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

### Customer Information

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

**Geologist:** Renee Clackler  
Noble Energy Inc.

### Mud Logging Details

**Logger:** Ross Apodaca &  
Scott Haney  
**Log Interval:** 5580' MD to 10220' MD  
**Start Date:** September 5, 2014  
**Release Date:** September 9, 2014

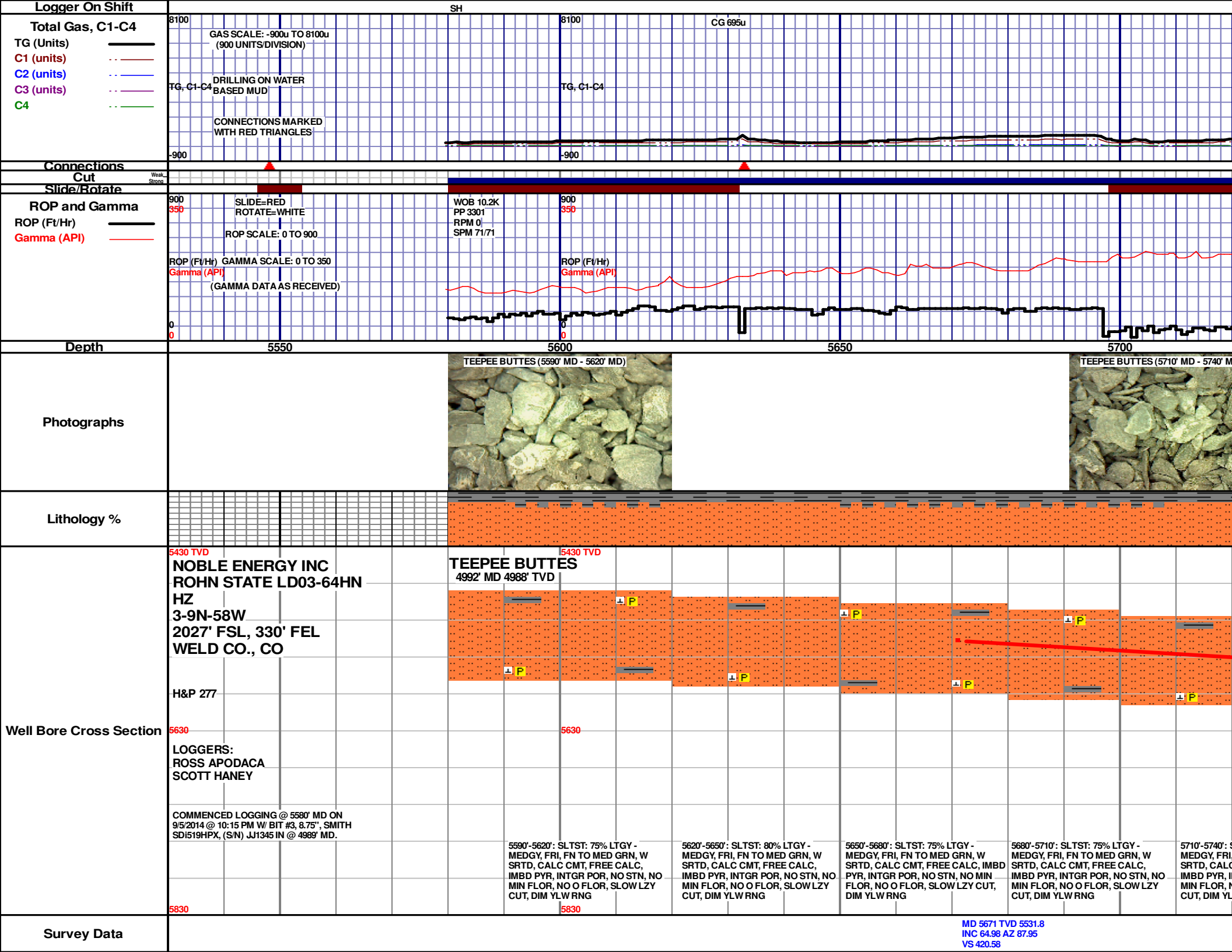
### Well Information

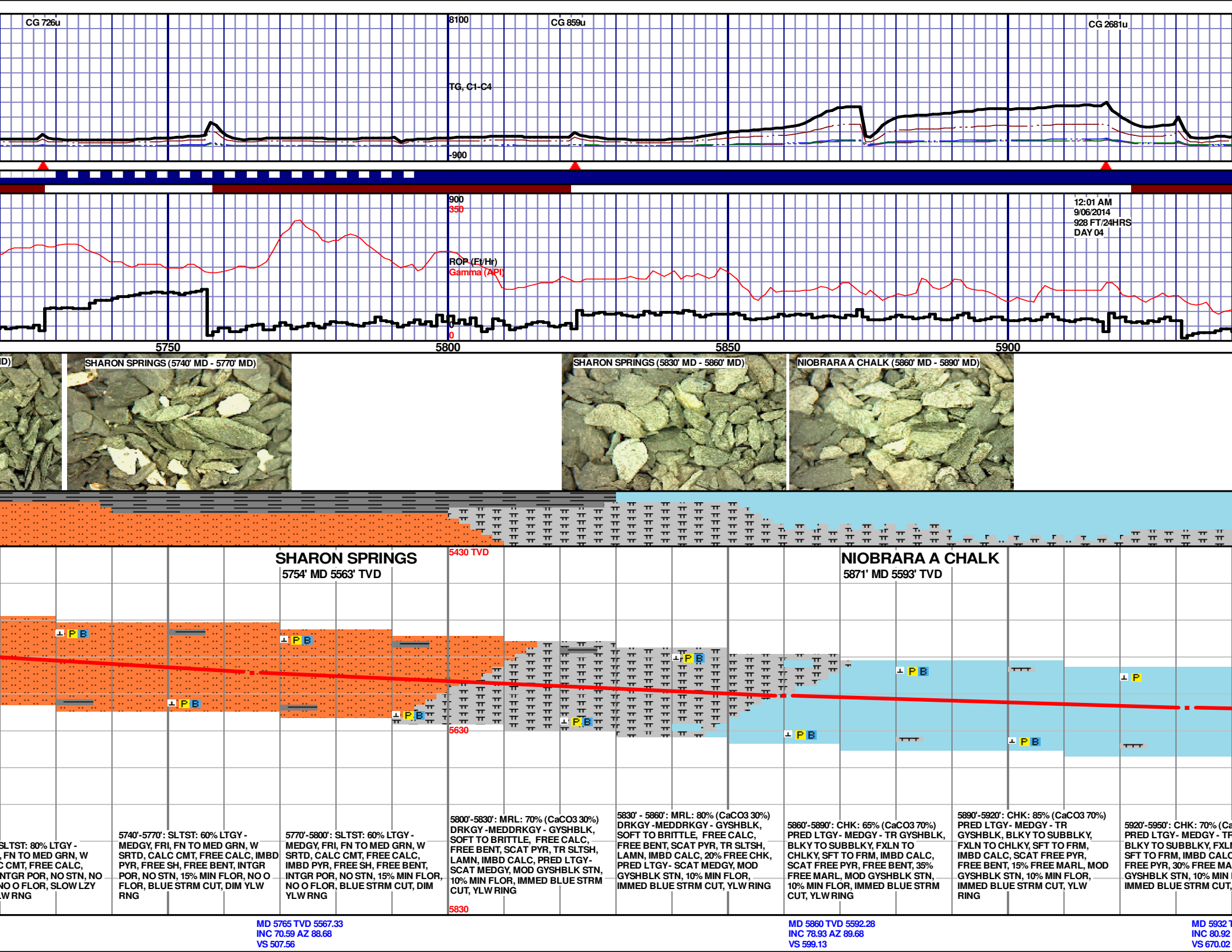
**Well Name:** Rohn State LD03-64HN HZ

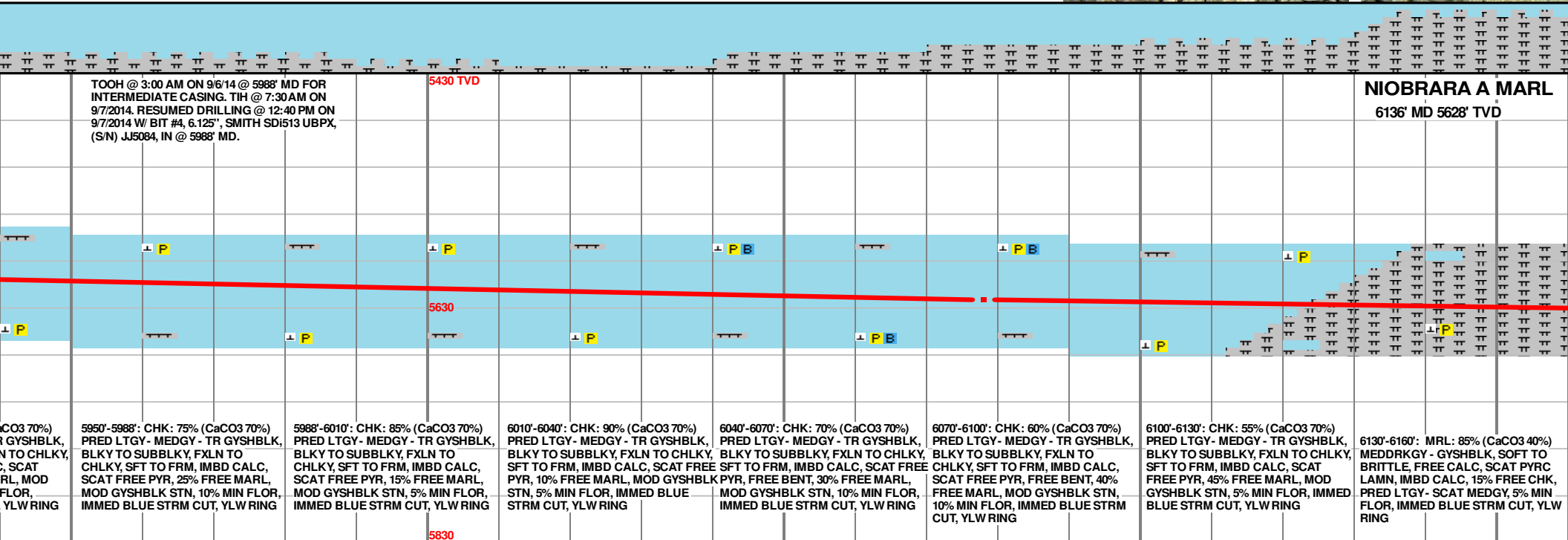
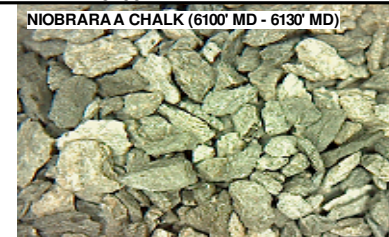
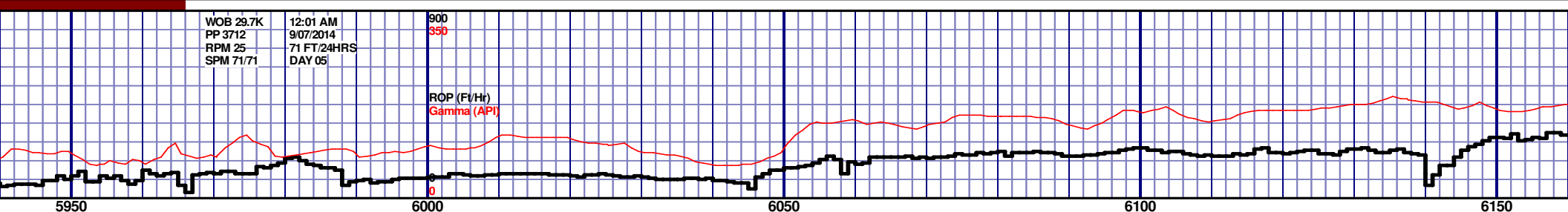
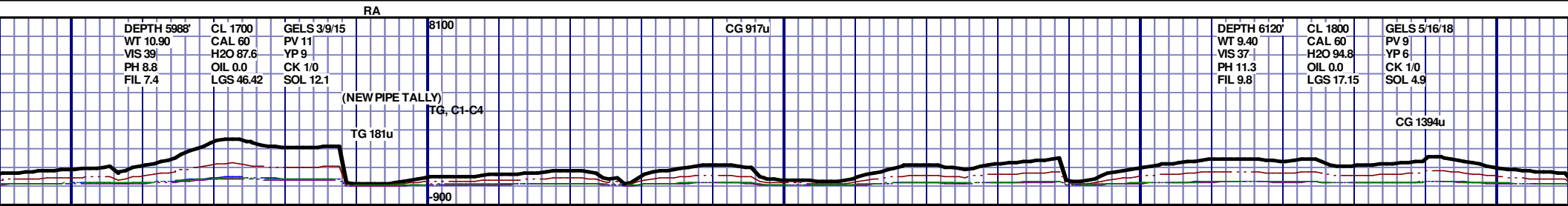
**Location:** 3-9N-58W  
2027' FSL, 330' FEL

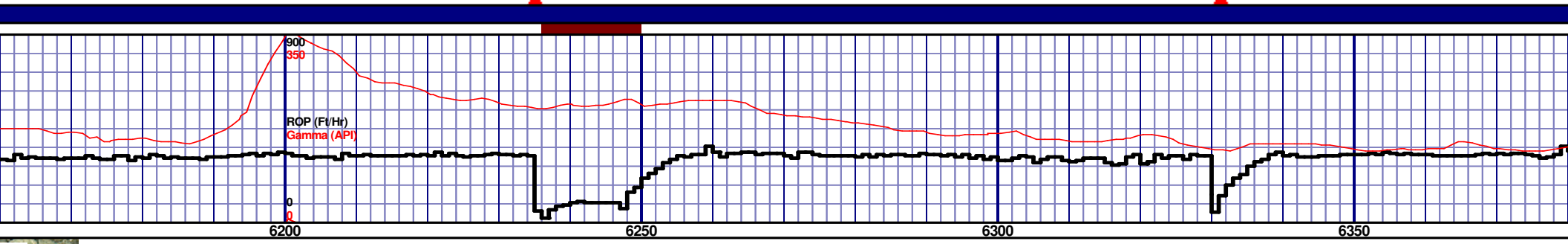
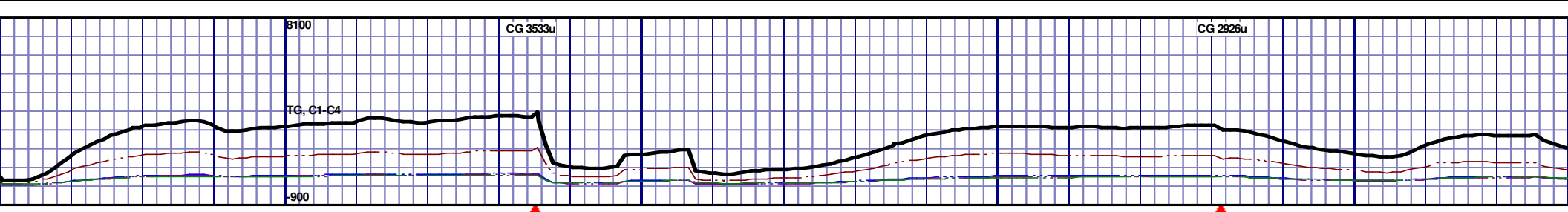
**County:** Weld  
**State:** Colorado

**Drilling Rig:** H&P 277  
**Total Depth:** 10220' MD  
**TD Date:** September 9, 2014  
**Formation:** Niobrara A Marl  
**KB Elevation:** 4725'  
**GR Elevation:** 4701'  
**API Number:** 05-123-37457-0000





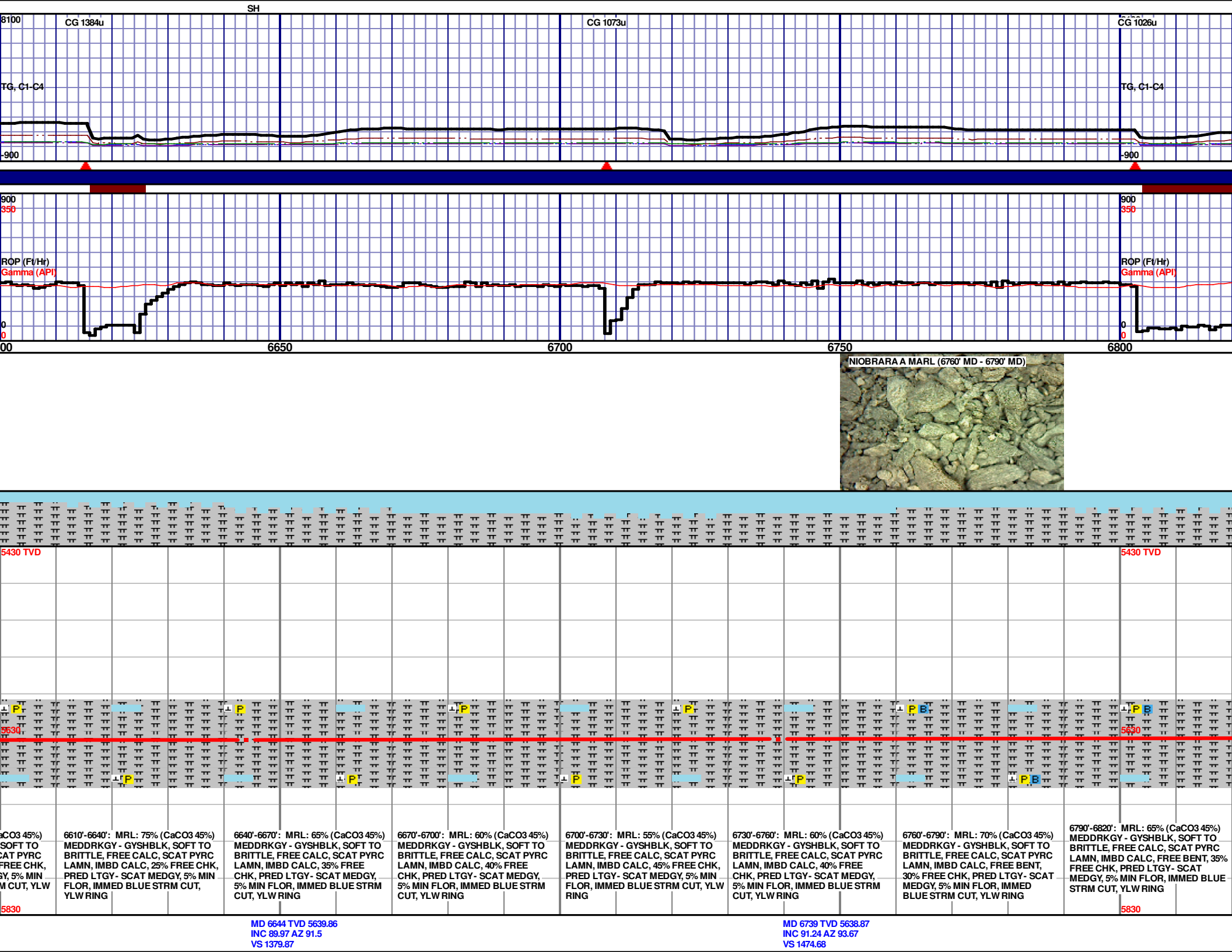


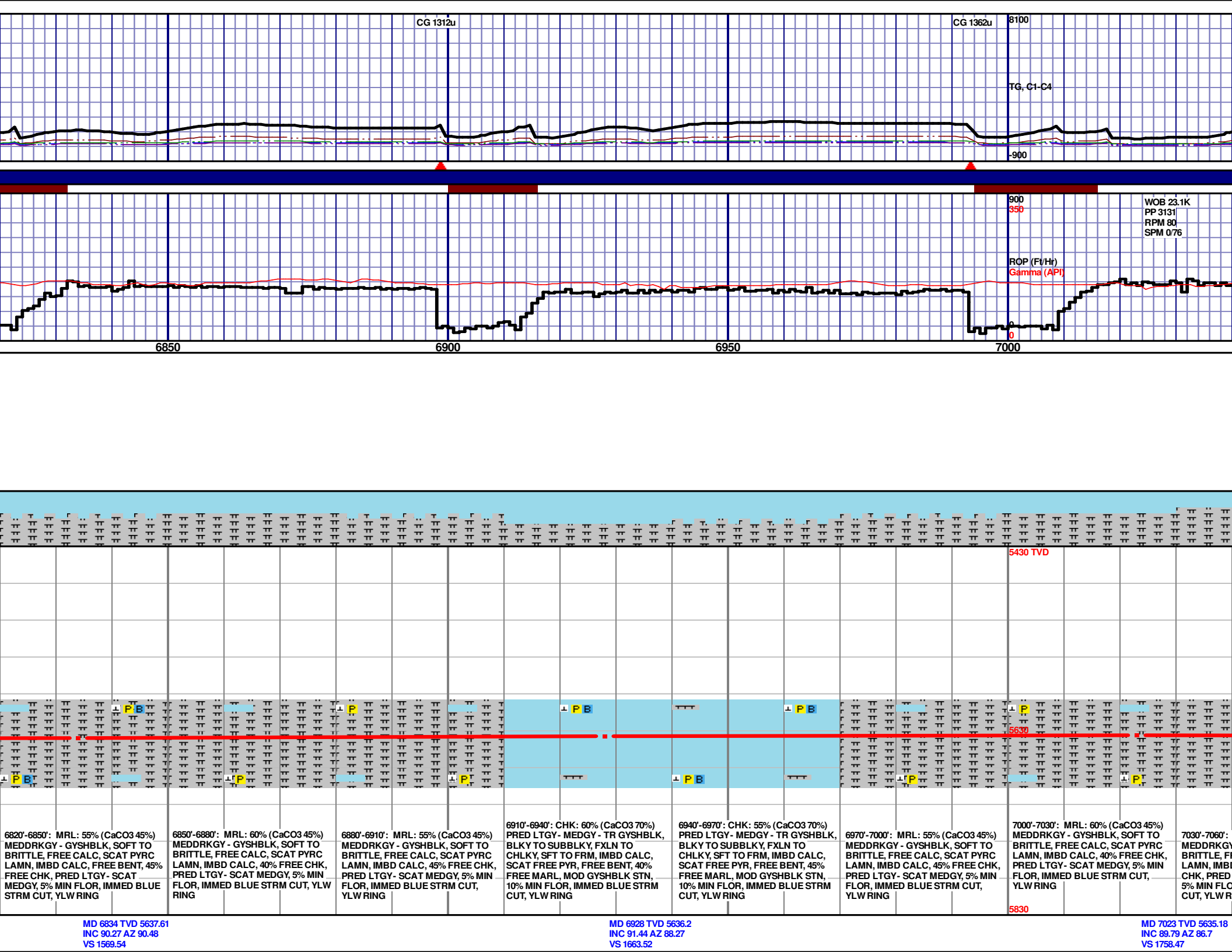


5430 TVD																			



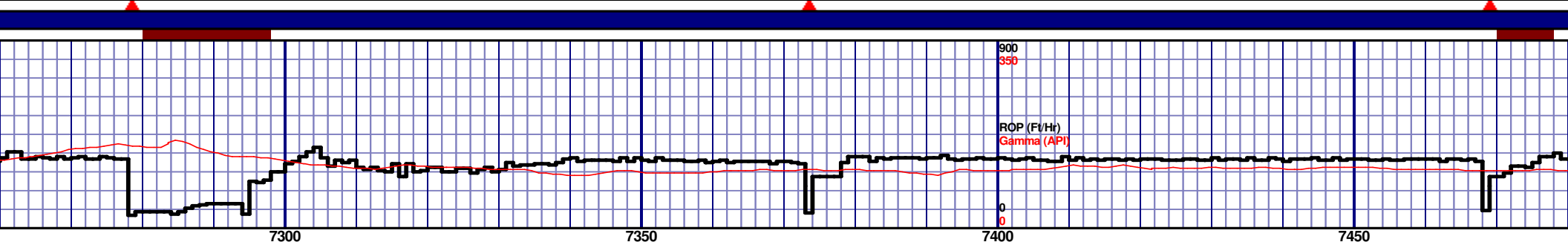
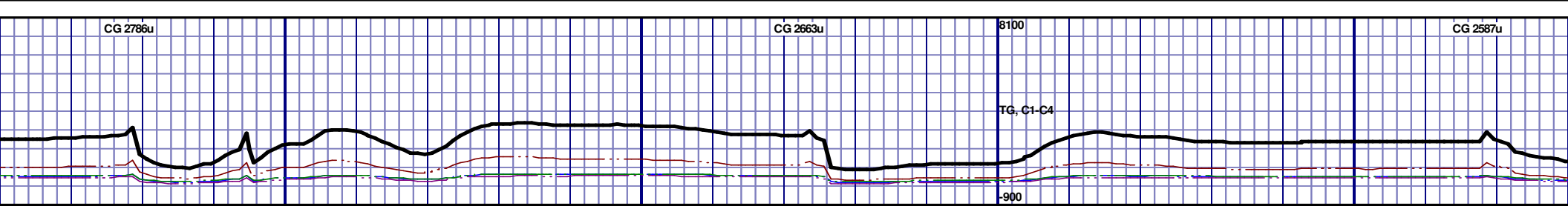




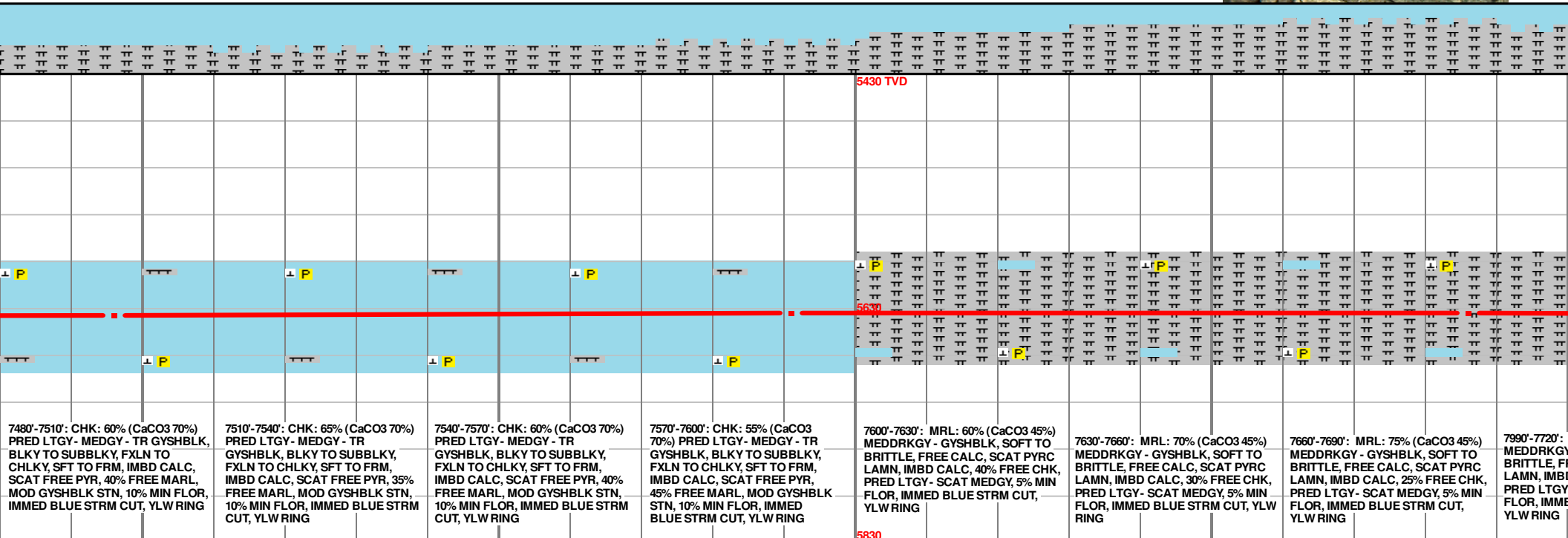
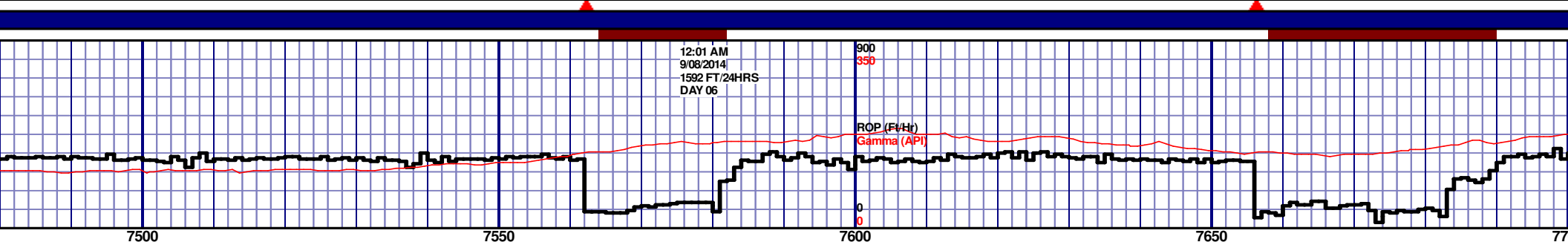
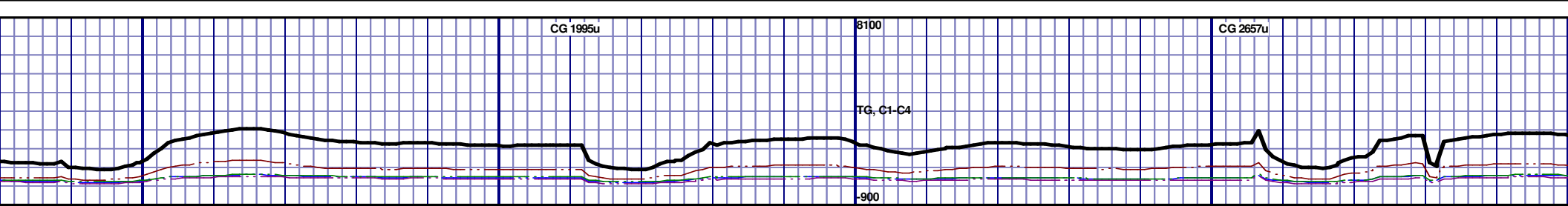


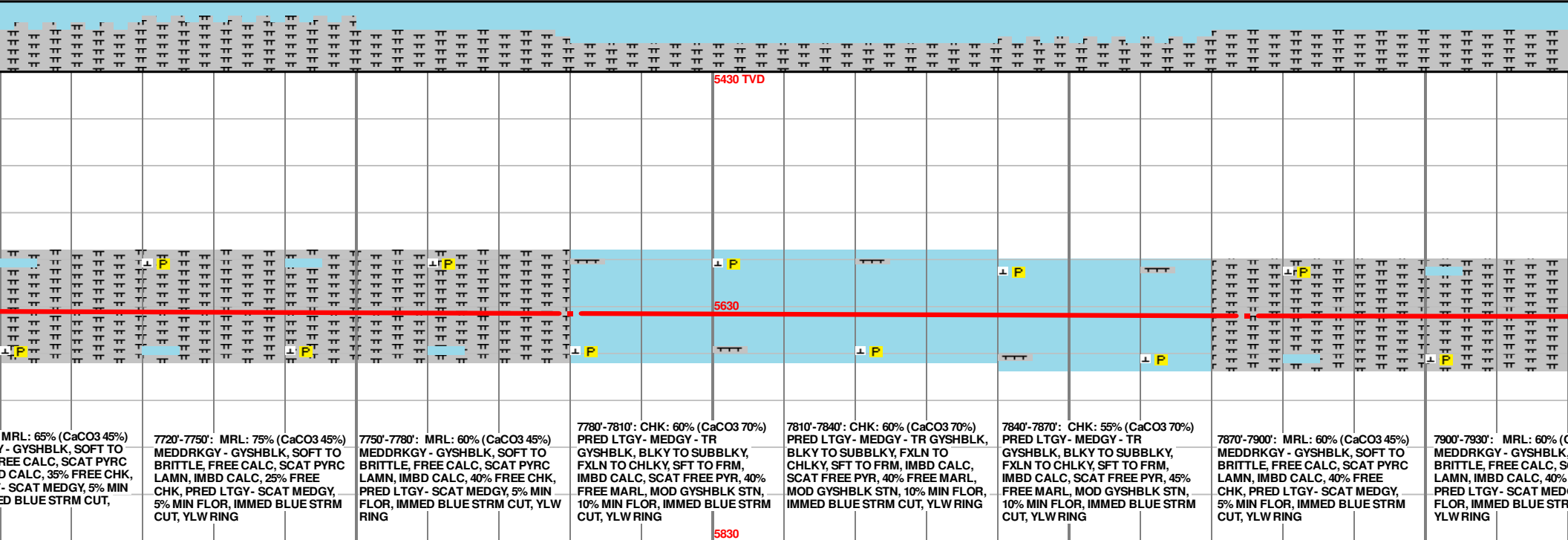
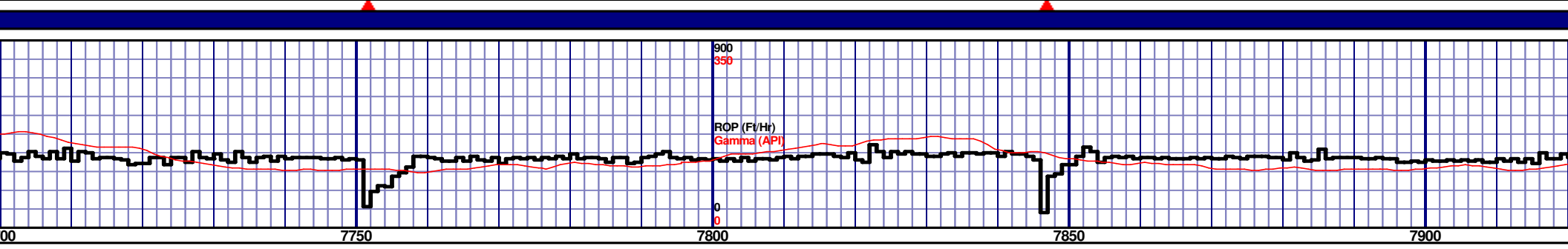
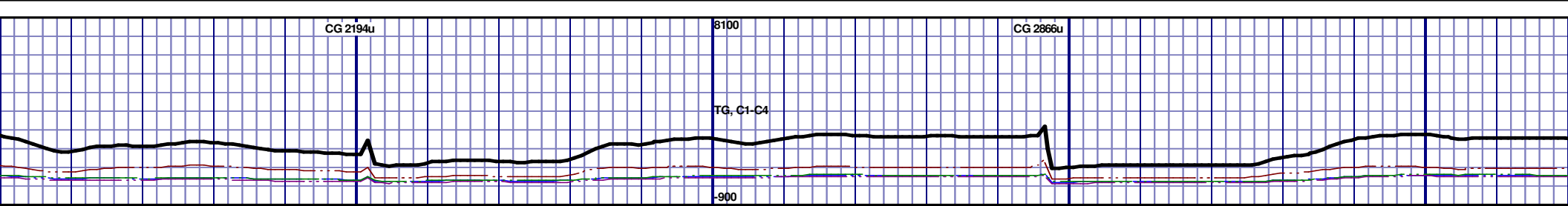






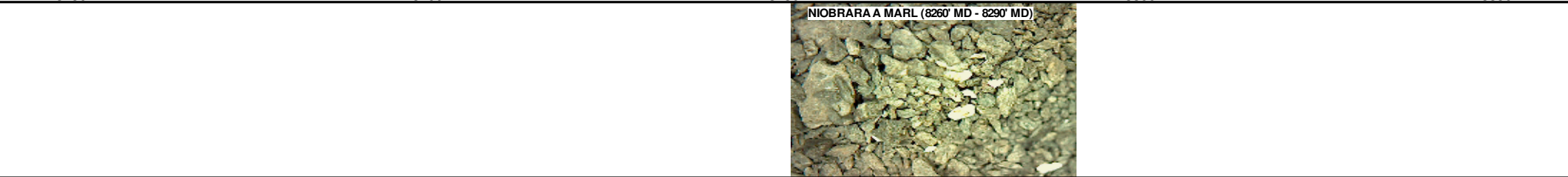
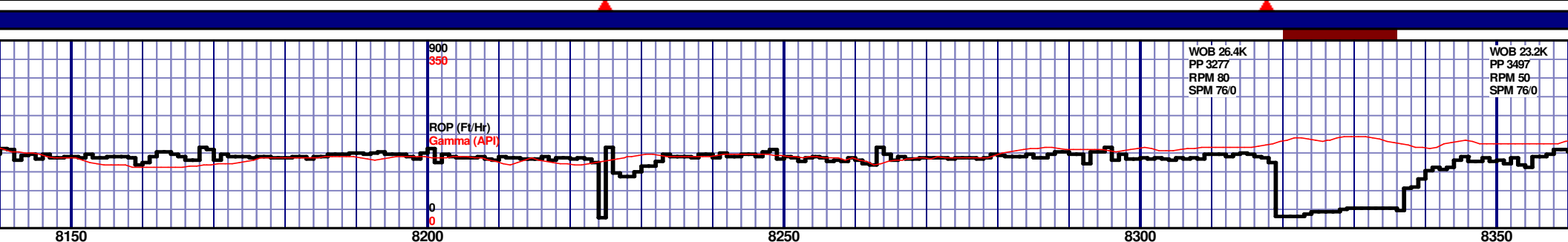
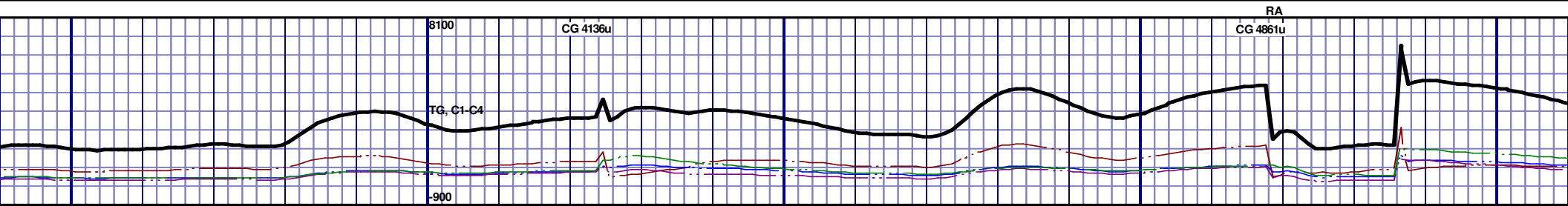
5430 TVD									
5630									
5830									
CO3 70%) GYSHBLK, N TO D CALC, EE MARL, MIN FLOR, YLW RING	7270'-7300': MRL: 55% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7300'-7330': MRL: 60% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7330'-7360': CHK: 60% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 40% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7360'-7390': CHK: 65% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 35% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7390'-7420': CHK: 60% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 40% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7420'-7450': CHK: 60% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 40% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7450'-7480': CHK: 65% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 35% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING		



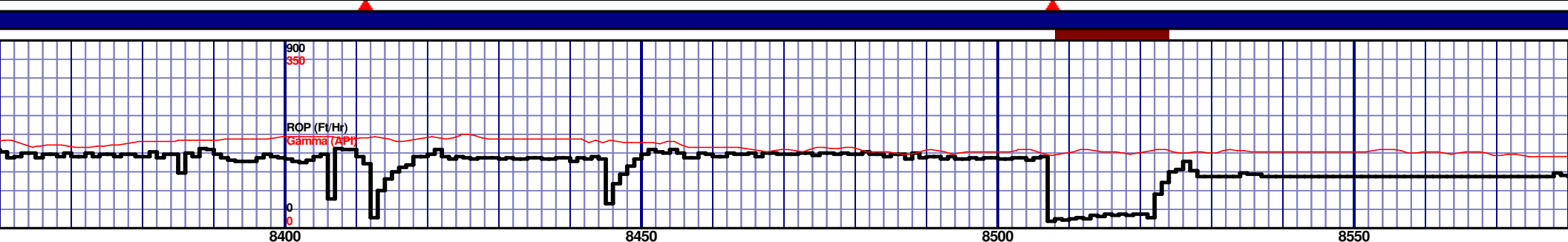




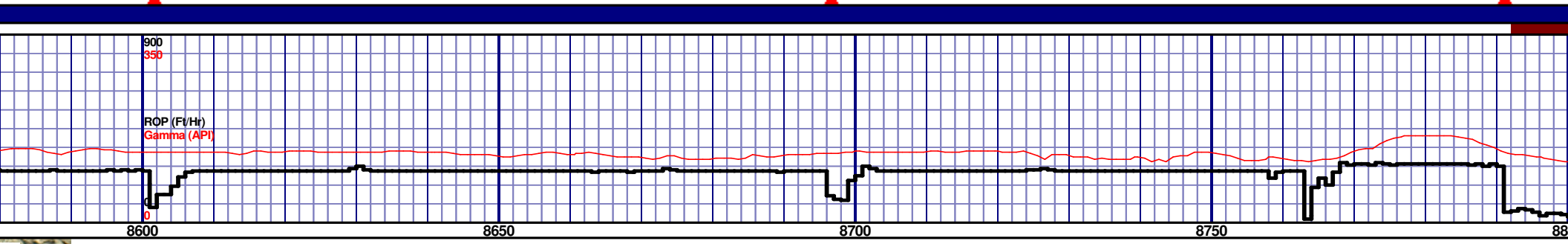
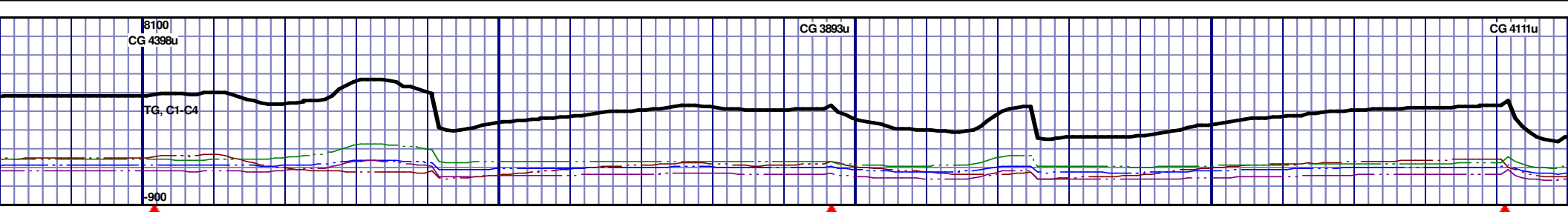
CaCO3 45%) SOFT TO CAT PYRC FREE CHK, GY, 5% MIN IM CUT,	7930'-7960': MRL: 55% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7960'-7990': MRL: 55% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7990'-8020': MRL: 60% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8020'-8050': MRL: 60% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8050'-8080': MRL: 70% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8080'-8110': MRL: 60% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8110'-8140': MRL: 55% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING
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8140'-8170': MRL: 65% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8170'-8200': MRL: 65% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8200'-8230': MRL: 55% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8230'-8260': MRL: 60% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8260'-8290': MRL: 65% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8290'-8320': MRL: 65% (CaCO3 45%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8320'-8350': MRL: 70% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8350'-8380': MRL: 70% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING
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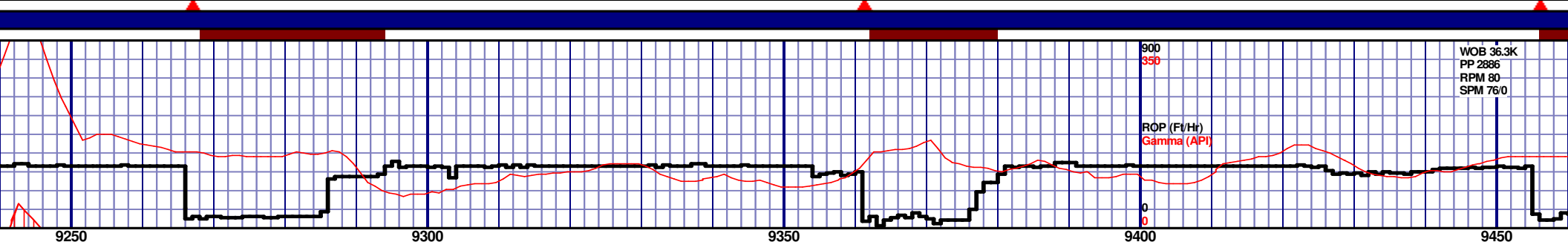
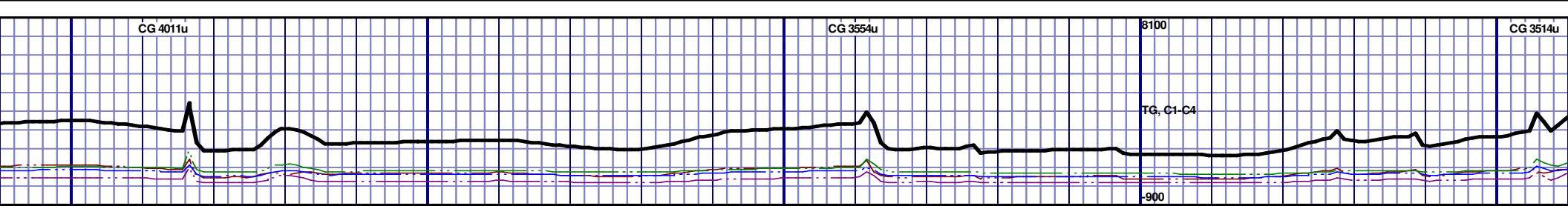




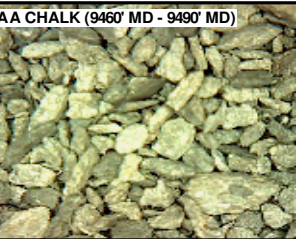
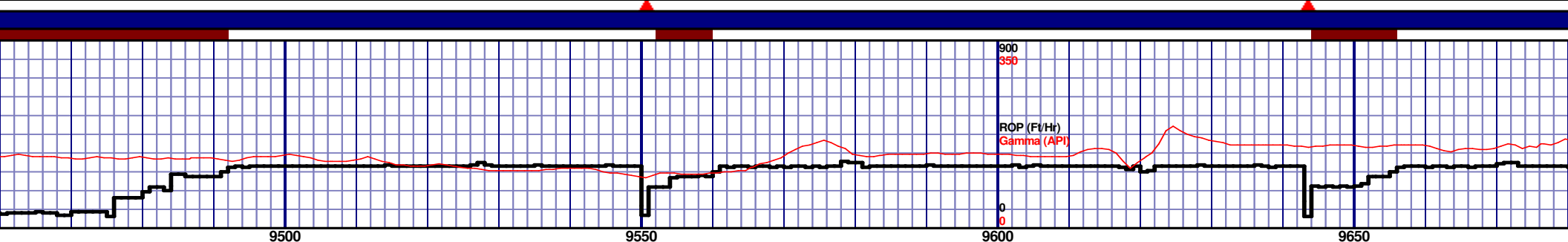
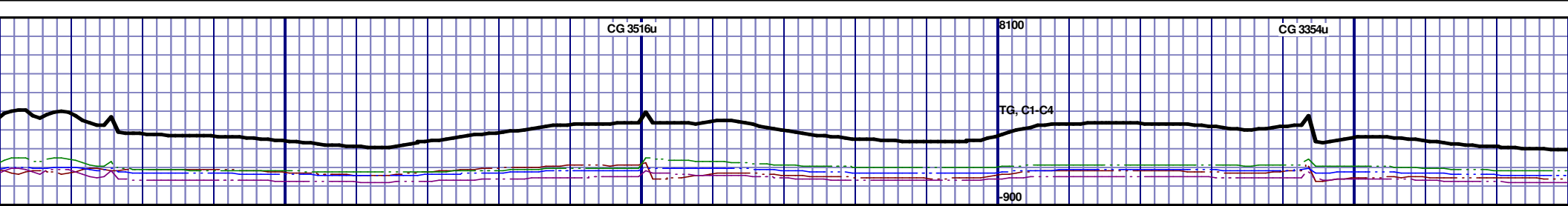
5430 TVD									
5830									
5830									







NIORARAA CHALK 9296' MD 5639' TVD									
5430 TVD									
5630									
5830									
aCO3 40%) SOFT TO SCAT PYRC FREE CHK, GY, 5% MIN M CUT,	9250'-9280': MRL: 70% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9280'-9310': MRL: 55% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9310'-9340': CHK: 75% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 25% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9340'-9370': CHK: 70% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9370'-9400': CHK: 85% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 15% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9400'-9430': CHK: 90% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 10% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9430'-9460': CHK: 80% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 20% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING		



AA CHALK (9460' MD - 9490' MD)									
9460'-9490': CHK: 70% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9490'-9520': CHK: 65% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 35% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9520'-9550': CHK: 65% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 35% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9550'-9580': CHK: 70% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9580'-9610': CHK: 90% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 10% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9610'-9640': CHK: 80% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 20% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9640'-9670': CHK: 60% (CaCO3 60%) PRED LTGY - MEDGY, BLKYTO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 40% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9670'-9700': MEDDRKG BRITTLE, F LAMN, IMB PRED LTGY FLOR, IMME RING									

MD 9484 TVD 5640.25  
INC 88.45 AZ 90.66  
VS 4218.02

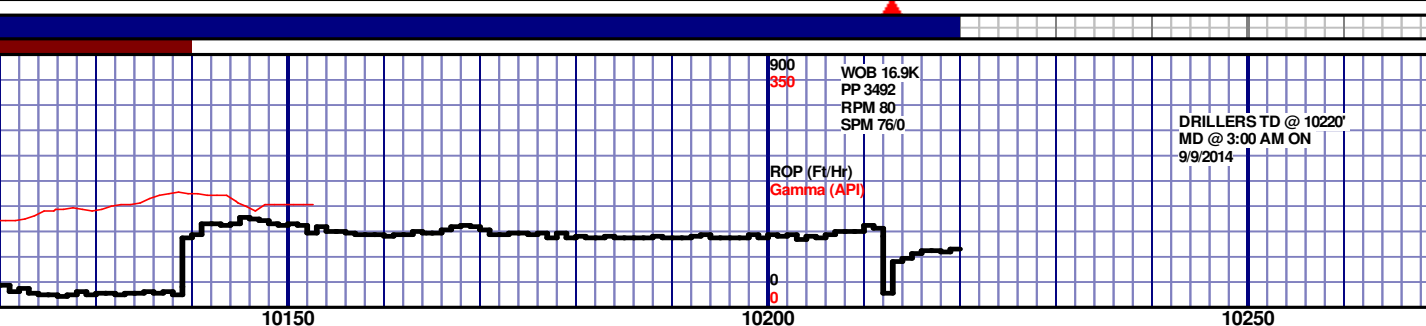
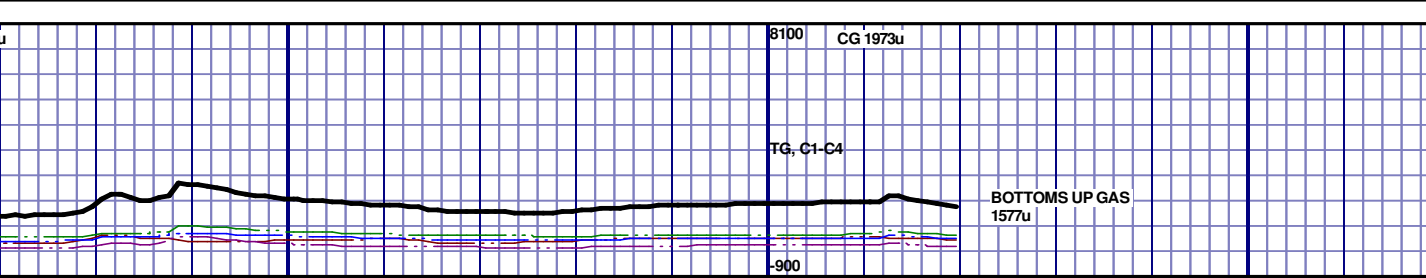
MD 9579 TVD 5642.67  
INC 88.63 AZ 91.18  
VS 4312.94

MD 9673  
INC 88.8  
VS 4406.8









10120'-10150': MRL: 55% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10150'-10180': MRL: 60% (CaCO3 40%) MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10180'-10220': CHK: 55% (CaCO3 60%) PRED LTGY - MEDGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 45% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING
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RELEASED 9/9/2014

TD @ 10220' MD

THANK YOU FROM  
ROSS APODACA,  
SCOTT HANEY, AND  
HORIZON WELL  
LOGGING, LLC