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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: Sam Stelzer & Brad Leonard

Log Interval: 7100' MD to 12,454' MD
Start Date: August 9, 2014
Release Date: August 12, 2014

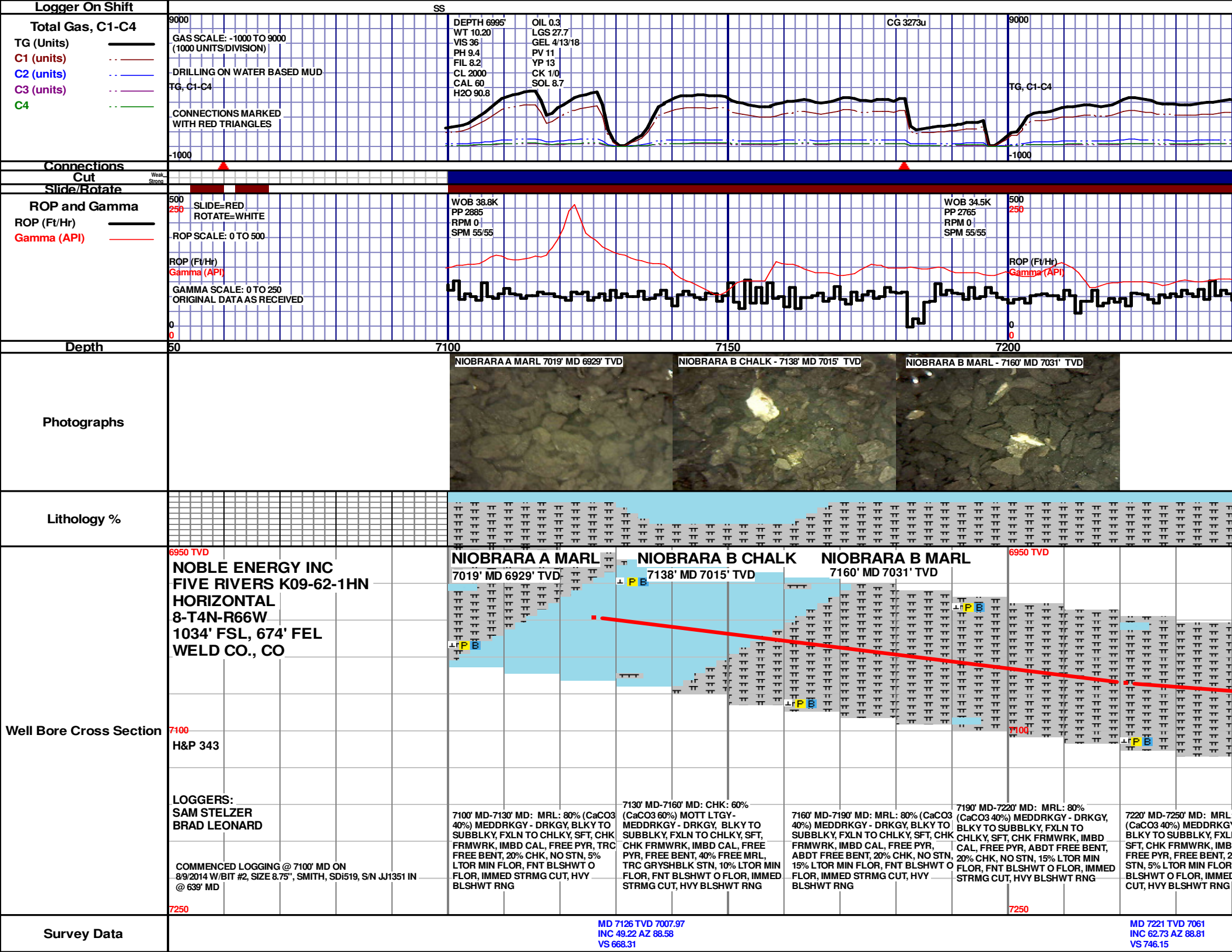
Well Information

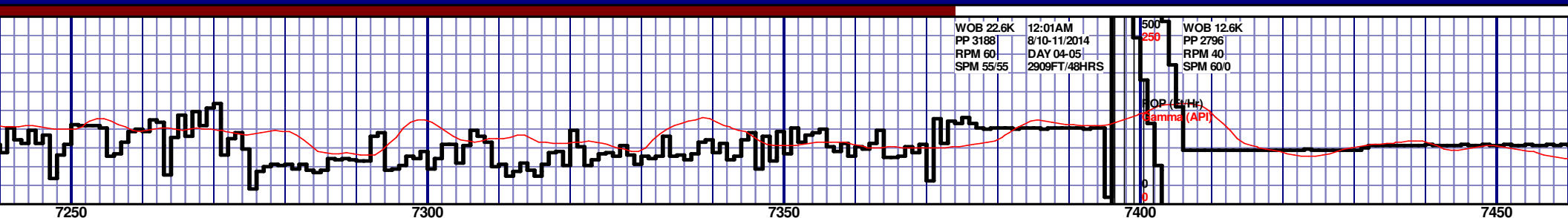
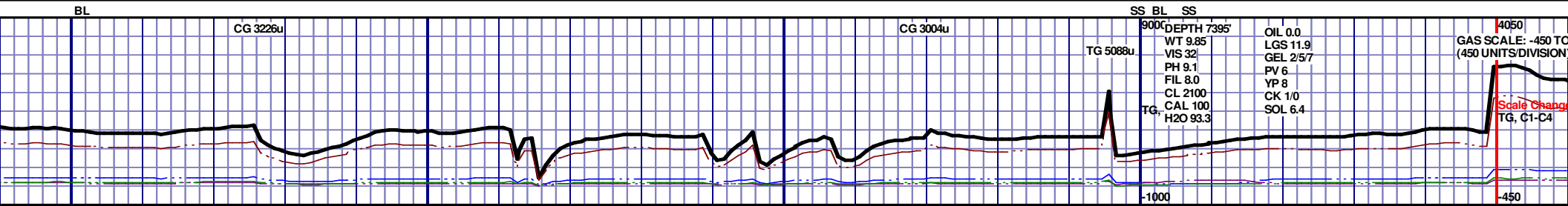
Well Name: Five Rivers K09-62-1HN
Horizontal

Location: 8-T4N-R66W
1034' FSL, 674' FEL

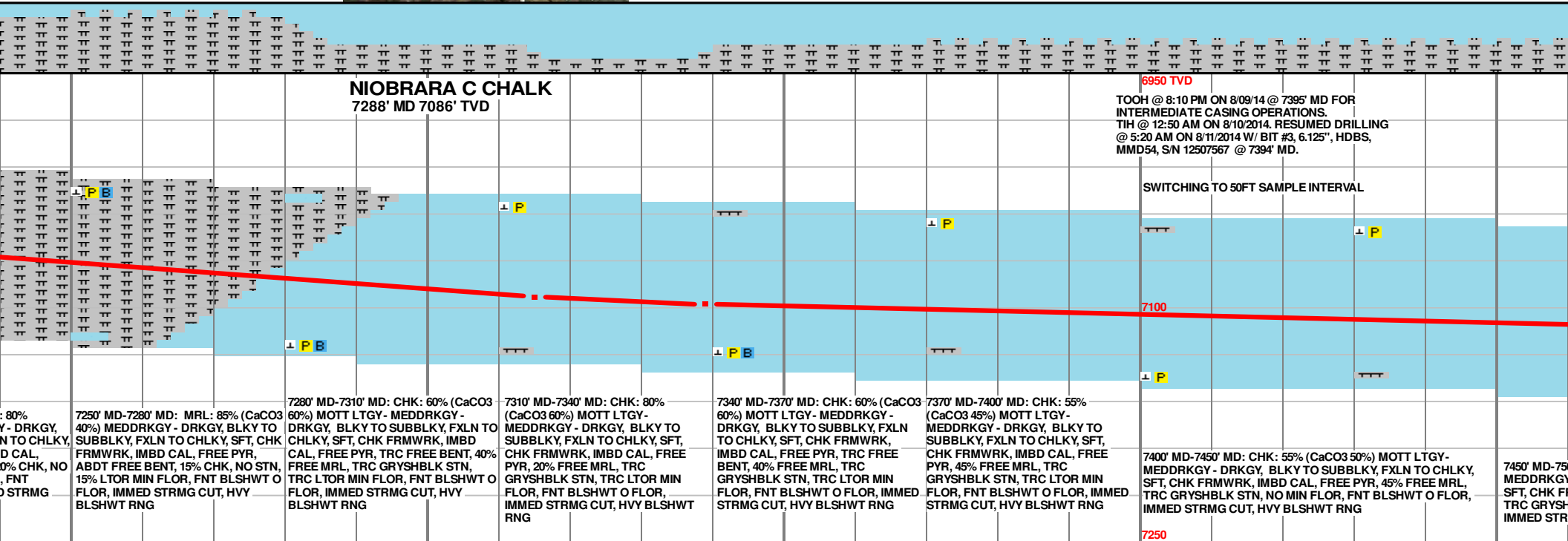
County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 12,454' MD
TD Date: August 12, 2014
Formation: Niobrara C Chalk
KB Elevation: 4726'
GR Elevation: 4702'
API Number: 05-123-39463-0000



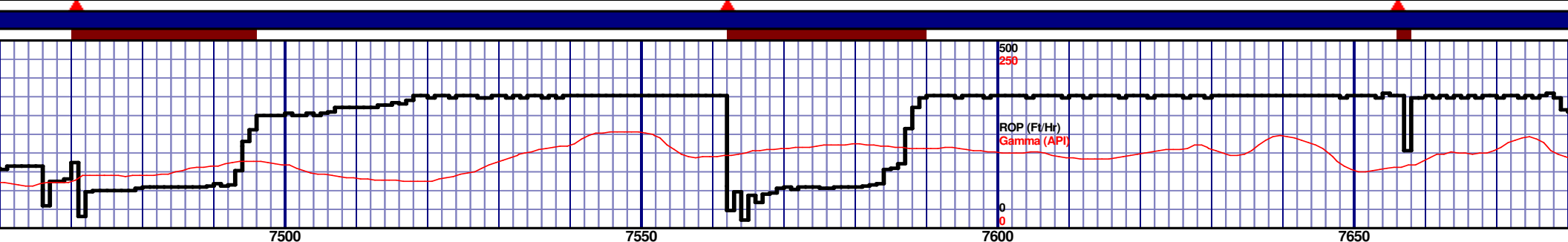
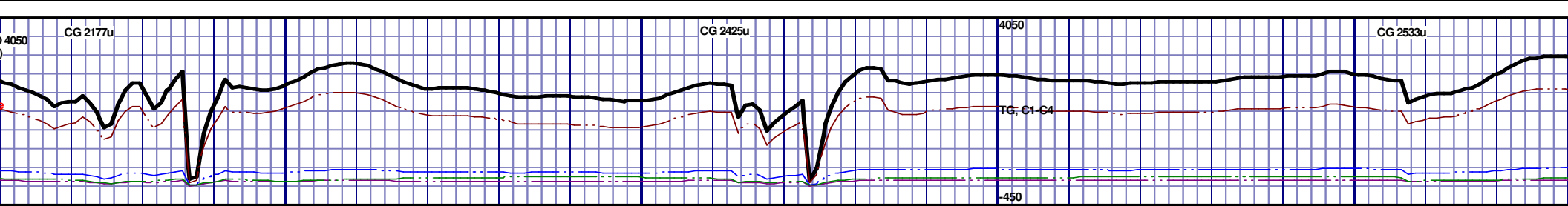


NIORARA C CHALK - 7288' MD 7086' TVD



MD 7315 TVD 7093.15
INC 77.17 AZ 92.1
VS 633.73

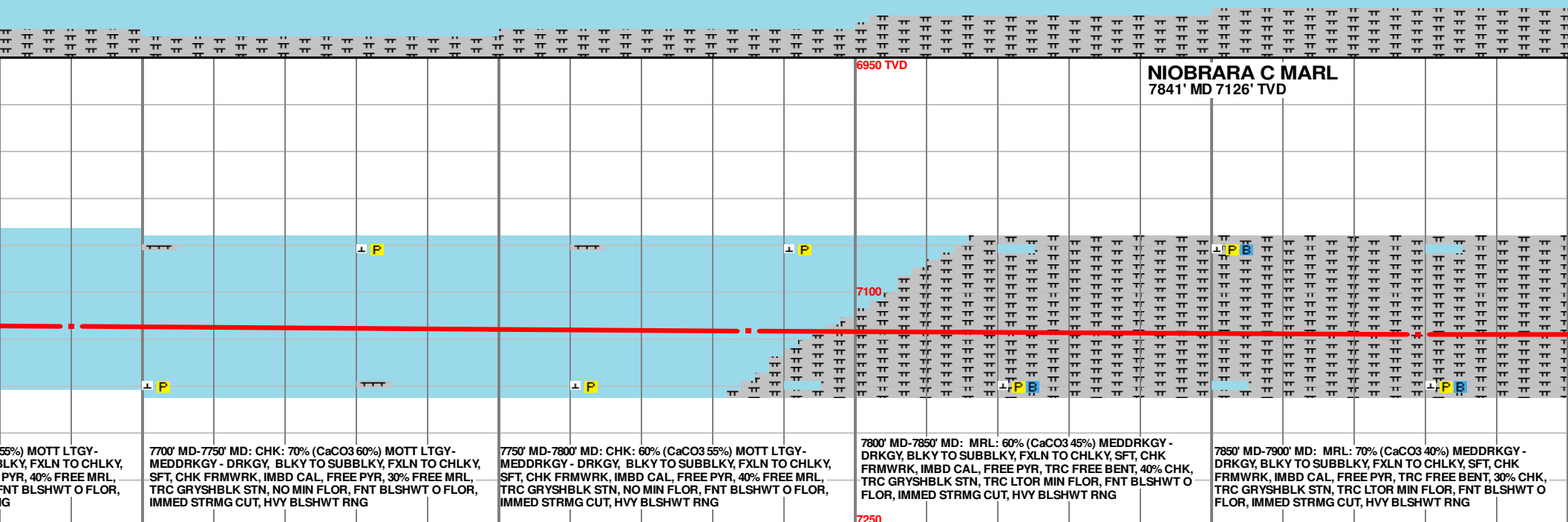
MD 7339 TVD 7097.64
INC 81.28 AZ 93.1
VS 857.25



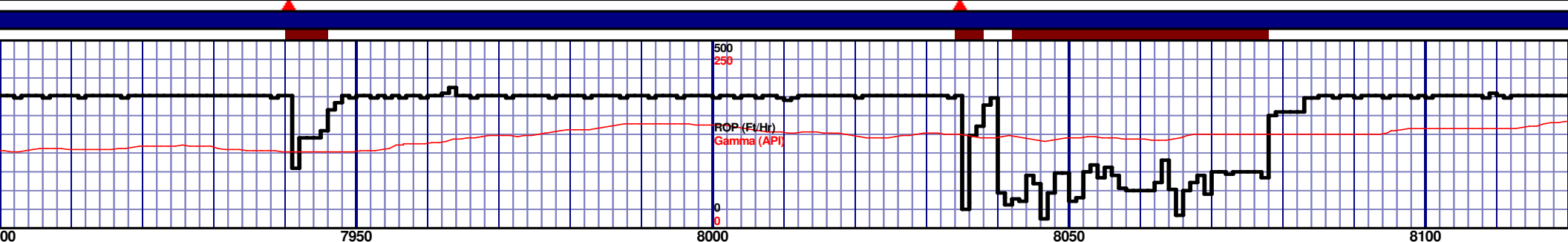
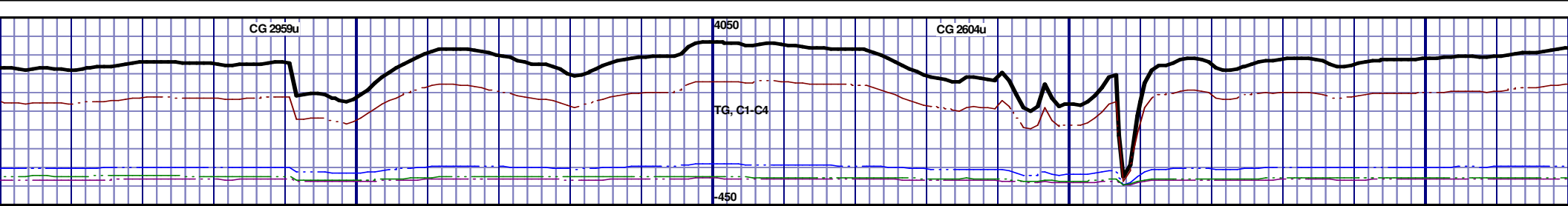
6950 TVD					7100					7250				
7500' MD-7550' MD: CHK: 60% (CaCO3 50%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					7550' MD-7600' MD: CHK: 55% (CaCO3 50%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 45% FREE MRL, TRC GRYSHBLK STN, NO 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, 40% CHK, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
7650' MD-7700' MD: CHK: 60% (CaCO3 50%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG														

MD 7501 TVD 7114.77
INC 86.58 AZ 91.5
VS 1017.86

MD 7596 TVD 7118.93
INC 88.4 AZ 90.77
VS 1112.36



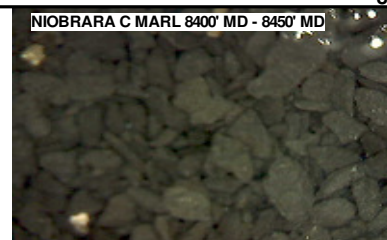
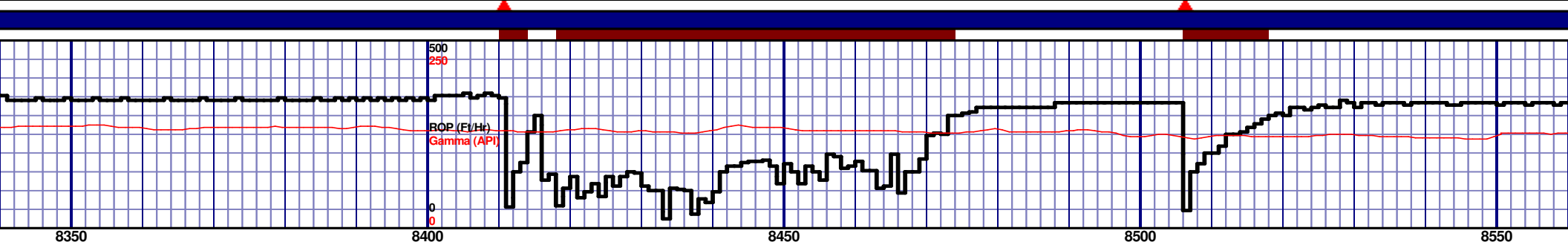
MD 7879 TVD 7126.82
INC 90.22 AZ 89.68
VS 1393.17



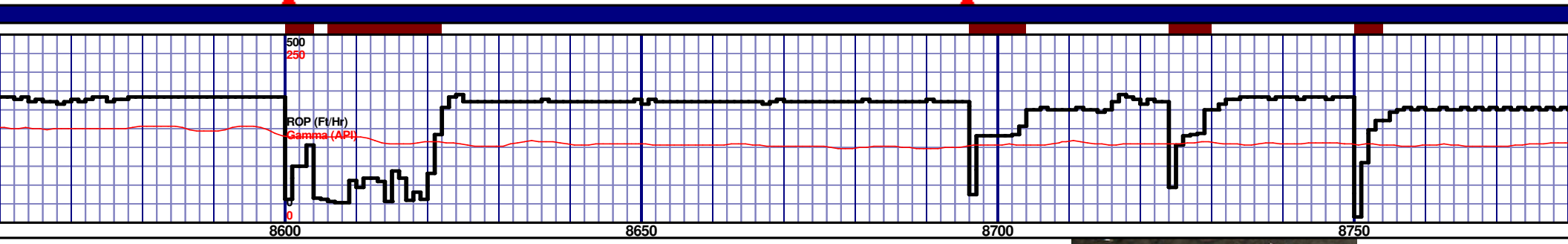
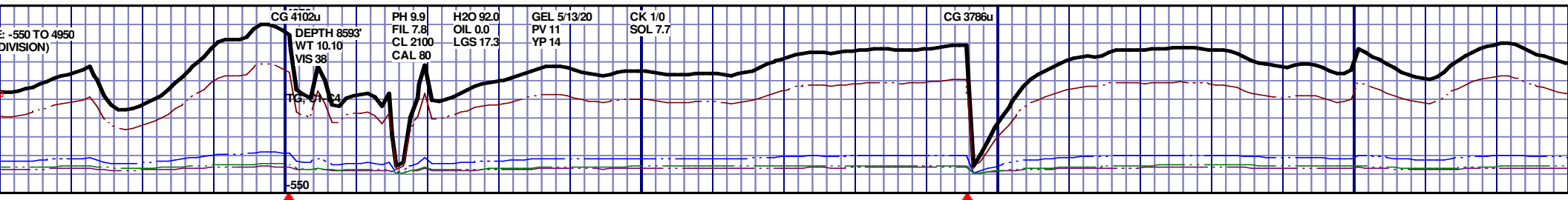
7900' MD-7950' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7950' MD-8000' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8000' MD-8050' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8050' MD-8100' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8100' MD-8150' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 7973 TVD 7126.92
INC 89.66 AZ 88.96
VS 1486.45

MD 8067 TVD 7126.06
INC 91.39 AZ 90.35
VS 1579.78



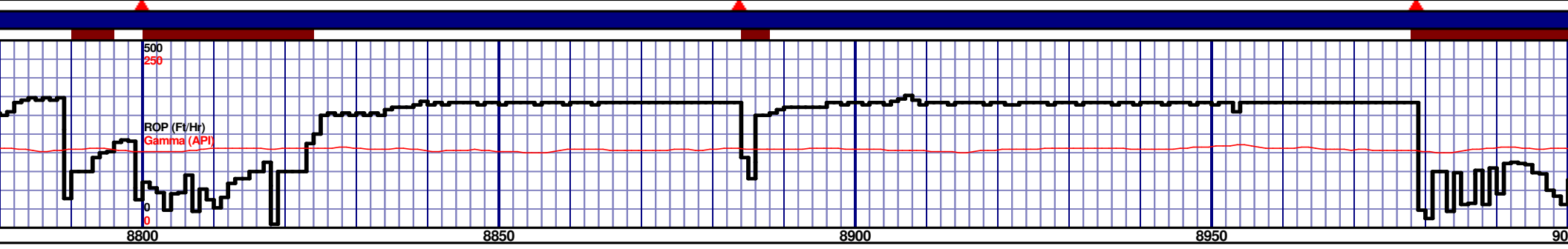
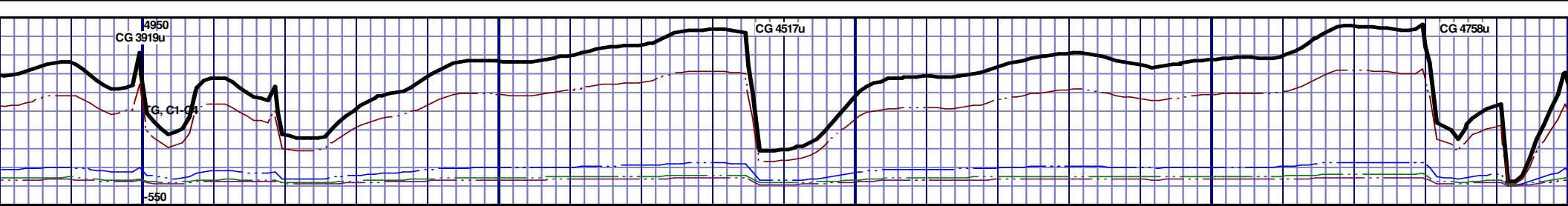
8350' MD-8400' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8400' MD-8450' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8450' MD-8500' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8500' MD-8550' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8550' MD-8600' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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6950 TVD									
7190									
7250									
8600' MD-8650' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8650' MD-8700' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8700' MD-8750' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8750' MD-8800' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 8635 TVD 7123.51
INC 90.34 AZ 90.63
VS 2143.61

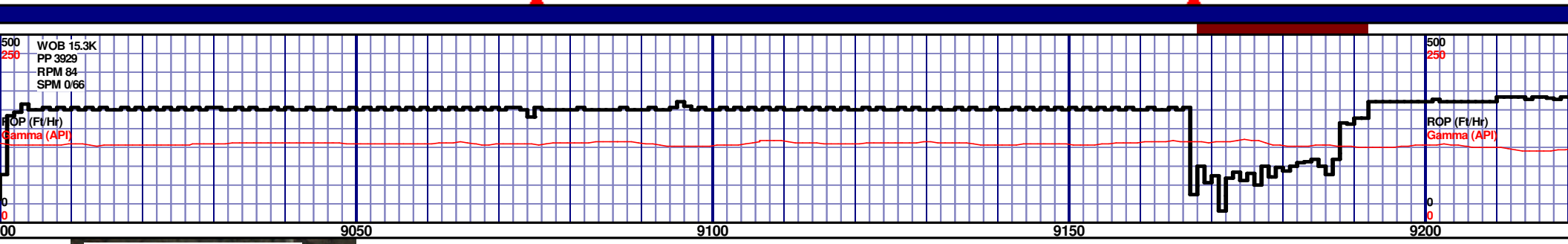
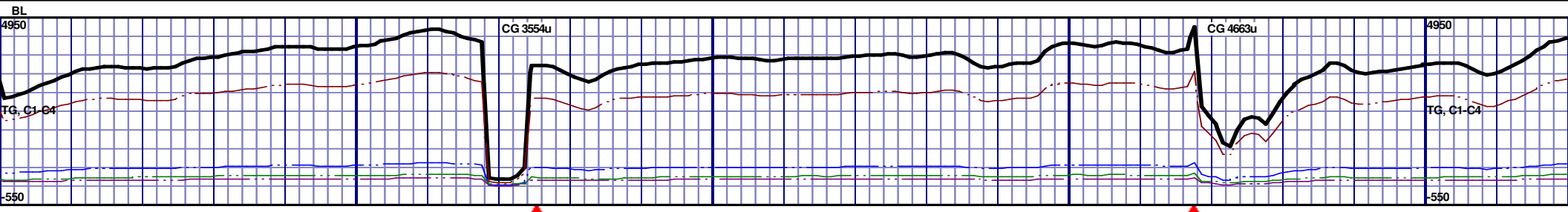
MD 8729 TVD 7123.56
INC 89.6 AZ 90.06
VS 2237.07



6950 TVD									
7100									
7250									
8800' MD-8850' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8850' MD-8900' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8900' MD-8950' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8950' MD-9000' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 8824 TVD 7123.74
INC 90.18 AZ 91.26
VS 2331.59

MD 8918 TVD 7124.35
INC 89.08 AZ 90.24
VS 2425.12

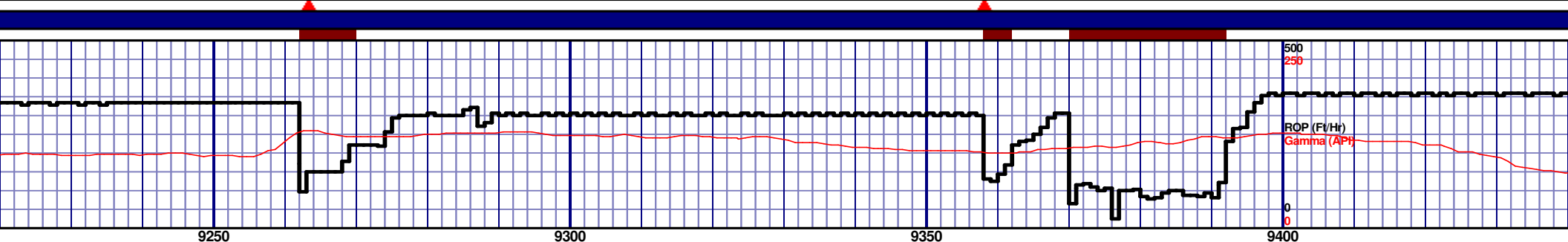
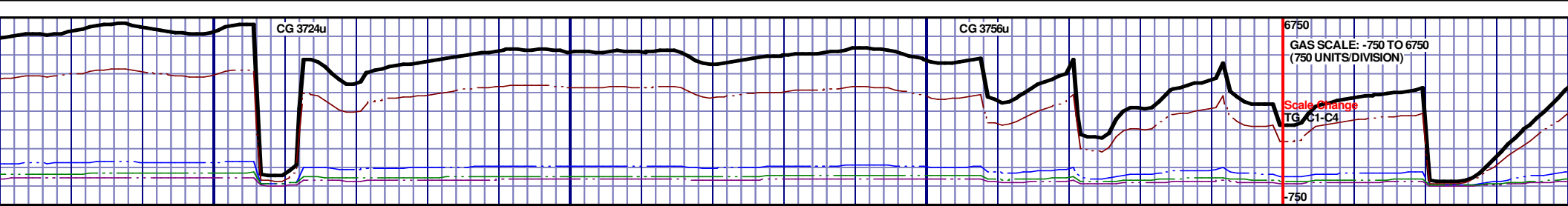


6950 TVD										6950 TVD									
9000' MD-9050' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										9050' MD-9100' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9100' MD-9150' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										9150' MD-9200' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9200' MD-9250' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										9200' MD-9250' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7250										7250									

MD 9013 TVD 7125.24
INC 89.85 AZ 93.12
VS 2519.78

MD 9108 TVD 7125.49
INC 89.85 AZ 93.02
VS 2614.61

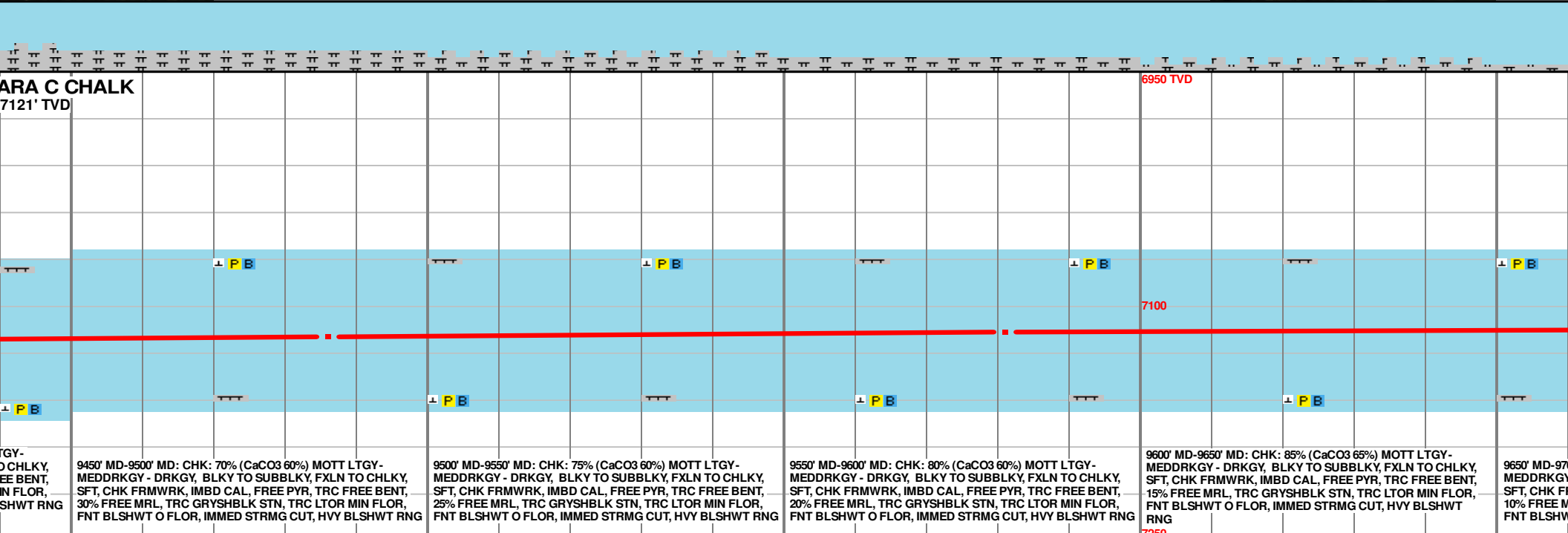
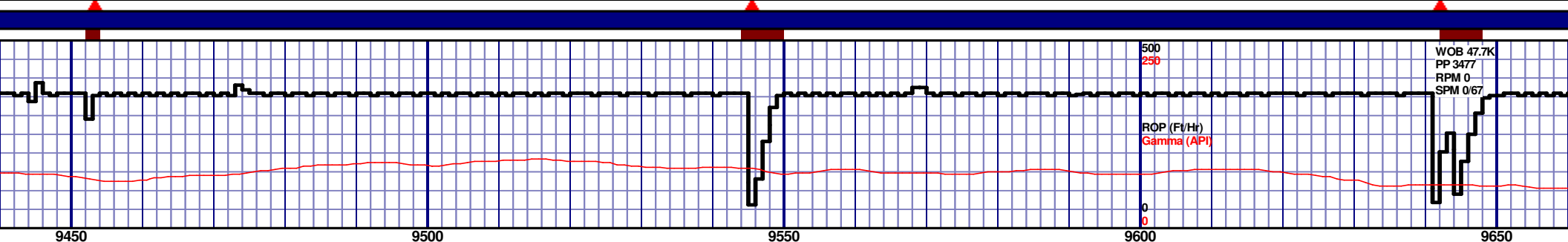
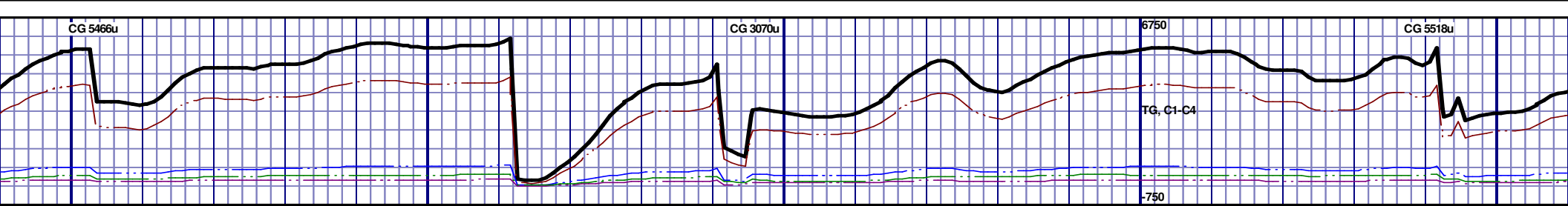
MD 9202 TVD 7124.6
INC 91.23 AZ 93.2
VS 2708.45



70% (CaCO3 40%) MEDDRKGY - KY, FXLN TO CHLKY, SFT, CHK EE PYR, 30% CHK, TRC GRYSBLK BLSHWT O FLOR, IMMED STRMG									
9250' MD-9300' MD: MRL: 60% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9300' MD-9350' MD: MRL: 65% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 35% CHK, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9350' MD-9400' MD: MRL: 55% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 45% CHK, TRC GRYSBLK STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9400' MD-9450' MD: CHK: 65% (CaCO3 60%) MOTT LT MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FR 35% FREE MRL, TRC GRYSBLK STN, TRC LTOR M FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BL									

MD 9297 TVD 7123.86
INC 89.66 AZ 91.07
VS 2803.17

MD 9391 TVD 7122.52
INC 91.97 AZ 90.59
VS 2896.7



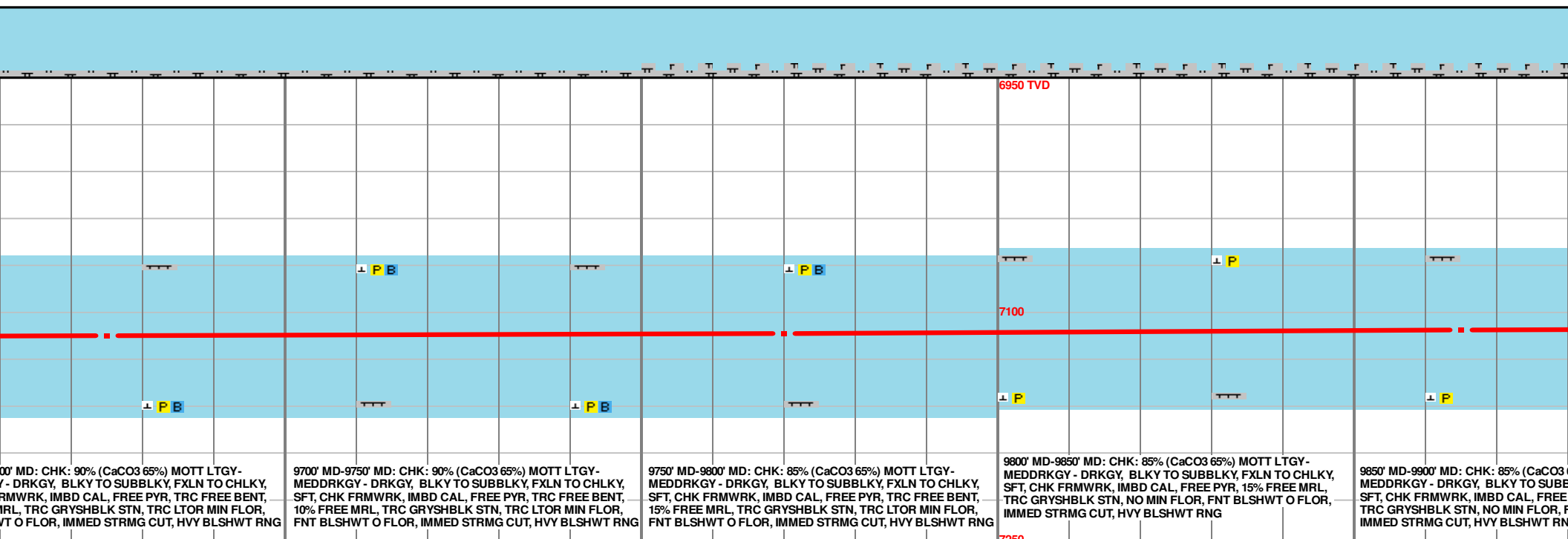
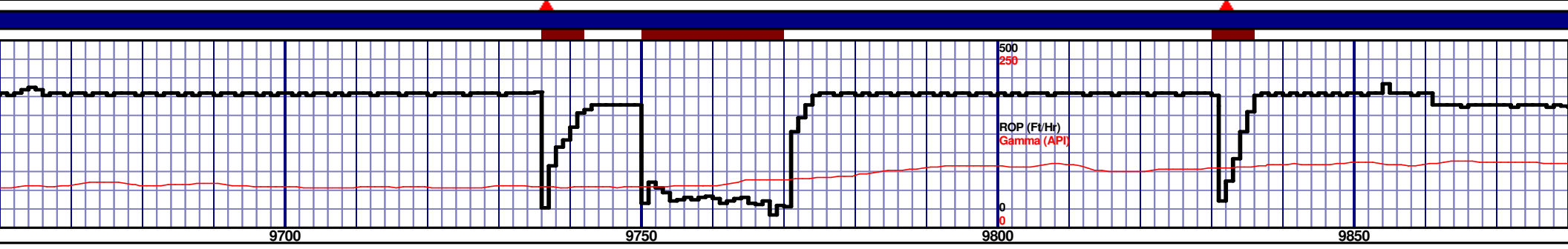
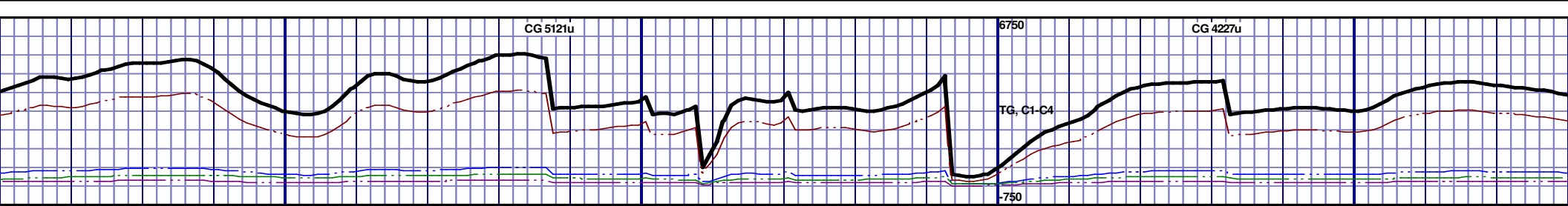
9450' MD-9500' MD: CHK: 70% (CaCO₃ 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9500' MD-9550' MD: CHK: 75% (CaCO₃ 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9550' MD-9600' MD: CHK: 80% (CaCO₃ 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9600' MD-9650' MD: CHK: 85% (CaCO₃ 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 15% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9650' MD-9700' MD: CHK: 90% (CaCO₃ 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 10% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG



9700' MD-9750' MD: CHK: 90% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 10% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9750' MD-9800' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 15% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

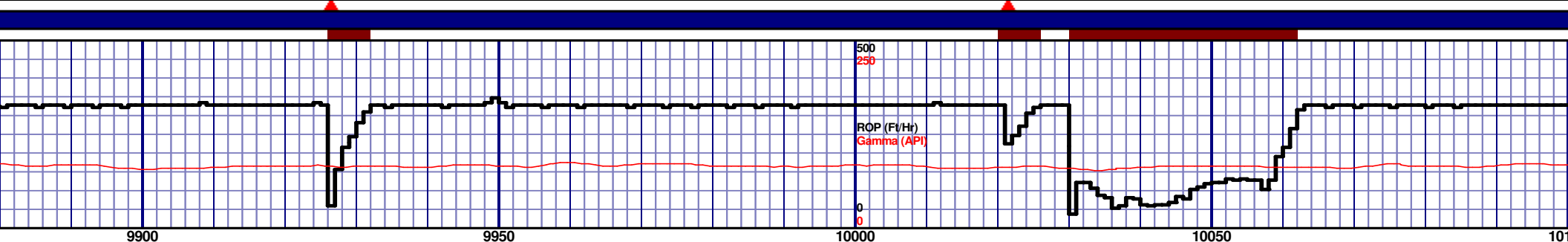
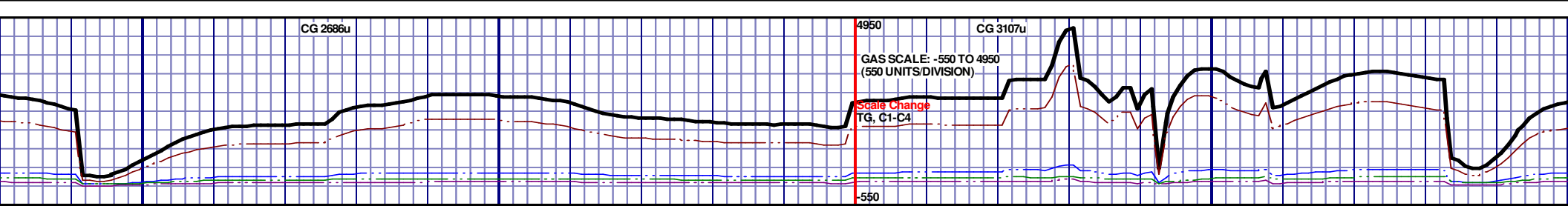
9800' MD-9850' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 15% FREE MRL, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9850' MD-9900' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 15% FREE MRL, TRC GRYSBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

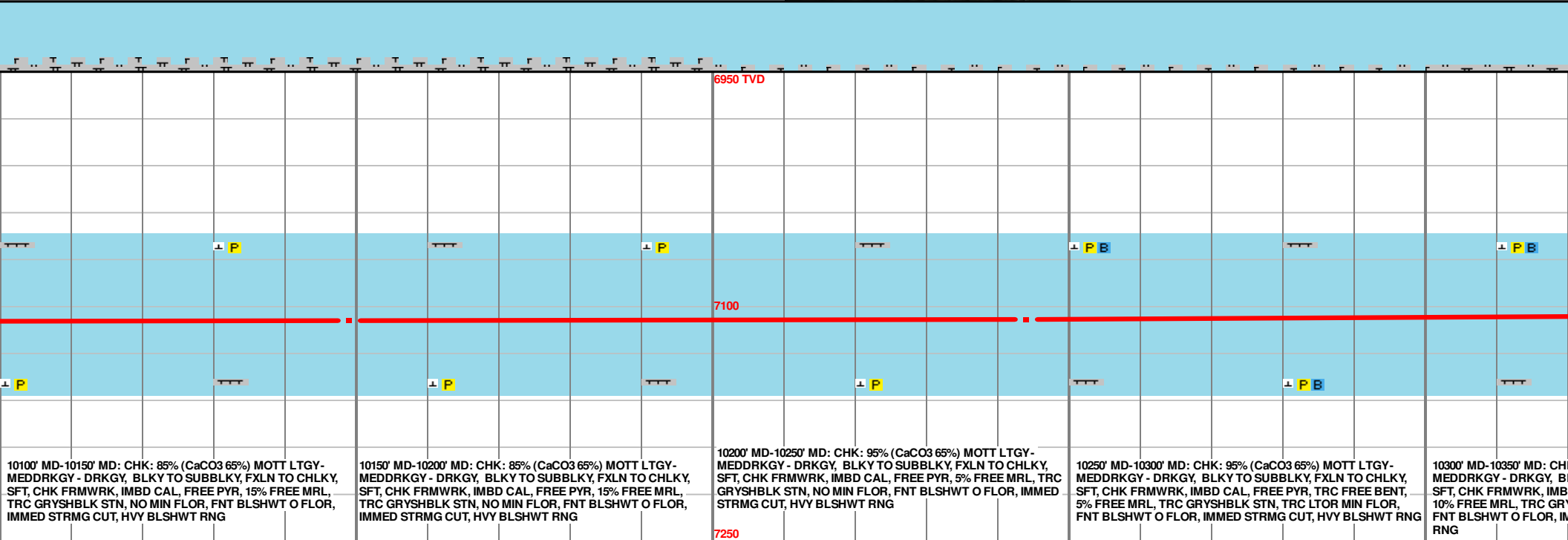
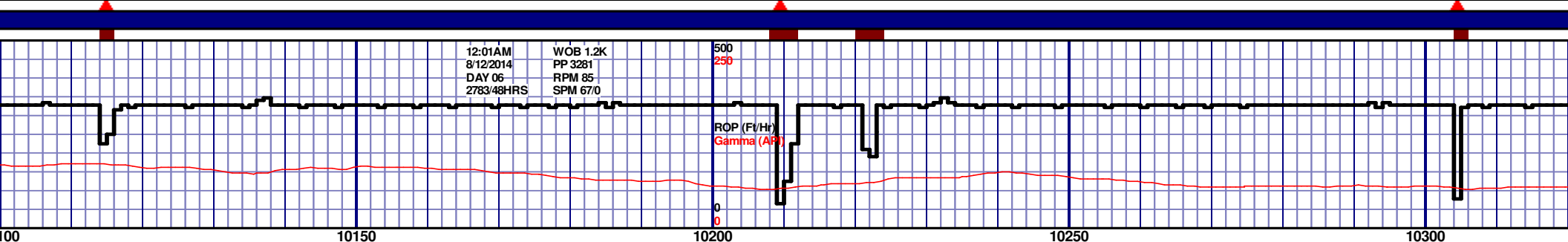
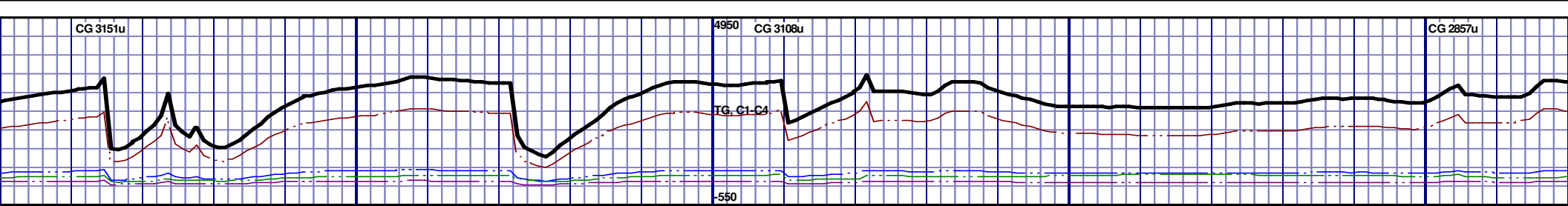
MD 9675 TVD 7115.18
INC 90.19 AZ 88.33
VS 3178.46

MD 9770 TVD 7113.57
INC 91.75 AZ 90.03
VS 3272.68

MD 9865 TVD 7110.0
INC 91.33 AZ 89.27
VS 3366.96



6950 TVD					7100					7250				
9900' MD-9950' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					9950' MD-10000' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					10000' MD-10050' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 15% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
10050' MD-10100' MD: CHK: 80% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG														



10100' MD-10150' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 15% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10150' MD-10200' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 15% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

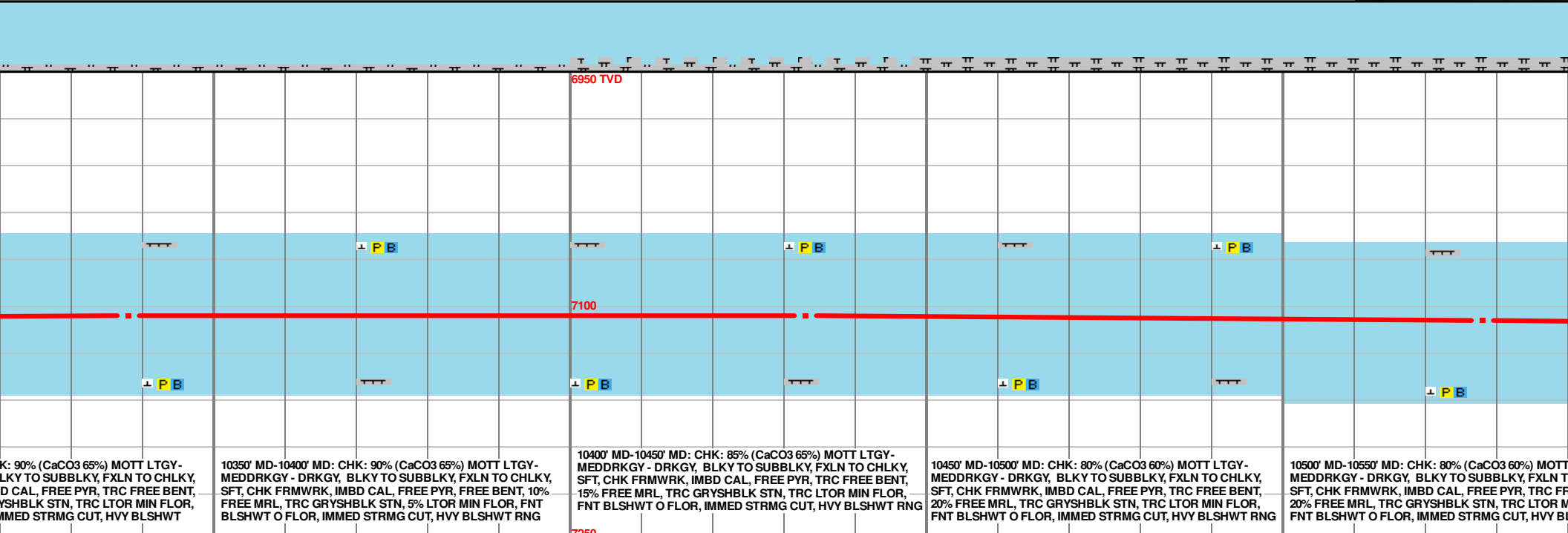
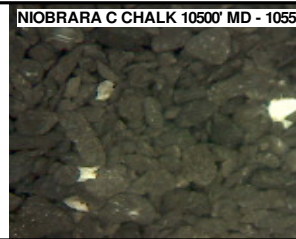
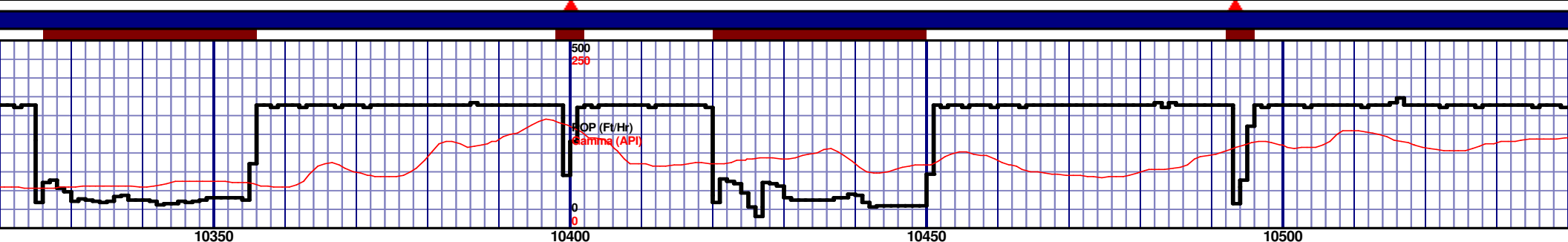
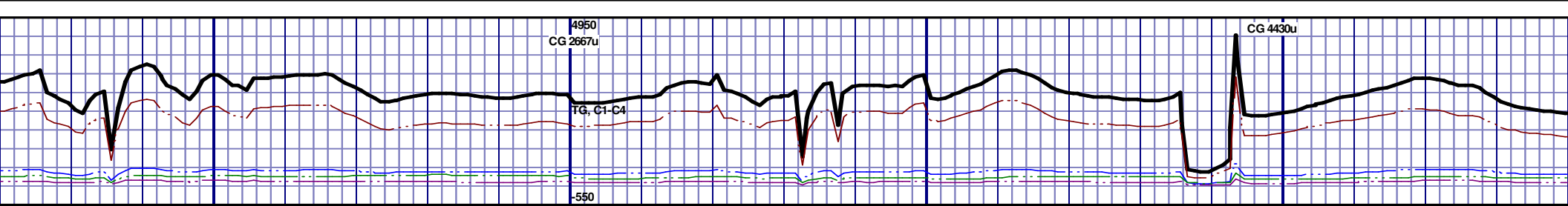
10200' MD-10250' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10250' MD-10300' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 5% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10300' MD-10350' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 10% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 10149 TVD 7109.3
INC 90.12 AZ 89.89
VS 3648.89

MD 10244 TVD 7108.26
INC 91.14 AZ 89.72
VS 3743.25



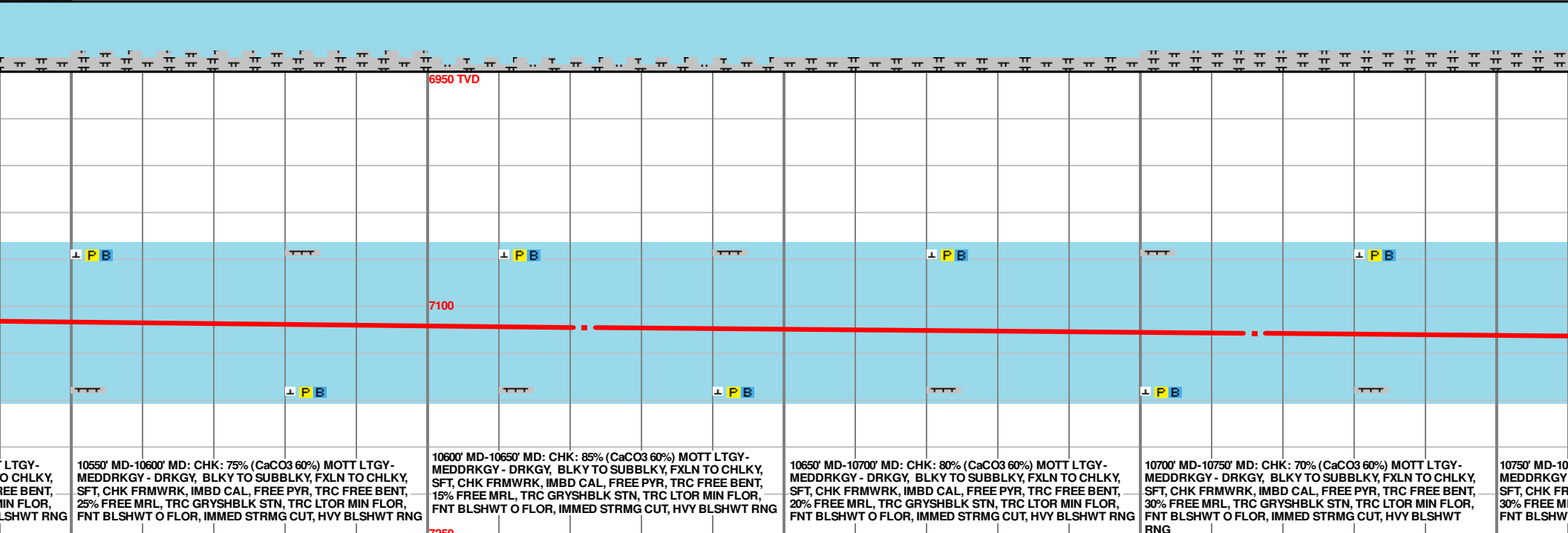
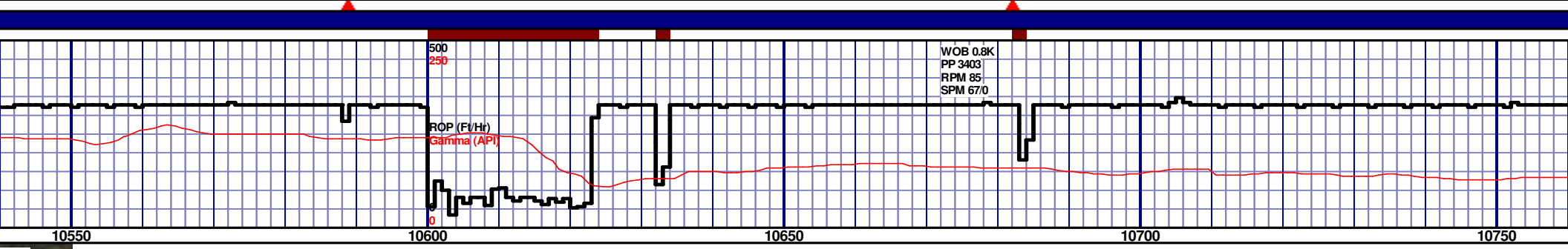
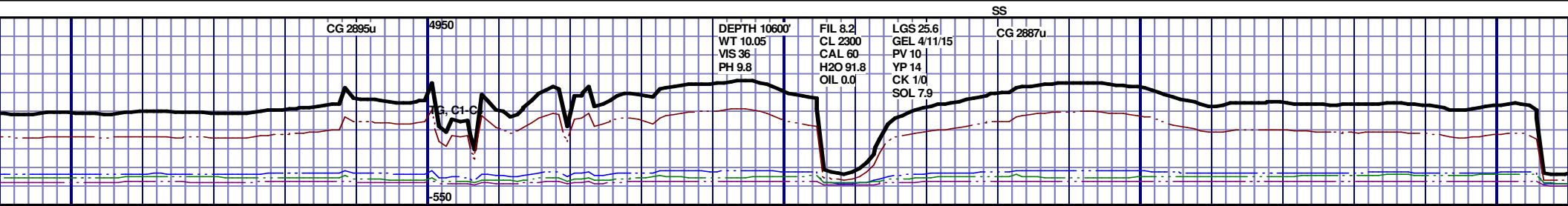
CHK: 90% (CaCO3 65%) MOTT LTGY -
BLKY TO SUBBLKY, FXLN TO CHLKY,
D CAL, FREE PYR, TRC FREE BENT,
GRYSHBLK STN, TRC LTOR MIN FLOR,
IMMED STRMG CUT, HVY BLSHWT

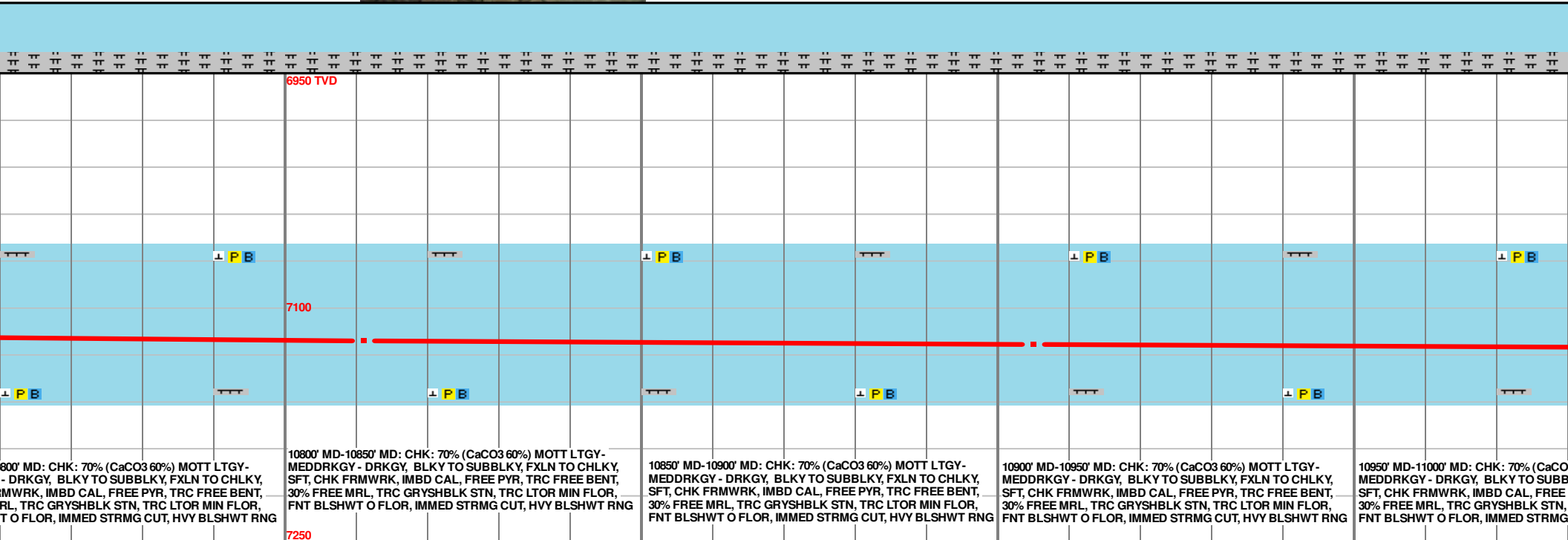
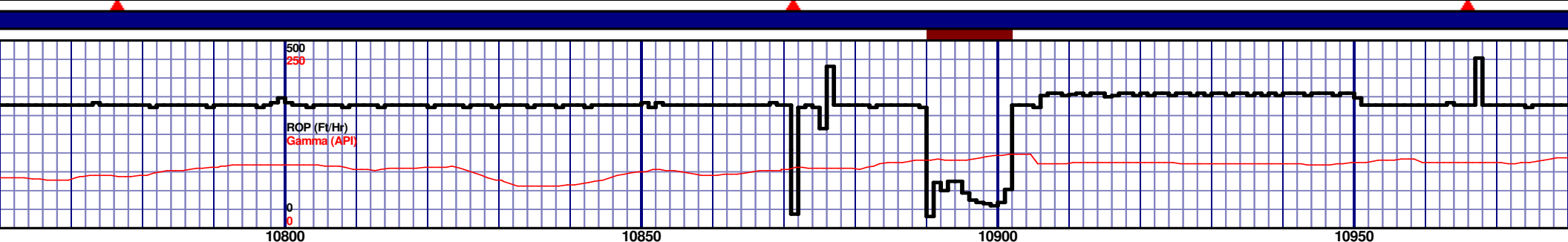
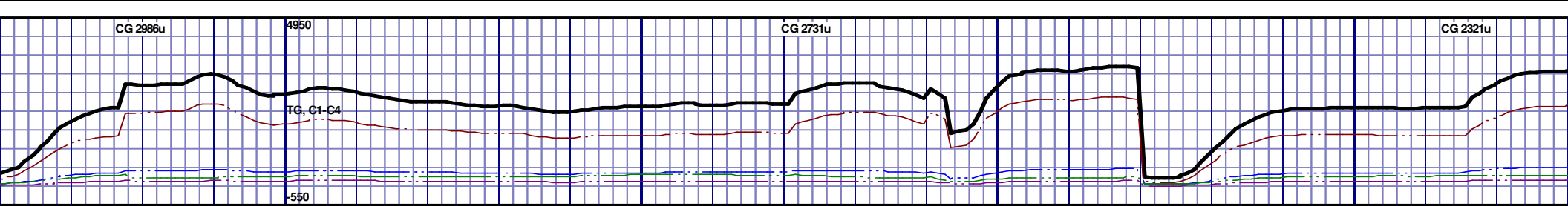
10350' MD-10400' MD: CHK: 90% (CaCO3 65%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10400' MD-10450' MD: CHK: 85% (CaCO3 65%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
15% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10450' MD-10500' MD: CHK: 80% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
20% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

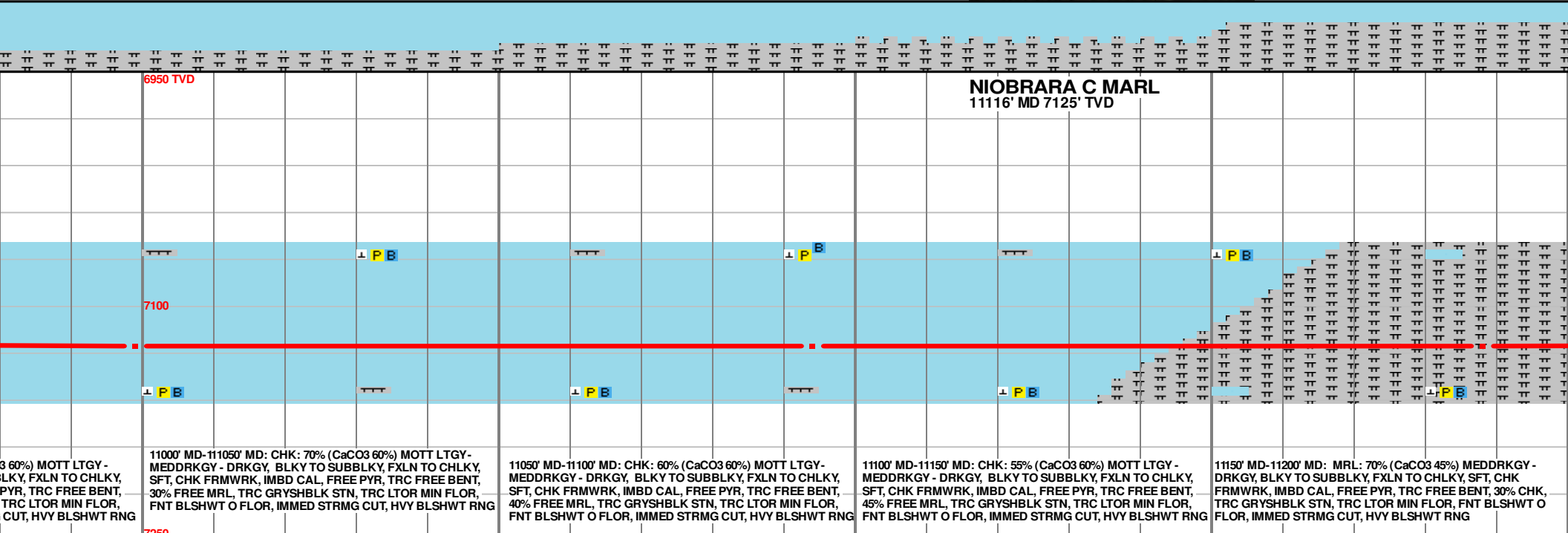
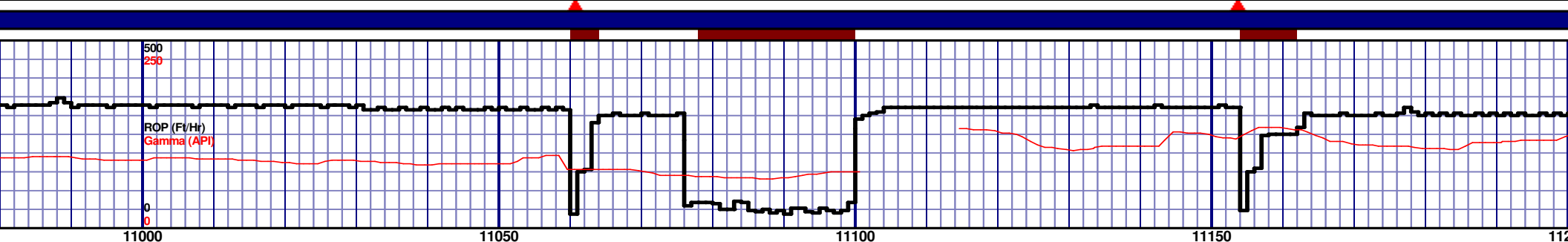
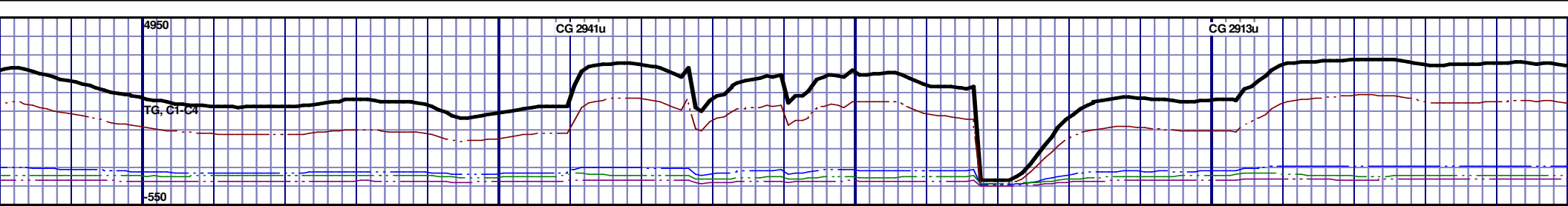
10500' MD-10550' MD: CHK: 80% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
20% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG





MD 10811 TVD 7120.64
INC 87.53 AZ 90.06
VS 4307.7

MD 10905 TVD 7123.57
INC 88.89 AZ 89.26
VS 4400.99

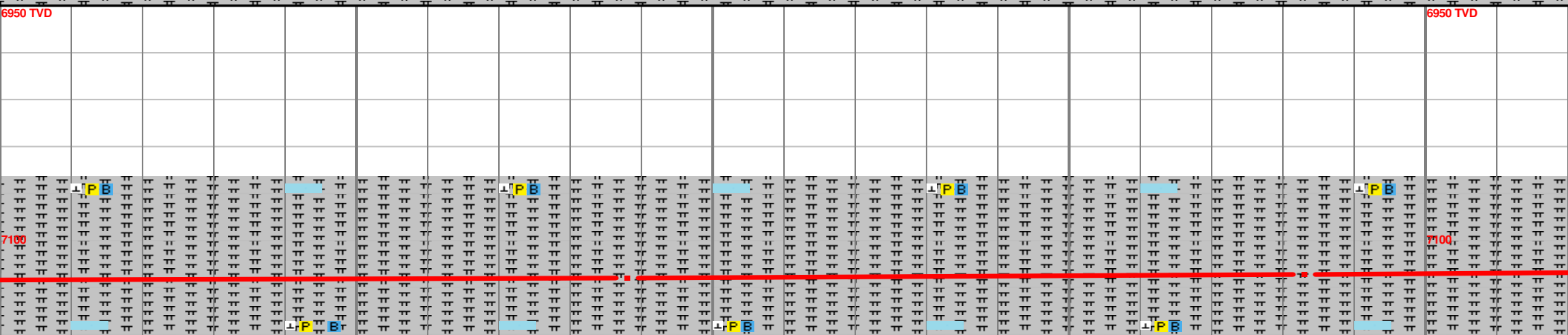
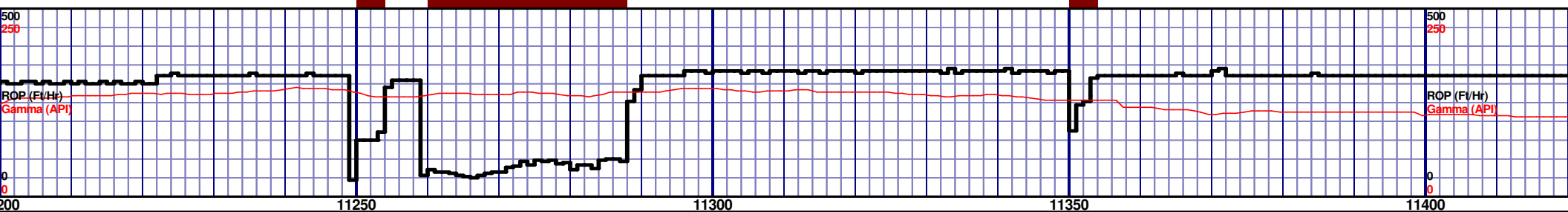


3 60%) MOTT LTGY - BLKY, FXLN TO CHLKY, PYR, TRC FREE BENT, TRC LTOR MIN FLOR, CUT, HVY BLSHWT RNG	11000' MD-11050' MD: CHK: 70% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11050' MD-11100' 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 GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11100' MD-11150' MD: CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11150' MD-11200' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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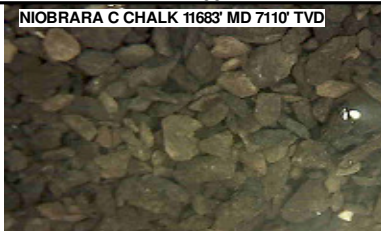
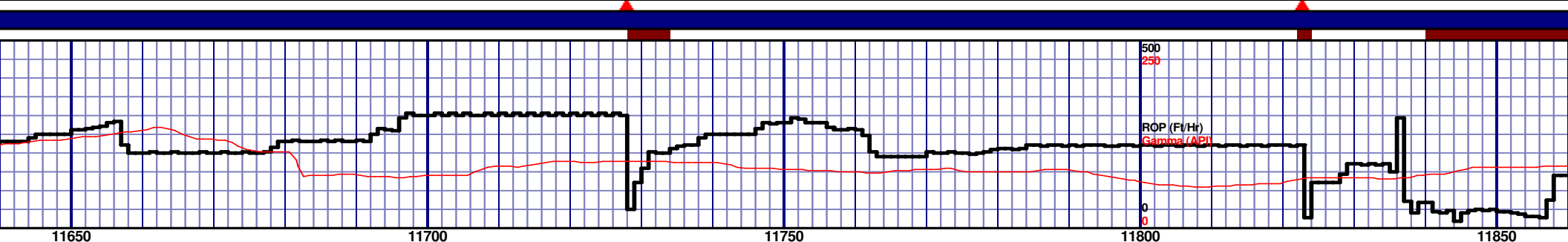
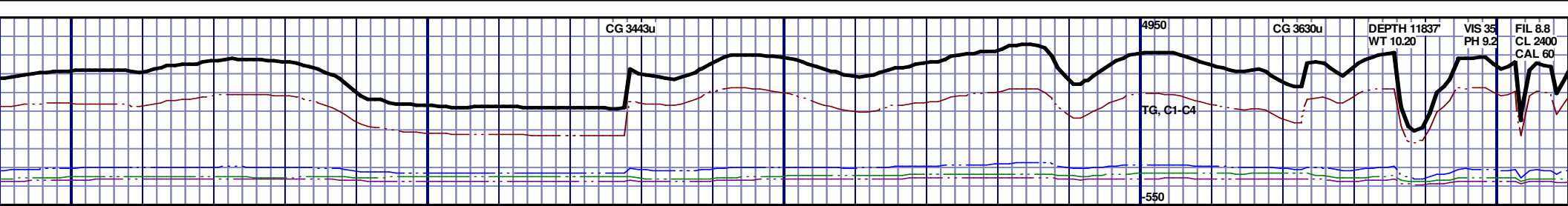
MD 10999 TVD 7125.26
INC 89.05 AZ 88.63
VS 4494.17

MD 11094 TVD 7125.6
INC 90.55 AZ 90.13
VS 4588.45

MD 11188 TVD 7125.6
INC 89.72 AZ 89.13
VS 4681.8



11400' MD-11450' MD: MR
DRKGY, BLKY TO SUBBL
FRMWRK, IMBD CAL, FR
TRC GRYSBLK STN, 10'
FLOR, IMMED STRMG CU

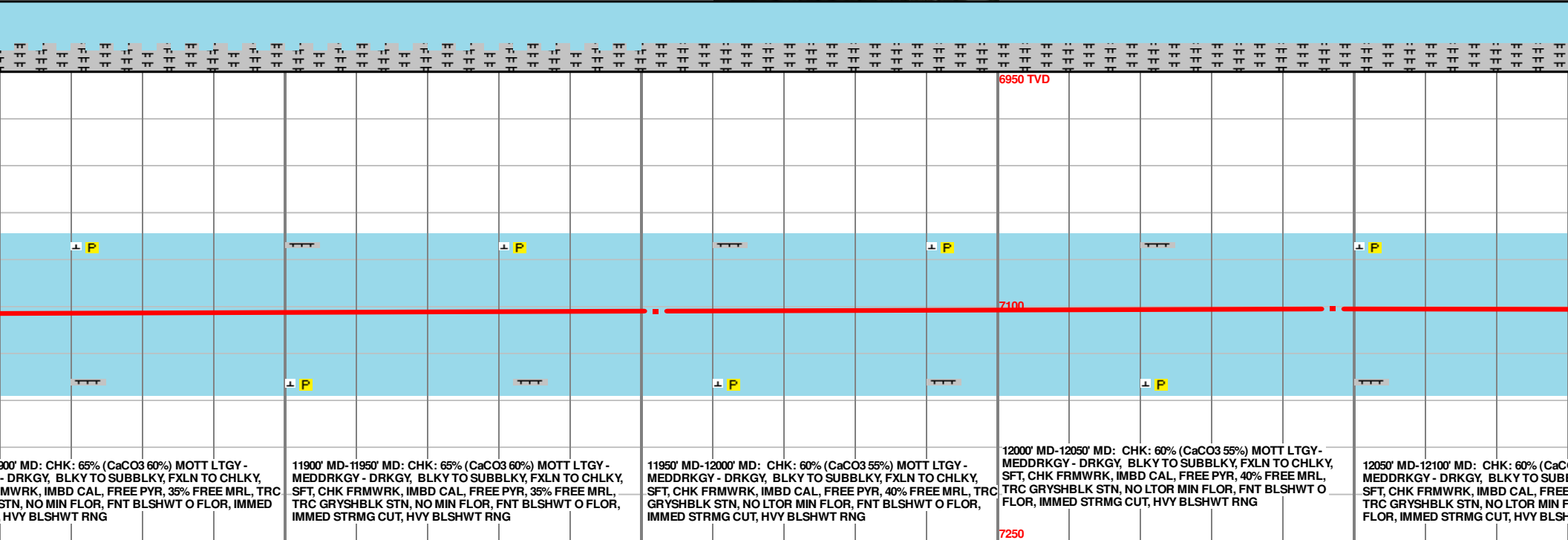
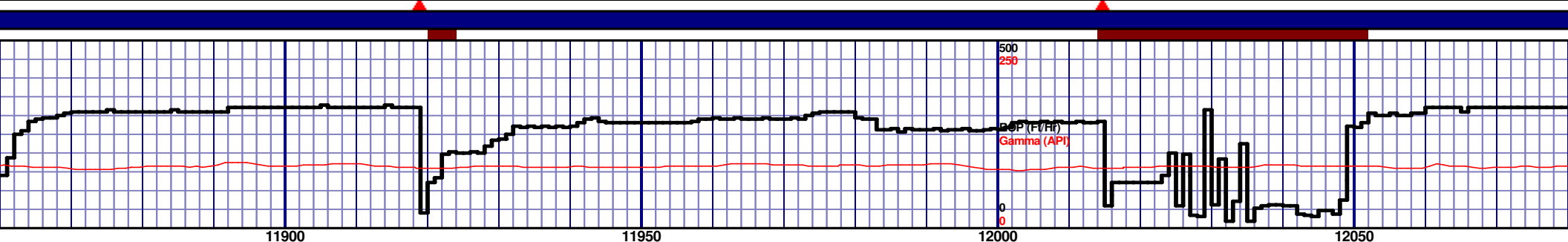
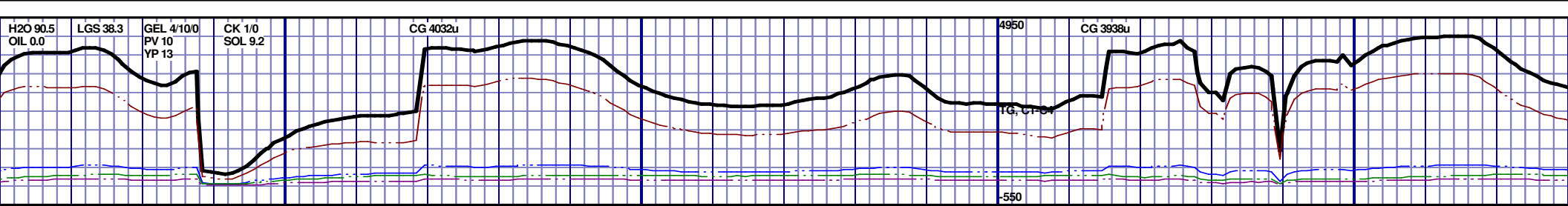


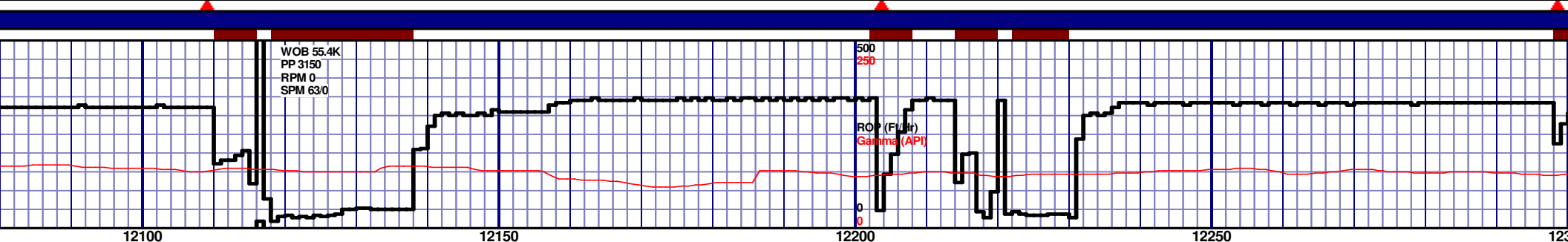
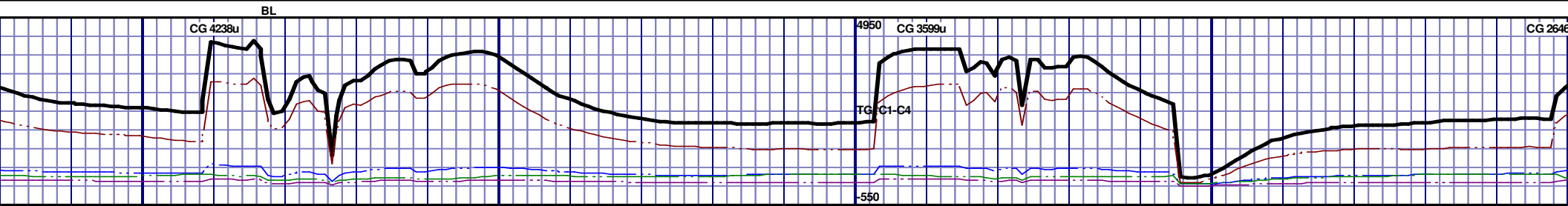
NIOBRARA C CHALK									
11683' MD 7110' TVD									
6950 TVD									
7100									
7250									
11650' MD-11700' MD: CHK: 60% (CaCO3 55%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11700' MD-11750' MD: CHK: 60% (CaCO3 55%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11750' MD-11800' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11800' MD-11850' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
11850' MD-11900' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 11667 TVD 7110.85
INC 91.91 AZ 88.67
VS 5155.88

MD 11762 TVD 7107.64
INC 91.97 AZ 87.81
VS 5249.85

MD
INC
VS





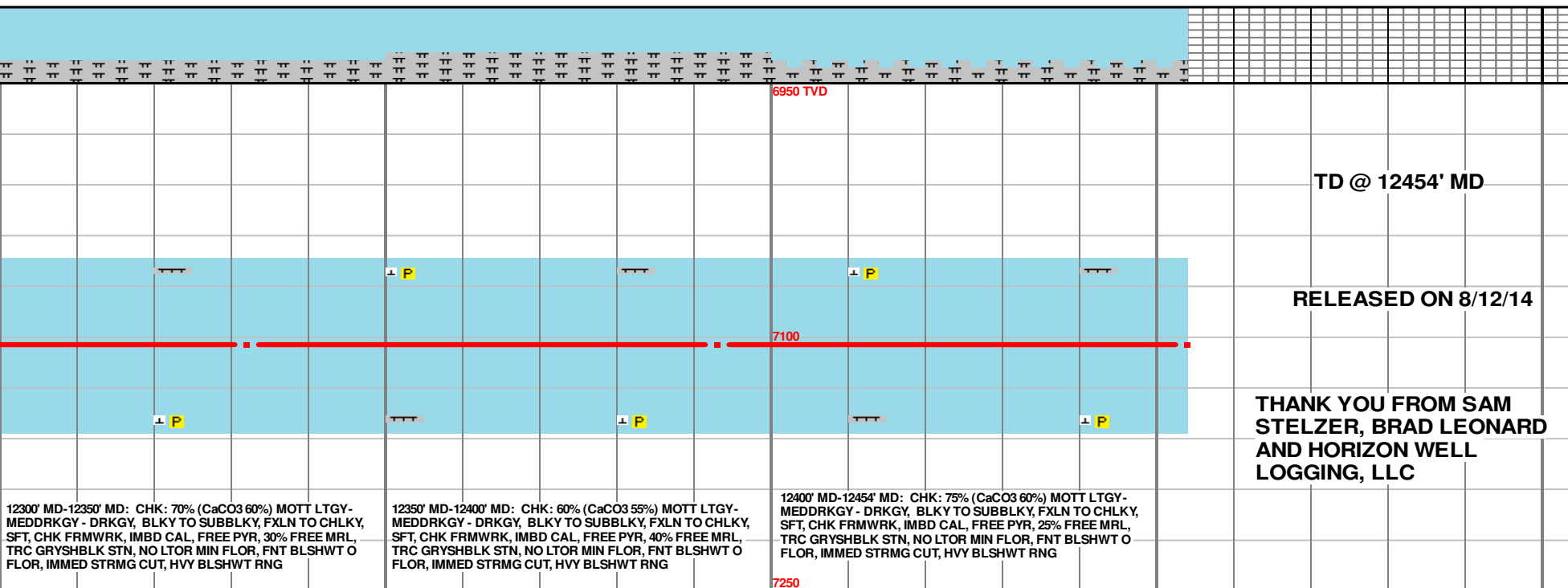
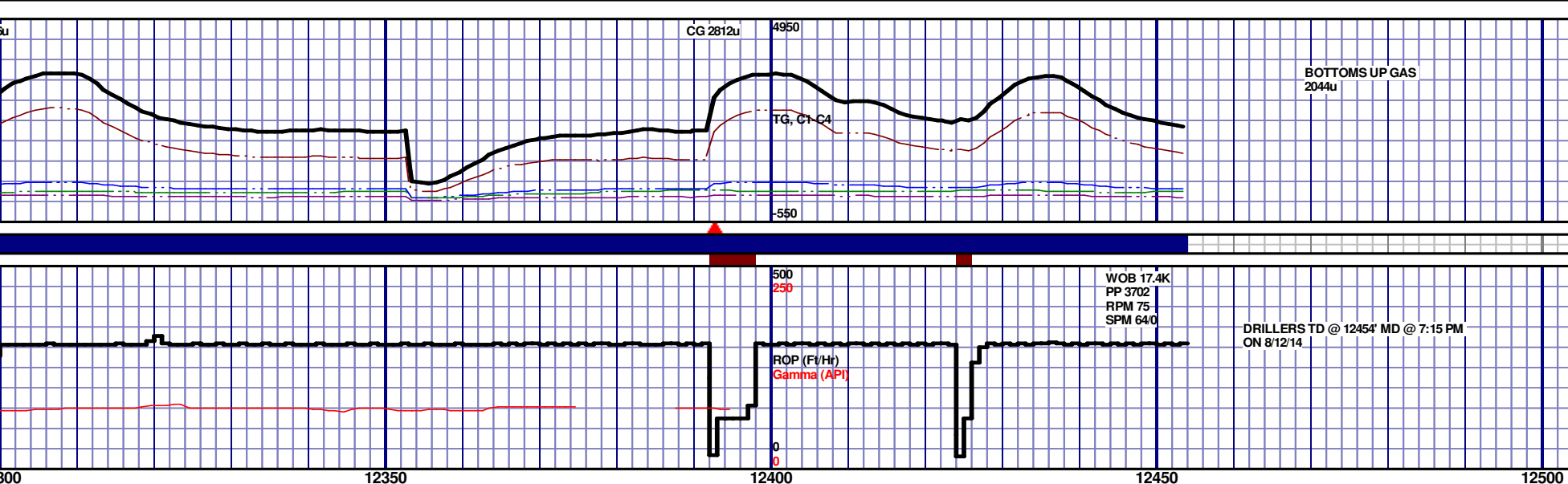
NIOBRARA C CHALK 12250' MD - 12300' MD



6950 TVD					7100					7250				
03 55%) MOTT LTGY- BLKY, FXLN TO CHLKY, PYR, 40% FREE MRL, FLOR, FNT BLSHWT O WWT RNG					12100' MD-12150' MD: CHK: 55% (CaCO3 55%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 45% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					12150' MD-12200' MD: CHK: 60% (CaCO3 55%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
12200' MD-12250' MD: CHK: 80% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					12250' MD-12300' MD: CHK: 70% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 12142 TVD 7102.25
INC 87.75 AZ 92.11
VS 5627.4

MD 12237 TVD 7104.19
INC 89.91 AZ 91.47
VS 5722.06



MD 12332 TVD 7104.44
INC 89.78 AZ 90.5
VS 5816.63

MD 12393 TVD 7104.61
INC 89.91 AZ 90.84
VS 5877.32

PTB MD 12454 TVD 7104.61
INC 89.91 AZ 90.84
VS 5938.03