



Scale: 5" / 100'
Measured Depth Log

Well Name HOUSTON 33C-8HZ

Location SEC.8-T3N-R67W

State COLORADO

Country USA

API Number 05-123-3895200

Region DJ BASIN

Spud Date 3/16/2014

Surface Coordinates 1735' FSL 569' FEL

Bottom Hole Coordinates 1015' FSL 50' FWL

County WELD

Rig Number XTREME 8

AFE # 2091306

Field WATTENBERG

Drilling Completed 5/18/2014

Ground Elevation 4807'

K.B. Elevation 4824'

Logged Interval 6950' To 11994'

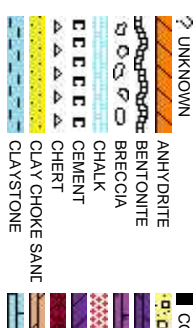
Total Depth 11994'

Formation CODELL

Type of Drilling Fluid FW LSND

Company ANADARKO PE
Address 1099 18TH, SU
DENVER, CO 8

Name RIKKI WITHER
Company COLUMBINE L
Address 2385 S. LIPAN
DENVER, CO 8








Accessories

Fossils

Fossils

Stringer

- ## Fossils
-  ALGAE
 -  AMPHIP
 -  BELEMN
 -  BIOCLAS
 -  BRACHC
 -  BRYOZO
 -  CEPHAL
 -  CORAL
 -  CRINOID
 -  ECHINOI
 -  FISH
 -  FORAMIN
 -  FOSSIL

1

EMITT









- ## Oil Shocks

Porosity







- ☒ FENESTRA
- ☐ FRACTURA
- ☒ INTERCERAMICO
- ☒ INTERODONTOLOGICO
- ☒ MOLDED

Accessories

Stringer

- ## Fossils
-  ALGAE
 -  AMPHIP
 -  BELEMN
 -  BIOCLAS
 -  BRACHC
 -  BRYOZO
 -  CEPHAL
 -  CORAL
 -  CRINOID
 -  ECHINOI
 -  FISH
 -  FORAMIN
 -  FOSSIL

CEOUS

- ## Fossils
-  ALGAE
 -  AMPHIP
 -  BELEMN
 -  BIOCLAS
 -  BRACHC
 -  BRYOZO
 -  CEPHAL
 -  CORAL
 -  CRINOID
 -  ECHINOI
 -  FISH
 -  FORAMIN
 -  FOSSIL

52 GRAINS ONE

- ## Oil Shocks

9 MUDSTONE

- ## Porosi

Sorting

- ☐ E EARTHY
- ☐ F FENESTRA
- ☐ F FRACTURE
- ☒ X INTERCROSS
- ☒ Q INTERROOM
- ☒ M MOLDIC
- ☐ O ORGANIC

...

- ☐ E EARTHY
- ☐ F FENESTRA
- ☐ F FRACTURE
- ☒ X INTERCROSS
- ☒ Q INTERROOM
- ☒ M MOLDIC
- ☐ O ORGANIC

ROP
ROF
GAMMA

Bit Data
Bit #: 2
Type: SDi611
Size: 8.75
Depth In: 848'
Depth Out: 7,420'
Hours: 23.1 hrs
Avg Ft/Hr: 284.5'/hr

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Columbine Logging Two Man Rigged
Up 16:51hrs 05/12/2014 With Bloodhound
Unit # 0313
Logging Began @ 01:26 hrs 05/13/2014
at 6950' MD

Depth Labels

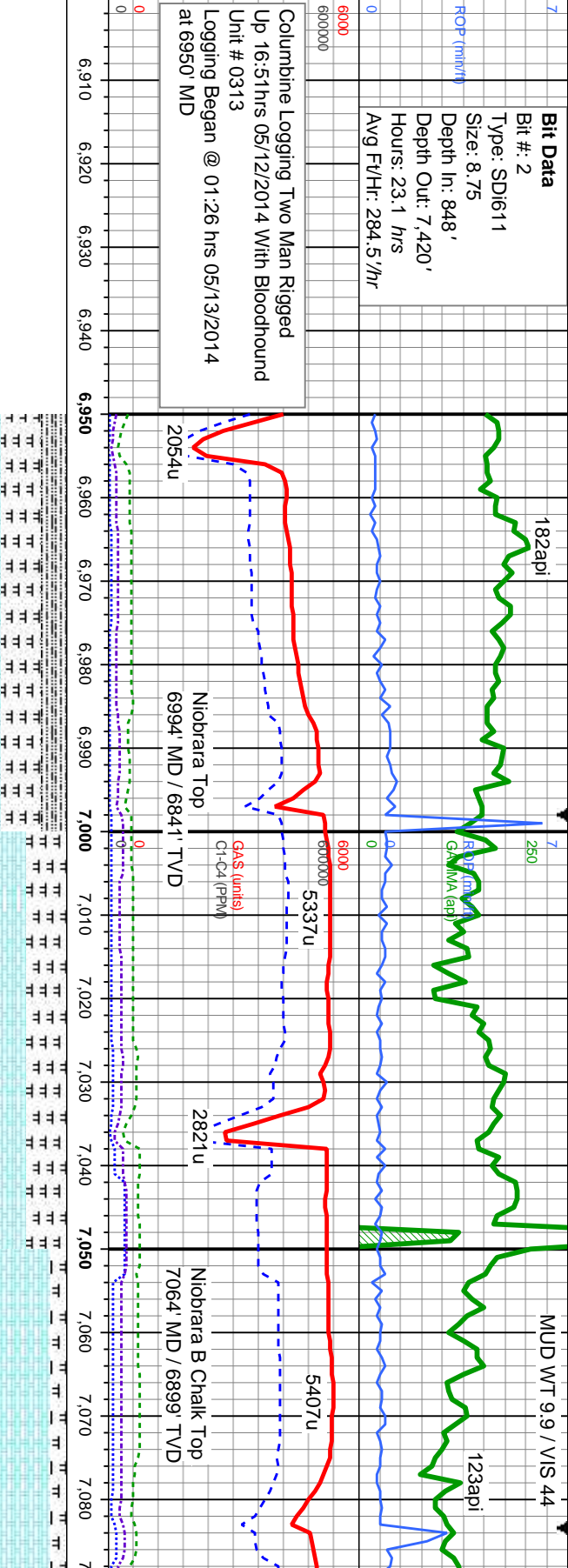
% Lith

Well Bore
TVD

Oil Show

EGMTST

Images



Acetone was used
as the cutting agent
with the dimple filled
to the rim.

The ratings are based
on 7 descriptors:
None, Slight trace, Trace,
Fair, Moderate, Good, and
Excellent. The descriptor
used is based on the loggers
observations and best
judgment of brilliance,
color and longevity of the cut.

MD: 6,980'
TVD: 6,829.61'
Inclination: 32.1°
Azimuth: 272.31°
VS: -410.69'

MD: 7,023'
TVD: 6,865.37'
Inclination: 35.33°
Azimuth: 271.43°
VS: -386.82'

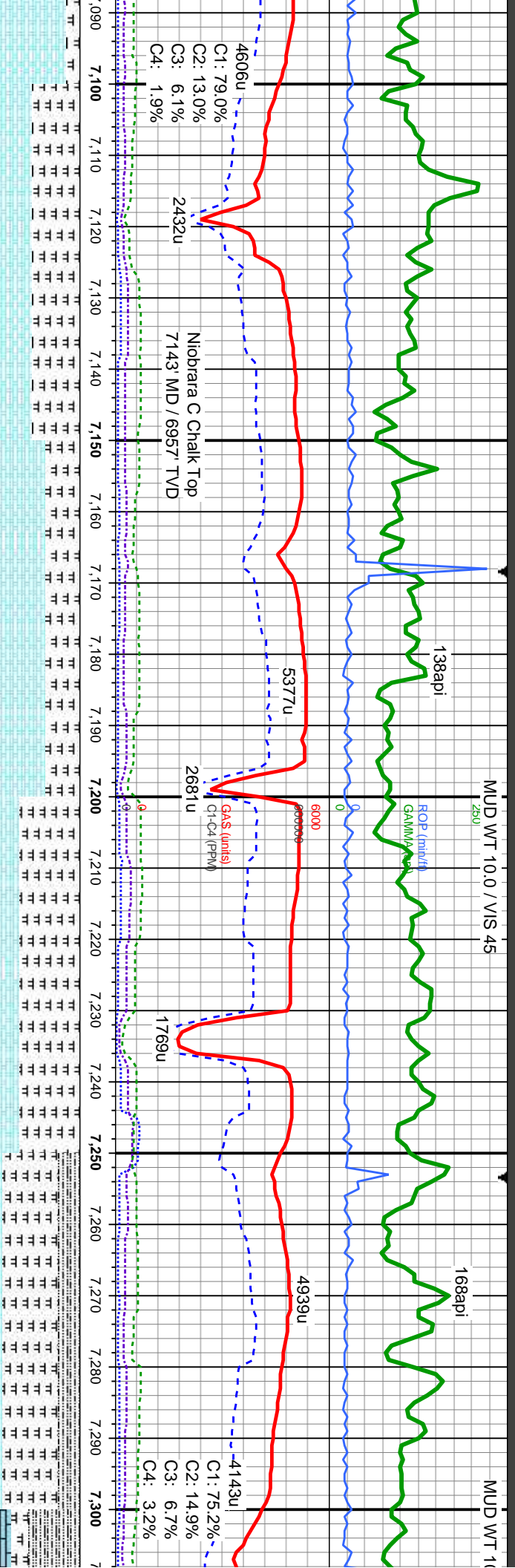
MD: 7,065'
TVD: 6,898.87'
Inclination: 38.84°
Azimuth: 270.71°
VS: -361.5'

MRLST: med-dk gy, sb ply-sb blkly, sb
ang-sb rnd, med sft-fim, vf gr, w srt, lam, sily
tex; CHK: lt-med gy, sb blkly-blkly, sb ang-sb
rnd, f gr, mod srt, mot; SLTY SH: med gy,
ply-sb blkly, sb rnd, med sft-fim, vf gr, mod-w
srt, mod fr-si brt, sily tex, v sl calc, com bent,
fast sting mky bl cut, spty bri bl ring

CHK: lt-med gy, sb blkly-blkly, sb ang-sb rnd, f
gr, mod srt, mot; MRLST: med-dk gy, sb
ply-sb blkly, sb ang-sb rnd, med sft-fim, vf
gr, w srt, lam, sily tex, fast sting mky bl cut,
spty bri bl ring

CHK: lt-med gy, sb blkly-blkly, sb an
gr, mod srt, mot; MRLST: med-dk g
ply-sb blkly, sb ang-sb rnd, med sft-fim, vf
gr, w srt, lam, sily tex, tr bent, fast s





MD: 7,108'
TVD: 6,931.58'
Inclination: 42.08 °
Azimuth: 269.58 °
VS: -333.61'

MD: 7,150'
TVD: 6,961.78'
Inclination: 45.98 °
Azimuth: 270.2 °
VS: -304.44'

MD: 7,193'
TVD: 6,990.66'
Inclination: 49.61 °
Azimuth: 270.92 °
VS: -272.6'

MD: 7,236'
TVD: 7,017.39'
Inclination: 53.48 °
Azimuth: 271.68 °
VS: -238.93'

MD: 7,278'
TVD: 7,041.09'
Inclination: 57.82 °
Azimuth: 272.43 °
VS: -204.27'

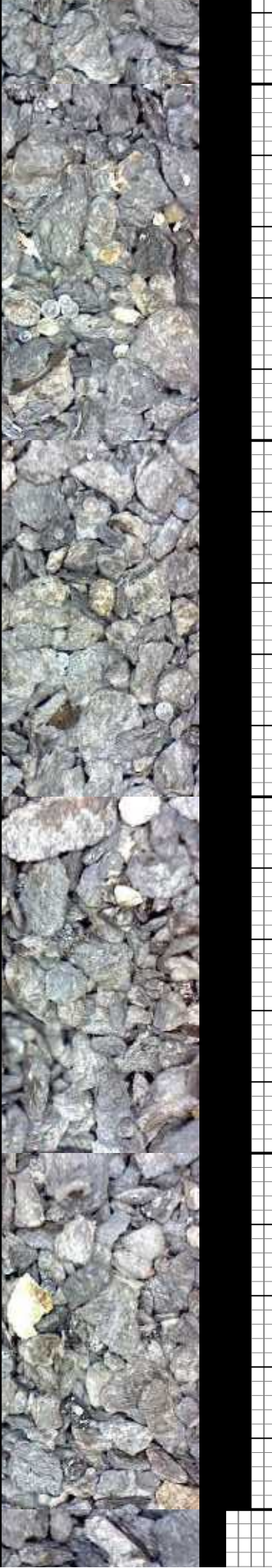
g-sb md,f
y, sb
frm, vf
ting mky

MRLST: med-dk gy, sb ply-sb blkly, sb
ang-sb md, med sft-frm, vf gr, w srt, lam, silty
tex; CHK: lt-med gy, sb blkly-blky, sb ang-sb
md,f gr, mod srt, mot, tr inoc, fast string mky
bl cut, spty brt bl ring

CHK: lt-med gy, sb blkly-blky, sb ang-sb md,f
gr, mod srt, mot; MRLST: med-dk gy, sb
ply-sb blkly, sb ang-sb md, med sft-frm, vf
gr, w srt, lam, silty tex, fast string mky bl cut,
spty brt bl ring

MRLST: med-dk gy, sb ply-sb blkly, sb
ang-sb md, med sft-frm, vf gr, w srt, lam, silty
tex; CHK: lt-med gy, sb blkly-blky, sb ang-sb
md,f gr, mod srt, mot, tr bent, fast string mky
bl cut, spty brt bl ring

MRLST: dk gy, bn-blk, sb ply-sb blkly, sb
ang-sb md, vf gr, w srt, sft-frm, brt, silty tex;
SLTY SH: dk-med gy, sb ply-ply, med
sft-frm, mod fr-sl brt, vf gr, w srt, silty tex, v sl
calc; CHK: lt-med gy, dk gry, sb blkly-blky, sb
ang-sb md, f gr, mot, fast string mky bl cut,
spty brt bl ring

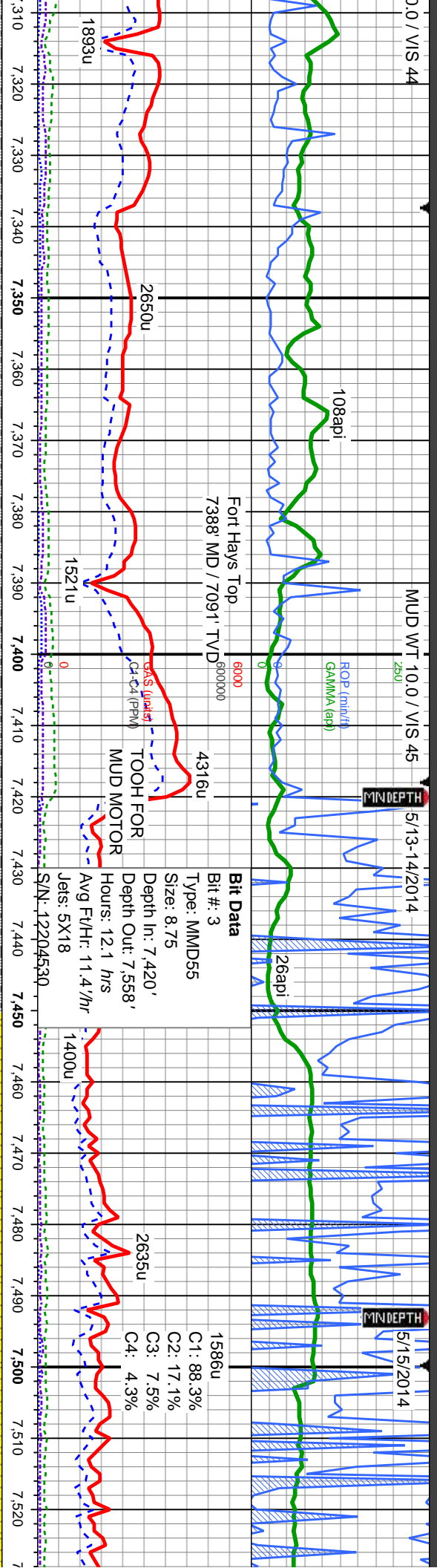


0.0 / VIS 44

MUD WT 10.0 / VIS 45

5/13-14/2014

5/15/2014



dk-med gy, sb ply-pty, med
mod fr-si brit, vf gr, silty tex, v sl calc;
n-firm, cpxl tex: MRLST: med-dk gy,
sb ply-pty, sb ang-ang, vf gr, w srt,
silty tex, sb ang-sb rnd, vf gr, w srt,
silty tex, sting mky bl cut, dul bl ring

LS: lt gy-oftwht, sb ply-pty, sb ang-ang, vf gr,
mod frm-firm, cpxl tex, SLTY SH: dk-med gy,
sb ply-pty, med stf-firm, mod fr-si brit, vf gr,
silty tex, v sl calc, sting mky bl cut, dul bl ring

LS: lt gy-oftwht, sb ply-pty, sb ang-ang, vf gr,
mod frm-firm, cpxl tex: SS: lt-med gy,
cl-trnsl, occ s&p, nd, w rd, w srt, med gr;
SLTY SH: dk-med gy, sb ply-pty, med
stf-firm, mod fr-si brit, vf gr, silty tex, v sl calc,
slow sting mky bl cut, spy dul grn ring

SS: lt-med gy, gy brn, cl-trnsl, occ s&p, nd,
w rd, w srt, med gr, LS: lt gy-oftwht, sb
ply-pty, sb ang-ang, vf gr, mod frm-firm,
cpxl tex, slow sting mky bl cut, spy dul grn
ring

SS: lt-med gy, gy brn, cl-trnsl, occ s&p, nd,
w rd, w srt, med gr, LS: lt gy-oftwht, sb
ply-pty, sb ang-ang, vf gr, mod frm-firm,
cpxl tex, slow sting mky bl cut, spy dul grn
ring

MD: 7,320'
TVD: 7,062.25'
Inclination: 61.65 °
Azimuth: 273.26 °
VS: -168.01'

MD: 7,362'
TVD: 7,081.01'
Inclination: 65.28 °
Azimuth: 272 °
VS: -130.45'

MD: 7,405'
TVD: 7,097.5'
Inclination: 69.63 °
Azimuth: 272.61 °
VS: -90.74'

MD: 7,447'
TVD: 7,110.67'
Inclination: 73.79 °
Azimuth: 271.65 °
VS: -50.88'

MD: 7,490'
TVD: 7,120.95'
Inclination: 78.56 °
Azimuth: 272.18 °
VS: -9.14'

MD: 7,501'
TVD: 7,122.99'
Inclination: 80 °
Azimuth: 272.39 °
VS: 1.67'

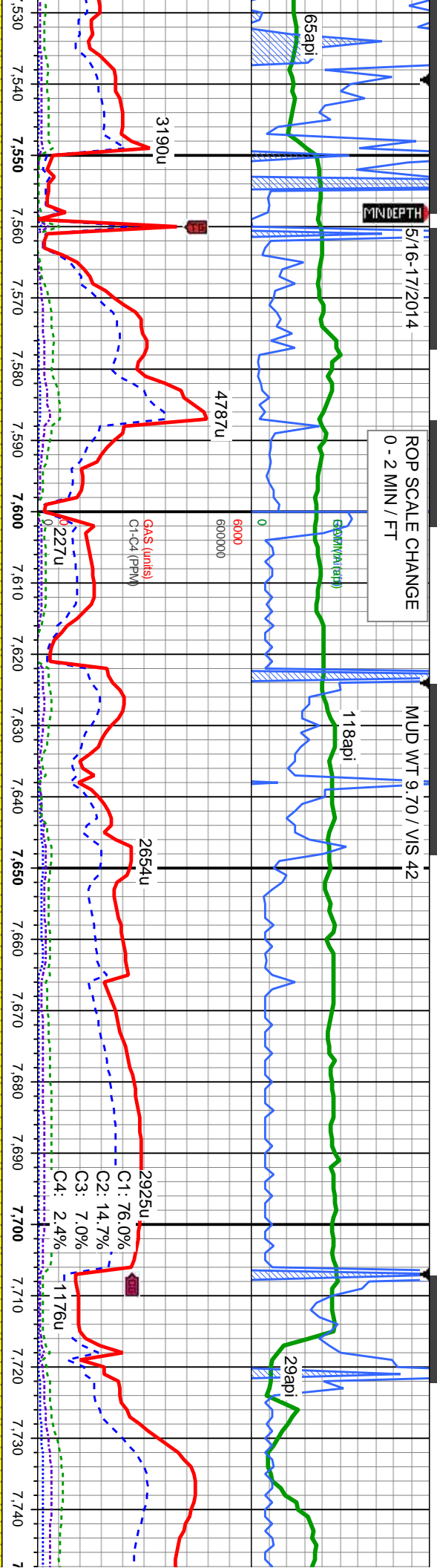


LANDE
@ 11:2
LOGGI
@ 01:2

5/16-17/2014

ROP SCALE CHANGE
0 - 2 MIN / FT

MUD WT 9.70 / VIS 42



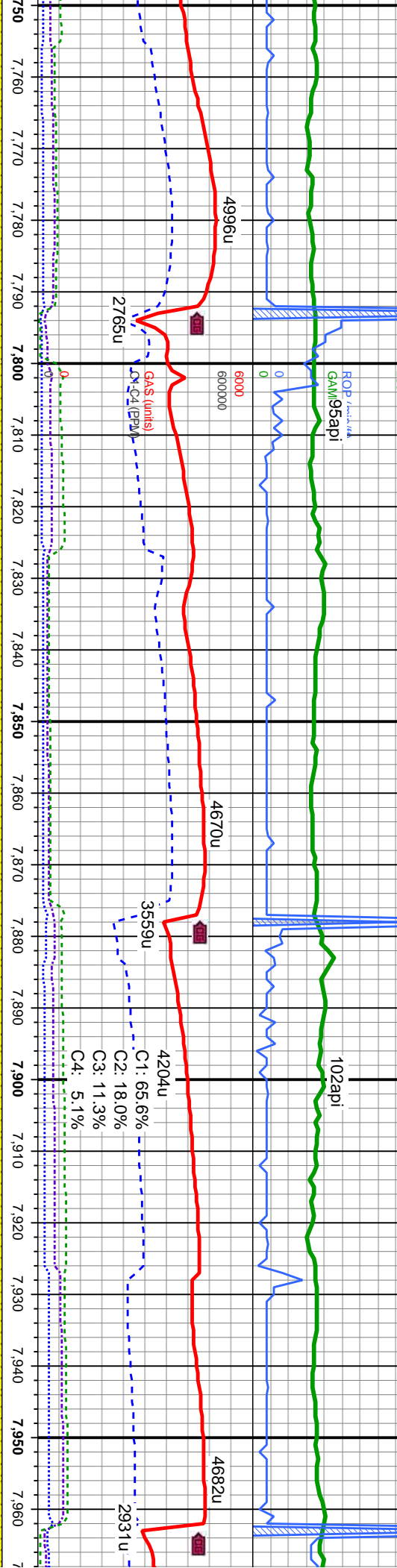
transl, occ s&p, hd, sting mky bl cut,	SS: lt-med gy, gy brn, cl-trmsl, occ s&p, hd, w rd, w srt, med gr, slow sting mky bl cut, dul bl ring	6350	SS: lt-med gy, gr brn, cl-trmsl, r s&p, hd, w rd, w srt, med gr, gridg to sh, slow sting mky bl cut, dul bl ring
---	---	------	--

D CURVE 5/15/2014 0 MST; 7558' MD NG RESUMED 5 MST 5/17/2014	Bit Data Bit #: 4 Type: VS513D Depth In: 7,558' Jets: 2X12 3X14 S/N: 4006987	MD: 7,597' TVD: 7,133.31' Inclination: 87.65° Azimuth: 272.42° VS: 97.03'	MD: 7,652' TVD: 7,134.34' Inclination: 90.21° Azimuth: 272.75° VS: 152.01'	MD: 7,727' TVD: 7,133.9' Inclination: 90.46° Azimuth: 271.71° VS: 227.01'
---	--	---	--	---



MUD WT 9.60 / VIS 48

MUD WT 9.20 / VIS 42



orn, cli-tmsl, tr s&p, hd, w
LS: lt-gy-offwht, sb pty-pty,
mod frm-frm, crpxl tex,
cut, dul bl ring

SS: lt-med gy, gr brn, cli-tmsl, tr s&p, hd, w
rd, w srt, med gr, grdg to sh, slow string mky
bl cut, dul bl ring

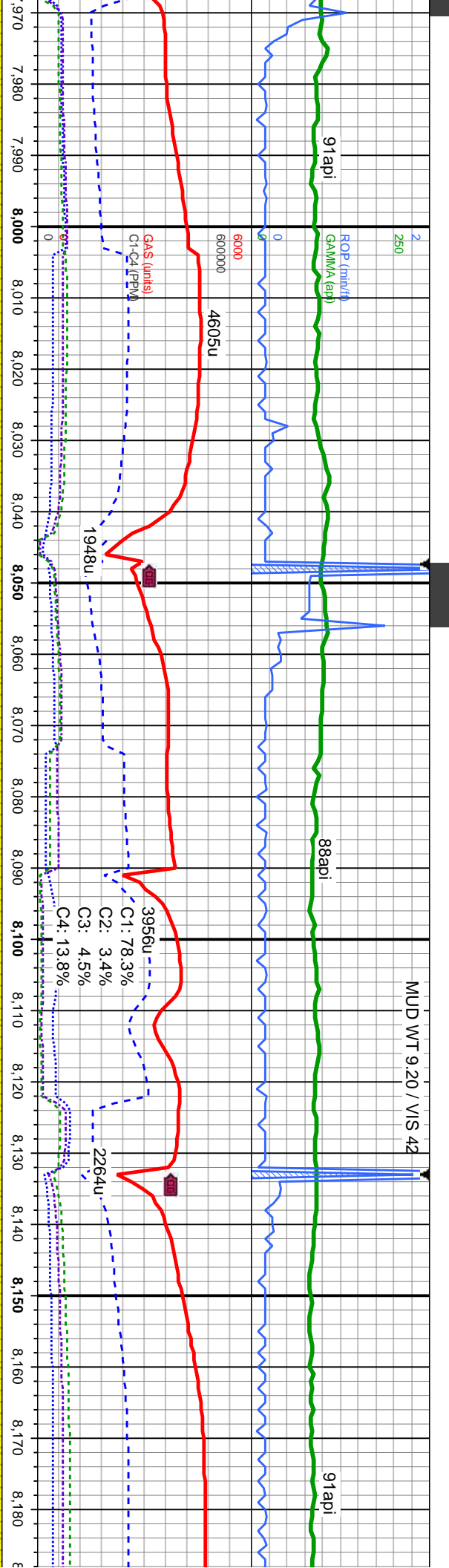
SS: lt-med gy, gr brn, cli-tmsl, tr s&p
rd, w srt, med gr, grdg to sh, slow string
bl cut, dul bl ring

TVD (ft)

MD: 7,813'
TVD: 7,132.61'
Inclination: 91.26°
Azimuth: 270.85°
VS: 312.99'

MD: 7,898'
TVD: 7,130.49'
Inclination: 91.6°
Azimuth: 270.84°
VS: 397.96'





SS: lt-med gy, gr brn, clr-trnsl, tr s&p, hd, w
rd, w srt, med gr, slow string mky bl cut, dul
bl ring

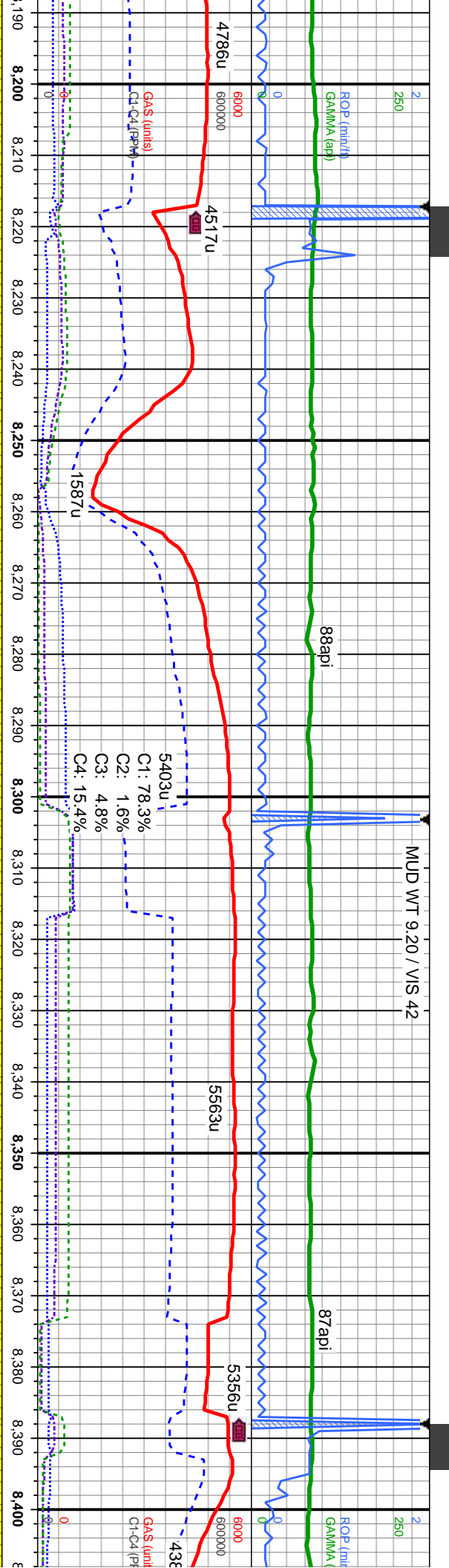
SS: lt-med gy, gr brn, clr-trnsl, v rr s&p, hd, w
rd, w srt, med gr, slow string mky bl cut, bl
ring

MD: 7,983'
TVD: 7,128.37'
Inclination: 91.26 °
Azimuth: 270.66 °
VS: 482.92'

MD: 8,068'
TVD: 7,127.36'
Inclination: 90.09 °
Azimuth: 270.13 °
VS: 567.9'

MD: 8,153'
TVD: 7,126.91'
Inclination: 90.52 °
Azimuth: 270.87 °
VS: 652.88'





SS: lt-med gy, gr brn, cl-trnsl, hd, w rd, w srt,
med gr, sting mky bl cut, bl ring

SS: lt-med gy, gr brn, cl-trnsl, hd, w rd, w srt,
med gr, tr pyr, sting mky bl cut, bl ring

MD: 8,239'
TVD: 7,126.55'
Inclination: 89.96 °
Azimuth: 270.84 °
VS: 738.87'

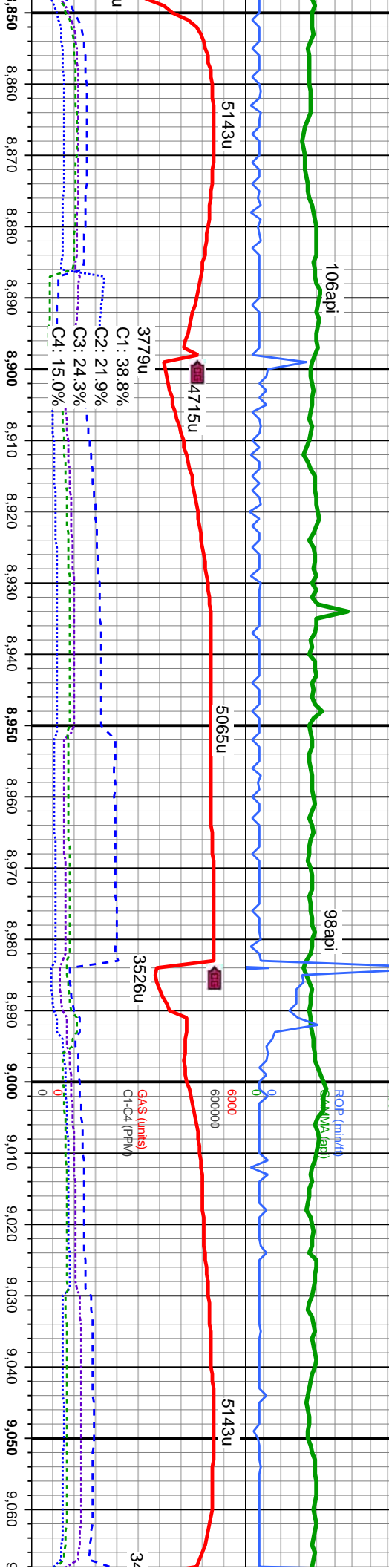
MD: 8,324'
TVD: 7,126.56'
Inclination: 90.03 °
Azimuth: 270.73 °
VS: 823.86'

MD: 8,400'
TVD: 7,110.00'
Inclination: 90.00 °
Azimuth: 270.00 °
VS: 908.00'



0 / VIS 40

MUD WT 9.50 / VIS 40



n, clr-tmsl, hd, w rd, mod
mky bl cut, spty bri bl ring

SS: med gy, gr brn, clr-tmsl, hd, w rd, mod
srt, med gr, sting mky bl cut, spty bri bl ring

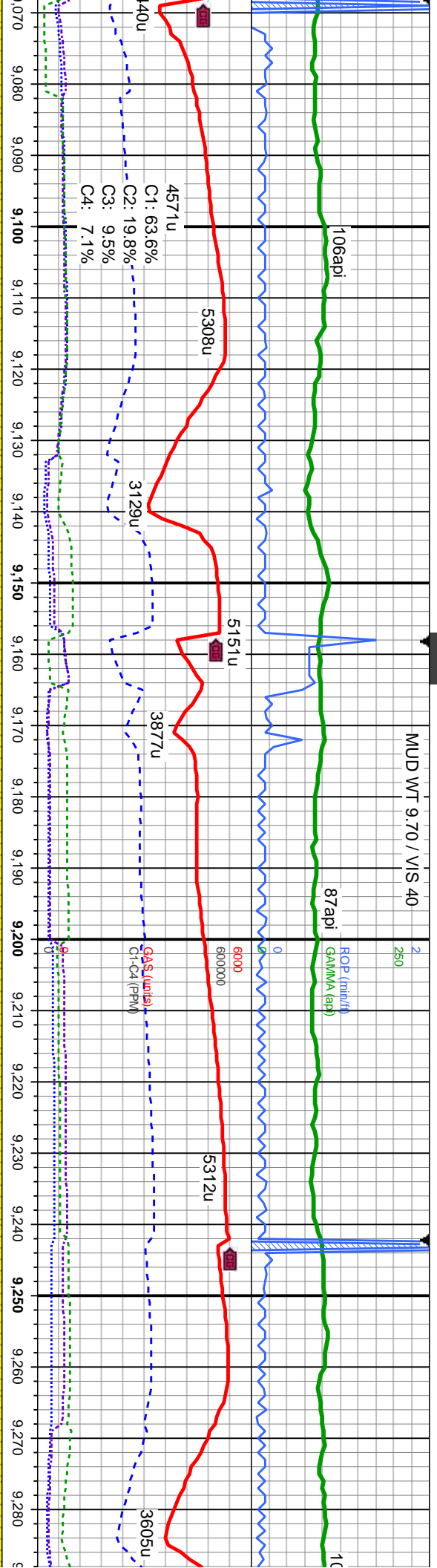
SS: lt-med gy, gr brn, clr-tmsl, hd, w rd, l
srt, med gr, sting mky bl cut, spty bri bl r

MD: 8,920'
TVD: 7,128.47'
Inclination: 90.65 °
Azimuth: 272.13 °
VS: 1,419.82'

MD: 9,005'
TVD: 7,128.09'
Inclination: 89.87 °
Azimuth: 272.41 °
VS: 1,504.81'

TVD (ft)



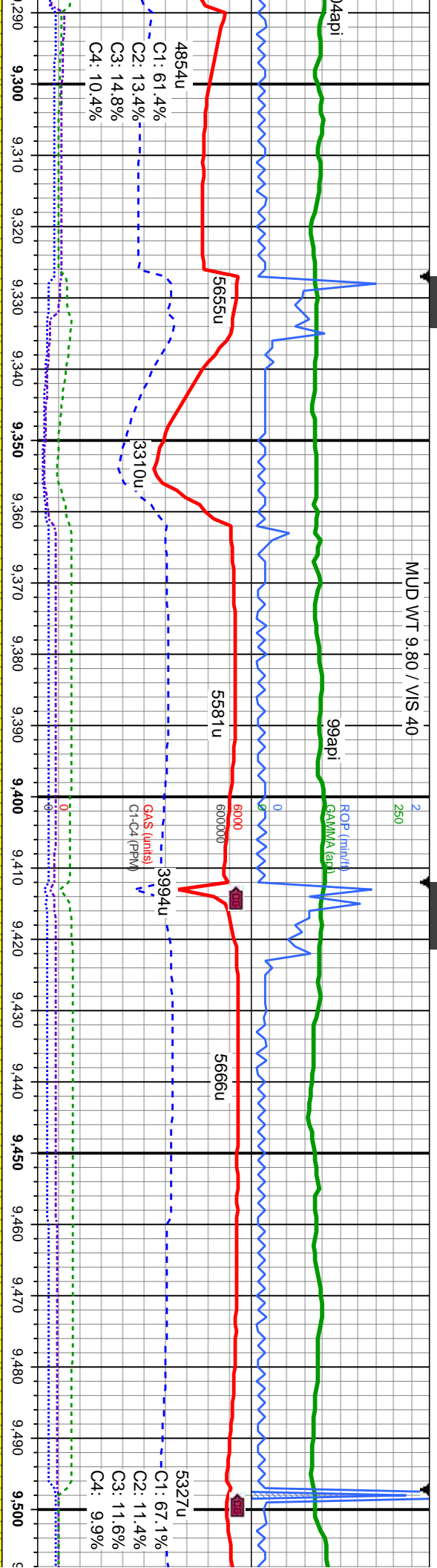


mod
ing

SS: lt-med gy, gr brn, cl-trnsl, hd, w rd, mod
srt, med gr, sting mky bl cut, spy bri bl ring

MD: 9,091' TVD: 7,128.07' Inclination: 90.15 ° Azimuth: 272.61 ° VS: 1,590.8'		MD: 9,176' TVD: 7,128.29' Inclination: 89.56 ° Azimuth: 273.2 ° VS: 1,675.78'		MD: 9,261' TVD: 7,128.8' Inclination: 89.75 ° Azimuth: 273.39 ° VS: 1,760.74'	
---	--	---	--	---	--





SS: lt-med gy, gr brn, clr-tnsl, hd, w rd,
mod srt, med gr, string mky bl cut, spty
bri bl ring

SS: med gy, gr brn, clr-tnsl, hd, w rd,
mod srt, med gr, string mky bl cut,
spty bri bl ring

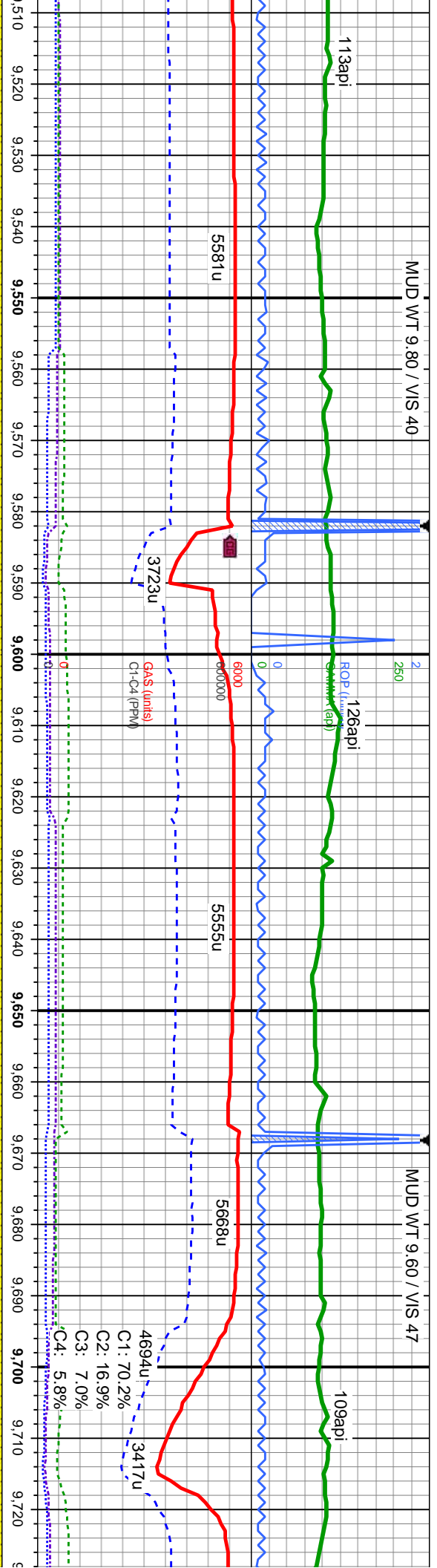
MD: 9,346'
TVD: 7,128.74'
Inclination: 90.33°
Azimuth: 273.03°
VS: 1,845.71'

MD: 9,432'
TVD: 7,128.54'
Inclination: 89.93°
Azimuth: 271.55°
VS: 1,931.7'

TVD (ft)

7600



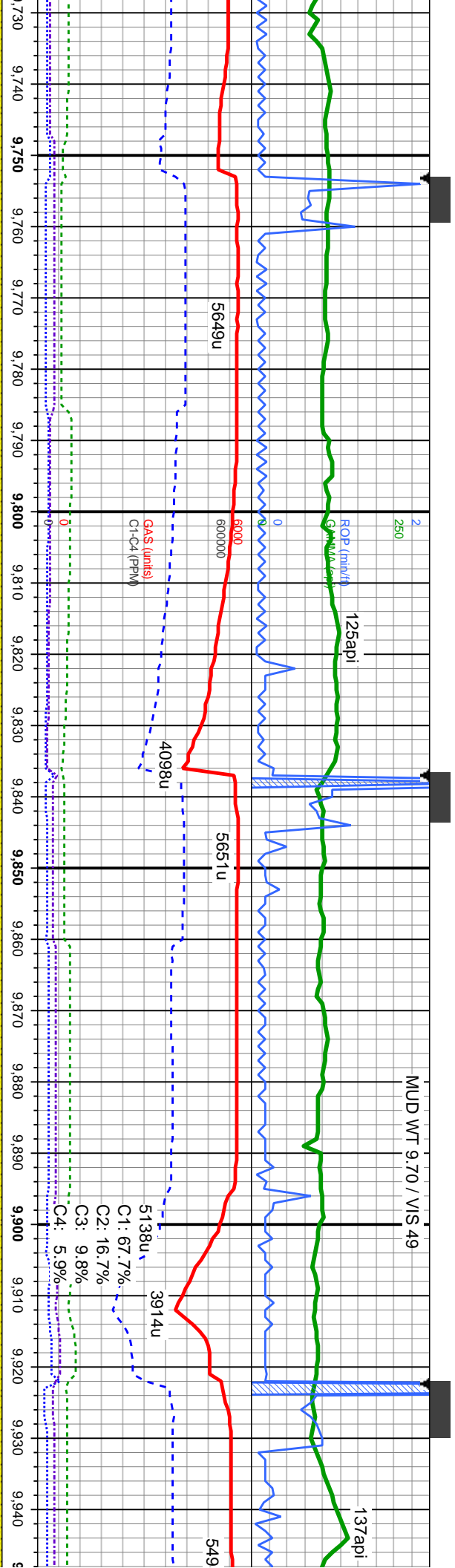


SS: med gy, gr brn, cl-trnsl, hd, w rd,
mod srt, med gr, sting mky bl cut, spty
bri bl ring

SS: lt-med gy, gr brn, cl-trnsl, rr s&p, hd, w rd,
w srt, med gr, sting mky bl cut, spty bri bl ring

MD: 9,517'	MD: 9,602'	MD: 9,687'
TVD: 7,128.6'	TVD: 7,128.87'	TVD: 7,129.33'
Inclination: 90 °	Inclination: 89.63 °	Inclination: 89.75 °
Azimuth: 271.05 °	Azimuth: 270.61 °	Azimuth: 270.24 °
VS: 2,016.7'	VS: 2,101.69'	VS: 2,186.67'





SS: med gy, gr brn, cl-trnsl, hd, w rd,
mod srt, med gr, sting mky bl cut, spty
brl bl ring

SS: med gy, gr brn, clr-trnsl, hd, w rd,
mod srt, med gr, slow sting mky bl cut,
spty brl bl ring

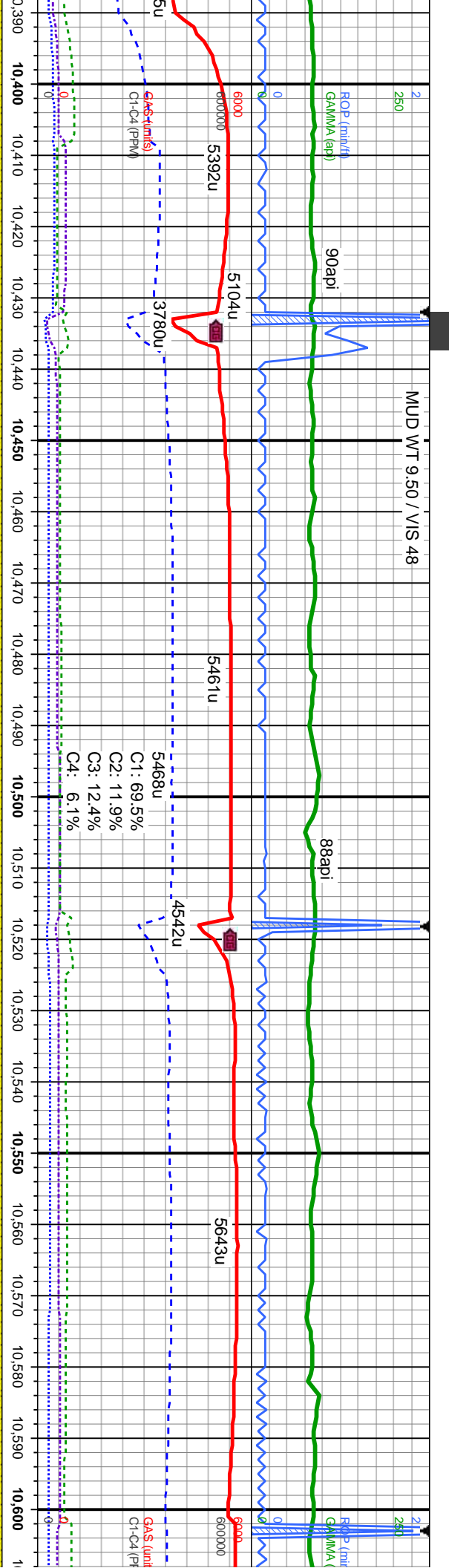
SS: lt-med gy, gr brn,
w srt, med gr, sting m

MD: 9,773'
TVD: 7,129.93'
Inclination: 89.44 °
Azimuth: 270.75 °
VS: 2,272.65'

MD: 9,858'
TVD: 7,130.77'
Inclination: 89.44 °
Azimuth: 271.33 °
VS: 2,357.64'

MD: 9,943'
TVD: 7,132.1'
Inclination: 88.7
Azimuth: 270.7
VS: 2,442.63'





SS: lt-med gy, gr brn, clr-trnsl, occ s&p, hd, w
rd, w srt, med gr, slow stimg mky bl cut, spy bri
bl ring

SS: lt-med gy, gr brn, clr-trnsl, occ s&p, hd, w
rd, w srt, med gr, stimg mky bl cut, bl ring

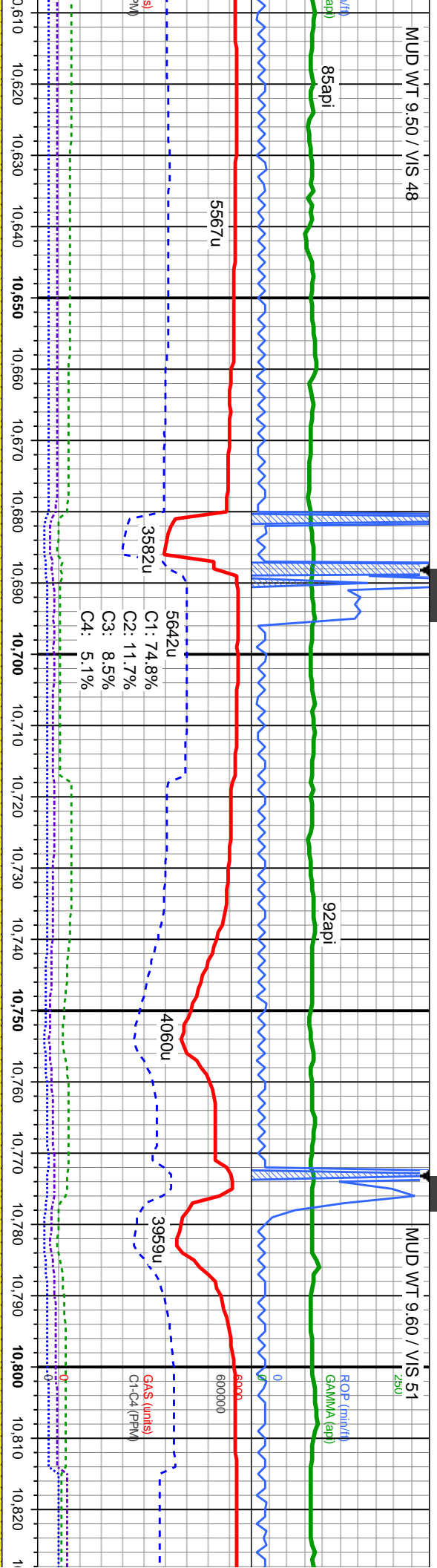
MD: 10,454'
TVD: 7,129.96'
Inclination: 90.43°
Azimuth: 272.53°
VS: 2,953.53'

MD: 10,539'
TVD: 7,129.23'
Inclination: 90.55°
Azimuth: 272.17°
VS: 3,038.52'



MUD WT 9.50 / VIS 48

MUD WT 9.60 / VIS 51



SS: lt-med gy, gr brn, clr-tnsl, hd, w rd, w srt,
med gr, sting mky bl cut, bl ring

SS: lt-med gy, gr brn, clr-tnsl, hd, w rd, w srt,
med gr, sting mky bl cut, bl ring

SS: srt, l

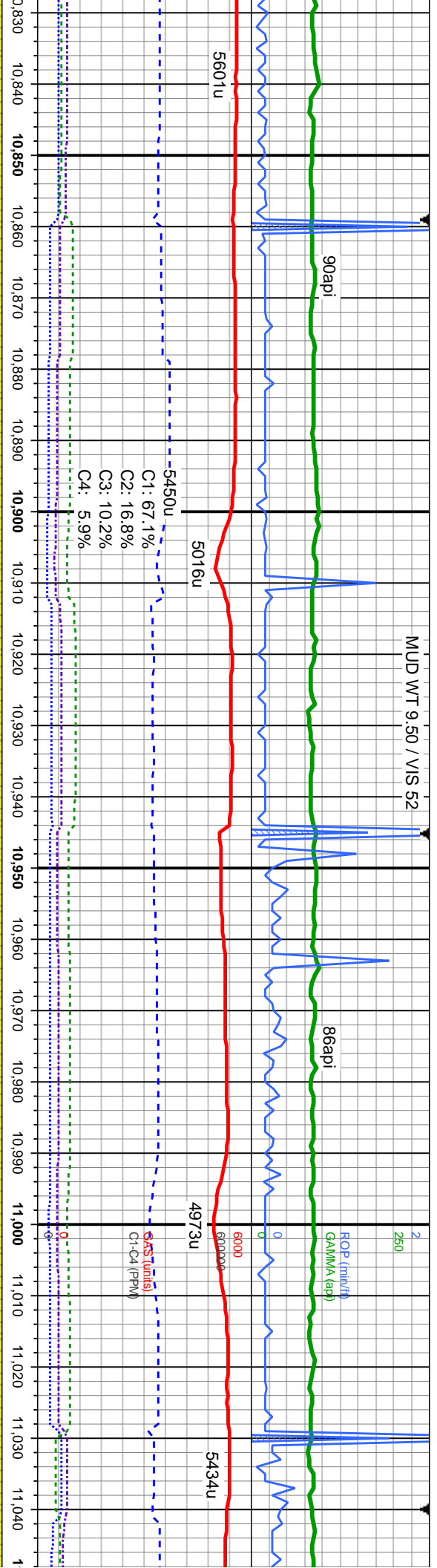
MD: 10,624'
TVD: 7,128.12'
Inclination: 90.95 °
Azimuth: 272.09 °
VS: 3,123.51'

MD: 10,709'
TVD: 7,126.98'
Inclination: 90.58 °
Azimuth: 271.63 °
VS: 3,208.5'

MD: 10,794'
TVD: 7,126.53'
Inclination: 90.03 °
Azimuth: 272.08 °
VS: 3,293.5'

TVD (ft)





lt-med gy, gr br, clr-trnsl, hd, w rd, mod-w
med gr, stmg mky bl cut, bl ring

SS: med gy, gr br, clr-trnsl, hd, w rd, mod-w
srt, med gr, stmg mky bl cut, bl ring

SS: med-dk gy, gr br
srt, med gr, stmg mk

MD: 10,879'
TVD: 7,126.49'
Inclination: 90.03 °
Azimuth: 271.9 °
VS: 3,378.5'

MD: 10,965'
TVD: 7,126.31'
Inclination: 90.21 °
Azimuth: 272.04 °
VS: 3,464.49'

MD: 11,
TVD: 7,
Inclination:
Azimuth
VS: 3,52



MUD WT 9.50 / VIS 50

C1: 61.2%
C2: 19.0%
C3: 12.1%
C4: 7.7%

ROP (min/hr)
GAMMA (api)
GAS (units)
Cl-C4 (PPM)

n, cl-trnsl, hd, w rd, mod-w
y bl cut, bl ring

SS: med-dk gy, gr brn, cl-trnsl, hd, w rd, mod-w
srt, med gr, sting mky bl cut, bl ring

SS: med-dk gy, gr brn, cl-trnsl, hd, w rd, l
srt, med gr, sting mky bl cut, bl ring

050'
25.95'
on: 90.27 °
: 272.12°
9.49'

MD: 11,135'
TVD: 7,125.64'
Inclination: 90.15 °
Azimuth: 271.47°
VS: 3.634.49'

MD: 11,220'
TVD: 7,125.12'
Inclination: 90.55 °
Azimuth: 271.7°
VS: 3,719.49'

TVD (ft)

6350

5562u
5000
2000

5158u

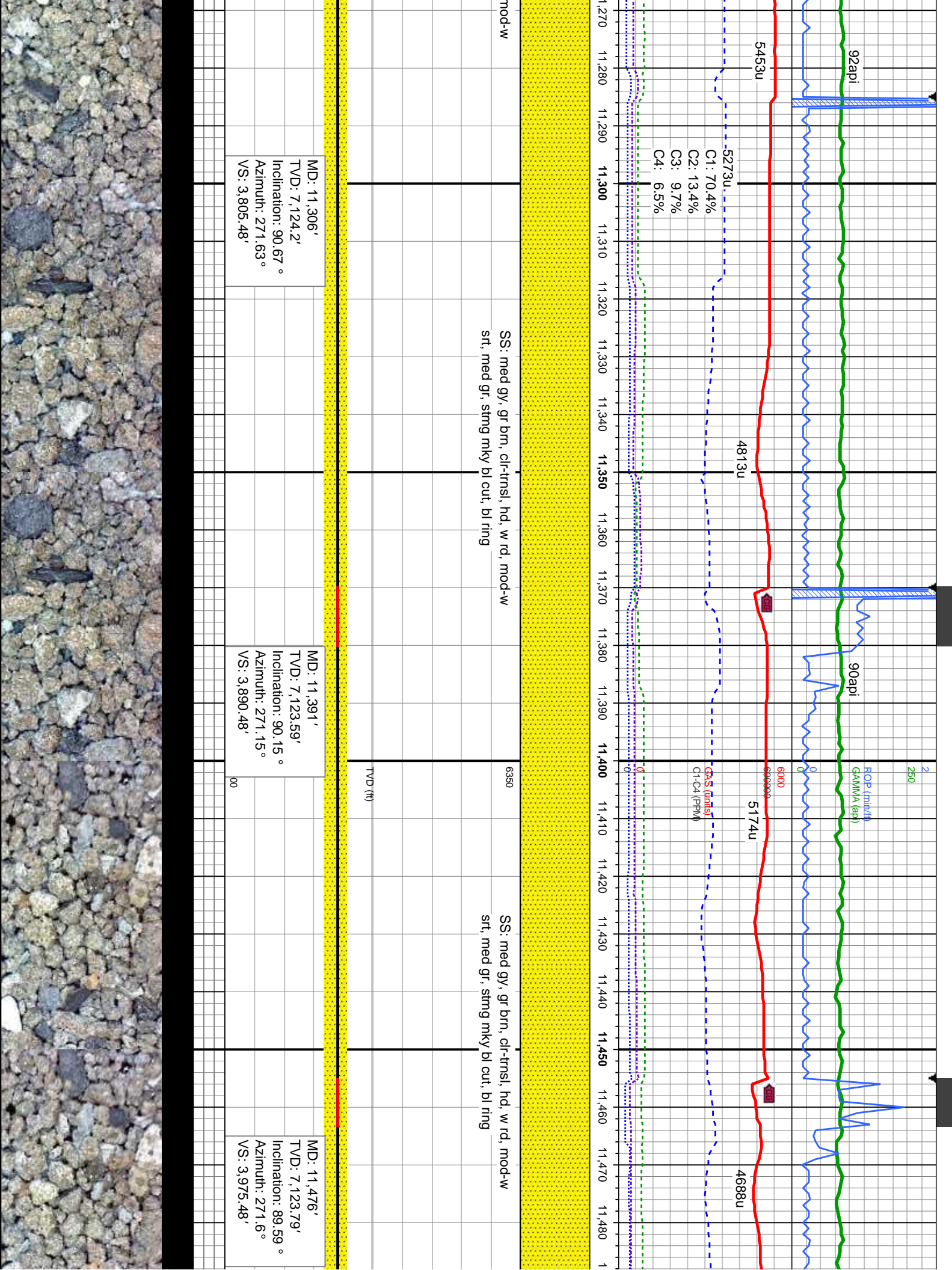
5474u

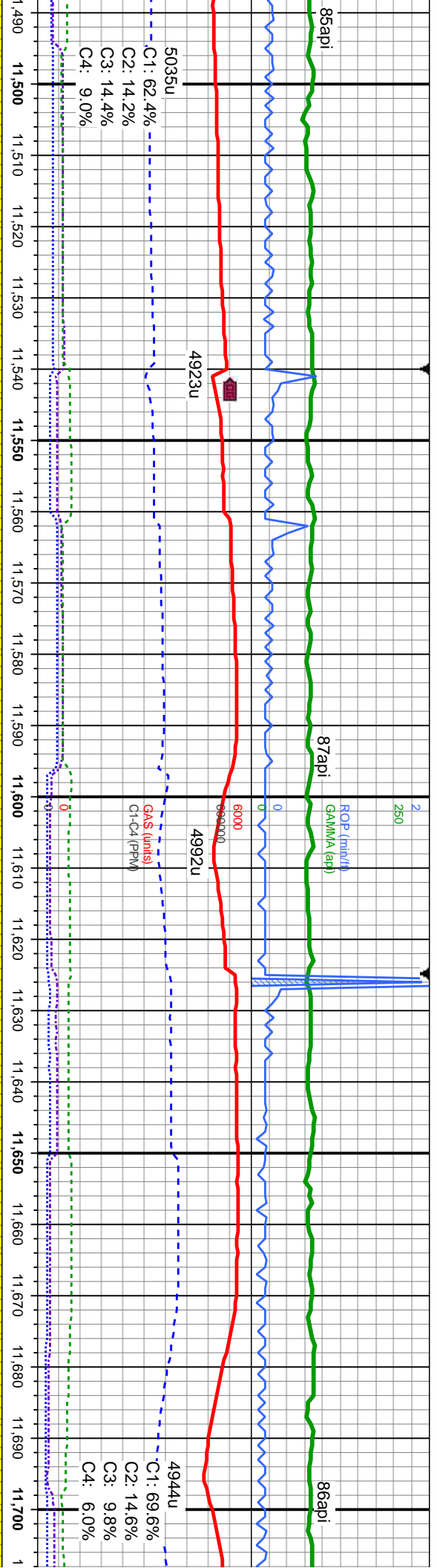
4389u

94api

94api







SS: med gy, gr brn, clr-trnsl, hd, w rd, w srt,
med gr, stmg mky bl cut, bl ring

SS: lt-med gy, gr brn, occ s&p, clr-trnsl, hd, w
rd, w srt, med gr, stmg mky bl cut, bl ring

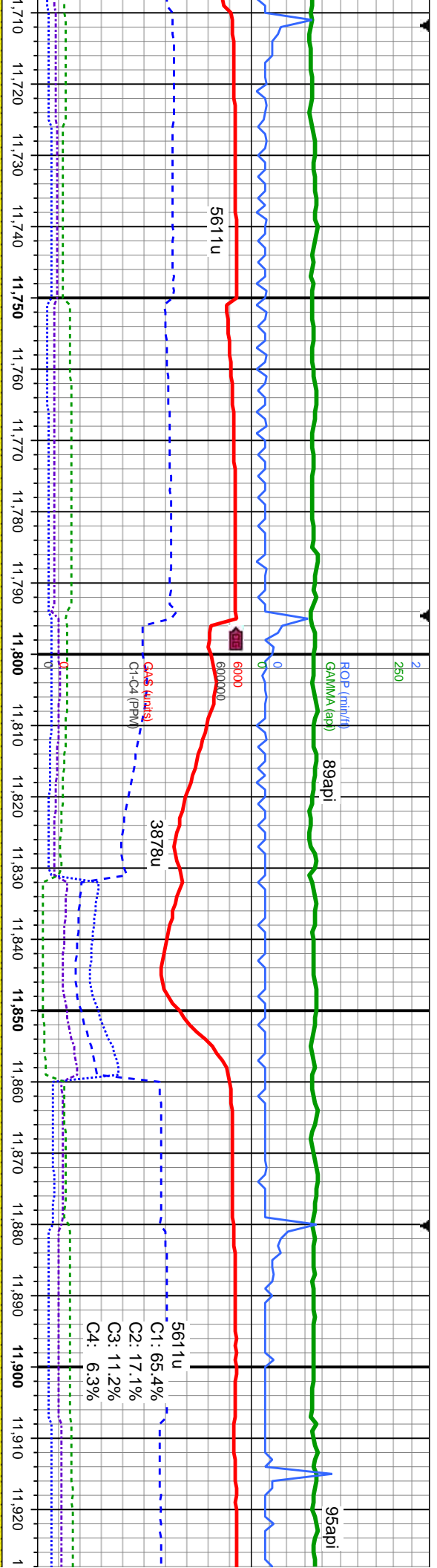
TVD (ft)

MD: 11,561'
TVD: 7,124.23'
Inclination: 89.81°
Azimuth: 271.24°
VS: 4,060.48'

MD: 11,647'
TVD: 7,124.41'
Inclination: 89.96°
Azimuth: 271.1°
VS: 4,146.47'

7600





SS: lt-med gy, gr brn, occ s&p, clr-trnsl, hd, w
rd, w srt, med-f gr, sting mky bl cut, bl ring

SS: lt-med gy, gr brn, occ s&p, clr-trnsl, hd, w
rd, w srt, med-f gr, sting mky bl cut, bl ring

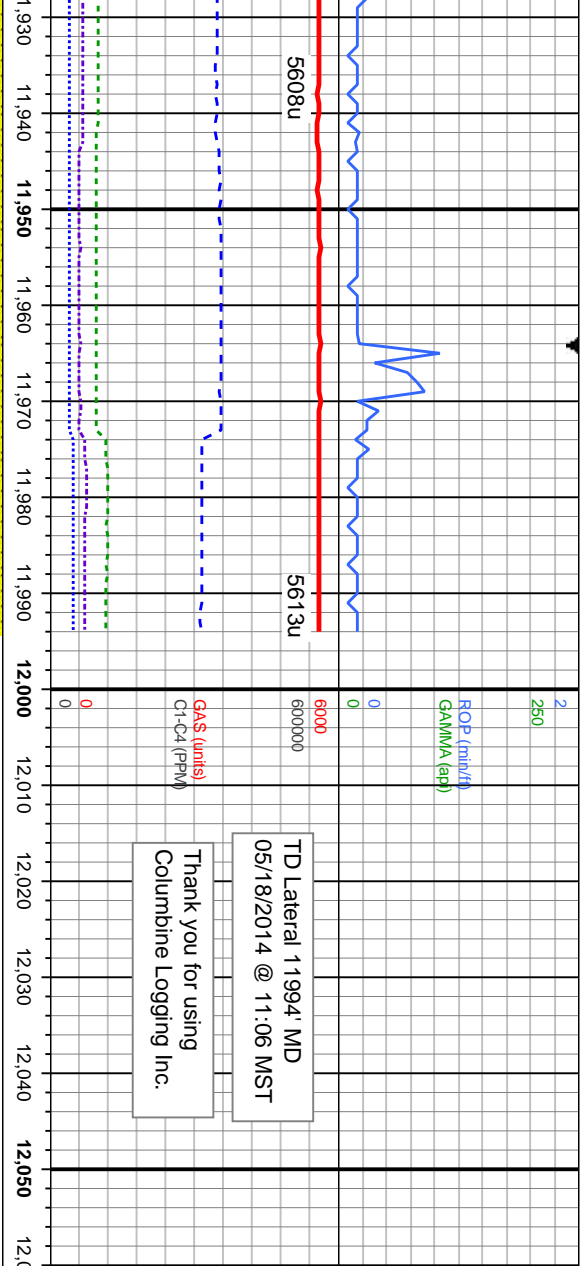
SS
me

MD: 11,732'
TVD: 7,124.41'
Inclination: 90.03 °
Azimuth: 270.95 °
VS: 4,231.47'

MD: 11,817'
TVD: 7,124.67'
Inclination: 89.62 °
Azimuth: 270.69 °
VS: 4,316.46'

MD: 11,926'
TVD: 7,125'
Inclination: 20
Azimuth: 270.95 °
VS: 4,425.4'





TD Lateral 11994' MD
05/18/2014 @ 11:06 MST

Thank you for using
Columbine Logging Inc.

lt-med gy, gr brn, cl-trmsl, hd, w rd, w srt,
d-f gr, sting mky bl cut, bl ring

6350

PROJECTION TO BIT

MD: 11,994'
TVD: 7,127.09'
Inclination: 89.04 °
Azimuth: 269.05 °
VS: 4,493.32'

89.04 °
89.05 °

