COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	Grande 4-65 20-19 3AH		
Location	NW/SW SEC 21 T4S-R65W		
State	COLORADO	**County**	ARAPAHOE
Country	USA	**Rig Number**	H&P 448
API Number	05-005-07271	**AFE #**	WAY.CDR.0041
Geographic Region	DJ BASIN	**Field**	WILDCAT
Spud Date	8/31/2017	**Drilling Completed**	9/9/2017
Surface Coordinates	1557' FSL & 431' FWL SEC 21 T4S-R65W		
Bottom Hole Coordinates	Proposed BHL: 2483' FSL & 2450' FEL SEC 19 T4S-R65W		
Ground Elevation	5632.1'	**K.B. Elevation**	5658.3'
Logged Interval	6000 **To** 15453'	**Total Depth**	15453'
Formation	Niobrara		
Type of Drilling Fluid	OBM		

Operator

Company Conoco Phillips

Address 600 N. Dairy Ashford Rd.
Houston, TX 77079-1175

ConocoPh

Geologist

Name Dave Aldridge

Company Conoco Phillips Central Rockies Implementa

Address Dave.E.Aldridge@conocophillips.com
Office:(832)486-3983
600 N Dairy Ashford EC3 14-W134
Houston, TX 77079

ConocoPh

illips

ation

illips

Other

Columbine Logging Inc.	Mud Logging Company
Geologists/Geosteerers on Location:	Todd Thiesse, Zak Lewis
Gas Detection:	Bloodhound chromatograph gas unit #0316
DD/MWD:	Baker Hughes
Columbine Computer	87A

Color Coding

Oil	Condensate	Gas
Note	Core	Pressure
Error	Water	Seal

Rock Types

UNKNOWN	COAL	MARLSTONE	SHALY SANDSTONE
ANHYDRITE	CONGLOMERATE	METAMORPHIC	SHALY SILTSTONE
BENTONITE	DOLOMITE	NO SAMPLE	SILTY SHALE
BRECCIA	DOLOMITIC LIMESTONE	SALT	SILTSTONE
CHALK	GRANITE	SANDSTONE	TILL
CEMENT	GYPSUM	SALT-PEPPER SAND	TUFF
CHERT	IGNEOUS	SHALE	WELDED TUFF
CLAY CHOKE SAND	SIDERITE or LIMONITE	SHALE COLORED	
CLAYSTONE	LIMESTONE	SHALE GRAY	

Fossils

ALGAE
AMPHIP
BELEM
BIOCLA
BRACHO
BRYOZO
CEPHAL
CORAL
CRINOID
ECHINO
FISH
FORAM
F FOSSIL

Oil Sh

D DEAD
EVEN
QUESTI
SPOTTE

Porosi

E EARTHY
FENESTI
F FRACTU
INTERC
INTERO
MOLDIC
O ORGANI

Accessories

- 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

- 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

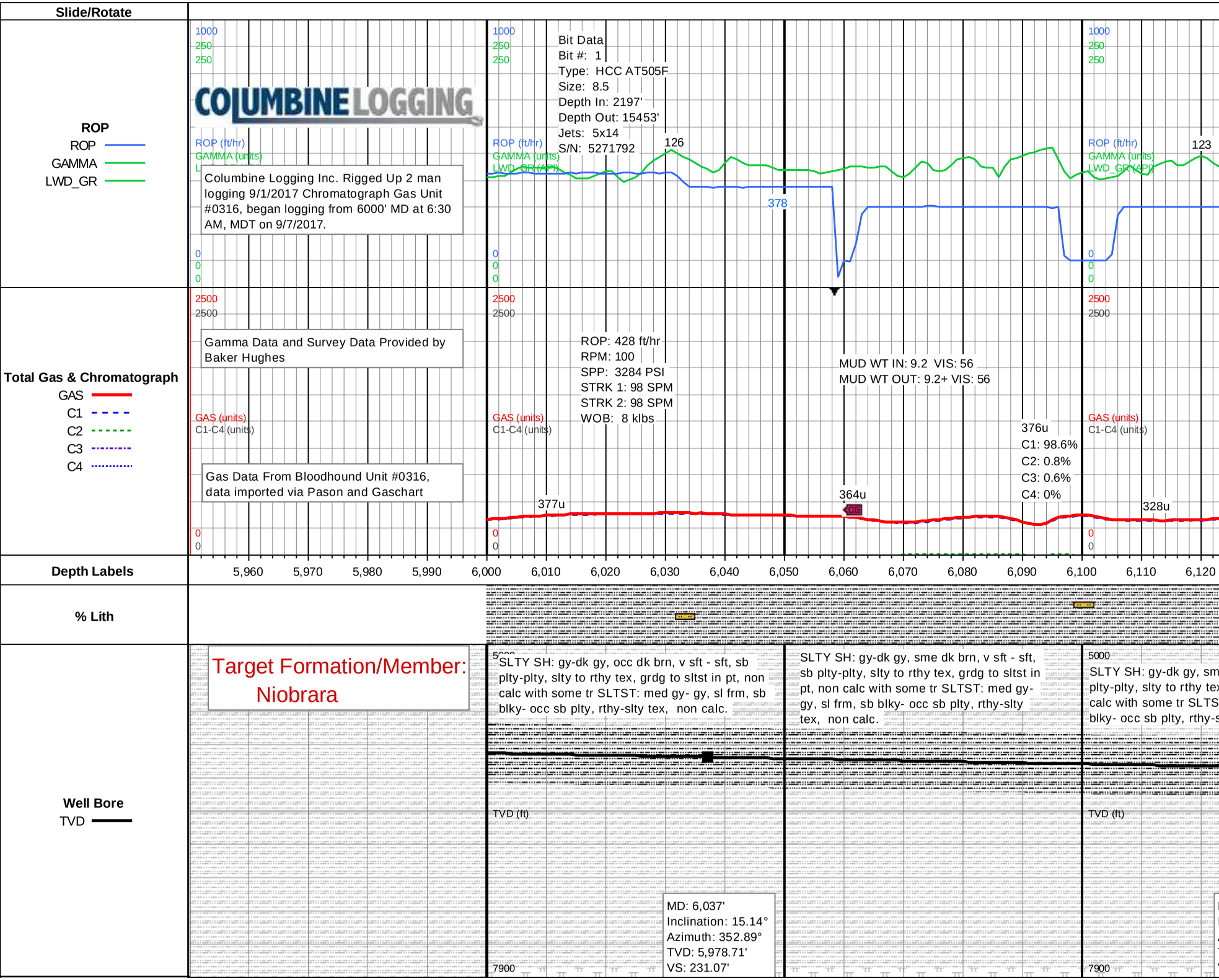
- ANGULAR
- ROUNDED
- SUBANG
- SUBRND

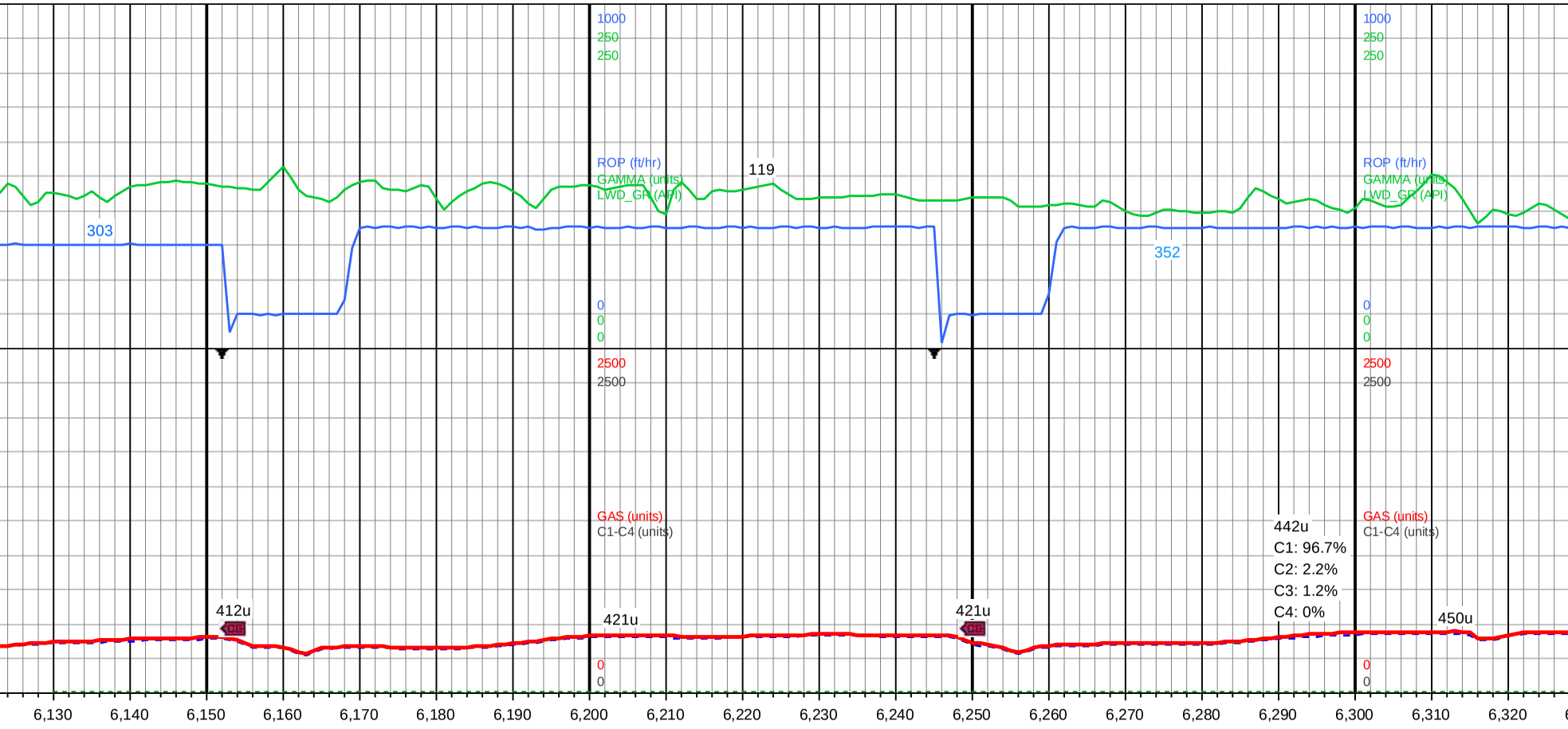
Textures

- BOUNDSTONE
- CHALKY
- CRYPTOXLN
- EARTHY
- FINELYXLN
- GRAINSTONE
- LITHOGRAPHIC
- MICROXLN
- MUDSTONE
- PACKSTONE
- WACKESTONE

Sorting

- MODERATE
- POOR
- WELL


Slide/Rotate
ROP
ROP
GAMMA
LWD_GR
COLUMBINE LOGGING
Columbine Logging Inc. Rigged Up 2 man logging 9/1/2017 Chromatograph Gas Unit #0316, began logging from 6000' MD at 6:30 AM, MDT on 9/7/2017.
Bit Data
Bit #: 1
Type: HCC AT505F
Size: 8.5
Depth In: 2197'
Depth Out: 15453'
Jets: 5x14
S/N: 5271792
126
123
378
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
Gamma Data and Survey Data Provided by Baker Hughes
Gas Data From Bloodhound Unit #0316, data imported via Pason and Gaschart
ROP: 428 ft/hr
RPM: 100
SPP: 3284 PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 8 klbs
MUD WT IN: 9.2 VIS: 56
MUD WT OUT: 9.2+ VIS: 56
377u
364u
376u
C1: 98.6%
C2: 0.8%
C3: 0.6%
C4: 0%
328u
Depth Labels
5,960
5,970
5,980
5,990
6,000
6,010
6,020
6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
% Lith
Target Formation/Member: Niobrara
Well Bore
TVD
SLTY SH: gy-dk gy, occ dk brn, v sft - sft, sb plty-plty, slty to rthy tex, grdg to sltst in pt, non calc with some tr SLTST: med gy- gy, sl frm, sb blky- occ sb plty, rthy-slty tex, non calc.
SLTY SH: gy-dk gy, sme dk brn, v sft - sft, sb plty-plty, slty to rthy tex, grdg to sltst in pt, non calc with some tr SLTST: med gy- gy, sl frm, sb blky- occ sb plty, rthy-slty tex, non calc.
SLTY SH: gy-dk gy, sm
plty-plty, slty to rthy tex
calc with some tr SLTS
blky- occ sb plty, rthy-s
MD: 6,037'
Inclination: 15.14°
Azimuth: 352.89°
TVD: 5,978.71'
VS: 231.07'



e dk brn, v sft - sft, sb
x, grdg to sltst in pt, non
T: med gy- gy, sl frm, sb
slty tex, non calc.

SLTY SH: gy-dk gy, sme dk brn, v sft - sft, sb plty-plty, slty to rthy tex, grdg to sltst in pt, non calc with some tr SLTST: med gy- gy, sl frm, sb blky- occ sb plty, rthy-slty tex, non calc.

5000

SLTY SH: gy-dk gy, dk brn ip, v sft-sft, sb plty-plty, slty-rthy tex, occ gt, non calc, slty ip.

TVD (ft)

7900

SLTY SH: gy-dk gy, dk brn ip, v sft-sft, sb plty-plty, slty-rthy tex, occ gt, non calc, slty ip.

5000

SLTY SH: gy-dk gy, dk brn ip
plty-plty, slty-rthy tex, occ g
ip.

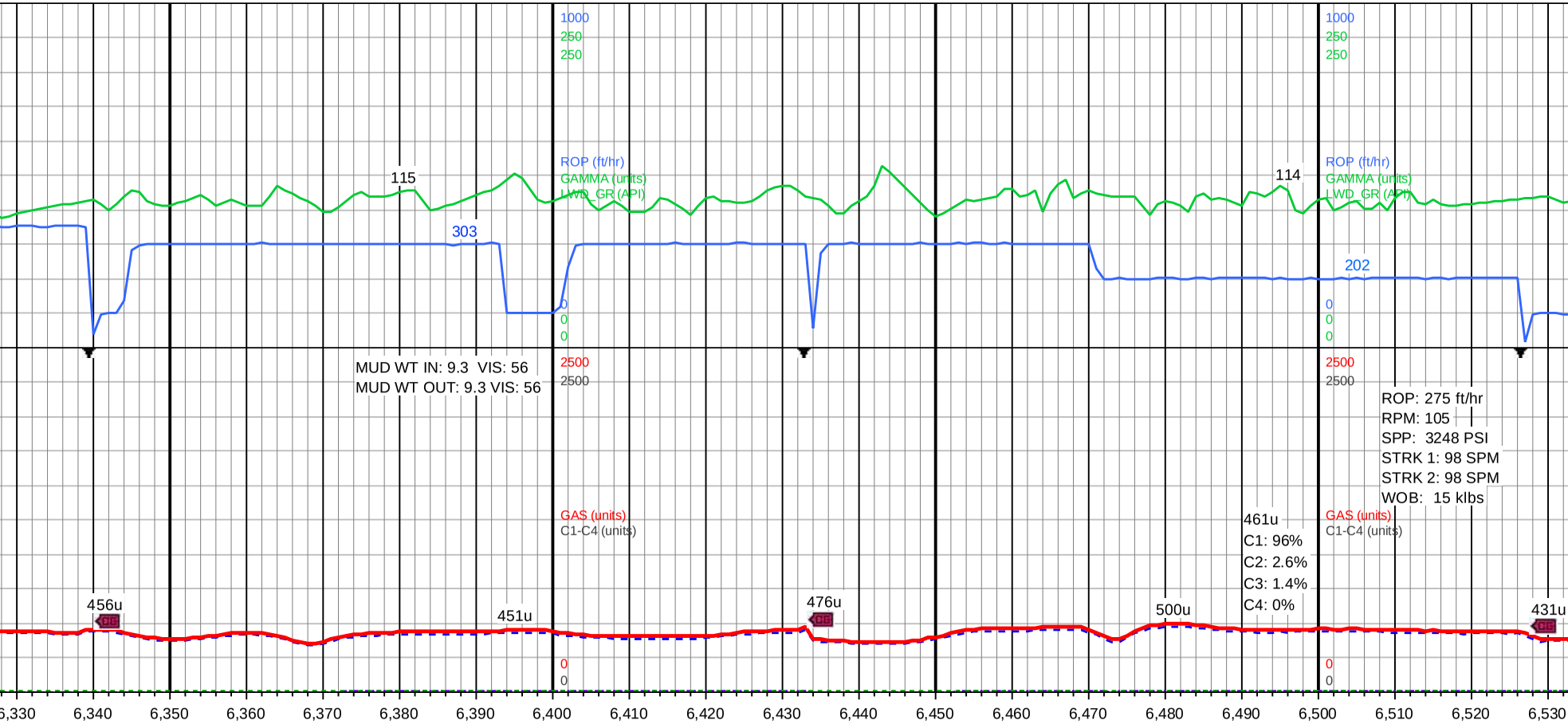
TVD (ft)

7900

MD: 6,131'
Inclination: 16.26°
Azimuth: 1.82°
TVD: 6,069.21'
VS: 235.03'

MD: 6,225'
Inclination: 17.8°
Azimuth: 6.11°
TVD: 6,159.09'
VS: 236.2'

MD: 6,320'
Inclination: 17.
Azimuth: 7.88°
TVD: 6,249.52'
VS: 235.94'



p, v sft-sft, sb
t, non-sl calc, slty

SLTY SH: gy-dk gy, dk brn ip, v sft-sft, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

5000

SLTY SH: gy-dk gy, dk brn ip, v sft-sft, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

TVD (ft)

MD: 6,414'
Inclination: 17.83°
Azimuth: 8.38°
TVD: 6,338.99'
VS: 235.11'

7900

SLTY SH: gy-dk gy, dk brn ip, v sft-sft, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

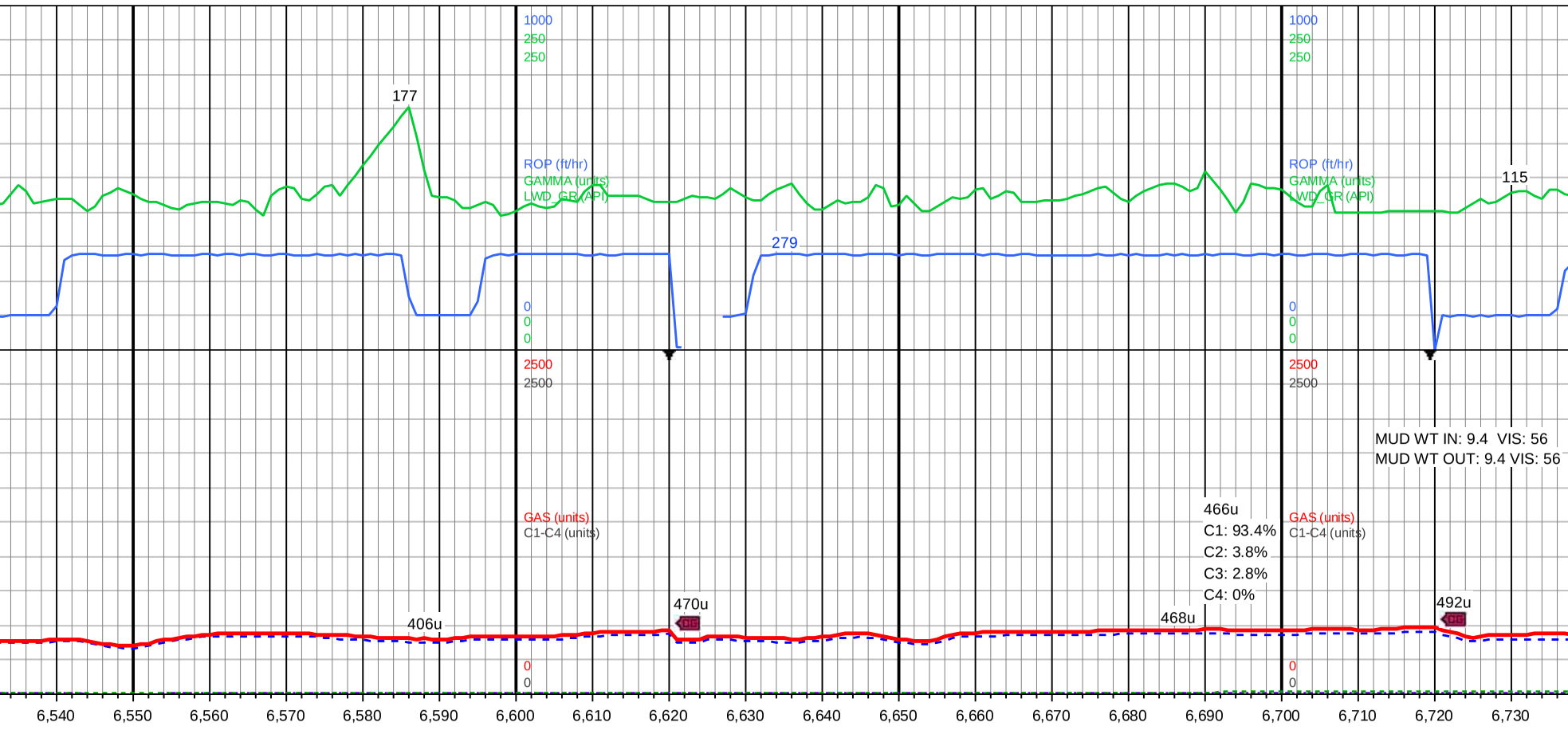
5000

SLTY SH: gy-dk gy, occ dk brn, v occ frm, sb plty-plty, slty-rthy tex non-sl calc, slty ip.

TVD (ft)

MD: 6,509'
Inclination: 17.85°
Azimuth: 9.52°
TVD: 6,429.42'
VS: 233.86'

7900



sft-sft
, occ gt,

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

5000

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

5000

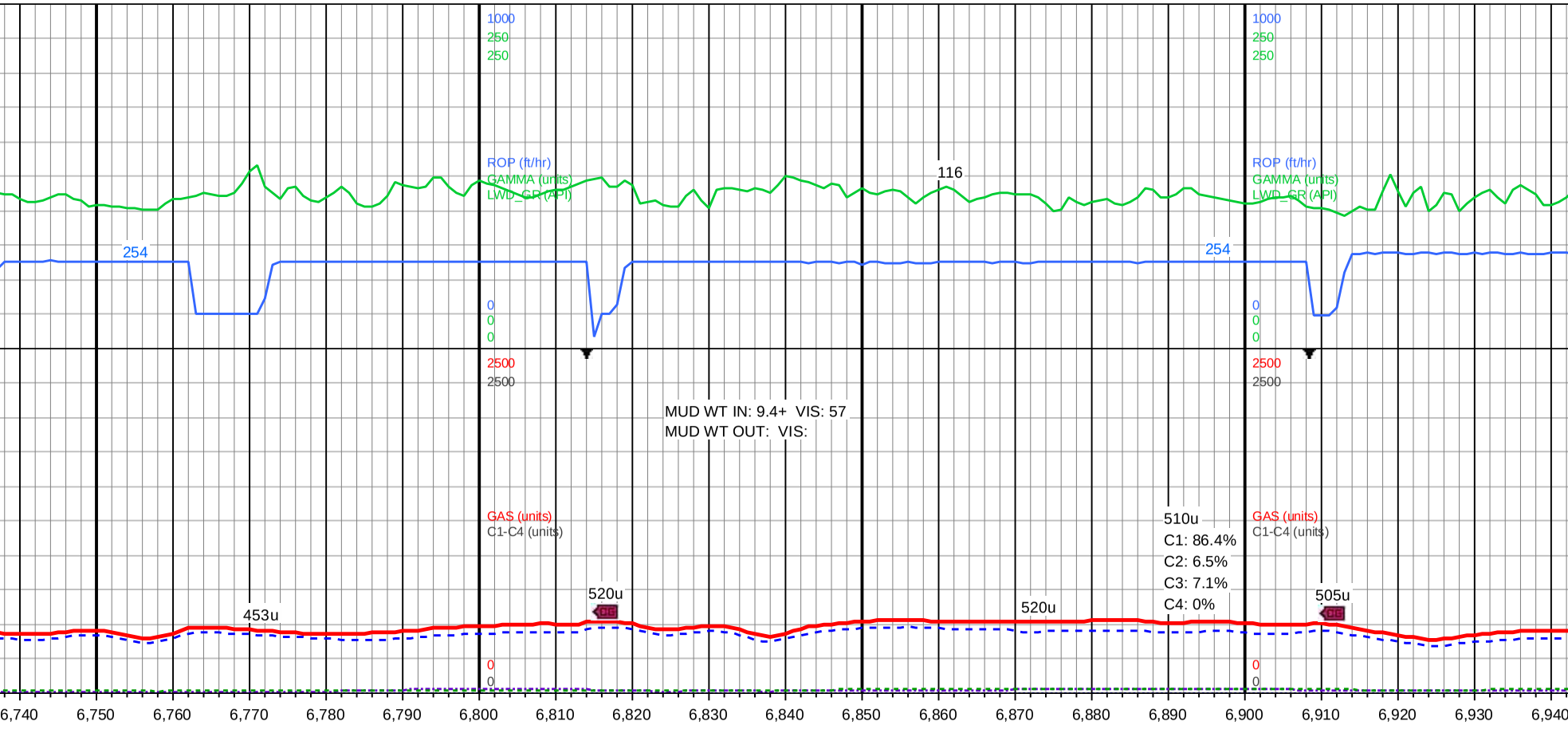
SLTY SH: gy-dk gy, sme dk brn, v sft
frm, sb plty-plty, slty-rthy tex, occ gt,
calc, slty ip.

TVD (ft)

MD: 6,604'
Inclination: 17.2°
Azimuth: 7.46°
TVD: 6,520.01'
VS: 232.86'

TVD (ft)

MD: 6,698'
Inclination: 15.11°
Azimuth: 9.39°
TVD: 6,610.3'
VS: 232'



-sft occ
non-sl

SLTY SH: gy-dk gy, sme dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

5000

SLTY SH: gy-dk gy, sme dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

SLTY SH: gy-dk gy, sme dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.

5000

SLTY SH: gy-dk gy, sme dk brn, v sf
occ frm, sb plty-plty, slty-rthy tex, oc
non-sl calc, slty ip.

TVD (ft)

MD: 6,793'
Inclination: 16.07°
Azimuth: 355.2°
TVD: 6,701.83'
VS: 233.95'

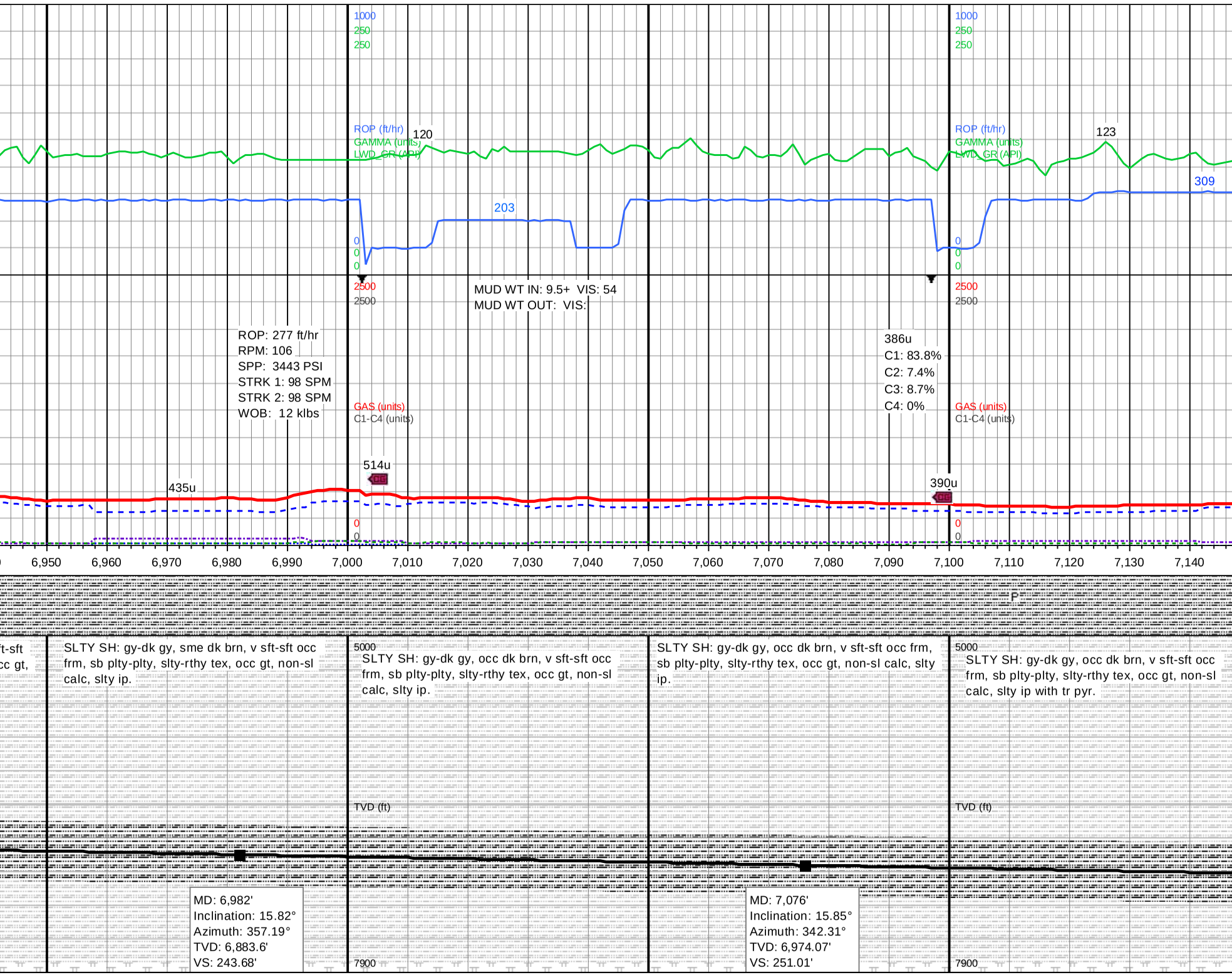
7900

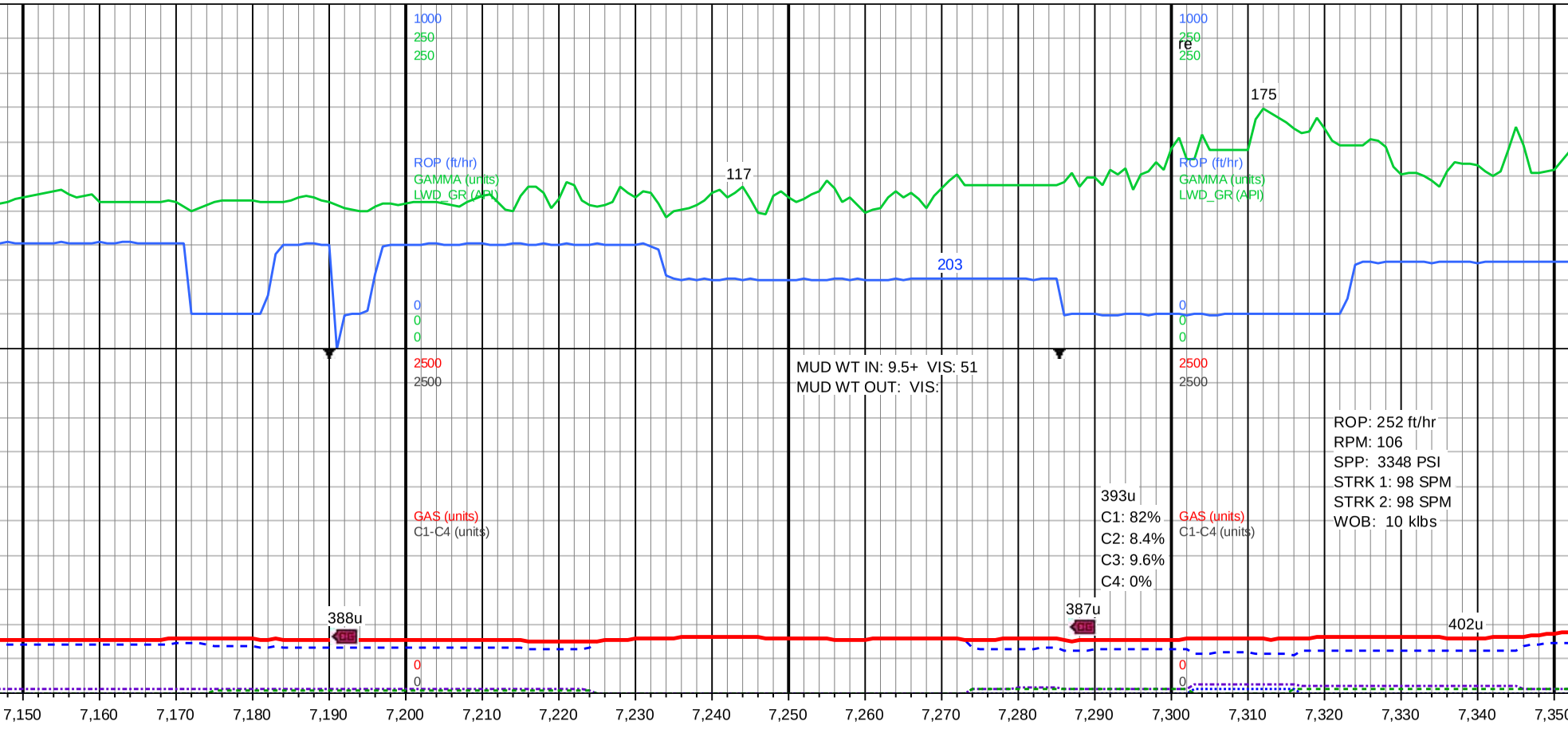
TVD (ft)

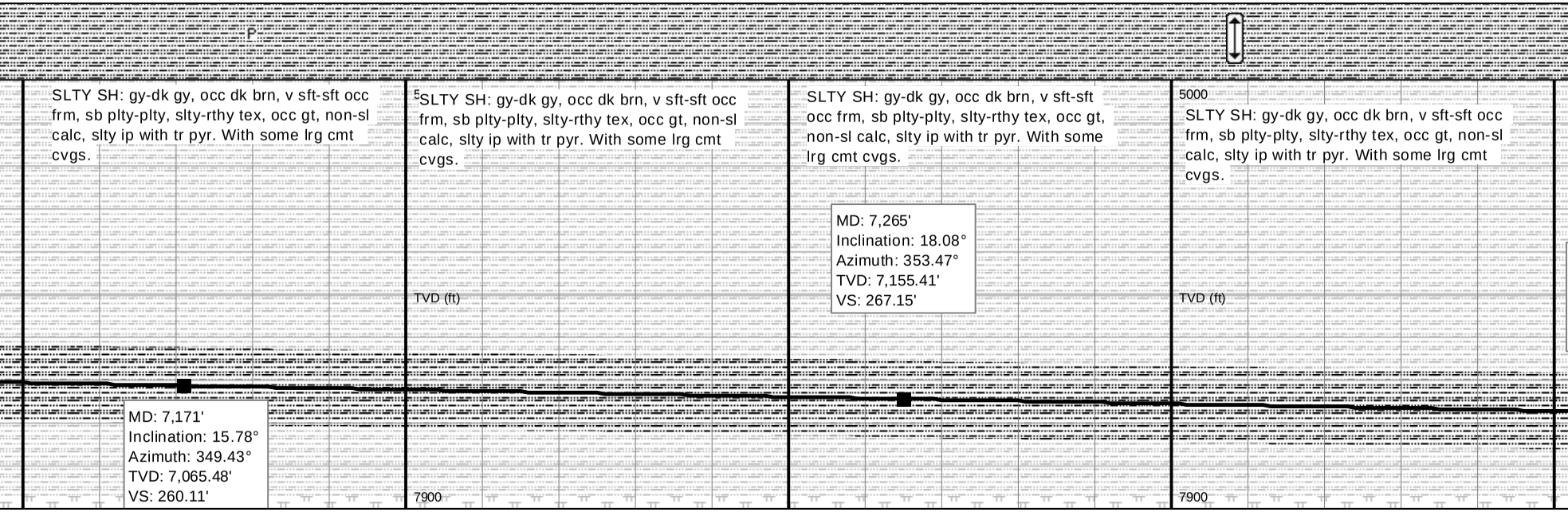
MD: 6,888'
Inclination: 15.86°
Azimuth: 355.14°
TVD: 6,793.17'
VS: 239.08'

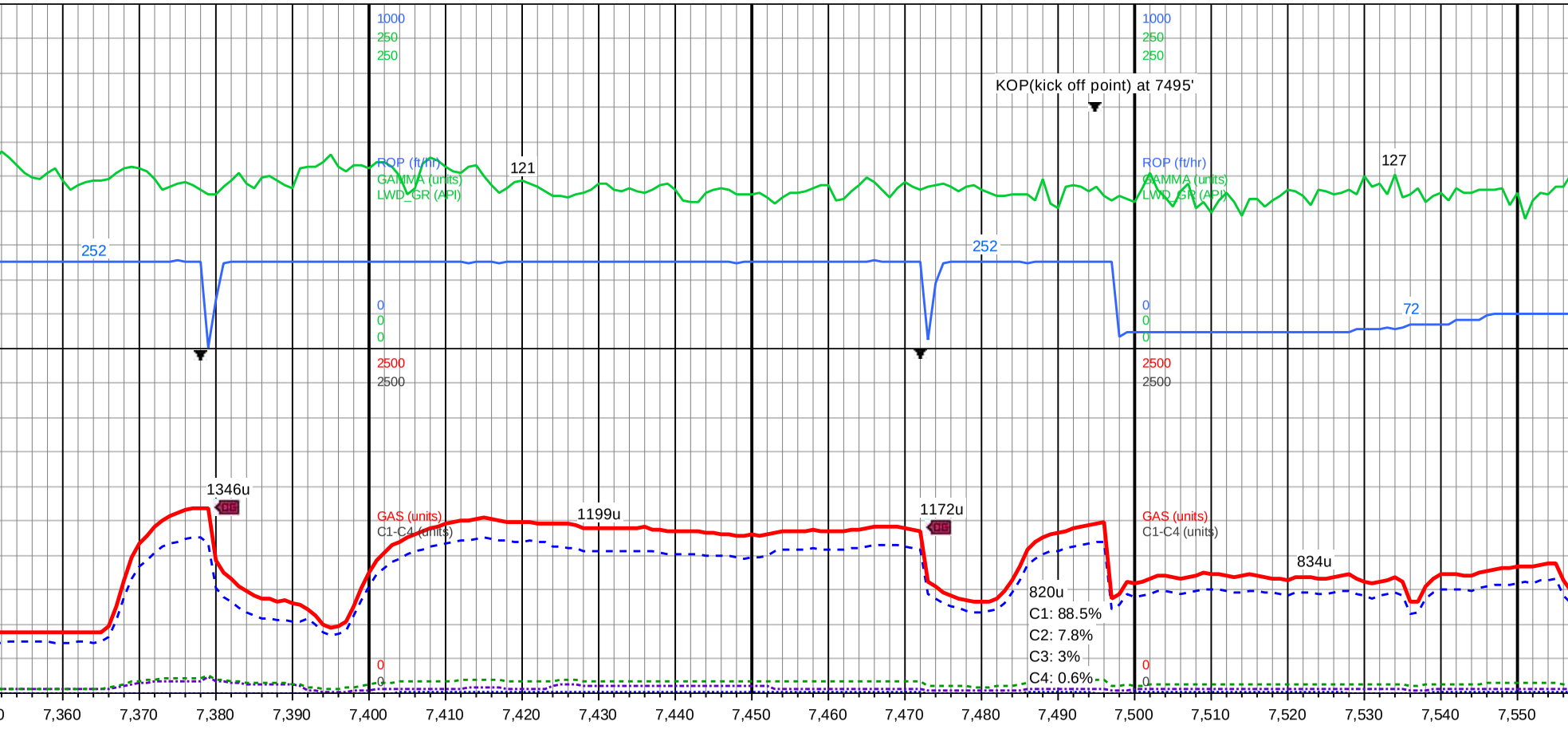
7900

TVD (ft)


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
120
203
123
309
0
0
0
2500
2500
MUD WT IN: 9.5+ VIS: 54
MUD WT OUT: VIS:
ROP: 277 ft/hr
RPM: 106
SPP: 3443 PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 12 klbs
386u
C1: 83.8%
C2: 7.4%
C3: 8.7%
C4: 0%
GAS (units)
C1-C4 (units)
435u
514u
390u
6,950
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
7,060
7,070
7,080
7,090
7,100
7,110
7,120
7,130
7,140
SLTY SH: gy-dk gy, sme dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.
SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.
SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip.
SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip with tr pyr.
5000
TVD (ft)
7900
MD: 6,982'
Inclination: 15.82°
Azimuth: 357.19°
TVD: 6,883.6'
VS: 243.68'
MD: 7,076'
Inclination: 15.85°
Azimuth: 342.31°
TVD: 6,974.07'
VS: 251.01'


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
117
203
175
0
0
0
2500
2500
MUD WT IN: 9.5+ VIS: 51
MUD WT OUT: VIS:
ROP: 252 ft/hr
RPM: 106
SPP: 3348 PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 10 klbs
393u
C1: 82%
C2: 8.4%
C3: 9.6%
C4: 0%
GAS (units)
C1-C4 (units)
388u
387u
402u
7,150
7,160
7,170
7,180
7,190
7,200
7,210
7,220
7,230
7,240
7,250
7,260
7,270
7,280
7,290
7,300
7,310
7,320
7,330
7,340
7,350


SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip with tr pyr. With some lrg cmt cvgs.
MD: 7,171'
Inclination: 15.78°
Azimuth: 349.43°
TVD: 7,065.48'
VS: 260.11'
TVD (ft)
7900
MD: 7,265'
Inclination: 18.08°
Azimuth: 353.47°
TVD: 7,155.41'
VS: 267.15'
5000



SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, non-sl calc, slty ip with tr pyr. With some lrg cmt cvgs.

MD: 7,360'
Inclination: 18.23°
Azimuth: 341.65°
TVD: 7,245.71'
VS: 276.72'

5000

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl incr in calc.

TVD (ft)

7900

MD: 7,454'
Inclination: 18.32°
Azimuth: 342.24°
TVD: 7,334.97'
VS: 288.96'

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl incr in calc.

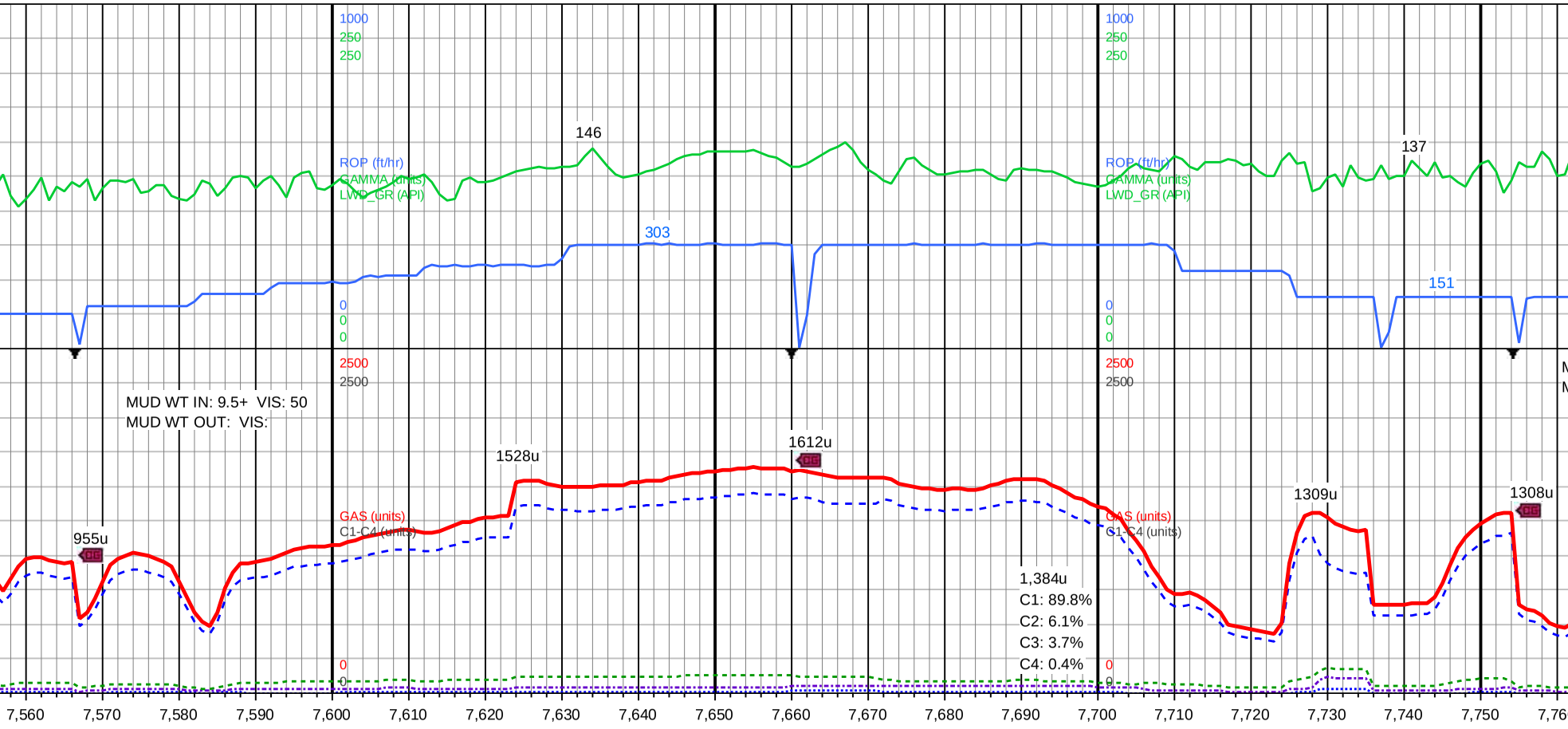
50

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. with a few lrg cmt cvgs.

TVD (ft)

7900

MD: 7,549'
Inclination: 22.14
Azimuth: 325.48
TVD: 7,424.17'
VS: 306.86'



TY SH: gy-dk gy, occ dk brn, v sft-sft occ
, sb plty-plty, slty-rthy tex, occ gt, sl calc.
h a few lrg cmt cvgs.

5000

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. with a few lrg cmt cvgs.

MD: 7,644'
Inclination: 30.38°
Azimuth: 304.62°
TVD: 7,509.47'
VS: 339.92'

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. with a few lrg cmt cvgs.

5000

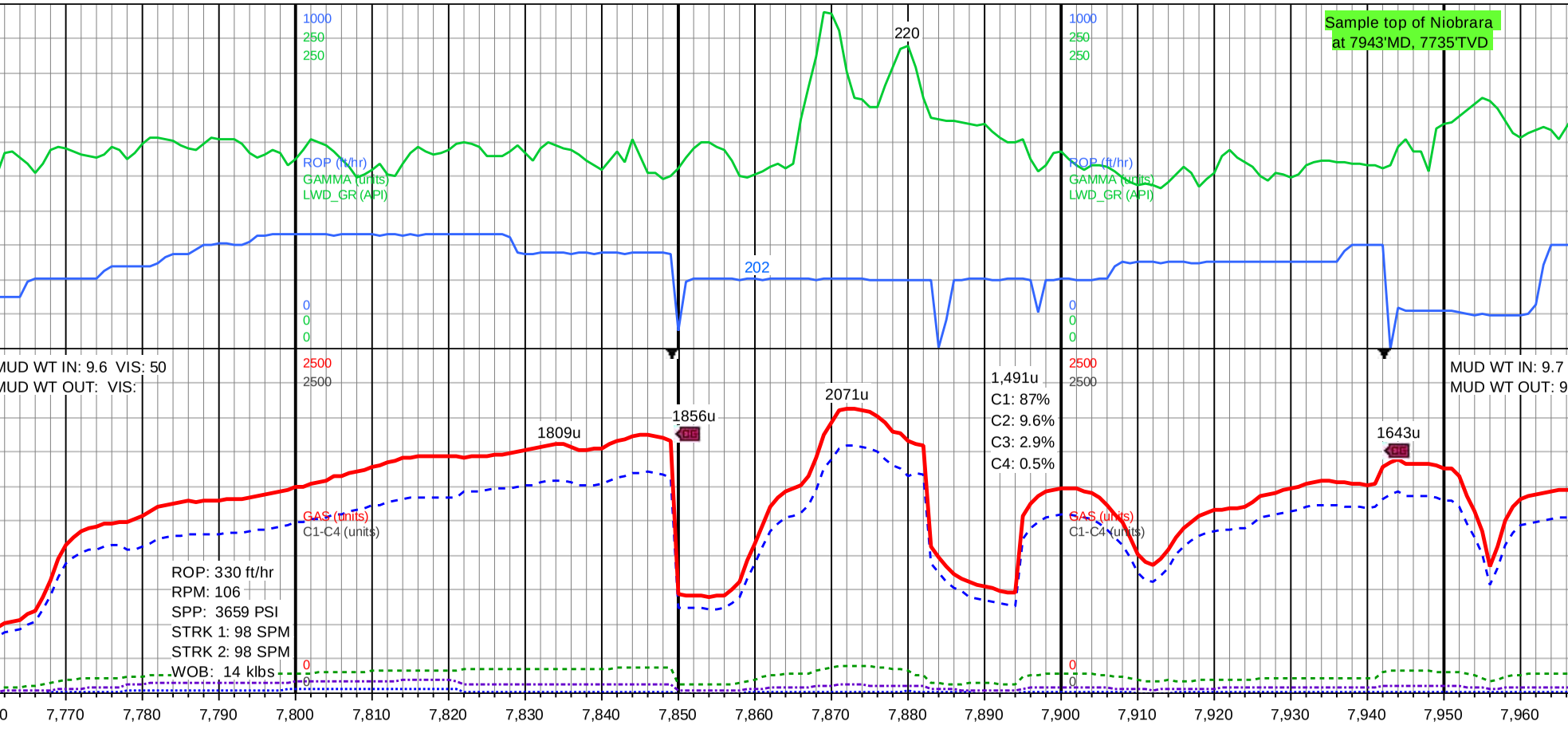
SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. with a few lrg cmt cvgs.

MD: 7,738'
Inclination: 35.44°
Azimuth: 304.88°
TVD: 7,588.36'
VS: 384.89'

SLTY SH: g
sb plty-plty

TVD (ft)

7900



gy-dk gy, occ dk brn, v sft-sft occ frm, , slty-rthy tex, occ gt, sl calc. Tr Bent.

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr. with a few lrg cmt cvgs.

MD: 7,833'
Inclination: 43.13°
Azimuth: 298.07°
TVD: 7,661.87'
VS: 439.42'

TVD (ft)

7900

SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr. with a few lrg cmt cvgs.

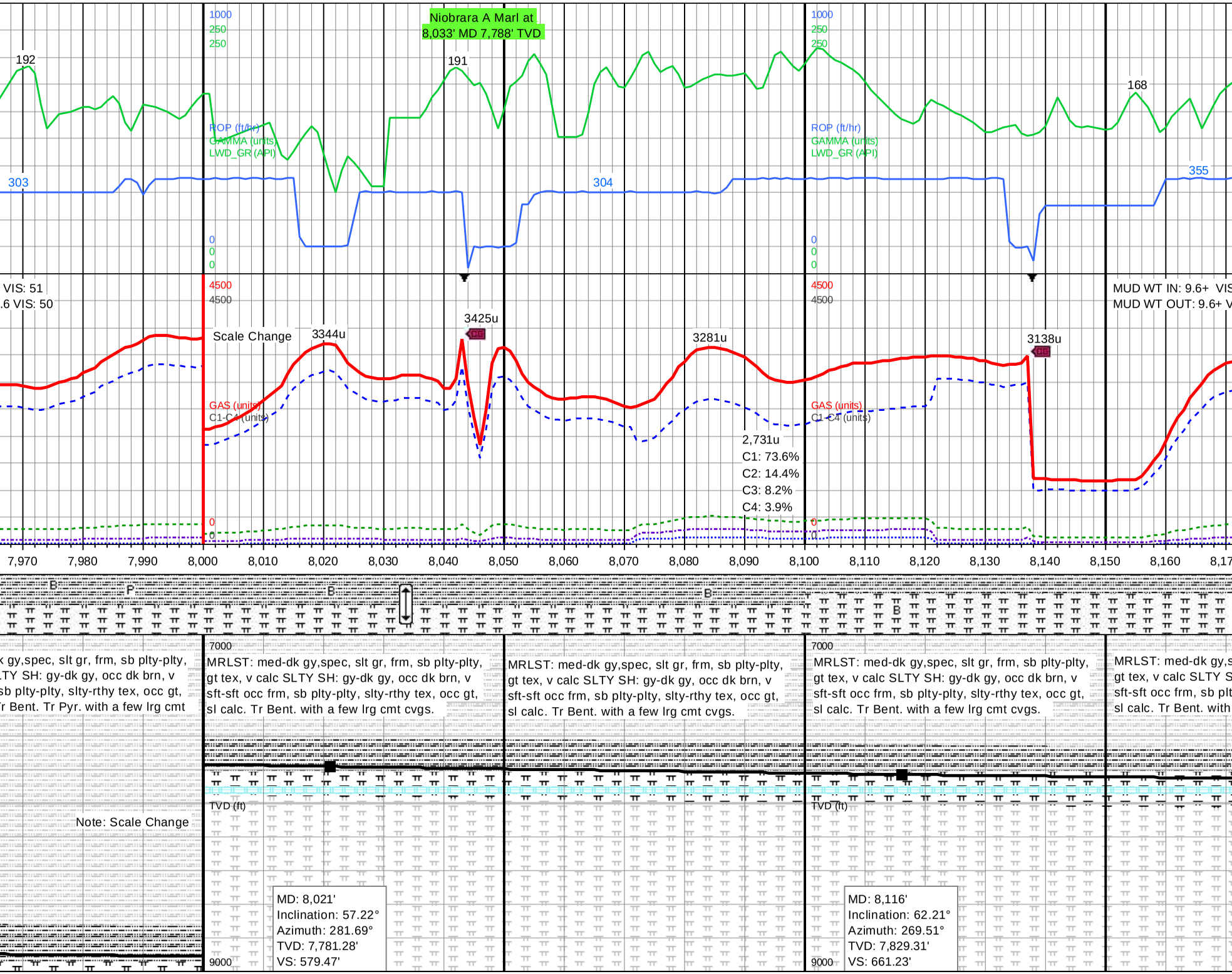
MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty, gt tex, v calc SLTY SH: gy-dk gy, occ dk brn, v sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt, sl calc. incr in Tr Bent. Tr Pyr. with a few lrg cmt cvgs.

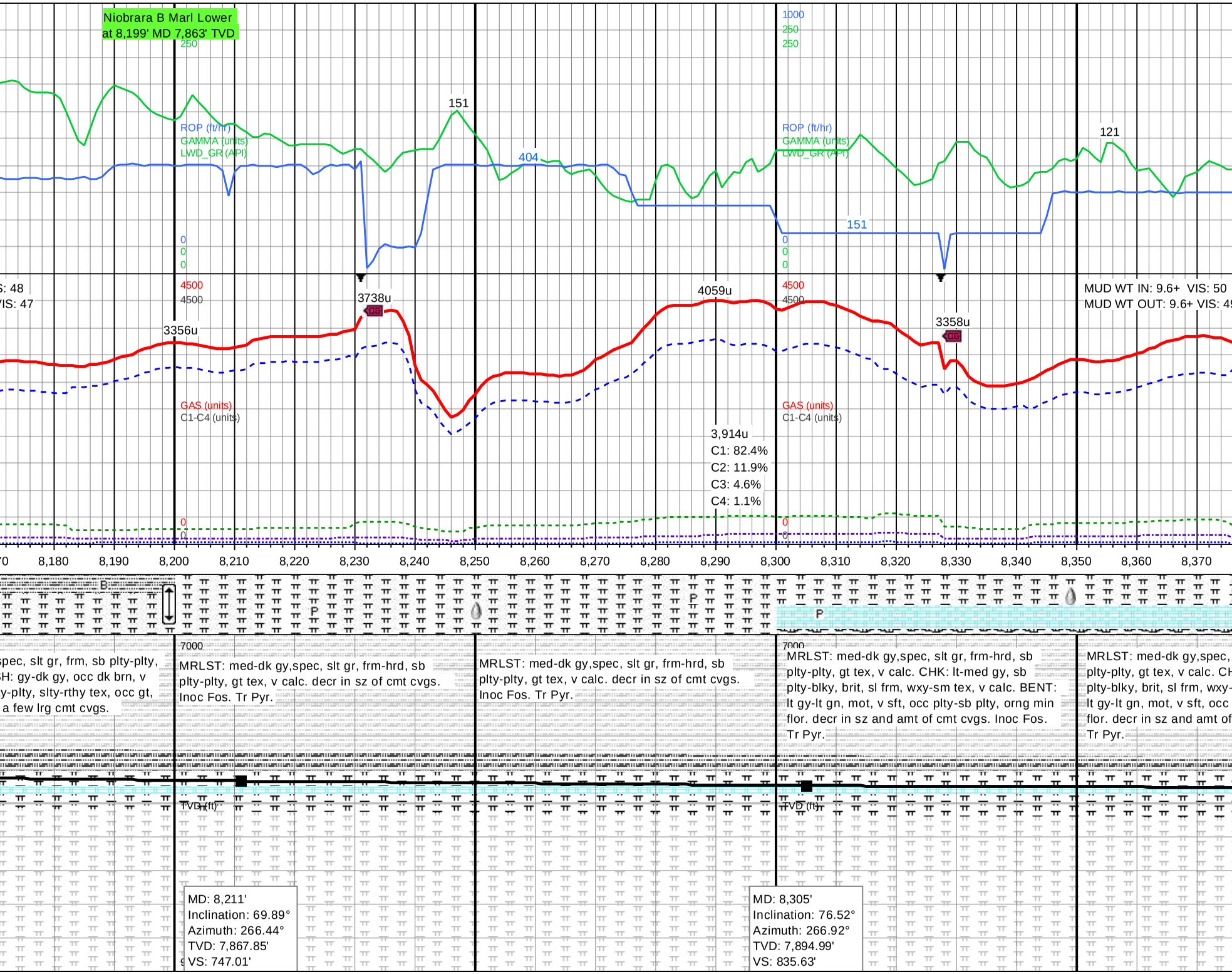
MD: 7,927'
Inclination: 50.82°
Azimuth: 291.17°
TVD: 7,726'
VS: 504.68'

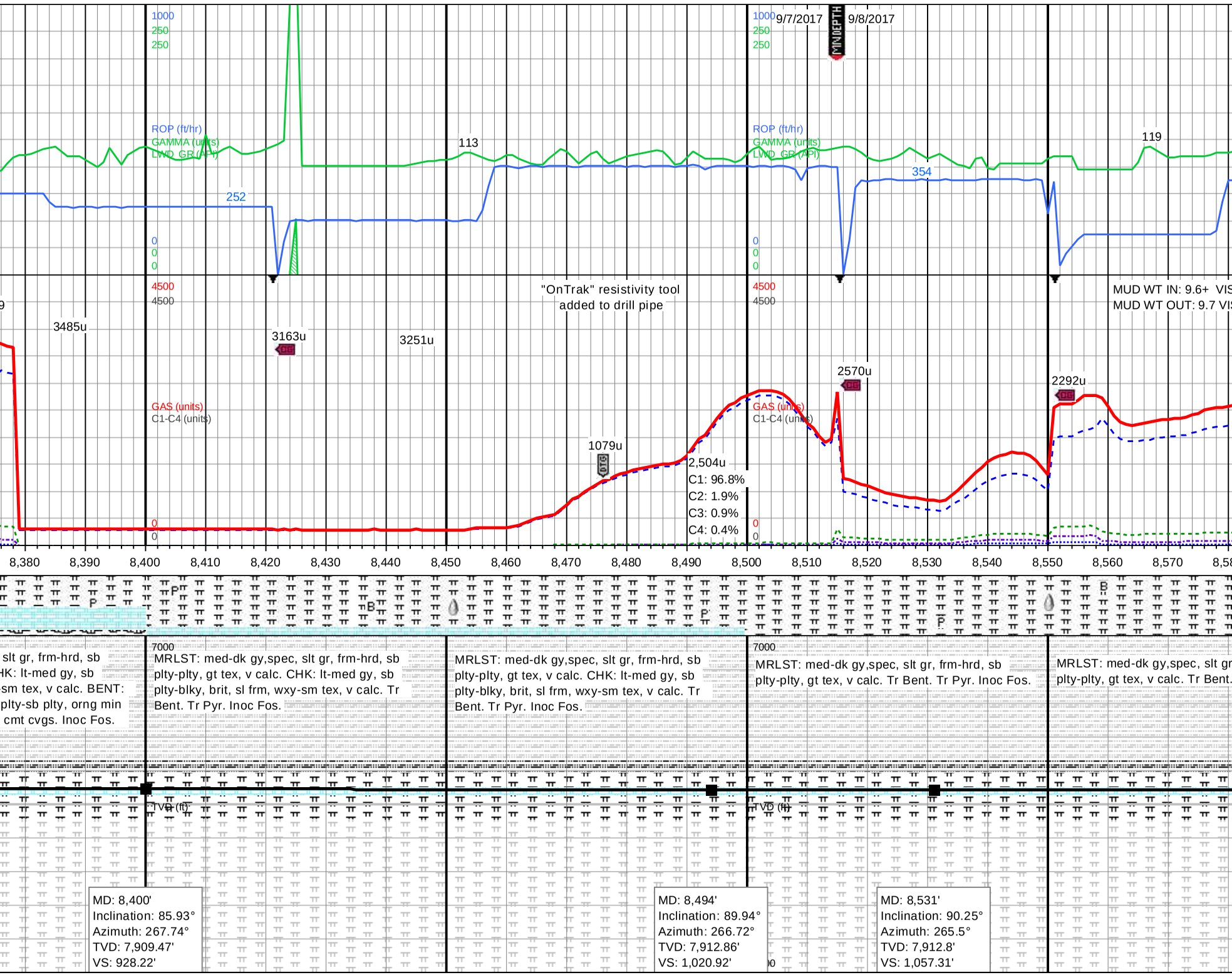
TVD (ft)

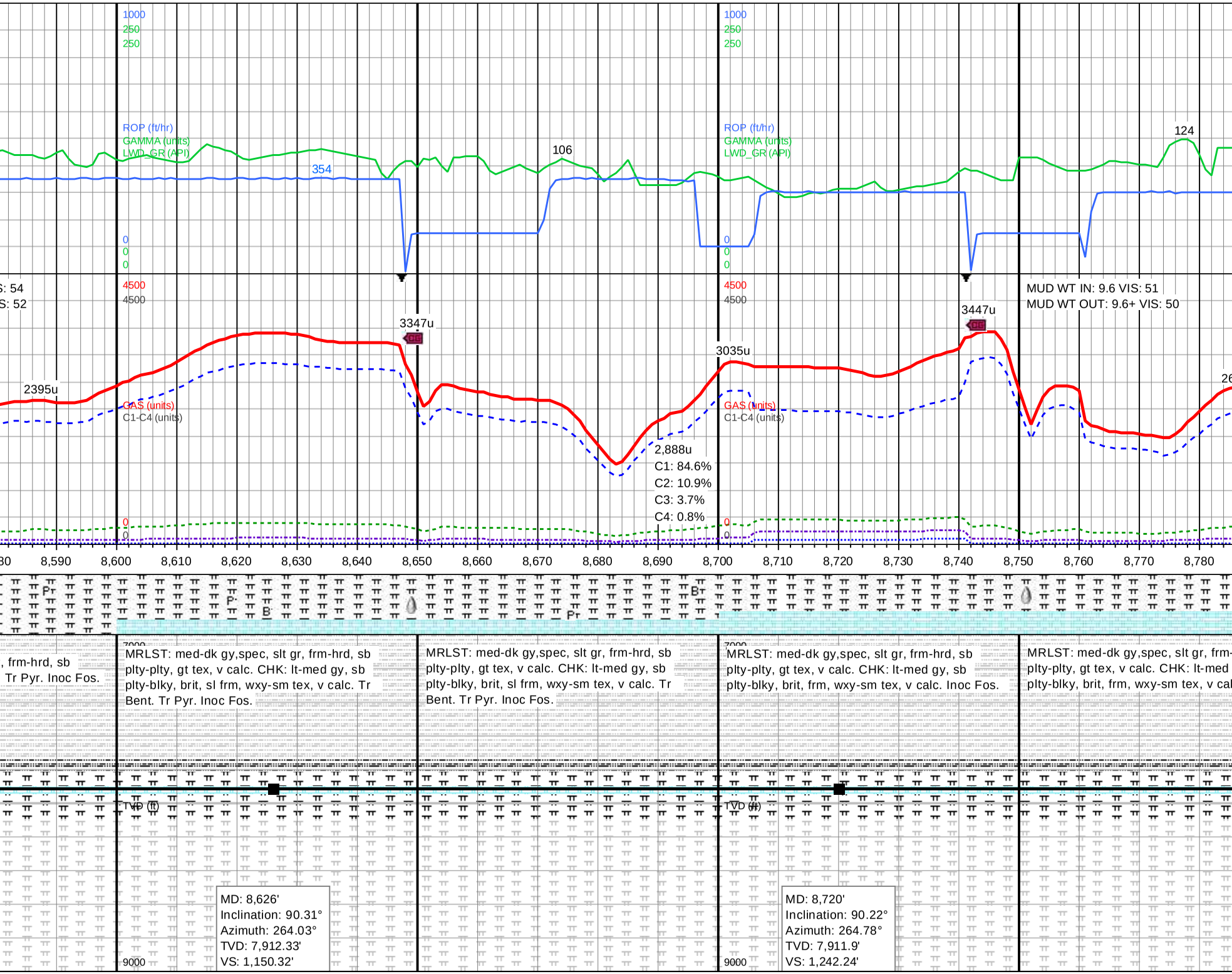
7900

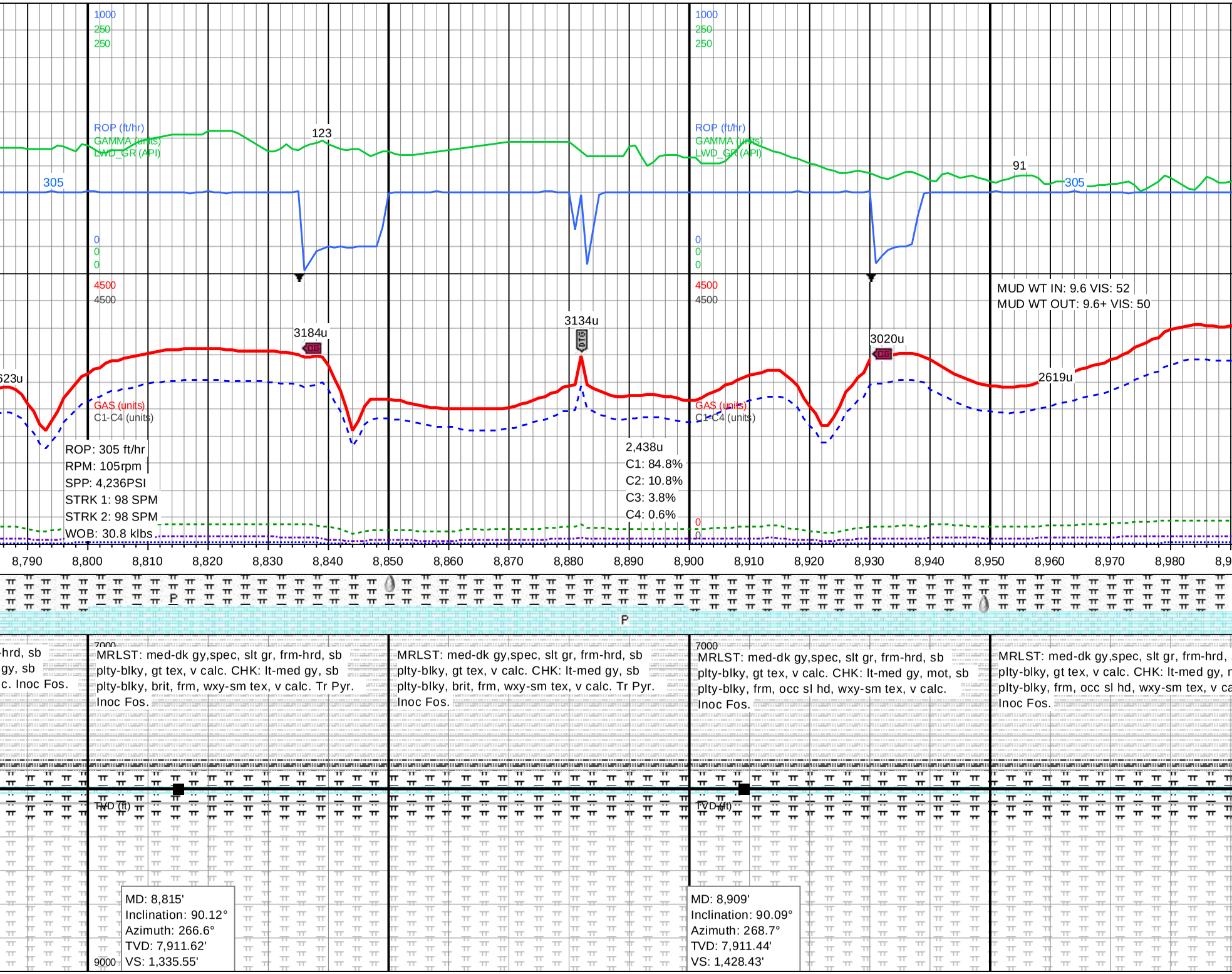
MRLST: med-dk gt tex, v calc SL sft-sft occ frm, s sl calc. Incr in T cvgs.

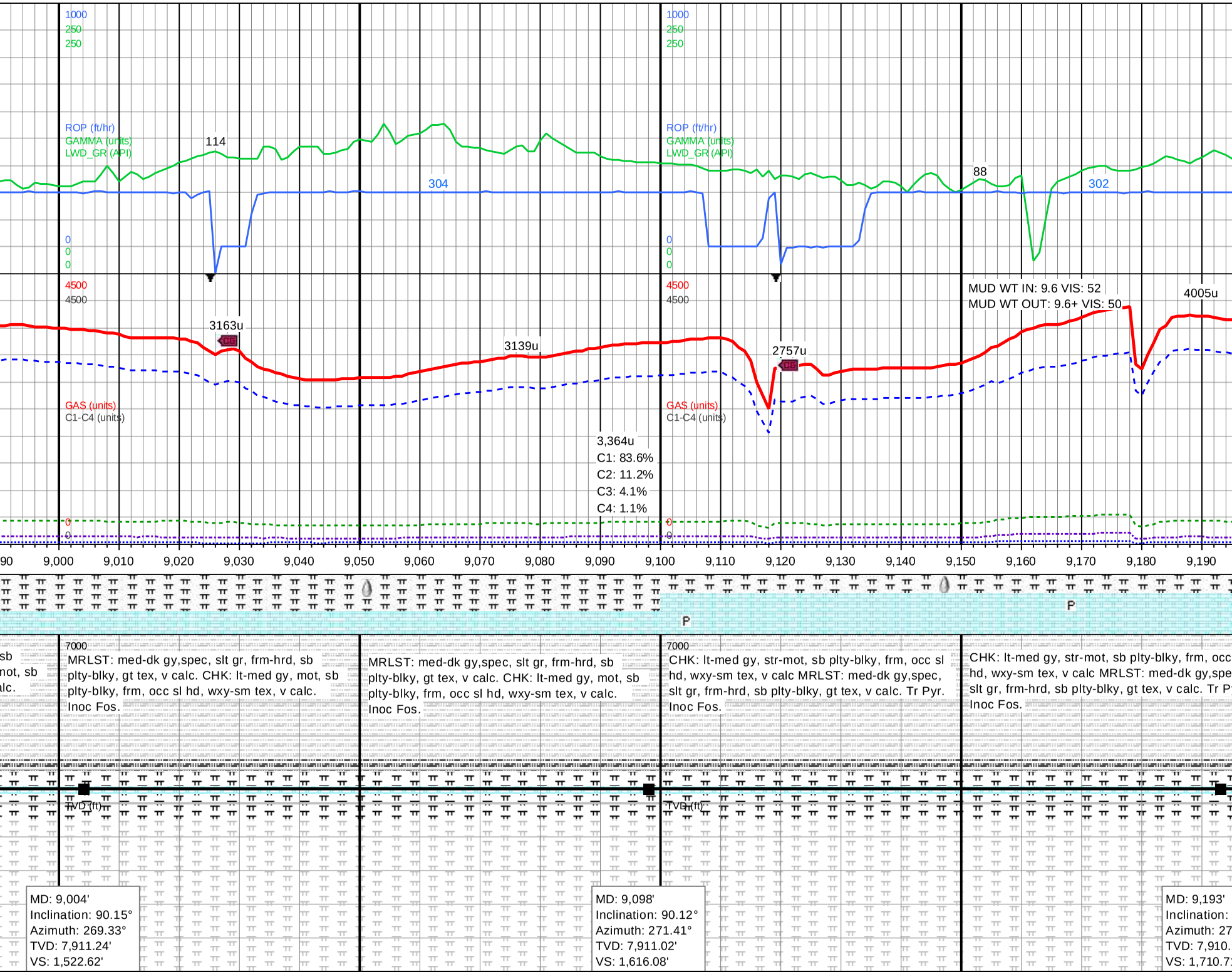

Niobrara A Marl at
8,033' MD 7,788' TVD
1000
250
250
192
191
168
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
303
304
355
0
0
0
VIS: 51
.6 VIS: 50
MUD WT IN: 9.6+ VIS
MUD WT OUT: 9.6+ V
4500
4500
Scale Change
3344u
3425u
3281u
3138u
GAS (units)
C1-C4 (units)
2,731u
C1: 73.6%
C2: 14.4%
C3: 8.2%
C4: 3.9%
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
8,160
k gy,spec, slt gr, frm, sb plty-plty,
TY SH: gy-dk gy, occ dk brn, v
sb plty-plty, slty-rthy tex, occ gt,
r Bent. Tr Pyr. with a few lrg cmt
7000
MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty,
gt tex, v calc SLTY SH: gy-dk gy, occ dk brn, v
sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt,
sl calc. Tr Bent. with a few lrg cmt cvgs.
MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty,
gt tex, v calc SLTY SH: gy-dk gy, occ dk brn, v
sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt,
sl calc. Tr Bent. with a few lrg cmt cvgs.
7000
MRLST: med-dk gy,spec, slt gr, frm, sb plty-plty,
gt tex, v calc SLTY SH: gy-dk gy, occ dk brn, v
sft-sft occ frm, sb plty-plty, slty-rthy tex, occ gt,
sl calc. Tr Bent. with a few lrg cmt cvgs.
MRLST: med-dk gy,s
gt tex, v calc SLTY S
sft-sft occ frm, sb plt
sl calc. Tr Bent. with
Note: Scale Change
TVD (ft)
MD: 8,021'
Inclination: 57.22°
Azimuth: 281.69°
TVD: 7,781.28'
VS: 579.47'
9000
TVD (ft)
MD: 8,116'
Inclination: 62.21°
Azimuth: 269.51°
TVD: 7,829.31'
VS: 661.23'
9000

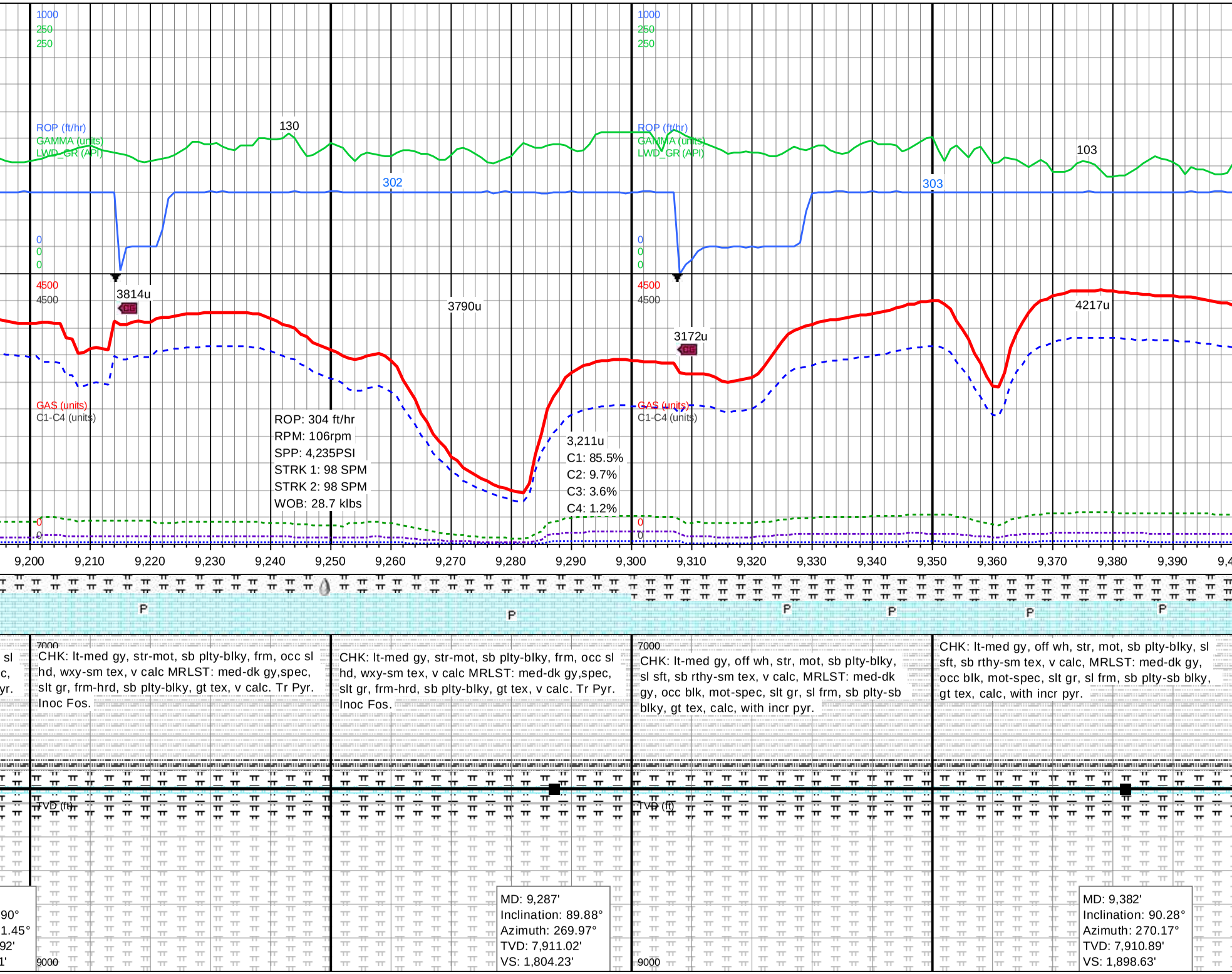

Niobrara B Marl Lower
at 8,199' MD 7,863' TVD
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
151
404
1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
121
151
0
0
0
0
0
0
4500
4500
4500
4500
3738u
3356u
4059u
3358u
MUD WT IN: 9.6+ VIS: 50
MUD WT OUT: 9.6+ VIS: 49
GAS (units)
C1-C4 (units)
GAS (units)
C1-C4 (units)
3,914u
C1: 82.4%
C2: 11.9%
C3: 4.6%
C4: 1.1%
0
0
0
0
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
7000
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. decr in sz of cmt cvgs. Inoc Fos. Tr Pyr.
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. decr in sz of cmt cvgs. Inoc Fos. Tr Pyr.
7000
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. CHK: lt-med gy, sb plty-blky, brit, sl frm, wxy-sm tex, v calc. BENT: lt gy-lt gn, mot, v sft, occ plty-sb plty, orng min flor. decr in sz and amt of cmt cvgs. Inoc Fos. Tr Pyr.
MRLST: med-dk gy,spec, plty-plty, gt tex, v calc. CH
plty-blky, brit, sl frm, wxy-
lt gy-lt gn, mot, v sft, occ
flor. decr in sz and amt of
Tr Pyr.
spec, slt gr, frm, sb plty-plty,
H: gy-dk gy, occ dk brn, v
y-plty, slty-rthy tex, occ gt,
a few lrg cmt cvgs.
TVD (ft)
TVD (ft)
MD: 8,211'
Inclination: 69.89°
Azimuth: 266.44°
TVD: 7,867.85'
VS: 747.01'
MD: 8,305'
Inclination: 76.52°
Azimuth: 266.92°
TVD: 7,894.99'
VS: 835.63'

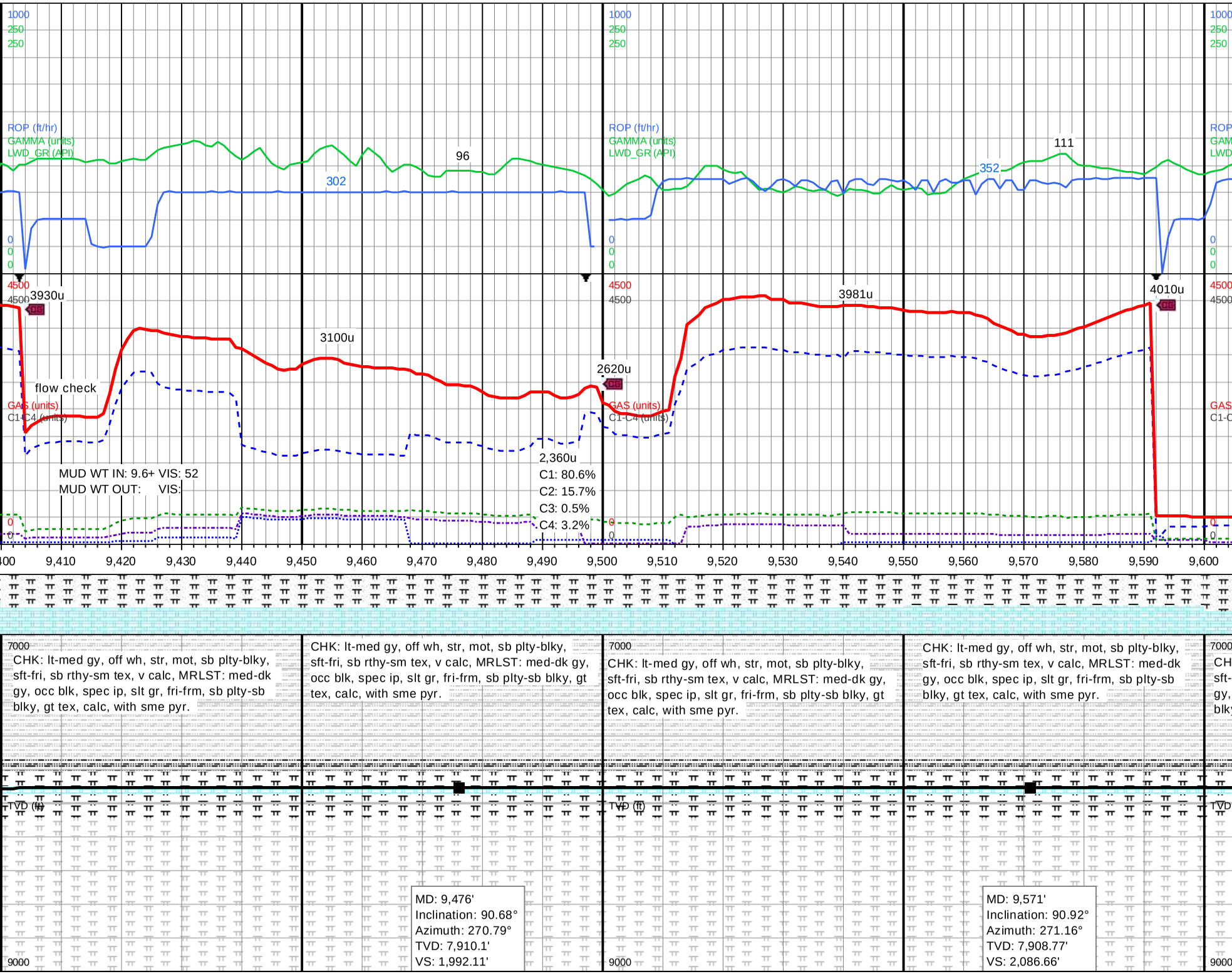

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
252
113
354
119
0
0
0
9/7/2017
9/8/2017
MNDEPTH
4500
4500
3485u
3163u
3251u
"OnTrak" resistivity tool
added to drill pipe
MUD WT IN: 9.6+ VIS
MUD WT OUT: 9.7 VIS
GAS (units)
C1-C4 (units)
1079u
2,504u
C1: 96.8%
C2: 1.9%
C3: 0.9%
C4: 0.4%
2570u
2292u
8,380
8,390
8,400
8,410
8,420
8,430
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510
8,520
8,530
8,540
8,550
8,560
8,570
7000
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb
plty-plty, gt tex, v calc. CHK: lt-med gy, sb
plty-blky, brit, sl frm, wxy-sm tex, v calc. Tr
Bent. Tr Pyr. Inoc Fos.
TVD (ft)
MD: 8,400'
Inclination: 85.93°
Azimuth: 267.74°
TVD: 7,909.47'
VS: 928.22'
MD: 8,494'
Inclination: 89.94°
Azimuth: 266.72°
TVD: 7,912.86'
VS: 1,020.92'
MD: 8,531'
Inclination: 90.25°
Azimuth: 265.5°
TVD: 7,912.8'
VS: 1,057.31'

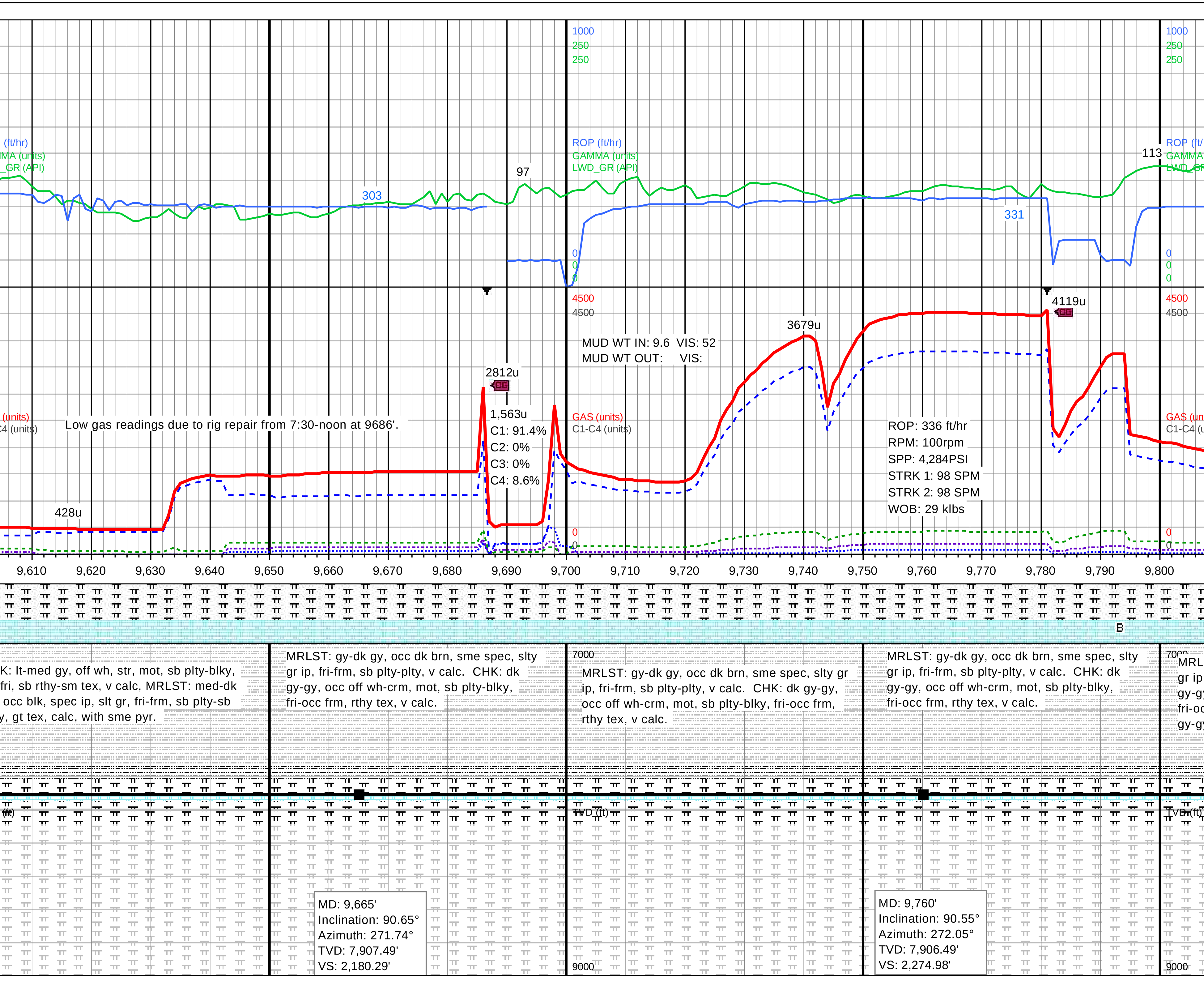

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
354
106
124
0
0
0
4500
4500
3347u
3035u
3447u
2395u
GAS (units)
C1-C4 (units)
2,888u
C1: 84.6%
C2: 10.9%
C3: 3.7%
C4: 0.8%
MUD WT IN: 9.6 VIS: 51
MUD WT OUT: 9.6+ VIS: 50
8,590
8,600
8,610
8,620
8,630
8,640
8,650
8,660
8,670
8,680
8,690
8,700
8,710
8,720
8,730
8,740
8,750
8,760
8,770
8,780
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb
plty-plty, gt tex, v calc. CHK: lt-med gy, sb
plty-blky, brit, sl frm, wxy-sm tex, v calc. Tr
Bent. Tr Pyr. Inoc Fos.
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb
plty-plty, gt tex, v calc. CHK: lt-med gy, sb
plty-blky, brit, frm, wxy-sm tex, v calc. Inoc Fos.
TVD (ft)
9000
MD: 8,626'
Inclination: 90.31°
Azimuth: 264.03°
TVD: 7,912.33'
VS: 1,150.32'
MD: 8,720'
Inclination: 90.22°
Azimuth: 264.78°
TVD: 7,911.9'
VS: 1,242.24'


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
305
123
91
0
0
0
4500
4500
3184u
3134u
3020u
2619u
623u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.6 VIS: 52
MUD WT OUT: 9.6+ VIS: 50
ROP: 305 ft/hr
RPM: 105rpm
SPP: 4,236PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 30.8 klbs
2,438u
C1: 84.8%
C2: 10.8%
C3: 3.8%
C4: 0.6%
8,790
8,800
8,810
8,820
8,830
8,840
8,850
8,860
8,870
8,880
8,890
8,900
8,910
8,920
8,930
8,940
8,950
8,960
8,970
8,980
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb
plty-blky, gt tex, v calc. CHK: lt-med gy, sb
plty-blky, brit, frm, wxy-sm tex, v calc. Tr Pyr.
Inoc Fos.
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb
plty-blky, gt tex, v calc. CHK: lt-med gy, mot, sb
plty-blky, frm, occ sl hd, wxy-sm tex, v calc.
Inoc Fos.
7000
9000
TVD (ft)
MD: 8,815'
Inclination: 90.12°
Azimuth: 266.6°
TVD: 7,911.62'
VS: 1,335.55'
MD: 8,909'
Inclination: 90.09°
Azimuth: 268.7°
TVD: 7,911.44'
VS: 1,428.43'

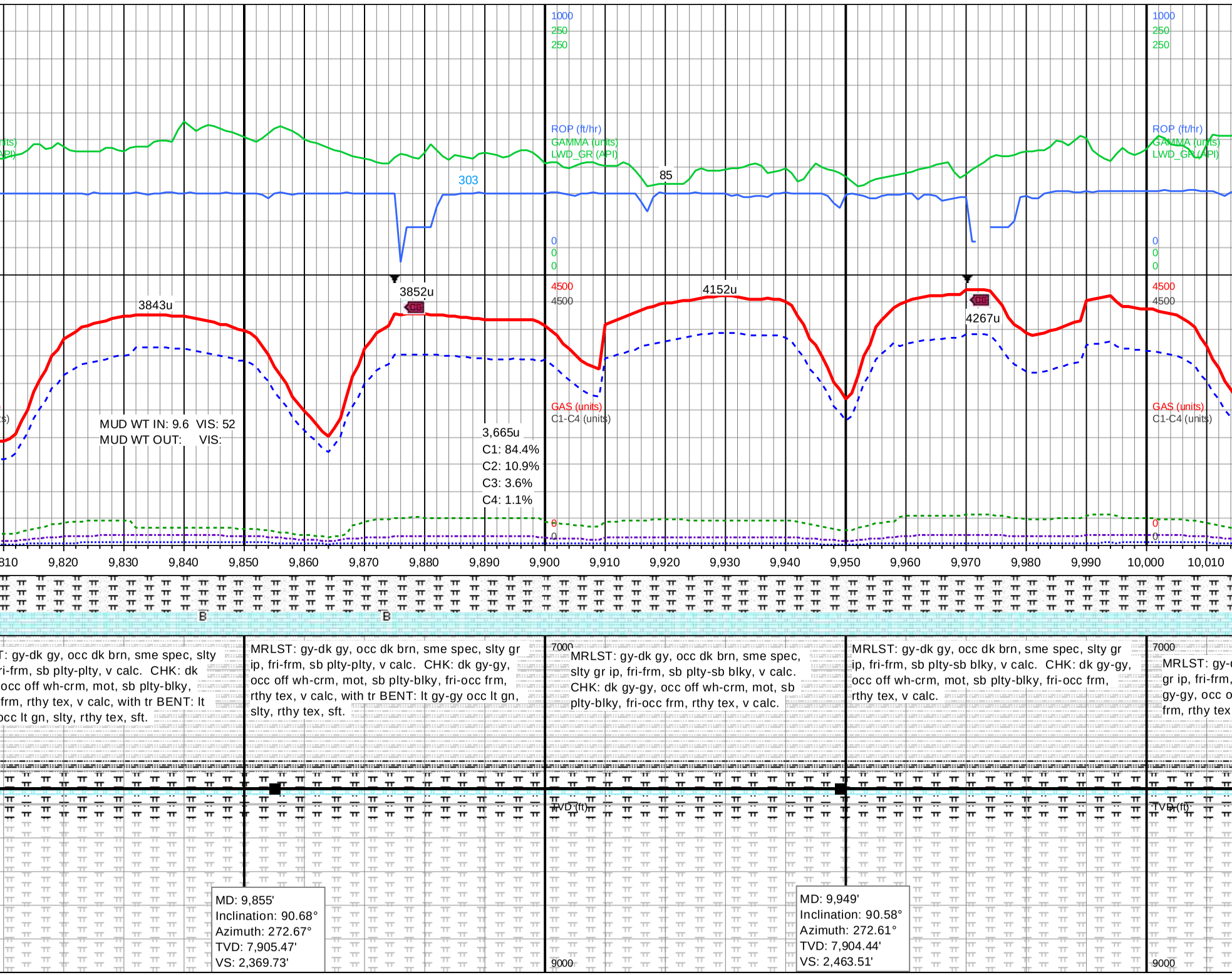

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
114
304
88
302
0
0
0
4500
4500
3163u
3139u
2757u
4005u
MUD WT IN: 9.6 VIS: 52
MUD WT OUT: 9.6+ VIS: 50
GAS (units)
C1-C4 (units)
3,364u
C1: 83.6%
C2: 11.2%
C3: 4.1%
C4: 1.1%
9,000
9,010
9,020
9,030
9,040
9,050
9,060
9,070
9,080
9,090
9,100
9,110
9,120
9,130
9,140
9,150
9,160
9,170
9,180
9,190
P
7000
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-blky, gt tex, v calc. CHK: lt-med gy, mot, sb plty-blky, frm, occ sl hd, wxy-sm tex, v calc. Inoc Fos.
TVD (ft)
MD: 9,004'
Inclination: 90.15°
Azimuth: 269.33°
TVD: 7,911.24'
VS: 1,522.62'
MD: 9,098'
Inclination: 90.12°
Azimuth: 271.41°
TVD: 7,911.02'
VS: 1,616.08'
CHK: lt-med gy, str-mot, sb plty-blky, frm, occ sl hd, wxy-sm tex, v calc MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-blky, gt tex, v calc. Tr Pyr.
MD: 9,193'
Azimuth: 27
TVD: 7,910.
VS: 1,710.7

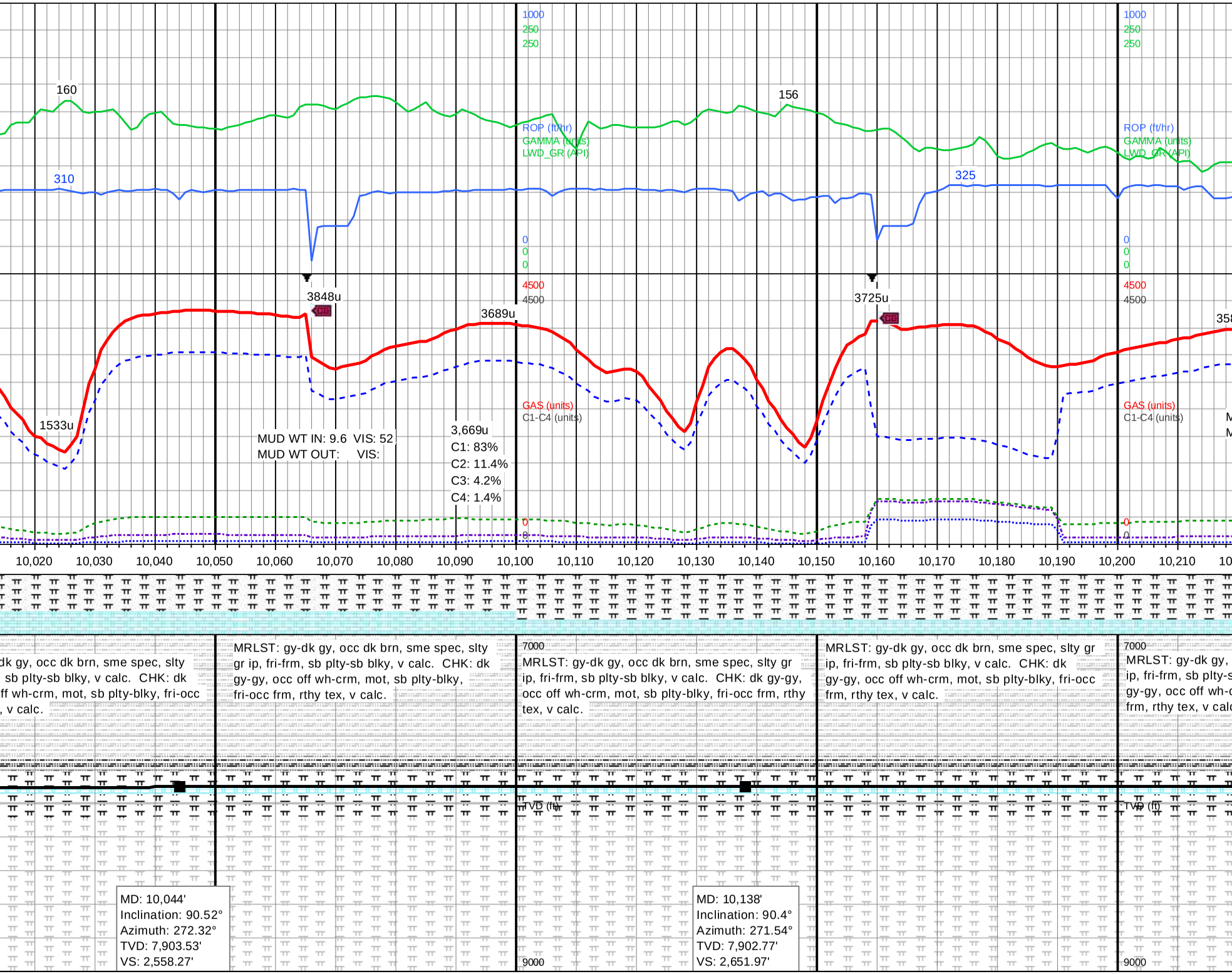

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
130
302
103
303
0
0
0
4500
4500
3814u
3790u
3172u
4217u
GAS (units)
C1-C4 (units)
ROP: 304 ft/hr
RPM: 106rpm
SPP: 4,235PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 28.7 klbs
3,211u
C1: 85.5%
C2: 9.7%
C3: 3.6%
C4: 1.2%
9,200
9,210
9,220
9,230
9,240
9,250
9,260
9,270
9,280
9,290
9,300
9,310
9,320
9,330
9,340
9,350
9,360
9,370
9,380
9,390
7000
CHK: lt-med gy, str-mot, sb plty-blky, frm, occ sl hd, wxy-sm tex, v calc MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-blky, gt tex, v calc. Tr Pyr. Inoc Fos.
CHK: lt-med gy, str-mot, sb plty-blky, frm, occ sl hd, wxy-sm tex, v calc MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-blky, gt tex, v calc. Tr Pyr. Inoc Fos.
7000
CHK: lt-med gy, off wh, str, mot, sb plty-blky, sl sft, sb rthy-sm tex, v calc, MRLST: med-dk gy, occ blk, mot-spec, slt gr, sl frm, sb plty-sb blky, gt tex, calc, with incr pyr.
CHK: lt-med gy, off wh, str, mot, sb plty-blky, sl sft, sb rthy-sm tex, v calc, MRLST: med-dk gy, occ blk, mot-spec, slt gr, sl frm, sb plty-sb blky, gt tex, calc, with incr pyr.
TVD (ft)
9000
MD: 9,287'
Inclination: 89.88°
Azimuth: 269.97°
TVD: 7,911.02'
VS: 1,804.23'
MD: 9,382'
Inclination: 90.28°
Azimuth: 270.17°
TVD: 7,910.89'
VS: 1,898.63'

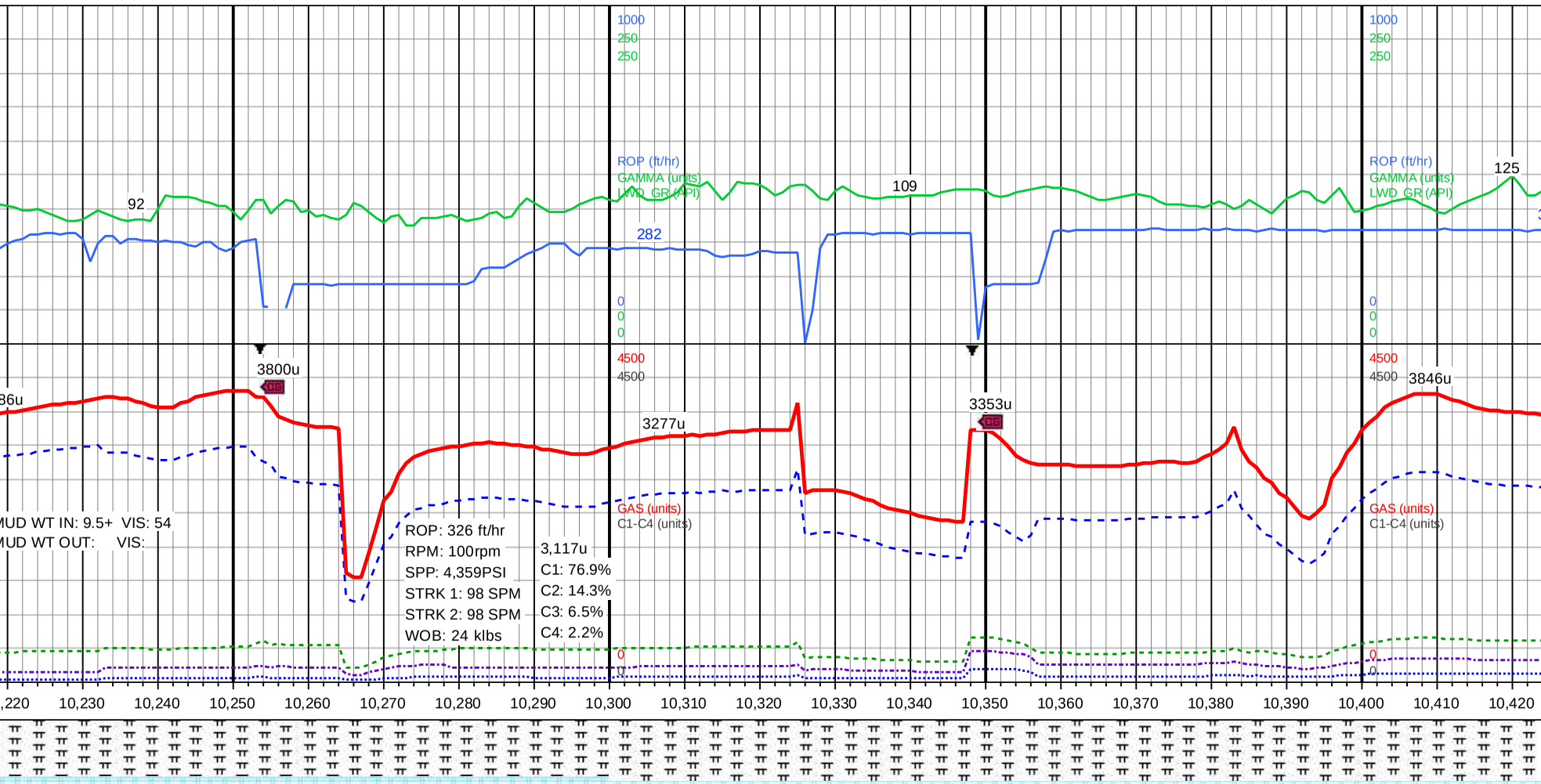

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
96
302
111
352
0
0
0
4500
4500
3930u
3100u
2620u
3981u
4010u
flow check
GAS (units)
C1-C4 (units)
MUD WT IN: 9.6+ VIS: 52
MUD WT OUT: VIS:
2,360u
C1: 80.6%
C2: 15.7%
C3: 0.5%
C4: 3.2%
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
9,480
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
7000
CHK: lt-med gy, off wh, str, mot, sb plty-blky, sft-fri, sb rthy-sm tex, v calc, MRLST: med-dk gy, occ blk, spec ip, slt gr, fri-frm, sb plty-sb blky, gt tex, calc, with sme pyr.
TVD (ft)
9000
MD: 9,476'
Inclination: 90.68°
Azimuth: 270.79°
TVD: 7,910.1'
VS: 1,992.11'
MD: 9,571'
Inclination: 90.92°
Azimuth: 271.16°
TVD: 7,908.77'
VS: 2,086.66'



ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
1000
250
250
0
0
0
303
97
331
113
GAS (units)
C1-C4 (units)
4500
4500
0
0
428u
Low gas readings due to rig repair from 7:30-noon at 9686'.
2812u
1,563u
C1: 91.4%
C2: 0%
C3: 0%
C4: 8.6%
MUD WT IN: 9.6 VIS: 52
MUD WT OUT: VIS:
3679u
4119u
ROP: 336 ft/hr
RPM: 100rpm
SPP: 4,284PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 29 klbs
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
9,700
9,710
9,720
9,730
9,740
9,750
9,760
9,770
9,780
9,790
9,800
B
K: lt-med gy, off wh, str, mot, sb plty-blky, fri, sb rthy-sm tex, v calc, MRLST: med-dk occ blk, spec ip, slt gr, fri-frm, sb plty-sb y, gt tex, calc, with sme pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
TVD (ft)
MD: 9,665'
Inclination: 90.65°
Azimuth: 271.74°
TVD: 7,907.49'
VS: 2,180.29'
MD: 9,760'
Inclination: 90.55°
Azimuth: 272.05°
TVD: 7,906.49'
VS: 2,274.98'
9000


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
303
85
0
0
0
4500
4500
3843u
3852u
4152u
4267u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.6 VIS: 52
MUD WT OUT: VIS:
3,665u
C1: 84.4%
C2: 10.9%
C3: 3.6%
C4: 1.1%
9,810
9,820
9,830
9,840
9,850
9,860
9,870
9,880
9,890
9,900
9,910
9,920
9,930
9,940
9,950
9,960
9,970
9,980
9,990
10,000
10,010
B
B
T: gy-dk gy, occ dk brn, sme spec, slty
ri-frm, sb plty-plty, v calc. CHK: dk
occ off wh-crm, mot, sb plty-blky,
frm, rthy tex, v calc, with tr BENT: lt
occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-plty, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm,
rthy tex, v calc, with tr BENT: lt gy-gy occ lt gn,
slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme spec,
slty gr ip, fri-frm, sb plty-sb blky, v calc.
CHK: dk gy-gy, occ off wh-crm, mot, sb
plty-blky, fri-occ frm, rthy tex, v calc.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm,
rthy tex, v calc.
MRLST: gy-
gr ip, fri-frm,
gy-gy, occ o
frm, rthy tex
7000
TVD (ft)
9000
MD: 9,855'
Inclination: 90.68°
Azimuth: 272.67°
TVD: 7,905.47'
VS: 2,369.73'
MD: 9,949'
Inclination: 90.58°
Azimuth: 272.61°
TVD: 7,904.44'
VS: 2,463.51'


1000
250
250
160
156
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
310
325
0
0
0
4500
4500
3848u
3689u
3725u
1533u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.6 VIS: 52
MUD WT OUT: VIS:
3,669u
C1: 83%
C2: 11.4%
C3: 4.2%
C4: 1.4%
10,020
10,030
10,040
10,050
10,060
10,070
10,080
10,090
10,100
10,110
10,120
10,130
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
dk gy, occ dk brn, sme spec, slty
sb plty-sb blky, v calc. CHK: dk
ff wh-crm, mot, sb plty-blky, fri-occ
, v calc.
MRLST: gy-dk gy, occ dk brn, sme spec, slty
gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk
gy-gy, occ off wh-crm, mot, sb plty-blky,
fri-occ frm, rthy tex, v calc.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy
tex, v calc.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-sb blky, v calc. CHK: dk
gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ
frm, rthy tex, v calc.
7000
MRLST: gy-dk gy,
ip, fri-frm, sb plty-s
gy-gy, occ off wh-c
frm, rthy tex, v calc
TVD (ft)
9000
MD: 10,044'
Inclination: 90.52°
Azimuth: 272.32°
TVD: 7,903.53'
VS: 2,558.27'
MD: 10,138'
Inclination: 90.4°
Azimuth: 271.54°
TVD: 7,902.77'
VS: 2,651.97'



occ dk brn, sme spec, slty gr sb blky, v calc. CHK: dk crm, mot, sb plty-blky, fri-occ c.

MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.

MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. with abnt cmt cvgs.

MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. with abnt cmt cvgs.

MRLST: gy-dk gy, occ gr ip, fri-frm, sb plty-sb gy-gy, occ off wh-crm, frm, rthy tex, v calc. wi

7000

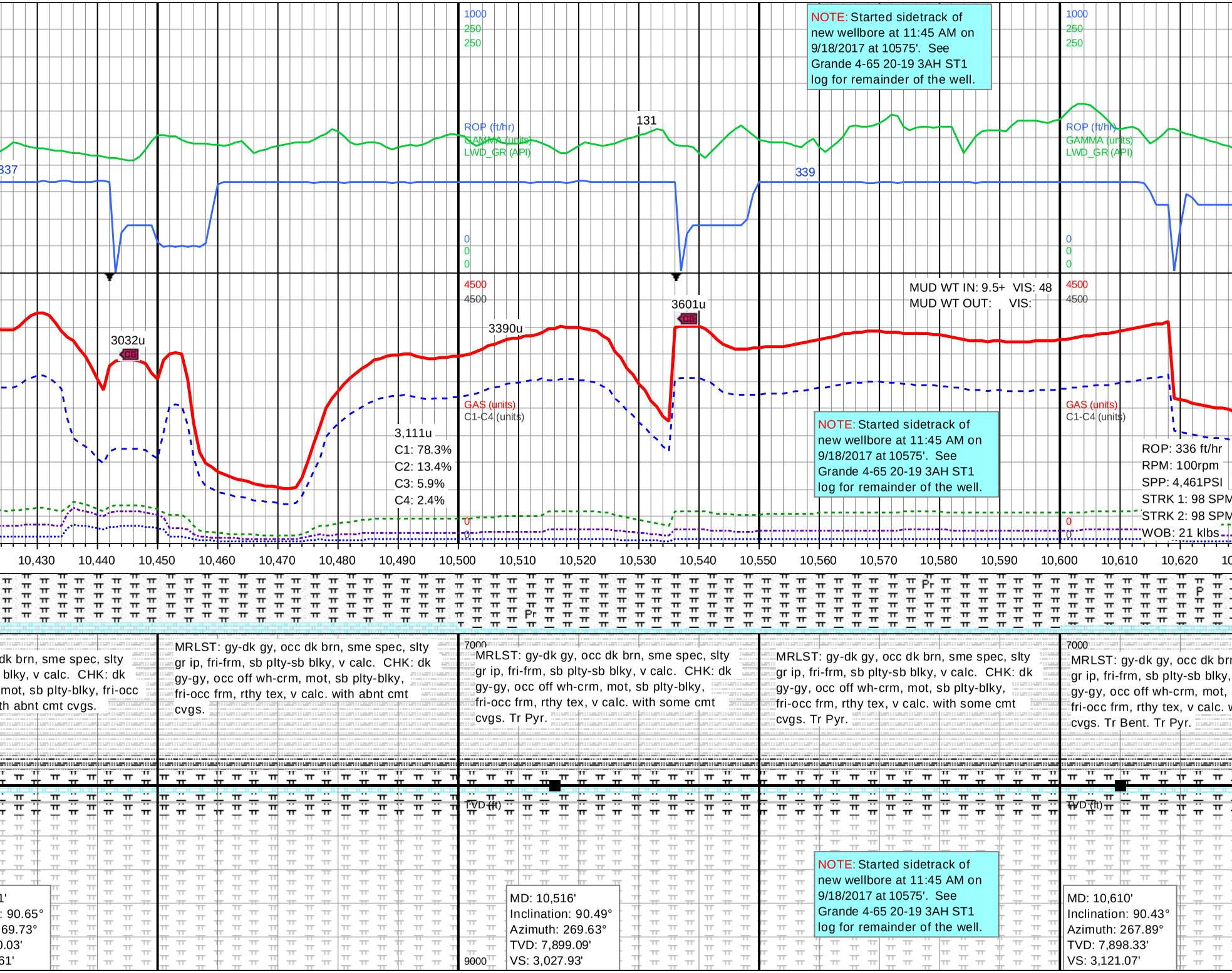
TVD (ft)

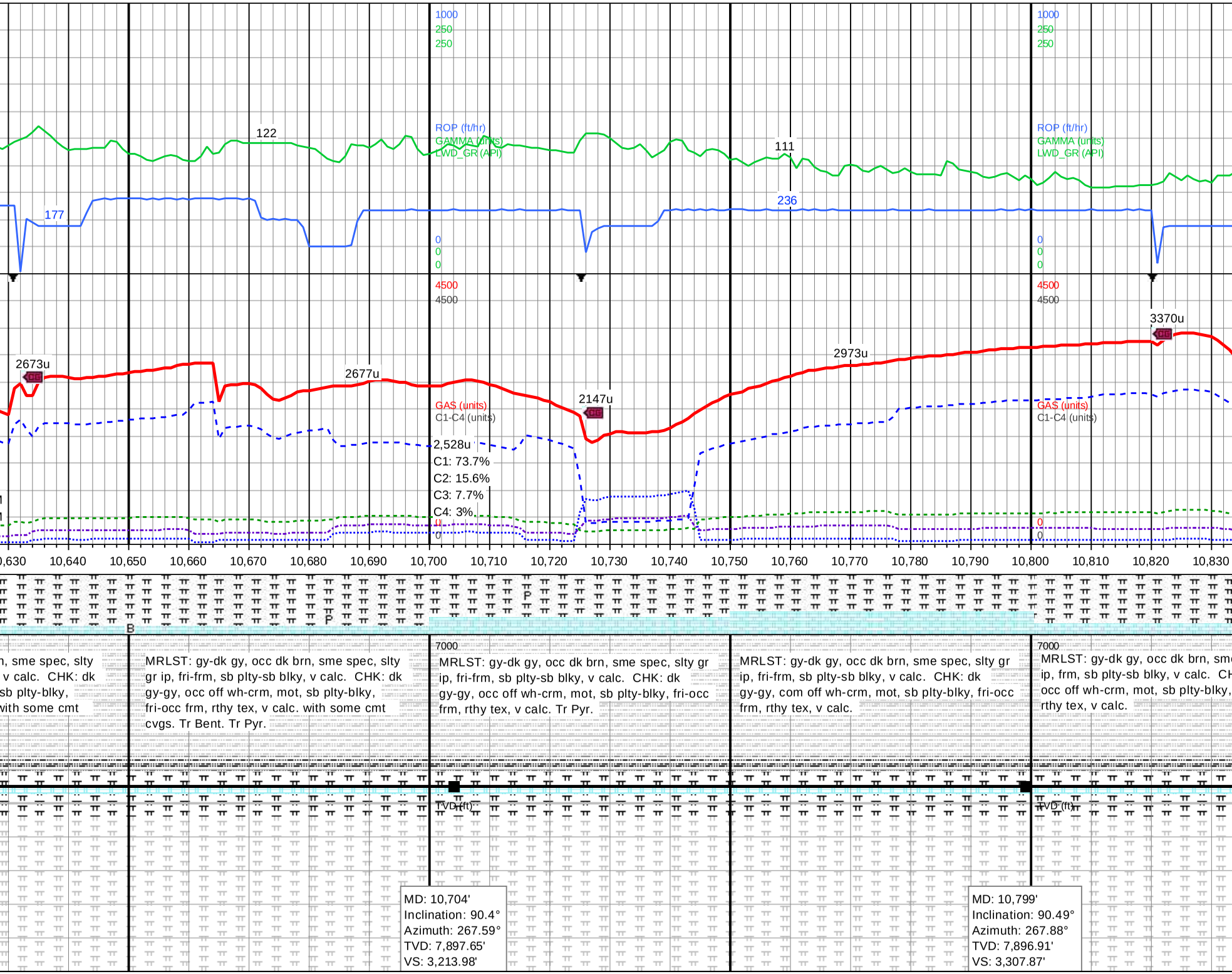
9000

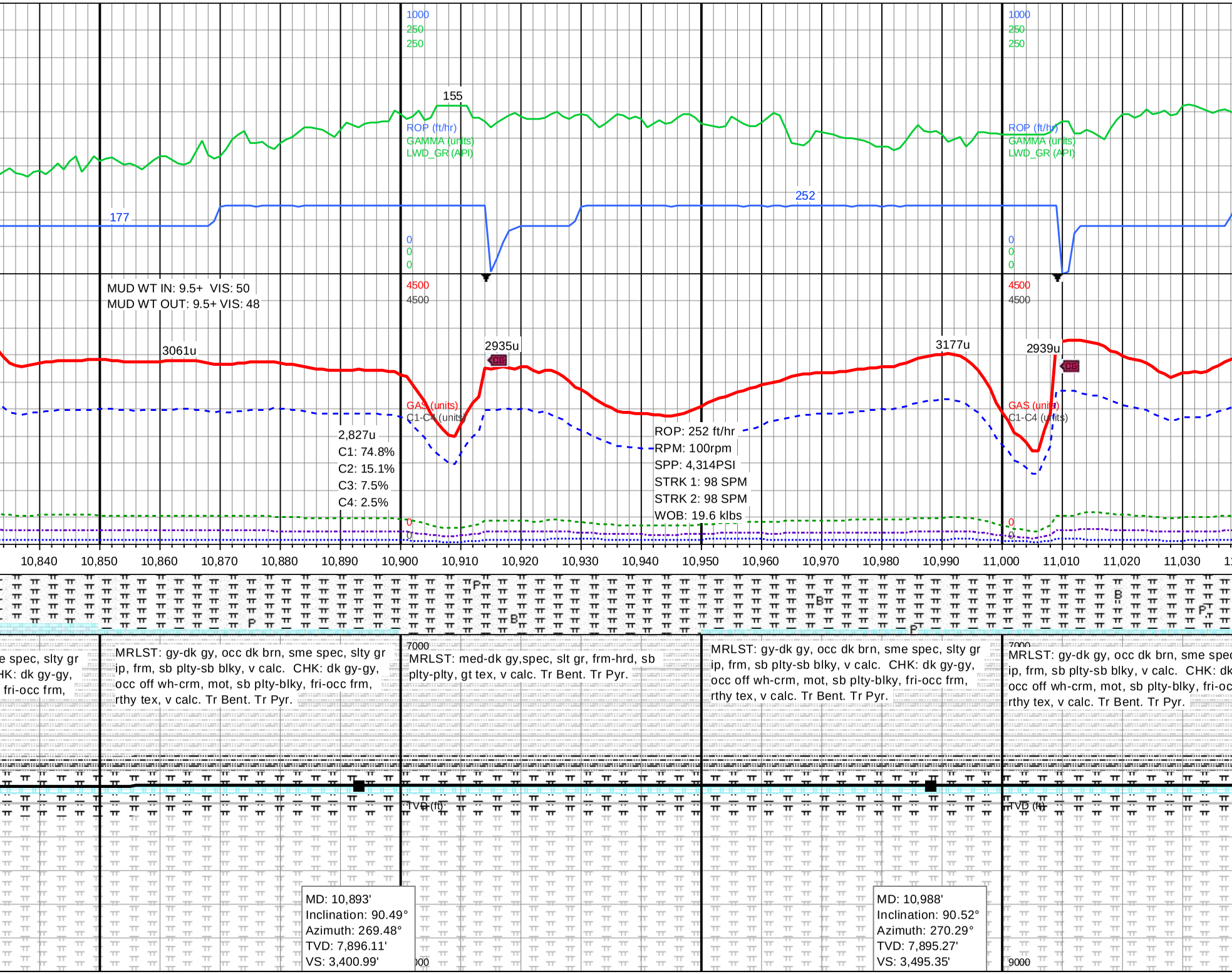
MD: 10,232'
Inclination: 90.65°
Azimuth: 271.47°
TVD: 7,901.91'
VS: 2,745.61'

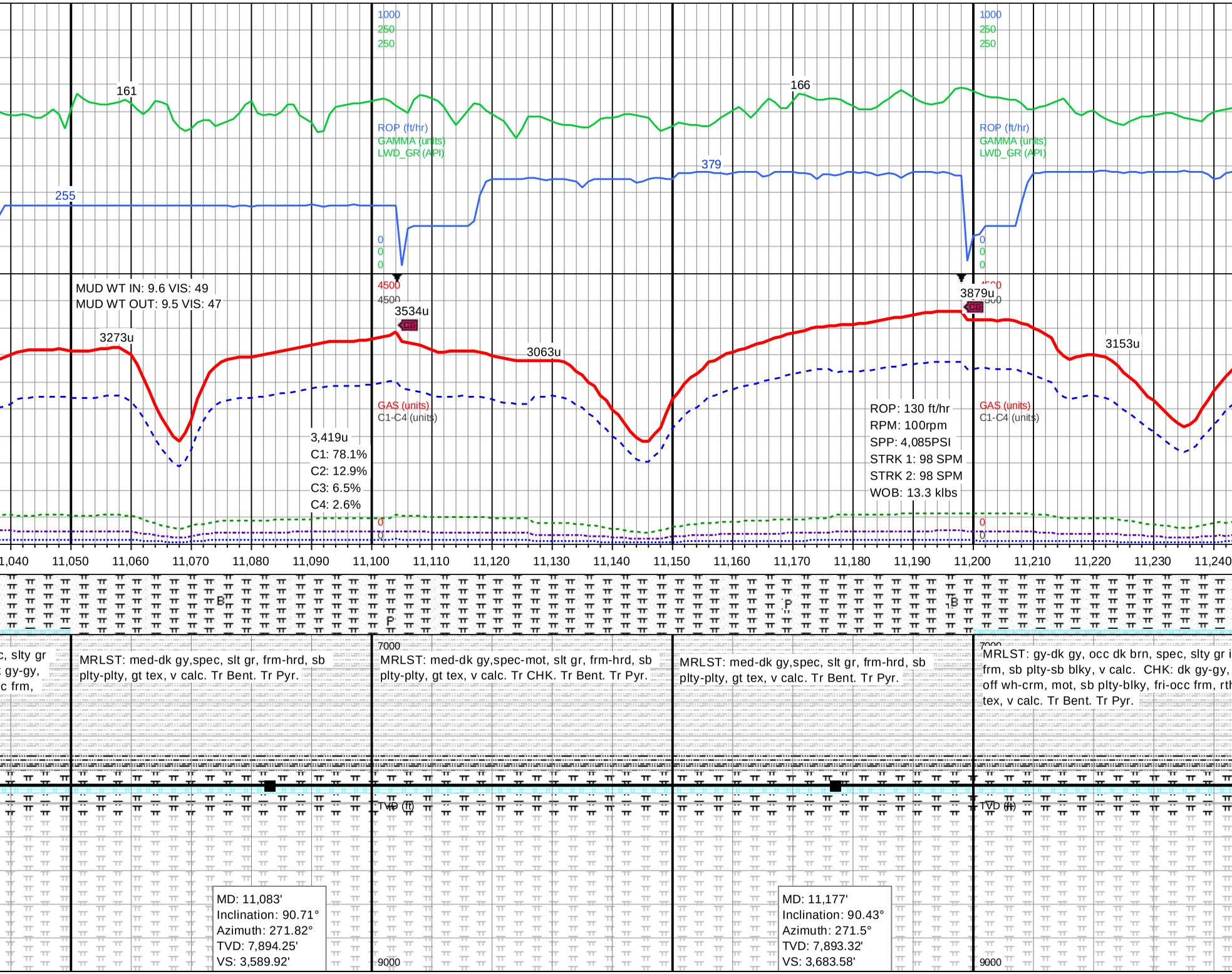
MD: 10,327'
Inclination: 90.49°
Azimuth: 270.67°
TVD: 7,900.97'
VS: 2,840.18'

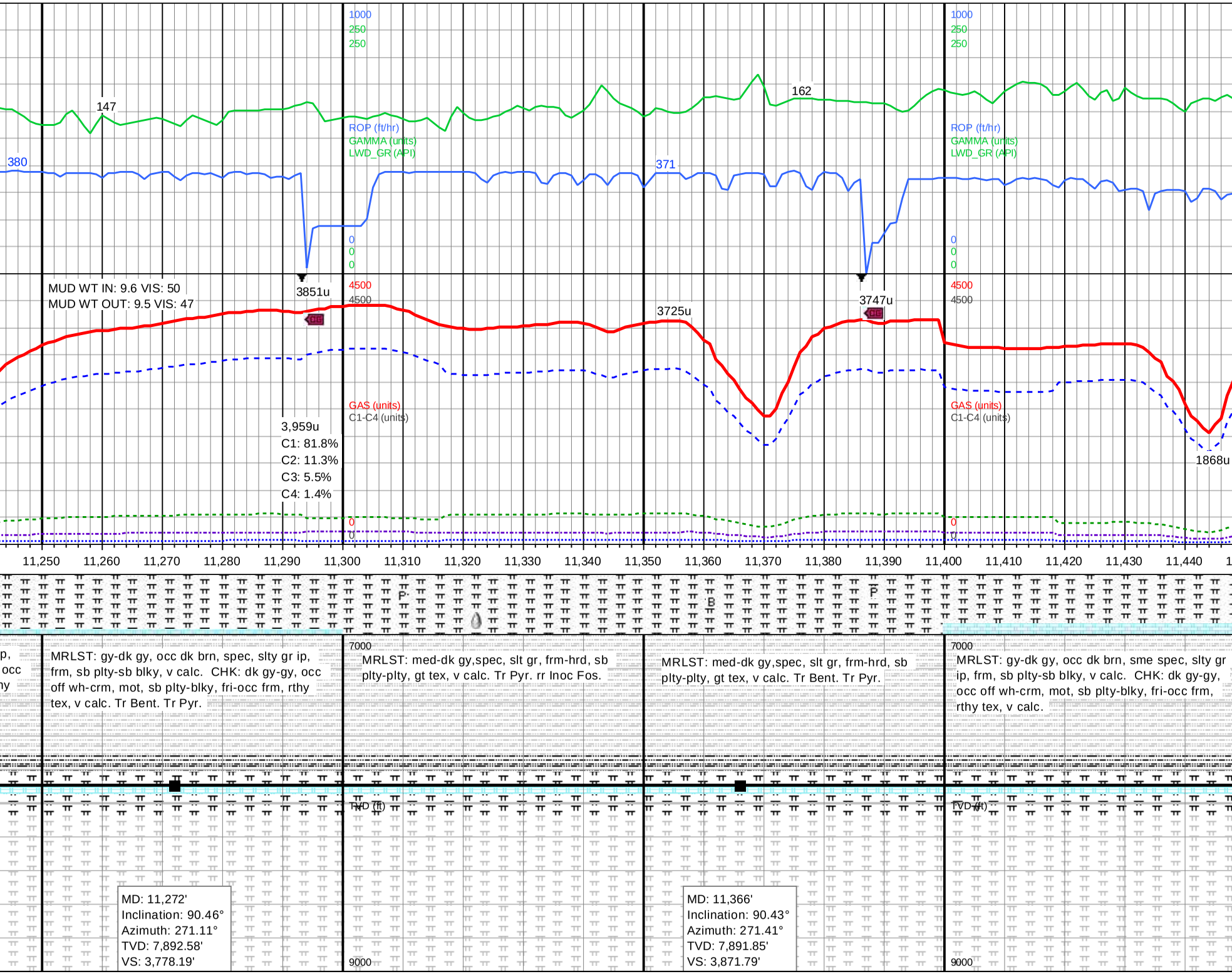
MD: 10,42
Inclination
Azimuth: 2
TVD: 7,900
VS: 2,933.


NOTE: Started sidetrack of new wellbore at 11:45 AM on 9/18/2017 at 10575'. See Grande 4-65 20-19 3AH ST1 log for remainder of the well.
1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
131
337
339
0
0
0
4500
4500
MUD WT IN: 9.5+ VIS: 48
MUD WT OUT: VIS:
3032u
3390u
3601u
GAS (units)
C1-C4 (units)
3,111u
C1: 78.3%
C2: 13.4%
C3: 5.9%
C4: 2.4%
ROP: 336 ft/hr
RPM: 100rpm
SPP: 4,461PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 21 klbs
10,430
10,440
10,450
10,460
10,470
10,480
10,490
10,500
10,510
10,520
10,530
10,540
10,550
10,560
10,570
10,580
10,590
10,600
10,610
10,620
dk brn, sme spec, slty
blky, v calc. CHK: dk
mot, sb plty-blky, fri-occ
th abnt cmt cvgs.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. with abnt cmt cvgs.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. with some cmt cvgs. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. with some cmt cvgs. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn
gr ip, fri-frm, sb plty-sb blky,
gy-gy, occ off wh-crm, mot,
fri-occ frm, rthy tex, v calc. v
cvgs. Tr Bent. Tr Pyr.
TVD (ft)
9000
NOTE: Started sidetrack of new wellbore at 11:45 AM on 9/18/2017 at 10575'. See Grande 4-65 20-19 3AH ST1 log for remainder of the well.
MD: 10,516'
Inclination: 90.49°
Azimuth: 269.63°
TVD: 7,899.09'
VS: 3,027.93'
MD: 10,610'
Inclination: 90.43°
Azimuth: 267.89°
TVD: 7,898.33'
VS: 3,121.07'


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
122
111
177
236
0
0
0
4500
4500
2673u
2677u
2147u
2973u
3370u
GAS (units)
C1-C4 (units)
2,528u
C1: 73.7%
C2: 15.6%
C3: 7.7%
C4: 3%
10,630
10,640
10,650
10,660
10,670
10,680
10,690
10,700
10,710
10,720
10,730
10,740
10,750
10,760
10,770
10,780
10,790
10,800
10,810
10,820
10,830
, sme spec, slty
v calc. CHK: dk
sb plty-blky,
with some cmt
MRLST: gy-dk gy, occ dk brn, sme spec, slty
gr ip, fri-frm, sb plty-sb blky, v calc. CHK: dk
gy-gy, occ off wh-crm, mot, sb plty-blky,
fri-occ frm, rthy tex, v calc. with some cmt
cvgs. Tr Bent. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-sb blky, v calc. CHK: dk
gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ
frm, rthy tex, v calc. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-sb blky, v calc. CHK: dk
gy-gy, com off wh-crm, mot, sb plty-blky, fri-occ
frm, rthy tex, v calc.
7000
MRLST: gy-dk gy, occ dk brn, sm
ip, frm, sb plty-sb blky, v calc. CH
occ off wh-crm, mot, sb plty-blky,
rthy tex, v calc.
TVD (ft)
TVD (ft)
MD: 10,704'
Inclination: 90.4°
Azimuth: 267.59°
TVD: 7,897.65'
VS: 3,213.98'
MD: 10,799'
Inclination: 90.49°
Azimuth: 267.88°
TVD: 7,896.91'
VS: 3,307.87'


1000
250
250
155
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
177
252
0
0
0
MUD WT IN: 9.5+ VIS: 50
MUD WT OUT: 9.5+ VIS: 48
4500
4500
3061u
2935u
3177u
2939u
GAS (units)
C1-C4 (units)
2,827u
C1: 74.8%
C2: 15.1%
C3: 7.5%
C4: 2.5%
ROP: 252 ft/hr
RPM: 100rpm
SPP: 4,314PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 19.6 klbs
10,840
10,850
10,860
10,870
10,880
10,890
10,900
10,910
10,920
10,930
10,940
10,950
10,960
10,970
10,980
10,990
11,000
11,010
11,020
11,030
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent. Tr Pyr.
7000
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent. Tr Pyr.
MD: 10,893'
Inclination: 90.49°
Azimuth: 269.48°
TVD: 7,896.11'
VS: 3,400.99'
MD: 10,988'
Inclination: 90.52°
Azimuth: 270.29°
TVD: 7,895.27'
VS: 3,495.35'
9000


1000
250
250
161
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
255
379
0
0
0
4500
4500
MUD WT IN: 9.6 VIS: 49
MUD WT OUT: 9.5 VIS: 47
3534u
3273u
3063u
GAS (units)
C1-C4 (units)
3,419u
C1: 78.1%
C2: 12.9%
C3: 6.5%
C4: 2.6%
0
0
1000
250
250
166
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
3879u
3153u
ROP: 130 ft/hr
RPM: 100rpm
SPP: 4,085PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 13.3 klbs
GAS (units)
C1-C4 (units)
0
0
11,040
11,050
11,060
11,070
11,080
11,090
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
B
P
P
B
, slty gr
gy-gy,
c frm,
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr.
7000
MRLST: med-dk gy,spec-mot, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr CHK. Tr Bent. Tr Pyr.
MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn, spec, slty gr i
frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
off wh-crm, mot, sb plty-blky, fri-occ frm, rth
tex, v calc. Tr Bent. Tr Pyr.
TVD (ft)
TVD (ft)
TVD (ft)
MD: 11,083'
Inclination: 90.71°
Azimuth: 271.82°
TVD: 7,894.25'
VS: 3,589.92'
9000
MD: 11,177'
Inclination: 90.43°
Azimuth: 271.5°
TVD: 7,893.32'
VS: 3,683.58'
9000



MRLST: gy-dk gy, occ dk brn, spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent. Tr Pyr.

MD: 11,272'
Inclination: 90.46°
Azimuth: 271.11°
TVD: 7,892.58'
VS: 3,778.19'

7000

MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr Pyr. rr Inoc Fos.

TVD (ft)

9000

MRLST: med-dk gy,spec, slt gr, frm-hrd, sb plty-plty, gt tex, v calc. Tr Bent. Tr Pyr.

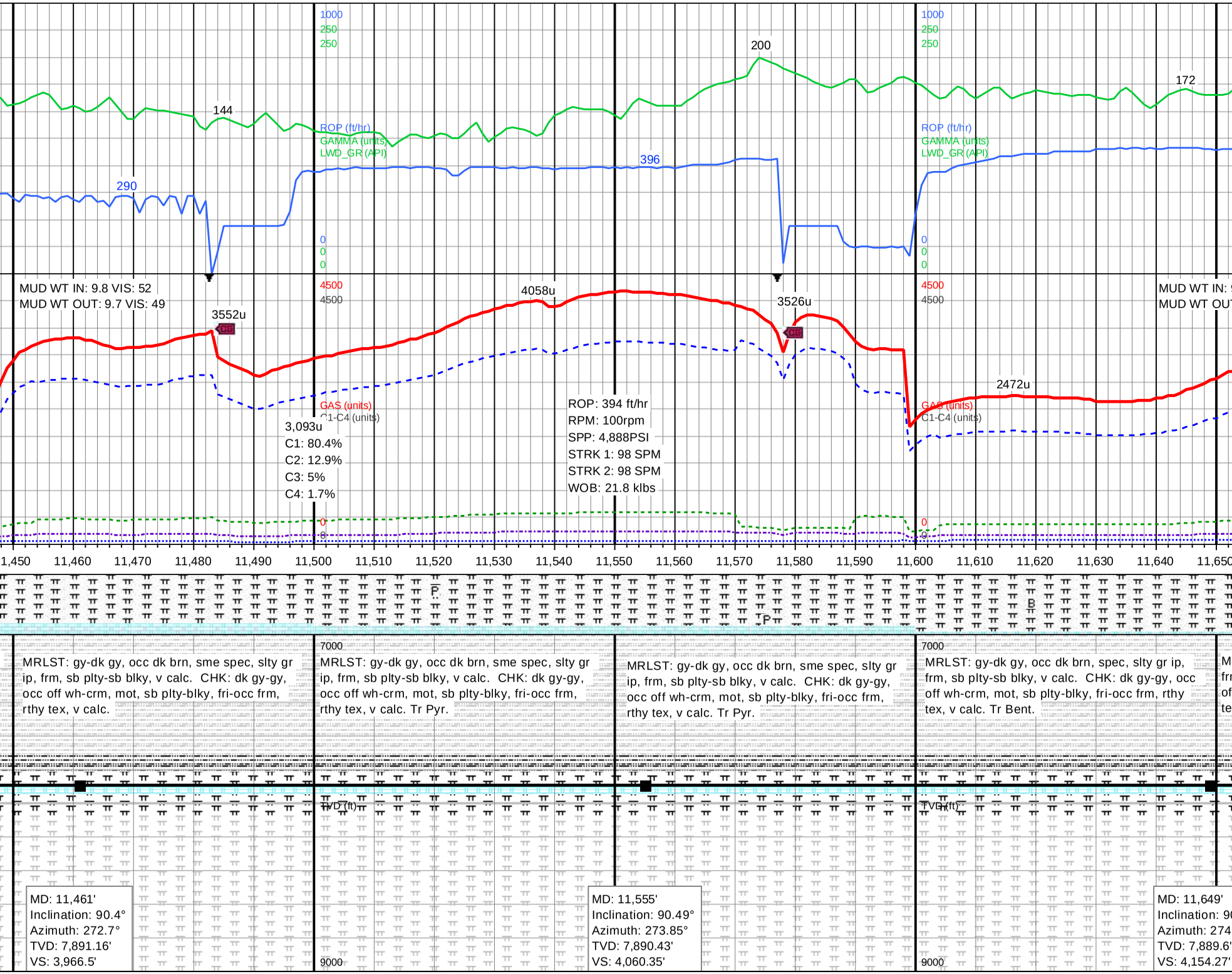
MD: 11,366'
Inclination: 90.43°
Azimuth: 271.41°
TVD: 7,891.85'
VS: 3,871.79'

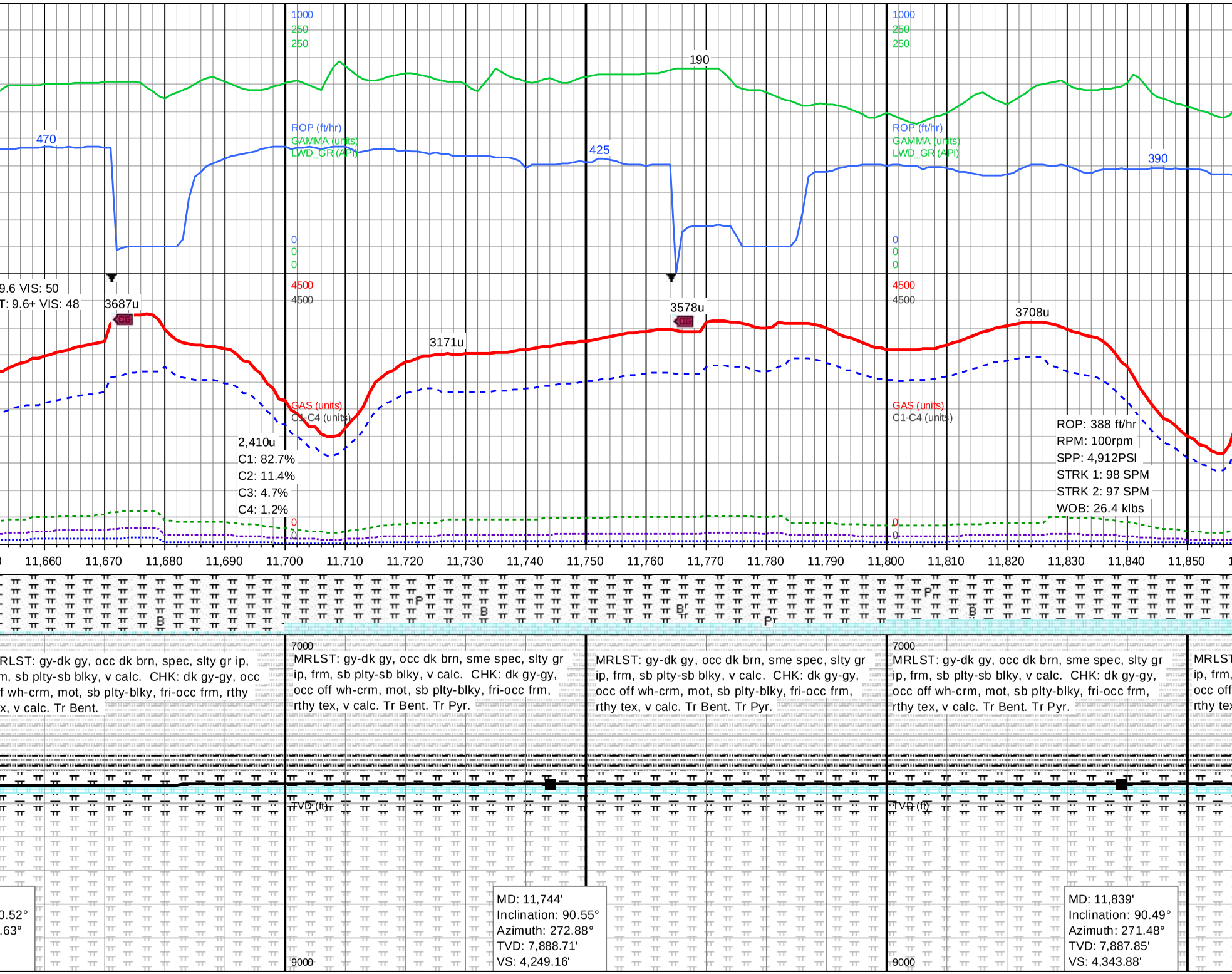
7000

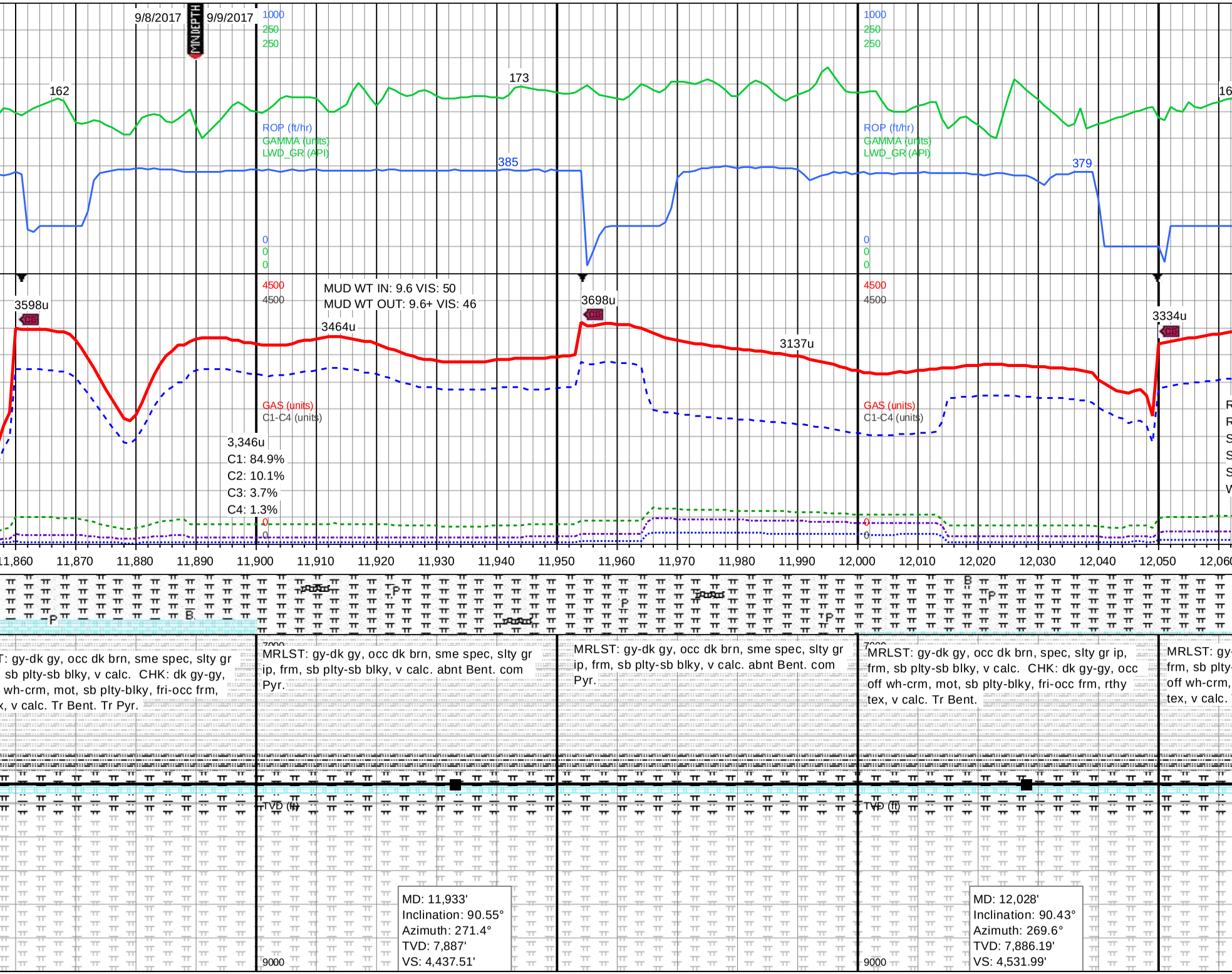
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.

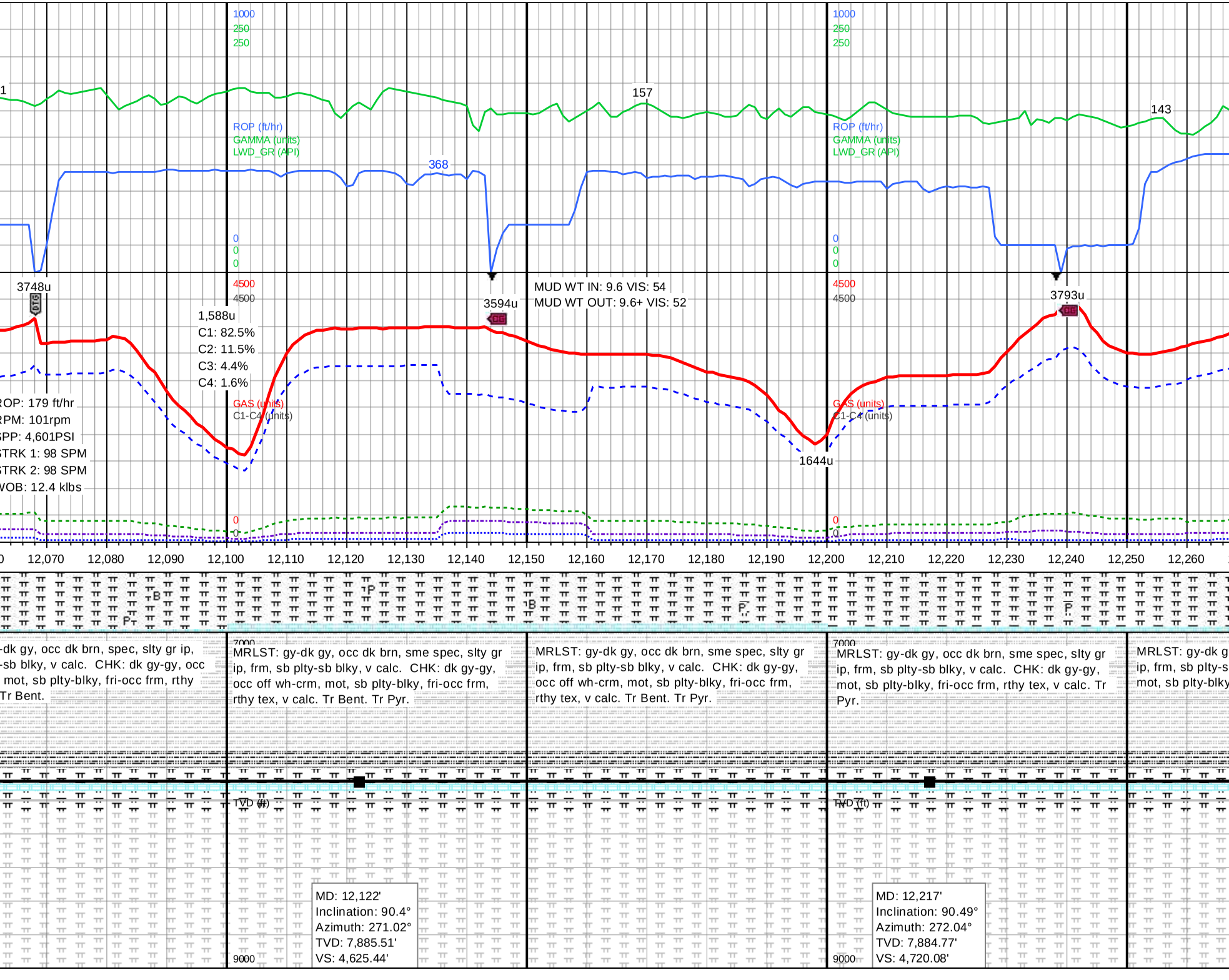
TVD (ft)

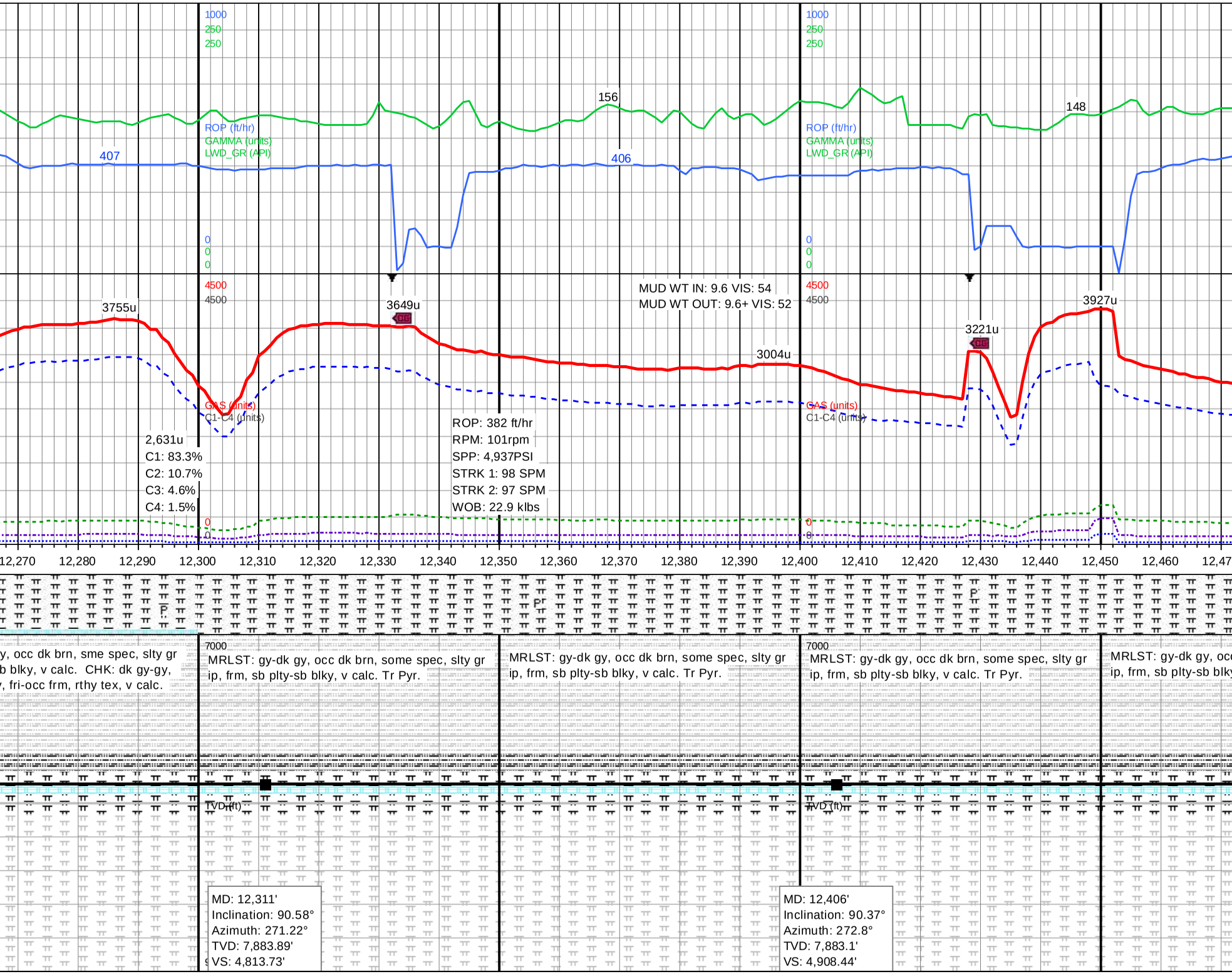
9000

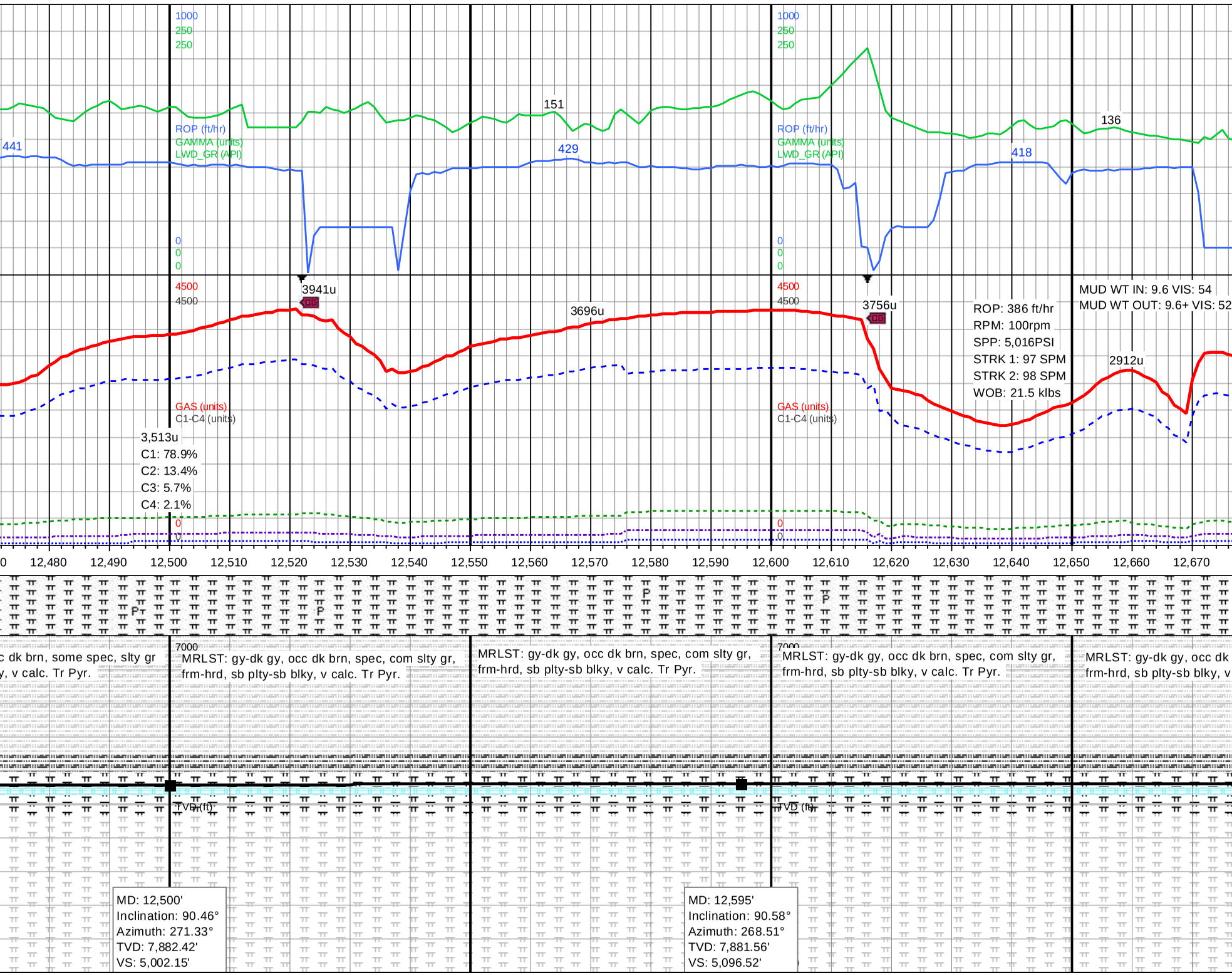

1000
250
250
144
200
172
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
290
396
0
0
0
MUD WT IN: 9.8 VIS: 52
MUD WT OUT: 9.7 VIS: 49
4500
4500
3552u
4058u
3526u
2472u
GAS (units)
C1-C4 (units)
3,093u
C1: 80.4%
C2: 12.9%
C3: 5%
C4: 1.7%
ROP: 394 ft/hr
RPM: 100rpm
SPP: 4,888PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 21.8 klbs
11,450
11,460
11,470
11,480
11,490
11,500
11,510
11,520
11,530
11,540
11,550
11,560
11,570
11,580
11,590
11,600
11,610
11,620
11,630
11,640
11,650
7000
9000
TVD (ft)
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent.
MD: 11,461'
Inclination: 90.4°
Azimuth: 272.7°
TVD: 7,891.16'
VS: 3,966.5'
MD: 11,555'
Inclination: 90.49°
Azimuth: 273.85°
TVD: 7,890.43'
VS: 4,060.35'
MD: 11,649'
Inclination: 90
Azimuth: 274
TVD: 7,889.6'
VS: 4,154.27'

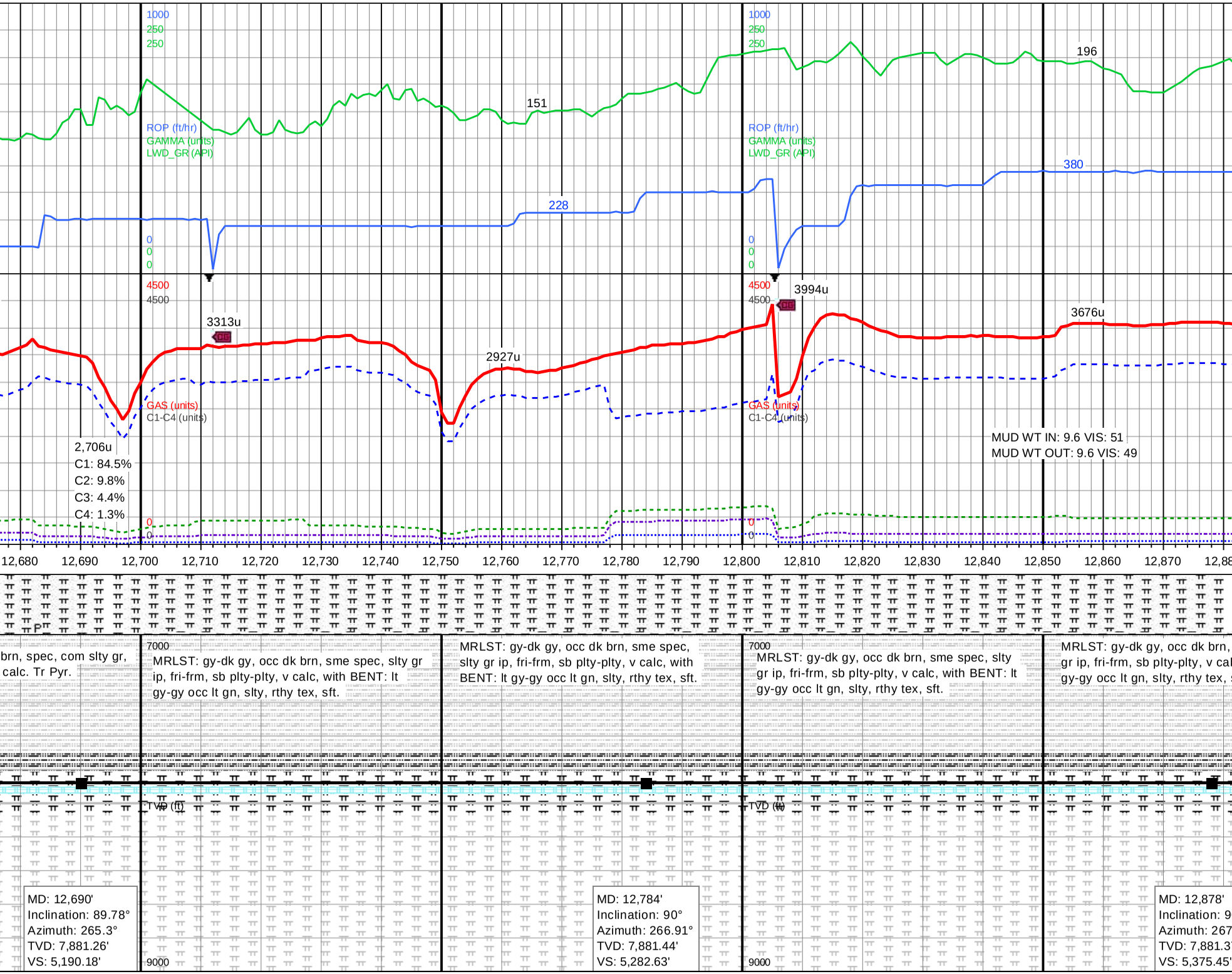

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
0
0
0
470
190
425
390
9.6 VIS: 50
T: 9.6+ VIS: 48
3687u
3578u
3708u
3171u
4500
4500
GAS (units)
C1-C4 (units)
2,410u
C1: 82.7%
C2: 11.4%
C3: 4.7%
C4: 1.2%
ROP: 388 ft/hr
RPM: 100rpm
SPP: 4,912PSI
STRK 1: 98 SPM
STRK 2: 97 SPM
WOB: 26.4 klbs
11,660
11,670
11,680
11,690
11,700
11,710
11,720
11,730
11,740
11,750
11,760
11,770
11,780
11,790
11,800
11,810
11,820
11,830
11,840
11,850
RLST: gy-dk gy, occ dk brn, spec, slty gr ip,
m, sb plty-sb blky, v calc. CHK: dk gy-gy, occ
f wh-crm, mot, sb plty-blky, fri-occ frm, rthy
x, v calc. Tr Bent.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm,
rthy tex, v calc. Tr Bent. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm,
rthy tex, v calc. Tr Bent. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy,
occ off wh-crm, mot, sb plty-blky, fri-occ frm,
rthy tex, v calc. Tr Bent. Tr Pyr.
MRLST
ip, frm,
occ off
rthy tex
TVD (ft)
TVD (ft)
TVD (ft)
0.52°
.63°
MD: 11,744'
Inclination: 90.55°
Azimuth: 272.88°
TVD: 7,888.71'
VS: 4,249.16'
9000
9000
MD: 11,839'
Inclination: 90.49°
Azimuth: 271.48°
TVD: 7,887.85'
VS: 4,343.88'

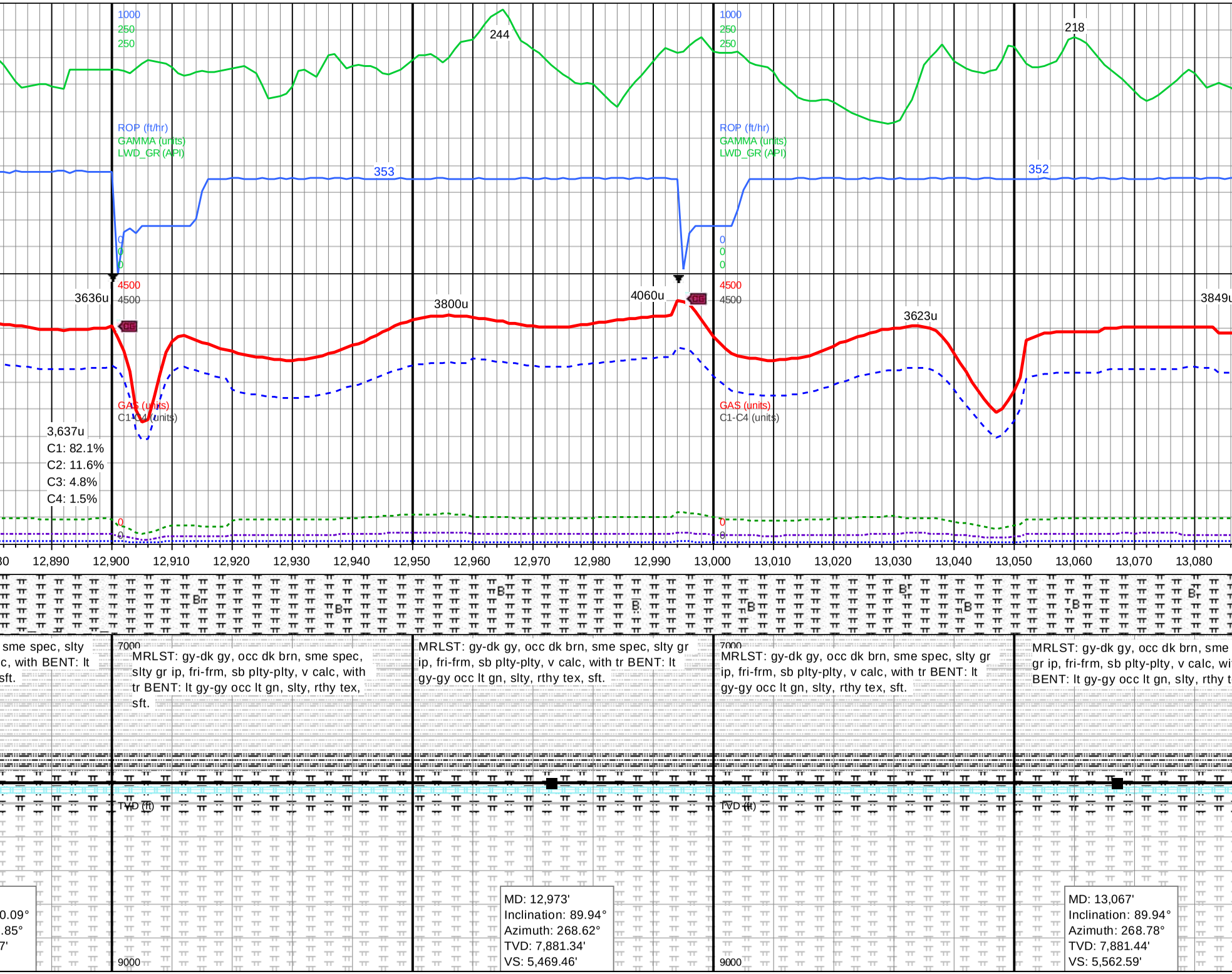

9/8/2017
9/9/2017
MINDEPTH
1000
250
250
162
173
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
385
379
0
0
0
4500
4500
MUD WT IN: 9.6 VIS: 50
MUD WT OUT: 9.6+ VIS: 46
3598u
3464u
3698u
3137u
3334u
GAS (units)
C1-C4 (units)
3,346u
C1: 84.9%
C2: 10.1%
C3: 3.7%
C4: 1.3%
11,860
11,870
11,880
11,890
11,900
11,910
11,920
11,930
11,940
11,950
11,960
11,970
11,980
11,990
12,000
12,010
12,020
12,030
12,040
12,050
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. abnt Bent. com Pyr.
MRLST: gy-dk gy, occ dk brn, spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent.
TVD (ft)
7000
9000
MD: 11,933'
Inclination: 90.55°
Azimuth: 271.4°
TVD: 7,887'
VS: 4,437.51'
MD: 12,028'
Inclination: 90.43°
Azimuth: 269.6°
TVD: 7,886.19'
VS: 4,531.99'

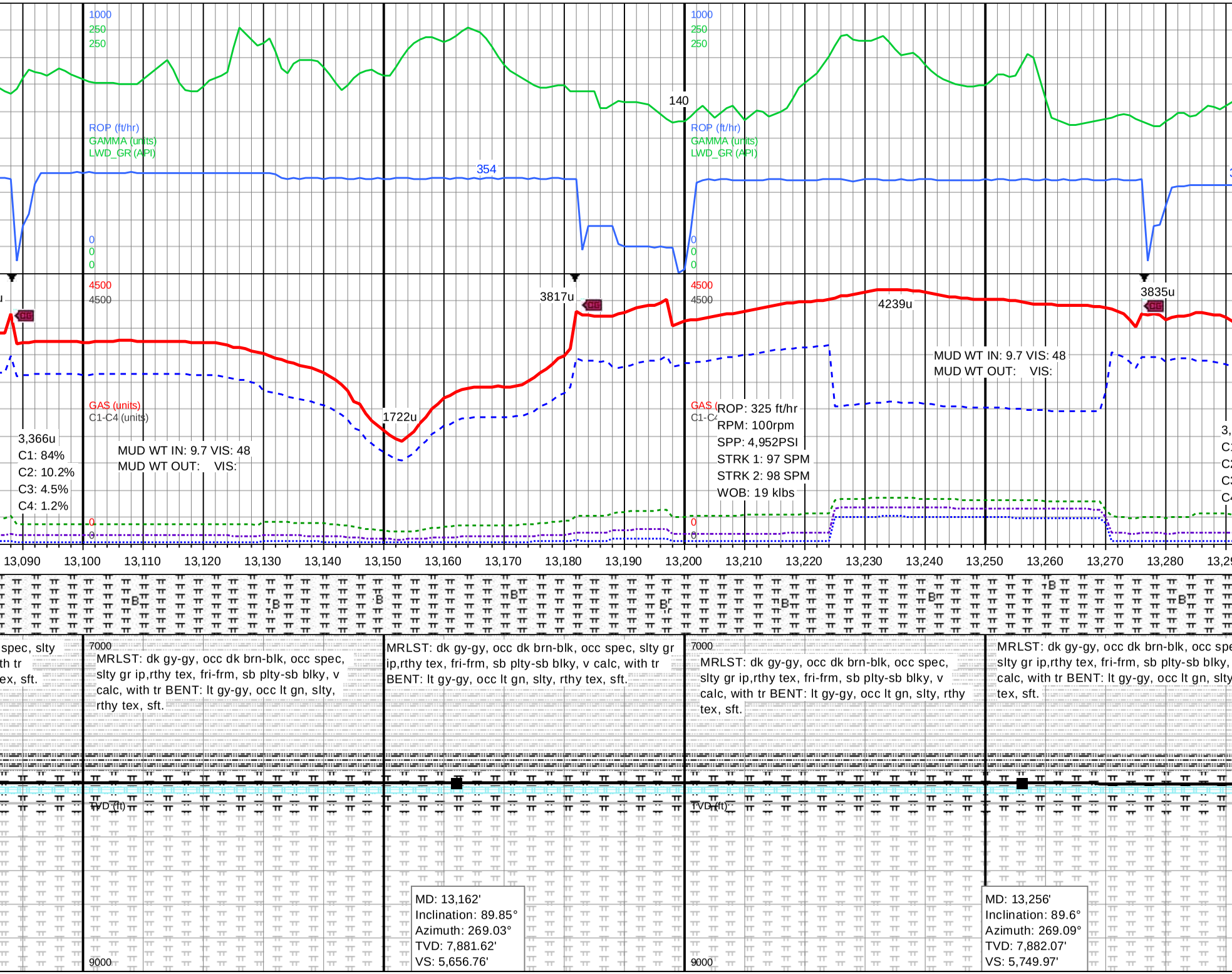

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
157
143
368
0
0
0
4500
4500
3748u
3594u
3793u
1644u
1,588u
C1: 82.5%
C2: 11.5%
C3: 4.4%
C4: 1.6%
MUD WT IN: 9.6 VIS: 54
MUD WT OUT: 9.6+ VIS: 52
ROP: 179 ft/hr
RPM: 101rpm
SPP: 4,601PSI
STRK 1: 98 SPM
STRK 2: 98 SPM
WOB: 12.4 klbs
GAS (units)
C1-C4 (units)
12,070
12,080
12,090
12,100
12,110
12,120
12,130
12,140
12,150
12,160
12,170
12,180
12,190
12,200
12,210
12,220
12,230
12,240
12,250
12,260
-dk gy, occ dk brn, spec, slty gr ip,
-sb blky, v calc. CHK: dk gy-gy, occ
mot, sb plty-blky, fri-occ frm, rthy
Tr Bent.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Bent. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, frm, sb plty-sb blky, v calc. CHK: dk gy-gy, mot, sb plty-blky, fri-occ frm, rthy tex, v calc. Tr Pyr.
MRLST: gy-dk g
ip, frm, sb plty-s
mot, sb plty-blky
7000
9000
TVD (ft)
MD: 12,122'
Inclination: 90.4°
Azimuth: 271.02°
TVD: 7,885.51'
VS: 4,625.44'
MD: 12,217'
Inclination: 90.49°
Azimuth: 272.04°
TVD: 7,884.77'
VS: 4,720.08'

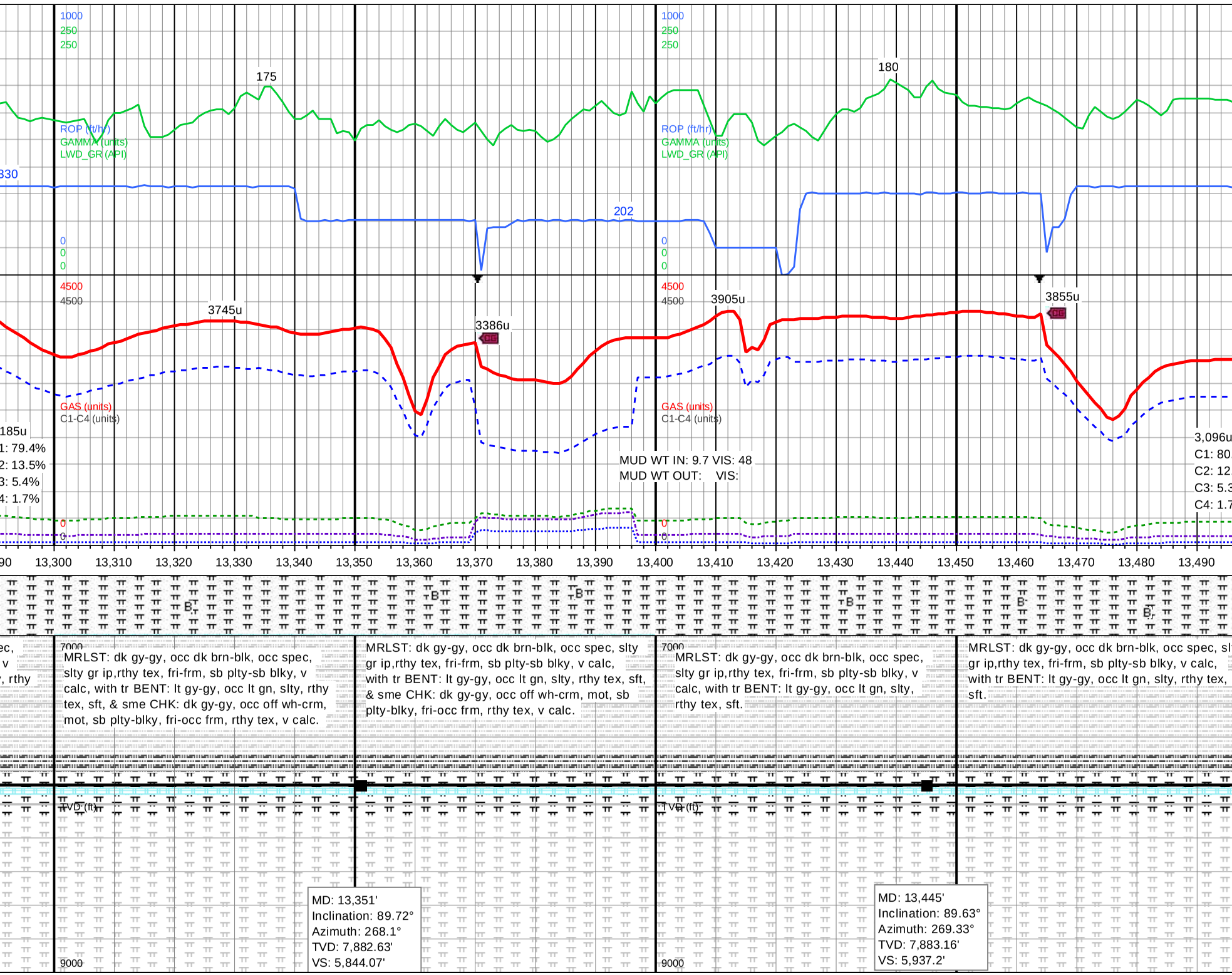

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
156
148
407
406
0
0
0
4500
4500
MUD WT IN: 9.6 VIS: 54
MUD WT OUT: 9.6+ VIS: 52
3755u
3649u
3927u
3221u
3004u
GAS (units)
C1-C4 (units)
2,631u
C1: 83.3%
C2: 10.7%
C3: 4.6%
C4: 1.5%
ROP: 382 ft/hr
RPM: 101rpm
SPP: 4,937PSI
STRK 1: 98 SPM
STRK 2: 97 SPM
WOB: 22.9 klbs
12,270
12,280
12,290
12,300
12,310
12,320
12,330
12,340
12,350
12,360
12,370
12,380
12,390
12,400
12,410
12,420
12,430
12,440
12,450
12,460
12,47
y, occ dk brn, sme spec, slty gr
b blky, v calc. CHK: dk gy-gy,
, fri-occ frm, rthy tex, v calc.
7000
MRLST: gy-dk gy, occ dk brn, some spec, slty gr
ip, frm, sb plty-sb blky, v calc. Tr Pyr.
MRLST: gy-dk gy, occ dk brn, some spec, slty gr
ip, frm, sb plty-sb blky, v calc. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn, some spec, slty gr
ip, frm, sb plty-sb blky, v calc. Tr Pyr.
MRLST: gy-dk gy, occ
ip, frm, sb plty-sb blky
TVD (ft)
TVD (ft)
MD: 12,311'
Inclination: 90.58°
Azimuth: 271.22°
TVD: 7,883.89'
VS: 4,813.73'
MD: 12,406'
Inclination: 90.37°
Azimuth: 272.8°
TVD: 7,883.1'
VS: 4,908.44'

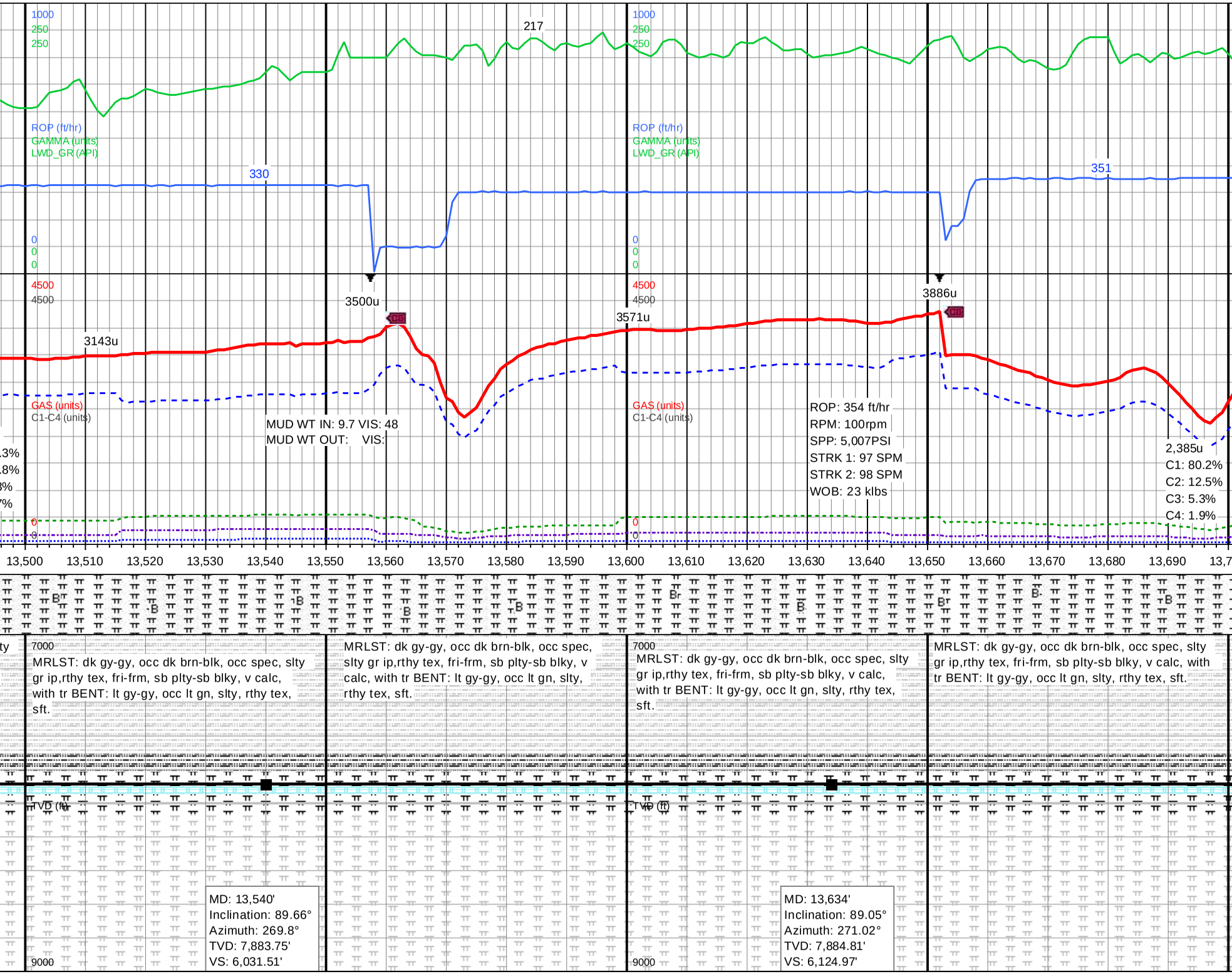

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
441
151
429
136
418
0
0
0
4500
4500
3941u
3696u
3756u
2912u
GAS (units)
C1-C4 (units)
3,513u
C1: 78.9%
C2: 13.4%
C3: 5.7%
C4: 2.1%
ROP: 386 ft/hr
RPM: 100rpm
SPP: 5,016PSI
STRK 1: 97 SPM
STRK 2: 98 SPM
WOB: 21.5 klbs
MUD WT IN: 9.6 VIS: 54
MUD WT OUT: 9.6+ VIS: 52
12,480
12,490
12,500
12,510
12,520
12,530
12,540
12,550
12,560
12,570
12,580
12,590
12,600
12,610
12,620
12,630
12,640
12,650
12,660
12,670
7000
MRLST: gy-dk gy, occ dk brn, spec, com slty gr, frm-hrd, sb plty-sb blky, v calc. Tr Pyr.
TVD(ft)
MD: 12,500'
Inclination: 90.46°
Azimuth: 271.33°
TVD: 7,882.42'
VS: 5,002.15'
MD: 12,595'
Inclination: 90.58°
Azimuth: 268.51°
TVD: 7,881.56'
VS: 5,096.52'

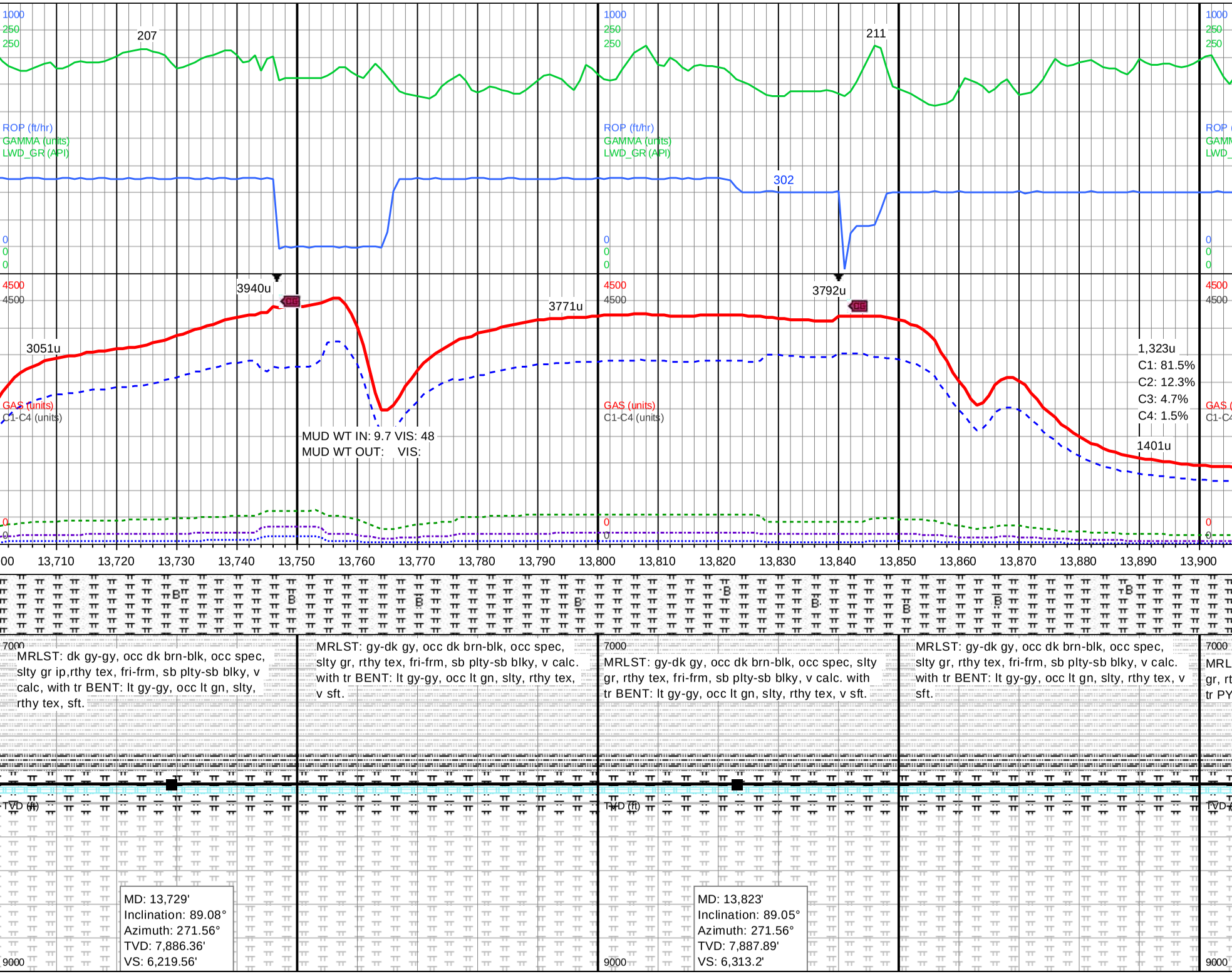

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
151
196
228
380
0
0
0
4500
4500
3313u
2927u
3994u
3676u
GAS (units)
C1-C4 (units)
2,706u
C1: 84.5%
C2: 9.8%
C3: 4.4%
C4: 1.3%
MUD WT IN: 9.6 VIS: 51
MUD WT OUT: 9.6 VIS: 49
12,680
12,690
12,700
12,710
12,720
12,730
12,740
12,750
12,760
12,770
12,780
12,790
12,800
12,810
12,820
12,830
12,840
12,850
12,860
12,870
brn, spec, com slty gr,
calc. Tr Pyr.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr
ip, fri-frm, sb plty-plty, v calc, with BENT: lt
gy-gy occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme spec,
slty gr ip, fri-frm, sb plty-plty, v calc, with
BENT: lt gy-gy occ lt gn, slty, rthy tex, sft.
7000
MRLST: gy-dk gy, occ dk brn, sme spec, slty
gr ip, fri-frm, sb plty-plty, v calc, with BENT: lt
gy-gy occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn,
gr ip, fri-frm, sb plty-plty, v cal
gy-gy occ lt gn, slty, rthy tex,
TVD (ft)
TVD (ft)
MD: 12,690'
Inclination: 89.78°
Azimuth: 265.3°
TVD: 7,881.26'
VS: 5,190.18'
9000
MD: 12,784'
Inclination: 90°
Azimuth: 266.91°
TVD: 7,881.44'
VS: 5,282.63'
9000
MD: 12,878'
Inclination: 9
Azimuth: 267
TVD: 7,881.3
VS: 5,375.45'

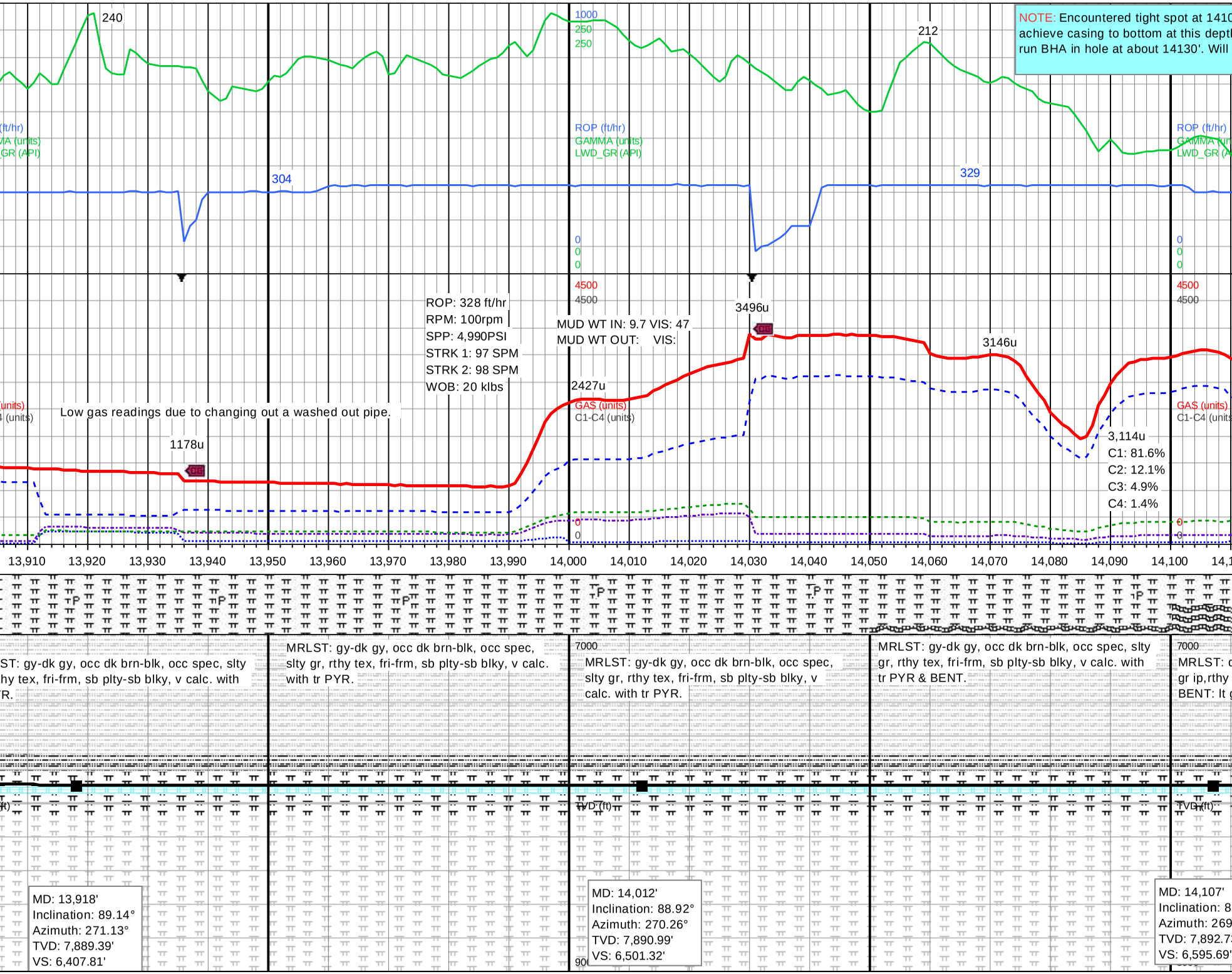

1000
250
250
244
218
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
353
352
0
0
0
4500
4500
3636u
3800u
4060u
3623u
3849u
GAS (units)
C1-C4 (units)
3,637u
C1: 82.1%
C2: 11.6%
C3: 4.8%
C4: 1.5%
12,890
12,900
12,910
12,920
12,930
12,940
12,950
12,960
12,970
12,980
12,990
13,000
13,010
13,020
13,030
13,040
13,050
13,060
13,070
13,080
7000
9000
TVD (ft)
sme spec, slty
c, with BENT: lt
sft.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc, with tr BENT: lt gy-gy occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc, with tr BENT: lt gy-gy occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme spec, slty gr ip, fri-frm, sb plty-plty, v calc, with tr BENT: lt gy-gy occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn, sme gr ip, fri-frm, sb plty-plty, v calc, wi BENT: lt gy-gy occ lt gn, slty, rthy t
0.09°
.85°
7'
MD: 12,973'
Inclination: 89.94°
Azimuth: 268.62°
TVD: 7,881.34'
VS: 5,469.46'
MD: 13,067'
Inclination: 89.94°
Azimuth: 268.78°
TVD: 7,881.44'
VS: 5,562.59'

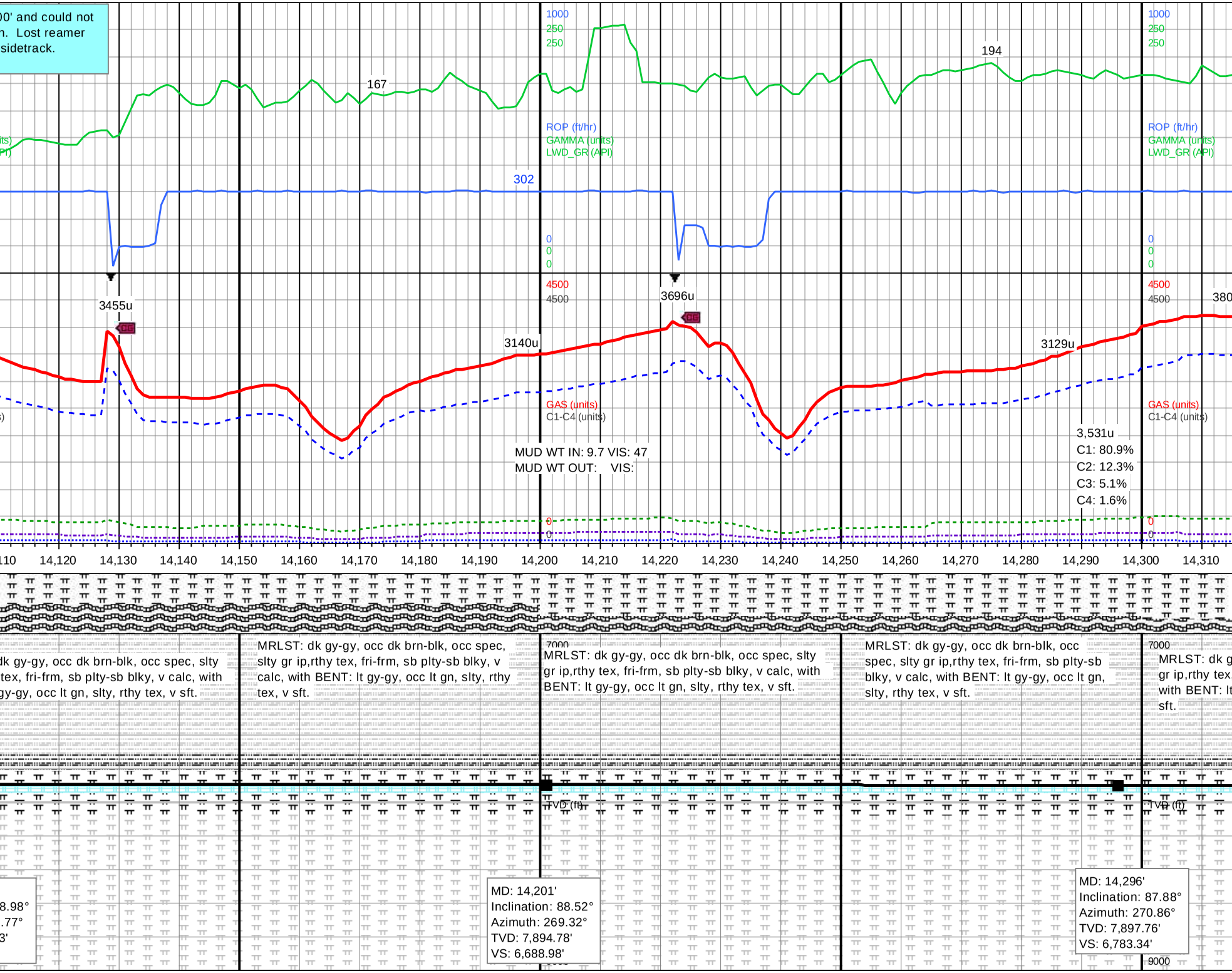

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
354
140
0
0
0
4500
4500
GAS (units)
C1-C4 (units)
3817u
4239u
3835u
1722u
3,366u
C1: 84%
C2: 10.2%
C3: 4.5%
C4: 1.2%
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
ROP: 325 ft/hr
RPM: 100rpm
SPP: 4,952PSI
STRK 1: 97 SPM
STRK 2: 98 SPM
WOB: 19 klbs
13,090
13,100
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
7000
9000
TVD (ft)
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
MD: 13,162'
Inclination: 89.85°
Azimuth: 269.03°
TVD: 7,881.62'
VS: 5,656.76'
MD: 13,256'
Inclination: 89.6°
Azimuth: 269.09°
TVD: 7,882.07'
VS: 5,749.97'

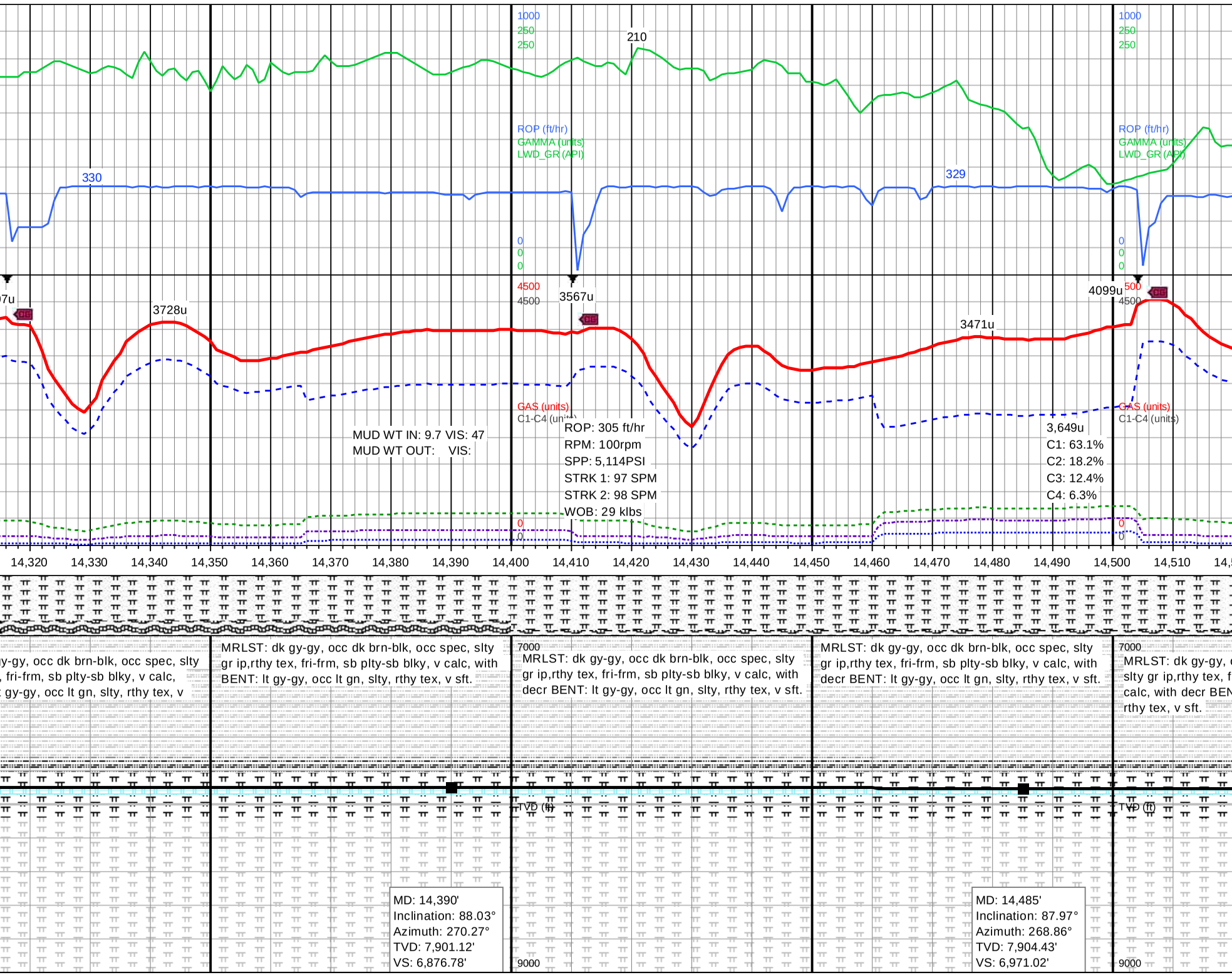

1000
250
250
175
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
330
0
0
0
4500
4500
3745u
GAS (units)
C1-C4 (units)
185u
1: 79.4%
2: 13.5%
3: 5.4%
4: 1.7%
0
0
90
13,300
13,310
13,320
13,330
13,340
13,350
13,360
13,370
13,380
13,390
13,400
13,410
13,420
13,430
13,440
13,450
13,460
13,470
13,480
13,490
1000
250
250
180
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
202
0
0
0
4500
4500
3905u
3855u
GAS (units)
C1-C4 (units)
3386u
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
3,096u
C1: 80
C2: 12
C3: 5.3
C4: 1.7
0
0
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft, & sme CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft, & sme CHK: dk gy-gy, occ off wh-crm, mot, sb plty-blky, fri-occ frm, rthy tex, v calc.
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, sl gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
TVD (ft)
MD: 13,351'
Inclination: 89.72°
Azimuth: 268.1°
TVD: 7,882.63'
VS: 5,844.07'
9000
TVD (ft)
MD: 13,445'
Inclination: 89.63°
Azimuth: 269.33°
TVD: 7,883.16'
VS: 5,937.2'
9000

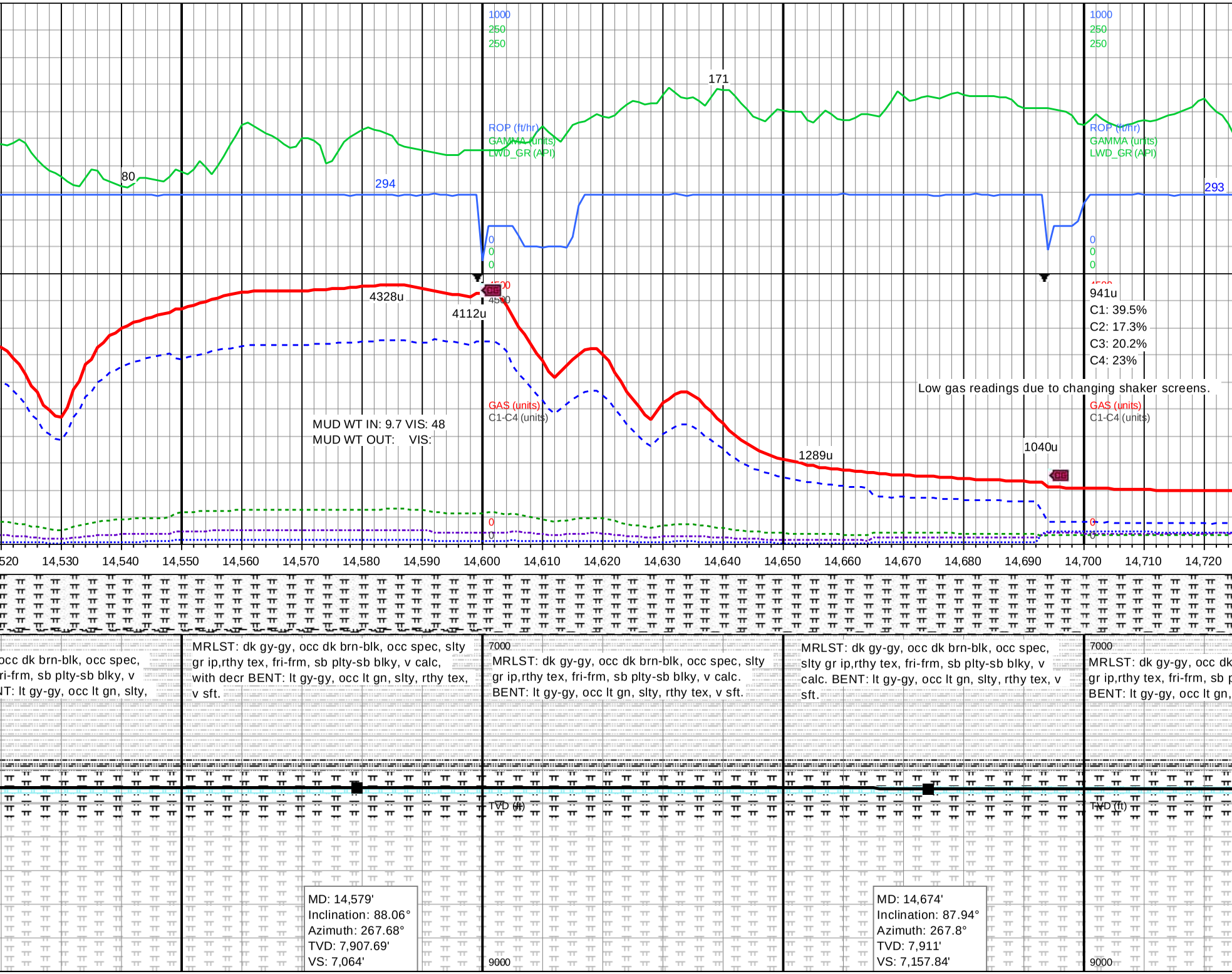

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
217
330
351
0
0
0
4500
4500
3500u
3571u
3886u
3143u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
ROP: 354 ft/hr
RPM: 100rpm
SPP: 5,007PSI
STRK 1: 97 SPM
STRK 2: 98 SPM
WOB: 23 klbs
2,385u
C1: 80.2%
C2: 12.5%
C3: 5.3%
C4: 1.9%
13,500
13,510
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
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
TVD (ft)
MD: 13,540'
Inclination: 89.66°
Azimuth: 269.8°
TVD: 7,883.75'
VS: 6,031.51'
MD: 13,634'
Inclination: 89.05°
Azimuth: 271.02°
TVD: 7,884.81'
VS: 6,124.97'
9000

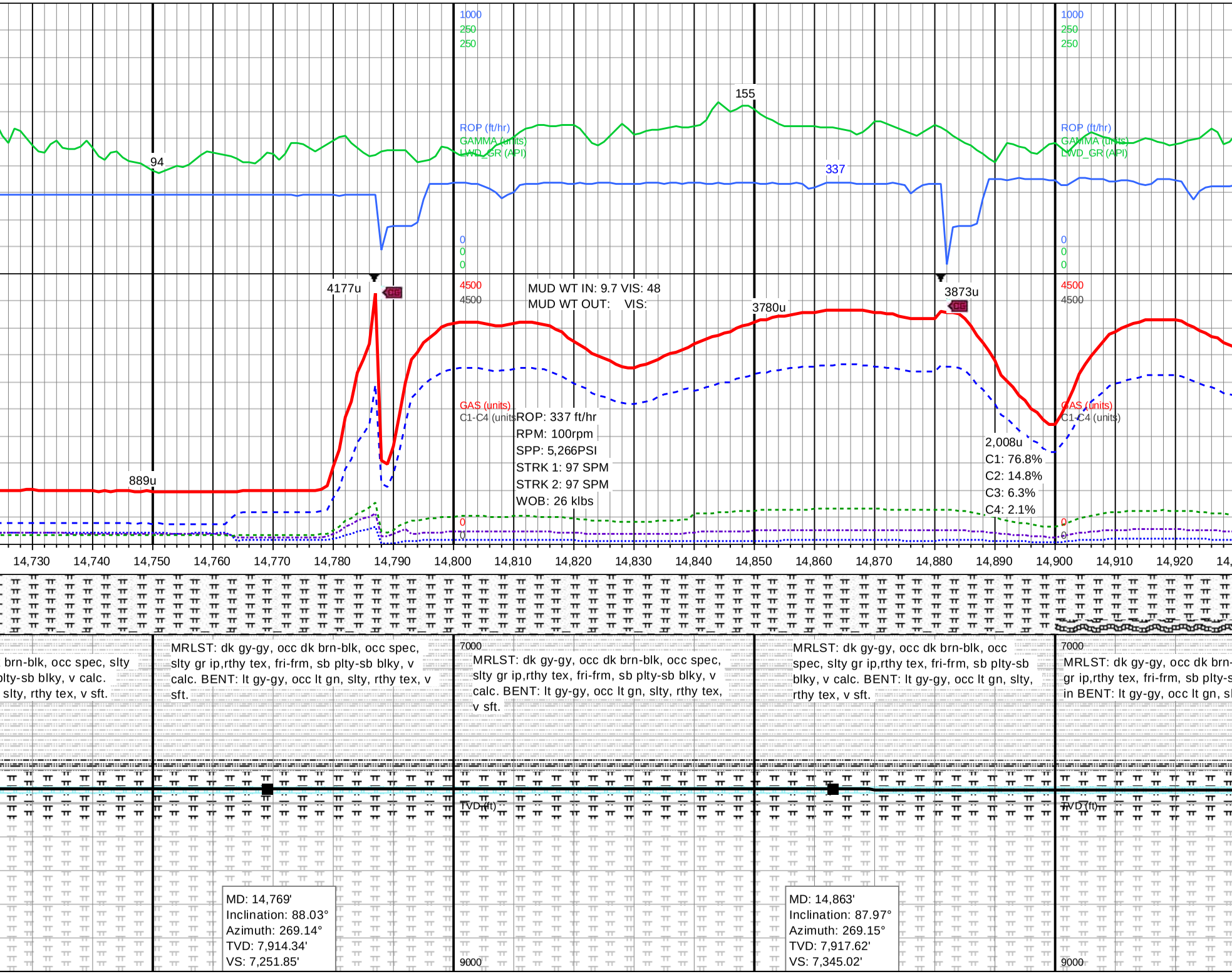

1000
250
250
207
211
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
302
0
0
0
4500
4500
3940u
3792u
3771u
3051u
1,323u
C1: 81.5%
C2: 12.3%
C3: 4.7%
C4: 1.5%
1401u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
13,710
13,720
13,730
13,740
13,750
13,760
13,770
13,780
13,790
13,800
13,810
13,820
13,830
13,840
13,850
13,860
13,870
13,880
13,890
13,900
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, sft.
MRLST: gy-dk gy, occ dk brn-blk, occ spec, slty gr, rthy tex, fri-frm, sb plty-sb blky, v calc. with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: gy-dk gy, occ dk brn-blk, occ spec, slty gr, rthy tex, fri-frm, sb plty-sb blky, v calc. with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: gy-dk gy, occ dk brn-blk, occ spec, slty gr, rthy tex, fri-frm, sb plty-sb blky, v calc. with tr BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
TVD (ft)
MD: 13,729'
Inclination: 89.08°
Azimuth: 271.56°
TVD: 7,886.36'
VS: 6,219.56'
MD: 13,823'
Inclination: 89.05°
Azimuth: 271.56°
TVD: 7,887.89'
VS: 6,313.2'
9000

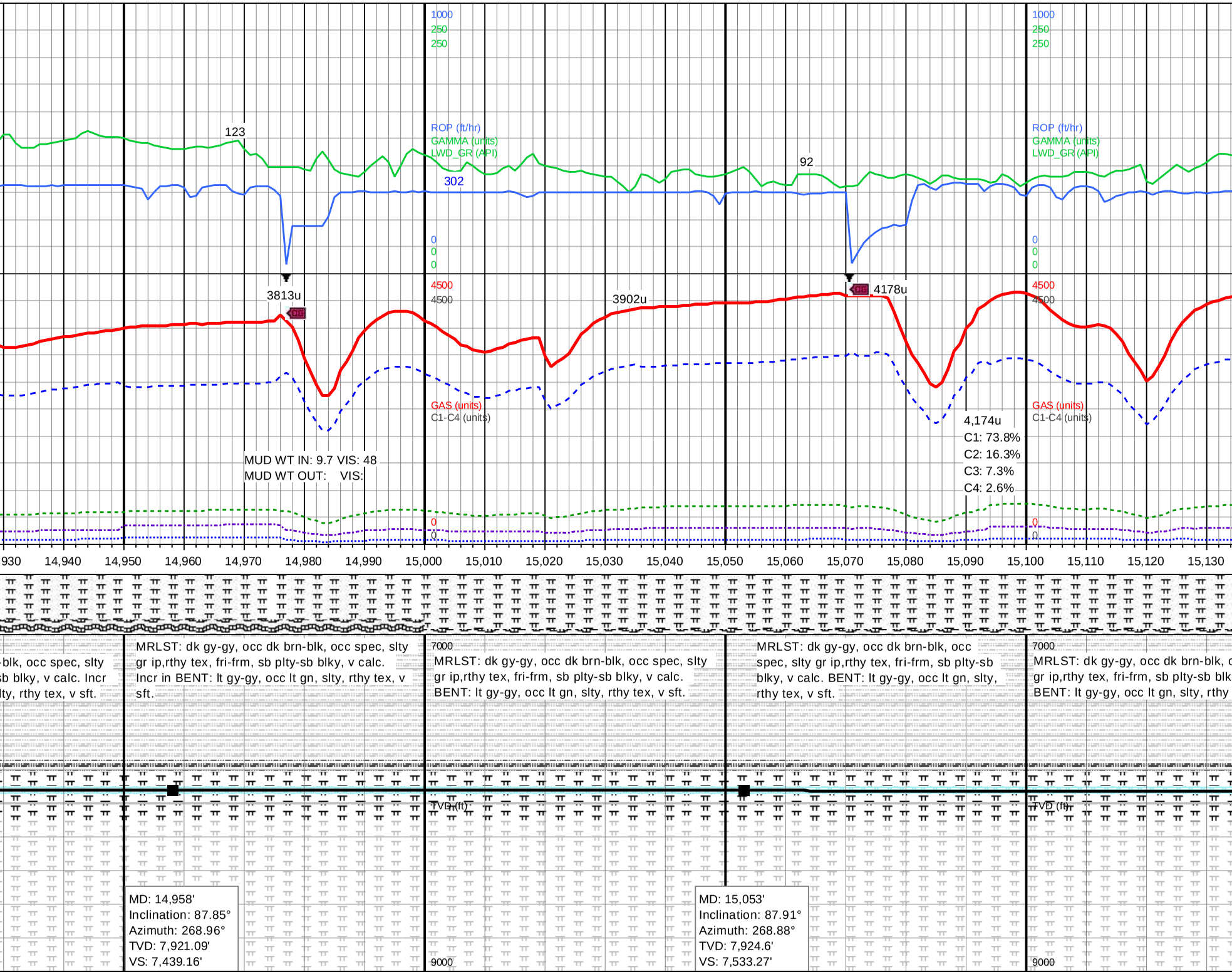

NOTE: Encountered tight spot at 1410
achieve casing to bottom at this depth
run BHA in hole at about 14130'. Will
240
212
304
329
1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
0
0
0
4500
4500
ROP: 328 ft/hr
RPM: 100rpm
SPP: 4,990PSI
STRK 1: 97 SPM
STRK 2: 98 SPM
WOB: 20 klbs
MUD WT IN: 9.7 VIS: 47
MUD WT OUT: VIS:
3496u
3146u
2427u
GAS (units)
C1-C4 (units)
Low gas readings due to changing out a washed out pipe.
1178u
3,114u
C1: 81.6%
C2: 12.1%
C3: 4.9%
C4: 1.4%
13,910
13,920
13,930
13,940
13,950
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
MRLST: gy-dk gy, occ dk brn-blk, occ spec,
slty gr, rthy tex, fri-frm, sb plty-sb blky, v calc.
with tr PYR.
MRLST: gy-dk gy, occ dk brn-blk, occ spec, slty
gr, rthy tex, fri-frm, sb plty-sb blky, v calc. with
tr PYR & BENT.
7000
TVD (ft)
MD: 13,918'
Inclination: 89.14°
Azimuth: 271.13°
TVD: 7,889.39'
VS: 6,407.81'
MD: 14,012'
Inclination: 88.92°
Azimuth: 270.26°
TVD: 7,890.99'
VS: 6,501.32'
MD: 14,107'
Inclination: 8
Azimuth: 269
TVD: 7,892.7
VS: 6,595.69'

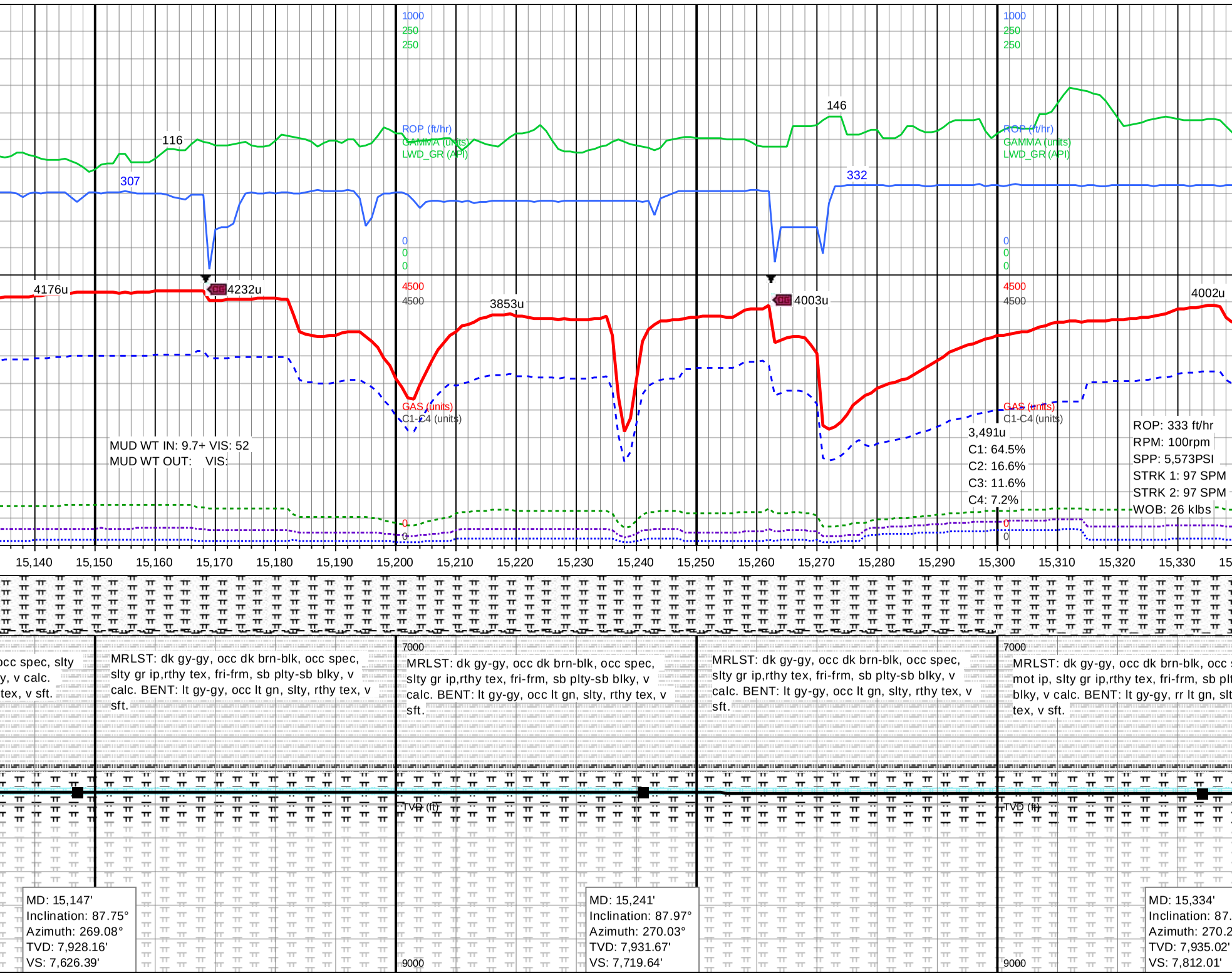

00' and could not
n. Lost reamer
sidetrack.
1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
167
194
302
0
0
0
4500
4500
3455u
3696u
3140u
3129u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 47
MUD WT OUT: VIS:
3,531u
C1: 80.9%
C2: 12.3%
C3: 5.1%
C4: 1.6%
14,110
14,120
14,130
14,140
14,150
14,160
14,170
14,180
14,190
14,200
14,210
14,220
14,230
14,240
14,250
14,260
14,270
14,280
14,290
14,300
14,310
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
7000
TVD (ft)
MD: 14,201'
Inclination: 88.52°
Azimuth: 269.32°
TVD: 7,894.78'
VS: 6,688.98'
MD: 14,296'
Inclination: 87.88°
Azimuth: 270.86°
TVD: 7,897.76'
VS: 6,783.34'
9000

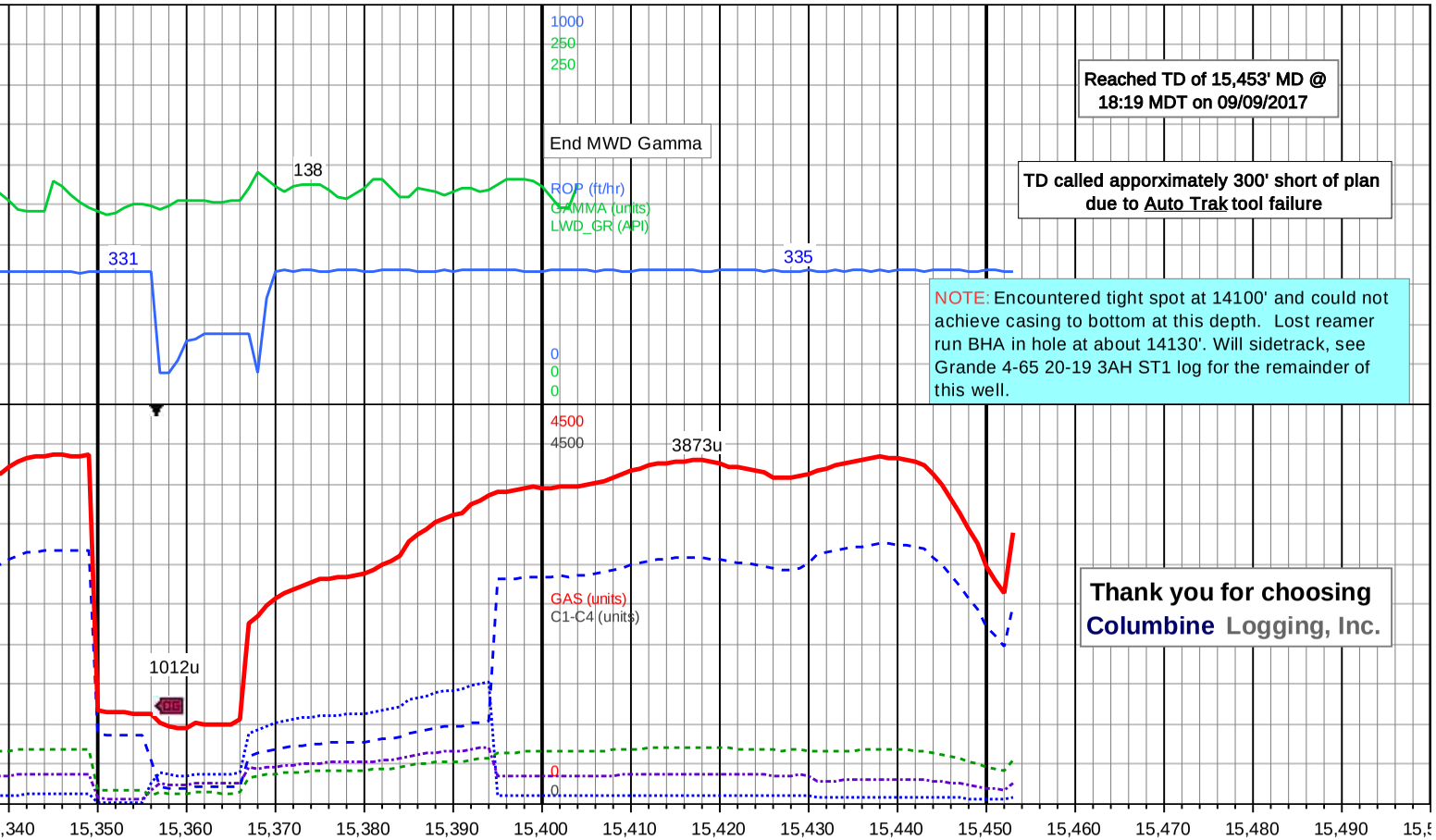

1000
250
250
210
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
330
329
0
0
0
4500
4500
3567u
3728u
4099u
3471u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 47
MUD WT OUT: VIS:
ROP: 305 ft/hr
RPM: 100rpm
SPP: 5,114PSI
STRK 1: 97 SPM
STRK 2: 98 SPM
WOB: 29 klbs
3,649u
C1: 63.1%
C2: 18.2%
C3: 12.4%
C4: 6.3%
14,320
14,330
14,340
14,350
14,360
14,370
14,380
14,390
14,400
14,410
14,420
14,430
14,440
14,450
14,460
14,470
14,480
14,490
14,500
14,510
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with decr BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
7000
TVD (ft)
9000
MD: 14,390'
Inclination: 88.03°
Azimuth: 270.27°
TVD: 7,901.12'
VS: 6,876.78'
MD: 14,485'
Inclination: 87.97°
Azimuth: 268.86°
TVD: 7,904.43'
VS: 6,971.02'

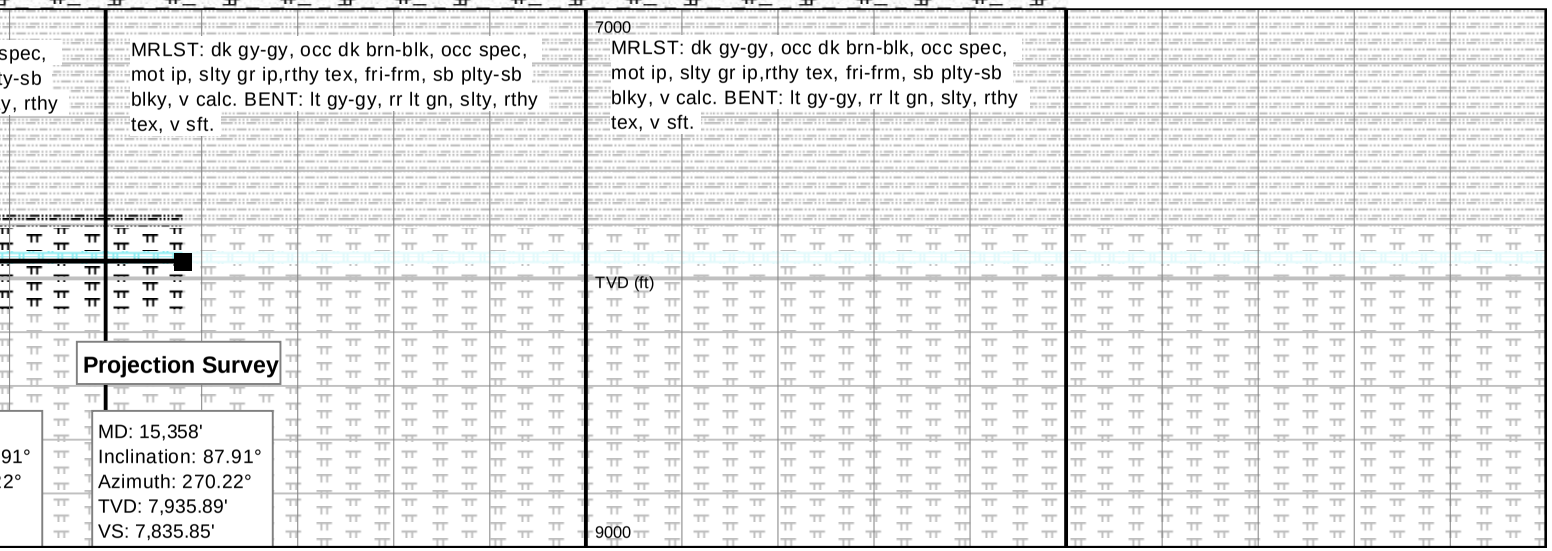

1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
171
80
294
293
0
0
0
4328u
4112u
941u
C1: 39.5%
C2: 17.3%
C3: 20.2%
C4: 23%
Low gas readings due to changing shaker screens.
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
1289u
1040u
14,520
14,530
14,540
14,550
14,560
14,570
14,580
14,590
14,600
14,610
14,620
14,630
14,640
14,650
14,660
14,670
14,680
14,690
14,700
14,710
14,720
occ dk brn-blk, occ spec, ri-frm, sb plty-sb blky, v NT: lt gy-gy, occ lt gn, slty,
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc, with decr BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc. BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc. BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
7000
TVD (ft)
9000
MD: 14,579'
Inclination: 88.06°
Azimuth: 267.68°
TVD: 7,907.69'
VS: 7,064'
MD: 14,674'
Inclination: 87.94°
Azimuth: 267.8°
TVD: 7,911'
VS: 7,157.84'


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
155
94
337
0
0
0
4500
4500
4177u
3780u
3873u
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
GAS (units)
C1-C4 (units)
ROP: 337 ft/hr
RPM: 100rpm
SPP: 5,266PSI
STRK 1: 97 SPM
STRK 2: 97 SPM
WOB: 26 klbs
889u
2,008u
C1: 76.8%
C2: 14.8%
C3: 6.3%
C4: 2.1%
14,730
14,740
14,750
14,760
14,770
14,780
14,790
14,800
14,810
14,820
14,830
14,840
14,850
14,860
14,870
14,880
14,890
14,900
14,910
14,920
brn-blk, occ spec, slty
lty-sb blky, v calc.
slty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec,
slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v
calc. BENT: lt gy-gy, occ lt gn, slty, rthy tex, v
sft.
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec,
slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v
calc. BENT: lt gy-gy, occ lt gn, slty, rthy tex,
v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ
spec, slty gr ip,rthy tex, fri-frm, sb plty-sb
blky, v calc. BENT: lt gy-gy, occ lt gn, slty,
rthy tex, v sft.
7000
MRLST: dk gy-gy, occ dk brn-
gr ip,rthy tex, fri-frm, sb plty-s
in BENT: lt gy-gy, occ lt gn, sl
TVD (ft)
TVD (ft)
TVD (ft)
MD: 14,769'
Inclination: 88.03°
Azimuth: 269.14°
TVD: 7,914.34'
VS: 7,251.85'
9000
MD: 14,863'
Inclination: 87.97°
Azimuth: 269.15°
TVD: 7,917.62'
VS: 7,345.02'
9000


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
123
302
92
0
0
0
4500
4500
3813u
3902u
4178u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7 VIS: 48
MUD WT OUT: VIS:
4,174u
C1: 73.8%
C2: 16.3%
C3: 7.3%
C4: 2.6%
14,930
14,940
14,950
14,960
14,970
14,980
14,990
15,000
15,010
15,020
15,030
15,040
15,050
15,060
15,070
15,080
15,090
15,100
15,110
15,120
15,130
-blk, occ spec, slty
sb blky, v calc. Incr
lty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty
gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc.
Incr in BENT: lt gy-gy, occ lt gn, slty, rthy tex, v
sft.
7000
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty
gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc.
BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
MRLST: dk gy-gy, occ dk brn-blk, occ
spec, slty gr ip,rthy tex, fri-frm, sb plty-sb
blky, v calc. BENT: lt gy-gy, occ lt gn, slty,
rthy tex, v sft.
7000
MRLST: dk gy-gy, occ dk brn-blk, c
gr ip,rthy tex, fri-frm, sb plty-sb blk
BENT: lt gy-gy, occ lt gn, slty, rthy
TVD (ft)
TVD (ft)
TVD (ft)
MD: 14,958'
Inclination: 87.85°
Azimuth: 268.96°
TVD: 7,921.09'
VS: 7,439.16'
MD: 15,053'
Inclination: 87.91°
Azimuth: 268.88°
TVD: 7,924.6'
VS: 7,533.27'
9000
9000


1000
250
250
ROP (ft/hr)
GAMMA (units)
LWD_GR (API)
116
307
146
332
0
0
0
4176u
4232u
4500
4500
3853u
4003u
4002u
GAS (units)
C1-C4 (units)
MUD WT IN: 9.7+ VIS: 52
MUD WT OUT: VIS:
3,491u
C1: 64.5%
C2: 16.6%
C3: 11.6%
C4: 7.2%
ROP: 333 ft/hr
RPM: 100rpm
SPP: 5,573PSI
STRK 1: 97 SPM
STRK 2: 97 SPM
WOB: 26 klbs
15,140
15,150
15,160
15,170
15,180
15,190
15,200
15,210
15,220
15,230
15,240
15,250
15,260
15,270
15,280
15,290
15,300
15,310
15,320
15,330
MRLST: dk gy-gy, occ dk brn-blk, occ spec, slty gr ip,rthy tex, fri-frm, sb plty-sb blky, v calc. BENT: lt gy-gy, occ lt gn, slty, rthy tex, v sft.
7000
TVD (ft)
9000
MD: 15,147'
Inclination: 87.75°
Azimuth: 269.08°
TVD: 7,928.16'
VS: 7,626.39'
MD: 15,241'
Inclination: 87.97°
Azimuth: 270.03°
TVD: 7,931.67'
VS: 7,719.64'
MD: 15,334'
Inclination: 87.
Azimuth: 270.2
TVD: 7,935.02'
VS: 7,812.01'





Projection Survey

MD: 15,358'
Inclination: 87.91°
Azimuth: 270.22°
TVD: 7,935.89'
VS: 7,835.85'