



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

Well Name: Horsetail 08C-1707
Well Id: 05-123-42852-00
Location: Sec 8-T10N-R57W
License Number: 05-123-42850-01
Spud Date: 5/19/2016
Surface Coordinates: Lat.: 40.859789 Long.: -103.777136

Region: Redtail Field
Drilling Completed: 5/23/2016

Bottom Hole Coordinates:

Ground Elevation (ft): 4913
Logged Interval (ft): 5094 To: 15953
Formation: Niobrara A
Type of Drilling Fluid: Water Based Mud

K.B. Elevation (ft): 4934
Total Depth (ft): 15953

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

Drilling Company

Unit Drilling Company
Rig 409

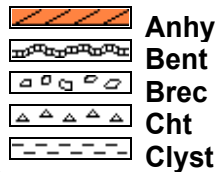
Gas Detection

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

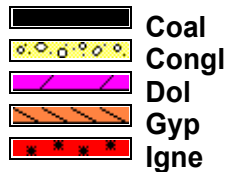
Comments

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

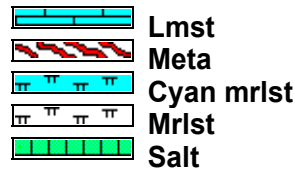
ROCK TYPES



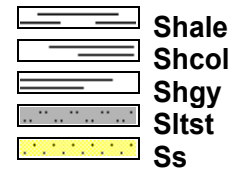
Anhy
Bent
Brec
Cht
Clyst



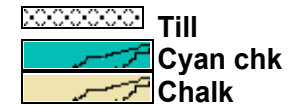
Coal
Congl
Dol
Gyp
Igne



Lmst
Meta
Cyan mrlst
Mrlst
Salt

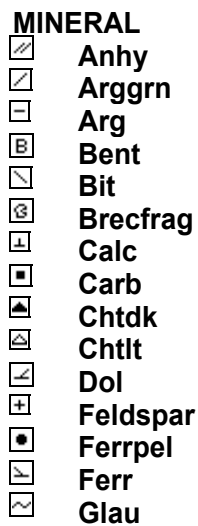


Shale
Shcol
Shgy
Slstst
Ss

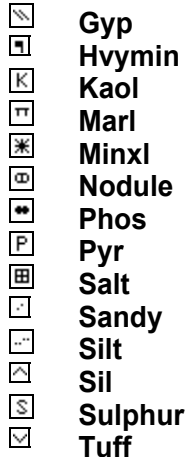


Till
Cyan chk
Chalk

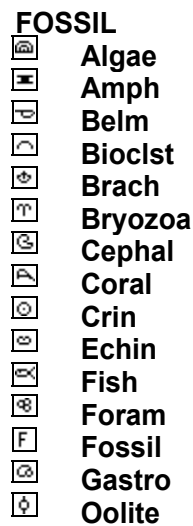
ACCESSORIES



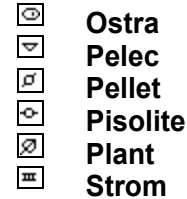
MINERAL
Anhy
Arggrn
Arg
Bent
Bit
Brecfrag
Calc
Carb
Chtdk
Chtlt
Dol
Feldspar
Ferrpel
Ferr
Glau



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



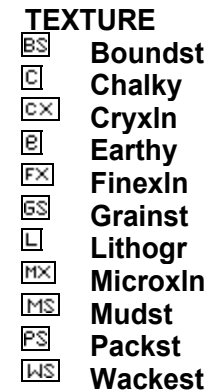
Ostra
Pelec
Pellet
Pisolite
Plant
Strom



STRINGER
Anhy
Arg
Bent
Coal
Dol
Gyp
Ls
Mrst










Slststrg
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

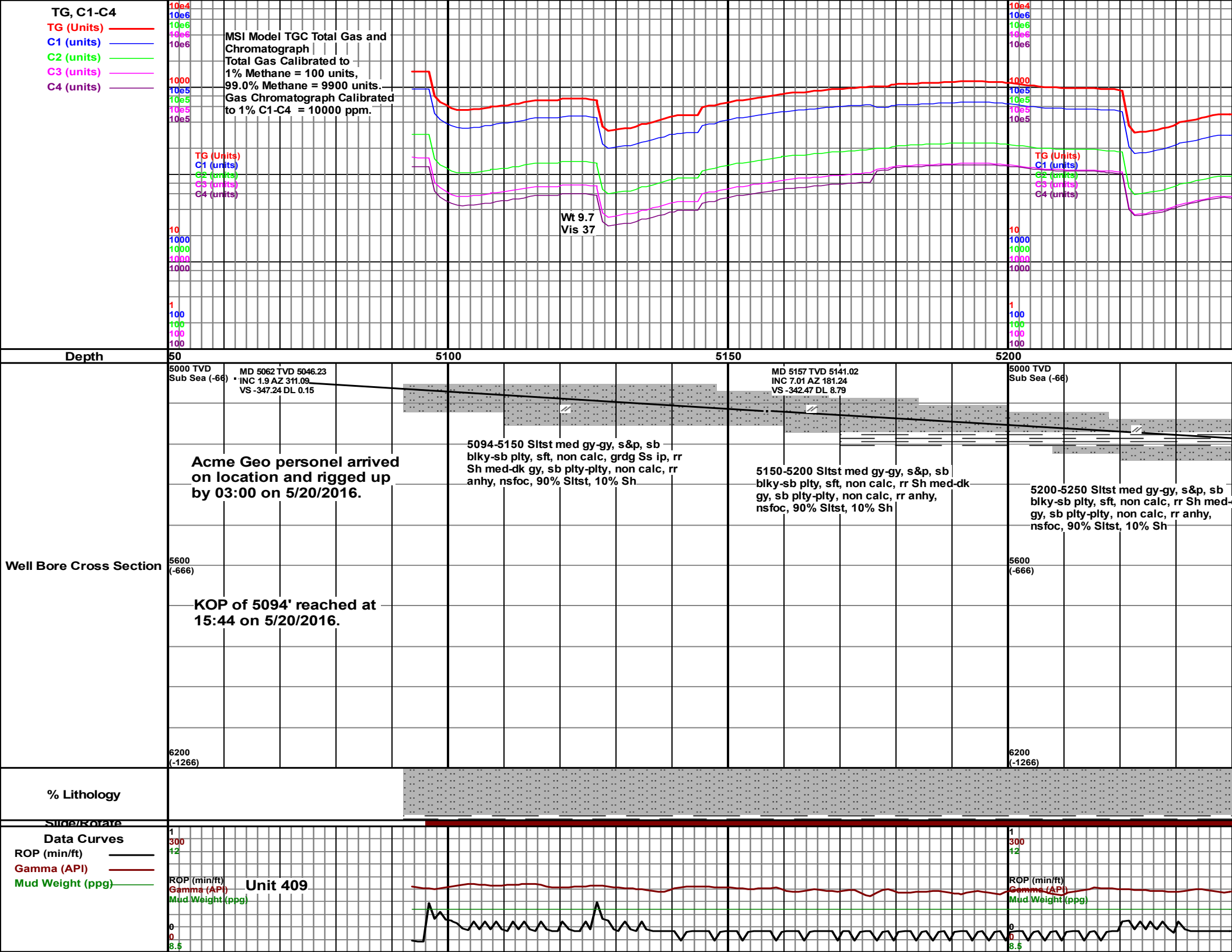
EVENT

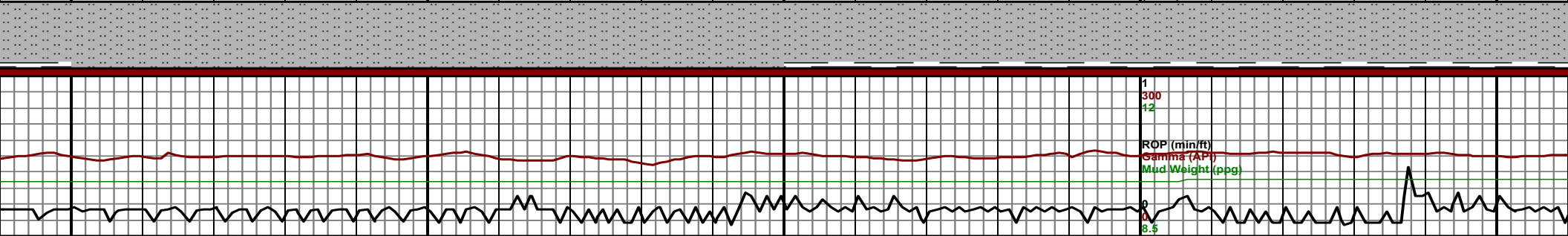
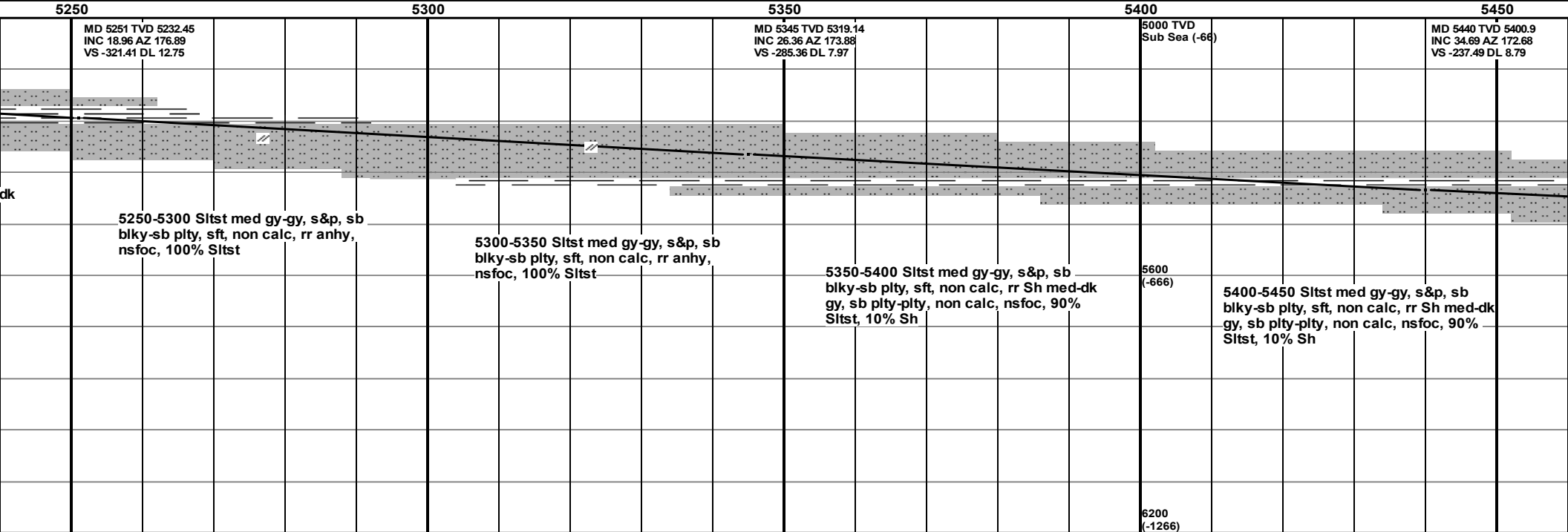
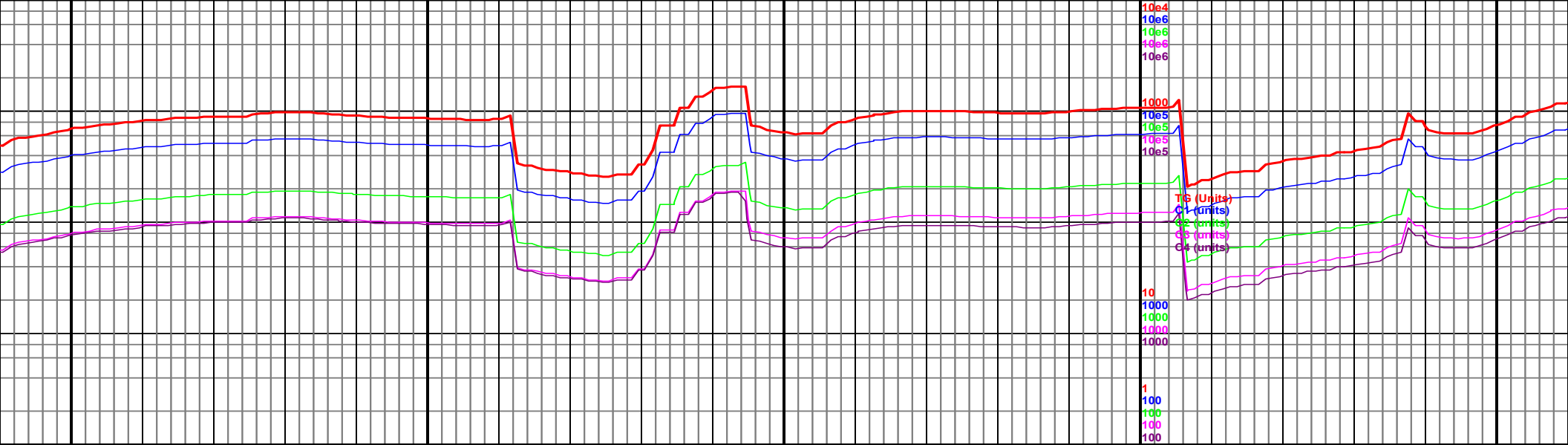


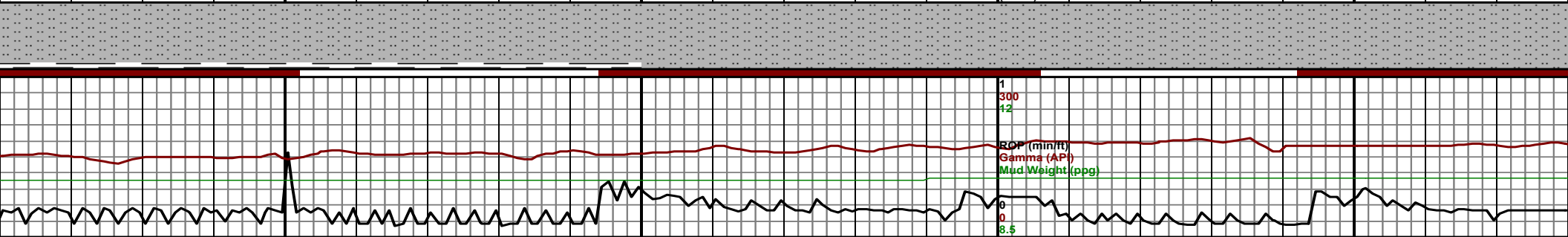
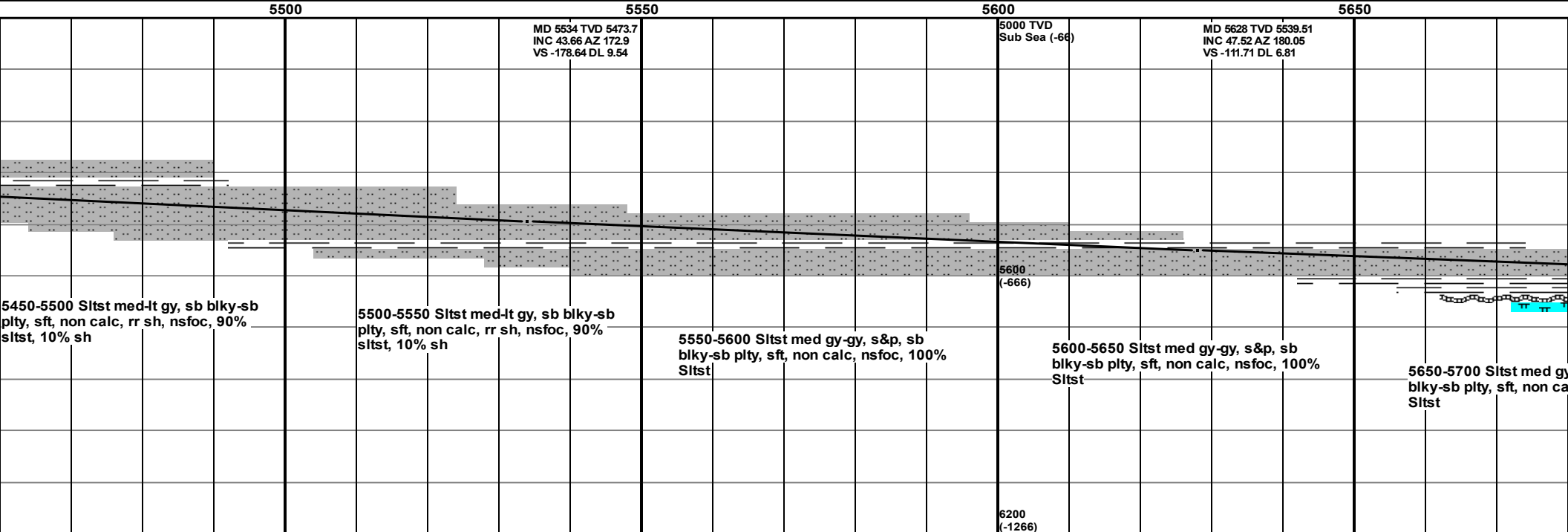
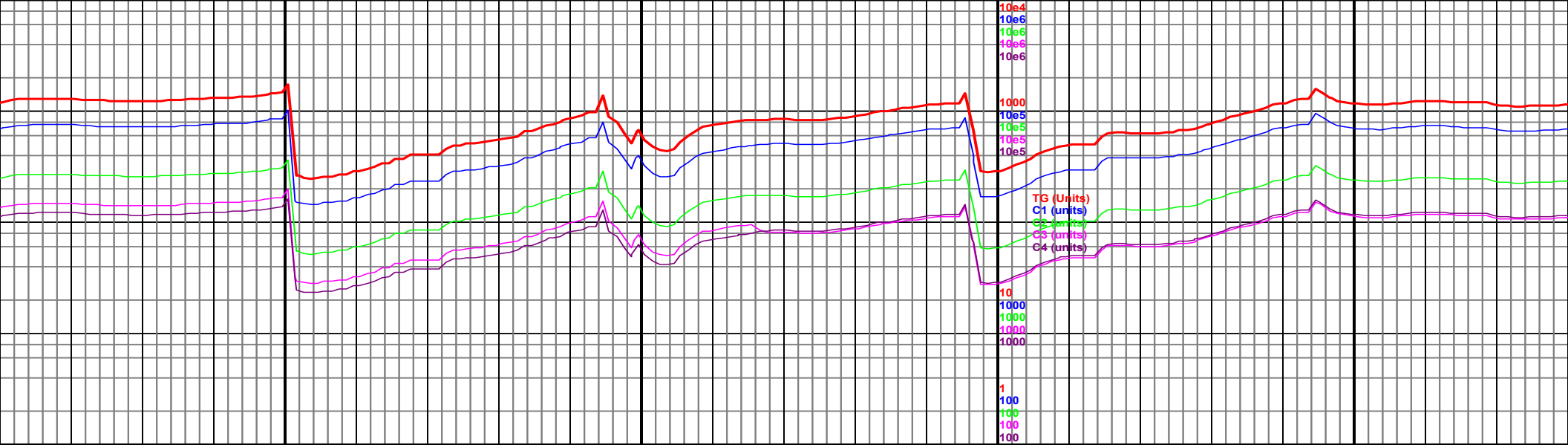
Rft

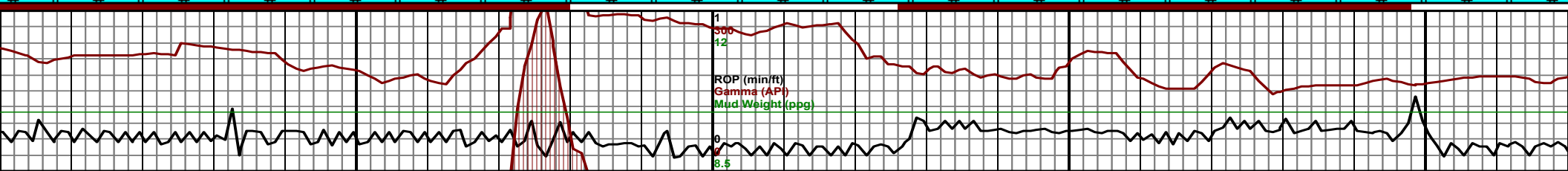
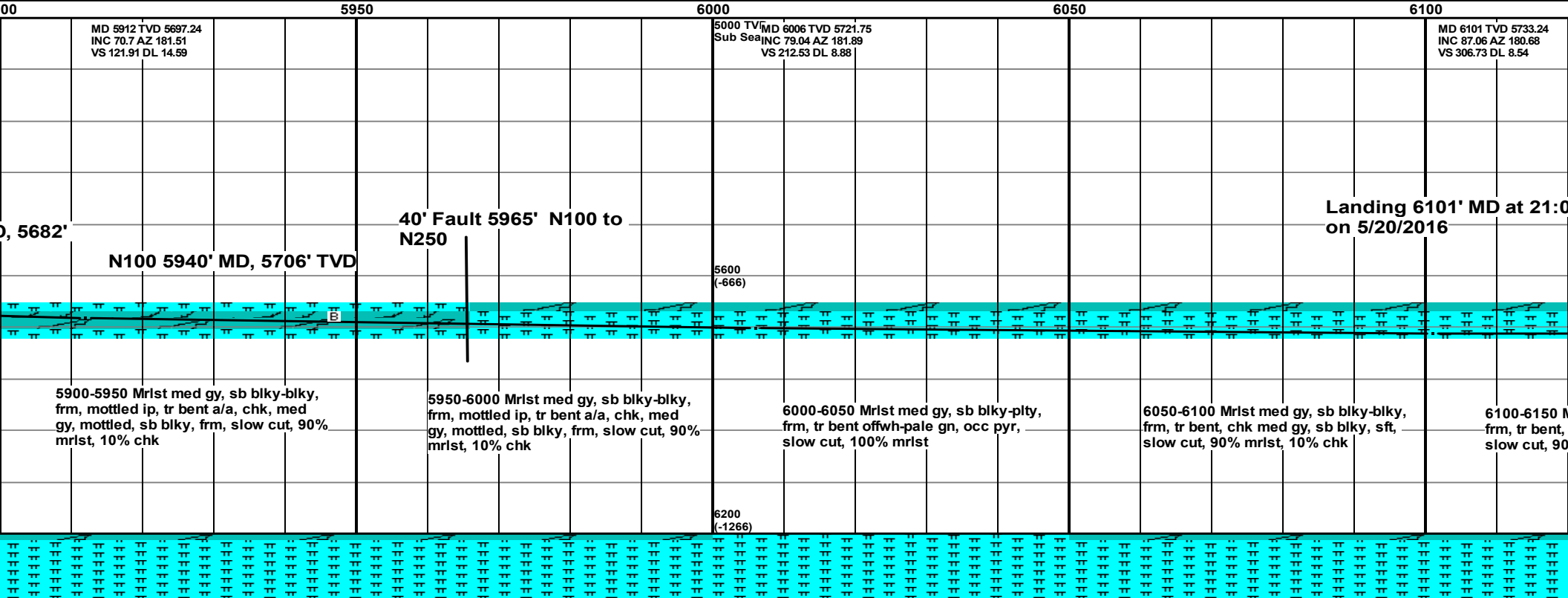
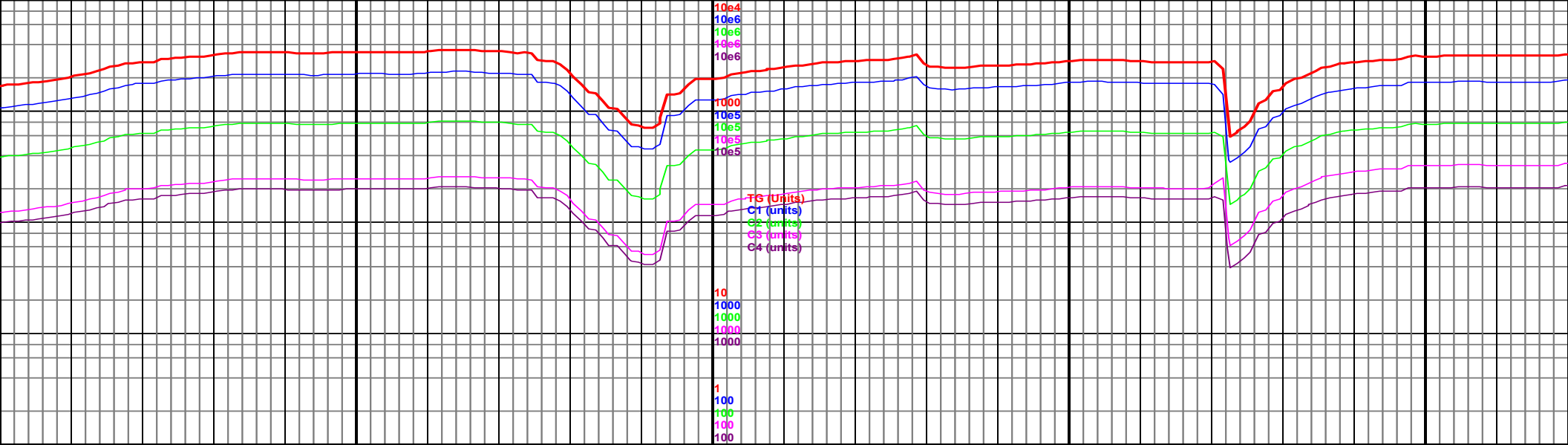


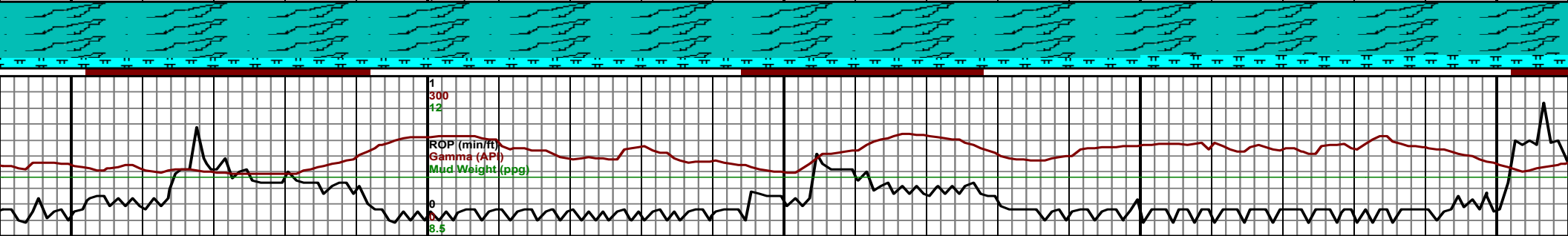
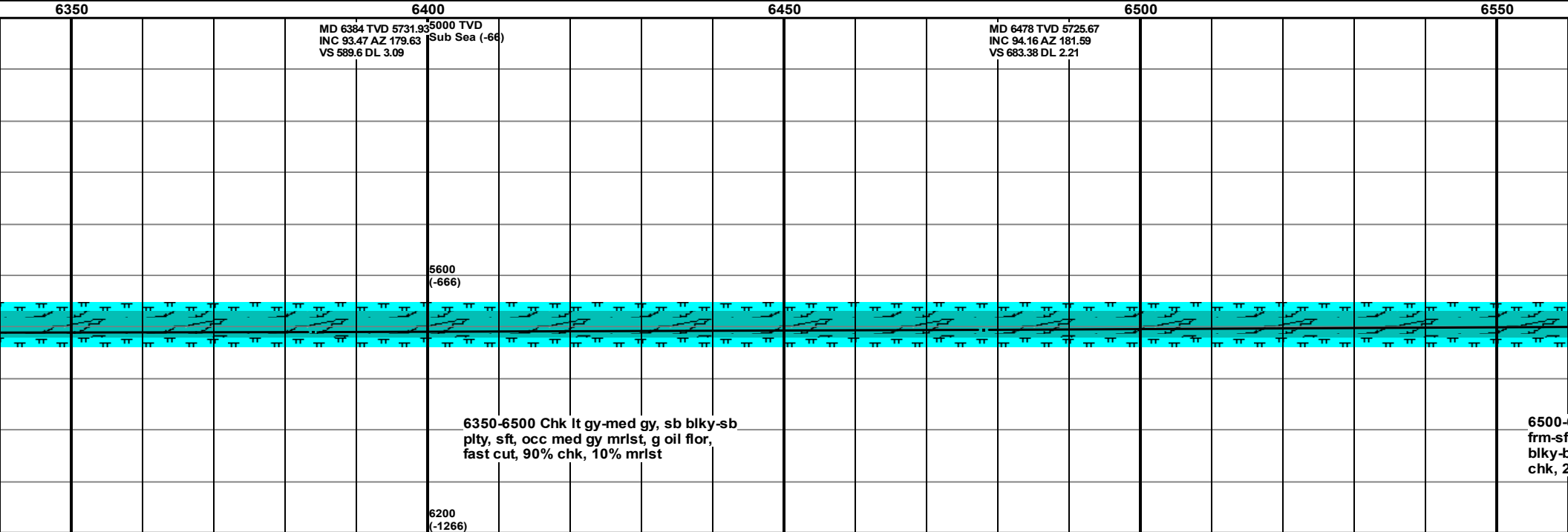
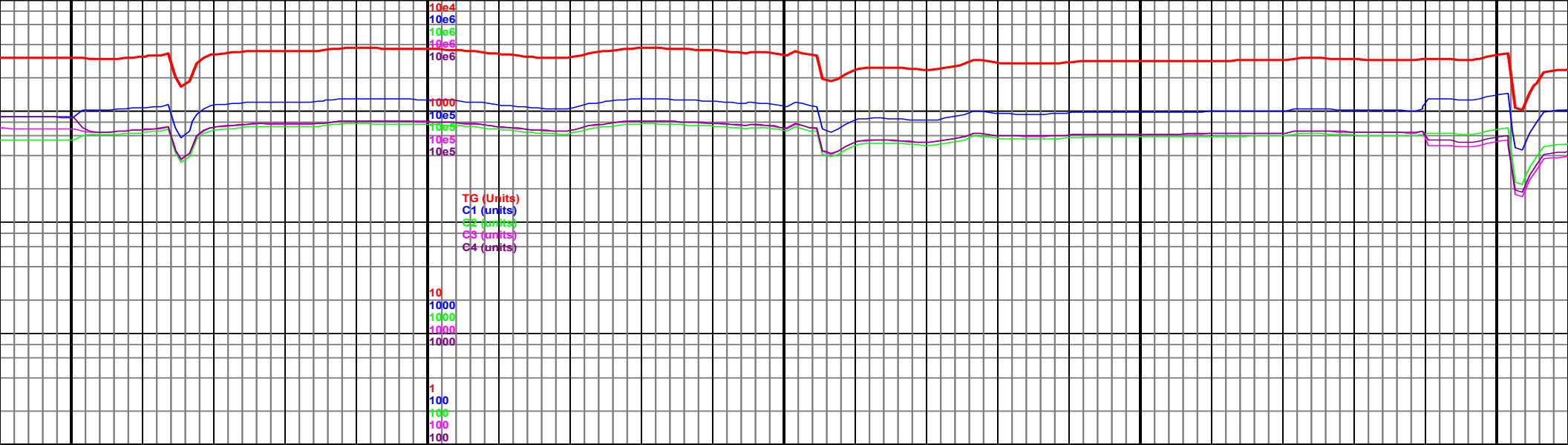
Sidewall

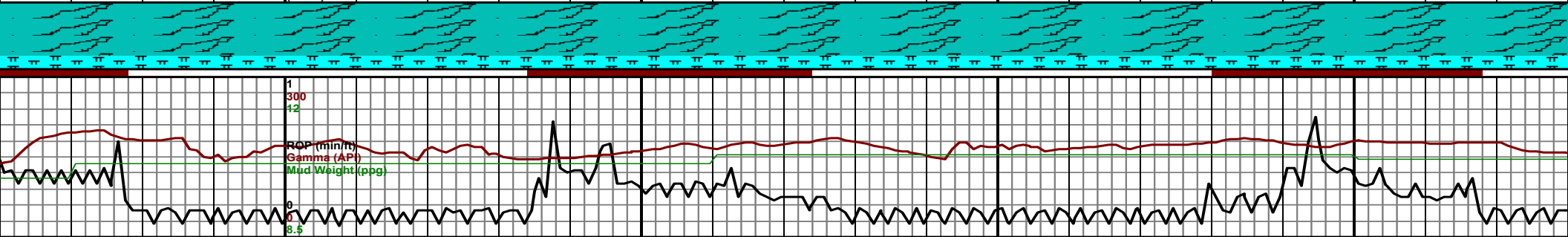
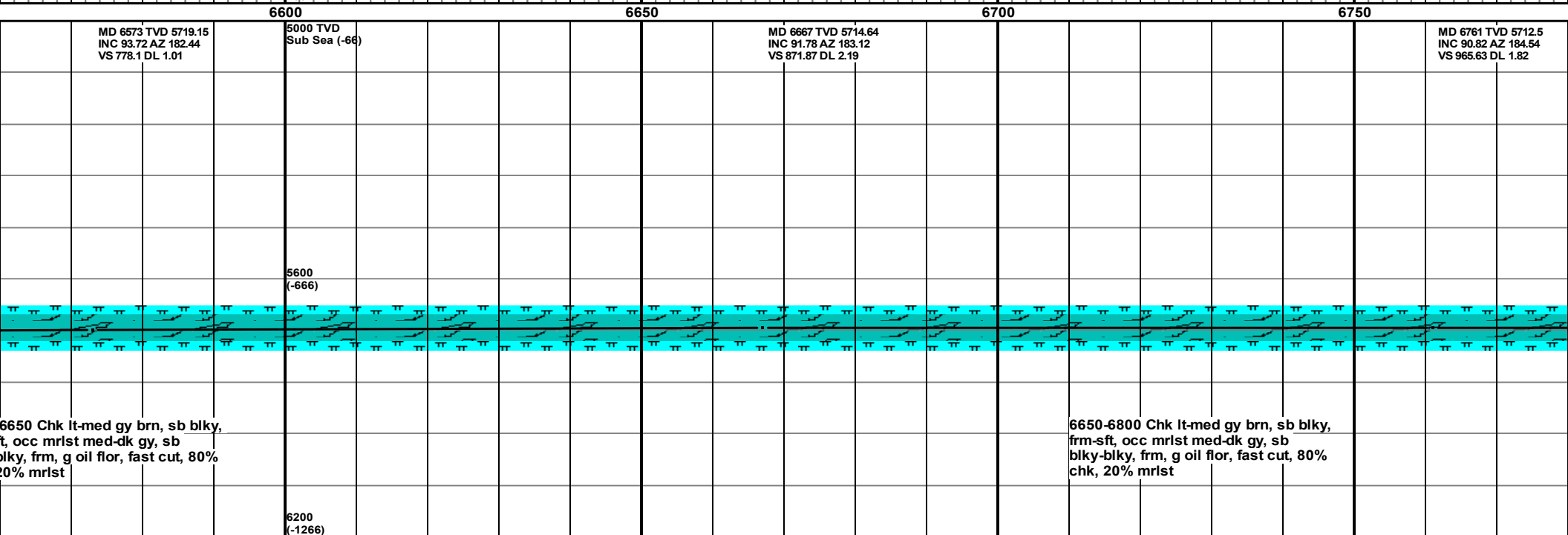
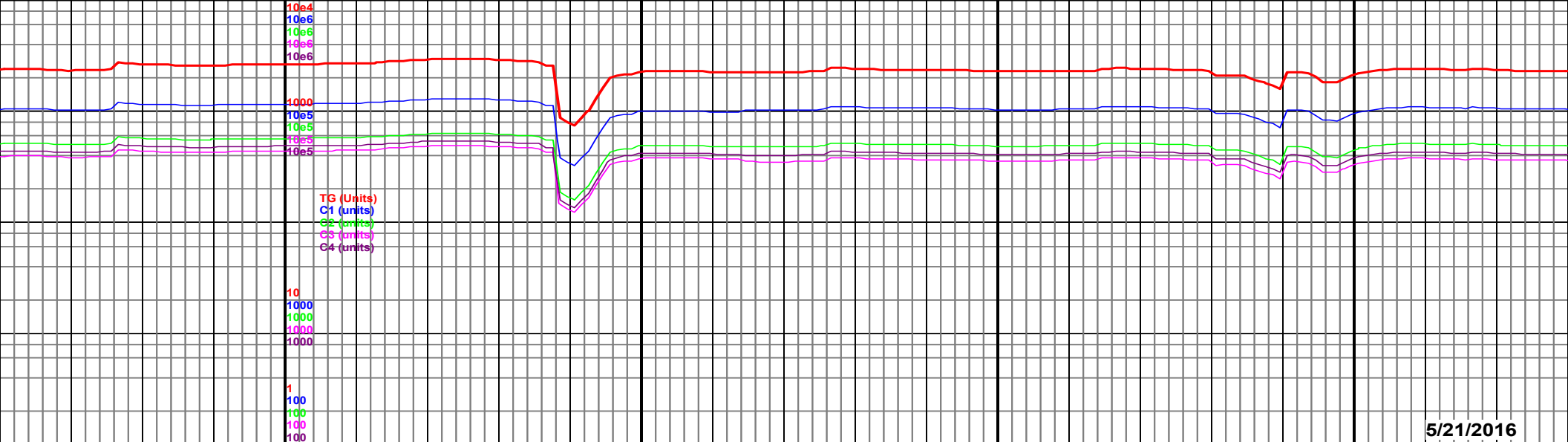


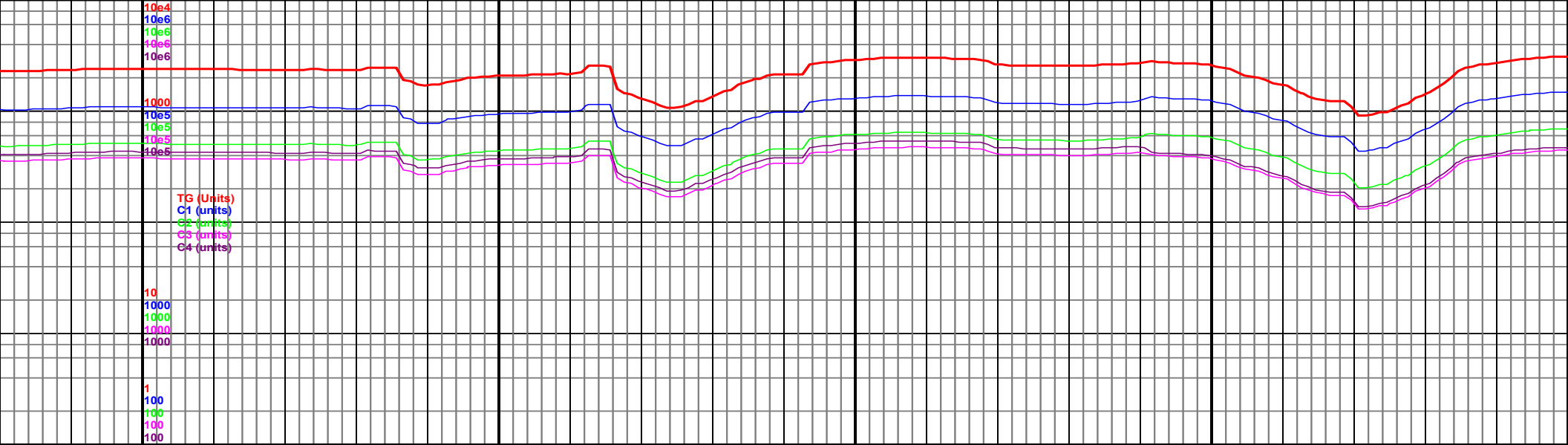












6800 6850 6900 6950 7000

5000 TVD
Sub Sea (-66)

MD 6856 TVD 5713.32
INC 88.2 AZ 183.46
VS 1060.39 DL 2.98

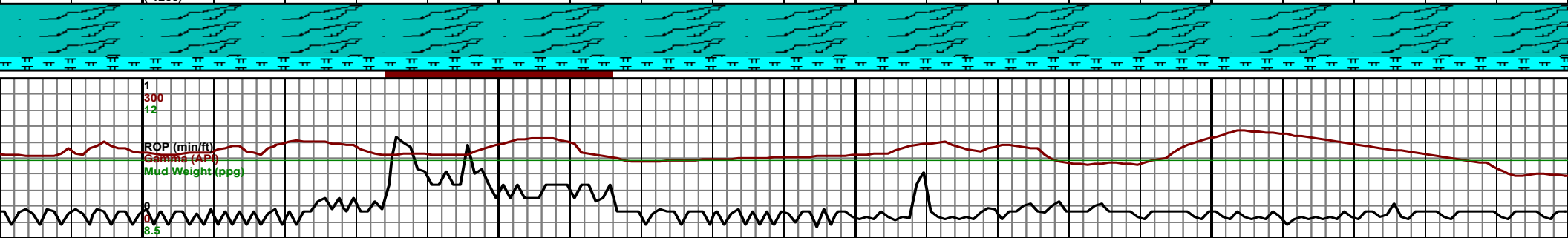
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INC 88.45 AZ 182.91
VS 1154.2 DL 0.64

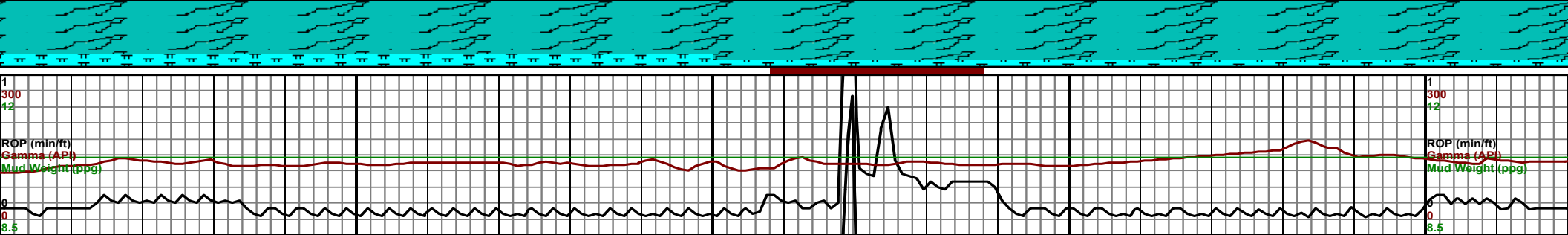
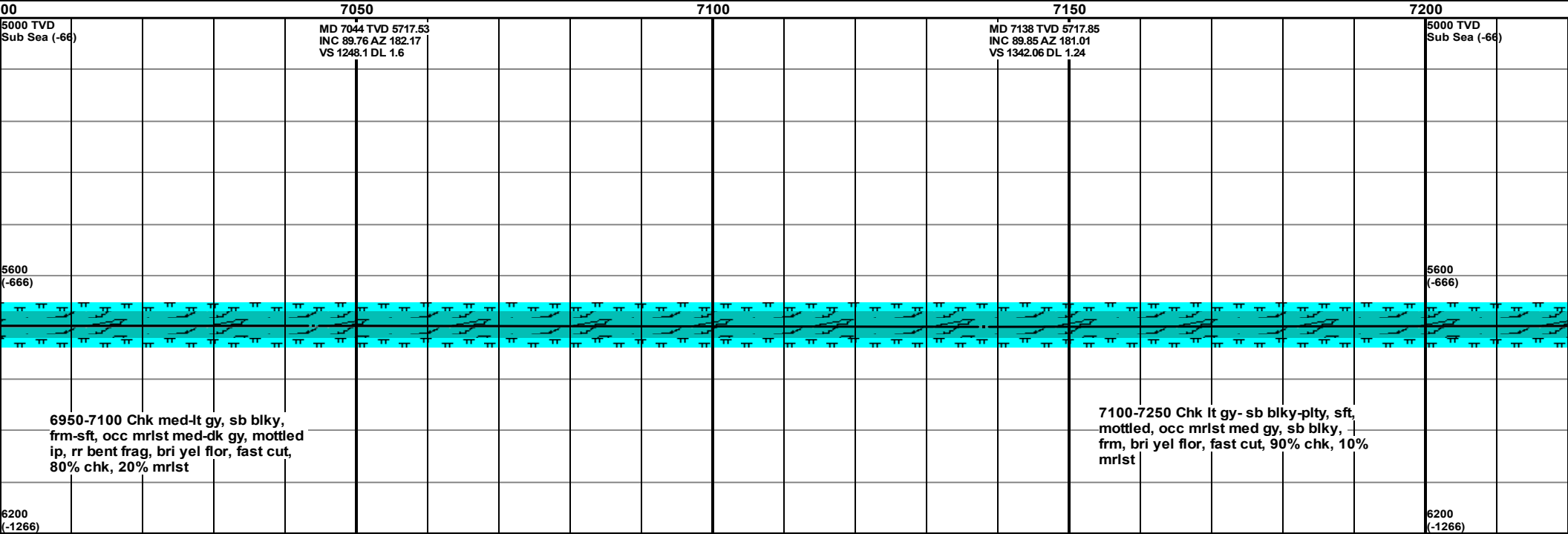
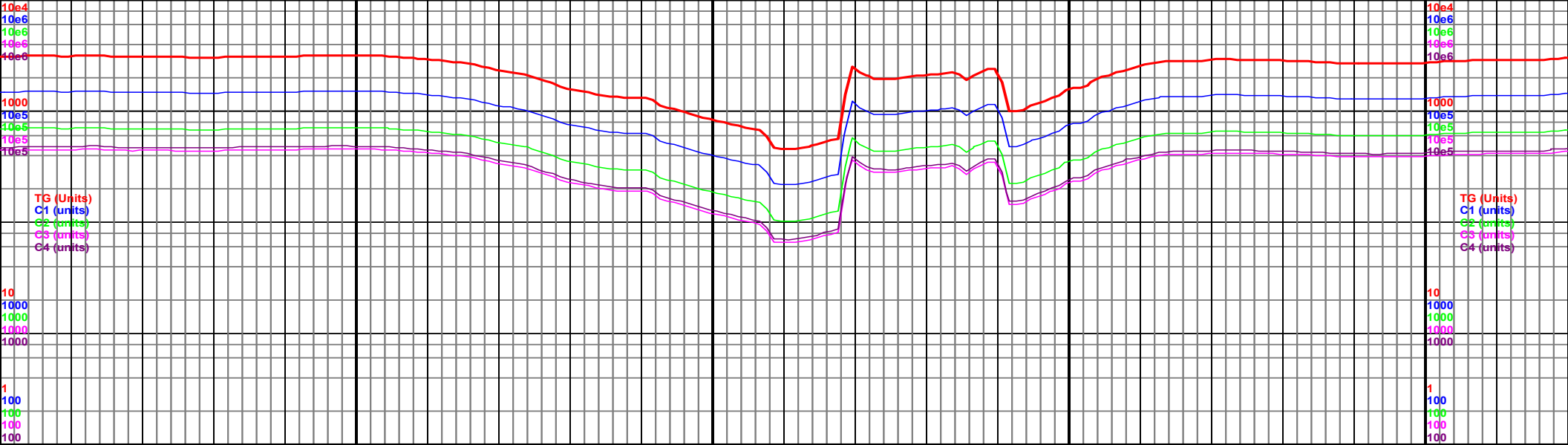
5600
(-666)

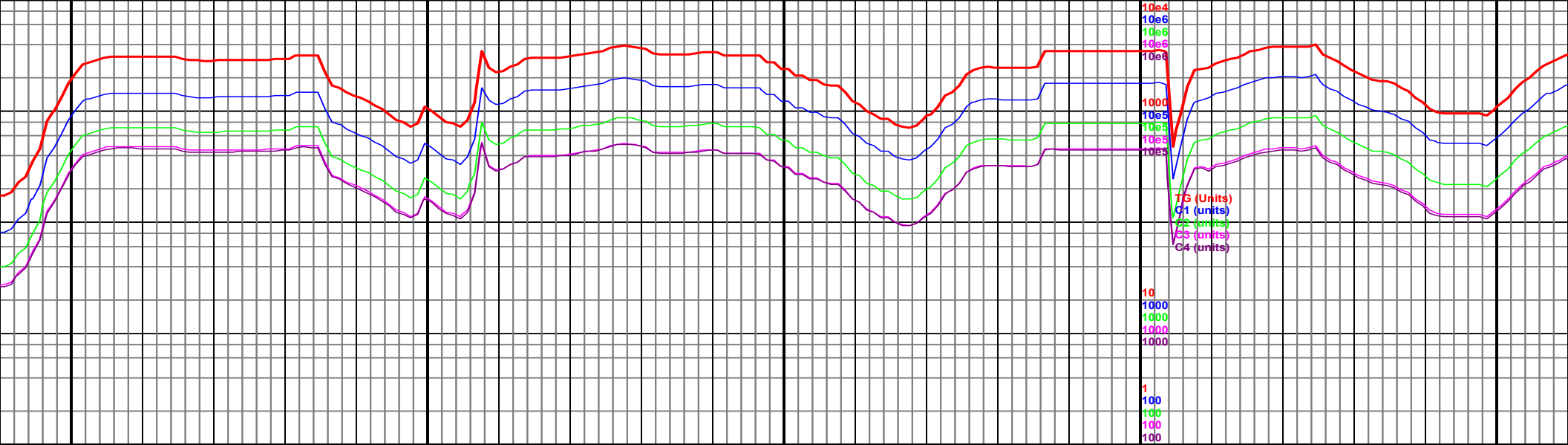
B

6800-6950 Chk med-lt gy, sb blk,
frm-sft, occ mrlst med-dk gy, mottled
ip, rr bent frag, bri yel flor, fast cut,
80% chk, 20% mrlst

6200
(-1266)







7450

7500

7550

7600

7650

MD 7517 TVD 5713.85
INC 91.95 AZ 179.98
VS 1720.97 DL 2.31

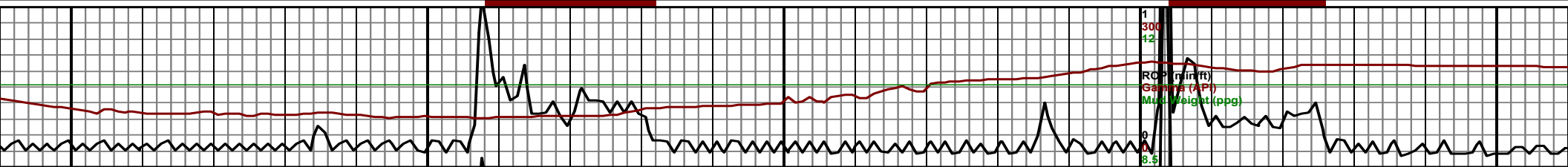
5000 TVD
Sub Sea (-66)
MD 7610 TVD 5712.72
INC 89.44 AZ 179.21
VS 1813.95 DL 2.82

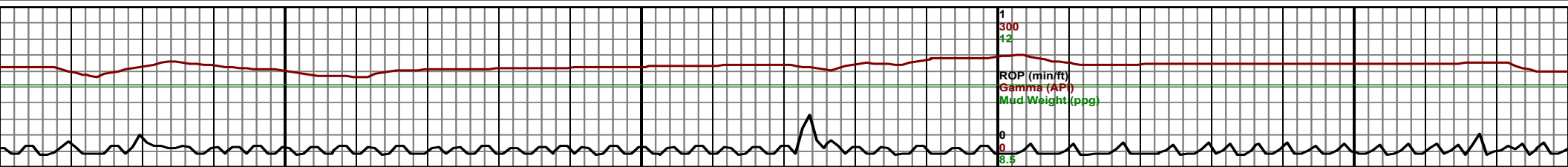
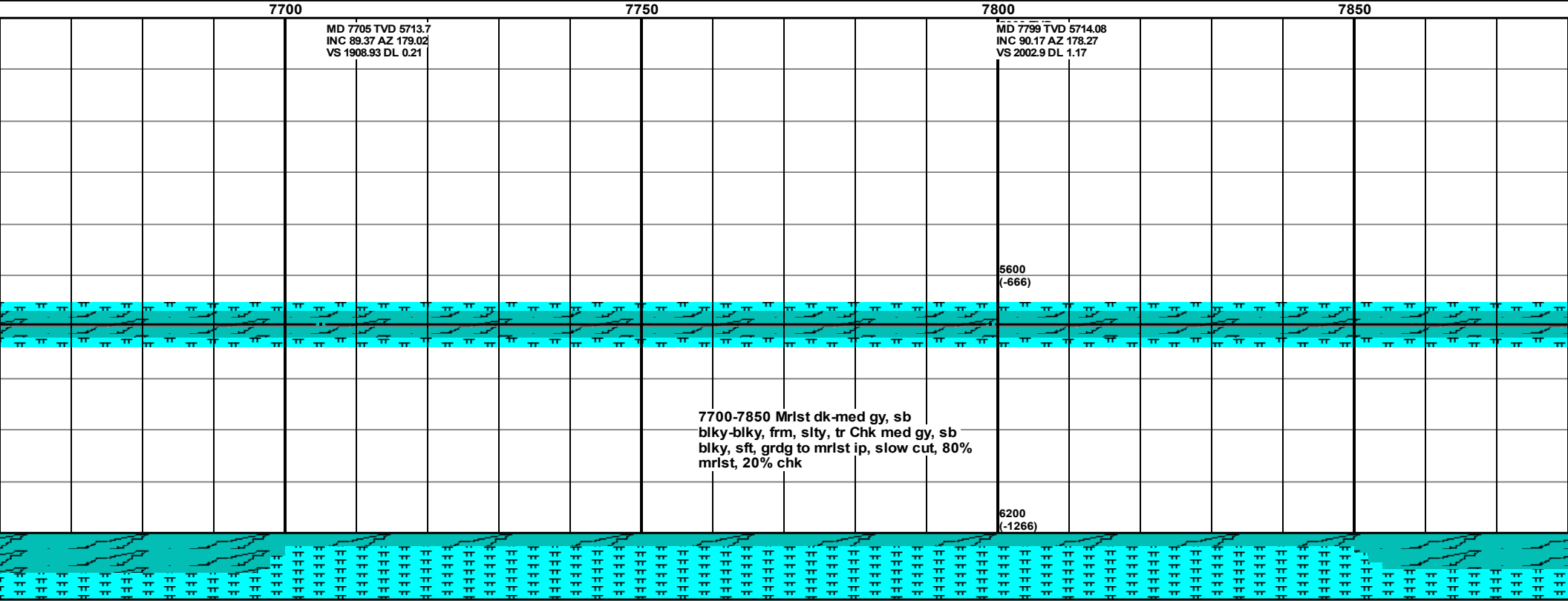
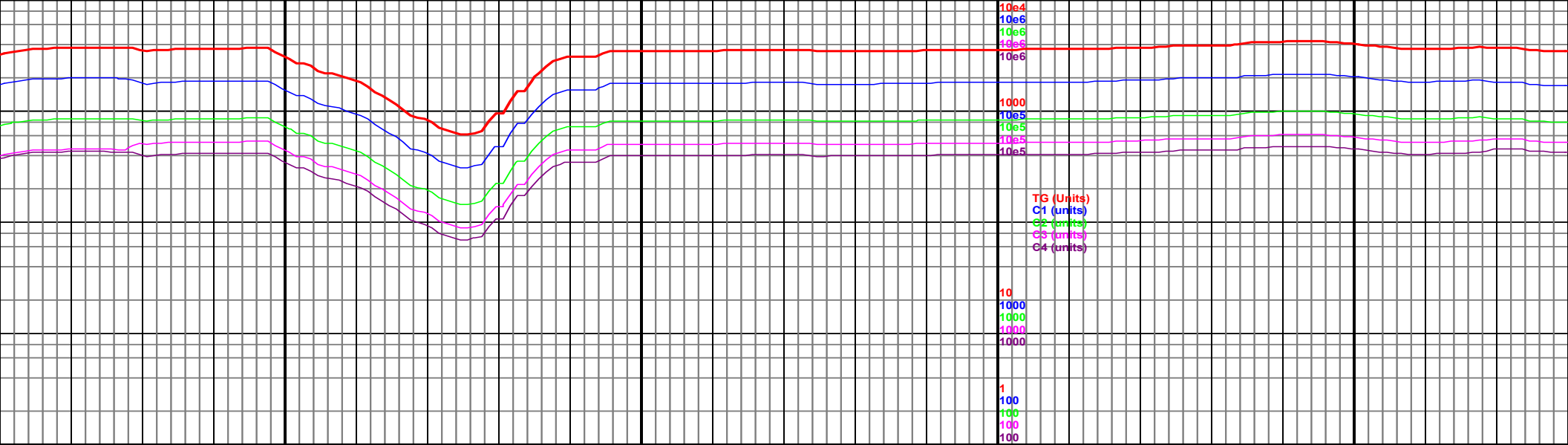
7400-7550 Chk lt gy-gy, sb blk-y-pty,
sft, mottled, dk lam, rr Mrst med gy, sb
blk-y, frm, med cut, 90% chk, 10% mrst

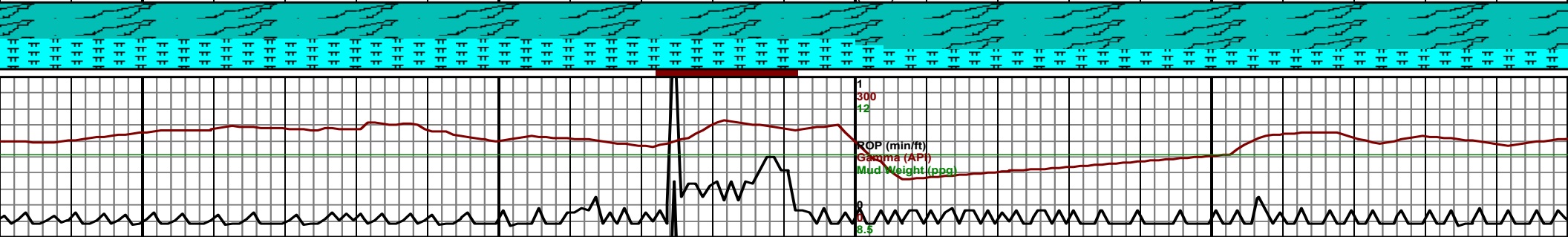
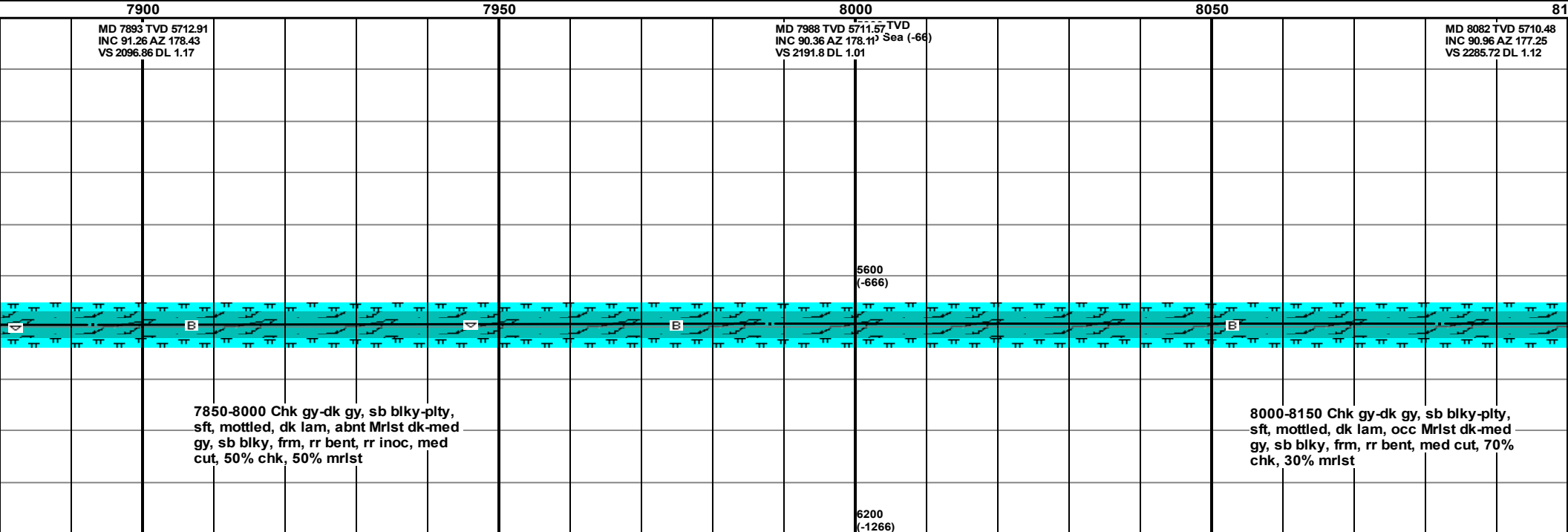
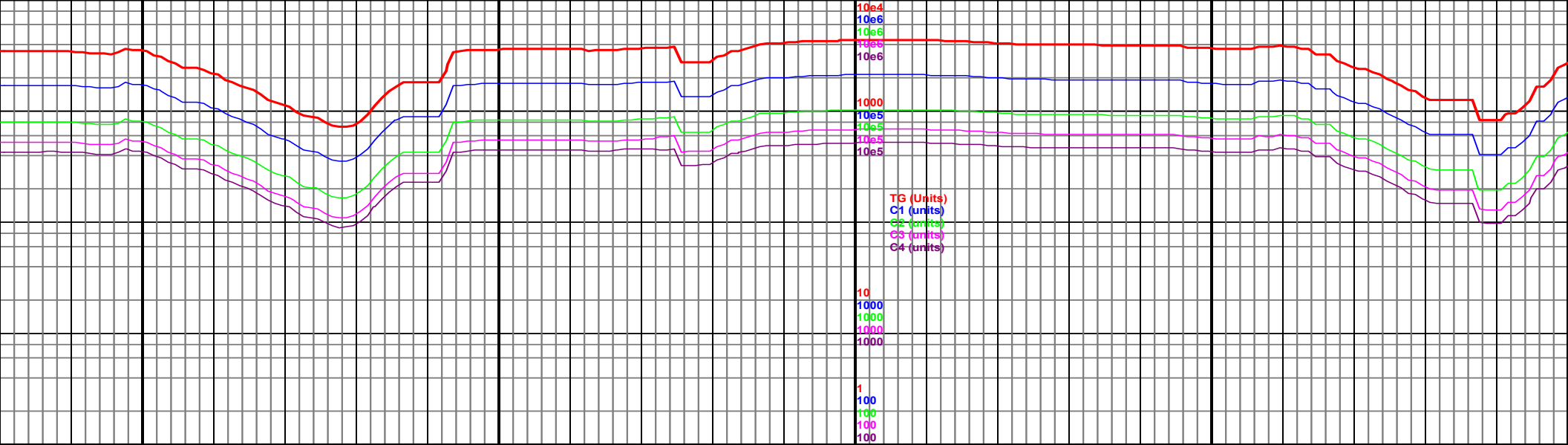
7550-7700 Chk lt gy-med gy, sb
blk-y-pty, sft, mottled, dk lam, tr Mrst
dk-med gy, sb blk-y, frm, med cut, 60%
chk, 40% mrst

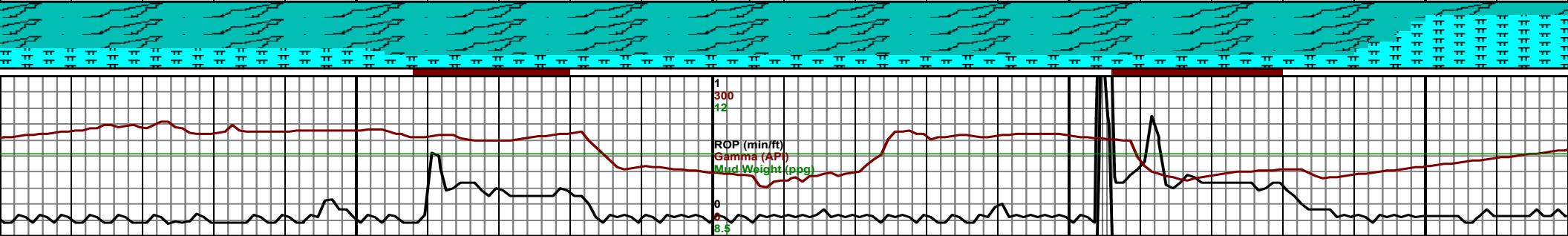
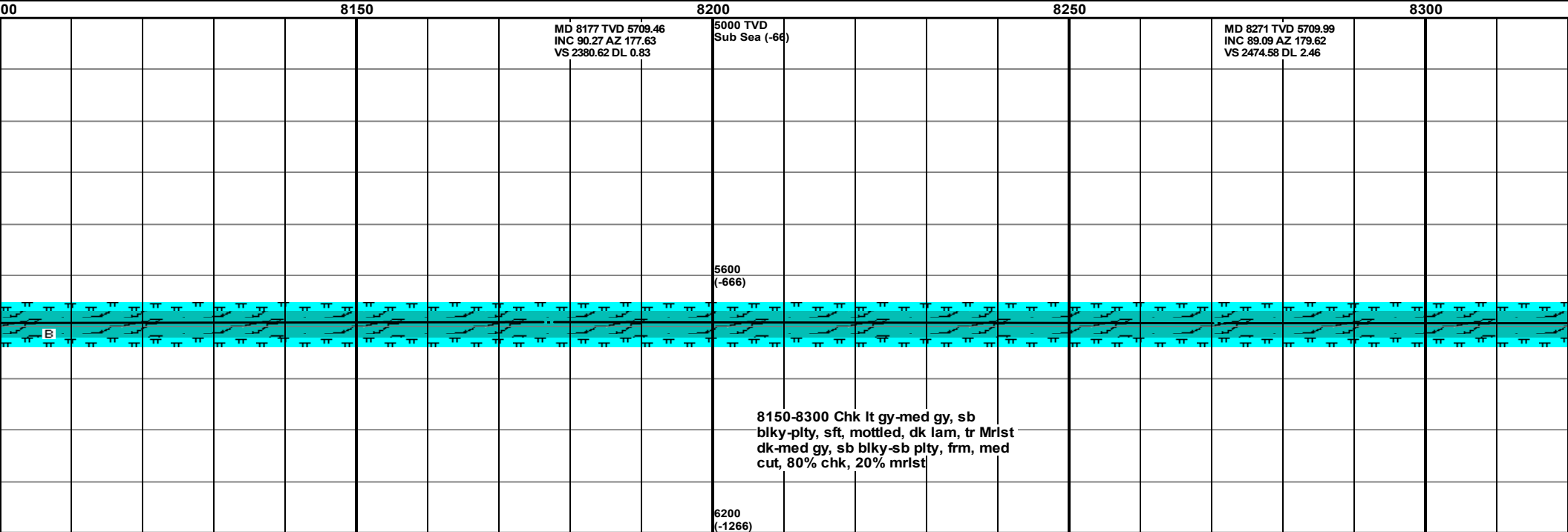
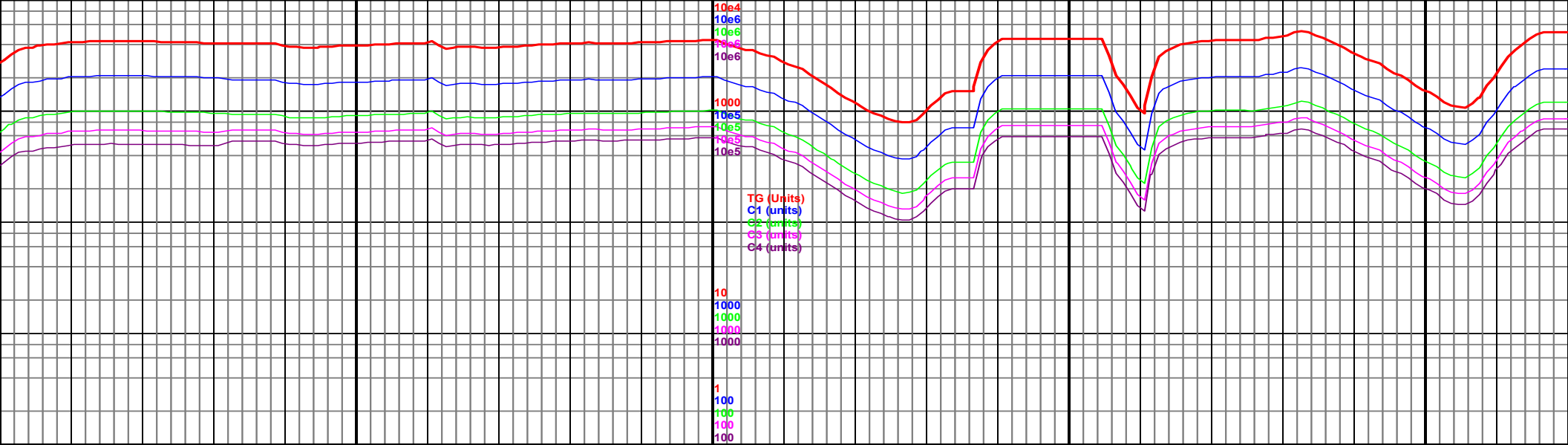
5600
(-666)

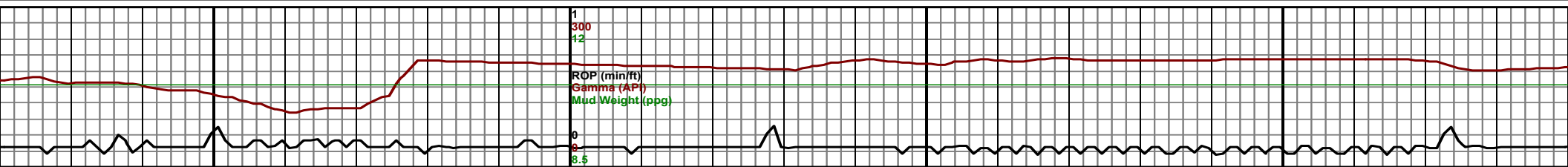
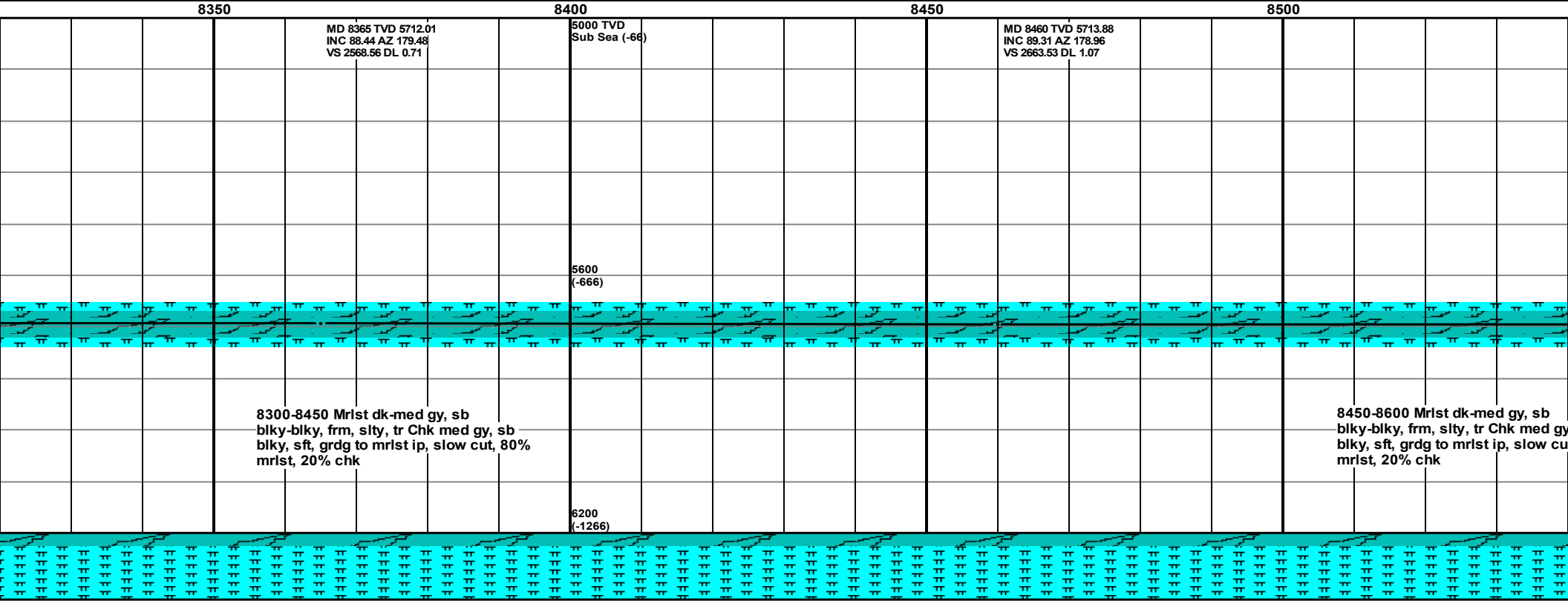
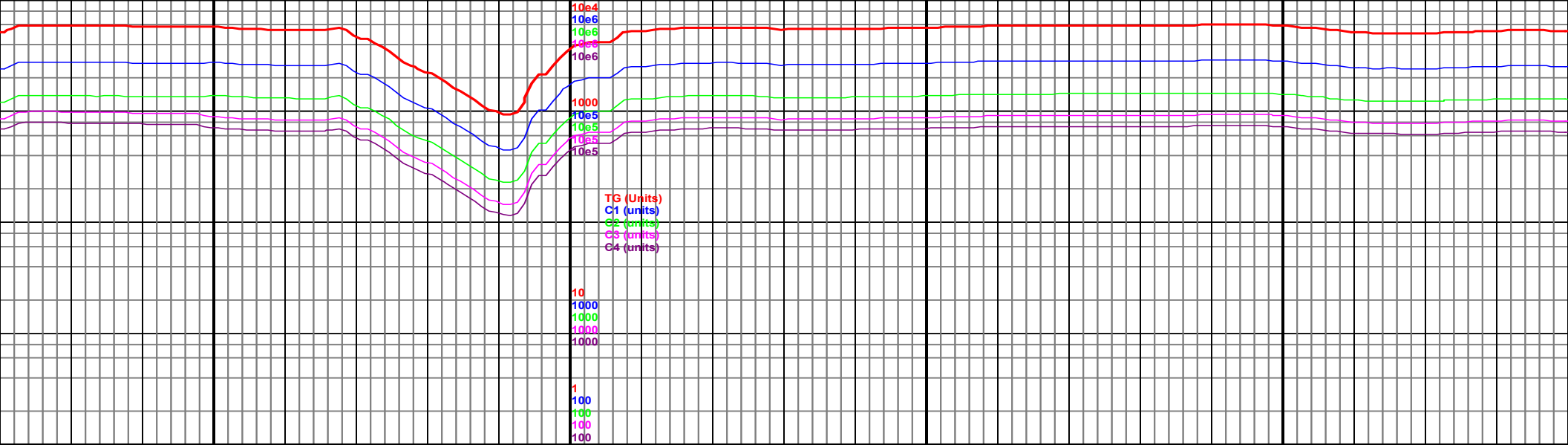
6200
(-1266)

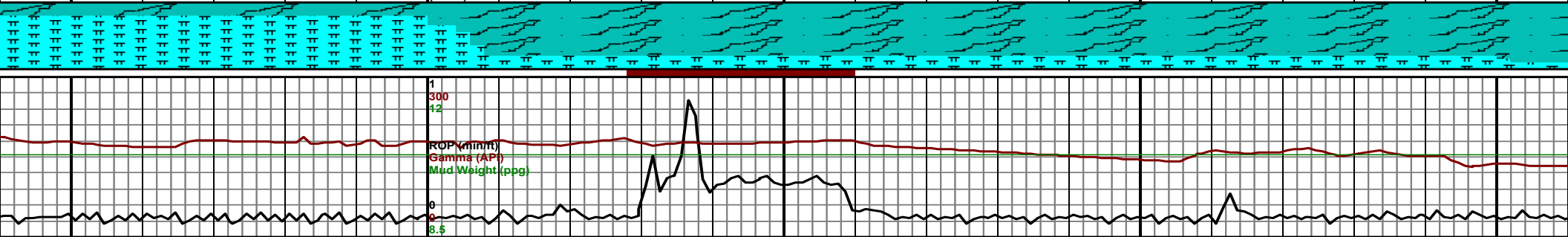
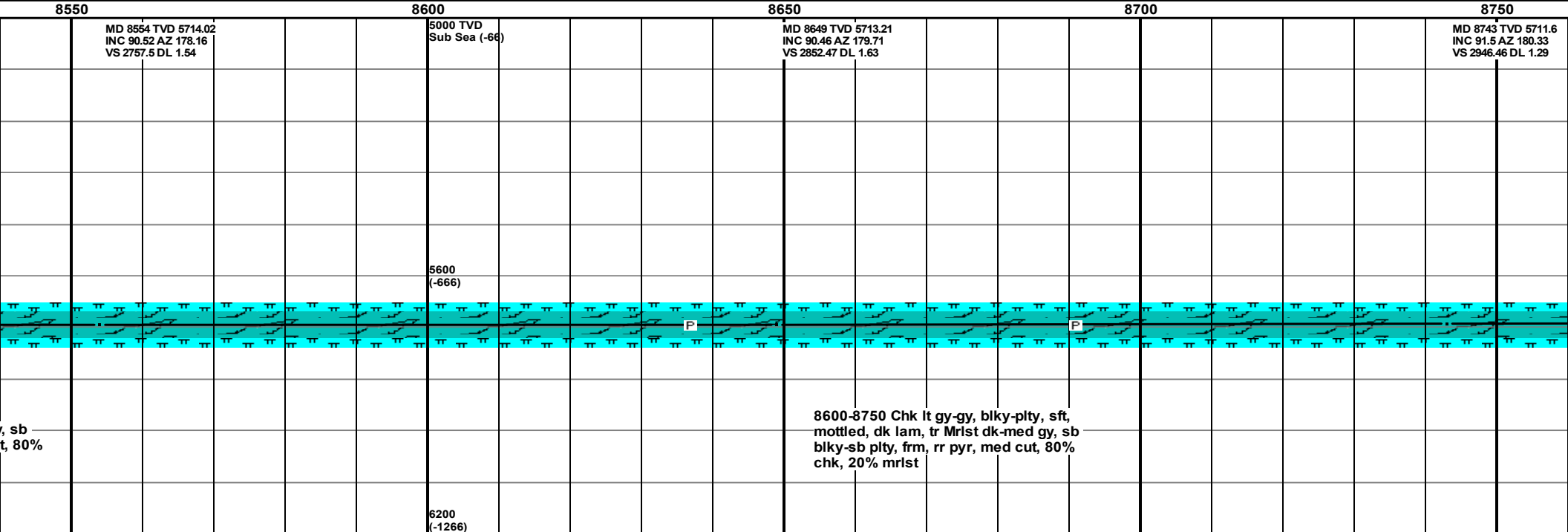
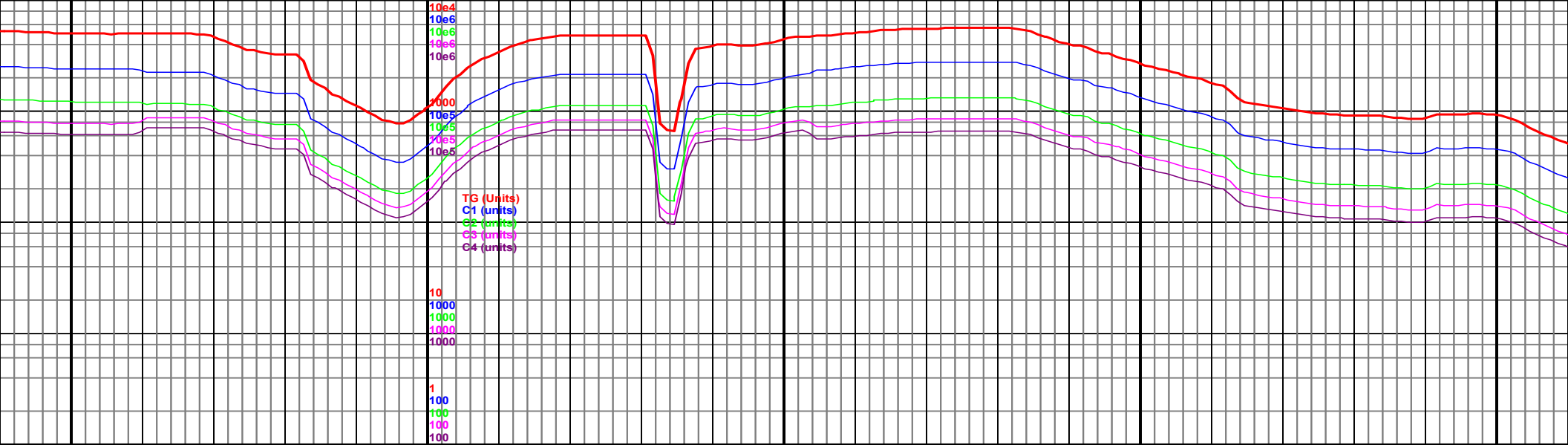


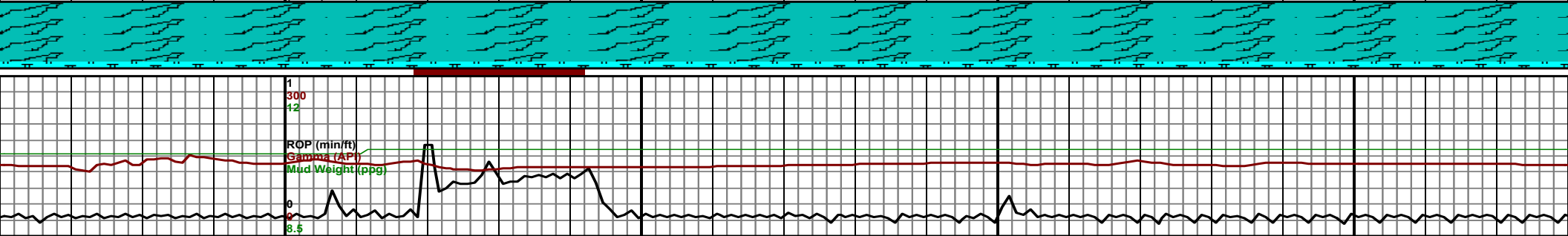
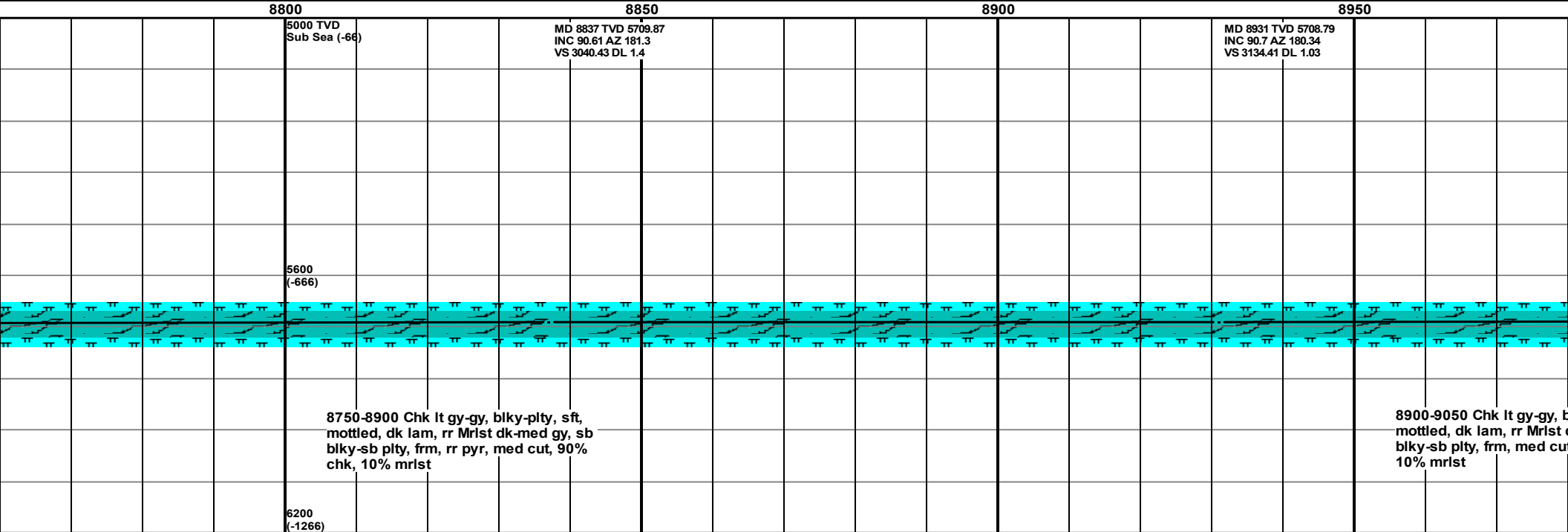
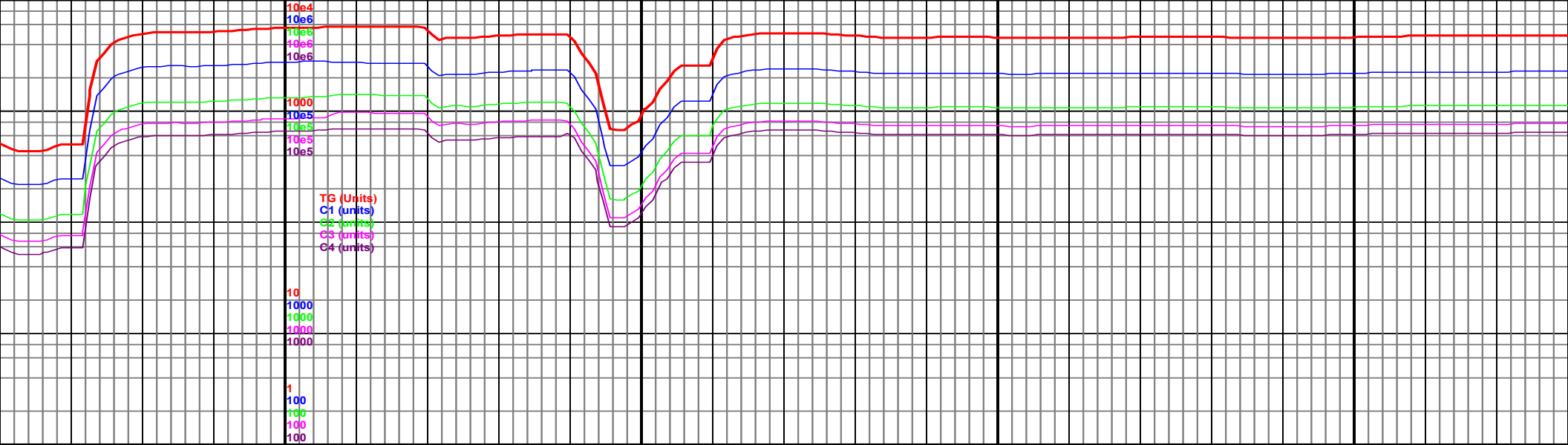


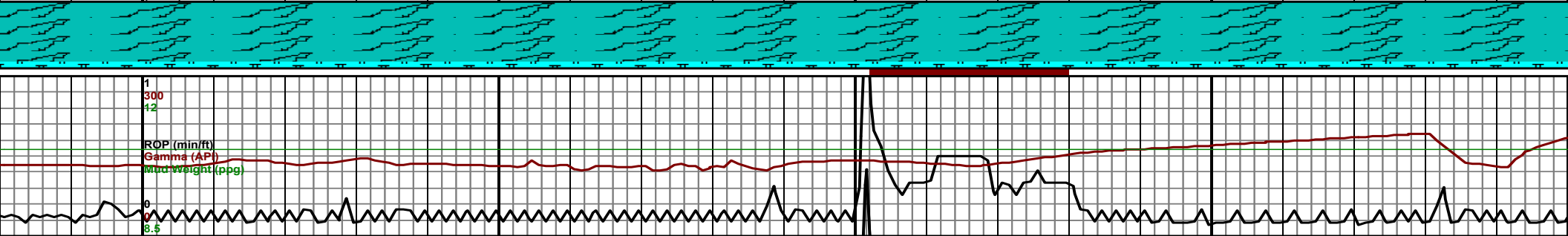
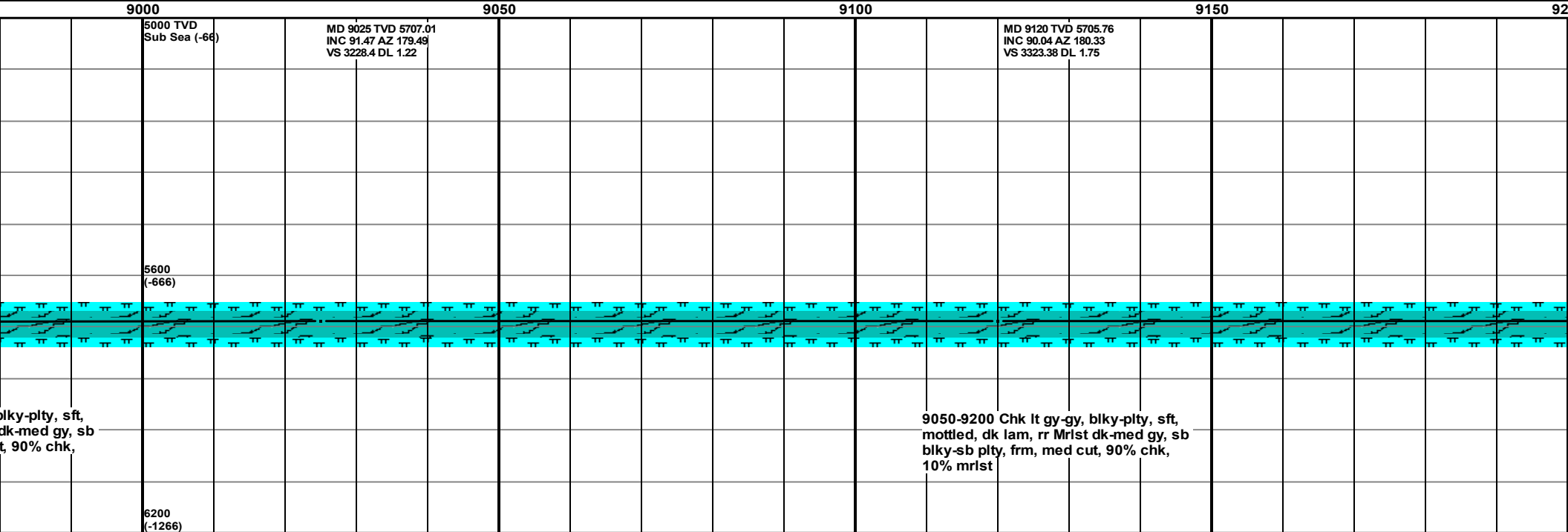
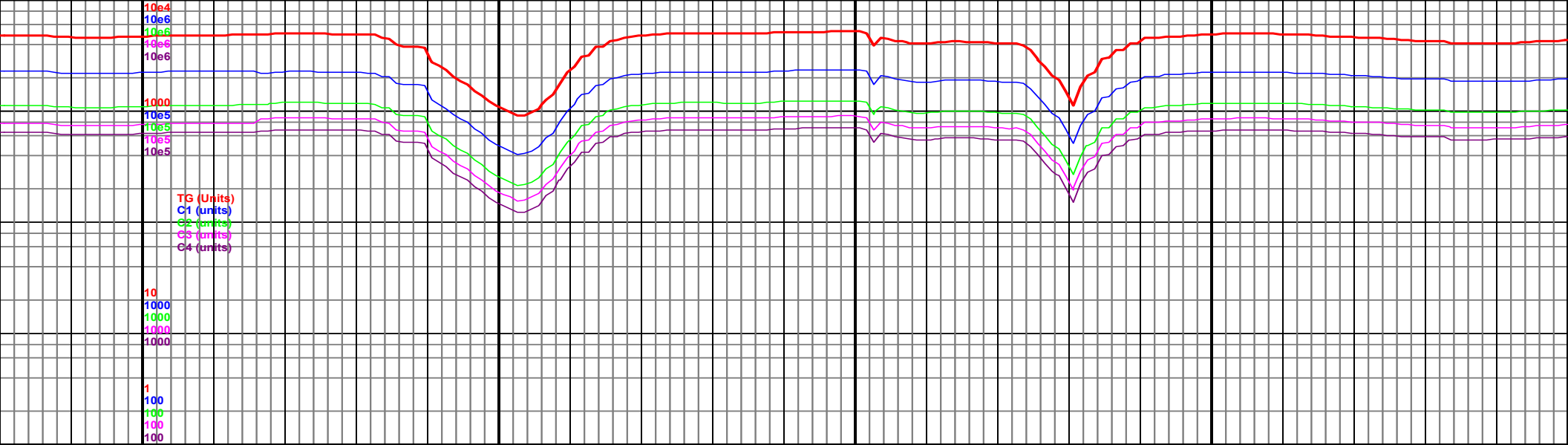


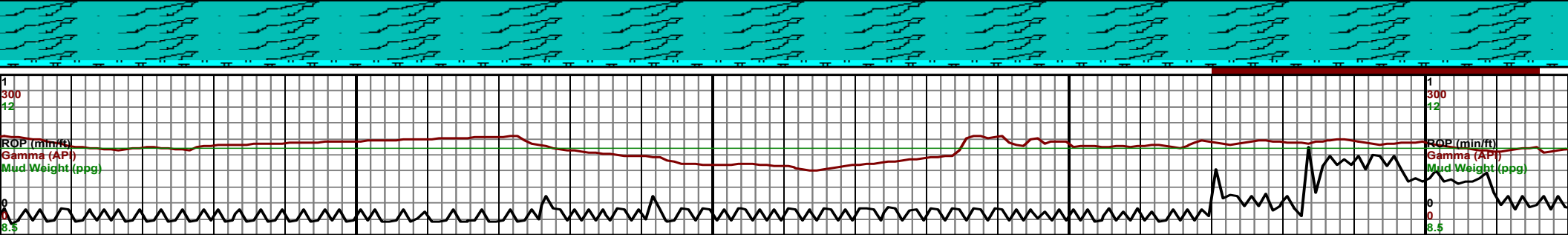
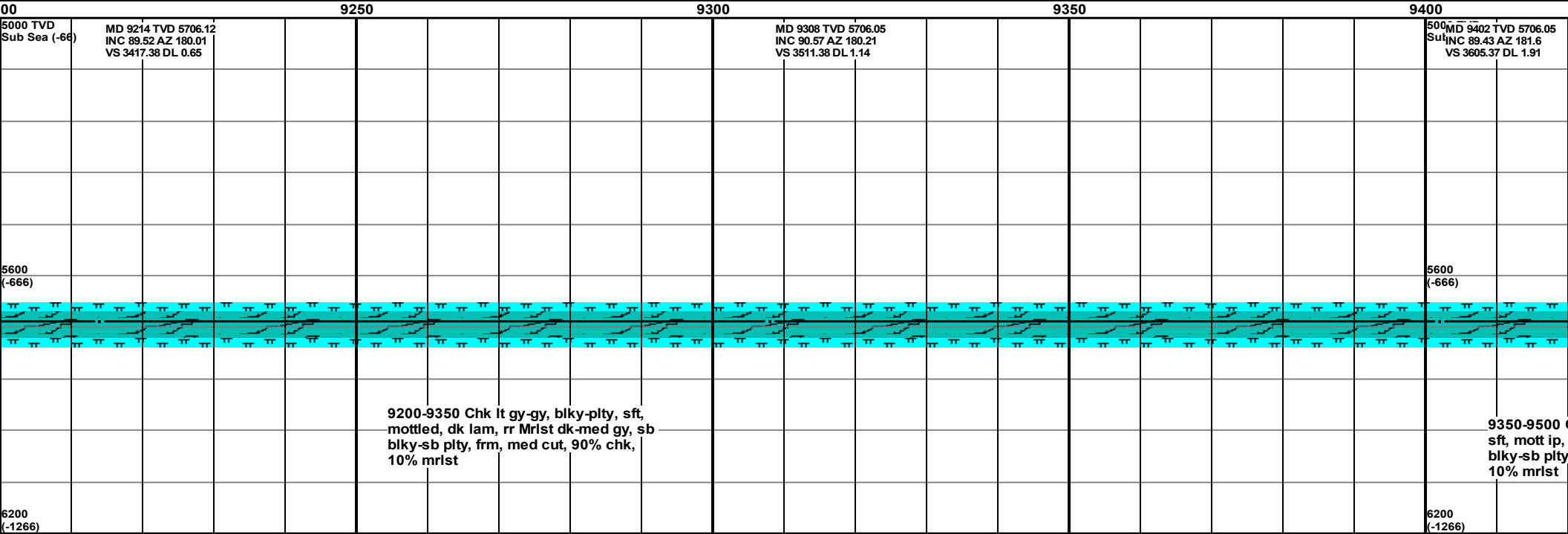
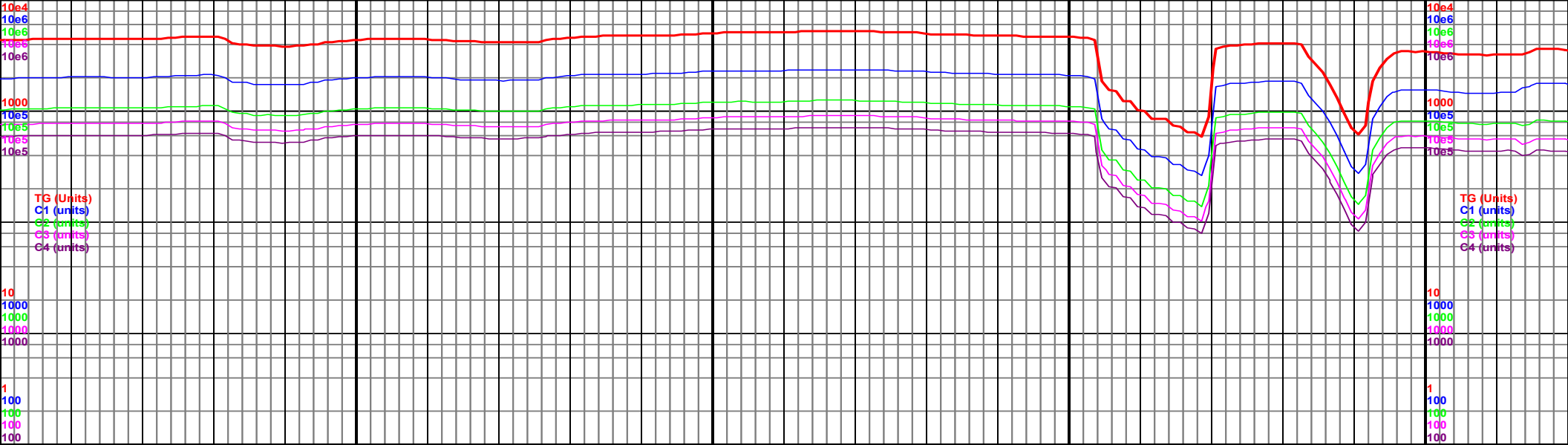


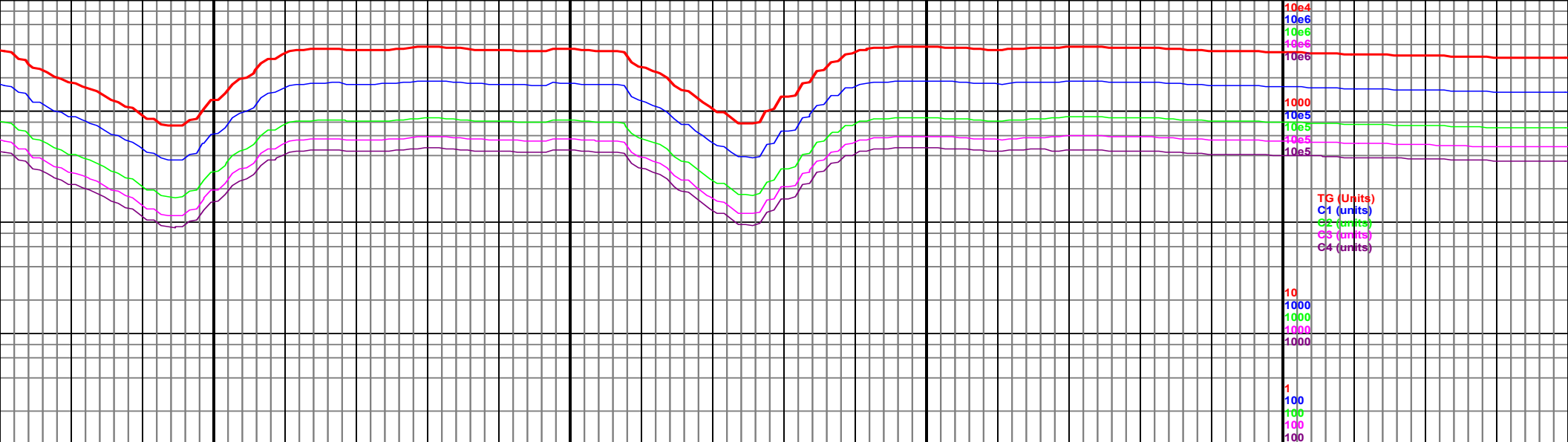












9450

9500

9550

9600

MD 9497 TVD 5706.58
INC 89.93 AZ 181.94
VS 3700.32 DL 0.64

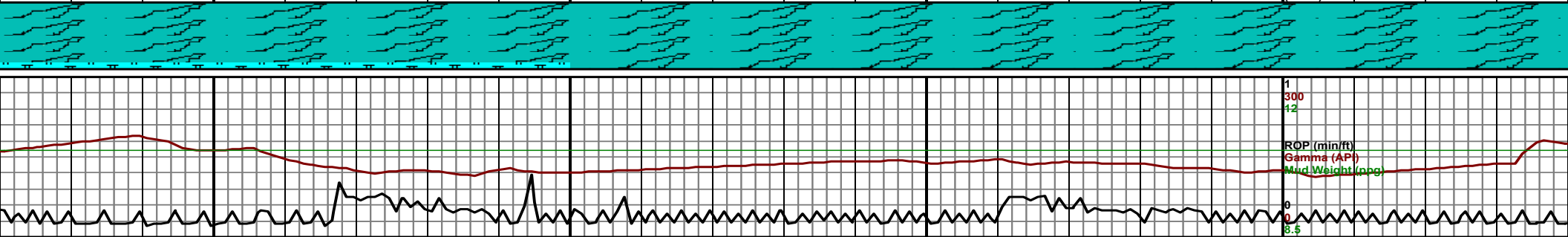
MD 9591 TVD 5706.13
INC 90.62 AZ 181.13^a (-66)
VS 3794.28 DL 1.13

Chk lt gy-gy, sb blk-y-sb plty,
rr mrlst med-dk gy, sb
, frm, mod cut, 90% chk,

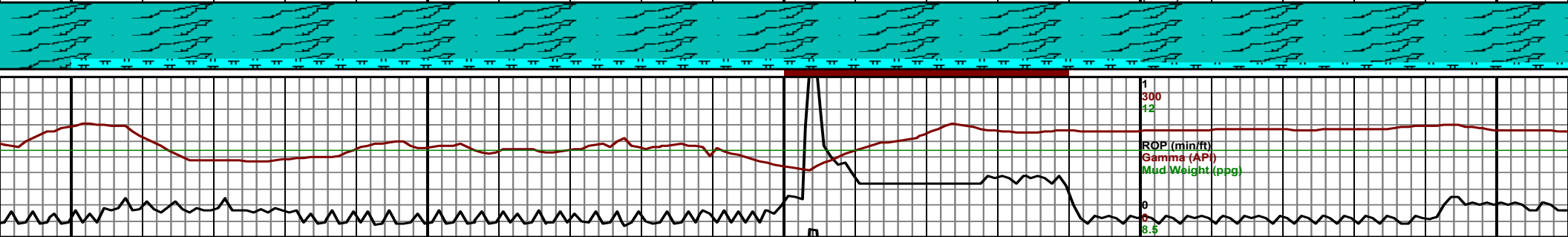
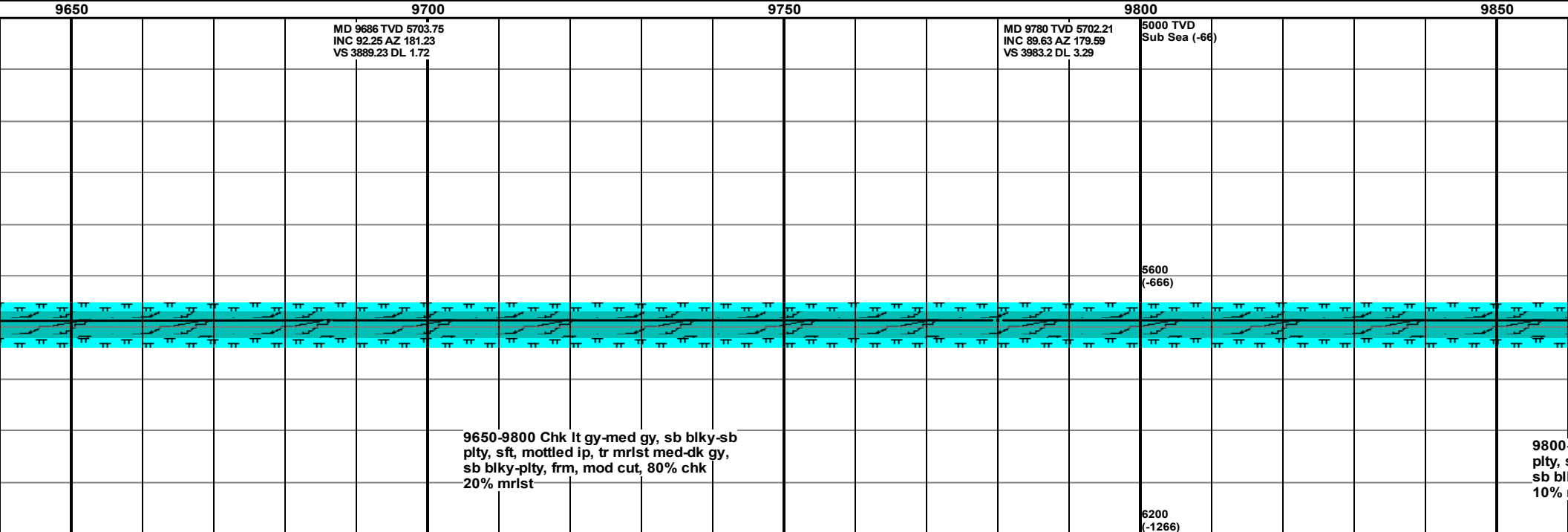
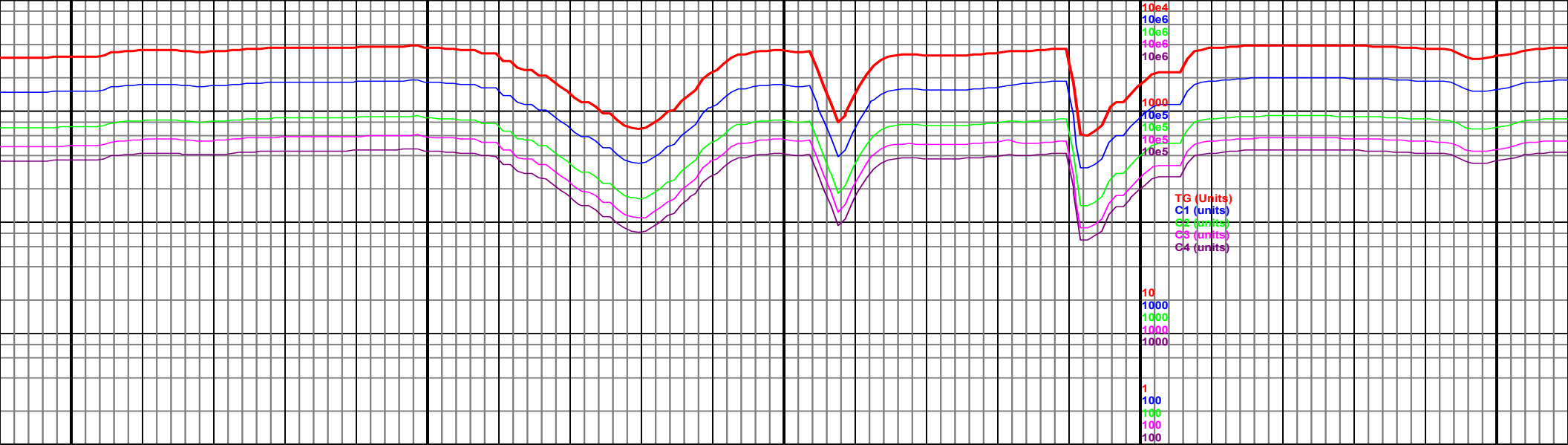
9500-9650 Chk lt gy, sb blk-y-sb plty,
sft, mottled ip, mod cut, 100% chk

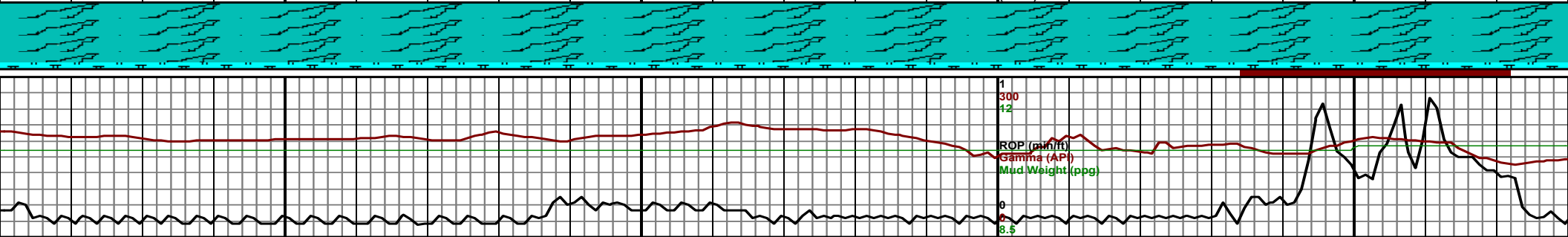
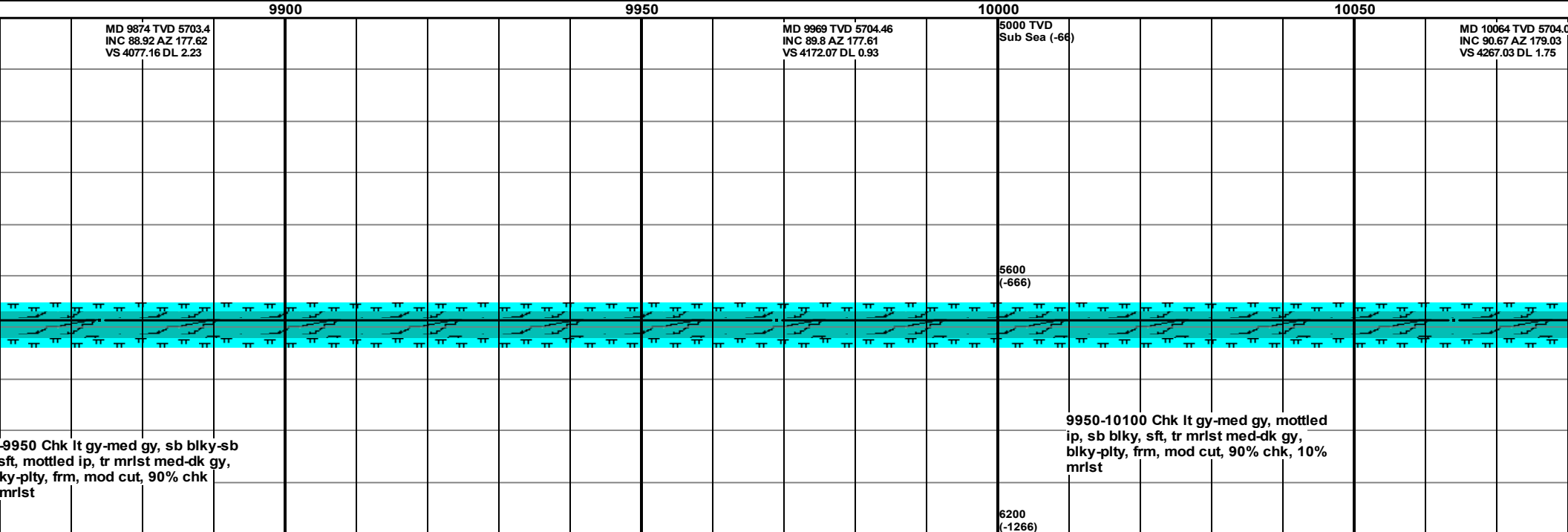
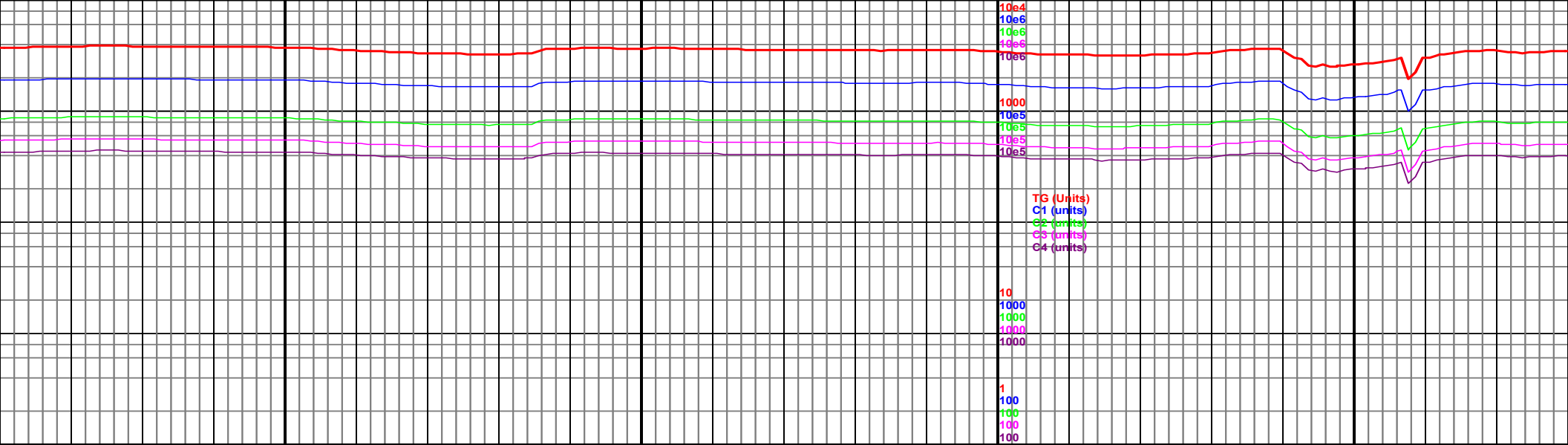
5600
(-666)

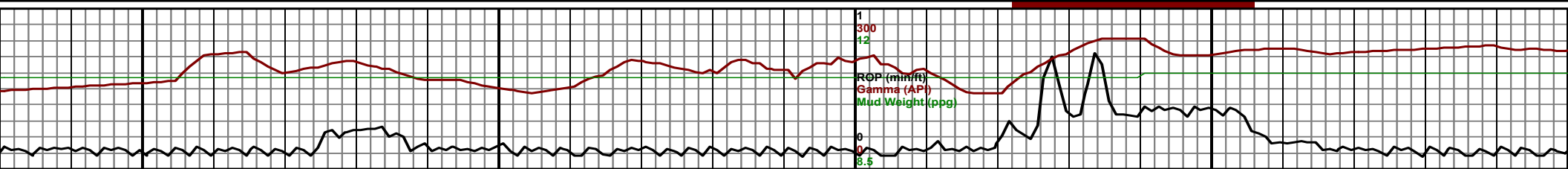
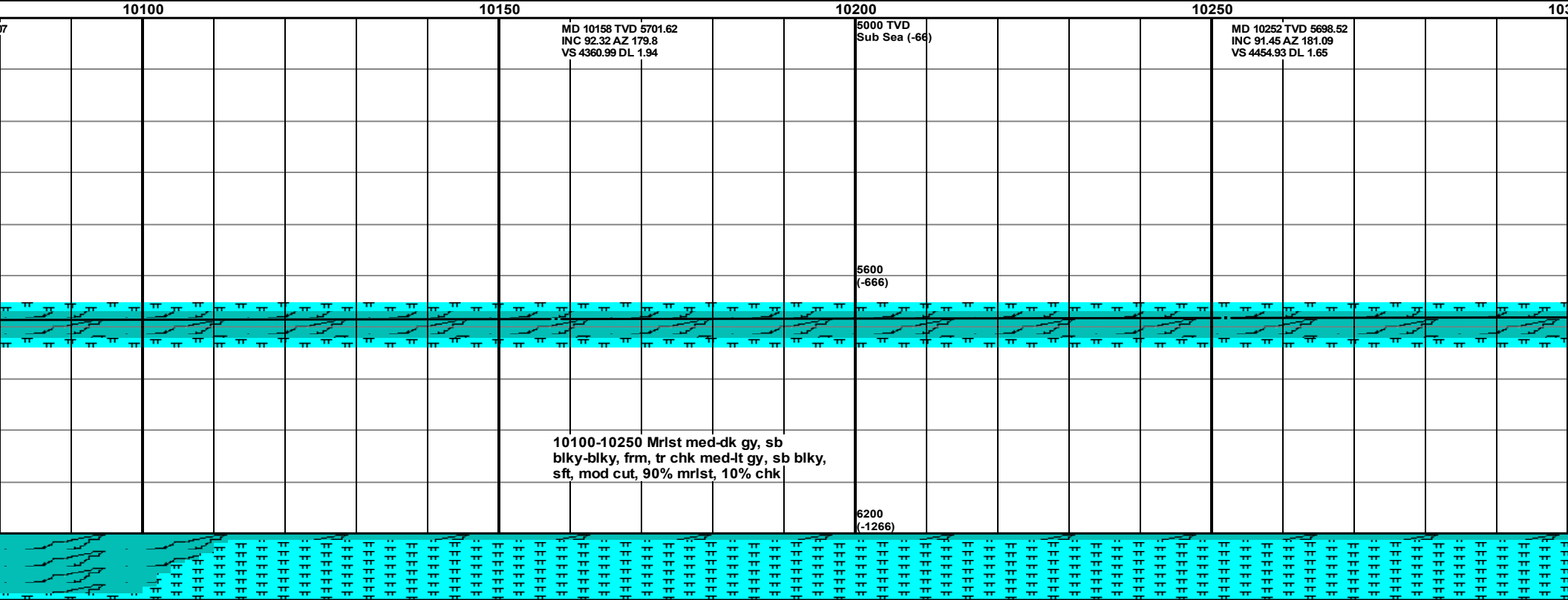
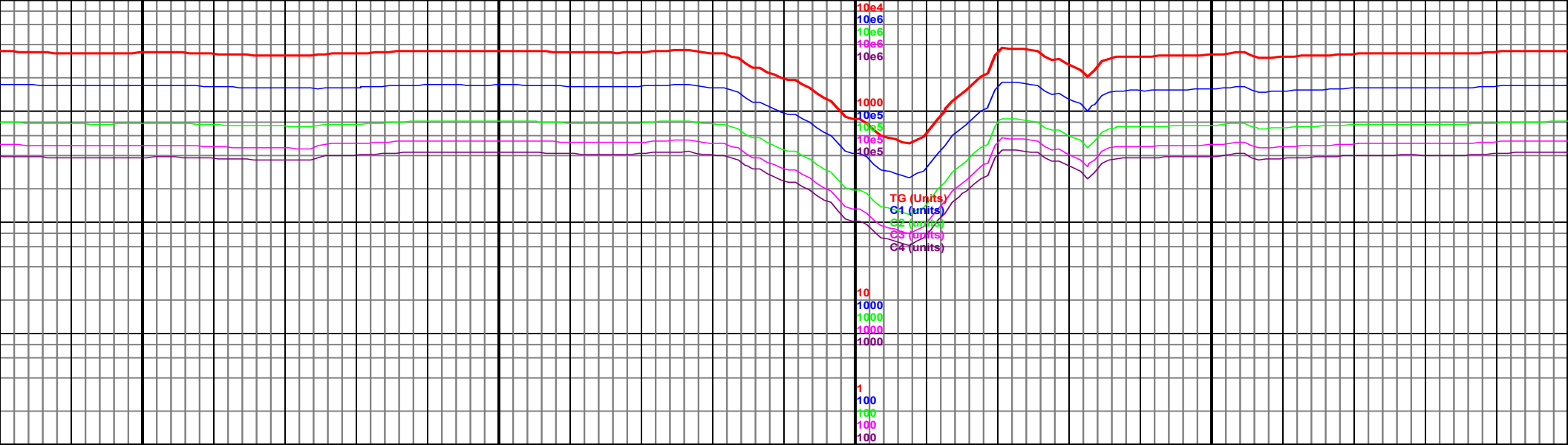
6200
(-1266)

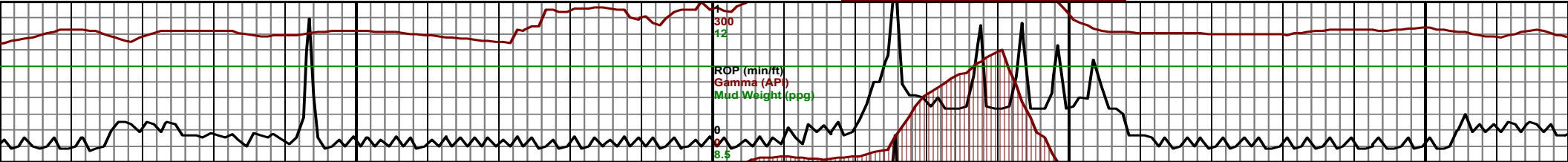
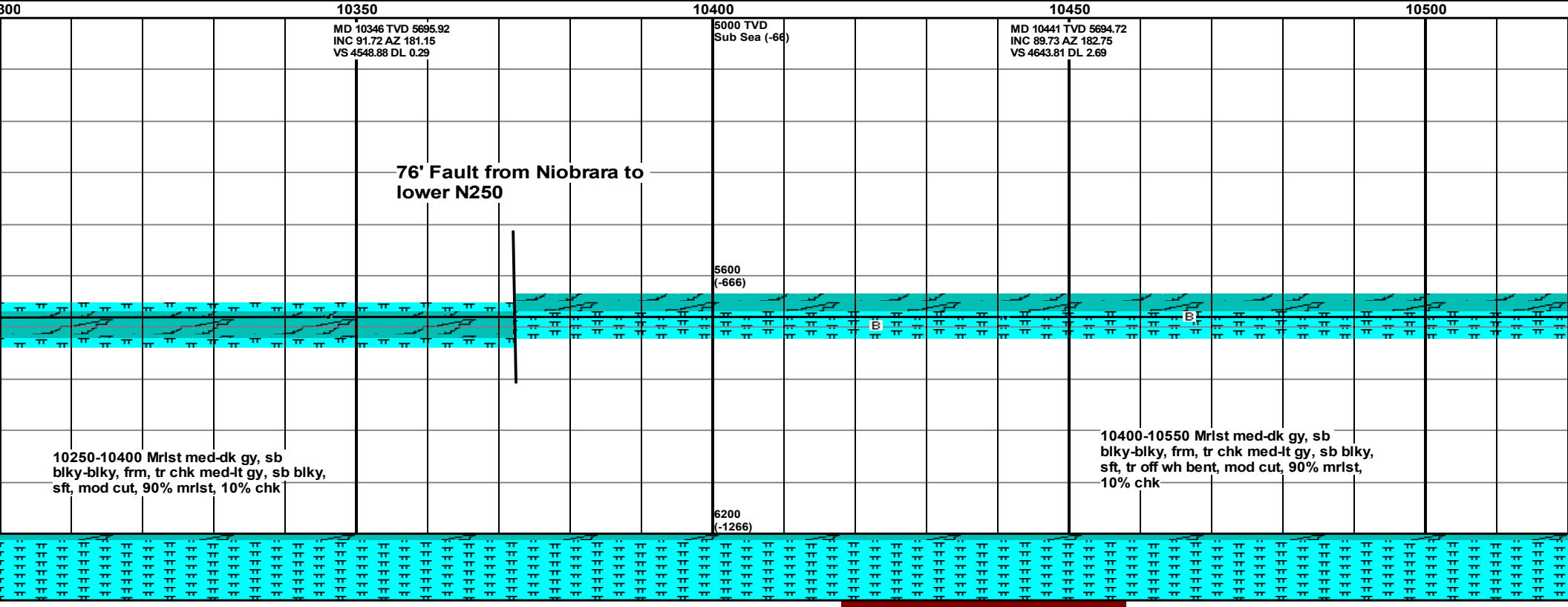
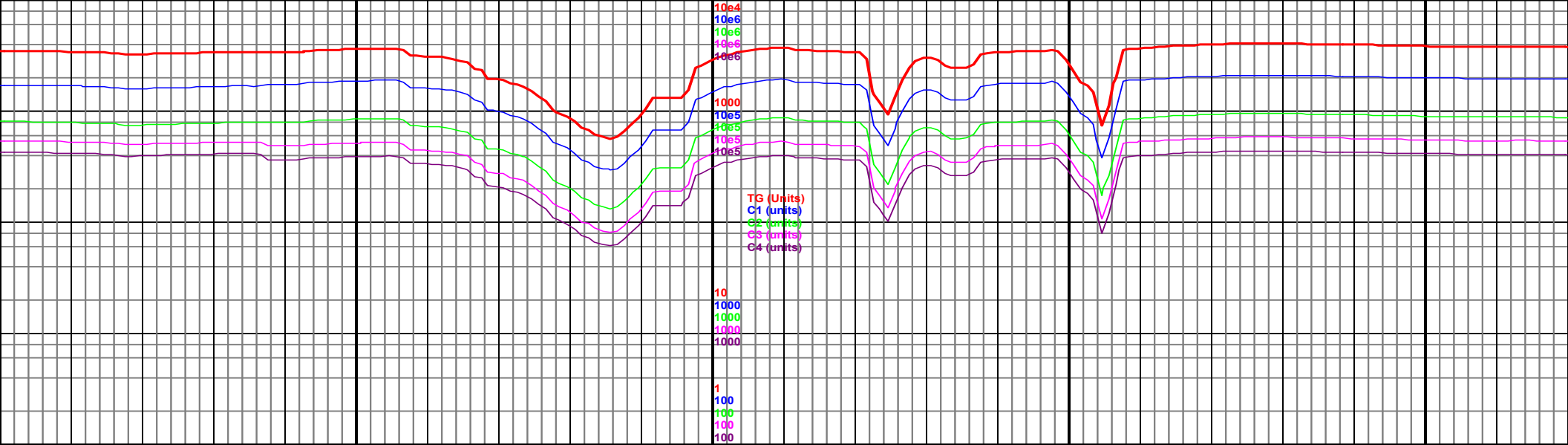


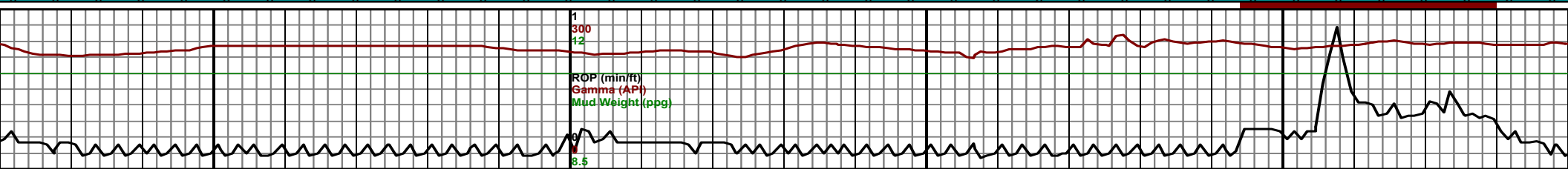
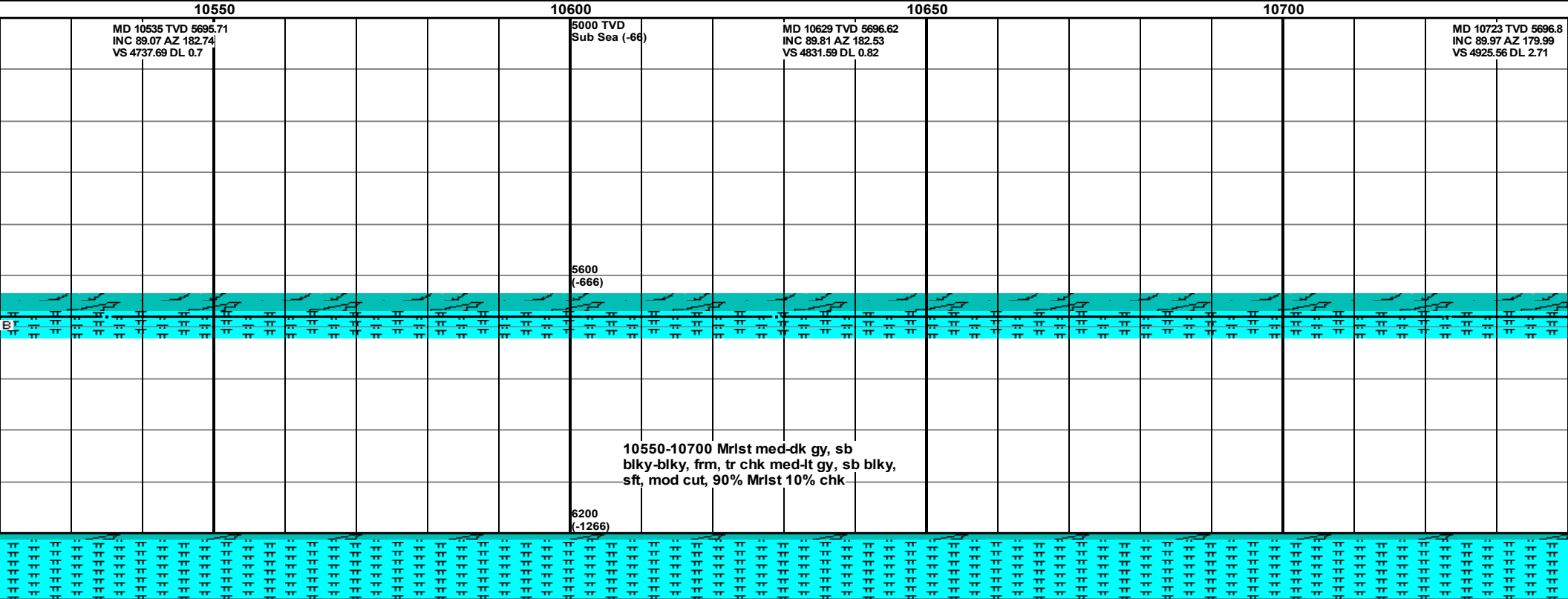
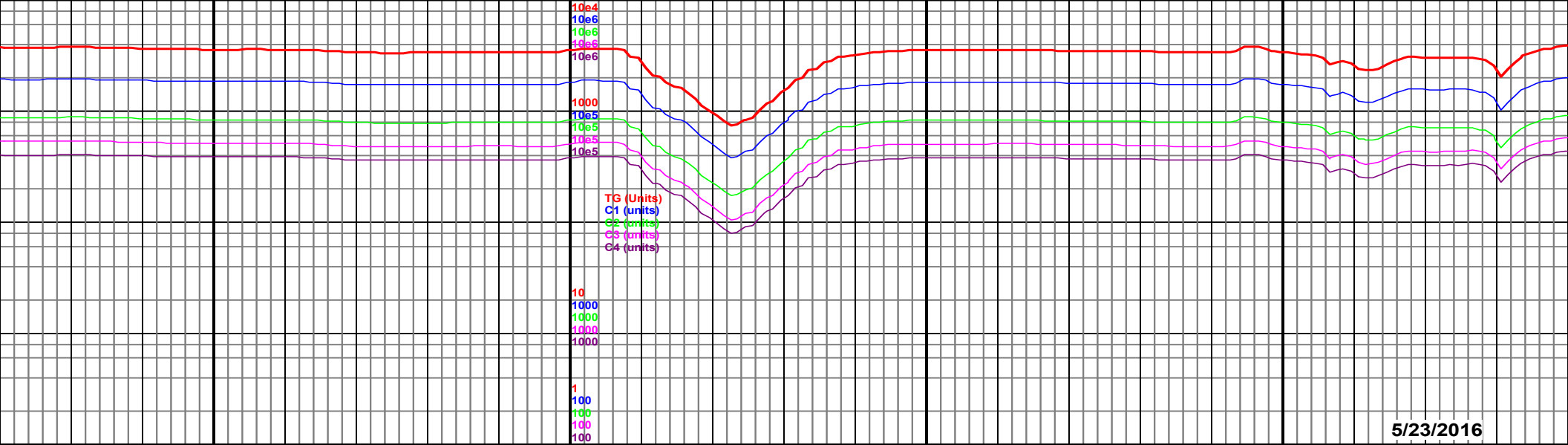
ROP (min/ft)
Gamma (API)
Mud Weight (ppg)

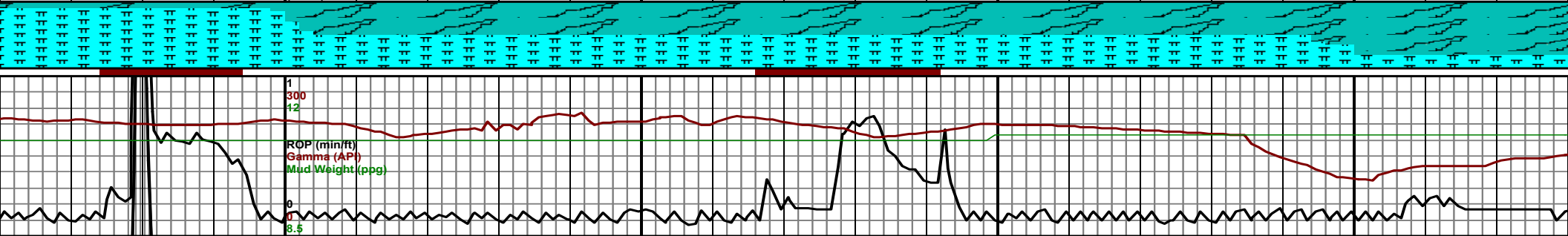
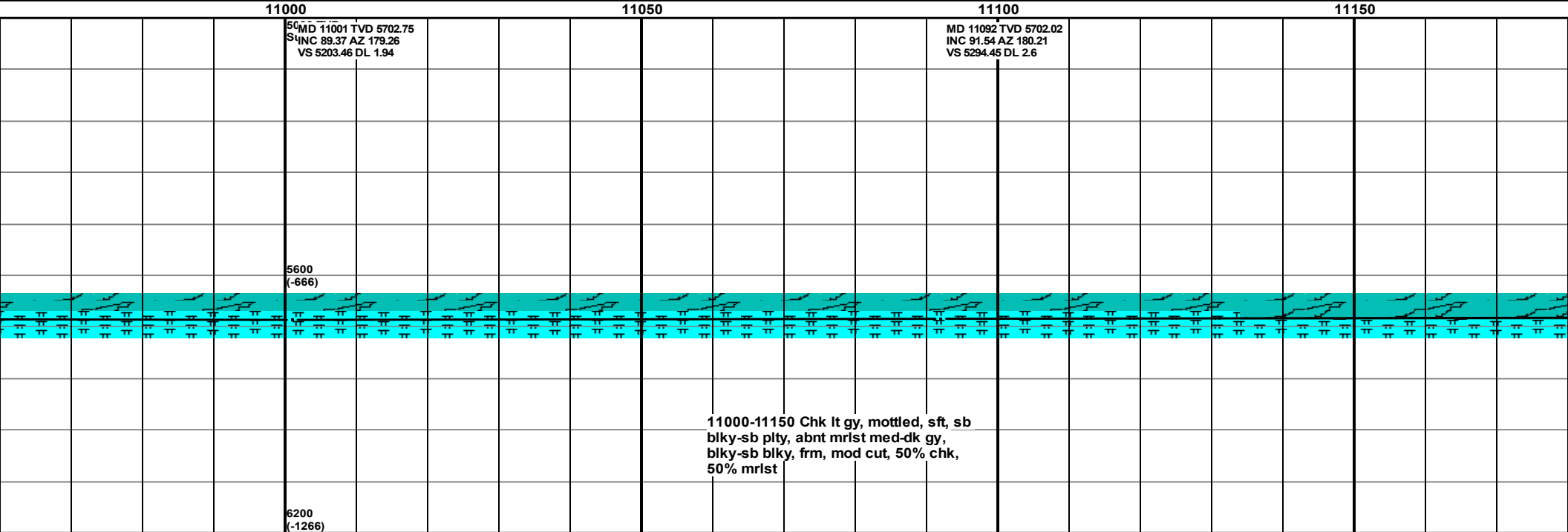
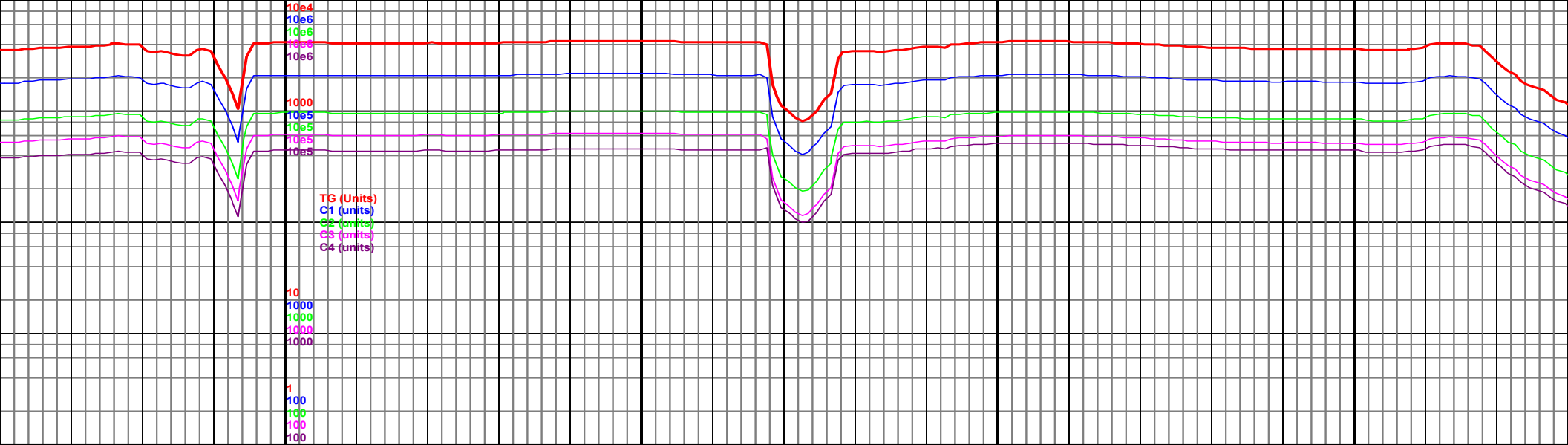


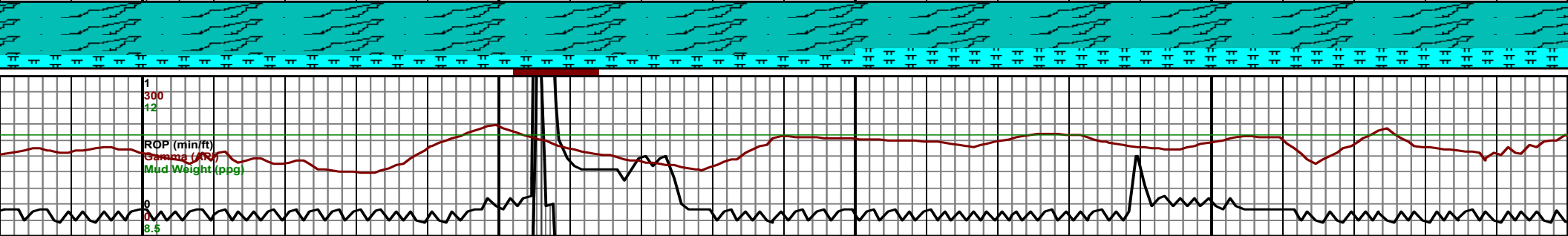
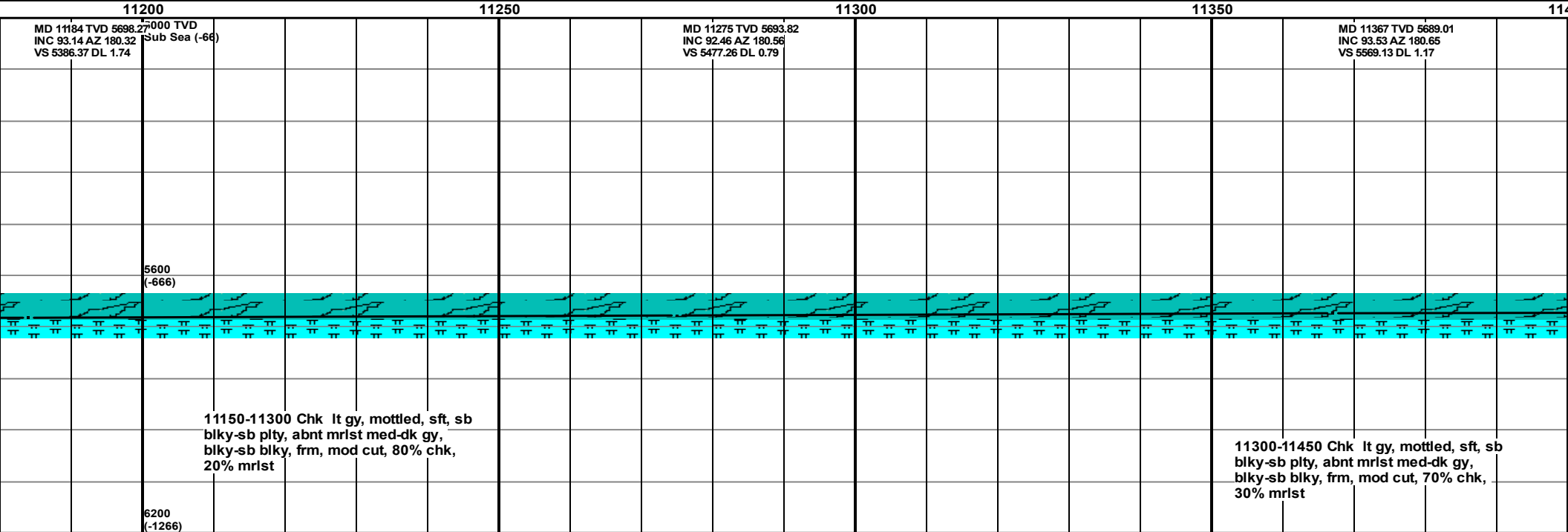
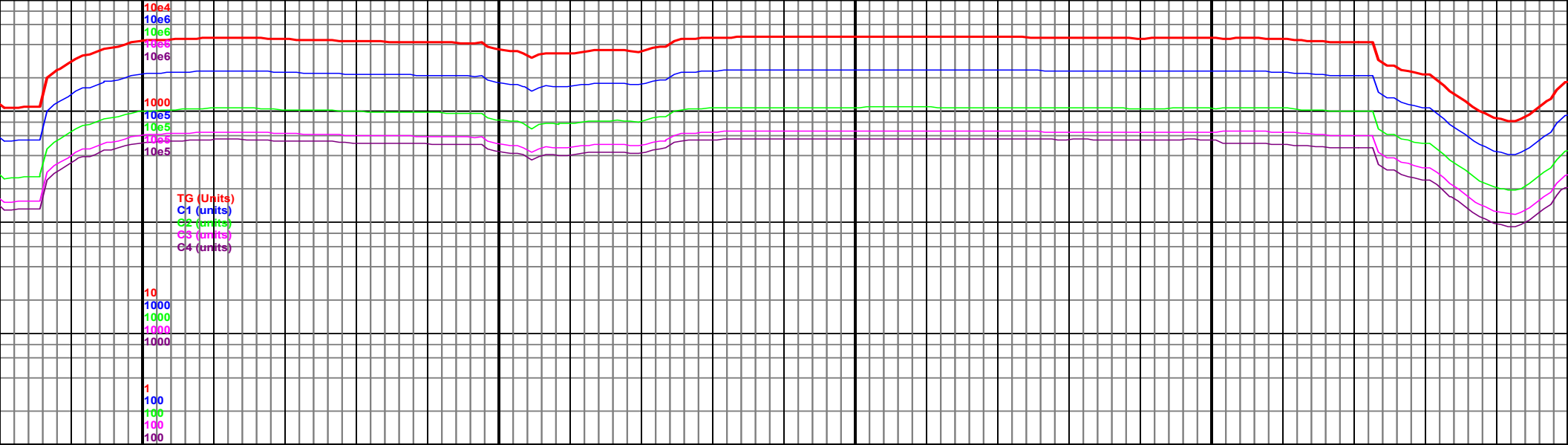


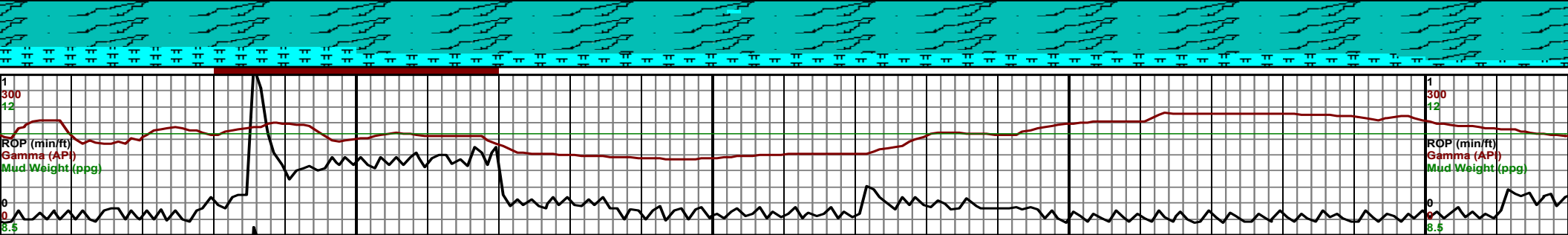
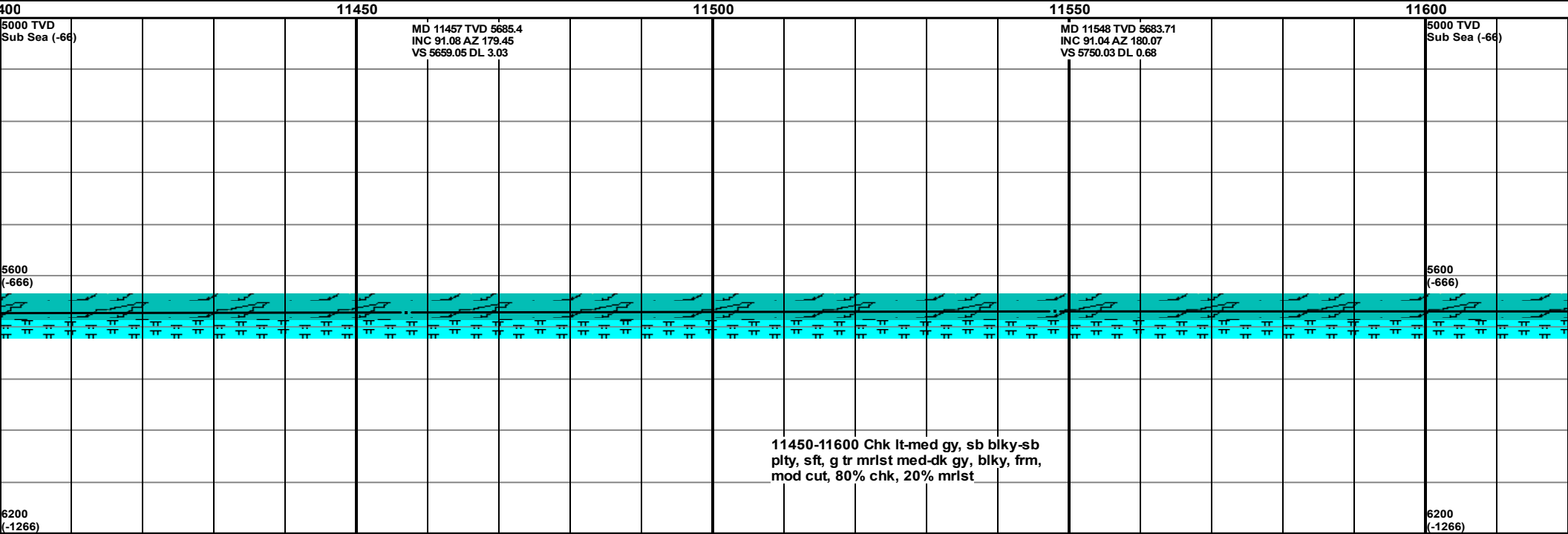
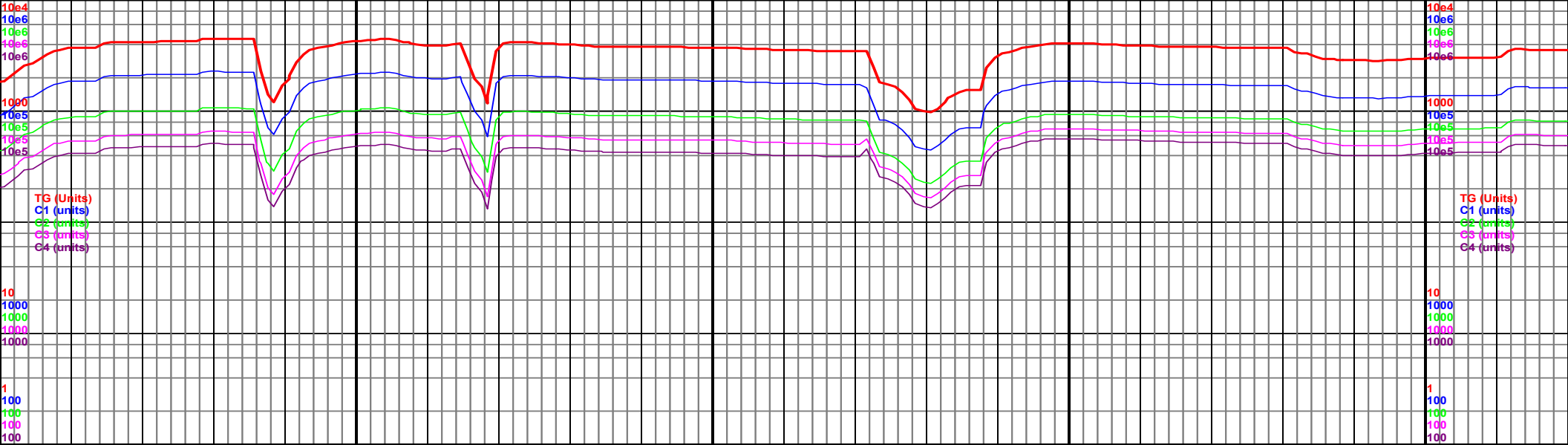


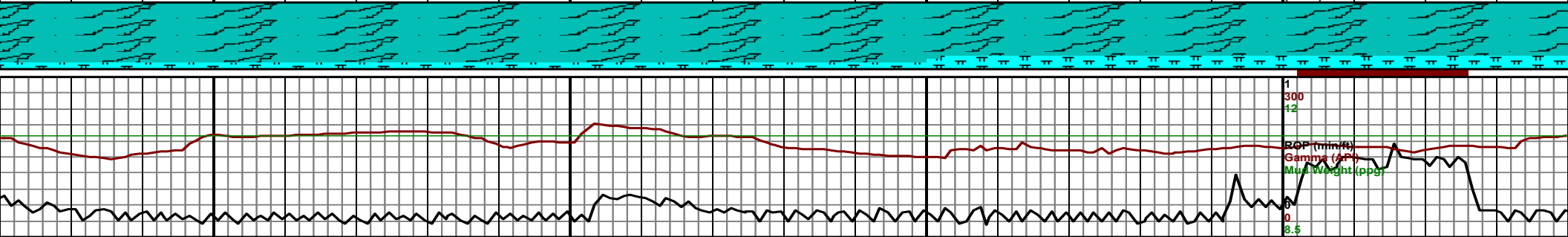
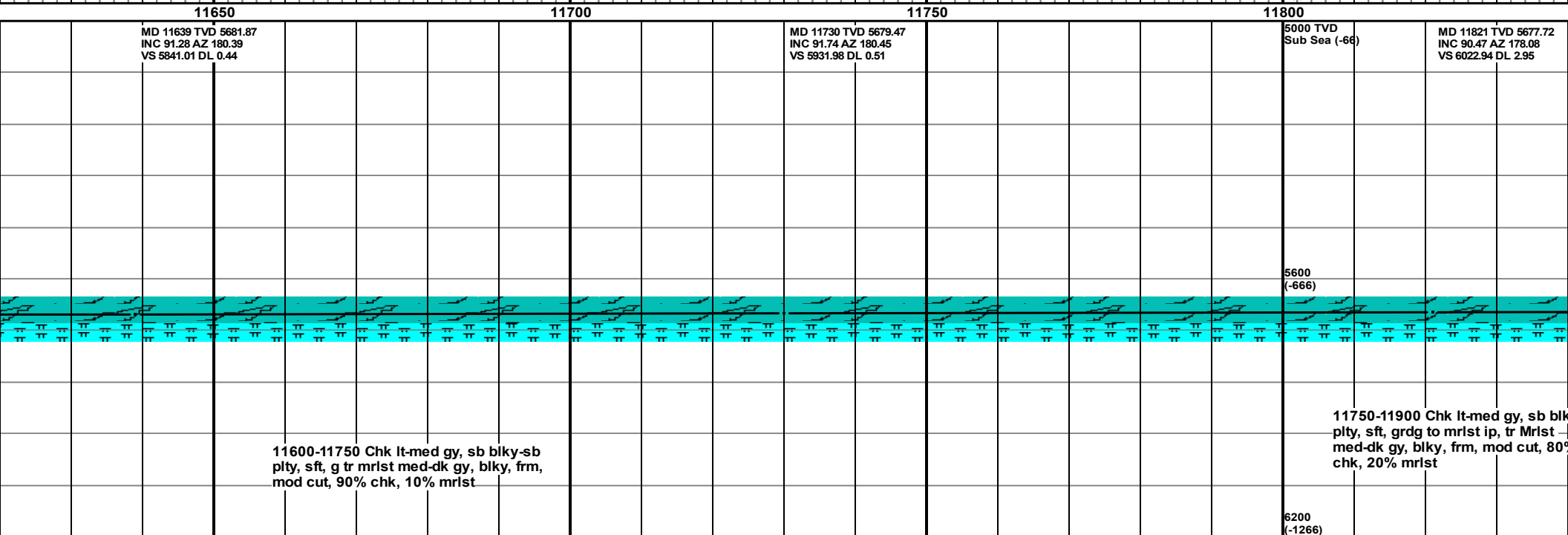
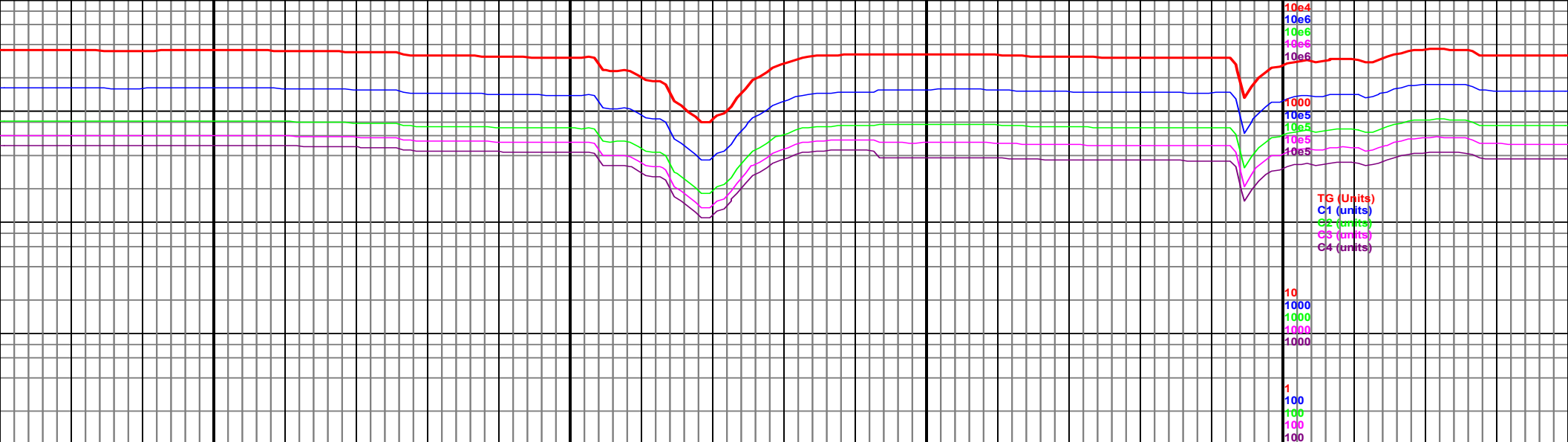


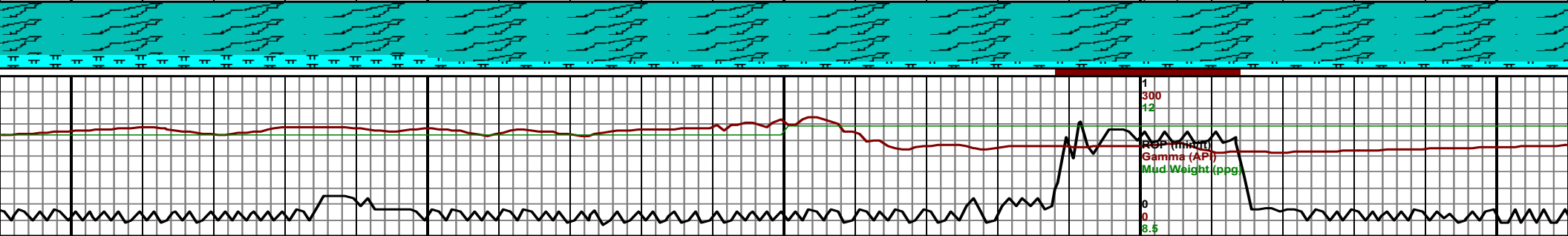
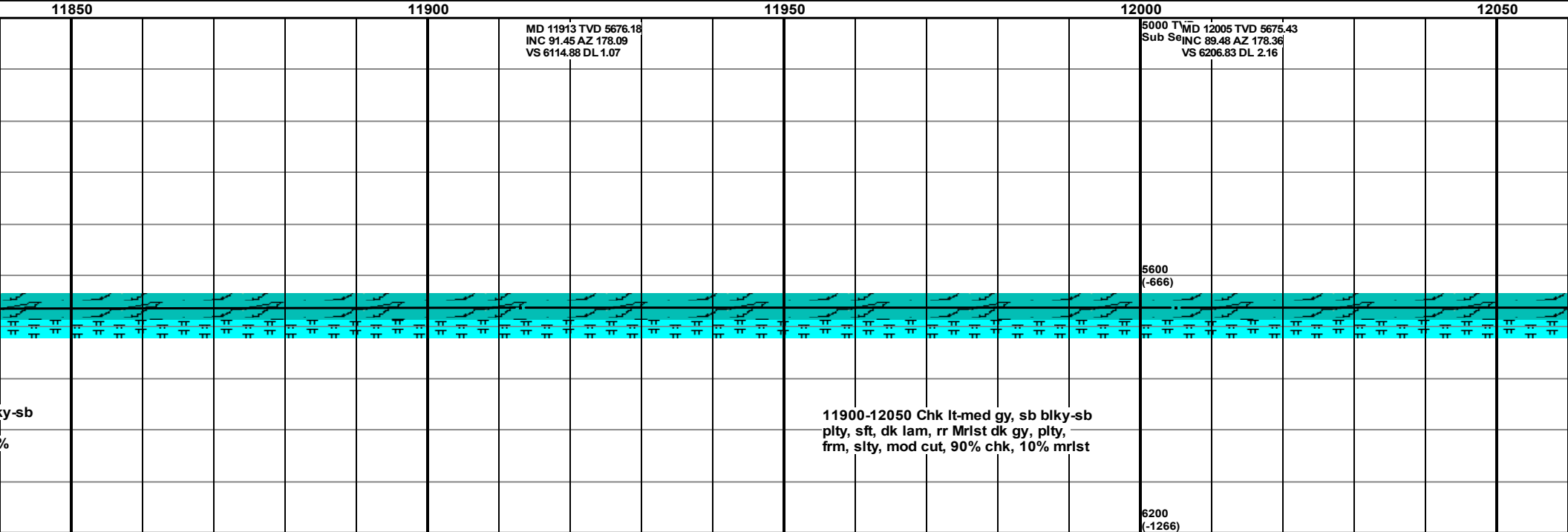
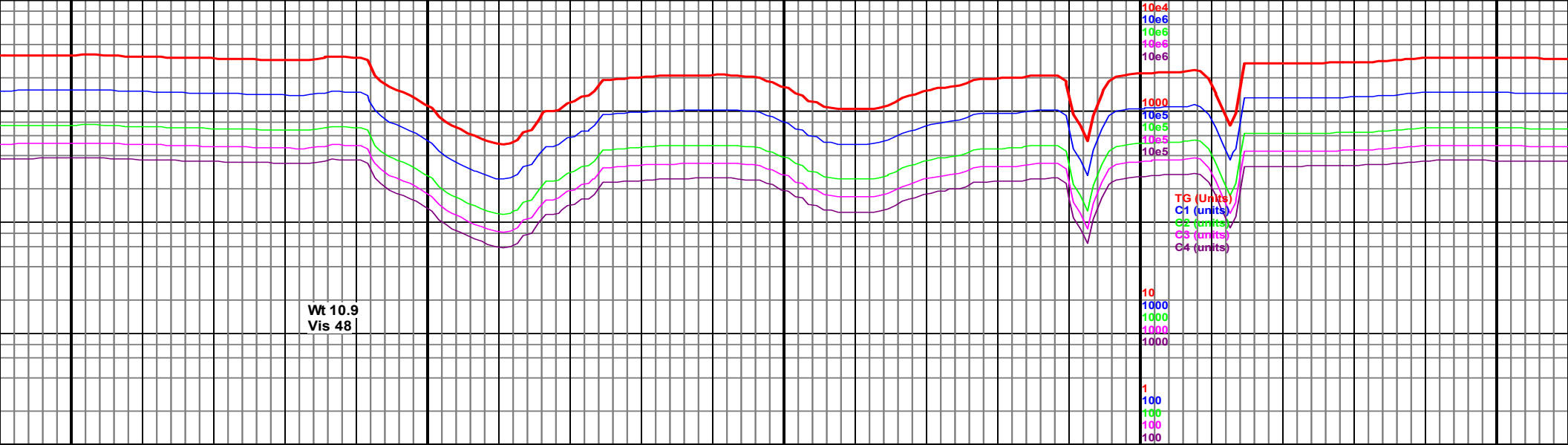


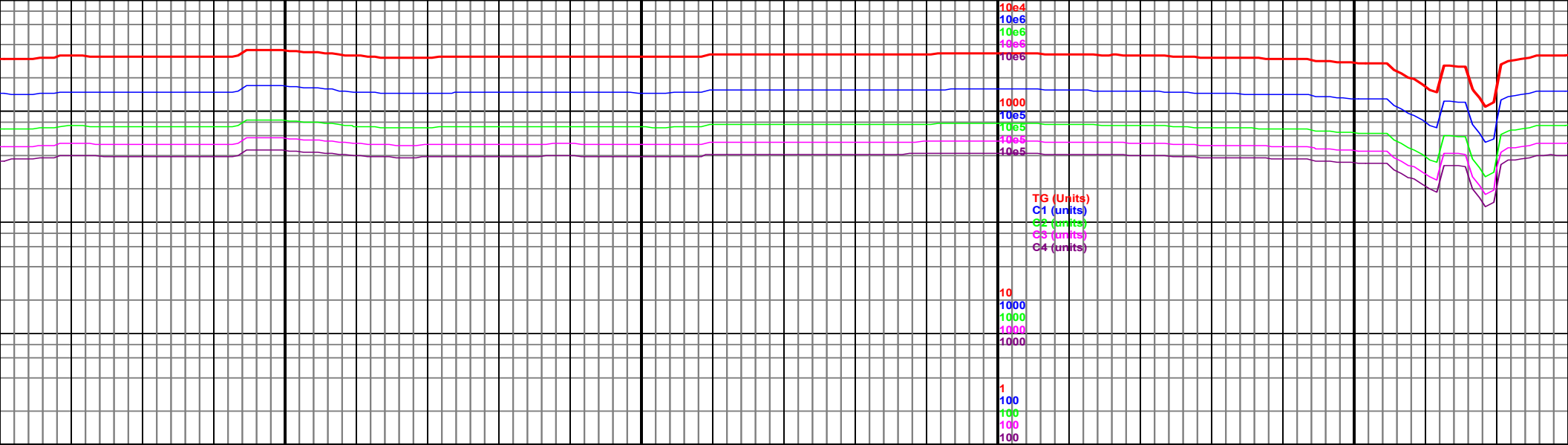












12100
MD 12096 TVD 5675.87
INC 89.96 AZ 178.03
VS 6297.78 DL 0.64

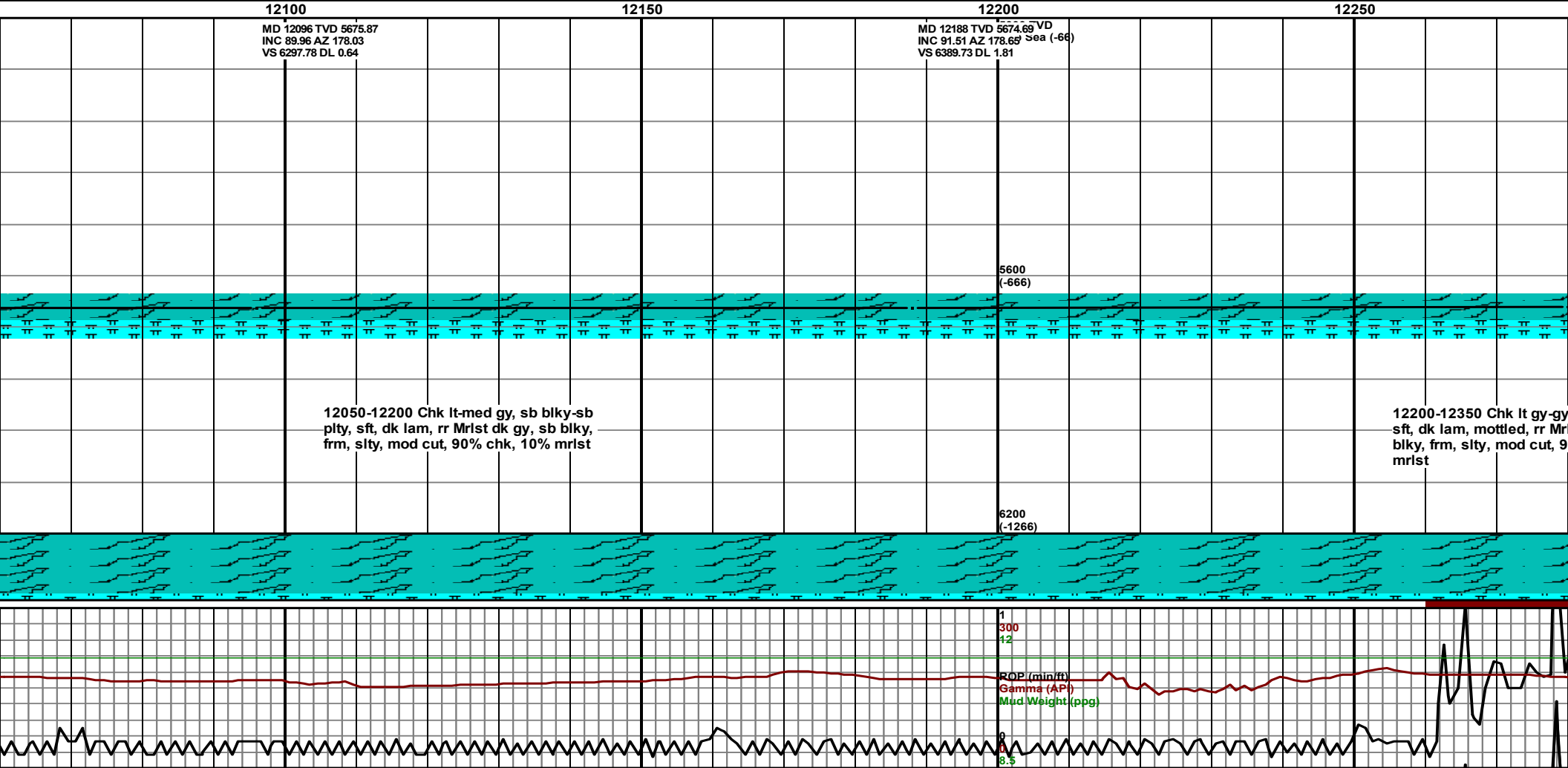
12150

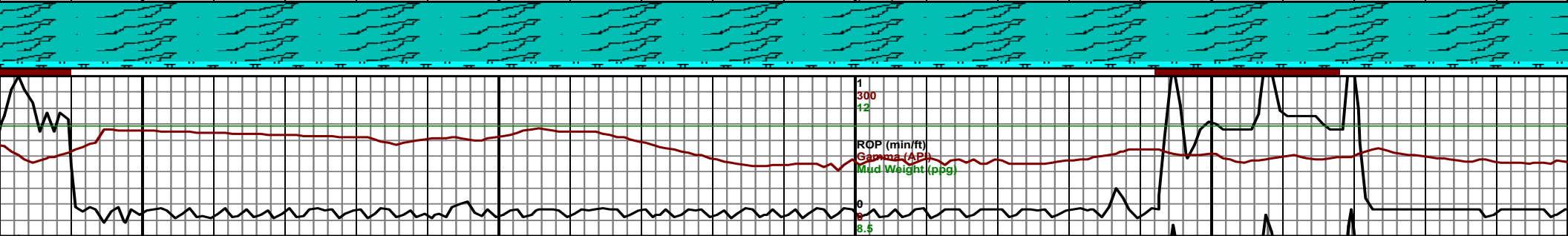
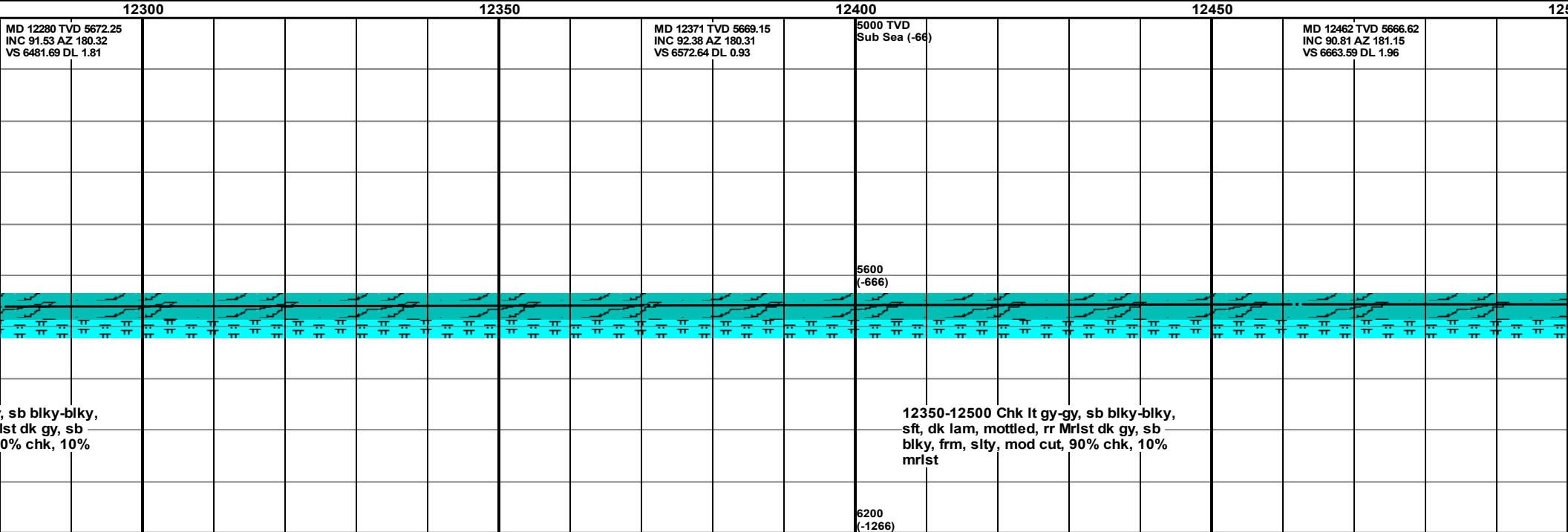
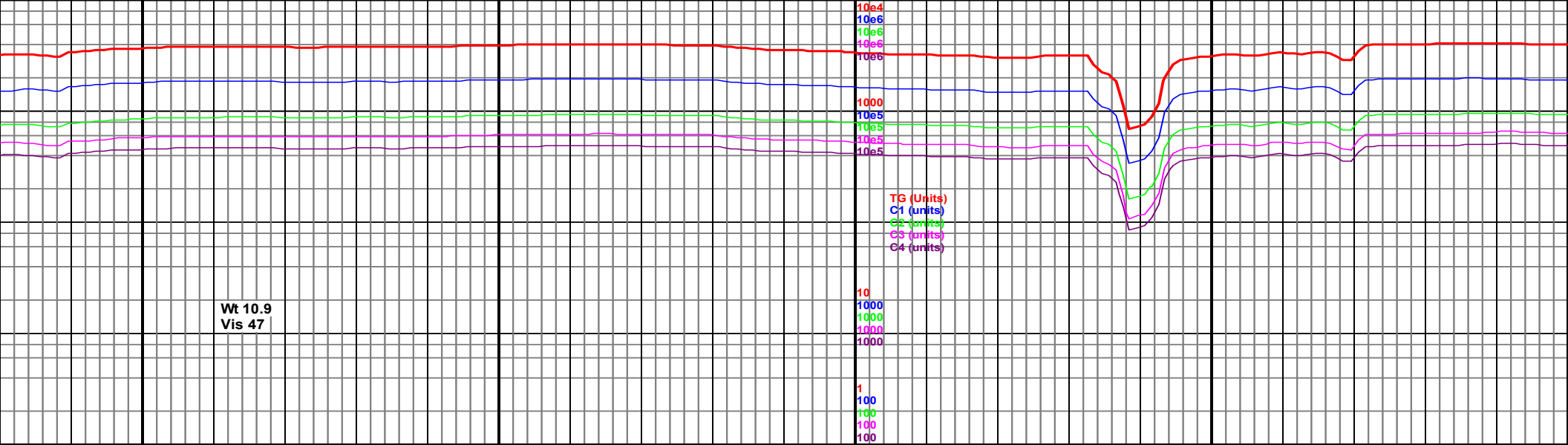
12200
MD 12188 TVD 5674.69
INC 91.51 AZ 178.65 Sea (-66)
VS 6389.73 DL 1.81

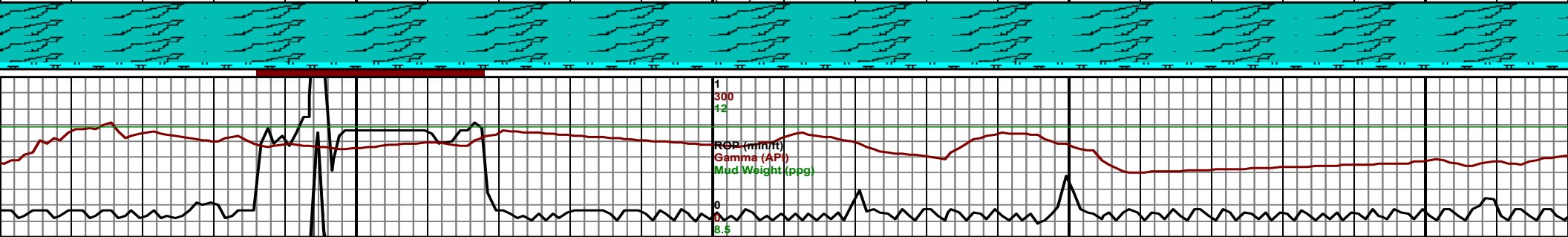
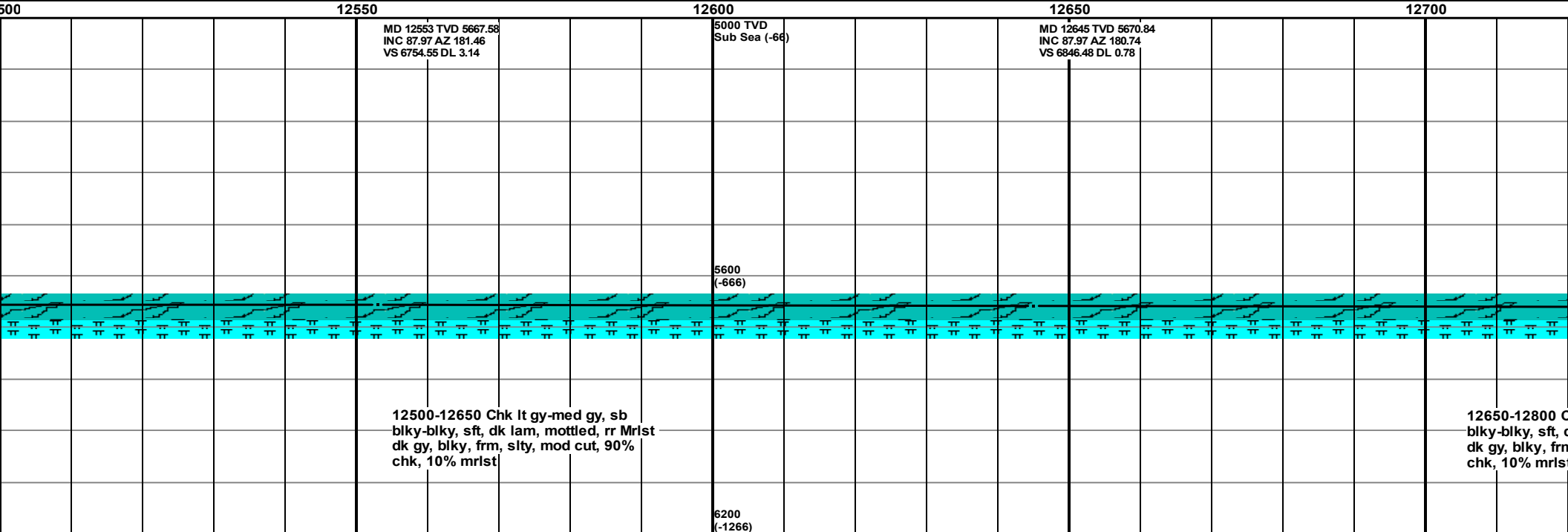
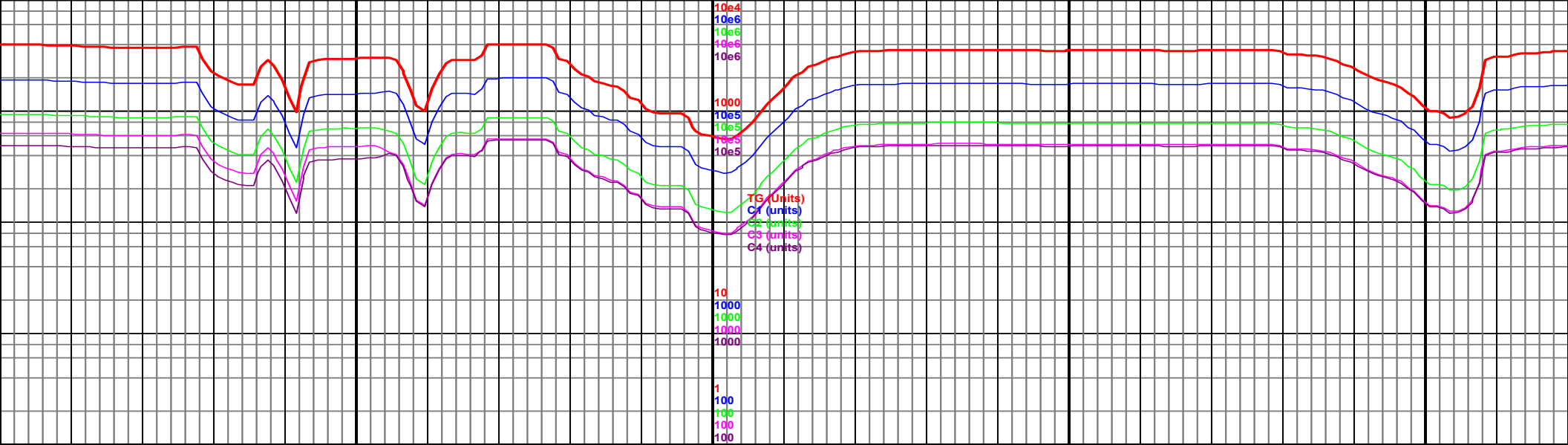
12250

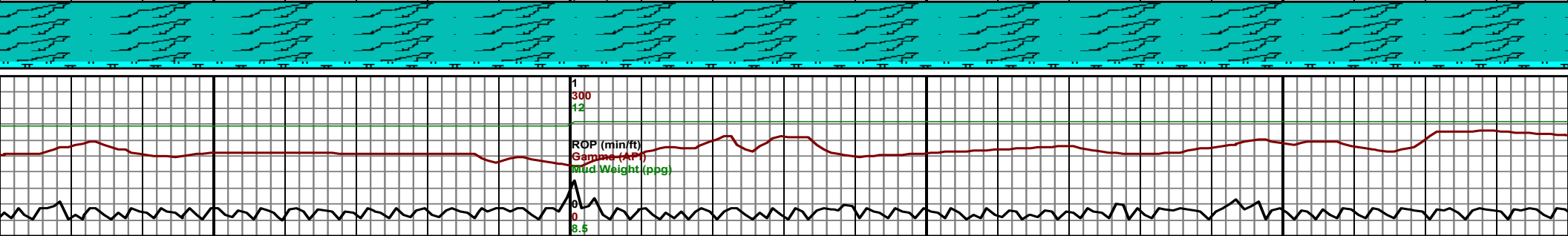
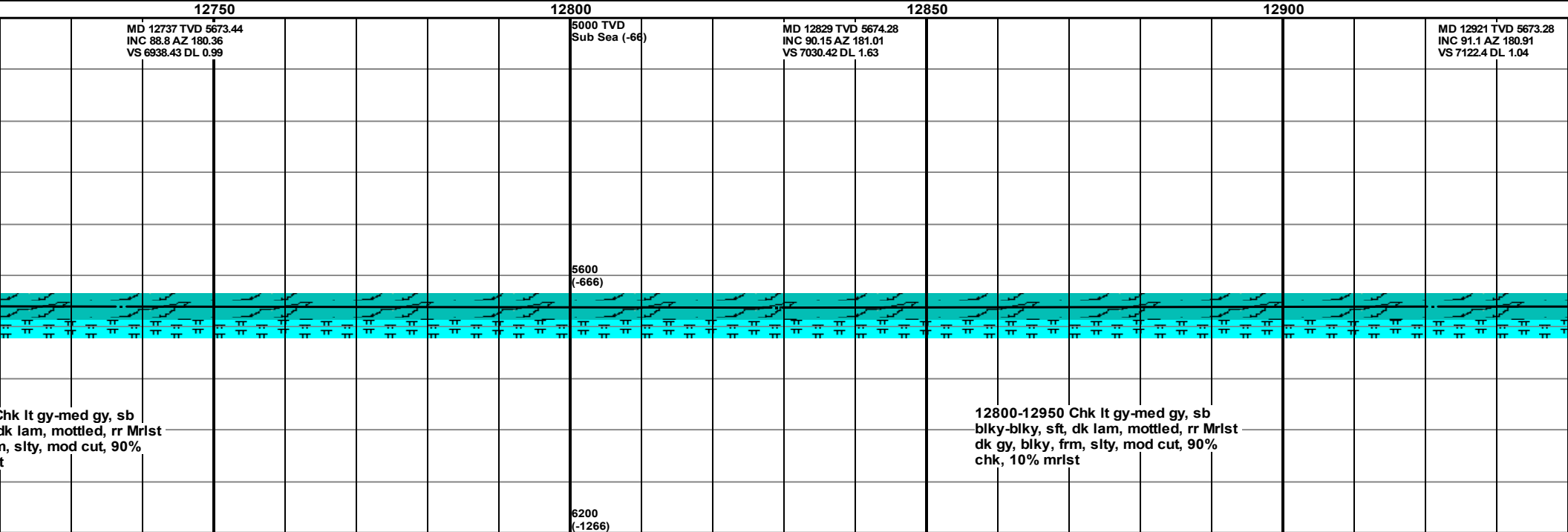
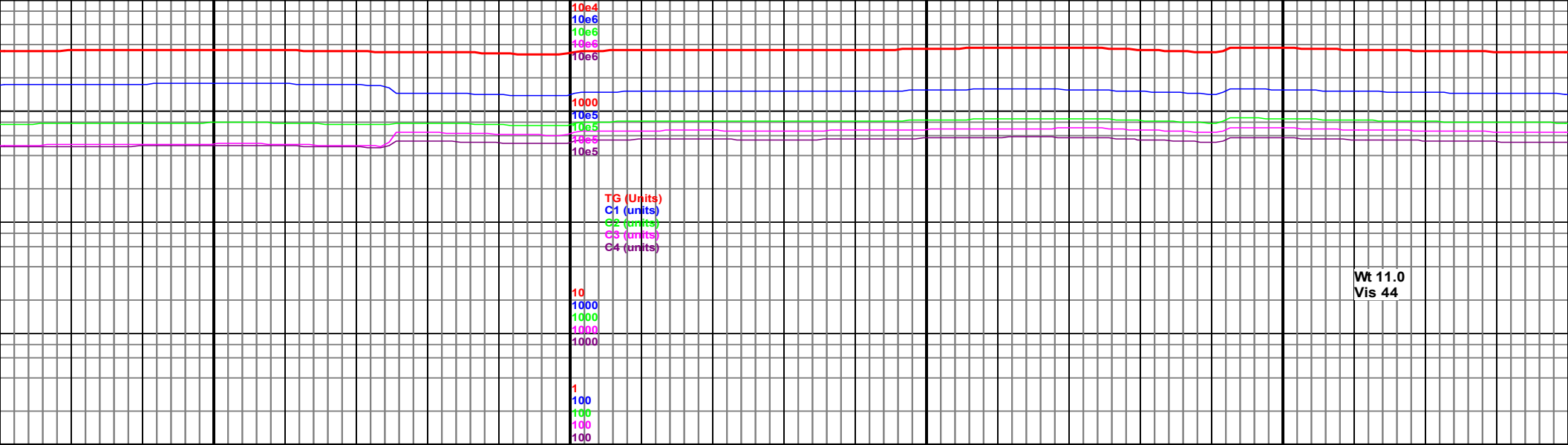
12050-12200 Chk lt-med gy, sb blkly-sb
pty, sft, dk lam, rr Mrlst dk gy, sb blkly,
frm, slty, mod cut, 90% chk, 10% mrlst

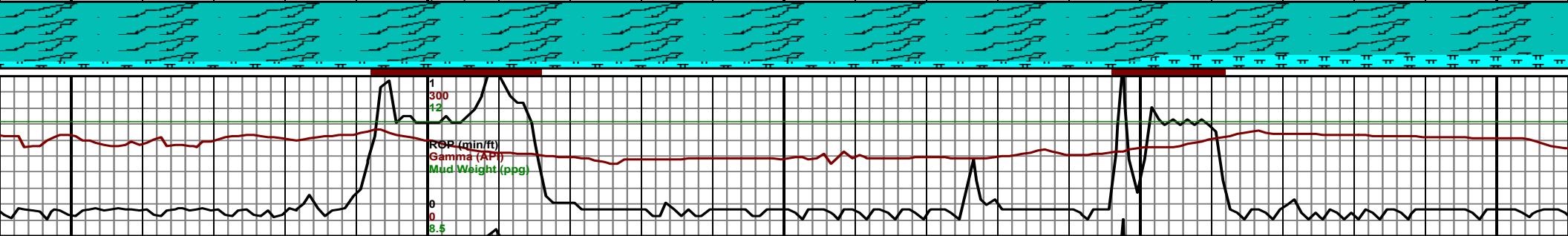
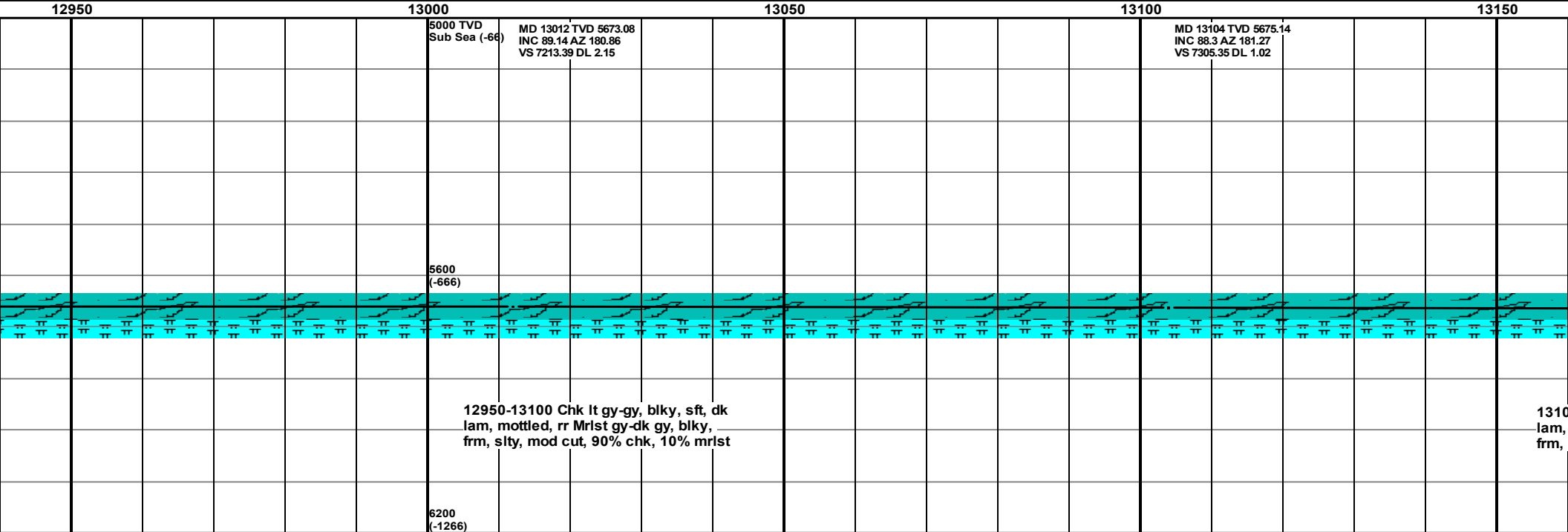
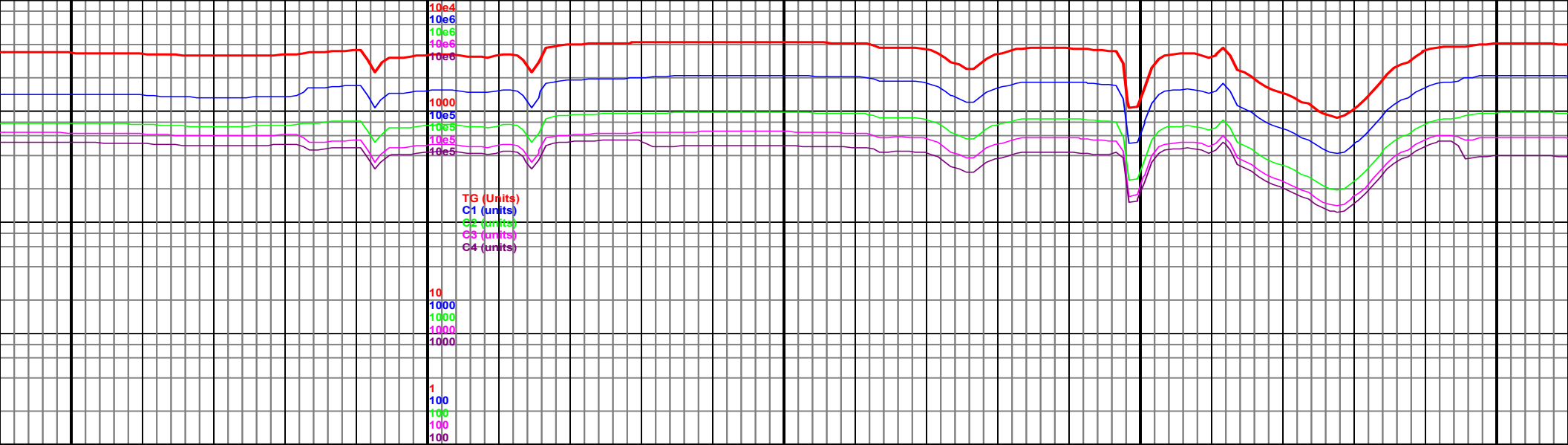
12200-12350 Chk lt gy-gy
sft, dk lam, mottled, rr Mrl
blkly, frm, slty, mod cut, 9
mrlst

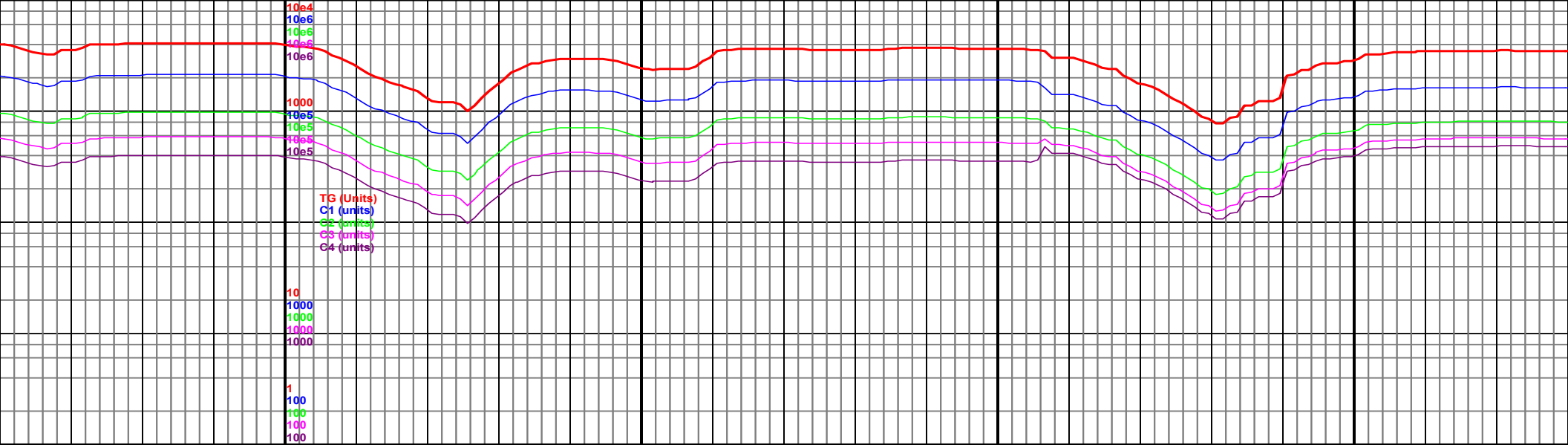












13200
MD 13196 TVD 5677.61
INC 88.62 AZ 180.8
VS 7397.3 DL 0.62

13250

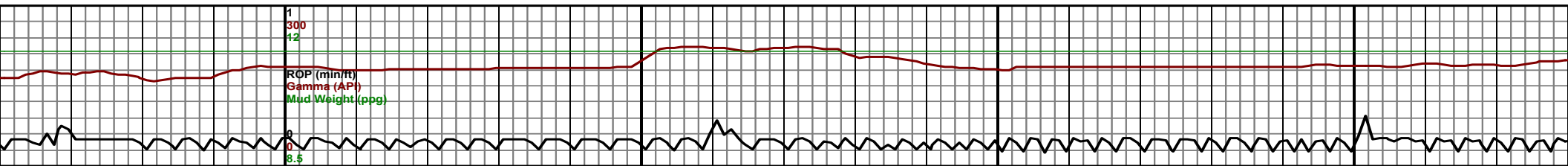
13300
MD 13288 TVD 5679.42
INC 89.13 AZ 180.49
VS 7489.27 DL 0.65

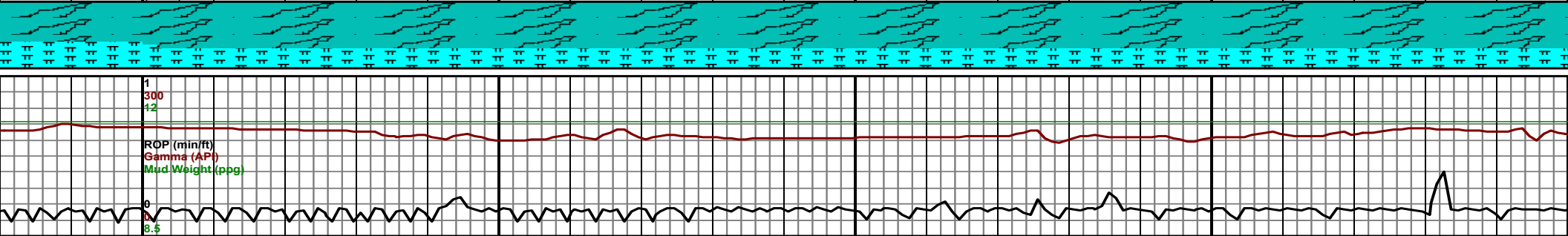
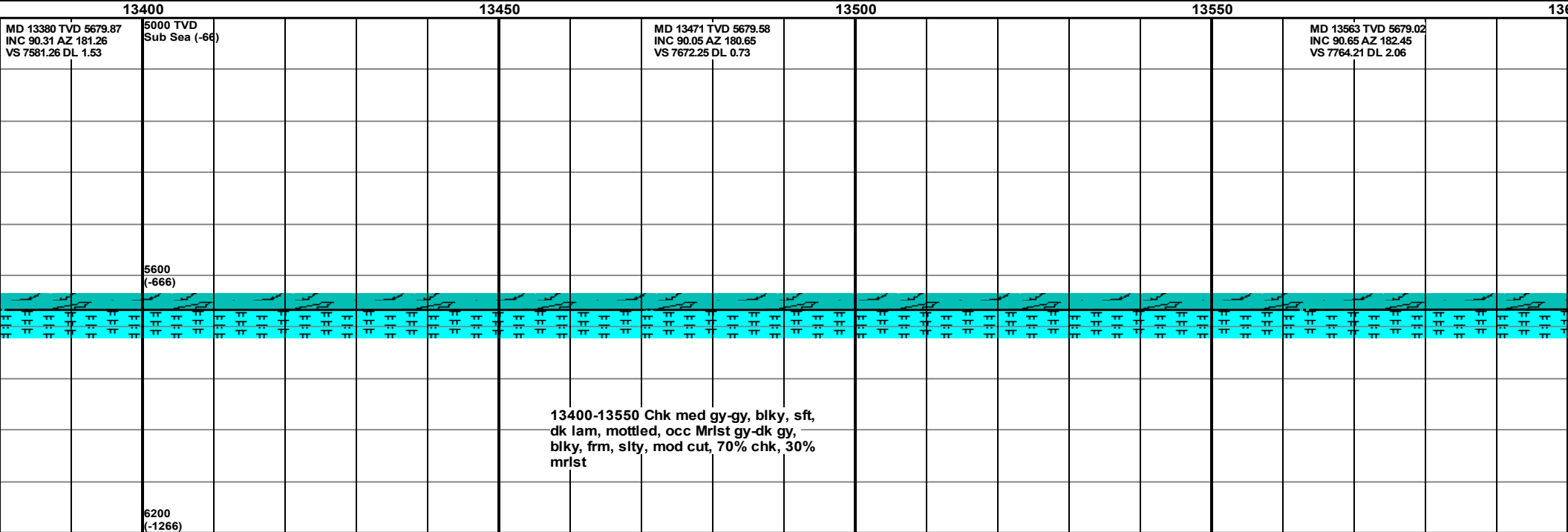
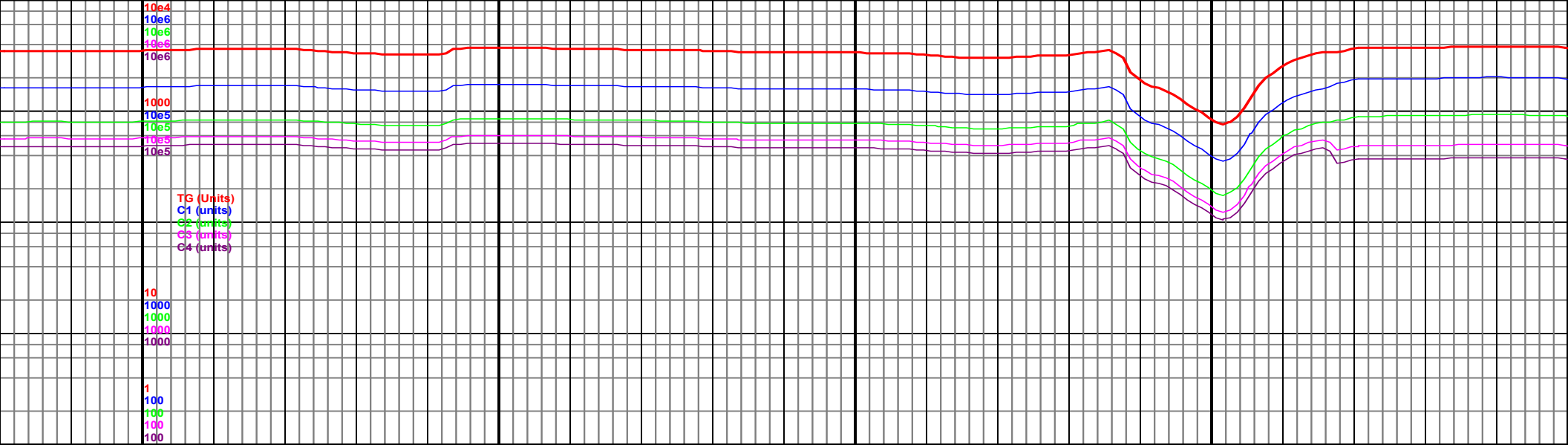
13350

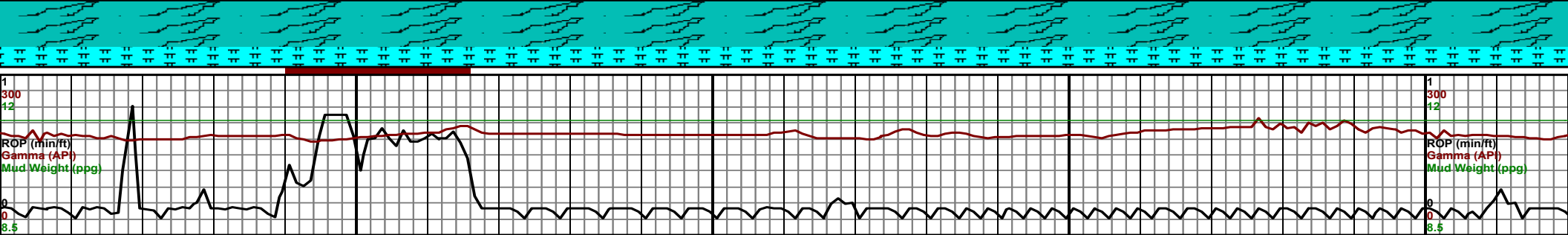
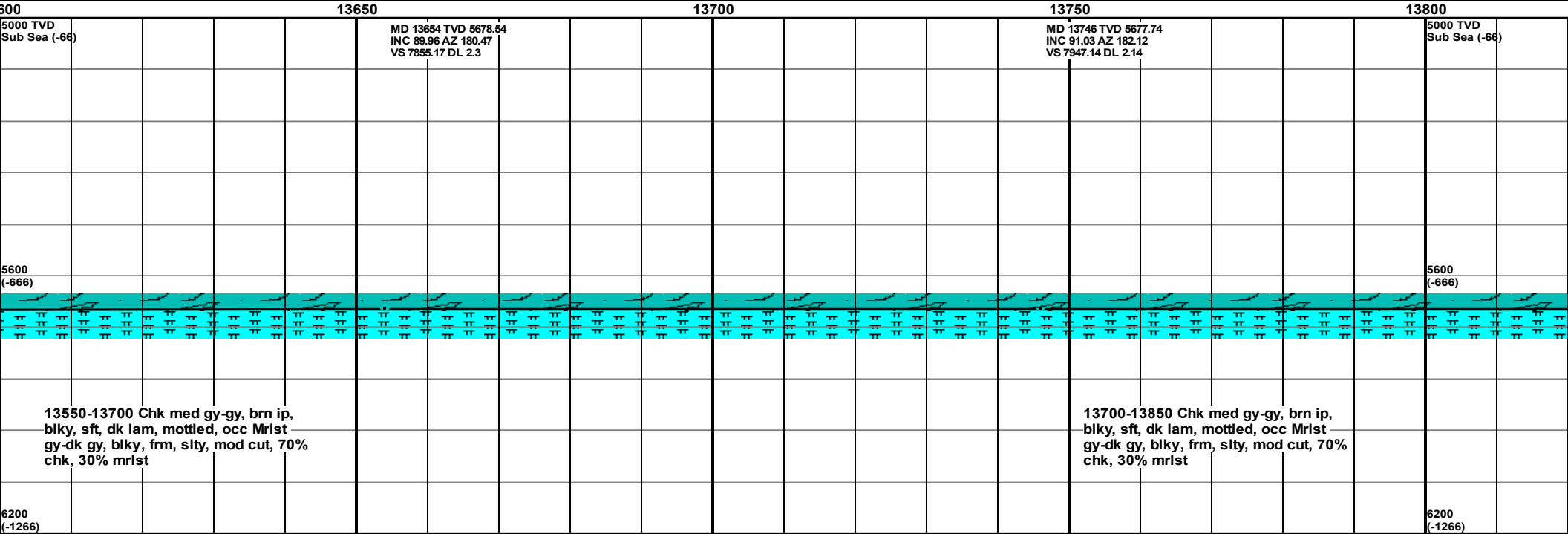
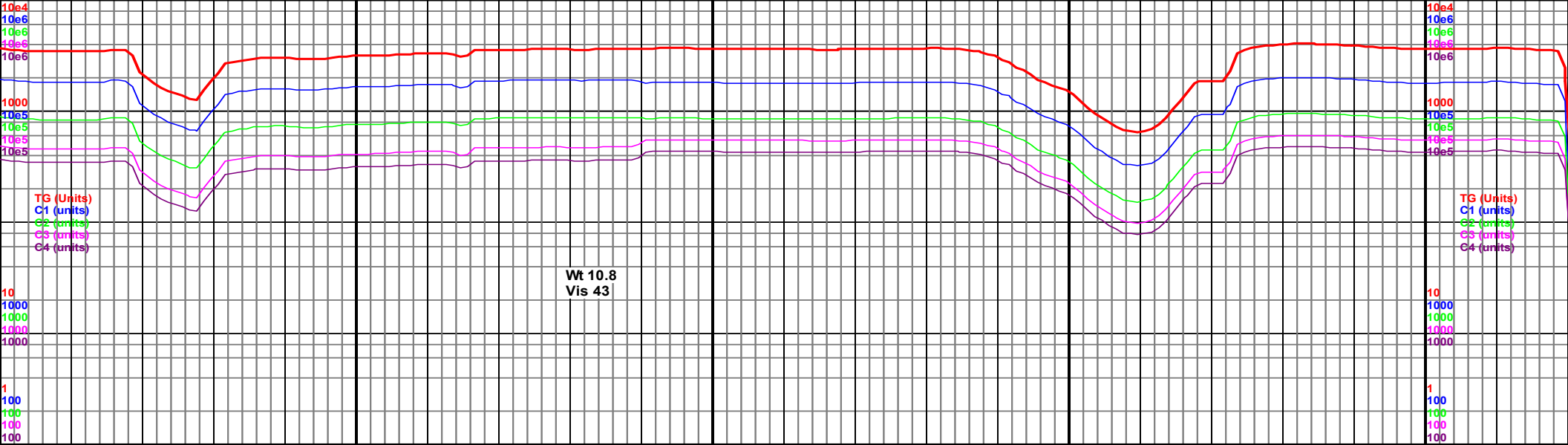
0-13250 Chk lt gy-gy, blk, sft, dk
mottled, rr Mrlst gy-dk gy, blk,
sity, mod cut, 80% chk, 20% mrlst

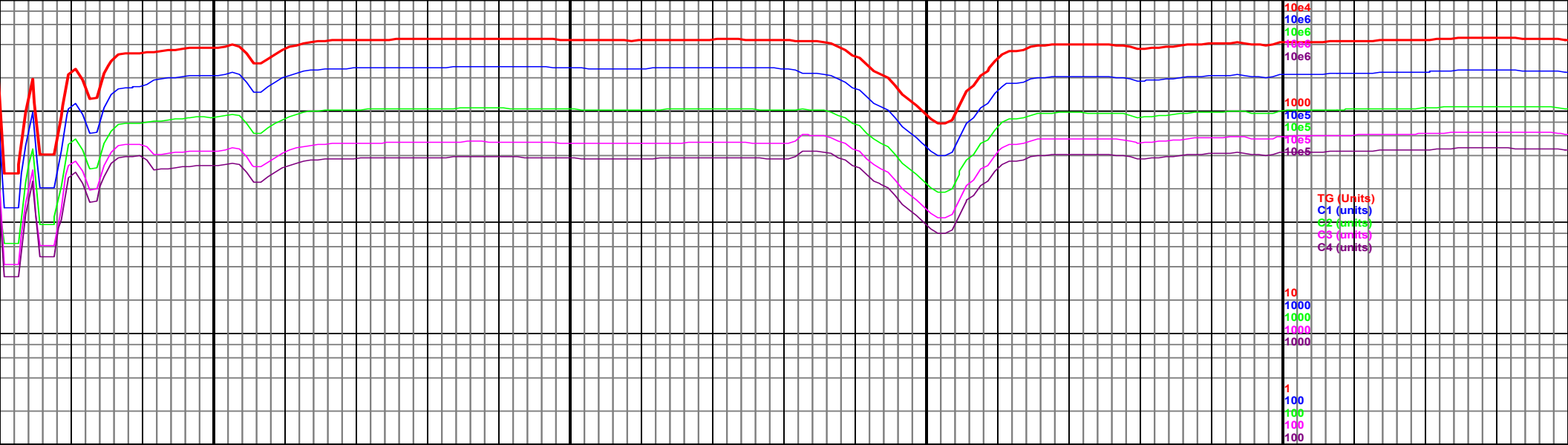
13250-13400 Chk med gy-gy, blk, sft,
dk lam, mottled, occ Mrlst gy-dk gy,
blk, frm, sity, mod cut, 60% chk, 40%
mrlst

6200
(-1266)









13850
MD 13838 TVD 5677.8
INC 88.9 AZ 179.99
VS 8039.11 DL 3.27

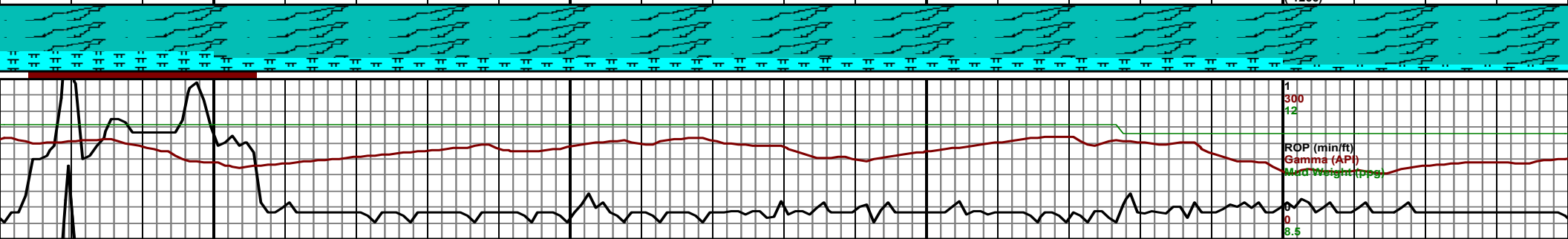
MD 13930 TVD 5679.92
INC 88.45 AZ 178.49
VS 8131.08 DL 1.7

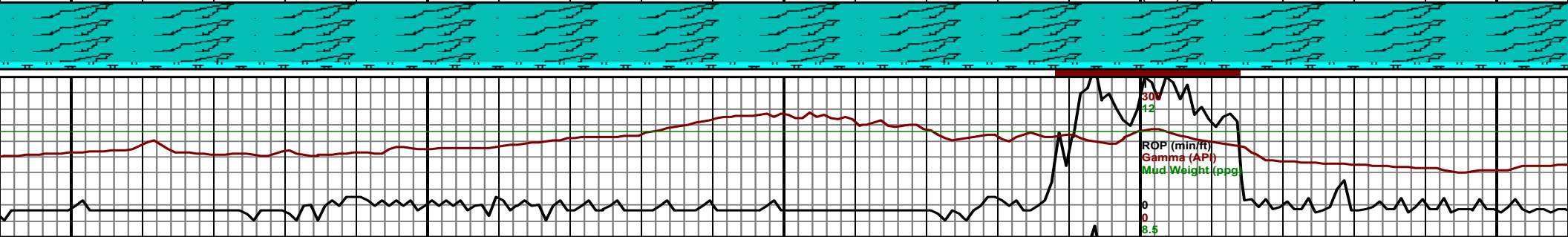
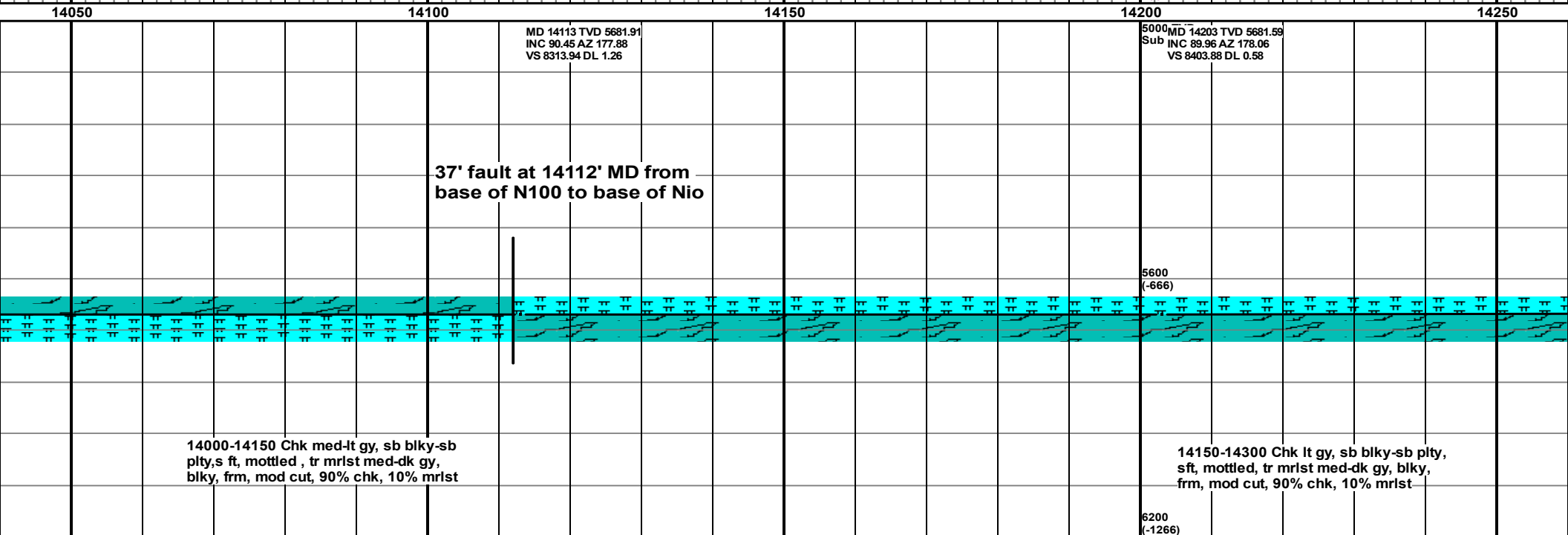
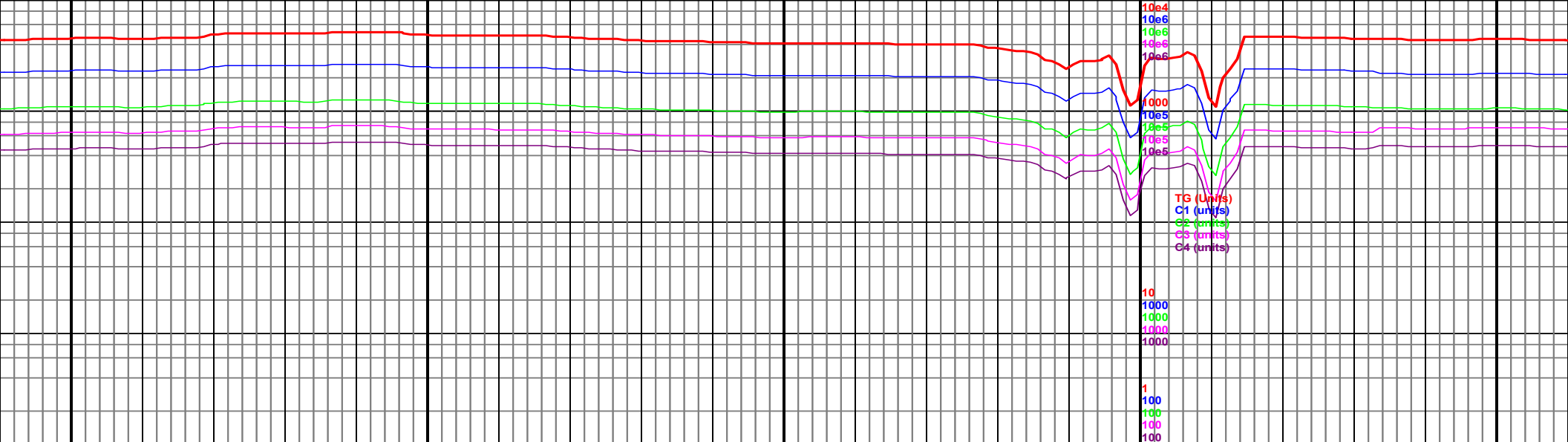
14000
5000 TVD
Sub Sea (-66)
MD 14021 TVD 5681.71
INC 89.3 AZ 177.71
VS 8222.01 DL 1.27

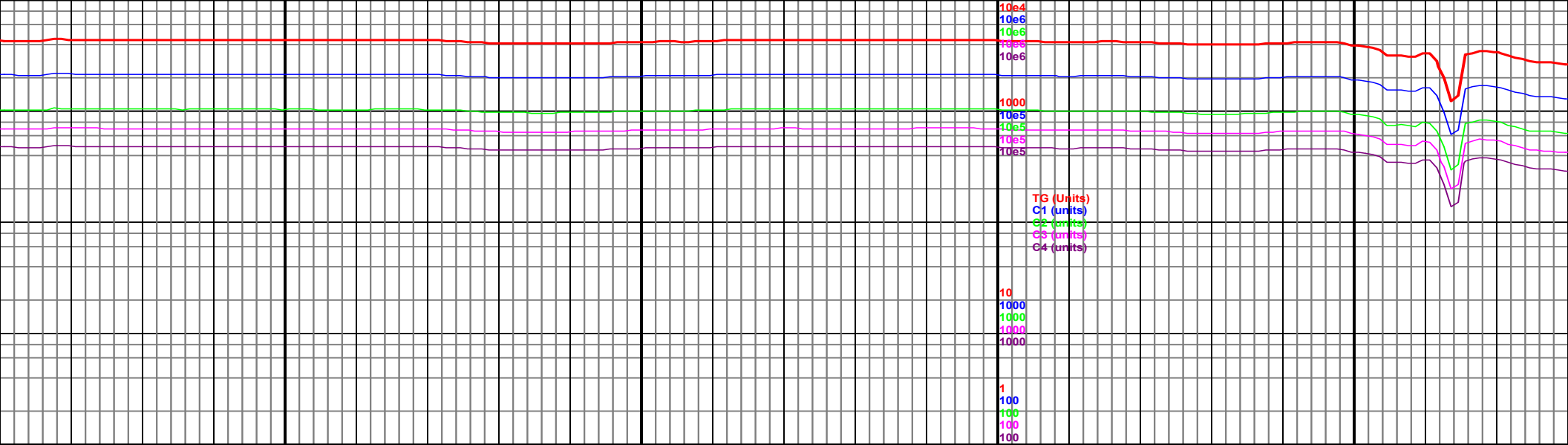
13850-14000 Chk med-lt gy, sb blk, sft, mottled, occ mrlst med-dk gy, blk, frm, mod cut, 80% chk, 20% mrlst

5600
(-666)

6200
(-1266)







14300
MD 14294 TVD 5681.3
INC 90.4 AZ 178.45
VS 8494.84 DL 0.65

14350

14400
MD 14384 TVD 5680.35
INC 90.81 AZ 178
VS 8584.79 DL 0.68
Sub Sea (-66)

14450

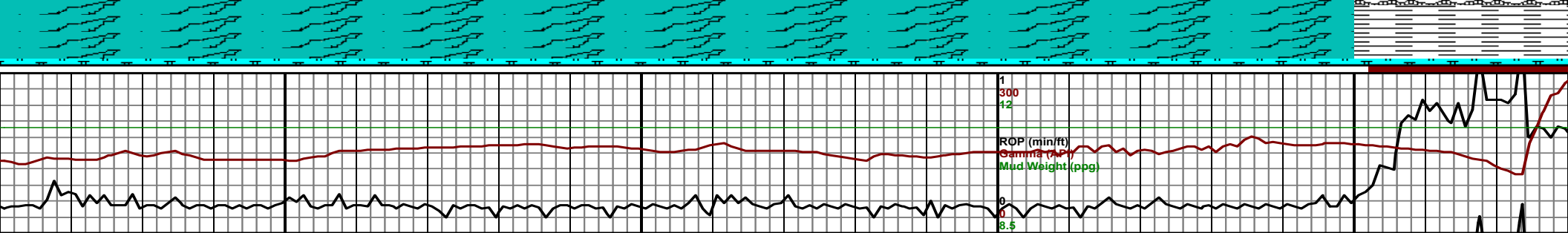
MD
INC
VS 8

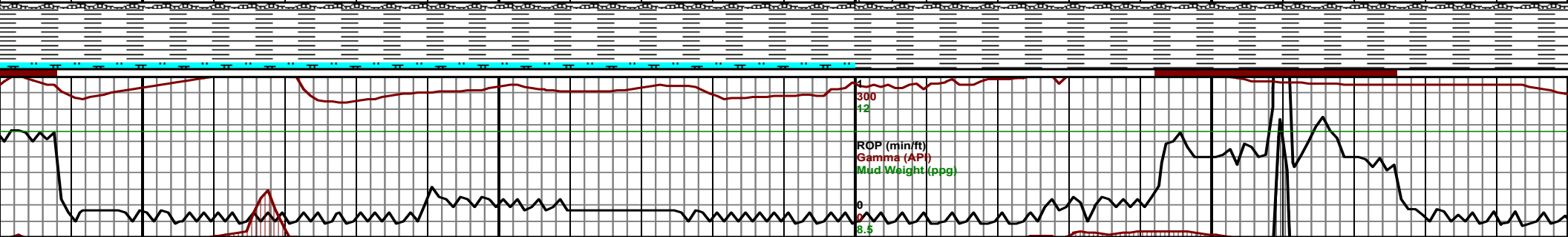
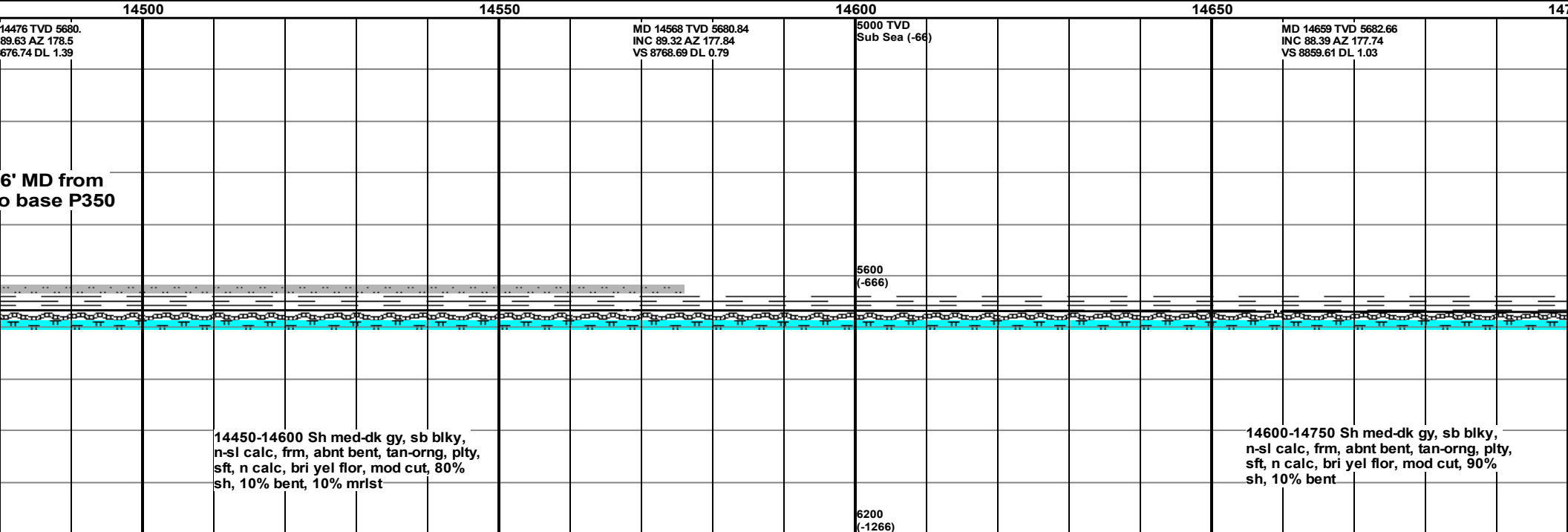
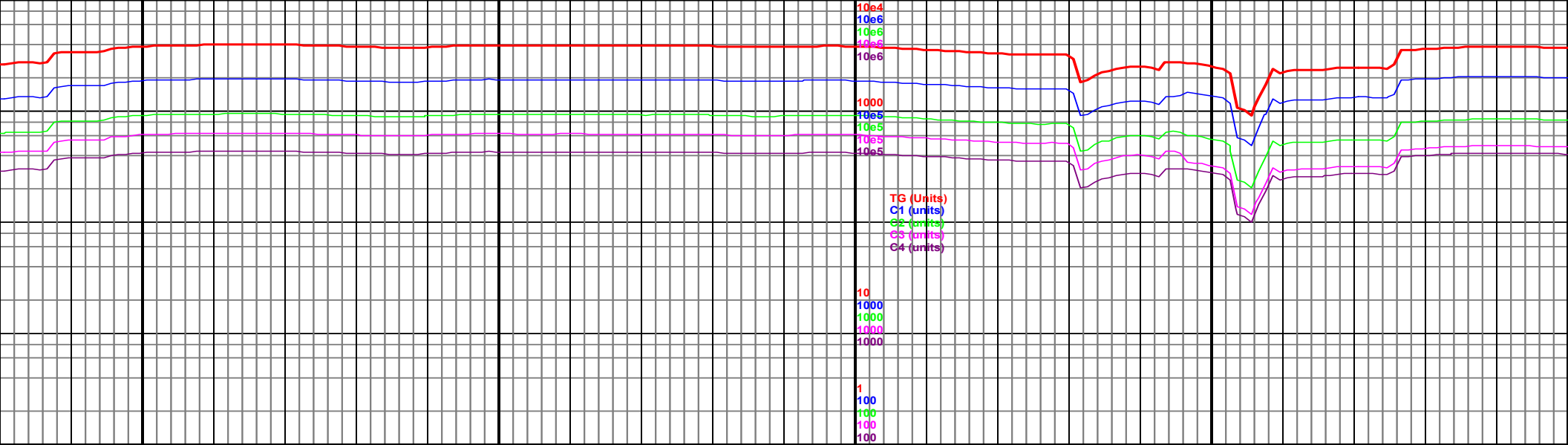
21' fault at 1447
upper of N100 t

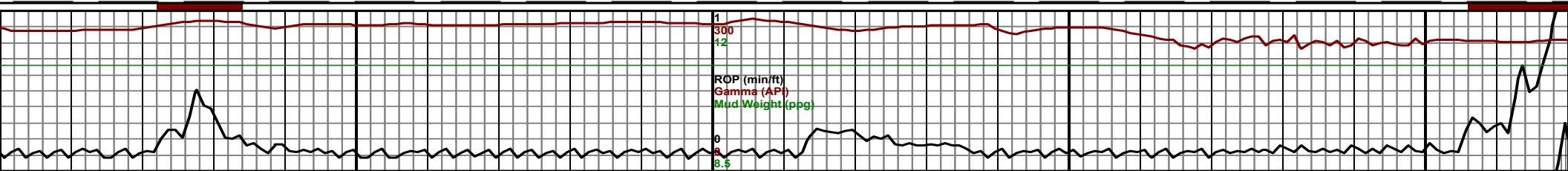
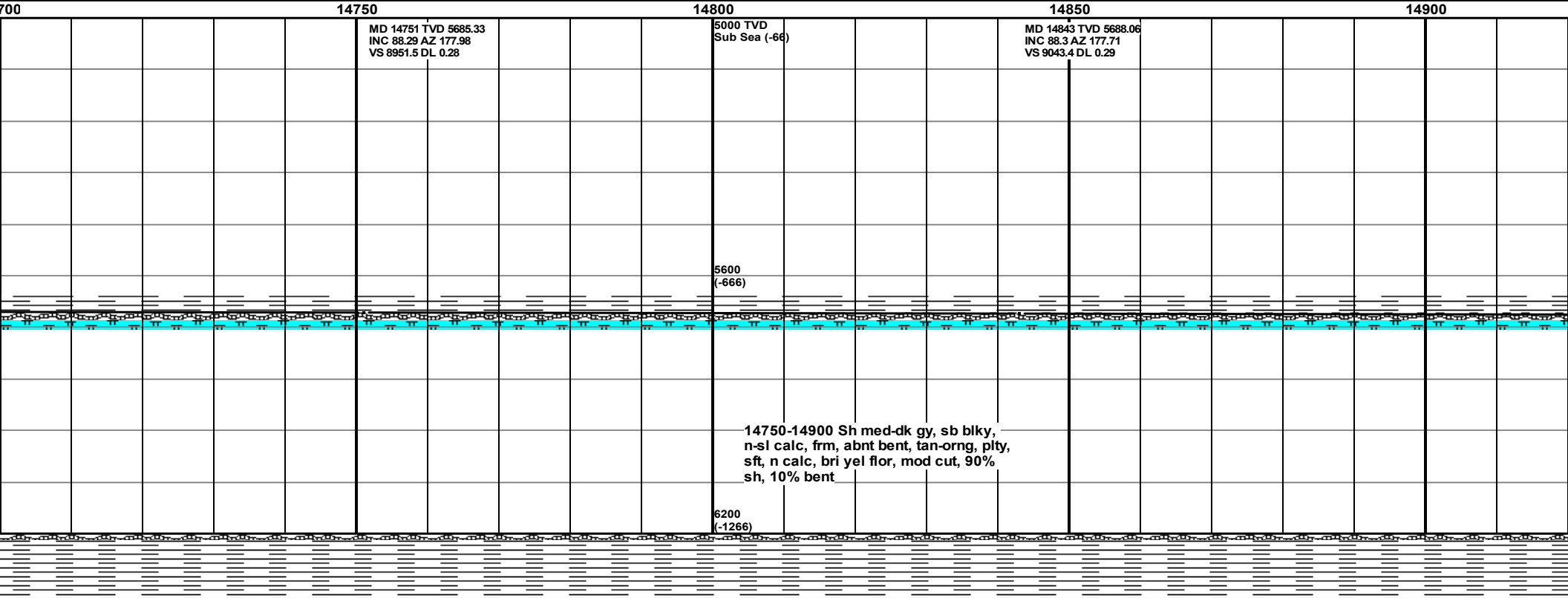
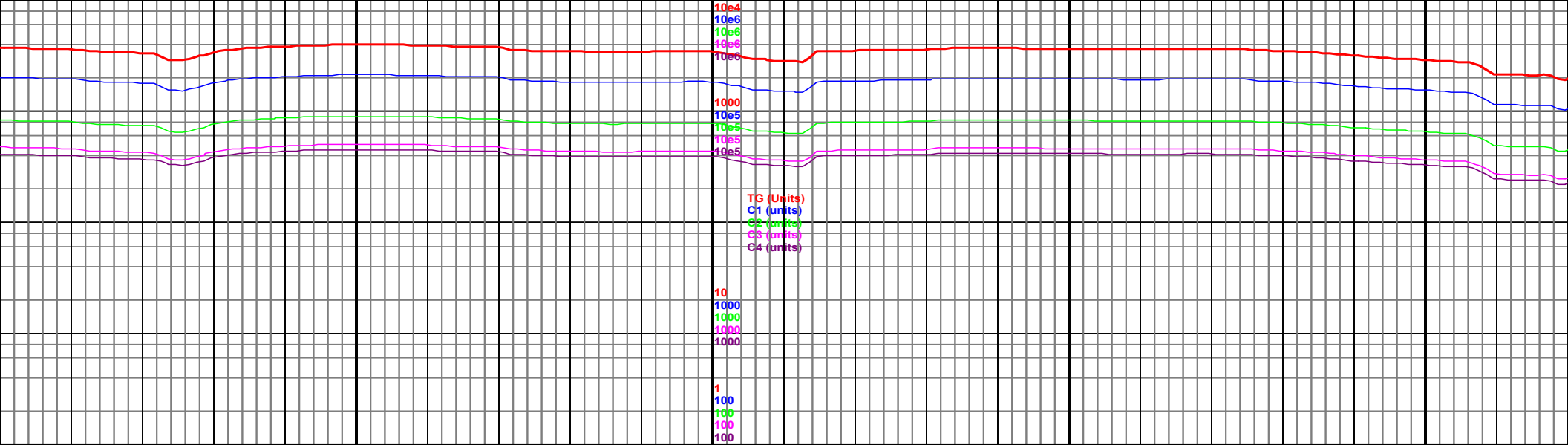
14300-14450 Chk lt gy, sb blk, sft,
mottled ip, tr mlst med-dk gy, sb blk,
frm, mod cut, 90% chk, 10% mlst

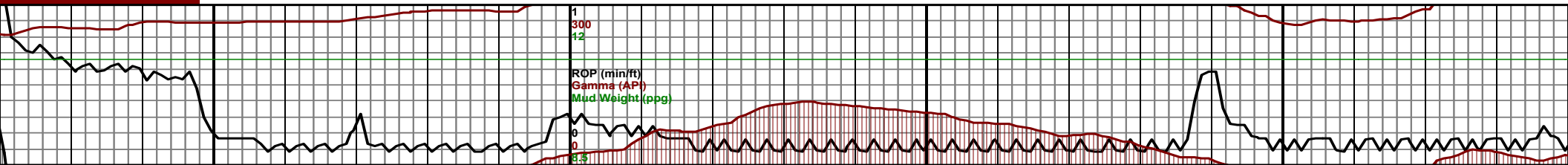
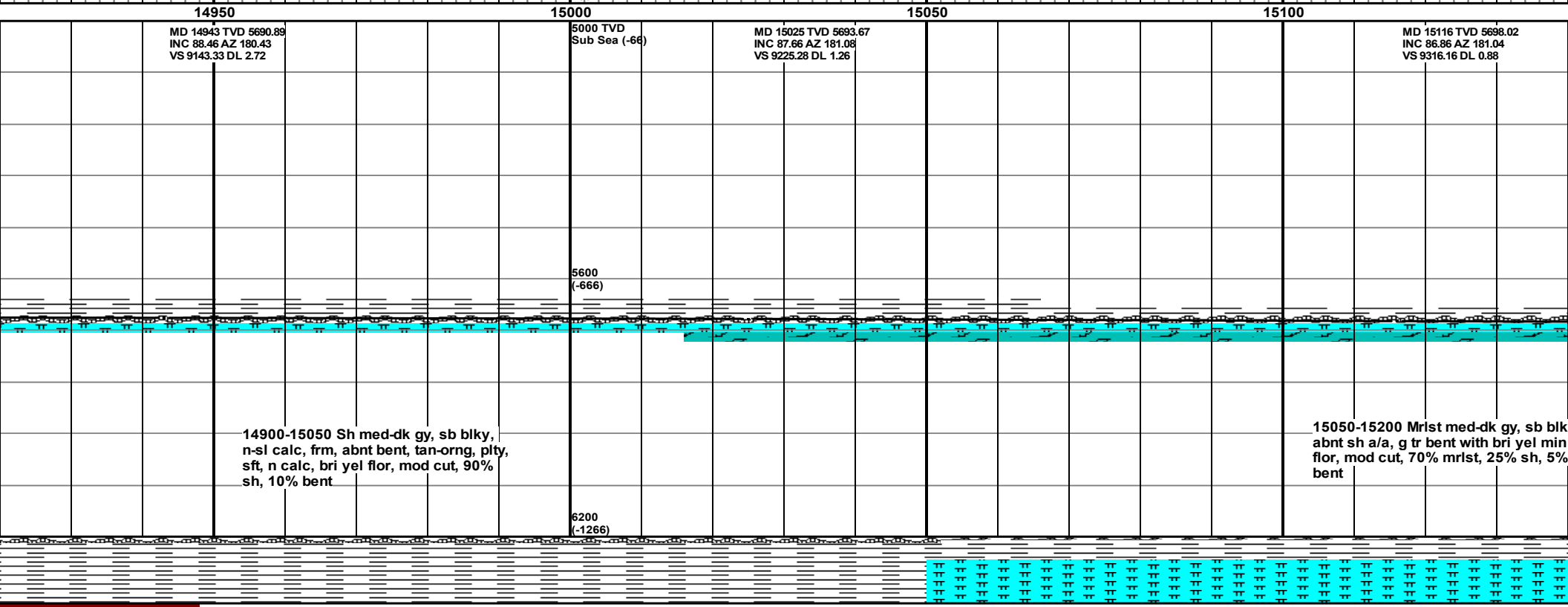
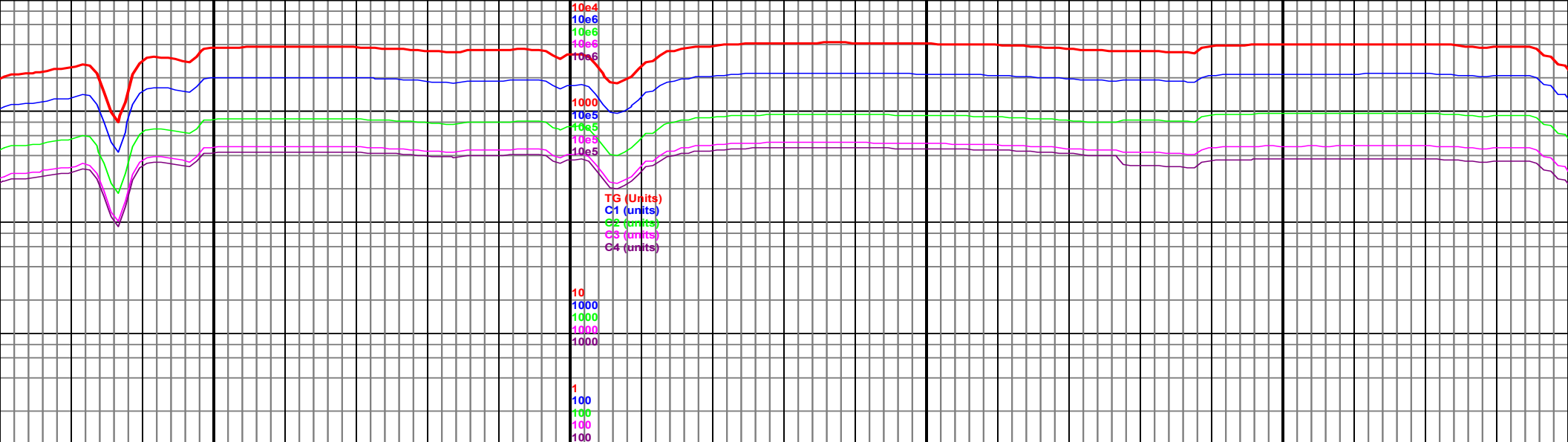
5600
(-666)

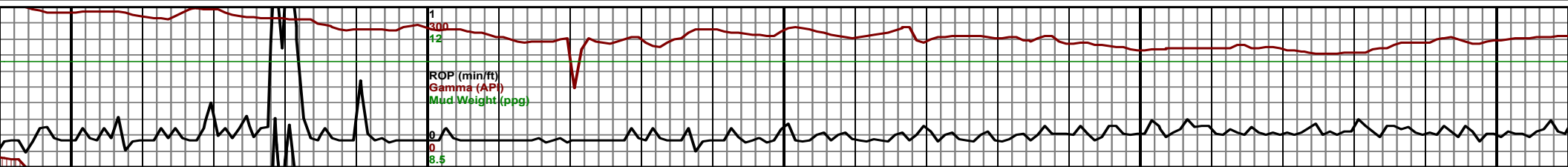
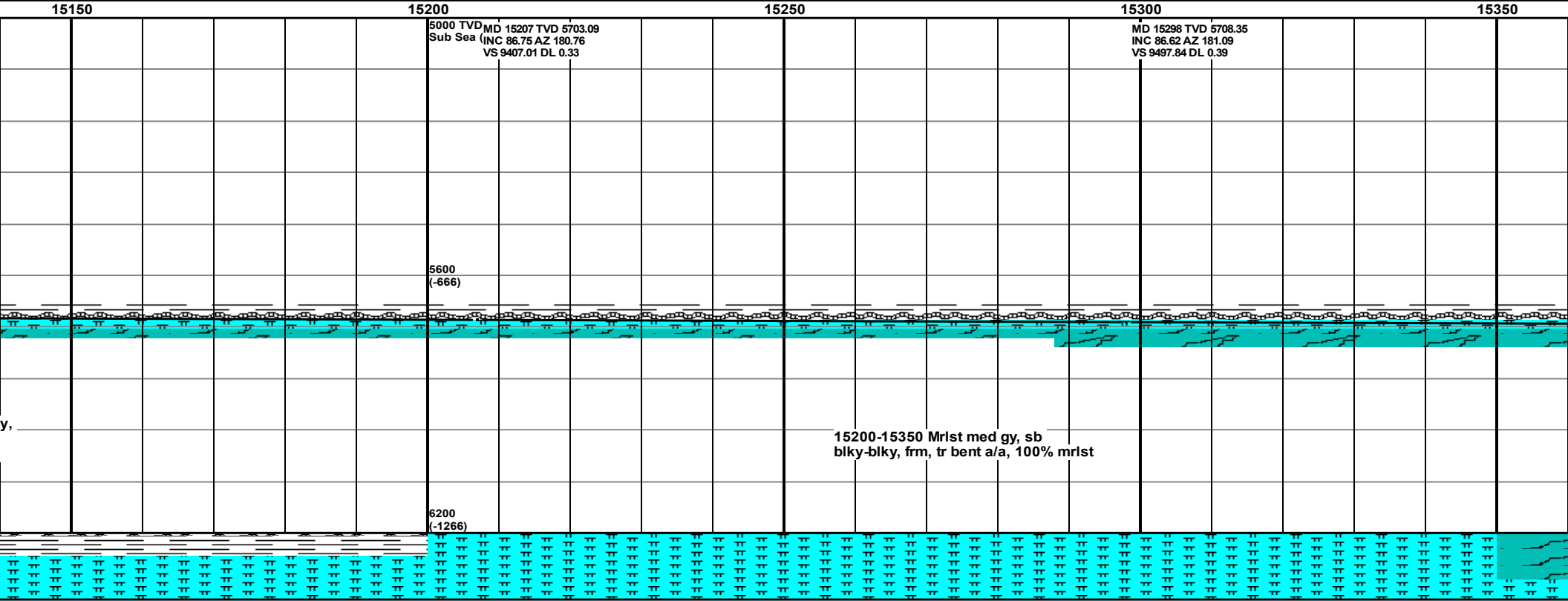
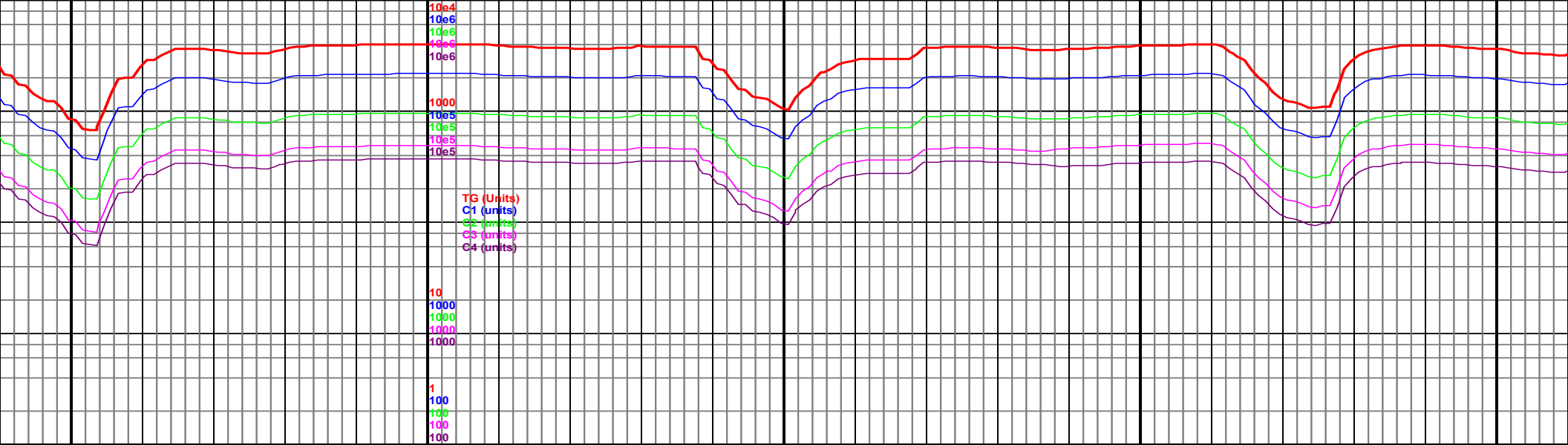
6200
(-1266)

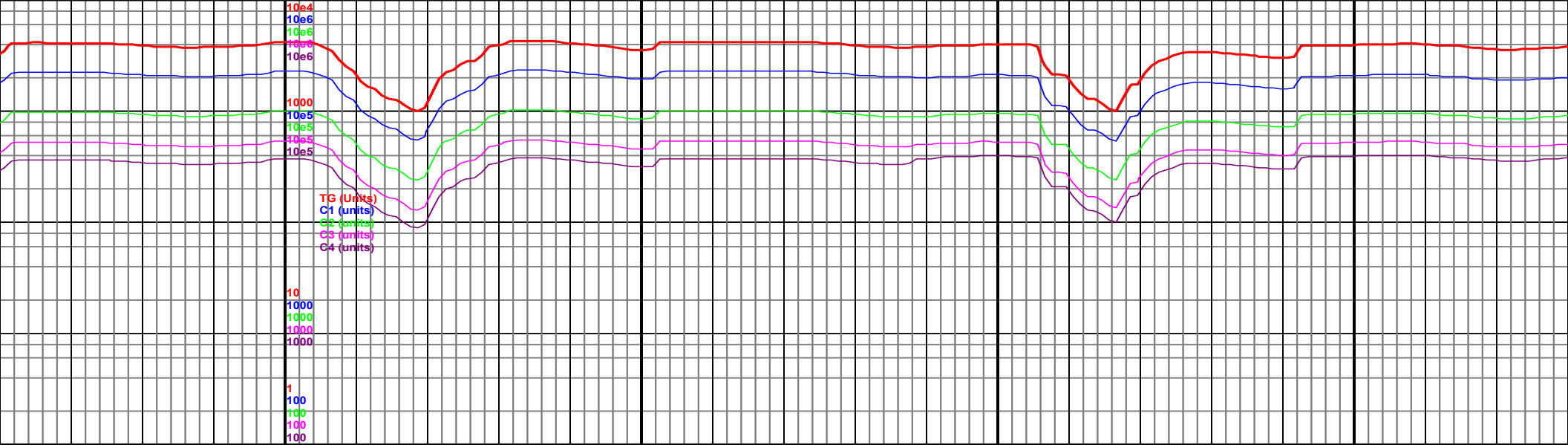












MD 15389 TVD 5713.65
INC 86.7 AZ 180.03 Sea (-66)
VS 9588.68 DL 1.17

MD 15480 TVD 5718.88
INC 86.71 AZ 179.9
VS 9679.53 DL 0.14

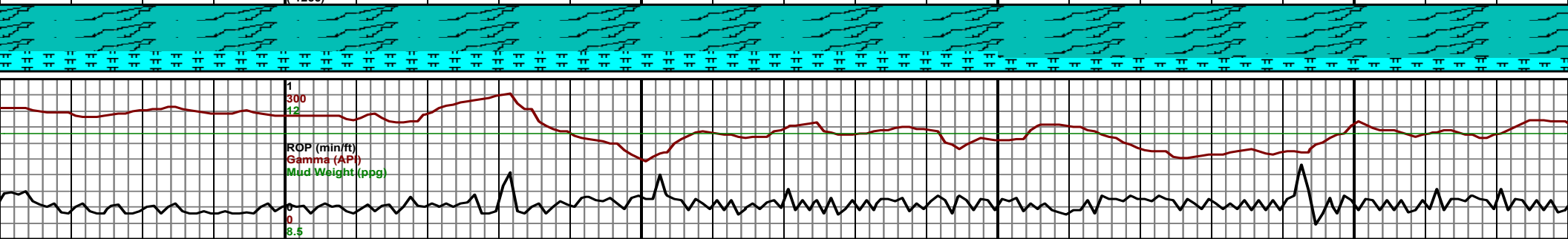
MD 15570 TVD 5724.00
INC 86.53 AZ 179.9
VS 9769.37 DL 0.14

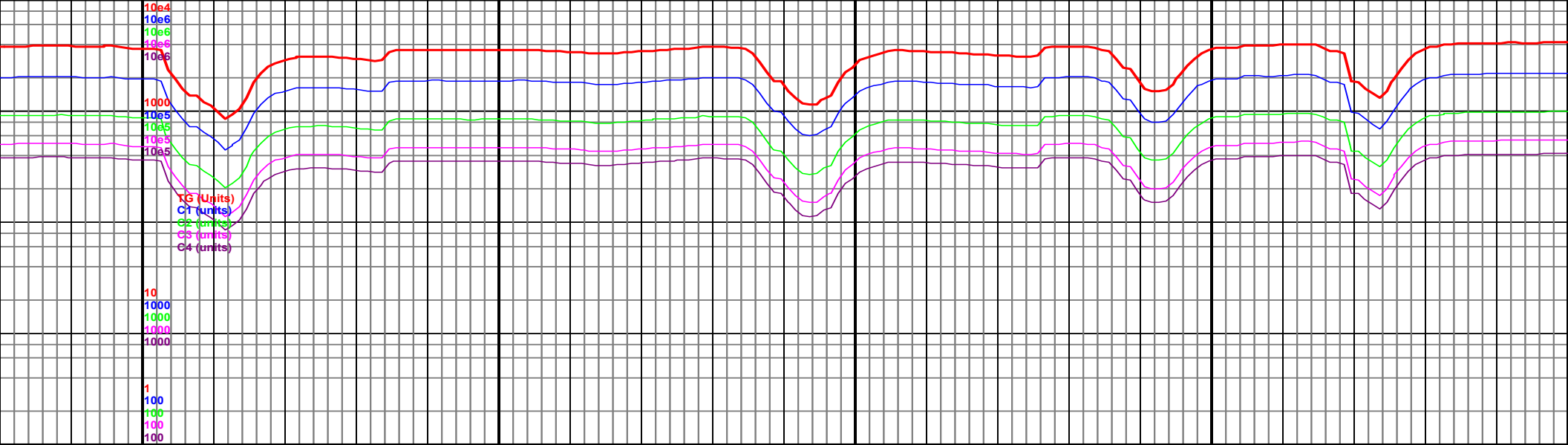
5600
(-666)

15350-15500 Chk lt gy, mottled, sb
blky-sb plty, sft, abnt mrlst med gy, sb
blky, mott ip, frm, 70% chk, 30% mrlst

15500-15650 Chk lt gy, m
blky-sb plty, sft, abnt mrlst med gy, sb
blky, mott ip, frm, 80% chk, 20% mrlst

6200
(-1266)





D 5724.19 I 179.19 L 0.81	5000 TVD Sub Sea (-66)	MD 15663 TVD 5729.22 INC 87.27 AZ 178.14 VS 9862.21 DL 1.38	MD 15755 TVD 5733. INC 88.02 AZ 177.92 VS 9954.08 DL 0.85	
mottled, sb st med gy, sb k, 20% mrlst	6200 (-1266)	15650-15800 Chk med-lt gy, mottled, sb blky-sb plty, sft, occ mrlst med-dk gy, blky-sb blky, frm, 90% chk, 10% mrlst		

