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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: 6550' MD to 12007' MD
Start Date: June 1, 2014
Release Date: June 6, 2014

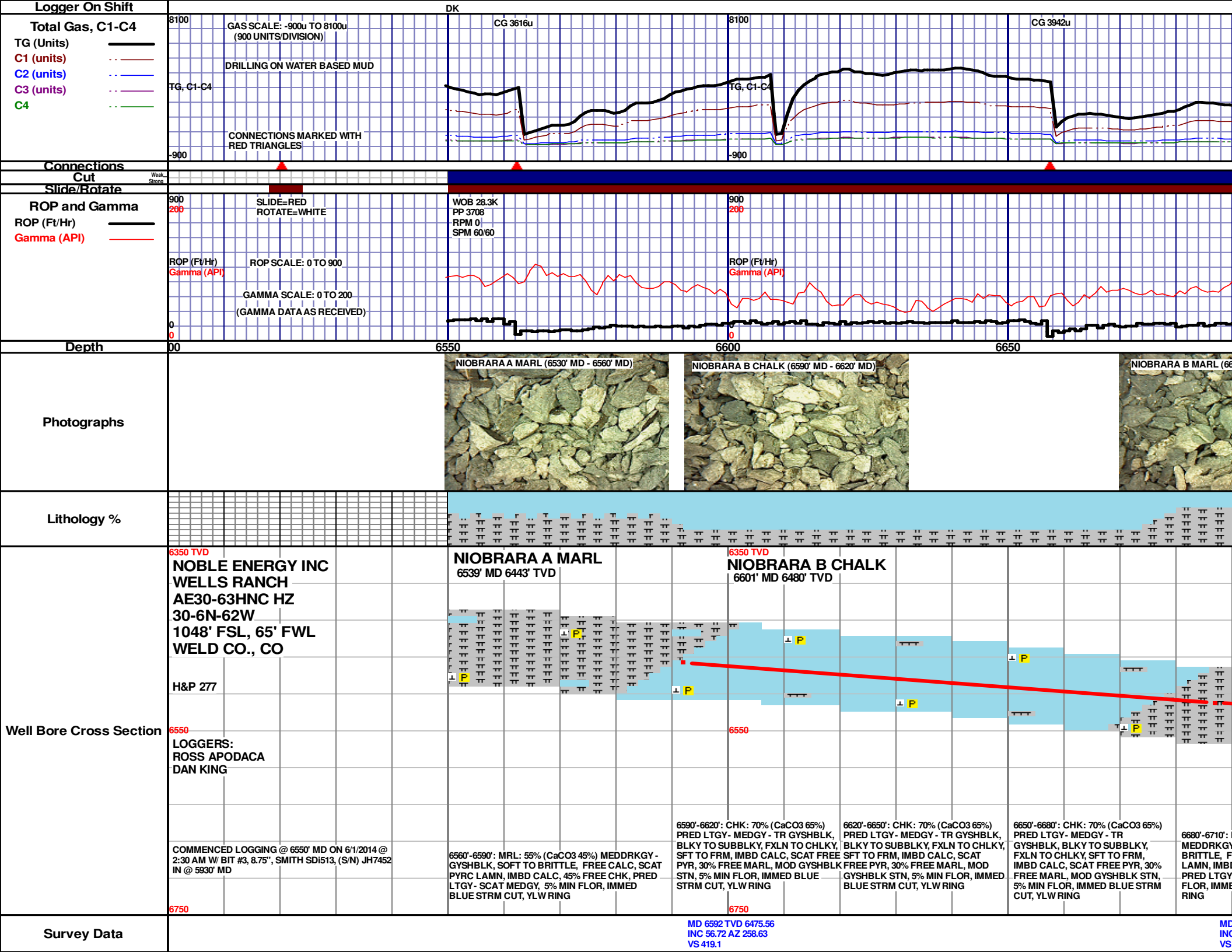
Well Information

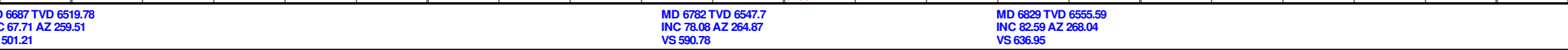
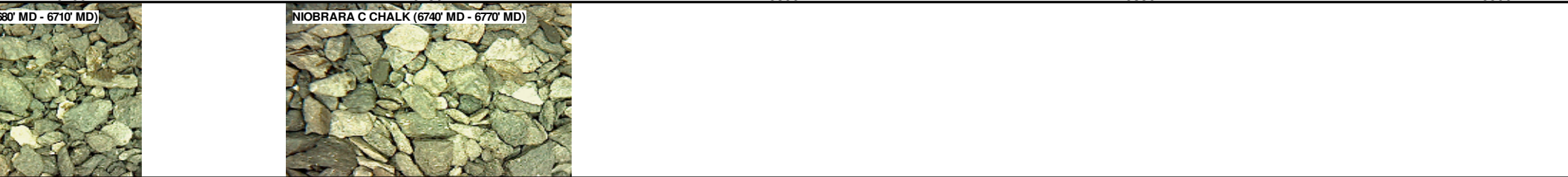
Well Name: Wells Ranch AE30-63HNC
HZ

Location: 30-6N-62W
1048' FSL, 65' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 277
Total Depth: 12007' MD
TD Date: June 6, 2014
Formation: Niobrara C Chalk
KB Elevation: 4776'
GR Elevation: 4752'
API Number: 05-123-38682-0000

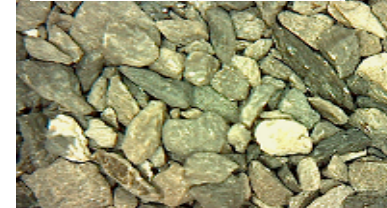




-900

ROP (Ft/Hr)
Gamma (API)

NIOBRARA C CHALK (7050' MD - 7100' MD)



SWITCHING TO 50' SAMPLE INTERVAL

6350 TVD

6550

6919'-6950': CHK: 70% (CaCO3 70%)
 PRED LTGY- MEDGY- TR GYSHBLK,
 BLKY TO SUBBLKY, FXLN TO
 CHLKY, SFT TO FRM, IMBD CALC,
 SCAT FREE PYR, FREE BENT, 30%
 FREE MARL, MOD GYSHBLK STN,
 10% MIN FLOW, IMMED BLUE STRM
 CUT, YLW RING

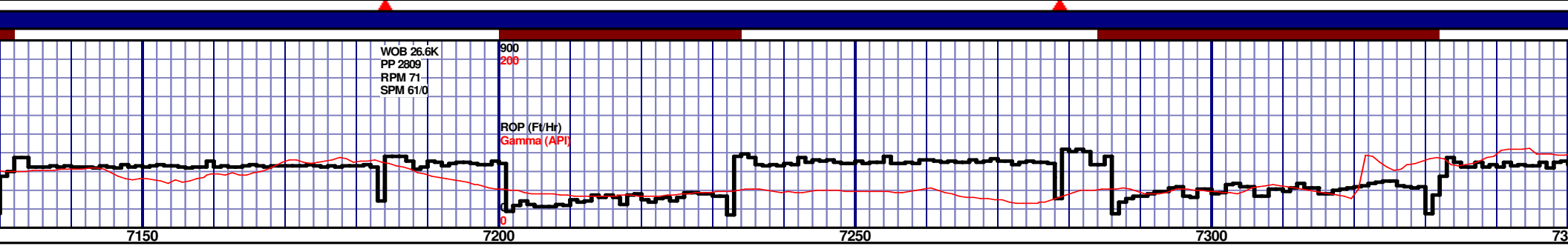
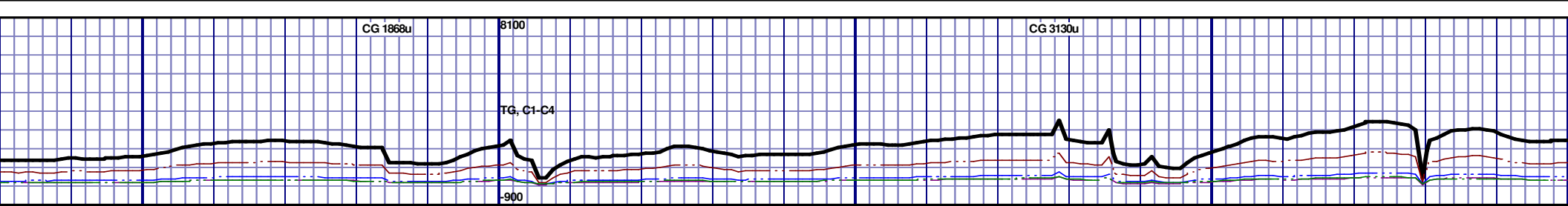
6950'-7000': CHK: 80% (CaCO3 75%) PRED LTGY- MEDGY- TR
GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM,
IMBD CALC, SCAT FREE PYR, 20% FREE MARL, MOD
GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW
RING

7000'-7050': CHK: 75% (CaCO₃ 70%) PRED LTGY - MEDGY - TR
GYSHBLK, BLKY TO 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

7050'-7100': CHK: 80% (CaCO₃ 75%) PRED LTGY- MEDGY - TR
GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM
IMBD CALC, SCAT FREE PYR, FREE BENT, 20% FREE MARL,
MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT,
YLW RING

7100'-7150': CHK: 65% (CaCO₃ 70%) PF
GYSHBLK, BLKY TO SUBBLKY, FXLN
IMBD CALC, SCAT FREE PYR, FREE B
MOD GYSHBLK STN, 10% MIN FLOR, II
YLW RING

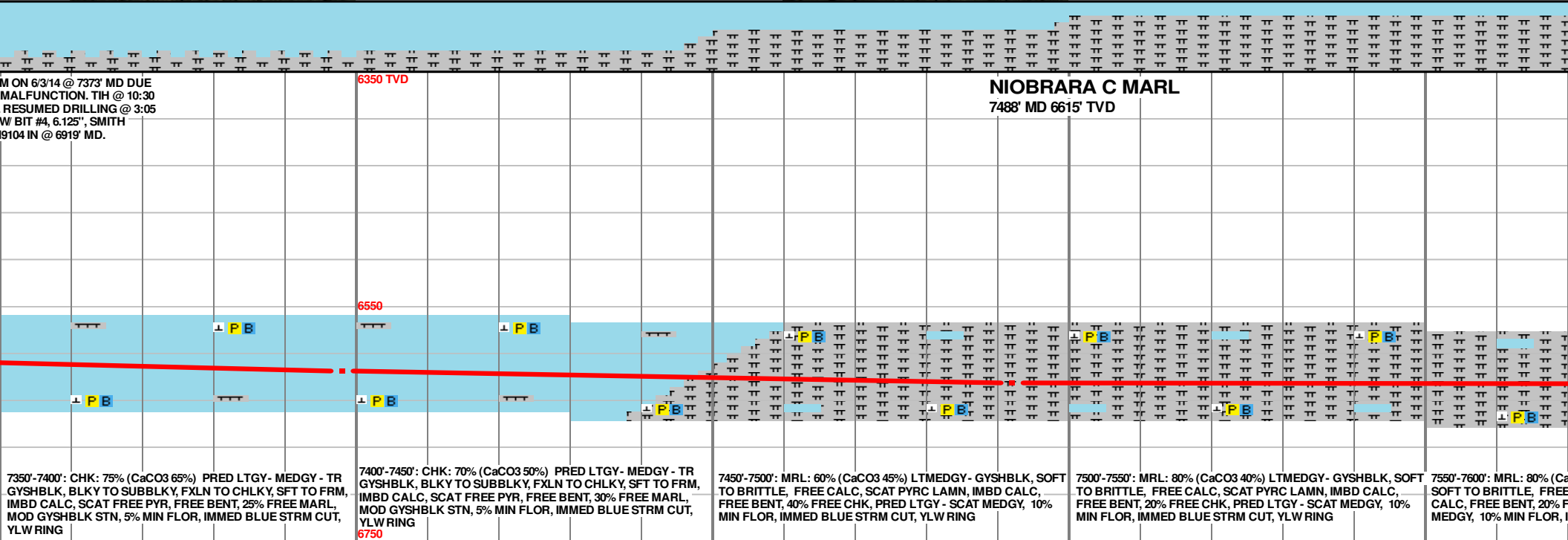
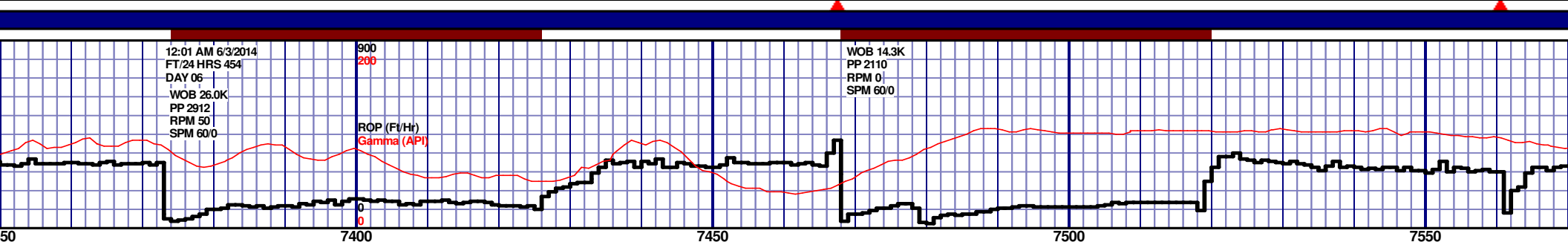
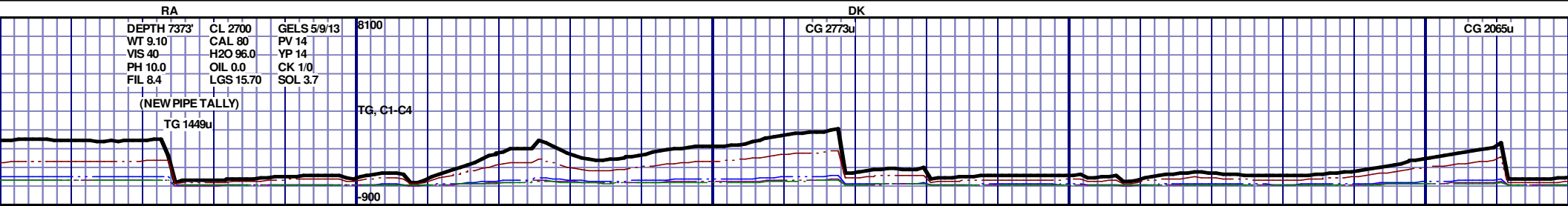
MD 7114 TVD 6575.06
INC 87.58 AZ 267.39
VS 920.94



TOOH @ 1:15 AM TO MWD TOOL AM ON 6/3/2014 PM ON 6/3/2014 SDI513, (S/N) JH									
RED LTGY - MEDGY - TR TO CHLKY, SFT TO FRM, ENT, 35% FREE MARL, IMMED BLUE STRM CUT, YLV RING									
7150'-7200': CHK: 60% (CaCO3 65%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 40% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLV RING									
7200'-7250': CHK: 70% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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, YLV RING									
7250'-7300': CHK: 85% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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, YLV RING									
7300'-7350': CHK: 70% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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, YLV RING									

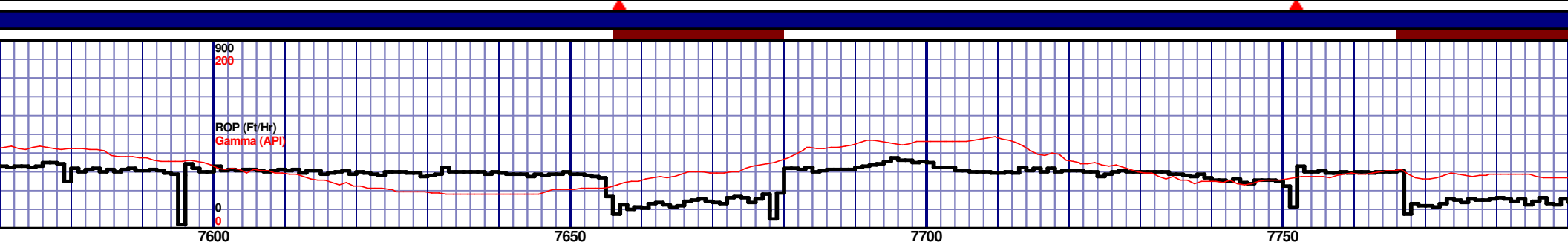
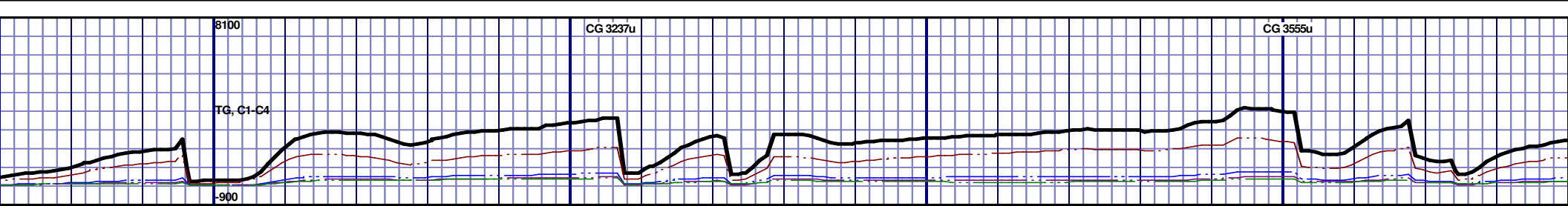
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INC 85.67 AZ 265.14
VS 1015.43

MD 7303 TVD 6590.95
INC 81.75 AZ 261.31
VS 1107.96

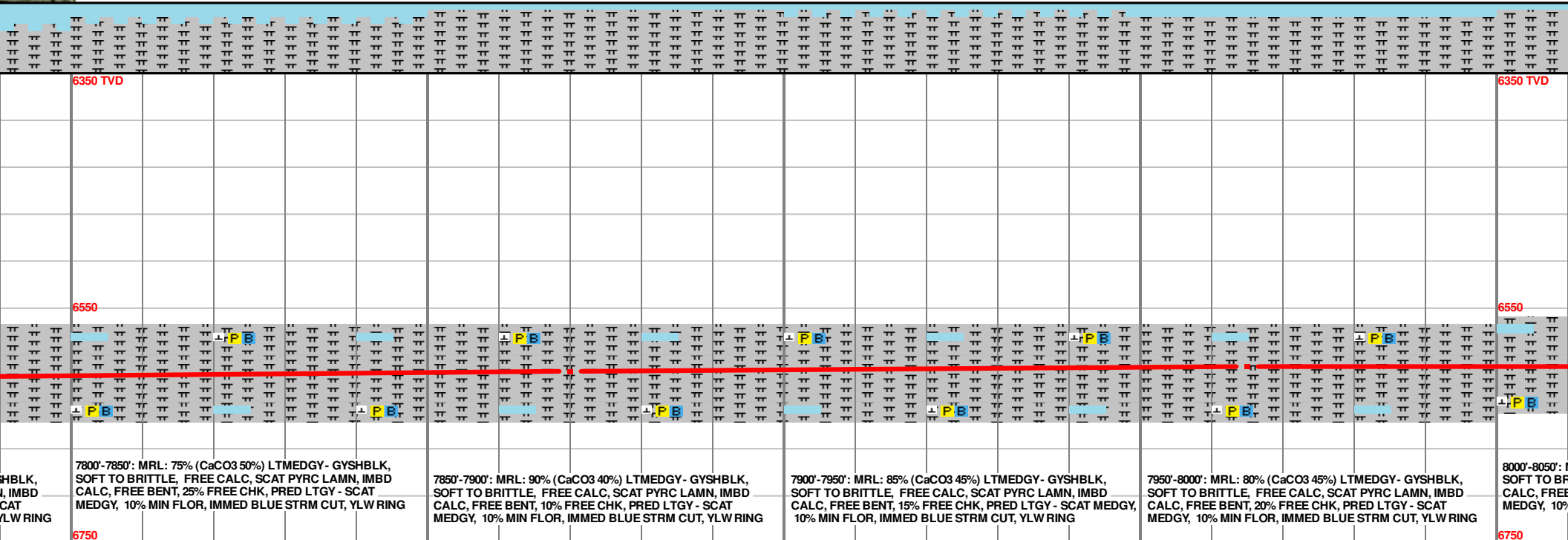
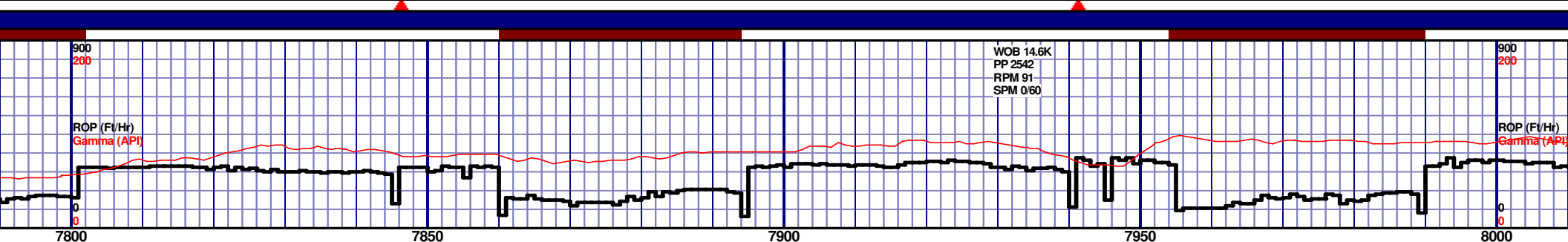


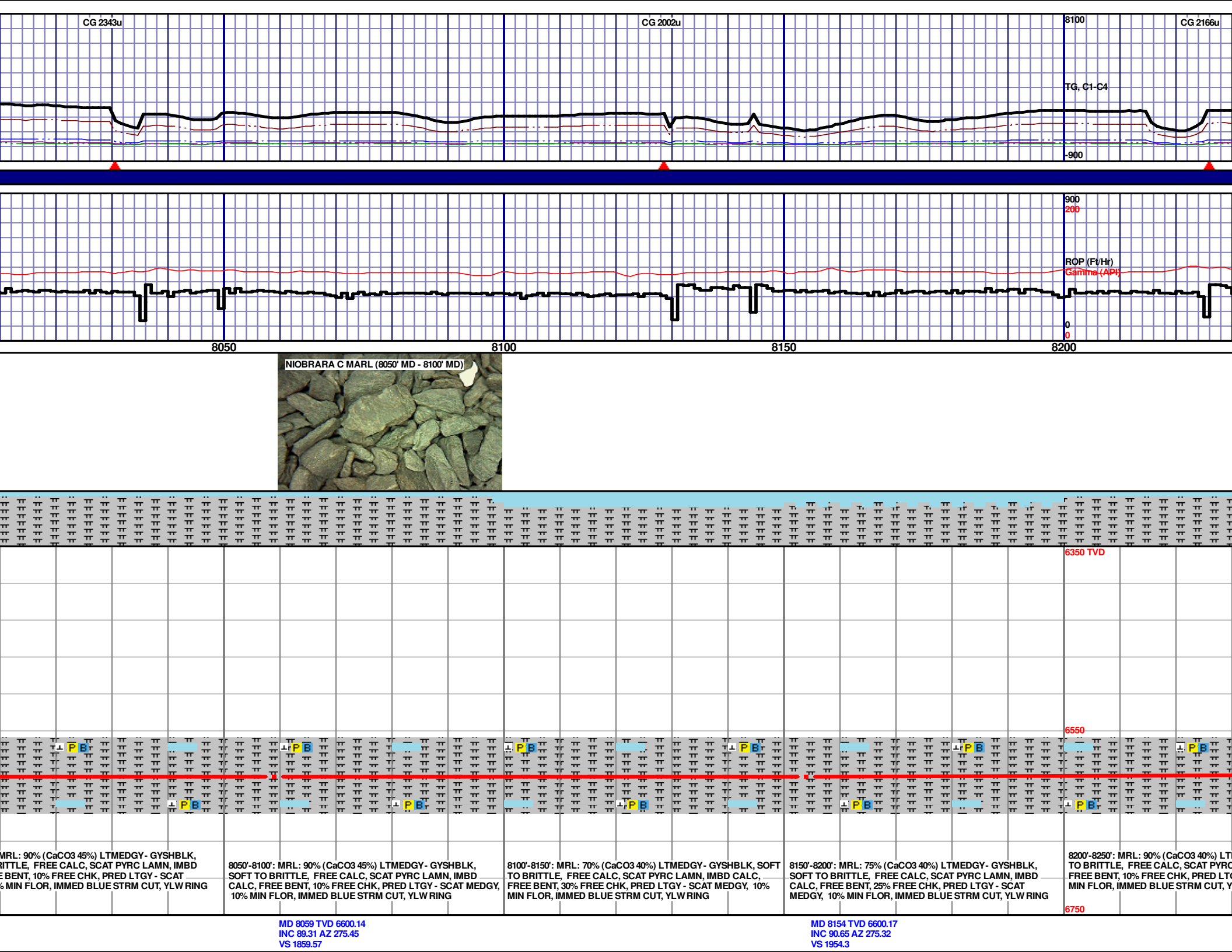
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INC 80.65 AZ 263.04
VS 1200.71

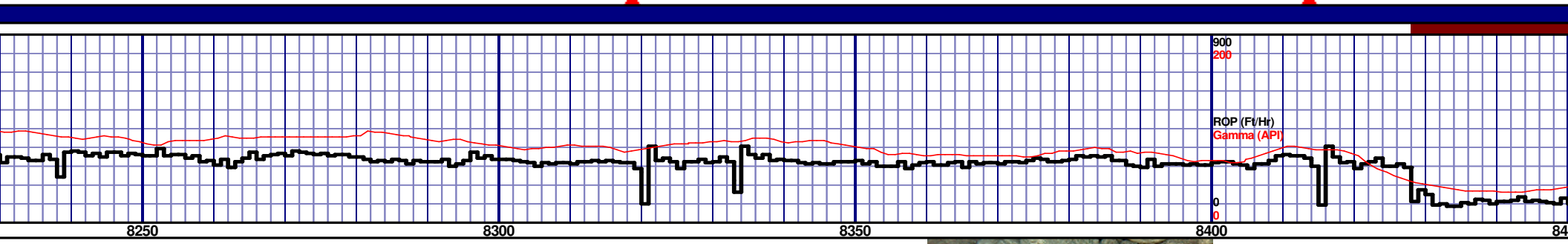
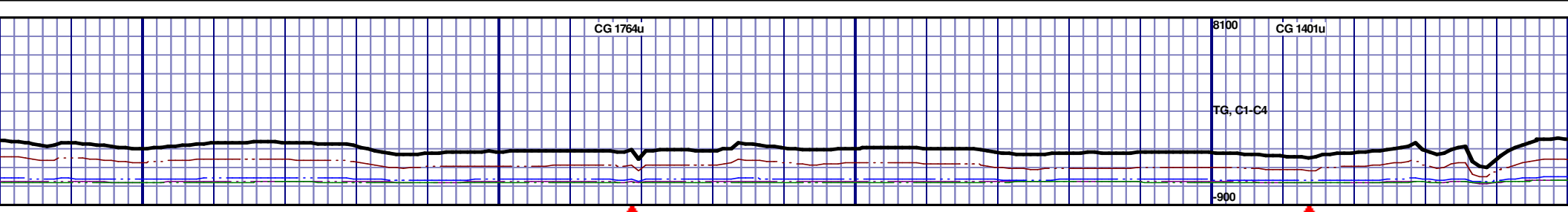
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INC 87.86 AZ 268.49
VS 1293.74



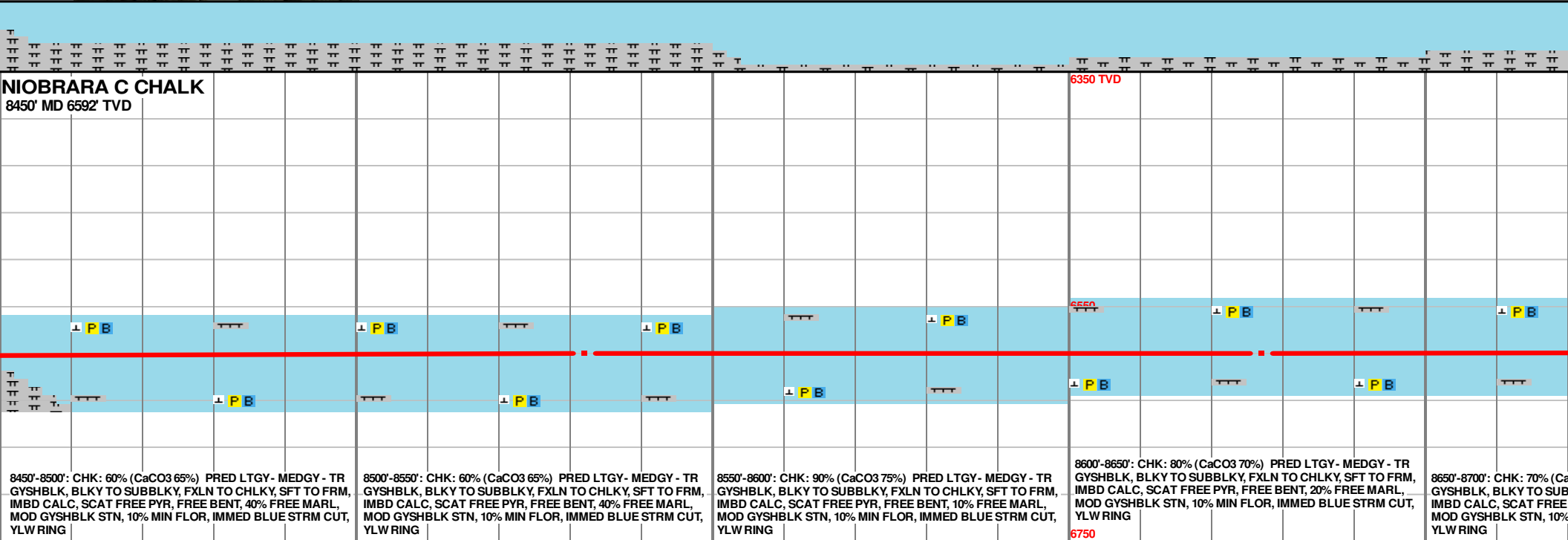
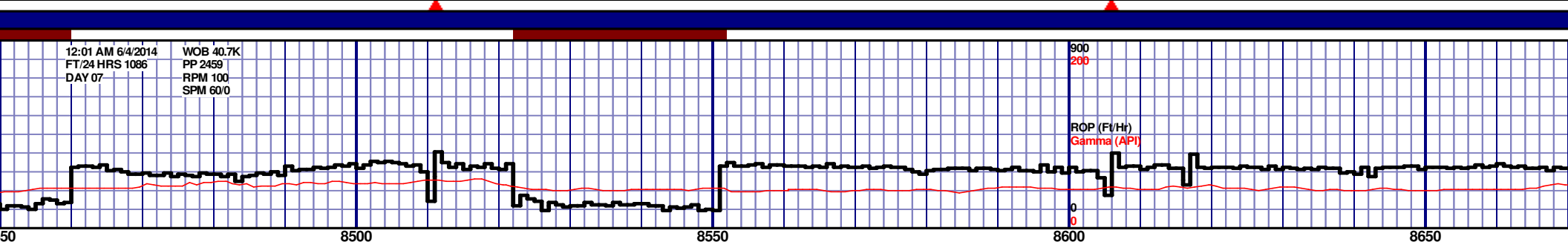
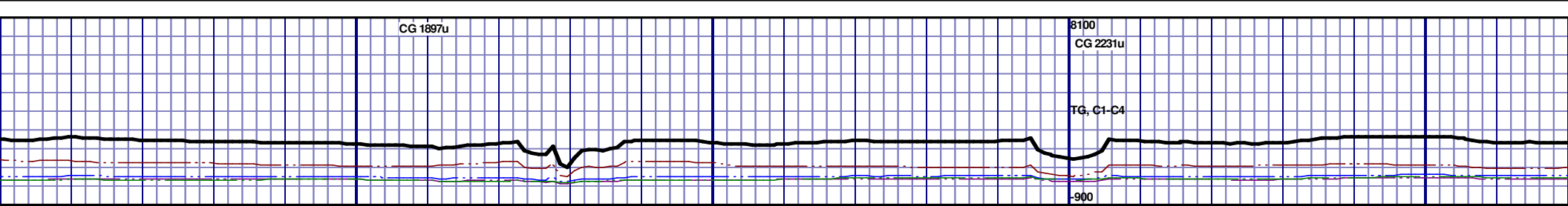
6350 TVD									
6550									
6750									
7600'-7650': MRL: 60% (CaCO3 45%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 40% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7650'-7700': MRL: 70% (CaCO3 45%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7700'-7750': MRL: 70% (CaCO3 45%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
7750'-7800': MRL: 65% (CaCO3 45%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									

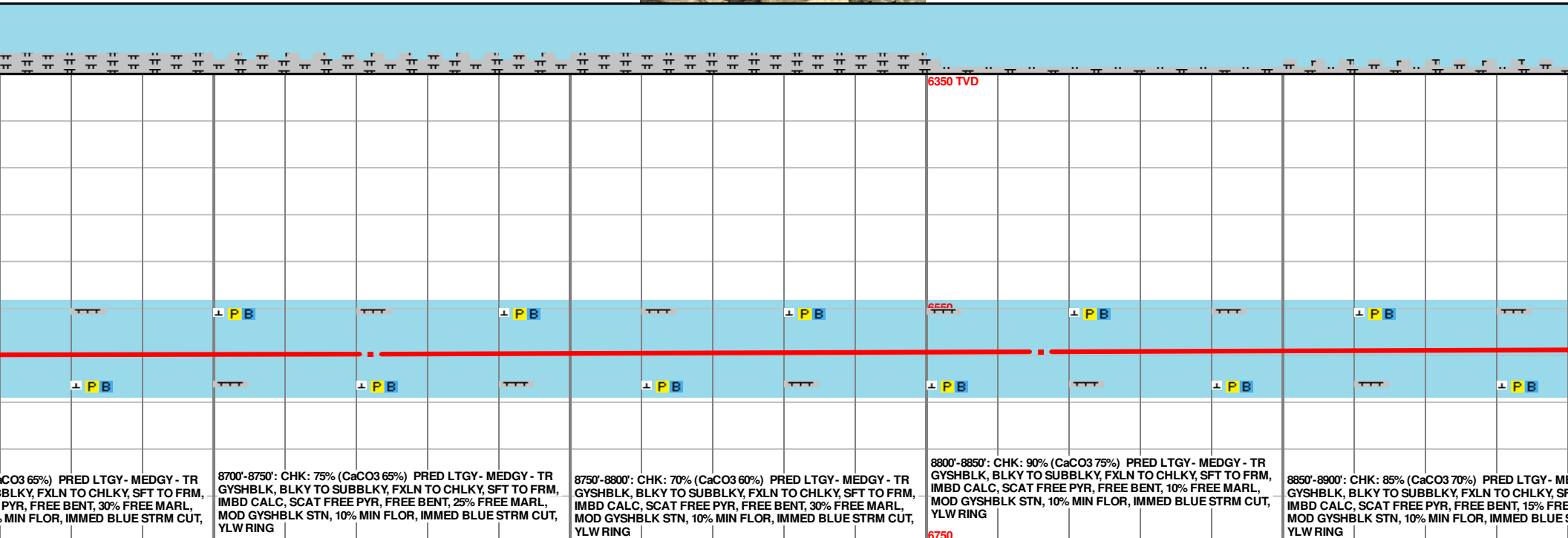
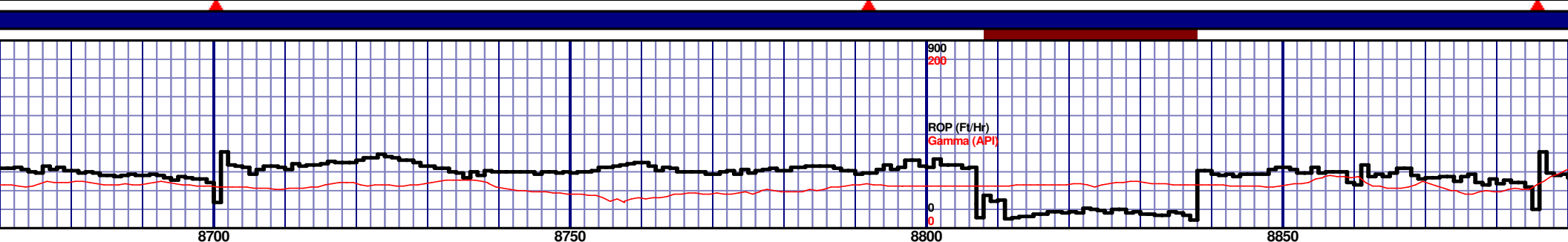
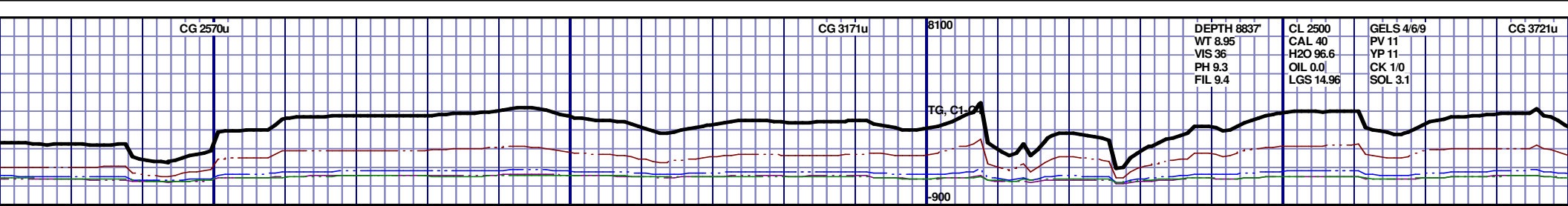


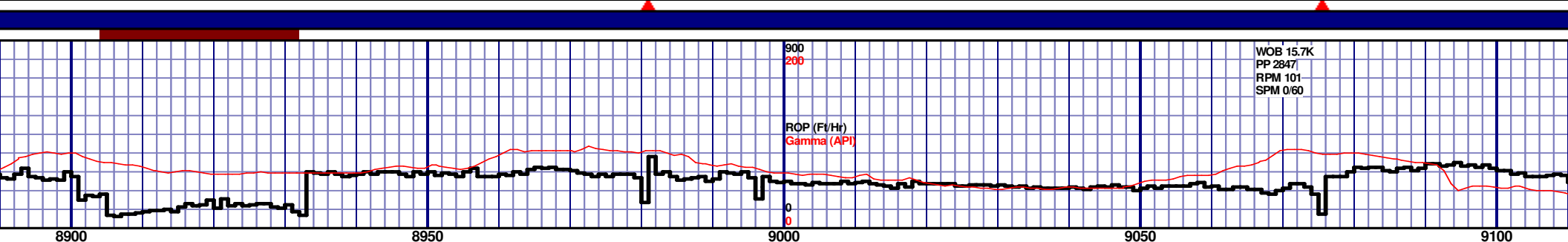
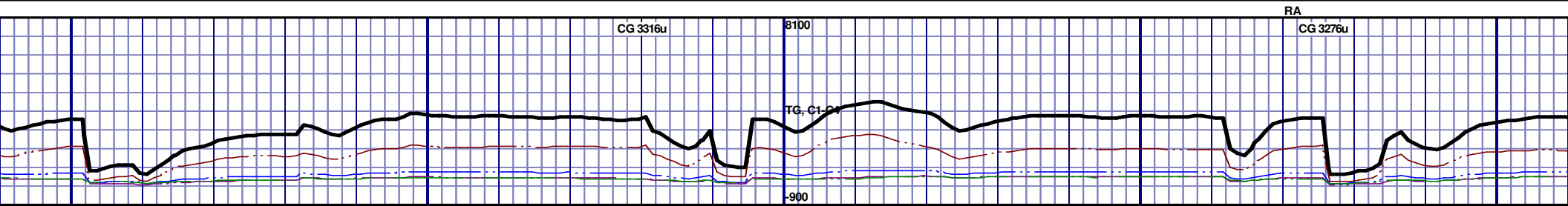




8250'-8300': MRL: 80% (CaCO3 45%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 20% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8300'-8350': MRL: 70% (CaCO3 50%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 30% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8350'-8400': MRL: 65% (CaCO3 40%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 35% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING	8400'-8450': MRL: 75% (CaCO3 40%) LTMEDGY - GYSHBLK, SOFT TO BRITTLE, FREE CALC, SCAT PYRC LAMN, IMBD CALC, FREE BENT, 25% FREE CHK, PRED LTGY - SCAT MEDGY, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING
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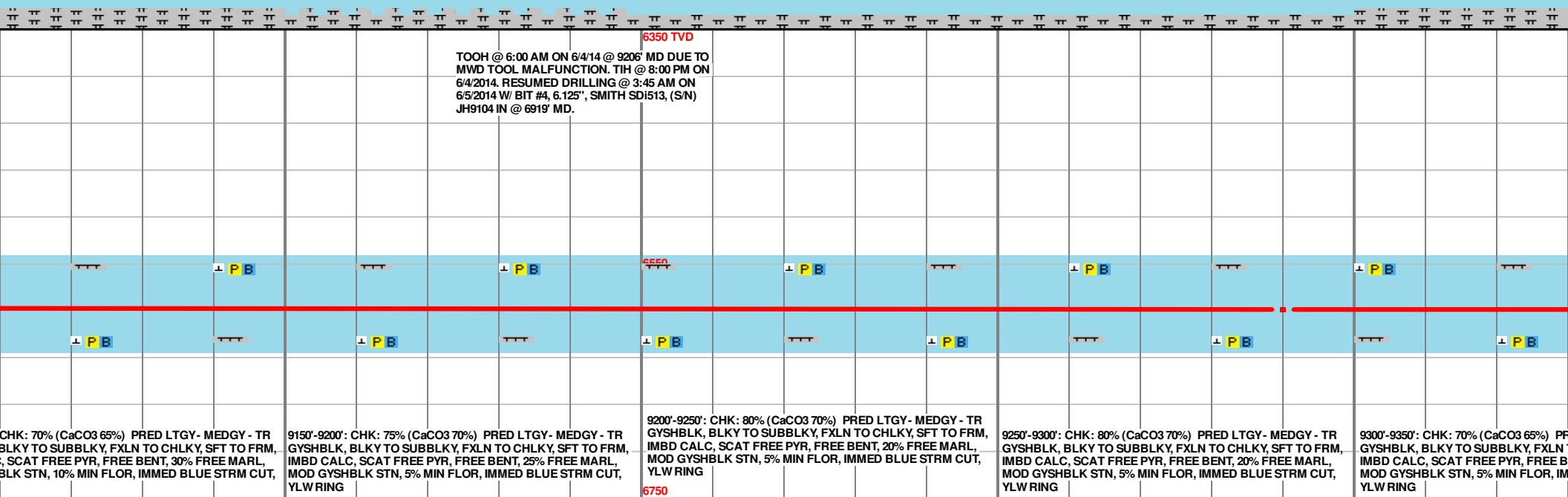
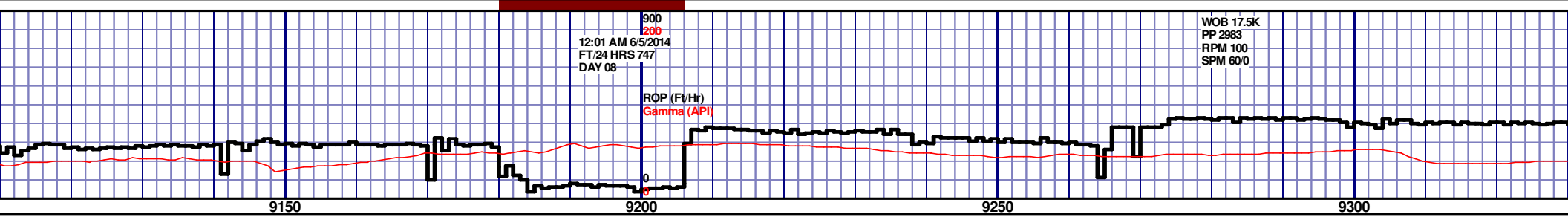
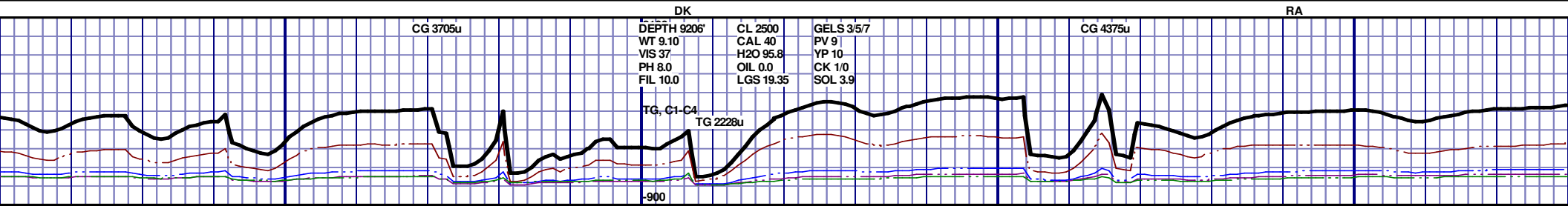


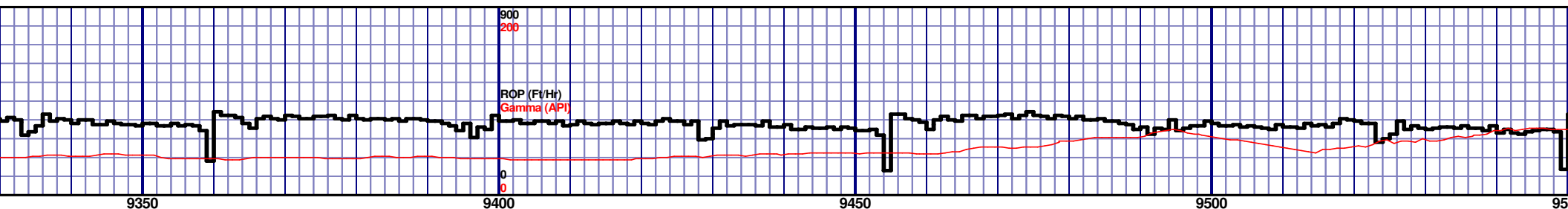
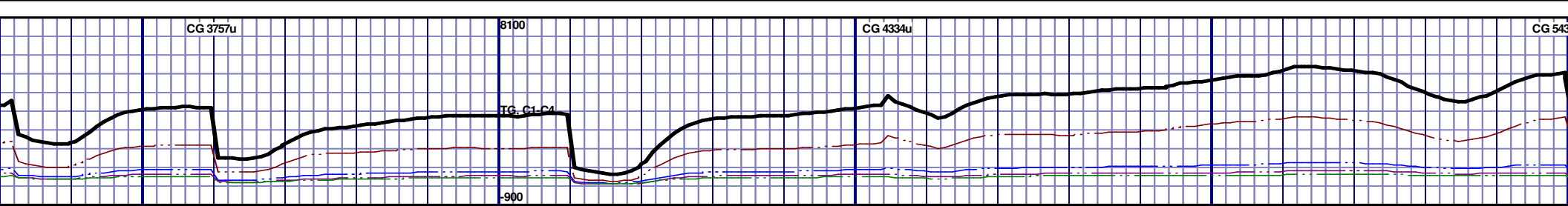
6350 TVD					6650					6750				
EDGY - TR FT TO FRM, EE MARL, STRM CUT,					8900'-8950': CHK: 80% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 20% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					8950'-9000': CHK: 70% (CaCO3 65%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING				
9000'-9050': CHK: 75% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 25% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					9050'-9100': CHK: 75% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 25% FREE MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE STRM CUT, YLW RING					9100'-9150': GYSHBLK, IMBD CALC, MOD GYSH				

MD 8911 TVD 6585.33
INC 89.87 AZ 268.21
VS 2709.99

MD 9006 TVD 6586.8
INC 88.36 AZ 268.74
VS 2804.89

MD 9101 TVD
INC 89.78 A
VS 2899.78





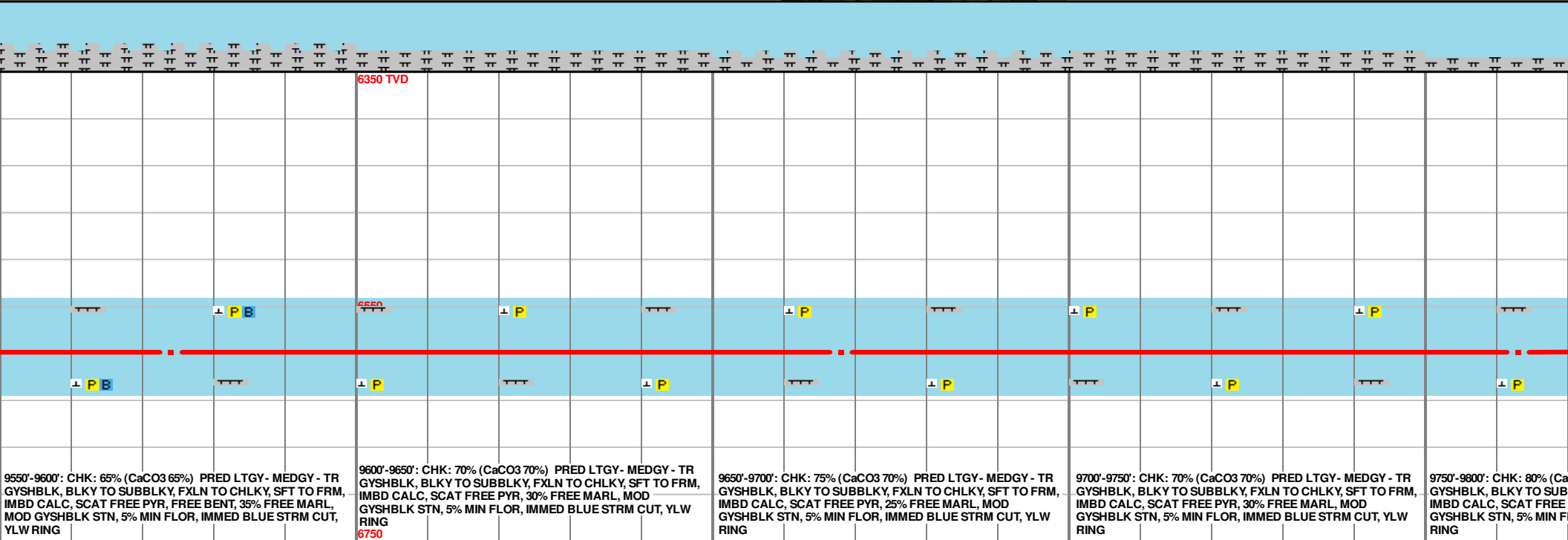
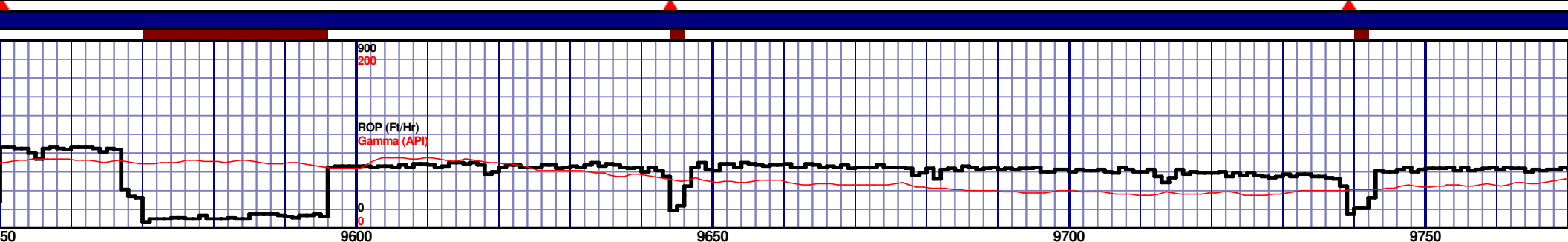
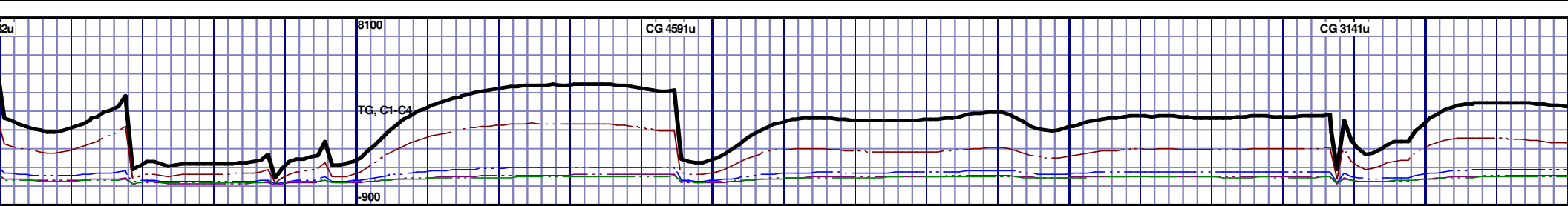
NIOBRARA C CHALK (9350' MD - 9400' MD)

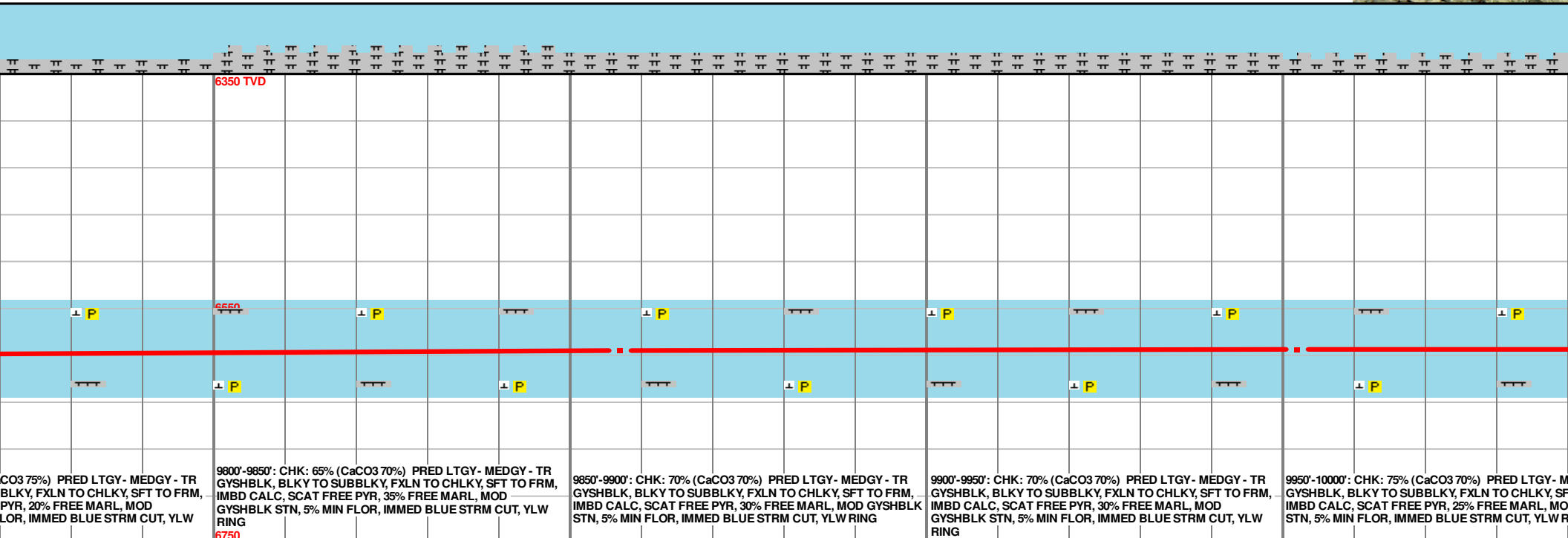
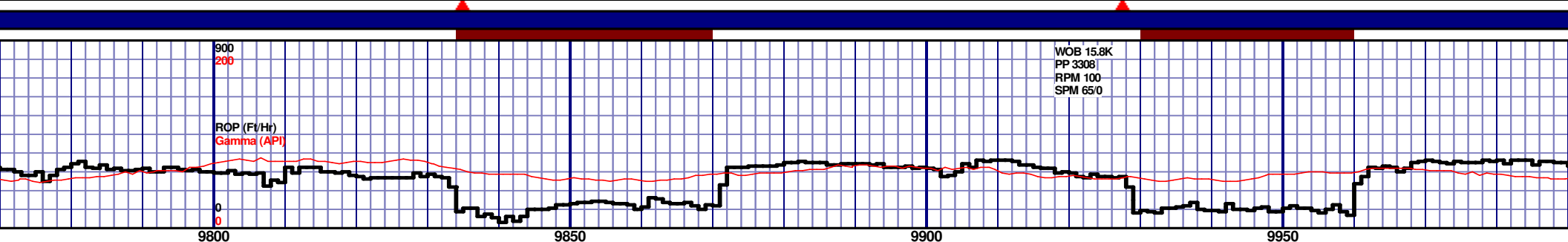
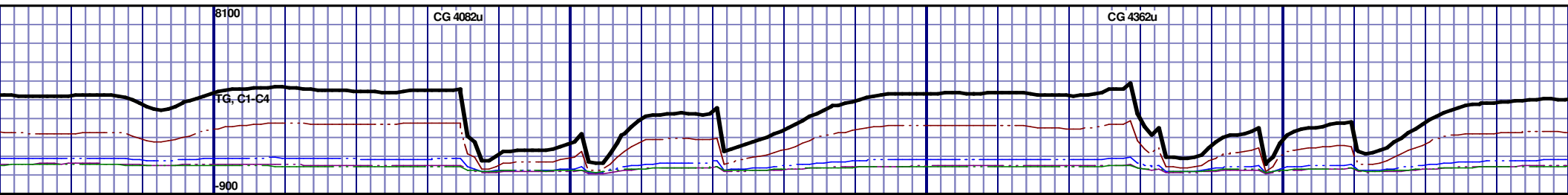


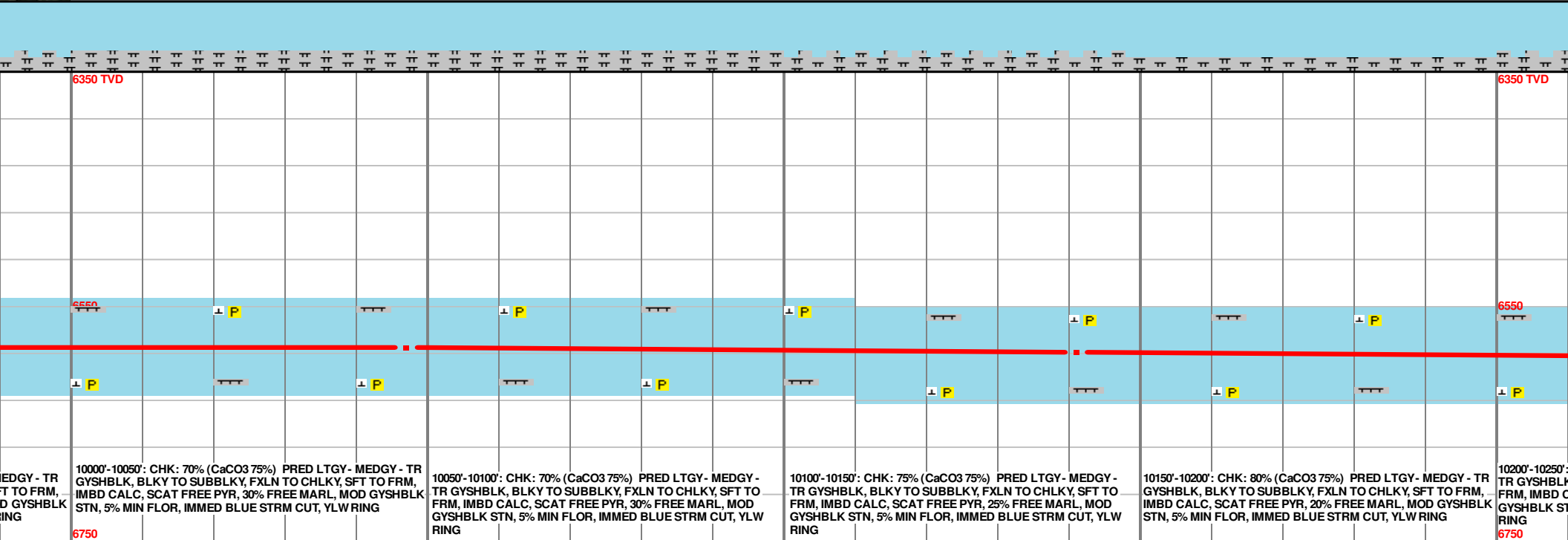
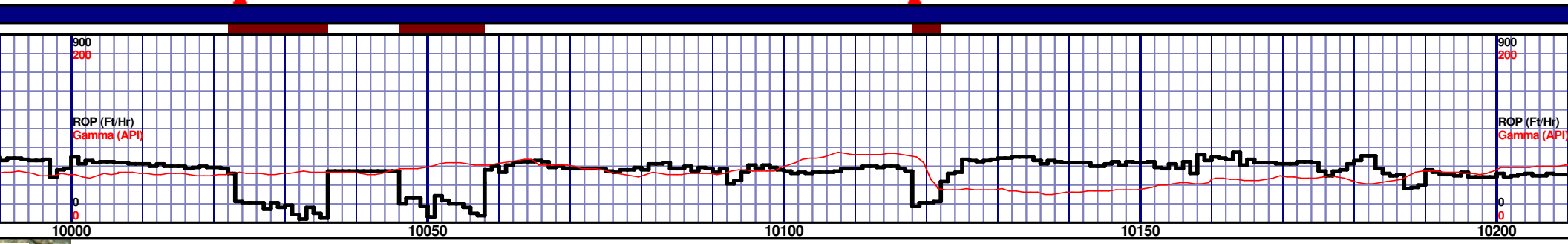
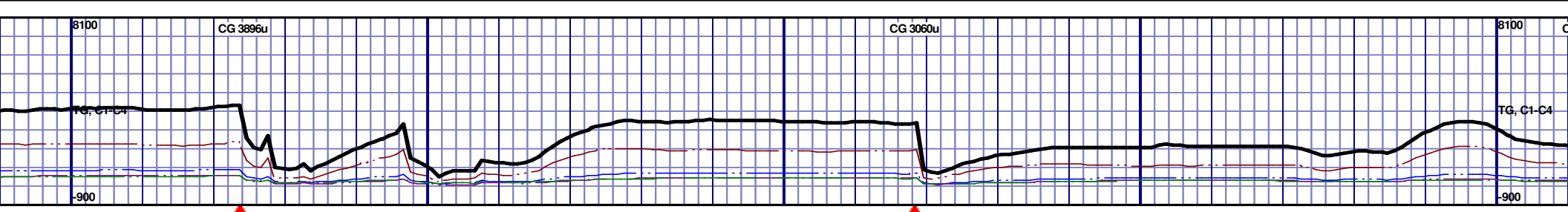
6350 TVD									
P B					P B				
P B					P B				
RED LTGY - MEDGY - TR TO CHLKY, SFT TO FRM, ENT, 30% FREE MARL, IMMED BLUE STRM CUT,					9400'-9450': CHK: 80% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 20% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLWR RING				
9350'-9400': CHK: 70% (CaCO3 65%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLWR RING					9450'-9500': CHK: 80% (CaCO3 70%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 20% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLWR RING				
9500'-9550': CHK: 70% (CaCO3 65%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLWR RING									

MD 9384 TVD 6589.42
INC 89.85 AZ 268.87
VS 3182.65

MD 9479 TVD 6589.24
INC 90.36 AZ 267.48
VS 3277.53



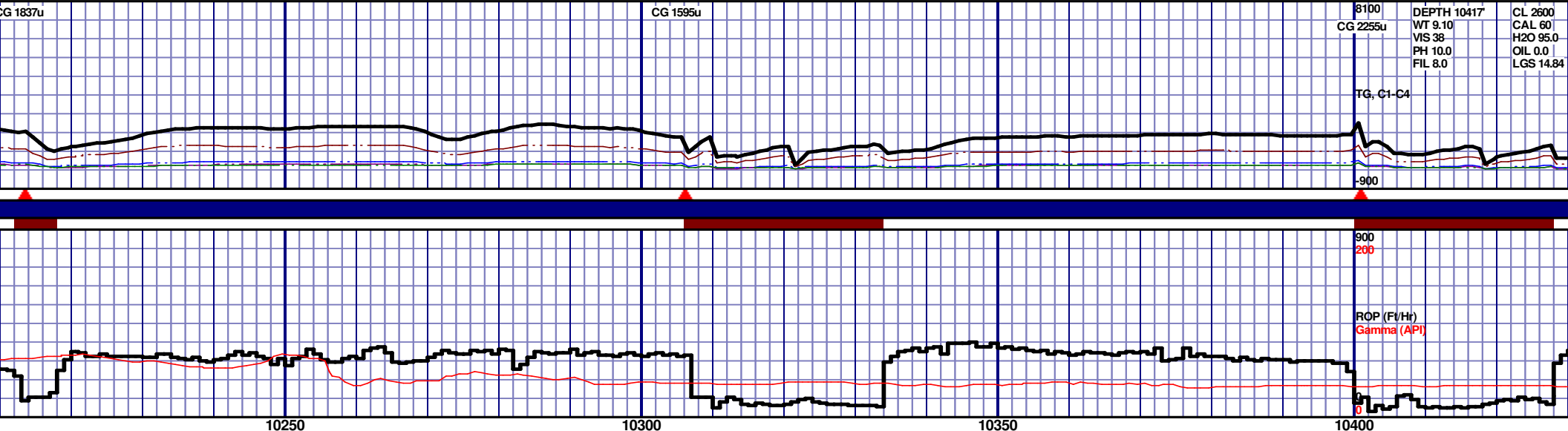




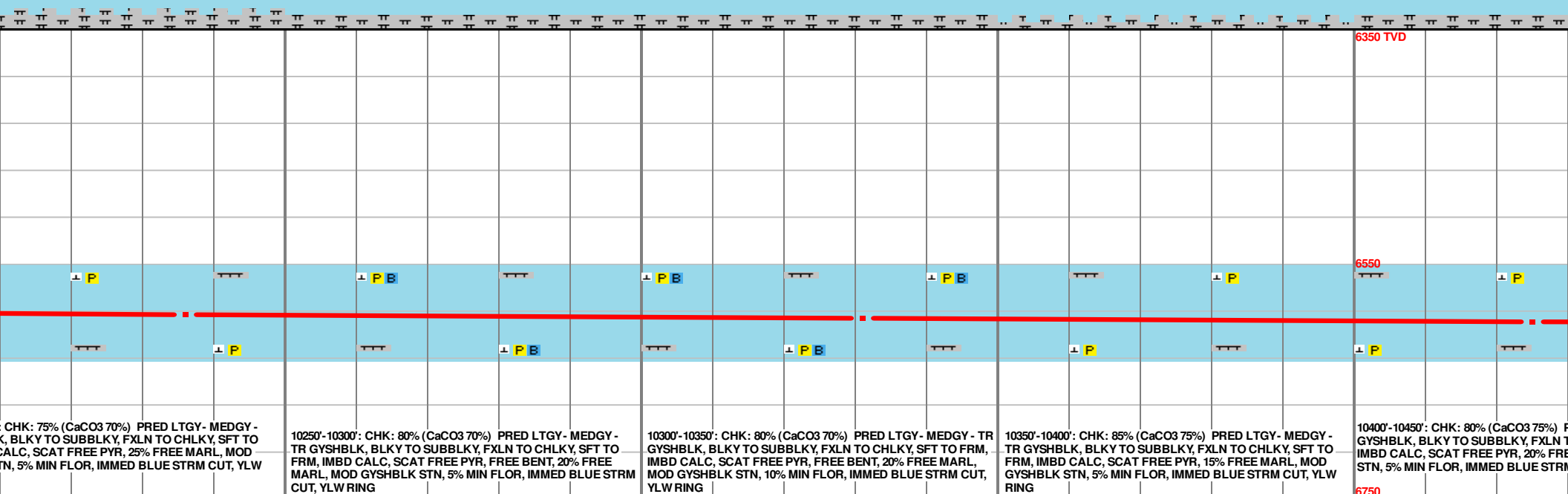
<p>MEDGY - TR T TO FRM, D GYSHBLK RING</p> <p>10000'-10050': CHK: 70% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING</p> <p>6750</p>	<p>10050'-10100': CHK: 70% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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</p>	<p>10100'-10150': CHK: 75% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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</p>	<p>10150'-10200': CHK: 80% (CaCO3 75%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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</p>	<p>10200'-10250': TR GYSHBLK FRM, IMBD C GYSHBLK ST RING</p> <p>6750</p>
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MD 10047 TVD 6585.42
INC 88.41 AZ 269.21
VS 3844.74

MD 10141 TVD 6588.93
INC 87.31 AZ 267.89
VS 3938.59



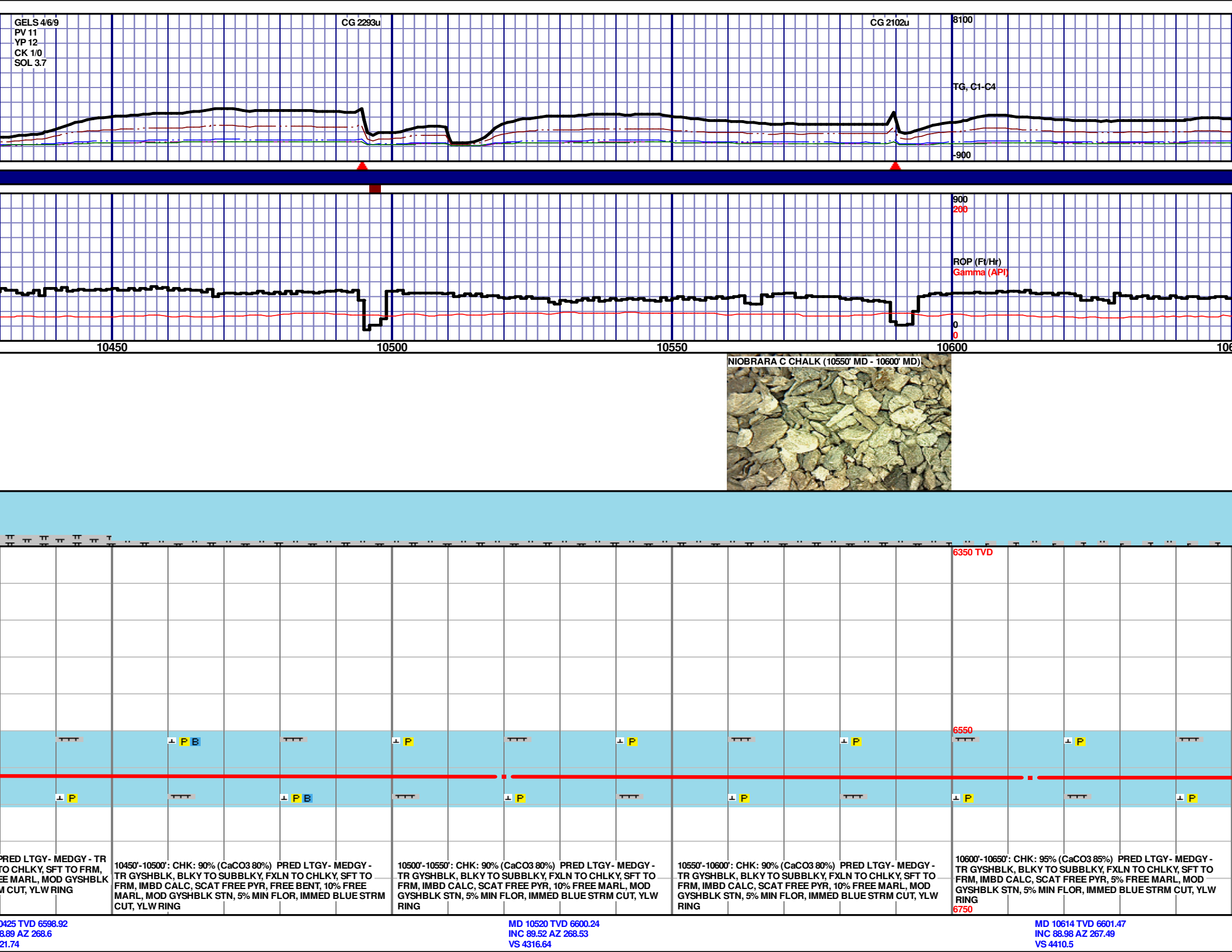
NIOBRARA C CHALK (10250' MD - 10300' MD)

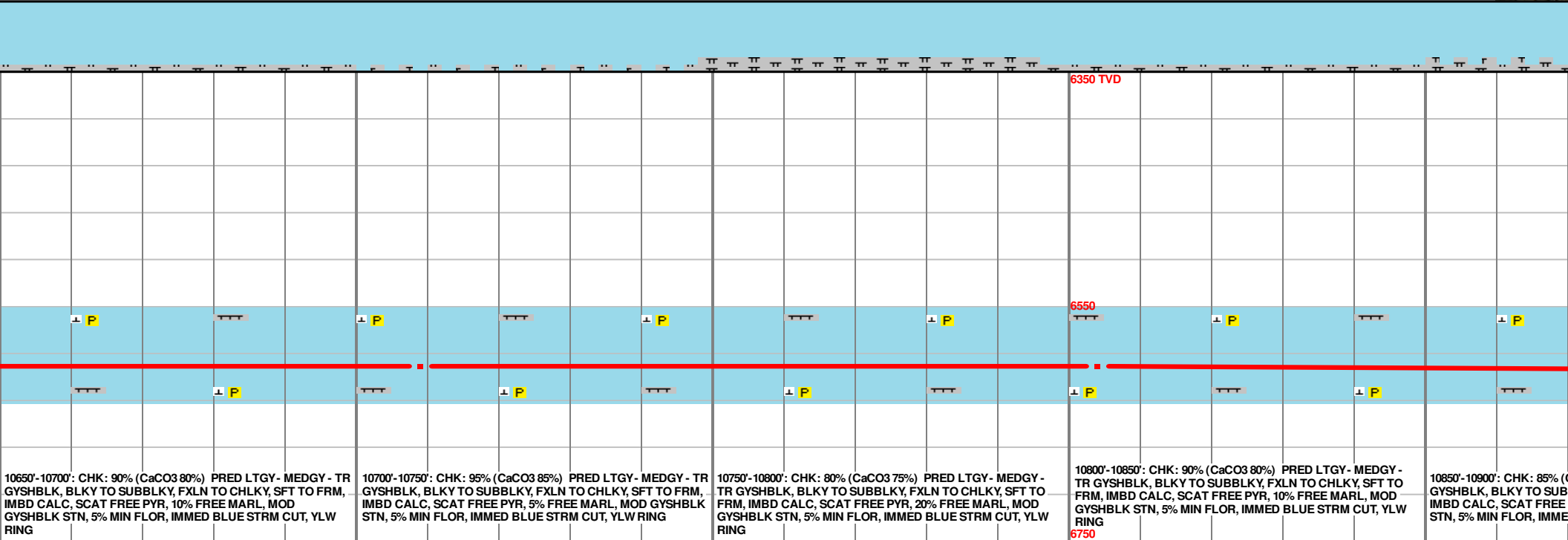
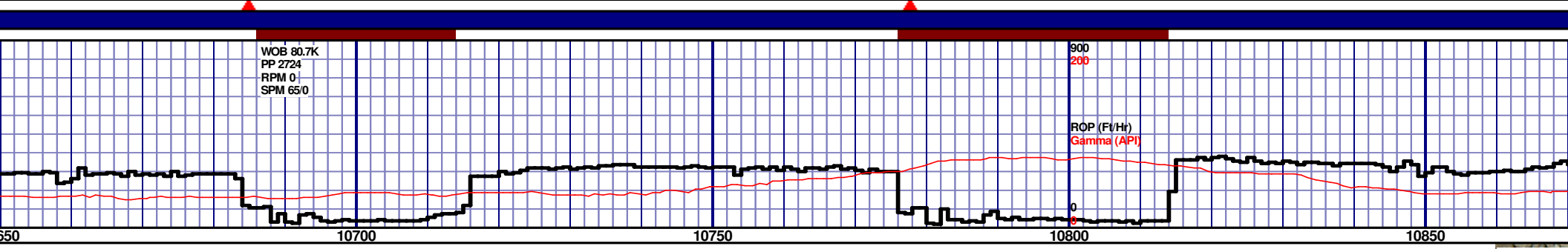
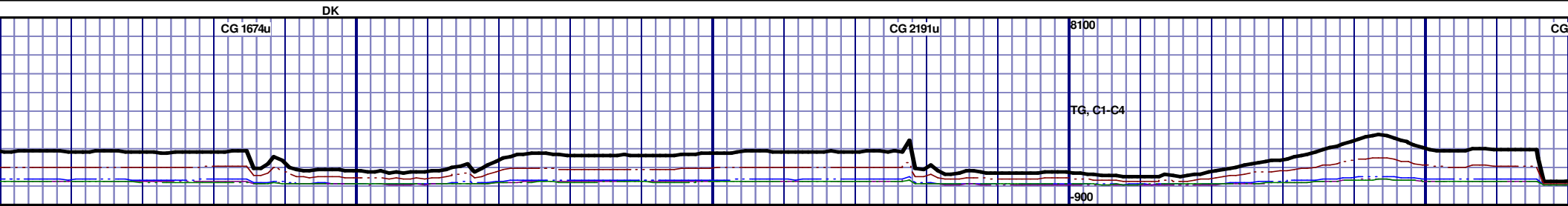


MD 10236 TVD 6592.92
INC 87.88 AZ 266.42
VS 4033.29

MD 10331 TVD 6596.35
INC 87.98 AZ 266.79
VS 4127.94

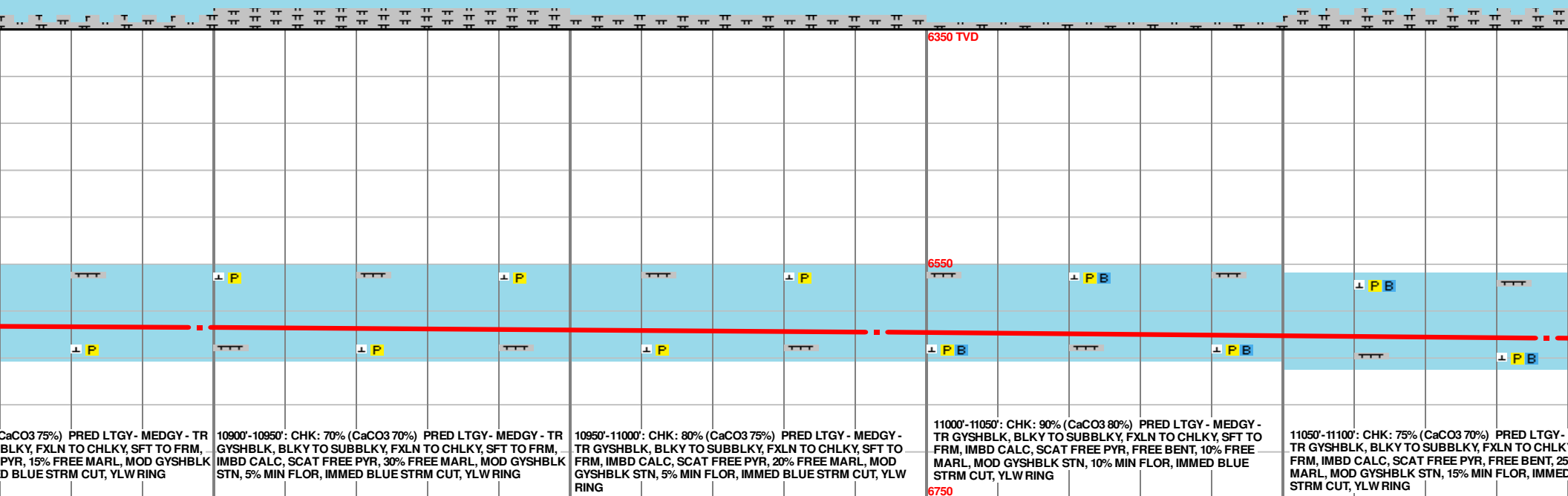
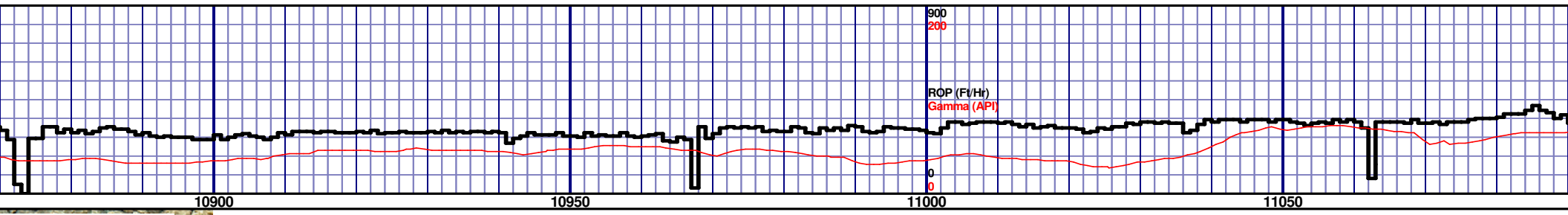
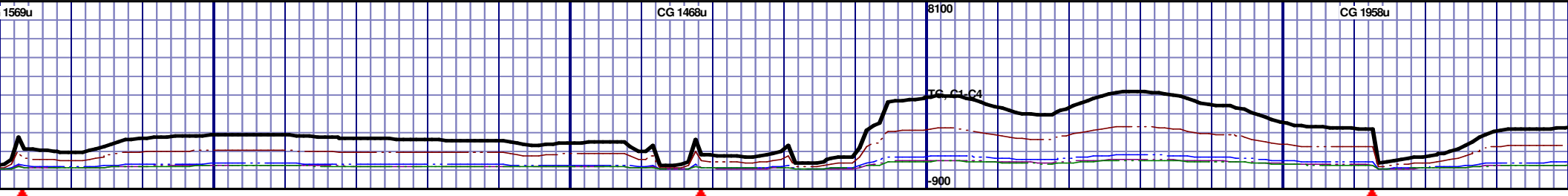
MD 10
INC 8
VS 42





MD 10709 TVD 6601.39
INC 91.11 AZ 270.17
VS 4505.42

MD 10804 TVD 6601.29
INC 89.01 AZ 270.92
VS 4600.41



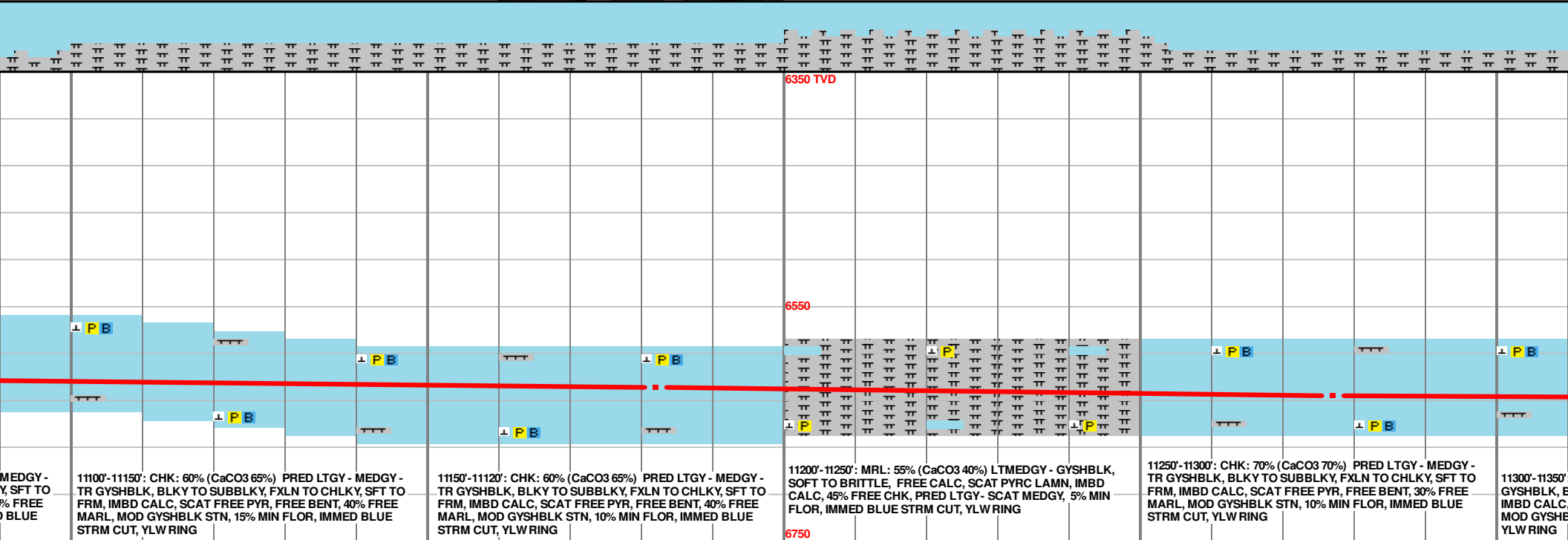
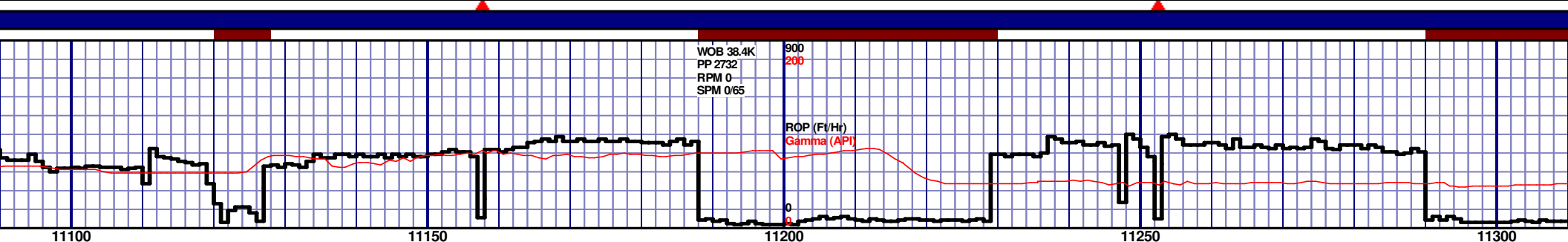
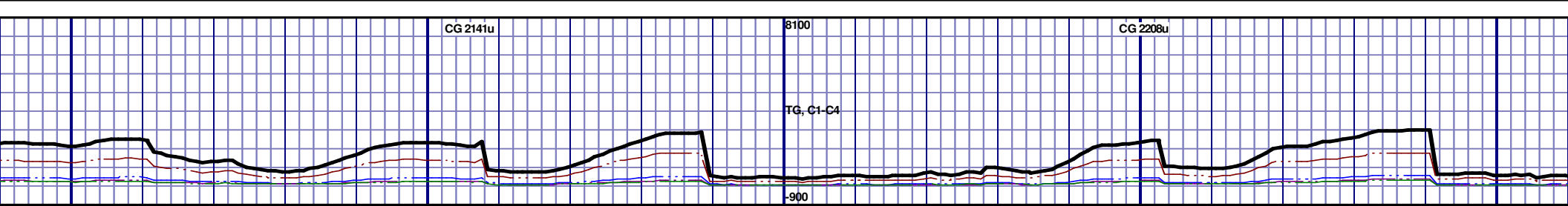
CaCO3 75%) PRED LTGY - MEDGY - TR
BLKY, FXLN TO CHLKY, SFT TO FRM,
PYR, 15% FREE MARL, MOD GYSHBLK
D BLUE STRM CUT, YLW RING

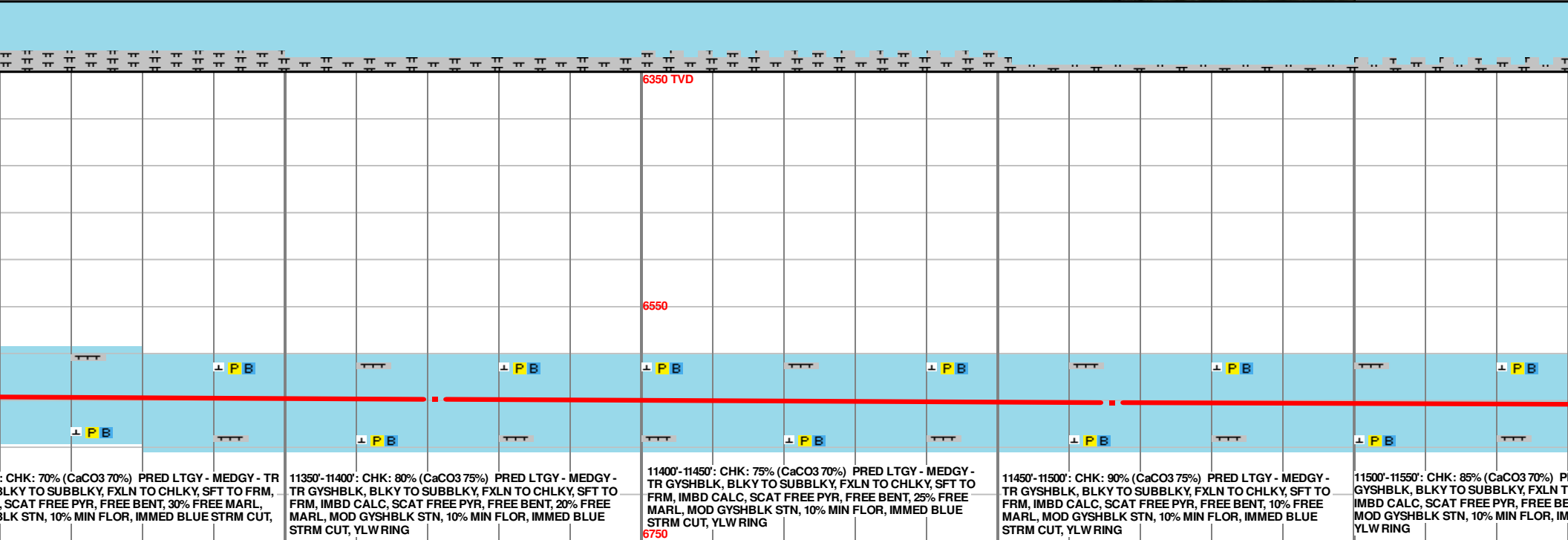
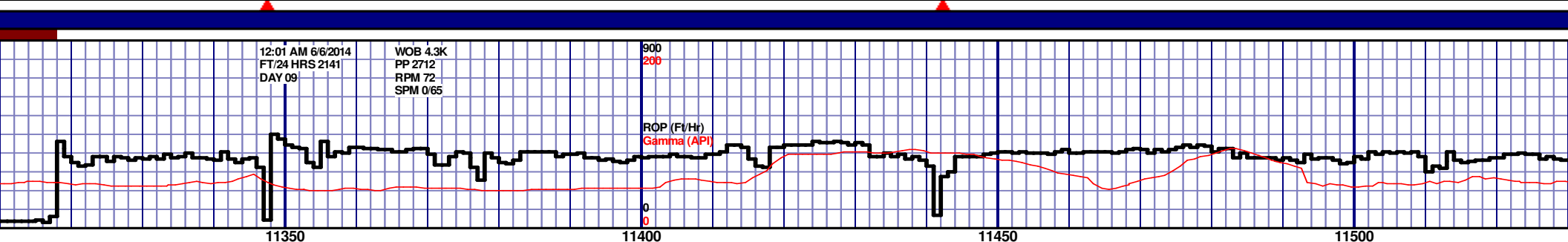
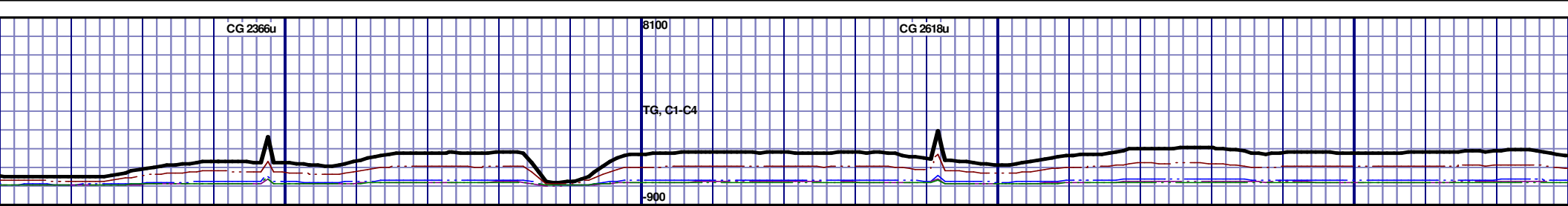
10900'-10950': CHK: 70% (CaCO3 70%) PRED LTGY - MEDGY - TR
GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM,
IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK
STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING

10950'-11000': CHK: 80% (CaCO3 75%) PRED LTGY - MEDGY -
TR GYSHBLK, BLKY TO 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

11000'-11050': CHK: 90% (CaCO3 80%) PRED LTGY - MEDGY -
TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO
FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 10% FREE
MARL, MOD GYSHBLK STN, 10% MIN FLOR, IMMED BLUE
STRM CUT, YLW RING

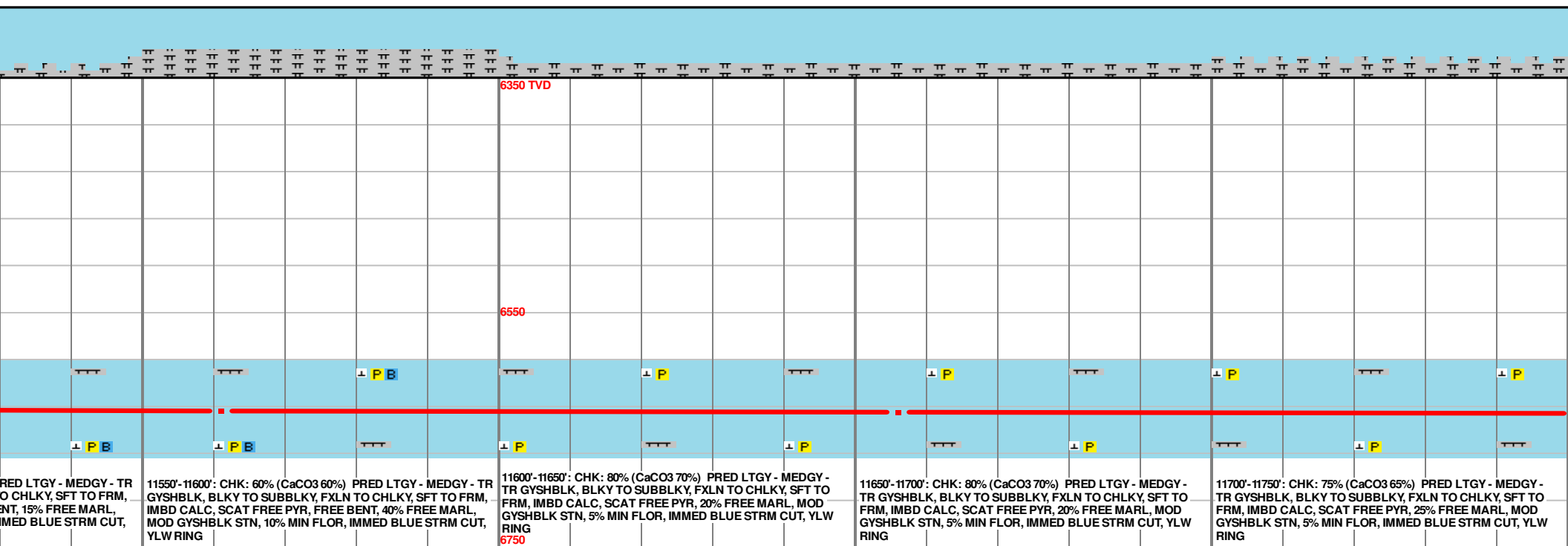
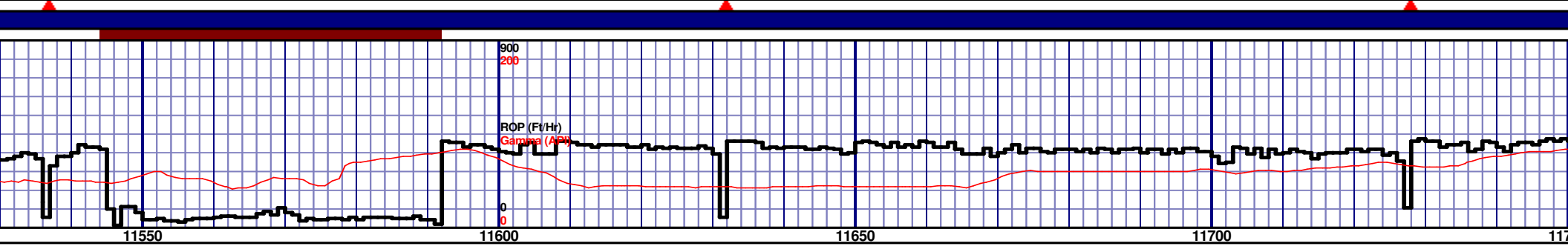
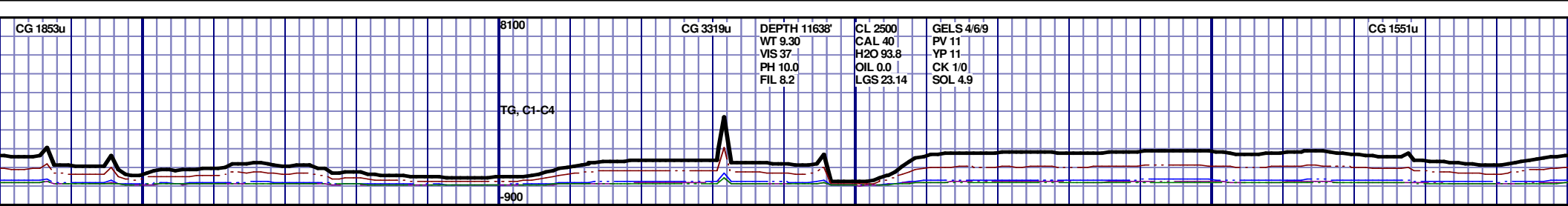
11050'-11100': CHK: 75% (CaCO3 70%) PRED LTGY -
TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY,
FRM, IMBD CALC, SCAT FREE PYR, FREE BENT, 25%
MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED
STRM CUT, YLW RING





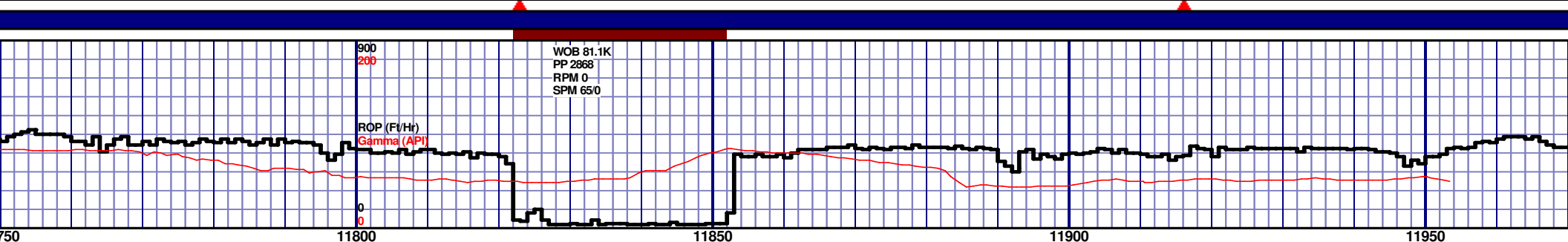
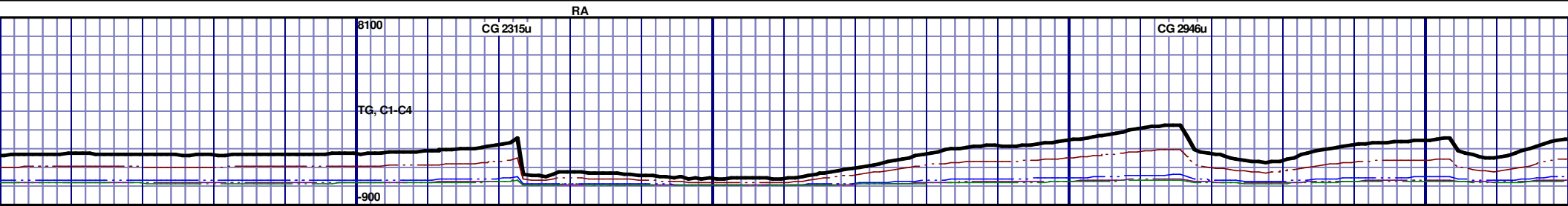
MD 11371 TVD 6629.22
INC 88.59 AZ 270.56
VS 5166.43

MD 11466 TVD 6631.59
INC 88.54 AZ 269.75
VS 5261.39



MD 11561 TVD 6633.91
INC 88.67 AZ 271.41
VS 5356.36

MD 11656 TVD 6634.9
INC 90.13 AZ 271.26
VS 5451.35

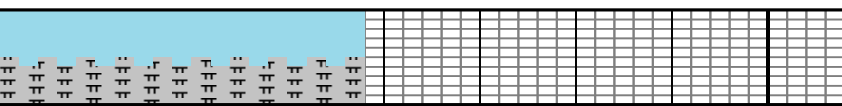
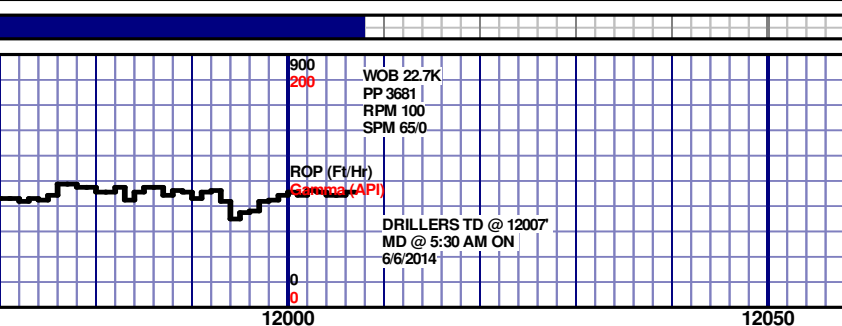
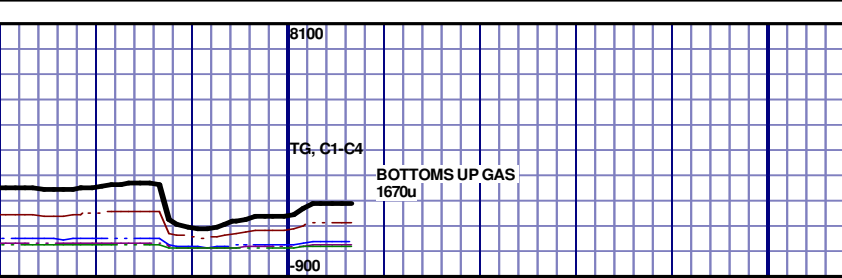


6350 TVD									
6550									
6750									
11750'-11800': CHK: 70% (CaCO3 60%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 30% FREE MARL, MOD GYSHBLK STN, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
11800'-11850': CHK: 70% (CaCO3 60%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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									
11850'-11900': CHK: 80% (CaCO3 65%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO 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									
11900'-11950': CHK: 60% (CaCO3 60%) 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, 5% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									
11950'-12007': CHK: 55% (CaCO3 55%) PRED LTGY - MEDGY - TR GYSHBLK, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD CALC, SCAT FREE PYR, 15% FREE MARL, MOD GYSHBLK STN, 15% MIN FLOR, IMMED BLUE STRM CUT, YLW RING									

MD 11751 TVD 6635.74
INC 88.82 AZ 268.68
VS 5546.32

MD 11846 TVD 6634.94
INC 92.15 AZ 270.77
VS 5641.27

MD 11937 TVD 6631.01
INC 92.79 AZ 270.28
VS 5732.19



RELEASED 6/6/2014

TD @ 12007' MD

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

CaCO3 55%) PRED LTGY - MEDGY - TR
IBLKY, FXLN TO CHLKY, SFT TO FRM, IMBD
FREE BENT, 45% FREE MARL, MOD GYSHBLK
ED BLUE STRM CUT, YLW RING