



7136 South Yale Avenue, Suite 414  
Tulsa, Oklahoma 74136-6378

phone 918.925.9739

fax 866.534.4559

[WWW.HZMUD.COM](http://WWW.HZMUD.COM)

### Customer Information

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

**Geologist:** Cassidy Miller  
Noble Energy Inc.

### Mud Logging Details

**Logger:** Ryan Bleess & Casey  
Sensecqua  
**Log Interval:** 6750' MD to 11115' MD  
**Start Date:** June 21, 2013  
**Release Date:** June 24, 2013

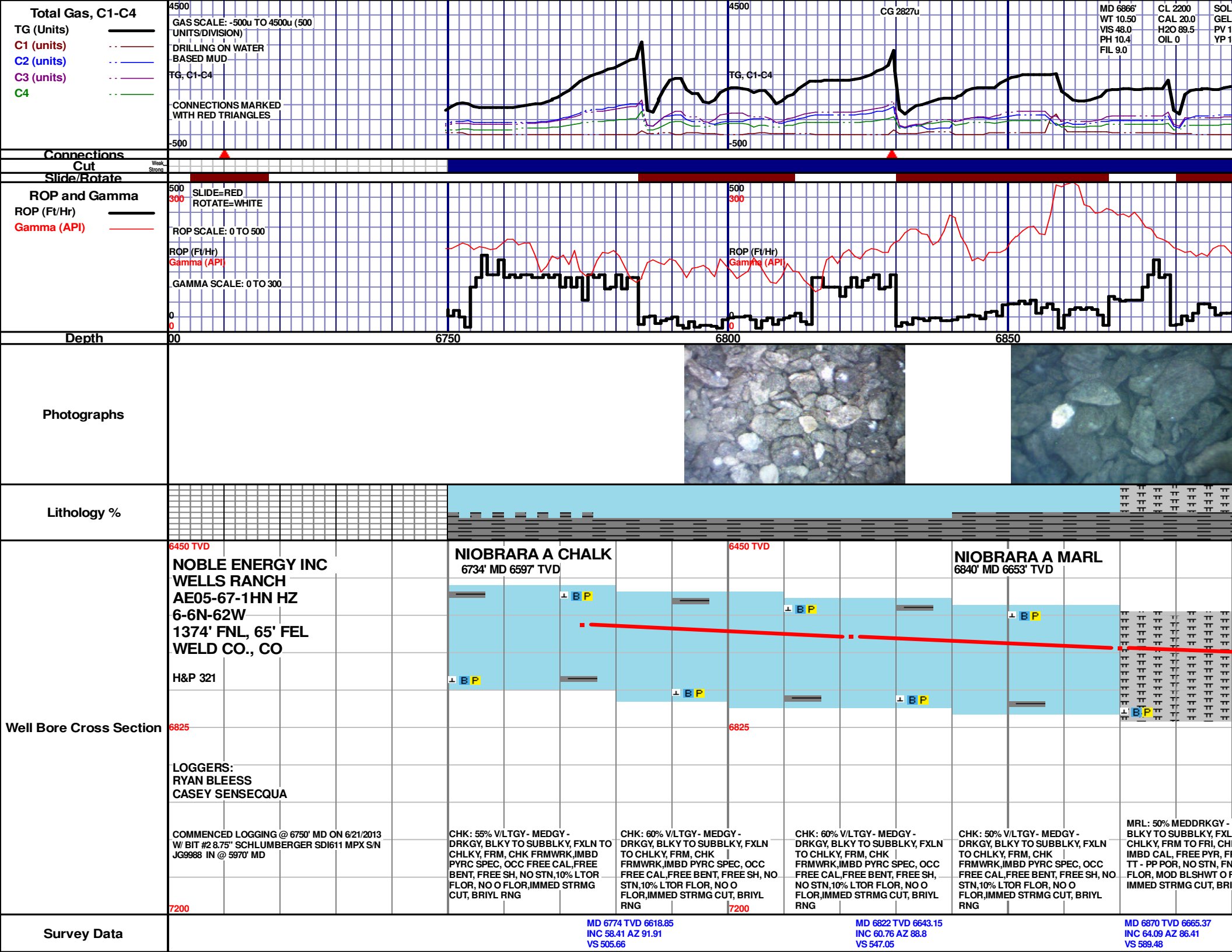
### Well Information

**Well Name:** Wells Ranch AE05-67-1HN  
HZ

**Location:** 6-6N-62W  
1374' FNL, 65' FEL

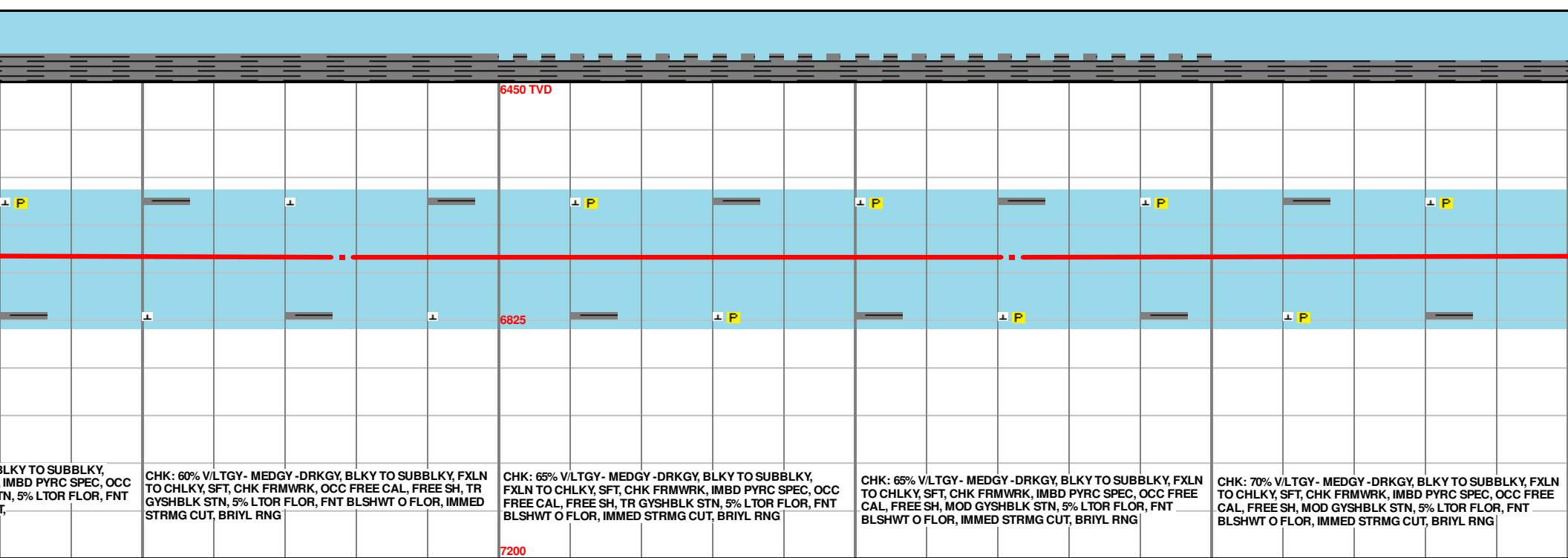
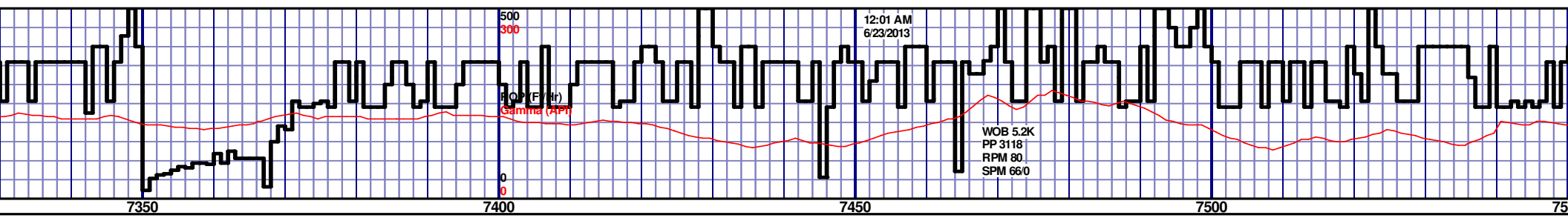
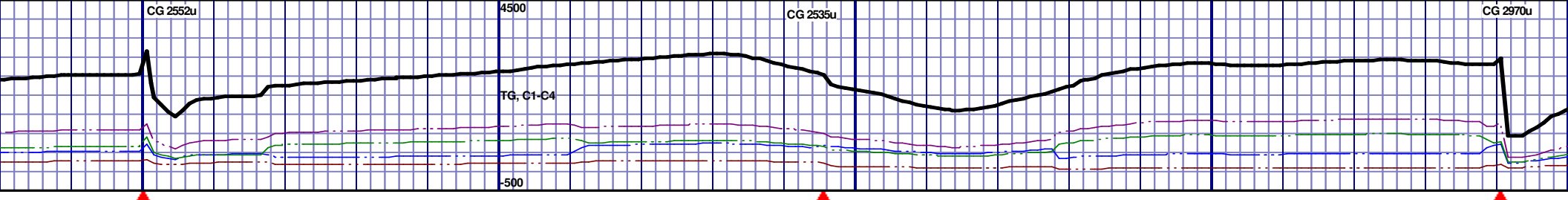
**County:** Weld  
**State:** Colorado

**Drilling Rig:** H&P 321  
**Total Depth:** 11115' MD  
**TD Date:** June 24, 2013  
**Formation:** Niobrara B Chalk  
**KB Elevation:** 4963'  
**GR Elevation:** 4933'  
**API Number:** 05-123-36978



MD 7038 TVD 6708.08  
INC 82.67 AZ 88.6  
VS 750.5

MD 7283 TVD 6722.77  
INC 87.81 AZ 89.51  
VS 994.84



CHK: 60% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, TR GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

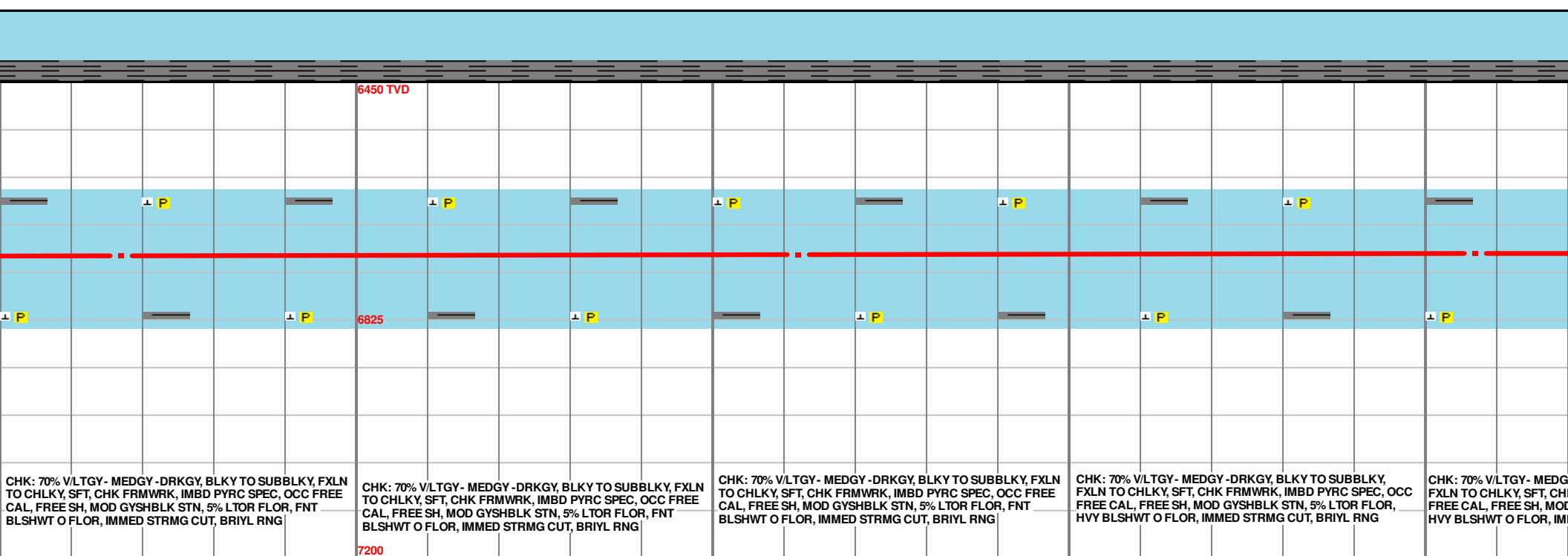
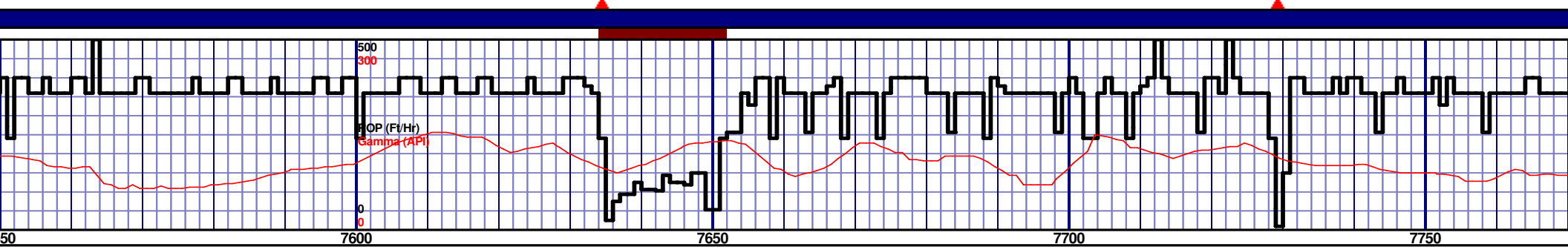
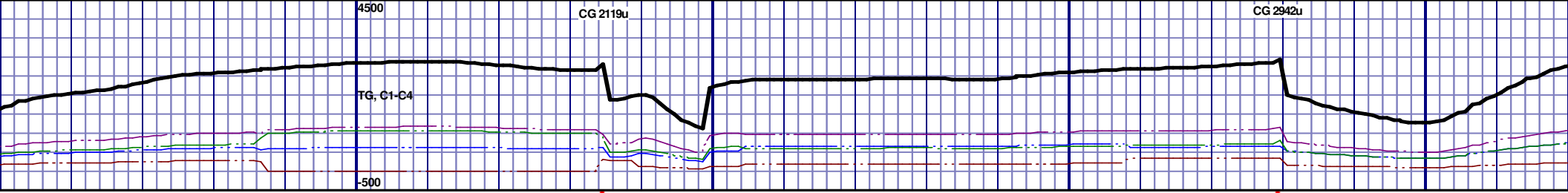
CHK: 65% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, TR GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 65% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

MD 7378 TVD 6724.97  
INC 89.54 AZ 88.29  
VS 1089.72

MD 7472 TVD 6724.72  
INC 90.77 AZ 87.65  
VS 1183.55



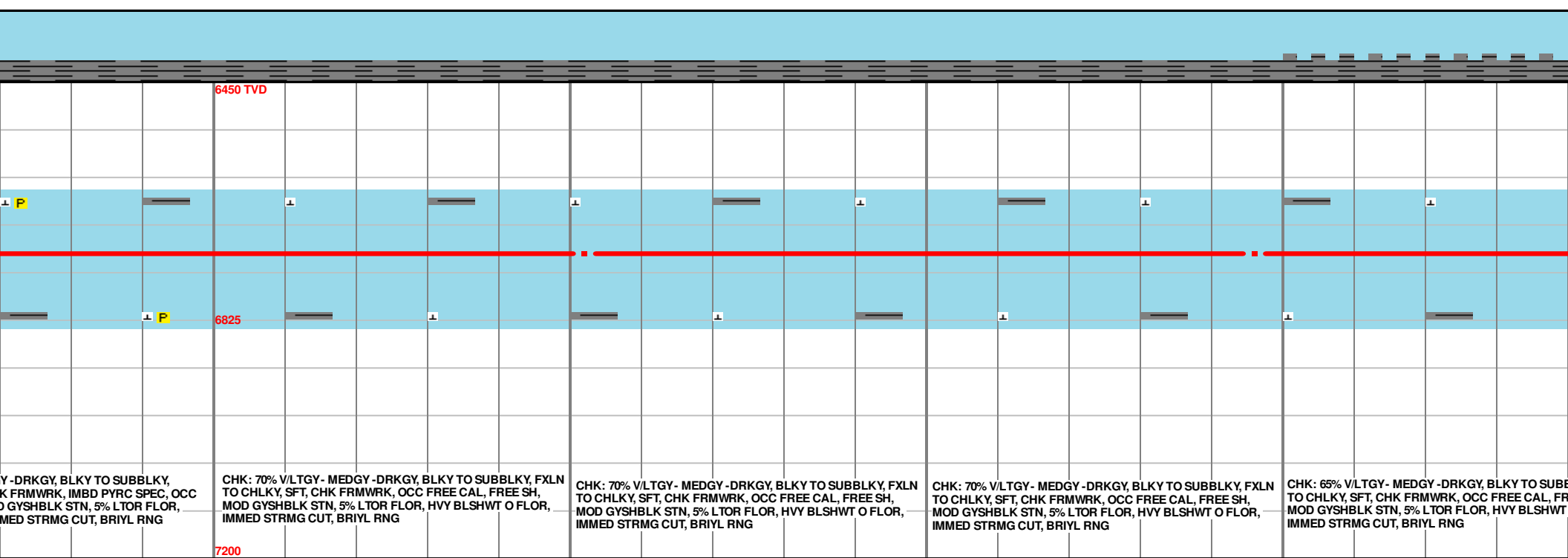
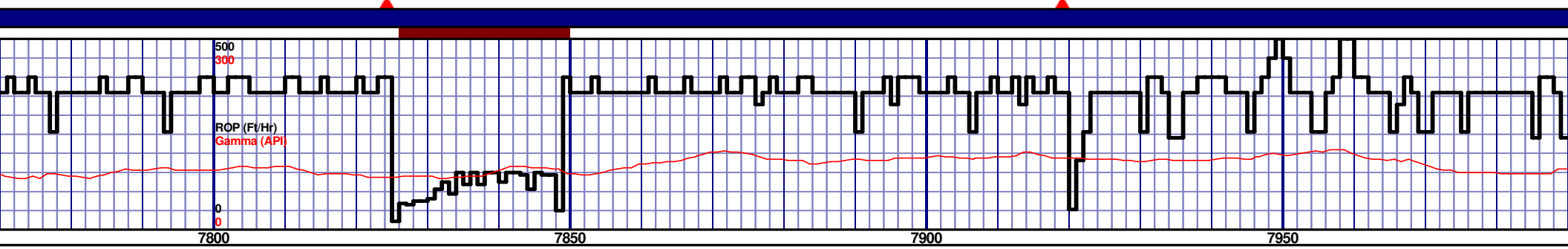
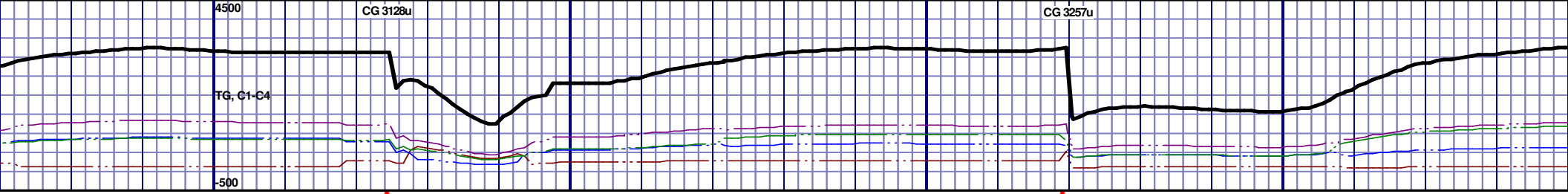
CHK: 70% V/LTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

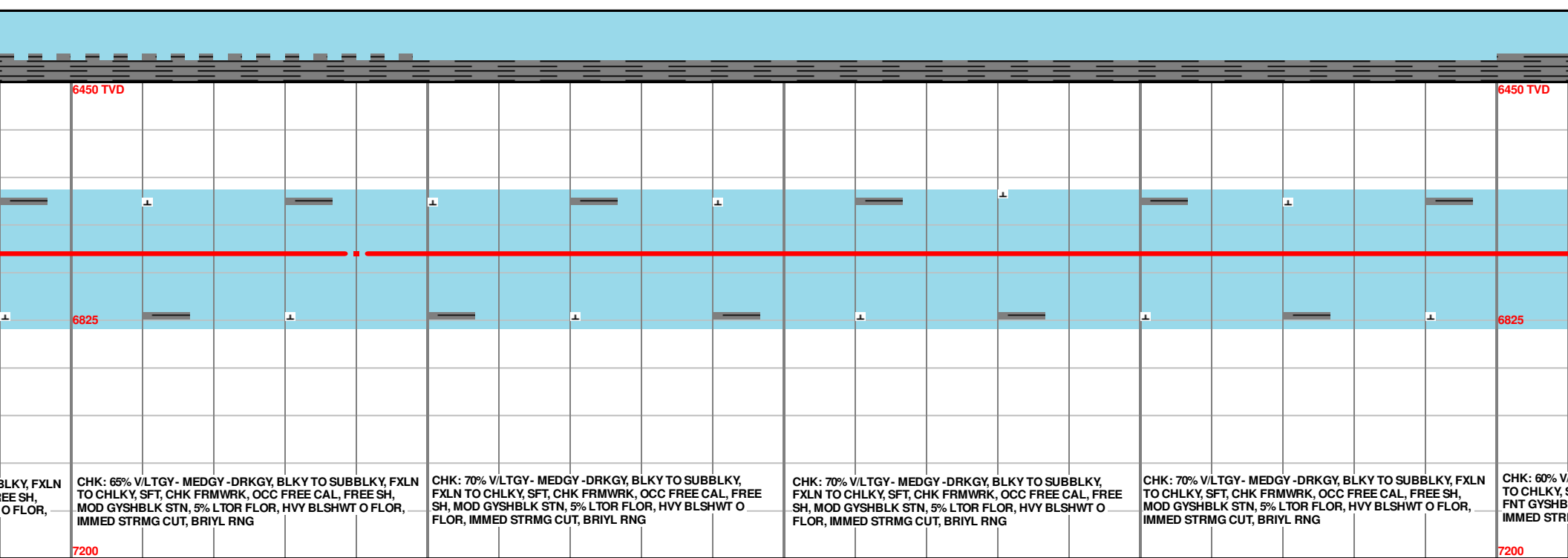
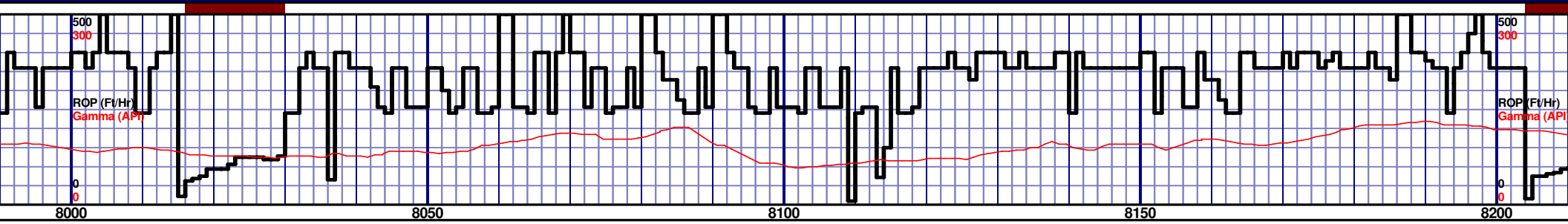
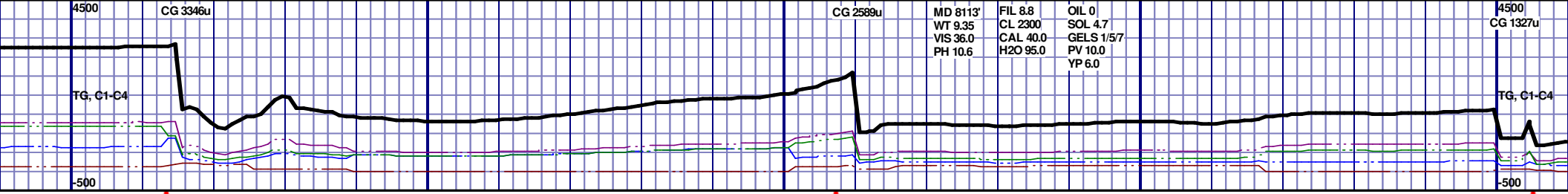
CHK: 70% V/LTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% V/LTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% V/LTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, HVY BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

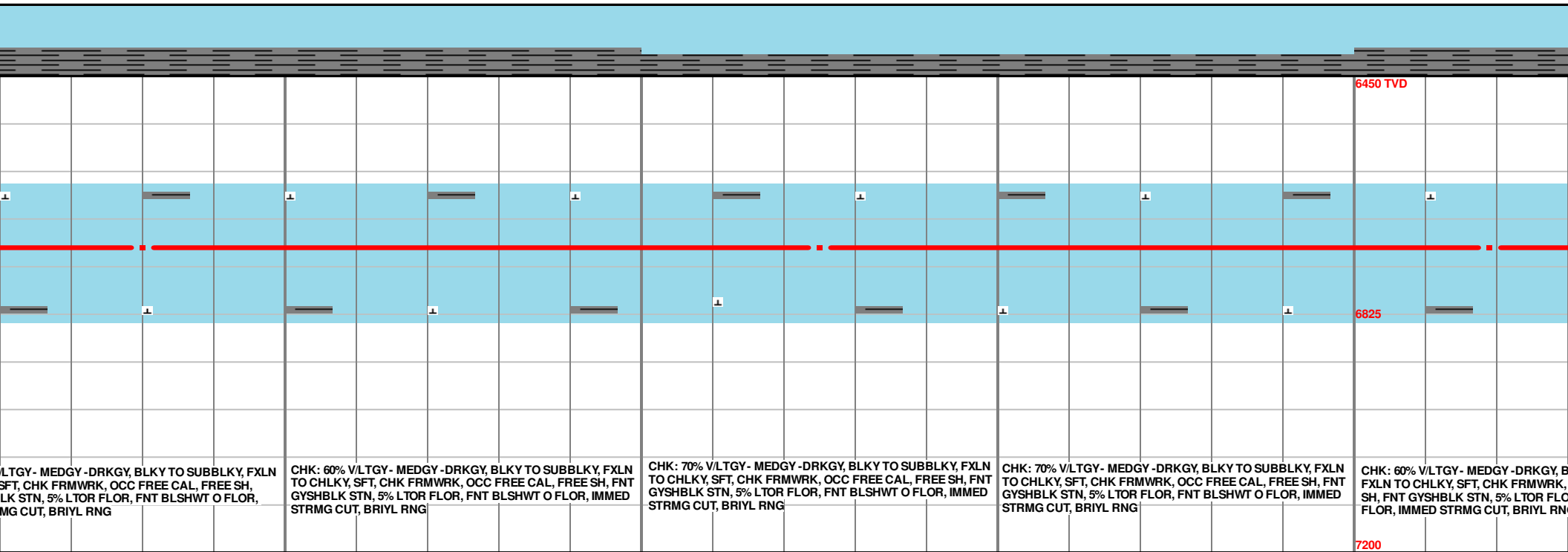
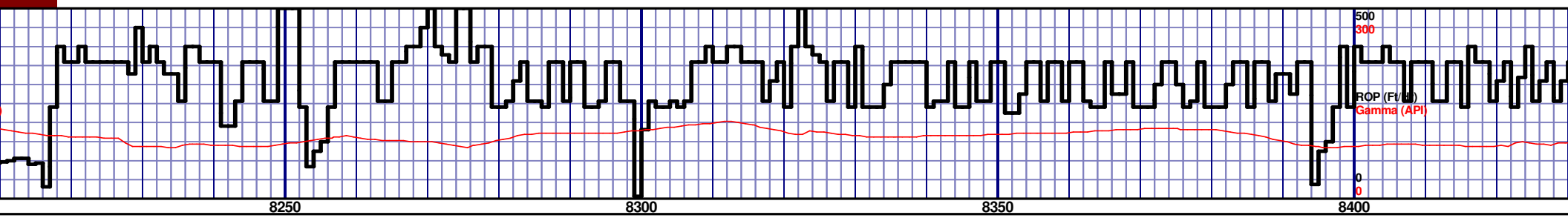
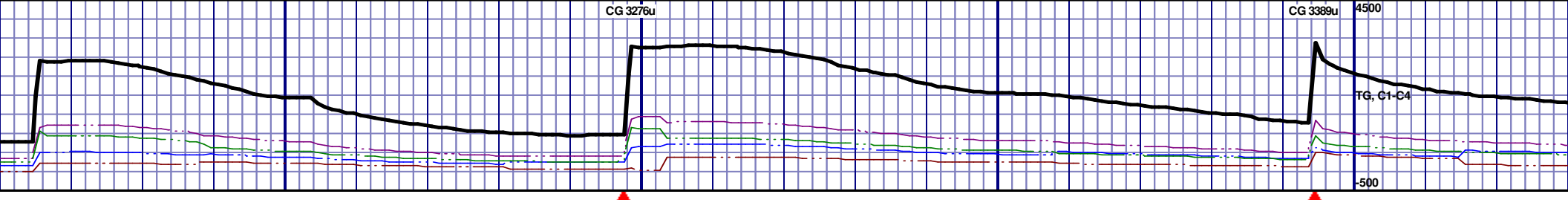
CHK: 70% V/LTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, IMBD PYRC SPEC, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, HVY BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG





MD 8040 TVD 6720.08  
INC 89.38 AZ 88.74  
VS 1750.75

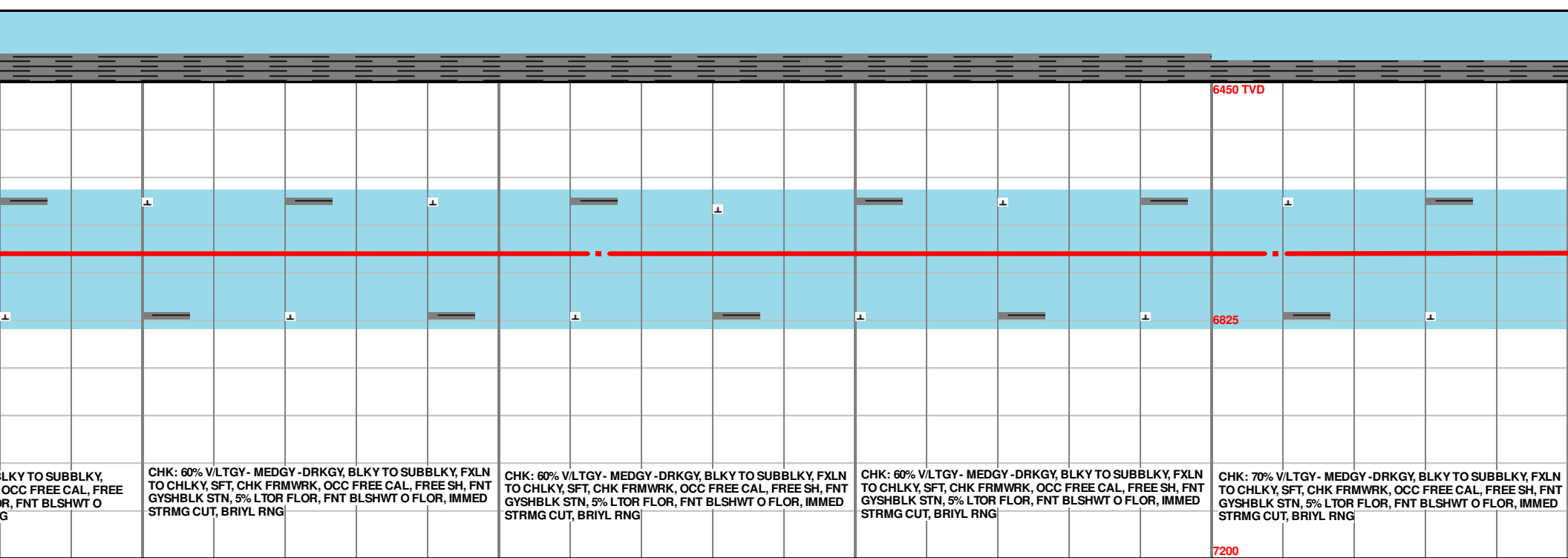
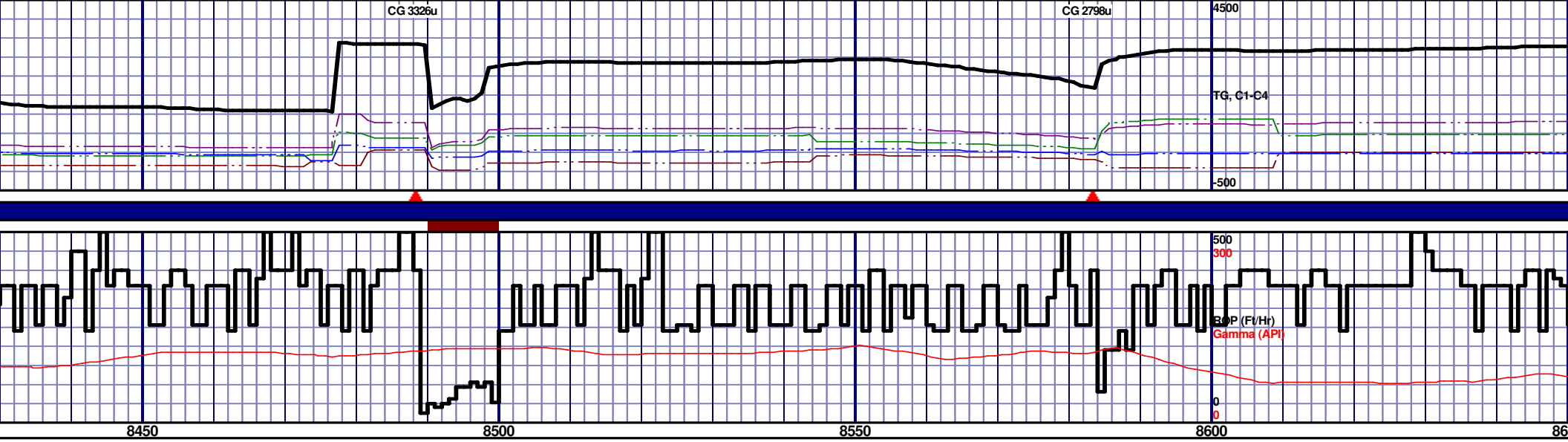




MD 8230 TVD 6719.77  
INC 89.51 AZ 87.93  
VS 1940.46

MD 8325 TVD 6720.21  
INC 89.97 AZ 87.8  
VS 2031.28

MD 8419 TVD  
INC 90.49 AZ 87.8  
VS 2129.08

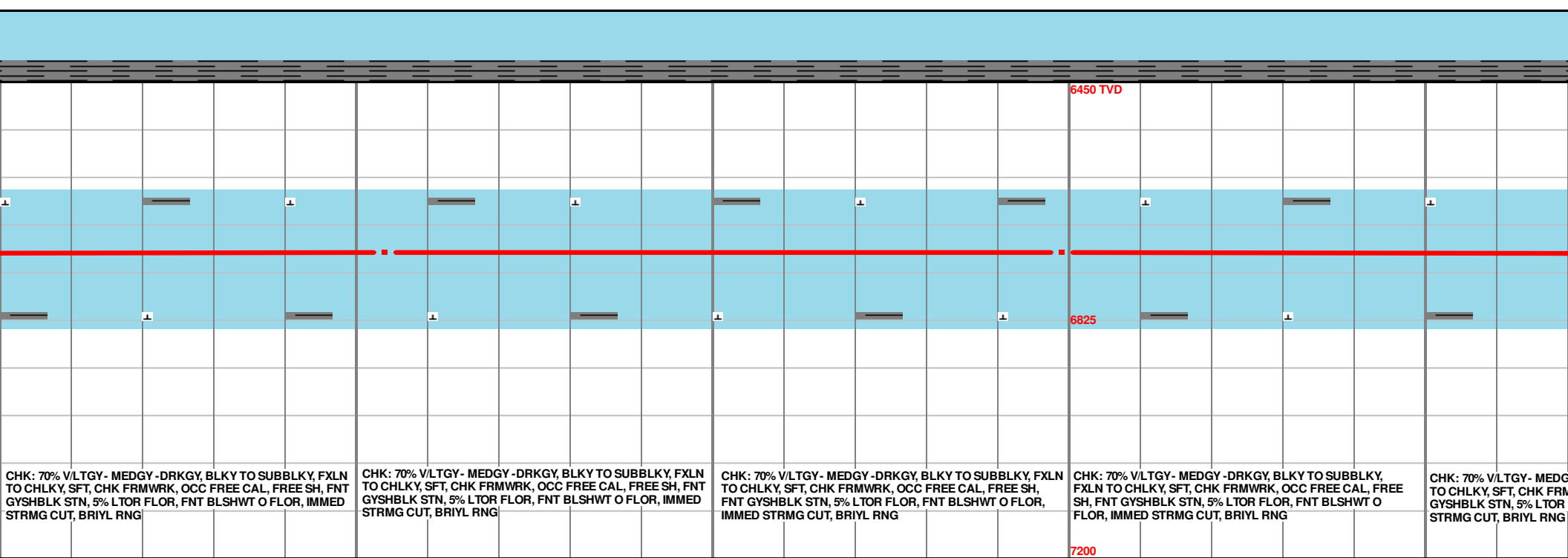
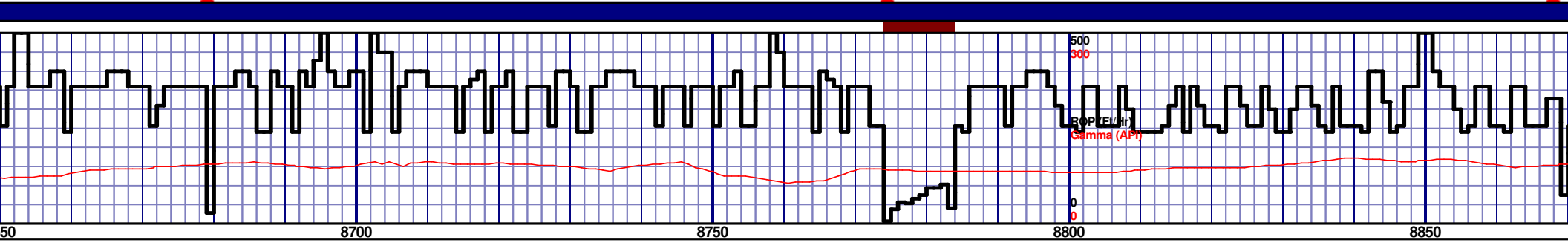
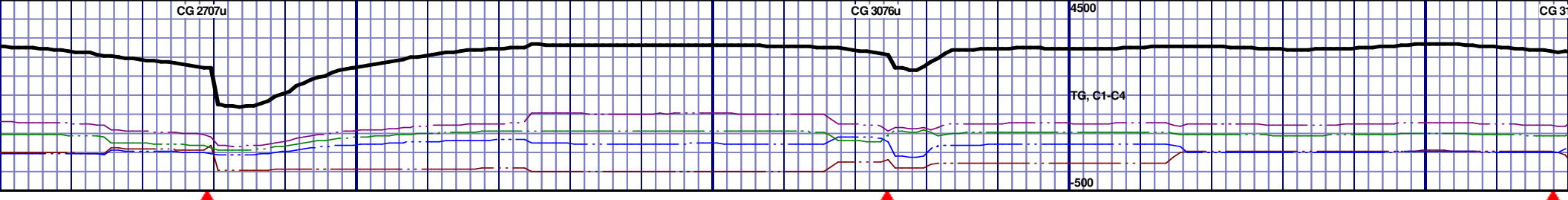


CHK: 60% VLTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 60% VLTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 60% VLTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% VLTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG



CHK: 70% VLTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% VLTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

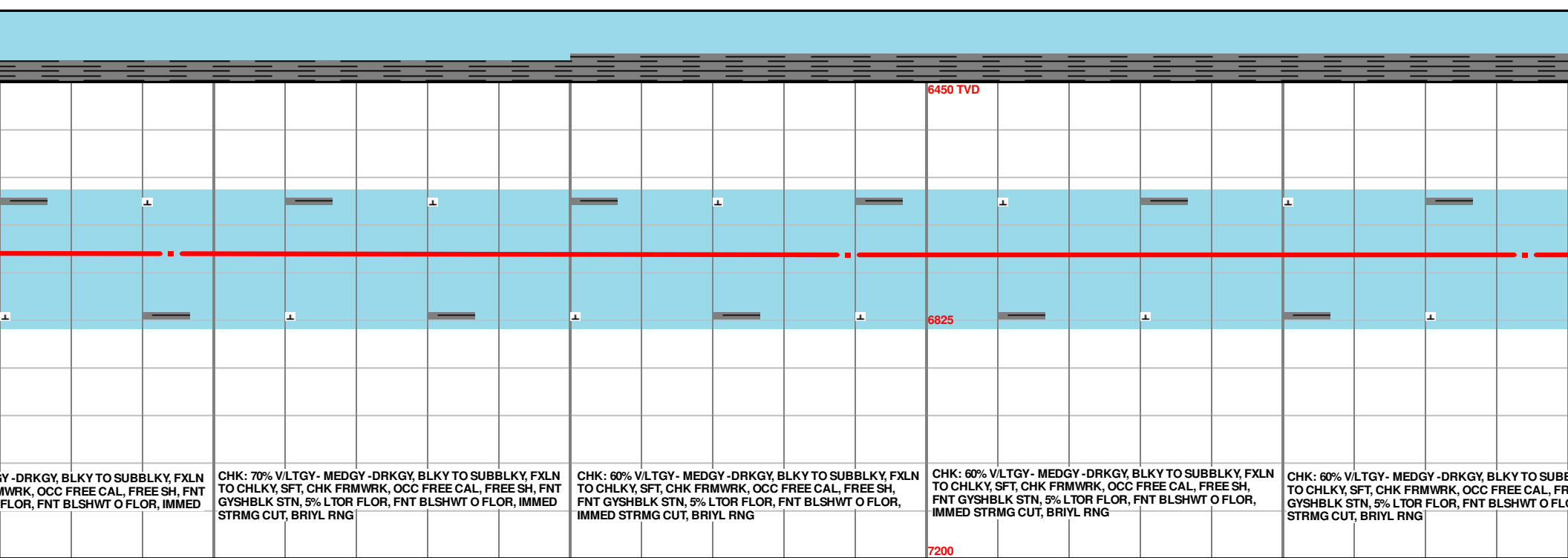
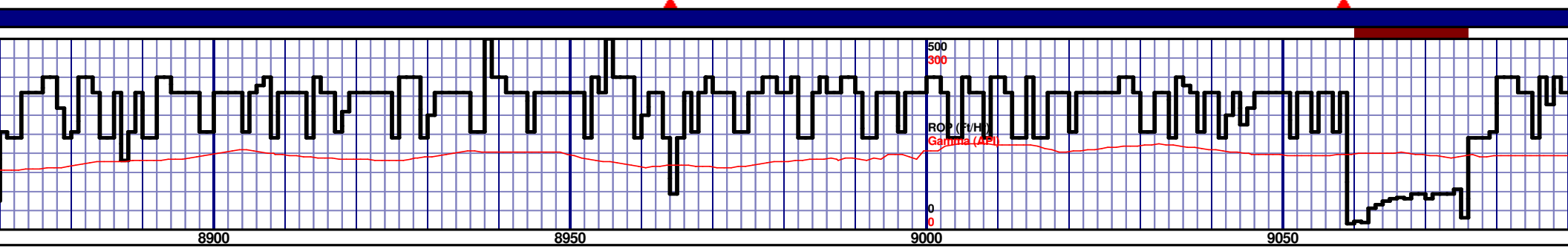
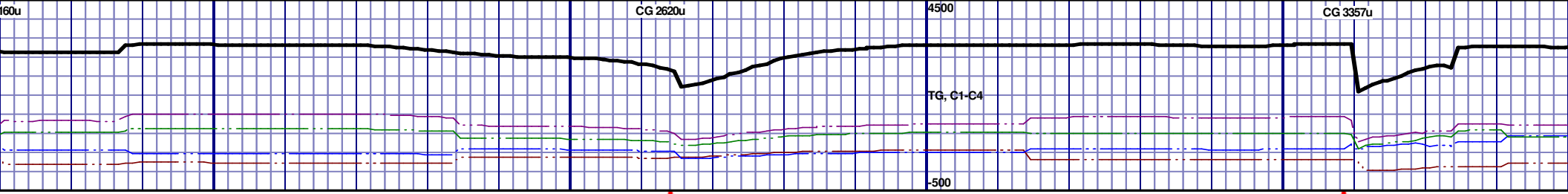
CHK: 70% VLTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% VLTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% VLTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWK, OCC FREE CAL, FREE SH, FNT GYSHBLK STN, 5% LTOR FLOR, FNT BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

MD 8704 TVD 6718.78  
INC 90.77 AZ 89.49  
VS 2413.74

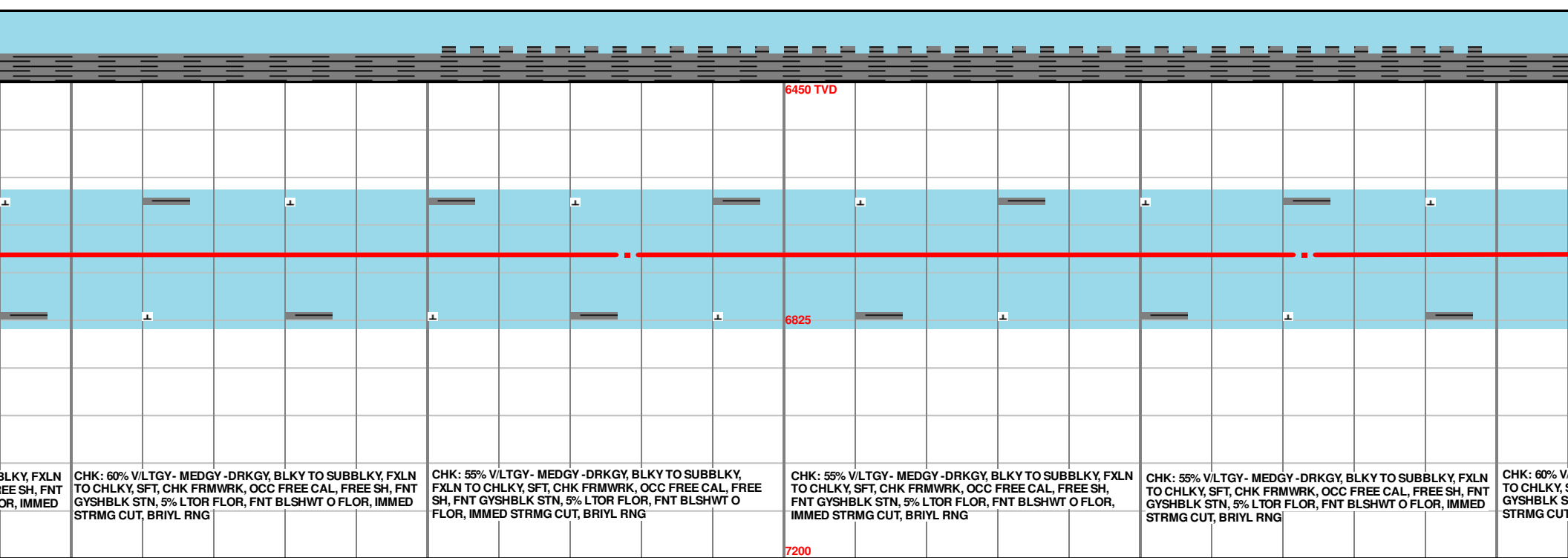
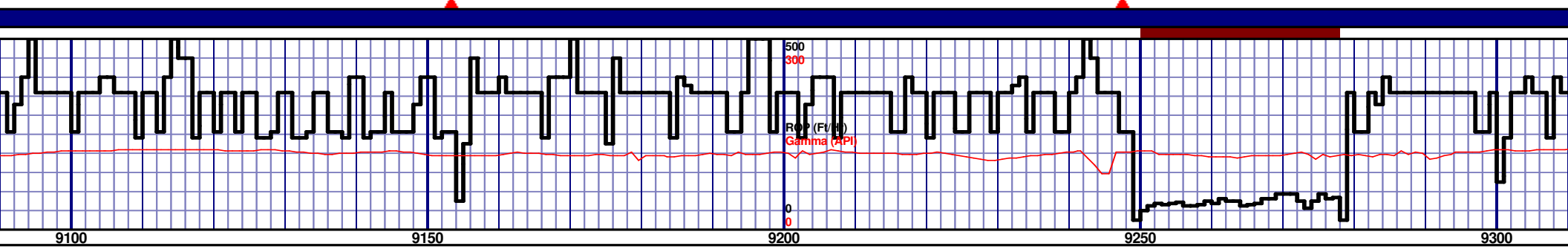
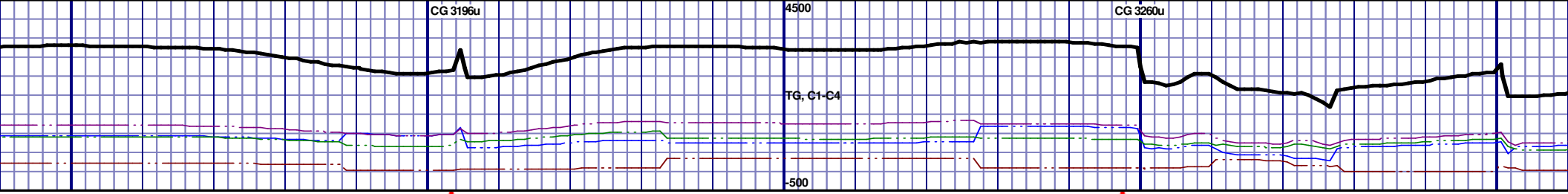
MD 8799 TVD 6718.91  
INC 89.08 AZ 87.35  
VS 2508.61

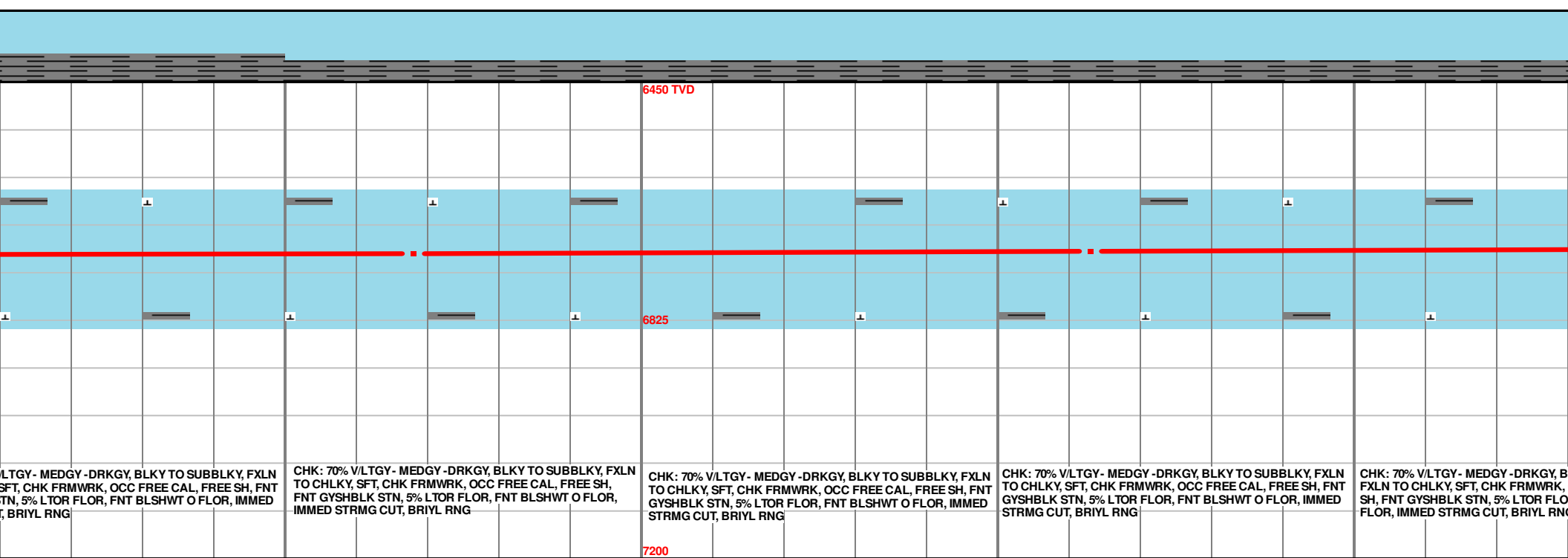
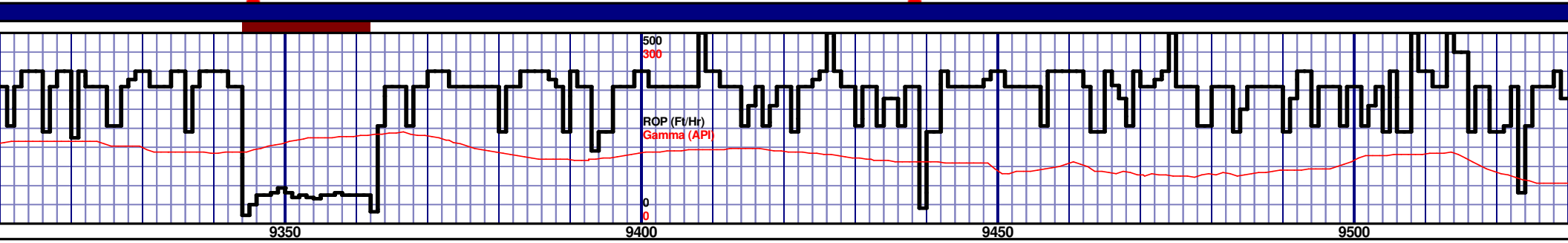
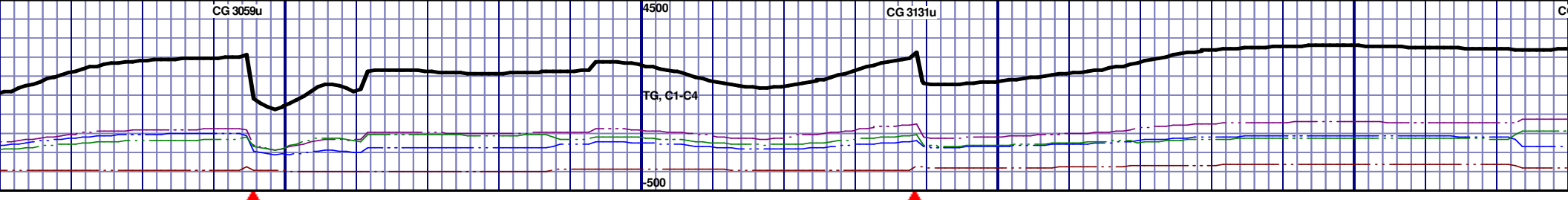


MD 8894 TVD 6720.44  
INC 89.08 AZ 87.42  
VS 2603.36

MD 8989 TVD 6722.18  
INC 88.83 AZ 87.9  
VS 2696.15

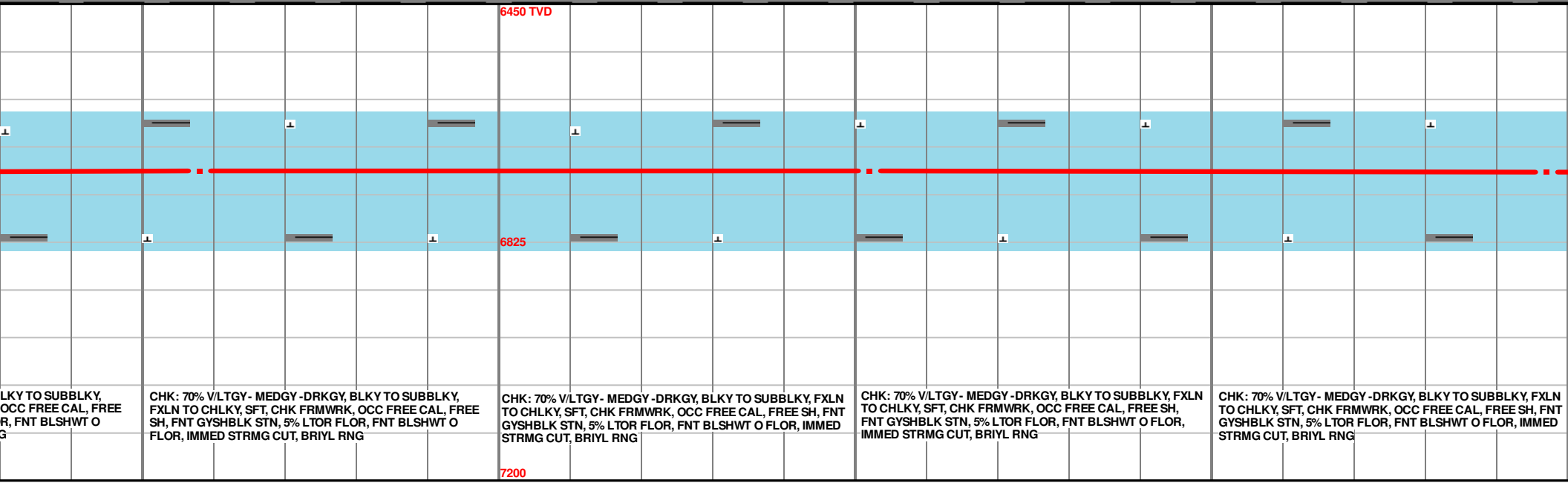
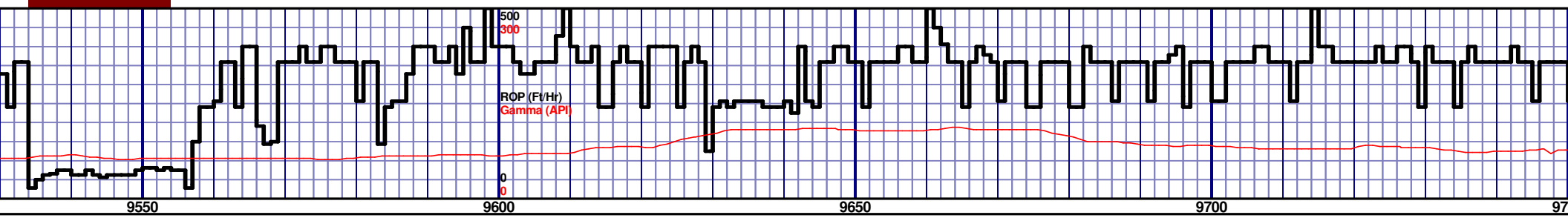
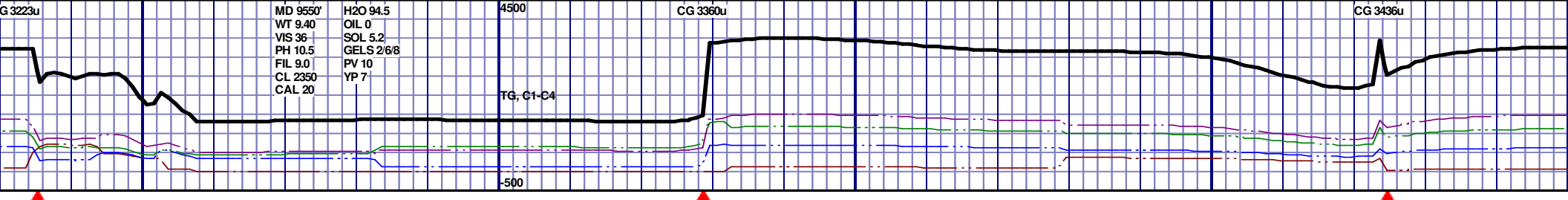
MD 908  
INC 90.  
VS 2792





MD 9368 TVD 6719.16  
INC 91.79 AZ 89.01  
VS 3076

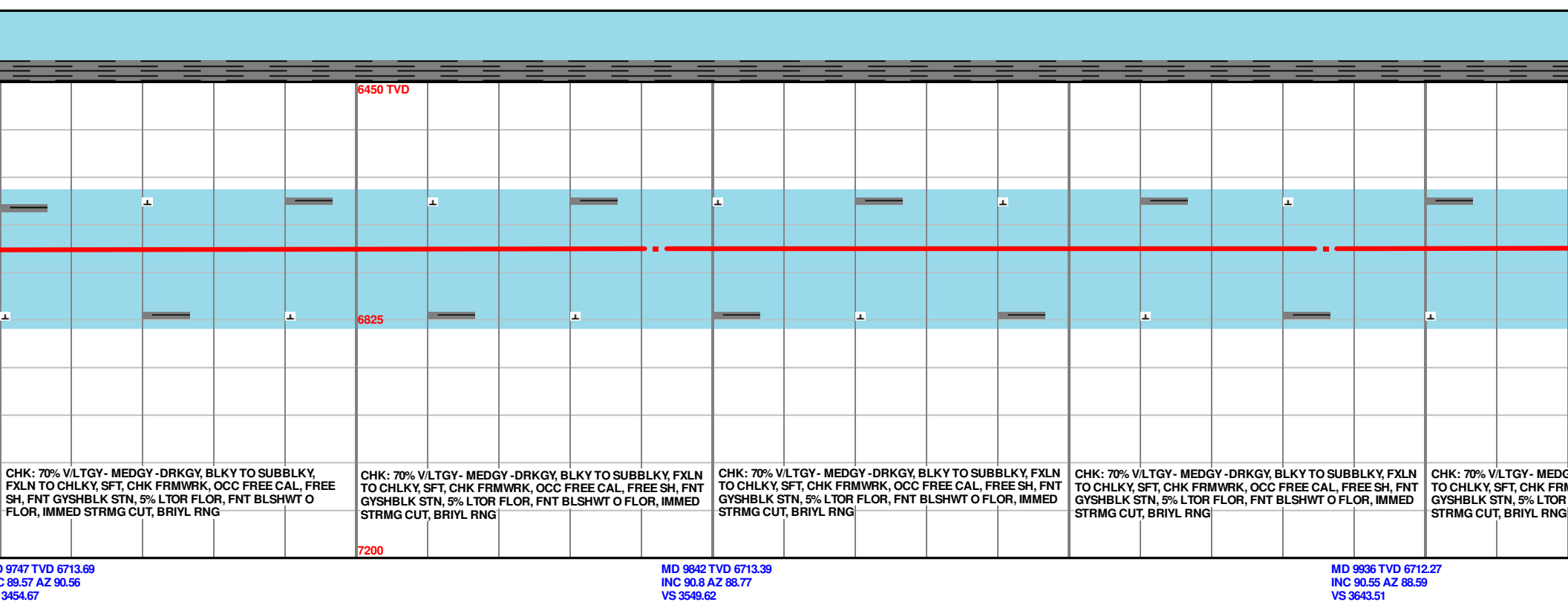
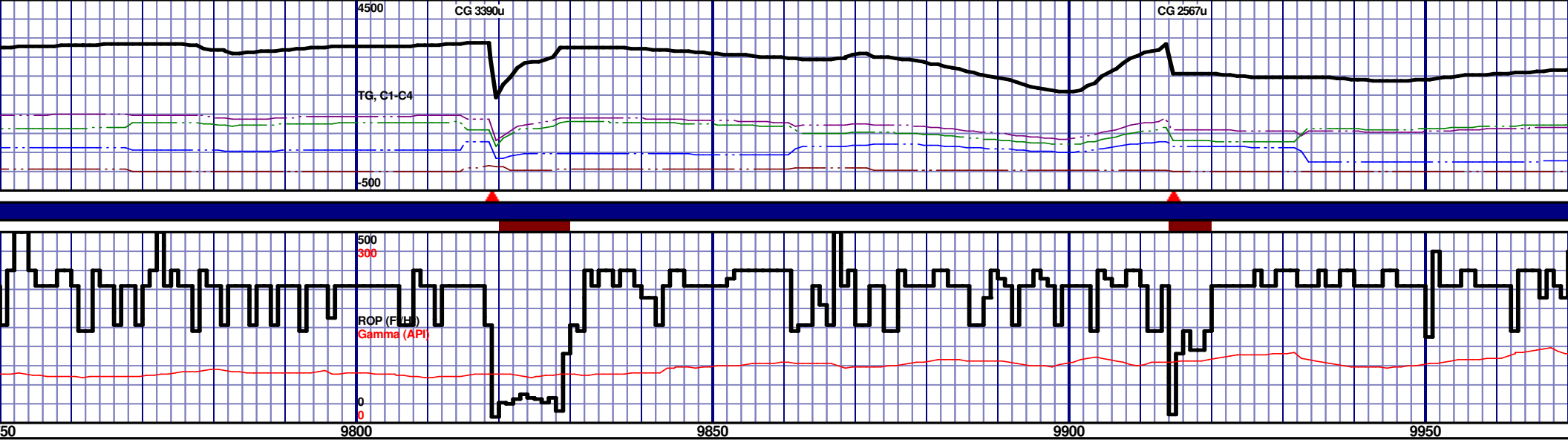
MD 9463 TVD 6715.61  
INC 92.5 AZ 88.72  
VS 3170.84



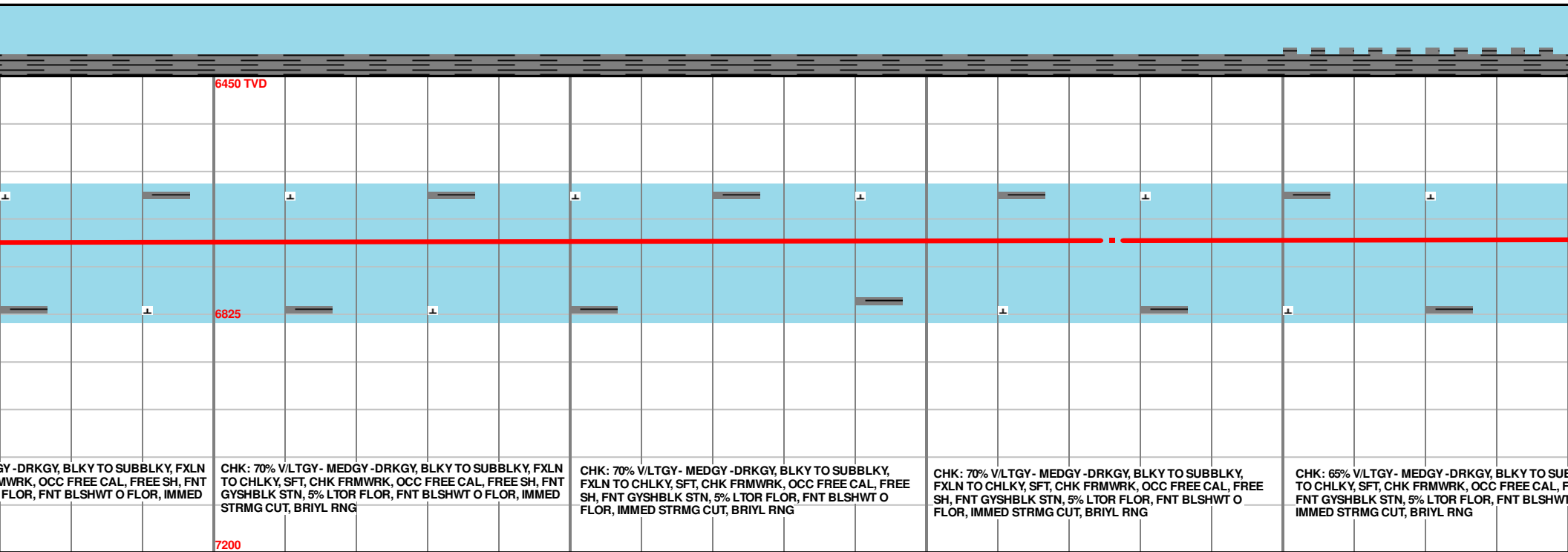
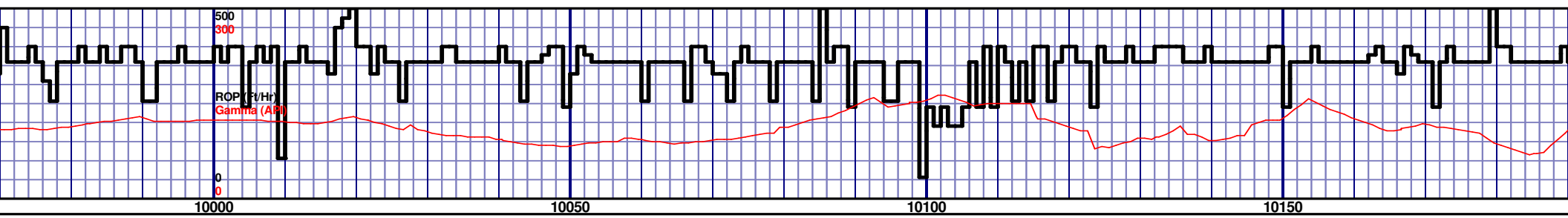
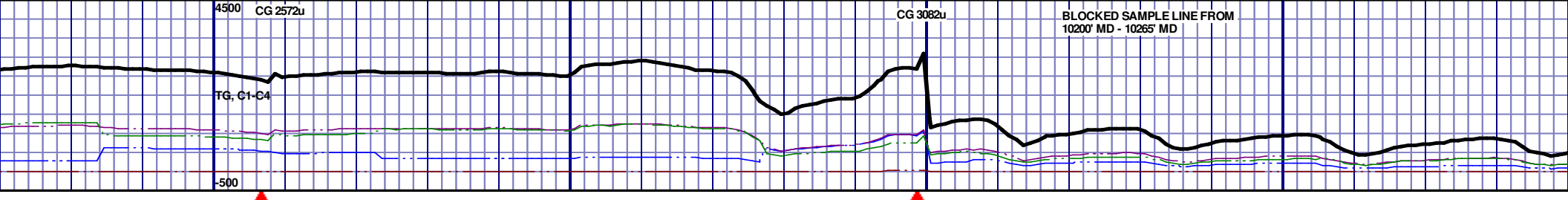
MD 9558 TVD 6713.33  
INC 90.25 AZ 89.72  
VS 3265.74

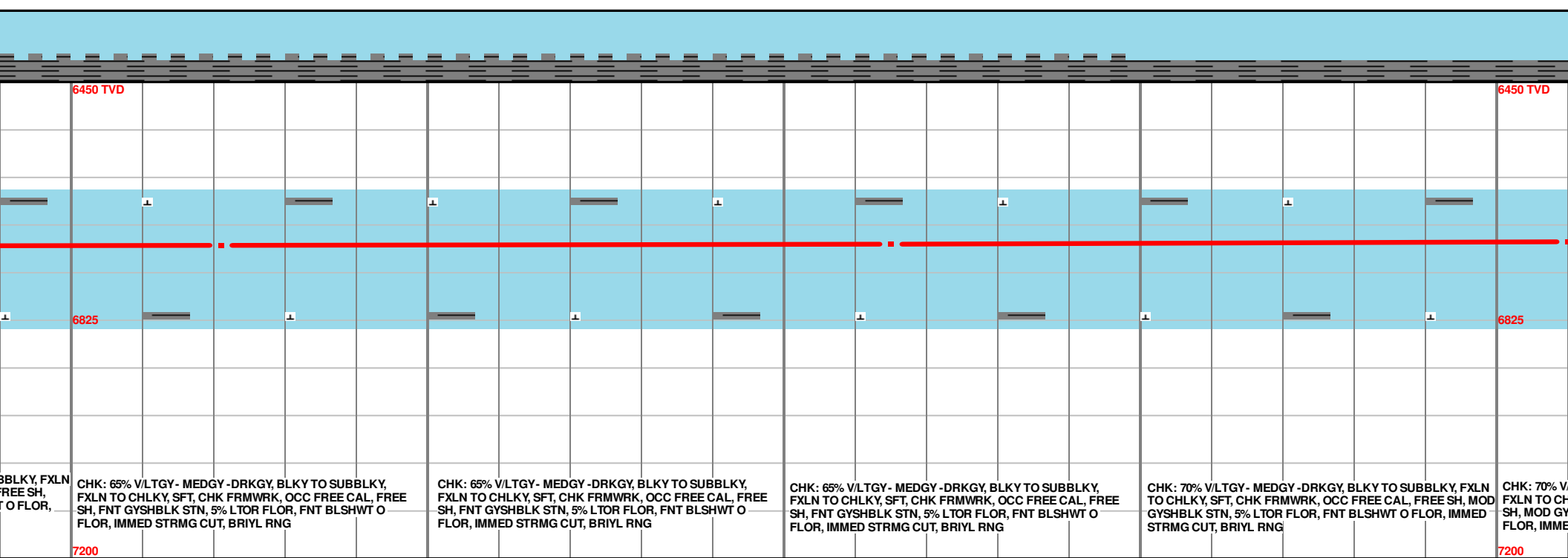
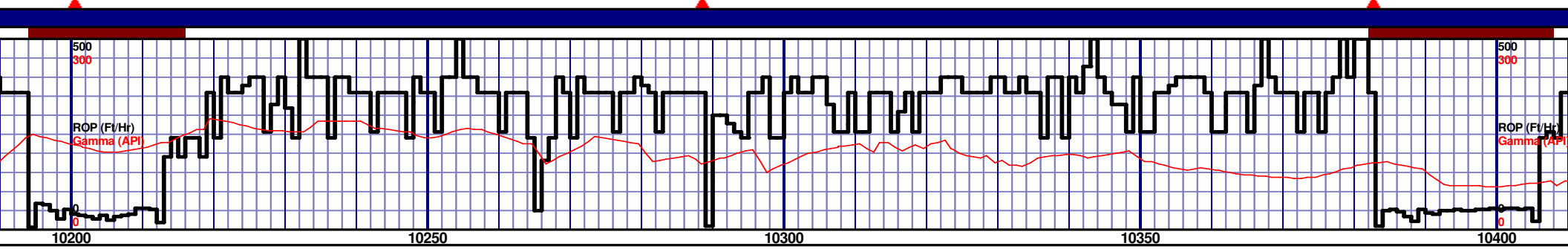
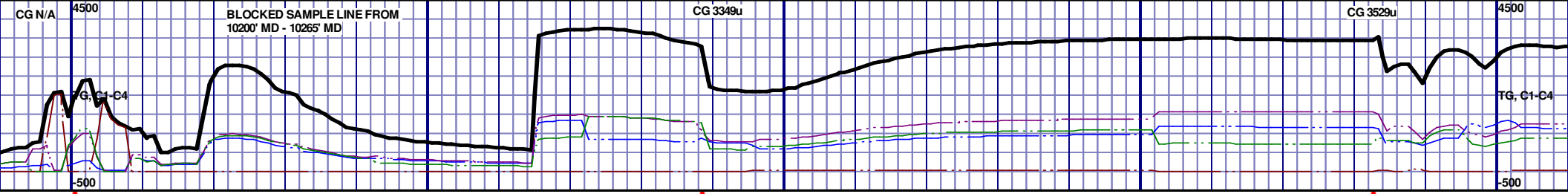
MD 9652 TVD 6713.23  
INC 89.88 AZ 89.62  
VS 3359.7

MD  
INC  
VS



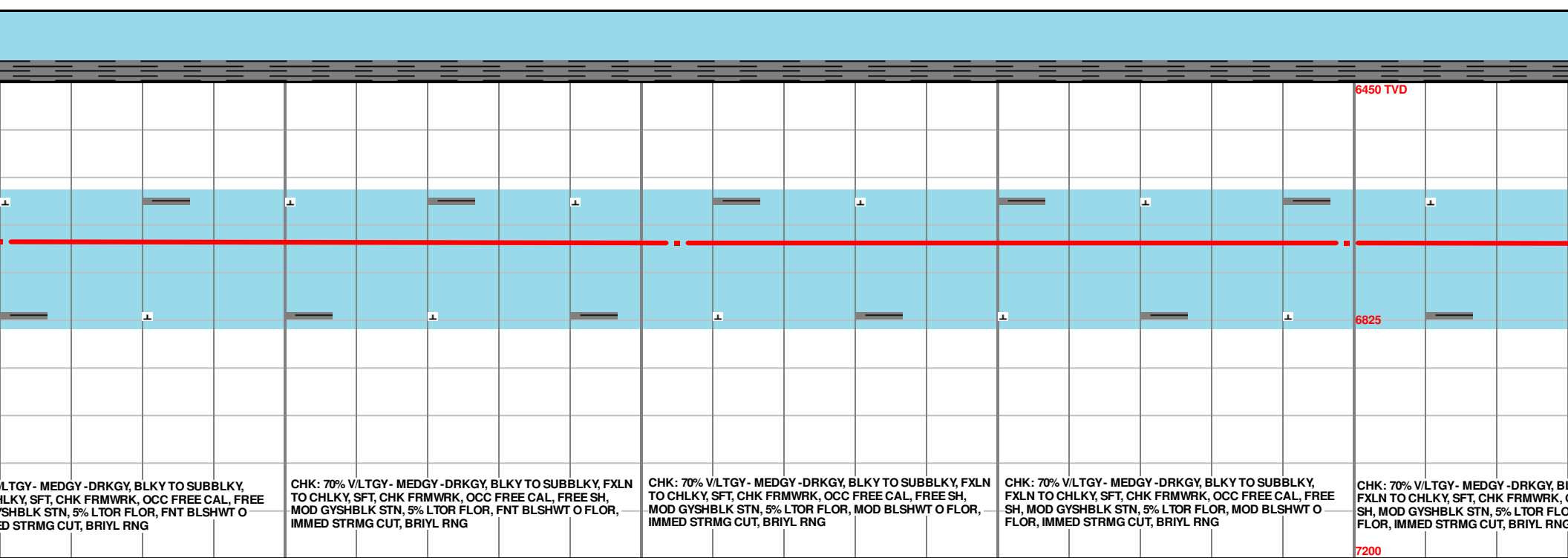
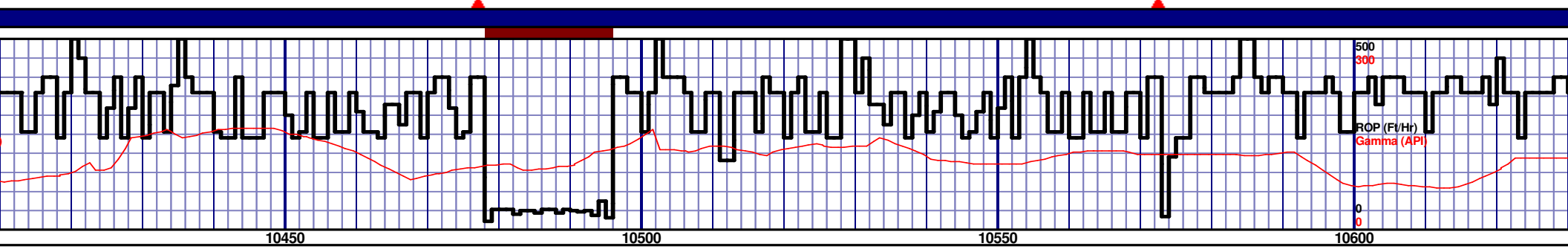
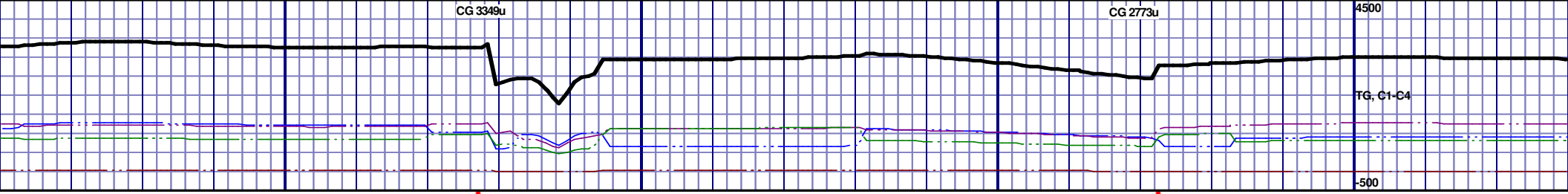




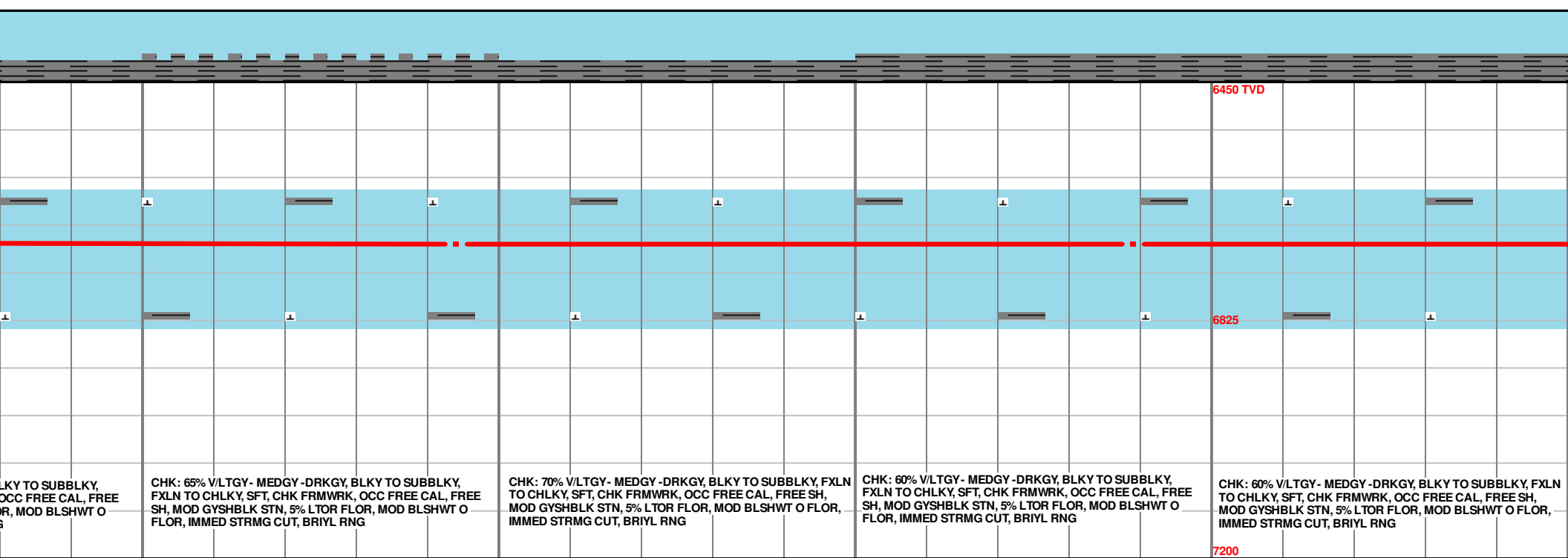
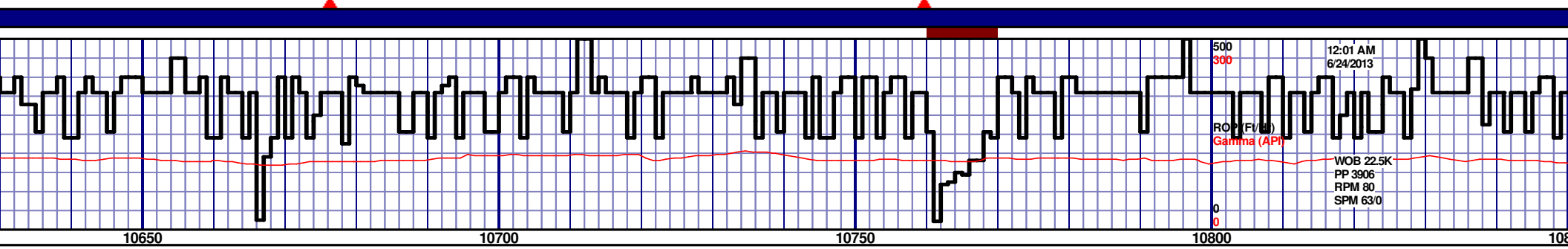
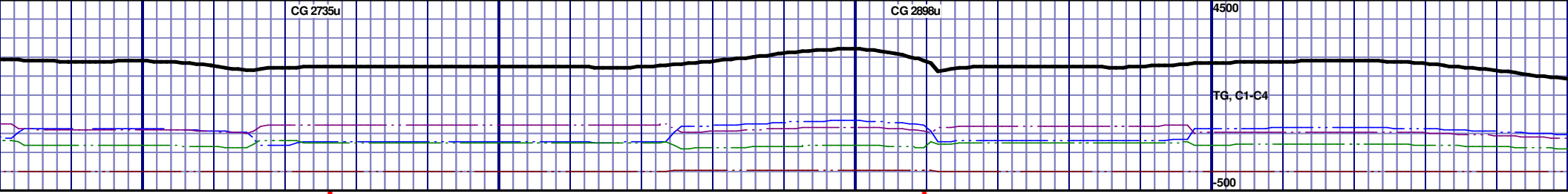


MD 10221 TVD 6707.01  
INC 90.43 AZ 88.8  
VS 3928.08

MD 10315 TVD 6704.66  
INC 92.44 AZ 88.99  
VS 4021.96



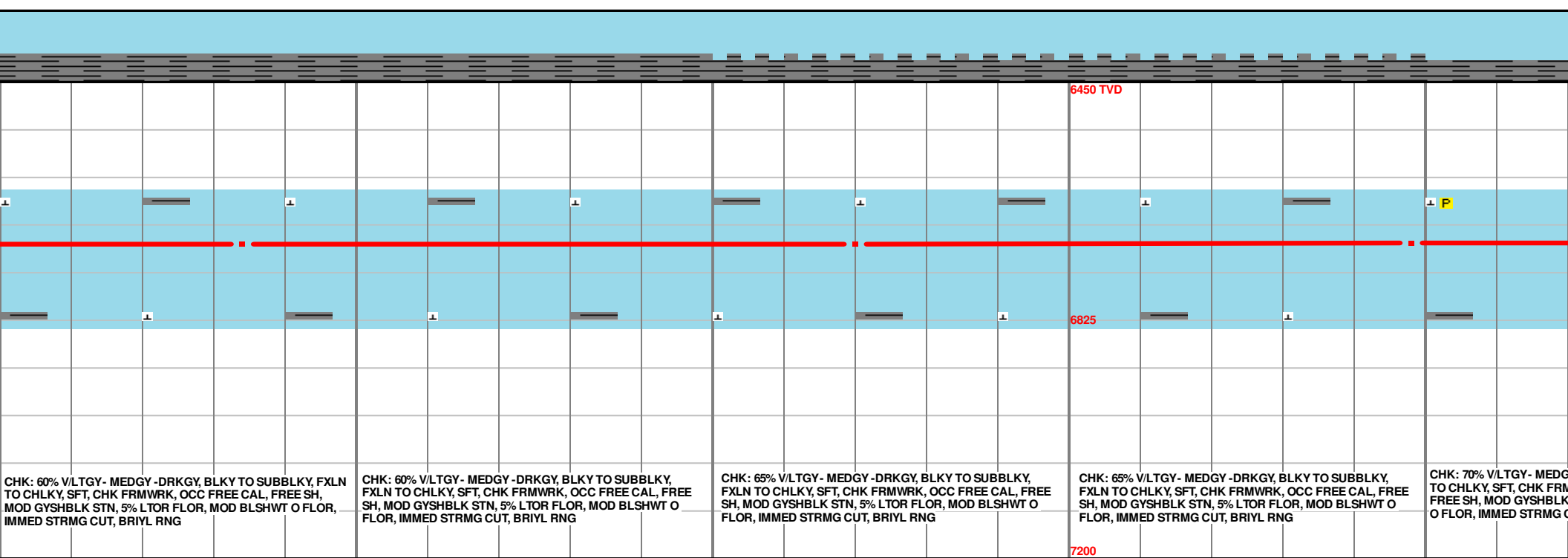
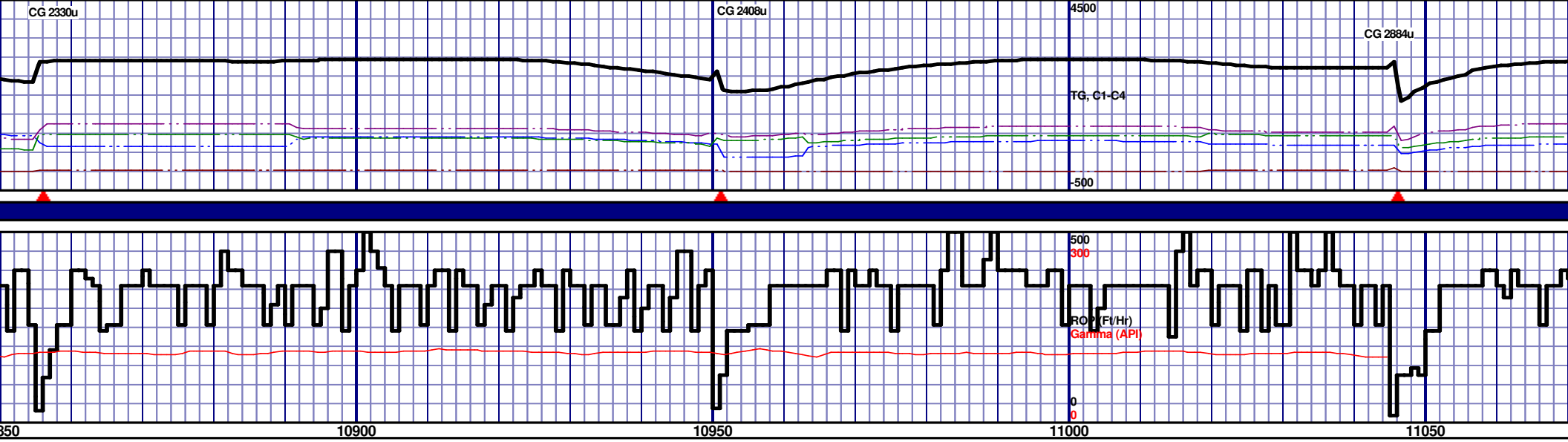
|  |  |  |
|--|--|--|
| MD 10410 TVD 6702.1<br>INC 90.65 AZ 89.7<br>VS 4116.86 | MD 10505 TVD 6702.38<br>INC 89.01 AZ 88.52<br>VS 4211.78 | MD 10599 TVD 6703.37<br>INC 89.78 AZ 88.62<br>VS 4305.66 |
|--|--|--|



|   |   |   |   |
|---|---|---|---|
| CHK: 65% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG | CHK: 70% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG | CHK: 60% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG | CHK: 60% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG |
|---|---|---|---|

MD 10694 TVD 6704.93  
INC 88.98 AZ 87.85  
VS 4400.51

MD 10789 TVD 6705.42  
INC 88.78 AZ 89.44  
VS 4495.39



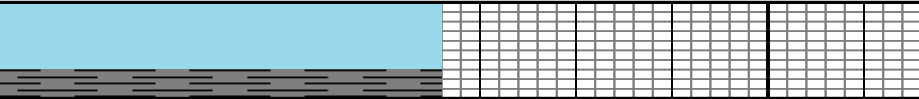
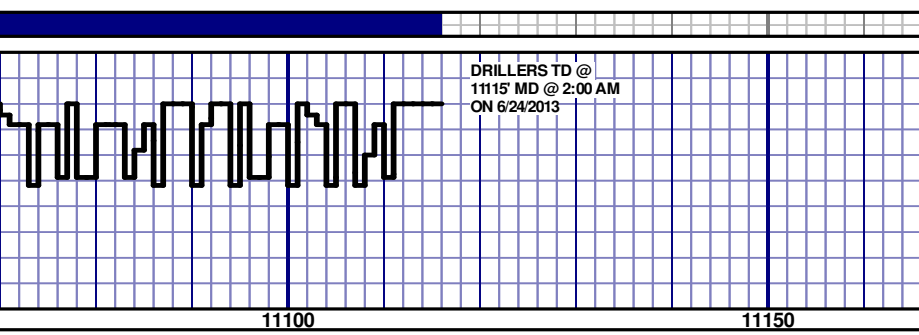
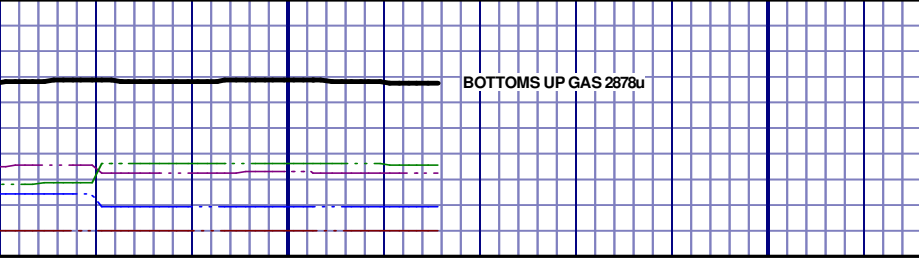
CHK: 60% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 60% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 65% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 65% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG

CHK: 70% V/LTGY - MEDGY - DRKGY, BLKY TO SUBBLKY, FXLN TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, FREE SH, MOD GYSHBLK STN, 5% LTOR FLOR, MOD BLSHWT O FLOR, IMMED STRMG CUT, BRIYL RNG



**TD @ 11115' MD**

**RELEASED ON 6/24/2013**

**THANK YOU FROM  
RYAN BLEESS,  
CASEY SENSECQUA,  
AND HORIZON WELL  
LOGGING, LLC**

Y - DRKGY, BLKY TO SUBBLKY, FXLN  
MWRK, OCC FREE CAL, IMBD PYR,  
STN, 5% L TOR FLOR, MOD BLSHW  
CUT, BRIYL RNG

CHK: 70% VLTGY- MEDGY -DRKGY, BLKY TO SUBBLKY, FXLN  
TO CHLKY, SFT, CHK FRMWRK, OCC FREE CAL, IMBD PYR,  
FREE SH, MOD GYSHBLK STN, 5% L TOR FLOR, MOD BLSHW  
O FLOR, IMMED STRMG CUT, BRIYL RNG