



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

phone 918.925.9739

fax 866.534.4559

WWW.HZMUD.COM/25

Customer Information

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

Geologist: Teresa Malesardi
Noble Energy Inc.

Mud Logging Details

Logger: Cory Shorette & Brian Whitfield

Log Interval: 6650' MD to 11118' MD

Start Date: October 10, 2013

Release Date: October 13, 2013

Well Information

Well Name: Crow Creek State
AC36-74HN HZ

Location: 36-7N-63W
270' FSL, 1538' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 277

Total Depth: 11118' MD

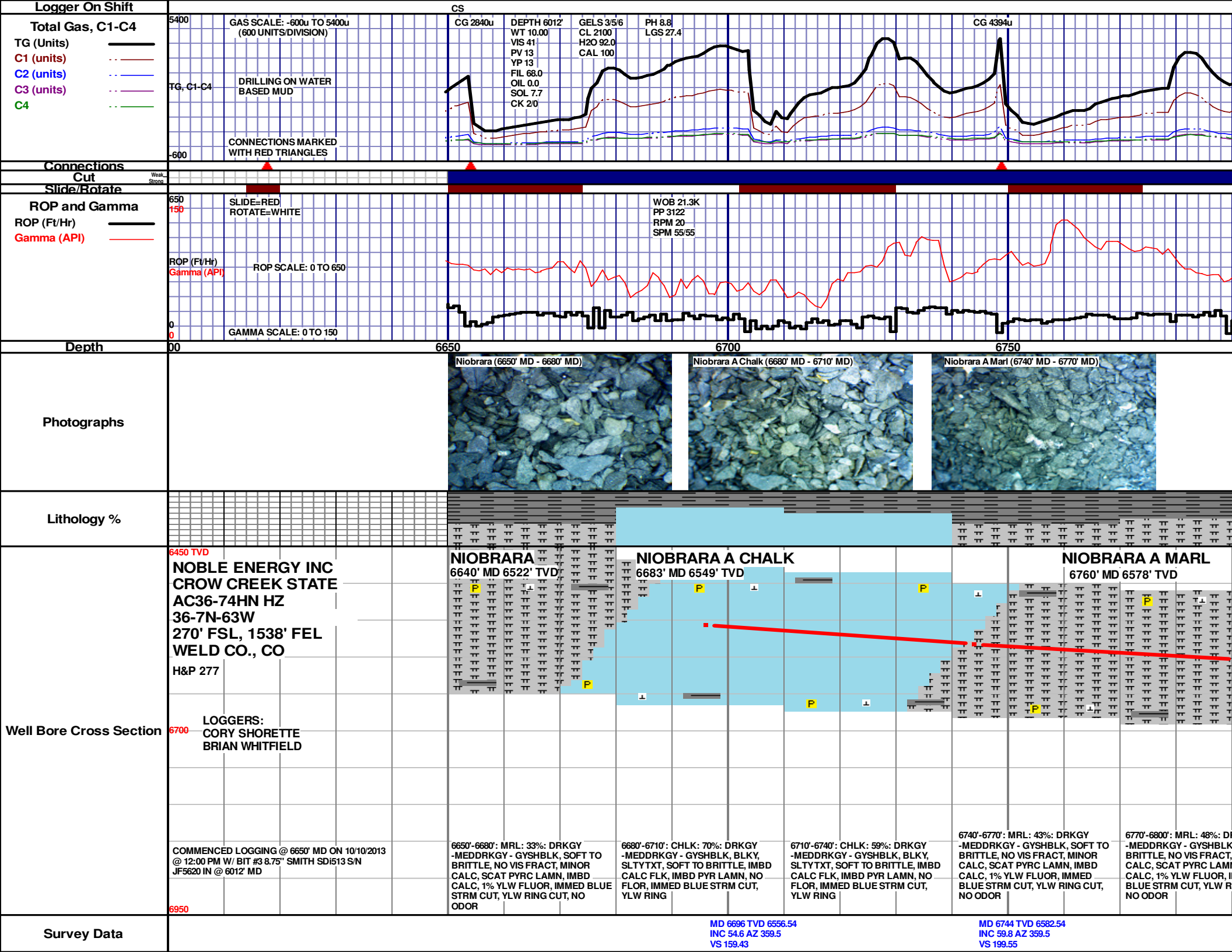
TD Date: October 13, 2013

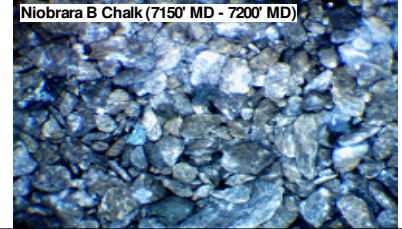
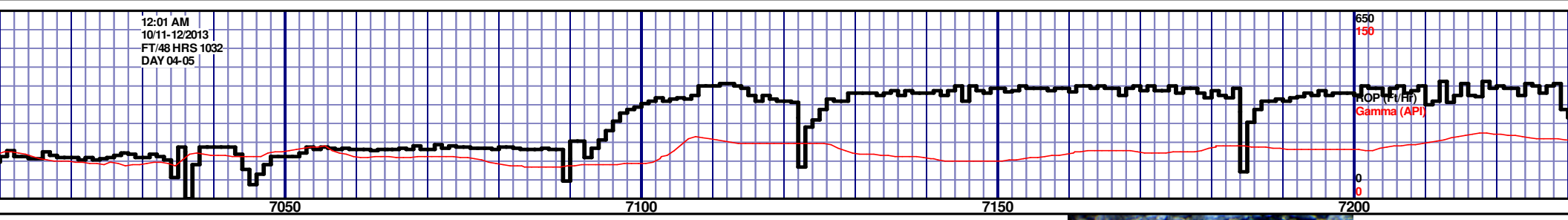
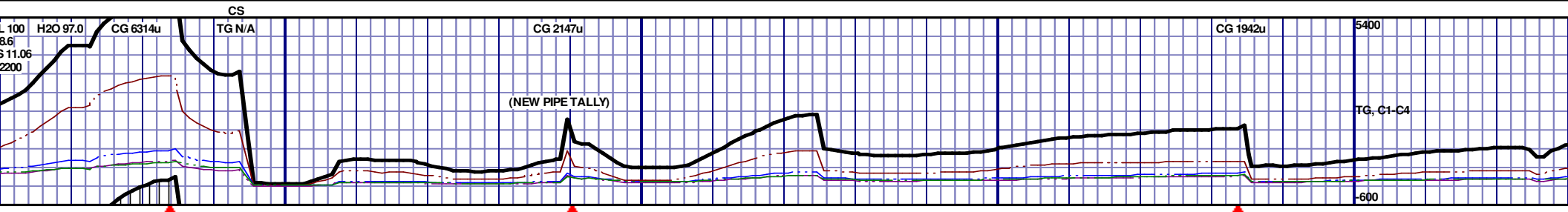
Formation: Niobrara B Chalk

KB Elevation: 4871'

GR Elevation: 4847'

API Number: 05-123-37425-0000



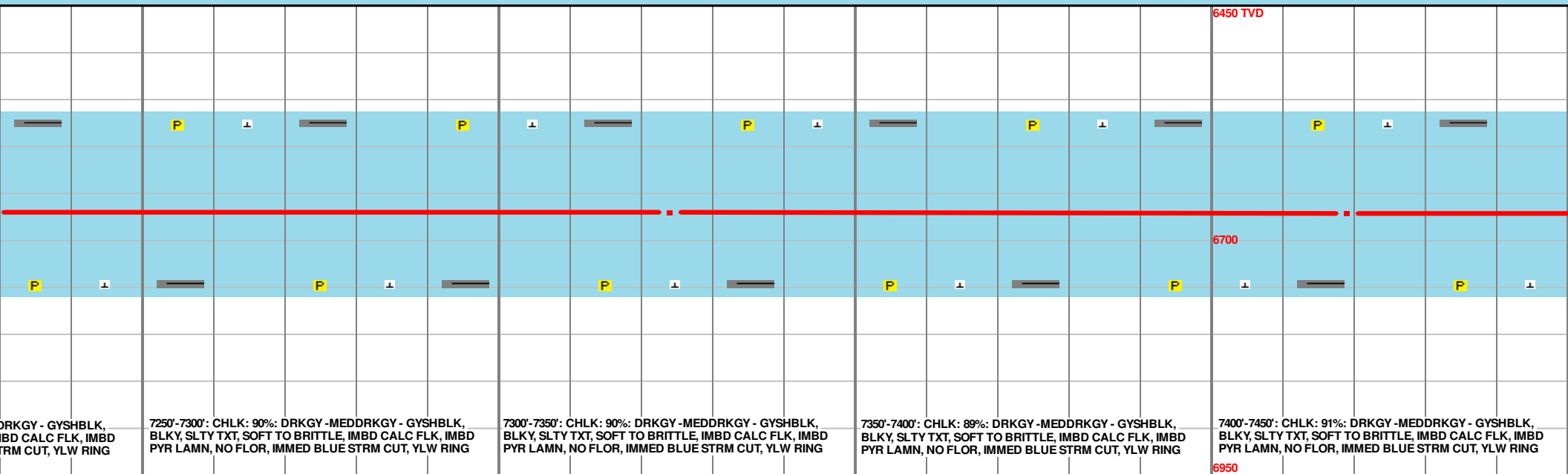
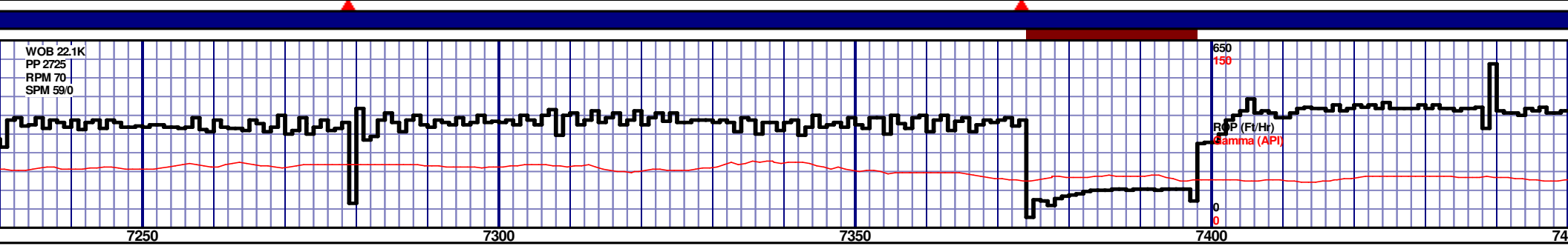
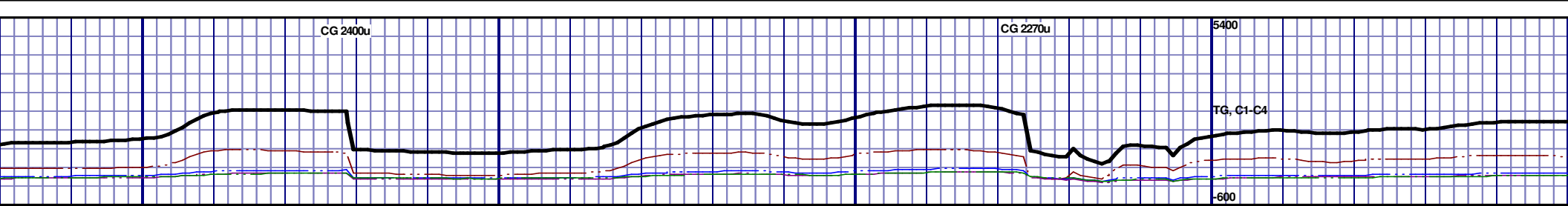


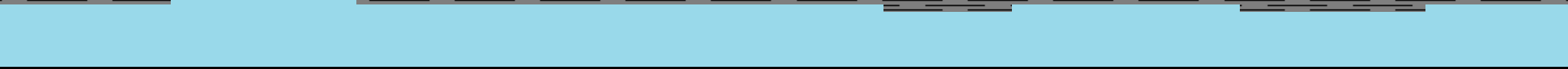
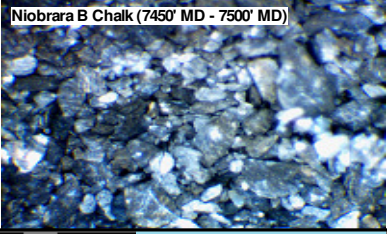
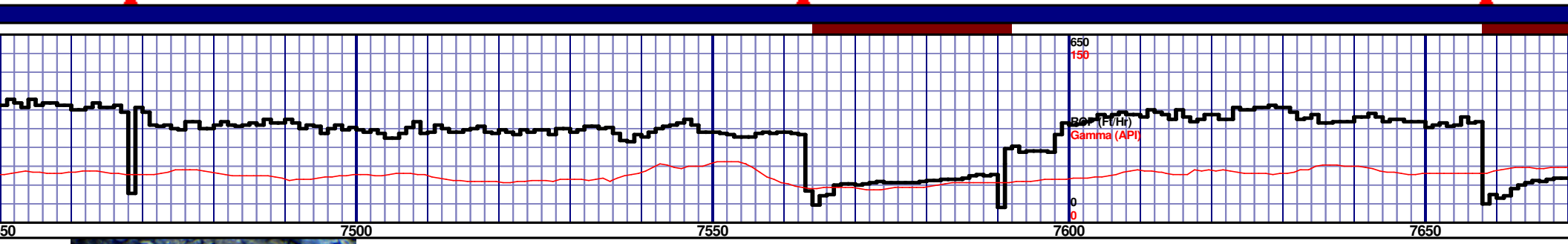
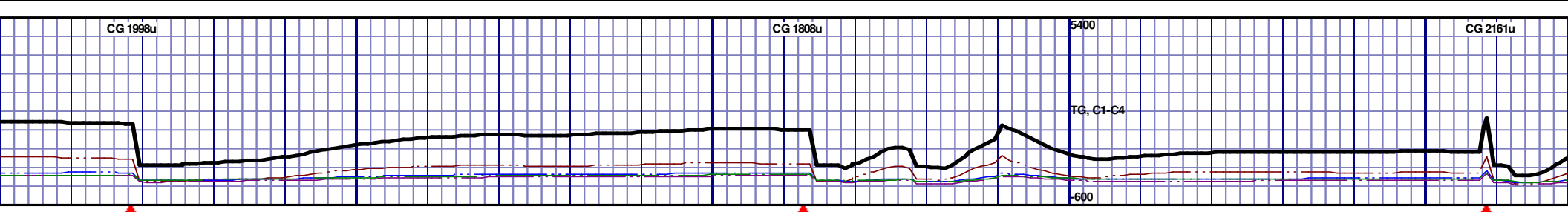
TOOH @ 7:00 PM ON 10/10/13 @ 7044' MD FOR INTERMEDIATE CASING. TIH @ 2:10 AM ON 10/12/13. RESUMED DRILLING @ 7:30 AM ON 10/12/2013 W/ BIT #4 6.125" SMITH MDI513 S/N JH2807 IN @ 7044' MD.







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P	I		P	I		P	I		P	I		P	I

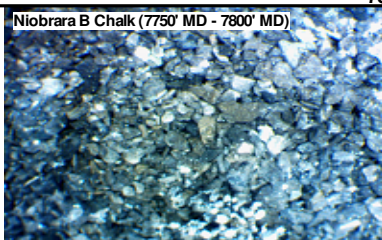
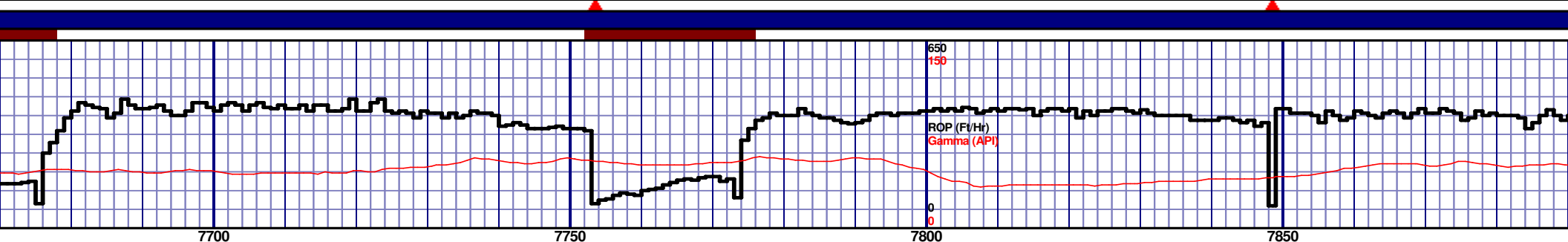
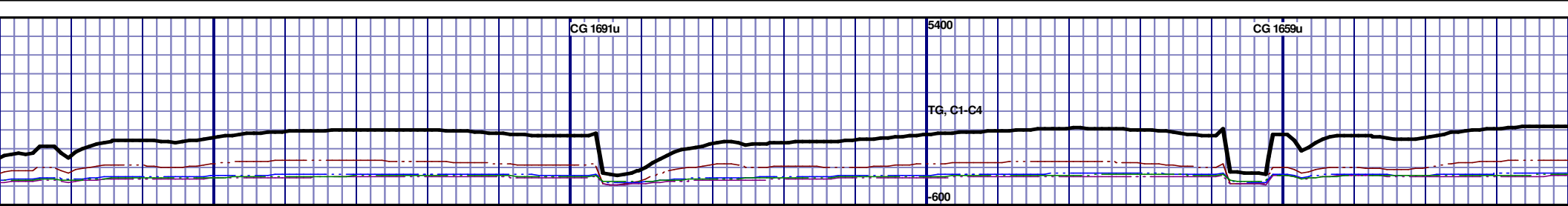
MD 7070 TVD 6662.46
INC 86.9 AZ 359.6
VS 510.69

MD 7133 TVD 6665.65
INC 87.3 AZ 359.7
VS 573.26





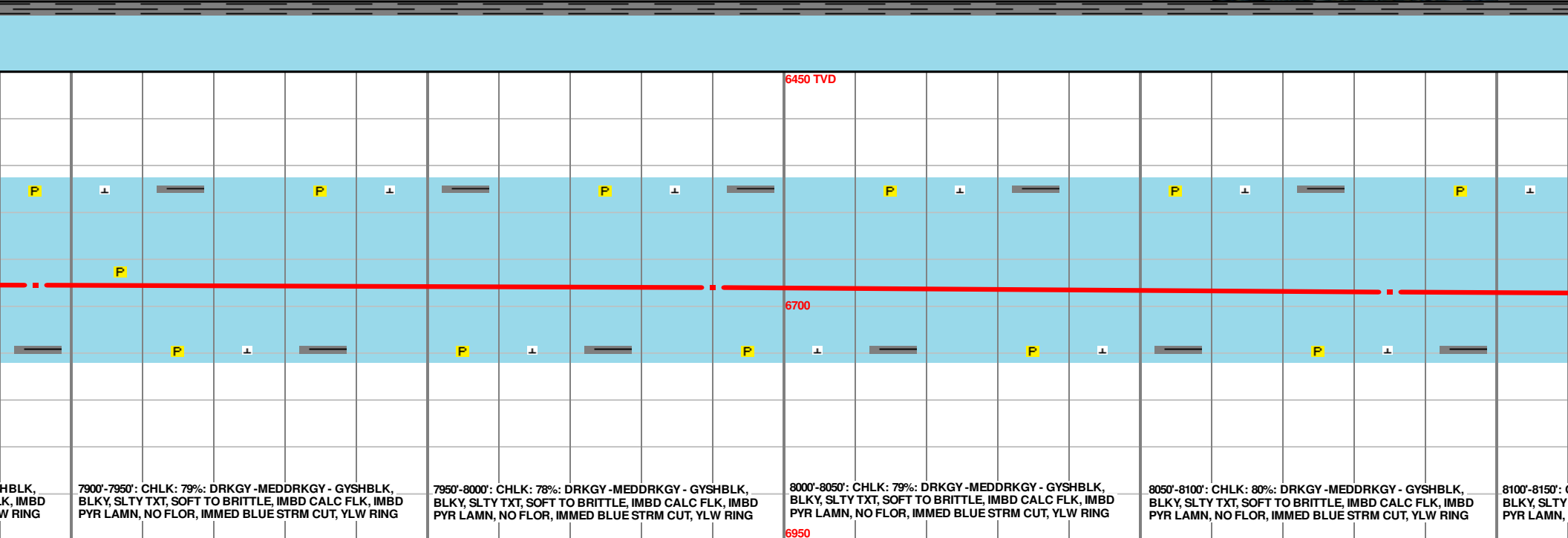
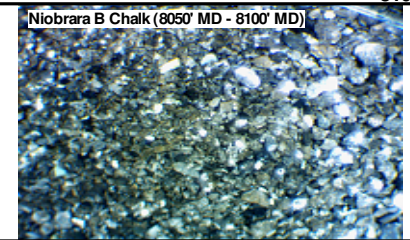
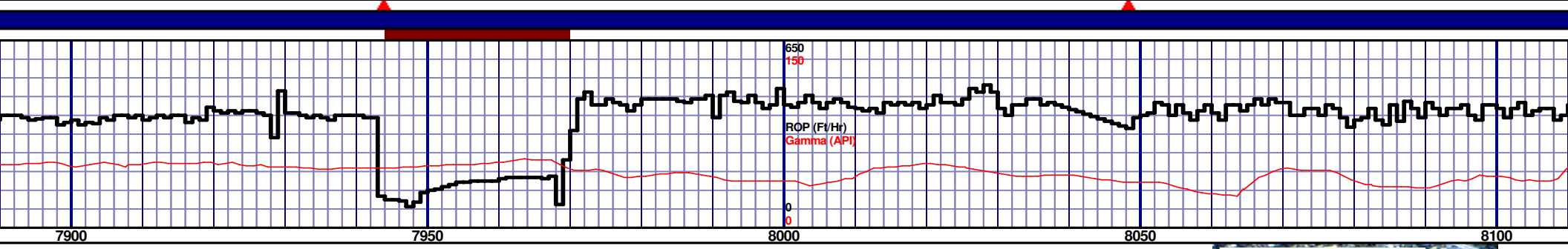
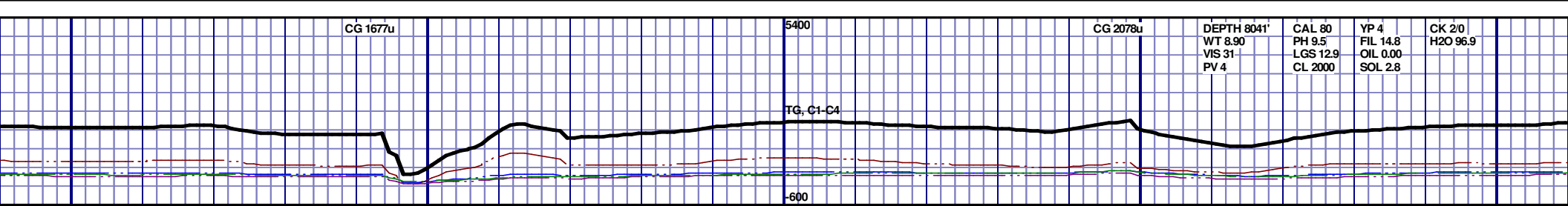
																							

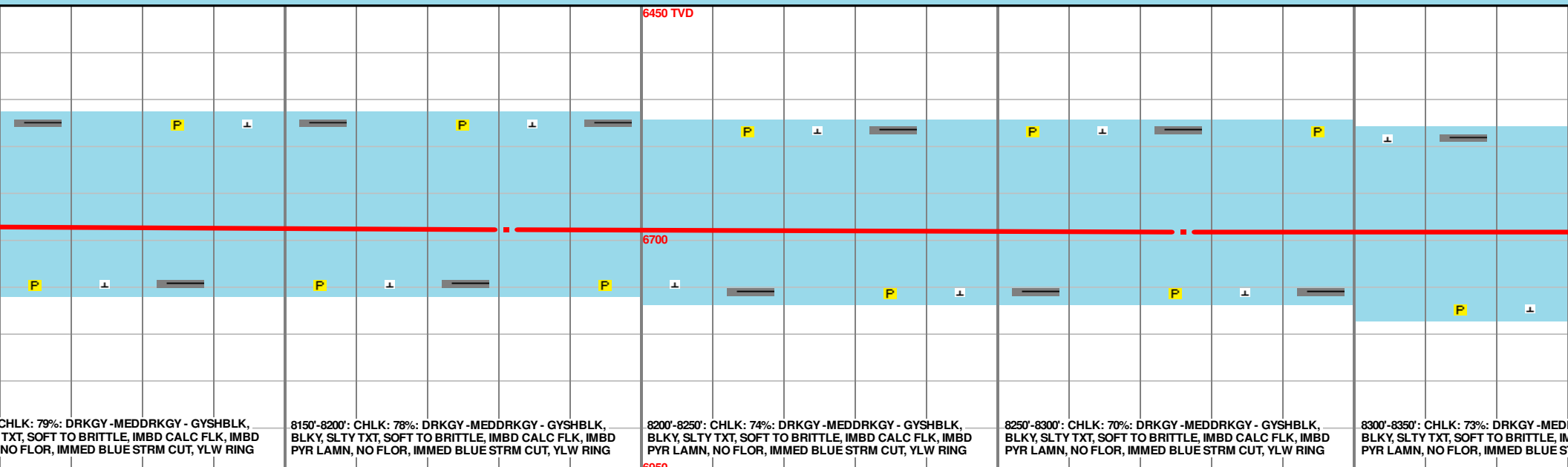
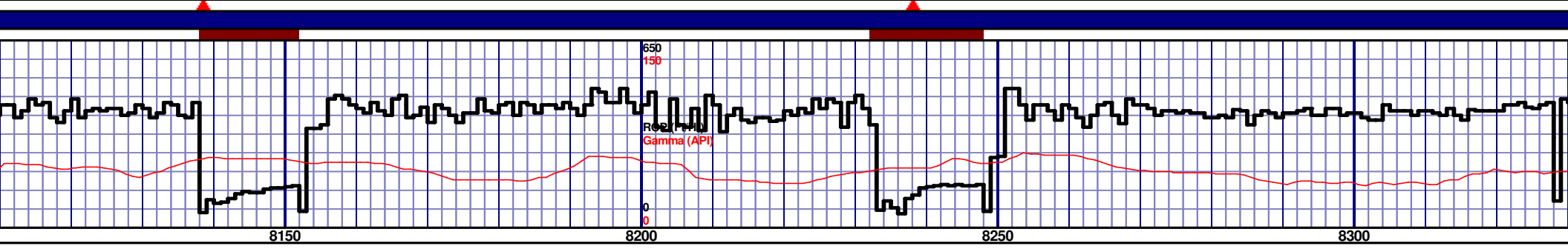
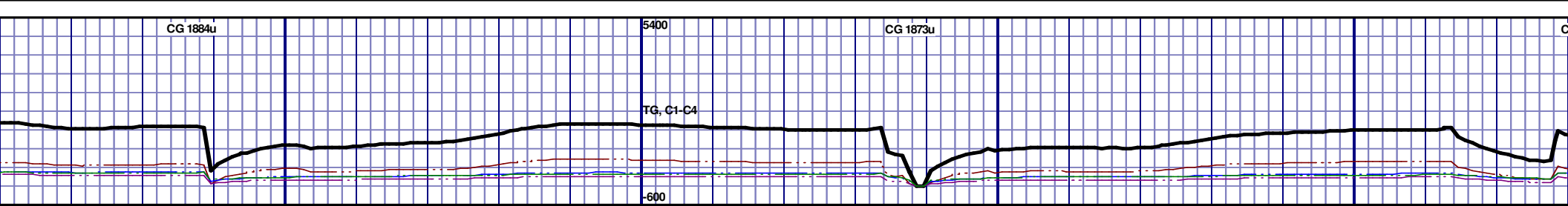


7700'-7750': CHLK: 88%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7750'-7800': CHLK: 85%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7800'-7850': CHLK: 81%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7850'-7900': CHLK: 78%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING		
7700'-7750': CHLK: 88%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7750'-7800': CHLK: 85%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7800'-7850': CHLK: 81%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING			7850'-7900': CHLK: 78%; DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING		

MD 7704 TVD 6673.06
INC 89.2 AZ 0.3
VS 1141.93

MD 7800 TVD 6675.16
INC 88.3 AZ 0.6
VS 1237.22





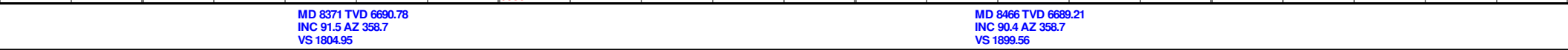
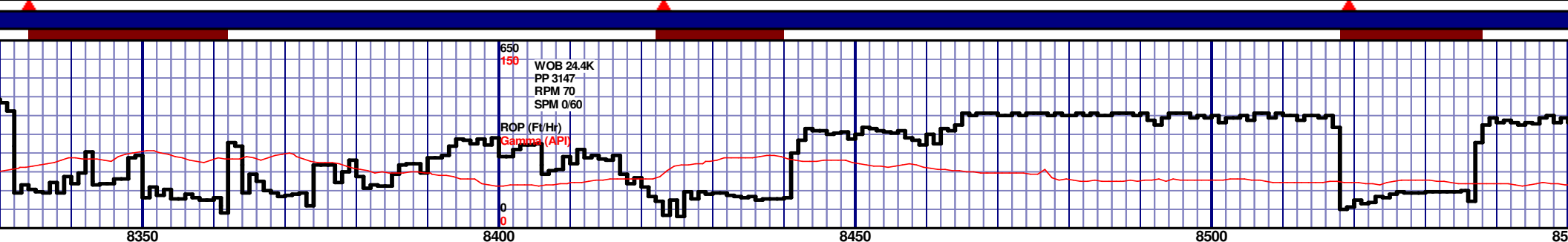
CHLK: 79%: DRKGY - MEDDRKGY - GYSHBLK, TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD NO FLOR, IMMED BLUE STRM CUT, YLW RING

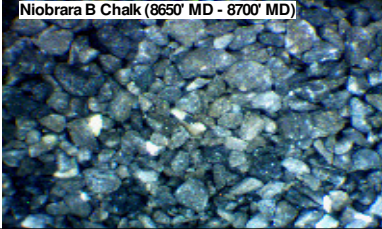
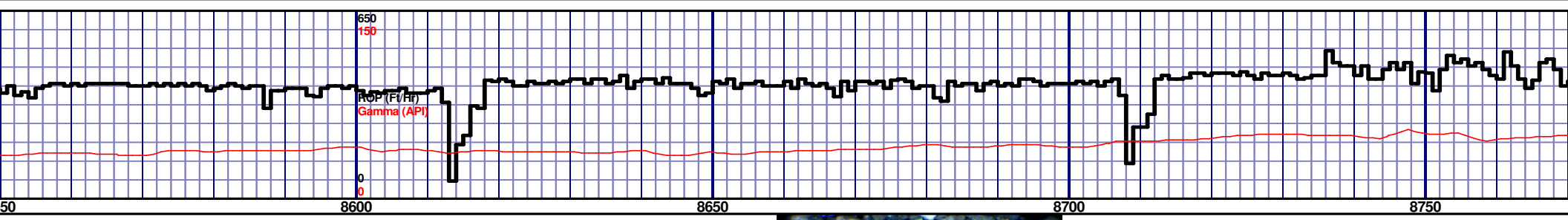
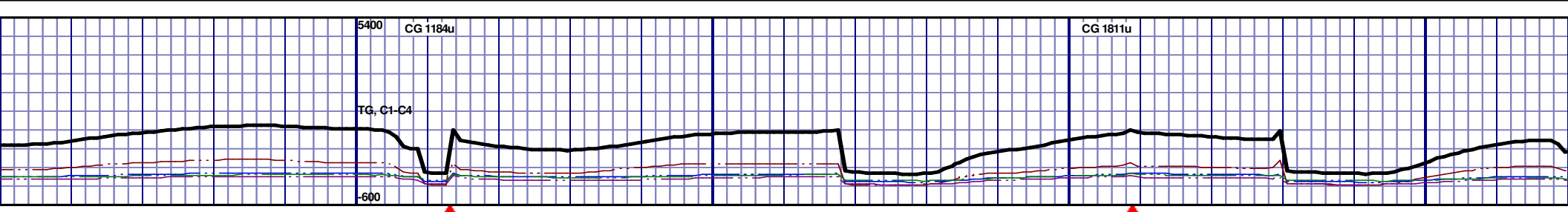
8150'-8200': CHLK: 78%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING

8200'-8250': CHLK: 74%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING

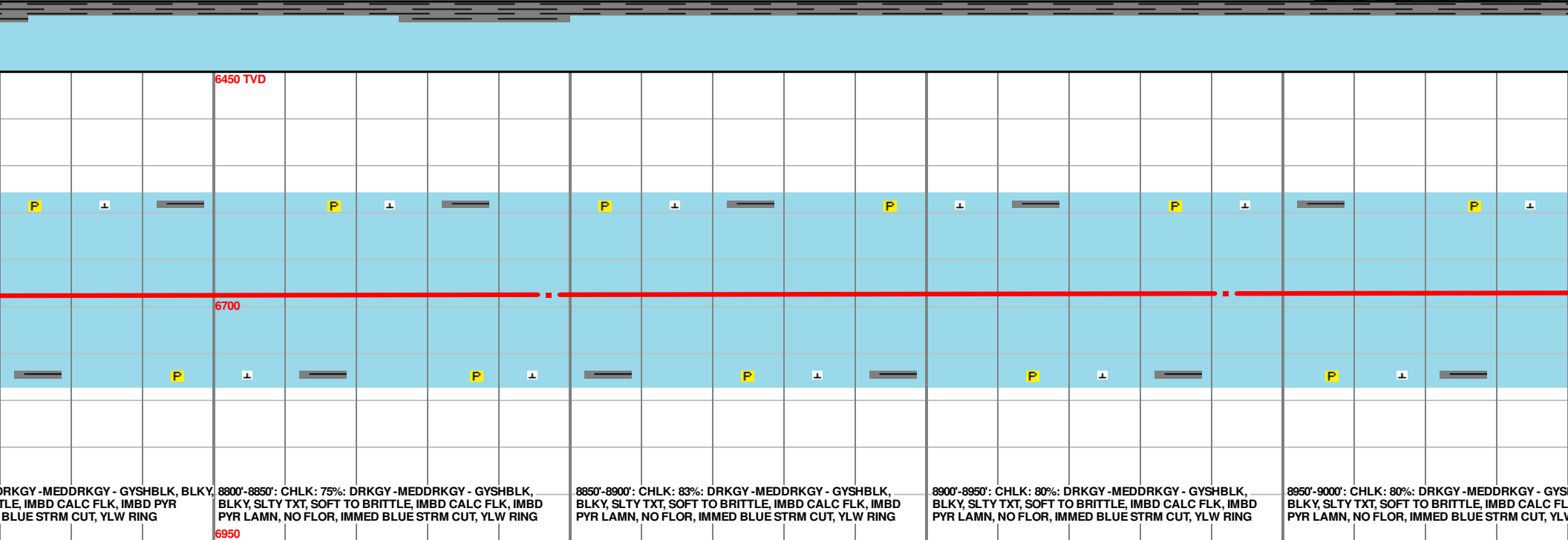
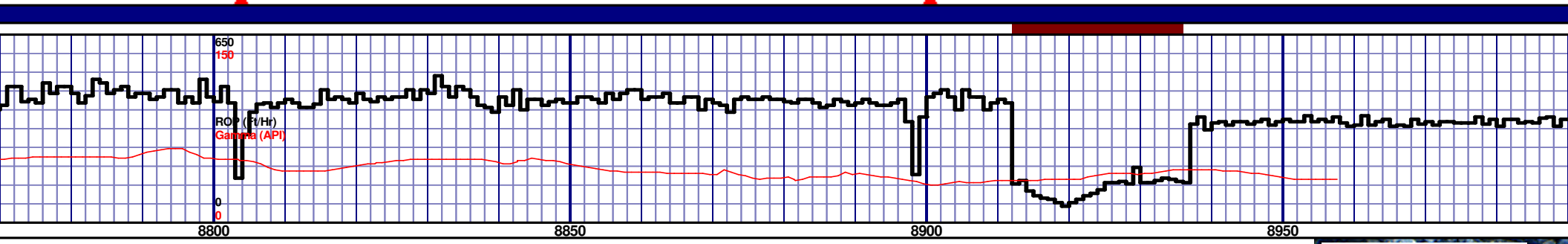
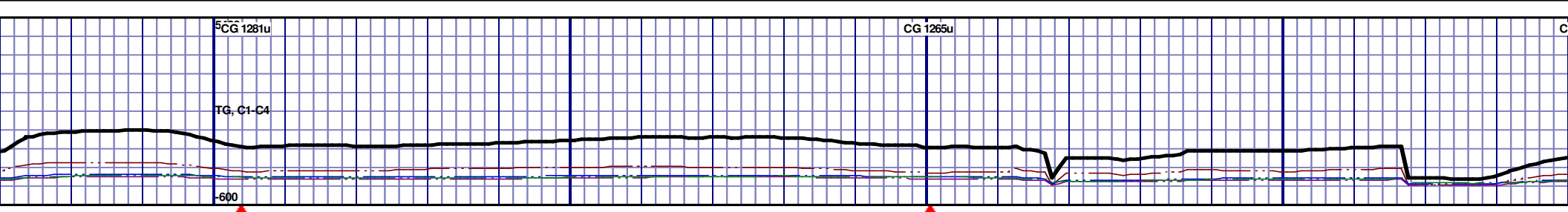
8250'-8300': CHLK: 70%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING

8300'-8350': CHLK: 73%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING



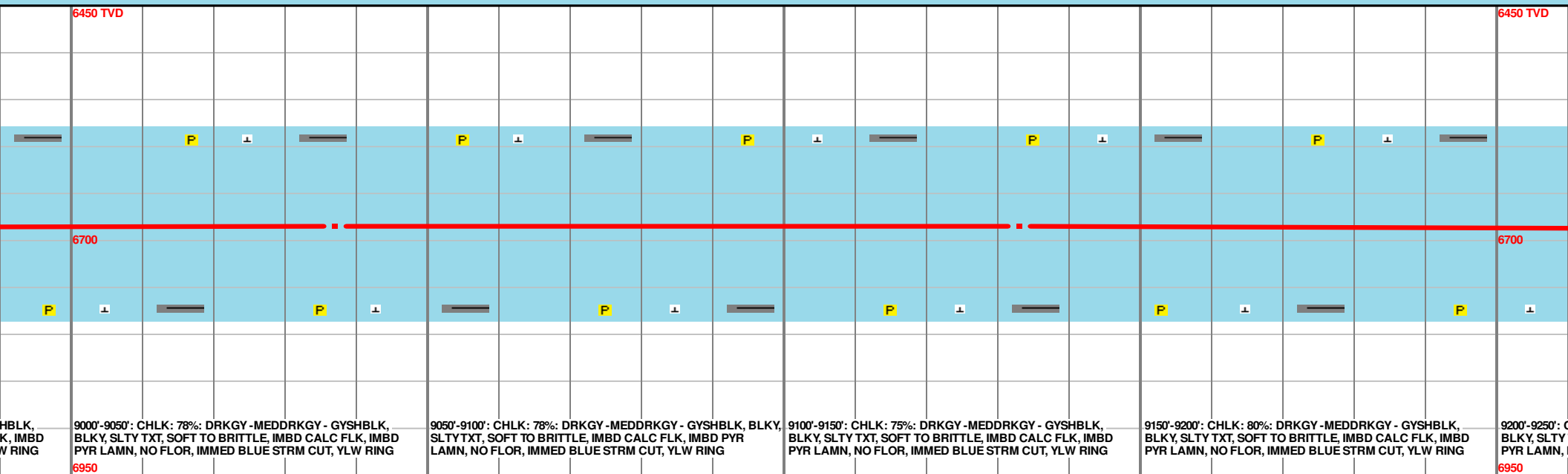
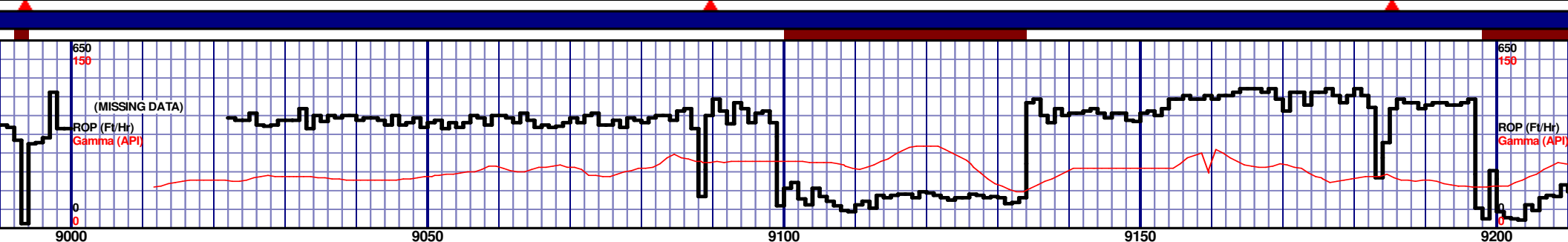
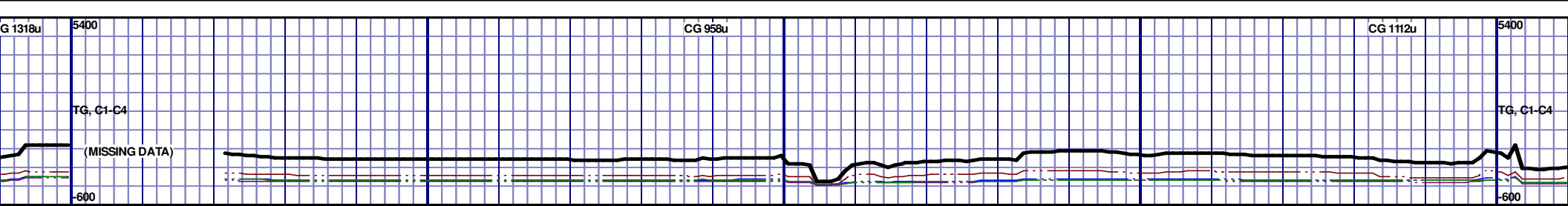


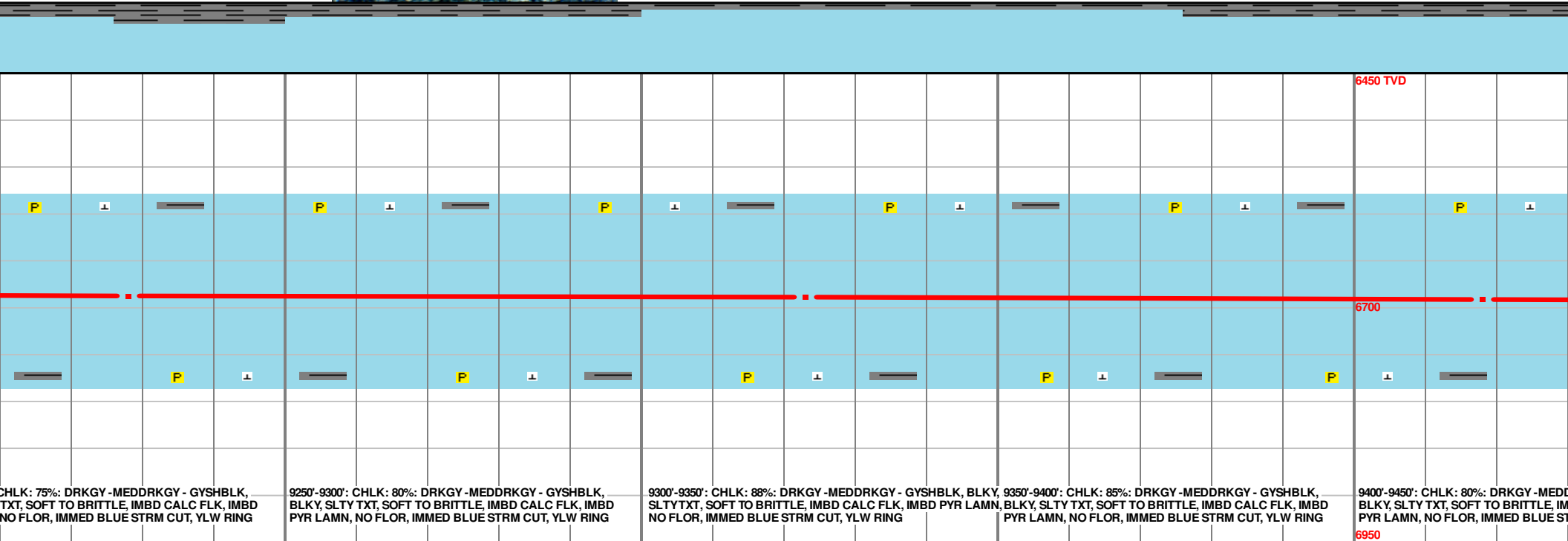
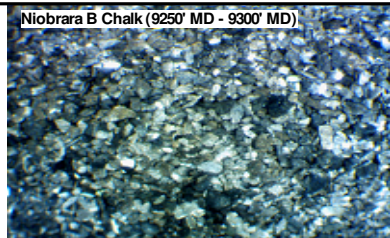
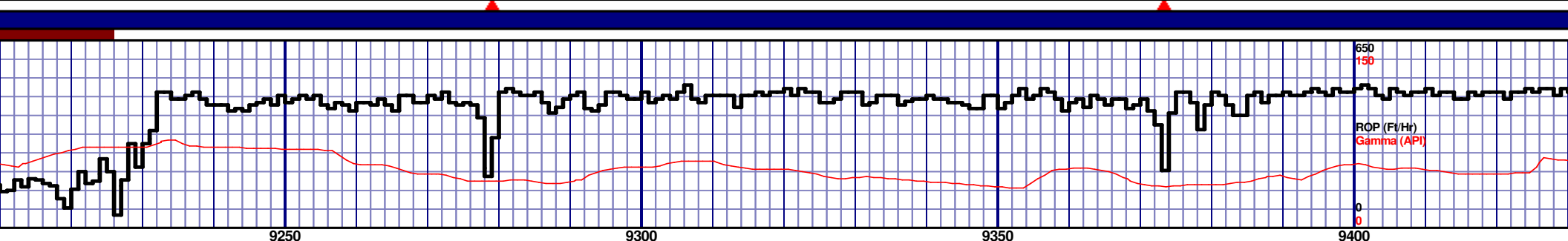
				6450 TVD											

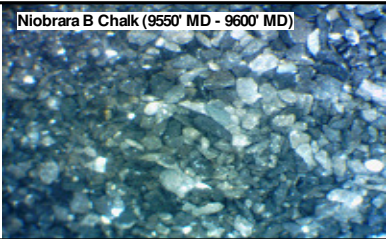
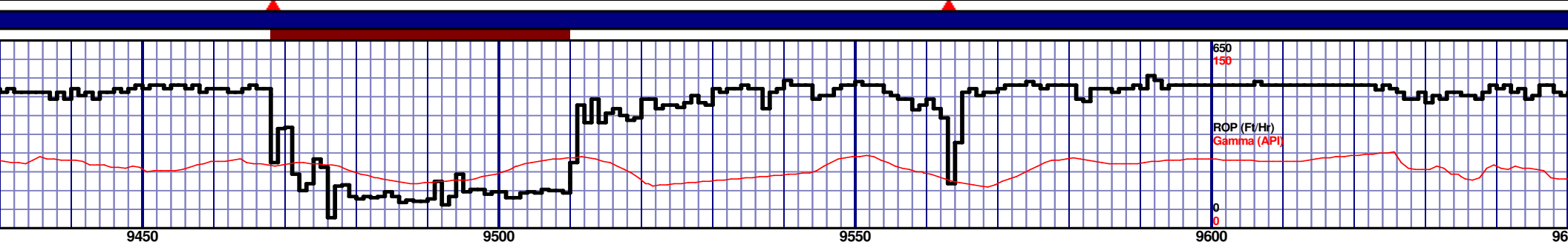
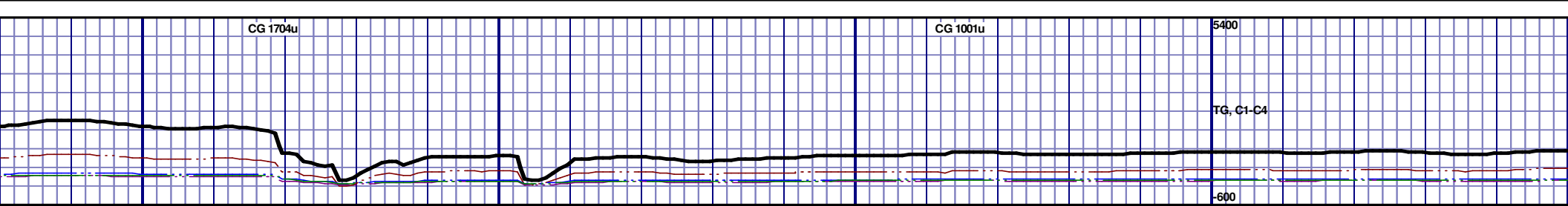


MD 8847 TVD 6687.13
INC 91.5 AZ 357.5
VS 2278.88

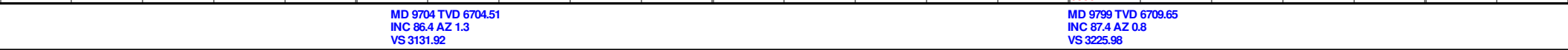
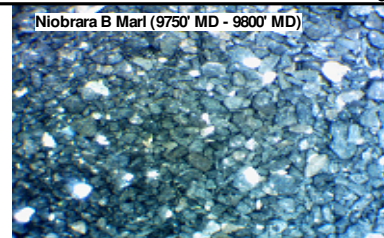
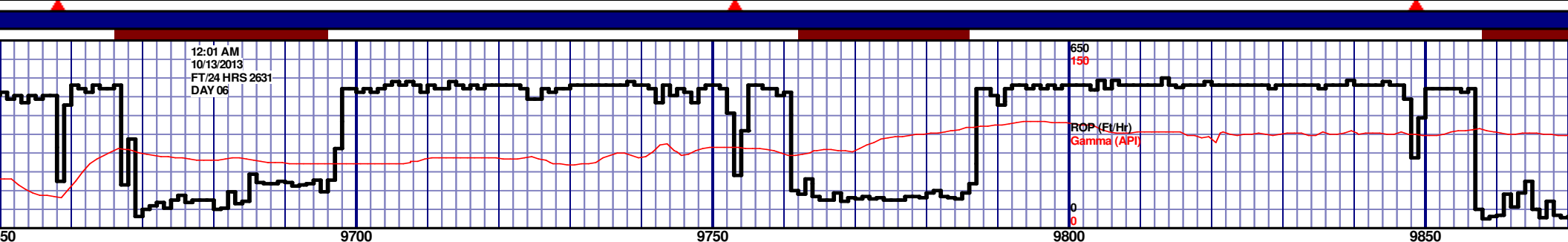
MD 8942 TVD 6685.8
INC 90.1 AZ 358
VS 2373.62

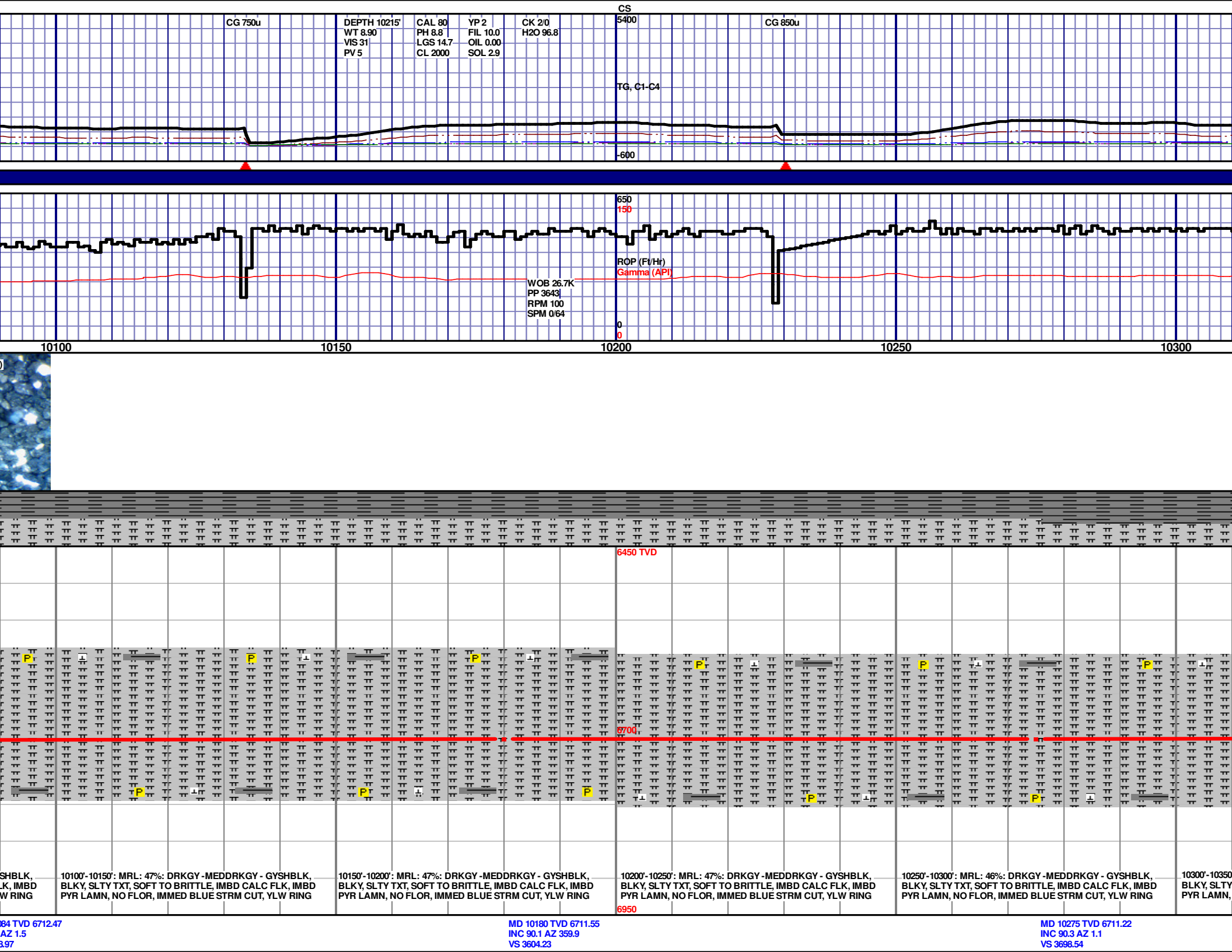


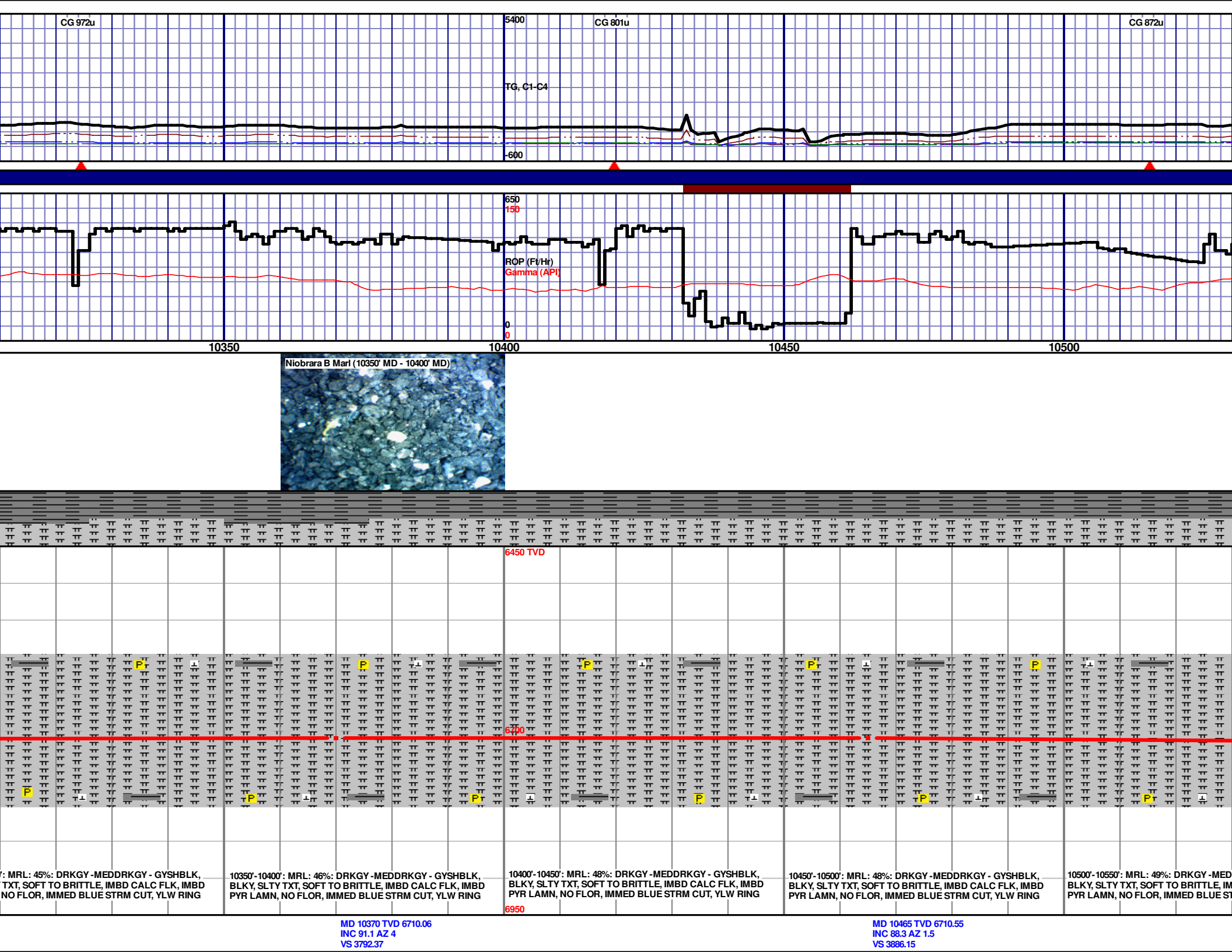


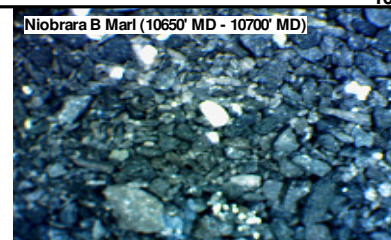
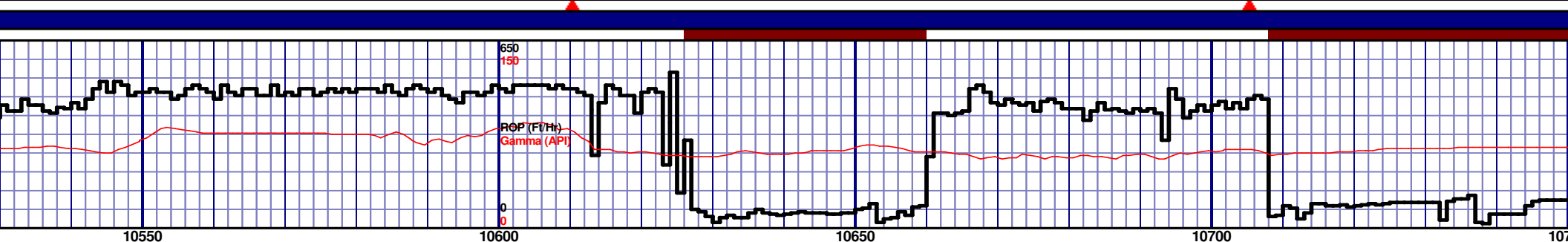
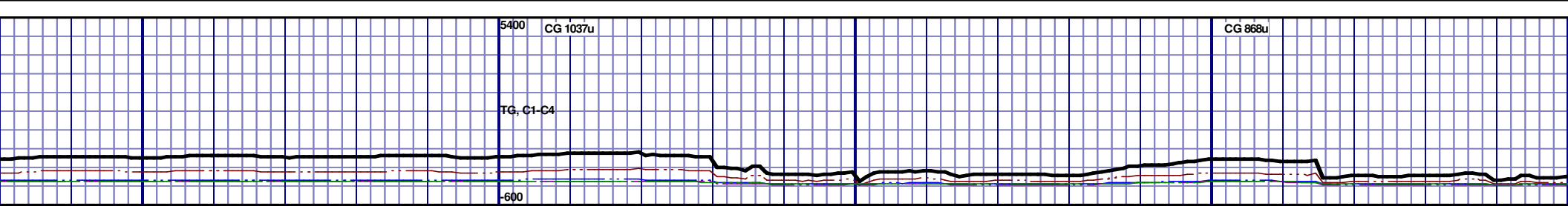


										6450 TVD									
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DRKGY - GYSHBLK, IMBD CALC FLK, IMBD TRM CUT, YLW RING																			
9450'-9500': CHLK: 85%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			
9500'-9550': CHLK: 85%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			
9550'-9600': CHLK: 80%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			
9600'-9650': CHLK: 78%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			
										6950									





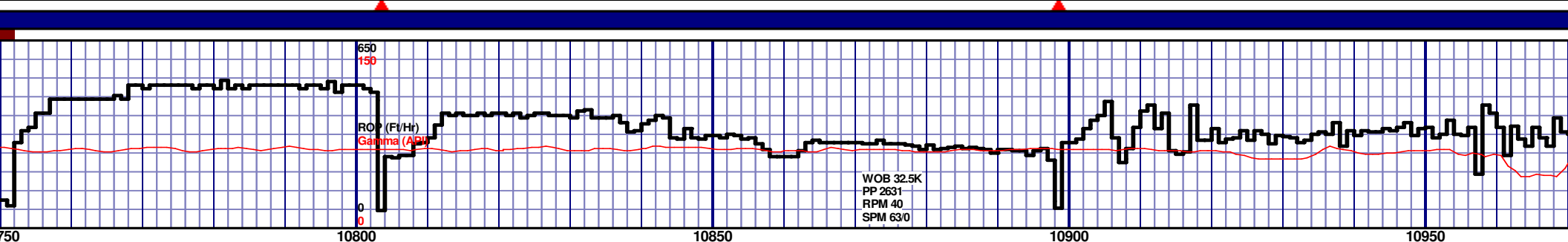
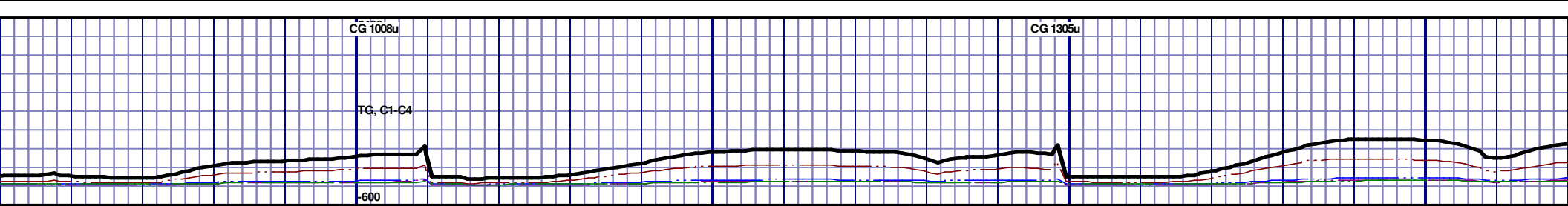




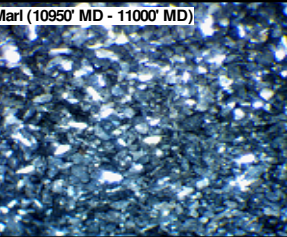
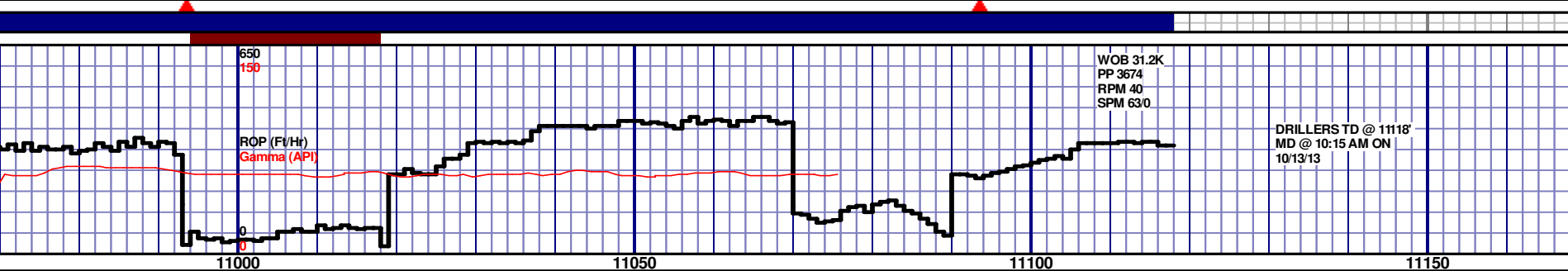
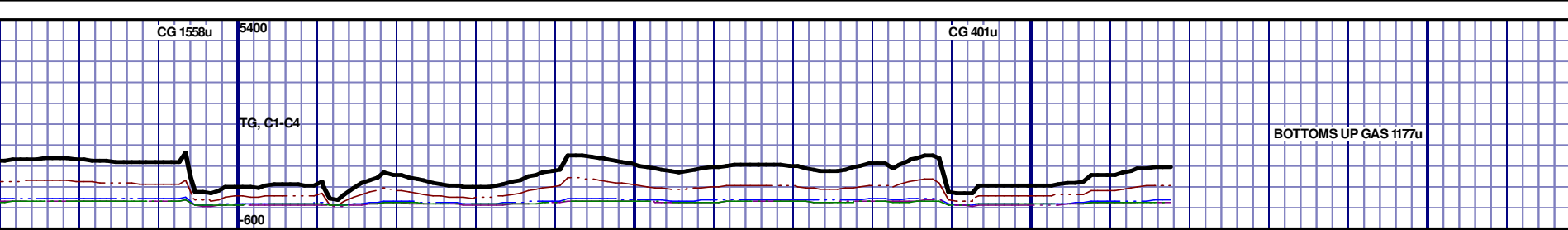
6450 TVD									
6700									
6950									
DRKGY - GYSHBLK, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10550'-10600': MRL: 45%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10600'-10650': MRL: 40%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10650'-10700': MRL: 41%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10700'-10750': MRL: 43%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									

MD 10560 TVD 6714.7
INC 86.7 AZ 1.5
VS 3960.15

MD 10656 TVD 6718.72
INC 88.5 AZ 359.2
VS 4075.4



6450 TVD									
6700									
10750'-10800': MRL: 42%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10800'-10850': MRL: 41%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10850'-10900': MRL: 44%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10900'-10950': MRL: 46%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									
10950'-11000': MRL: 49%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING									



6450 TVD										RELEASED ON 10/13/2013									
6300										TD @ 11118' MD									
DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING										THANK YOU FROM BRIAN WHITFIELD, CORY SHORETTE, AND HORIZON WELL LOGGING, LLC									
11000'-11050': MRL: 46%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			
11050'-11118': MRL: 46%: DRKGY - MEDDRKGY - GYSHBLK, BLKY, SLTY TXT, SOFT TO BRITTLE, IMBD CALC FLK, IMBD PYR LAMN, SCAT FREE BENT, NO FLOR, IMMED BLUE STRM CUT, YLW RING																			

MD 11036 TVD 6709.85
INC 92.6 AZ 354.6
VS 4454.72

MD 11065 TVD 6708.33
INC 93.4 AZ 355.3
VS 4463.68

PTB: MD 11118 TVD 6705.18
INC 93.4 AZ 355.3
VS 4536.56