



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

Well Name: Razor 11E-1401A
Location: SWNW 11-T10N-R58W
License Number: 05-123-38529
Spud Date: 1/17/2014
Surface Coordinates: Lat.: 40.853983 Long.: -103.839508
Bottom Hole Coordinates: Lat.: 40.831772 Long.: -103.841642
Ground Elevation (ft): 5002 **K.B. Elevation (ft):** 5019
Logged Interval (ft): To: **Total Depth (ft):**
Formation: Pierre, Sharon Springs, Niobrara B
Type of Drilling Fluid: Water Based Mud

Region: Redtail Field
Drilling Completed:

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

Drilling Company

Cade Drilling, LLC
Rig #23

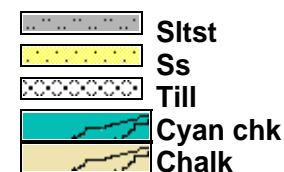
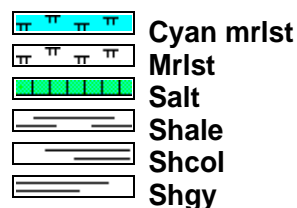
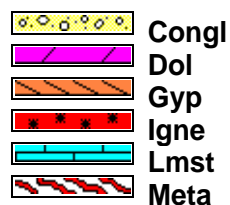
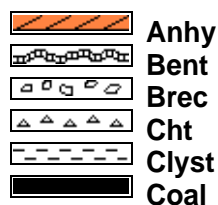
Gas Detection

Mudlogging Systems, Inc., M Logger, Model TGC, Total Gas and Chromatograph, #149

Comments

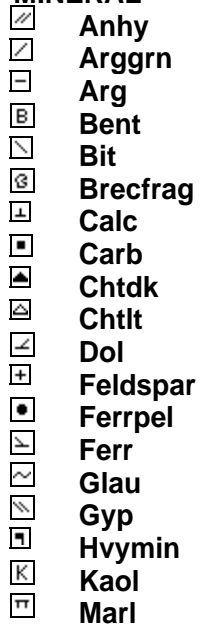
Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.

ROCK TYPES

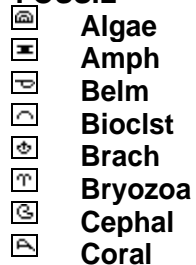


ACCESSORIES

MINERAL



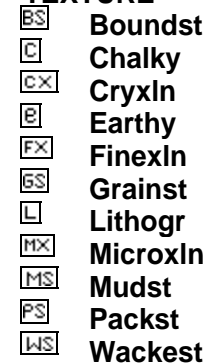
FOSSIL



STRINGER











TEXTURE



OTHER SYMBOLS




POROSITY

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

SORTING





-  Well
-  Moderate
-  Poor

ROUNDING



-  Rounded
-  Subrnd
-  Subang

-  Angular

OIL SHOW

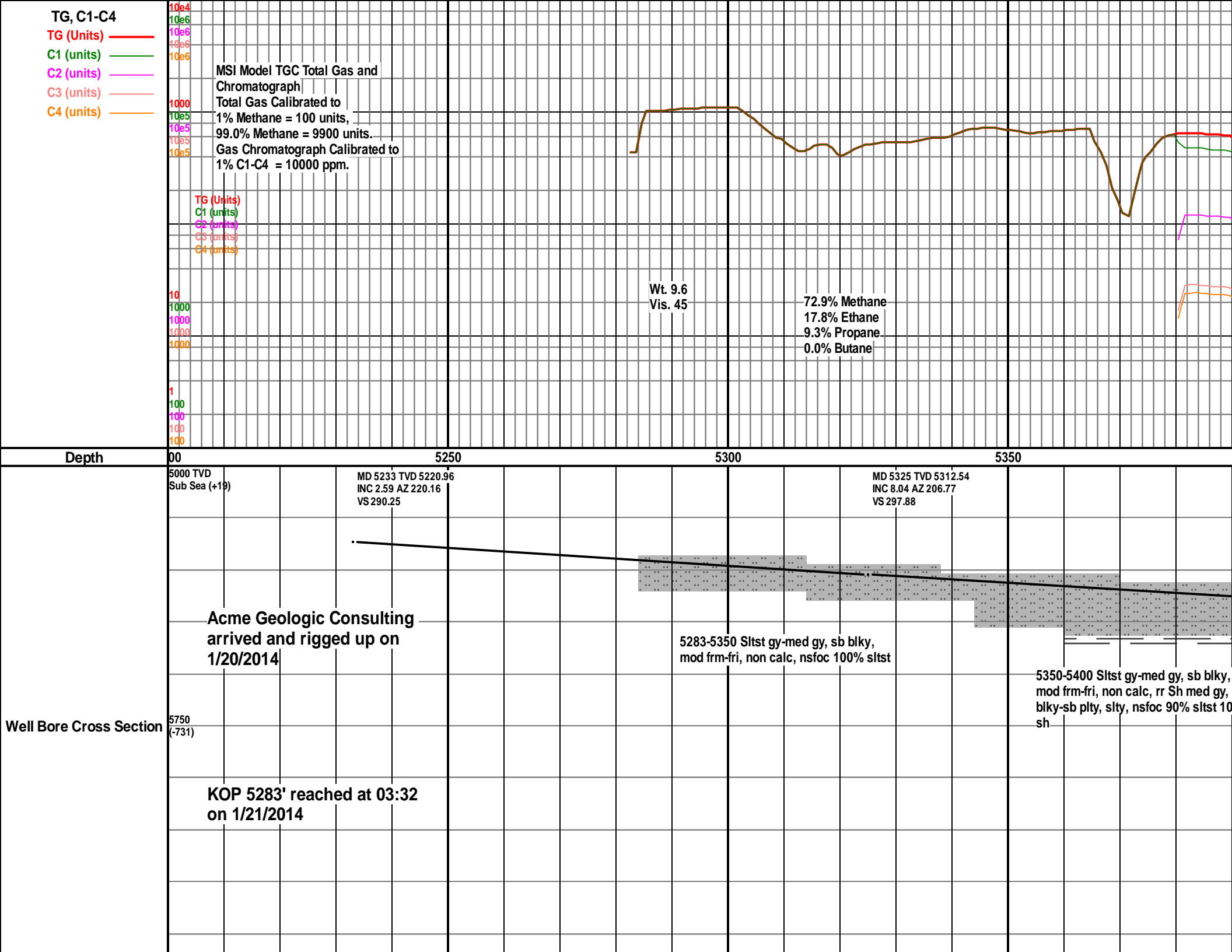
-  Even
-  Spotted
-  Ques
-  Dead

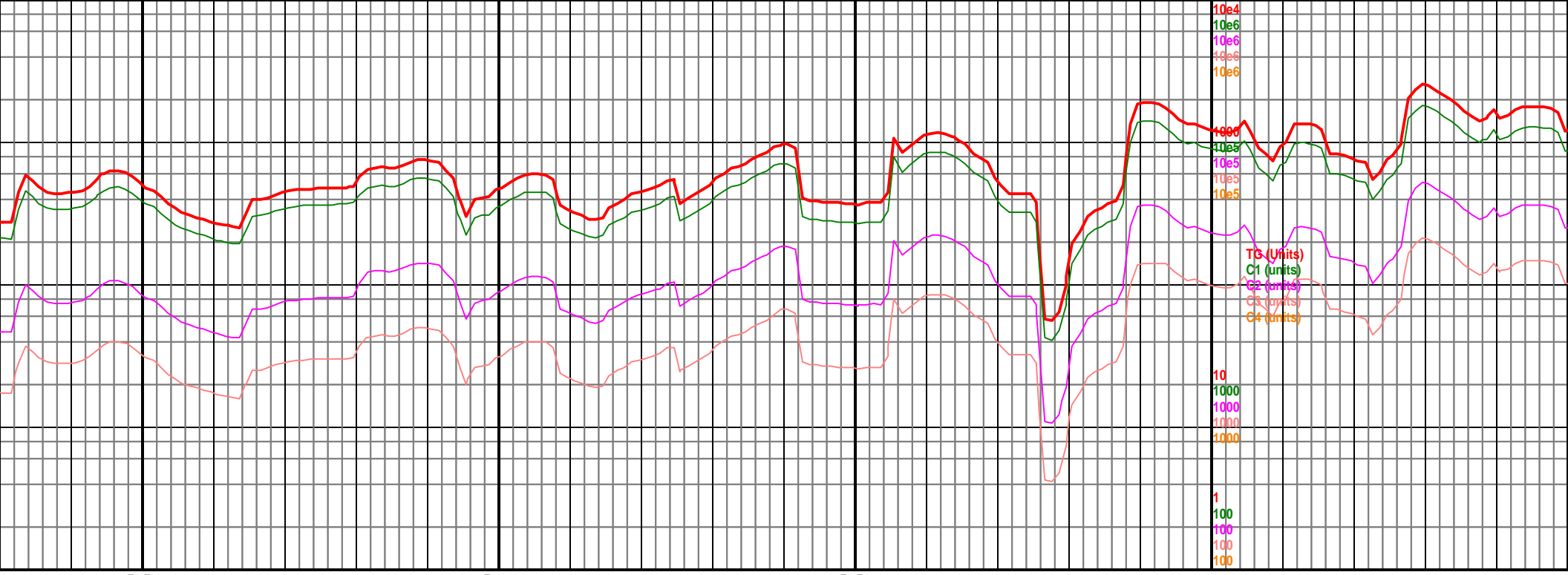
INTERVAL

-  Core
-  Dst

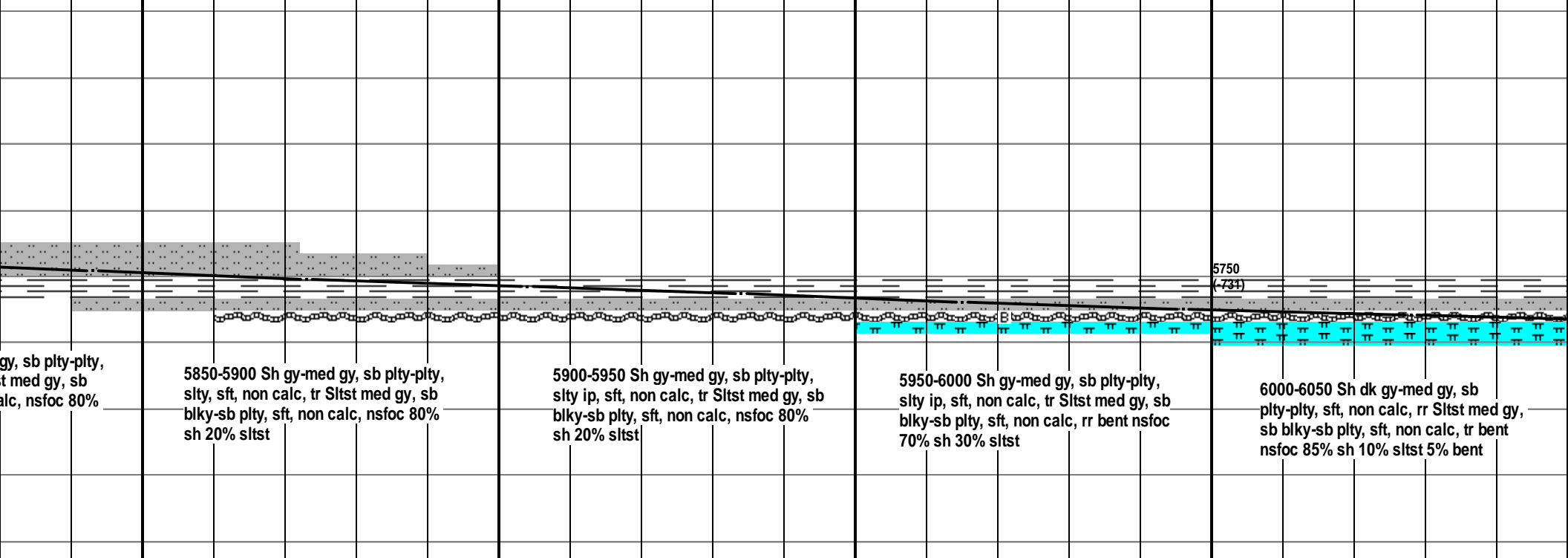
EVENT

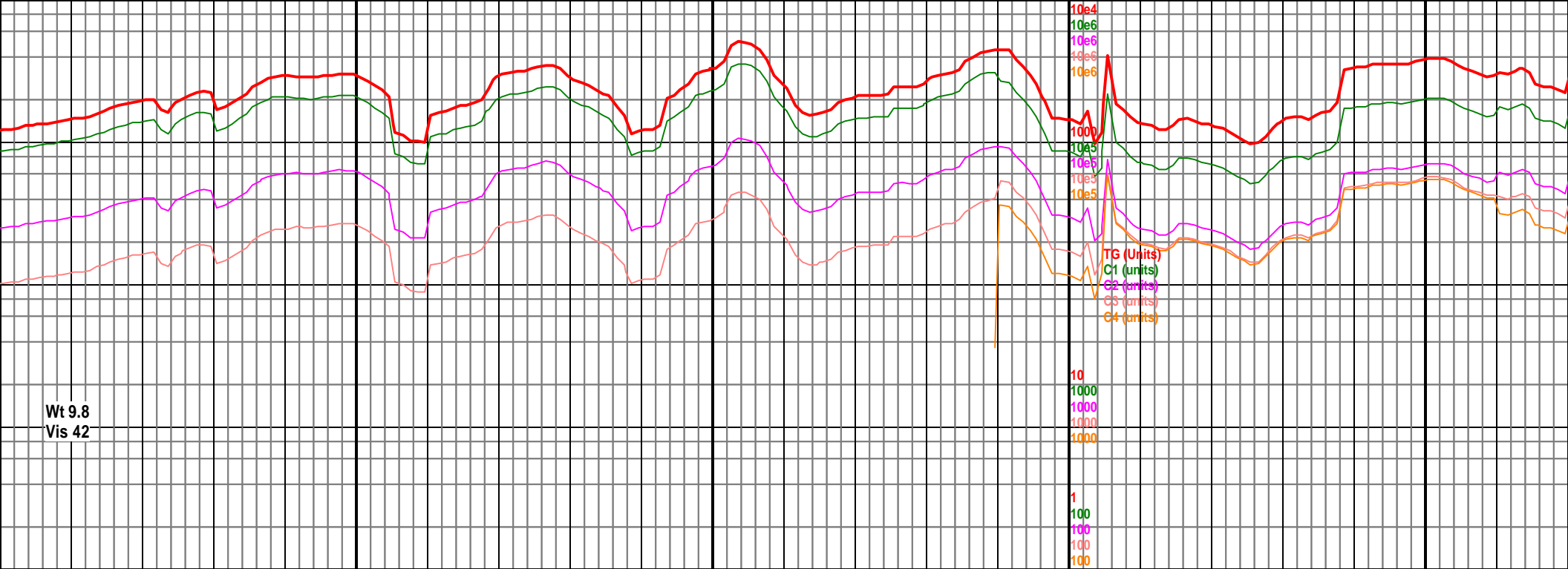
-  Rft
-  Sidewall





4	MD 5843 TVD 5737.41 INC 52.18 AZ 198.31 VS 536.35	MD 5873 TVD 5755.31 INC 54.51 AZ 197.28 VS 559.74	MD 5904 TVD 5773.25 INC 54.81 AZ 197.84 VS 584.34	MD 5934 TVD 5790.3 INC 55.91 AZ 197.95 VS 608.32	MD 5965 TVD 5807.16 INC 58.2 AZ 198.43 VS 633.55	MD 5996 TVD 5822.84 INC 61.01 AZ 199.24 VS 659.42	MD 6028 TVD 5837.82 INC 63.16 AZ 202.24 VS 686.51
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Wt 9.8
Vis 42

TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

10
1000
10000
100000
1000000

1
100
1000
10000
100000

50 6100 6150 6200 6250

MD 6060 TVD 5851.62
INC 65.76 AZ 204.5
VS 713.77

MD 6091 TVD 5863.47
INC 69.27 AZ 205.36
VS 740.55

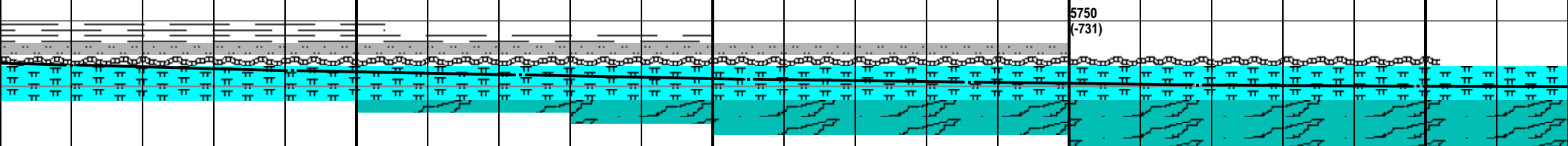
MD 6123 TVD 5873.91
INC 72.66 AZ 205.09
VS 768.78

MD 6155 TVD 5882.64
INC 75.65 AZ 204.59
VS 797.58

MD 6186 TVD 5889.38 TVD
INC 79.25 AZ 204.07 Sea (+19)
VS 825.98

MD 6218 TVD 5894.22
INC 83.34 AZ 203.85
VS 855.73

MD 6249 TVD 5897.33
INC 85.14 AZ 204.18
VS 884.74



5750
(-731)

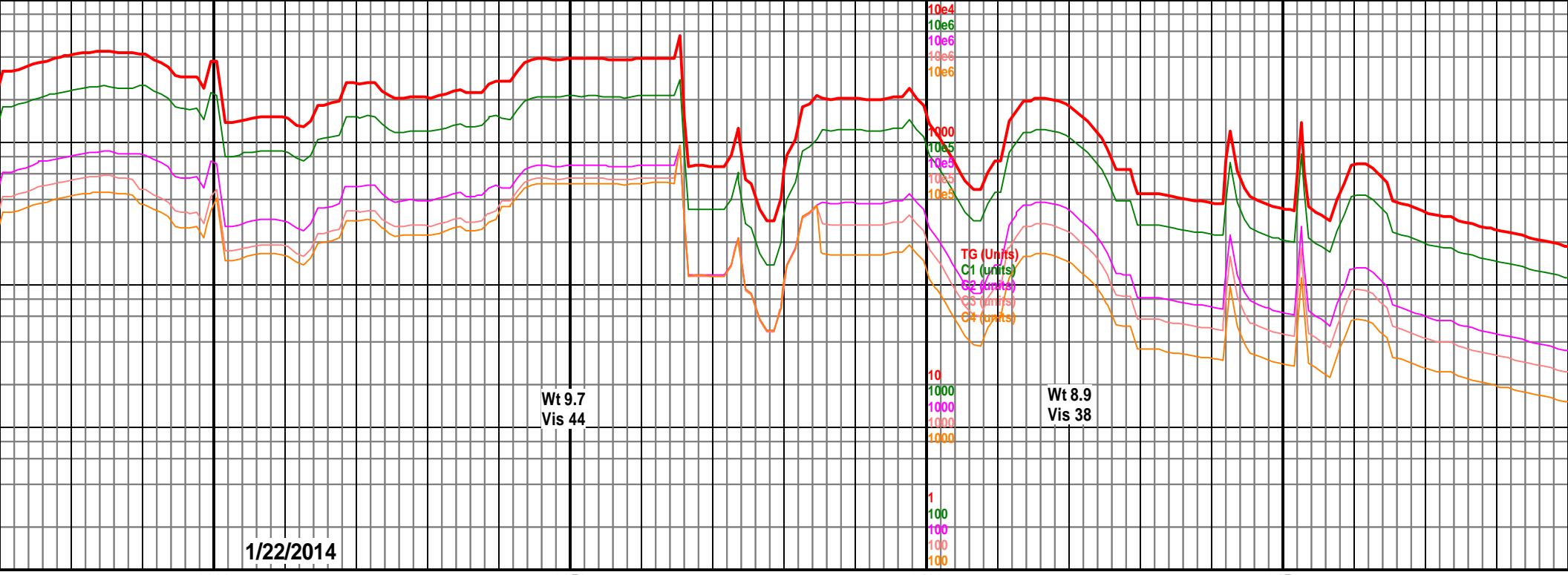
6050-6100 Mrlst dk gy-gy, blkly-plty,
frm, slty, tr Sh gy, sb plty-plty, frm, tr
bent, fst cut 80% mrlst, 20% Sh

6100-6150 Mrlst dk gy-gy, blkly-plty,
frm, slty, tr Sh gy, sb plty-plty, frm, tr
bent, sl cut 80% mrlst, 20% Sh

6150-6200 Mrlst dk gy-gy, blkly-sb plty,
frm, slty, rr Chk gy, lt gy ip, sb plty-plty,
frm, tr bent, tr inocs, fst oil cut, 80%
mrlst, 20% chk

6200-6250 Mrlst dk gy-gy, blkly-sb plty,
frm, slty, occ Chk gy, lt gy ip, sb
plty-plty, frm, rr bent, tr bri yl min flr,
fst oil cut, 70% mrlst, 30% chk

6250-6300 Mrlst dk gy-gy, blkly-sb plty,
frm, slty, occ Chk gy, lt gy ip, sb
plty-plty, frm, rr bent, tr bri yl min flr,
fst oil cut, 70% mrlst, 30% chk



6300

6350

6400

6450

MD 6315 TVD 5901.26
INC 88.04 AZ 203.86
VS 946.71

MD 6392 TVD 5901.53
INC 91.56 AZ 201.37¹⁹⁾
VS 1019.73

MD
INC
VS

Intermediate casing 6365'
at 01:14 on 1/22/2014.
Resumed drilling at 05:10
on 1/23/2014.

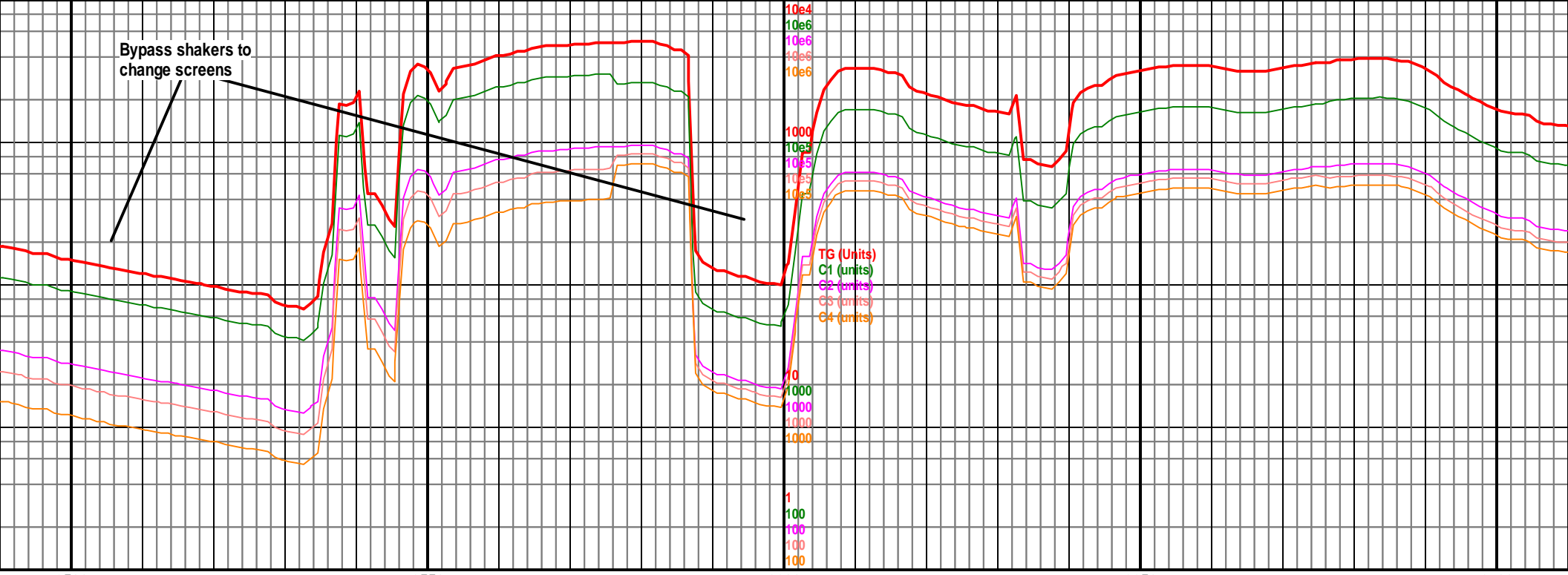
5750
(-731)

ist dk gy-gy, blk-y-sb plty,
Chk gy, lt gy ip, sb
rr bent, tr bri yl min flor,
% mrlst, 30% chk

6300-6350 Mrlst dk gy-gy, blk-y-sb plty,
frm, slty, occ Chk gy, lt gy ip, sb
plty-plty, frm, rr bent, tr bri yl min flor,
fst oil cut, 70% mrlst, 30% chk

6350-6400 Chk lt gy-gy, plty-blky, frm,
mottled ip, tr Mrlst dk gy-gy, blk-y-sb
plty, frm, slty, fst oil cut, 70% chk, 30%
mrlst

6400-6500 Chk lt gy-gy, plty-blky, frm,
mottled, tr Mrlst dk gy-gy, blk-y-sb plty,
frm, slty, fst oil cut, 70% chk, 30%
mrlst



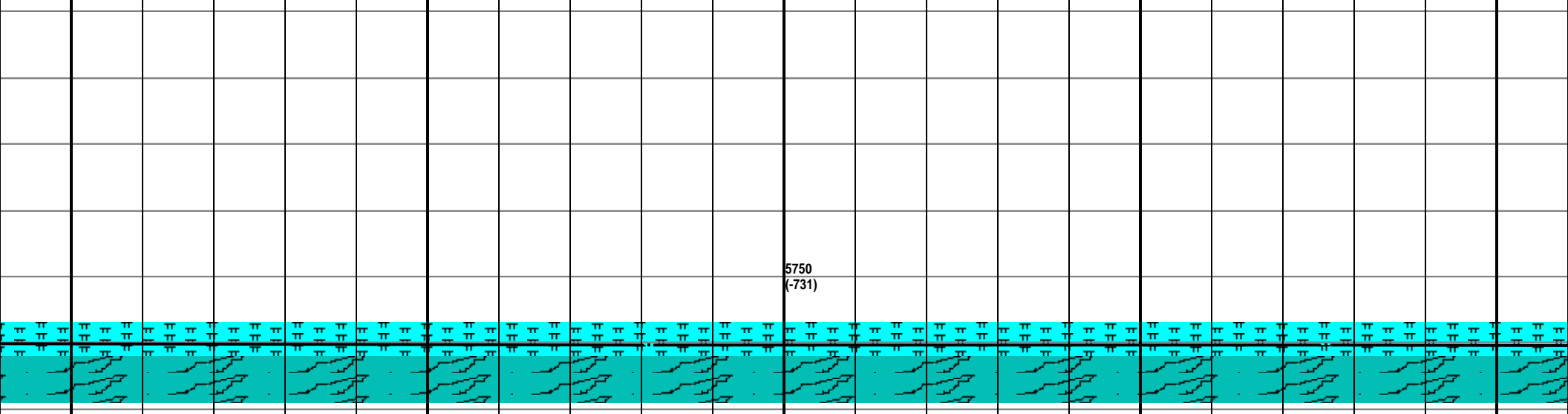
6500 6550 6600 6650 6700

6487 TVD 5901.38
INC 88.62 AZ 199.41
1110.94

MD 6581 TVD 5903.76
INC 88.48 AZ 196.67
VS 1202.16

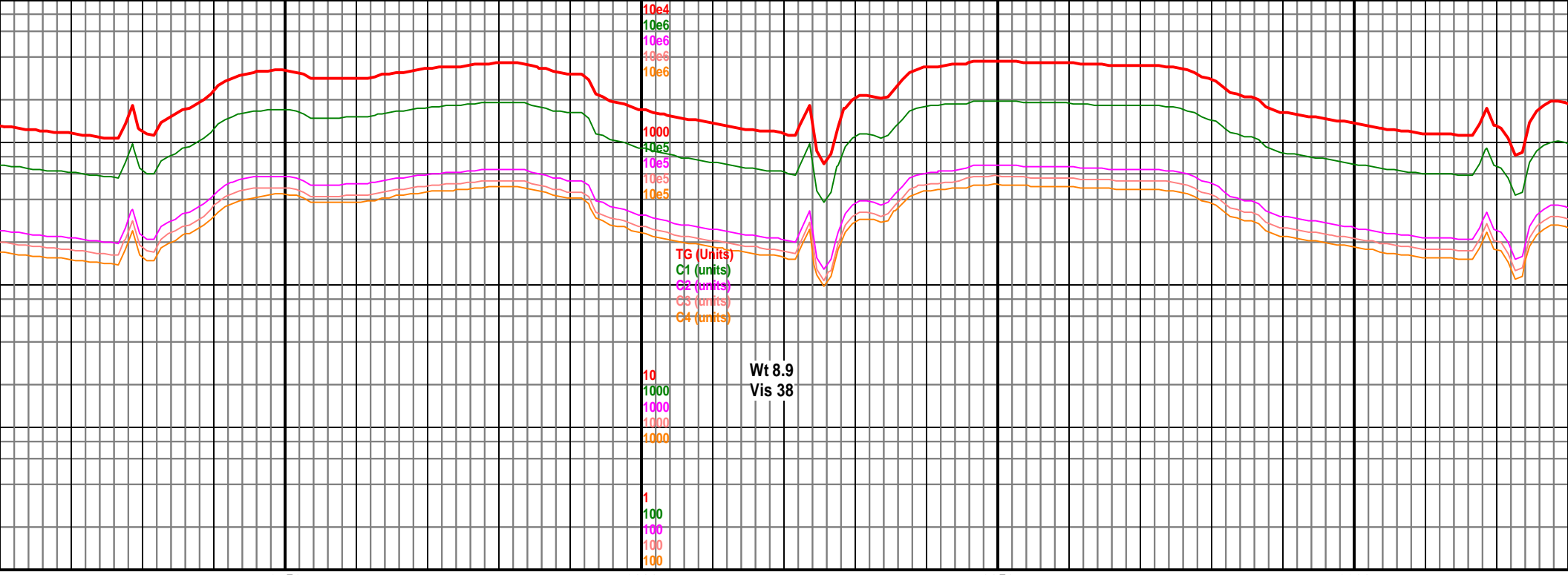
5000 TVD
Sub Sea (+19)

MD 6676 TVD 5906.49
INC 88.22 AZ 193.84
VS 1295.34



6500-6600 Chk med gy-gy, plty-blky,
frm, mottled, tr Mrlist dk gy-gy, blk-sb
plty, frm, slty, fst oil cut, 70% chk, 30%
mrlist

6600-6700 Chk med gy-gy, plty-blky,
frm, mottled, tr Mrlist dk gy-gy, blk-sb
plty, frm, slty, fst oil cut, 80% chk, 20%
mrlist



6750

6800

6850

6900

MD 6771 TVD 5908.13
INC 89.8 AZ 192.35
VS 1389.17

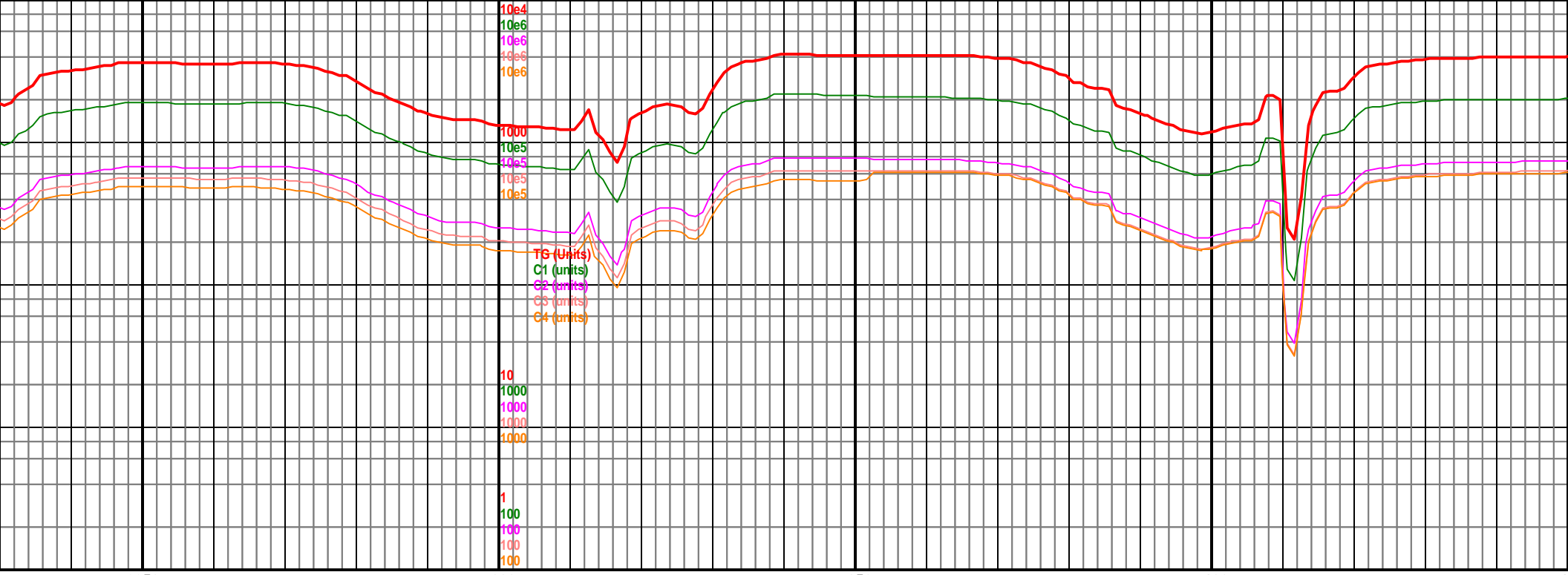
5000 TVD
Sub Sea (+19)

MD 6865 TVD 5907.95
INC 90.42 AZ 188.54
VS 1482.59

5750
(-731)

6700-6800 Chk med gy-gy, plty-blky,
frm, mottled, tr Mrlst dk gy-gy, blky-sb
plty, frm, slty, fst oil cut, 80% chk, 20%
mrlst

6800-6900 Chk med gy-lt gy, sb plty-sb
blky, frm, mottled, rr Mrlst dk gy-gy,
blky-sb plty, frm, slty, fst oil cut, 90%
chk, 10% mrlst



6950

7000

7050

7100

7150

MD 6960 TVD 5907.3
INC 90.37 AZ 185.22
VS 1577.47

5000 TVD
Sub Sea (+19)

MD 7054 TVD 5906.04
INC 91.16 AZ 181.12
VS 1671.42

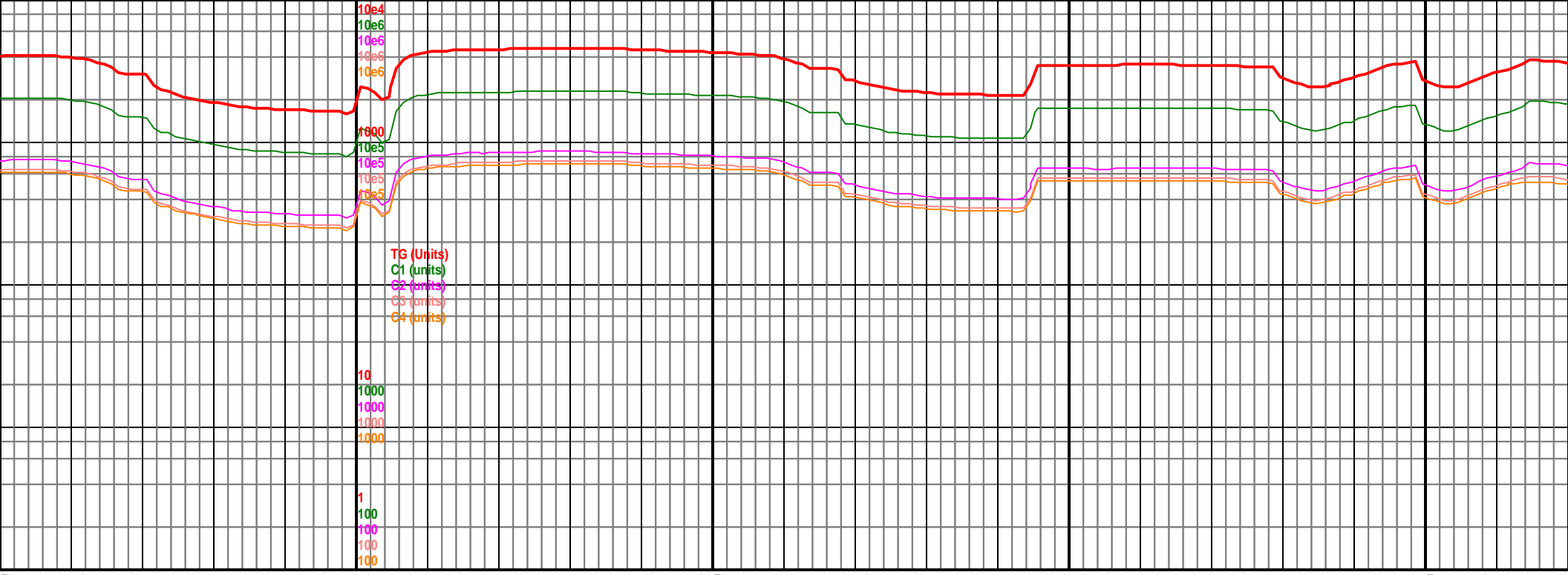
M
IN
V

5750
(-731)

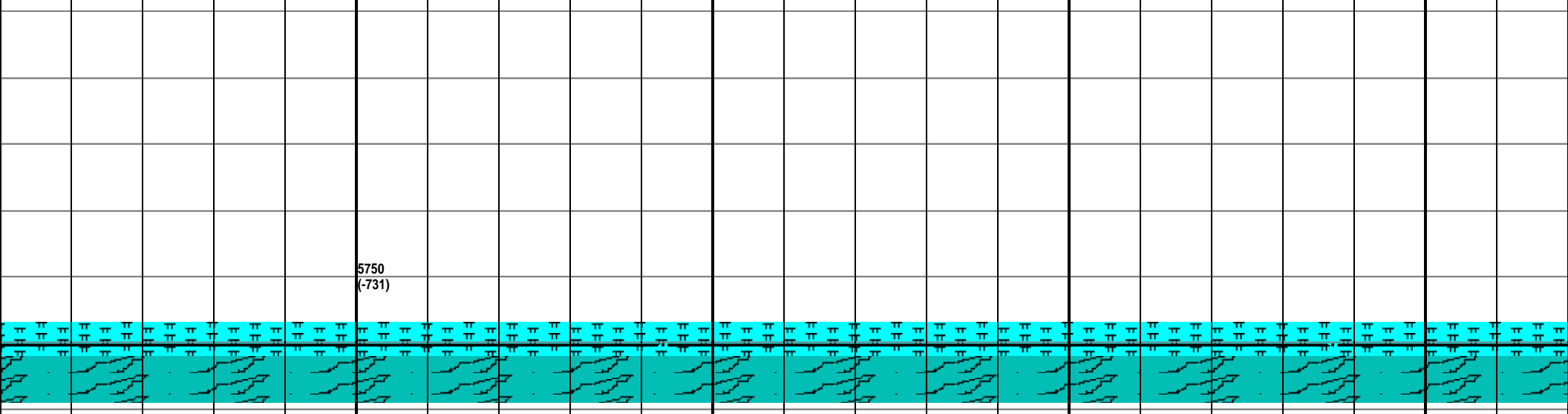
6900-7000 Chk lt gy-gy, plty-sb blk,
frm, mottled, rr Mrlst dk gy-gy, sb blk,
frm, slty, fst oil cut, 90% chk, 10%
mrlist

7000-7100 Chk lt gy-gy, plty-sb blk,
frm, mottled, rr Mrlst dk gy, sb blk,
frm, slty, fst oil cut, 90% chk, 10%
mrlist

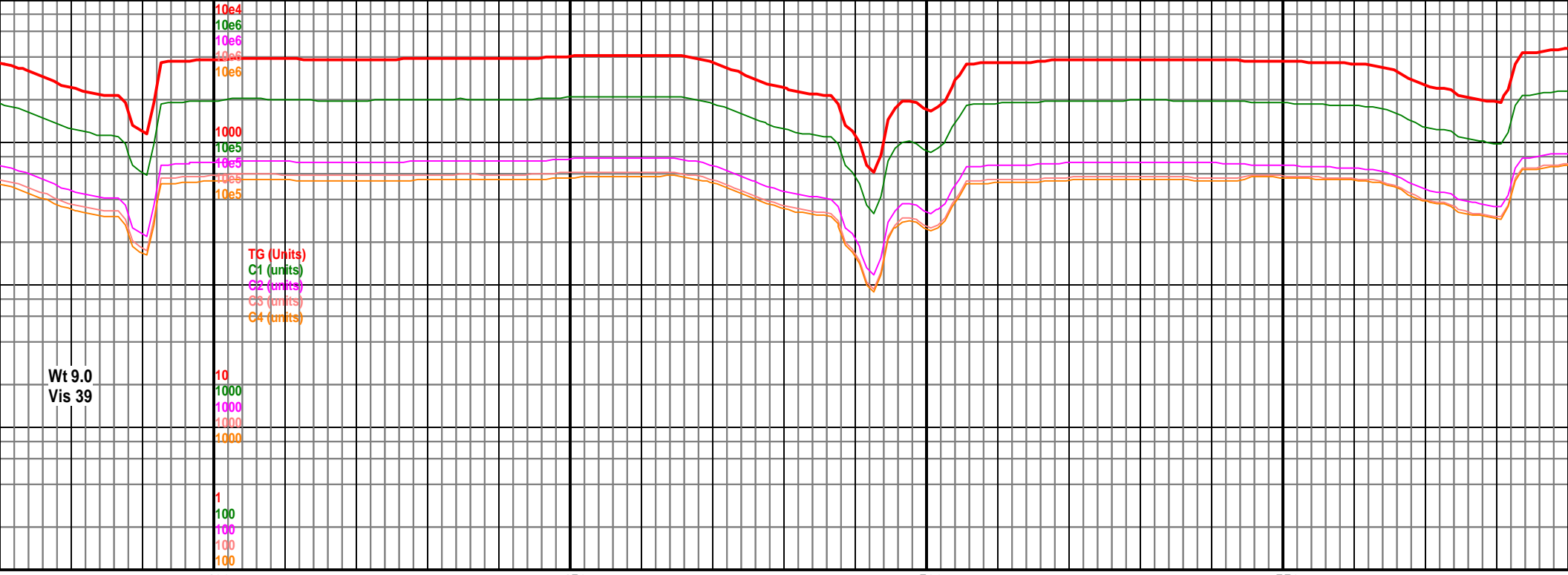
7100-7200 Chk lt gy-gy, plty-sb blk,
frm, mottled, rr Mrlst dk gy, sb blk,
frm, slty, fst oil cut, 90% chk, 10%
mrlist



Station	MD 7148 TVD 5905.21 INC 89.85 AZ 179.34 S1765.19	MD 7243 TVD 5905.25 INC 90.11 AZ 177.75 VS1859.73	MD 7337 TVD 5905.39 INC 89.71 AZ 177.68 VS1953.13
7150			
7200			
7250			
7300			
7350			



7150-7200	7200-7300	7300-7400
gy, plty-sb blk, t dk gy, sb blk-sb cut, 90% chk, 10%	7200-7300 Chk It gy-gy, sb plty-sb blk, fr, mottled, rr Mrst dk gy, sb blk-sb plty, mod fr, fst oil cut, 90% chk, 10% mrst	7300-7400 Chk It gy-gy, sb plty-sb blk, fr, mottled, rr Mrst dk gy, sb blk-sb plty, mod fr, fst oil cut, 90% chk, 10% mrst



Wt 9.0
Vis 39

7400 7450 7500 7550

5000 TVD
Sub Sea (+19)

MD 7432 TVD 5905.98
INC 89.58 AZ 177.64
VS 2047.52

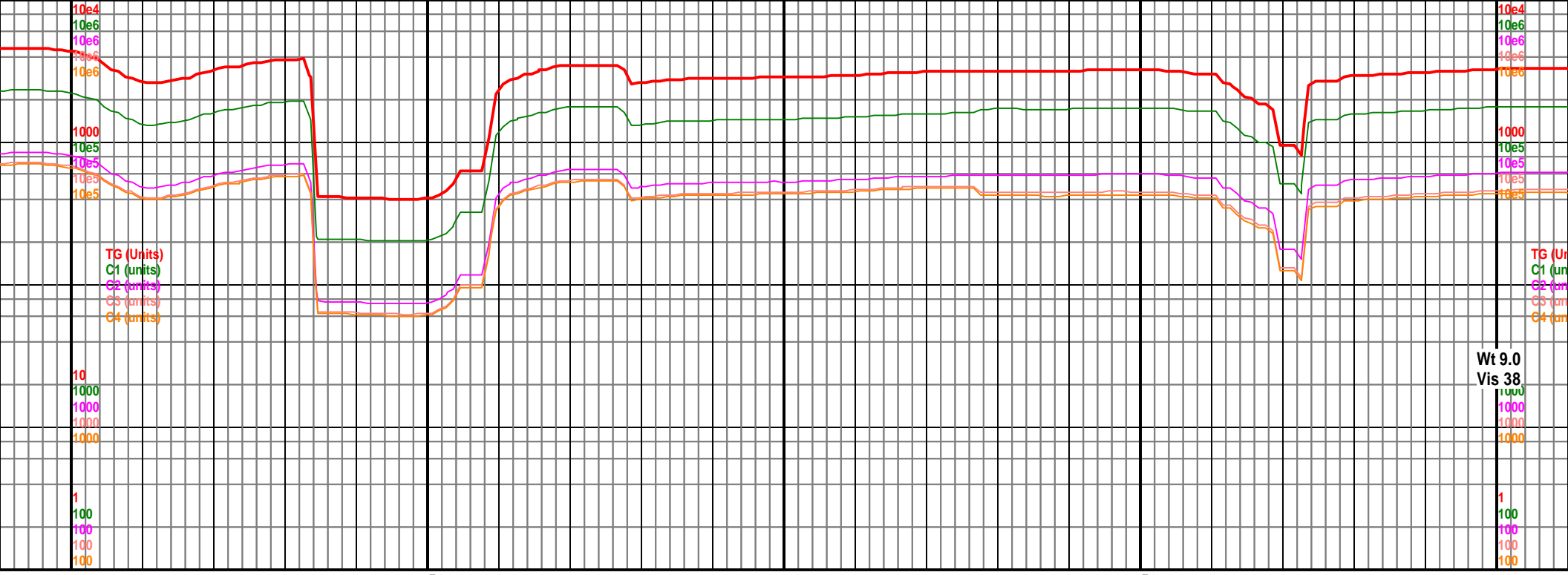
MD 7527 TVD 5905.84
INC 90.59 AZ 178.66
VS 2141.99

5750
(-731)



7400-7500 Chk lt gy-gy, plty-sb blkly,
frm, mottled, rr Mrlst dk gy, sb blkly-sb
plty, mod frm, fst oil cut, 90% chk, 10%
mrlist

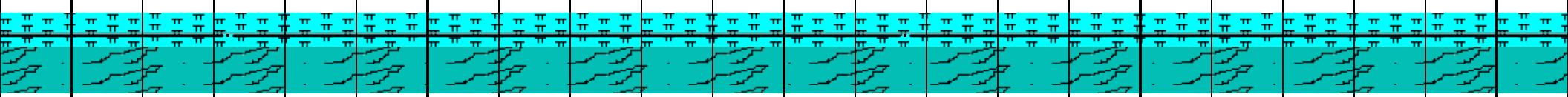
7500-7600 Chk lt gy-gy, plty-sb blkly,
frm, mottled, rr Mrlst dk gy, sb blkly-sb
plty, mod frm, fst oil cut, 90% chk, 10%
mrlist



7600 7650 7700 7750 7800

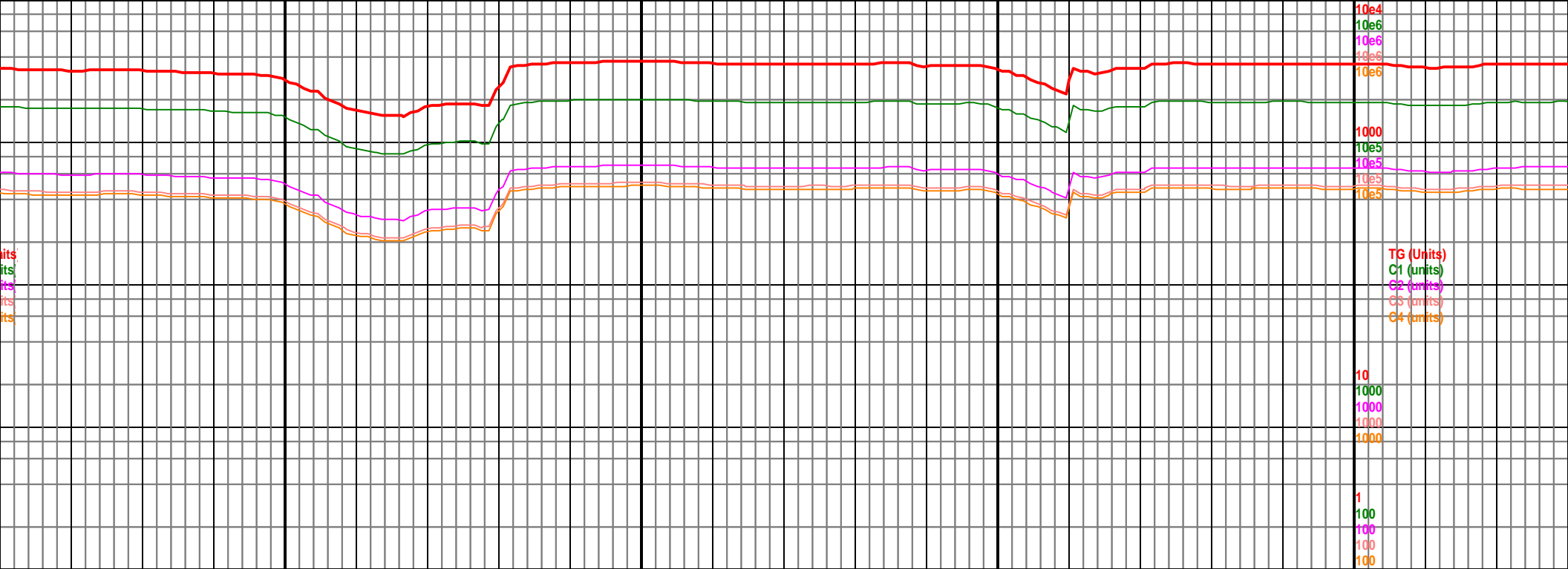
5000 TVD Sub Sea (+19) MD 7622 TVD 5905.37 INC 89.98 AZ 178.82 VS 2236.56 MD 7717 TVD 5905.58 INC 89.76 AZ 179.42 VS 2331.2 5000 TVD Sub Sea (+19)

5750 (-731) 5750 (-731)



7600-7700 Chk lt gy-gy, plty-sb blk, frm, mottled, dk lam ip, rr Mrlst dk gy, sb blk-sb plty, mod frm, fst oil cut, 90% chk, 10% mrlst

7700-7800 Chk lt gy-gy, plty-sb blk, frm, mottled, dk lam ip, rr Mrlst dk gy, sb blk-sb plty, mod frm, fst oil cut, 90% chk, 10% mrlst

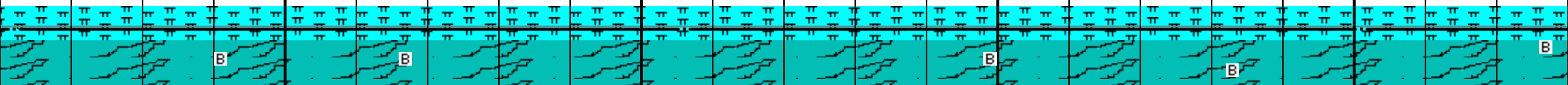
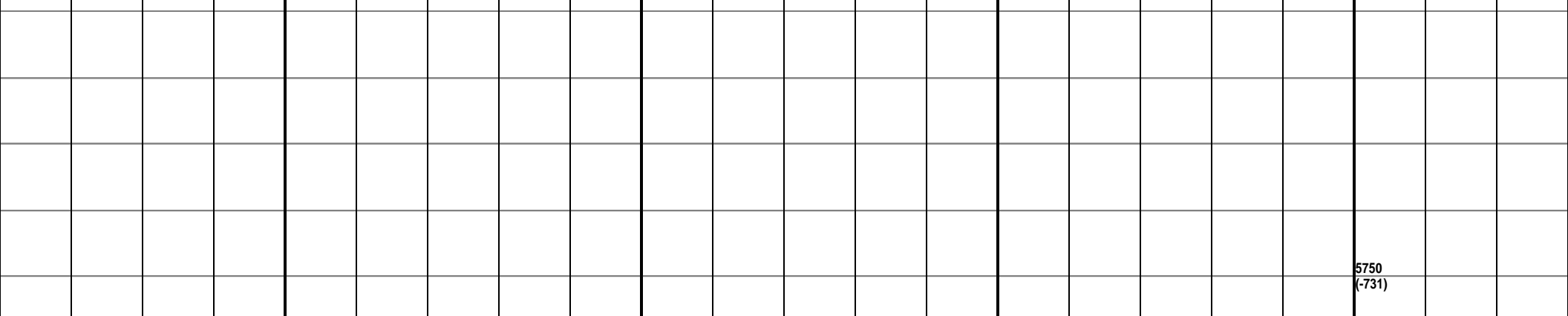


7850 7900 7950 8000

MD 7812 TVD 5906.27
INC 89.41 AZ 179.15
VS 2425.85

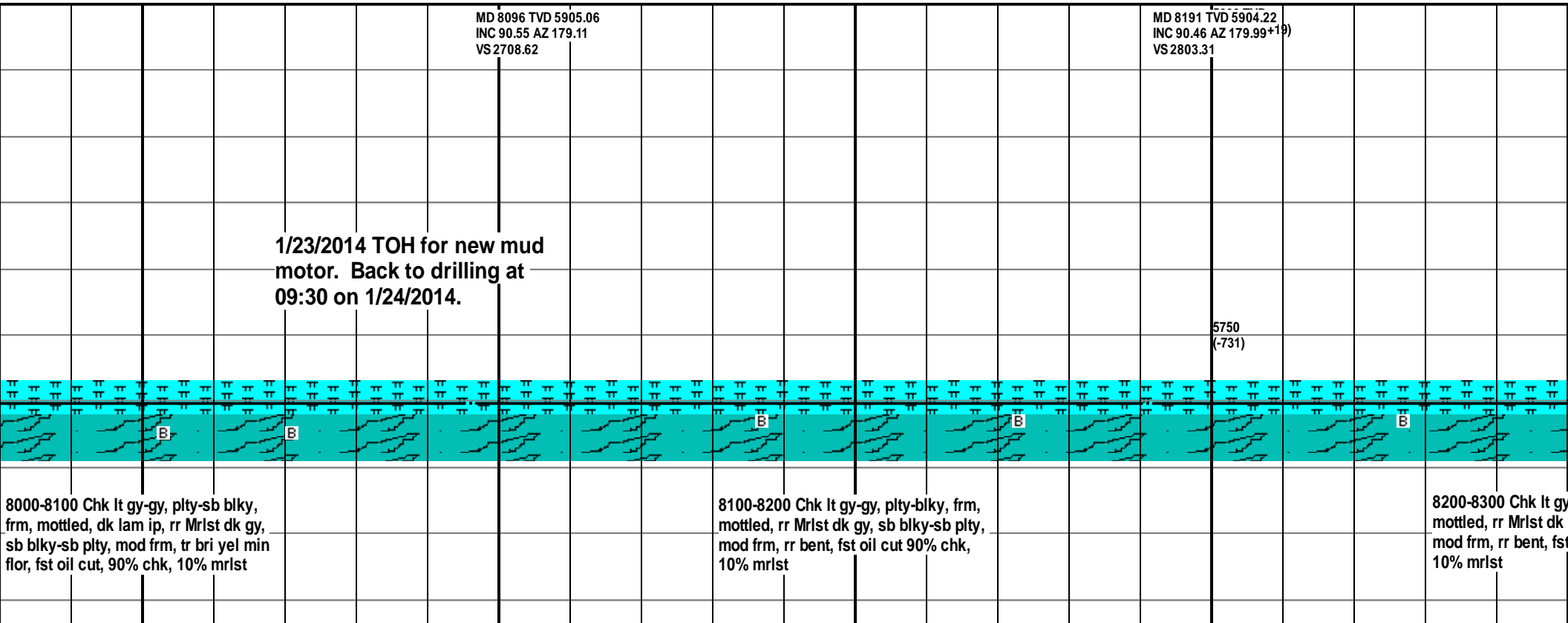
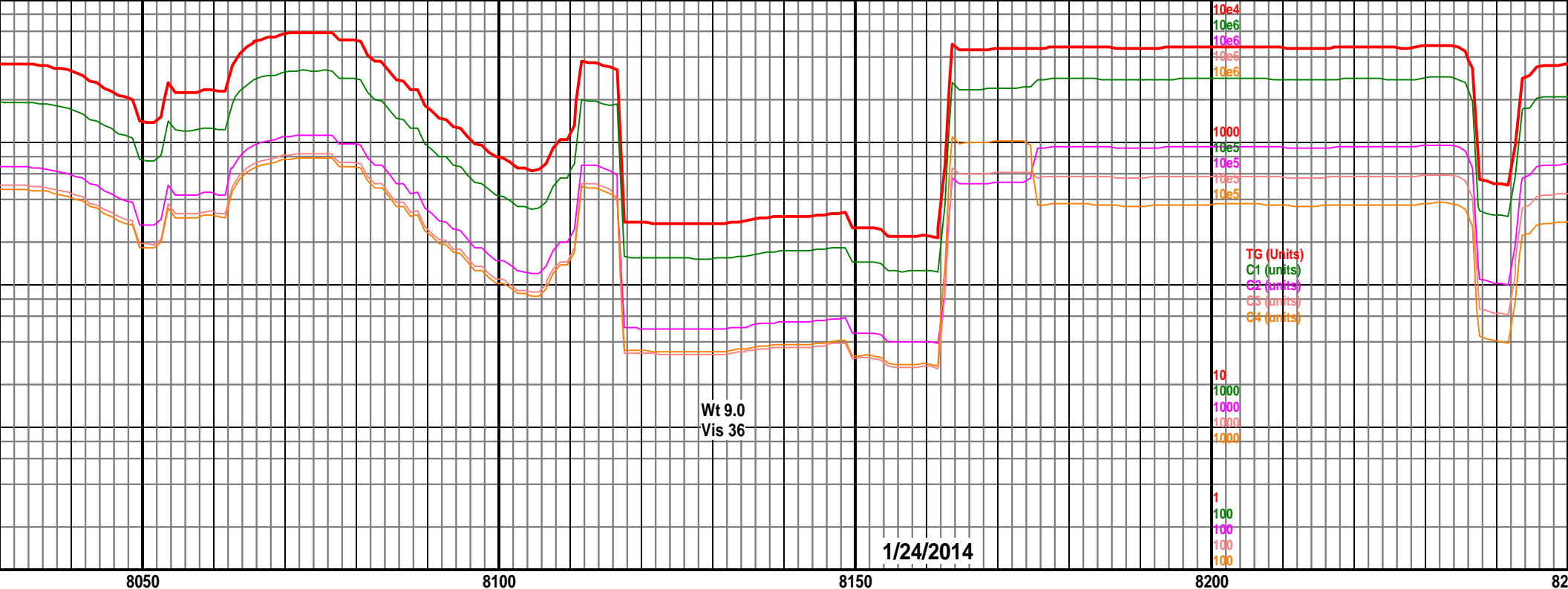
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INC 90.42 AZ 178.64
VS 2519.45

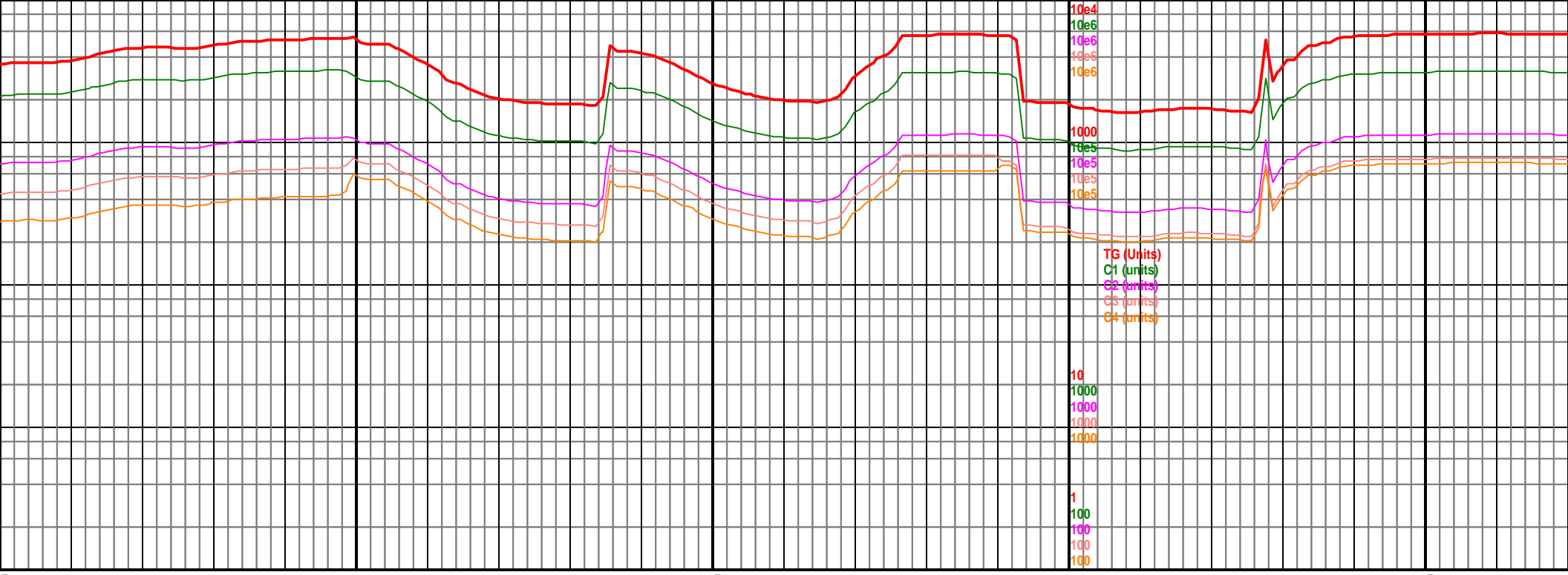
MD 8001 TVD 5905.79
INC 90.33 AZ 178.79
VS 2614.02



7800-7900 Chk lt gy-gy, plty-sb blk,
frm, mottled, dk lam ip, rr Mrlst dk gy,
sb blk-sb plty, mod frm, rr bent, fst oil
cut, 90% chk, 10% mrlst

7900-8000 Chk lt gy-gy, plty-sb blk,
frm, mottled, dk lam ip, rr Mrlst dk gy,
sb blk-sb plty, mod frm, rr bent, fst oil
cut, 90% chk, 10% mrlst





50 8300 8350 8400 8450

MD 8283 TVD 5903.66
INC 90.24 AZ 180.37
VS 2895.08

MD 8375 TVD 5903.59
INC 89.85 AZ 180.44
VS 2986.88

5000 TVD
Sub Sea (+19)

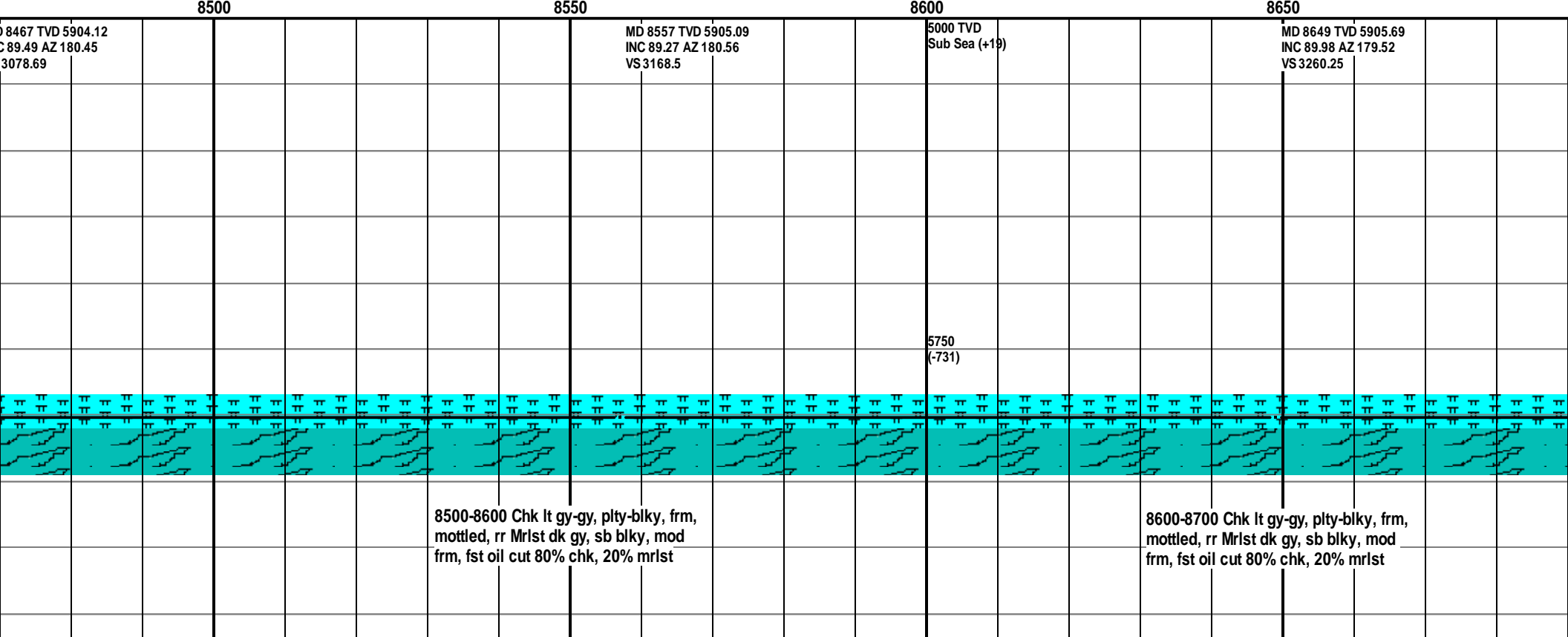
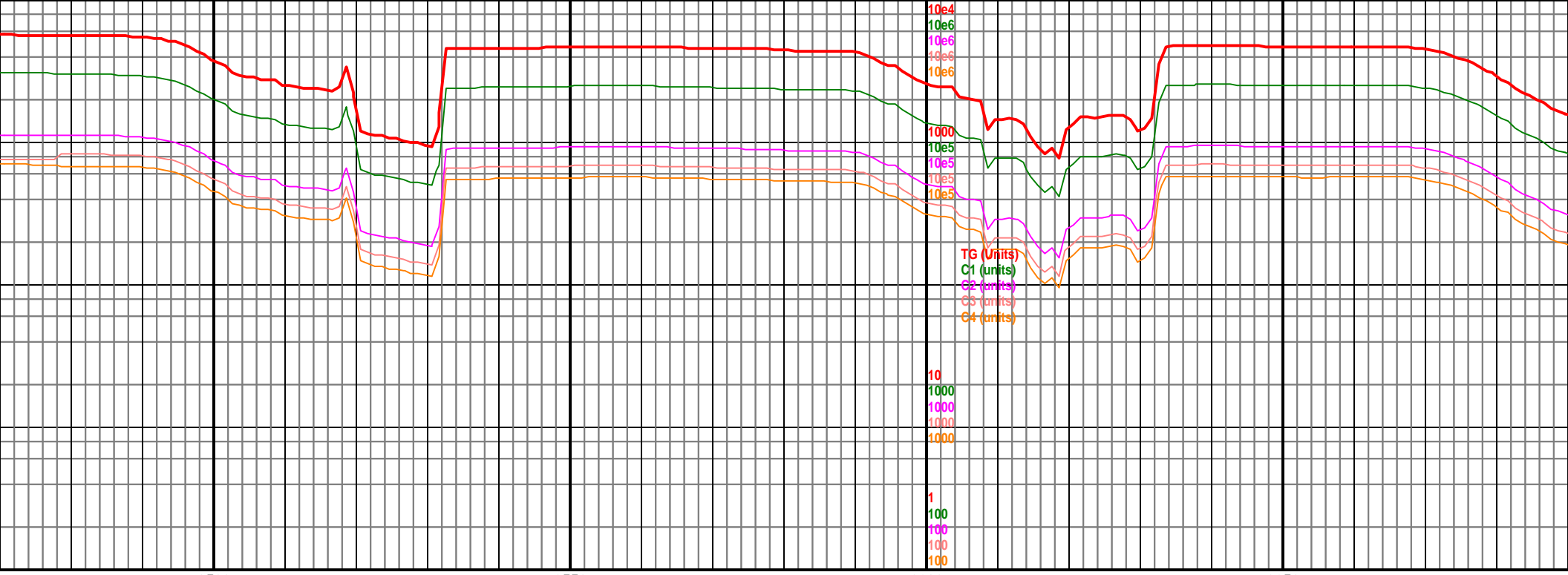
MD
INC
VS

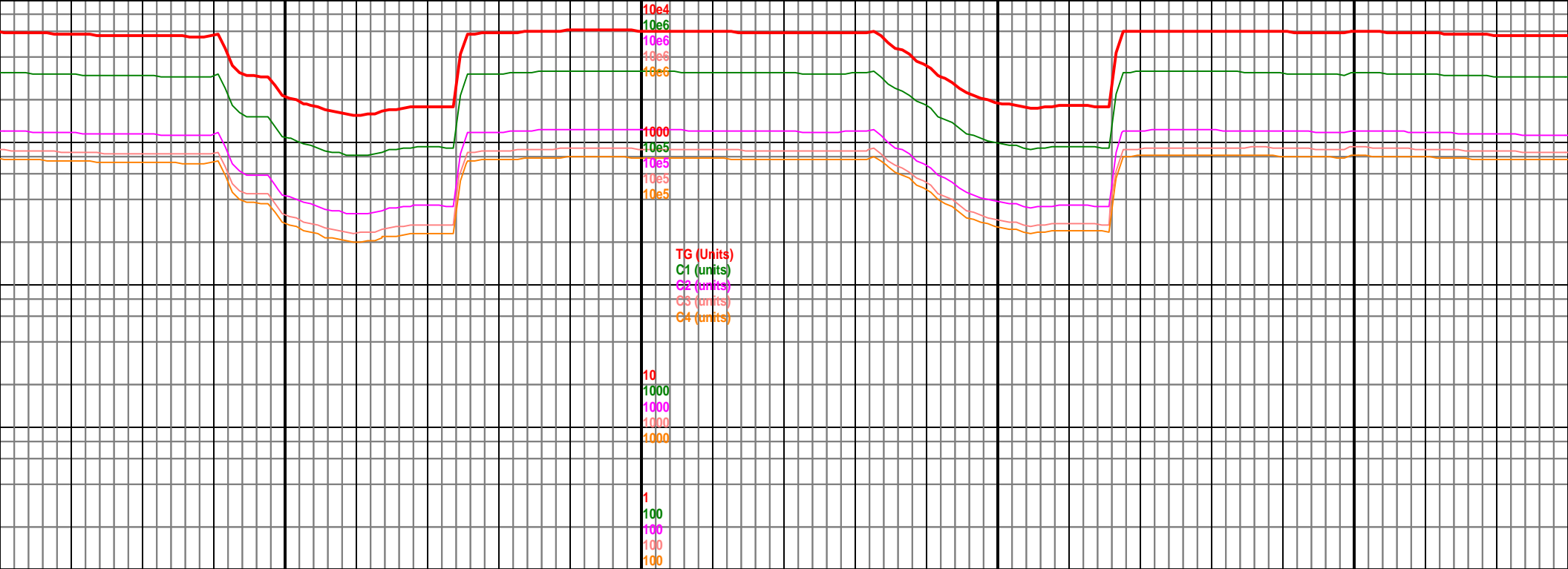
5750
(-731)

-gy, plty-blky, frm,
gy, sb blky-sb plty,
oil cut 90% chk,

8300-8400 Chk lt gy-gy, plty-blky, frm,
mottled, rr Mrlst dk gy, sb blky-sb plty,
mod frm, fst oil cut 90% chk, 10% mrlst

8400-8500 Chk lt gy-gy, plty-blky, frm,
mottled, rr Mrlst dk gy, sb blky-sb plty,
mod frm, fst oil cut 90% chk, 10% mrlst





TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

10
1000
10000
100000
1000000

1
100
1000
10000
100000

8950 9000 9050 9100

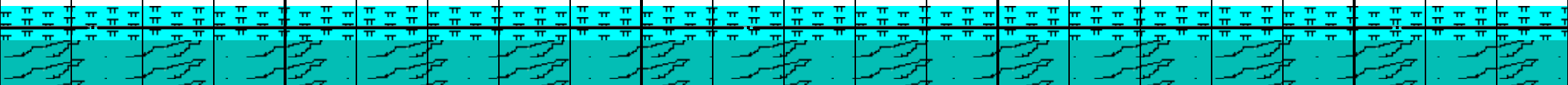
MD 8923 TVD 5903.21
INC 90.29 AZ 178.89
VS 3533.16

5000 TVD
Sub Sea (+19)

MD 9015 TVD 5902.79
INC 90.24 AZ 178.86
VS 3624.76

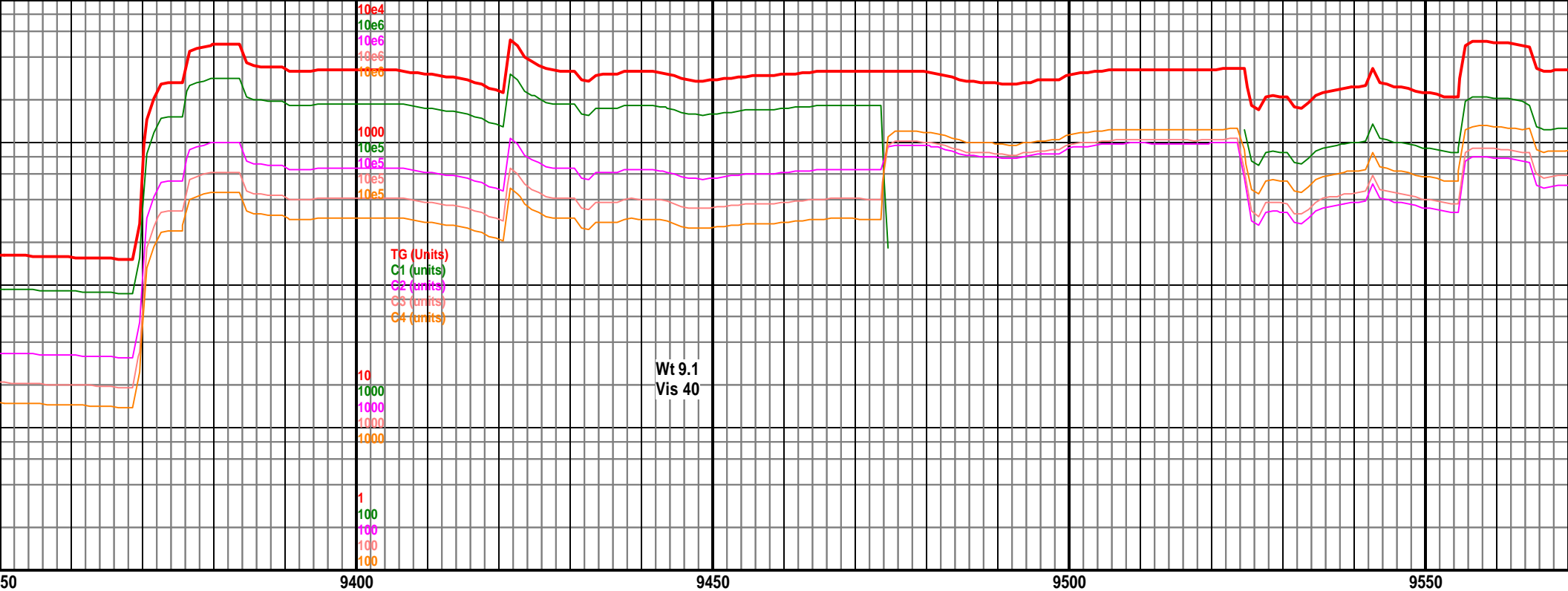
MD 9106 TVD 5902.51
INC 90.11 AZ 178.9
VS 3715.38

5750
(-731)



8900-9000 Chk lt gy-gy, plty-blky, frm,
mottled, rr Mrlst dk gy, sb blky, mod
frm, fst oil cut 90% chk, 10% mrlst

9000-9100 Chk lt gy-gy, plty-blky, frm,
mottled, rr Mrlst dk gy, sb blky, mod
frm, fst oil cut 90% chk, 10% mrlst



MD 9381 TVD 5893.89
INC 90.81 AZ 181.31
VS 3989.25

5000 TVD
Sub Sea (+19)

MD 9472 TVD 5892.71
INC 90.68 AZ 181.17
VS 4080.12

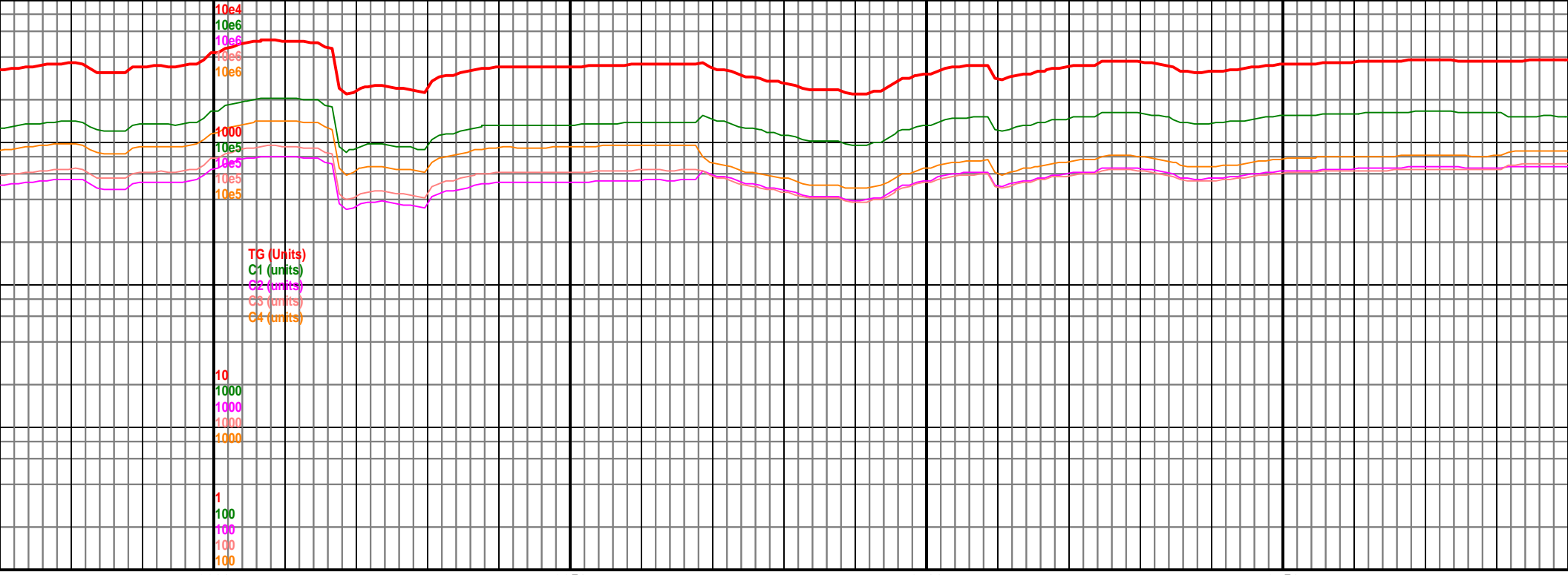
MD 9512 TVD 5892.71
INC 90.68 AZ 181.17
VS 4170.12

5750
(-731)

med gy, plty-blky,
rr Mrlst dk gy, sb
cut 90% chk, 10%

9400-9500 Chk lt gy-med gy, plty-blky,
frm, mottled, slty ip, rr Mrlst dk gy, sb
blky, mod frm, tr bri yel min flor, fst oil
cut 90% chk, 10% mrlst

9500-9600 Chk lt gy-med gy, plty-blky,
frm, mottled, slty ip, rr Mrlst dk gy, sb
blky, mod frm, tr bri yel min flor, fst oil
cut 90% chk, 10% mrlst



64 TVD 5891.75
.51 AZ 182.58
2.04

5000 TVD
Sub Sea (+19)

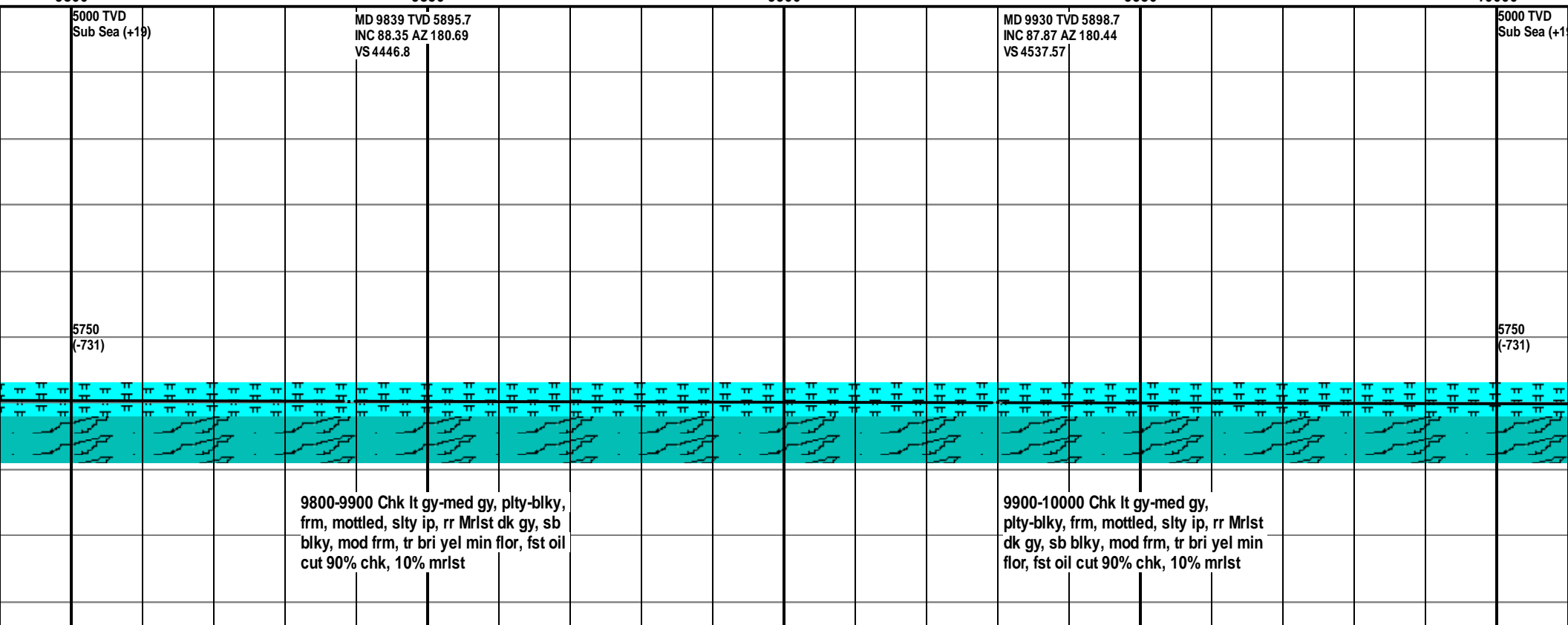
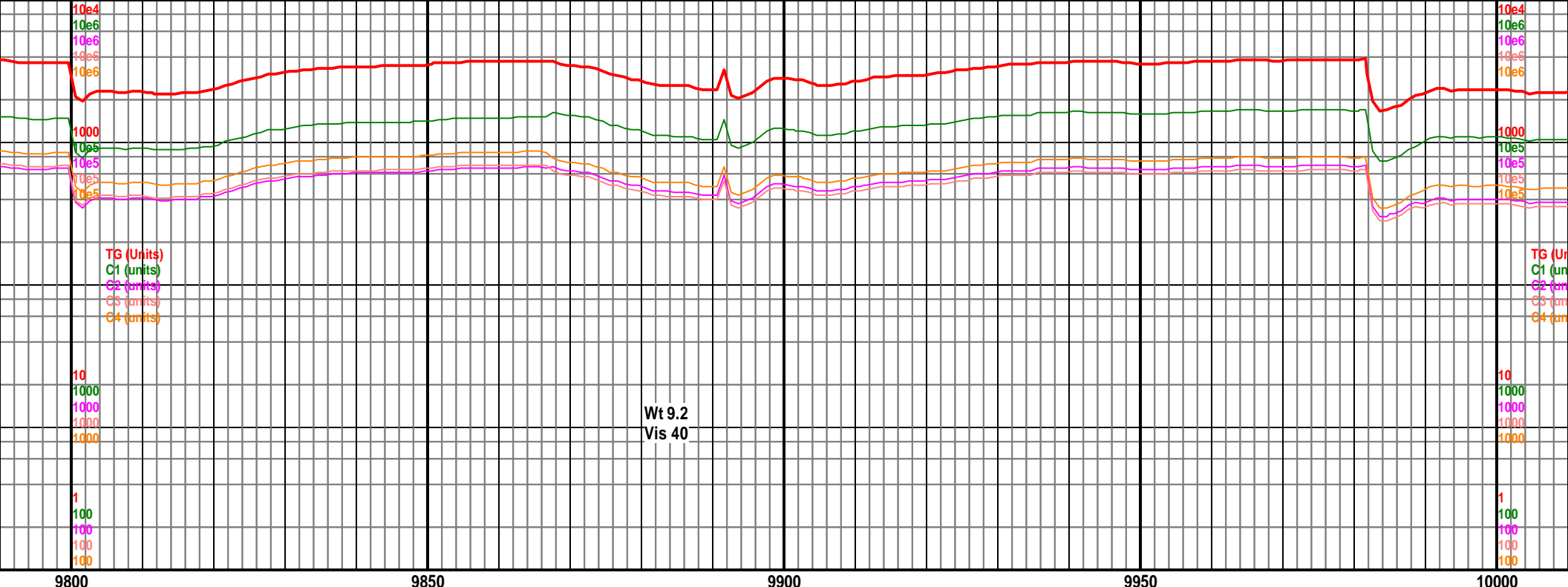
MD 9655 TVD 5891.96
INC 89.23 AZ 182.42
VS 4263

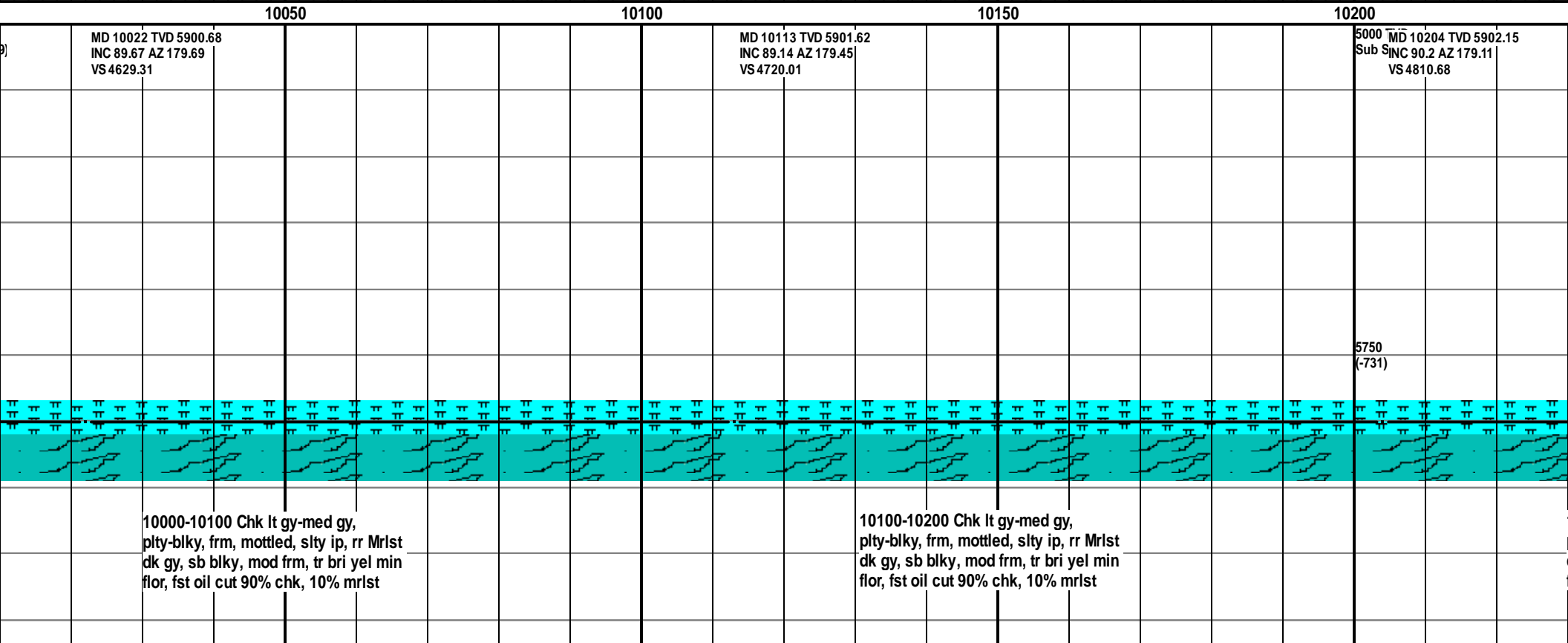
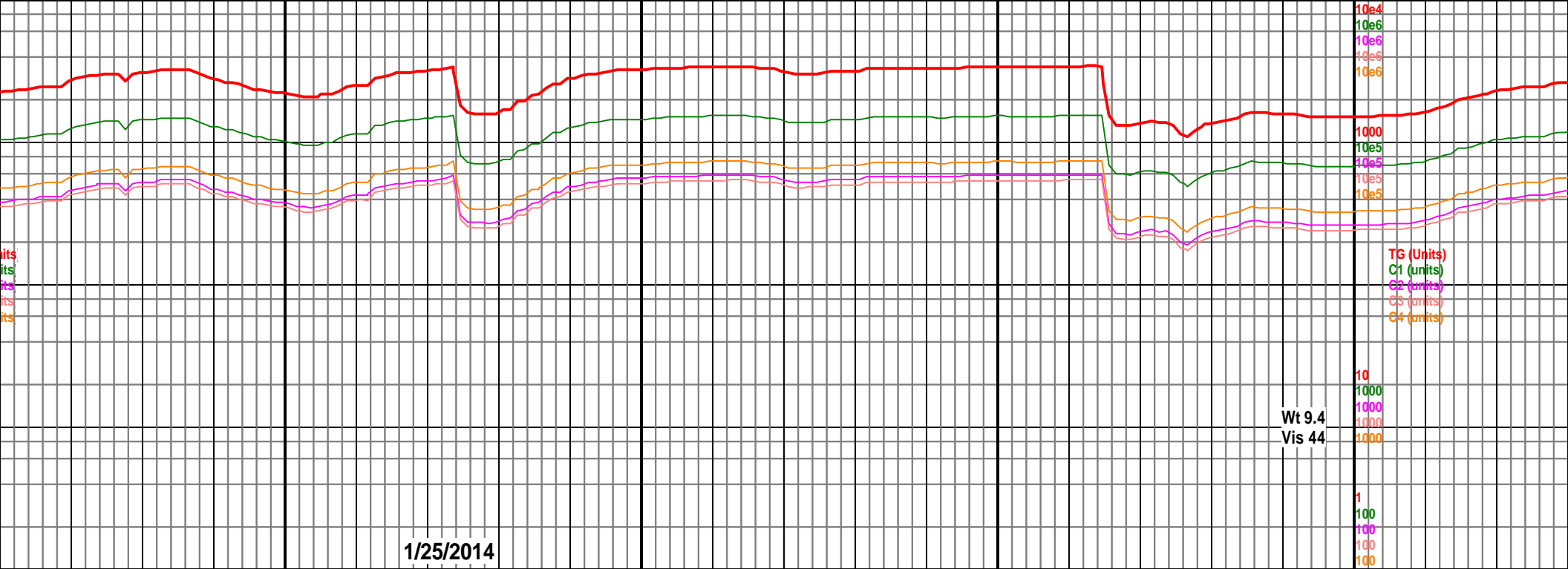
MD 9747 TVD 5893.48
INC 88.88 AZ 182.12
VS 4354.94

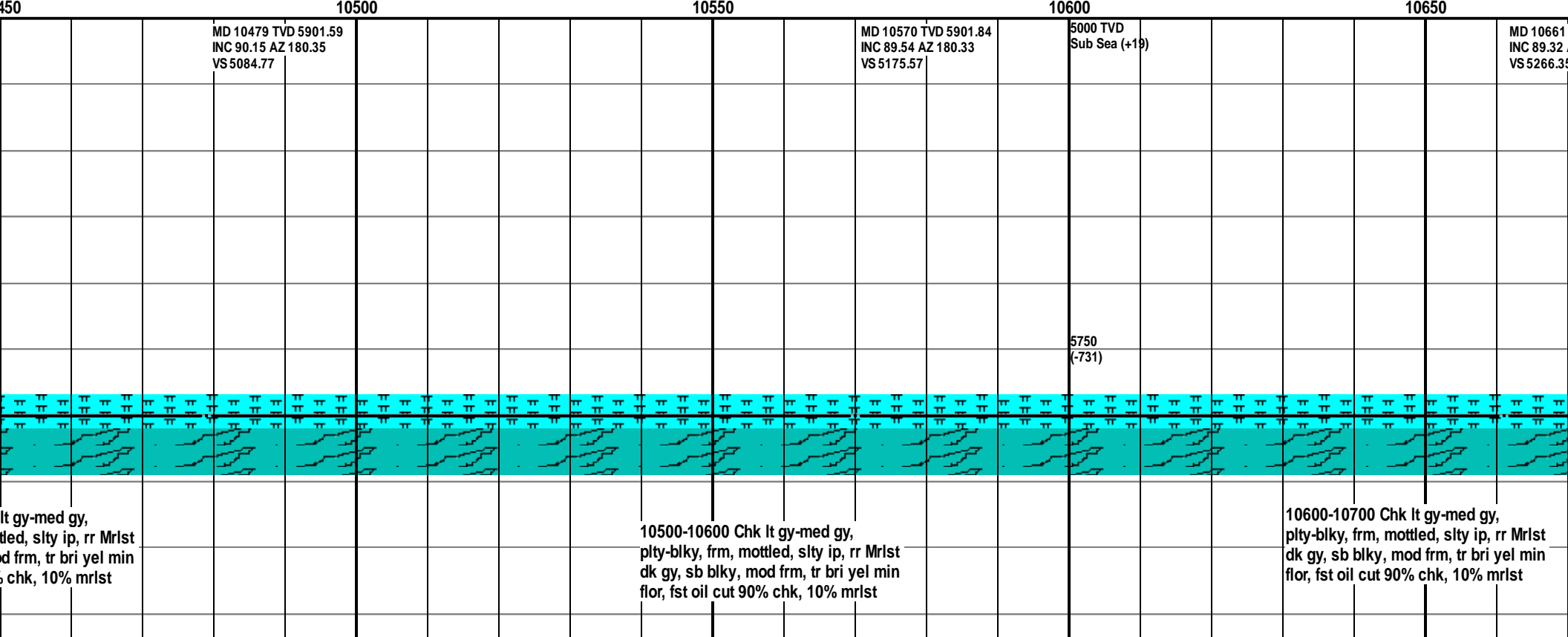
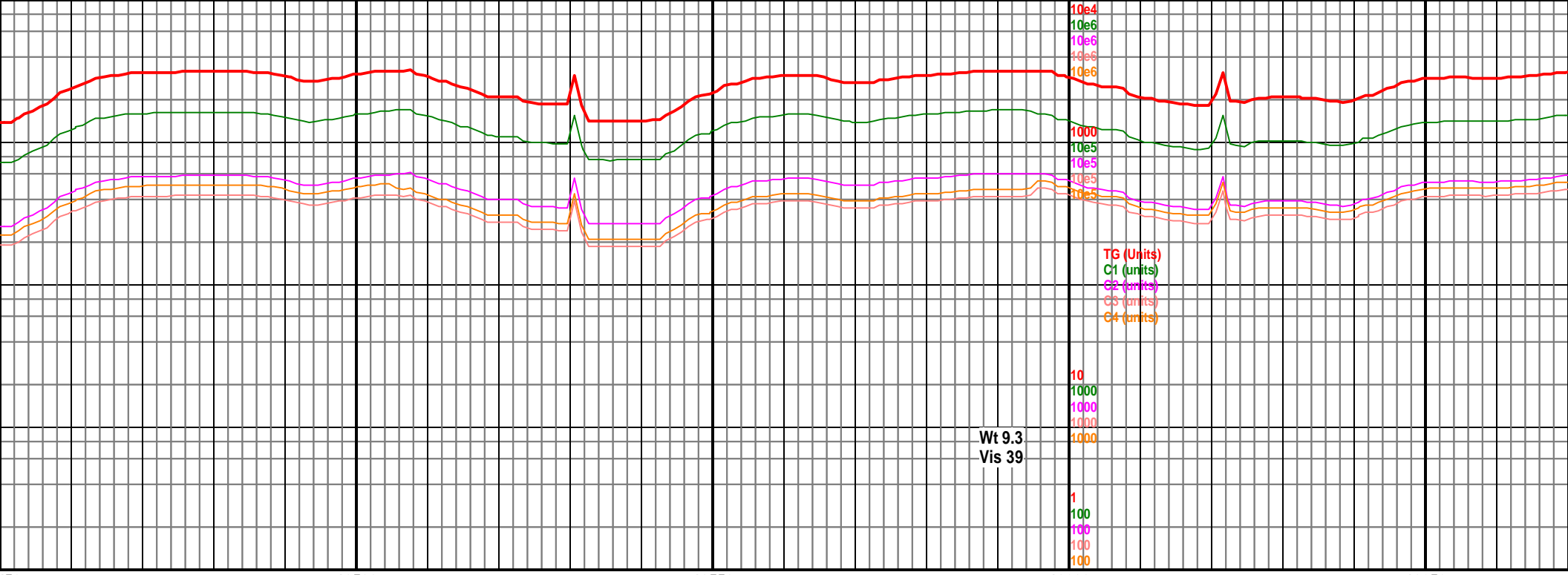
5750
(-731)

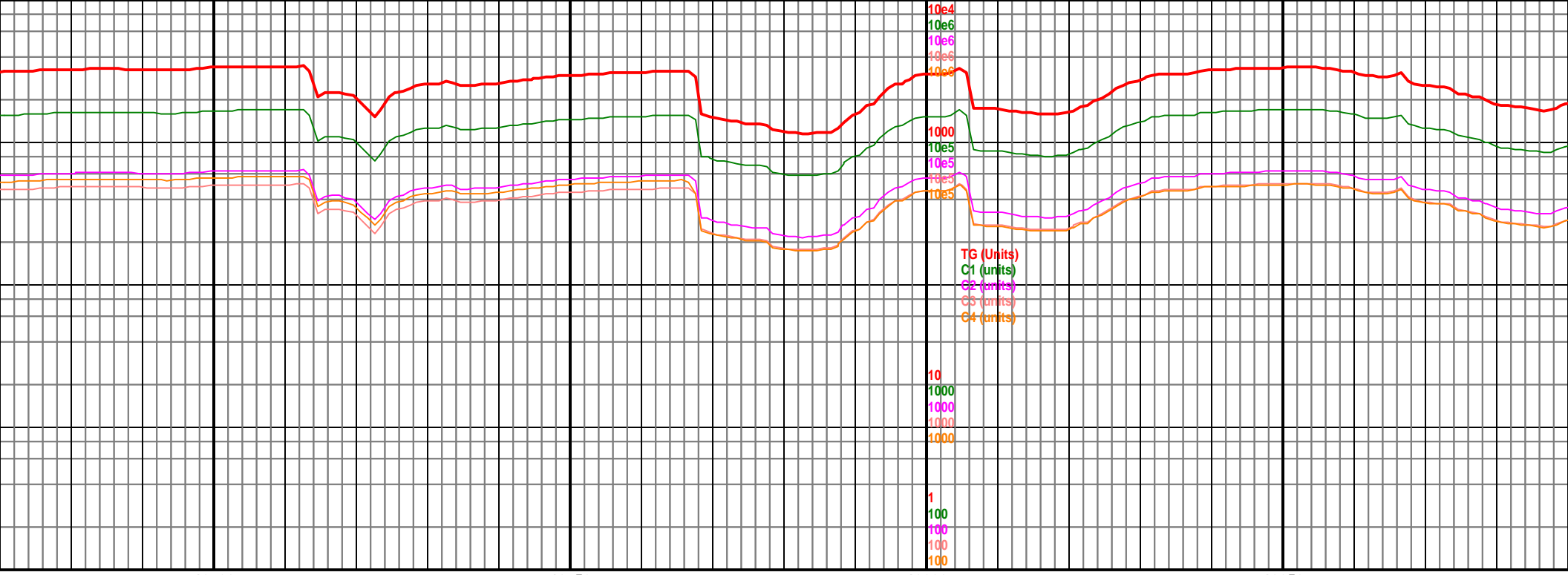
9600-9700 Chk lt gy-med gy, plty-blky,
frm, mottled, slty ip, rr Mrlst dk gy, sb
blky, mod frm, tr bri yel min flor, fst oil
cut 90% chk, 10% mrlst

9700-9800 Chk lt gy-med gy, plty-blky,
frm, mottled, slty ip, rr Mrlst dk gy, sb
blky, mod frm, tr bri yel min flor, fst oil
cut 90% chk, 10% mrlst









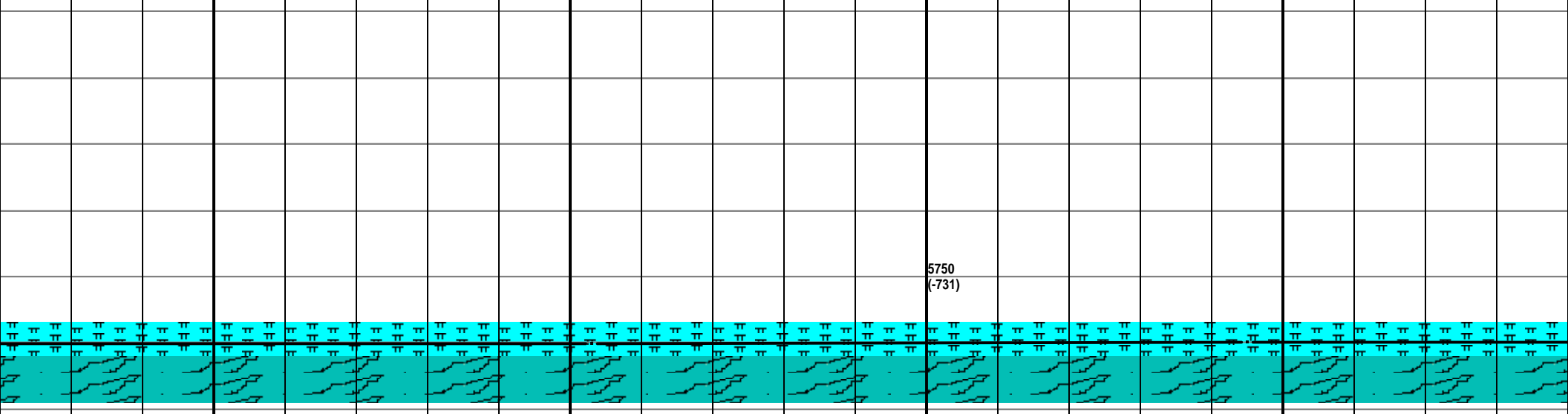
10700 10750 10800 10850

TVD 5902.75
AZ 180.23
5

MD 10753 TVD 5902.22
INC 91.34 AZ 179.82
VS 5358.11

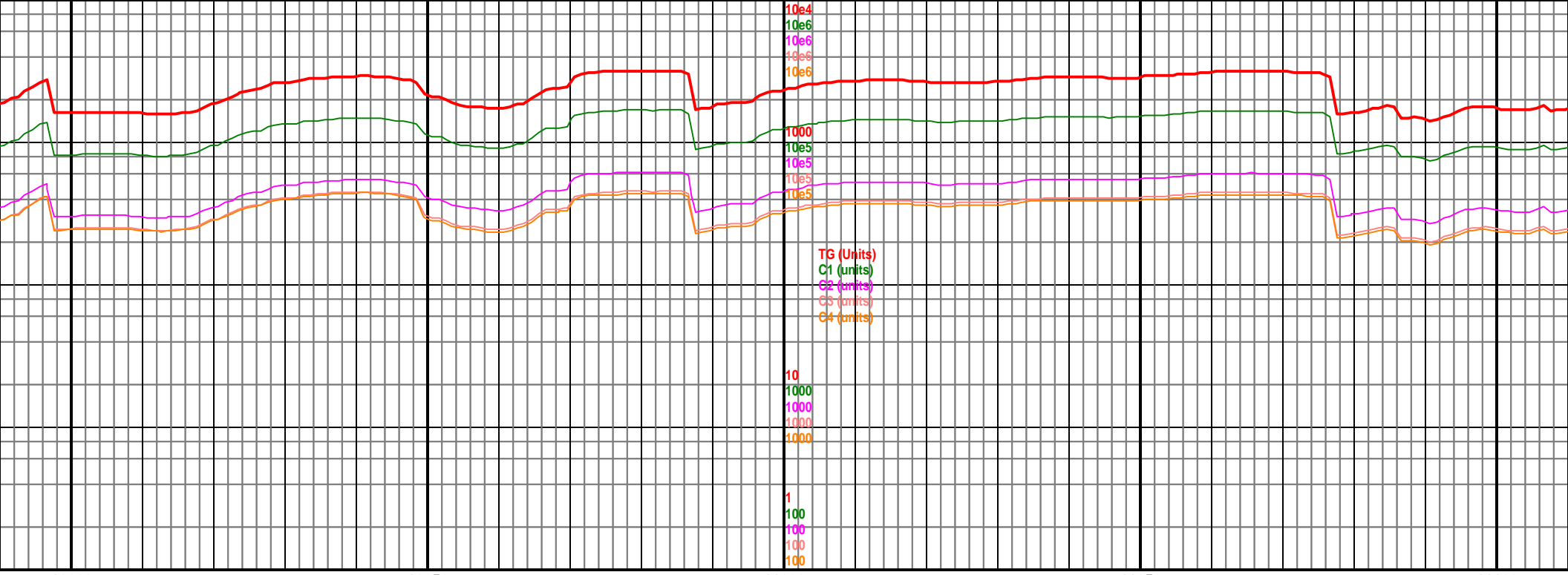
5000 TVD
Sub Sea (+19)

MD 10845 TVD 5900.21
INC 91.16 AZ 179.82
VS 5449.82



10700-10800 Chk lt gy-gy, plty-blky,
frm, mottled, rr Mrlst dk gy, sb blky,
mod frm, fst oil cut 90% chk 10% mrlst

10800-10900 Chk lt gy-gy, plty-blky,
frm, mottled, rr Mrlst dk gy, sb blky,
mod frm, fst oil cut 90% chk 10% mrlst



10900

10950

11000

11050

11100

MD 10936 TVD 5898.78
INC 90.64 AZ 179.5
VS 5540.52

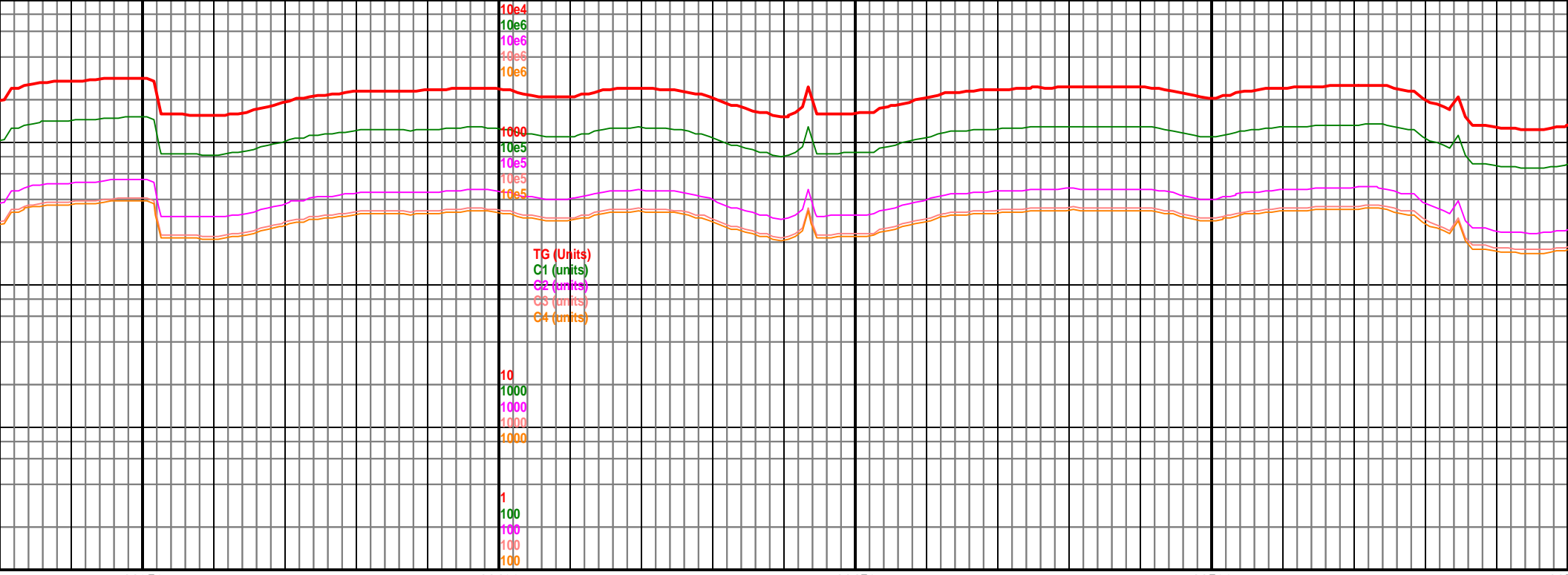
5000 TVD
Sub Sea (+19)

MD 11027 TVD 5897.73
INC 90.68 AZ 179.41
VS 5631.21

5750
(-731)

10900-11000 Chk lt gy-gy, plty-blky,
frm, mottled, rr Mrlst dk gy, sb blky,
mod frm, fst oil cut 90% chk 10% mrlst

11000-11100 Chk lt gy-med gy,
plty-blky, frm, mottled, rr Mrlst dk gy,
sb blky, mod frm, fst oil cut 90% chk
10% mrlst



11350

11400

11450

11500

11550

MD 11393 TVD 5893.22
INC 88.88 AZ 181.11°
VS 5996.42

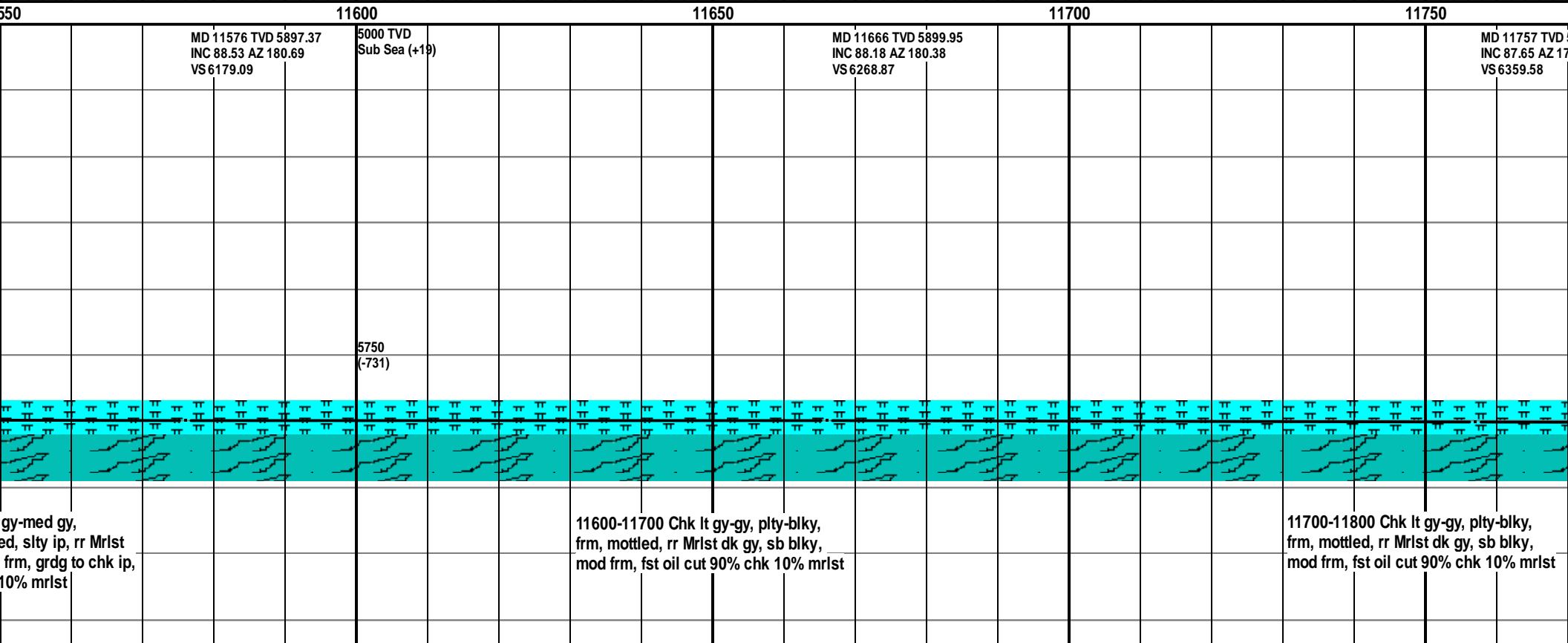
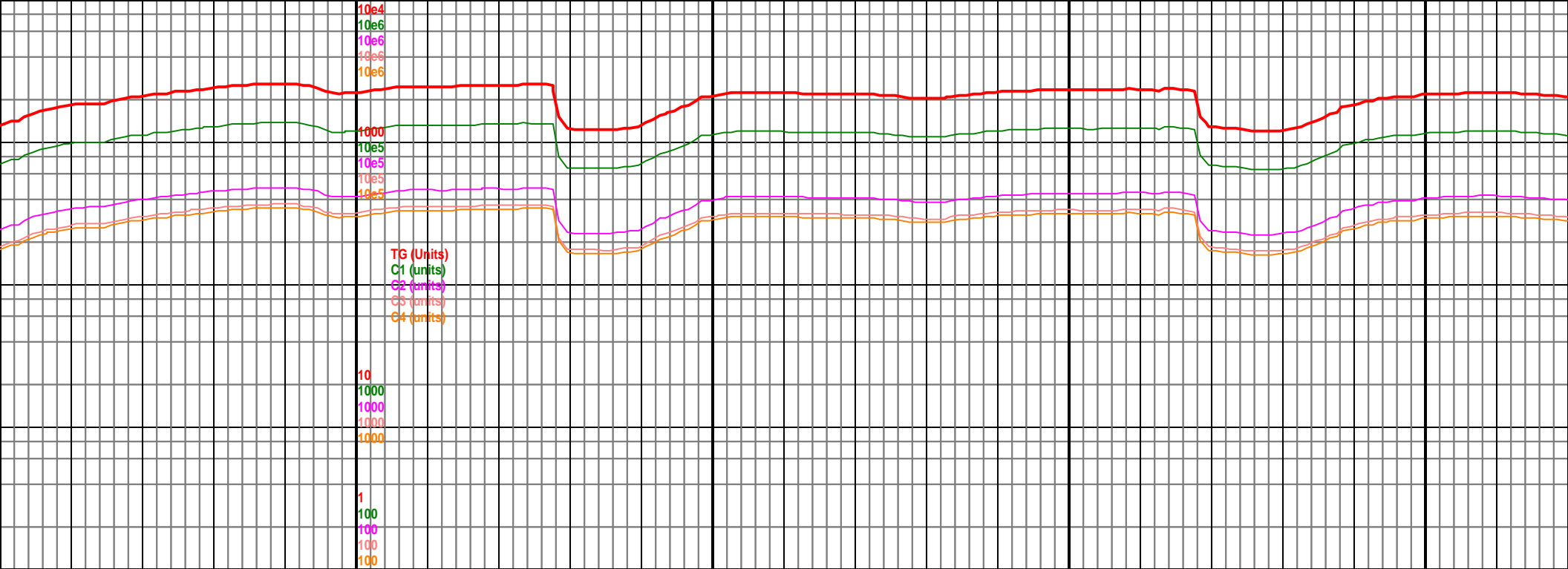
MD 11484 TVD 5895.14
INC 88.7 AZ 181.03°
VS 6087.27

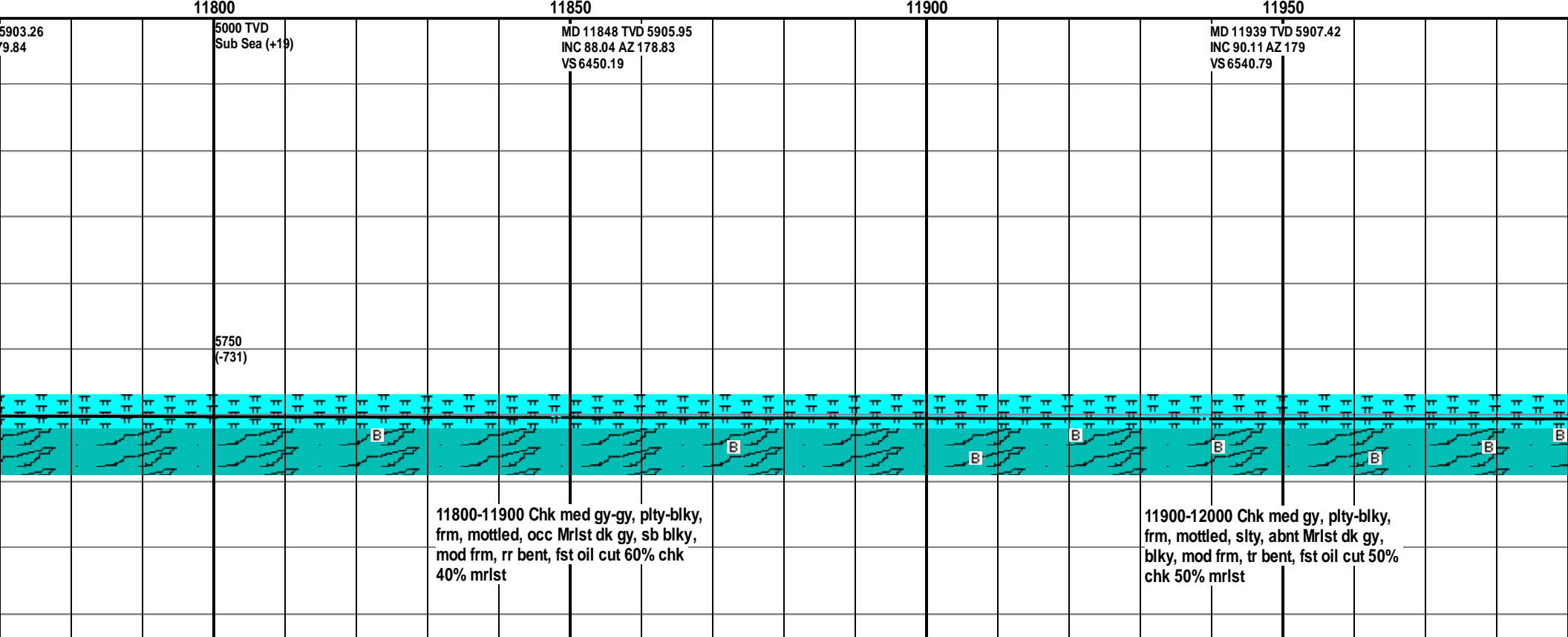
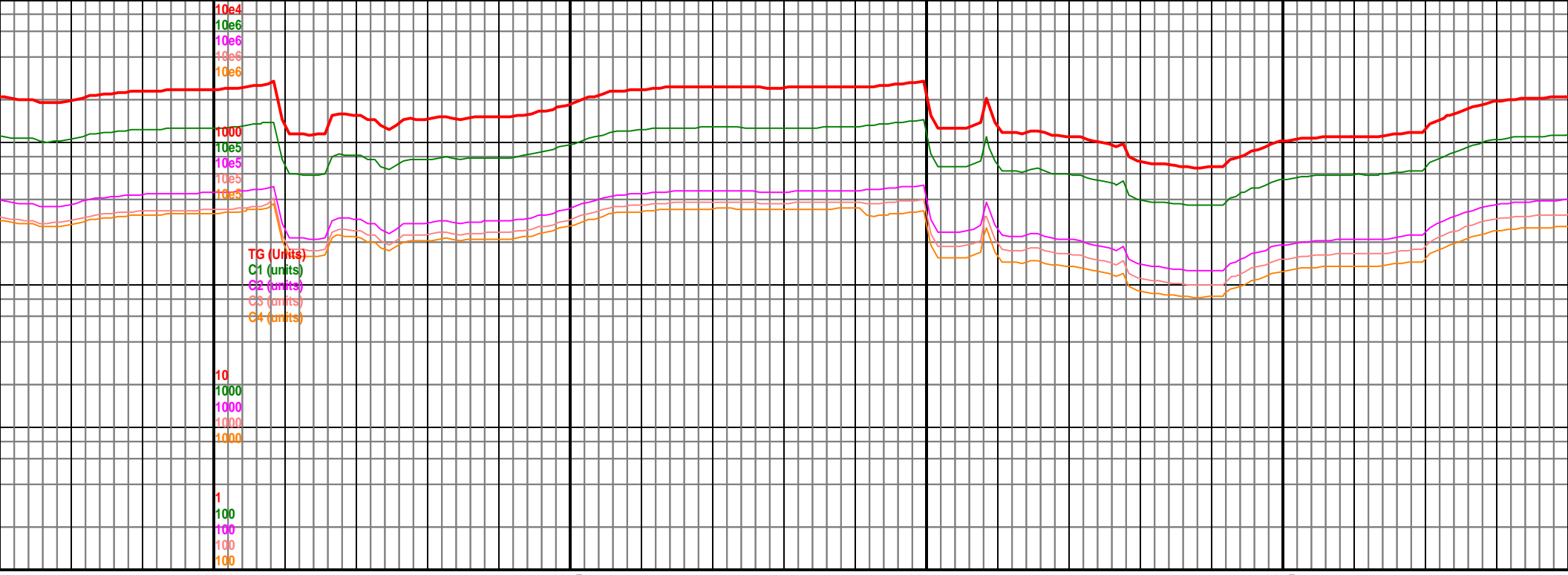
5750
(-731)

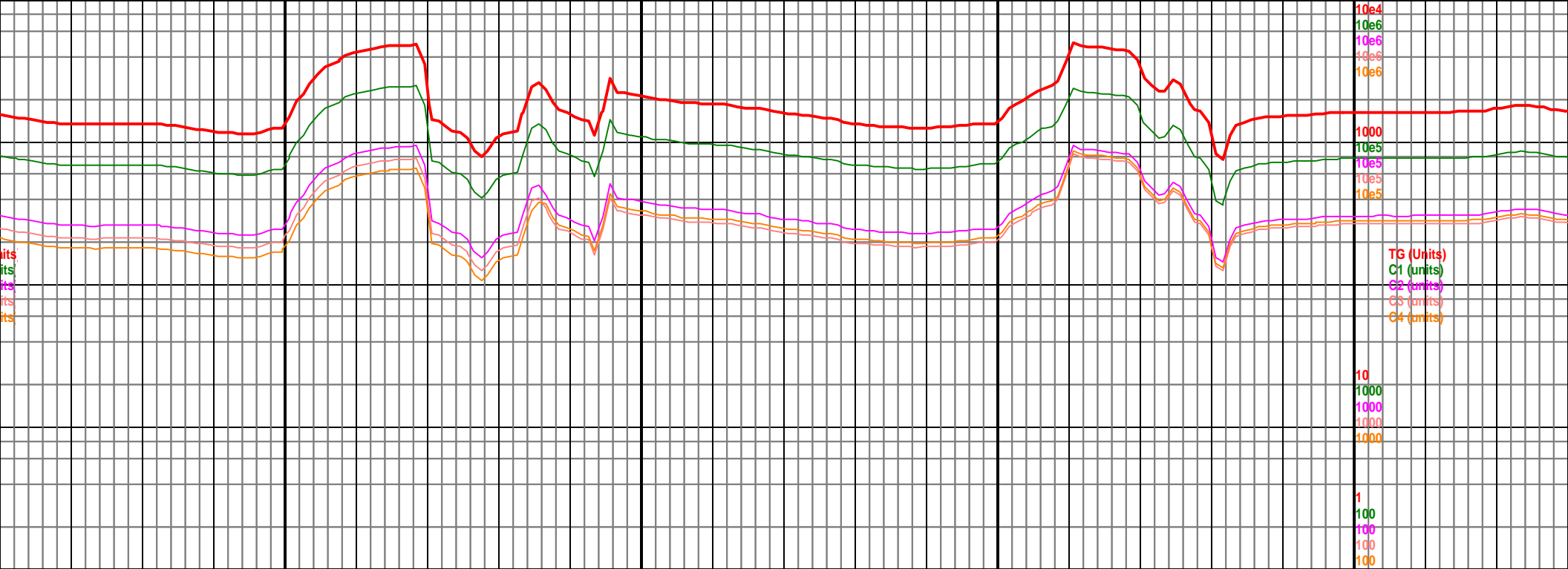
11300-11400 Chk gy-med gy, plty-blky,
frm, mottled, slty ip, rr Mrlst dk gy, sb
blky, mod frm, fst oil cut 90% chk 10%
mrlst

11400-11500 Chk lt gy-med gy,
plty-blky, frm, mottled, slty ip, rr Mrlst
dk gy, sb blky, mod frm, grdg to chk ip,
fst oil cut 90% chk 10% mrlst

11500-11600 Chk lt
plty-blky, frm, mottled,
dk gy, sb blky, mod frm,
fst oil cut 90% chk 10% mrlst







12250

12300

12350

12400

MD 12214 TVD 5908.71
INC 89.36 AZ 177.08
VS 6814.35

MD 12305 TVD 5908.93
INC 90.37 AZ 177.76
VS 6904.72

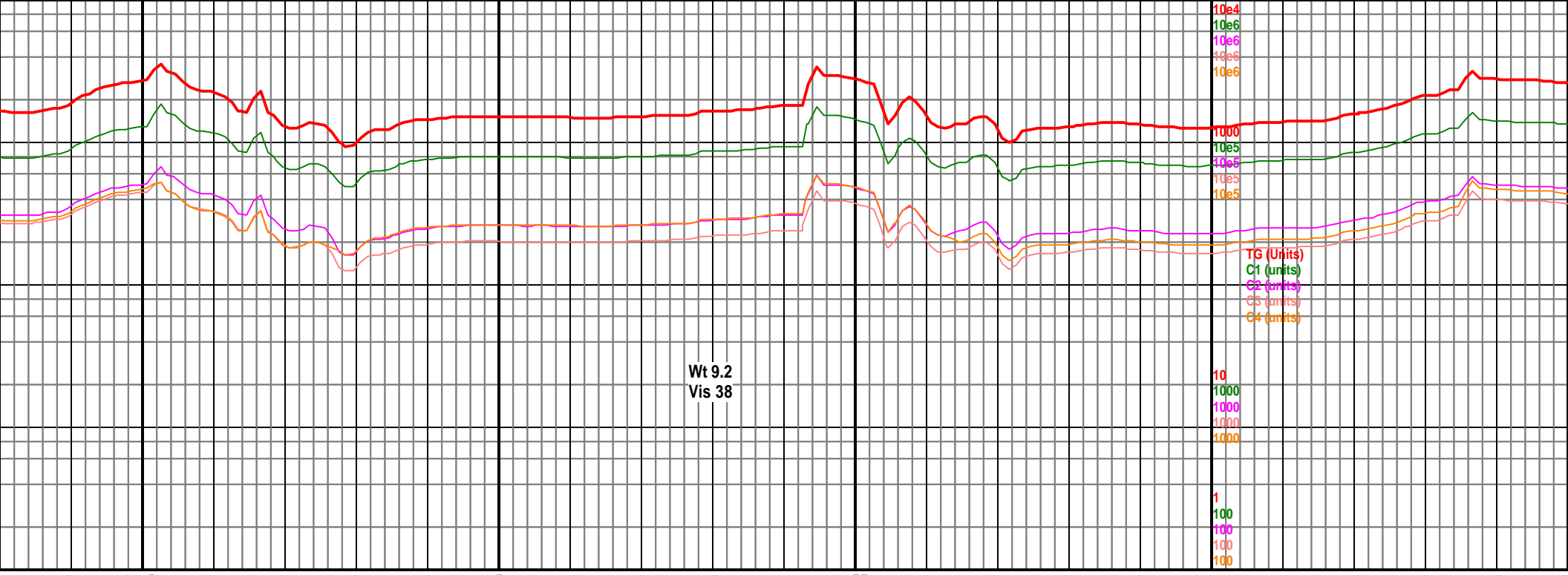
MD 12397 TVD 5907.94
INC 90.86 AZ 177.91
VS 6996.15

5750
(-731)

12200-12300 Chk lt gy-med gy,
plty-blky, frm, mottled, occ Mrlst dk gy,
sb blky, mod frm, rr bent, tr yel min
flor, fst oil cut 70% chk 30% mrlst

12300-12400 Chk lt gy-med gy,
plty-blky, frm, mottled, occ Mrlst dk gy,
sb blky, mod frm, rr bent, tr yel min
flor, fst oil cut 70% chk 30% mrlst

B



Wt 9.2
Vis 38

TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

10
1000
1000
1000
1000

1
100
100
100
100

12450

12500

12550

12600

12650

MD 12488 TVD 5905.95
INC 91.65 AZ 180.05
VS 7086.75

MD 12580 TVD 5904.43
INC 90.24 AZ 180.73
VS 7178.53

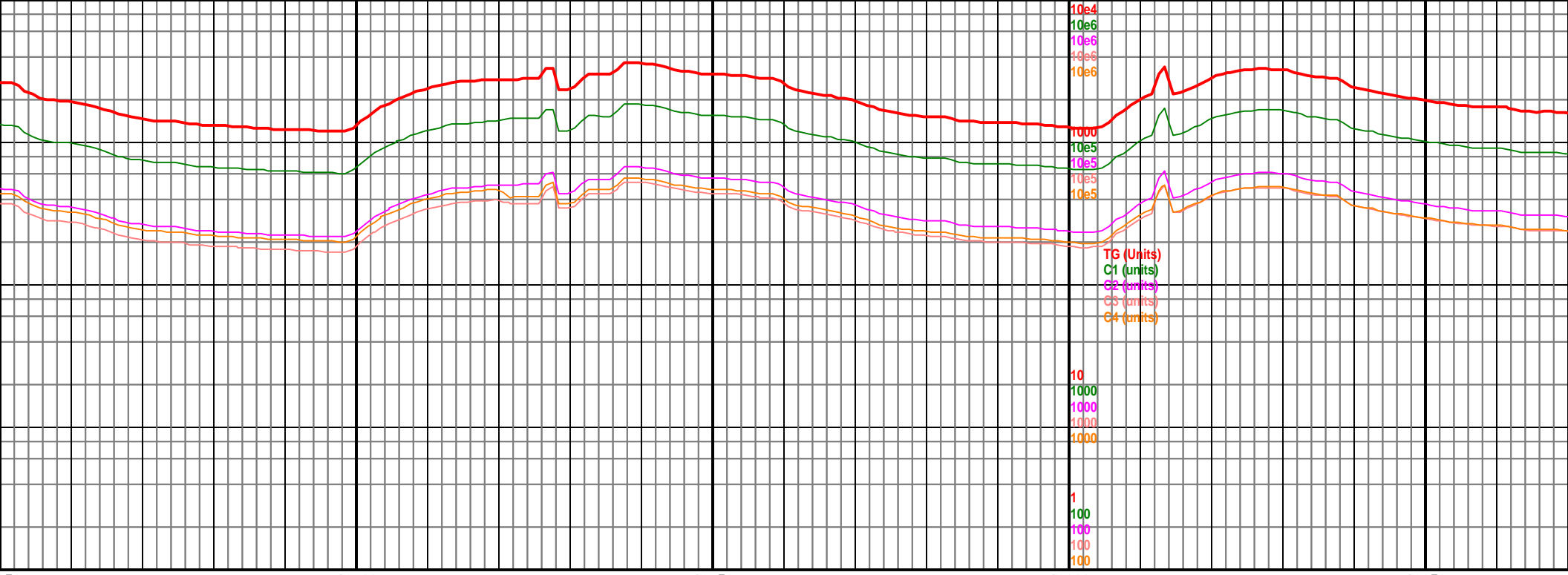
5000 TVD
Sub Sea (+19)

5750
(-731)

12400-12500 Chk lt gy-med gy,
plty-blky, frm, mottled, tr Mrlst dk gy,
sb blky, mod frm, tr bent, fst oil cut
80% chk 20% mrlst

12500-12600 Chk lt gy-med gy,
plty-blky, frm, mottled, tr Mrlst dk gy,
sb blky, mod frm, tr bent, fst oil cut
80% chk 20% mrlst

12600-12700 Chk lt
plty-blky, frm, mottled,
sb blky, mod frm, tr
80% chk 20% mrlst



12550 12700 12750 12800 12850

MD 12672 TVD 5904.5
INC 89.67 AZ 179.92
VS 7270.32

MD 12762 TVD 5905.3
INC 89.32 AZ 179.62
VS 7360.05

5000 TVD
Sub Sea (+19)

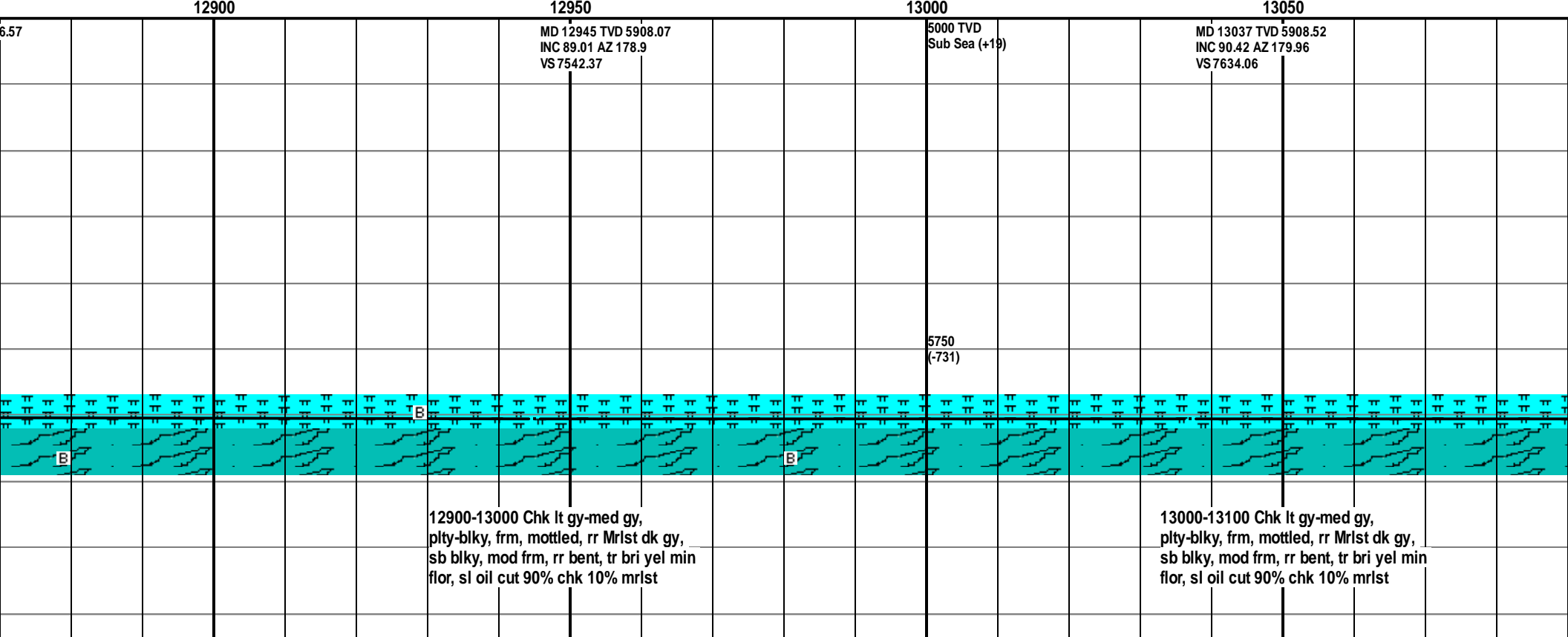
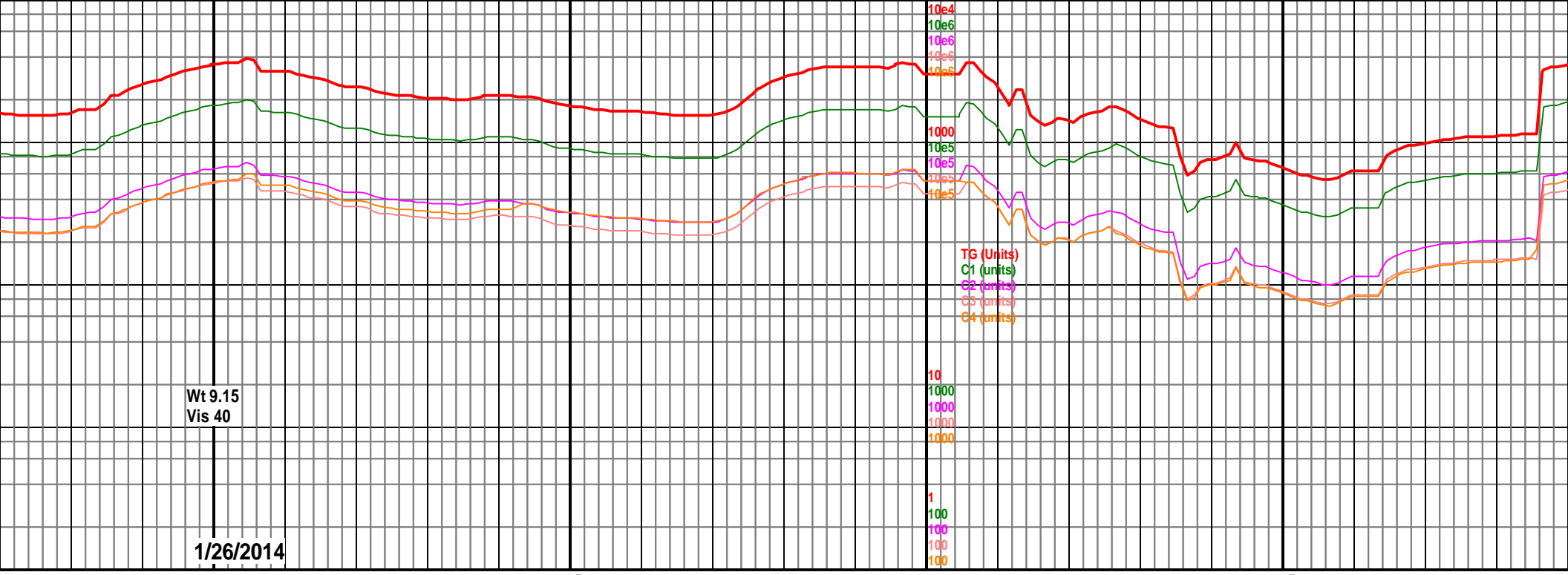
MD 12854 TVD 5905.3
INC 89.1 AZ 179.36
VS 7451.74

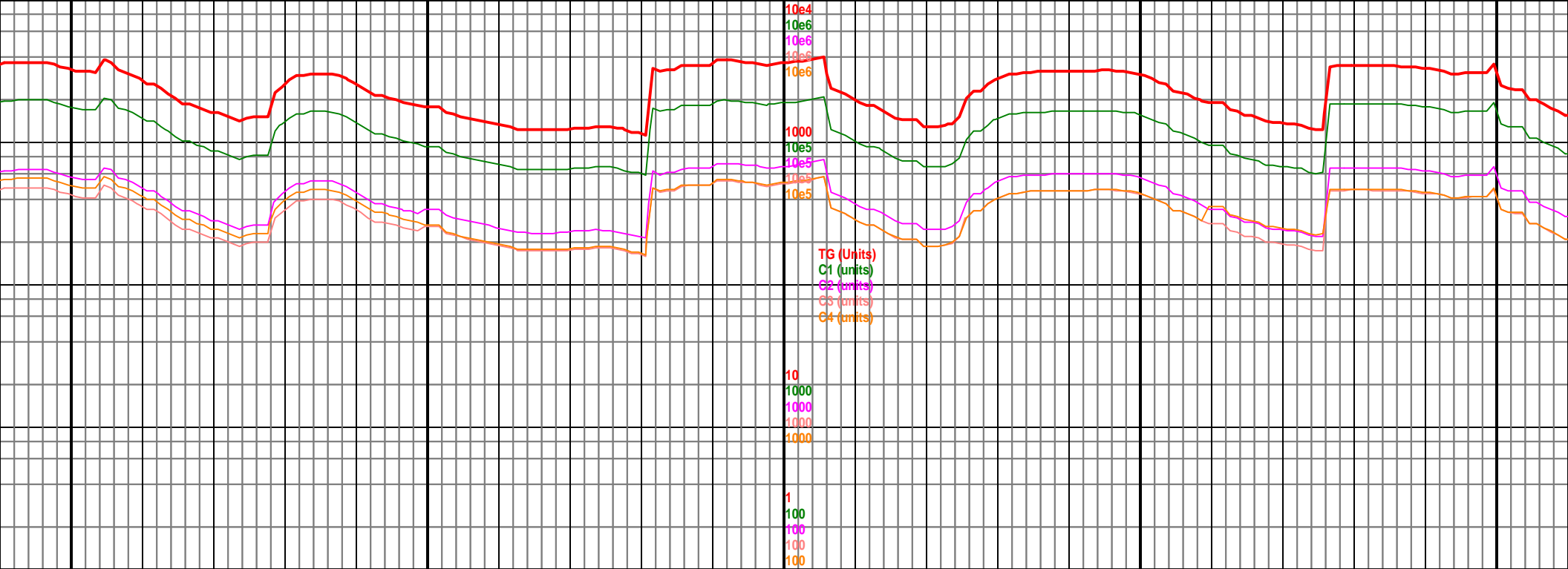
5750
(-731)

gy-med gy,
d, tr Mrlst dk gy,
bent, fst oil cut

12700-12800 Chk lt gy-med gy,
plty-blky, frm, mottled, rr Mrlst dk gy,
sb blky, mod frm, tr bent, fst oil cut
90% chk 10% mrlst

12800-12900 Chk lt gy-med gy,
plty-blky, frm, mottled, rr Mrlst dk gy,
sb blky, mod frm, rr bent, fst oil cut
90% chk 10% mrlst





13100

13150

13200

13250

13300

MD 13131 TVD 5908.02
INC 90.2 AZ 180.08
VS 7727.81

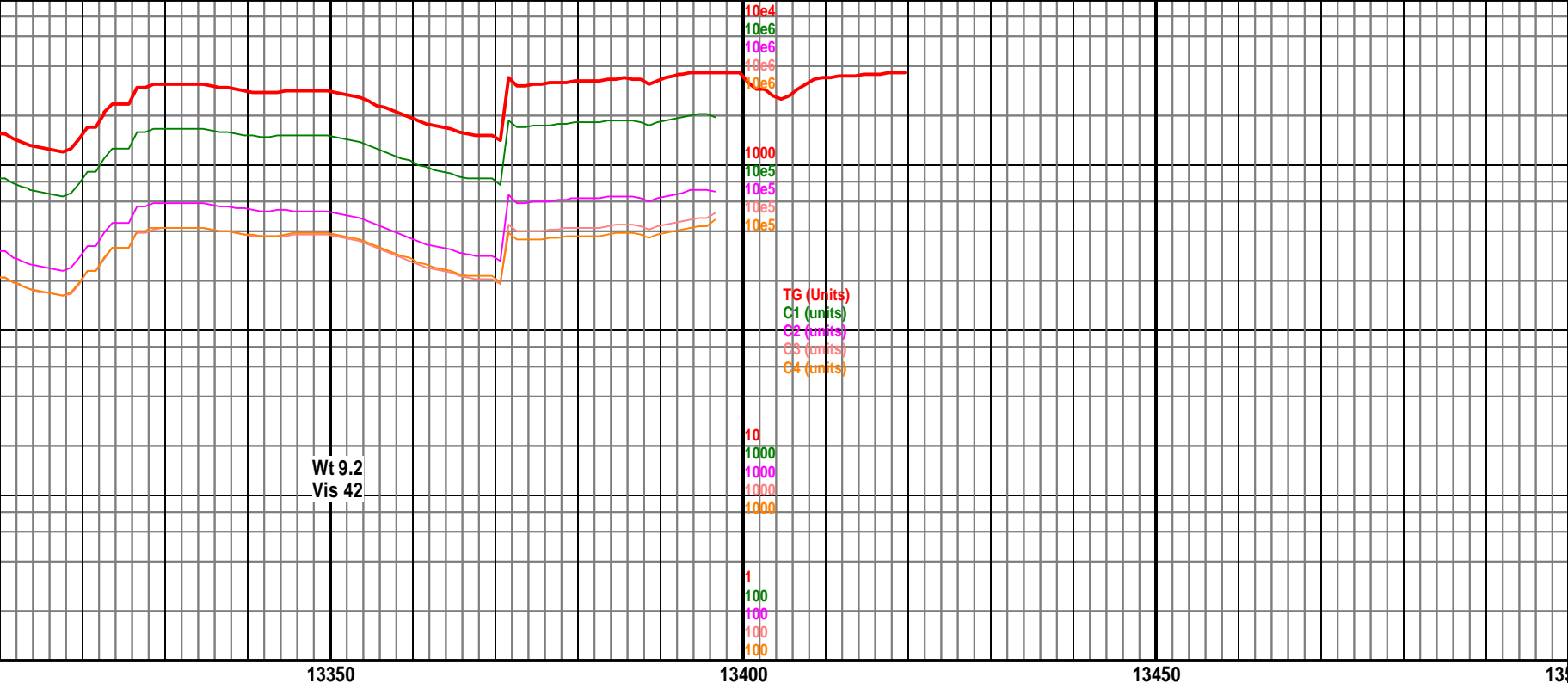
5000 TVD
Sub Sea (+19)

MD 13226 TVD 5907.94
INC 89.89 AZ 179.34
VS 7822.52

5750
(-731)

13100-13200 Chk lt gy-med gy,
plty-blky, frm, mottled, rr Mrlst dk gy,
sb blky, mod frm, rr bent, tr bri yel min
flor, fst oil cut 90% chk 10% mrlst

13200-13300 Chk lt gy-med gy,
plty-blky, frm, mottled, rr Mrlst dk gy,
sb blky, mod frm, rr bent, tr bri yel min
flor, fst oil cut 90% chk 10% mrlst

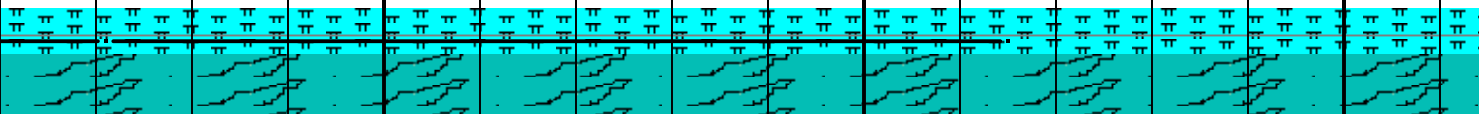


MD 13321 TVD 5908.46
INC 89.49 AZ 179.01
VS7917.16

5000 TVD	
Sub Sea (+19)	

MD 13415	TVD 5909.65
INC 89.05	AZ 178.7
VS 8010.74	

TD 13465' at 04:58 on
1/26/2014

$$\begin{array}{r} 5750 \\ -731 \\ \hline \end{array}$$


13300-13400 Chk lt gy-med gy,
 plty-blky, frm, mottled, rr Mrlst dk gy,
 sb blky, mod frm, rr bent, tr bri yel min
 flwr, fst oil cut 90% chk 10% mrlst

13400-13465 Chk lt gy-med gy,
 plty-blky, frm, mottled, rr Mrlst dk gy,
 sb blky, mod frm, rr bent, tr bri yel min
 flor, fst oil cut 90% chk 10% mrlst