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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

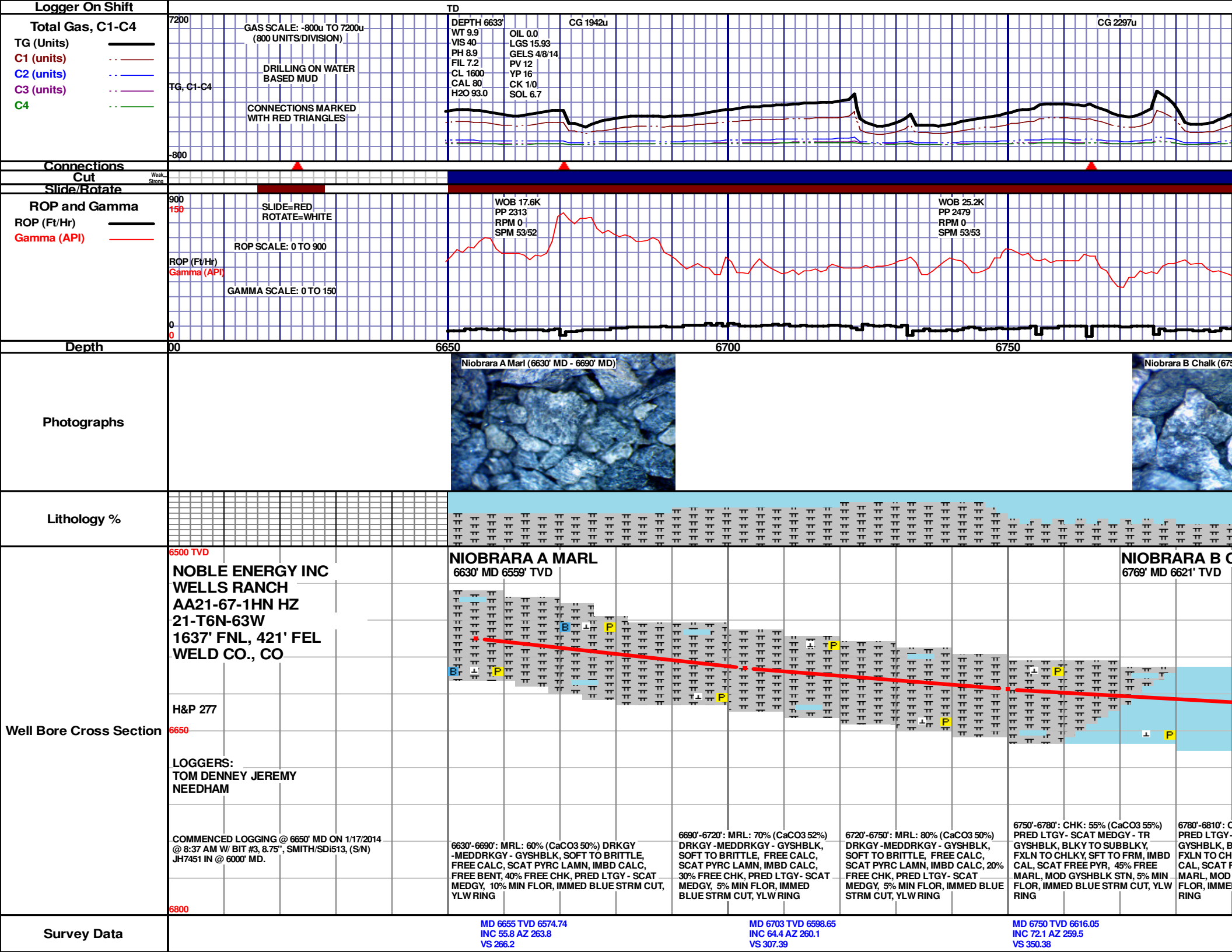
Logger: Tom Denney &
Jeremy Needham
Log Interval: 6650' MD to 10675' MD
Start Date: January 17, 2014
Release Date: January 21, 2014

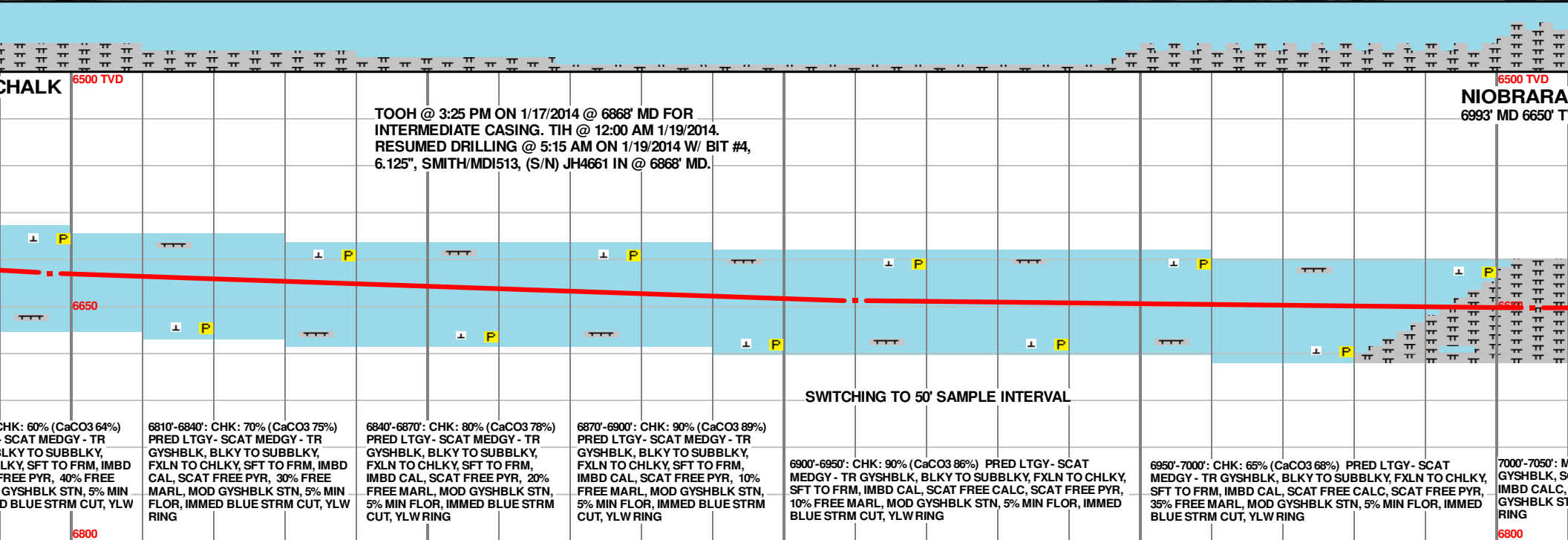
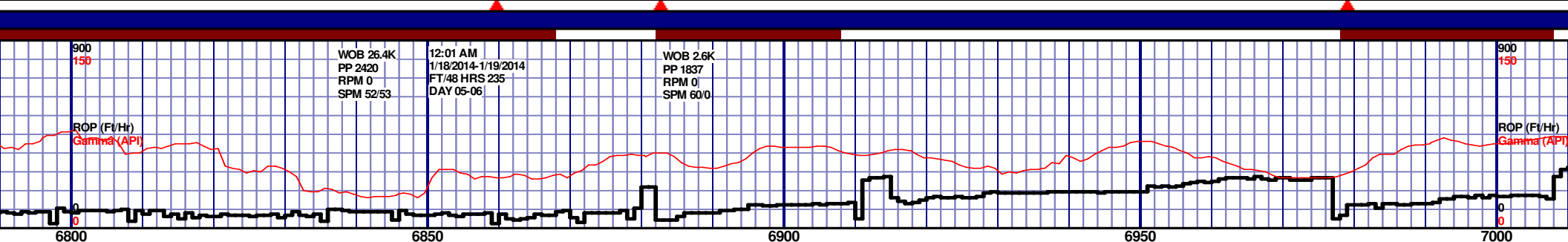
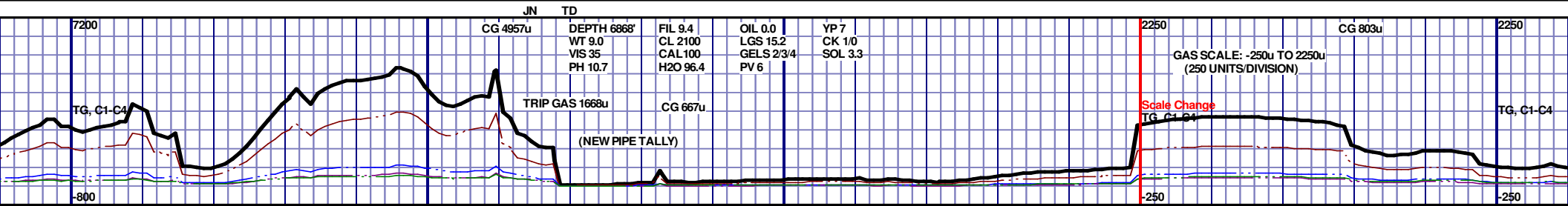
Well Information

Well Name: Wells Ranch
AA21-67-1HN HZ
Location: 21-T6N-63W
1637' FNL, 421' FEL

County: Weld
State: Colorado

Drilling Rig: H&P 277
Total Depth: 10675' MD
TD Date: January 21, 2014
Formation: Niobrara B Chalk
KB Elevation: 4751'
GR Elevation: 4727'
API Number: 05-123-37724-0000

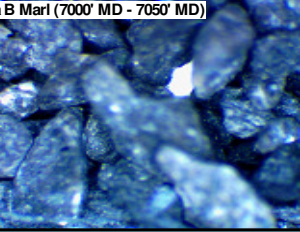
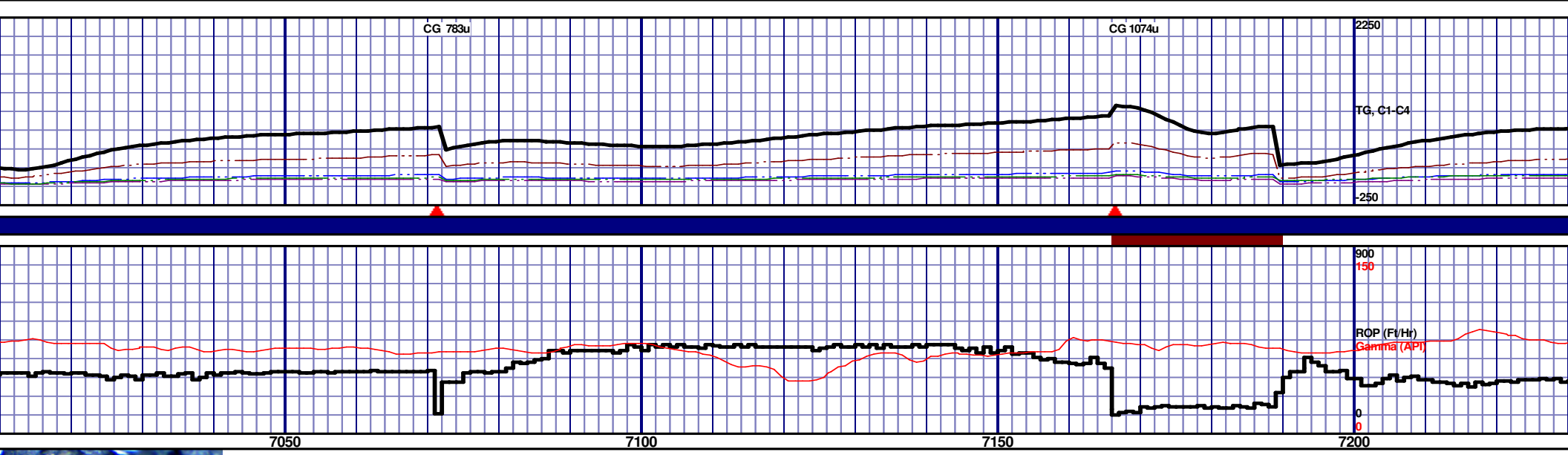




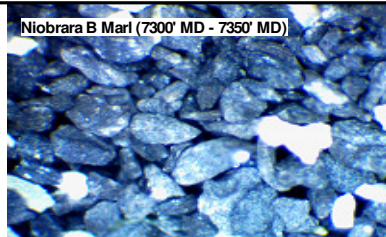
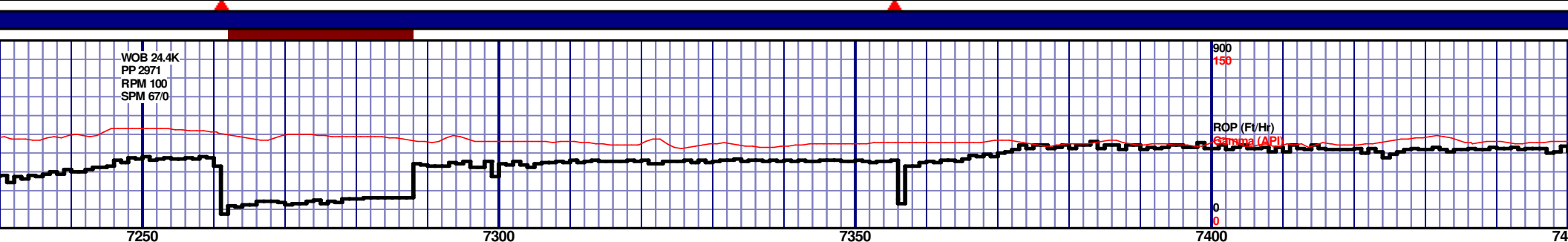
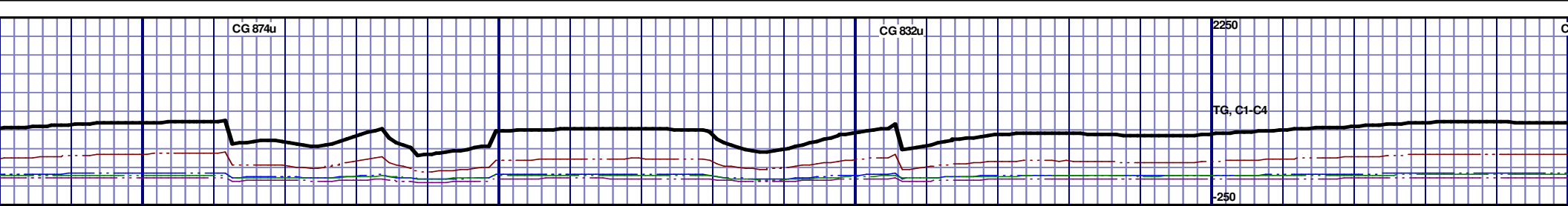
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INC 76.7 AZ 259.5
VS 394.94

MD 6910 TVD 6646.07
INC 85.6 AZ 265.2
VS 505.56

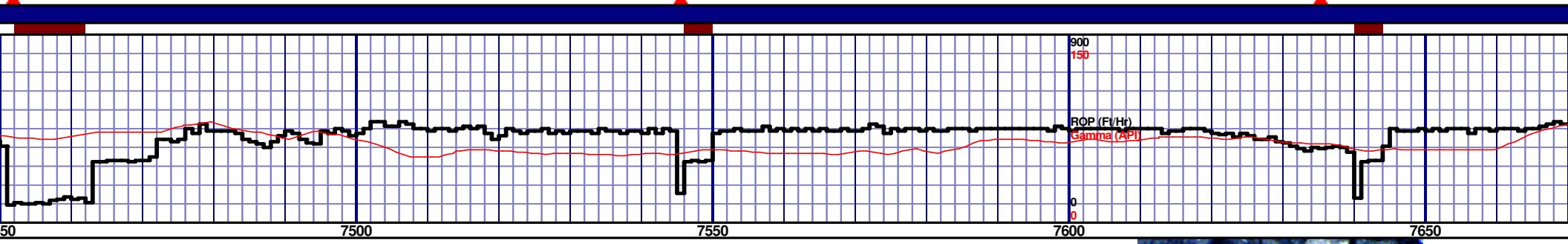
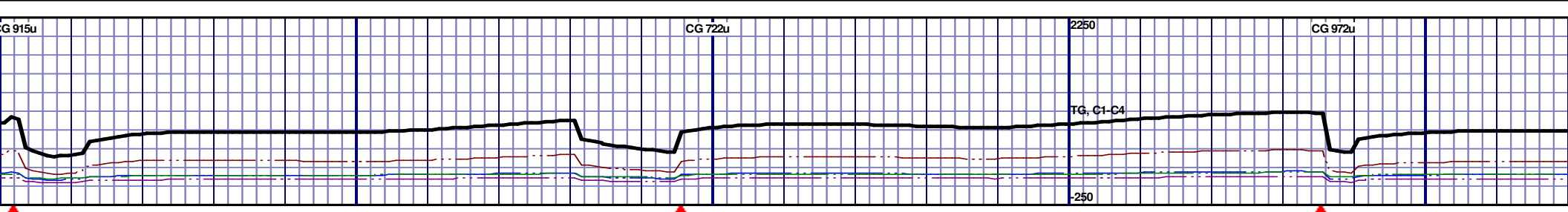
MD 70
INC 8
VS 600



B MARL VD										6500 TVD									
MRL: 65% (CaCO3 53%) DRKGY - MEDDRKGY - SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD TN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										6550									
7050'-7100': MRL: 60% (CaCO3 55%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										6600									
7100'-7150': MRL: 60% (CaCO3 56%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										6650									
7150'-7200': MRL: 70% (CaCO3 48%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										6700									
7200'-7250': MRL: 65% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										6750									



7250'-7300': MRL: 70% (CaCO3 55%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7300'-7350': MRL: 65% (CaCO3 52%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 20% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7350'-7400': MRL: 75% (CaCO3 55%) 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, 20% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7400'-7450': MRL: 70% (CaCO3 52%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 20% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									

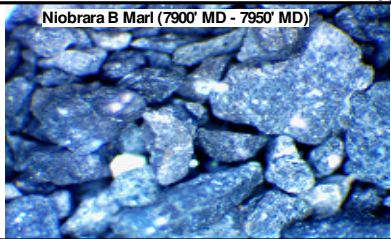
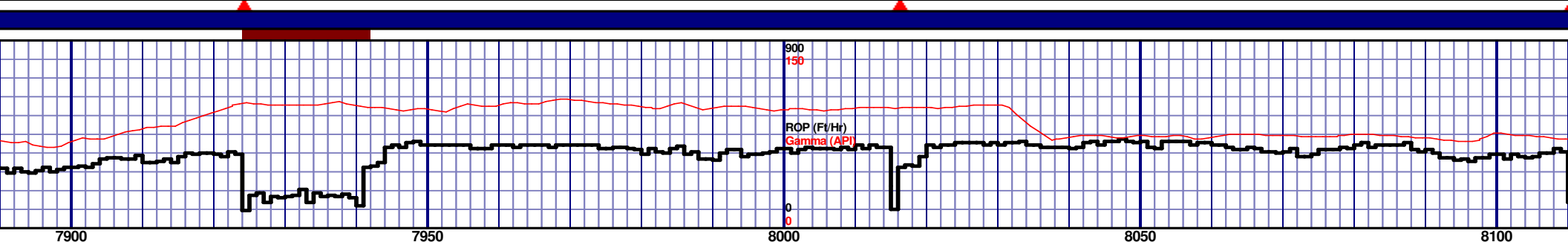
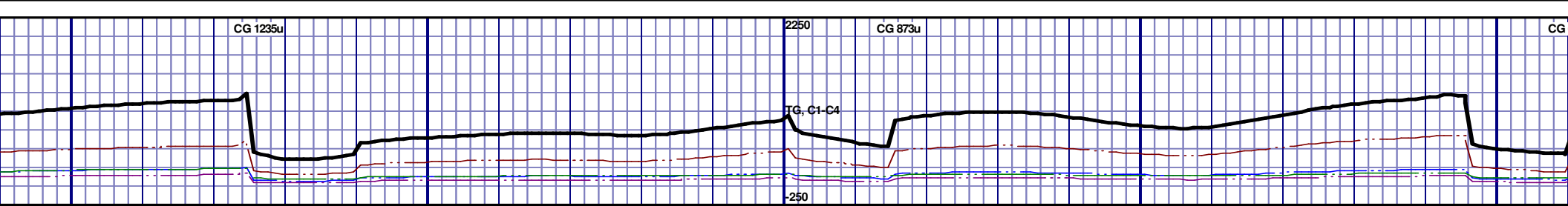


7450'-7500': MRL: 70% (CaCO3 50%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 20% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7500'-7550': MRL: 50% (CaCO3 58%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, FREE BENT, LAMN, IMBD CALC, 50% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 20% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7550'-7600': MRL: 55% (CaCO3 55%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 45% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7600'-7650': MRL: 60% (CaCO3 58%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7650'-7700': MRL: 60% (CaCO3 58%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 40% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									

MD 7477 TVD 6662.24
INC 89.4 AZ 271.2
VS 1071.86

MD 7571 TVD 6662.98
INC 89.7 AZ 271.3
VS 1165.82

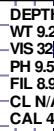
MD
INC
VS



7900'-7950': MRL: 75% (CaCO3 54%) 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									
7950'-8000': MRL: 80% (CaCO3 52%) 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, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8000'-8050': MRL: 80% (CaCO3 55%) 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									
8050'-8100': MRL: 80% (CaCO3 53%) 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									
8100'-8150': MRL: 80% (CaCO3 53%) 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									

MD 7950 TVD 6660.67
INC 89.1 AZ 268.9
VS 1544.66

MD 8045 TVD 6661.75
INC 89.6 AZ 268.8
VS 1639.65



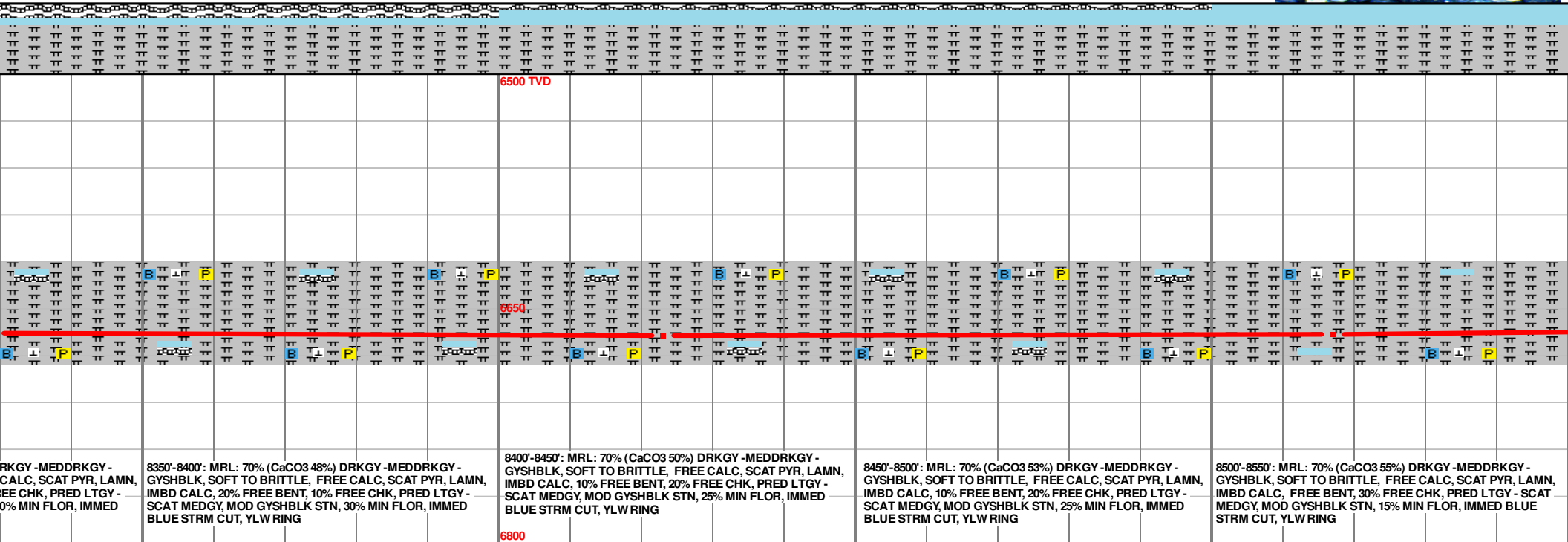
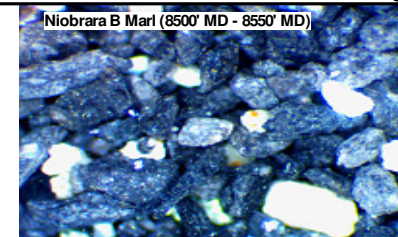
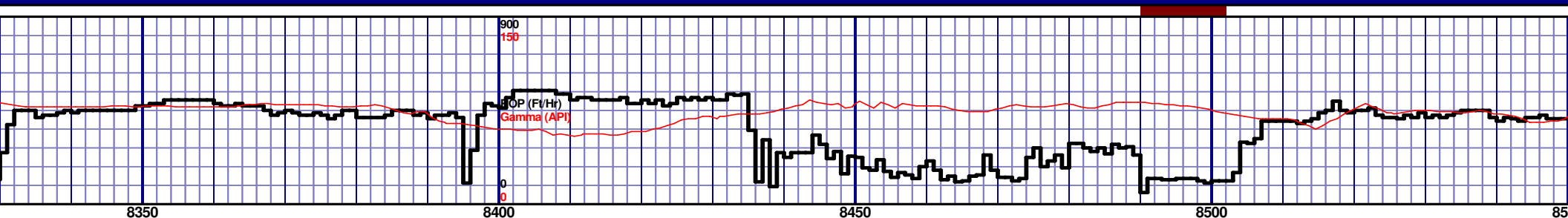
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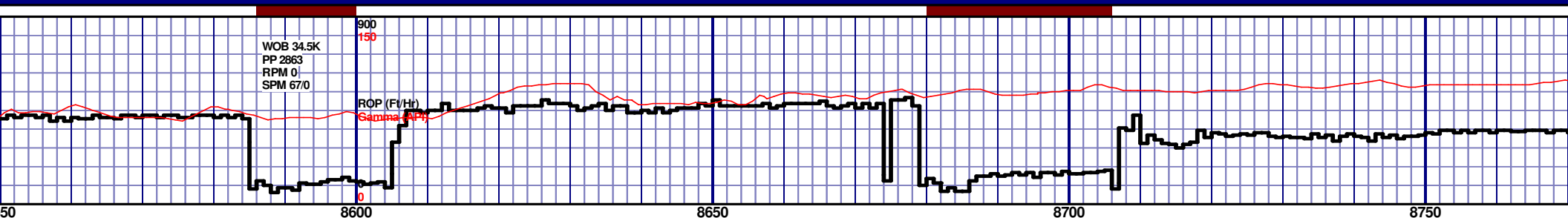
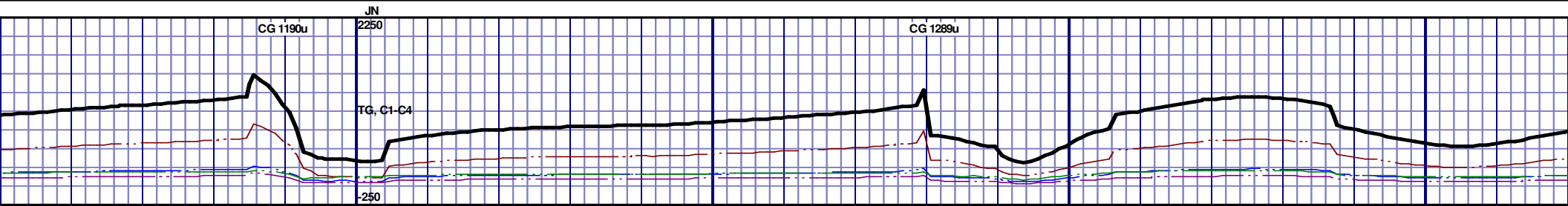
8150'-8200': MRL: 80% (CaCO3 55%) DRKGY-MEDDRKGY-GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 20% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLWRING

8200'-8250': MHL: 70% (CaCO₃ 50%) DRKGY-MEDDRKGY-GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 10% FREE BENT, 20% FREE CHK, PRED LTGY-SCAT MEDGY, MOD GYSHBLK STN, 25% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

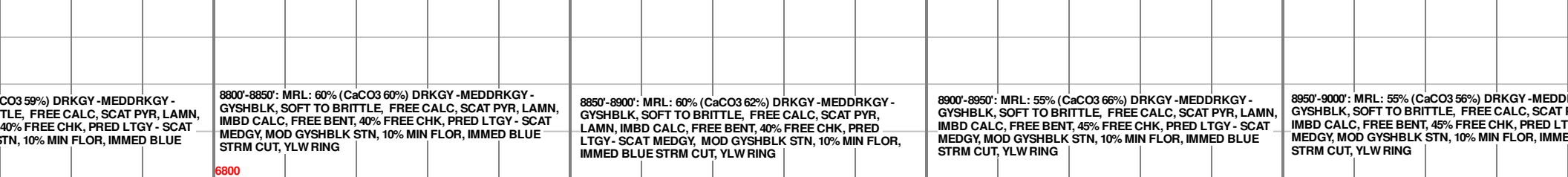
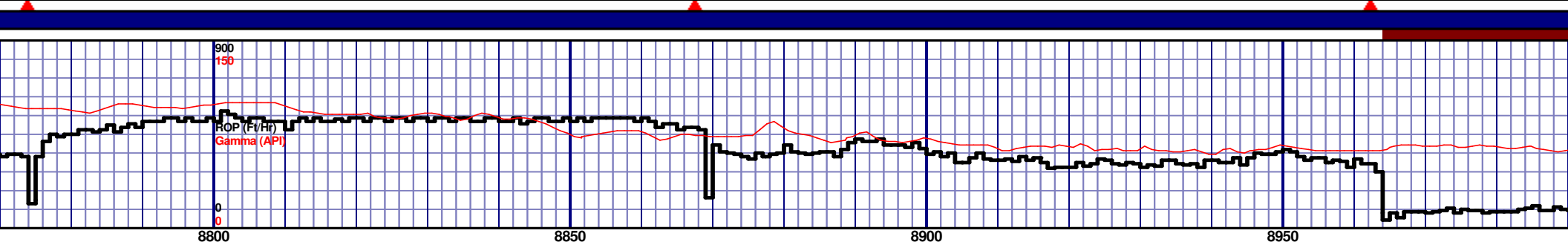
8250'-8300': MRL: 70% (CaCO3 48%) DRKGY-MEDDRKGY-GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 20% FREE BENT, 10% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 30% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

8300'-8350': MRL: 70% (CaCO₃ 45%) D
GYSHBLK, SOFT TO BRITTLE, FREE
IMBD CALC, 20% FREE BENT, 10% FR
SCAT MEDGY, MOD GYSHBLK STN, 3
BLUE STRM CUT, YLW RING

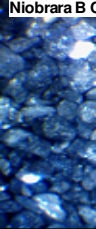
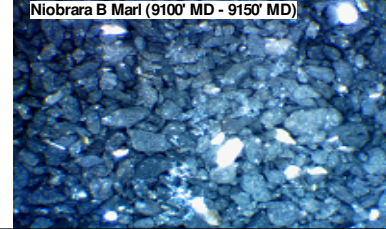
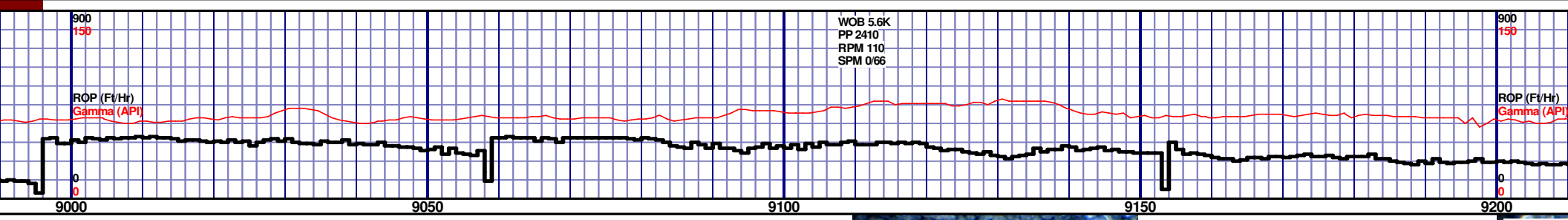
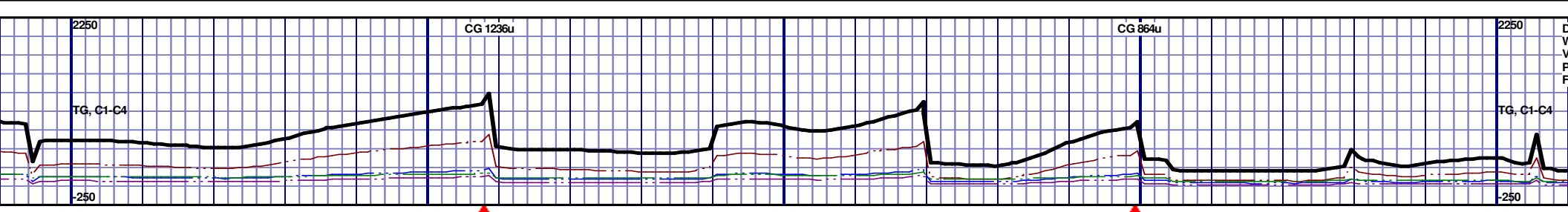




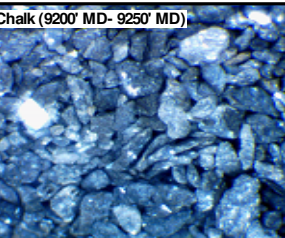
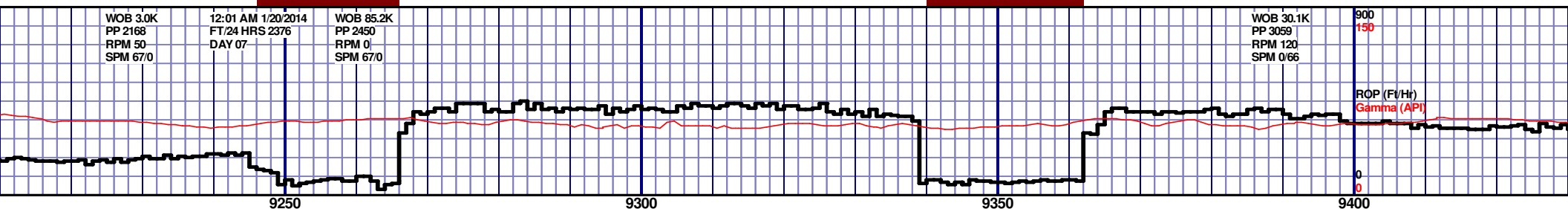
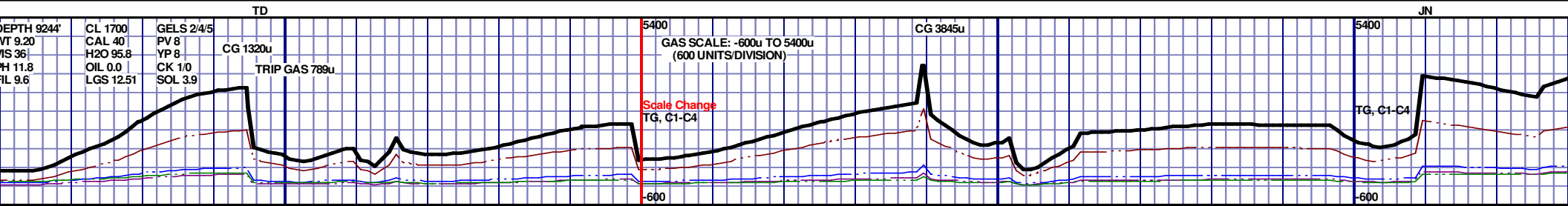
6500 TVD									
6500									
6600									
6800									
8550'-8600': MRL: 70% (CaCO3 53%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8600'-8650': MRL: 65% (CaCO3 55%) 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, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8650'-8700': MRL: 65% (CaCO3 53%) 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, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
8700'-8750': MRL: 70% (CaCO3 57%) 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									
8750'-8800': MRL: 60% (CaCO3 53%) 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									



MD 8894 TVD 6656.98
INC 92 AZ 268.4
VS 2488.01



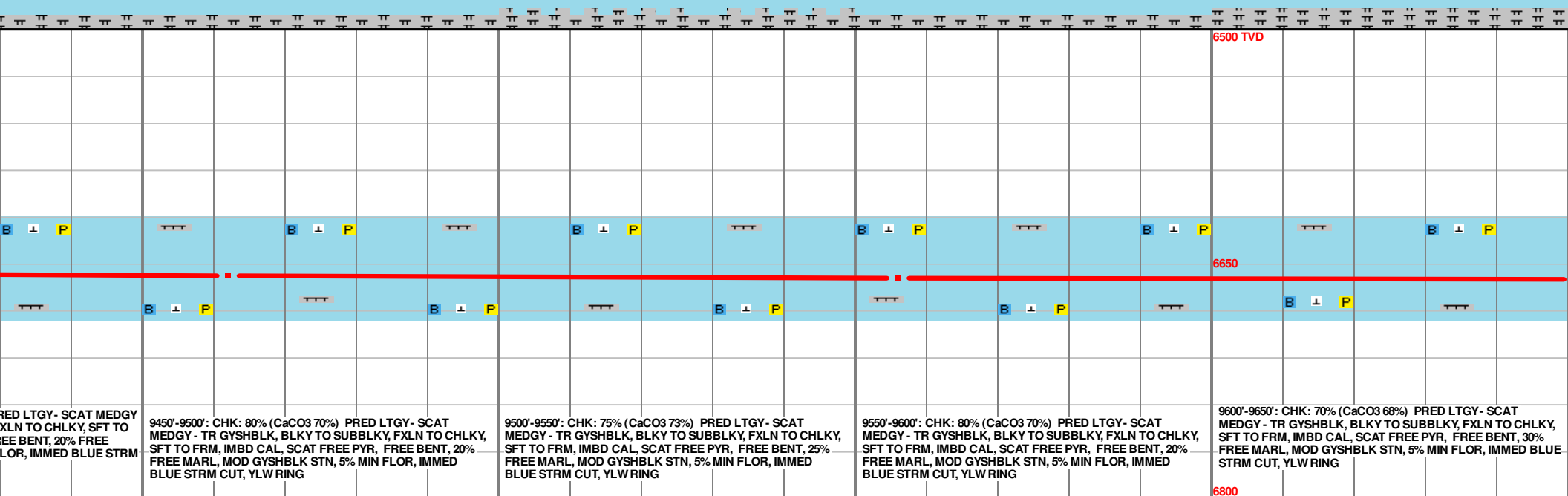
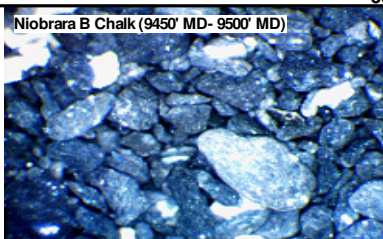
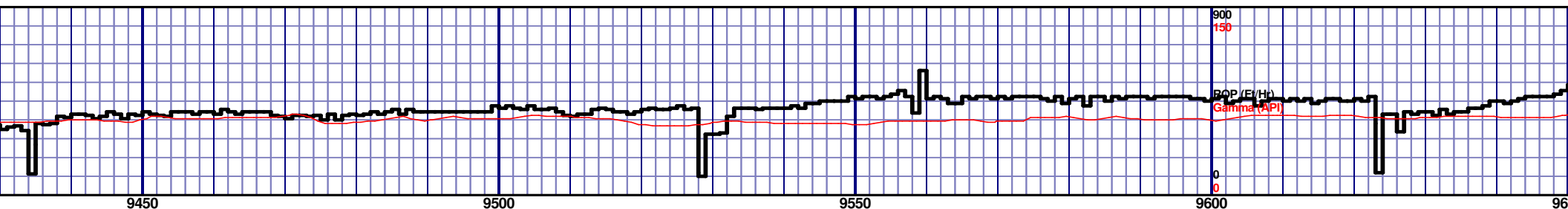
6500 TVD										6500 TVD									
DRKGY - PYR, LAMN, GY - SCAT D BLUE										DRKGY - PYR, LAMN, GY - SCAT D BLUE									
9000'-9050': MRL: 65% (CaCO3 58%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										9000'-9050': MRL: 65% (CaCO3 58%) 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									
9050'-9100': MRL: 60% (CaCO3 48%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										9050'-9100': MRL: 60% (CaCO3 48%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9100'-9150': MRL: 60% (CaCO3 46%) 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										9100'-9150': MRL: 60% (CaCO3 46%) 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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9200'-9250': MRL: 65% (CaCO3 46%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING										9200'-9250': MRL: 65% (CaCO3 46%) DRKGY - MEDDRKGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYR, LAMN, IMBD CALC, 5% FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
6800										6800									



PARA B CHALK 655' TVD									
TOOH @ 11:30 PM ON 1/19/2014 @ 9244' MD TO REPLACE MWD TOOL. TIH @ 8:30 AM ON 1/20/2014. RESUMED DRILLING @ 2:30 PM ON 1/20/2014 W/ BIT #5, 6.125", SMITH/MDI513, (S/N) JH4661 IN @ 6868' MD.									
6500 TVD									
6650									
CHK: 70% (CaCO3 73%) PRED LTGY- SCAT GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9250'-9300': CHK: 70% (CaCO3 65%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9300'-9350': CHK: 70% (CaCO3 68%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9350'-9400': CHK: 75% (CaCO3 70%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 25% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
9400'-9450': CHK: 80% (CaCO3 72%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 25% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
6800									

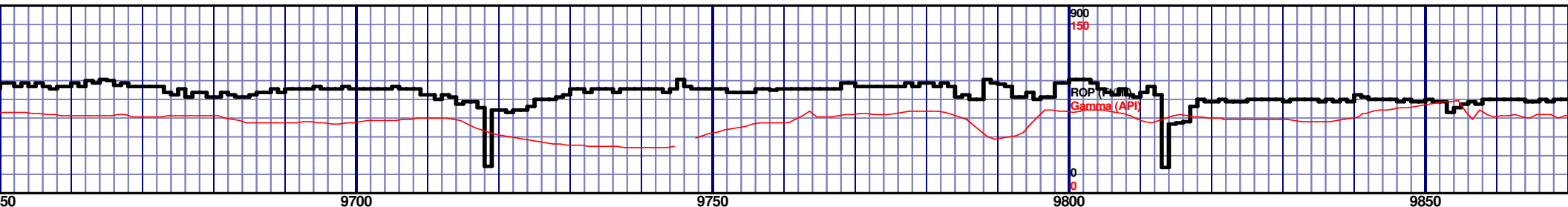
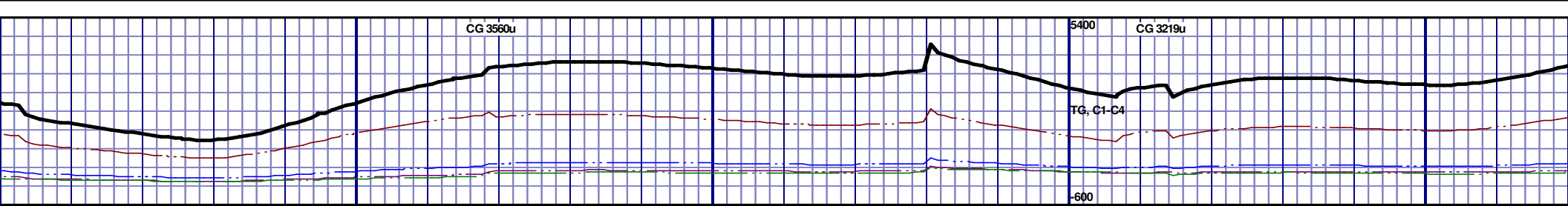
MD 9273 TVD 6654.09
INC 90.1 AZ 268.8
VS 2866.9

MD 9368 TVD 6655.25
INC 88.5 AZ 270.6
VS 2961.89

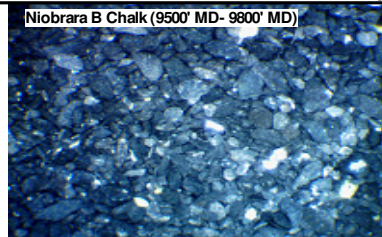


MD 9462 TVD 6657.22
INC 89.1 AZ 270.2
VS 3055.86

MD 9556 TVD 6658.78
INC 89 AZ 270.6
VS 3149.83



Niobrara B Chalk (9500' MD- 9800' MD)

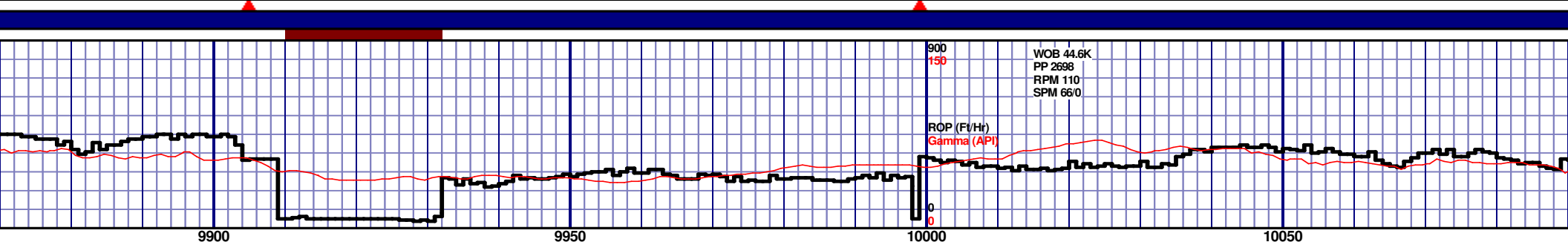
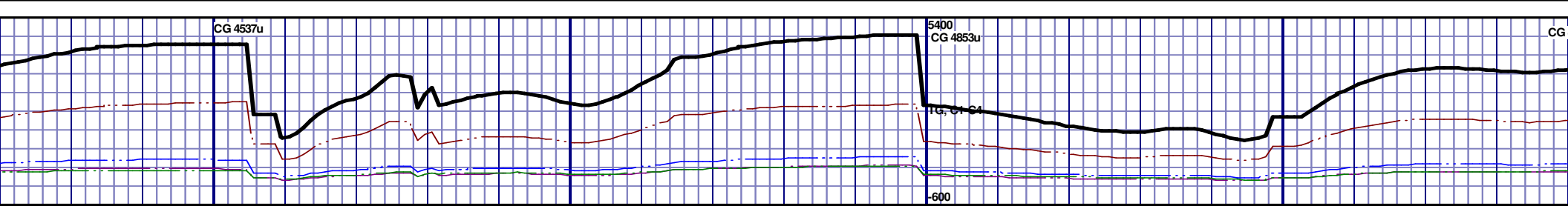


9650'-9700': CHK: 70% (CaCO3 70%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9700'-9750': CHK: 70% (CaCO3 72%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9750'-9800': CHK: 55% (CaCO3 63%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 45% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9800'-9850': CHK: 60% (CaCO3 69%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 40% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				9850'-9900': CHK: 70% (CaCO3 70%) PRED LTGY- SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING			
B I P				B I P				B I P				B I P				B I P			

MD 9651 TVD 6659.85
INC 89.7 AZ 271.4
VS 3244.8

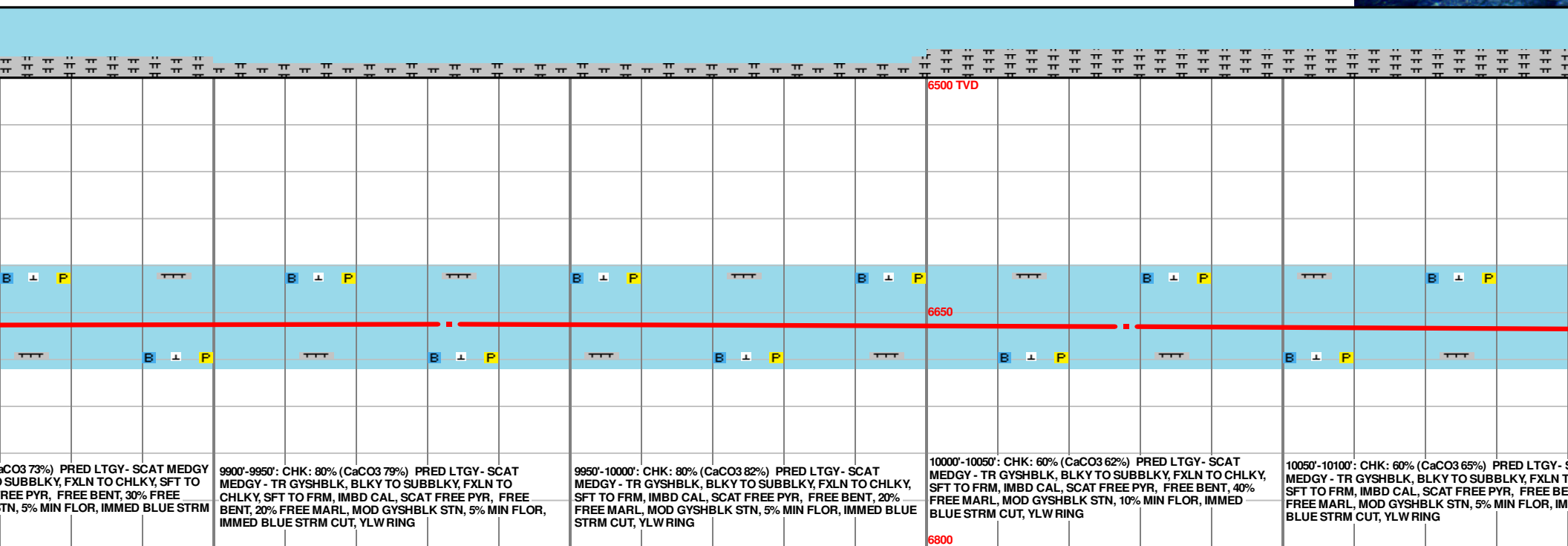
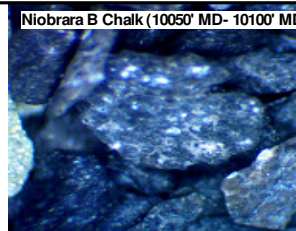
MD 9745 TVD 6659.77
INC 90.4 AZ 271.4
VS 3338.75

MD 9839 TVD 6658.05
INC 91.7 AZ 271.4
VS 3432.68



WOB 44.6K
PP 2698
RPM 110
SPM 66'0

ROP (Ft/Hr)
Gamma (API)



CO3 73%) PRED LTGY - SCAT MEDGY
SUBBLKY, FXLN TO CHLKY, SFT TO
FREE PYR, FREE BENT, 30% FREE
STN, 5% MIN FLOR, IMMED BLUE STRM

9900'-9950': CHK: 80% (CaCO3 79%) PRED LTGY - SCAT
MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO
CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE
BENT, 20% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR,
IMMED BLUE STRM CUT, YLW RING

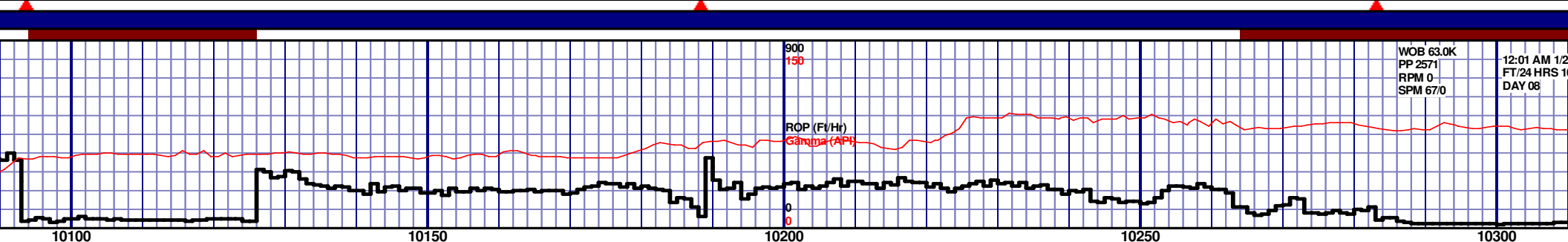
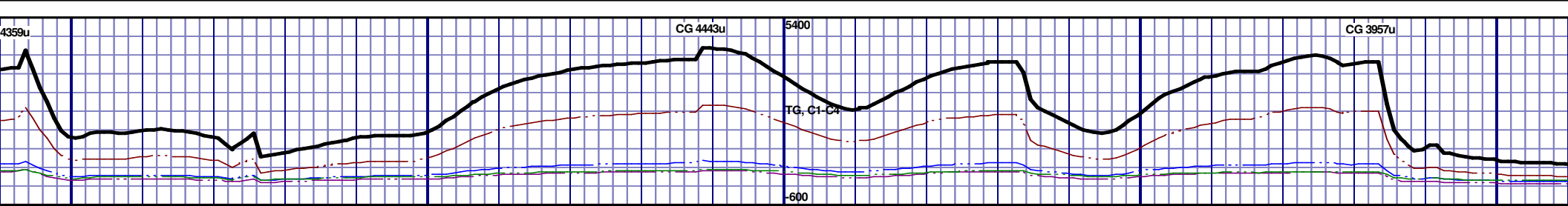
9950'-10000': CHK: 80% (CaCO3 82%) PRED LTGY - SCAT
MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 20%
FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE
STRM CUT, YLW RING

10000'-10050': CHK: 60% (CaCO3 62%) PRED LTGY - SCAT
MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 40%
FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED
BLUE STRM CUT, YLW RING

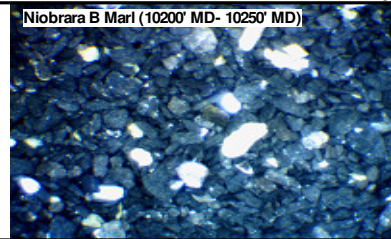
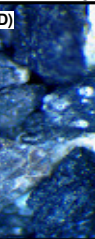
10050'-10100': CHK: 60% (CaCO3 65%) PRED LTGY - S
MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN T
SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BE
FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IM
BLUE STRM CUT, YLW RING

MD 9933 TVD 6657.56
INC 88.9 AZ 271.8
VS 3526.61

MD 10028 TVD 6658.64
INC 89.8 AZ 272.7
VS 3621.5



WOB 63.0K
PP 2571
RPM 0
SPM 670
12:01 AM 1/2
FT/24 HRS 10
DAY 08

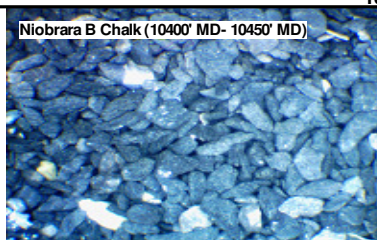
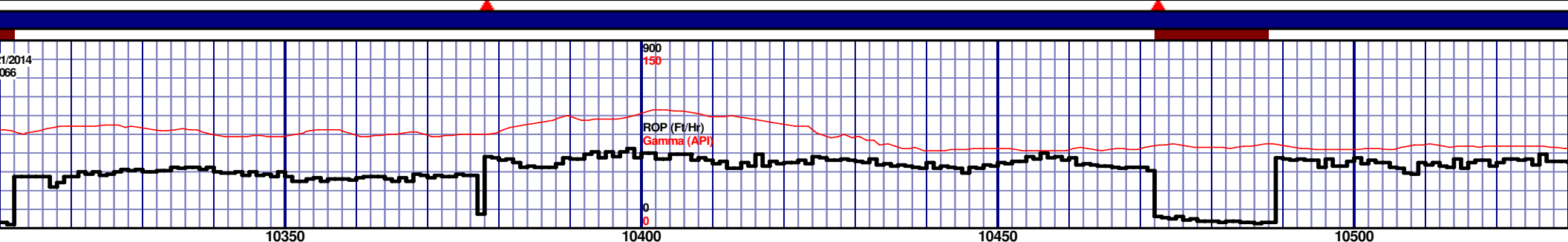


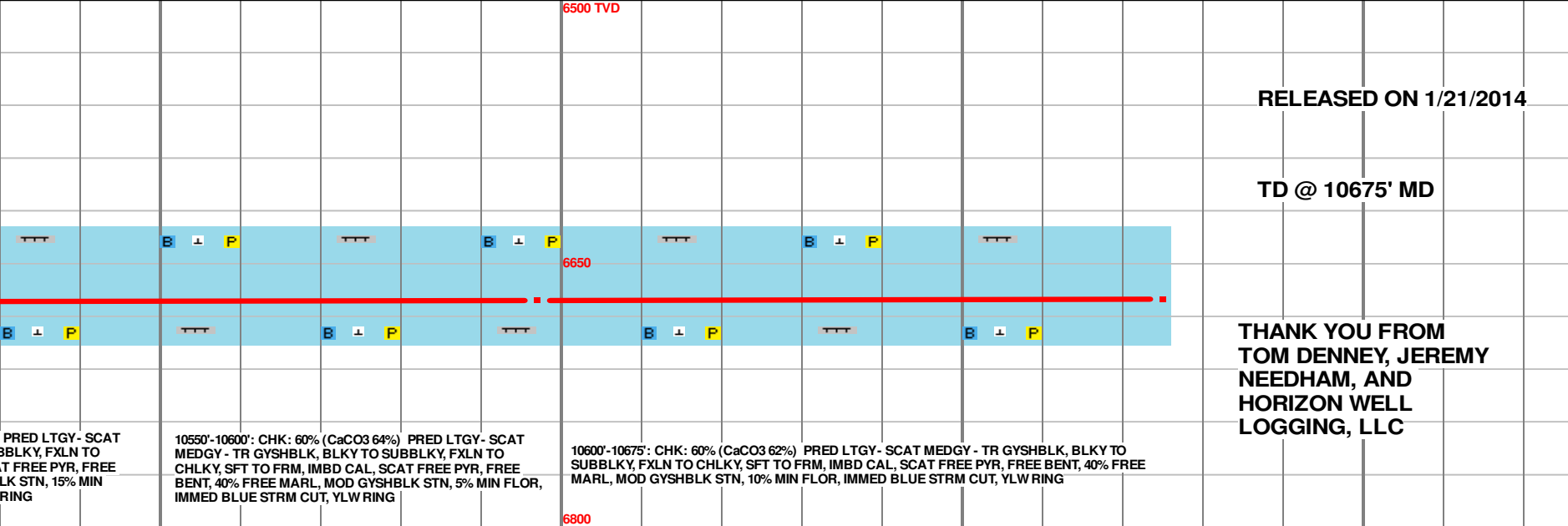
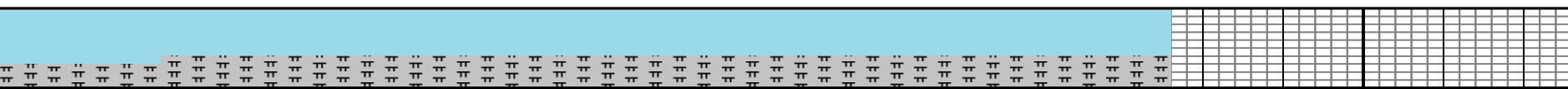
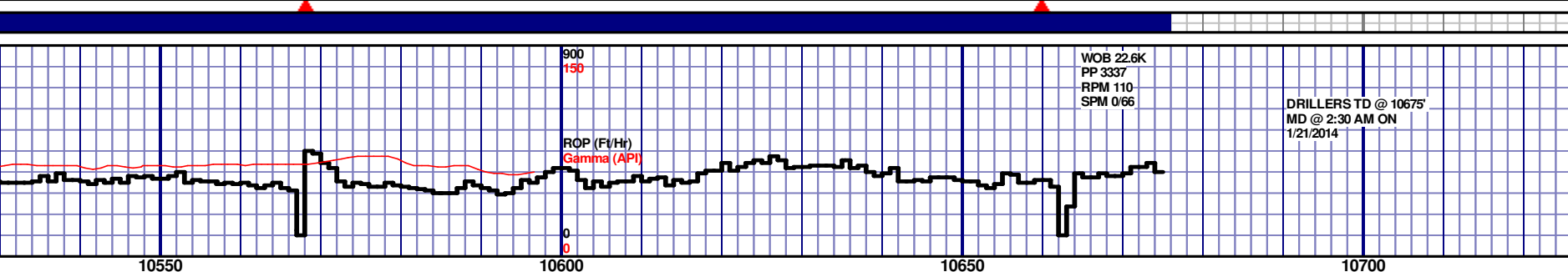
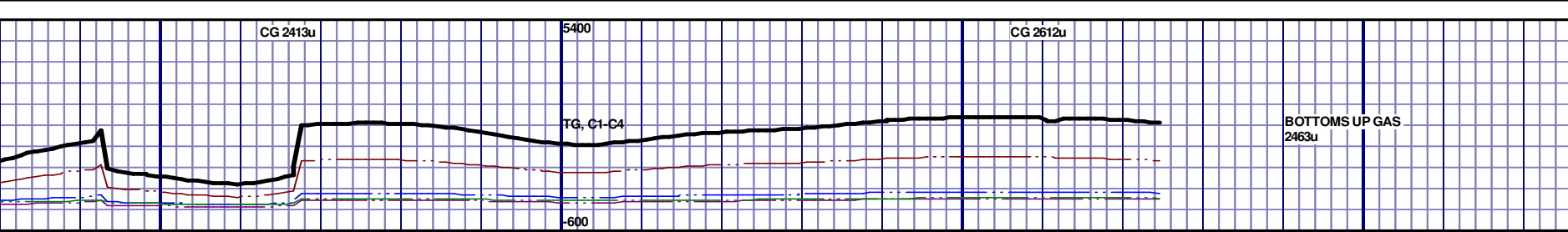
10100'-10150': CHK: 55% (CaCO3 56%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, 10% FREE BENT, 35% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10150'-10200': CHK: 60% (CaCO3 64%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, 10% FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					10200'-10250': MRL: 60% (CaCO3 52%) 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					10250'-10300': MRL: 60% (CaCO3 54%) 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					10300'-10350': GYSHBLK, IMBD CALC, MEDGY, MOD GYSHBLK, IMMED BLUE STRM CUT, YLW RING				
B I P					B I P					B I P					B I P					B I P				

NIORARA B MARL
10216' MD 6667' TVD

MD 10123 TVD 6661.45
INC 86.8 AZ 269.6
VS 3716.4

MD 10218 TVD 6667.09
INC 86.4 AZ 268.3
VS 3811.22

[illegible]



RELEASED ON 1/21/2014

TD @ 10675' MD

THANK YOU FROM
TOM DENNEY, JEREMY
NEEDHAM, AND
HORIZON WELL
LOGGING, LLC

PRED LTGY - SCAT
BBLKY, FXLN TO
T FREE PYR, FREE
LK STN, 15% MIN
RING

10550'-10600': CHK: 60% (CaCO3 64%) PRED LTGY - SCAT
MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO
CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE
BENT, 40% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR,
IMMED BLUE STRM CUT, YLW RING

10600'-10675': CHK: 60% (CaCO3 62%) PRED LTGY - SCAT MEDGY - TR GYSHBLK, BLKY TO
SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CAL, SCAT FREE PYR, FREE BENT, 40% FREE
MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

MD 10597 TVD 6670.89
INC 90.2 AZ 267.6
VS 4189.95

MD 10675 TVD 6670.62
PTB: INC 90.2 AZ 267.6
VS 4267.91