



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

Well Name: Horsetail 33M-2804
Well Id:
Location: SWSW 33-T10N-R57W, Weld County, Colorado
License Number: 05-123-3924000
Spud Date: 7/15/2014
Surface Coordinates: Lat 40.789036
Long -103.761300
Bottom Hole Lat 40.815531
Coordinates: Long -103.760708
Ground Elevation (ft): 4634
Logged Interval (ft): 4850 To: 14936
Formation: Pierre, Sharon Springs, Niobrara
Type of Drilling Fluid: Water Based Mud

Region: Redtail Field
Drilling Completed: 7/24/2014
K.B. Elevation (ft): 4651
Total Depth (ft): 14936

Printed by WellSight Log Manager from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

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

GEOLOGIST

Name: Brian Reddick, Mark Denler
Company: Acme Geologic Consulting
Address: 108 Berry Street
Little Rock, AR 72205

Drilling Company

Pioneer #54


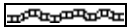
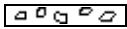

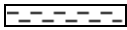
Gas Detection






Mudlogging Systems, Inc., M Logger, Model TGC, Total Gas and Chromatograph, #326




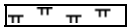
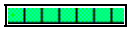
Comments


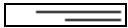
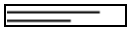


Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.




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

-  Earthy
-  Fenest
-  Fracture
-  Inter
-  Moldic
-  Organic
-  Pinpoint







Vuggy

SORTING

-  Well
-  Moderate
-  Poor

OTHER SYMBOLS

ROUNDING

-  Rounded
-  Subrnd
-  Subang
-  Angular

OIL SHOW

-  Even



Spotted



Ques



Dead

INTERVAL



Core



Dst

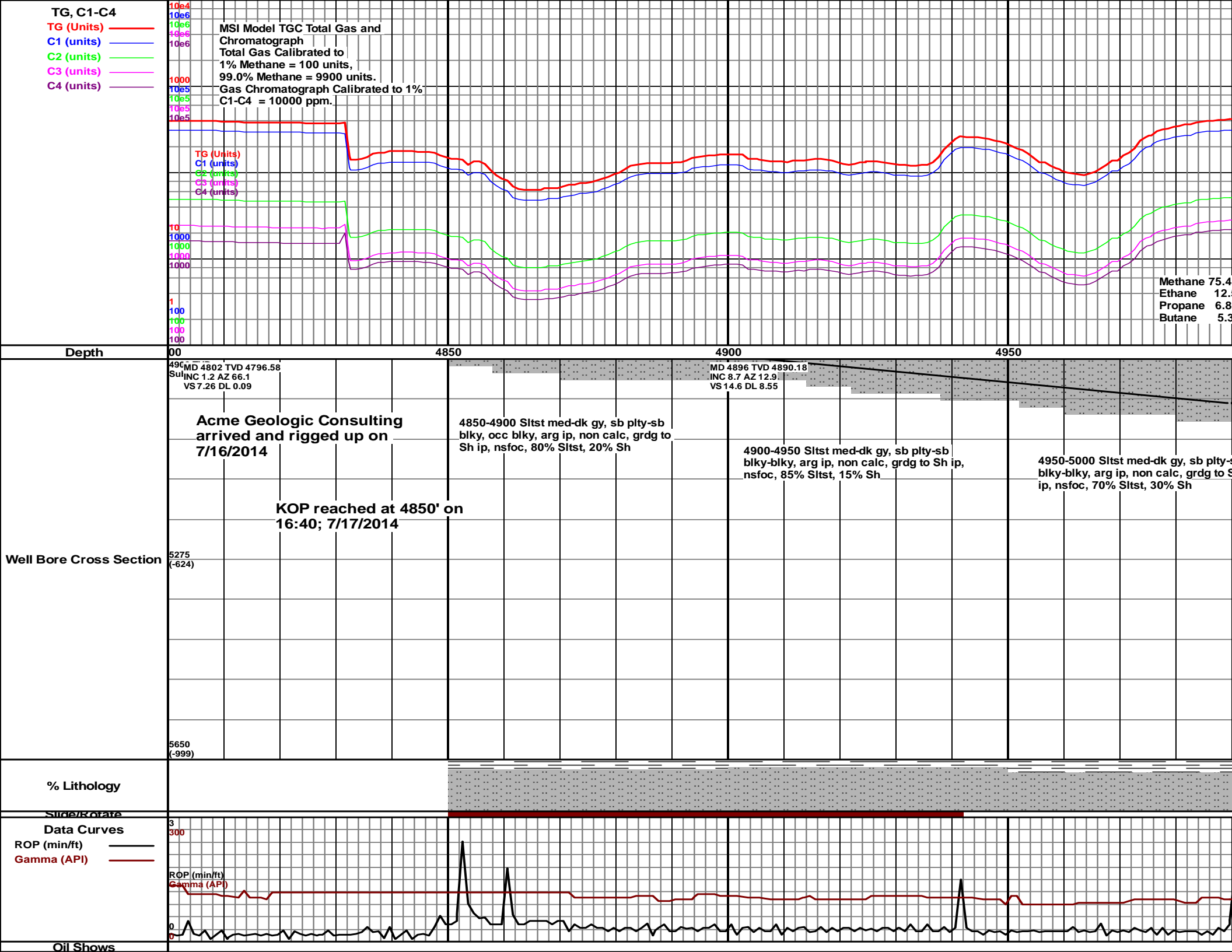
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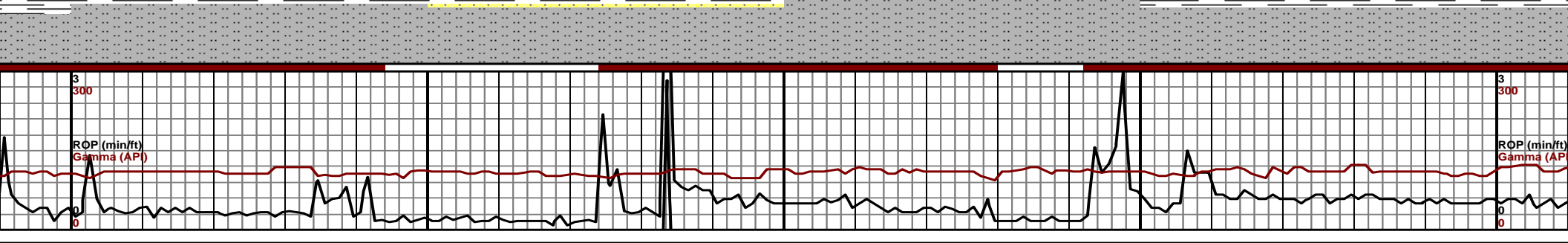
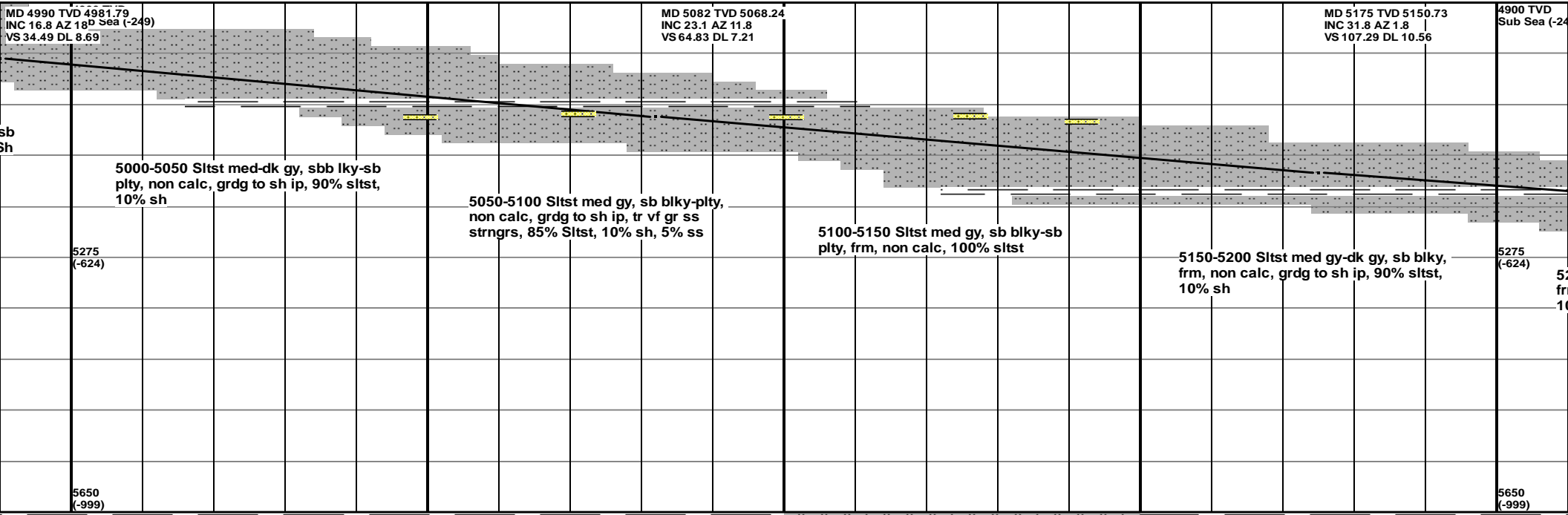
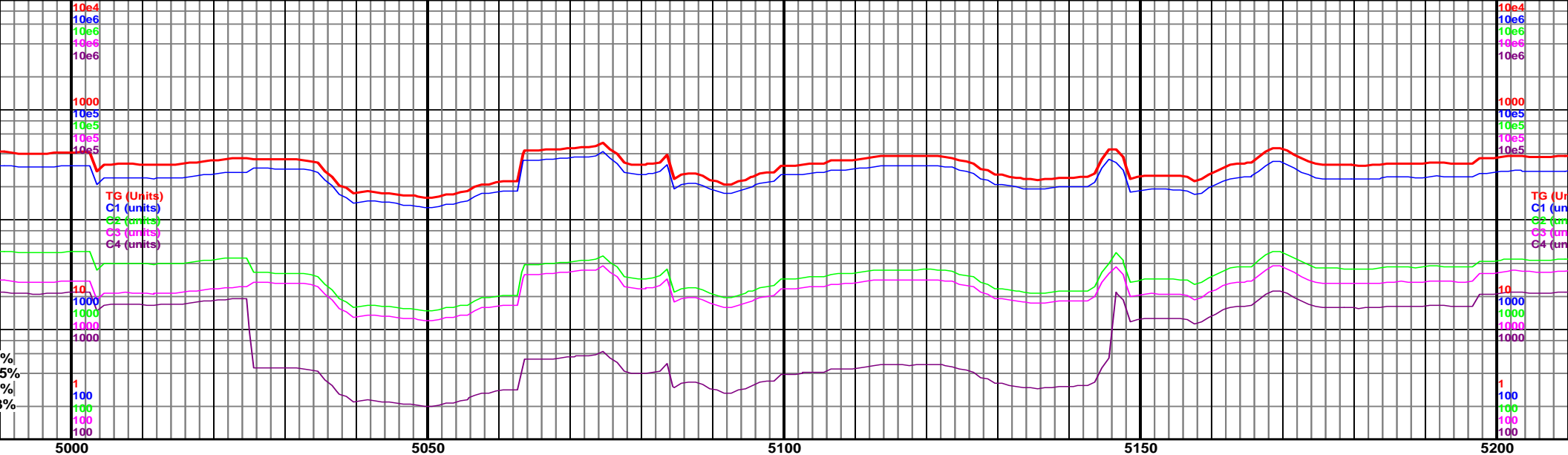


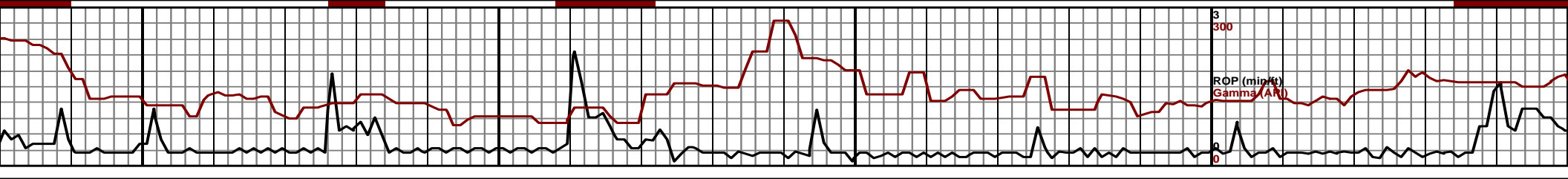
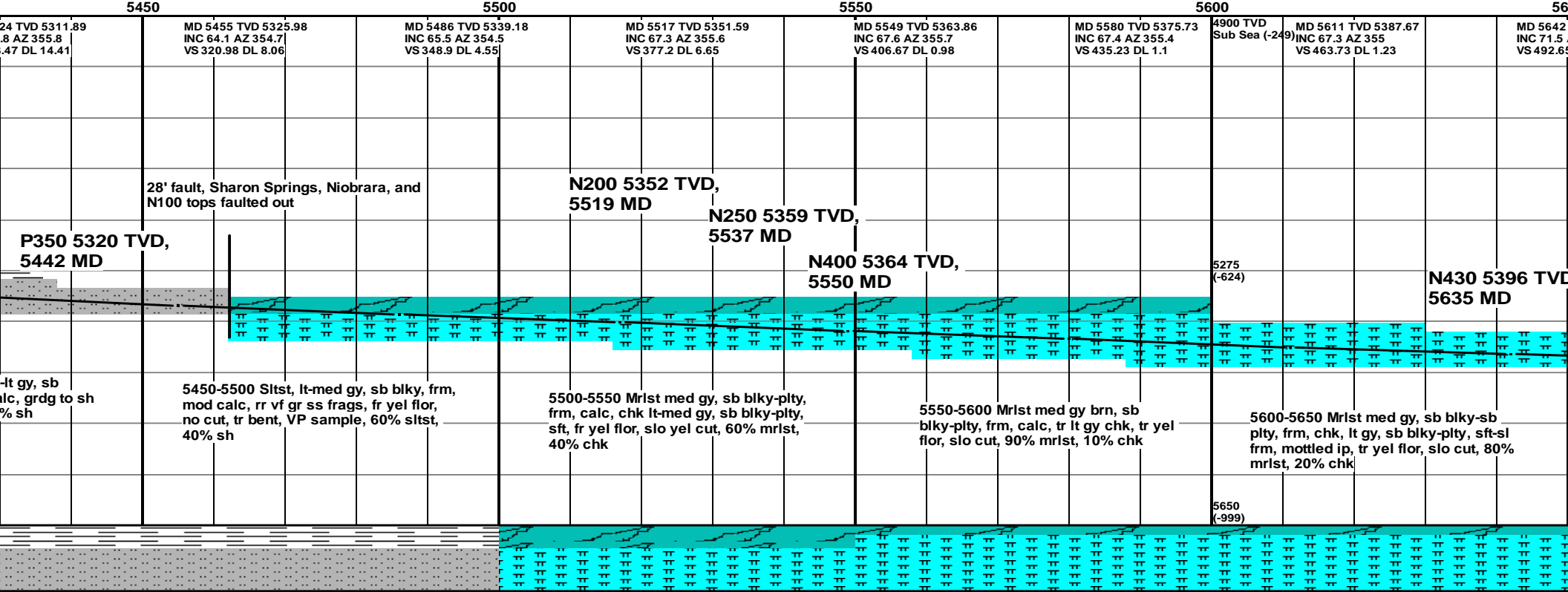
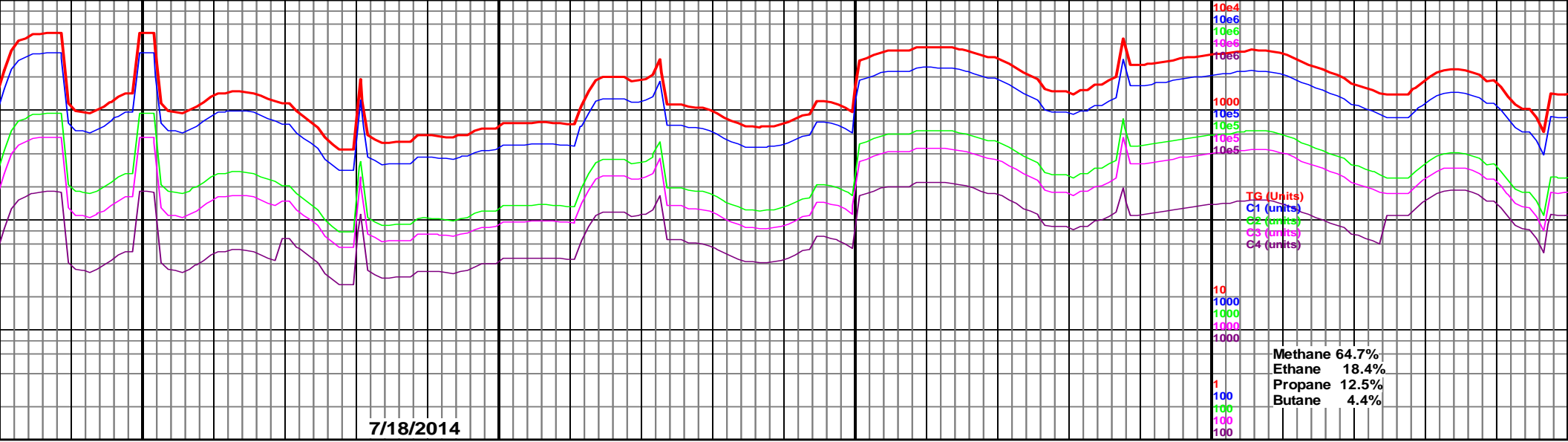
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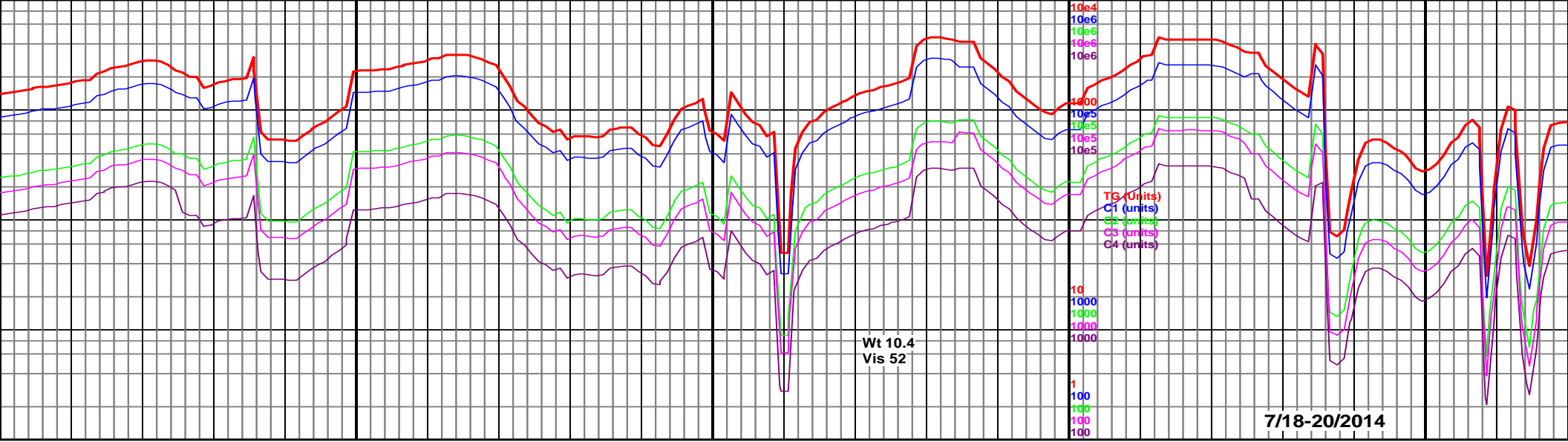


Sidewall

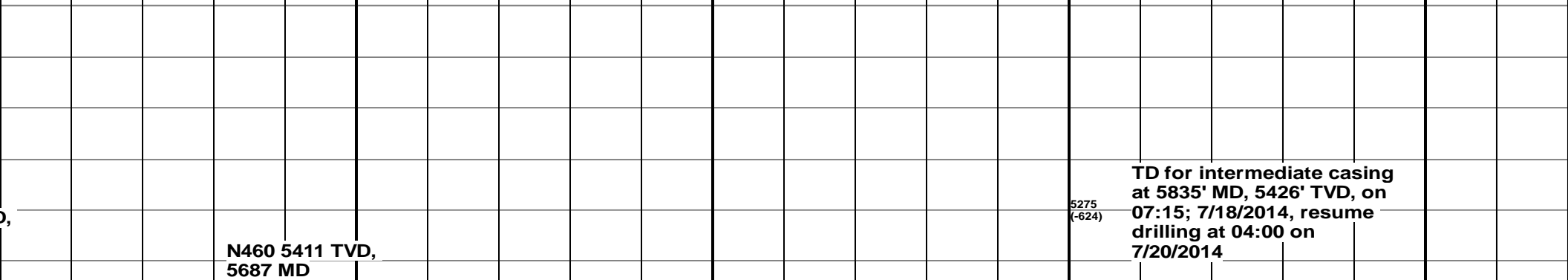




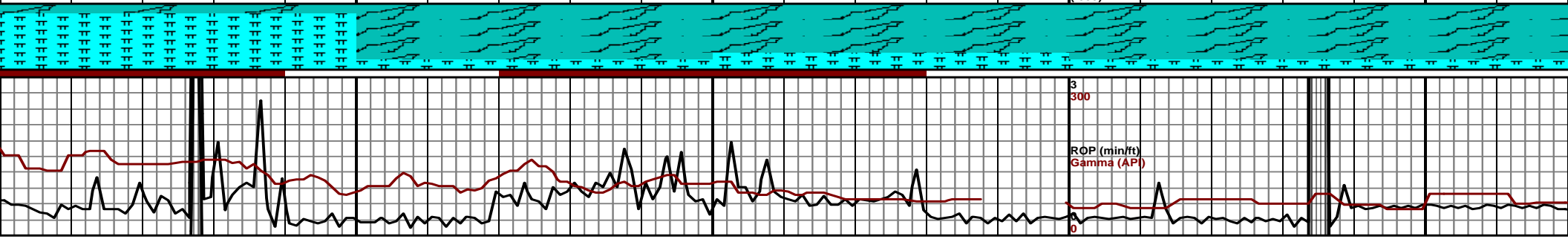


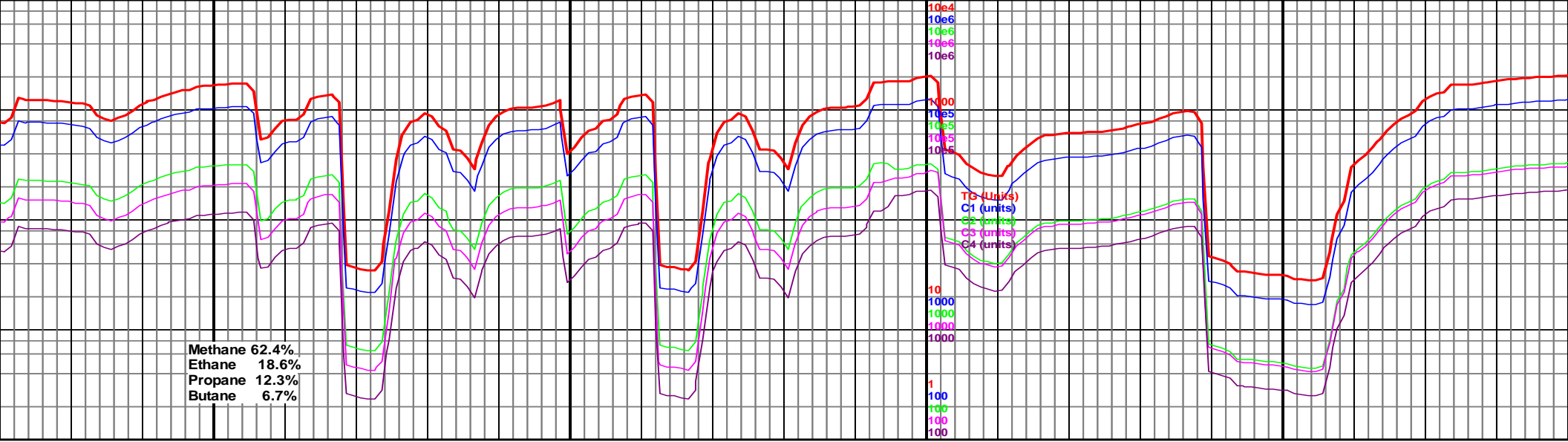


TVD 5398.57 AZ 355.8 DL 13.76	MD 5673 TVD 5407.48 INC 75.1 AZ 358.3 VS 522.3 DL 13.95	MD 5704 TVD 5415.11 INC 76.4 AZ 357.9 VS 552.33 DL 4.38	MD 5735 TVD 5421.37 INC 80.3 AZ 358.6 VS 582.67 DL 12.77	MD 5766 TVD 5424.98 INC 86.3 AZ 359.8 VS 613.44 DL 19.73	MD 5788 TVD 5426.04 D INC 88.2 AZ 0.1 VS 635.41 DL 8.74	MD 5856 TVD 5426.04 D INC 89.3 AZ 359.8 VS 703.39 DL 1.6
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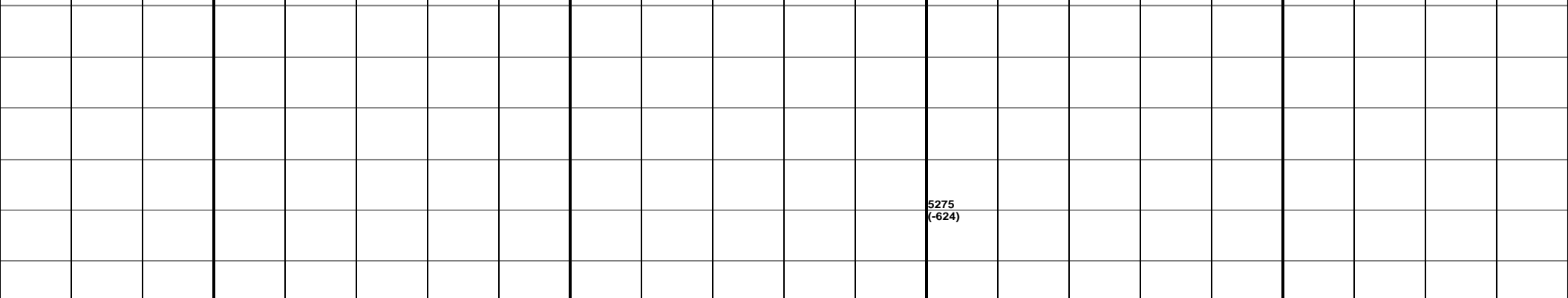


5650-5700 Mrlst med gy, sb blkly-sb pty, frm, chk, lt gy, sb blkly-pty, sft-sl frm, mottled ip, tr yel flor, slo cut, 80% mrlst, 20% chk	5700-5750 Chk, lt gy, sb blkly-pty, sft-sl frm, mottled ip, occ Mrlst med gy, sb blkly-sb pty, frm, g tr yel flor, slo cut, 85% chk, 15% mrlst	5750-5800 Chk, lt gy, sb blkly-pty, sft-sl frm, mottled ip, occ Mrlst med gy, sb blkly-sb pty, frm, rr yel flor, g tr inoc, slo cut, 75% chk, 25% mrlst	5800-5835 Chk, lt gy, sb blkly-pty, sft-sl frm, mottled ip, occ Mrlst med gy, sb blkly-sb pty, frm, rr yel flor, tr inoc, mod fst cut, 85% chk, 15% mrlst	5835-5900 Chk lt blkly-sb pty, sft, tr blkly-sb blkly, frm, inoc, mod cut, 90%
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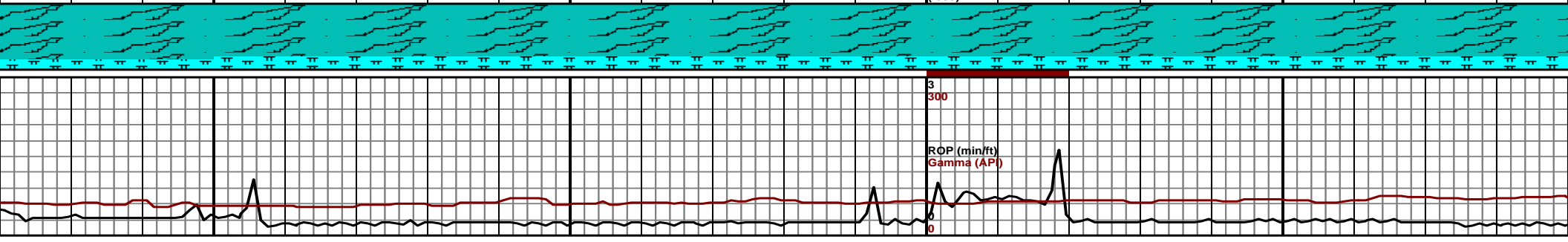


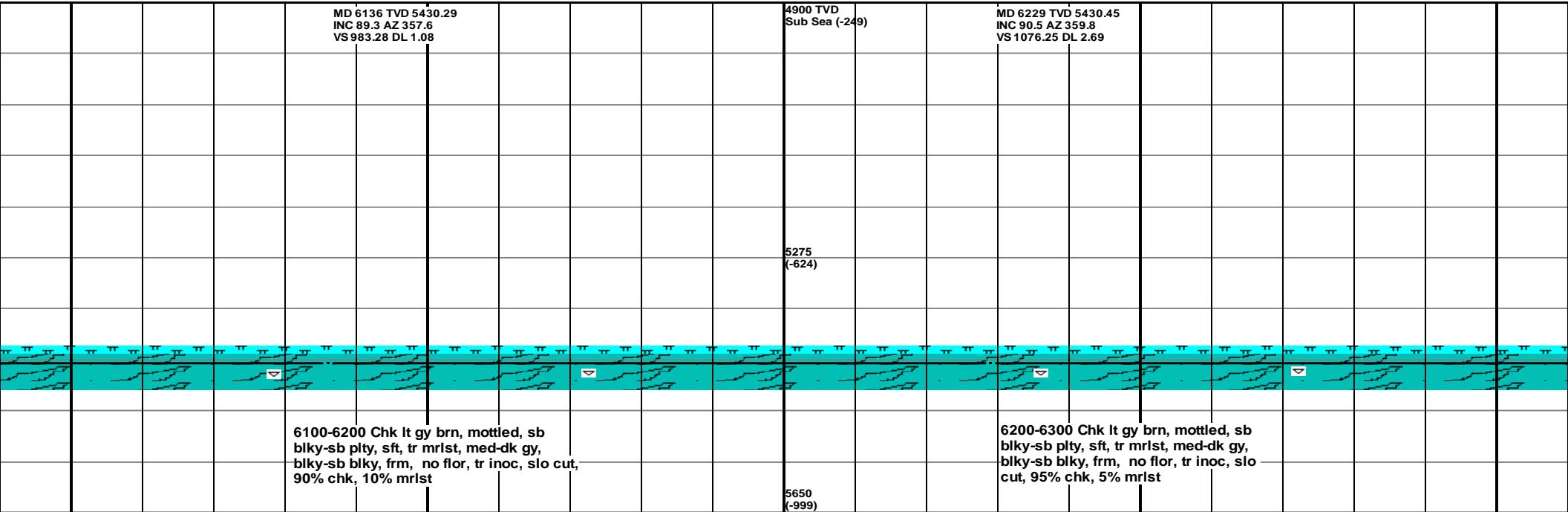


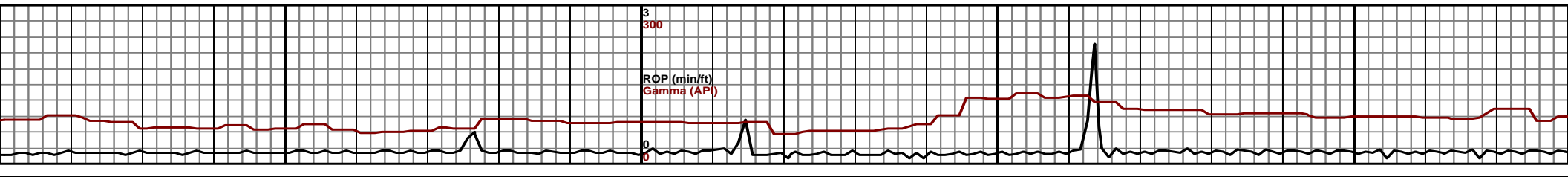
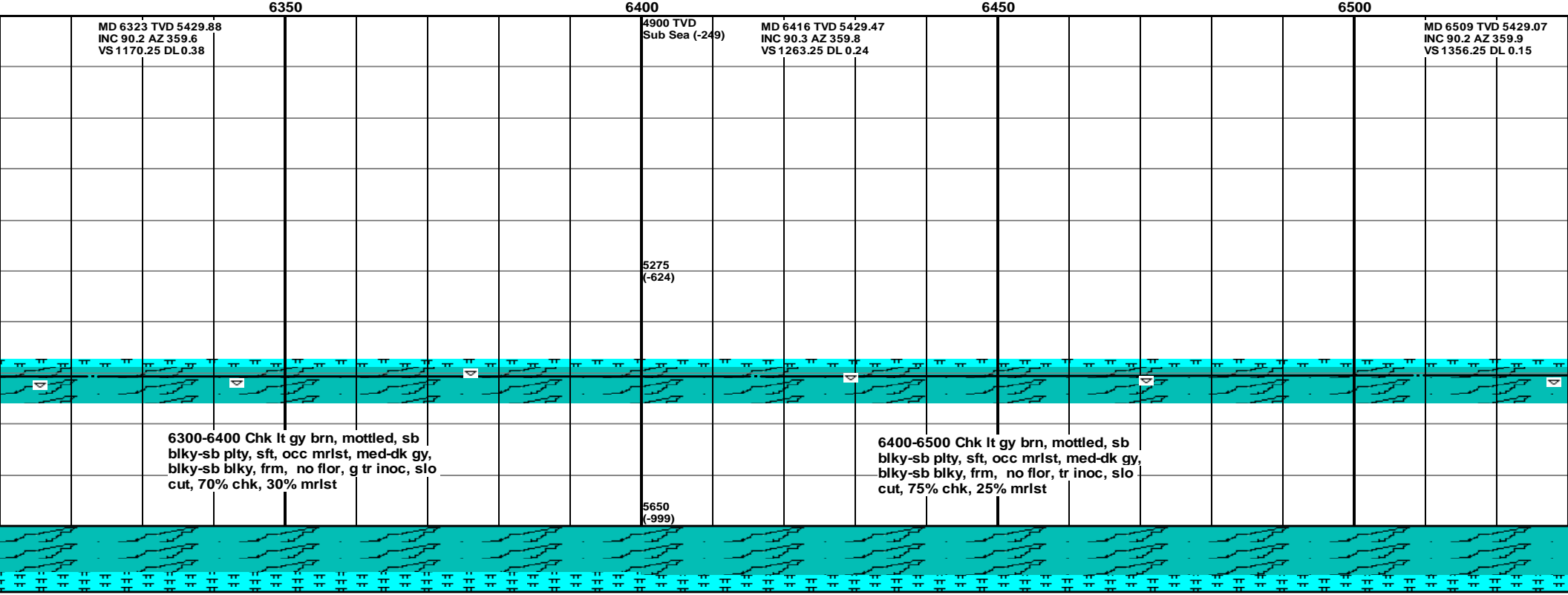
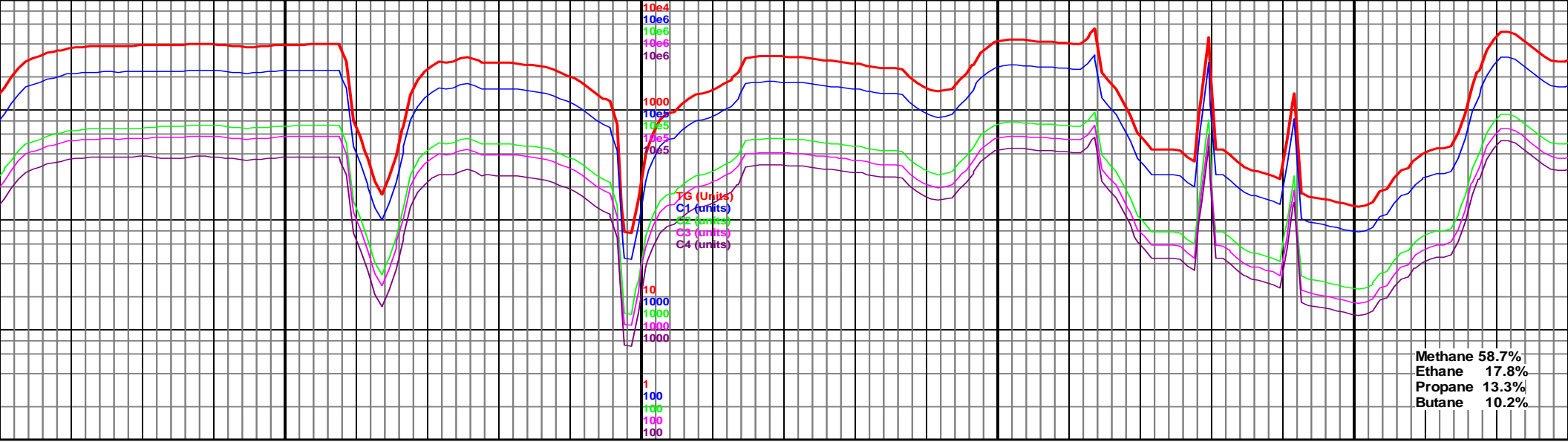
MD 5949 TVD 5428.98 INC 88.9 AZ 359.2 VS 796.38 DL 0.78	MD 6043 TVD 5429.8 INC 90.1 AZ 358.2 VS 890.35 DL 1.66
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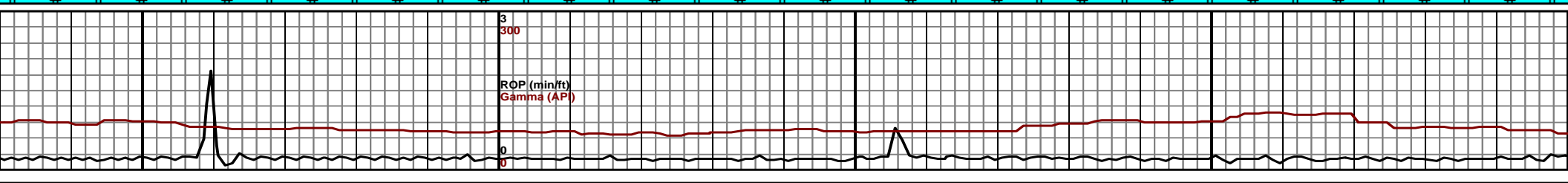
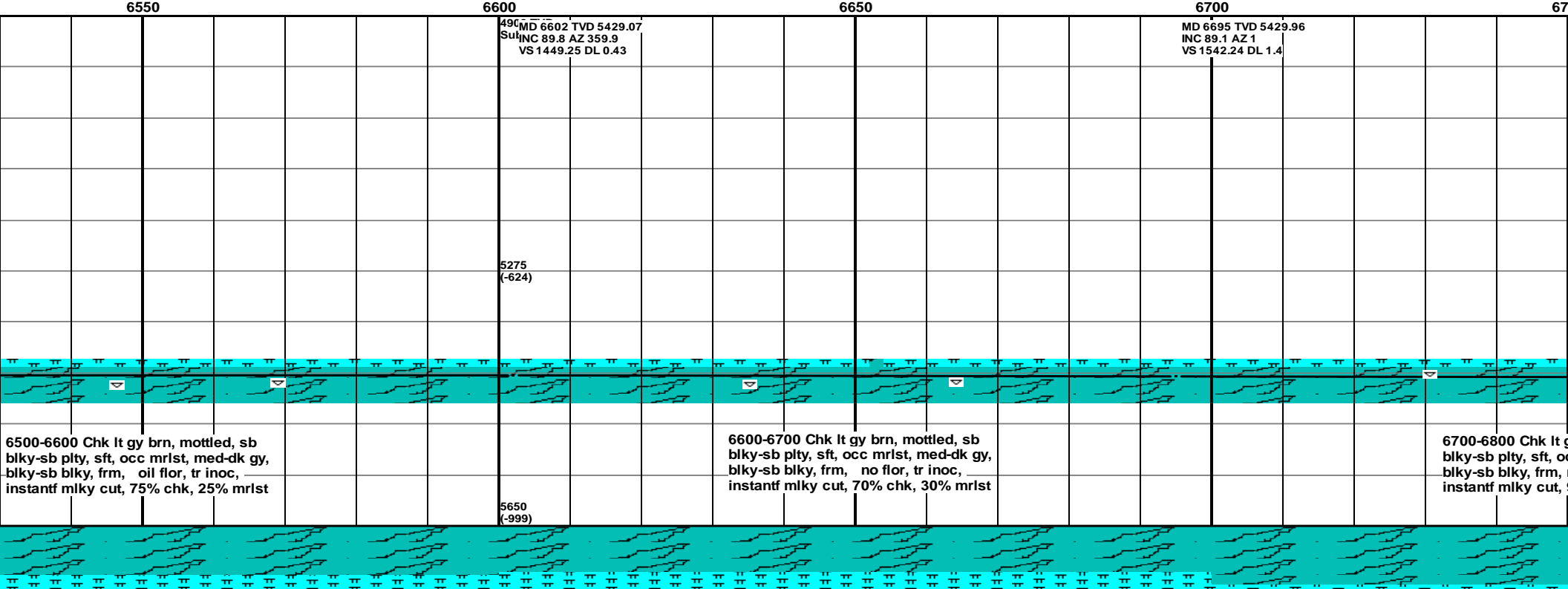
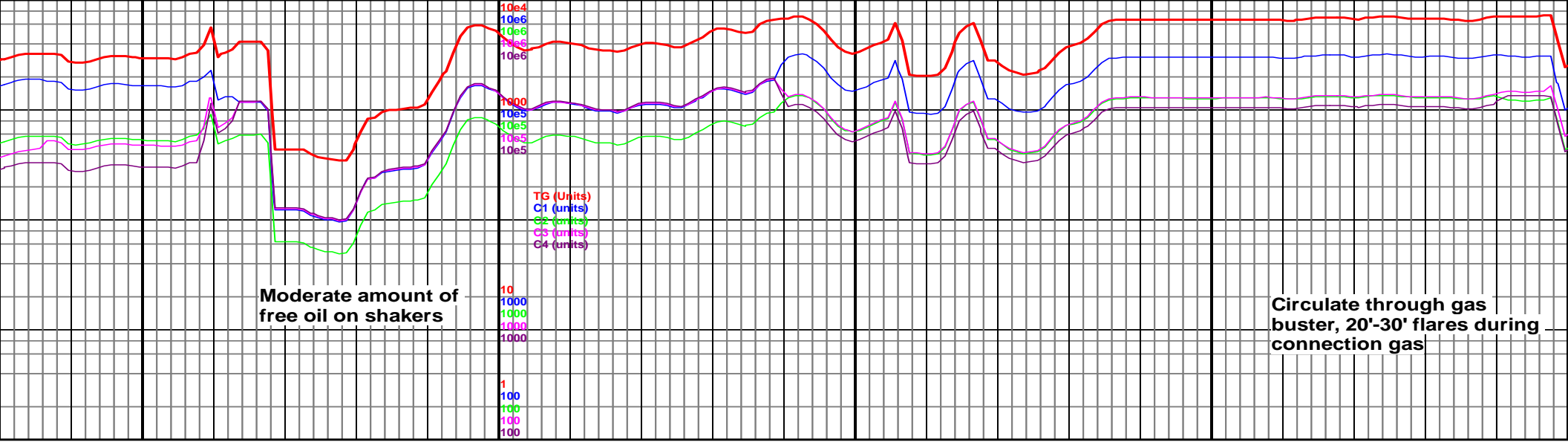


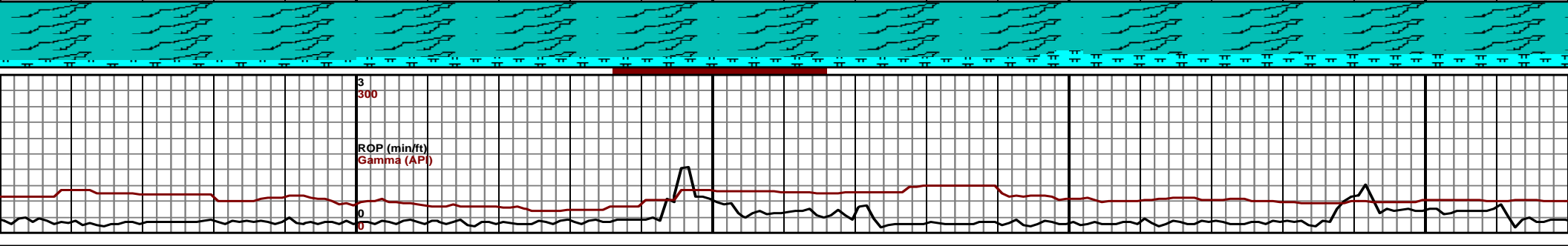
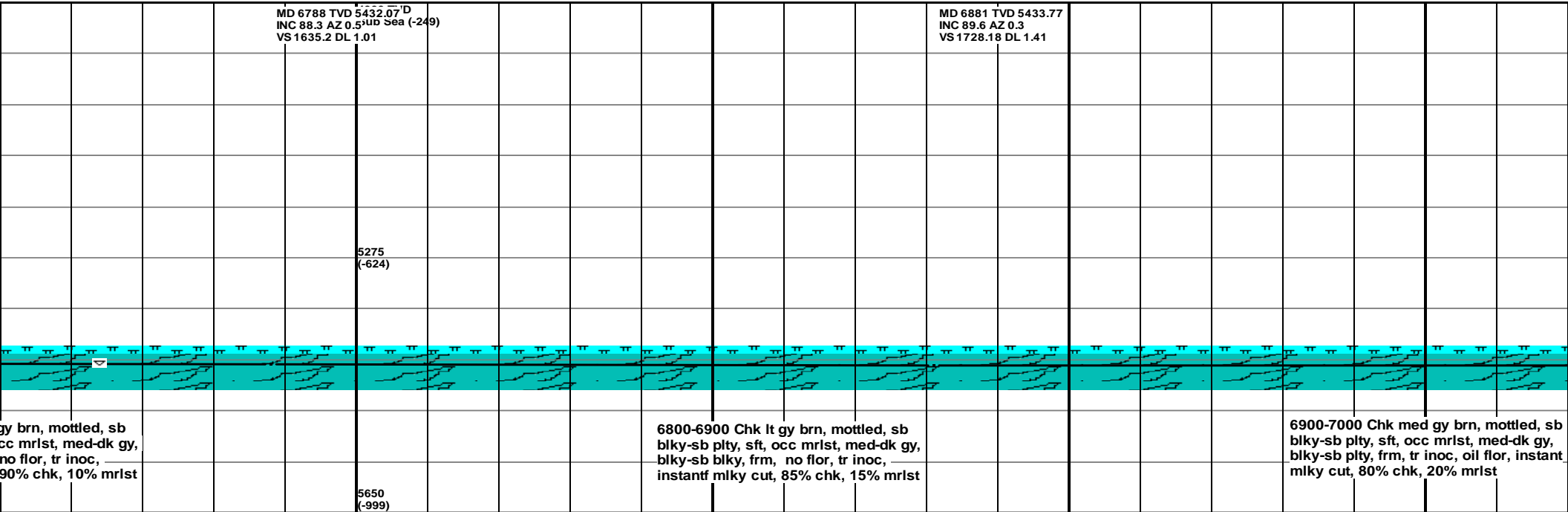
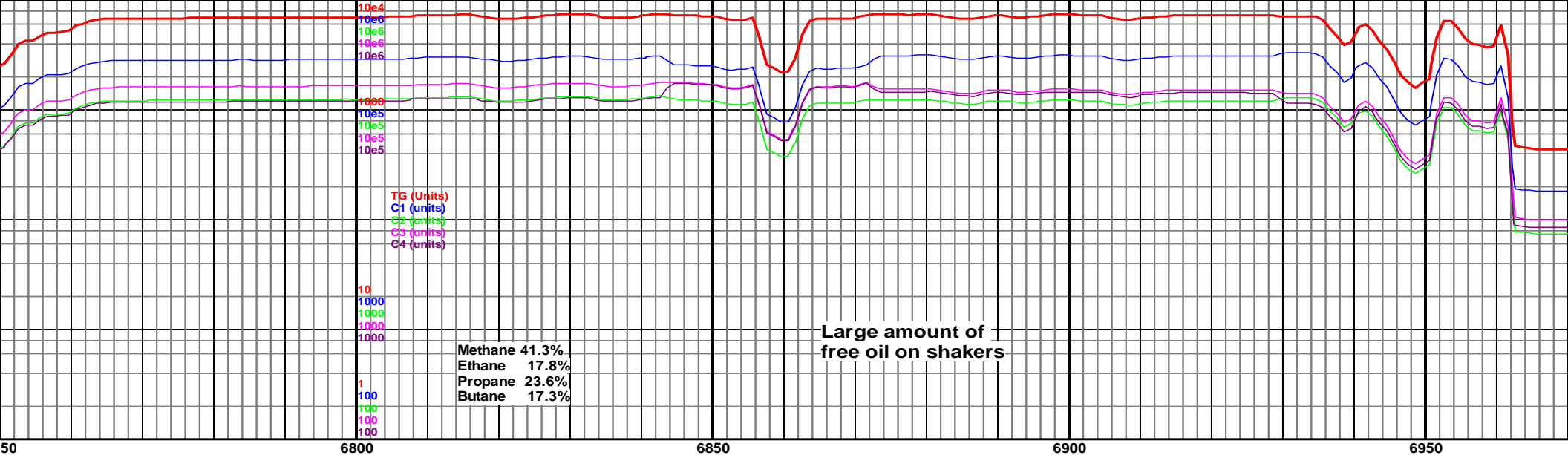
gy brn, mottled, sb mrlist, med-dk gy, abnt dull orng flor, rr % chk, 10% mrlist	5900-6000 Chk lt gy brn, mottled, sb blky-sb plty, sft, tr mrlist, med-dk gy, blky-sb blky, frm, tr cement in spl, no flor, rr inoc, slo cut, 85% chk, 15% mrlist	6000-6100 Chk lt gy brn, mottled, sb blky-sb plty, sft, tr mrlist, med-dk gy, blky-sb blky, frm, no flor, rr inoc, slo cut, 80% chk, 20% mrlist
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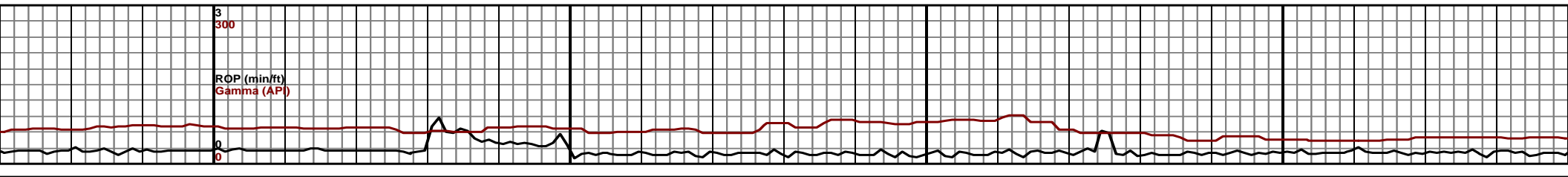
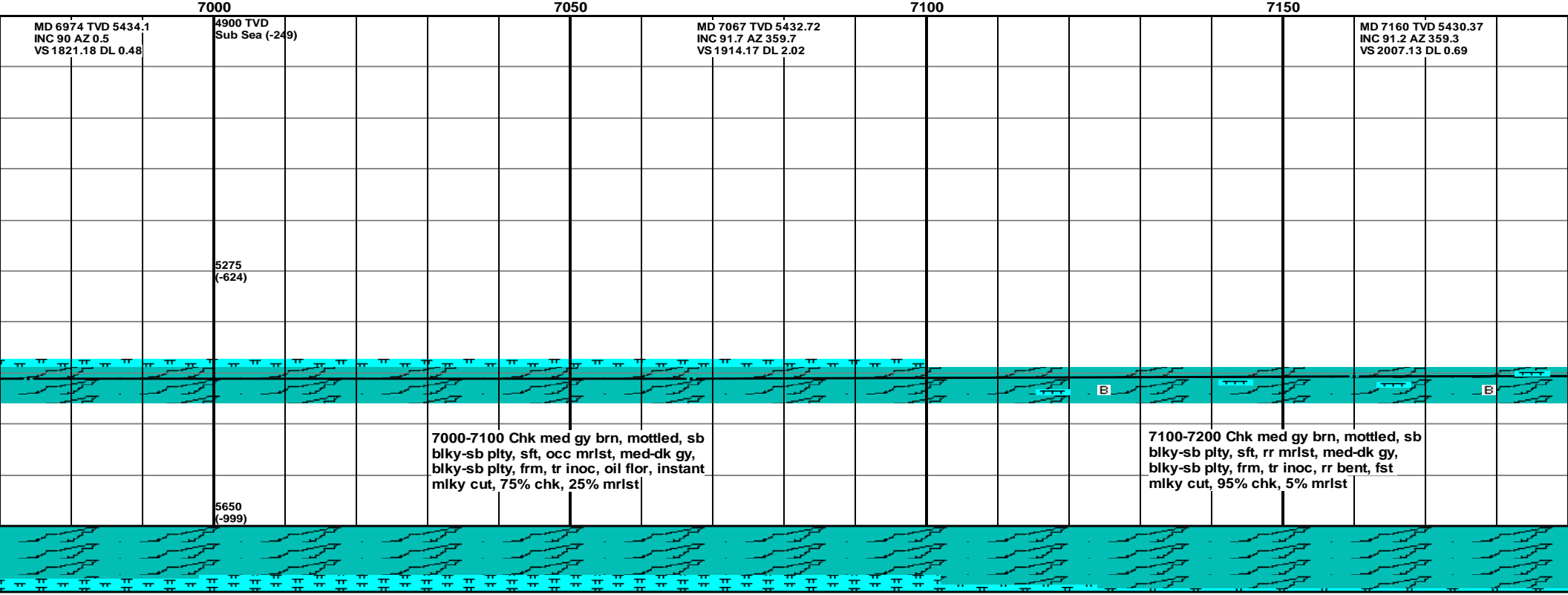
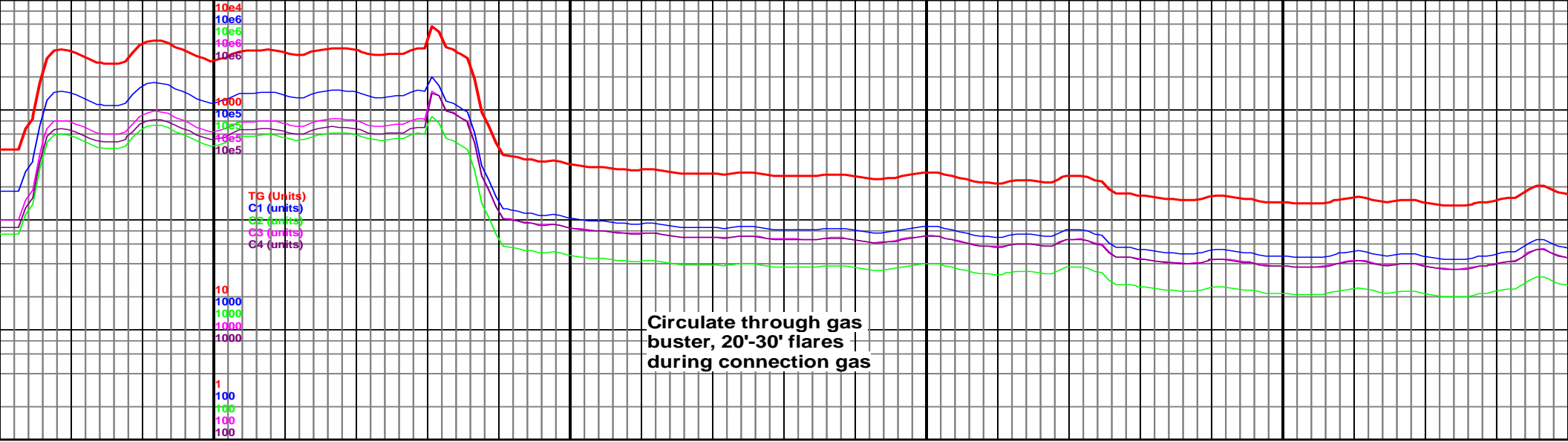


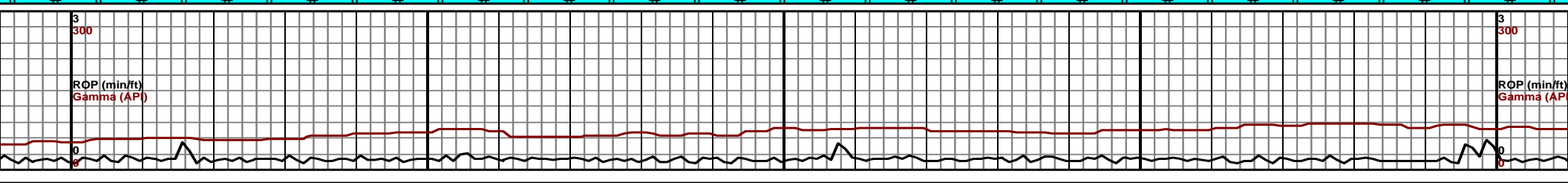
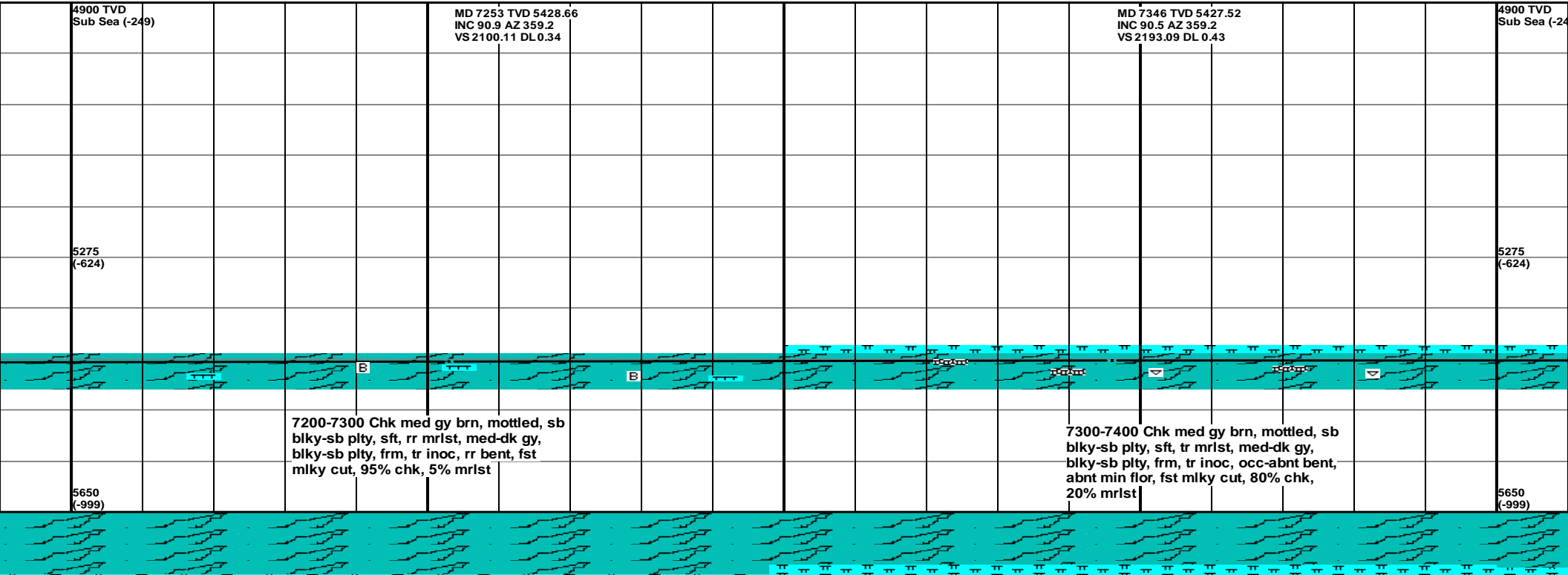
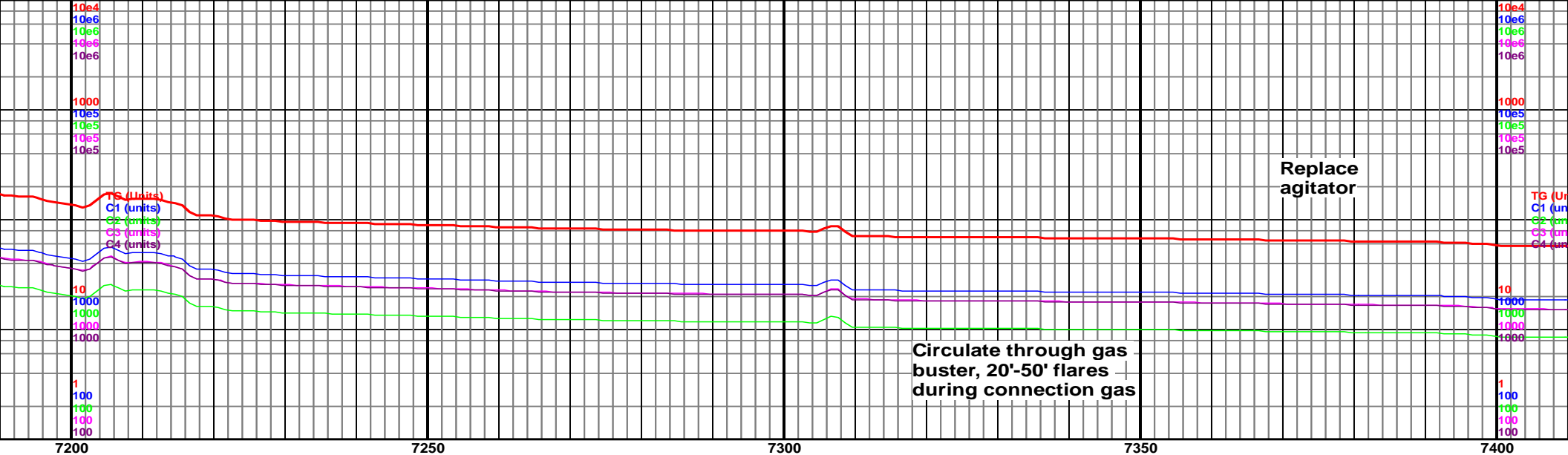


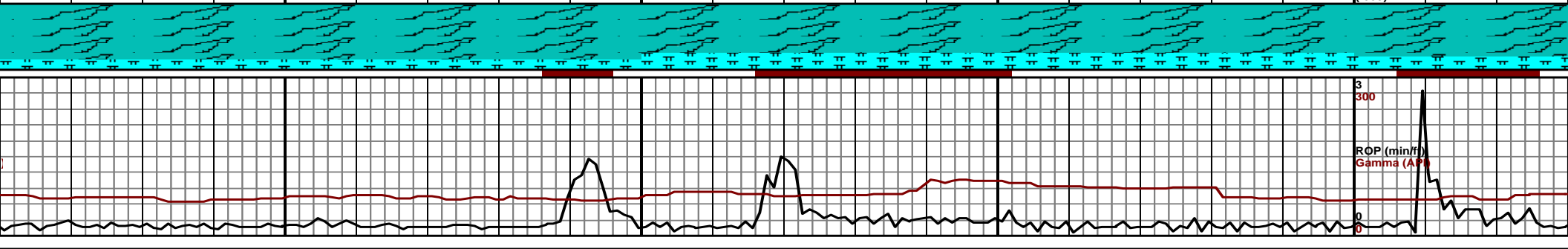
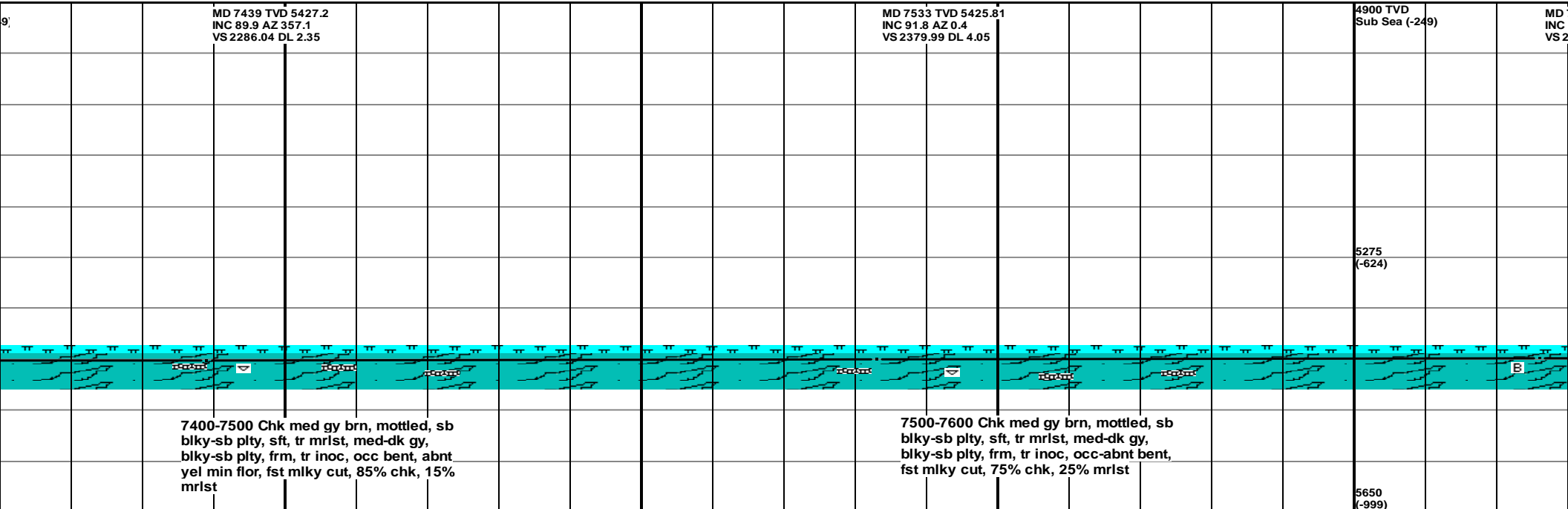
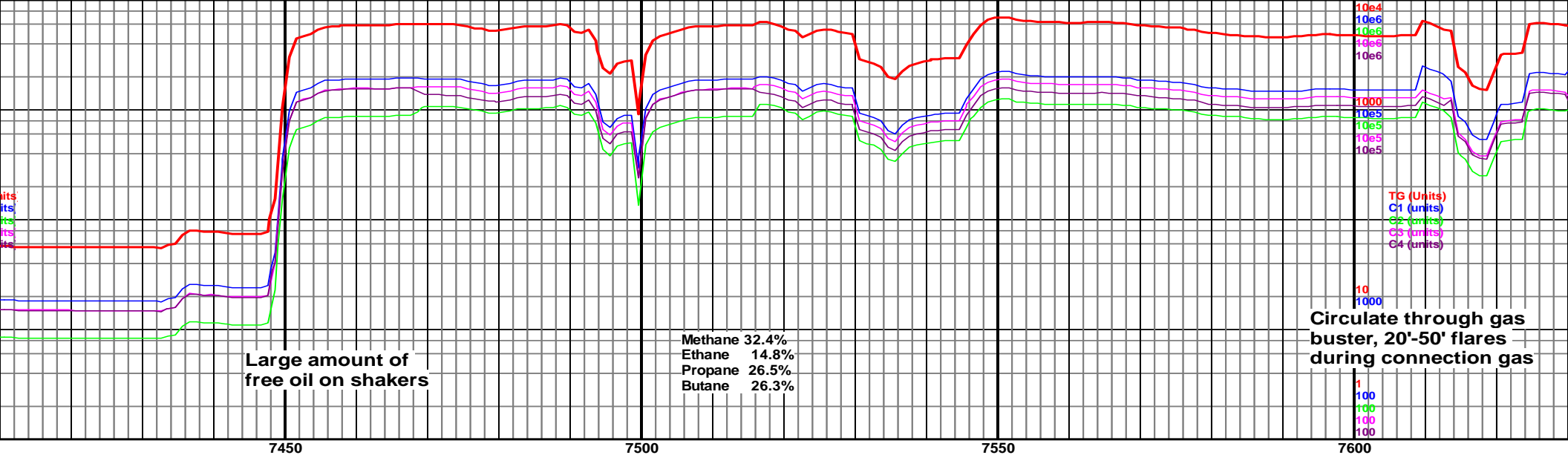


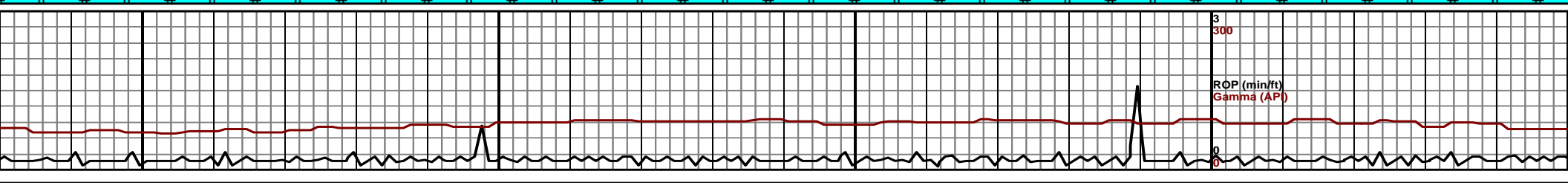
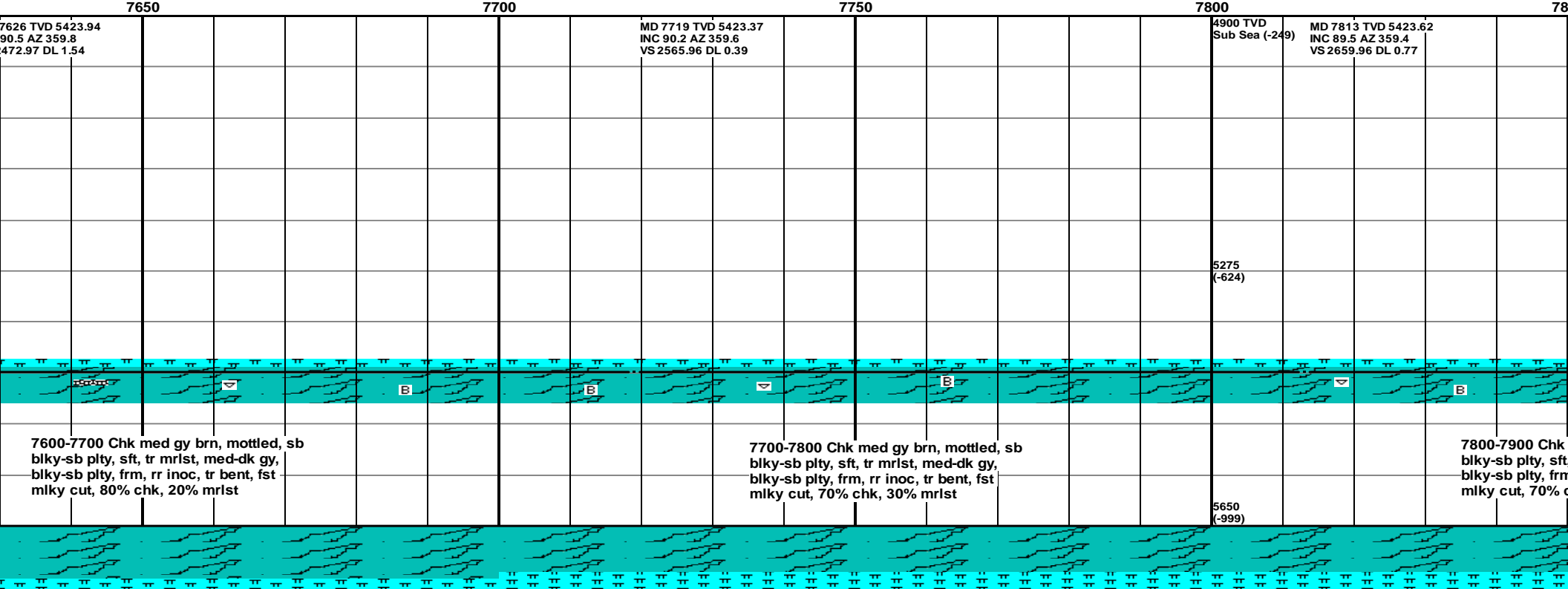
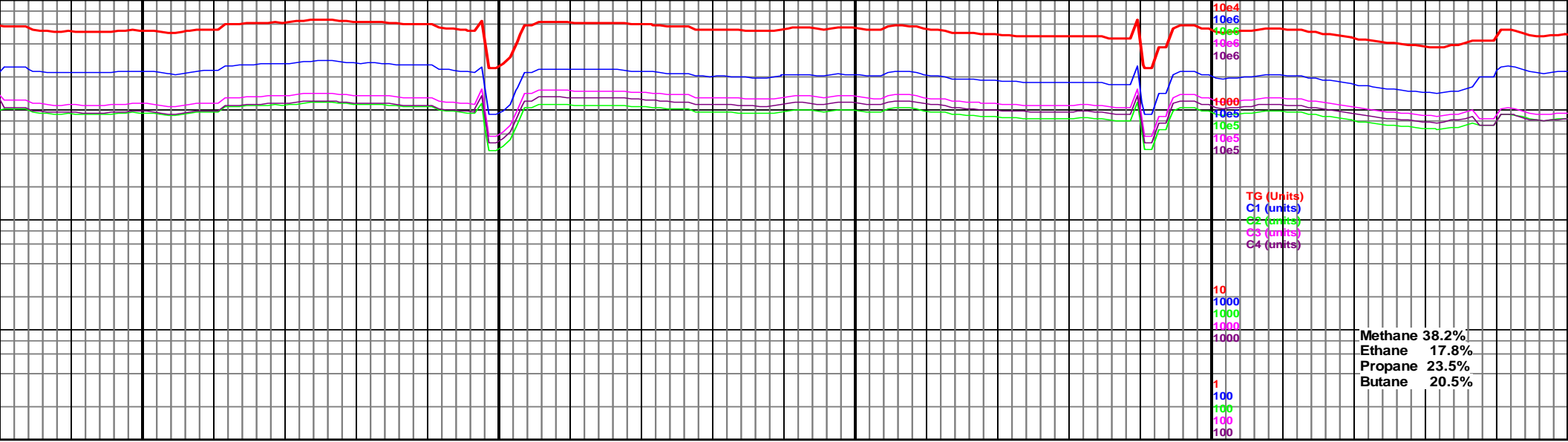


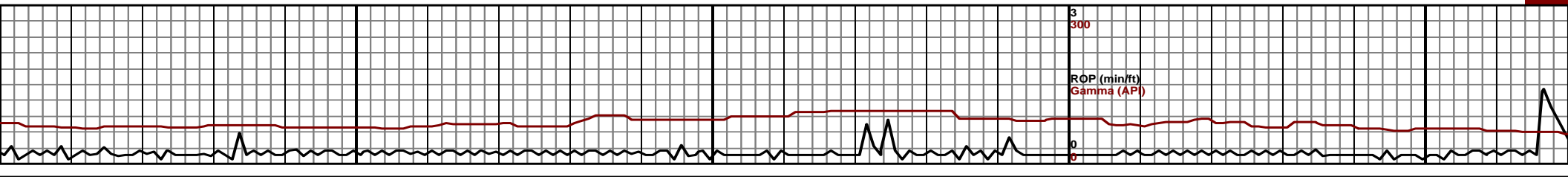
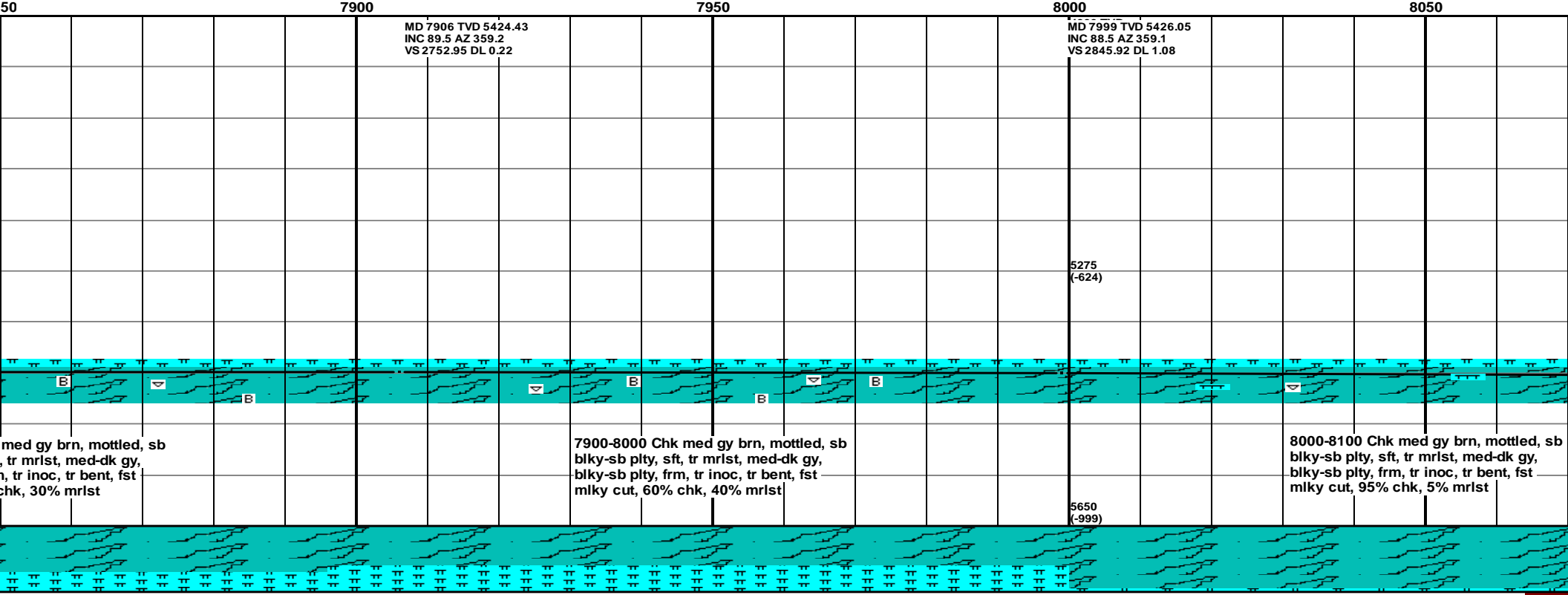
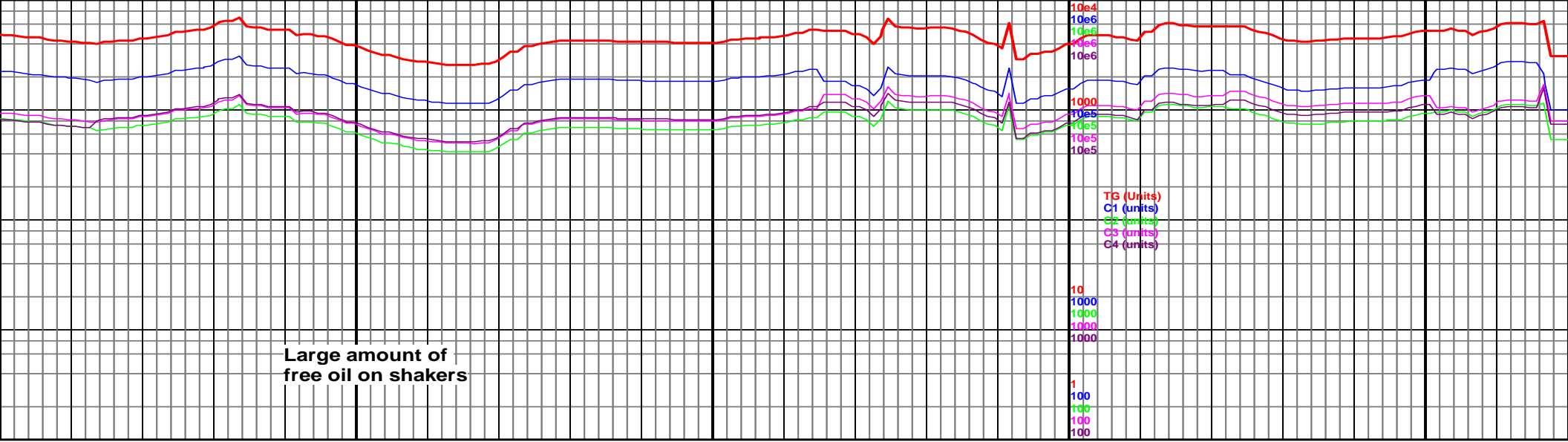


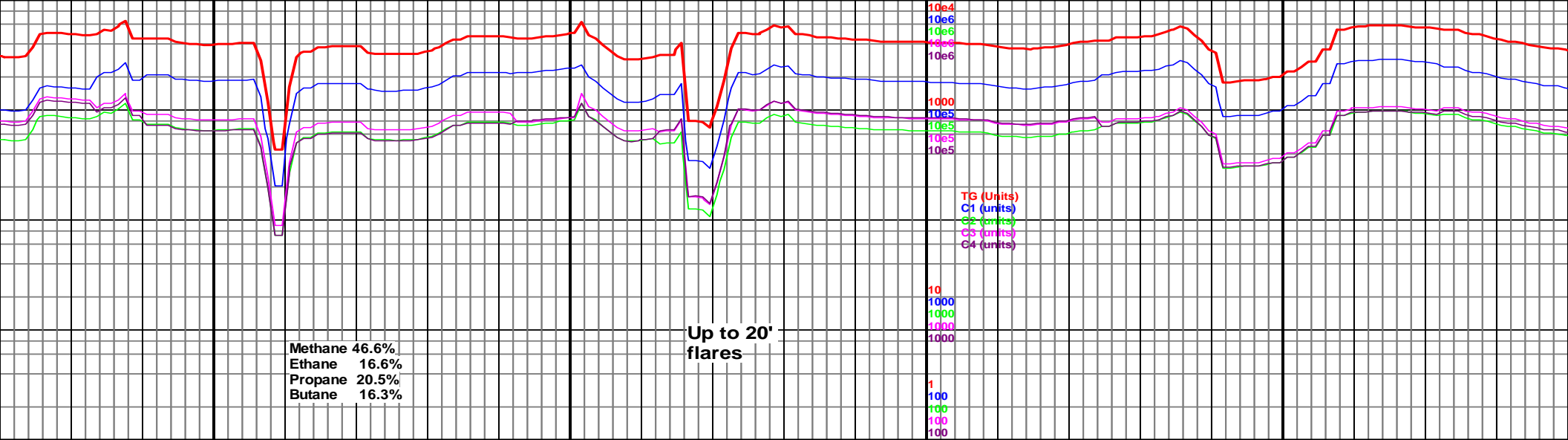






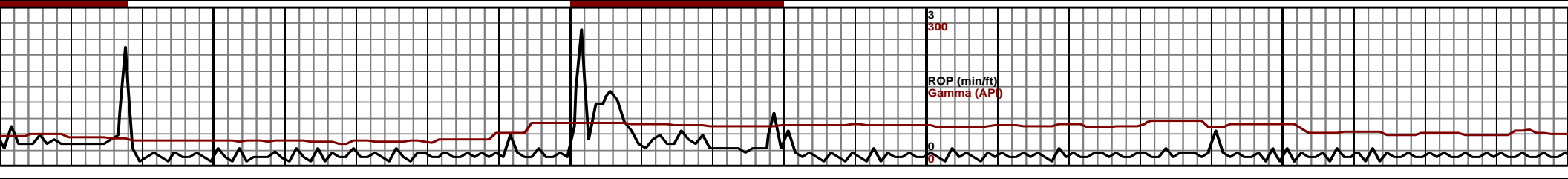
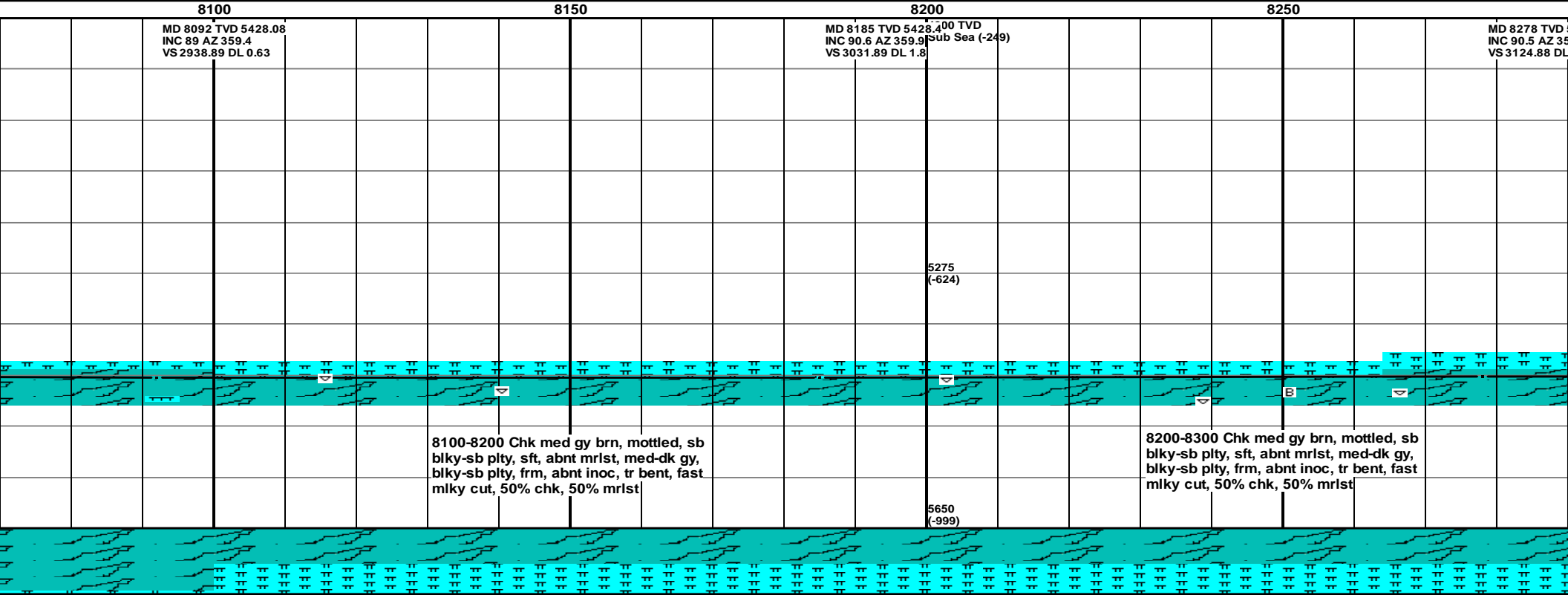


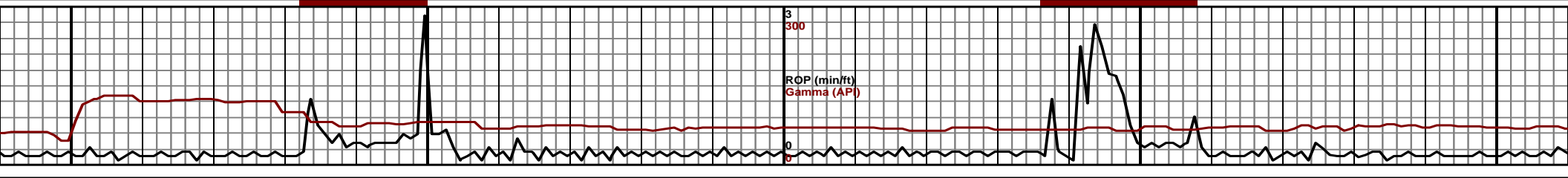
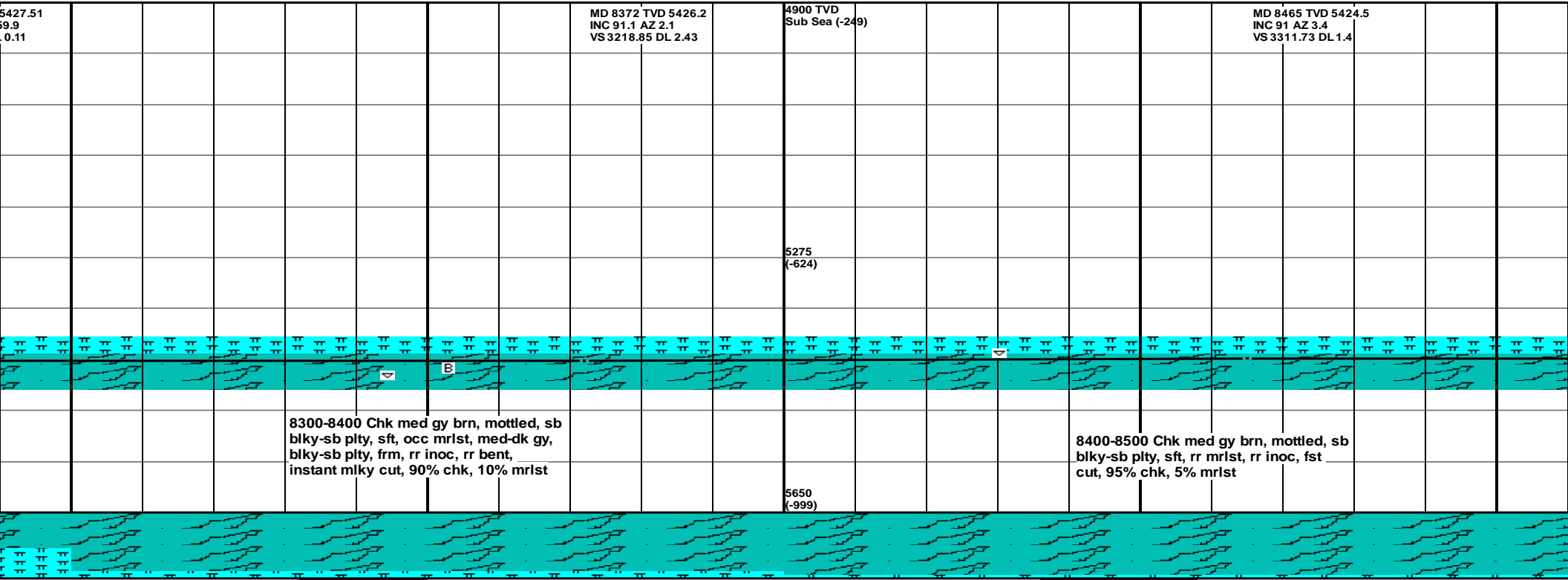
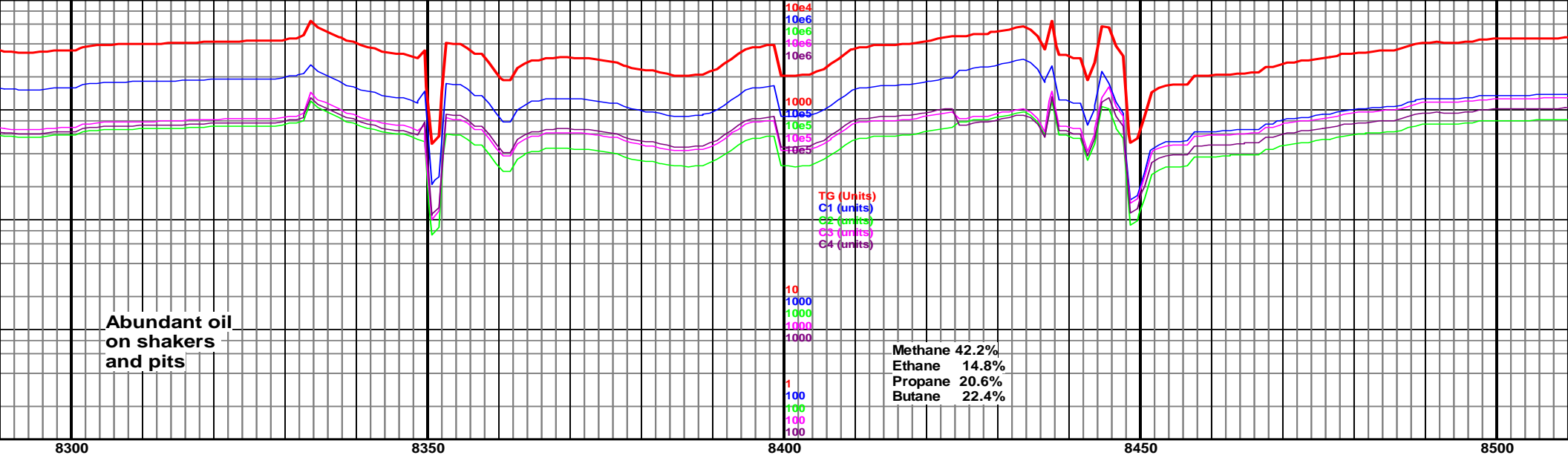


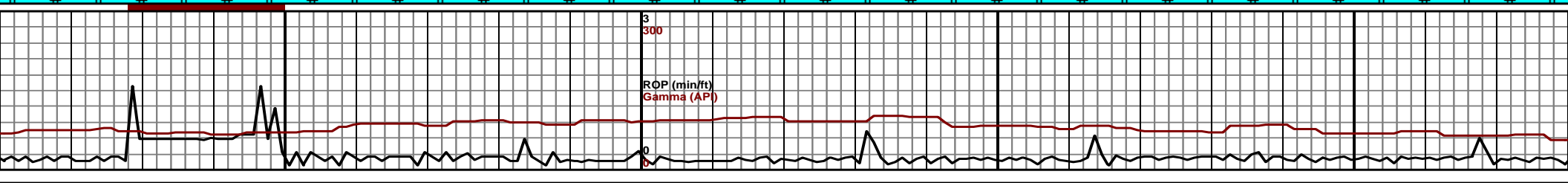
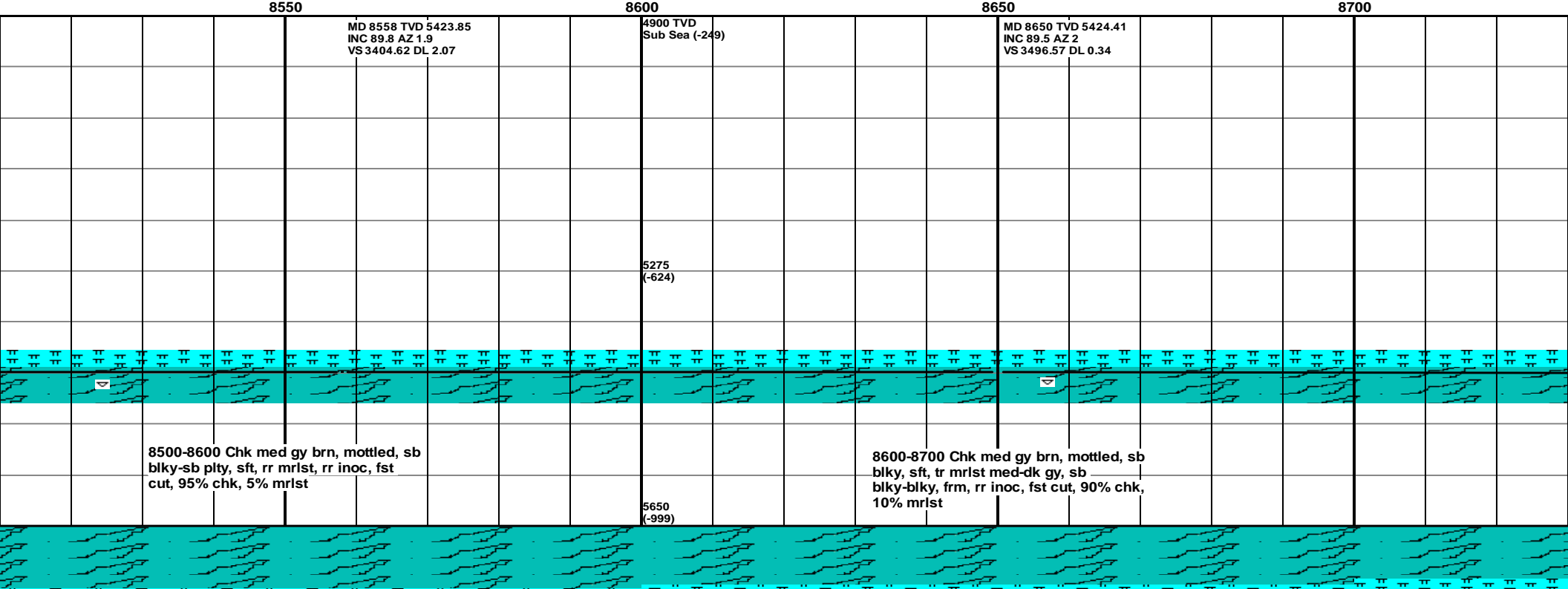
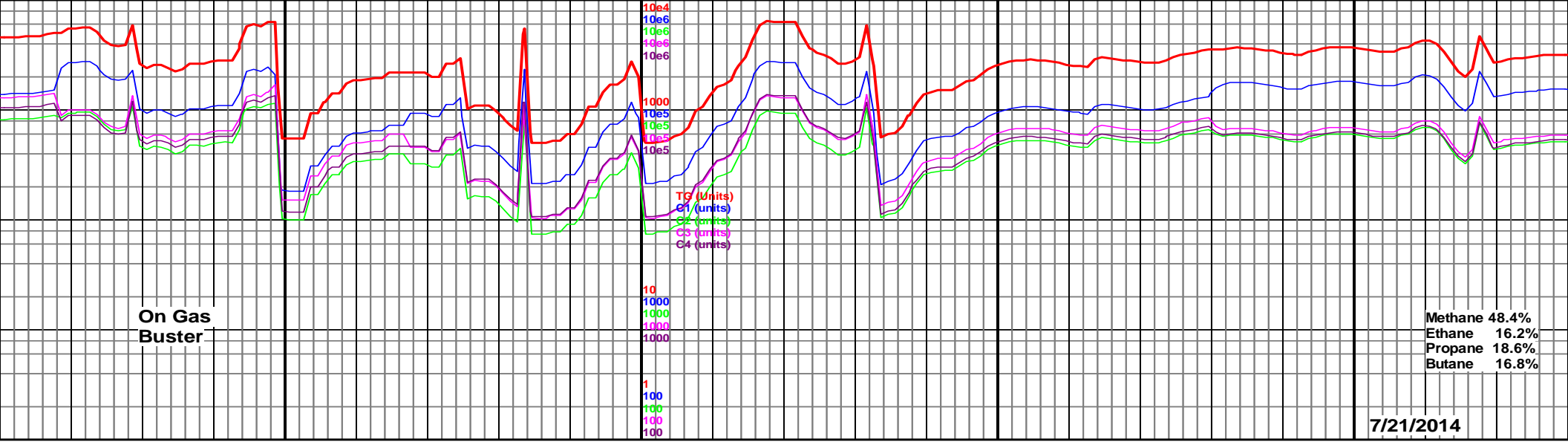


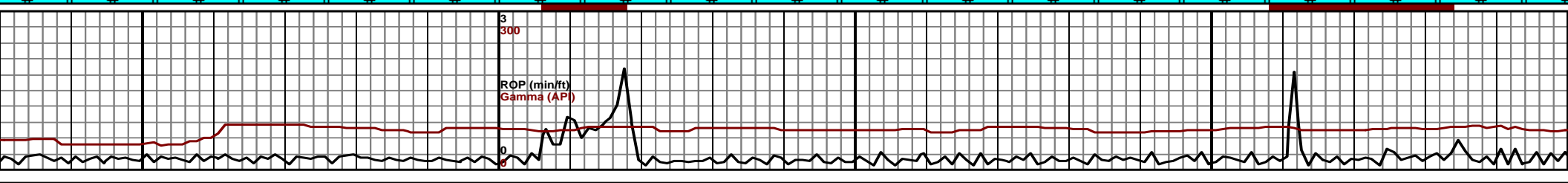
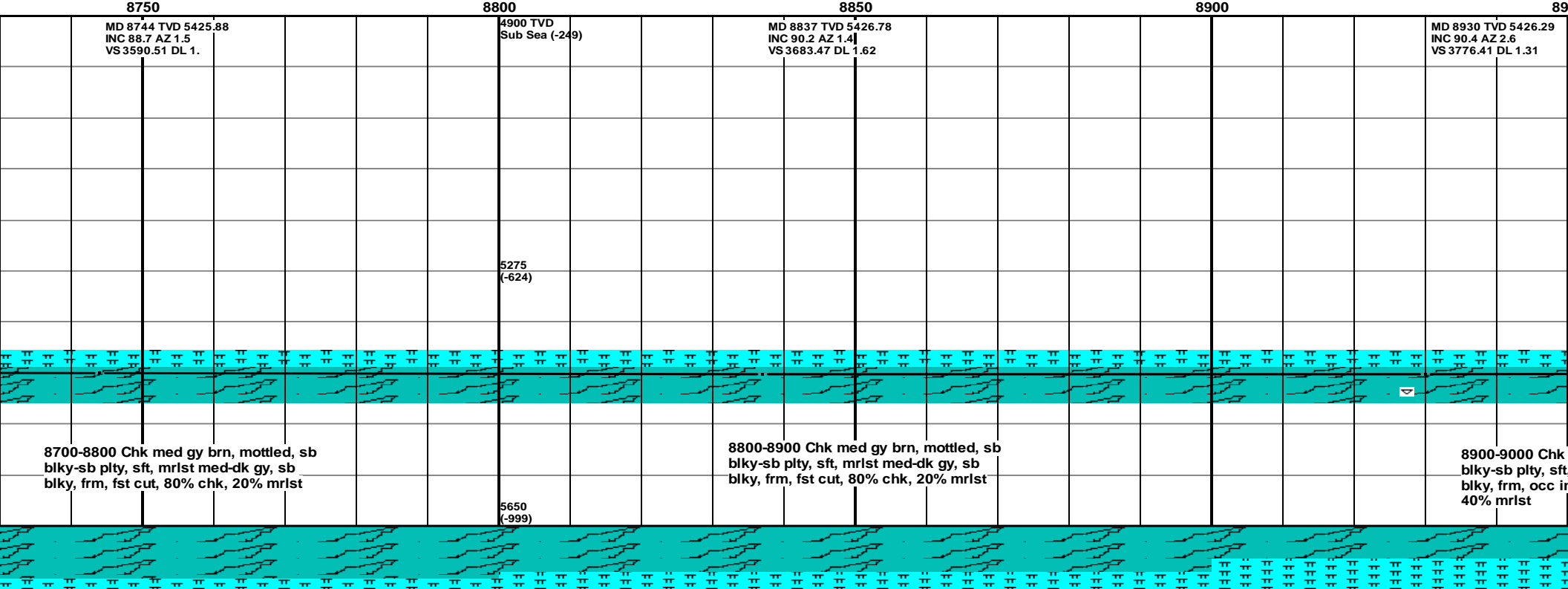
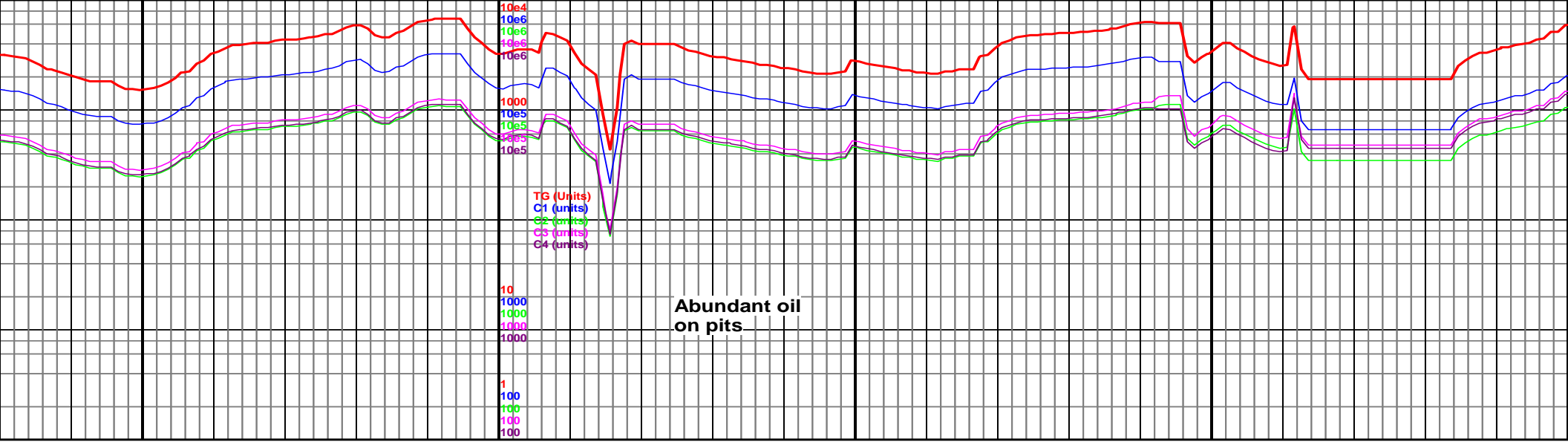
Methane 46.6%
Ethane 16.6%
Propane 20.5%
Butane 16.3%

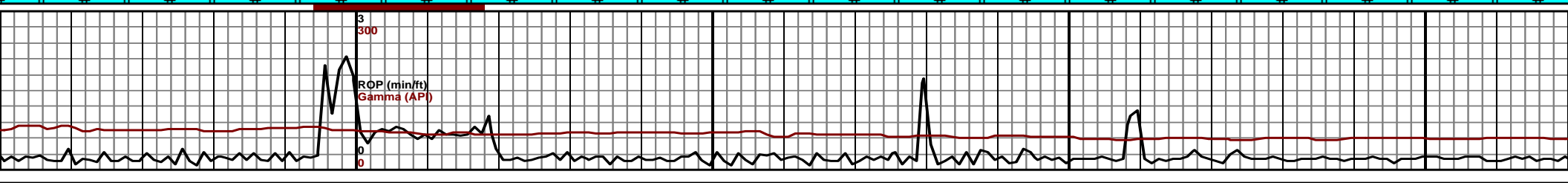
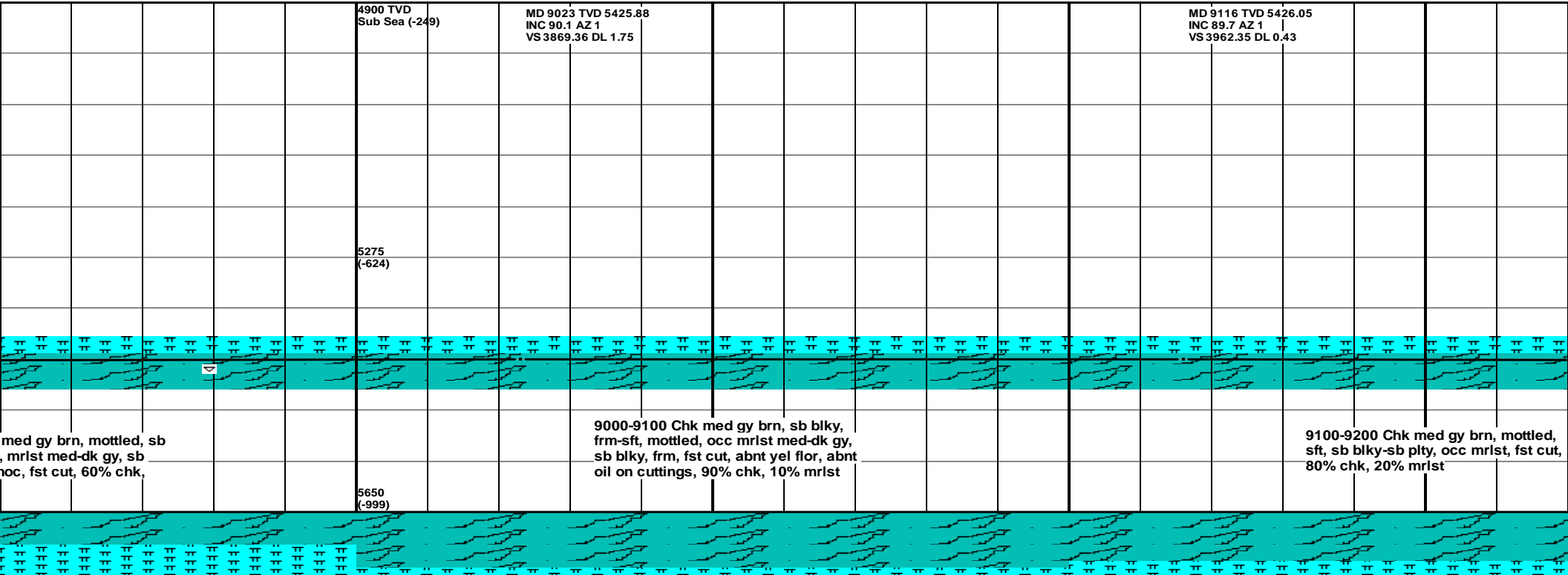
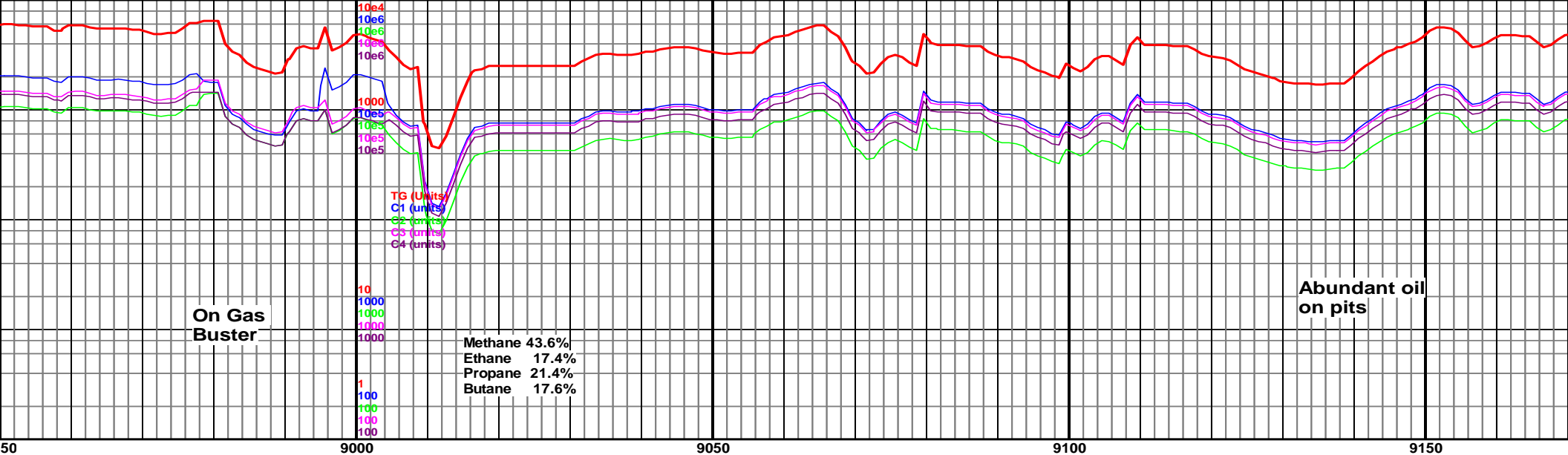
Up to 20'
flares

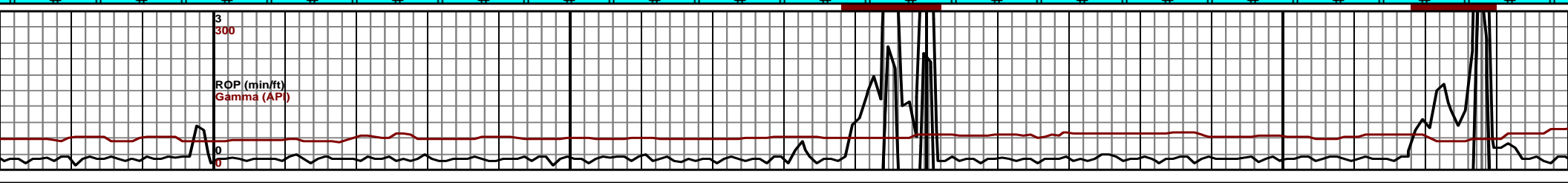
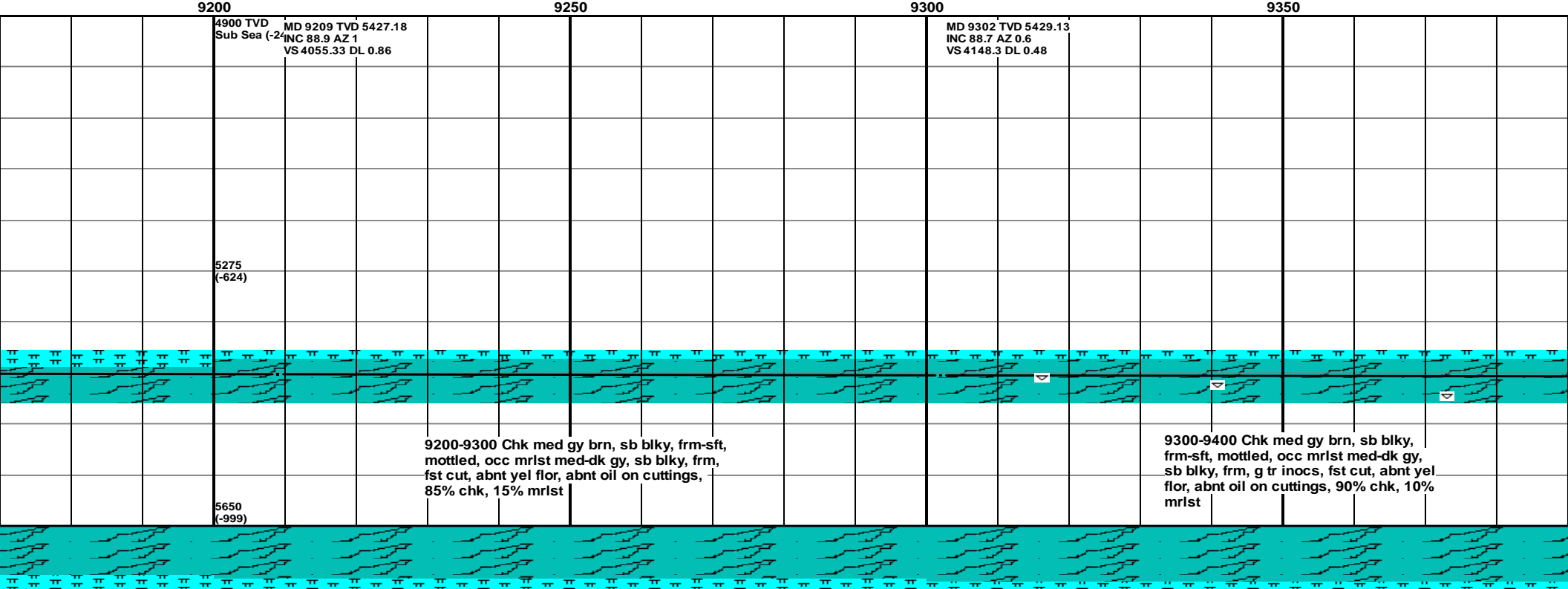
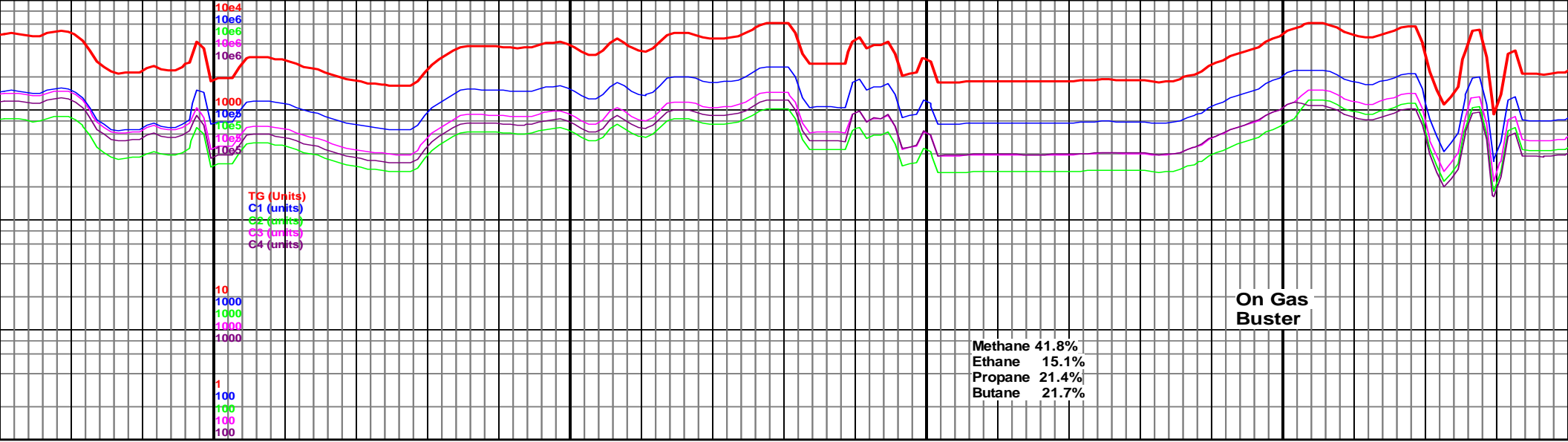


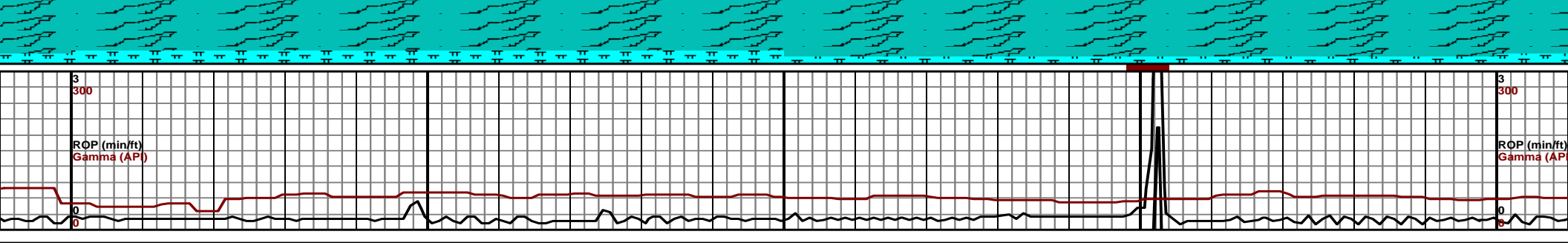
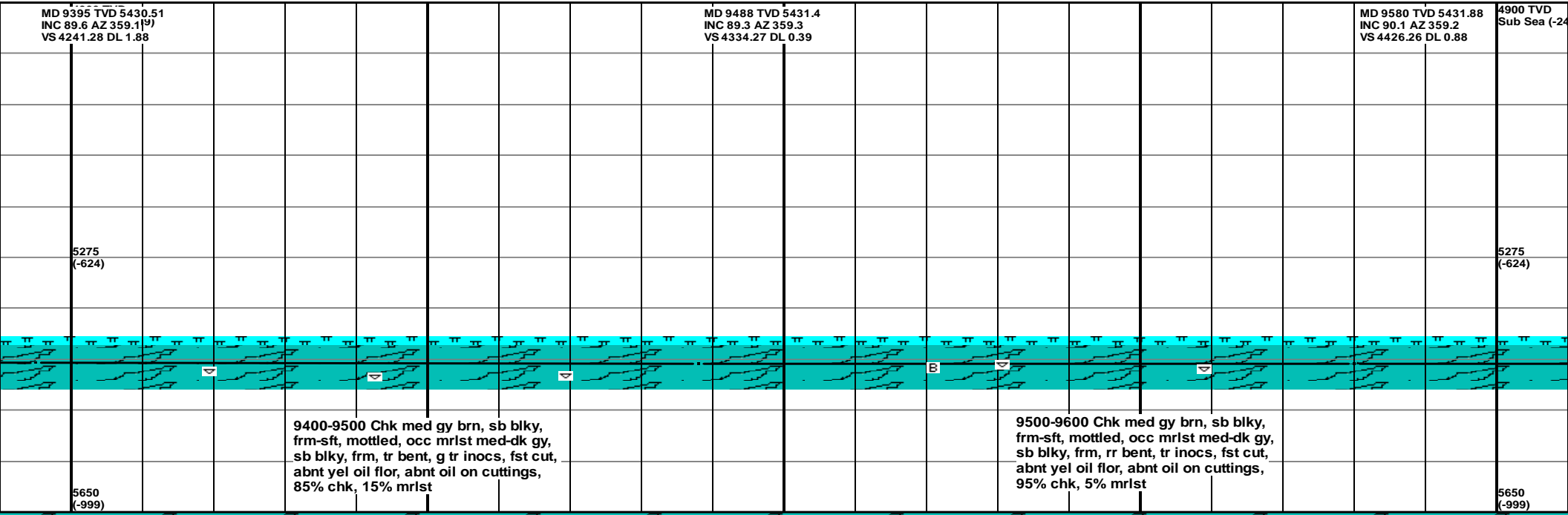
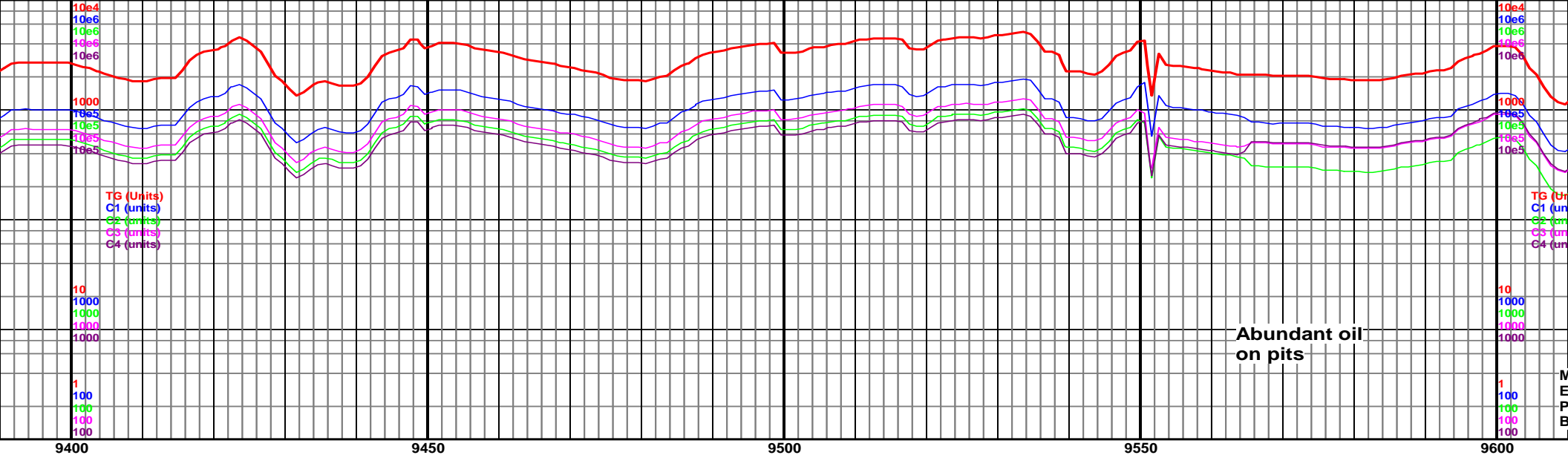


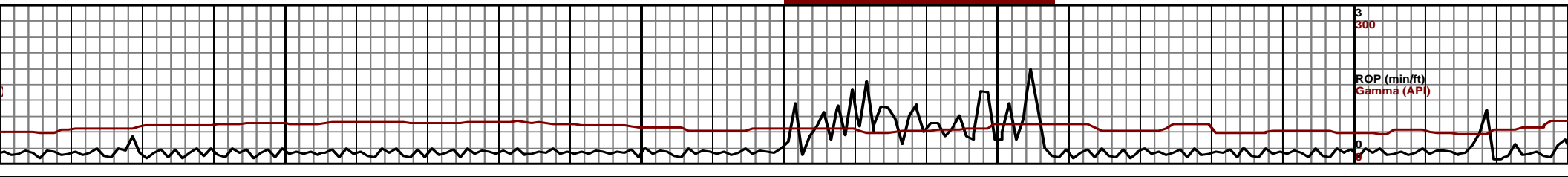
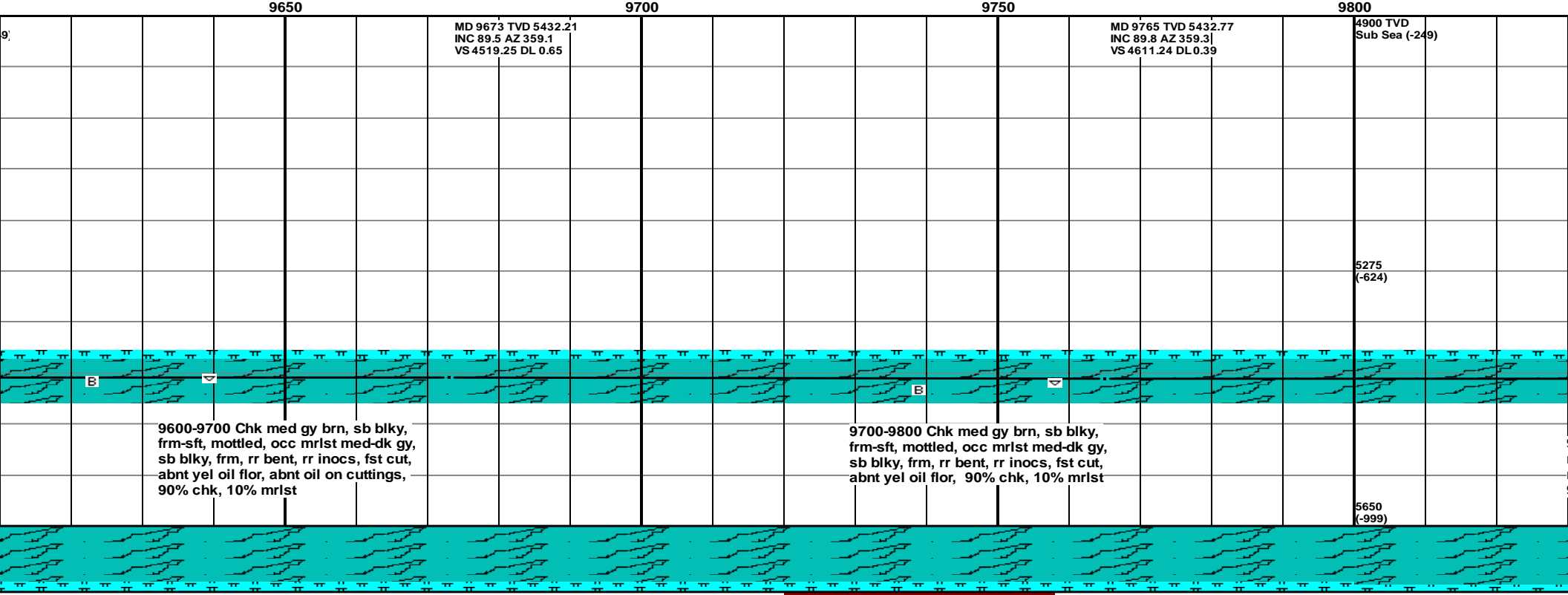
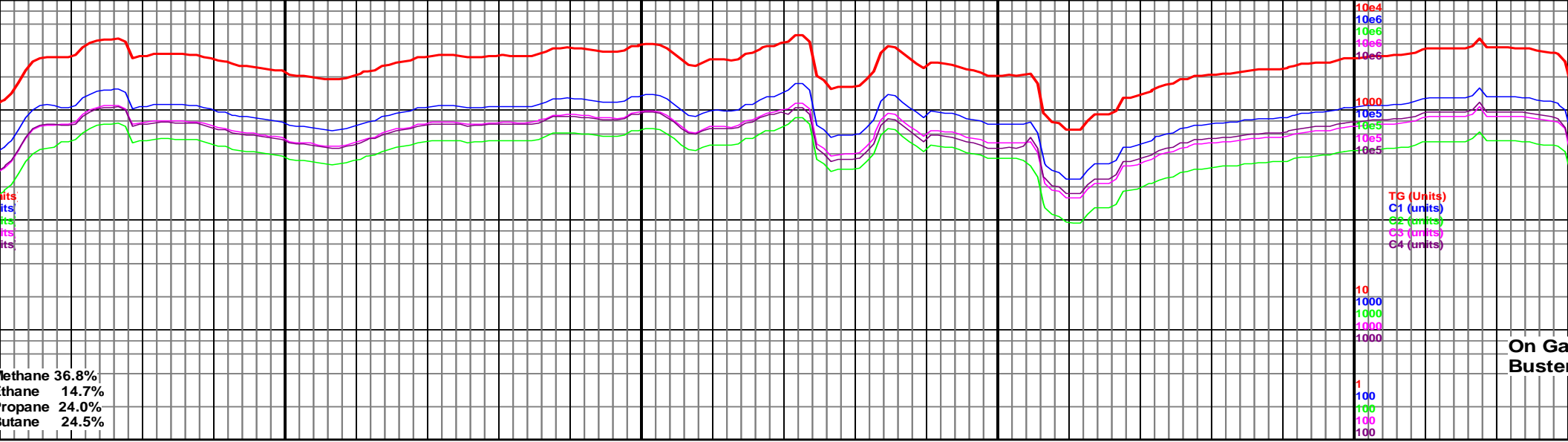


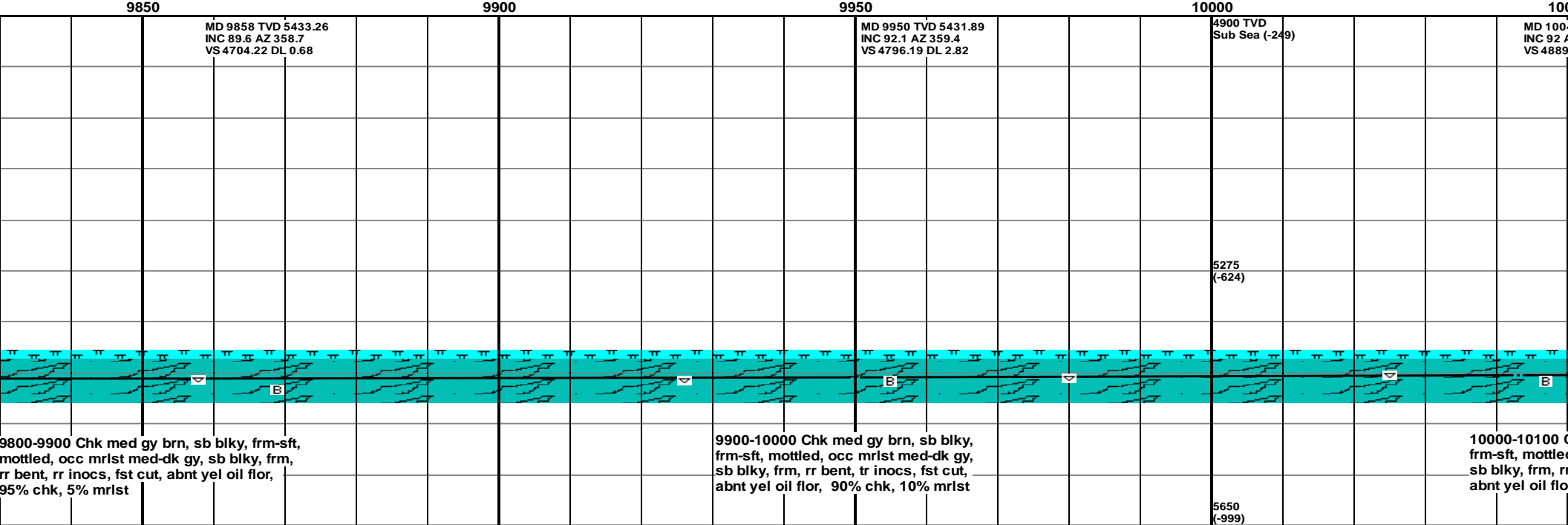
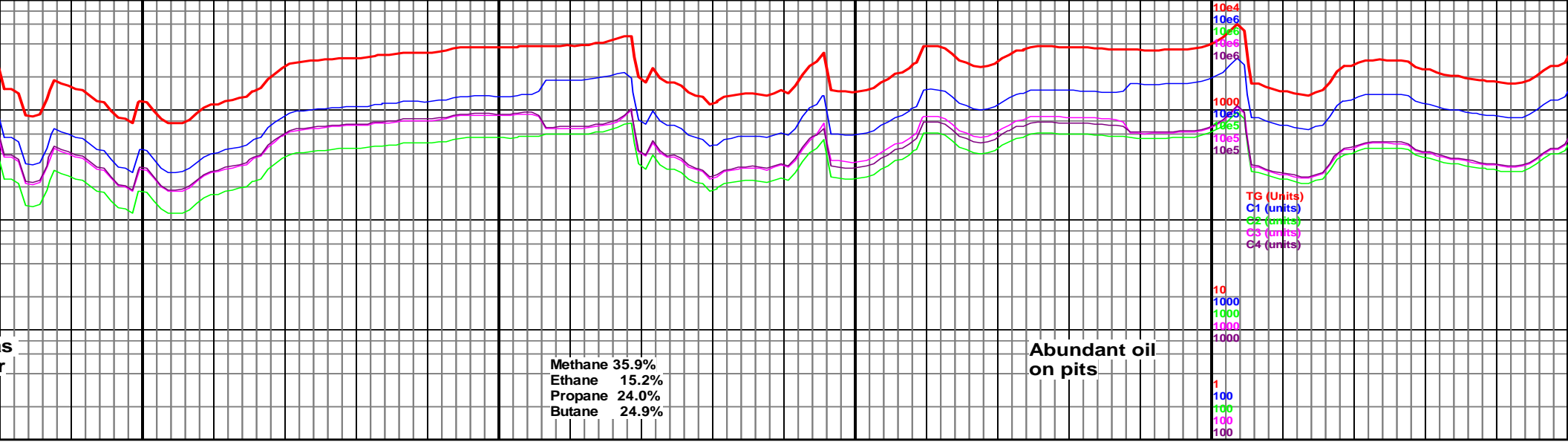


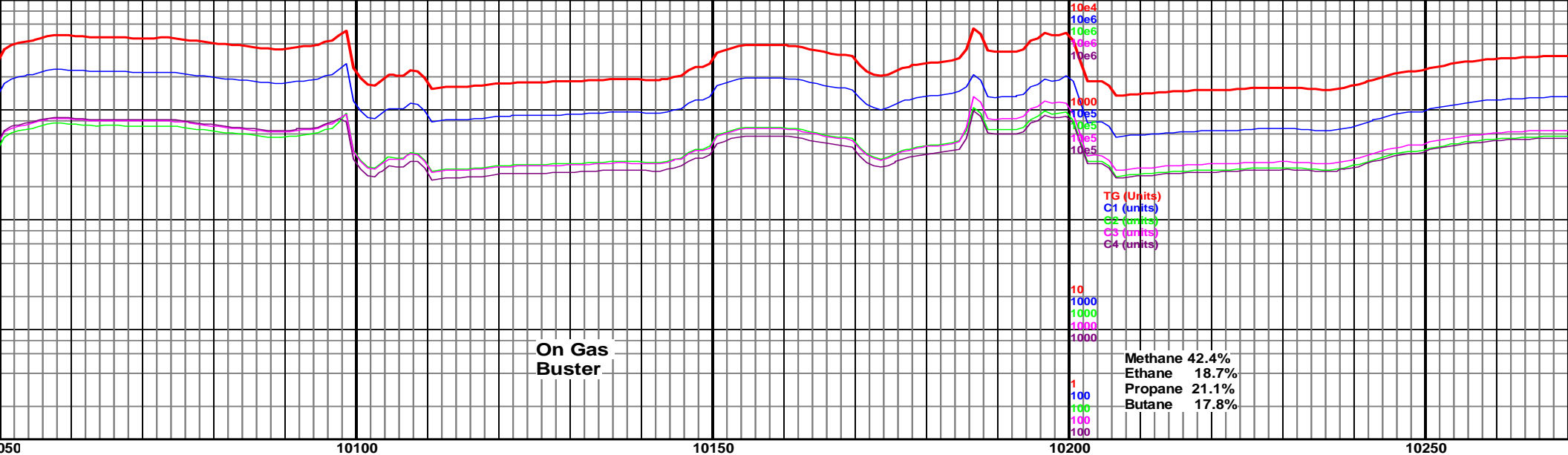




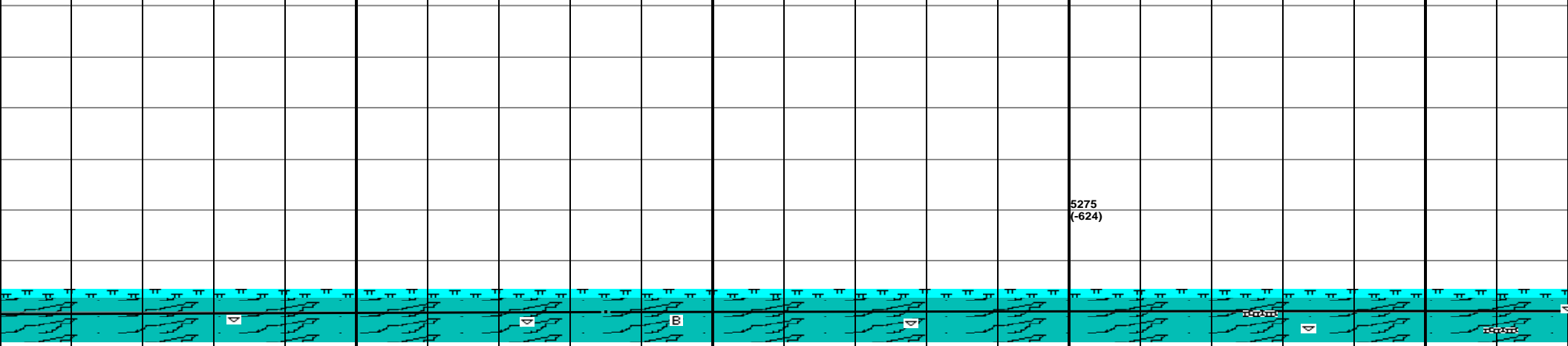




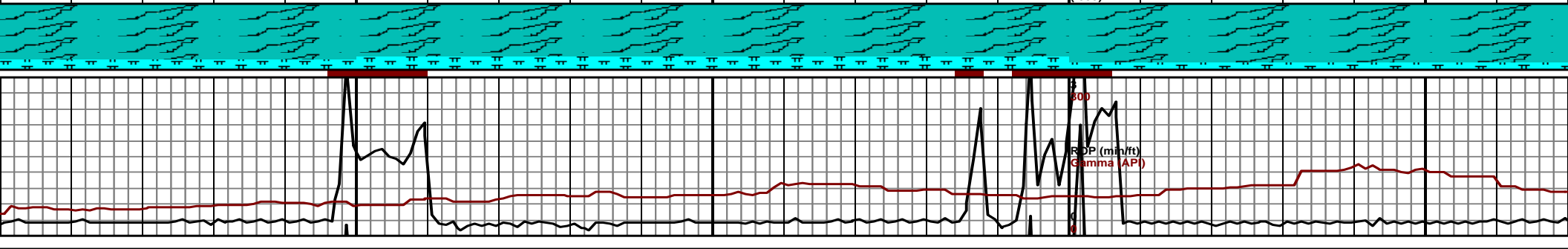


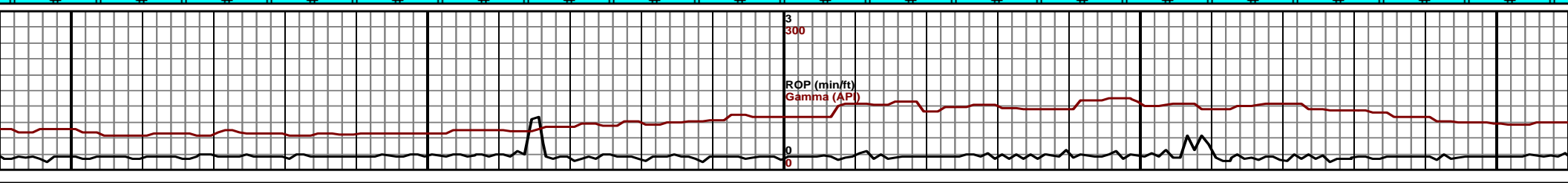
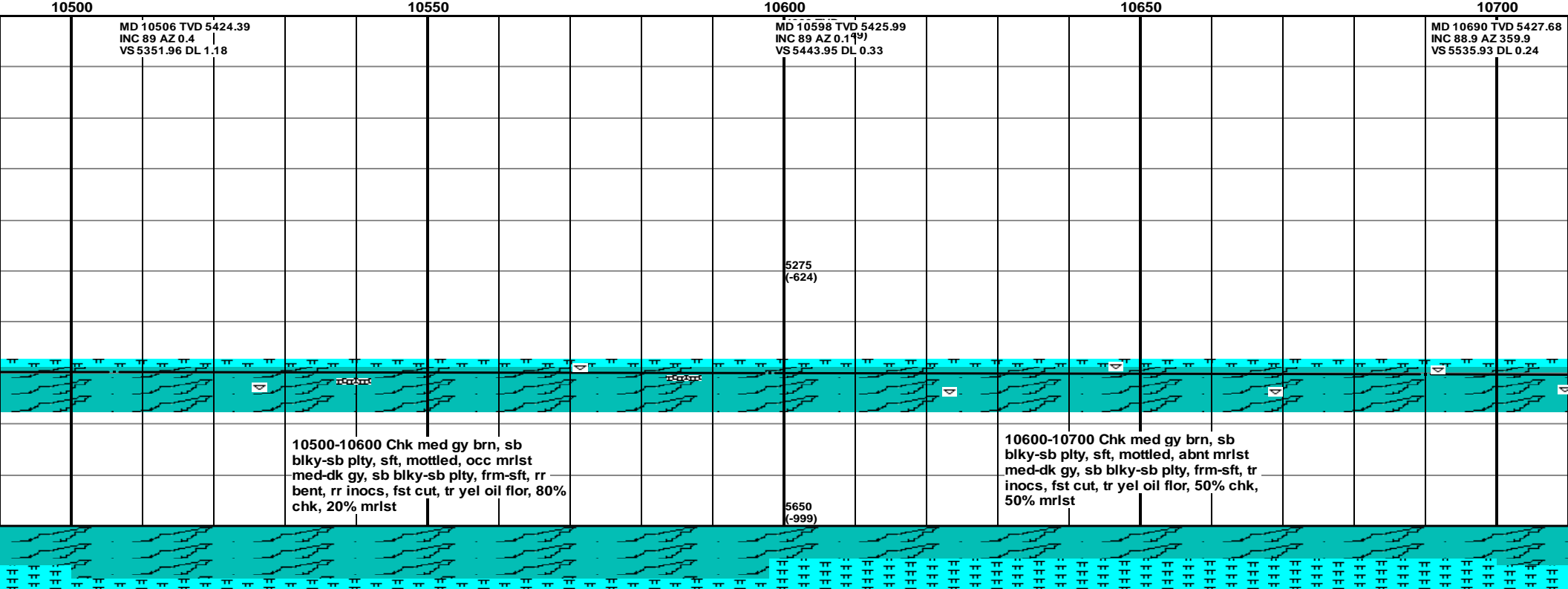
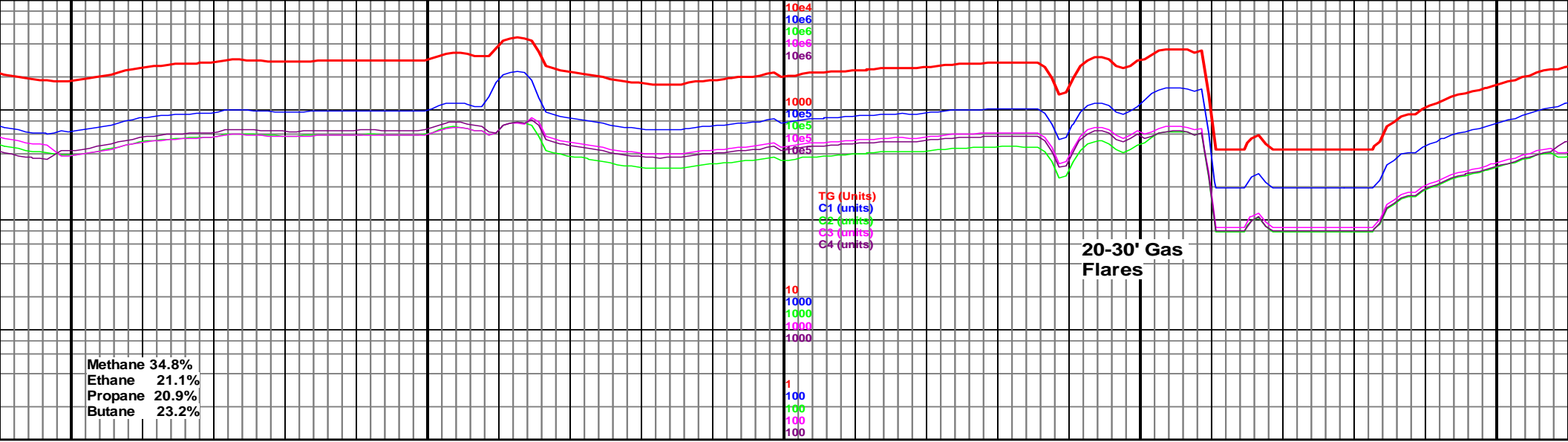


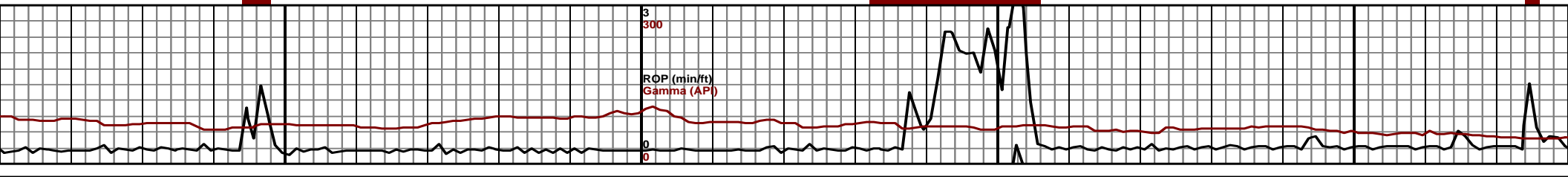
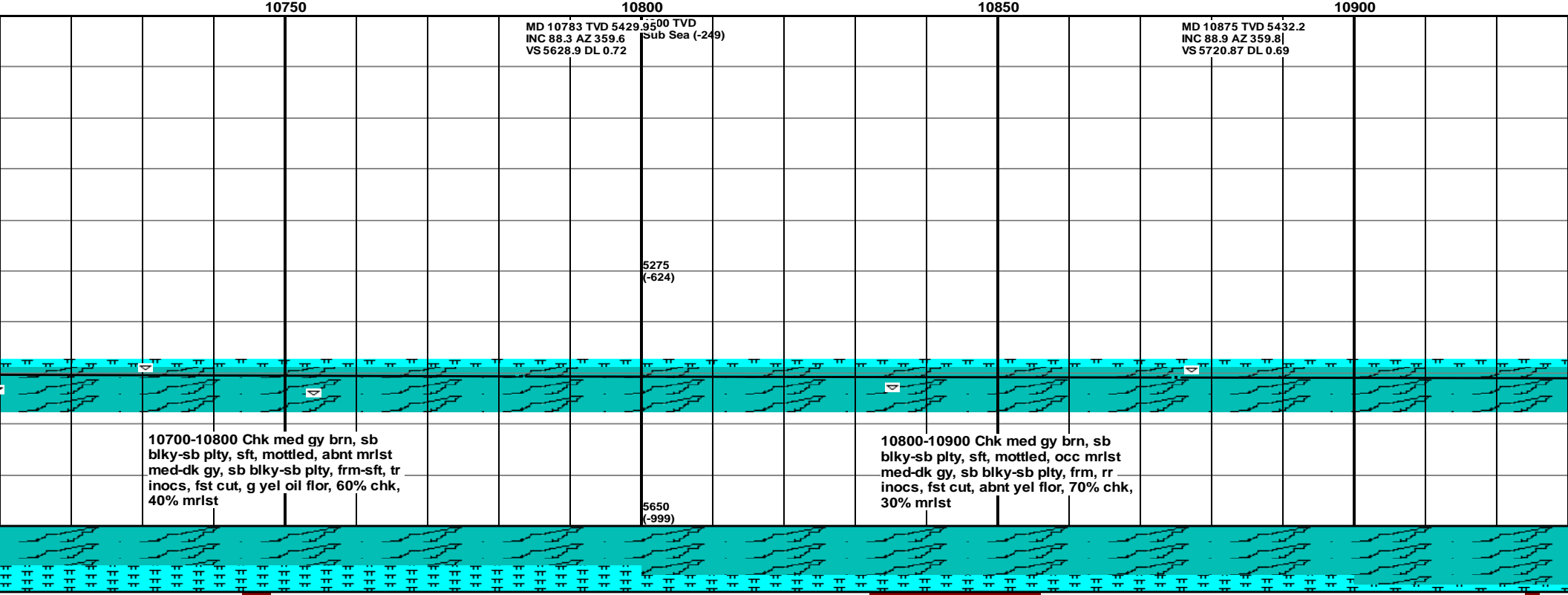
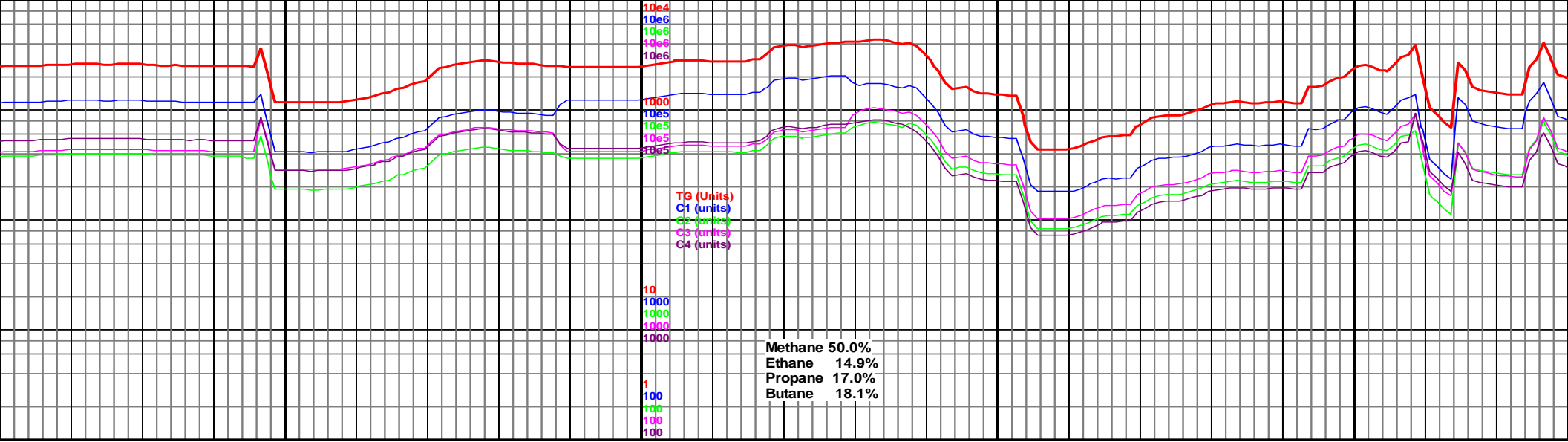
MD 10135 TVD 5425.92 INC 91.3 AZ 359.3 VS 4981.06 DL 1.08	MD 10227 TVD 5423.91 INC 91.2 AZ 359.9 VS 5073.04 DL 0.66
43 TVD 5428.57 AZ 358.6 DL 0.87	

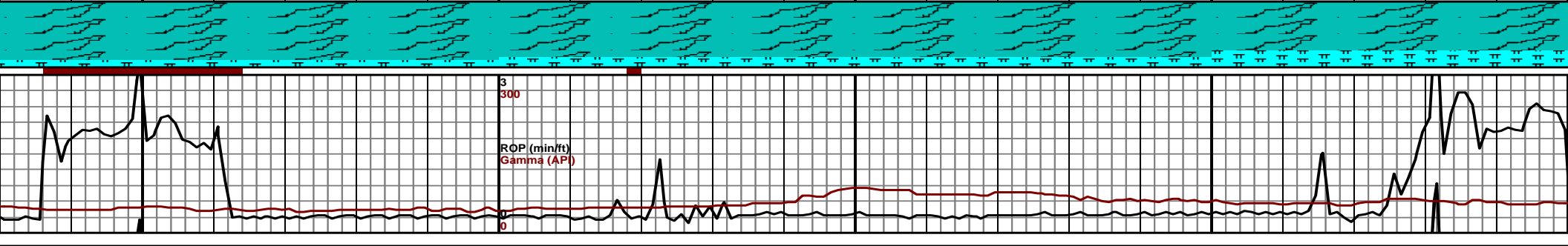
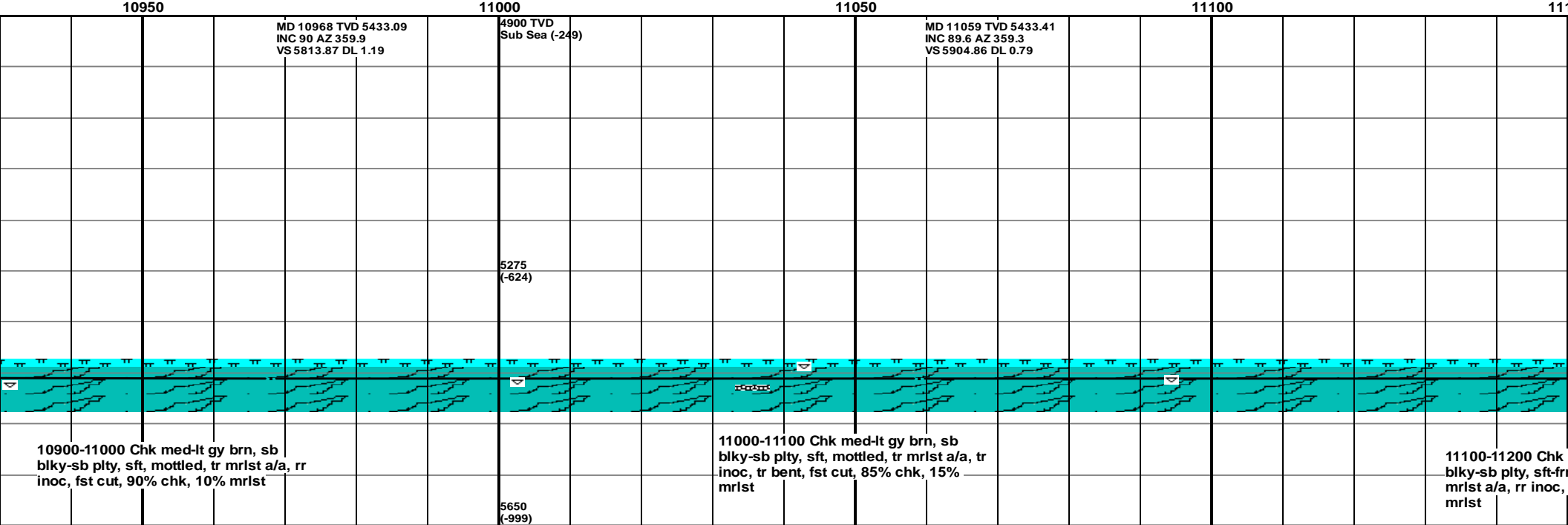
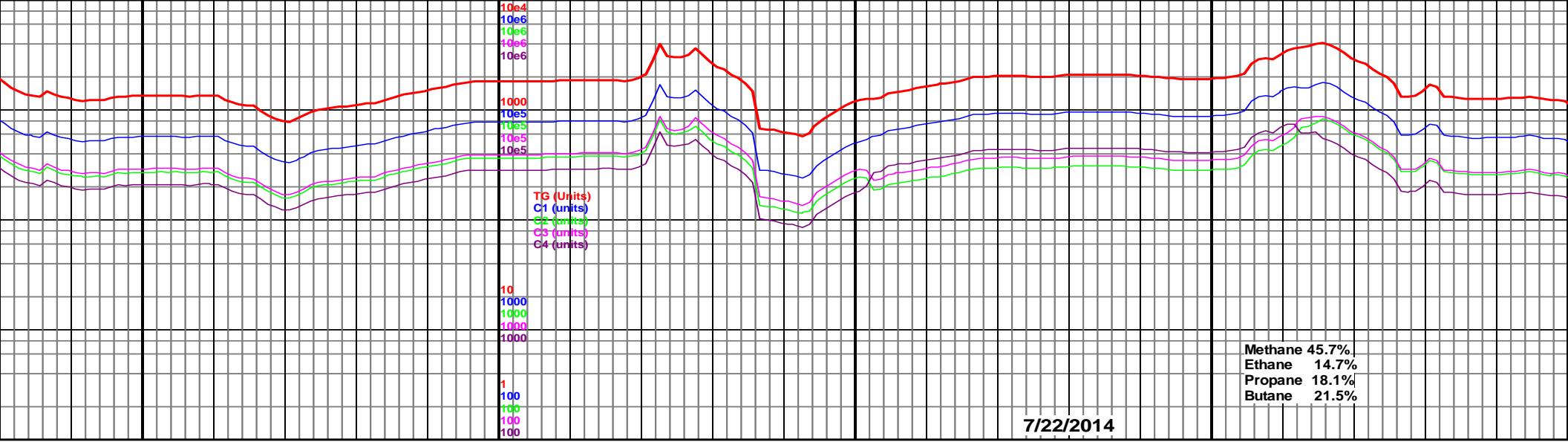


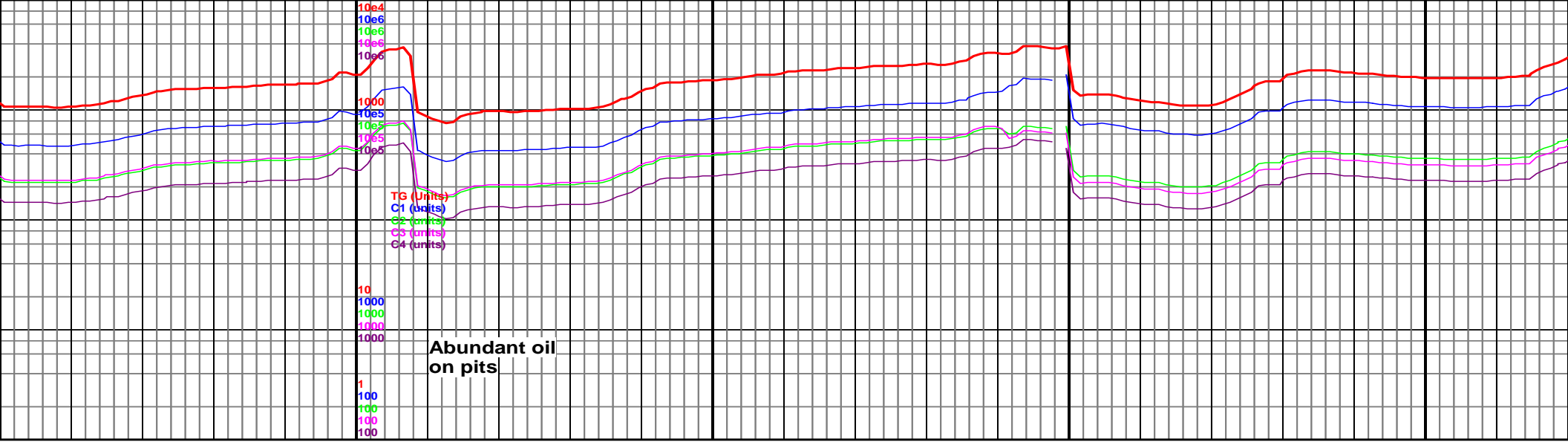
10100-10200 Chk med gy brn, sb blk, frm-sft, mottled, occ mrlst med-dk gy, sb blk, frm, rr bent, tr inocs, fst cut, tr yel oil flr, 80% chk, 20% mrlst	10200-10300 Chk med gy brn, sb blk-sb plty, frm-sft, mottled, occ mrlst med-dk gy, sb blk, frm, tr bent, rr inocs, fst cut, 90% chk, 10% mrlst
Chk med gy brn, sb blk, d, occ mrlst med-dk gy, bent, tr inocs, fst cut, r, 90% chk, 10% mrlst	



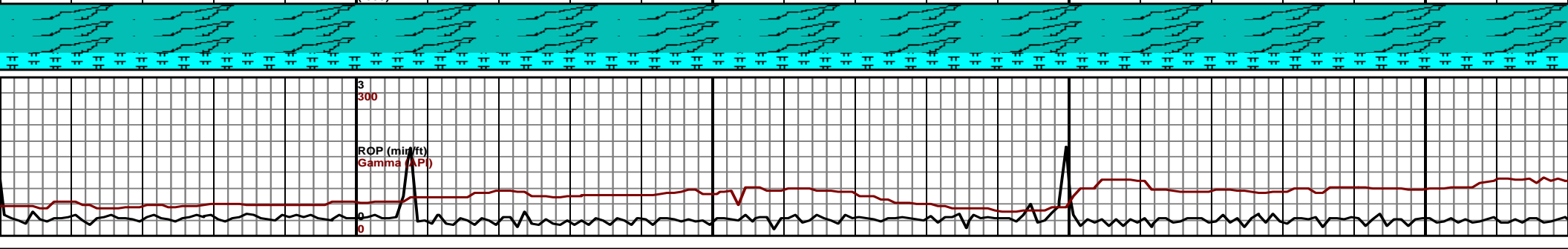
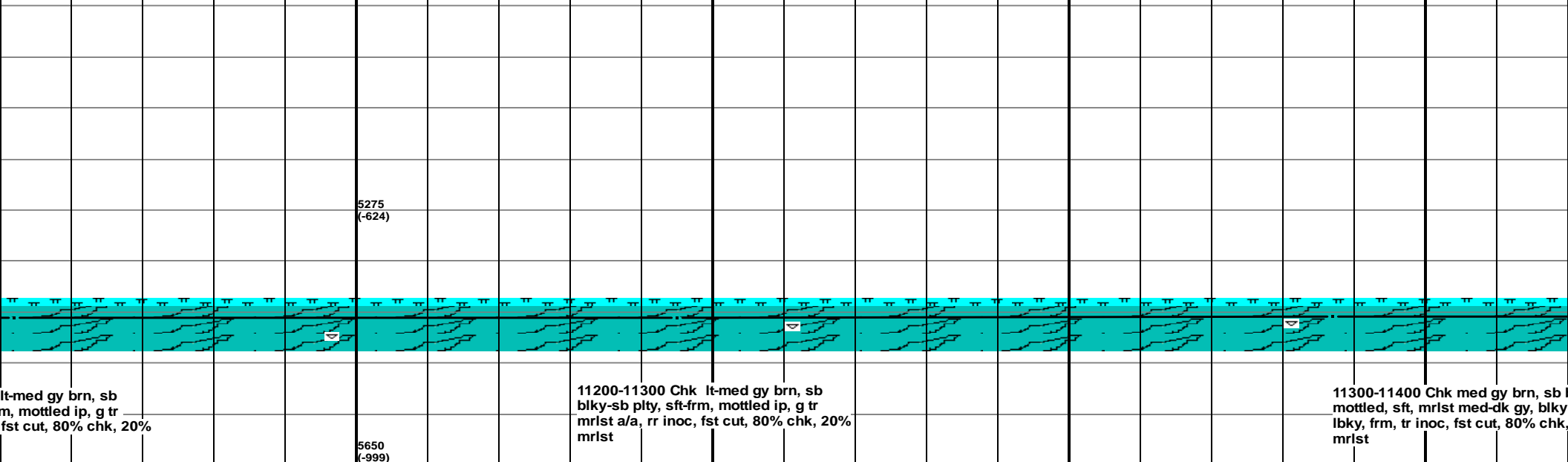


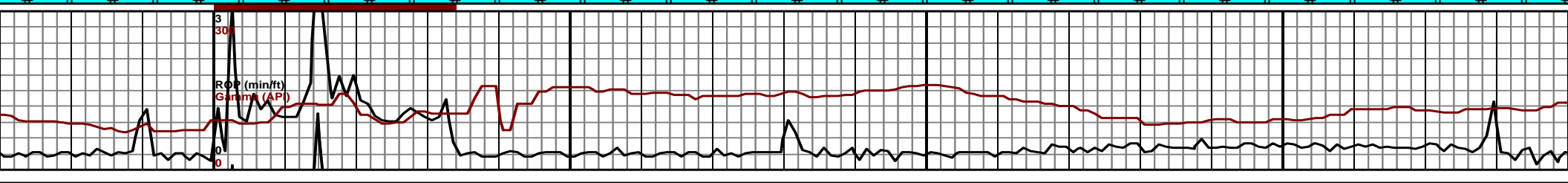
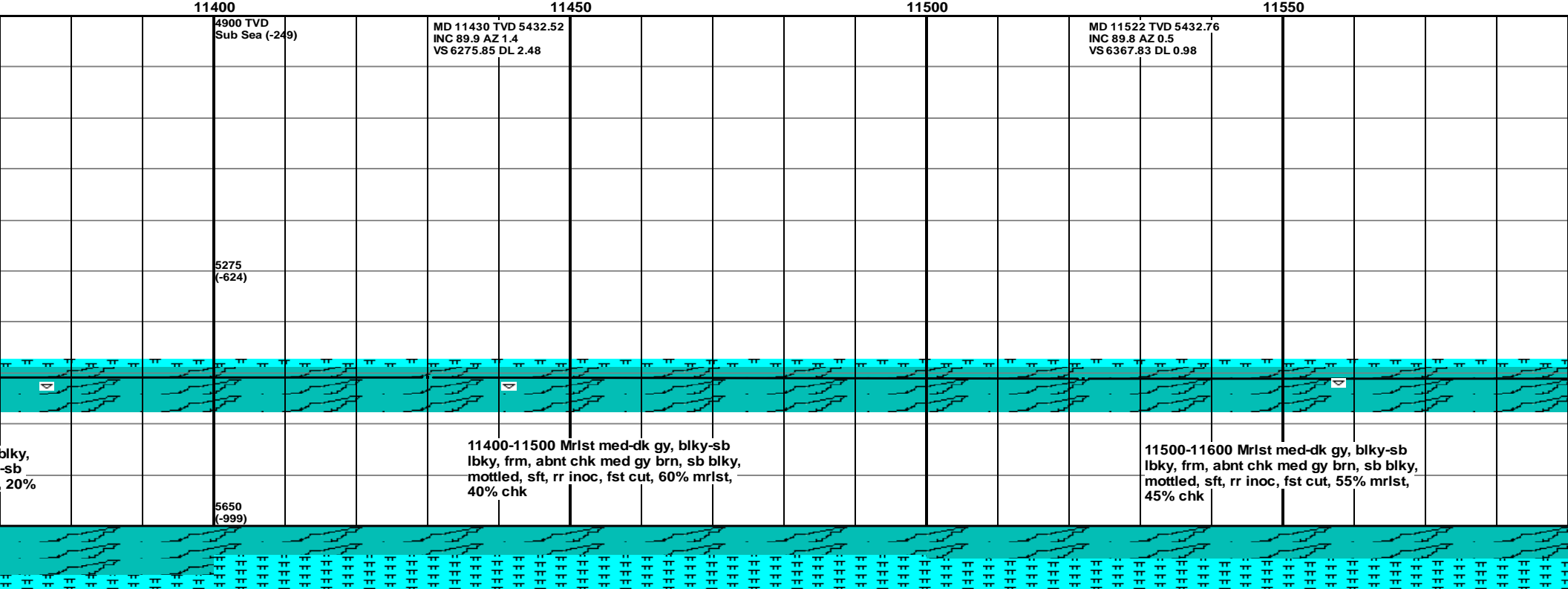
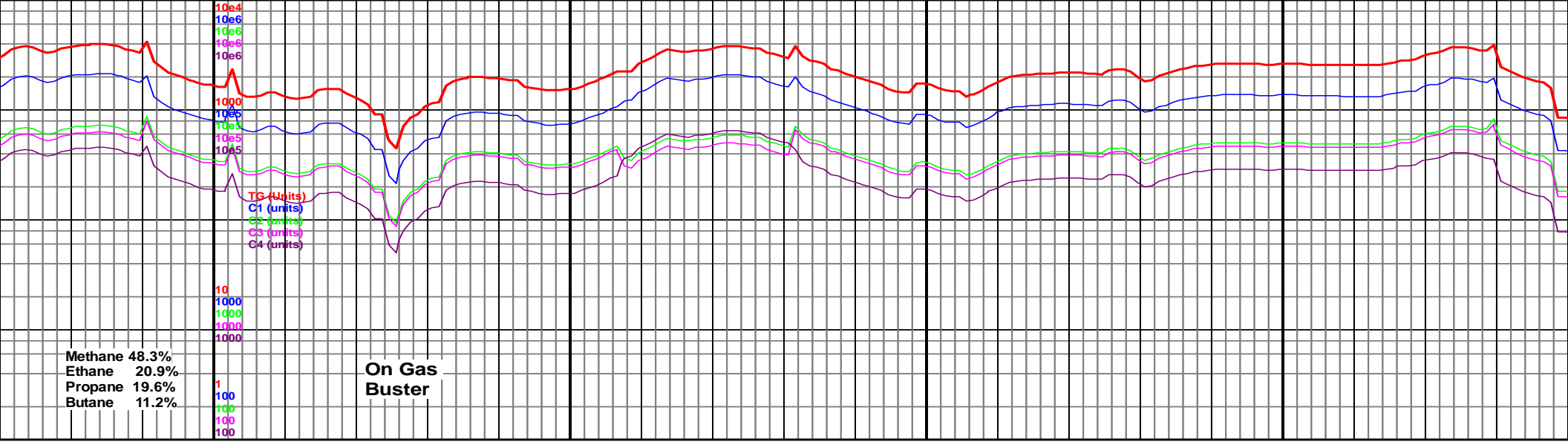


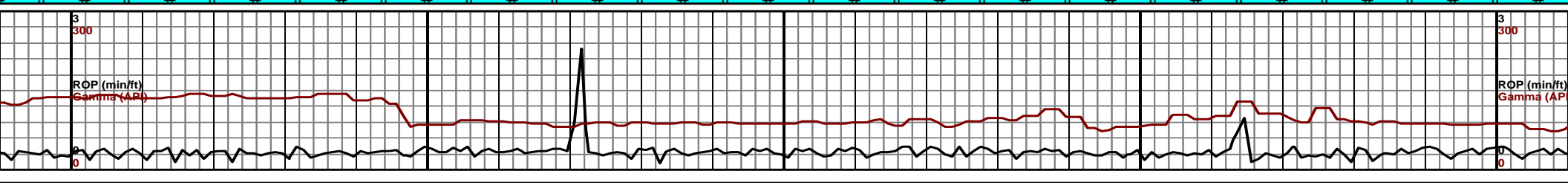
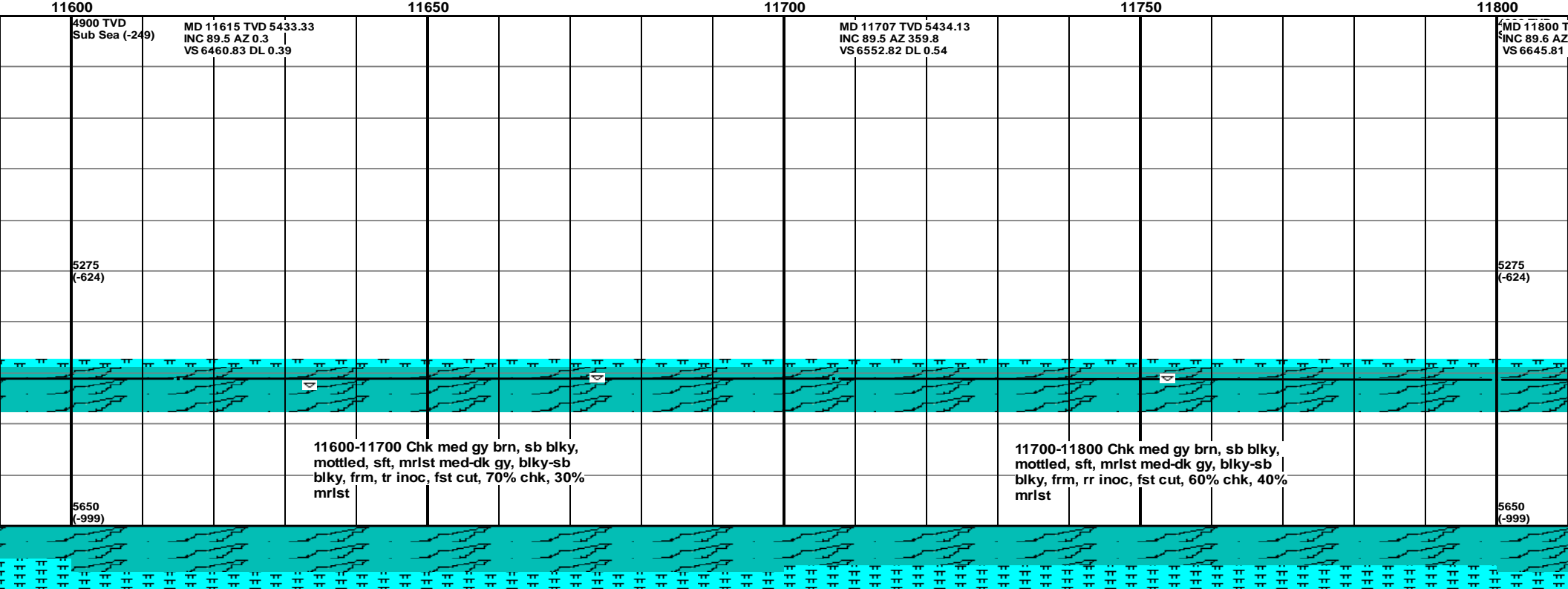
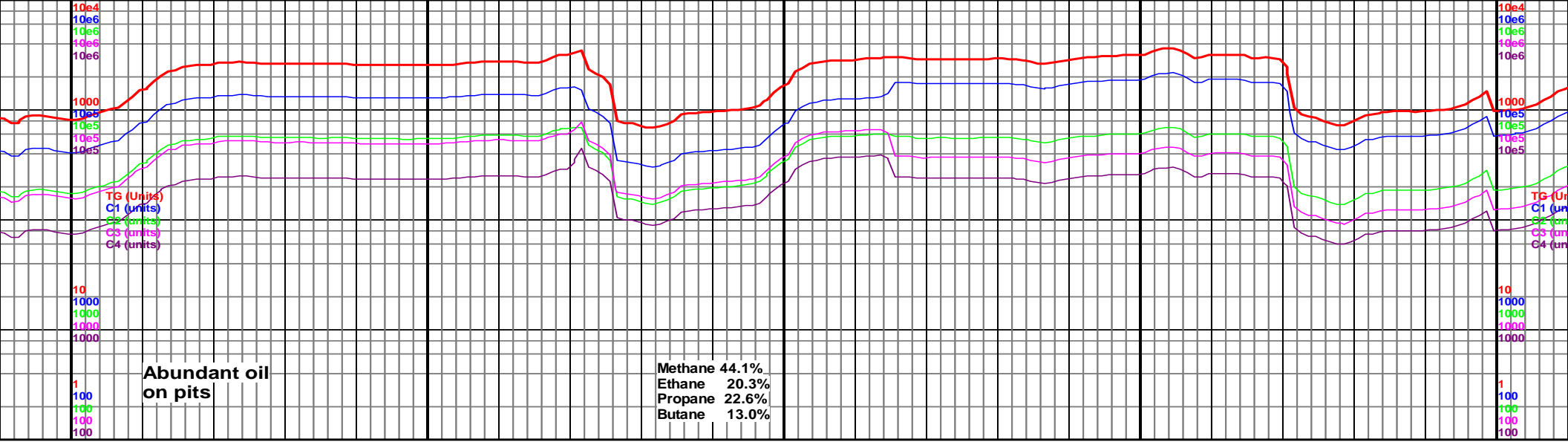


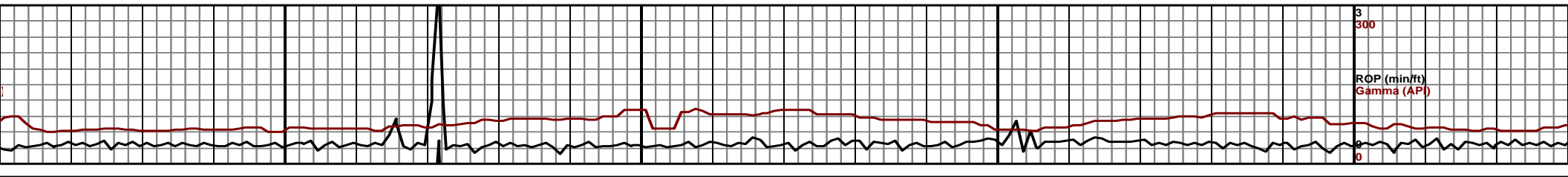
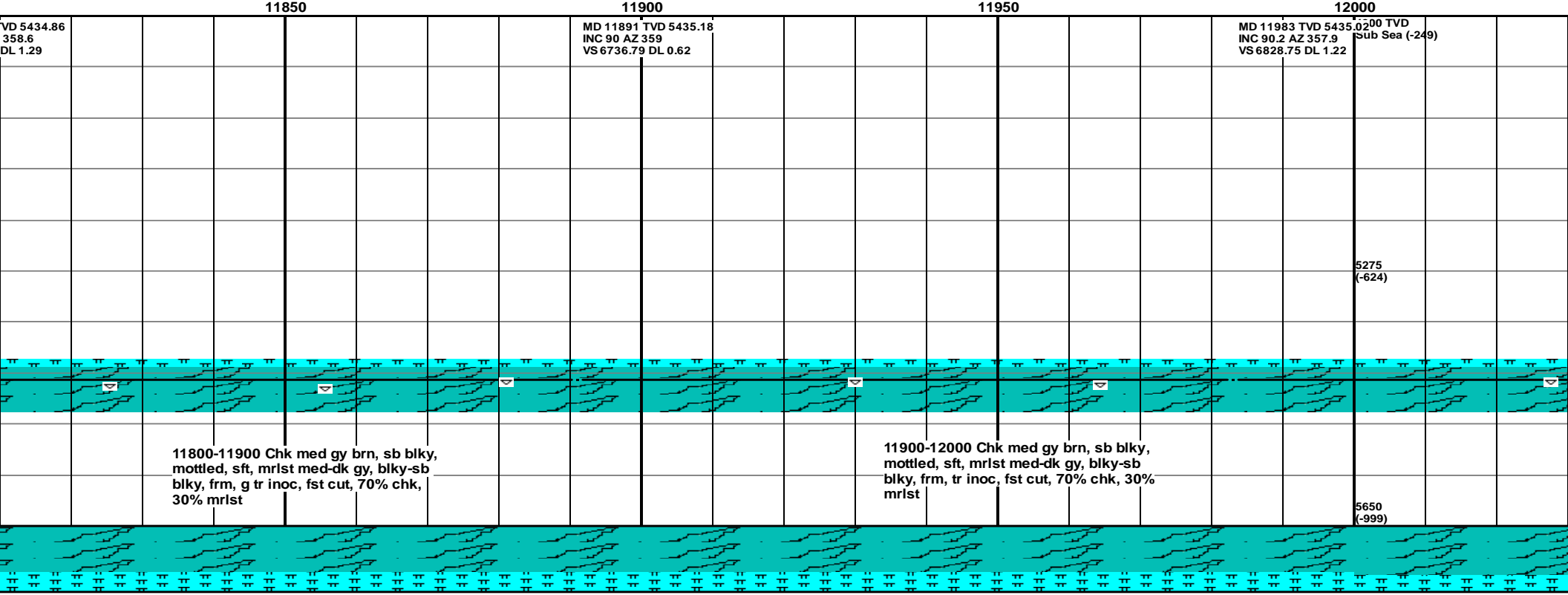
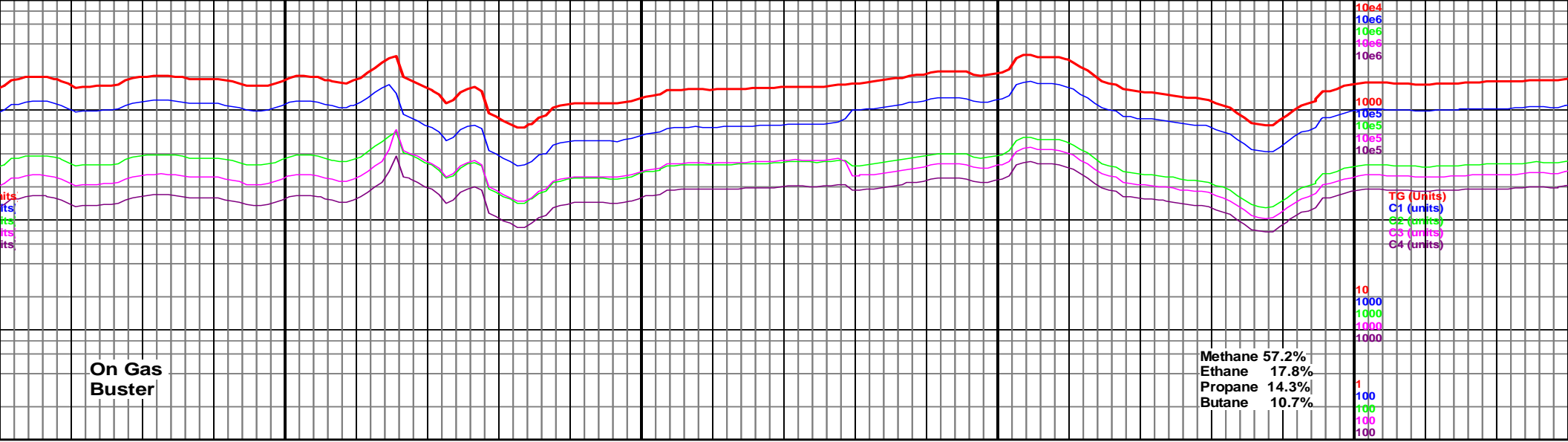


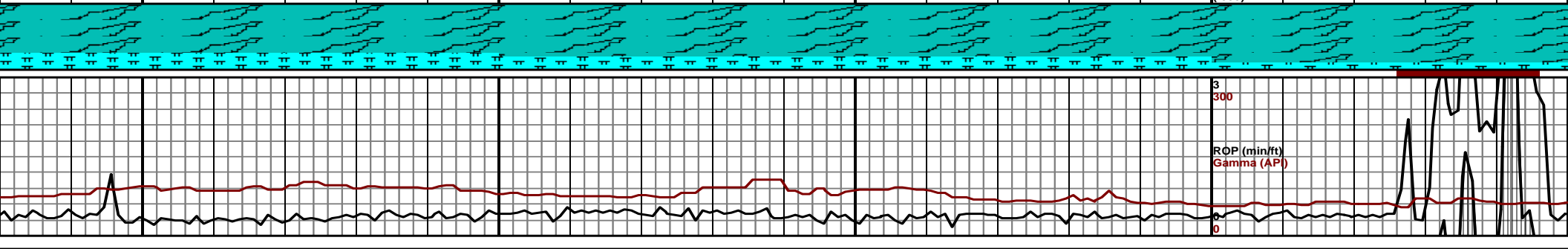
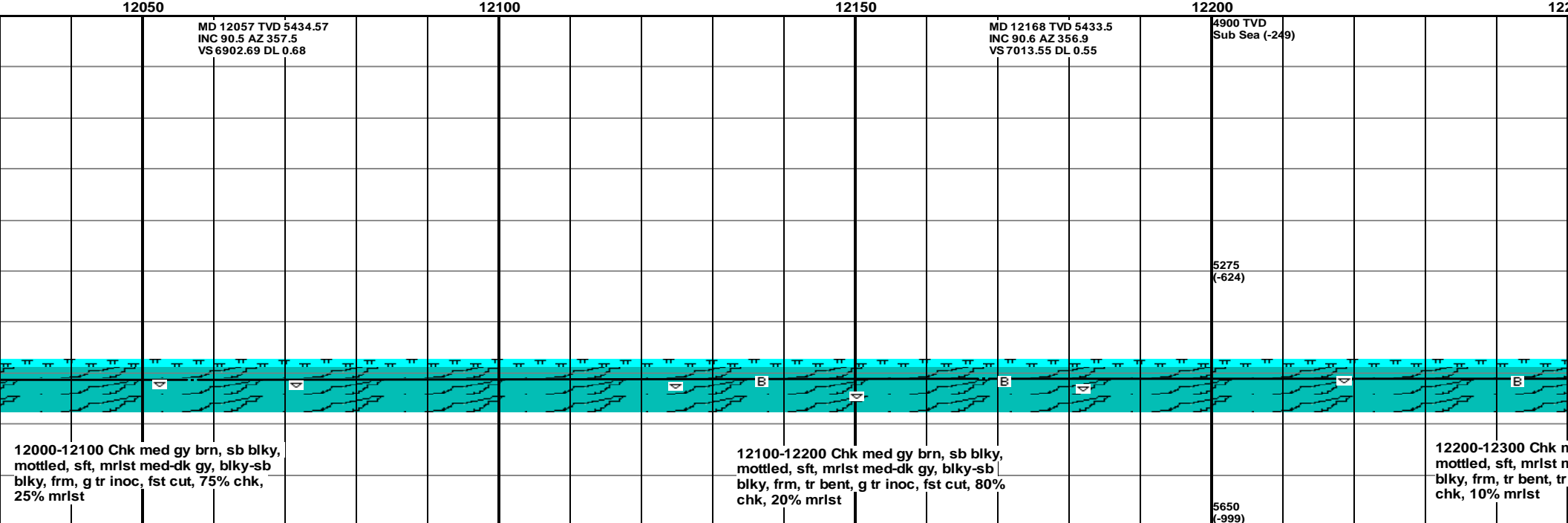
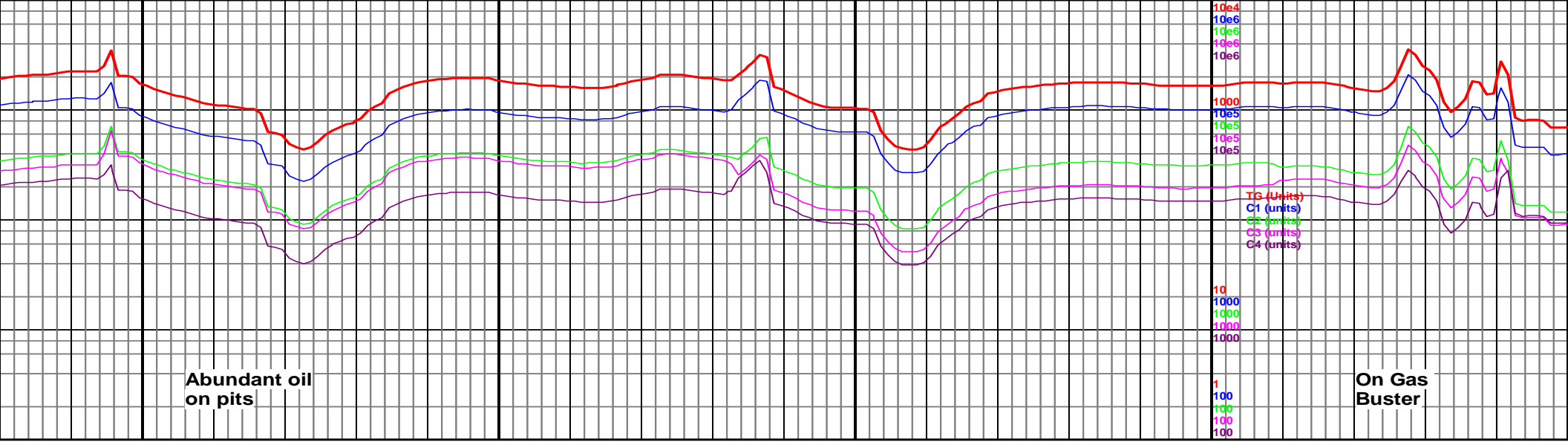
MD 11152 TVD 5433.33 INC 90.5 AZ 0.5 VS 5997.86 DL 1.61	4900 TVD Sub Sea (-249)	MD 11245 TVD 5432.76 INC 90.2 AZ 359.7 VS 6090.86 DL 0.92	MD 11337 TVD 5432.52 INC 90.1 AZ 359.1 VS 6182.85 DL 0.66
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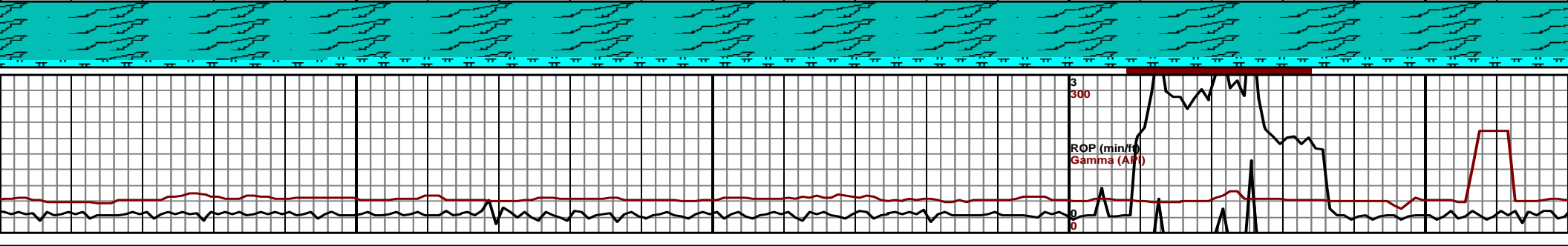
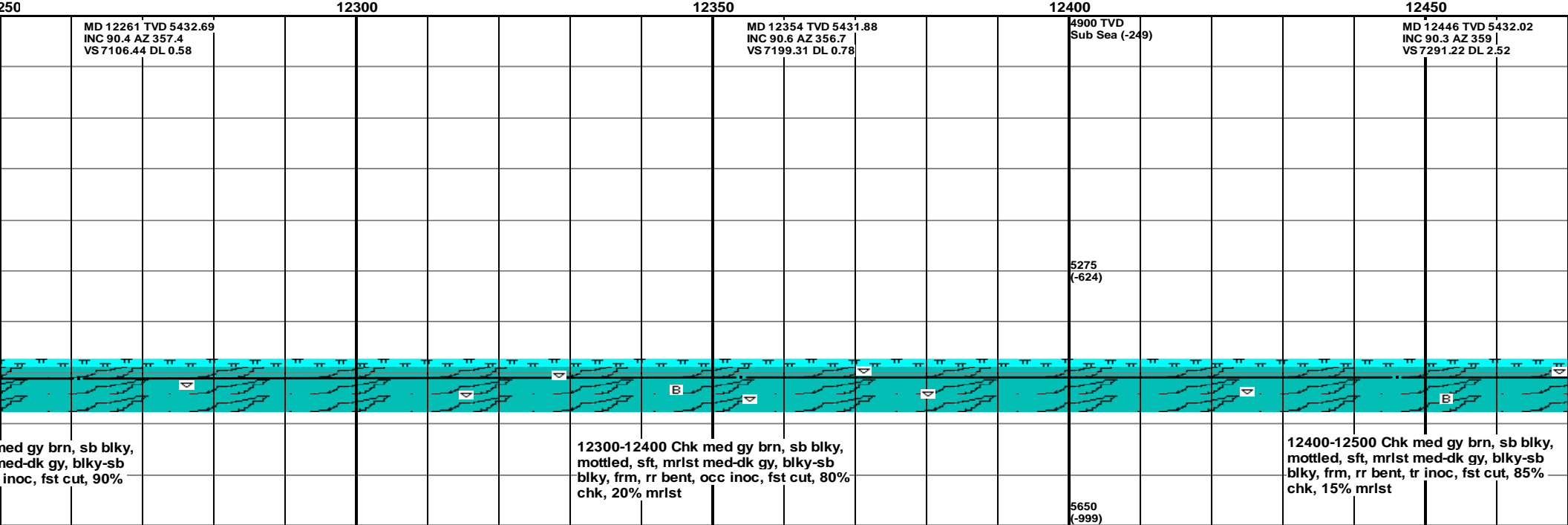
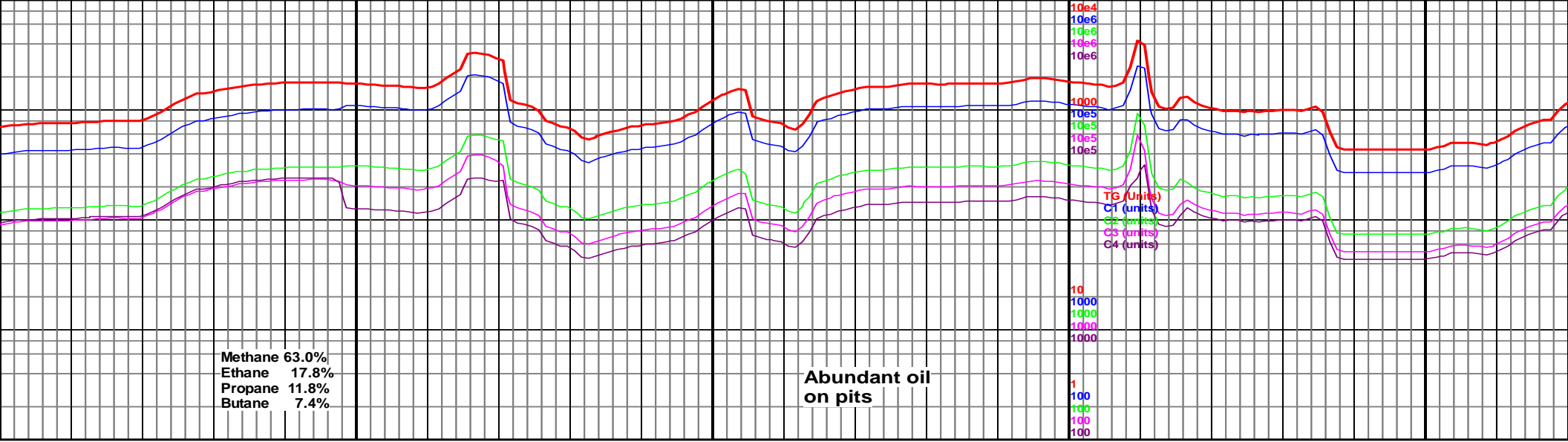


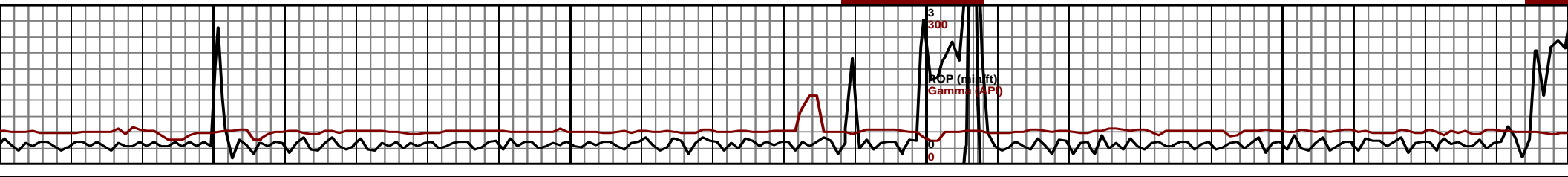
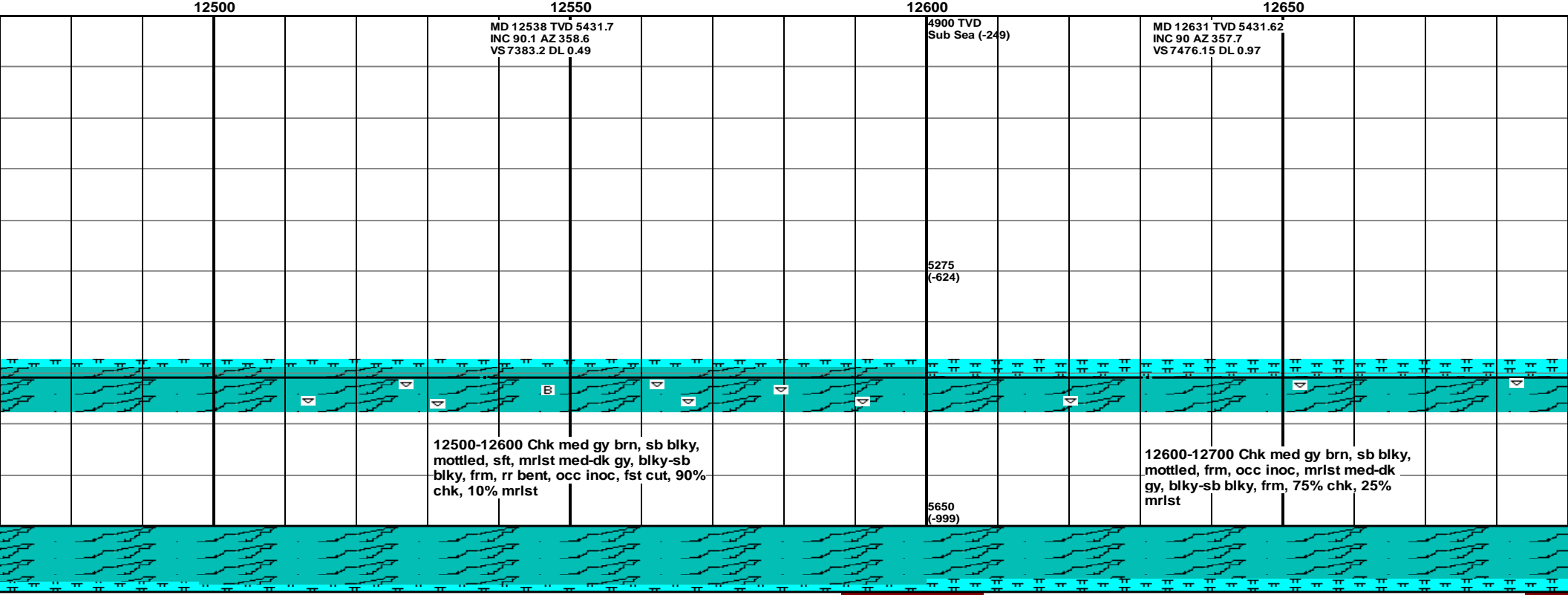
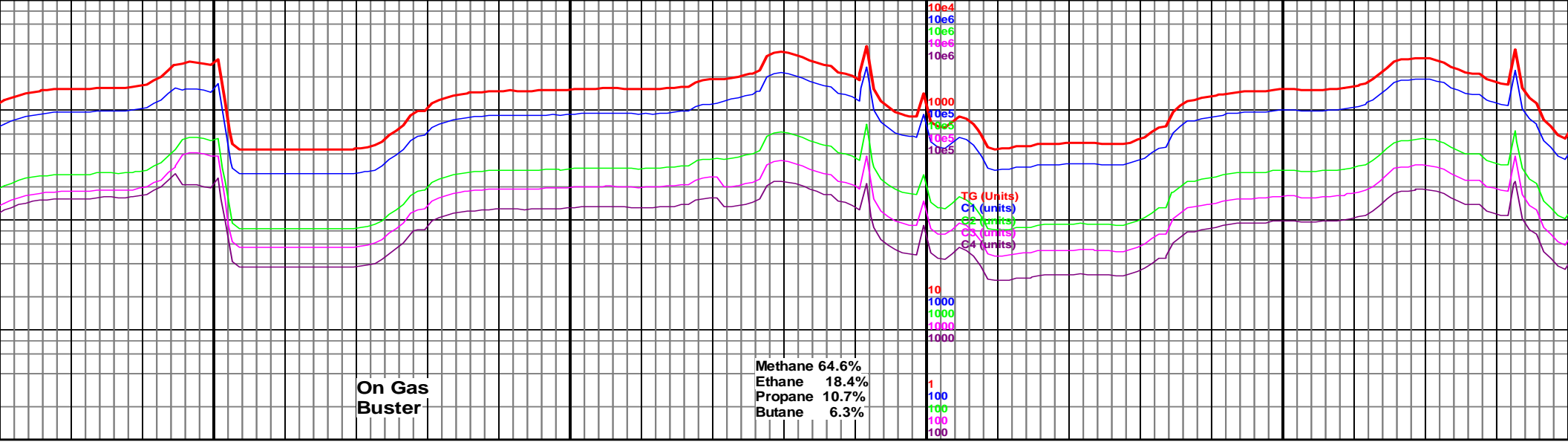


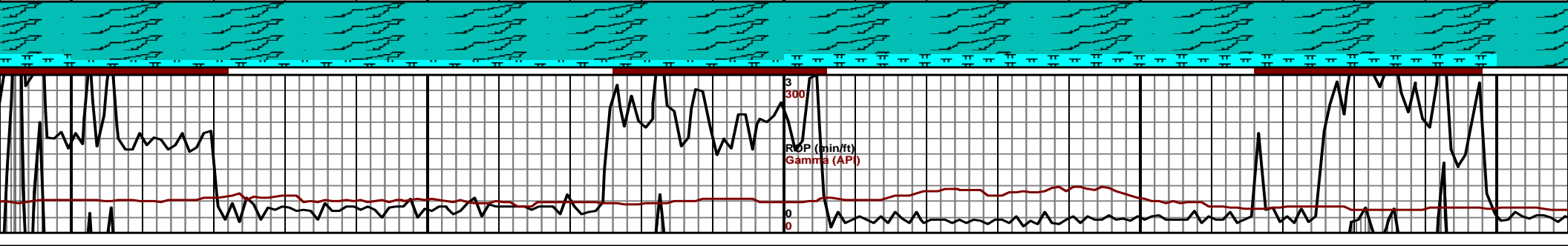
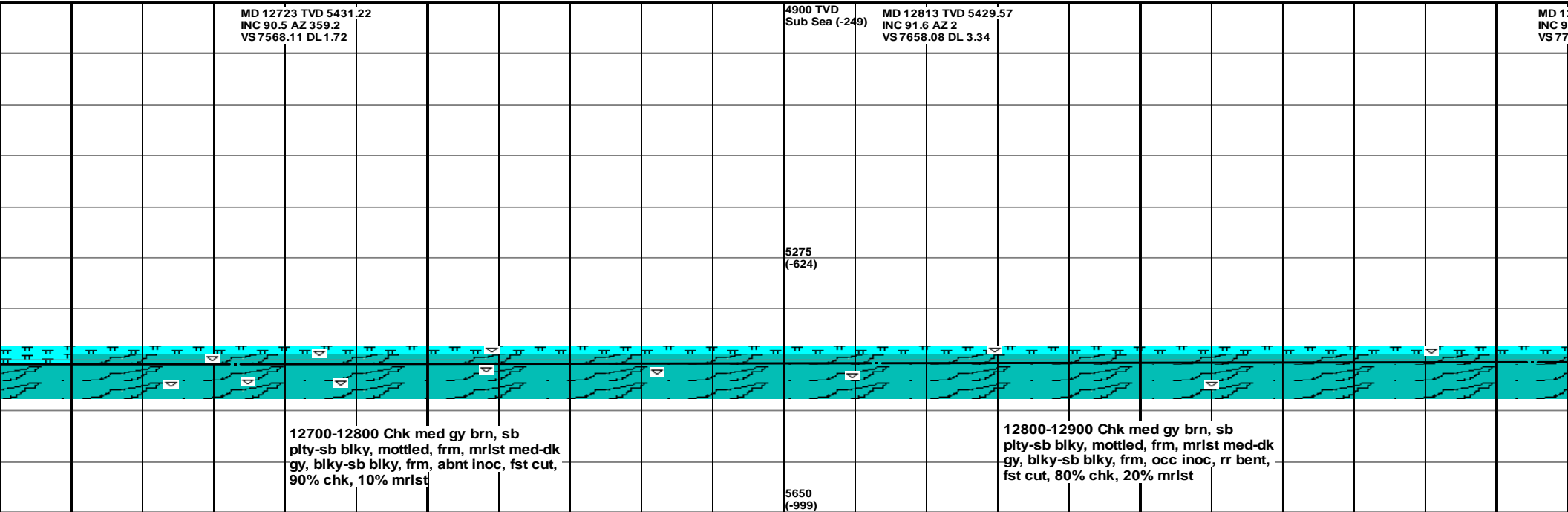
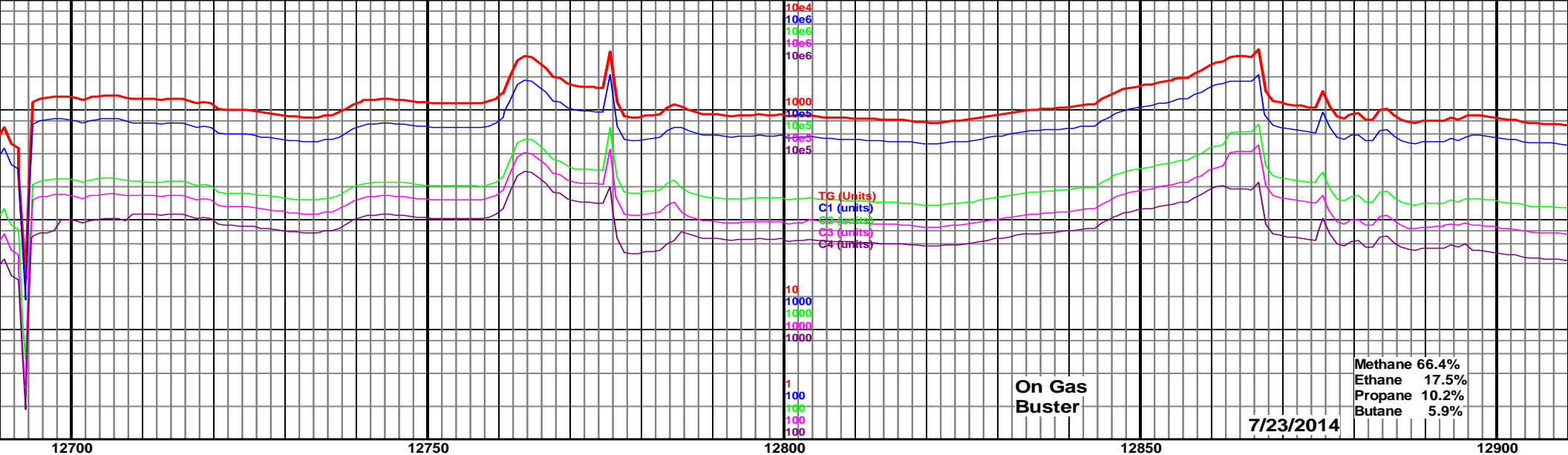


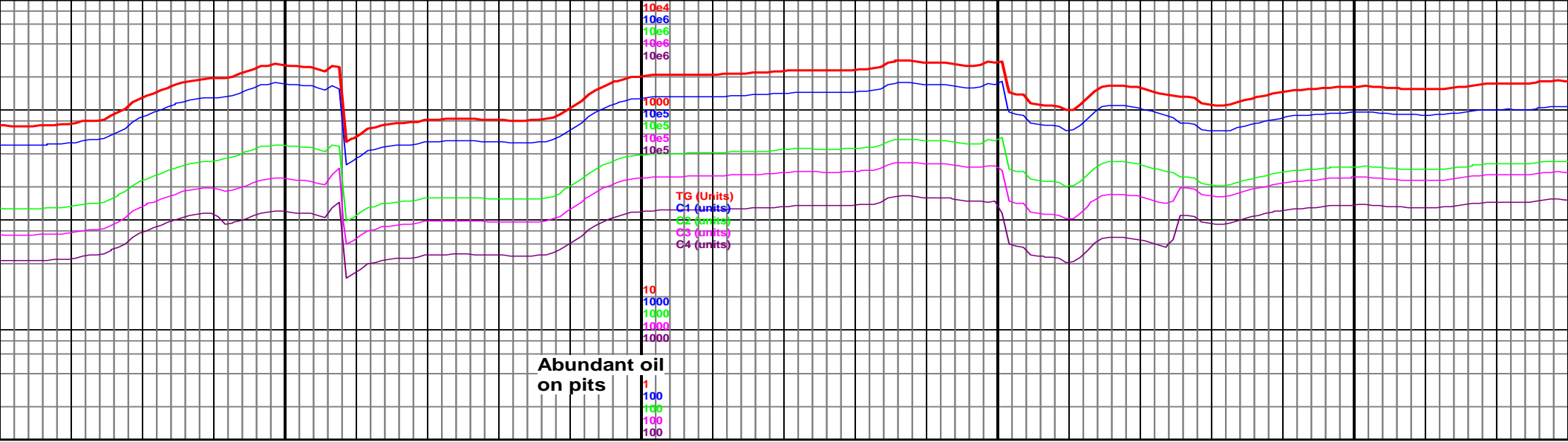




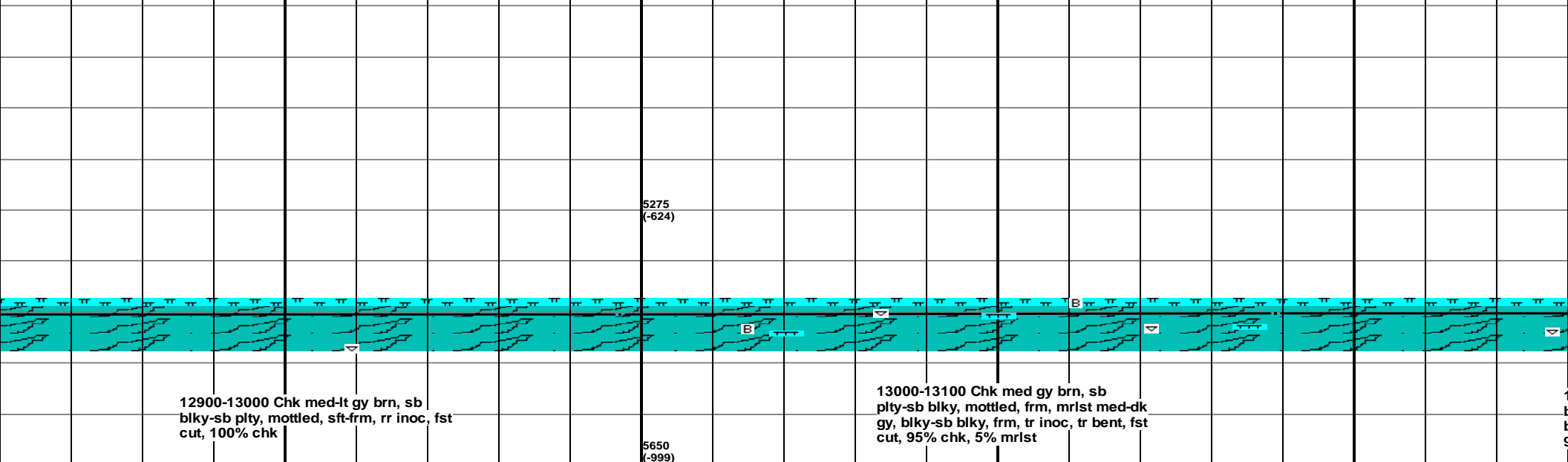






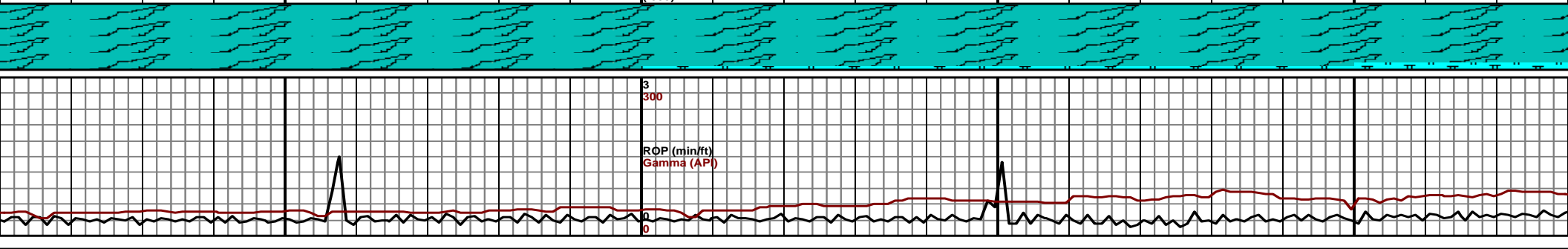


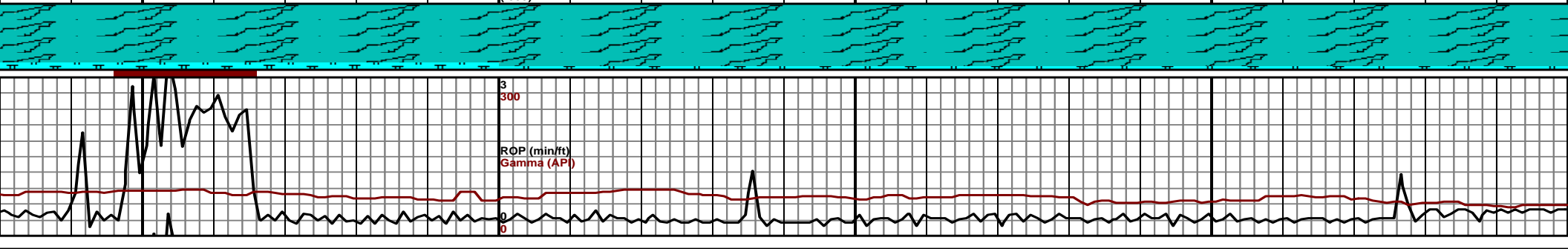
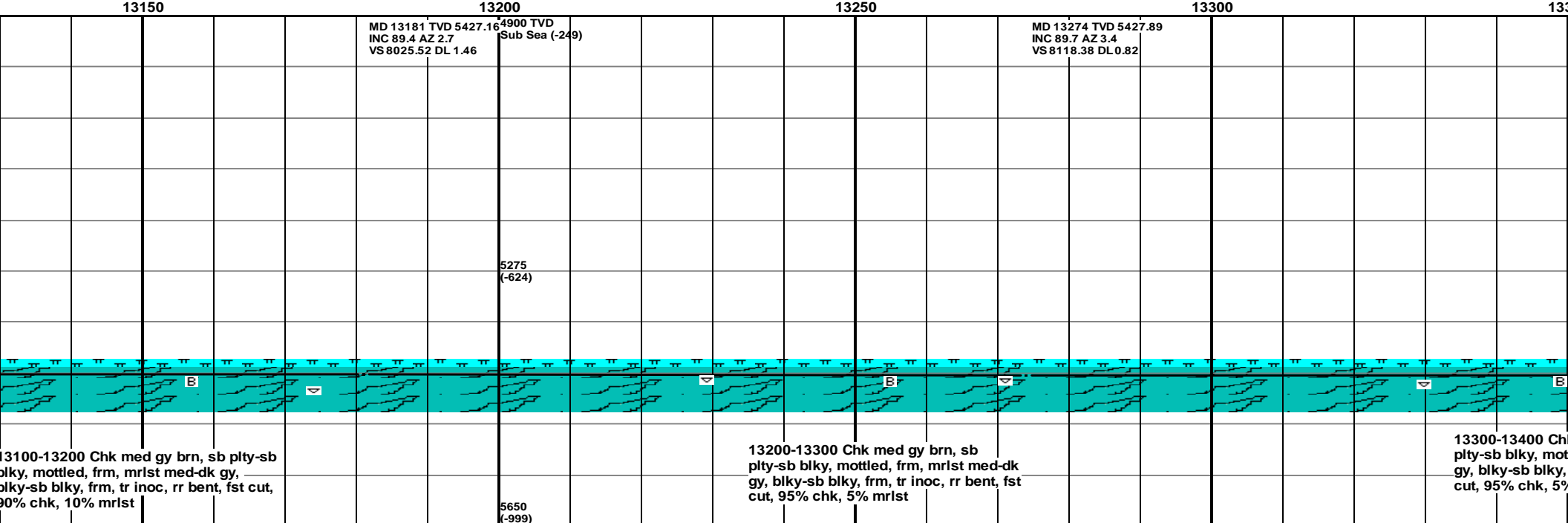
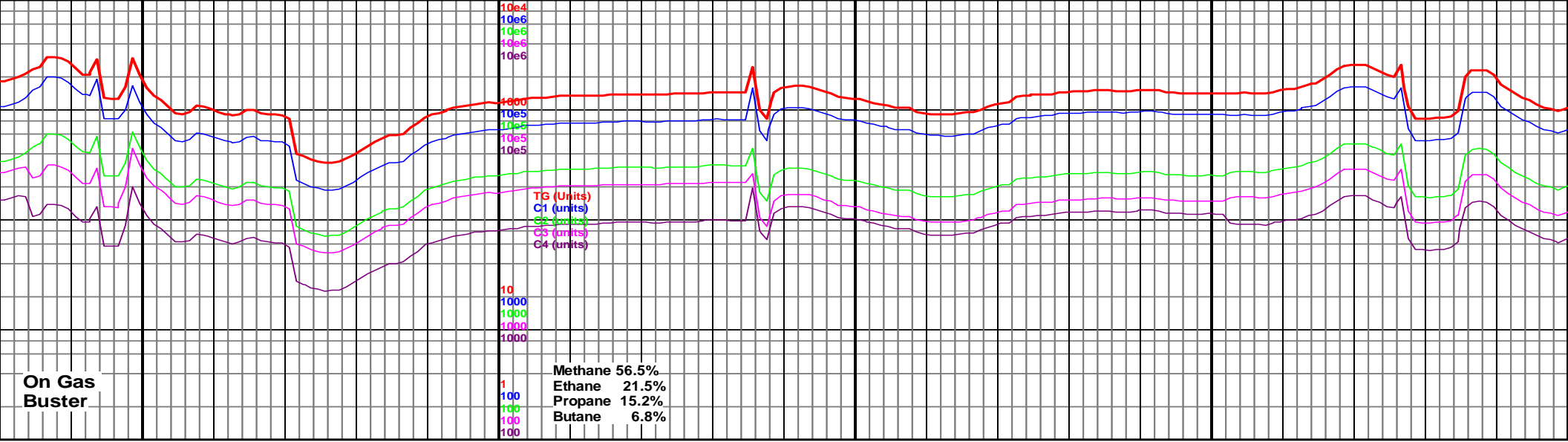
MD 12905 TVD 5428.2 INC 90.3 AZ 3.8 VS 749.95 DL 2.55	MD 12997 TVD 5427.88 INC 90.3 AZ 3.249 VS 7841.79 DL 0.9	MD 13089 TVD 5427.16 INC 90.6 AZ 3.3 VS 7933.64 DL 0.46
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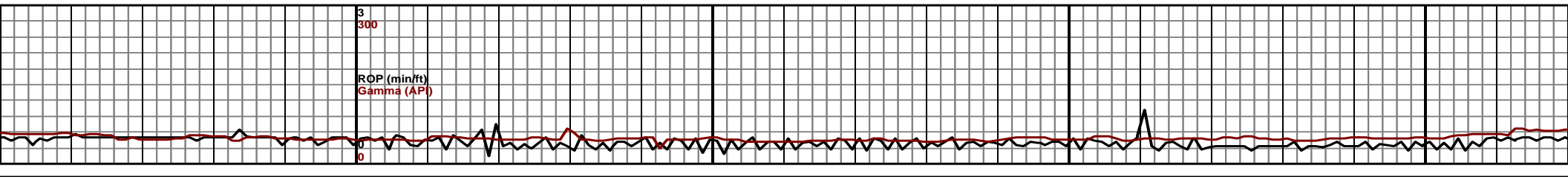
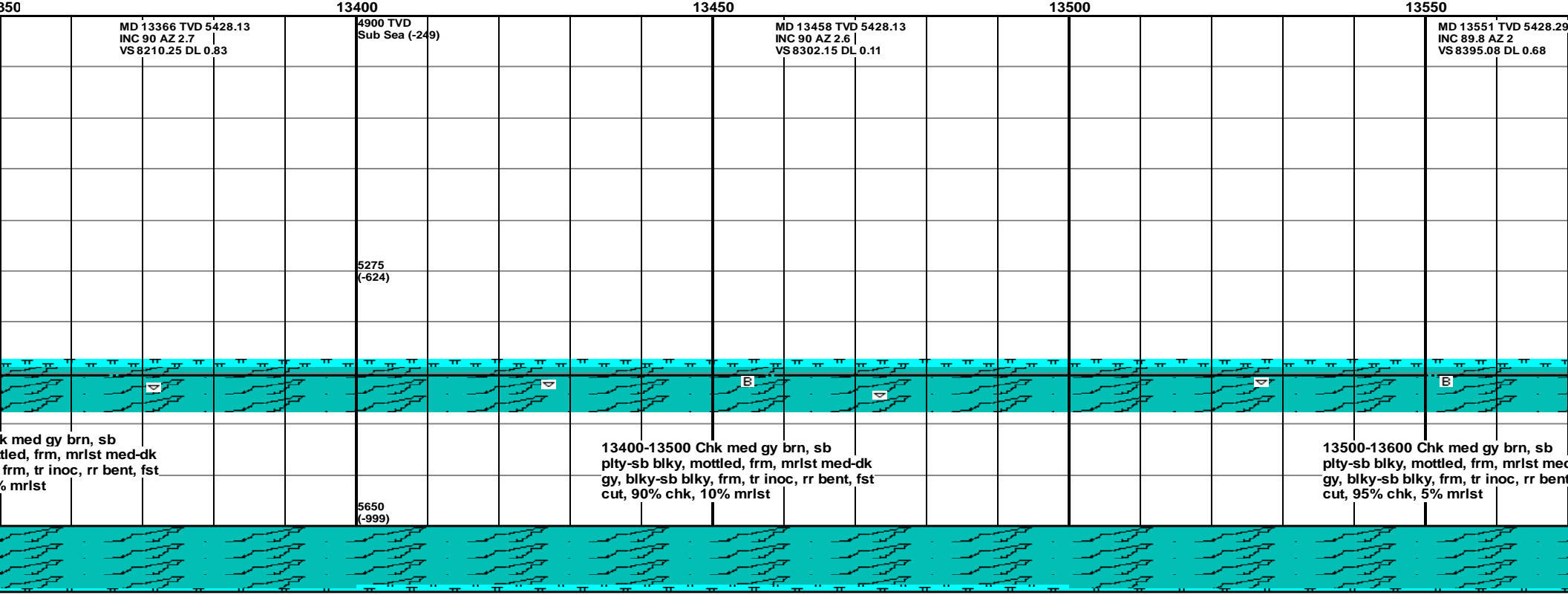
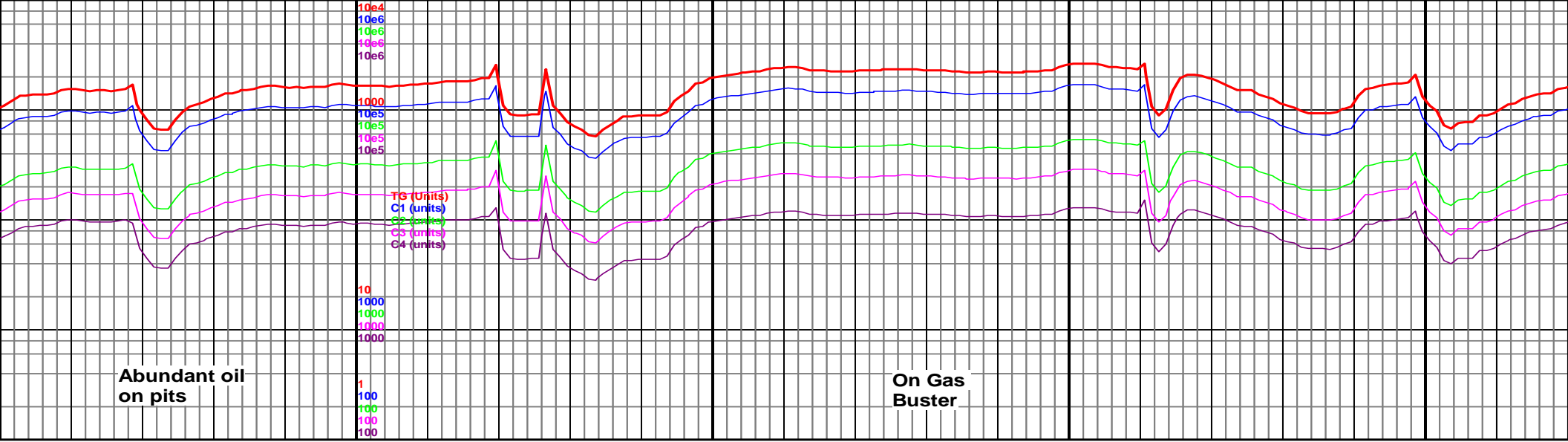


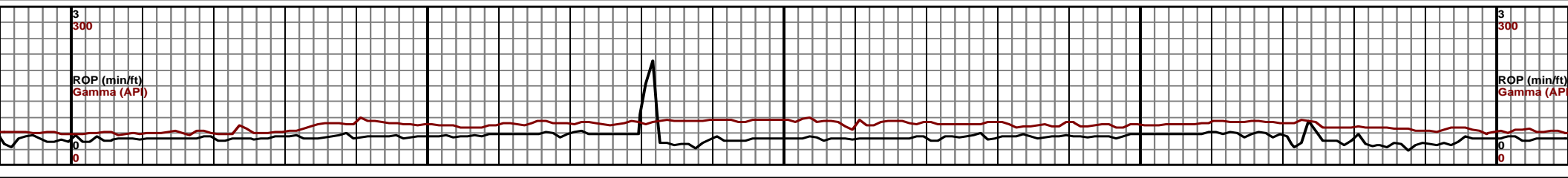
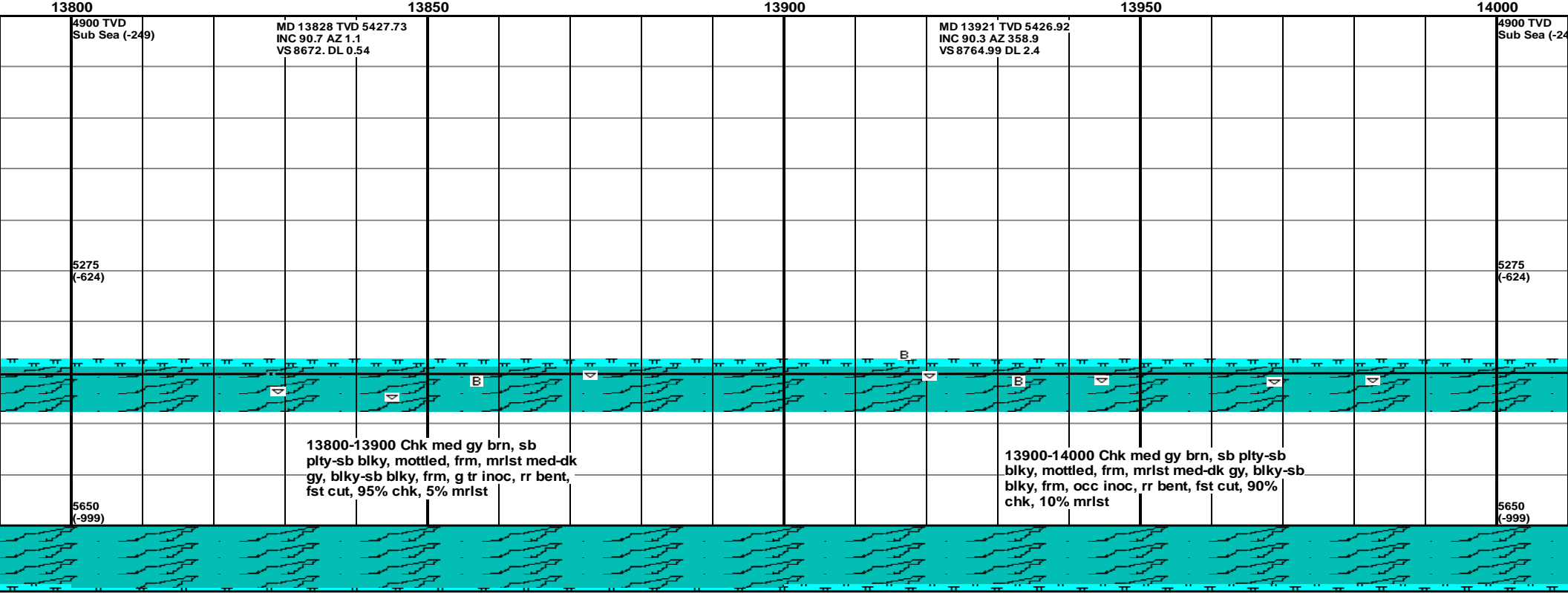
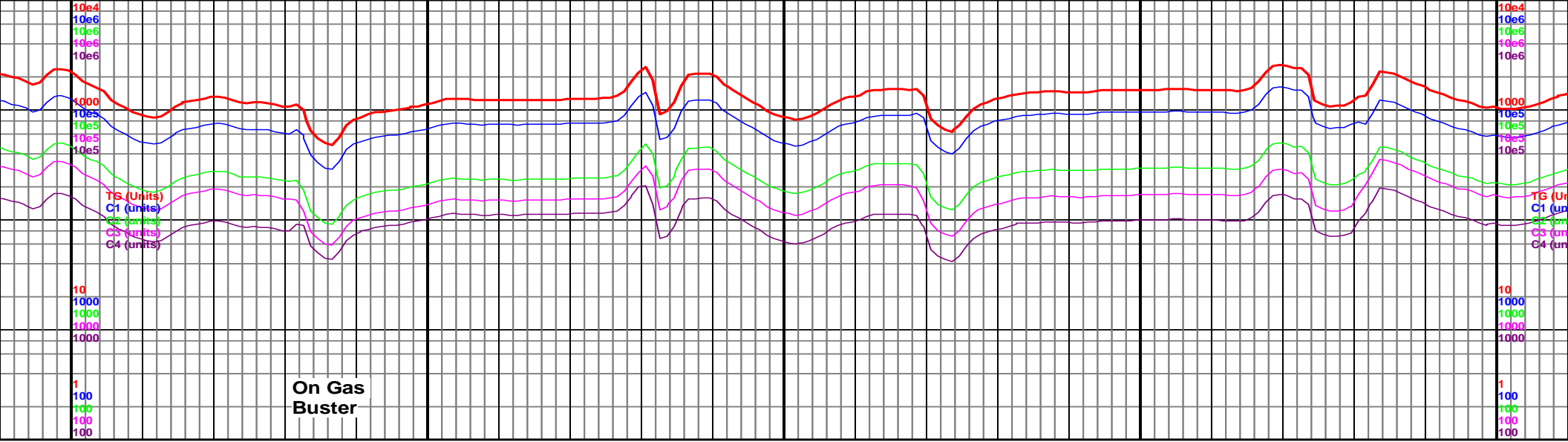
12900-13000 Chk med-lt gy brn, sb
blky-sb plty, mottled, sft frm, rr inoc, fst
cut, 100% chk

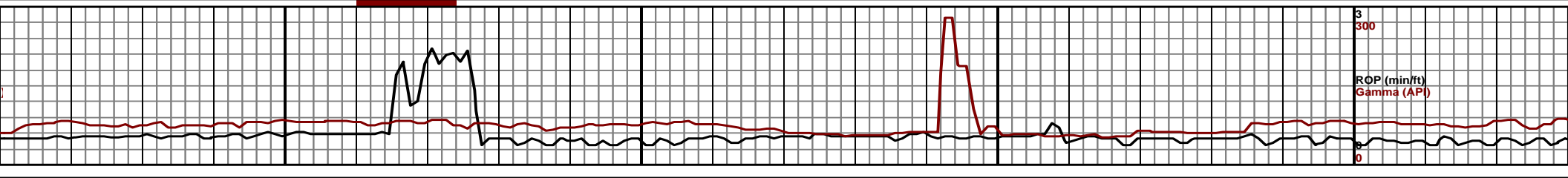
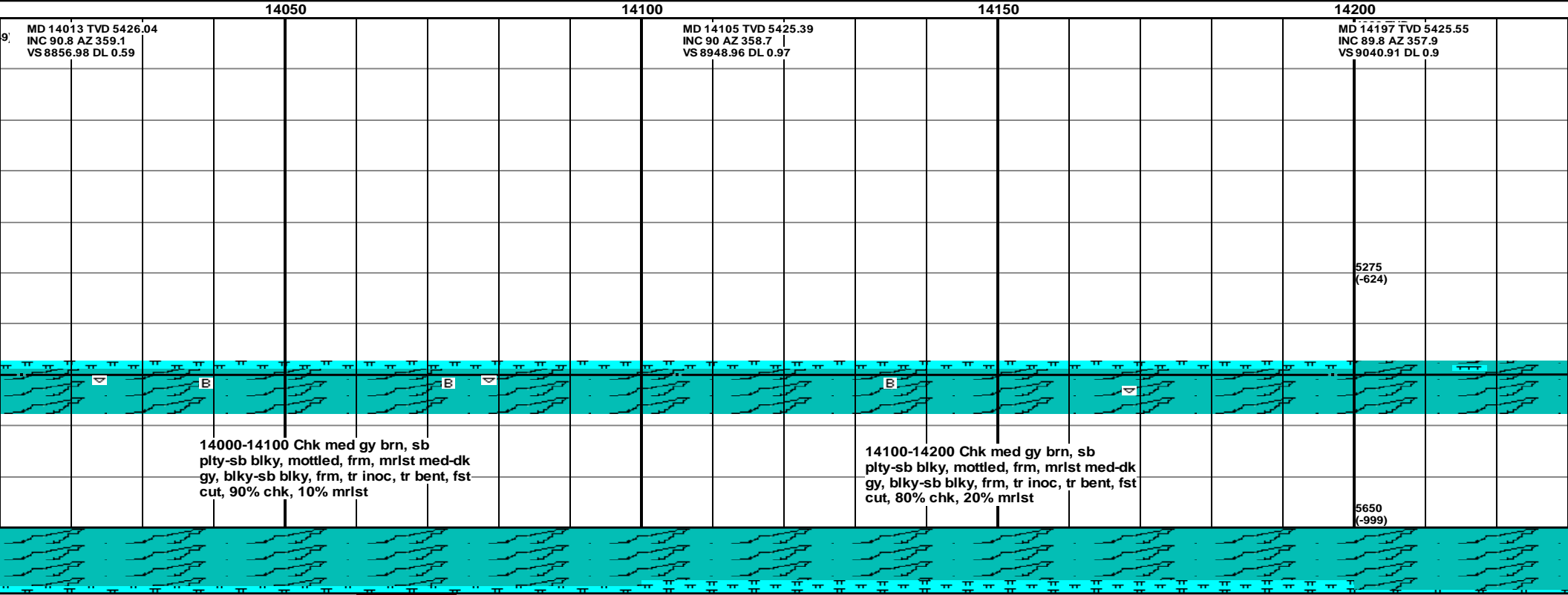
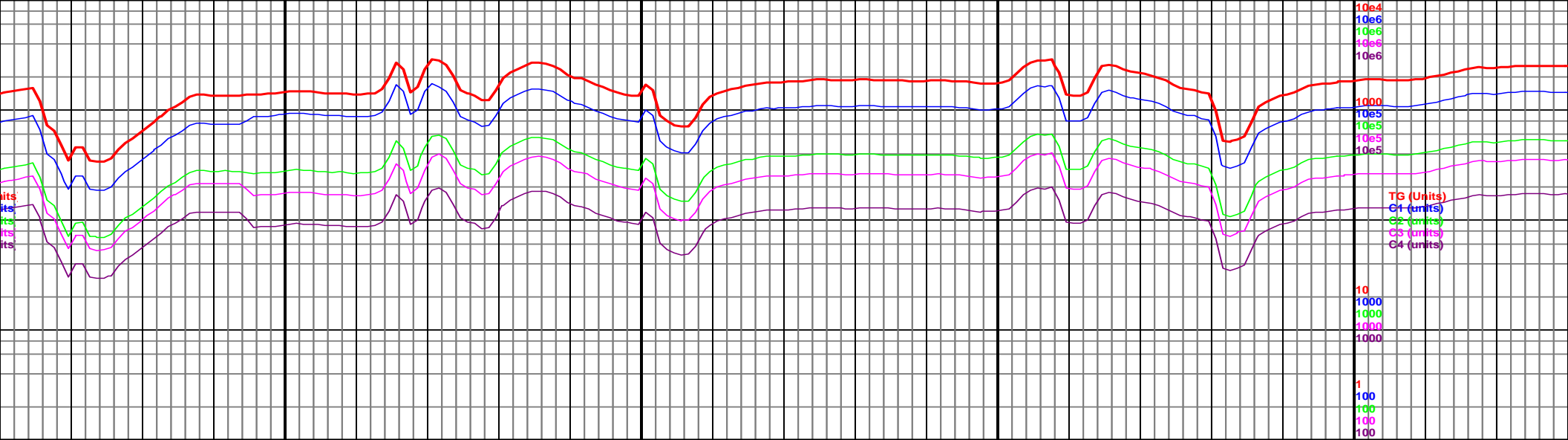
13000-13100 Chk med gy brn, sb
plty-sb blky, mottled, frm, mrlst med-dk
gy, blky-sb blky, frm, tr inoc, tr bent, fst
cut, 95% chk, 5% mrlst

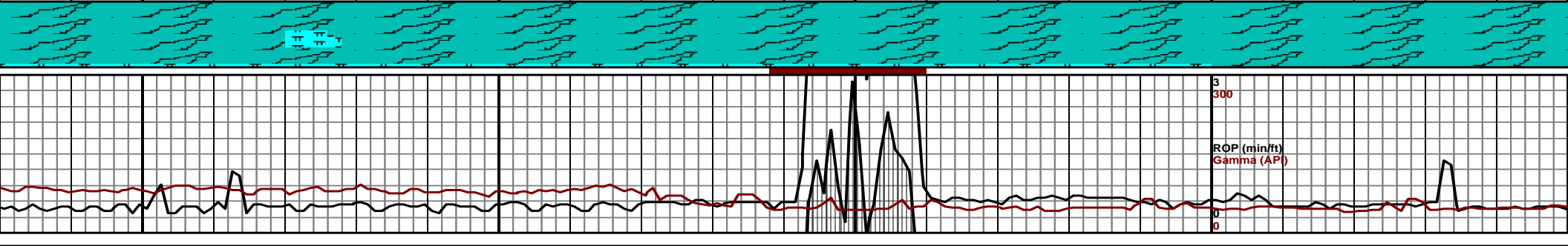
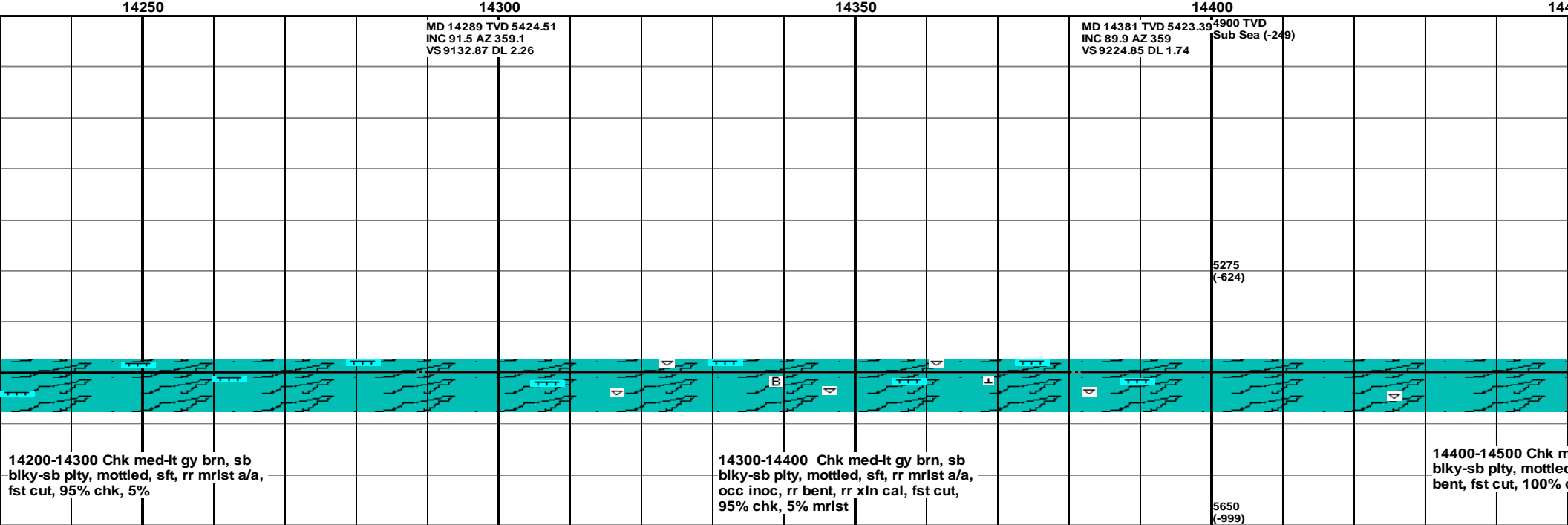
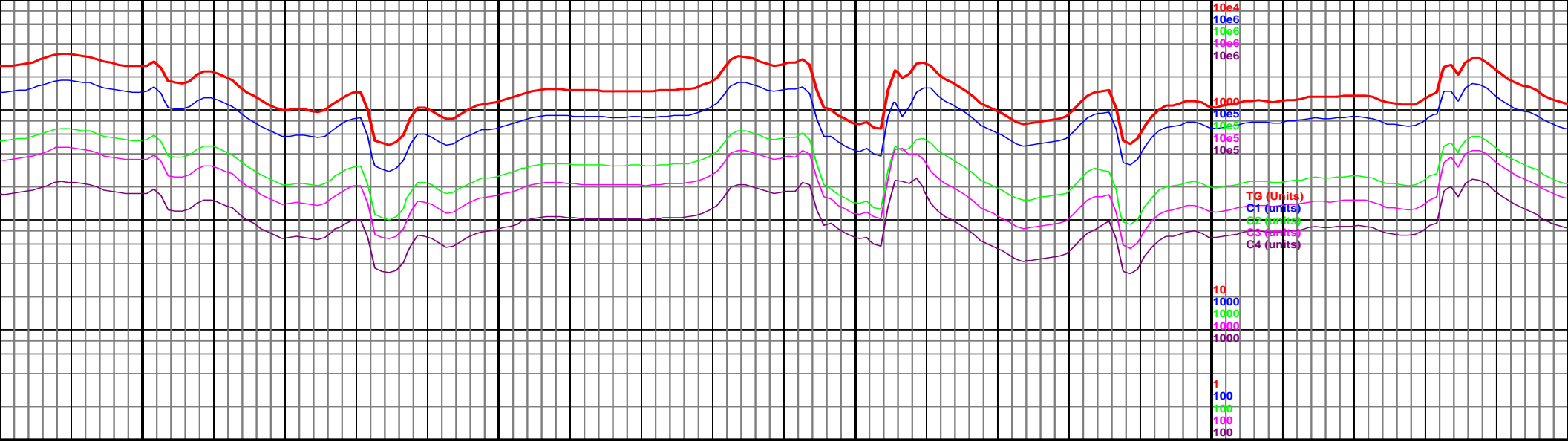


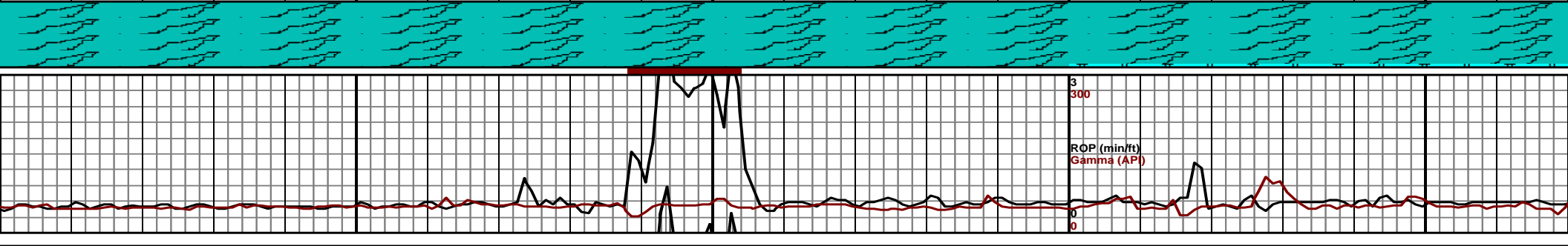
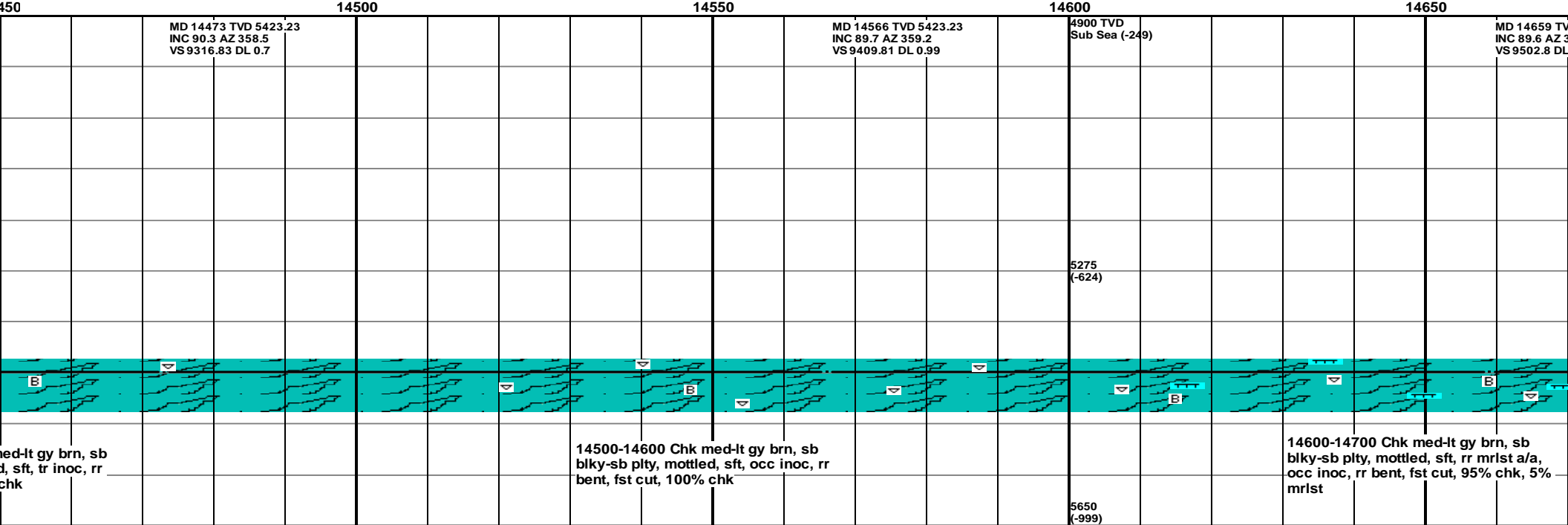
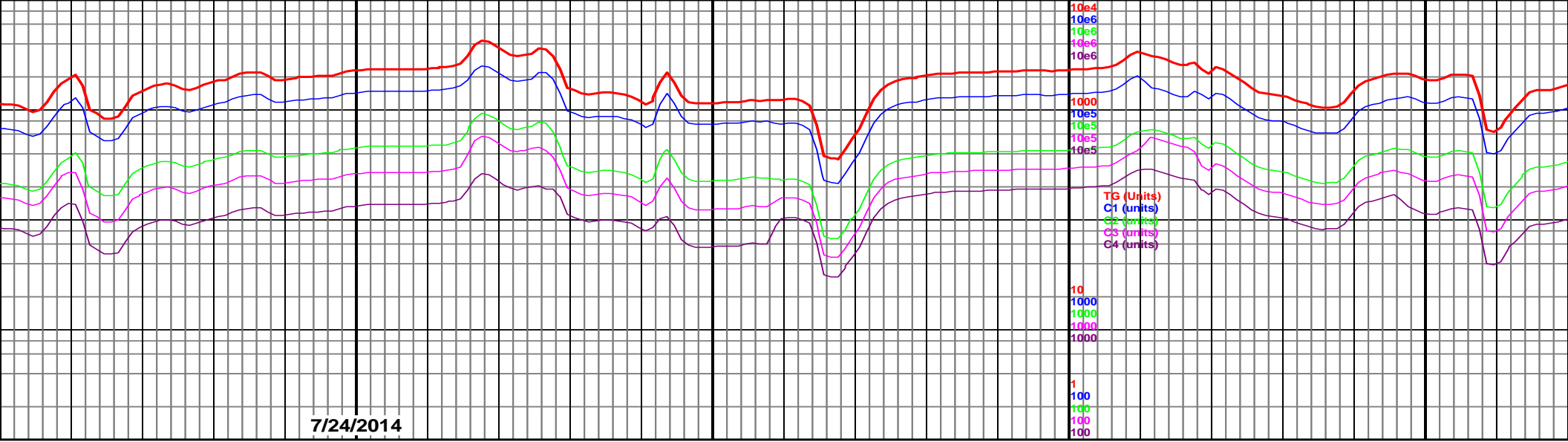


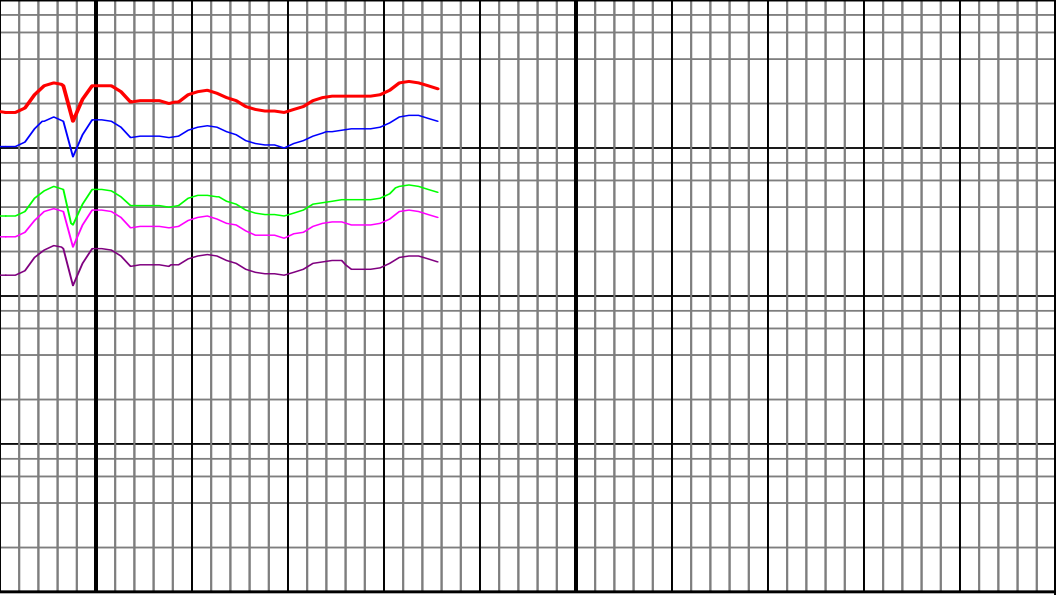












14900

14950

15

MD 14936 TVD 5424.36
INC 90.9 AZ 357.1
VS 9779.64 DL 1.62

**TD at the depth of 14936
at 06:55; 7/24/2014**



14900-14936 Chk med-lt gy brn, sb
blky-sb plty, mottled, sft, rr mrlst a/a, rr
inoc, rr bent, fst cut, 90% chk, 10%
mrlst

