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Customer Information

Operator: **Noble Energy Inc**
1625 Broadway
Suite 2200
Denver, Colorado 80202

Geologist: **Holly Sell**
Noble Energy Inc.

Mud Logging Details

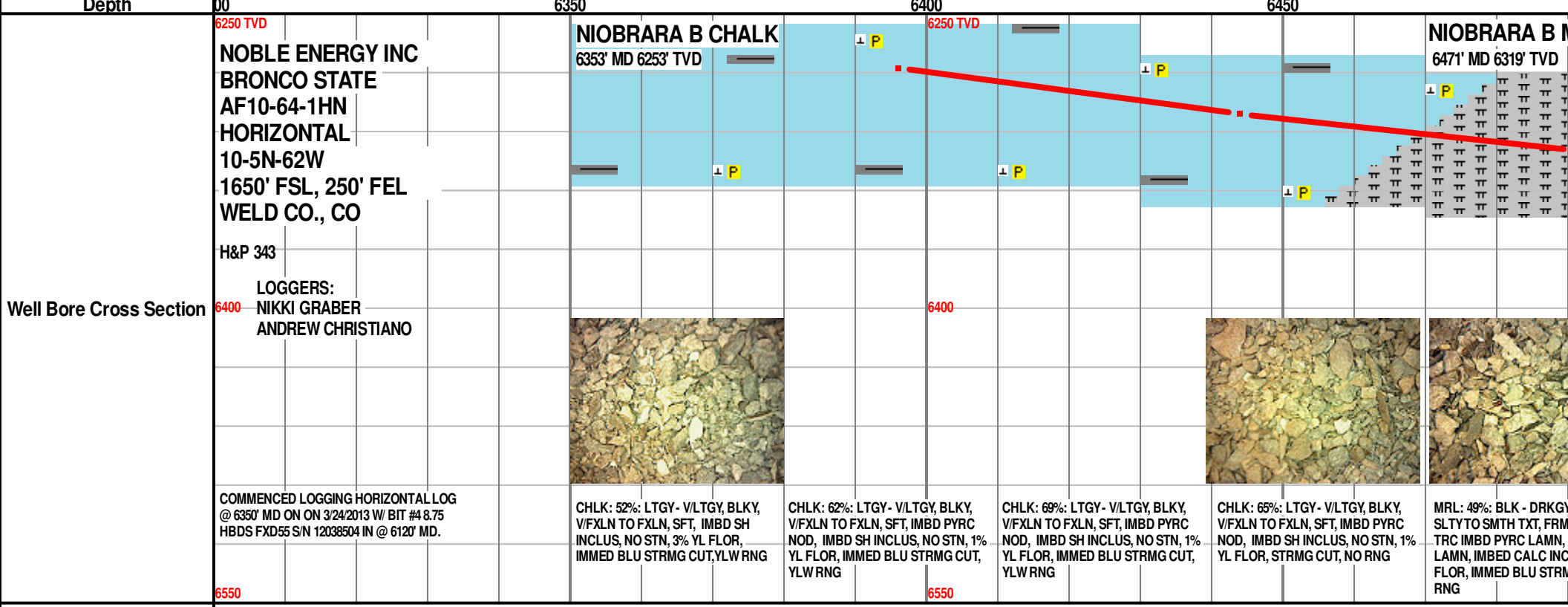
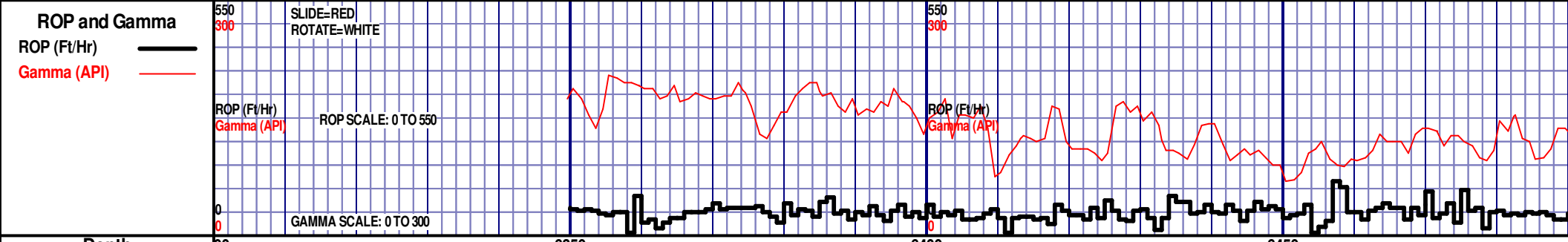
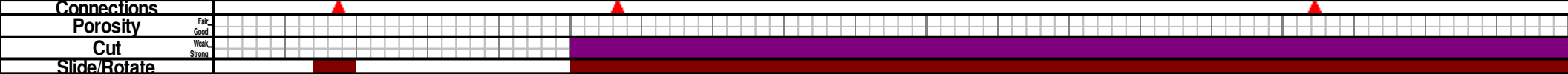
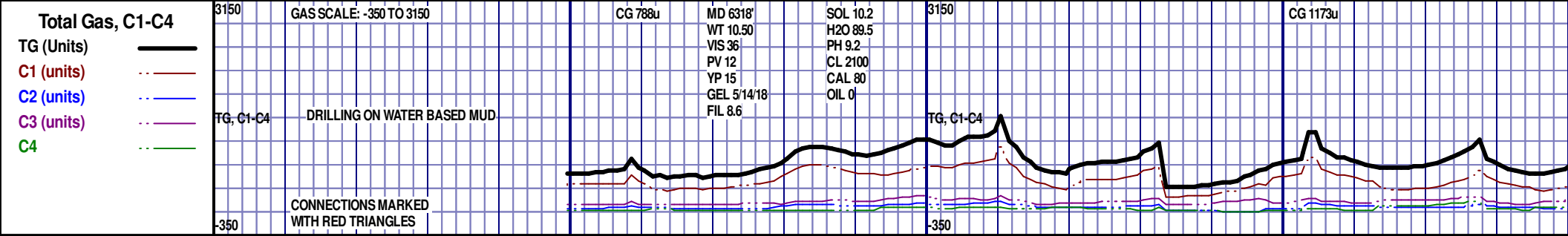
Logger: **Nikki Graber**
Andrew Christiano
Log Interval: 6350' MD to 10705' MD
Start Date: March 24, 2013
Release Date: March 27, 2013

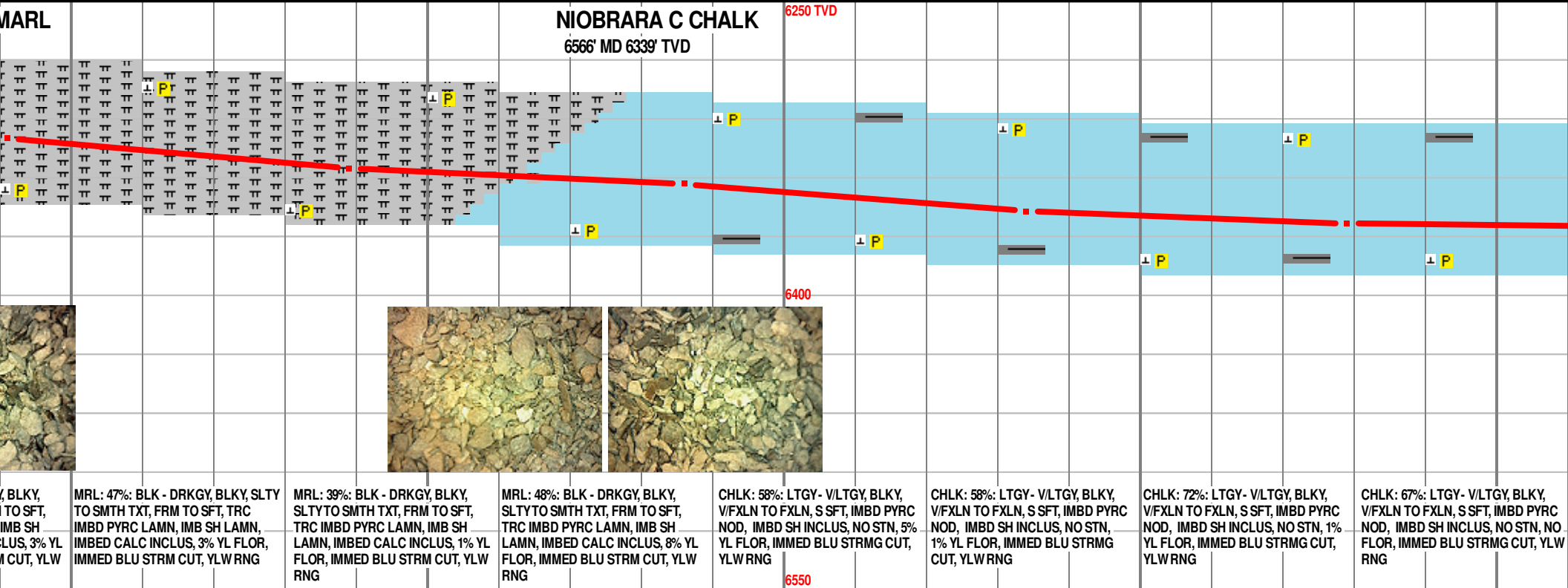
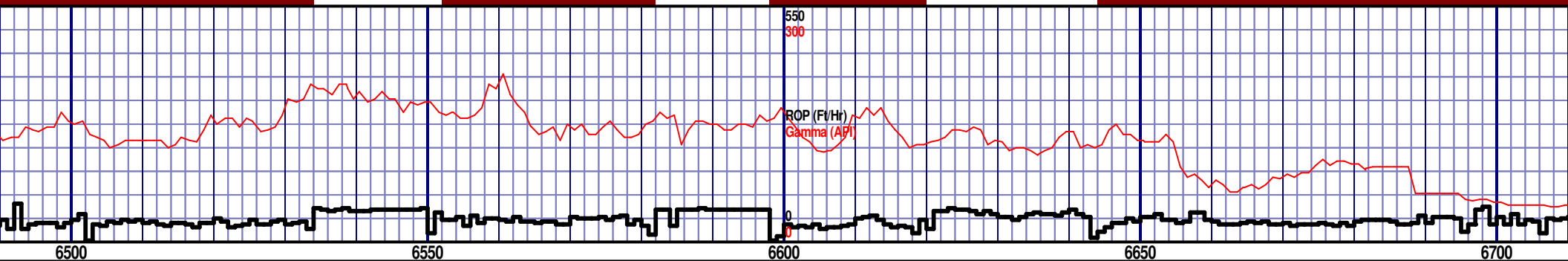
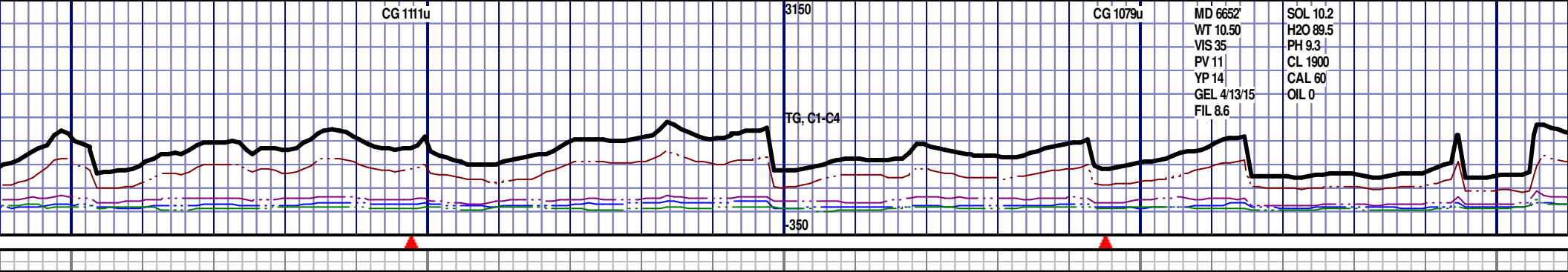
Well Information

Well Name: **Bronco State AF10-64-1HN**
Horizontal
Location: **10-5N-62W**
1650' FSL, 250' FEL

County: **Weld**
State: **Colorado**

Drilling Rig: **H&P 343**
Total Depth: **10705' MD**
TD Date: **March 27, 2013**
Formation: **Niobrara C Chalk**
KB Elevation: **4706'**
GR Elevation: **4746'**
API Number: **05-123-36580**





MD 6491 TVD 6319.73 INC 68.8 AZ 268.01 VS 259.47	MD 6539 TVD 6335.35 INC 73.22 AZ 268.9 VS 269.9	MD 6586 TVD 6342.94 INC 76.41 AZ 269.9 VS 332.83	MD 6634 TVD 6357.55 INC 79.81 AZ 270.65 VS 397.14	MD 6679 TVD 6363.27 INC 85.57 AZ 269.94 VS 441.74
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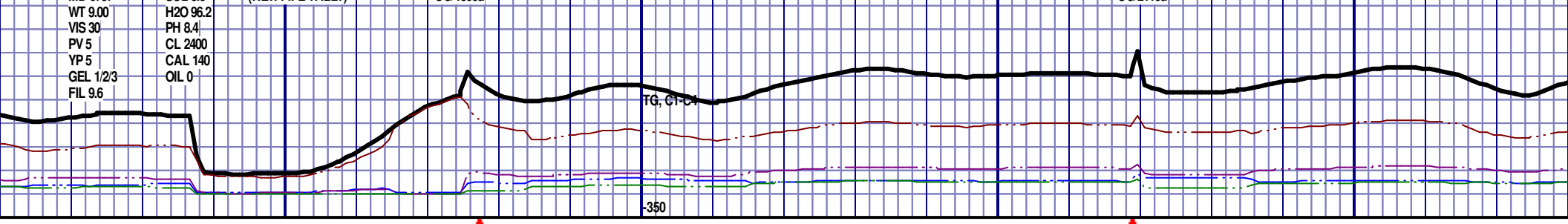
MD 6737
 WT 9.00
 VIS 30
 PV 5
 YP 5
 GEL 1/2/3
 FIL 9.6

(NEW PIPE TALLY)

CG 1806u

3150

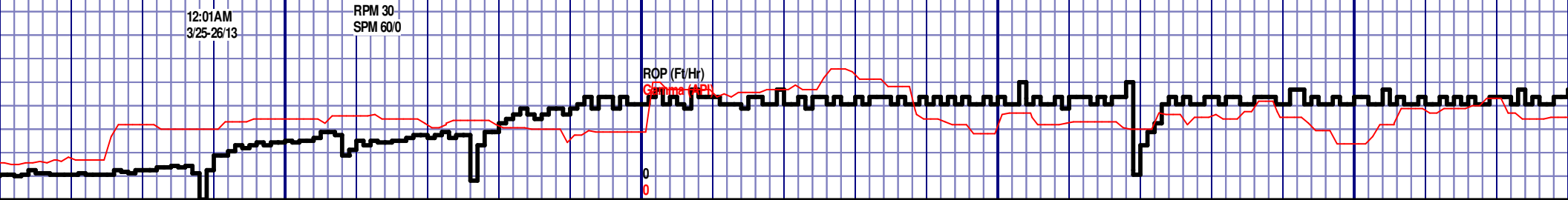
CG 2116u



12:01AM
 3/25-26/13

WOB 14.2K
 PP 2429
 RPM 30
 SPM 60/0

550
 300



6750

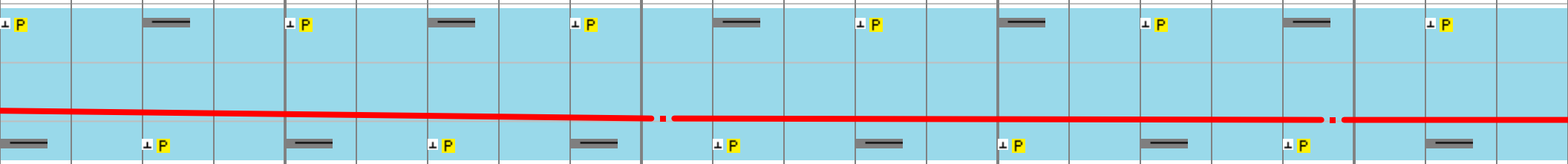
6800

6850

6900

TOOH @ 5:00PM ON 3/24/13 AT 6737' MD FOR INT CASING. TIH @ 1:15AM ON 3/26/13. RESUMED DRILLING @ 7:45 AM ON 3/26/2013 W/ BIT #5 6.125" SMITH MDI513 S/N JG5758 IN @ 6737' MD.

6250 TVD



6400

CHLK: 58%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, S SFT, IMBD PYRC NOD, IMBD SH INCLUS, 1% YL STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

CHLK: 61%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

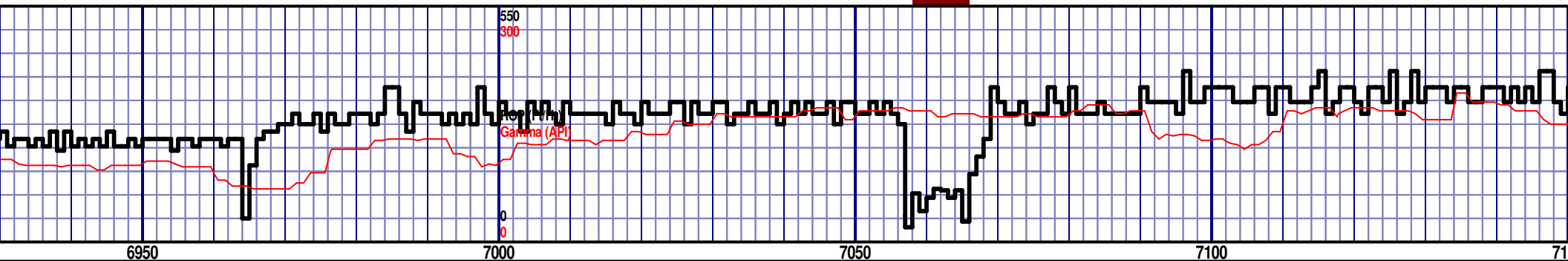
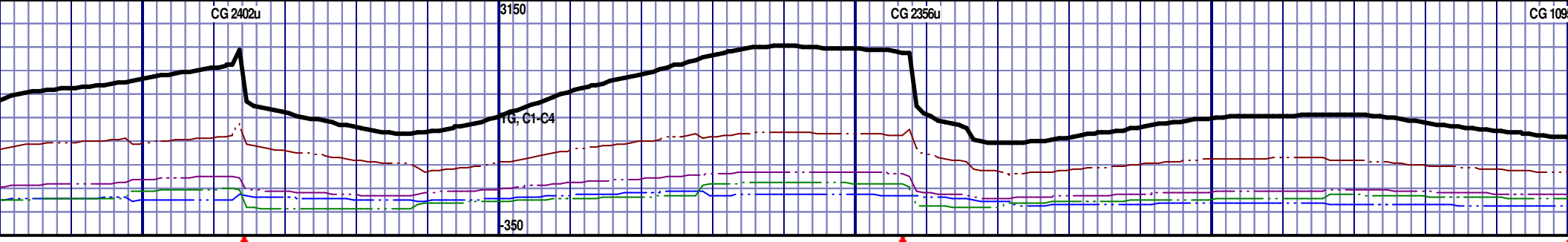
CHLK: 52%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, 1% YL FLOR, IMMED BLU STRMG CUT, YLWRNG

CHLK: 60%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

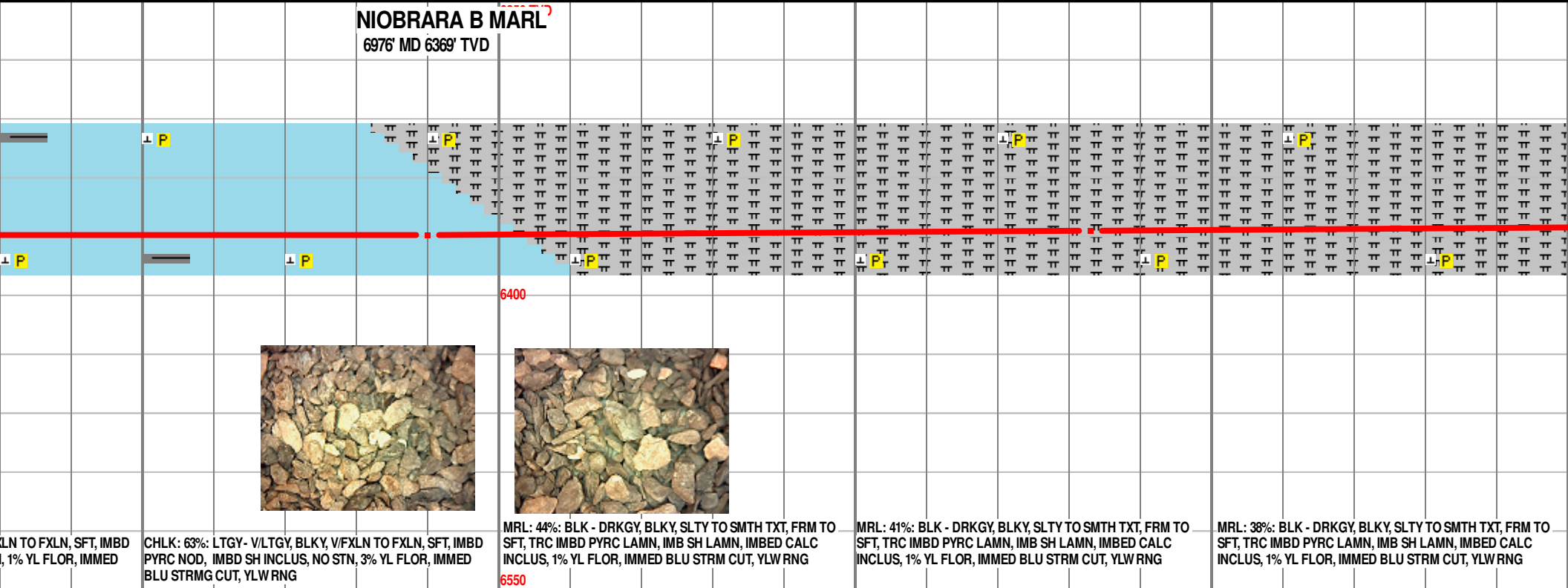
CHLK: 62%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

MD 6803 TVD 6368.39
 INC 89.69 AZ 268.94
 VS 565.6

MD 6897 TVD 6369.33
 INC 89.17 AZ 267.86
 VS 659.59



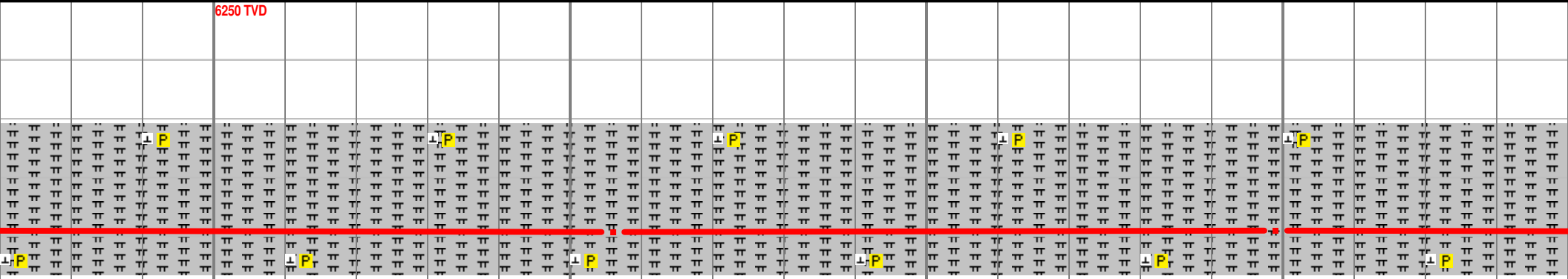
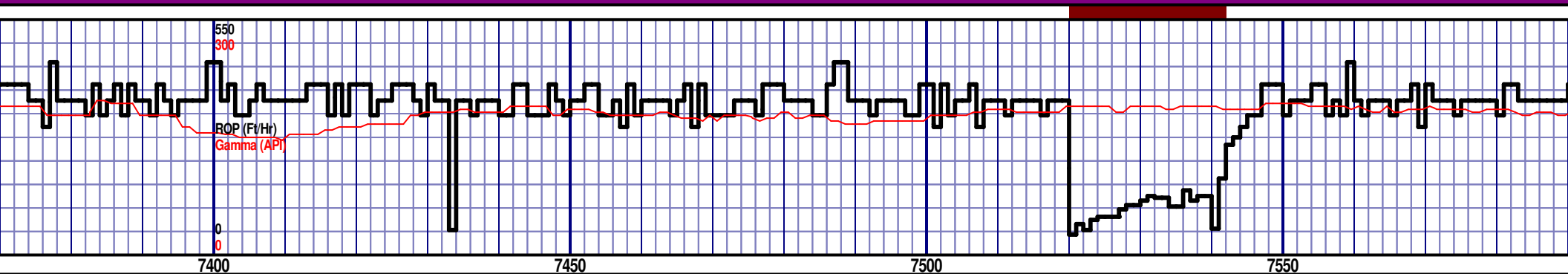
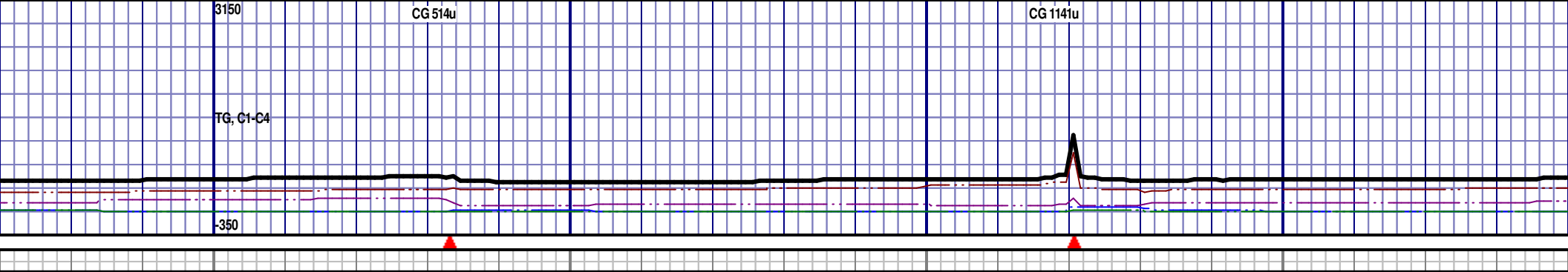
NIOBRARA B MARL
6976' MD 6369' TVD



LN TO FXLN, SFT, IMBD 1, 1% YL FLOR, IMMED	CHLK: 63%: LTGY- VLTGY, BLKY, VFXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, 3% YL FLOR, IMMED BLU STRMG CUT, YLWRNG	MRL: 44%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG	MRL: 41%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG	MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG
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MD 6990 TVD 6369.23
INC 90.96 AZ 268.56
VS 752.58

MD 7083 TVD 6366.9
INC 91.91 AZ 268.92
VS 845.55



<p>BLKY, SLTY TO SMTH TXT, FRM TO IMN, IMB SH LAMN, IMBED CALC IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 37%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 39%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW</p>
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TVD 6366.81
AZ 267.85

MD 7456 TVD 6367.55
INC 90.46 AZ 268.3
VS 1218.48

MD 7549 TVD 6366.85
INC 90.4 AZ 268.4
VS 1311.47

3150

CG 556u

MD 7658'

WT 9.3
VIS 32
PV 7
YP 9
GEL 2/3/4
FIL 8.6

SOL 4.9
H2O 94.8
PH 9.5
CL 2200
CAL 80
OIL 0

CG 450u

CG 485u

3150

TG, C1-C4

TG, C1-C4

-350

-350

550

300

ROP (FV/Hr)
Gamma (API)

7600

7650

7700

7750

550

300

ROP (FV/Hr)
Gamma (API)

7800

6250 TVD

6250 TVD

6400

6400

MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 42%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

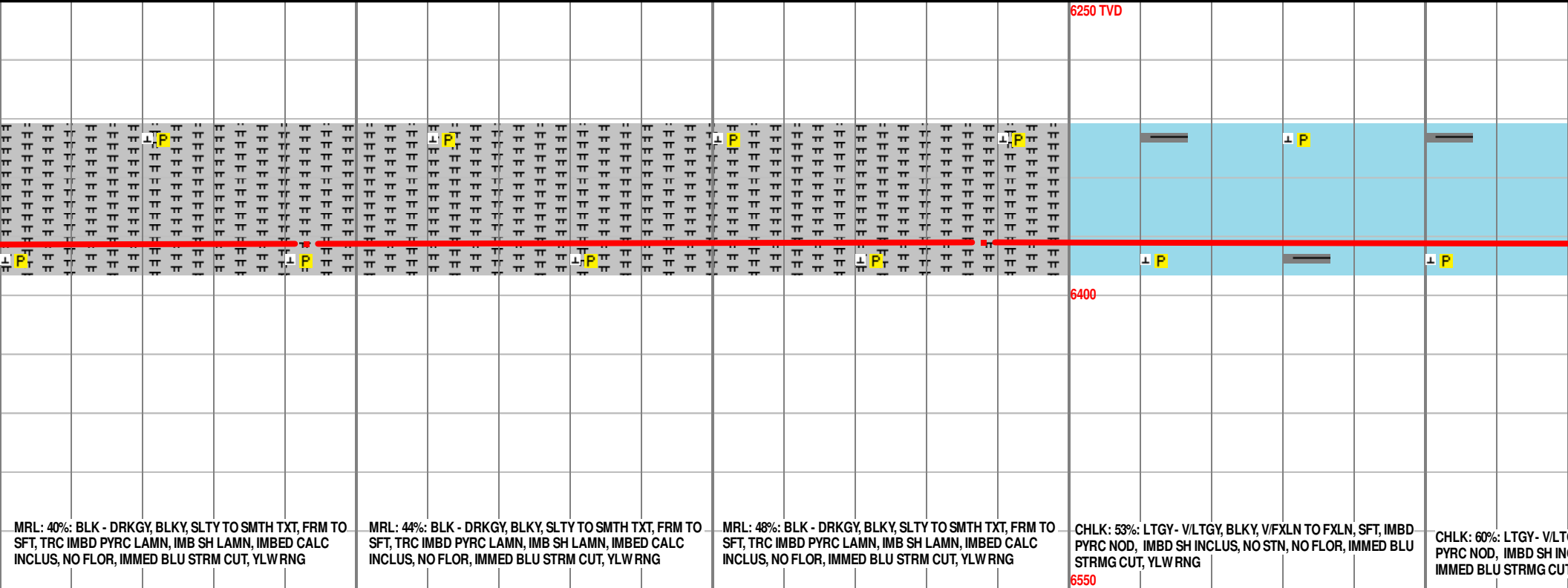
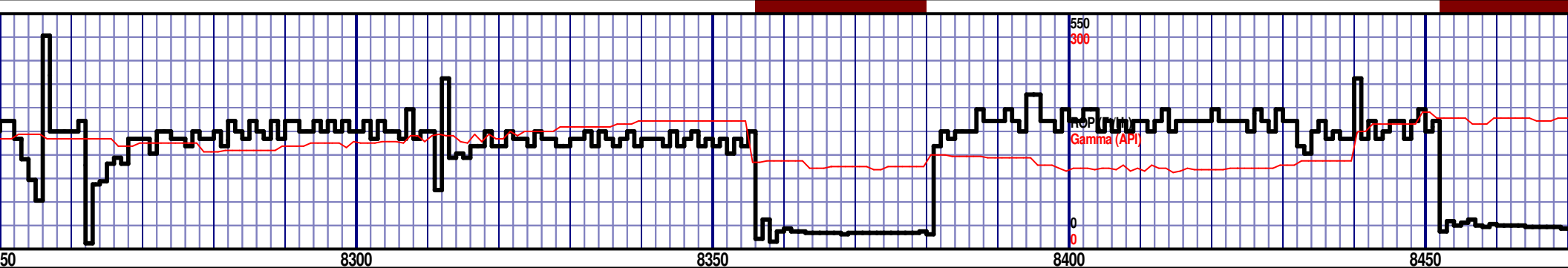
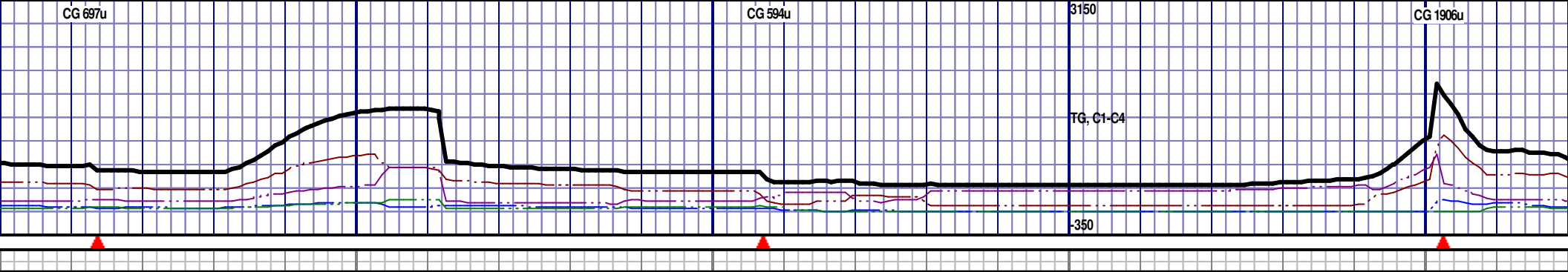
MRL: 36%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

6550

6550

MD 7642 TVD 6367.5
INC 88.8 AZ 268.15
VS 1404.46

MD 7734 TVD 6368.66
INC 89.75 AZ 268.02
VS 1496.45



MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 44%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

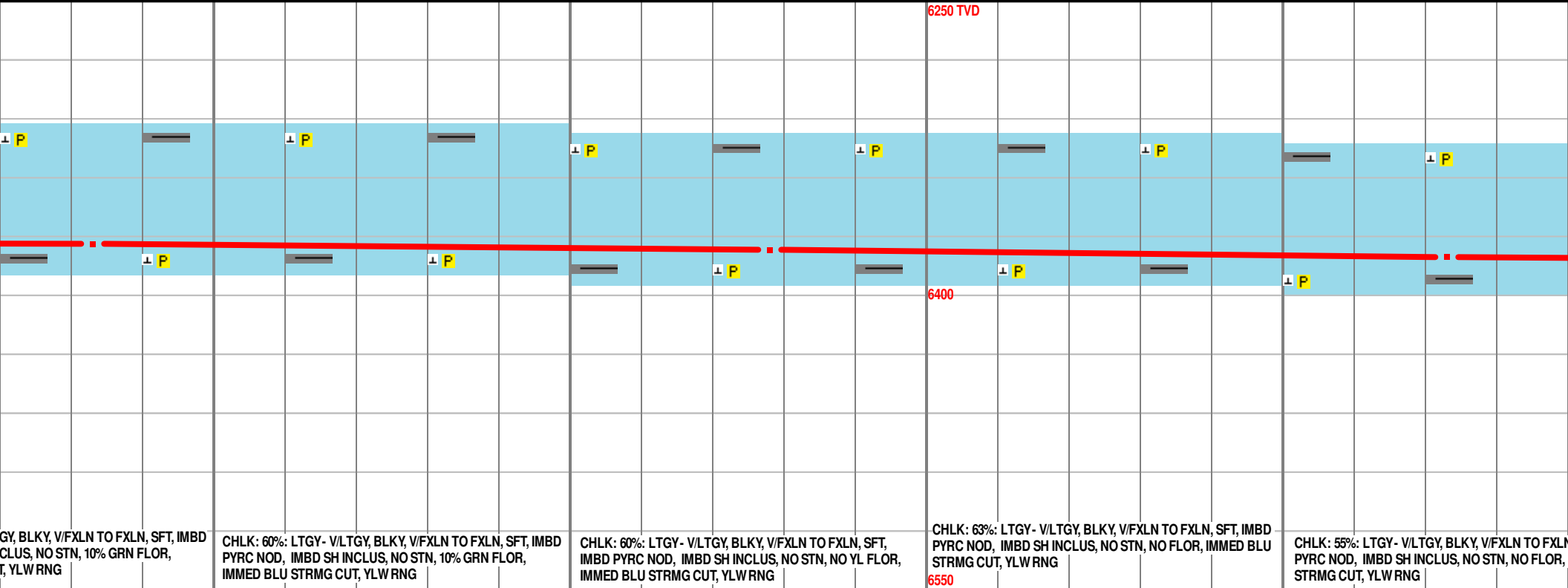
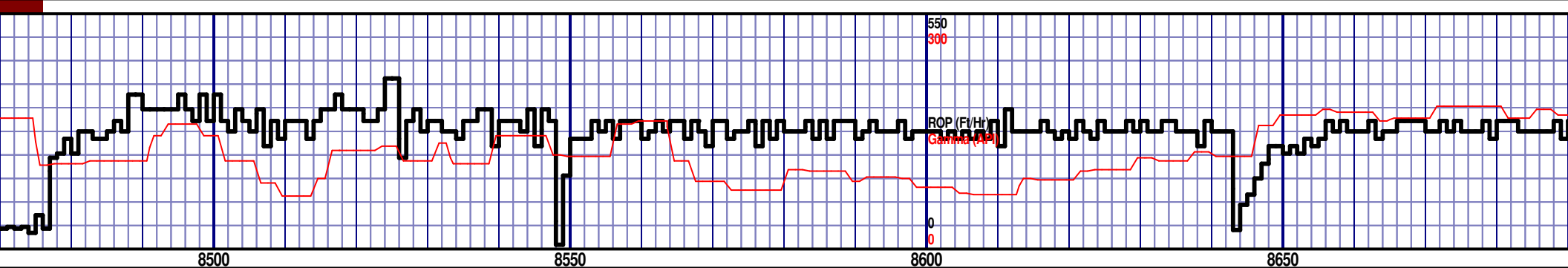
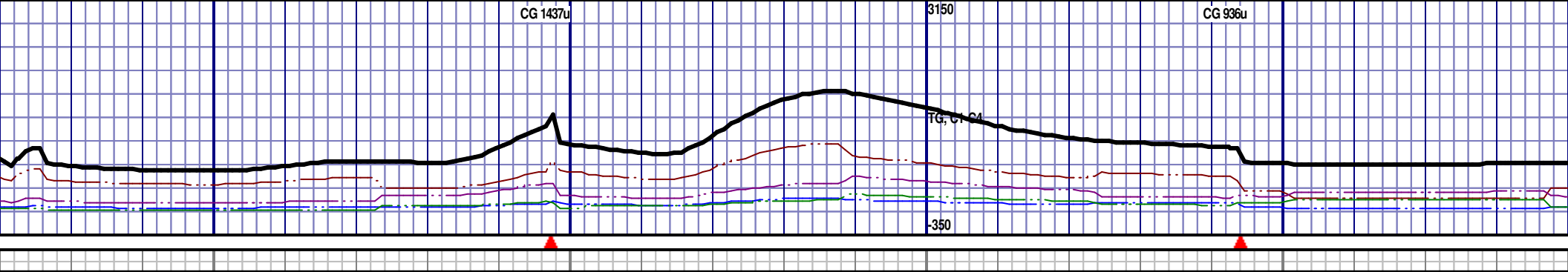
MRL: 48%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

CHLK: 53%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

CHLK: 60%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLWRNG

MD 8293 TVD 6374.09
 INC 90.93 AZ 267.51
 VS 2055.31

MD 8388 TVD 6373.1
 INC 90.28 AZ 268.02
 VS 2150.29



GY, BLKY, V/FXLN TO FXLN, SFT, IMBD
 CLUS, NO STN, 10% GRN FLOR,
 T, YLW RNG

CHLK: 60%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD
 PYRC NOD, IMBD SH INCLUS, NO STN, 10% GRN FLOR,
 IMMED BLU STRMG CUT, YLW RNG

CHLK: 60%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT,
 IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO YL FLOR,
 IMMED BLU STRMG CUT, YLW RNG

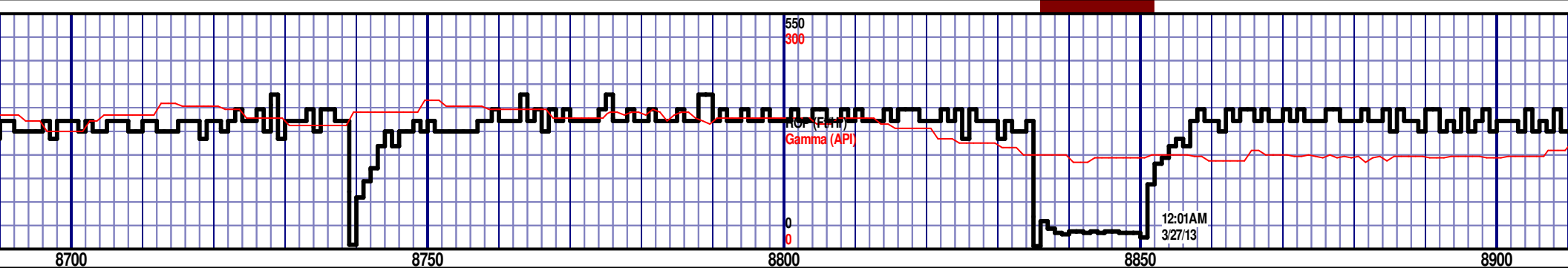
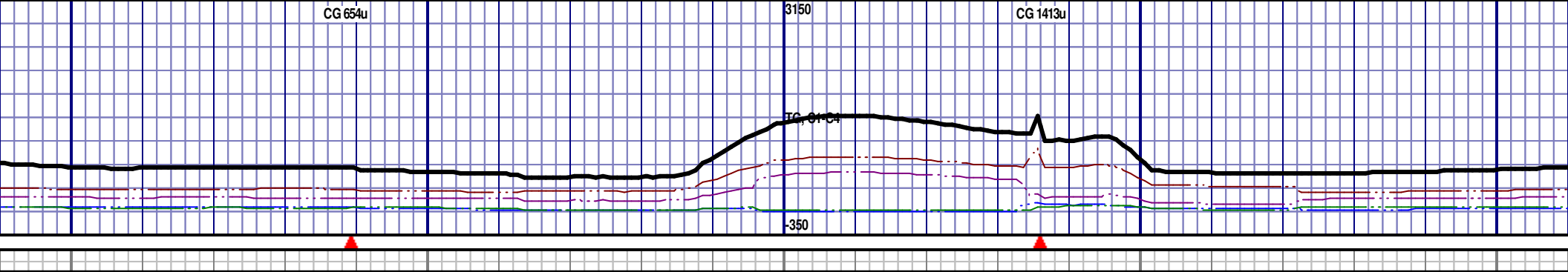
CHLK: 63%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD
 PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU
 STRMG CUT, YLW RNG

CHLK: 55%: LTGY - V/LTGY, BLKY, V/FXLN TO FXLN
 PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR,
 STRMG CUT, YLW RNG

MD 8483 TVD 6374.07
 INC 88.55 AZ 268.37
 VS 2245.28

MD 8578 TVD 6376.96
 INC 87.97 AZ 268.77
 VS 2340.23

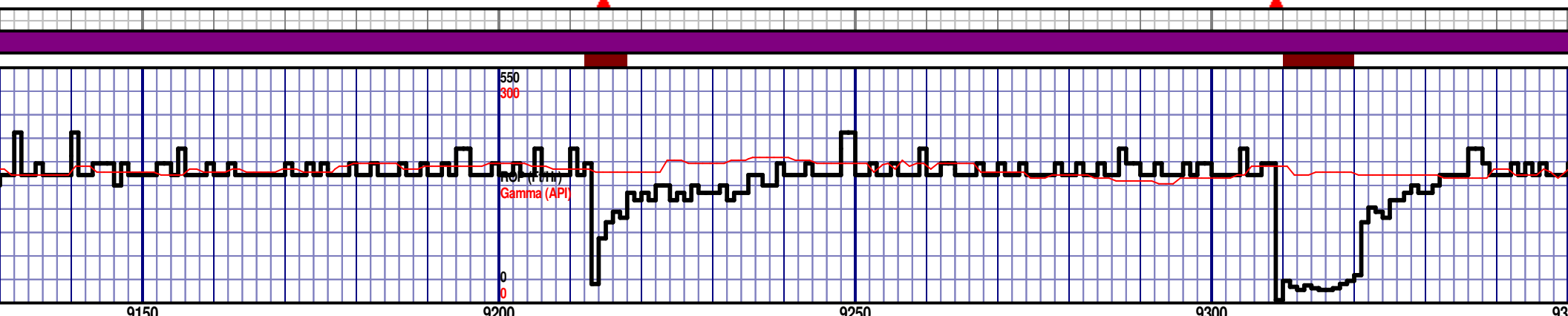
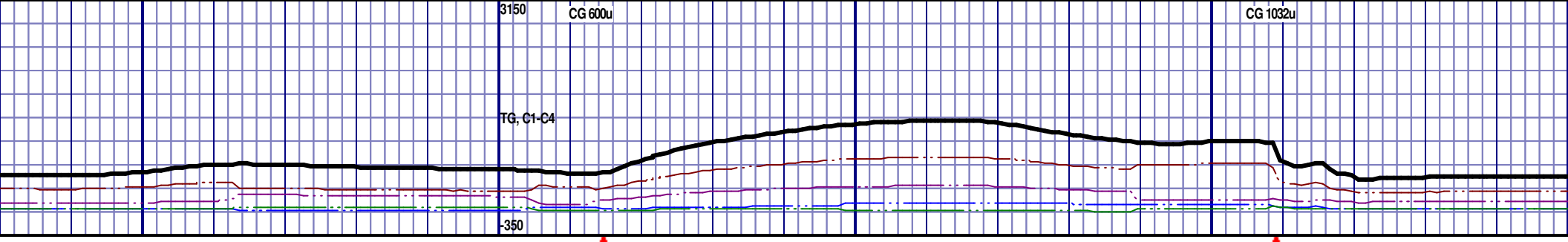
MD 8673 TVD 6380.23
 INC 88.09 AZ 269.32
 VS 2435.18



	<p>6250 TVD</p>	<p>6480</p>	<p>6550</p>
<p>CHLK: 51%: LTGY - VLTGY, BLKY, V/FXLN TO FXLN, SFT, IMBD PYRC NOD, IMBD SH INCLUS, NO STN, NO FLOR, IMMED BLU STRMG CUT, YLW RNG</p>	<p>MRL: 45%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 44%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG</p>	<p>MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG</p>

MD 8768 TVD 6383.07
 INC 88.49 AZ 269.27
 VS 2530.13

MD 8863 TVD 6383.43
 INC 91.08 AZ 269.69
 VS 2625.11



9150	9200	9250	9300	9350
	6250 TVD			
	6400			
	6550			

TO SMTH TXT, FRM TO LAMN, IMBED CALC CUT, YLWRNG

MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 37%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

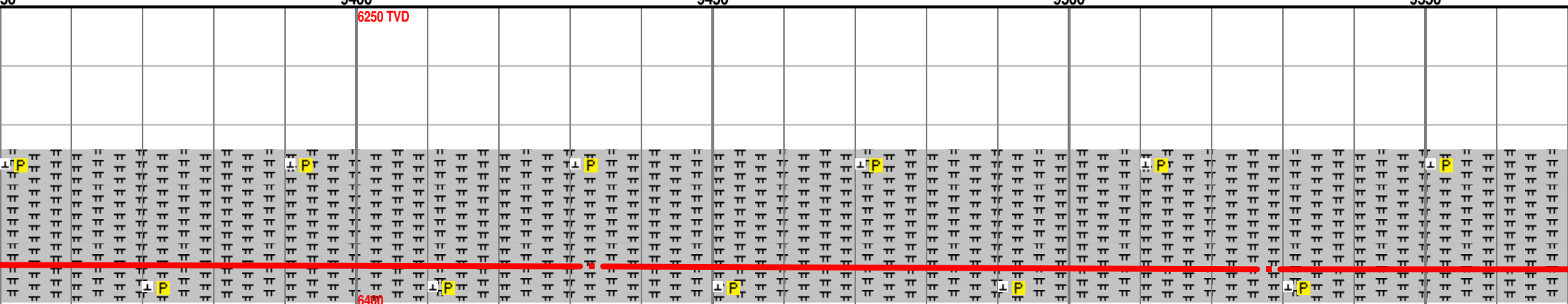
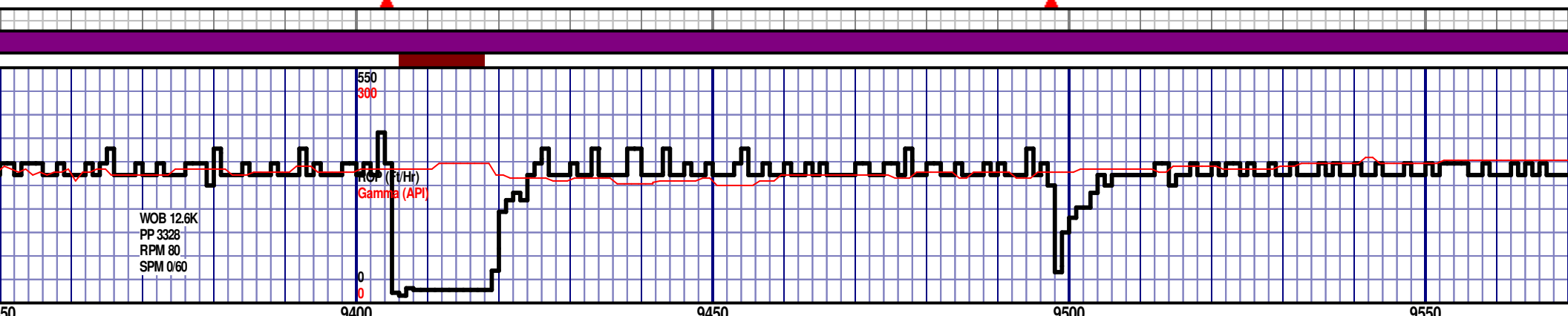
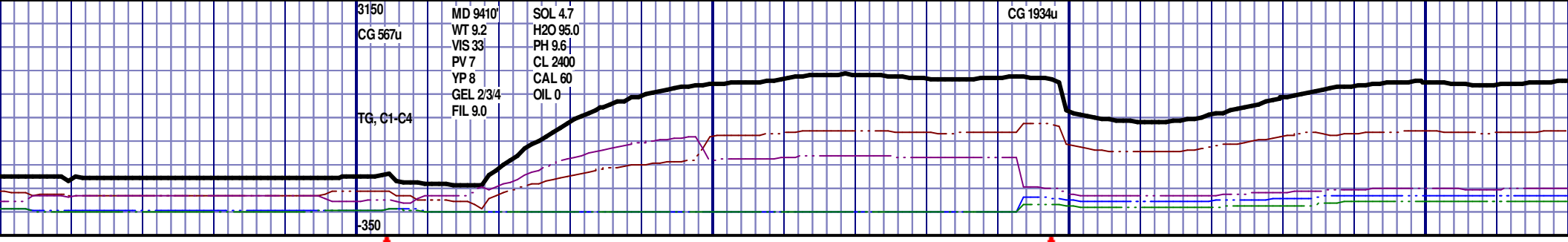
MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 44%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG

MD 9148 TVD 6382.38
 INC 89.75 AZ 268.36
 VS 2910.07

MD 9243 TVD 6382
 INC 90.71 AZ 267.88
 VS 3005.06

MD 9338 TVD 6382
 INC 90.12 AZ 267.88
 VS 3100.03



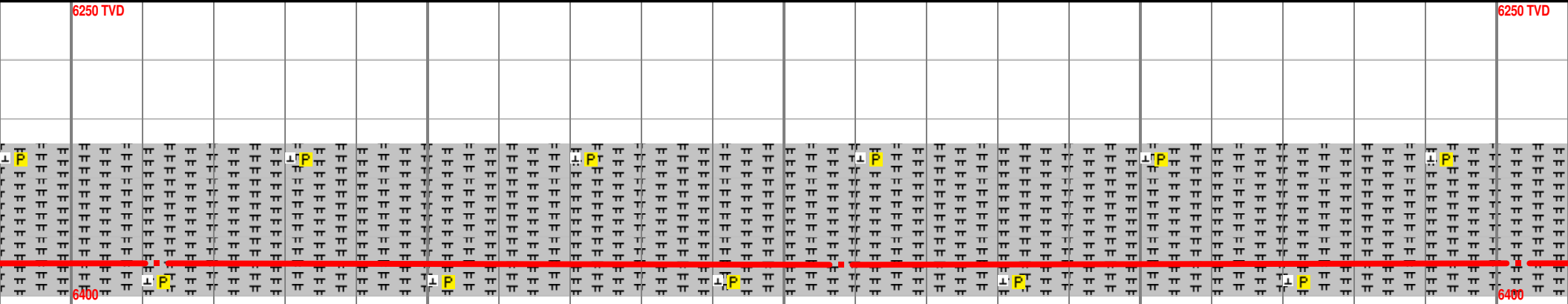
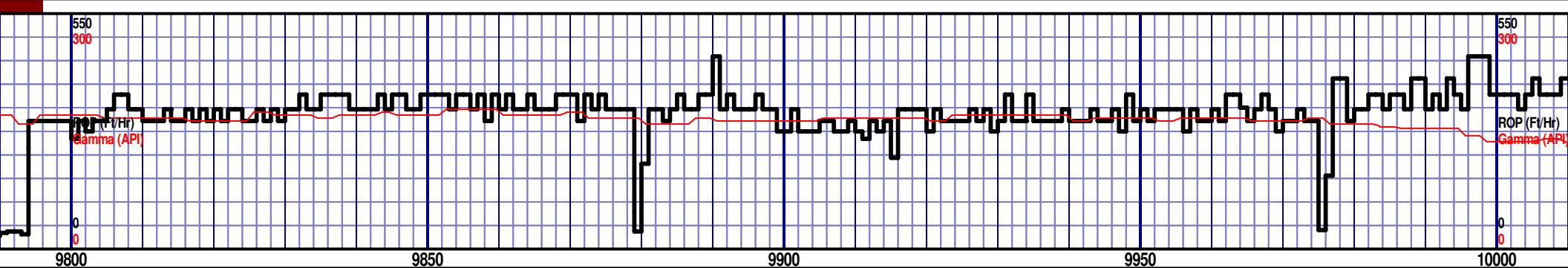
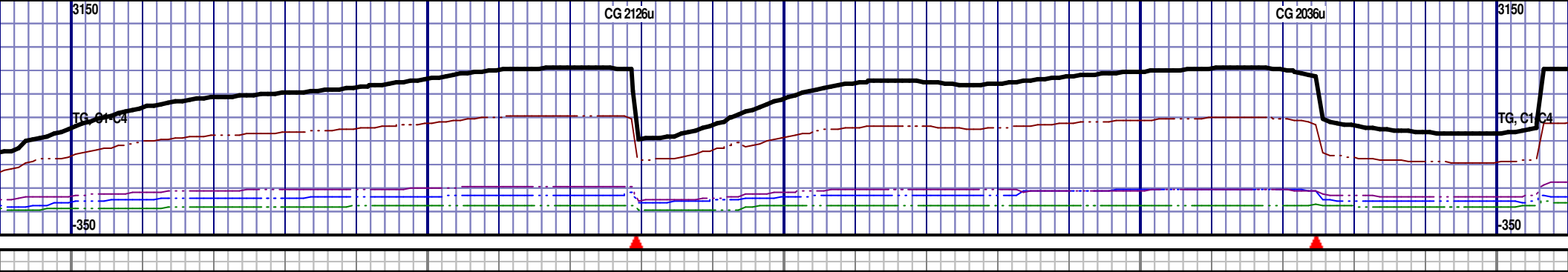
MRL: 45%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 3% YL FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 44%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 43%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG

MRL: 39%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLWRNG

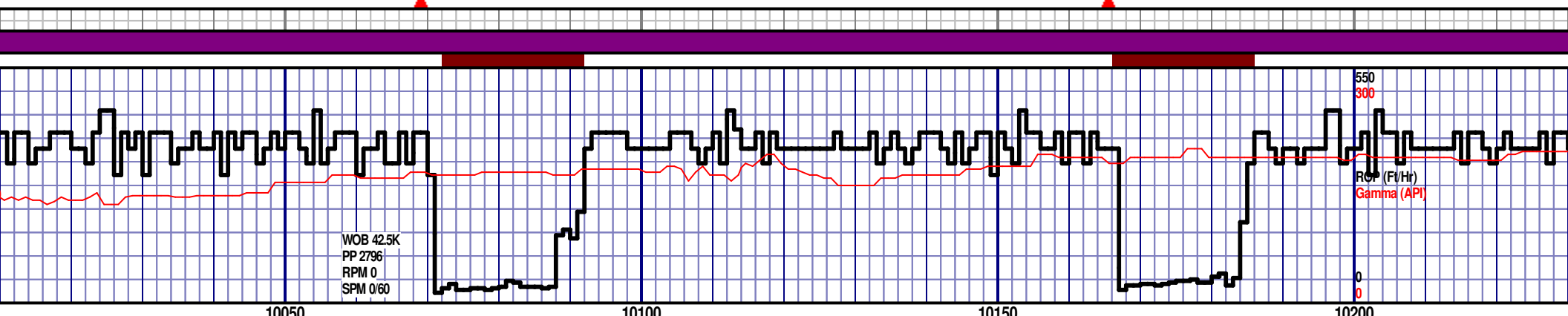
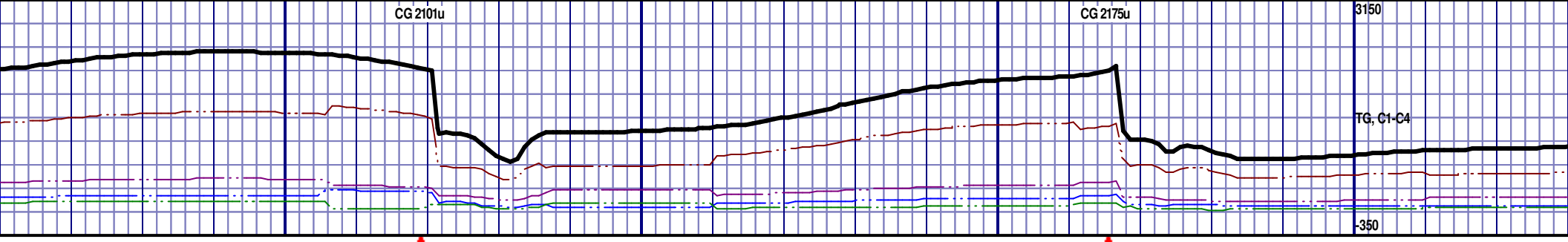


MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 39%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 39%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG

MD 9812 TVD 6383.81
 INC 89.38 AZ 269.06
 VS 3573.97

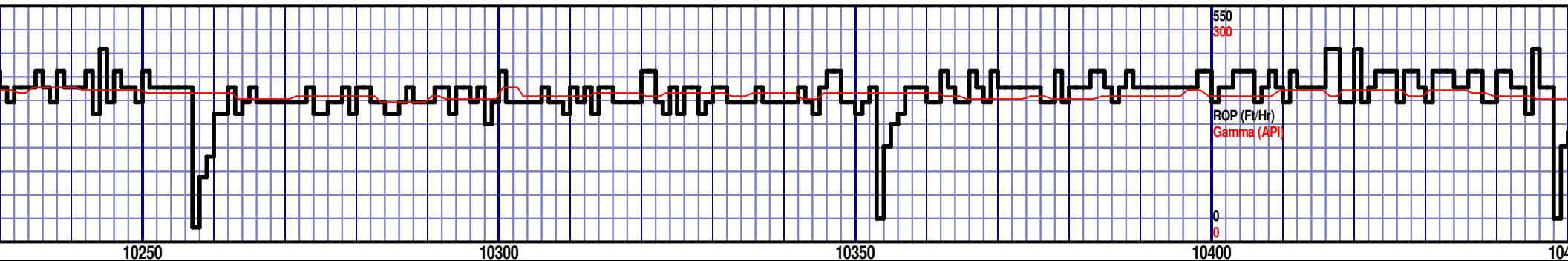
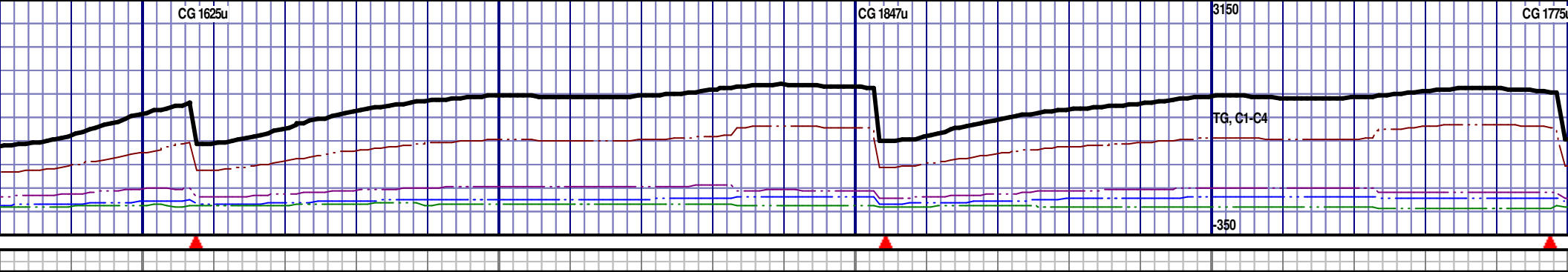
MD 9908 TVD 6384.35
 INC 89.97 AZ 268.53
 VS 3669.97

MD 1000
 INC 90.7
 VS 3764.97

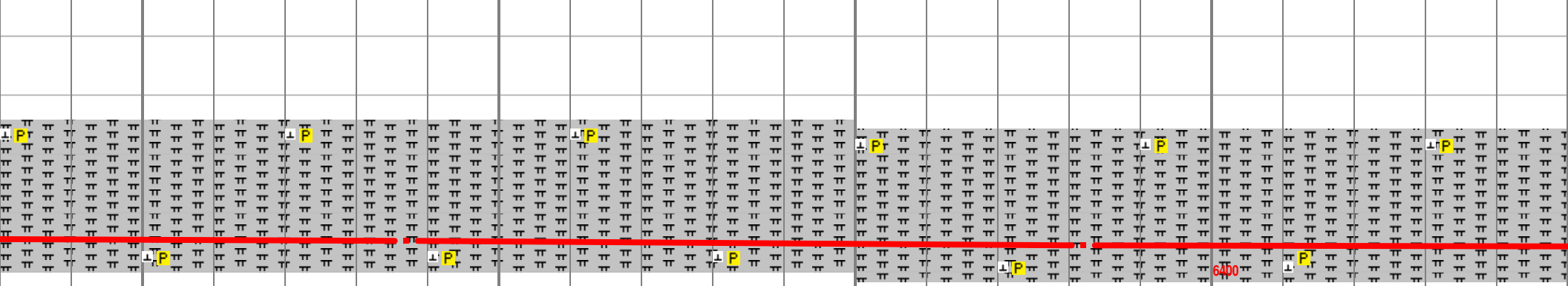


10050	10100	10150	10200
6250 TVD			
6400			

MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 41%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 42%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, NO FLOR, IMMED BLU STRM CUT, YLW RNG
 MRL: 43%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% FLOR, IMMED BLU STRM CUT, YLW RNG



10250 10300 10350 10400 10450



TO SMTH TXT, FRM TO LAMN, IMBED CALC CUT, YLW RNG

MRL: 42%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

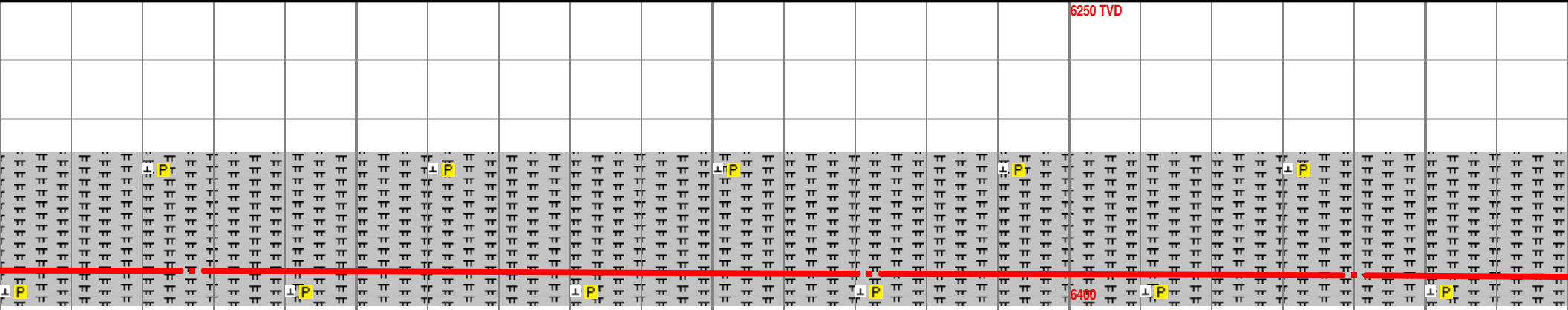
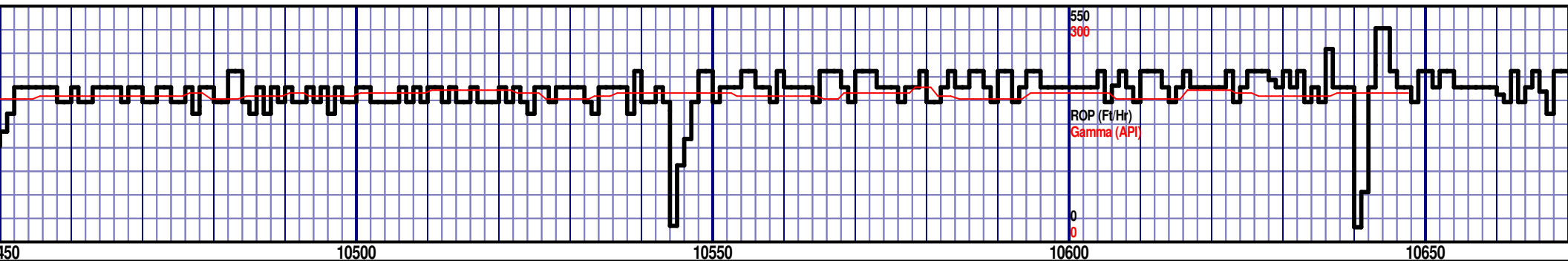
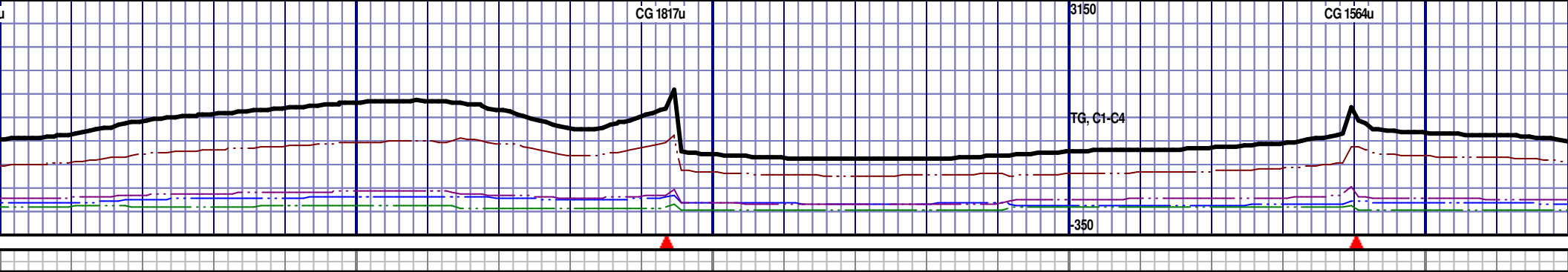
MRL: 40%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 3% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 38%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 36%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MD 10287 TVD 6384.54
INC 88.52 AZ 268.27
VS 4048.92

MD 10382 TVD 6386.18
INC 89.51 AZ 268.12
VS 4143.9



MRL: 35%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 34%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 33%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 32%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

MRL: 33%: BLK - DRKGY, BLKY, SLTY TO SMTH TXT, FRM TO SFT, TRC IMBD PYRC LAMN, IMB SH LAMN, IMBED CALC INCLUS, 1% YL FLOR, IMMED BLU STRM CUT, YLW RNG

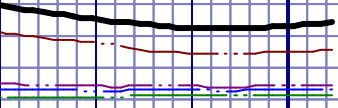
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 INC 89.38 AZ 266.87
 VS 4238.87

MD 10572 TVD 6388.65
 INC 88.74 AZ 265.73
 VS 4333.76

MD 10640 TVD 6389.82
 INC 89.29 AZ 265.43
 VS 4401.64

6550

BOTTOMS UP GAS 855u



DRILLER'S TD @ 10705' MD @
1:15PM ON 3/27/2013

WOB 11.2K
PP 3387
RPM 80
SPM 60/0

10700

10750

TD @ 10705' MD

RELEASED ON
3/27/2013

THANK YOU FROM,
NIKKI GRABER,
ANDREW CHRISTIANO,
AND HORIZON WELL
LOGGING, LLC

BLKY, SLTY TO SMTH TXT, FRM TO
MN, IMB SH LAMN, IMBED CALC
MED BLU STRM CUT, YLW RNG