COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Anshutz State 4-62-2-1721 CH2 Horz		
Location	SWNW Sec 2 T4N R62W		
State	Colorado	**County**	Weld
Country	USA	**Rig Number**	Nabor M22
API Number	05-123-38963	**AFE #**	18748D
Region	DJ Basin	**Field**	Wildcat
Spud Date	5/3/2014	**Drilling Completed**	5/11/2014
Surface Coordinates	SWNW Sec 02-T4N-R62W 1614' FNL 250' FWL		
Bottom Hole Coordinates	Projected: SWNW Sec 02-T4N-R62W 1925' FNL 2280' FEL		
Ground Elevation	4544'	**K.B. Elevation**	4566'
Logged Interval	4700' **To** 14375'	**Total Depth**	14375'
Formation	Niobrara C Chalk		
Type of Drilling Fluid	LSND		

Company Bill Barrett Corp

Address 1099 18th Stree
Denver, CO 802

Name Scott Hampton

Company Bill Barrett Corp

Address 1099 18th Stree
Denver, CO 802

Charles Trodick

Mark Raimo

Operator

oration

et, Suite 2300
202

Geologist

oration

et, Suite 2300
202

Other

Senior Wellsite Geologist

Wellsite Geologist

Rock Types

DAL
CONGLOMERATE
DOLOMITE
DOLOMITIC LIMESTONE
GRANITE
GYPSUM
IGNEOUS
SIDERITE or LIMONITE
LIMESTONE
MARLSTONE
METAMORPHIC
NO SAMPLE
SALT
SANDSTONE
SALT-PEPPER SAND
SHALE
SHALE COLORED
SHALE GRAY
SHALY SANDSTONE
SHALY SILTSTONE
SILTY SHALE
SILTSTONE
TILL
TUFF
WELDED TUFF

Accessories

Fossils

ALGAE
AMPHIPORA
BELEMNITE
BIOCLASTIC
BRACHOIPOD
BRYOZOA
CEPHALOPOD
CORAL
CRINOID
ECHINOID
FISH
FORAMINIFERA
FOSSIL
GASTROPOD
INOCERAMUS
OOLITE
OSTRACOD
PELECYPOD
PELLET
PISOLITE
PLANT REMAINS
PLANT SPORES
SCAPHOPOD
STROMATOPOROID

Minerals

ANHYDRITIC
ARGILLACEOUS
ARGILLITE GRAIN
BENTONITE
BITUMENOUS SUBSTANCE
BRECCIA FRAGMENTS
CALCAREOUS
CARBONACEOUS FLAKES
CHTDK
CHTLT
COAL - THIN BEDS
DOLOMITIC
FELDSPAR
FERRUGINOUS PELLET
FERRUGINOUS
GLAUCONITE
GYPSIFEROUS
HEAVY MINERAL
KAOLIN
MARCASITE
MARLSTONE
MICACEOUS
MINERAL CRYSTALS
NODULES
PHOSPHATE PELLETS
PYRITE
SALT CAST
SANDY
SIDERITE
SILICEOUS
SILTY
TUFFACEOUS

Stringer

ANHYDRITE STRINGER
BENTONITE STRINGER
COAL STRINGER
DOLOMITE STRINGER
GYPSUM STRINGER
LIMESTONE STRINGER
MARLSTONE (CALC) STRG
MARLSTONE (DOL) STRG
SANDSTONE STRINGER
SHALE STRINGER
SILTSTONE STRINGER

Other Symbols

Oil Show

DEAD
EVEN
QUESTIONABLE
SPOTTED STAINING

Porosity

EARTHY
FENESTRAL
FRACTURE
INTERCRYSTALLINE
INTEROOLITIC
MOLDIC
ORGANIC
PINPOINT
VUGGY

Engineering

BIT
CONNECTION (UP)
CONNECTION (DOWN)
CONNECTION GAS
CONNECTION GAS (LEFT)
TRIP GAS
TRIP GAS (LEFT)
DOWN TIME GAS
DOWN TIME GAS (LEFT)
CORE - LOST
CORE - RECOVERED
DST INTERVAL
FAULT
FORMATION TOP
GAS SHOW
OIL SHOW
MN DEPTH UP
MN DEPTH (DOWN)
NORMAL FAULT
OVERTURNED STRATA
REVERSE FAULT
CASING
SIDEWALL CORE (LEFT)
SIDEWALL CORE (RIGHT)
SLIDE
SURVEY
WIRELINE TESTED - LEFT
WIRELINE TESTED - RT
DRILL STEM TEST
MN DEPTH

Rounding

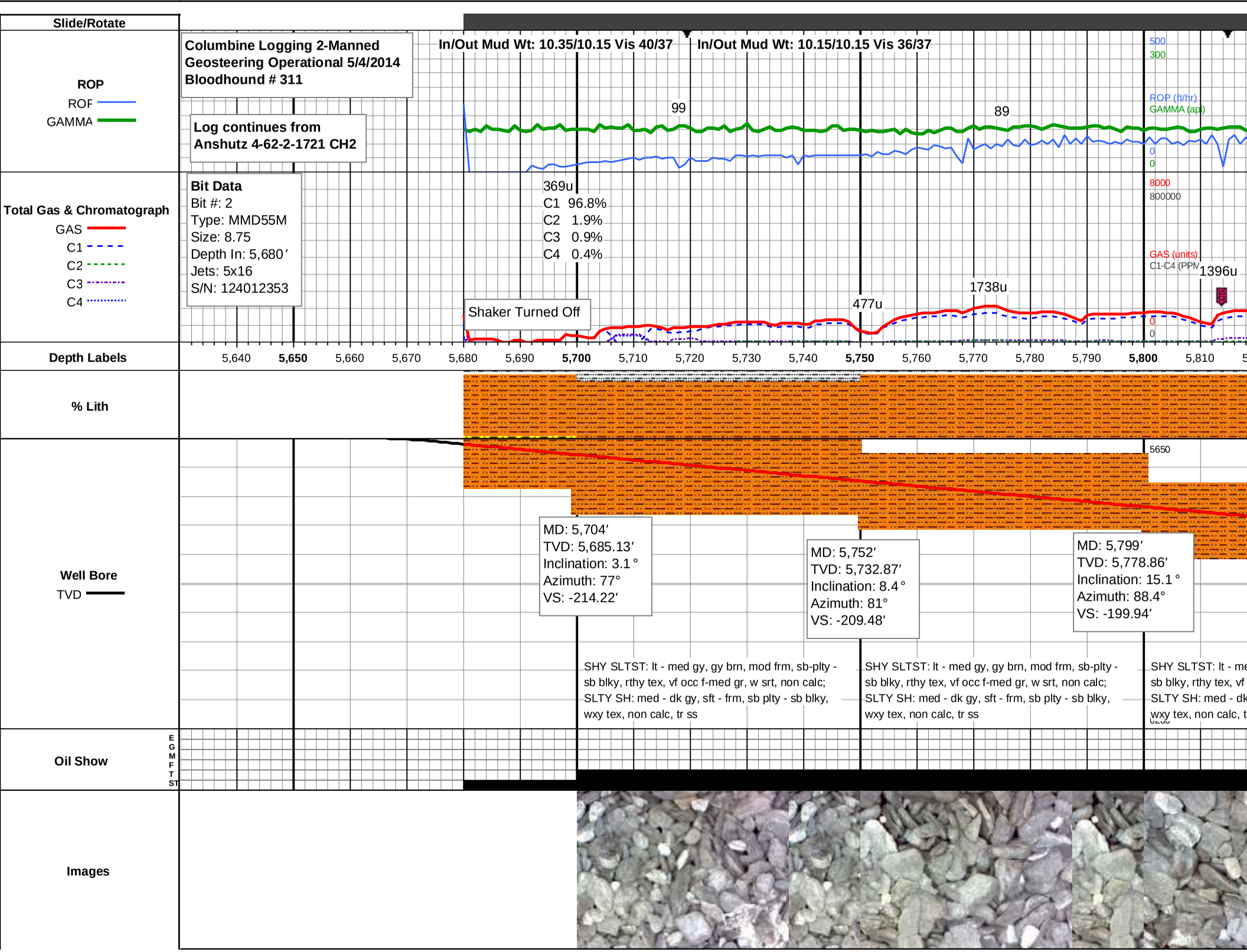
ANGULAR
ROUNDED
SUBANG
SUBRND

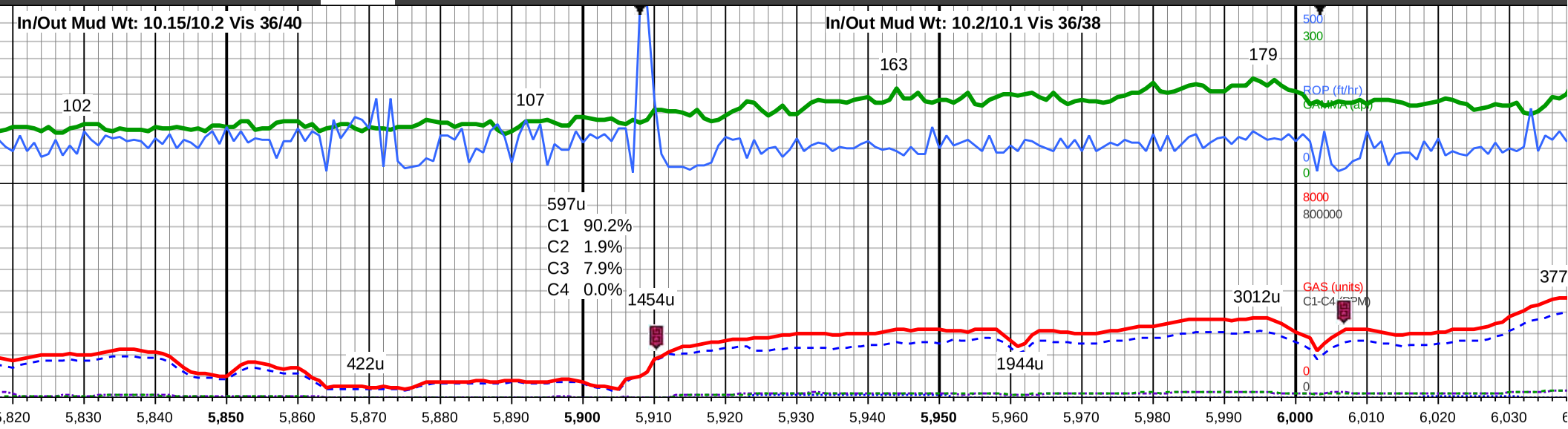
Textures

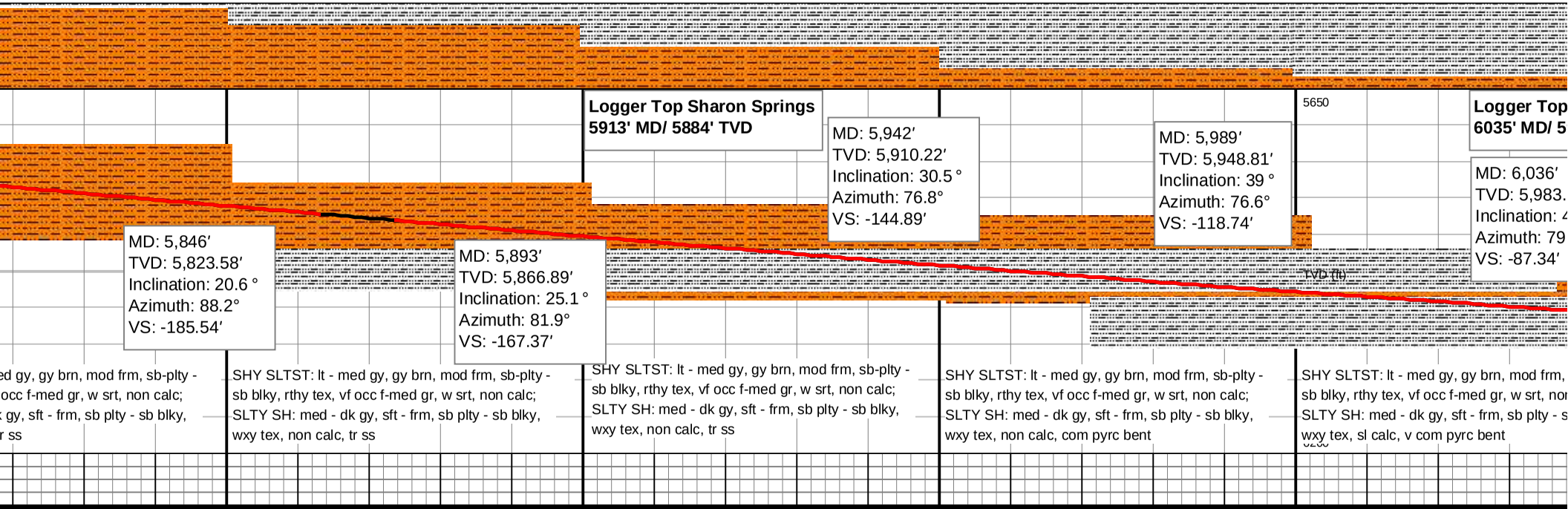
BOUNDSTONE
CHALKY
CRYPTOXLN
EARTHY
FINELYXLN
GRAINSTONE
LITHOGRAPHIC
MICROXLN
MUDSTONE
PACKSTONE
WACKESTONE

Sorting

MODERATE
POOR
WELL


Slide/Rotate
ROP
ROF
GAMMA
Columbine Logging 2-Manned
Geosteering Operational 5/4/2014
Bloodhound # 311
Log continues from
Anshutz 4-62-2-1721 CH2
In/Out Mud Wt: 10.35/10.15 Vis 40/37
In/Out Mud Wt: 10.15/10.15 Vis 36/37
99
89
500
300
ROP (ft/hr)
GAMMA (api)
0
0
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
Bit Data
Bit #: 2
Type: MMD55M
Size: 8.75
Depth In: 5,680′
Jets: 5x16
S/N: 124012353
369u
C1 96.8%
C2 1.9%
C3 0.9%
C4 0.4%
Shaker Turned Off
477u
1738u
1396u
8000
800000
GAS (units)
C1-C4 (PPM)
0
0
Depth Labels
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
5,740
5,750
5,760
5,770
5,780
5,790
5,800
5,810
% Lith
Well Bore
TVD
5650
MD: 5,704′
TVD: 5,685.13′
Inclination: 3.1 °
Azimuth: 77°
VS: -214.22′
MD: 5,752′
TVD: 5,732.87′
Inclination: 8.4 °
Azimuth: 81°
VS: -209.48′
MD: 5,799′
TVD: 5,778.86′
Inclination: 15.1 °
Azimuth: 88.4°
VS: -199.94′
SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc; SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, non calc, tr ss
SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc; SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, non calc, tr ss
Oil Show
E
G
M
F
T
ST
Images





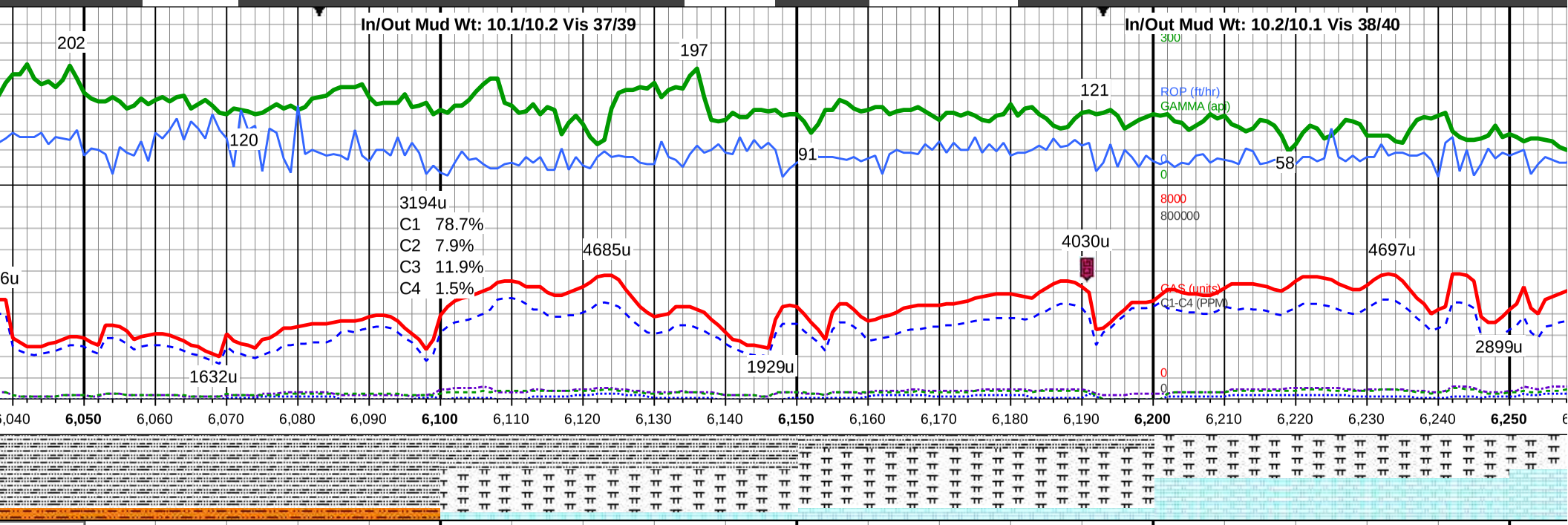
ed gy, gy brn, mod frm, sb-plty - occ f-med gr, w srt, non calc; k gy, sft - frm, sb plty - sb blky, r ss

SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc; SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, non calc, tr ss

SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc; SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, non calc, tr ss

SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc; SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, non calc, com pyrc bent

SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non SLTY SH: med - dk gy, sft - frm, sb plty - s wxy tex, sl calc, v com pyrc bent



Niobrara
982' TVD

18'
46.9 °
.2°

MD: 6,083'
TVD: 6,013.77'
Inclination: 51.9 °
Azimuth: 82.4°
VS: -52.04'

MD: 6,131'
TVD: 6,041.74'
Inclination: 56.8 °
Azimuth: 85.4°
VS: -13.21'

MD: 6,178'
TVD: 6,067.2'
Inclination: 57.6 °
Azimuth: 88.6°
VS: 26.26'

MD: 6,226'
TVD: 6,091.93'
Inclination: 60.4 °
Azimuth: 93.2°
VS: 67.36'

Logger Top Niobrara B2
6242' MD/ 6099' TVD

TVD (ft)

6200

sb-plty -
n calc;
b blky,

SHY SLTST: lt - med gy, gy brn, mod frm, sb-plty - sb blky, rthy tex, vf occ f-med gr, w srt, non calc;
SLTY SH: med - dk gy, sft - frm, sb plty - sb blky, wxy tex, sl calc, v com bent

SLTY SH: dk gy- blk, some brn-gy, sft-mod sft, p-mod ind, fri-brit, fis, sb plty-plty
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, v tr bent
MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, rr vf dissm pyr

SLTY SH: dk gy- blk, some brn-gy, sft-mod sft, p-mod ind, fri-brit, fis, sb plty-plty
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, v tr bent
MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, rr vf dissm pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, v tr bent
MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, rr vf dissm pyr

CHK: lt-
sb plty-b
MARL: l
sil, tr cal

In/Out Mud Wt: 10.2/10.1 Vis 37/40

3/6/14

In/Out Mud Wt: 10.2/10.1 Vis 37/39

5/7/20

500
300
ROP (ft/hr)
GAMMA (api)
0
8000
800000
GAS (units)
C1-C4 (PPM)
0

112 135 112 84 44

4836u 2919u 3872u 3319u 3121u 4350u

C1 82.5%
C2 7.0%
C3 7.0%
C4 3.5%

Curve Landed @ 02:50 MST
5/6/2014 @ 6476' MD

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 6,440 **6,450** 6,460 6,470

med gy, some brn-red, lam, mot, v sft-sft, lky, v calc, crptxl, intbd w/marl, t-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, , tr inoc

Chalk

MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, tr cal, tr inoc, tr pyrc bent

MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, tr cal, tr inoc, tr pyrc bent

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr inoc

CHK: lt-med gy, some brn-red, sb plty-blky, v calc, crptxl, intbd lt-dk gy, stri, sft-v sft, sb plty-plt cal, tr inoc

Logger Top Niobrara C Chalk
6383' MD/ 6147' TVD

MD: 6,273′
TVD: 6,113.48′
Inclination: 65 °
Azimuth: 95.4°
VS: 108.94′

MD: 6,321′
TVD: 6,131.81′
Inclination: 70.1 °
Azimuth: 97.2°
VS: 152.93′

MD: 6,368′
TVD: 6,145.43′
Inclination: 76.2 °
Azimuth: 96.6°
VS: 197.46′

MD: 6,414′
TVD: 6,153.45′
Inclination: 83.7 °
Azimuth: 94.4°
VS: 242.44′

MD
TV
Inc
Azi
VS

6200

In/Out Mud Wt: 8.55/8.45 Vis 27/27

In/Out Mud

14

113

154

189

500
300
ROP (ft/hr)
GAMMA (api)
59
0
0

Resumed Drilling @ 9:42 MST
5/7/2014

5348u

5308u

8000
800000
GAS (units)
C1-C4 (PPM)

4169u
C1 80.2%
C2 8.0%
C3 11.8%
C4 0.0%

2000u

2115u

525
C1
C2
C3
C4

0
0

6,480 6,490 **6,500** 6,510 6,520 6,530 6,540 **6,550** 6,560 6,570 6,580 6,590 **6,600** 6,610 6,620 6,630 6,640 **6,650** 6,660 6,670 6,680 6,690

lam, mot, v sft-sft,
l w/marl MARL:
y, fri- brit, sil, com

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb plty-blky, v calc, crptxl, intbd w/marl MARL:
lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com
cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb plty-blky, v calc, crptxl, intbd w/marl MARL:
lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com
cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb plty-blky, v calc, crptxl, intbd w/marl MARL:
lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com
cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft,
sb plty-blky, v calc, crptxl, intbd w/marl MARL:
lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com
cal, tr pyr

: 6,485′
D: 6,155.93′
lination: 92.3 °
muth: 89°
: 313.22′

TVD (ft)

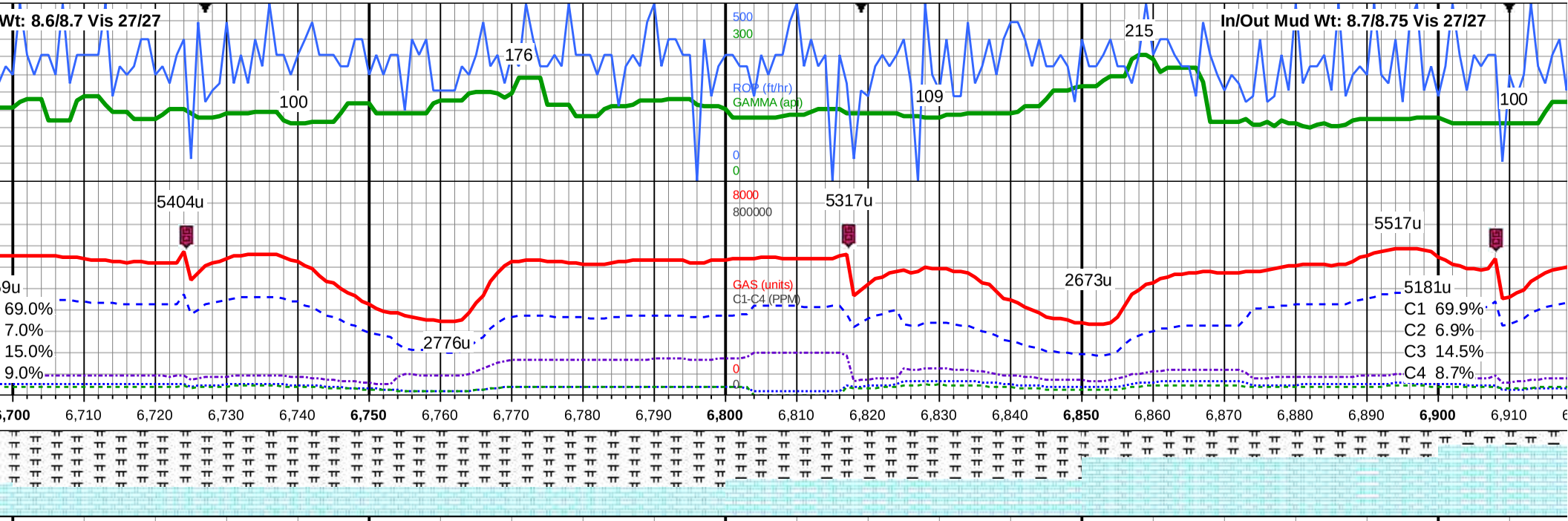
TVD (ft)

MD: 6,576′
TVD: 6,154.26′
Inclination: 89.8 °
Azimuth: 90.6°
VS: 404.19′

MD: 6,667′
TVD: 6,154.58′
Inclination: 89.8 °
Azimuth: 91.1°
VS: 495.14′

6200

6200



CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr

6100

MD: 6,851′
TVD: 6,156.66′
Inclination: 88.8 °
Azimuth: 90.1°
VS: 679.05′

TVD (ft)

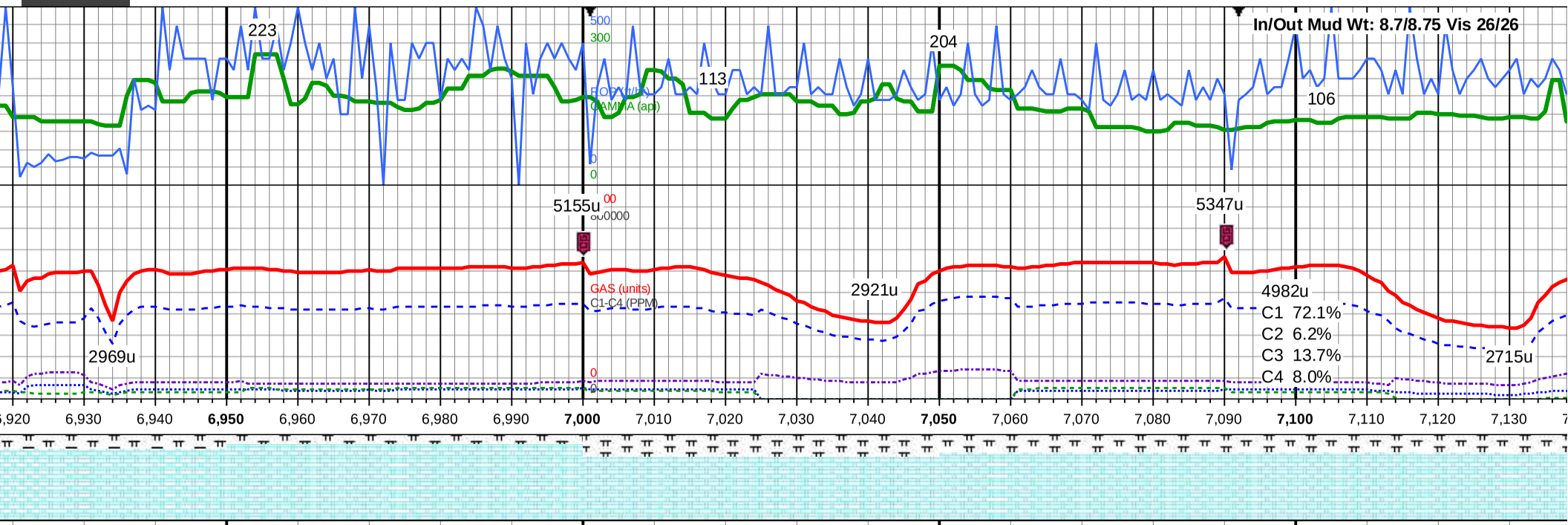
MD: 6,759′
TVD: 6,155.22′
Inclination: 89.4 °
Azimuth: 90.8°
VS: 587.09′

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr

6200

CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr

CHK: lt-med gy, sor plty-blky, v calc, crp gy, stri, sft-v sft, sb pyr


In/Out Mud Wt: 8.7/8.75 Vis 26/26
223
113
204
106
500
300
ROP (m/hr)
GAMMA (api)
0
0
5155u
5347u
GAS (units)
C1-C4 (PPM)
2969u
2921u
4982u
C1 72.1%
C2 6.2%
C3 13.7%
C4 8.0%
2715u
0
6,920
6,930
6,940
6,950
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
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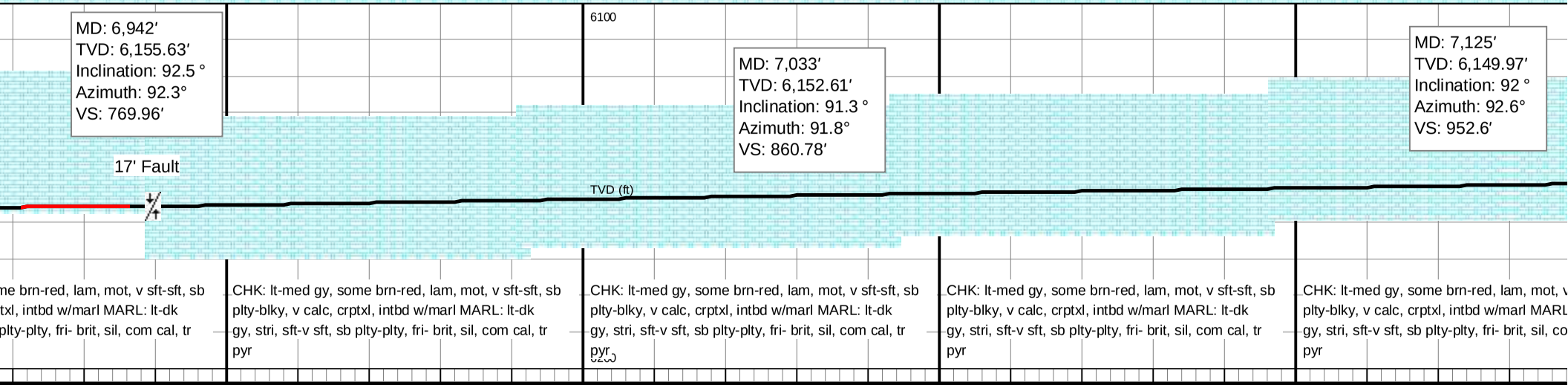
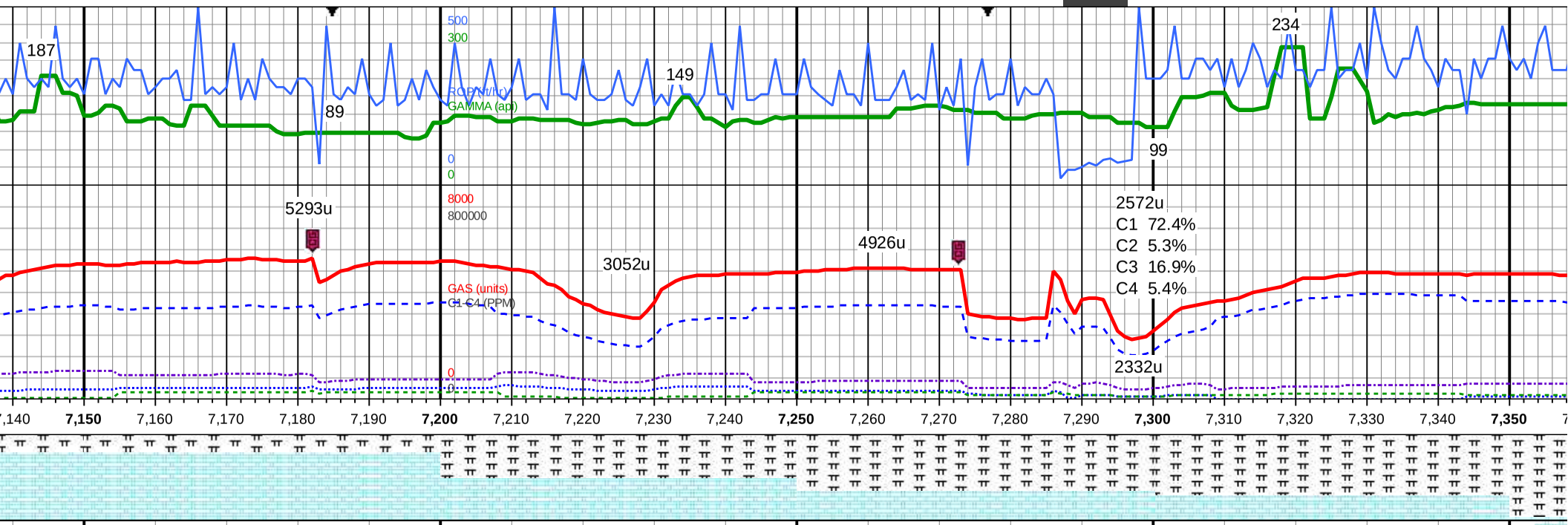
7,080
7,090
7,100
7,110
7,120
7,130


MD: 6,942′
TVD: 6,155.63′
Inclination: 92.5 °
Azimuth: 92.3°
VS: 769.96′
6100
MD: 7,033′
TVD: 6,152.61′
Inclination: 91.3 °
Azimuth: 91.8°
VS: 860.78′
MD: 7,125′
TVD: 6,149.97′
Inclination: 92 °
Azimuth: 92.6°
VS: 952.6′
17' Fault
TVD (ft)
me brn-red, lam, mot, v sft-sft, sb
txl, intbd w/marl MARL: lt-dk
plty-plty, fri- brit, sil, com cal, tr
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr
pyr
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr
pyr
6200
CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr
pyr
CHK: lt-med gy, some brn-red, lam, mot, v
plty-blky, v calc, crptxl, intbd w/marl MARL
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, co
pyr



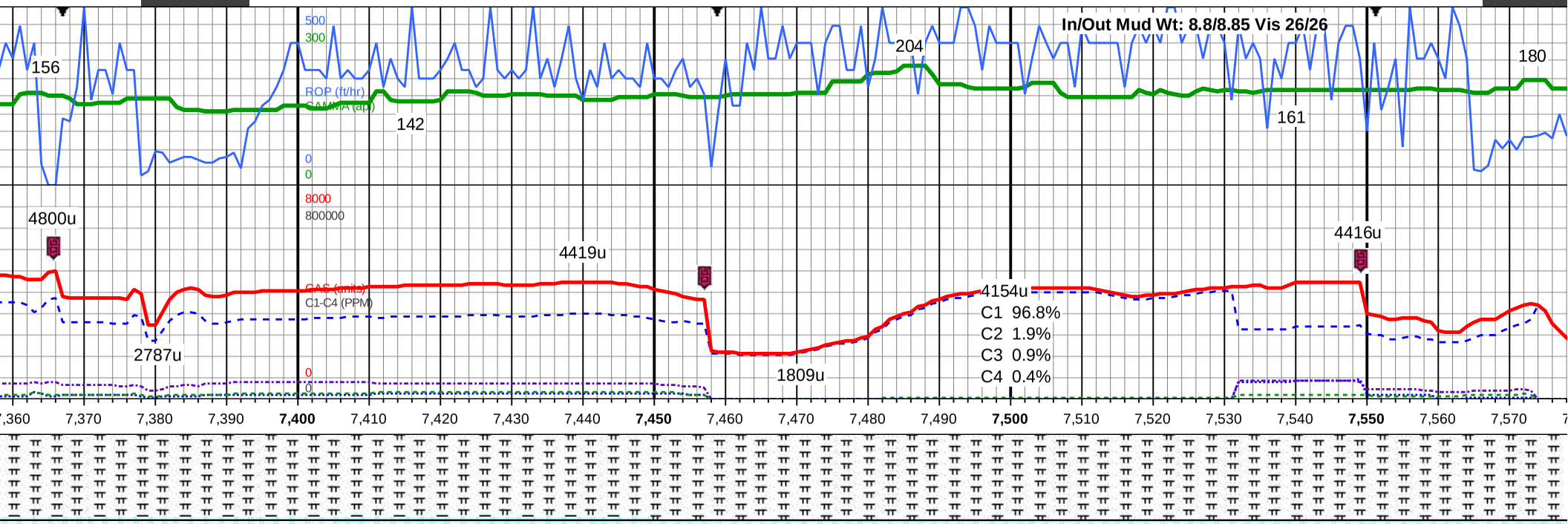
6100

MD: 7,217′
TVD: 6,146.92′
Inclination: 91.8 °
Azimuth: 91.7°
VS: 1,044.42′

MD: 7,308′
TVD: 6,144.37′
Inclination: 91.4 °
Azimuth: 90.3°
VS: 1,135.32′

TVD (ft)

v sft-sft, sb : lt-dk m cal, tr	CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr	CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr	CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr	CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil, com cal, tr pyr	MARL: sil; CHK sb plty- tr cal, tr



6100

MD: 7,400′
TVD: 6,143.81′
Inclination: 89.3 °
Azimuth: 89.1°
VS: 1,227.31′

MD: 7,492′
TVD: 6,143.65′
Inclination: 90.9 °
Azimuth: 90°
VS: 1,319.3′

MD:
TVD
Incli
Azir
VS:

TVD (ft)

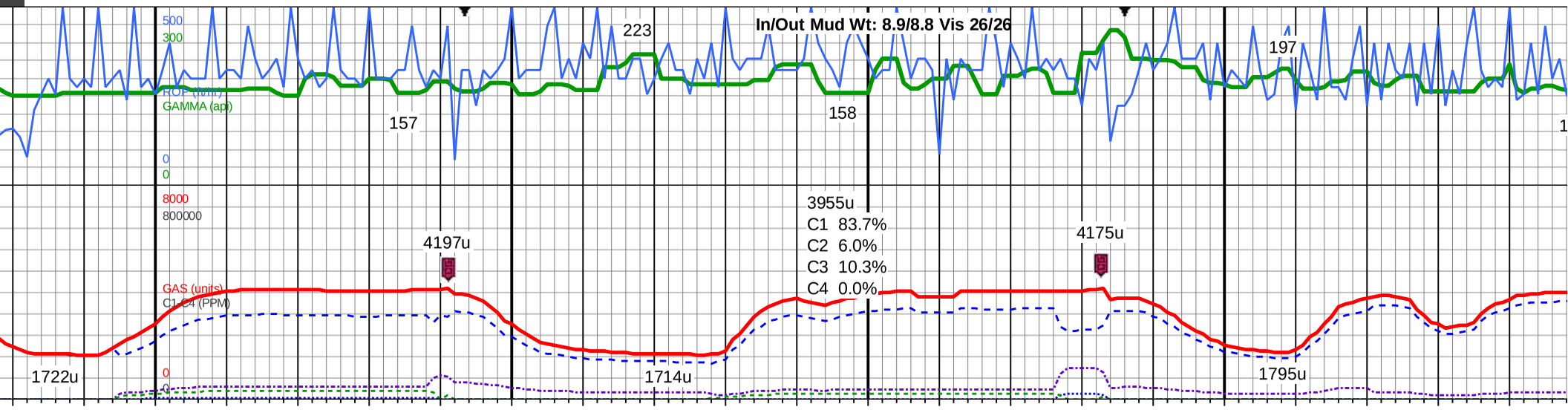
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, : lt-med gy, some brn-red, lam, mot, v sft-sft, blky, v calc, crptxl, intbd w/marl, com bent, pyr

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; CHK: lt-med gy, some brn-red, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, com bent, tr cal, tr dissm pyr

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

MARL: med-dk gy, stri, sft-v sf sil; tr chk, com bent, tr cal, tr di



6100

7,584′
D: 6,143.09′
nation: 89.8 °
muth: 90.8°
1,411.27′

MD: 7,677′
TVD: 6,143.33′
Inclination: 89.9 °
Azimuth: 89.4°
VS: 1,504.25′

MD: 7,768′
TVD: 6,143.17′
Inclination: 90.3 °
Azimuth: 90.6°
VS: 1,595.24′

TVD (ft)

t, sb plty-plty, fri- brit,
ssm pyr

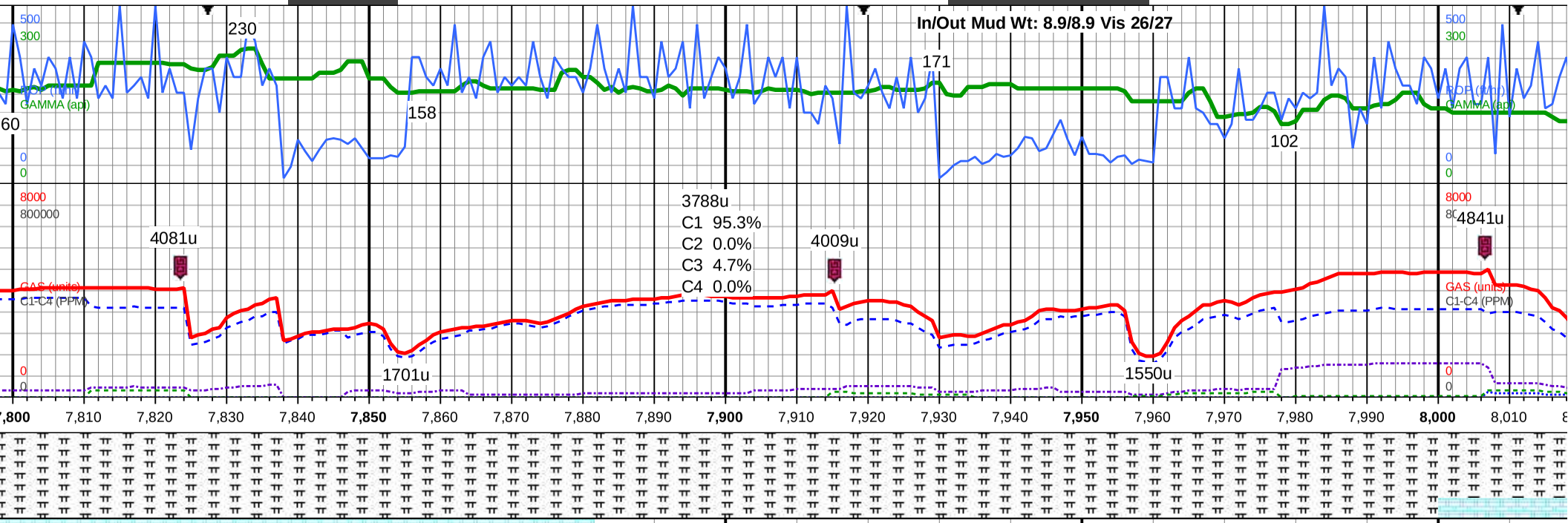
MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

6200

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr



6100

MD: 7,860′
TVD: 6,142.93′
Inclination: 90 °
Azimuth: 91.4°
VS: 1,687.18′

MD: 7,951′
TVD: 6,144.04′
Inclination: 88.6 °
Azimuth: 90.5°
VS: 1,778.12′

6100

TVD (ft)

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

6200

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

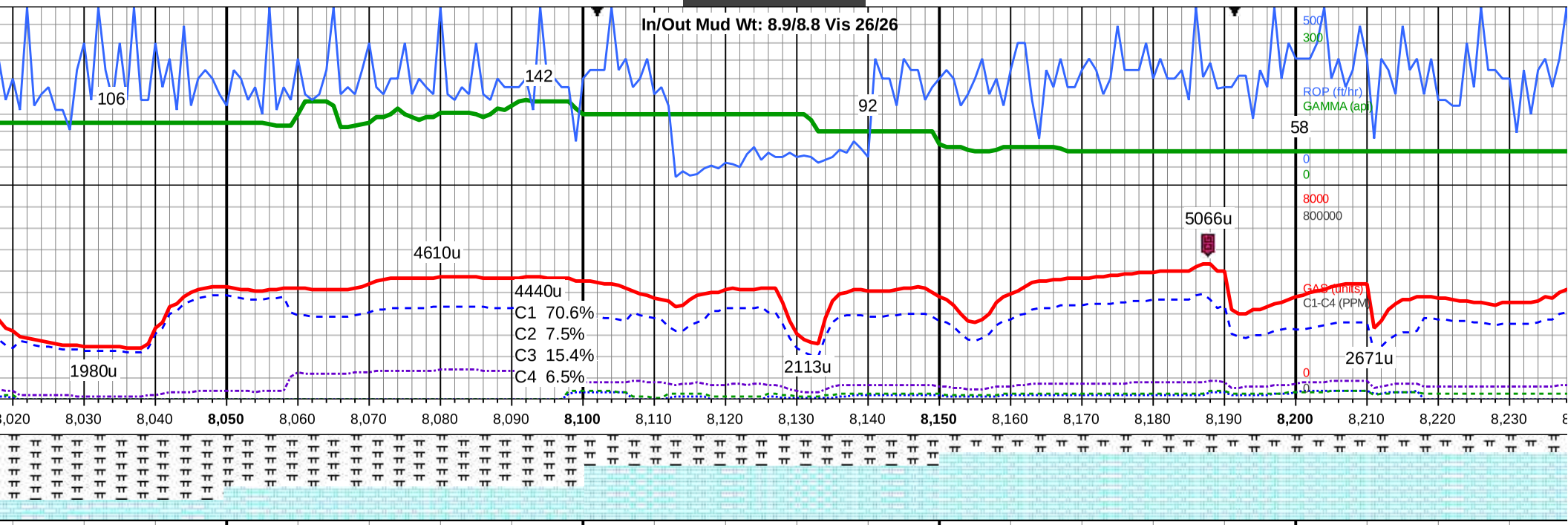
MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

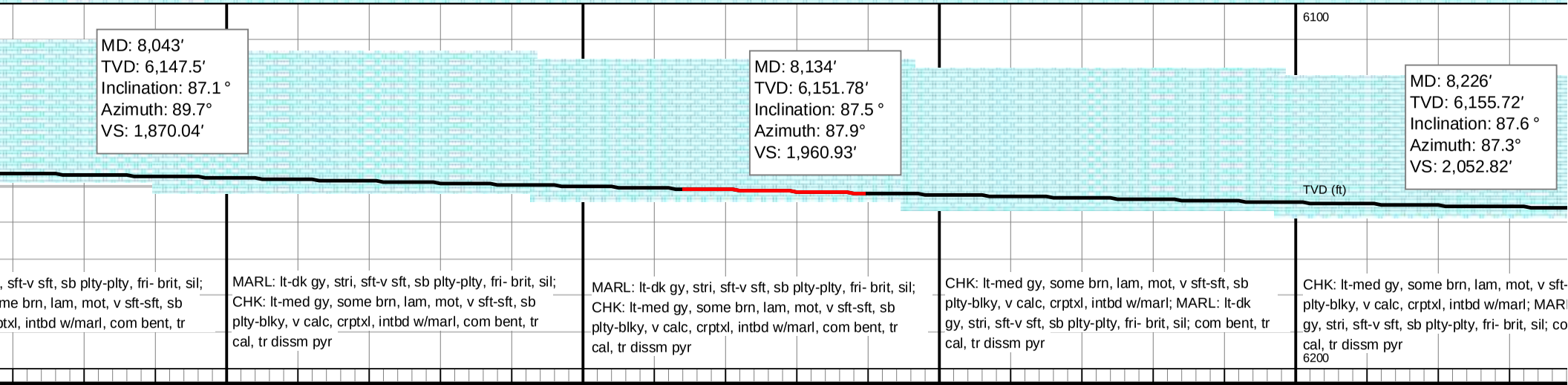
MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr chk, com bent, tr cal, tr dissm pyr

TVD (ft)

MARL: lt-dk gy, stri
CHK: lt-med gy, so
plty-blky, v calc, crp
cal, tr dissm pyr

6200





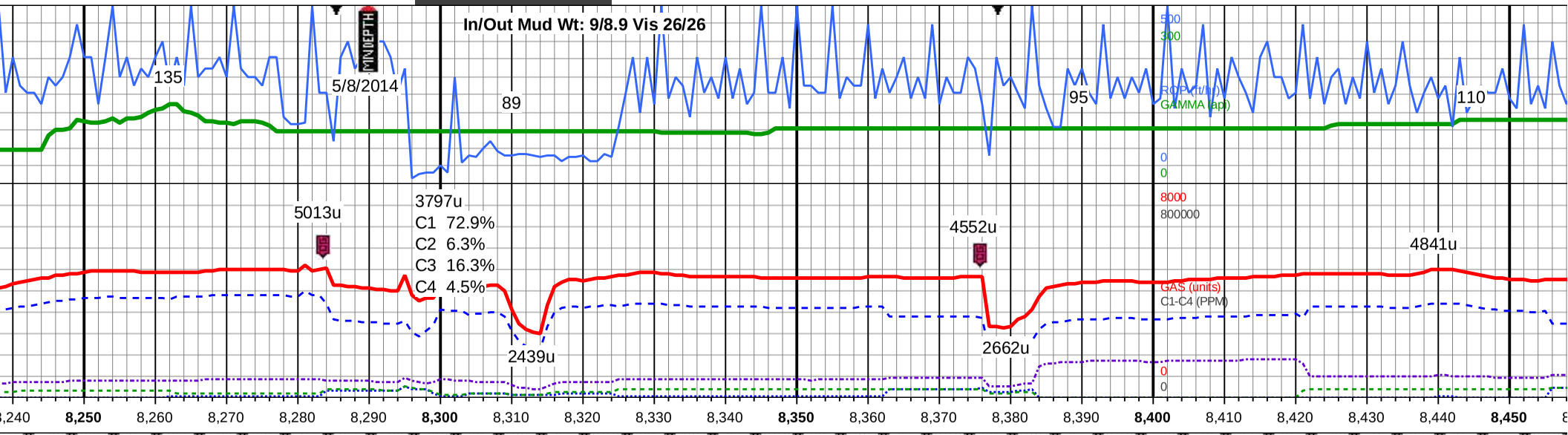
, sft-v sft, sb plty-plty, fri- brit, sil; me brn, lam, mot, v sft-sft, sb ptxl, intbd w/marl, com bent, tr

MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, com bent, tr cal, tr dissm pyr

MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl, com bent, tr cal, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr cal, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft- plty-blky, v calc, crptxl, intbd w/marl; MAR gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; co cal, tr dissm pyr



6100

MD: 8,318′
TVD: 6,157.88′
Inclination: 89.7 °
Azimuth: 87.3°
VS: 2,144.75′

MD: 8,411′
TVD: 6,157.64′
Inclination: 90.6 °
Azimuth: 87.8°
VS: 2,237.71′

sft, sb
L: lt-dk
m bent, tr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr cal, tr dissm pyr

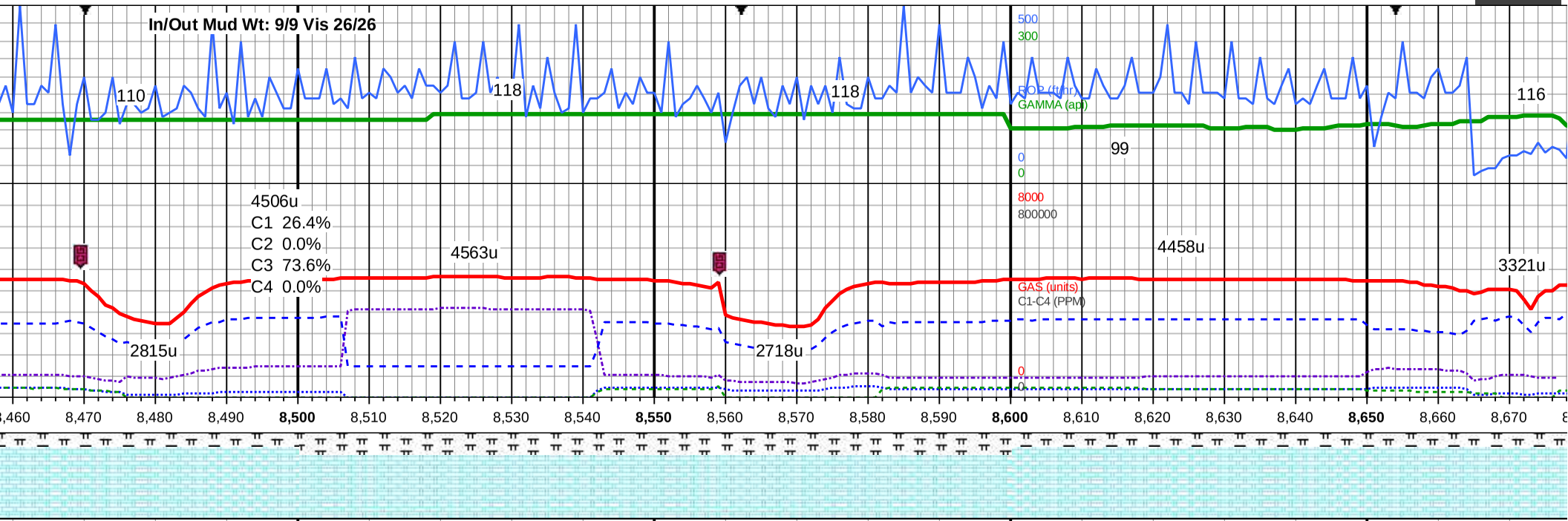
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr cal, tr dissm pyr

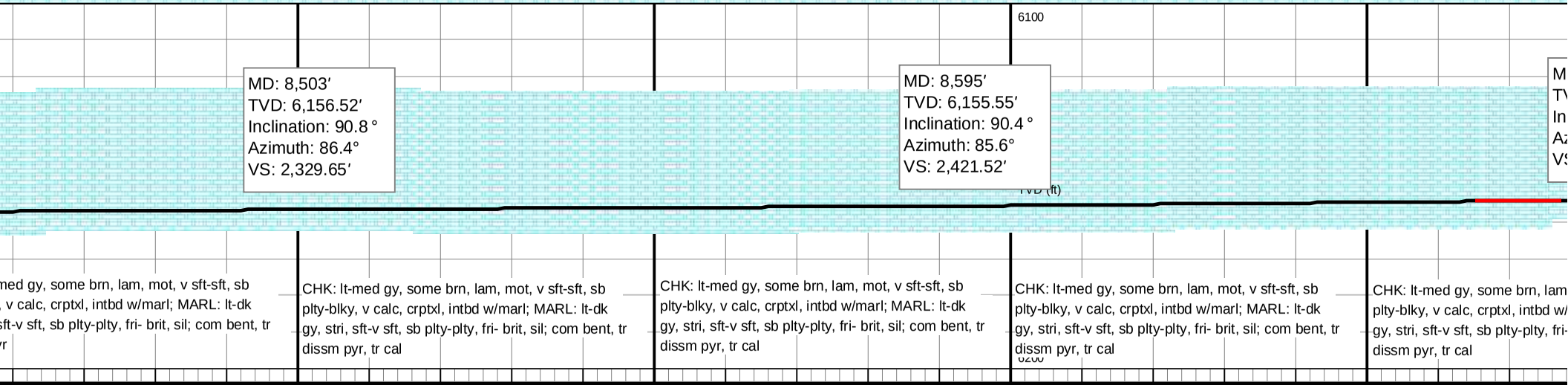
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr cal, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr cal, tr dissm pyr

6200

CHK: lt-
plty-blky
gy, stri, s
dissm py





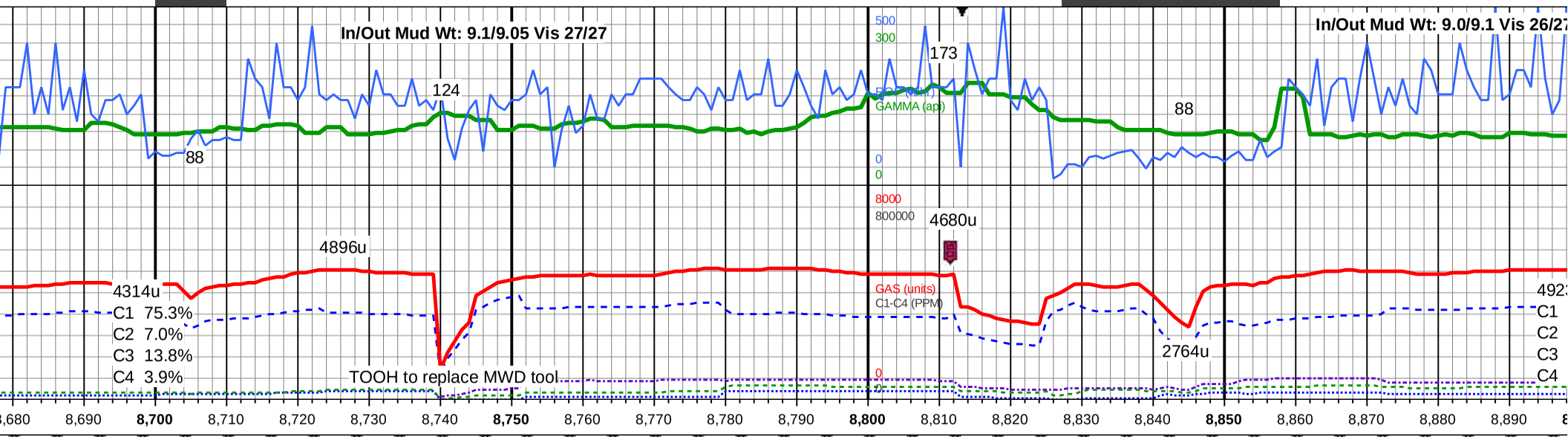
med gy, some brn, lam, mot, v sft-sft, sb
, v calc, crptxl, intbd w/marl; MARL: lt-dk
sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr
yr

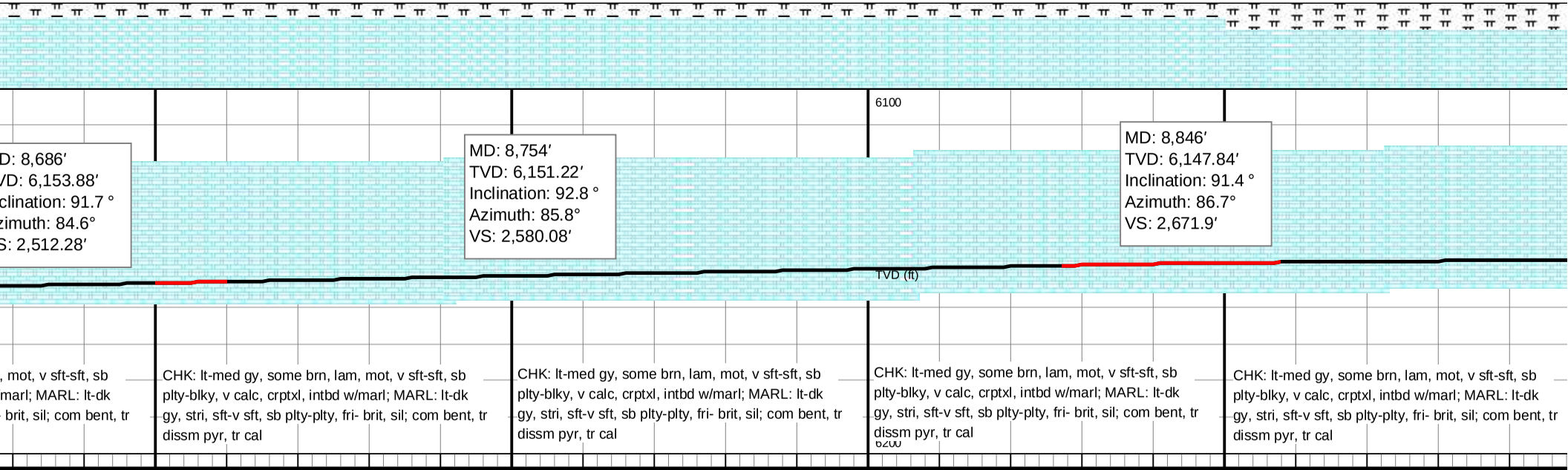
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam
plty-blky, v calc, crptxl, intbd w/
gy, stri, sft-v sft, sb plty-plty, fri-
dissm pyr, tr cal





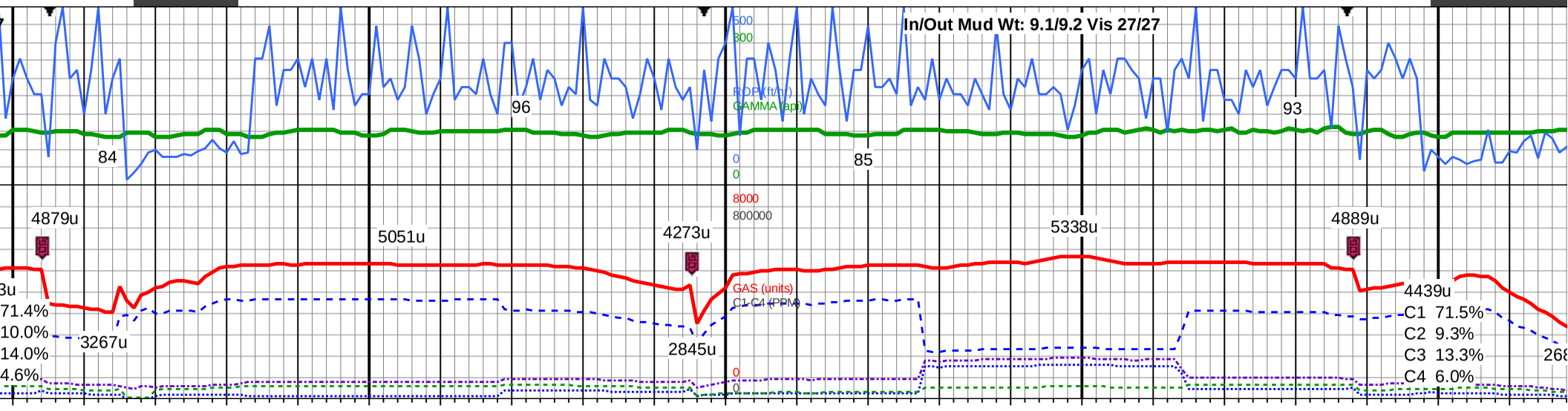
, mot, v sft-sft, sb marl; MARL: lt-dk brit, sil; com bent, tr

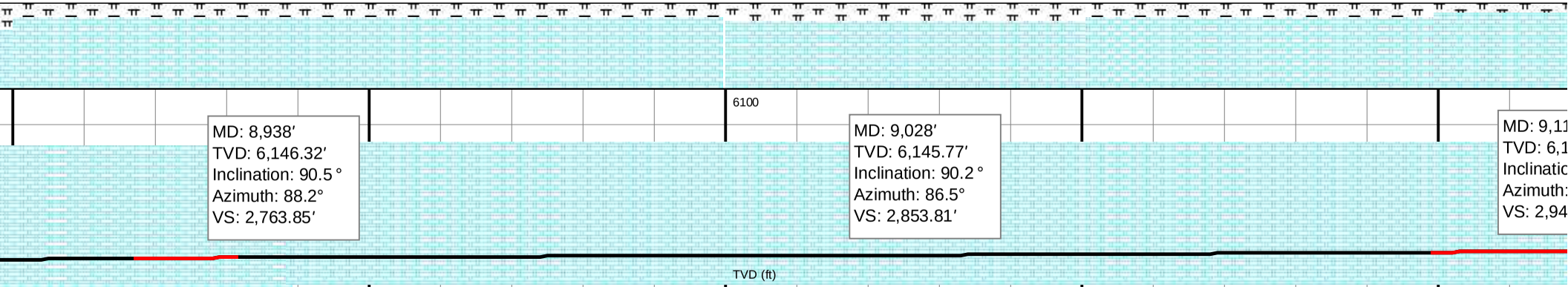
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr, tr cal





CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent, tr cal

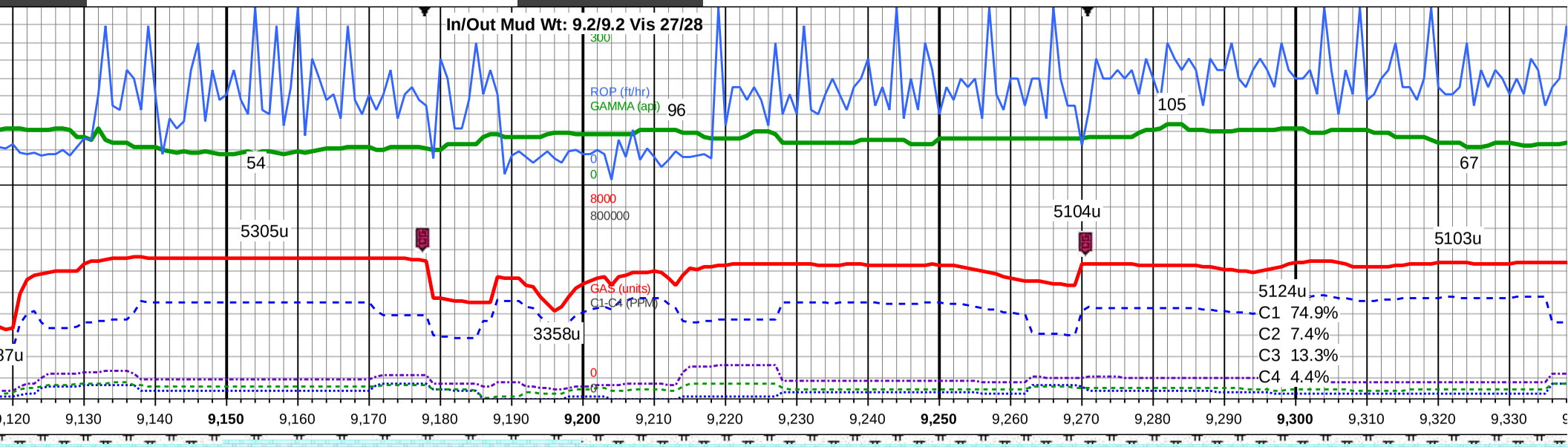
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent, tr cal

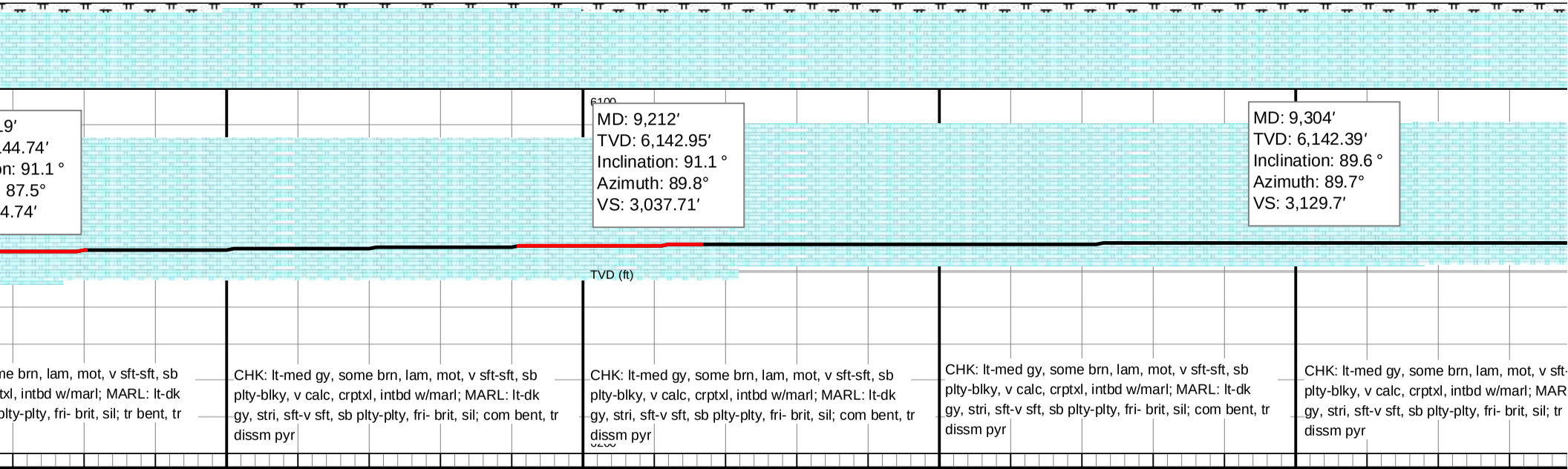
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent, tr cal

6200

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent, tr cal

CHK: lt-med gy, som plty-blky, v calc, crp gy, stri, sft-v sft, sb cal





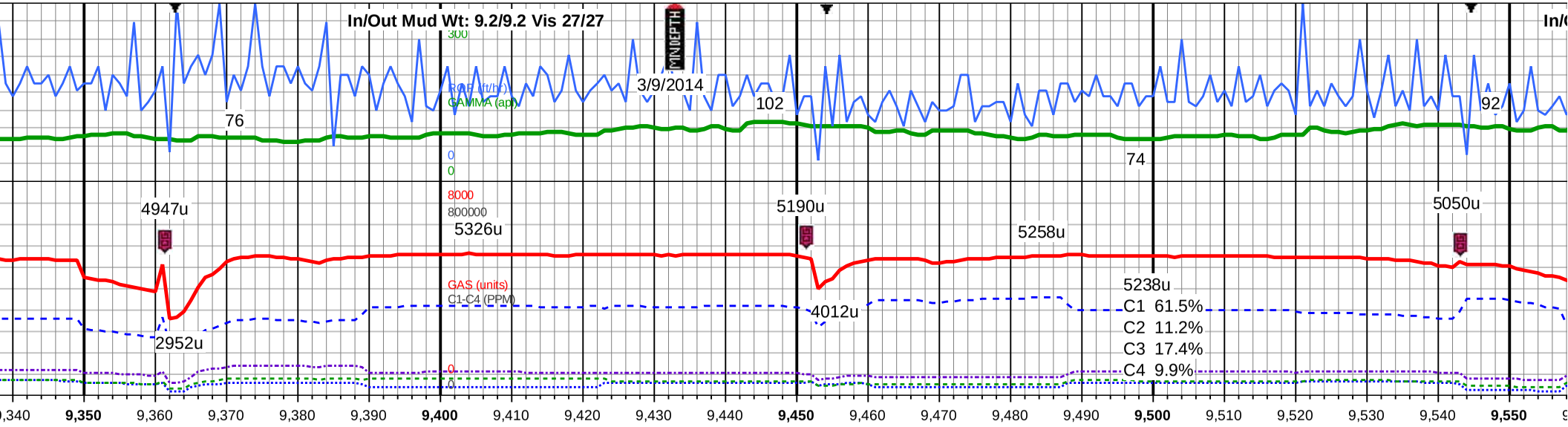
me brn, lam, mot, v sft-sft, sb
txl, intbd w/marl; MARL: lt-dk
plty-plty, fri- brit, sil; tr bent, tr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; com bent, tr dissm pyr

CHK: lt-med gy, some brn, lam, mot, v sft-
plty-blky, v calc, crptxl, intbd w/marl; MAR
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr
dissm pyr



MD: 9,394′
TVD: 6,142.07′
Inclination: 90.8 °
Azimuth: 90.9°
VS: 3,219.68′

MD: 9,486′
TVD: 6,141.03′
Inclination: 90.5 °
Azimuth: 90.6°
VS: 3,311.63′

TVD (ft)

-sft, sb
L: lt-dk
bent, tr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent, tr dissm pyr

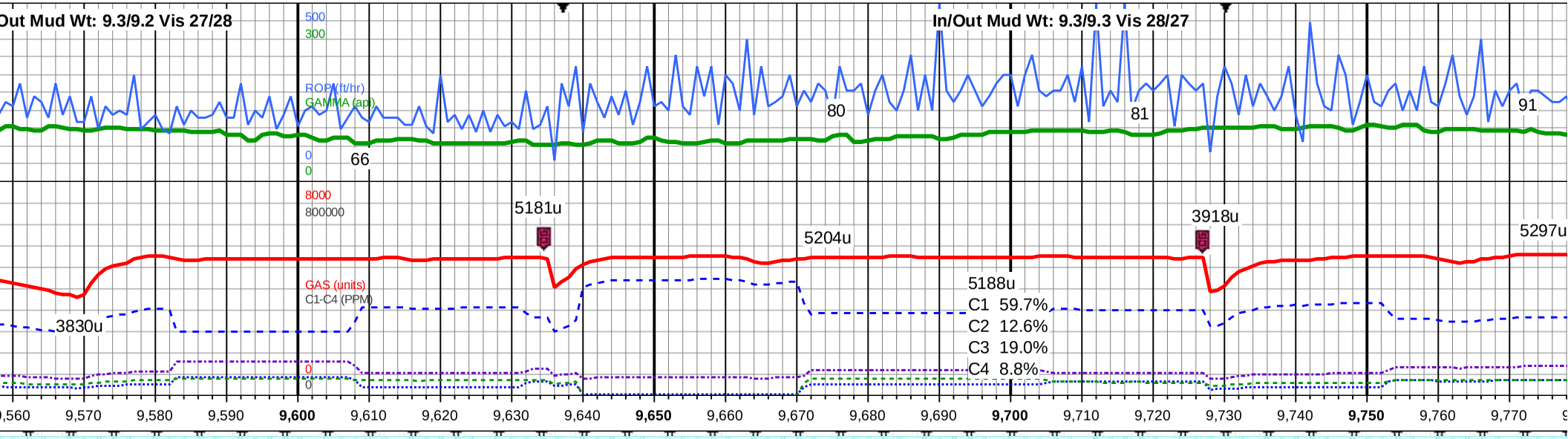
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

6200

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: lt-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-
plty-blky
gy, stri,



MD: 9,578′
TVD: 6,140.79′
Inclination: 89.8 °
Azimuth: 91°
VS: 3,403.59′

6100

MD: 9,671′
TVD: 6,140.55′
Inclination: 90.5 °
Azimuth: 91.8°
VS: 3,496.51′

MD: 9,763′
TVD: 6,139.74′
Inclination: 90.5 °
Azimuth: 92.5°
VS: 3,588.37′

TVD (ft)

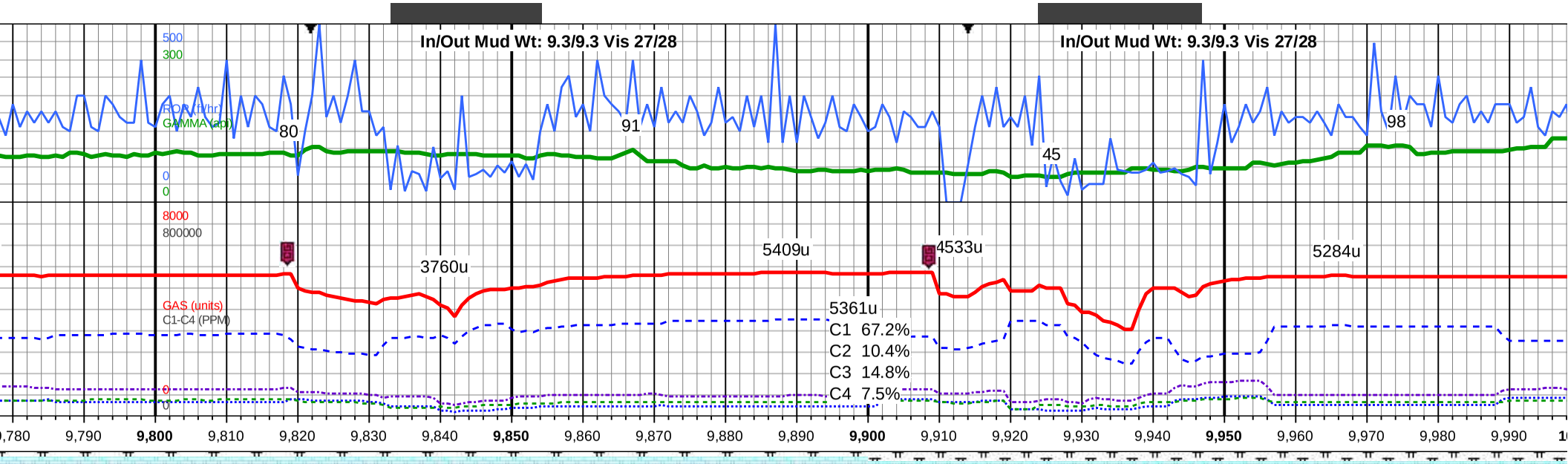
-med gy, some brn, lam, mot, v sft-sft, sb
y, v calc, crptxl, intbd w/marl; MARL: lt-dk
sft-v sft, sb plty-plty, fri- brit, sil; tr bent

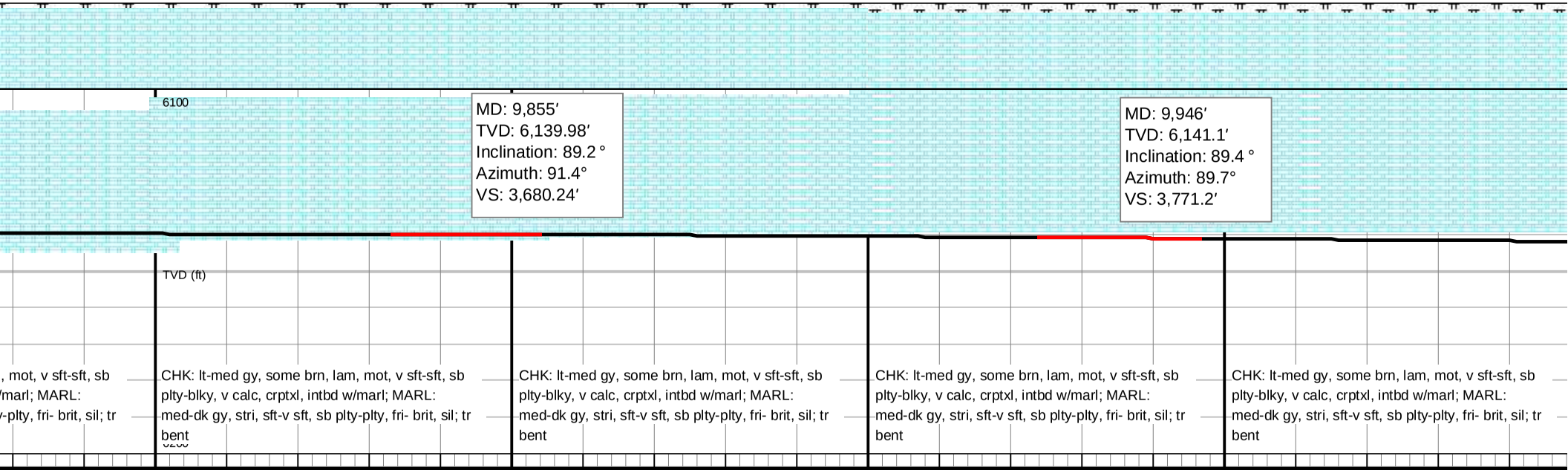
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

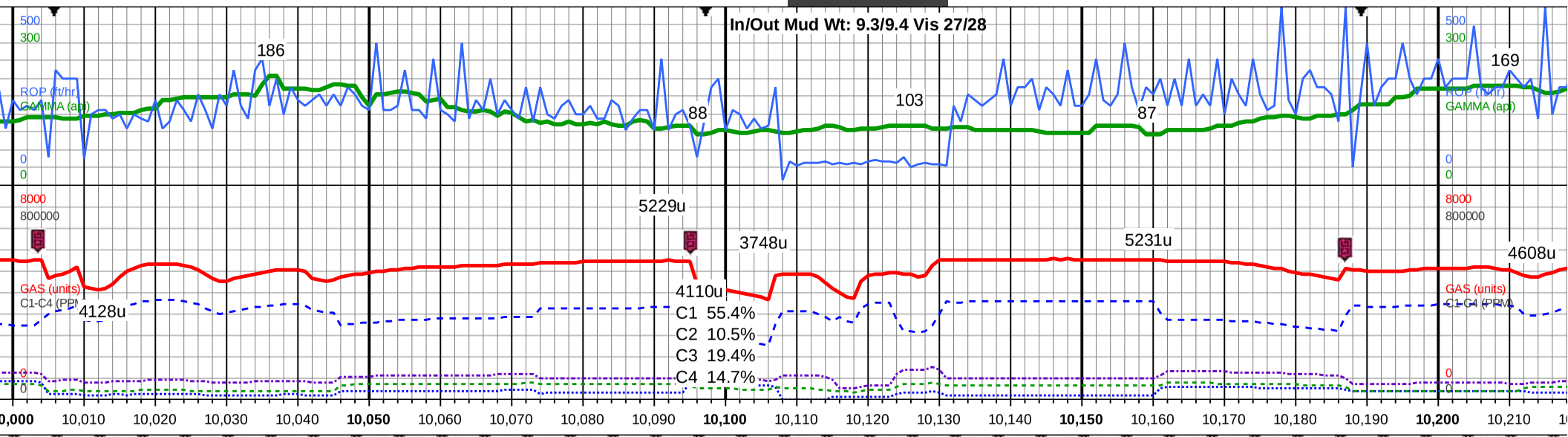
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam
plty-blky, v calc, crptxl, intbd w/
med-dk gy, stri, sft-v sft, sb plty
bent





, mot, v sft-sft, sb /marl; MARL: -plty, fri- brit, sil; tr	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent



6100

MD: 10,038′
TVD: 6,142.54′
Inclination: 88.8 °
Azimuth: 89.6°
VS: 3,863.19′

MD: 10,129′
TVD: 6,142.94′
Inclination: 90.7 °
Azimuth: 91°
VS: 3,954.16′

MD: 10,211′
TVD: 6,141.65′
Inclination: 91.1
Azimuth: 90.8°
VS: 4,036.1′

TVD (ft)

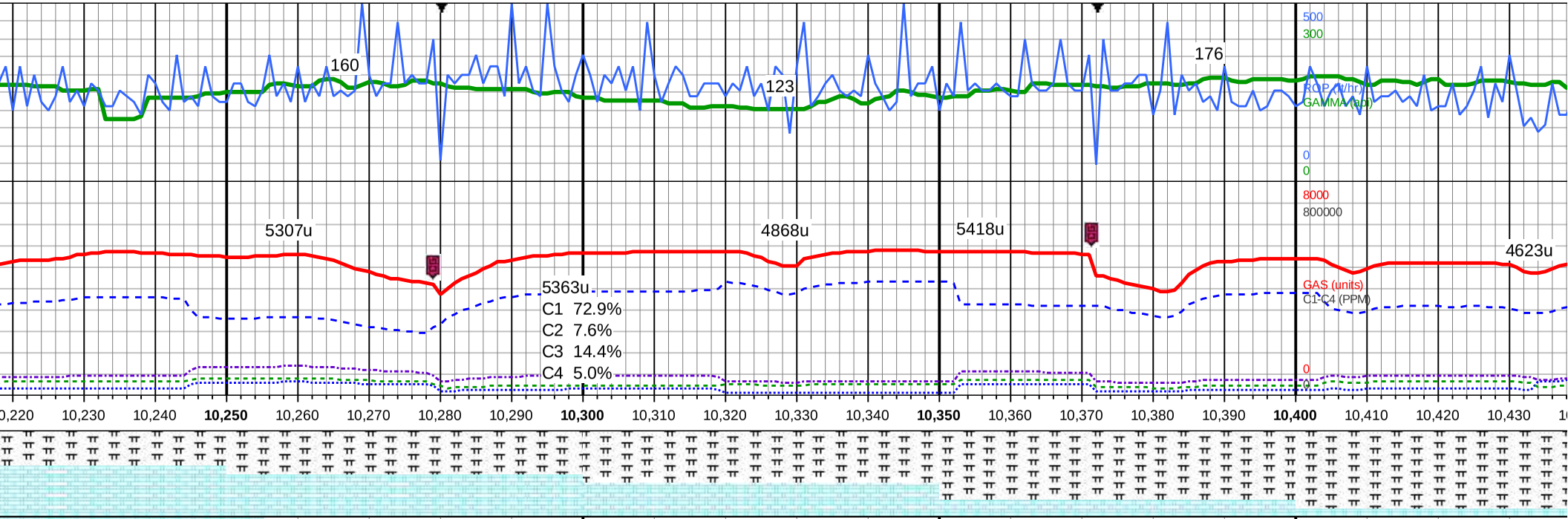
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, so
plty-blky, v calc, crp
med-dk gy, stri, sft-
bent



MD: 10,313′
TVD: 6,140.58′
Inclination: 90.1 °
Azimuth: 89.3°
VS: 4,138.08′

MD: 10,405′
TVD: 6,140.26′
Inclination: 90.3 °
Azimuth: 88.8°
VS: 4,230.08′

TVD (ft)

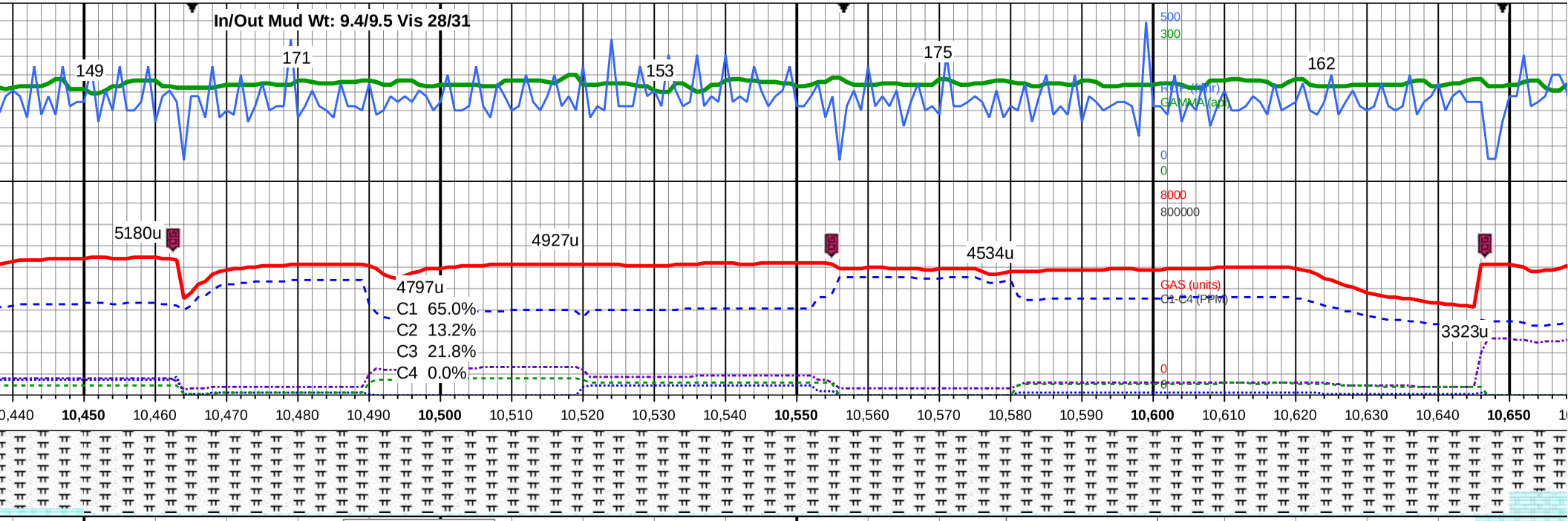
me brn, lam, mot, v sft-sft, sb
txl, intbd w/marl; MARL:
v sft, sb plty-plty, fri- brit, sil; tr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft
plty-blky, v calc, crptxl, intbd w/marl; MAR
med-dk gy, stri, sft-v sft, sb plty-plty, fri- b
bent



MD: 10,497′
TVD: 6,139.62′
Inclination: 90.5 °
Azimuth: 88.9°
VS: 4,322.07′

MD: 10,590′
TVD: 6,138.81′
Inclination: 90.5 °
Azimuth: 88.4°
VS: 4,415.07′

6100

TVD (ft)

-sft, sb
L:
rit, sil; tr

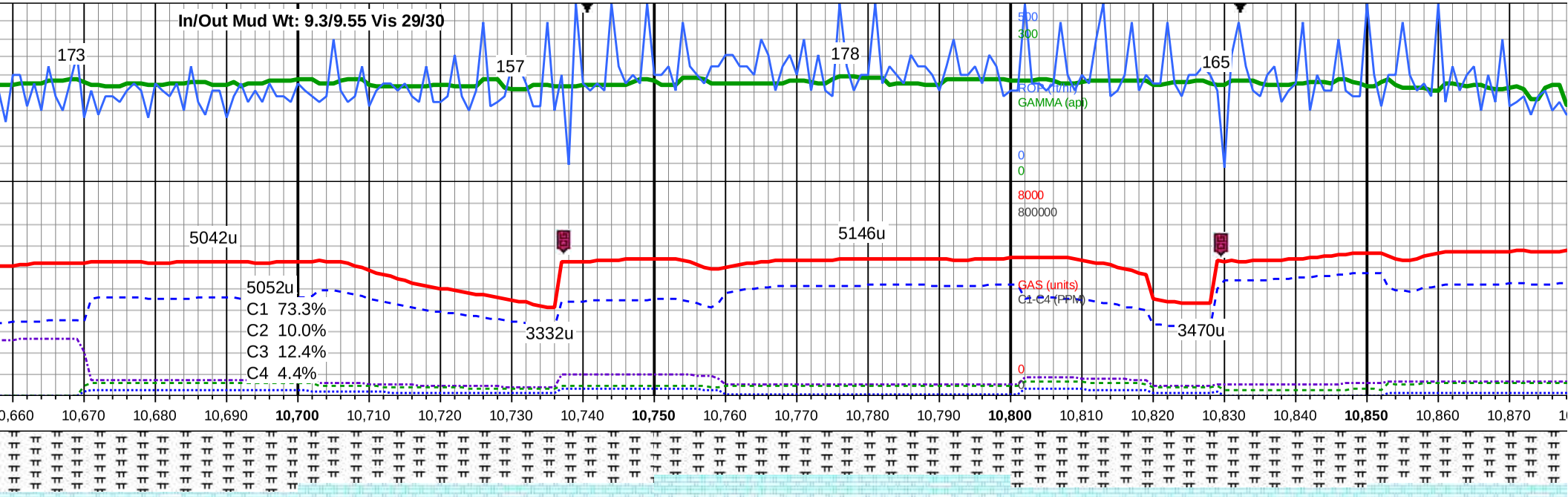
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr bent

CHK: lt-
plty-blky
med-dk
bent



MD: 10,681′
TVD: 6,138.33′
Inclination: 90.1 °
Azimuth: 86.5°
VS: 4,506.03′

MD: 10,773′
TVD: 6,138.09′
Inclination: 90.2 °
Azimuth: 85.2°
VS: 4,597.88′

6100

MD: 10,865′
TVD: 6,139.05′
Inclination: 88.6 °
Azimuth: 82.7°
VS: 4,689.5′

TVD (ft)

med gy, some brn, lam, mot, v sft-sft, sb
, v calc, crptxl, intbd w/marl; MARL:
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr

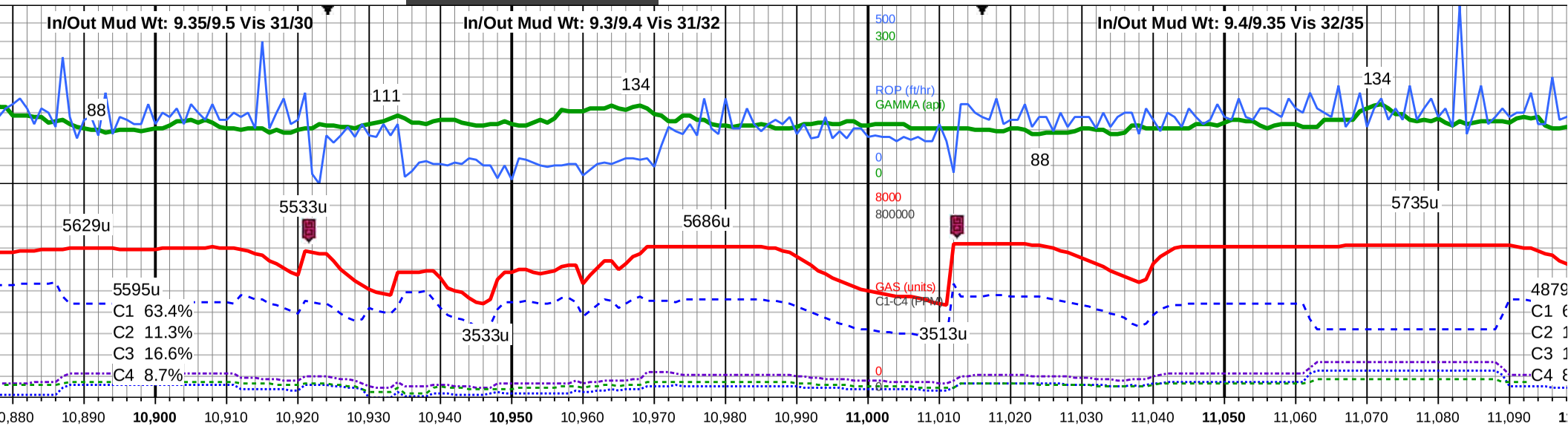
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal

6200

CHK: lt-med gy, some brn, lam
plty-blky, v calc, crptxl, intbd w/
med-dk gy, stri, sft-v sft, sb plty
cal



6100

MD: 10,957′
TVD: 6,140.9′
Inclination: 89.1 °
Azimuth: 82.8°
VS: 4,780.93′

MD: 11,048′
TVD: 6,140.9′
Inclination: 90.9 °
Azimuth: 84.1°
VS: 4,871.49′

TVD (ft)

6200

, mot, v sft-sft, sb marl; MARL: -plty, fri- brit, sil; tr	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal	CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal

[redacted] [redacted]

In/Out Mud Wt: 9.4/9.35 Vis 34/35

500
300
ROP (min/ft)
GAMMA (api)
0
0
8000
800000
GAS (units)
C1-C4 (PPM)
0
0

175
173
164
88
5585u
4970u
4169u
3505u
4462u
C1 76.4%
C2 9.5%
C3 10.6%
C4 3.5%
65.2%
11.1%
15.7%
3.0%

11,100 11,110 11,120 11,130 11,140 **11,150** 11,160 11,170 11,180 11,190 **11,200** 11,210 11,220 11,230 11,240 **11,250** 11,260 11,270 11,280 11,290 **11,300** 11,310

6100

MD: 11,140′
TVD: 6,138.04′
Inclination: 92.6 °
Azimuth: 85°
VS: 4,963.16′

TVD (ft)

MD: 11,232′
TVD: 6,135.47′
Inclination: 90.6 °
Azimuth: 84.5°
VS: 5,054.86′

MD
TVD
Incl
Azi
VS:

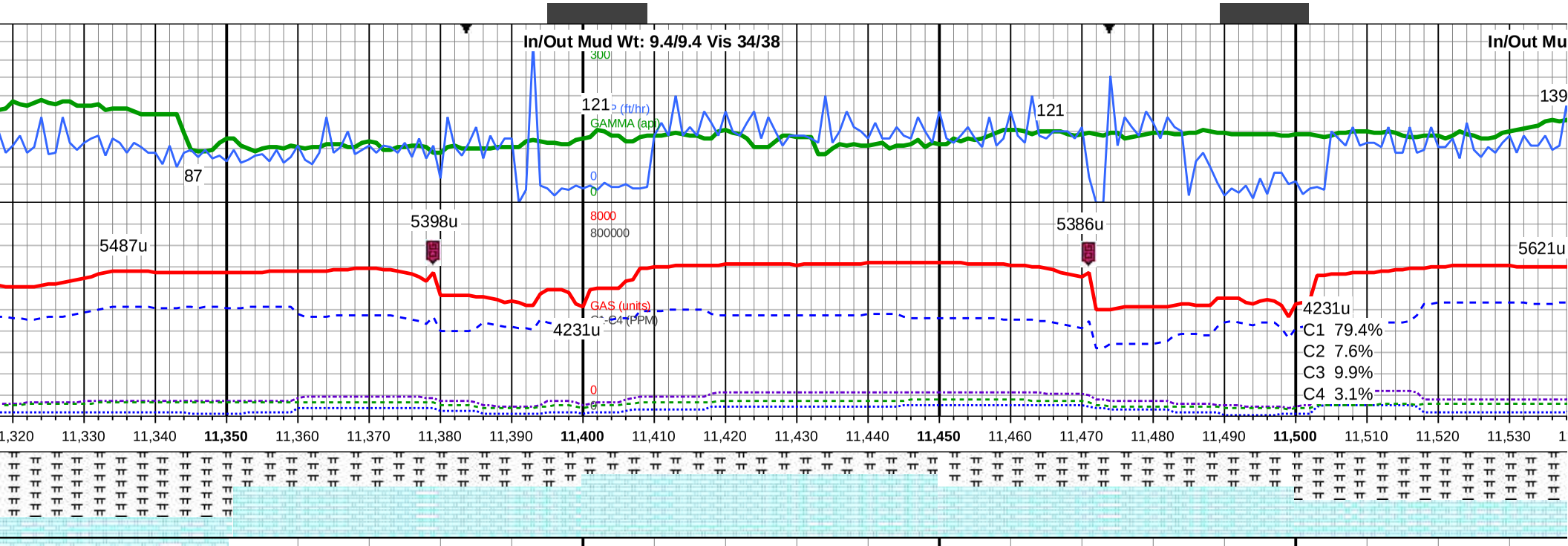
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; tr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, so
plty-blky, v calc, crp
med-dk gy, stri, sft-
cal


In/Out Mud Wt: 9.4/9.4 Vis 34/38
In/Out Mu
300
121
(ft/hr)
GAMMA (api)
121
139
87
0
0
8000
800000
5398u
5386u
5487u
5621u
GAS (units)
C1-C4 (PPM)
4231u
4231u
C1 79.4%
C2 7.6%
C3 9.9%
C4 3.1%
0
0
11,320
11,330
11,340
11,350
11,360
11,370
11,380
11,390
11,400
11,410
11,420
11,430
11,440
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11,480
11,490
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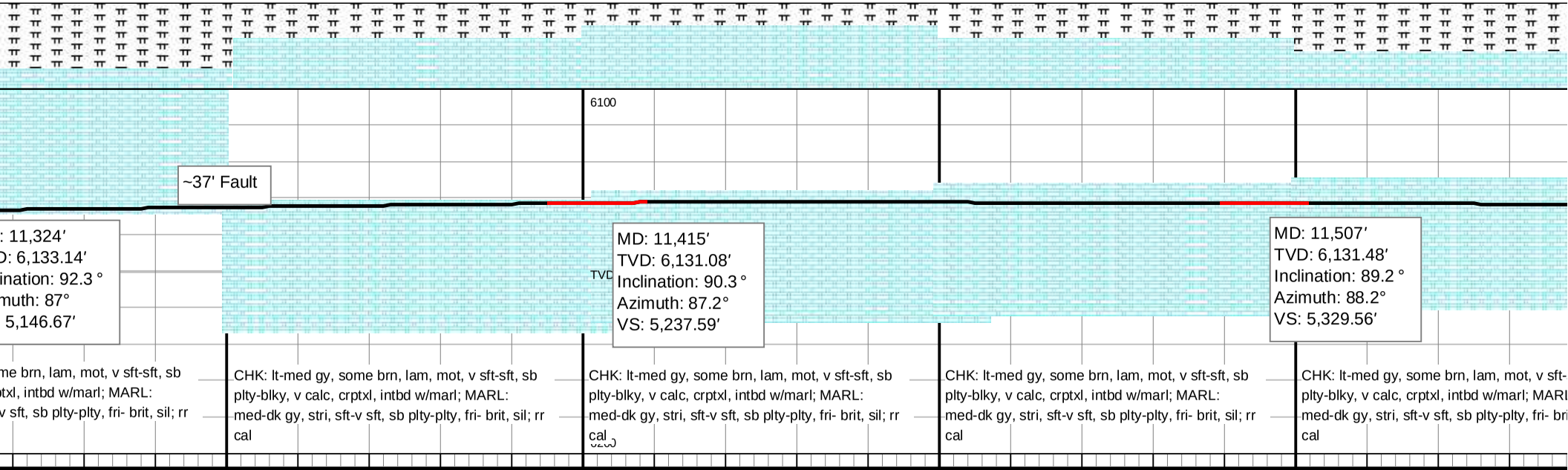
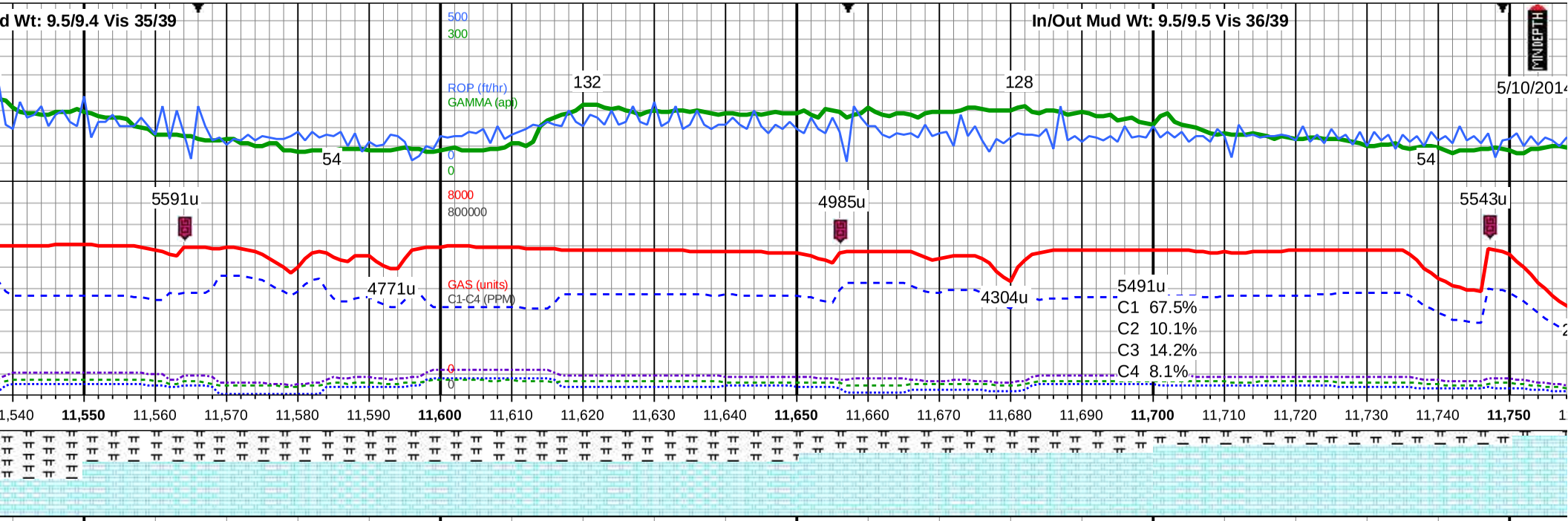
11,510
11,520
11,530


6100
~37' Fault
: 11,324′
D: 6,133.14′
ination: 92.3 °
muth: 87°
5,146.67′
TVD
MD: 11,415′
TVD: 6,131.08′
Inclination: 90.3 °
Azimuth: 87.2°
VS: 5,237.59′
MD: 11,507′
TVD: 6,131.48′
Inclination: 89.2 °
Azimuth: 88.2°
VS: 5,329.56′
me brn, lam, mot, v sft-sft, sb
txl, intbd w/marl; MARL:
v sft, sb plty-plty, fri- brit, sil; rr
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-
plty-blky, v calc, crptxl, intbd w/marl; MARL
med-dk gy, stri, sft-v sft, sb plty-plty, fri- bri
cal



6100

MD: 11,598′
TVD: 6,132.27′
Inclination: 89.8 °
Azimuth: 88.9°
VS: 5,420.55′

MD: 11,690′
TVD: 6,132.27′
Inclination: 90.2 °
Azimuth: 89.4°
VS: 5,512.55′

sft, sb
L:
t, sil; rr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

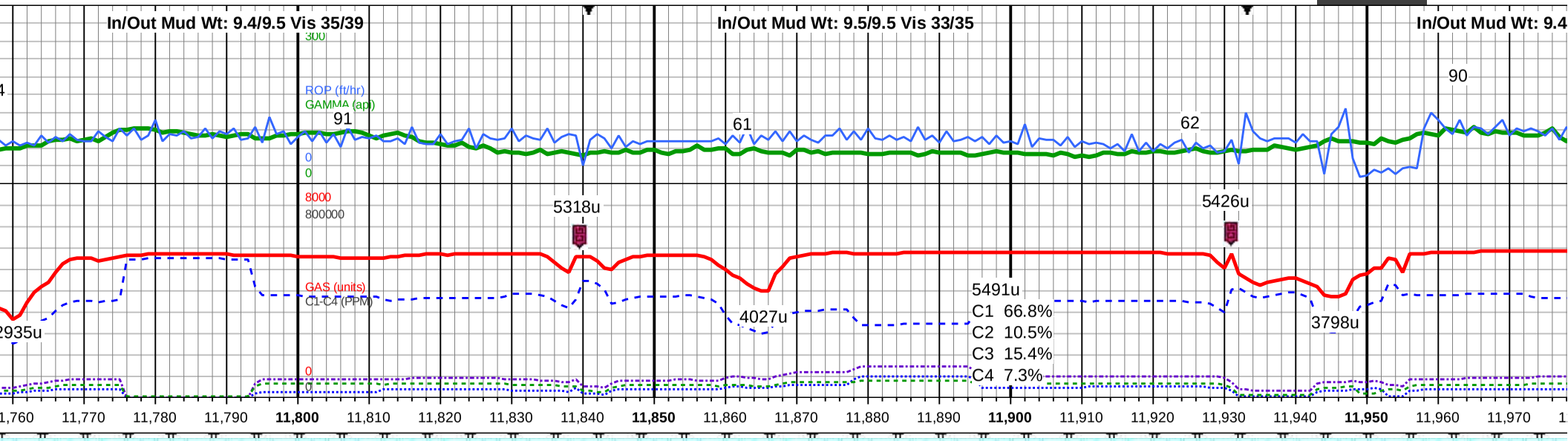
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

6200

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-
plty-blky
med-dk
cal



6100

TVD (ft)

MD: 11,782′
TVD: 6,131.71′
Inclination: 90.5 °
Azimuth: 90.1°
VS: 5,604.54′

MD: 11,874′
TVD: 6,130.51′
Inclination: 91 °
Azimuth: 90.4°
VS: 5,696.51′

MD: 11,966′
TVD: 6,129.38′
Inclination: 90.4 °
Azimuth: 91.3°
VS: 5,788.46′

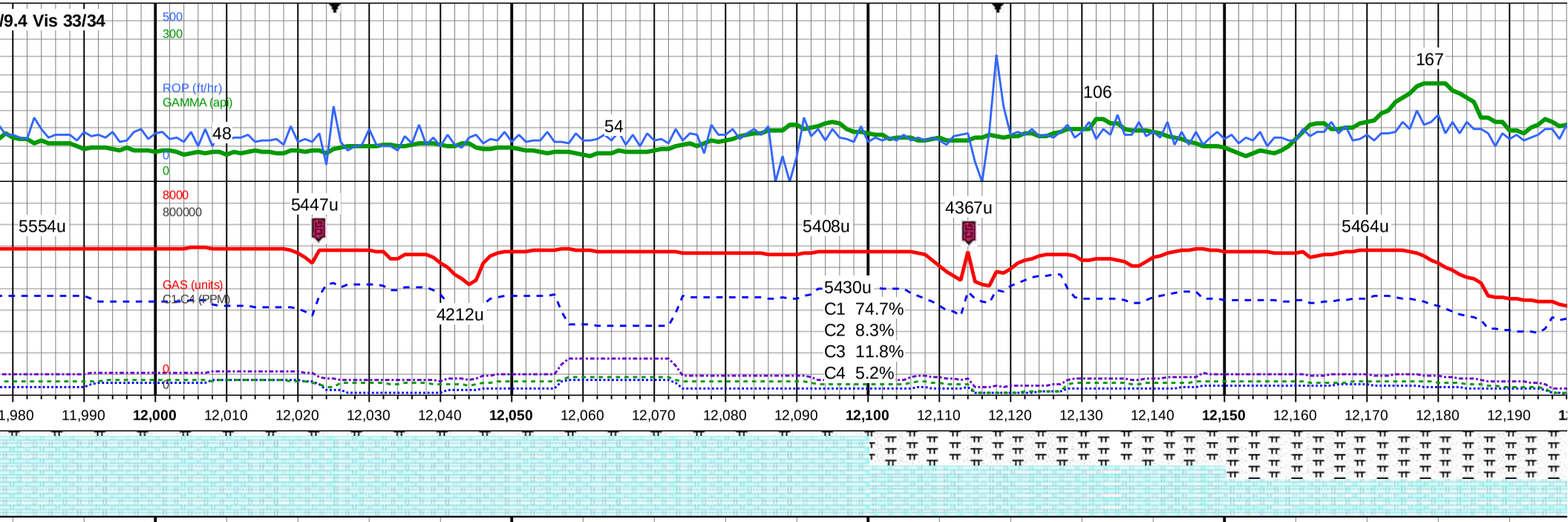
med gy, some brn, lam, mot, v sft-sft, sb
, v calc, crptxl, intbd w/marl; MARL:
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK
plty-blky, v calc, crptxl, intbd w/
med-dk gy, stri, sft-v sft, sb plty
cal



6100

TVD (ft)

MD: 12,058′
TVD: 6,128.74′
Inclination: 90.4 °
Azimuth: 90.8°
VS: 5,880.4′

MD: 12,150′
TVD: 6,128.58′
Inclination: 89.8 °
Azimuth: 91°
VS: 5,972.35′

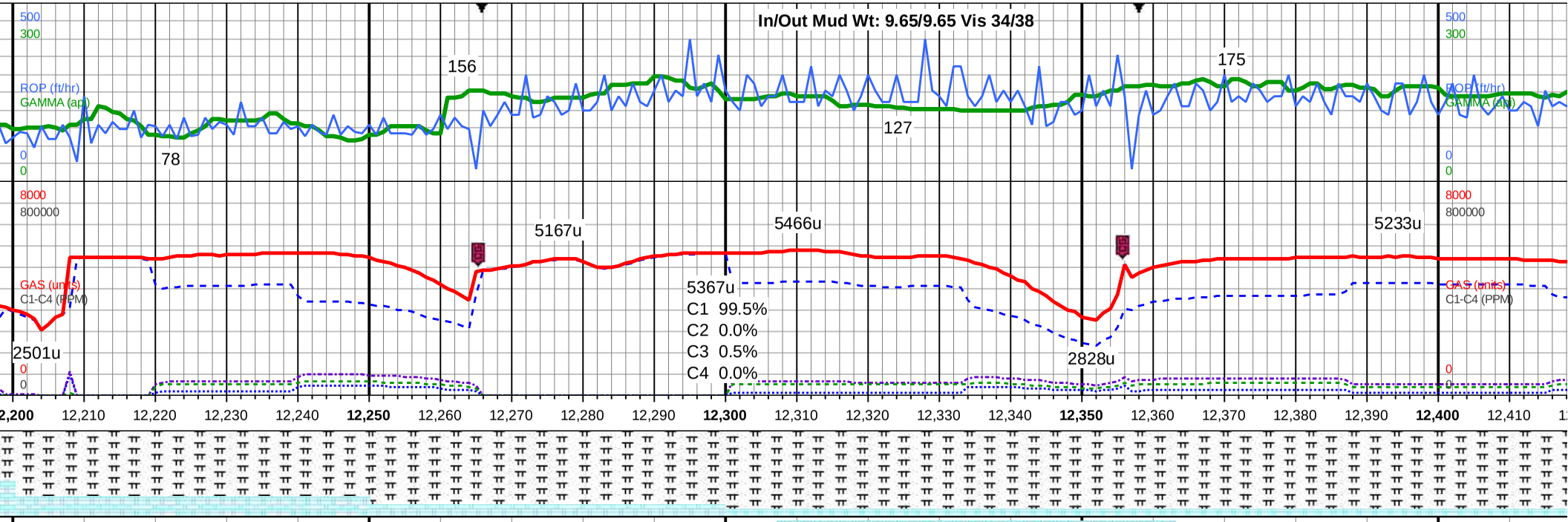
, mot, v sft-sft, sb
/marl; MARL:
y-plty, fri- brit, sil; rr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal



6100

MD: 12,207′
TVD: 6,128.83′
Inclination: 89.7 °
Azimuth: 90.9°
VS: 6,029.32′

MD: 12,299′
TVD: 6,129.55′
Inclination: 89.4 °
Azimuth: 91.3°
VS: 6,121.26′

33' Fault

MD: 12,391′
TVD: 6,130.67′
Inclination: 89.2 °
Azimuth: 91.5°
VS: 6,213.17′

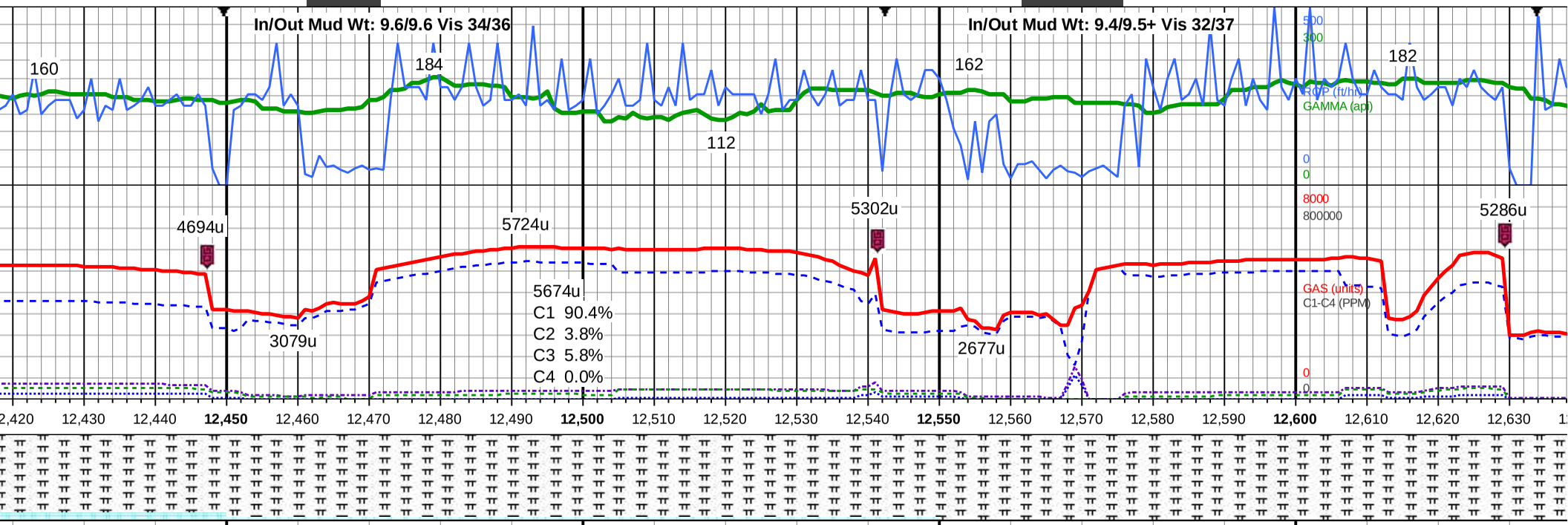
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, sor plty-blky, v calc, crp med-dk gy, stri, sft-v cal



6100

MD: 12,483′
TVD: 6,131.72′
Inclination: 89.5 °
Azimuth: 92.3°
VS: 6,305.05′

MD: 12,575′
TVD: 6,132.6′
Inclination: 89.4 °
Azimuth: 90.3°
VS: 6,396.97′

TVD (ft)

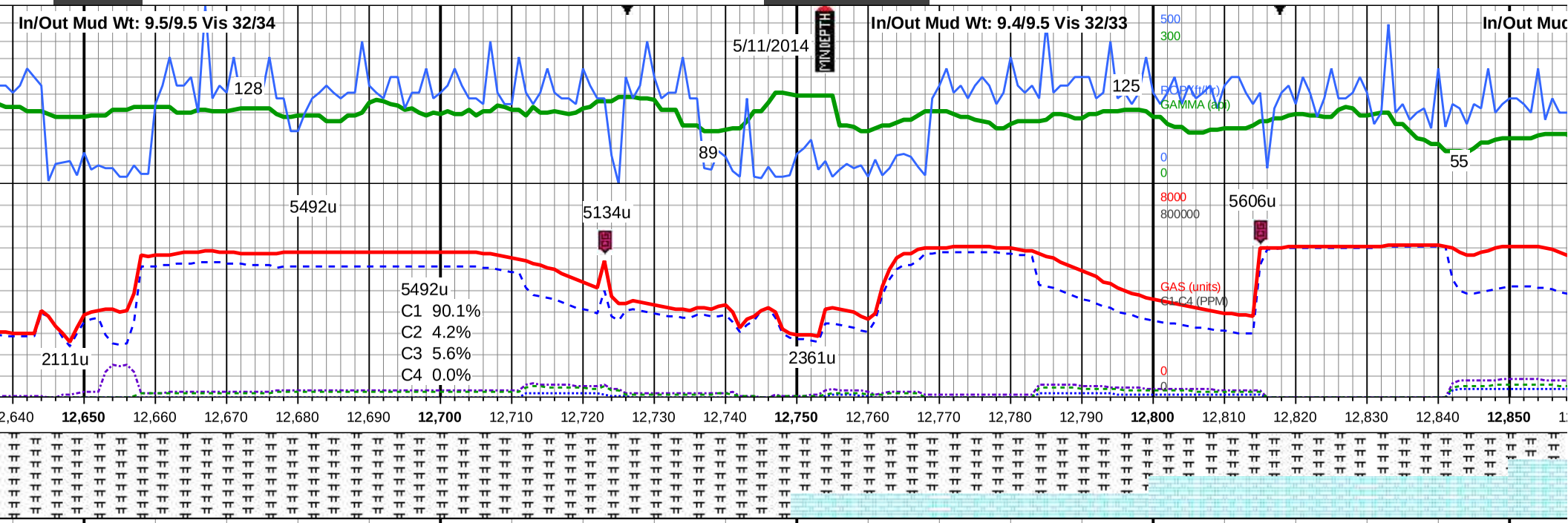
me brn, lam, mot, v sft-sft, sb
txl, intbd w/marl; MARL:
v sft, sb plty-plty, fri- brit, sil; rr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal, rr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal, rr bent

MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal, rr bent, rr inoc

MARL: med-dk gy, stri, sft-v sft, sb plty-plt
sil; rr cal, rr bent, rr inoc



MD: 12,667′
TVD: 6,133.48′
Inclination: 89.5 °
Azimuth: 89.7°
VS: 6,488.95′

MD: 12,758′
TVD: 6,133.8′
Inclination: 90.1 °
Azimuth: 89°
VS: 6,579.95′

MD: 12,850′
TVD: 6,133.8′
Inclination: 89.9
Azimuth: 88.8°
VS: 6,671.95′

y, fri- brit,

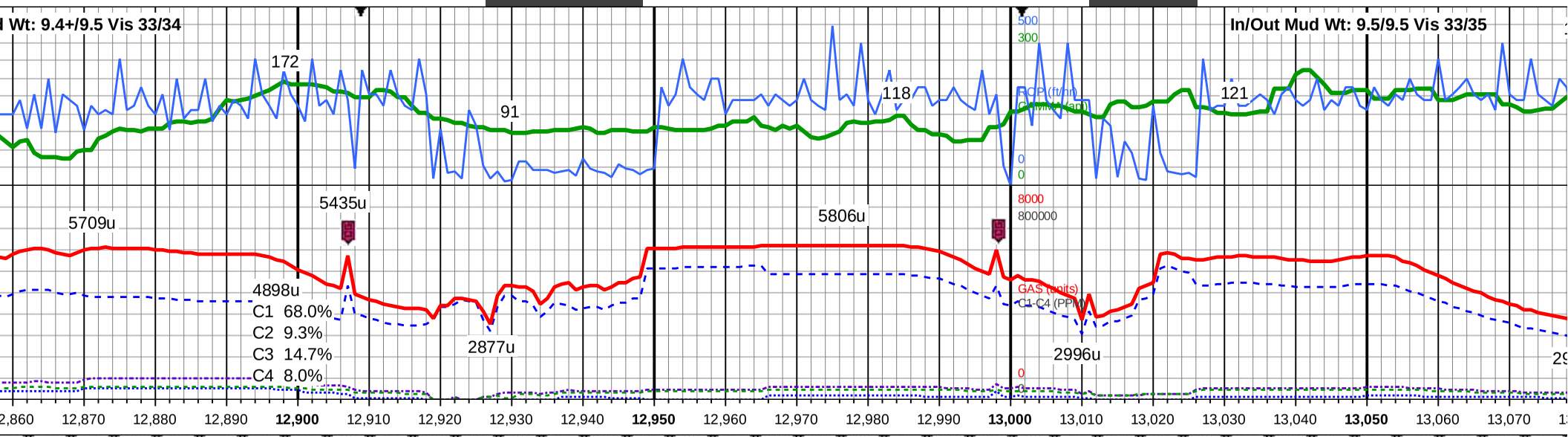
MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal, rr bent

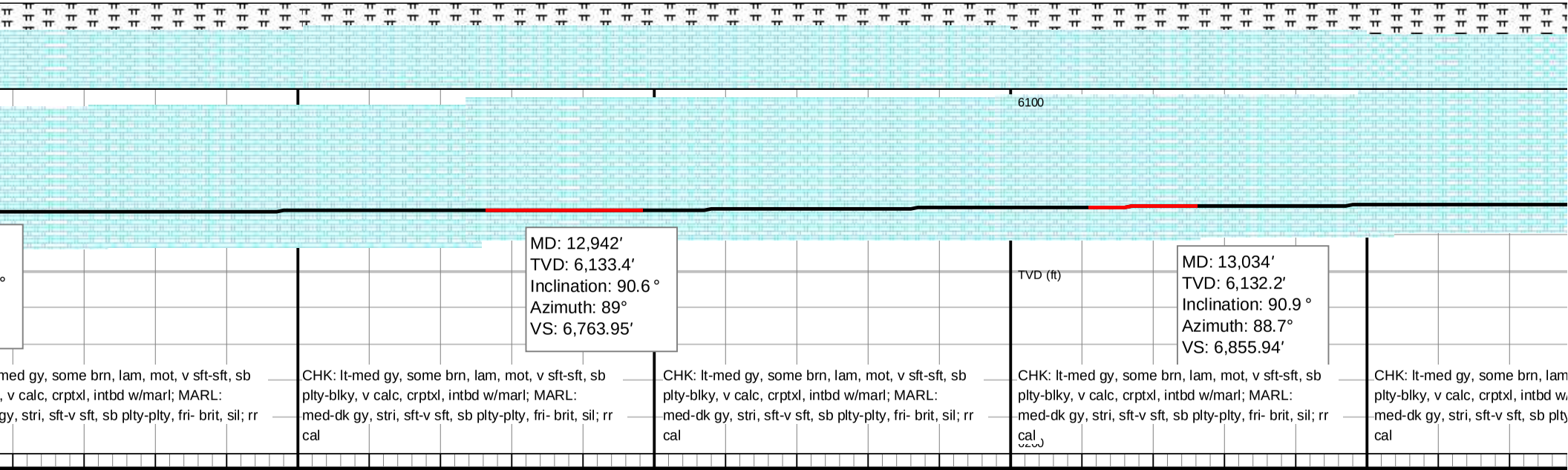
MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal, rr bent

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-
plty-blky
med-dk
cal





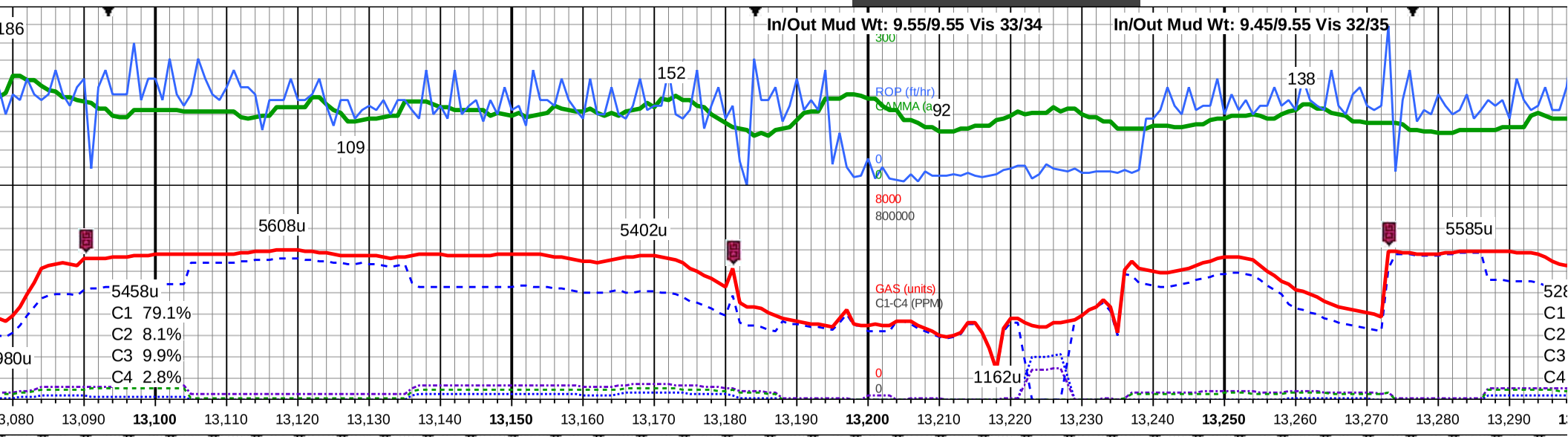
med gy, some brn, lam, mot, v sft-sft, sb
, v calc, crptxl, intbd w/marl; MARL:
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr

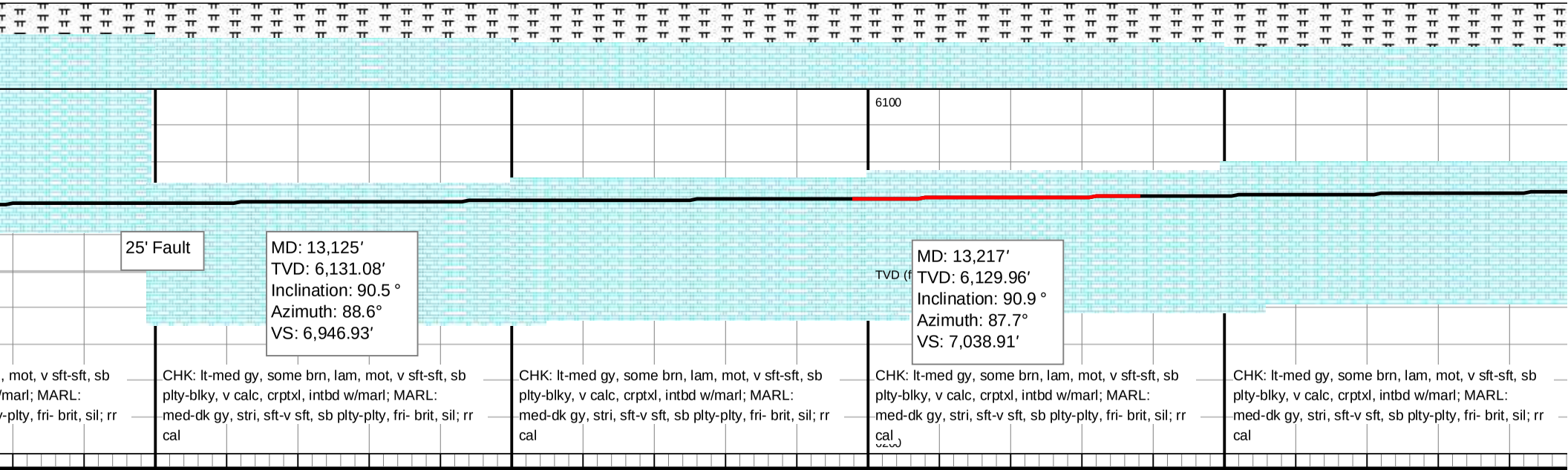
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

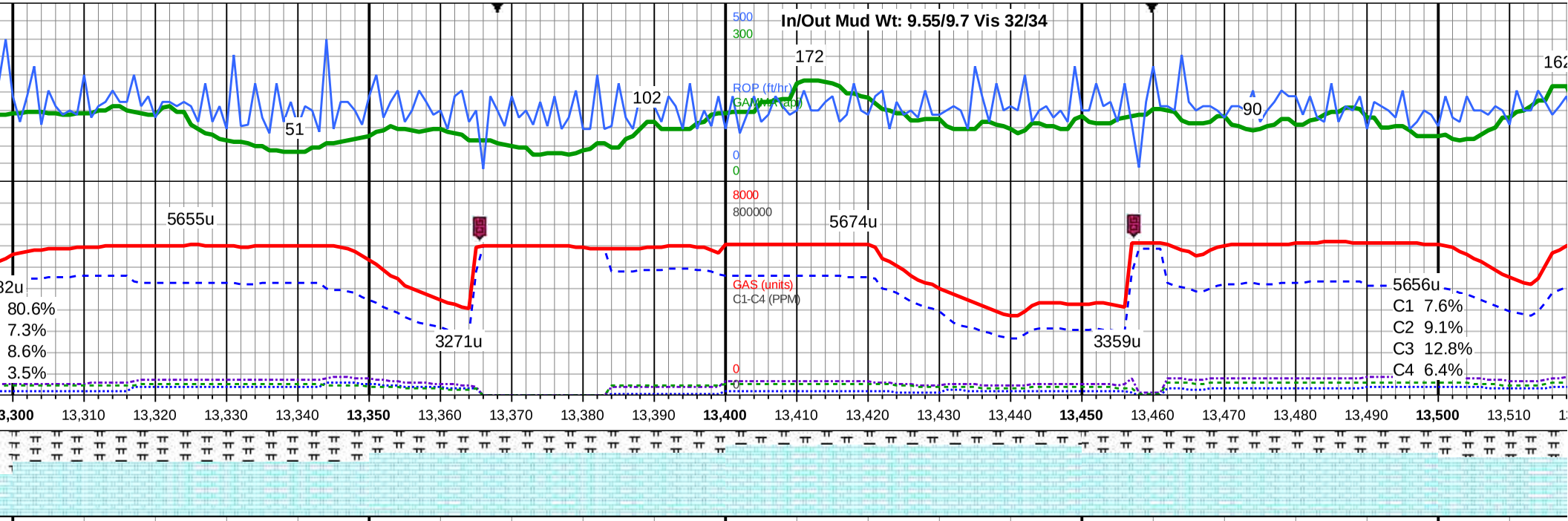
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam
plty-blky, v calc, crptxl, intbd w/
med-dk gy, stri, sft-v sft, sb plty
cal


In/Out Mud Wt: 9.55/9.55 Vis 33/34
In/Out Mud Wt: 9.45/9.55 Vis 32/35
186
109
152
92
138
ROP (ft/hr)
GAMMA (a
300
0
0
8000
800000
5608u
5402u
5585u
5458u
C1 79.1%
C2 8.1%
C3 9.9%
C4 2.8%
980u
1162u
GAS (units)
C1-C4 (PPM)
0
0
13,080
13,090
13,100
13,110
13,120
13,130
13,140
13,150
13,160
13,170
13,180
13,190
13,200
13,210
13,220
13,230
13,240
13,250
13,260
13,270
13,280
13,290


6100
25' Fault
MD: 13,125′
TVD: 6,131.08′
Inclination: 90.5 °
Azimuth: 88.6°
VS: 6,946.93′
TVD (f
MD: 13,217′
TVD: 6,129.96′
Inclination: 90.9 °
Azimuth: 87.7°
VS: 7,038.91′
, mot, v sft-sft, sb
/marl; MARL:
-plty, fri- brit, sil; rr
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal



6100

MD: 13,308′
TVD: 6,128.21′
Inclination: 91.3 °
Azimuth: 87.9°
VS: 7,129.87′

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

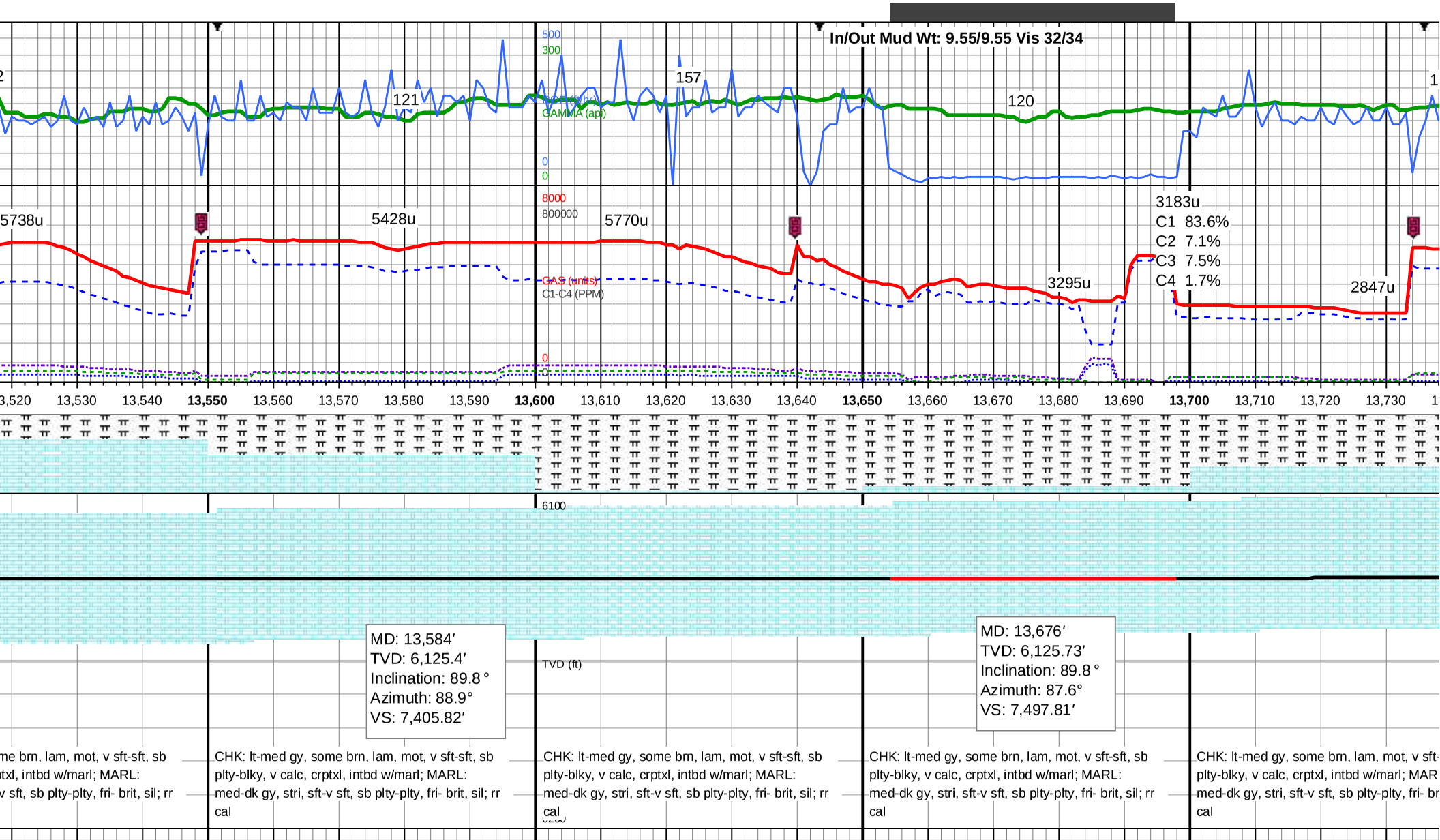
MD: 13,400′
TVD: 6,126.45′
Inclination: 90.9 °
Azimuth: 88.2°
VS: 7,221.84′

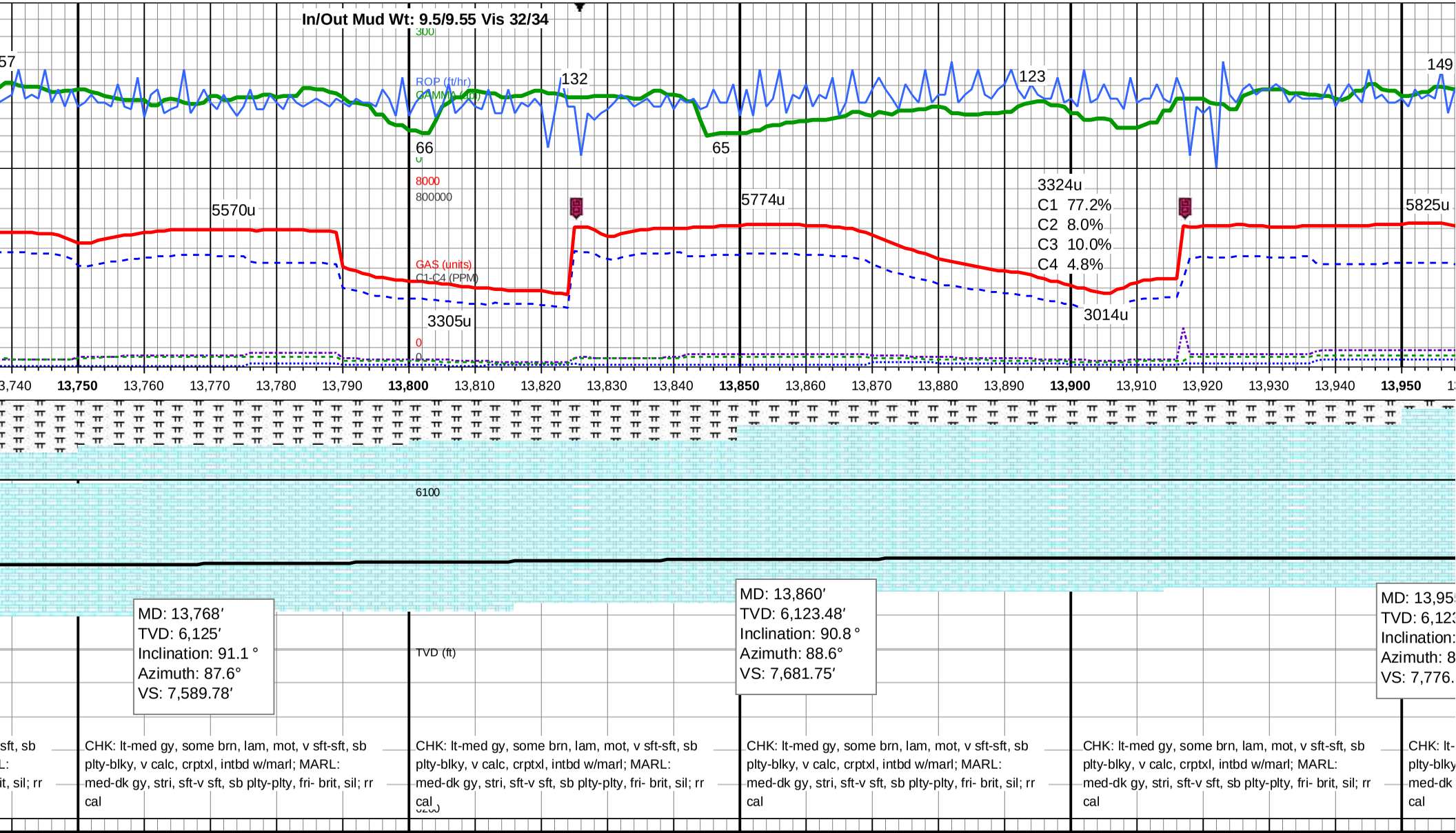
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

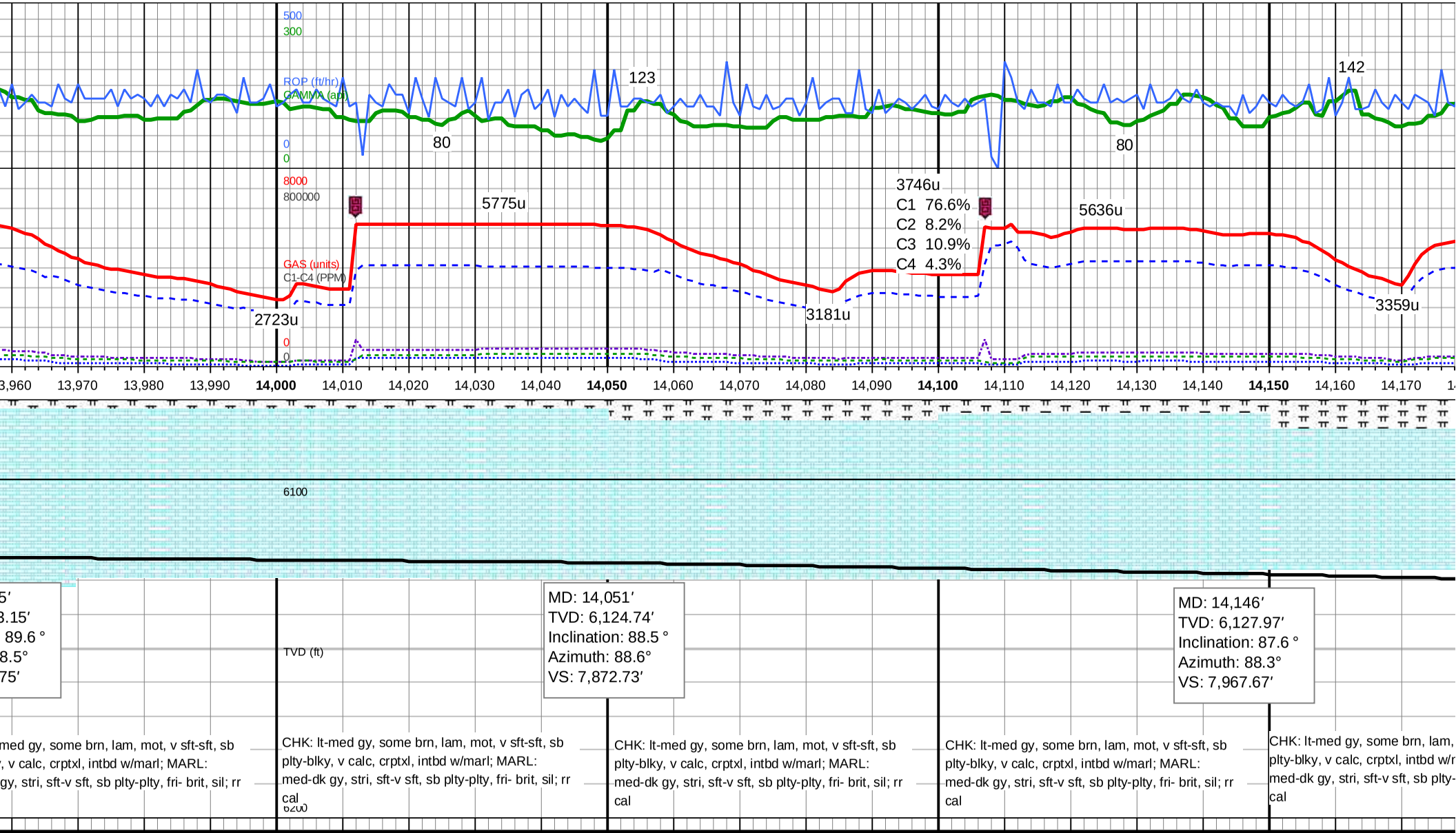
MD: 13,492′
TVD: 6,125.48′
Inclination: 90.3 °
Azimuth: 88.3°
VS: 7,313.83′

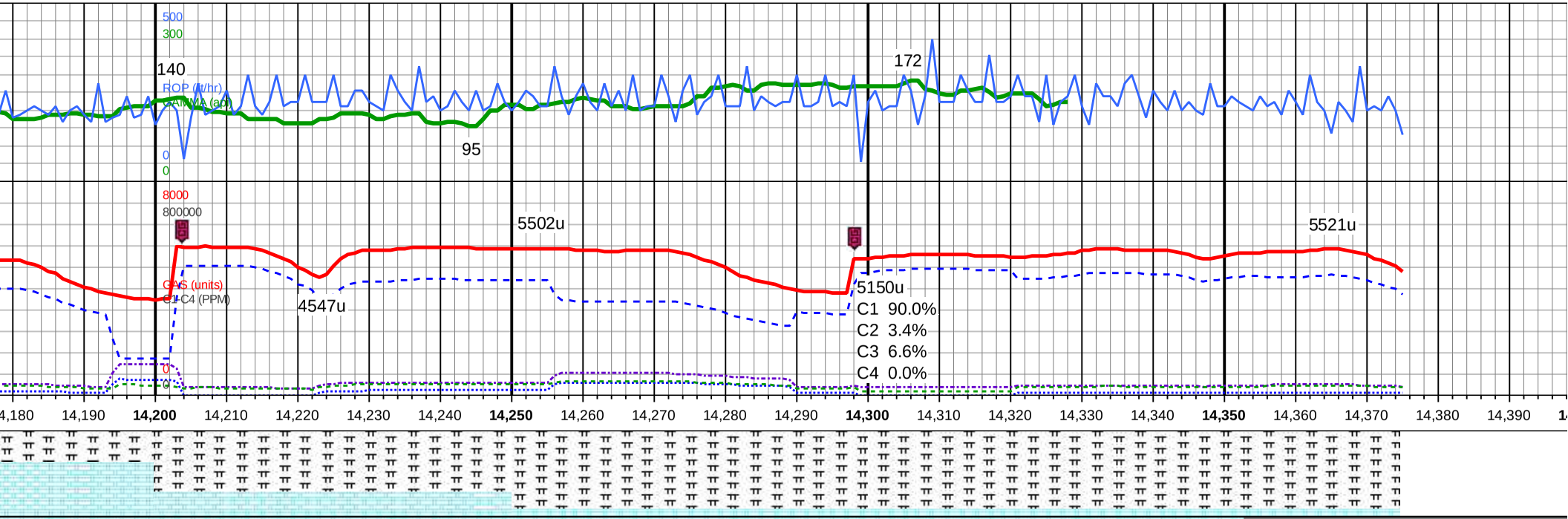
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, so
plty-blky, v calc, crp
med-dk gy, stri, sft-
cal


In/Out Mud Wt: 9.55/9.55 Vis 32/34
500
300
GAMMA (api)
0
0
8000
800000
GAS (units)
C1-C4 (PPM)
0
121
157
120
5738u
5428u
5770u
3295u
3183u
C1 83.6%
C2 7.1%
C3 7.5%
C4 1.7%
2847u
13,520
13,530
13,540
13,550
13,560
13,570
13,580
13,590
13,600
13,610
13,620
13,630
13,640
13,650
13,660
13,670
13,680
13,690
13,700
13,710
13,720
13,730
6100
TVD (ft)
MD: 13,584′
TVD: 6,125.4′
Inclination: 89.8 °
Azimuth: 88.9°
VS: 7,405.82′
MD: 13,676′
TVD: 6,125.73′
Inclination: 89.8 °
Azimuth: 87.6°
VS: 7,497.81′
me brn, lam, mot, v sft-sft, sb
txl, intbd w/marl; MARL:
v sft, sb plty-plty, fri- brit, sil; rr
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-
plty-blky, v calc, crptxl, intbd w/marl; MARL
med-dk gy, stri, sft-v sft, sb plty-plty, fri- br
cal


In/Out Mud Wt: 9.5/9.55 Vis 32/34
300
ROP (ft/hr)
GAMMA (API)
57
132
123
149
66
65
0
8000
800000
5570u
5774u
3324u
C1 77.2%
C2 8.0%
C3 10.0%
C4 4.8%
5825u
GAS (units)
C1-C4 (PPM)
3305u
3014u
0
0
3,740
13,750
13,760
13,770
13,780
13,790
13,800
13,810
13,820
13,830
13,840
13,850
13,860
13,870
13,880
13,890
13,900
13,910
13,920
13,930
13,940
13,950
6100
TVD (ft)
MD: 13,768′
TVD: 6,125′
Inclination: 91.1 °
Azimuth: 87.6°
VS: 7,589.78′
MD: 13,860′
TVD: 6,123.48′
Inclination: 90.8 °
Azimuth: 88.6°
VS: 7,681.75′
MD: 13,95
TVD: 6,123
Inclination:
Azimuth: 8
VS: 7,776.
sft, sb
L:
it, sil; rr
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal
CHK: lt-
plty-blky
med-dk
cal


500
300
ROP (ft/hr)
GAMMA (api)
0
0
8000
800000
GAS (units)
C1-C4 (PPM)
0
0
80
123
80
142
5775u
2723u
3181u
3746u
C1 76.6%
C2 8.2%
C3 10.9%
C4 4.3%
5636u
3359u
13,960
13,970
13,980
13,990
14,000
14,010
14,020
14,030
14,040
14,050
14,060
14,070
14,080
14,090
14,100
14,110
14,120
14,130
14,140
14,150
14,160
14,170
6100
TVD (ft)
6200
MD: 14,051′
TVD: 6,124.74′
Inclination: 88.5 °
Azimuth: 88.6°
VS: 7,872.73′
MD: 14,146′
TVD: 6,127.97′
Inclination: 87.6 °
Azimuth: 88.3°
VS: 7,967.67′
med gy, some brn, lam, mot, v sft-sft, sb
v calc, crptxl, intbd w/marl; MARL:
gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb
plty-blky, v calc, crptxl, intbd w/marl; MARL:
med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr
cal
CHK: lt-med gy, some brn, lam,
plty-blky, v calc, crptxl, intbd w/r
med-dk gy, stri, sft-v sft, sb plty-
cal



6100

Anshutz State 4-62-2-1721 CH2
TD at 14375' on 3/11/2014 at 20:15 MST

THANK YOU FOR CHOOSING COLUMBINE LOGGING INC.

TVD (ft)

MD: 14,241'
TVD: 6,132.28'
Inclination: 87.2 °
Azimuth: 88.5°
VS: 8,062.56'

MD: 14,316'
TVD: 6,136.27'
Inclination: 86.7 °
Azimuth: 88.4°
VS: 8,137.45'

mot, v sft-sft, sb
marl; MARL:
plty, fri- brit, sil; rr

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

6200

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

CHK: lt-med gy, some brn, lam, mot, v sft-sft, sb plty-blky, v calc, crptxl, intbd w/marl; MARL: med-dk gy, stri, sft-v sft, sb plty-plty, fri- brit, sil; rr cal

[redacted]