



Scale: 5" / 100'
Measured Depth Log

Well Name	70 RANCH 04-63-03-4956CH		
Location	NW SW SEC3 - T4N - R63W		
State	COLORADO	County	WELD
Country	UNITED STATES OF AMERICA	Rig Number	NABORS M - 37
API Number	05-123-37925	AFE #	18531D
Region	DENVER-JULESBURG BASIN	Field	WATTENBERG
Spud Date	12/6/2013	Drilling Completed	12/17/2013
Surface Coordinates	NWSW SEC3-T4N-R63W 1,928' FSL 234' FWL		
Bottom Hole Coordinates	SESE SEC 03-T4N-R63W 769' FSL 500' FWL		
Ground Elevation	4,560'	K.B. Elevation	4,583'
Logged Interval	4,000'	To	11,002'
Formation	PIERRE - NIOBRARA C	Total Depth	11,002'
Type of Drilling Fluid	WATER BASED POLY MUD		

Company BILL BARRETT
Address 1099 18TH ST.,
DENVER, CO 8

Name JOHN ROESIN
Company BILL BARRETT
Address 1099 18TH ST.,
DENVER, CO 8

WELL SITE GEOLOGISTS



ROP
ROF
GAMMA

Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Depth Labels

% Lith

SHY SLTST: gy-dk gy, firm-hd, blk-y-sb blk-y, occ sb
blk-y-sb pily, gr-rthy, occ sd, non calc, qtz gr, occ
cmt, arg, intbdd wi SHY SS: lt gy-med gy, fri, f gr,
sb rd-rd, mod-w srt, arg, com glau & biot incl,
intbdd wi SS

SHY SLTST: gy-dk gy, firm-hd, blk-y-sb blk-y, occ sb
blk-y-sb pily, gr-rthy, occ sd, non calc, qtz gr, occ
cmt, arg, intbdd wi SHY SS: lt gy-med gy, fri, f gr,
sb rd-rd, mod-w srt, arg, com glau & biot incl,
intbdd wi SS: SLTY SH: gy-dk gy, some blk, sb
blk-y-pily, fis, vfr-mic gr, sl tr pyr

SHY SLTST: gy-dk gy, firm-hd, blk-y-sb blk-y, occ sb
blk-y-sb pily, gr-rthy, occ sd, non calc, qtz gr, occ
cmt, arg, intbdd wi SHY SS: lt gy-med gy, fri, f gr,
sb rd-rd, mod-w srt, arg, com glau & biot incl,
intbdd wi SS: SLTY SH: gy-dk gy, some blk, sb
blk-y-pily, fis, vfr-mic gr, sl tr pyr

5000
SHY SLTST: gy-dk
sb blk-y-sb pily, gr-r
occ cmt, arg, biot ir
blk, sb blk-y-pily, fis
dull bl string-flash c
ring

Well Bore

TVD

50' SAMPLE INTERVAL

Columbine Logging
2-Manned Geosteering
Operational 12/11/2013
Bloodhound# 314

MD: 6,107'
TVD: 5,990.56'
Inclination: 5.1°
Azimuth: 103.4°
VS: 969.16'

MD: 6,125'
TVD: 6,008.48'
Inclination: 5.5°
Azimuth: 109.4°
VS: 969.89'

Oil Show

Images

DEPTH 12/12/13

SL

10L

10L

191api

121api

10L

181api

OG

178a

TRIP TO ADJUST MOTOR

6.389' MD

75api

9.90 / MUD VIS: 38

MUD WT: 9.85 / MUD VIS: 38

MUD WT: 9.90 / MUD VIS: 3900

6.220 6.230 6.240 6.250 6.260 6.270 6.280 6.290 6.300 6.310 6.320 6.330 6.340 6.350 6.360 6.370 6.380 6.390 6.400 6.410 6.420 6.430

3865u

3245u

C1: 73.2%

C2: 15.8%

C3: 8.7%

C4: 2.3%

3727u

3829u

1490u

165u

4474u

Gas (units)

C1-C4 (ppm)

gy, firm-hd, bly-sb blk, occ
thy, occ sd, non calc, qtz gr,
SLTY SH: gy-dk gy, some
v-mic gr, sl tr pyr: med fast,
ut, bri bl wh flor ring, no vis

SLTY SH: gy-dk gy, some blk, sb pty-pty, v-mic
gr, fis, sl bnnd, tr pyr, tr bent, some grad to SHY
SLTST: gy-dk gy, firm-hd, bly-sb blk, occ sb
bly-sb pty, gr-rthy, occ sd, non calc, qtz gr, occ
cnt, arg: MRLST: dk gy, sb bly-pty, pred frm,
occ mod sft, mot, calc cnt, rthy lstr, diss pyr,
med fast, dull bl stmg-flash cut, bri bl wh flor ring,
tr tan vis ring

SLTY SH: gy-dk gy, some blk, sb pty-pty, v-mic
gr, fis, sl bnnd, tr pyr, com bent, CHK: med gy, sb
bly, sft-sl frm, mot, calc, MRLST: dk gy, sb
bly-pty, pred frm, occ mod sft, mot, calc cnt,
rthy lstr, diss pyr: med fast, dull bl stmg-flash cut,
bri bl wh flor ring, thn tan vis ring

SLTY SH: gy-dk gy, some blk, sb pty-pty, v-mic
gr, fis, sl bnnd, tr pyr, com bent, CHK: med
gy, some wht, sb bly, sft-sl frm, mot, calc, tr fos
frag, MRLST: dk gy, sb bly-pty, pred frm, occ
mod sft, mot, calc cnt, rthy lstr, diss pyr: med
fast, dull bl stmg-flash cut, bri bl wh flor ring,
tan vis ring

5000
CHK: med gy, some wht, sb bly, sft-sl frm
calc, tr fos frag, MRLST: dk gy, sb bly-pty,
frm, occ mod sft, mot, calc cnt, rthy lstr, c
pyr: med fast, dull bl stmg-flash cut, bri bl
ring, thn tan vis ring

ger's Top Sharon Springs
5' MD / 6.106' TVD

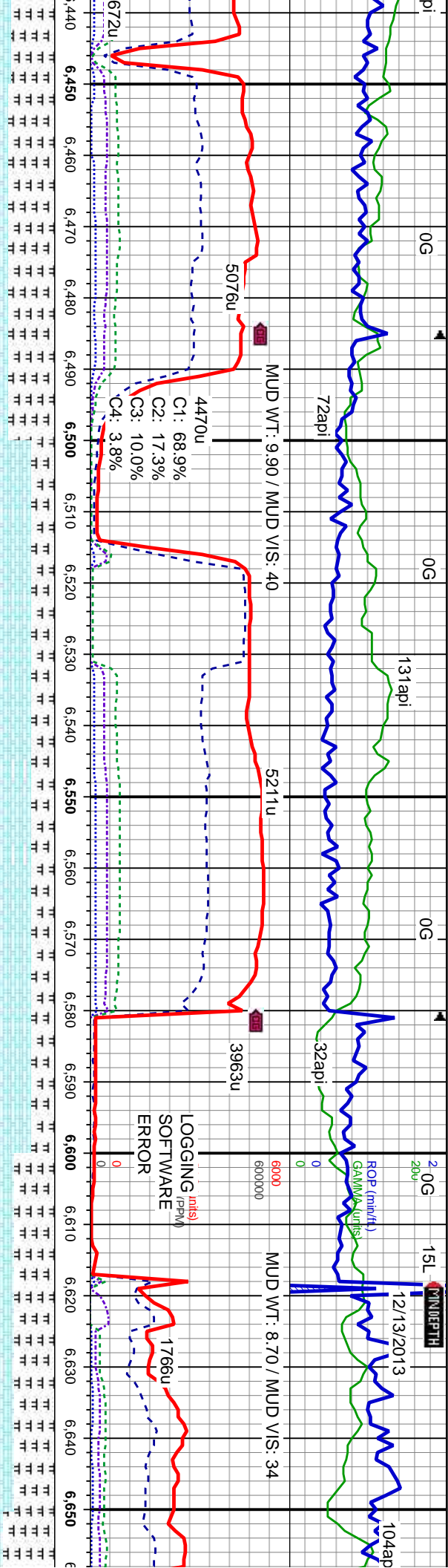
TVD (ft)

3.222'
6.104.14'
ation: 13.1°
uth: 115.8°
78.47'

MD: 6.318'
TVD: 6.195.19'
Inclination: 23.4°
Azimuth: 115.4°
VS: 995.66'

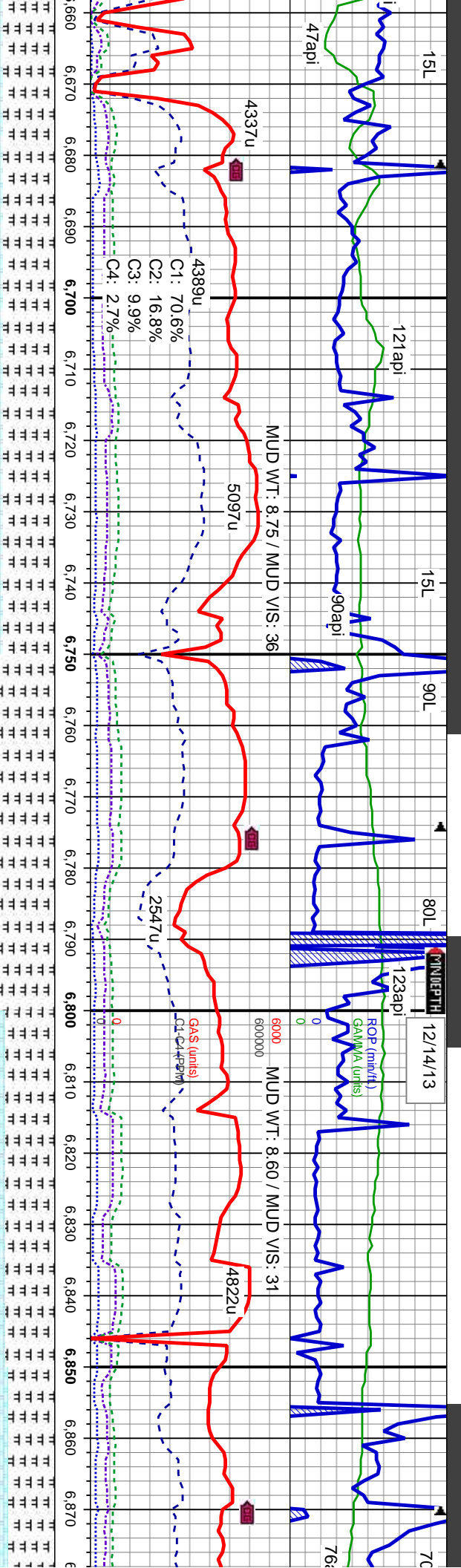
MD: 6.415'
TVD: 6.280.02'
Inclination: 34.3°
Azimuth: 115.4°
VS: 207.24'

7000



CHK: med gy some wht, sb blk, sft-si frm, mot, calc, tr fos frag, MRLST: dk gy, sb blk-ply, pred frm, occ mod sft, mot, calc cnt, rthy lsfr, dissn pyr: med fast, dull bl string-flash cut, bri bl wh flr ring, thn tan vis ring	MD: 6,510' TVD: 6,351.91' Inclination: 47.1 ° Azimuth: 119.6 ° VS: 267.23'	MD: 6,542' TVD: 6,372.64' Inclination: 52.1 ° Azimuth: 121.4 ° VS: 290.58'	MD: 6,606' TVD: 6,407.79' Inclination: 61.2 ° Azimuth: 118.2 ° VS: 341.96'	MD: 6,636' TVD: 6,420.5' Inclination: 68.7 ° Azimuth: 123.8 ° VS: 367.9'
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7000



dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, dissn pyr, CHK: med gy-it
dk gy, sb biky, sft-sl frm, mot, calc, v sl tr fos frag: string-flash cut, bri bl wh flor ring, vis ring

MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, dissn pyr, CHK: med gy-it
gy, sb biky, sft-sl frm, mot, calc: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring

MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, dissn pyr, CHK: med gy-it
gy, sb biky, sft-sl frm, mot, calc: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring

MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, dissn pyr, CHK: med gy, sb biky, sft-sl frm, mot, calc, sl tr fos frag: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring

MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, dissn pyr, CHK: med gy, sb biky, sft-sl frm, mot, calc, sl tr fos frag: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring

MD: 6,670' TVD: 6,430.86' Inclination: 75.8° Azimuth: 122.6° VS: 398.44'

MD: 6,699' TVD: 6,436.26' Inclination: 82.7° Azimuth: 121.6° VS: 425.5'

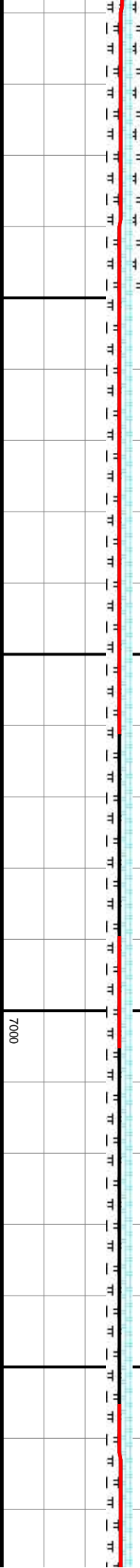
MD: 6,730' TVD: 6,438.04' Inclination: 90.7° Azimuth: 119.1° VS: 455.16'

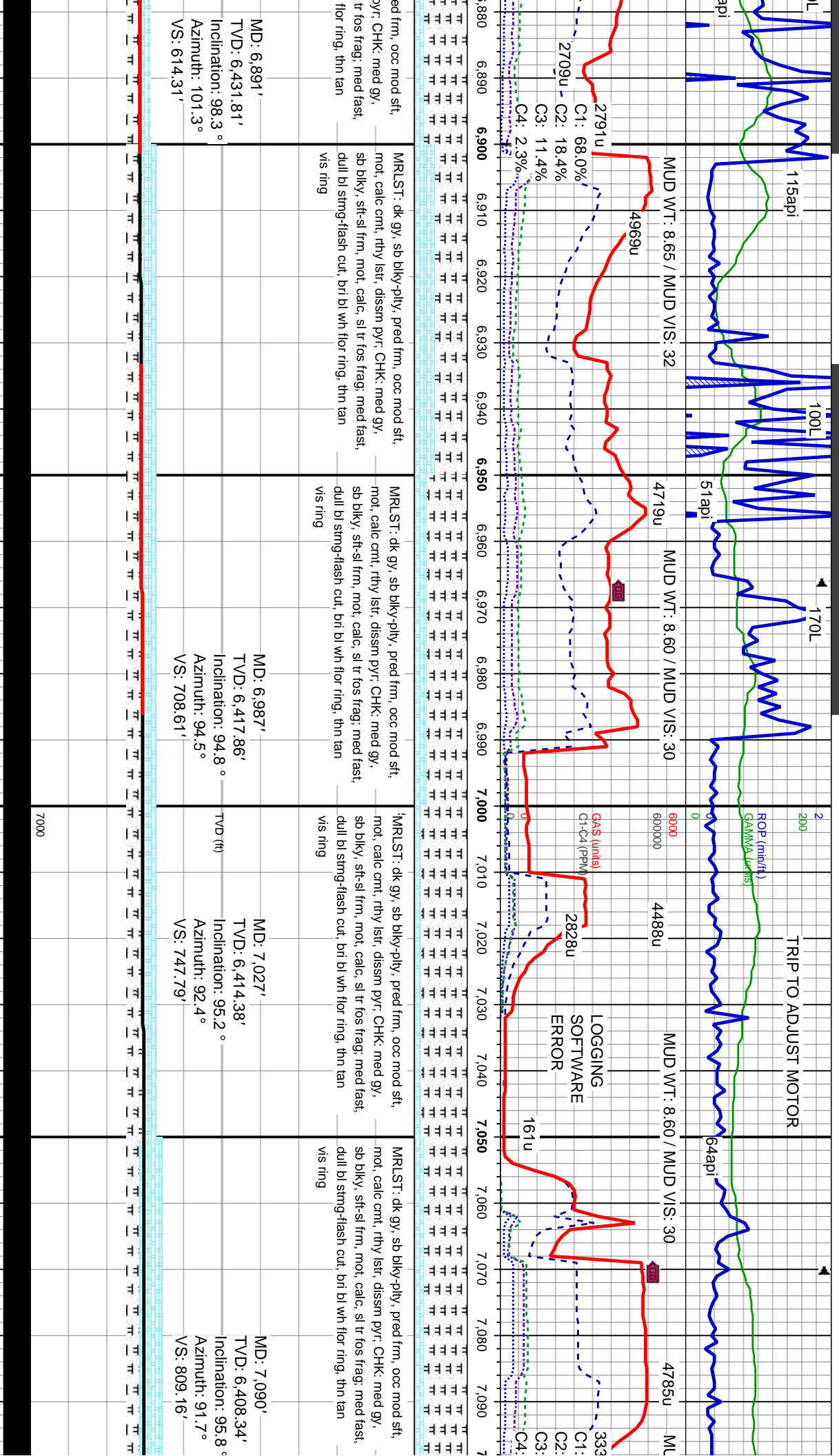
MD: 6,760' TVD: 6,437.47' Inclination: 91.5° Azimuth: 115° VS: 484.36'

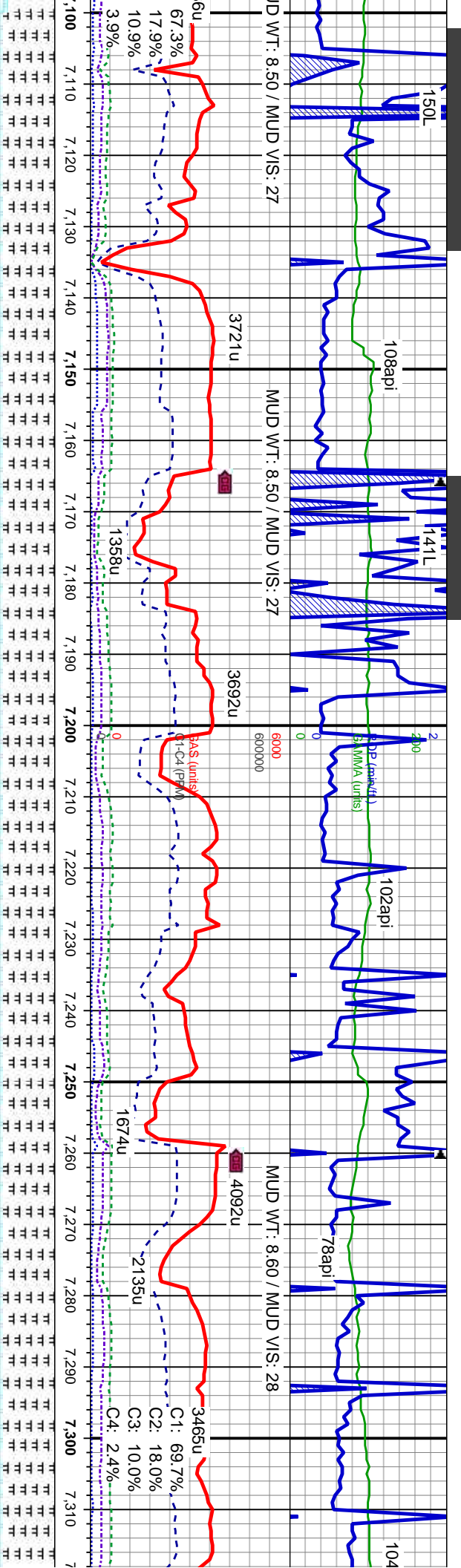
MD: 6,795' TVD: 6,436.74' Inclination: 90.9° Azimuth: 112.9° VS: 518.82'

MD: 6,826' TVD: 6,436.09' Inclination: 91.5° Azimuth: 109.1° VS: 549.57'

MD: 6,858' TVD: 6,434.94' Inclination: 92.6° Azimuth: 106.1° VS: 581.48'







MR.LST: dk gy, sb blk-y-pily, pred frm, occ mod sft, mot, calc cnt, rthy lst, dissn pyr, CHK: med gy, sb blk-y, sft-sl frm, mot, calc, v sl tr fos frag: med fast, dull bl stmg-flash cut, bri bl wh flor ring, thin tan vis ring

MR.LST: dk gy, sb blk-y-pily, pred frm, occ mod sft, mot, calc cnt, rthy lst, dissn pyr, CHK: med gy, sb blk-y, sft-sl frm, mot, calc, v sl tr fos frag: med fast, dull bl stmg-flash cut, bri bl wh flor ring, thin tan vis ring

MR.LST: dk gy, sb blk-y-pily, pred frm, occ mod sft, mot, calc cnt, rthy lst, dissn pyr, CHK: med gy, sb blk-y, sft-sl frm, mot, calc, tr bent, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thin tan vis ring

MR.LST: dk gy, sb blk-y-pily, pred frm, occ mod sft, mot, calc cnt, rthy lst, dissn pyr, CHK: med gy, sb blk-y, sft-sl frm, mot, calc, tr bent, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thin tan vis ring

MR.LST: dk gy, sb blk-y-pily, pred frm, occ mod sft, mot, calc cnt, rthy lst, dissn pyr, CHK: med gy, sb blk-y, sft-sl frm, mot, calc, v sl tr fos frag: med fast, dull bl stmg-flash cut, bri bl wh flor ring, thin tan vis ring

MD: 7,152'
TVD: 6,404.01'
Inclination: 92.2 °
Azimuth: 89.4 °
VS: 869.31'

MD: 7,185'
TVD: 6,403.44'
Inclination: 89.8 °
Azimuth: 88.2 °
VS: 901.16'

MD: 7,217'
TVD: 6,403.55'
Inclination: 89.8 °
Azimuth: 87.6 °
VS: 931.92'

MD: 7,280'
TVD: 6,403.44'
Inclination: 90.4 °
Azimuth: 87.6 °
VS: 992.37'

7000

12/15/13

150L

ROP (min/hr)

GAMMA (ppm)

90api

82api

MUD WT: 8.60 / MUD VIS: 28

3926u

3942u

4497u

MUD WT: 8.60 / MUD VIS: 28

2344.01u

C1: 70.4%

C2: 18.1%

C3: 9.3% -2165u

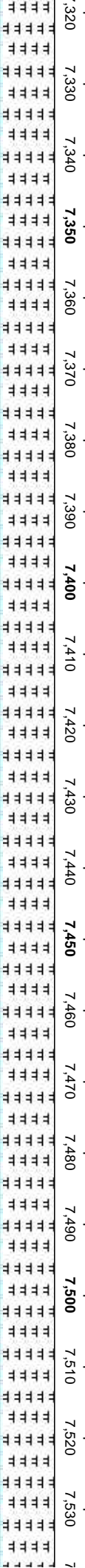
C4: 2.2%

1475u

1266u

GAS (units)

C4 (ppm)



dk, pred frm, occ mod sft, mot, calic cnt, rthy lstr, dissn pyr, CHK: med gy, sb biky, sft-sl frm, mot, calc, tr bent; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring

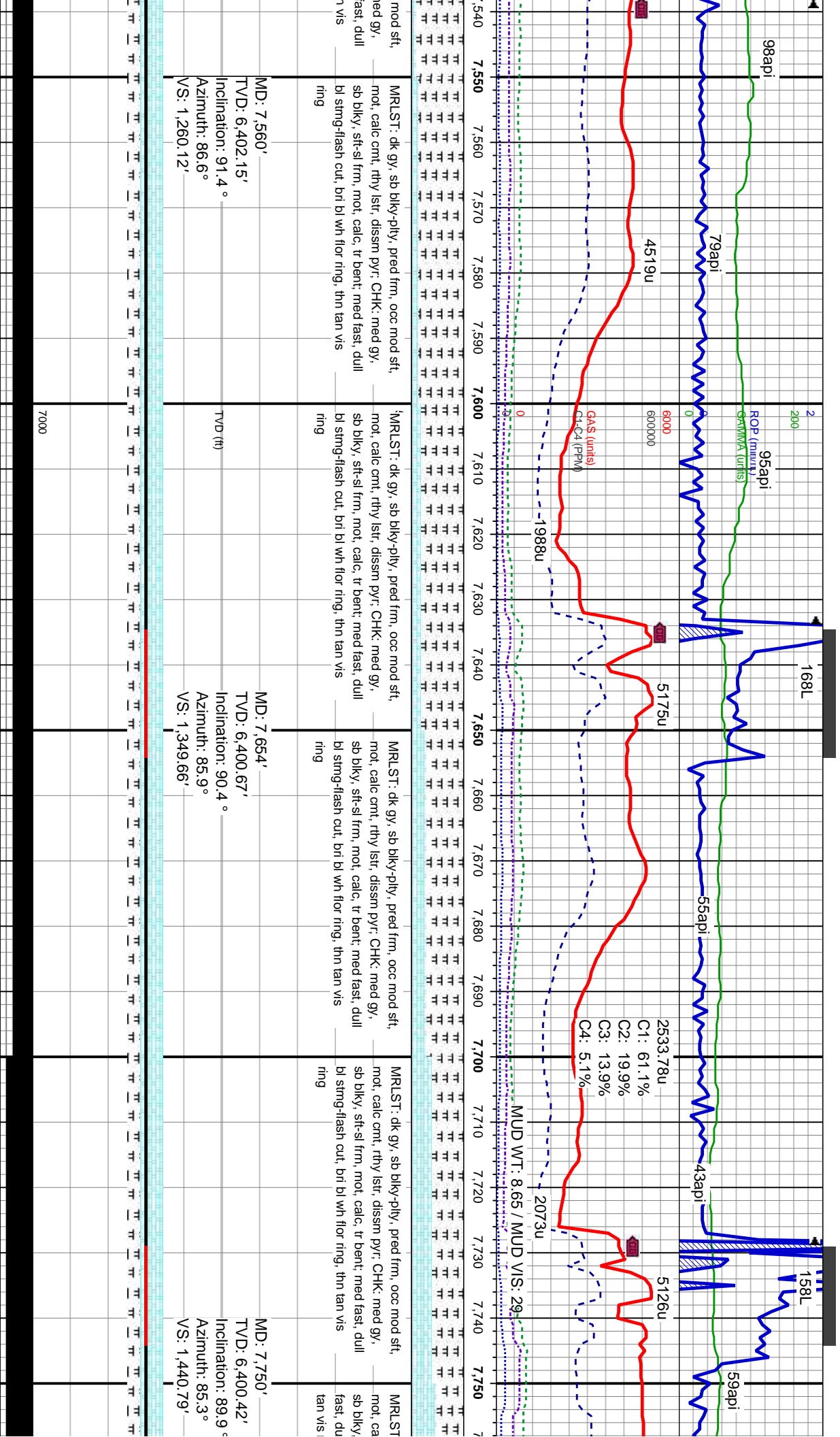
MD: 7,369'
TVD: 6,402.9'
Inclination: 90.3°
Azimuth: 87.1°
VS: 1,077.67'

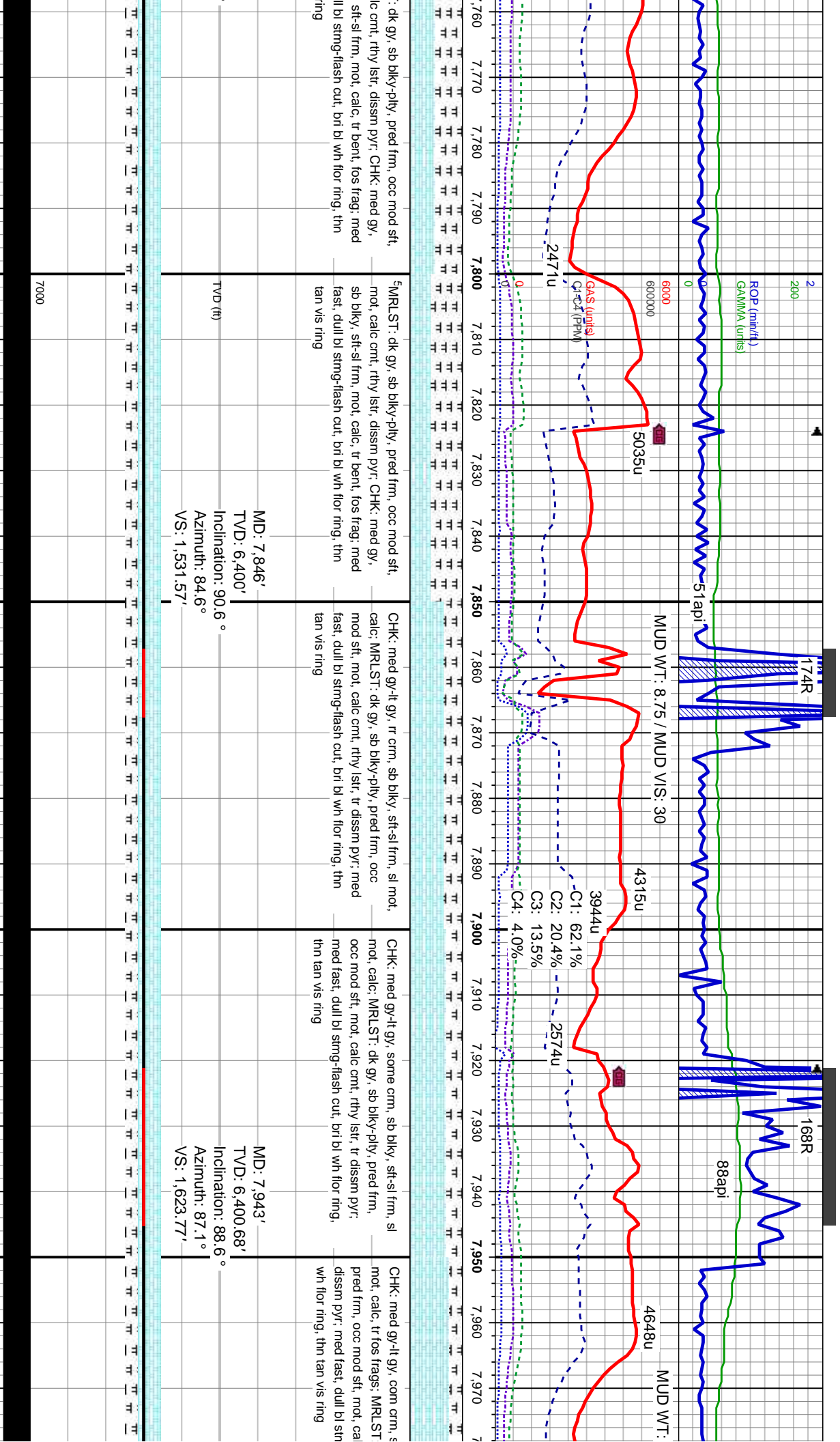
MD: 7,465'
TVD: 6,402.98'
Inclination: 89.6°
Azimuth: 86.6°
VS: 1,169.44'

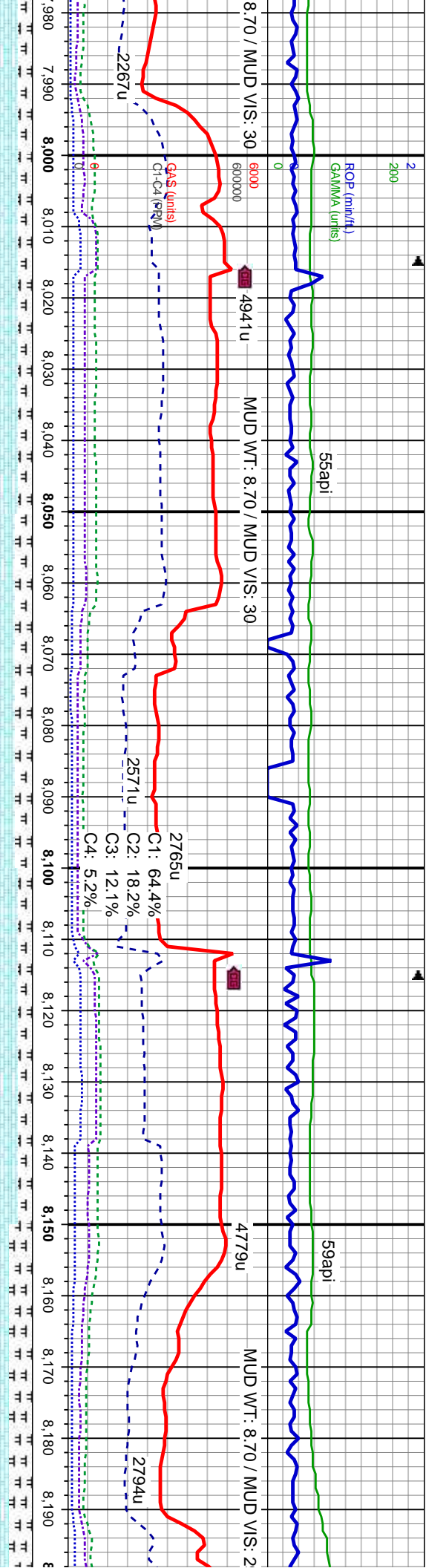
MD: 7,465'
TVD: 6,402.98'
Inclination: 89.6°
Azimuth: 86.6°
VS: 1,169.44'

MD: 7,465'
TVD: 6,402.98'
Inclination: 89.6°
Azimuth: 86.6°
VS: 1,169.44'

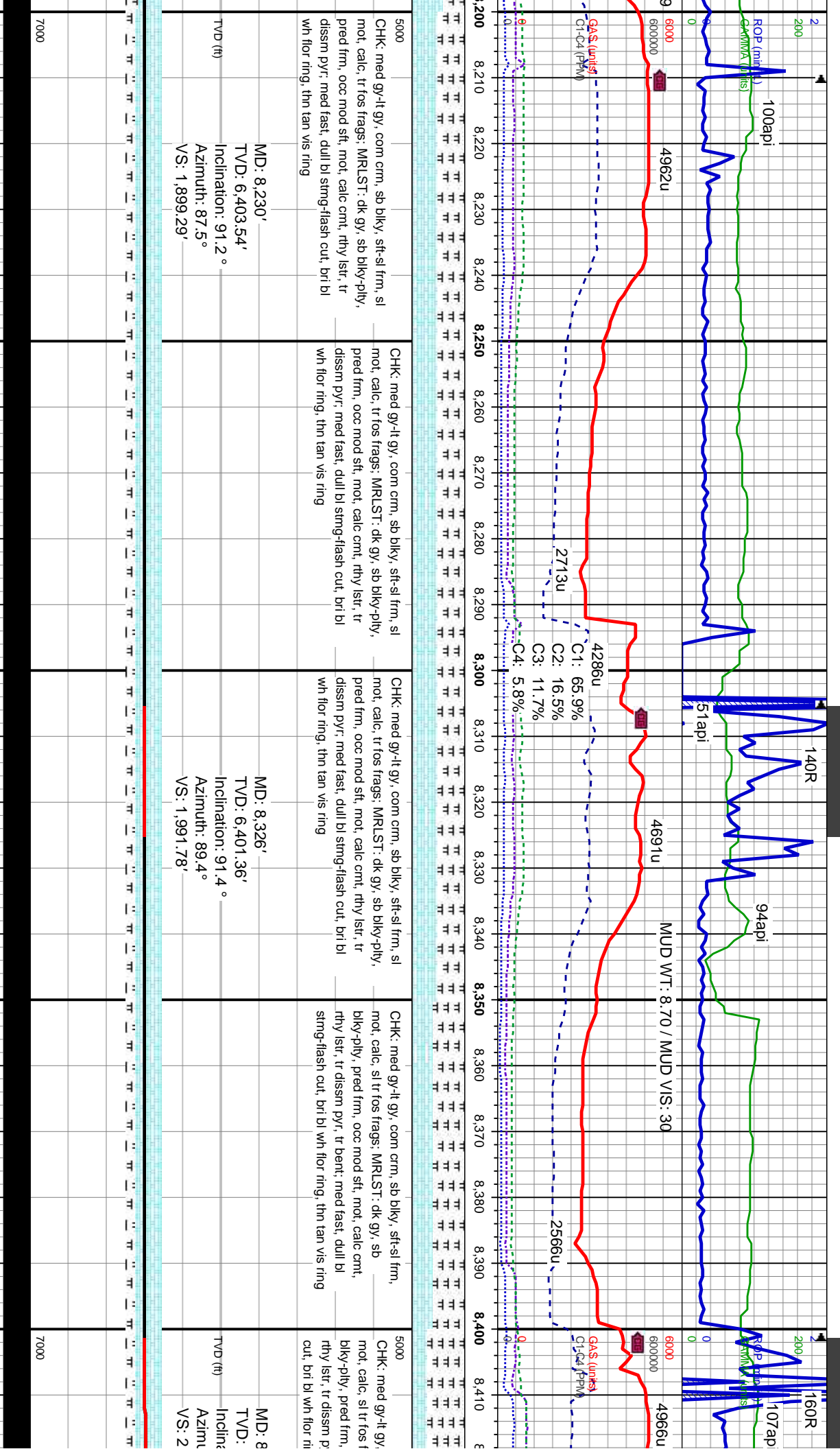
7000







5000	5000	5000	5000
sb blkly, sft-sl frm, sl dk gy, sb blkly-pty, c cnt, rthy lsfr, tr ng-flash cut, bri bl	CHK: med gy-lt gy, com crm, sb blkly, sft-sl frm, sl mod, calc, tr fos frags; MRLST: dk gy, sb blkly-pty, pred frm, occ mod sft, mod, calc cnt, rthy lsfr, tr dissim pyr: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-lt gy, com crm, sb blkly, sft-sl frm, sl mod, calc, tr fos frags; MRLST: dk gy, sb blkly-pty, pred frm, occ mod sft, mod, calc cnt, rthy lsfr, tr dissim pyr: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-lt gy, com crm, sb blkly, sft-sl frm, sl mod, calc, tr fos frags; MRLST: dk gy, sb blkly-pty, pred frm, occ mod sft, mod, calc cnt, rthy lsfr, tr dissim pyr: med fast, dull bl string-flash cut, bri bl wh flor ring, thn tan vis ring
TVD (ft) MD: 8,039' TVD: 6,402.86' Inclination: 88.8° Azimuth: 88° VS: 1,715.85'	MD: 8,135' TVD: 6,404.2' Inclination: 89.6° Azimuth: 87.8° VS: 1,808.1'		
7000			



5000
CHK: med gy-lt gy, com crm, sb blk, sft-sl frm, sl
mot, calc, tr fos frags; MRLST: dk gy, sb blk-ply,
pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr
dissm pyr; med fast, dull bl sting-flash cut, bri bl
wh flr ring, thn tan vis ring

CHK: med gy-lt gy, com crm, sb blk, sft-sl frm, sl
mot, calc, tr fos frags; MRLST: dk gy, sb blk-ply,
pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr
dissm pyr; med fast, dull bl sting-flash cut, bri bl
wh flr ring, thn tan vis ring

CHK: med gy-lt gy, com crm, sb blk, sft-sl frm, sl
mot, calc, tr fos frags; MRLST: dk gy, sb blk-ply,
pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr
dissm pyr; med fast, dull bl sting-flash cut, bri bl
wh flr ring, thn tan vis ring

CHK: med gy-lt gy, com crm, sb blk, sft-sl frm,
mot, calc, sl tr fos frags; MRLST: dk gy, sb
blk-ply, pred frm, occ mod sft, mot, calc cnt,
rthy lstr, tr dissm pyr, tr bent; med fast, dull bl
sting-flash cut, bri bl wh flr ring, thn tan vis ring

5000
CHK: med gy-lt gy,
mot, calc, sl tr fos f
blk-ply, pred frm,
rthy lstr, tr dissm p
cut, bri bl wh flr ri

TVD (ft)
MD: 8,230'
TVD: 6,403.54'
Inclination: 91.2°
Azimuth: 87.5°
VS: 1,899.29'

TVD (ft)
MD: 8,326'
TVD: 6,401.36'
Inclination: 91.4°
Azimuth: 89.4°
VS: 1,991.78'

TVD (ft)
MD: 8,403.54'
TVD: 6,403.54'
Inclination: 91.2°
Azimuth: 87.5°
VS: 1,899.29'

TVD (ft)
MD: 8,403.54'
TVD: 6,403.54'
Inclination: 91.2°
Azimuth: 87.5°
VS: 1,899.29'

TVD (ft)
MD: 8,403.54'
TVD: 6,403.54'
Inclination: 91.2°
Azimuth: 87.5°
VS: 1,899.29'

12/16/13

DEPTH

94api

83api

MUD WT: 8.75 / MUD VIS: 30

4889u

4846u

C1: 61.6%

C2: 19.3%

C3: 12.8%

C4: 6.3%

150L

600000

4942u

2741u

3081u

420

8430

8440

8450

8460

8470

8480

8490

8500

8510

8520

8530

8540

8550

8560

8570

8580

8590

8600

8610

8620

8630

8640

8650

8660

8670

8680

8690

8700

8710

8720

8730

8740

8750

8760

8770

8780

8790

8800

8810

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8840

8850

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8870

8880

8890

8900

8910

8920

8930

8940

8950

8960

8970

8980

8990

9000

9010

9020

9030

9040

9050

9060

9070

9080

9090

9100

9110

9120

9130

9140

9150

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9170

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9210

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9270

9280

9290

9300

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9370

9380

9390

9400

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9670

9680

9690

9700

9710

9720

9730

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9770

9780

9790

9800

9810

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10170

10180

10190

10200

10210

10220

10230

10240

10250

10260

10270

10280

10290

10300

10310

10320

10330

10340

10350

10360

10370

10380

10390

10400

10410

10420

10430

10440

10450

10460

10470

10480

10490

10500

10510

10520

10530

10540

10550

10560

10570

10580

10590

10600

10610

10620

10630

10640

10650

10660

10670

10680

10690

10700

10710

10720

10730

10740

10750

10760

10770

10780

10790

10800

10810

10820

10830

10840

10850

10860

10870

10880

10890

10900

10910

10920

10930

10940

10950

10960

10970

10980

10990

11000

11010

11020

11030

11040

11050

11060

11070

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11100

11110

11120

11130

11140

11150

11160

11170

11180

11190

11200

11210

11220

11230

11240

11250

11260

11270

11280

11290

11300

11310

11320

11330

11340

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11410

11420

11430

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11450

11460

11470

11480

11490

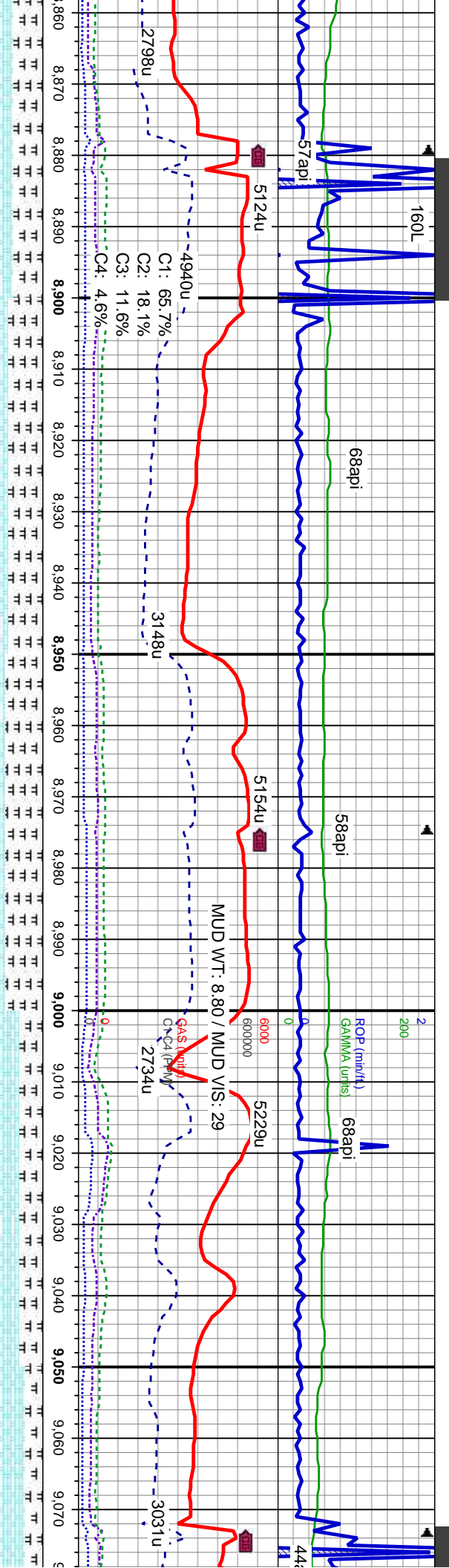
11500

11510

11520

11530

11540

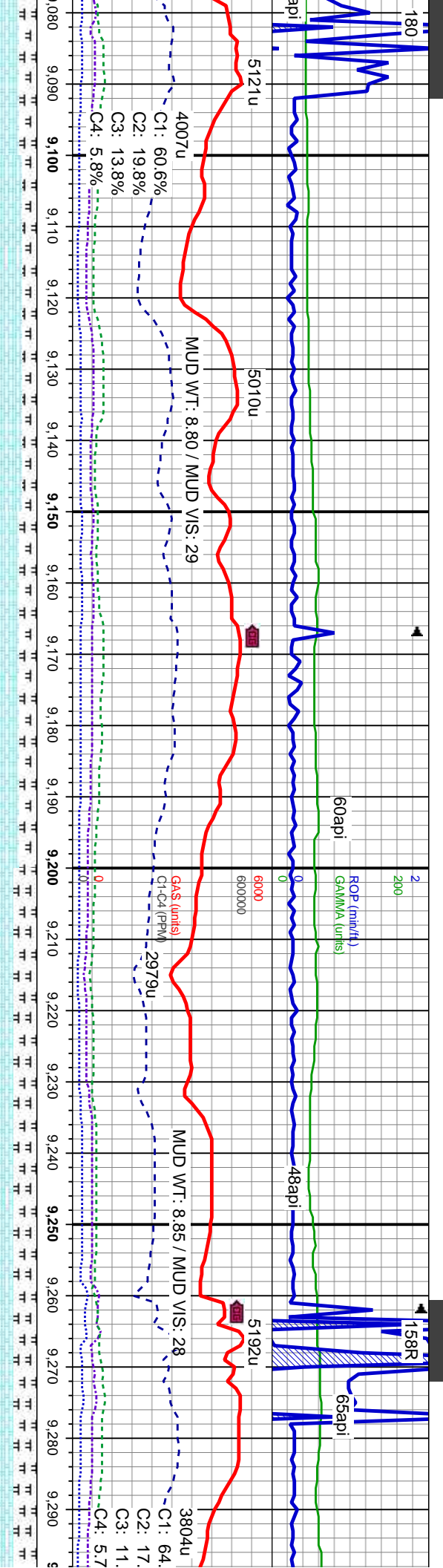


med gy-lt gy, some crm, sb blkly, sft-sl frm, mot, calc, sl tr fos frags: MRLST: dk gy, sb blkly-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr: med fast, dull bl sting-flash cut, bri bl wh flr ring, thin tan vis ring	med gy-lt gy, some crm, sb blkly, sft-sl frm, mot, calc, sl tr fos frags: MRLST: dk gy, sb blkly-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr: med fast, dull bl sting-flash cut, bri bl wh flr ring, thin tan vis ring	med gy-lt gy, some crm, sb blkly, sft-sl frm, mot, calc, sl tr fos frags: MRLST: dk gy, sb blkly-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr: med fast, dull bl sting-flash cut, bri bl wh flr ring, thin tan vis ring	med gy-lt gy, some crm, sb blkly, sft-sl frm, mot, calc, sl tr fos frags: MRLST: dk gy, sb blkly-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr: med fast, dull bl sting-flash cut, bri bl wh flr ring, thin tan vis ring
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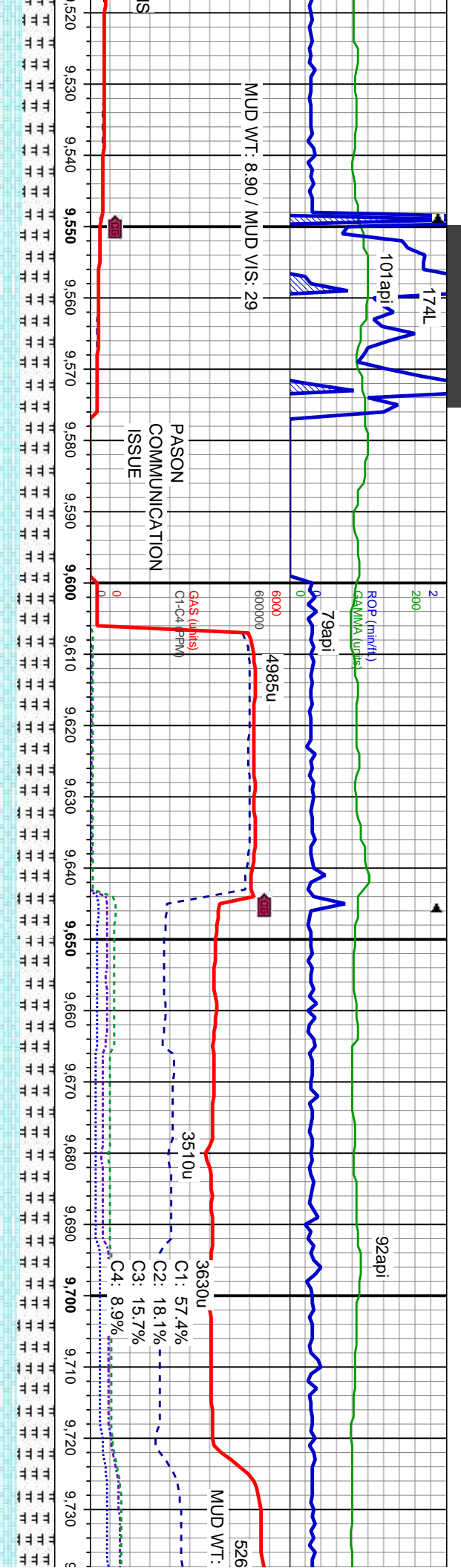
MD: 8.901'
TVD: 6,399.21'
Inclination: 90 °
Azimuth: 87.8 °
VS: 2,550.77'

MD: 8.997'
TVD: 6,398.04'
Inclination: 91.4 °
Azimuth: 86.6 °
VS: 2,642.7'

7000



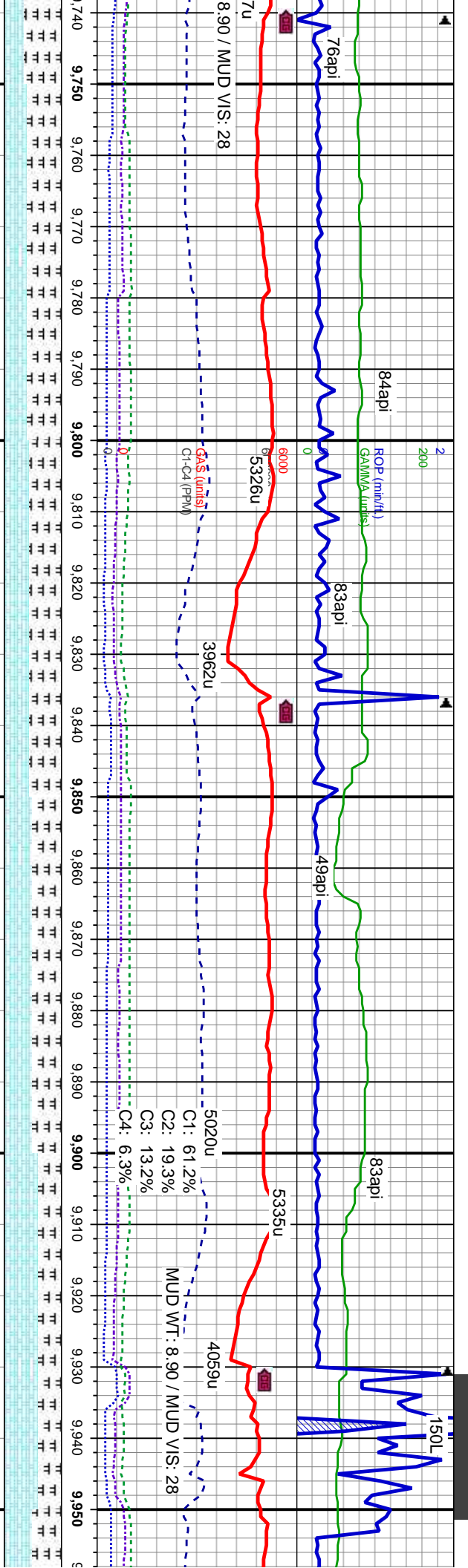
biky-biky, sft-sl frm, ec cal: MRLST: dk mod sft, mot, calc fast, dull bl g, thn tan vis ring		CHK: med gy-lt gy, gry-brn, some red bm, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr; med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring		5 ^{min} CHK: med gy-lt gy, gry-brn, some red bm, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr; med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring		CHK: med gy-lt gy, gry-brn, some red bm, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr; med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring	
MD: 9.092' TVD: 6,396.71' Inclination: 90.2° Azimuth: 85.7° VS: 2,733.15'				MD: 9.186' TVD: 6,395.65' Inclination: 91.1° Azimuth: 85.2° VS: 2,822.3'		TVD (ft)	



, mot, calc, sl tr-tr fos frags, sl tr dk gy, sb blk-y-pty, pred frm, occ cmnt, rthy lstr, tr dissn pyr, med flash cut, bri bl wh flor ring, thn	CHK: med gy-lt gy, gry-brn, some red brn, sb blk-y-bkly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb blk-y-pty, pred frm, occ mod sft, mot, calc cmnt, rthy lstr, tr dissn pyr, med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring	MD: 9.571' TVD: 6.390.86' Inclination: 89 ° Azimuth: 89.7 ° VS: 3.190.29'
	TVD (ft)	

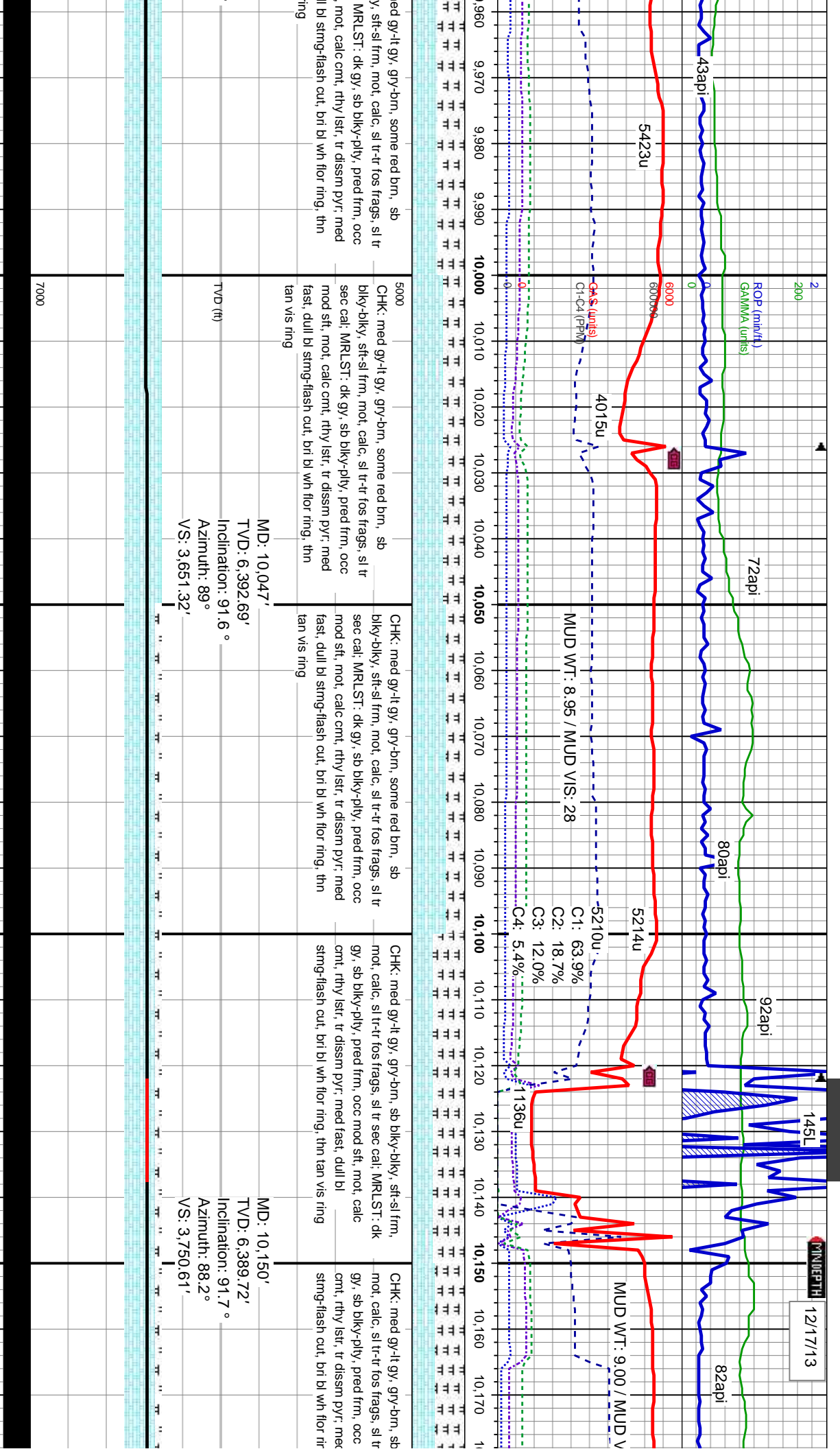
, mot, calc, sl tr-tr fos frags, sl tr dk gy, sb blk-y-pty, pred frm, occ cmnt, rthy lstr, tr dissn pyr, med flash cut, bri bl wh flor ring, thn	CHK: med gy-lt gy, gry-brn, some red brn, sb blk-y-bkly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb blk-y-pty, pred frm, occ mod sft, mot, calc cmnt, rthy lstr, tr dissn pyr, med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring	MD: 9.667' TVD: 6.392.95' Inclination: 88.5 ° Azimuth: 89.2 ° VS: 3.283.22'
	TVD (ft)	

, mot, calc, sl tr-tr fos frags, sl tr dk gy, sb blk-y-pty, pred frm, occ cmnt, rthy lstr, tr dissn pyr, med flash cut, bri bl wh flor ring, thn	CHK: med gy-lt gy, gry-brn, some red brn, sb blk-y-bkly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb blk-y-pty, pred frm, occ mod sft, mot, calc cmnt, rthy lstr, tr dissn pyr, med fast, dull bl sting-flash cut, bri bl wh flor ring, thn tan vis ring	MD: 9.667' TVD: 6.392.95' Inclination: 88.5 ° Azimuth: 89.2 ° VS: 3.283.22'
	TVD (ft)	



sb egs, sl tr frm, occ g, thn	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-pty, pried frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr; med fast, dull bl sting-flash cut, bri bl wh flr ring, thn tan vis ring	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-pty, pried frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr; med fast, dull bl sting-flash cut, bri bl wh flr ring, thn tan vis ring	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-pty, pried frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr; med fast, dull bl sting-flash cut, bri bl wh flr ring, thn tan vis ring	CHK: r biky-bik sec cal: mod sft fast, du tan vis
MD: 9.762' TVD: 6,394.86' Inclination: 89.2 ° Azimuth: 89.7 ° VS: 3,375.18'				
MD: 9.856' TVD: 6,394.78' Inclination: 90.9 ° Azimuth: 89.4 ° VS: 3,466.24'				
MD: 9.951' TVD: 6,394.03' Inclination: 90 ° Azimuth: 90.1 ° VS: 3,558.34'				

7000	
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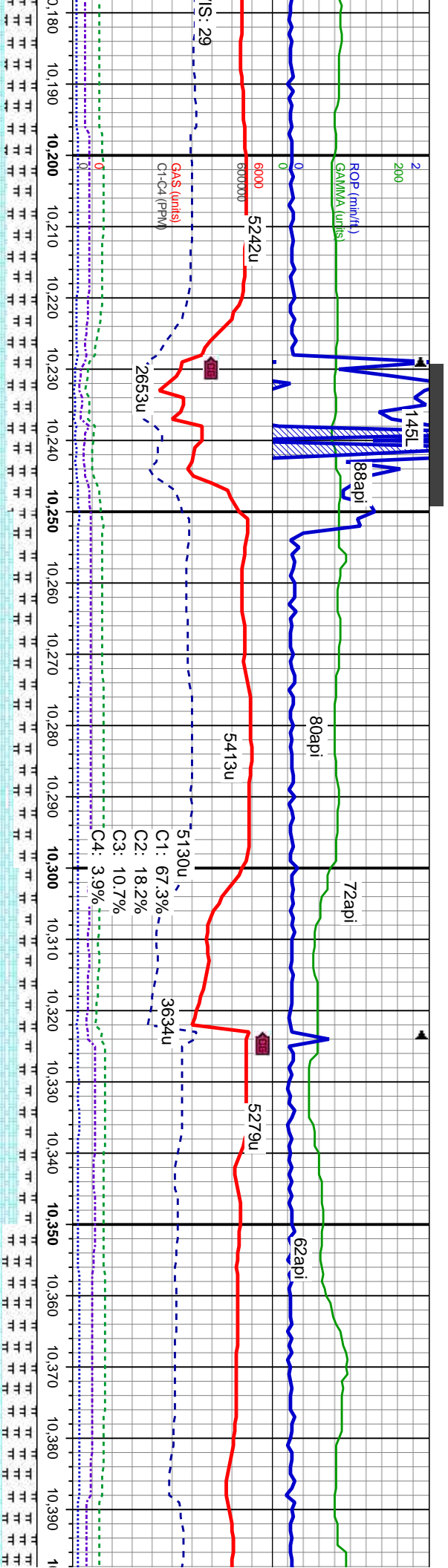
med gy-lt gy, gry-brn, some red brn, sb
y, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr
MRLST: dk gy, sb bly-plty, pred frm, occ
mot, calc cnt, rthy lstr, tr diss pyr, med
fast, dull bl stmg-flash cut, bri bl wh flor ring, thin
tan vis ring

5000

CHK: med gy-lt gy, gry-brn, some red brn, sb
bly-bly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr
sec cal; MRLST: dk gy, sb bly-plty, pred frm, occ
mod sft, mot, calc cnt, rthy lstr, tr diss pyr, med
fast, dull bl stmg-flash cut, bri bl wh flor ring, thin
tan vis ring

CHK: med gy-lt gy, gry-brn, sb bly-bly, sft-sl frm,
mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk
gy, sb bly-plty, pred frm, occ mod sft, mot, calc
cnt, rthy lstr, tr diss pyr, med fast, dull bl
stmg-flash cut, bri bl wh flor ring, thin tan vis ring

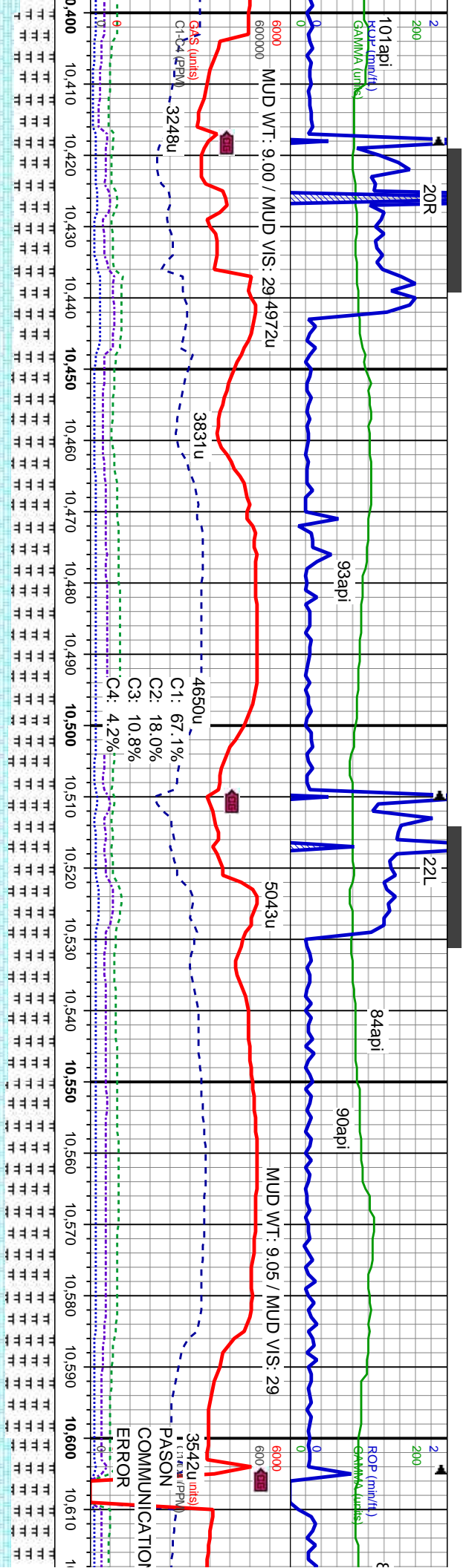
CHK: med gy-lt gy, gry-brn, sb
mot, calc, sl tr-tr fos frags, sl tr
gy, sb bly-plty, pred frm, occ
cnt, rthy lstr, tr diss pyr, med
stmg-flash cut, bri bl wh flor rir



biky-biky, sft-si frm, sec cal: MRLST: dk mod sft, mot, calc fast, dull bl g, thn tan vis ring	5CHK: med gy-lt gy, gry-brn, sb biky-biky, sft-si frm, mod, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-si frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-si frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-lt gy, gry-brn, some red brn, sb biky-biky, sft-si frm, mot, calc, sl tr-tr fos frags, sl tr sec cal: MRLST: dk gy, sb biky-ply, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissim pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring
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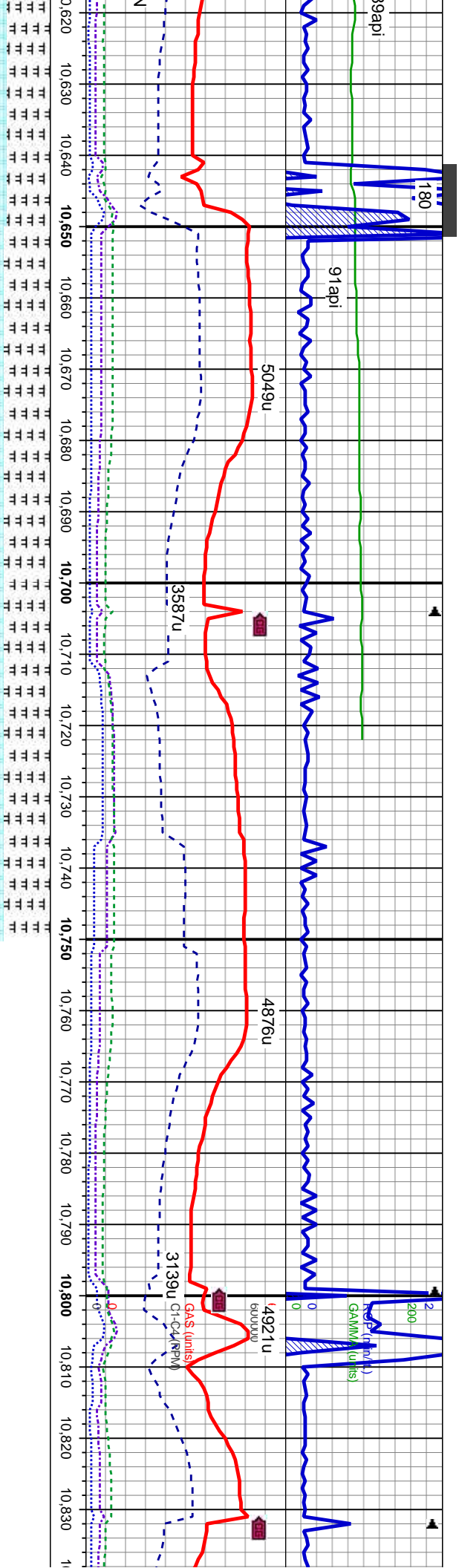
TVD (ft)	MD: 10,245' TVD: 6,390.55' Inclination: 87.3° Azimuth: 88.2° VS: 3,842.02'	MD: 10,340' TVD: 6,396.44' Inclination: 85.6° Azimuth: 88.2° VS: 3,933.29'
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7000	
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5CHK: med gy-It-gy, gry-brn, sb biky-biky, sft-sI frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb biky-ply, pried frm, occ mod sft, mot, calc cnt, rthy str, tr dissim pyr; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-It-gy, gry-brn, sb biky-biky, sft-sI frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb biky-ply, pried frm, occ mod sft, mot, calc cnt, rthy str, tr dissim pyr; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-It-gy, gry-brn, sb biky-biky, sft-sI frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb biky-ply, pried frm, occ mod sft, mot, calc cnt, rthy str, tr dissim pyr; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	CHK: med gy-It-gy, gry-brn, sb biky-biky, sft-sI frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb biky-ply, pried frm, occ mod sft, mot, calc cnt, rthy str, tr dissim pyr; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	5CHK: med gy-It-gy, gry-brn, sb biky-biky, sft-sI frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb biky-ply, pried frm, occ mod sft, mot, calc cnt, rthy str, tr dissim pyr; med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring
MD: 10,435' TVD: 6,402.4' Inclination: 87.2° Azimuth: 86.9° VS: 4,024.25'	MD: 10,530' TVD: 6,403.48' Inclination: 91.5° Azimuth: 85.5° VS: 4,114.71'	MD: 10,530' TVD: 6,403.48' Inclination: 91.5° Azimuth: 85.5° VS: 4,114.71'	MD: 10,530' TVD: 6,403.48' Inclination: 91.5° Azimuth: 85.5° VS: 4,114.71'	MD: 10,435' TVD: 6,402.4' Inclination: 87.2° Azimuth: 86.9° VS: 4,024.25'

[illegible]



D: 10,626'		MD: 10,722'	
ID: 6,400.13'		TVD: 6,397.28'	
Inclination: 92.5°		Inclination: 90.9°	
Azimuth: 84.6°		Azimuth: 85.2°	
S: 4,205.48'		VS: 4,296.19'	

gry-brn, sb blk-y-bkly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb blk-y-plly, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring		gry-brn, sb blk-y-bkly, sft-sl frm, mot, calc, sl tr-tr fos frags, sl tr sec cal; MRLST: dk gy, sb blk-y-plly, pred frm, occ mod sft, mot, calc cnt, rthy lstr, tr dissn pyr, med fast, dull bl stmg-flash cut, bri bl wh flor ring, thn tan vis ring	
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5000		7000	
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