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WWW.HZMUD.COM/25

Customer Information

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

Geologist: Holly Duncan
Noble Energy Inc.

Mud Logging Details

Logger: Sam Stelzer &
Thomas Wacholz
Log Interval: 6700' MD to 16445' MD
Start Date: June 27, 2014
Release Date: July 3, 2014

Well Information

Well Name: NCLP AA06-66-1HNC
Horizontal

Location: 4-T6N-R63W
2272' FNL, 100' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 16445' MD
TD Date: July 3, 2014
Formation: Niobrara C Chalk
KB Elevation: 4733'
GR Elevation: 4709'
API Number: 05-123-39069-0000

G (Units) —————
 (units) .. ———
 ? (units) .. ———
 ? (units) .. ———
 ? (units) .. ———

5850

GAS SCALE: -650 TO 5850
(650 UNITS/DIVISION)

DRILLING ON WATER BASED MUD

TG, C1-C4

CONNECTIONS MARKED
WITH RED TRIANGLES

CG 4488u

DEPTH 6138'	H2O 90.0	YP 15
WT 10.45	OIL 0.0	CK 2/0
VIS 48	LGS 29.6	SOL 9.7
PH 9.1	GEL 6/23/37	
FIL 6.4	PV 16	
CL 2100		
CAL 80		

5850
CG 5280u
TG, C1-

Slide/Rotate

ROP and Gamma

ROP (Ft/Hr) _____

Gamma (API) _____

500 SLIDE=RED
250 ROTATE=WHITE
ROP SCALE: 0 TO 500
ROP (Ft/Hr)
Gamma (API)
GAMMA SCALE: 0 TO 250
ORIGINAL DATA AS RECEIVED

WOB 8.1K
PP 3663
RPM 0
SPM 61/61

WOB 18.41
PP 3829
RPM 30
SPM 61/61

500
250

ROP (Ft/Hr)
Gamma (API)

Depth

50

6700

6800

Photographs

**Lithology %**

6600 TVD			
NOBLE ENERGY INC			
NCLP AA06-66-1HNC			
HORIZONTAL			
4-T6N-R63W			
2272' FNL, 100' FWL			
WELD CO., CO			

H&P 343

LOGGERS: SAM STELZER THOMAS WACHOLZ	
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COMMENCED LOGGING @ 6700' MD ON
6/27/2014 W/BIT #3, SIZE 8.75", HDBS MMD55, S/N 12443970
IN @ 6038' MD

NIOBRARA A MARL
6615' MD 6566' TVD

NIOBRARA B CHALK
6746' MD 6646' TVD

6600 TVD

NIOBRARA B MARL
6813' MD 6676' TVD

Well Bore Cross Section

6750

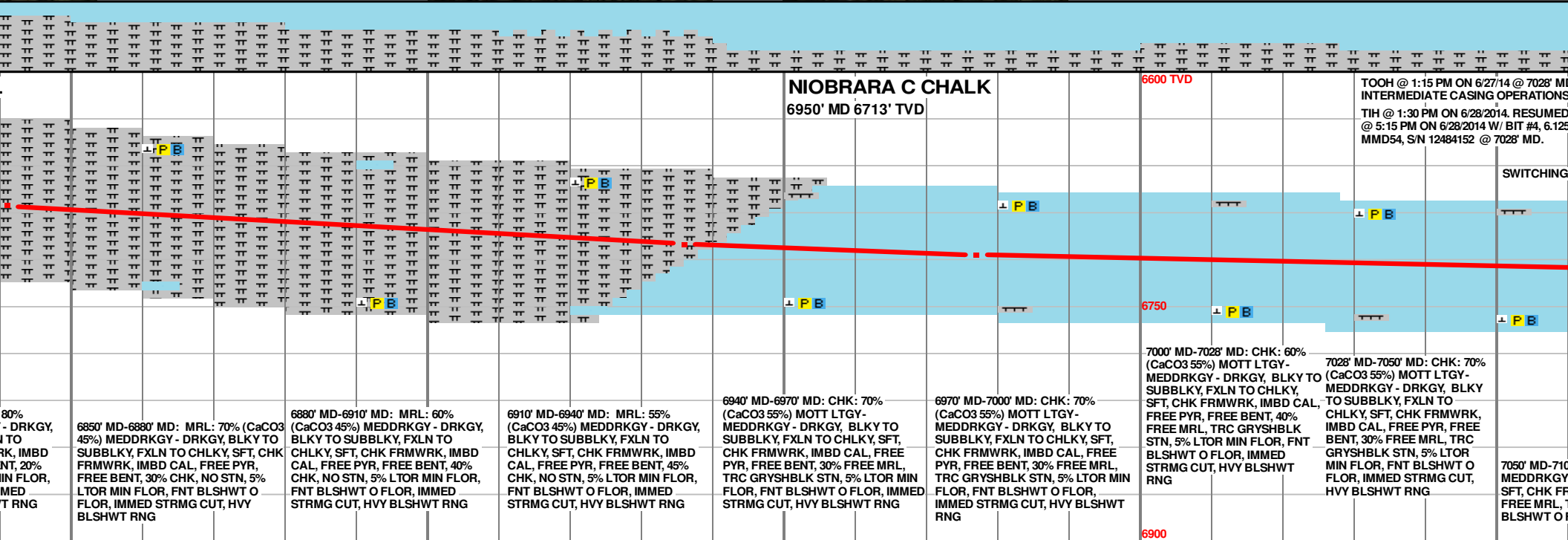
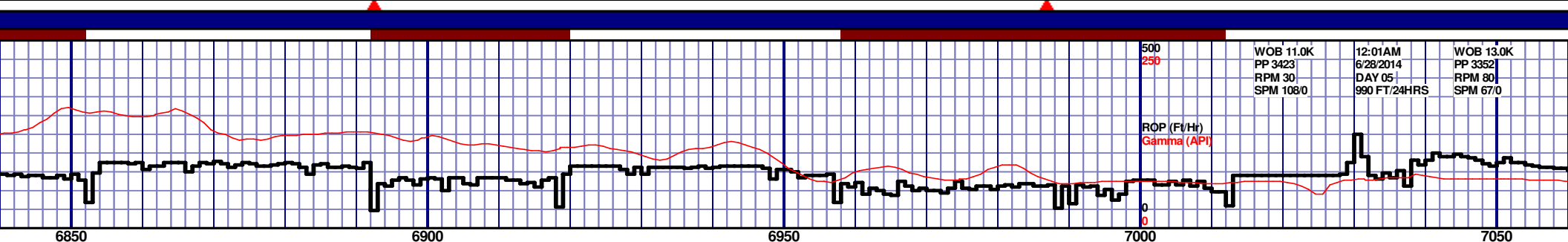
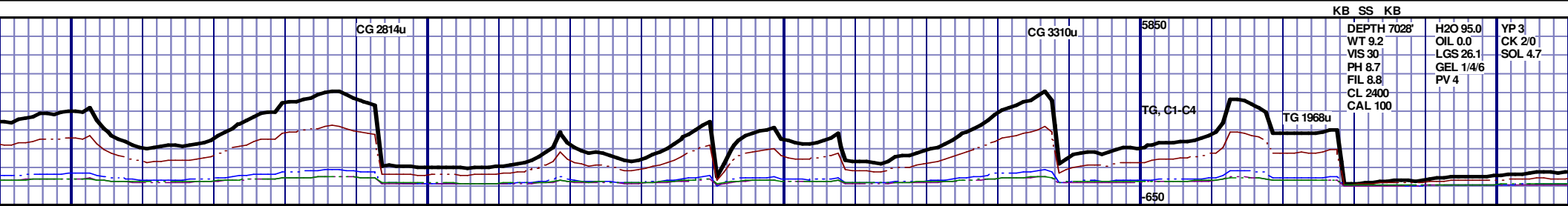
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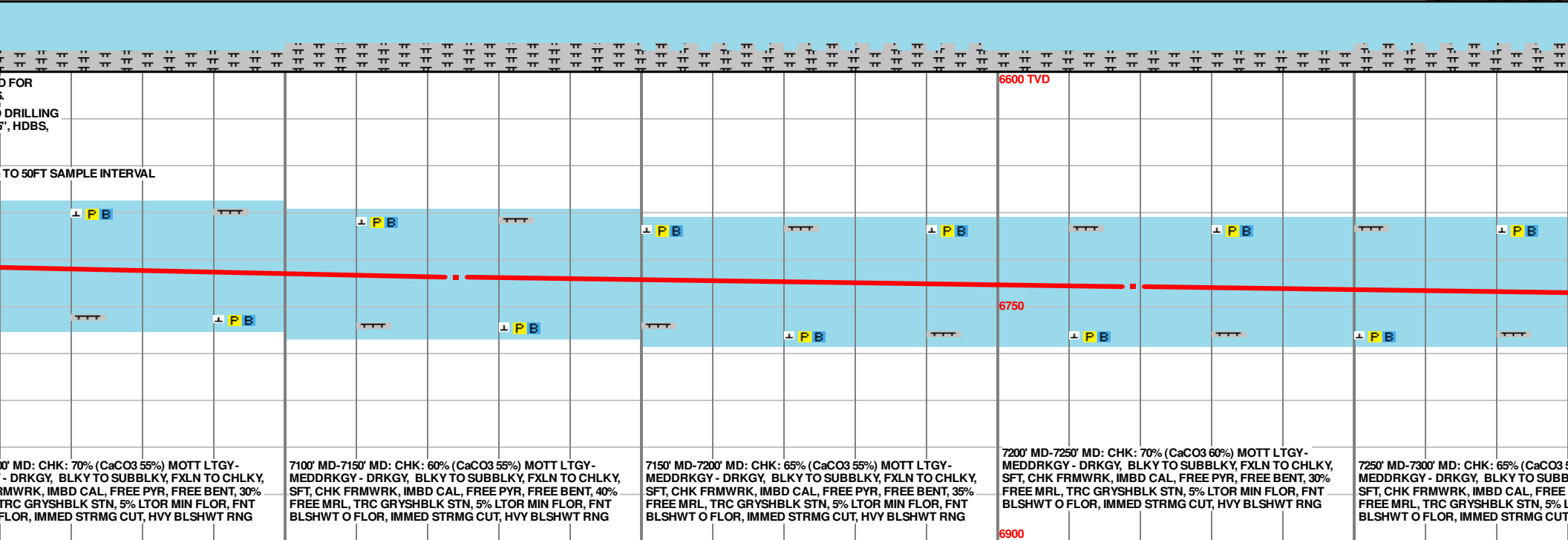
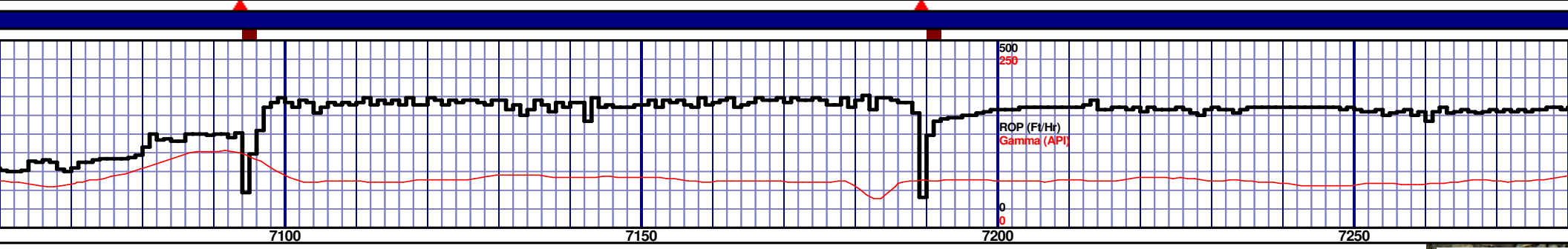
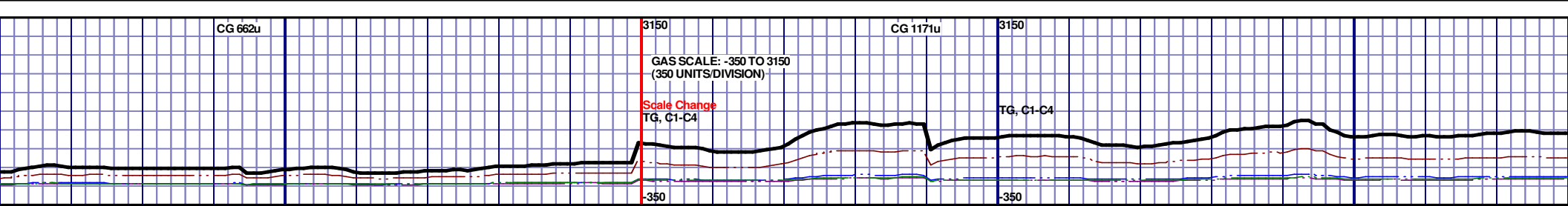
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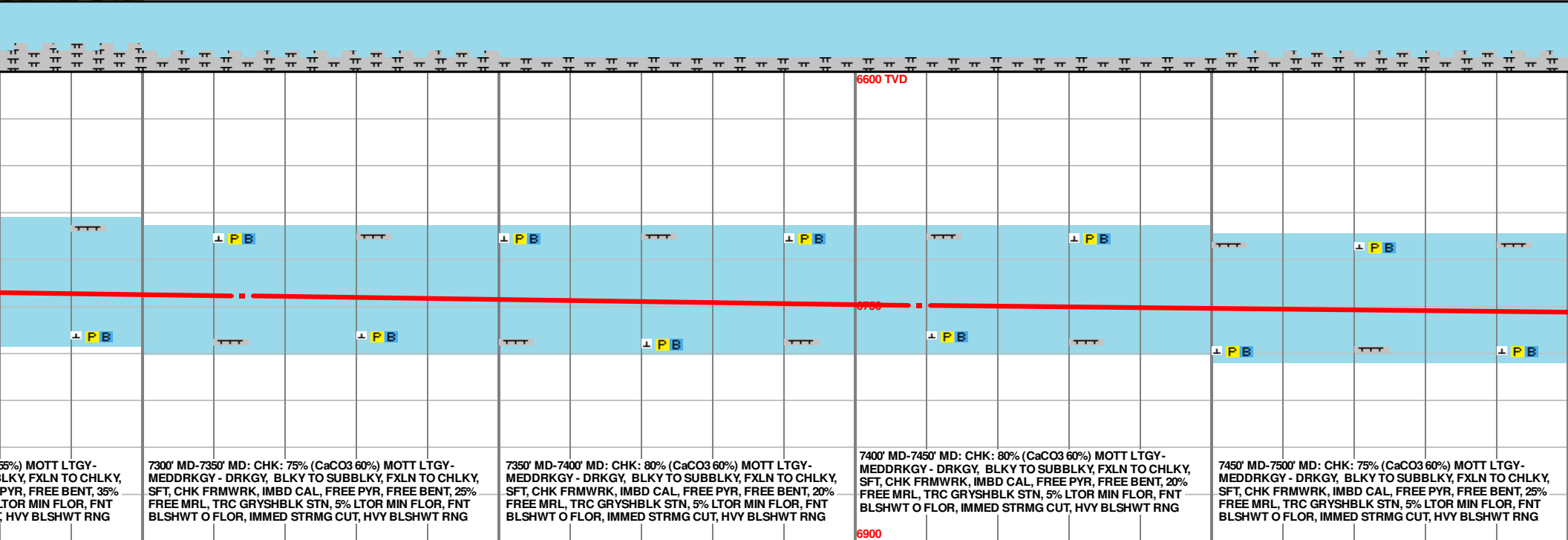
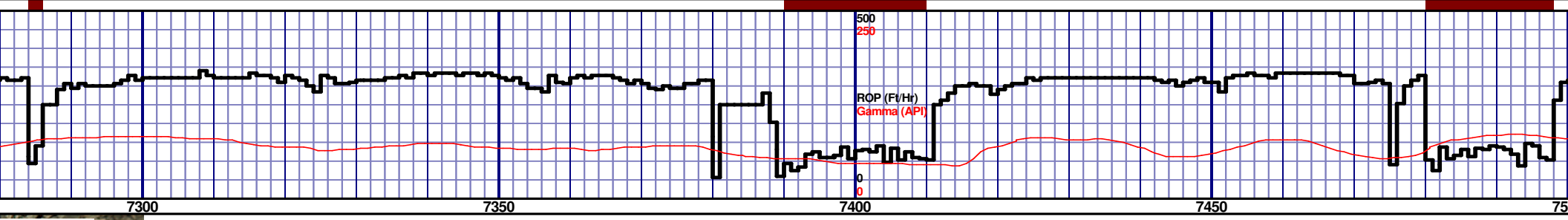
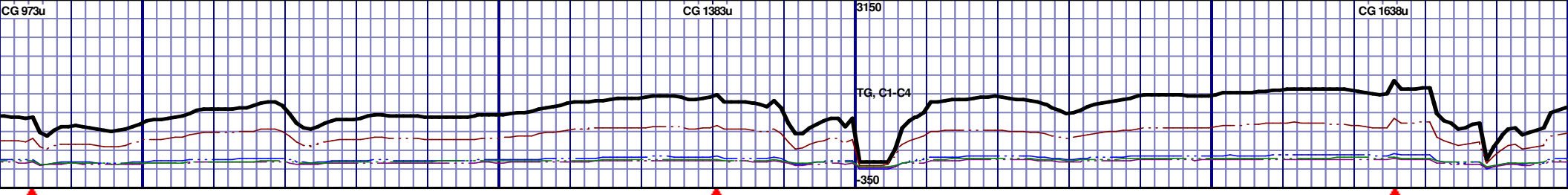
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Survey Data

MD 6746 TVD 6646.52
INC 59.8 AZ 269.25
VS 329.89

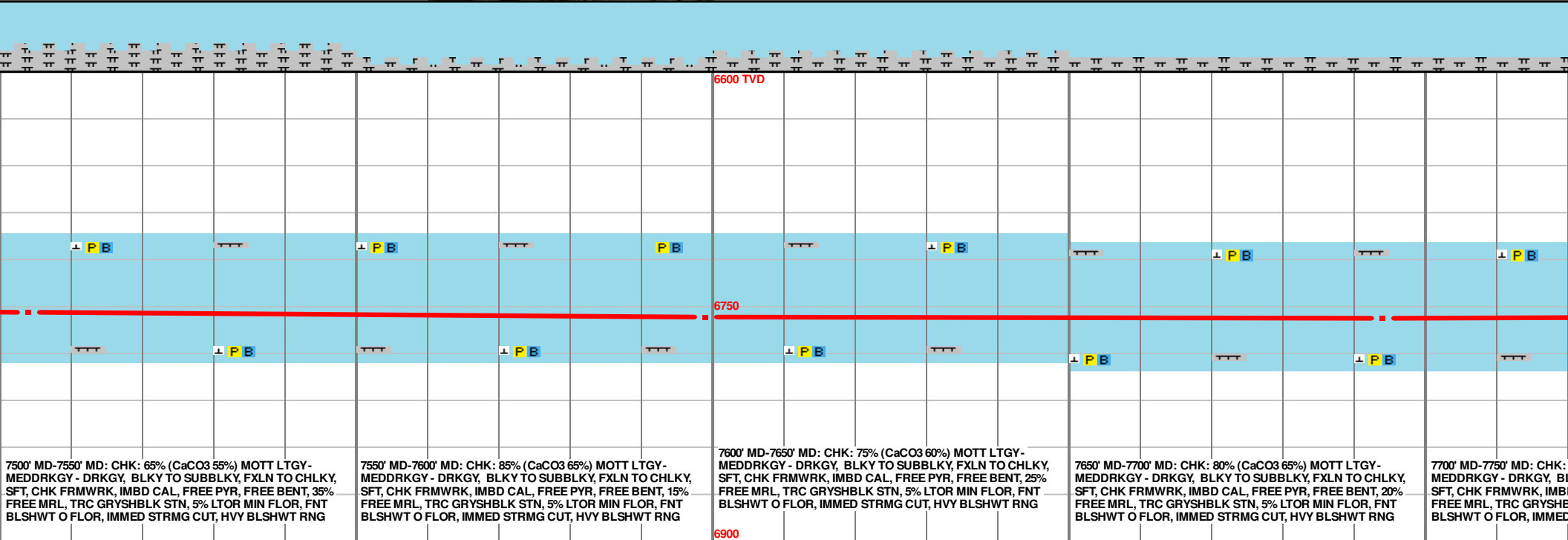
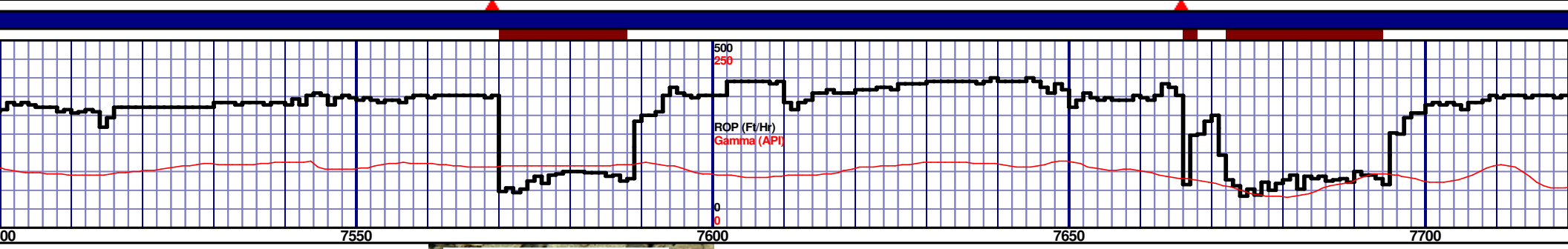
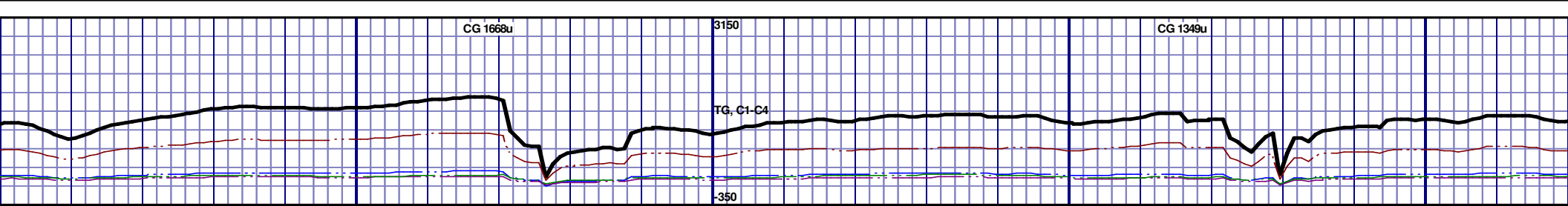


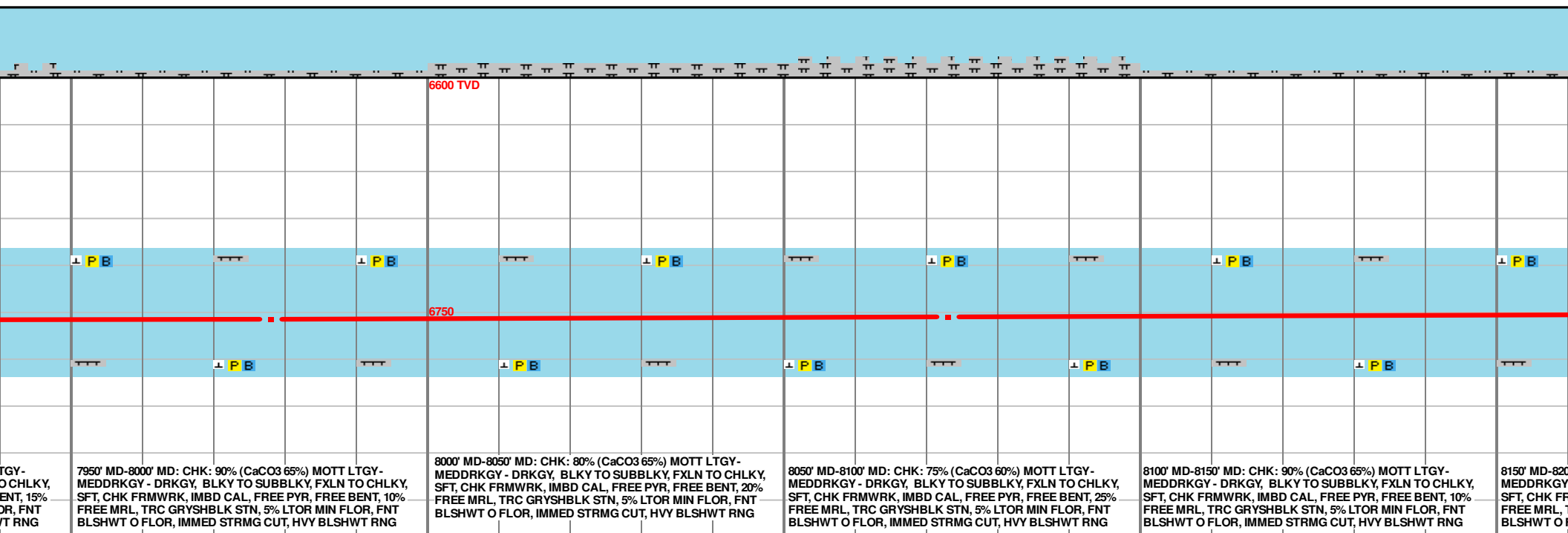
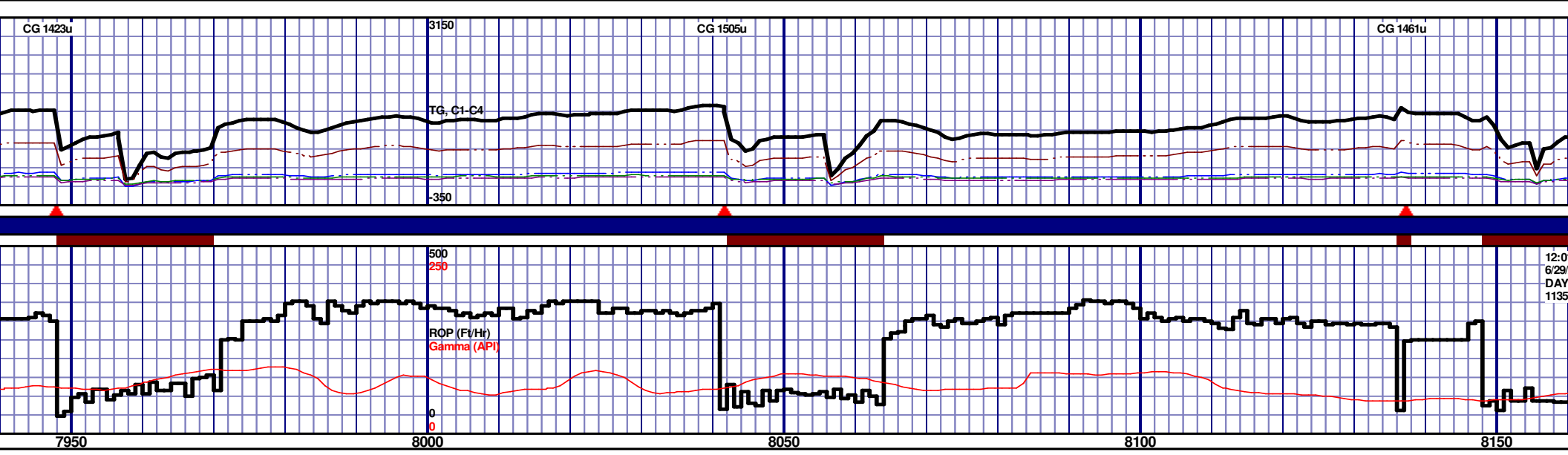




MD 7314 TVD 6743.17
INC 86.24 AZ 266.42
VS 884.31

MD 7409 TVD 6749.07
INC 86.64 AZ 267.86
VS 979.09





7950' MD-8000' MD: CHK: 90% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

8000' MD-8050' MD: CHK: 80% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

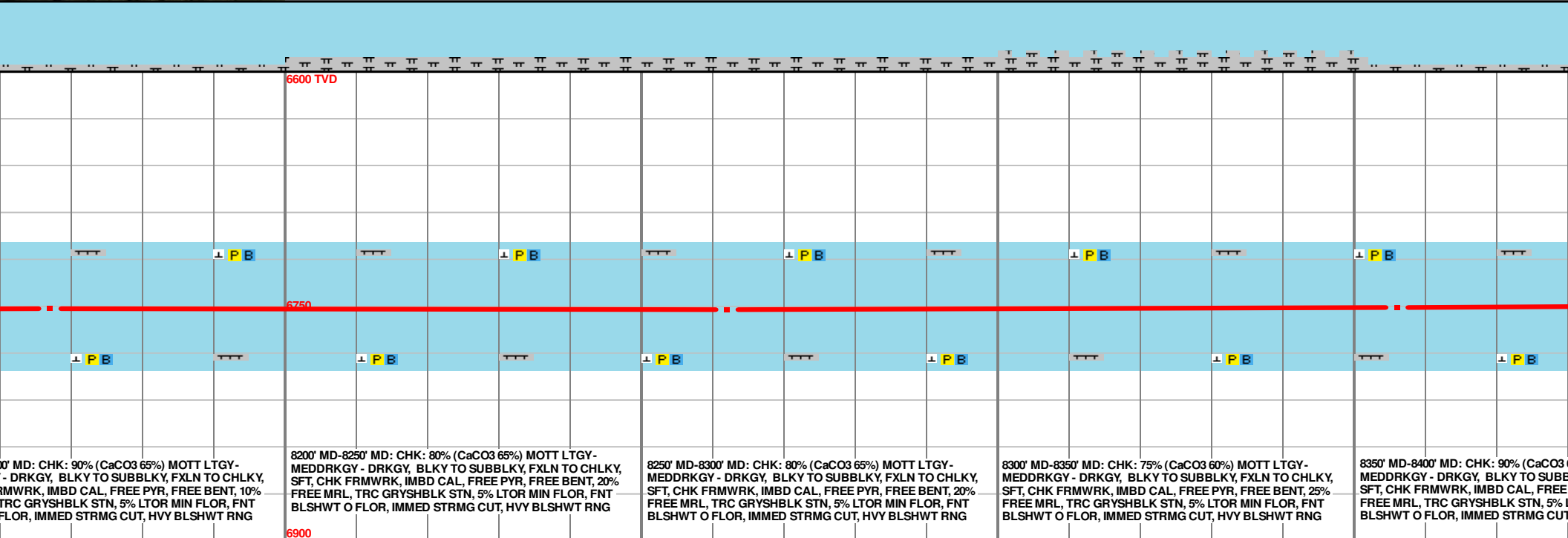
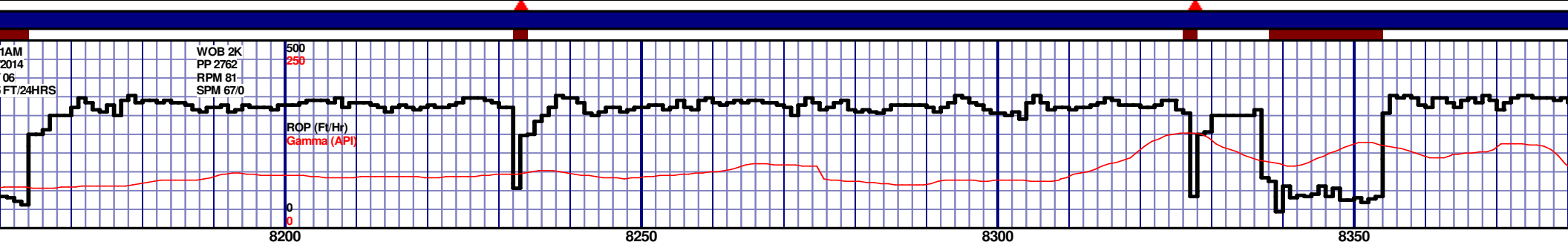
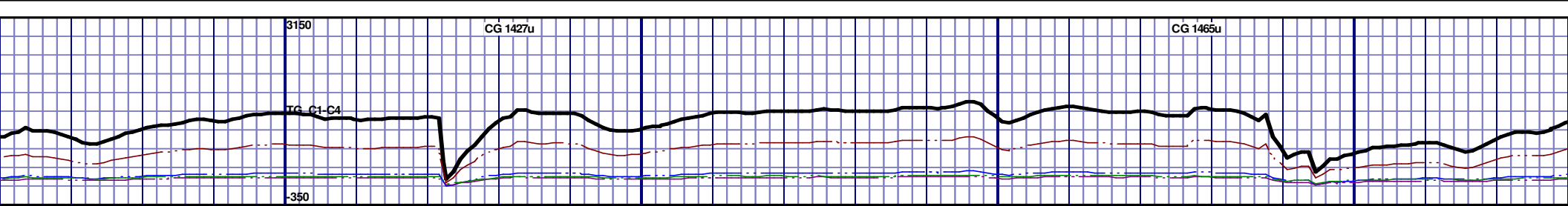
8050' MD-8100' MD: CHK: 75% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 25% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

8100' MD-8150' MD: CHK: 90% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

8150' MD-8200' MD: CHK: 90% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 7978 TVD 6754.58
INC 90.55 AZ 268.14
VS 1547.65

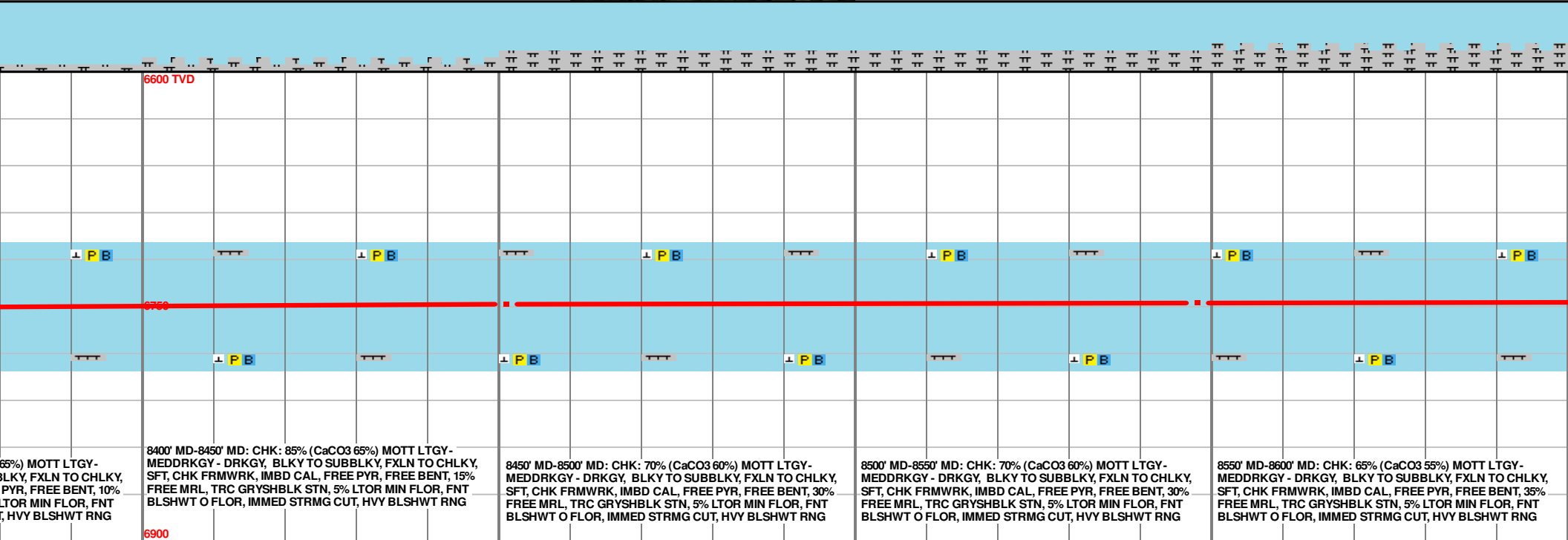
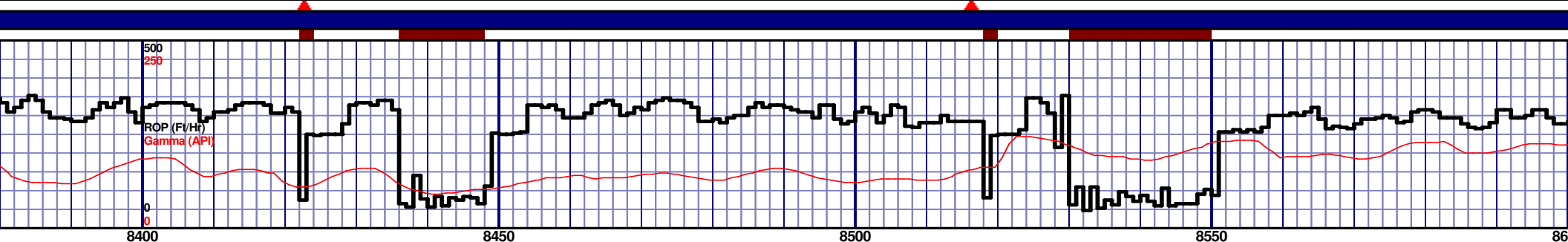
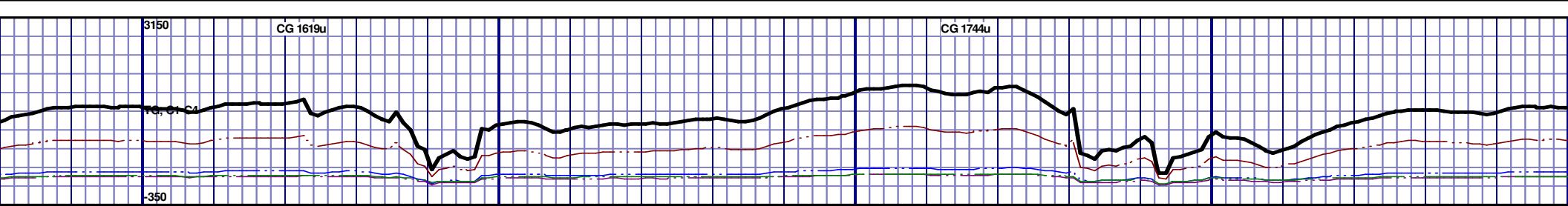
MD 8073 TVD 6752.89
INC 91.48 AZ 270.51
VS 1642.82



MD 8167 TVD 6751.78
INC 89.88 AZ 270.21
VS 1736.76

MD 8262 TVD 6751.88
INC 90 AZ 269.12
VS 1831.74

MD 8356 TVD 6750.99
INC 91.08 AZ 270
VS 1925.72



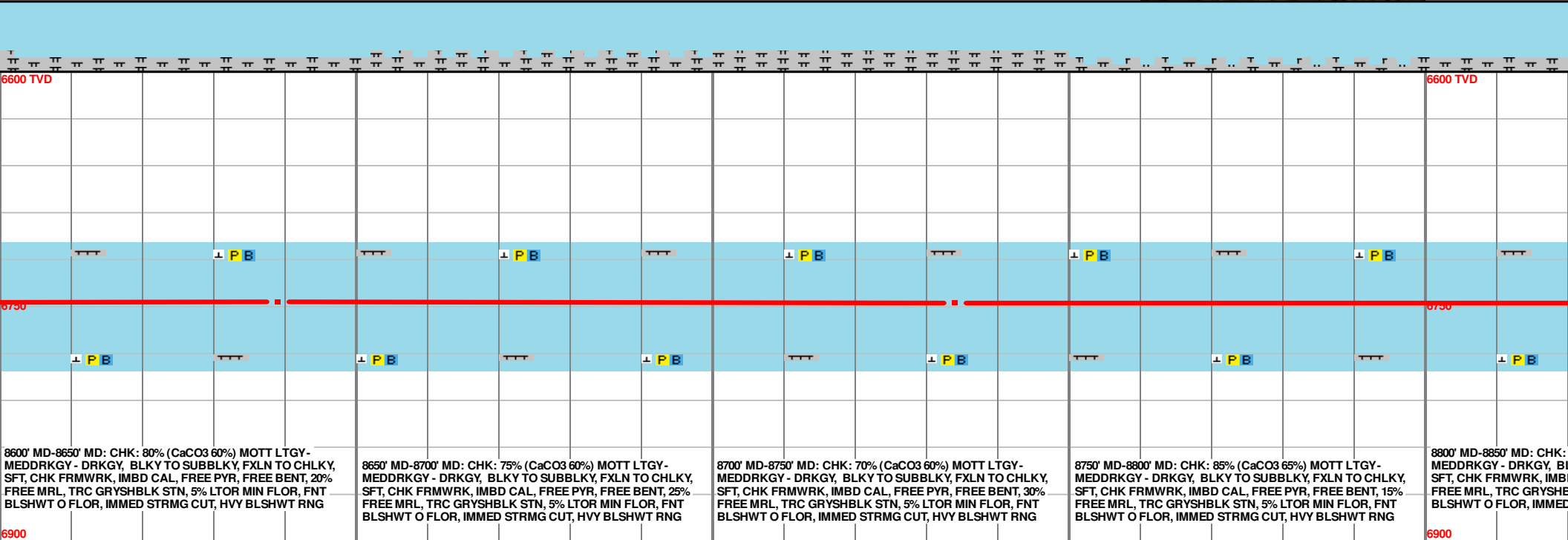
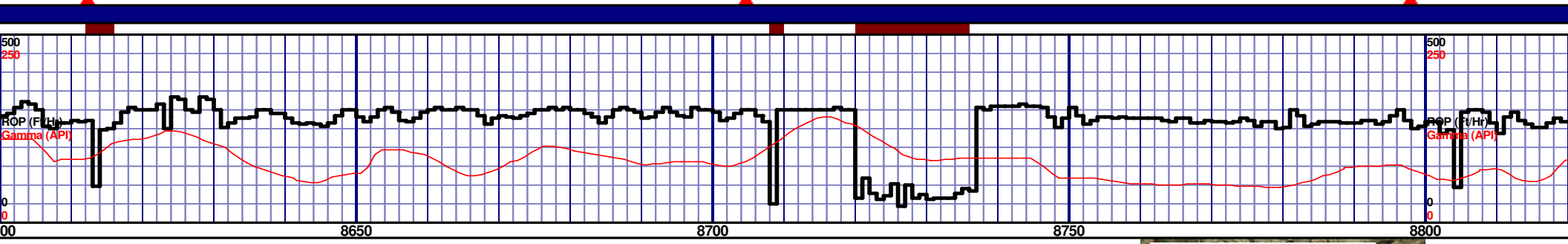
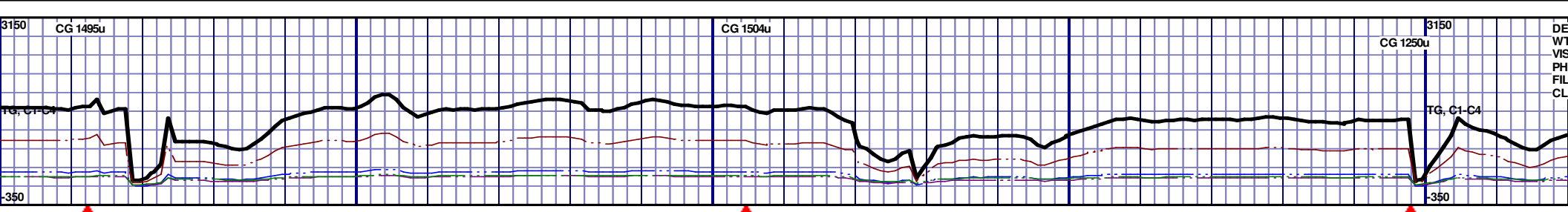
65%) MOTT LTGY -
BLKY, FXLN TO CHLKY,
PYR, FREE BENT, 10%
LTOR MIN FLOR, FNT
T, HVY BLSHWT RNG

8400' MD-8450' MD: CHK: 85% (CaCO3 65%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 15%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

8450' MD-8500' MD: CHK: 70% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

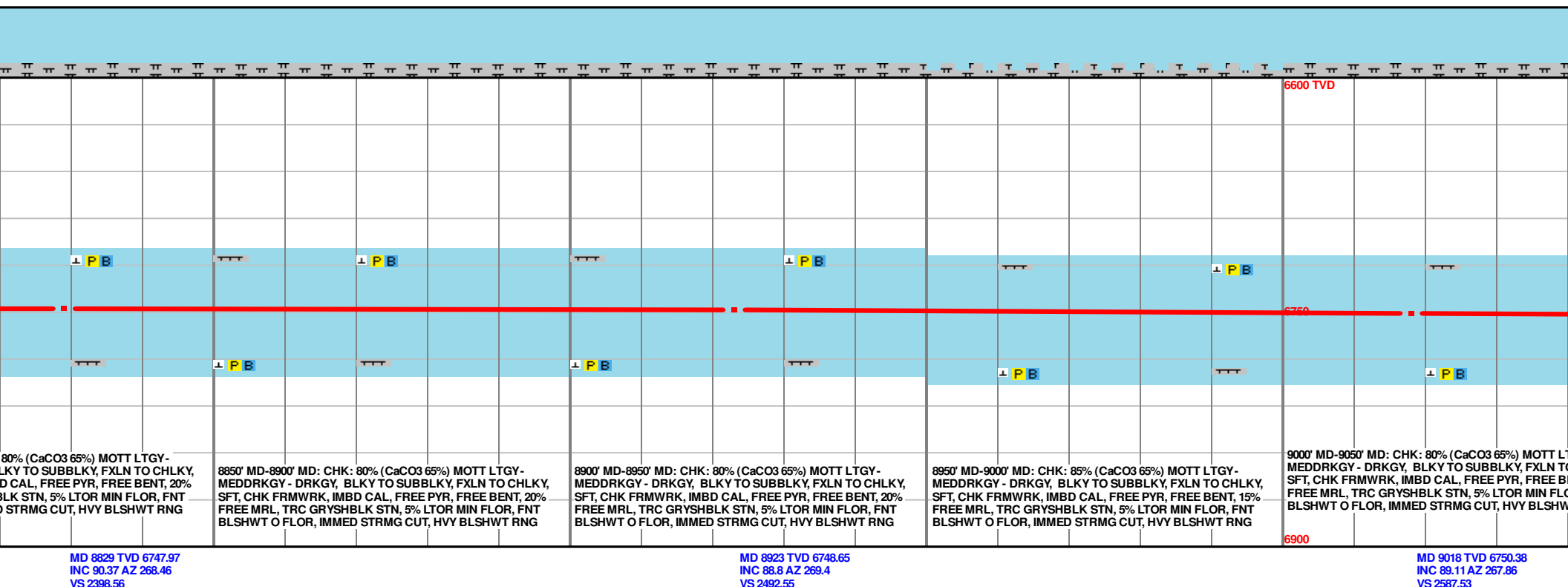
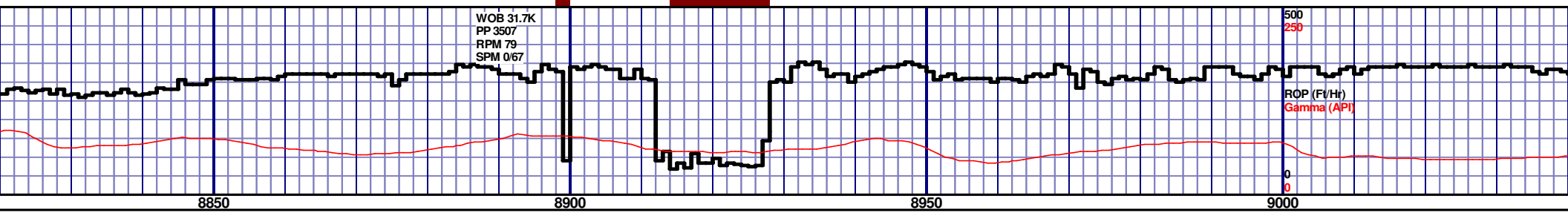
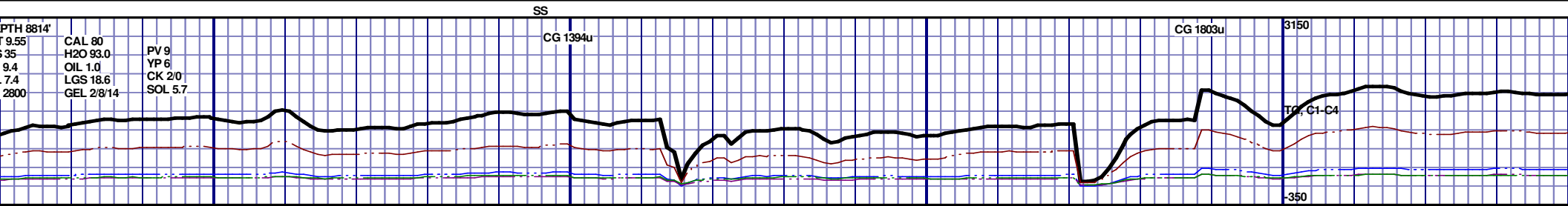
8500' MD-8550' MD: CHK: 70% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

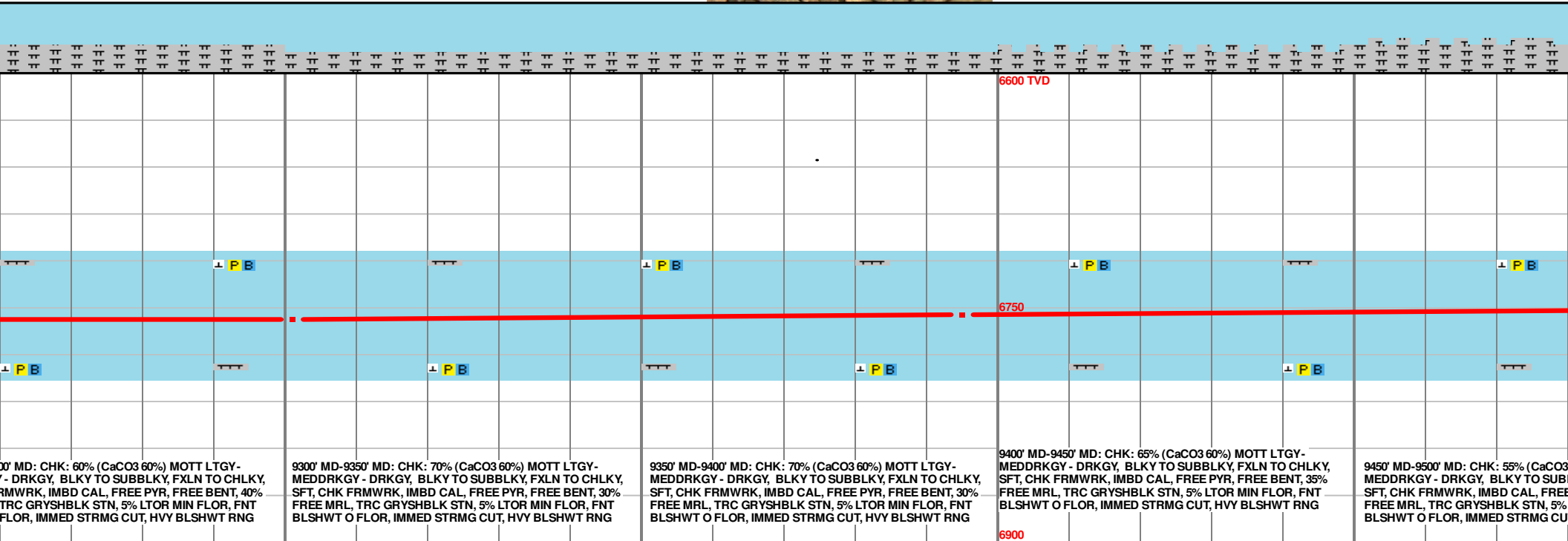
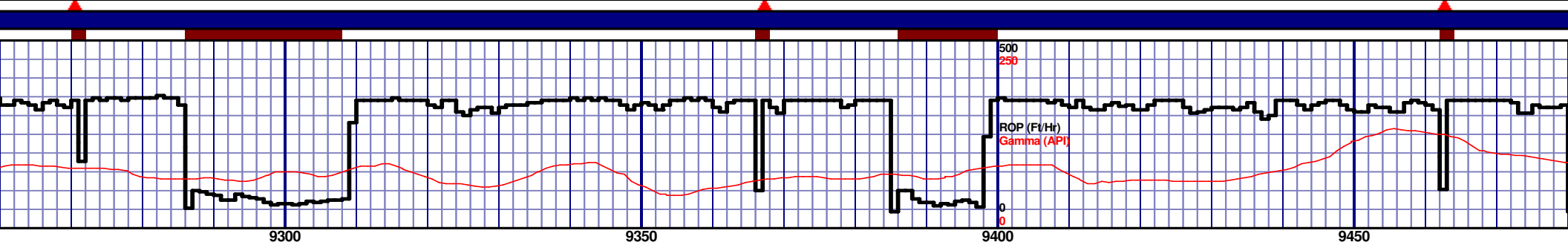
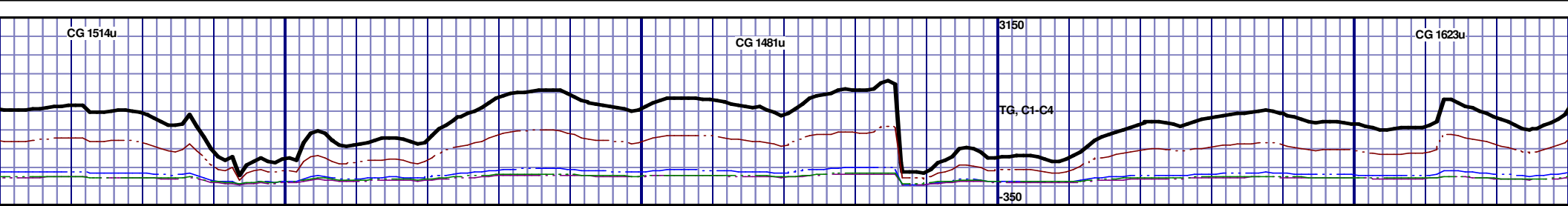
8550' MD-8600' MD: CHK: 65% (CaCO3 55%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 35%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG



MD 8639 TVD 6747.24
INC 90.34 AZ 269.47
VS 2208.58

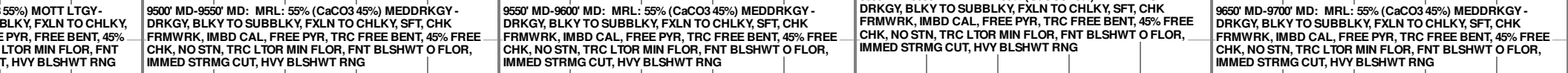
MD 8734 TVD 6747.63
INC 89.23 AZ 269.61
VS 2303.56

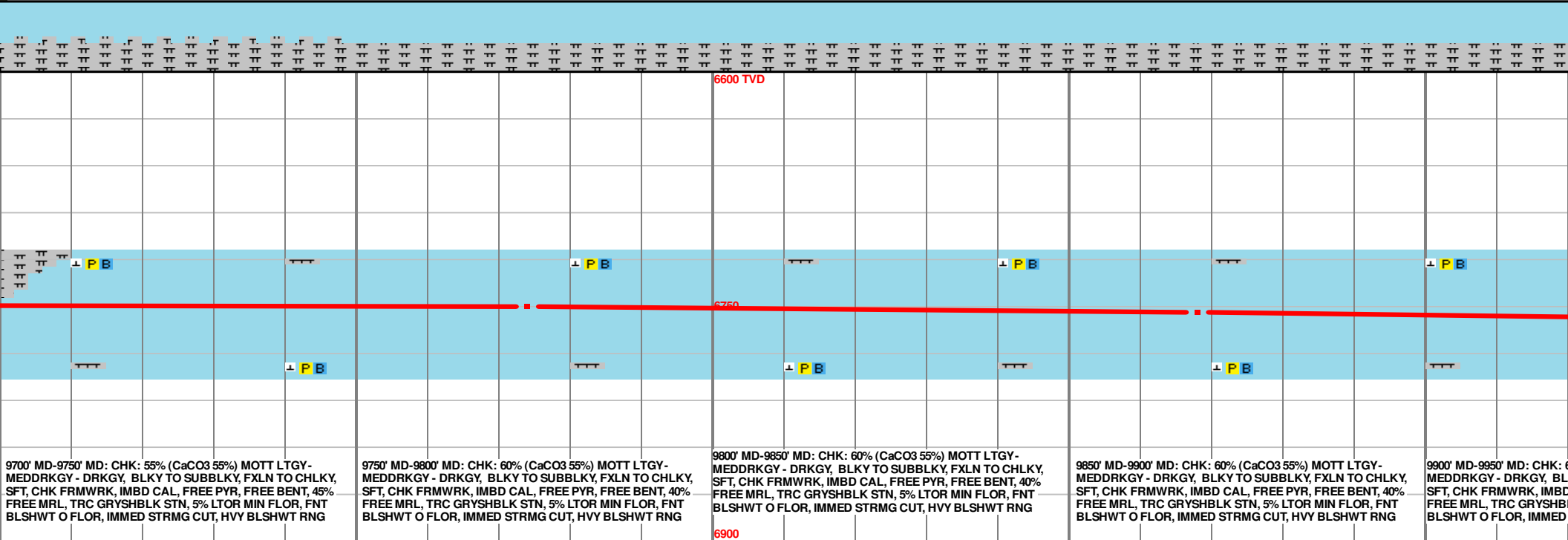
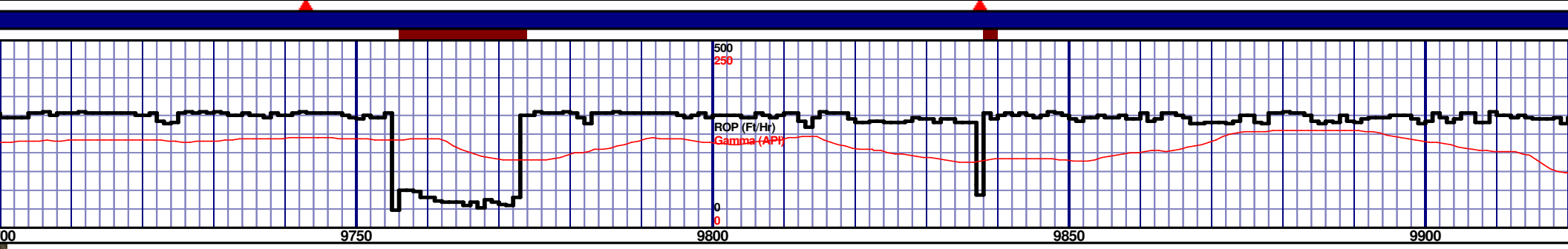
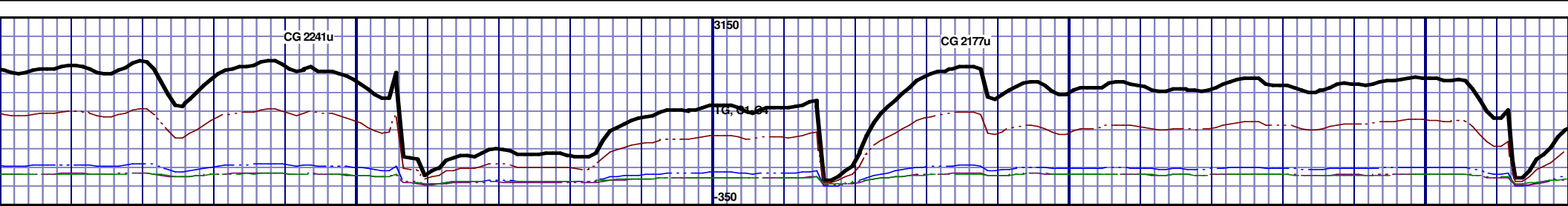




MD 9301 TVD 6757.79
INC 91.26 AZ 269.18
VS 2670.32

MD 9395 TVD 6754.84
INC 92.34 AZ 270.32
VS 2964.25





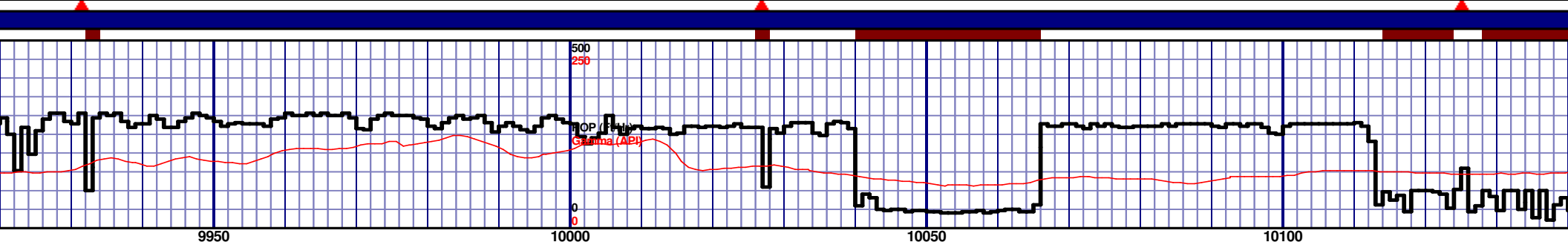
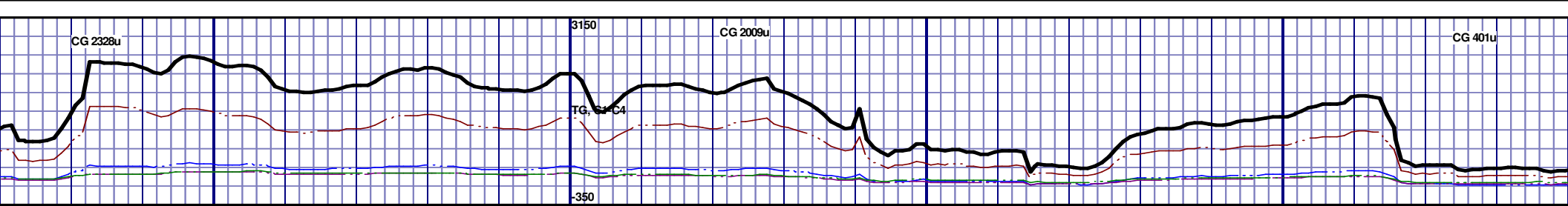
9700' MD-9750' MD: CHK: 55% (CaCO3 55%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9750' MD-9800' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9800' MD-9850' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

9850' MD-9900' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

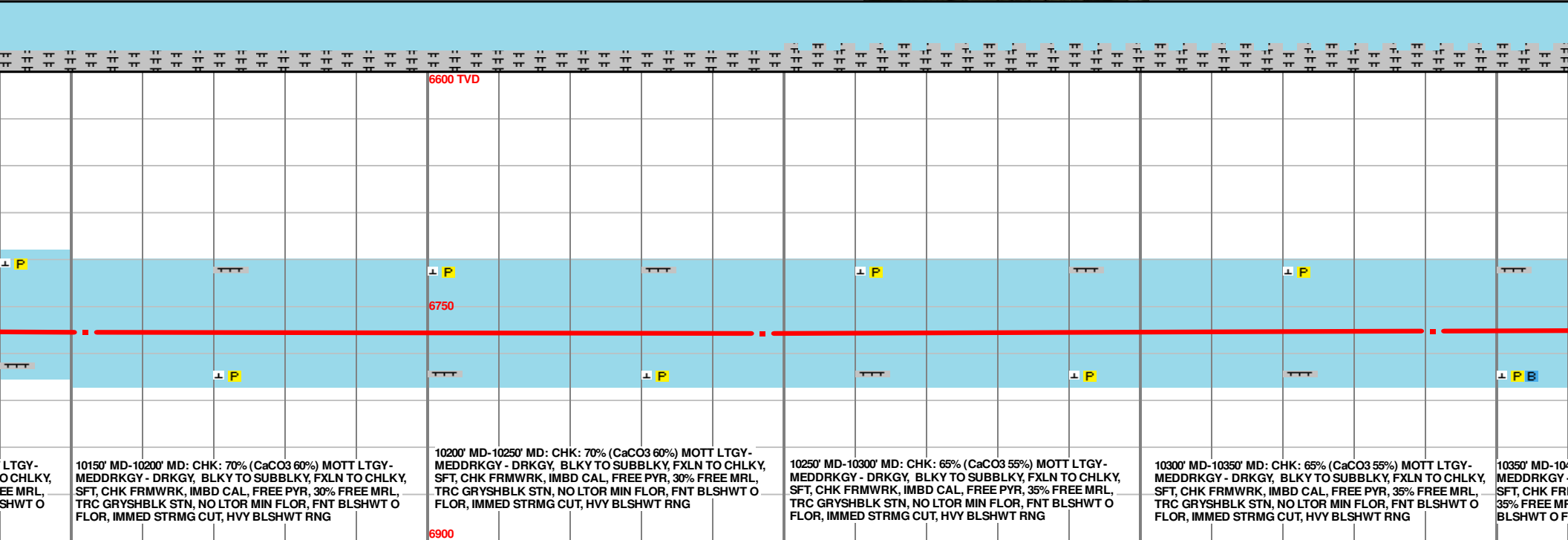
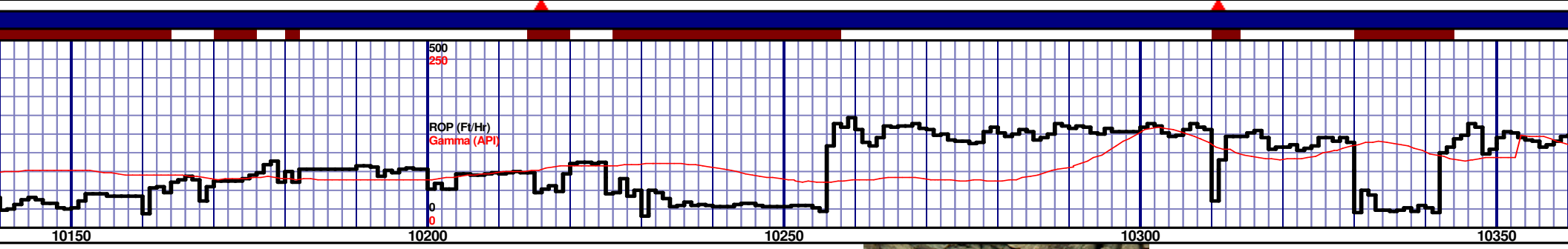
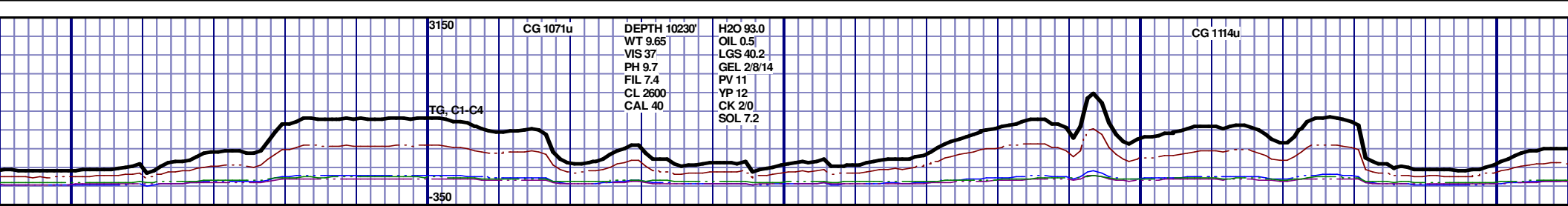
9900' MD-9950' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG



<p>9950' MD-10000' MD: CHK: 60% (CaCO₃ 55%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>9950' MD-10000' MD: CHK: 60% (CaCO₃ 55%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10000' MD-10050' MD: CHK: 60% (CaCO₃ 55%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 40% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10050' MD-10100' MD: CHK: 80% (CaCO₃ 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10100' MD-10150' MD: CHK: 70% (CaCO₃ 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>
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MD 9963 TVD 6759.1
INC 86.67 AZ 266.32
VS 3531.66

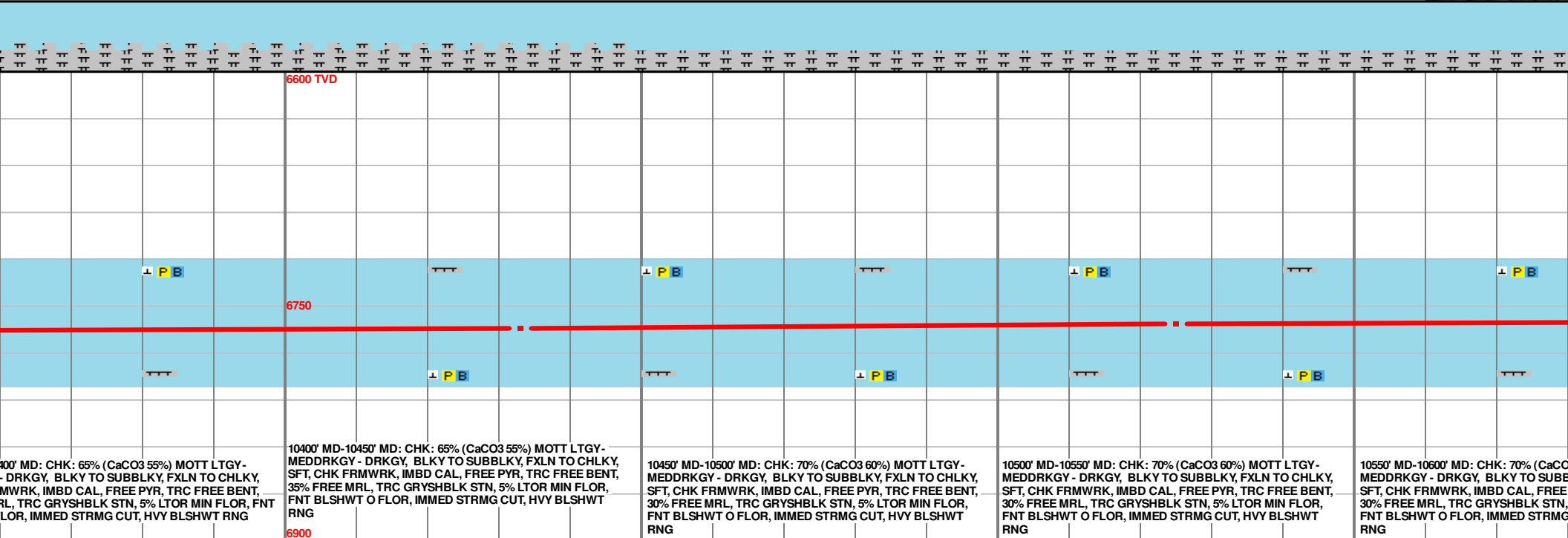
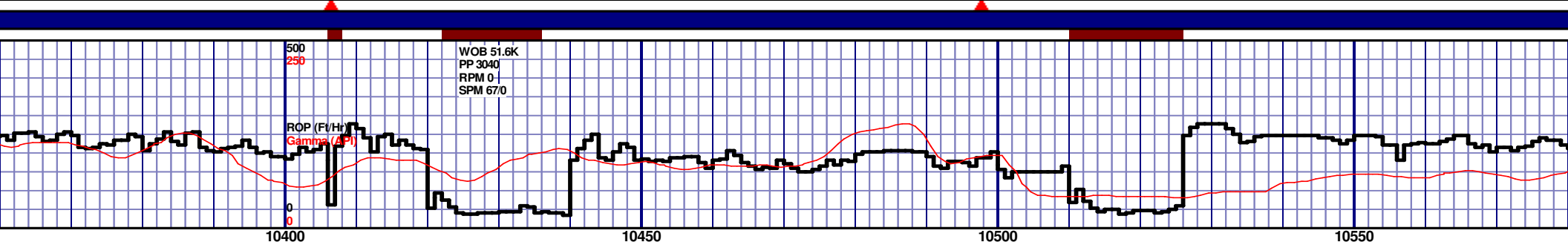
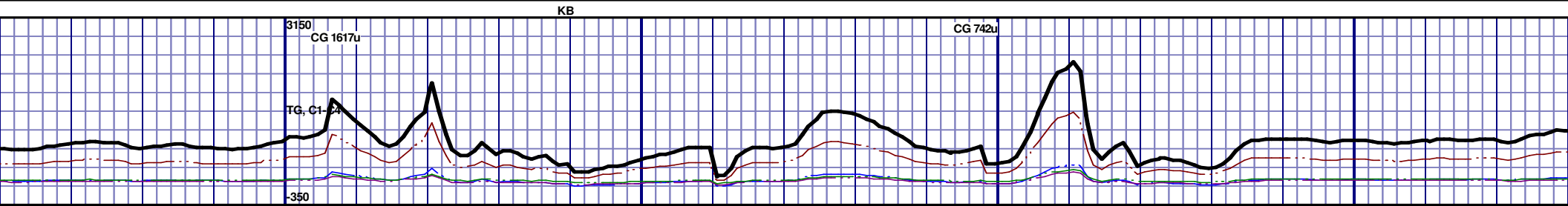
MD 10058 TVD 6764.03
INC 87.38 AZ 266.3
VS 3626.46



MD 10152 TVD 6766.66
INC 89.41 AZ 266.71
VS 3720.36

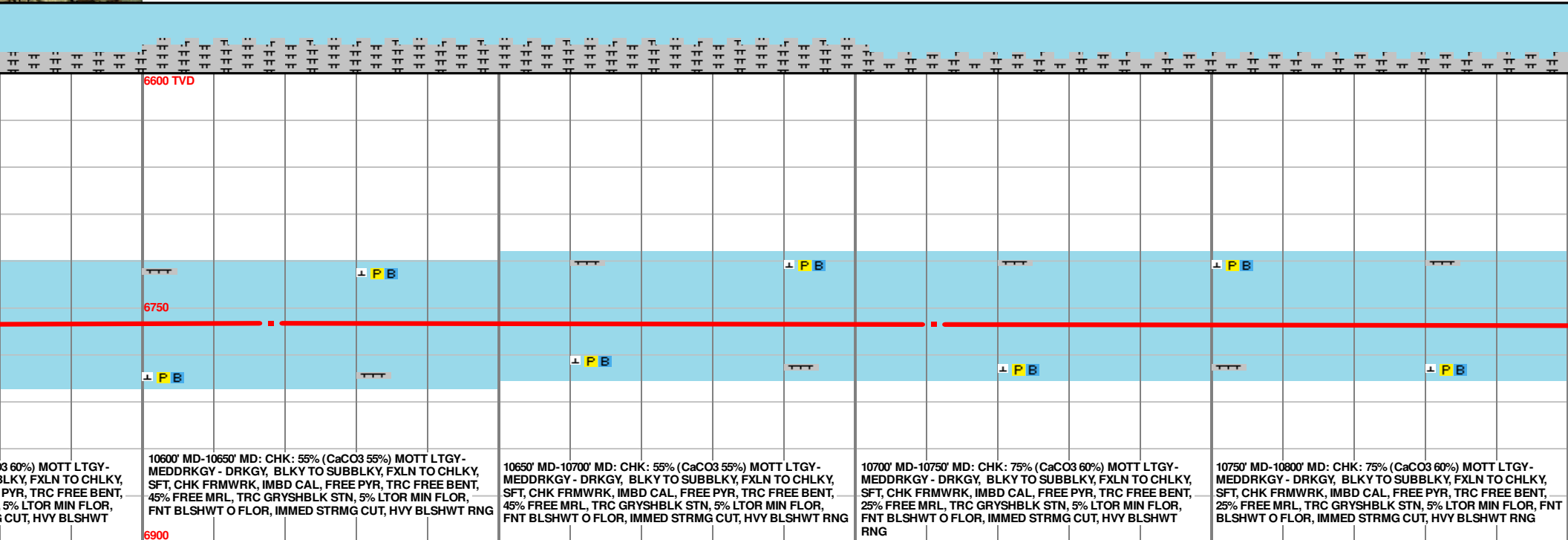
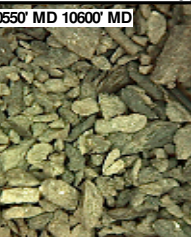
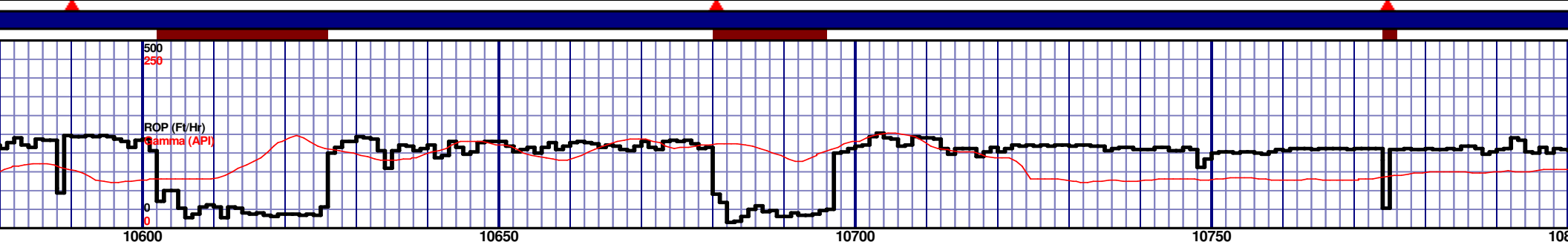
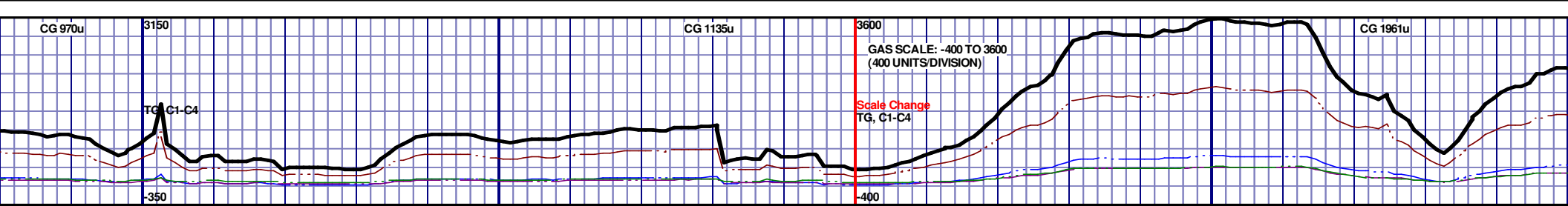
MD 10247 TVD 6767.03
INC 90.15 AZ 268.44
VS 3815.34

MD 10341 TVD 6766.02
INC 91.08 AZ 269
VS 3909.33



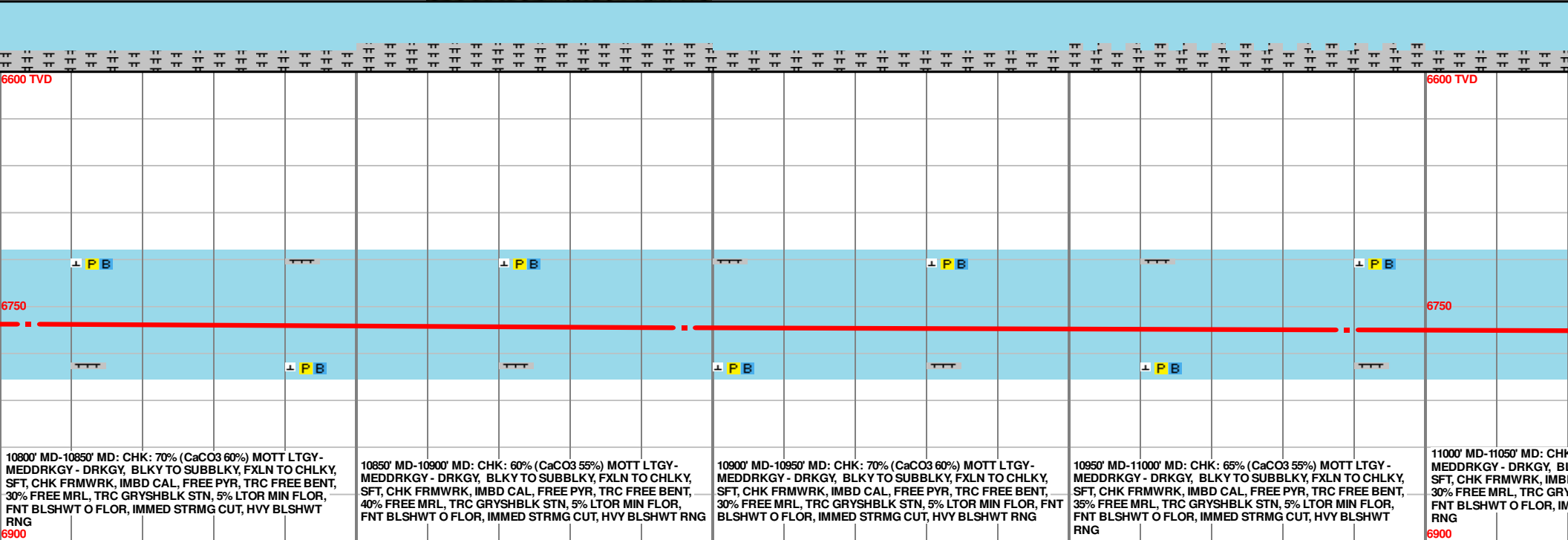
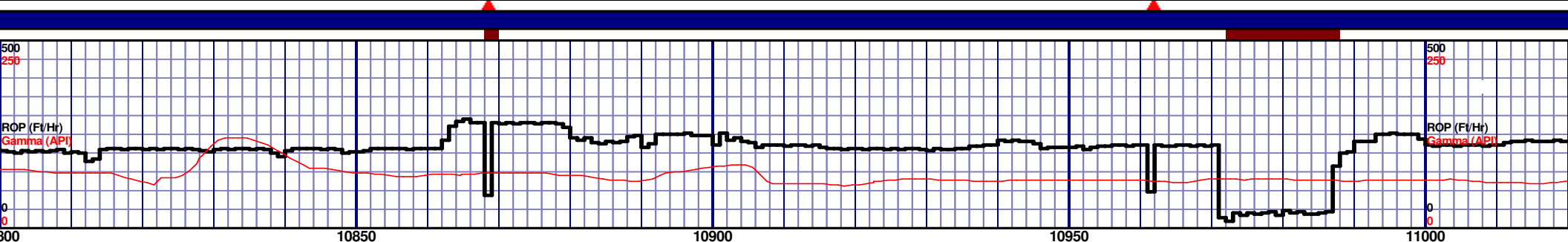
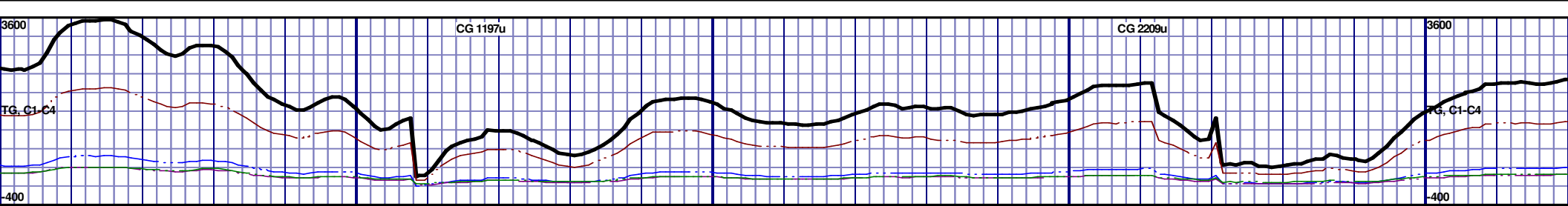
MD 10433 TVD 6764.06
INC 91.36 AZ 270.32
VS 4001.29

MD 10525 TVD 6761.55
INC 91.76 AZ 271
VS 4093.19



MD 10618 TVD 6759.9
INC 90.28 AZ 271.42
VS 4186.07

MD 10711 TVD 6760.18
INC 89.38 AZ 270.89
VS 4278.97



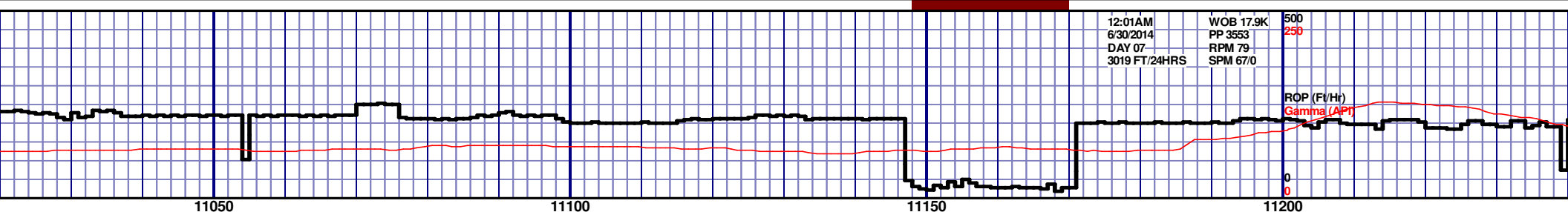
10800' MD-10850' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10850' MD-10900' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

10900' MD-10950' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

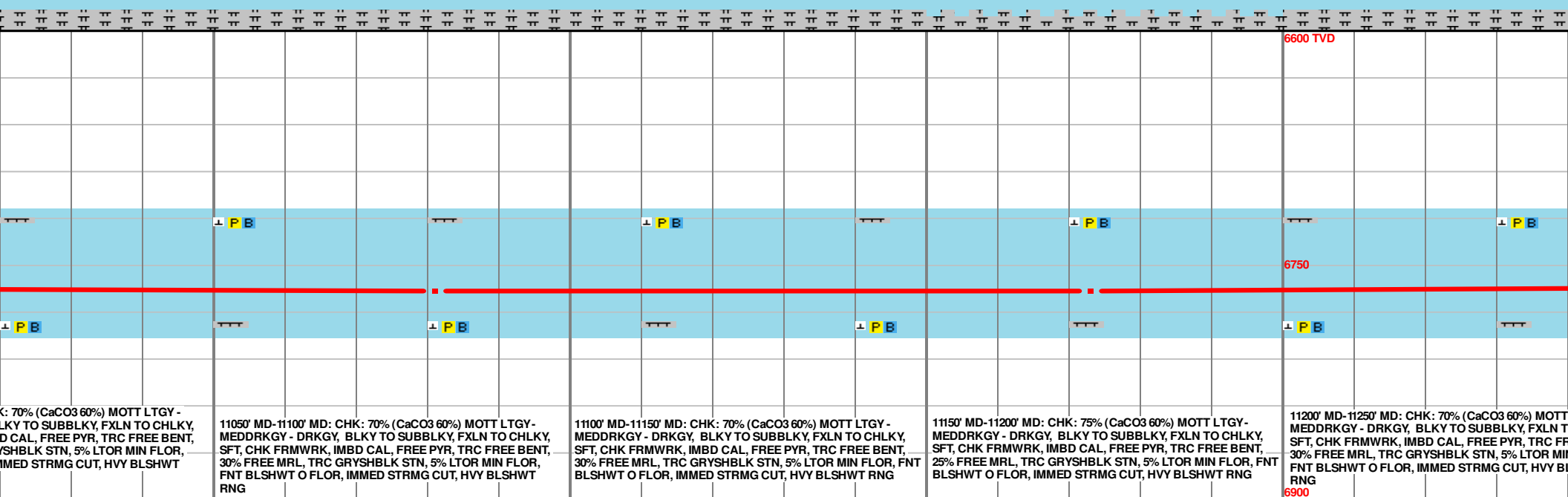
10950' MD-11000' MD: CHK: 65% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

11000' MD-11050' MD: CHK: 60% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG



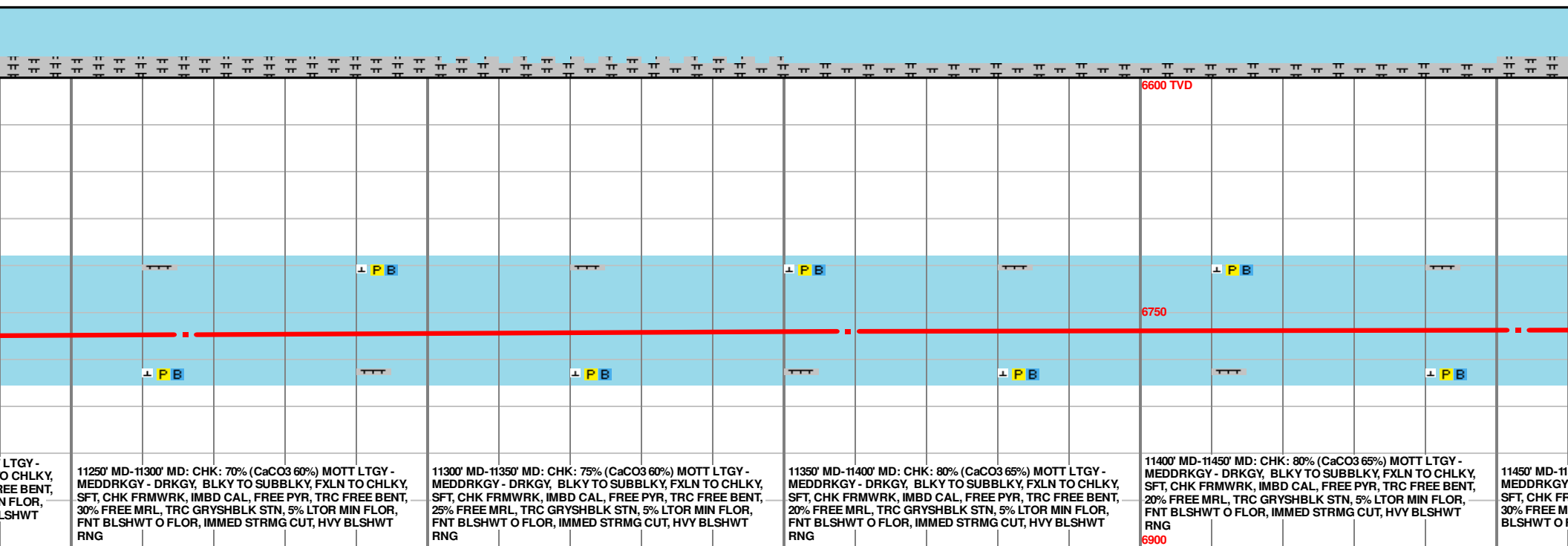
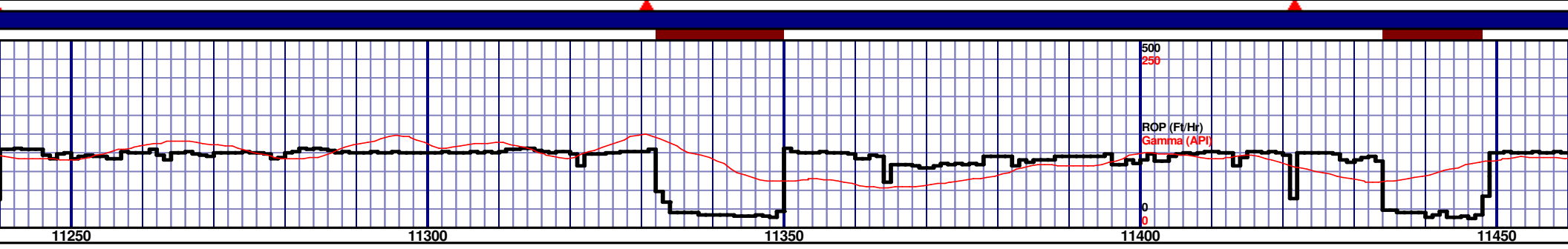
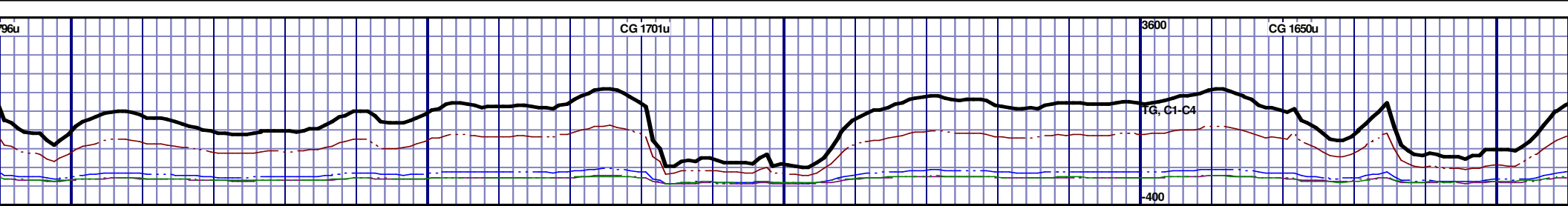
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6/30/2014	PP 3553
DAY 07	RPM 79
3019 FT/24HRS	SPM 67/0

ROP (Ft/Hr)
Gamma (API)



MD 11081 TVD 6766.19
INC 89.23 AZ 266.33
VS 4648.83

MD 11173 TVD 6766.26
INC 90.68 AZ 269.22
VS 4740.81



LTGY - O CHLKY, FREE BENT, N FLOR, LSHWT

11250' MD-11300' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

11300' MD-11350' MD: CHK: 75% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

11350' MD-11400' MD: CHK: 80% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

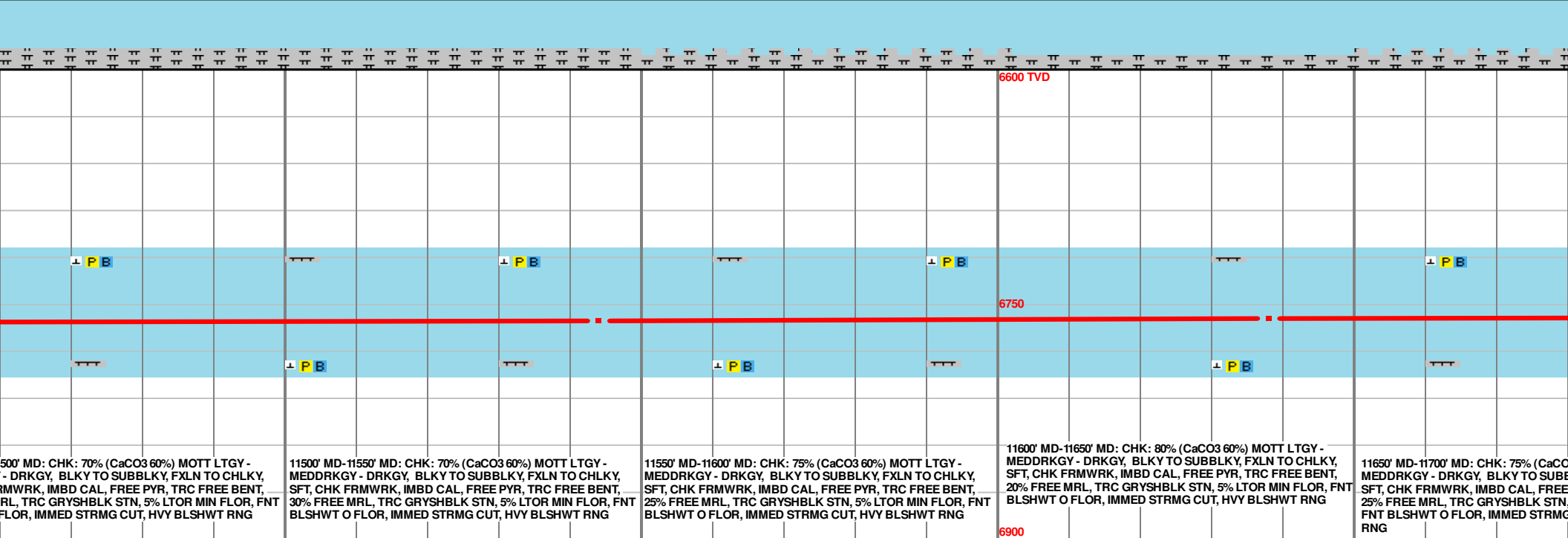
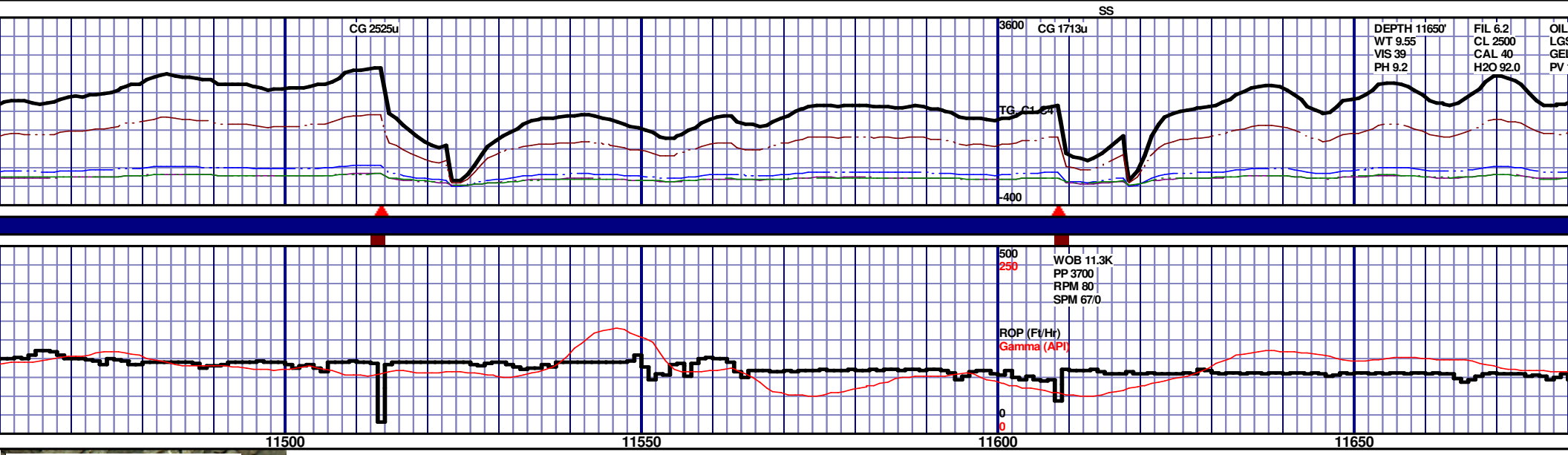
11400' MD-11450' MD: CHK: 80% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

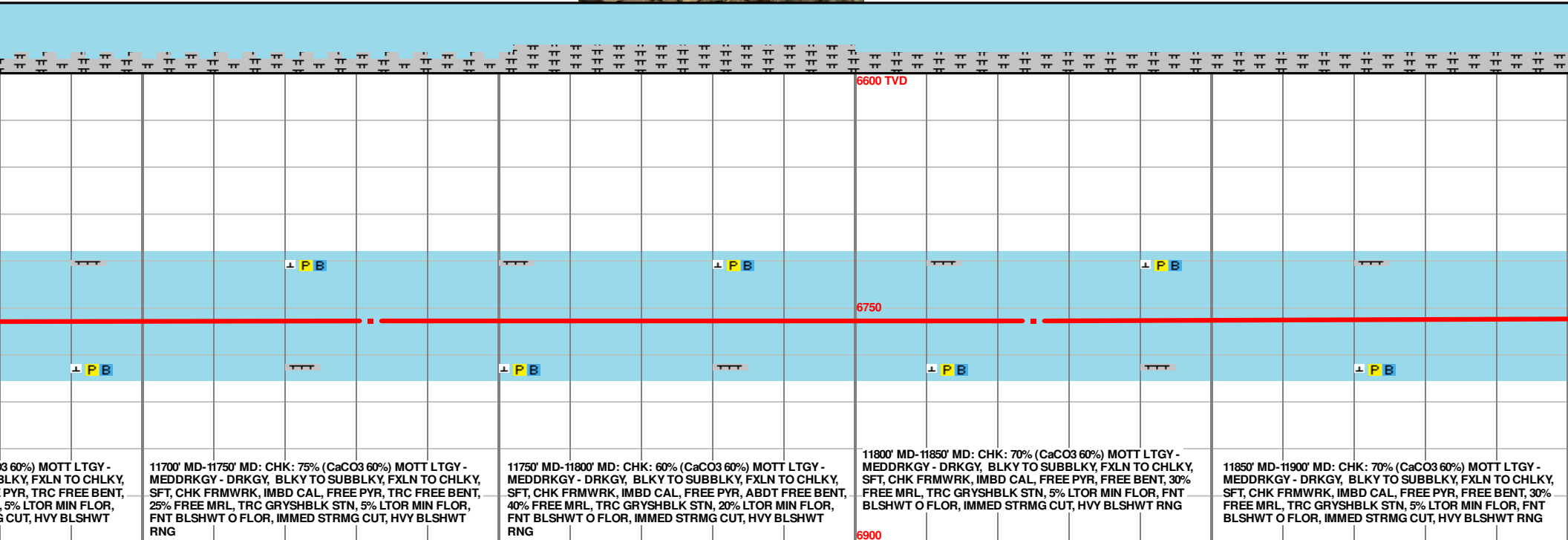
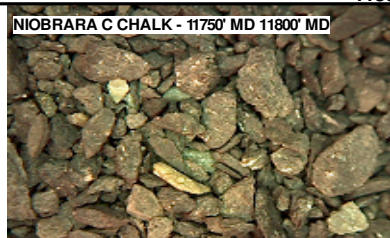
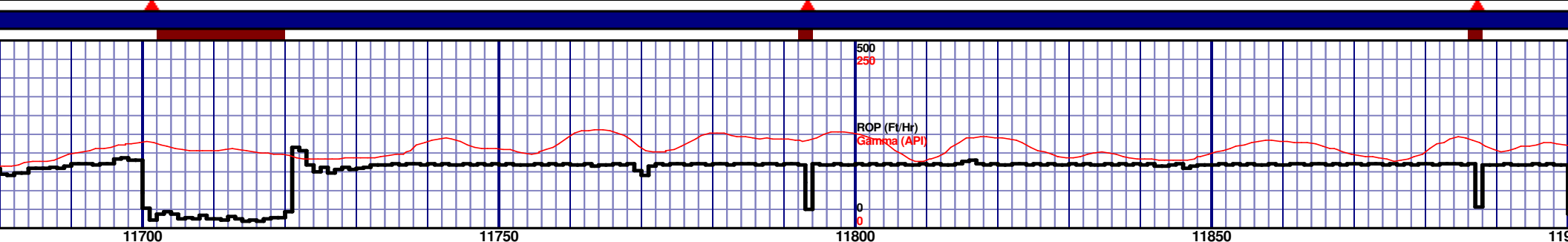
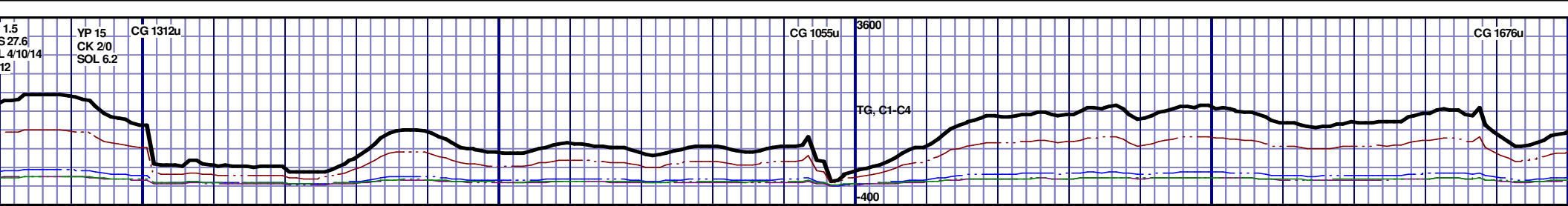
11450' MD-11500' MD: CHK: 80% (CaCO3 65%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 11266 TVD 6764.26
INC 91.79 AZ 268.34
VS 4833.78

MD 11359 TVD 6762.23
INC 90.71 AZ 268.93
VS 4926.76

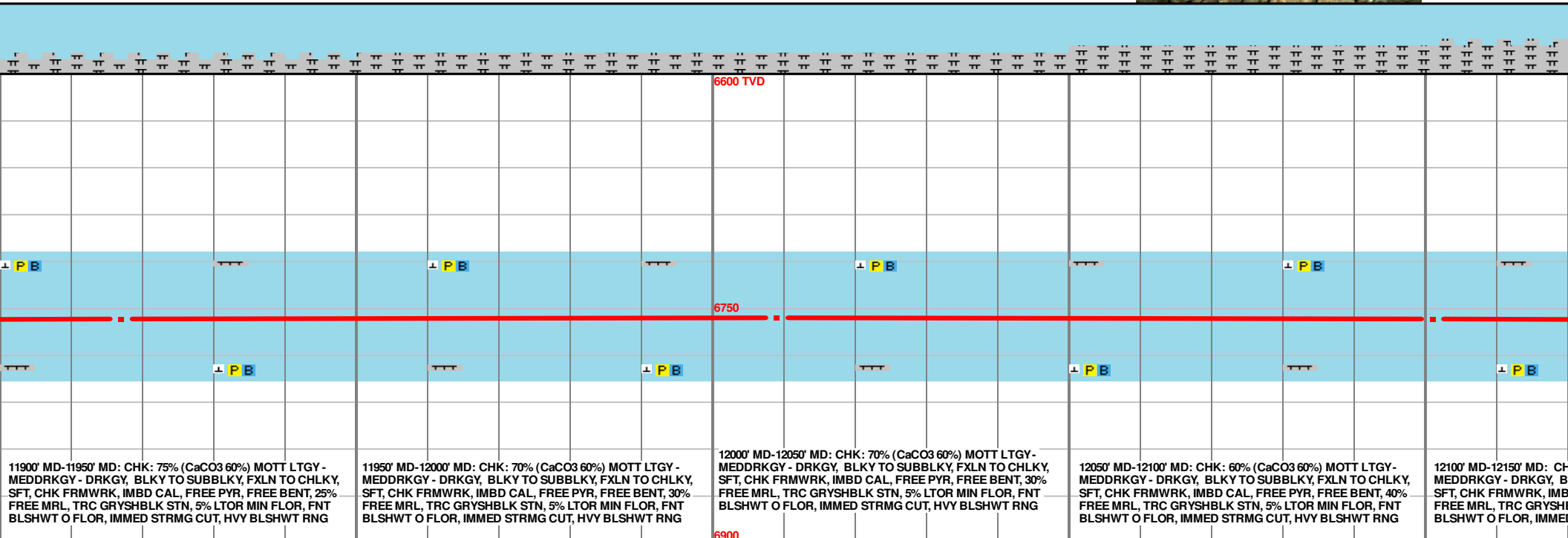
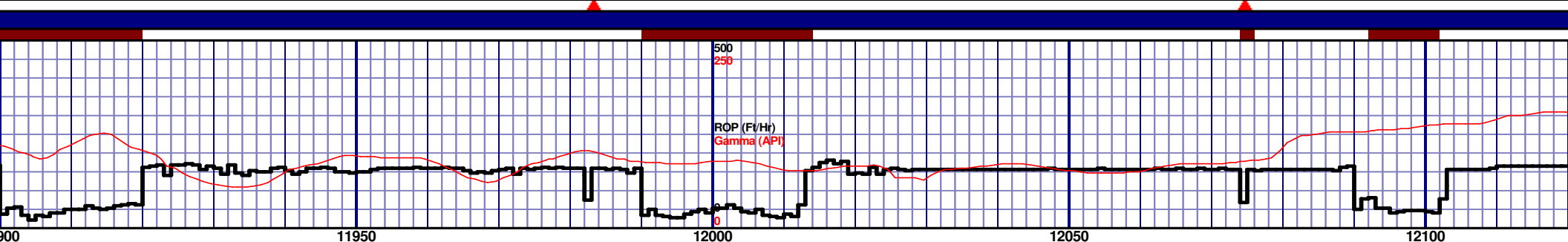
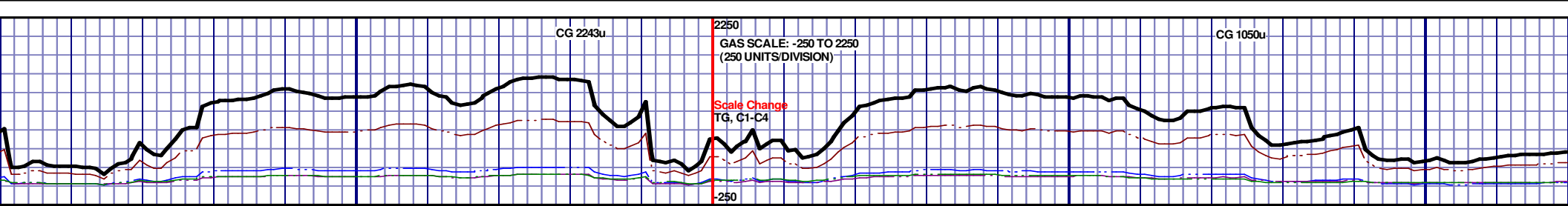
MD 11450 TVD 6762.23
INC 90.21 AZ 268.93
VS 5020.76





MD 11732 TVD 6758.4
INC 89.78 AZ 268.86
VS 5299.71

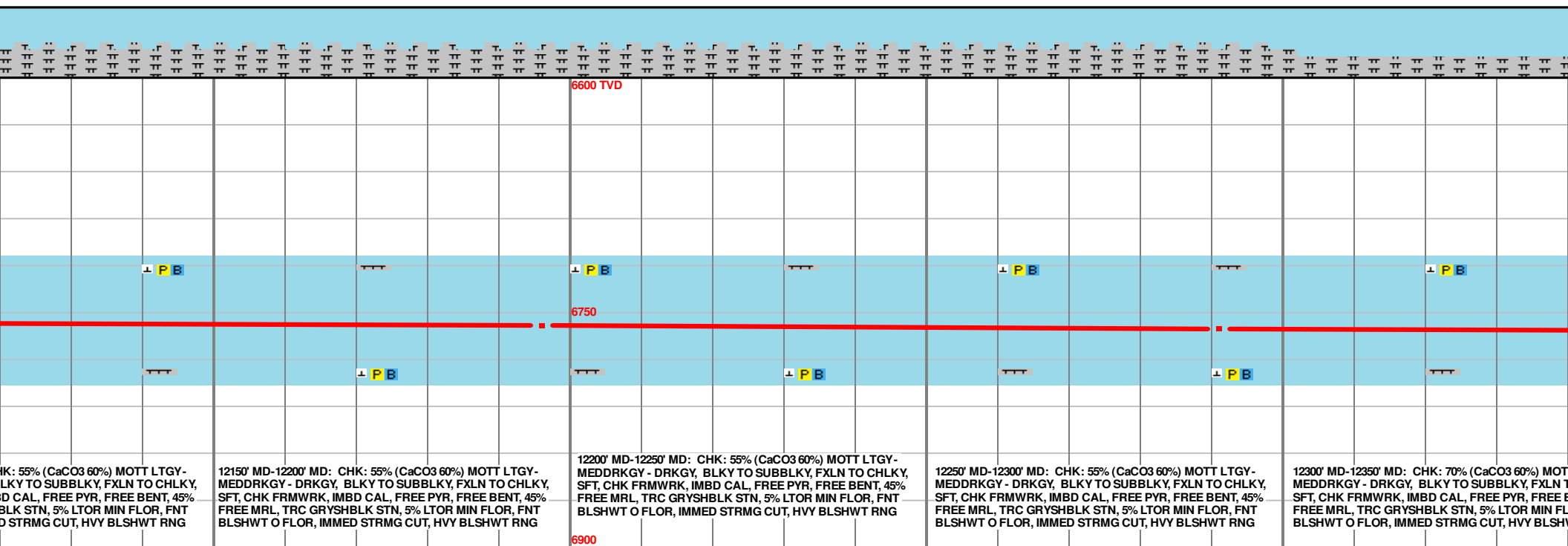
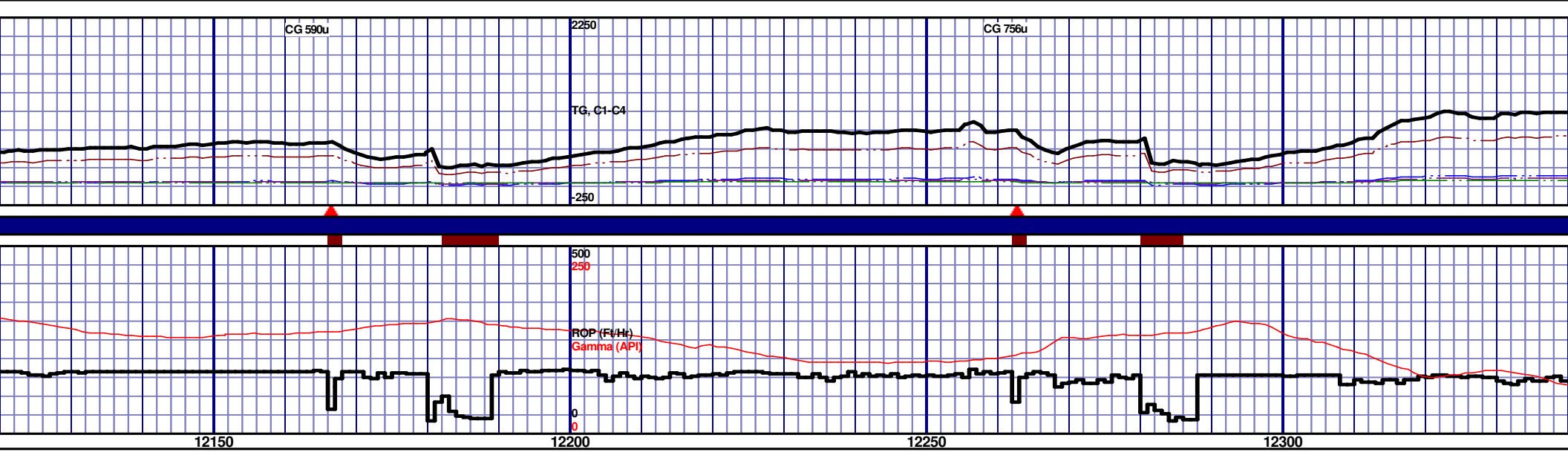
MD 11825 TVD 6758.28
INC 90.37 AZ 267.63
VS 5392.71



MD 11917 TVD 6757.11
INC 91.08 AZ 268.88
VS 5484.7

MD 12009 TVD 6756.22
INC 90.03 AZ 269.47
VS 5576.68

MD 12101 TVD 6756.54
INC 89.57 AZ 269.89
VS 5668.67



CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

12150' MD-12200' MD: CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

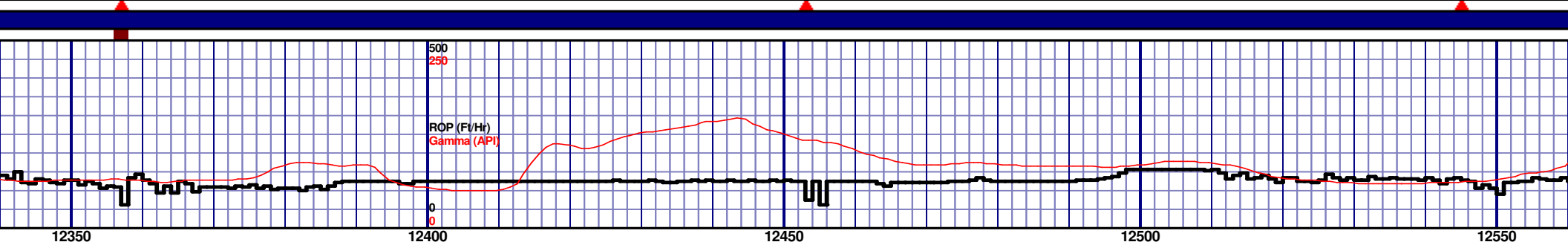
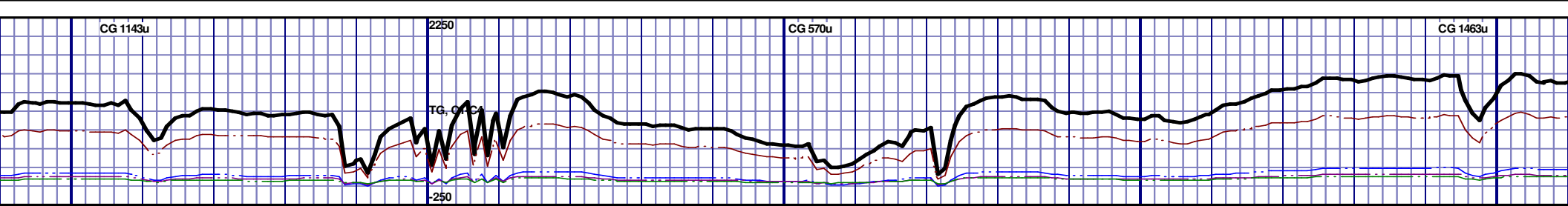
12200' MD-12250' MD: CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

12250' MD-12300' MD: CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

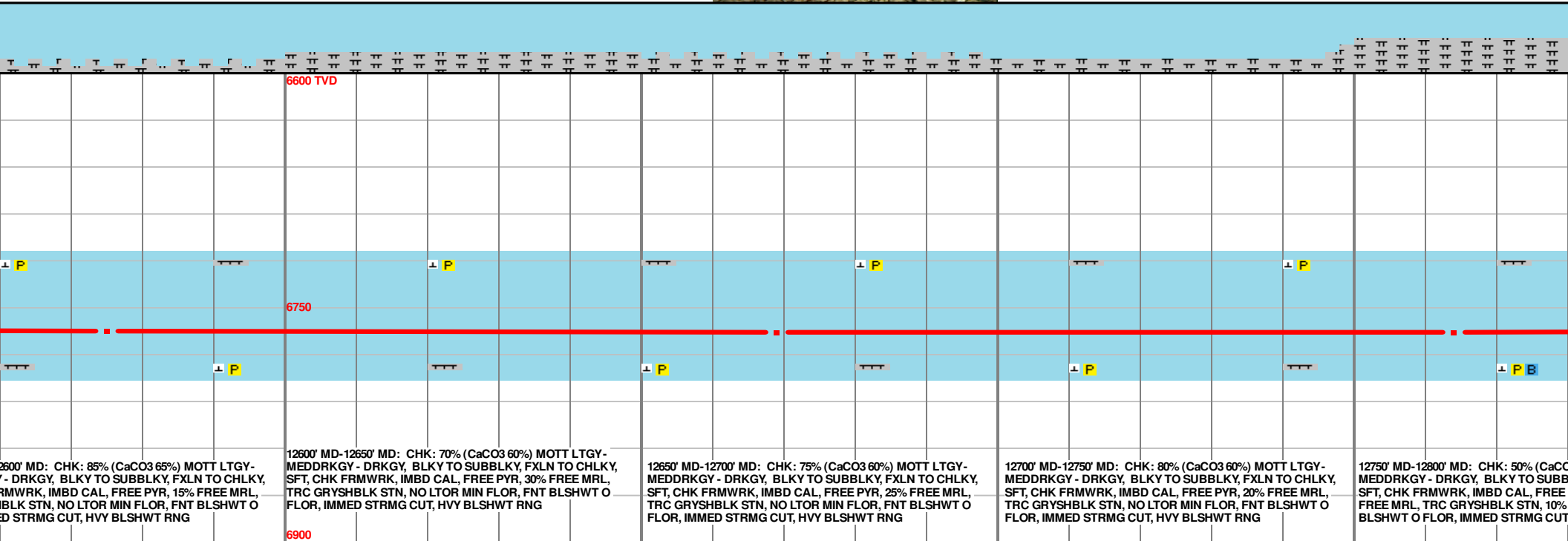
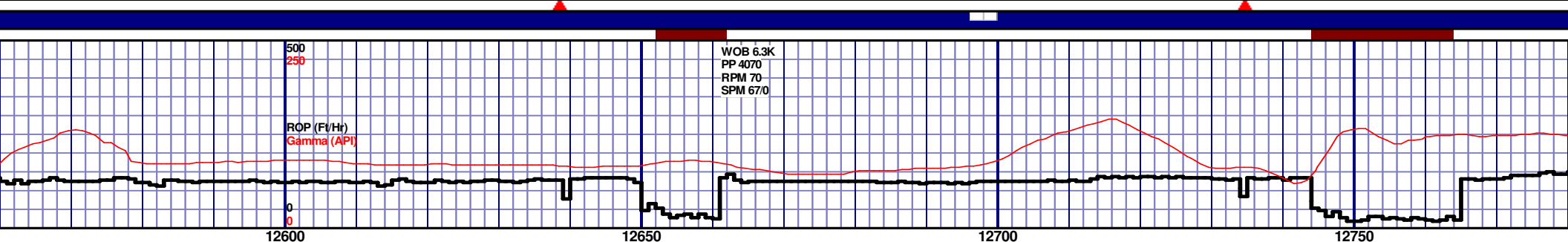
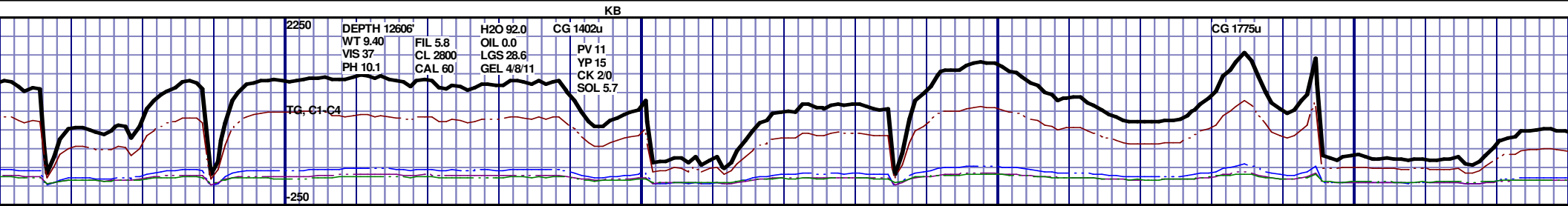
12300' MD-12350' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 12196 TVD 6758.58
INC 87.97 AZ 270.19
VS 5763.61

MD 12291 TVD 6760.76
INC 89.41 AZ 269.49
VS 5858.55



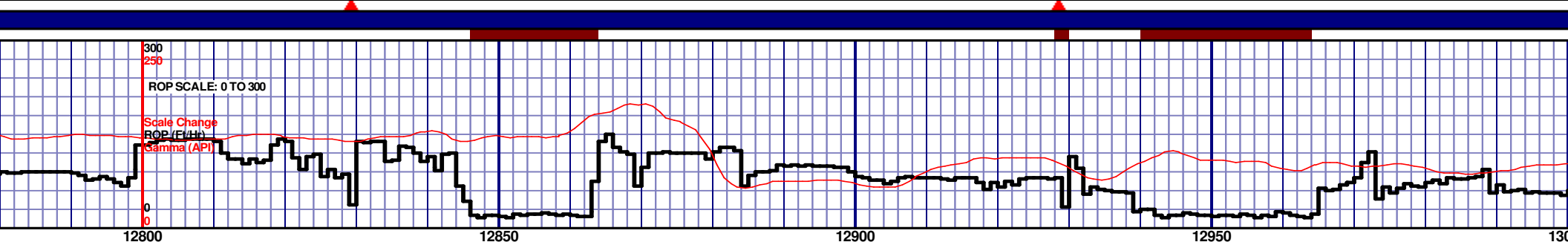
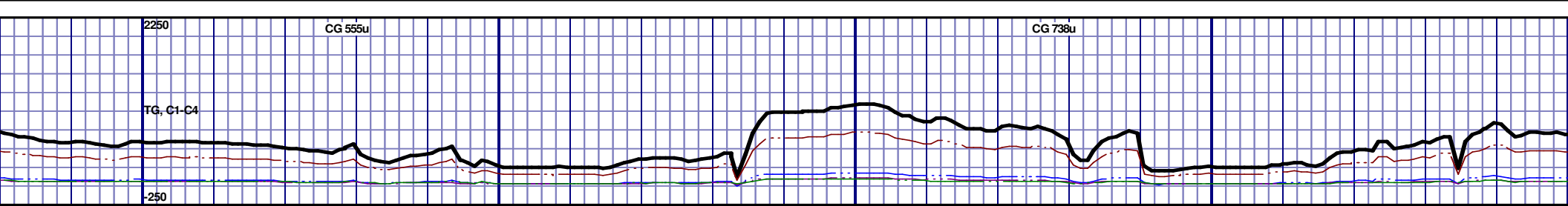
<p>12350' MD-12400' MD: CHK: 75% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12400' MD-12450' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12450' MD-12500' MD: CHK: 65% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 35% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12500' MD-12550' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE MRL, TRC GRYSBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12550' MD-12600' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE MRL, TRC GRYSBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12600' MD-12650' MD: CHK: 95% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE MRL, TRC GRYSBLK STN, NO LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>
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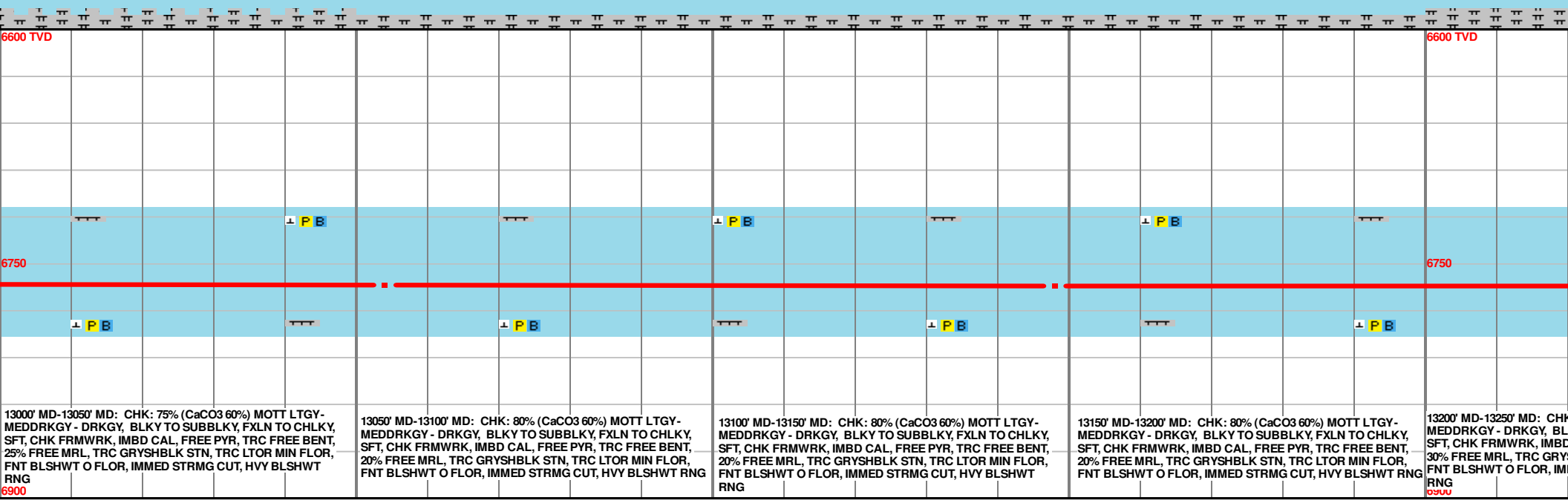
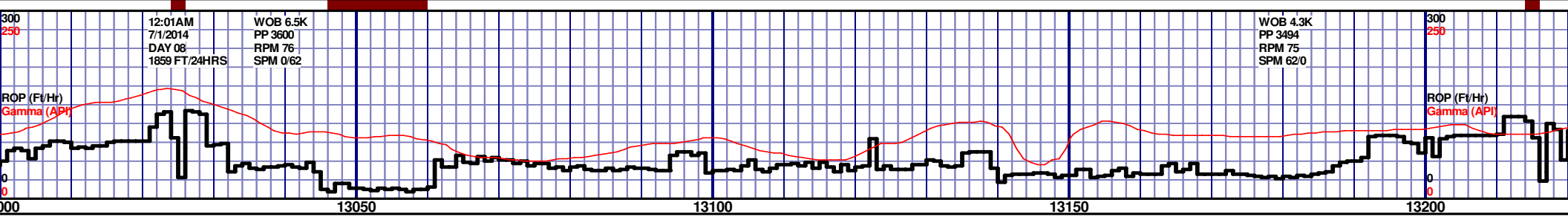
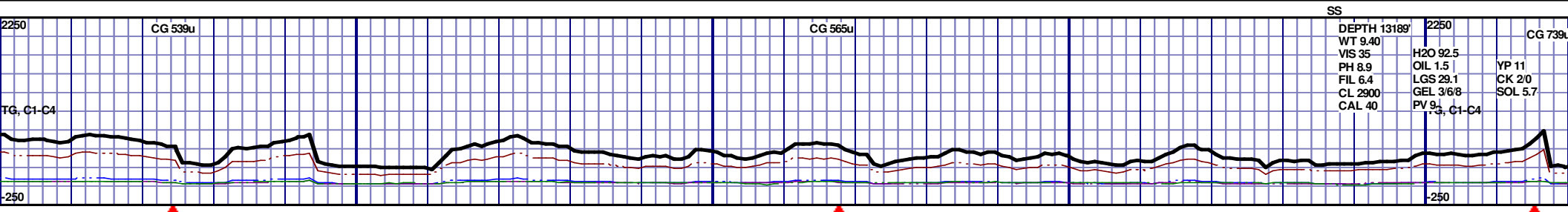
MD 12575 TVD 6764.74
INC 89.14 AZ 267.33
VS 6142.51

MD 12669 TVD 6765.96
INC 89.38 AZ 266.54
VS 6236.46

MD 12764 TVD 6766.0
INC 90.49 AZ 267.39
VS 6331.42

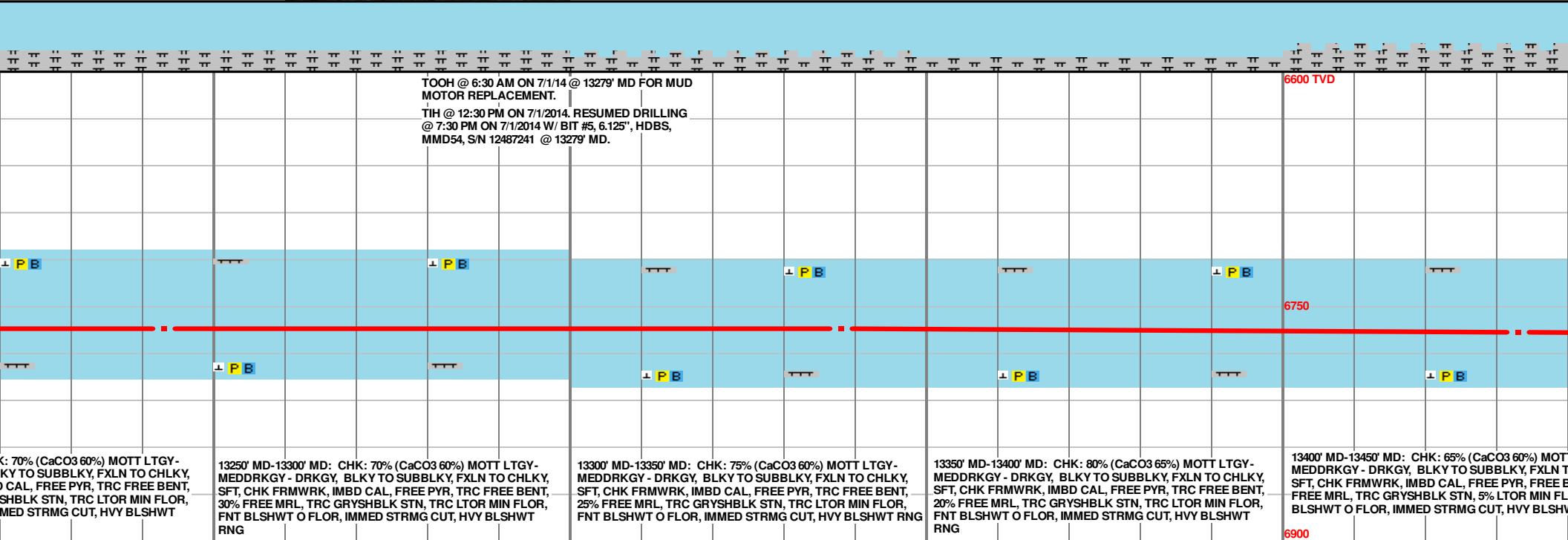
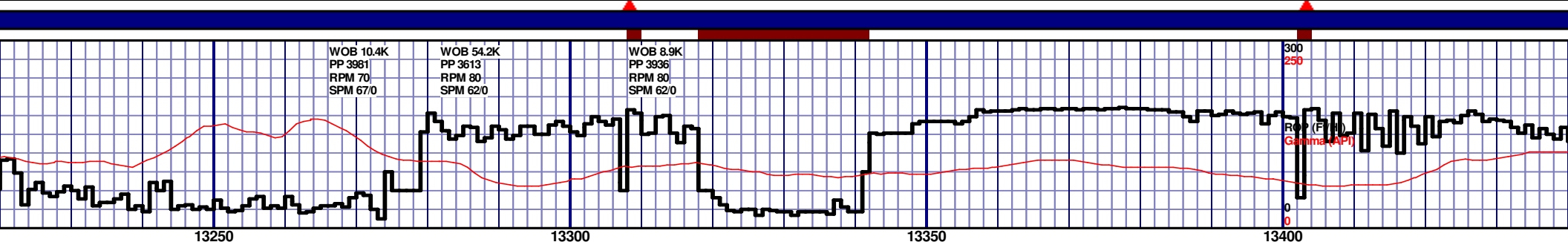
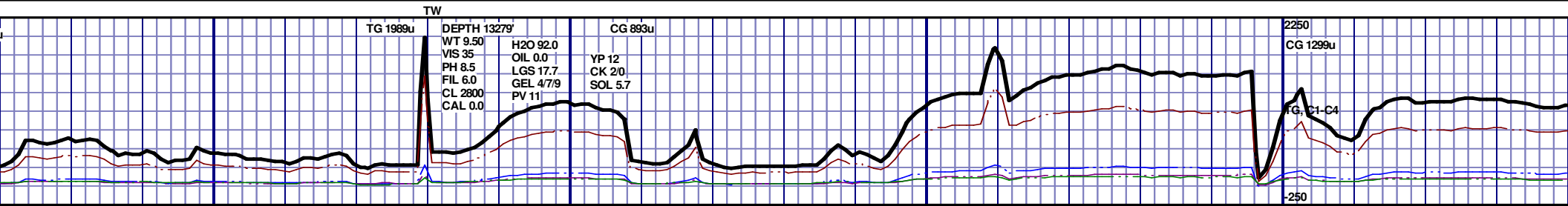


6600 TVD									
12800' MD-12850' MD: MRL: 55% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWKR, IMBD CAL, FREE PYR, FREE BENT, 45% FREE CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
12850' MD-12900' MD: CHK: 80% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWKR, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
12900' MD-12950' MD: CHK: 80% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWKR, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
12950' MD-13000' MD: CHK: 75% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWKR, IMBD CAL, FREE PYR, TRC FREE BENT, 25% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									



MD 13054 TVD 6763.31
INC 89.38 AZ 269.92
VS 6621.36

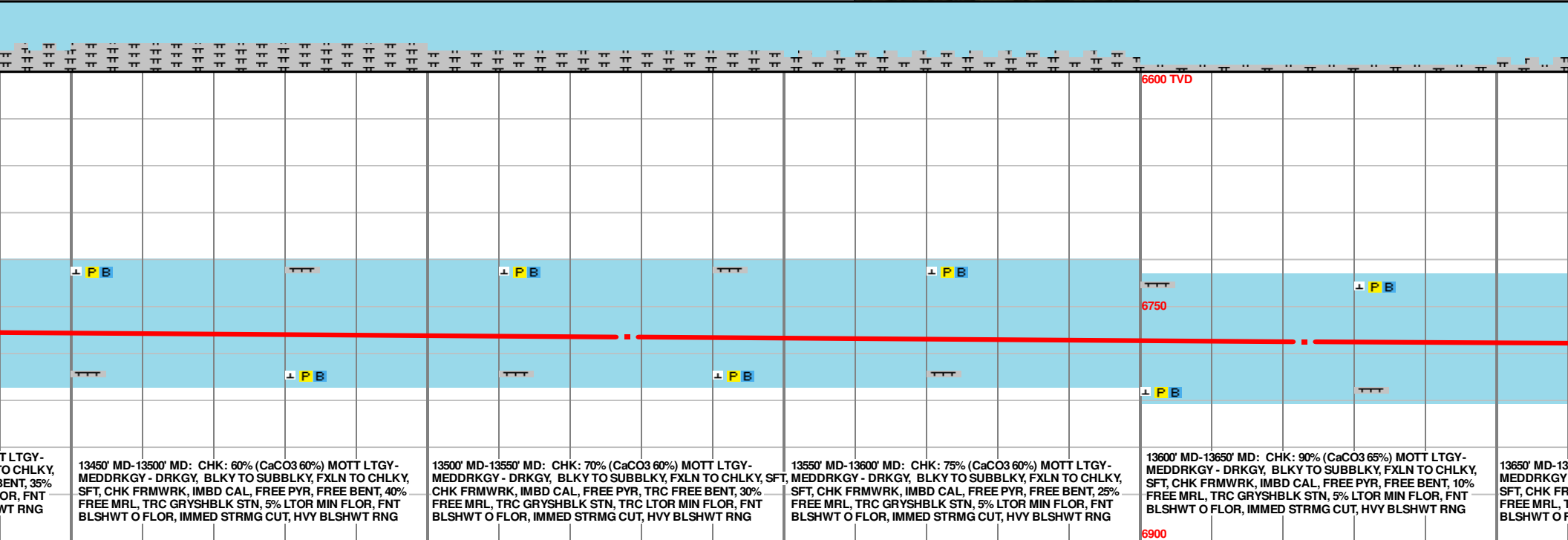
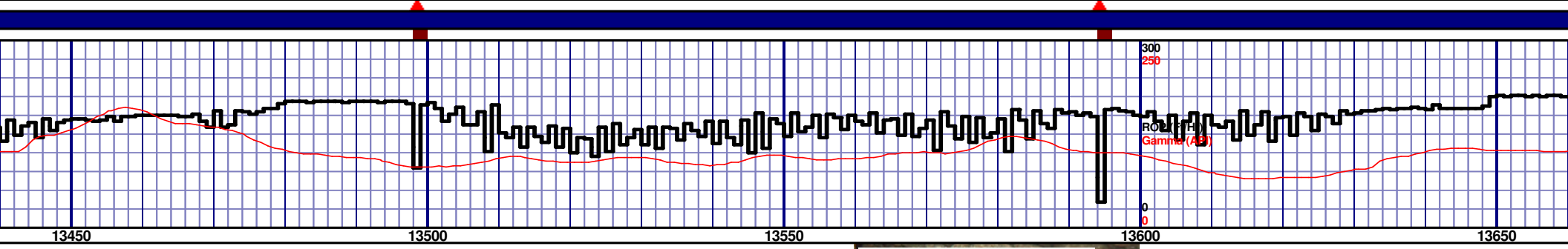
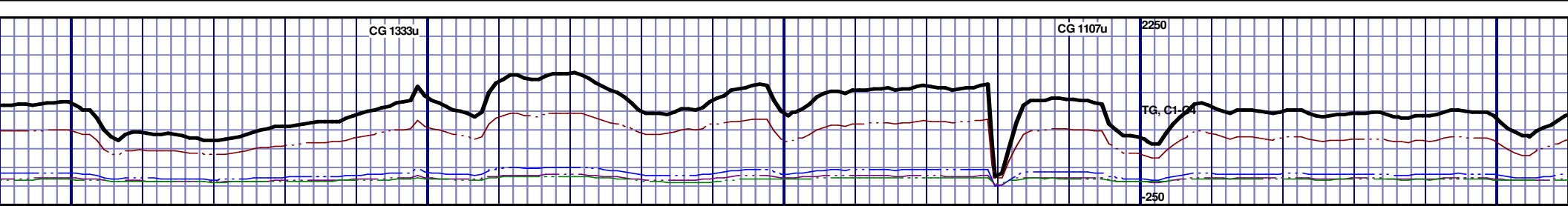
MD 13148 TVD 6764.24
INC 89.48 AZ 269.93
VS 6715.33

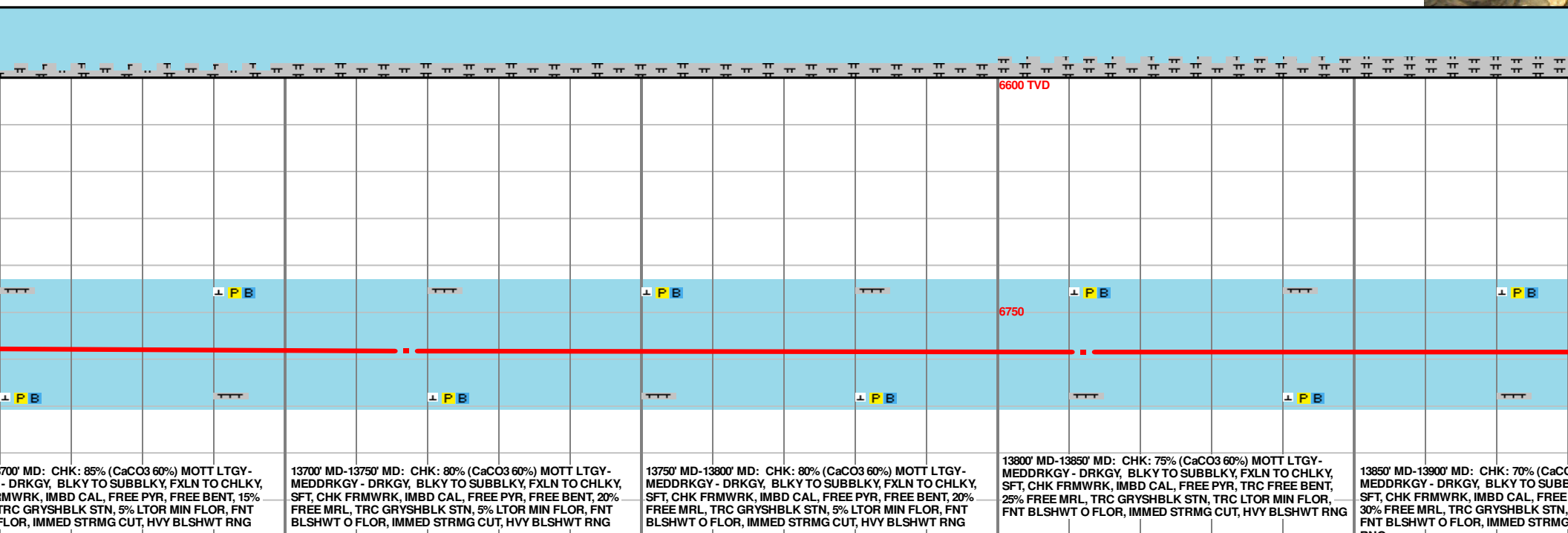
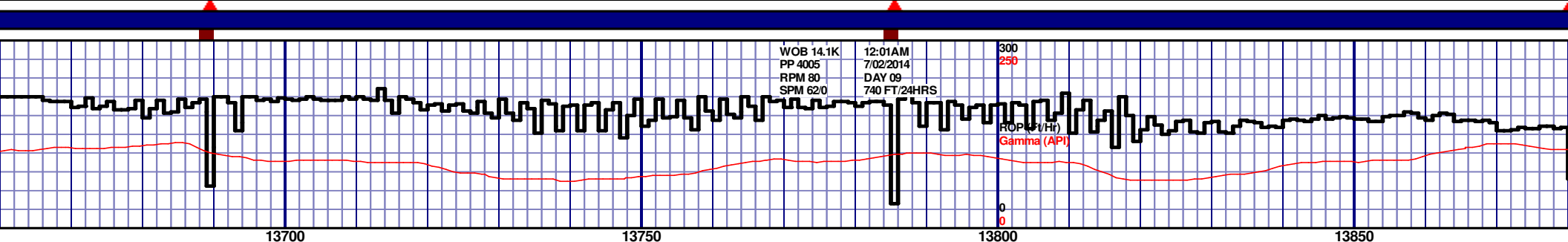
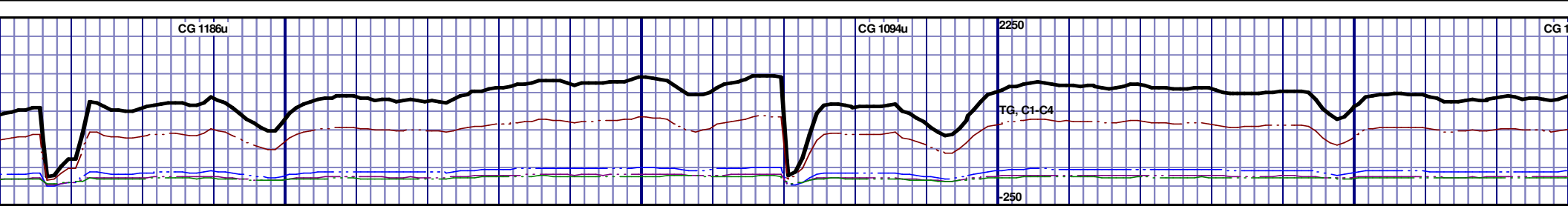


MD 13243 TVD 6763.94
INC 90.89 AZ 270.45
VS 6810.29

MD 13338 TVD 6764.3
INC 88.67 AZ 270.25
VS 6905.23

MD 1343
INC 88.2
VS 7000





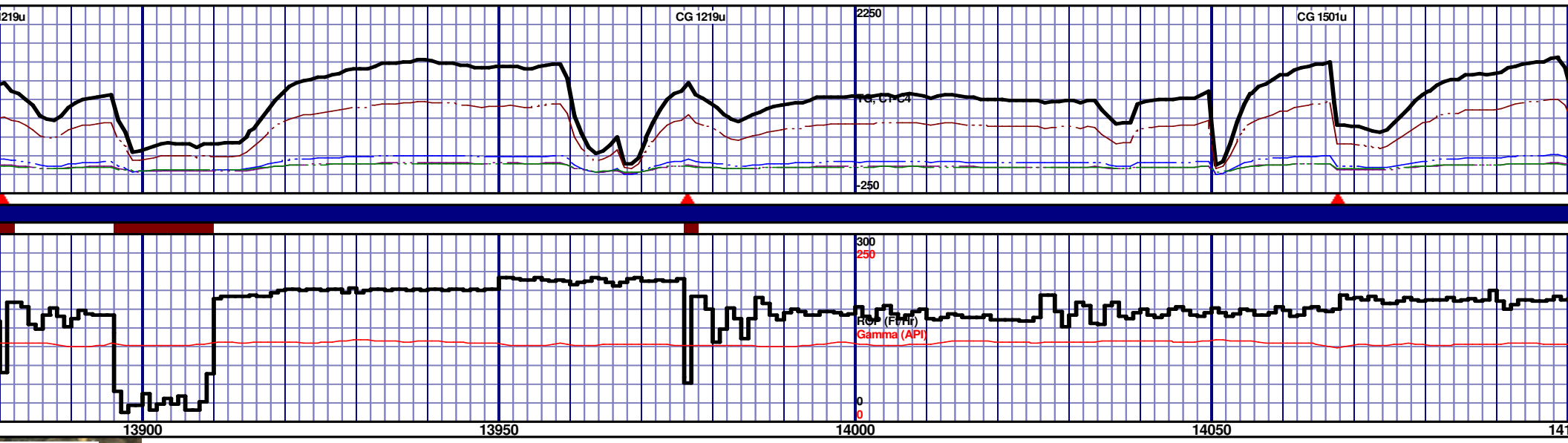
700' MD: CHK: 85% (CaCO3 60%) MOTT LTGY -
- DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
IMWRK, IMBD CAL, FREE PYR, FREE BENT, 15%
TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13700' MD-13750' MD: CHK: 80% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13750' MD-13800' MD: CHK: 80% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20%
FREE MRL, TRC GRYSBLK STN, 5% LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13800' MD-13850' MD: CHK: 75% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
25% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13850' MD-13900' MD: CHK: 70% (CaCO3 60%) MOTT LTGY -
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

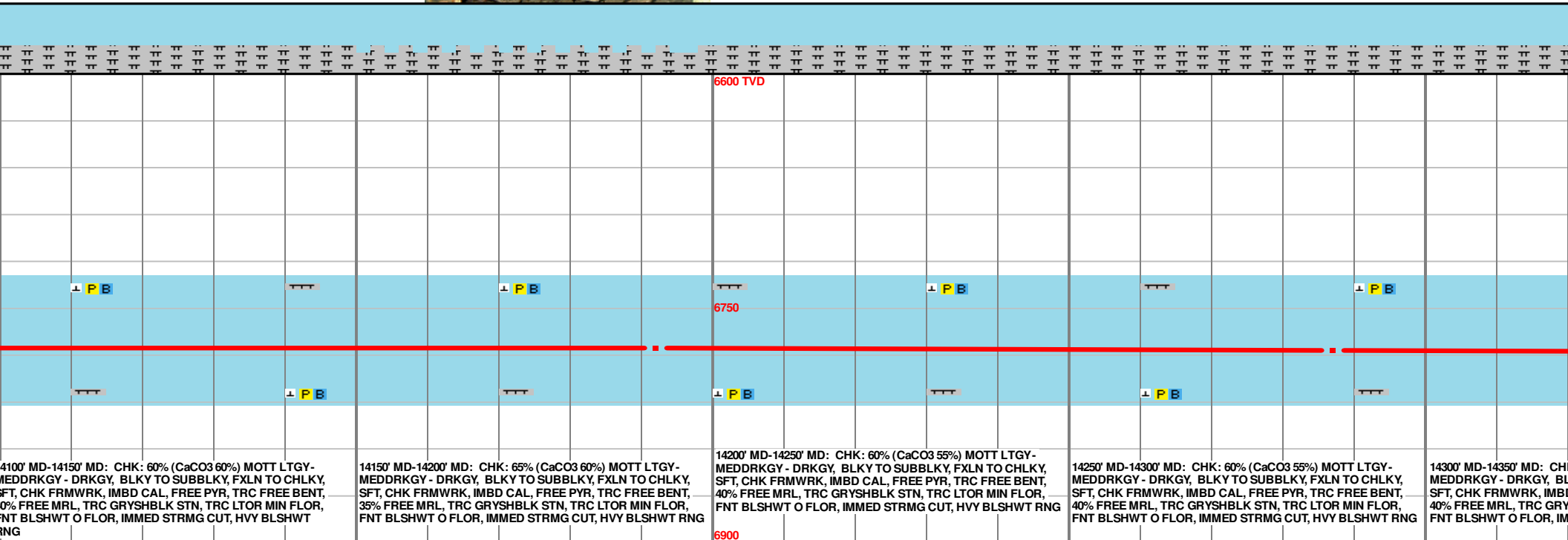
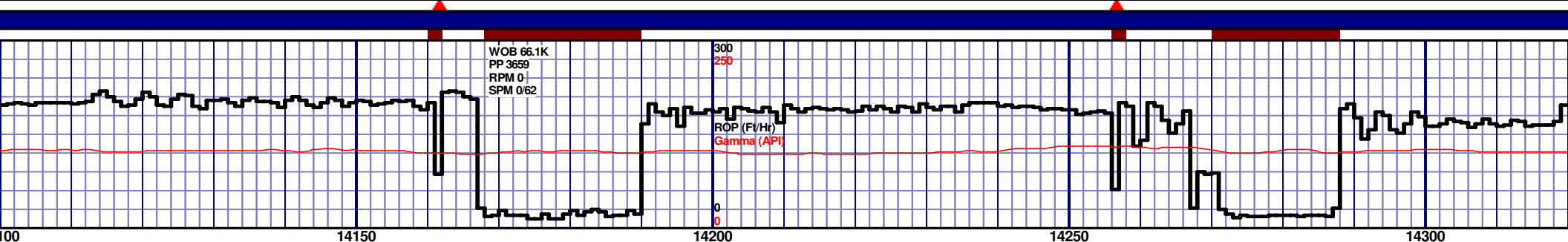
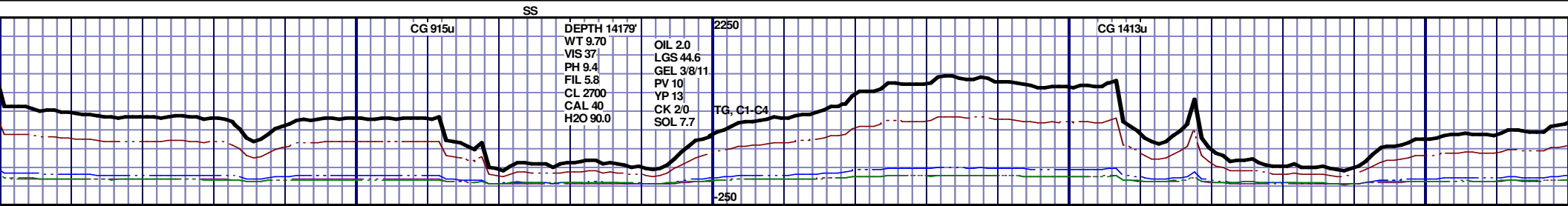


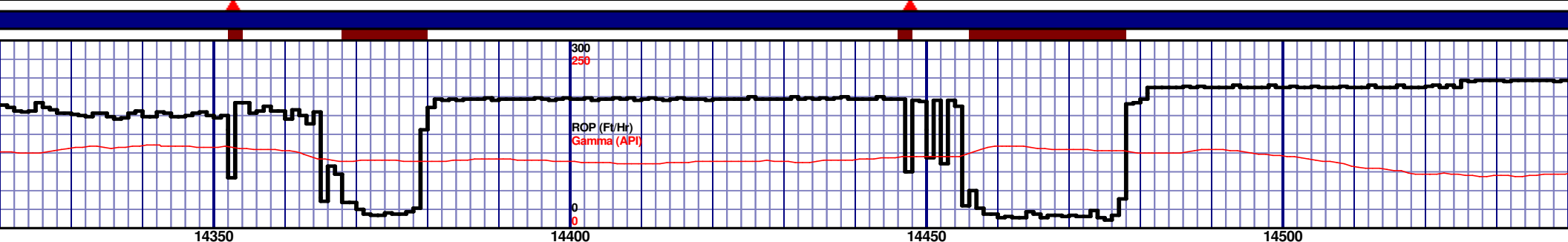
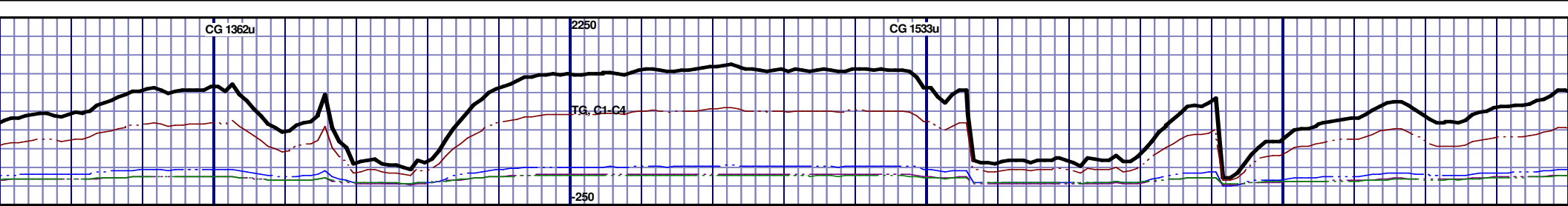
13850' MD 13900' MD									
13900' MD-13950' MD: MRL: 70% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
13950' MD-14000' MD: MRL: 75% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% FREE CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14000' MD-14050' MD: CHK: 55% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14050' MD-14100' MD: CHK: 60% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

MD 13907 TVD 6775.25
INC 90.25 AZ 268.62
VS 7474.03

MD 14002 TVD 6775
INC 90.06 AZ 267.02
VS 7569.02

MD
VS

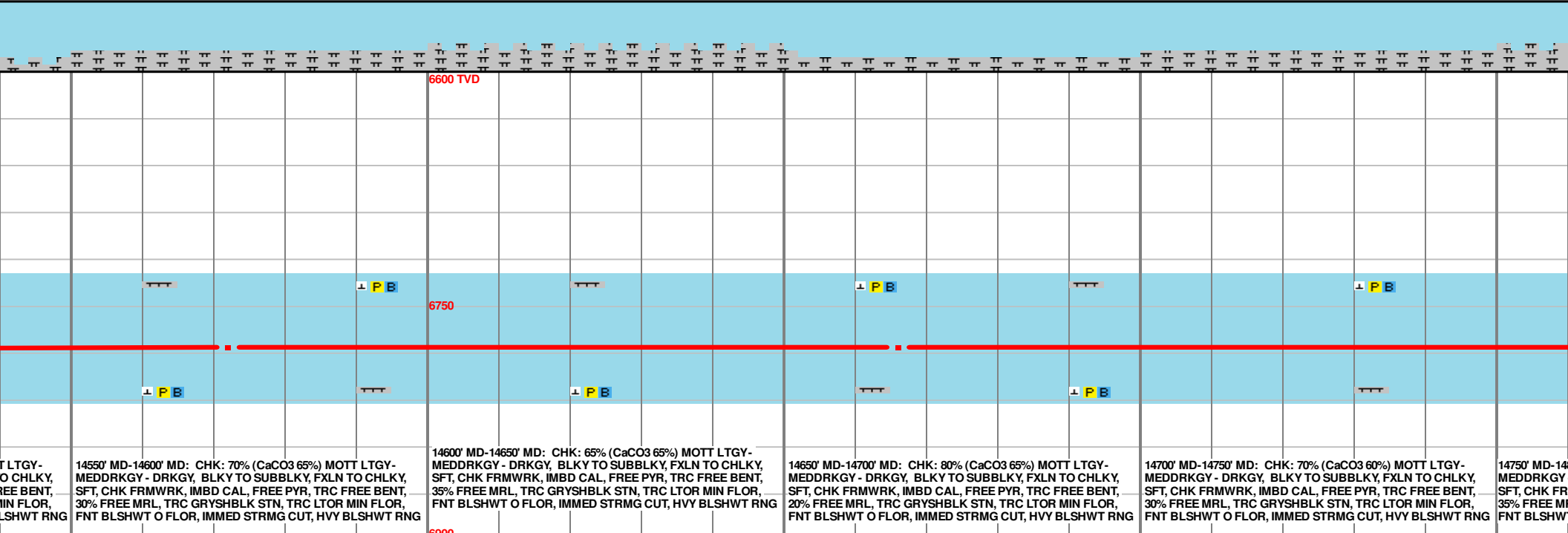
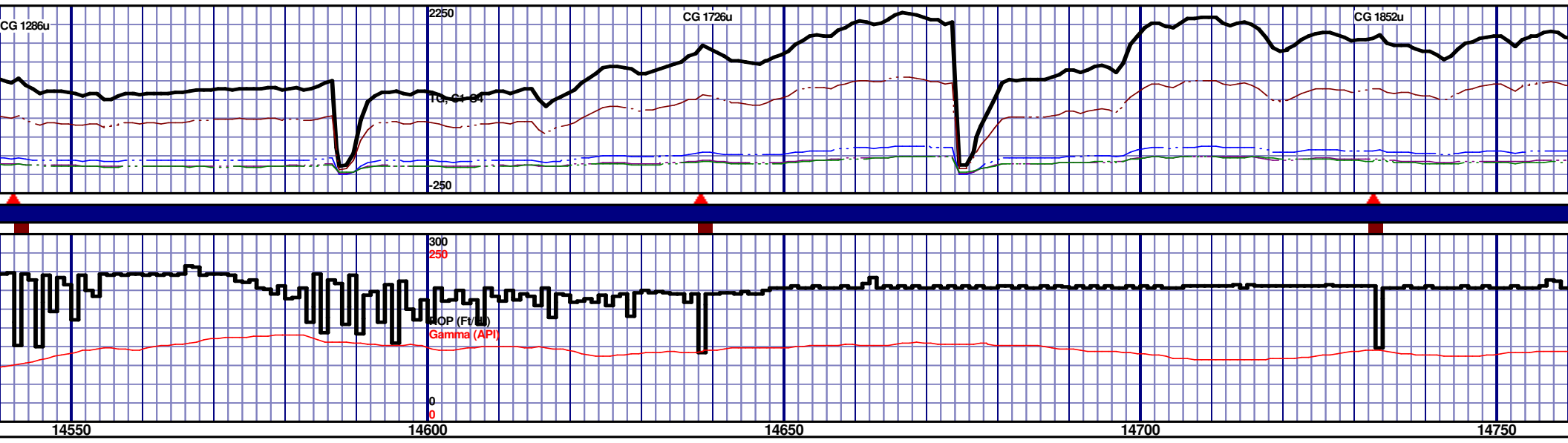




6600 TVD				
6750				
6900				
14350' MD-14400' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
14400' MD-14450' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
14450' MD-14500' MD: CHK: 55% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 45% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
14500' MD-14550' MD: CHK: 85% (CaCO3 65%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 15% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				

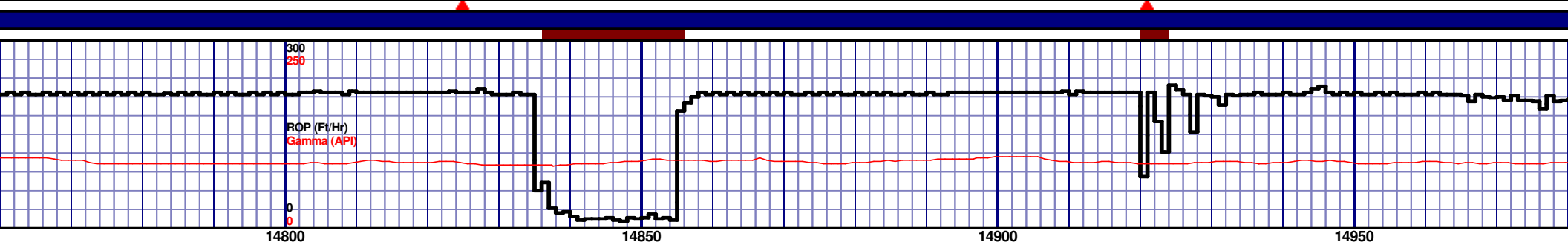
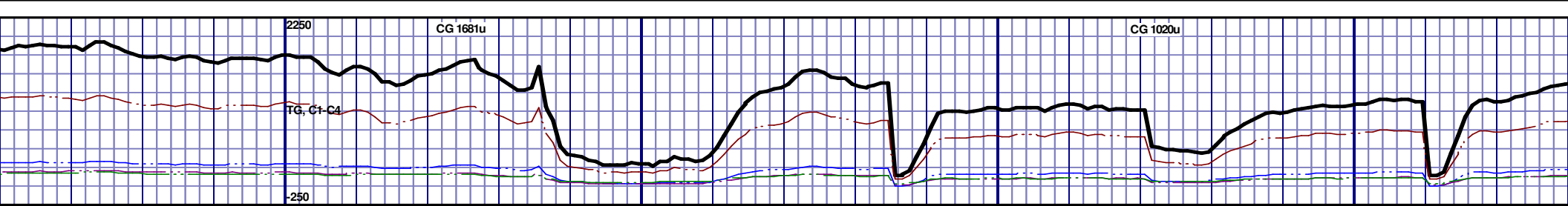
MD 14382 TVD 6778.25
INC 89.35 AZ 267.83
VS 7948.82

MD 14477 TVD 6777.87
INC 91.11 AZ 270.62
VS 8043.79



MD 14572 TVD 6776.49
INC 90.56 AZ 269.67
VS 8138.75

MD 14666 TVD 6776.21
INC 89.78 AZ 268.54
VS 8232.74

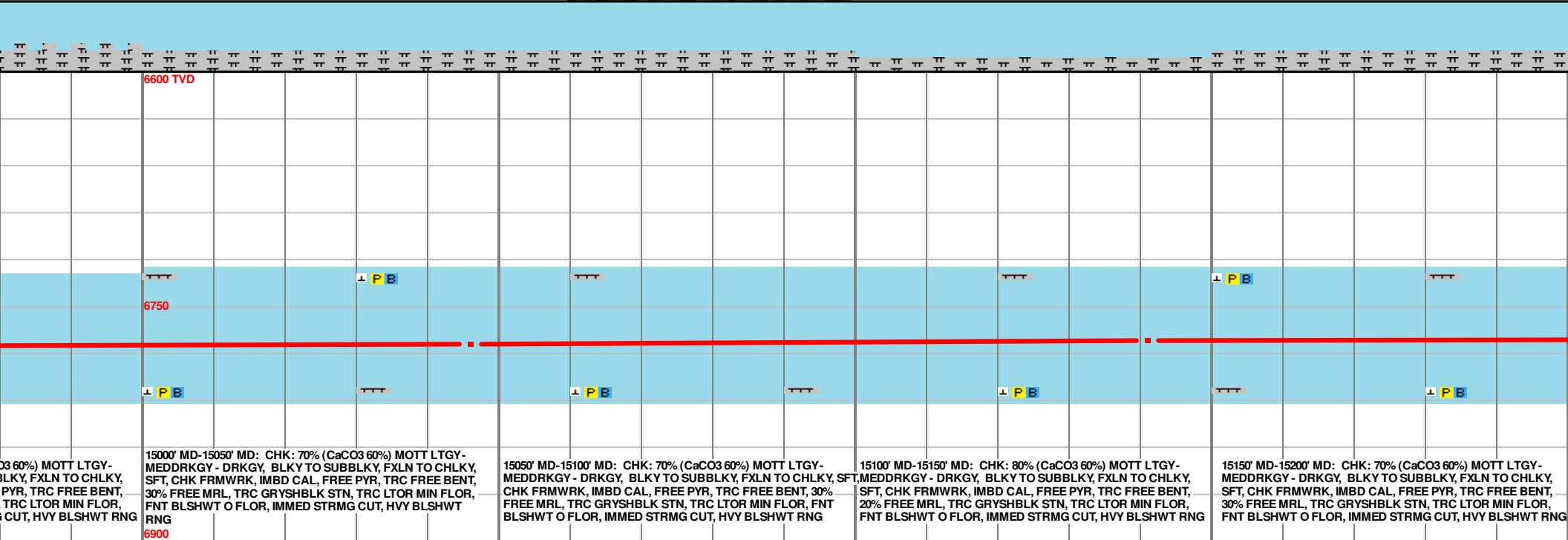
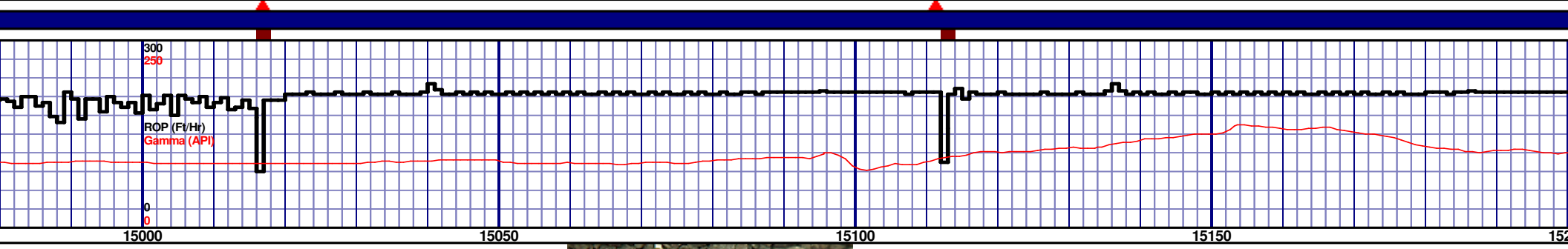
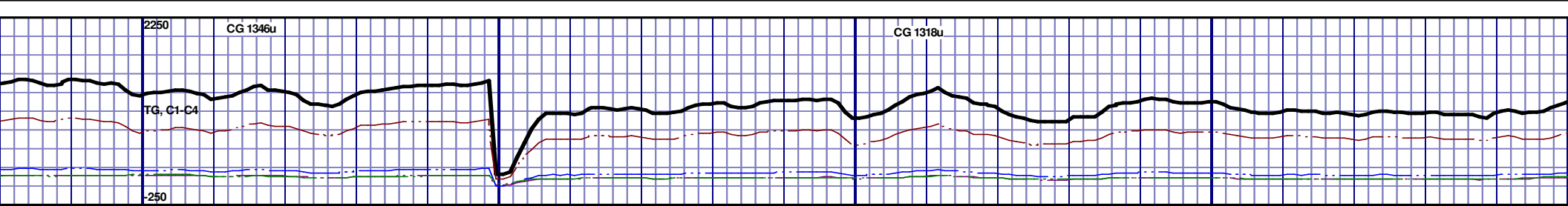


6600 TVD					6750					6900				
14800' MD-14850' MD: CHK: 65% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					14850' MD-14900' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					14900' MD-14950' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
14950' MD-15000' MD: CHK: 65% (CaCO3 55%) MOTT LTGY-MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG														

MD 14762 TVD 6776.39
INC 90 AZ 267.73
VS 8328.73

MD 14856 TVD 6776.21
INC 90.22 AZ 269.86
VS 8422.73

MD 14951 TVD 6775.42
INC 90.74 AZ 270
VS 8517.7



03 60%) MOTT LTGY-
BLKY, FXLN TO CHLKY,
PYR, TRC FREE BENT,
TRC LTOR MIN FLOR,
CUT, HVY BLSHWT RNG

15000' MD-15050' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT,
30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT
RNG

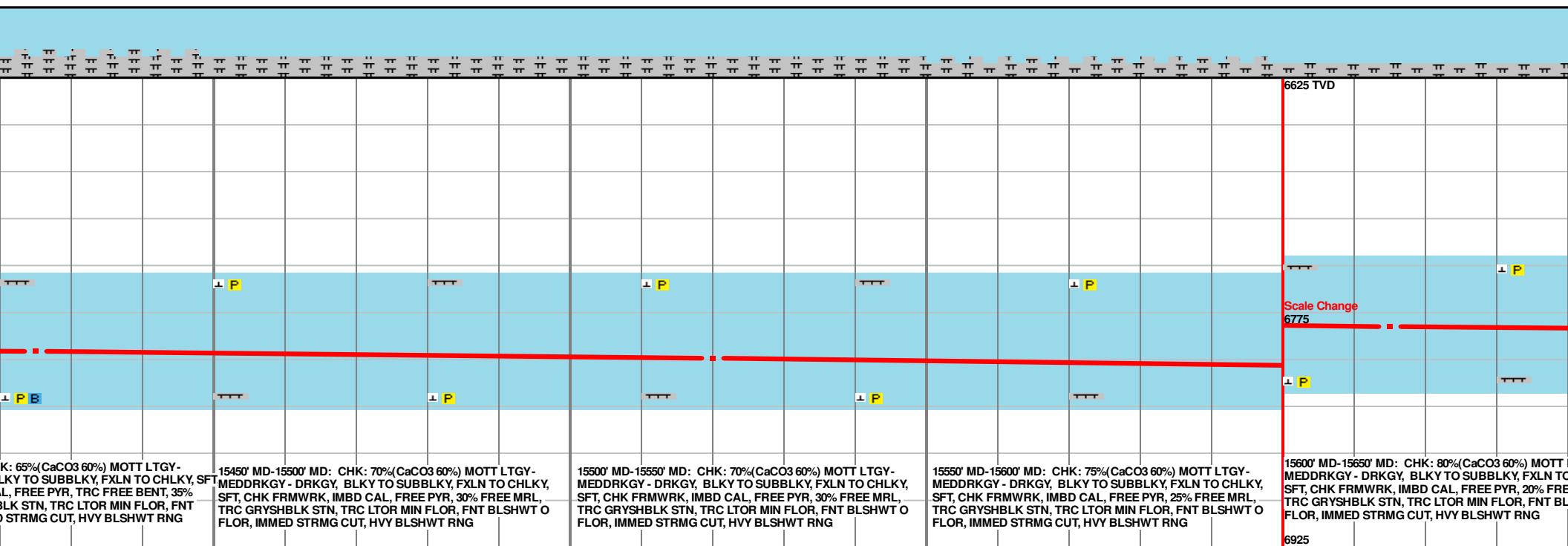
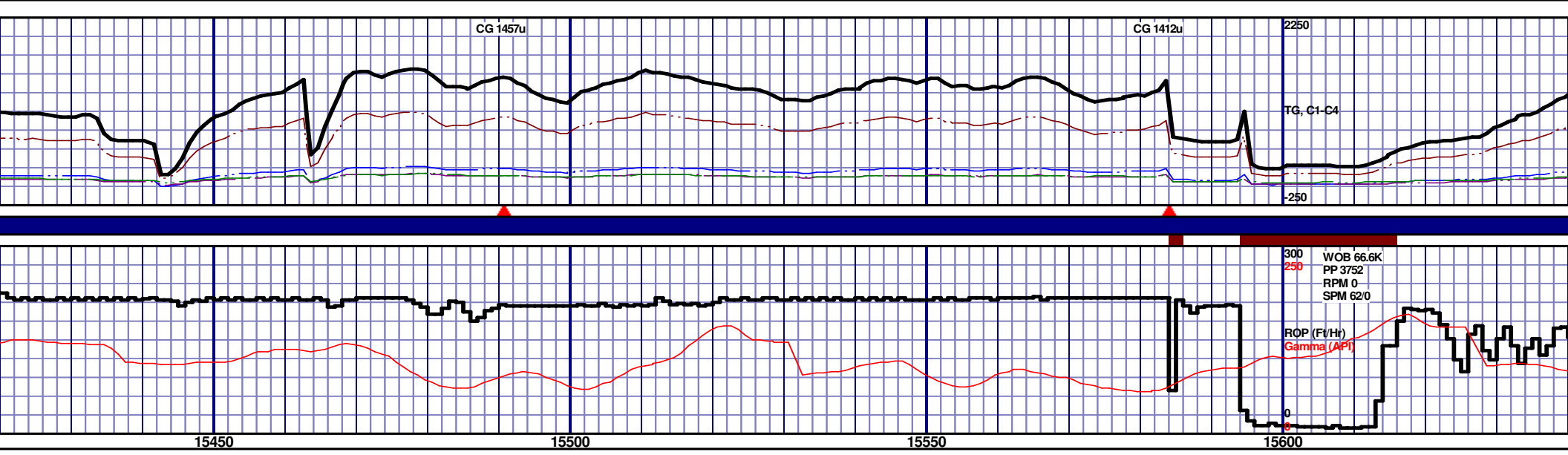
15050' MD-15100' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT,
CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 30%
FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

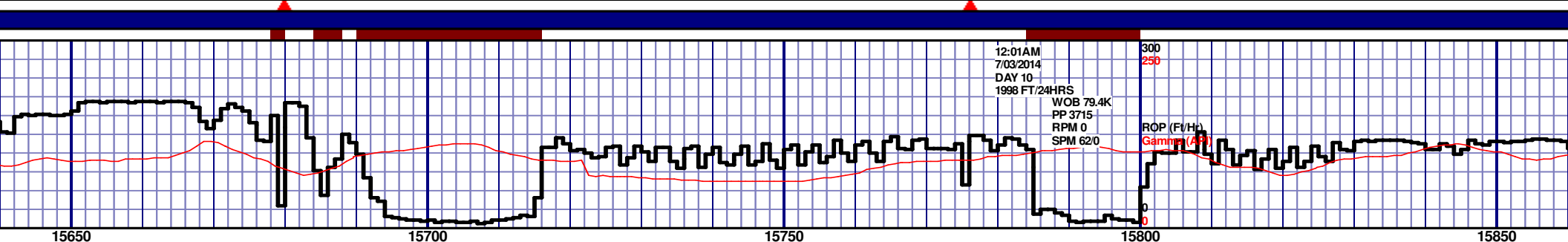
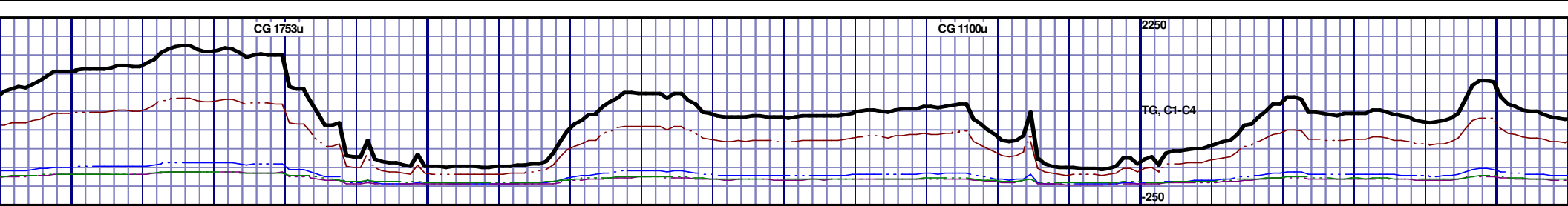
15100' MD-15150' MD: CHK: 80% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT,
CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT,
20% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

15150' MD-15200' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT,
30% FREE MRL, TRC GRYSBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 15046 TVD 6773.83
INC 91.17 AZ 270.32
VS 8612.64

MD 15141 TVD 6771.79
INC 91.3 AZ 270.28
VS 8707.57

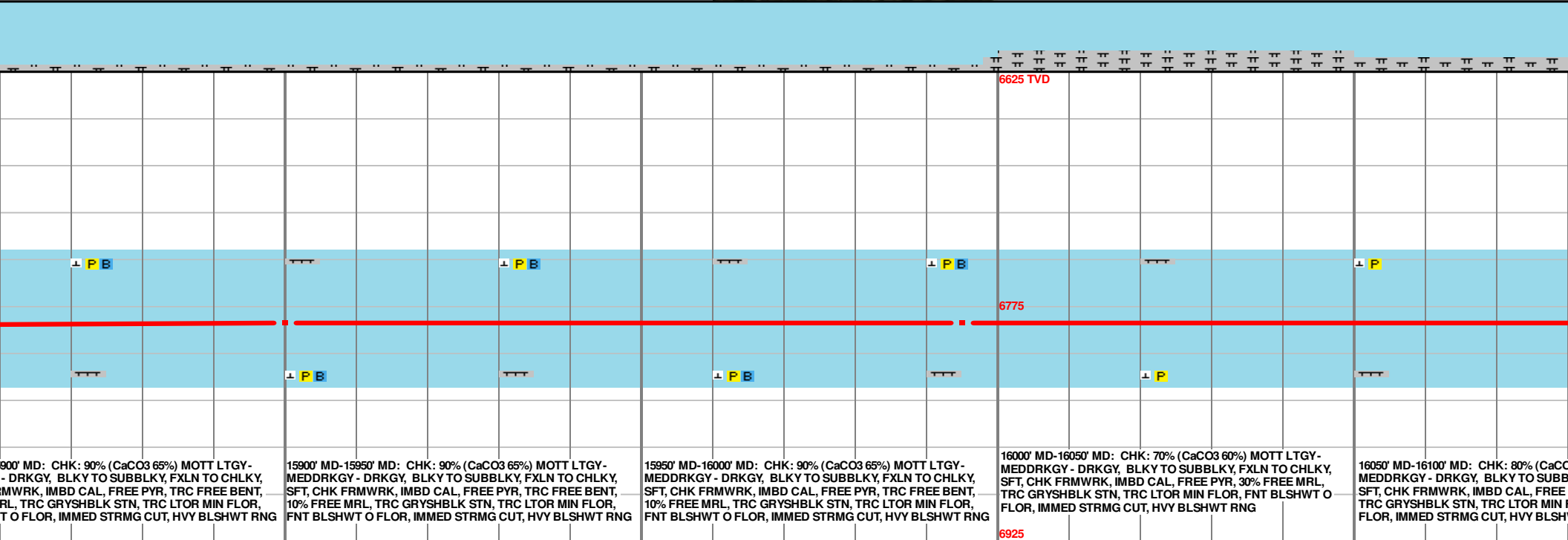
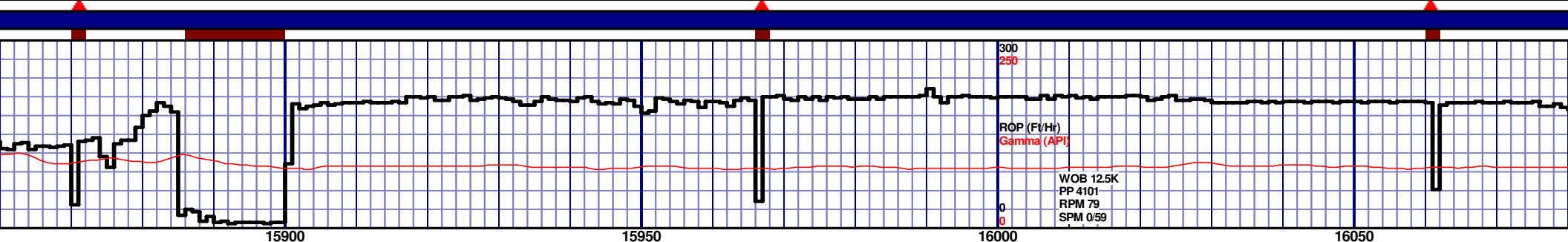
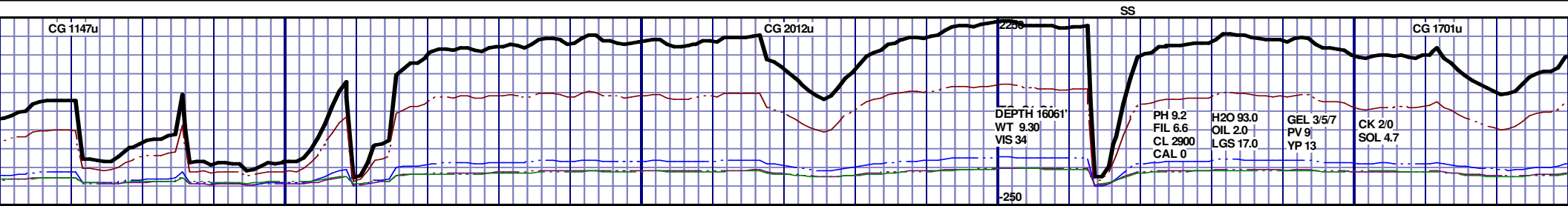




6625 TVD					
6775					
6925					
LTGY- O CHLKY, E MRL, SHWT O	15650' MD-15700' MD: CHK: 80% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15700' MD-15750' MD: CHK: 75% (CaCO3 60%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15750' MD-15800' MD: CHK: 85% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 15% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15800' MD-15850' MD: CHK: 80% (CaCO3 65%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15850' MD-15 MEDDRKGY SFT, CHK FR 10% FREE M FNT BLSHWT

MD 15710 TVD 6788.07
INC 88.46 AZ 268.23
VS 9276.14

MD 15805 TVD 6787.74
INC 91.94 AZ 269.03
VS 9371.12



15900' MD: CHK: 90% (CaCO3 65%) MOTT LTGY-
- DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
IMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
RL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR,
T O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

15900' MD-15950' MD: CHK: 90% (CaCO3 65%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
10% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

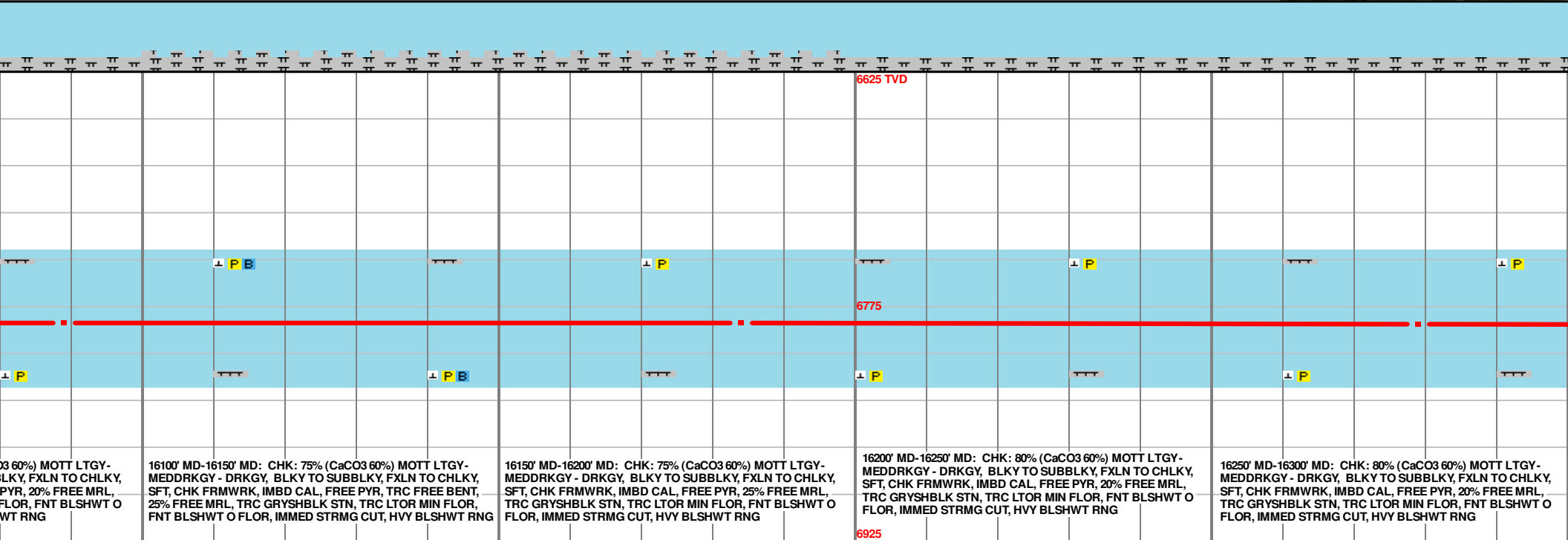
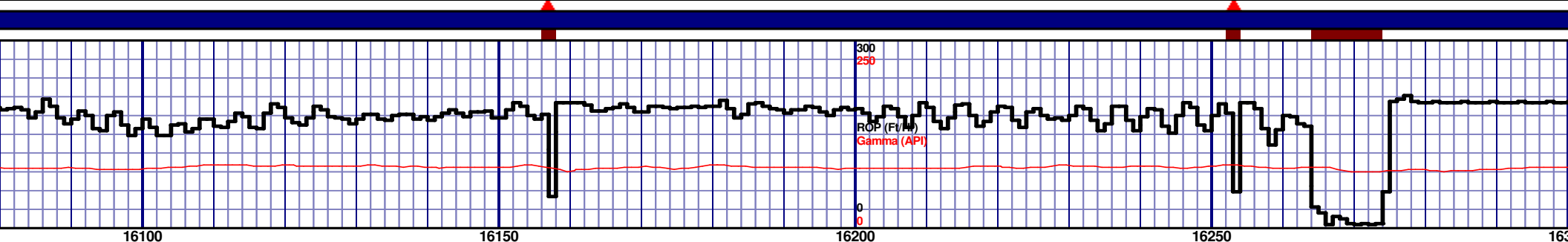
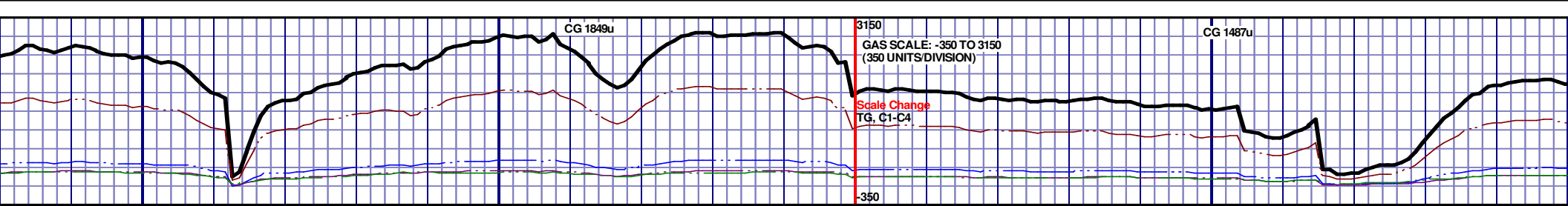
15950' MD-16000' MD: CHK: 90% (CaCO3 65%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT,
10% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR,
FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

16000' MD-16050' MD: CHK: 70% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL,
TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O
FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

16050' MD-16100' MD: CHK: 80% (CaCO3 60%) MOTT LTGY-
MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY,
SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL,
TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O
FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 15900 TVD 6785.87
INC 90.31 AZ 268.15
VS 9466.1

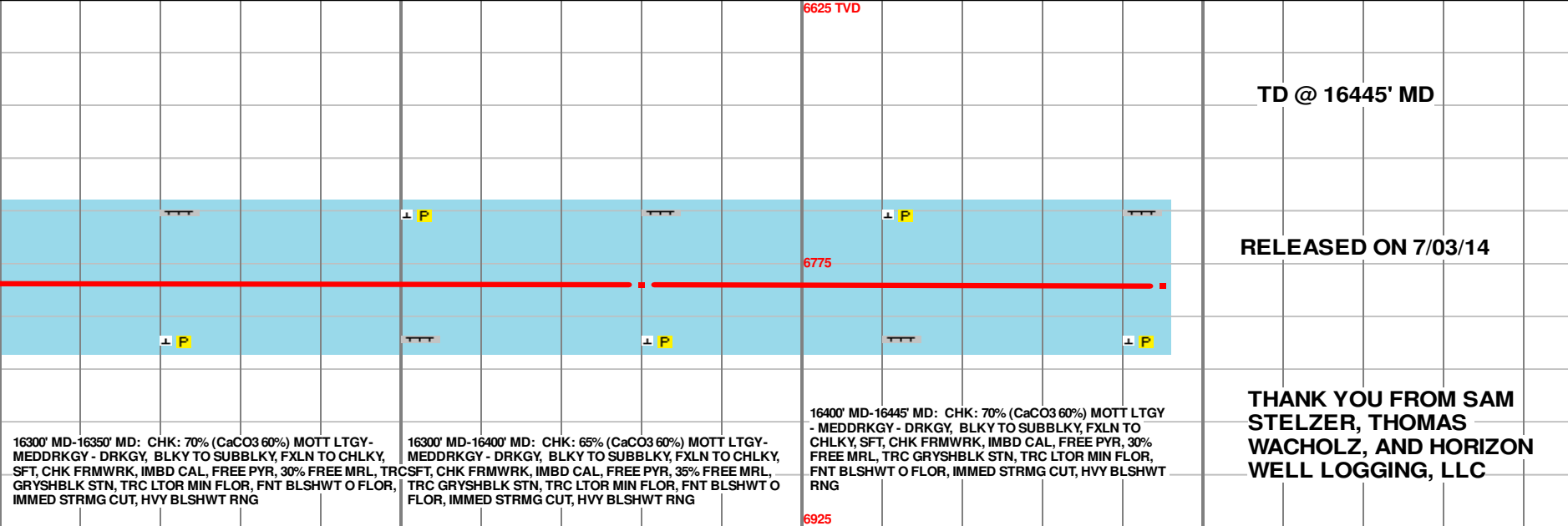
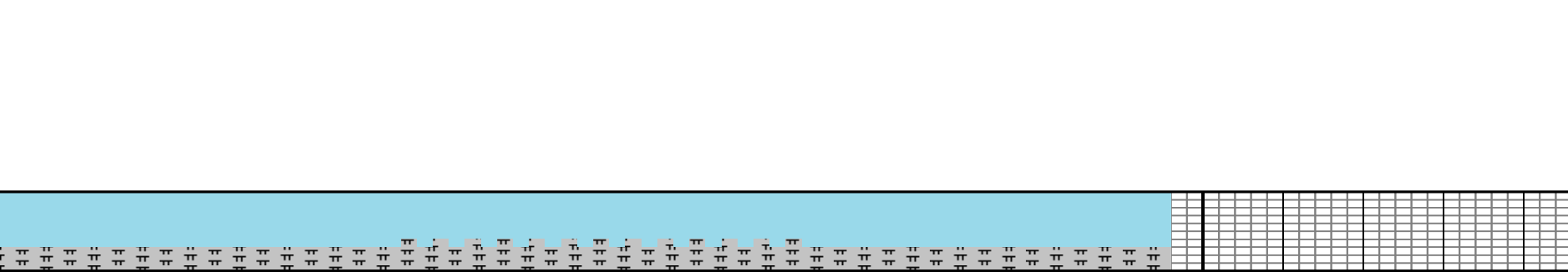
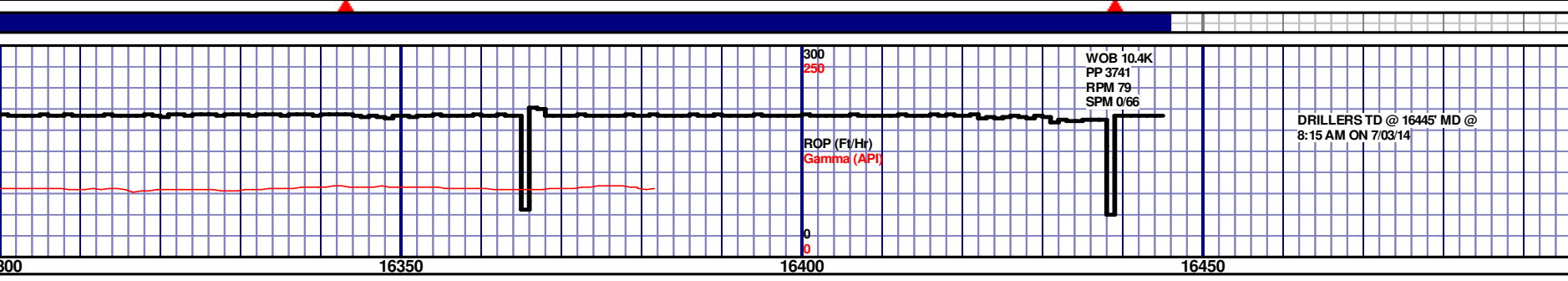
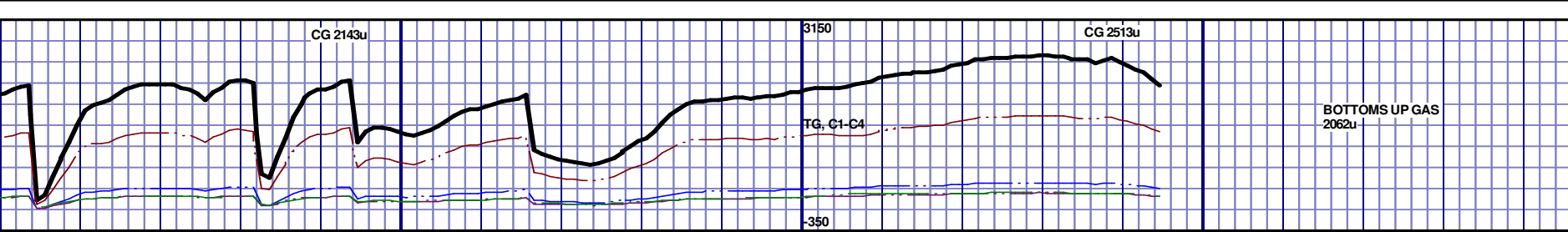
MD 15950 TVD 6785.36
INC 90.31 AZ 268.23
VS 9561.1



MD 16089 TVD 6785.18
INC 89.91 AZ 266.94
VS 9655.08

MD 16184 TVD 6785.32
INC 89.91 AZ 265.83
VS 9750.01

MD 16279 TVD 6785.96
INC 89.32 AZ 265.97
VS 9844.91



16300' MD-16350' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRCSFT, CHK FRMWRK, IMBD CAL, FREE PYR, 35% FREE MRL, GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

16300' MD-16400' MD: CHK: 65% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 35% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

16400' MD-16445' MD: CHK: 70% (CaCO3 60%) MOTT LTGY - MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 30% FREE MRL, TRC GRYSHBLK STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

TD @ 16445' MD

RELEASED ON 7/03/14

THANK YOU FROM SAM
STELZER, THOMAS
WACHOLZ, AND HORIZON
WELL LOGGING, LLC