



7136 South Yale Avenue, Suite 414
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: Casey Sensecqua &
Tom Wacholz
Log Interval: 6600' MD to 10946' MD
Start Date: February 16, 2014
Release Date: February 20, 2014

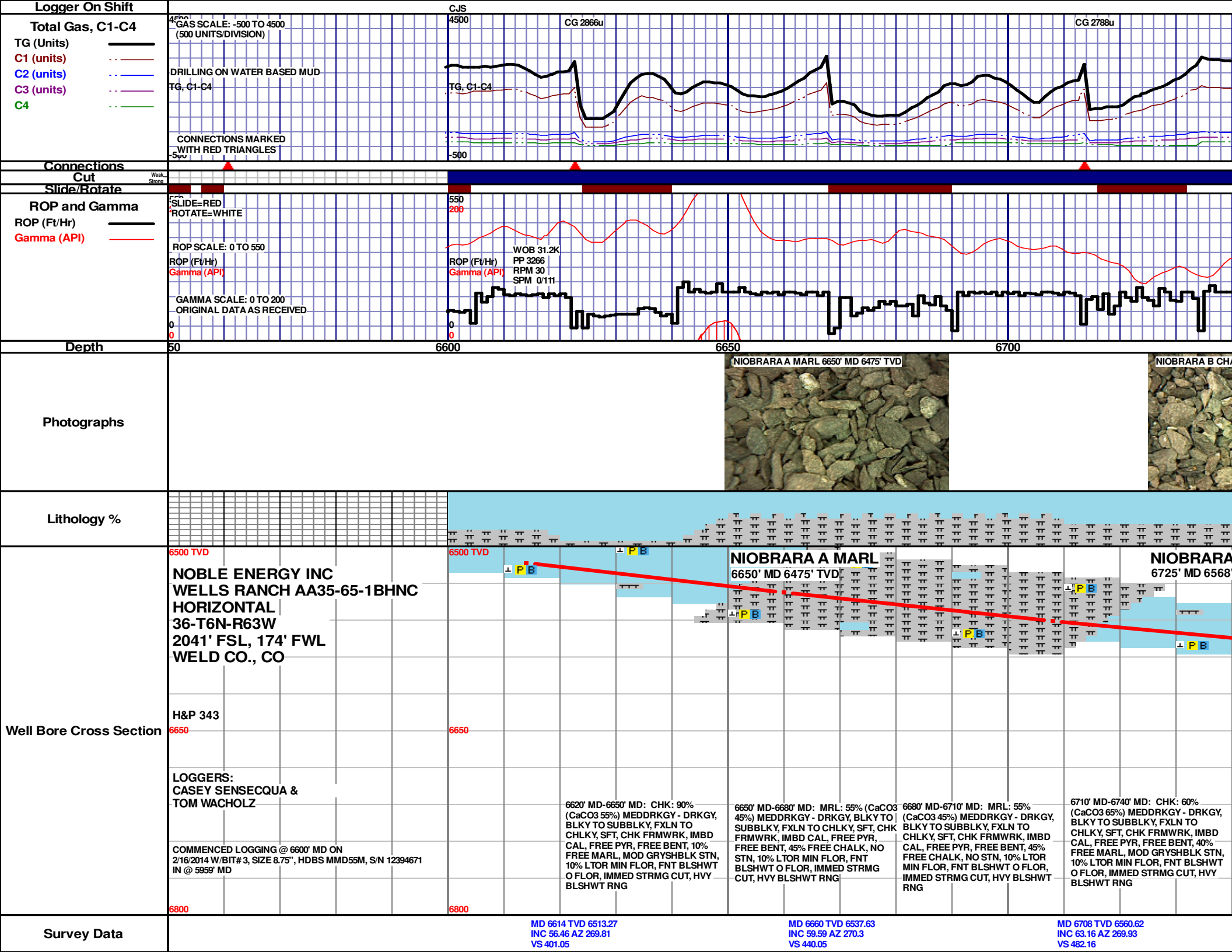
Well Information

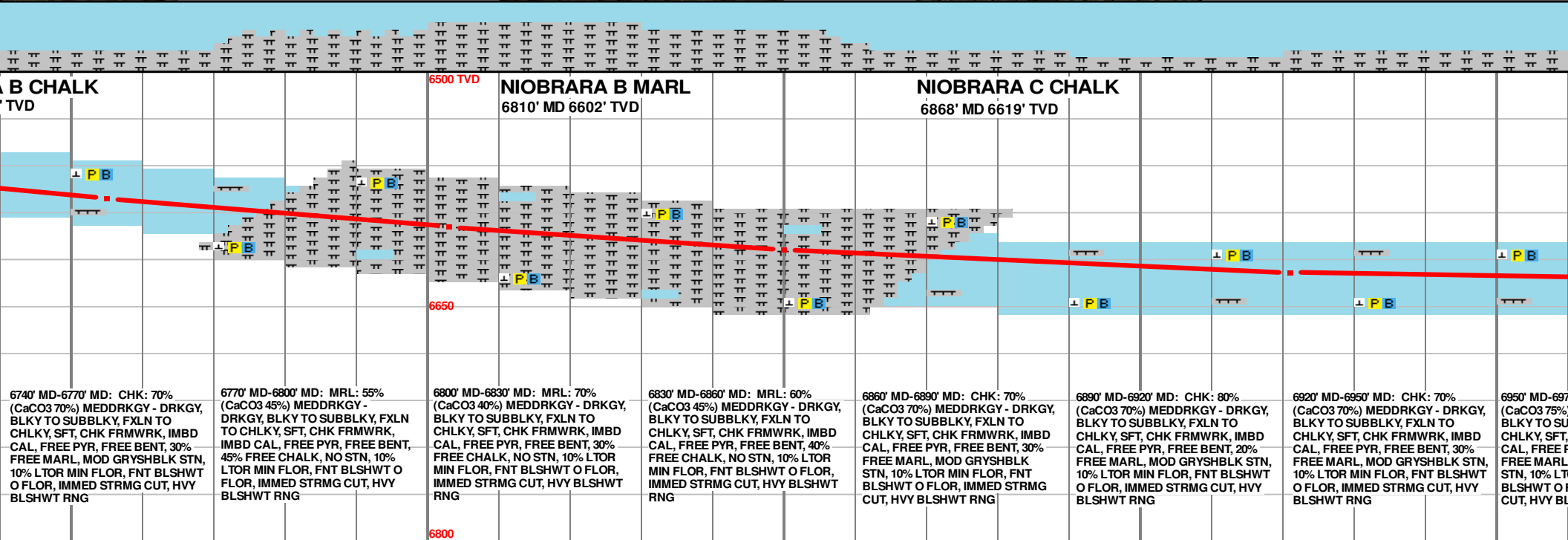
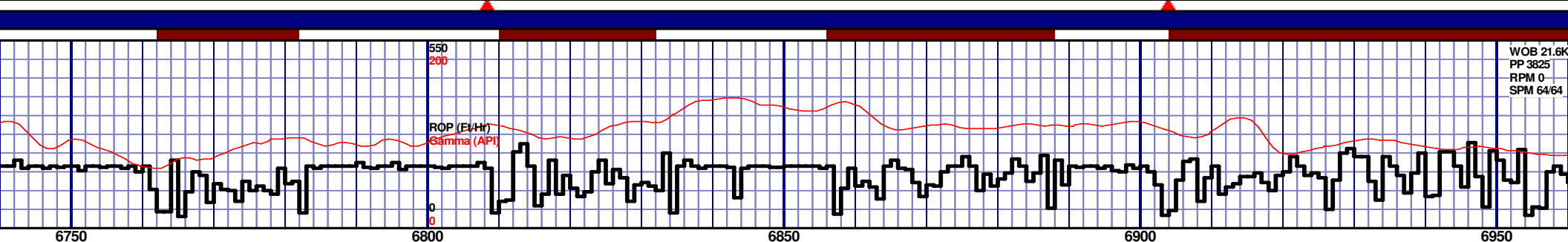
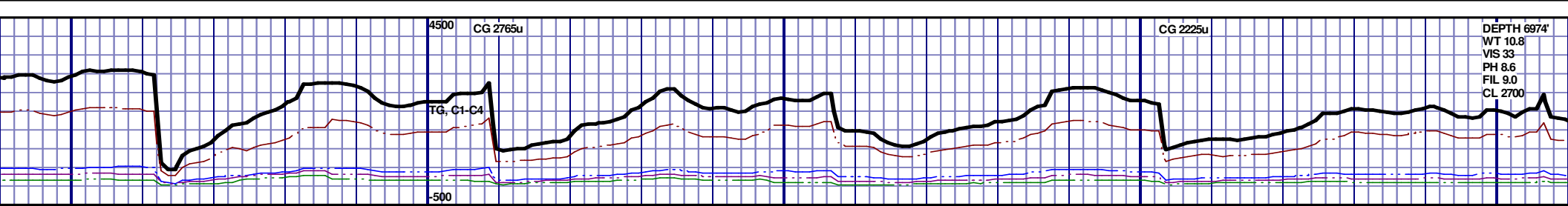
Well Name: Wells Ranch AA35-65-1BHNC
Horizontal

Location: 36-T6N-R63W
2041' FSL, 174' FWL

County: Weld
State: Colorado

Drilling Rig: H&P 343
Total Depth: 10946' MD
TD Date: February 20, 2014
Formation: Niobrara C Chalk
KB Elevation: 4798'
GR Elevation: 4774'
API Number: 05-123-38661-0000



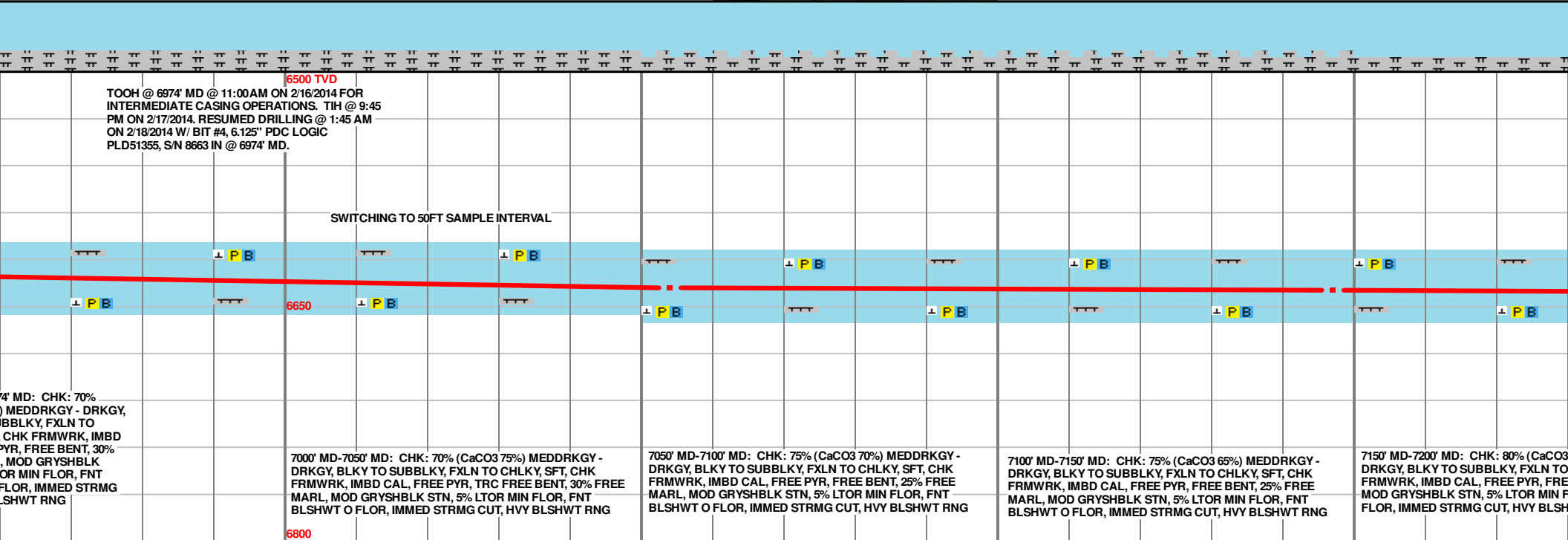
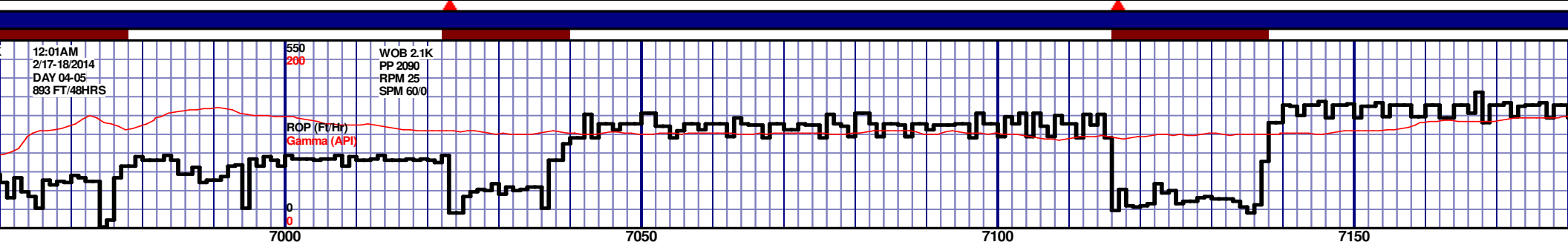
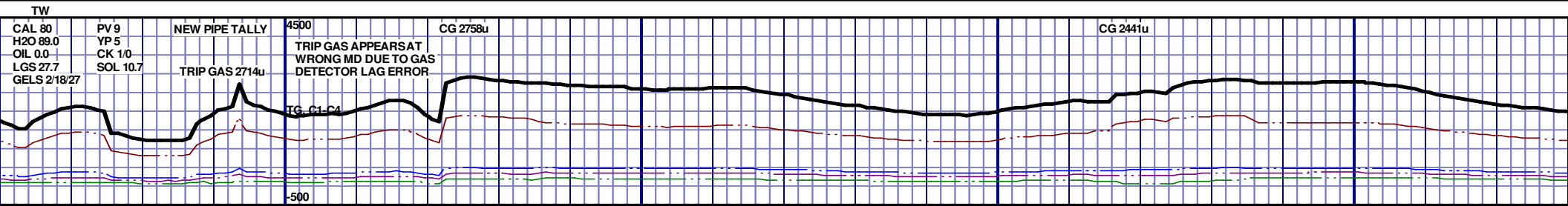


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VS 524.61

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VS 568.96

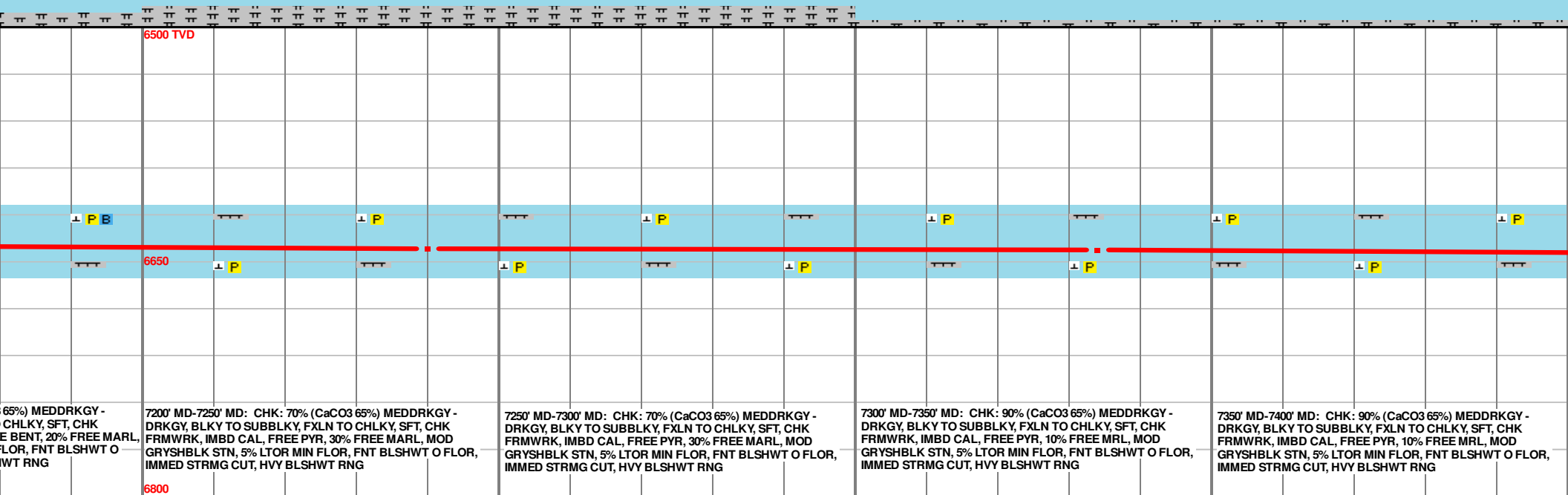
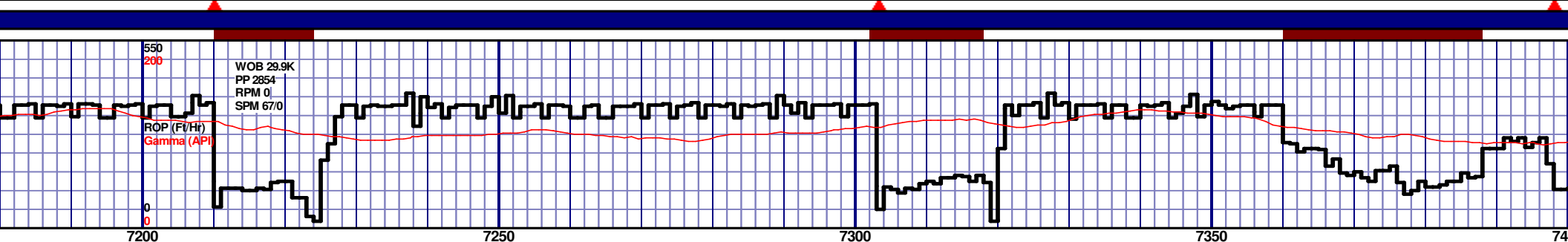
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VS 613.45

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VS 682.85

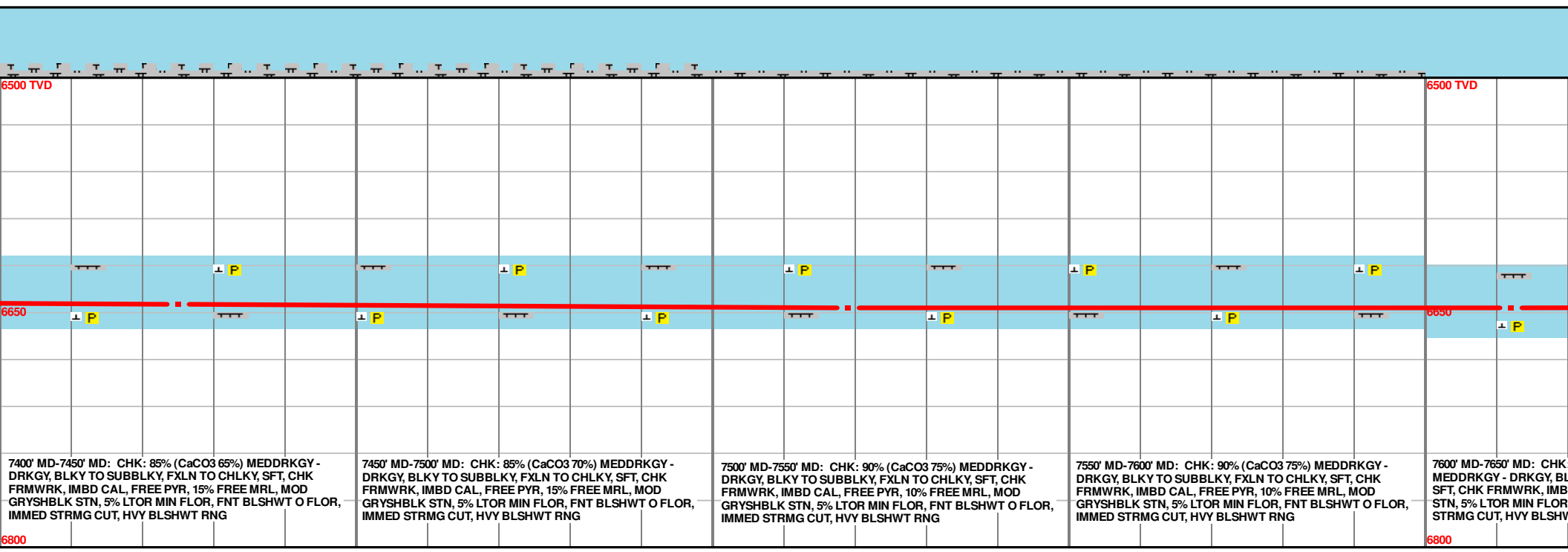
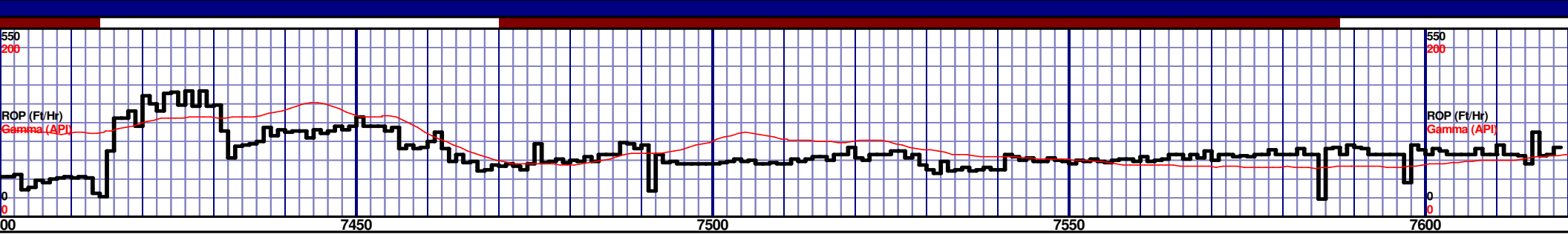
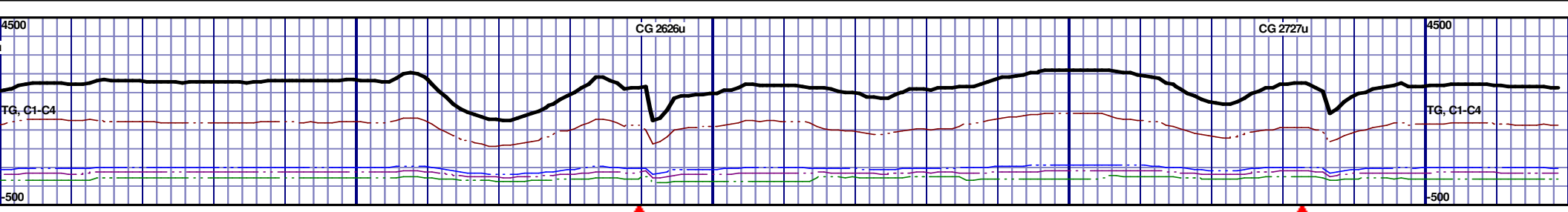


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VS 815.45

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VS 908.42



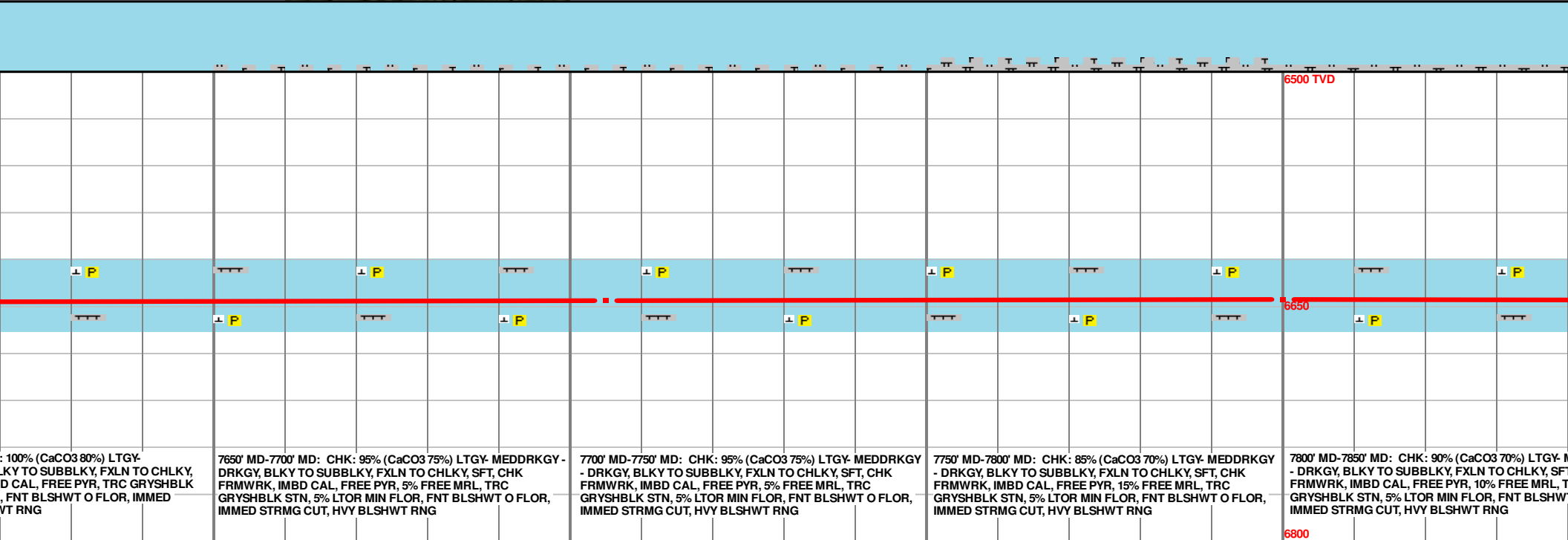
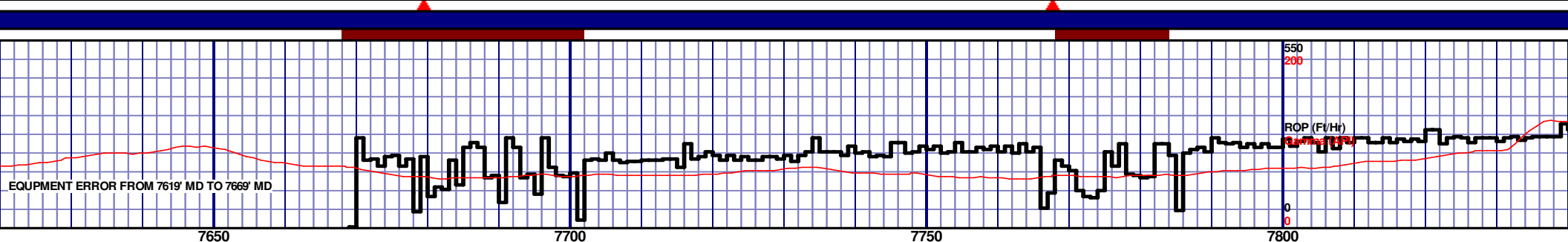
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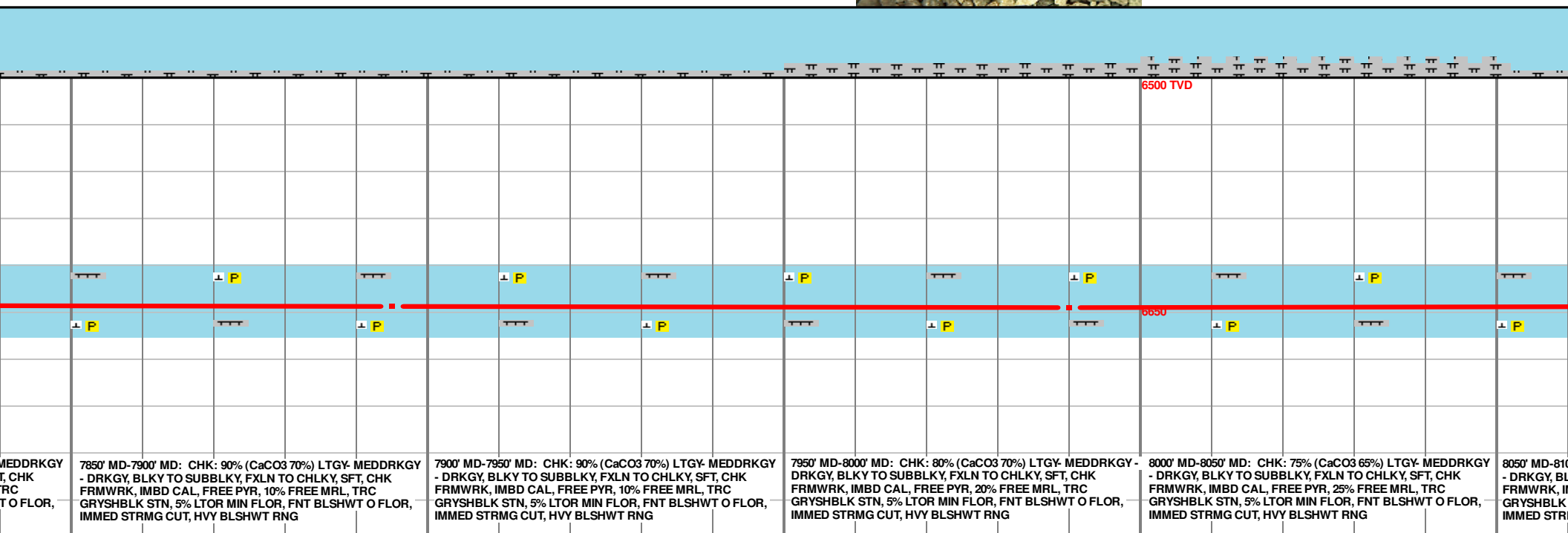
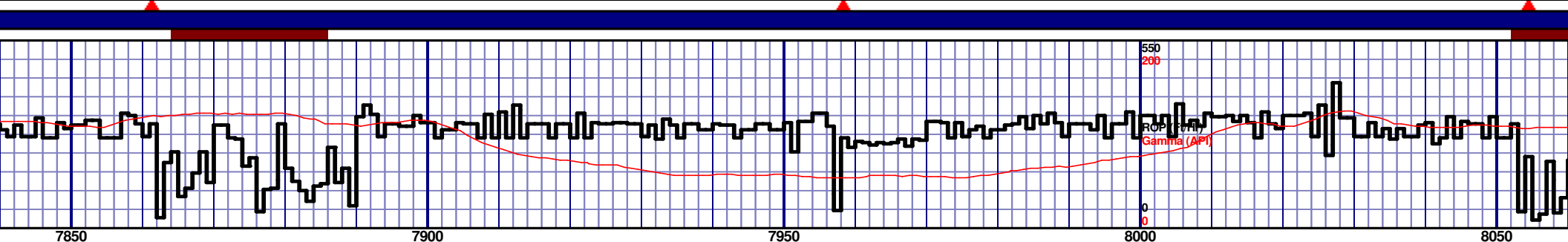
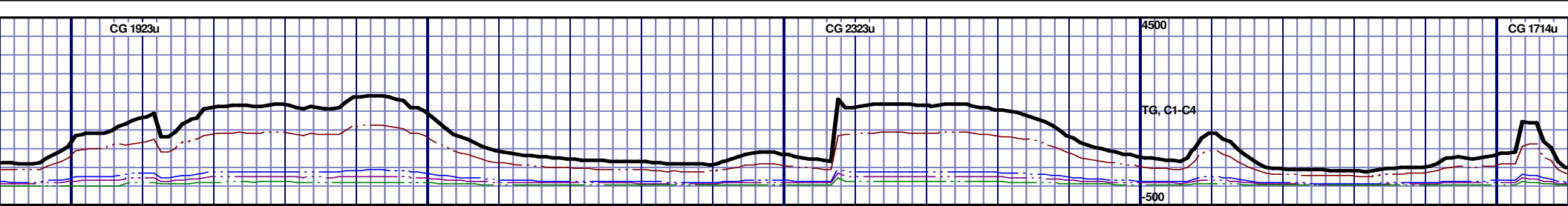


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VS 1186.13

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INC 89.14 AZ 266.92
VS 1279.83

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VS 1372.83

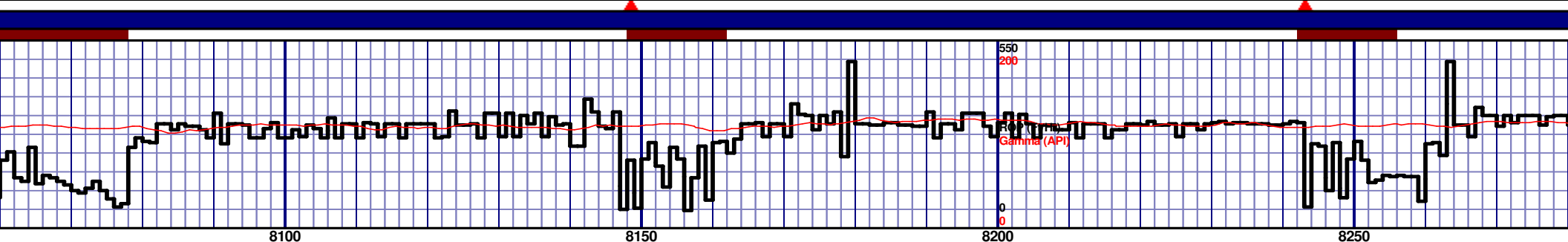
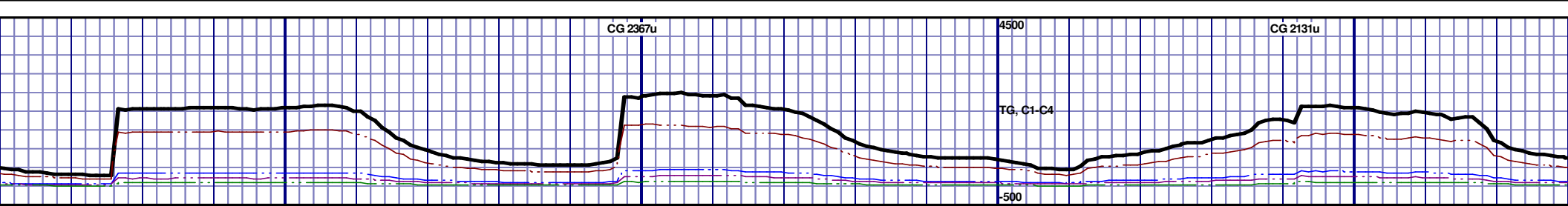




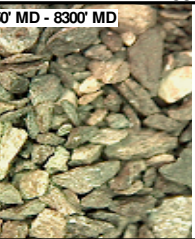
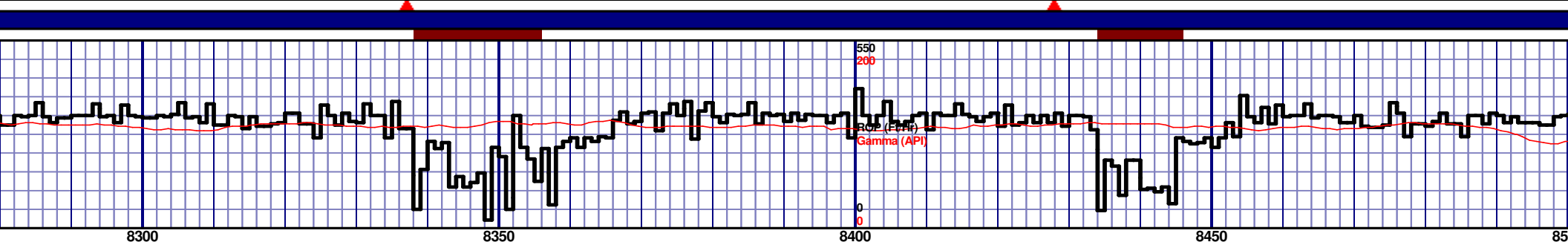
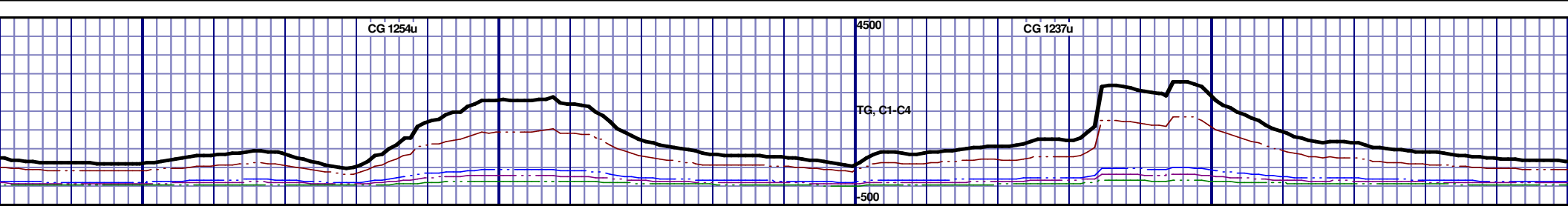
MEDDRKGY T, CHK TRC T O FLOR,	7850' MD-7900' MD: CHK: 90% (CaCO3 70%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 10% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7900' MD-7950' MD: CHK: 90% (CaCO3 70%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 10% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	7950' MD-8000' MD: CHK: 80% (CaCO3 70%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8000' MD-8050' MD: CHK: 75% (CaCO3 65%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	8050' MD-8100' MD: CHK: 75% (CaCO3 65%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 25% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG
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VS 1655.38

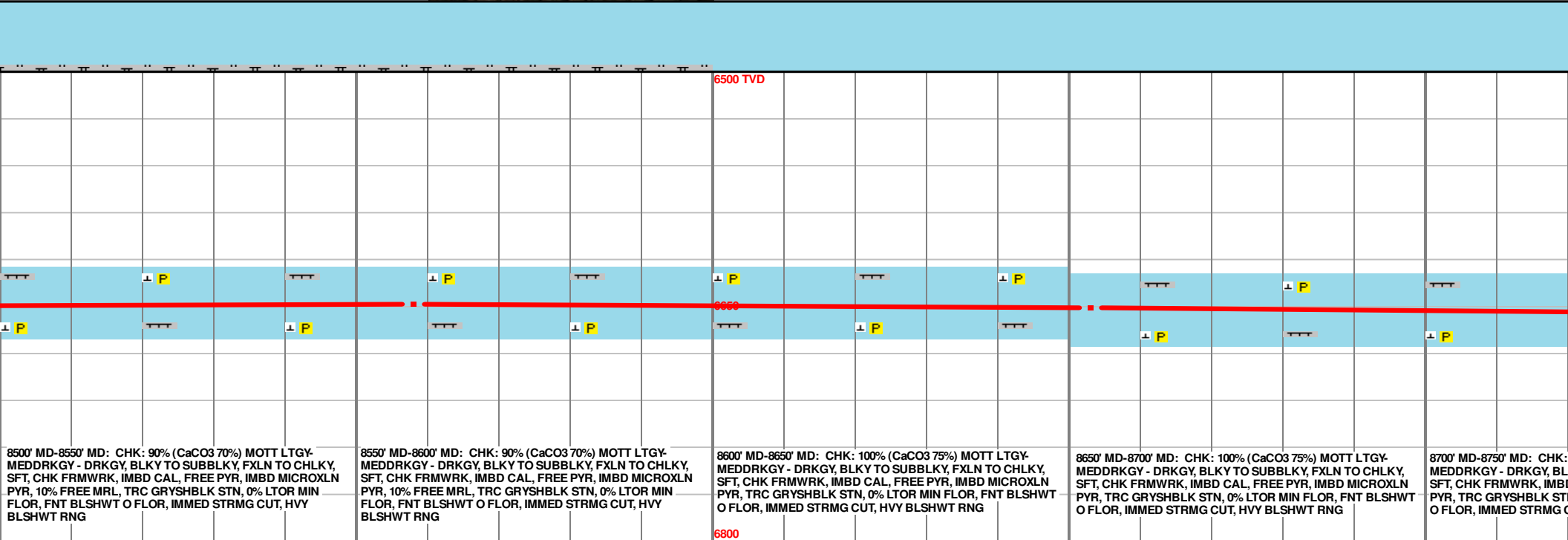
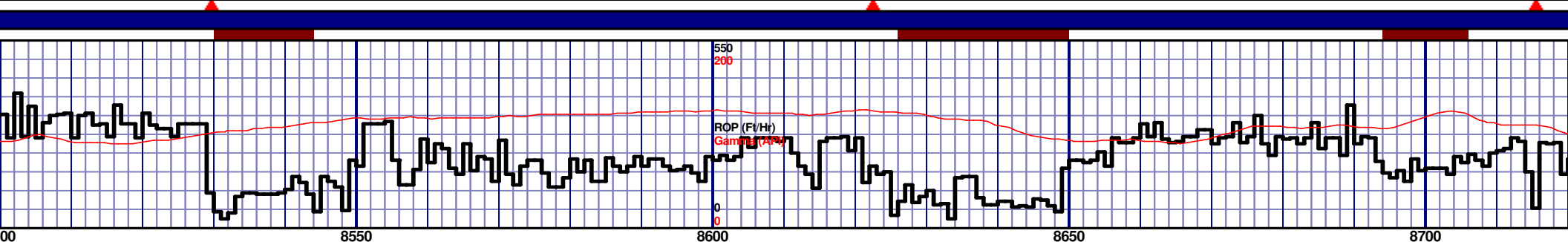
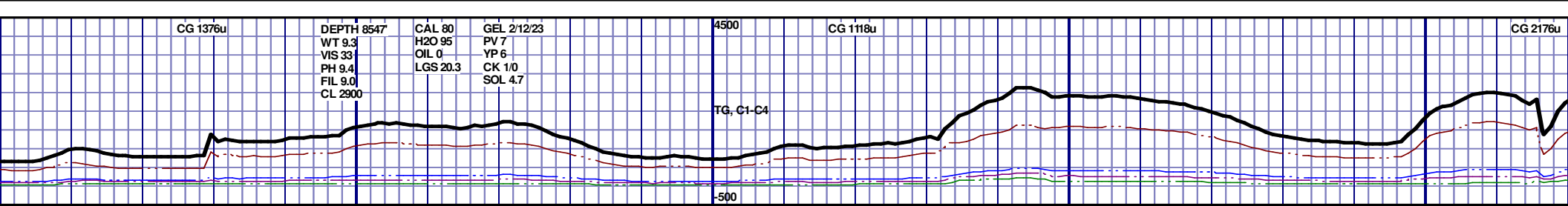
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VS 1750.36



										6500 TVD																			

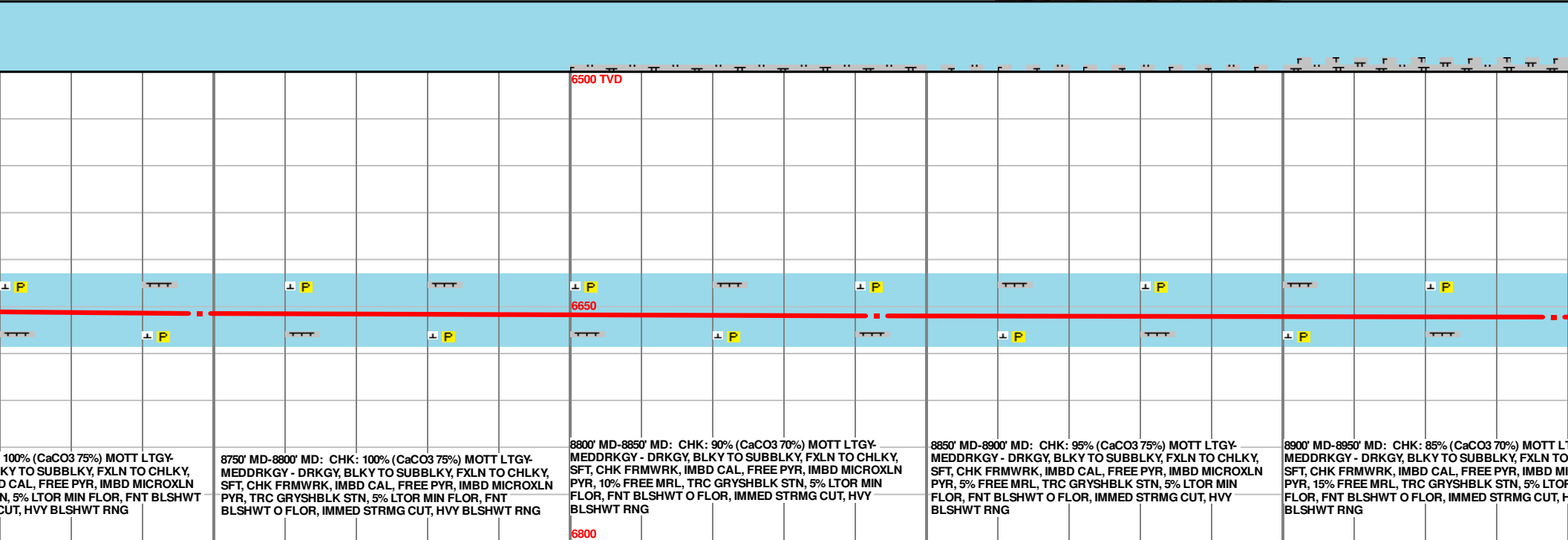
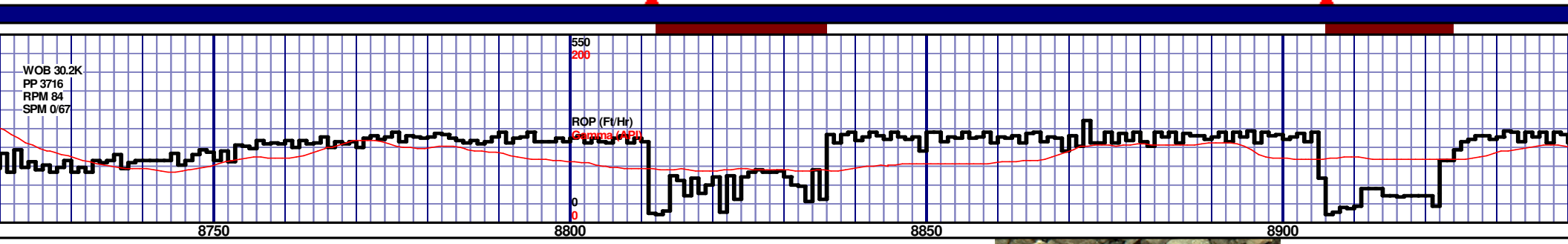
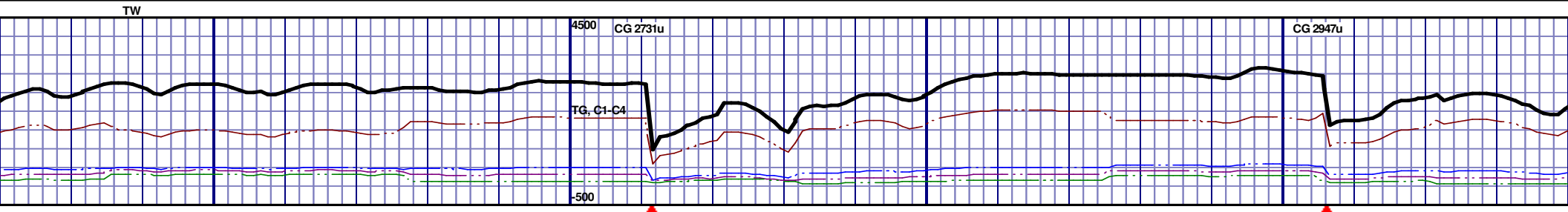


6500 TVD					6800				
8300' MD-8350' MD: CHK: 100% (CaCO3 75%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					8400' MD-8450' MD: CHK: 100% (CaCO3 70%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, FREE BENT, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				
8350' MD-8400' MD: CHK: 100% (CaCO3 75%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, FREE BENT, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG					8450' MD-8500' MD: CHK: 100% (CaCO3 70%) LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, FREE BENT, TRC GRYSHBLK STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG				



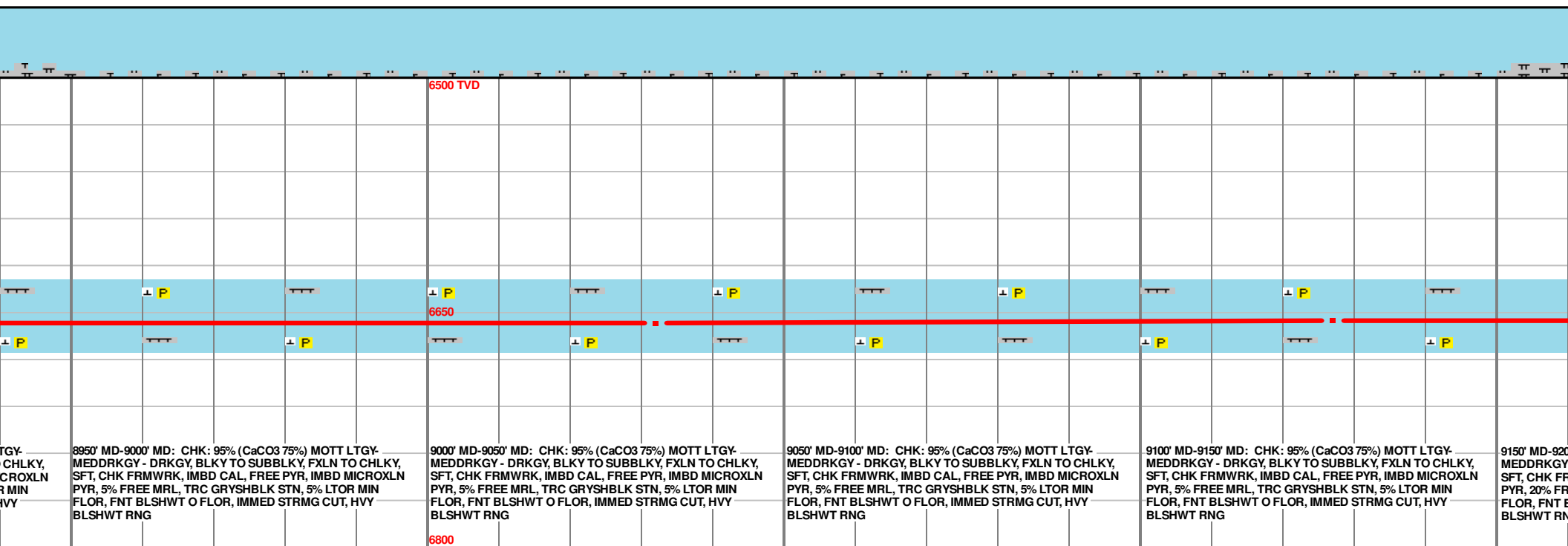
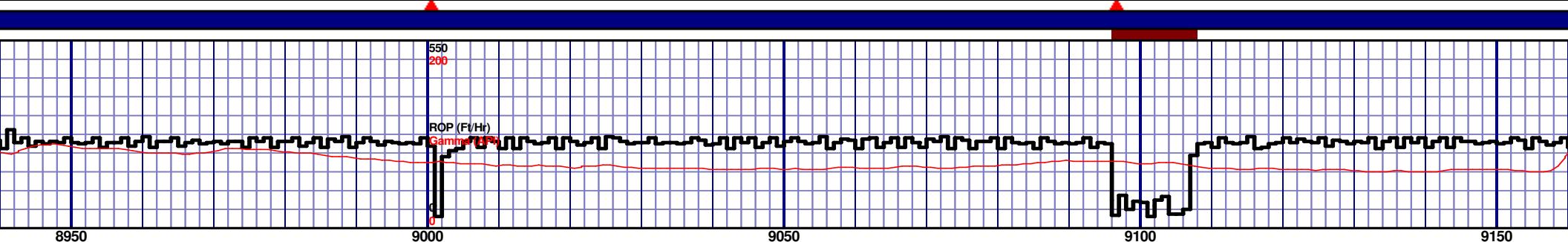
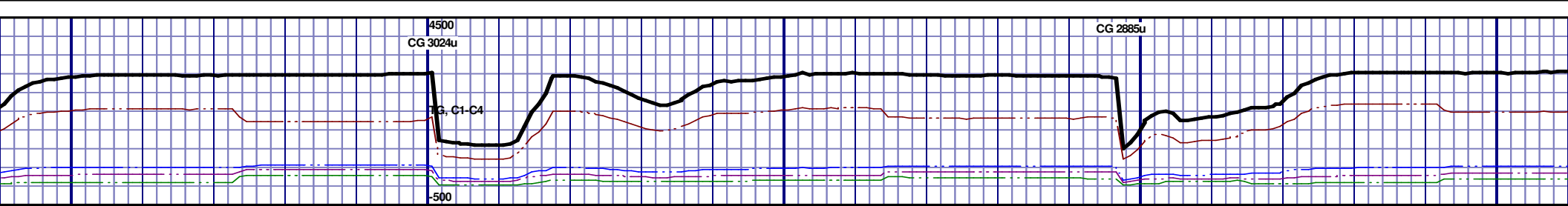
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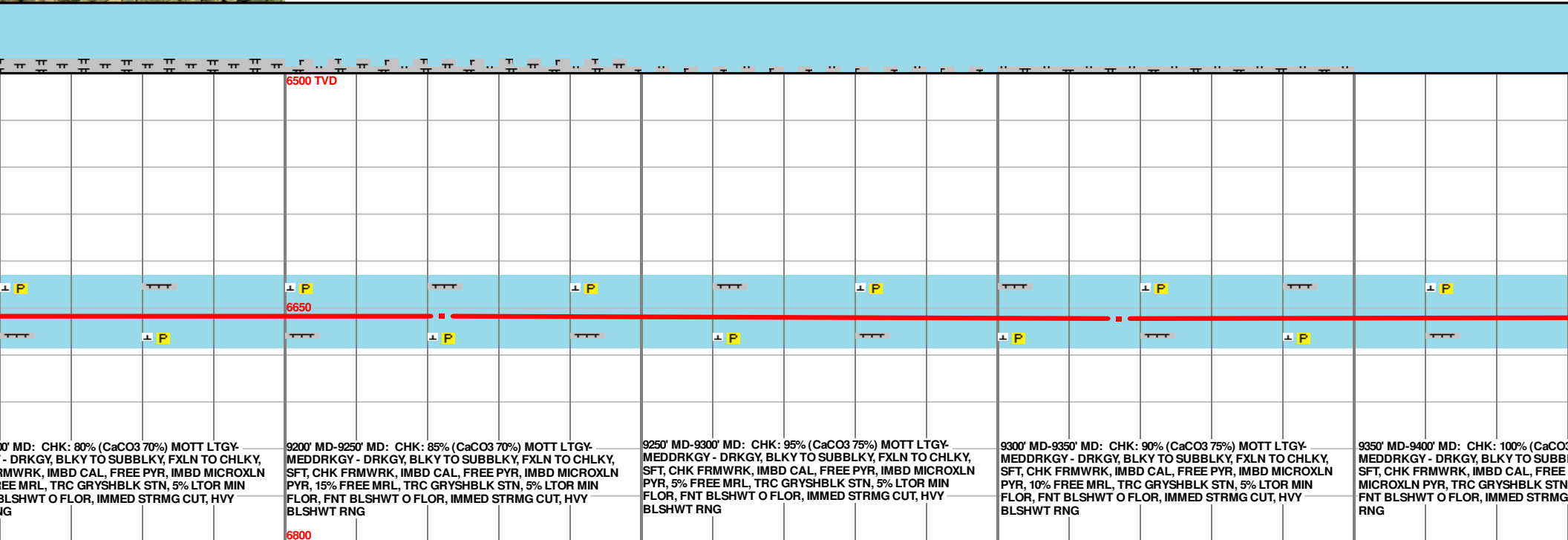
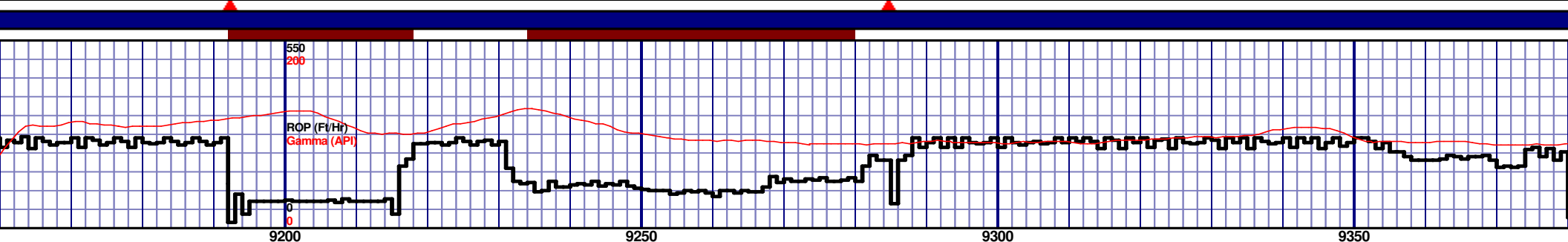
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VS 2412.39

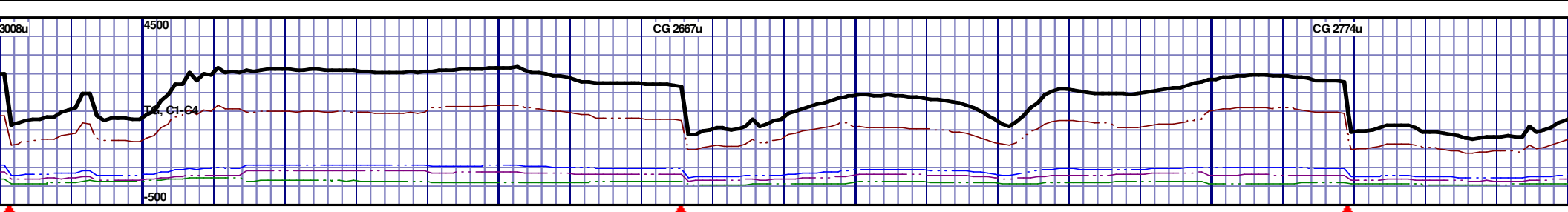


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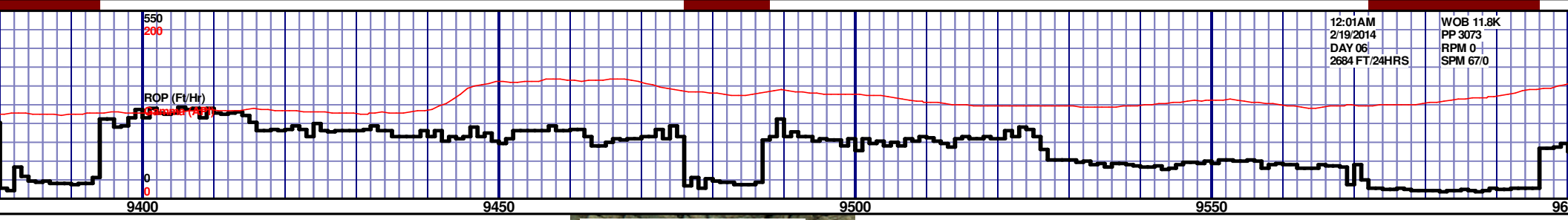
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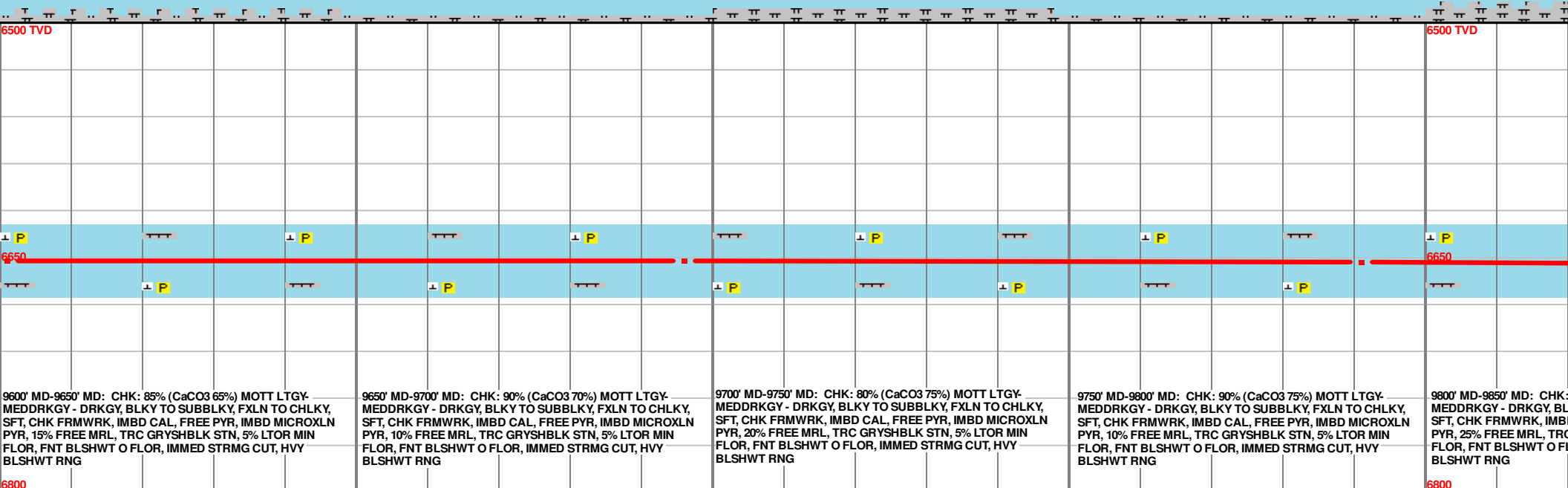
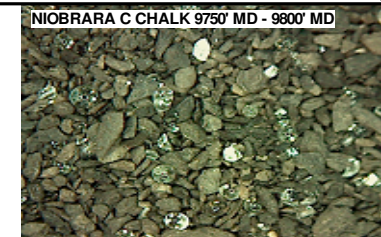
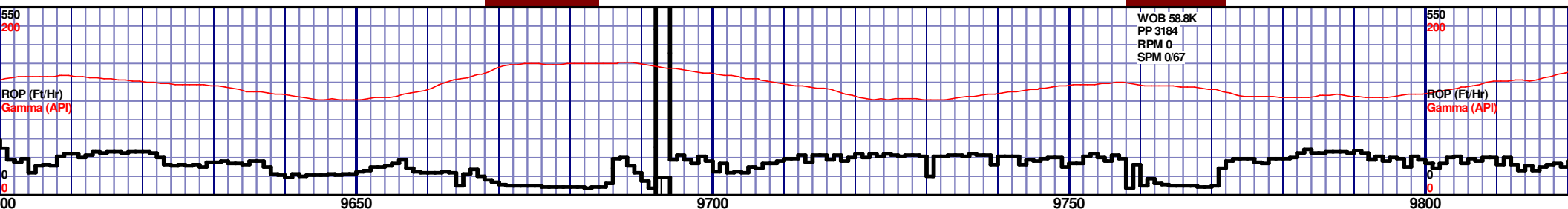
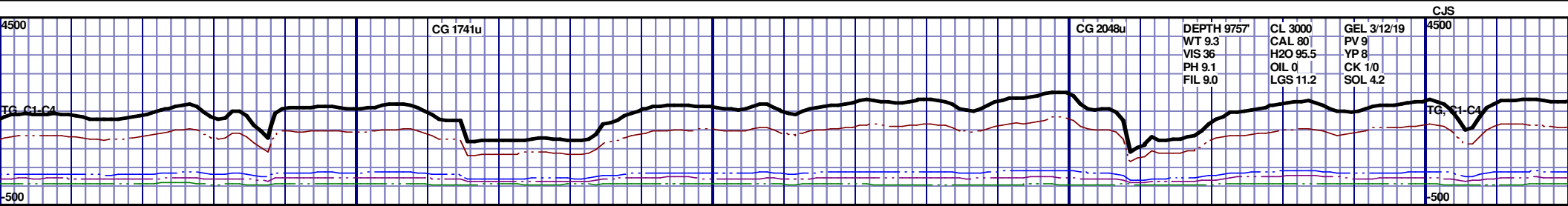




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2/19/2014
DAY 06
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RPM 0
SPM 670



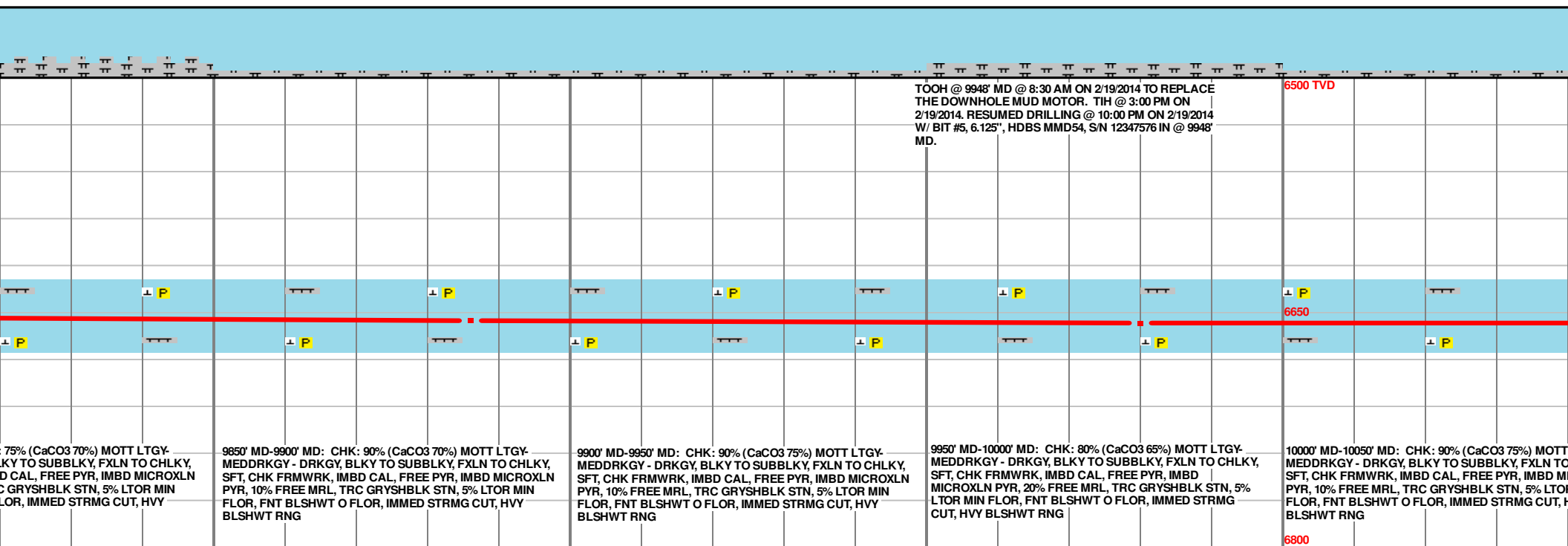
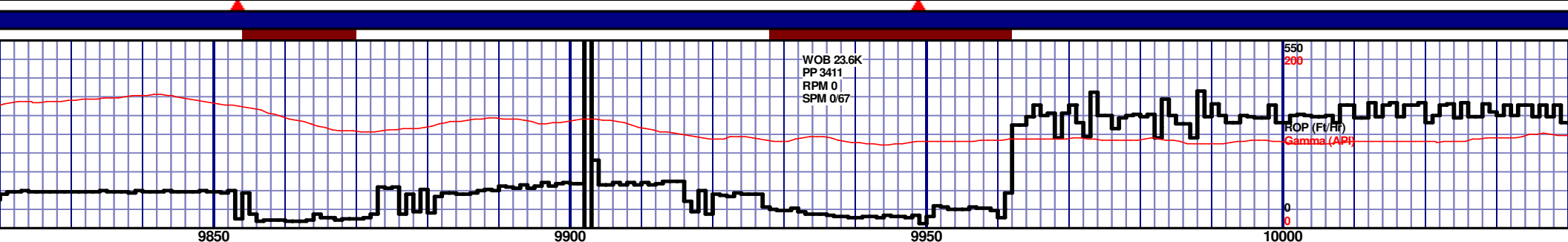
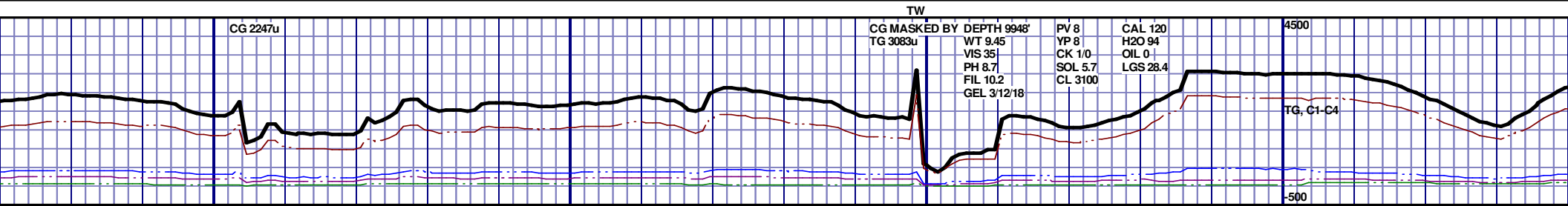
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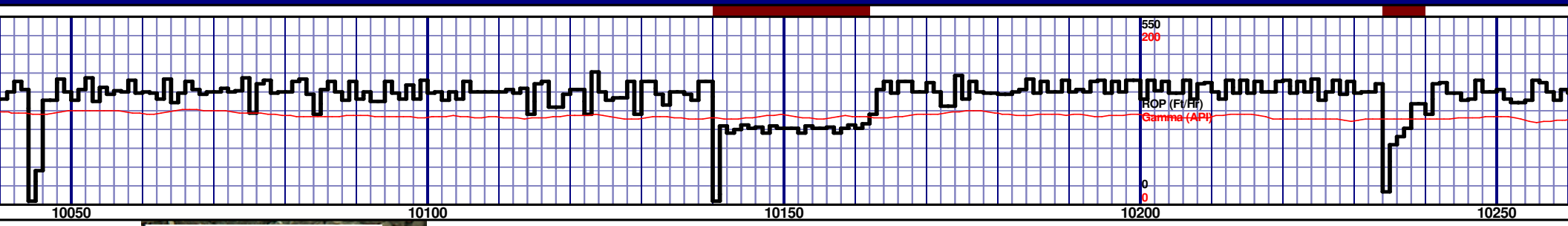
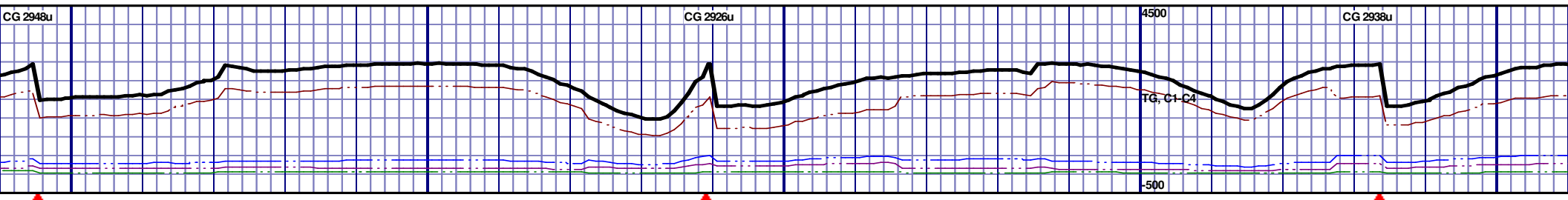
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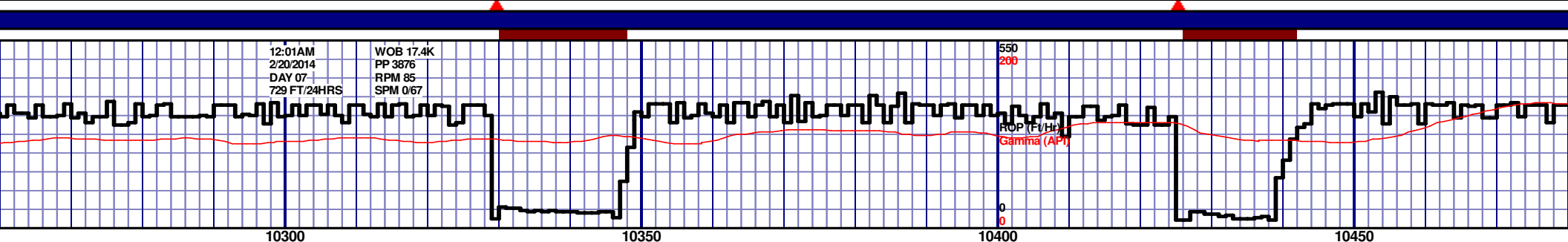
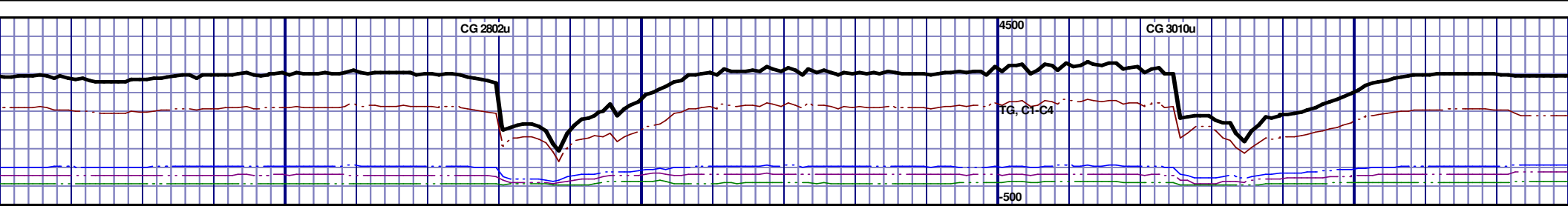


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VS 3643.08

MD 9980 TVD 6657.05
INC 89.88 AZ 271.25
VS 3737.05



6500 TVD									
6650									
6800									
LTGY- CHLKY, CROXLN R MIN HVY	10050' MD-10100' MD: CHK: 90% (CaCO3 75%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 10% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10100' MD-10150' MD: CHK: 85% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 15% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10150' MD-10200' MD: CHK: 85% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 15% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10200' MD-10250' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10250' MD-10300' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10300' MD-10350' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10350' MD-10400' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10400' MD-10450' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG	10450' MD-10500' MD: CHK: 80% (CaCO3 70%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 20% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG

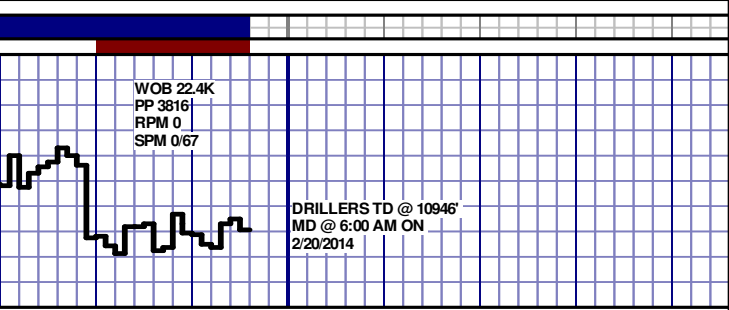
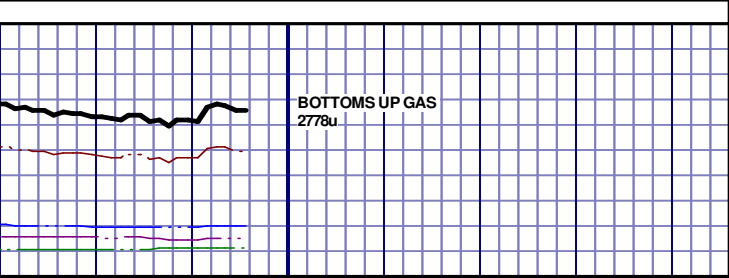


12:01AM
2/20/2014
DAY 07
729 FT/24HRS

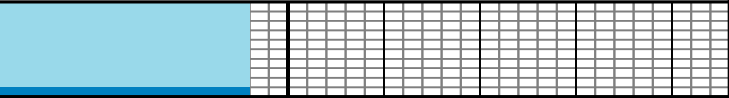
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PP 3876
RPM 85
SPM 067



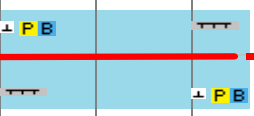
<p>000' MD: CHK: 90% (CaCO3 75%) MOTT LTGY- - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, IMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN EE MRL, TRC GRYSHBLK STN, 5% LTOR MIN BLSHWT O FLOR, IMMED STRMG CUT, HVY IG</p>	<p>10300' MD-10350' MD: CHK: 95% (CaCO3 80%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 5% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10350' MD-10400' MD: CHK: 95% (CaCO3 75%) MOTT LTGY- MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, IMBD MICROXLN PYR, 5% FREE MRL, TRC GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10400' MD-10450' MD: CHK: 95% (CaCO3 75%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE BENT, MOD GRYSHBLK STN, 5% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>	<p>10450' MD-10500' MD: CHK: 90% (CaCO3 75%) MEDDRKGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD CAL, FREE PYR, 5% FREE BENT, MOD GRYSHBLK STN, 10% LTOR MIN FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, HVY BLSHWT RNG</p>
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10950



TD @ 10946' MD



RELEASED ON 2/20/2014

THANK YOU FROM
CASEY SENSECQUA,
TOM WACHOLZ
AND HORIZON WELL
LOGGING, LLC

K: 90% (CaCO3 65%) MEDDRKGY
LKY, FXLN TO CHLKY, SFT, CHK
EE PYR, 10% FREE BENT, MOD
OR MIN FLOR, FNT BLSHWT O
T, HVY BLSHWT RNG