



Scale 1:240 (5"=100') Imperial  
Measured Depth Log

Well Name: RAZOR 27J-3412B  
Location: NWSW 27-T10N-R58W Weld County, Colorado  
License Number: 05-123-38063  
Spud Date: 7/26/2014  
Surface Coordinates: Lat.: 40.808458 Long.: -103.848086

Region: Redtail Field  
Drilling Completed: 8/4/2014

**Bottom Hole Coordinates:**

Ground Elevation (ft): 4764  
Logged Interval (ft): 5217 To: 13500  
Formation: Pierre, Sharon Springs, Niobrara  
Type of Drilling Fluid: Water Based Mud

K.B. Elevation (ft): 4786  
Total Depth (ft): 13500

Printed by HORIZONTAL.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

**OPERATOR**

Company: Whiting Oil & Gas Corp.  
Address: 1700 Broadway Suite 2300  
Denver, CO 80290

**GEOLOGIST**

Name: Craig Dreiling, Camille Warren  
Company: Acme Geologic Consulting  
Address: 108 Berry Street  
Little Rock, AR 72205

## Drilling Company

Frontier  
Rig #26


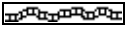
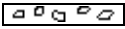

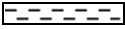
## Gas Detection






Mudlogging Systems, Inc., M Logger, Model TGC, Total Gas and Chromatograph, #317




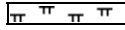
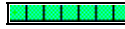
## Comments

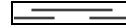
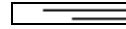


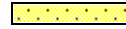
Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.




## ROCK TYPES

 Anhy  
 Bent  
 Brec  
 Cht  
 Clyst
















 Coal  
 Congl  
 Dol  
 Gyp  
 Igne











 Lmst  
 Meta  
 Cyan mrlst  
 Mrlst  
 Salt
















 Shale  
 Shcol  
 Shgy  
 Sltst  
 Ss







 Till  
 Cyan chk  
 Chalk

## ACCESSORIES

**MINERAL**  
 Anhy  
 Arggrn  
 Arg  
 Bent  
 Bit  
 Brecfrag  
 Calc  
 Carb  
 Chtdk  
 Chtlt  
 Dol  
 Feldspar  
 Ferrpel  
 Ferr  
 Glau












 Gyp  
 Hvymin  
 Kaol  
 Marl  
 Minxl  
 Nodule  
 Phos  
 Pyr  
 Salt  
 Sandy  
 Silt  
 Sil  
 Sulphur  
 Tuff

**FOSSIL**  
 Algae  
 Amph  
 Belm  
 Bioclst  
 Brach  
 Bryozoa  
 Cephal  
 Coral  
 Crin  
 Echin  
 Fish  
 Foram  
 Fossil  
 Gastro  
 Oolite







 Ostra  
 Pelec  
 Pellet  
 Pisolite  
 Plant  
 Strom






**STRINGER**  
 Anhy  
 Arg  
 Bent  
 Coal  
 Dol  
 Gyp  
 Ls  
 Mrst





 Sltstrg  
 Ssstrg

**TEXTURE**  
 Boundst  
 Chalky  
 Cryxln  
 Earthy  
 Finexln  
 Grainst  
 Lithogr  
 Microxln  
 Mudst  
 Packst  
 Wackest




OTHER SYMBOLS

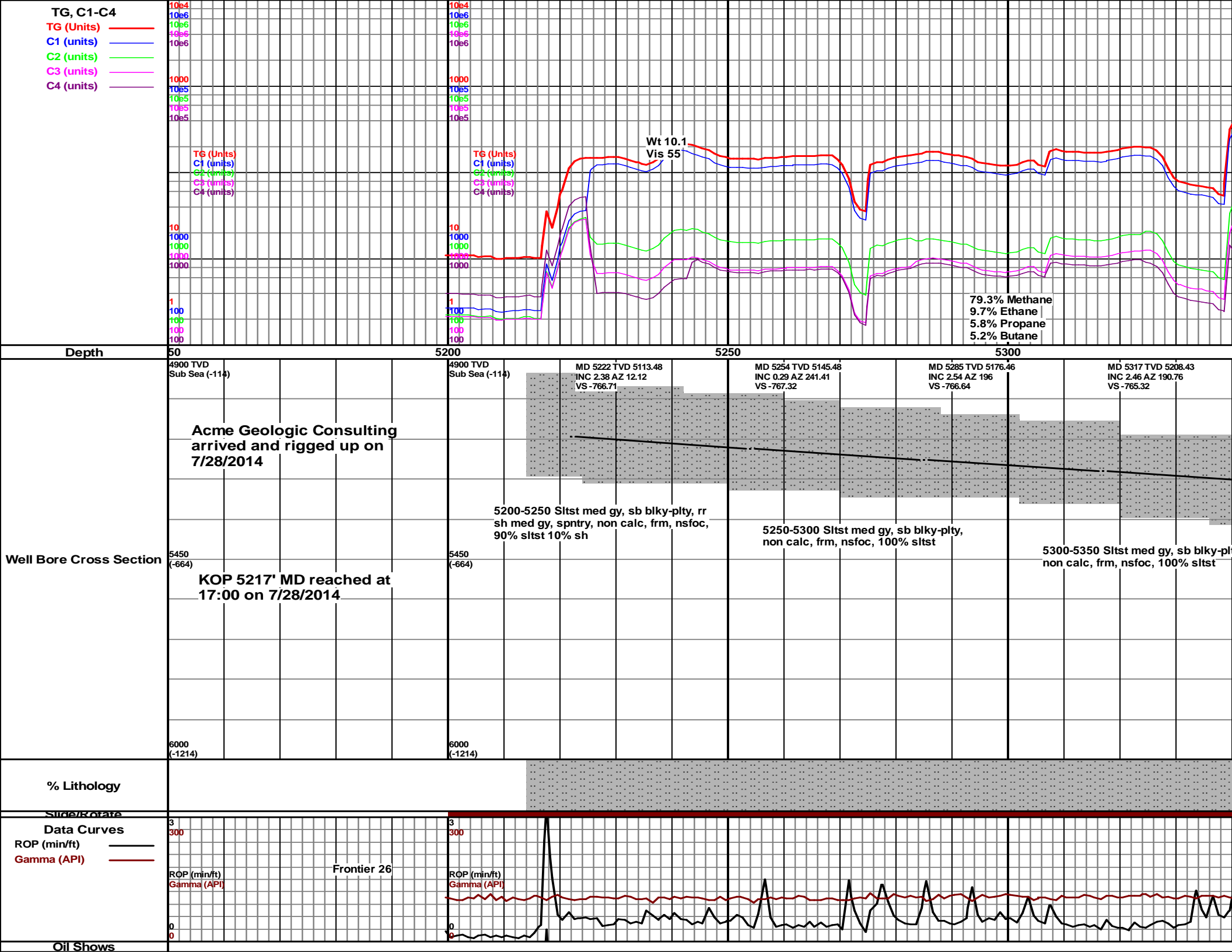
- POROSITY**
-  Earthy
  -  Fenest
  -  Fracture
  -  Inter
  -  Moldic
  -  Organic

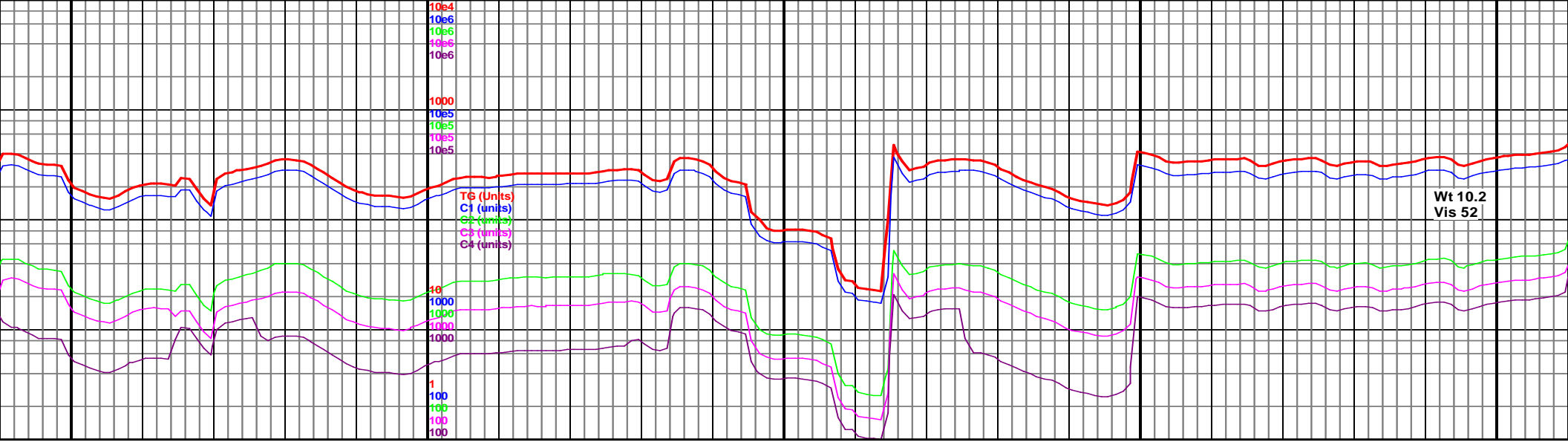
-  Pinpoint
  -  Vuggy
- SORTING**
-  Well
  -  Moderate
  -  Poor

- ROUNDING**
-  Rounded
  -  Subrnd
  -  Subang
  -  Angular

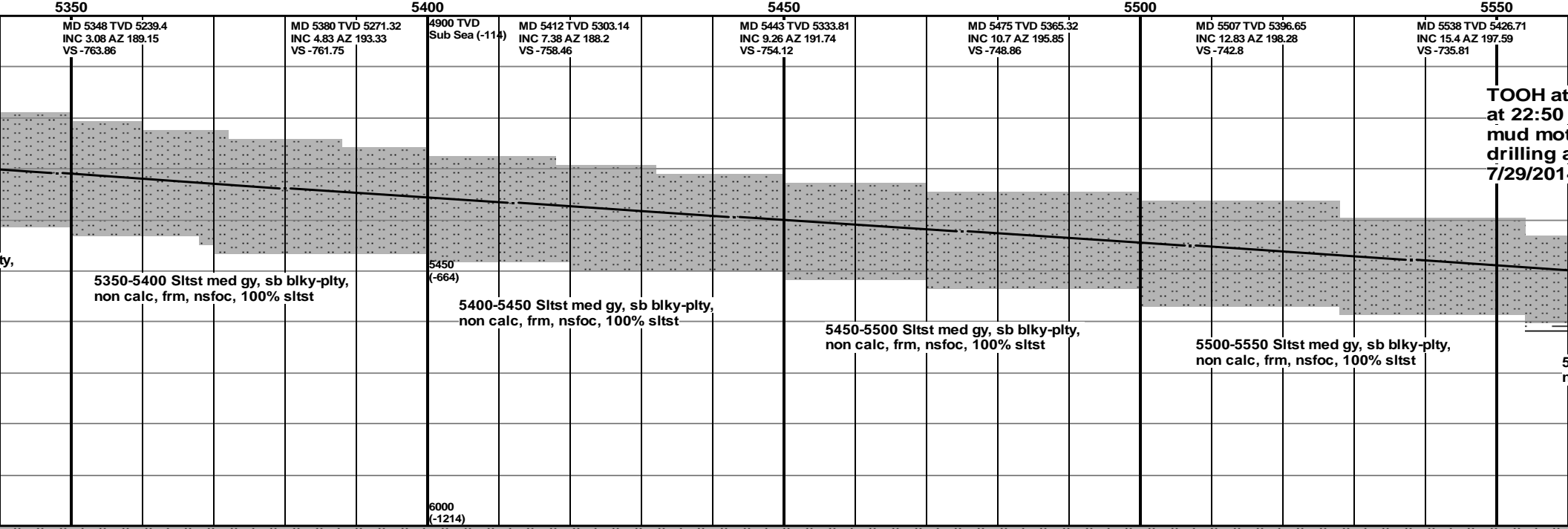
- OIL SHOW**
-  Good
  -  Fair
  -  Poor
- INTERVAL**
-  Core

-  Dst
- EVENT**
-  Rft
  -  Sidewall

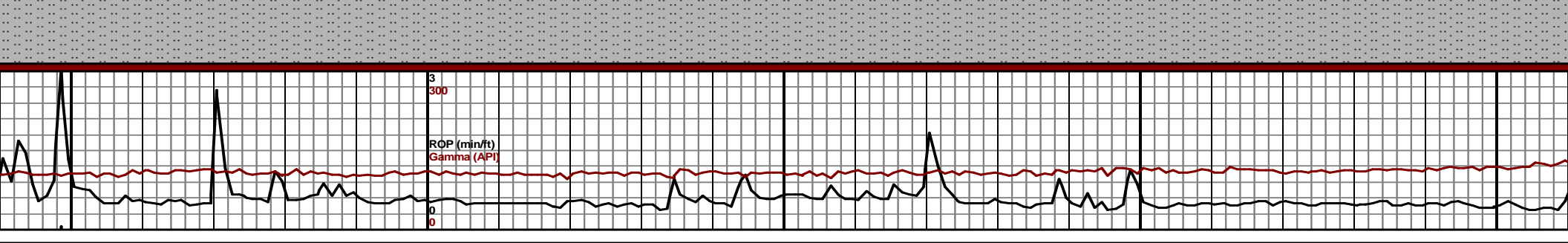


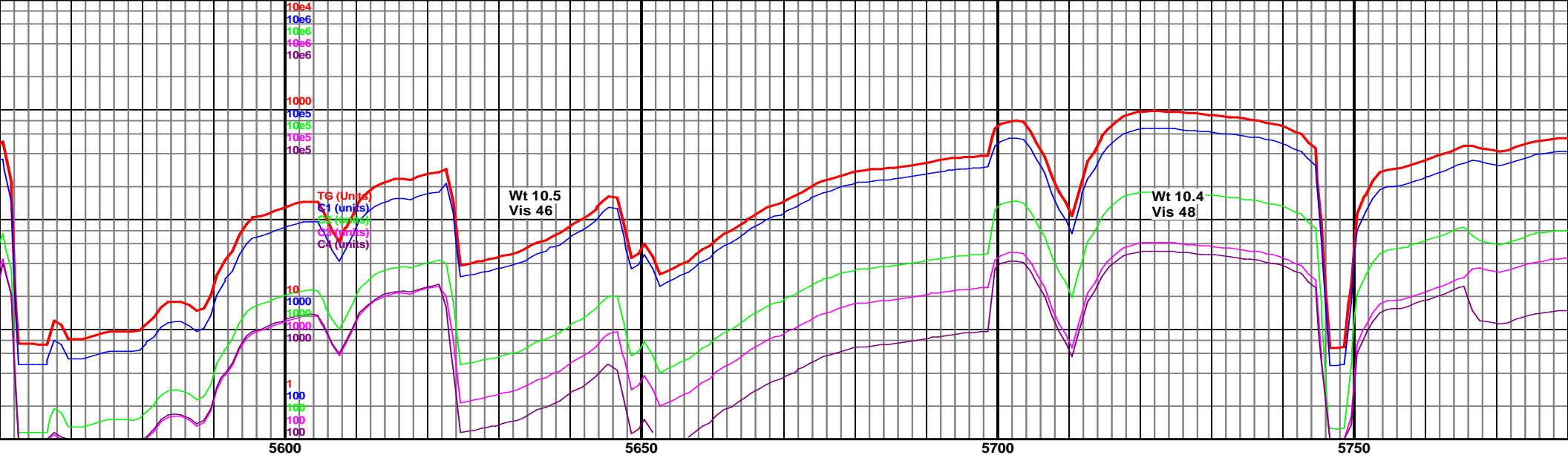


Wt 10.2  
Vis 52



TOOH at  
at 22:50  
mud mot  
drilling a  
7/29/201





MD 5569 TVD 5456.49 INC 16.93 AZ 190.3 VS -727.63	MD 5601 TVD 5486.75 INC 20.99 AZ 189.79 VS -717.56	MD 5633 TVD 5516.37 INC 23.5 AZ 195.21 VS -706	MD 5664 TVD 5544.35 INC 27.41 AZ 196.56 VS -693.51	MD 5696 TVD 5572.3 INC 30.84 AZ 192.35 VS -678.78	MD 5727 TVD 5598.58 INC 33.25 AZ 191.78 VS -663.01	MD 5759 TVD 5624.66 INC 37.56 AZ 189.72 VS -645.12
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5560' MD decided on 7/28/2014 for tor. Resumed at 07:51 on 7/28/2014

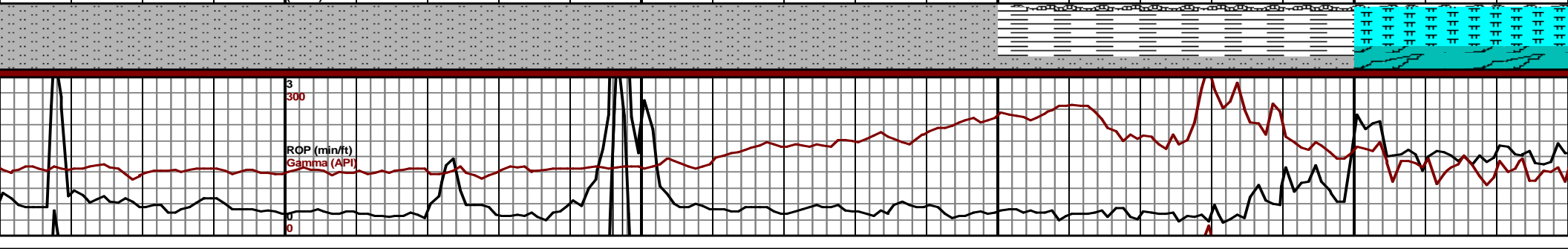
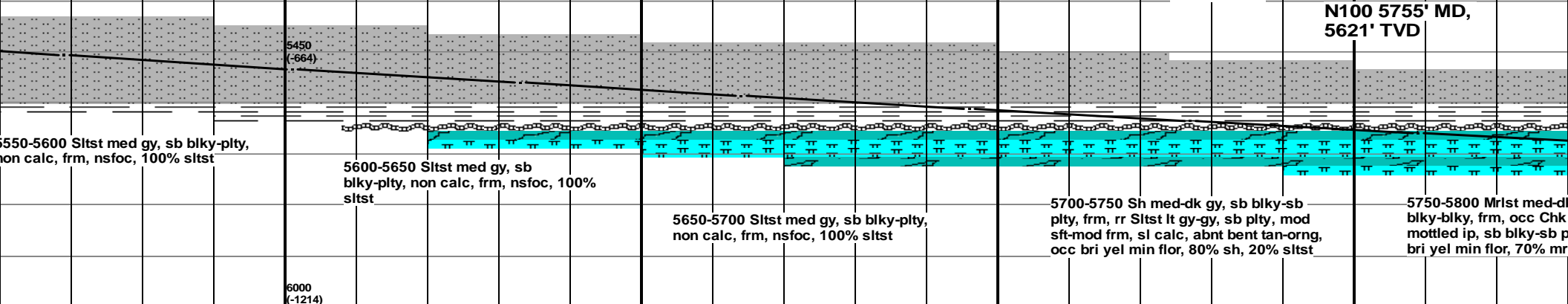
TOOH at 5745' MD decided at 12:15 on 7/29/2014 for mud motor. Resumed drilling at 20:45 on 7/29/2014

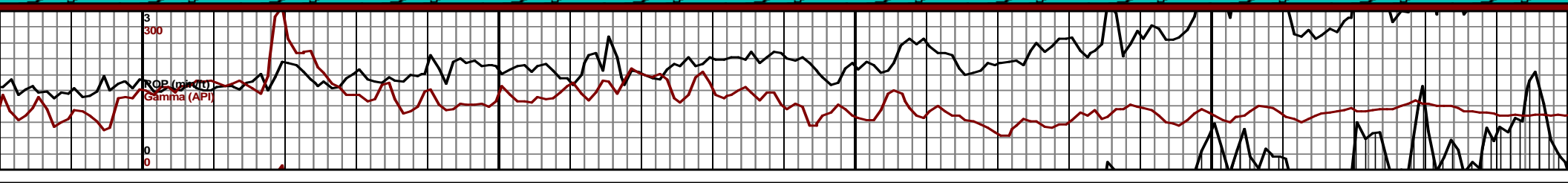
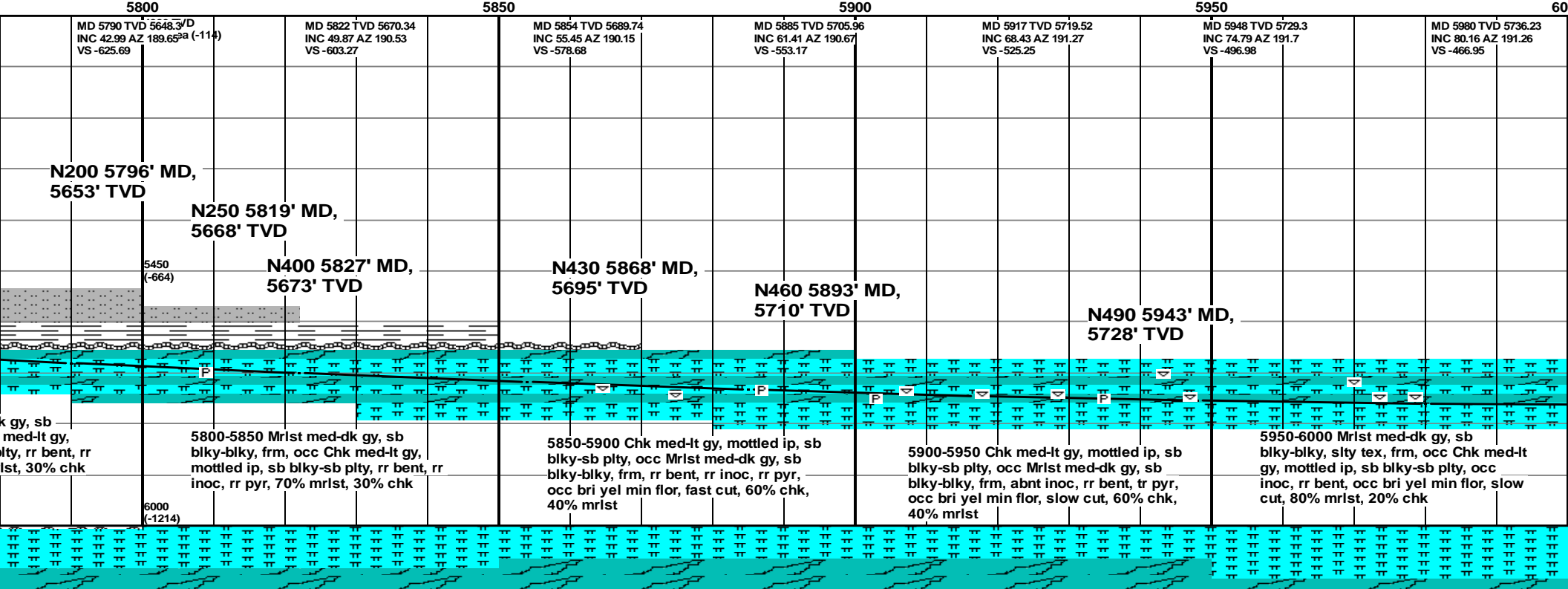
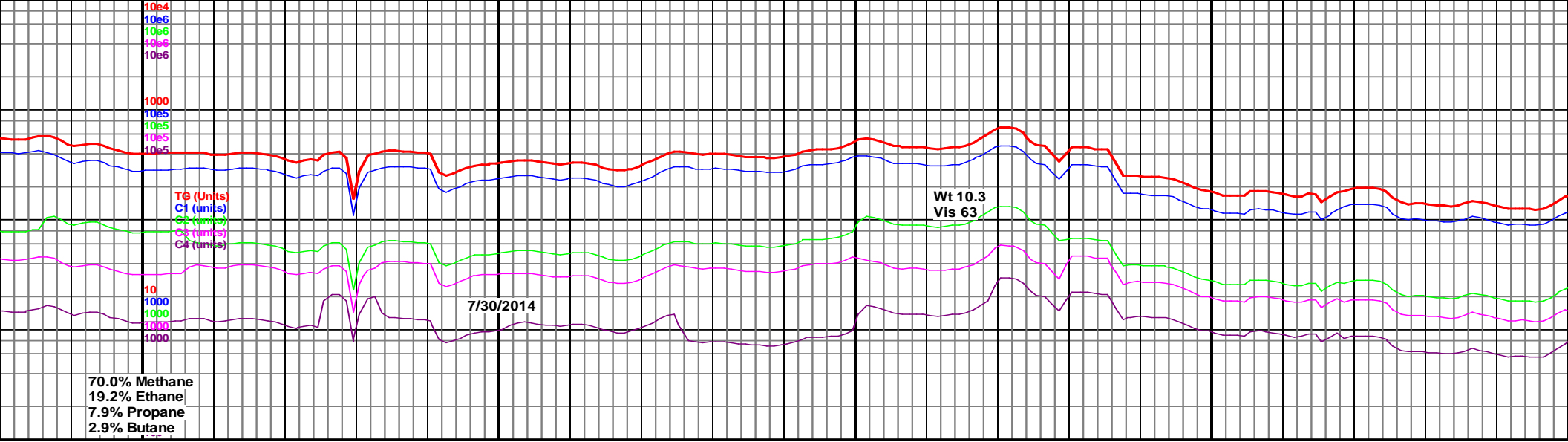
P350 5716' MD, 5589' TVD

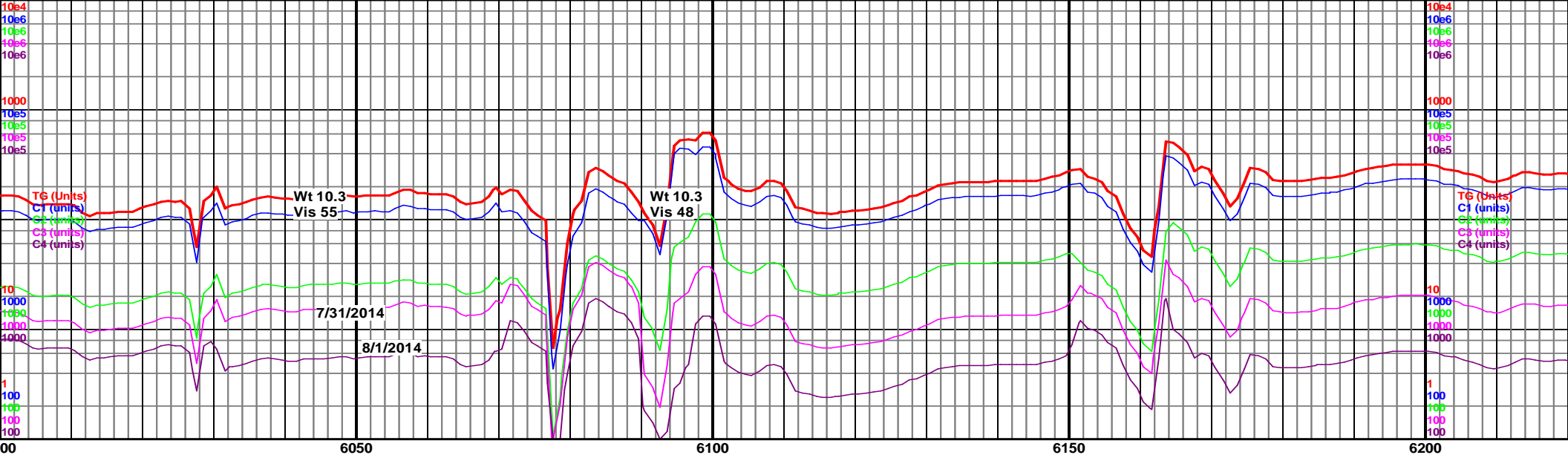
Sharon Springs 5731' MD, 5602' TVD

Niobrara 5738' MD, 5608' TVD

N100 5755' MD, 5621' TVD



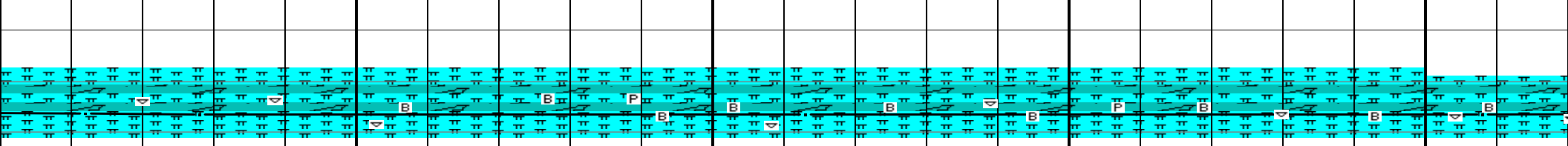




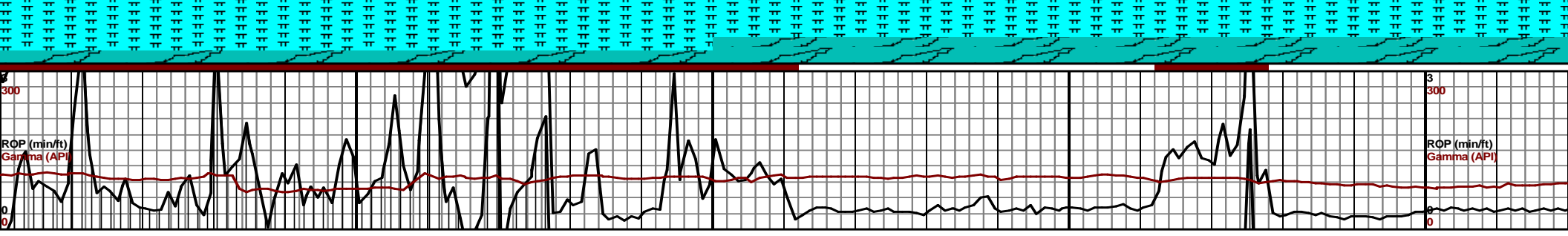
4900 TVD Sub Sea (-114)	MD 6012 TVD 5739.89 INC 86.72 AZ 189.06 VS -436.21	MD 6028 TVD 5740.55 INC 88.5 AZ 187.46 VS -420.61	MD 6113 TVD 5741.67 INC 90 AZ 176.83 VS -336.31	4900 TVD Sub Sea (-114)	MD 6208 TVD 5741.67 INC 90.65 AZ 176.83 VS -241.32
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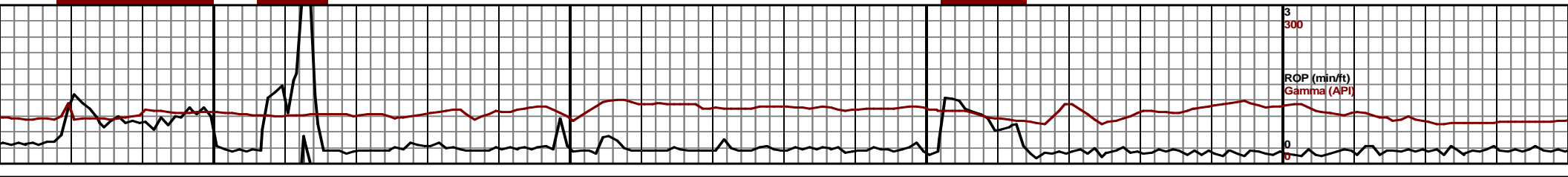
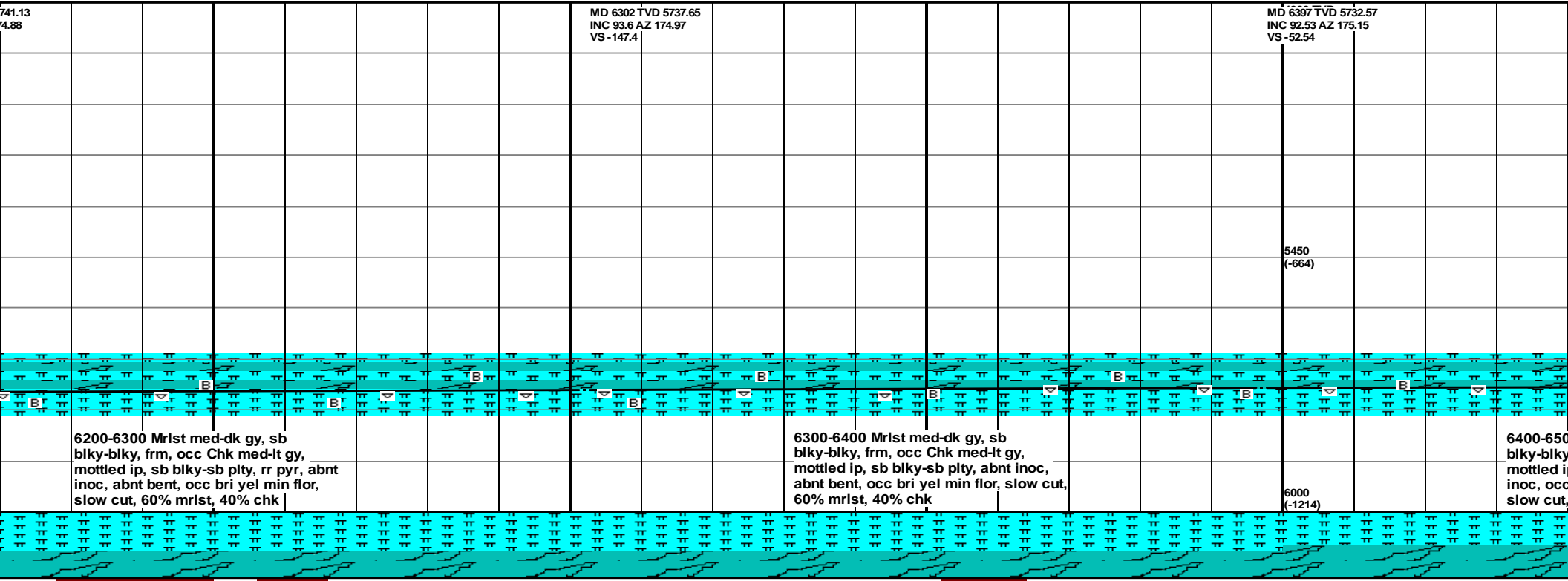
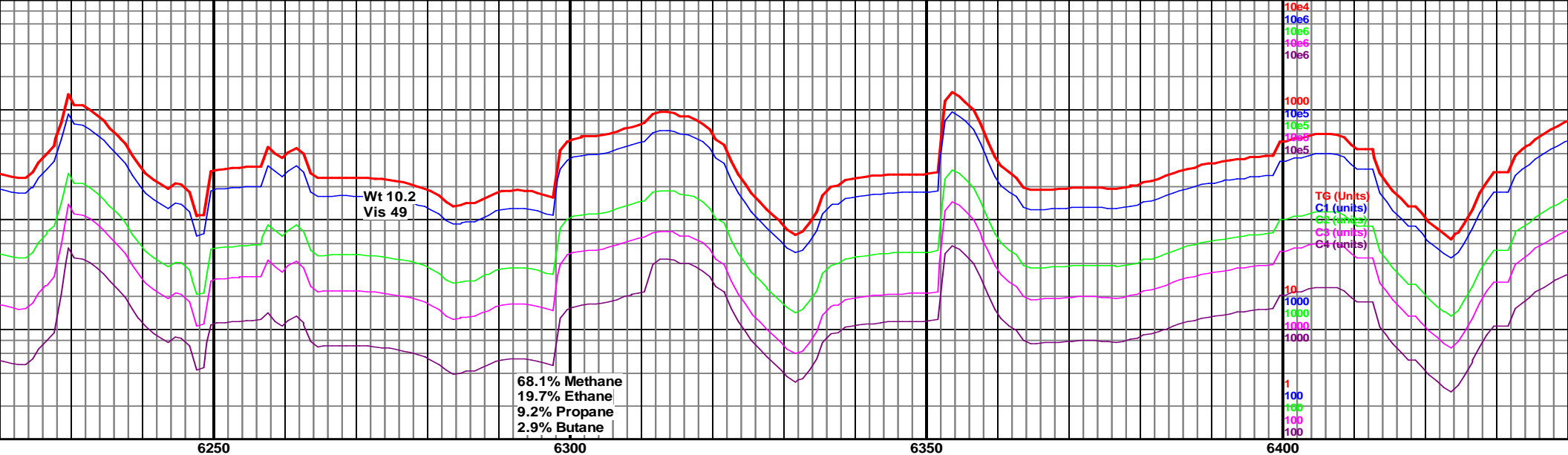
Intermediate casing depth  
6075' MD reached at 15:05  
on 7/30/2014, resume  
drilling at 00:40 on 8/1/2014

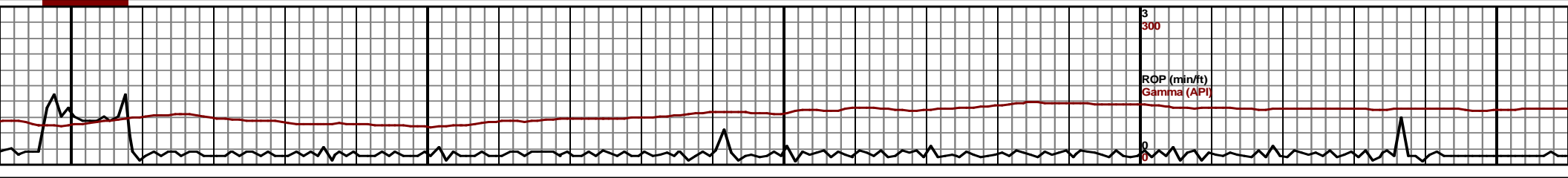
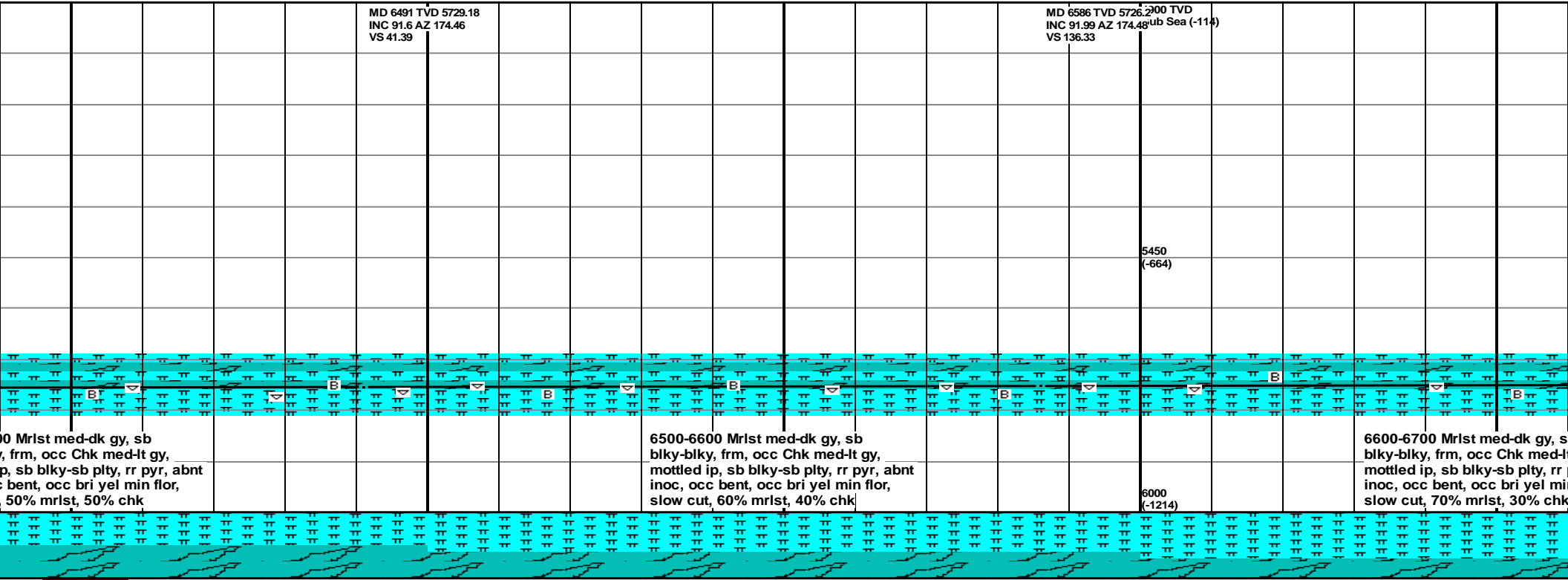
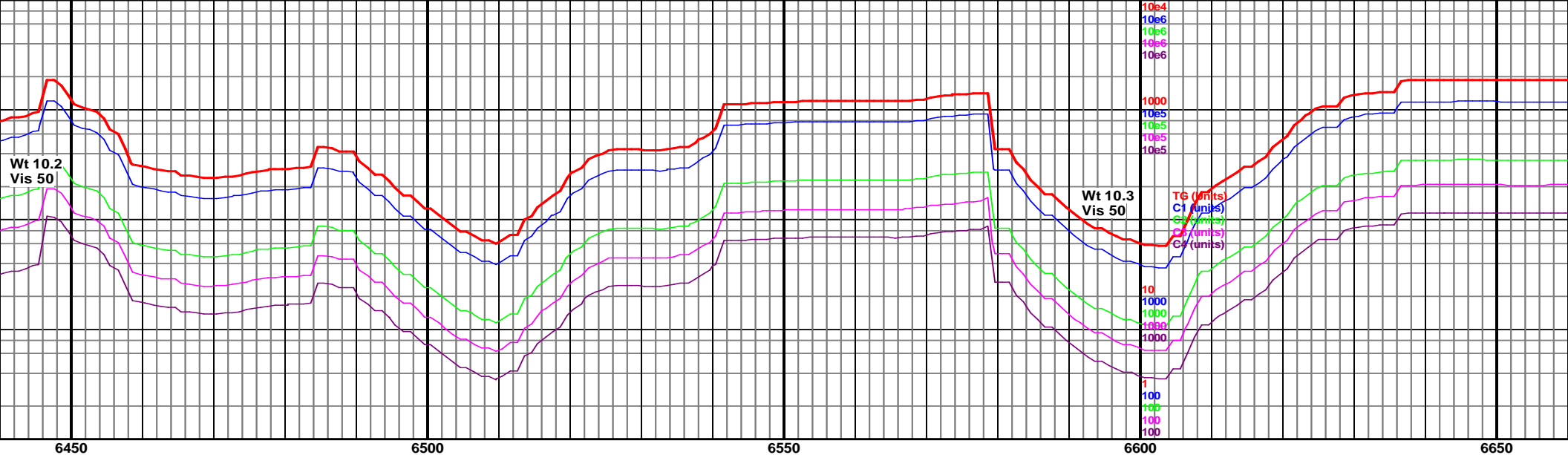
5450 (-664)				5450 (-664)	
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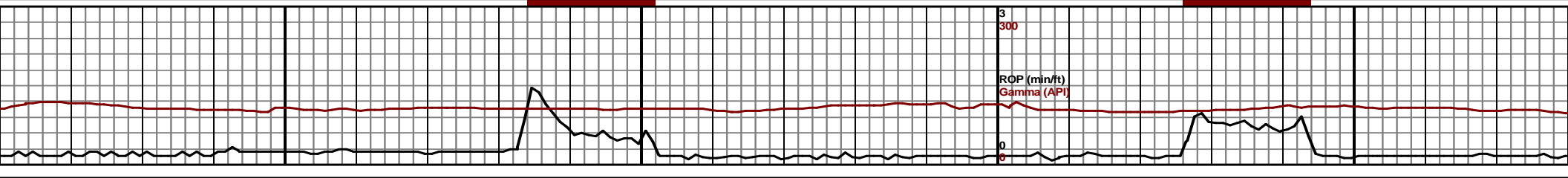
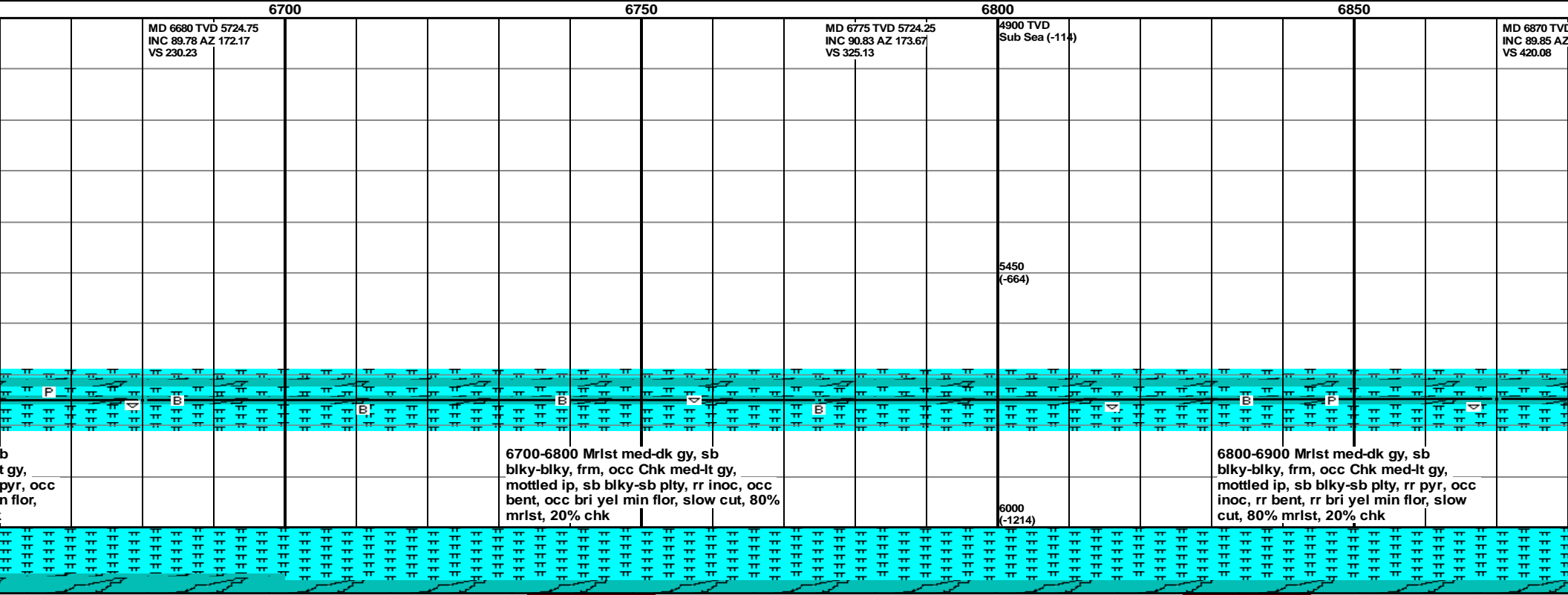
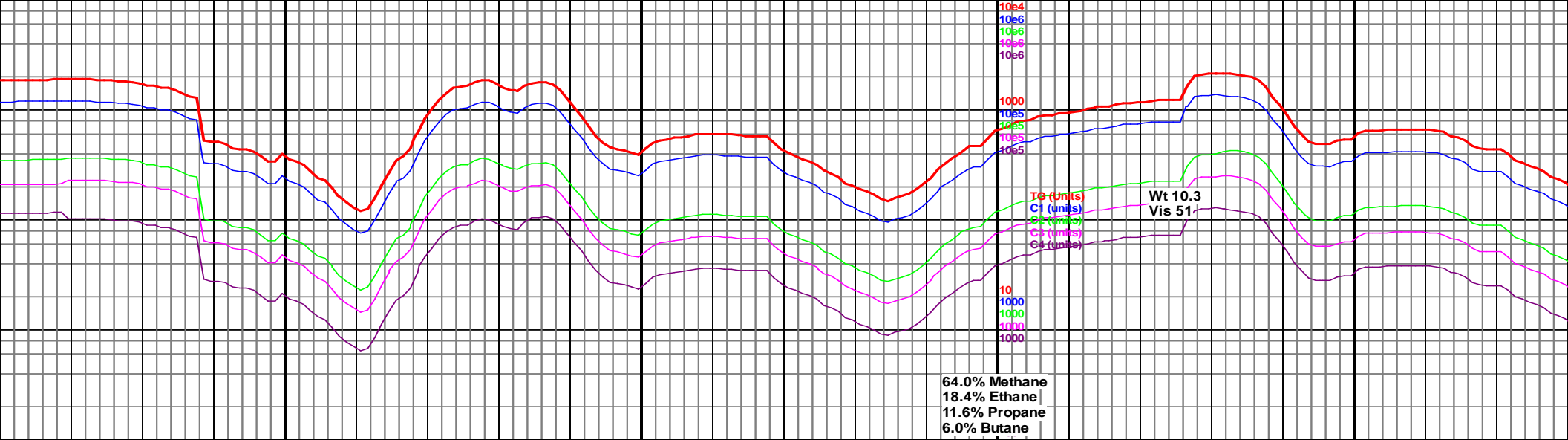


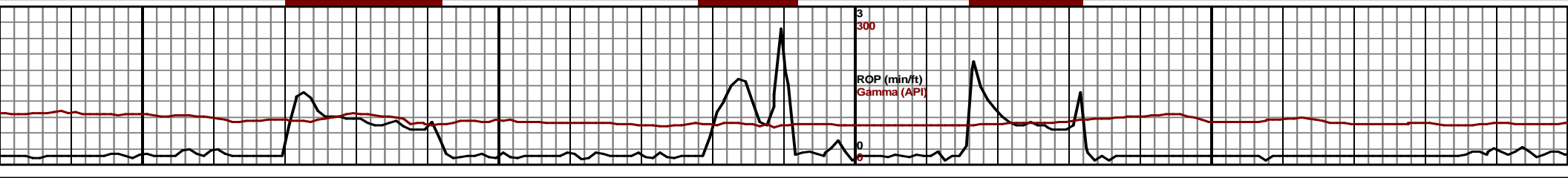
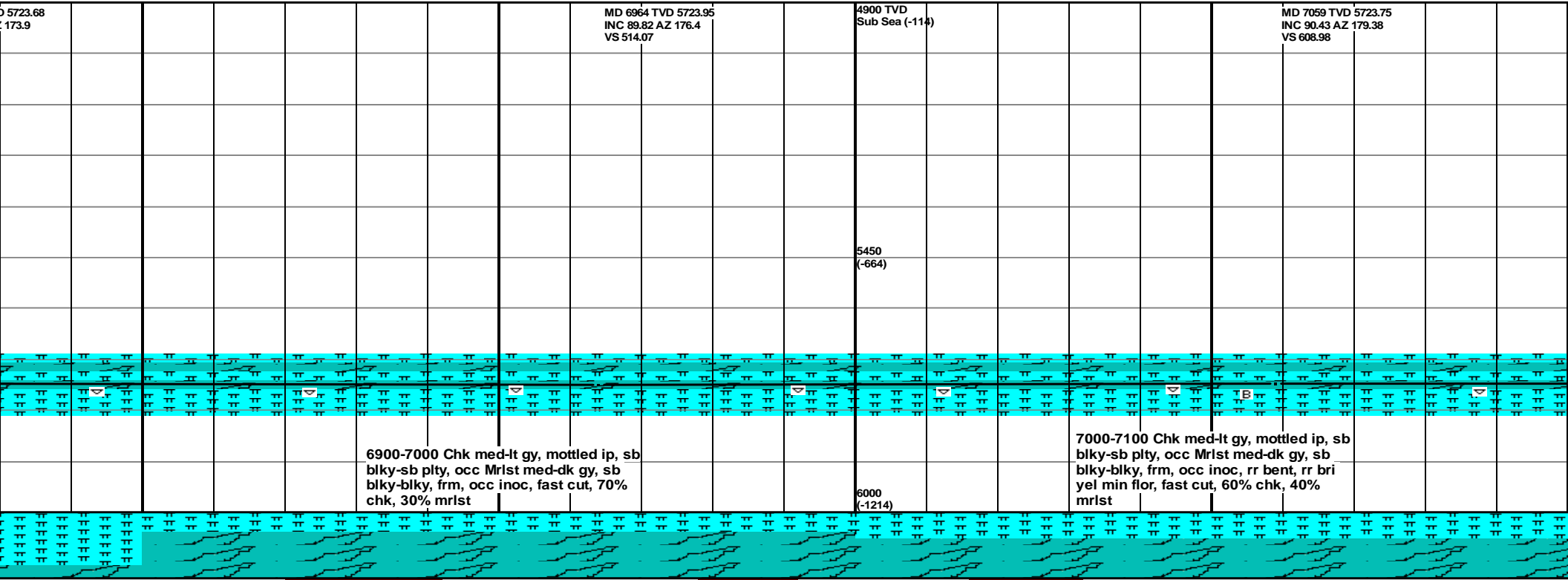
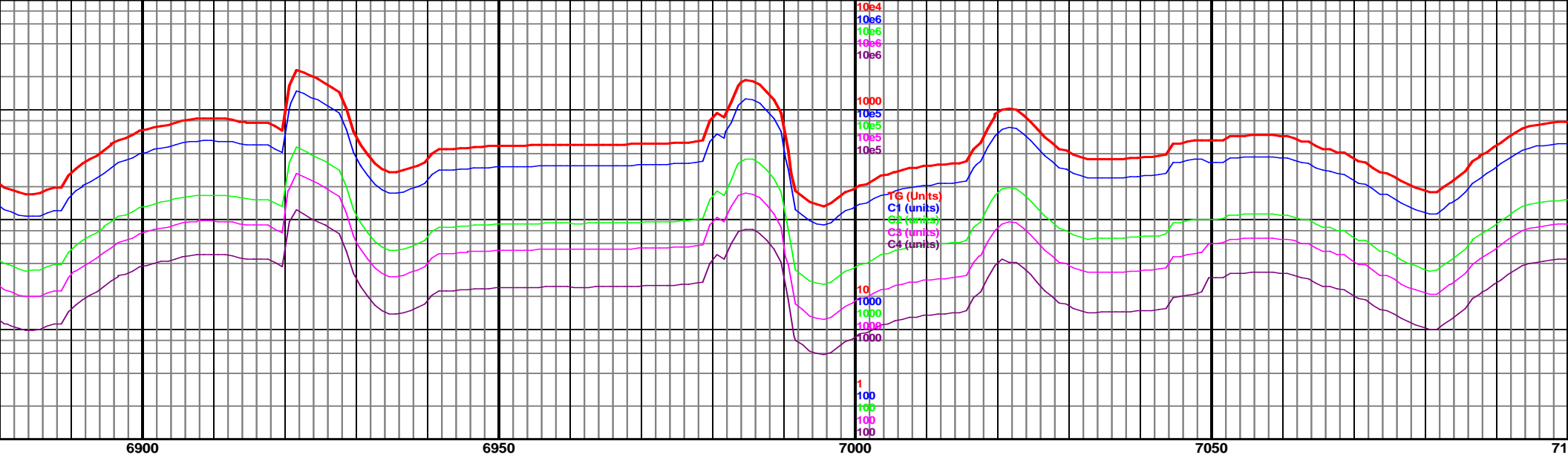
6000-6050 Mrlst med-dk gy, sb blky-blky, frm, occ Chk med-lt gy, mottled ip, sb blky-sb plty, occ inoc, occ bent, occ bri yel min flr, slow cut, 80% mrlst, 20% chk	6050-6100 Mrlst med-dk gy, sb blky-blky, frm, occ Chk med-lt gy, mottled ip, sb blky-sb plty, rr pyr, occ inoc, abnt bent, abnt bri yel min flr, slow cut, 80% mrlst, 20% chk	6100-6200 Mrlst med-dk gy, sb blky-blky, frm, occ Chk med-lt gy, mottled ip, sb blky-sb plty, rr pyr, abnt inoc, abnt bent, occ bri yel min flr, slow cut, 60% mrlst, 40% chk	6000 (-1214)
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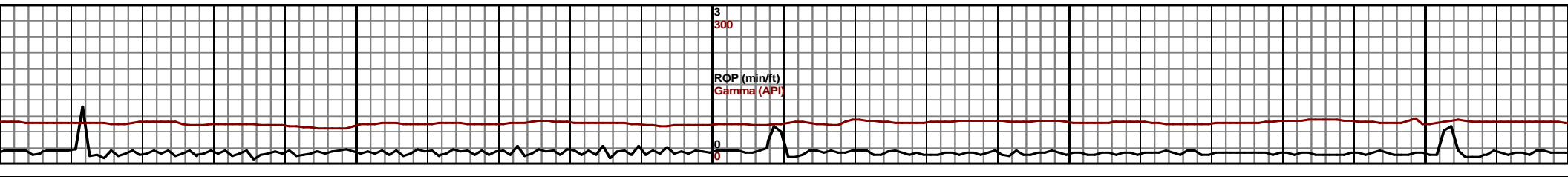
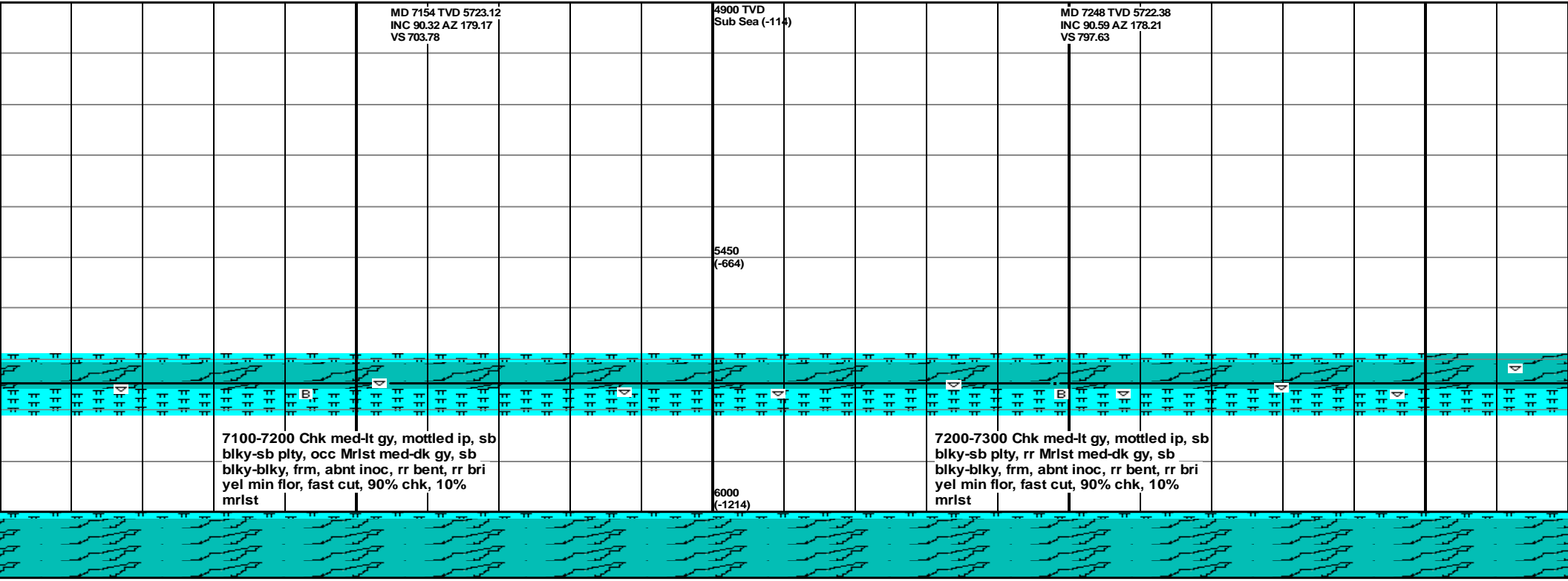
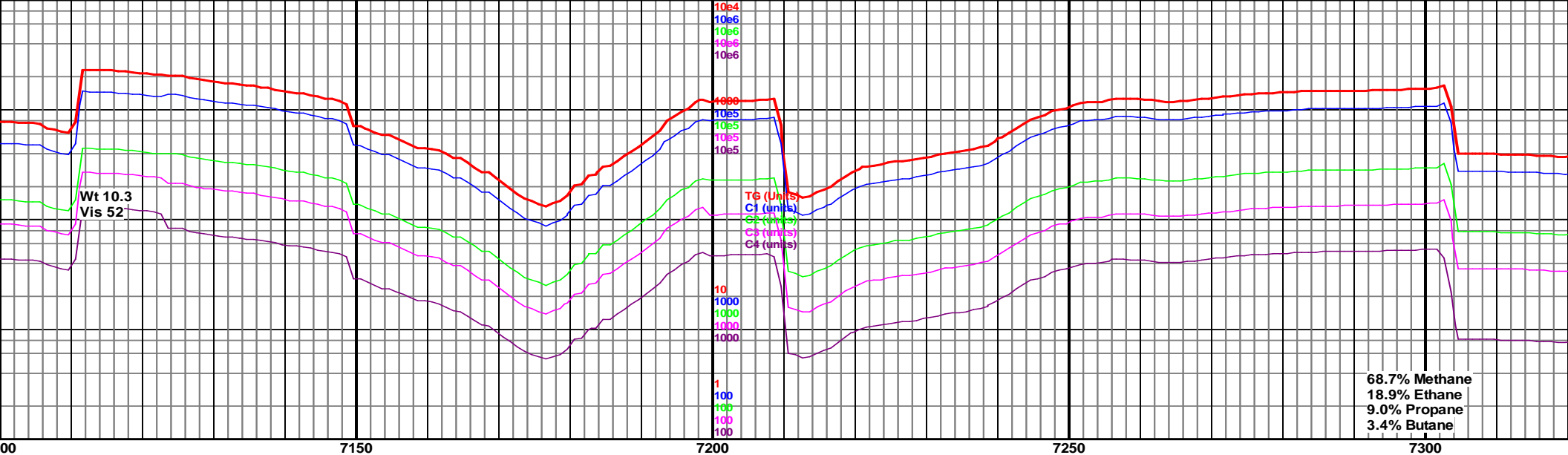


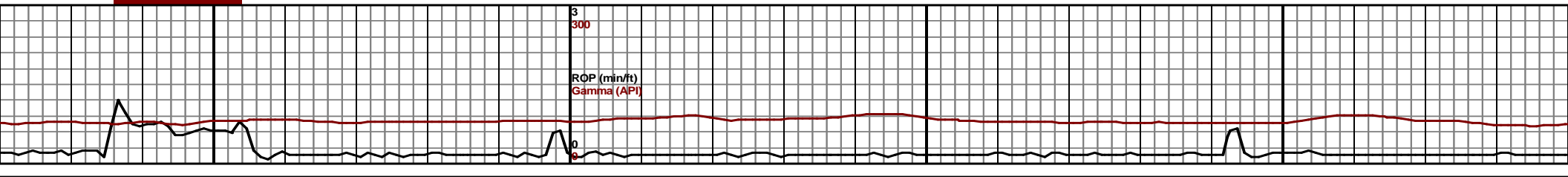
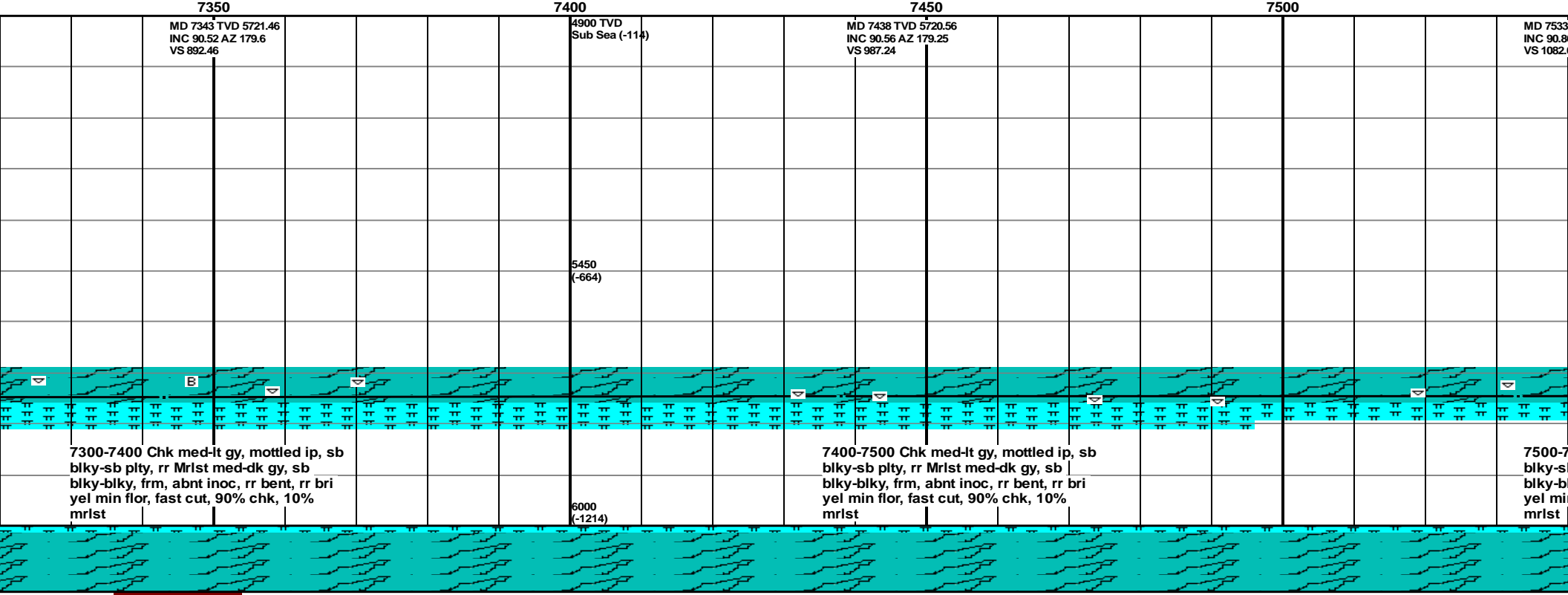
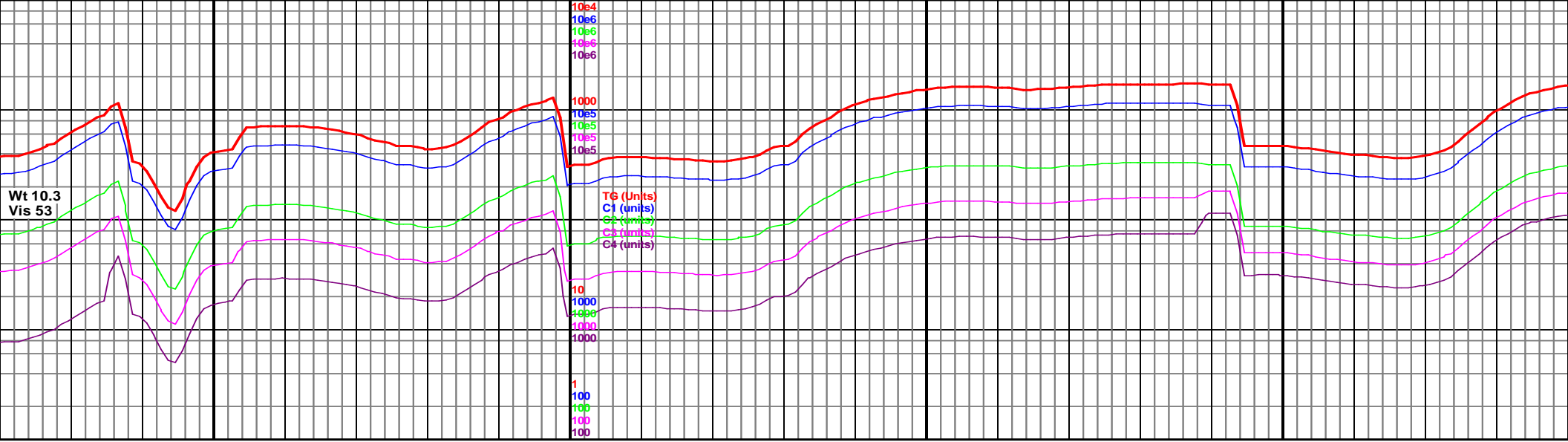


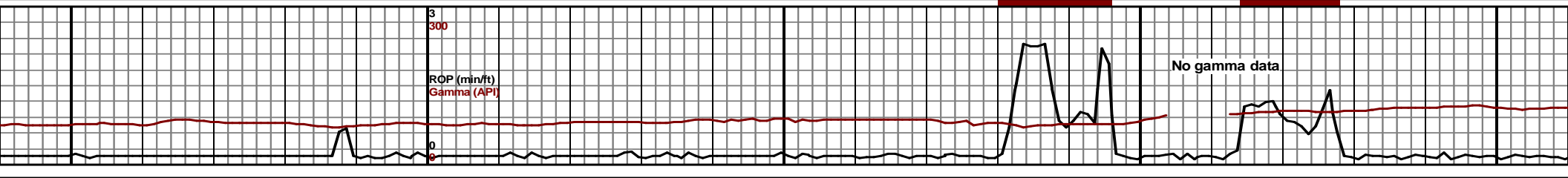
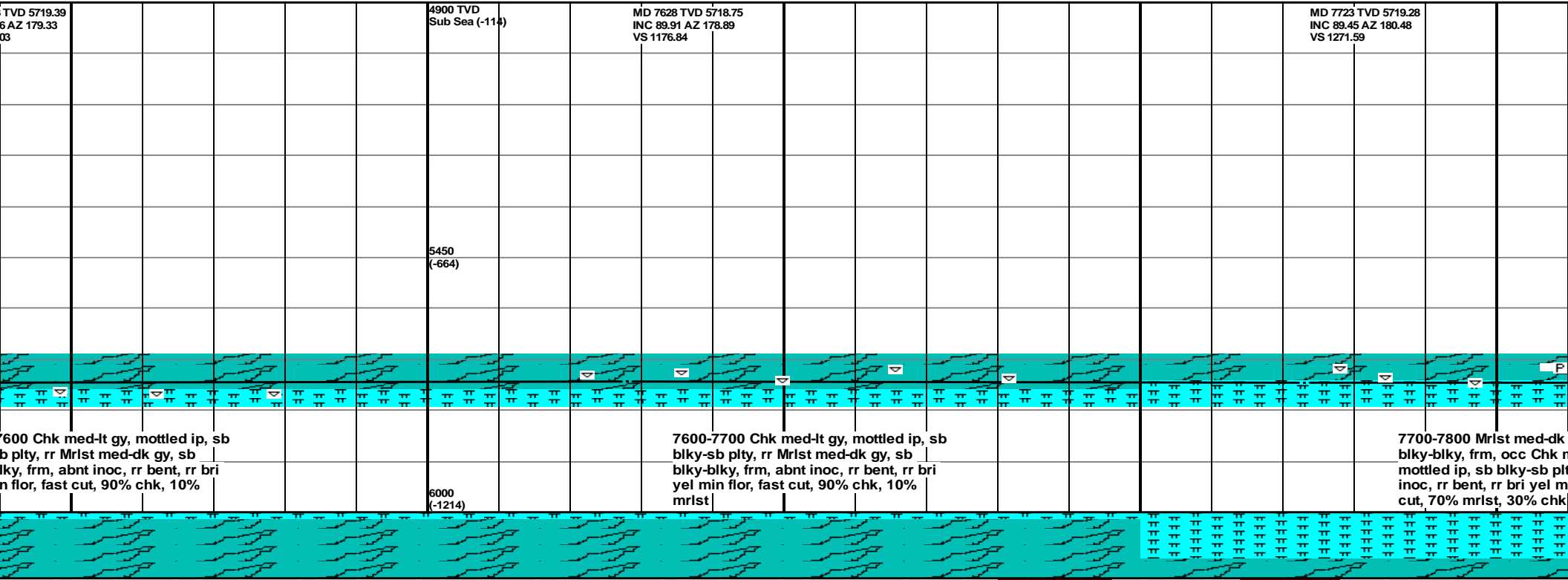
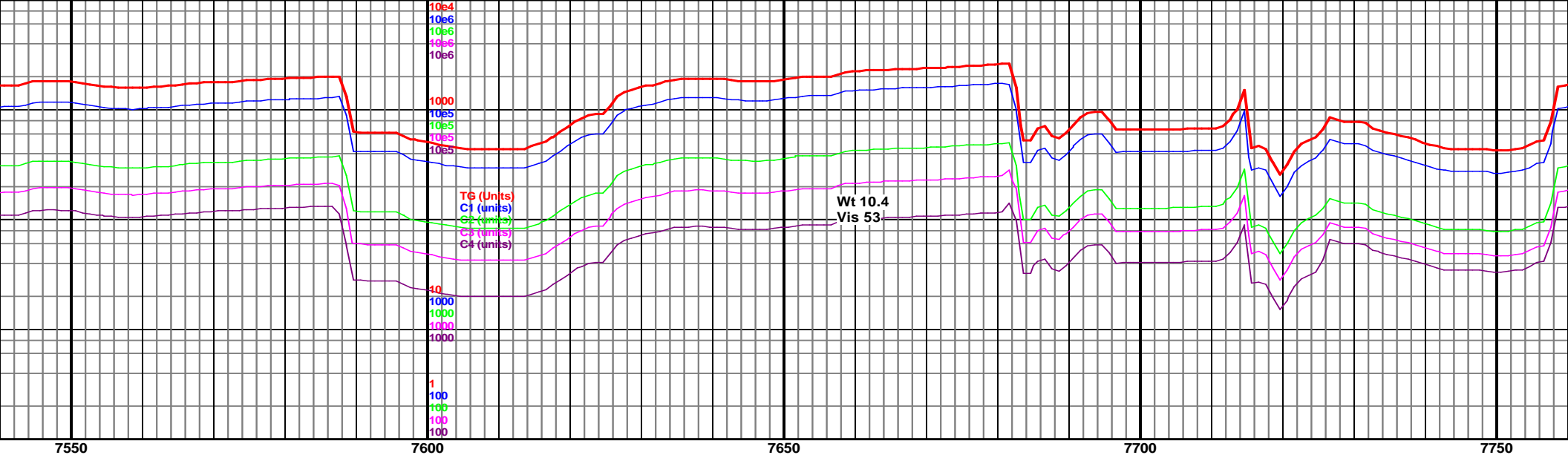


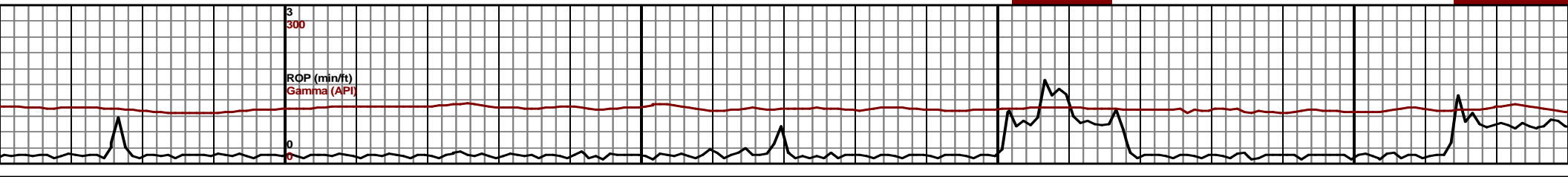
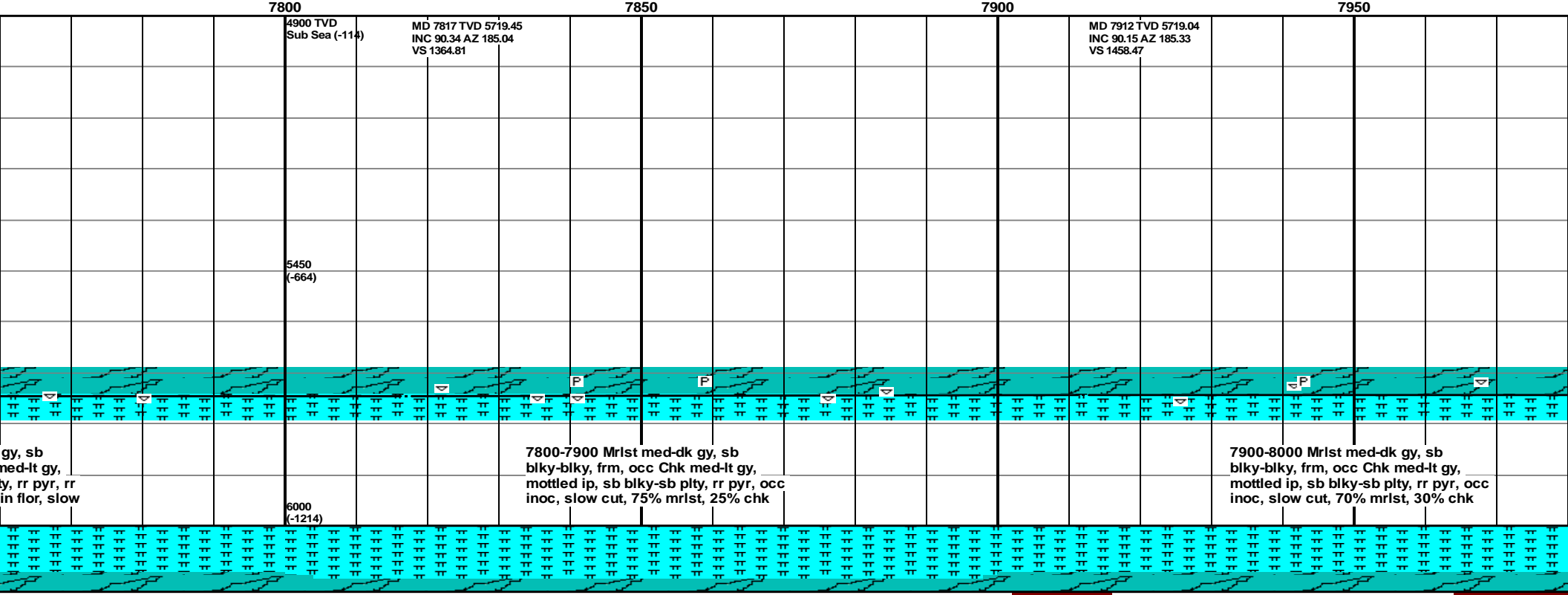
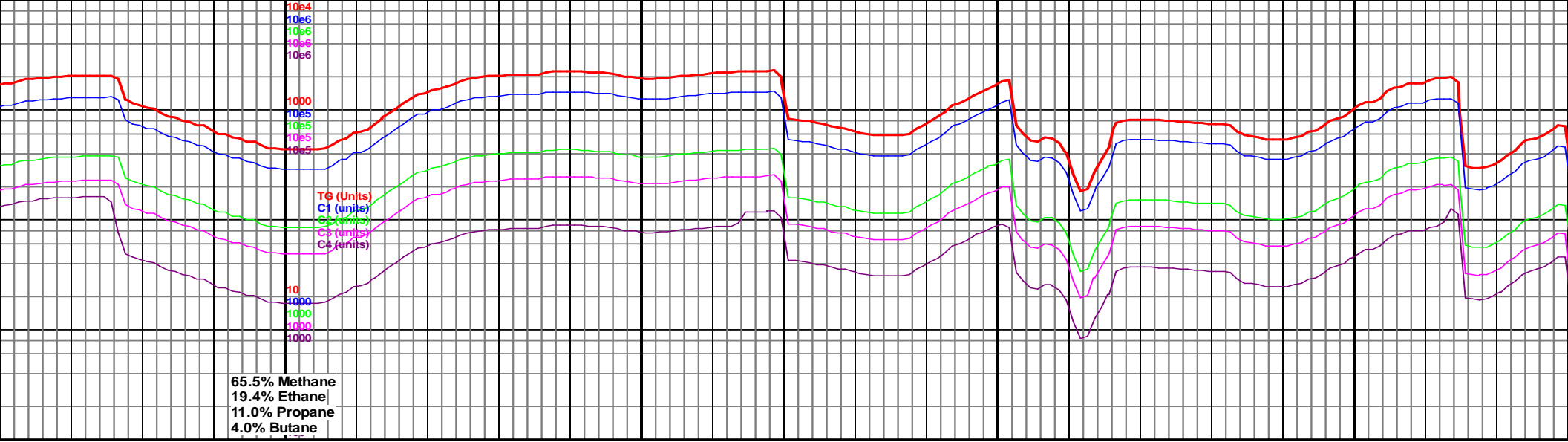




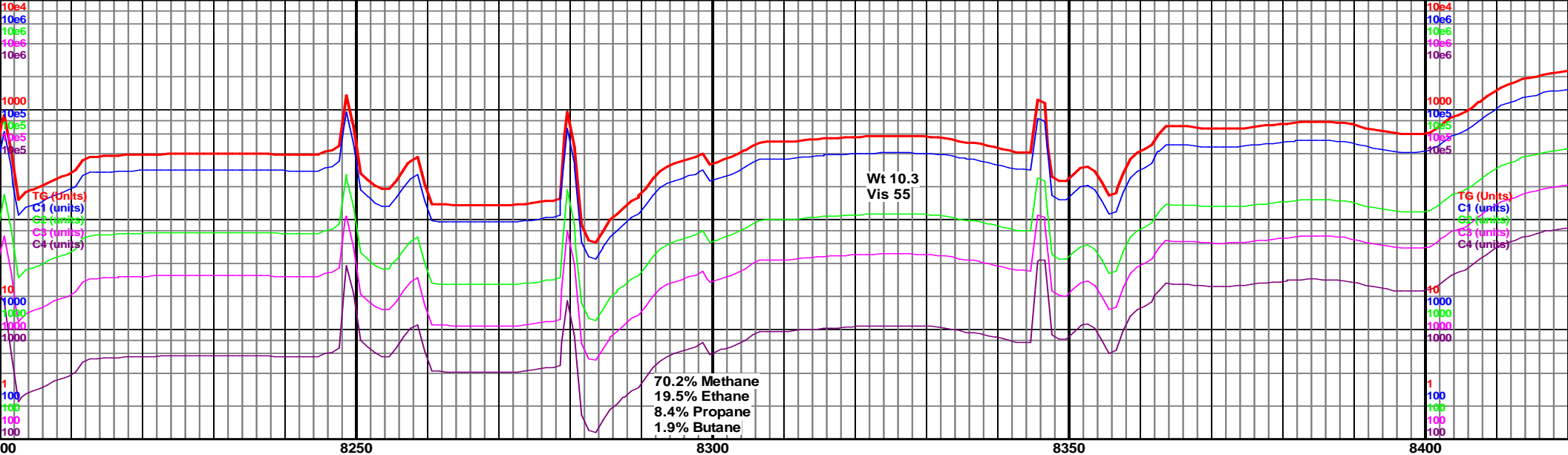




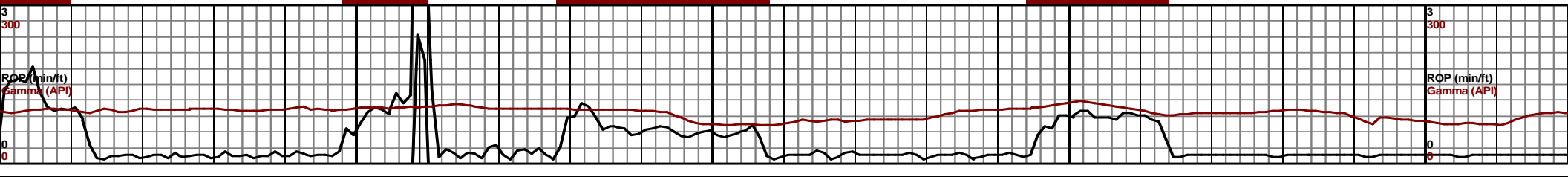
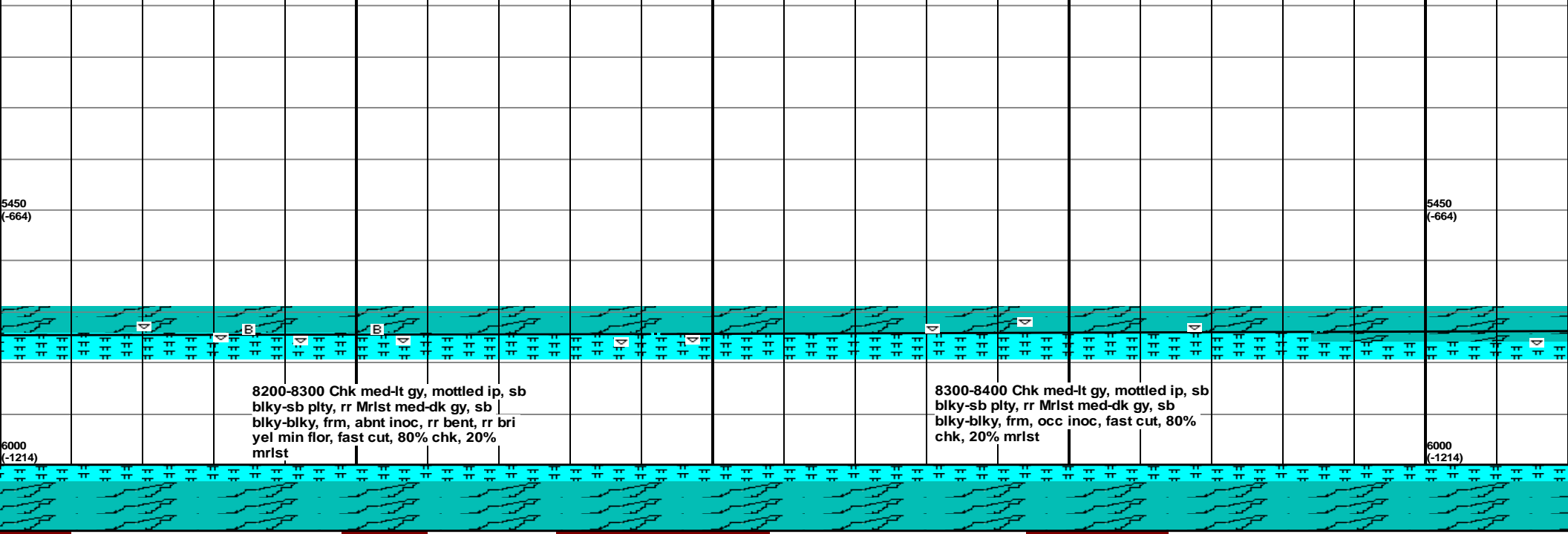


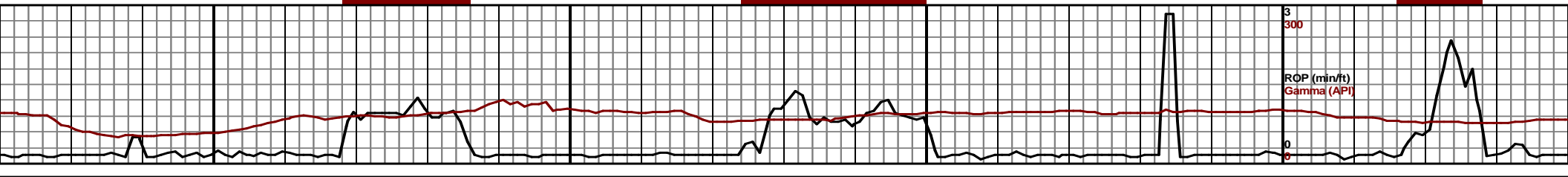
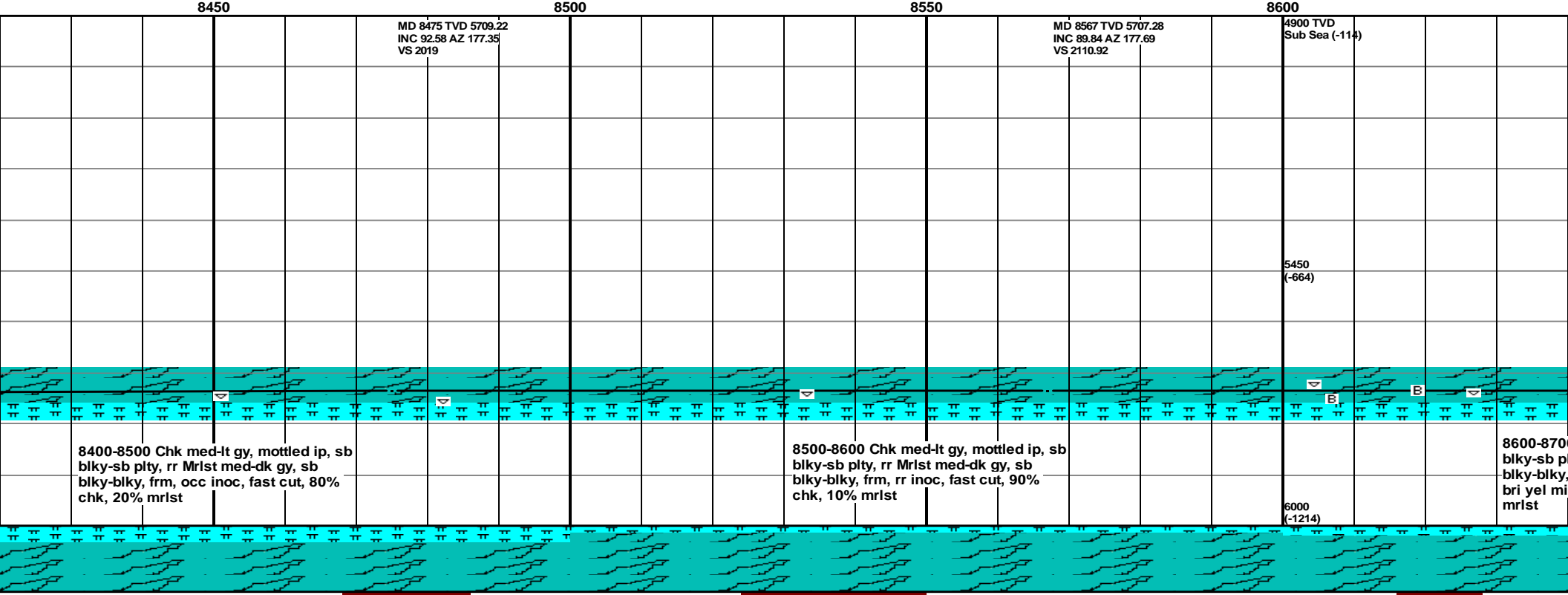
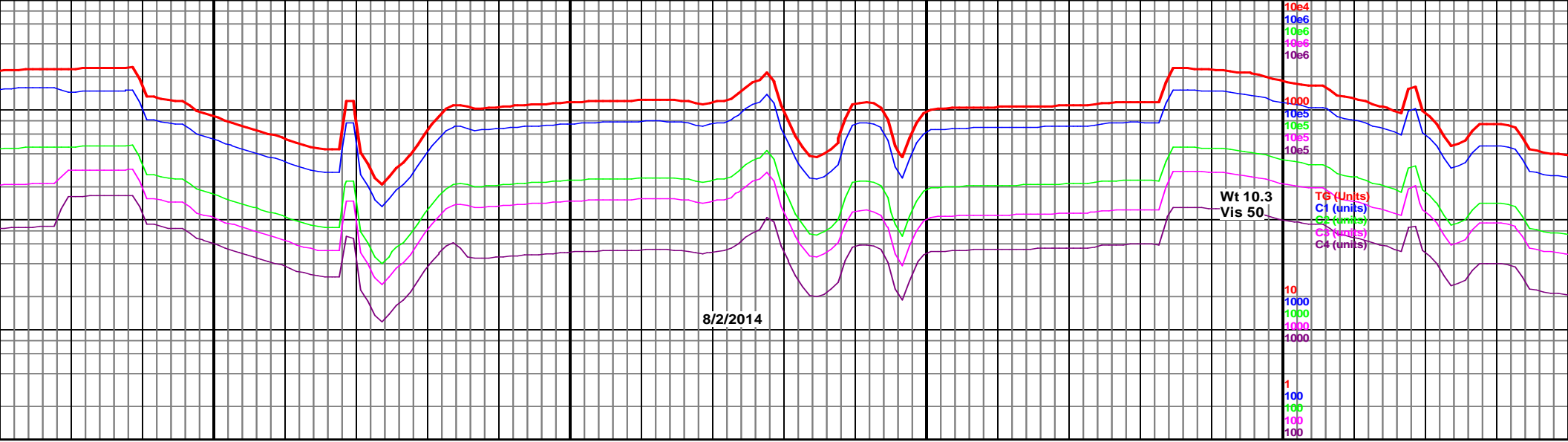


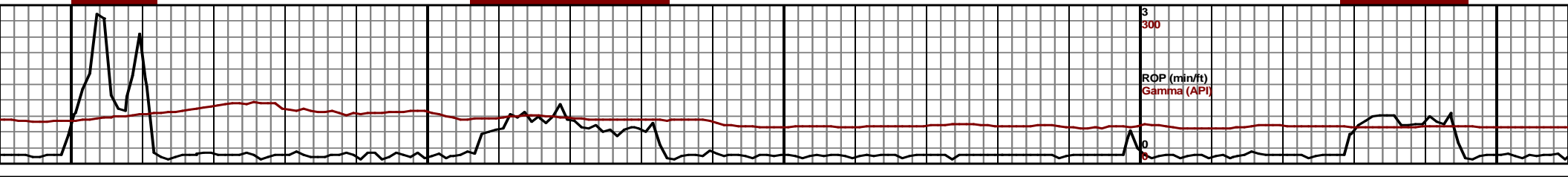
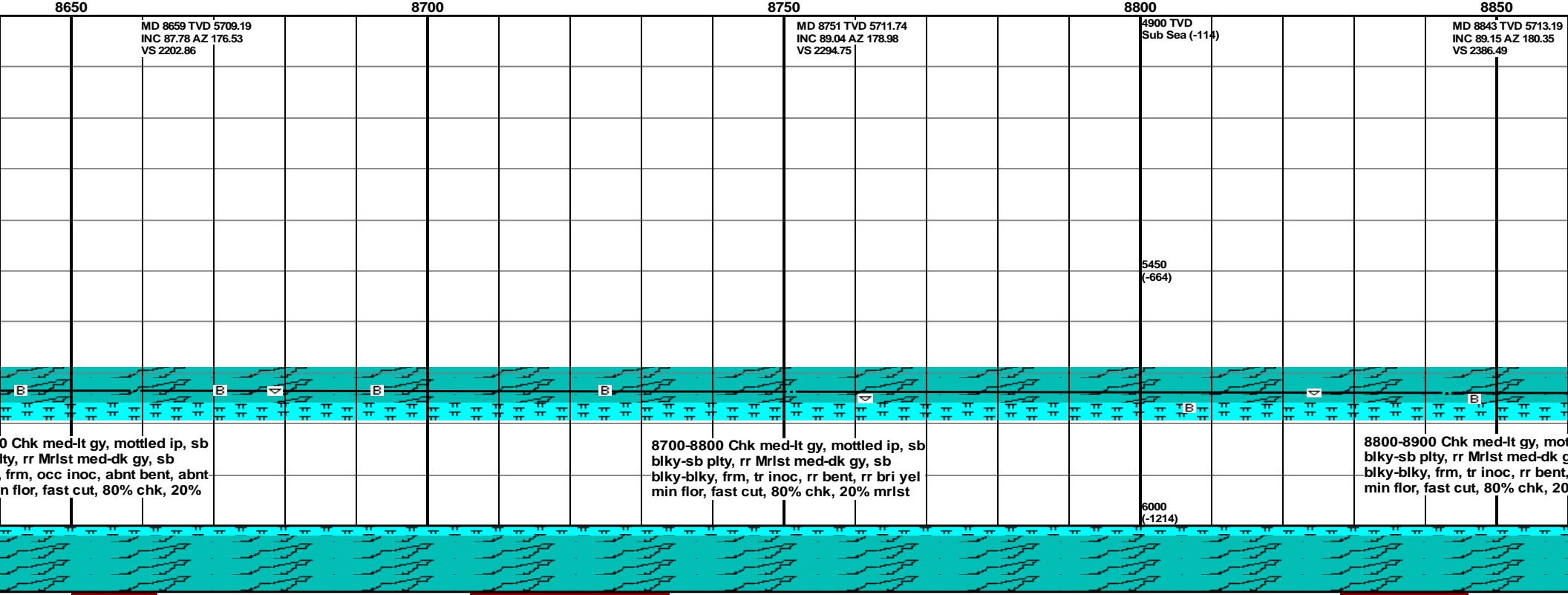
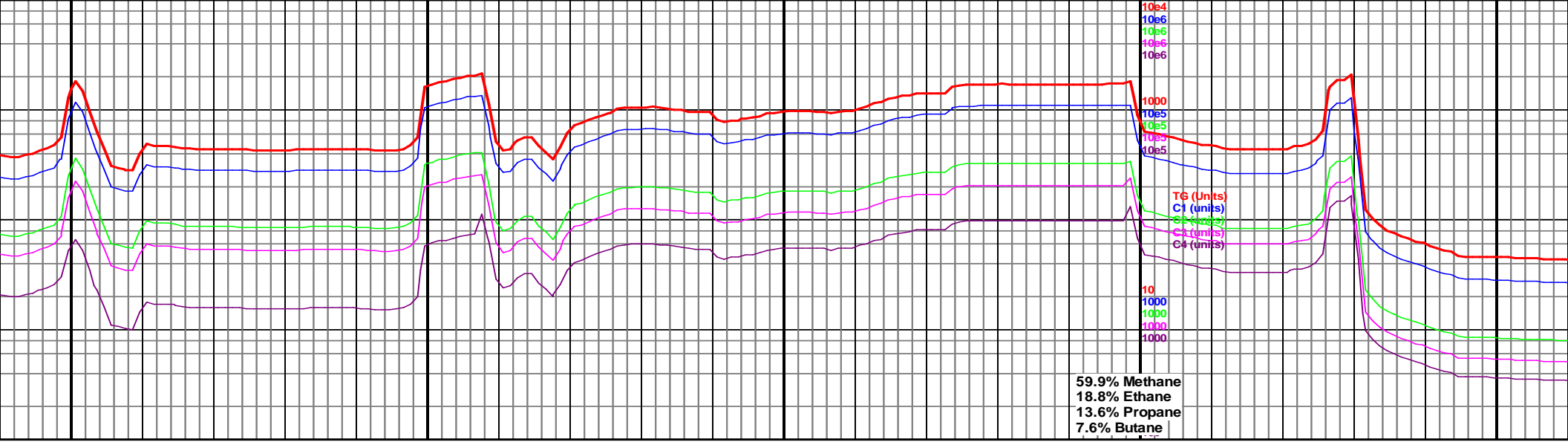


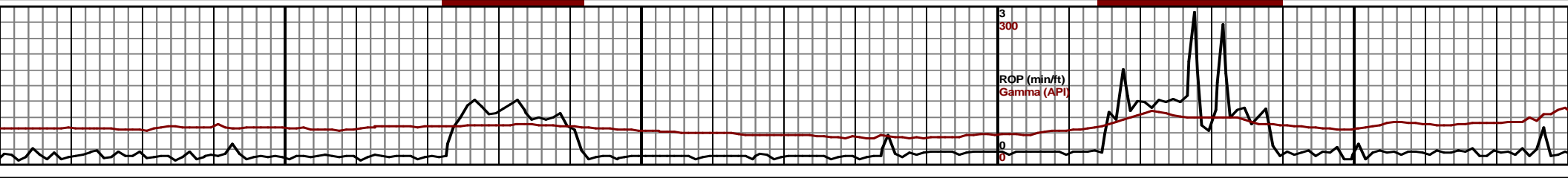
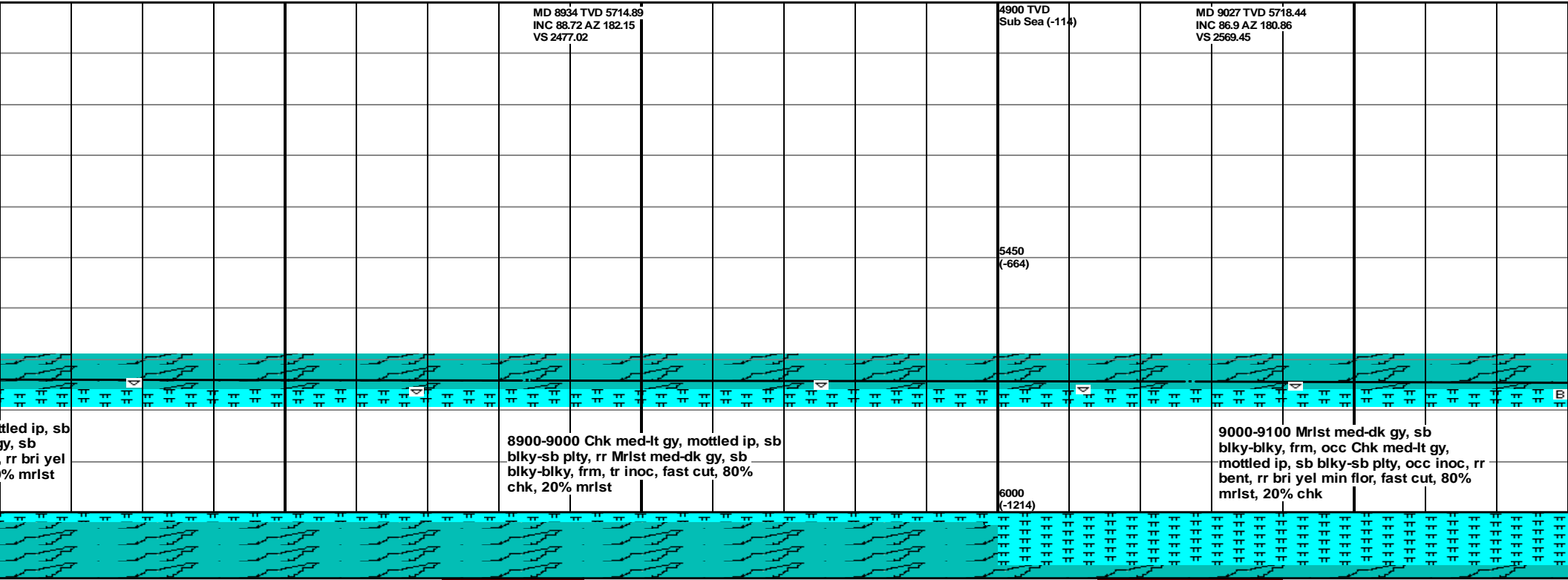
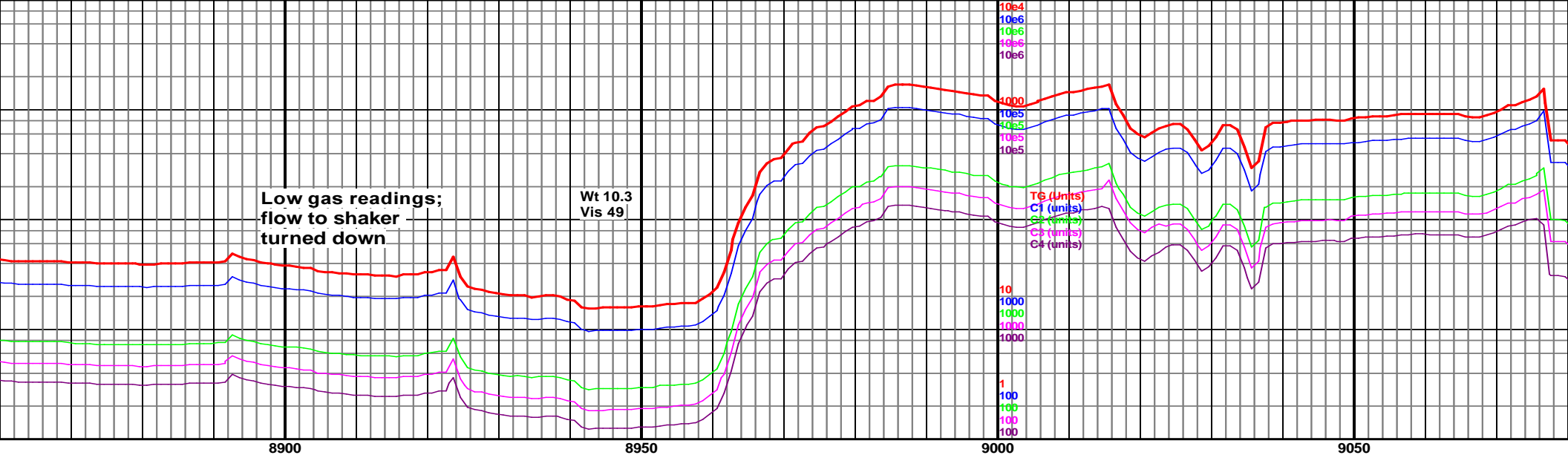


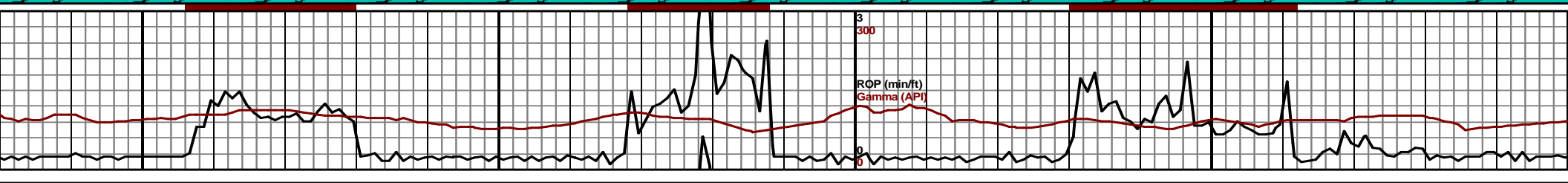
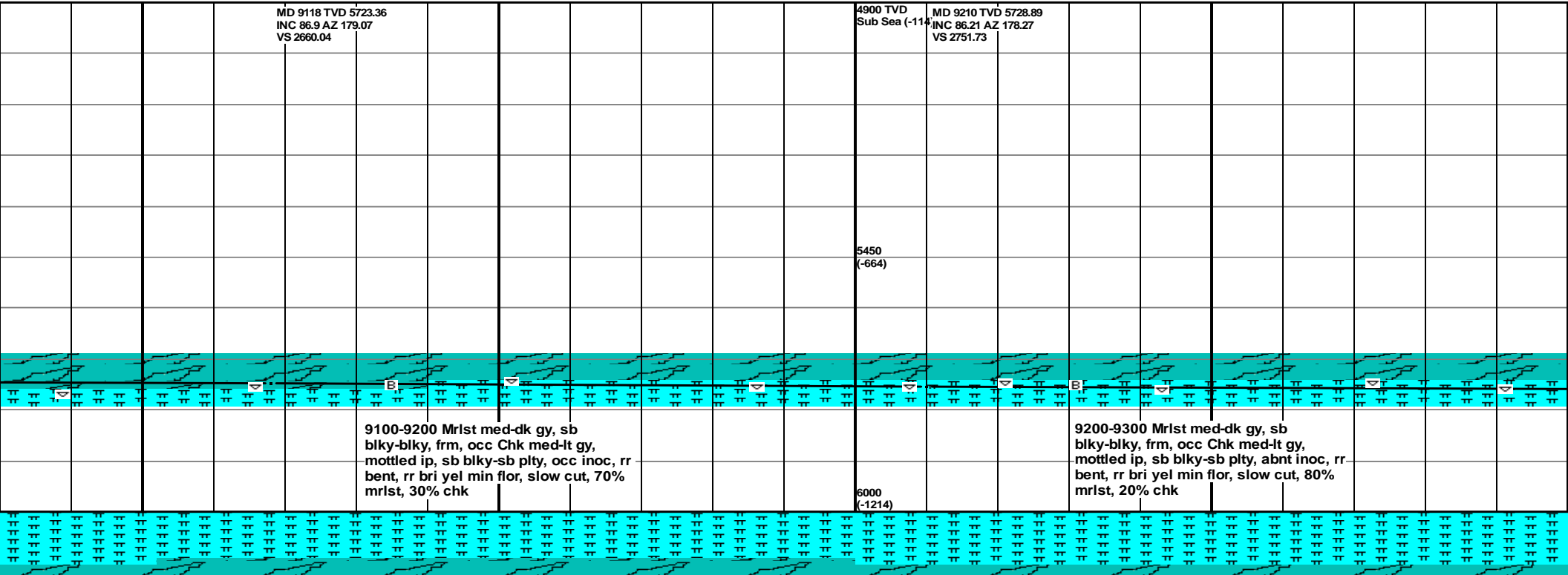
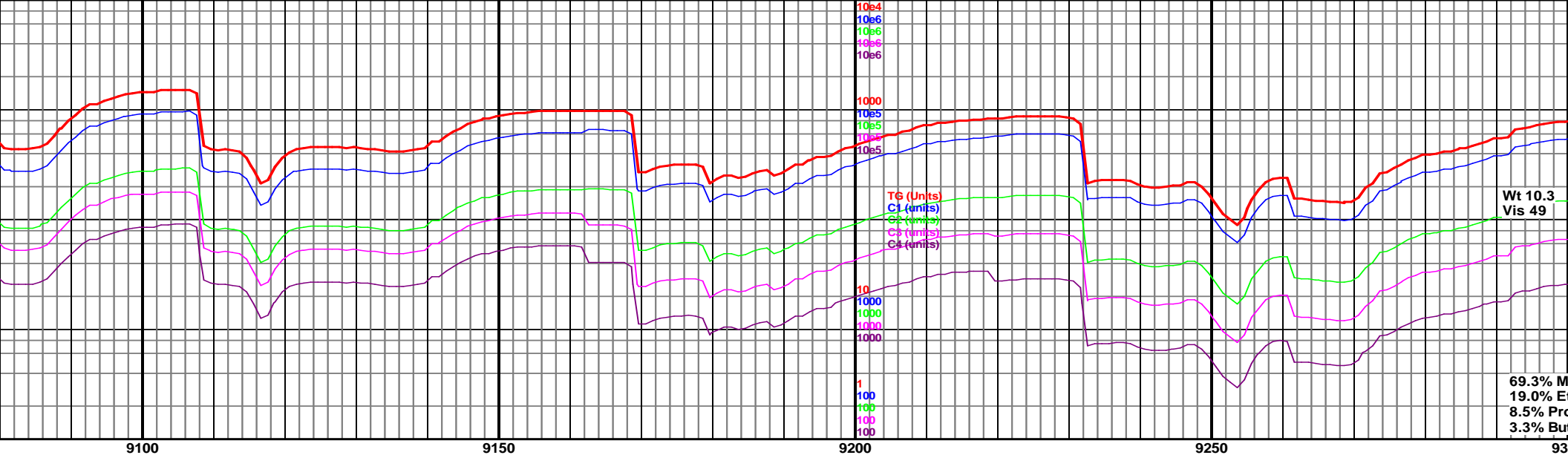
8197 TVD 5719.22 C 89.92 AZ 178.33 1741.39	MD 8292 TVD 5718.18 INC 91.33 AZ 177.31 VS 1836.3	MD 8385 TVD 5714.13 INC 93.67 AZ 176.94 VS 1929.17	13900 TVD Sub Sea (-114)
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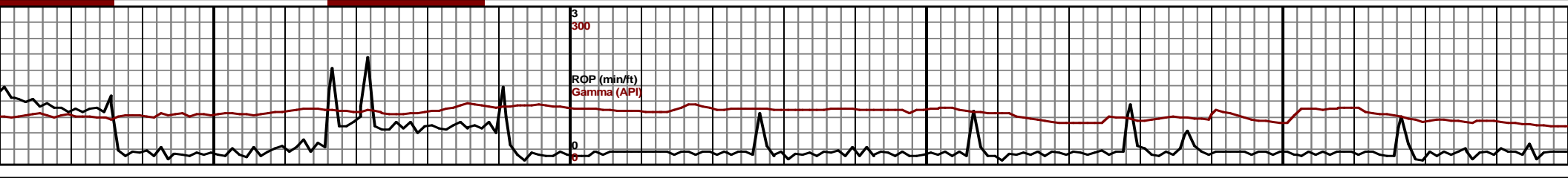
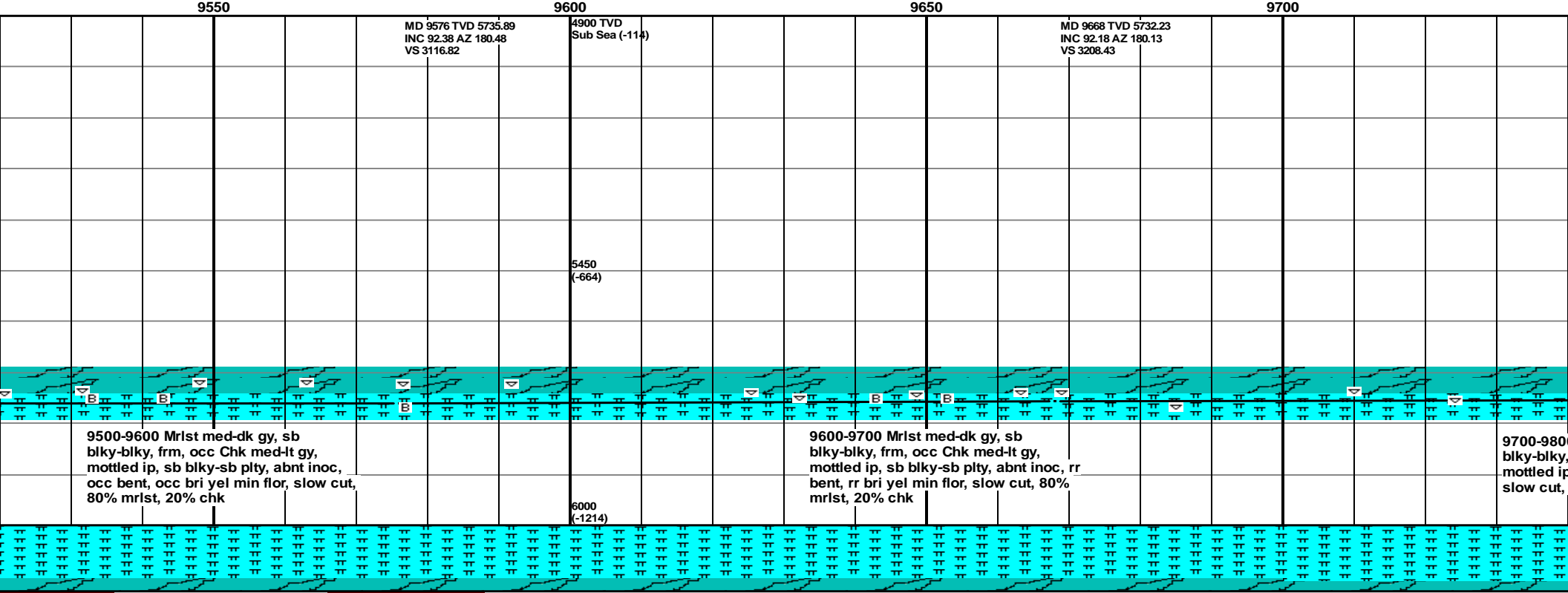
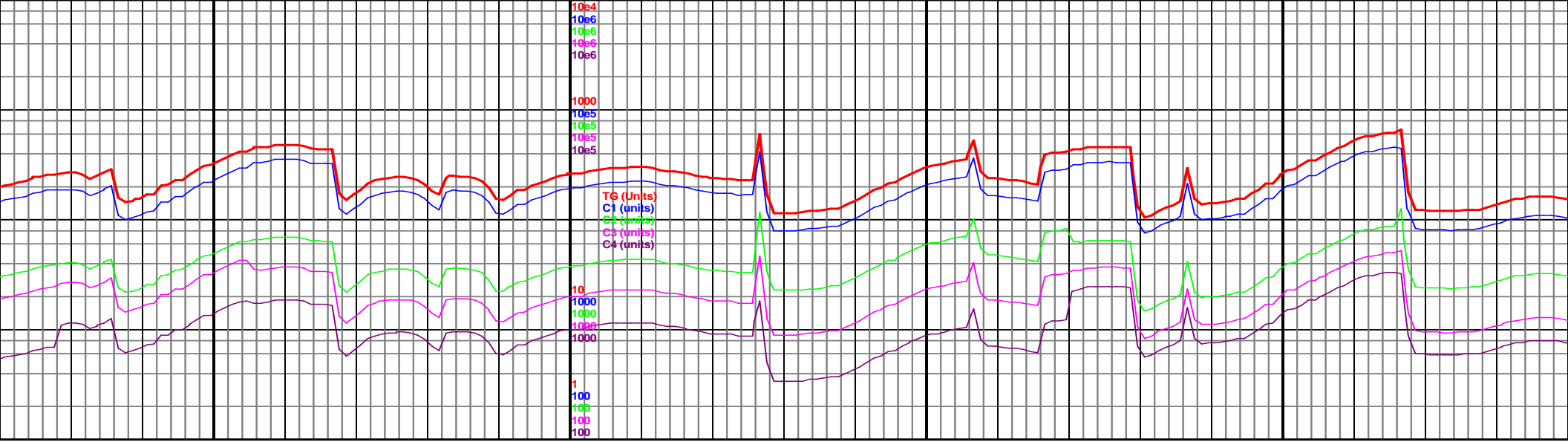


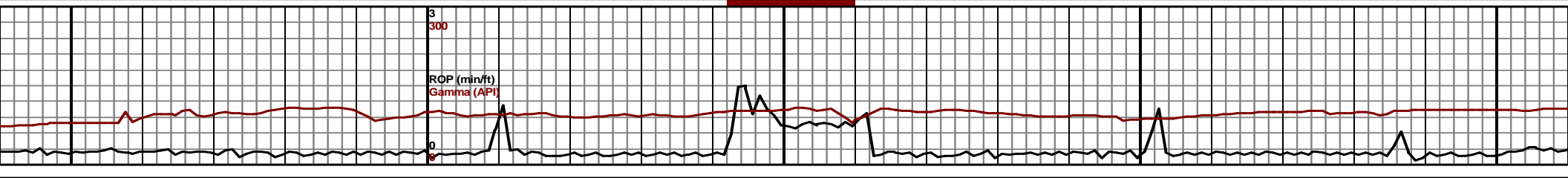
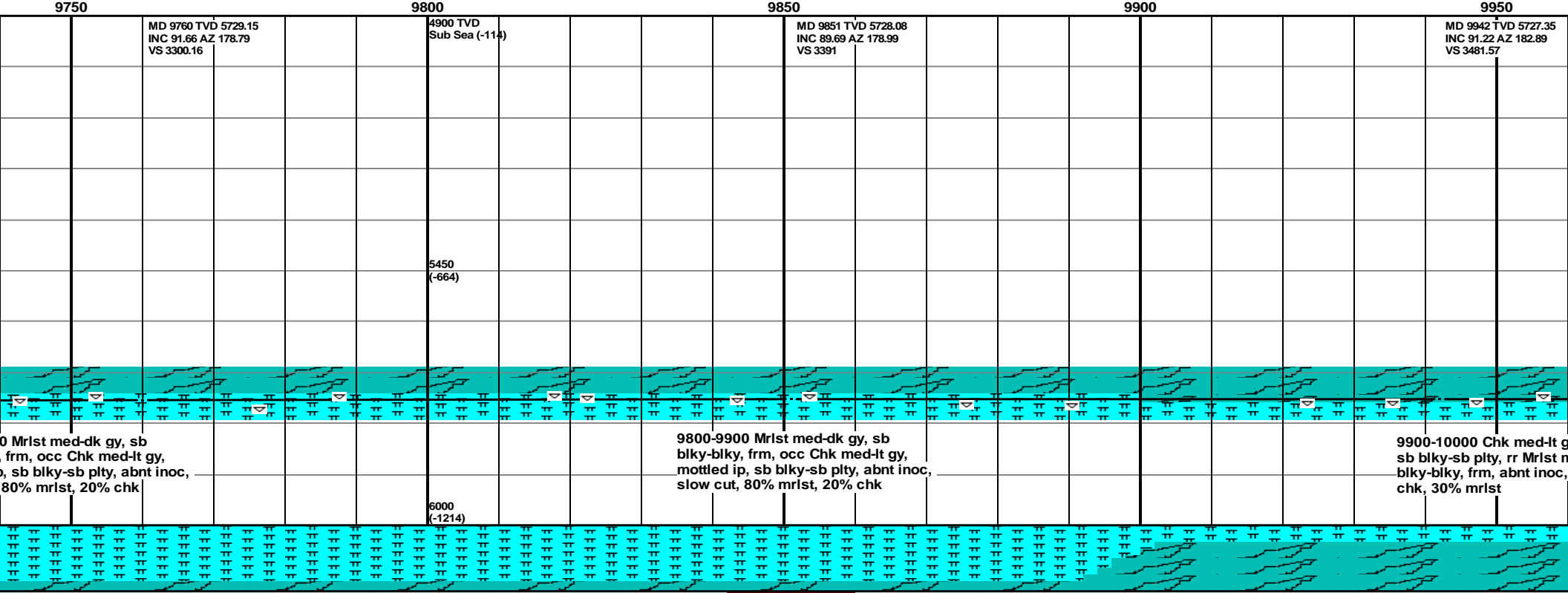
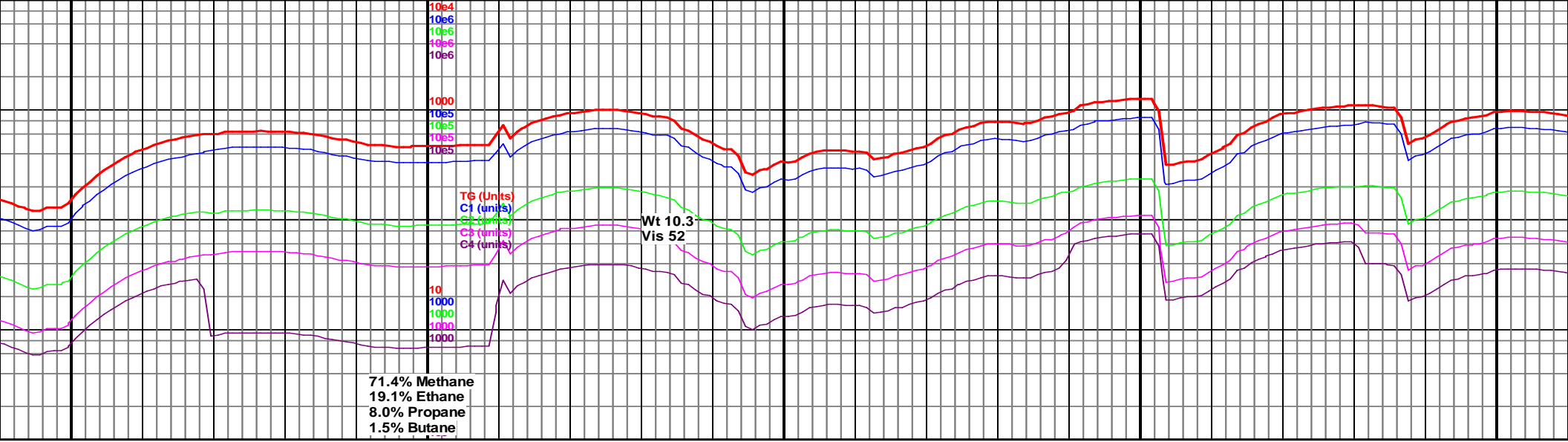


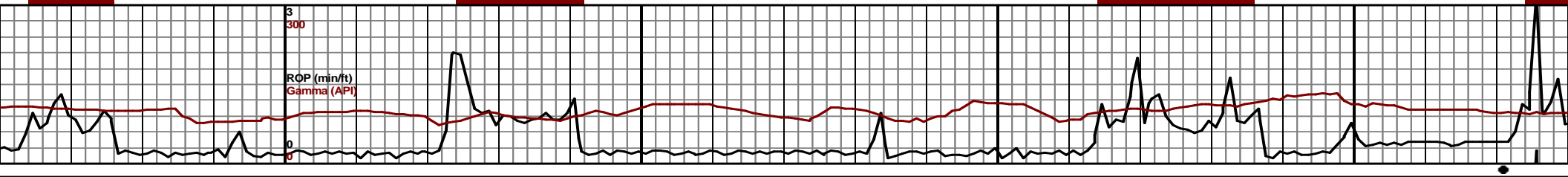
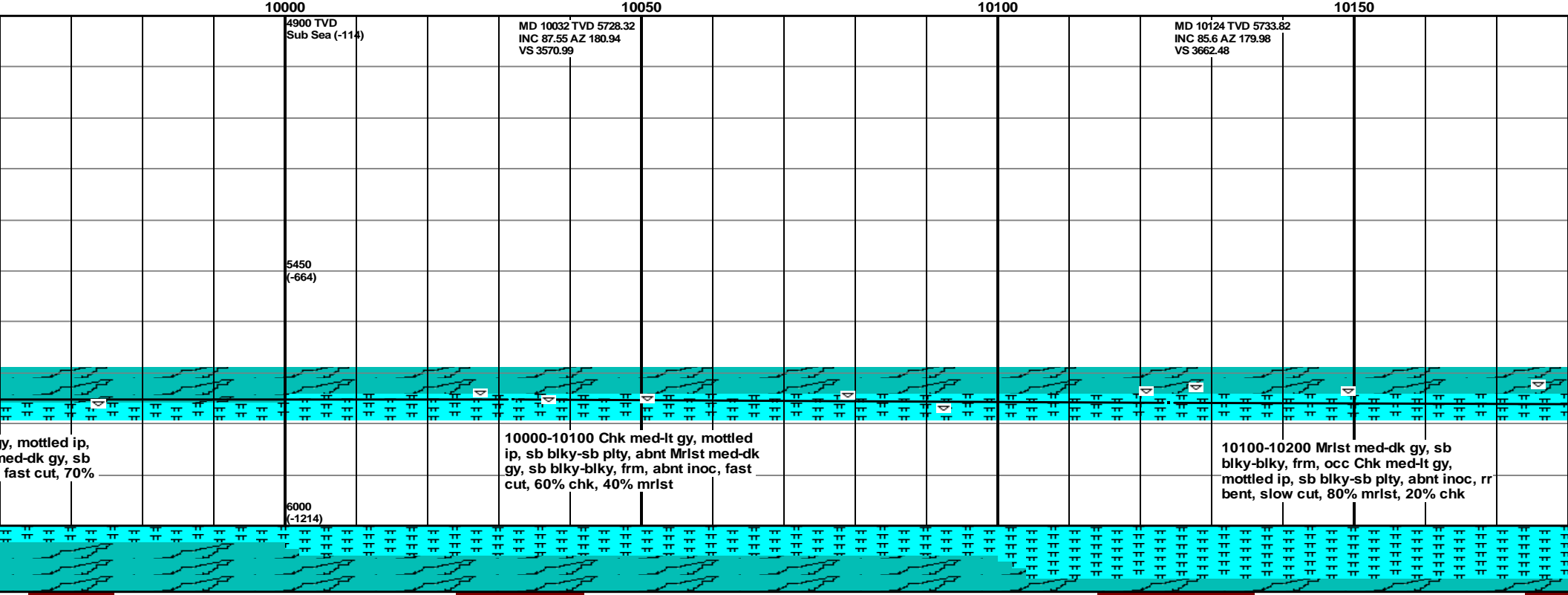
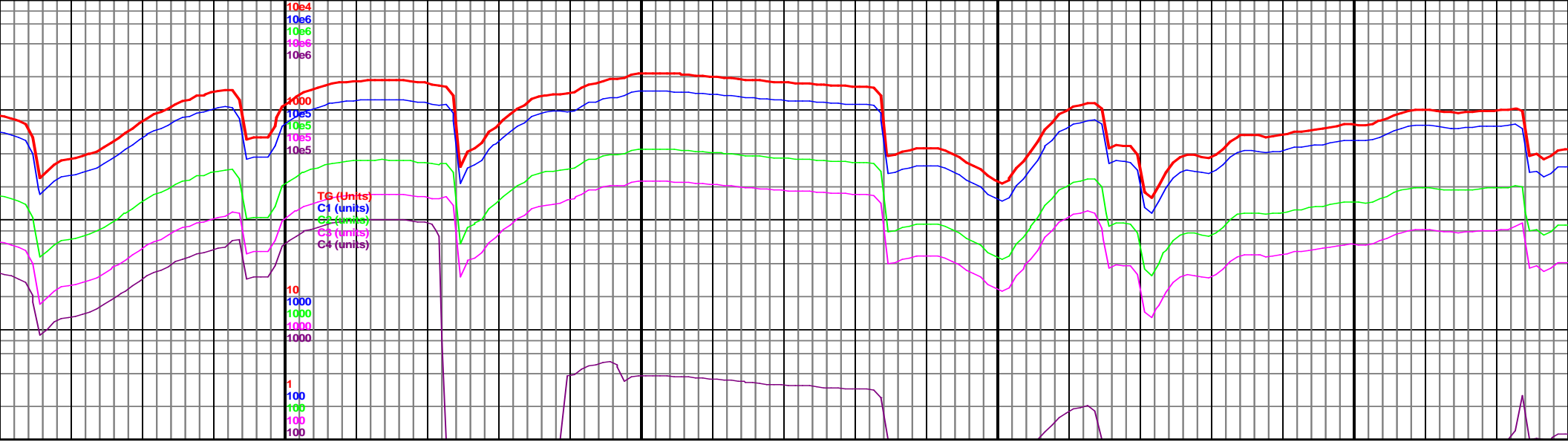


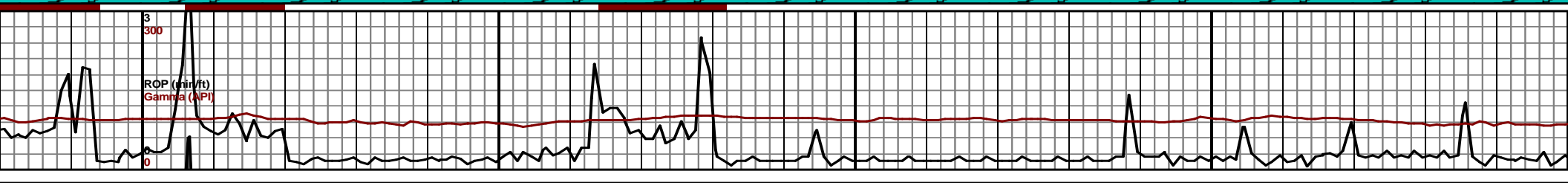
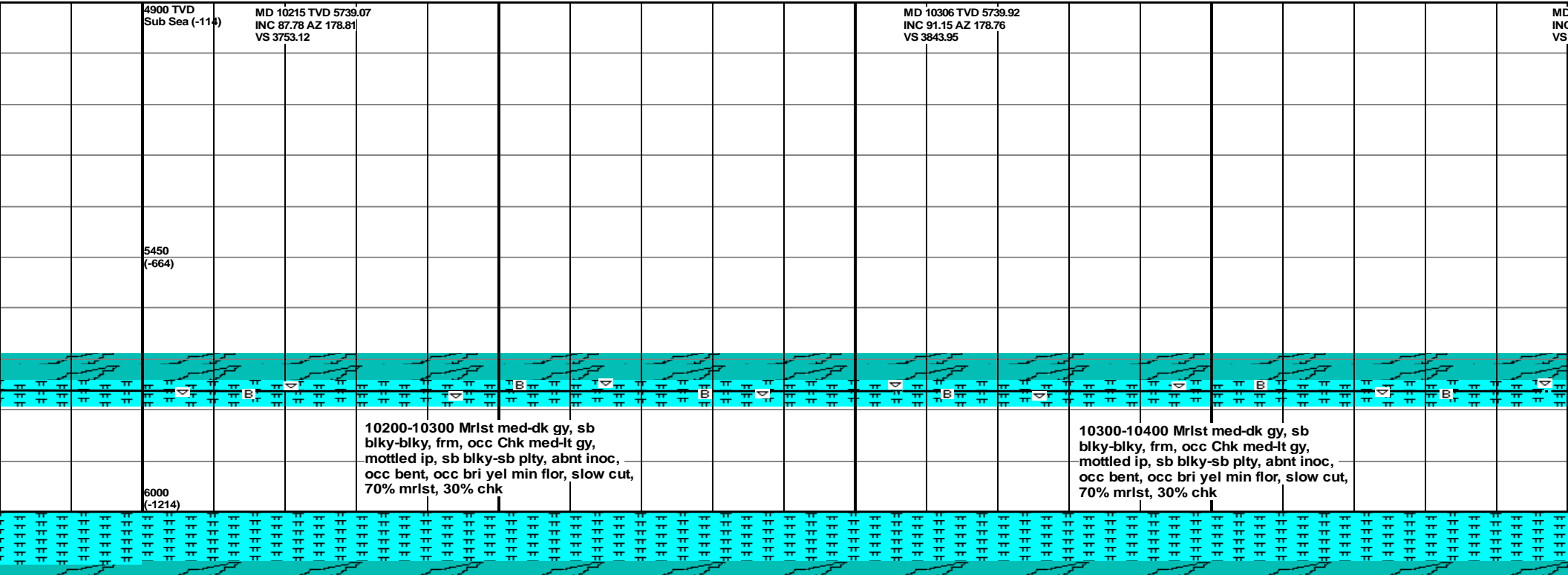
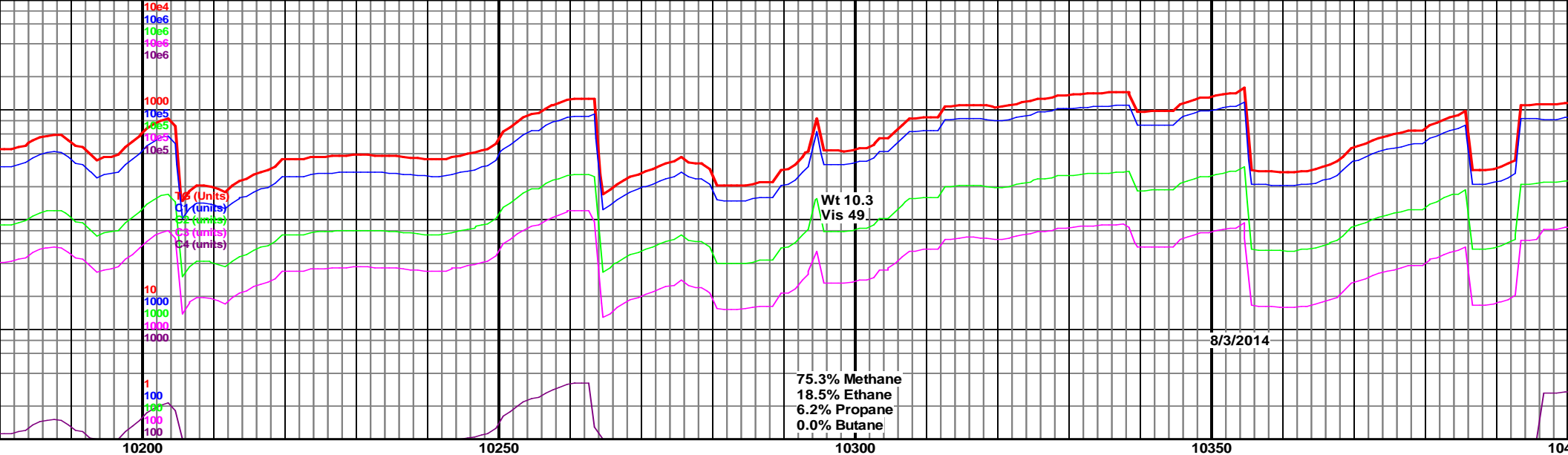


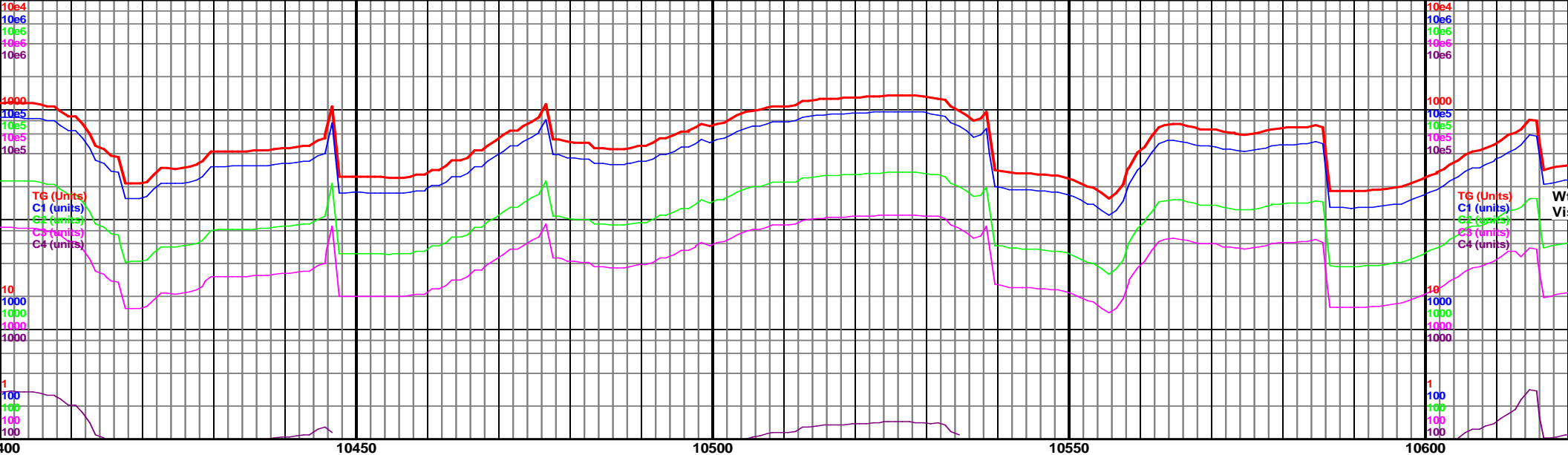
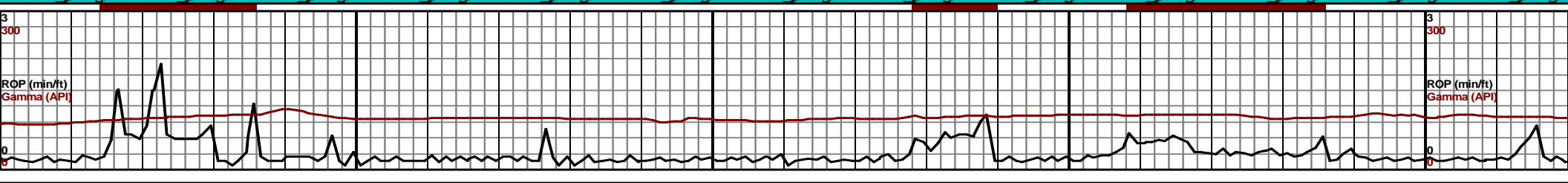
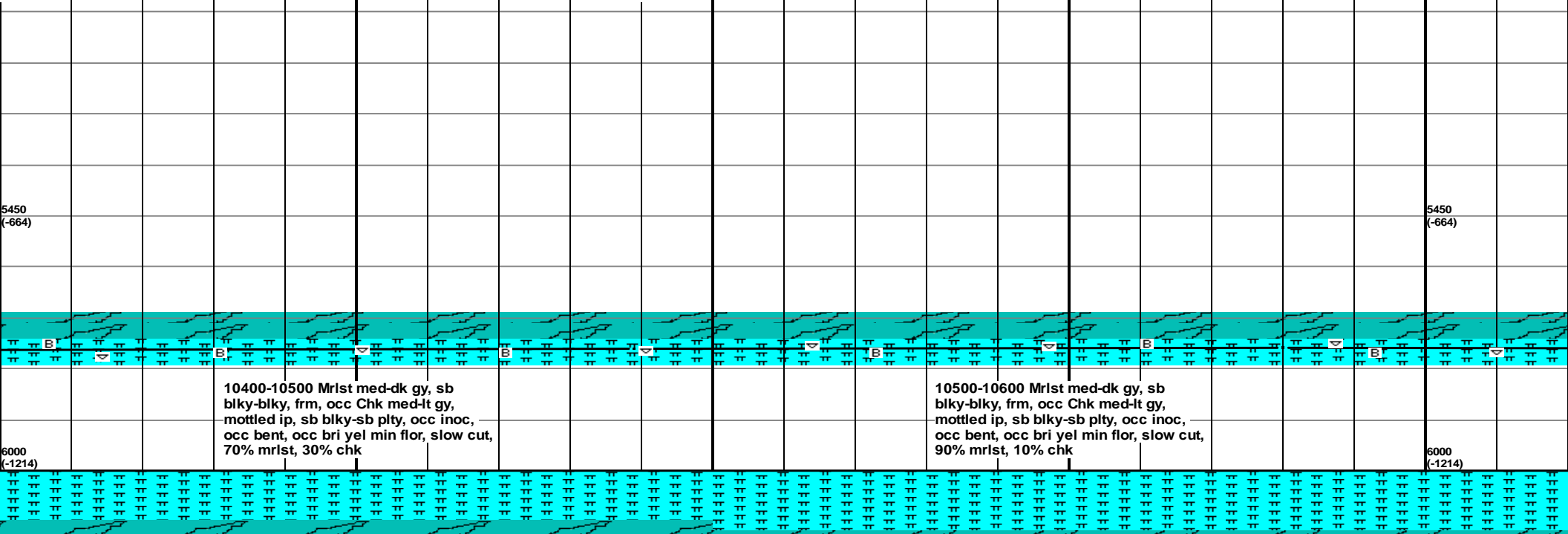


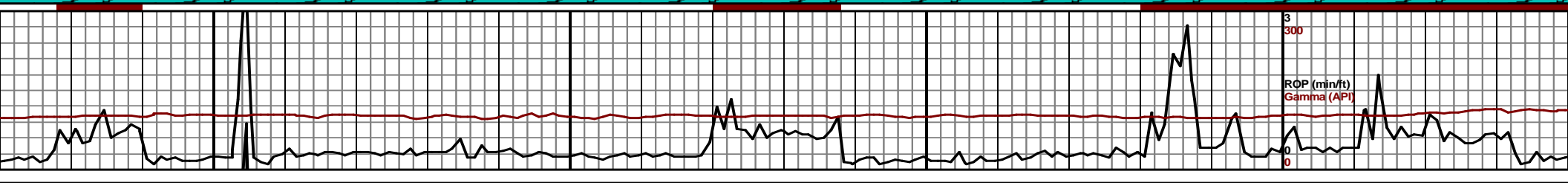
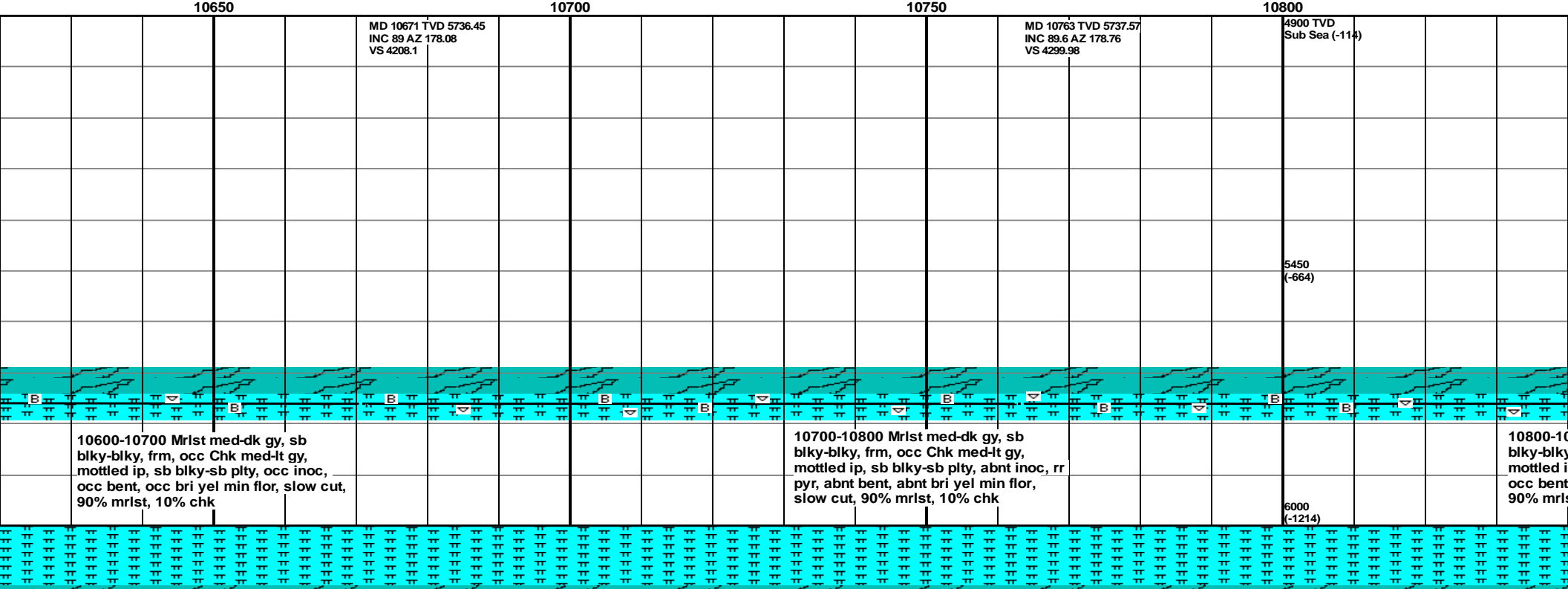
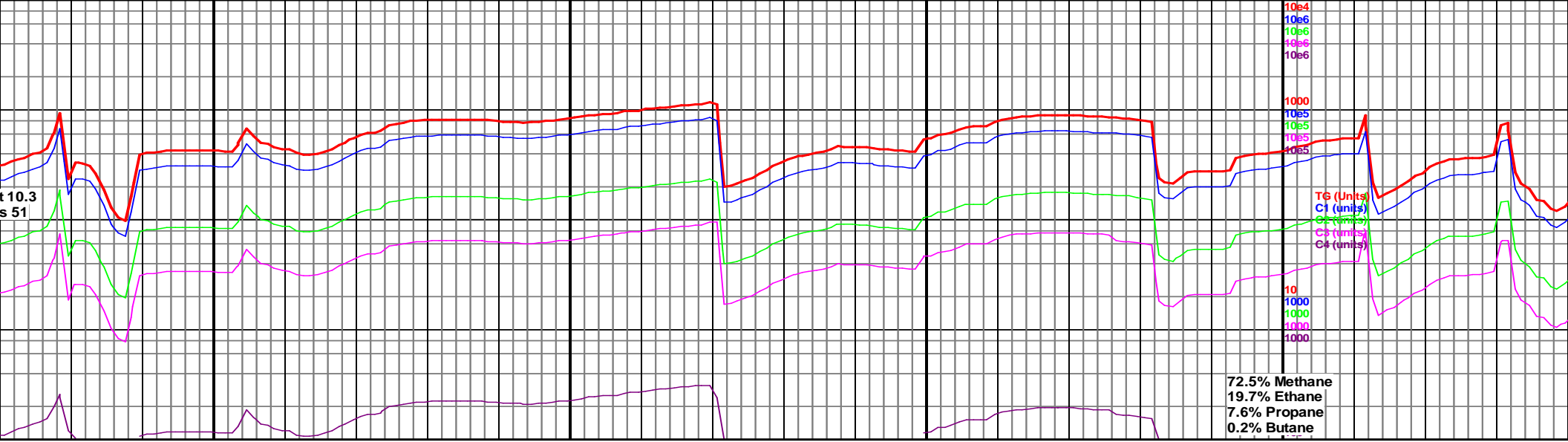


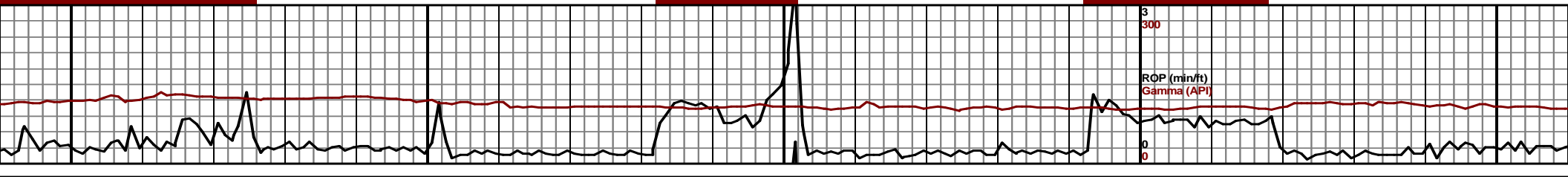
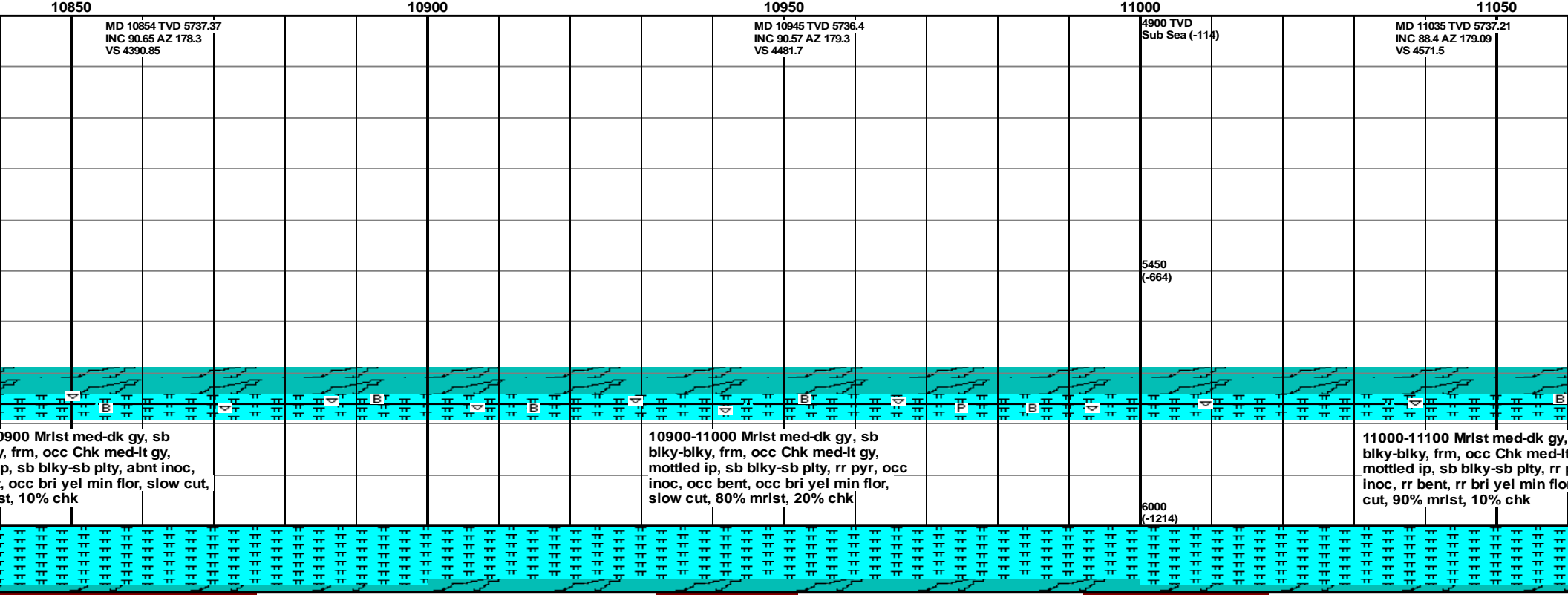
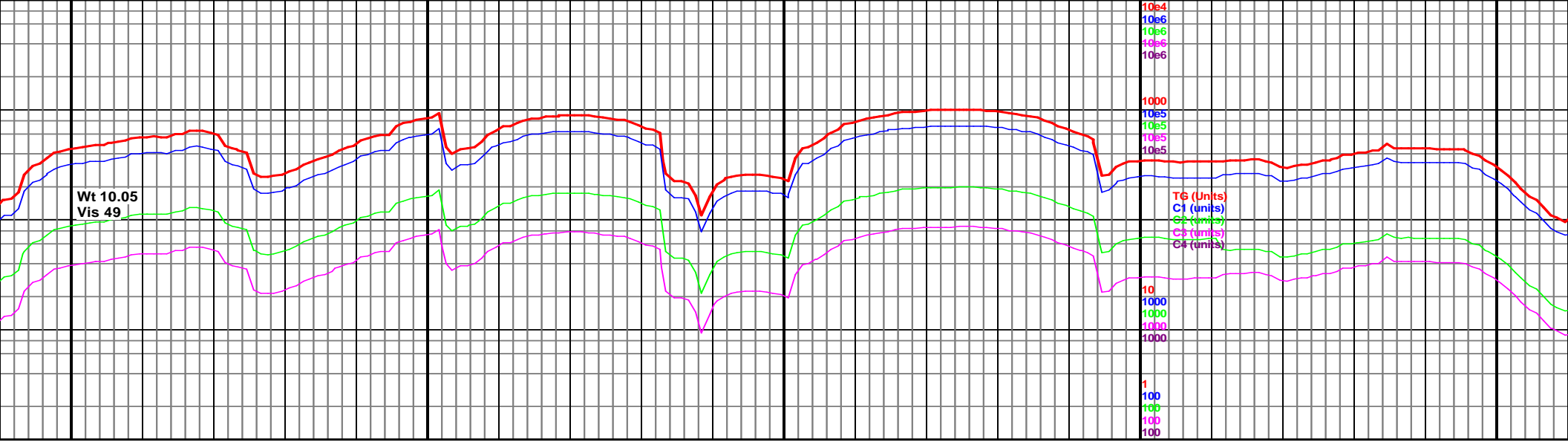


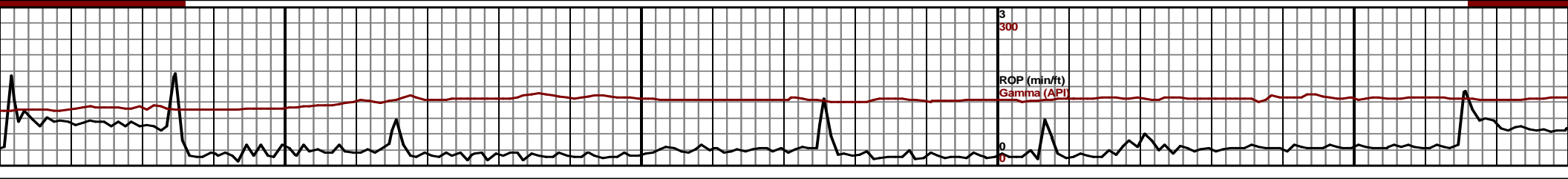
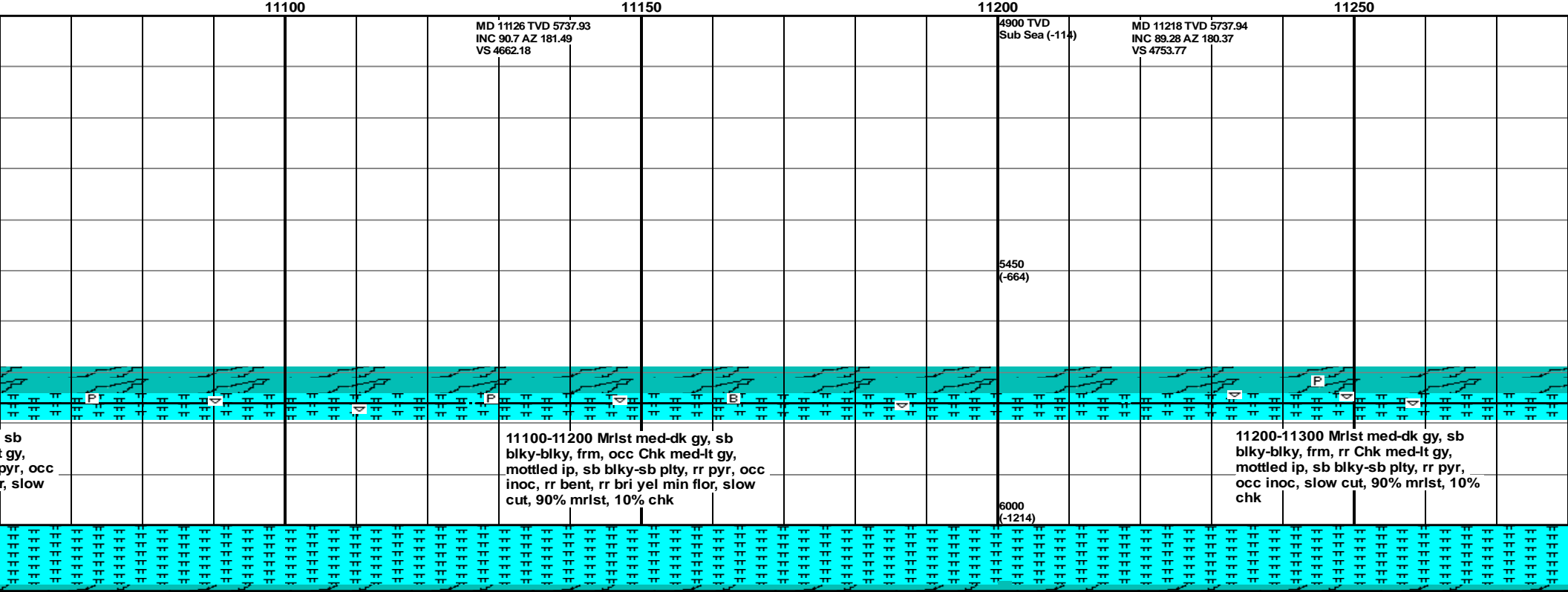
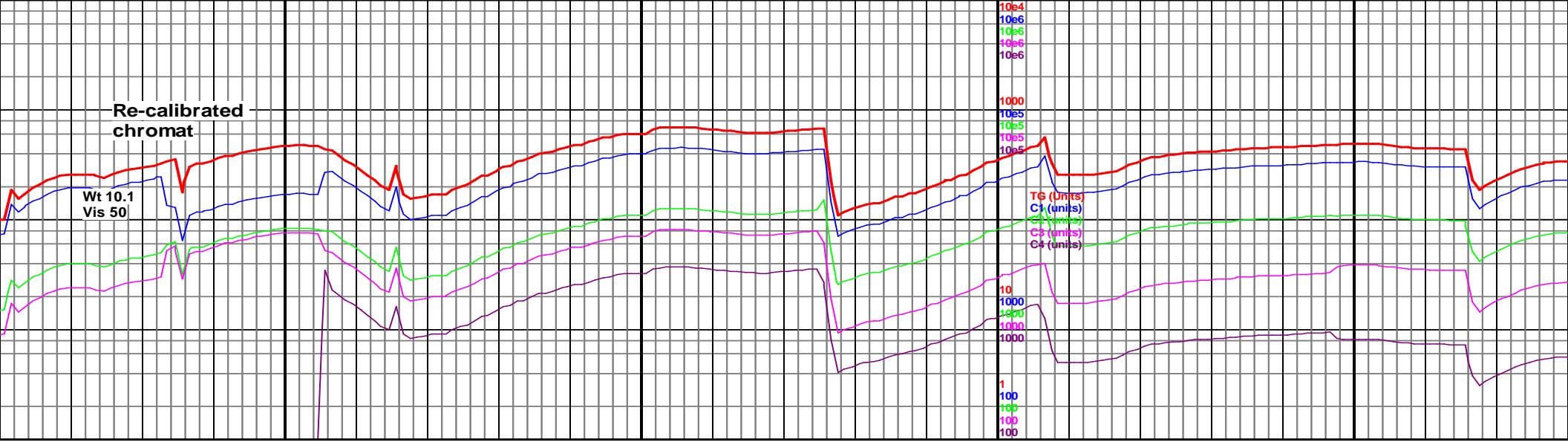


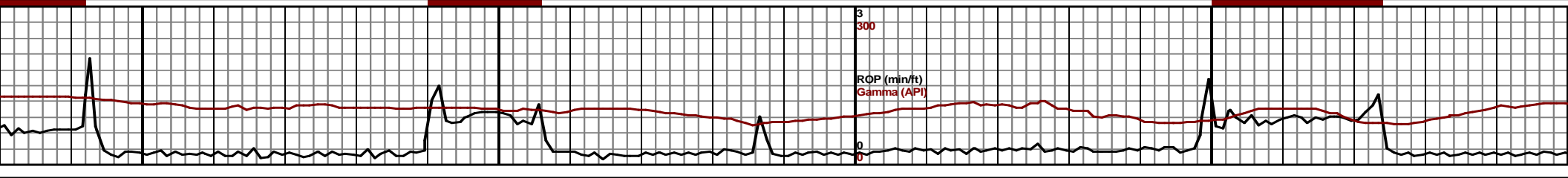
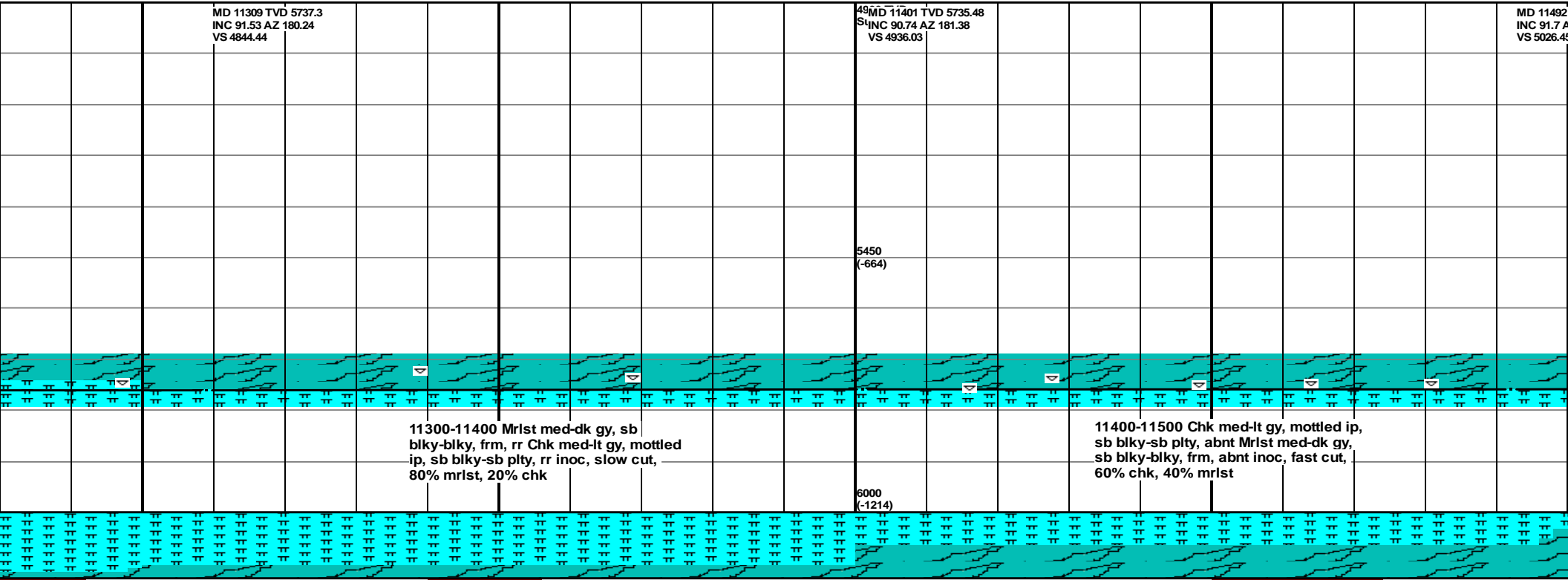
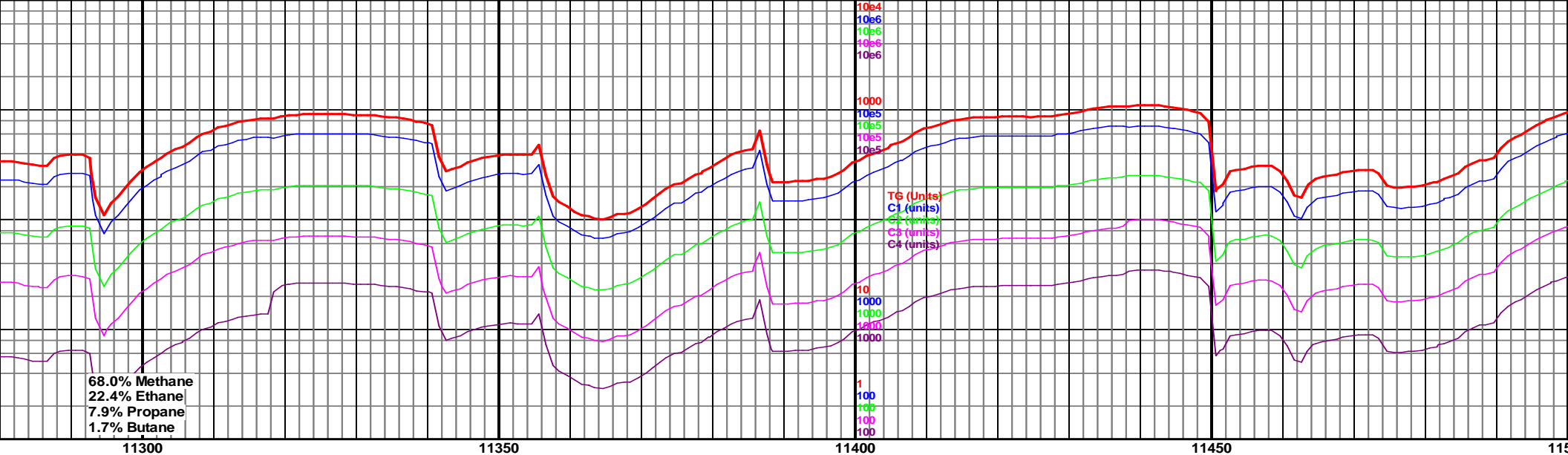


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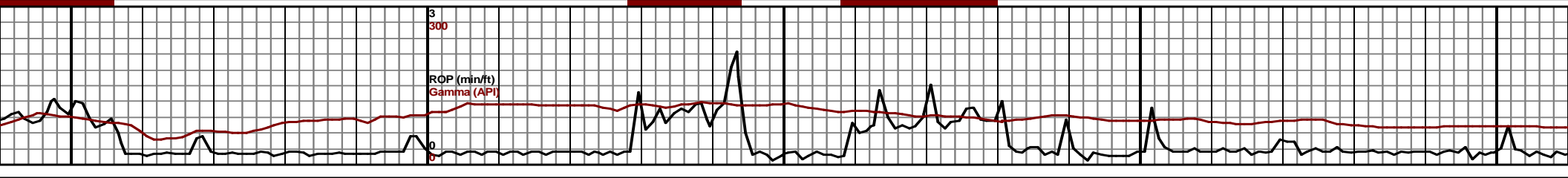
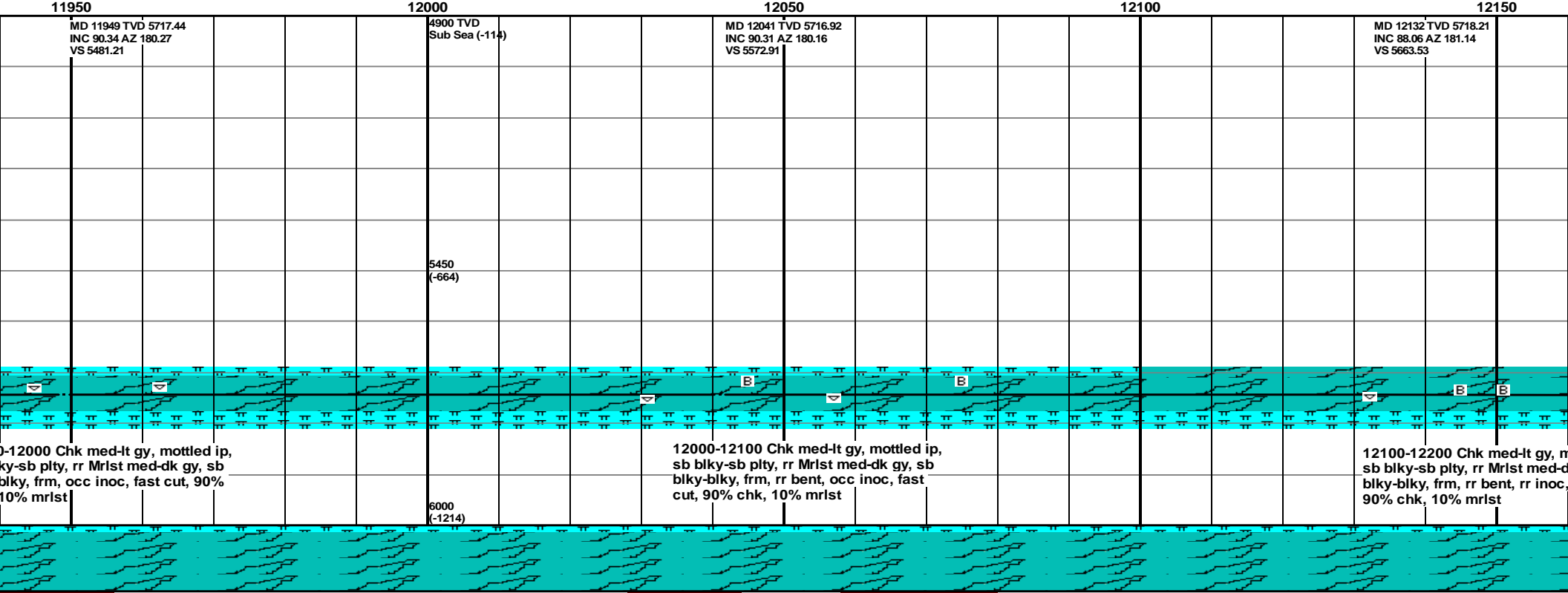
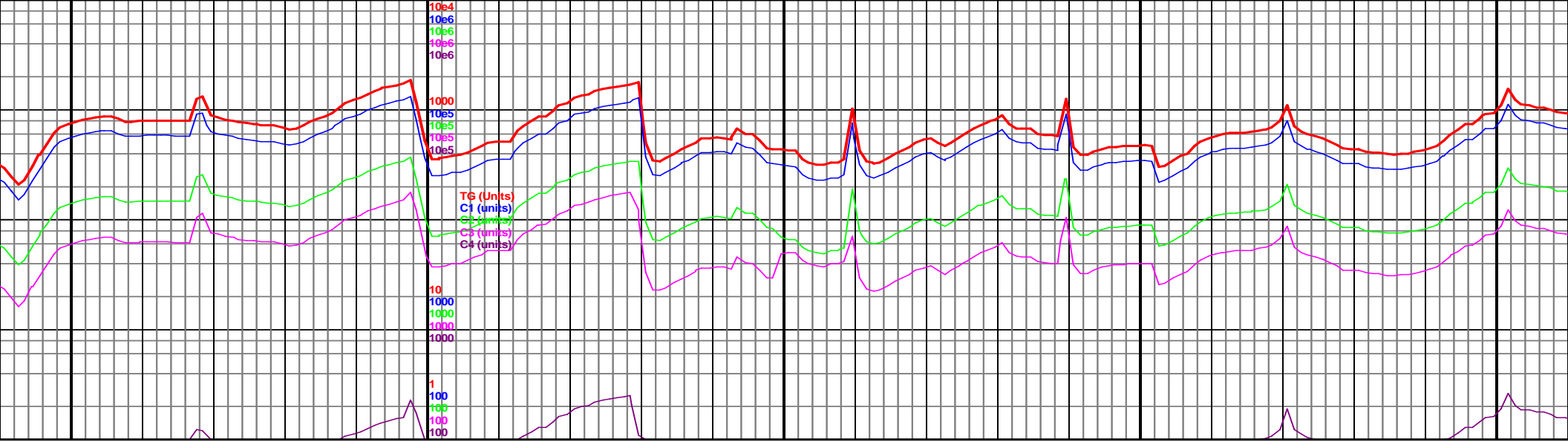


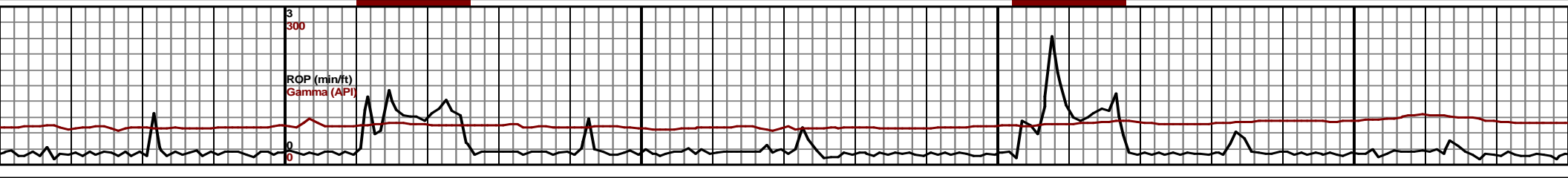
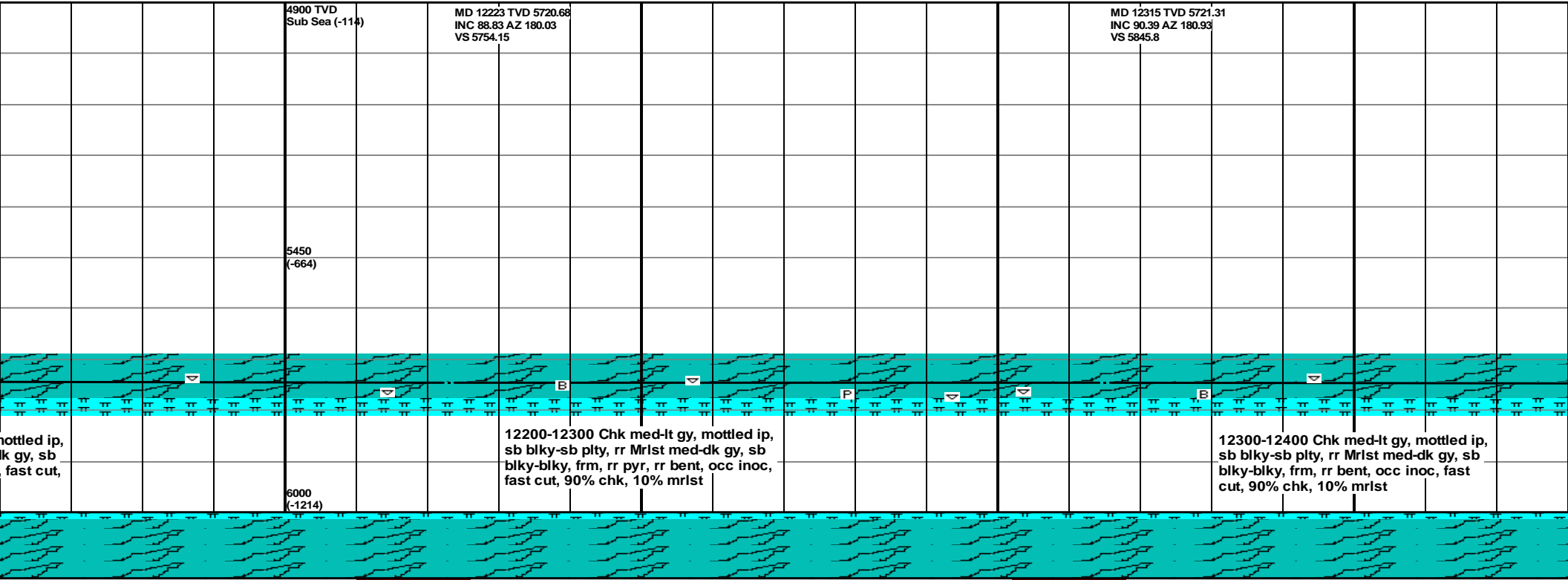
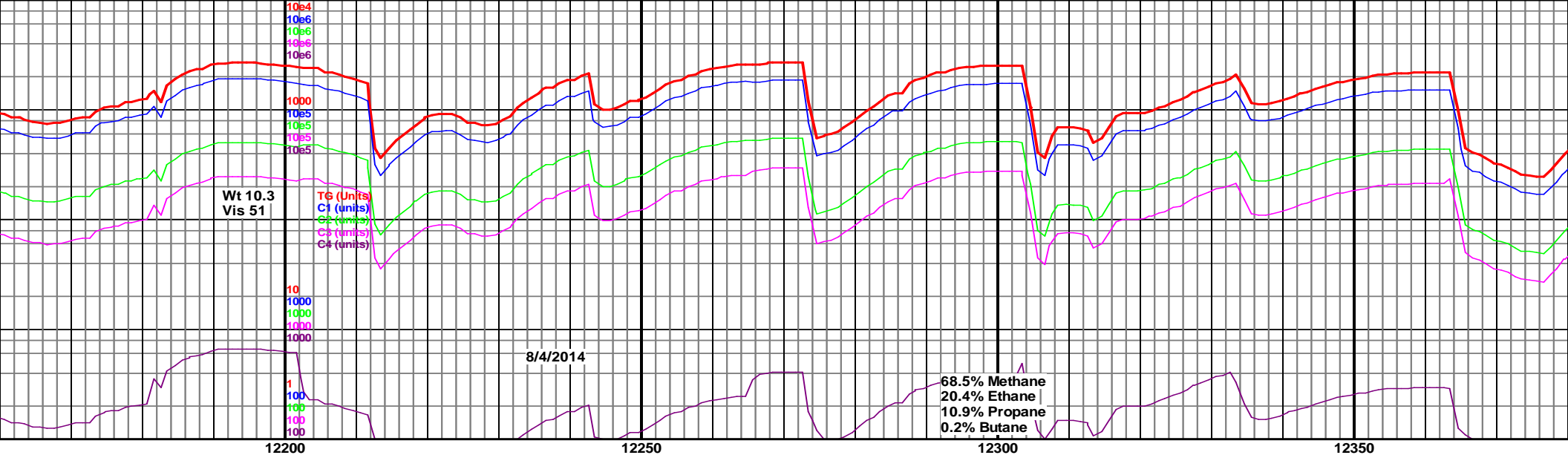


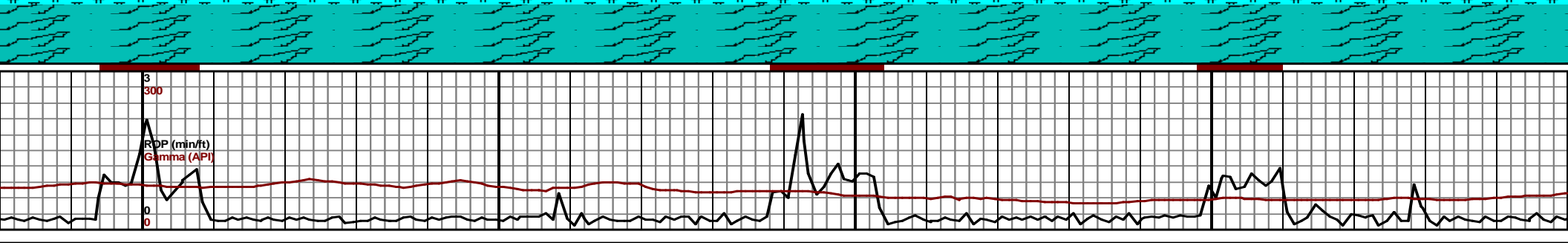
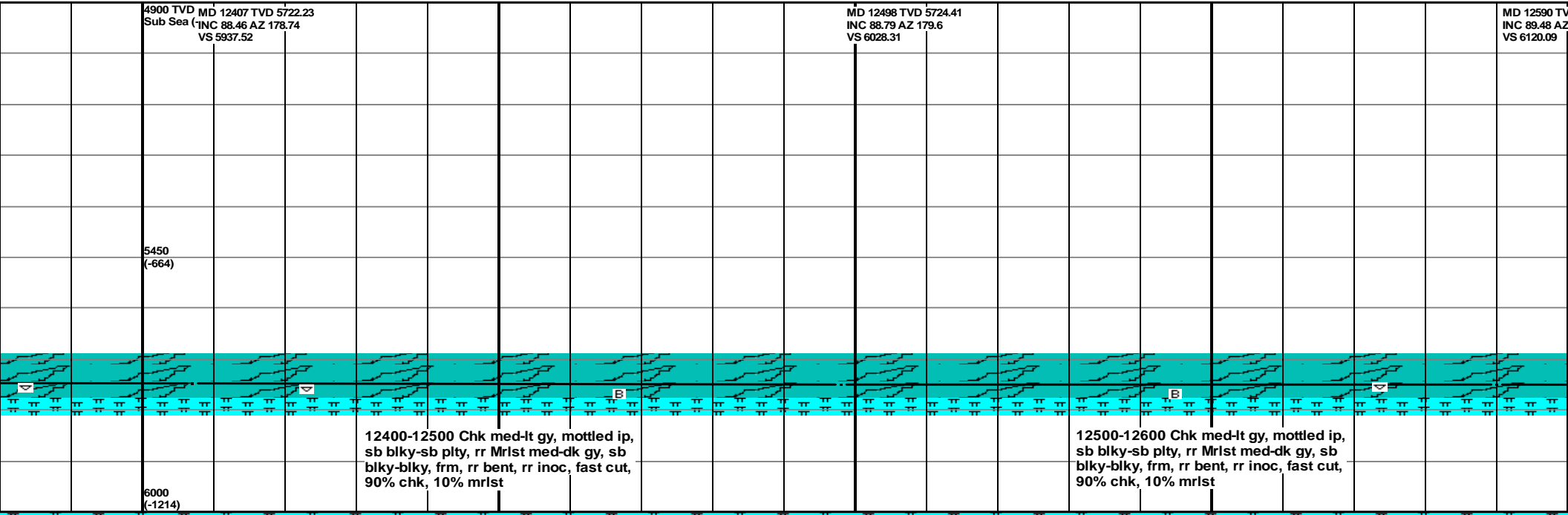
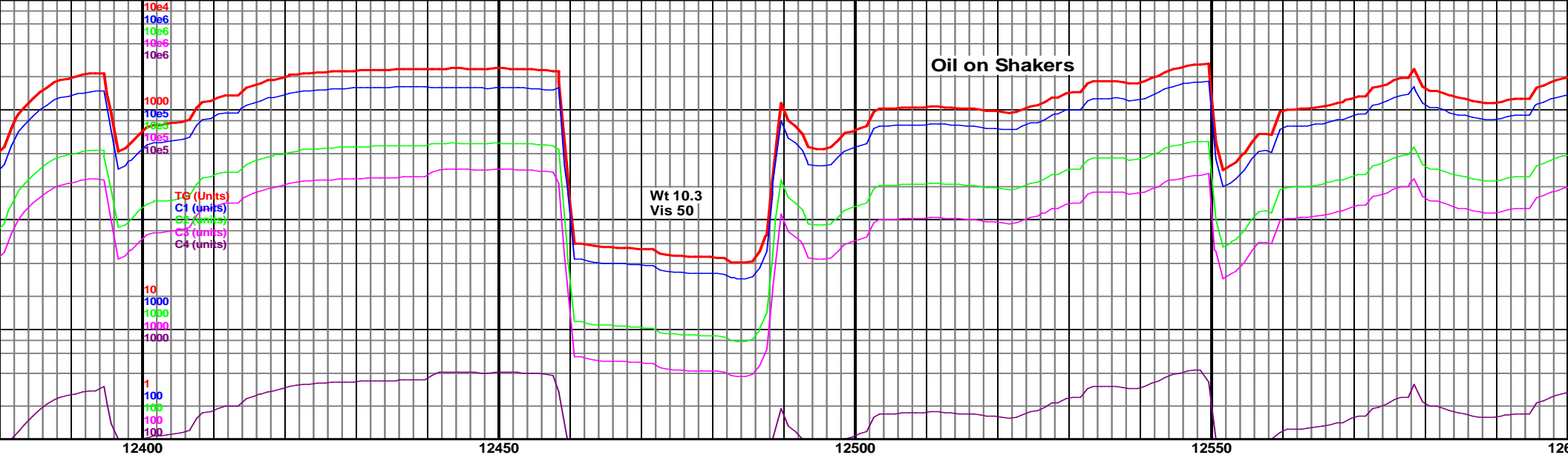


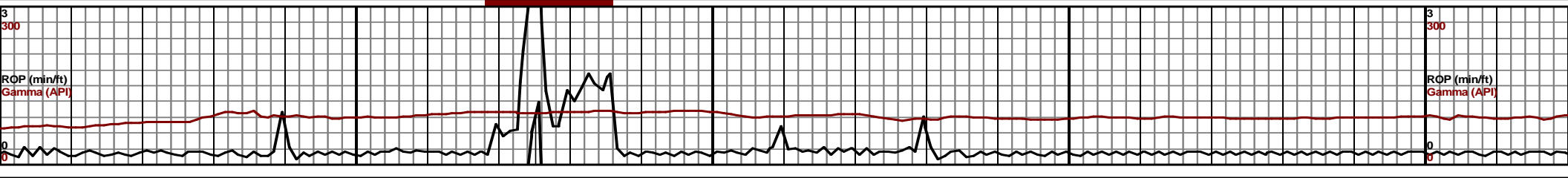
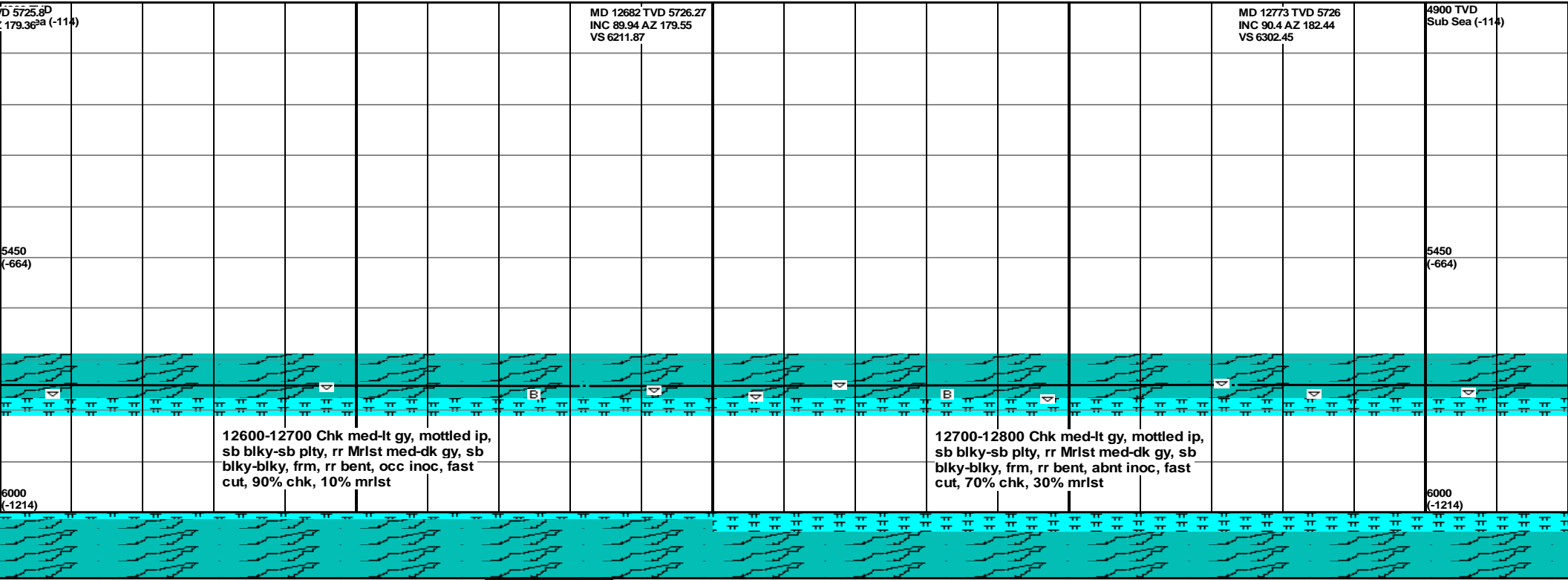
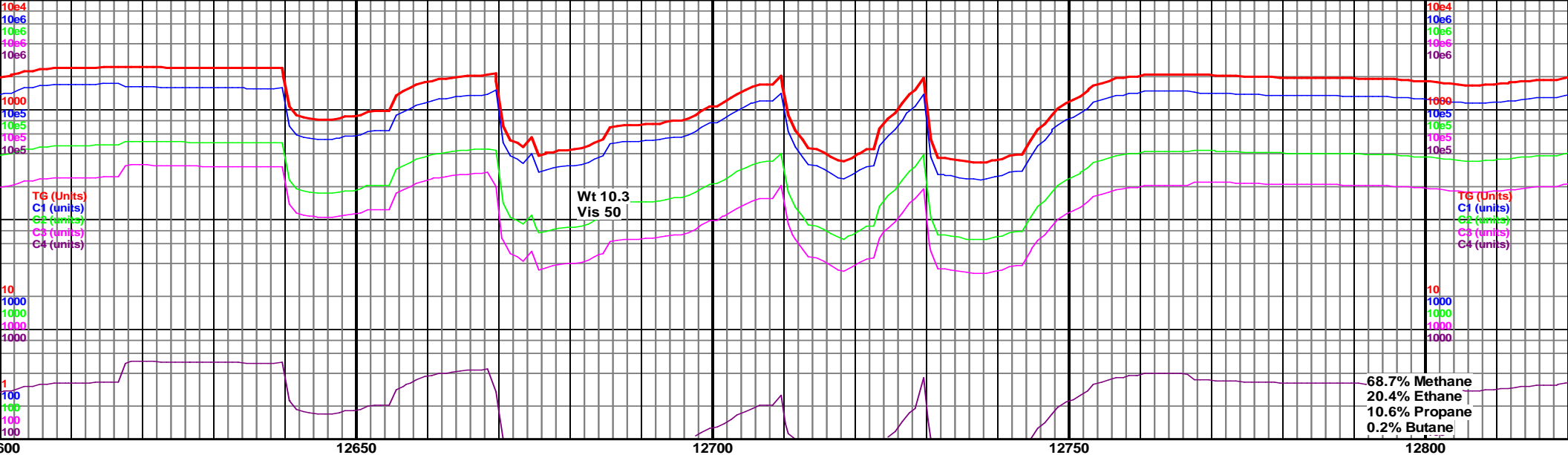


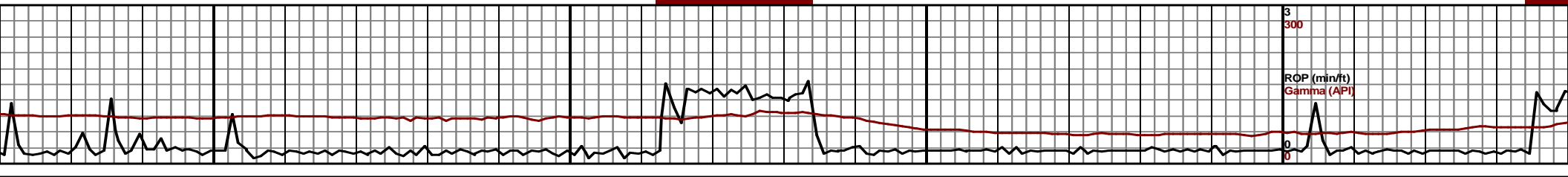
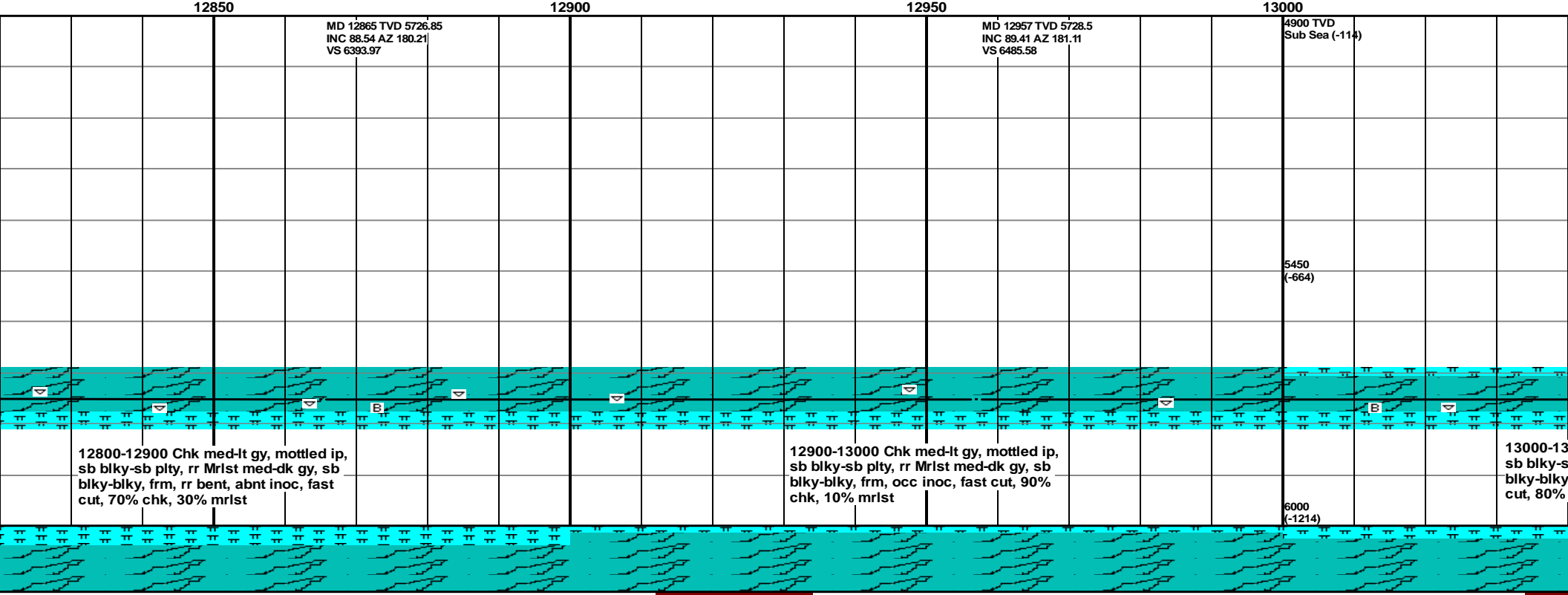
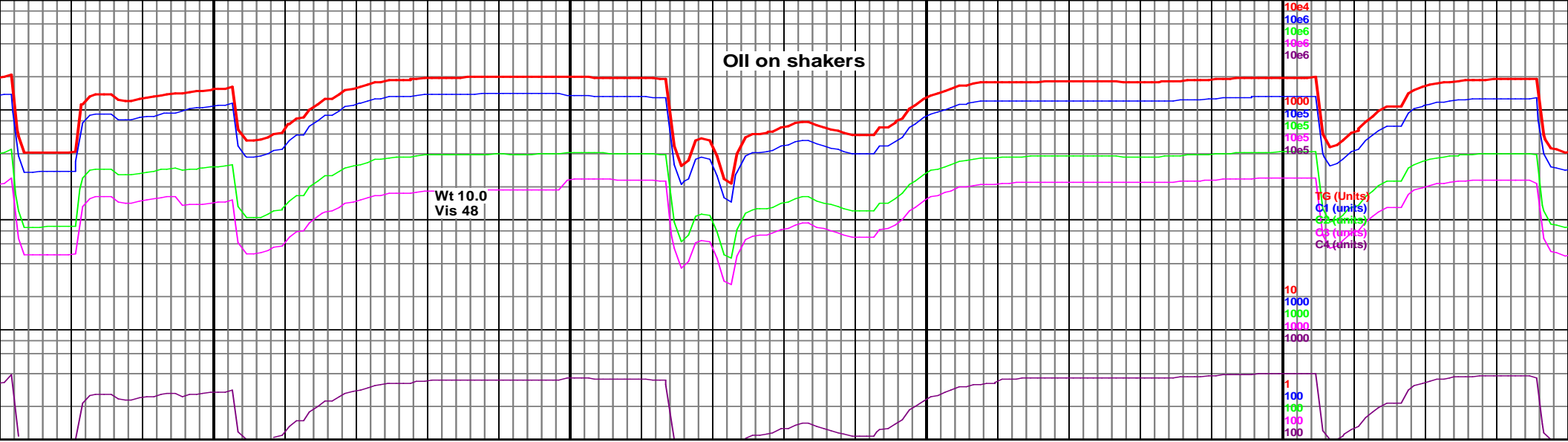




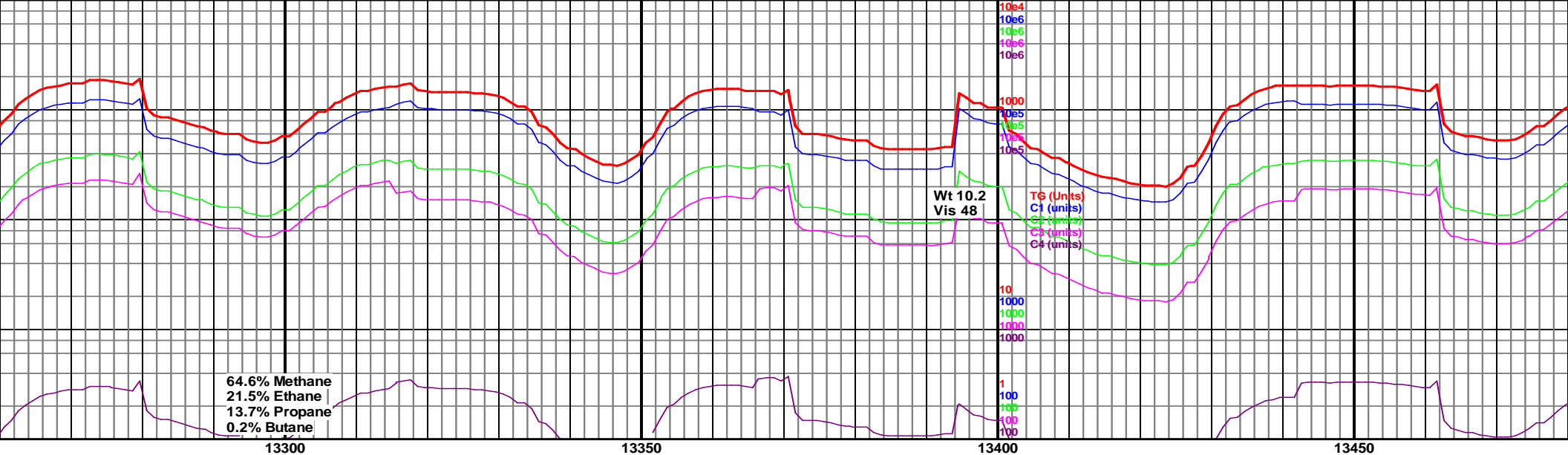








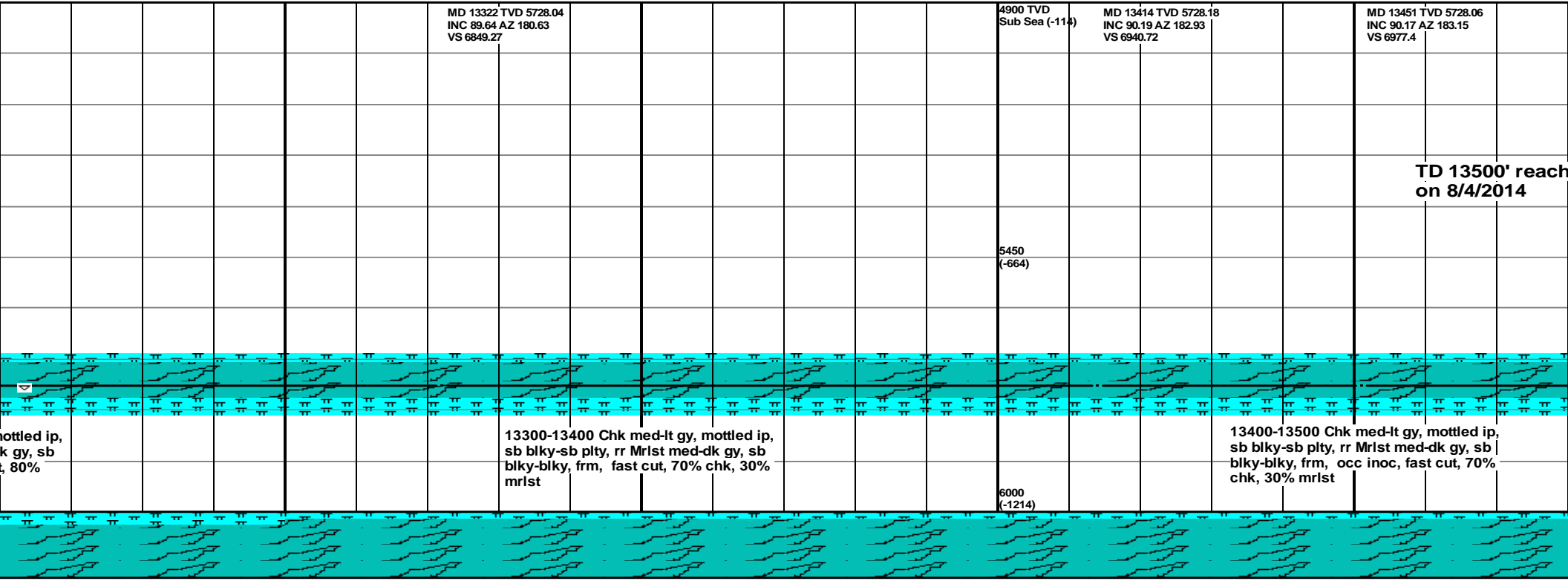




64.6% Methane  
21.5% Ethane  
13.7% Propane  
0.2% Butane

Wt 10.2  
Vis 48

T6 (Units)  
C1 (units)  
C2 (units)  
C3 (units)  
C4 (units)



MD 13322 TVD 5728.04  
INC 89.64 AZ 180.63  
VS 6849.27

4900 TVD  
Sub Sea (-114)

MD 13414 TVD 5728.18  
INC 90.19 AZ 182.93  
VS 6940.72

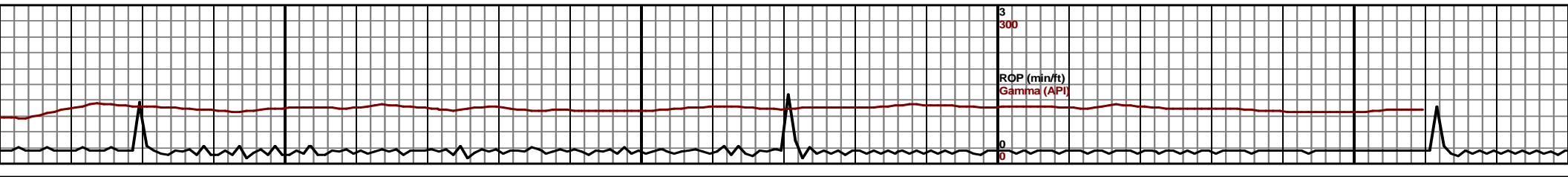
MD 13451 TVD 5728.06  
INC 90.17 AZ 183.15  
VS 6977.4

TD 13500' reached  
on 8/4/2014

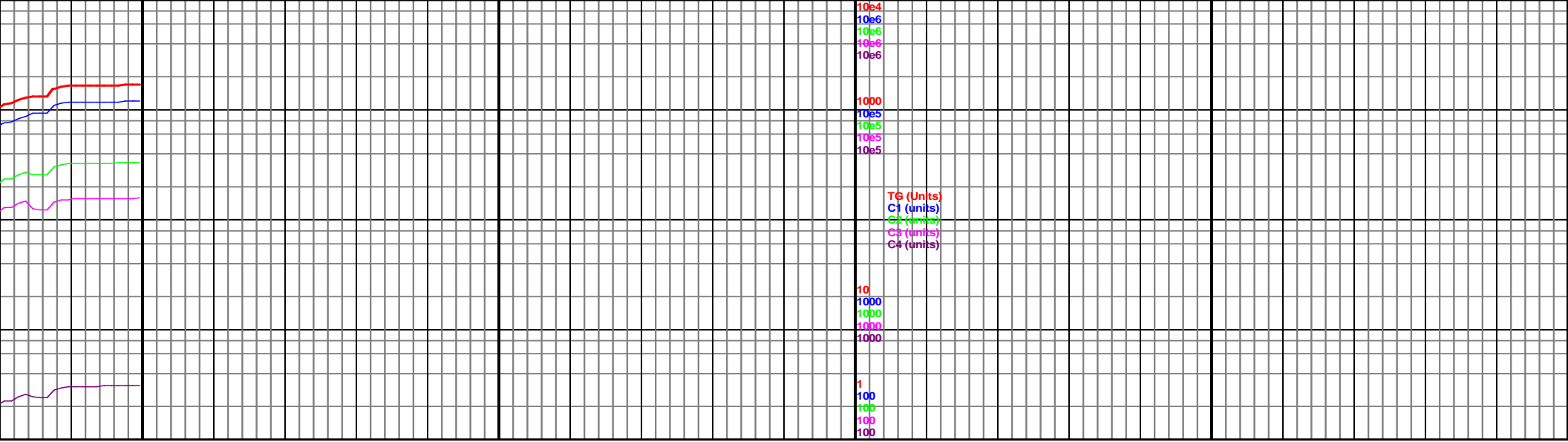
mottled ip,  
k gy, sb  
t, 80%

13300-13400 Chk med-lt gy, mottled ip,  
sb blkgy-sb plty, rr Mrlst med-dk gy, sb  
blkgy-blky, frm, fast cut, 70% chk, 30%  
mrlst

13400-13500 Chk med-lt gy, mottled ip,  
sb blkgy-sb plty, rr Mrlst med-dk gy, sb  
blkgy-blky, frm, occ inocc, fast cut, 70%  
chk, 30% mrlst



ROP (min/ft)  
Gamma (API)



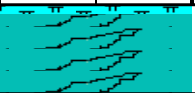
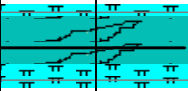
MD 13500 TVD 5727.92  
INC 90.17 AZ 183.15  
VS 7025.97

4900 TVD  
Sub Sea (-114)

ed at 12:30

5450  
(-664)

6000  
(-1214)

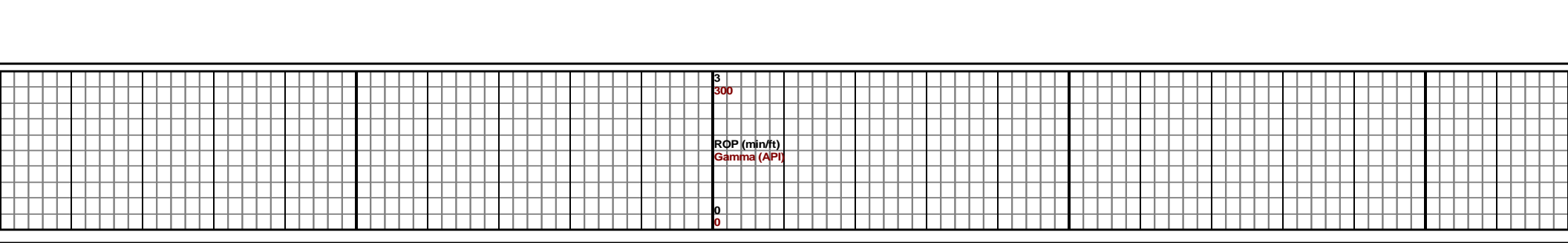
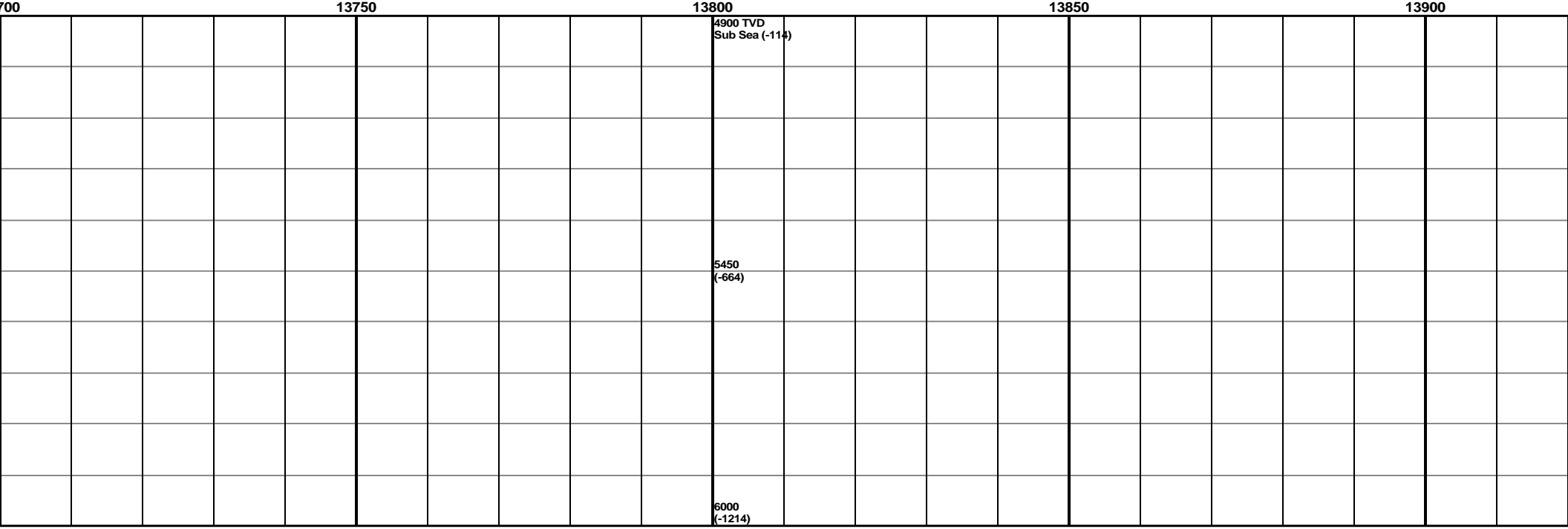
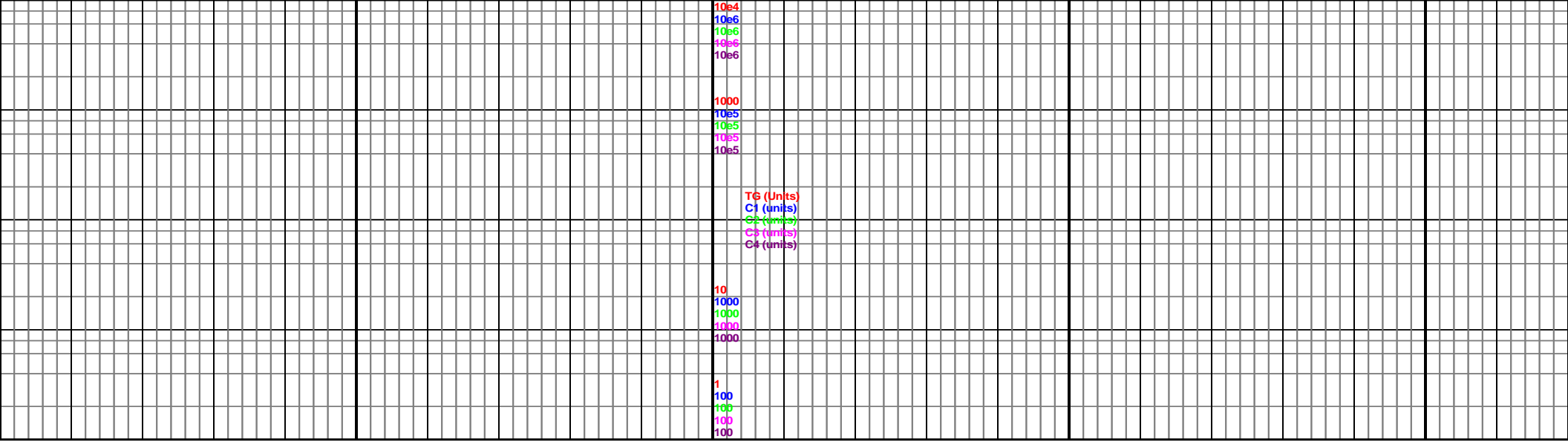


3  
300

ROP (min/ft)  
Gamma (API)

0  
0





[illegible]