



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

Well Name:	Razor 33M-2803		
API:	05-123-3925700		
Location:	SWSW 33-T10N-R58W, Weld County, Colorado		
License Number:	05-123-3925700	Region:	Redtail
Spud Date:	12/31/2014	Drilling Completed:	1/7/2015
Surface Coordinates:	Lat.: 40.789186		
	Long.: -103.876633		
Bottom Hole Coordinates:			
Ground Elevation (ft):	4729	K.B. Elevation (ft):	4748
Logged Interval (ft):	5050	Total Depth (ft):	13129
	To:	13129	
Formation:	Niobrara		
Type of Drilling Fluid:	Water Based Mud		

Printed by HORIZONTAL.LOG 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: Craig Dreiling, Mark Denler
Company: Acme Geologic Consulting
Address: 108 Berry Street
Little Rock, AR 72205

Drilling Company

Pioneer #54


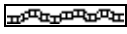
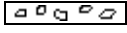
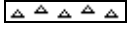
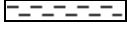
Gas Detection






Mudlogging Systems, Inc., M Logger, Model TGC, Total Gas and Chromatograph, #311



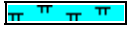
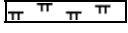

Comments

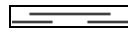
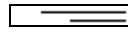
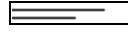


Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.




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

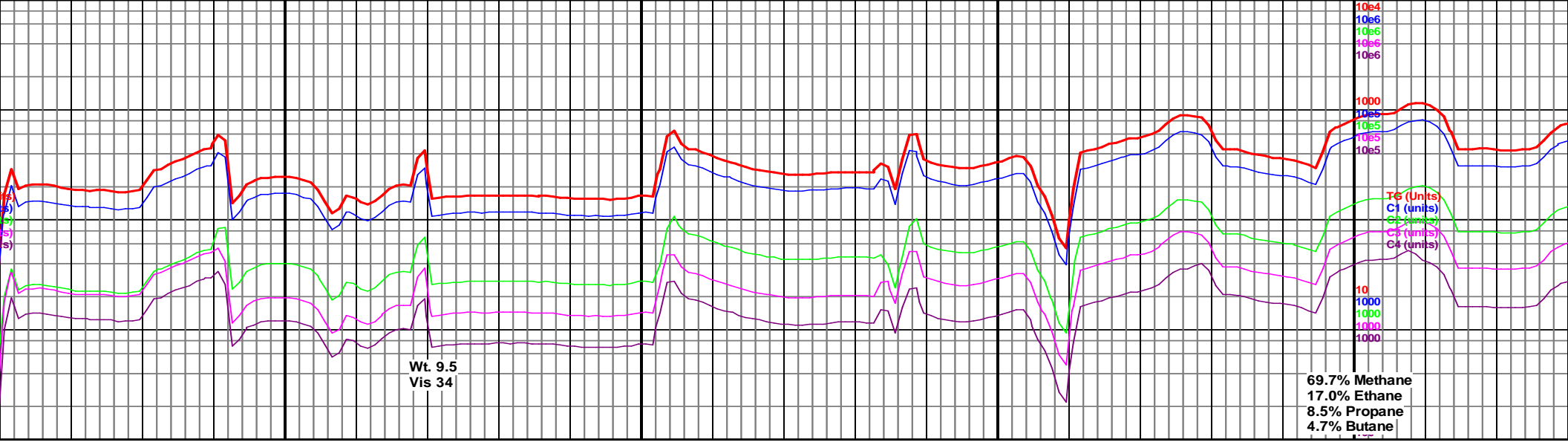
ROUNDING
 Rounded
 Subrnd
 Subang
 Angular

OIL SHOW
 Good
 Fair
 Poor

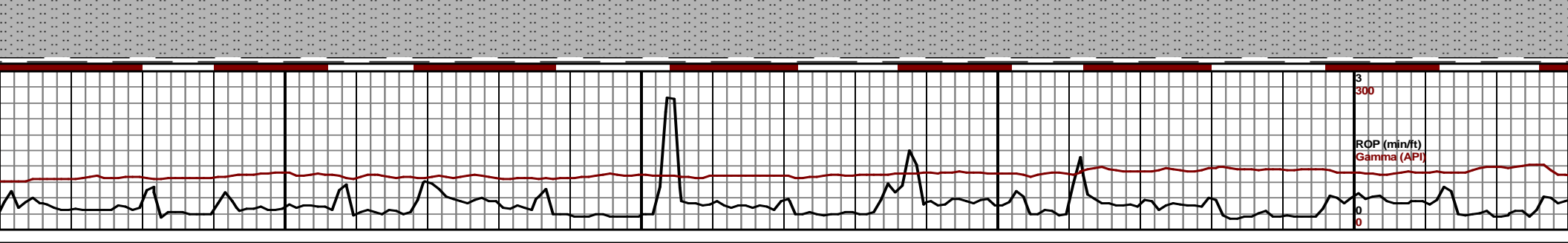
INTERVAL
 Core

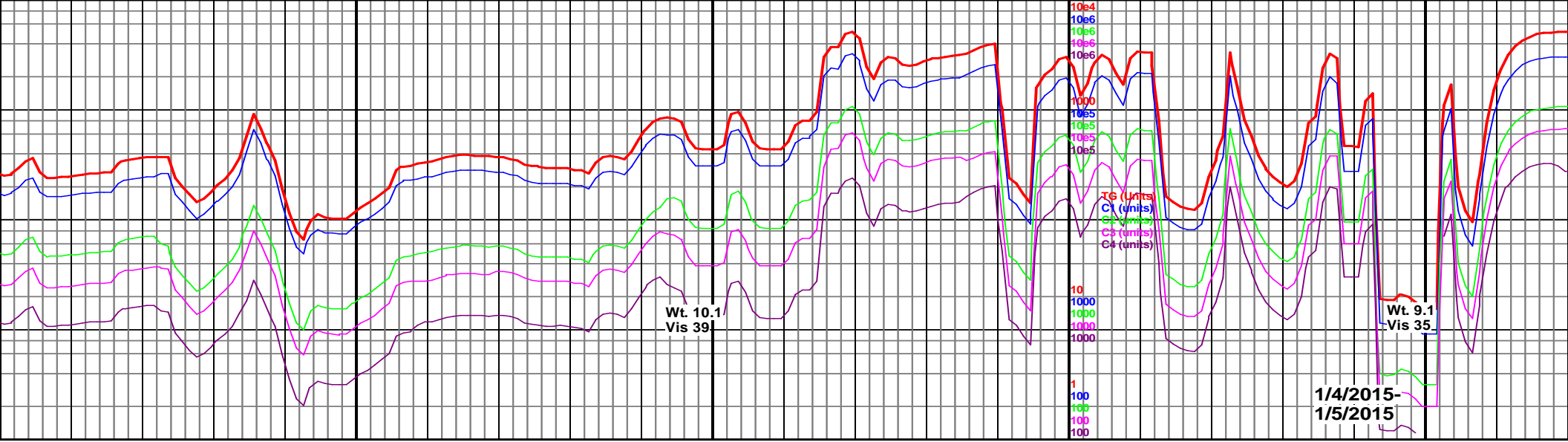
 Dst

EVENT
 Rft
 Sidewall

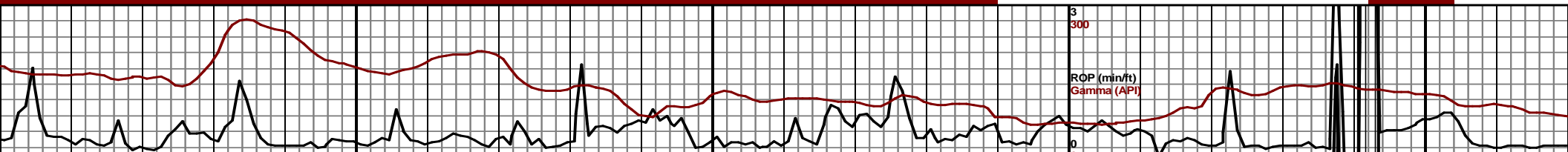


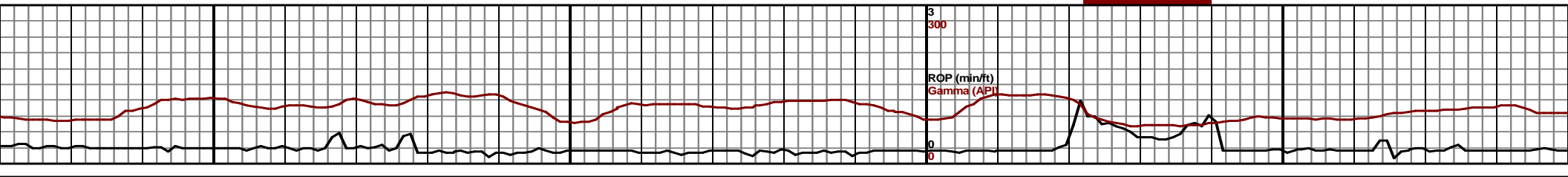
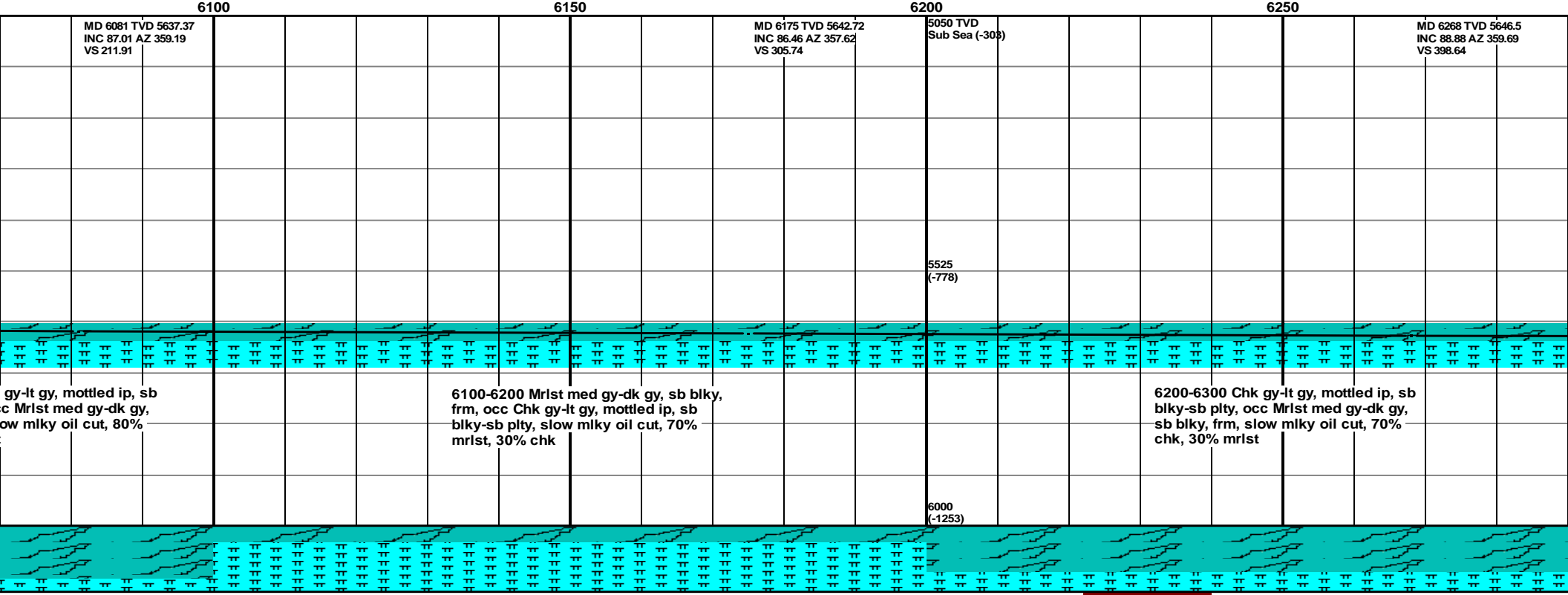
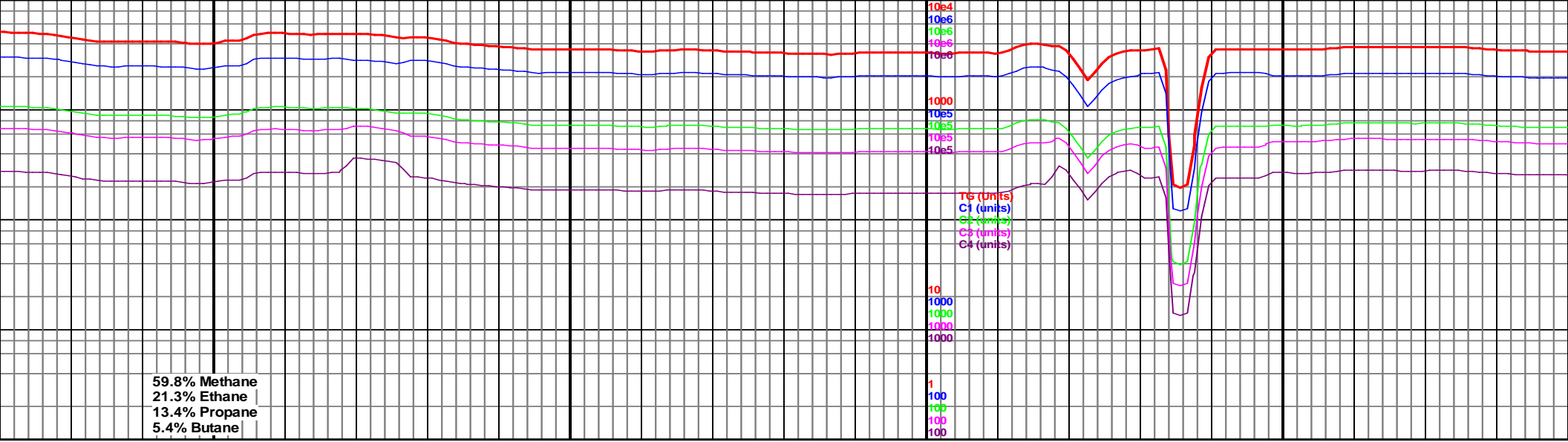
MD 5424 TVD 5359.12 INC 37.14 AZ 1.47 VS -356.76	MD 5455 TVD 5383.39 INC 39.81 AZ 358.58 VS -337.48	MD 5486 TVD 5406.8 INC 42.11 AZ 357.54 VS -317.17	MD 5516 TVD 5428.67 INC 44.3 AZ 358.01 VS -296.64	MD 5547 TVD 5450.26 INC 47.4 AZ 359.1 VS -274.4	MD 5578 TVD 5470.66 INC 50.28 AZ 359.6 VS -251.07	5505 TVD Sub Sea (-30) INC 52.7 AZ 0.39 VS -226.81	MD 5609 TVD 5489.96 INC 52.7 AZ 0.39 VS -226.81
5450 Sltst gy-lt gy, sb plty-sb mod frm-frm, non calc, arg ip, to Sh, 90% Sltst, 10% Sh	5450-5500 Sltst gy-lt gy, sb plty-blky, mod frm-frm, non calc, arg ip, grdg to Sh, 90% Sltst, 10% Sh	5500-5550 Sltst gy-lt gy, sb plty-blky, mod frm-frm, non calc, arg ip, grdg to Sh, 90% Sltst, 10% Sh	5550-5600 Sltst gy-lt gy, sb blky-plty, mod frm-frm, non calc, arg ip, grdg to Sh, 90% Sltst, 10% Sh	5600-5650 Sltst gy-lt gy, mod frm-frm, non calc, a Sh, 90% Sltst, 10% Sh	P200 5 5529'		

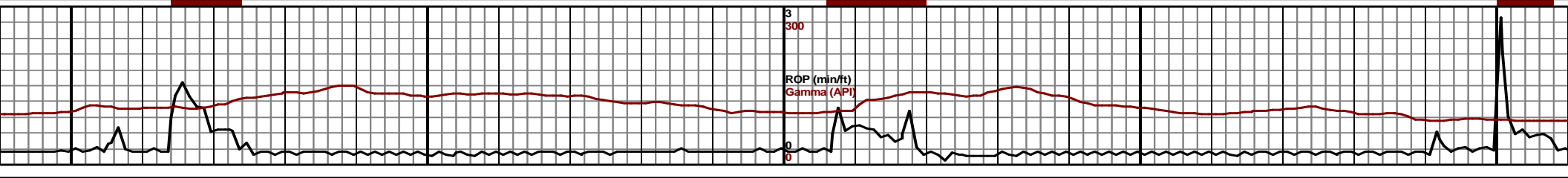
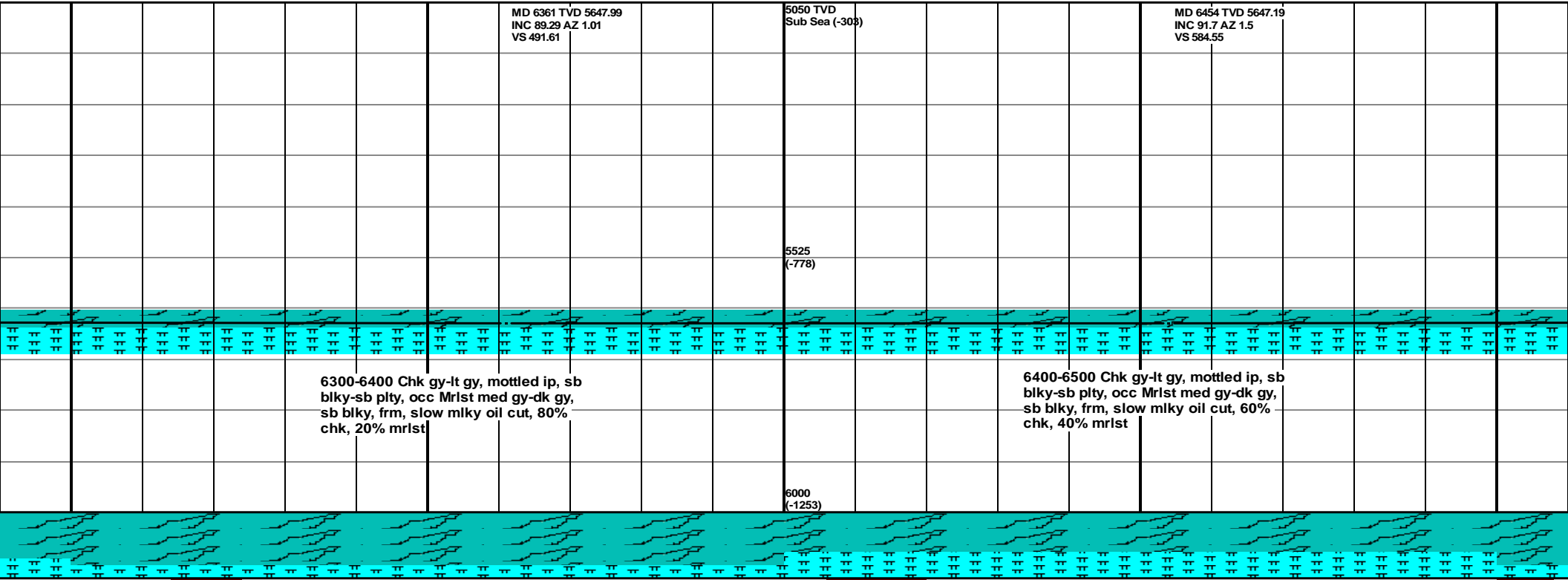
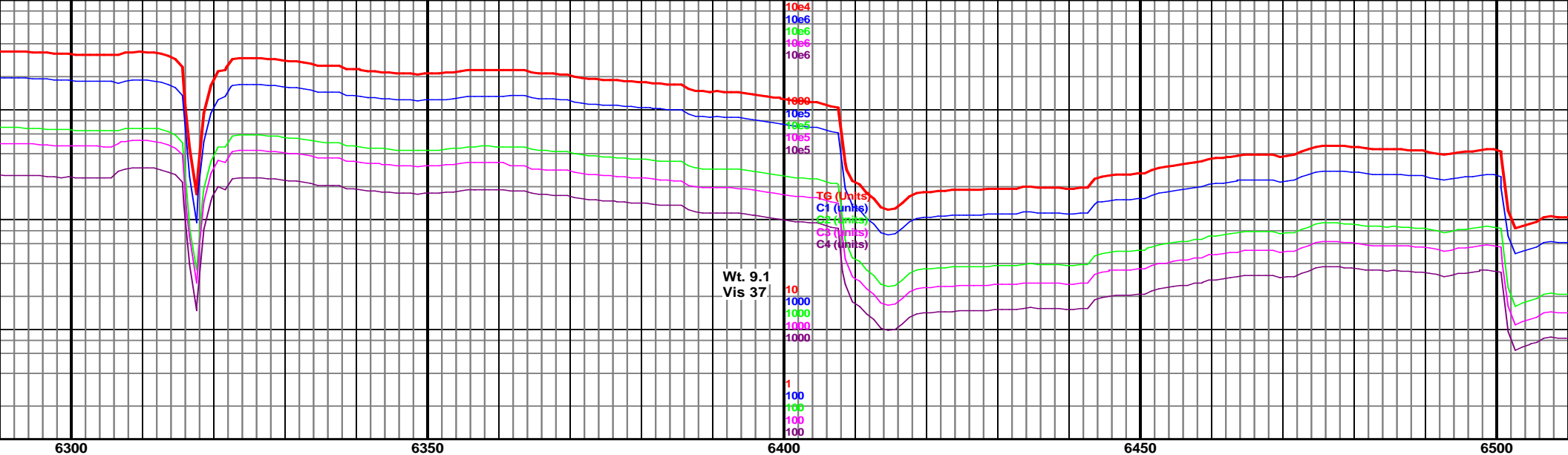


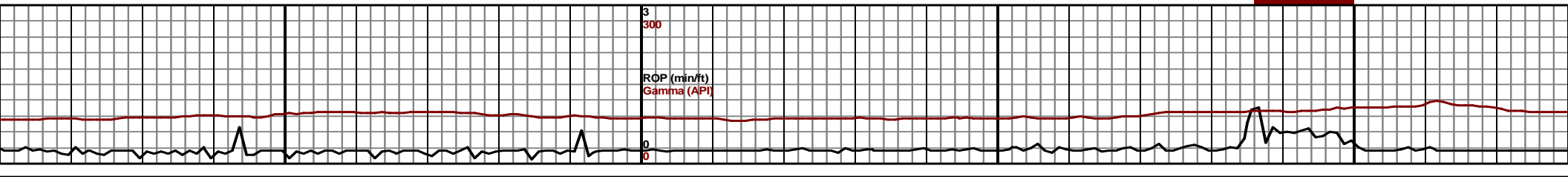
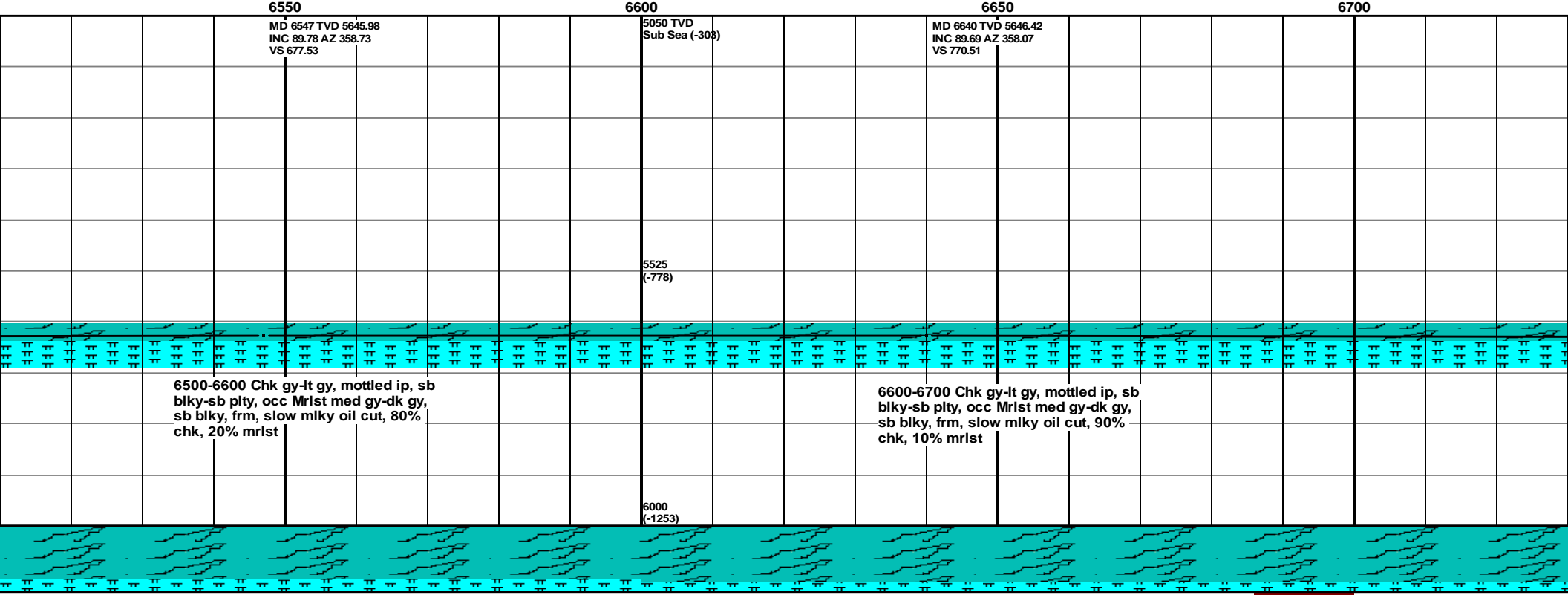
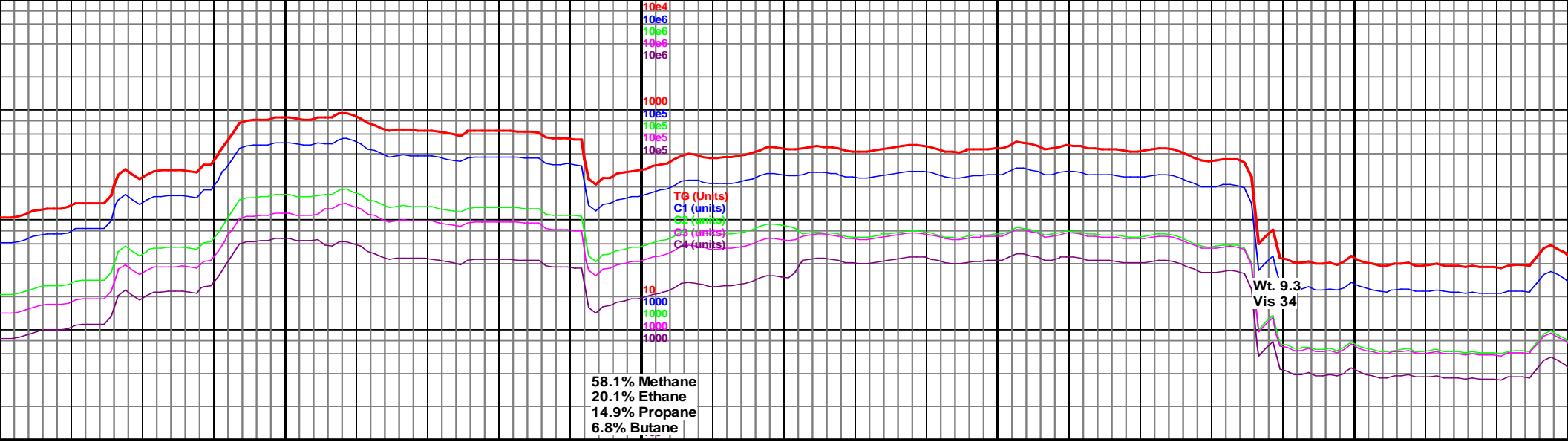


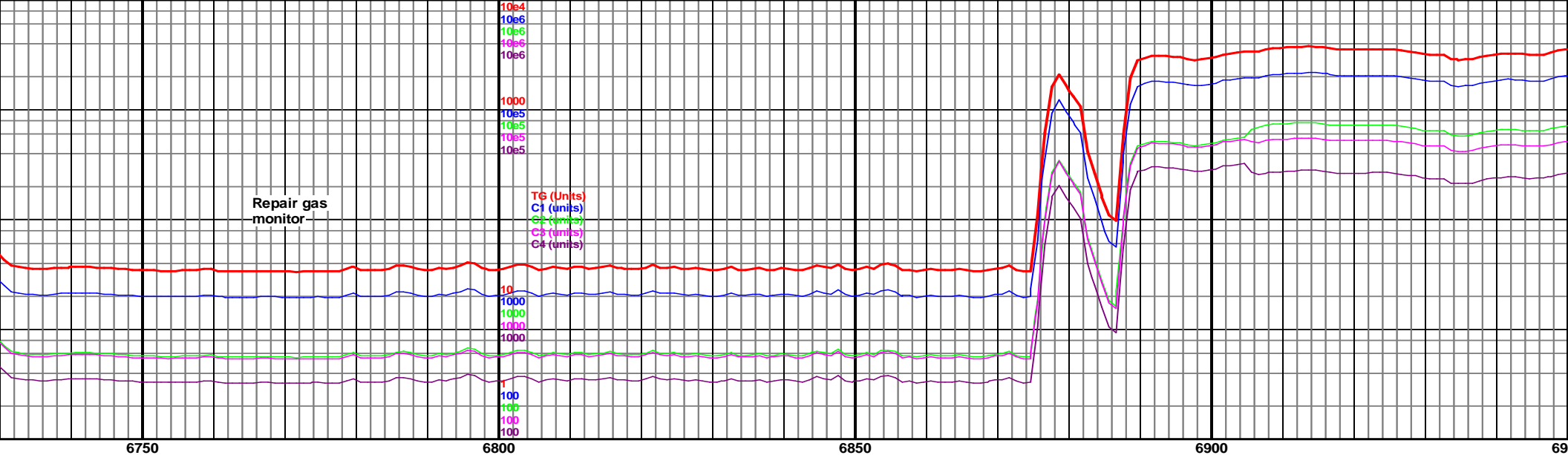
MD 5856 TVD 5606.69 INC 71.93 AZ 358.83 VS -10.3	MD 5886 TVD 5615.07 INC 75.62 AZ 358.4 VS 18.49	MD 5917 TVD 5621.61 INC 80 AZ 358.79 VS 48.78	MD 5947 TVD 5626.26 INC 82.18 AZ 359.13 VS 78.42	MD 5978 TVD 5630 INC 83.95 AZ 0.48 VS 109.19	MD 5998 TVD 5631.86 INC 85.38 AZ 0.55 VS 129.1											
<p>0' MD, 0</p> <p>Sharon Springs 5878' MD, 5612' TVD</p> <p>Niobrara 5927' MD, 5622' TVD</p> <p>5850-5900 Sh med-dk gy, sb plty-plty, mod sft-mod frm, Slstst gy, sb plty-plty, mod frm-frm, non calc, arg ip, abnt bent tan-org, occ bri yel min flor, 90% sh, 10% sltst</p>								<p>N100 5990' MD, 5630' TVD</p>								



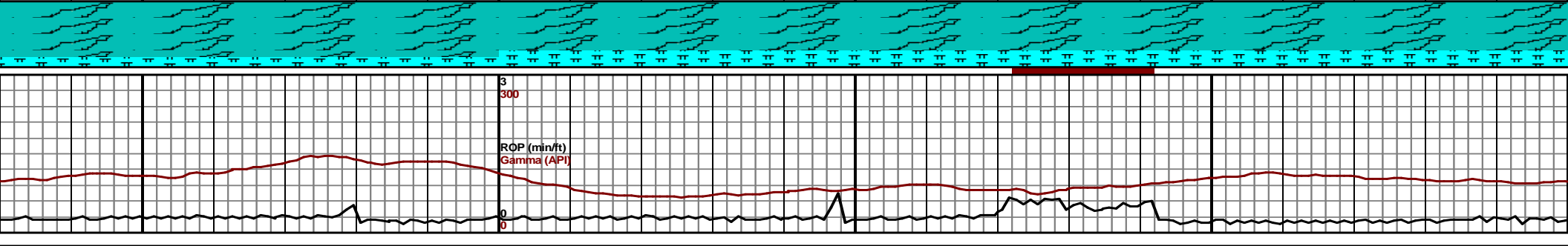


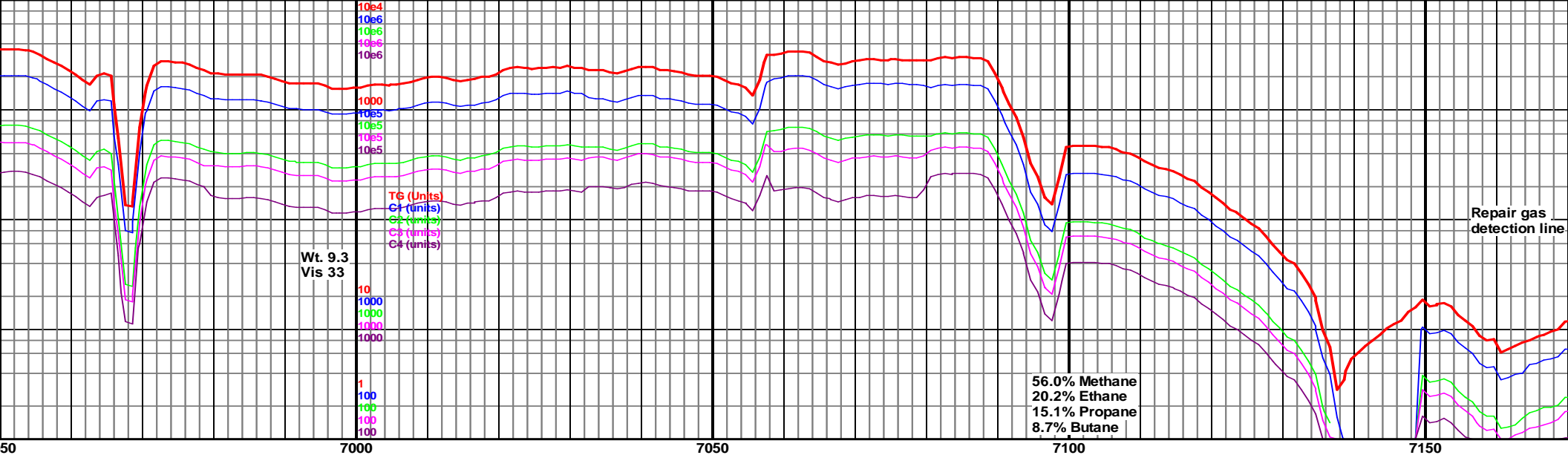






MD 6732 TVD 5647.31 INC 89.2 AZ 359.55 VS 862.5		5050 TVD Sub Sea (-303)	MD 6825 TVD 5649.3 INC 88.34 AZ 358.63 VS 955.47		MD 6919 TVD 5651.71 INC 88.73 AZ 1.5 VS 1049.42	69
		5525 (-778)				
6700-6800 Chk gy-lt gy, mottled ip, sb blky-sb plty, occ Mrlst med gy-dk gy, sb blky, frm, slow mlky oil cut, 90% chk, 10% mrlst		6000 (-1253)	6800-6900 Chk gy-lt gy, mottled ip, sb blky-sb plty, occ Mrlst med gy-dk gy, sb blky, frm, slow mlky oil cut, 80% chk, 20% mrlst			6900-7000 Chk gy blky-sb plty, occ sb blky, frm, slow chk, 20% mrlst



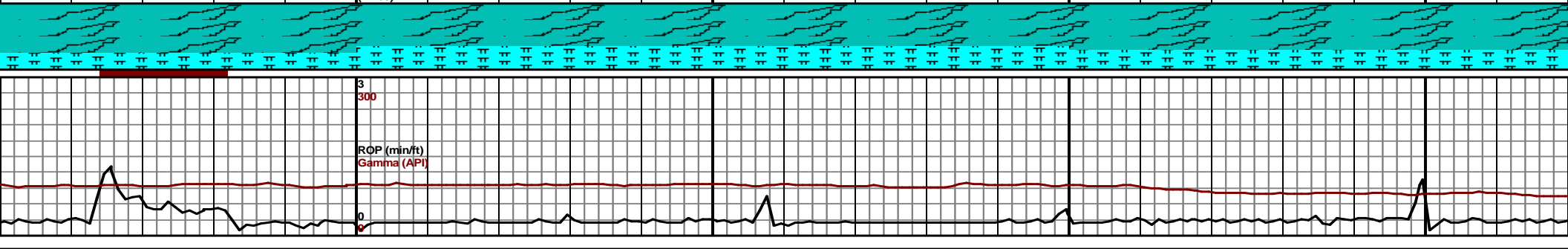


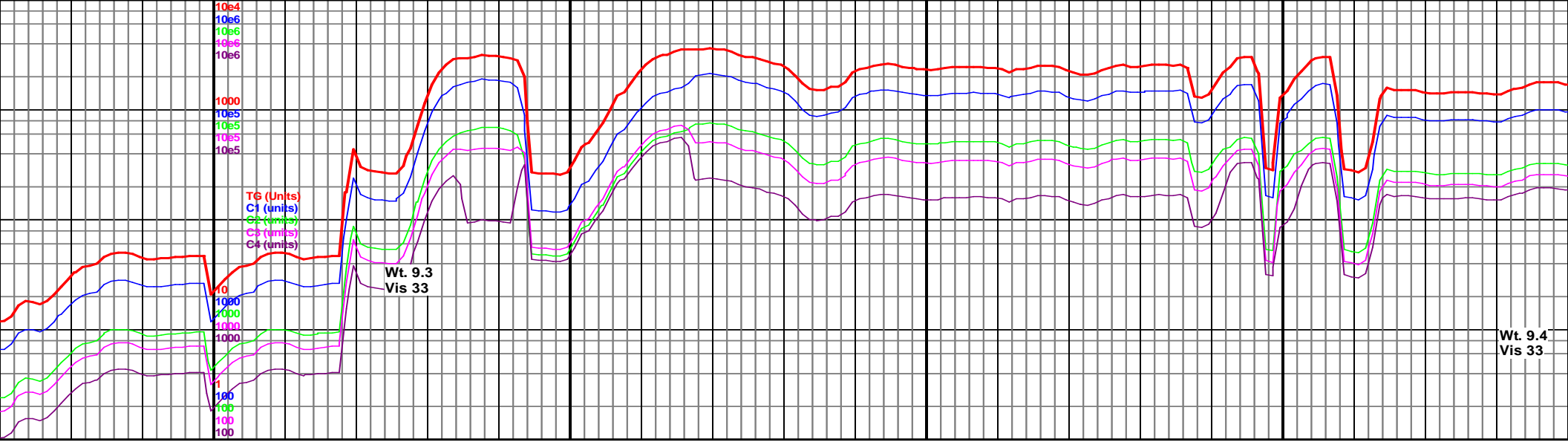
5050 TVD Sub Sea (-303)	MD 7012 TVD 5652.44 INC 90.37 AZ 3.72 VS 1142.27	MD 7105 TVD 5652.42 INC 89.63 AZ 1.2 VS 1235.13
5525 (-778)		

0-50 gy, mottled ip, sb
Mrlst med gy-dk gy,
mlky oil cut, 80%

7000-7100 Chk gy-lt gy, mottled ip, sb
blky-sb plty, occ Mrlst med gy-dk gy,
sb blky, frm, slow mlky oil cut, 70%
chk, 30% mrlst

7100-7200 Chk gy-lt gy, mottled ip, sb
blky-sb plty, occ Mrlst med gy-dk gy,
sb blky, frm, slow mlky oil cut, 80%
chk, 20% mrlst





MD 7198 TVD 5653.47
INC 89.08 AZ 0.79
VS 1328.09

MD 7291 TVD 5656.06
INC 87.72 AZ 359.82
VS 1421.04

MD 7381 TVD 5658.06
INC 88.00 AZ 359.82
VS 1511.04

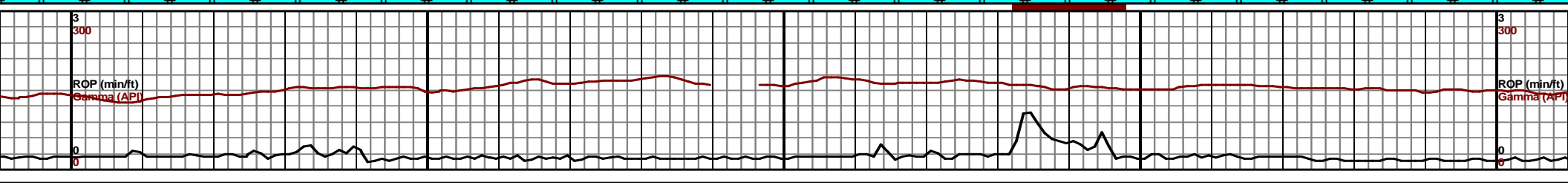
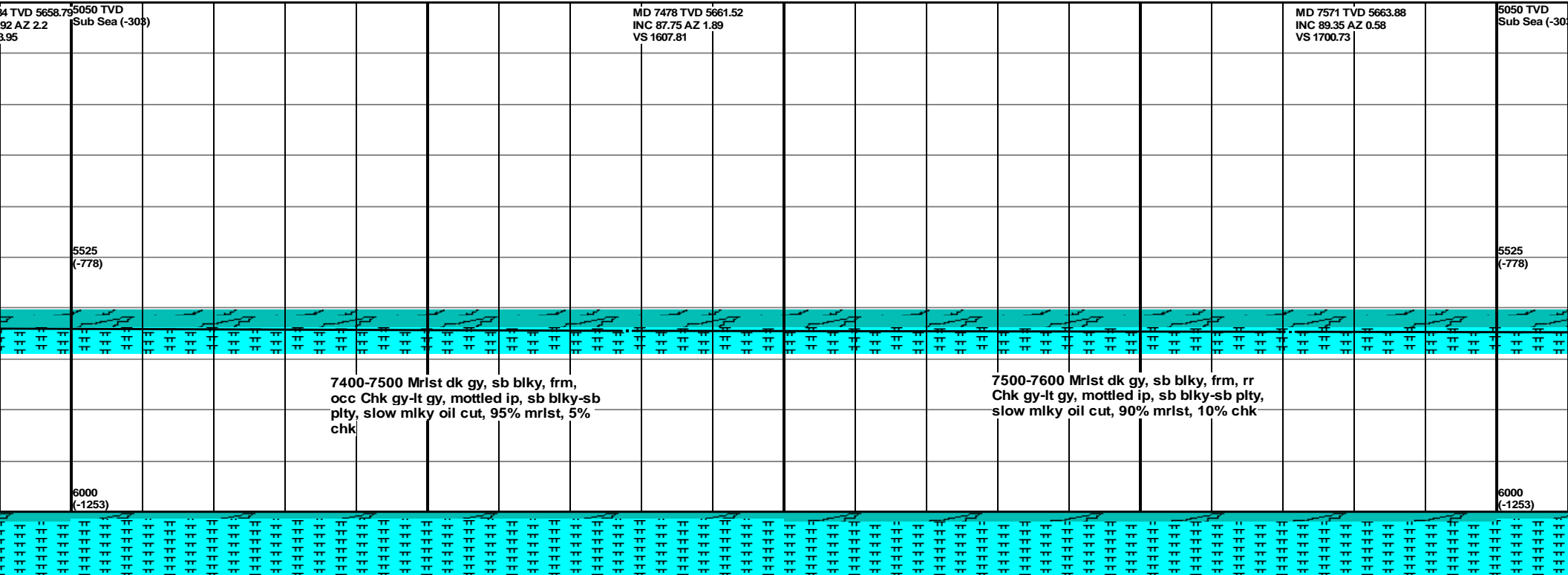
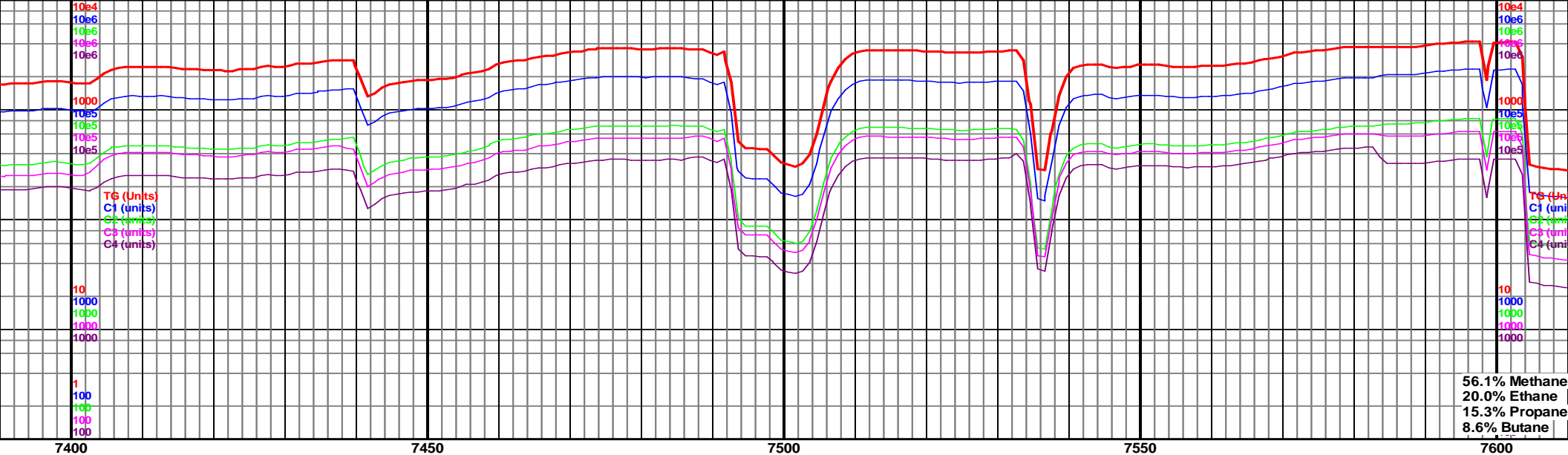
5525
(-778)

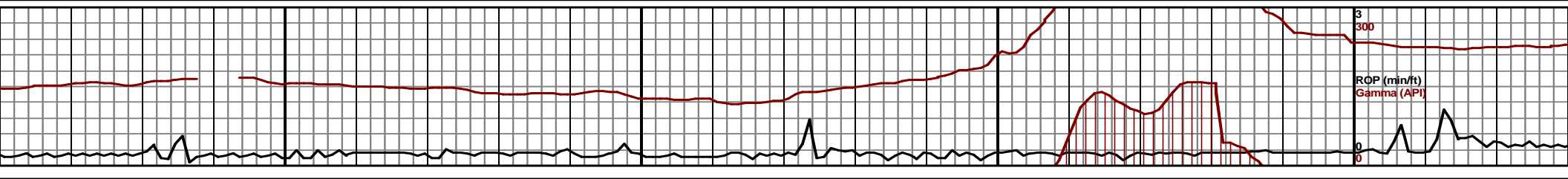
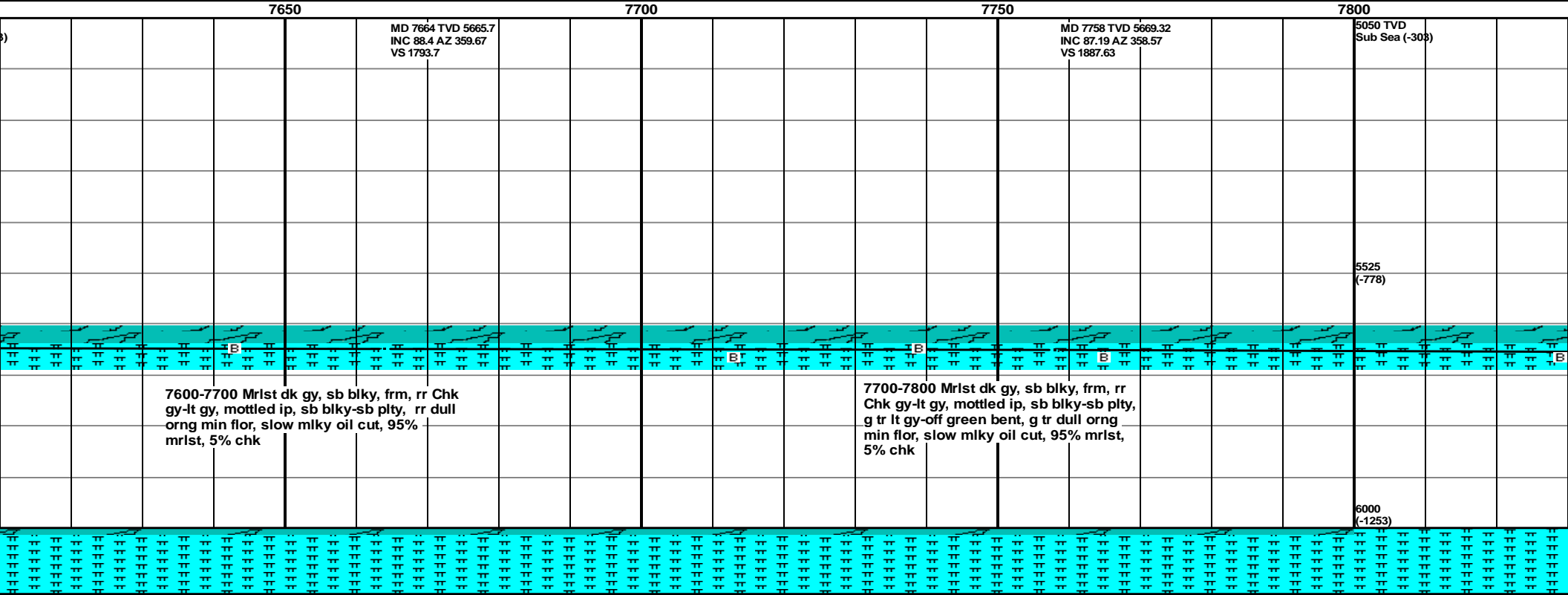
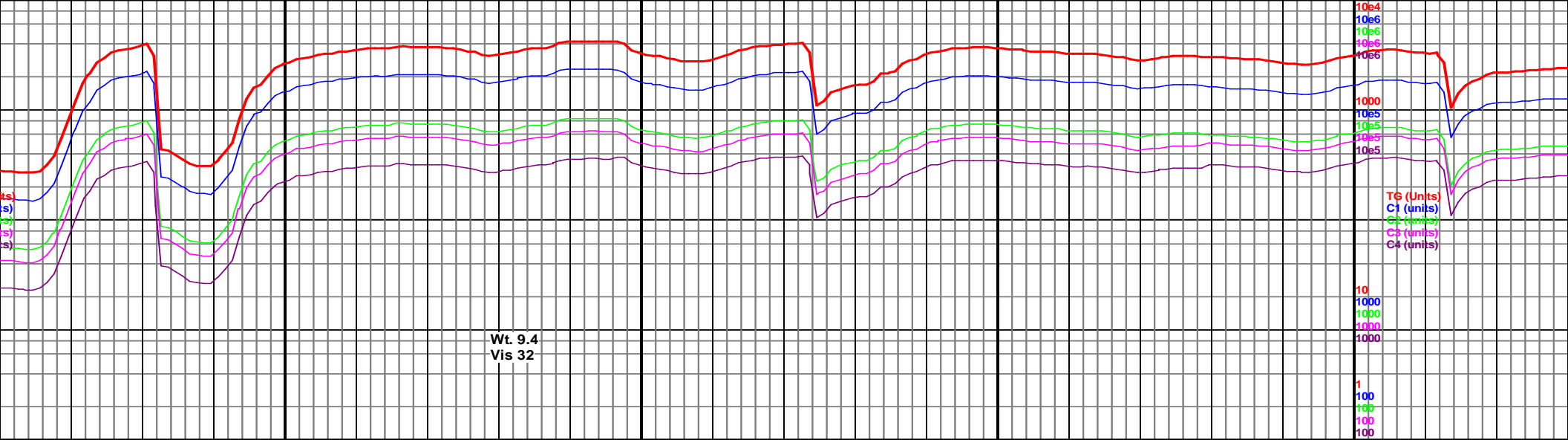
6000
(-1253)

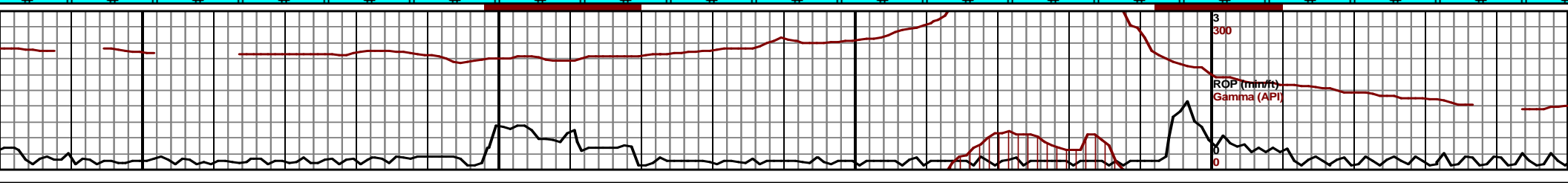
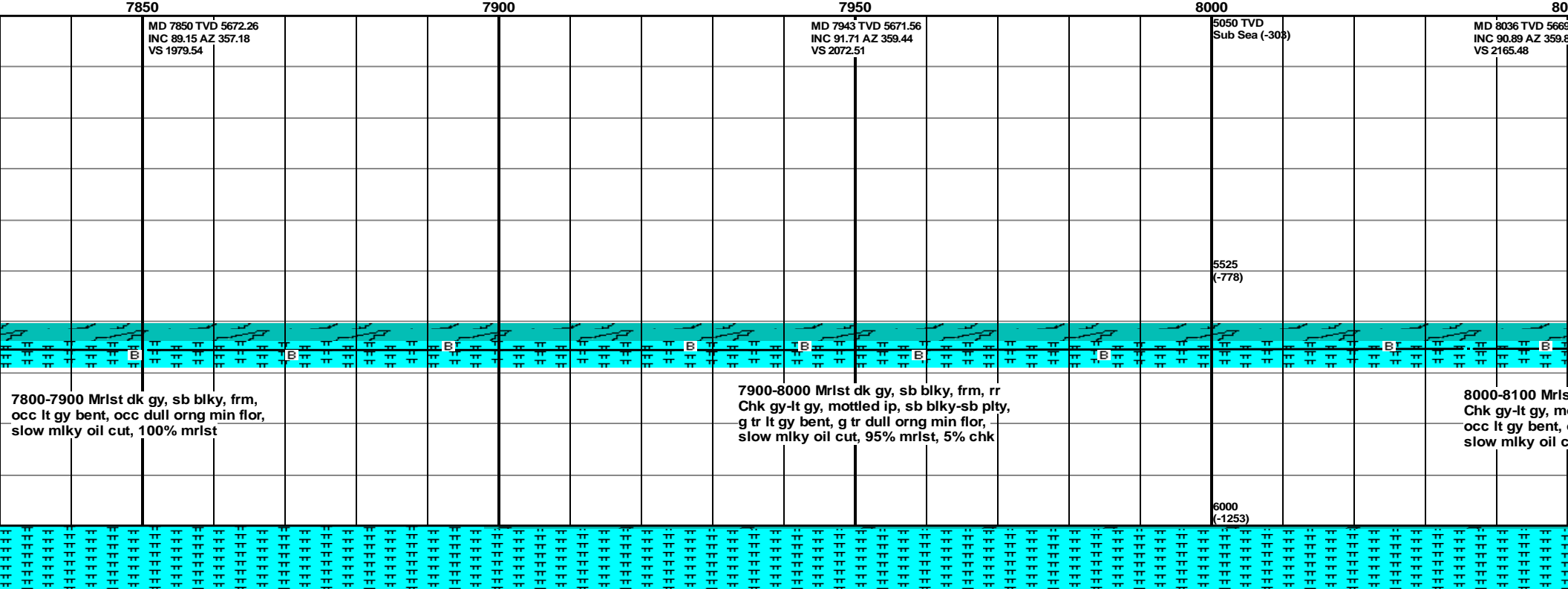
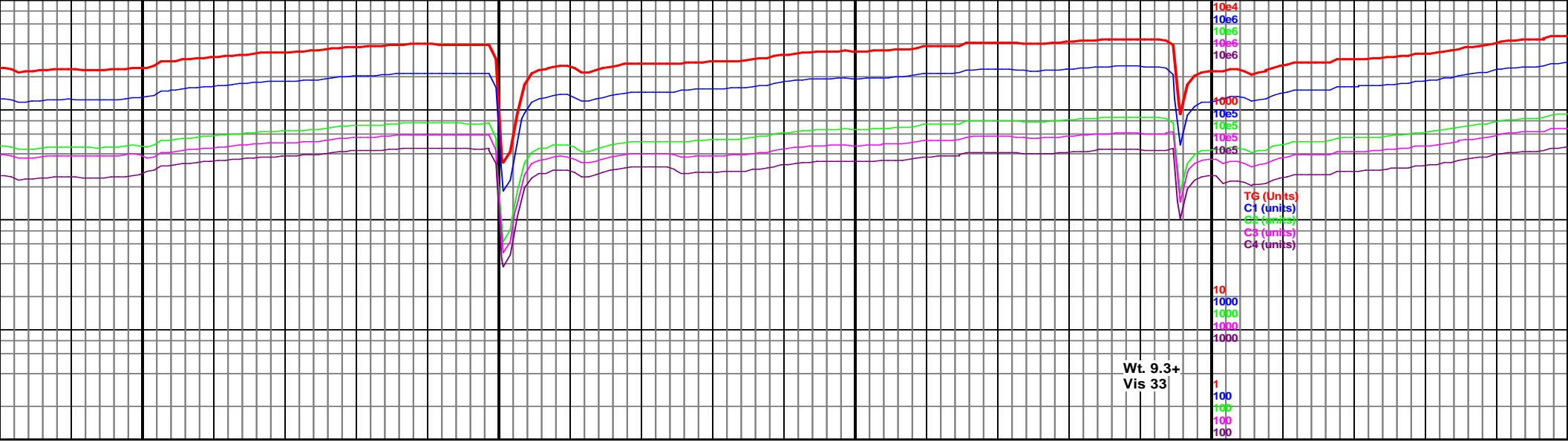
7200-7300 Mrlst dk gy, sb blk, frm,
occ Chk gy-lt gy, mottled ip, sb blk-sb
plty, tr pyr, tr dull yel min flor, slow
mlky oil cut, 70% mrlst, 30% chk

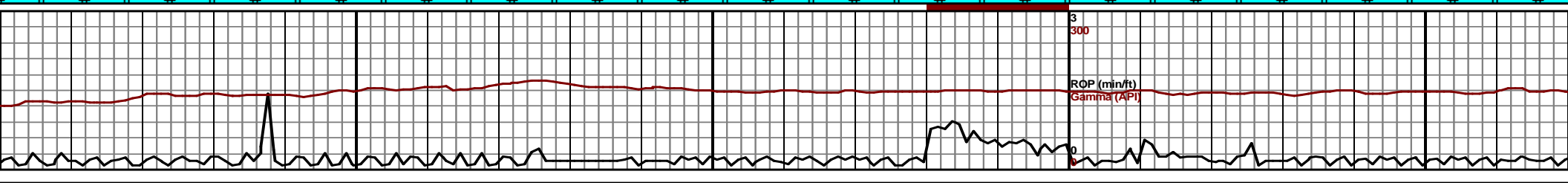
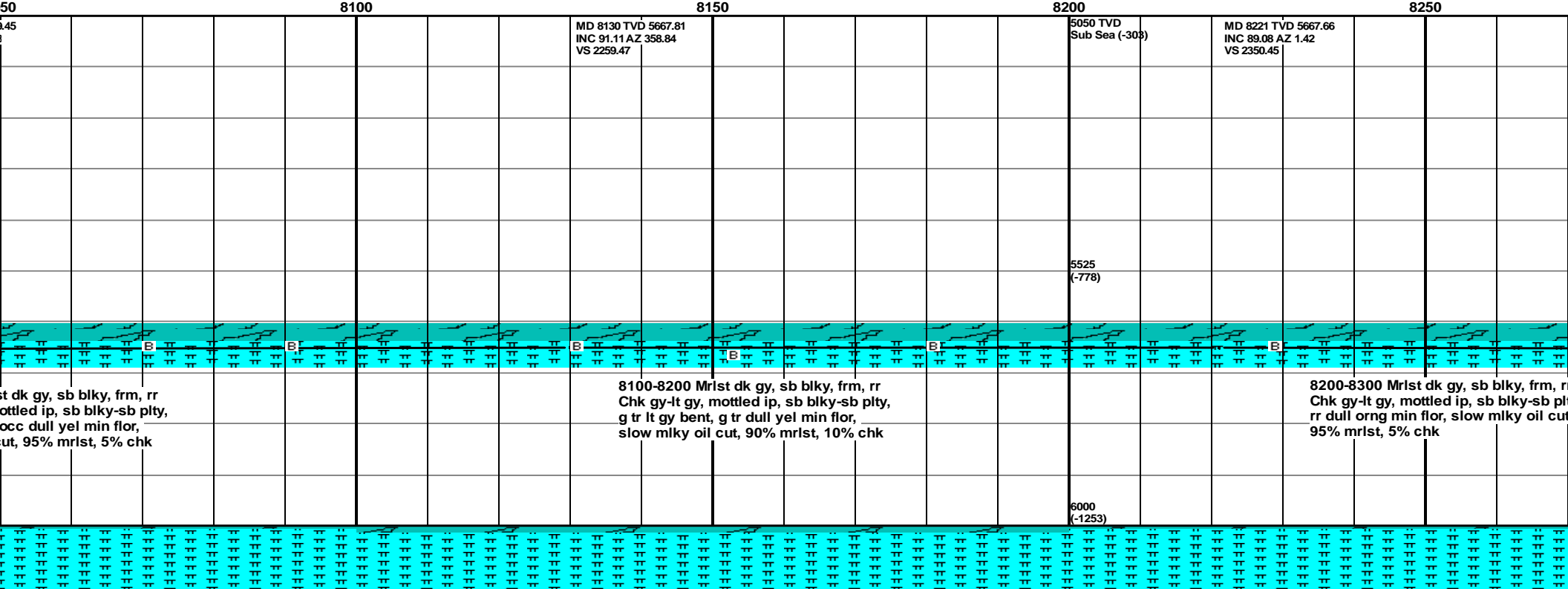
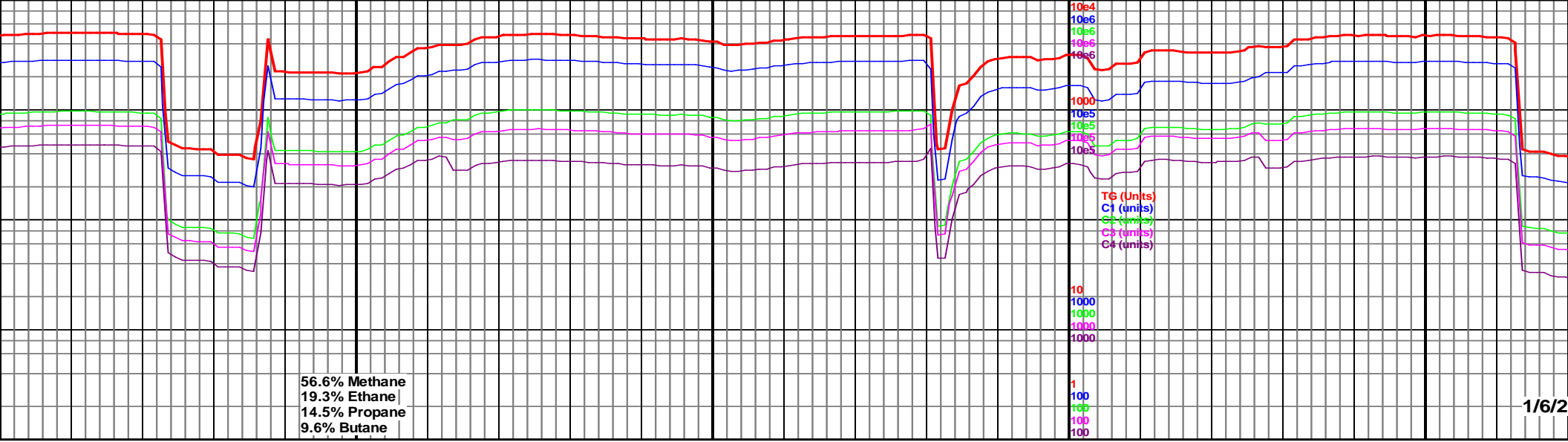
7300-7400 Mrlst dk gy, sb blk, frm, occ
Chk gy-lt gy, mottled ip, sb blk-sb plty, tr
dull yel min flor, slow mlky oil cut, 90%
mrlst, 10% chk

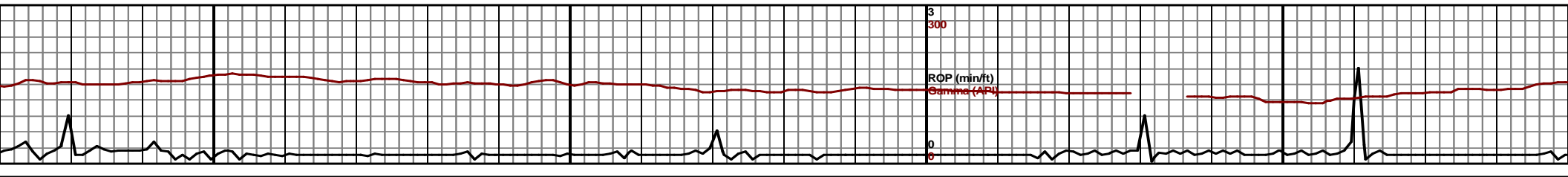
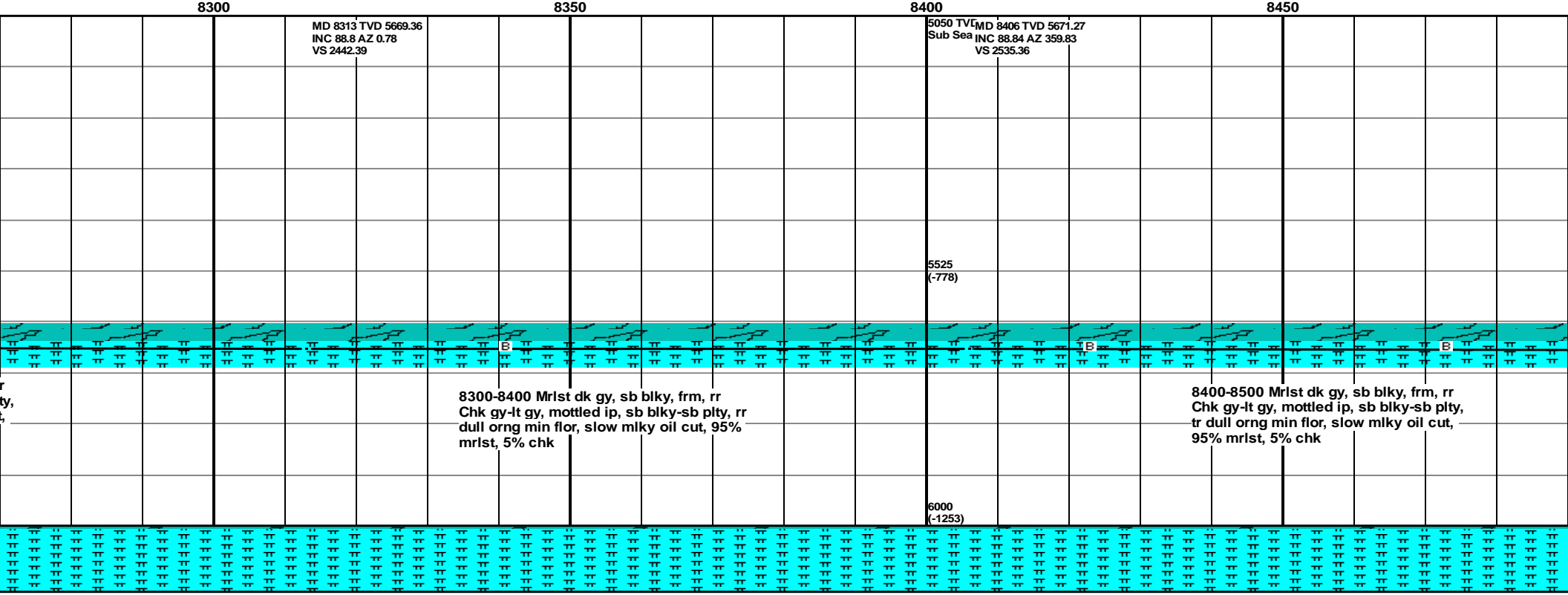
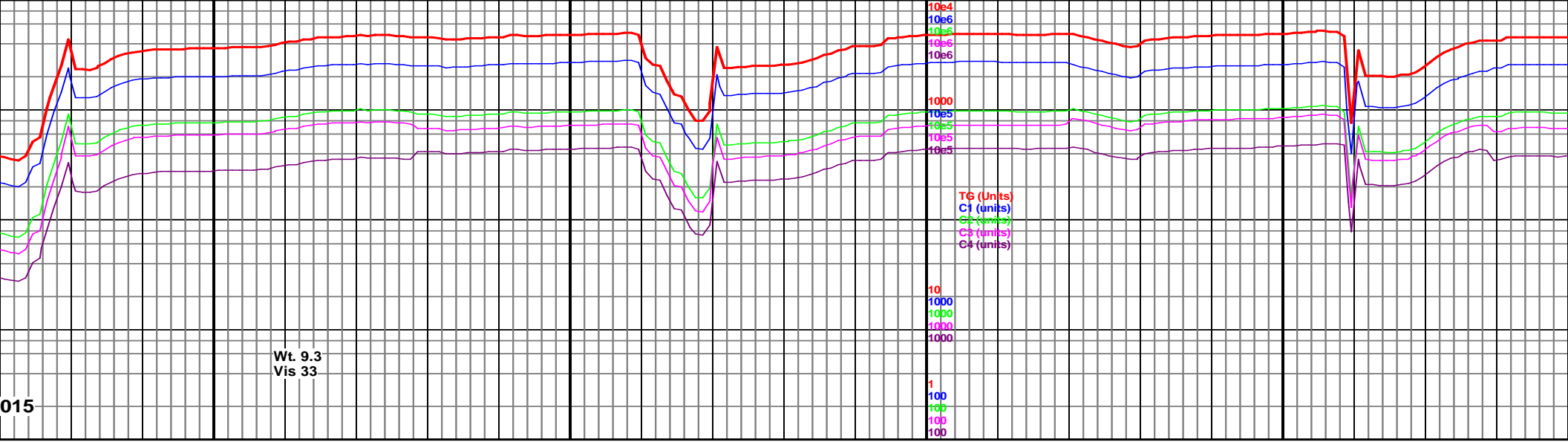
ROP (min/ft)
Gamma (API)

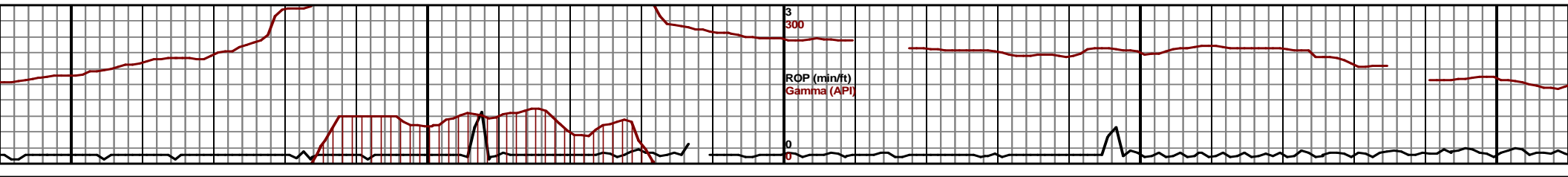
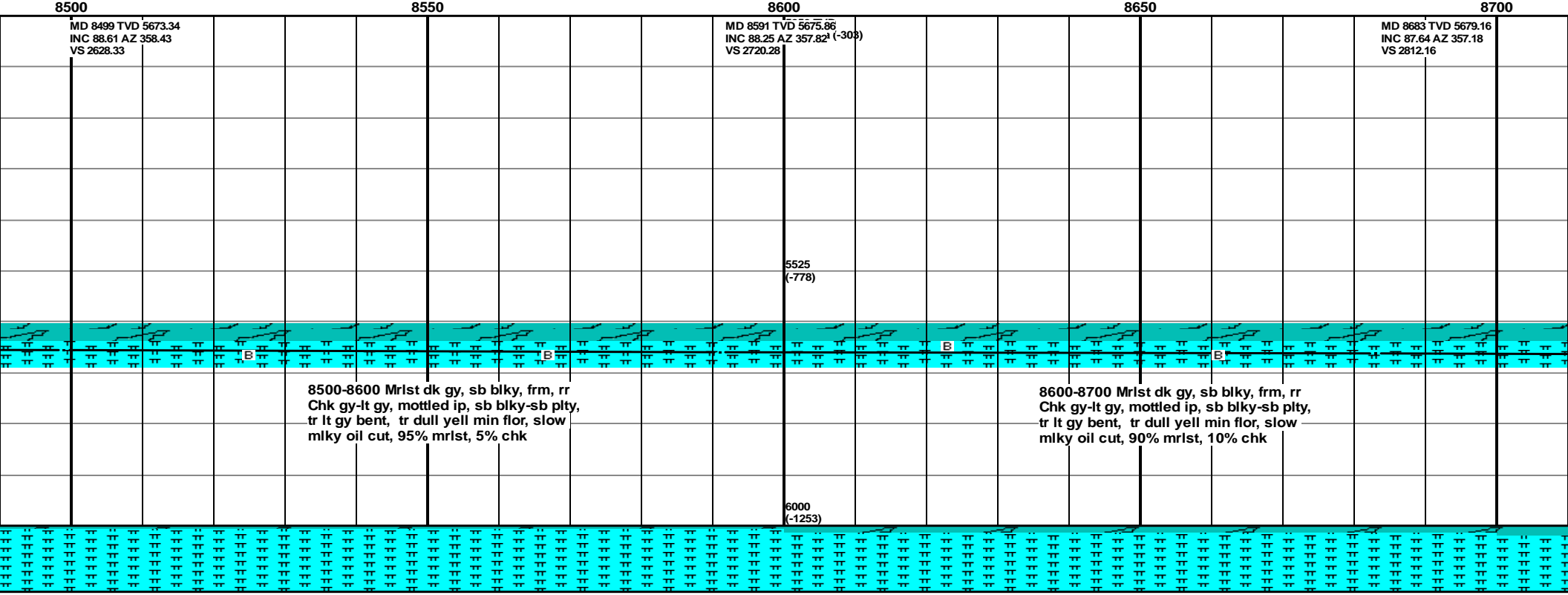
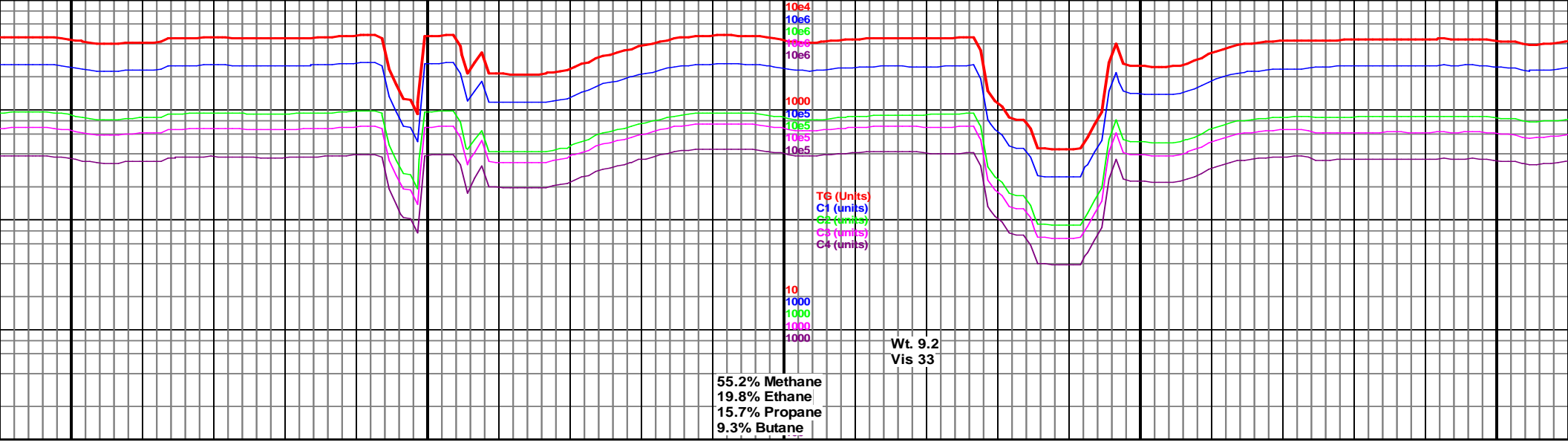


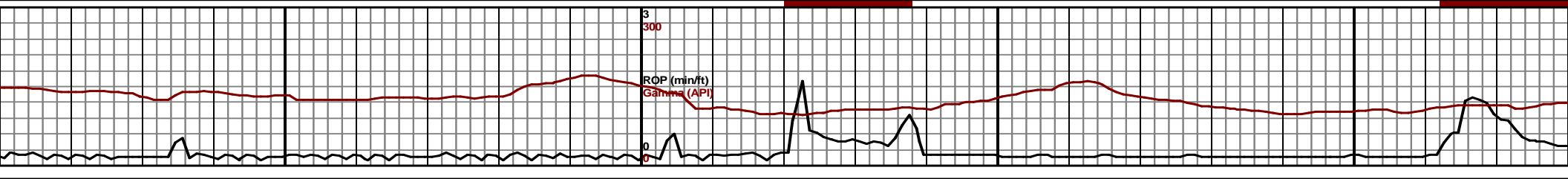
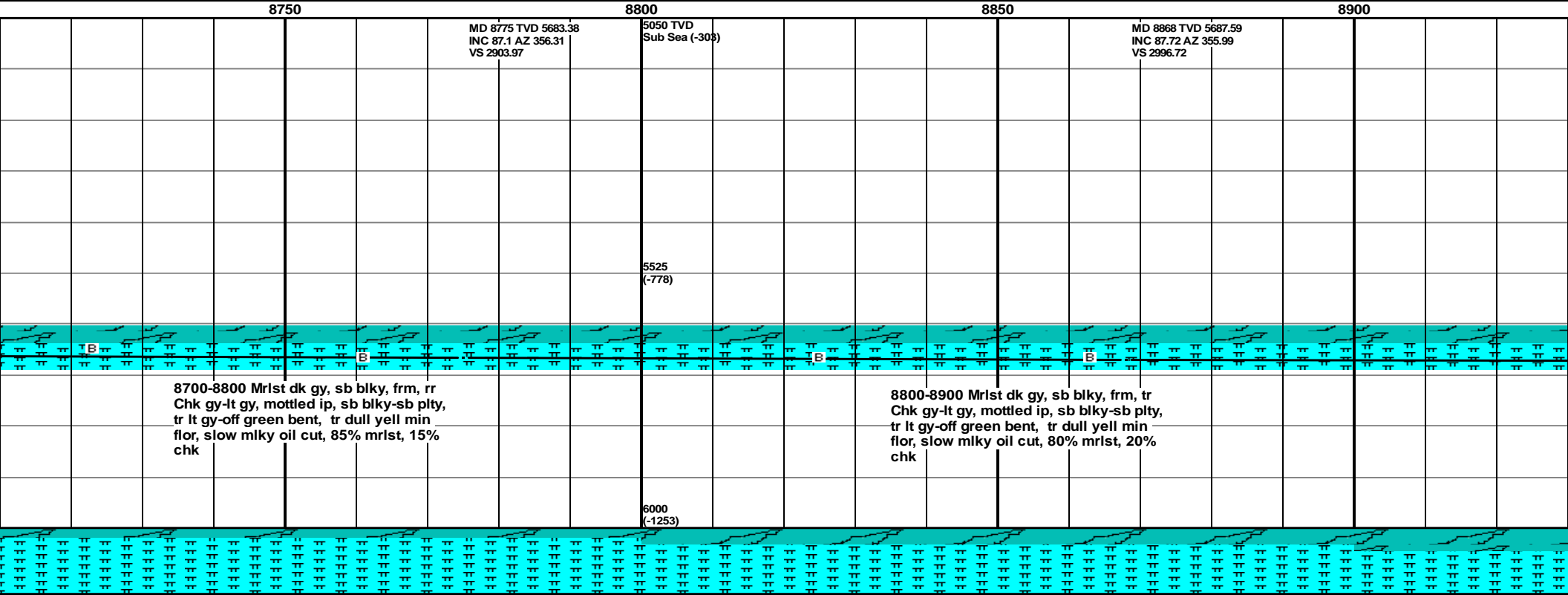
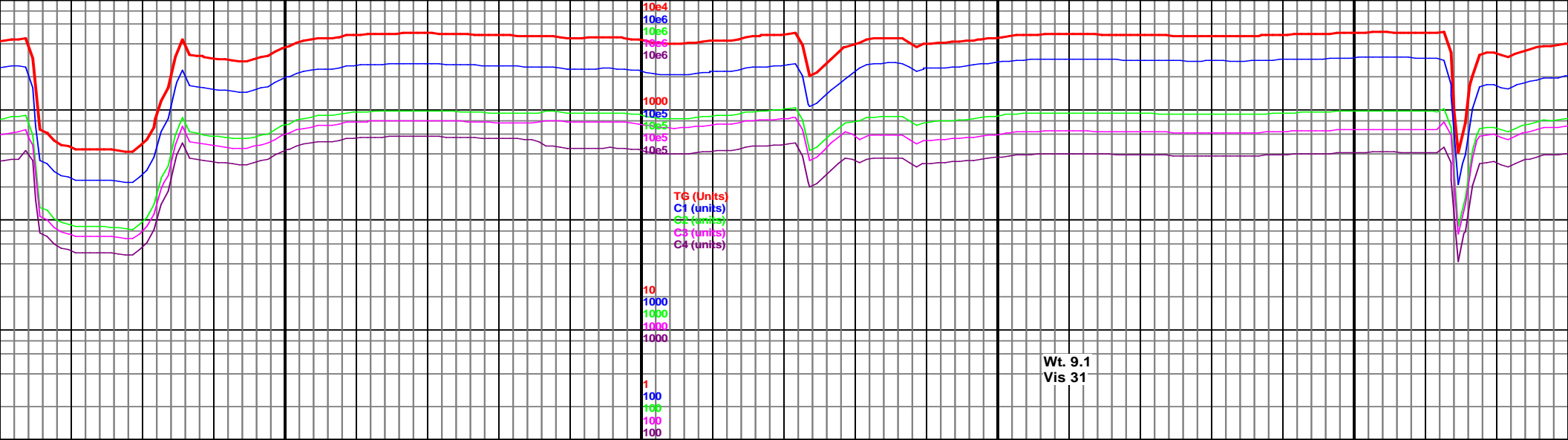


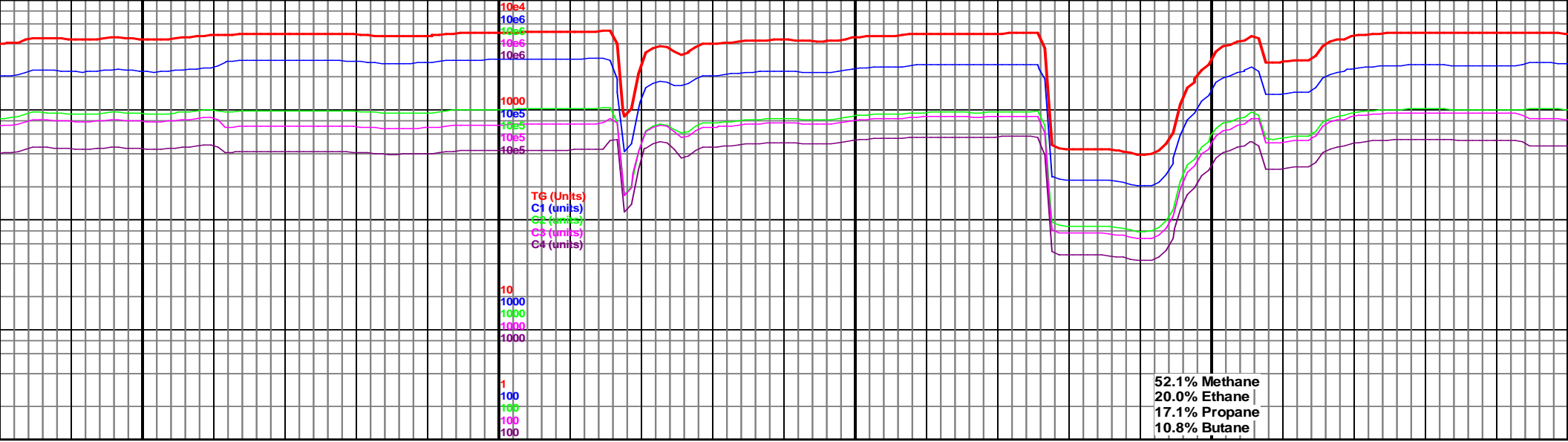




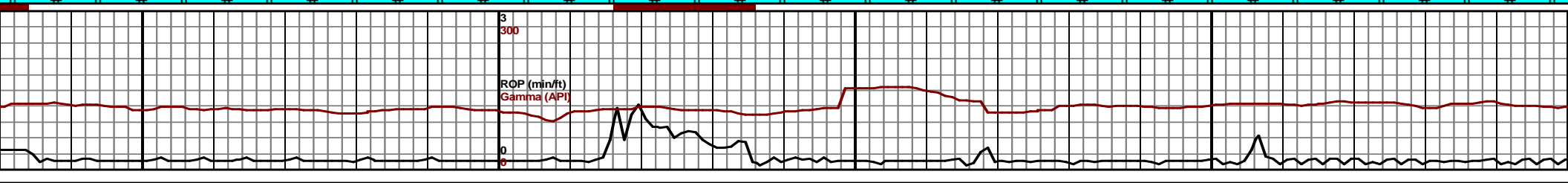


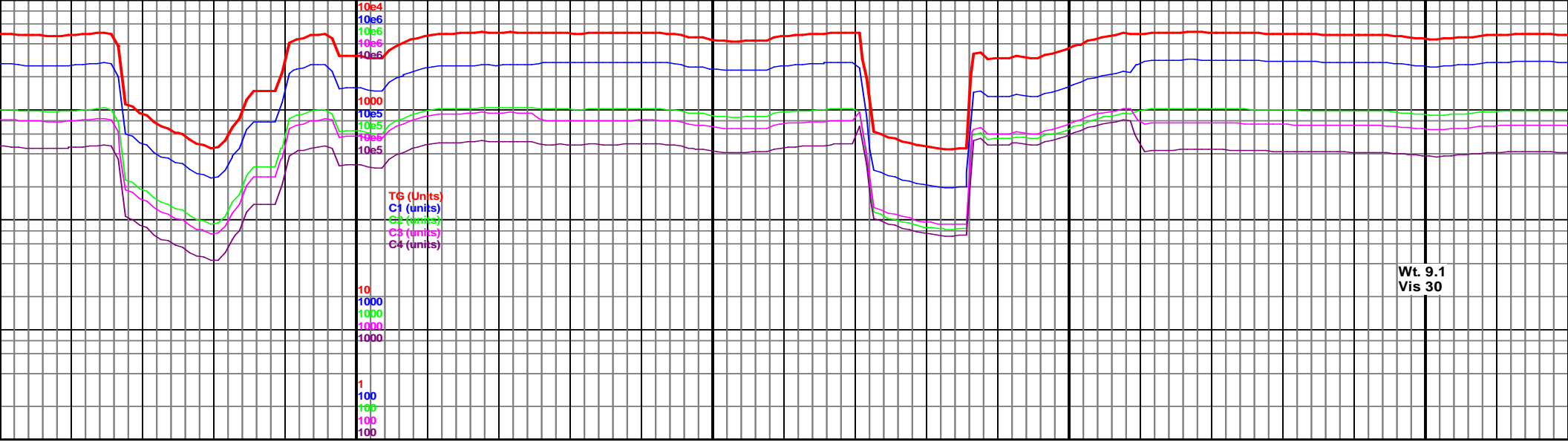






8950			9000			9050			9100			9150		
MD 8960 TVD 5689.37 INC 90.06 AZ 357.01 VS 3088.58			5050 TVD Sub Sea (-303)			MD 9052 TVD 5689.39 INC 89.91 AZ 359.51 VS 3180.55			MD 9152 TVD 5689.39 INC 89.91 AZ 359.51 VS 3180.55			MD 9152 TVD 5689.39 INC 89.91 AZ 359.51 VS 3180.55		
			5525 (-778)											
8900-9000 Mrlst dk gy, sb blk, frm, tr Chk gy-lt gy, mottled ip, sb blk-sb plty, rr dull yell min flor, slow mlky oil cut, 70% mrlst, 30% chk			9000-9100 Mrlst dk gy, sb blk, frm, tr Chk gy-lt gy, mottled ip, sb blk-sb plty, rr dull yell min flor, slow mlky oil cut, 75% mrlst, 25% chk			9100-9200 Mrlst dk gy, sb blk, frm, tr Chk gy-lt gy, mottled ip, sb blk-sb plty, rr dull yell min flor, slow mlky oil cut, 75% mrlst, 25% chk			9200-9300 Mrlst dk gy, sb blk, frm, tr Chk gy-lt gy, mottled ip, sb blk-sb plty, rr dull yell min flor, slow mlky oil cut, 75% mrlst, 25% chk			9300-9400 Mrlst dk gy, sb blk, frm, tr Chk gy-lt gy, mottled ip, sb blk-sb plty, rr dull yell min flor, slow mlky oil cut, 75% mrlst, 25% chk		





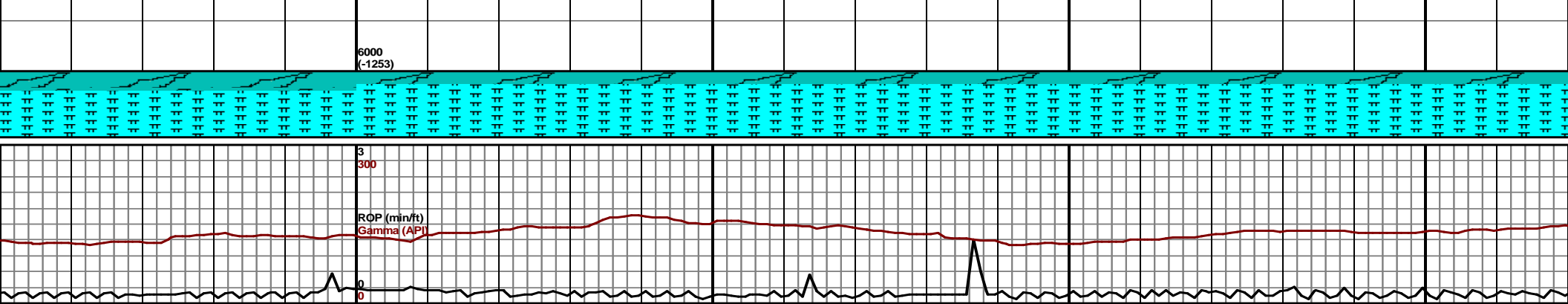
Wt. 9.1
Vis 30

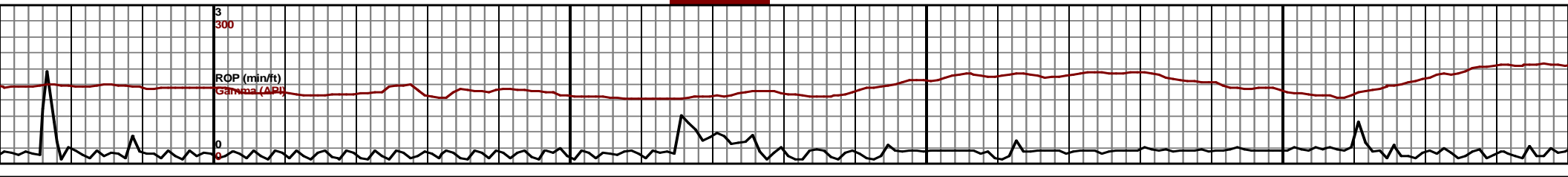
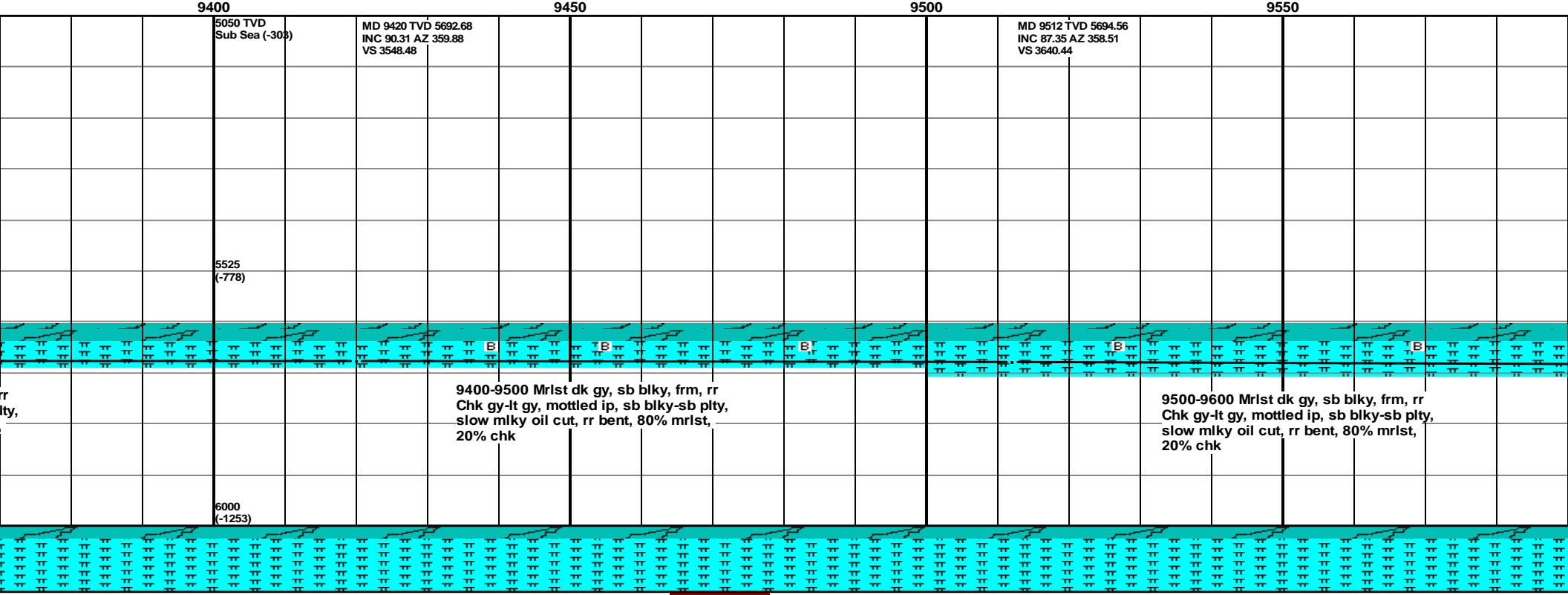
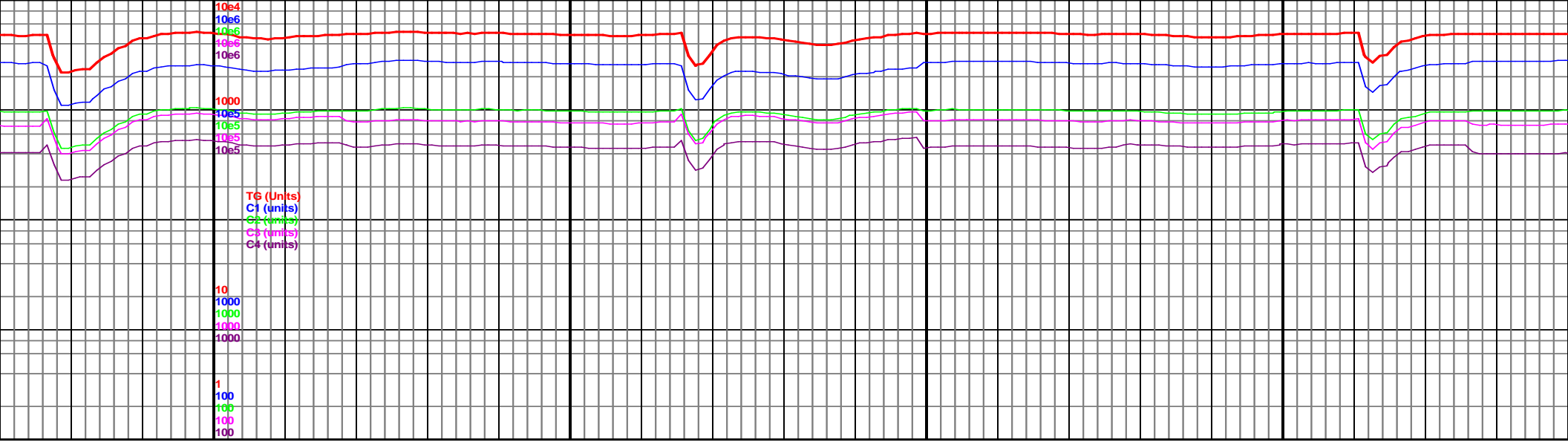
50	9200	9250	9300	9350
MD 9237 TVD 5689.65 INC 89.78 AZ 359.14 VS 73.55	MD 9237 TVD 5690.34 INC 89.35 AZ 358.22 VS 3365.54			MD 9329 TVD 5691.9 INC 88.71 AZ 357.6 VS 3457.49
	5525 (-778)			

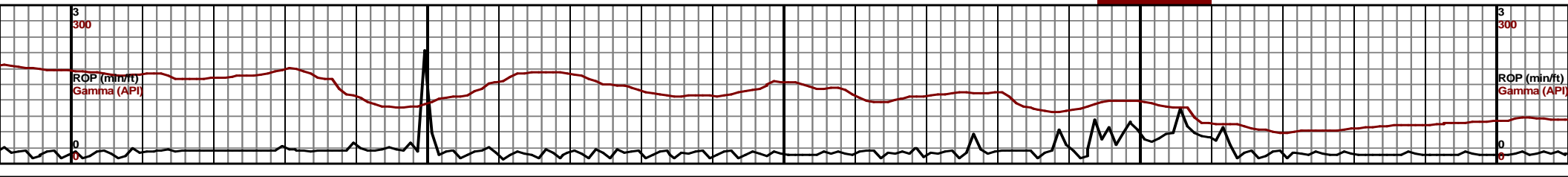
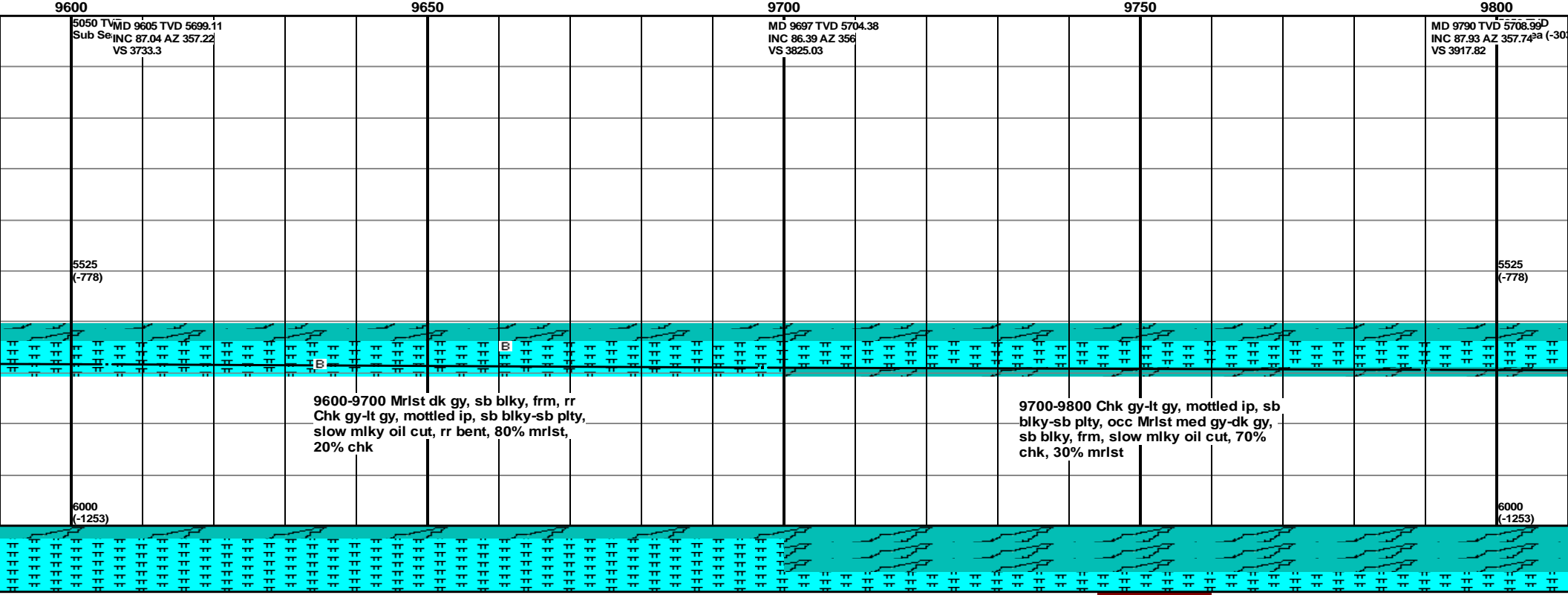
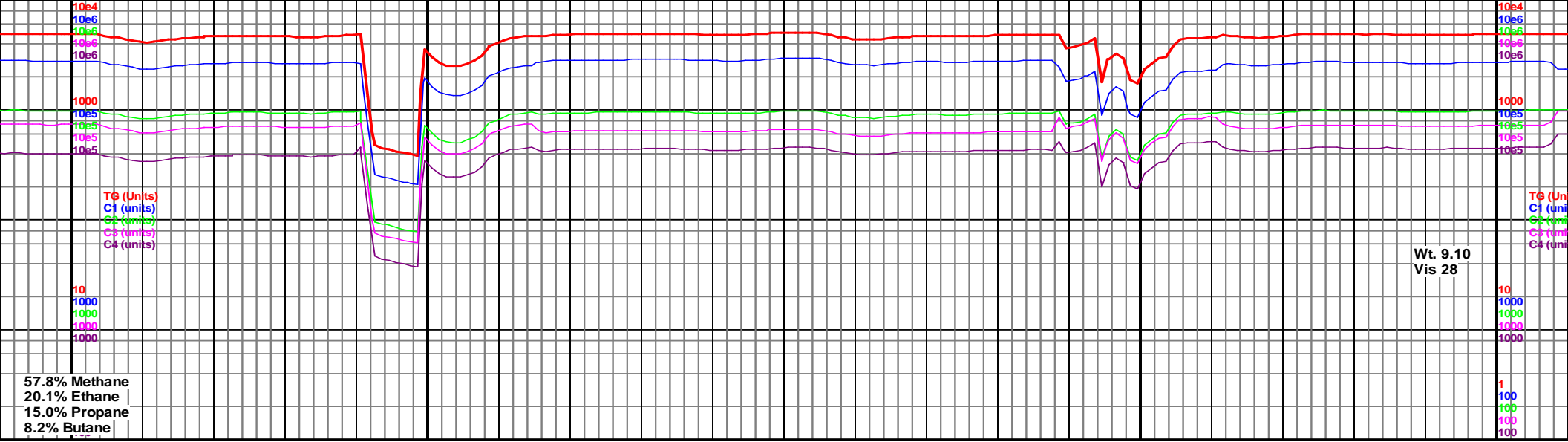
k gy, sb blk, frm,
mottled ip, sb blk-sb
cut, 75% mrlst, 25%

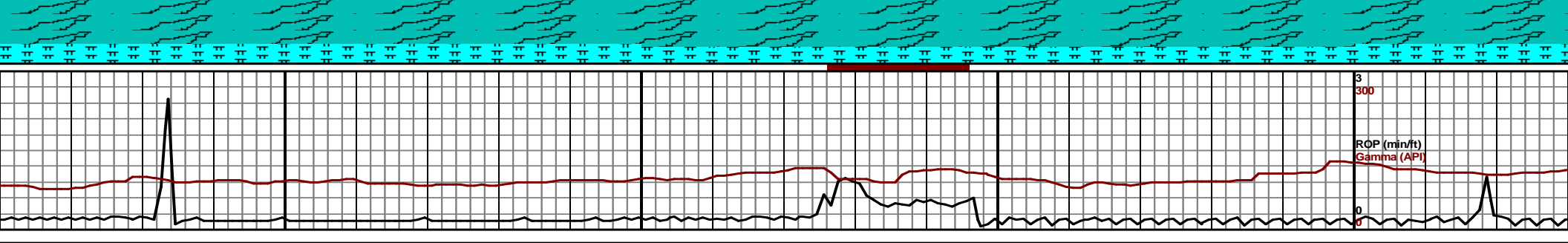
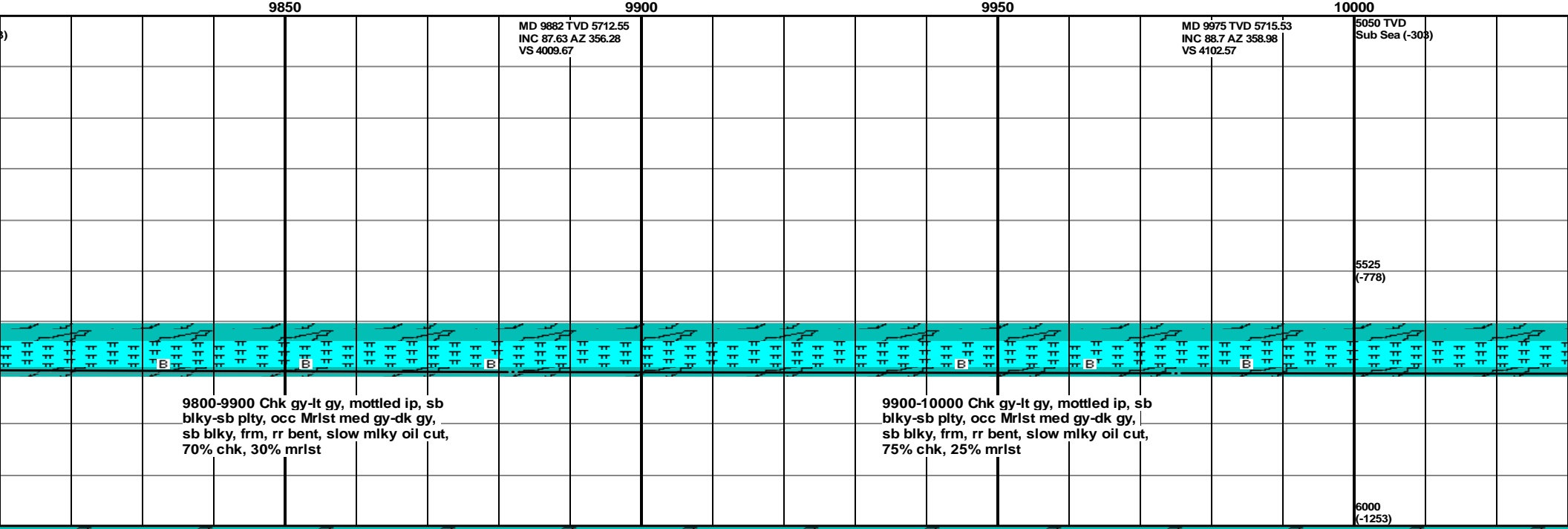
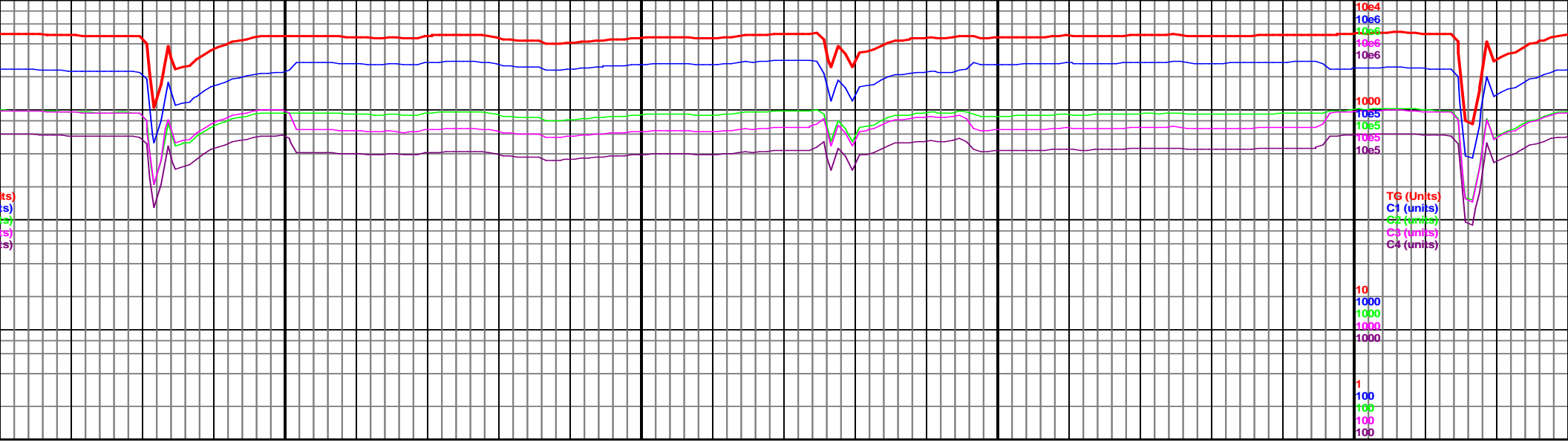
9200-9300 Mrlst dk gy, sb blk, frm, rr
Chk gy-lt gy, mottled ip, sb blk-sb plty,
slow mlky oil cut, rr bent, 80% mrlst,
20% chk

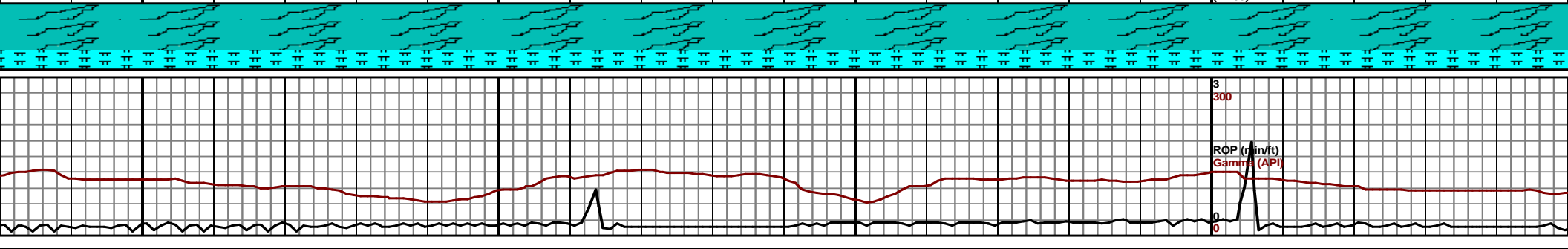
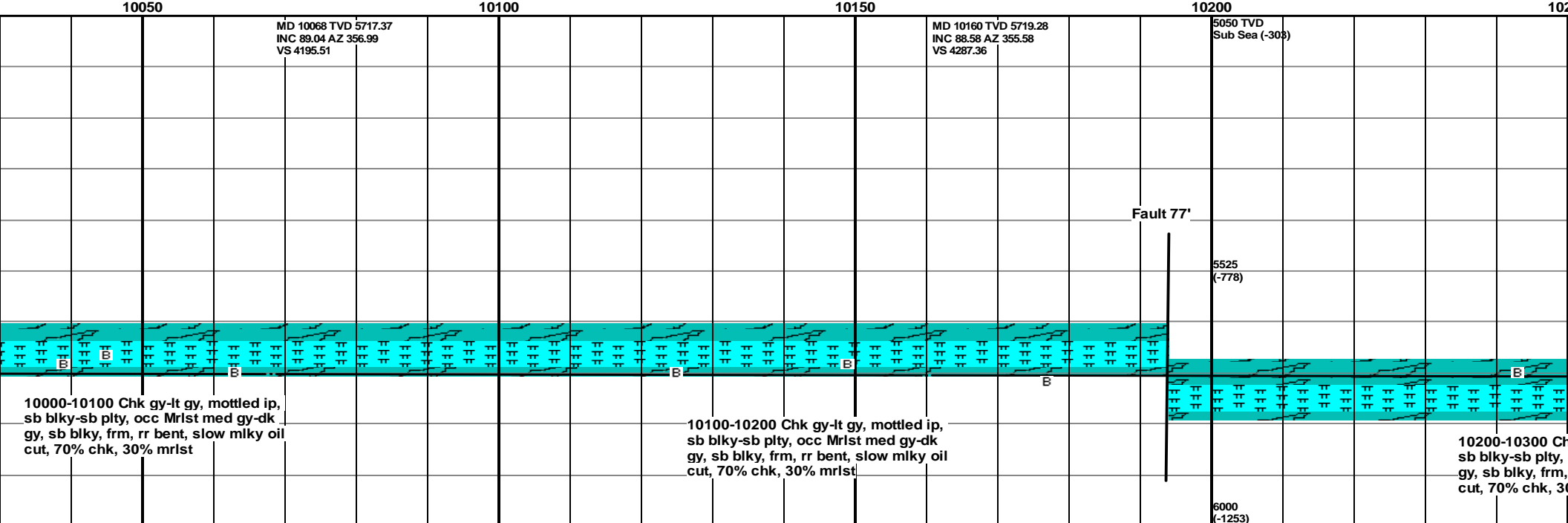
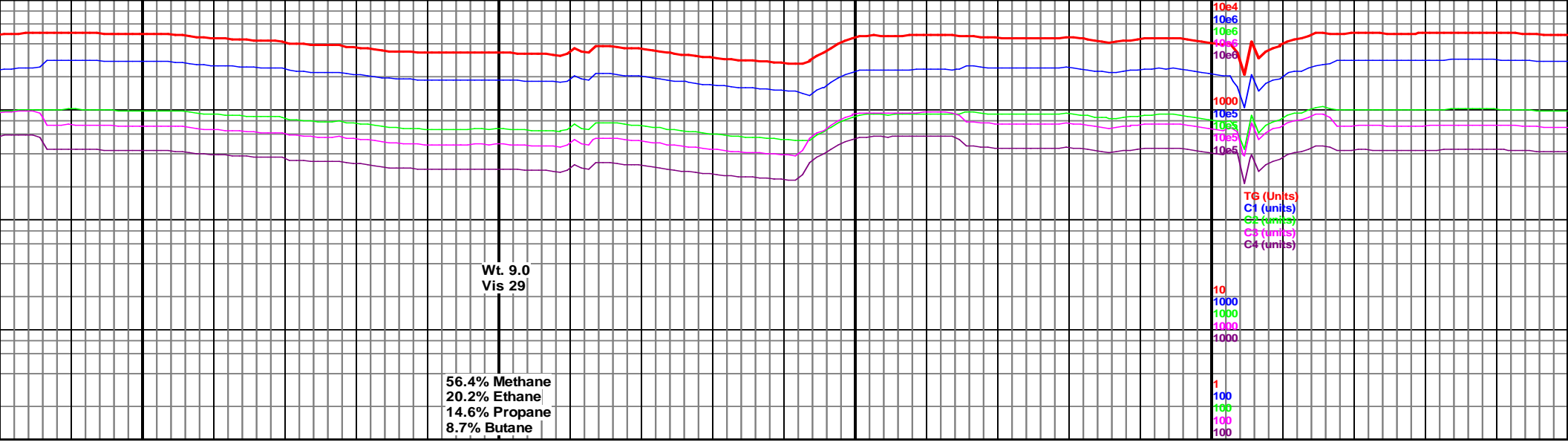
9300-9400 Mrlst dk gy, sb blk, frm, rr
Chk gy-lt gy, mottled ip, sb blk-sb plty,
slow mlky oil cut, rr bent, 80% mrlst,
20% chk

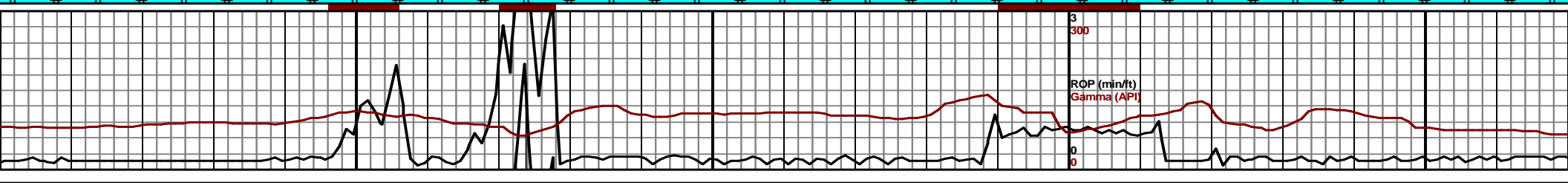
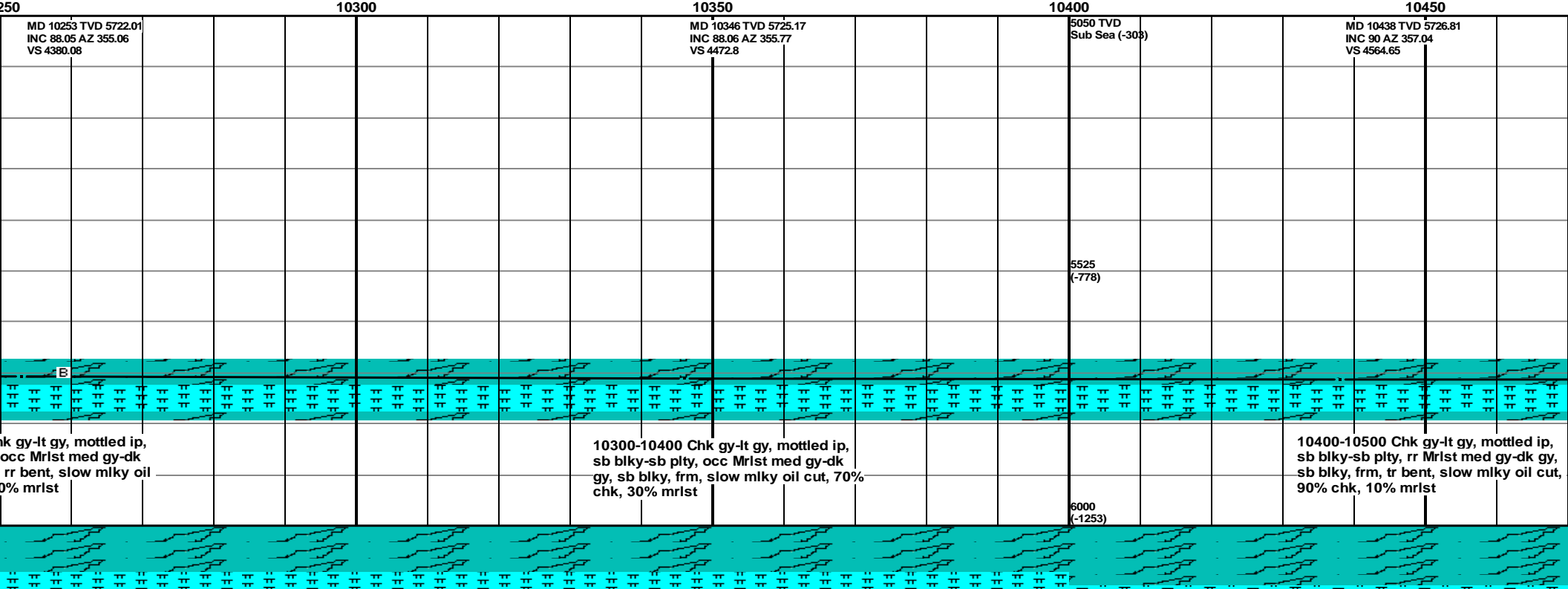
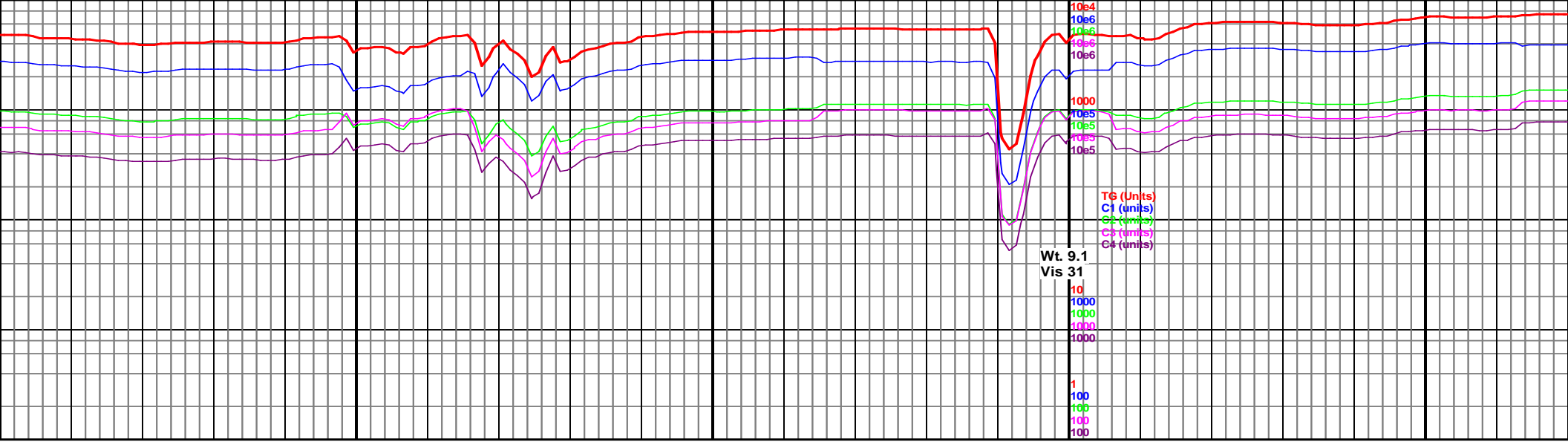


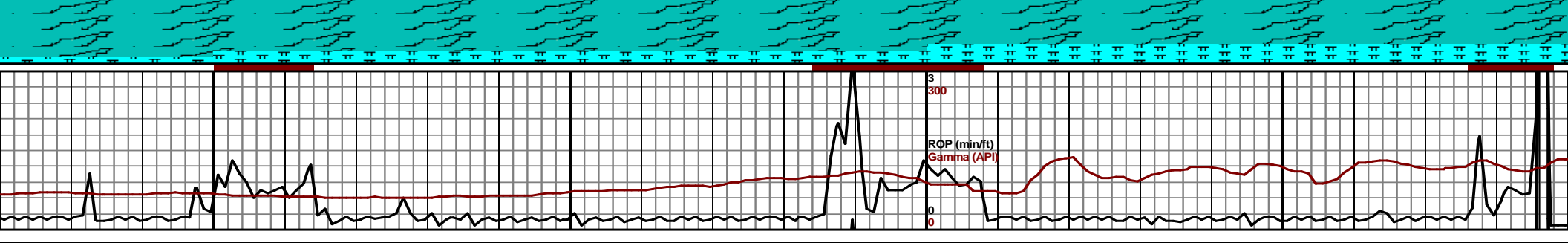
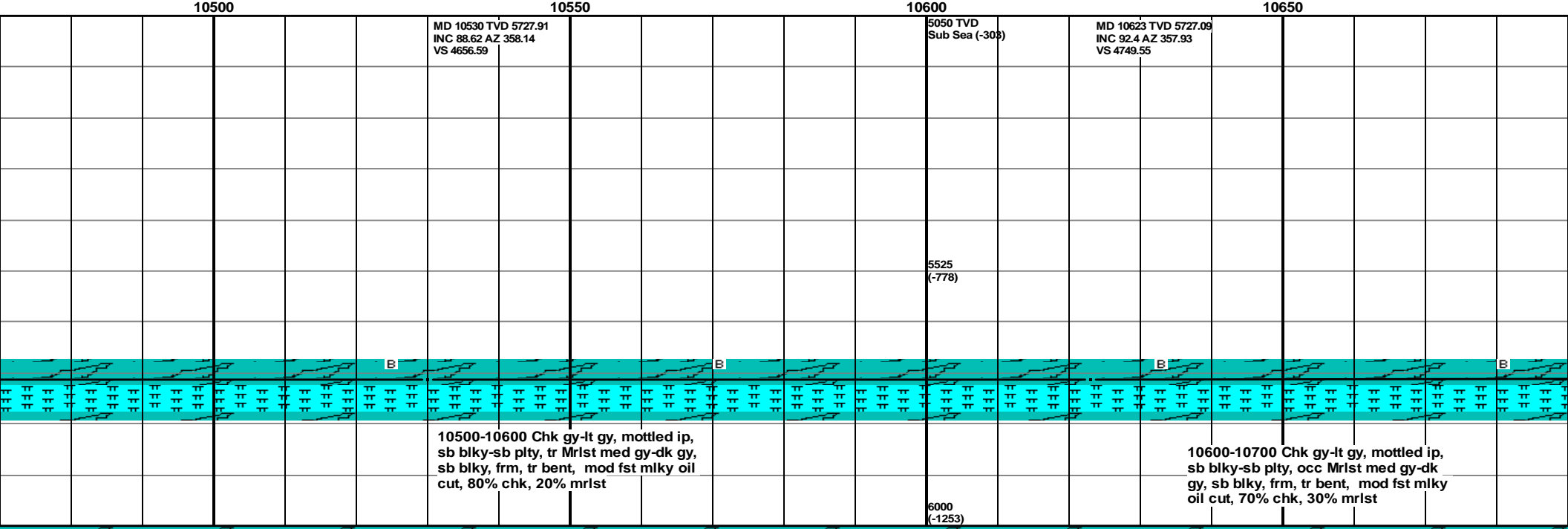
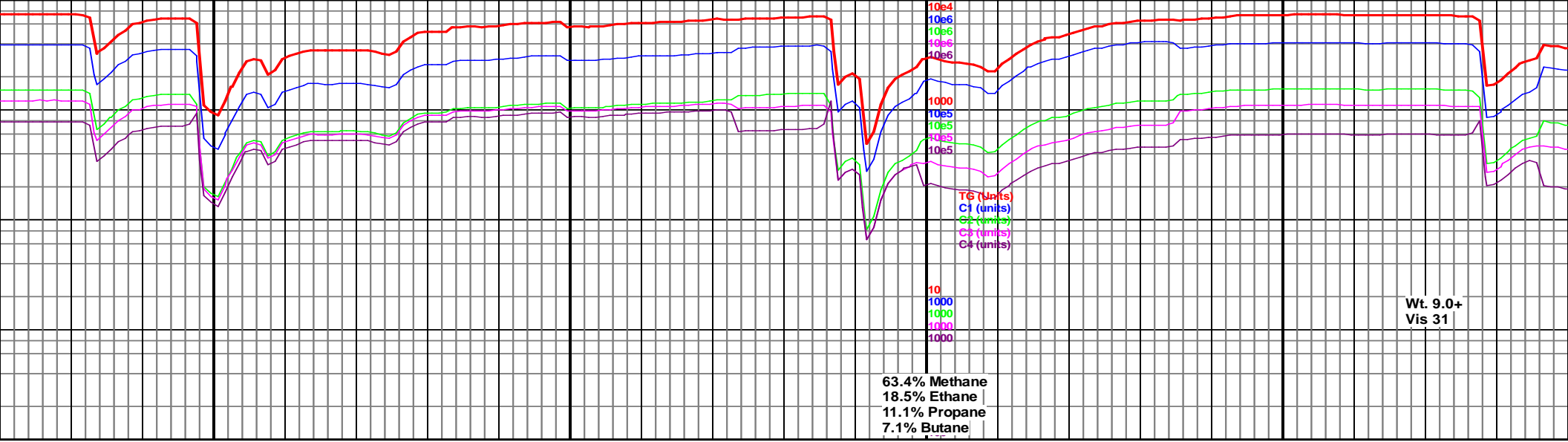


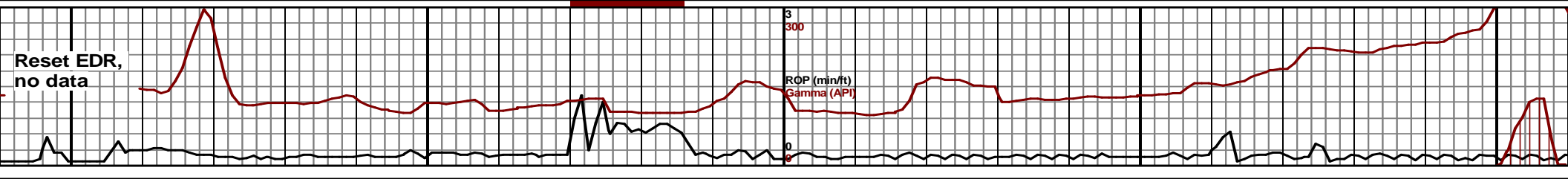
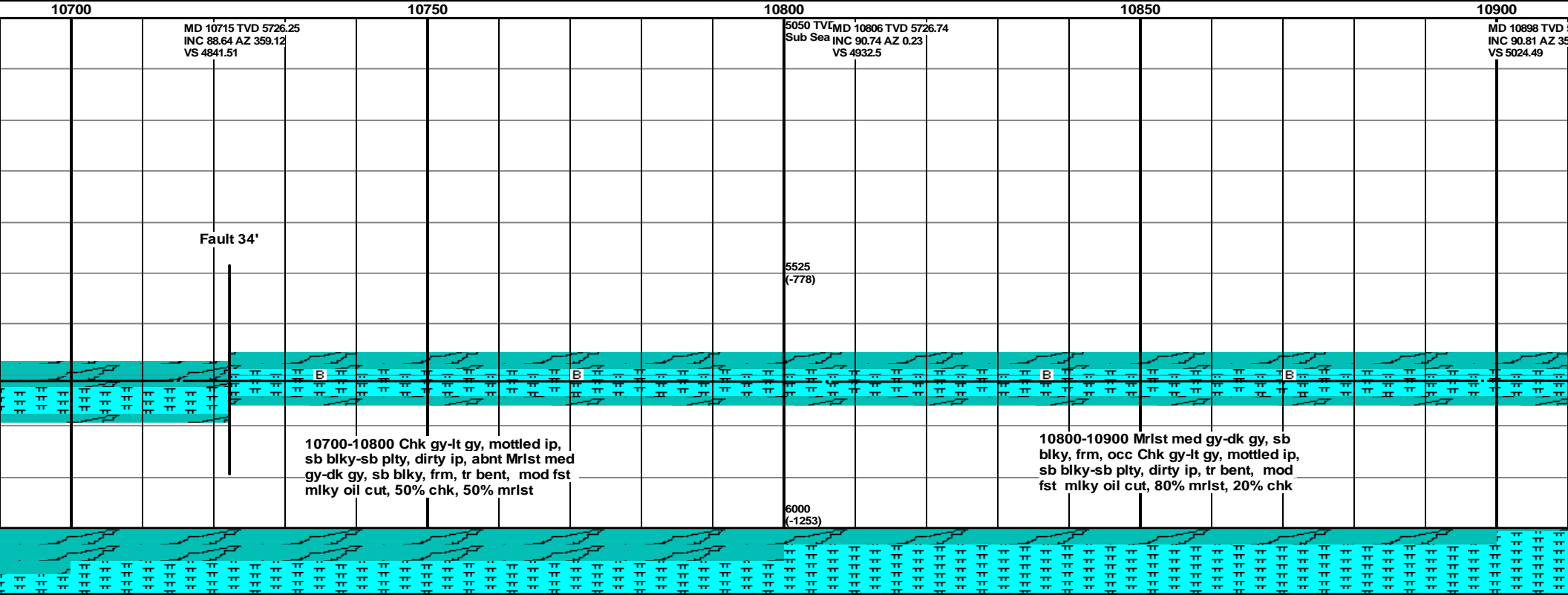
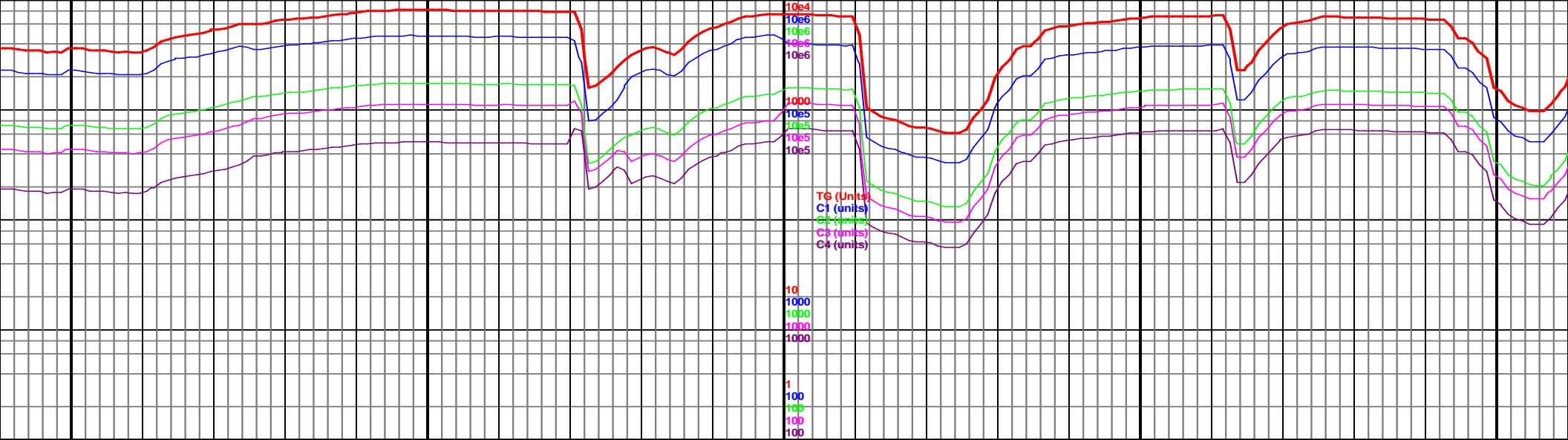


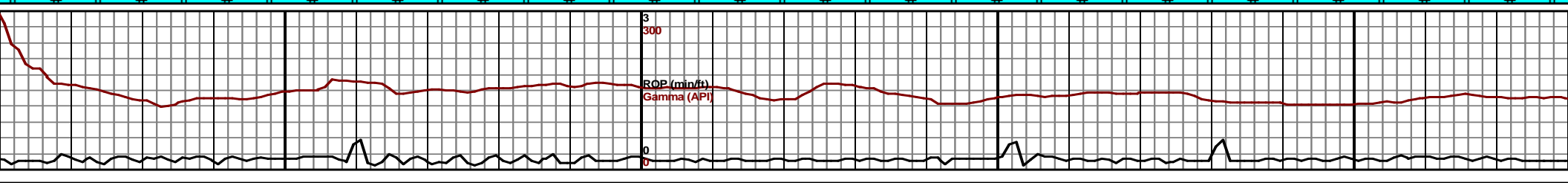
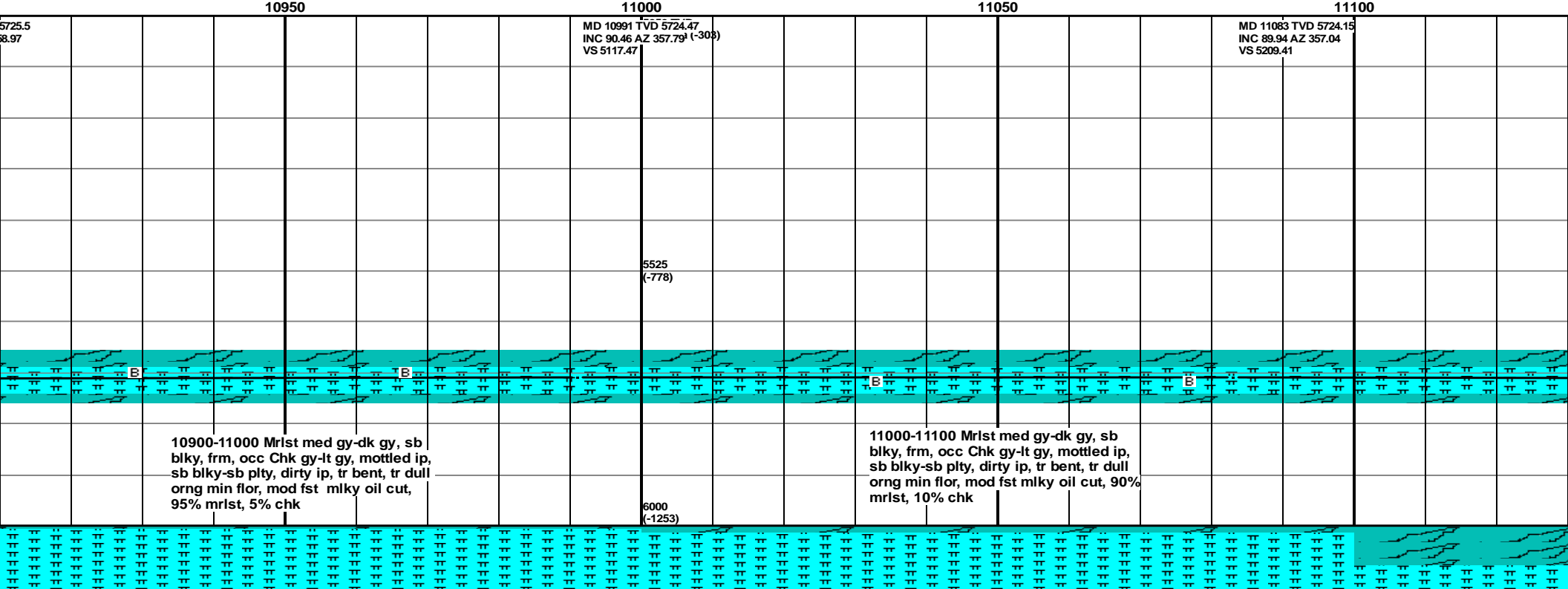
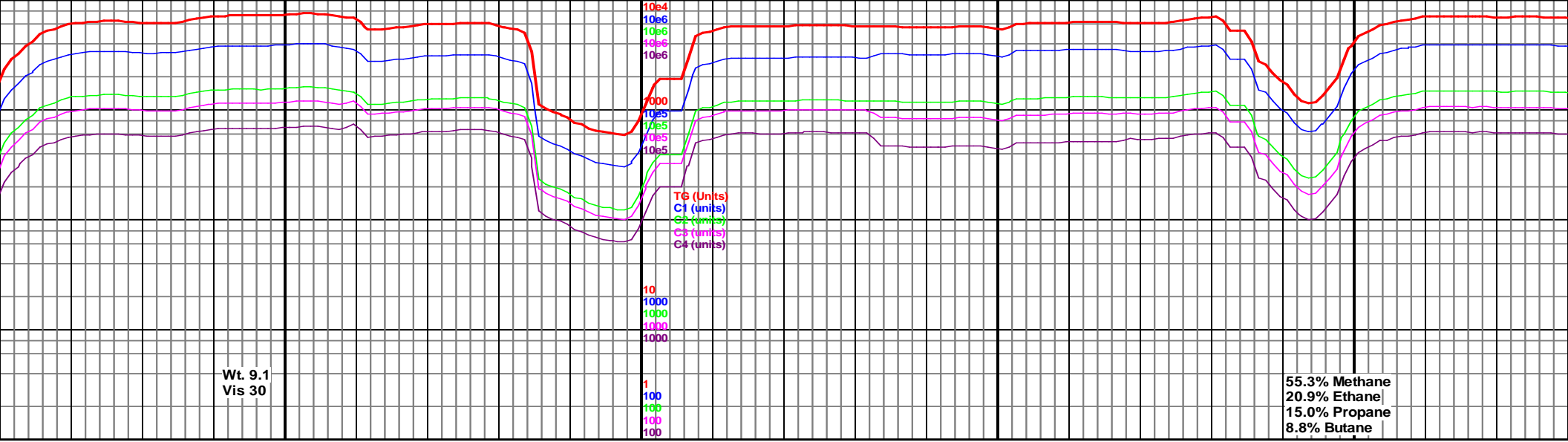


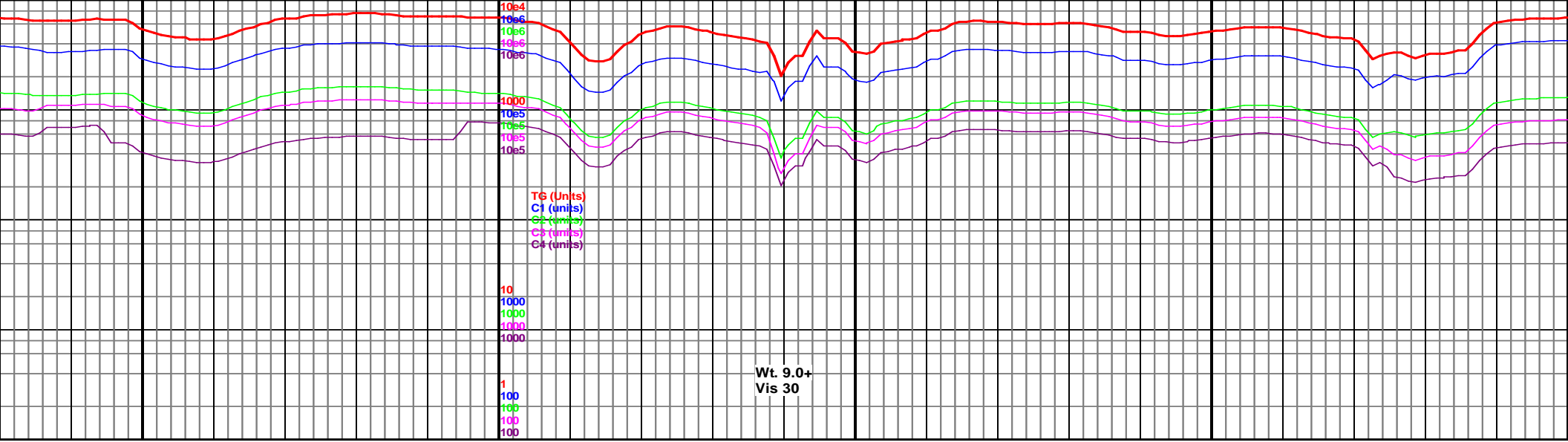




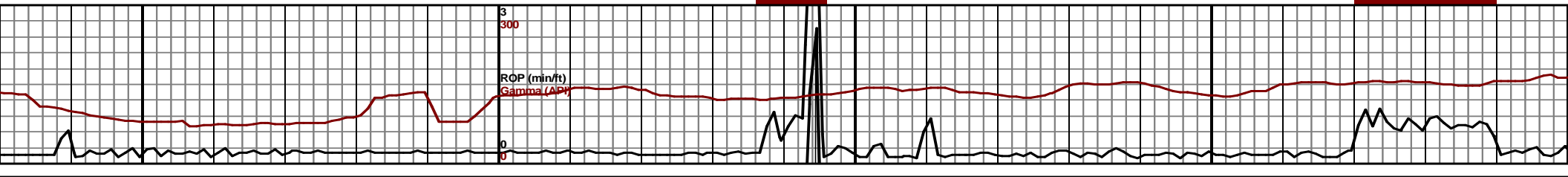


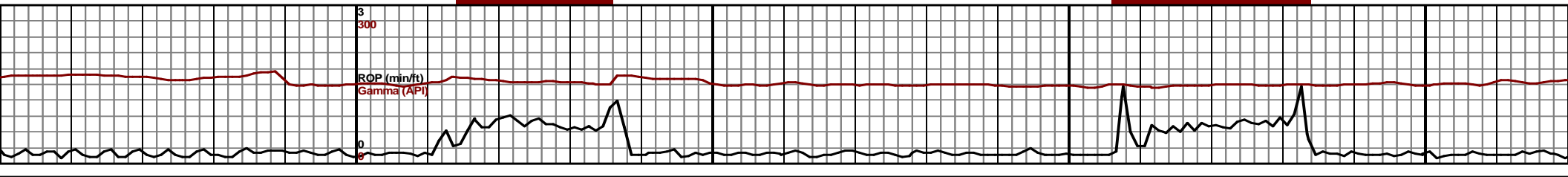
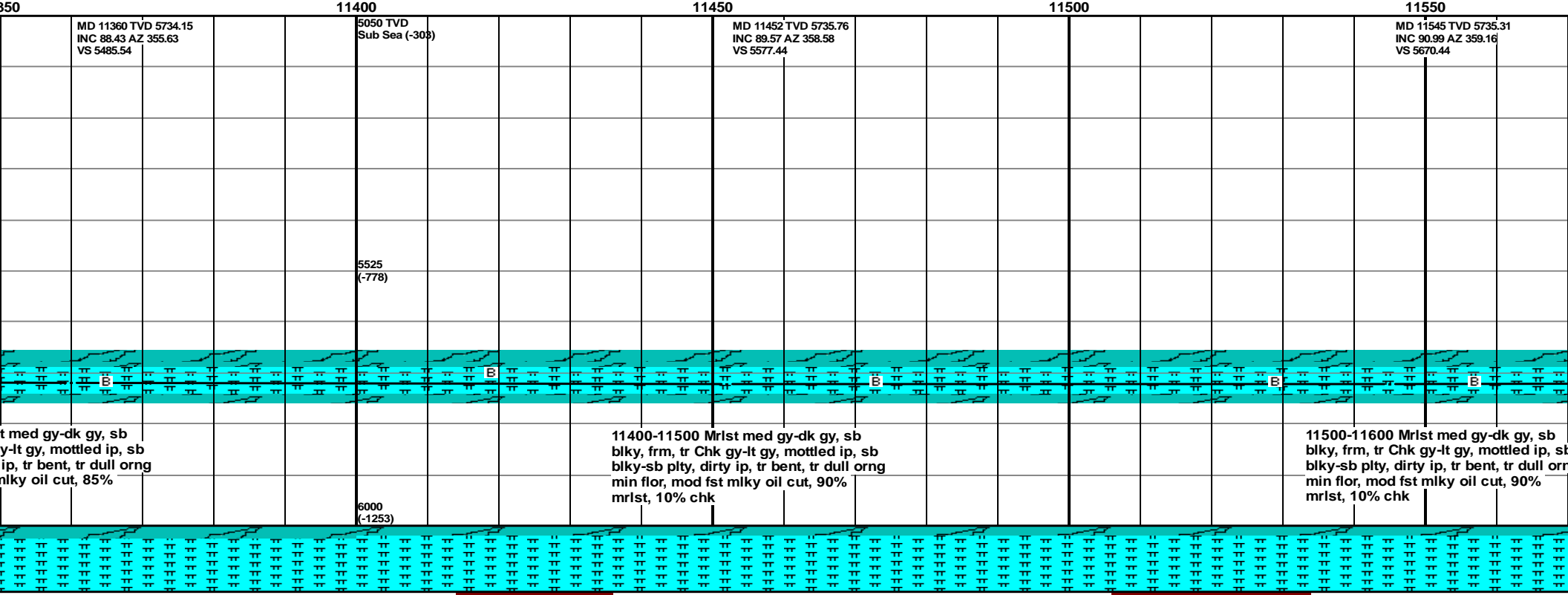
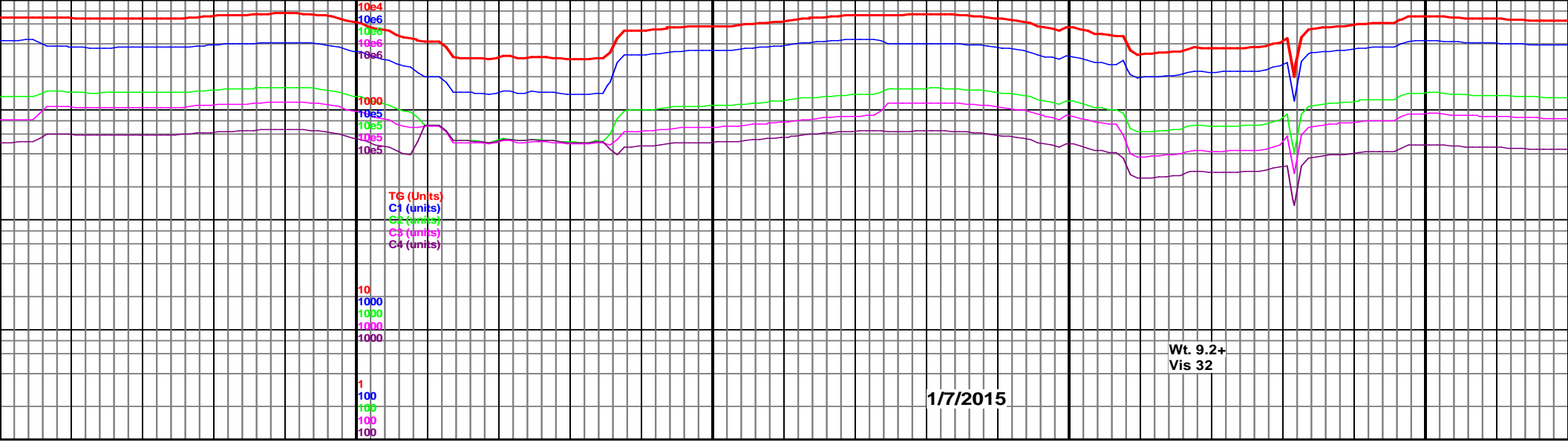


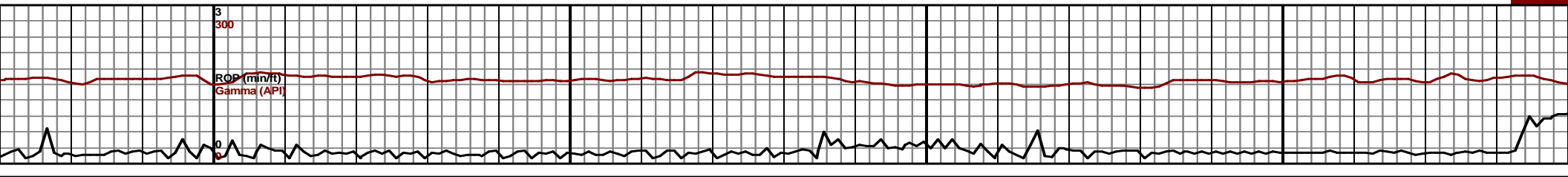
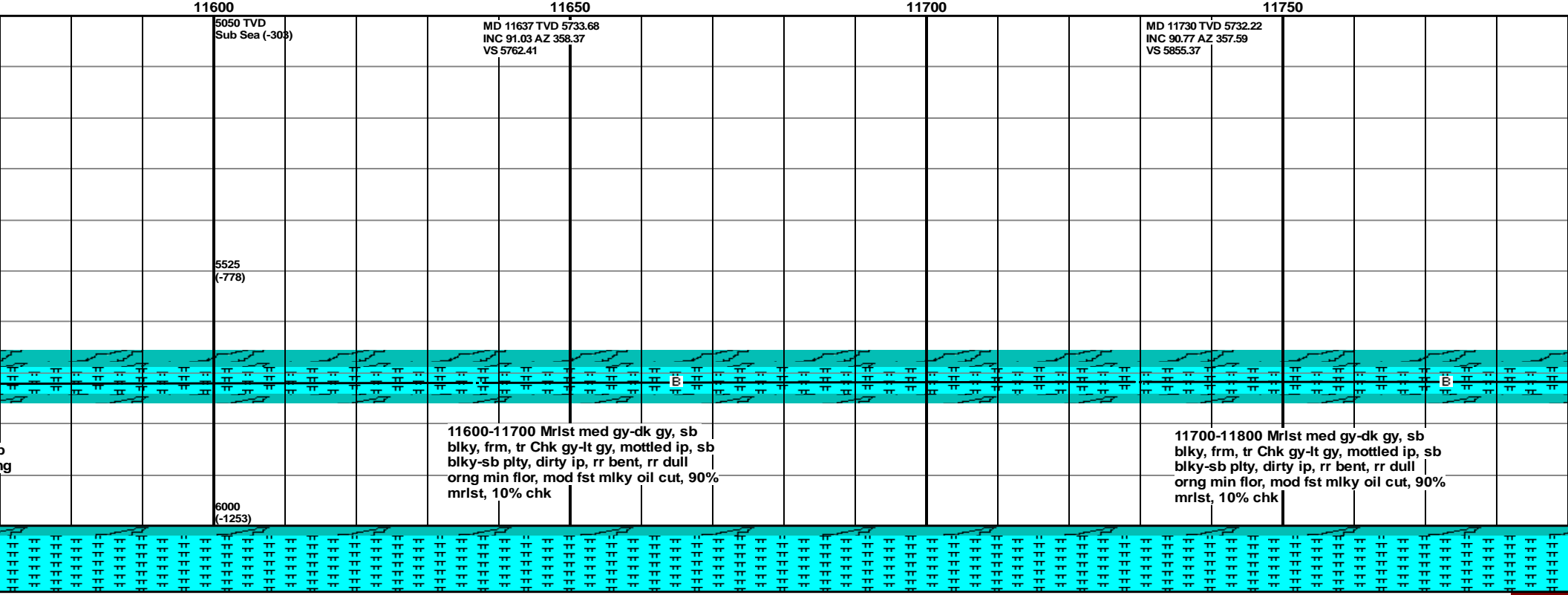
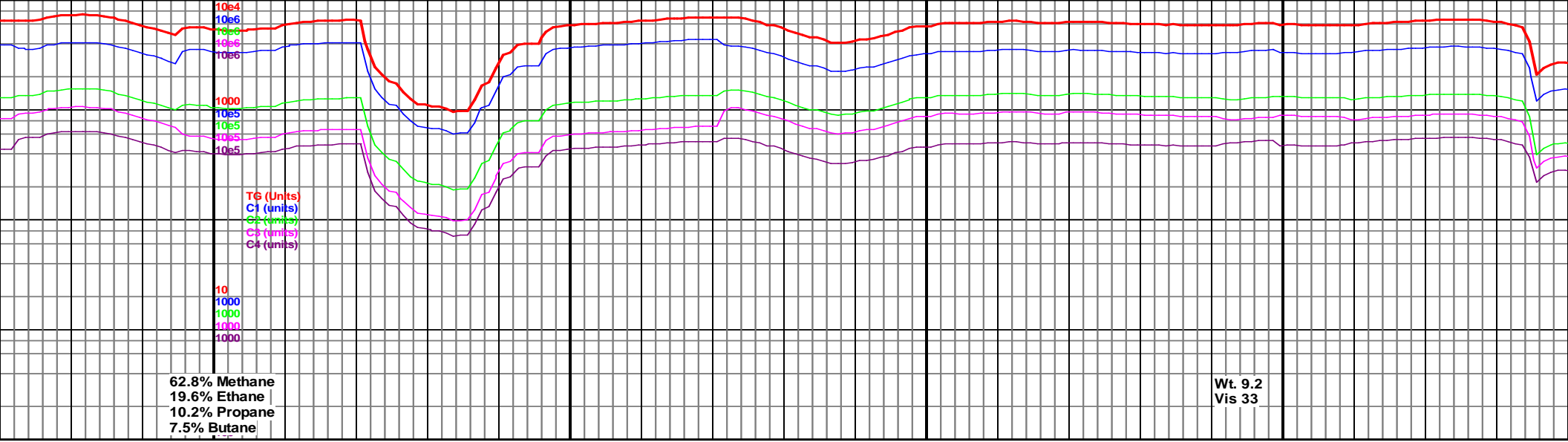


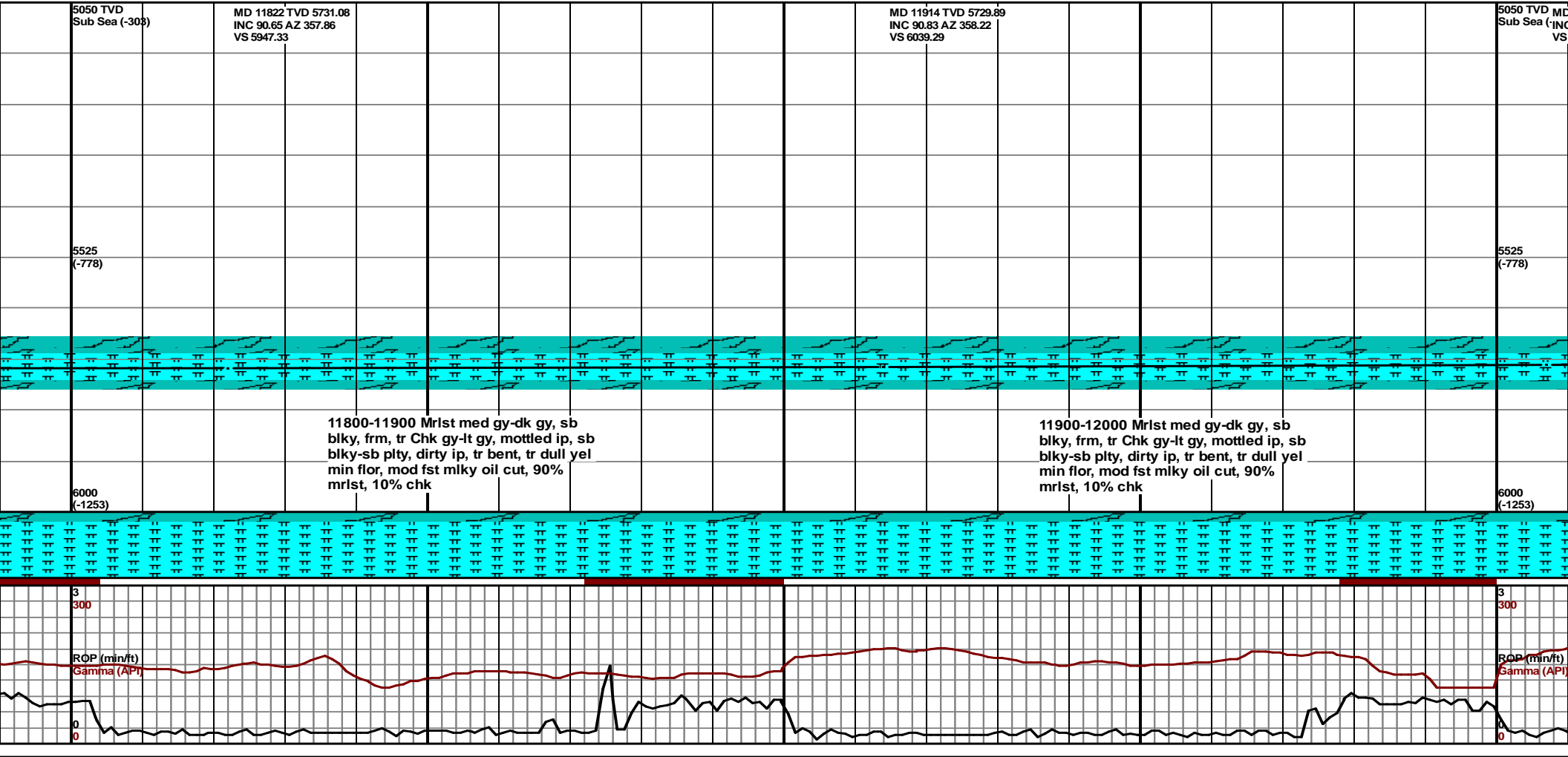
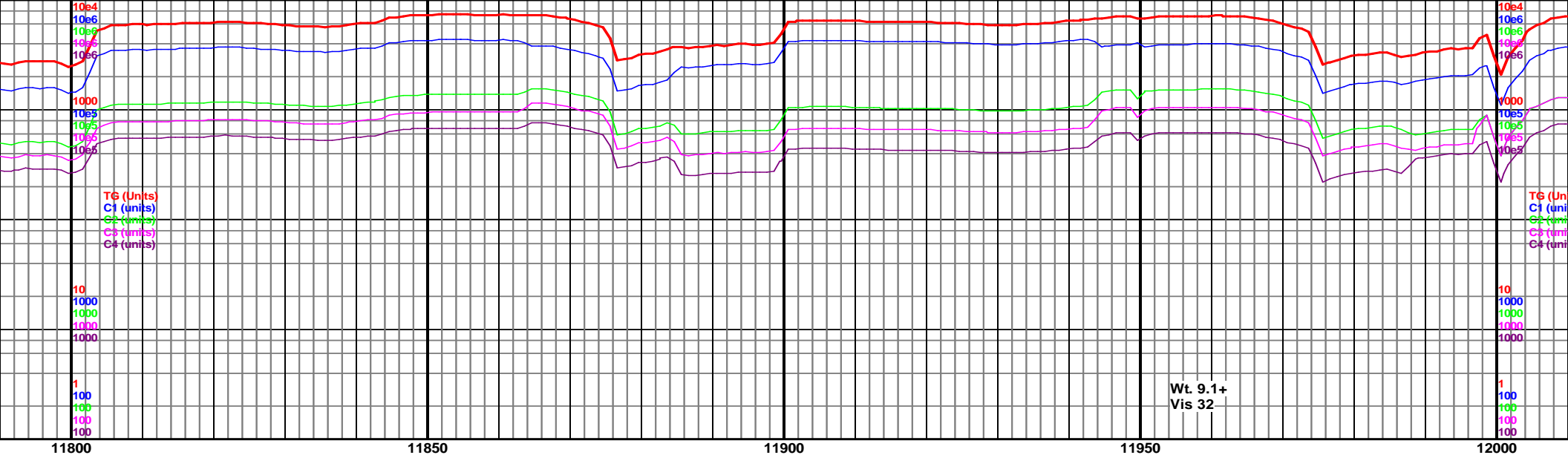


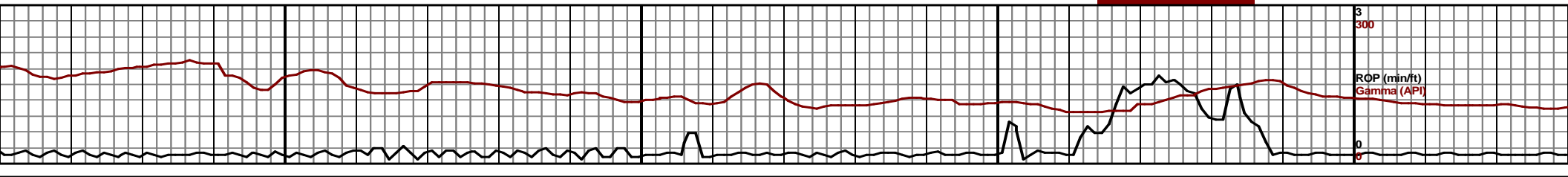
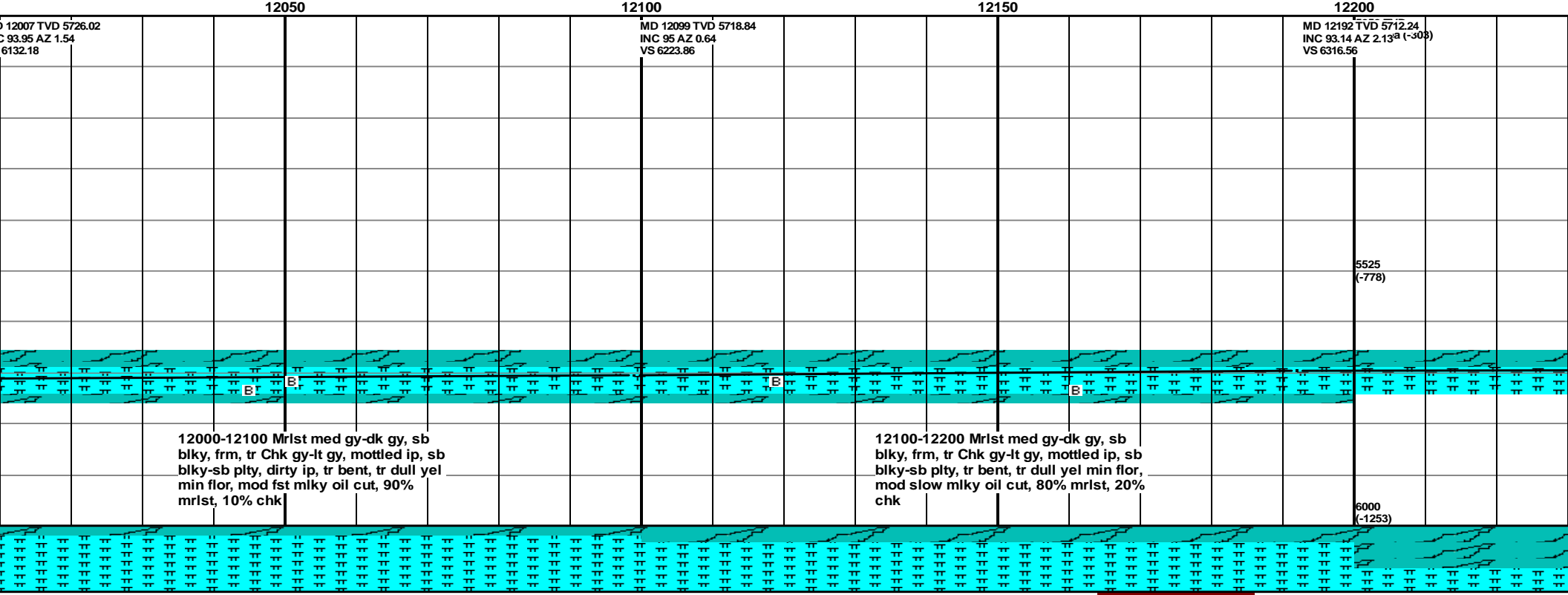
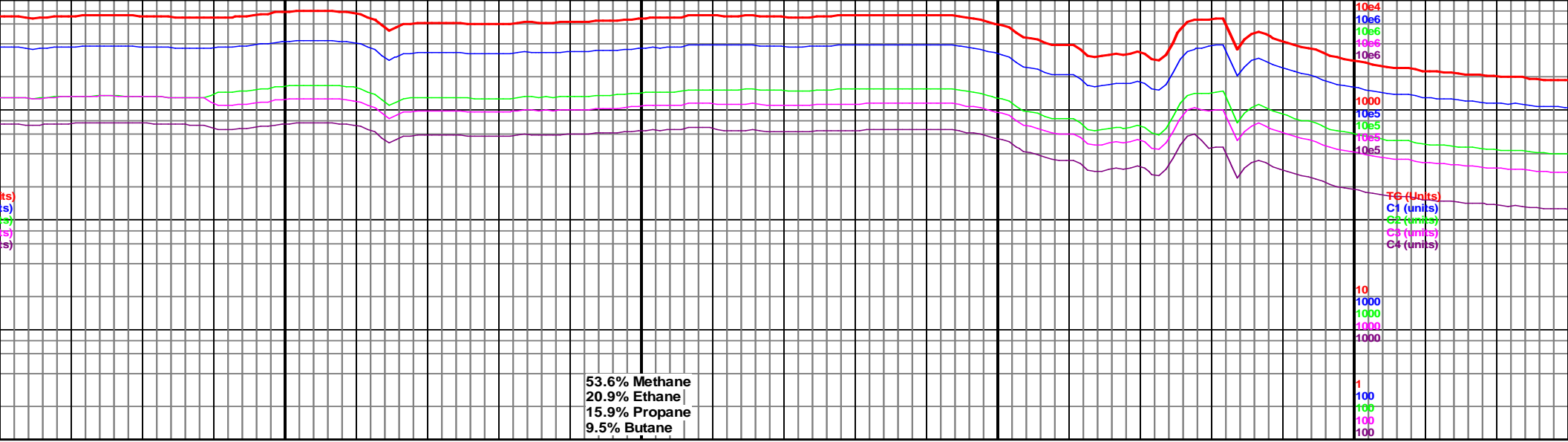
11150					11200					11250					11300					11350
MD 11175 TVD 5725.53 INC 88.34 AZ 354.69 VS 5301.22					5050 TVD Sub Sea (-303)					MD 11268 TVD 5729.9 INC 86.27 AZ 355.57 VS 5393.85										
					5525 (-778)															
11100-11200 Mrlst med gy-dk gy, sb blky, frm, abnt Chk gy-lt gy, mottled ip, sb blky-sb plty, dirty ip, tr bent, tr dull yel min flor, mod fst mlky oil cut, 60% mrlst, 40% chk					11200-11300 Mrlst med gy-dk gy, sb blky, frm, tr Chk gy-lt gy, mottled ip, sb blky-sb plty, dirty ip, tr bent, tr dull orng min flor, mod fst mlky oil cut, 90% mrlst, 10% chk					11300-11400 Mrlst med gy-dk gy, sb blky, frm, tr Chk gy-lt gy, mottled ip, sb blky-sb plty, dirty ip, tr bent, tr dull orng min flor, mod fst mlky oil cut, 90% mrlst, 10% chk					11300-11400 Mrlst med gy-dk gy, sb blky, frm, tr Chk gy-lt gy, mottled ip, sb blky-sb plty, dirty ip, tr bent, tr dull orng min flor, mod fst mlky oil cut, 90% mrlst, 10% chk					

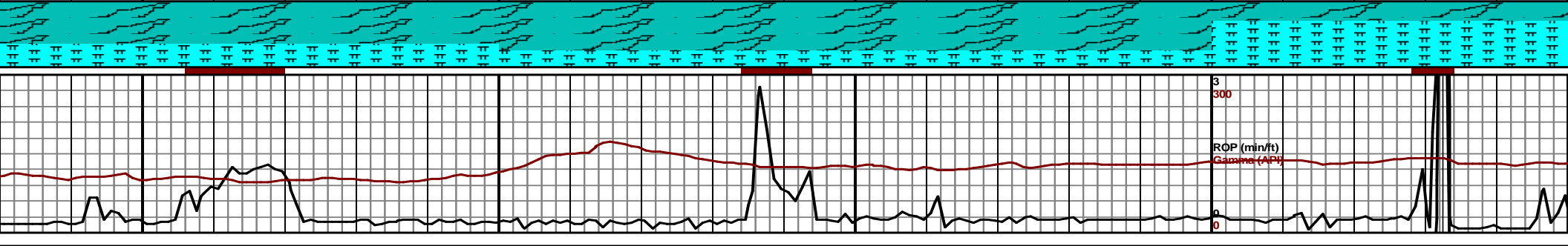
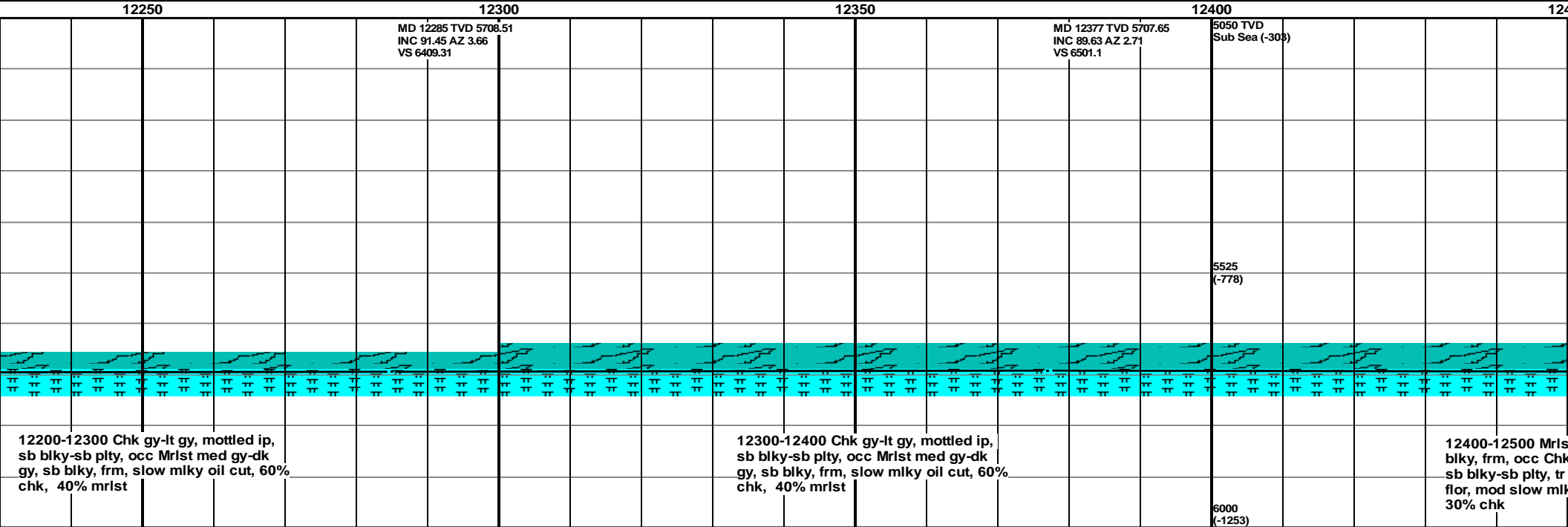
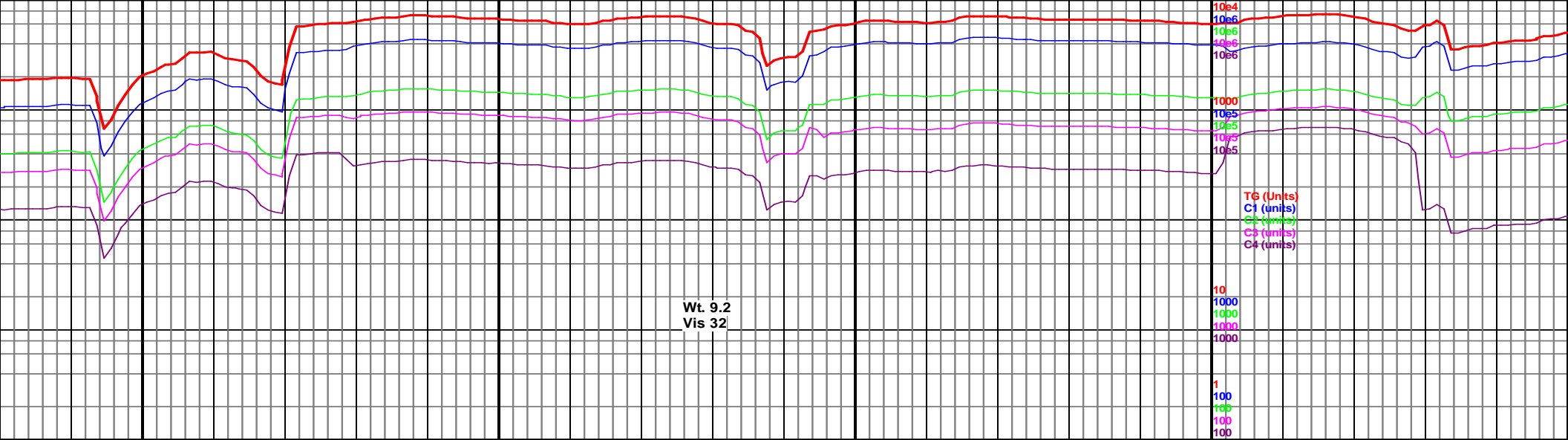


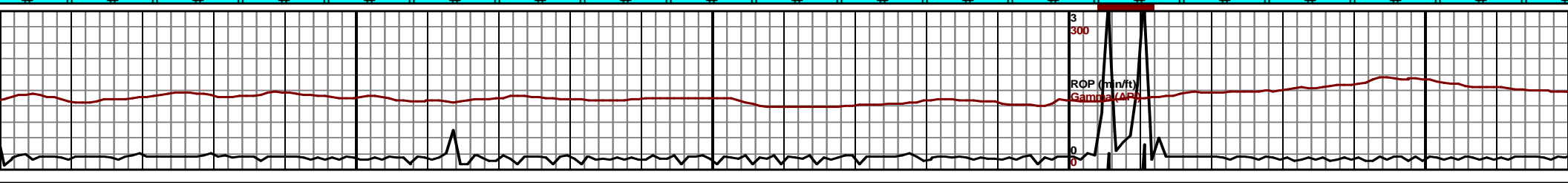
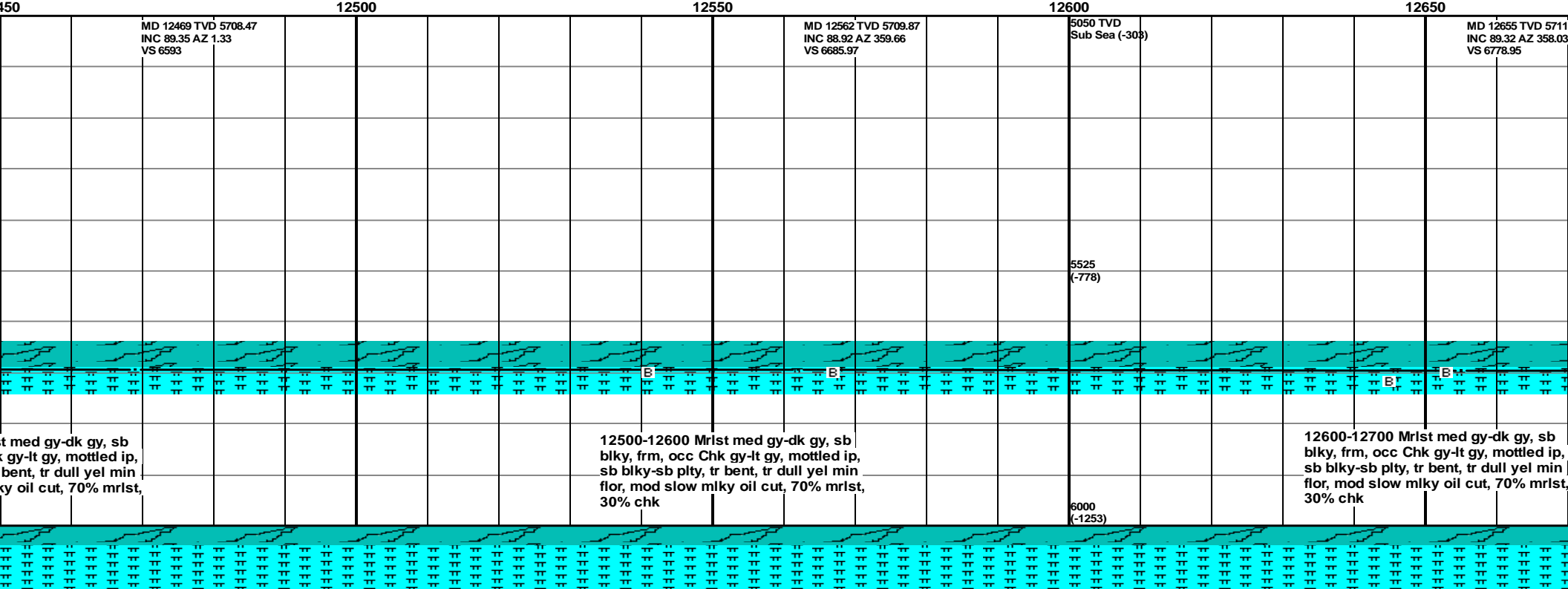
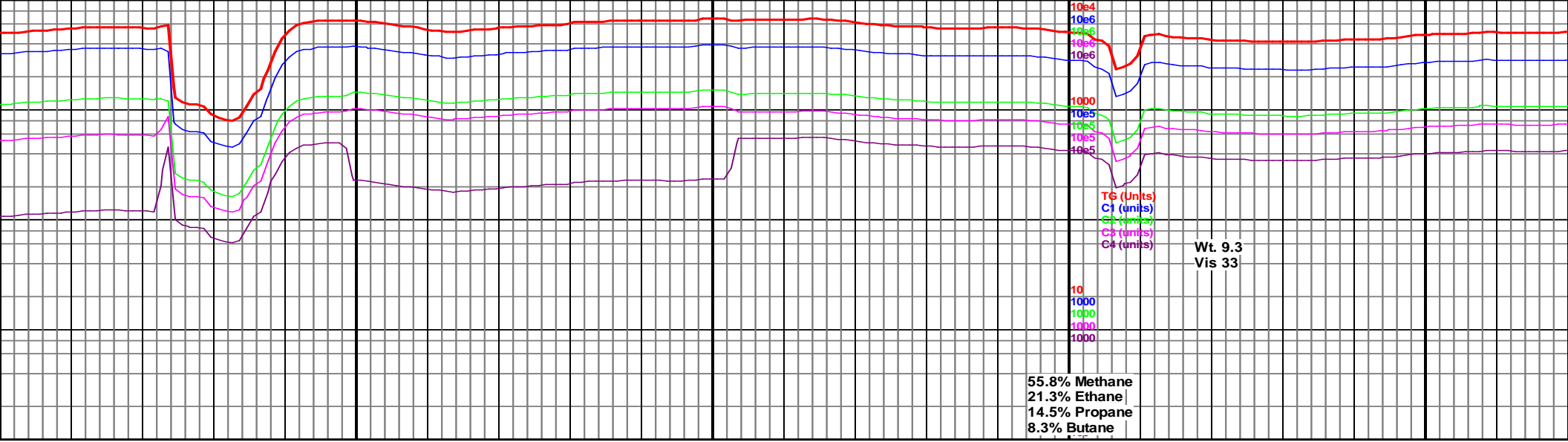


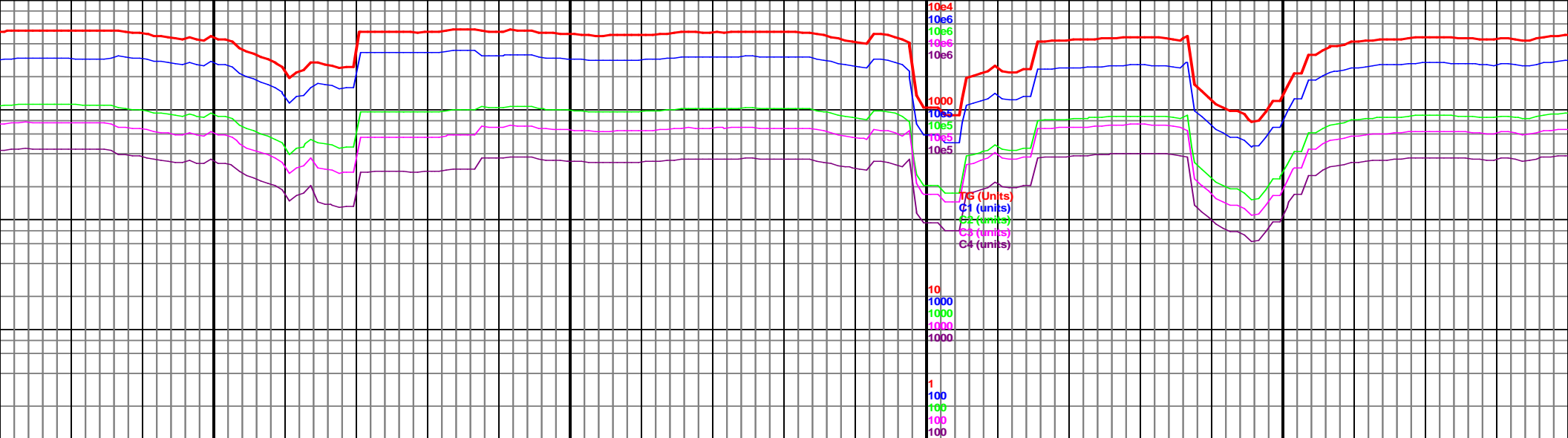












12700

12750

12800

12850

MD 12747	TVD 5711.87
INC 89.97	AZ 355.87
VS 6870.86	

5050 TVD	
Sub Sea (-303)	

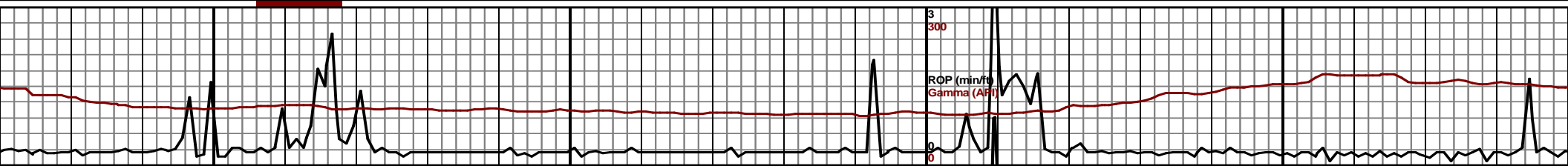
MD 12840 TVD 5710.79
INC 91.36 AZ 354.14
VS 6963.57

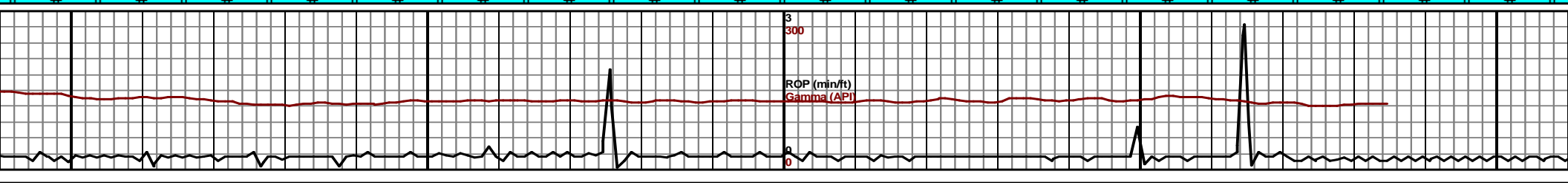
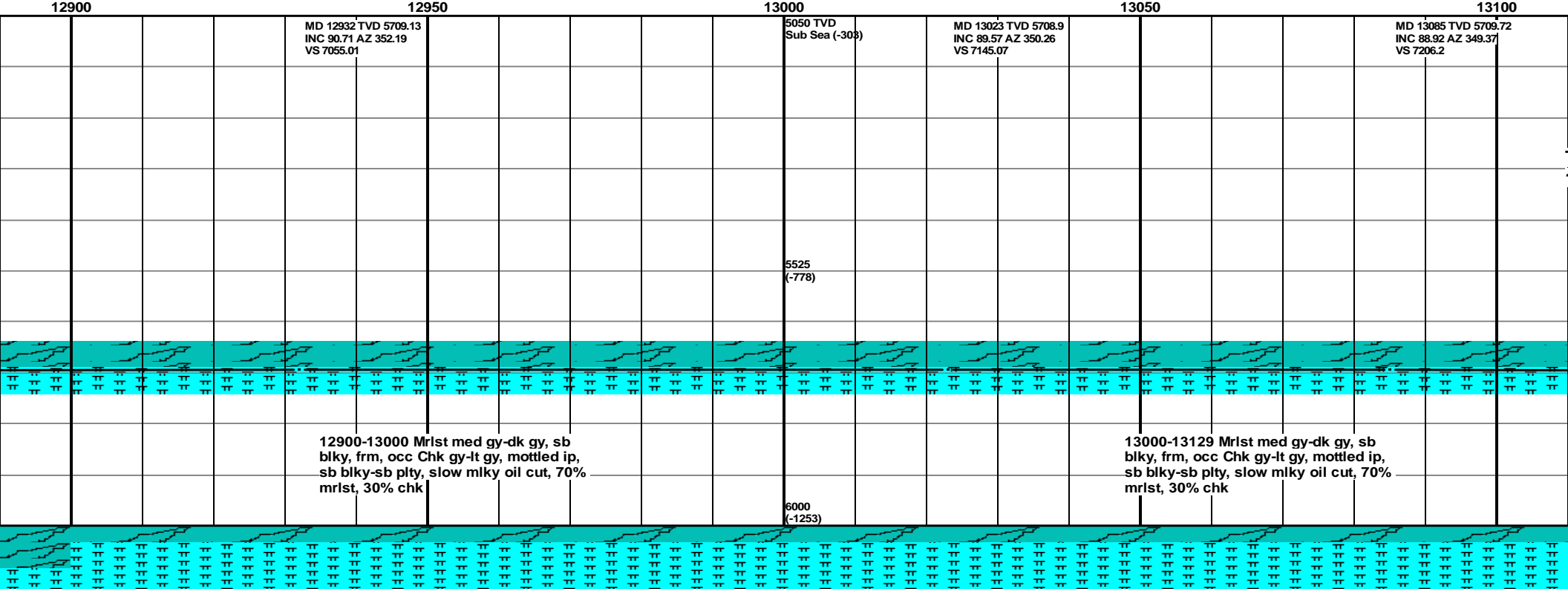
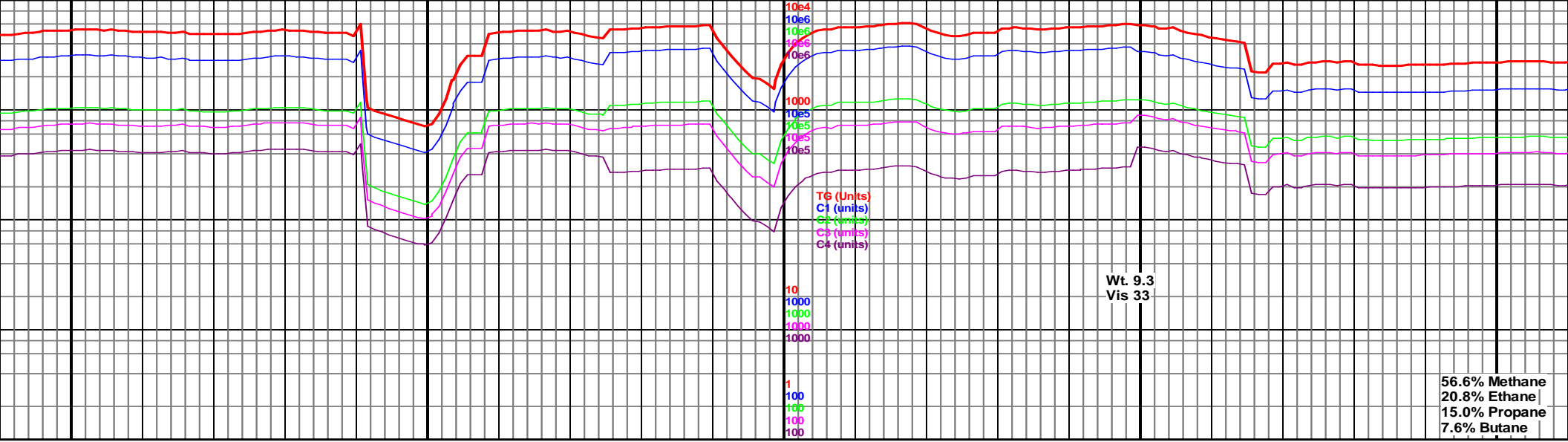
5525
(-778)

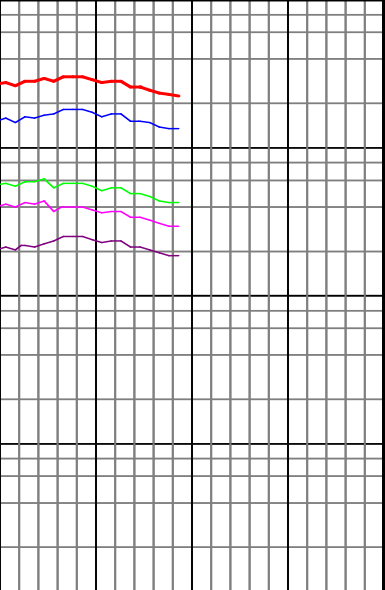
6000
(-1253)

12700-12800 Chk gy-lt gy, mottled ip, sb blk-y-sb plty, occ Mrlst med gy-dk gy, sb blk-y, frm, slow mlky oil cut, 60% chk, 40% mrlst

12800-12900	Chk gy-lt gy, mottled ip, sb blk-y-sb plty, occ Mrlst med gy-dk gy, sb blk-y, frm, slow mlky oil cut, 60% chk, 40% mrlst
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13

MD 13129 TVD 5710.55
INC 88.92 AZ 349.37
VS 7249.52

TD 13129' MD reached at
14:22; 1/7/2015

