



7136 South Yale Avenue, Suite 414  
Tulsa, Oklahoma 74136-6378

phone 918.925.9739

fax 866.534.4559

[WWW.HZMUD.COM/25](http://WWW.HZMUD.COM/25)

### Customer Information

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

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

### Mud Logging Details

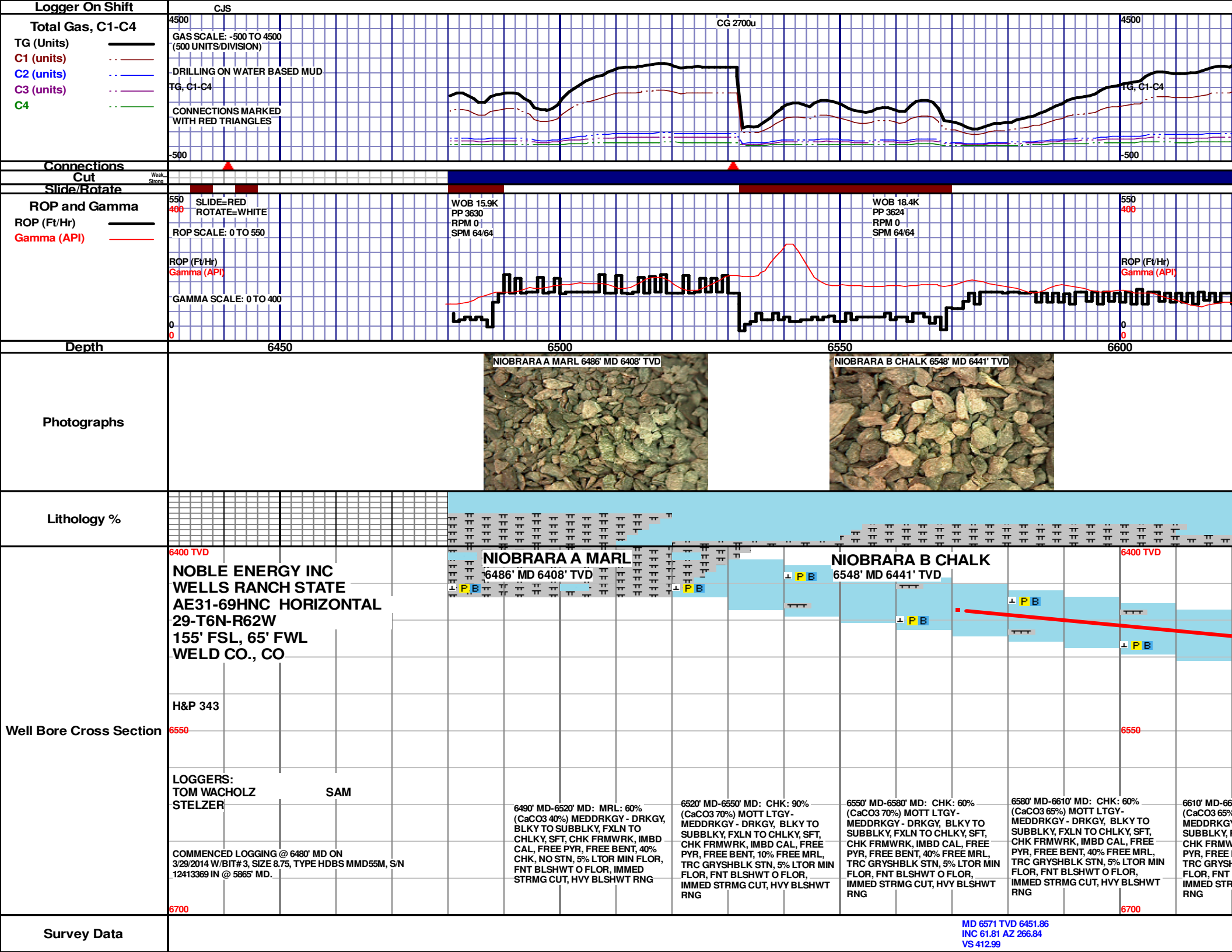
**Logger:** Tom Wacholz & Sam Stelzer  
**Log Interval:** 6480' MD to 15344' MD  
**Start Date:** March 29, 2014  
**Release Date:** April 11, 2014

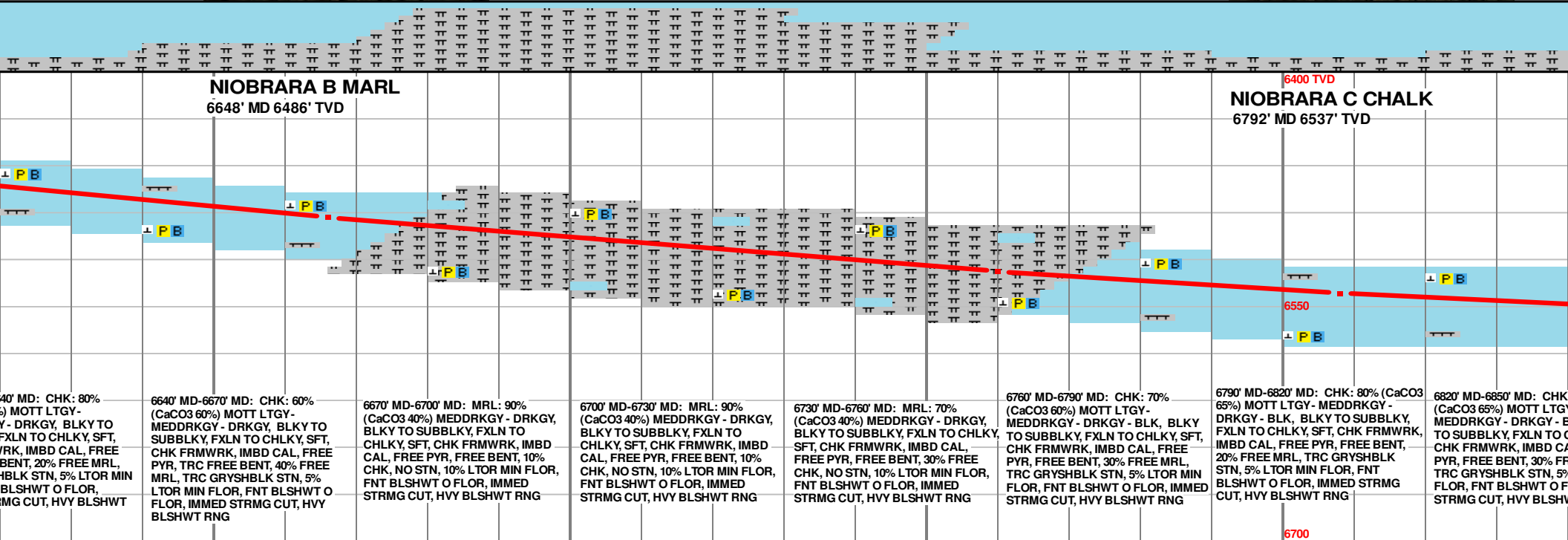
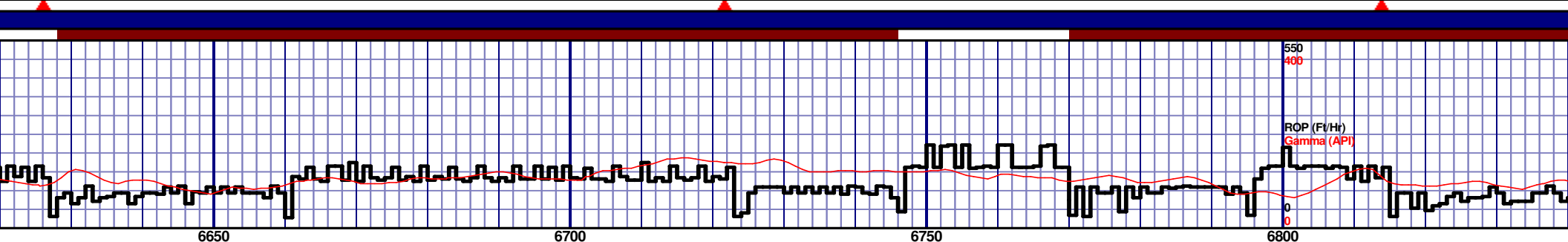
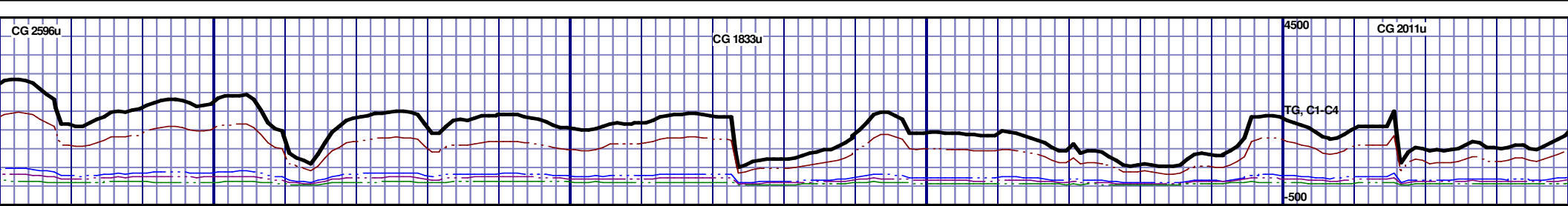
### Well Information

**Well Name:** Wells Ranch State  
AE31-69HNC Horizontal  
**Location:** 29-T6N-R62W  
155' FSL, 65' FWL

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

**Drilling Rig:** H&P 343  
**Total Depth:** 15344' MD  
**TD Date:** April 6, 2014  
**Formation:** Niobrara C Chalk  
**KB Elevation:** 4769'  
**GR Elevation:** 4745'  
**API Number:** 05-123-38687-0000



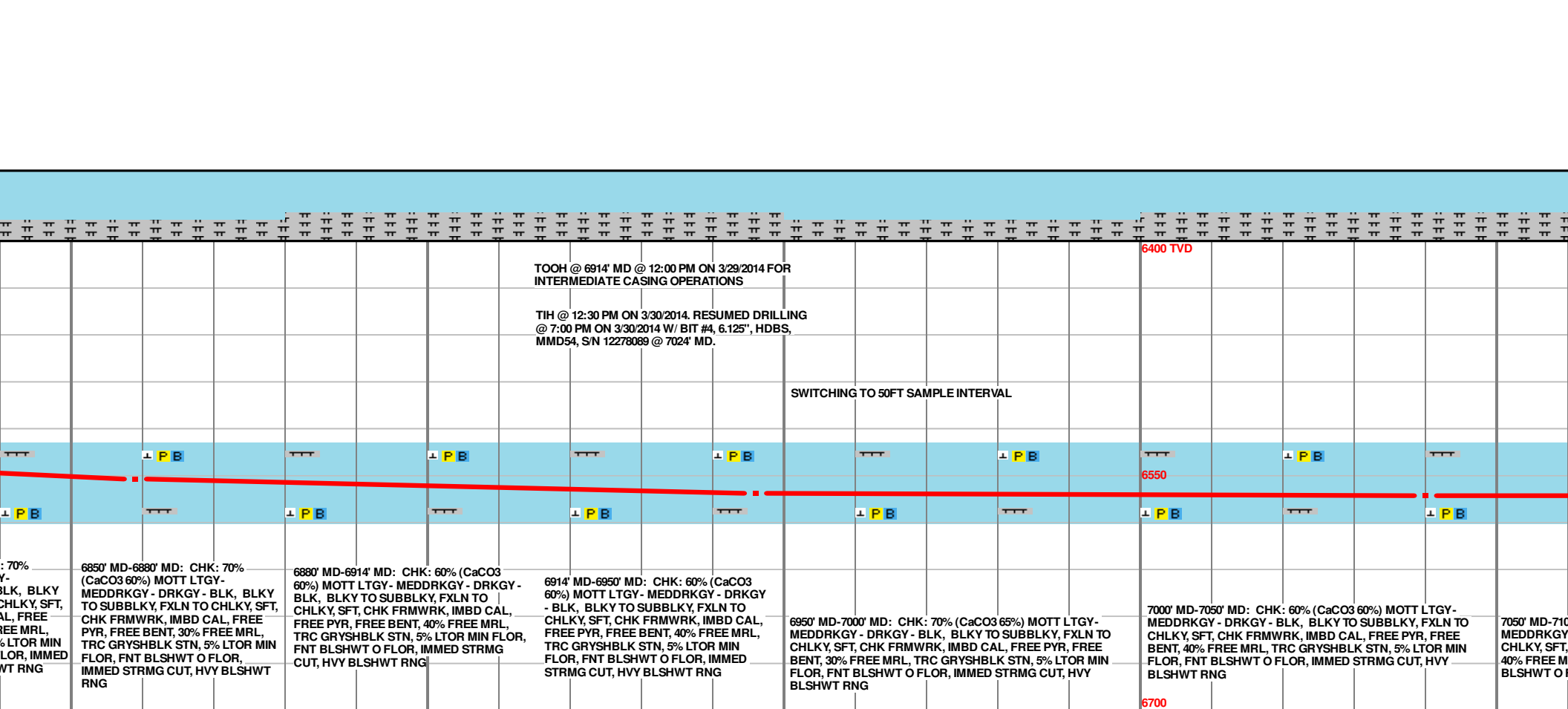
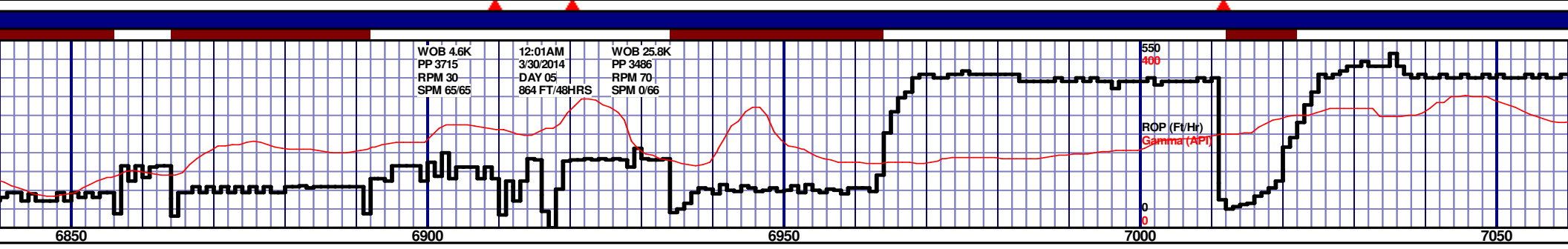
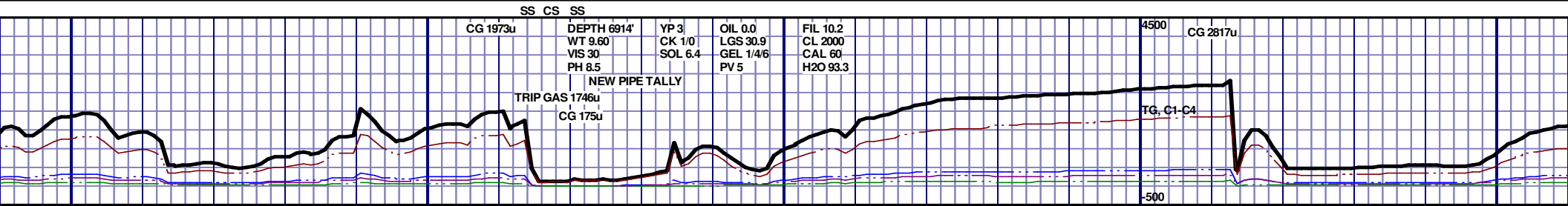


40' MD: CHK: 80% (CaCO3 60%) MOTT LTGY- DRKGY, BLKY TO FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6640' MD-6670' MD: CHK: 60% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6670' MD-6700' MD: MRL: 90% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6700' MD-6730' MD: MRL: 90% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6730' MD-6760' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6760' MD-6790' MD: CHK: 70% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6790' MD-6820' MD: CHK: 80% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	6820' MD-6850' MD: CHK: 80% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
---	--	---	---	--	---	--	--

MD 6666 TVD 6493.11  
INC 66.7 AZ 266.16  
VS 498.49

MD 6760 TVD 6527.3  
INC 70.65 AZ 269.19  
VS 586.02

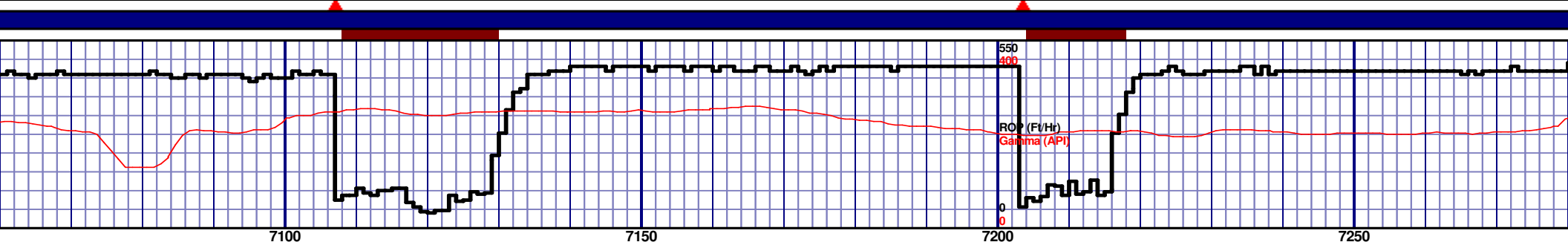
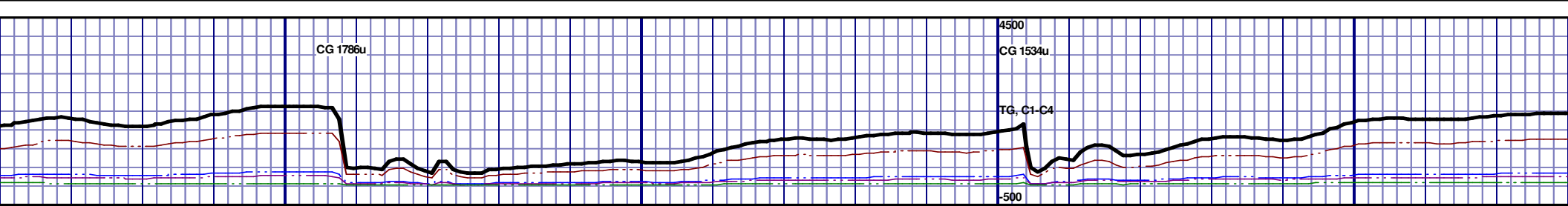
MD 6808 TVD 6541.74  
INC 74.33 AZ 269.5  
VS 631.78



MD 6859 TVD 6552.61  
INC 81.04 AZ 269.55  
VS 681.57

MD 6946 TVD 6561.57  
INC 87.13 AZ 270.03  
VS 768.03

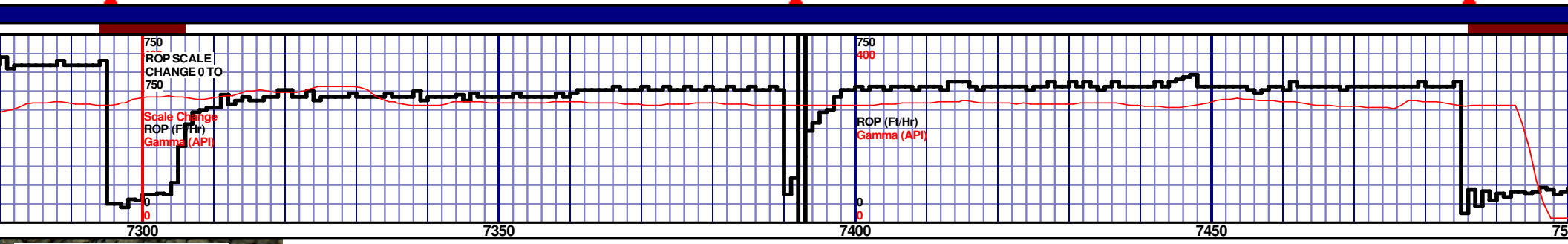
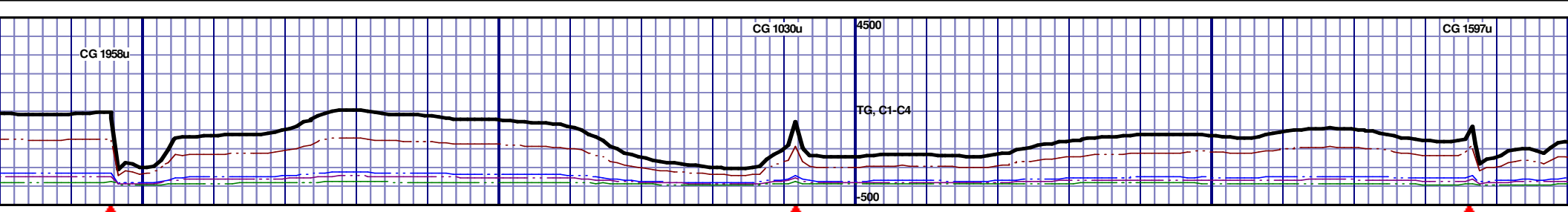
MD 7040 TVD 6563.11  
INC 90.99 AZ 268.8  
VS 861.97



7100' MD-7150' MD: CHK: 60% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7150' MD-7200' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7200' MD-7250' MD: CHK: 60% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7250' MD-7300' MD: CHK: 60% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

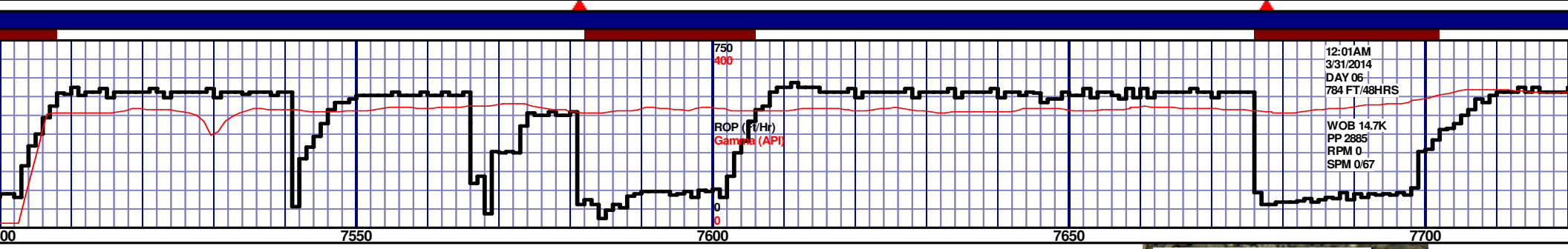
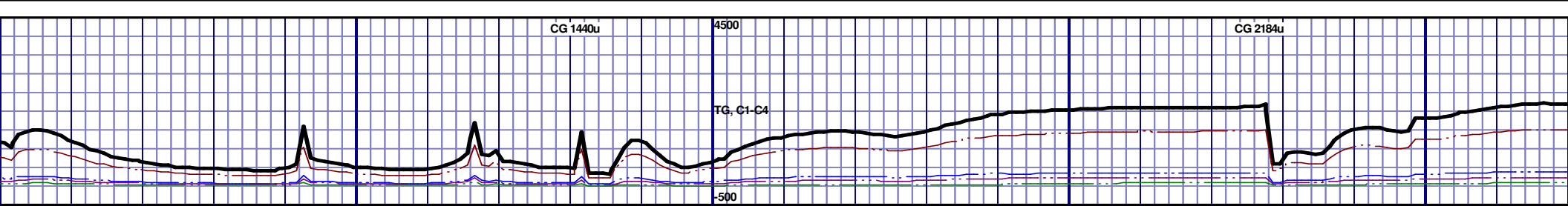
MD 7135 TVD 6562.52  
INC 89.72 AZ 268.11  
VS 956.97

MD 7230 TVD 6562.68  
INC 90.09 AZ 270  
VS 1051.95

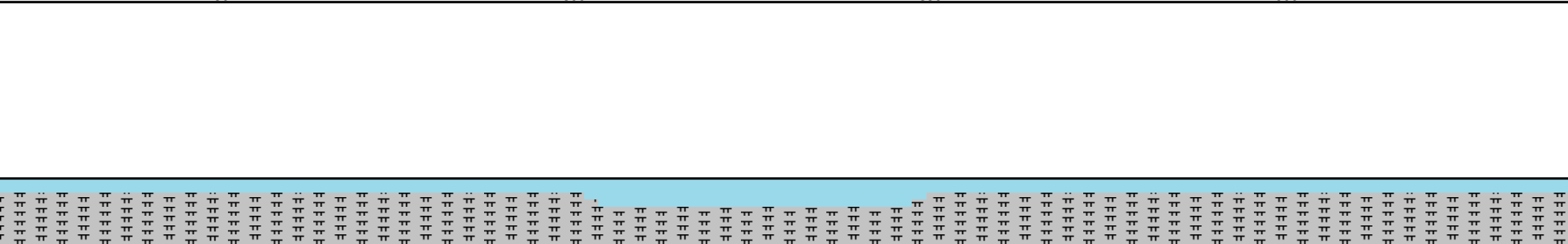
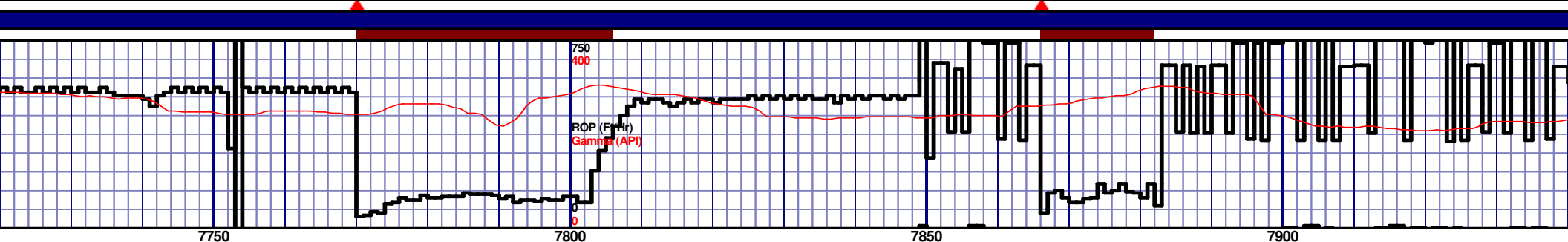
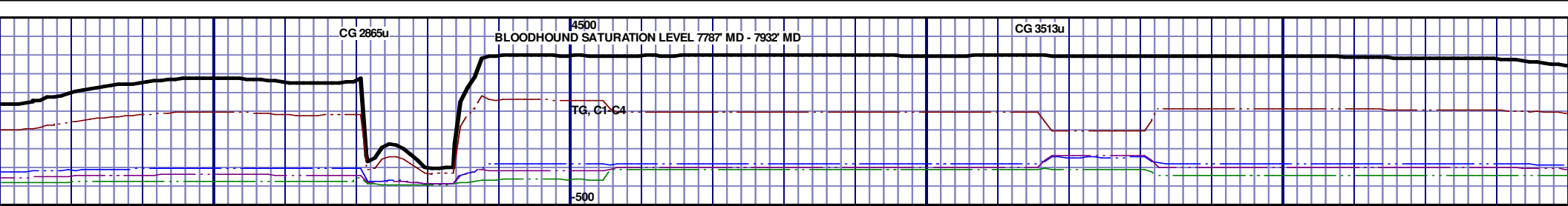


NIOBRARA B MARL									
280' MD 6563' TVD									
6400 TVD									





6400 TVD																			
6530																			
6700																			
7500' MD-7550' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG																			
7550' MD-7600' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 35% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG																			
7600' MD-7650' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG																			
7650' MD-7700' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG																			
7700' MD-7750' MD: MRL: DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG																			

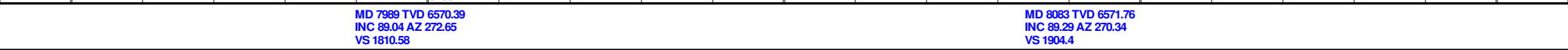
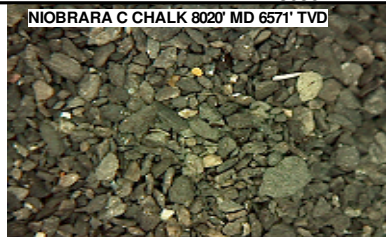
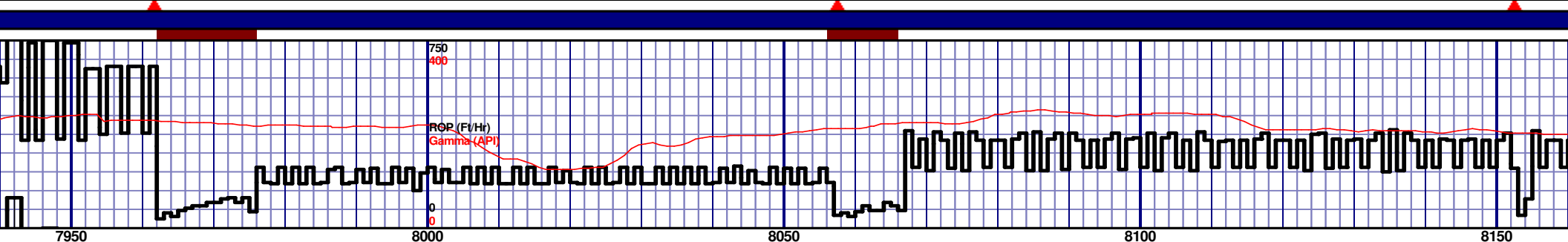


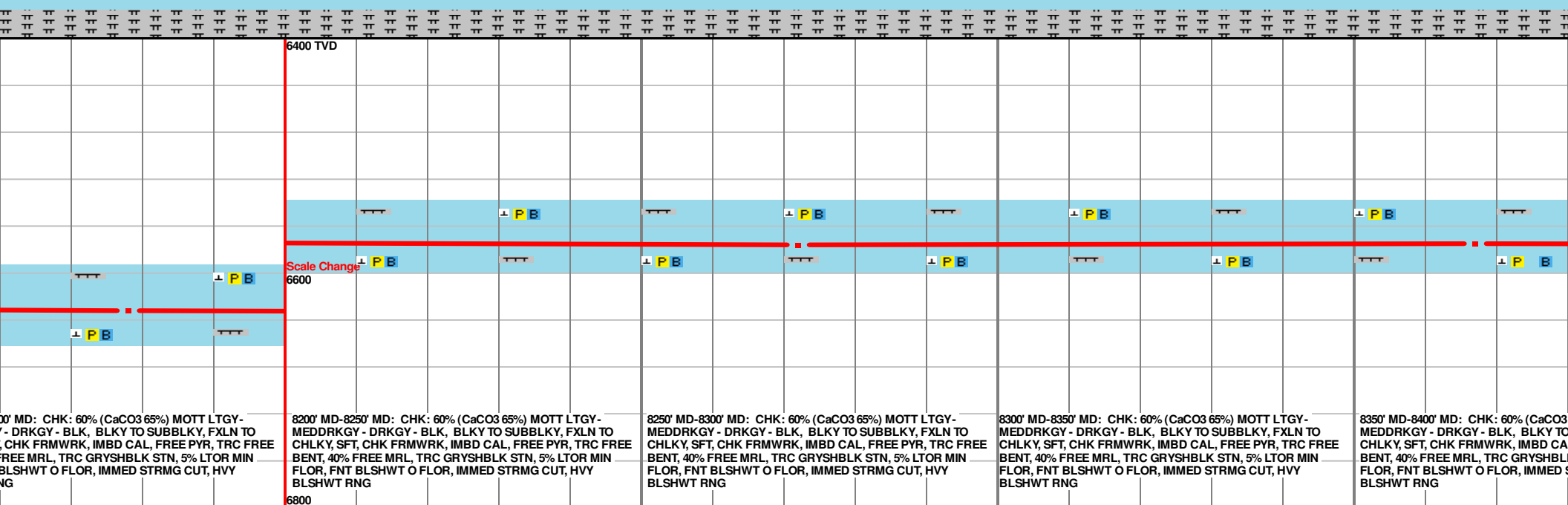
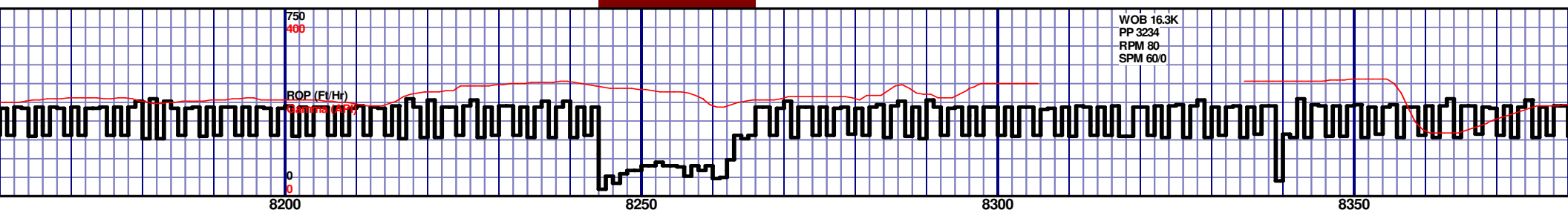
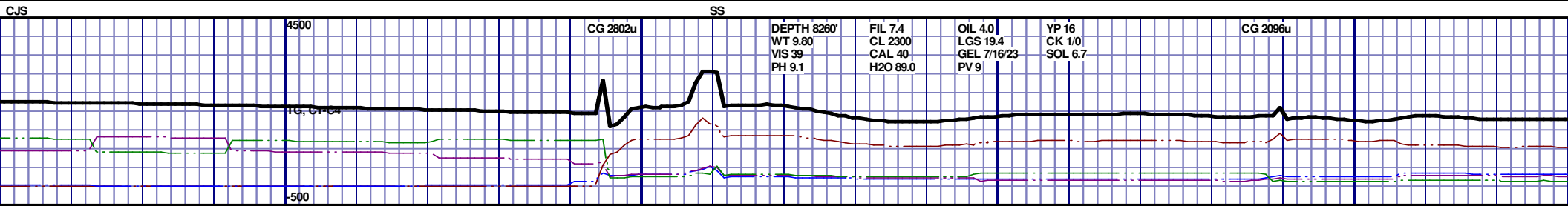
80% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7750' MD-7800' MD: MRL: 80% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7800' MD-7850' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, NO BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7850' MD-7900' MD: MRL: 80% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, NO BENT, 20% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7900' MD-7950' MD: MRL: 80% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, NO BENT, 20% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
--	--	--	--	--

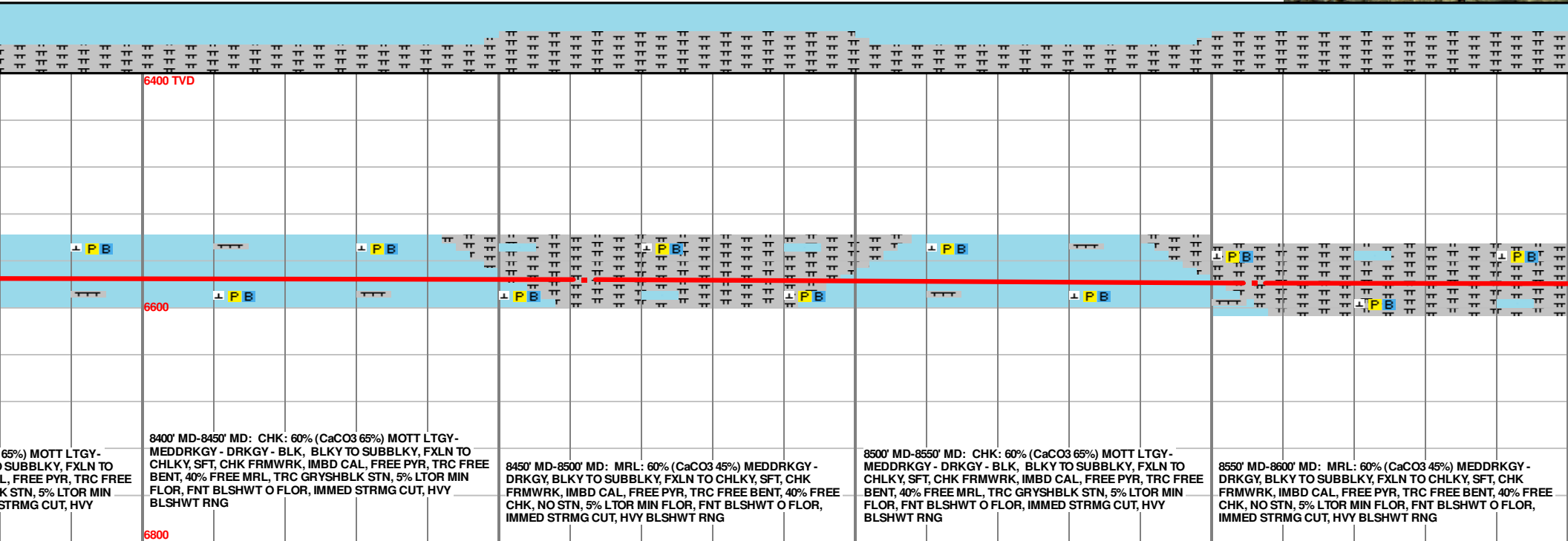
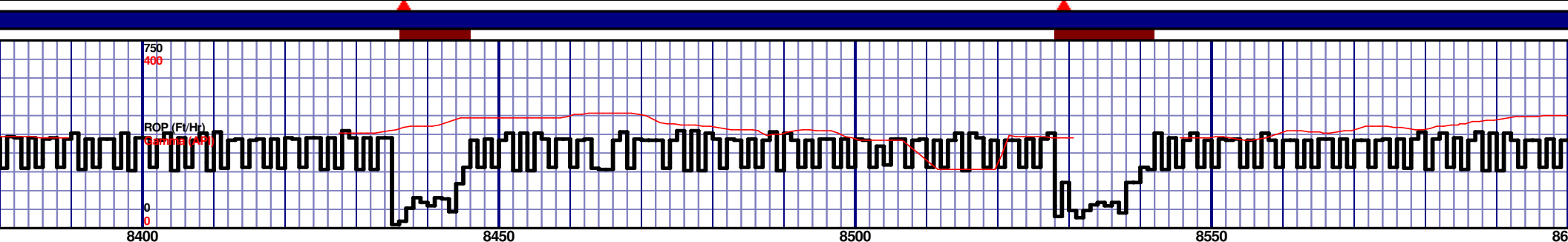
MD 7799 TVD 6570.13  
INC 88.61 AZ 268.32  
VS 1620.73

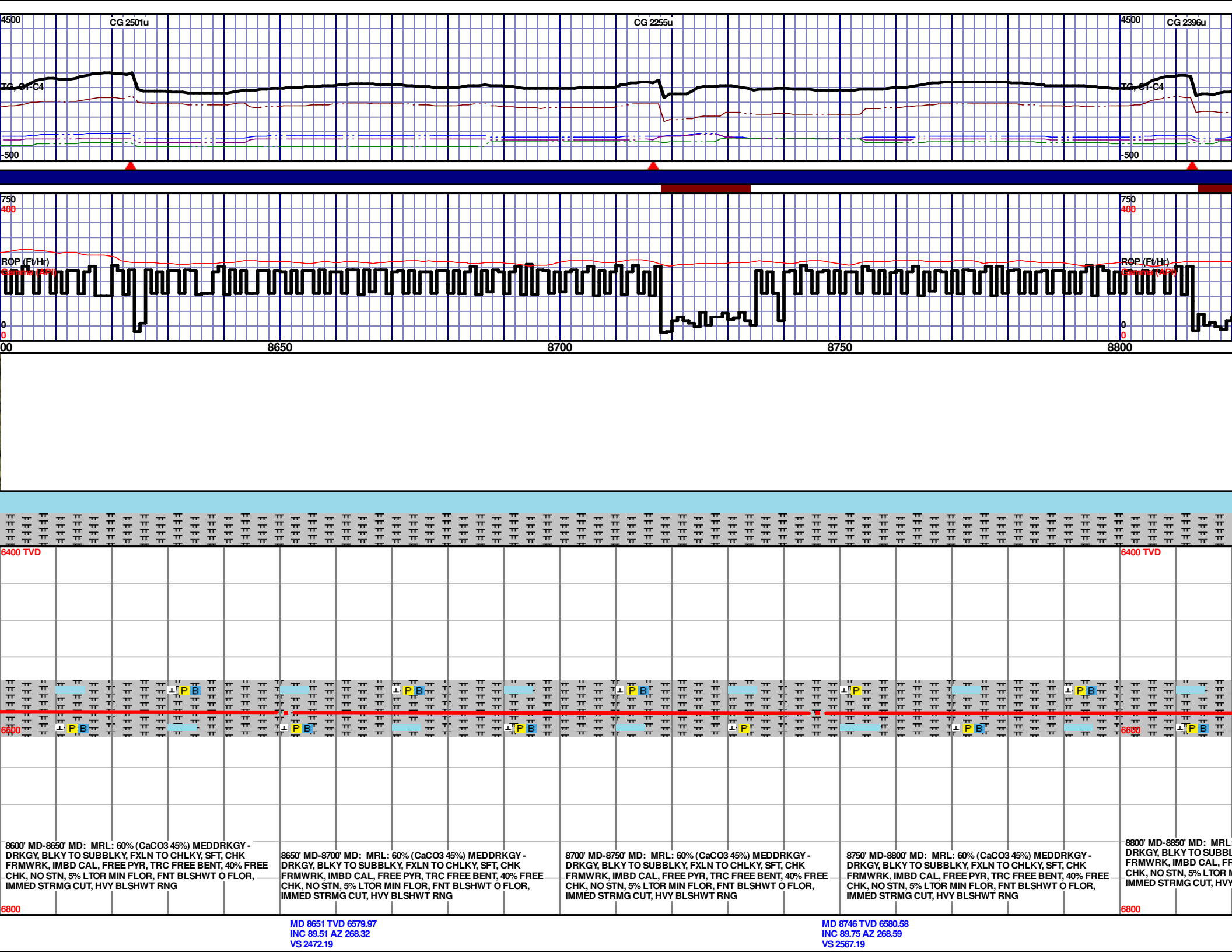
MD 7894 TVD 6570.44  
INC 91.02 AZ 269.59  
VS 1715.72

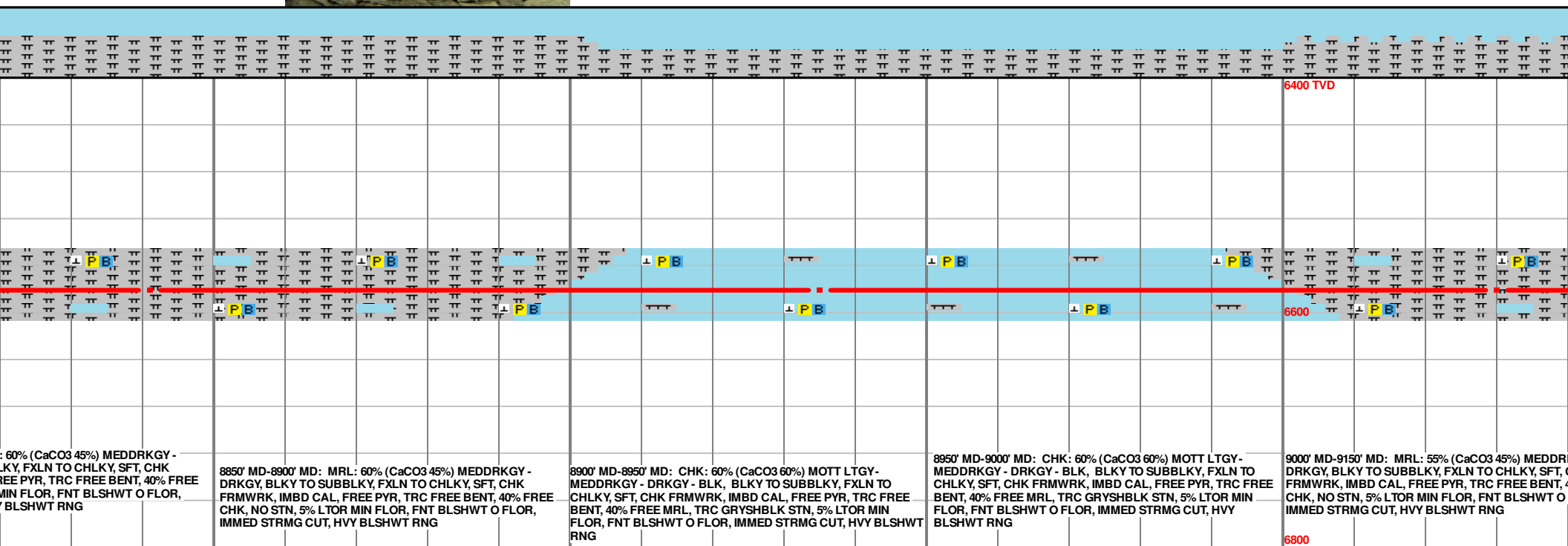
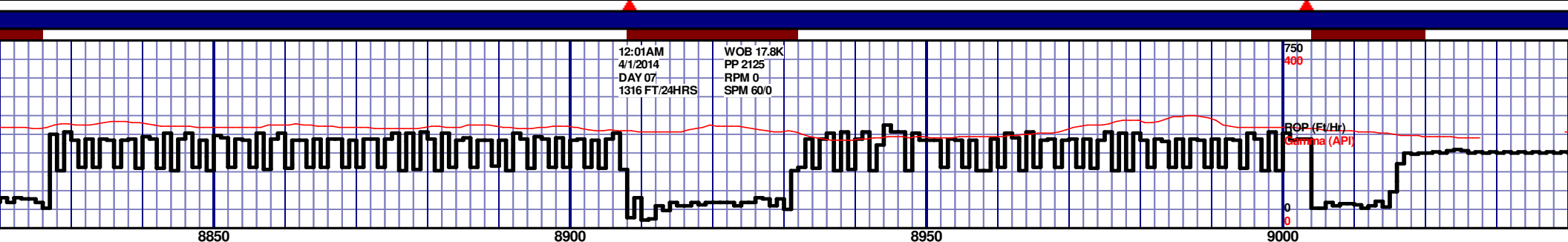


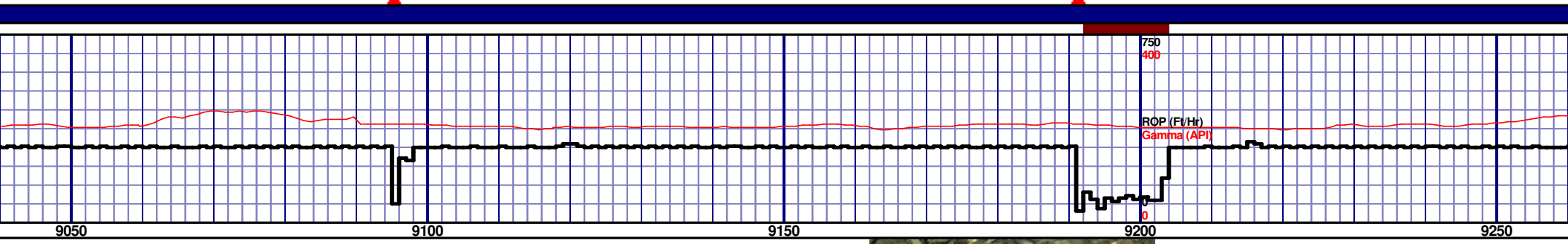
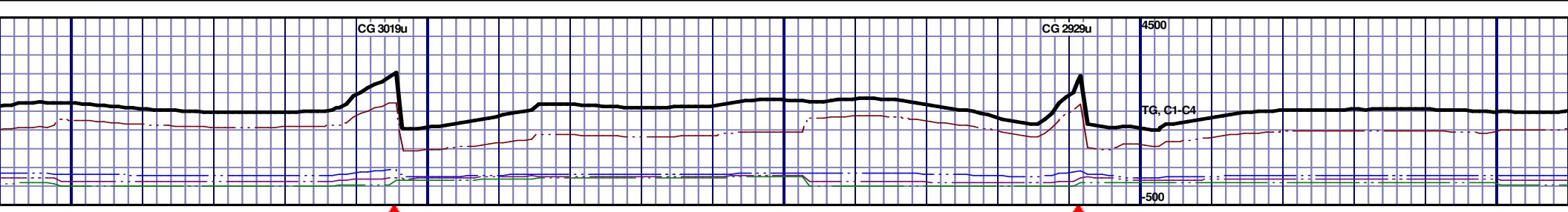








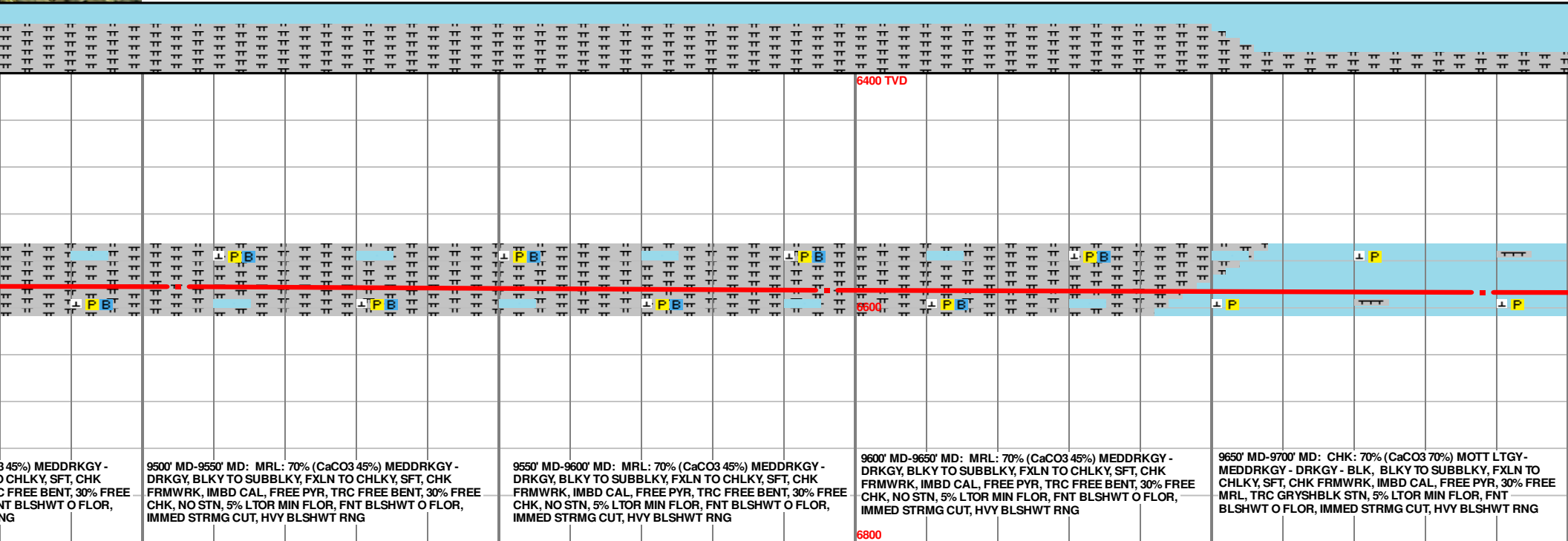
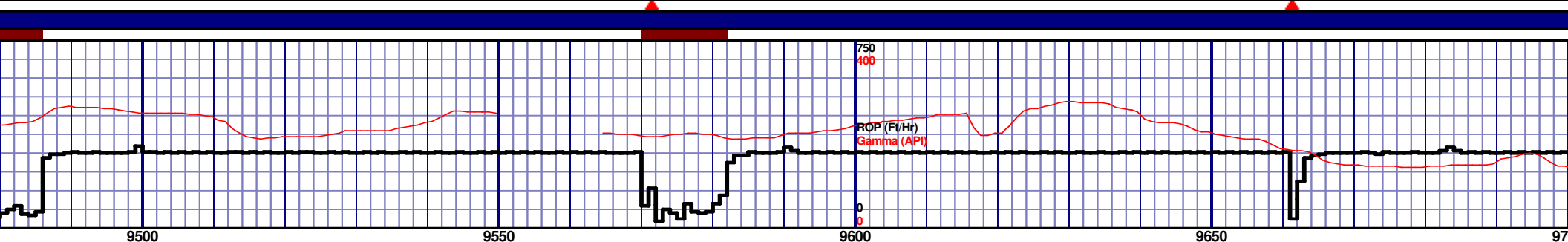
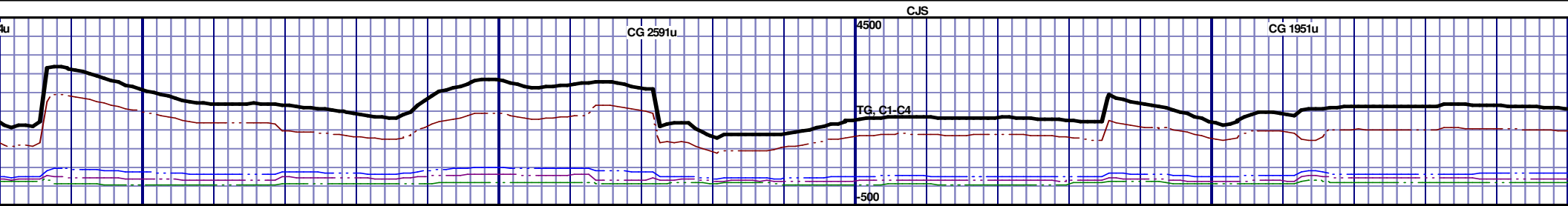




9000' MD-9050' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					9100' MD-9150' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					9150' MD-9250' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					9200' MD-9250' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					9250' MD-9300' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



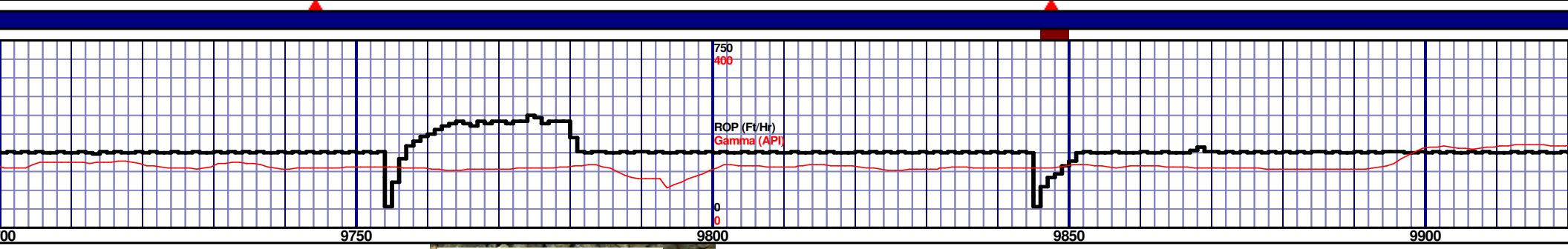
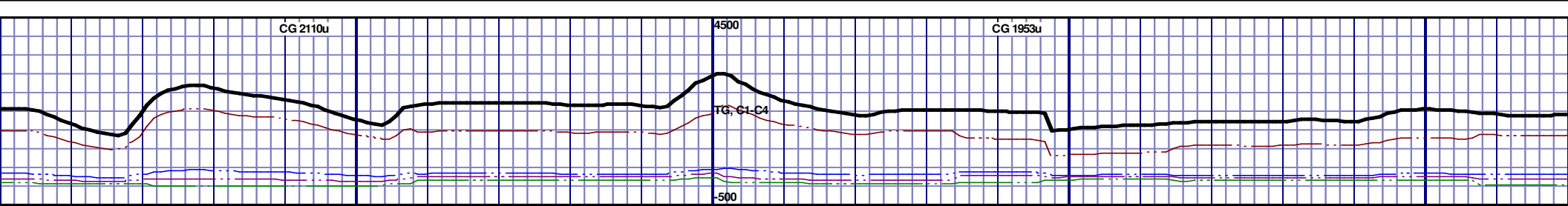




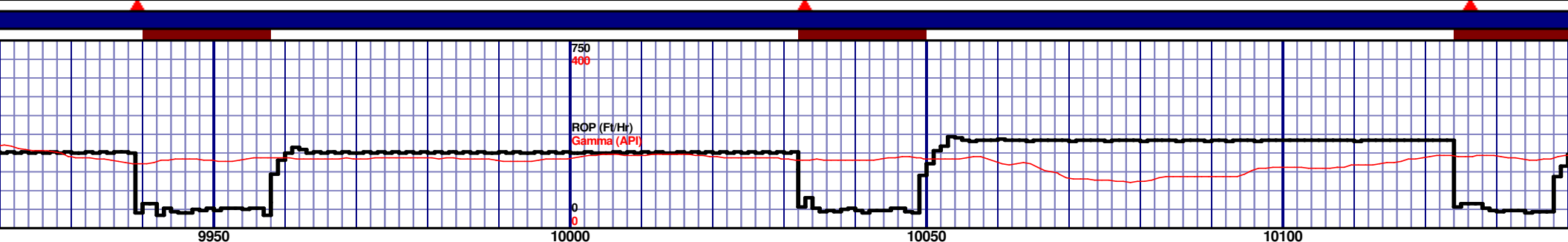
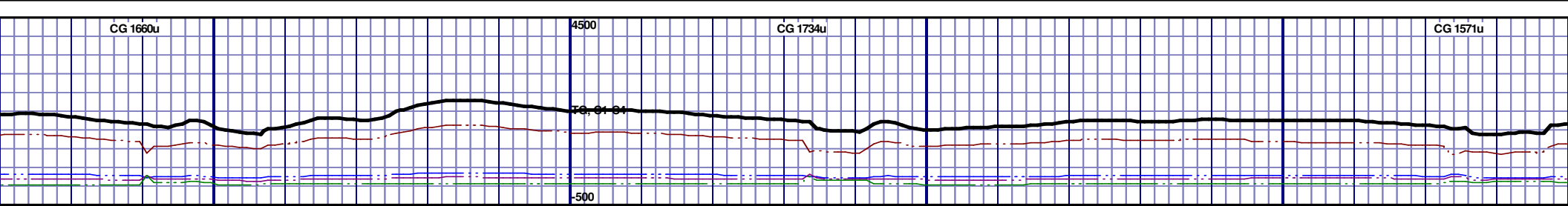
MD 9505 TVD 6581.9  
INC 87.9 AZ 269.18  
VS 3326.05

MD 9596 TVD 6584.92  
INC 88.3 AZ 270.01  
VS 3416.97

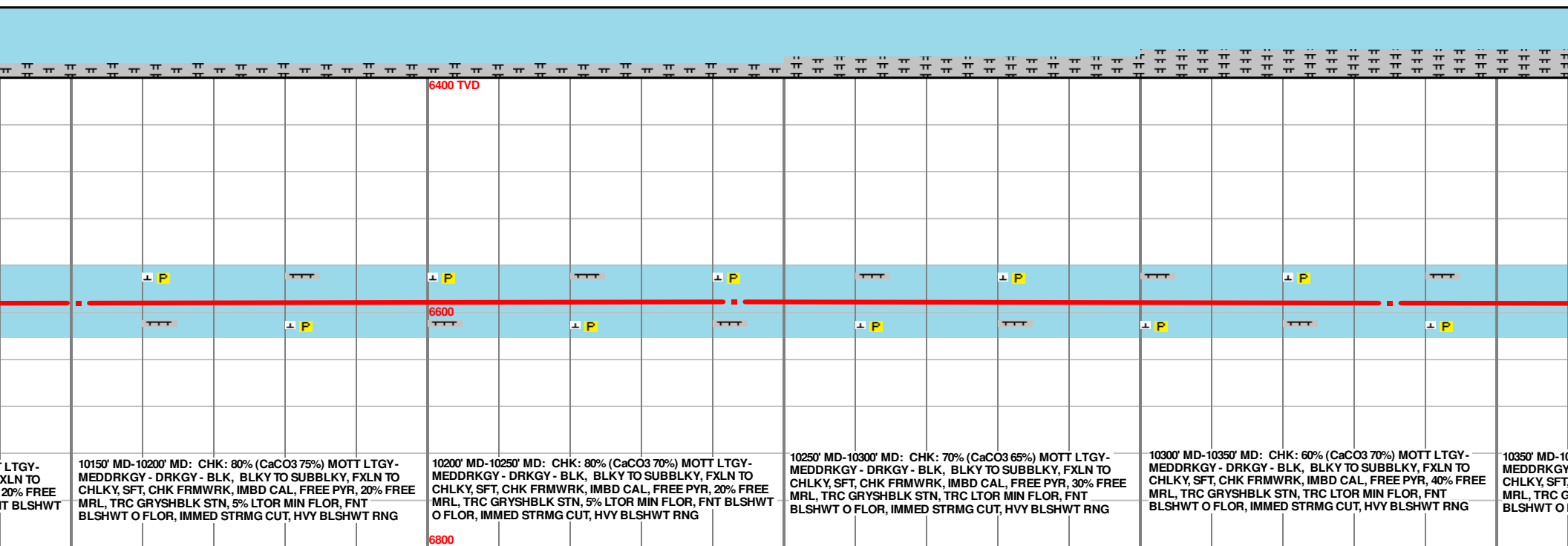
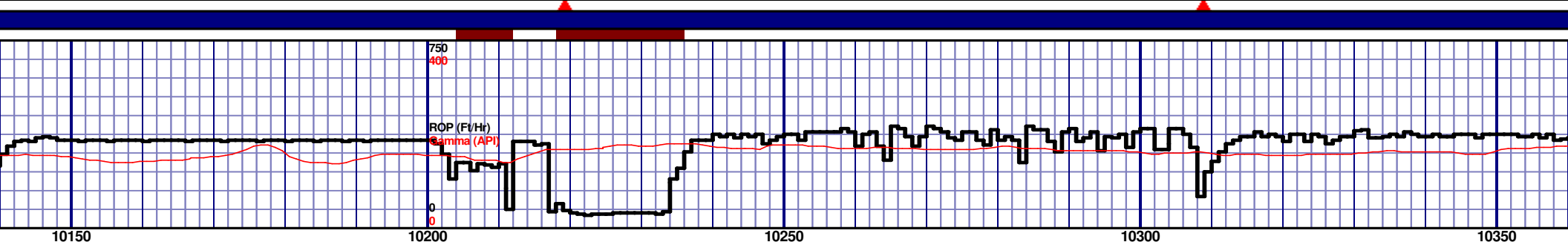
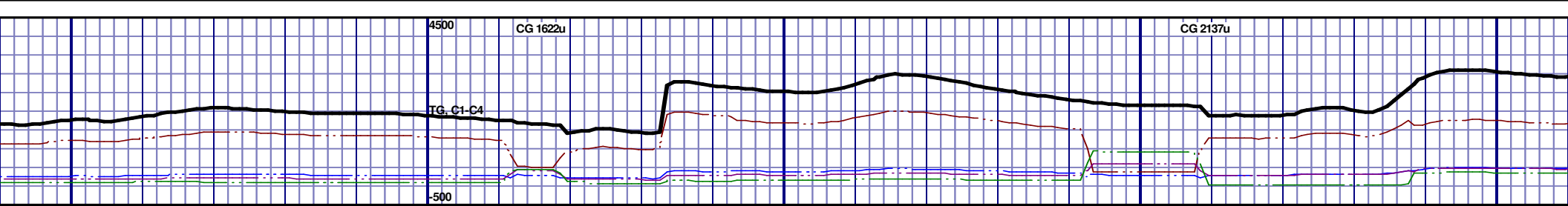
MD 9688 TVD 63  
INC 89.14 AZ 26  
VS 3508.91



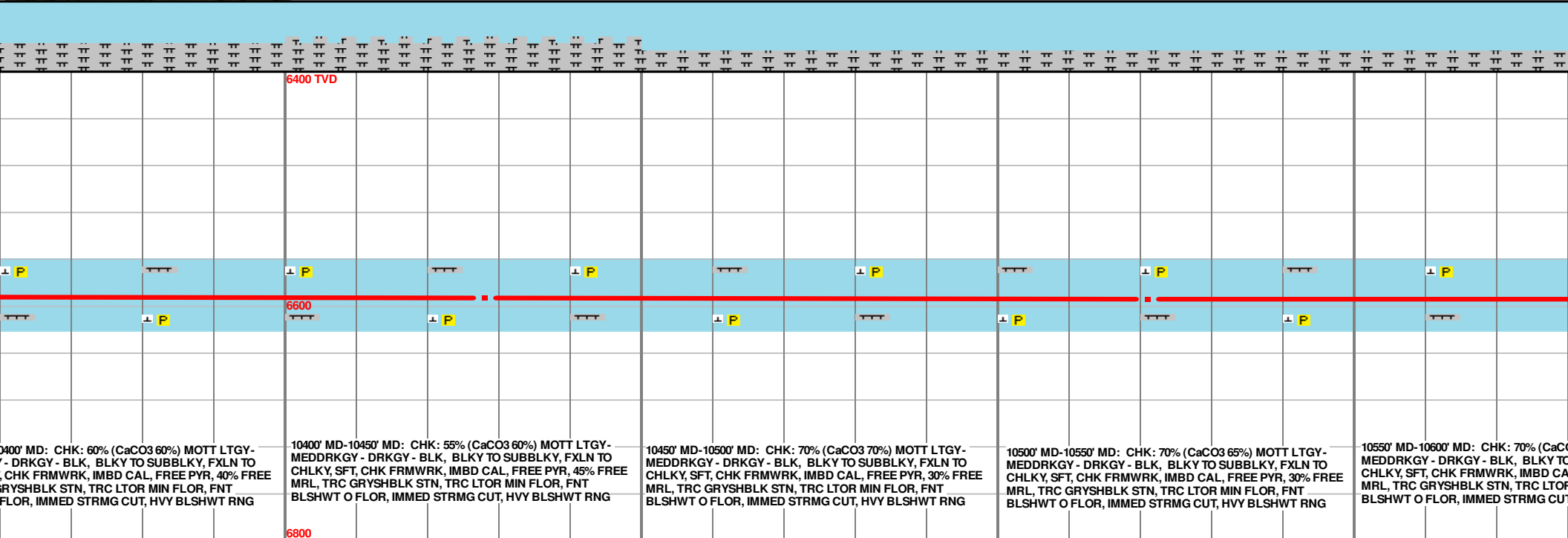
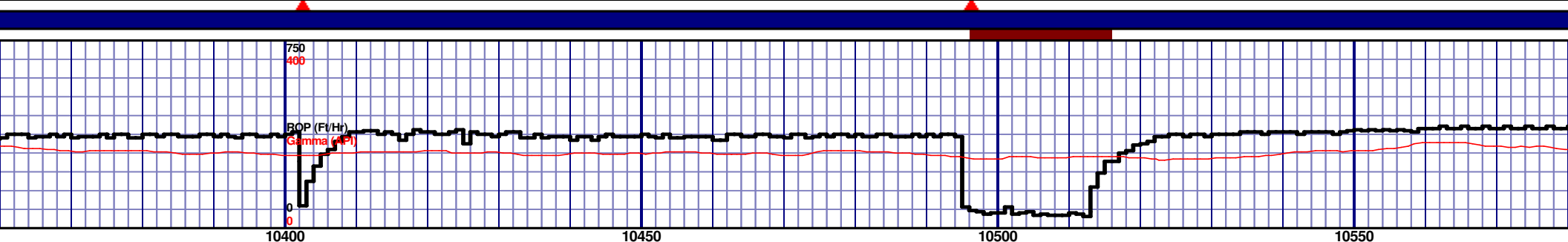
<p>9700' MD-9750' MD: CHK: 70% (CaCO<sub>3</sub> 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>9750' MD-9800' MD: CHK: 60% (CaCO<sub>3</sub> 65%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>9800' MD-9850' MD: CHK: 70% (CaCO<sub>3</sub> 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>9850' MD-9900' MD: CHK: 75% (CaCO<sub>3</sub> 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>9900' MD-9950' MD: CHK: 75% (CaCO<sub>3</sub> 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>
---	---	---	---	---



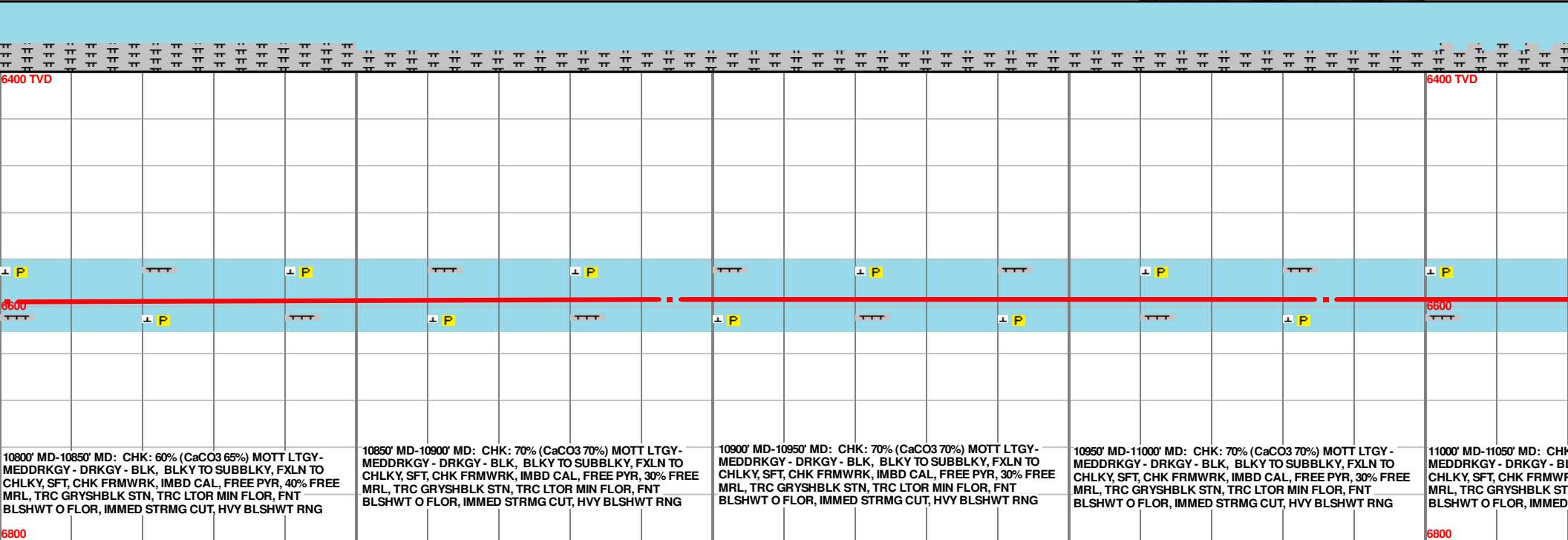
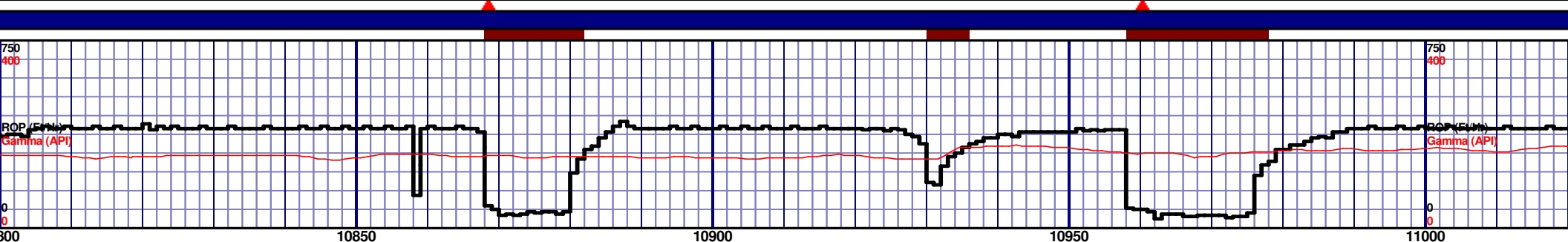
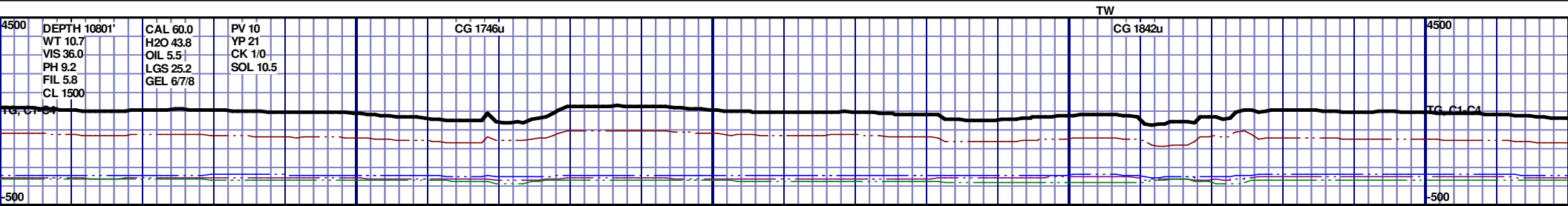
										6400 TVD																			



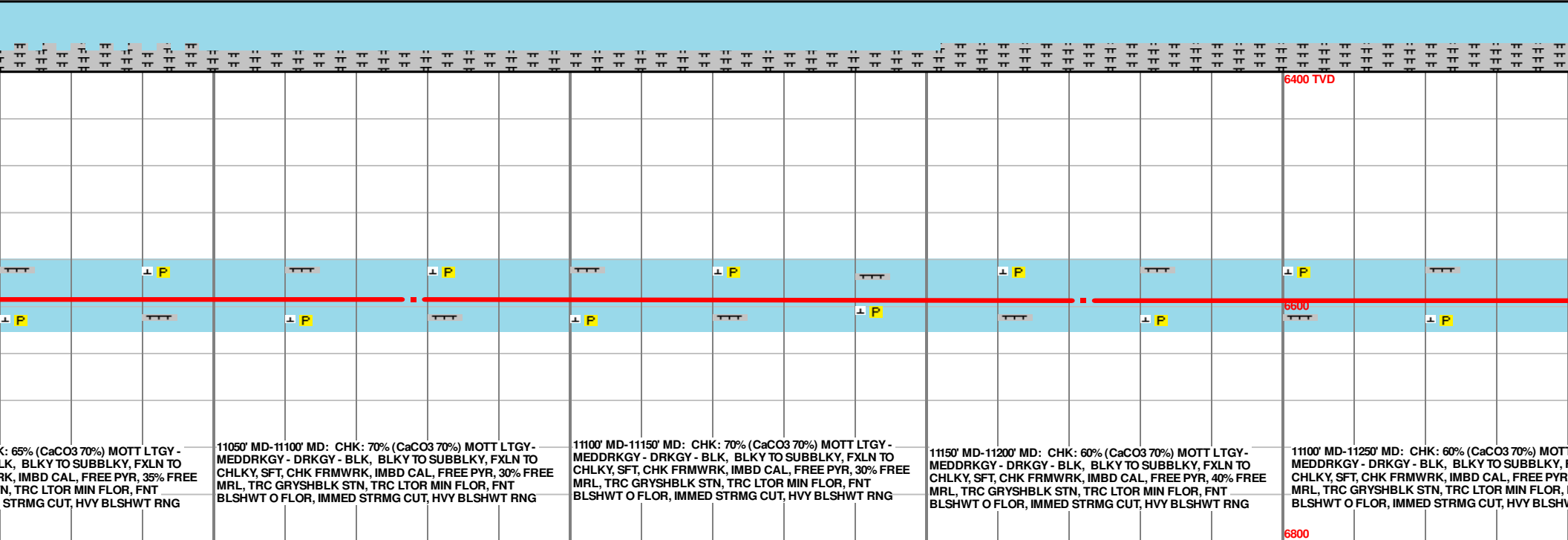
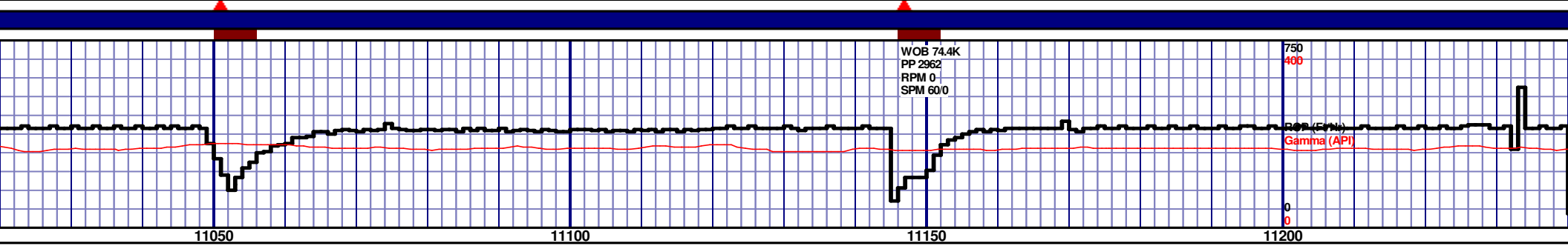
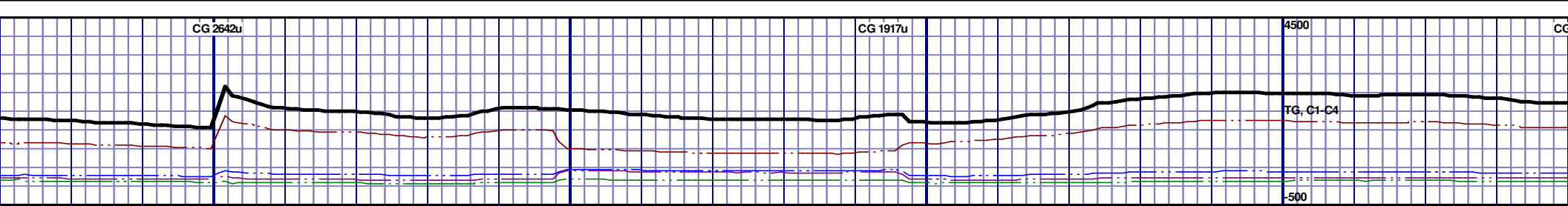
10150' MD-10200' MD: CHK: 80% (CaCO3 75%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10200' MD-10250' MD: CHK: 80% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10250' MD-10300' MD: CHK: 70% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10300' MD-10350' MD: CHK: 60% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10350' MD-10400' MD: CHK: 50% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 50% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
--	--	---	---	---











CHK: 65% (CaCO3 70%) MOTT LTGY -  
BLK, BLKY TO SUBBLKY, FXLN TO  
CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 35% FREE  
MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT  
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

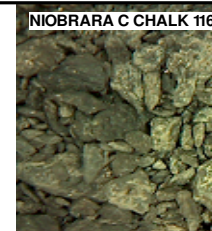
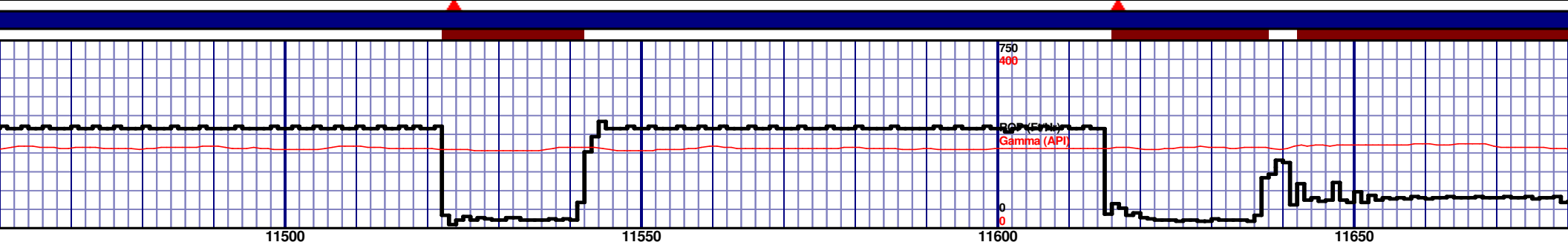
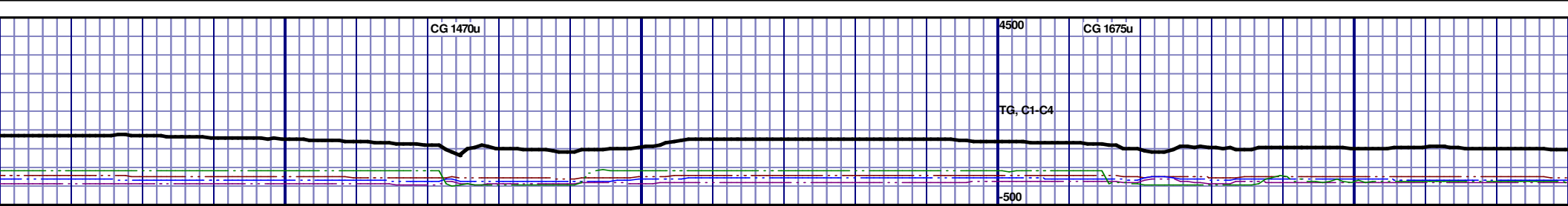
11050' MD-11100' MD: CHK: 70% (CaCO3 70%) MOTT LTGY -  
MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO  
CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE  
MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT  
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

11100' MD-11150' MD: CHK: 70% (CaCO3 70%) MOTT LTGY -  
MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO  
CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE  
MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT  
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

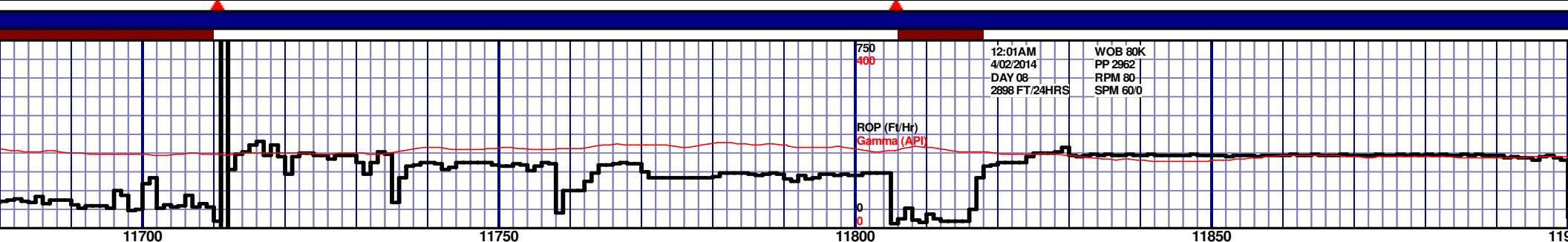
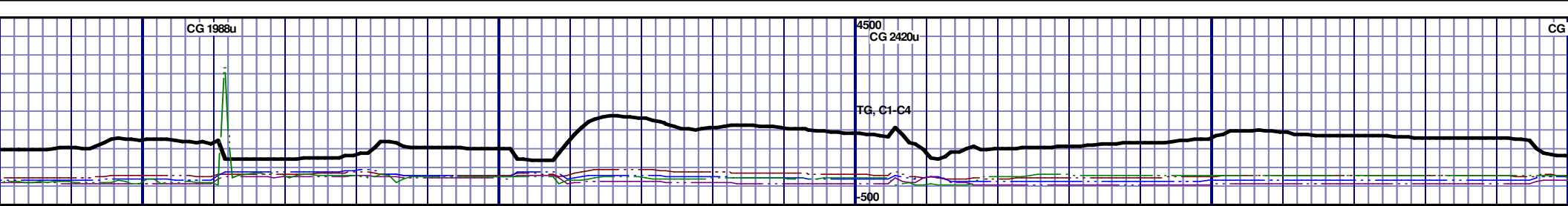
11150' MD-11200' MD: CHK: 60% (CaCO3 70%) MOTT LTGY -  
MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO  
CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE  
MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT  
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

11100' MD-11250' MD: CHK: 60% (CaCO3 70%) MOTT LTGY -  
MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO  
CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE  
MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT  
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

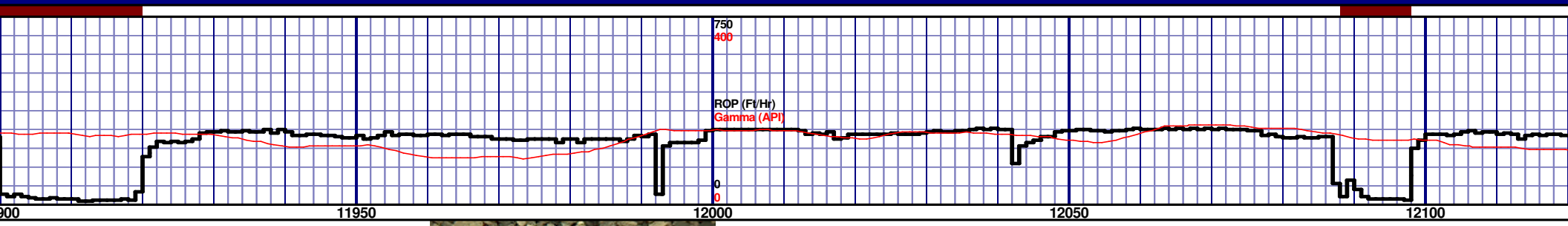
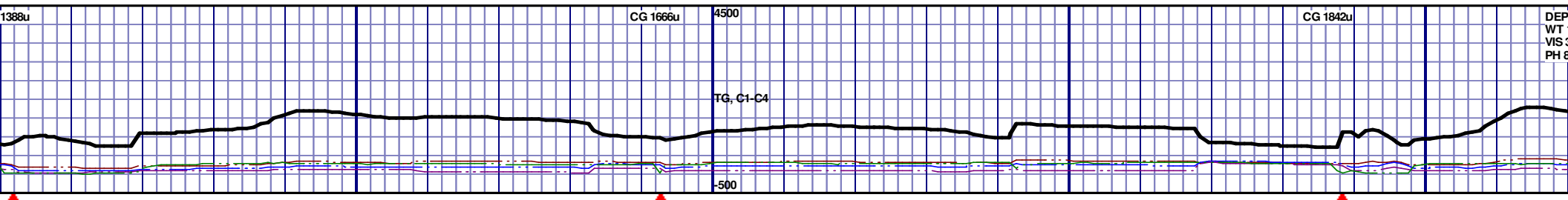




1150' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
1150' MD-11550' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11550' MD-11600' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11600' MD-11650' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11650' MD-11700' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									



11700' MD-11750' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11750' MD-11800' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11800' MD-11850' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11850' MD-11900' MD: CHK: 70% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

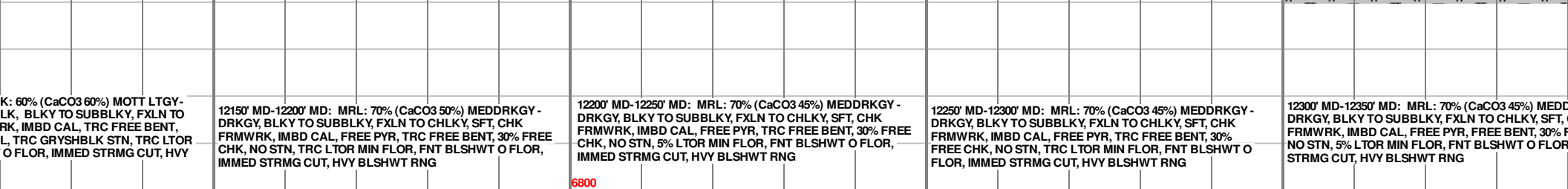
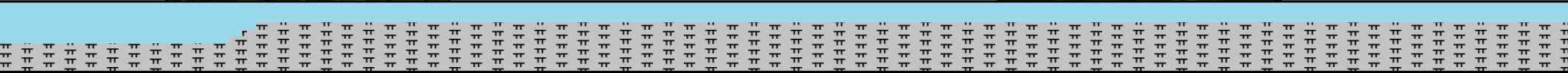
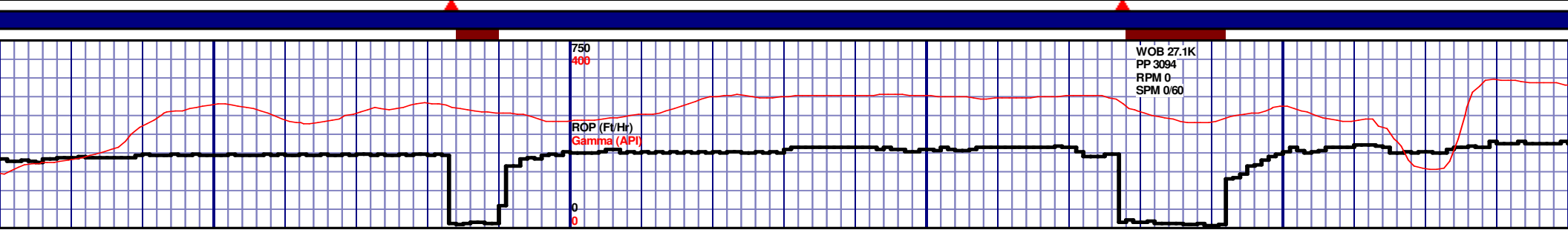


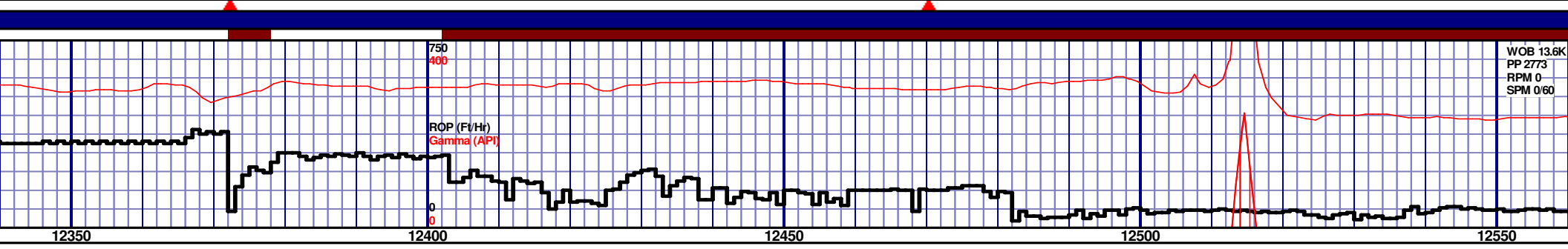
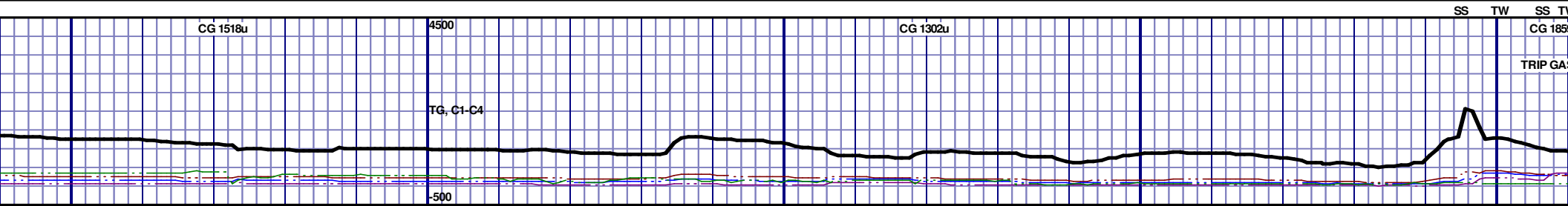
11900' MD-11950' MD: CHK: 70% (CaCO3 70%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					11950' MD-12000' MD: CHK: 70% (CaCO3 70%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					12000' MD-12050' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					12050' MD-12100' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					12100' MD-12150' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
6400 TVD					6400 TVD					6400 TVD					6400 TVD					6400 TVD				
6600					6600					6600					6600					6600				
6800					6800					6800					6800					6800				

MD 11928 TVD 6600.47  
INC 87.84 AZ 269.3  
VS 5747.96

MD 12022 TVD 6604.04  
INC 87.81 AZ 269.12  
VS 5841.88

MD  
INC  
VS



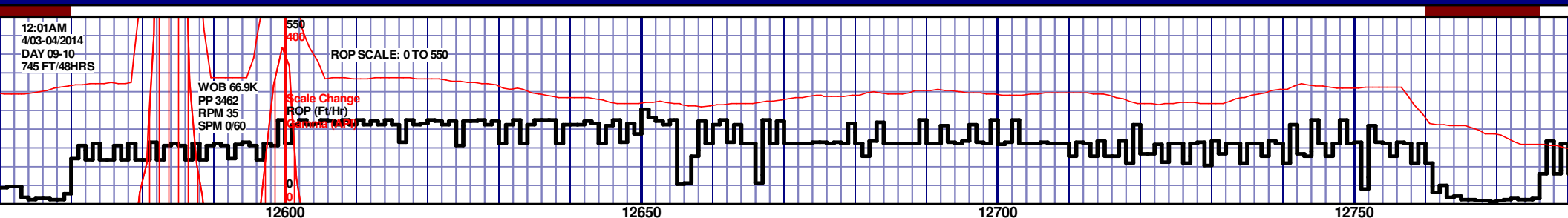
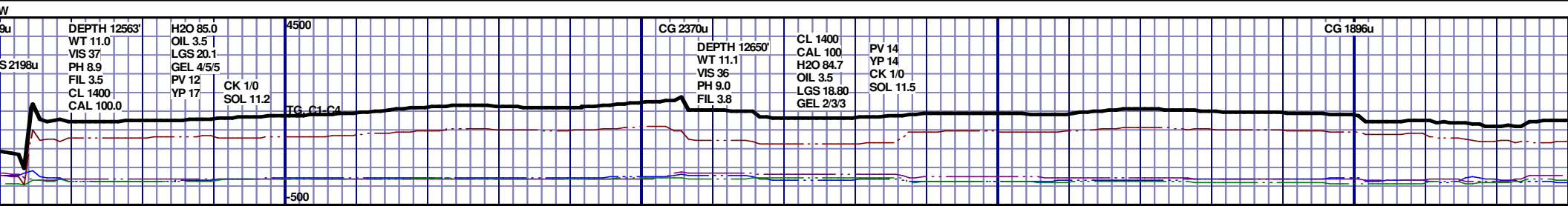


DRKGY - CHK FREE CHK, IMMED	12350' MD-12400' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12400' MD-12450' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12450' MD-12500' MD: MRL: 55% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12500' MD-12550' MD: MRL: 55% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12550' MD-12600' MD: MRL: 55% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
--------------------------------------	---	--	--	---	---

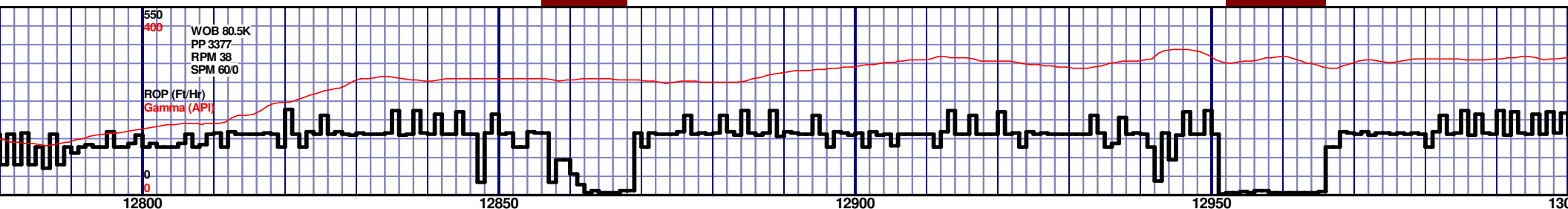
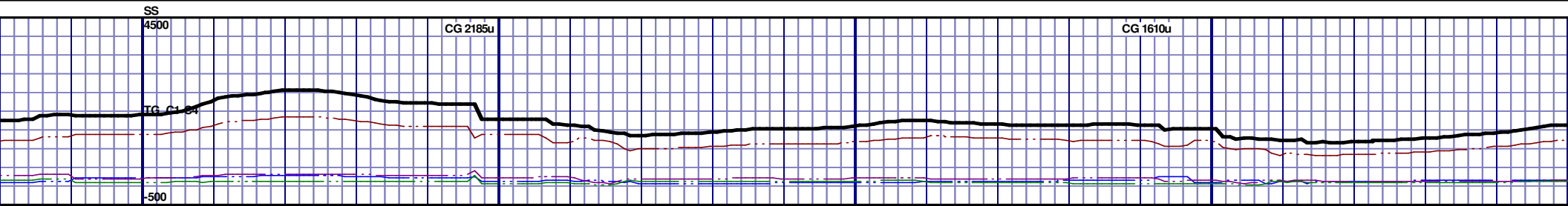
MD 12401 TVD 6609.83  
INC 90.28 AZ 268.13  
VS 6220.76

MD 12495 TVD 6609.58  
INC 90.03 AZ 267.73  
VS 6314.76

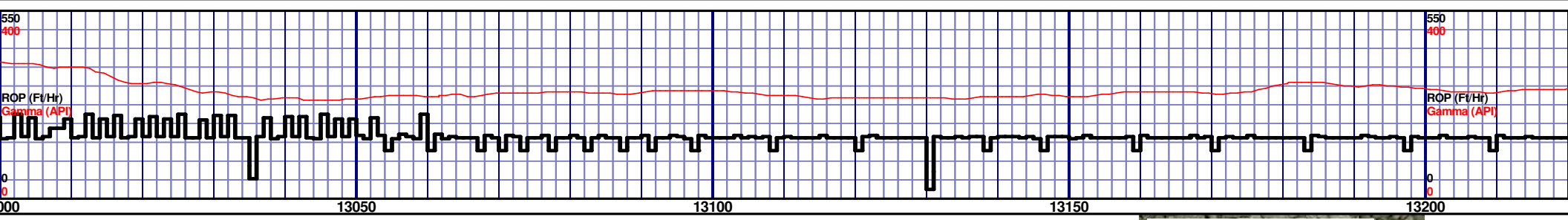
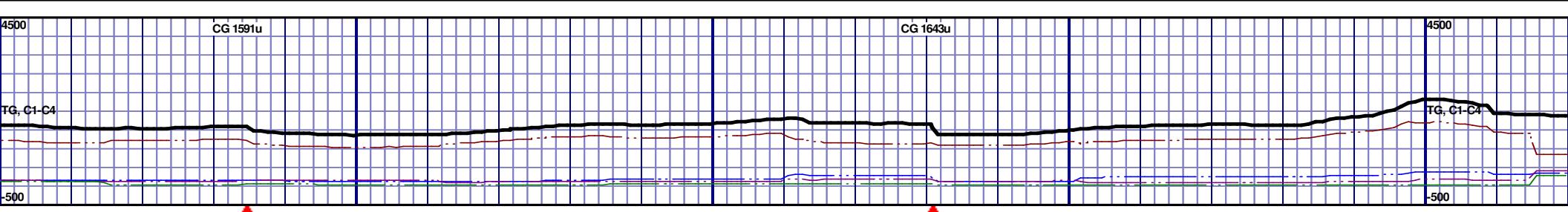




TOOH @ 12563' MD @ 10:00 PM ON 4/2/2014 FOR MUD MOTOR REPLACEMENT. TIH @ 2:45 PM ON 4/3/2014. RESUMED DRILLING @ 12:30 PM ON 4/4/2014 W/ BIT #5, 6.125", SMITH, SDI513, S/N JH9497 @ 12563' MD.				NIOBRARA C CHALK 12760' MD 6609' TVD			
12600' MD-12650' MD: CHK: 55% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 45% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				12650' MD-12700' MD: CHK: 55% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 45% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG			
12700' MD-12750' MD: CHK: 60% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				12750' MD-12800' MD: CHK: 80% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG			



LK									
6400 TVD									
NIOBRARA C MARL									
12832' MD 6609' TVD									



6400 TVD

6600

12300' MD-13050' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13050' MD-13100' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13100' MD-13150' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

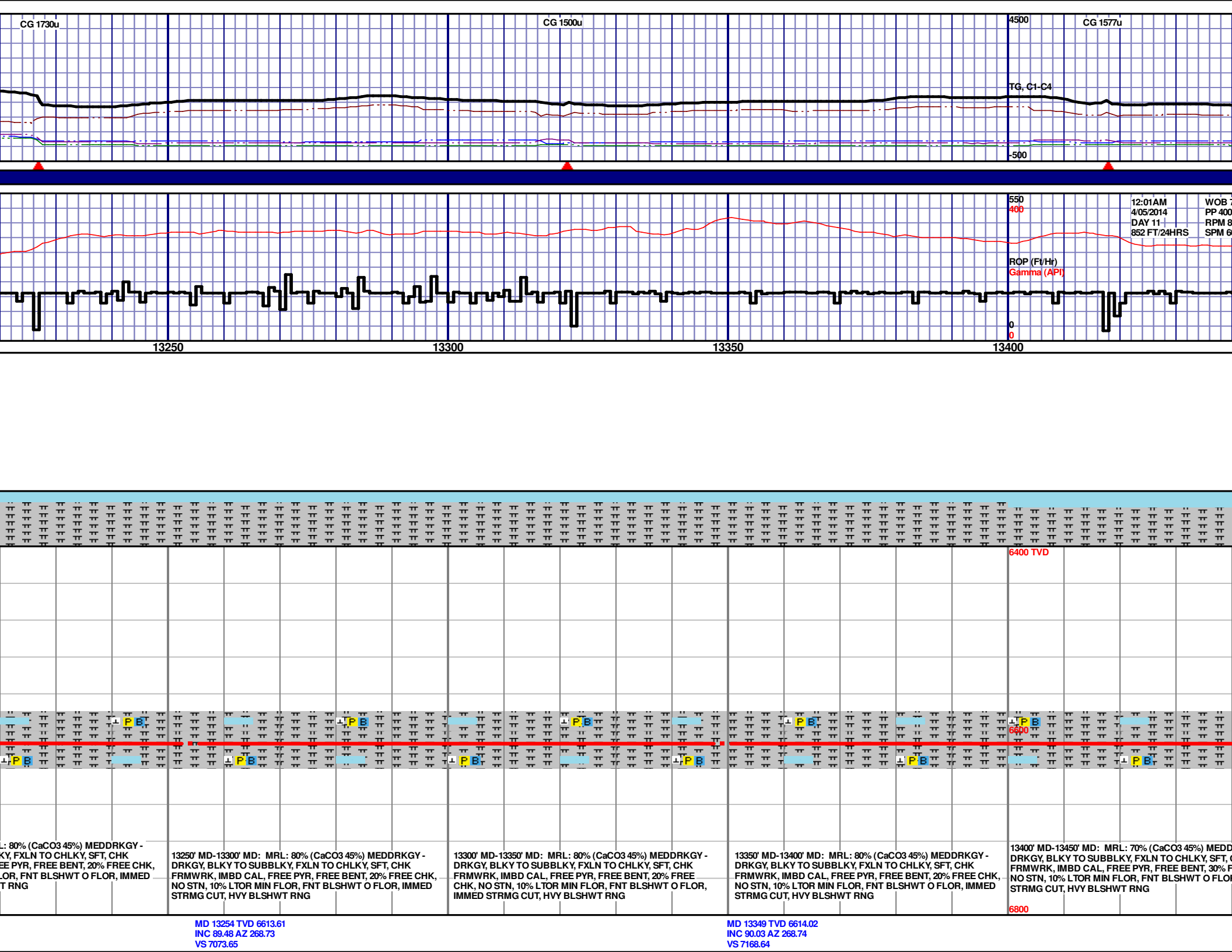
13150' MD-13200' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

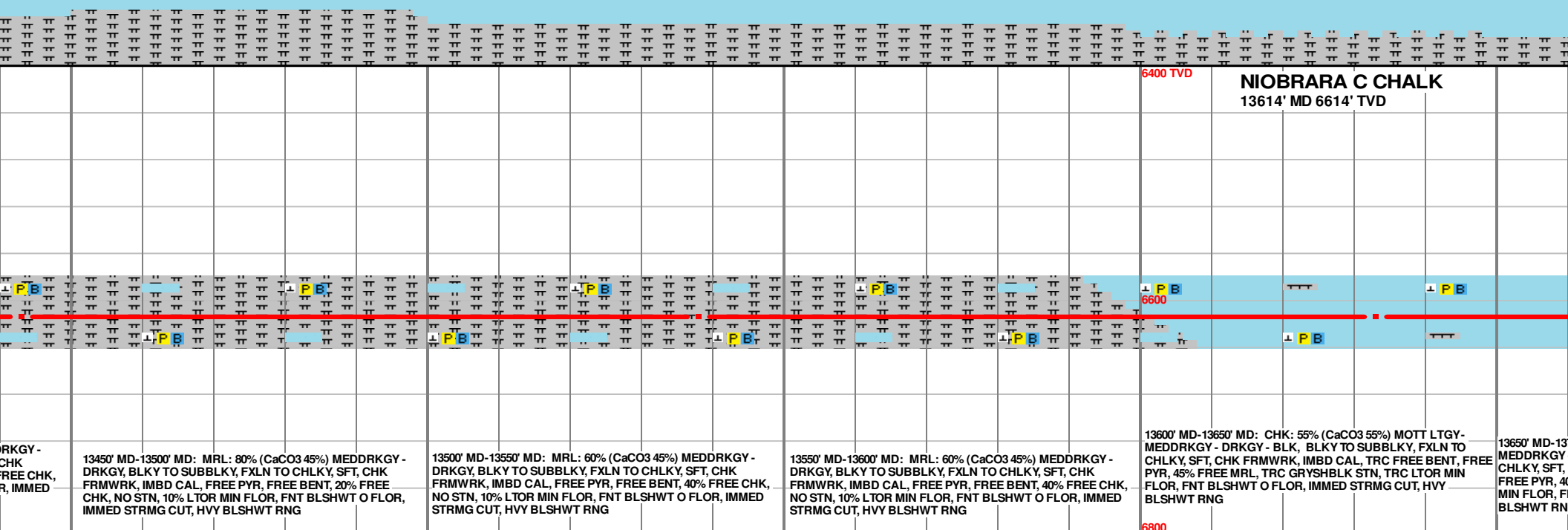
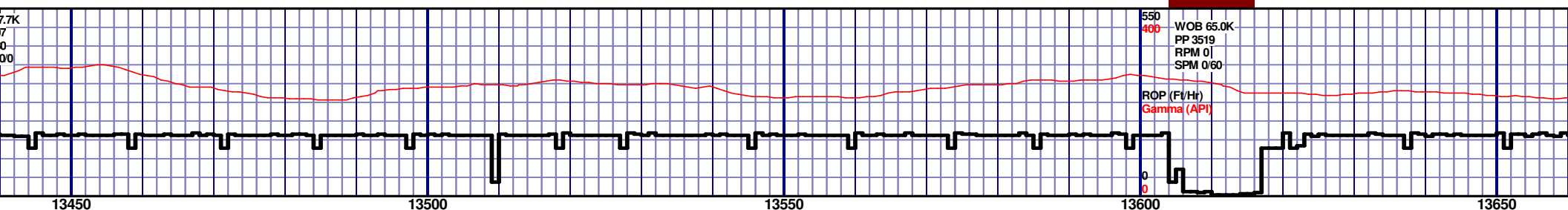
13200' MD-13250' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

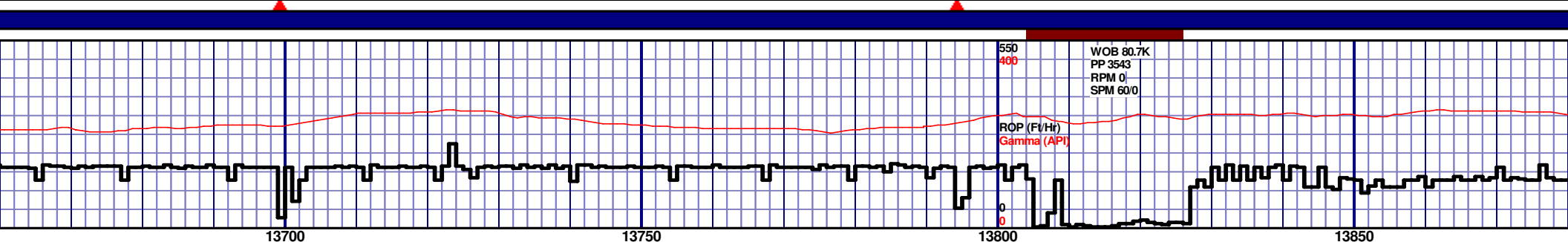
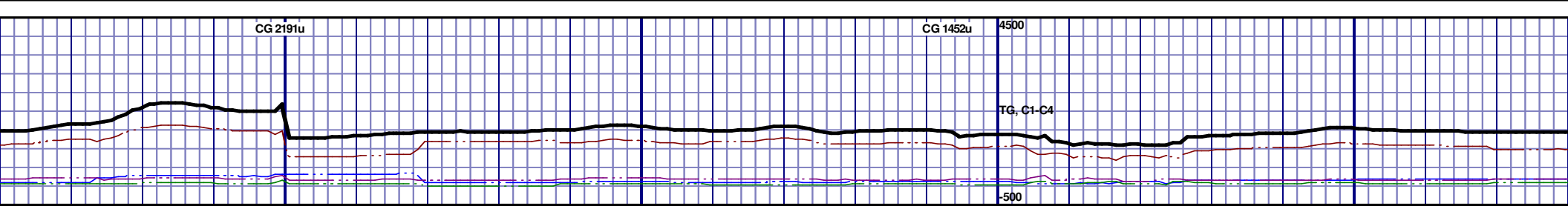
6800

MD 13064 TVD 6611.55  
INC 89.45 AZ 269.49  
VS 6883.68

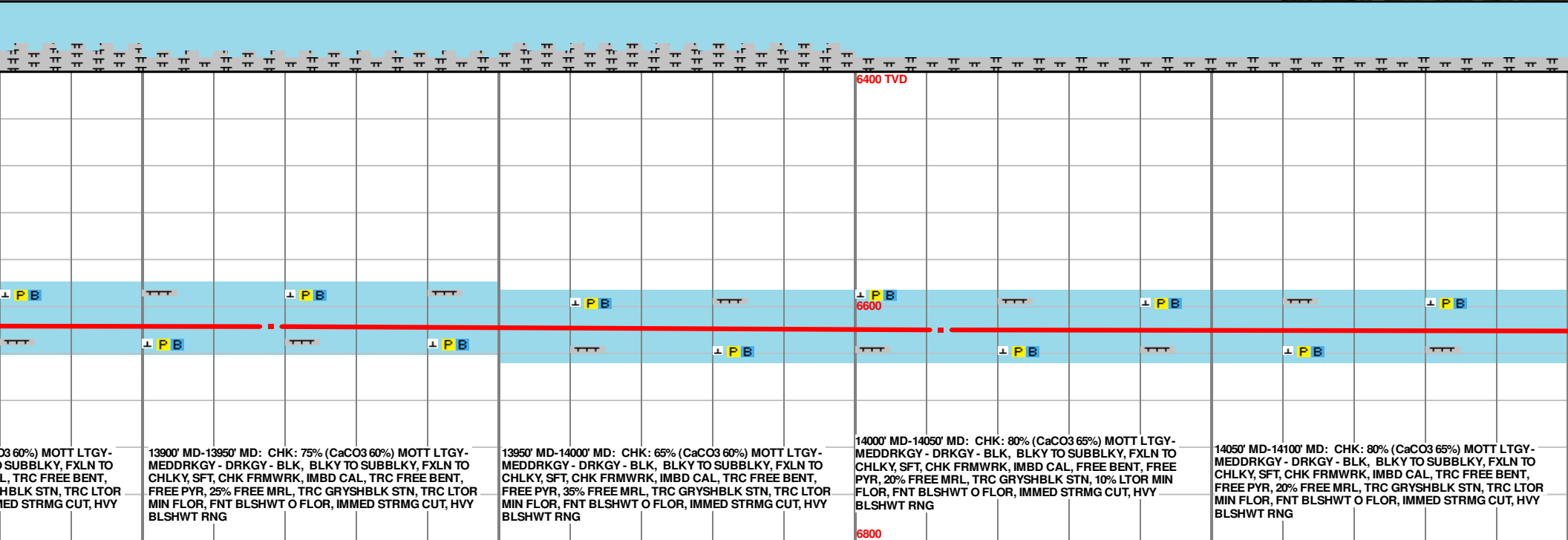
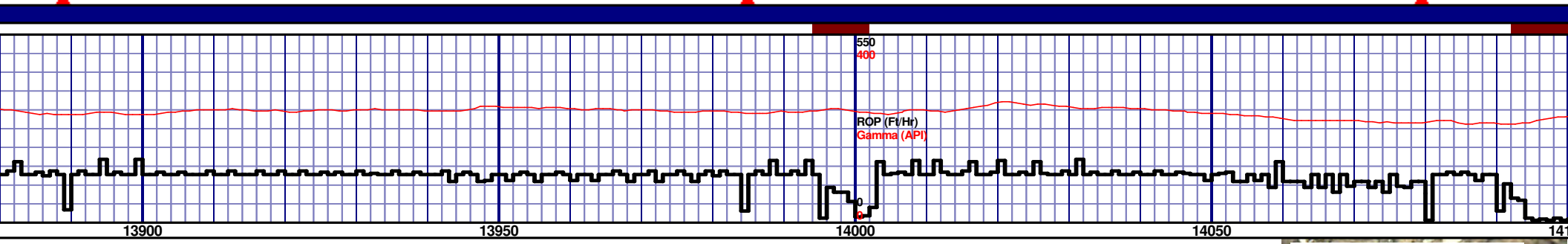
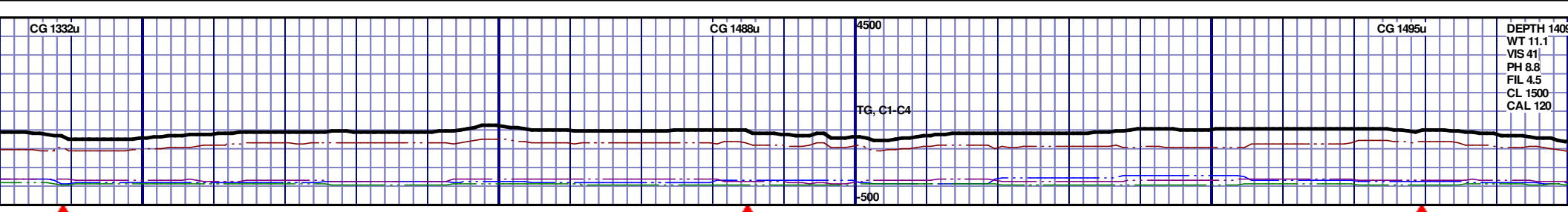
MD 13159 TVD 6612.59  
INC 89.29 AZ 268.93  
VS 6978.66







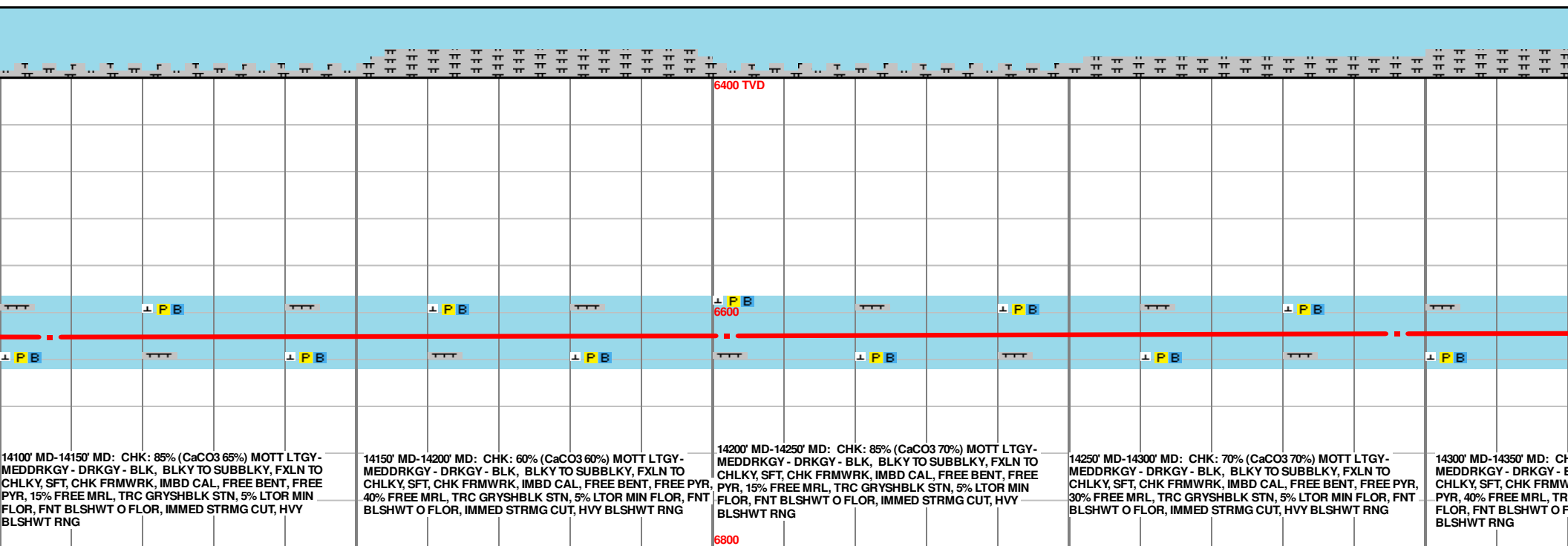
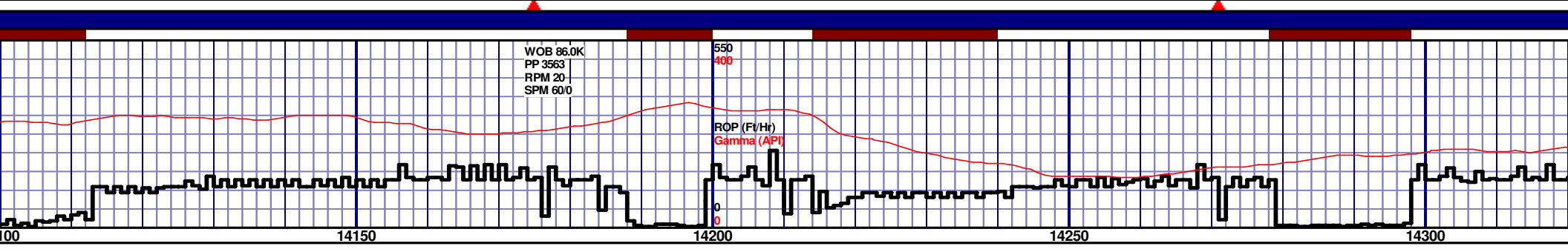
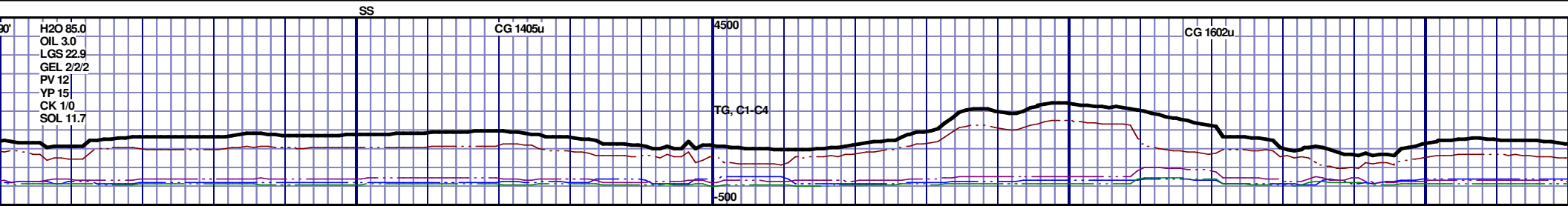
6400 TVD					6600					6800				
13700' MD-13750' MD: CHK: 65% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 35% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					13750' MD-13800' MD: CHK: 85% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 15% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					13800' MD-13850' MD: CHK: 70% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
13850' MD-13900' MD: CHK: 65% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, TRC FREE BENT, FREE PYR, 35% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG														



MD 13918 TVD 6617.39  
INC 89.14 AZ 267.29  
VS 7737.6

MD 14012 TVD 6619.52  
INC 88.27 AZ 265.34  
VS 7831.52

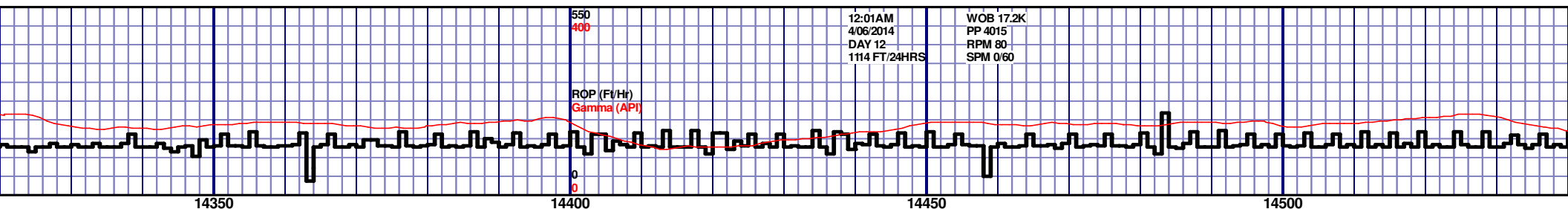
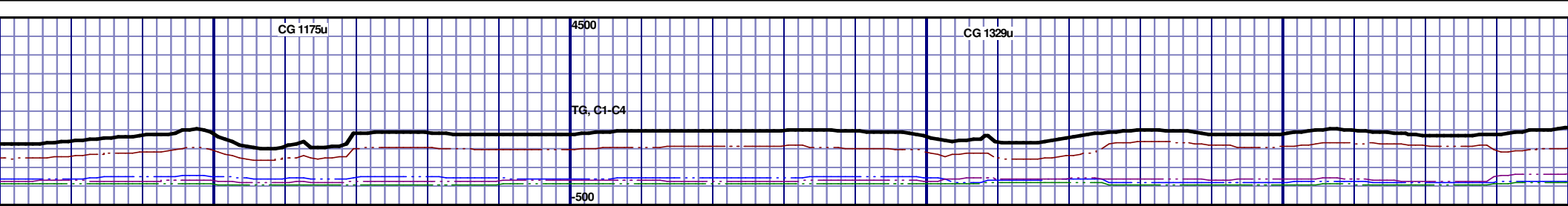




MD 14107 TVD 6620.72  
INC 90.28 AZ 266.47  
VS 7926.43

MD 14202 TVD 6619.77  
INC 90.86 AZ 267.48  
VS 8021.41

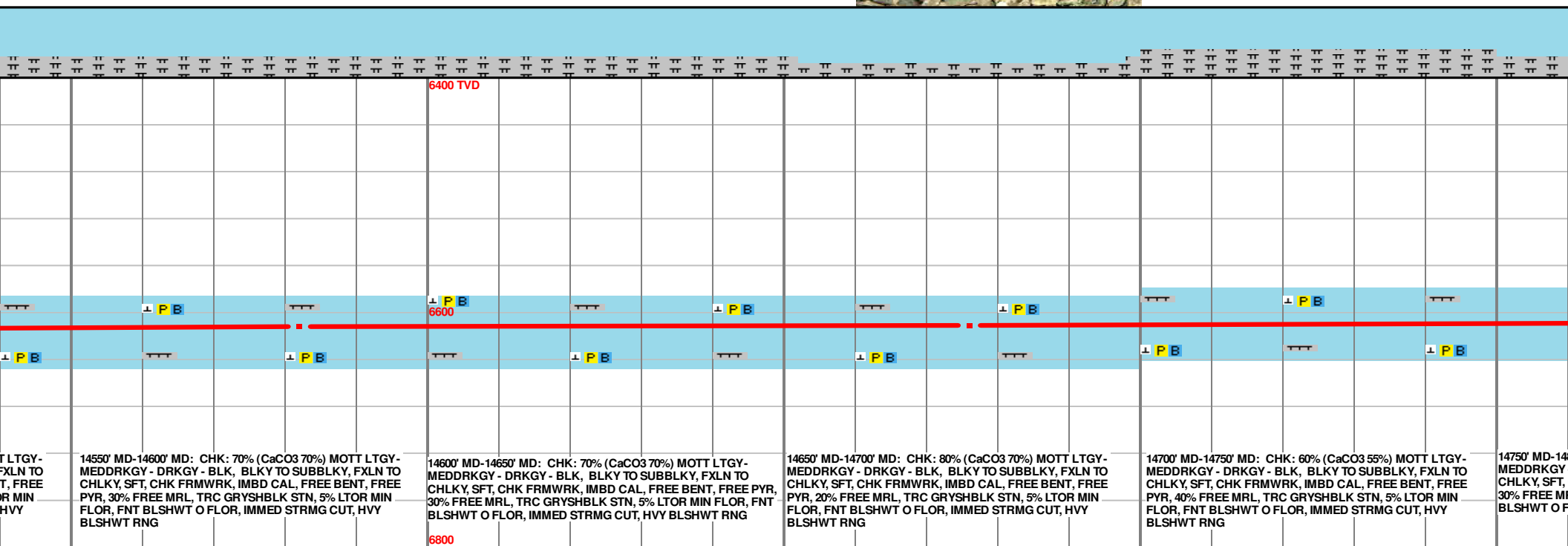
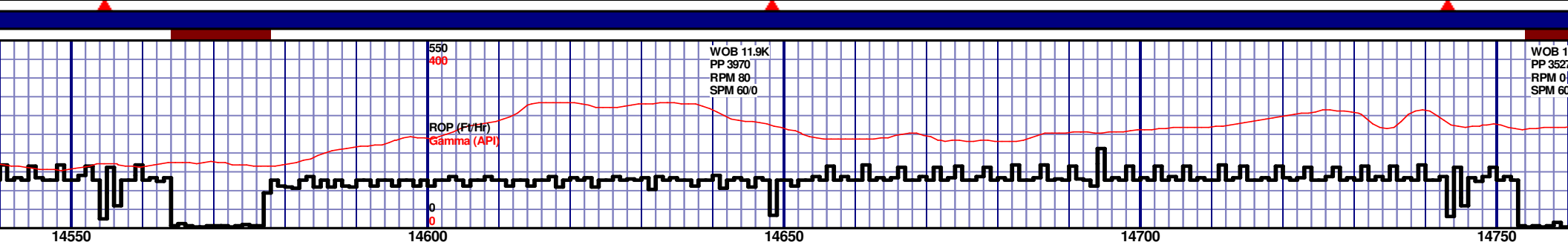
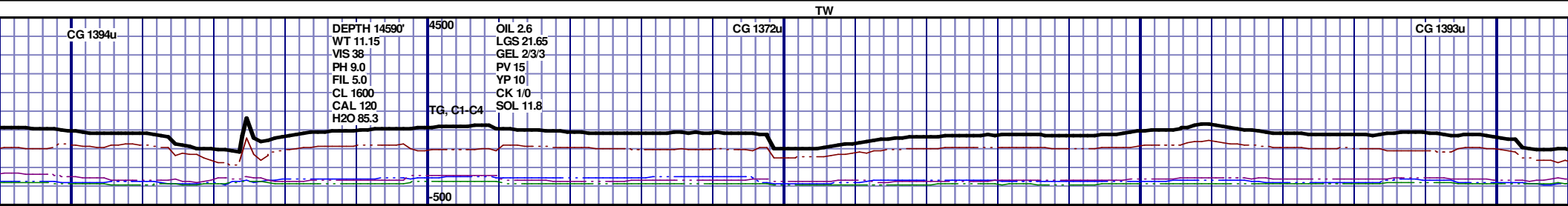
MD 14296 TVD 6618.41  
INC 90.8 AZ 269.5  
VS 8115.39



14350' MD-14400' MD: CHK: 70% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				14400' MD-14450' MD: CHK: 80% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				14450' MD-14500' MD: CHK: 70% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				14500' MD-14550' MD: CHK: 70% (CaCO3 70%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG			
---	--	--	--	---	--	--	--	---	--	--	--	---	--	--	--

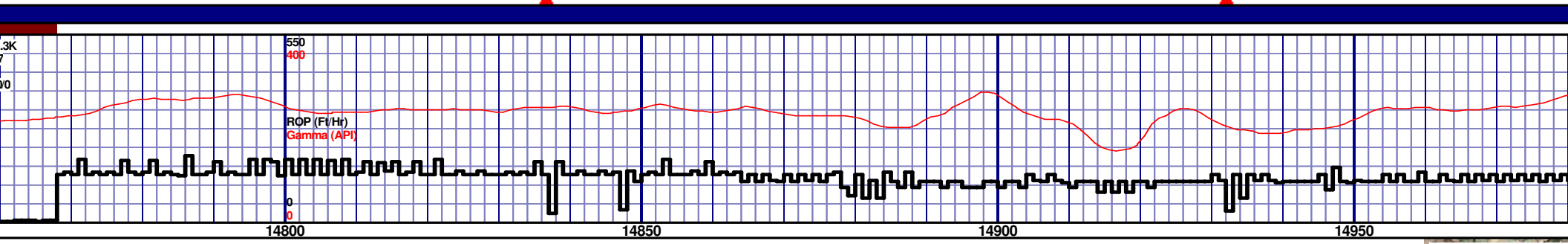
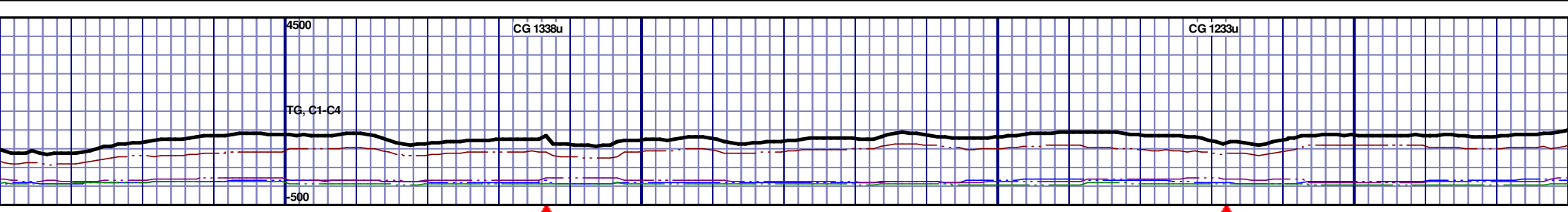
MD 14392 TVD 6616.79  
INC 91.14 AZ 268.46  
VS 8211.37

MD 14487 TVD 6614.54  
INC 91.57 AZ 268.35  
VS 8306.34

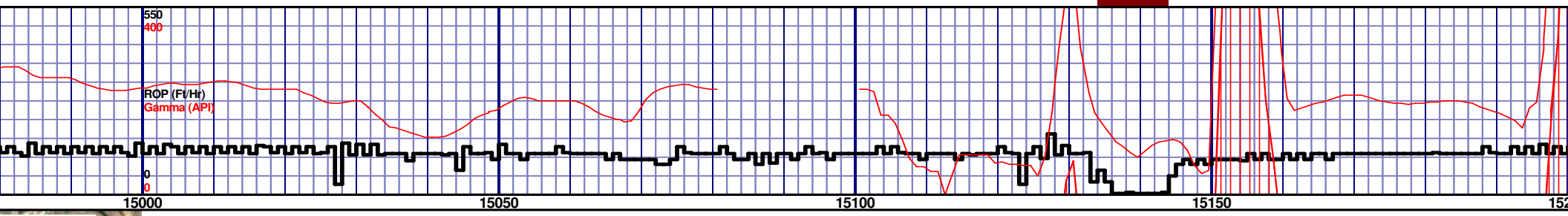
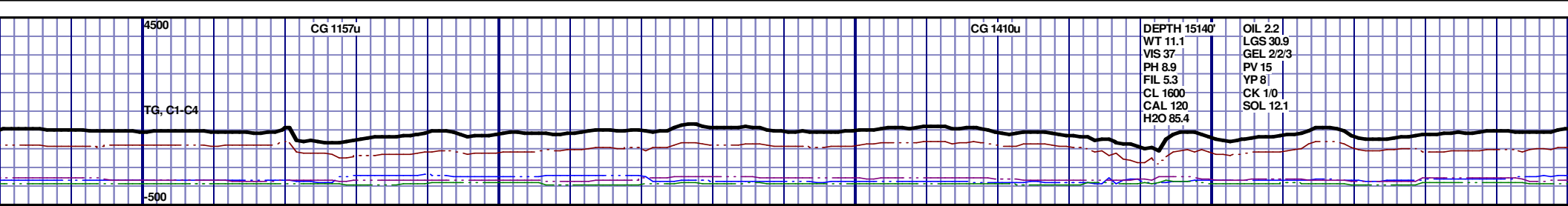


MD 14582 TVD 6612.32  
INC 91.11 AZ 269.64  
VS 8401.3

MD 14676 TVD 6610.51  
INC 91.11 AZ 269.41  
VS 8495.26



6400 TVD									
14800' MD-14850' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 40% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14850' MD-14900' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14900' MD-14950' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14950' MD-15000' MD: CHK: 80% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY - BLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE BENT, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									



6400 TVD									

