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Tulsa, Oklahoma 74136-6378

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fax 866.534.4559

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: Tom Wacholz &
Andrew Christiano
Log Interval: 6400' MD to 16238' MD
Start Date: April 15, 2014
Release Date: April 23, 2014


Well Information

Well Name: Wells Ranch State
AE30-62-1BHNA Horizontal
Location: 29-T6N-R62W
192' FSL, 65' FWL


County: Weld
State: Colorado


Drilling Rig: H&P 343
Total Depth: 16238' MD
TD Date: April 21, 2014
Formation: Niobrara A Marl
KB Elevation: 4769'
GR Elevation: 4745'
API Number: 05-123-38686-0000

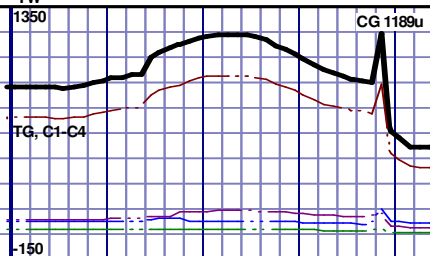
TG (Units) 

C1 (units) 

C2 (units)

C3 (units) 

C4 (units) 



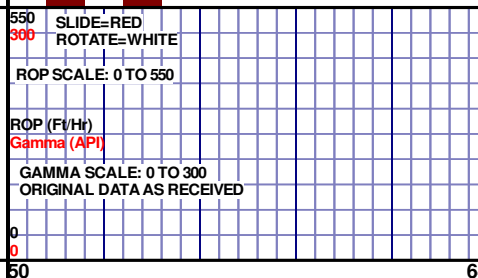
YP 10
CK 1/0
SOL 9.2

CG 1349



Connections
Cut
Slide/Rotate

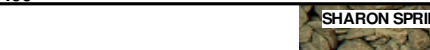
ROP (Ft/Hr) _____
Gamma (API) _____



550	WOB 48.9N
300	PP 3918
	RPM 20
	SPM 61/61

ROP (Ft/Hr)
Gamma (API)

ROP (Ft/Hr)
Gamma (API)
GAMMA SCALE: 0 TO 300
ORIGINAL DATA AS RECEIVED

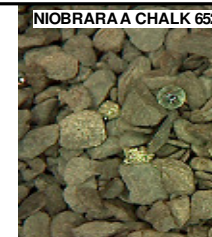


WOB 25.5K
PP 3373
RPM 30
SPM 0/110



Depth

Photographs

**Lithology %**[illegible]

H&P 343

LOGGERS:
TOM WACHOLZ
ANDREW CHRISTIANO

COMMENCED LOGGING @ 6400' MD ON
4/15/2014 W/BIT# 3, SIZE 8.75, TYPE HDBS MMD55M, S/N
12437588 IN @ 5729' MD

6300 TVD

SHARON SPRINGS
6430' MD 6322' TVD

6390' MD-6420' MD:
SLTYSH: 80% LTGY -
MEDGY, PRED
SUBBLKY TO SUBSPLT,
SLTYTO F TXT, FREE
CALC, IMBD PYR, FREE
SLTST, FREE SS, NO
STN, 5% FLOR, NO O
FLOR, IMBED STRMG
CUT, BRIYL RNG

6420' MD-6450' MD: SLTYSH: 60%
LTGY- MEDGY, PRED SUBBLKYTO
SUBSPLT, SLTY TO F TXT, FREE
CALC, IMBD PYR, FREE BENT, FREE
SLTST, FREE SS, NO STN, 5% FLOR,
NO O FLOR, IMMED STRMG CUT,
BRIYL RNG

6450' MD-6480' MD: SLTST: 60%
MEDDKGY- MEDLTGY, FRI, FN TO
MED GRN, W SRDT, CALC CMT,
FREE PYR, FREE SLTYSH, INTR
POR, ABDT FREE BENT, 15% MIN
FLOR NO STN, FNT BLSHW O
FLOR, IMMED STRMG CUT, HVY
BLSHW RNG

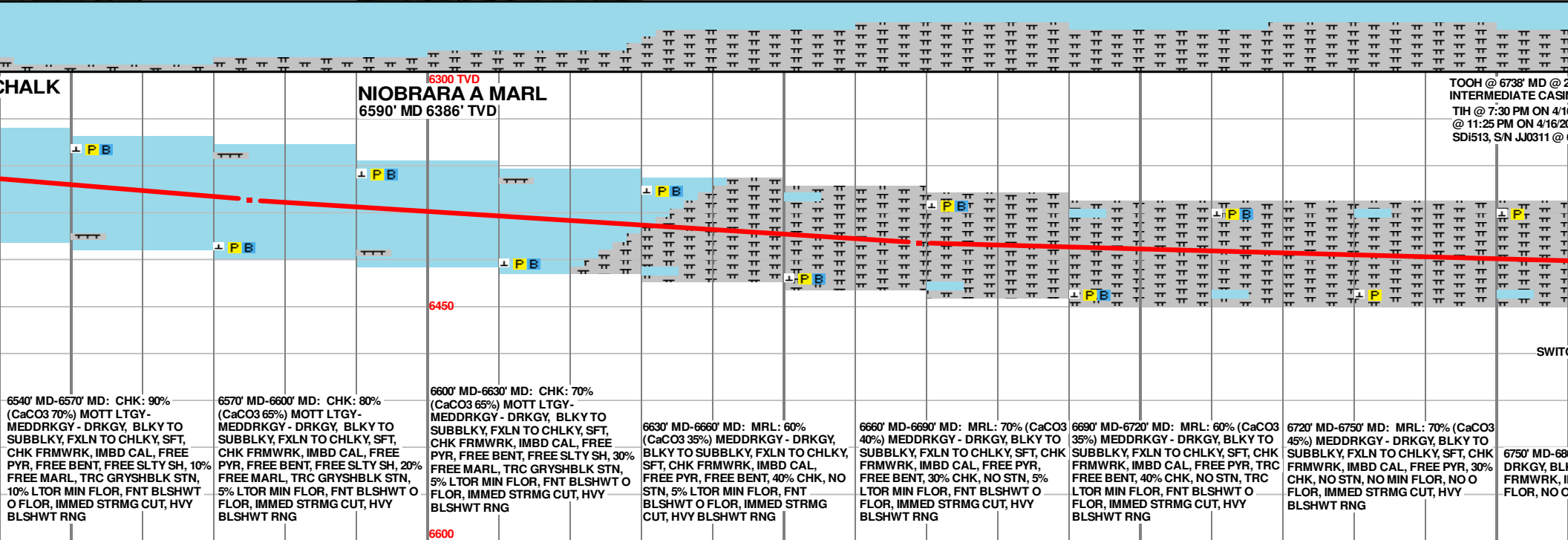
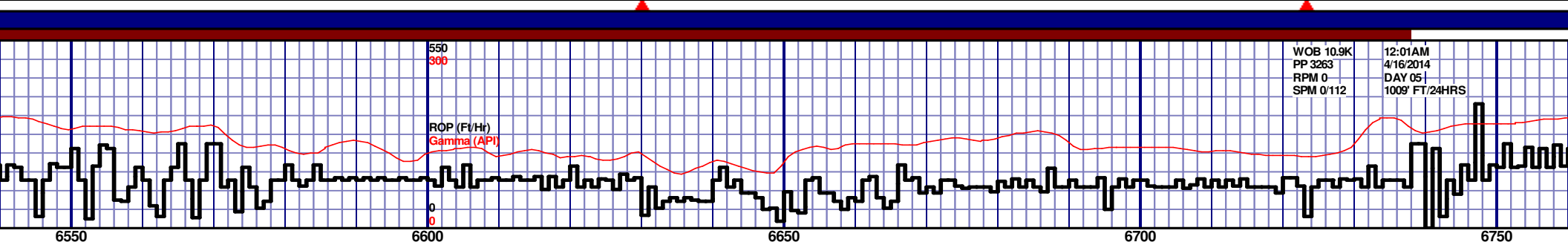
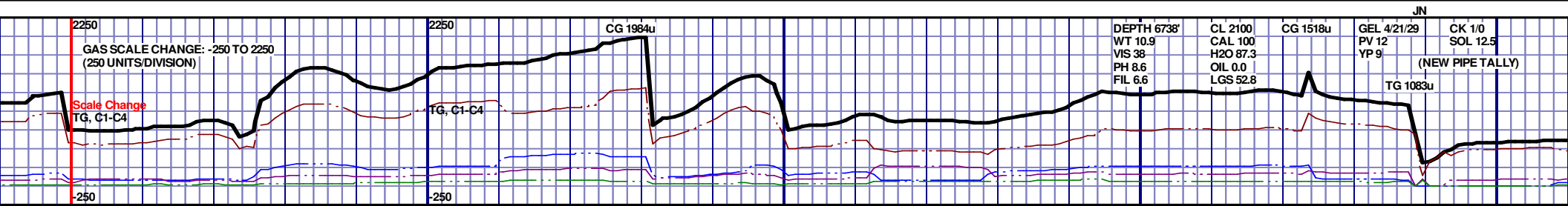
6480' MD-6510' MD: SLTST: 50%
MEDDKGY- MEDLTGY, FRI, FN TO
MED GRN, W SRDT, CALC CMT, FREE
PYR, FREE SLTYSH, INTR POR,
FREE BENT, 5% MIN FLOR, FNT
BLSHWT O FLOR, IMMED STRMG
CUT, HVY BLSHWT RNG

	NIOBRARA A C 6520' MD 6361' TVD
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6510' MD-6540' MD: CHK: 60% (CaCO3
60%) MOTT LTGY- MEDDRKG-
DRKG, BLKY TO SUBBLK, FXLN TO
CHLKY, SFT, CHK FRMWRK, IMBD
CAL, FREE PYR, FREE BENT, FREE
SLTSH, 40% FREE MARL, TRC
GRYSHBLK STN, 10% LTOR MIN FLOR,
FNT BLSHTW O FLOR, IMMED STRMG
CUT. HVY BLSHTW RNG

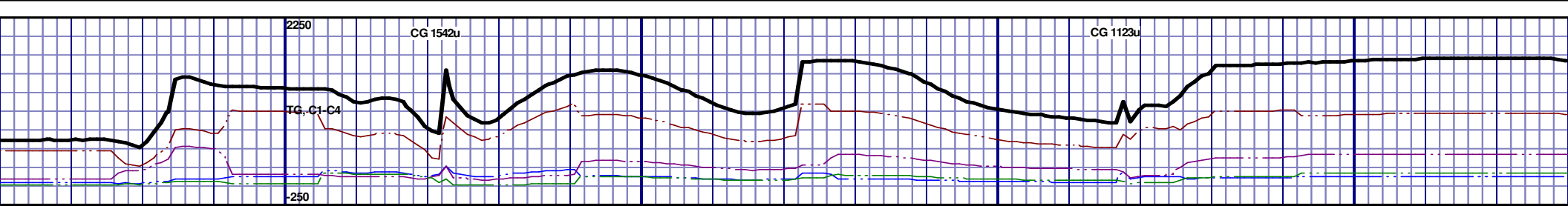
Survey Data

MD 6480 TVD 6345.98
INC 66.19 AZ 275.69
VS 409.25



MD 6575 TVD 6381.92
INC 69.36 AZ 272.18
VS 496.79

MD 6669 TVD 6409.19
INC 76.89 AZ 269.14
VS 586.6



WOB 25.2K
PP 3411
RPM 0
SPM 670

12:01AM
4/17/2014
DAY 06
62' FT/24HRS

550

300

ROR (Ft/Hr)
Gamma (API)

0

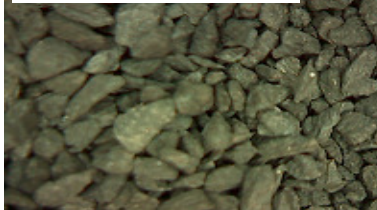
6800

6850

6900

6950

NIOBRARA A MARL 6850' MD- 6900' MD



12:15 PM ON 4/15/2014 FOR
ING OPERATIONS
6/2014. RESUMED DRILLING
14 W/ BIT #4, 6.125", SMITH,
6738' MD.

6300 TVD

CHING TO 50FT SAMPLE INTERVAL

00' MD: MRL: 60% (CaCO3 40%) MEDDRKGY -
DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK
IMBD CAL, FREE PYR, 40% CHK, NO STN, NO MIN
FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

6800' MD-6850' MD: MRL: 65% (CaCO3 40%) MEDDRKGY -
DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK
FRMWRK, IMBD CAL, FREE PYR, 35% CHK, NO STN, NO MIN
FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY
BLSHWT RNG

6850' MD-6900' MD: MRL: 60% (CaCO3 45%) MEDDRKGY -
DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK
FRMWRK, IMBD CAL, FREE PYR, 40% CHK, NO STN, NO MIN
FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY
BLSHWT RNG

6900' MD-6950' MD: MRL: 70% (CaCO3 40%) MEDDRKGY -
DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK
FRMWRK, IMBD CAL, FREE PYR, 30% CHK, NO STN, NO MIN
FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY
BLSHWT RNG

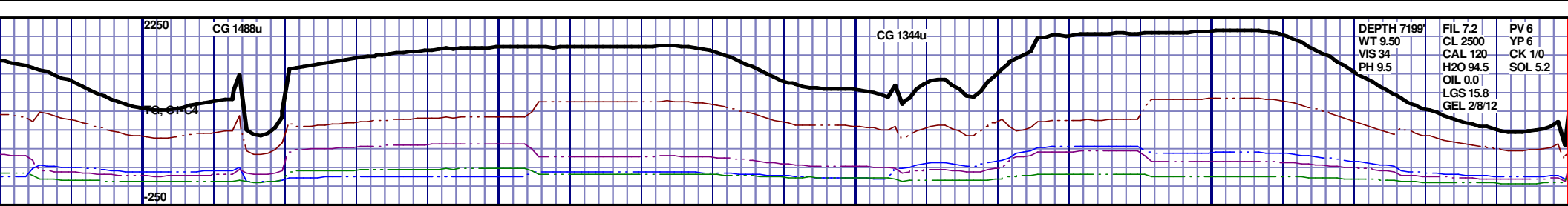
6950' MD-7000' MD: MRL: 70% (CaCO3 40%) MEDDRKGY -
DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK
FRMWRK, IMBD CAL, FREE PYR, 30% CHK, NO STN, NO MIN
FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY
BLSHWT RNG

6600

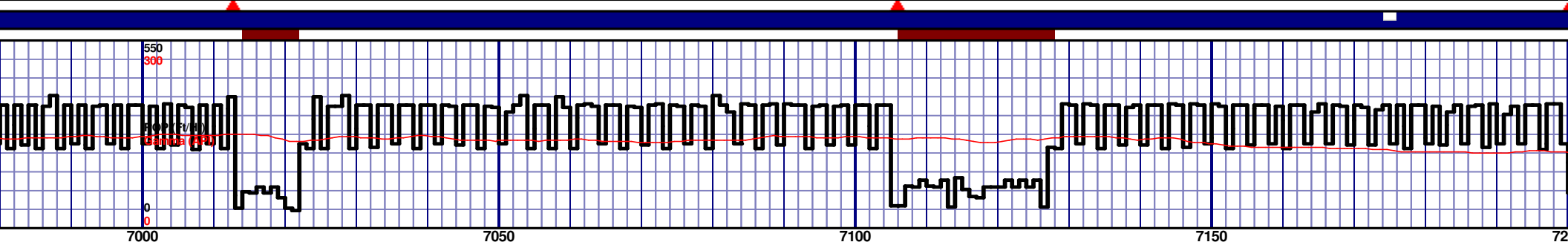
MD 6804 TVD 6426.2
INC 88.61 AZ 268.61
VS 720.29

MD 6850 TVD 6426.98
INC 89.45 AZ 268.35
VS 766.28

MD 6944 TVD 6427.66
INC 89.72 AZ 268.37
VS 860.28



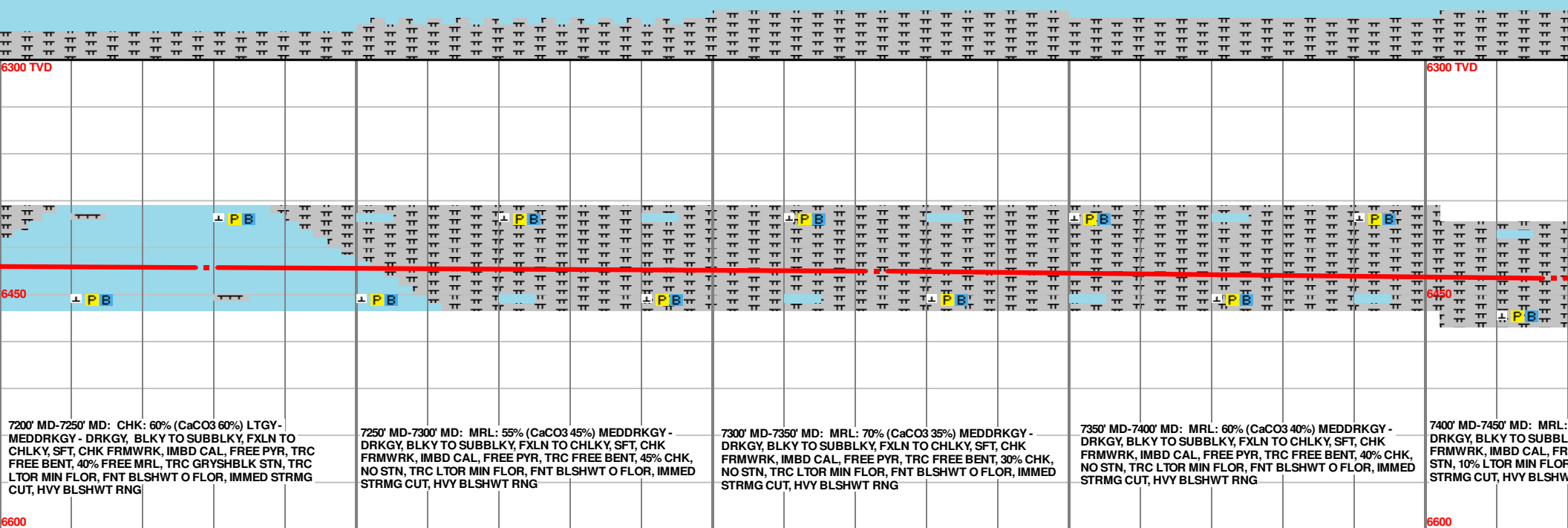
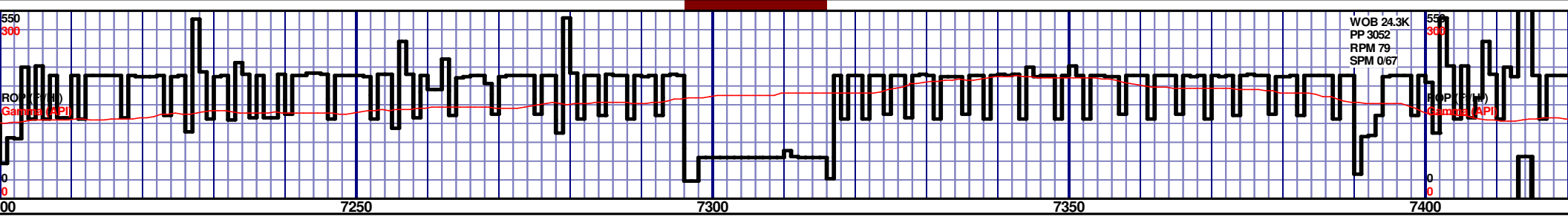
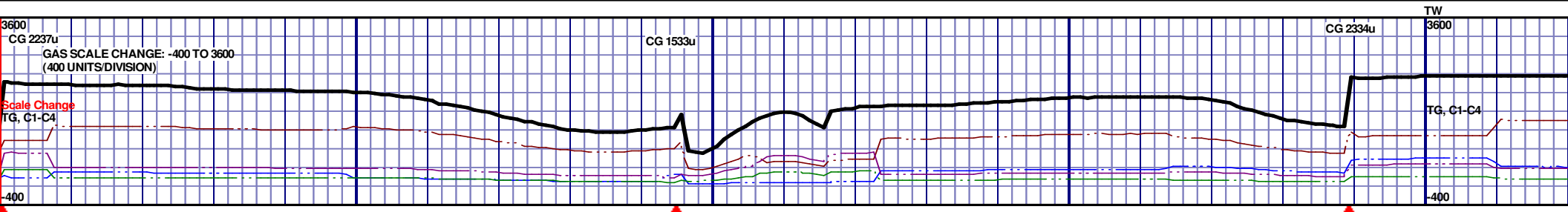
DEPTH 7199'
WT 9.50
VIS 34
PH 9.5
FIL 7.2
CL 2500
CAL 120
H2O 94.5
OIL 0.0
LGS 15.8
GEL 2/8/12
PV 6
YP 6
CK 1/0
SOL 5.2



6300 TVD									
6430									
6600									
0% MEDDRKGY - CHLKY, SFT, CHK CHK, NO STN, NO MIN STRMG CUT, HVY									
7000' MD-7050' MD: MRL: 55% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 45% CHK, NO STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7050' MD-7100' MD: MRL: 60% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 40% CHK, NO STN, NO MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7100' MD-7150' MD: MRL: 55% (CaCO3 50%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 45% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
7150' MD-7200' MD: MRL: 55% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 45% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

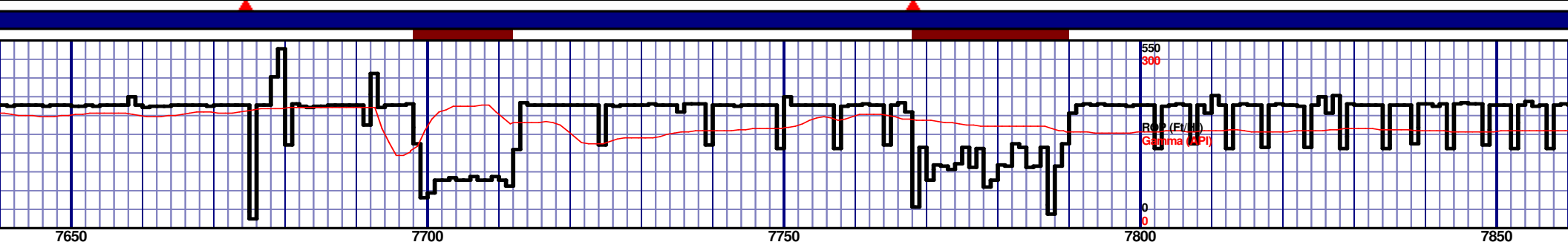
MD 7039 TVD 6428.35
INC 89.44 AZ 268
VS 955.27

MD 7134 TVD 6430.28
INC 88.24 AZ 268.07
VS 1050.25



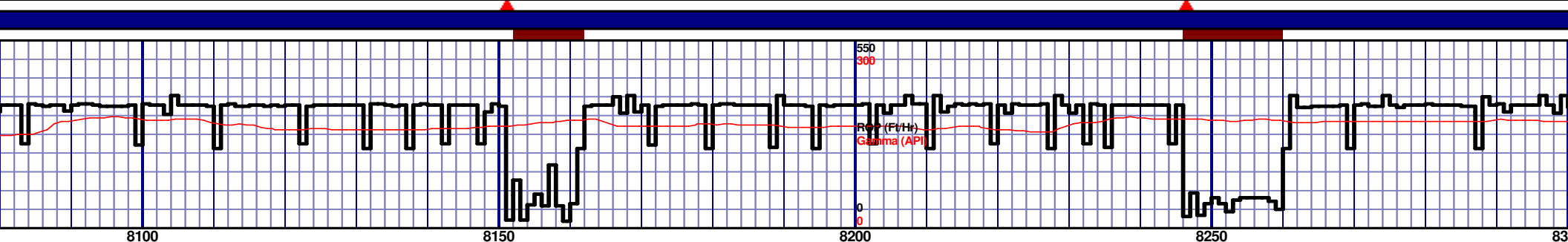
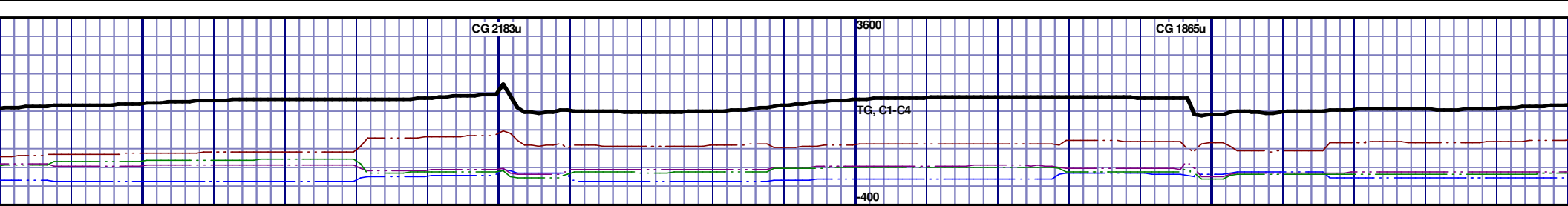
MD 7229 TVD 6432.4
INC 89.2 AZ 268.02
VS 1145.22

MD 7323 TVD 6435.18
INC 87.41 AZ 268.97
VS 1239.17

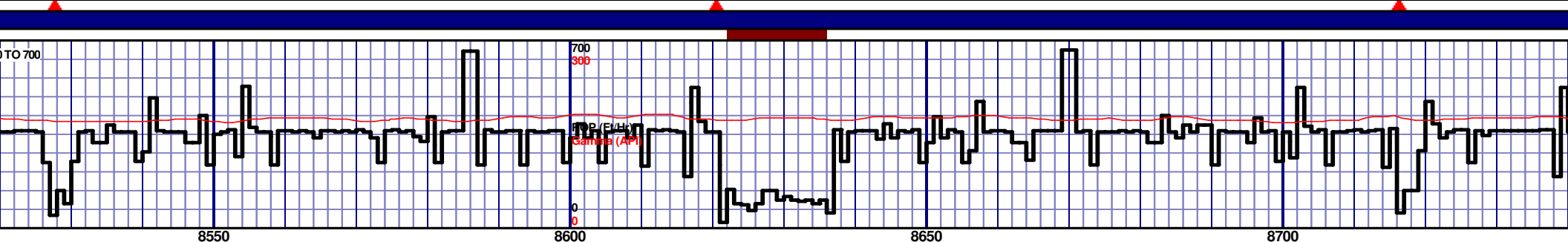
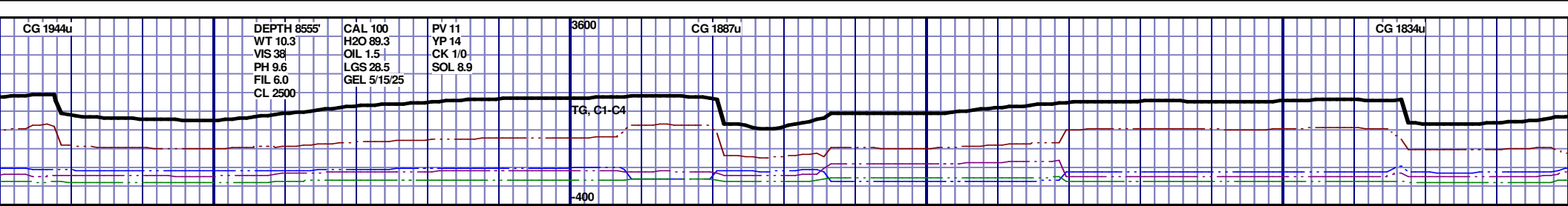
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MD 7703 TVD 6445.21
INC 90.55 AZ 271.61
VS 1618.82

MD 7798 TVD 6444.57
INC 90.22 AZ 272.61
VS 1713.64



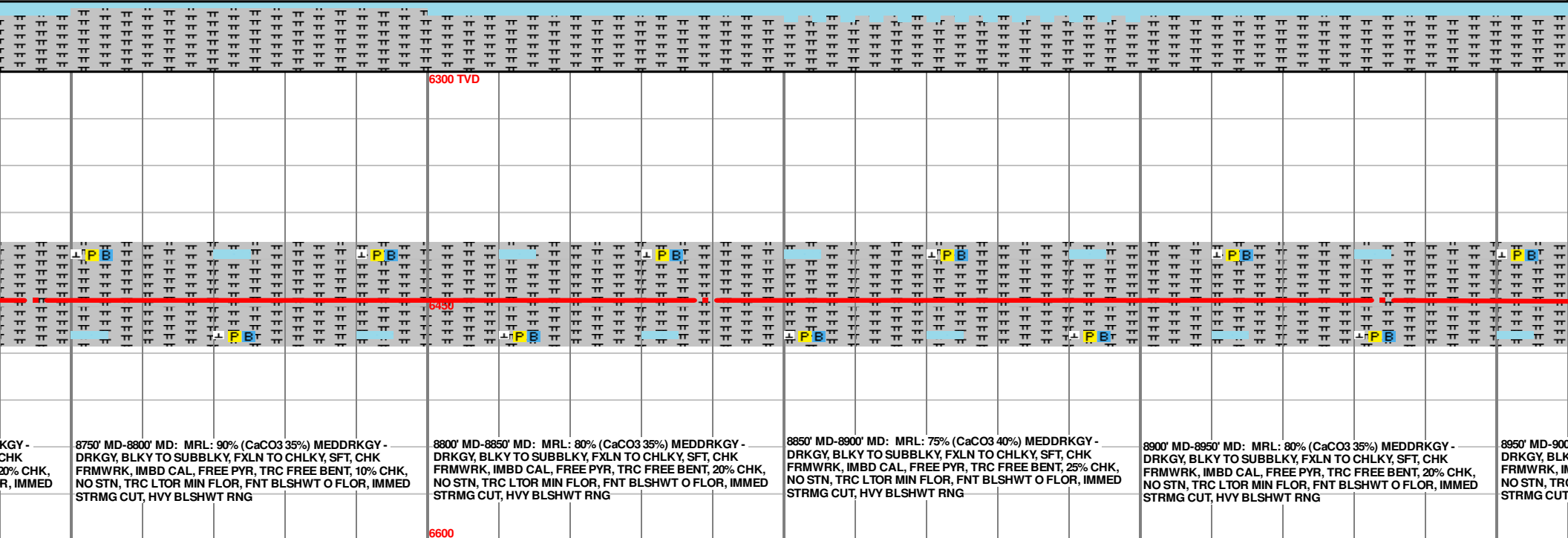
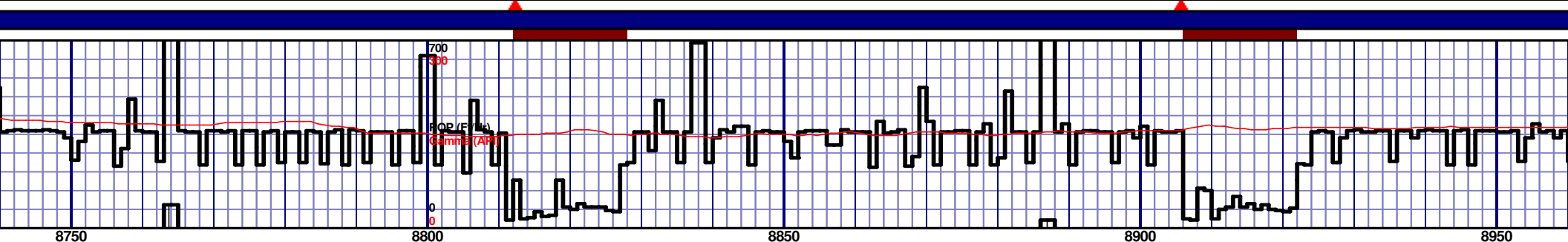
8100 MD-8100' MD									
8100' MD-8150' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8150' MD-8200' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8200' MD-8250' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
8250' MD-8300' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									

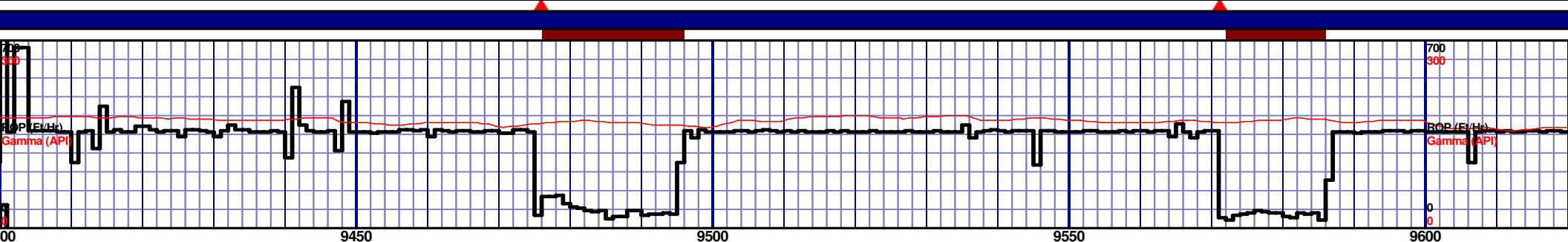
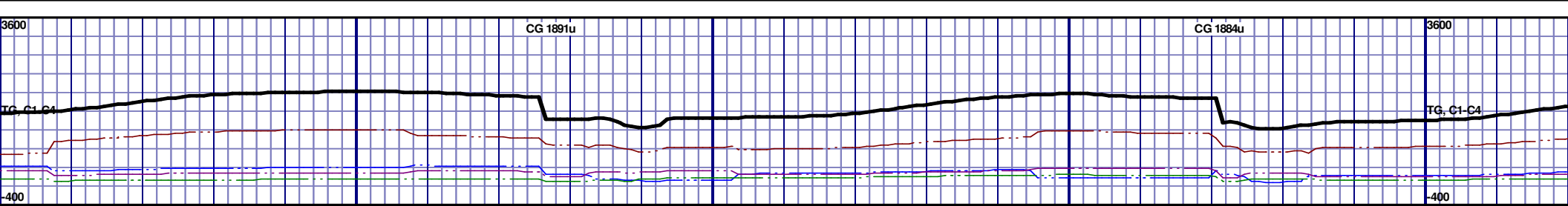


75% (CaCO3 35%) MEDDRKGY - DRKGY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8550' MD-8600' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8600' MD-8650' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8650' MD-8700' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8700' MD-8750' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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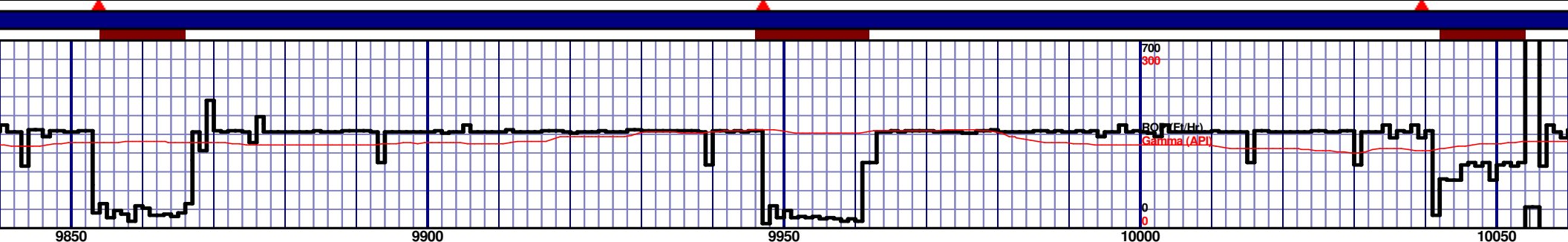
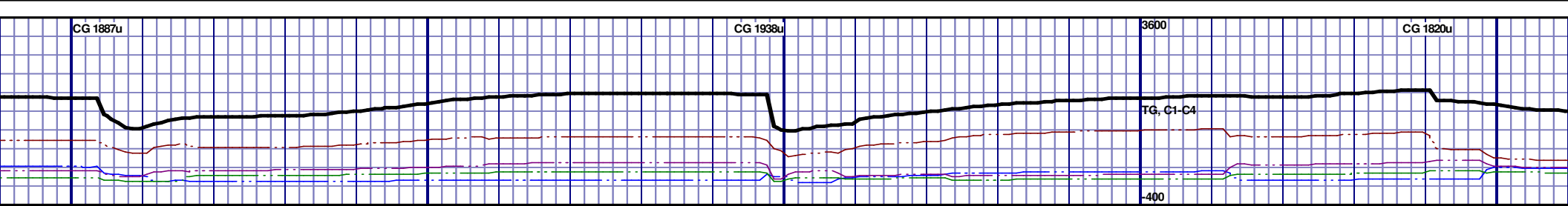
MD 8555 TVD 6444.76
INC 89.88 AZ 266.92
VS 2470.22

MD 8650 TVD 6445.52
INC 89.2 AZ 267.2
VS 2565.18





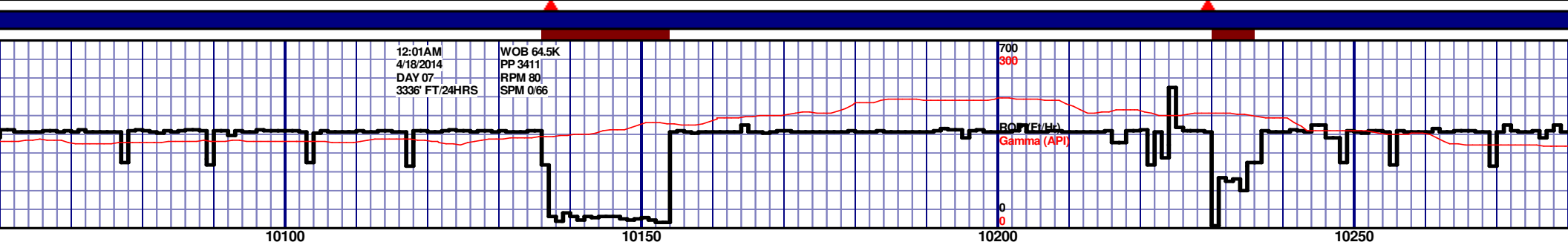
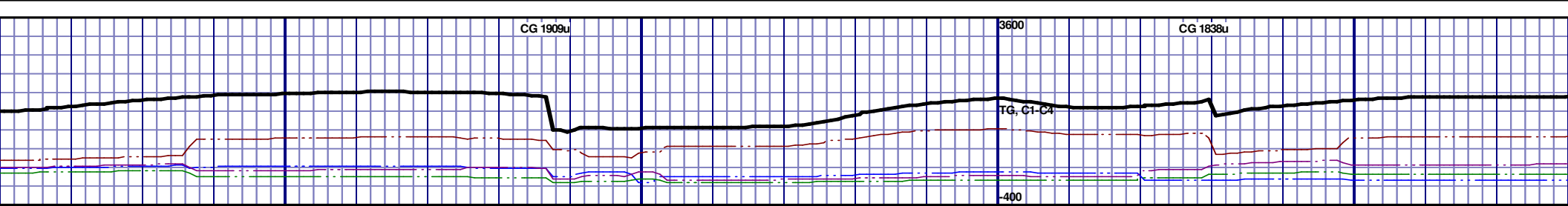
6300 TVD									
9400' MD-9450' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9450' MD-9500' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9500' MD-9550' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9550' MD-9600' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
9600' MD-9650' MD: MRL: 70% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
6300 TVD									



	9850' MD-9900' MD:	9900' MD-9950' MD:	9950' MD-10000' MD:	10000' MD-10050' MD:	10050' MD-10100' MD:
DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 30% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	DRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 35% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

MD 9880 TVD 6459.88
INC 89.48 AZ 269.58
VS 3794.78

MD 9975 TVD 6461.16
INC 88.98 AZ 269.58
VS 3889.76

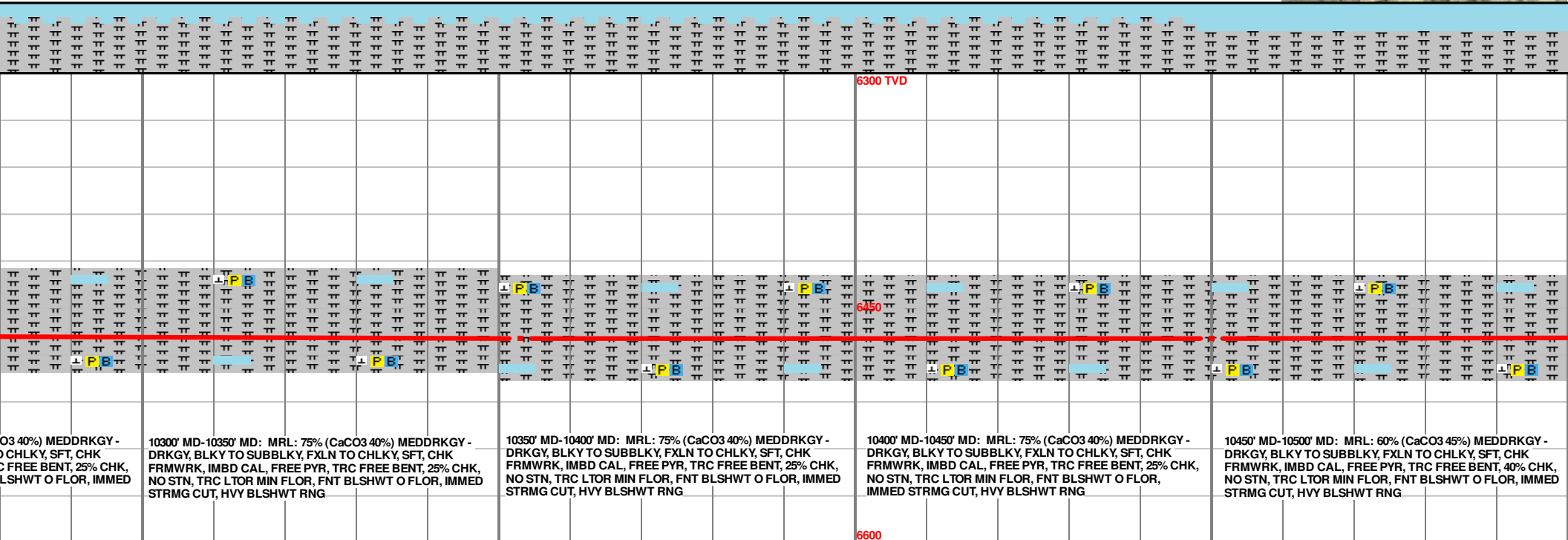
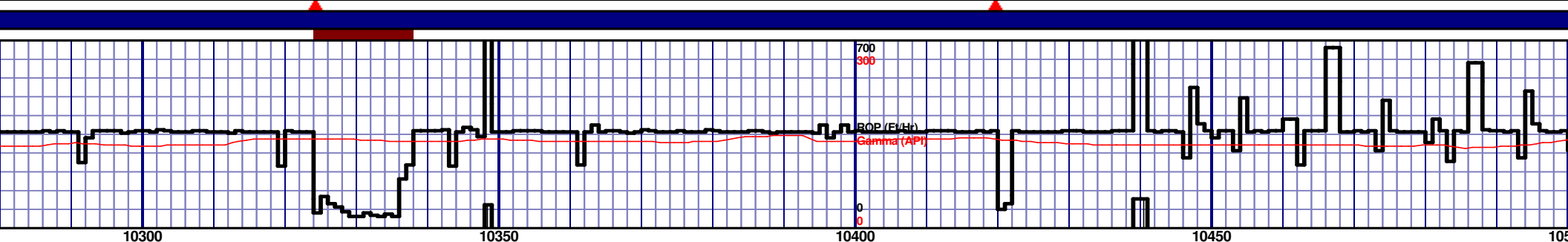


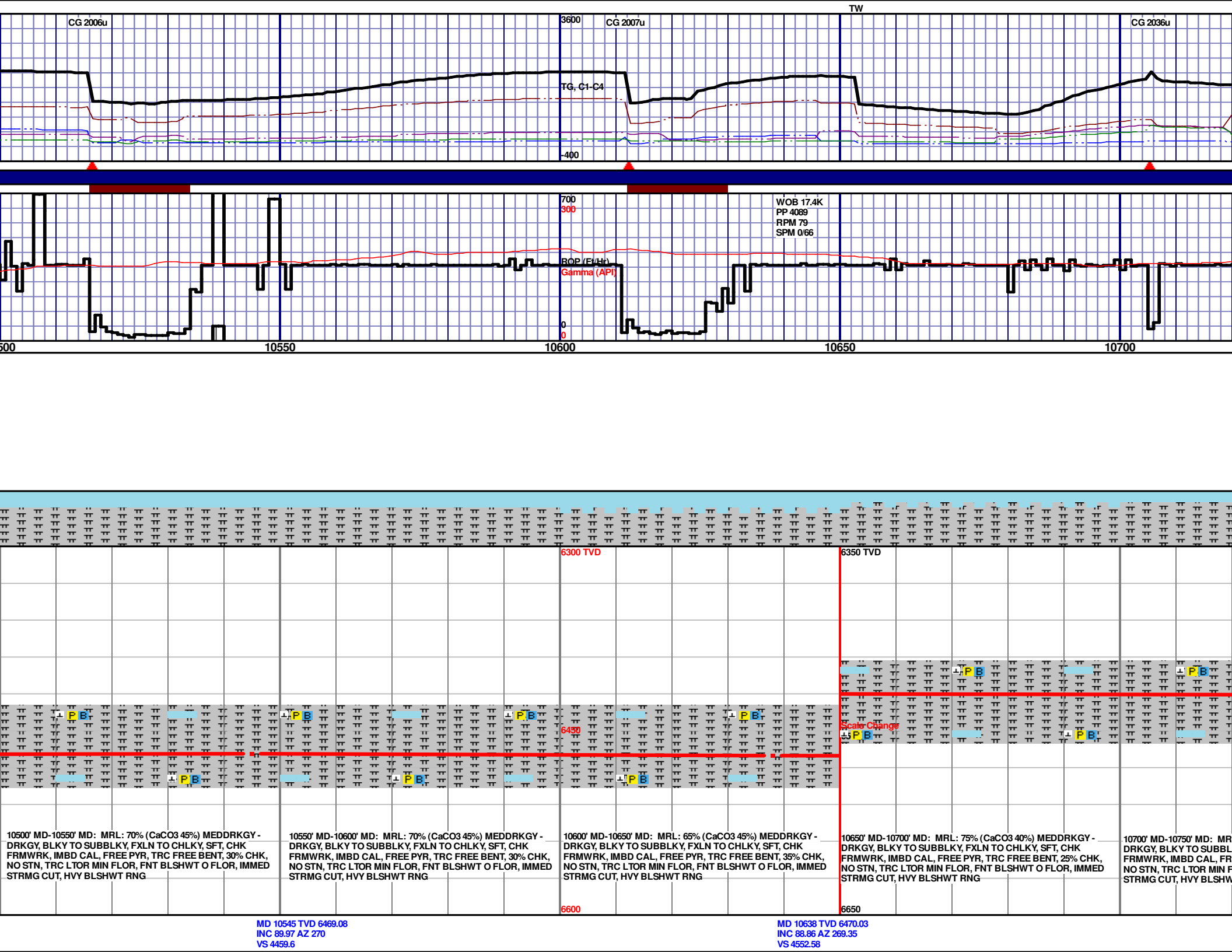
0100' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 40% CHK, C L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10100' MD-10150' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 25% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10150' MD-10200' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10200' MD-10250' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10250' MD-10300' MD: MRL: 75% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, TRC FREE BENT, 20% CHK, NO STN, TRC L TOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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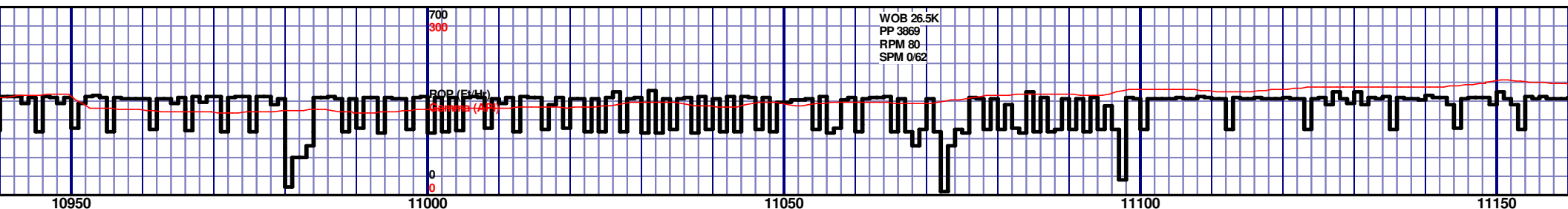
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VS 3983.73

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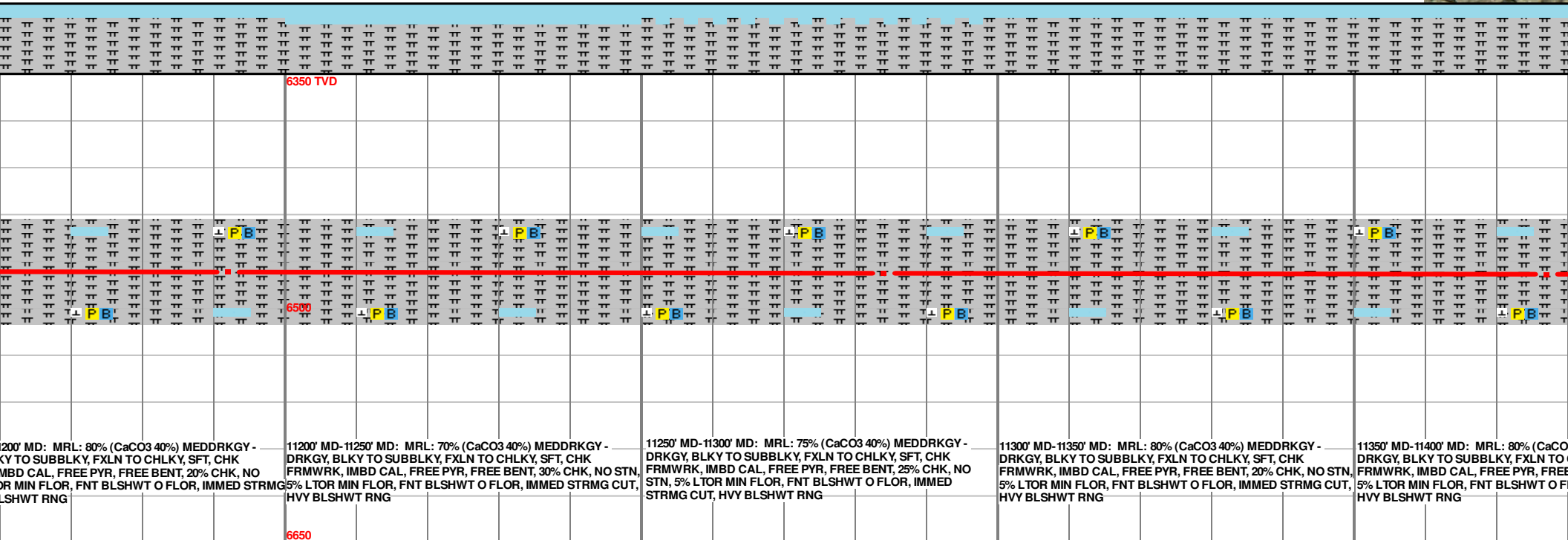
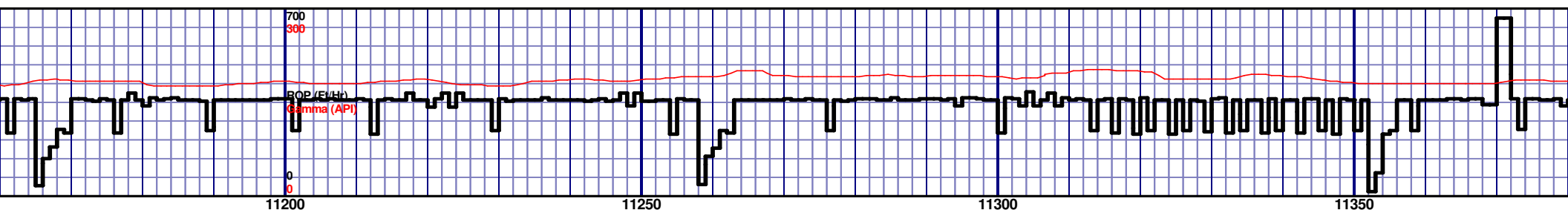




DRKGY - CHK 25% CHK, R, IMMED	10950' MD-11000' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11000' MD-11050' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11050' MD-11100' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11100' MD-11150' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	11150' MD-11200' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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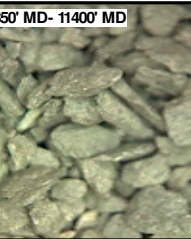
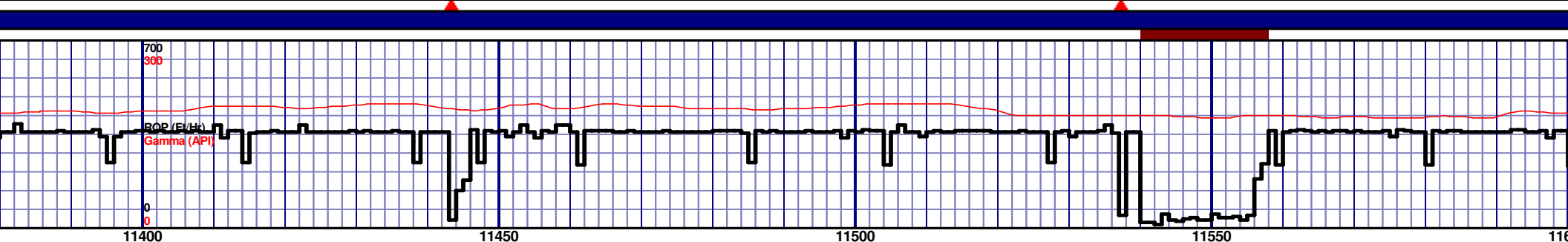
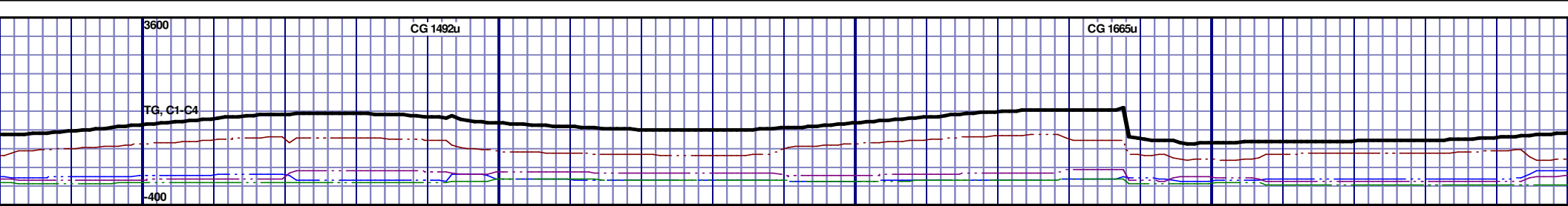
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VS 4921.4

MD 11099 TVD 6476.06
INC 89.14 AZ 267.06
VS 5013.36

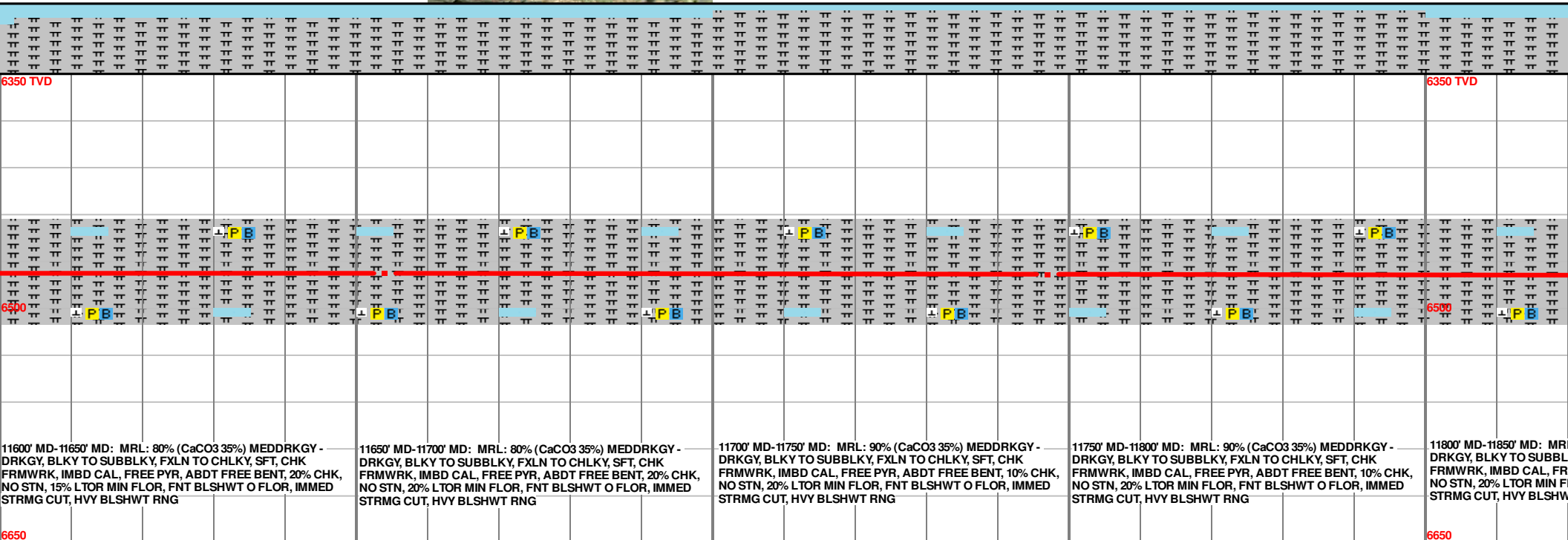
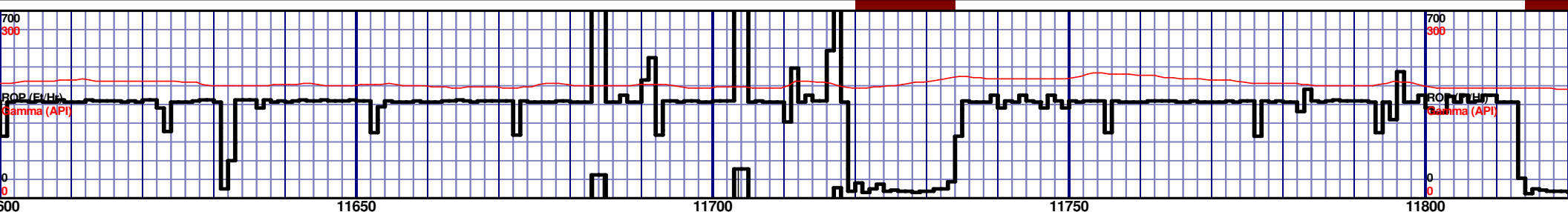


MD 11284 TVD 6477.73
INC 89.41 AZ 266.35
VS 5198.27

MD
INC
VS



6350 TVD									
6500									
6650									
3 40% MEDDRKGY - CHLKY, SFT, CHK BENT, 20% CHK, NO STN, LOR, IMMED STRMG CUT,									
11400' MD-11450' MD: MRL: 90% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 10% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVV BLSHWT RNG									
11450' MD-11500' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVV BLSHWT RNG									
11500' MD-11550' MD: MRL: 65% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABTD FREE BENT, 35% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVV BLSHWT RNG									
11550' MD-11600' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABTD FREE BENT, 40% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVV BLSHWT RNG									

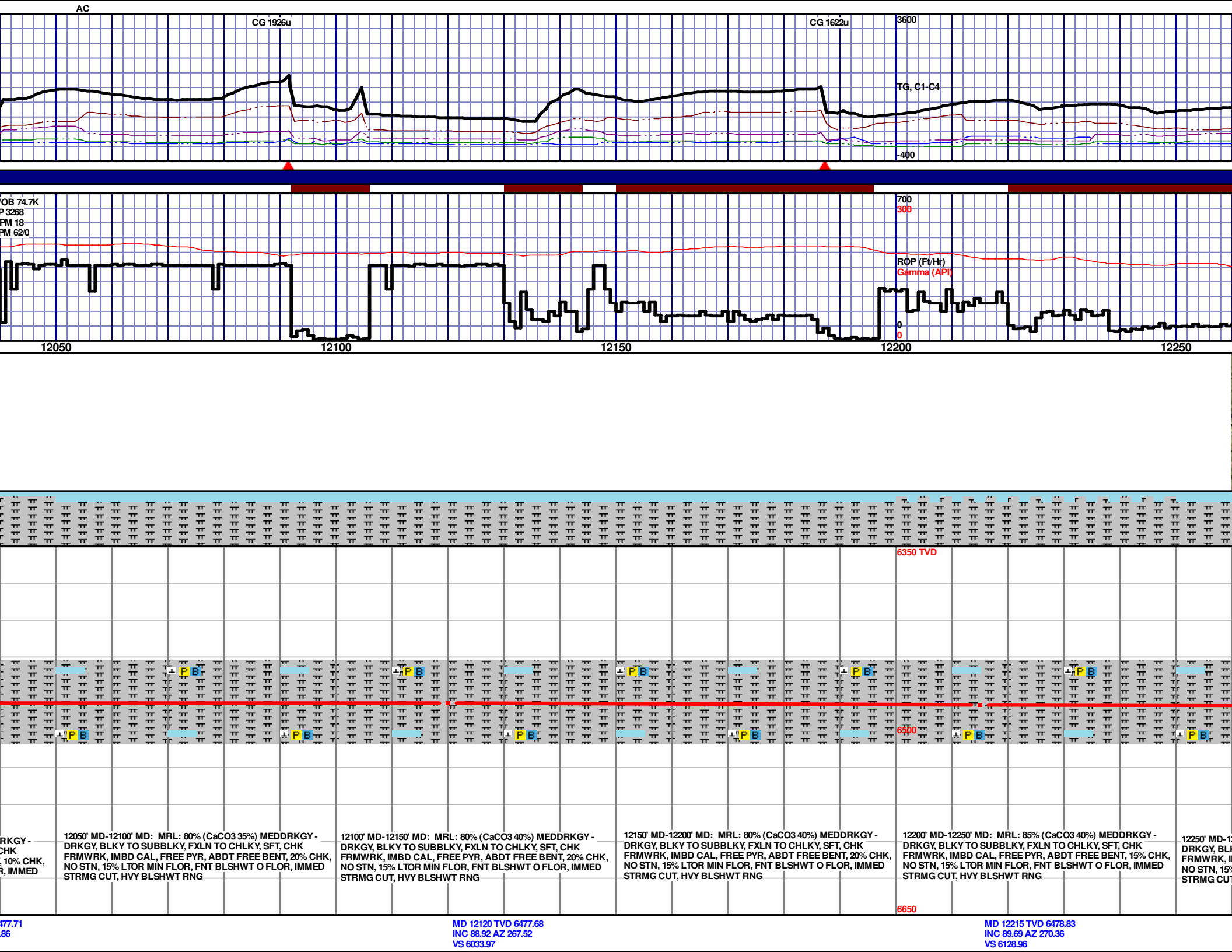


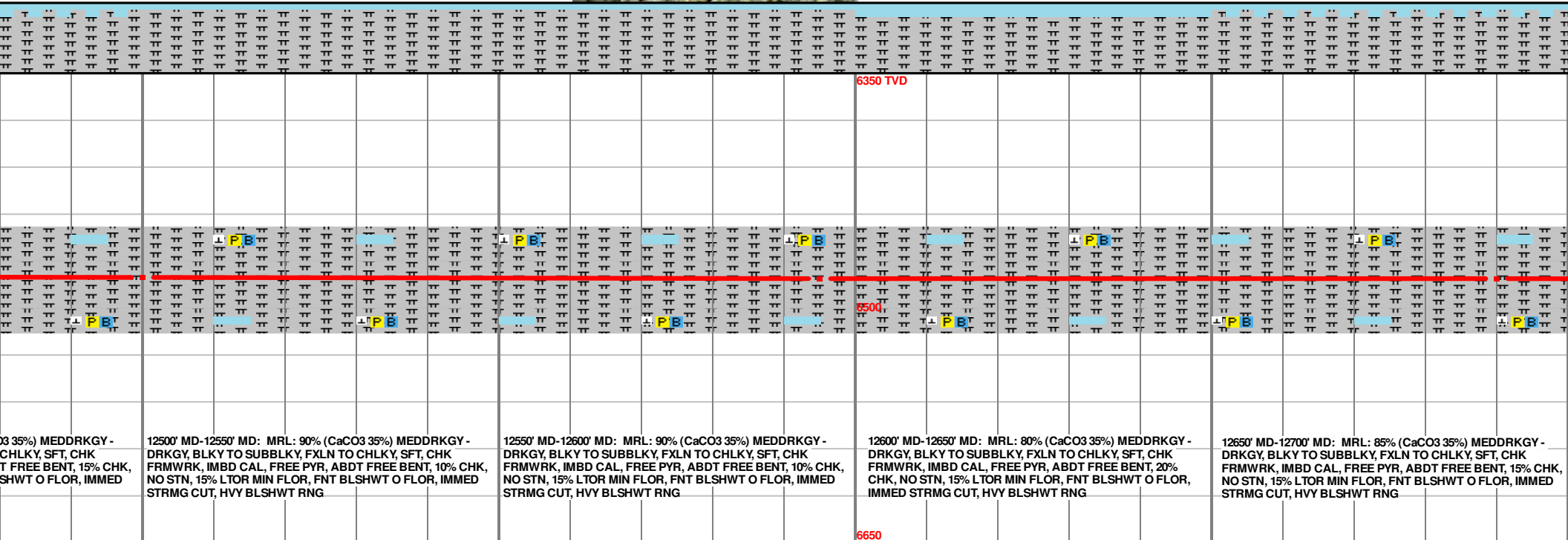
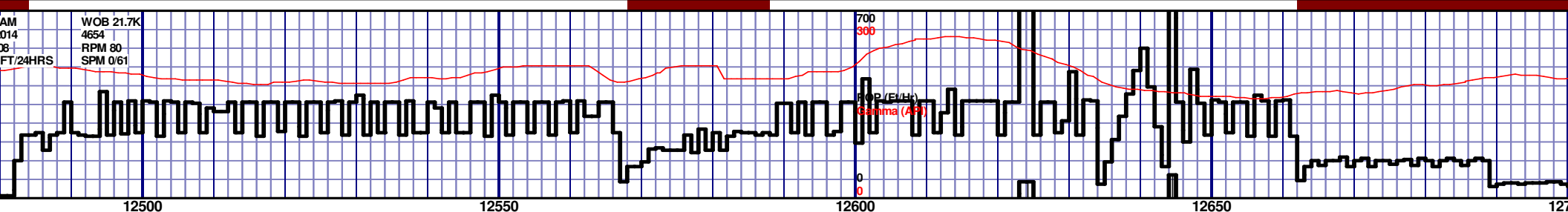
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INC 90.49 AZ 269.67
VS 5568.15

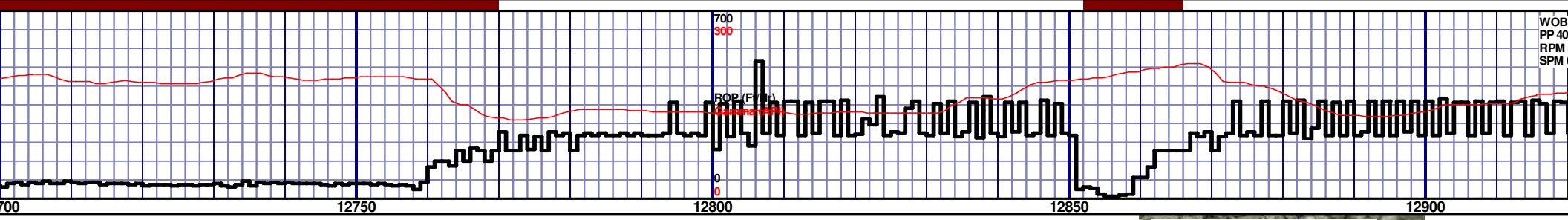
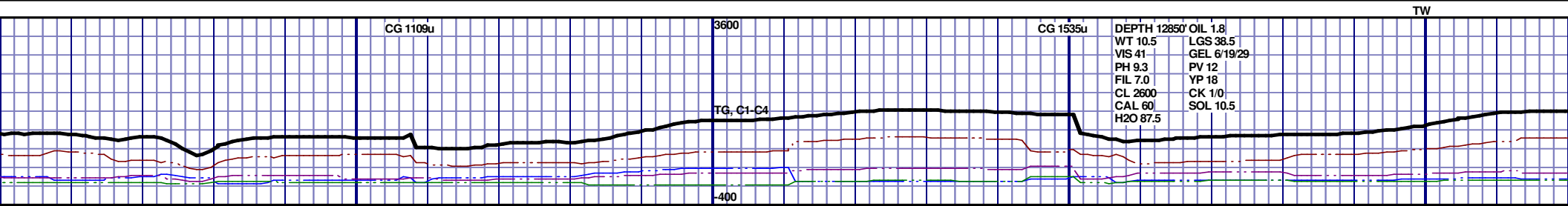
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INC 88.83 AZ 265.12
VS 5661.1



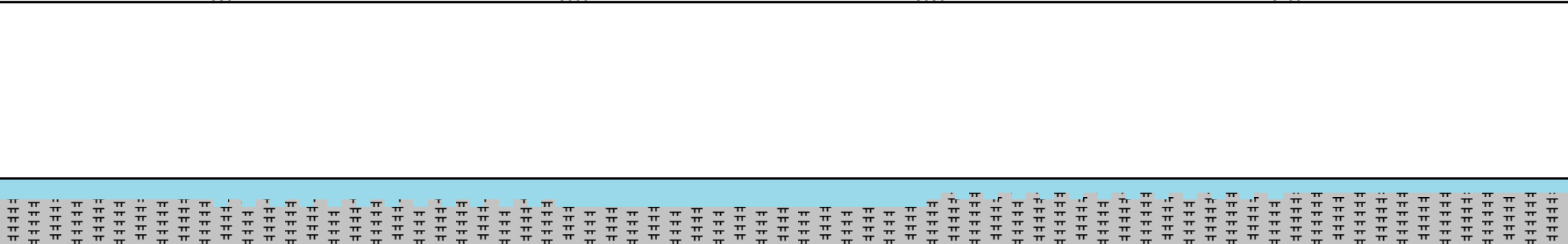
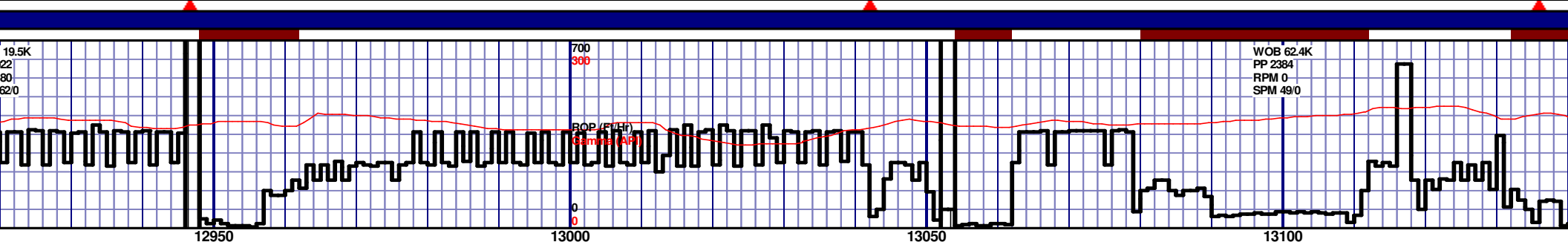
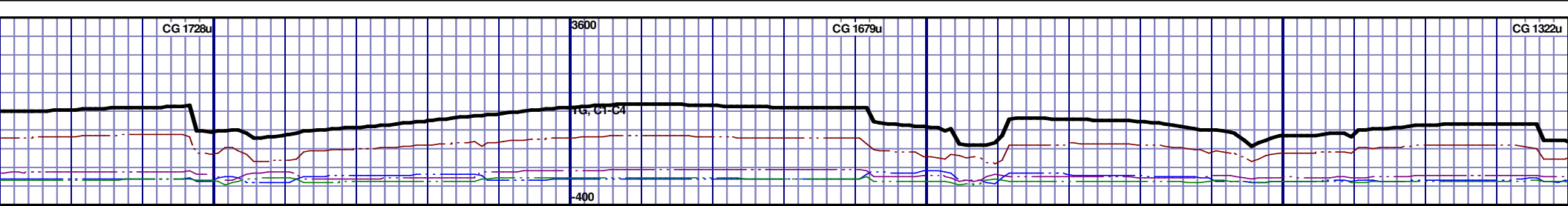
<p>11850' MD-11900' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 20% LTOR MIN FLO, FNT BLSHWT O FLO, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>11900' MD-11950' MD: MRL: 95% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 5% CHK, NO STN, 20% LTOR MIN FLO, FNT BLSHWT O FLO, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>11950' MD-12000' MD: MRL: 90% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 10% CHK, NO STN, 20% LTOR MIN FLO, FNT BLSHWT O FLO, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>12000' MD-12050' MD: MRL: 90% (CaCO3 35%) MEDDRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 10% CHK, NO STN, 15% LTOR MIN FLO, FNT BLSHWT O FLO, IMMED STRMG CUT, HVY BLSHWT RNG</p>
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12700' MD-12750' MD: MRL: 85% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 15% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12750' MD-12800' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12800' MD-12850' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12850' MD-12900' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	12900' MD-12950' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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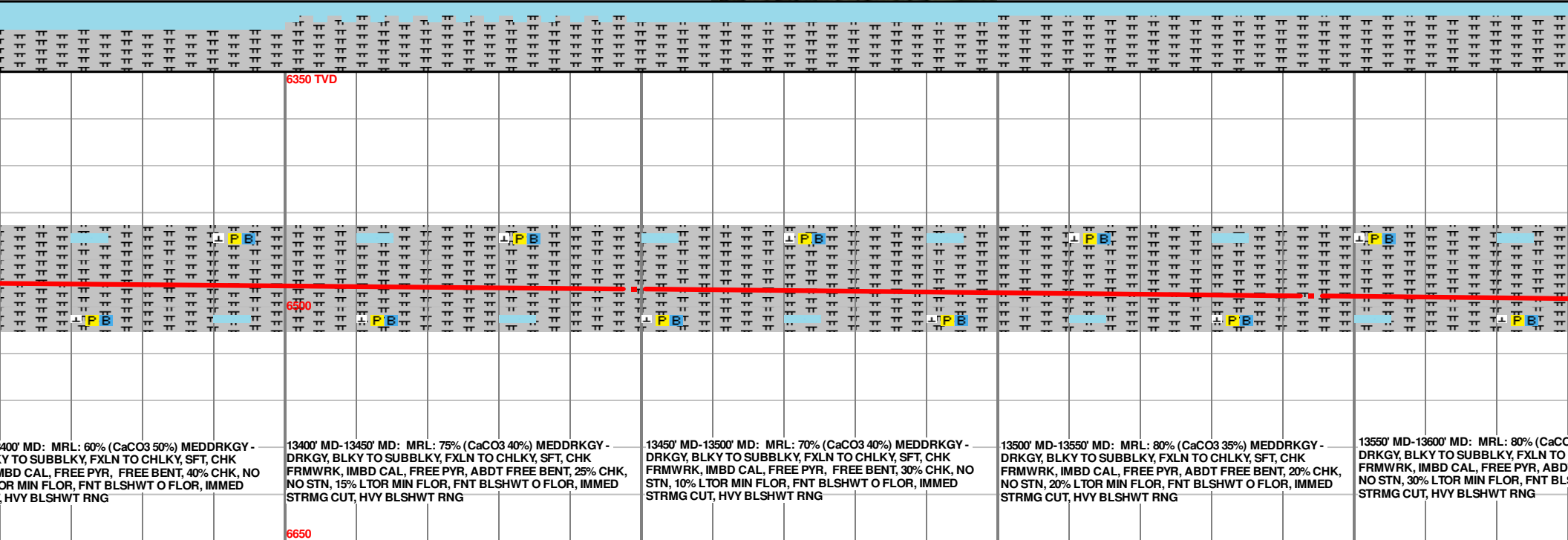
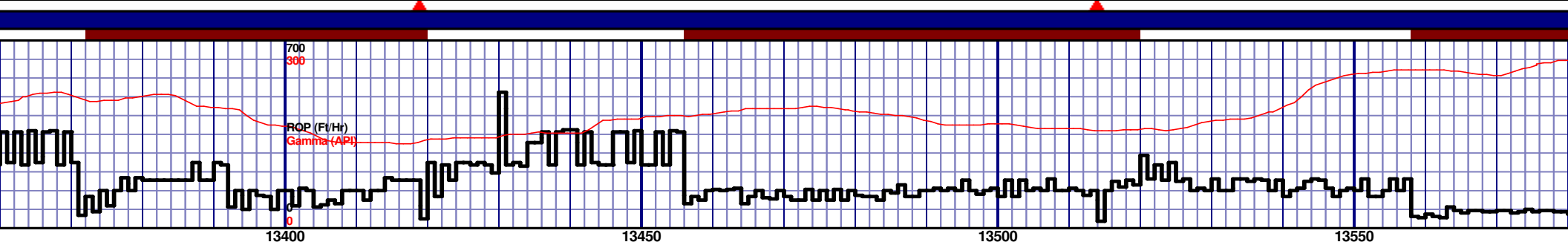
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6390									
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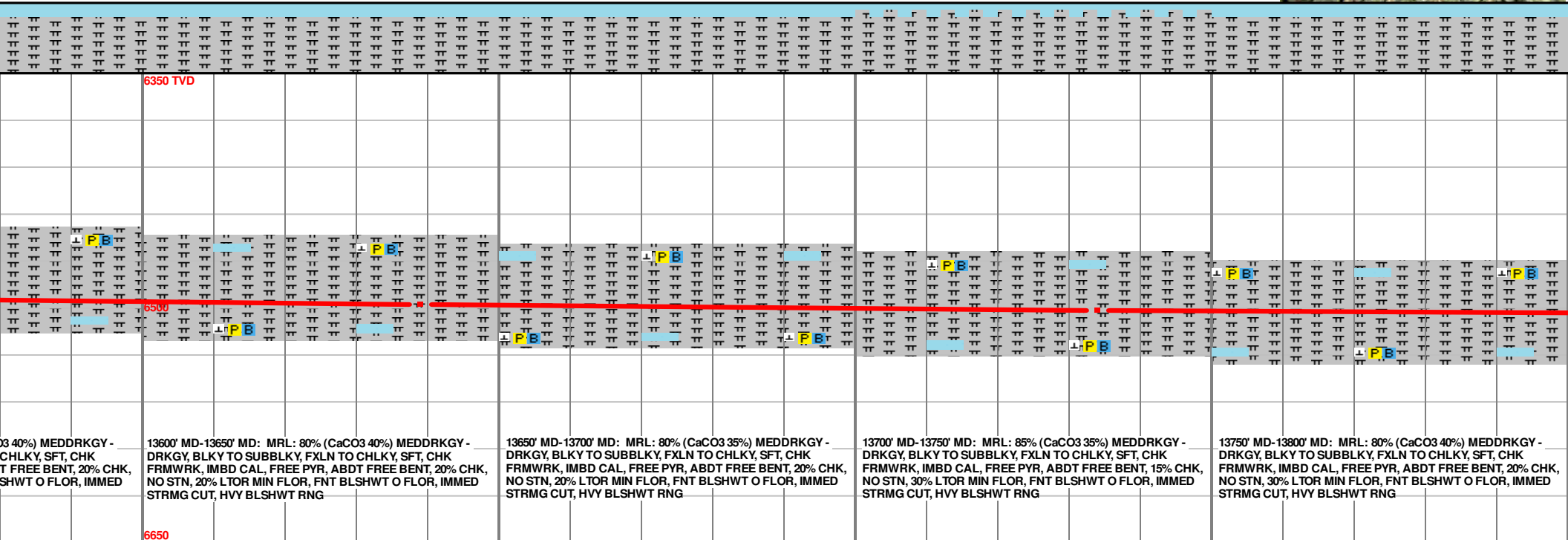
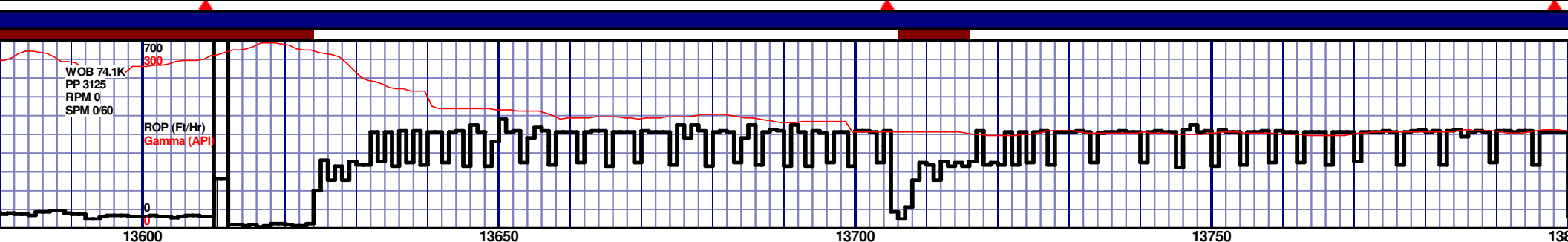
12950' MD-13000' MD: MRL: 65% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 35% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

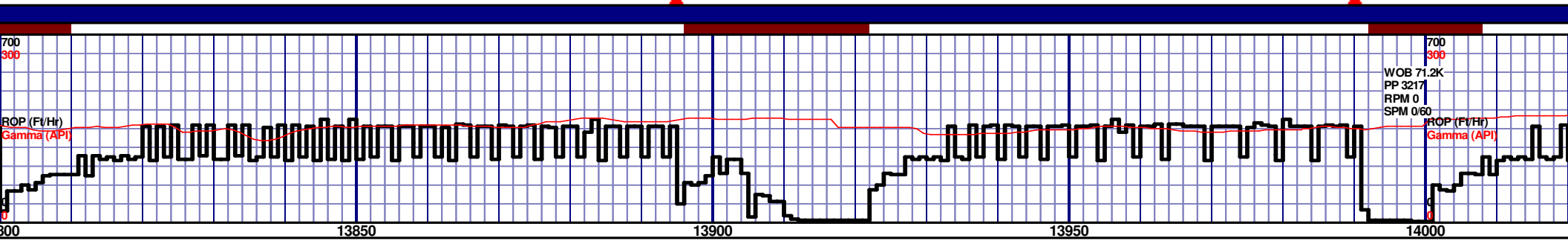
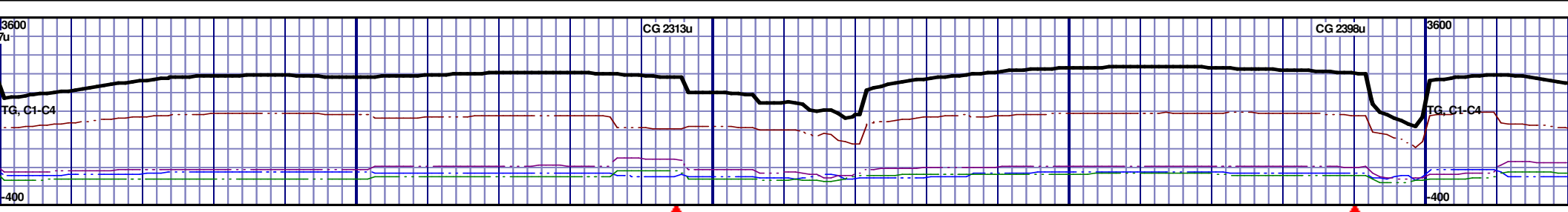
13000' MD-13050' MD: MRL: 60% (CaCO3 45%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 40% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13050' MD-13100' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 25% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

13100' MD-13150' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG



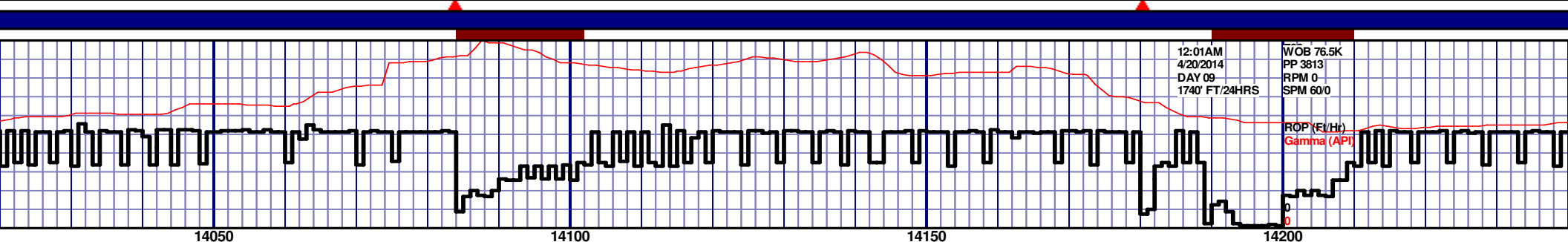
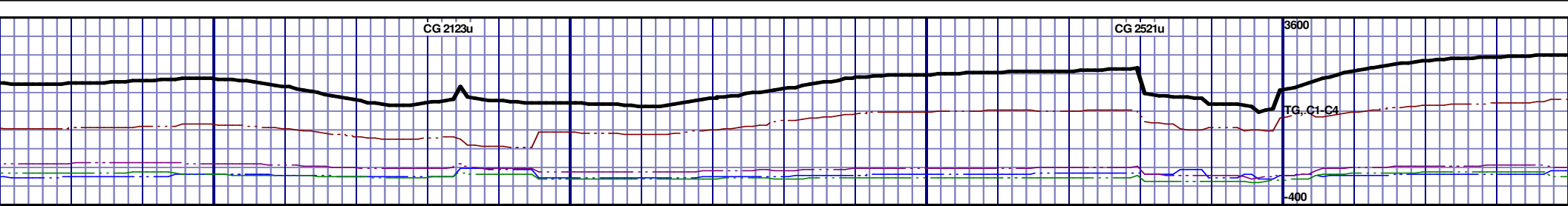




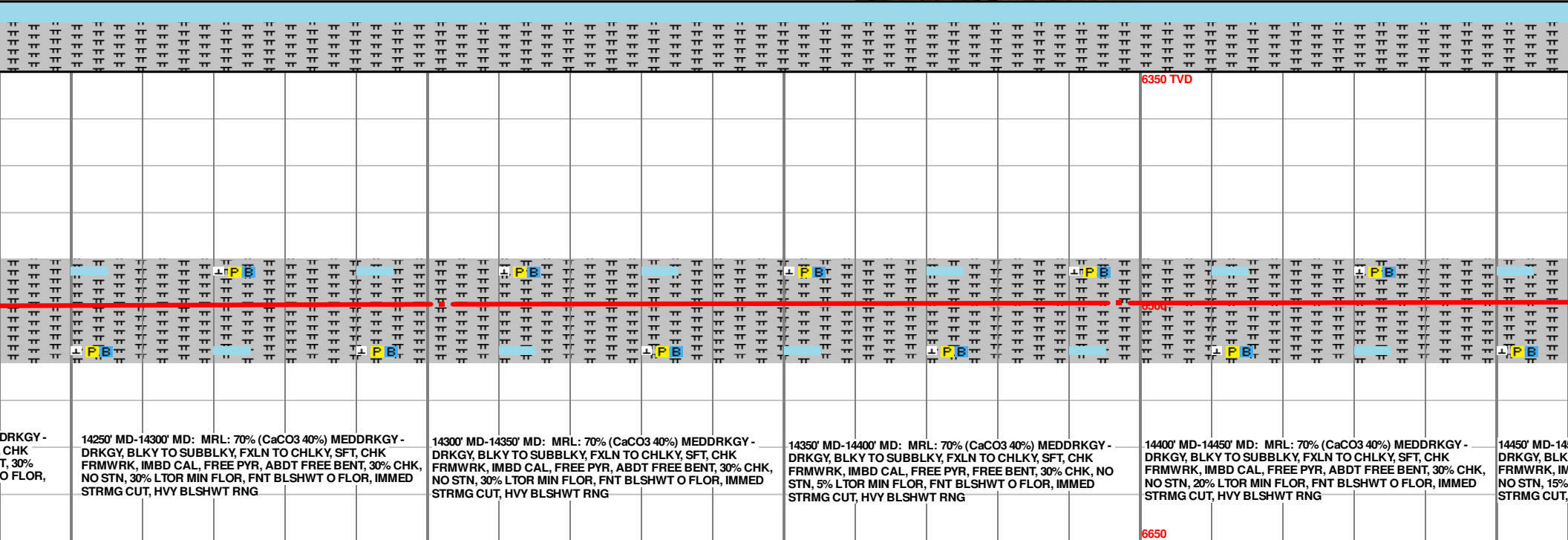
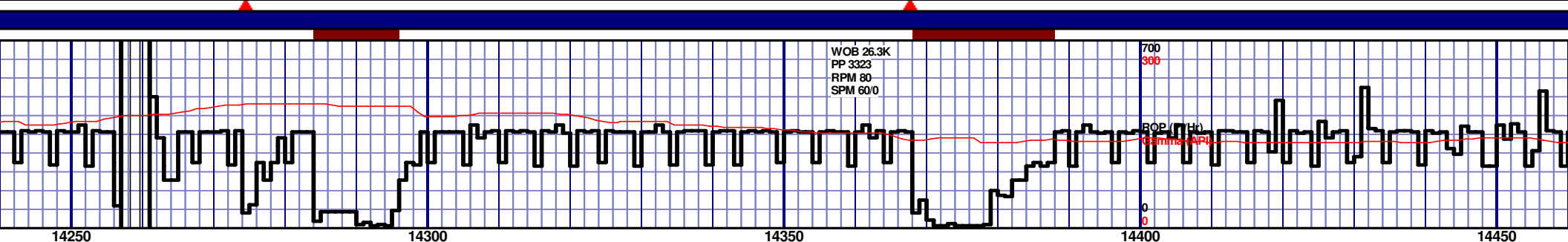
6350 TVD										6350 TVD									
13800' MD-13850' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										13850' MD-13900' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 30% CHK, NO STN, 30% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
13900' MD-13950' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										13950' MD-14000' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14000' MD-14050' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG										14050' MD-14100' MD: MRL: 80% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 20% CHK, NO STN, 15% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
6650										6650									

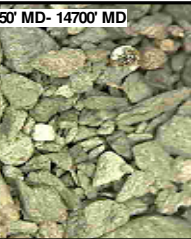
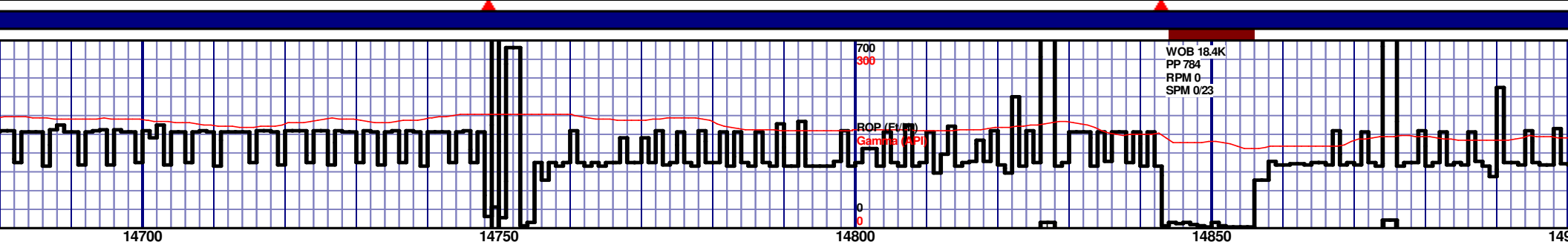
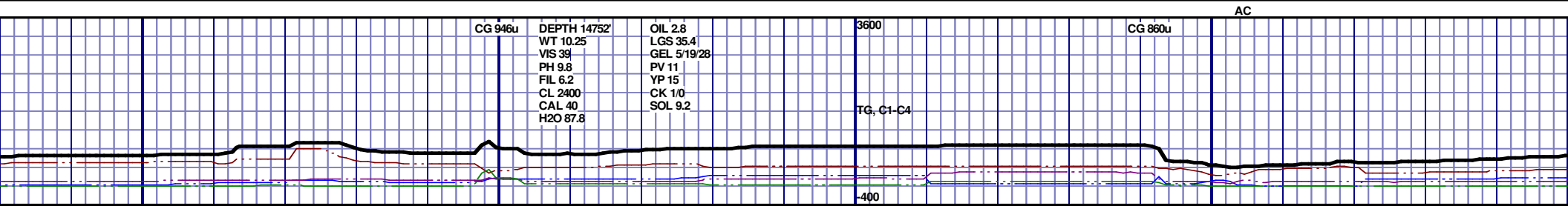
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VS 7836.01

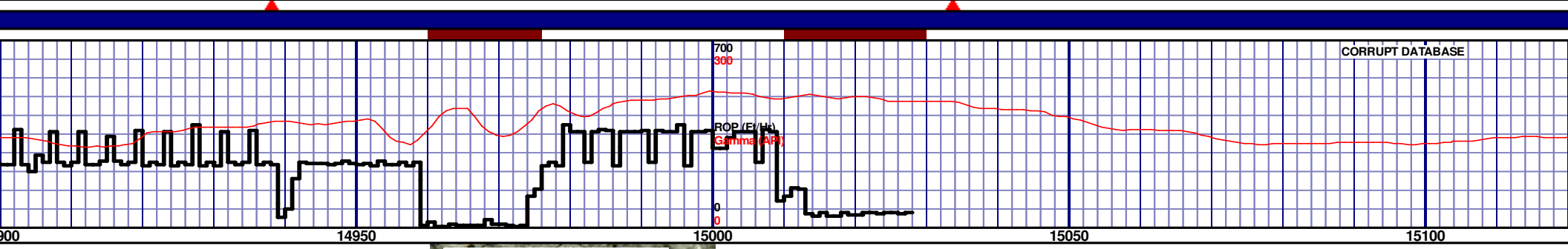
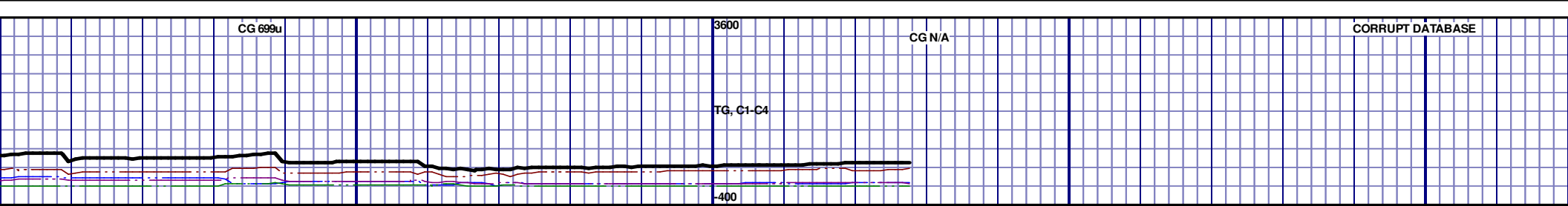


MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14050' MD-14100' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14100' MD-14150' MD: MRL: 75% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 25% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14150' MD-14200' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 30% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									
14200' MD-14250' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABDT FREE BENT, 30% CHK, NO STN, 20% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG									





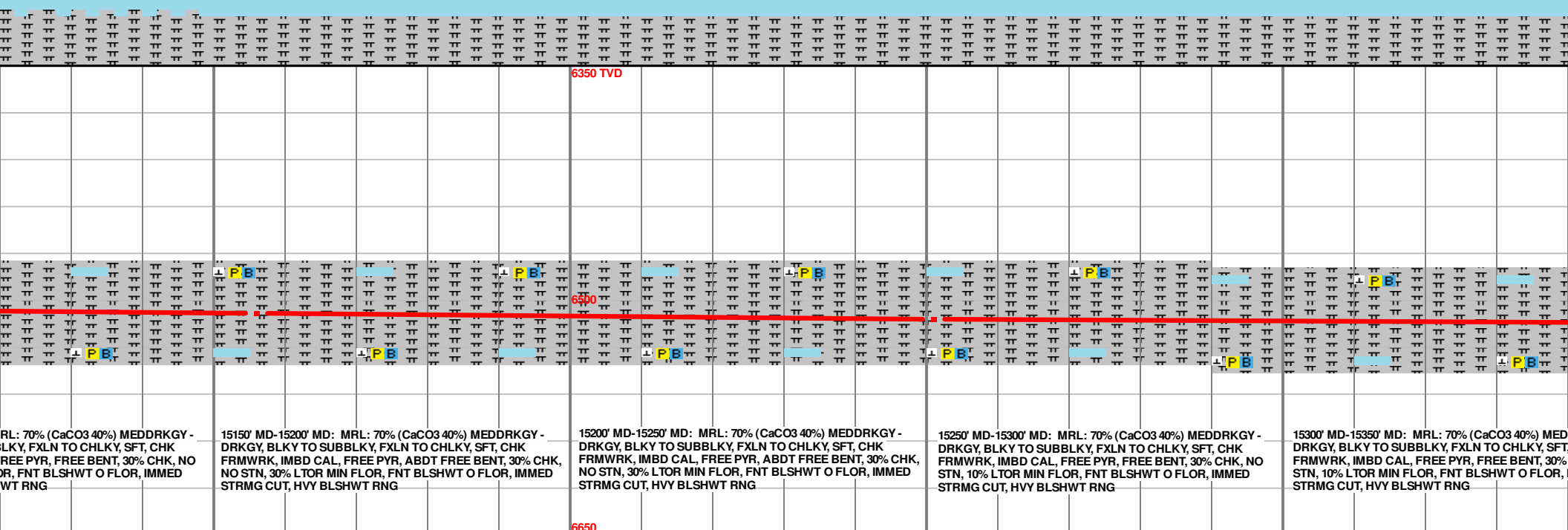
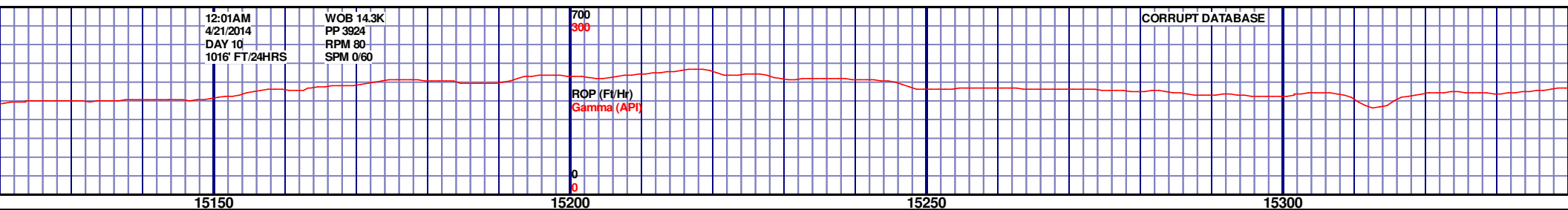
14700' MD-14750' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	14750' MD-14800' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	14800' MD-14850' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 20% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	14850' MD-14900' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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14900' MD-14950' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	14950' MD-15000' MD: MRL: 80% (CaCO3 35%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, ABTD FREE BENT, 20% CHK, NO STN, 35% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15000' MD-15050' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15050' MD-15100' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	15100' MD-15150' MD: MRL: 70% (CaCO3 40%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, FREE BENT, 30% CHK, NO STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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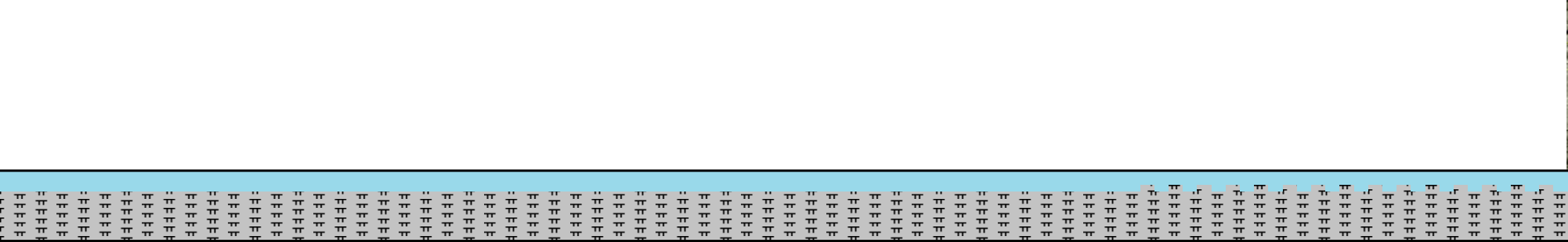
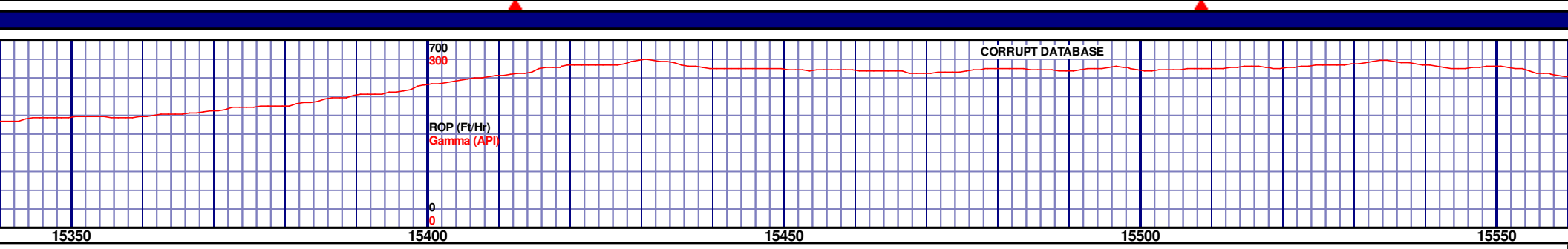
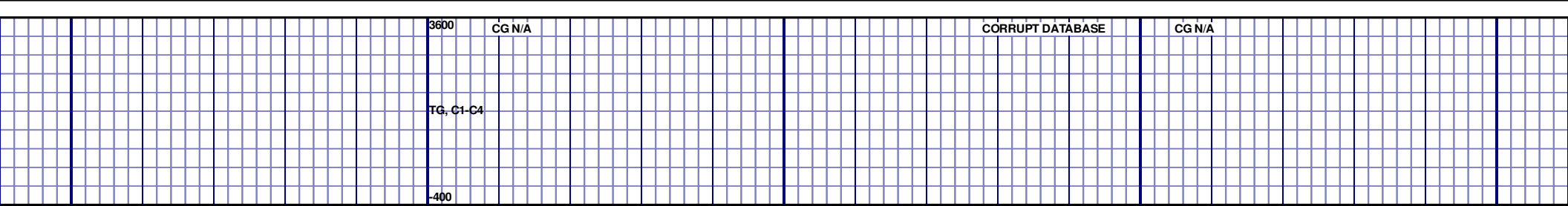
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VS 8878.85

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INC 87.81 AZ 268
VS 8973.77

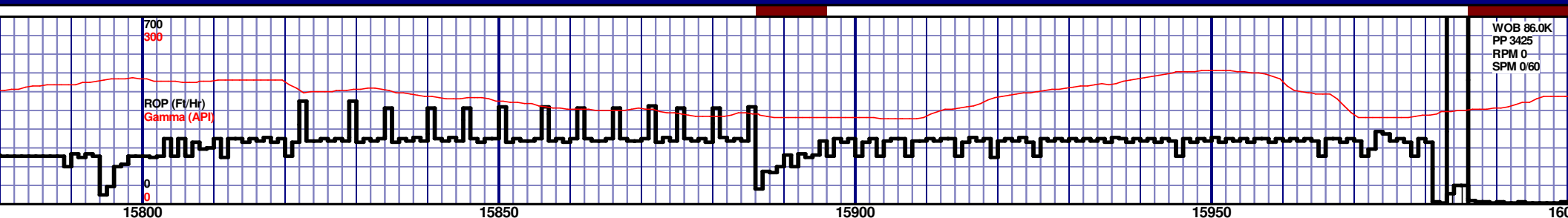


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VS 9163.6

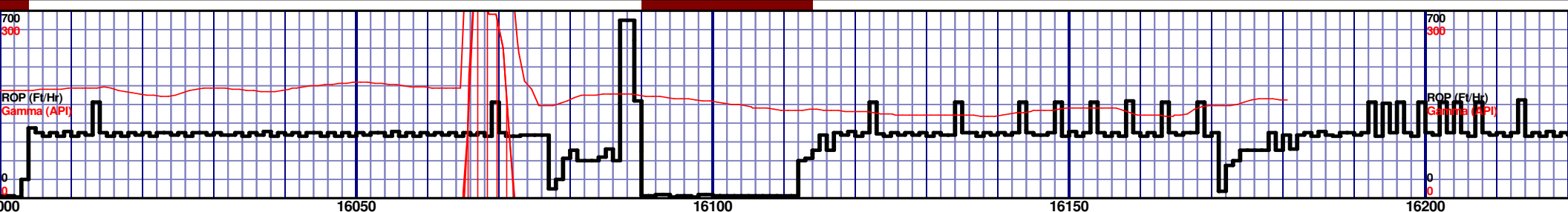


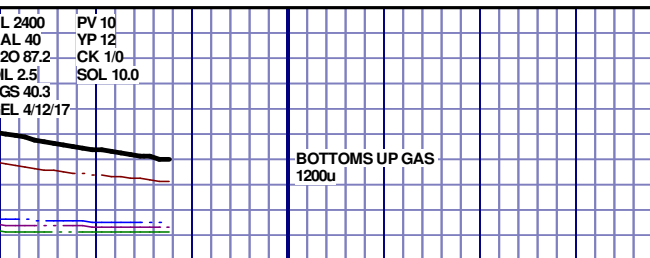
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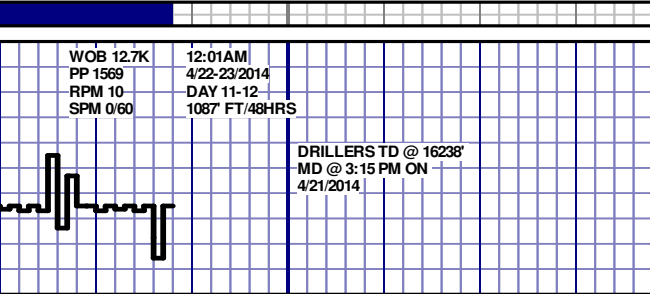
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VS 9732.27

MD 15915 TVD 6509.39
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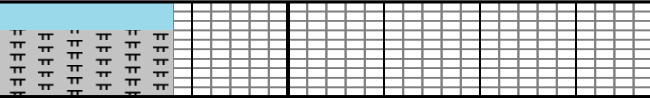


BOTTOMS UP GAS
1200u

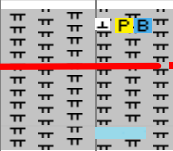


DRILLERS TD @ 16238'
MD @ 3:15 PM ON
4/21/2014

16250



TD @ 16238' MD



RELEASED ON 4/23/2014

THANK YOU FROM TOM
WACHOLZ, ANDREW
CHRISTIANO, AND
HORIZON WELL LOGGING,
LLC

L: 70% (CaCO3 40%)
KY TO SUBBLKY, FXLN
IWRK, IMBD CAL, FREE
K, NO STN, 5% LTOR
O FLOR, IMMED STRMG