



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

Well Name: Razor 12F-0105A  
Well Id: 05-123-38720-00  
Location: SENW 12-T10N-R58W  
License Number: 05-123-38720-00  
Spud Date: 11/4/2015  
Surface Coordinates: Lat.: 40.854661 Long.: -103.817919

Region: Redtail Field  
Drilling Completed: 11/10/2015

Bottom Hole  
Coordinates:  
Ground Elevation (ft): 4940  
Logged Interval (ft): 5500 To: 13582  
Formation: Pierre, Sharon Springs, Niobrara A, Niobrara B, Niobrara C  
Type of Drilling Fluid: Water Based Mud

K.B. Elevation (ft): 4961  
Total Depth (ft): 13582

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: Eli DenBesten and Todd Nakata  
Company: Acme Geologic Consulting  
Address: 108 Berry Street  
Little Rock, AR 72205

## Drilling Company

Unit Drilling Company  
Rig 409

## Gas Detection

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

## 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

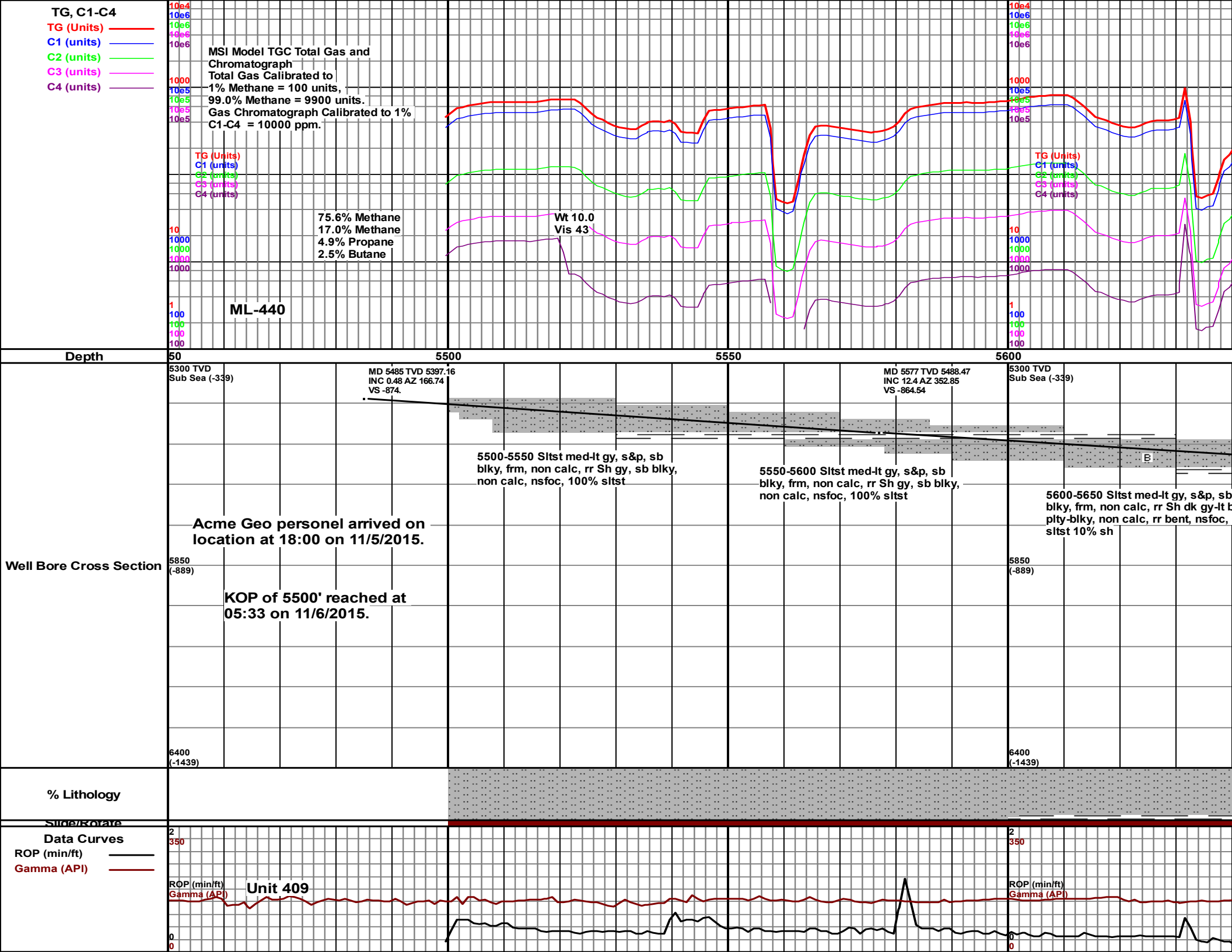
**TEXTURE**  
 Boundst  
 Chalky  
 Cryxln  
 Earthy  
 Finexln  
 Grainst  
 Lithogr  
 Microxln  
 Mudst  
 Packst  
 Wackest

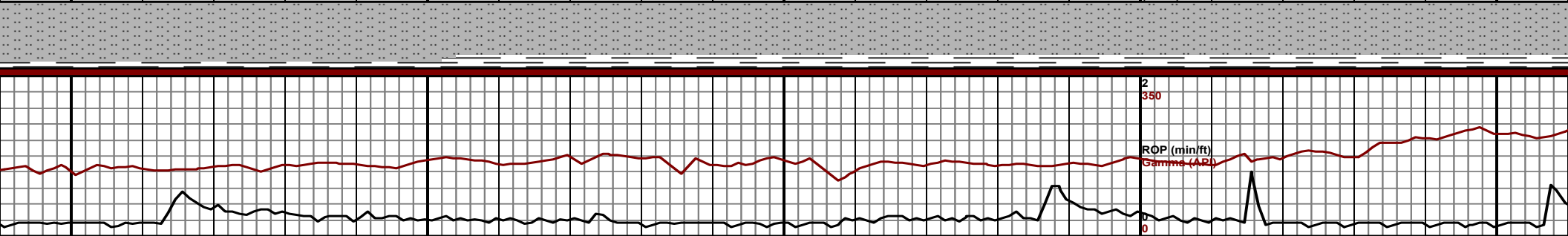
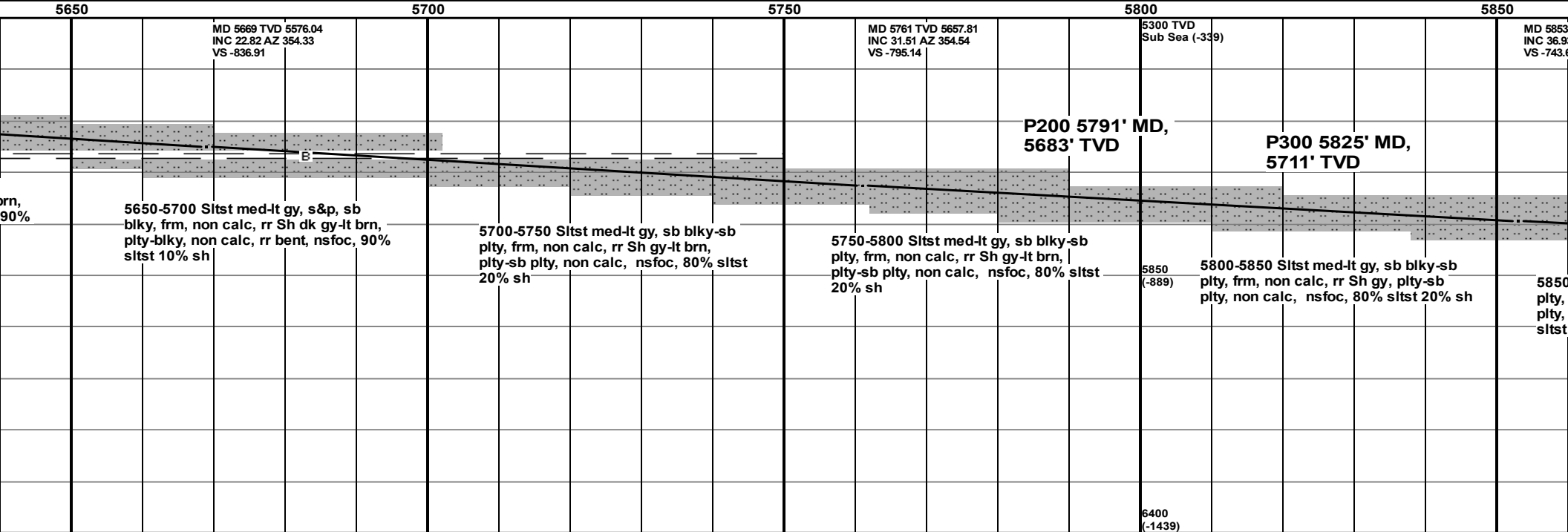
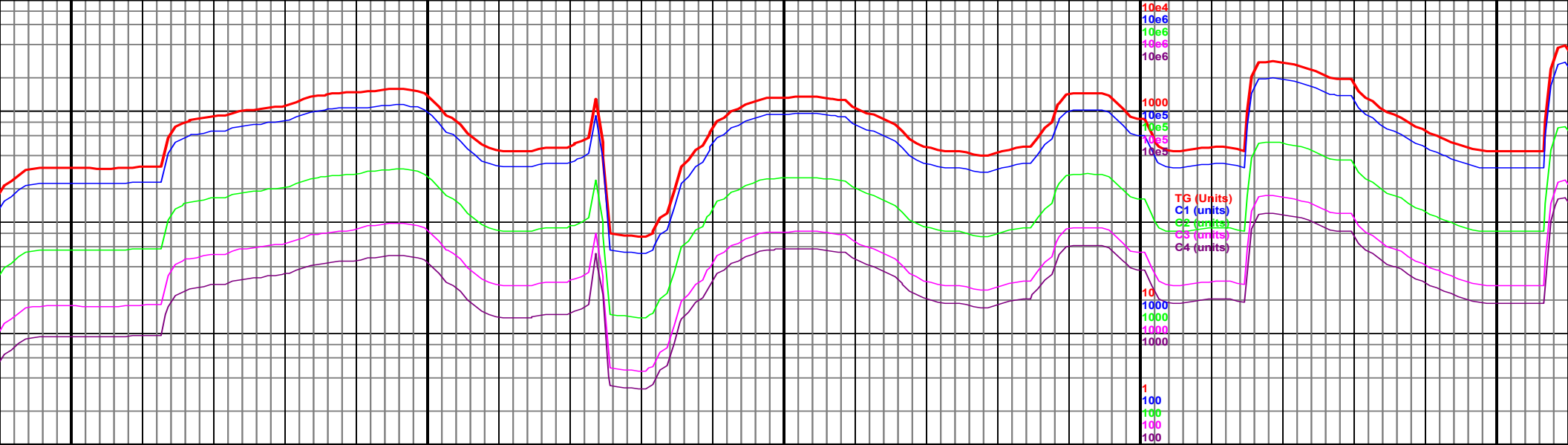
**POROSITY**  
[E] Earthy  
[B] Fenest  
[F] Fracture  
[X] Inter  
[Z] Moldic  
[O] Organic  
[P] Pinpoint

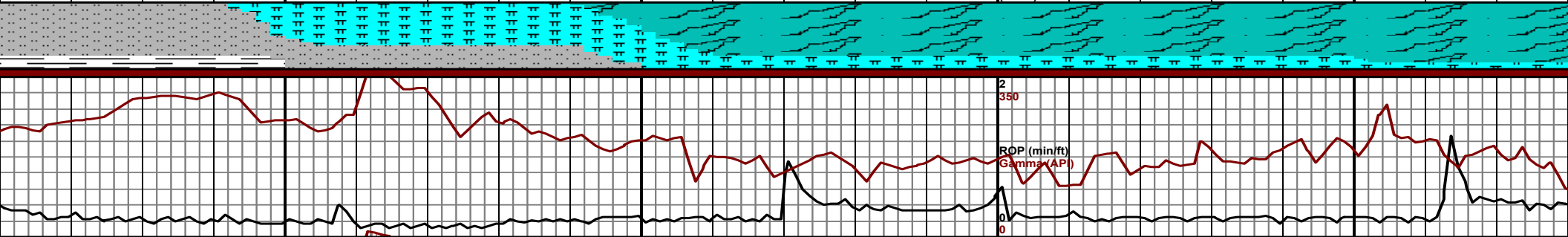
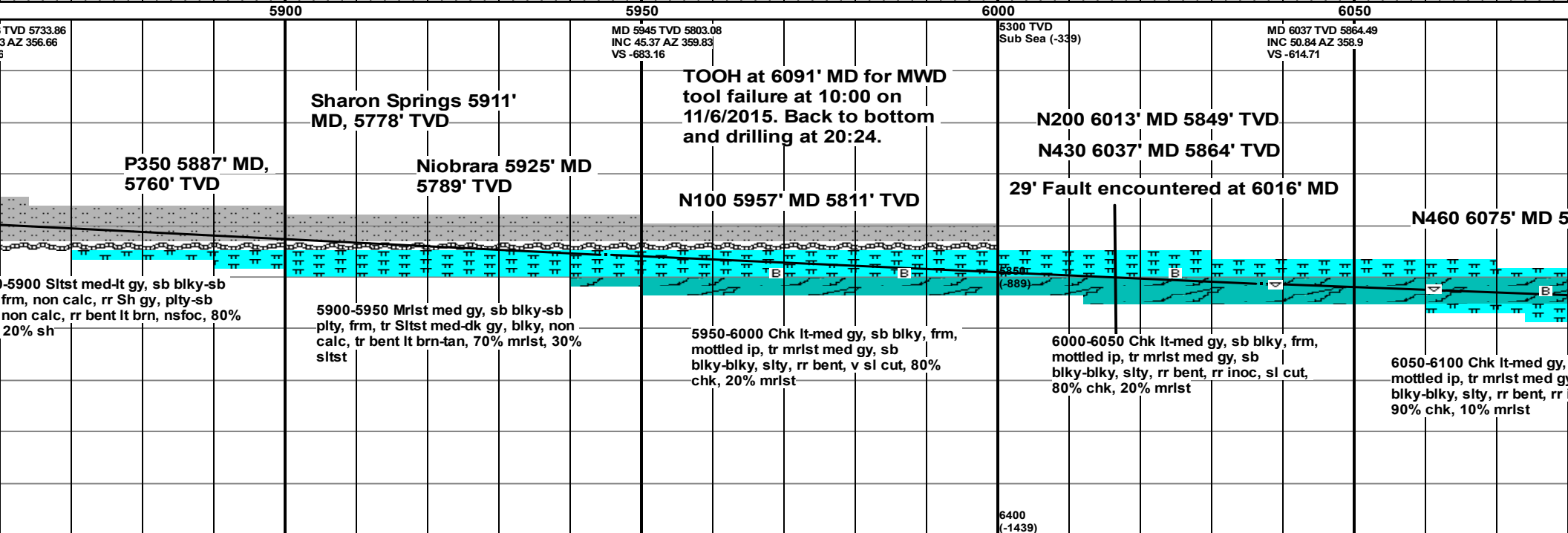
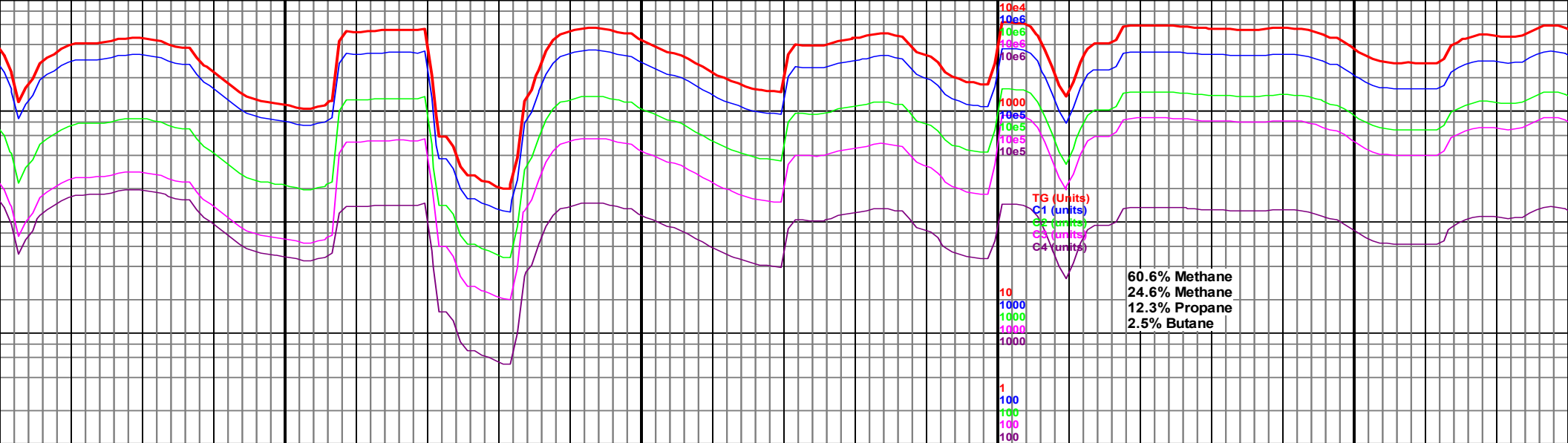
[V] Vuggy  
  
**SORTING**  
[W] Well  
[M] Moderate  
[P] Poor

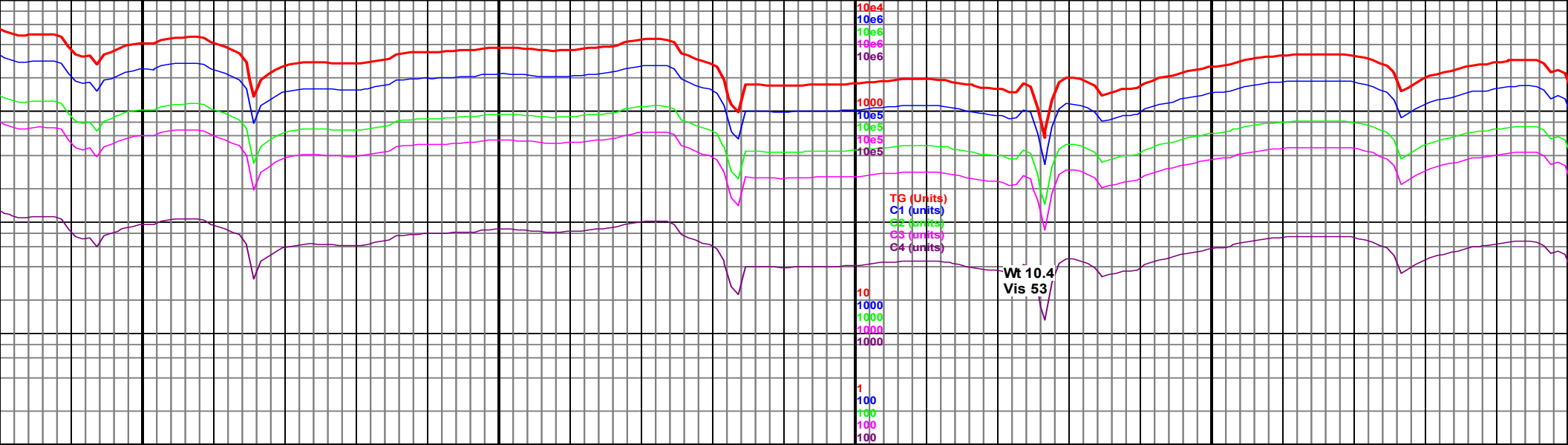
**OTHER SYMBOLS**  
**ROUNDING**  
[R] Rounded  
[r] Subrnd  
[a] Subang  
[A] Angular  
  
**OIL SHOW**  
[•] Even  
  
[•] Spotted  
[○] Ques  
[D] Dead  
  
**INTERVAL**  
[■] Core  
[◻] Dst

**EVENT**  
[▽] Rft  
[▶] Sidewall

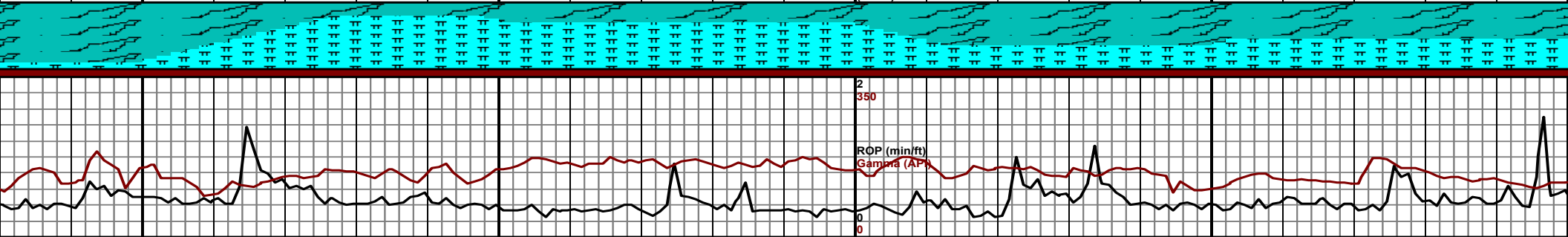


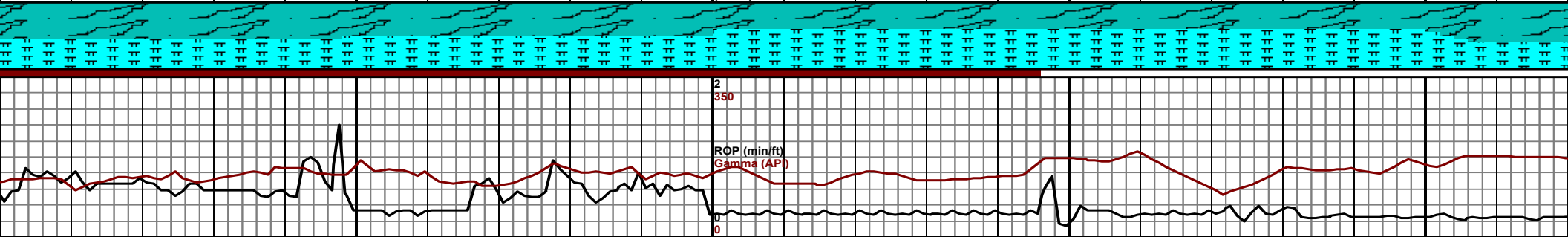
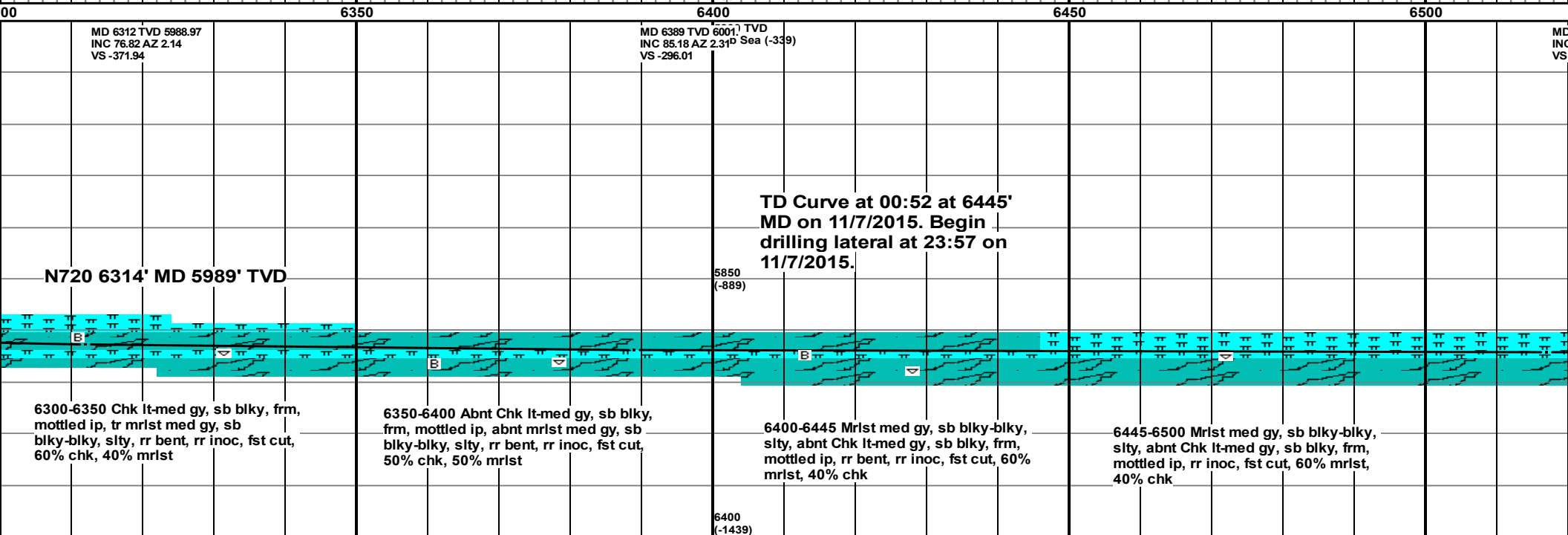
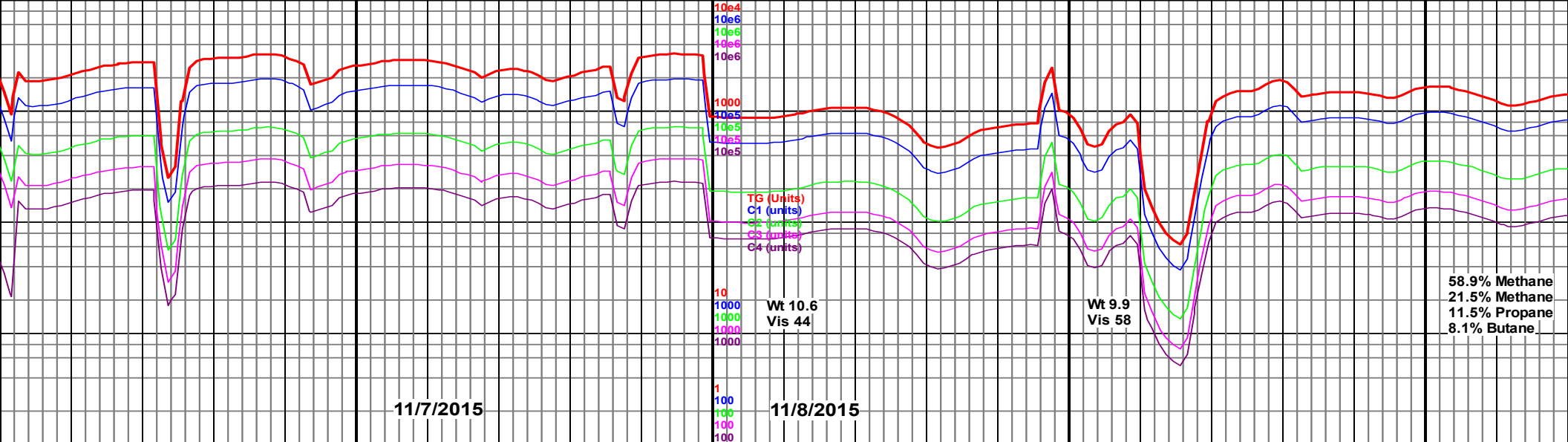




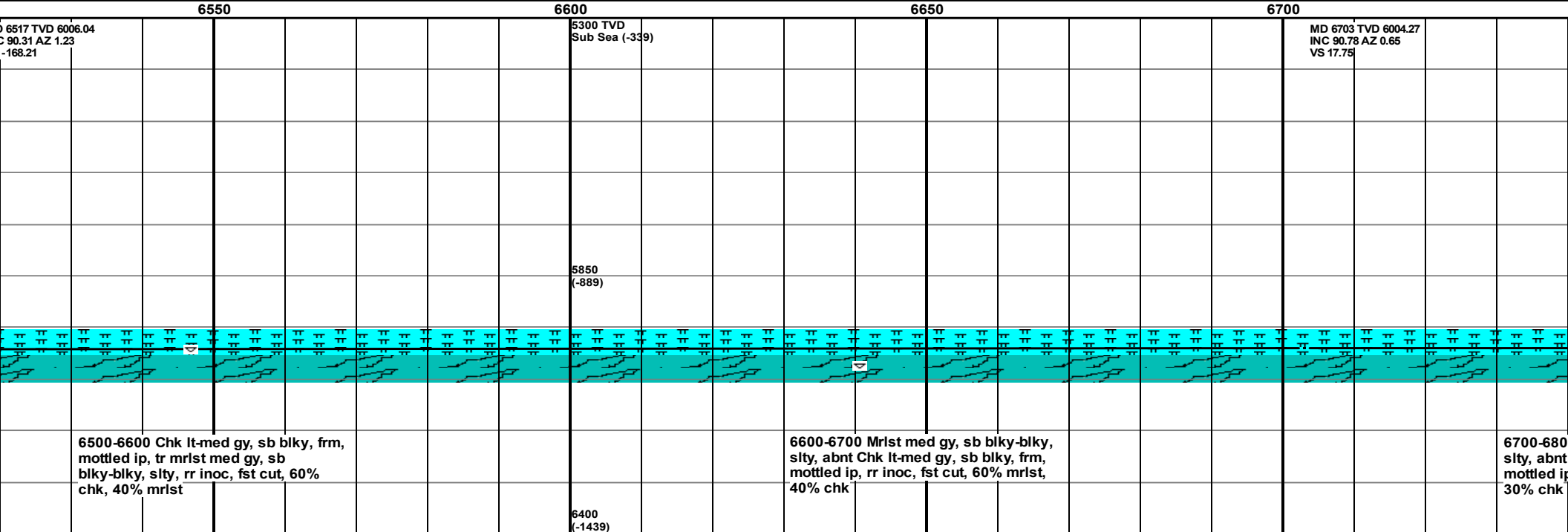


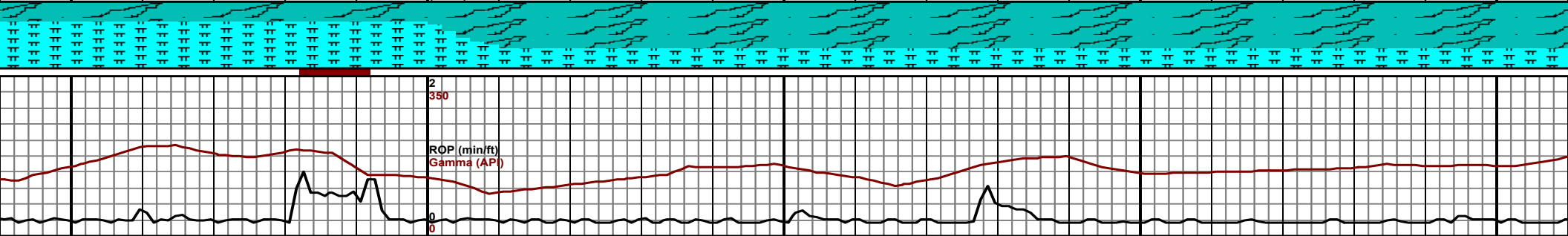
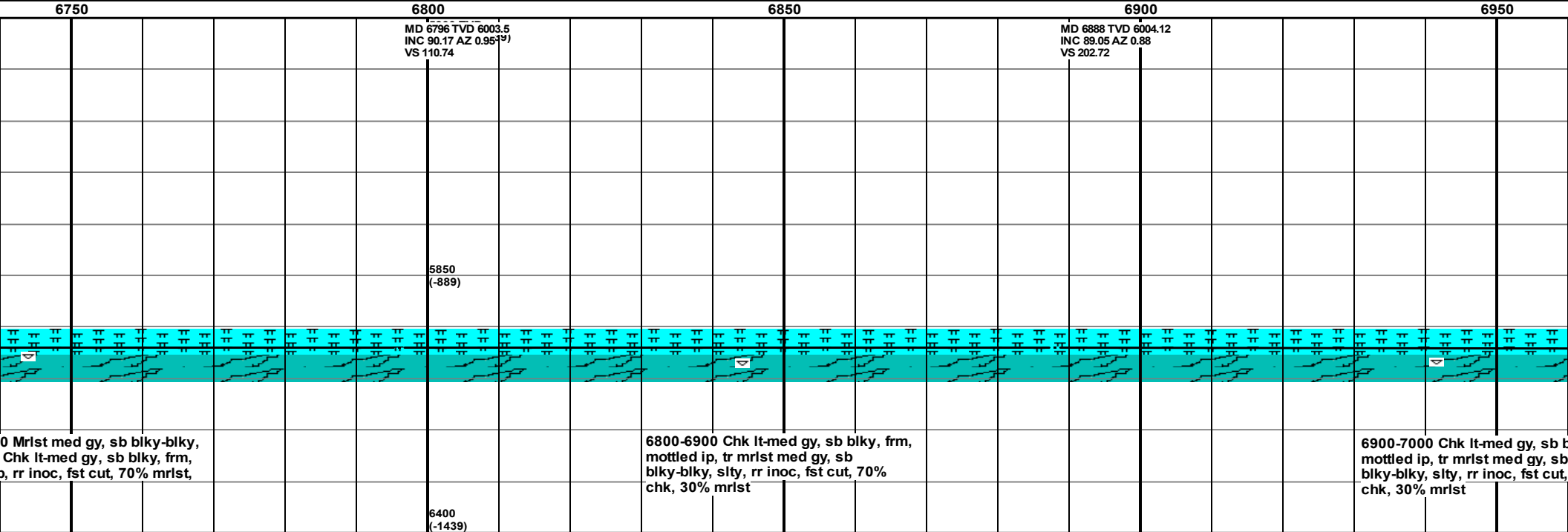
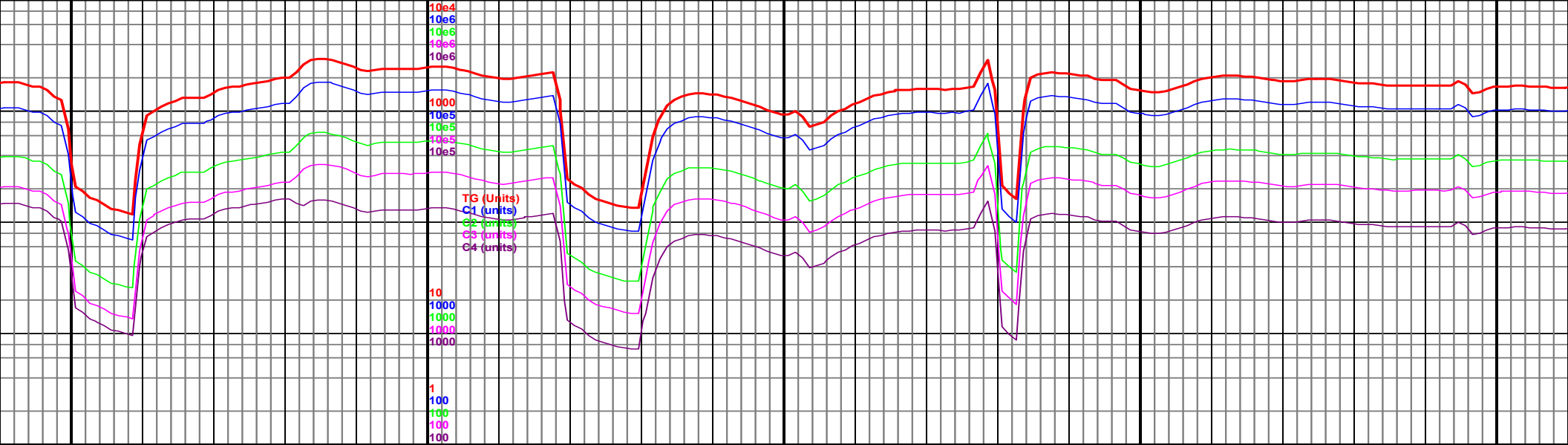
6100	6150	6200	6250	6300
MD 6129 TVD 5917.54 INC 58.67 AZ 358.58 VS -539.65	MD 6175 TVD 5939.63 INC 63.92 AZ 359.23 VS -499.33	5300 TVD Sub Sea (-339)	MD 6221 TVD 5959.45 INC 65.02 AZ 359.84 VS -457.82	MD 6267 TVD 5976.59 INC 71.23 AZ 1.53 VS -415.16
888' TVD	N490 6132' MD 5919' TVD N500 6146' MD 5926' TVD	N700 6244' MD 5969' TVD	N710 6276' MD 5979' TVD	
sb blk, frm, y, sb inoc, fst cut,	6100-6150 Mrlst med gy, sb blk-bkly, sly, rr Chk lt-med gy, sb blk, frm, mottled ip, rr bent, rr inoc, fst cut, 80% mrlst, 20% chk	6150-6200 Mrlst med gy, sb blk-bkly, sly, tr Chk lt-med gy, sb blk, frm, mottled ip, rr bent, rr inoc, fst cut, 70% mrlst, 30% chk	6200-6250 Chk lt-med gy, sb blk, frm, mottled ip, tr mrlst med gy, sb blk-bkly, sly, rr bent, rr inoc, fst cut, 70% chk, 30% mrlst	6250-6300 Chk lt-med gy, sb blk, frm, mottled ip, tr mrlst med gy, sb blk-bkly, sly, rr bent, rr inoc, fst cut, 60% chk, 40% mrlst

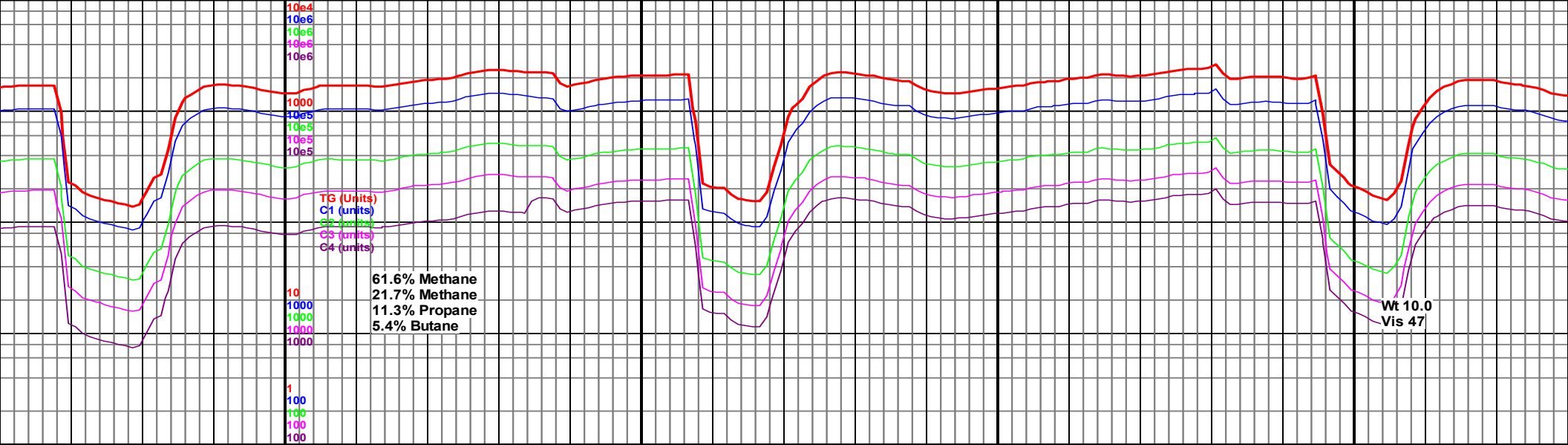




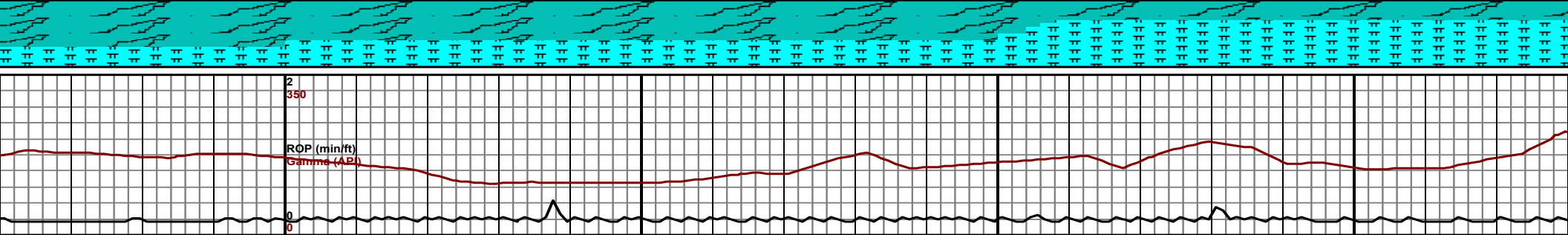


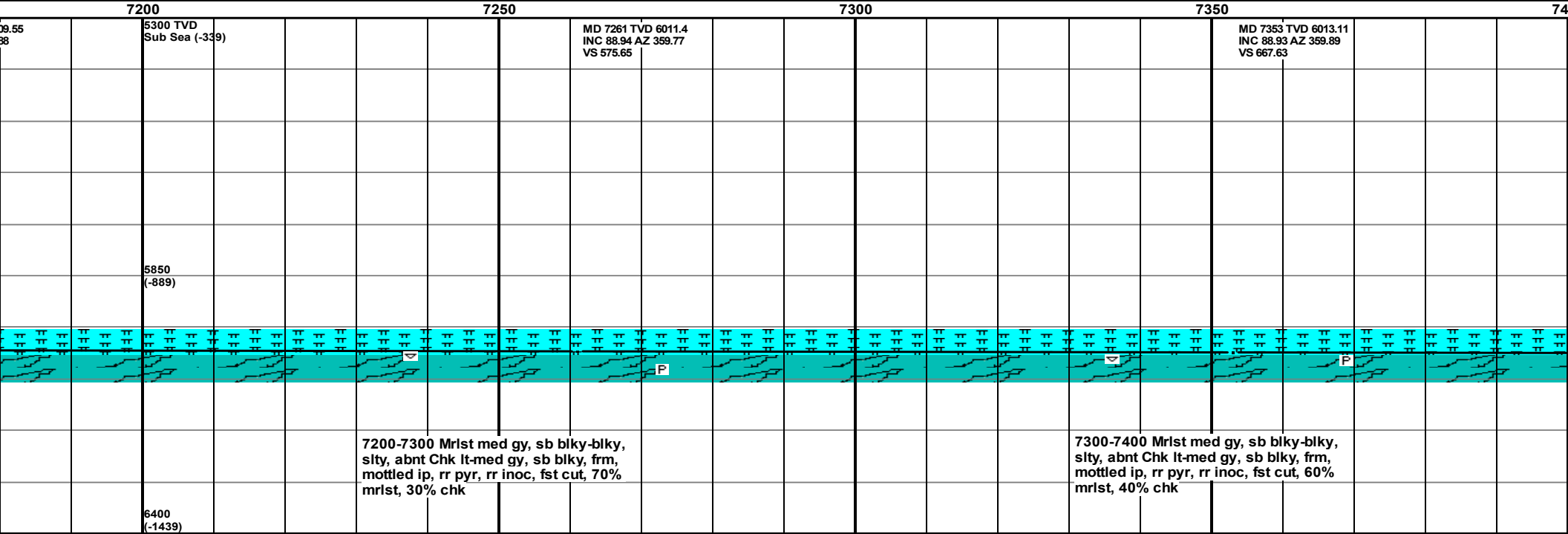
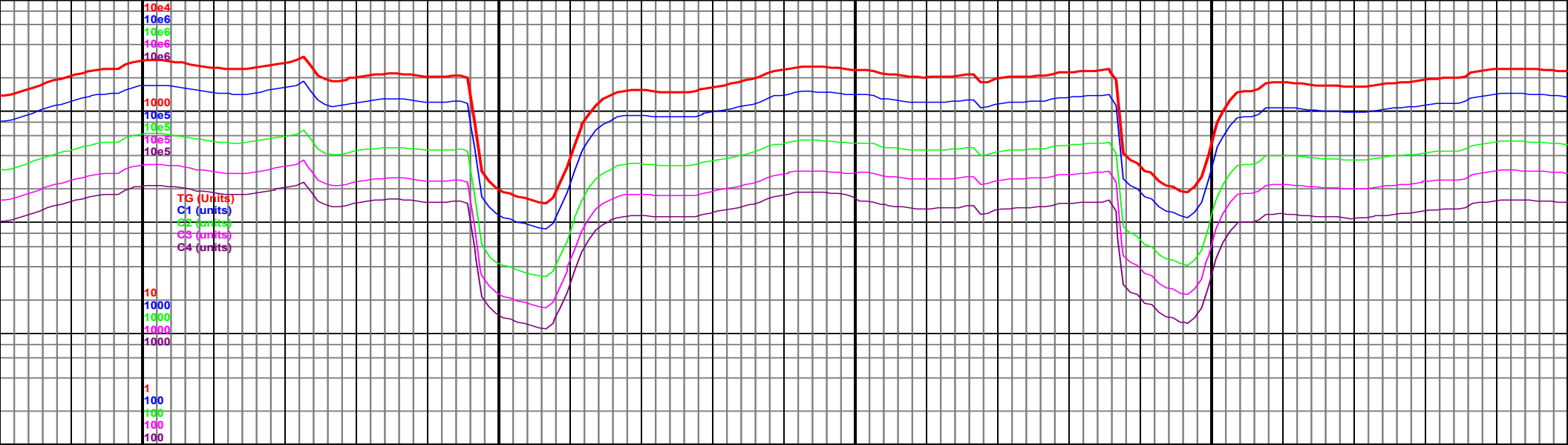






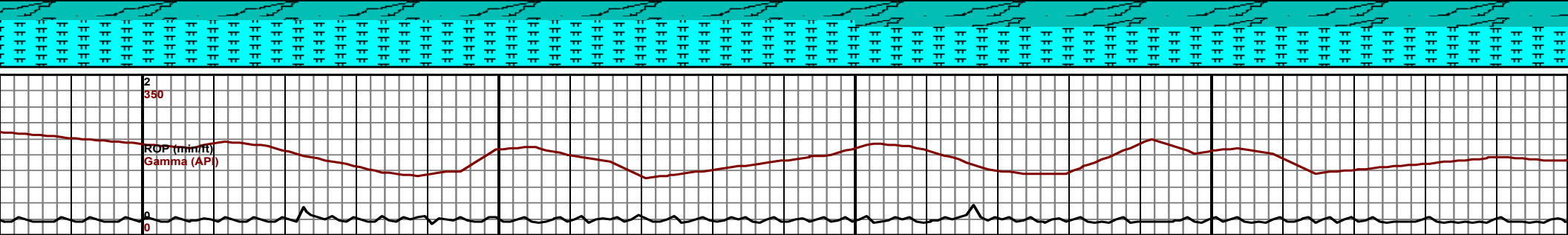
7000				7050				7100				7150			
MD 6981 TVD 6005.92 INC 88.74 AZ 0.19 VS 295.7				5300 TVD Sub Sea (-339)				MD 7074 TVD 6007.76 INC 88.99 AZ 0.24 VS 388.68				MD 7167 TVD 6007.76 INC 88.8 AZ 359.8 VS 481.67			
5850 (-889)															
blky, frm, 70%				7000-7100 Chk lt-med gy, sb blky, frm, mottled ip, tr mlst med gy, sb blky-blky, slty, rr inoc, fst cut, 60% chk, 40% mlst				7100-7200 Mrlst med gy, sb blky-blky, slty, abnt Chk lt-med gy, sb blky, frm, mottled ip, rr inoc, fst cut, 70% mlst, 30% chk							
6400 (-1439)															

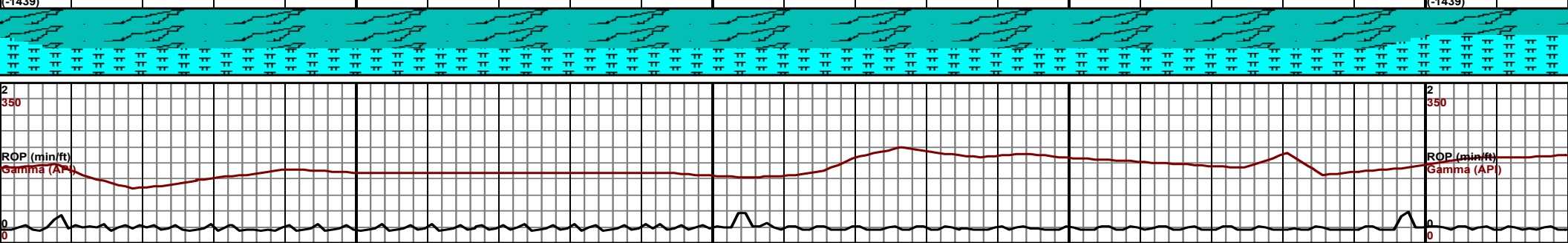
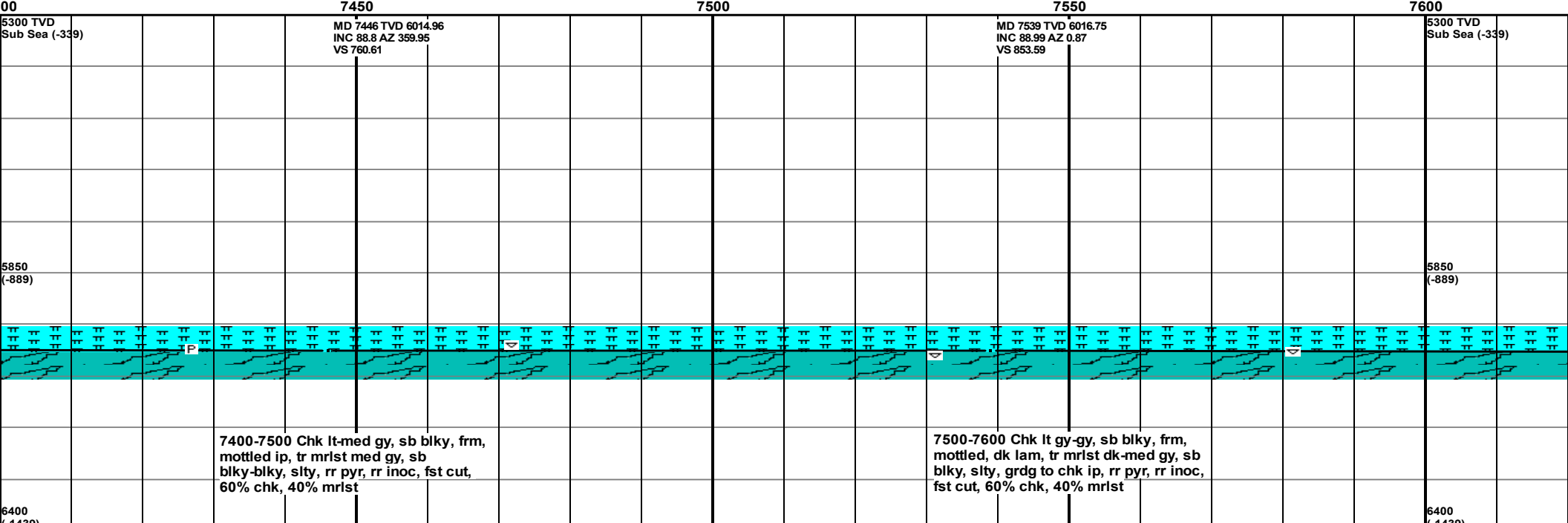
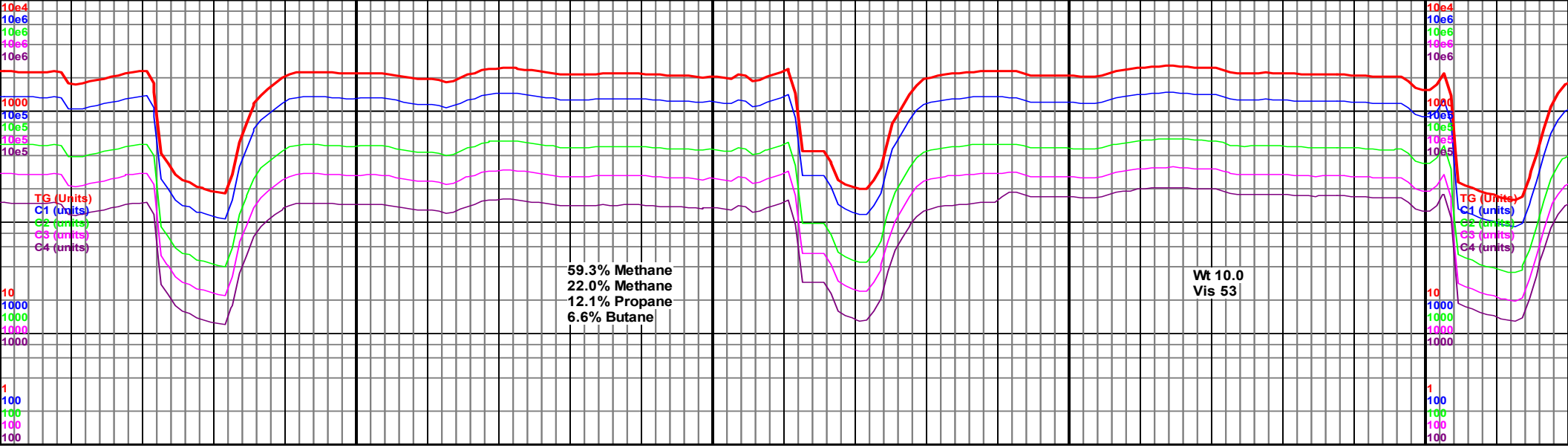


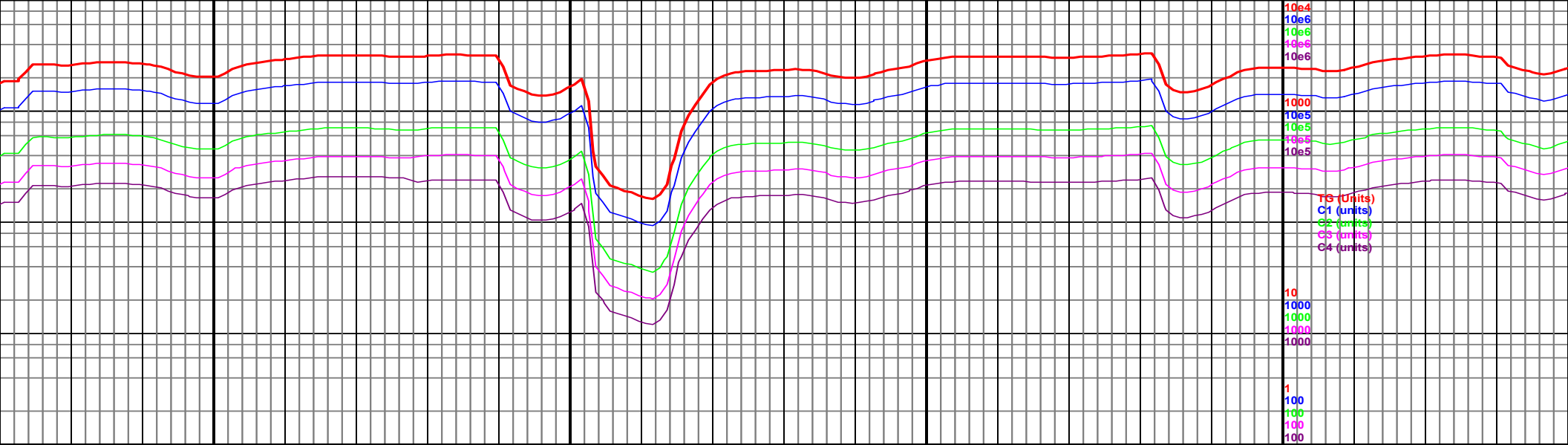


7200-7300 Mrlst med gy, sb blkly-blky, slty, abnt Chk lt-med gy, sb blkly, frm, mottled ip, rr pyr, rr inoc, fst cut, 70% mrlst, 30% chk

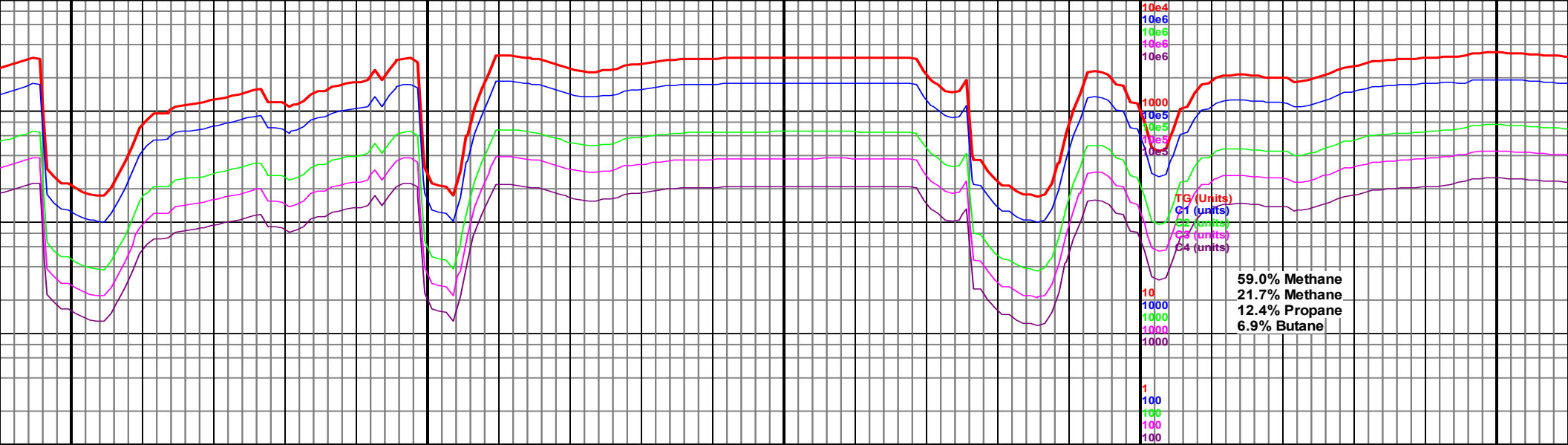
7300-7400 Mrlst med gy, sb blkly-blky, slty, abnt Chk lt-med gy, sb blkly, frm, mottled ip, rr pyr, rr inoc, fst cut, 60% mrlst, 40% chk



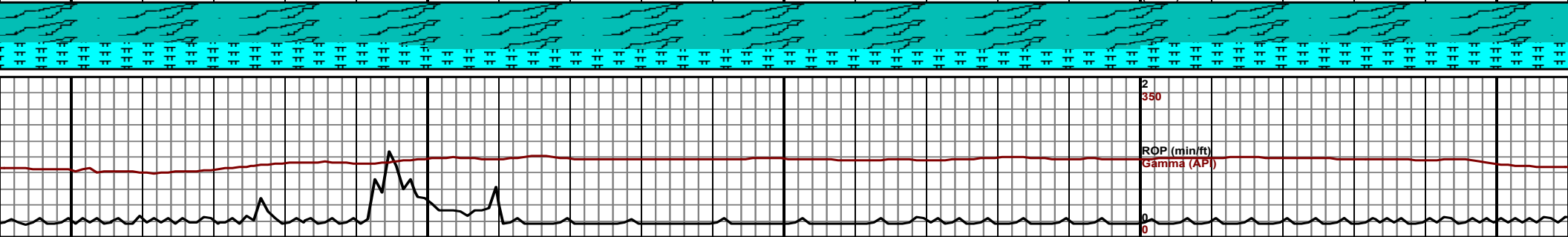


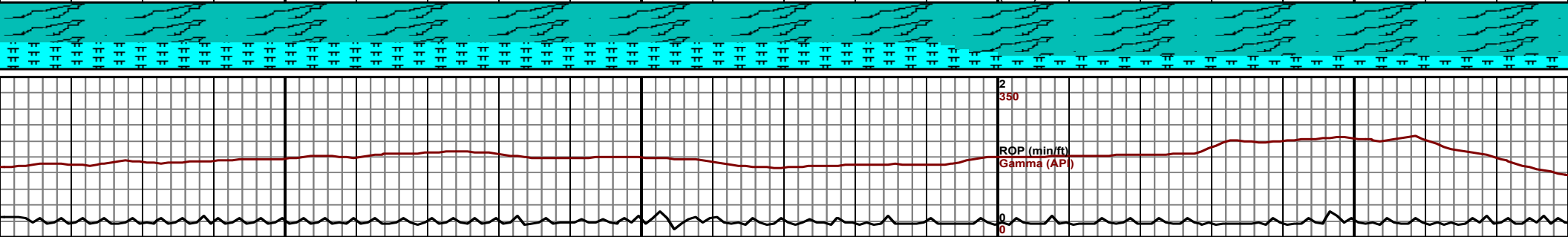
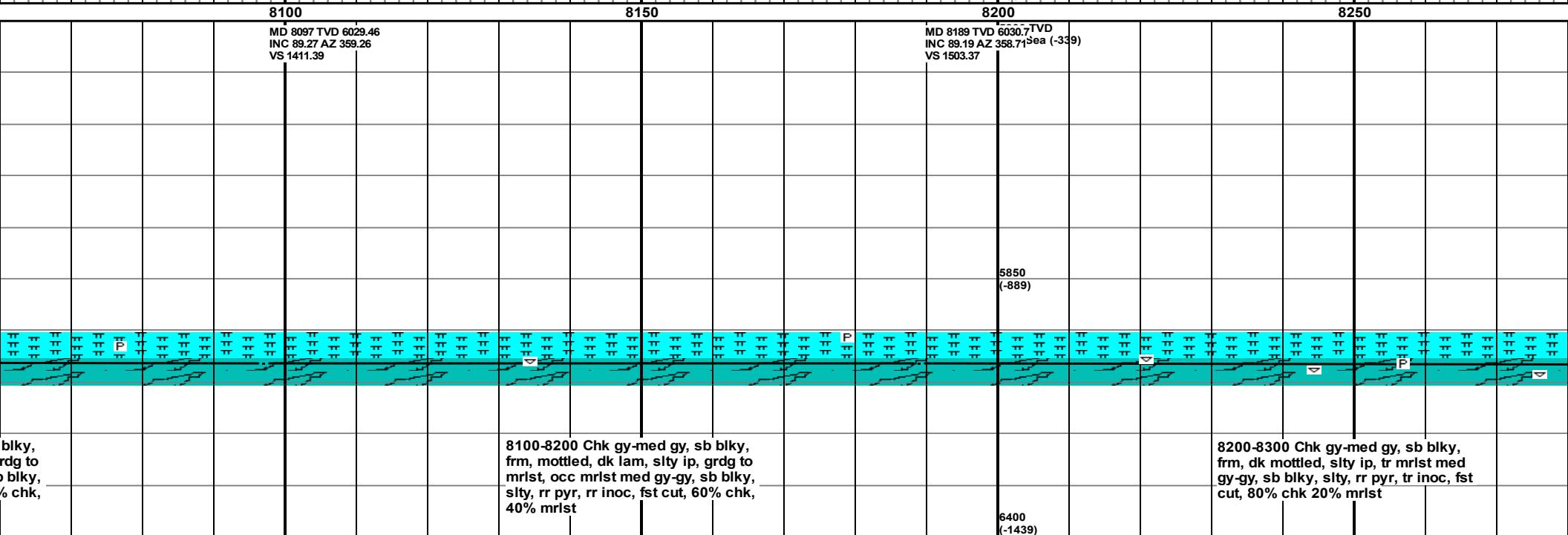
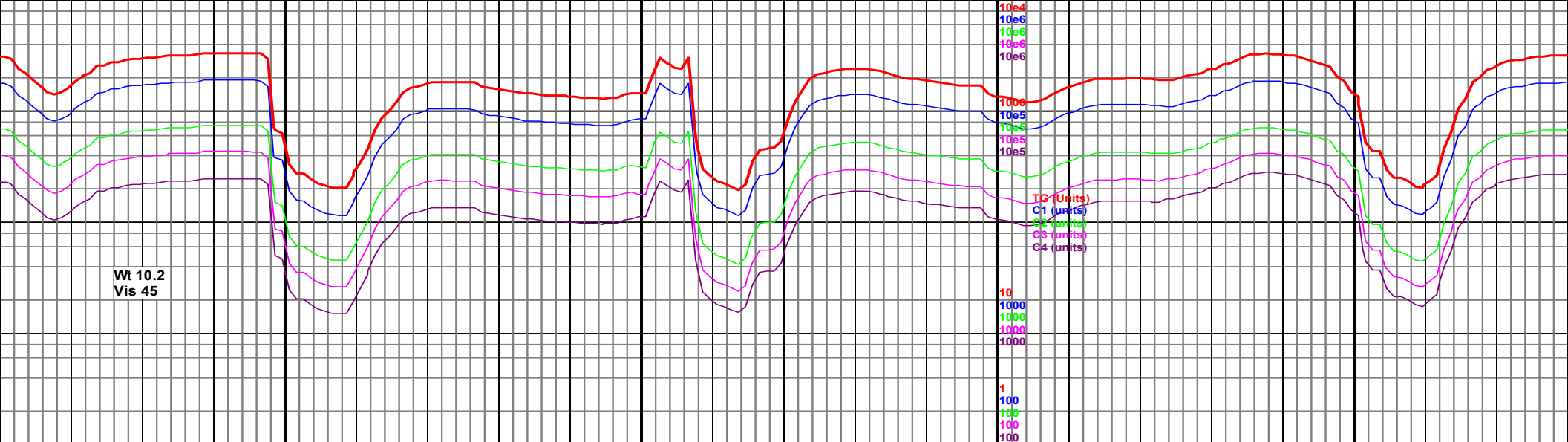


7650					7700					7750					7800														
MD 7632 TVD 6018.96 INC 88.29 AZ 0.13 VS 946.56										MD 7725 TVD 6021.98 INC 87.98 AZ 0.13 VS 1039.51										5300 TVD Sub Sea (-339)					MD 7818 TVD 6025.33 INC 87.9 AZ 360 VS 1132.45				

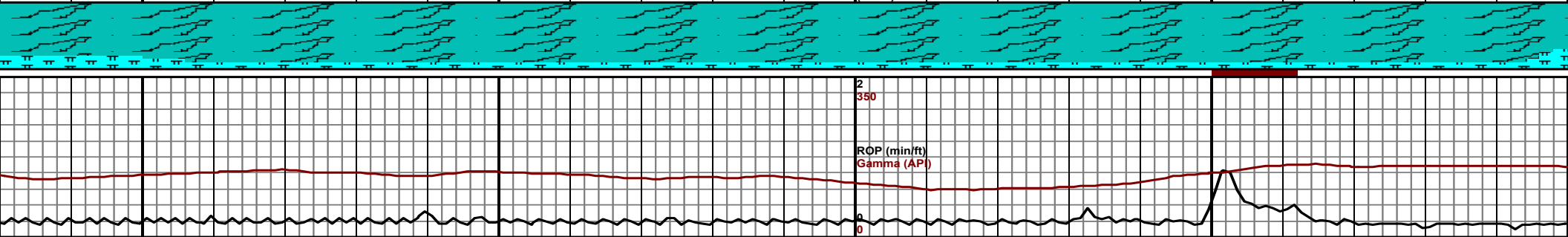
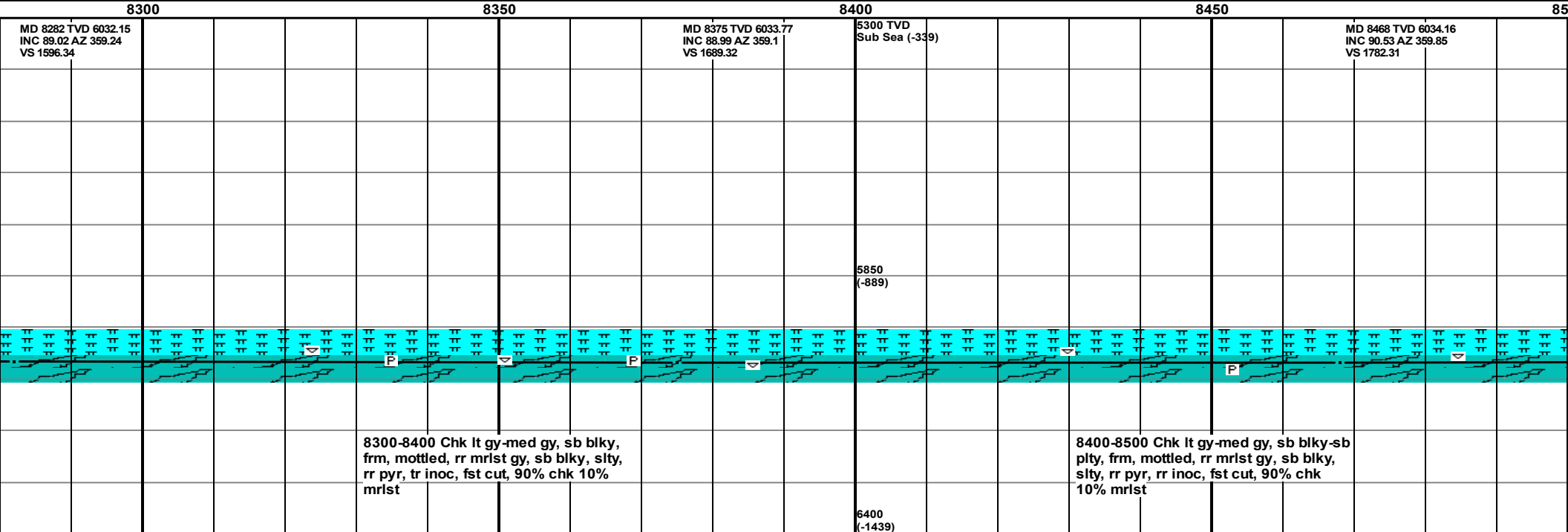
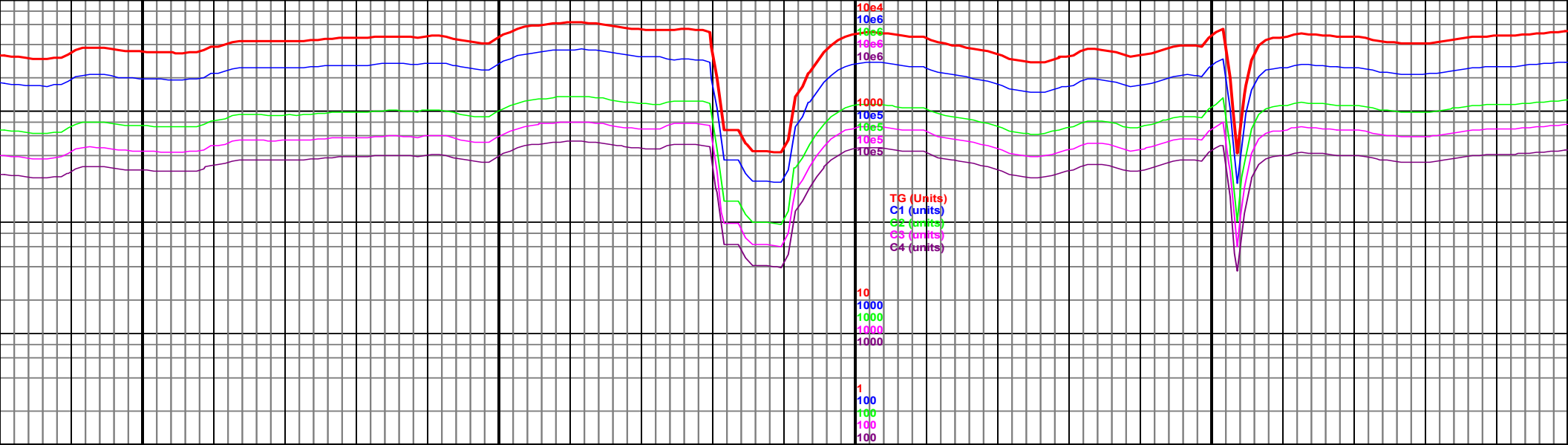


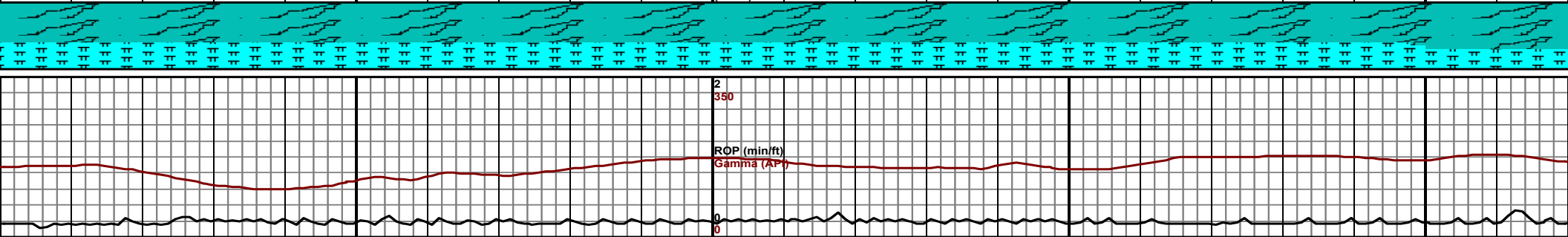
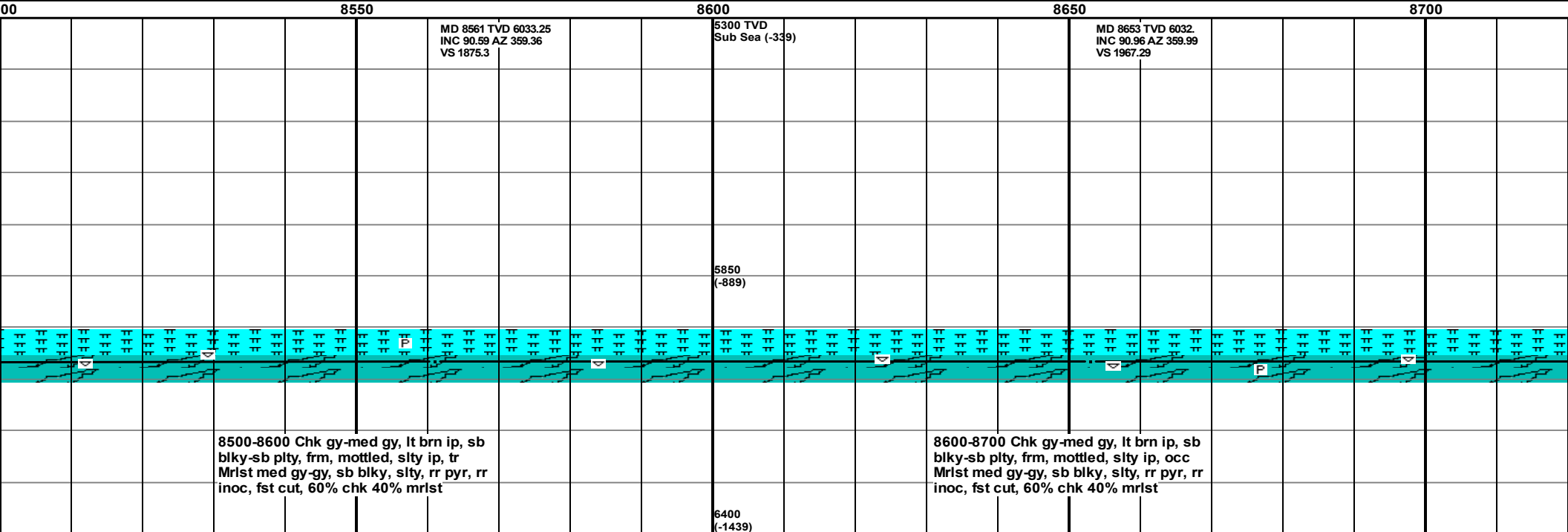
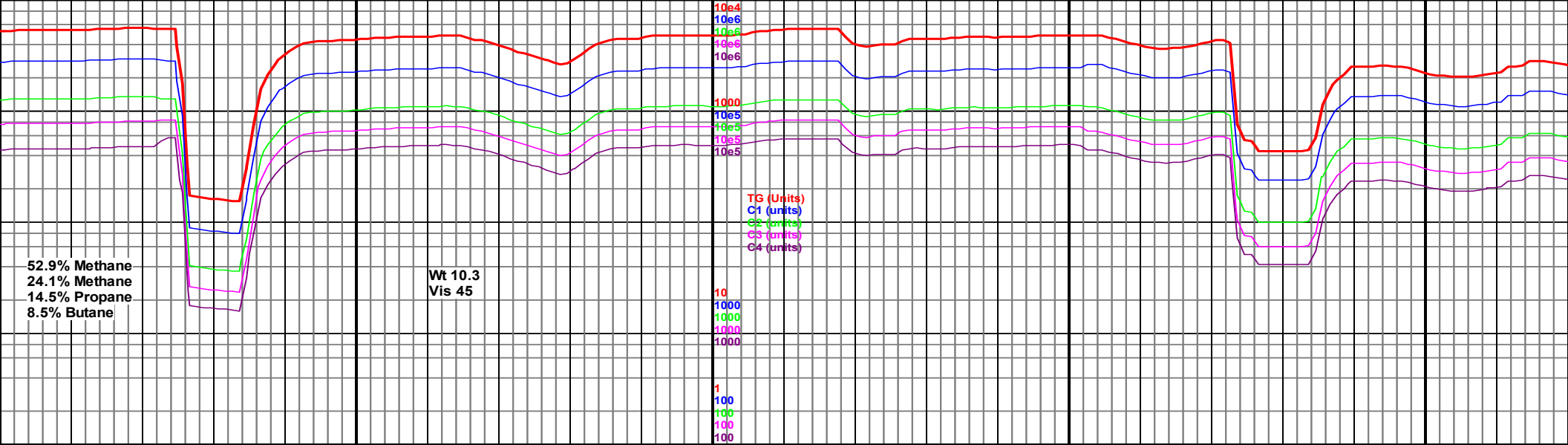
7850	7900	7950	8000	8050
	MD 7910 TVD 6027.24 INC 89.72 AZ 359.73 VS 1224.43		5300 MD 8004 TVD 6028.17 Sub SINC 89.14 AZ 358.89 VS 1318.41	
0 Chk gy-med gy, sb blk, ed, dk lam, slty ip, abnt mrlst y, sb blk, slty, grdg to chk, rr oc, fst cut, 60% chk, 40%		7900-8000 Chk lt gy-med gy, sb blk, frm, mottled, dk lam, slty ip, occ mrlst med gy, sb blk, slty, grdg to chk, rr pyr, rr inoc, fst cut, 70% chk, 30% mrlst	5850 (-889)	8000-8100 Chk gy-med gy, sb frm, mottled, dk lam, slty ip, g mrlst, occ mrlst med gy-gy, sb slty, rr pyr, rr inoc, fst cut, 60% mrlst

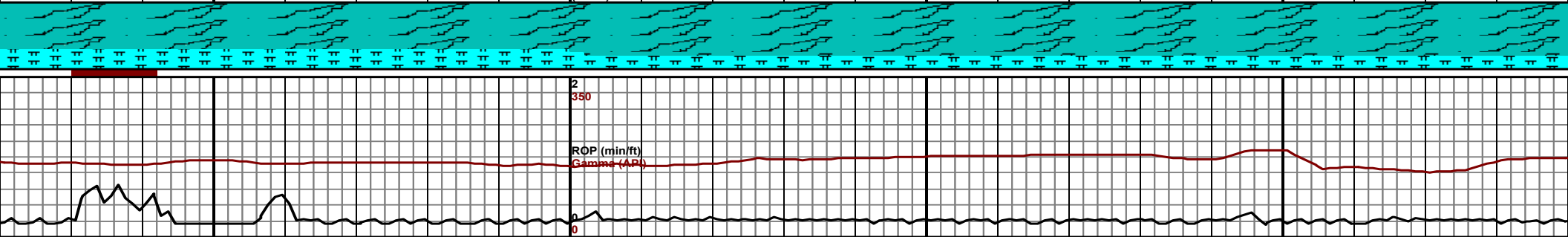
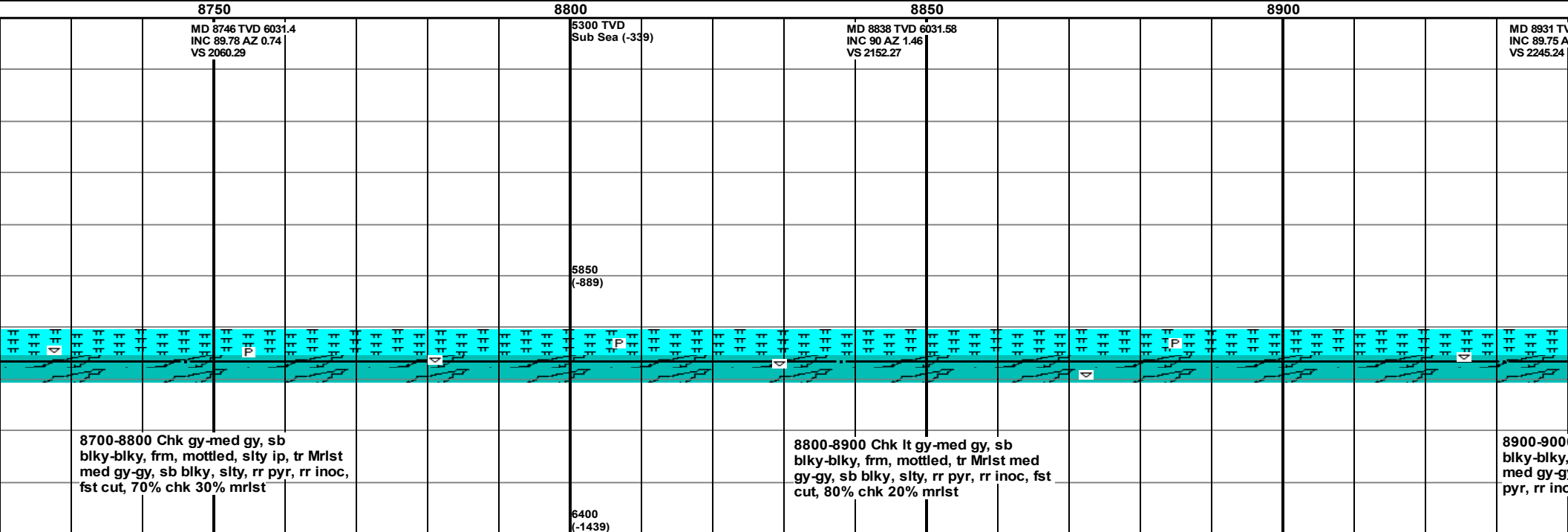
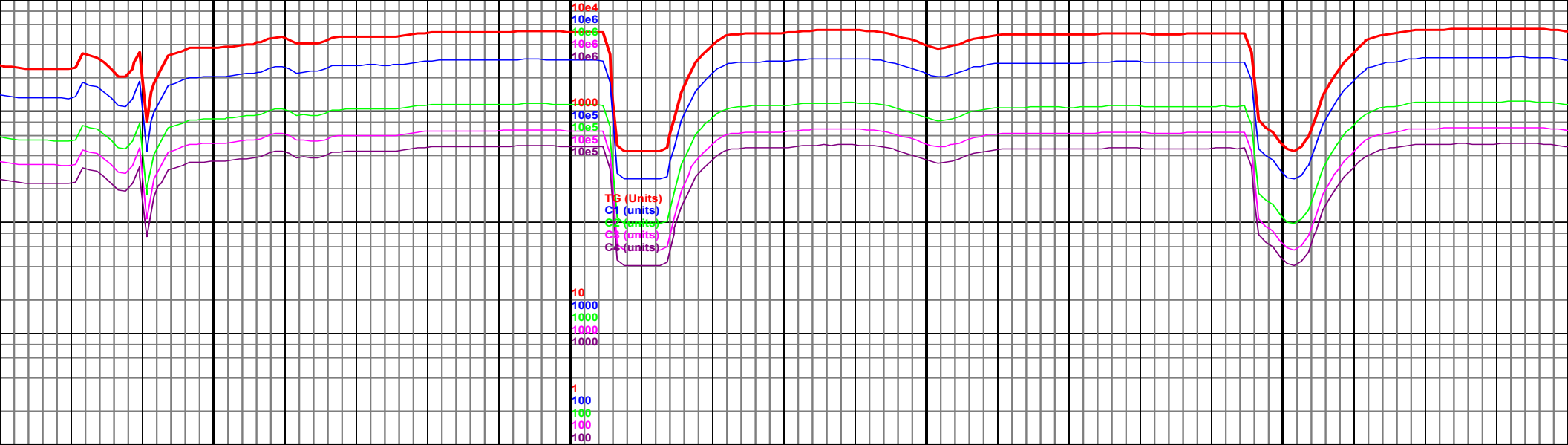


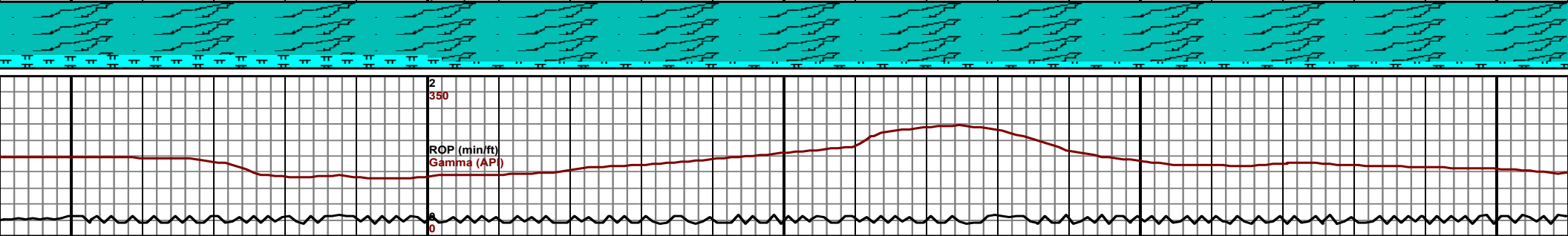
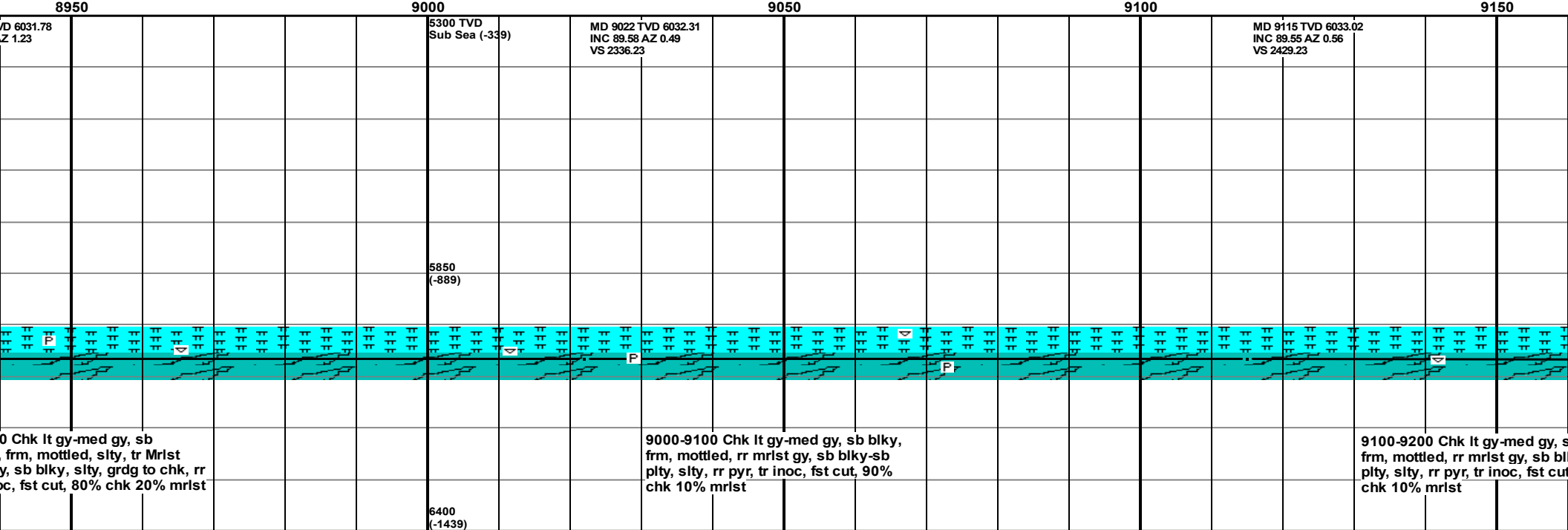
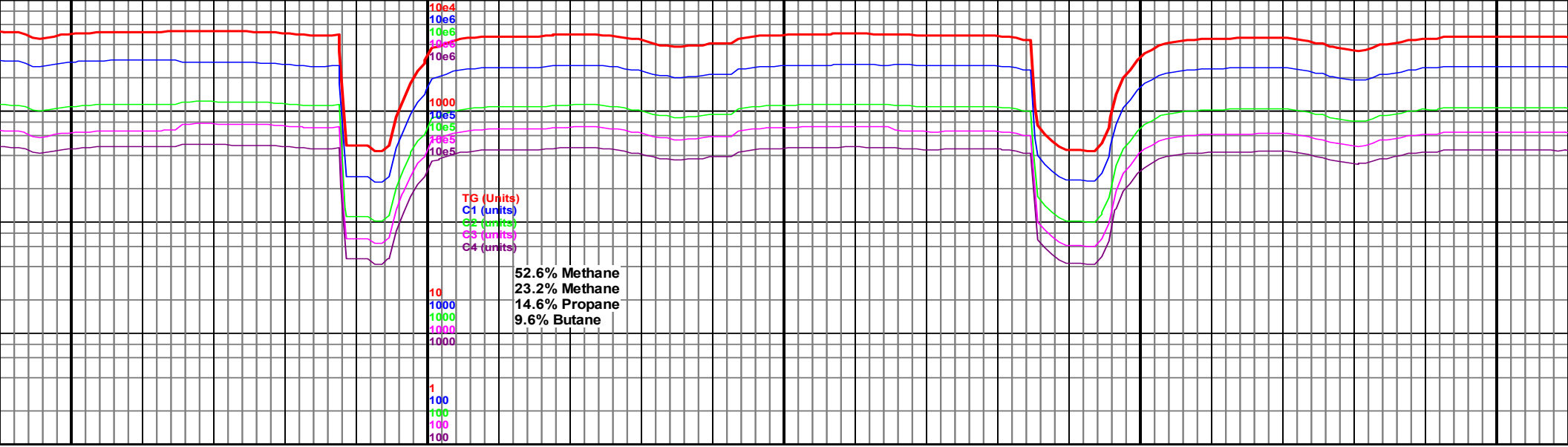


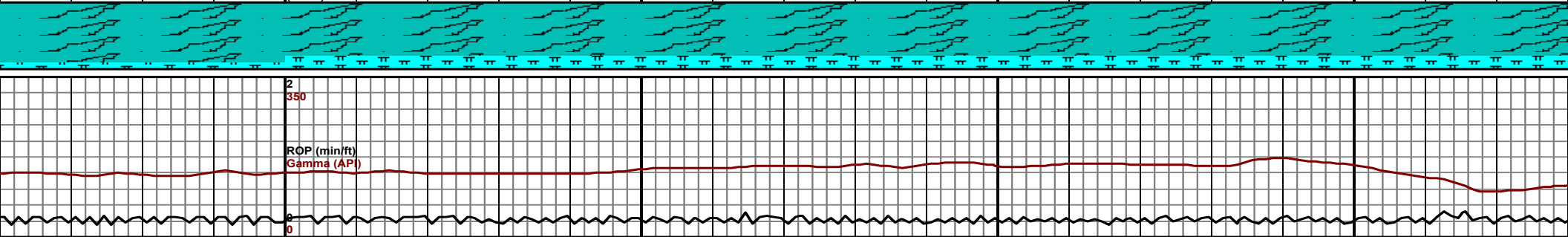
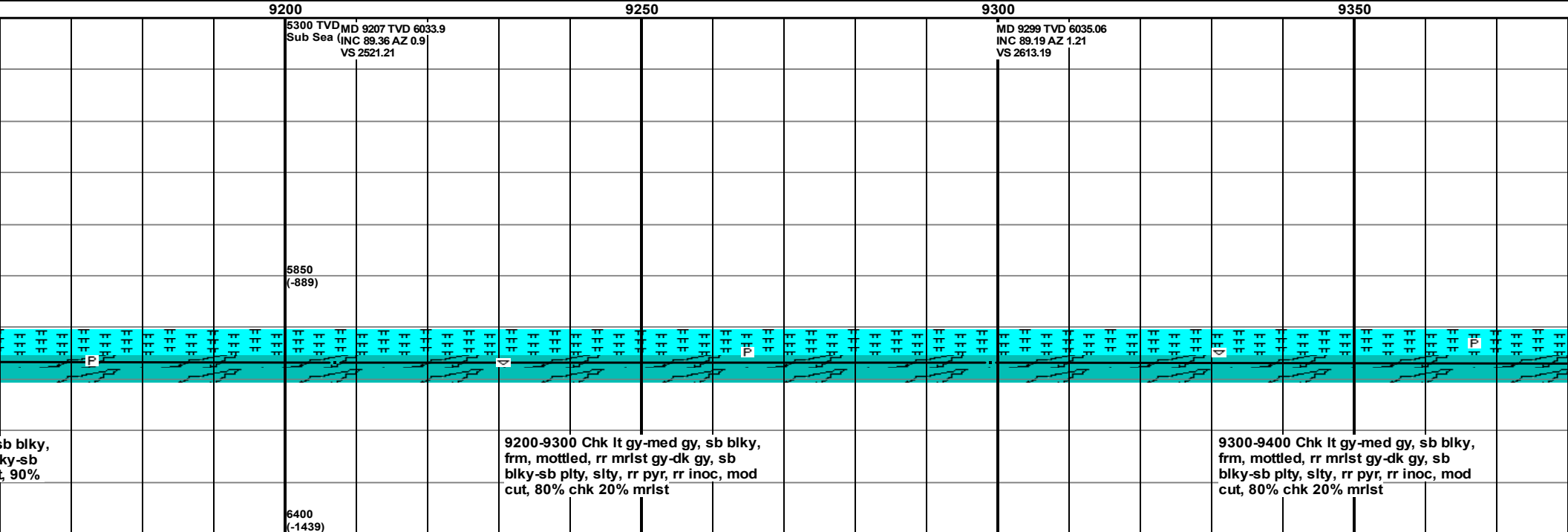
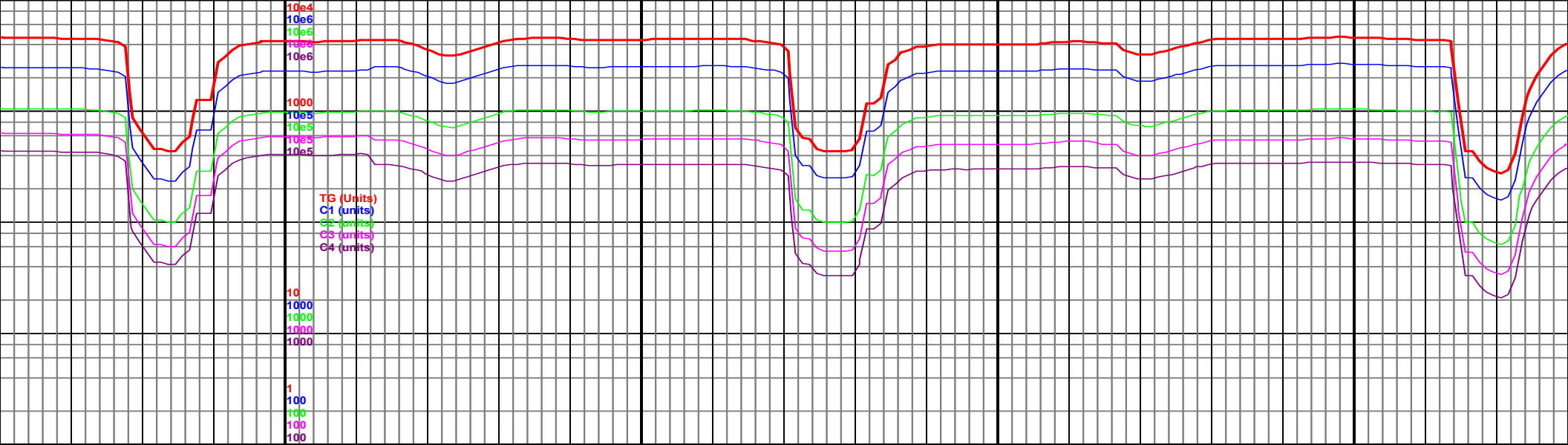


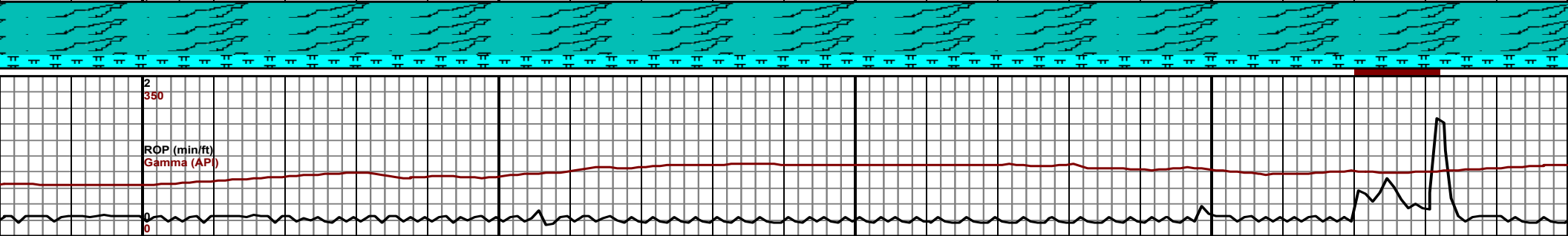
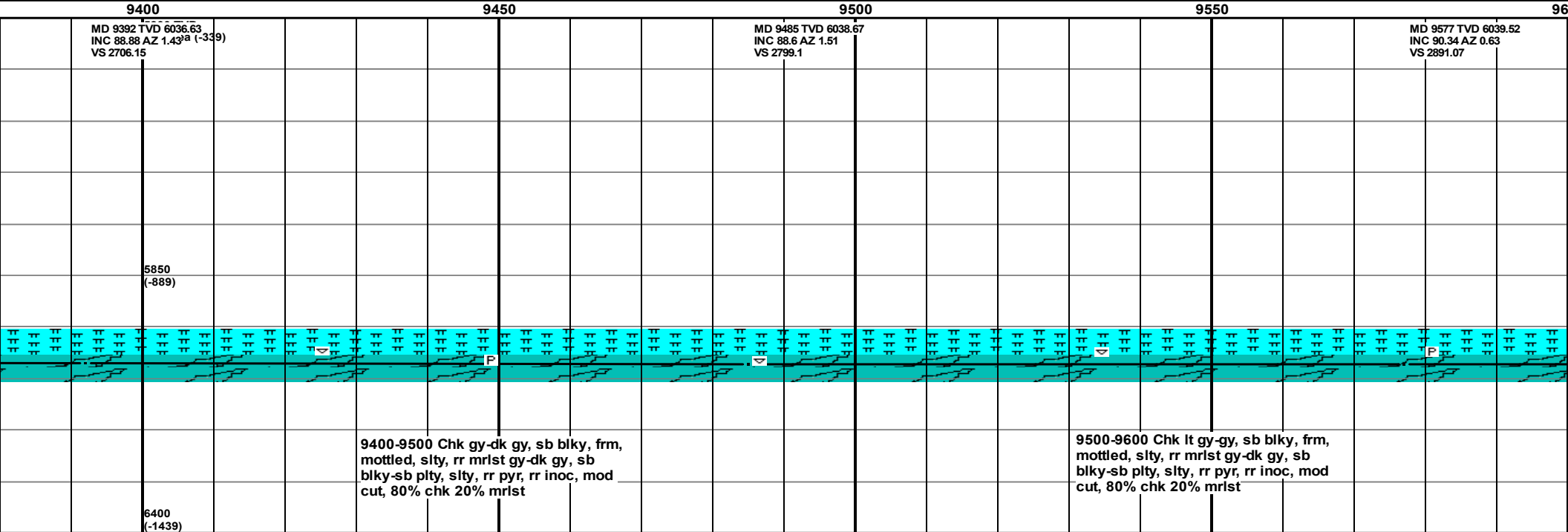
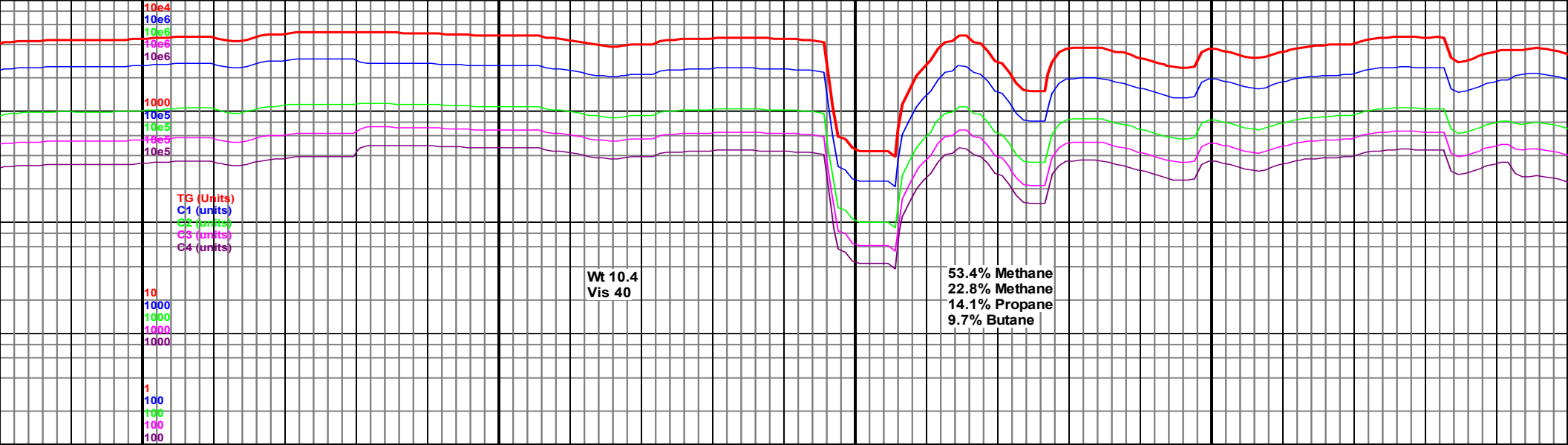


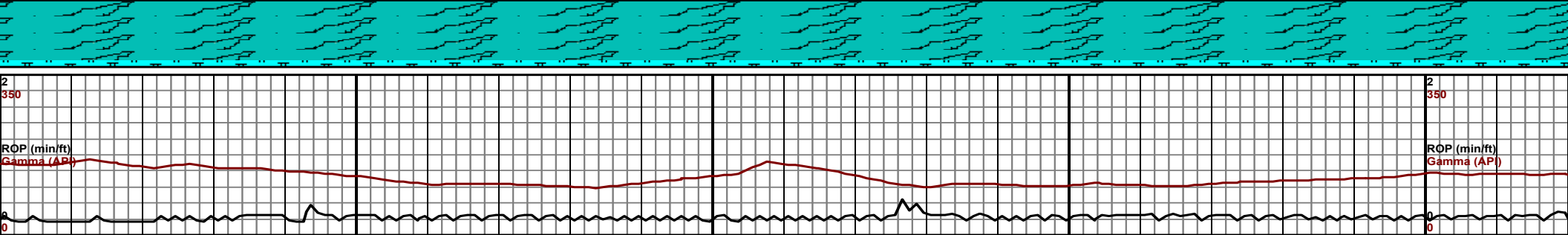
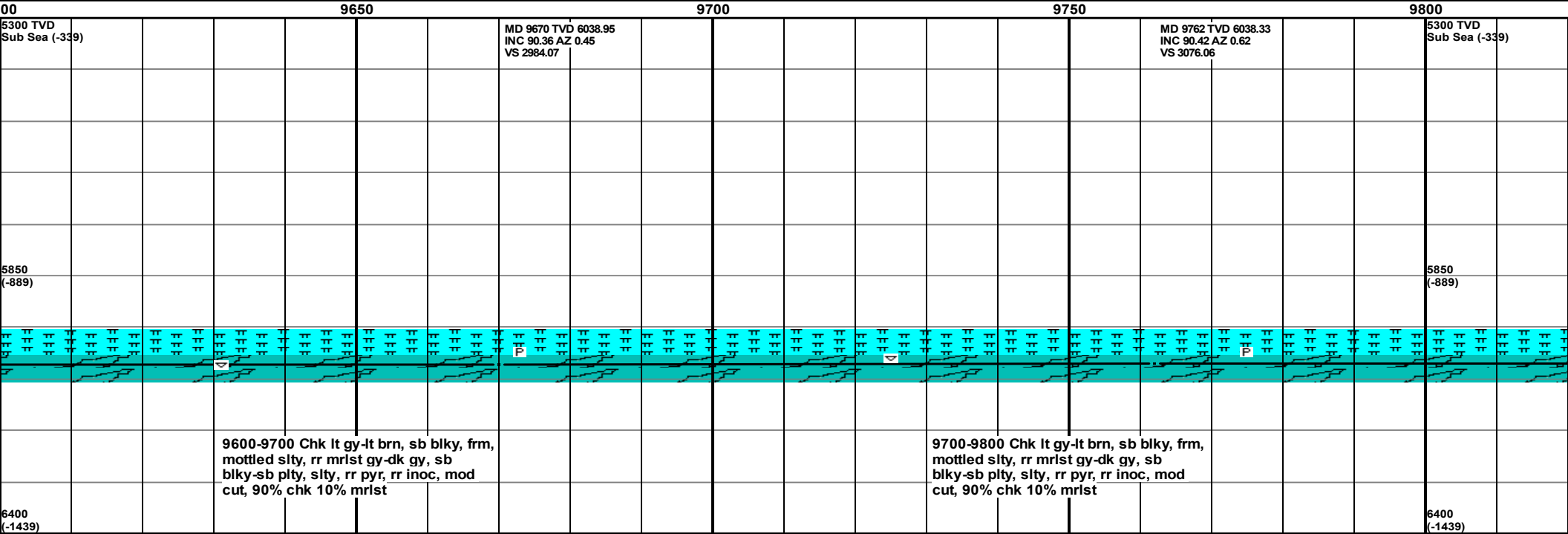
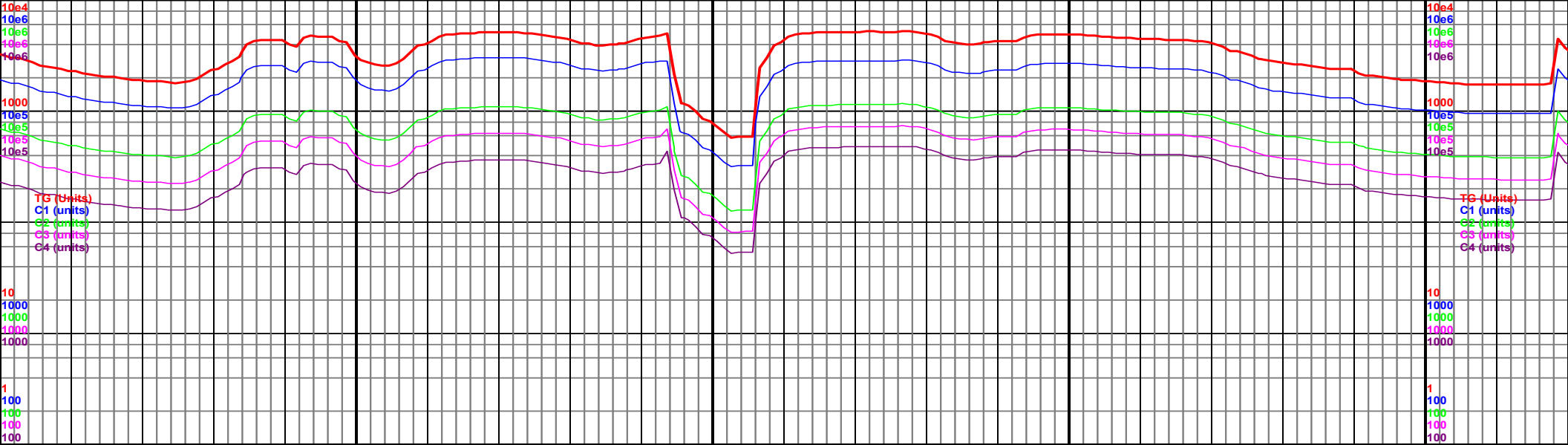


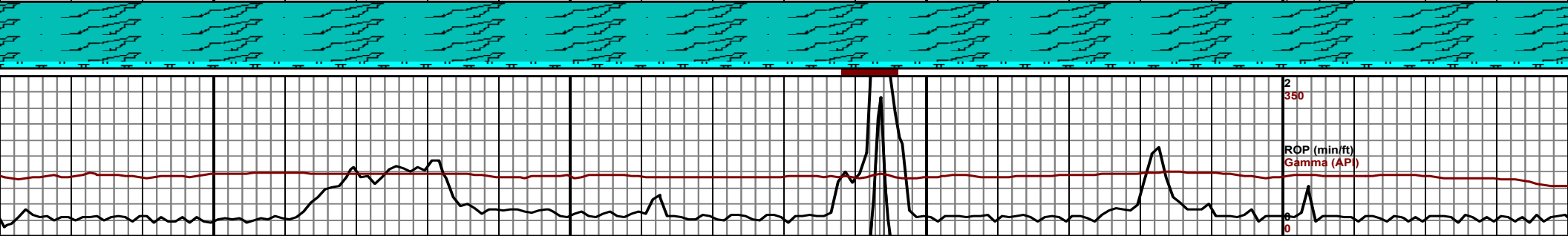
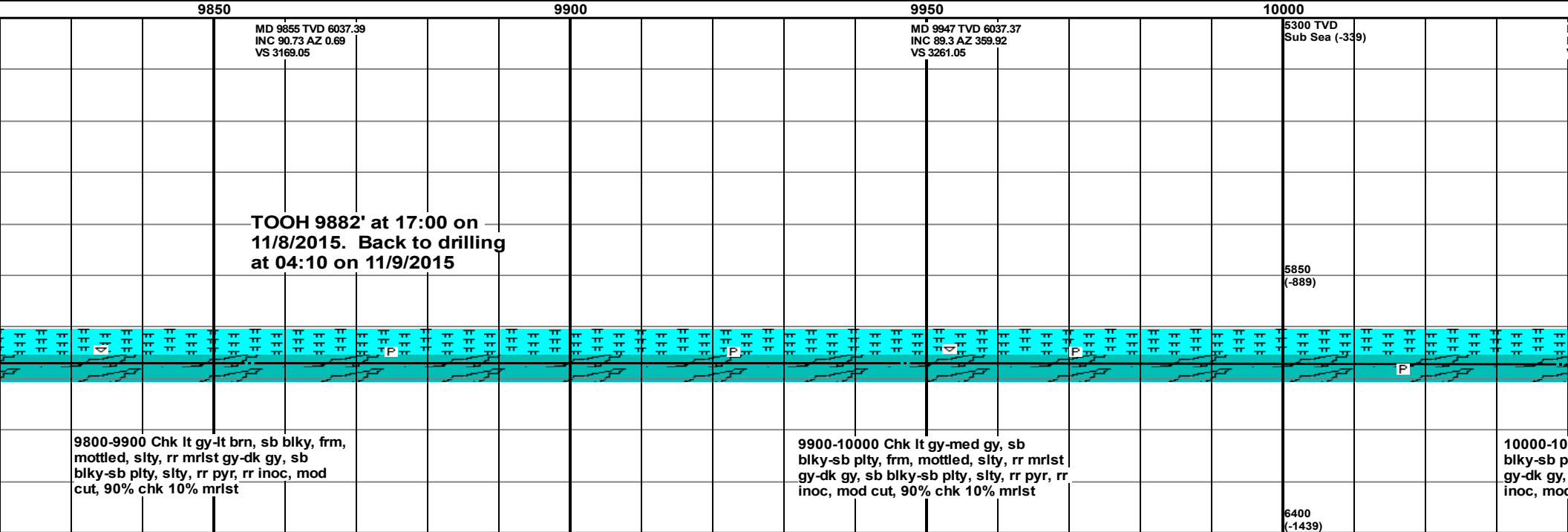
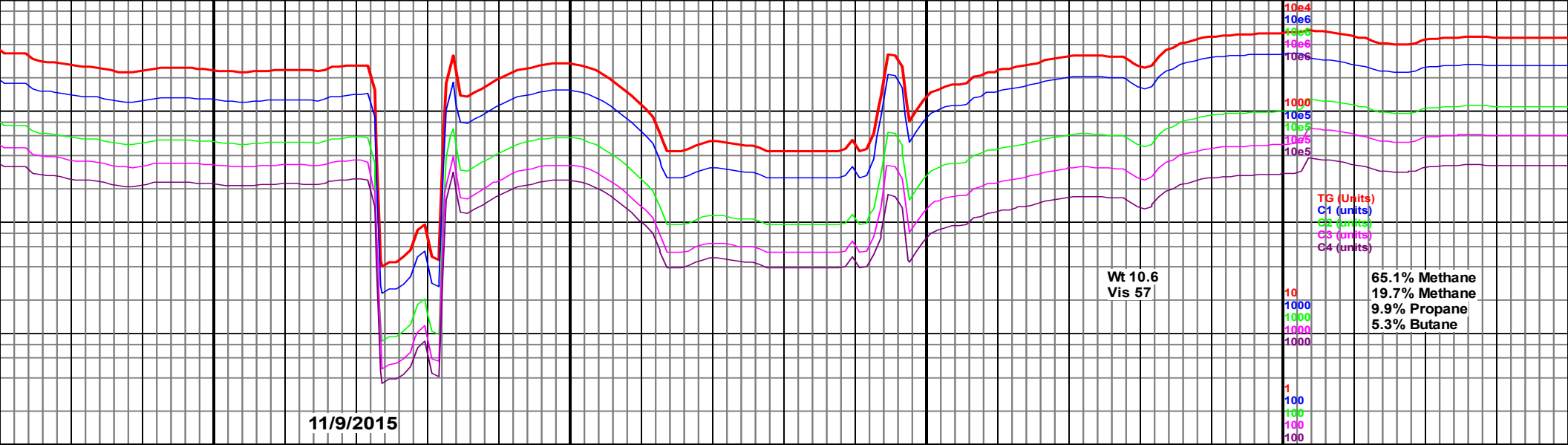




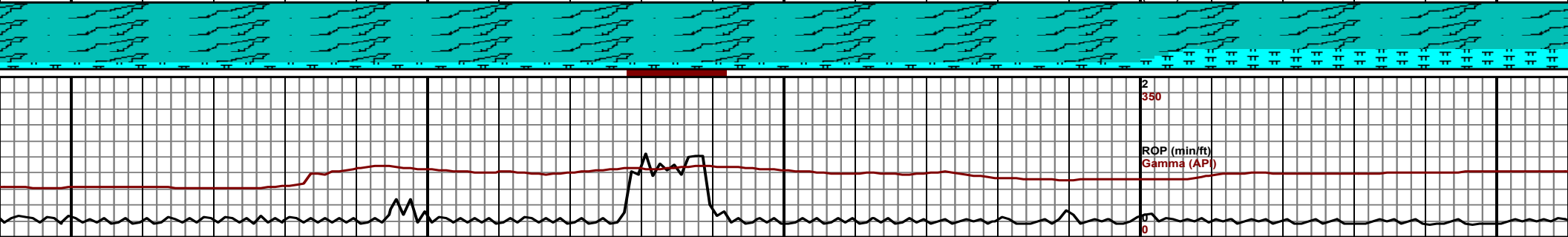
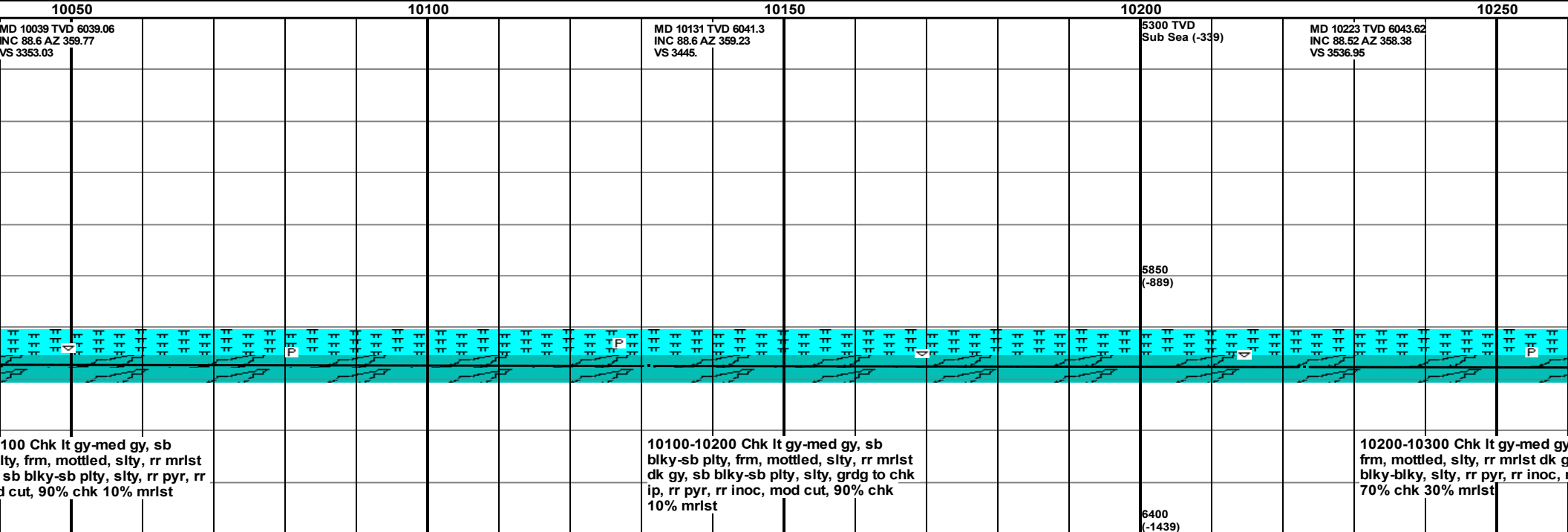
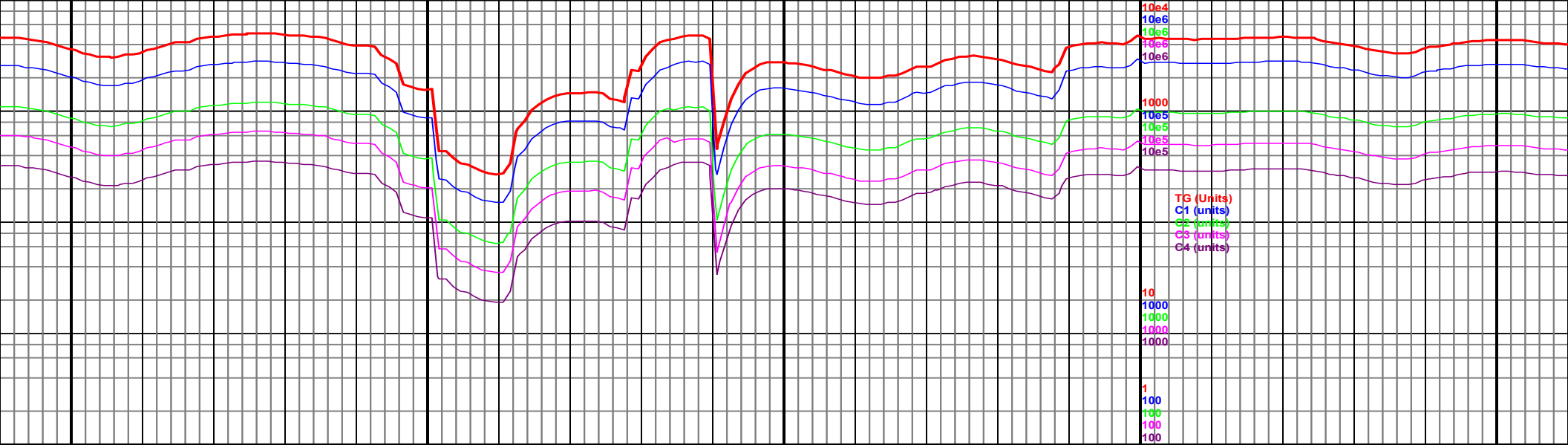


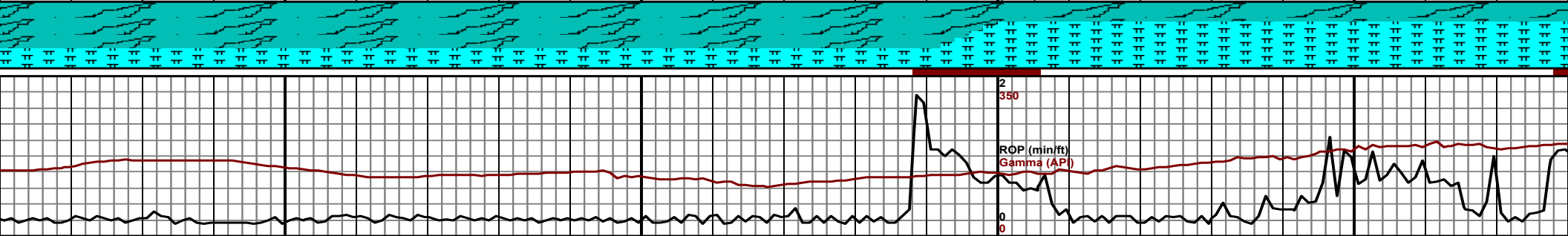
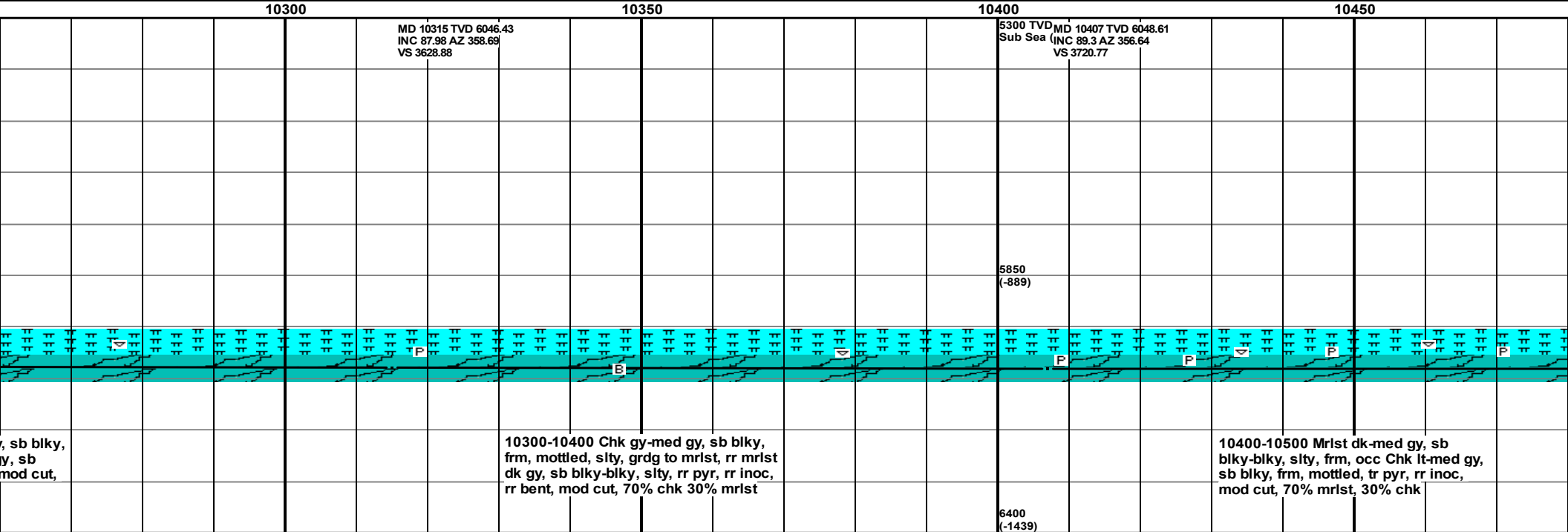
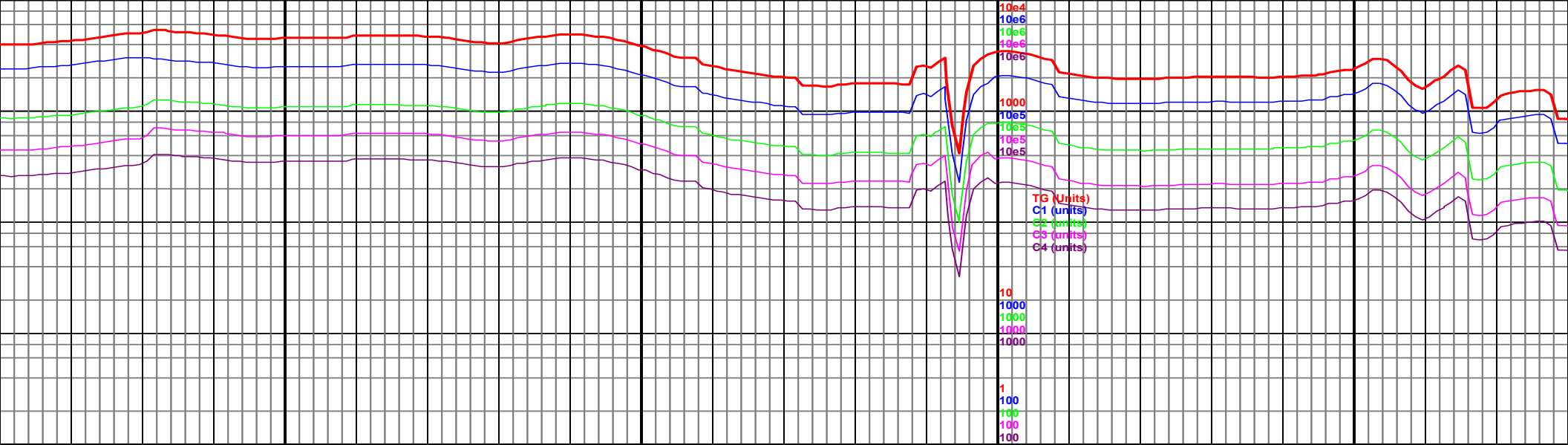


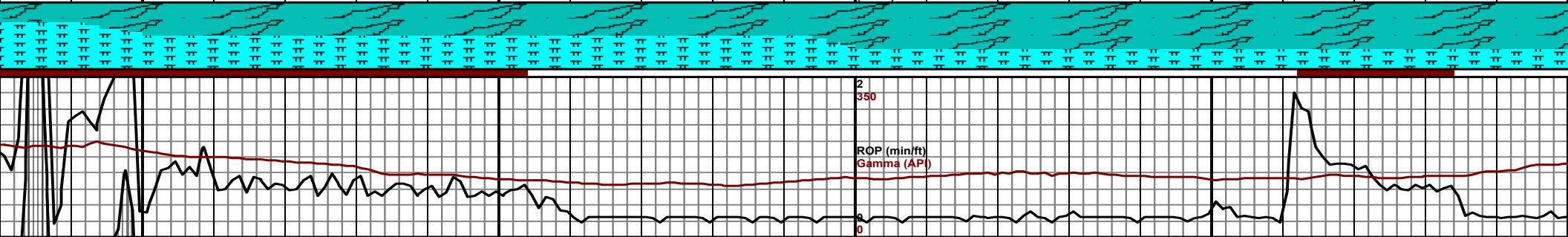
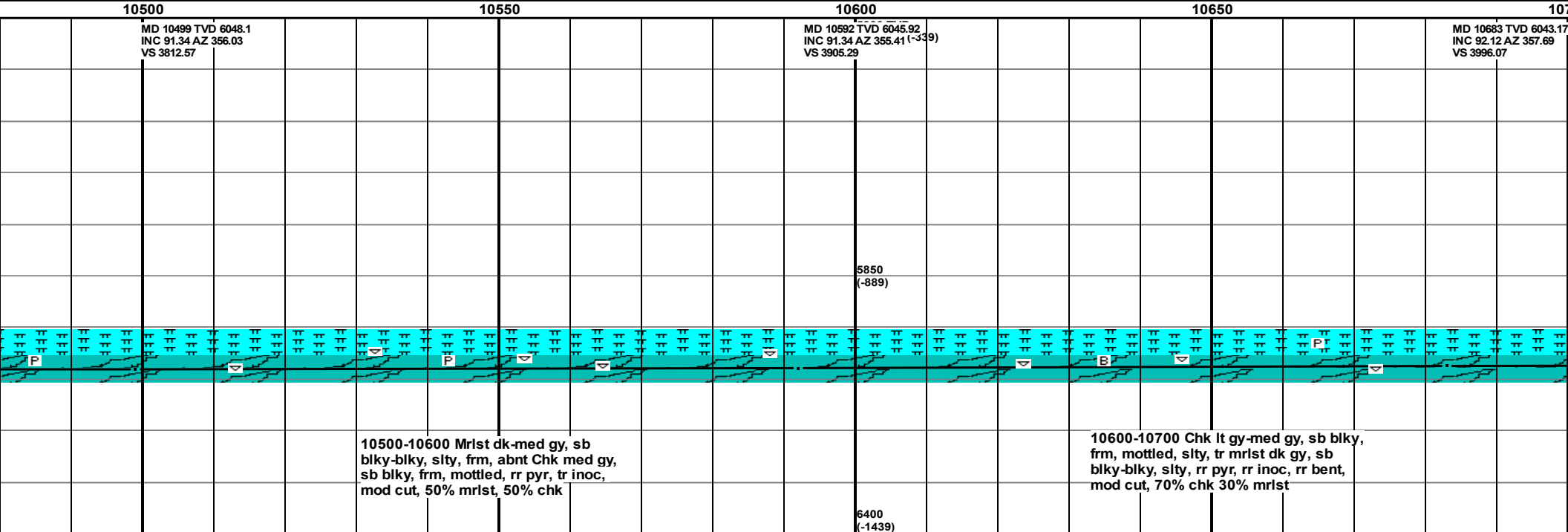
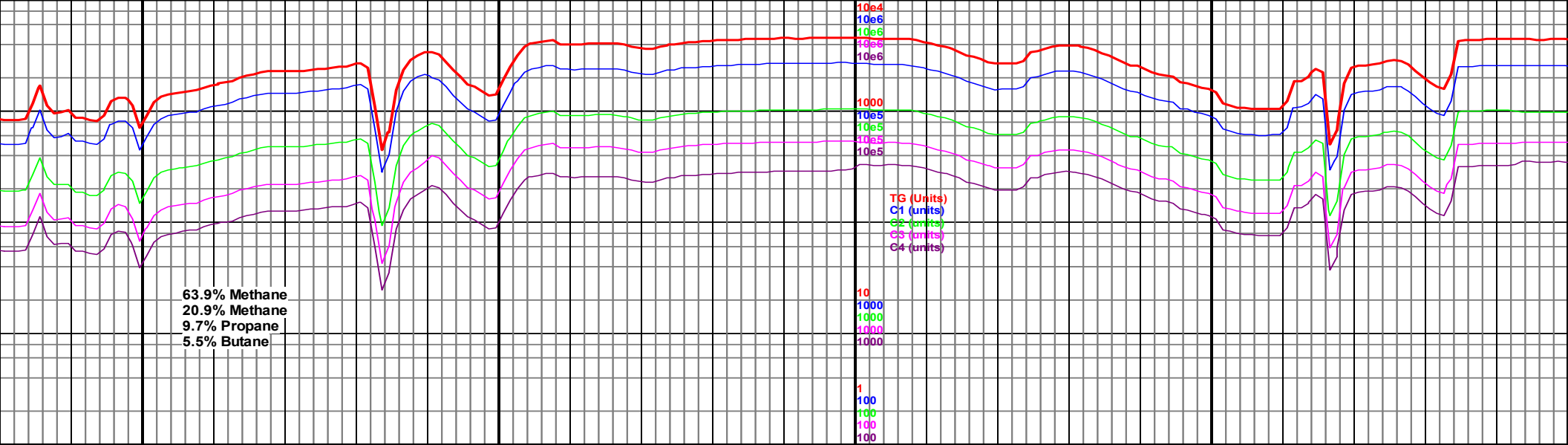


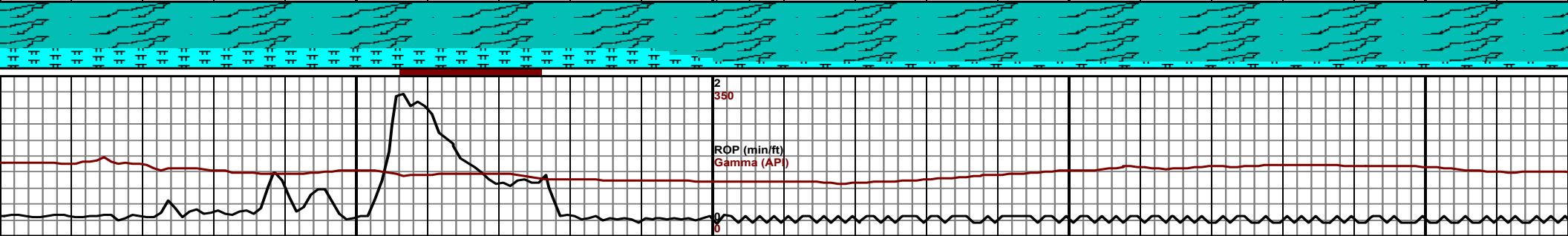
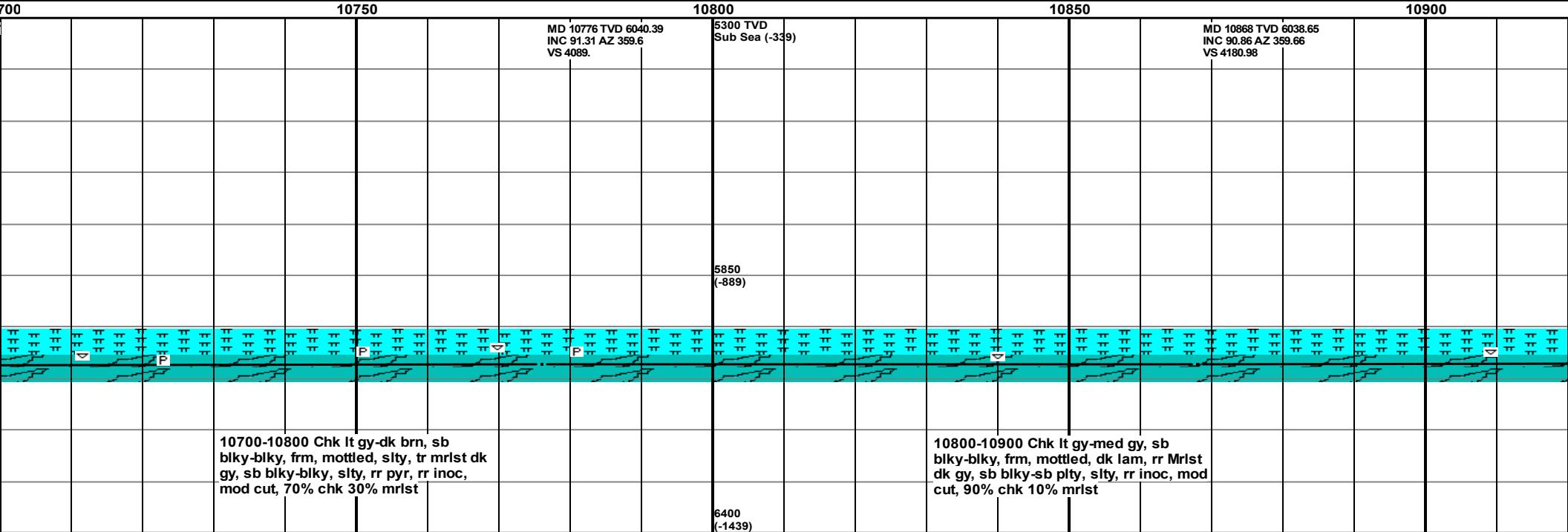
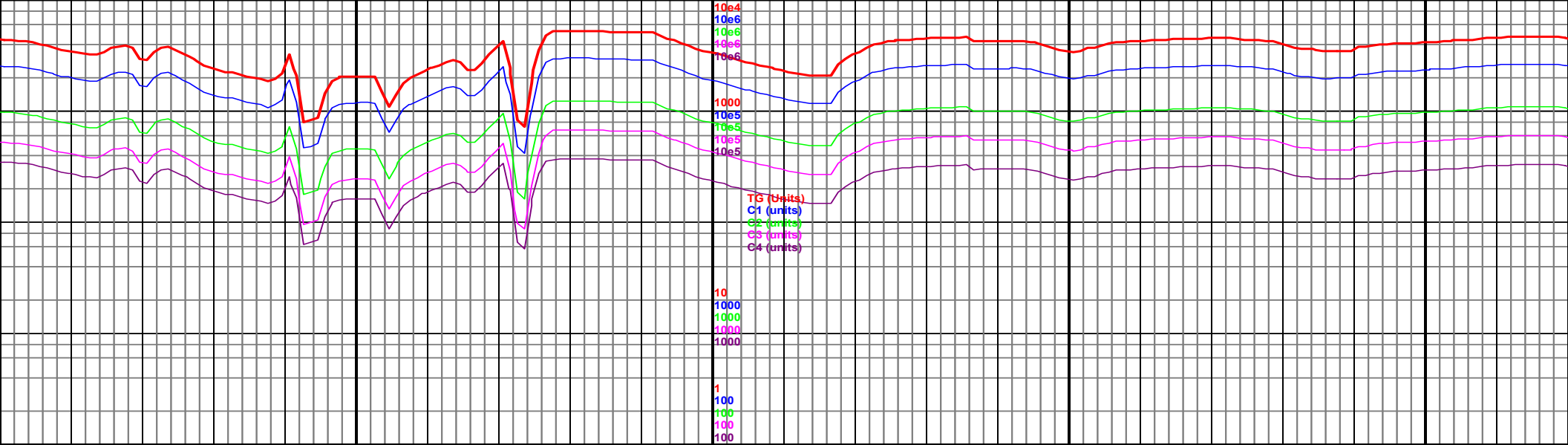


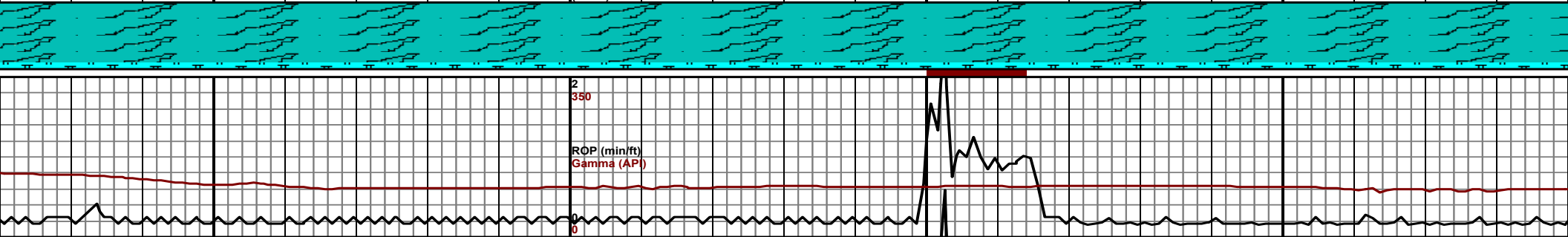
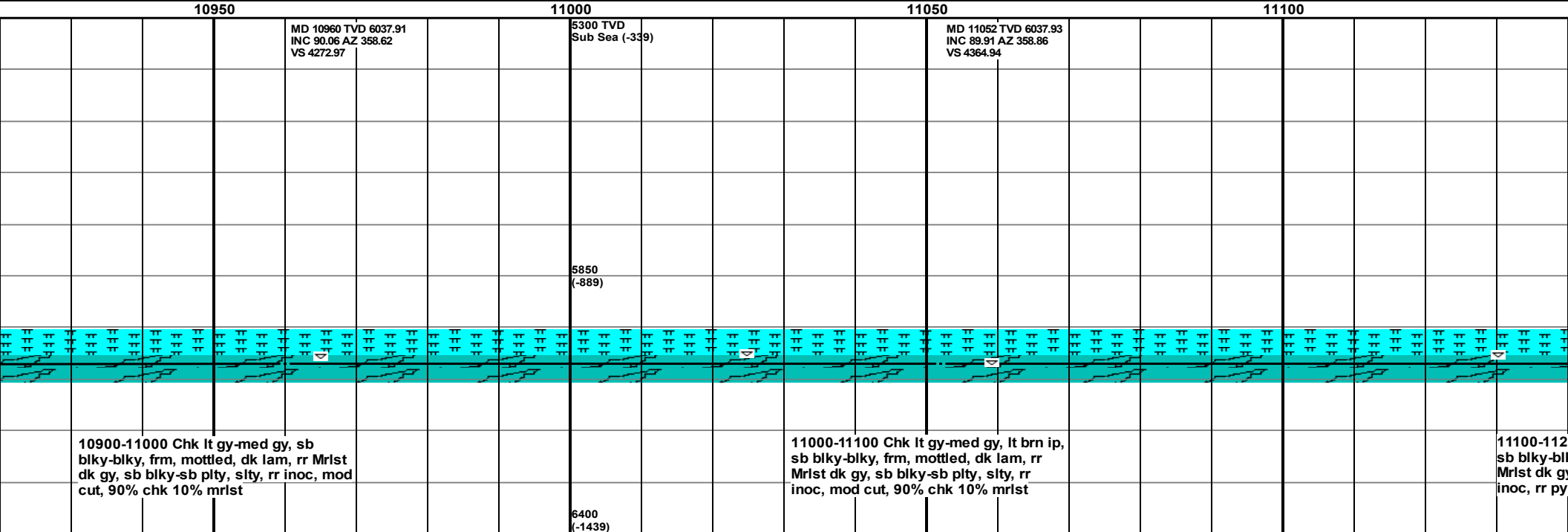
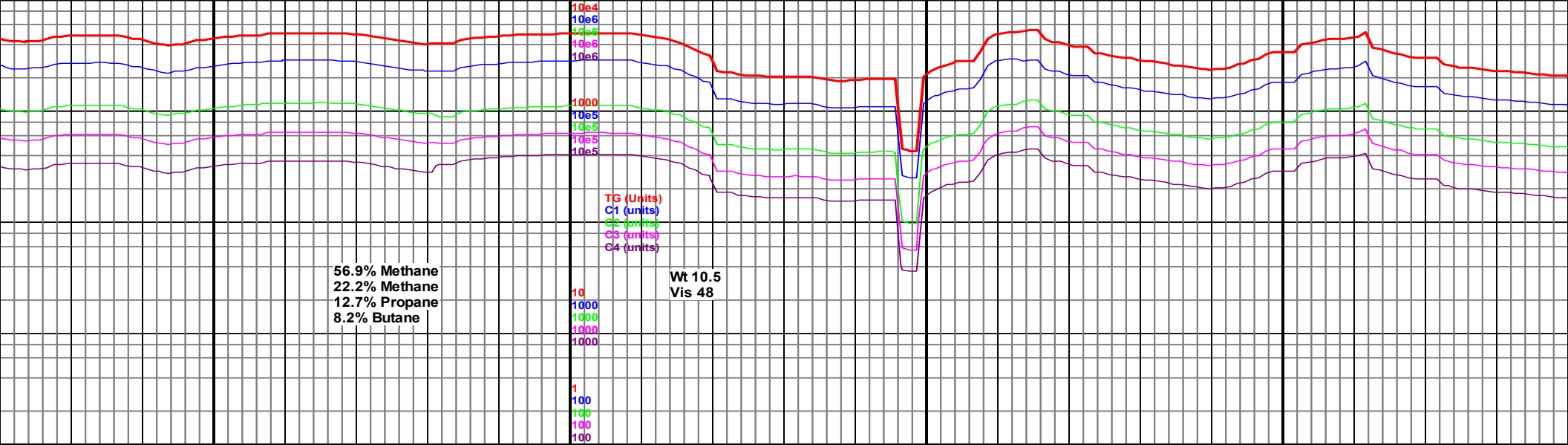


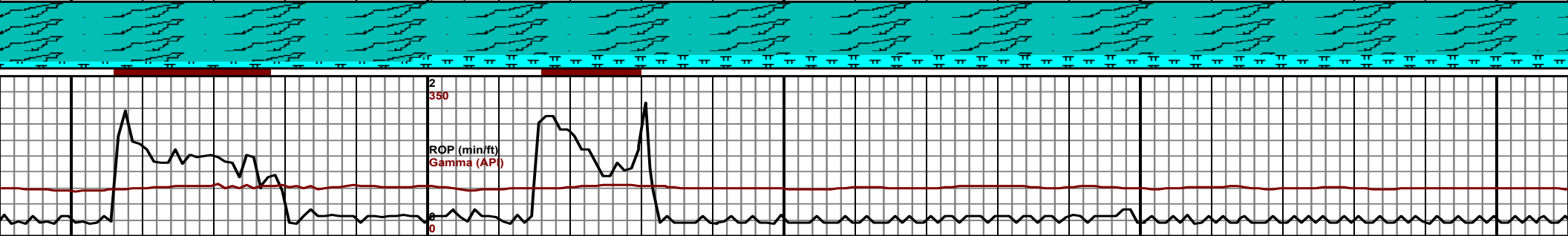
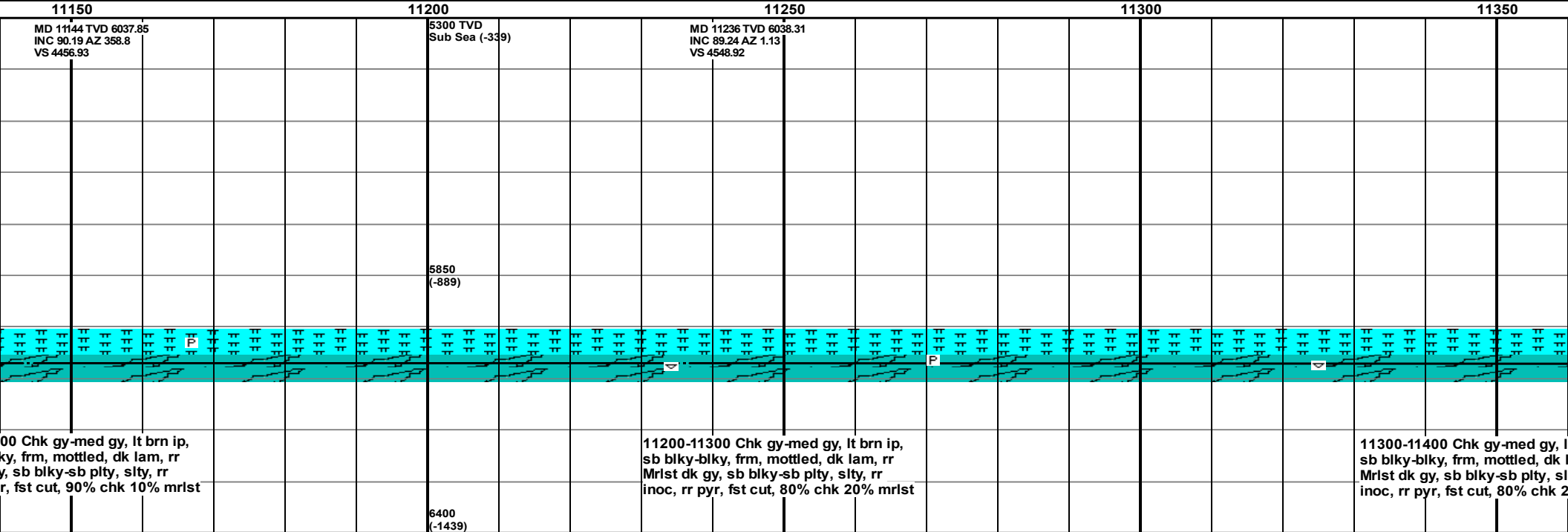
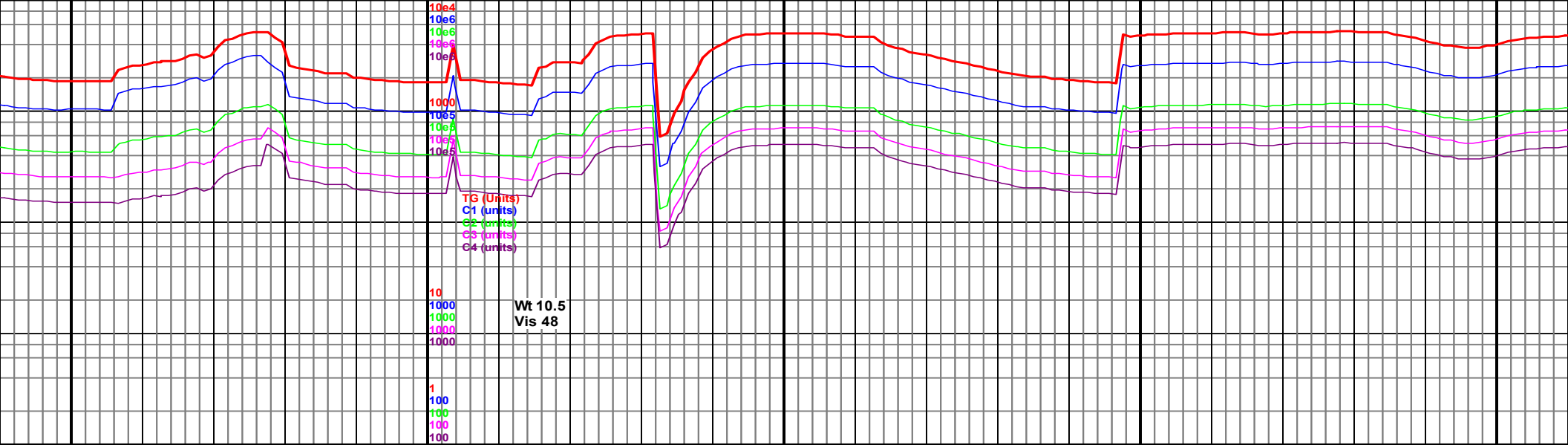


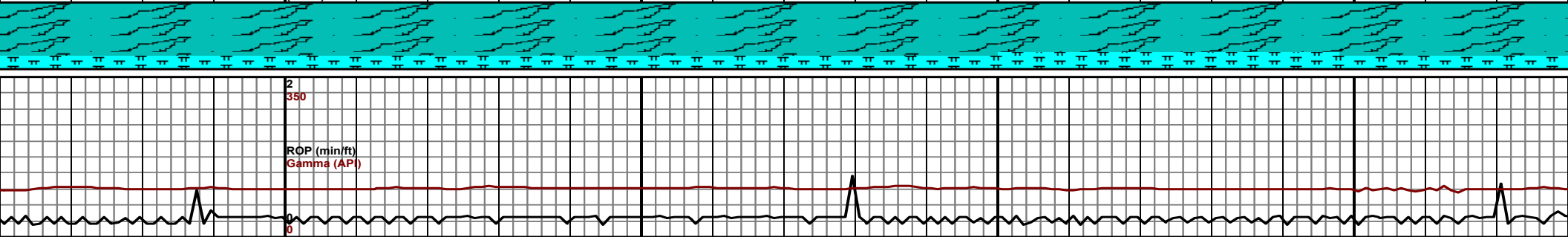
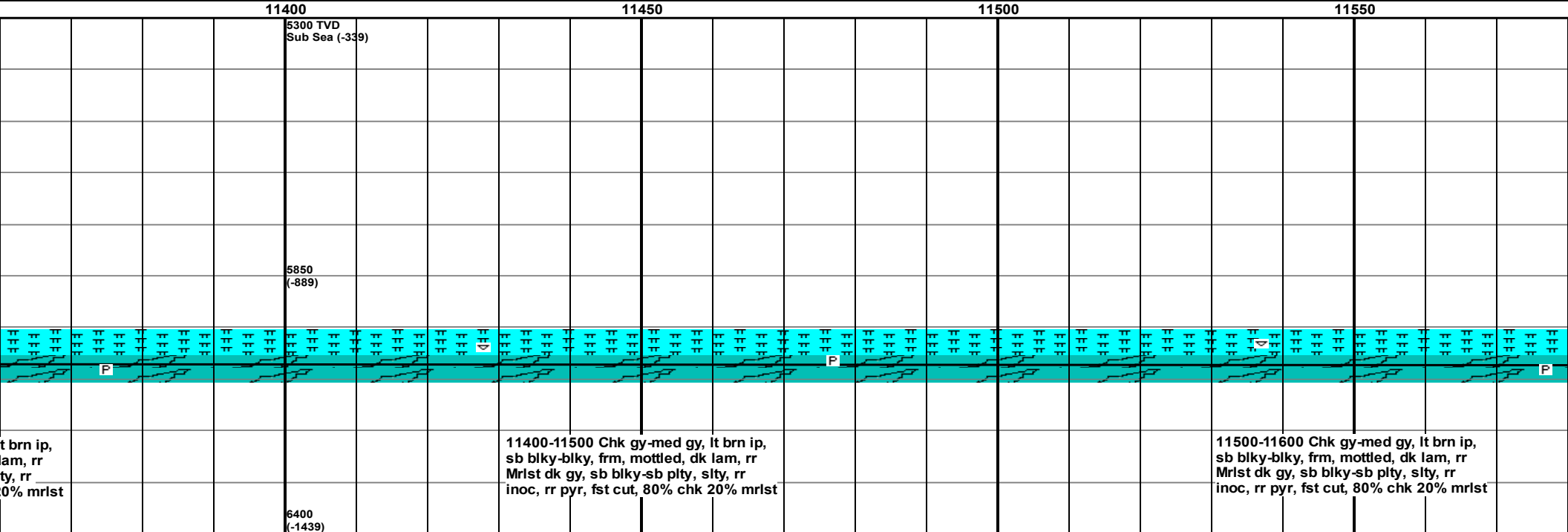
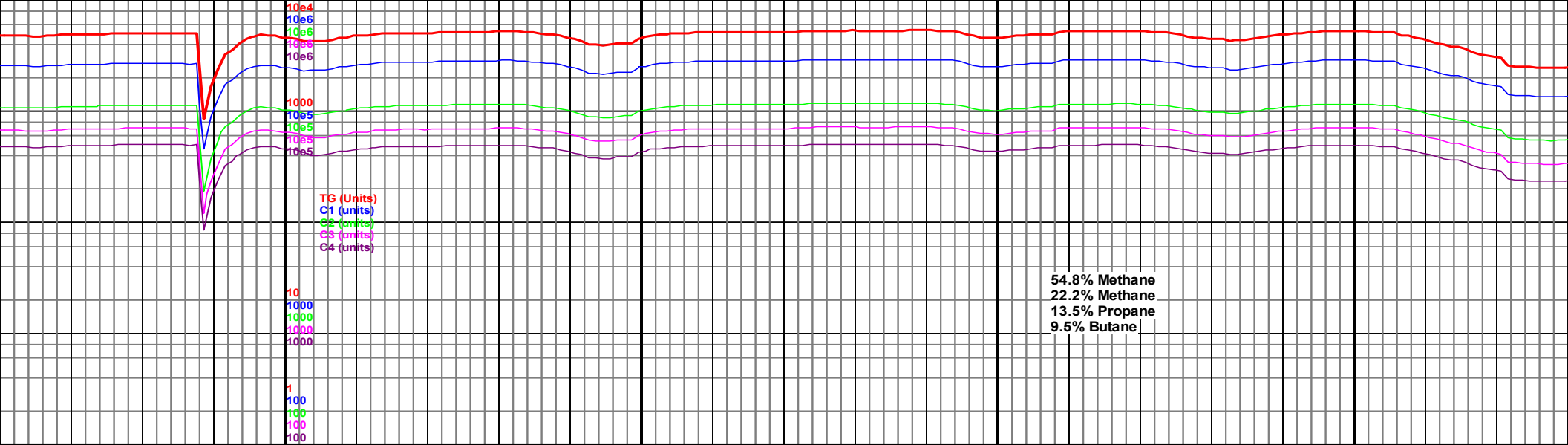


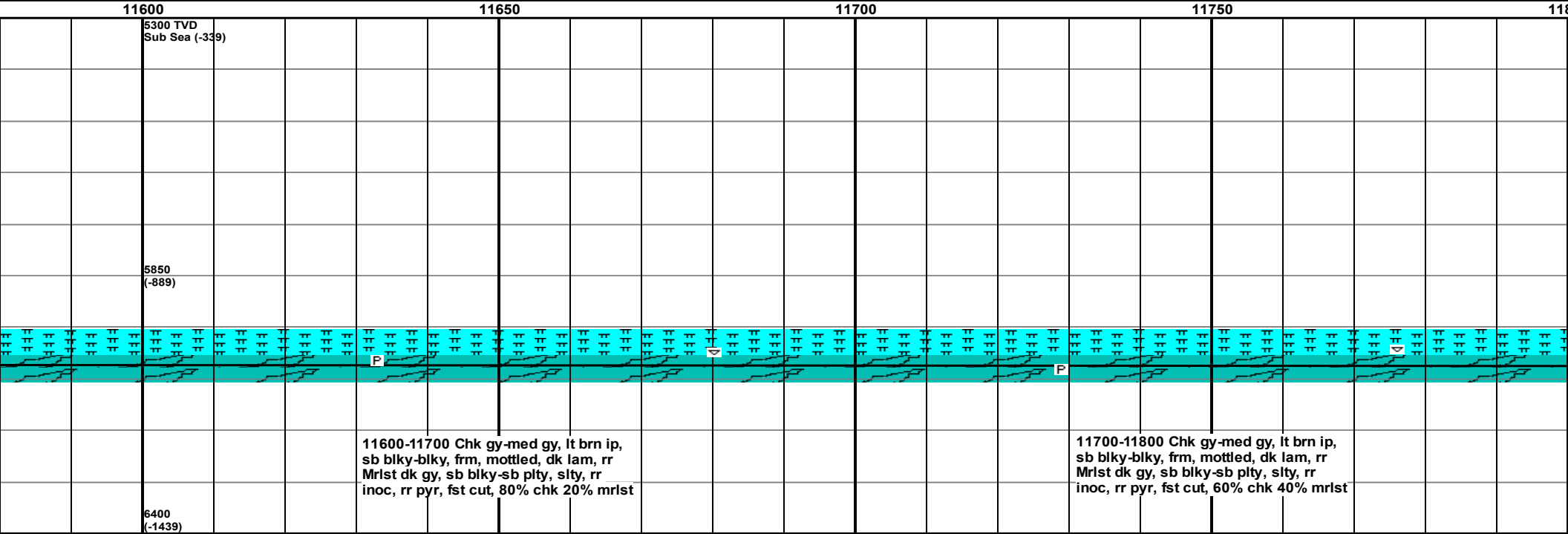
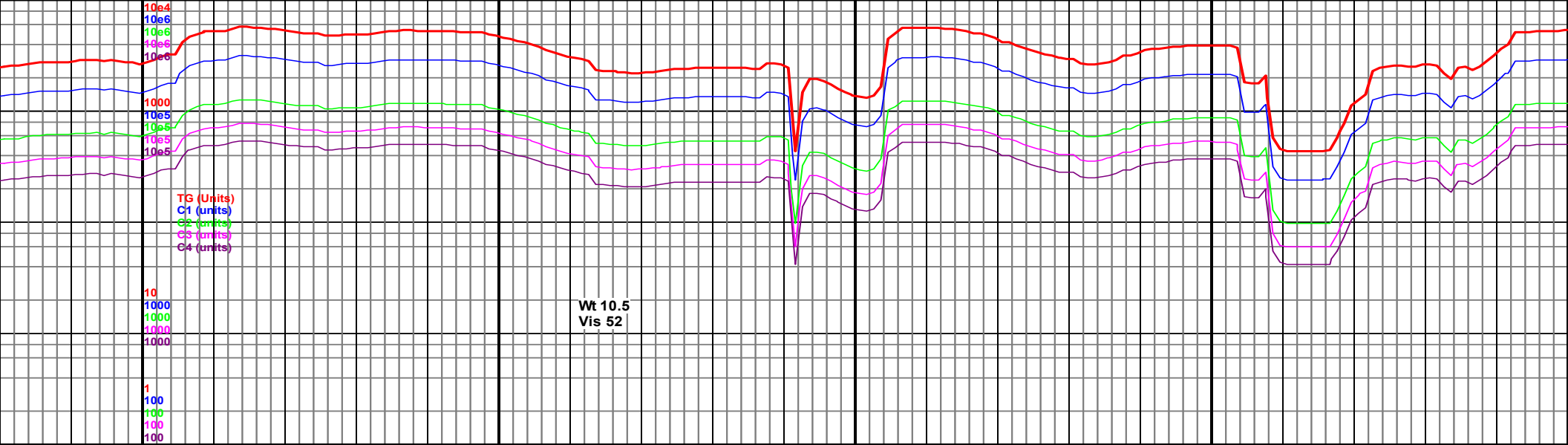






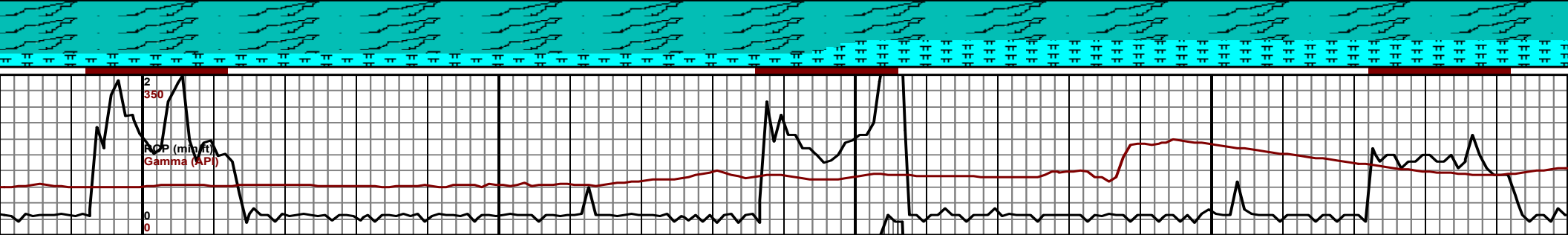




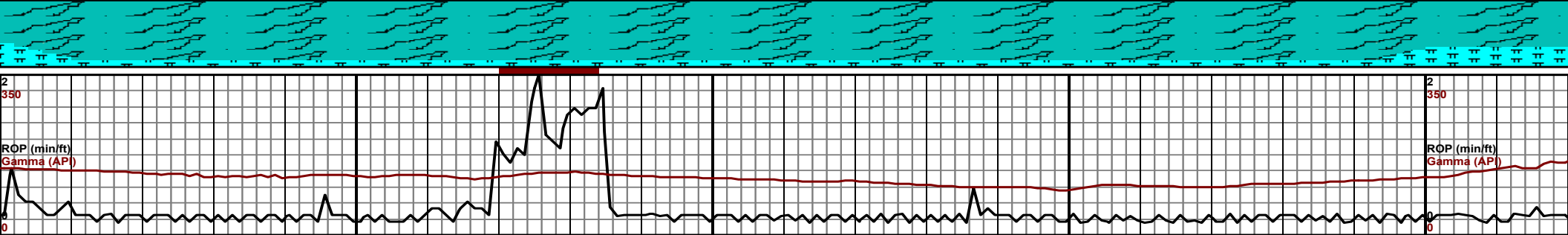
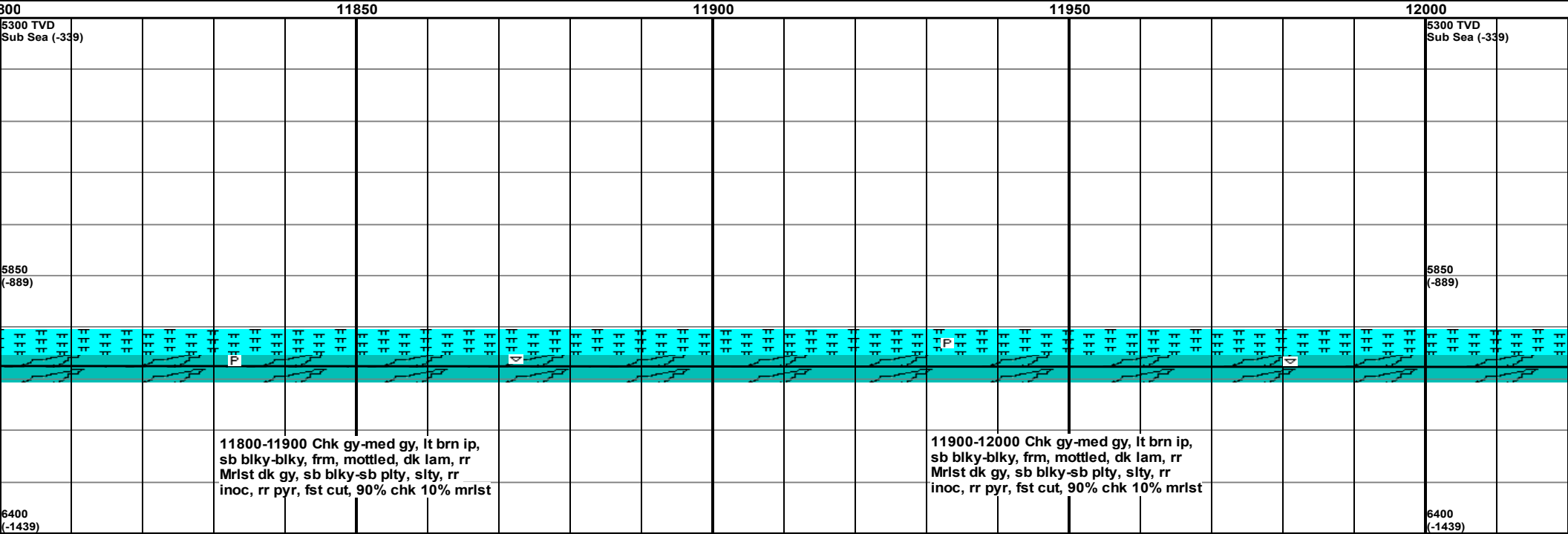
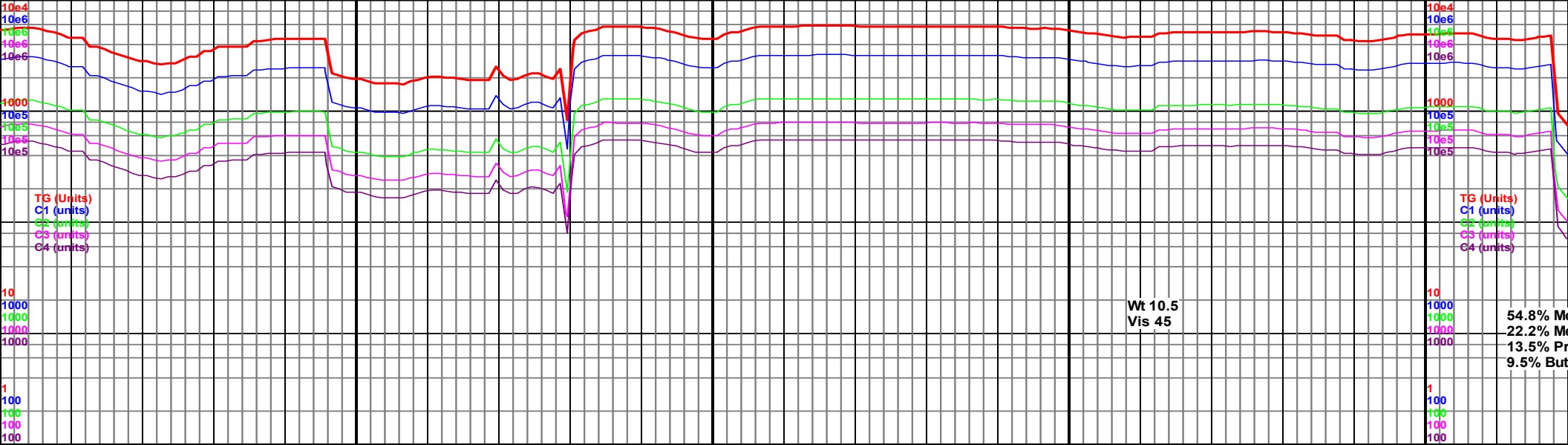


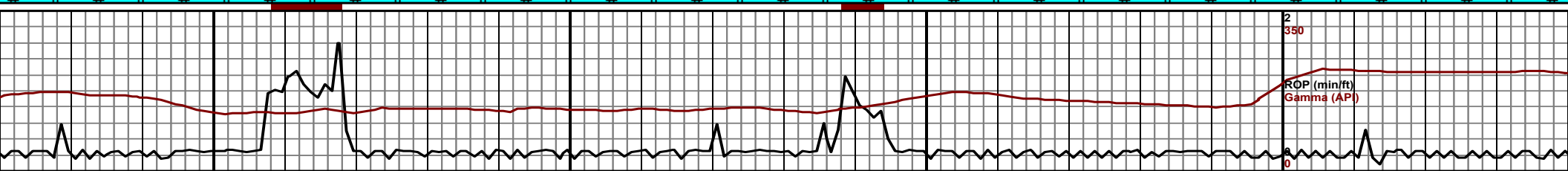
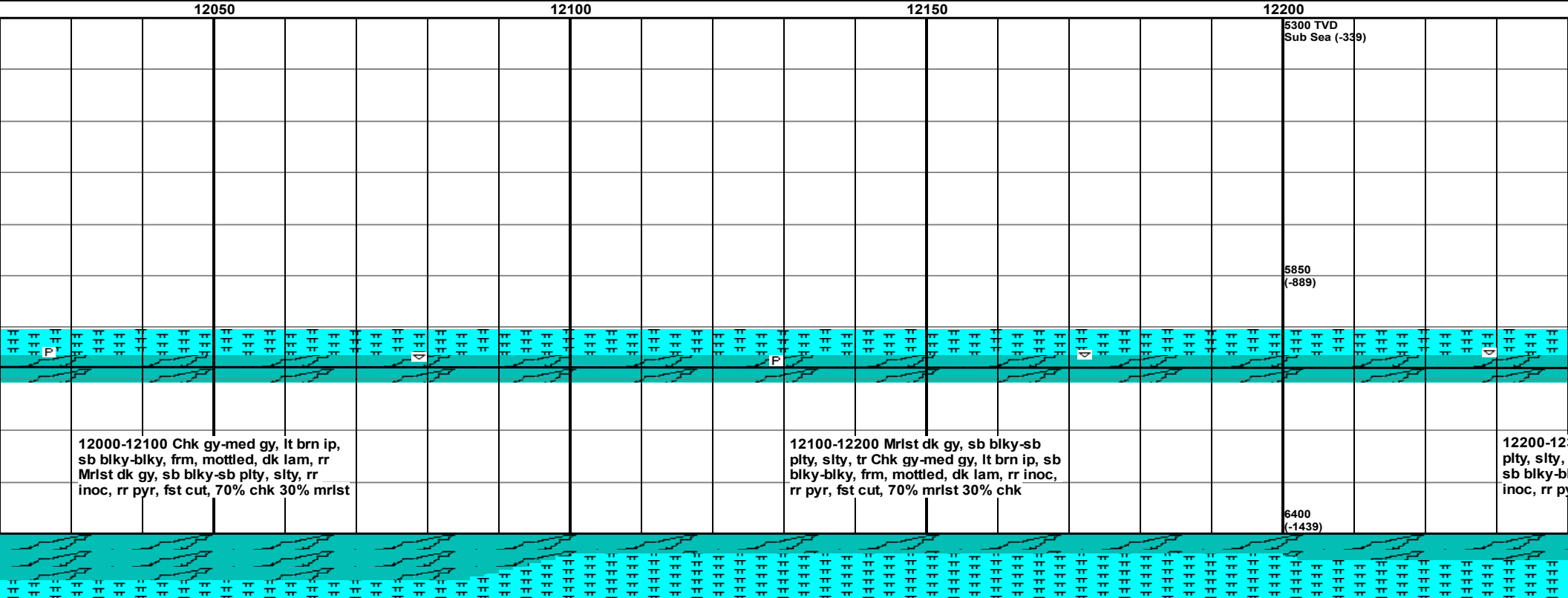
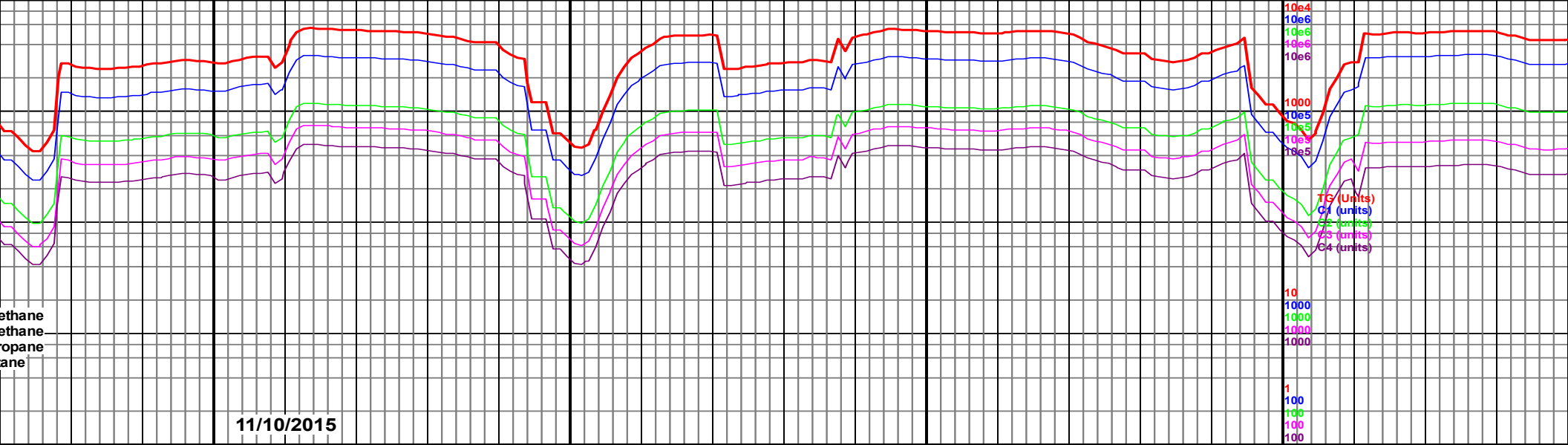
11600-11700 Chk gy-med gy, lt brn ip, sb blkgy-blky, frm, mottled, dk lam, rr Mrlst dk gy, sb blkgy-sb plty, slty, rr inoc, rr pyr, fst cut, 80% chk 20% mrlst

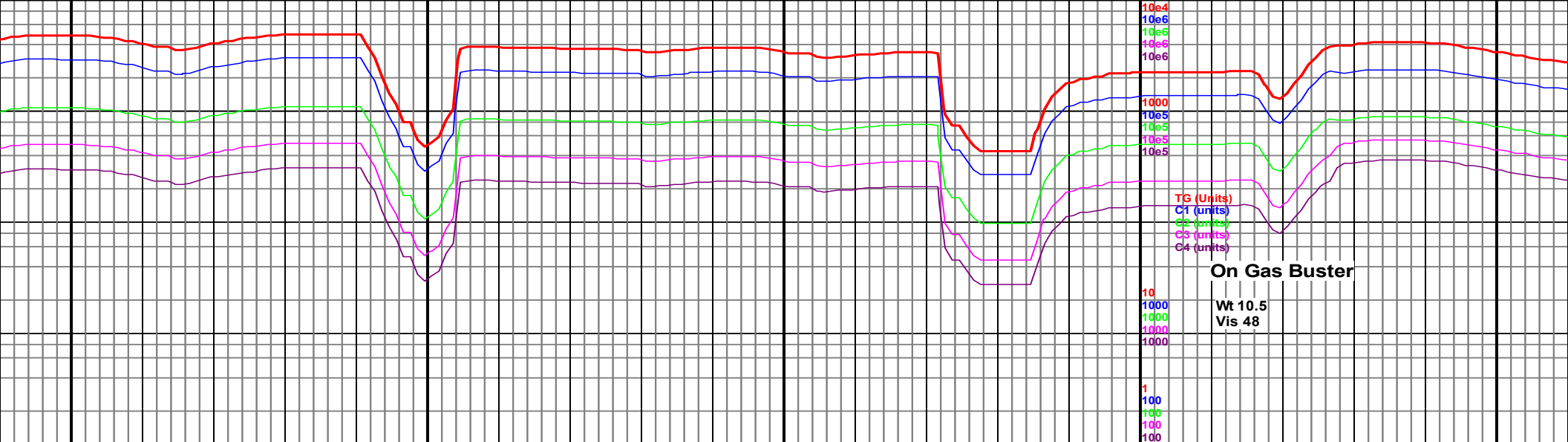
11700-11800 Chk gy-med gy, lt brn ip, sb blkgy-blky, frm, mottled, dk lam, rr Mrlst dk gy, sb blkgy-sb plty, slty, rr inoc, rr pyr, fst cut, 60% chk 40% mrlst







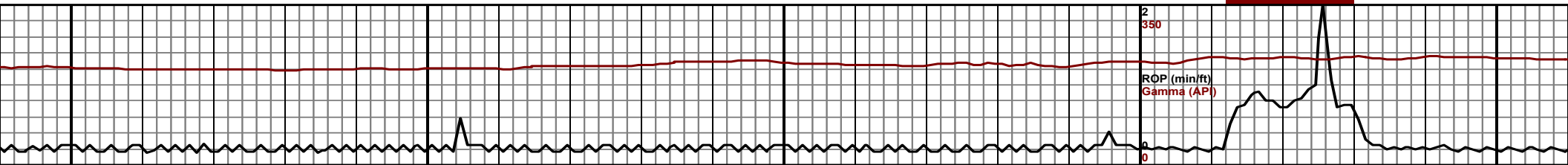


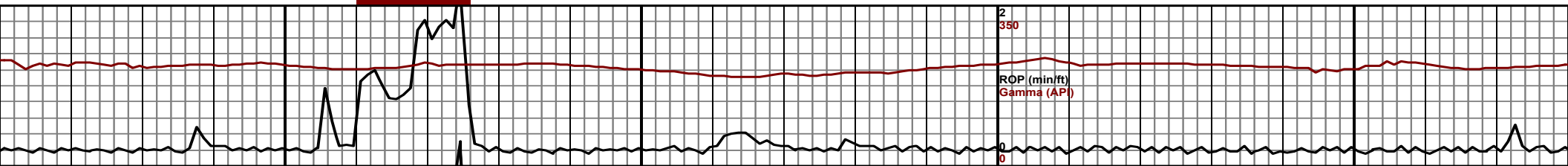
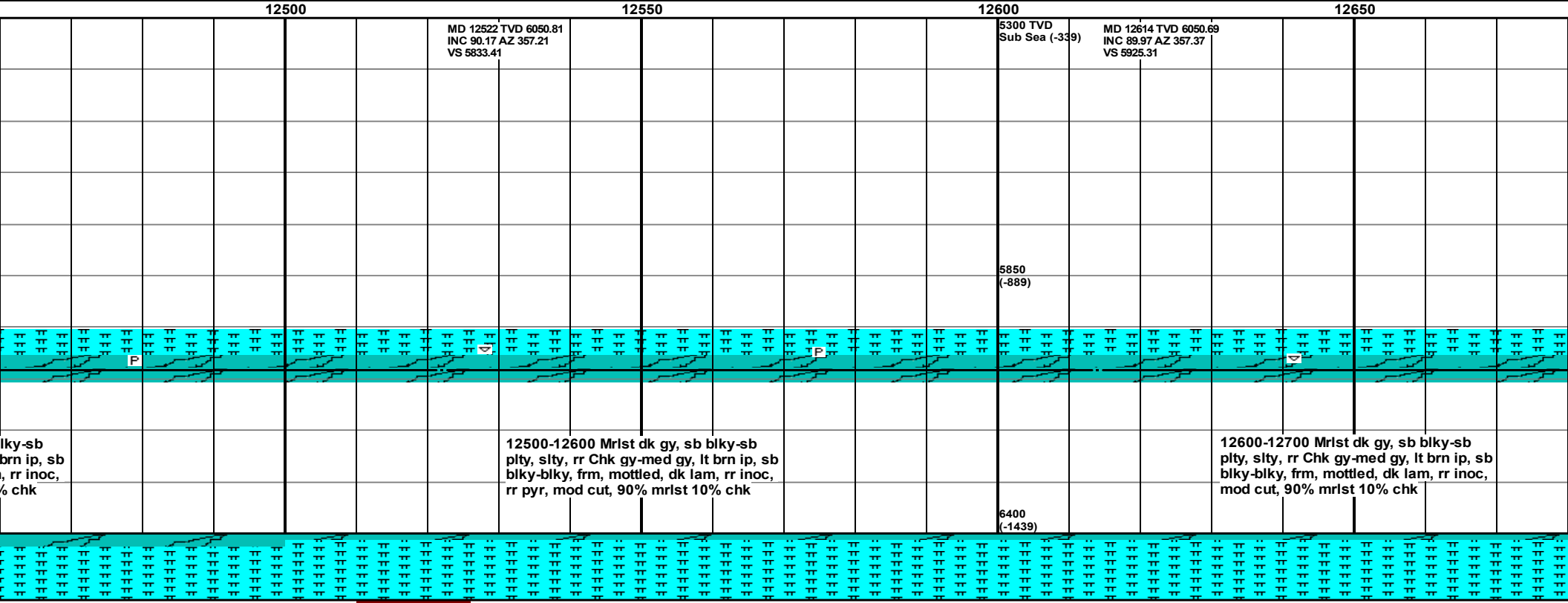
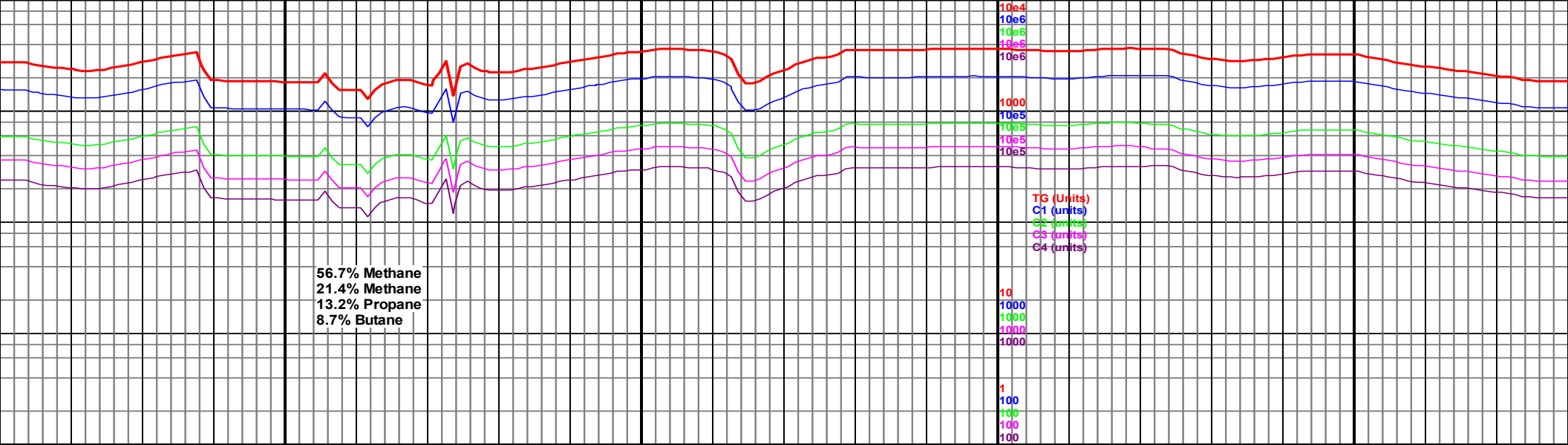


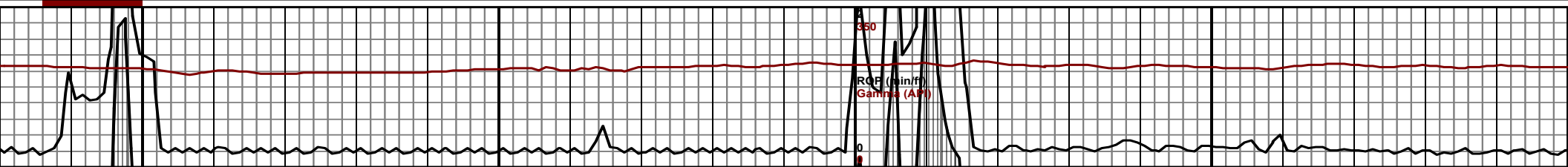
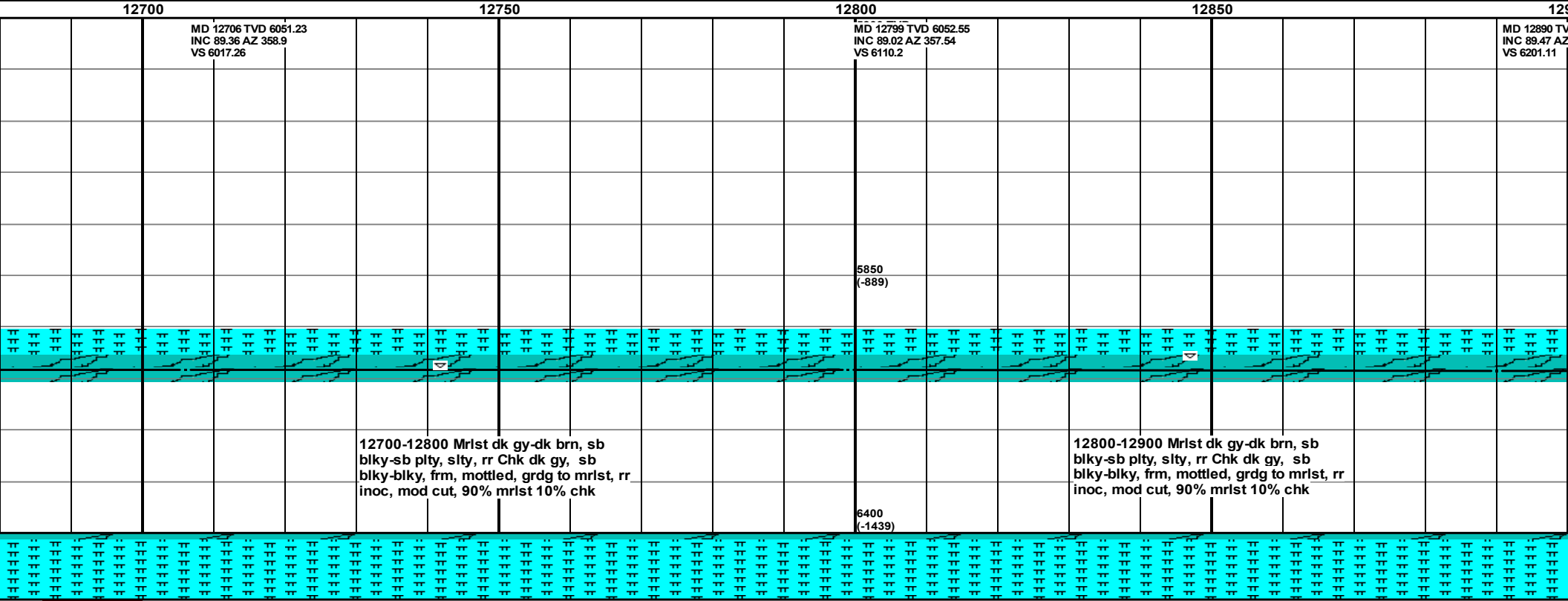
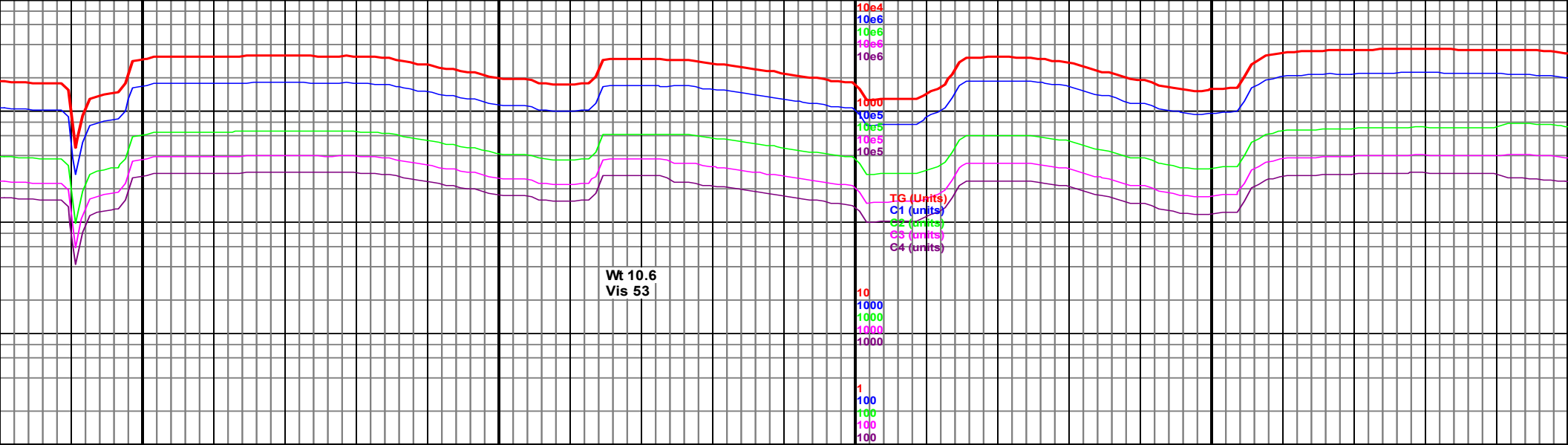
On Gas Buster

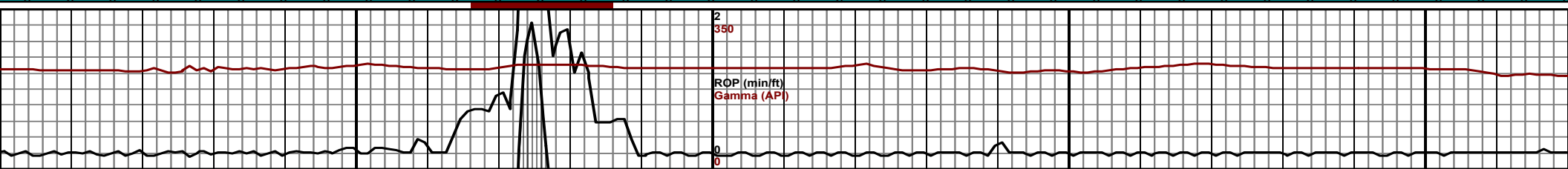
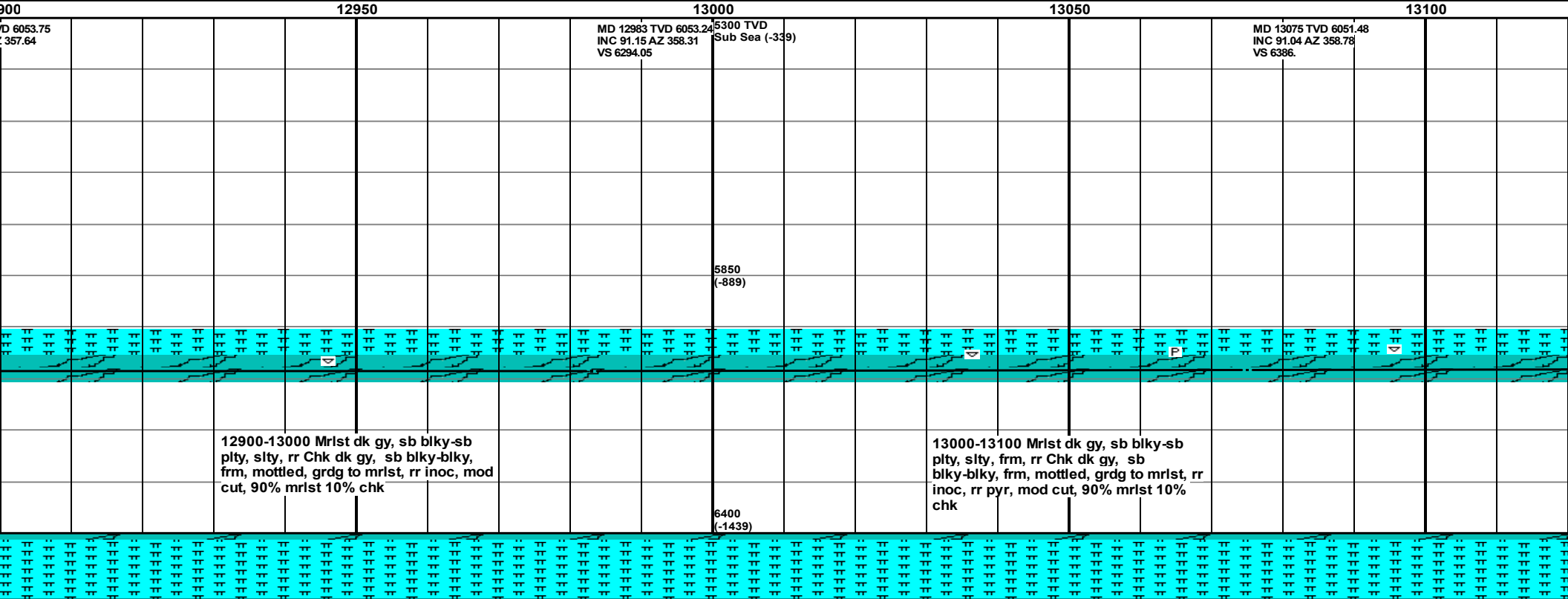
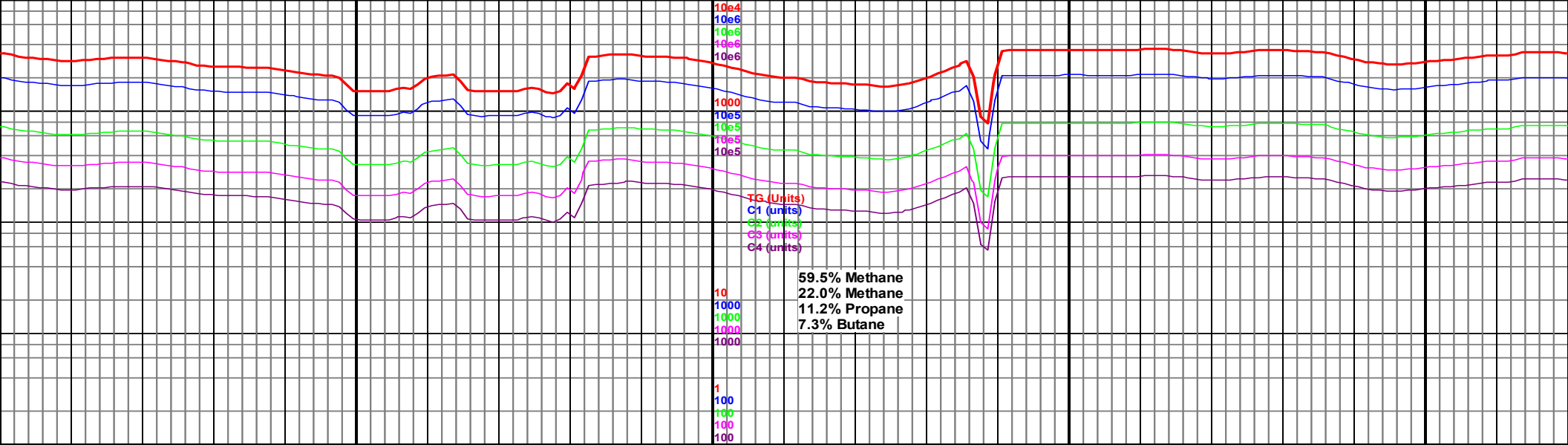
Wt 10.5  
Vis 48

<p>12250</p> <p>MD 12247 TVD 6046.96 INC 89.27 AZ 359.47 VS 5558.55</p> <p>300 Mrlst dk gy, sb blkly-sb occ Chk gy-med gy, lt brn ip, lky, frm, mottled, dk lam, rr pyr, fst cut, 60% mrlst 40% chk</p>	<p>12300</p>	<p>12350</p> <p>MD 12339 TVD 6048.75 INC 88.49 AZ 359.28 VS 5650.53</p> <p>12300-12400 Mrlst dk gy, sb blkly-sb plty, slty, tr Chk gy-med gy, lt brn ip, sb blkly-blky, frm, mottled, dk lam, rr inoc, rr pyr, mod cut, 70% mrlst 30% chk</p>	<p>12400</p> <p>5300 TVD Sub Sea (-339)</p> <p>5850 (-889)</p> <p>6400 (-1439)</p>	<p>12450</p> <p>MD 12431 TVD 6050.46 INC 89.39 AZ 358.19 VS 5742.49</p> <p>12400-12500 Mrlst dk gy, sb b plty, slty, rr Chk gy-med gy, lt blkly-blky, frm, mottled, dk lam rr pyr, mod cut, 80% mrlst 20%</p>
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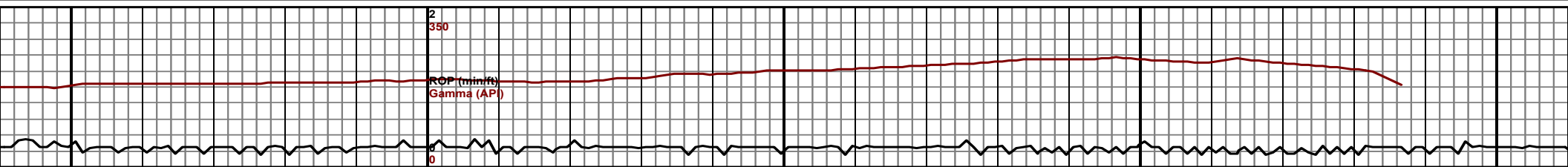
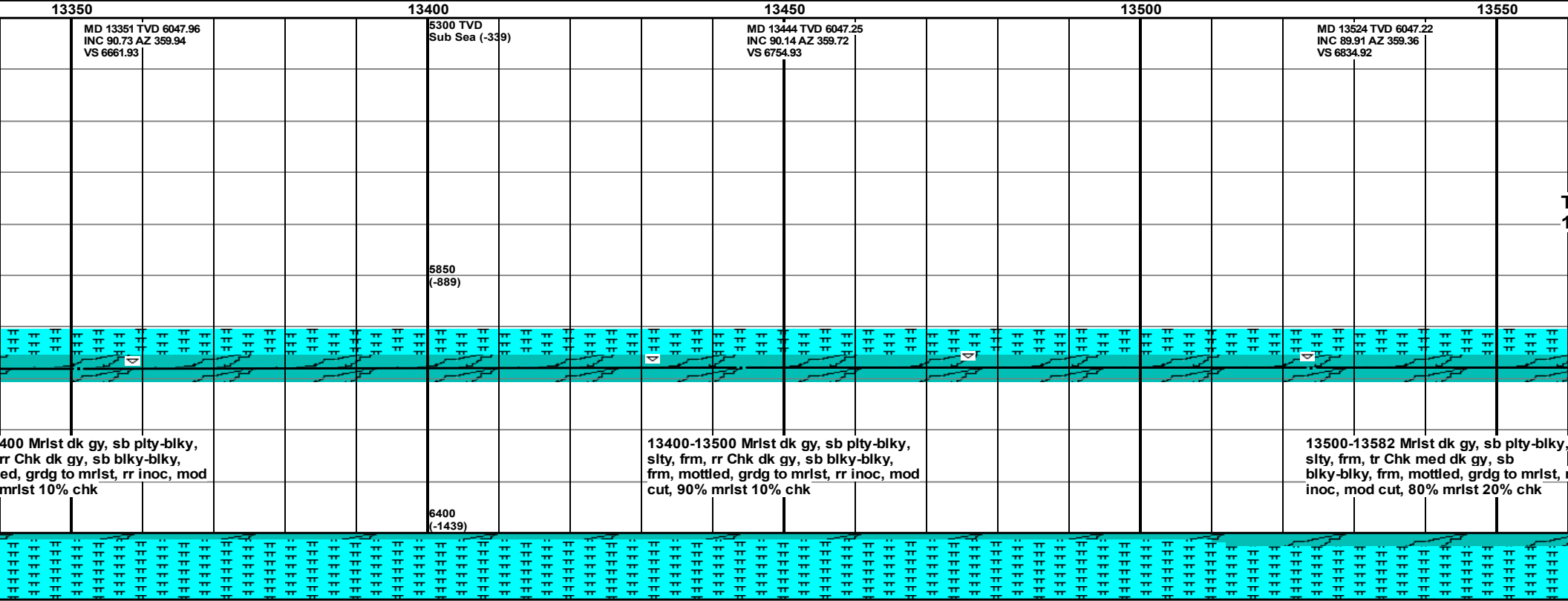
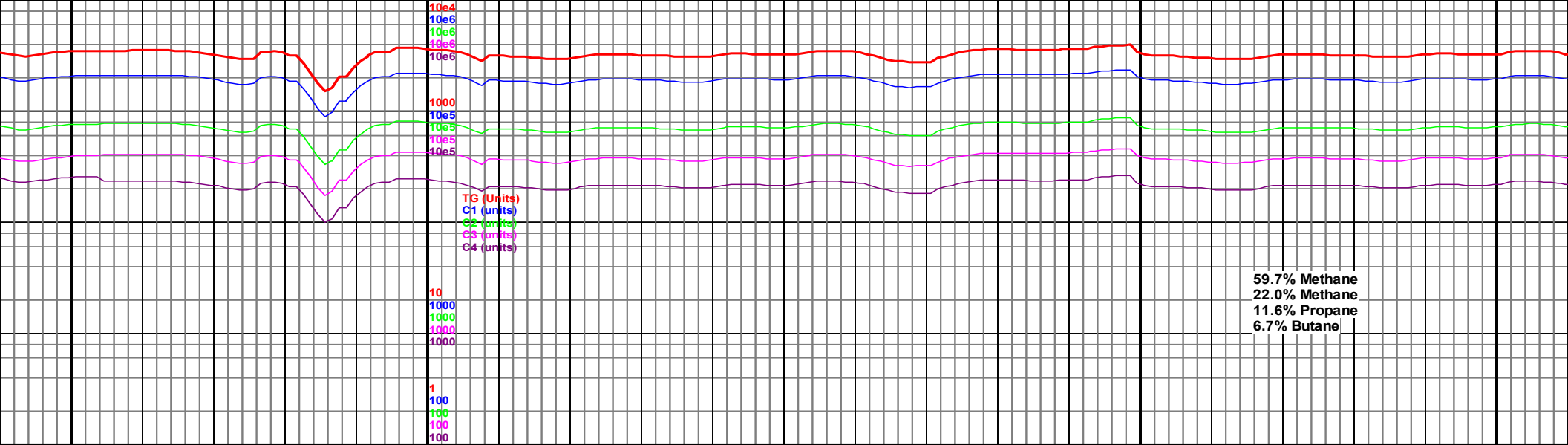




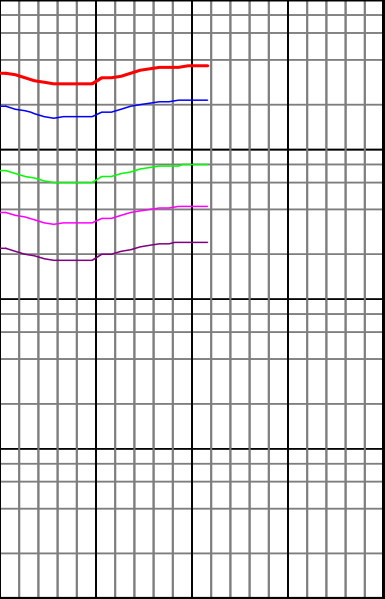












13

MD 13582 TVD 6047.31  
INC 89.91 AZ 359.36  
VS 6892.92

TD 13582' at 12:50 on  
11/10/2015



rr

