COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name	State Pronghorn 44-14-29HNB		
Location	SESE SECTION 29, T5N, R61W		
State	COLORADO	**County**	WELD
Country	USA	**Rig Number**	CADE 25
API Number	05-123-40061	**AFE #**	15020
Region	DJ BASIN	**Field**	WATTENBERG
Spud Date	2/5/2015	**Drilling Completed**	2/10/2015
Surface Coordinates	1240' FSL x 250' FEL		
Bottom Hole Coordinates	626' FSL x 547' FWL		
Ground Elevation	4601'	**K.B. Elevation**	4618'
Logged Interval	5600' **To** 10574'	**Total Depth**	10574'
Formation	NIOBRARA B CHALK		
Type of Drilling Fluid	FW LSND		

Operator

Company Bonanza Creek Energy Inc.

Address 410 17th STREET, SUITE 1500
DENVER, CO 80202

Geologist

Name BRANT LOGAN

Company BONANZA CREEK ENERGY INC.

Address 410 17th STREET, SUITE 1500
DENVER, CO 80202

Other

COLUMBINE LOGGING, INC. 602 S. LIPAN STREET
DENVER, COLORADO 8

WELL SITE GEOLOGISTS JOEY LUCE
JEFF LACY

Zone Color Coding

Oil
Note
Error
Condensate
Core
Water
Gas
Pres
Sea

30223

ssure

Rock Types

- UNKNOWN
- ANHYDRITE
- BENTONITE
- BRECCIA
- CHALK
- CEMENT
- CHERT
- CLAY CHOKE SANC
- CLAYSTONE
- COAL
- CONGLOMERATE
- DOLOMITE
- DOLOMITIC LIMESTONE
- GRANITE
- GYPSUM
- IGNEOUS
- SIDERITE or LIMONITE
- LIMESTONE
- MARLSTONE
- METAMORPHIC
- NO SAMPLE
- SALT
- SANDSTONE
- SALT-PEPPER SANC
- 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
- F FOSSIL
- GASTROPOD
- INOCERAMUS
- OOLITE
- OSTRACOD
- PELECYPOD
- PELLET
- PISOLITE
- PLANT REMAINS
- PLANT SPORES
- SCAPHOPOD
- STROMATOPOROID

Minerals

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

Oil Show

- P PINPOINT
- VUGGY
- D DEAD
- EVEN
- QUESTIONABLE
- SPOTTED STAINING

Engineering

- BIT
- CONNECTION (UP)
- CONNECTION (DOW

Porosity

- CONNECTION GAS
- E EARTHY
- CONNECTION GA
- FENESTRAL
- TRIP GAS
- F FRACTURE
- TRIP GAS (LEFT)
- INTERCRYSTALLINE
- DOWN TIME GAS
- INTEROOLITIC
- DOWN TIME GAS
- MOLDIC
- CORE - LOST
- O ORGANIC
- CORE - RECOVERED

Other Symbols

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

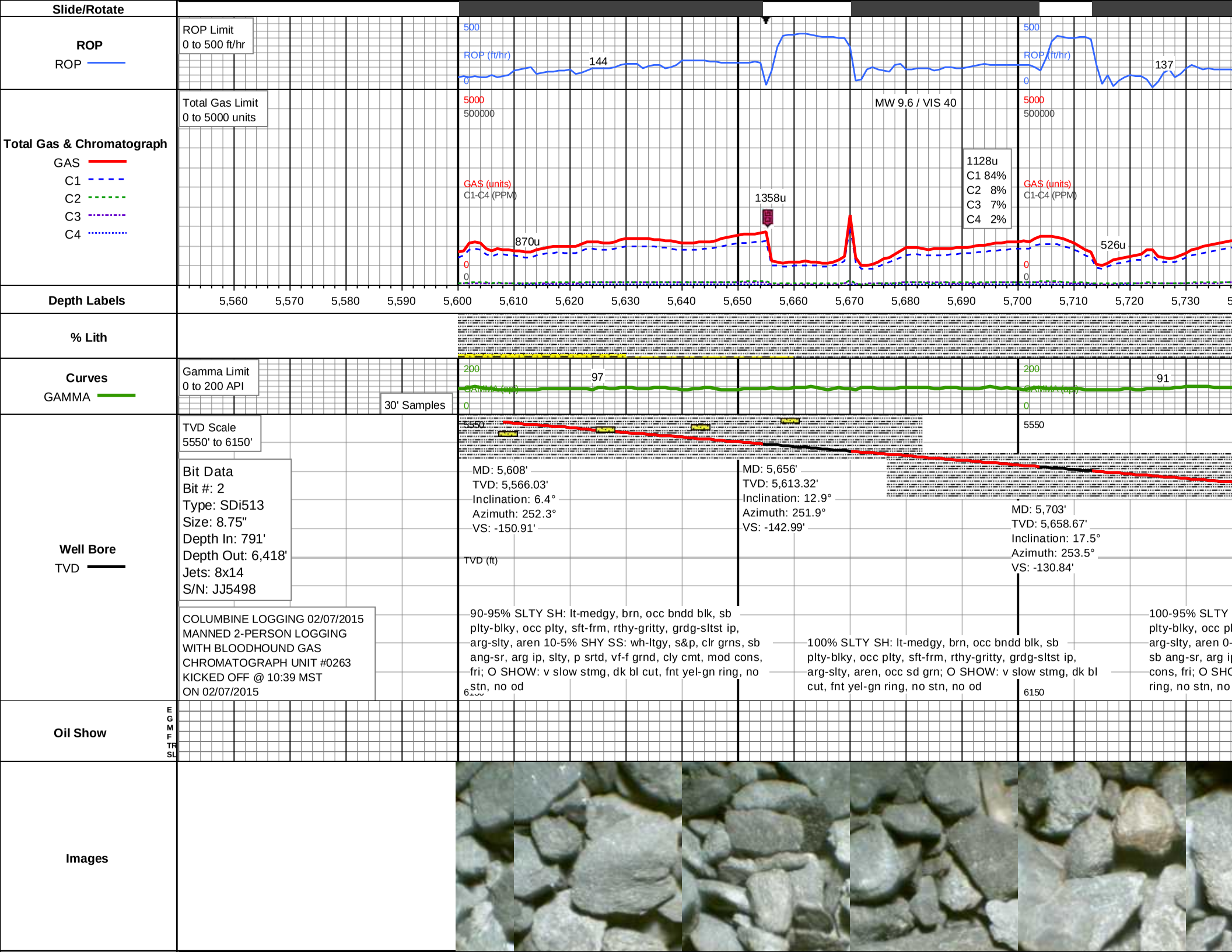
WACKESTONE

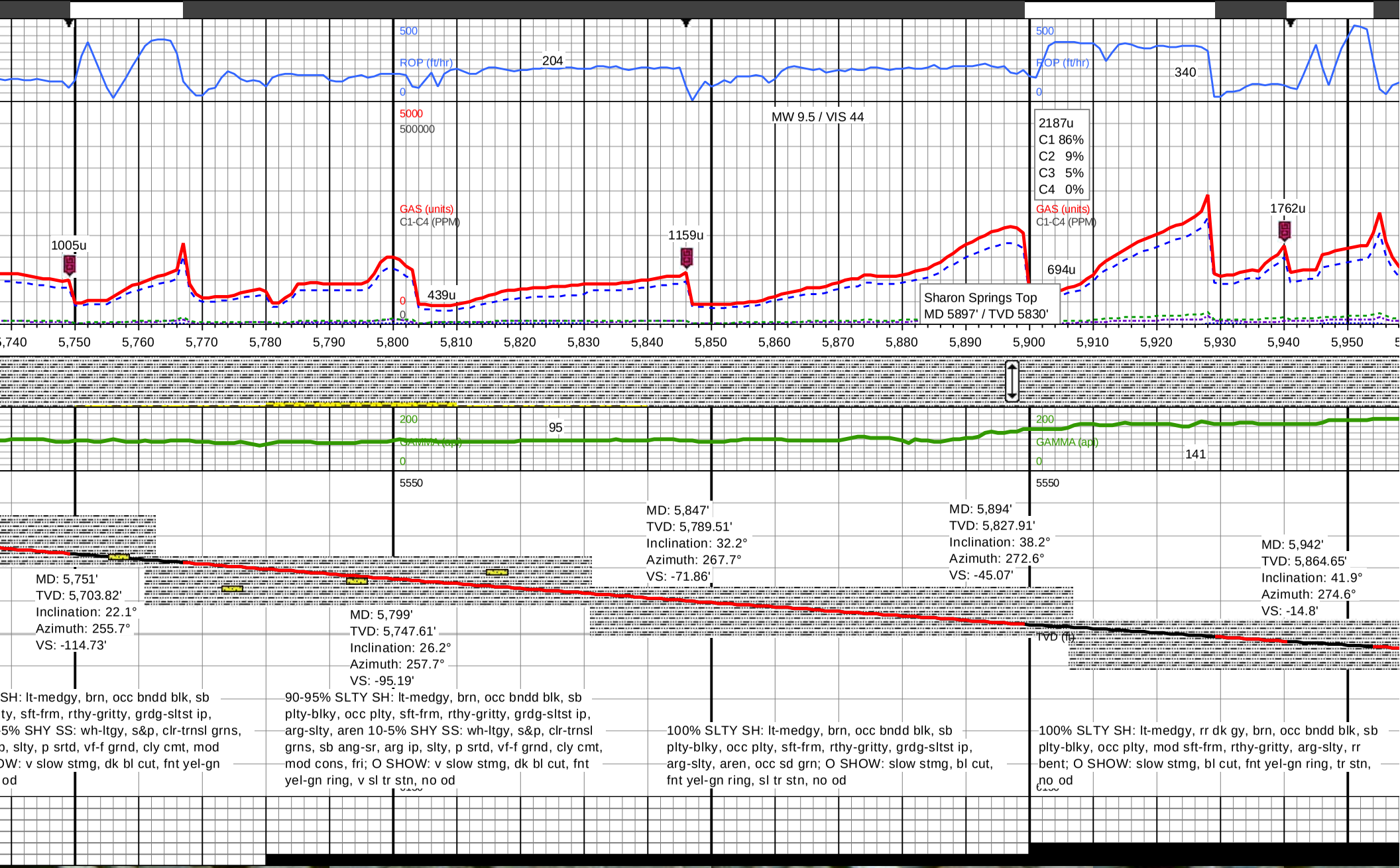
Sorting

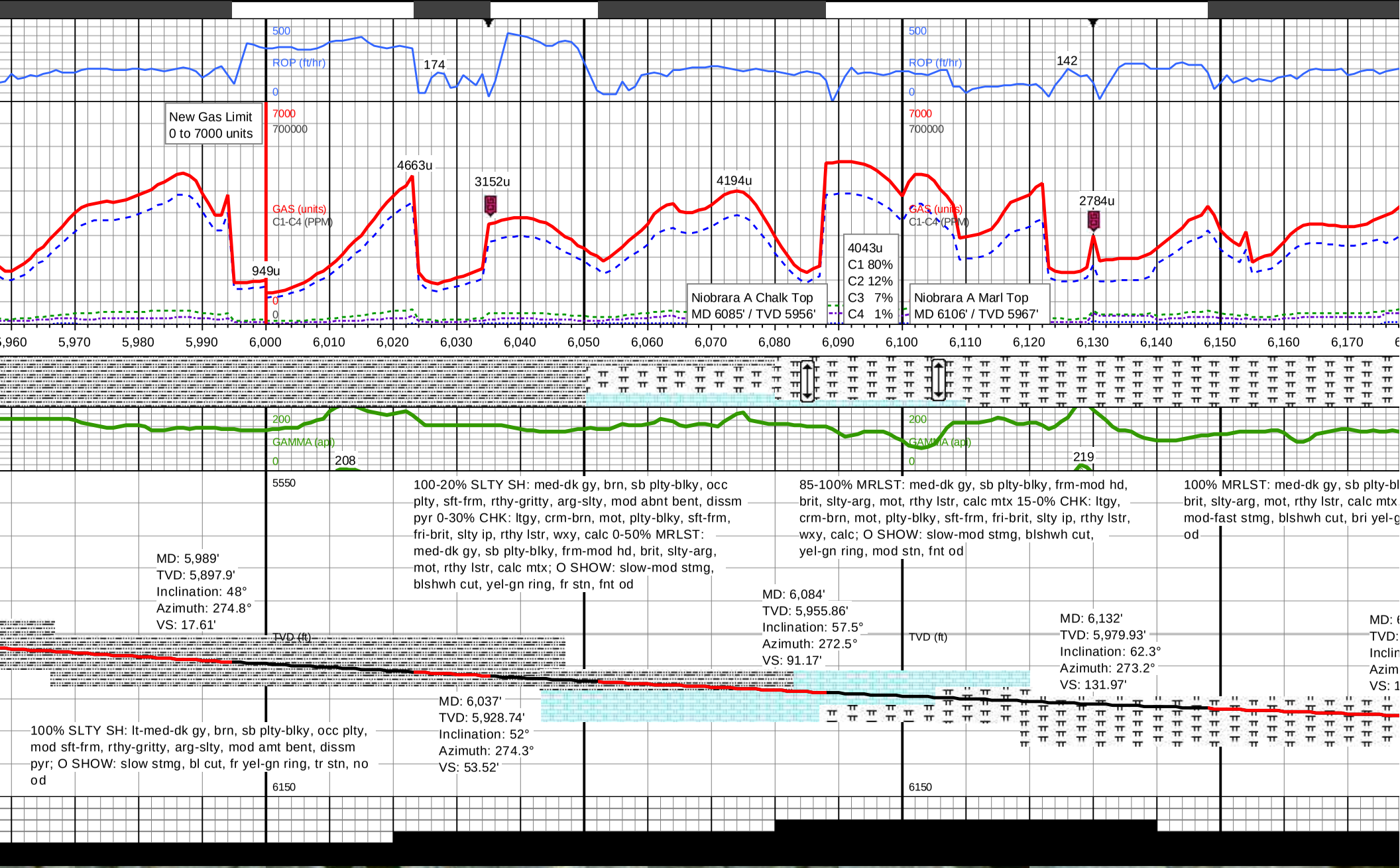
MODERATE

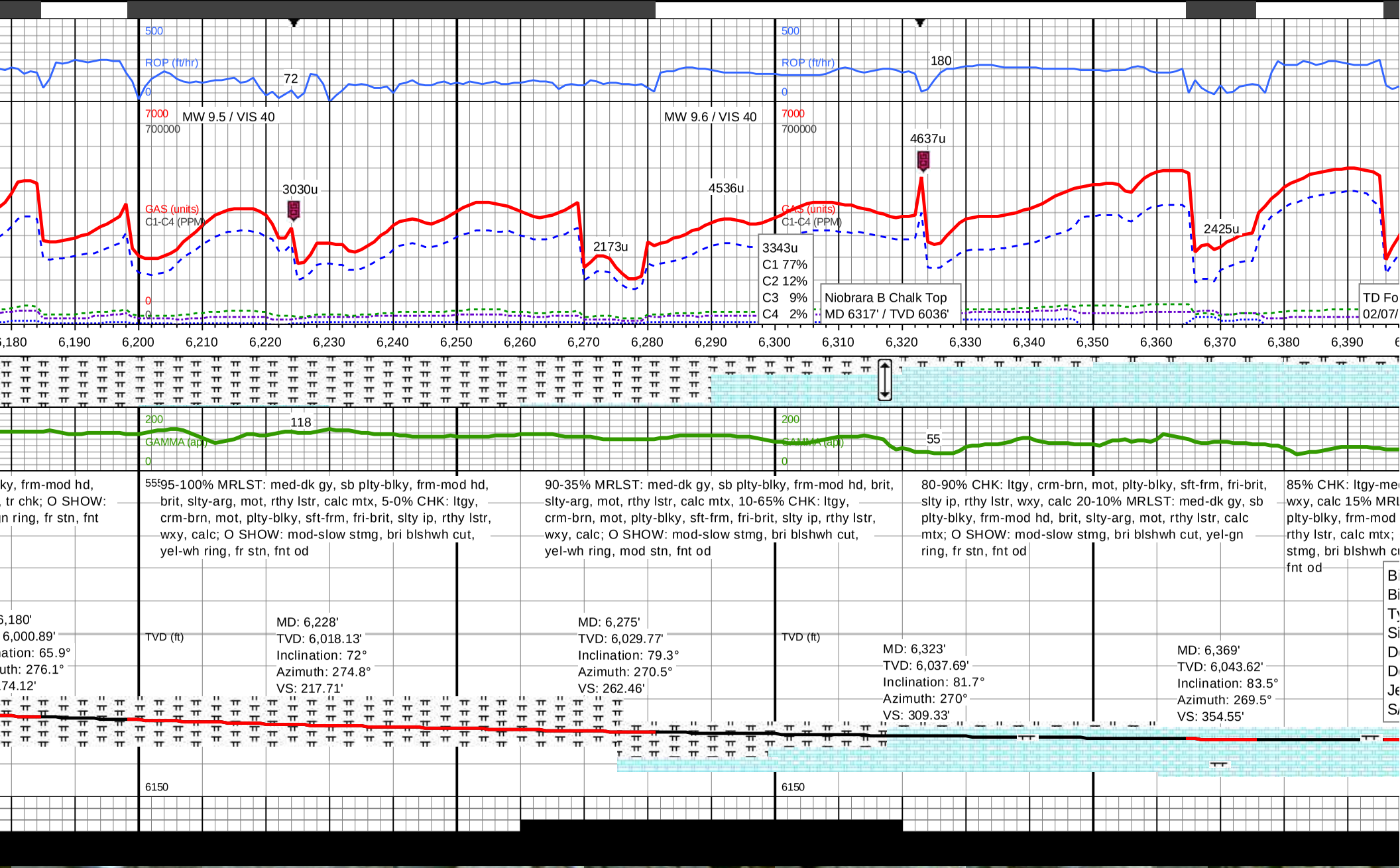
POOR

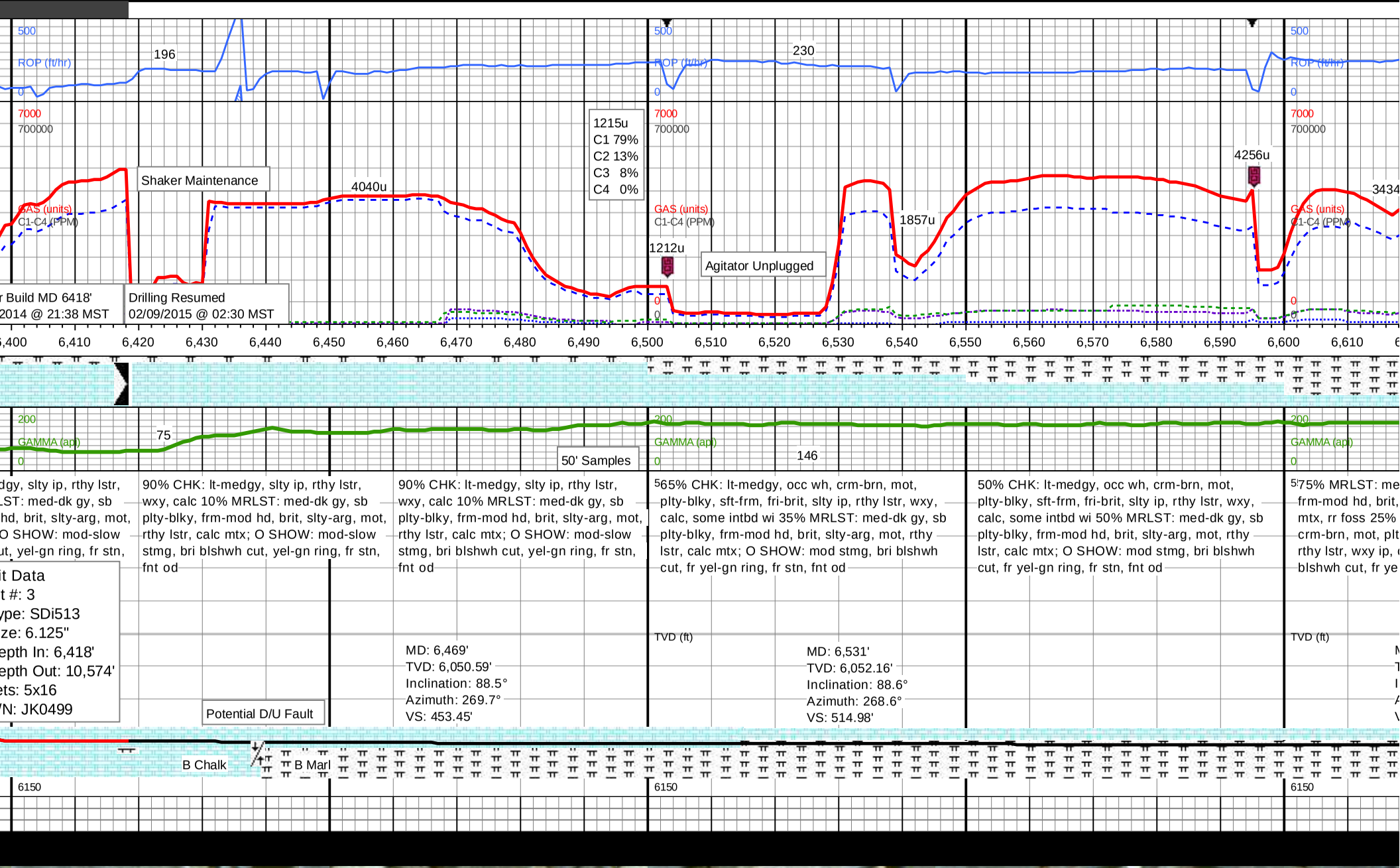
WELL

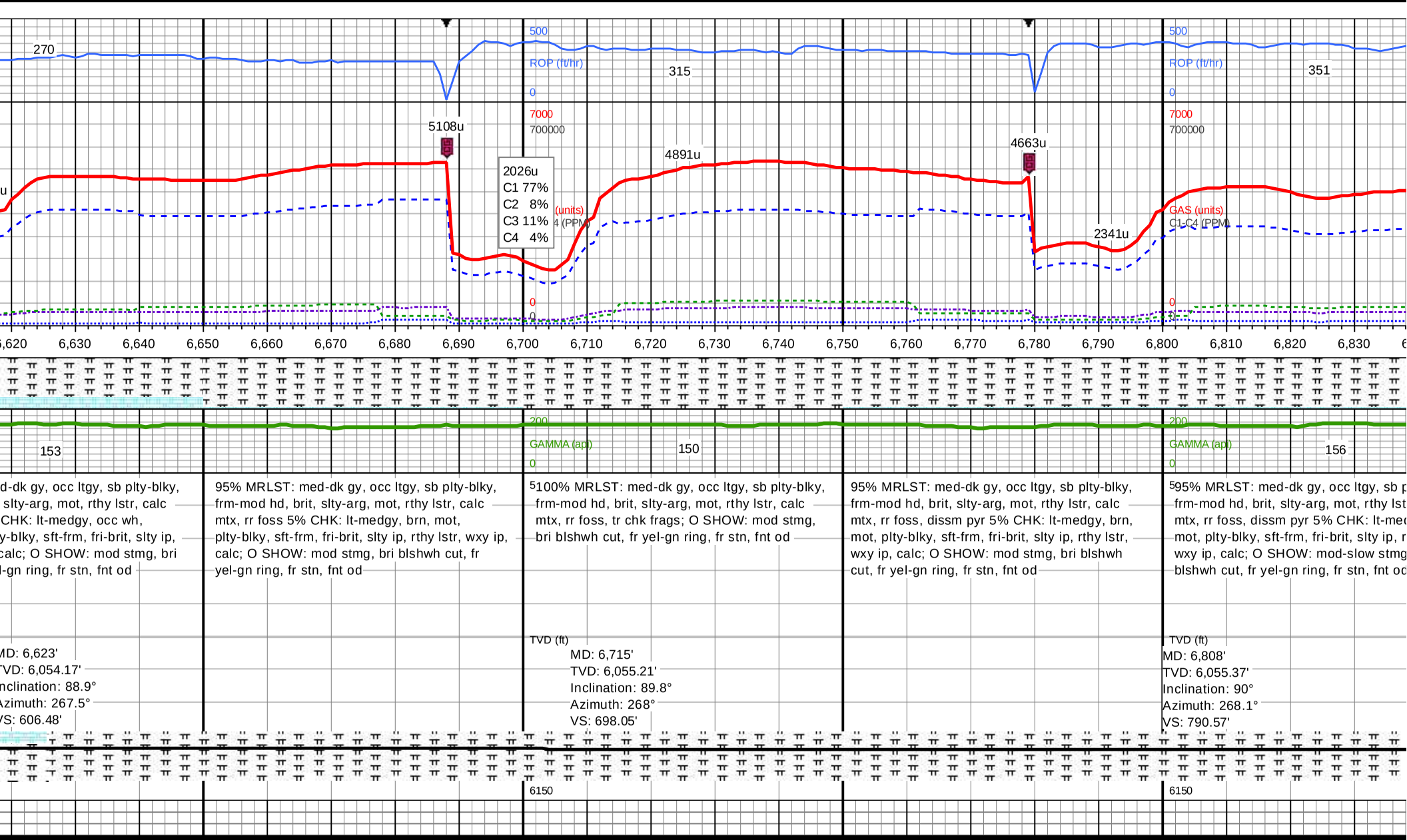

Slide/Rotate
ROP
ROP
ROP Limit
0 to 500 ft/hr
500
ROP (ft/hr)
0
144
137
Total Gas & Chromatograph
GAS
C1
C2
C3
C4
Total Gas Limit
0 to 5000 units
5000
500000
GAS (units)
C1-C4 (PPM)
MW 9.6 / VIS 40
1128u
C1 84%
C2 8%
C3 7%
C4 2%
1358u
870u
526u
Depth Labels
5,560
5,570
5,580
5,590
5,600
5,610
5,620
5,630
5,640
5,650
5,660
5,670
5,680
5,690
5,700
5,710
5,720
5,730
% Lith
Curves
GAMMA
Gamma Limit
0 to 200 API
200
97
91
30' Samples
TVD Scale
5550' to 6150'
5550
6150
Well Bore
TVD
Bit Data
Bit #: 2
Type: SDi513
Size: 8.75"
Depth In: 791'
Depth Out: 6,418'
Jets: 8x14
S/N: JJ5498
MD: 5,608'
TVD: 5,566.03'
Inclination: 6.4°
Azimuth: 252.3°
VS: -150.91'
MD: 5,656'
TVD: 5,613.32'
Inclination: 12.9°
Azimuth: 251.9°
VS: -142.99'
MD: 5,703'
TVD: 5,658.67'
Inclination: 17.5°
Azimuth: 253.5°
VS: -130.84'
TVD (ft)
COLUMBINE LOGGING 02/07/2015
MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0263
KICKED OFF @ 10:39 MST
ON 02/07/2015
90-95% SLTY SH: lt-medgy, brn, occ bndd blk, sb plty-blky, occ plty, sft-frm, rthy-gritty, grdg-sltst ip, arg-slty, aren 10-5% SHY SS: wh-ltgy, s&p, clr grns, sb ang-sr, arg ip, slty, p srtd, vf-f grnd, cly cmt, mod cons, fri; O SHOW: v slow stmg, dk bl cut, fnt yel-gn ring, no stn, no od
100% SLTY SH: lt-medgy, brn, occ bndd blk, sb plty-blky, occ plty, sft-frm, rthy-gritty, grdg-sltst ip, arg-slty, aren, occ sd grn; O SHOW: v slow stmg, dk bl cut, fnt yel-gn ring, no stn, no od
100-95% SLTY
plty-blky, occ pl
arg-slty, aren 0-
sb ang-sr, arg i
cons, fri; O SHO
ring, no stn, no
Oil Show
E
G
M
F
TR
SL
Images

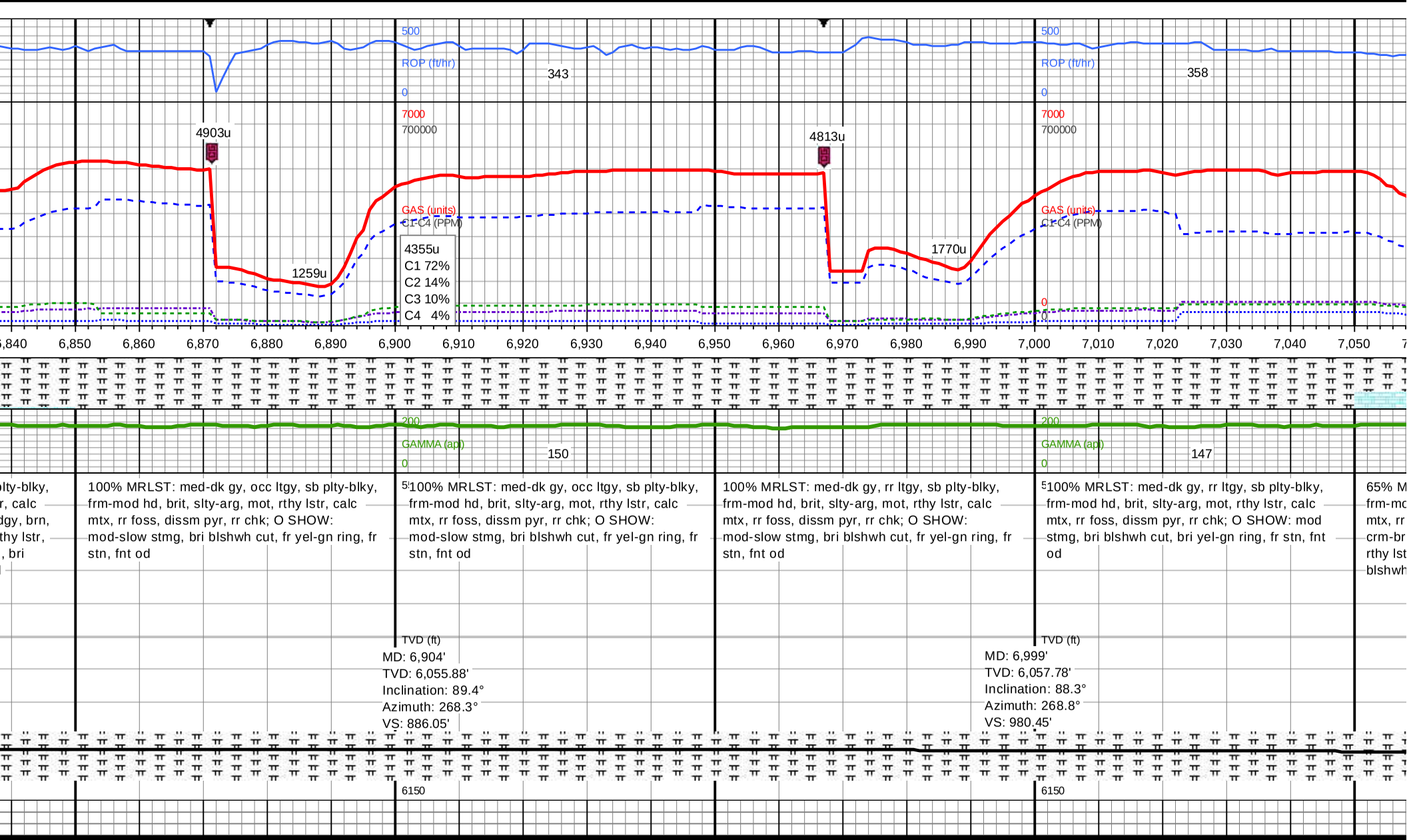

500
ROP (ft/hr)
0
204
5000
500000
MW 9.5 / VIS 44
GAS (units)
C1-C4 (PPM)
1005u
1159u
439u
694u
1762u
340
2187u
C1 86%
C2 9%
C3 5%
C4 0%
Sharon Springs Top
MD 5897' / TVD 5830'
5,740
5,750
5,760
5,770
5,780
5,790
5,800
5,810
5,820
5,830
5,840
5,850
5,860
5,870
5,880
5,890
5,900
5,910
5,920
5,930
5,940
5,950
200
GAMMA (api)
95
141
5550
MD: 5,751'
TVD: 5,703.82'
Inclination: 22.1°
Azimuth: 255.7°
VS: -114.73'
MD: 5,799'
TVD: 5,747.61'
Inclination: 26.2°
Azimuth: 257.7°
VS: -95.19'
MD: 5,847'
TVD: 5,789.51'
Inclination: 32.2°
Azimuth: 267.7°
VS: -71.86'
MD: 5,894'
TVD: 5,827.91'
Inclination: 38.2°
Azimuth: 272.6°
VS: -45.07'
MD: 5,942'
TVD: 5,864.65'
Inclination: 41.9°
Azimuth: 274.6°
VS: -14.8'
TVD (ft)
SH: lt-medgy, brn, occ bndd blk, sb
ty, sft-frm, rthy-gritty, grdg-sltst ip,
5% SHY SS: wh-ltgy, s&p, clr-trnsl grns,
p, slty, p srtd, vf-f grnd, cly cmt, mod
OW: v slow stmg, dk bl cut, fnt yel-gn
od
90-95% SLTY SH: lt-medgy, brn, occ bndd blk, sb
plty-blky, occ plty, sft-frm, rthy-gritty, grdg-sltst ip,
arg-slty, aren 10-5% SHY SS: wh-ltgy, s&p, clr-trnsl
grns, sb ang-sr, arg ip, slty, p srtd, vf-f grnd, cly cmt,
mod cons, fri; O SHOW: v slow stmg, dk bl cut, fnt
yel-gn ring, v sl tr stn, no od
100% SLTY SH: lt-medgy, brn, occ bndd blk, sb
plty-blky, occ plty, sft-frm, rthy-gritty, grdg-sltst ip,
arg-slty, aren, occ sd grn; O SHOW: slow stmg, bl cut,
fnt yel-gn ring, sl tr stn, no od
100% SLTY SH: lt-medgy, rr dk gy, brn, occ bndd blk, sb
plty-blky, occ plty, mod sft-frm, rthy-gritty, arg-slty, rr
bent; O SHOW: slow stmg, bl cut, fnt yel-gn ring, tr stn,
no od

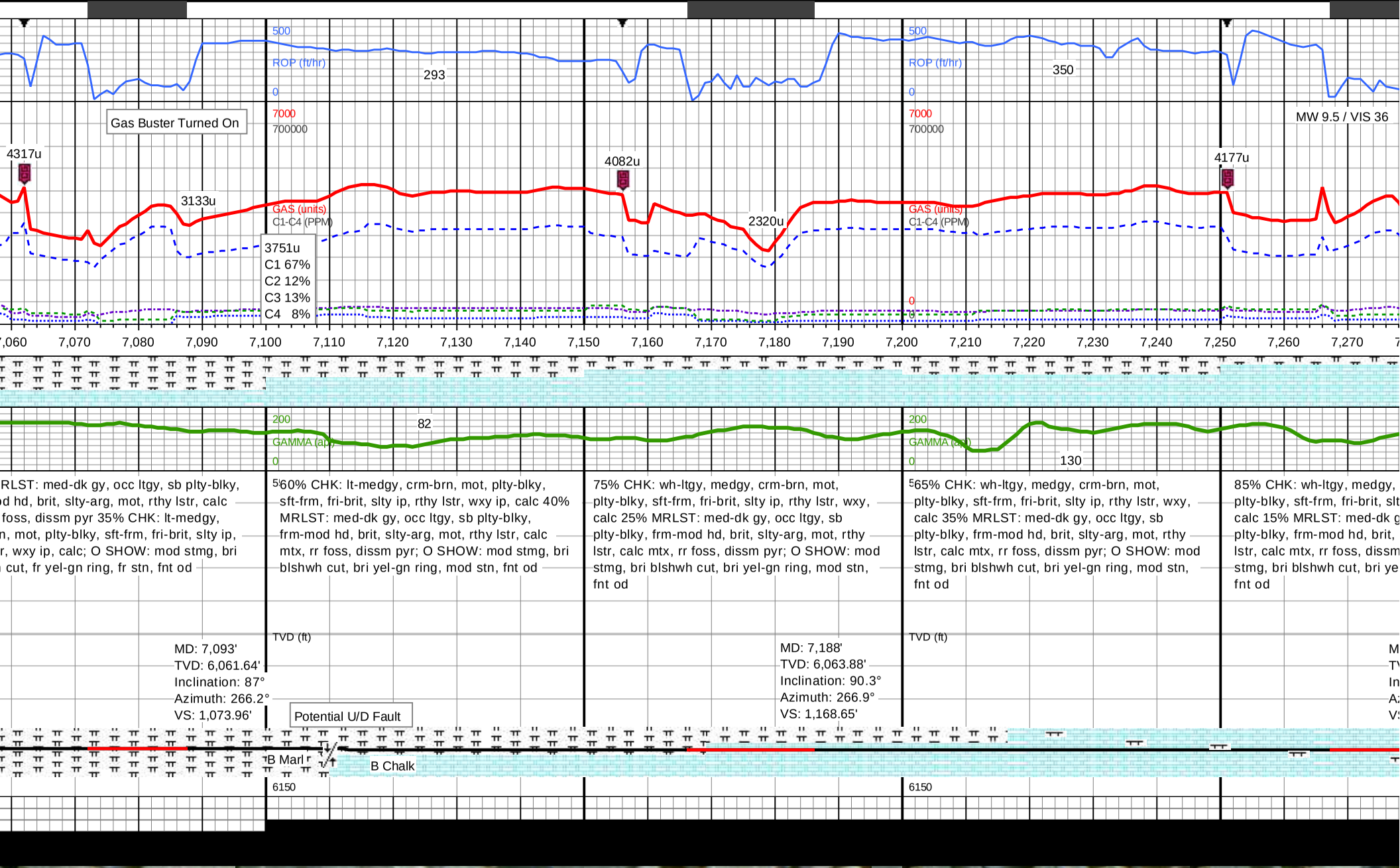

500
ROP (ft/hr)
0
174
142
New Gas Limit
0 to 7000 units
7000
700000
GAS (units)
C1-C4 (PPM)
4663u
3152u
4194u
2784u
949u
4043u
C1 80%
C2 12%
C3 7%
C4 1%
Niobrara A Chalk Top
MD 6085' / TVD 5956'
Niobrara A Marl Top
MD 6106' / TVD 5967'
5,960
5,970
5,980
5,990
6,000
6,010
6,020
6,030
6,040
6,050
6,060
6,070
6,080
6,090
6,100
6,110
6,120
6,130
6,140
6,150
6,160
6,170
200
GAMMA (api)
0
208
219
5550
6150
100-20% SLTY SH: med-dk gy, brn, sb plty-blky, occ plty, sft-frm, rthy-gritty, arg-slty, mod abnt bent, dissm pyr 0-30% CHK: ltgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 0-50% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: slow-mod stmg, blshwh cut, yel-gn ring, fr stn, fnt od
85-100% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx 15-0% CHK: ltgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc; O SHOW: slow-mod stmg, blshwh cut, yel-gn ring, mod stn, fnt od
100% MRLST: med-dk gy, sb plty-bl
brit, slty-arg, mot, rthy lstr, calc mtx
mod-fast stmg, blshwh cut, bri yel-g
od
MD: 5,989'
TVD: 5,897.9'
Inclination: 48°
Azimuth: 274.8°
VS: 17.61'
TVD (ft)
MD: 6,084'
TVD: 5,955.86'
Inclination: 57.5°
Azimuth: 272.5°
VS: 91.17'
MD: 6,132'
TVD: 5,979.93'
Inclination: 62.3°
Azimuth: 273.2°
VS: 131.97'
MD: 6,037'
TVD: 5,928.74'
Inclination: 52°
Azimuth: 274.3°
VS: 53.52'
100% SLTY SH: lt-med-dk gy, brn, sb plty-blky, occ plty, mod sft-frm, rthy-gritty, arg-slty, mod amt bent, dissm pyr; O SHOW: slow stmg, bl cut, fr yel-gn ring, tr stn, no od

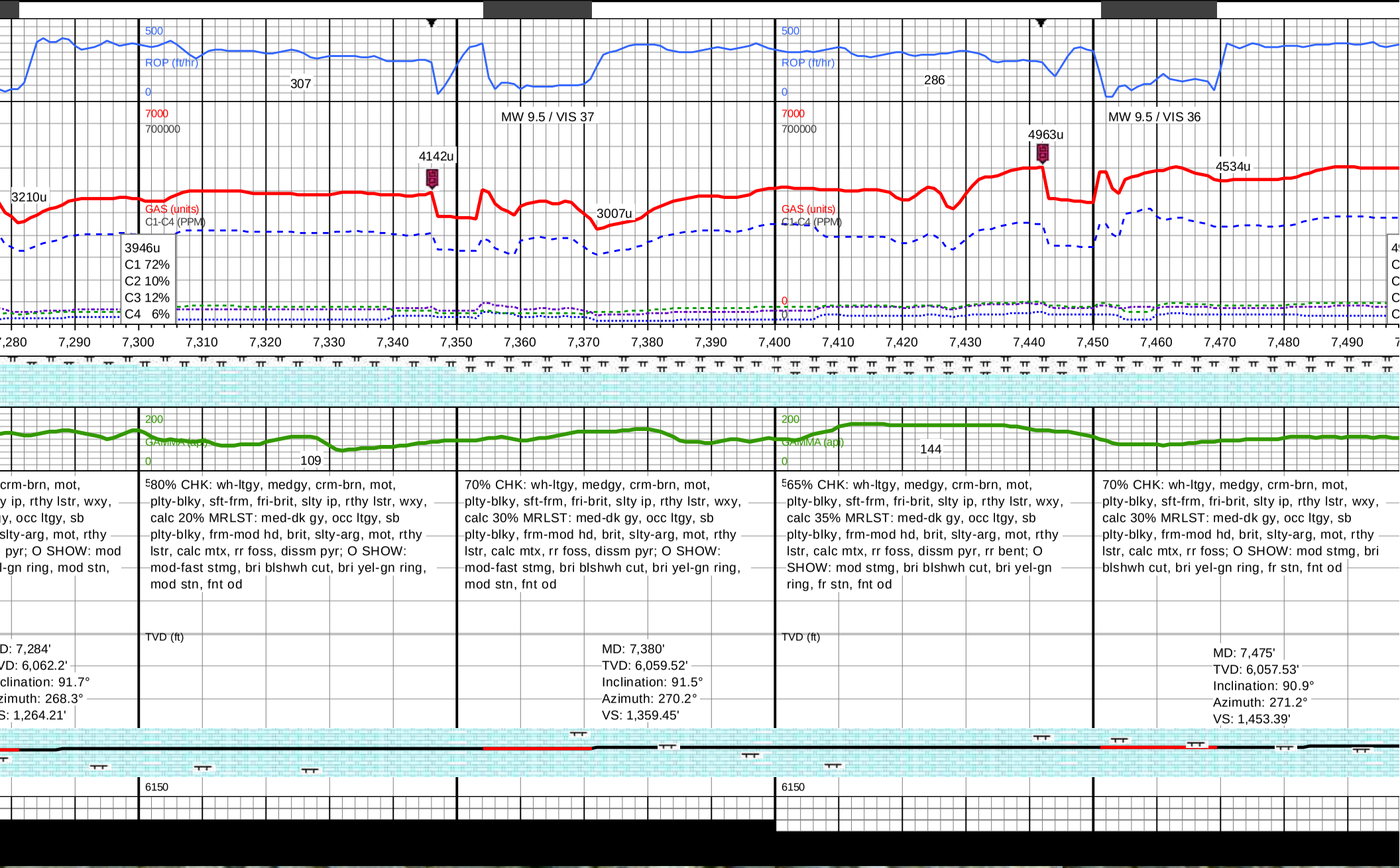

500
ROP (ft/hr)
0
72
180
7000
700000
MW 9.5 / VIS 40
MW 9.6 / VIS 40
3030u
4536u
4637u
2173u
2425u
GAS (units)
C1-C4 (PPM)
3343u
C1 77%
C2 12%
C3 9%
C4 2%
Niobrara B Chalk Top
MD 6317' / TVD 6036'
6,180
6,190
6,200
6,210
6,220
6,230
6,240
6,250
6,260
6,270
6,280
6,290
6,300
6,310
6,320
6,330
6,340
6,350
6,360
6,370
6,380
6,390
200
GAMMA (api)
118
55
95-100% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, 5-0% CHK: ltgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc; O SHOW: mod-slow stmg, bri blshwh cut, yel-wh ring, fr stn, fnt od
90-35% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, 10-65% CHK: ltgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc; O SHOW: mod-slow stmg, bri blshwh cut, yel-wh ring, mod stn, fnt od
80-90% CHK: ltgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 20-10% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: mod-slow stmg, bri blshwh cut, yel-gn ring, fr stn, fnt od
85% CHK: ltgy-me
wxy, calc 15% MRL
plty-blky, frm-mod
rthy lstr, calc mtx;
stmg, bri blshwh cu
fnt od
TVD (ft)
MD: 6,228'
TVD: 6,018.13'
Inclination: 72°
Azimuth: 274.8°
VS: 217.71'
MD: 6,275'
TVD: 6,029.77'
Inclination: 79.3°
Azimuth: 270.5°
VS: 262.46'
MD: 6,323'
TVD: 6,037.69'
Inclination: 81.7°
Azimuth: 270°
VS: 309.33'
MD: 6,369'
TVD: 6,043.62'
Inclination: 83.5°
Azimuth: 269.5°
VS: 354.55'
6150

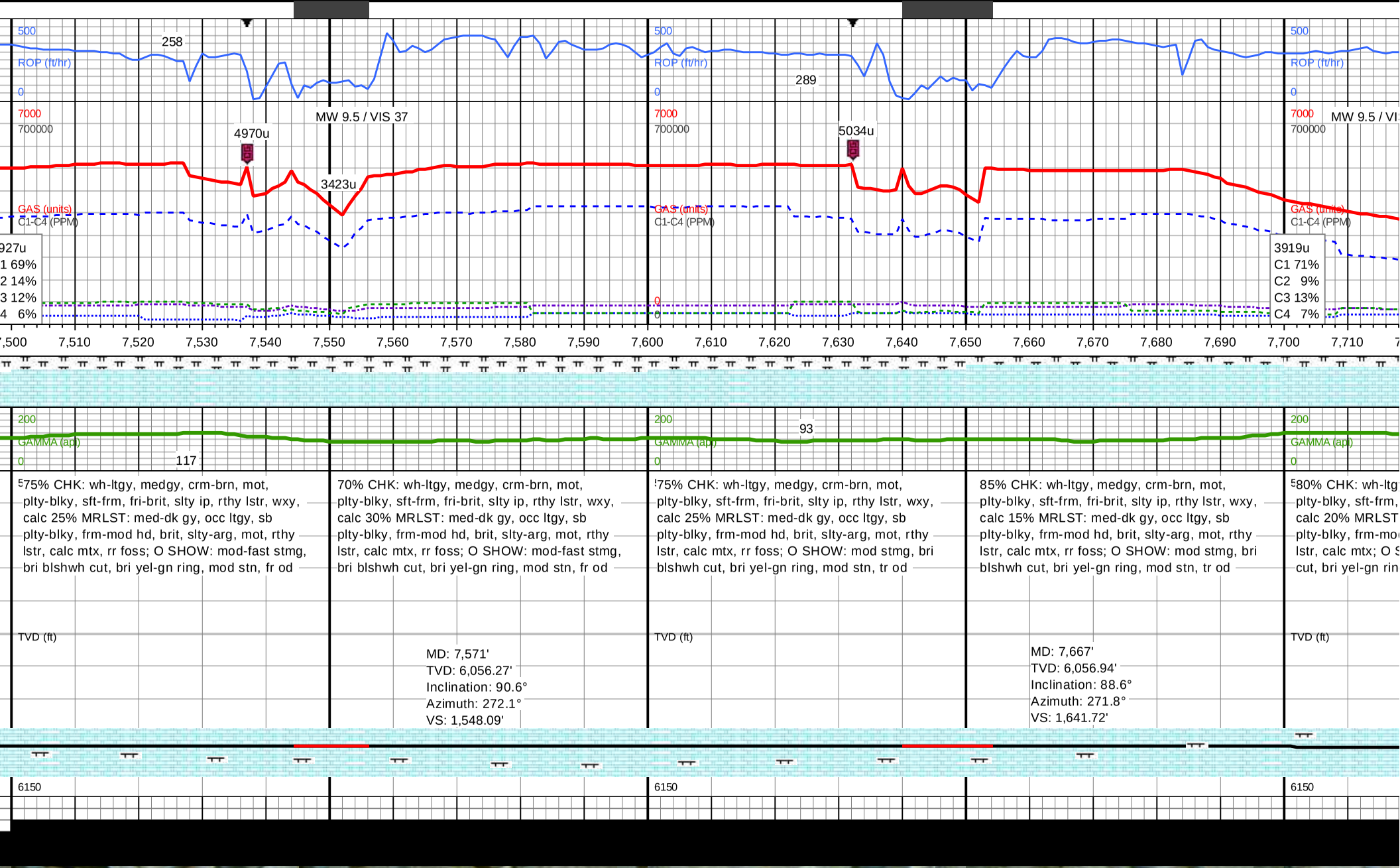

500
ROP (ft/hr)
0
196
230
7000
700000
1215u
C1 79%
C2 13%
C3 8%
C4 0%
Shaker Maintenance
4040u
4256u
3434
GAS (units)
C1-C4 (PPM)
1857u
1212u
Agitator Unplugged
r Build MD 6418'
2014 @ 21:38 MST
Drilling Resumed
02/09/2015 @ 02:30 MST
6,400
6,410
6,420
6,430
6,440
6,450
6,460
6,470
6,480
6,490
6,500
6,510
6,520
6,530
6,540
6,550
6,560
6,570
6,580
6,590
6,600
6,610
200
GAMMA (api)
75
146
50' Samples
it Data
t #: 3
ype: SDi513
ze: 6.125"
epth In: 6,418'
epth Out: 10,574'
ets: 5x16
/N: JK0499
dgy, slty ip, rthy lstr, LST: med-dk gy, sb hd, brit, slty-arg, mot, O SHOW: mod-slow ut, yel-gn ring, fr stn,
90% CHK: lt-medgy, slty ip, rthy lstr, wxy, calc 10% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: mod-slow stmg, bri blshwh cut, yel-gn ring, fr stn, fnt od
90% CHK: lt-medgy, slty ip, rthy lstr, wxy, calc 10% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: mod-slow stmg, bri blshwh cut, yel-gn ring, fr stn, fnt od
65% CHK: lt-medgy, occ wh, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc, some intbd wi 35% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: mod stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
50% CHK: lt-medgy, occ wh, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc, some intbd wi 50% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx; O SHOW: mod stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
75% MRLST: me frm-mod hd, brit, mtx, rr foss 25% crm-brn, mot, plt rthy lstr, wxy ip, blshwh cut, fr ye
TVD (ft)
MD: 6,469'
TVD: 6,050.59'
Inclination: 88.5°
Azimuth: 269.7°
VS: 453.45'
MD: 6,531'
TVD: 6,052.16'
Inclination: 88.6°
Azimuth: 268.6°
VS: 514.98'
Potential D/U Fault
B Chalk
B Marl
6150

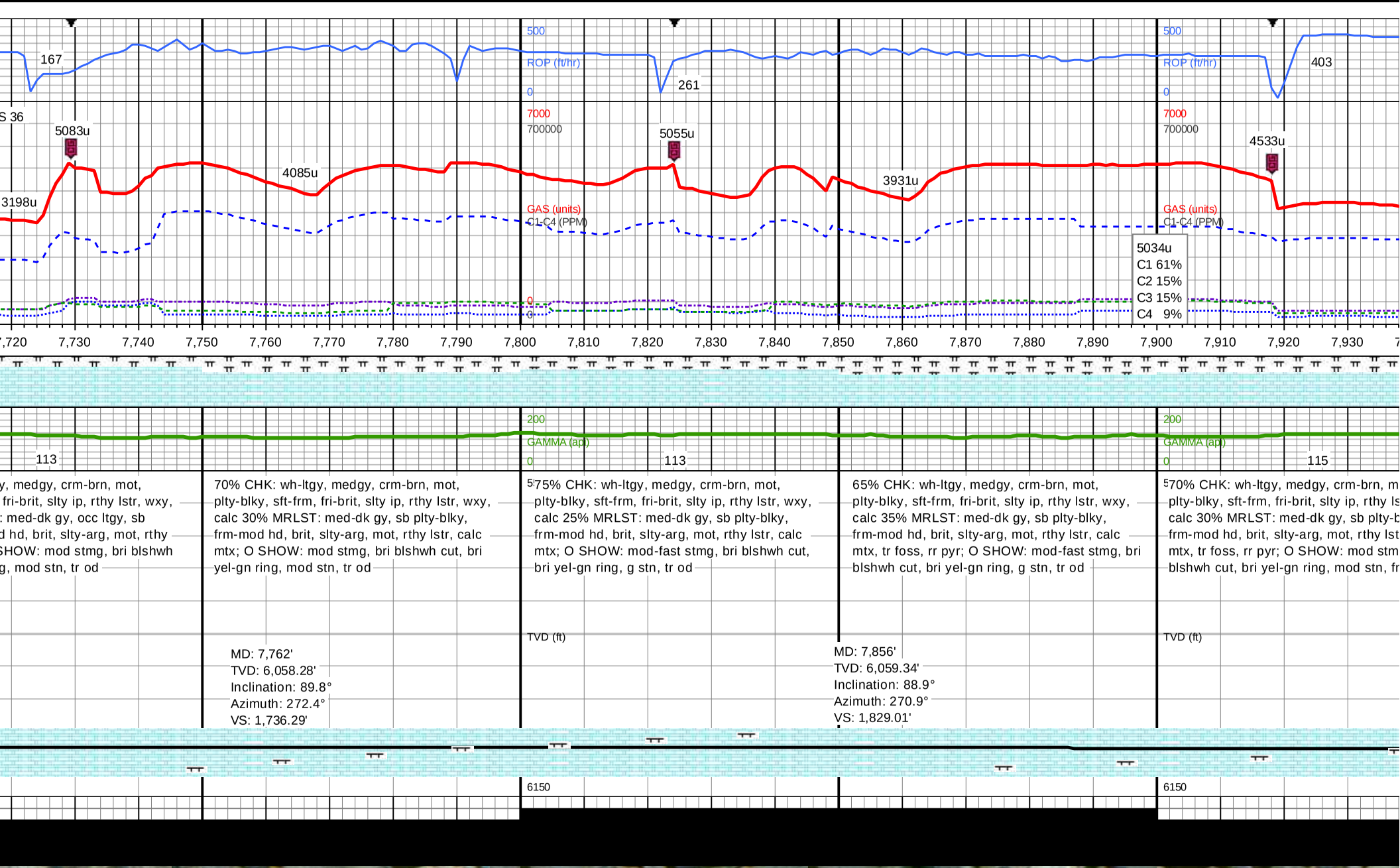

270
500
ROP (ft/hr)
0
7000
700000
5108u
315
2026u
C1 77%
C2 8%
C3 11%
C4 4%
(units)
4 (PPM)
4891u
4663u
2341u
351
GAS (units)
C1-C4 (PPM)
6,620
6,630
6,640
6,650
6,660
6,670
6,680
6,690
6,700
6,710
6,720
6,730
6,740
6,750
6,760
6,770
6,780
6,790
6,800
6,810
6,820
6,830
200
GAMMA (api)
153
150
156
d-dk gy, occ ltgy, sb plty-blky, slty-arg, mot, rthy lstr, calc CHK: lt-medgy, occ wh, y-blky, sft-frm, fri-brit, slty ip, calc; O SHOW: mod stmg, bri l-gn ring, fr stn, fnt od
95% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss 5% CHK: lt-medgy, brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
100% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, tr chk frags; O SHOW: mod stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
95% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, dissm pyr 5% CHK: lt-medgy, brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
95% MRLST: med-dk gy, occ ltgy, sb p frm-mod hd, brit, slty-arg, mot, rthy lst mtx, rr foss, dissm pyr 5% CHK: lt-med mot, plty-blky, sft-frm, fri-brit, slty ip, r wxy ip, calc; O SHOW: mod-slow stmg blshwh cut, fr yel-gn ring, fr stn, fnt od
MD: 6,623'
TVD: 6,054.17'
nclination: 88.9°
Azimuth: 267.5°
VS: 606.48'
TVD (ft)
MD: 6,715'
TVD: 6,055.21'
Inclination: 89.8°
Azimuth: 268°
VS: 698.05'
TVD (ft)
MD: 6,808'
TVD: 6,055.37'
Inclination: 90°
Azimuth: 268.1°
VS: 790.57'
6150
6150

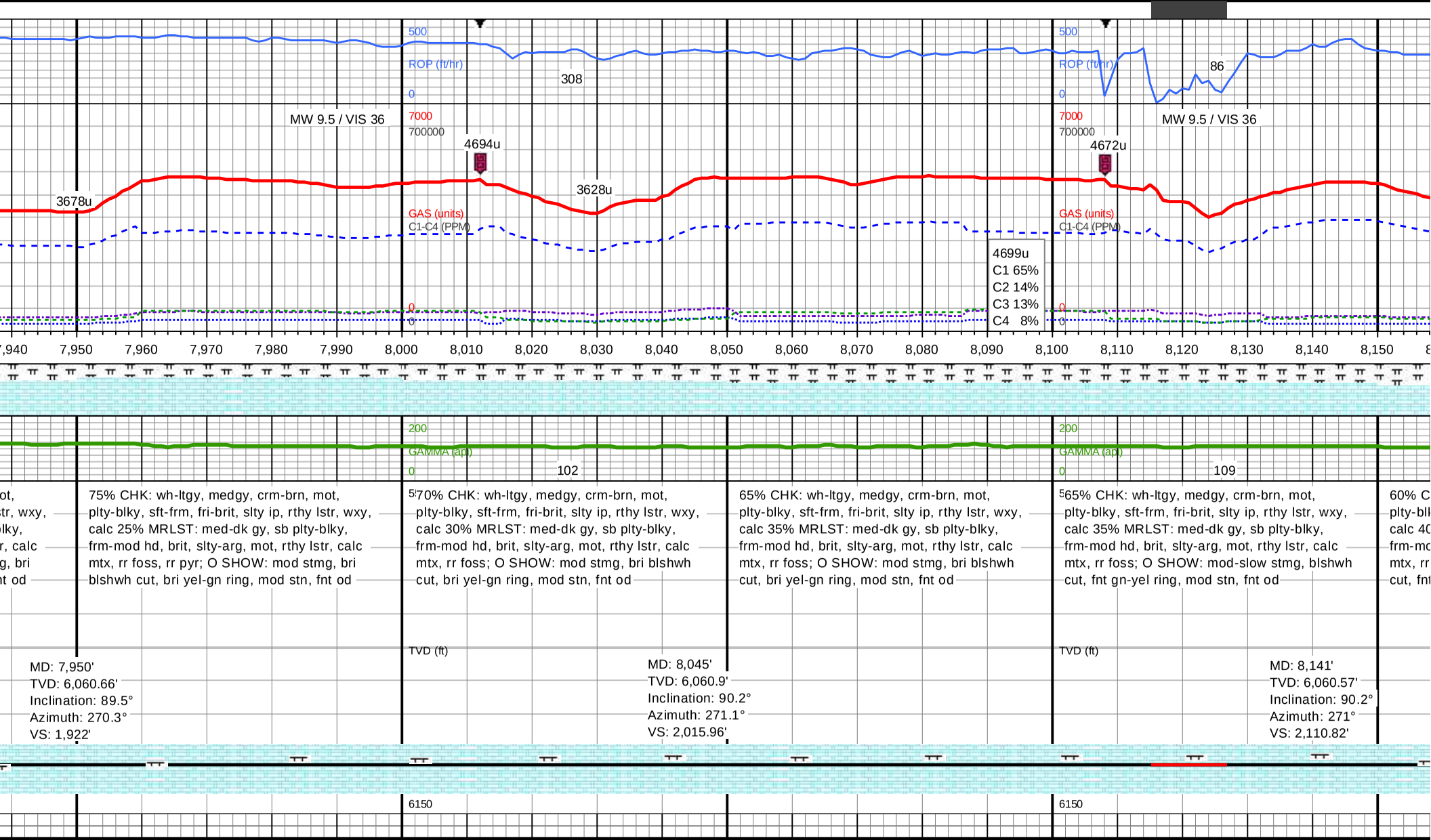

500
ROP (ft/hr)
0
343
358
7000
700000
4903u
4813u
GAS (units)
C1-C4 (PPM)
1259u
1770u
4355u
C1 72%
C2 14%
C3 10%
C4 4%
6,840
6,850
6,860
6,870
6,880
6,890
6,900
6,910
6,920
6,930
6,940
6,950
6,960
6,970
6,980
6,990
7,000
7,010
7,020
7,030
7,040
7,050
200
GAMMA (api)
150
147
100% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, dissm pyr, rr chk; O SHOW: mod-slow stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
100% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, dissm pyr, rr chk; O SHOW: mod-slow stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
100% MRLST: med-dk gy, rr ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, dissm pyr, rr chk; O SHOW: mod-slow stmg, bri blshwh cut, fr yel-gn ring, fr stn, fnt od
100% MRLST: med-dk gy, rr ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, dissm pyr, rr chk; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, fr stn, fnt od
TVD (ft)
MD: 6,904'
TVD: 6,055.88'
Inclination: 89.4°
Azimuth: 268.3°
VS: 886.05'
TVD (ft)
MD: 6,999'
TVD: 6,057.78'
Inclination: 88.3°
Azimuth: 268.8°
VS: 980.45'
6150
6150

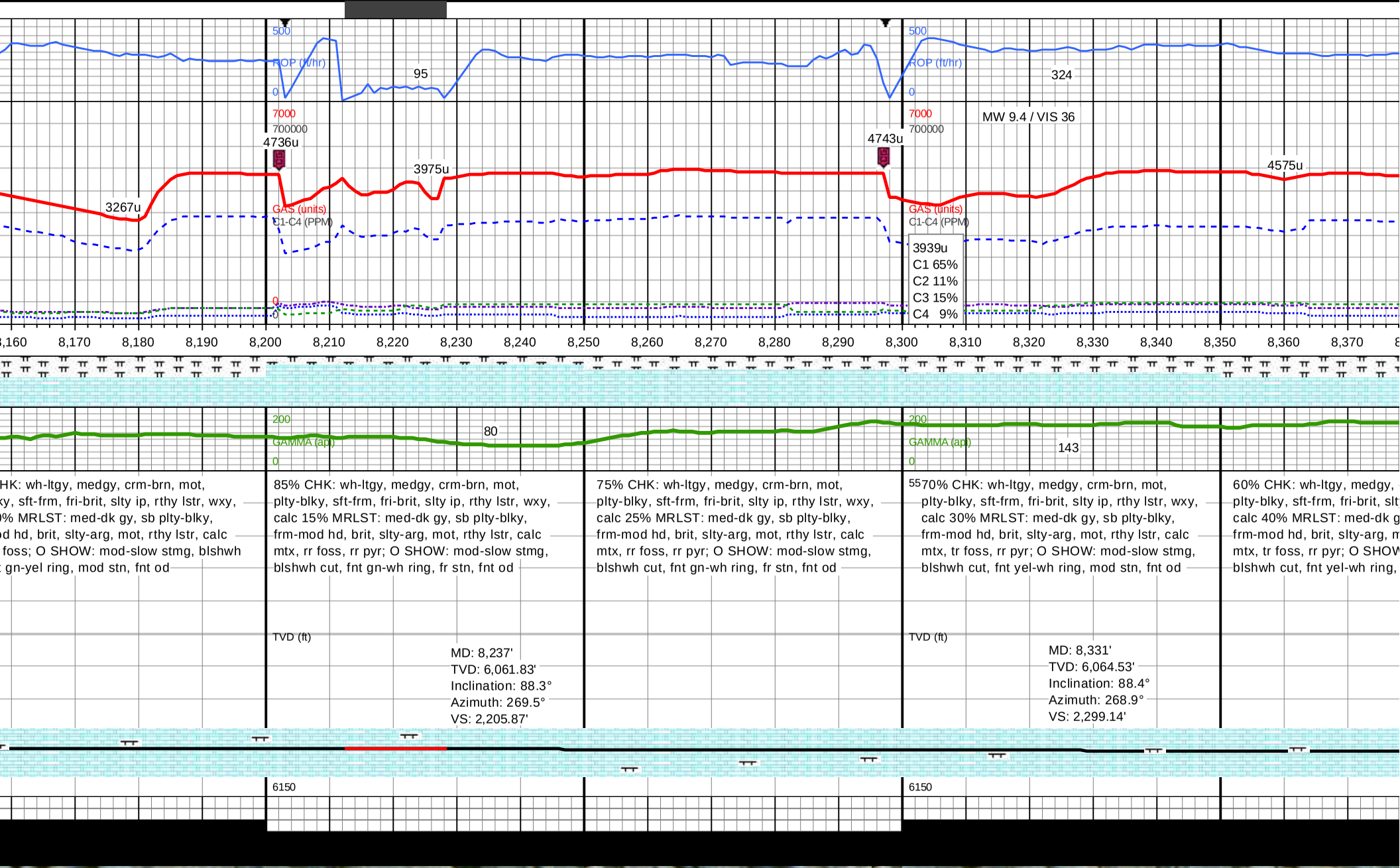

500
ROP (ft/hr)
0
293
350
7000
700000
Gas Buster Turned On
MW 9.5 / VIS 36
4317u
4082u
4177u
3133u
2320u
GAS (units)
C1-C4 (PPM)
3751u
C1 67%
C2 12%
C3 13%
C4 8%
0
7,060
7,070
7,080
7,090
7,100
7,110
7,120
7,130
7,140
7,150
7,160
7,170
7,180
7,190
7,200
7,210
7,220
7,230
7,240
7,250
7,260
7,270
200
GAMMA (api)
82
130
RLST: med-dk gy, occ ltgy, sb plty-blky,
od hd, brit, slty-arg, mot, rthy lstr, calc
foss, dissm pyr 35% CHK: lt-medgy,
n, mot, plty-blky, sft-frm, fri-brit, slty ip,
r, wxy ip, calc; O SHOW: mod stmg, bri
cut, fr yel-gn ring, fr stn, fnt od
60% CHK: lt-medgy, crm-brn, mot, plty-blky,
sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 40%
MRLST: med-dk gy, occ ltgy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, rr foss, dissm pyr; O SHOW: mod stmg, bri
blshwh cut, bri yel-gn ring, mod stn, fnt od
75% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 25% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss, dissm pyr; O SHOW: mod
stmg, bri blshwh cut, bri yel-gn ring, mod stn,
fnt od
65% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 35% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss, dissm pyr; O SHOW: mod
stmg, bri blshwh cut, bri yel-gn ring, mod stn,
fnt od
85% CHK: wh-ltgy, medgy,
plty-blky, sft-frm, fri-brit, slt
calc 15% MRLST: med-dk g
plty-blky, frm-mod hd, brit,
lstr, calc mtx, rr foss, dissm
stmg, bri blshwh cut, bri ye
fnt od
TVD (ft)
MD: 7,093'
TVD: 6,061.64'
Inclination: 87°
Azimuth: 266.2°
VS: 1,073.96'
Potential U/D Fault
B Marl
B Chalk
6150
MD: 7,188'
TVD: 6,063.88'
Inclination: 90.3°
Azimuth: 266.9°
VS: 1,168.65'

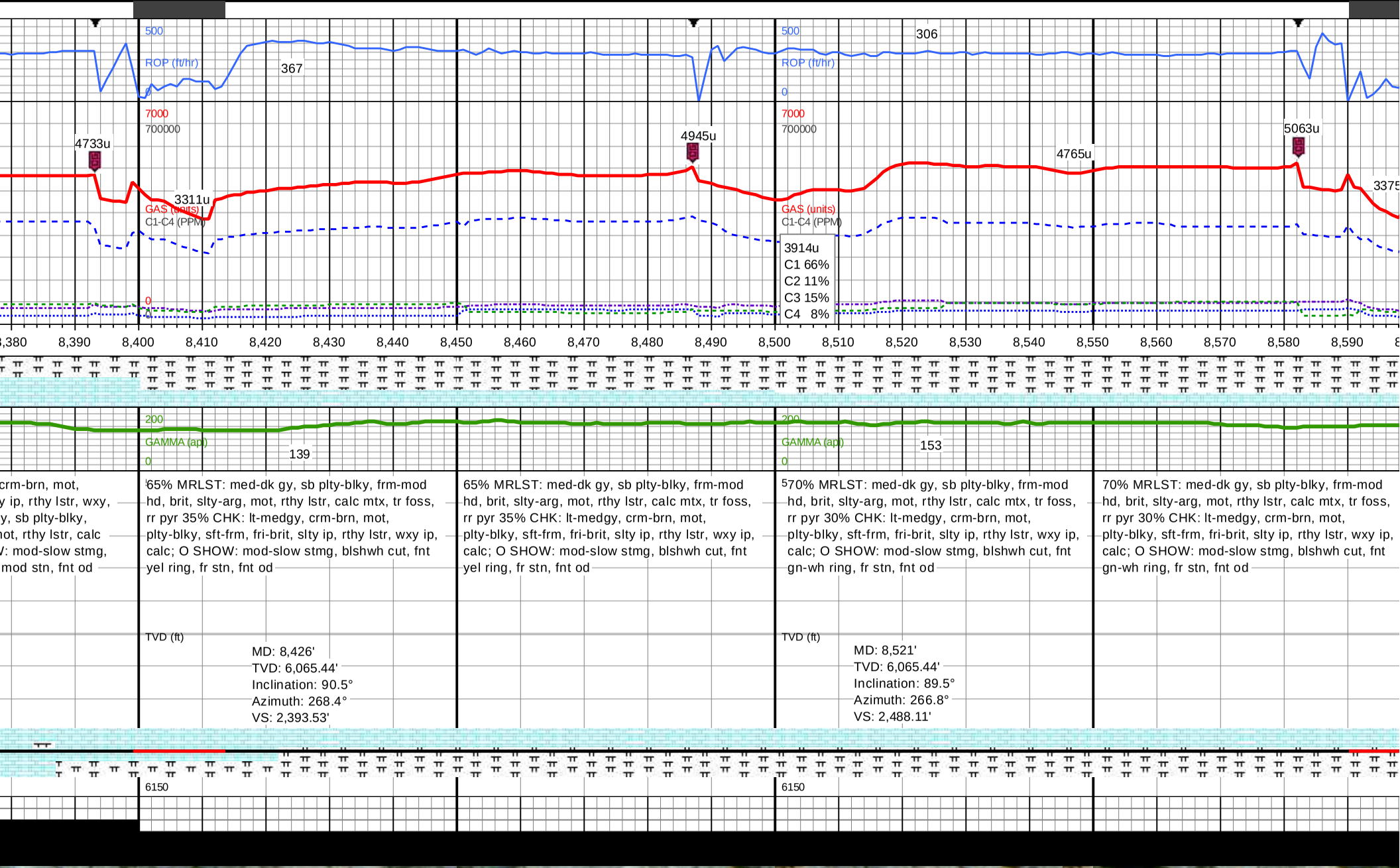

500
ROP (ft/hr)
0
307
7000
700000
MW 9.5 / VIS 37
4142u
3210u
GAS (units)
C1-C4 (PPM)
3946u
C1 72%
C2 10%
C3 12%
C4 6%
3007u
500
ROP (ft/hr)
0
286
7000
700000
4963u
MW 9.5 / VIS 36
4534u
GAS (units)
C1-C4 (PPM)
0
0
7,280
7,290
7,300
7,310
7,320
7,330
7,340
7,350
7,360
7,370
7,380
7,390
7,400
7,410
7,420
7,430
7,440
7,450
7,460
7,470
7,480
7,490
200
GAMMA (api)
0
109
200
GAMMA (api)
0
144
crm-brn, mot,
y ip, rthy lstr, wxy,
y, occ ltgy, sb
slty-arg, mot, rthy
pyr; O SHOW: mod
l-gn ring, mod stn,
D: 7,284'
VD: 6,062.2'
clination: 91.7°
zimuth: 268.3°
S: 1,264.21'
80% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 20% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss, dissm pyr; O SHOW:
mod-fast stmg, bri blshwh cut, bri yel-gn ring,
mod stn, fnt od
TVD (ft)
6150
70% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 30% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss, dissm pyr; O SHOW:
mod-fast stmg, bri blshwh cut, bri yel-gn ring,
mod stn, fnt od
MD: 7,380'
TVD: 6,059.52'
Inclination: 91.5°
Azimuth: 270.2°
VS: 1,359.45'
65% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 35% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss, dissm pyr, rr bent; O
SHOW: mod stmg, bri blshwh cut, bri yel-gn
ring, fr stn, fnt od
TVD (ft)
6150
70% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 30% MRLST: med-dk gy, occ ltgy, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss; O SHOW: mod stmg, bri
blshwh cut, bri yel-gn ring, fr stn, fnt od
MD: 7,475'
TVD: 6,057.53'
Inclination: 90.9°
Azimuth: 271.2°
VS: 1,453.39'

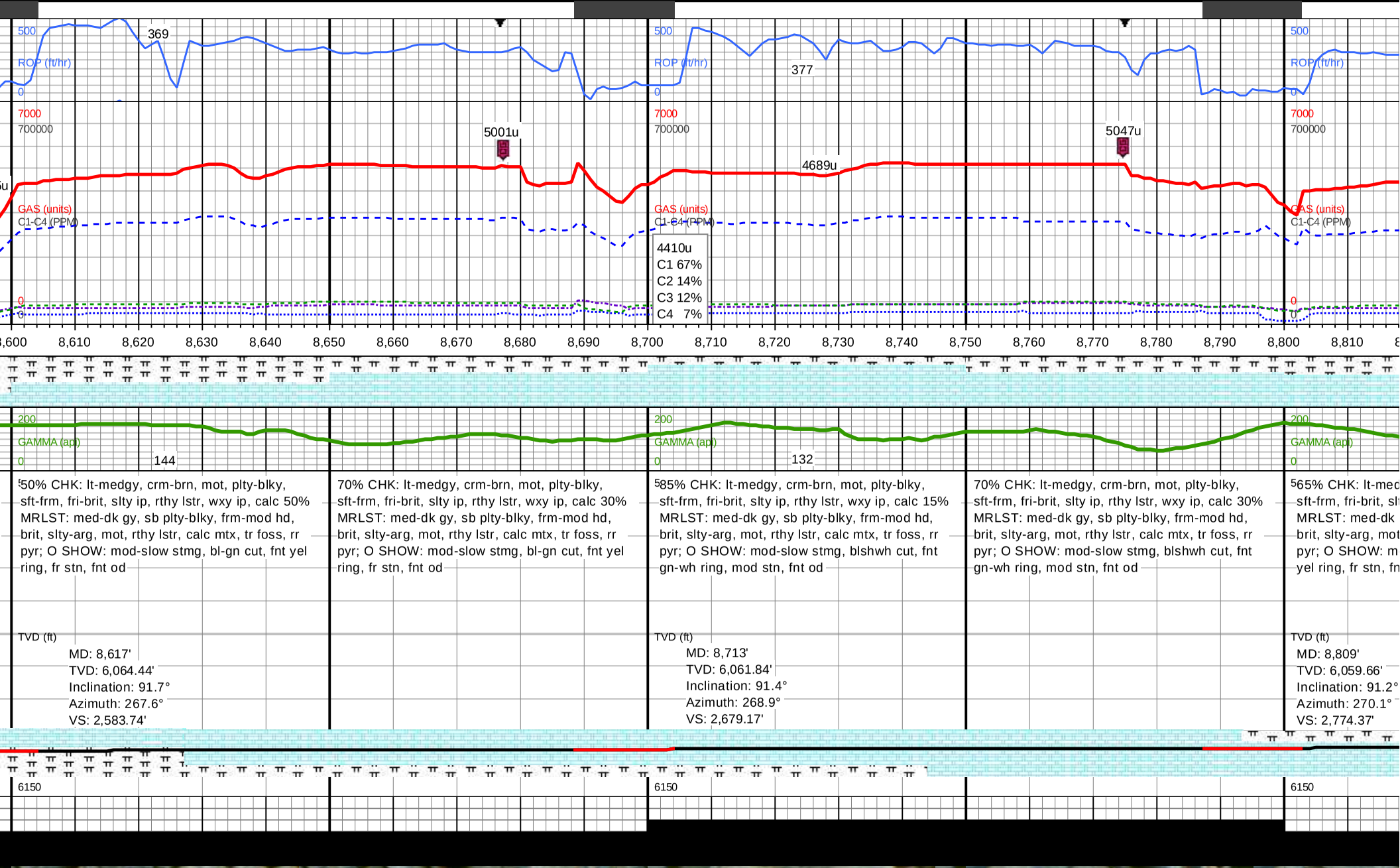

500
ROP (ft/hr)
0
258
289
7000
700000
MW 9.5 / VIS 37
4970u
3423u
5034u
GAS (units)
C1-C4 (PPM)
927u
1 69%
2 14%
3 12%
4 6%
3919u
C1 71%
C2 9%
C3 13%
C4 7%
7,500
7,510
7,520
7,530
7,540
7,550
7,560
7,570
7,580
7,590
7,600
7,610
7,620
7,630
7,640
7,650
7,660
7,670
7,680
7,690
7,700
7,710
200
GAMMA (api)
0
117
93
75% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 25% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-fast stmg, bri blshwh cut, bri yel-gn ring, mod stn, fr od
70% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 30% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-fast stmg, bri blshwh cut, bri yel-gn ring, mod stn, fr od
75% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 25% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, mod stn, tr od
85% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 15% MRLST: med-dk gy, occ ltgy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, mod stn, tr od
80% CHK: wh-ltg
plty-blky, sft-frm,
calc 20% MRLST
plty-blky, frm-mo
lstr, calc mtx; O S
cut, bri yel-gn rin
TVD (ft)
MD: 7,571'
TVD: 6,056.27'
Inclination: 90.6°
Azimuth: 272.1°
VS: 1,548.09'
MD: 7,667'
TVD: 6,056.94'
Inclination: 88.6°
Azimuth: 271.8°
VS: 1,641.72'
6150

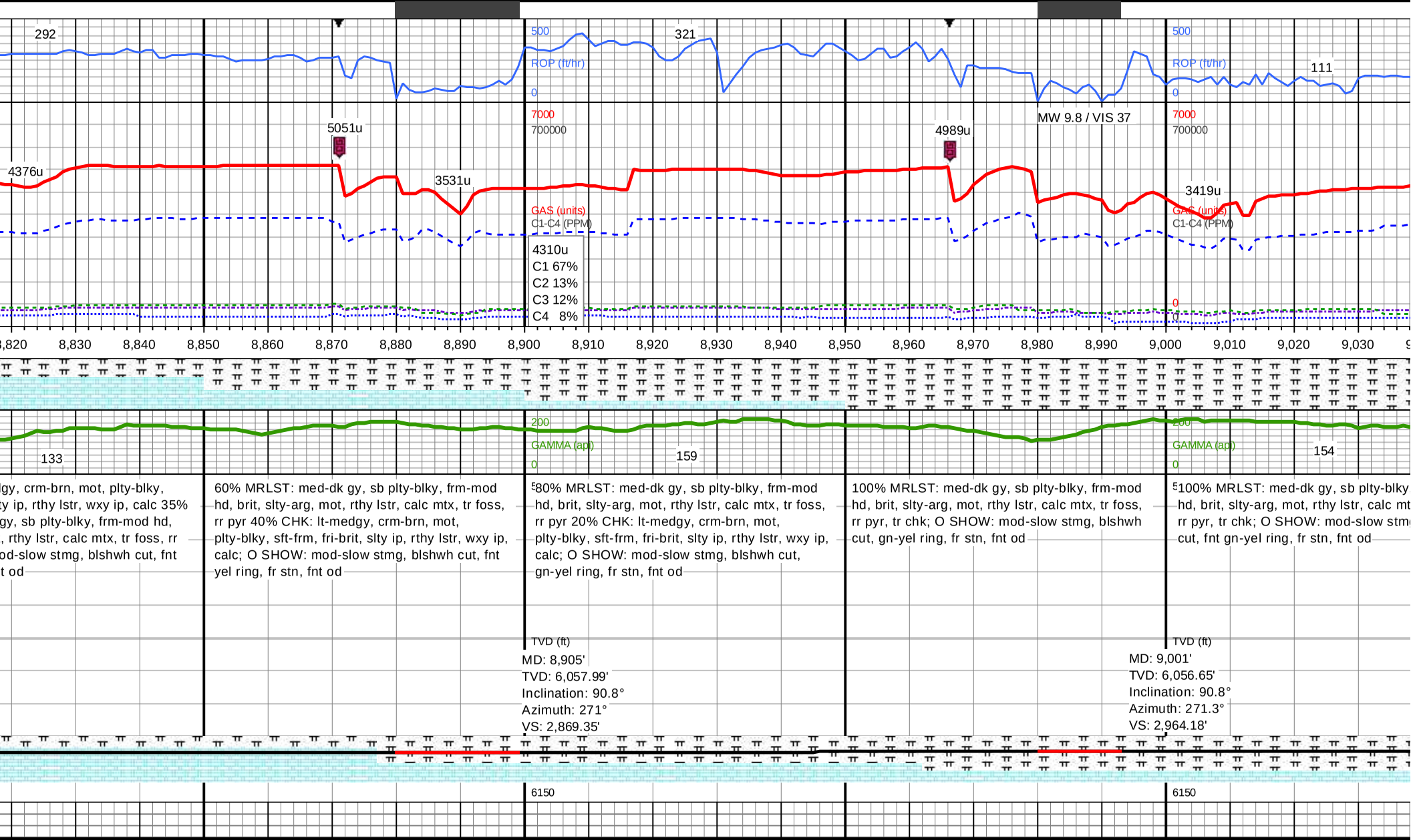

167
ROP (ft/hr)
261
403
5083u
4085u
5055u
3931u
4533u
3198u
GAS (units)
C1-C4 (PPM)
5034u
C1 61%
C2 15%
C3 15%
C4 9%
7,720
7,730
7,740
7,750
7,760
7,770
7,780
7,790
7,800
7,810
7,820
7,830
7,840
7,850
7,860
7,870
7,880
7,890
7,900
7,910
7,920
7,930
GAMMA (api)
113
113
115
MD: 7,762'
TVD: 6,058.28'
Inclination: 89.8°
Azimuth: 272.4°
VS: 1,736.29'
MD: 7,856'
TVD: 6,059.34'
Inclination: 88.9°
Azimuth: 270.9°
VS: 1,829.01'
TVD (ft)
6150

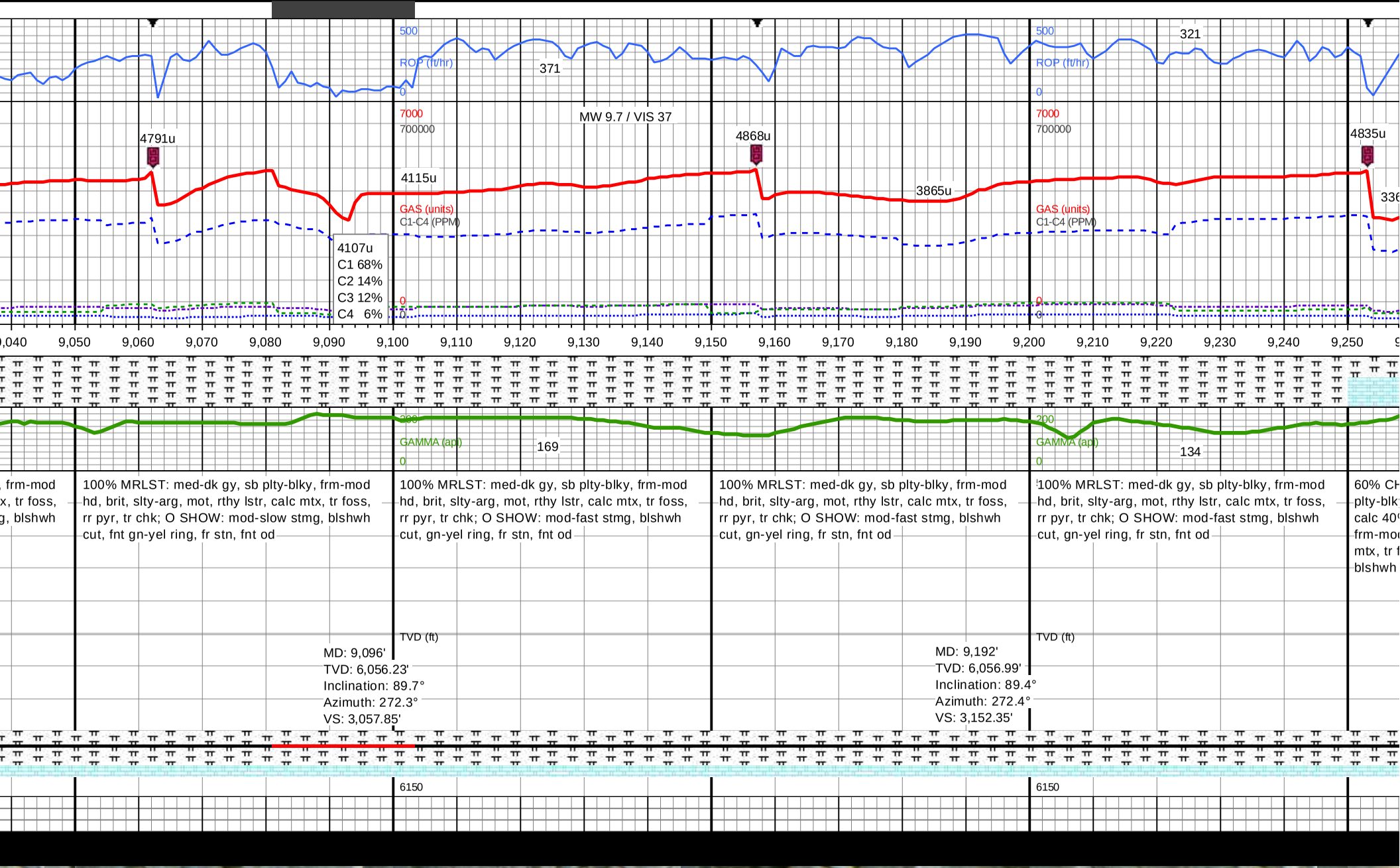

500
ROP (ft/hr)
0
308
86
MW 9.5 / VIS 36
7000
700000
4694u
4672u
3678u
3628u
GAS (units)
C1-C4 (PPM)
4699u
C1 65%
C2 14%
C3 13%
C4 8%
7,940
7,950
7,960
7,970
7,980
7,990
8,000
8,010
8,020
8,030
8,040
8,050
8,060
8,070
8,080
8,090
8,100
8,110
8,120
8,130
8,140
8,150
200
GAMMA (api)
102
109
75% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 25% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, rr pyr; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, mod stn, fnt od
70% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 30% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, mod stn, fnt od
65% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 35% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod stmg, bri blshwh cut, bri yel-gn ring, mod stn, fnt od
65% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 35% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod-slow stmg, blshwh cut, fnt gn-yel ring, mod stn, fnt od
TVD (ft)
MD: 7,950'
TVD: 6,060.66'
Inclination: 89.5°
Azimuth: 270.3°
VS: 1,922'
MD: 8,045'
TVD: 6,060.9'
Inclination: 90.2°
Azimuth: 271.1°
VS: 2,015.96'
MD: 8,141'
TVD: 6,060.57'
Inclination: 90.2°
Azimuth: 271°
VS: 2,110.82'
6150

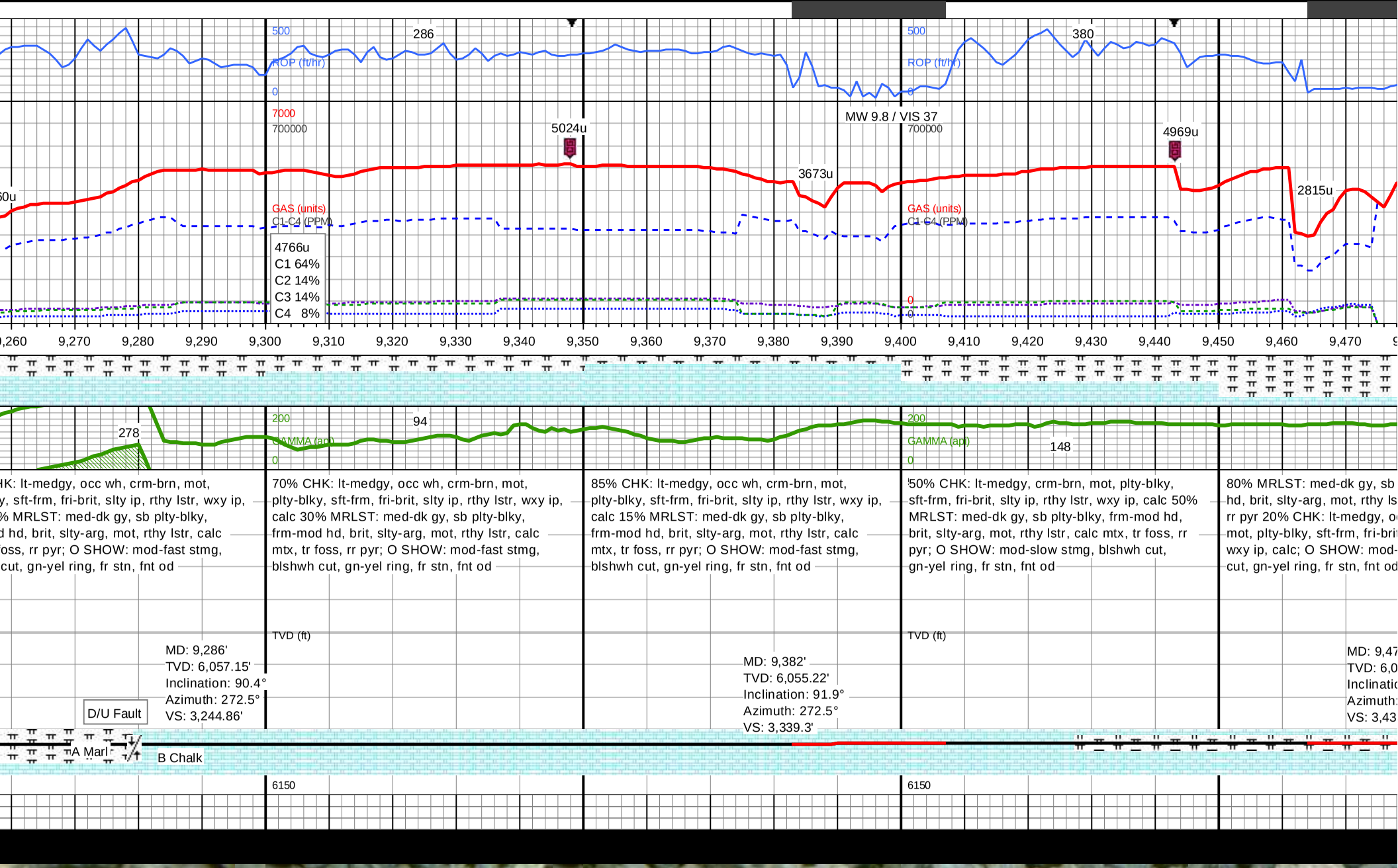

500
ROP (ft/hr)
95
0
7000
700000
4736u
3267u
3975u
GAS (units)
C1-C4 (PPM)
0
8,160
8,170
8,180
8,190
8,200
8,210
8,220
8,230
8,240
8,250
8,260
8,270
8,280
8,290
8,300
8,310
8,320
8,330
8,340
8,350
8,360
8,370
200
GAMMA (api)
80
0
HK: wh-ltgy, medgy, crm-brn, mot,
y, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
% MRLST: med-dk gy, sb plty-blky,
d hd, brit, slty-arg, mot, rthy lstr, calc
foss; O SHOW: mod-slow stmg, blshwh
gn-yel ring, mod stn, fnt od
85% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 15% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, rr foss, rr pyr; O SHOW: mod-slow stmg,
blshwh cut, fnt gn-wh ring, fr stn, fnt od
75% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 25% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, rr foss, rr pyr; O SHOW: mod-slow stmg,
blshwh cut, fnt gn-wh ring, fr stn, fnt od
TVD (ft)
MD: 8,237'
TVD: 6,061.83'
Inclination: 88.3°
Azimuth: 269.5°
VS: 2,205.87'
6150
500
ROP (ft/hr)
324
0
7000
700000
MW 9.4 / VIS 36
4743u
4575u
GAS (units)
C1-C4 (PPM)
3939u
C1 65%
C2 11%
C3 15%
C4 9%
200
GAMMA (api)
143
0
55
70% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 30% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, tr foss, rr pyr; O SHOW: mod-slow stmg,
blshwh cut, fnt yel-wh ring, mod stn, fnt od
60% CHK: wh-ltgy, medgy,
plty-blky, sft-frm, fri-brit, slt
calc 40% MRLST: med-dk g
frm-mod hd, brit, slty-arg, m
mtx, tr foss, rr pyr; O SHOW
blshwh cut, fnt yel-wh ring,
TVD (ft)
MD: 8,331'
TVD: 6,064.53'
Inclination: 88.4°
Azimuth: 268.9°
VS: 2,299.14'
6150

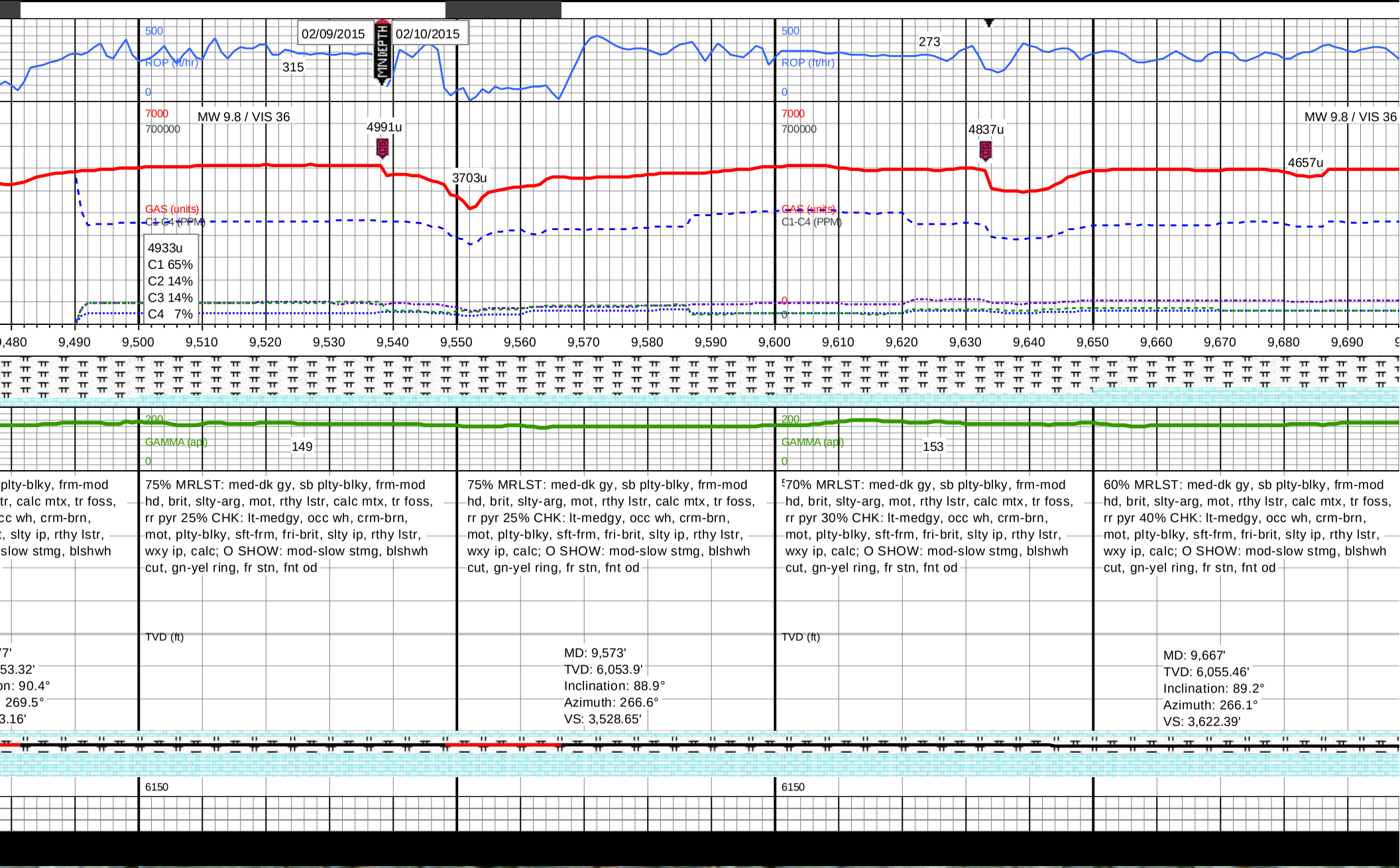

500
ROP (ft/hr)
0
367
306
7000
700000
4733u
3311u
4945u
4765u
5063u
3375
GAS (units)
C1-C4 (PPM)
3914u
C1 66%
C2 11%
C3 15%
C4 8%
8,380
8,390
8,400
8,410
8,420
8,430
8,440
8,450
8,460
8,470
8,480
8,490
8,500
8,510
8,520
8,530
8,540
8,550
8,560
8,570
8,580
8,590
200
GAMMA (api)
139
153
crm-brn, mot,
y ip, rthy lstr, wxy,
y, sb plty-blky,
ot, rthy lstr, calc
V: mod-slow stmg,
mod stn, fnt od
65% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 35% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, fnt yel ring, fr stn, fnt od
65% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 35% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, fnt yel ring, fr stn, fnt od
70% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 30% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, fnt gn-wh ring, fr stn, fnt od
70% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 30% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, fnt gn-wh ring, fr stn, fnt od
TVD (ft)
MD: 8,426'
TVD: 6,065.44'
Inclination: 90.5°
Azimuth: 268.4°
VS: 2,393.53'
TVD (ft)
MD: 8,521'
TVD: 6,065.44'
Inclination: 89.5°
Azimuth: 266.8°
VS: 2,488.11'
6150
6150

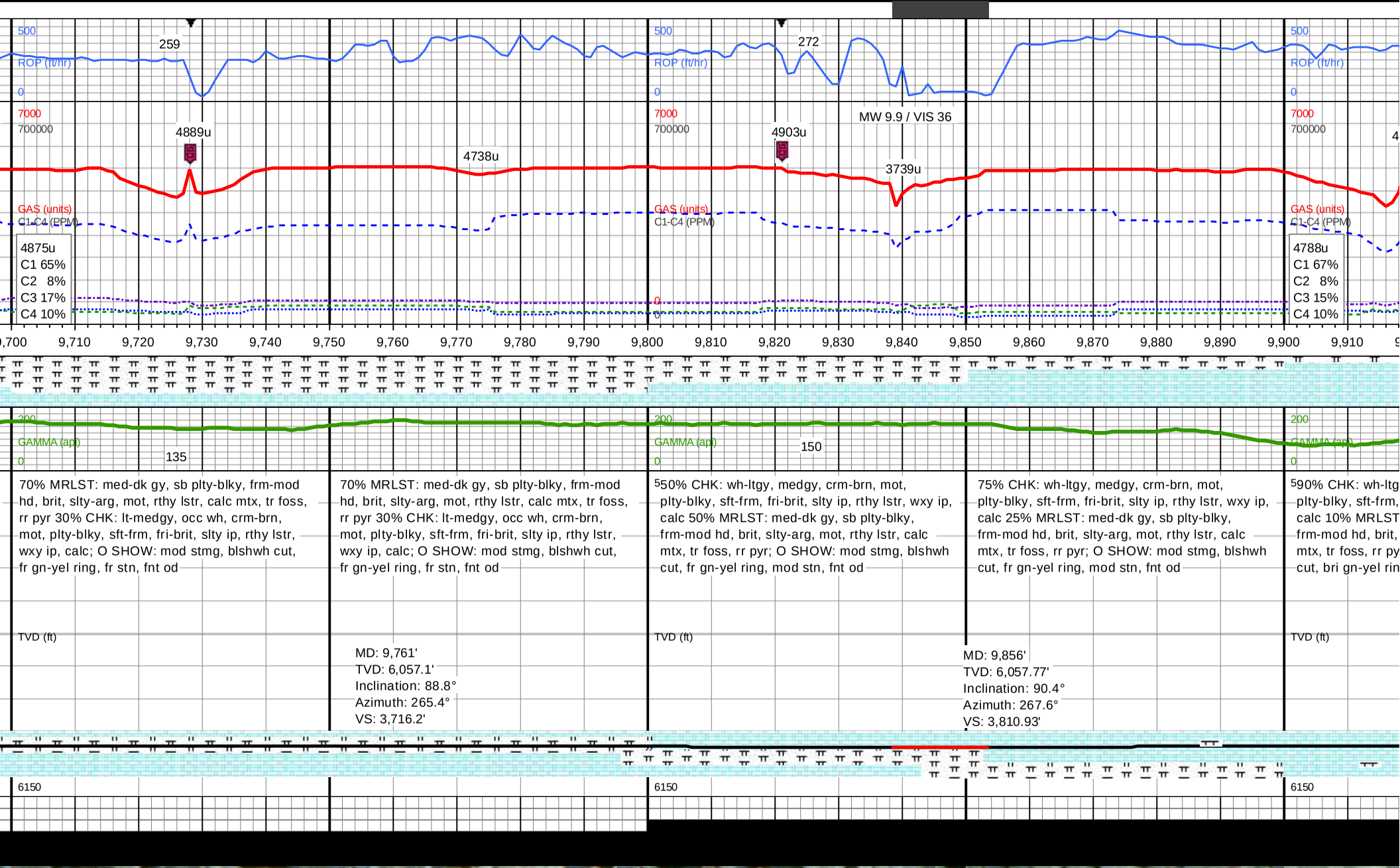

500
ROP (ft/hr)
0
369
377
7000
700000
5001u
5047u
4689u
GAS (units)
C1-C4 (PPM)
4410u
C1 67%
C2 14%
C3 12%
C4 7%
8,600
8,610
8,620
8,630
8,640
8,650
8,660
8,670
8,680
8,690
8,700
8,710
8,720
8,730
8,740
8,750
8,760
8,770
8,780
8,790
8,800
8,810
200
GAMMA (api)
144
132
50% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 50% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr; O SHOW: mod-slow stmg, bl-gn cut, fnt yel ring, fr stn, fnt od
70% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 30% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr; O SHOW: mod-slow stmg, bl-gn cut, fnt yel ring, fr stn, fnt od
85% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 15% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr; O SHOW: mod-slow stmg, blshwh cut, fnt gn-wh ring, mod stn, fnt od
70% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 30% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr; O SHOW: mod-slow stmg, blshwh cut, fnt gn-wh ring, mod stn, fnt od
65% CHK: lt-med
sft-frm, fri-brit, sl
MRLST: med-dk
brit, slty-arg, mot
pyr; O SHOW: m
yel ring, fr stn, fn
TVD (ft)
MD: 8,617'
TVD: 6,064.44'
Inclination: 91.7°
Azimuth: 267.6°
VS: 2,583.74'
TVD (ft)
MD: 8,713'
TVD: 6,061.84'
Inclination: 91.4°
Azimuth: 268.9°
VS: 2,679.17'
TVD (ft)
MD: 8,809'
TVD: 6,059.66'
Inclination: 91.2°
Azimuth: 270.1°
VS: 2,774.37'
6150
6150
6150


292
500
ROP (ft/hr)
0
321
500
ROP (ft/hr)
0
111
7000
700000
7000
700000
5051u
4989u
MW 9.8 / VIS 37
4376u
3531u
3419u
GAS (units)
C1-C4 (PPM)
GAS (units)
C1-C4 (PPM)
4310u
C1 67%
C2 13%
C3 12%
C4 8%
0
0
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
8,990
9,000
9,010
9,020
9,030
200
GAMMA (api)
0
200
GAMMA (api)
0
133
159
154
gy, crm-brn, mot, plty-blky,
y ip, rthy lstr, wxy ip, calc 35%
gy, sb plty-blky, frm-mod hd,
, rthy lstr, calc mtx, tr foss, rr
od-slow stmg, blshwh cut, fnt
t od
60% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 40% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, fnt yel ring, fr stn, fnt od
80% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr 20% CHK: lt-medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc; O SHOW: mod-slow stmg, blshwh cut, gn-yel ring, fr stn, fnt od
100% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr, tr chk; O SHOW: mod-slow stmg, blshwh cut, gn-yel ring, fr stn, fnt od
100% MRLST: med-dk gy, sb plty-blky
hd, brit, slty-arg, mot, rthy lstr, calc mt
rr pyr, tr chk; O SHOW: mod-slow stm
cut, fnt gn-yel ring, fr stn, fnt od
TVD (ft)
MD: 8,905'
TVD: 6,057.99'
Inclination: 90.8°
Azimuth: 271°
VS: 2,869.35'
TVD (ft)
MD: 9,001'
TVD: 6,056.65'
Inclination: 90.8°
Azimuth: 271.3°
VS: 2,964.18'
6150
6150


500
ROP (ft/hr)
0
371
MW 9.7 / VIS 37
321
7000
700000
4791u
4868u
4835u
4115u
3865u
GAS (units)
C1-C4 (PPM)
4107u
C1 68%
C2 14%
C3 12%
C4 6%
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
9,200
9,210
9,220
9,230
9,240
9,250
200
GAMMA (api)
169
134
100% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr, tr chk; O SHOW: mod-slow stmg, blshwh cut, fnt gn-yel ring, fr stn, fnt od
100% MRLST: med-dk gy, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr pyr, tr chk; O SHOW: mod-fast stmg, blshwh cut, gn-yel ring, fr stn, fnt od
TVD (ft)
MD: 9,096'
TVD: 6,056.23'
Inclination: 89.7°
Azimuth: 272.3°
VS: 3,057.85'
MD: 9,192'
TVD: 6,056.99'
Inclination: 89.4°
Azimuth: 272.4°
VS: 3,152.35'
6150

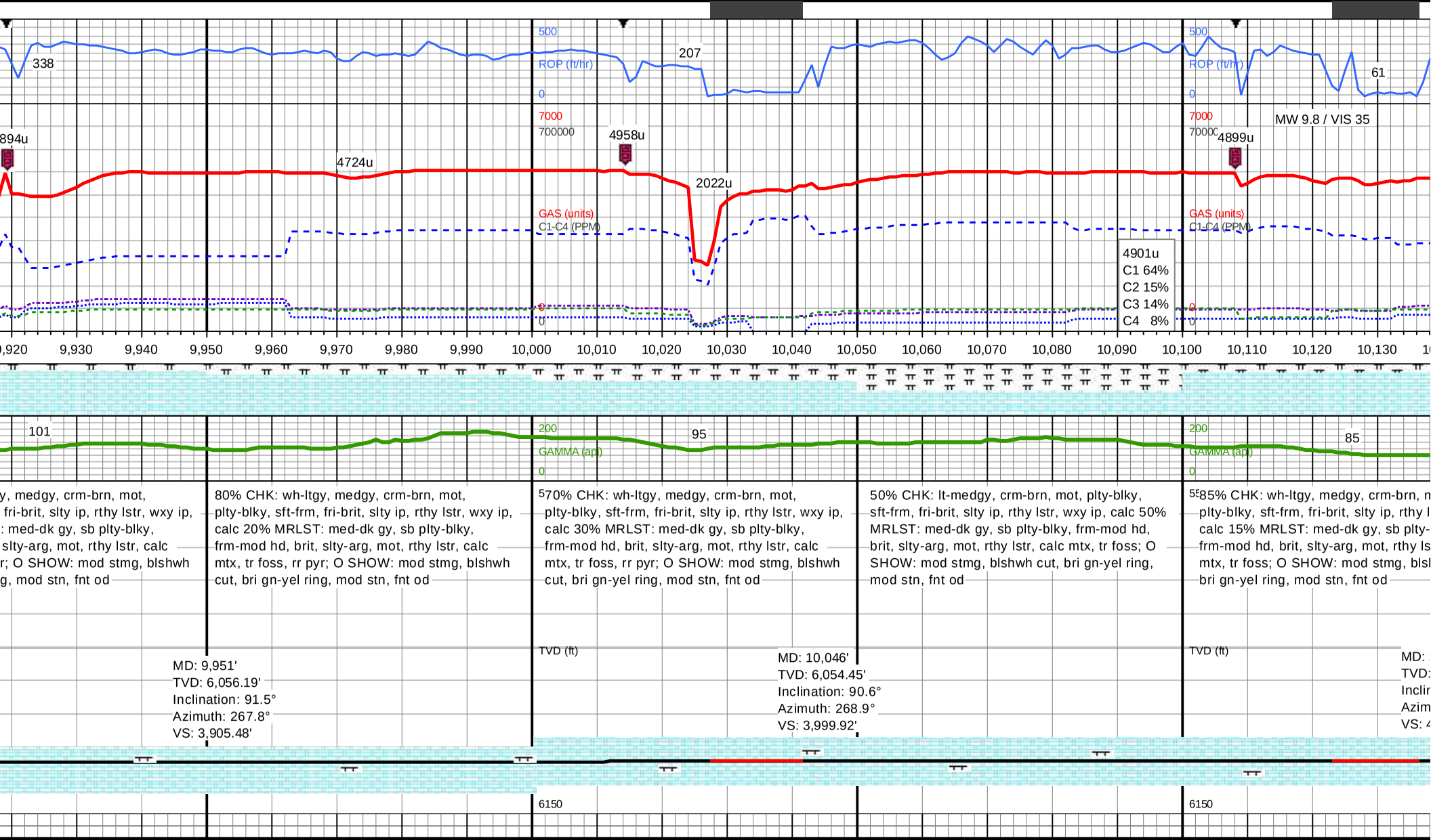

500
ROP (ft/hr)
0
286
380
MW 9.8 / VIS 37
7000
700000
5024u
4969u
3673u
2815u
GAS (units)
C1-C4 (PPM)
4766u
C1 64%
C2 14%
C3 14%
C4 8%
9,260
9,270
9,280
9,290
9,300
9,310
9,320
9,330
9,340
9,350
9,360
9,370
9,380
9,390
9,400
9,410
9,420
9,430
9,440
9,450
9,460
9,470
200
GAMMA (api)
278
94
148
HK: lt-medgy, occ wh, crm-brn, mot,
y, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
% MRLST: med-dk gy, sb plty-blky,
d hd, brit, slty-arg, mot, rthy lstr, calc
foss, rr pyr; O SHOW: mod-fast stmg,
cut, gn-yel ring, fr stn, fnt od
70% CHK: lt-medgy, occ wh, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
calc 30% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, tr foss, rr pyr; O SHOW: mod-fast stmg,
blshwh cut, gn-yel ring, fr stn, fnt od
85% CHK: lt-medgy, occ wh, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
calc 15% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, tr foss, rr pyr; O SHOW: mod-fast stmg,
blshwh cut, gn-yel ring, fr stn, fnt od
50% CHK: lt-medgy, crm-brn, mot, plty-blky,
sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 50%
MRLST: med-dk gy, sb plty-blky, frm-mod hd,
brit, slty-arg, mot, rthy lstr, calc mtx, tr foss, rr
pyr; O SHOW: mod-slow stmg, blshwh cut,
gn-yel ring, fr stn, fnt od
80% MRLST: med-dk gy, sb
hd, brit, slty-arg, mot, rthy ls
rr pyr 20% CHK: lt-medgy, o
mot, plty-blky, sft-frm, fri-brit
wxy ip, calc; O SHOW: mod-
cut, gn-yel ring, fr stn, fnt od
TVD (ft)
MD: 9,286'
TVD: 6,057.15'
Inclination: 90.4°
Azimuth: 272.5°
VS: 3,244.86'
D/U Fault
A Marl
B Chalk
MD: 9,382'
TVD: 6,055.22'
Inclination: 91.9°
Azimuth: 272.5°
VS: 3,339.3'
MD: 9,47
TVD: 6,0
Inclinatio
Azimuth:
VS: 3,43
6150

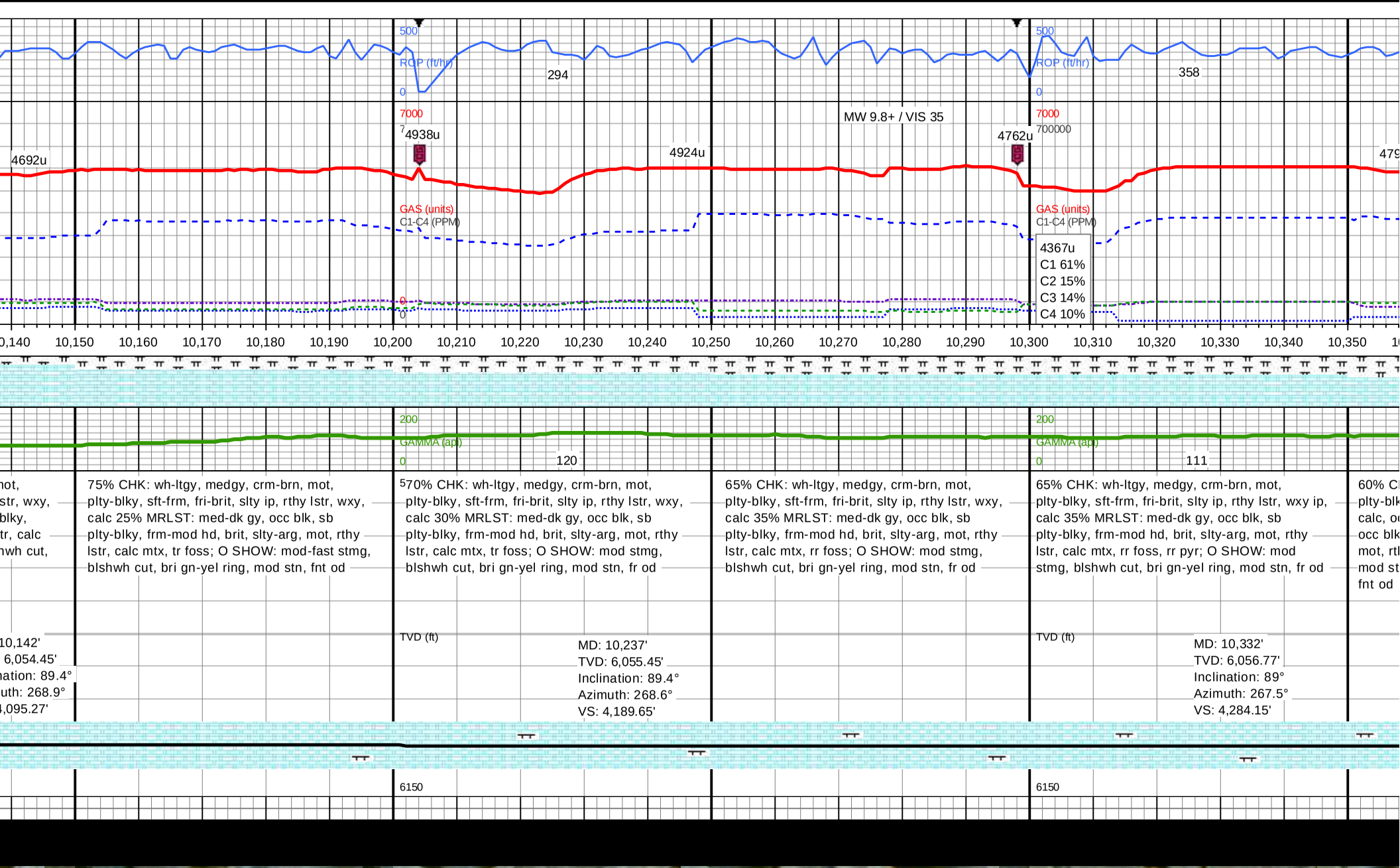

500
ROP (ft/hr)
0
02/09/2015
MINDEPTH
02/10/2015
315
273
7000
700000
MW 9.8 / VIS 36
4991u
3703u
4837u
4657u
GAS (units)
C1-C4 (PPM)
4933u
C1 65%
C2 14%
C3 14%
C4 7%
9,480
9,490
9,500
9,510
9,520
9,530
9,540
9,550
9,560
9,570
9,580
9,590
9,600
9,610
9,620
9,630
9,640
9,650
9,660
9,670
9,680
9,690
200
GAMMA (api)
149
153
plty-blky, frm-mod
tr, calc mtx, tr foss,
cc wh, crm-brn,
, slty ip, rthy lstr,
slow stmg, blshwh
75% MRLST: med-dk gy, sb plty-blky, frm-mod
hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss,
rr pyr 25% CHK: lt-medgy, occ wh, crm-brn,
mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr,
wxy ip, calc; O SHOW: mod-slow stmg, blshwh
cut, gn-yel ring, fr stn, fnt od
70% MRLST: med-dk gy, sb plty-blky, frm-mod
hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss,
rr pyr 30% CHK: lt-medgy, occ wh, crm-brn,
mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr,
wxy ip, calc; O SHOW: mod-slow stmg, blshwh
cut, gn-yel ring, fr stn, fnt od
60% MRLST: med-dk gy, sb plty-blky, frm-mod
hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss,
rr pyr 40% CHK: lt-medgy, occ wh, crm-brn,
mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr,
wxy ip, calc; O SHOW: mod-slow stmg, blshwh
cut, gn-yel ring, fr stn, fnt od
TVD (ft)
7'
53.32'
on: 90.4°
269.5°
3.16'
MD: 9,573'
TVD: 6,053.9'
Inclination: 88.9°
Azimuth: 266.6°
VS: 3,528.65'
MD: 9,667'
TVD: 6,055.46'
Inclination: 89.2°
Azimuth: 266.1°
VS: 3,622.39'
6150

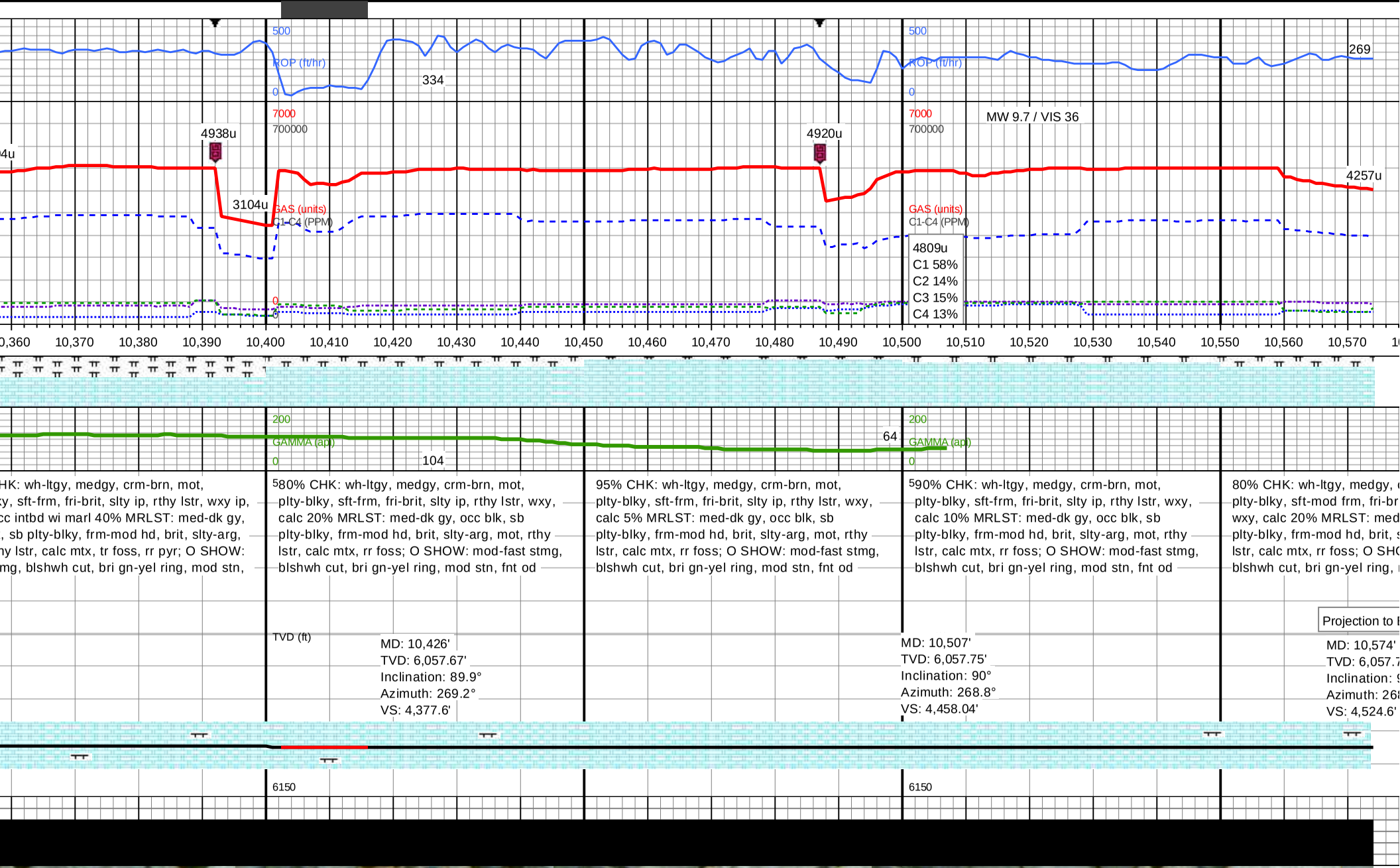


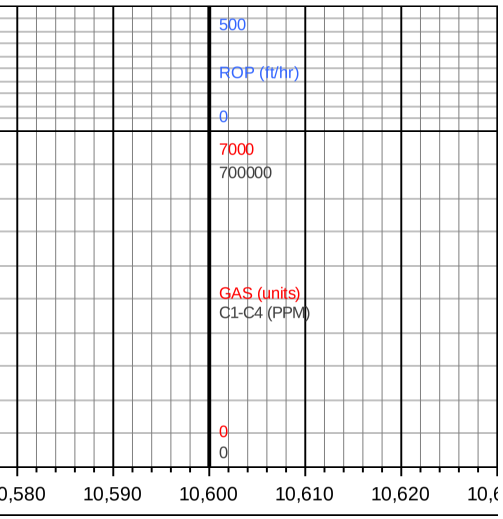
MD: 9,761'
TVD: 6,057.1'
Inclination: 88.8°
Azimuth: 265.4°
VS: 3,716.2'

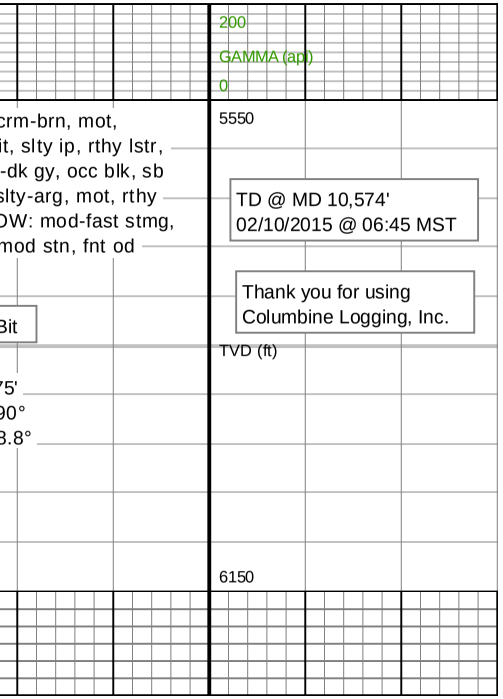
MD: 9,856'
TVD: 6,057.77'
Inclination: 90.4°
Azimuth: 267.6°
VS: 3,810.93'


338
500
ROP (ft/hr)
0
207
61
7000
700000
MW 9.8 / VIS 35
894u
4724u
4958u
2022u
4899u
GAS (units)
C1-C4 (PPM)
4901u
C1 64%
C2 15%
C3 14%
C4 8%
9,920
9,930
9,940
9,950
9,960
9,970
9,980
9,990
10,000
10,010
10,020
10,030
10,040
10,050
10,060
10,070
10,080
10,090
10,100
10,110
10,120
10,130
101
200
GAMMA (api)
95
85
y, medgy, crm-brn, mot,
fri-brit, slty ip, rthy lstr, wxy ip,
: med-dk gy, sb plty-blky,
slty-arg, mot, rthy lstr, calc
r; O SHOW: mod stmg, blshwh
g, mod stn, fnt od
80% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
calc 20% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, tr foss, rr pyr; O SHOW: mod stmg, blshwh
cut, bri gn-yel ring, mod stn, fnt od
570% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
calc 30% MRLST: med-dk gy, sb plty-blky,
frm-mod hd, brit, slty-arg, mot, rthy lstr, calc
mtx, tr foss, rr pyr; O SHOW: mod stmg, blshwh
cut, bri gn-yel ring, mod stn, fnt od
50% CHK: lt-medgy, crm-brn, mot, plty-blky,
sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 50%
MRLST: med-dk gy, sb plty-blky, frm-mod hd,
brit, slty-arg, mot, rthy lstr, calc mtx, tr foss; O
SHOW: mod stmg, blshwh cut, bri gn-yel ring,
mod stn, fnt od
55
85% CHK: wh-ltgy, medgy, crm-brn, n
plty-blky, sft-frm, fri-brit, slty ip, rthy l
calc 15% MRLST: med-dk gy, sb plty-
frm-mod hd, brit, slty-arg, mot, rthy ls
mtx, tr foss; O SHOW: mod stmg, blsl
bri gn-yel ring, mod stn, fnt od
TVD (ft)
MD: 9,951'
TVD: 6,056.19'
Inclination: 91.5°
Azimuth: 267.8°
VS: 3,905.48'
MD: 10,046'
TVD: 6,054.45'
Inclination: 90.6°
Azimuth: 268.9°
VS: 3,999.92'
6150


500
ROP (ft/hr)
0
294
358
MW 9.8+ / VIS 35
7000
4938u
4762u
4692u
4924u
GAS (units)
C1-C4 (PPM)
4367u
C1 61%
C2 15%
C3 14%
C4 10%
10,140
10,150
10,160
10,170
10,180
10,190
10,200
10,210
10,220
10,230
10,240
10,250
10,260
10,270
10,280
10,290
10,300
10,310
10,320
10,330
10,340
10,350
200
GAMMA (api)
120
111
TVD (ft)
6150
75% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 25% MRLST: med-dk gy, occ blk, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss; O SHOW: mod-fast stmg, blshwh cut, bri gn-yel ring, mod stn, fnt od
70% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 30% MRLST: med-dk gy, occ blk, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, tr foss; O SHOW: mod stmg, blshwh cut, bri gn-yel ring, mod stn, fr od
MD: 10,237'
TVD: 6,055.45'
Inclination: 89.4°
Azimuth: 268.6°
VS: 4,189.65'
65% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy, calc 35% MRLST: med-dk gy, occ blk, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss; O SHOW: mod stmg, blshwh cut, bri gn-yel ring, mod stn, fr od
65% CHK: wh-ltgy, medgy, crm-brn, mot, plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip, calc 35% MRLST: med-dk gy, occ blk, sb plty-blky, frm-mod hd, brit, slty-arg, mot, rthy lstr, calc mtx, rr foss, rr pyr; O SHOW: mod stmg, blshwh cut, bri gn-yel ring, mod stn, fr od
MD: 10,332'
TVD: 6,056.77'
Inclination: 89°
Azimuth: 267.5°
VS: 4,284.15'


500
ROP (ft/hr)
0
334
269
7000
700000
MW 9.7 / VIS 36
4938u
4920u
4257u
3104u
GAS (units)
C1-C4 (PPM)
4809u
C1 58%
C2 14%
C3 15%
C4 13%
10,360
10,370
10,380
10,390
10,400
10,410
10,420
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
200
GAMMA (api)
104
64
HK: wh-ltgy, medgy, crm-brn, mot,
y, sft-frm, fri-brit, slty ip, rthy lstr, wxy ip,
cc intbd wi marl 40% MRLST: med-dk gy,
, sb plty-blky, frm-mod hd, brit, slty-arg,
hy lstr, calc mtx, tr foss, rr pyr; O SHOW:
mg, blshwh cut, bri gn-yel ring, mod stn,
80% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 20% MRLST: med-dk gy, occ blk, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss; O SHOW: mod-fast stmg,
blshwh cut, bri gn-yel ring, mod stn, fnt od
95% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 5% MRLST: med-dk gy, occ blk, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss; O SHOW: mod-fast stmg,
blshwh cut, bri gn-yel ring, mod stn, fnt od
90% CHK: wh-ltgy, medgy, crm-brn, mot,
plty-blky, sft-frm, fri-brit, slty ip, rthy lstr, wxy,
calc 10% MRLST: med-dk gy, occ blk, sb
plty-blky, frm-mod hd, brit, slty-arg, mot, rthy
lstr, calc mtx, rr foss; O SHOW: mod-fast stmg,
blshwh cut, bri gn-yel ring, mod stn, fnt od
80% CHK: wh-ltgy, medgy,
plty-blky, sft-mod frm, fri-br
wxy, calc 20% MRLST: med
plty-blky, frm-mod hd, brit,
lstr, calc mtx, rr foss; O SH
blshwh cut, bri gn-yel ring,
TVD (ft)
MD: 10,426'
TVD: 6,057.67'
Inclination: 89.9°
Azimuth: 269.2°
VS: 4,377.6'
MD: 10,507'
TVD: 6,057.75'
Inclination: 90°
Azimuth: 268.8°
VS: 4,458.04'
Projection to
MD: 10,574'
TVD: 6,057.7
Inclination:
Azimuth: 268
VS: 4,524.6'
6150
6150


500
ROP (ft/hr)
0
7000
700000
GAS (units)
C1-C4 (PPM)
0
0
0,580
10,590
10,600
10,610
10,620


200
GAMMA (api)
0
crm-brn, mot,
it, slty ip, rthy lstr,
-dk gy, occ blk, sb
slty-arg, mot, rthy
OW: mod-fast stmg,
mod stn, fnt od
Bit
75'
90°
3.8°
5550
TD @ MD 10,574'
02/10/2015 @ 06:45 MST
Thank you for using
Columbine Logging, Inc.
TVD (ft)
6150