



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

Well Name: Razor 21A 2814B
Location: NENE 21-T10N-R58W Weld County, Colorado
License Number: 05-123-37845
Spud Date: 9/9/2013
Surface Coordinates: Lat.: 40.830067 Long.: -103.863442

Region: Redtail Field
Drilling Completed: 9/18/2013

Bottom Hole Coordinates: Lat.: 40.809697 Long.: -103.863247

Ground Elevation (ft): 4832
Logged Interval (ft): 5288 To: 12721
Formation: Pierre, Sharon Springs, Niobrara
Type of Drilling Fluid: Water Based Mud

K.B. Elevation (ft): 4849
Total Depth (ft): 12721

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: Mark Denler, Craig Dreiling
Company: Acme Geologic Consulting
Address: 108 Berry Street
Little Rock, AR 72205

Drilling Company

Cade Drilling, LLC
Rig 21

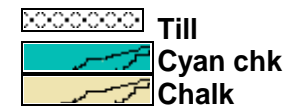
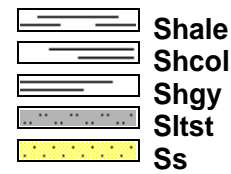
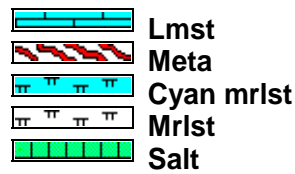
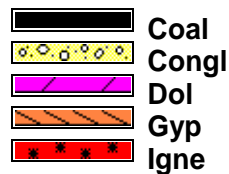
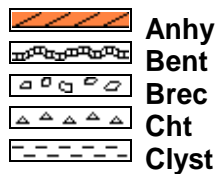
Gas Detection

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

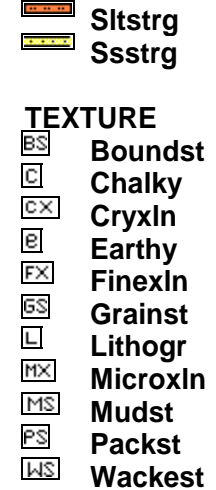
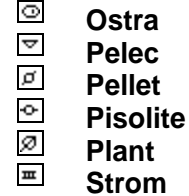
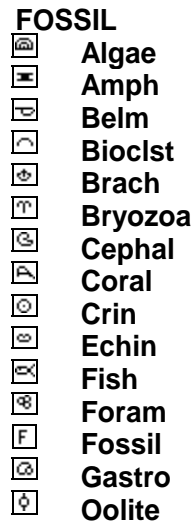
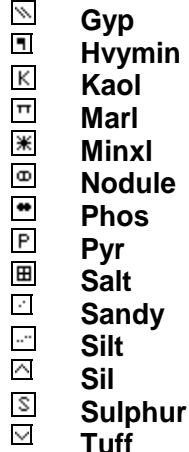
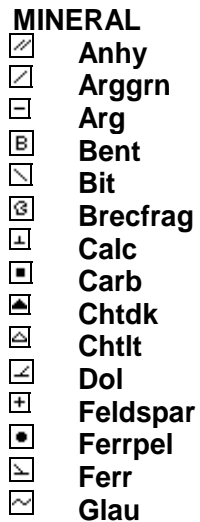
Comments








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
 Earthy
 Fenest
 Fracture
 Inter
 Moldic
 Organic
 Pinpoint




 Vuggy



SORTING
 Well
 Moderate
 Poor

OTHER SYMBOLS

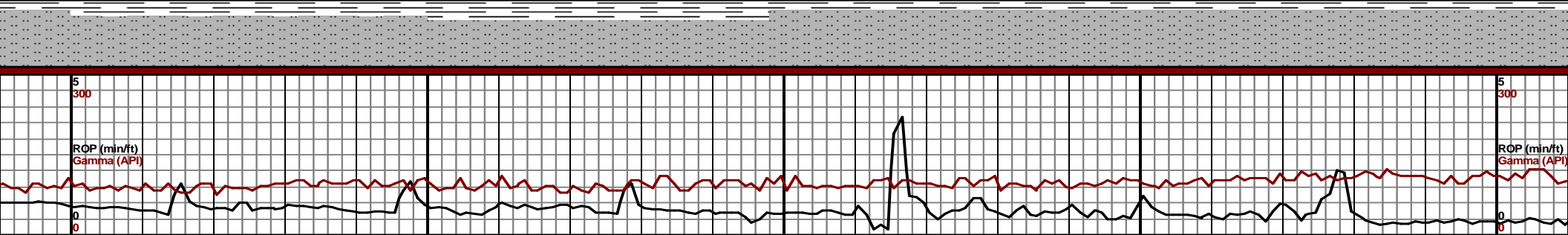
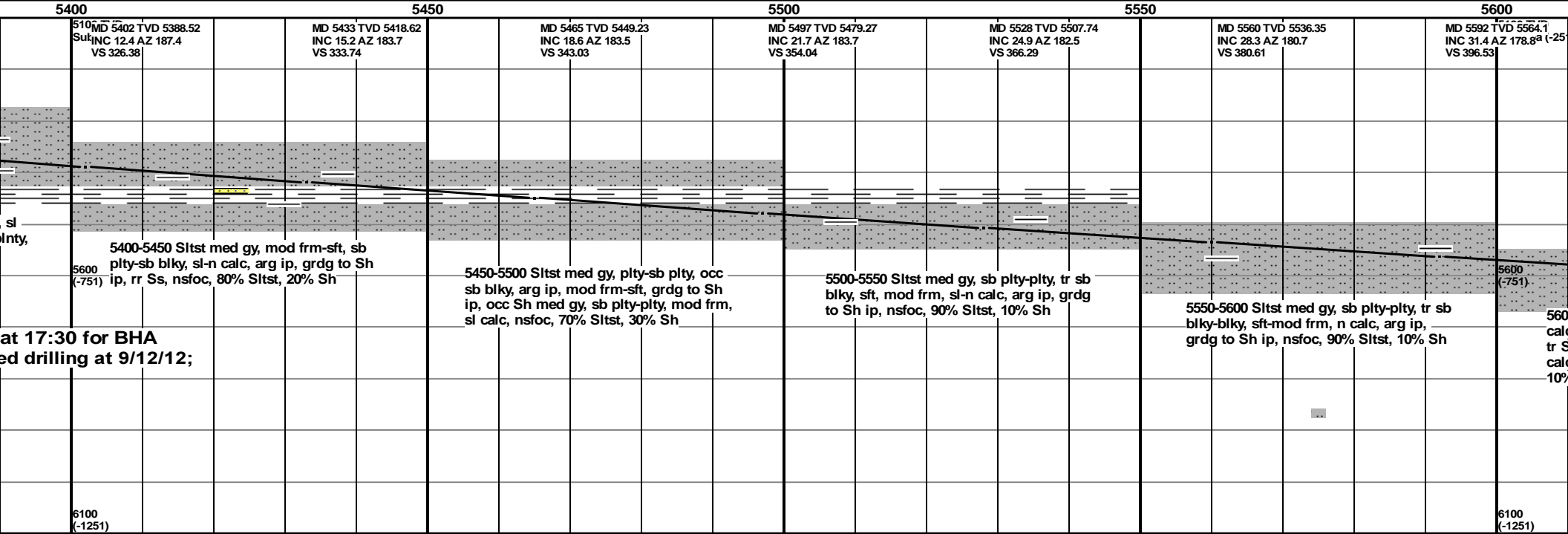
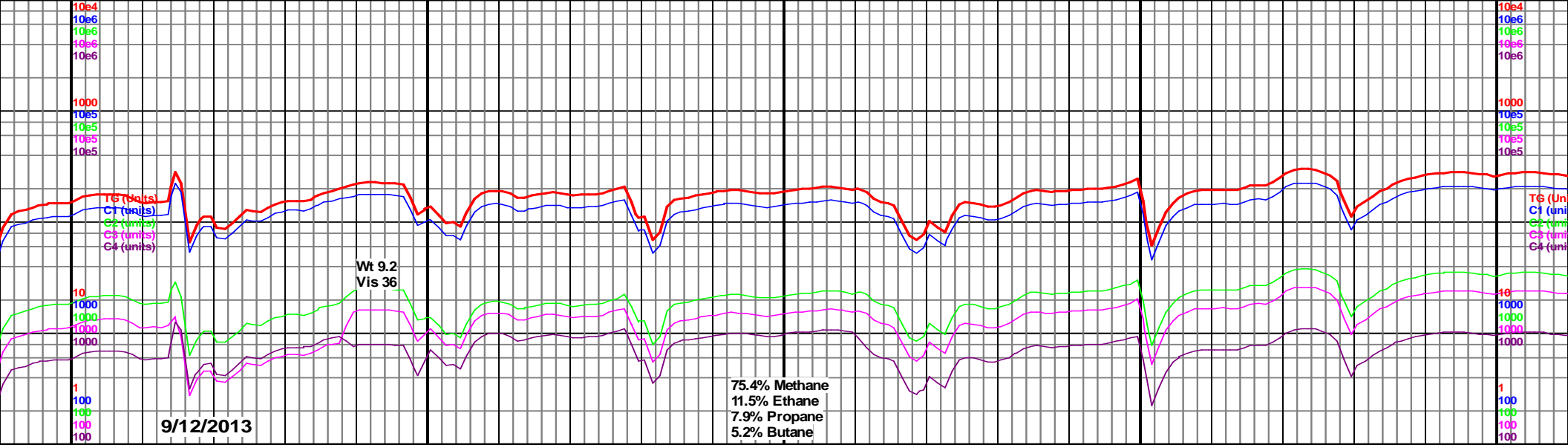
ROUNDING
 Rounded
 Subrnd
 Subang
 Angular

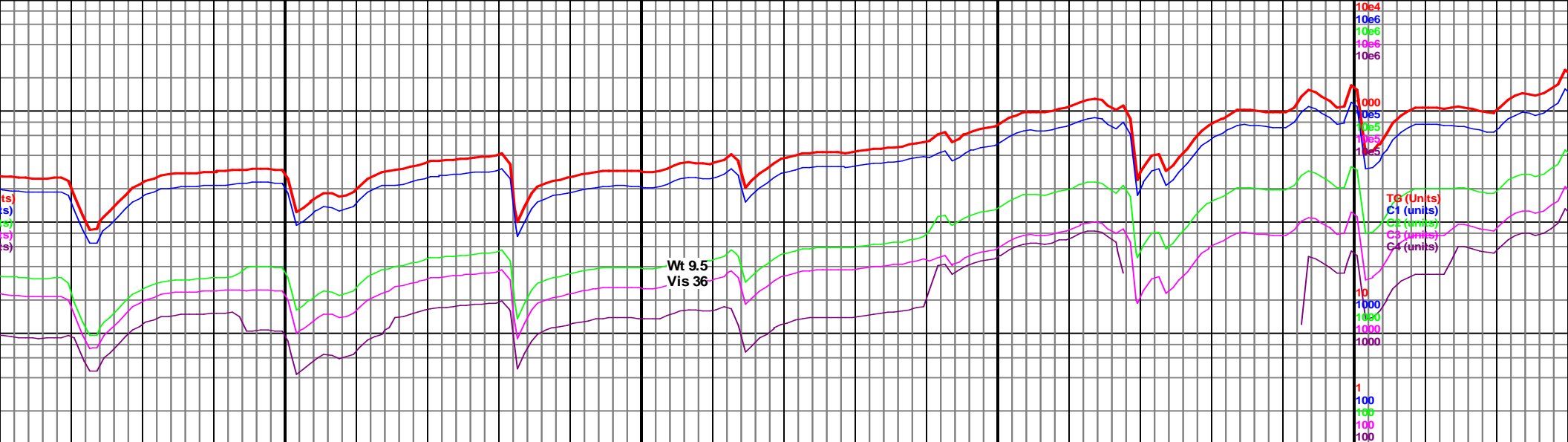
OIL SHOW
 Even

 Spotted
 Ques
 Dead

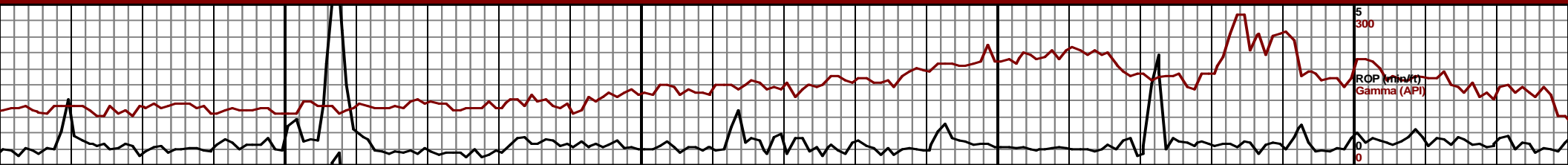
INTERVAL
 Core
 Dst

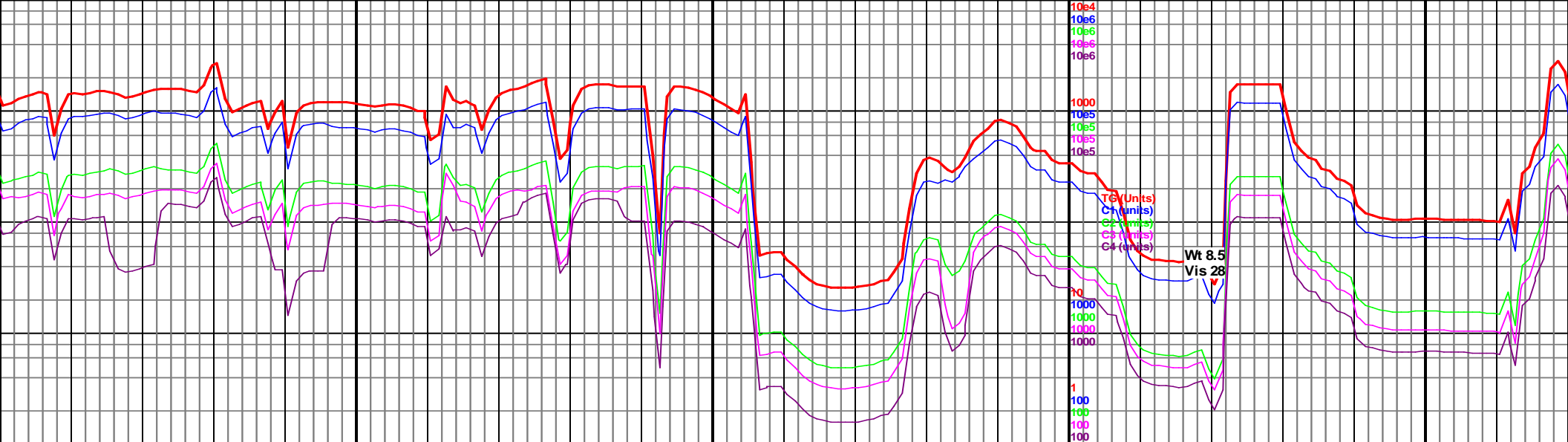
EVENT
 Rft
 Sidewall



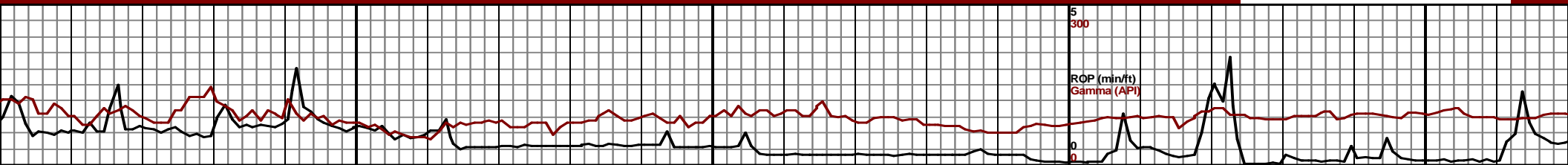


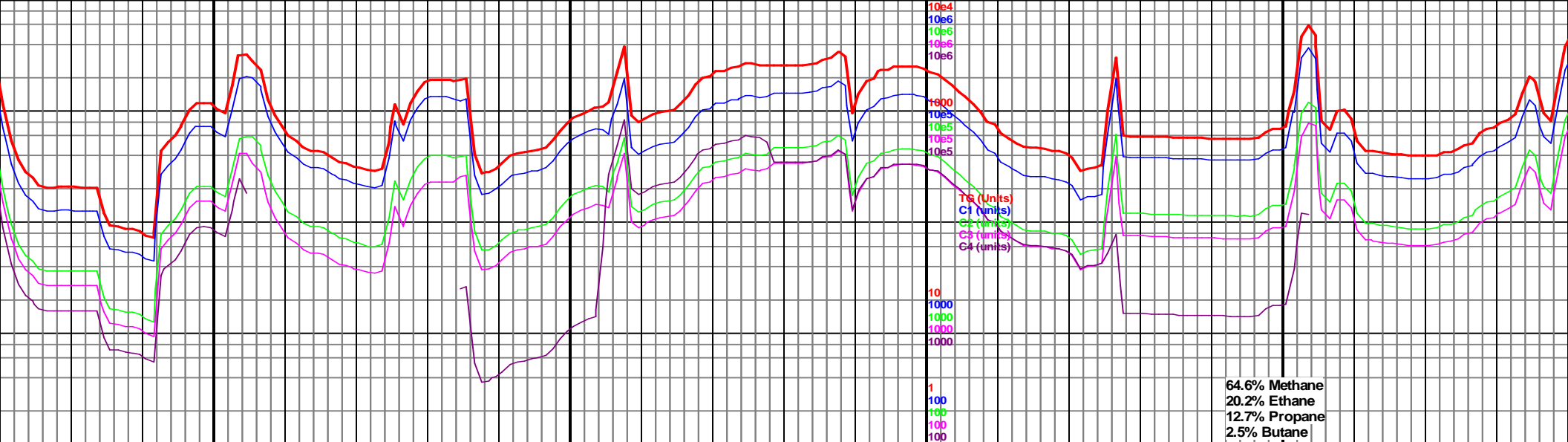
<p>MD 5623 TVD 5590.19 INC 34 AZ 177.7 VS 413.26</p> <p>0-5650 Slstst med gy, sb plty-plty, n c, arg ip, grdg to Sh ip, tr cal fil frac, Sh med gy, sb plty-plty, sft-mod frm, n c, nsoc, occ wht min flor, 90% Slstst, % Sh</p>	<p>MD 5655 TVD 5616.4 INC 36 AZ 177 VS 431.59</p> <p>5650-5700 Slstst med-dk ip gy, sb plty-plty, non calc, mod frm-sft, arg ip, grdg to Sh ip, tr Sh med-dk gy, sb plty-plty, sft-mod frm, n calc, nsfoc, 85% Slstst, 15% Sh</p>	<p>MD 5686 TVD 5640.87 INC 39.7 AZ 177 VS 450.57</p> <p>5700-5750 Slstst med-dk ip gy, sb plty-plty, non calc, mod frm-sft, arg ip, grdg to Sh ip, tr Sh med-dk gy, sb plty-plty, sft-mod frm, n calc, nsfoc, 80% Slstst, 20% Sh</p>	<p>MD 5749 TVD 5686.74 INC 46.6 AZ 180.4 VS 493.67</p> <p>5750-5800 Sh med-dk gy, sb plty-sb blk ip, mod frm, slty tex, grdg to Slstst ip, sl-non calc, tr-rr bent lt gy, plty-flky ip, rr pyr, occ bri yel min flor, nsoc, 60% Sh, 35% Slstst, 5% bent</p> <p>Sharon Springs 5781' MD, 5708' TVD</p>	<p>MD 5780 TVD 5707.35 INC 50 AZ 180.5 VS 516.81</p> <p>5800 TVD 5707.35 Sub Sea (-25')</p> <p>MD 5812 TVD 5727.32 INC 52.8 AZ 179.1 VS 541.81</p> <p>5800-5850 Mrstst med gy, occ brn, sb plty-blky, occ sb bl abt Chk med gy, mod frm. Sh, rr bent, tr bri yel min fl Mrstst, 40% Chk, 5% Sh</p> <p>Niobrara 5793' MD, 5716' TVD</p>
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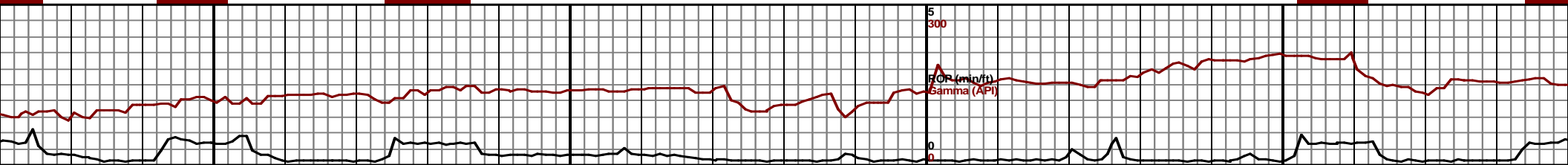


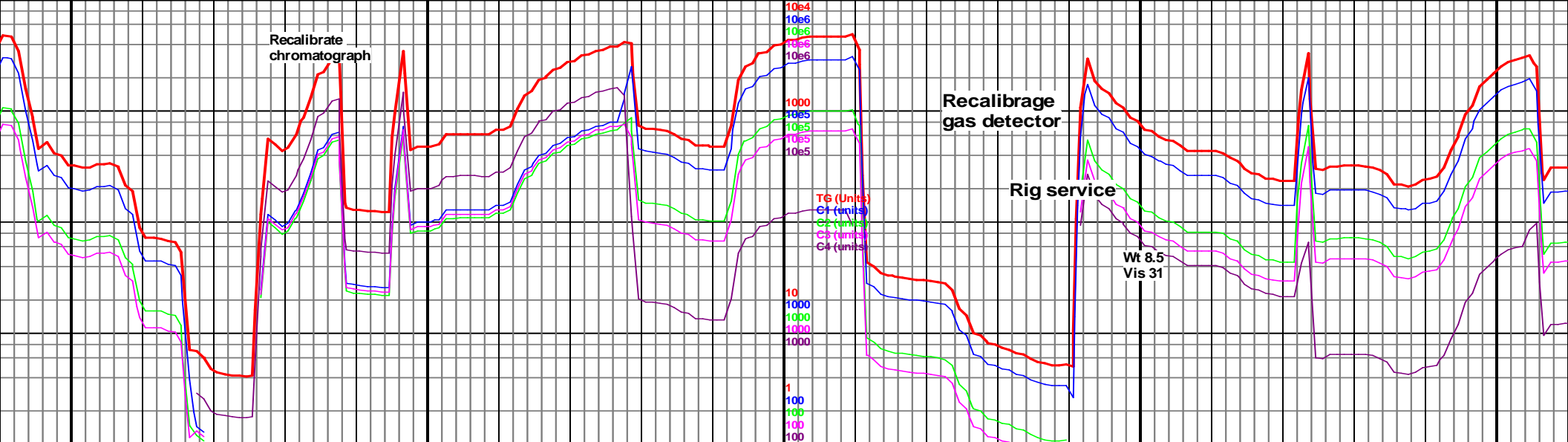
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MD 6065 TVD 5840.1 INC 77 AZ 180.2 VS 765.9	MD 6096 TVD 5846.02 INC 81 AZ 180.2 VS 796.33	MD 6128 TVD 5849.89 INC 85.1 AZ 180 VS 828.08			MD 6170 TVD 5851.79 INC 89.7 AZ 181.4 VS 870.03	5100 TVD Sub Sea (-251)	MD 6211 TVD 5851.65 INC 90.7 AZ 182.5 VS 911.02		MD 6243 TVD 5851.2 INC 90.9 AZ 182.5 VS 943	
Intermediate casing pt 6215' MD reached at 15:45 resumed drilling at 19:00 on 9/13/2013 TOOH at 22:00 for mud motor resumed drilling at 12:30										
N460 6060' MD, 5839' TVD										



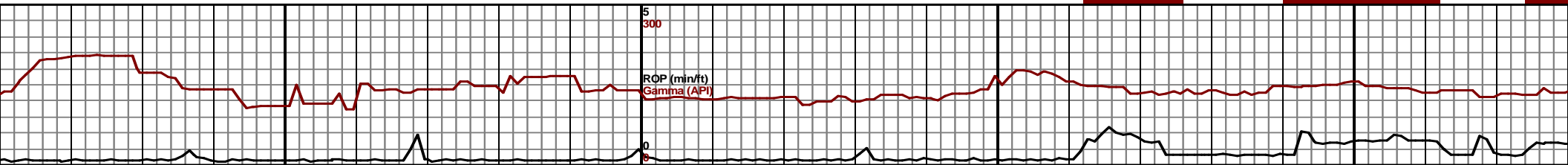
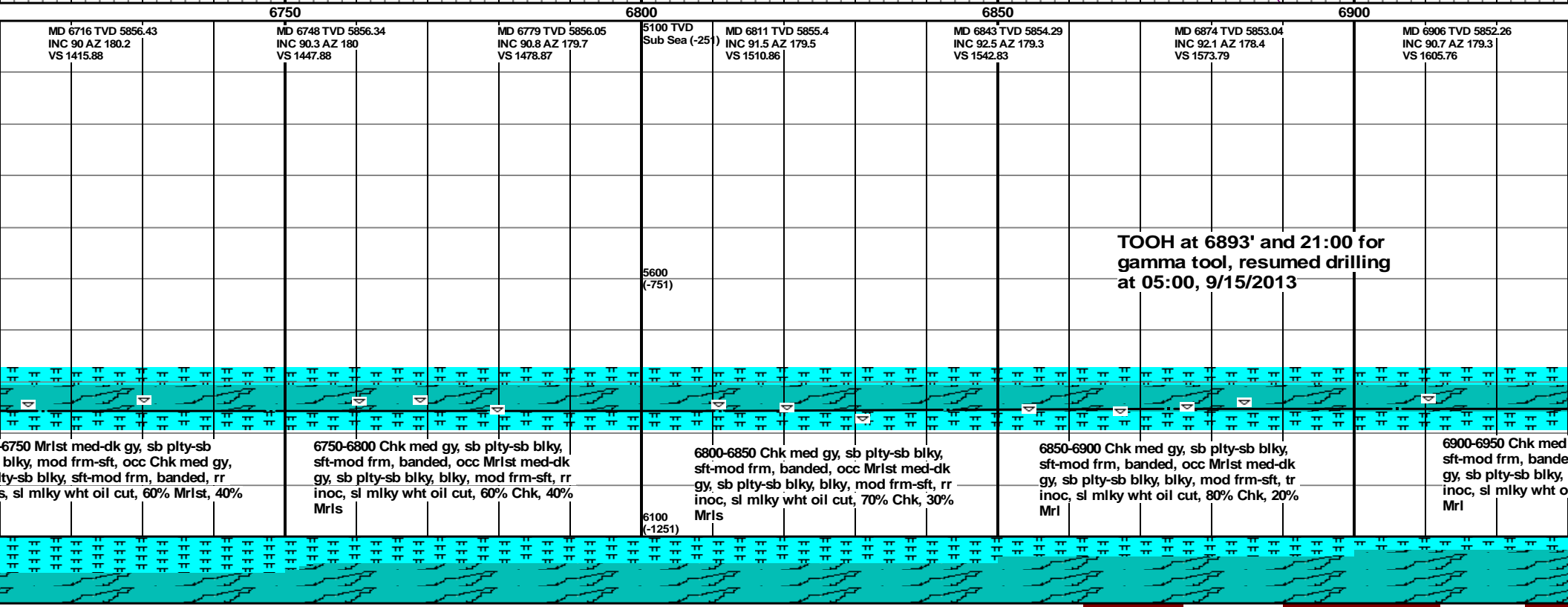
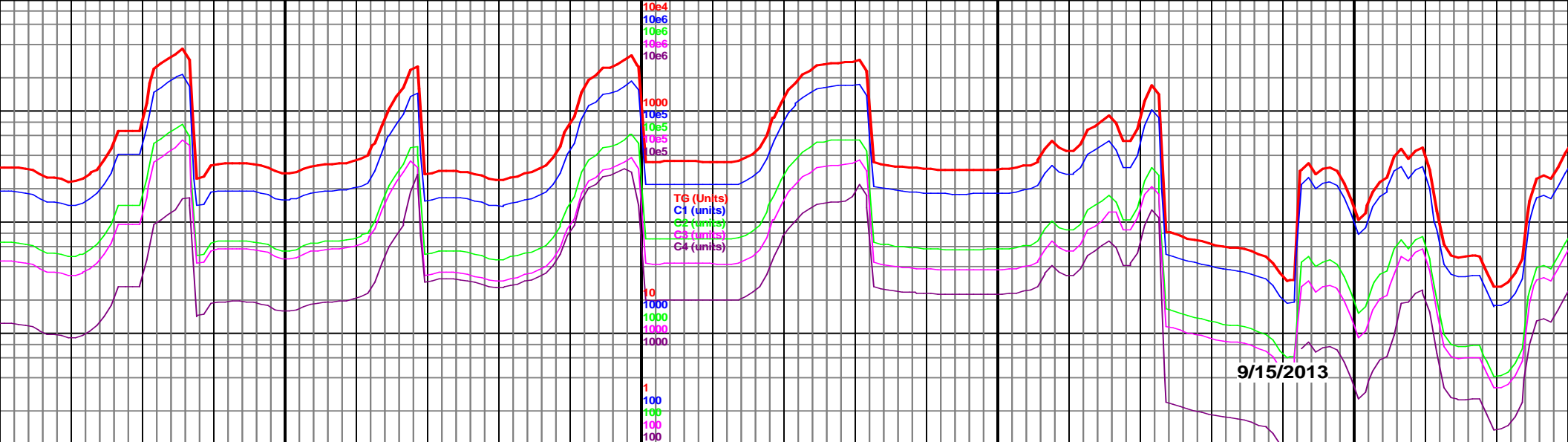


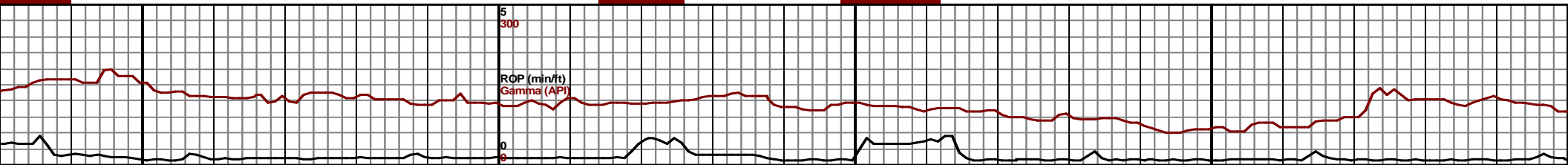
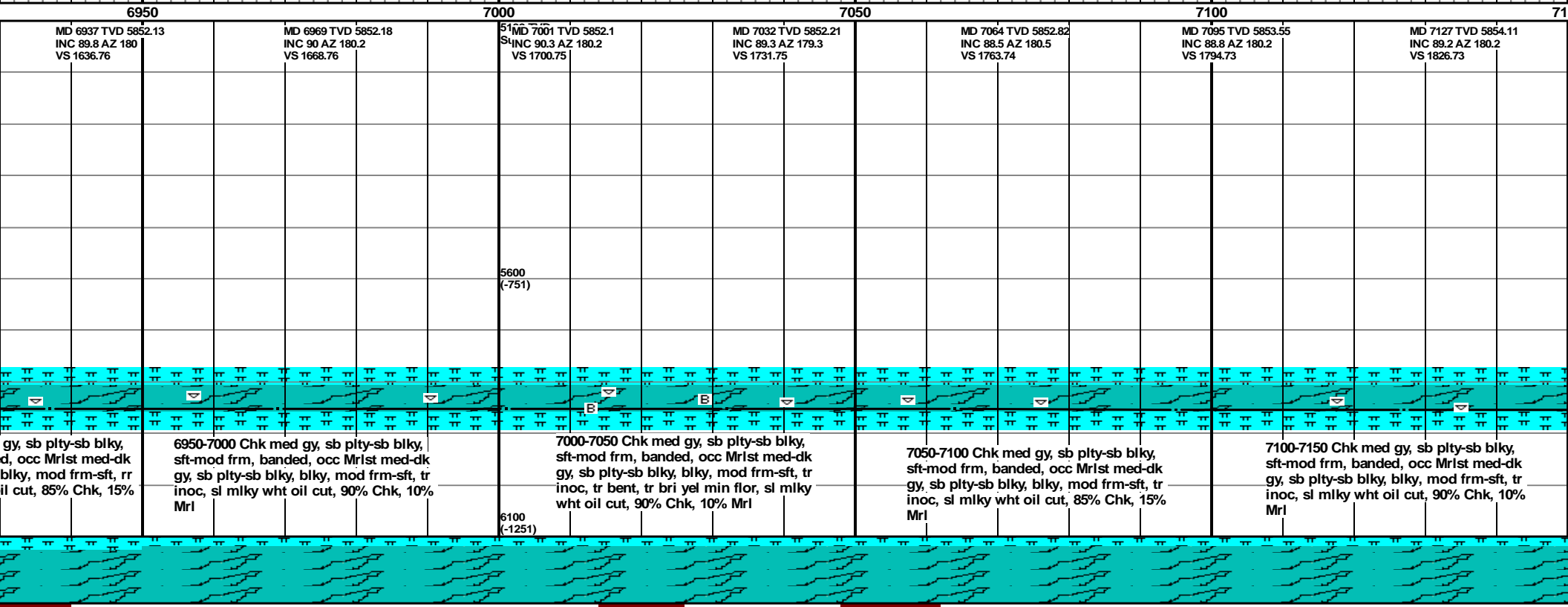
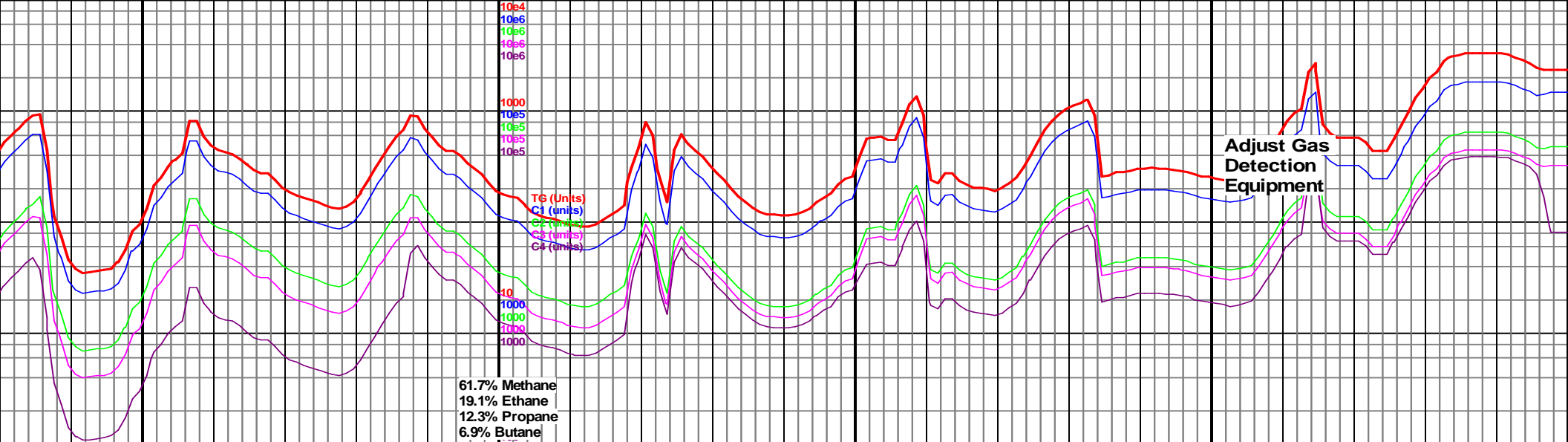
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med gy, sb plty-sb blk, nded, occ Mrlst med-dk lky, blk, mod frm-sft, rr wht oil cut, 60% Chk, 40%	6300-6350 Chk med gy, sb plty-sb blk, sft-mod frm, banded, occ Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr inoc, v sl mlky wht oil cut, 60% Chk, 40% Mrlst	6350-6400 Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr Chk med gy, sb plty-sb blk, sft-mod frm, banded, rr inoc, v sl mlky wht oil cut, 80% Mrlst, 20% Chk	6400-6450 Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr Chk med gy, sb plty-sb blk, sft-mod frm, banded, rr inoc, v sl mlky wht oil cut, 80% Mrlst, 20% Chk	6450-6500 Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr Chk med gy, plty-sb blk, sft-mod frm, banded, v sl mlky wht oil cut, 80% Mrlst, 20% Chk		

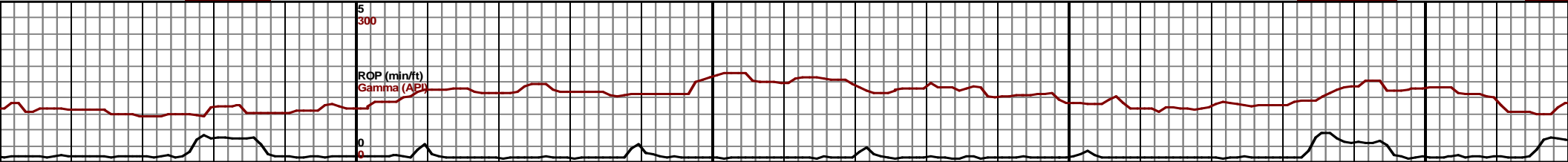
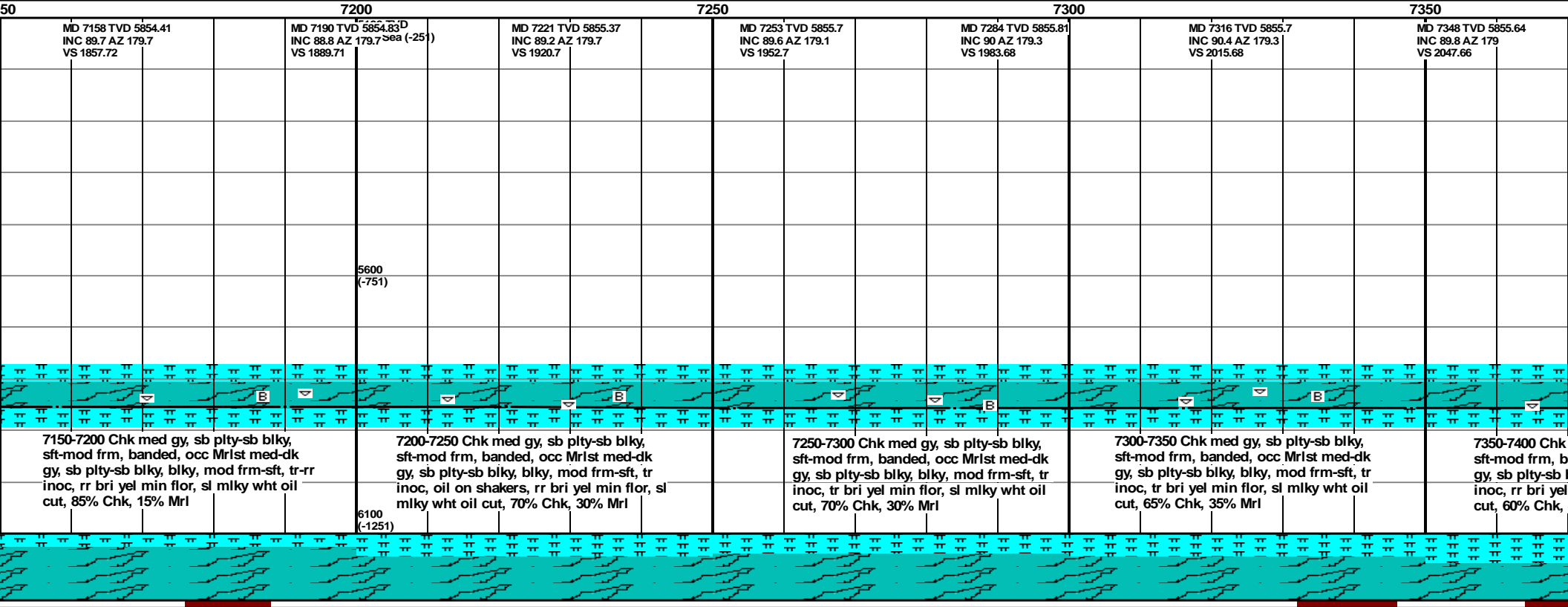
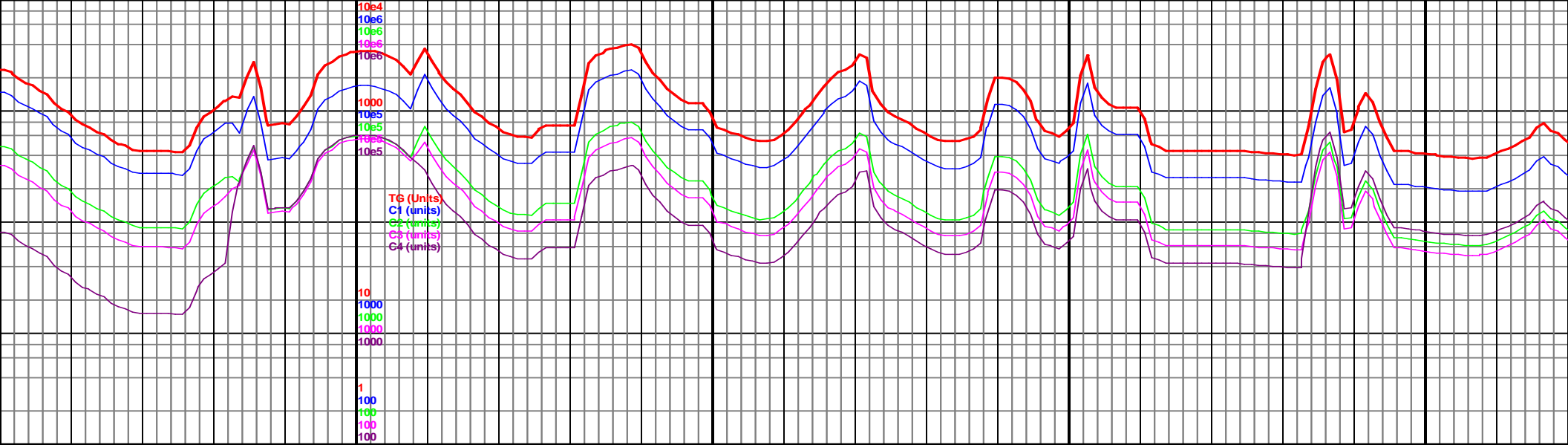


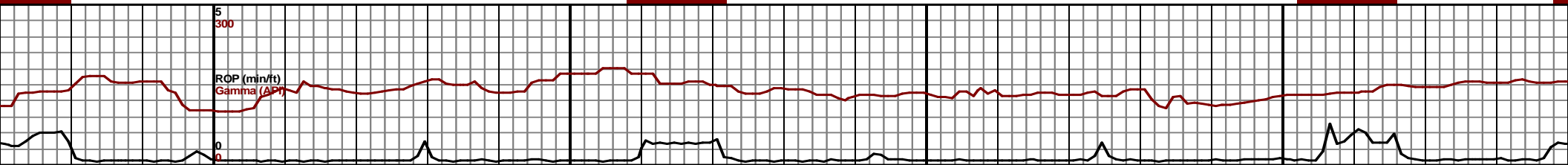
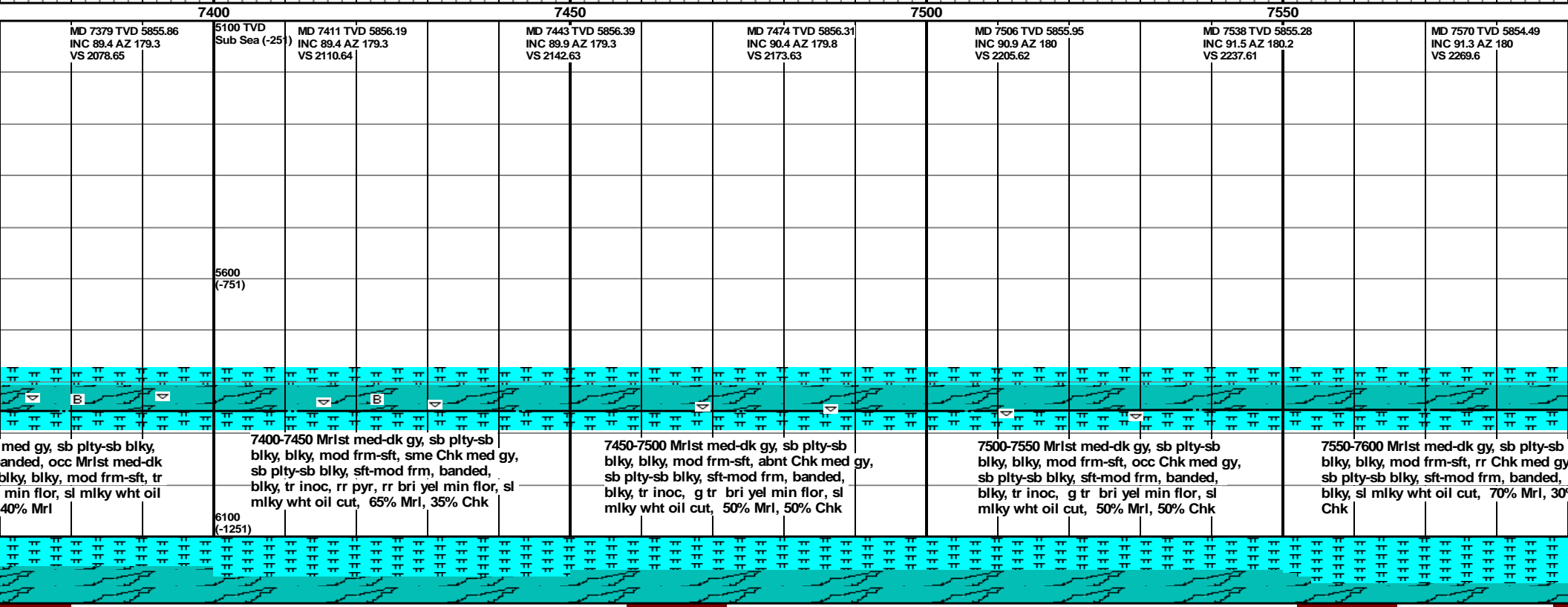
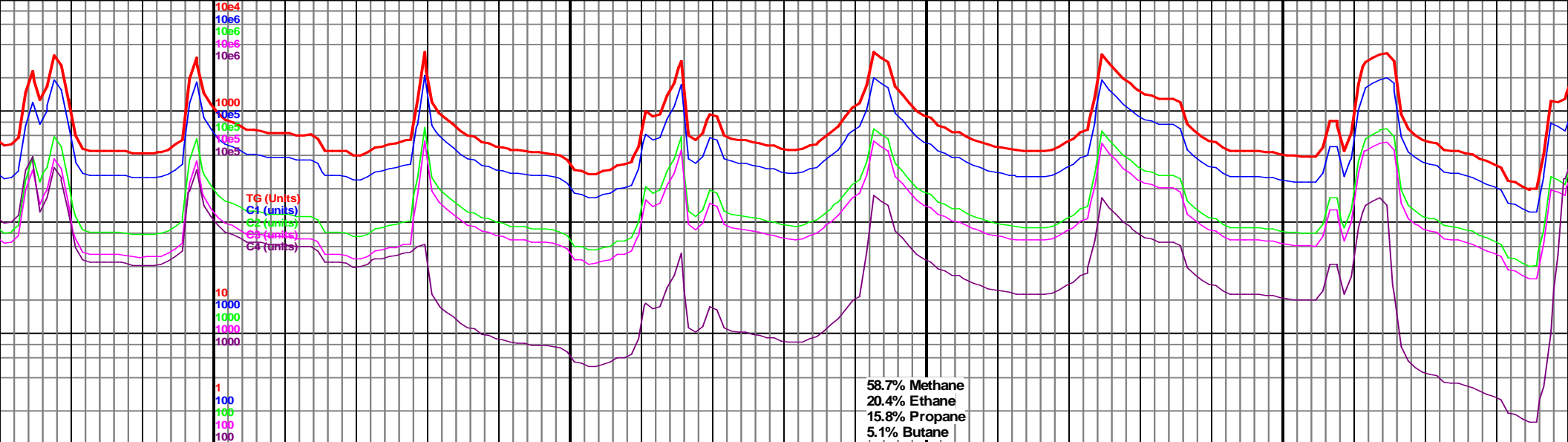


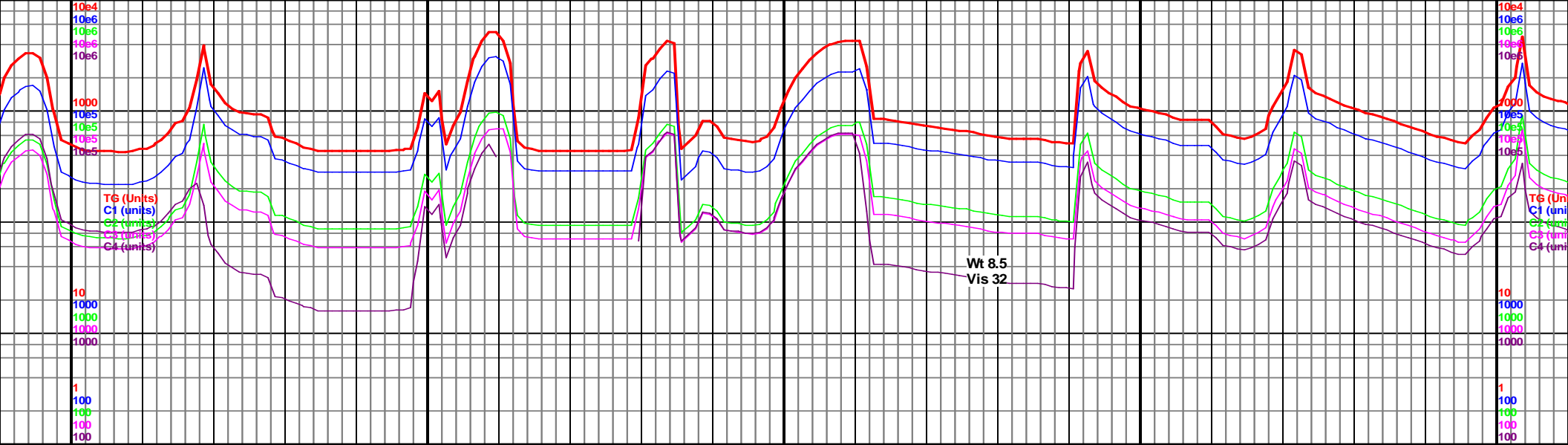
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								MD 6653 TVD 5855.93 INC 89.2 AZ 180.2 VS 1352.88	
								MD 6685 TVD 5856.29 INC 89.5 AZ 180.2 VS 1384.88	



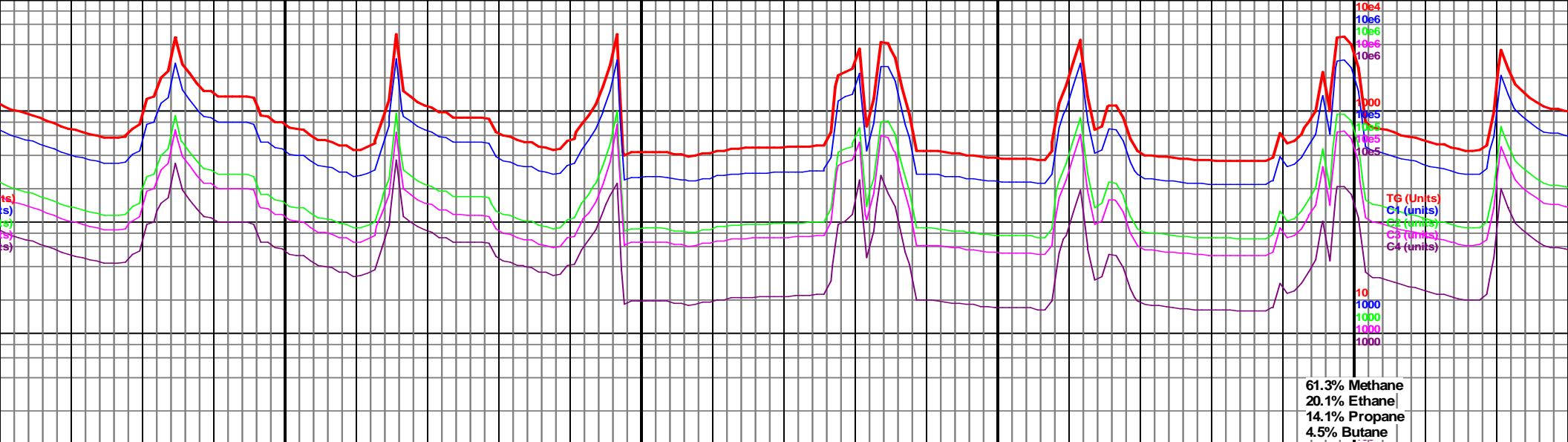




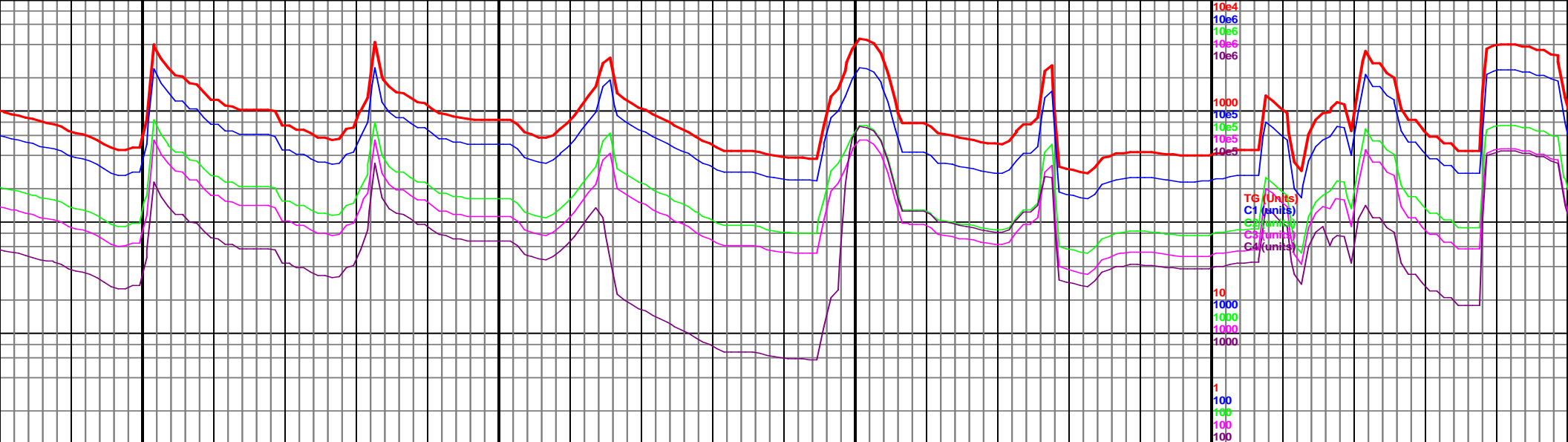




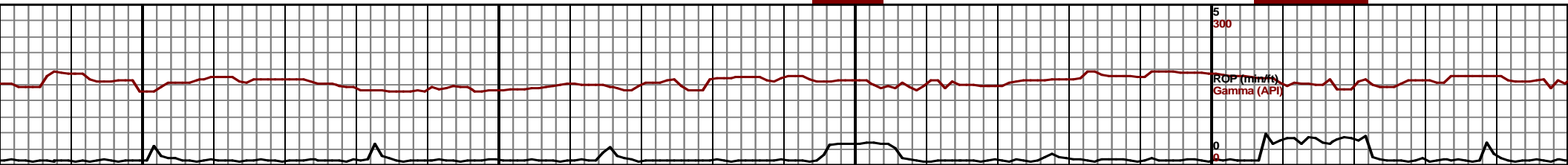
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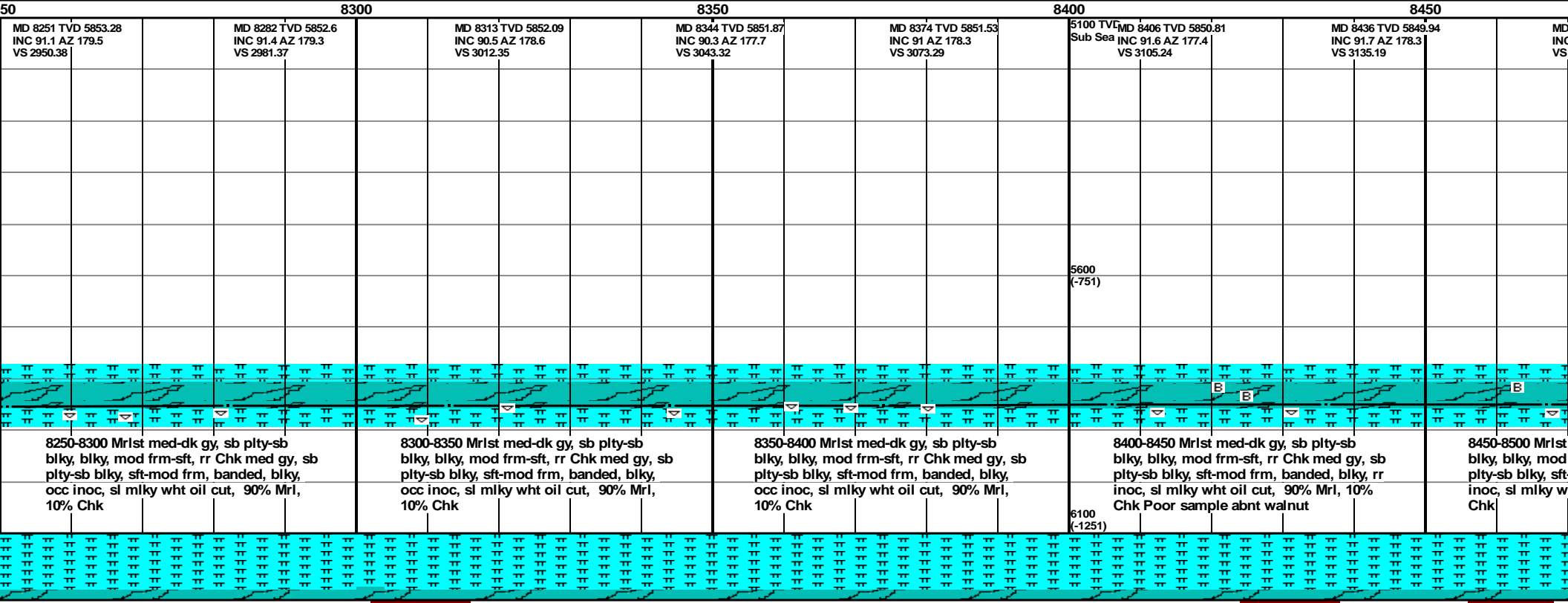


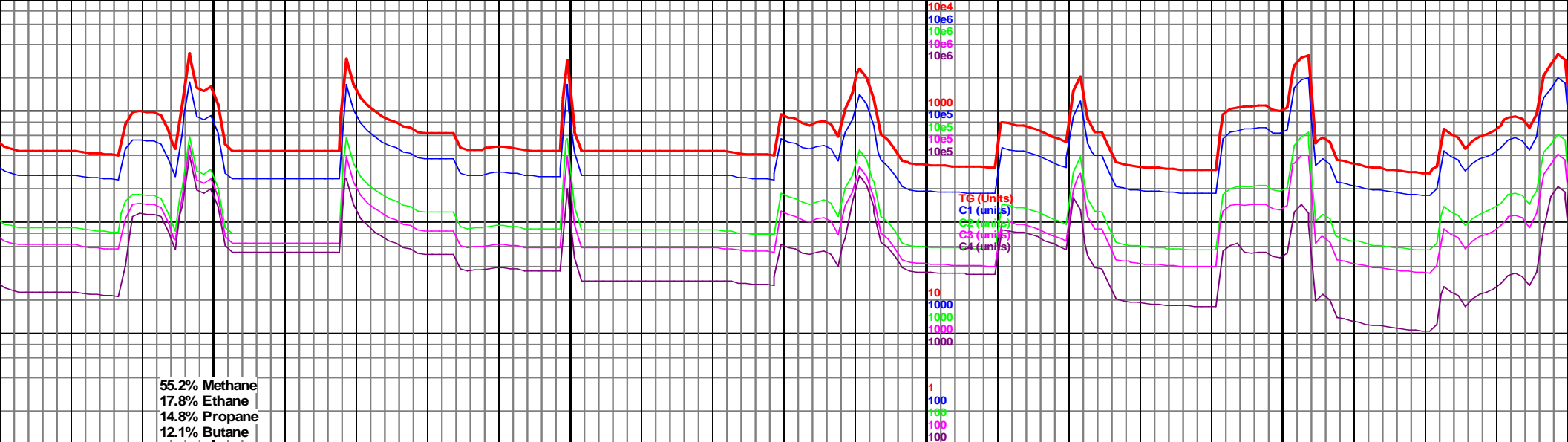
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												MD 7941 TVD 5857.32 INC 90.2 AZ 179.3 VS 2640.5			
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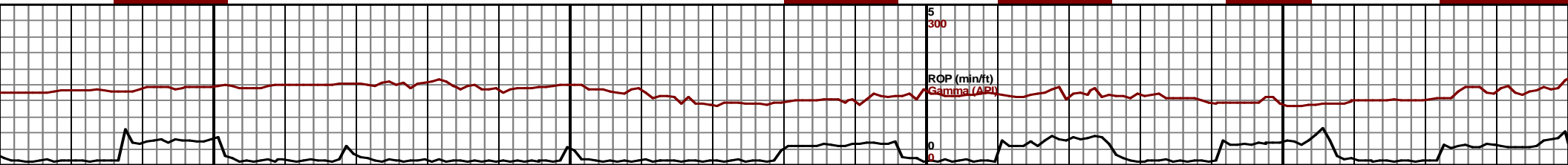
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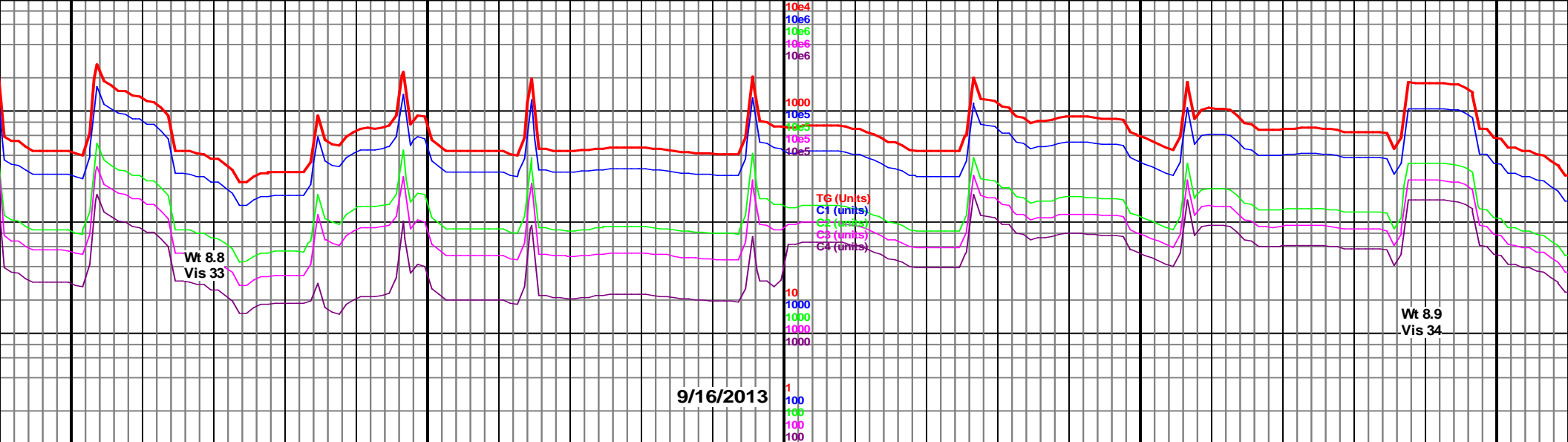




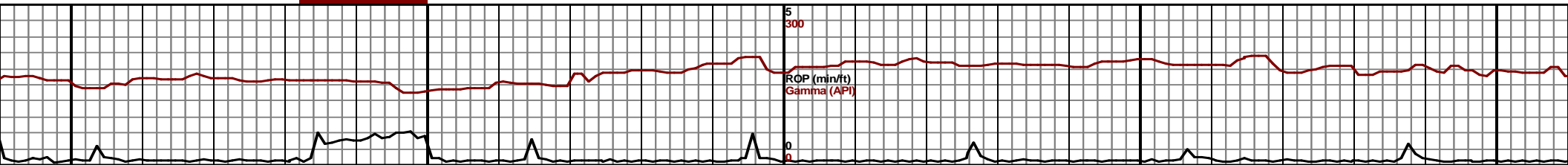


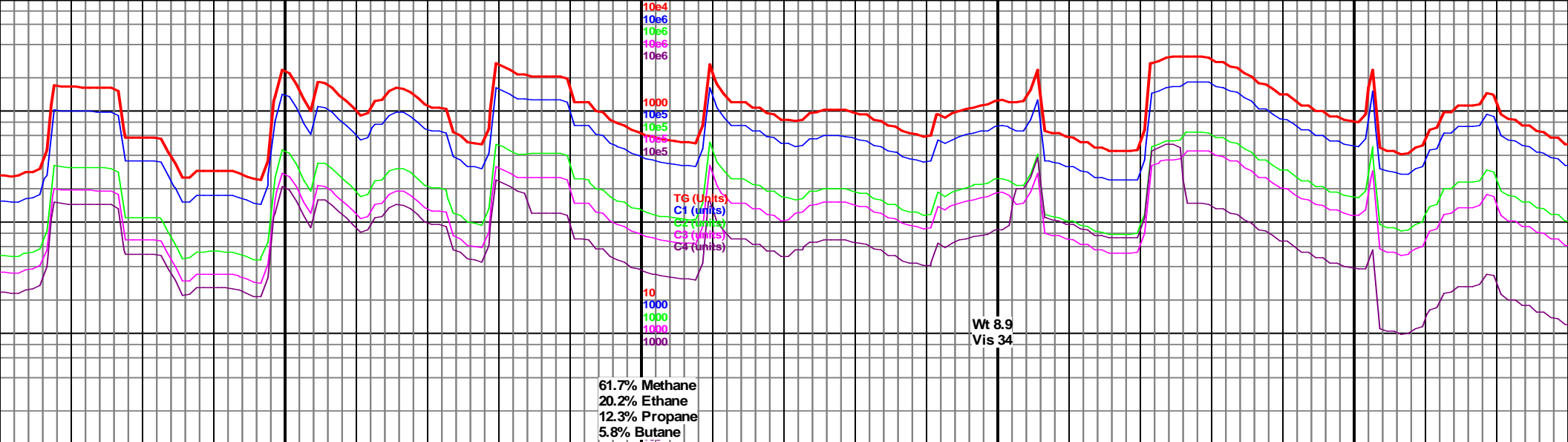
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med-dk gy, sb plty-sb frm-sft, rr Chk med gy, sb mod frm, banded, blk, rr ht oil cut, 90% Mrl, 10%		8500-8550 Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, rr Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr bent, rr inoc, sl oil cut, 80% Chk, 20% Mrl		8550-8600 Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, abnt Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr bent, rr inoc, sl oil cut, 60% Chk, 40% Mrl		8600-8650 Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, abnt Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr inoc, sl oil cut, 50% Chk, 50% Mrl		8650-8700 Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, abnt Mrlst med-dk gy, sb plty-sb blk, blk, mod frm-sft, rr bent, rr inoc, sl oil cut, 50% Chk, 50%							



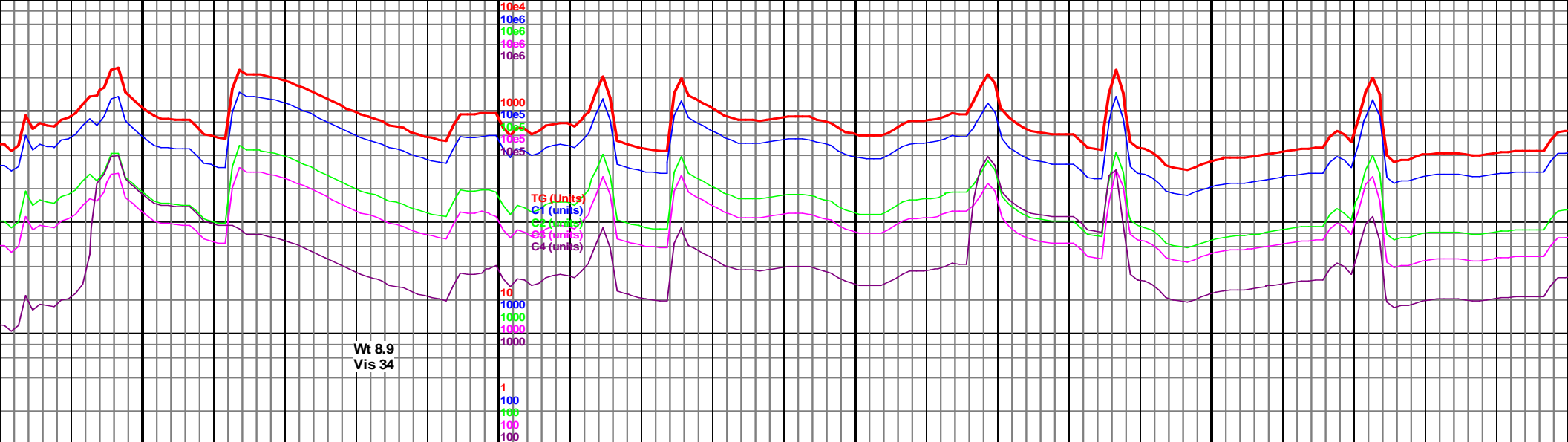


8700				8750				8800				8850				8900															
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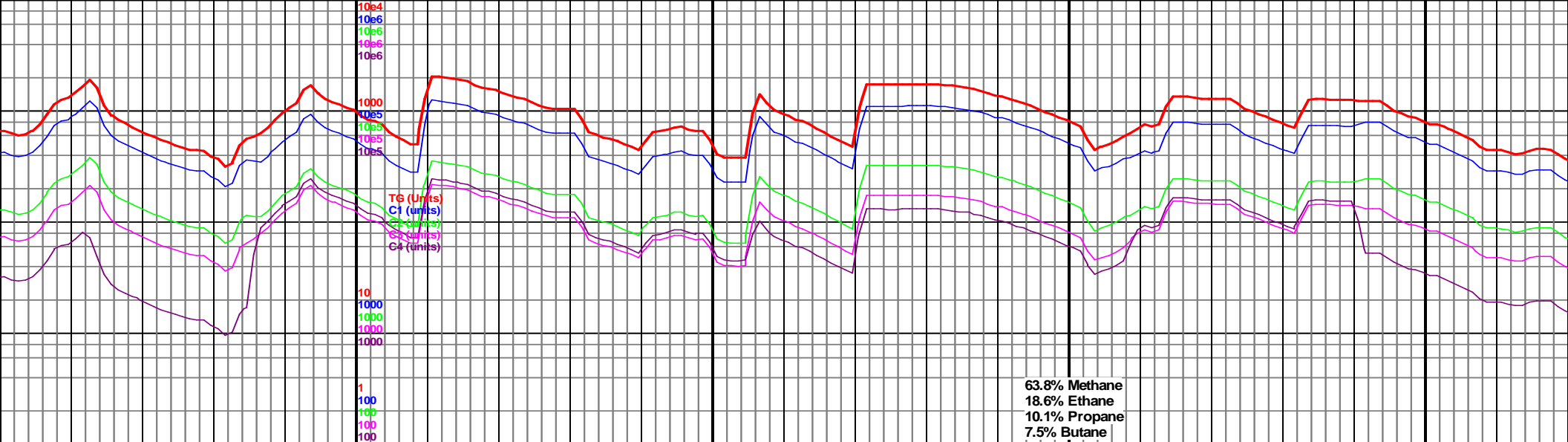




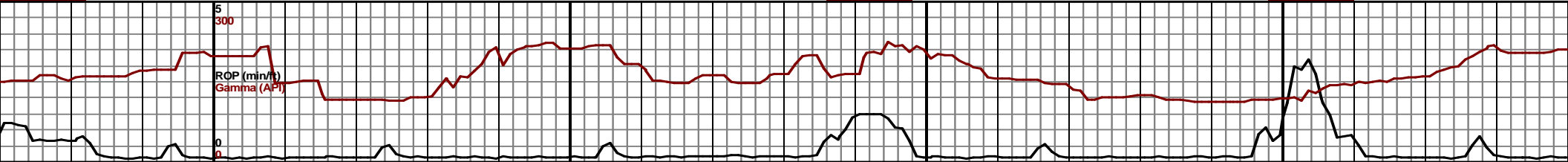
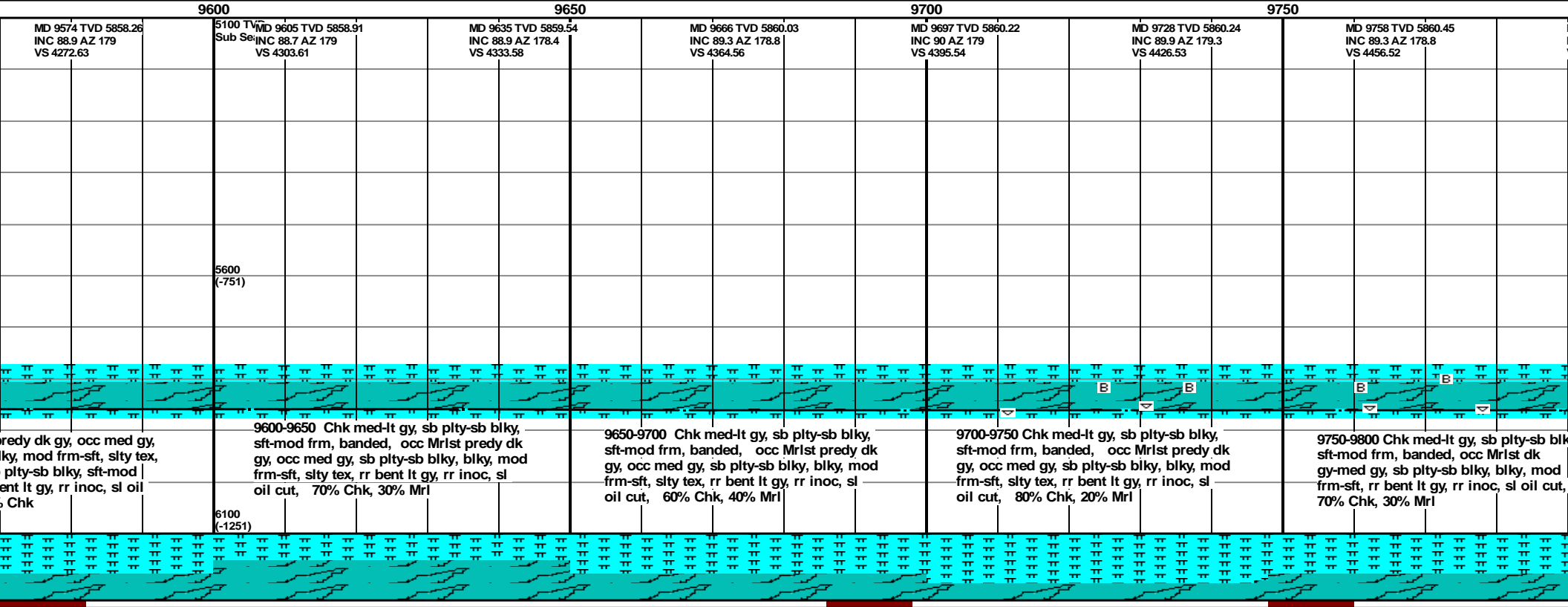
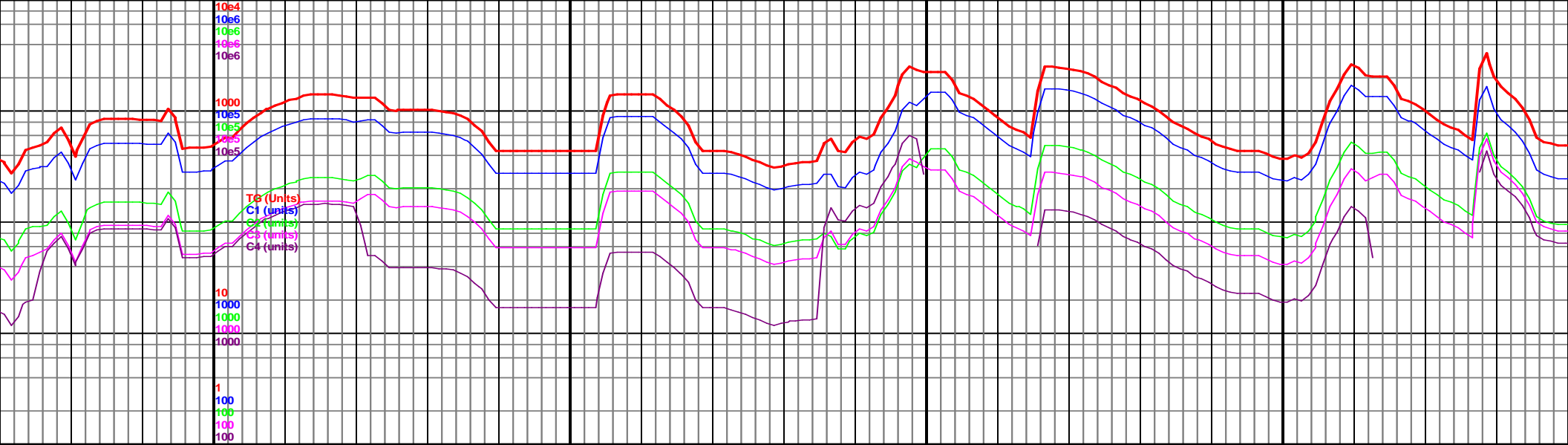
8950				9000				9050				9100															
MD 8928 TVD 5857.11 INC 89.2 AZ 179.7 VS 3626.82				MD 8959 TVD 5857.38 INC 89.8 AZ 180 VS 3657.81				MD 8990 TVD 5857.37 INC 90.5 AZ 180.5 Sea (-25) VS 3688.81				MD 9020 TVD 5857.01 INC 90.6 AZ 180 VS 3718.81				MD 9051 TVD 5856.93 INC 89.7 AZ 179.5 VS 3749.8				MD 9081 TVD 5857.03 INC 89.9 AZ 180.4 VS 3779.8				MD 9112 TVD 5856.84 INC 90.8 AZ 180.2 VS 3810.8			

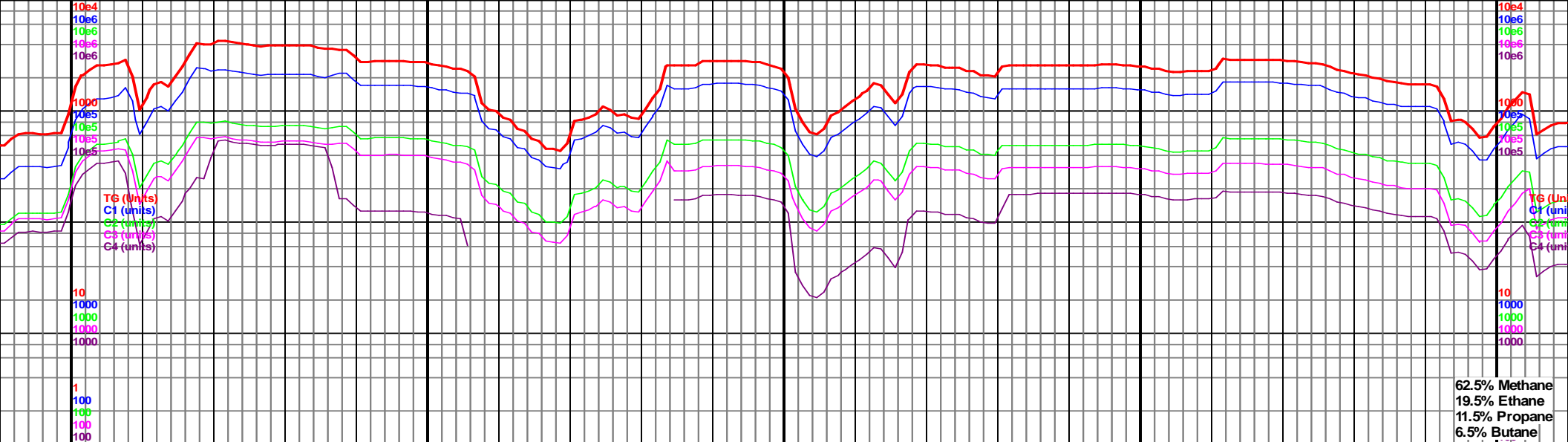


9150				9200				9250				9300				9350											
MD 9143 TVD 5856.54 INC 90.3 AZ 180.9 VS 3841.8				MD 9173 TVD 5856.28 INC 90.7 AZ 181.4 VS 3871.79				MD 9204 TVD 5855.82 INC 91 AZ 182.3 VS 3902.78				MD 9235 TVD 5855.31 INC 90.9 AZ 181.9 VS 3933.77				MD 9266 TVD 5855.06 INC 90 AZ 182.3 VS 3964.76				MD 9297 TVD 5855.06 INC 90 AZ 182.8 VS 3995.74				MD 9328 TVD 5855.09 INC 89.9 AZ 183.2 VS 4026.72			

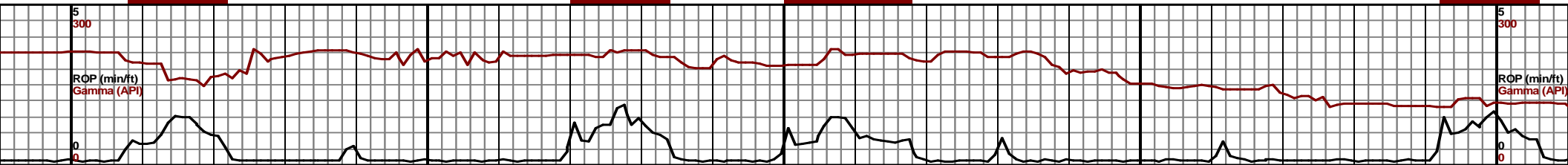
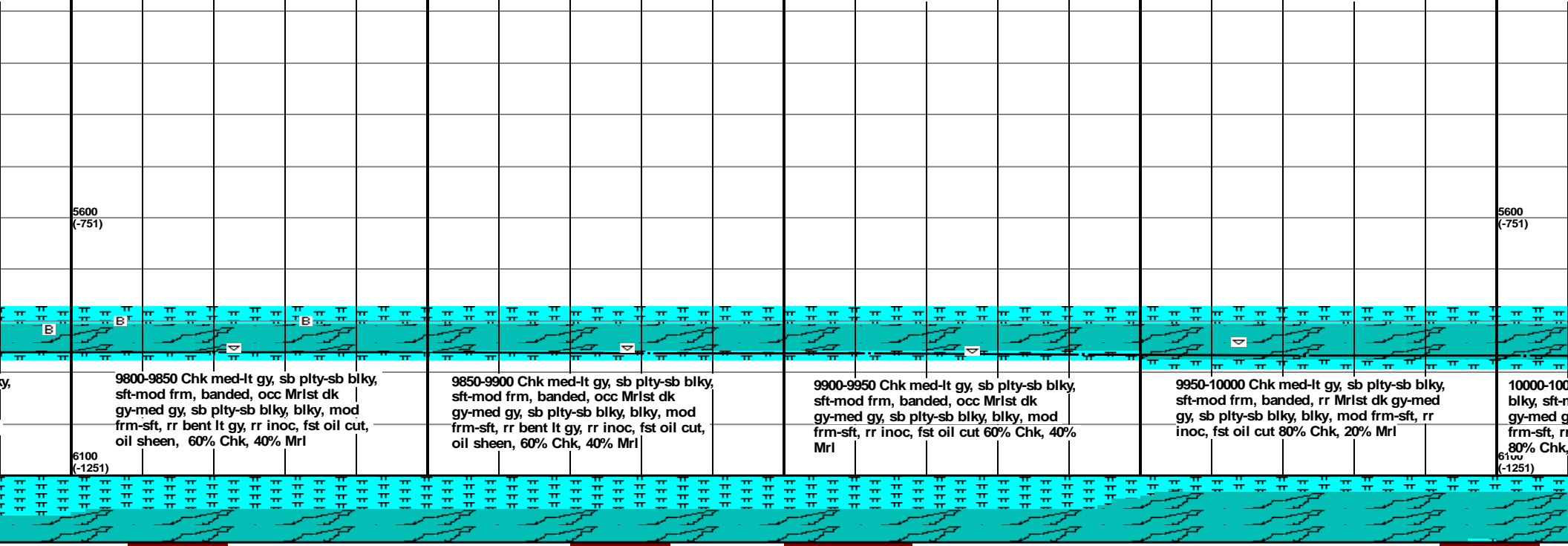


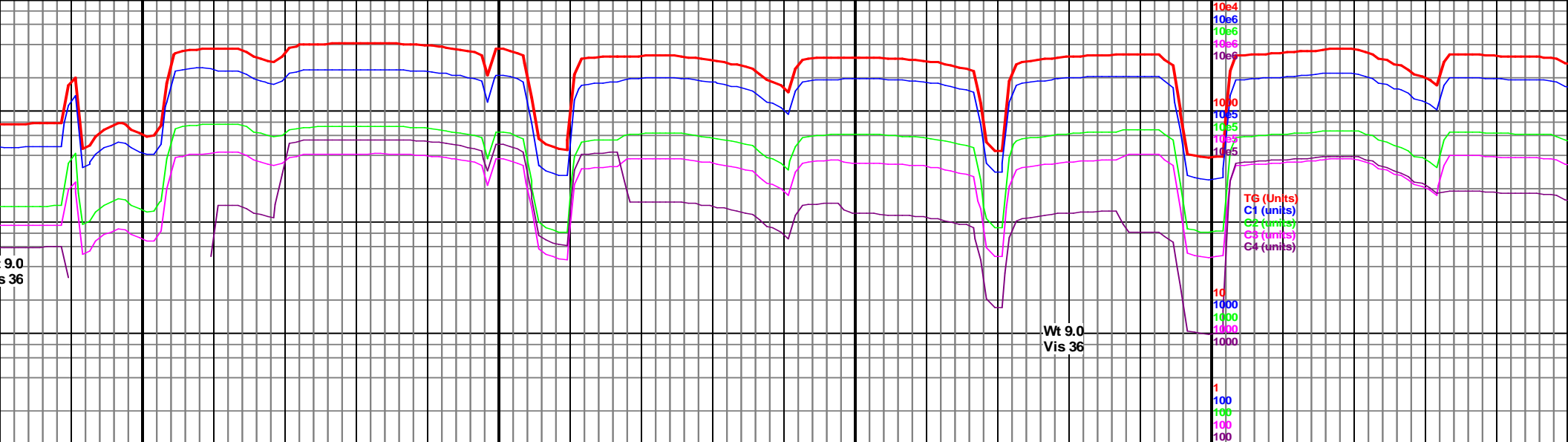
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MD 9358 TVD 5855.17 INC 89.8 AZ 183 VS 4056.69		MD 9389 TVD 5855.44 INC 89.2 AZ 181.1 ^D Sea (-25) VS 4087.68				MD 9420 TVD 5855.85 INC 89.3 AZ 180.4 VS 4118.67				MD 9451 TVD 5856.25 INC 89.2 AZ 180.4 VS 4149.67				MD 9482 TVD 5856.66 INC 89.3 AZ 180 VS 4180.67				MD 9513 TVD 5857.12 INC 89 AZ 179.5 VS 4211.66				MD 9544 TVD 5857.69 INC 88.9 AZ 179 VS 4242.64			
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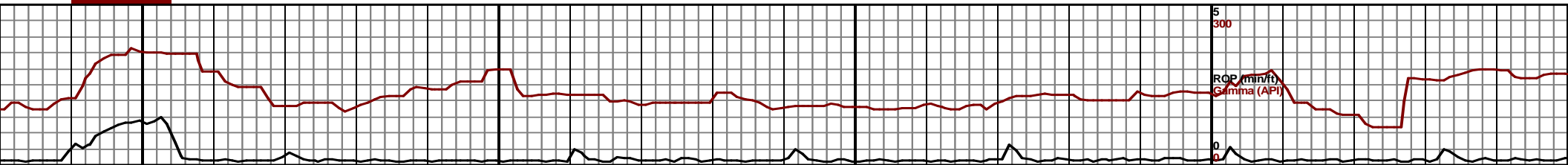


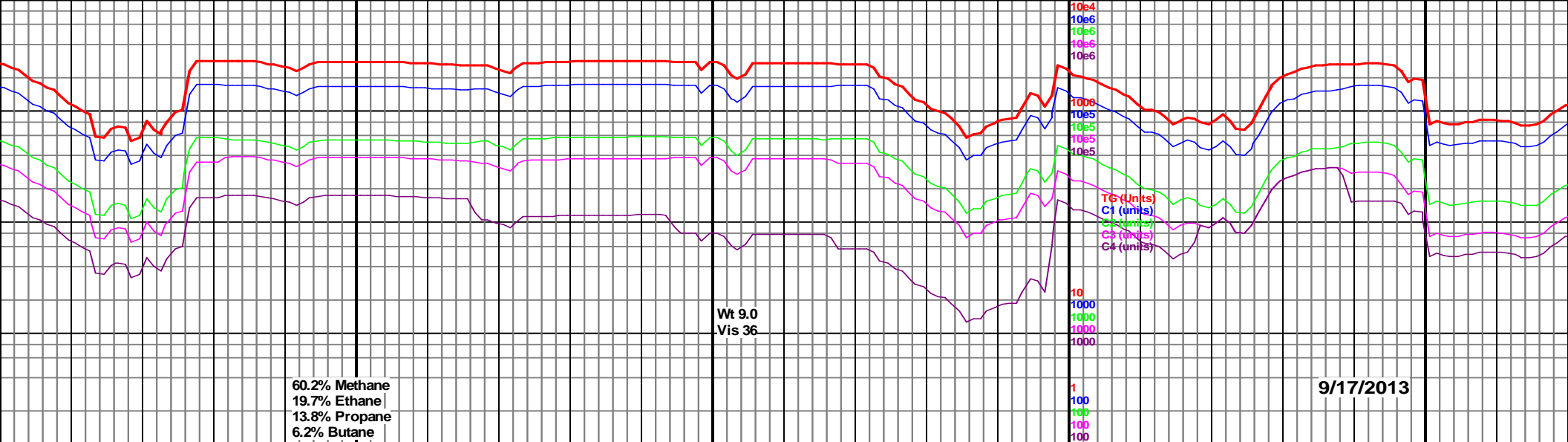
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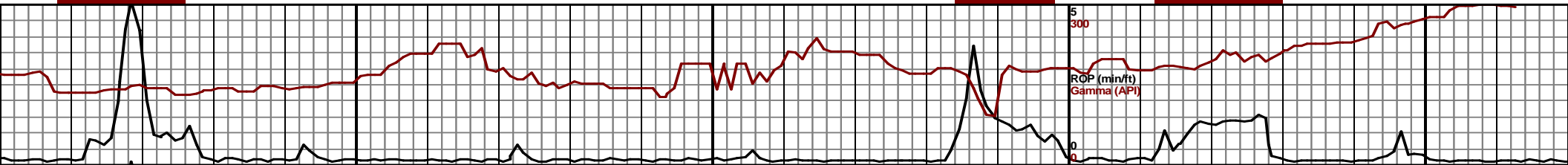


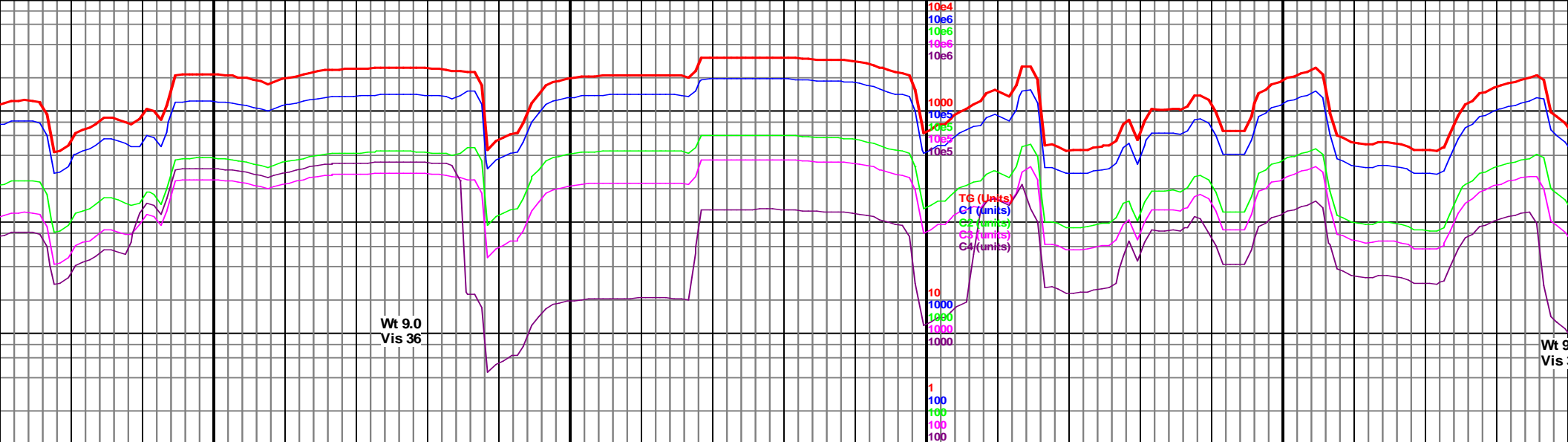
5865.24 7	MD 10250 TVD 5865.64 INC 88.5 AZ 181.2 VS 4948.26	MD 10281 TVD 5866.43 INC 88.6 AZ 181.4 VS 4979.24	MD 10312 TVD 5867.05 INC 89.1 AZ 180.5 VS 5010.24	MD 10343 TVD 5867.46 INC 89.4 AZ 181.1 VS 5041.23	MD 10374 TVD 5867.54 INC 90.3 AZ 182.3 VS 5072.23	MD 10404 TVD 5867.28 INC 90.7 AZ 181.8 VS 5102.22	MD 10434 TVD 5866.8 INC 91.1 AZ 181.4 VS 5132.21
sb plty-sb occ Mrlst dk blky, mod cut 75% Chk,	10250-10300 Chk med-lt gy, sb plty-sb blky, sft-mod frm, banded, occ Mrlst dk gy-med gy, sb plty-sb blky, blky, mod frm-sft, rr bent, rr inoc, sl oil cut 75% Chk, 25% Mrl		10300-10350 Chk med-lt gy, sb plty-sb blky, sft-mod frm, banded, occ Mrlst dk gy-med gy, sb plty-sb blky, blky, mod frm-sft, occ bent, rr inoc, sl oil cut 75% Chk, 25% Mrl	10350-10400 Chk med-lt gy, sb plty-sb blky, sft-mod frm, banded, occ Mrlst dk gy-med gy, sb plty-sb blky, blky, mod frm-sft, occ bent, rr inoc, sl oil cut 75% Chk, 25% Mrl		10400-10450 Chk med-lt gy, sb plty-sb blky, sft-mod frm, banded, occ Mrlst dk gy-med gy, sb plty-sb blky, blky, mod frm-sft, occ bent, rr inoc, sl oil cut 75% Chk, 25% Mrl	



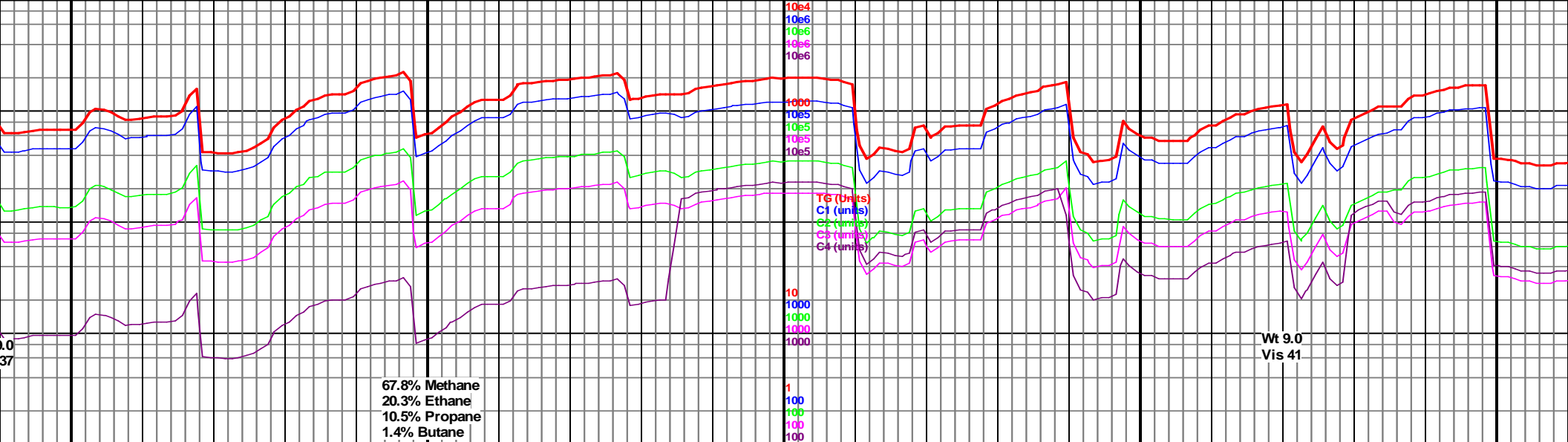


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MD 10465 TVD 5866.29 INC 90.8 AZ 181.4 VS 5163.2		MD 10495 TVD 5865.77 INC 91.2 AZ 180.7 VS 5193.2		MD 10526 TVD 5864.93 INC 91.9 AZ 180.2 VS 5224.19		MD 10557 TVD 5863.71 INC 92.6 AZ 180 VS 5255.16		MD 10589 TVD 5862.48 ^D INC 91.8 AZ 179.8 ^D Sea (-25) VS 5287.13		MD 10619 TVD 5861.88 INC 90.5 AZ 180 VS 5317.12		MD 10650 TVD 5861.58 INC 90.6 AZ 179.5 VS 5348.12	

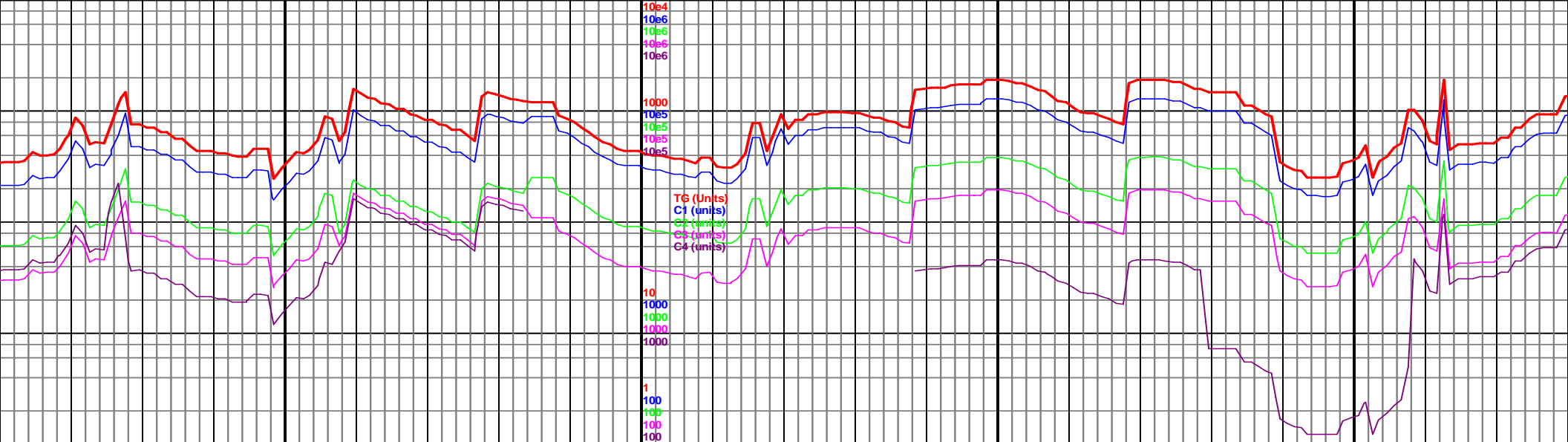




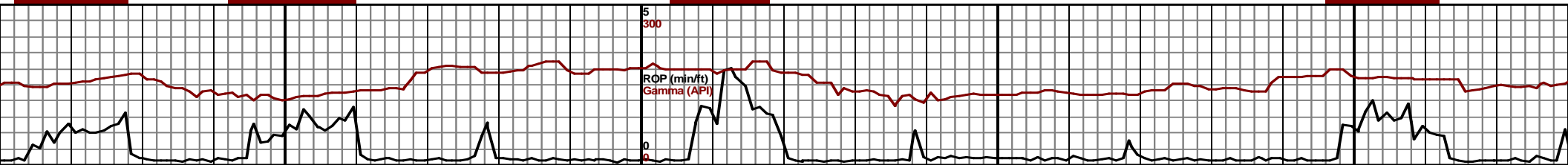
10700			10750			10800			10850		
MD 10681 TVD 5861.42 INC 90.8 AZ 178.8 VS 5379.11			MD 10712 TVD 5861.47 INC 89.8 AZ 178.8 VS 5410.09			MD 10742 TVD 5861.29 INC 90.9 AZ 179.1 VS 5440.08			MD 10773 TVD 5860.62 INC 91.6 AZ 179.1 VS 5471.06		
									5100 Sub MD 10803 TVD 5860.04 INC 90.6 AZ 178.4 VS 5501.03		
									MD 10834 TVD 5860.2 INC 88.8 AZ 178.3 VS 5532.01		
									MD 10864 TVD 5860.91 INC 88.5 AZ 177.9 VS 5561.97		

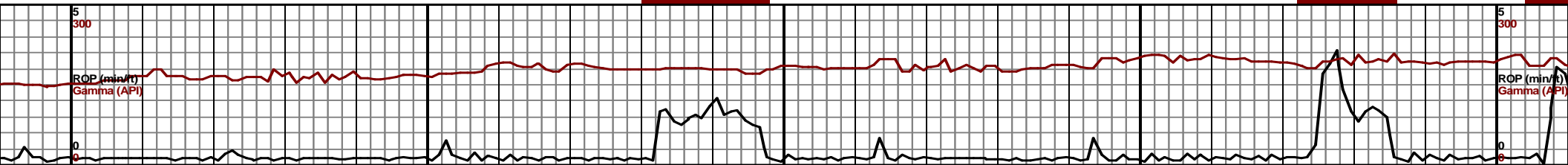
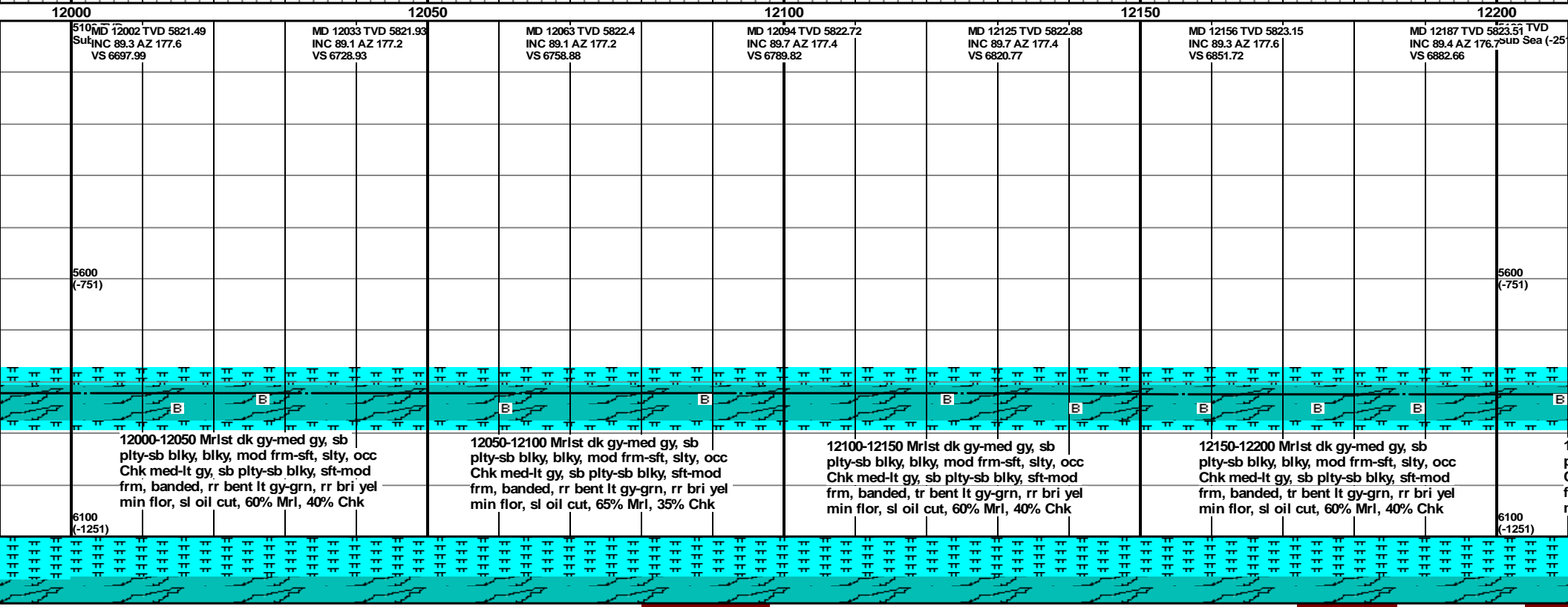
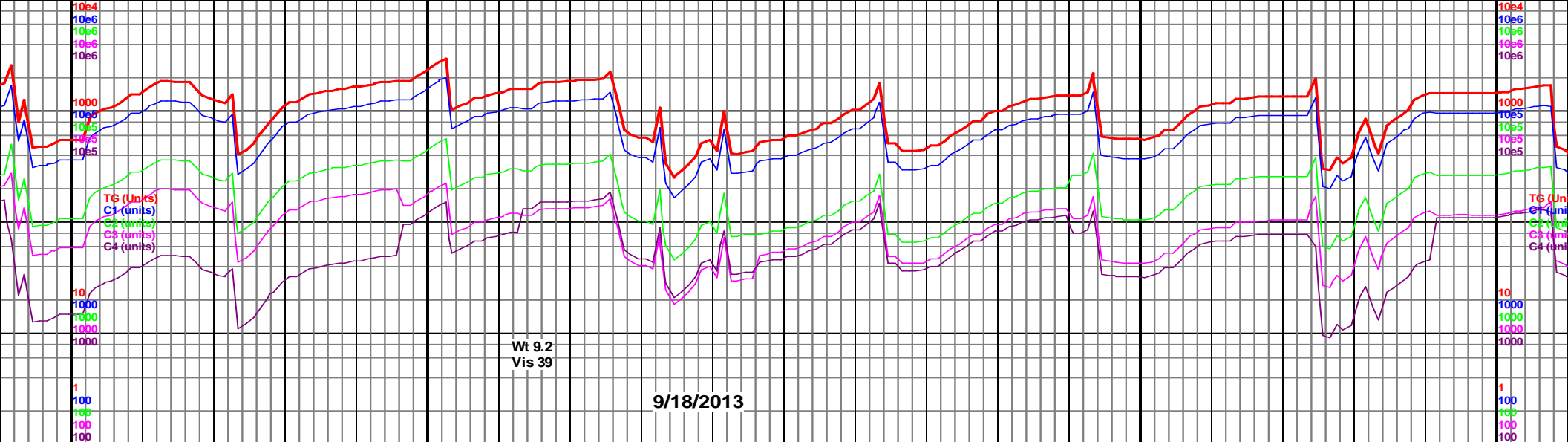


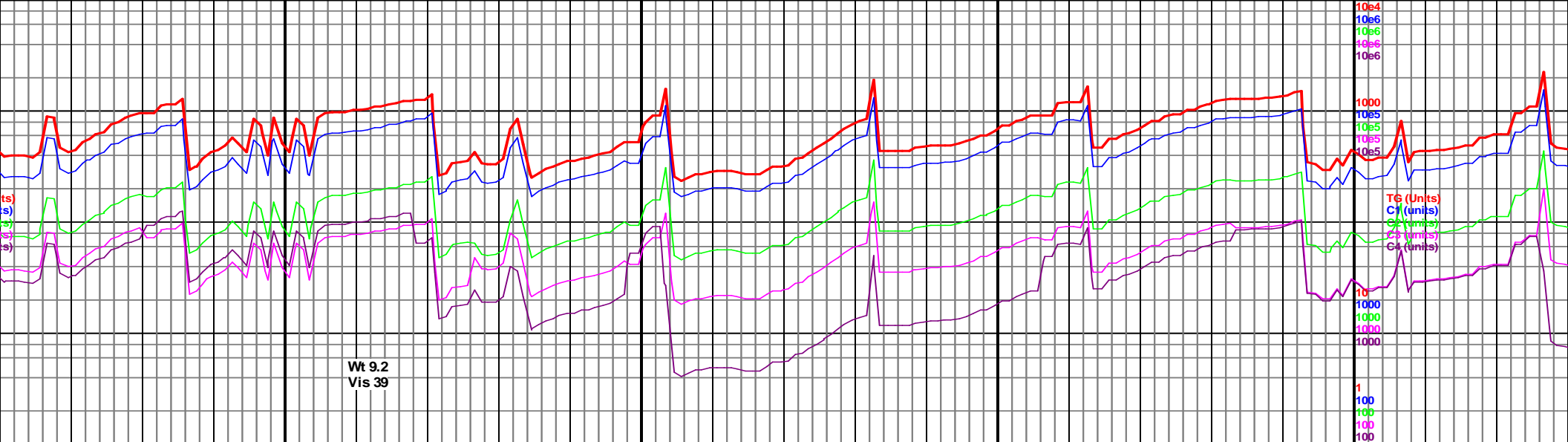
10900				10950				11000				11050				11100											
MD 10894 TVD 5861.64 INC 88.7 AZ 177.9 VS 5591.93				MD 10925 TVD 5862.24 INC 89.1 AZ 178.4 VS 5622.89				MD 10956 TVD 5862.7 INC 89.2 AZ 177.7 VS 5653.85				MD 10987 TVD 5863.02 INC 89.6 AZ 178.1 VS 5684.82				MD 11018 TVD 5863.26 INC 89.5 AZ 178.6 VS 5715.79				MD 11049 TVD 5863.48 INC 89.7 AZ 179.3 VS 5746.78				MD 11080 TVD 5863.48 INC 90.3 AZ 179.8 VS 5777.77			



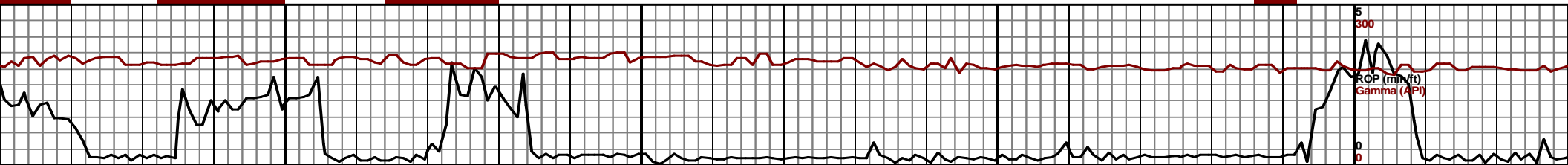
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MD 11111 TVD 5863.08 INC 91.2 AZ 180.9 VS 5808.77	MD 11142 TVD 5862.16 INC 92.2 AZ 180.9 VS 5839.75	MD 11172 TVD 5861 INC 92.2 AZ 181.6 VS 5869.73	MD 11203 TVD 5859.6 Sub INC 93 AZ 182.7 VS 5900.68	MD 11233 TVD 5858.05 INC 92.9 AZ 182.5 VS 5930.63	MD 11264 TVD 5856.4 INC 93.2 AZ 182.1 VS 5961.57	MD 11295 TVD 5854.46 INC 94 AZ 181.9 VS 5992.5	MD 11325 TVD 5852.46 INC 94.2 AZ 181.9 VS 6023.5
1100-11150 Mrlst predy dk gy, occ med gy, sb plty-sb blk, blk, mod frm-sft, slty, c Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy, rr inoc, occ bri yel min flor, sl oil cut, 65% Mrl, % Chk		11150-11200 Mrlst predy dk gy, occ med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, g tr bent lt gy, rr inoc, occ bri yel min flor, sl oil cut, 70% Mrl, 30% Chk		11200-11250 Mrlst predy dk gy, occ med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, g tr bent lt gy, rr inoc, occ bri yel min flor, sl oil cut, 80% Mrl, 20% Chk		11250-11300 Mrlst predy dk gy, occ med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, g tr bent lt gy, rr inoc, occ bri yel min flor, sl oil cut, 80% Mrl, 20% Chk	
11300-11350 Mrlst predy dk gy, occ med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, g tr bent lt gy, rr inoc, occ bri yel min flor, sl oil cut, 80% Mrl, 20% Chk							

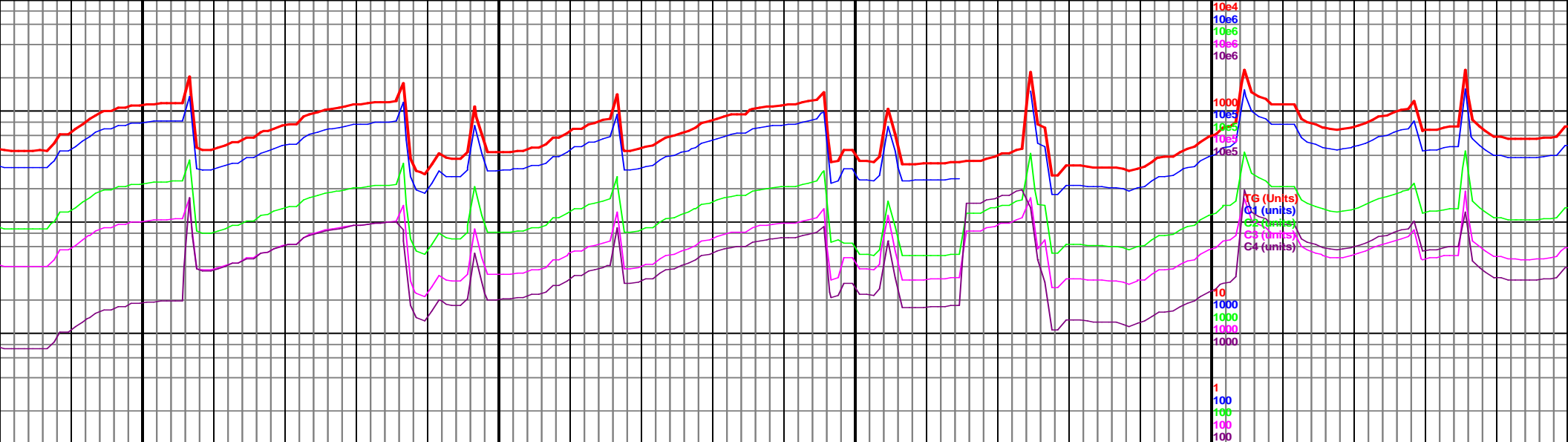




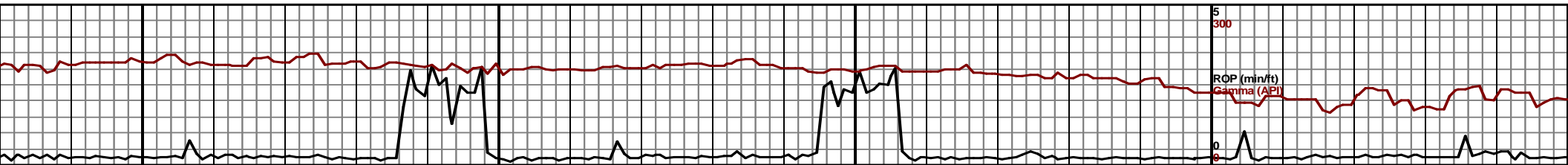


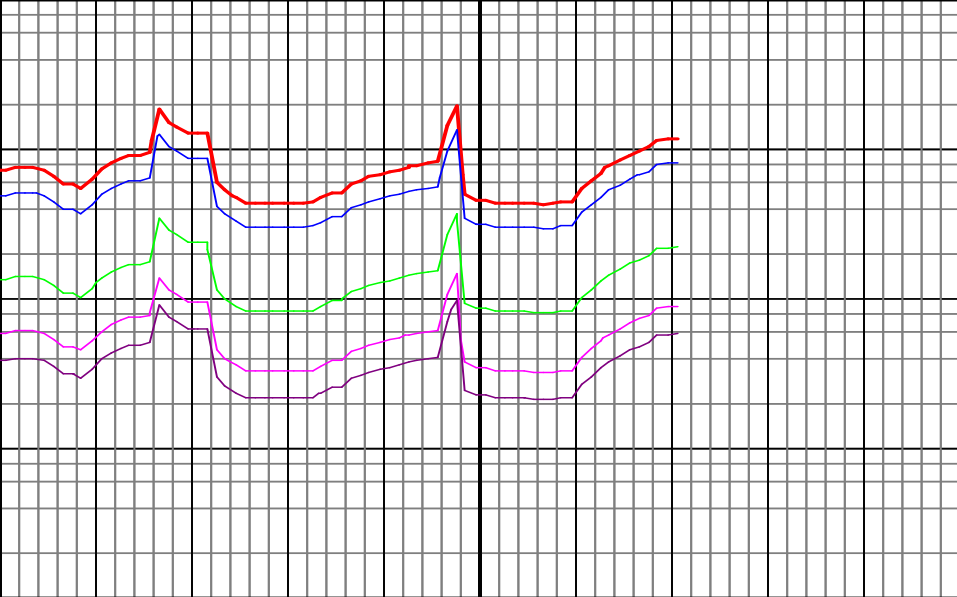
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MD 12218 TVD 5823.8 INC 89.5 AZ 178.4 VS 6913.61	MD 12248 TVD 5823.93 INC 90 AZ 180.4 VS 6943.6	MD 12279 TVD 5823.77 INC 90.6 AZ 181.2 VS 6974.6	MD 12310 TVD 5823.42 INC 90.7 AZ 181.9 VS 7005.6	MD 12341 TVD 5823.04 INC 90.7 AZ 181.8 VS 7036.59	MD 12372 TVD 5822.77 INC 90.3 AZ 181.8 VS 7067.58	MD 12402 TVD 5822.74 Sub INC 89.8 AZ 182.1 VS 7097.57	
12200-12250 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy-grn, rr bri yel min flor, sl oil cut, 60% Mrl, 40% Chk		12250-12300 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy-grn, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk		12300-12350 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy-grn, tr bri yel min flor, sl oil cut, 60% Mrl, 40% Chk		12350-12400 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy-grn, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk	
12400-12450 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy-grn, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk							



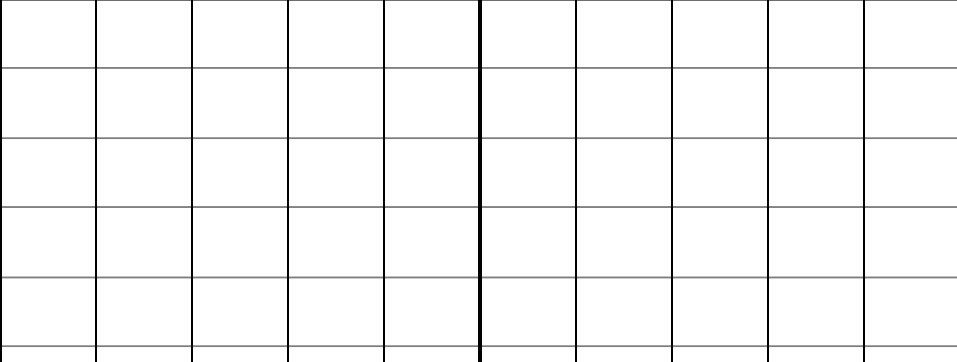


12450		12500		12550		12600		12619
MD 12433 TVD 5823.02 INC 89.2 AZ 181.6 VS 7128.57		MD 12464 TVD 5823.45 INC 89.2 AZ 181.4 VS 7159.56		MD 12495 TVD 5823.85 INC 89.3 AZ 182.3 VS 7190.55		MD 12525 TVD 5824.22 INC 89.3 AZ 182.8 VS 7220.53		MD 12556 TVD 5824.6 INC 89.3 AZ 183 VS 7251.5
						MD 12587 TVD 5825.00 TVD INC 89.2 AZ 183.7 Sub Sea (-25) VS 7282.47		MD 12619 TVD 5825.26 INC 89.9 AZ 183.7 VS 7314.42
med gy, sb m-sft, slty, occ b lky, sft-mod y, tr bri yel min 30% Chk		12450-12500 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk		12500-12550 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk		12550-12600 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, rr pyrt, tr bent lt gy, tr bri yel min flor, sl oil cut, 70% Mrl, 30% Chk		12600-12619 Mrlst dk gy-med gy, sb plty-sb blk, blk, mod frm-sft, slty, occ Chk med-lt gy, sb plty-sb blk, sft-mod frm, banded, tr bent lt gy, tr bri yel min flor, sl oil cut, 60% Mrl, 40% Chk

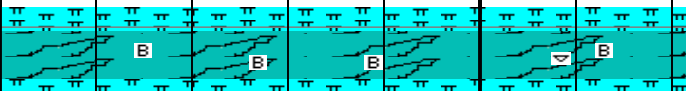




12650 12700 12721



TD at 12721' on
10:15; 9/18/2013



12650-12700 Mrlst dk gy-med gy, sb
plty-sb blk, blk, mod frm-sft, slty, occ
Chk med-lt gy, sb plty-sb blk, sft-mod
frm, banded, tr bent lt gy, tr bri yel min
flor, rr inoc, sl oil cut, 60% Mrl, 40% Chk

12700-12721 Mrlst dk gy-med gy, sb
plty-sb blk, blk, mod frm-sft, slty, occ
Chk med-lt gy, sb plty-sb blk, sft-mod
frm, banded, tr bent lt gy, tr bri yel min
flor, rr inoc, sl oil cut, 70% Mrl, 30% Chk

