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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 &
Dan King
Log Interval: 6620' MD to 10950' MD
Start Date: March 15, 2014
Release Date: March 18, 2014

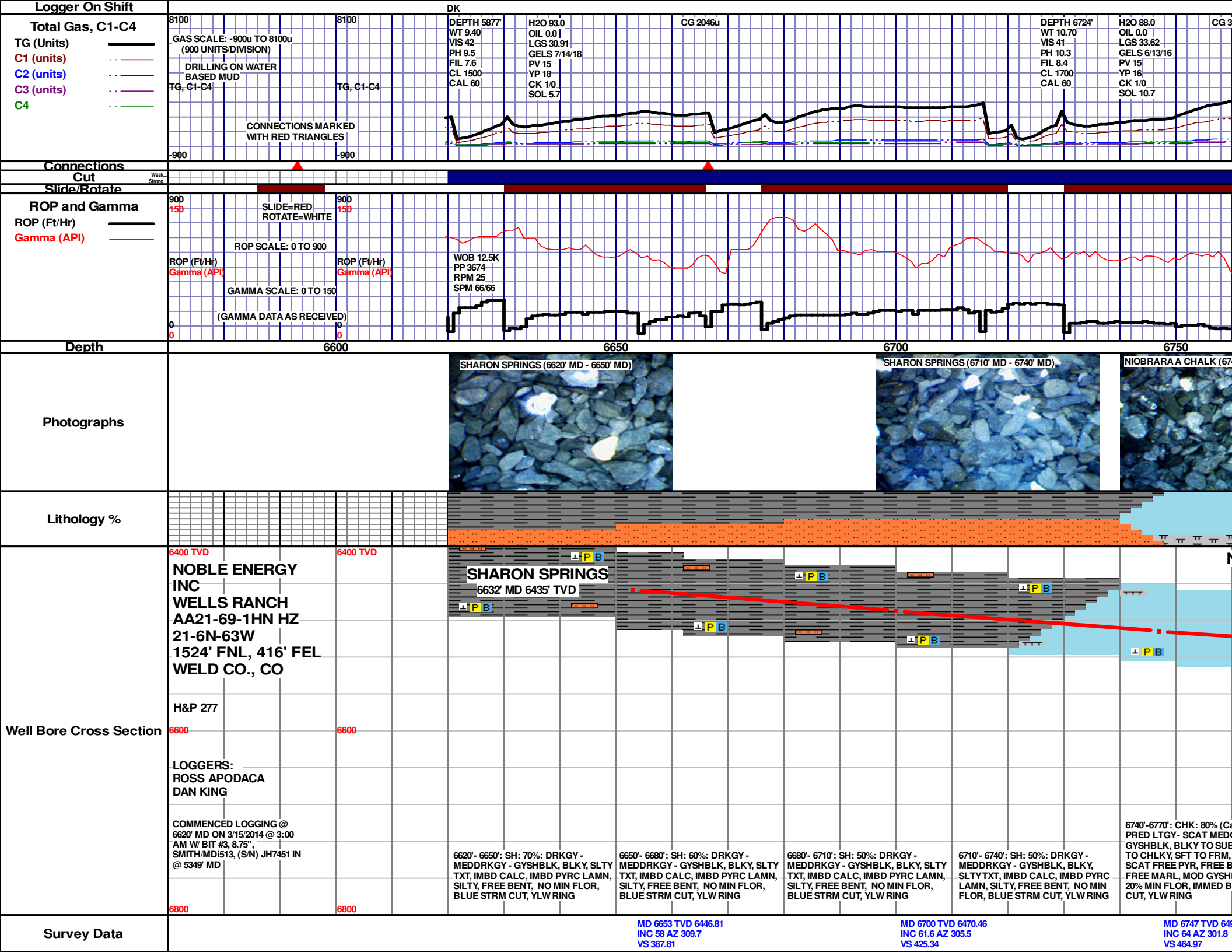
Well Information

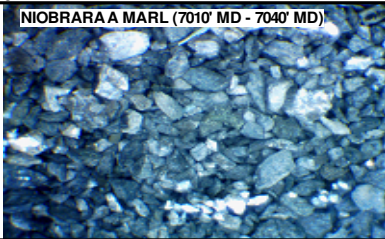
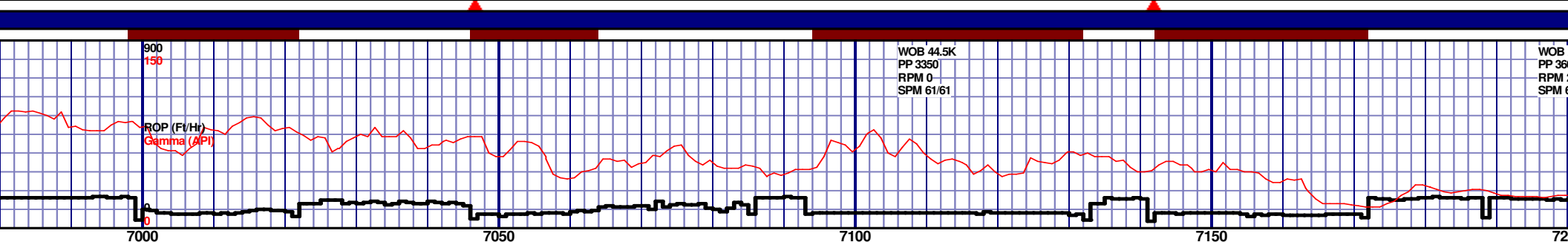
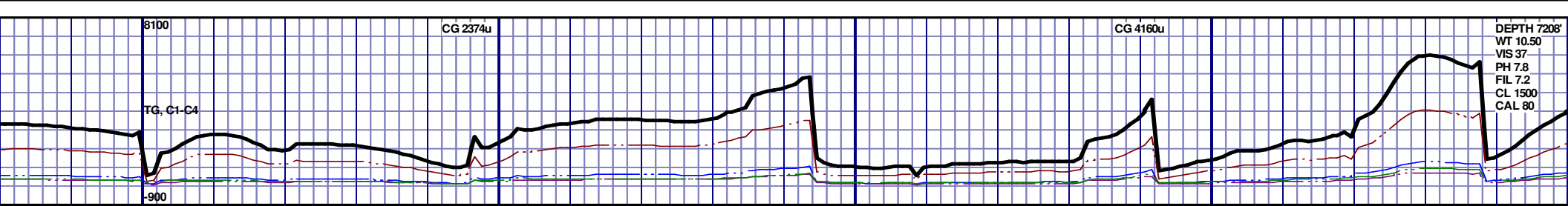
Well Name: Wells Ranch
AA21-69-1HN HZ

Location: 21-6N-63W
1524' FNL, 416' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 277
Total Depth: 10950' MD
TD Date: March 18, 2014
Formation: Niobrara B Chalk
KB Elevation: 4745'
GR Elevation: 4721'
API Number: 05-123-37702-0000





TOOH @ 11:15AM ON 3/15/14 @ 7208' M INTERMEDIATE CASING. TIH @ 5:30AM RESUMED DRILLING @ 9:40 AM ON 3/15/14 #4, 6.125", SMITH/MDI513, (S/N) JH4005 MD.							
NIOBRARA B CHALK 7059' MD 6599' TVD							
6980'-7010': MRL: 70% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7010'-7040': MRL: 70% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7040'-7070': CHK: 60% (CaCO3 55%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE CALC, 40% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7070'-7100': CHK: 60% (CaCO3 55%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE CALC, 40% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7100'-7130': CHK: 70% (CaCO3 60%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE CALC, 30% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7130'-7160': CHK: 85% (CaCO3 75%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE CALC, 15% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7160'-7190': CHK: 85% (CaCO3 75%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE CALC, 15% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	7190'-7208': PRED LTGY - GYSHBLK, B TO CHLKY, SCAT FREE FREE MARL 15% MIN FL CUT, YLW R

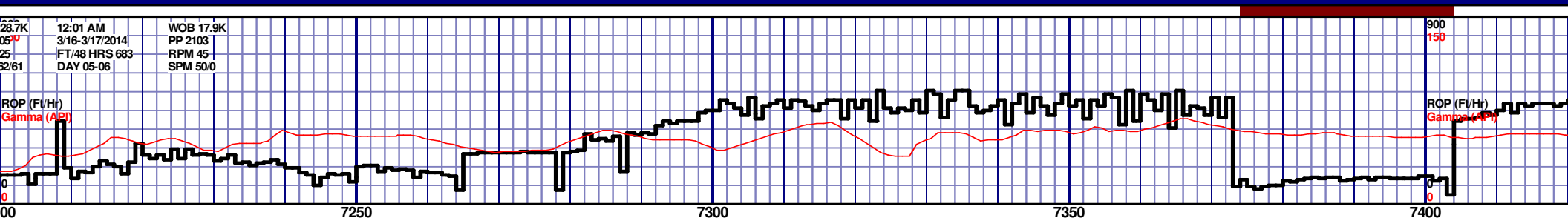
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INC 73.4 AZ 283
VS 681.26

MD 7031 TVD 6593.2
INC 76.1 AZ 281.8
VS 726.55

MD 7079 TVD 6603.23
INC 79.8 AZ 278.3
VS 773.29

MD 7126 TVD 6610.62
INC 82.1 AZ 273.8
VS 819.11

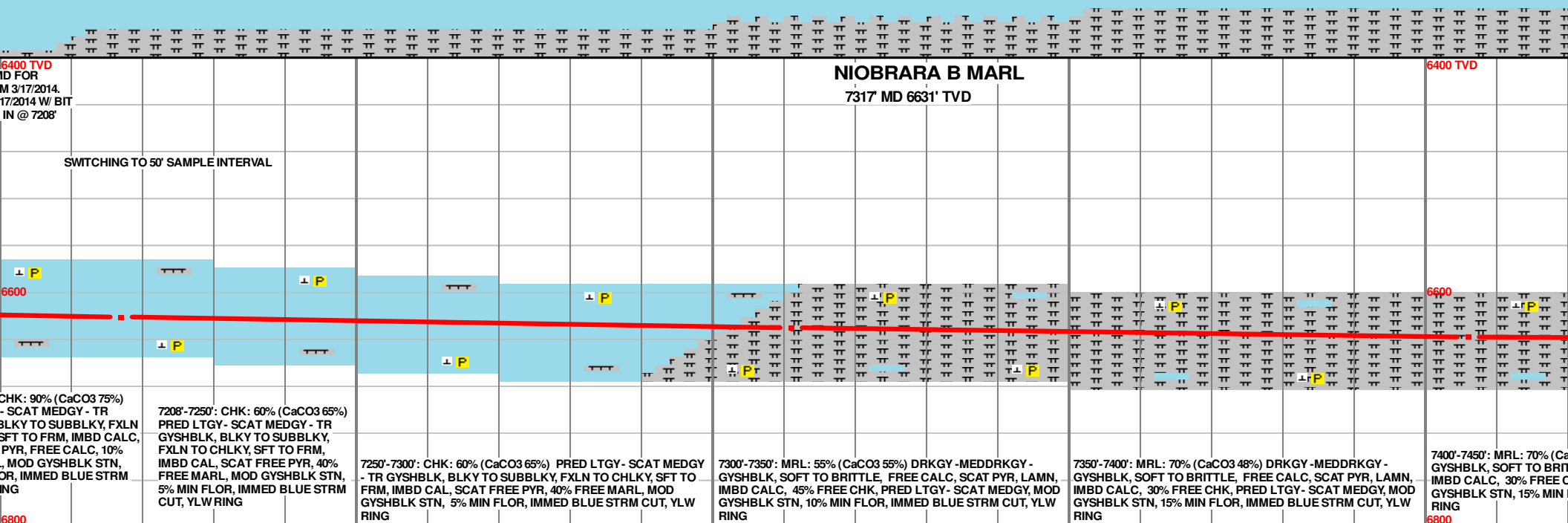
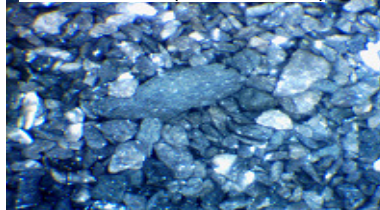
MD 7146 TVD 6613.16
INC 83.3 AZ 272.1
VS 838.5



NIOBRARA B CHALK (7250' MD - 7300' MD)



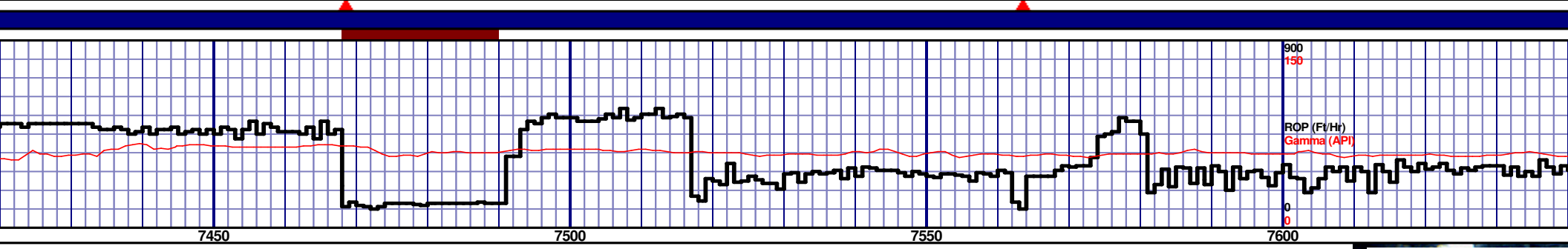
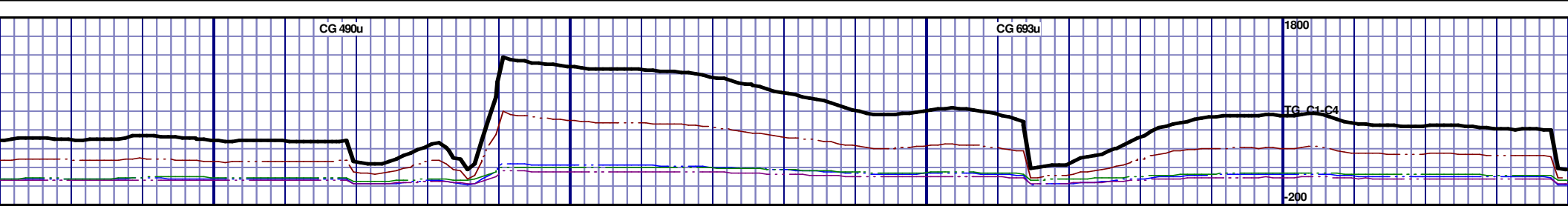
NIOBRARA B MARL (7300' MD - 7350' MD)



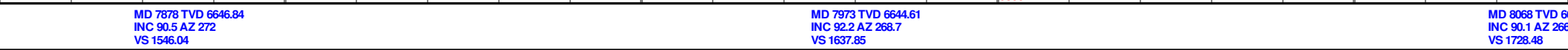
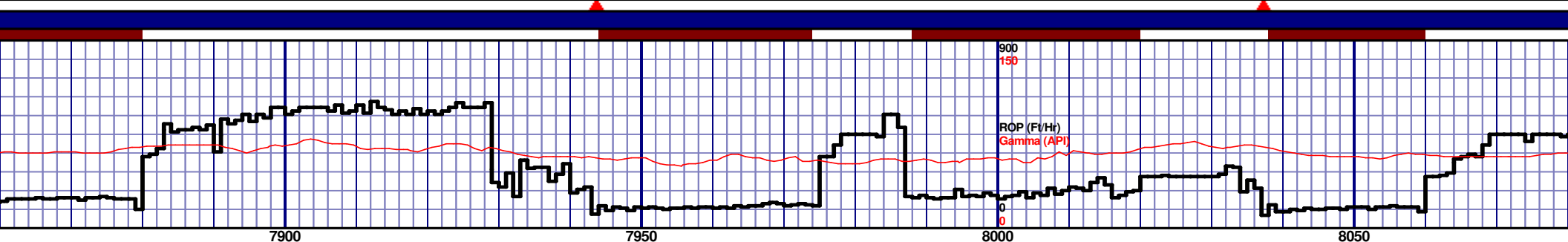
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VS 907.04

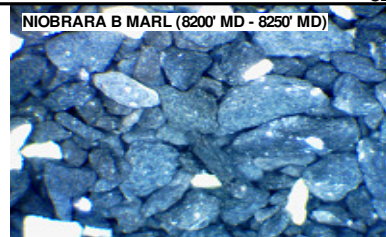
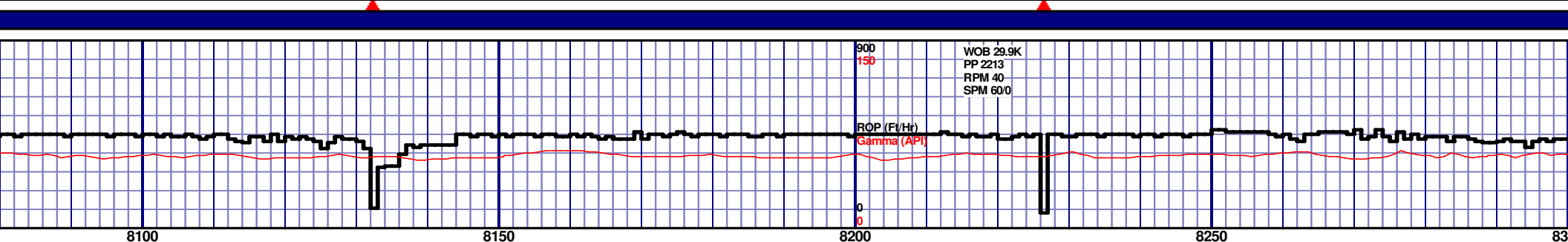
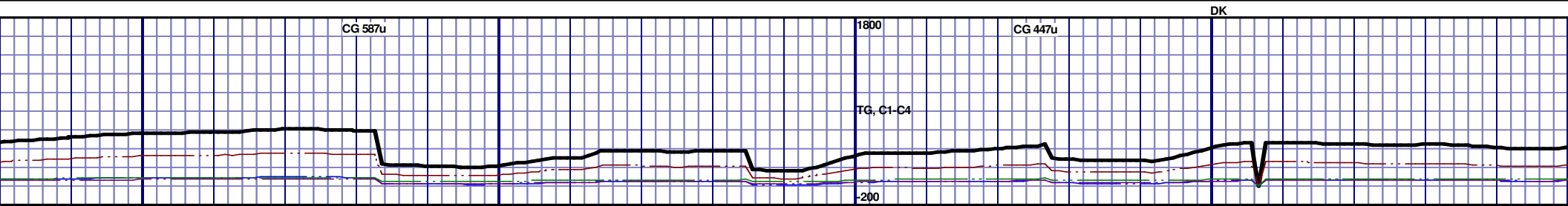
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INC 84.3 AZ 269.2
VS 997.29

MD 7406 TVD 6637
INC 86.5 AZ 269.8
VS 1088.47

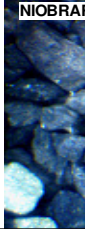
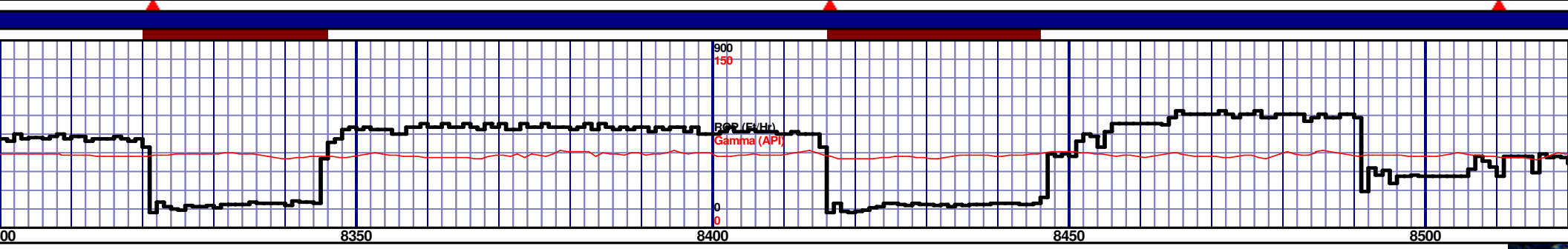
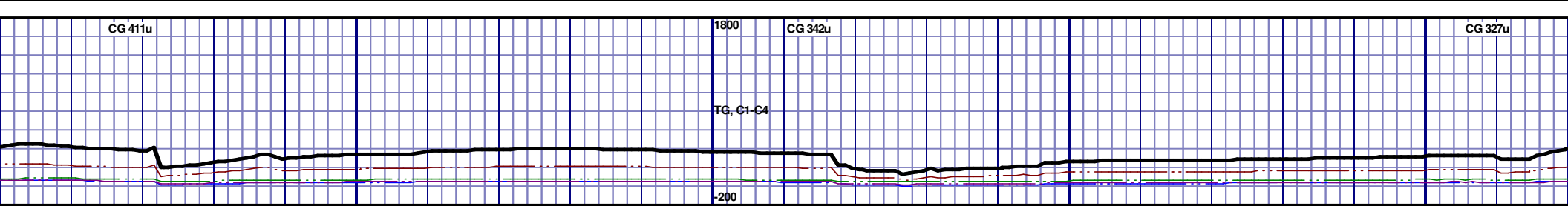


7450'-7500': MRL: 75% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 25% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7500'-7550': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 20% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7550'-7600': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 20% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7600'-7650': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									





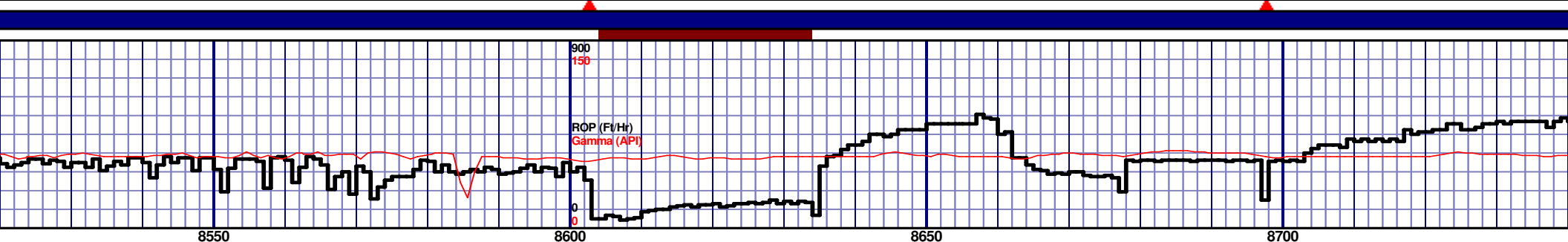
8100'-8150': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8150'-8200': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8200'-8250': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8250'-8300': MRL: 85% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 5% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									



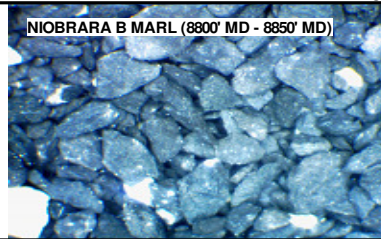
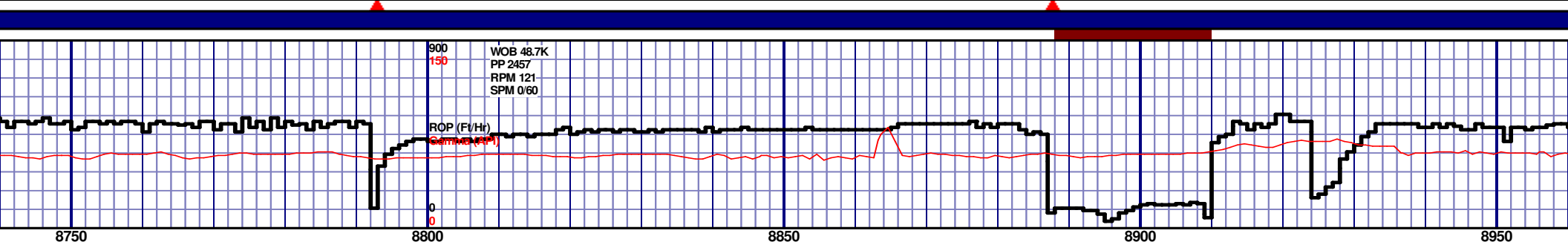
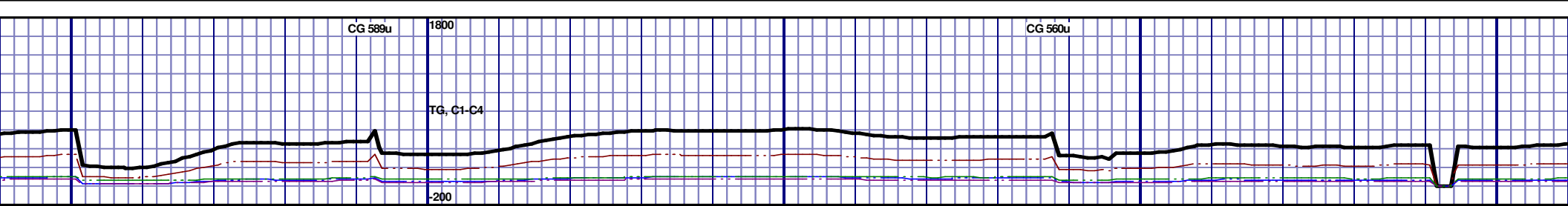
6400 TVD									
6600									
6800									
8300'-8350': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8350'-8400': MRL: 80% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8400'-8450': MRL: 80% (CaCO3 48%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8450'-8500': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									
8500'-8550': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLWRING									

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INC 89.4 AZ 265.6
VS 1996.93

MD 8446 TVD 6644.43
INC 89 AZ 268.1
VS 2086.17

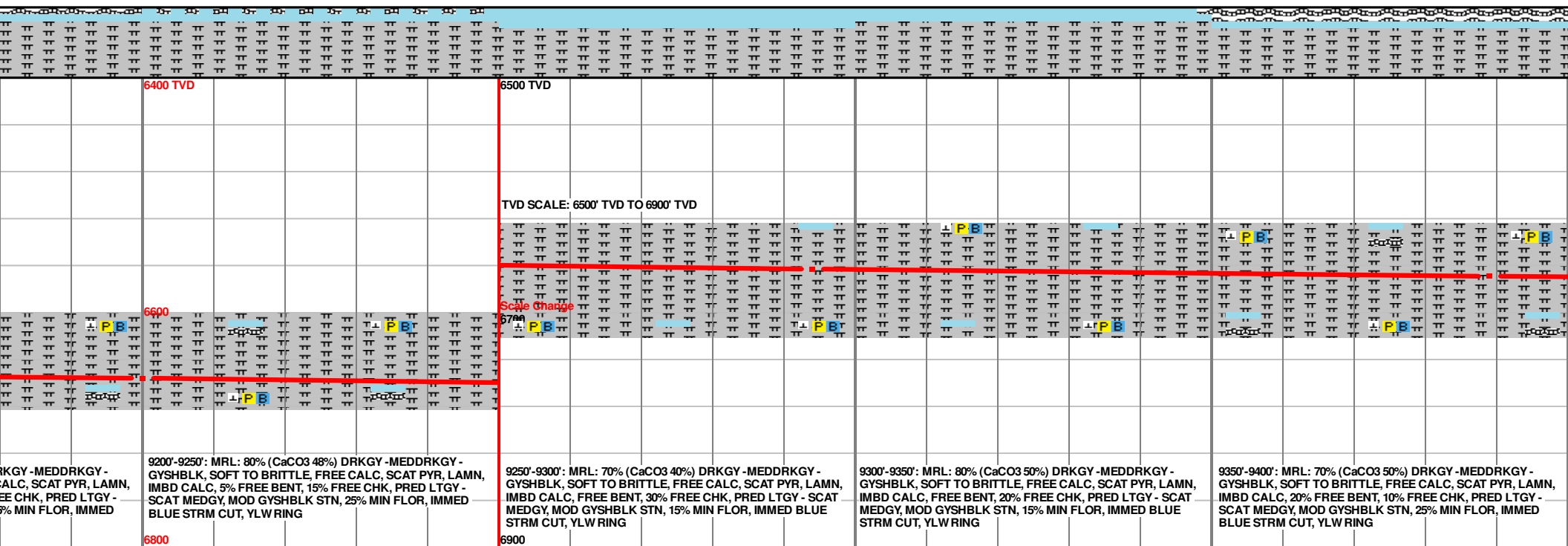
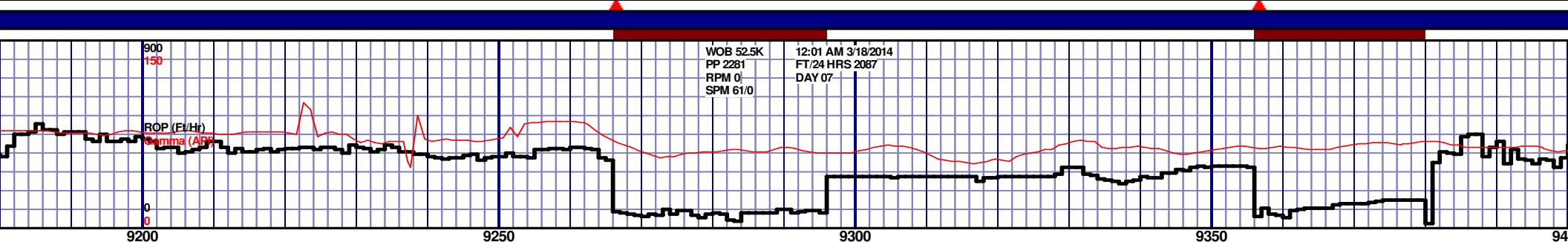


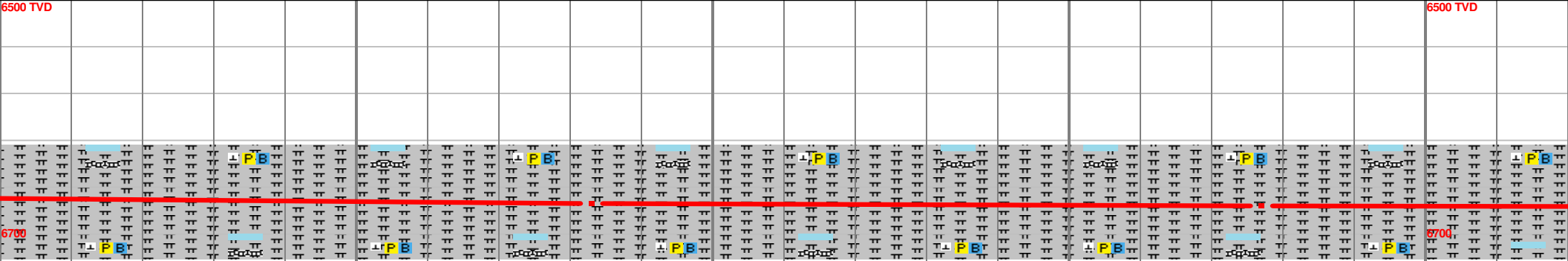
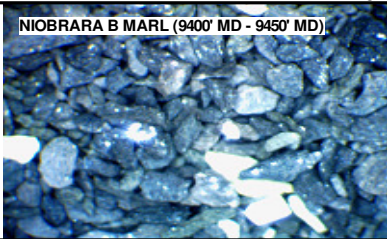
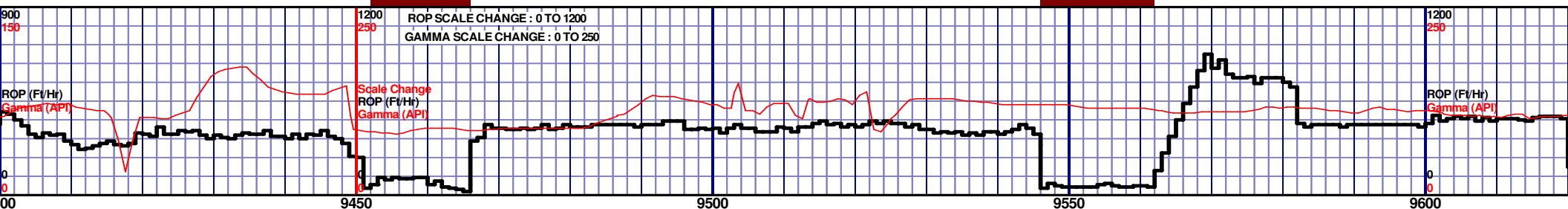
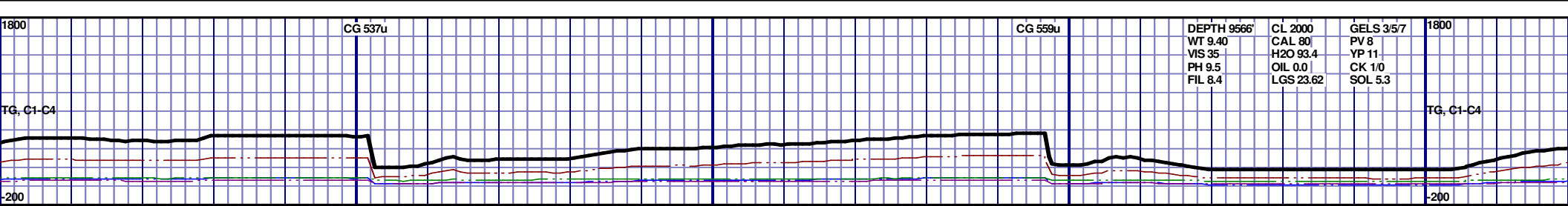
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INC 90 AZ 269.3	INC 87.4 AZ 266.3	INC 89.1 AZ 26
VS 2177.28	VS 2266.97	VS 2355.91



6400 TVD									
6600									
6800									
8750'-8800': MRL: 80% (CaCO3 43%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8800'-8850': MRL: 70% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8850'-8900': MRL: 85% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 5% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8900'-8950': MRL: 85% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 5% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8950'-9000': MRL: 85% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 5% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									

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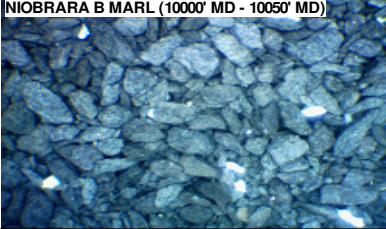
9400'-9450': MRL: 80% (CaCO3 48%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

9450'-9500': MRL: 85% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 5% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

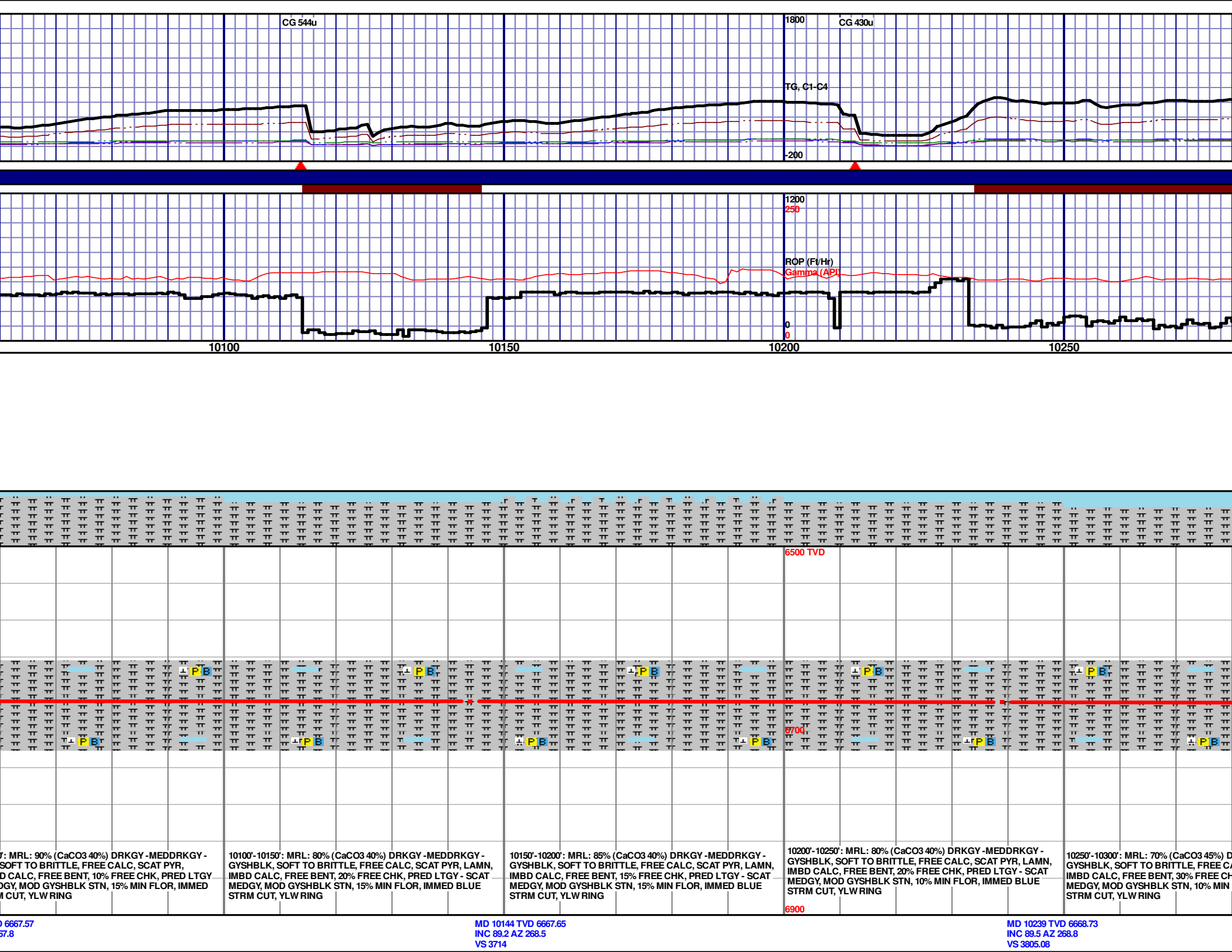
9500'-9550': MRL: 85% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

9550'-9600': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

9600'-9650': MRL: 80% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

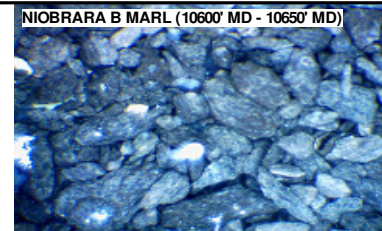
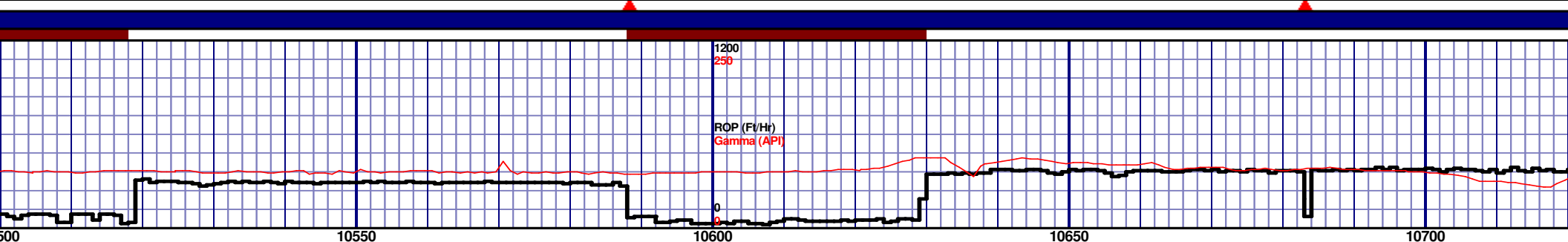
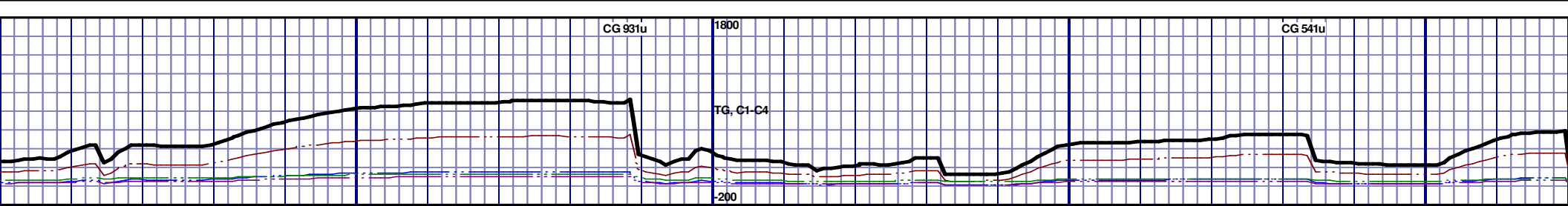


DRKGY - PYR, LAMN, GY - SCAT TO BLUE	9850'-9900': MRL: 60% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9900'-9950': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 20% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	9950'-10000': MRL: 80% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 20% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10000'-10050': MRL: 90% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	10050'-10100': GYSHBLK, LAMN, IMB - SCAT MED BLUE STRM
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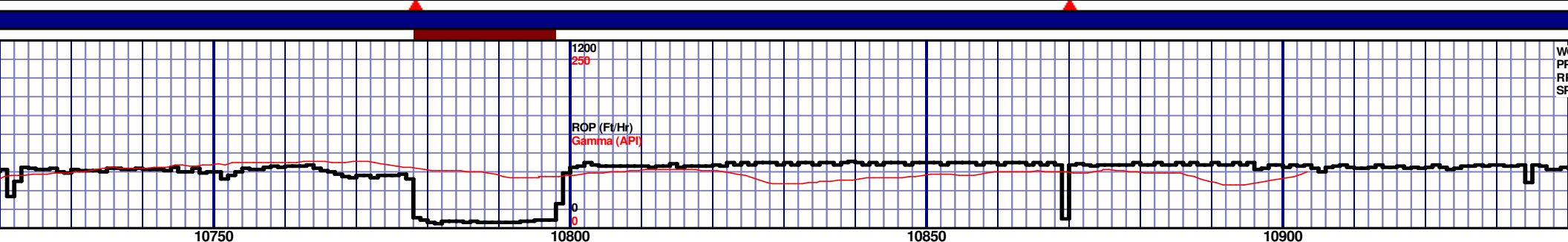
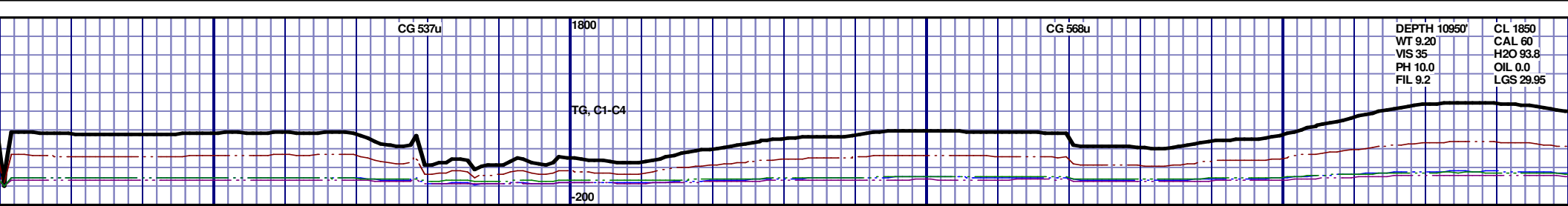




MD 10334 TVD 6669.64 INC 89.4 AZ 268.6 VS 3896.2	MD 10428 TVD 6670.63 INC 89.4 AZ 267.8 VS 3896.11
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6500 TVD									
6700									
6900									
10500'-10550': MRL: 90% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, TRC FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10550'-10600': MRL: 90% (CaCO3 40%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, TRC FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10600'-10650': MRL: 85% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, TRC FREE BENT, 15% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10650'-10700': MRL: 70% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10700'-10750': MRL: 70% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									



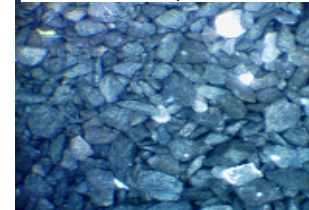
10750

10800

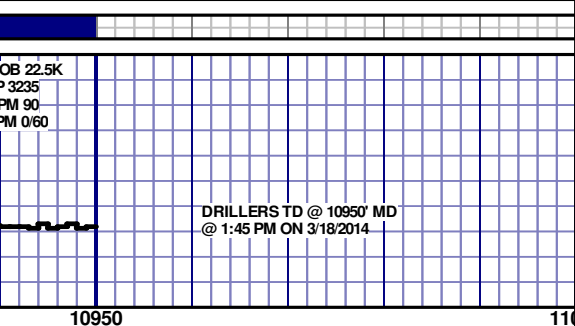
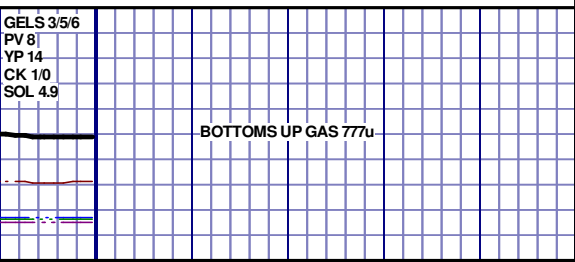
10850

10900

NIOBRARA B MARL (10900' MD - 10950')



6500 TVD									
10750'-10800': MRL: 75% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 25% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10800'-10850': MRL: 70% (CaCO3 45%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10850'-10900': MRL: 65% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
10900'-10950': MRL: 60% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									



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RELEASED ON 3/18/2014

TD @ 10950' MD

THANK YOU FROM
ROSS APODACA,
DAN KING, AND
HORIZON WELL
LOGGING, LLC

ORKGY -
R, LAMN,
Y - SCAT
BLUE