



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

Well Name: Horsetail 07E-1801  
Well Id: 05-123-41641-00  
Location: Sec 7-T10N-R57W  
License Number: 05-123-41641-00  
Spud Date: 1/5/2016  
Surface Coordinates: Lat.: 40.853964 Long.: -103.801367

Region: Redtail Field  
Drilling Completed: 1/10/2016

Bottom Hole  
Coordinates:  
Ground Elevation (ft): 4926  
Logged Interval (ft): 5310 To: 13938  
Formation: Pierre, Sharon Springs, Niobrara A, Niobrara B, Niobrara C  
Type of Drilling Fluid: Water Based Mud

K.B. Elevation (ft): 4947  
Total Depth (ft): 13938

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

## Drilling Company

Unit Drilling Company  
Rig 409

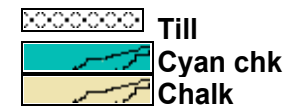
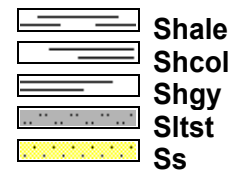
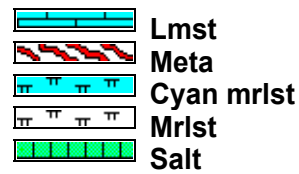
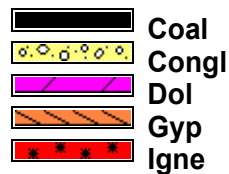
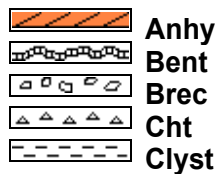
## Gas Detection

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

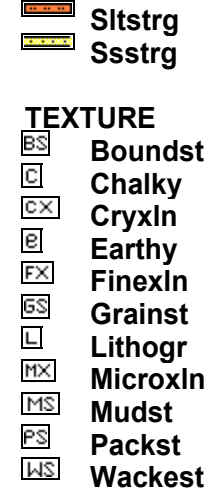
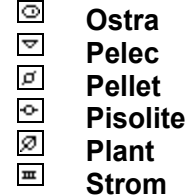
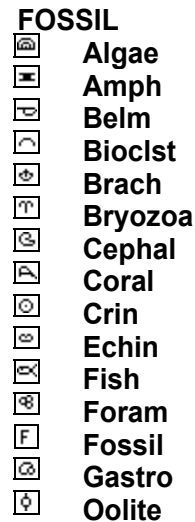
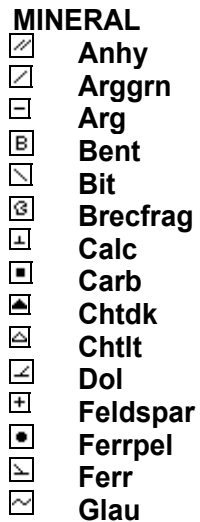
## Comments

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



## ACCESSORIES

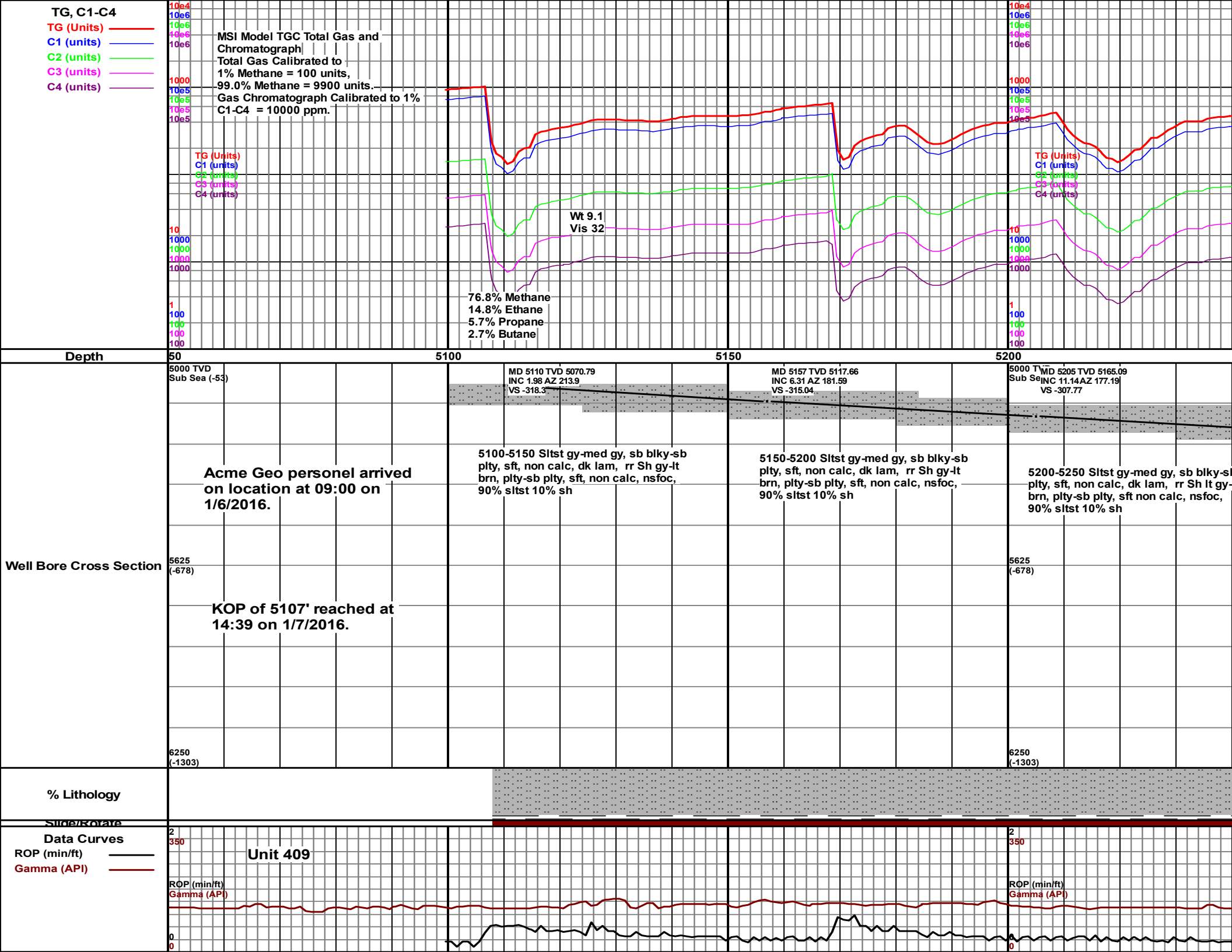


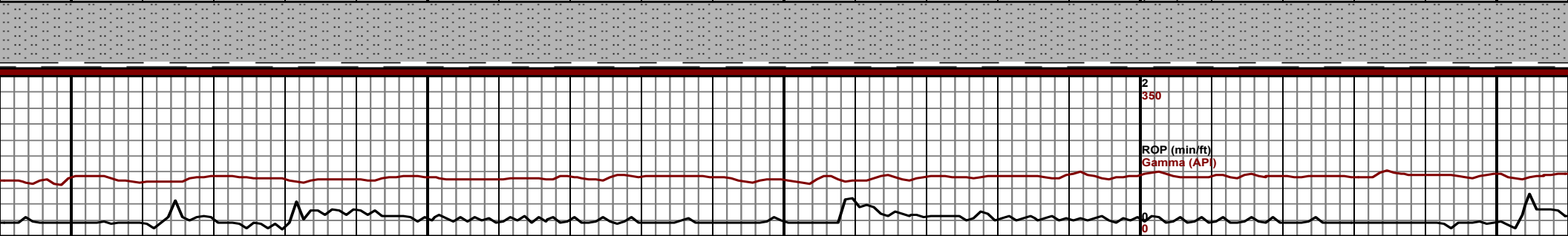
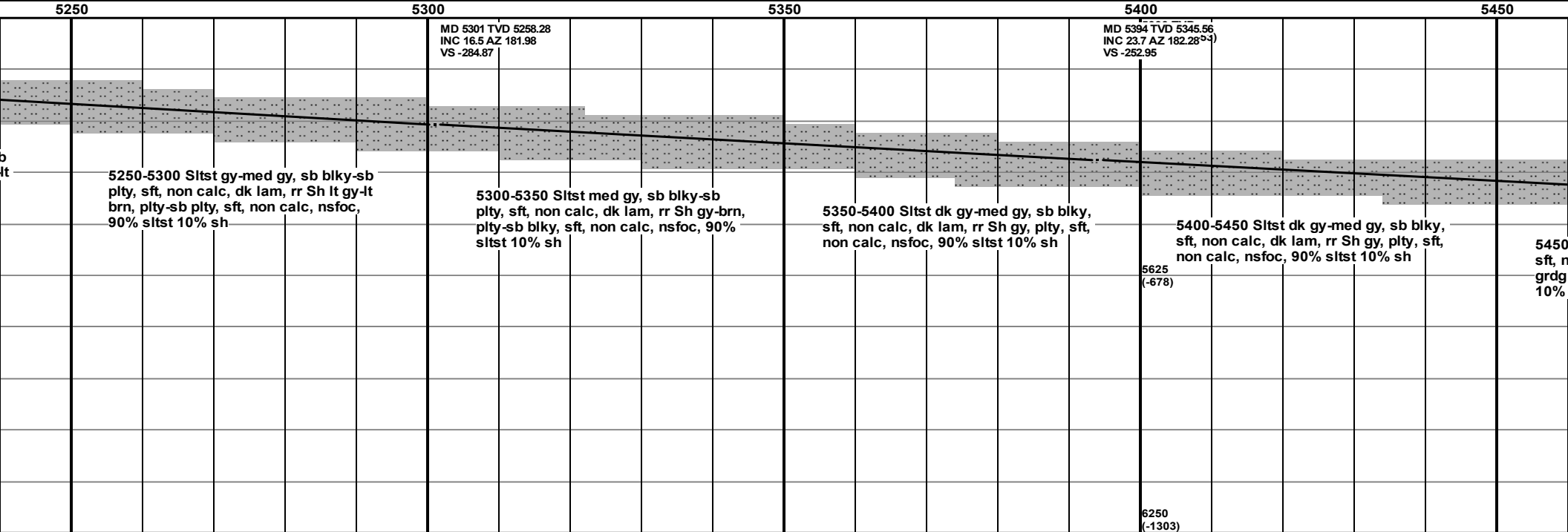
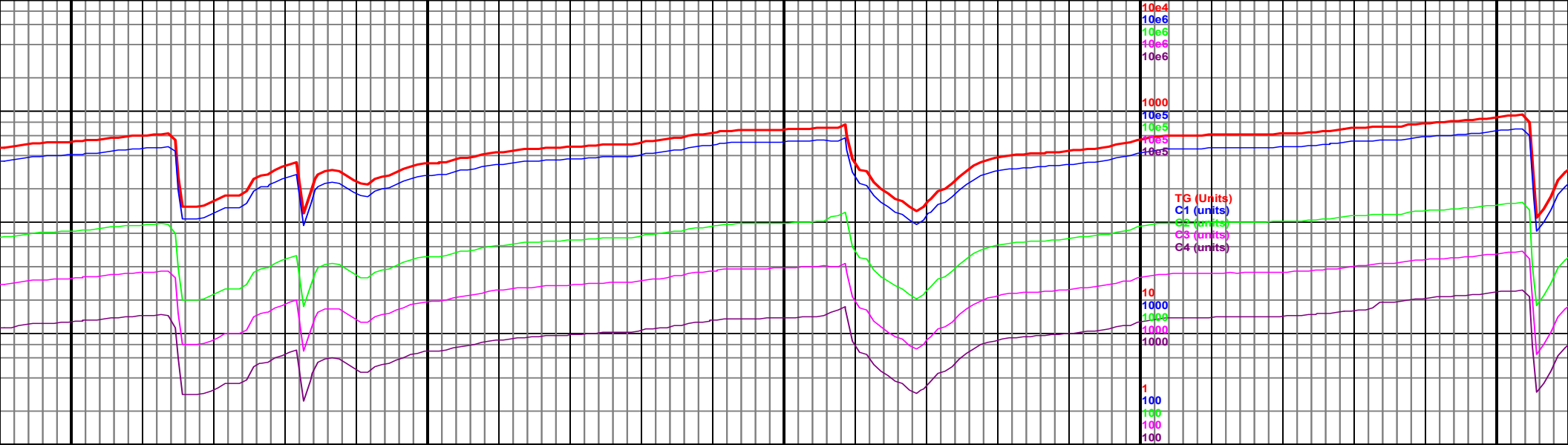
**POROSITY**  
[E] Earthy  
[B] Fenest  
[F] Fracture  
[X] Inter  
[Z] Moldic  
[O] Organic  
[P] Pinpoint

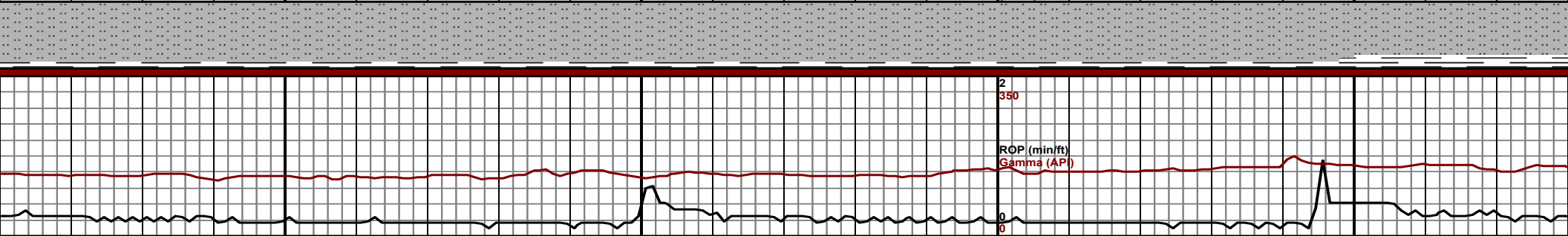
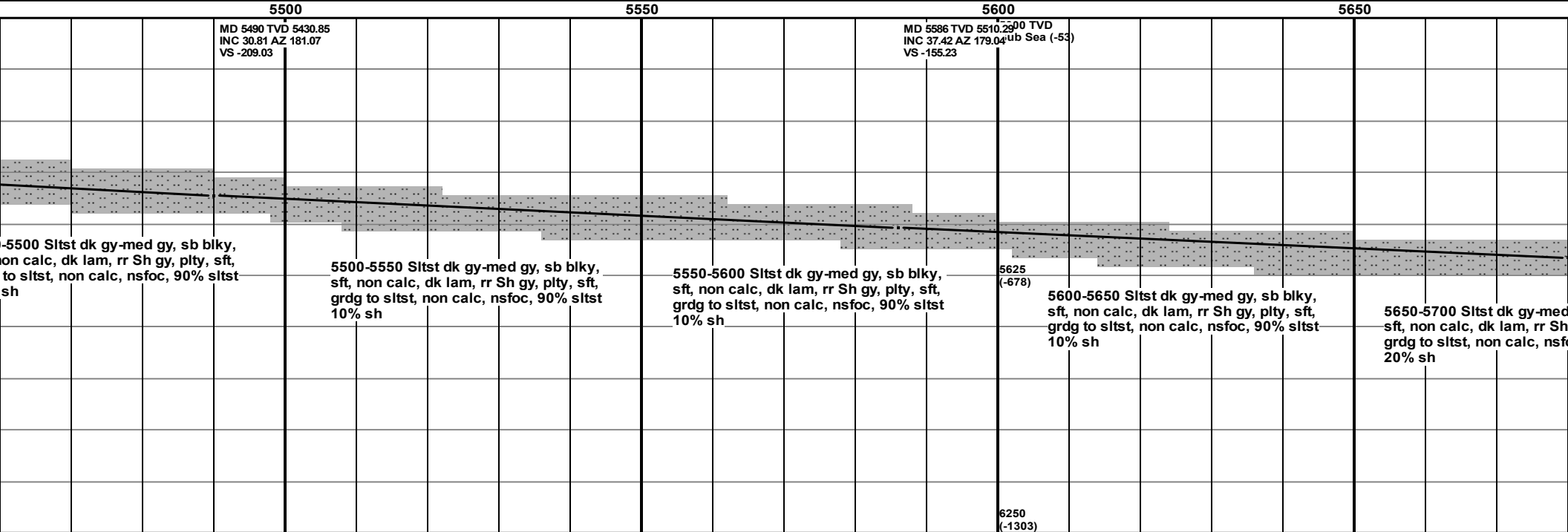
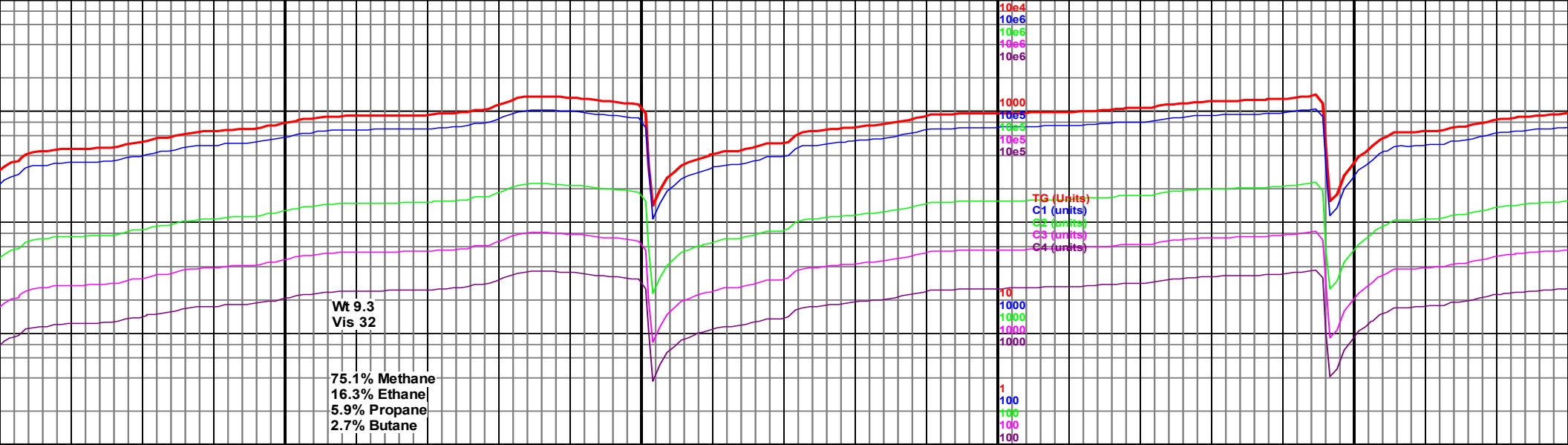
[V] Vuggy  
  
**SORTING**  
[W] Well  
[M] Moderate  
[P] Poor

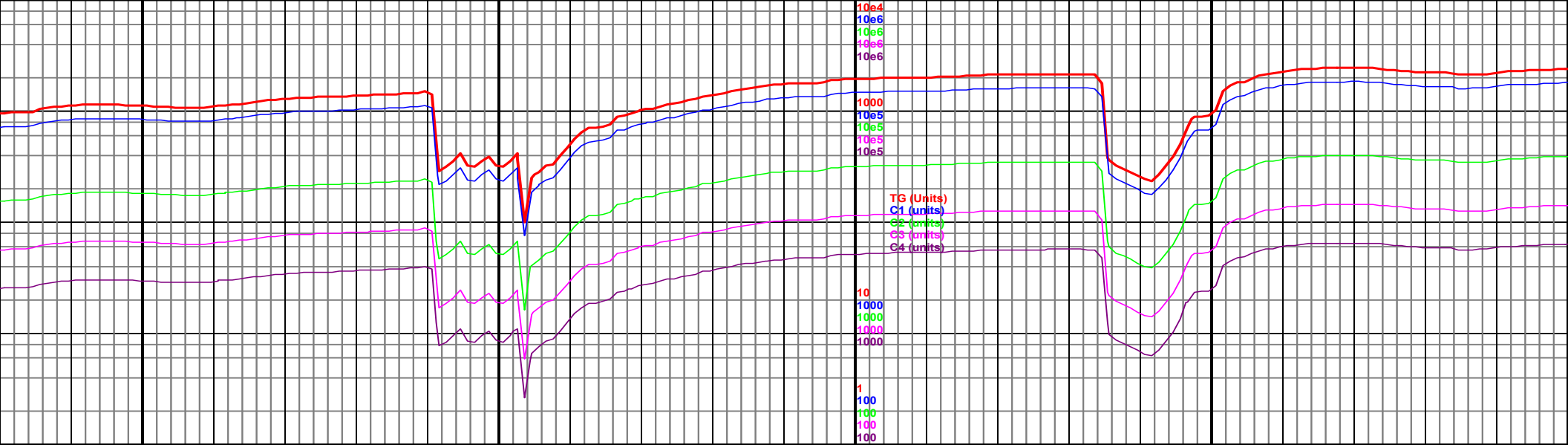
**OTHER SYMBOLS**  
**ROUNDING**  
[R] Rounded  
[r] Subrnd  
[S] Subang  
[A] Angular  
  
**OIL SHOW**  
[●] Even  
  
[●] Spotted  
[○] Ques  
[D] Dead  
  
**INTERVAL**  
[■] Core  
[◻] Dst

**EVENT**  
[▽] Rft  
[▶] Sidewall

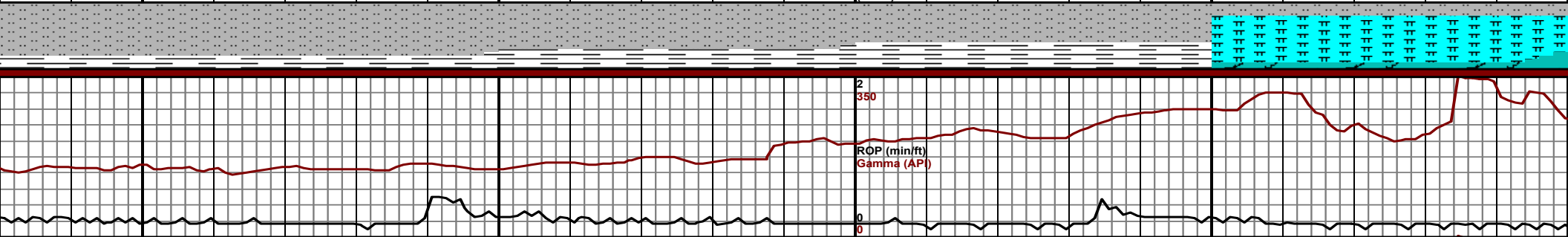


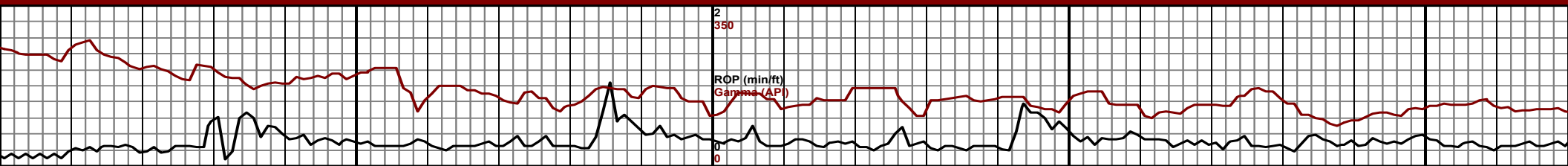
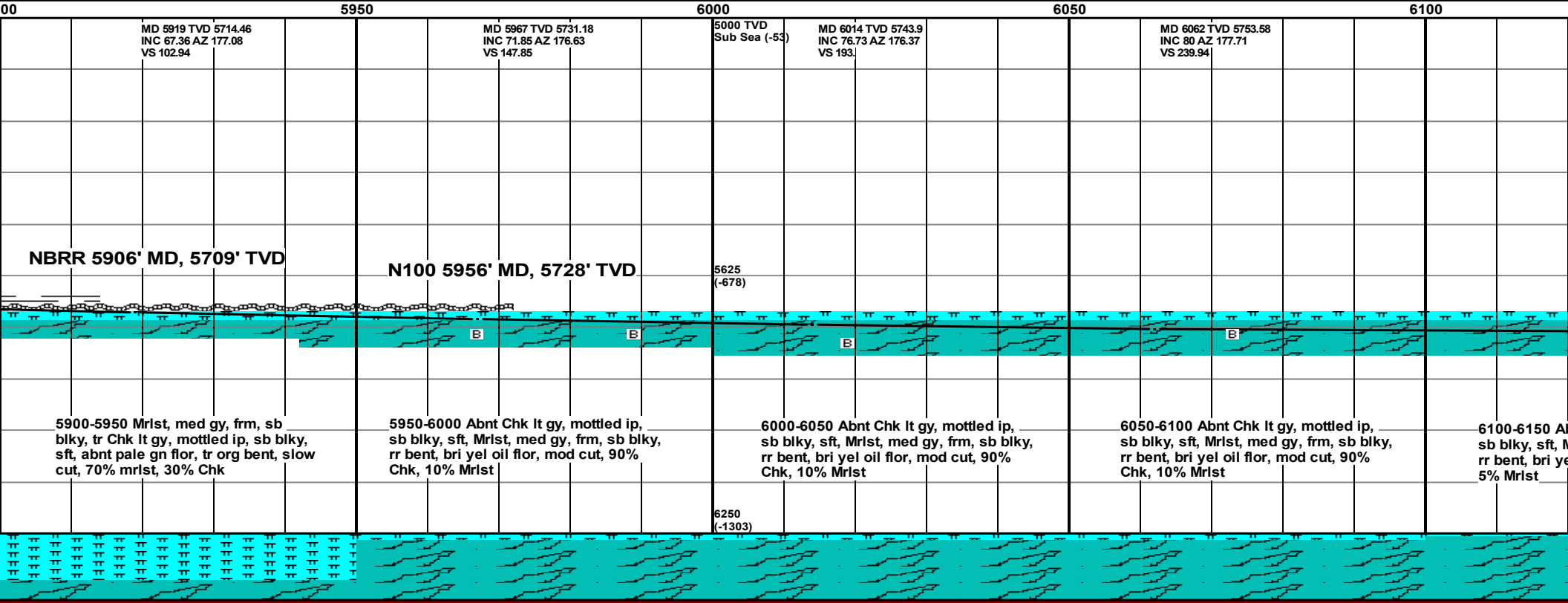
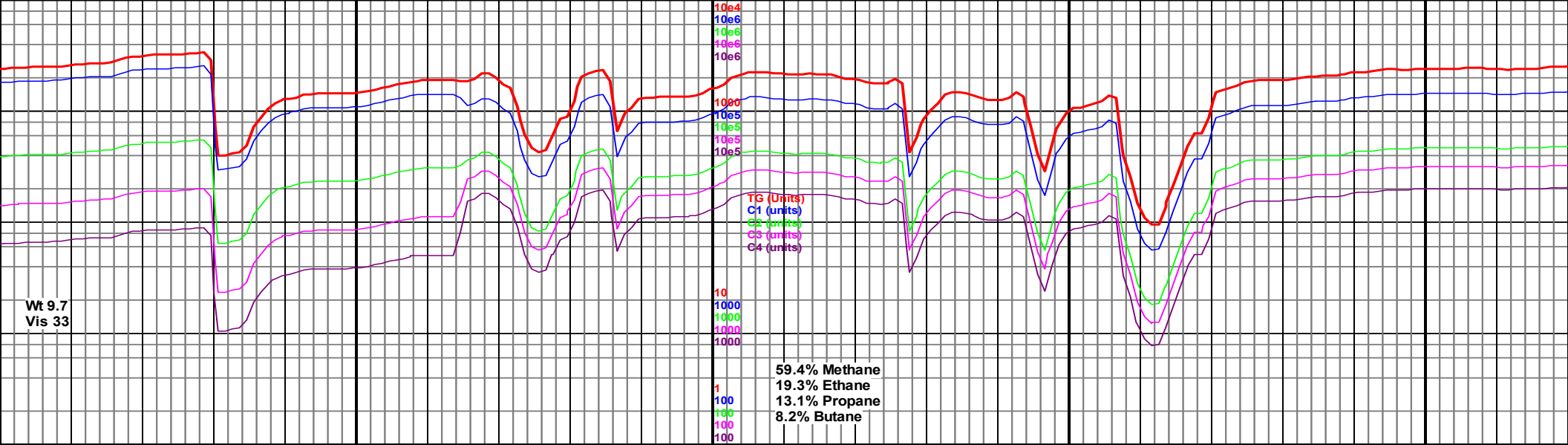






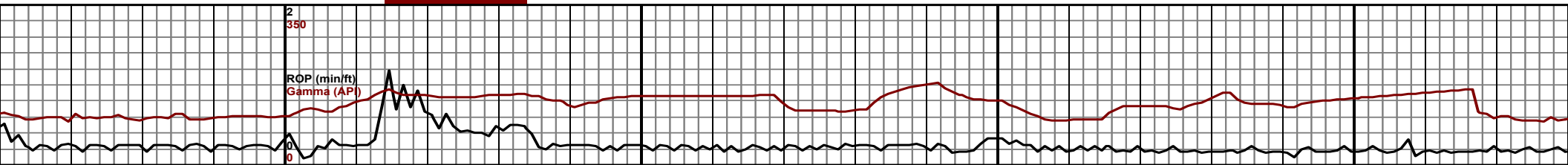
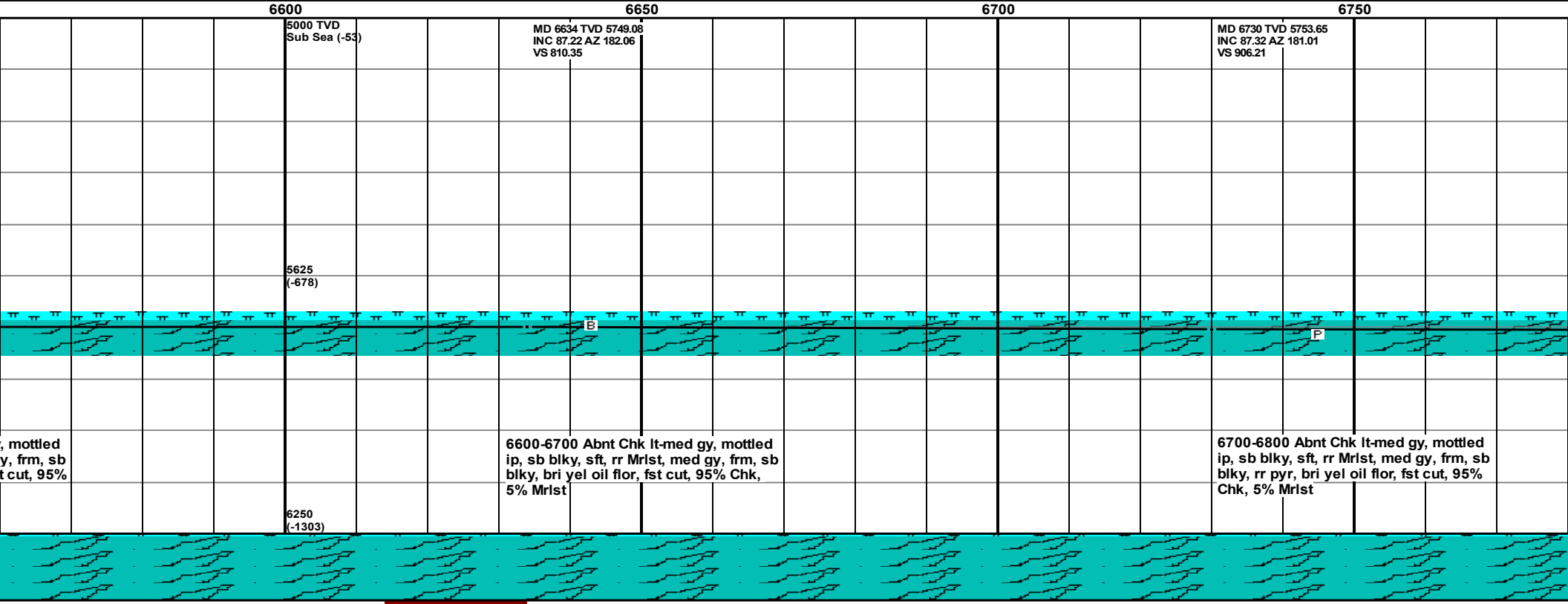
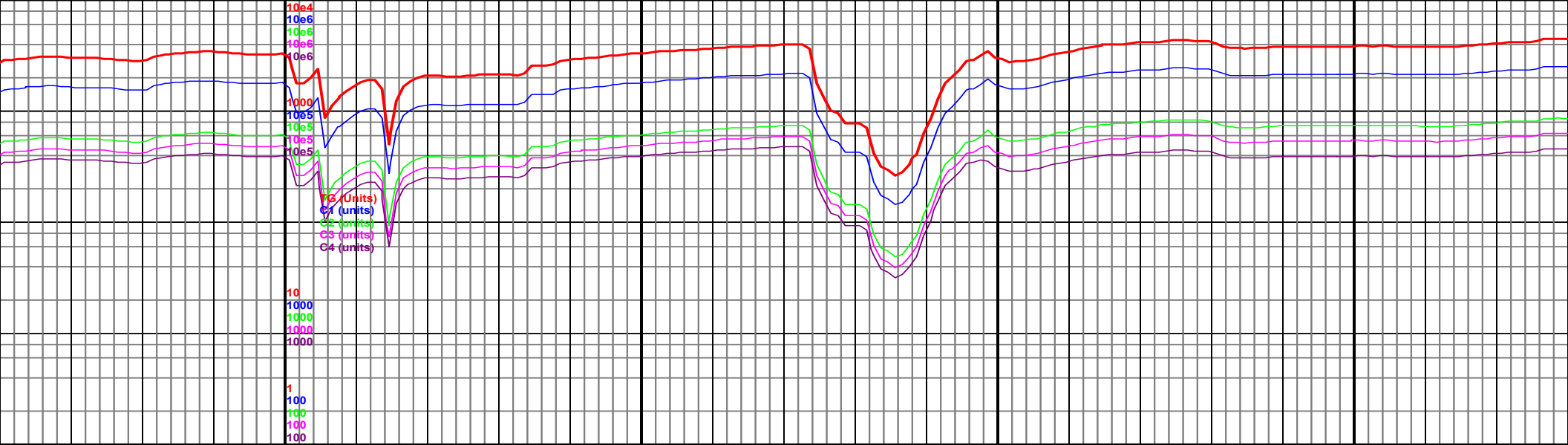
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MD 5680 TVD 5581.05 INC 44.82 AZ 180.58 VS -93.46		MD 5727 TVD 5613.1 INC 49.18 AZ 180.15 VS -59.09		MD 5776 TVD 5643.84 INC 53.1 AZ 177.72 VS -20.96		5000 TVD Sub Sea (-53)		MD 5823 TVD 5670.3 INC 58.35 AZ 178.64 VS 17.85		MD 5872 TVD 5694.51 INC 62.41 AZ 178.82 VS 60.43	

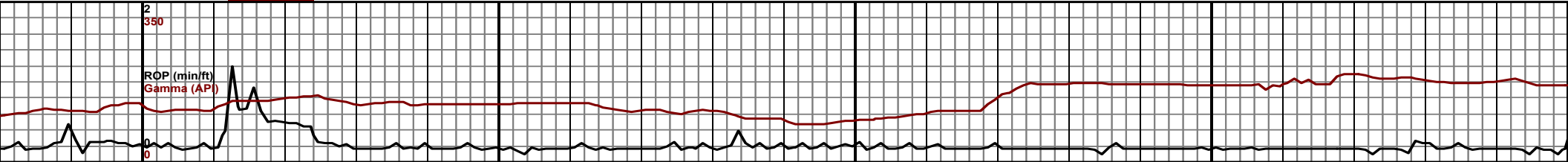
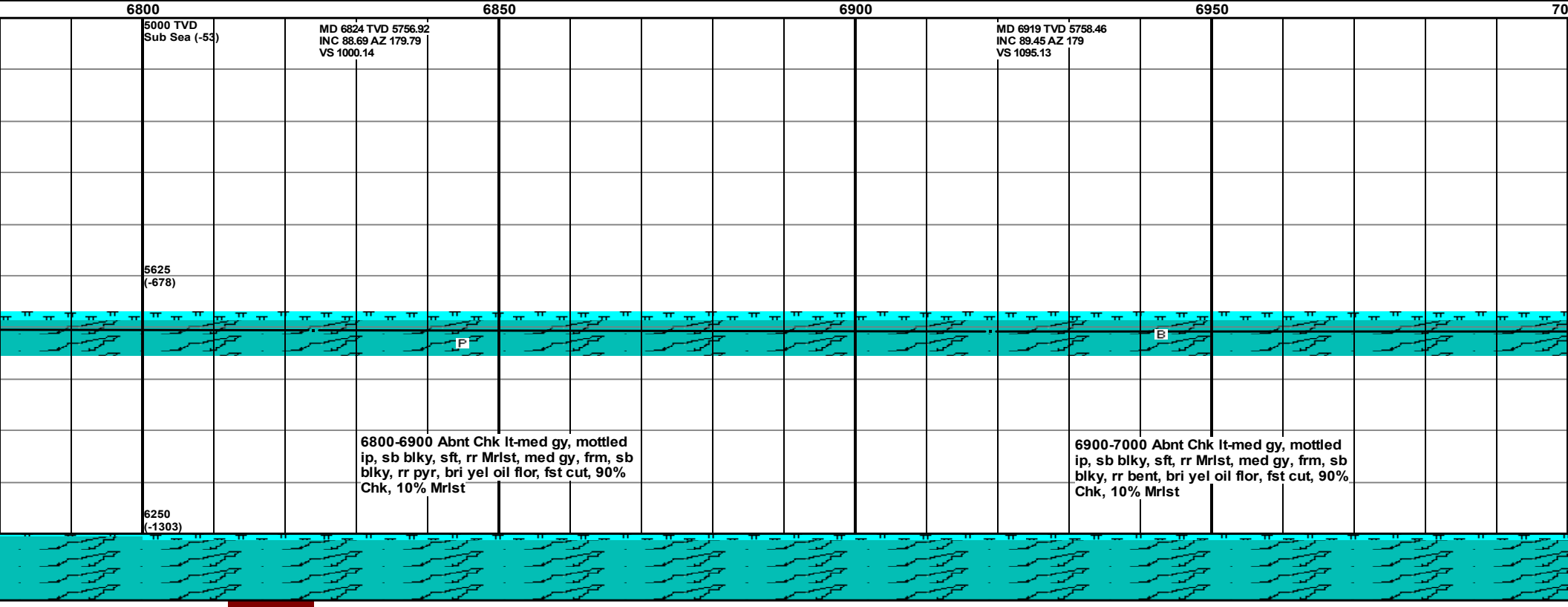
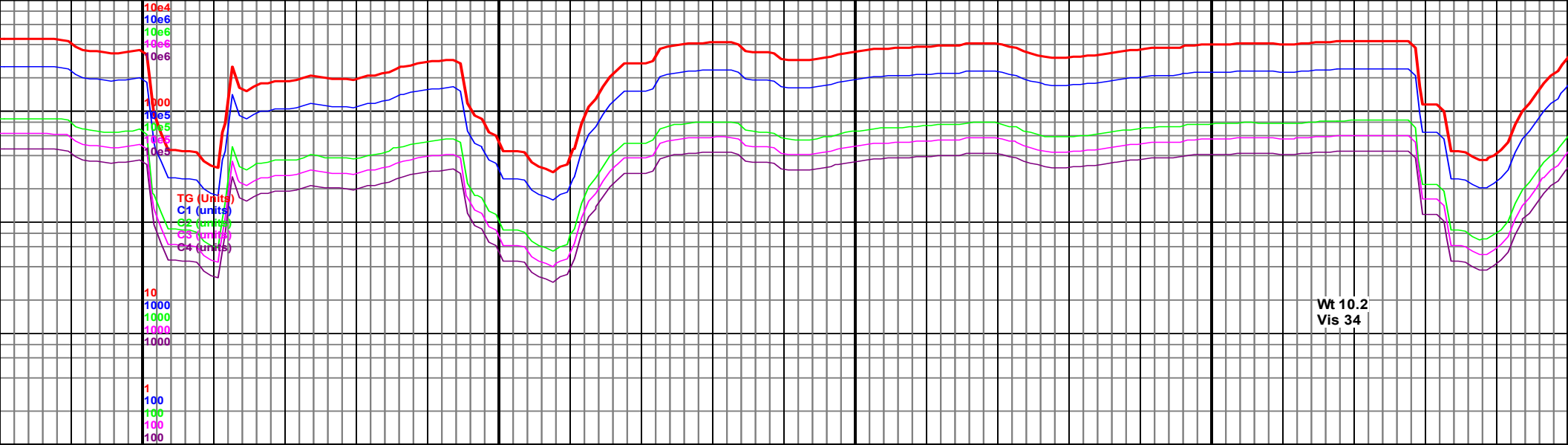




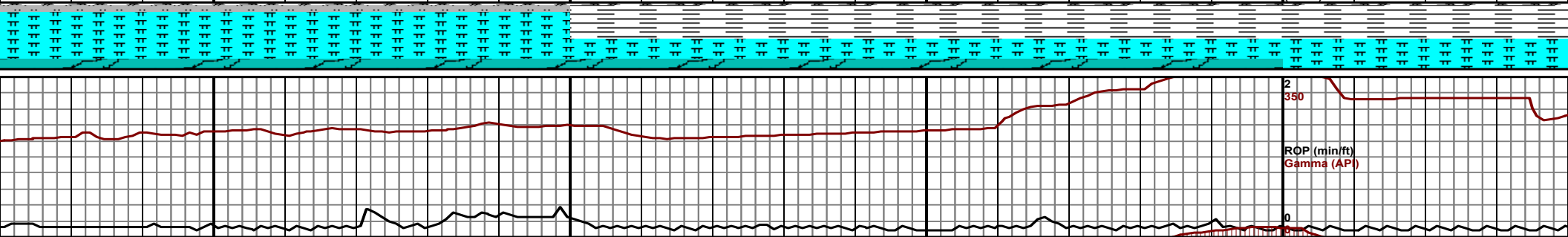
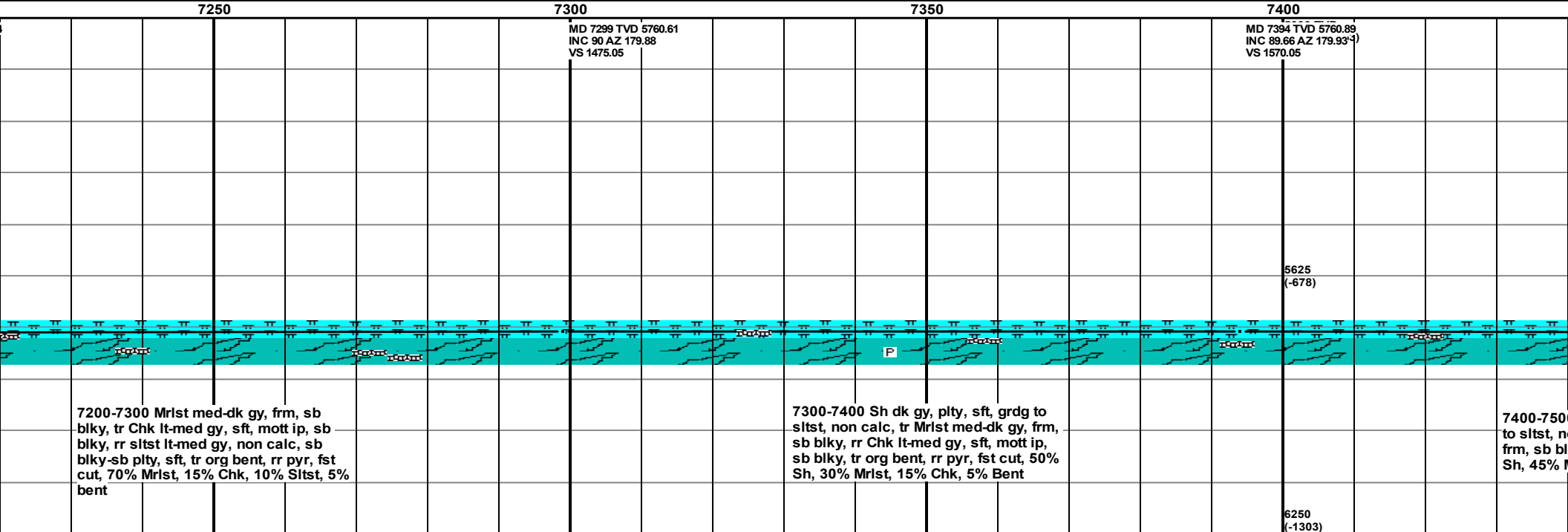
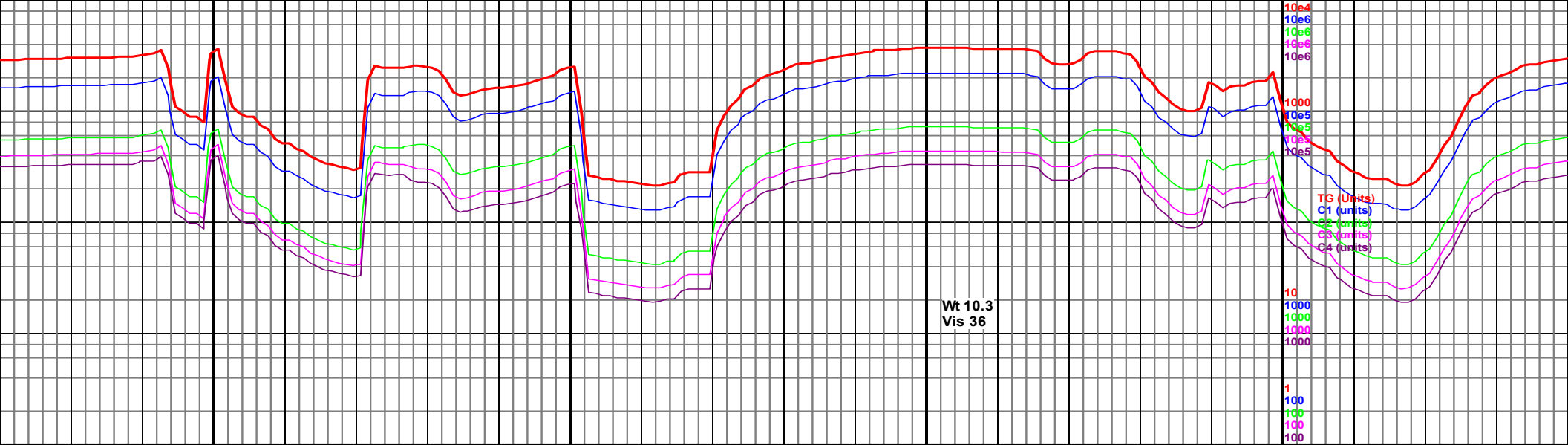


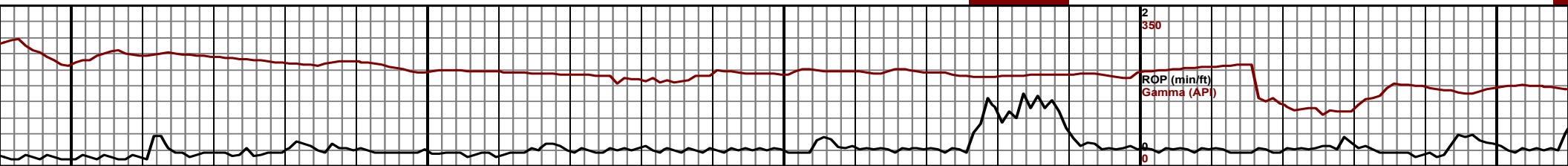
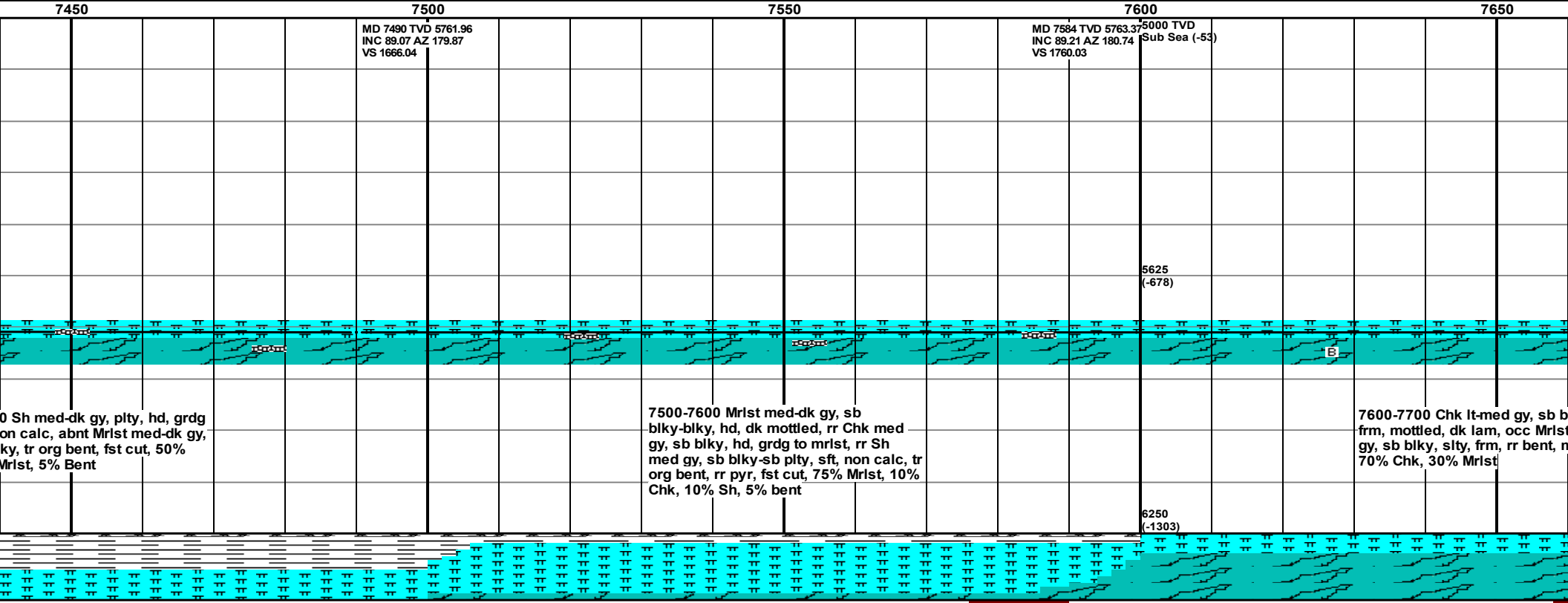
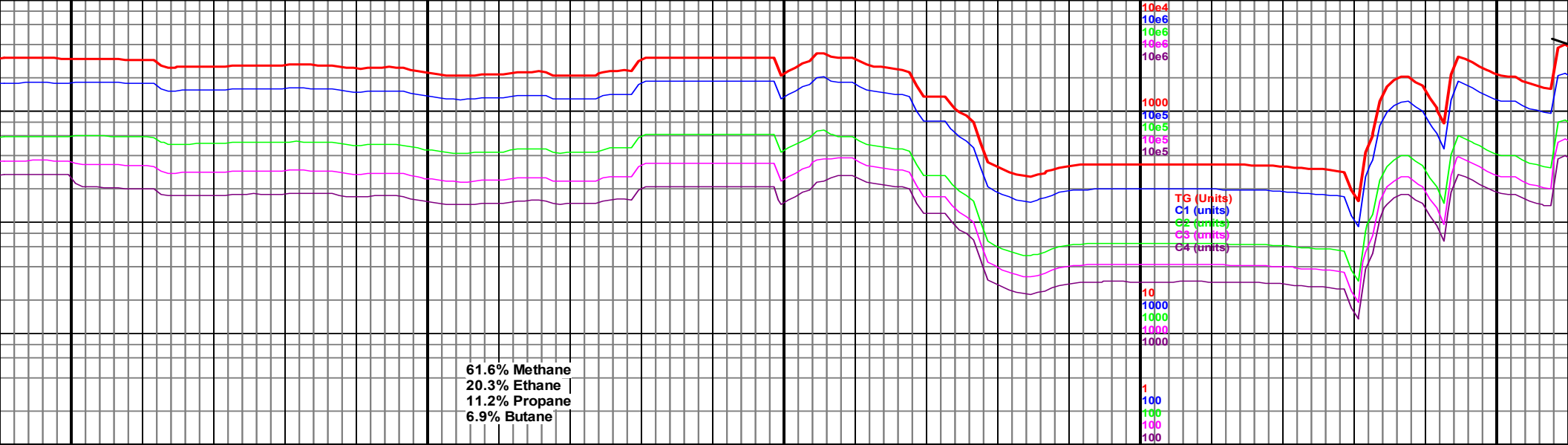


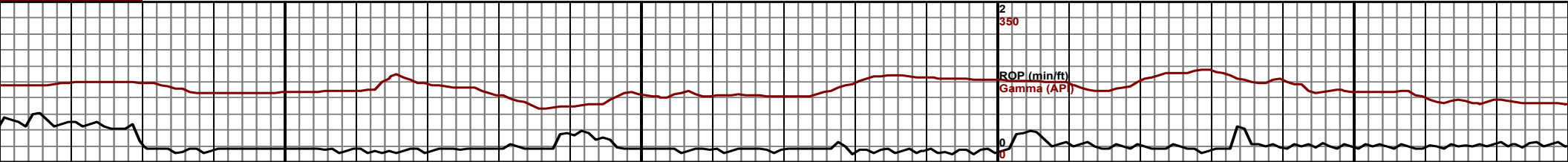
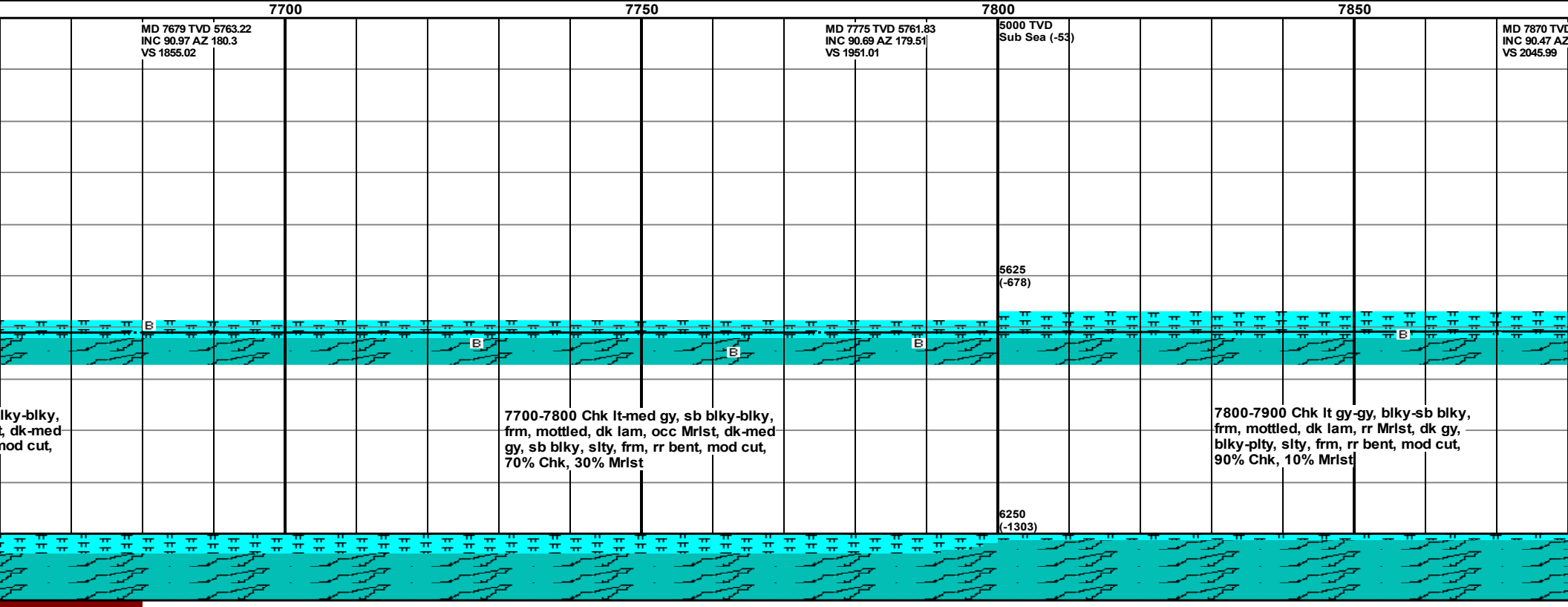
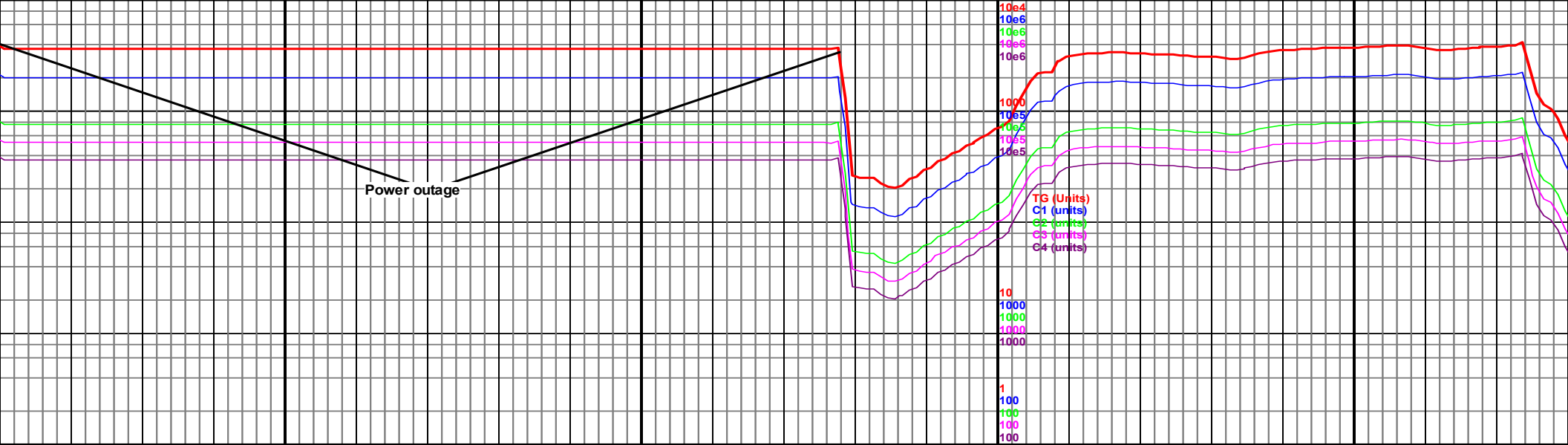


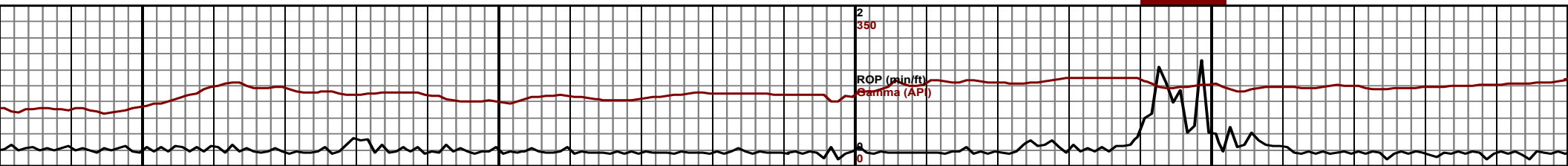
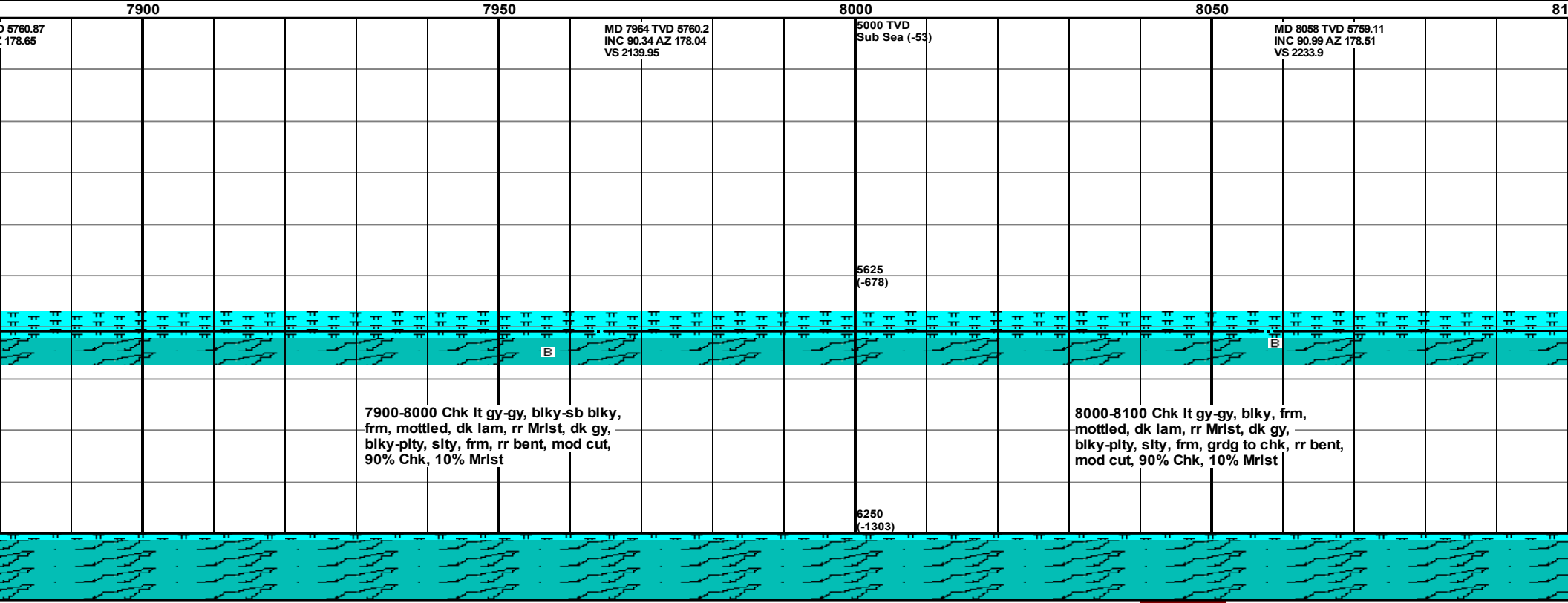
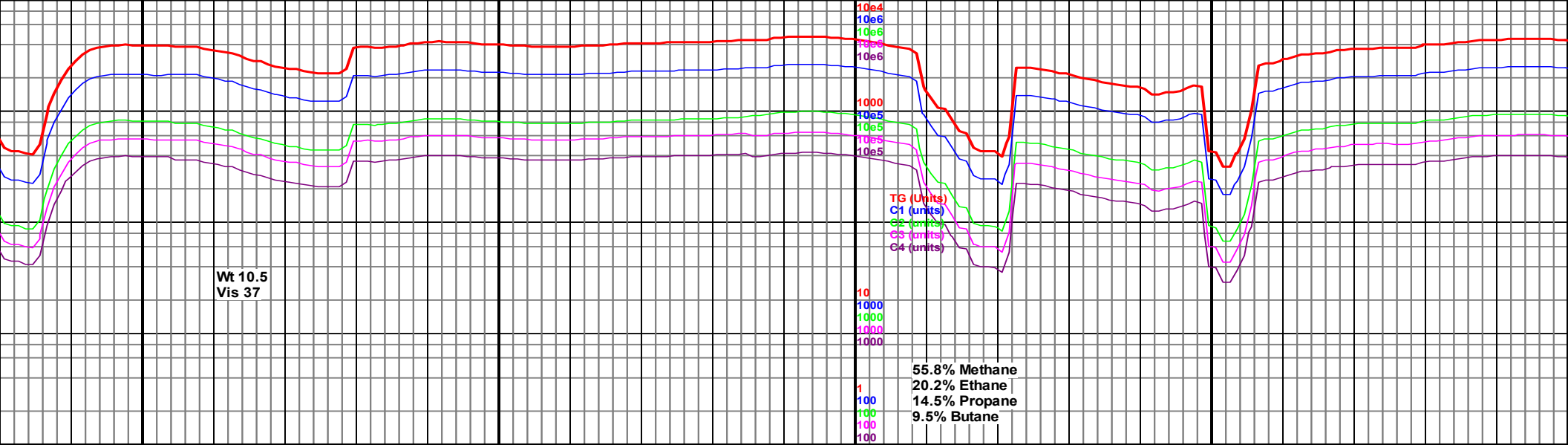


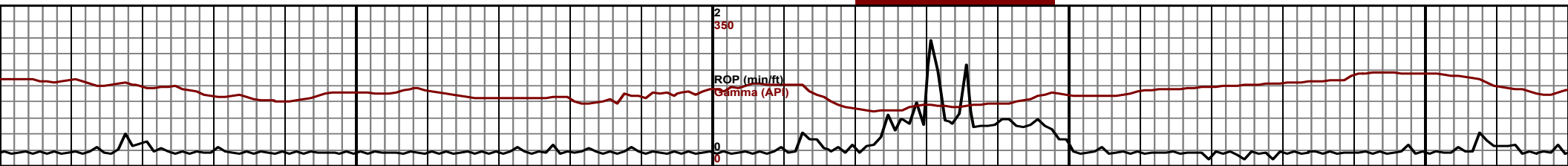
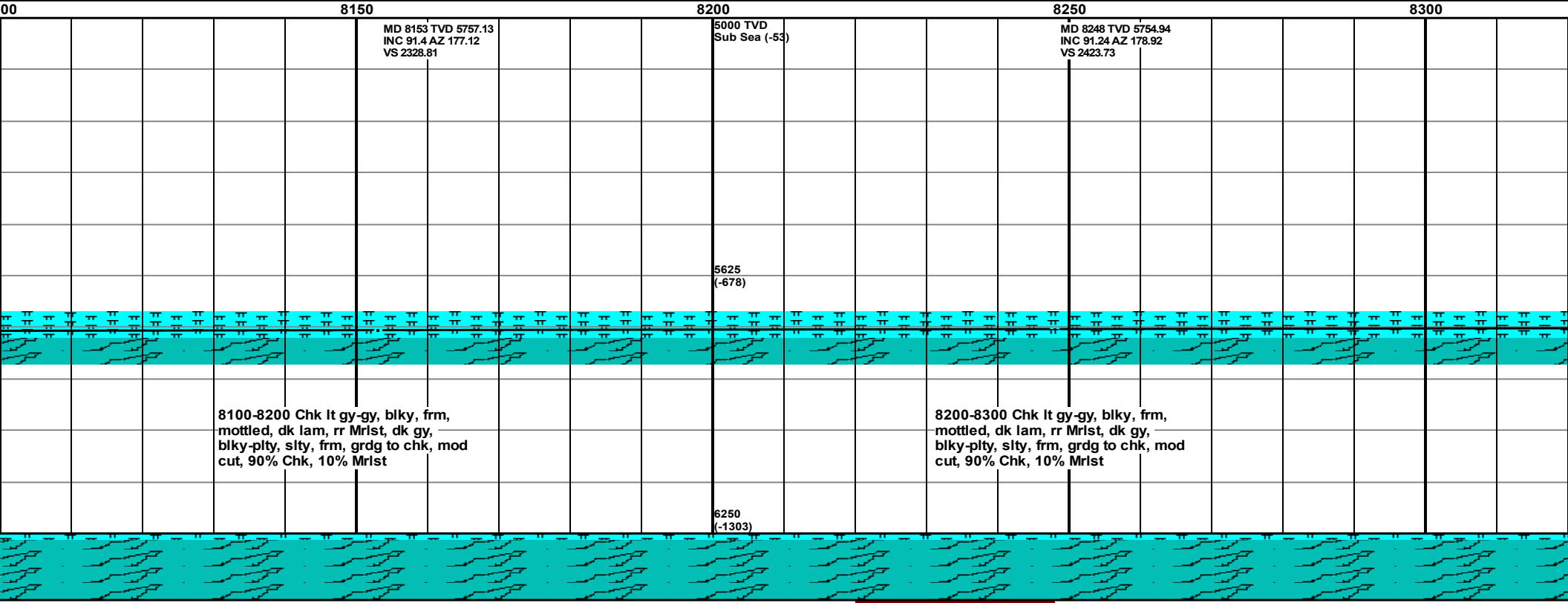
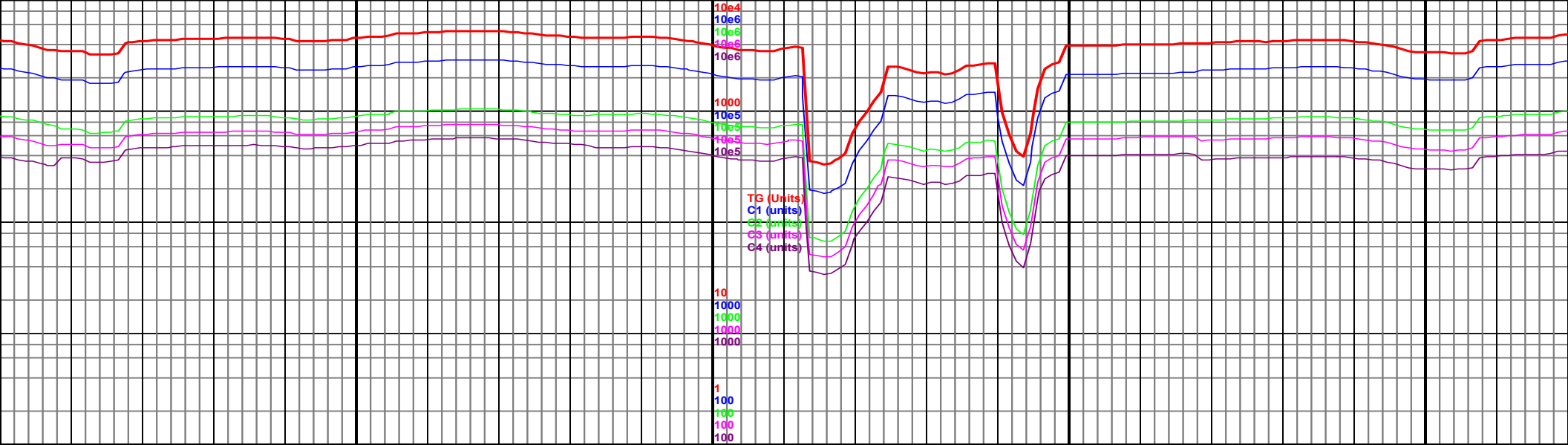


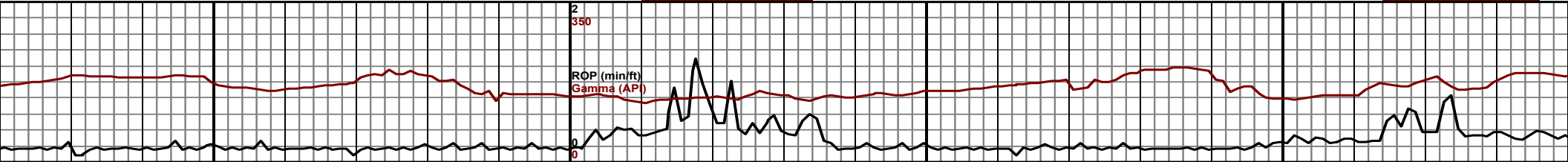
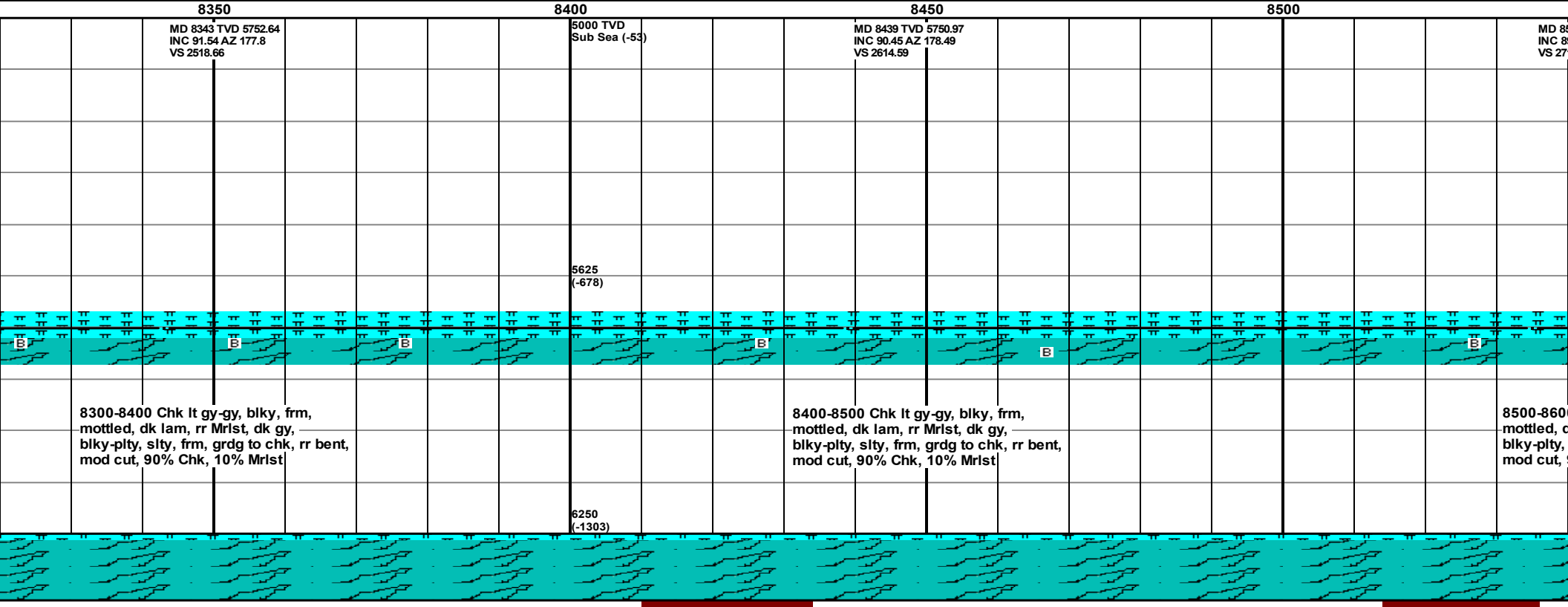
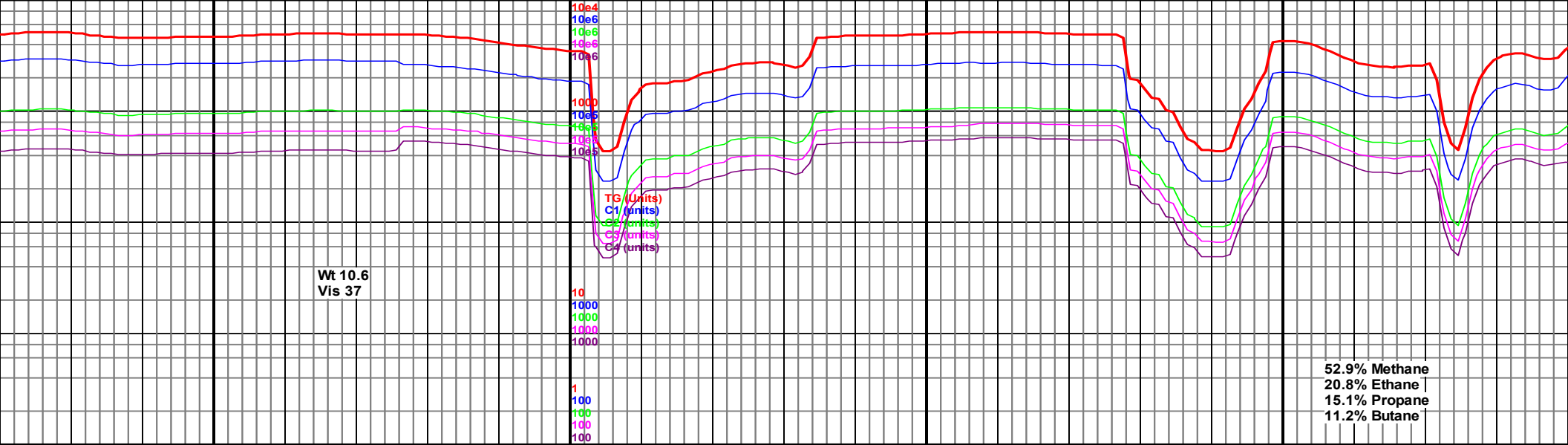


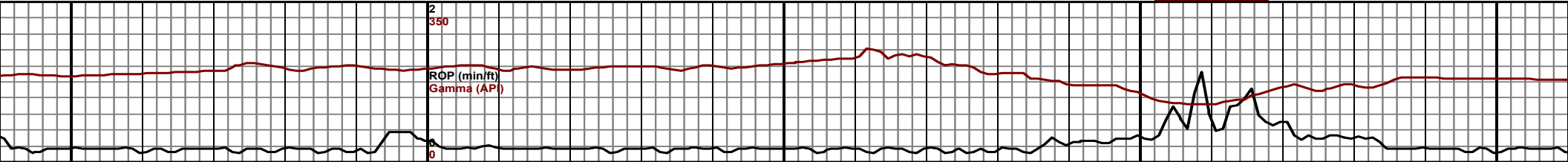
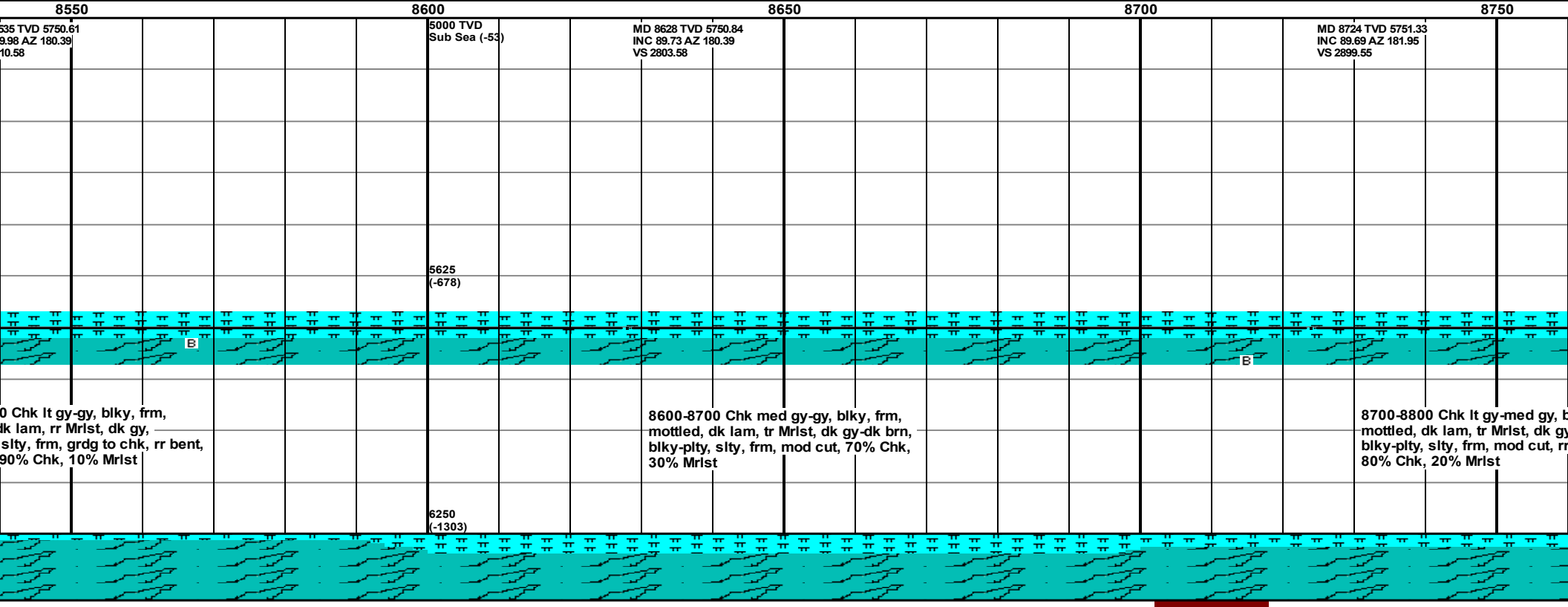
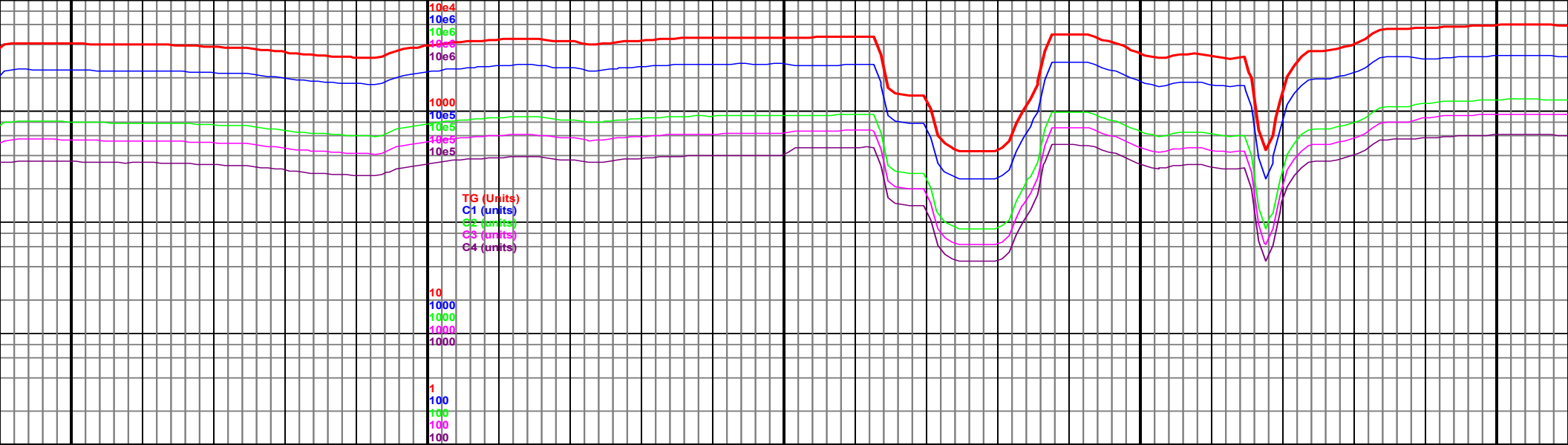


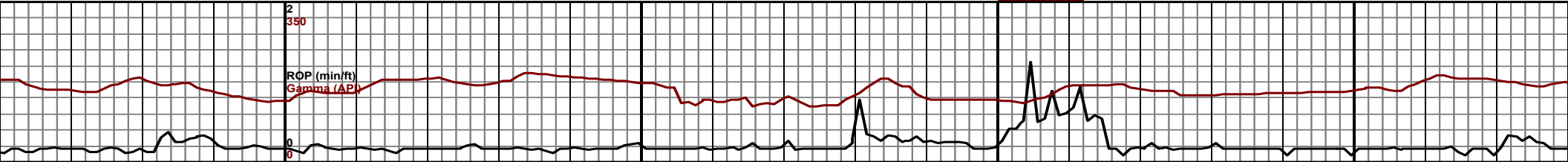
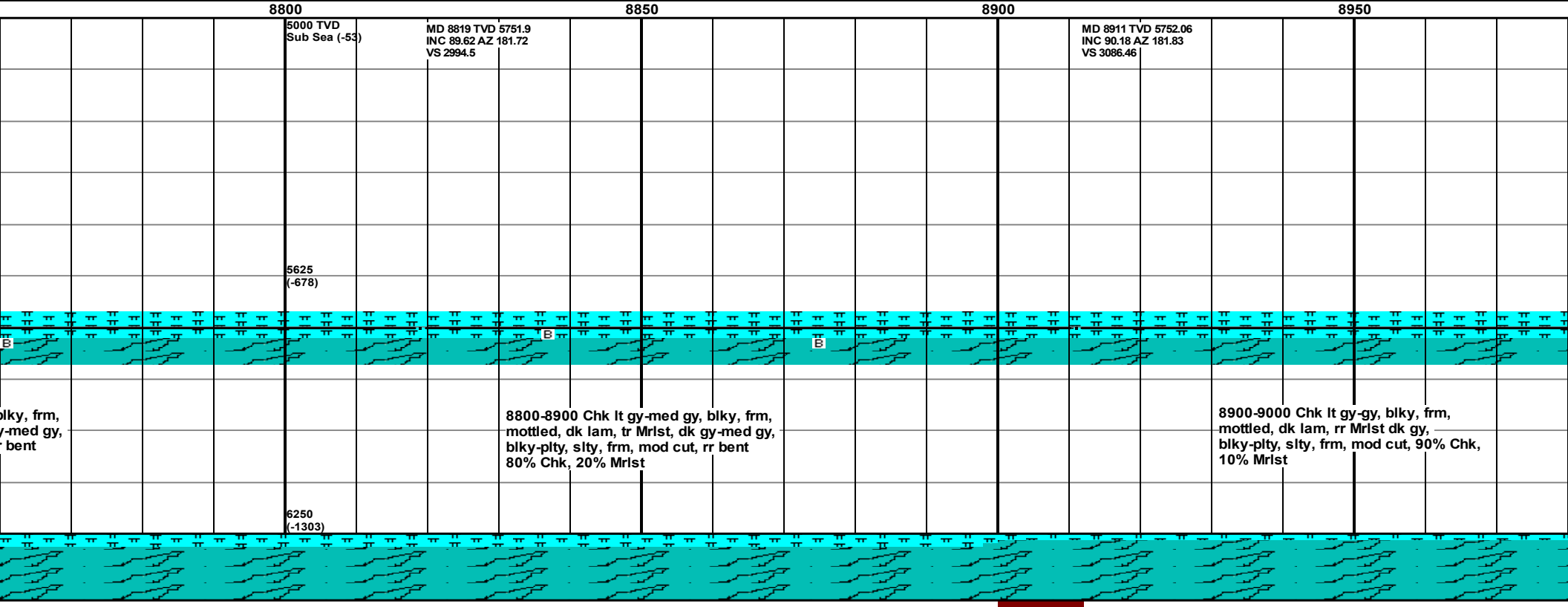
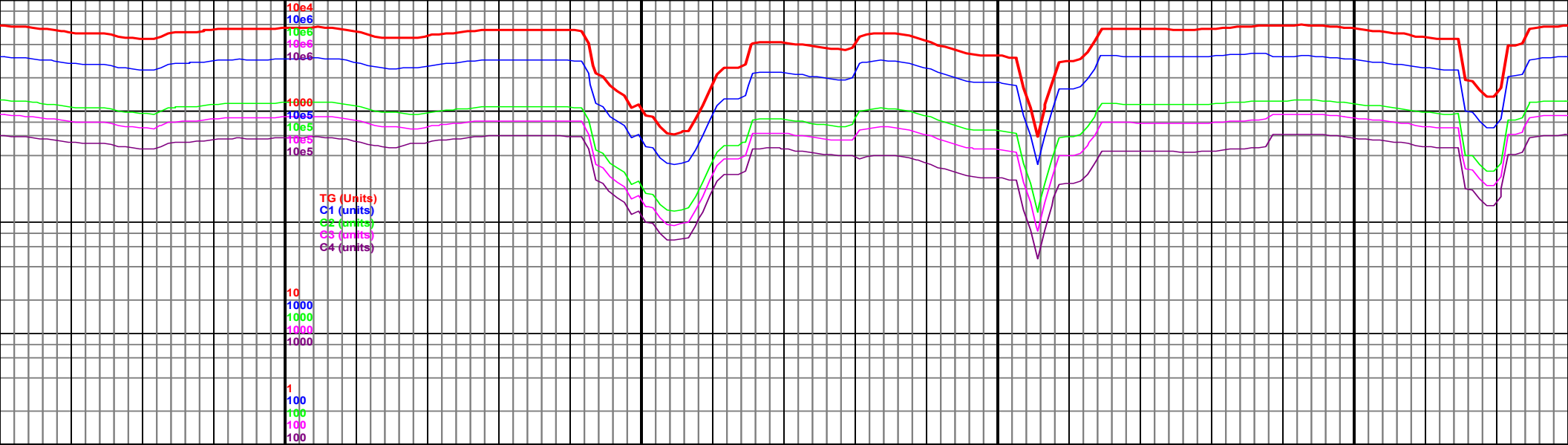


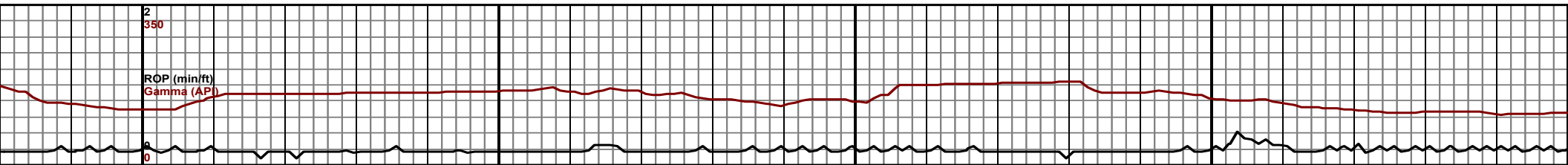
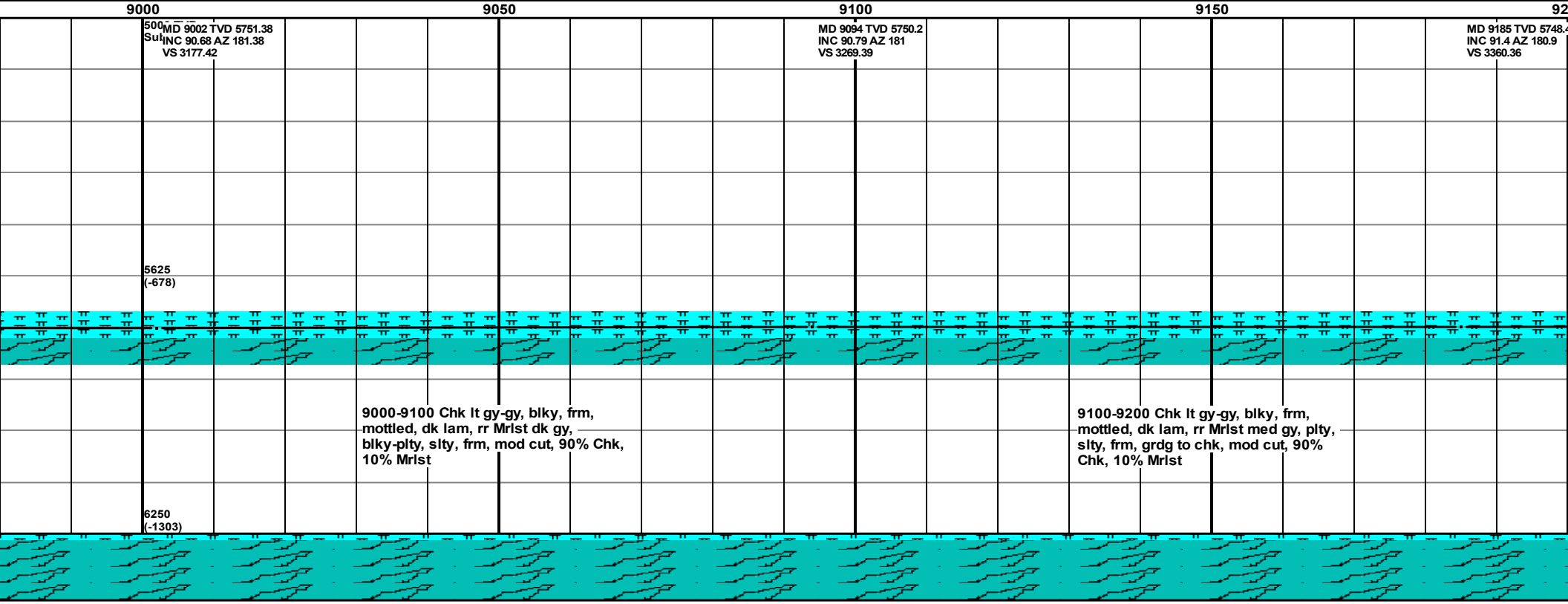
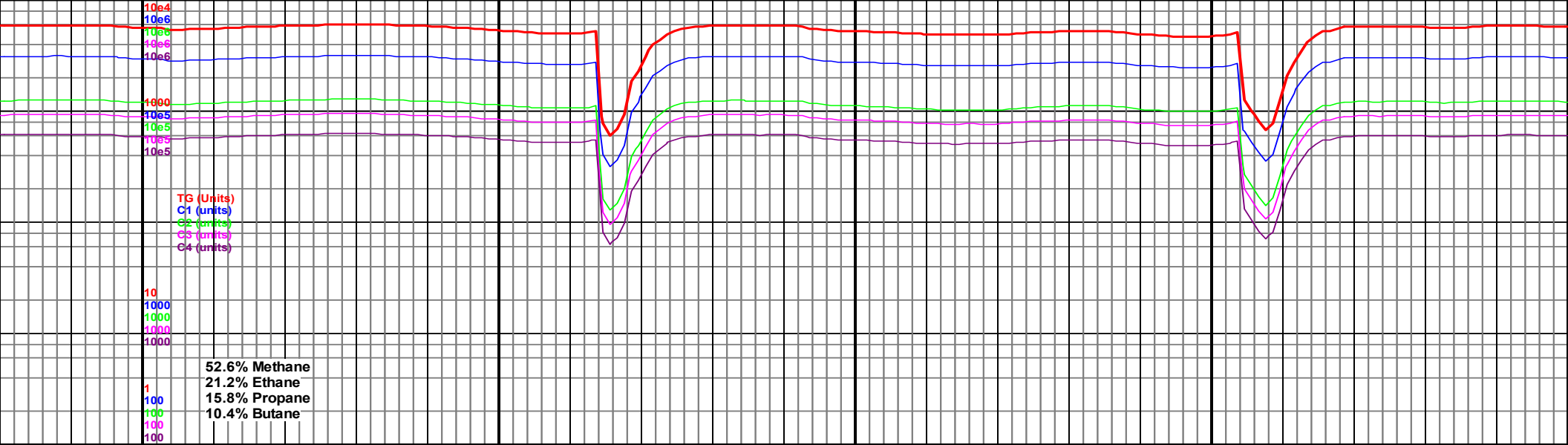


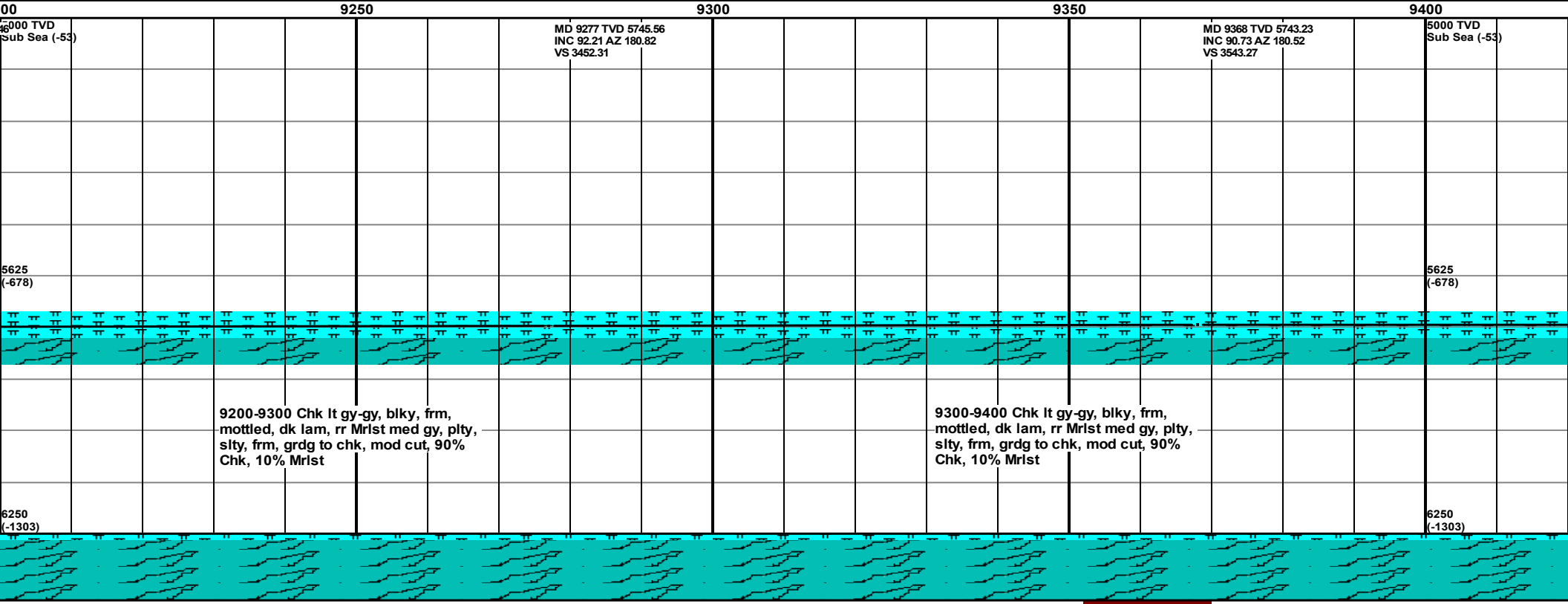


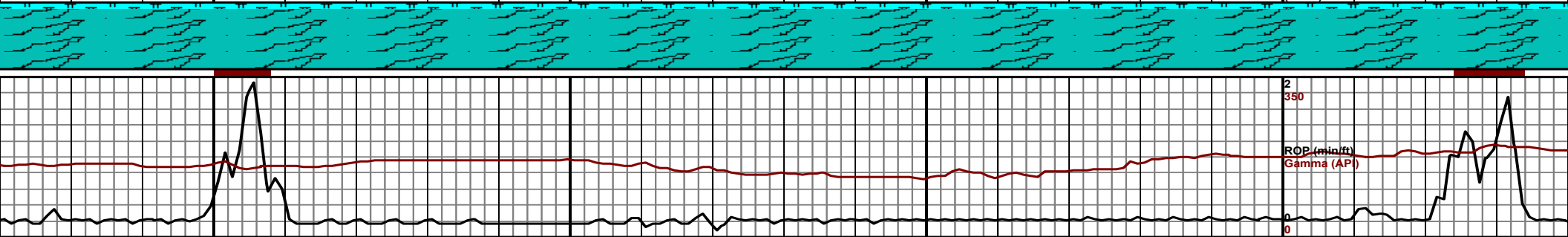
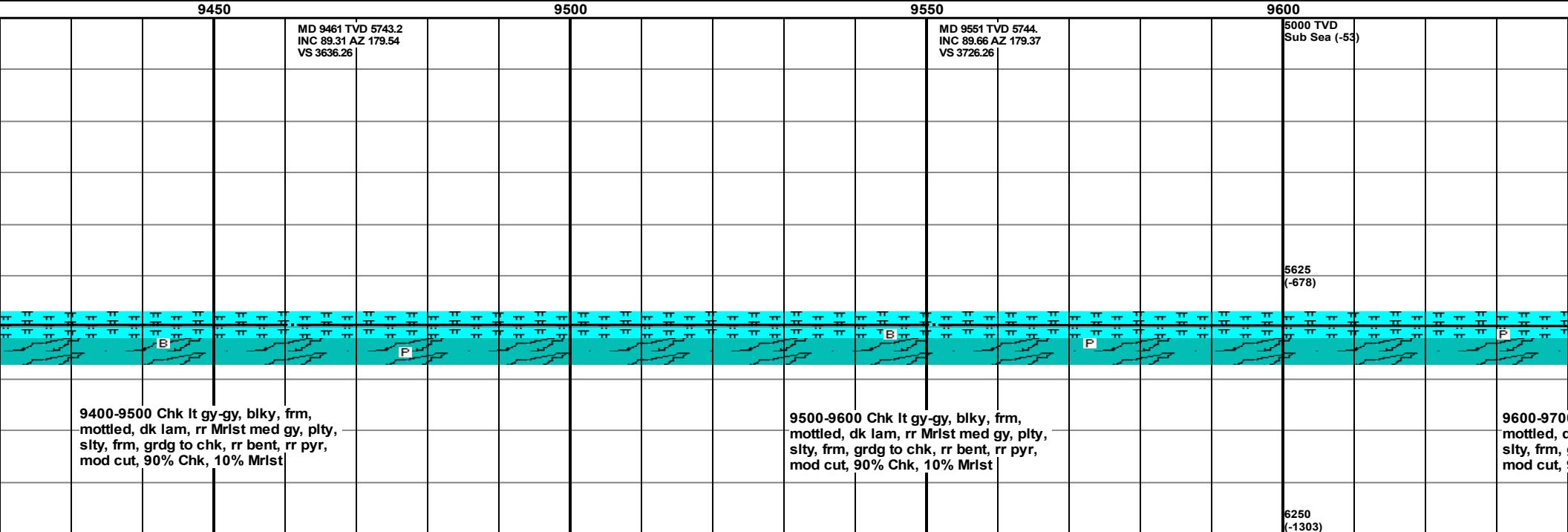
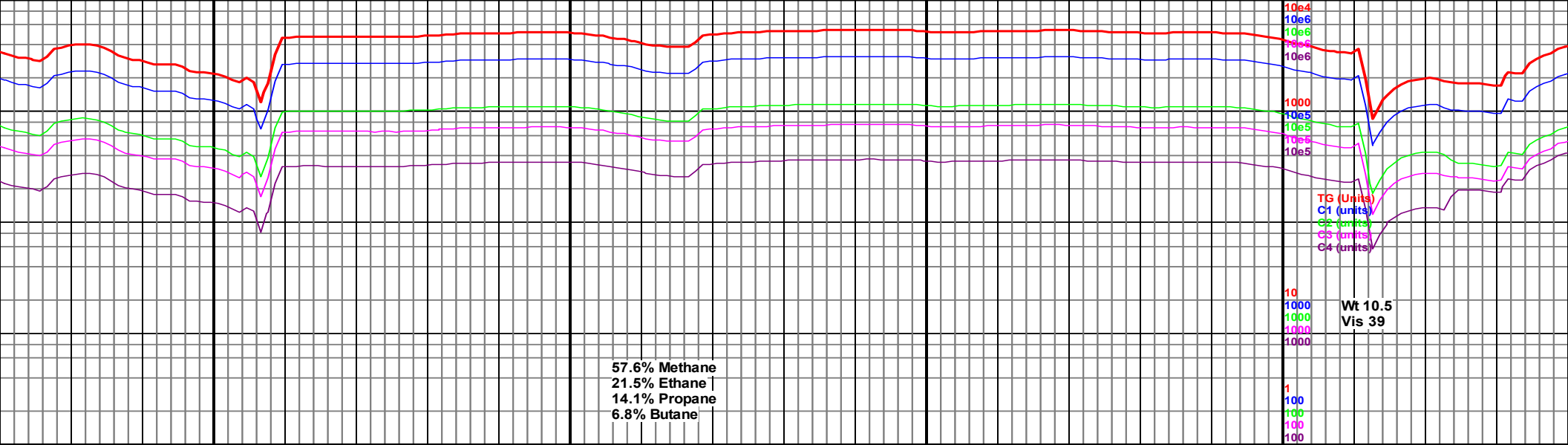


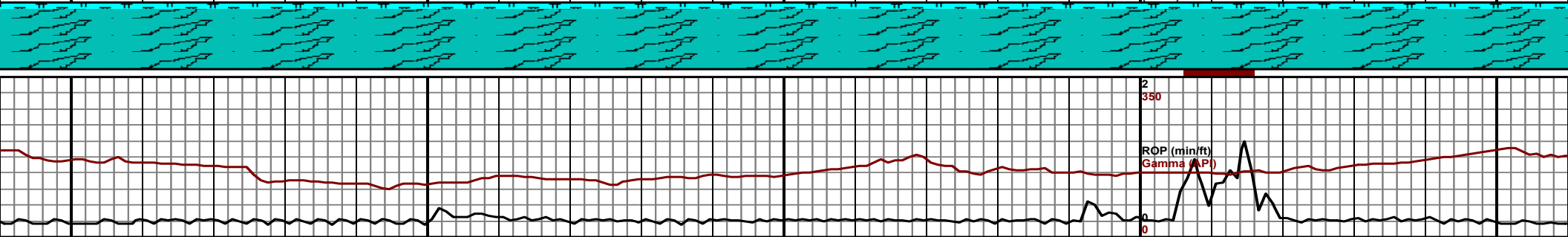
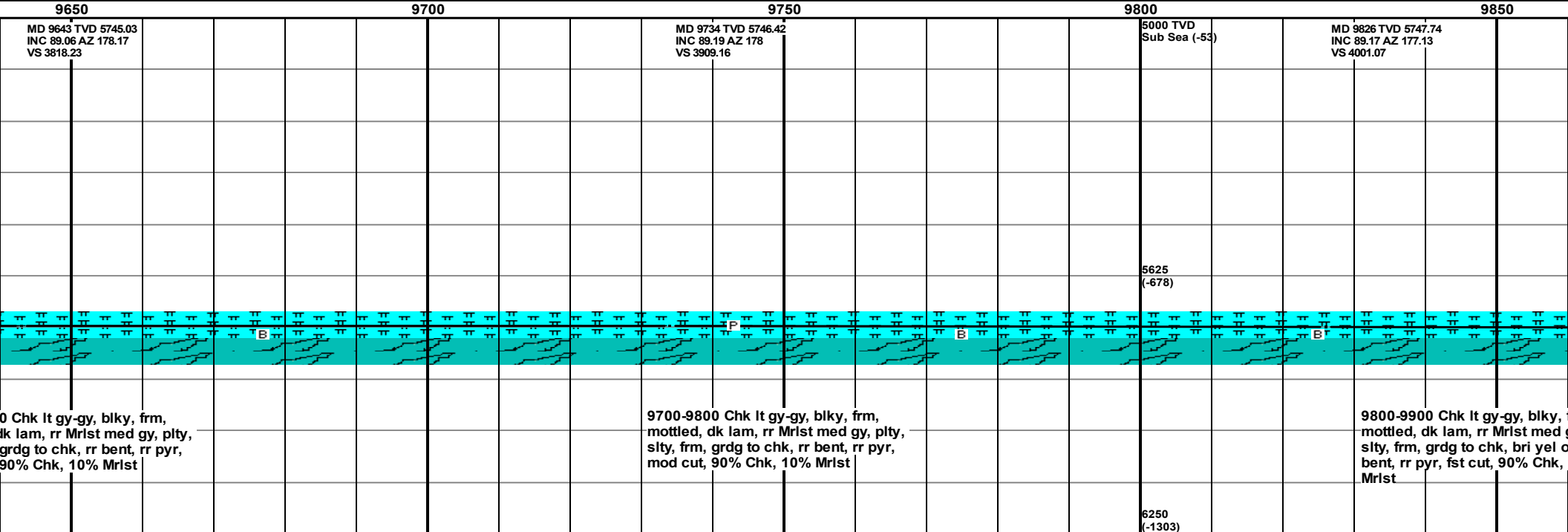
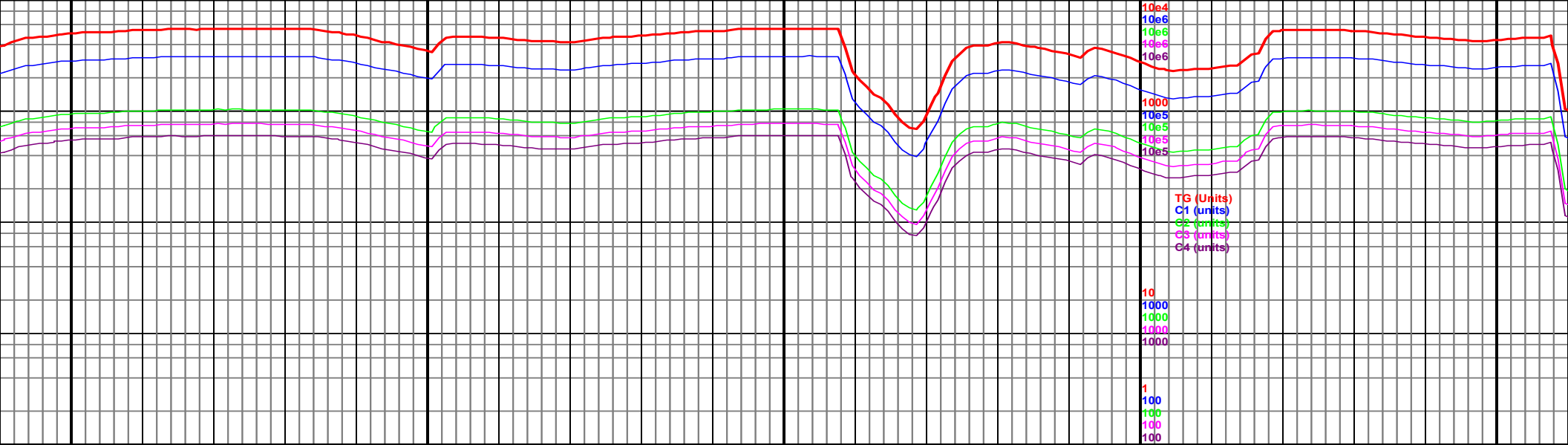


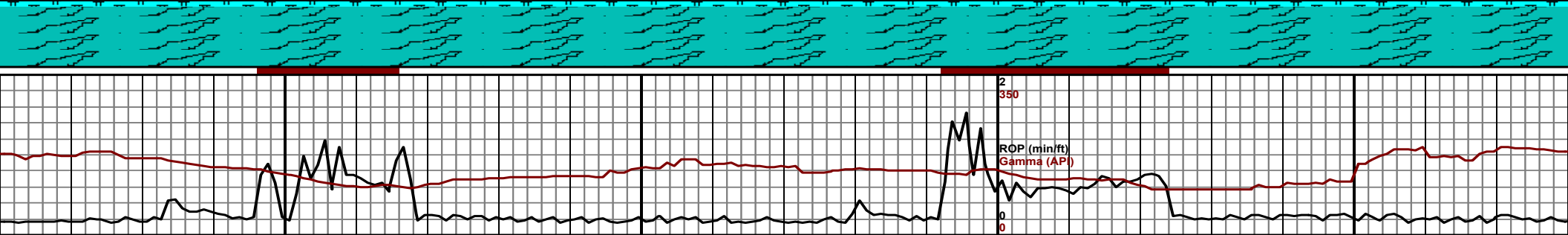
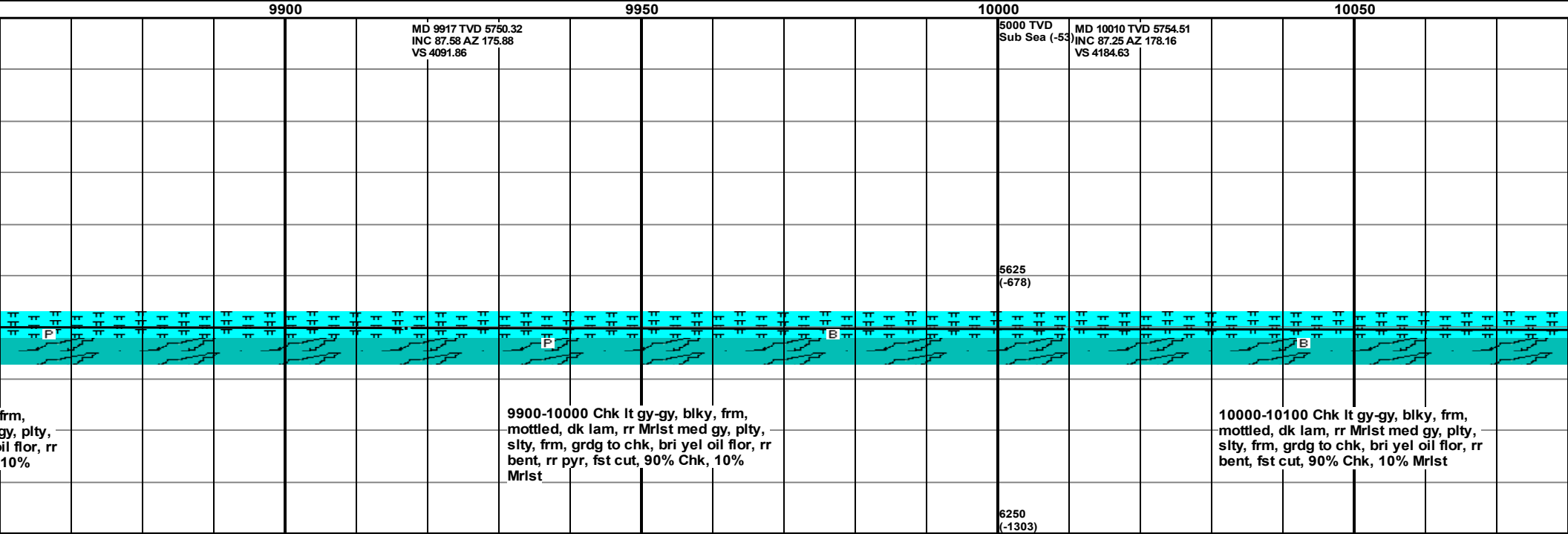
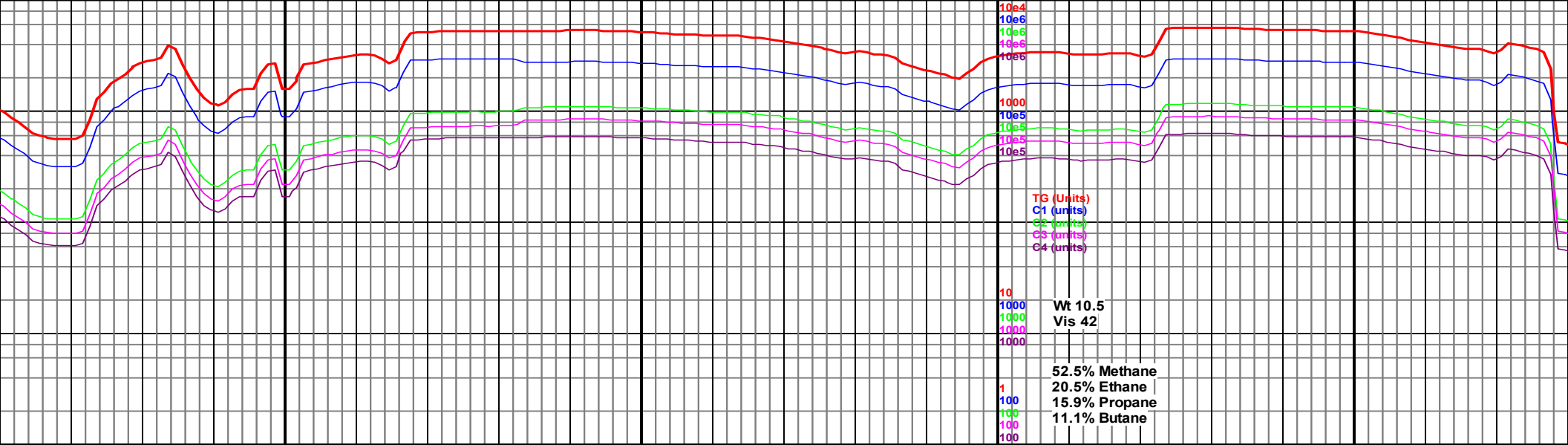


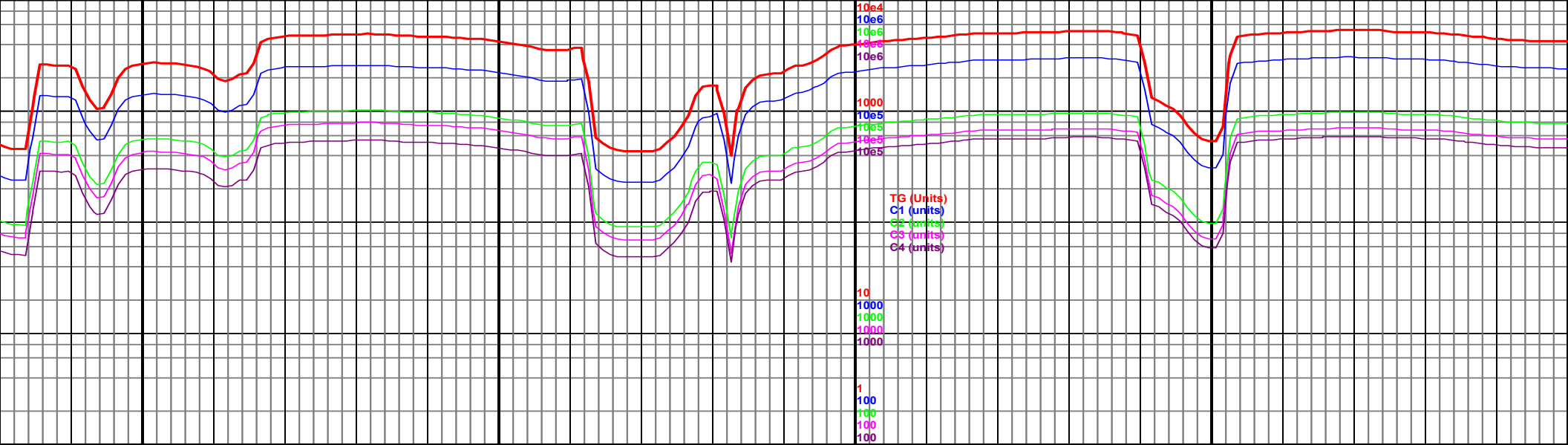












10100

MD 10102 TVD 5757.46  
INC 89.08 AZ 179.23  
VS 4276.56

10150

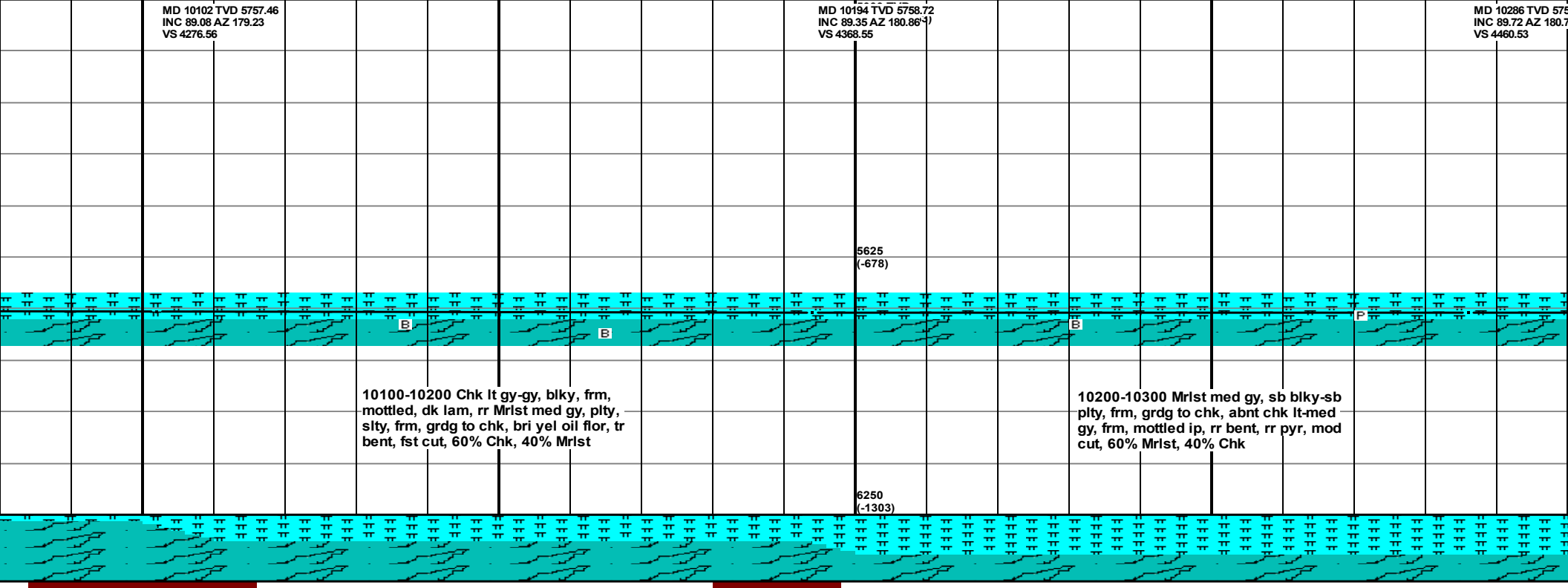
10200

MD 10194 TVD 5758.72  
INC 89.35 AZ 180.86  
VS 4368.55

10250

10300

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VS 4460.53

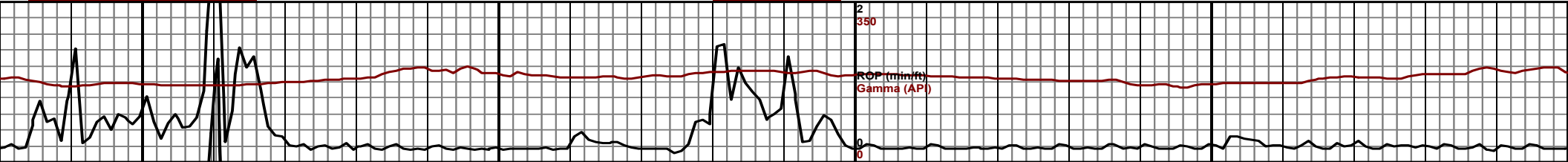


5625  
(-678)

10100-10200 Chk lt gy-gy, blk, frm,  
mottled, dk lam, rr Mrst med gy, plty,  
slty, frm, grdg to chk, bri yel oil flor, tr  
bent, fst cut, 60% Chk, 40% Mrst

10200-10300 Mrst med gy, sb blk-sb  
plty, frm, grdg to chk, abnt chk lt-med  
gy, frm, mottled ip, rr bent, rr pyr, mod  
cut, 60% Mrst, 40% Chk

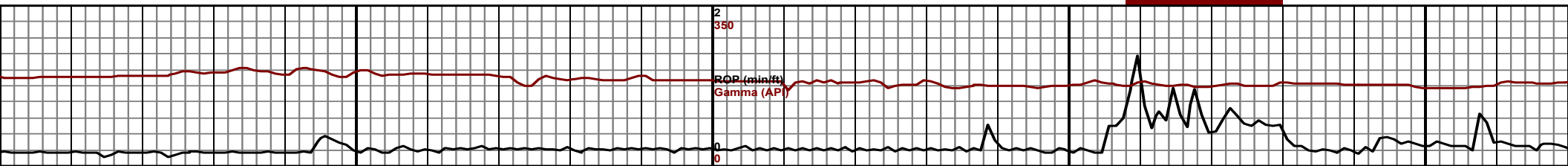
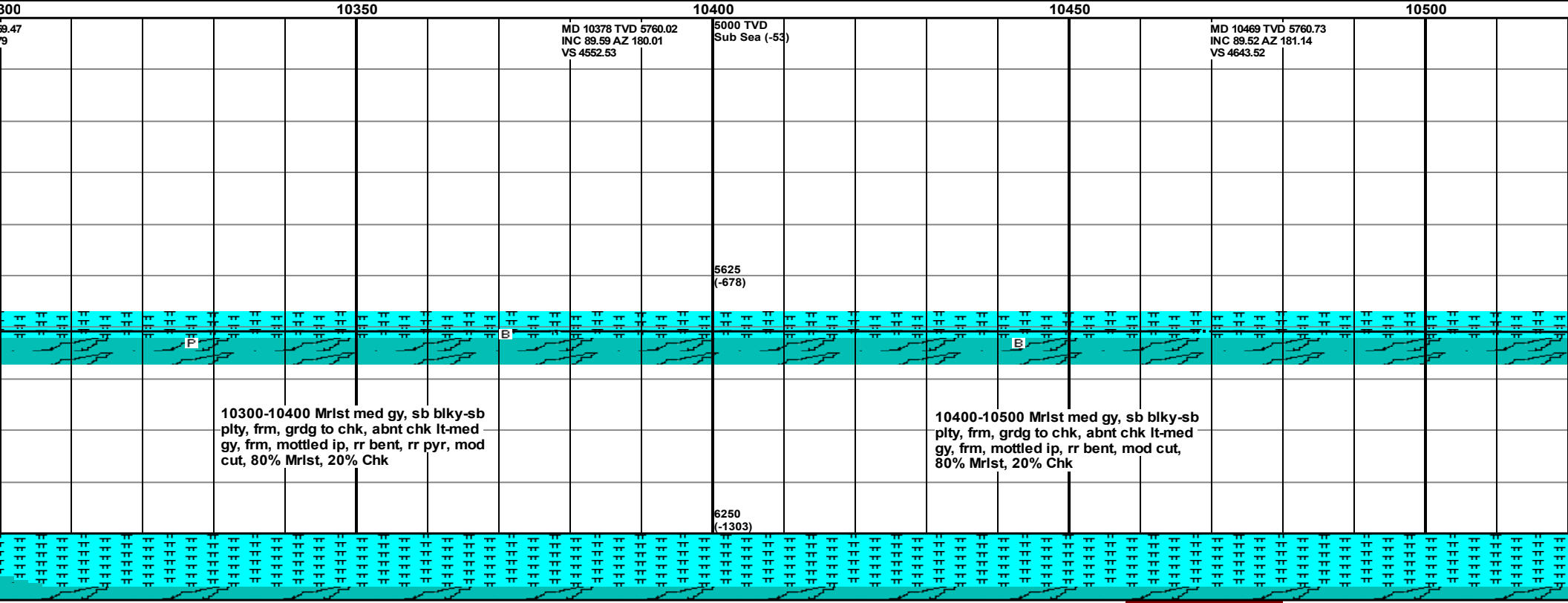
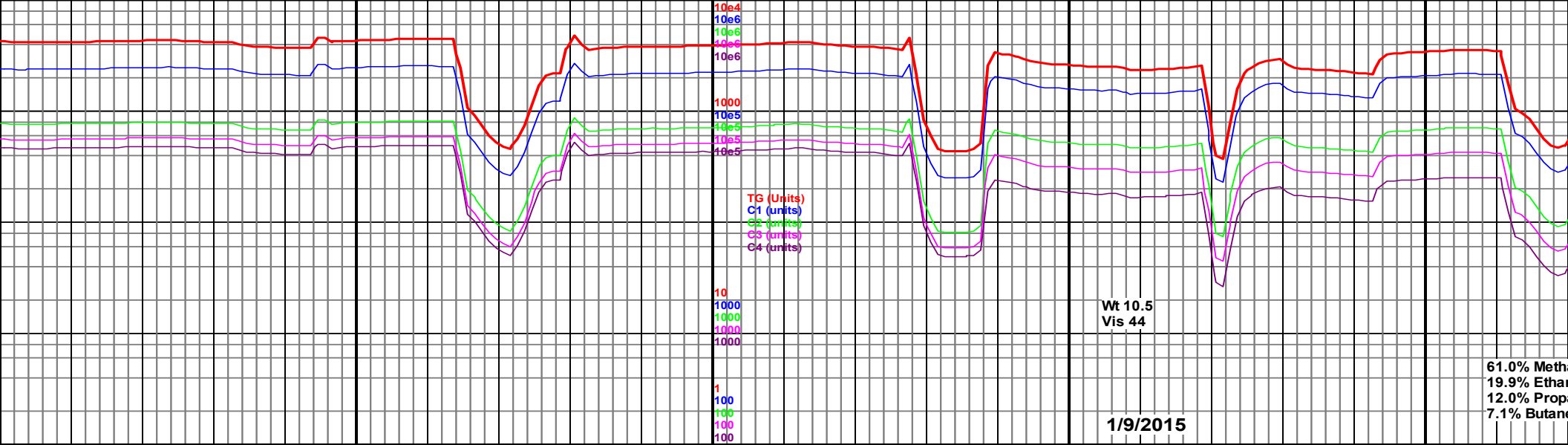
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(-1303)

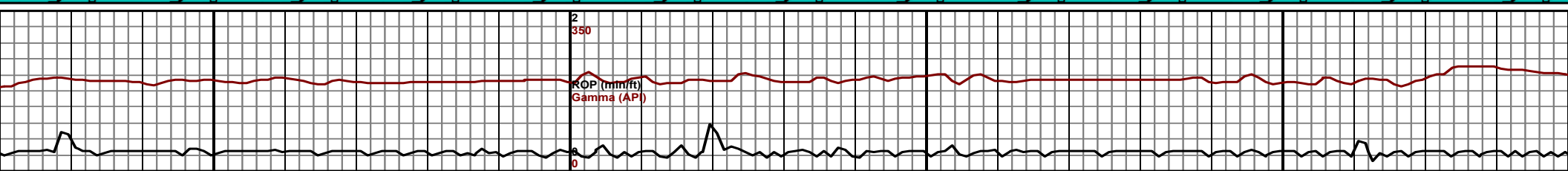
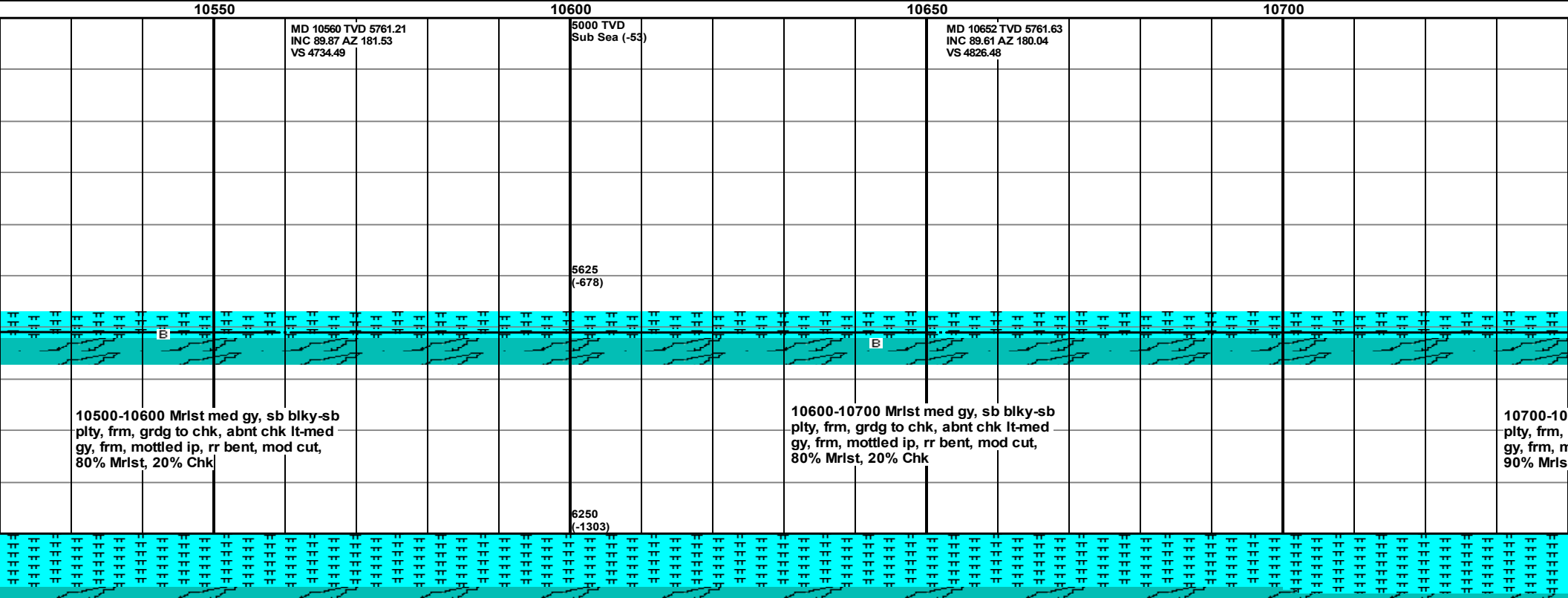
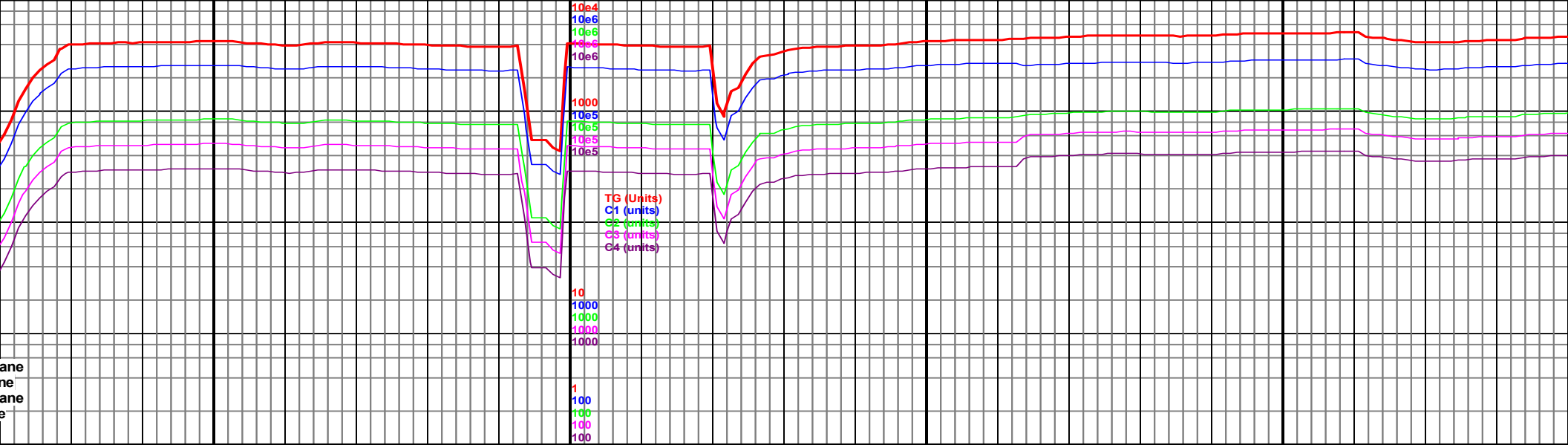


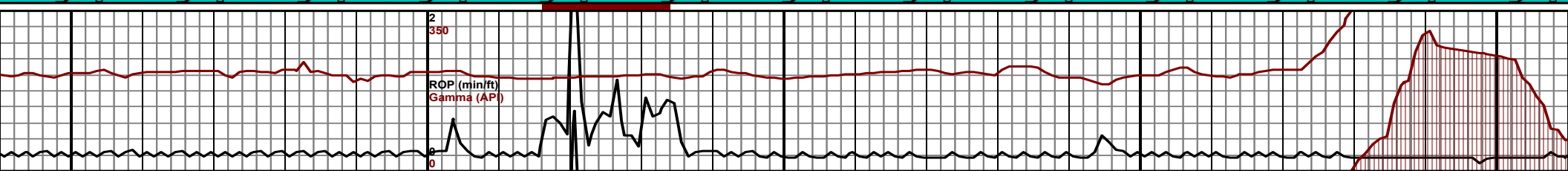
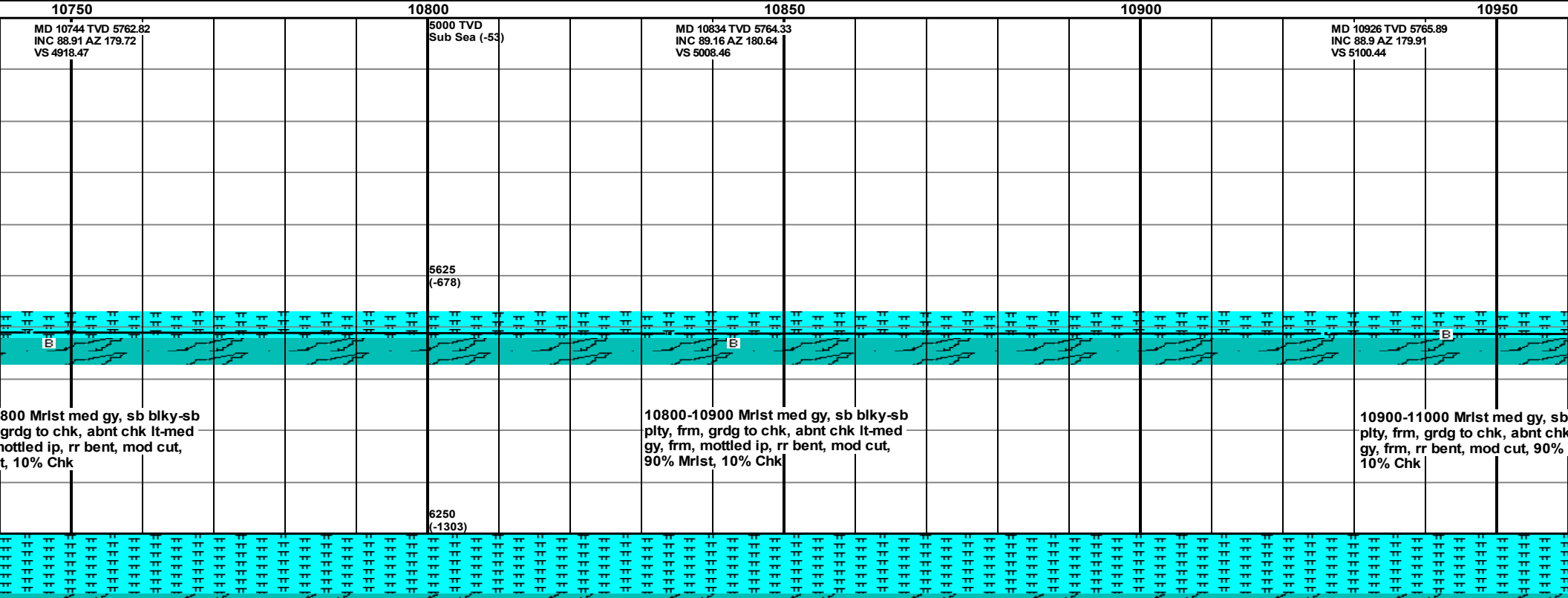
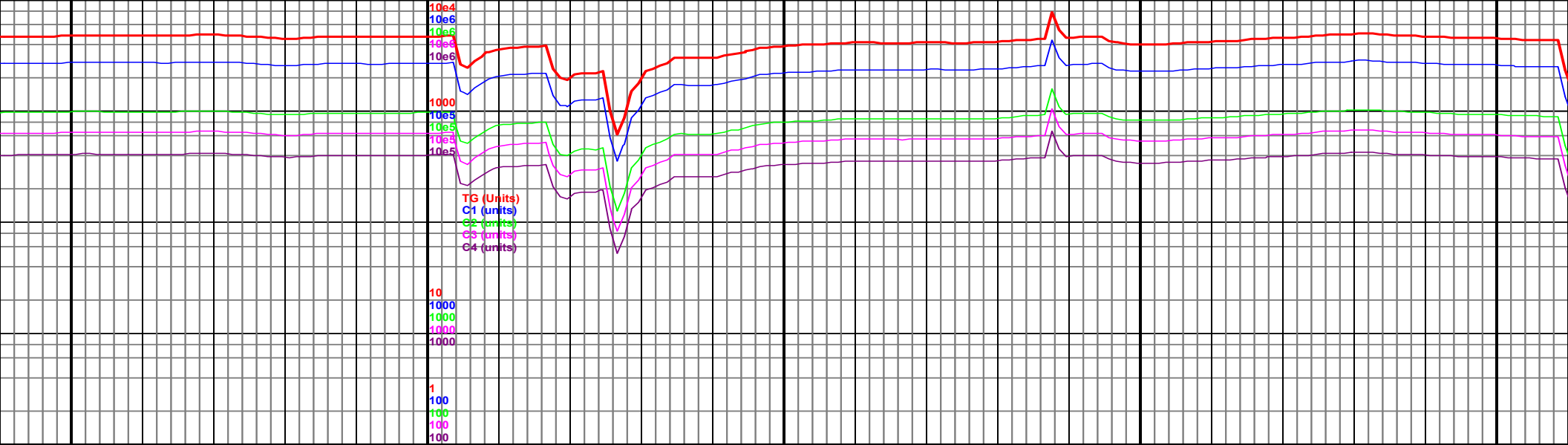
2  
350

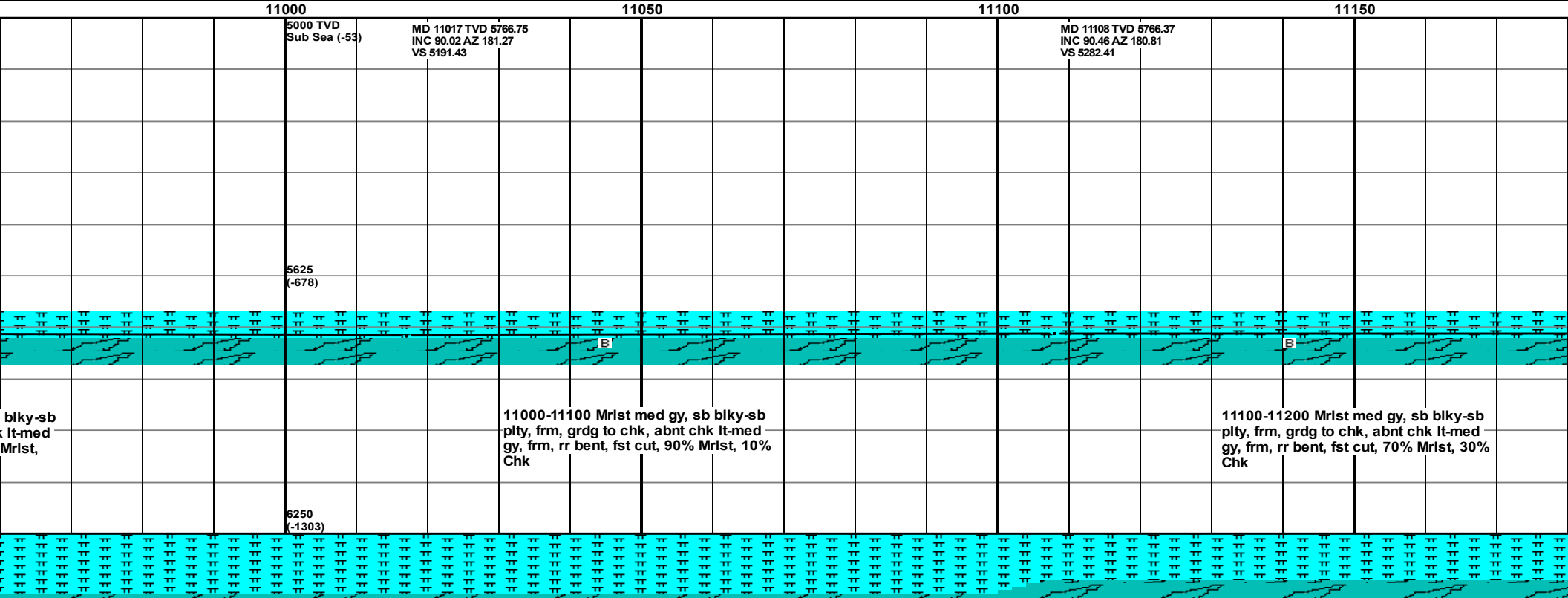
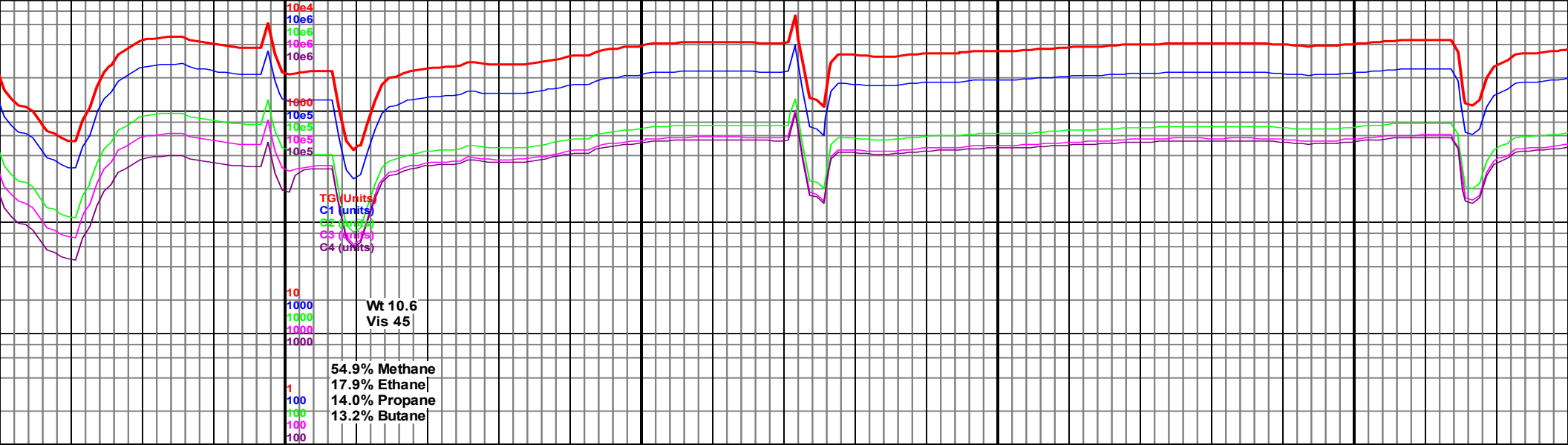
ROP (min/ft)  
Gamma (API)

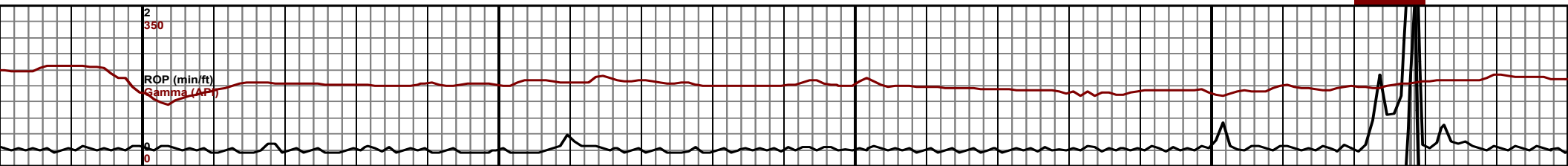
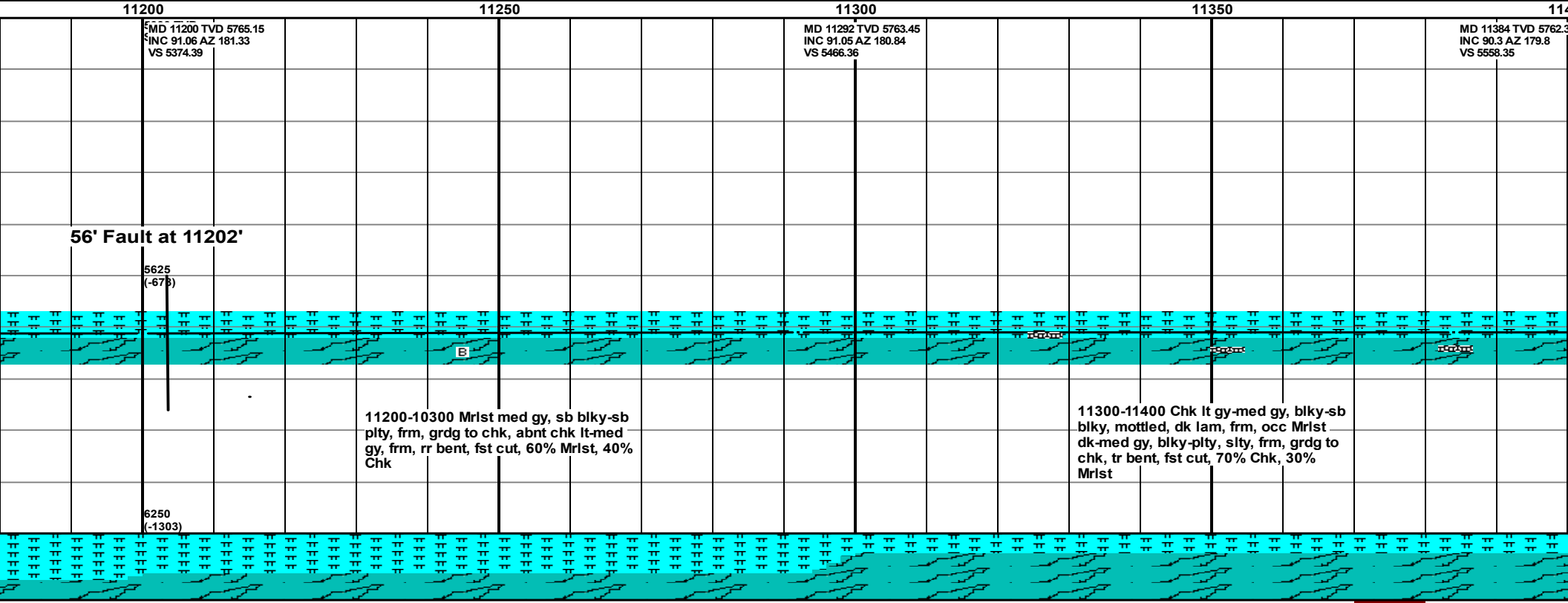
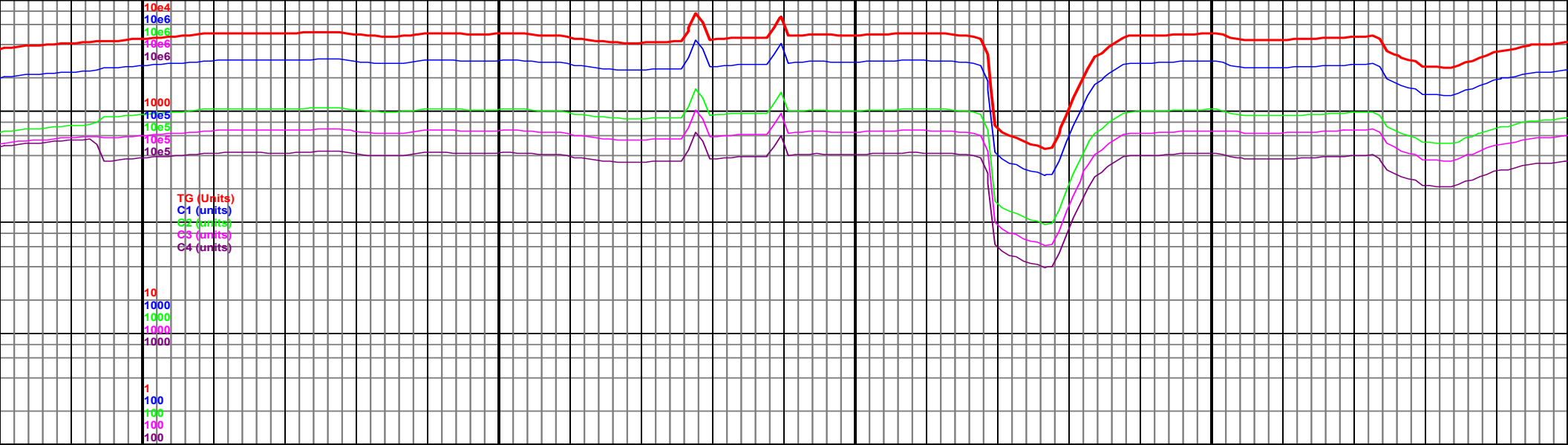
0  
0

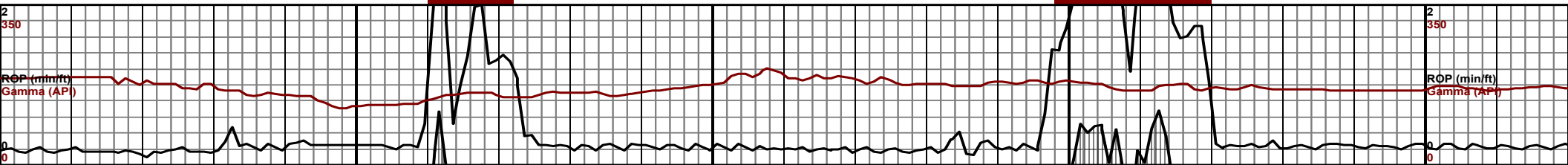
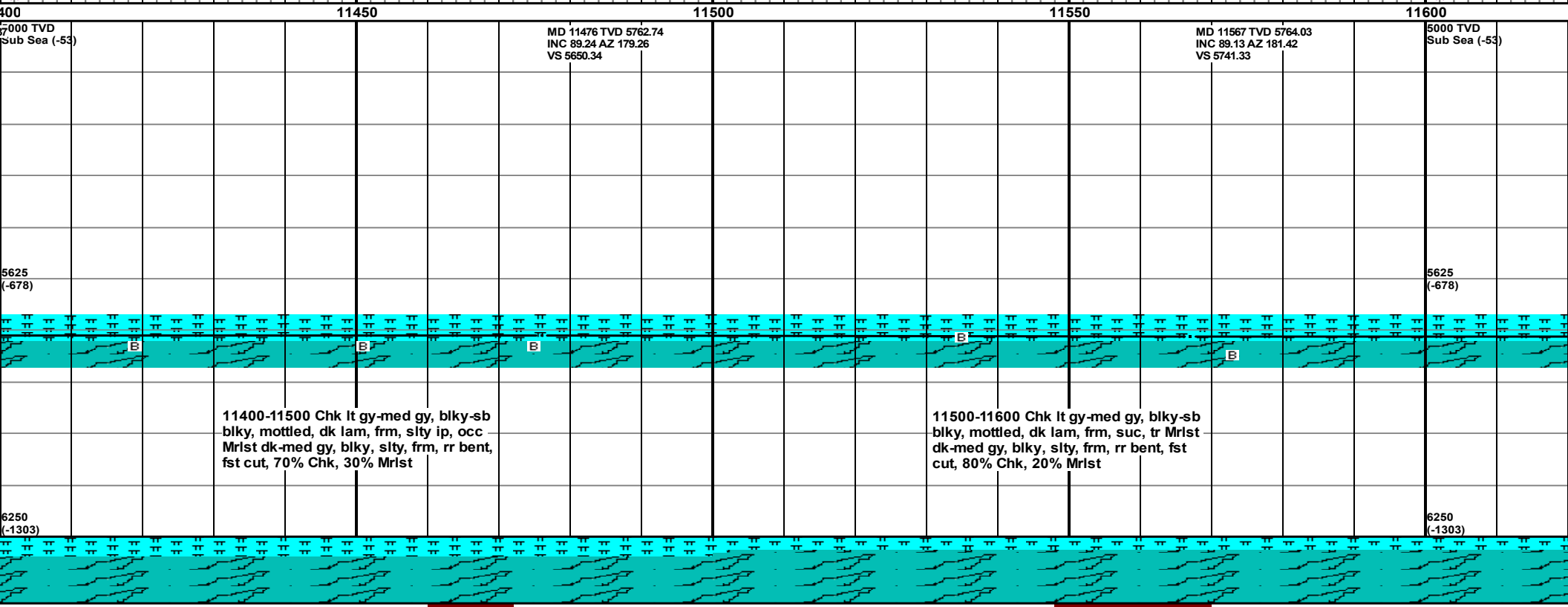
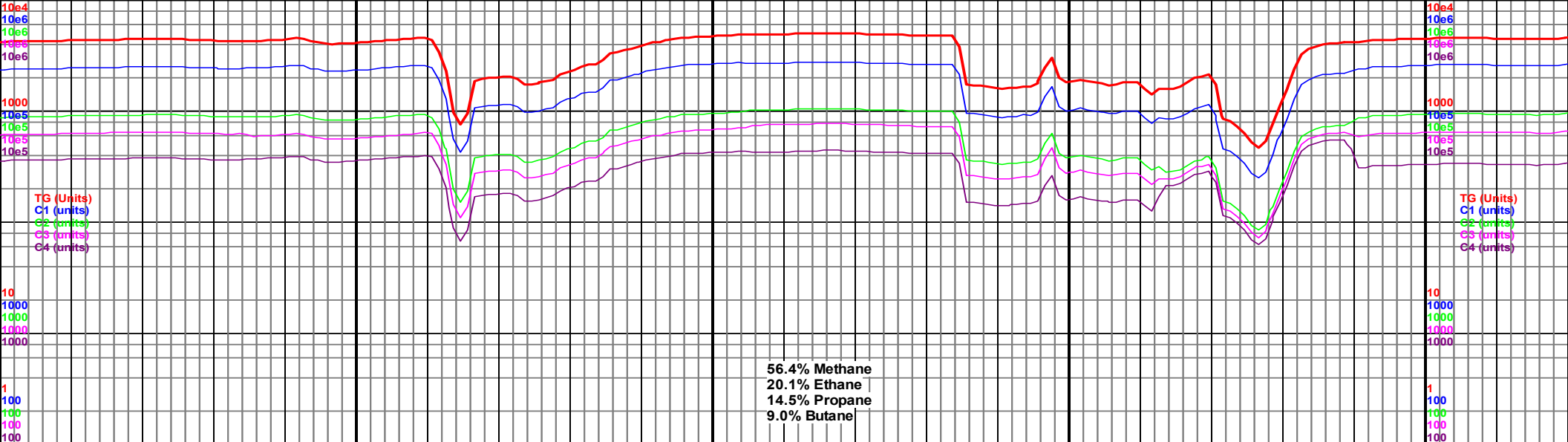




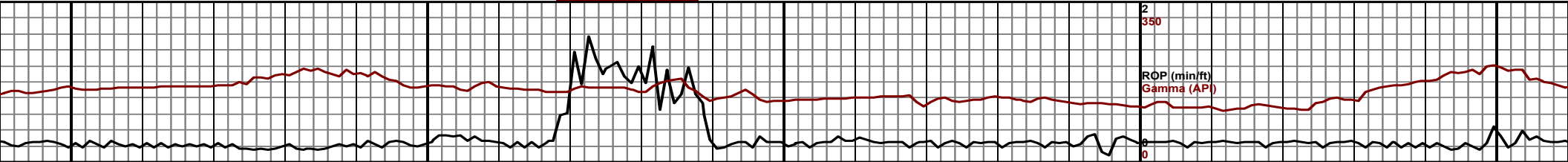
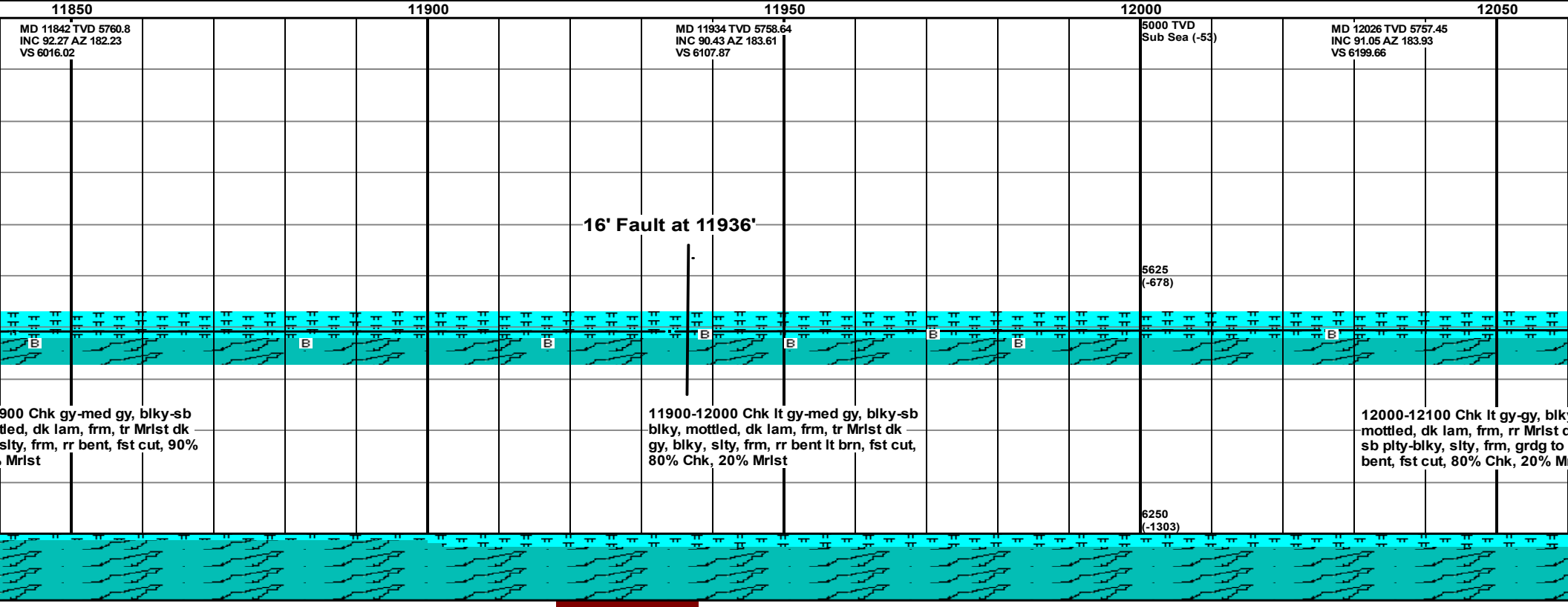
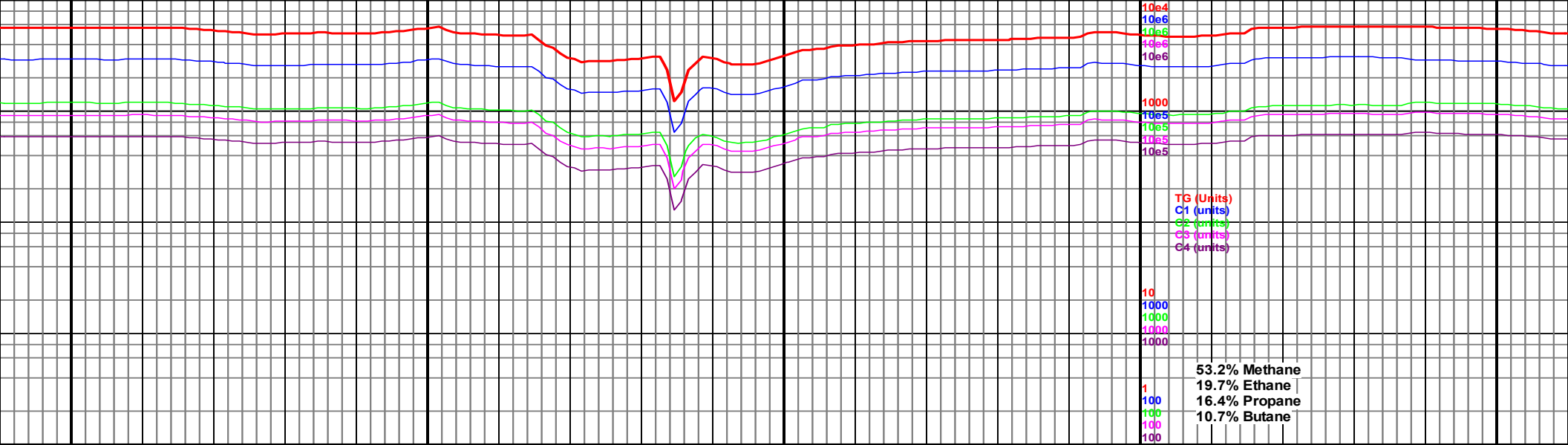


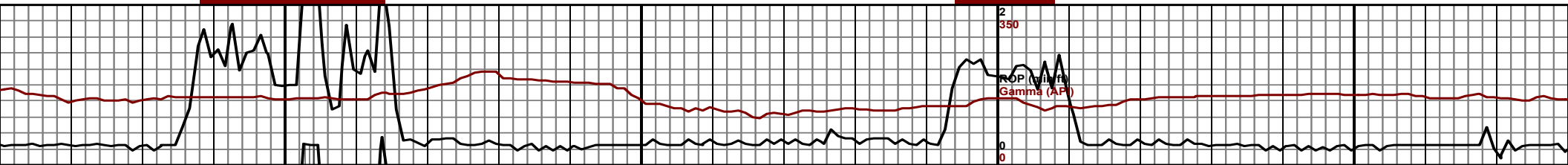
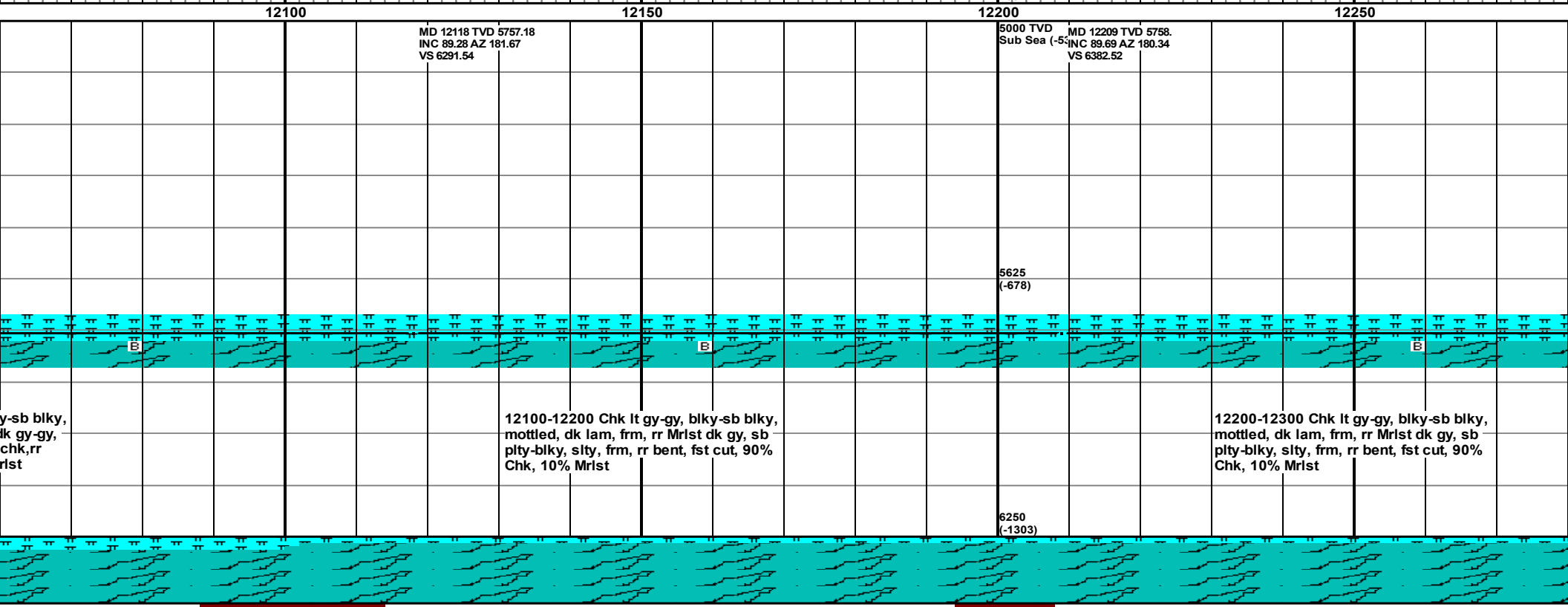
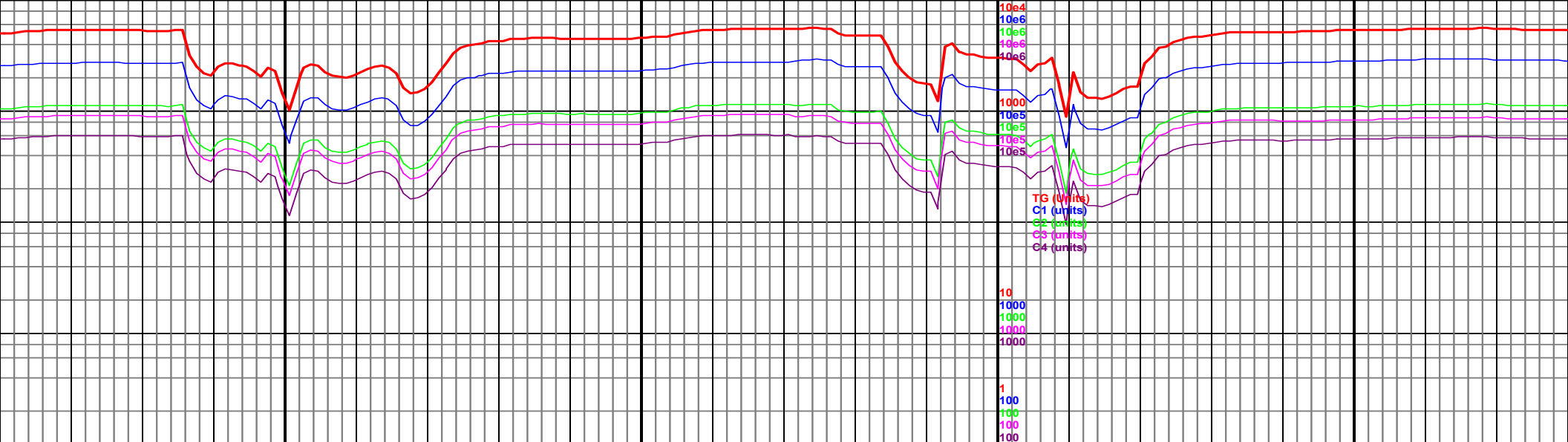


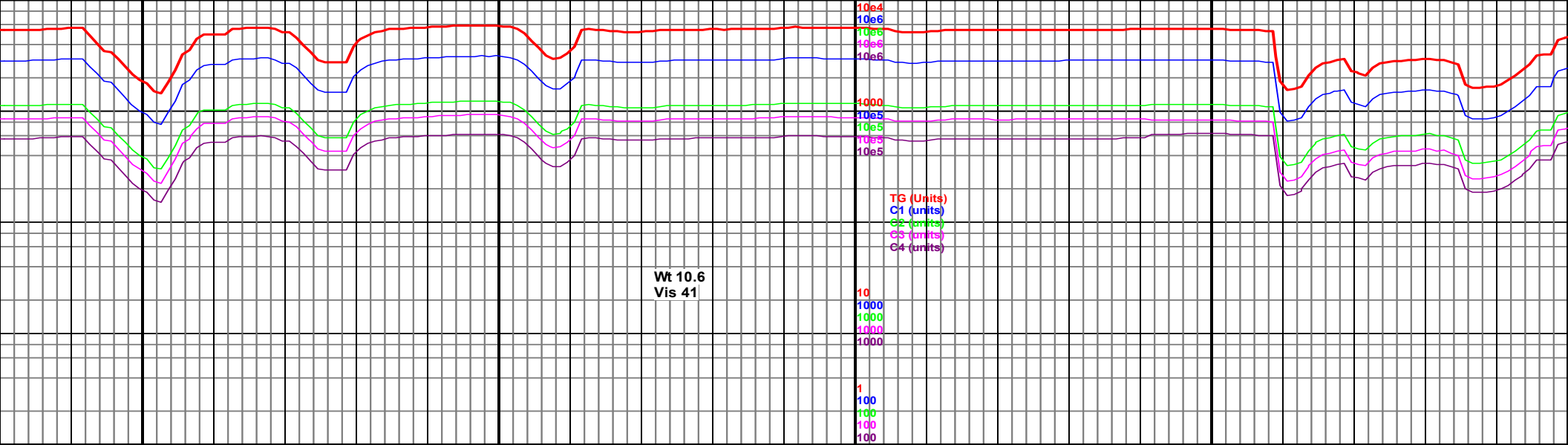












12300

MD 12301 TVD 5758.22  
INC 90.04 AZ 179.68  
VS 6474.52

12350

12400

MD 12392 TVD 5757.06  
INC 91.42 AZ 180.39 (-33)  
VS 6565.51

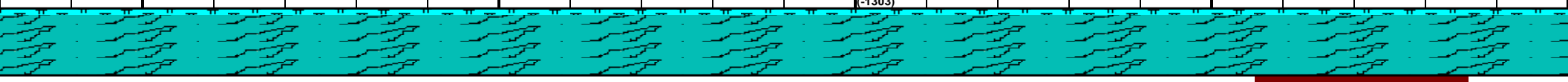
12450

MD 12483 TVD 5755.67  
INC 90.33 AZ 179.61  
VS 6656.5



12300-12400 Chk lt gy-lt brn, blk-sb  
blk, mottled, dk lam, frm, rr Mrlst dk  
gy, sb blk, slty, frm, rr bent, fst cut,  
90% Chk, 10% Mrlst

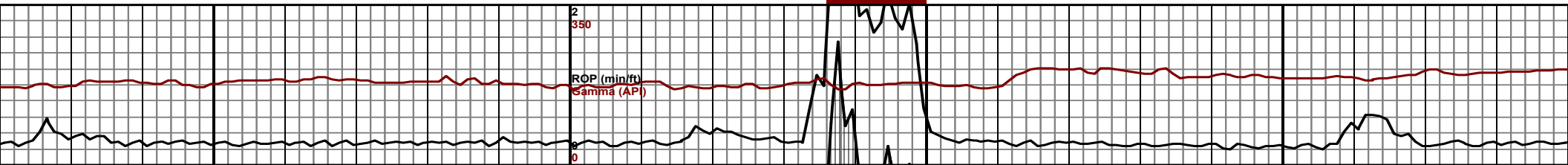
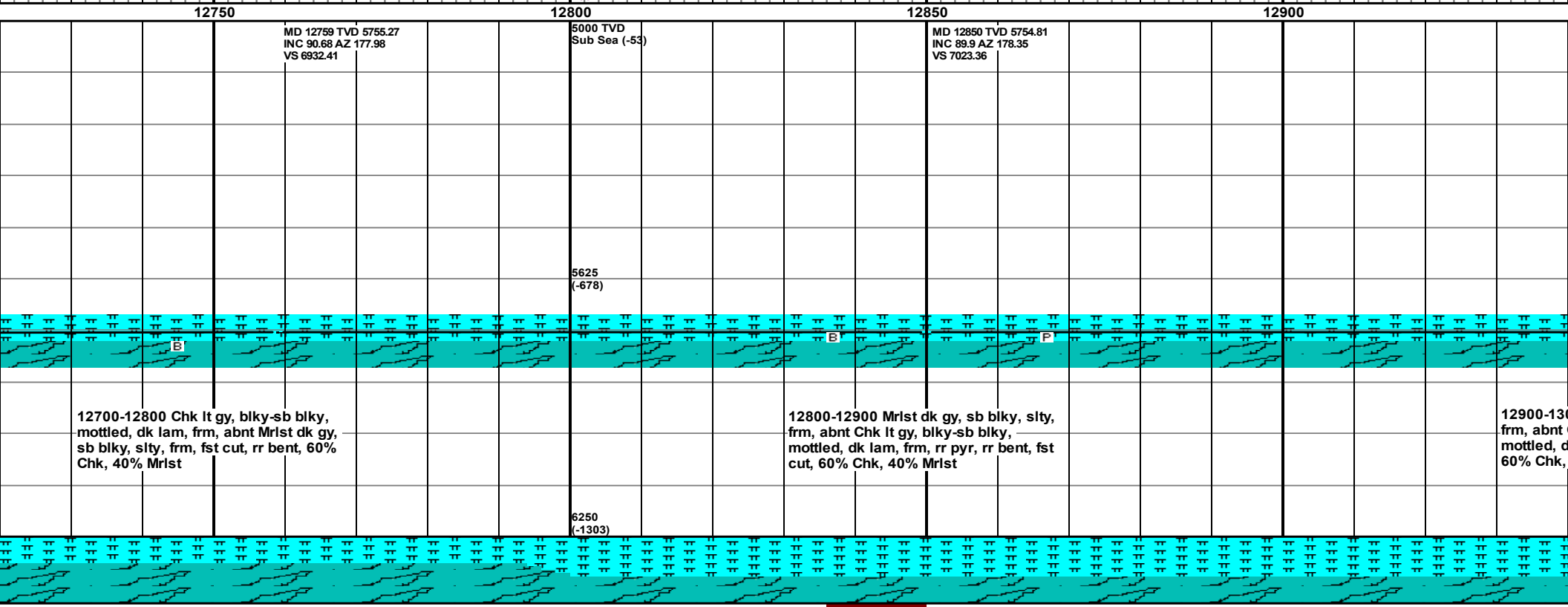
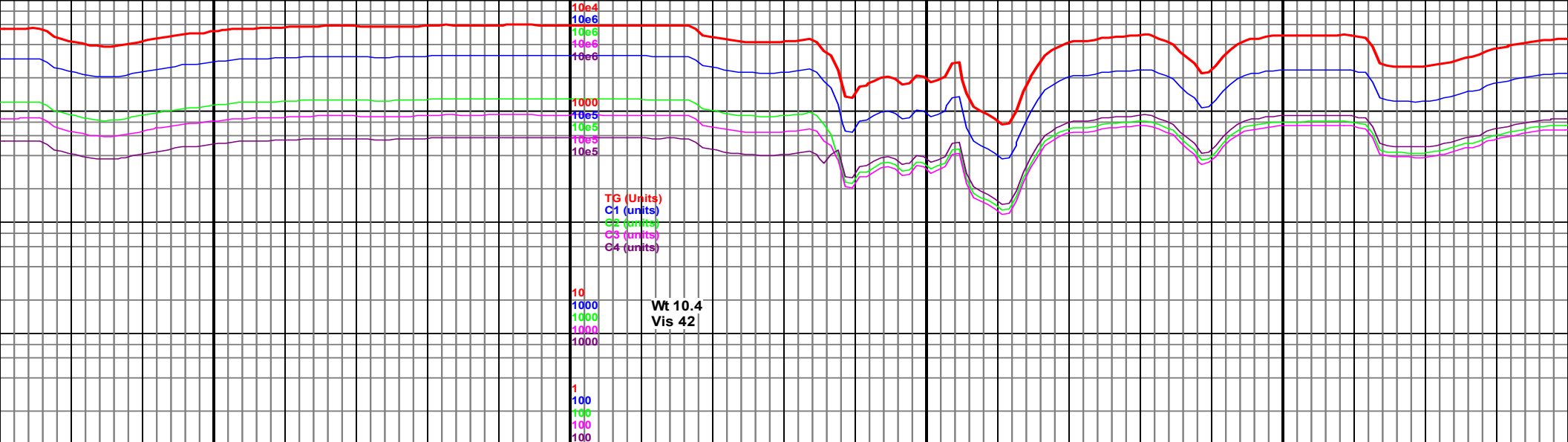
12400-12500 Chk lt gy, blk-sb blk,  
mottled, dk lam, frm, rr Mrlst dk gy, sb  
blk, slty, frm, rr bent, fst cut, 90% Chk,  
10% Mrlst

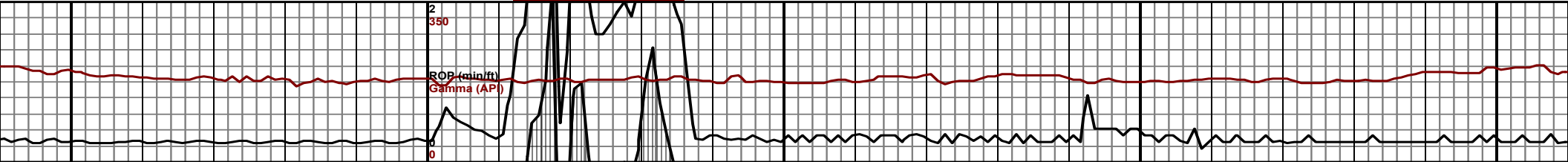
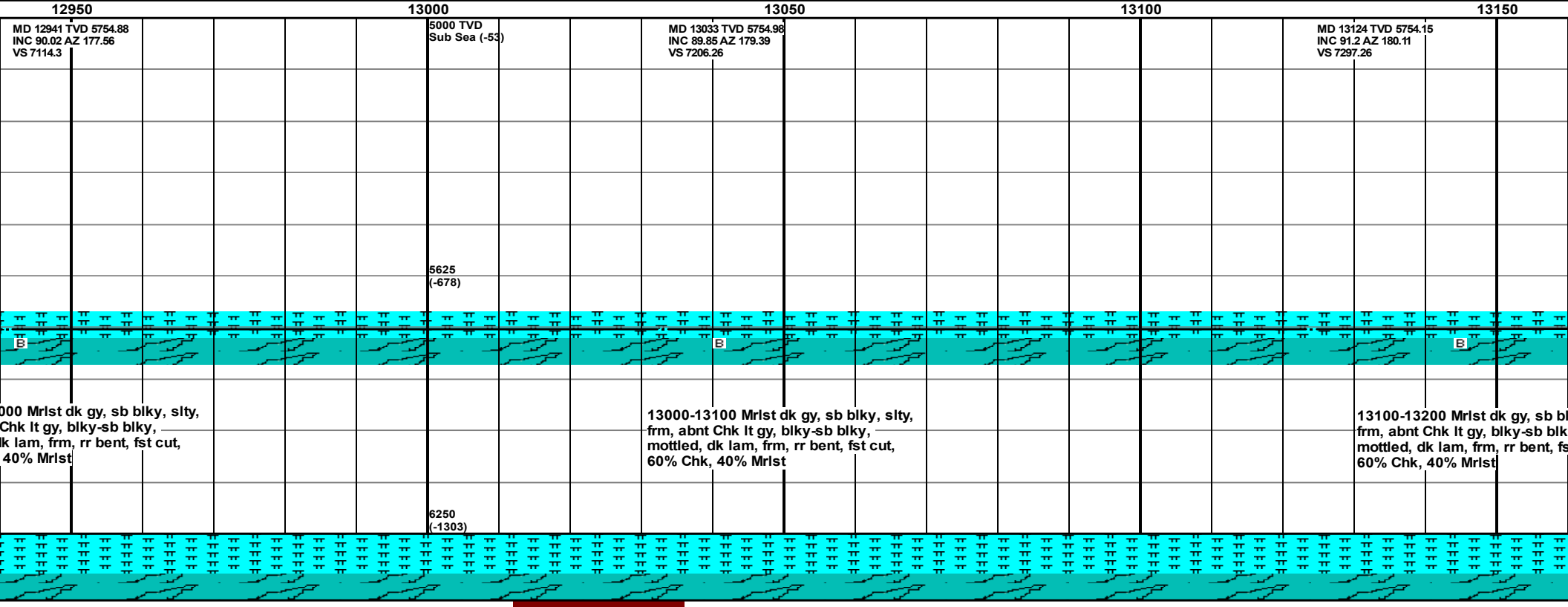
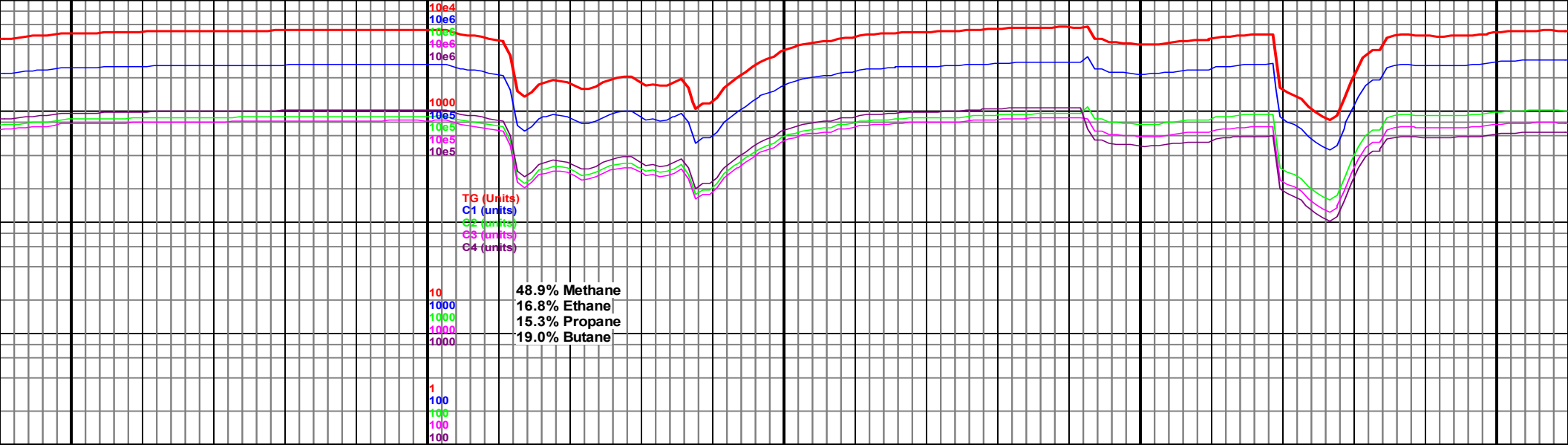


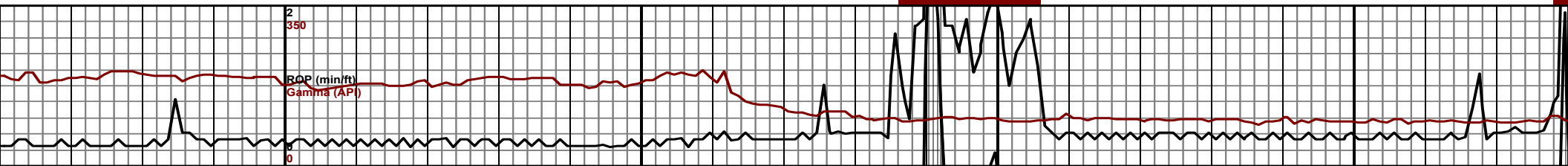
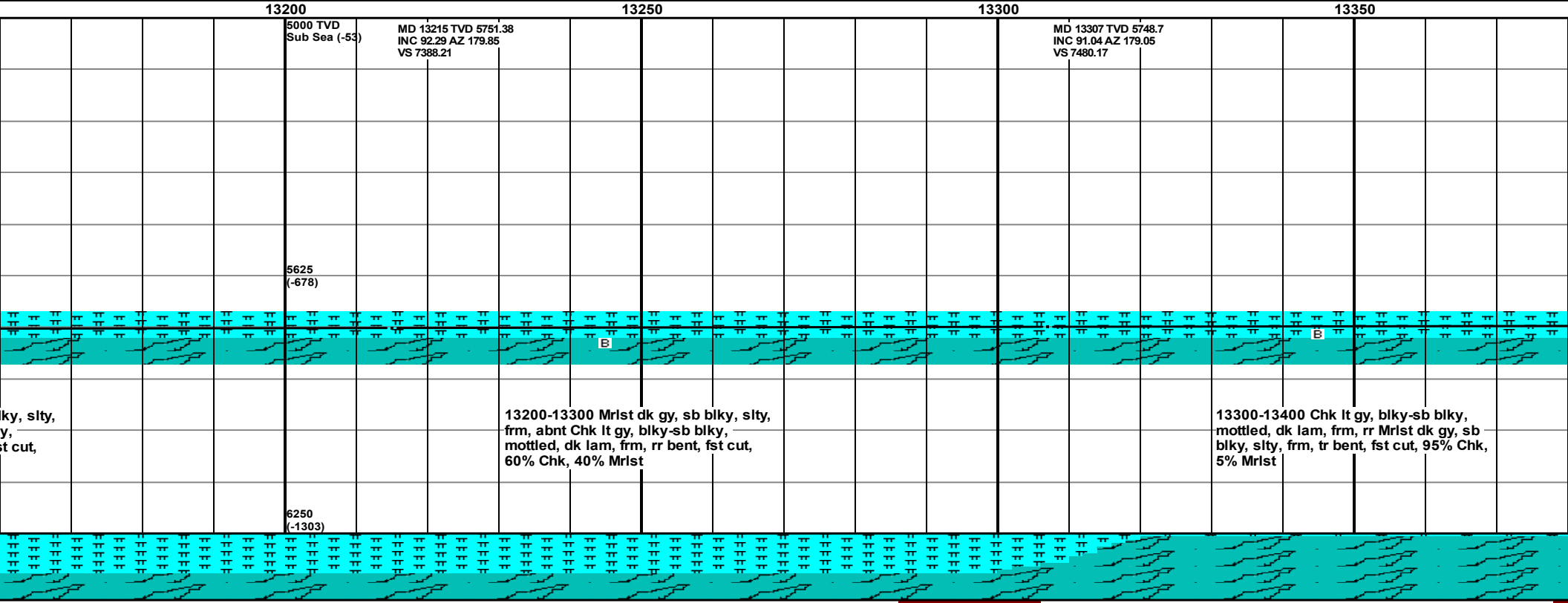
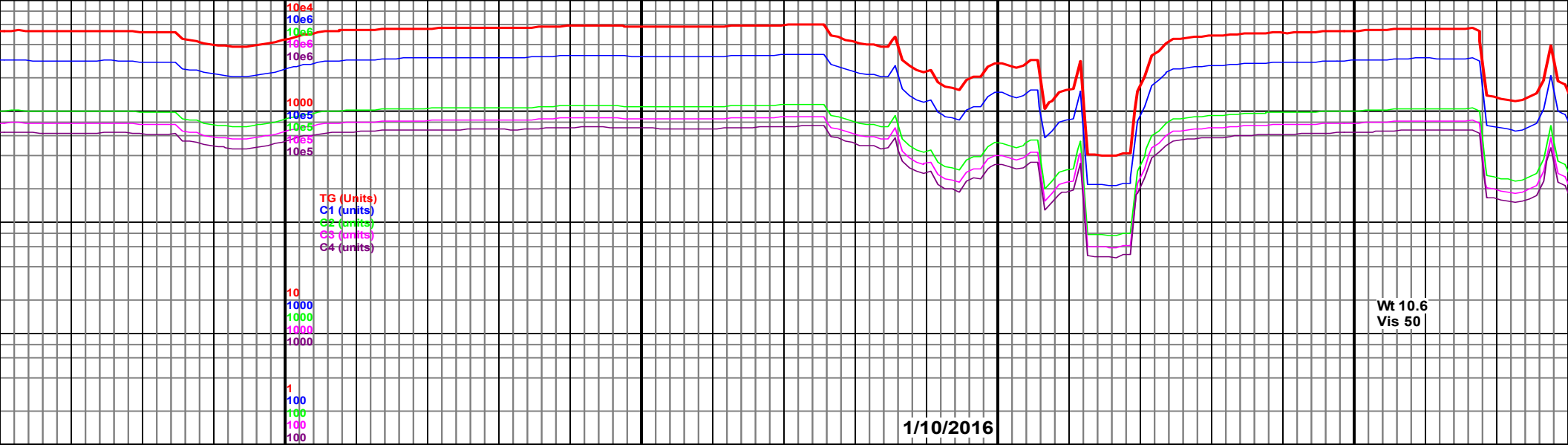
2  
350

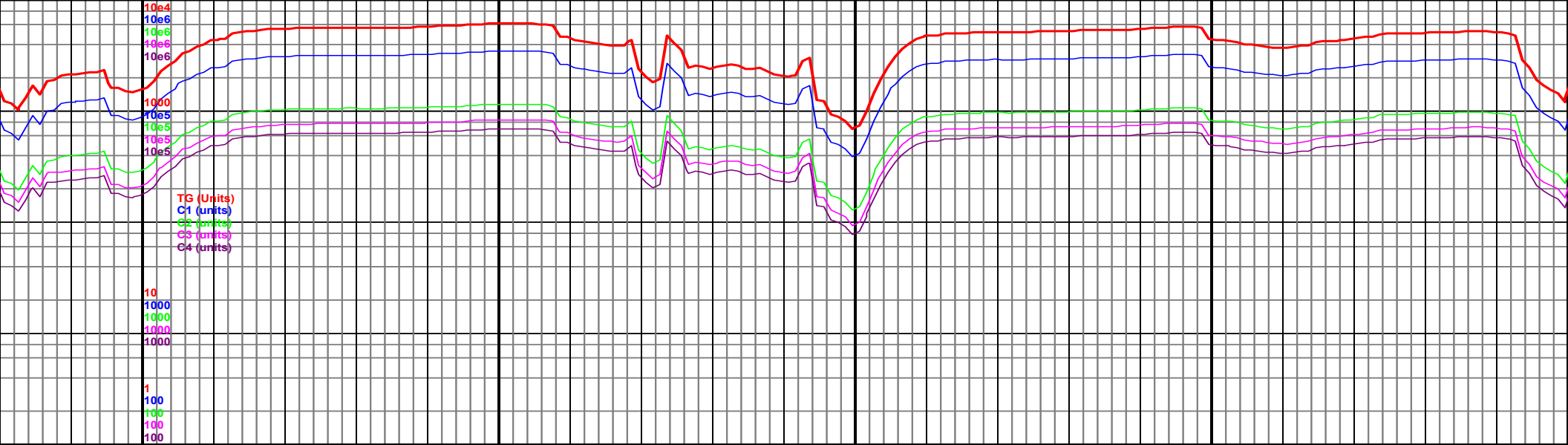
ROP (min/ft)  
Gamma (API)











13400 13450 13500 13550 13580

MD 13398 TVD 5747.3  
INC 90.73 AZ 181.26  
VS 7571.15

MD 13490 TVD 5747.02  
INC 89.62 AZ 181.72  
VS 7663.12

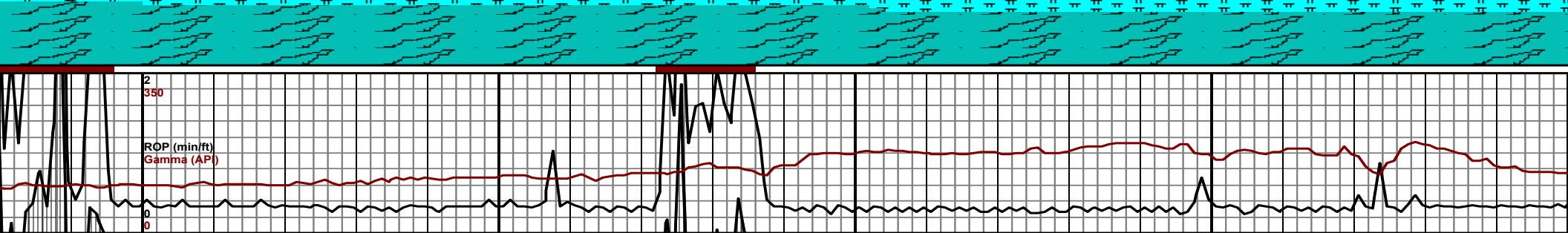
MD 13580 TVD 5747.23  
INC 90.11 AZ 180.48  
VS 7753.1

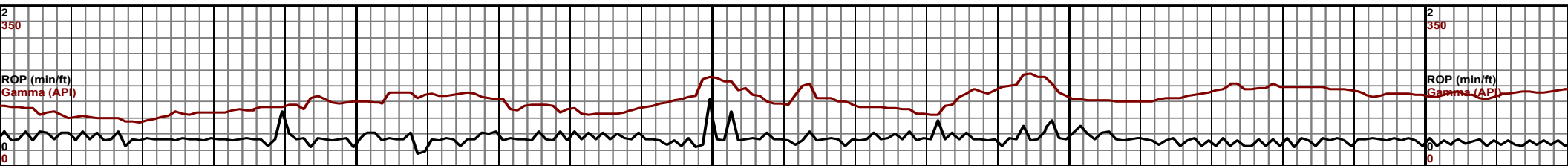
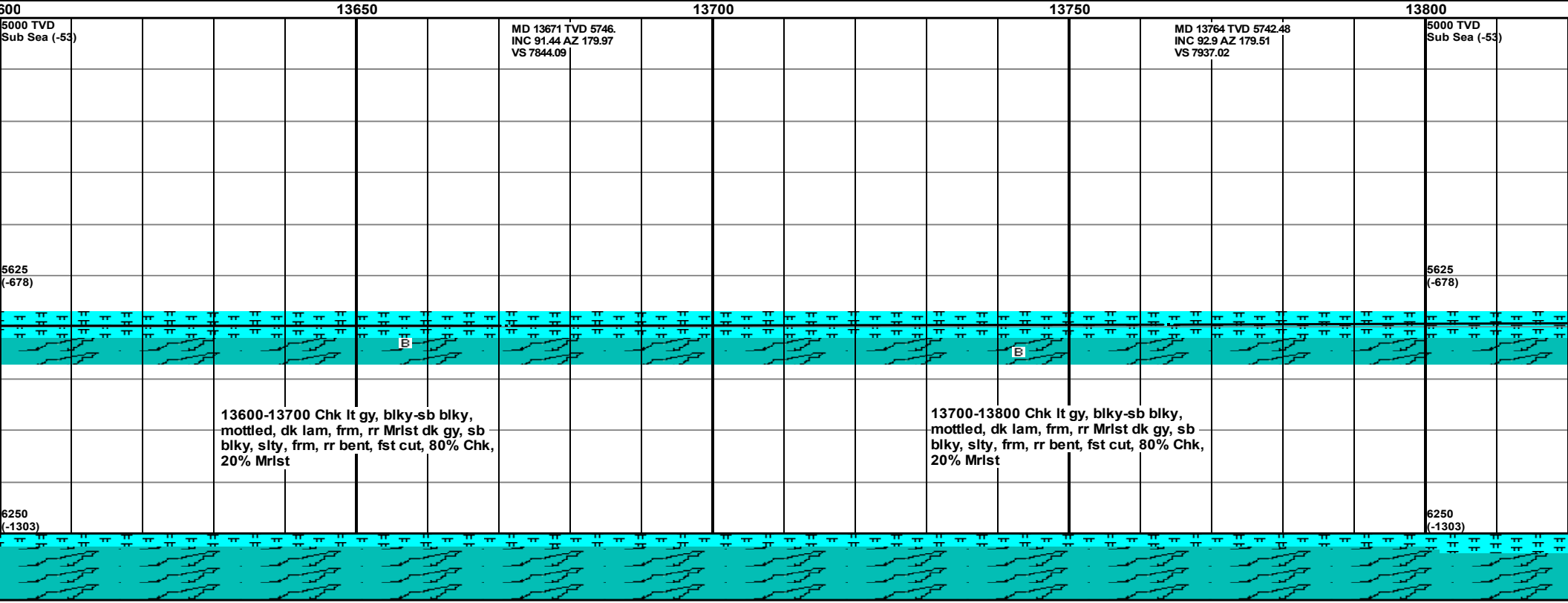
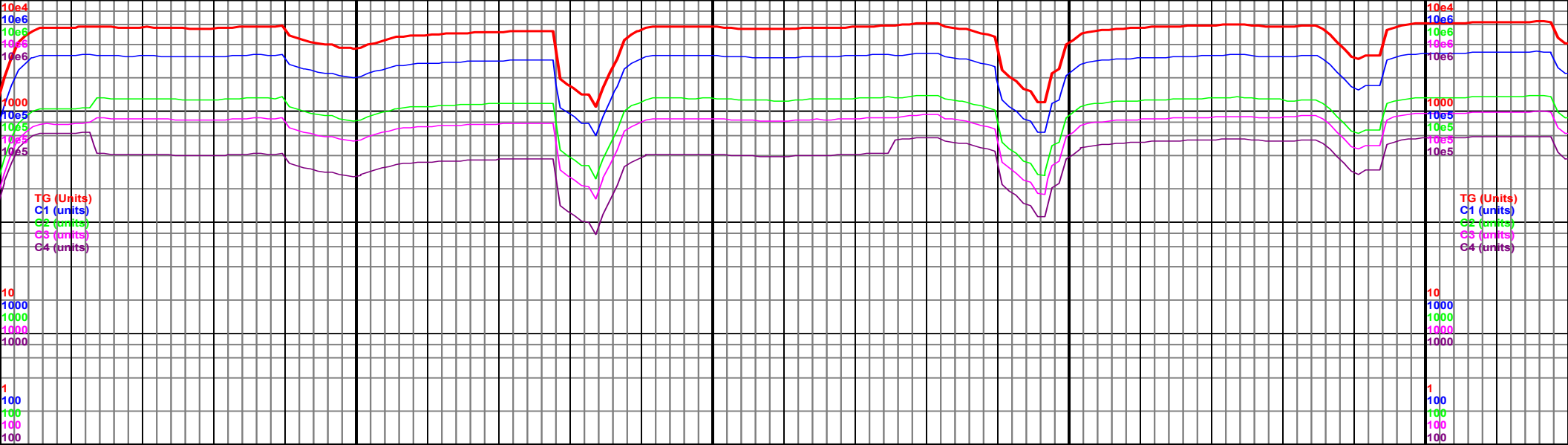
5625  
(-678)

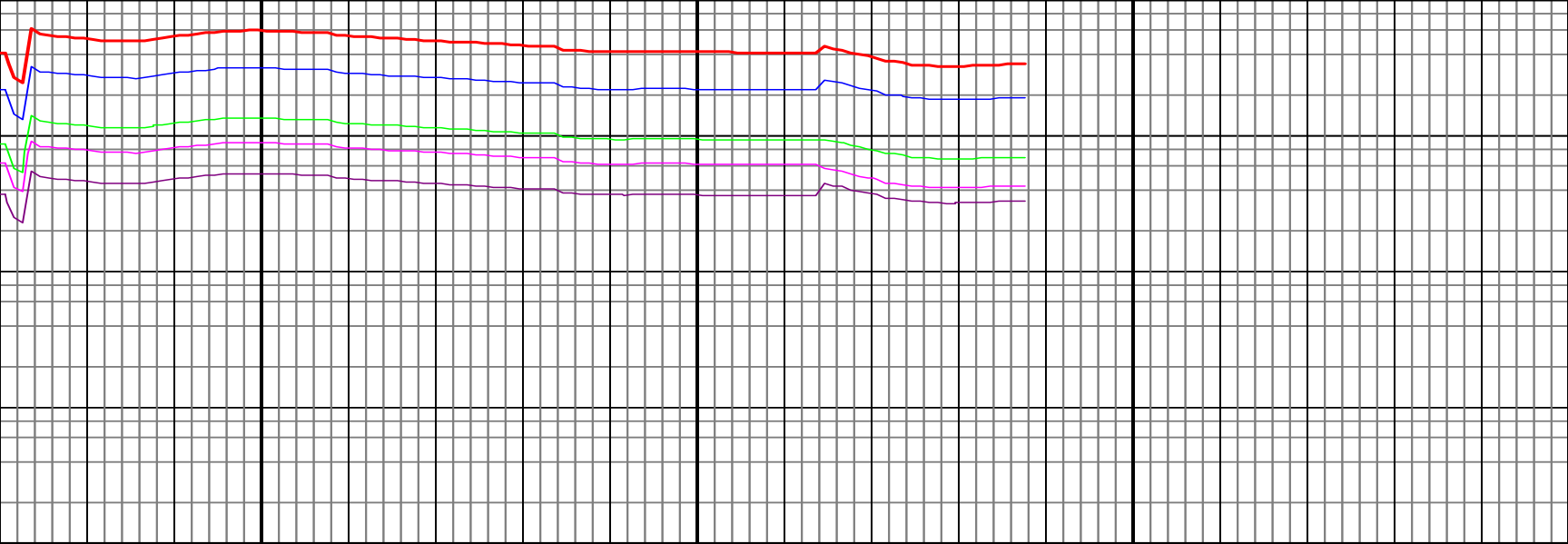
6250  
(-1303)

13400-13500 Chk lt gy, blkly-sb blkly,  
mottled, dk lam, frm, rr Mrlst dk gy, sb  
blkly, slty, frm, tr bent, fst cut, 90% Chk,  
10% Mrlst

13500-13600 Chk lt gy, blkly-sb blkly,  
mottled, dk lam, frm, rr Mrlst dk gy, sb  
blkly, slty, frm, tr bent, fst cut, 80% Chk,  
20% Mrlst







13850

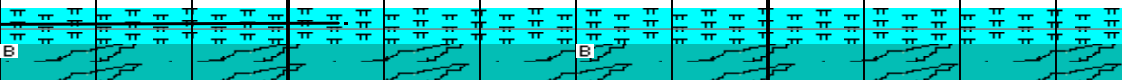
13900

13950

14

MD 13856 TVD 5737.48  
INC 93.33 AZ 178.8  
VS 8028.87

TD of 13938' reached at  
06:45 on 11/10/2016



13800-13938 Chk lt gy-med gy, blk-y-sb  
blk-y, mottled, dk lam, frm, occ Mrlst dk  
gy, plty-blky, slty, frm, rr bent, fst cut,  
70% Chk, 30% Mrlst

