



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

Well Name: Horsetail 30F-3108
Well Id:
Location: SENW 30-T10N-R57W, Weld County, Colorado
License Number: 05-123-391990
Spud Date: 7/22/2014
Surface Coordinates: Lat. 40.810544, Long. -103.795922
Region: Horsetail Field
Drilling Completed:
Bottom Hole Lat. 40.789506, Long. -103.793956
Coordinates:
Ground Elevation (ft): 4780 K.B. Elevation (ft): 4797
Logged Interval (ft): 4950 To: Total Depth (ft):
Formation: Pierre, Sharon Springs, 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: Kyle Newman, Eli Denbesten
Company: Acme Geologic Consulting
Address: 108 Berry Street
Little Rock, AR 72205

Drilling Company

Xtreme 18

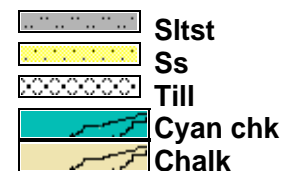
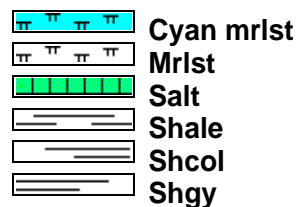
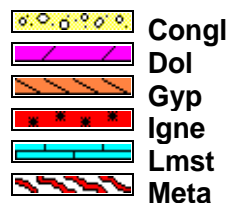
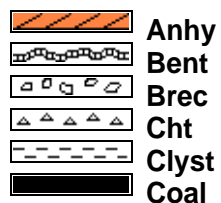
Gas Detection

Mudlogging Systems, Inc., M Logger, Model TGC, Total Gas and Chromatograph, #328

Comments

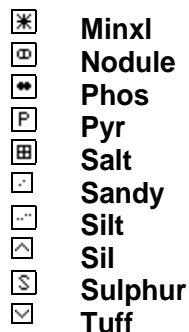
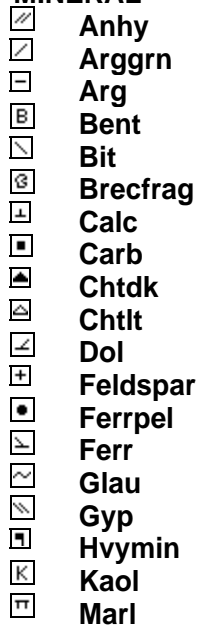
Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.

ROCK TYPES

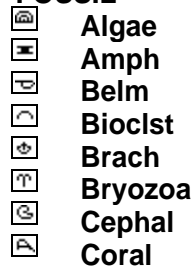


ACCESSORIES

MINERAL



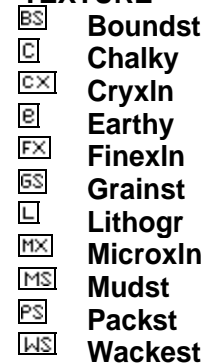
FOSSIL



STRINGER











TEXTURE



OTHER SYMBOLS




POROSITY

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

SORTING





-  Well
-  Moderate
-  Poor

ROUNDING



-  Rounded
-  Subrnd
-  Subang

-  Angular

OIL SHOW

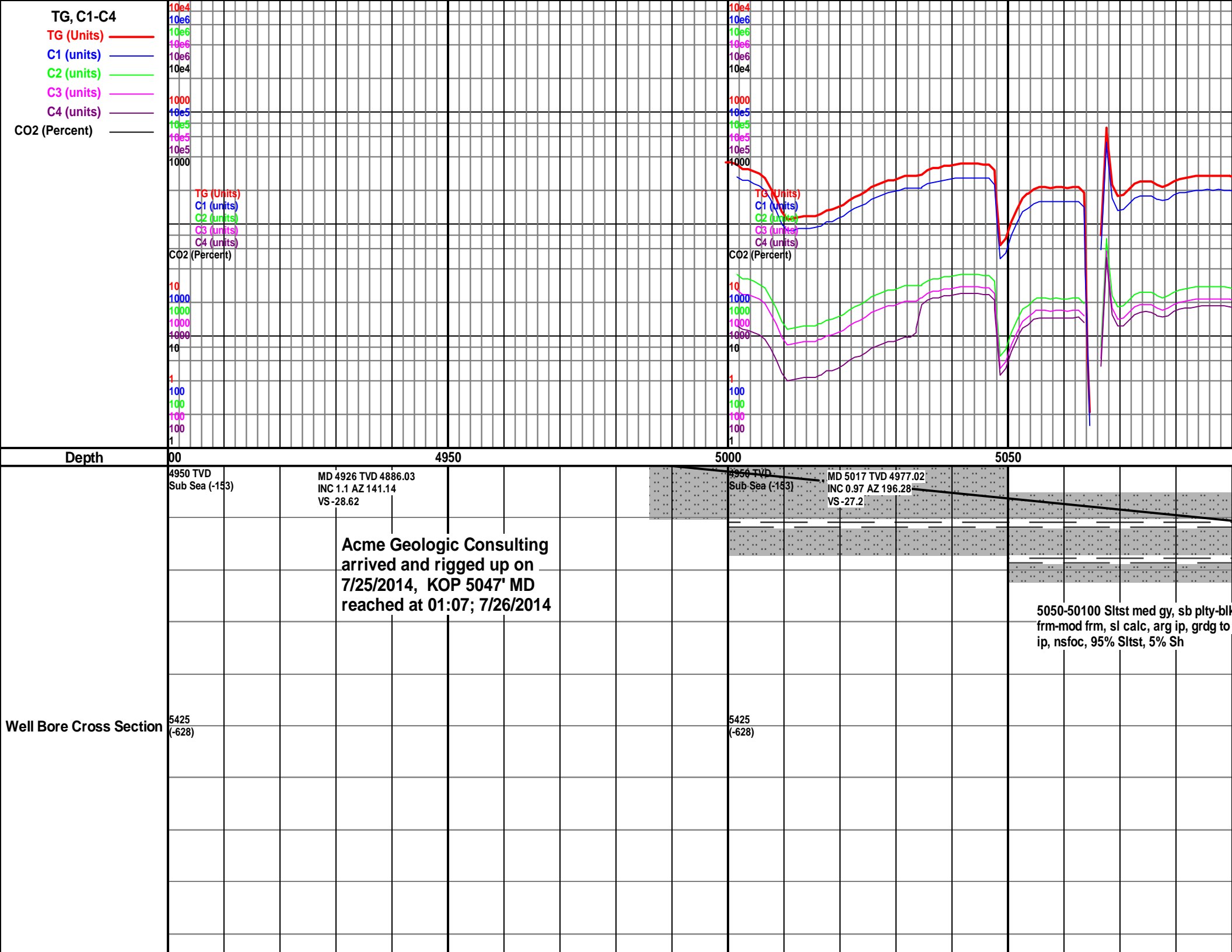
-  Even
-  Spotted
-  Ques
-  Dead

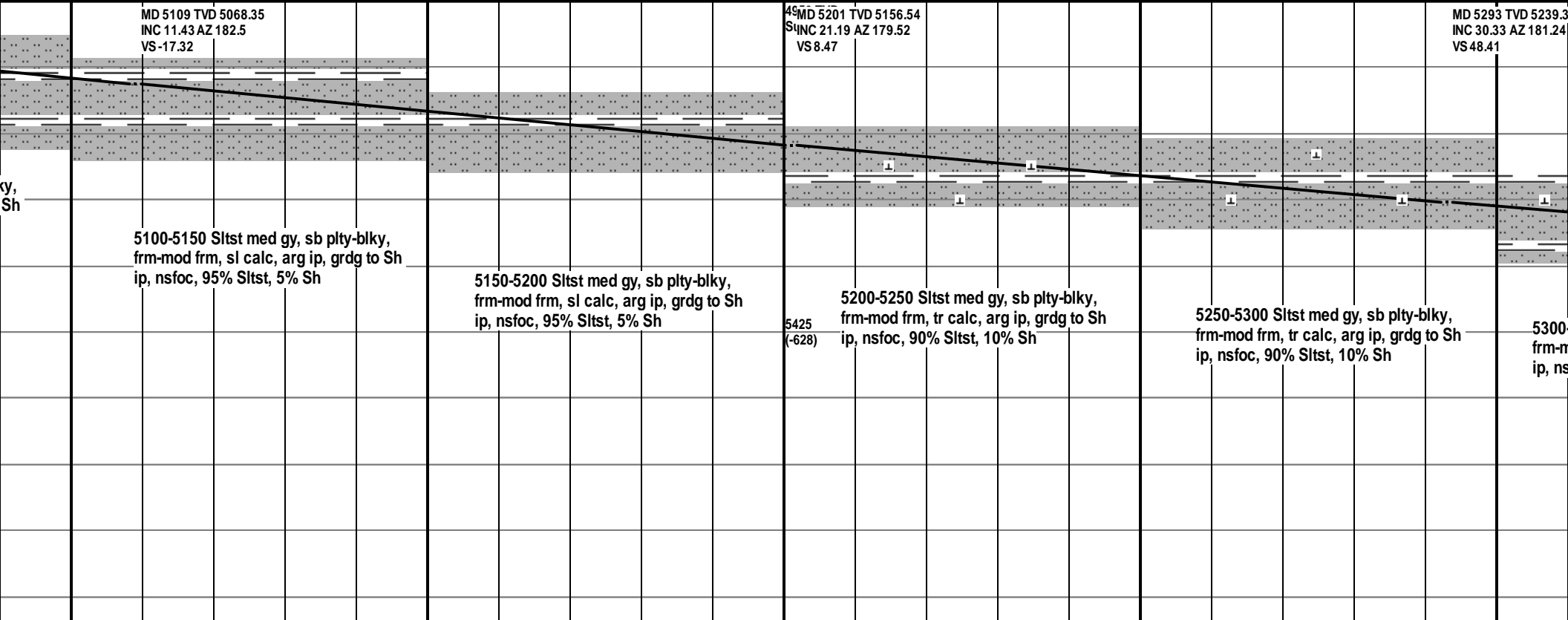
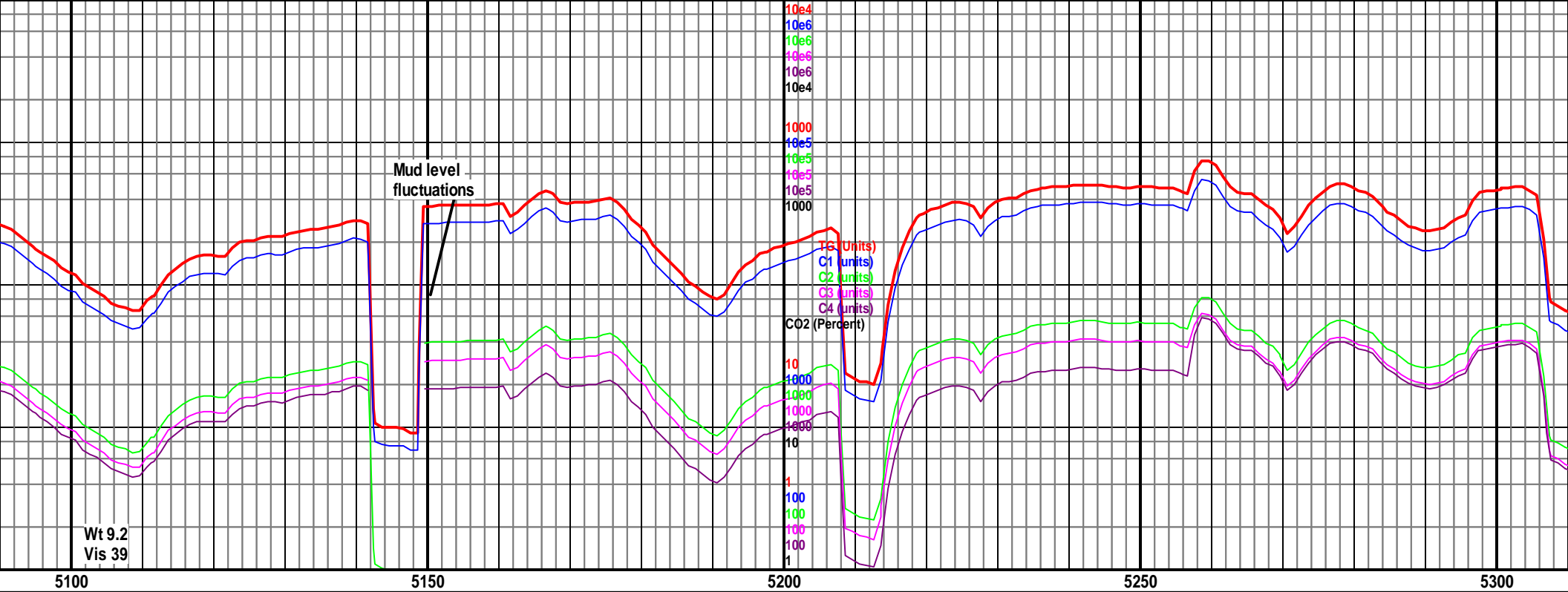
INTERVAL

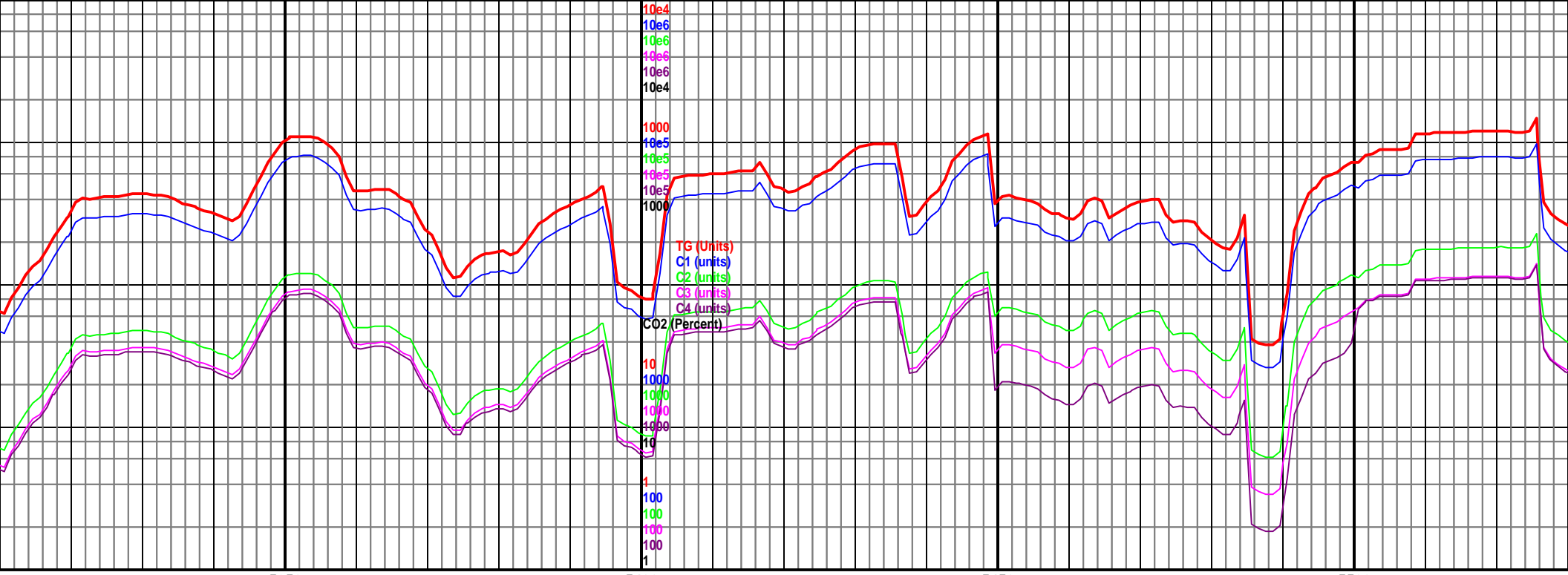
-  Core
-  Dst

EVENT

-  Rft
-  Sidewall





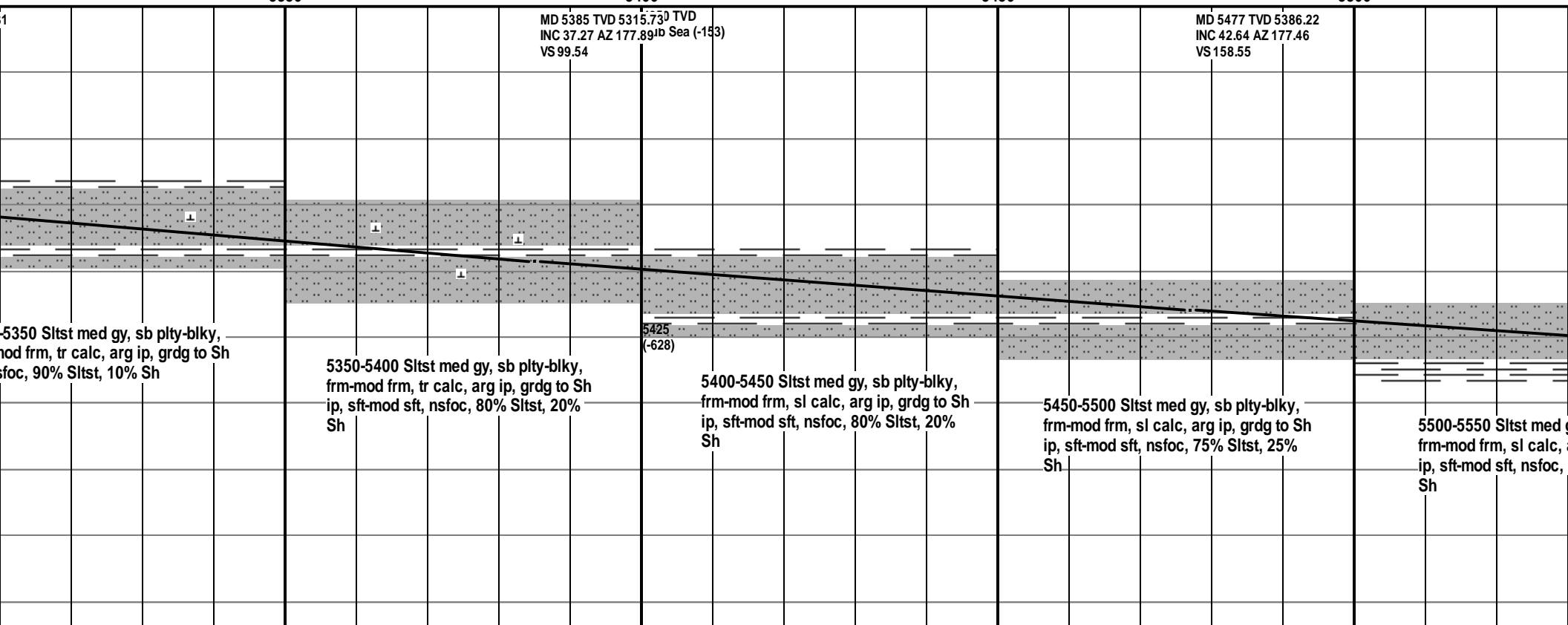


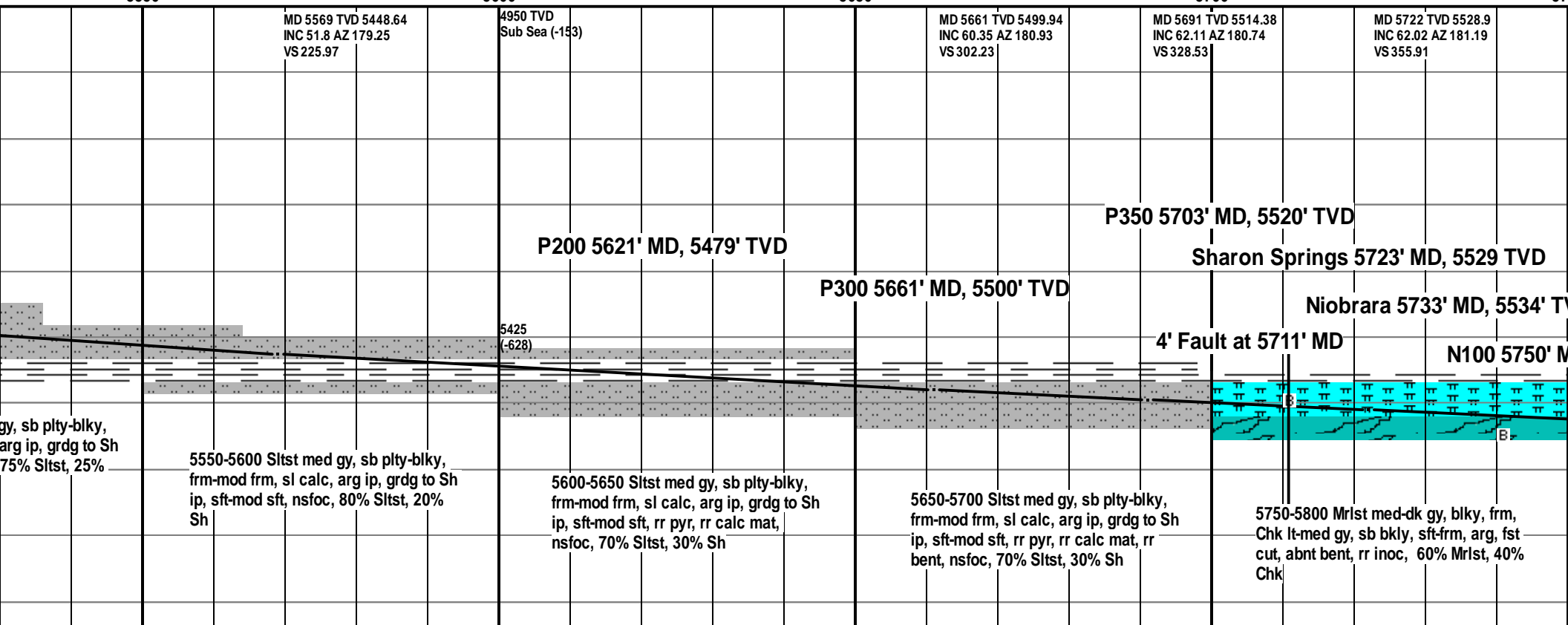
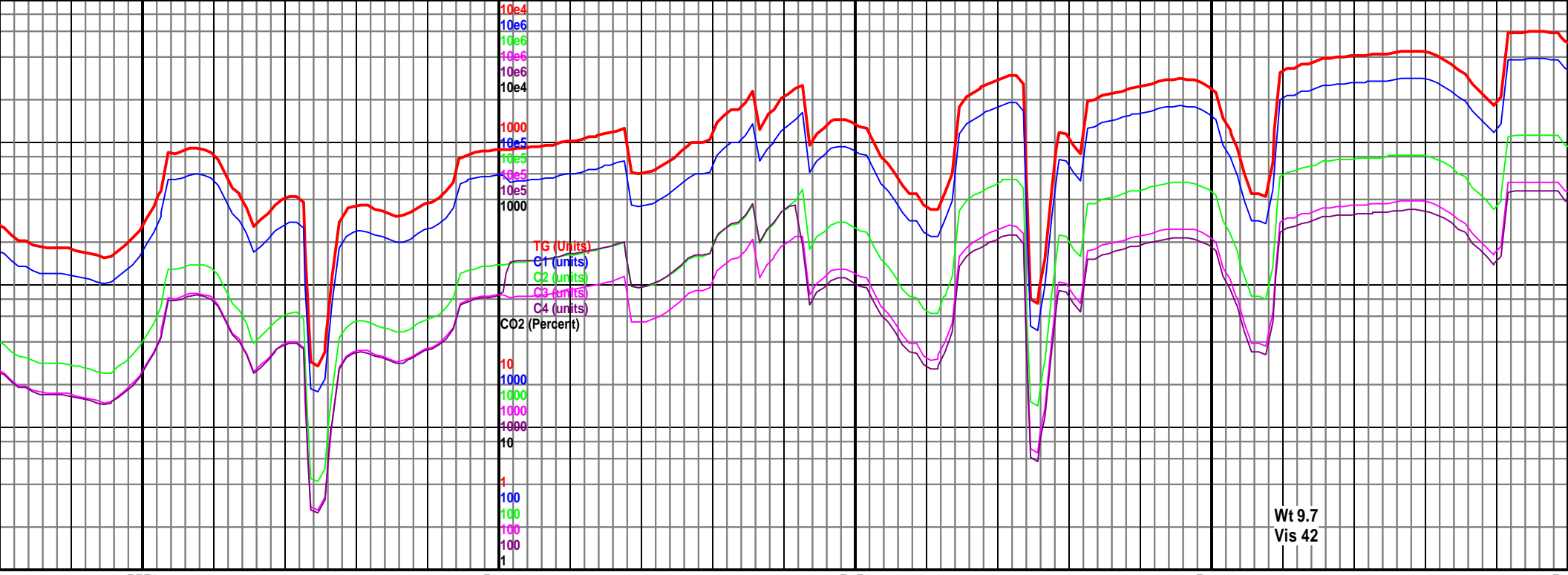
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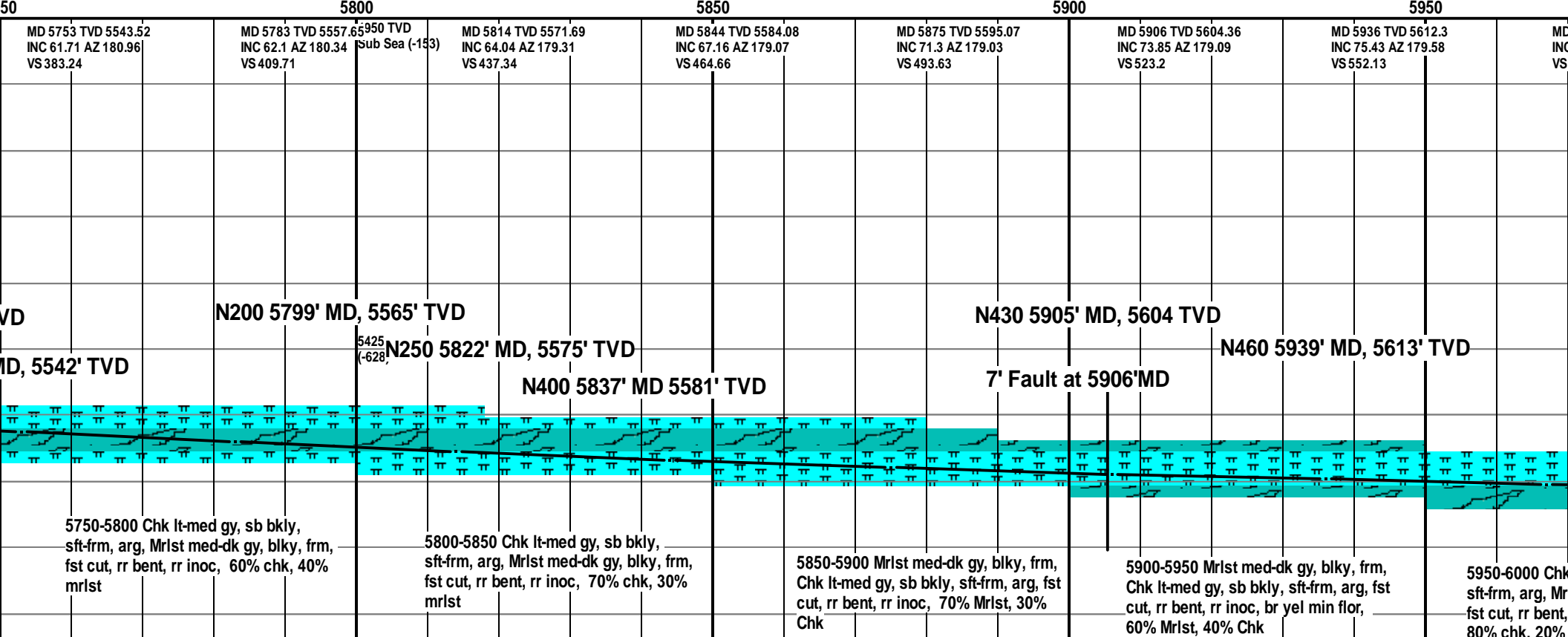
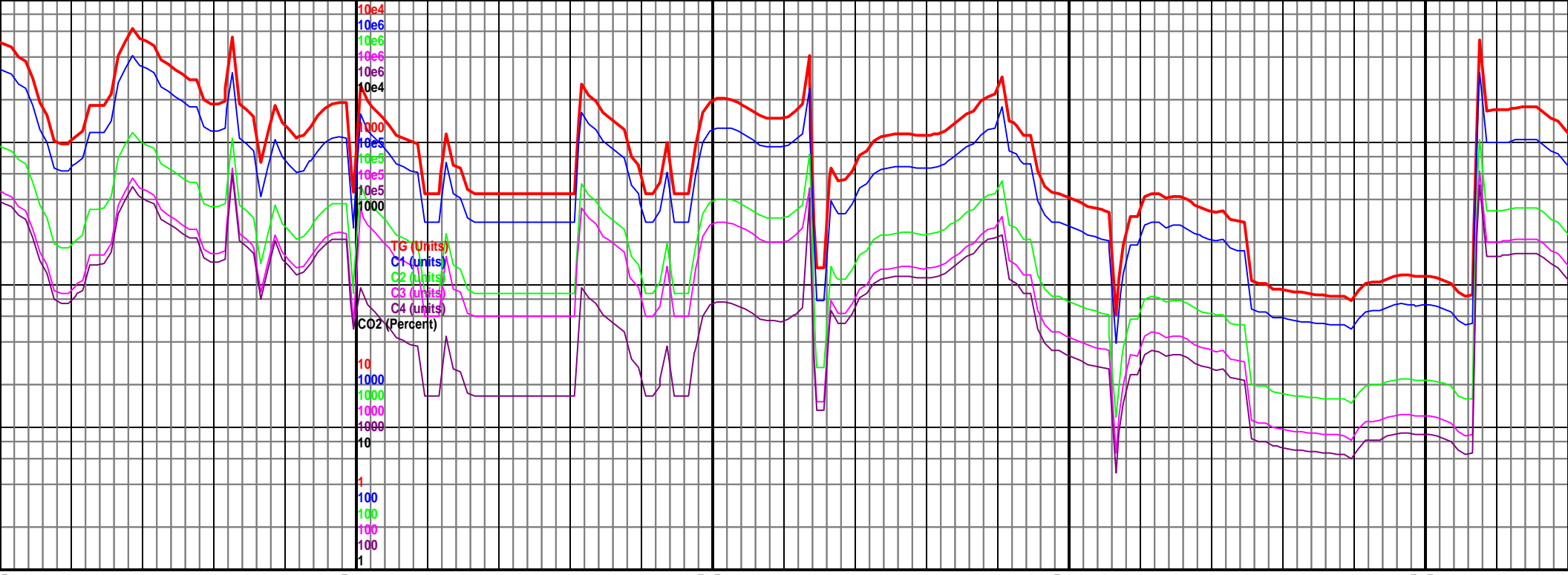
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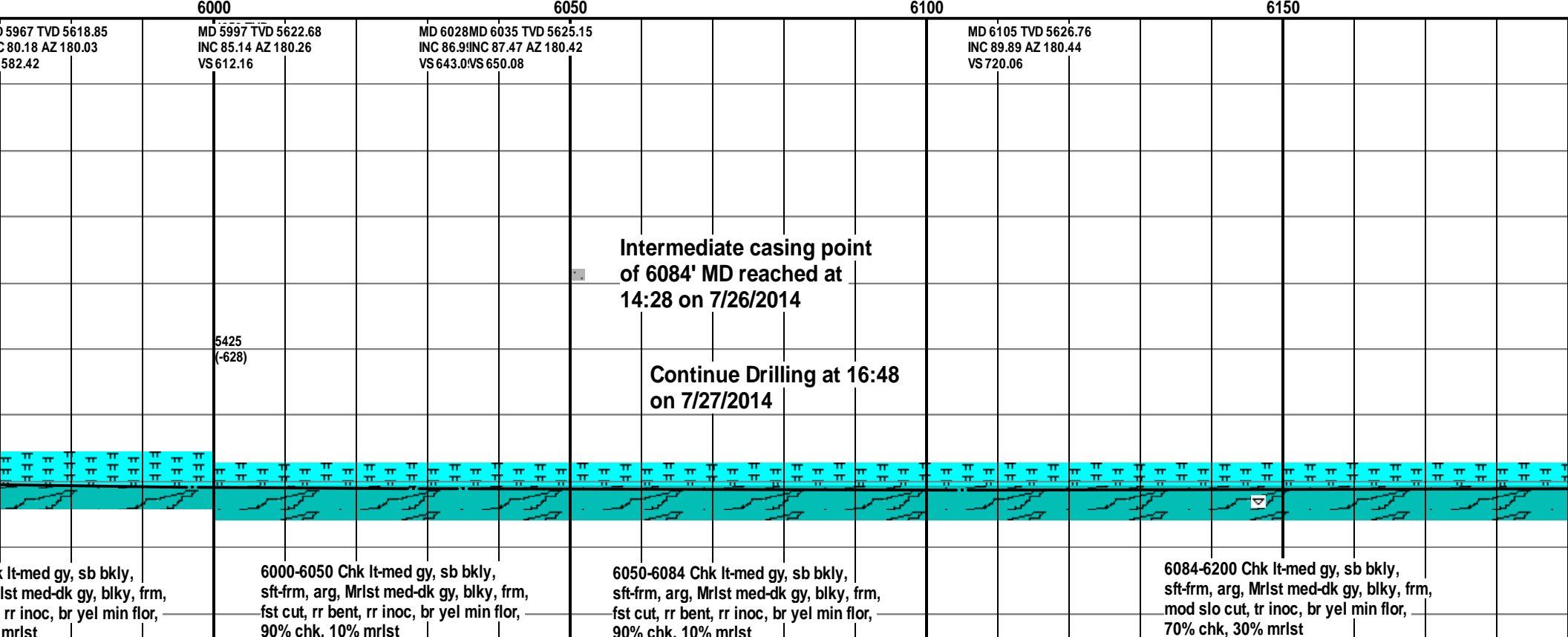
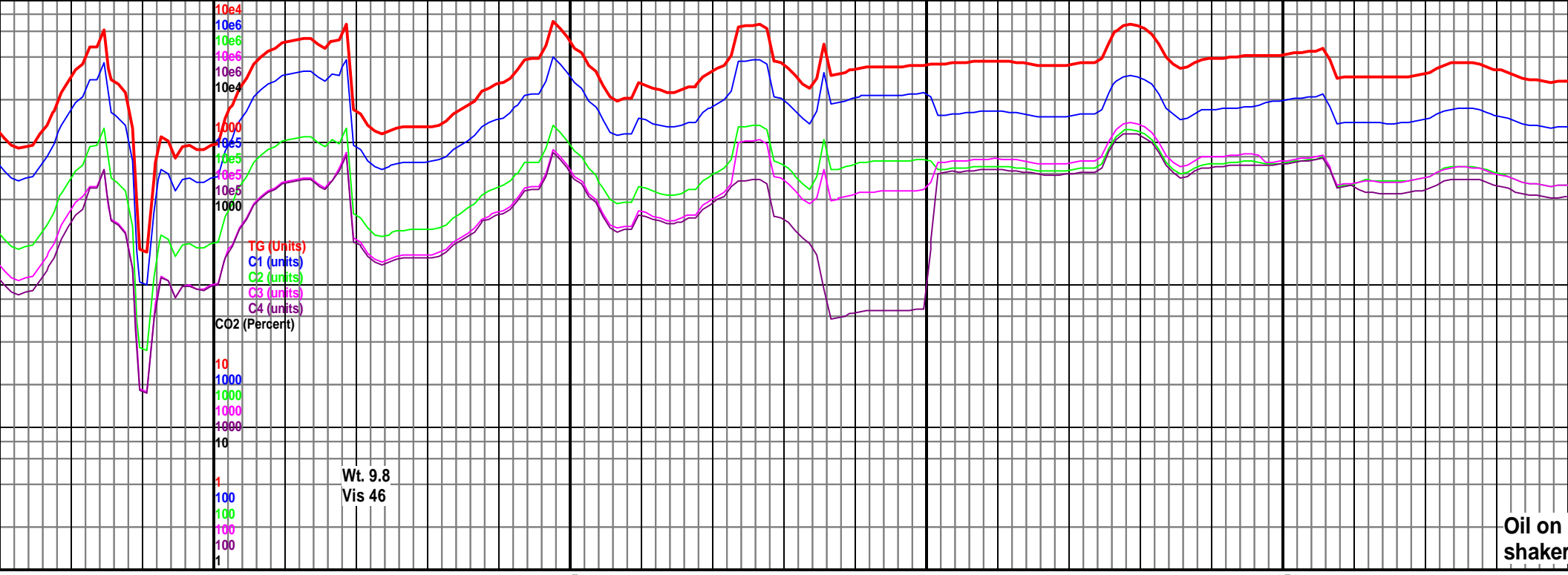
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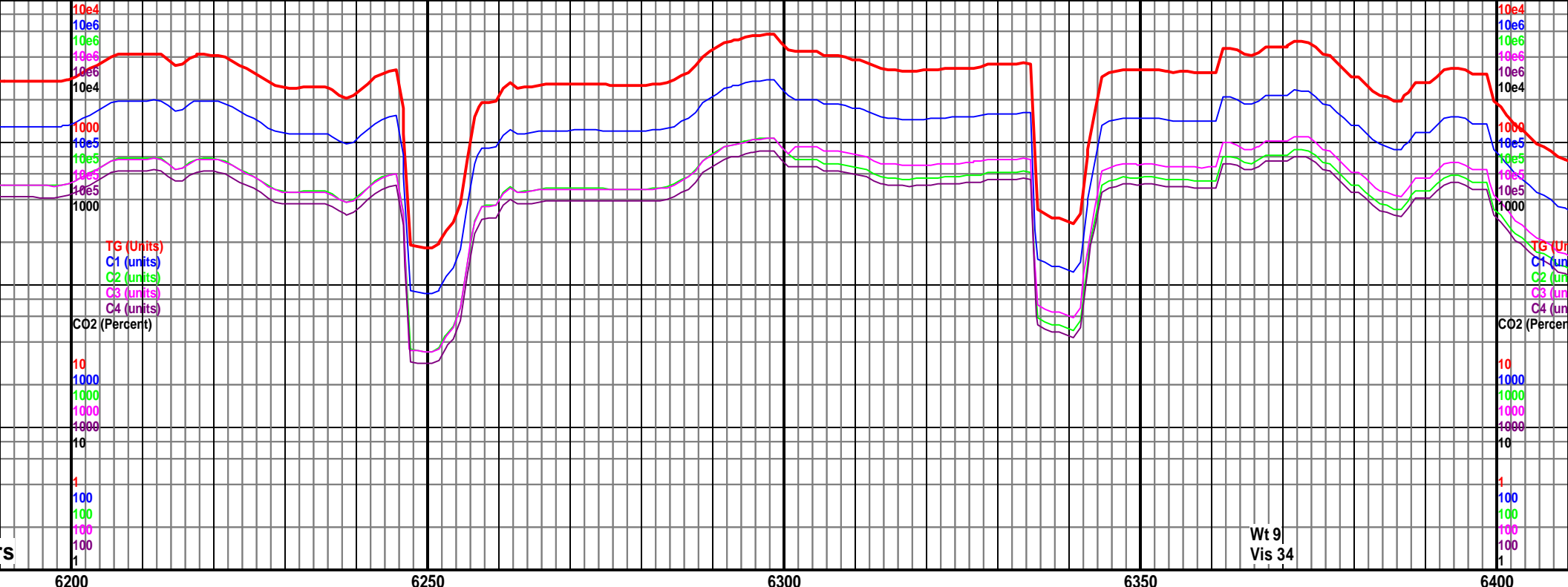
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MD 6194 TVD 5626.35
INC 90.64 AZ 179.85
VS 809.05

MD 6284 TVD 5625.14
INC 90.9 AZ 179.48
VS 899.04

MD 6374 TVD 5625.24
INC 88.97 AZ 179.18
VS 989.03

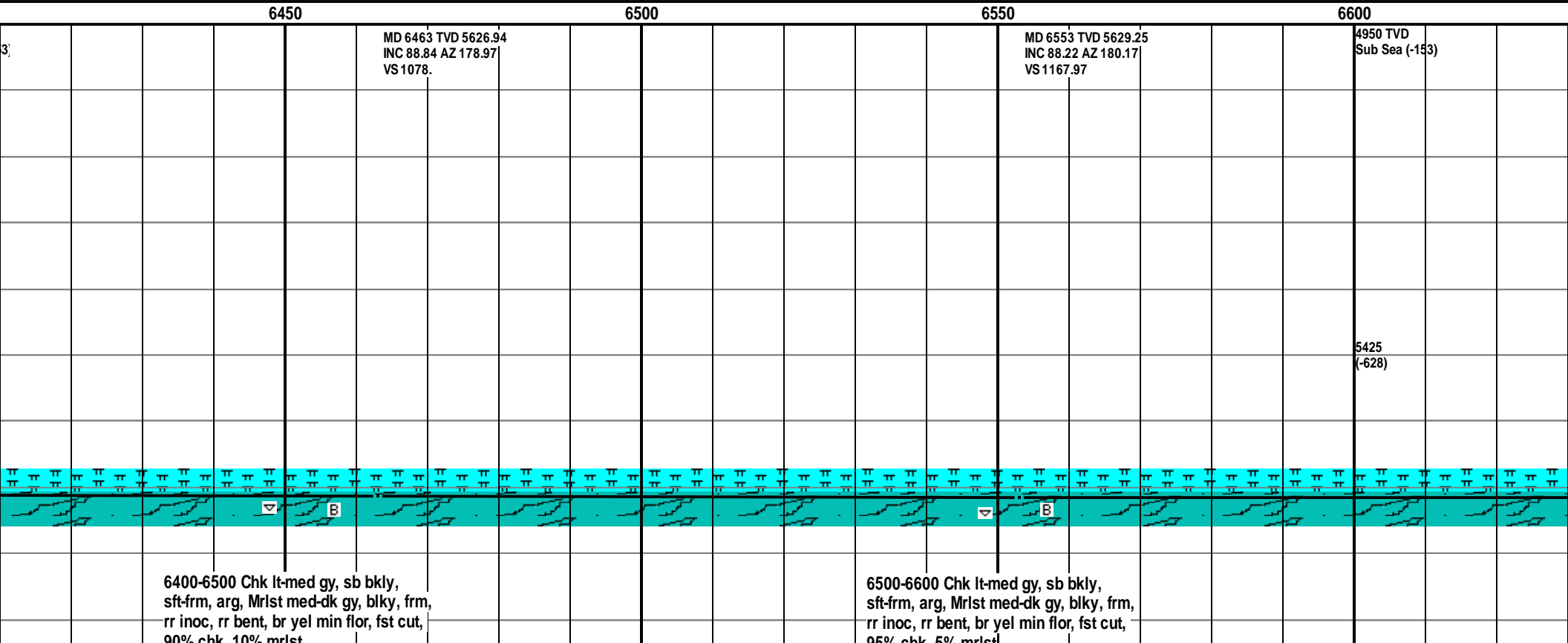
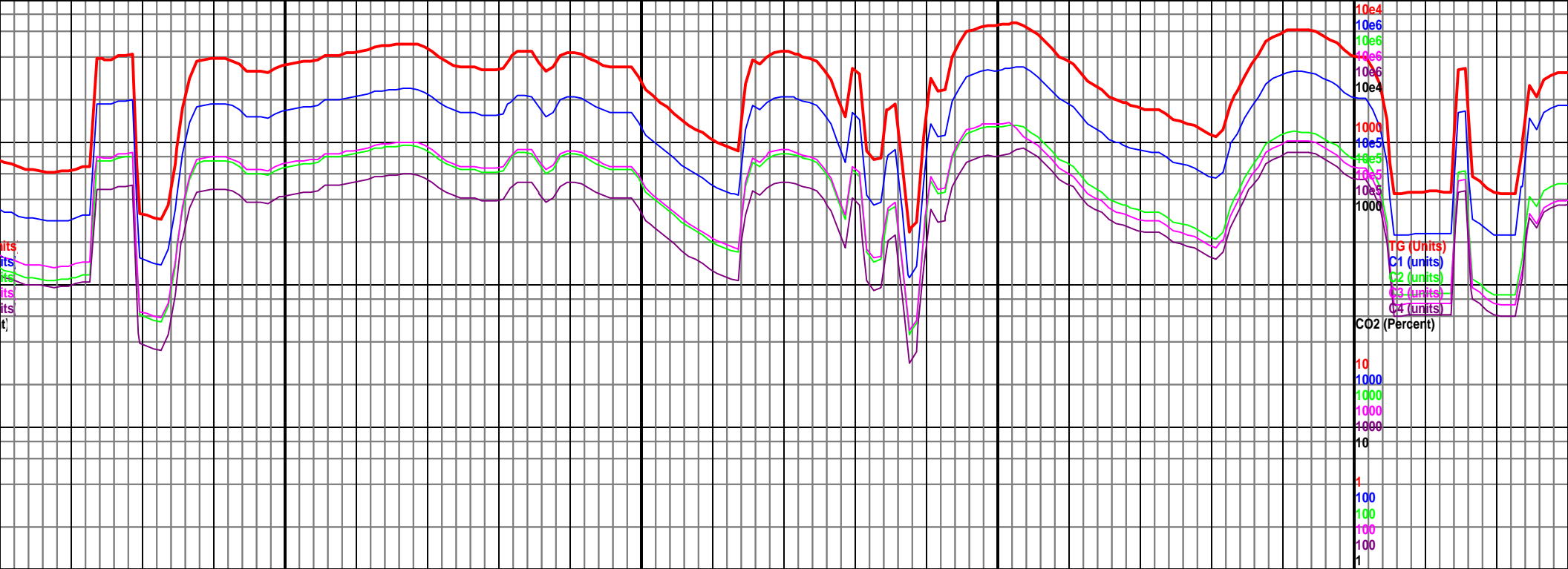
4950 TVD
Sub Sea (-15)

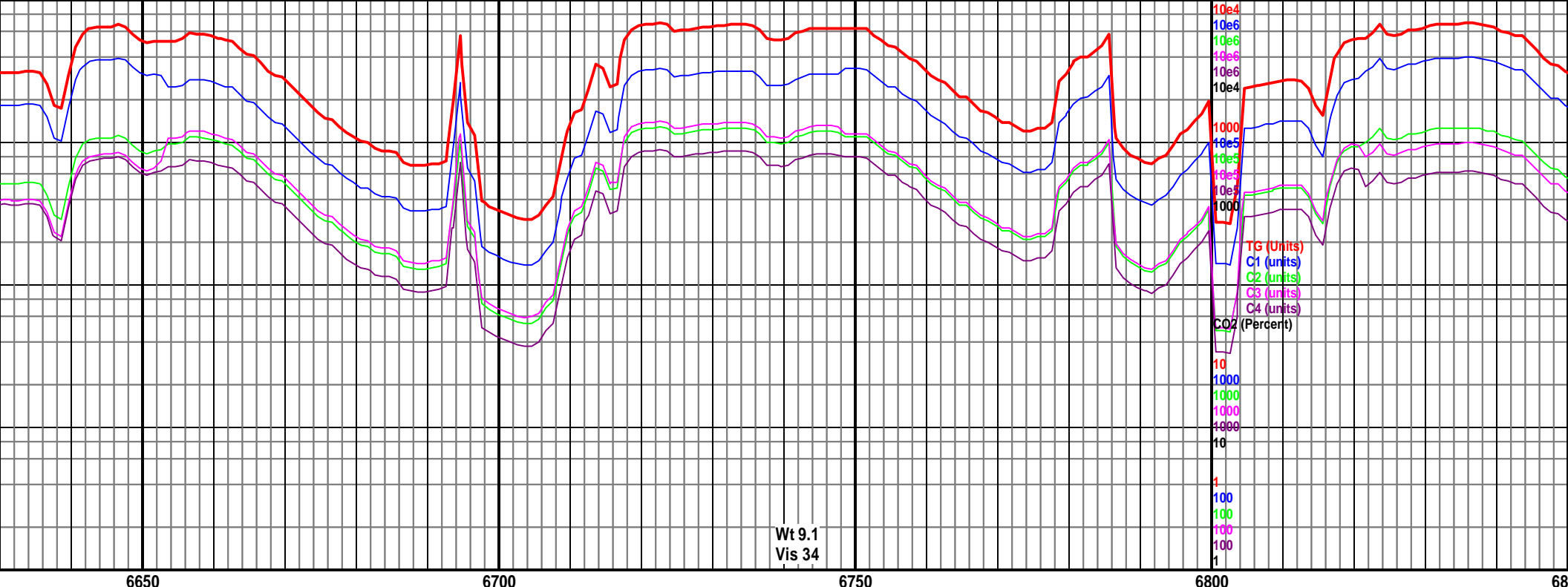
5425
(-628)

5425
(-628)

6200-6300 Chk lt-med gy, sb bkly,
sft frm, arg, Mrlst med-dk gy, blkly, frm,
mod slo cut, tr inoc, br yel min flor,
90% chk. 10% mrlst

6300-6400 Chk lt-med gy, sb bkly,
sft frm, arg, Mrlst med-dk gy, blkly, frm,
tr inoc, rr bent, br yel min flor, fst cut,
90% chk. 10% mrlst





MD 6642 TVD 5630.65
INC 89.98 AZ 181.58
VS 1256.94

MD 6732 TVD 5629.23
INC 91.82 AZ 182.53
VS 1346.87

4950 TVD
Sub Sea (-153)

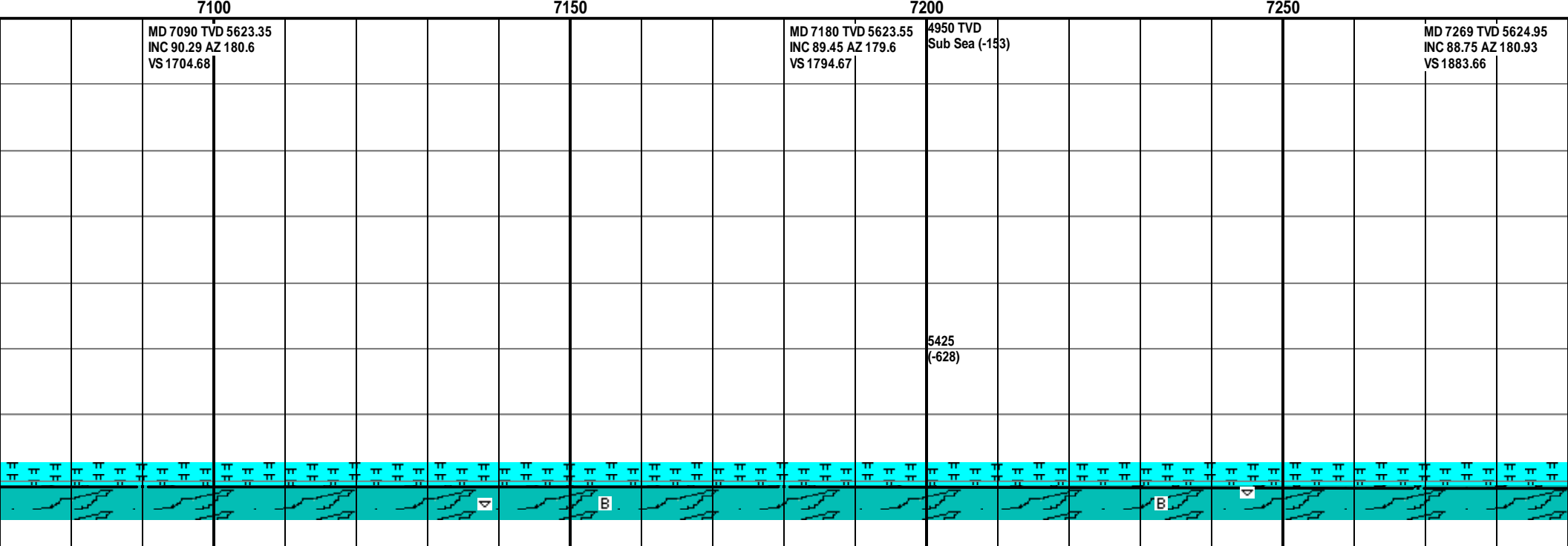
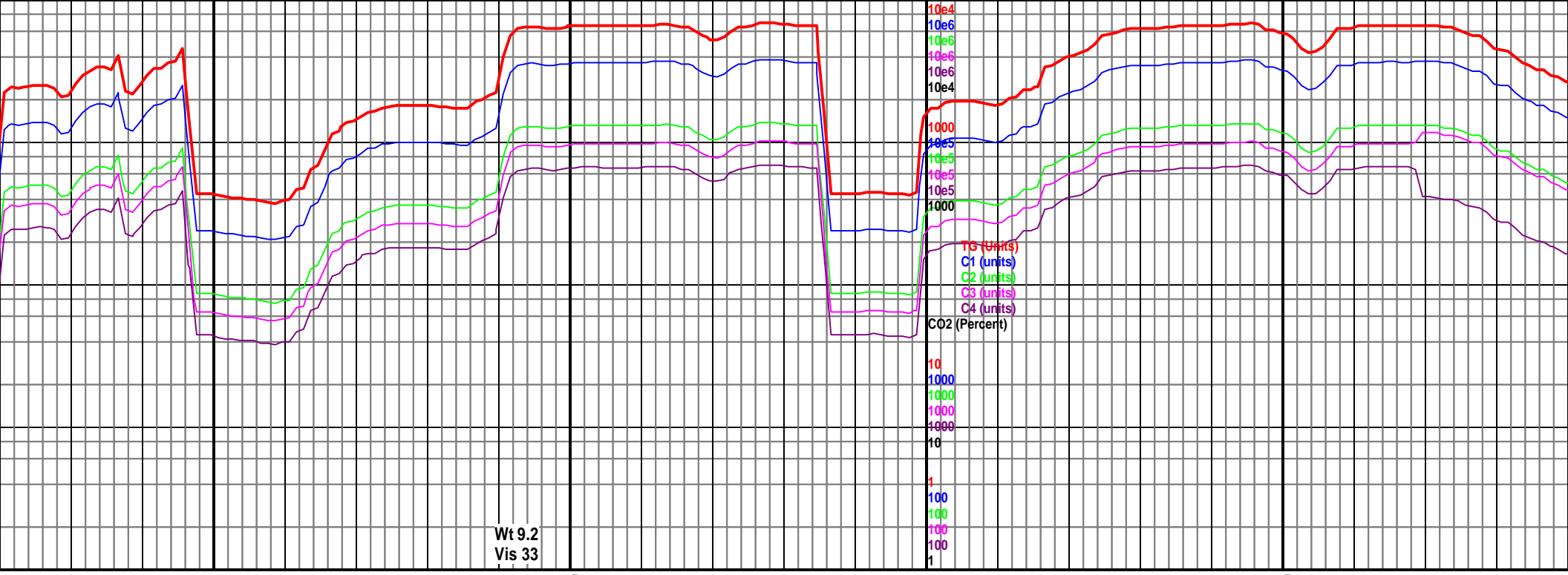
MD 6822 TVD 5627.4
INC 90.51 AZ 182.84
VS 1436.75

5425
(-628)

6600-6700 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, dull yel min flor,
fct out 25% chb 45% argst

6700-6800 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, rr bent, dull yel
fct out 75% chb 25% argst

6800-6900 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, rr bent, dull yel
fct out 70% chb 30% argst



MD 7090 TVD 5623.35
INC 90.29 AZ 180.6
VS 1704.68

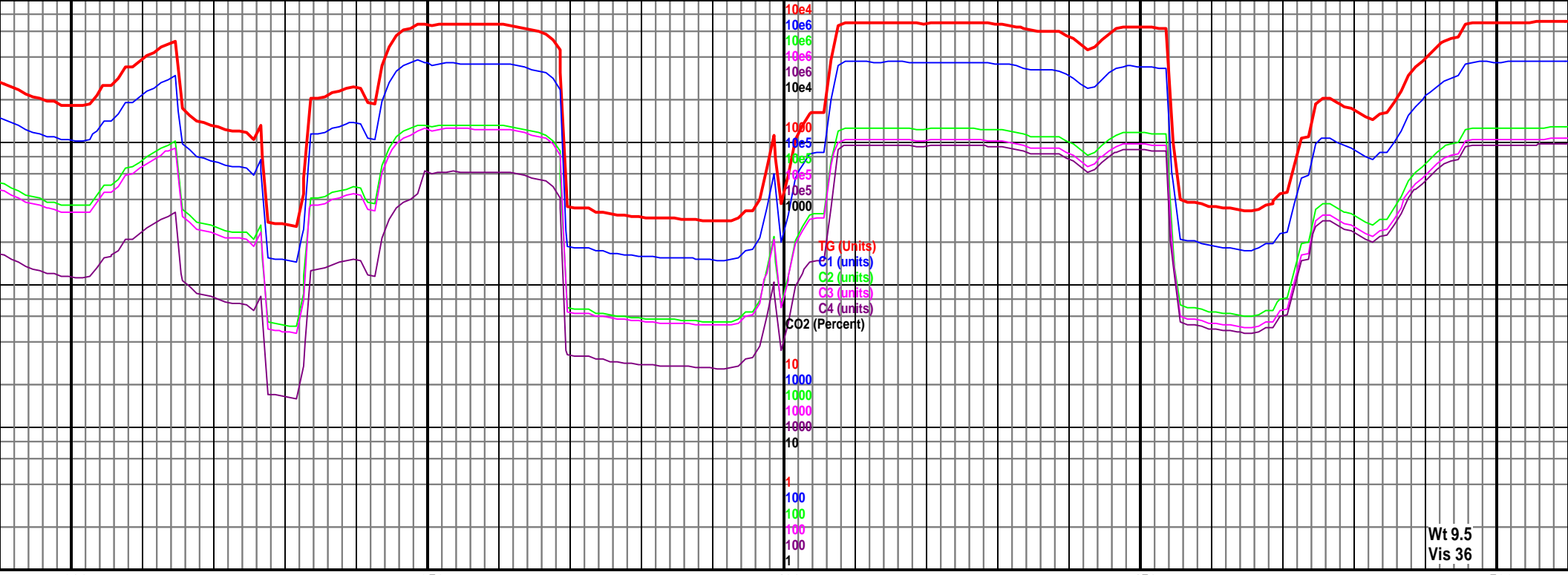
MD 7180 TVD 5623.55
INC 89.45 AZ 179.6
VS 1794.67

4950 TVD
Sub Sea (-153)

MD 7269 TVD 5624.95
INC 88.75 AZ 180.93
VS 1883.66

7100-7200 Mrlst med-dk gy, blk, frm,
Chk lt-med gy, sb bkly, sft-frm, banded
ip, arg, rr inoc, rr bent, rr pyr, dull yel
min flor, fst cut, 80% mrlst, 20% chk

7200-7300 Mrlst med-dk gy, blk, frm,
Chk lt-med gy, sb bkly, sft-frm, banded
ip, arg, rr inoc, rr pyr, rr bent, dull yel
min flor, fst cut, 80% mrlst, 20% chk



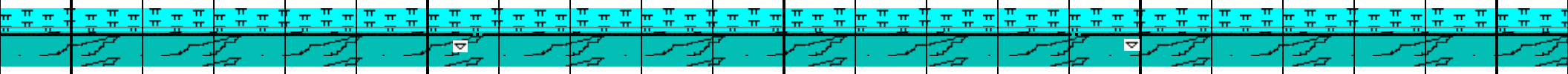
7300 7350 7400 7450 7500

MD 7357 TVD 5625.48
INC 90.55 AZ 180.71
VS 1971.65

4950 TVD
Sub Sea (-153)

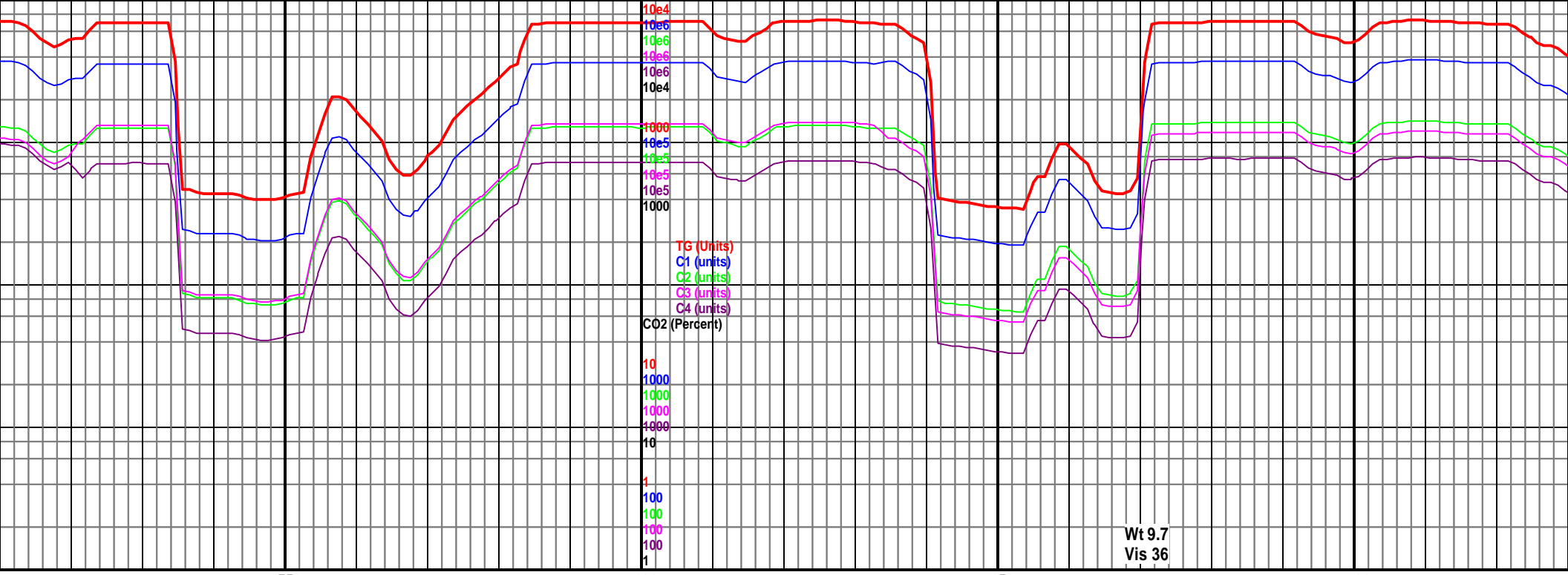
MD 7441 TVD 5624.91
INC 90.24 AZ 180.29
VS 2055.64

5425
(-628)



7300-7400 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blk, frm, rr inoc, dull yel min flor,
fst cut. 85% chk. 15% mrlst

7400-7500 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blk, frm, rr inoc, dull yel min flor,
fst cut. 90% chk. 10% mrlst



MD 7529 TVD 5624.71
INC 90.02 AZ 179.69
VS 2143.64

4950 TVD
Sub Sea (-153)

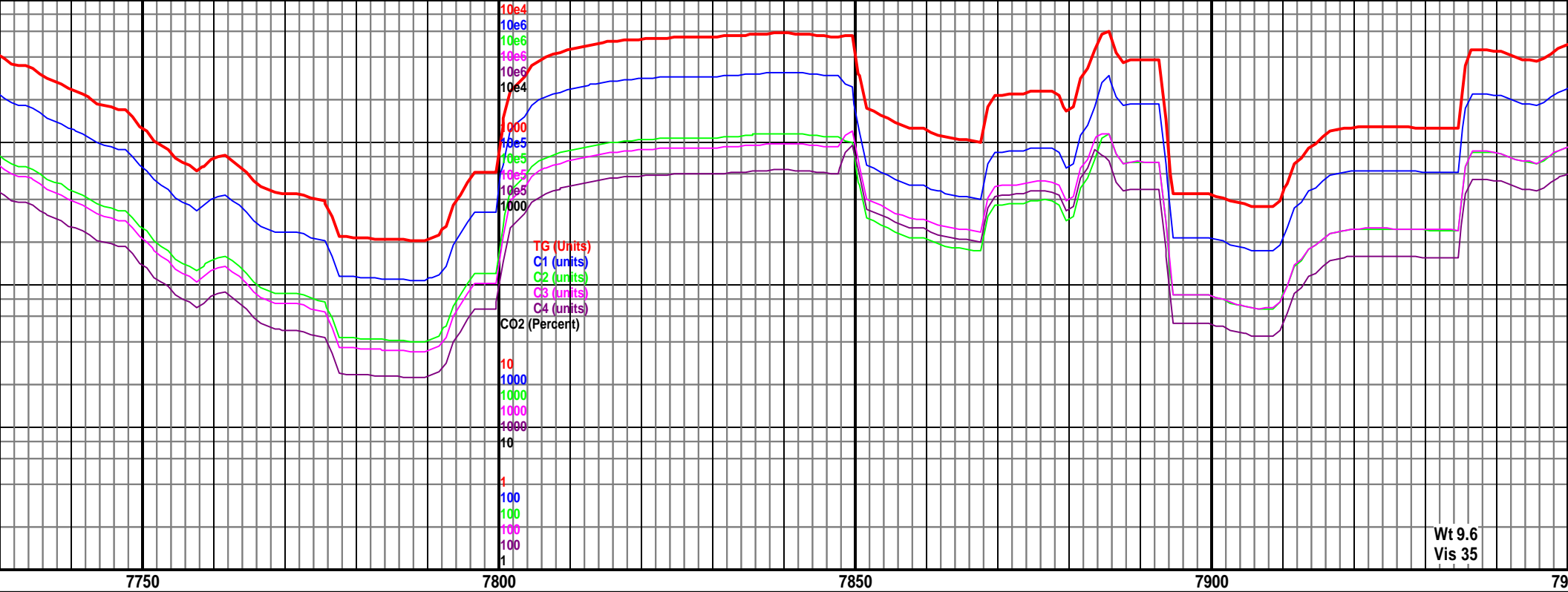
MD 7616 TVD 5624.87
INC 89.76 AZ 179.42
VS 2230.64

MD 7706 TVD 5625.46
INC 89.49 AZ 179.43
VS 2320.63

5425
(-628)

7500-7600 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, rr inoc, dull yel
min flor, fst cut, 100% chk

7600-7700 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, rr inoc, dull yel
min flor, fst cut, 100% chk



MD 7793 TVD 5626.8
 INC 88.75 AZ 178.45⁽³⁾
 VS 2407.6

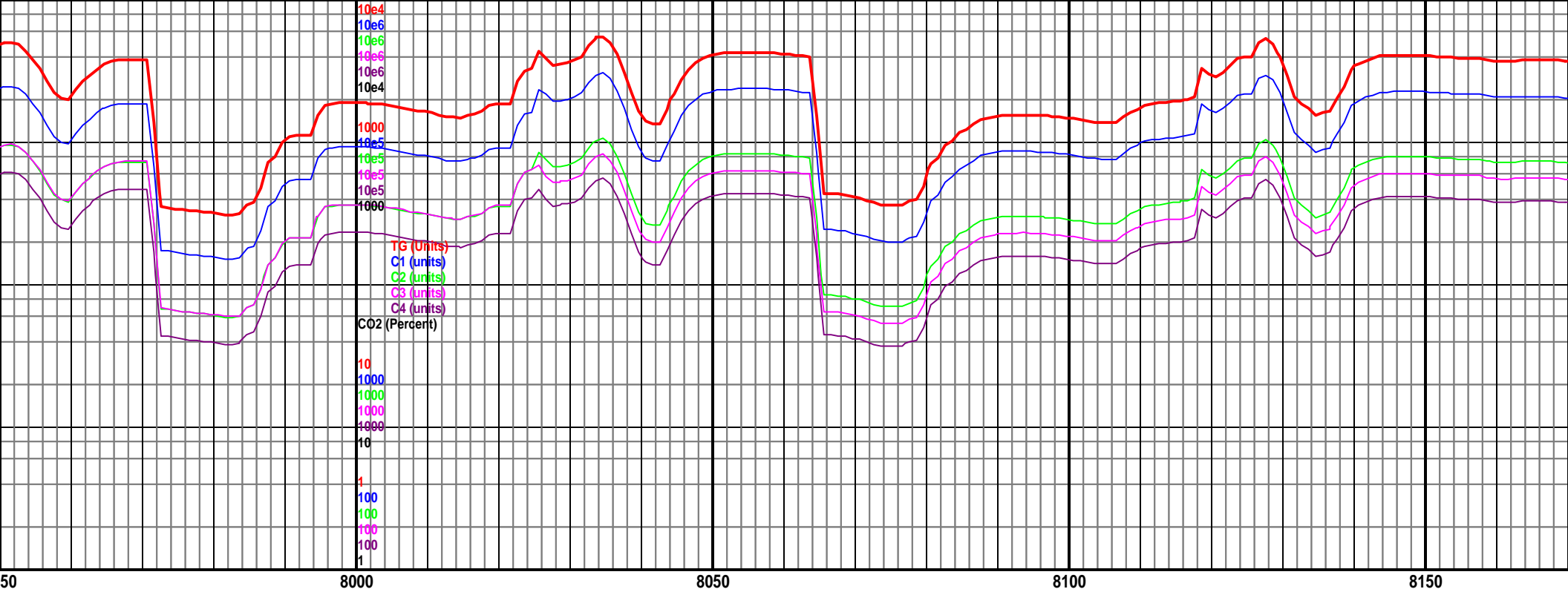
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 INC 90.29 AZ 179.93
 VS 2493.59

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 (-628)

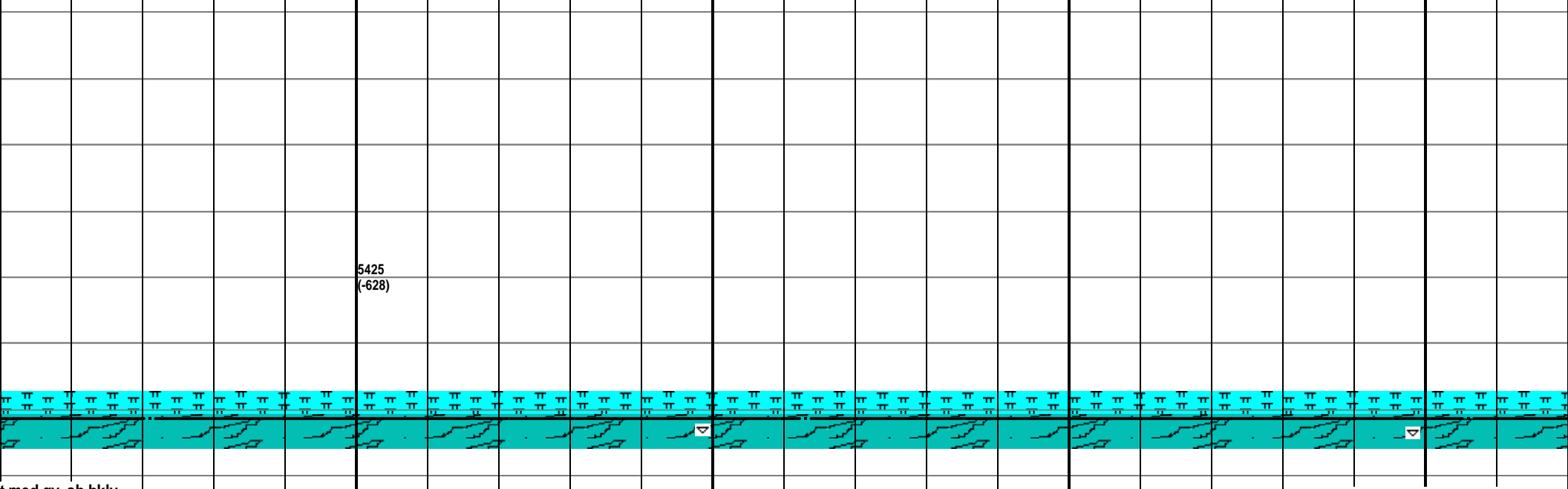
7700-7800 Chk lt-med gy, sb bkly,
 sft-frm, banded ip, arg, Mrlst med-dk
 gy, blkly, frm, rr inoc, dull yel min flor,
 fst cut, 90% chk, 10% mrlst

7800-7900 Chk lt-med gy, sb bkly,
 sft-frm, banded ip, arg, Mrlst med-dk
 gy, blkly, frm, rr inoc, dull yel min flor,
 fst cut, 90% chk, 10% mrlst

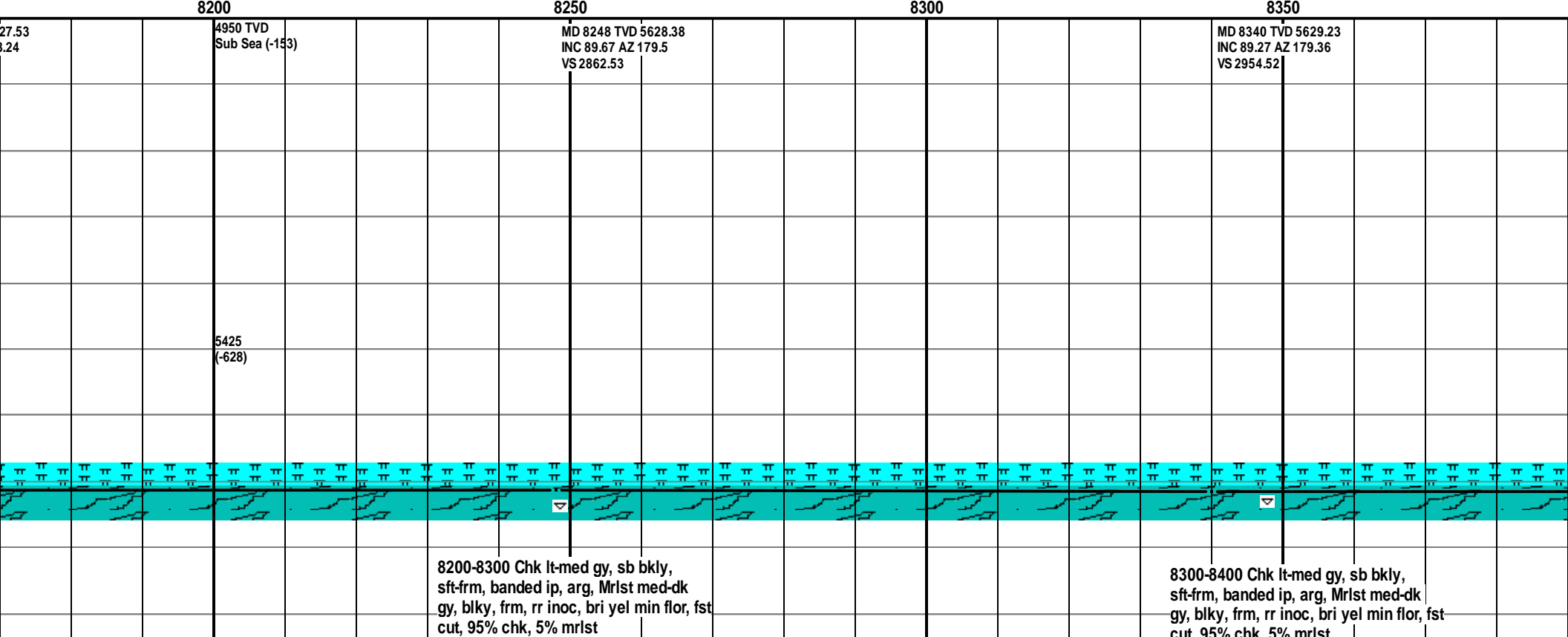
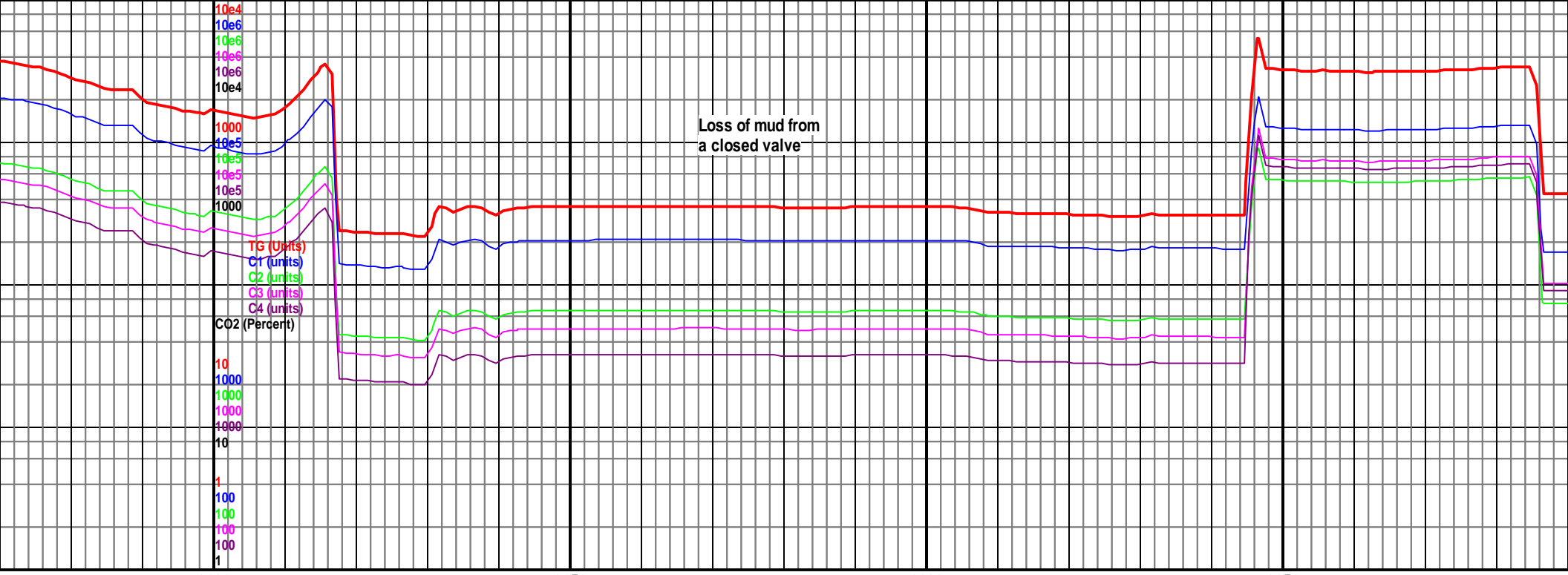
7900-8000 Chk lt-med gy, sb bkly,
 sft-frm, banded ip, arg, Mrlst med-dk
 gy, blkly, frm, rr inoc, dull yel min flor,
 fst cut, 90% chk, 10% mrlst

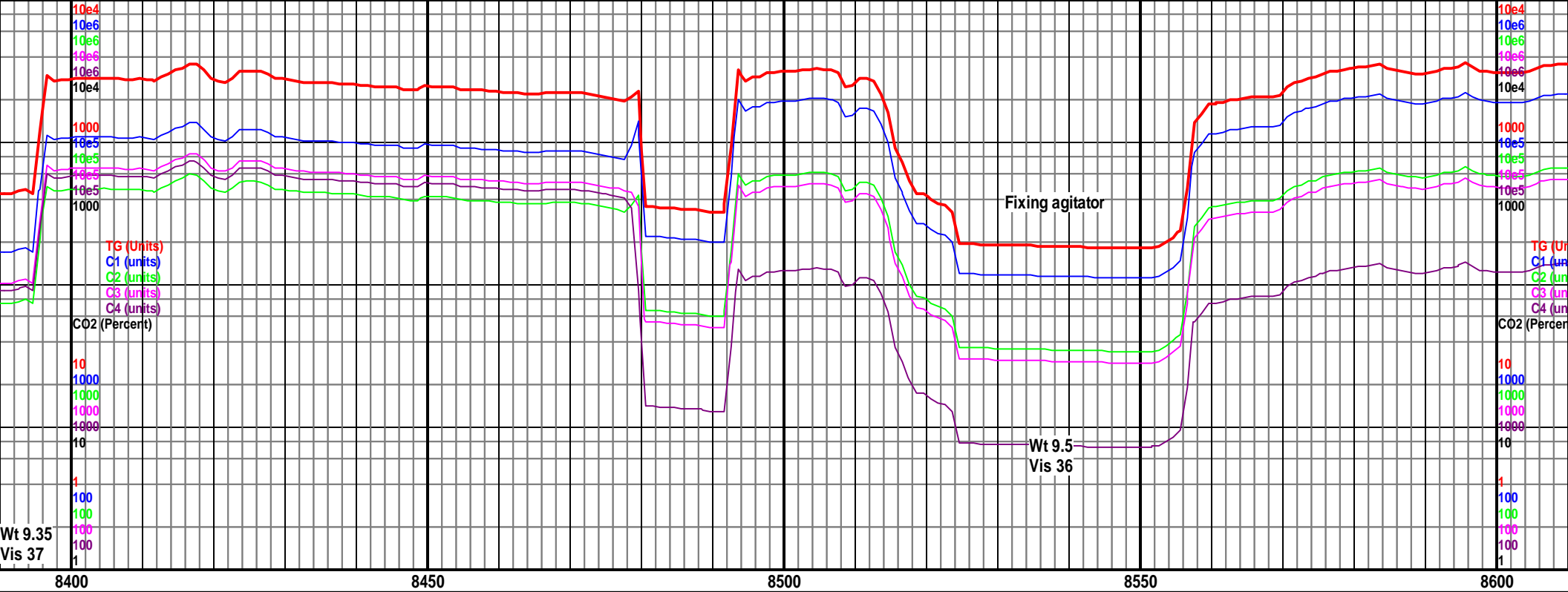


MD 7971 TVD 5627.09 INC 90.24 AZ 179.81 VS 2585.58	4950 TVD Sub Sea (-153)	MD 8063 TVD 5626.92 INC 89.98 AZ 179.15 VS 2677.58	MD 8156 TVD 5626.92 INC 89.27 AZ 179.15 VS 2770.55
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8000-8100 Chk lt-med gy, sb bkly, sft frm, banded ip, arg, Mrlst med-dk gy, bkly, frm, rr inoc, dull yel min flor, fst cut, 90% chk, 10% mrlst	8100-8200 Chk lt-med gy, sb bkly, sft frm, banded ip, arg, Mrlst med-dk gy, bkly, frm, rr inoc, dull yel min flor, fst cut, 95% chk, 5% mrlst
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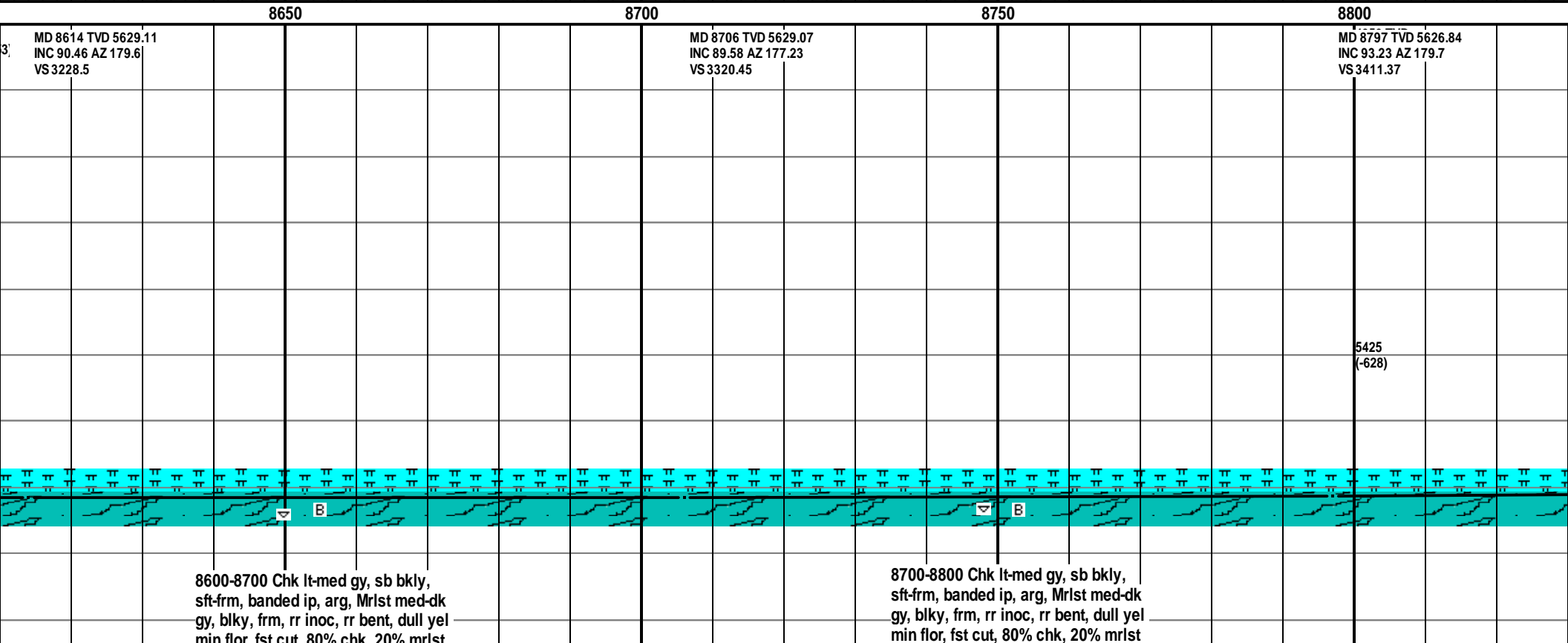
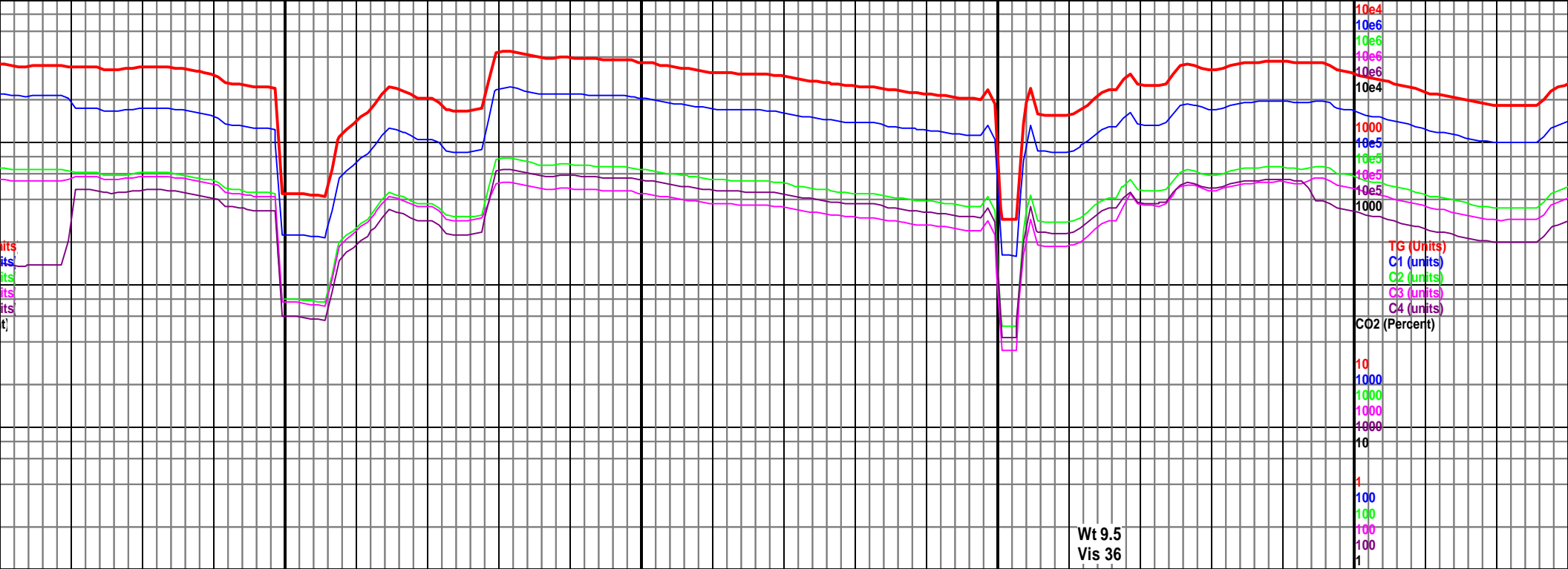


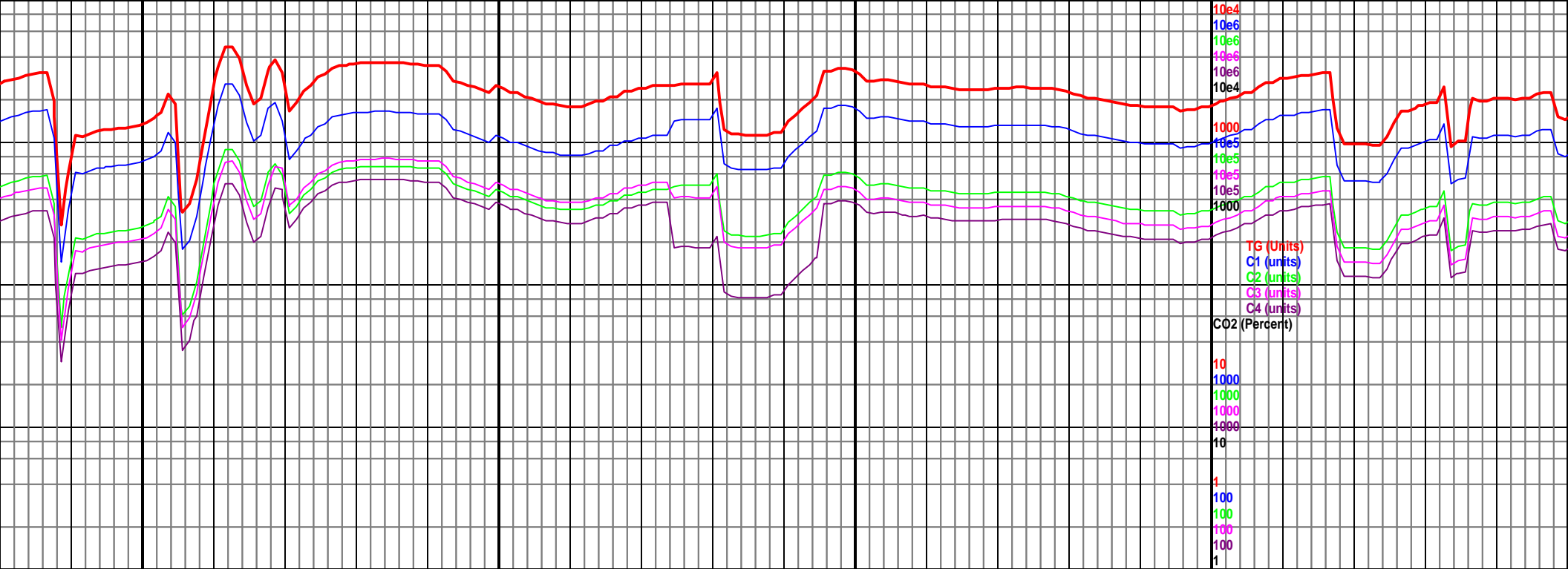
4950 TVD Sub Sea (-153)	MD 8432 TVD 5630.46 INC 89.19 AZ 180.07 VS 3046.51	MD 8523 TVD 5630.29 INC 91.03 AZ 180.28 VS 3137.51	4950 TVD Sub Sea (-153)
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5425 (-628)	5425 (-628)
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8400-8500 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut, 80% chk, 20% mrlst

8500-8600 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut, 80% chk, 20% mrlst





8850

8900

8950

9000

9050

MD 8889 TVD 5622.19
INC 92.57 AZ 181.37
VS 3503.25

MD 8981 TVD 5618.56
INC 91.95 AZ 181.94
VS 3595.14

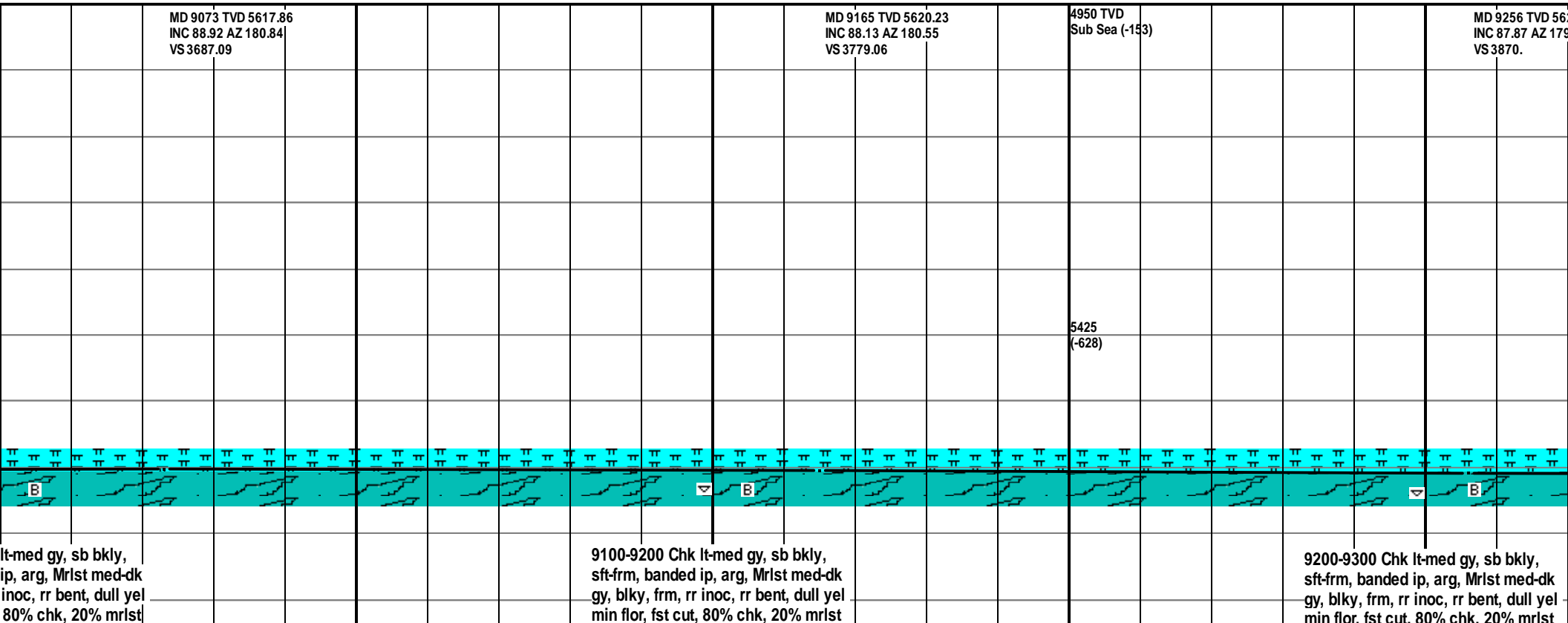
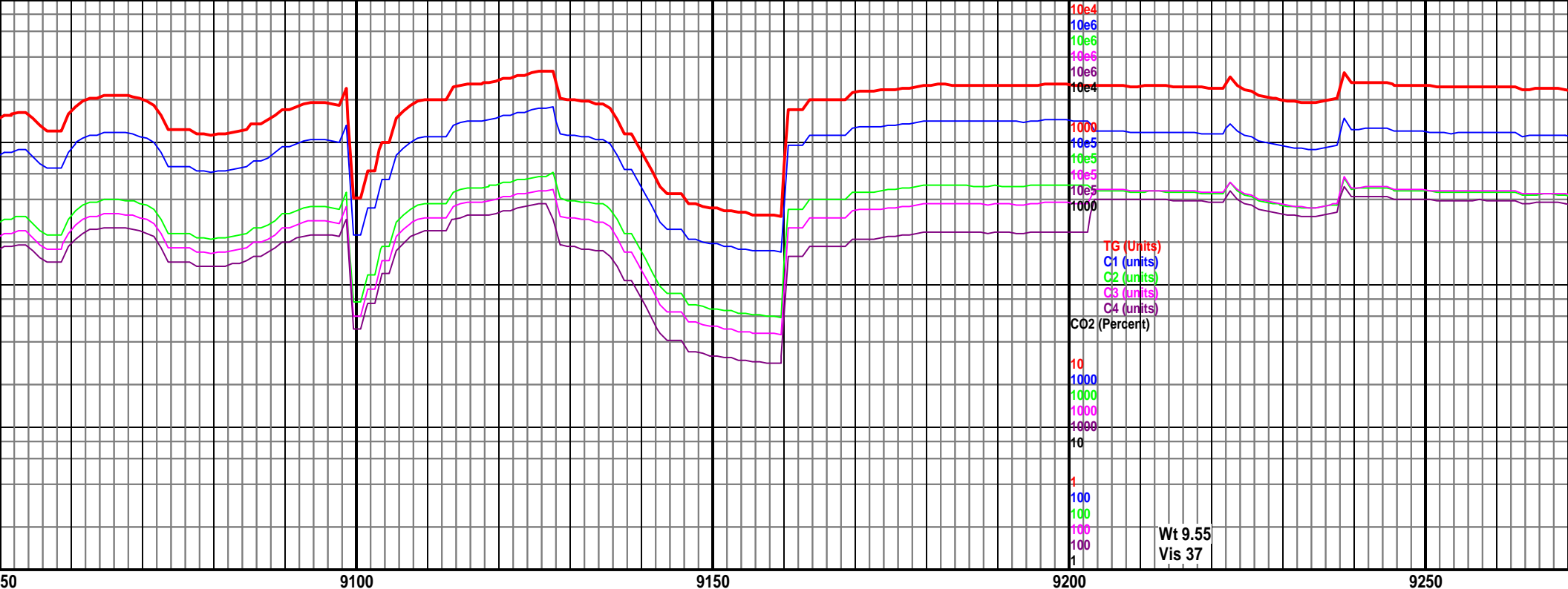
4950 TVD
Sub Sea (-153)

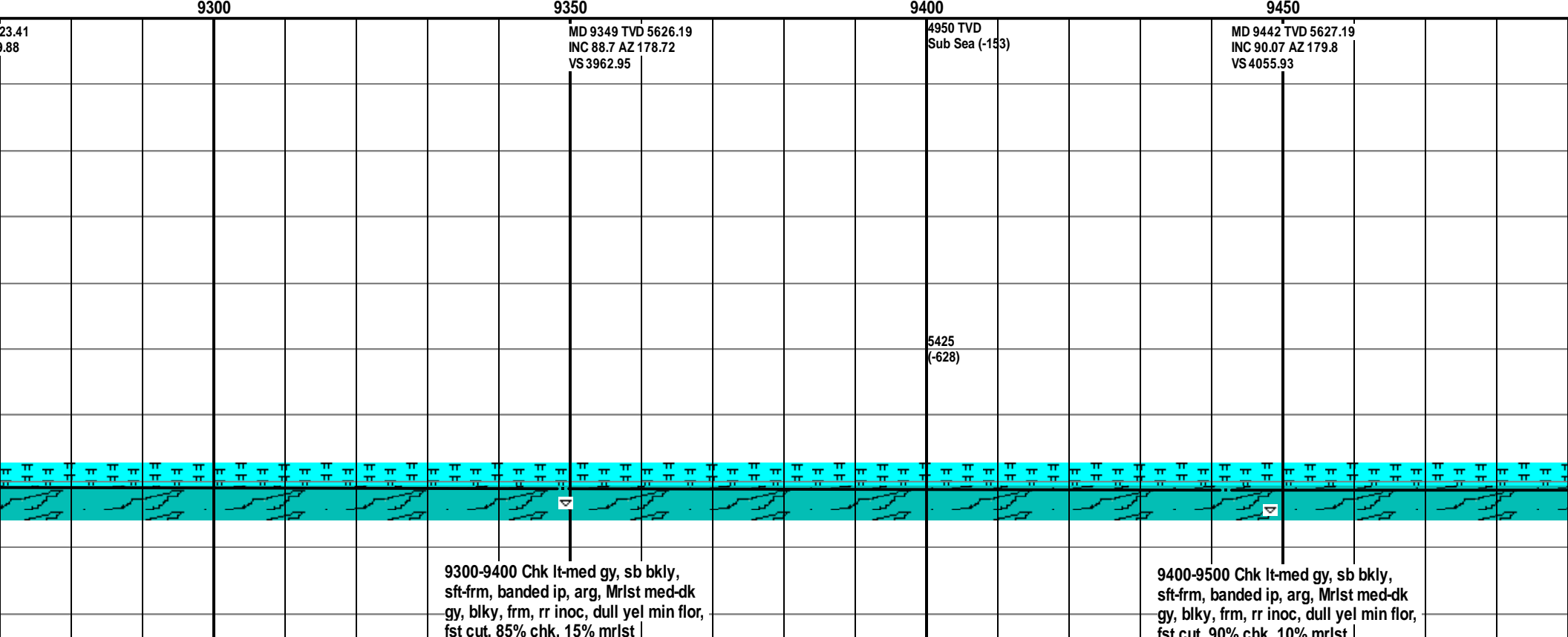
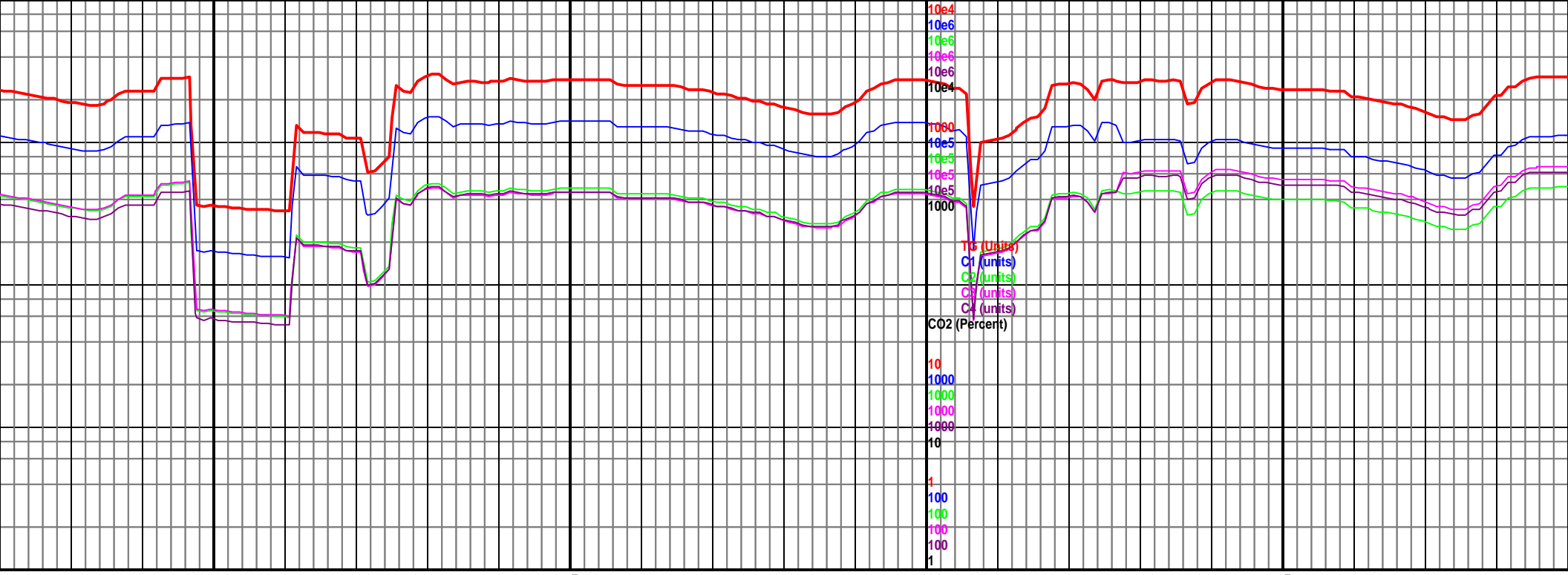
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(-628)

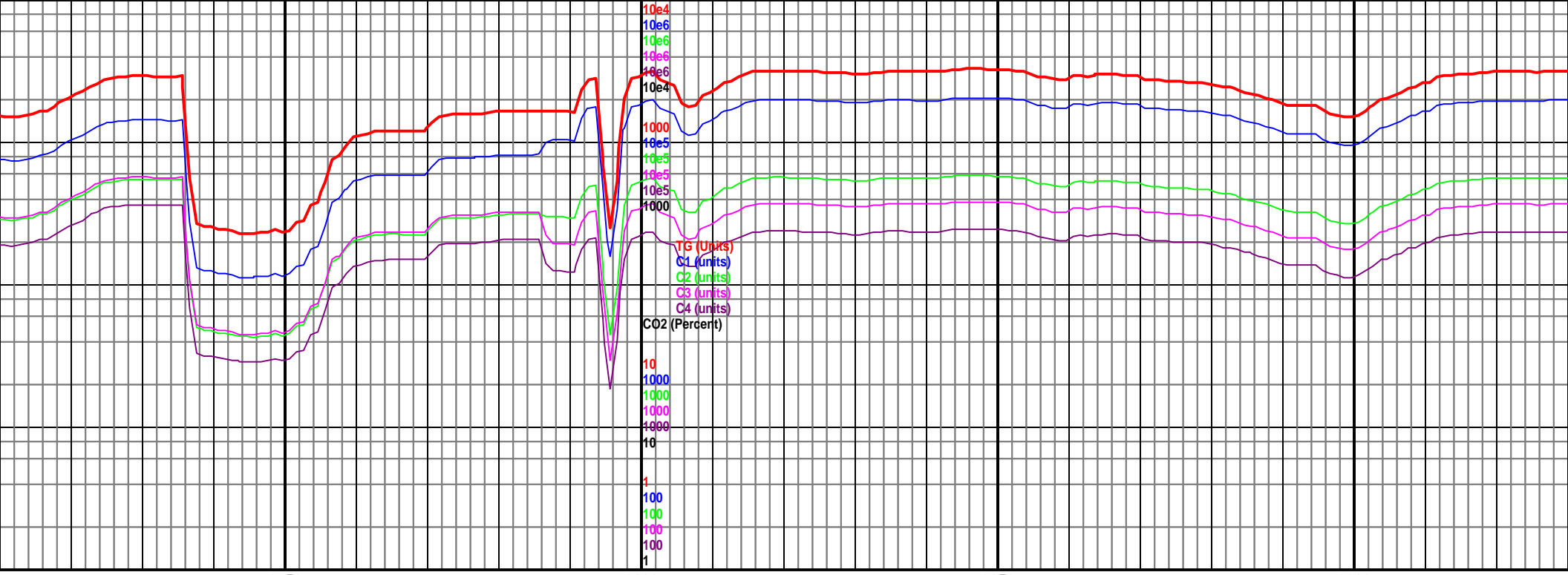
8800-8900 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flor, fst cut, 90% chk, 10% mrlst

8900-9000 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flor, fst cut, 90% chk, 10% mrlst

9000-9100 Chk
sft frm, banded
gy, blkly, frm, rr
min flor, fst cut,







MD 9717 TVD 5623.89
INC 91.87 AZ 181.3
VS 4330.85

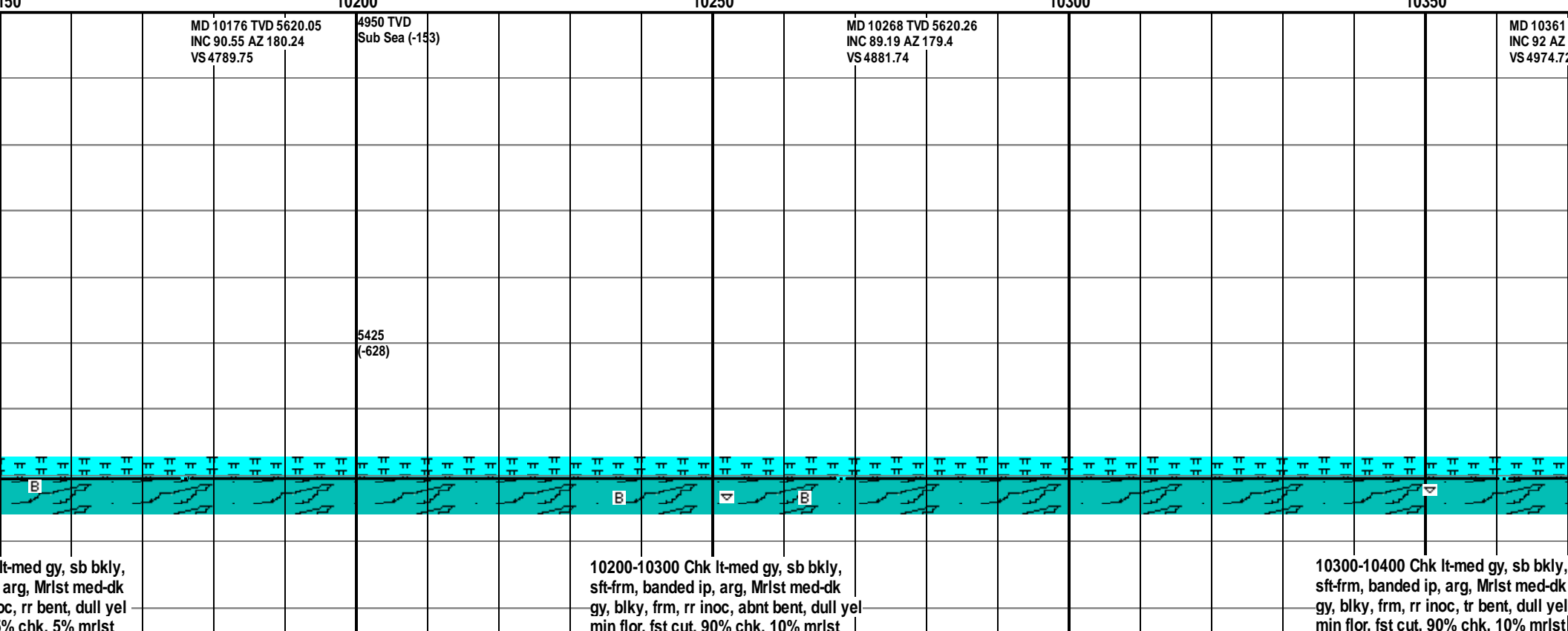
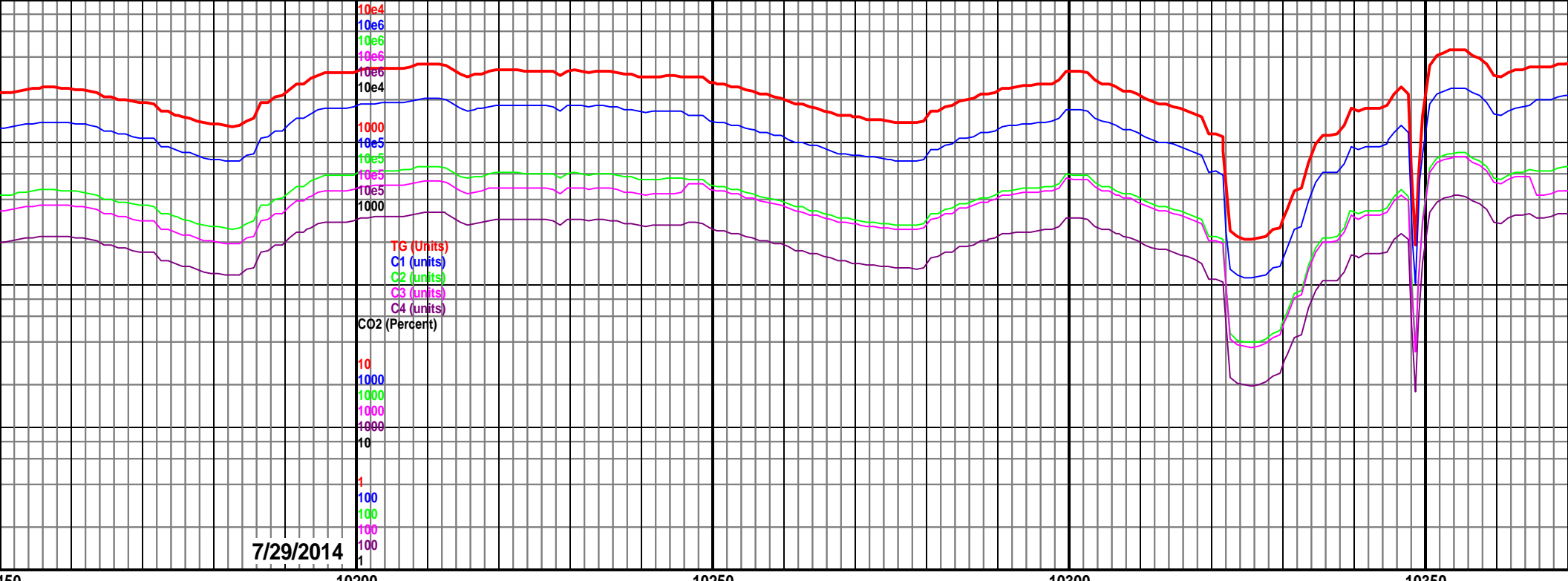
4950 TVD MD 9808 TVD 5622.49
Sub Sea (-) INC 89.89 AZ 181.13
VS 4421.82

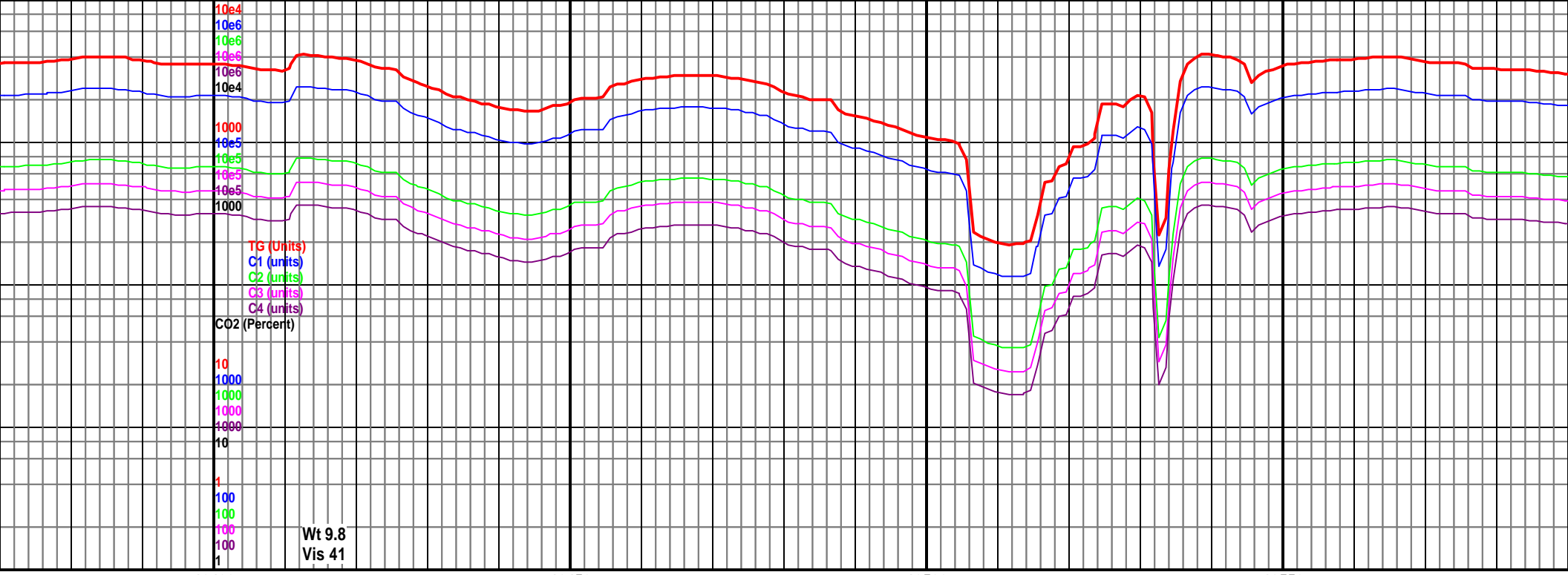
MD 9900 TVD 5623.2
INC 89.23 AZ 180.23
VS 4513.81

5425
(-628)

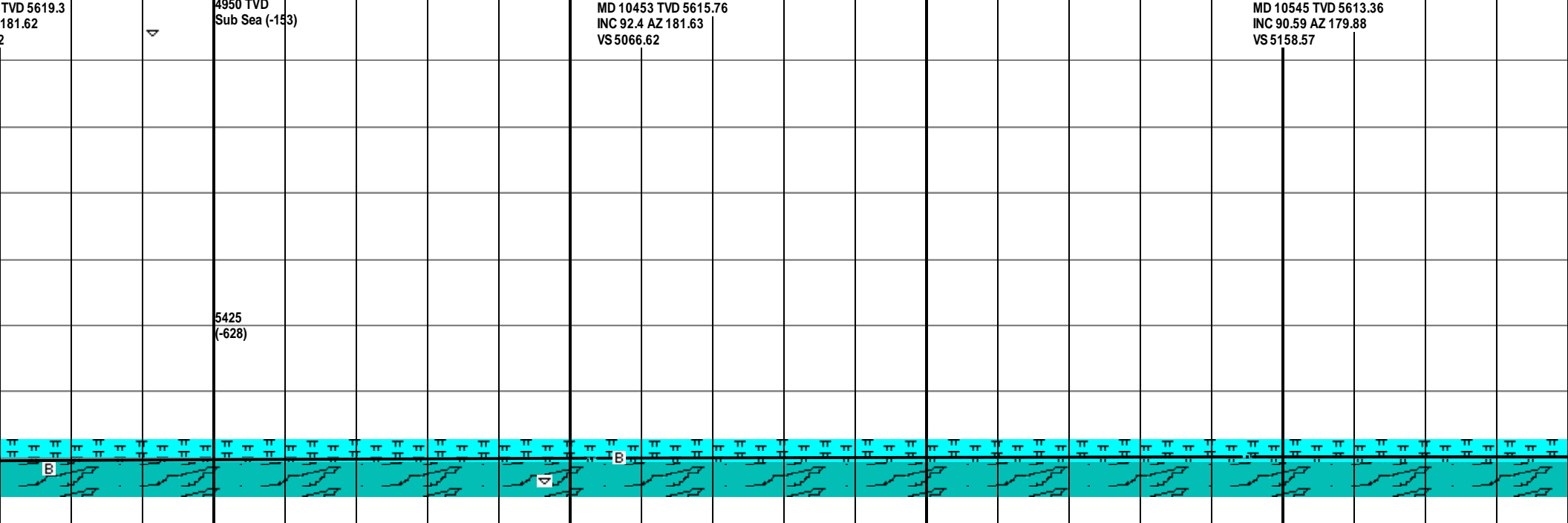
9700-9800 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, dull yel min flor,
fst cut 95% chk 5% mrlst

9800-9900 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, bkly, frm, rr inoc, dull yel min flor,
fst cut 95% chk 5% mrlst



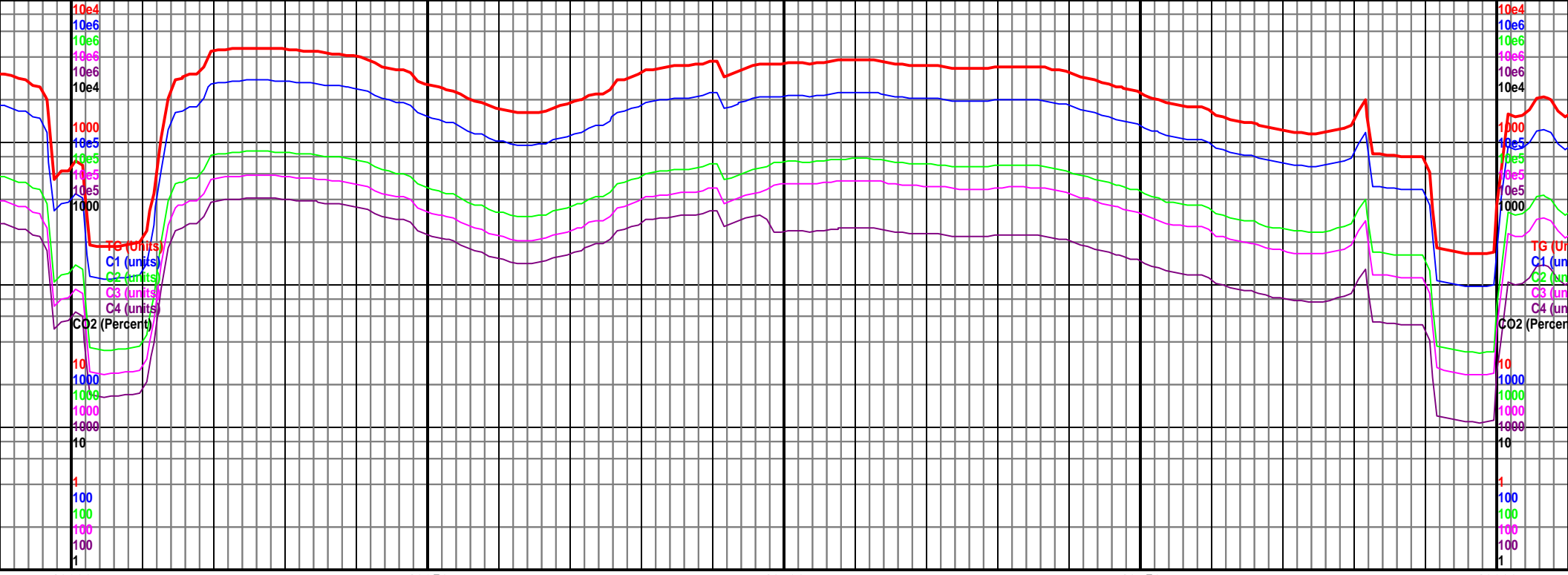


10400 10450 10500 10550



10400-10500 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blk, frm, rr inoc, rr bent, dull yel
min flor, fst cut, 90% chk, 10% mrlst

10500-10600 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, rr inoc, rr bent,
dull yel min flor, fst cut, 100% chk



4950 TVD
Sub Sea (-153)

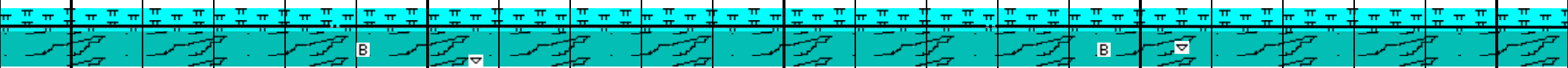
MD 10637 TVD 5613.08
INC 89.76 AZ 178.94
VS 5250.56

MD 10729 TVD 5614.18
INC 88.88 AZ 177.91
VS 5342.52

4950 TVD
Sub Sea (-153)

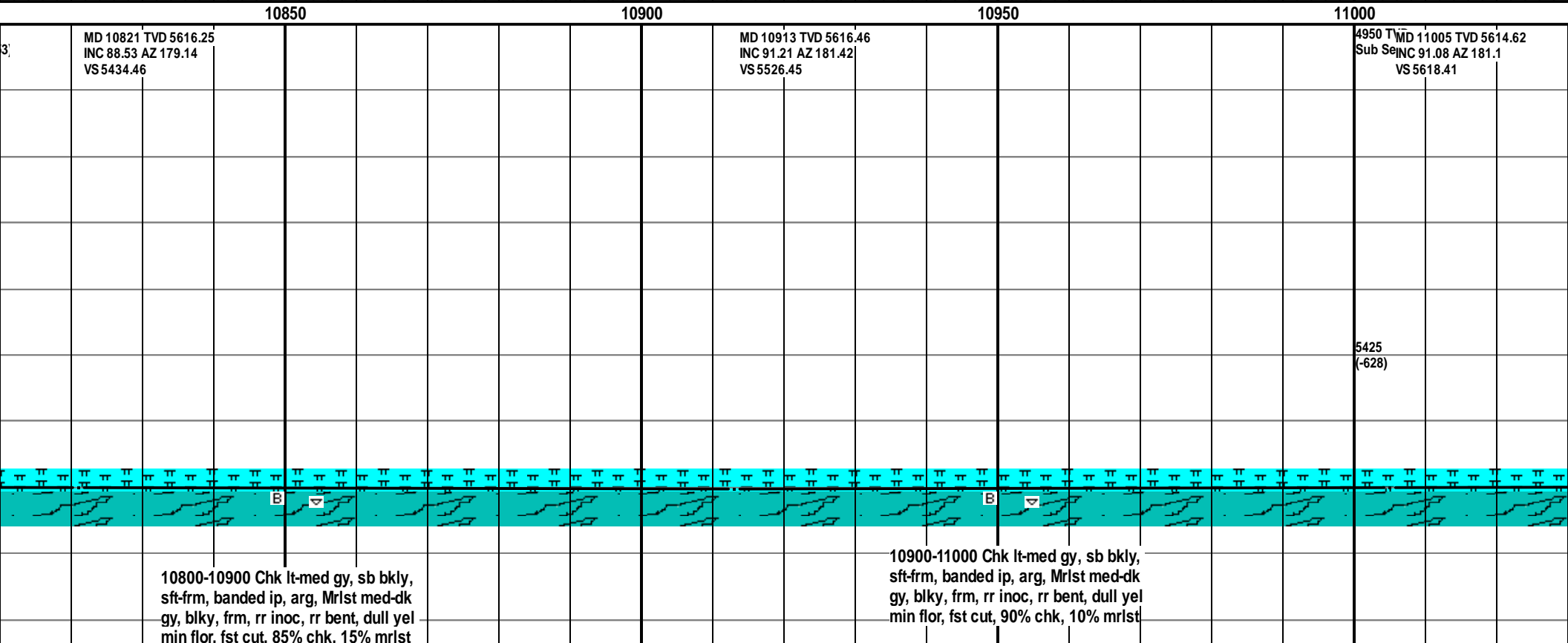
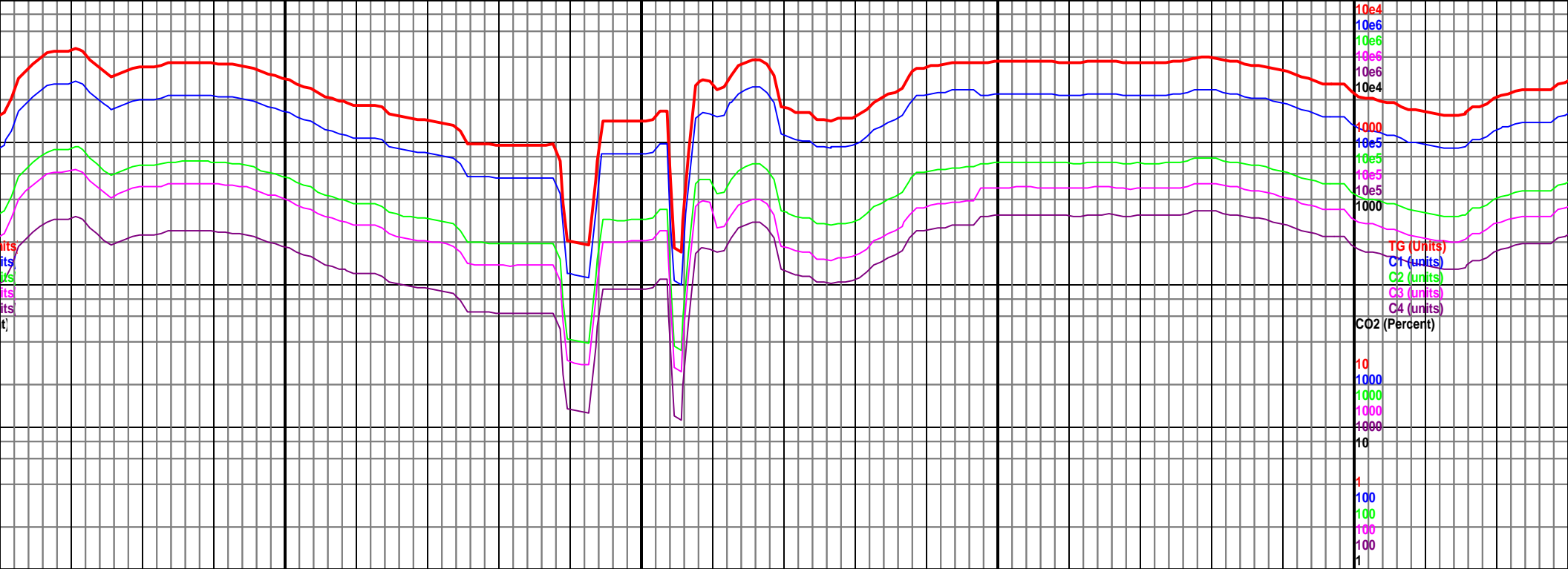
5425
(-628)

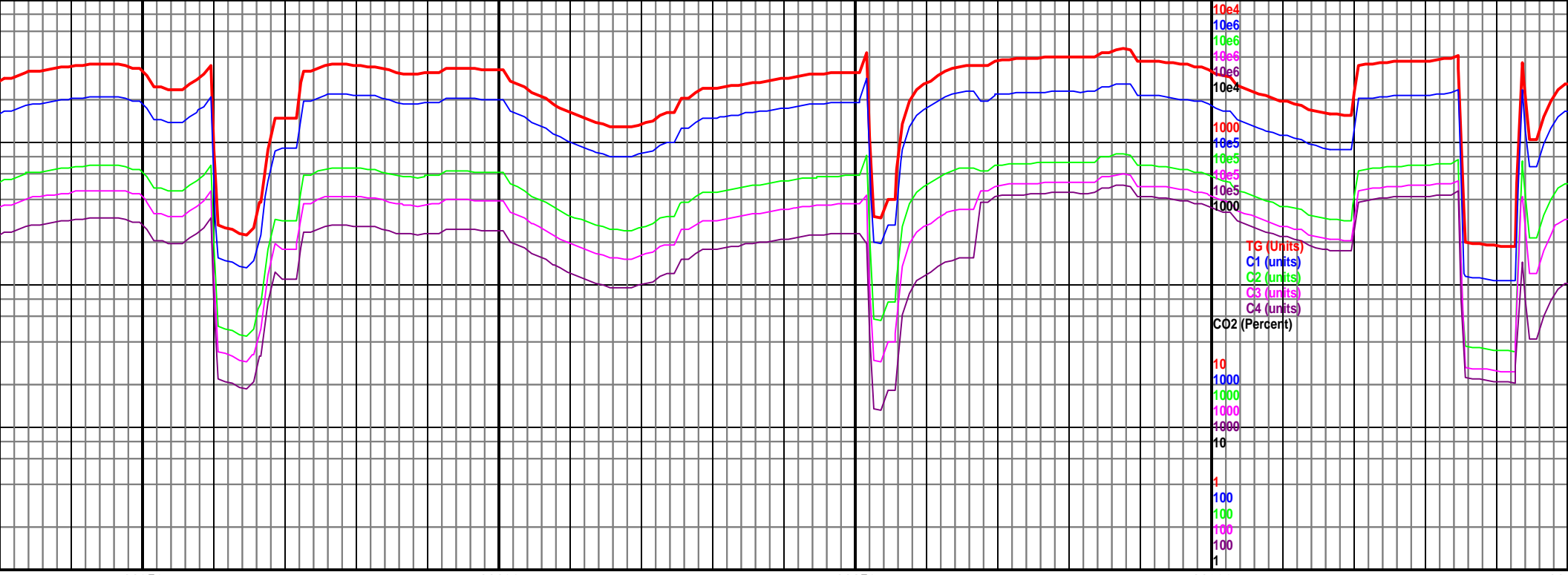
5425
(-628)



10600-10700 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut. 95% chk. 5% mrlst

10700-10800 Chk lt-med gy, sb bkly,
sft frm, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut. 85% chk. 15% mrlst





TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C02 (Percent)

10e7
10e6
10e5
10e4
1000
100
10
1

11050

11100

11150

11200

11250

MD 11097 TVD 5613.52
INC 90.29 AZ 180.33
VS 5710.39

MD 11188 TVD 5612.93
INC 90.46 AZ 180.25^{ea} (-153)
VS 5801.39

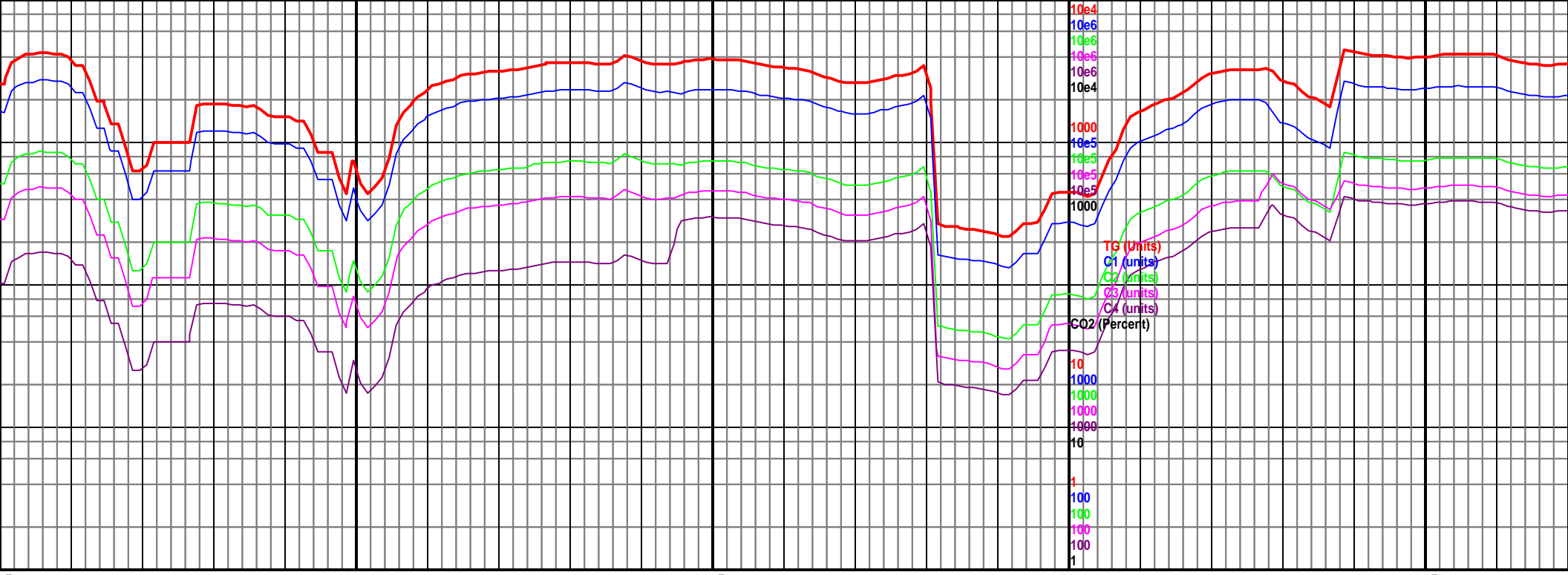
5425
(-628)



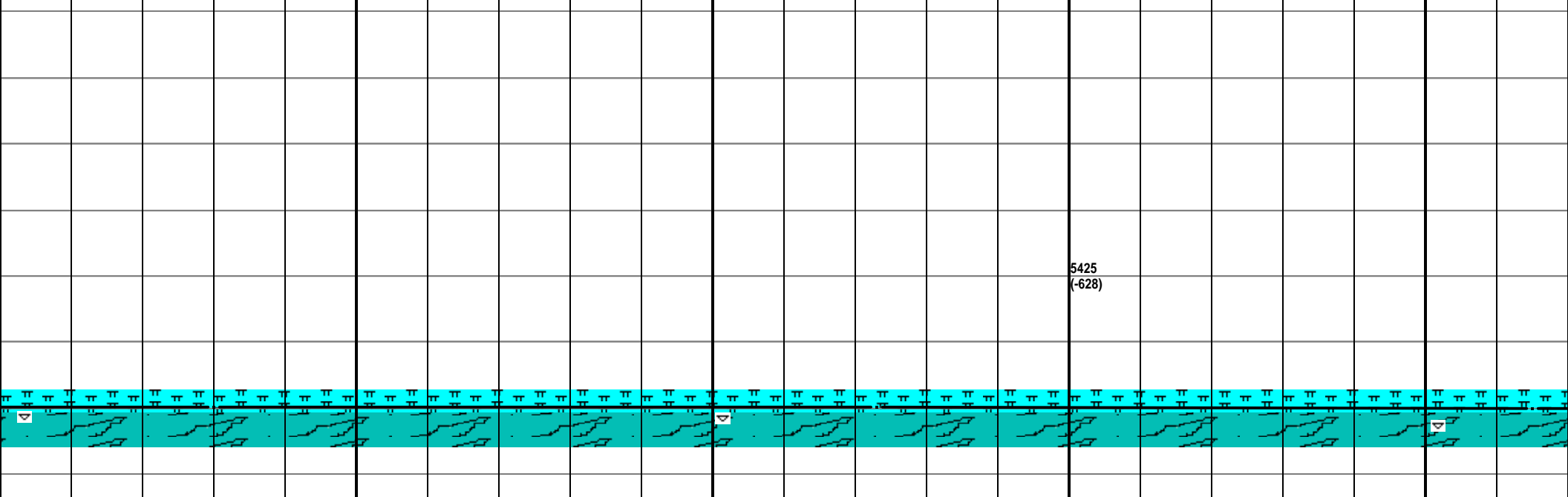
11000-11100 Chk lt-med gy, sb bkly,
sft-frn, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut, 70% chk, 30% mrlst

11100-11200 Chk lt-med gy, sb bkly,
sft-frn, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut, 70% chk, 30% mrlst

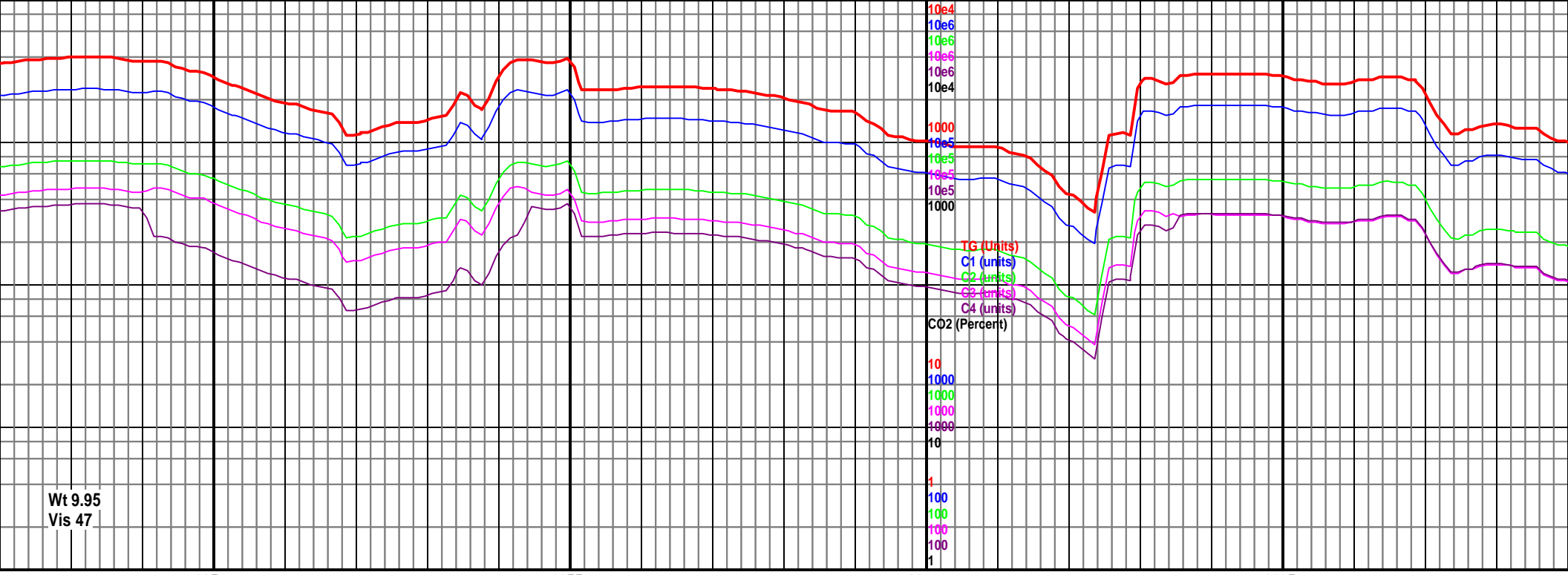
11200-11300
frm, Chk lt-med gy, sb bkly,
sft-frn, banded ip, arg, Mrlst med-dk
gy, blkly, frm, rr inoc, rr bent, dull yel
min flr, fst cut, 70% chk, 30% mrlst



MD 11280 TVD 5612.68 INC 89.85 AZ 179.82 VS 5893.39	MD 11373 TVD 5613.22 INC 89.49 AZ 179.75 VS 5986.38	4950 TVD Sub Sea (-153)	MD 11450 TVD 5613.22 INC 89.49 AZ 179.75 VS 5986.38
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0 Mrist med-dk gy, blk, med gy, sb bkly, sft-frm, arg, rr inoc, rr bent, slo cut,	11300-11400 Mrist med-dk gy, blk, frn, Chk lt-med gy, sb bkly, sft-frm, banded ip, arg, rr inoc, slo cut, 90%	11400-11500 Mrist med-dk gy, blk, frn, Chk lt-med gy, sb bkly, sft-frm, banded ip, arg, rr inoc, rr bent, slo cut,
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Wt 9.95
Vis 47

11500

11550

11600

11650

1465 TVD 5614.45
8.97 AZ 179.61
78.37

MD 11558 TVD 5615.3
INC 89.98 AZ 180.48
VS 6171.37

4950 TVD
Sub Sea (-153)

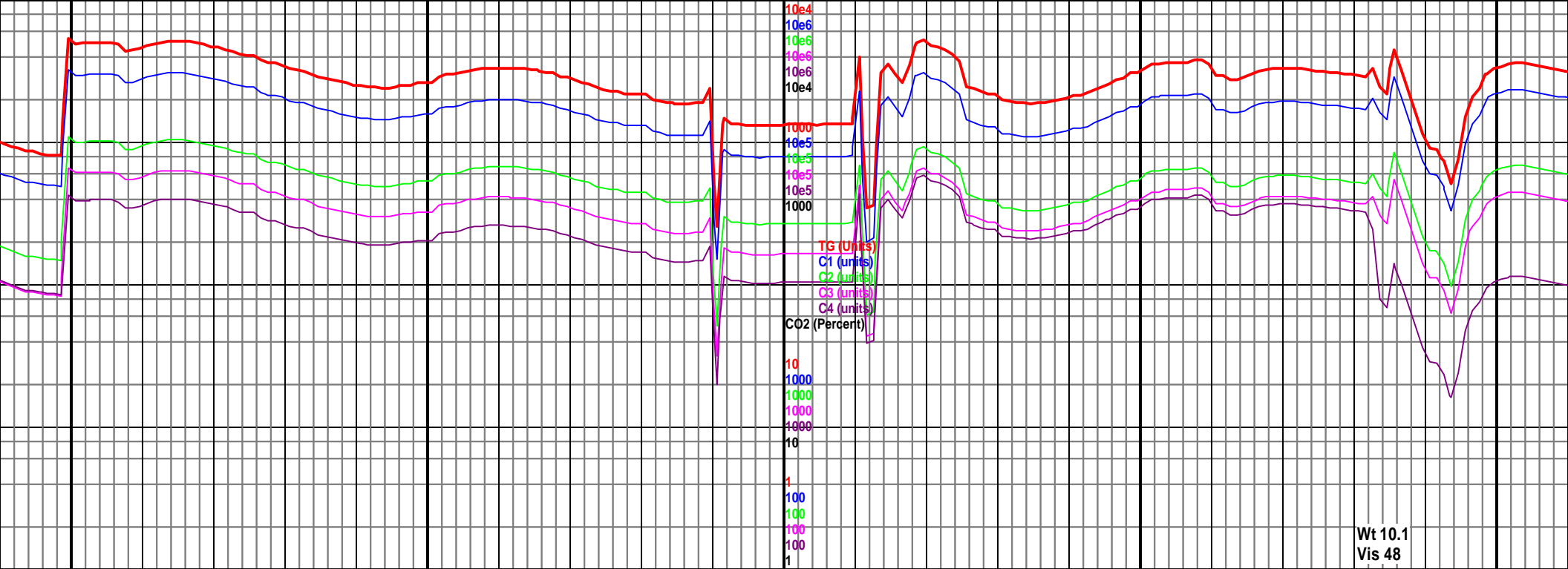
MD 11650 TVD 5613.89
INC 91.78 AZ 180.23
VS 6263.35

5425
(-628)

TOOH to repair top drive at
11701' MD, 12:20 PM.
Resume Drilling at 08:00.

11500-11600 Mrst med-dk gy, blkly,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, slo cut, 90%

11600-11700 Mrst med-dk gy, blkly,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, slo cut, 70%



11700

11750

11800

11850

11900

MD 11741 TVD 5610.47
INC 92.53 AZ 179.58
VS 6354.29

4950 TVD
Sub Sea (-153)

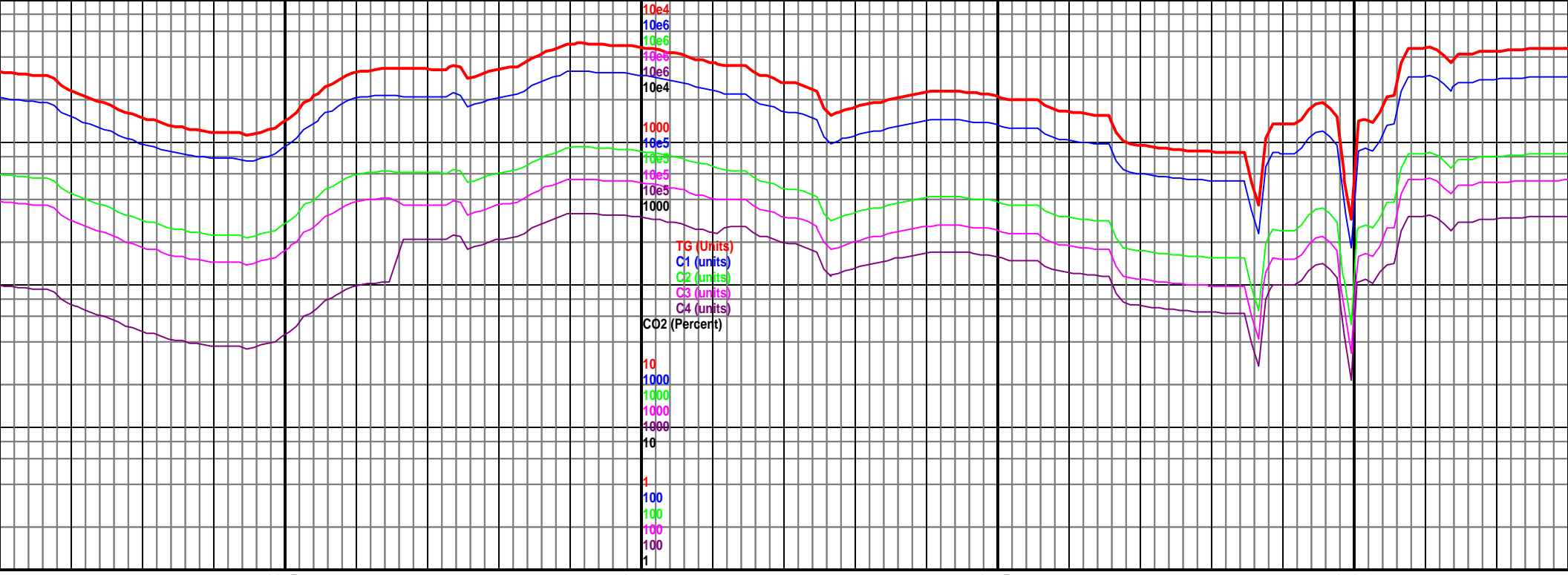
MD 11832 TVD 5607.5
INC 91.21 AZ 179.26
VS 6445.23

5425
(-628)

at

11700-11800 Mrlst med-dk gy, blkly,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, slo cut, 50%
mrlst, 50% chkl

11800-11900 Mrlst med-dk gy, blkly,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, slo cut, 75%
mrlst, 75% chkl



11950

12000

12050

12100

MD 11923 TVD 5605.62
INC 91.16 AZ 178.4
VS 6536.19

4950 TVD
Sub Sea (-153)

MD 12016 TVD 5603.8
INC 91.08 AZ 177.7
VS 6629.12

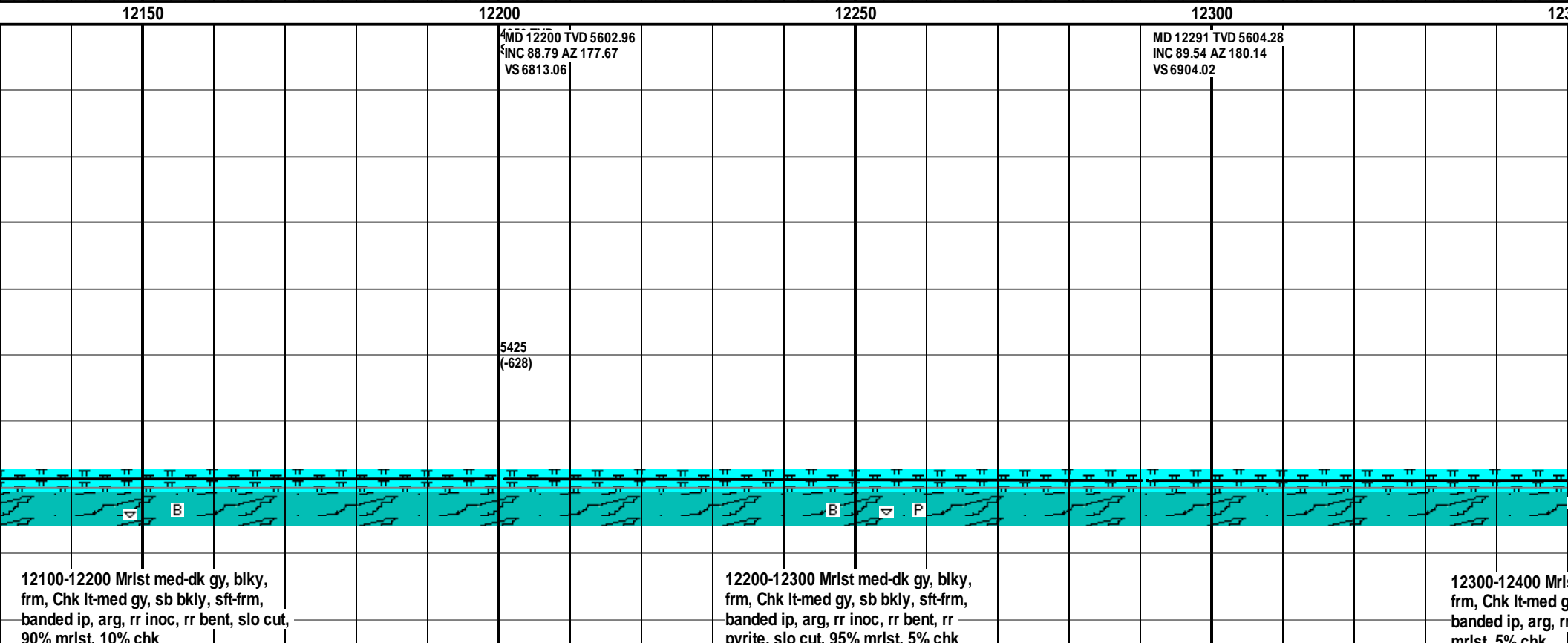
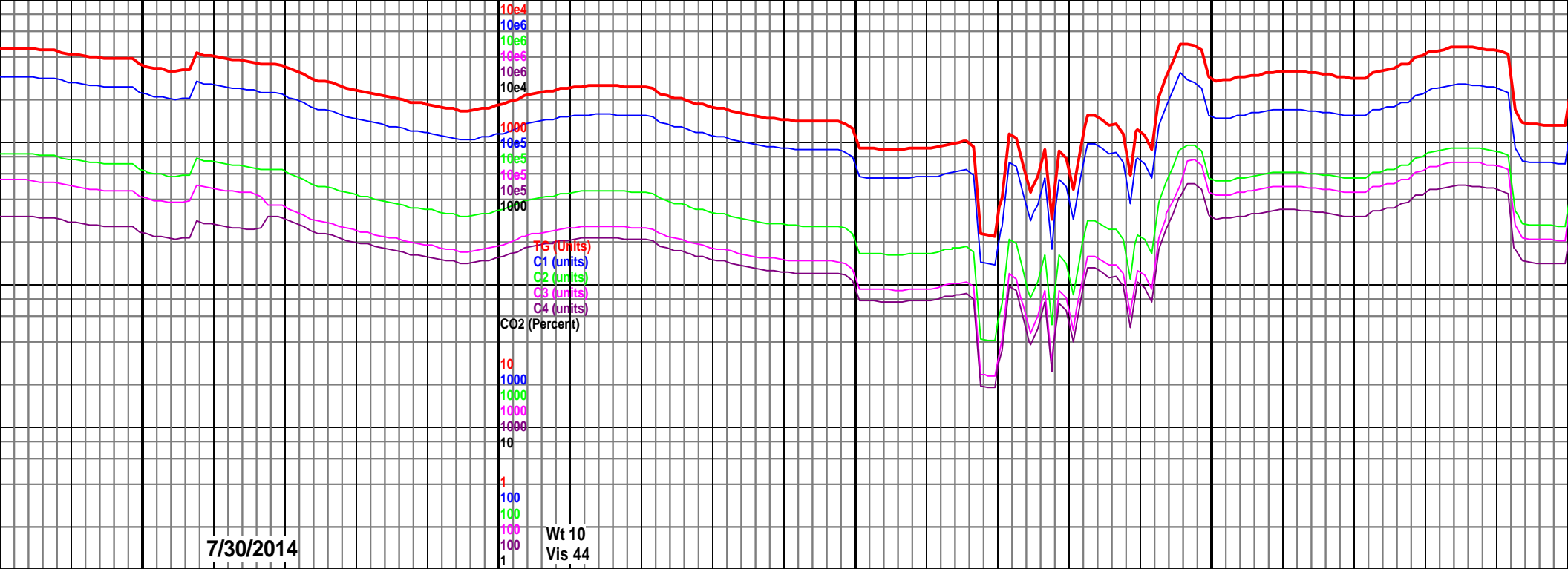
MD 12108 TVD 5602.46
INC 90.59 AZ 180.23
VS 6721.09

5425
(-628)



11900-12000 Mrlst med-dk gy, blk,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, rr bent, slo cut,
85% mrlst, 15% chk

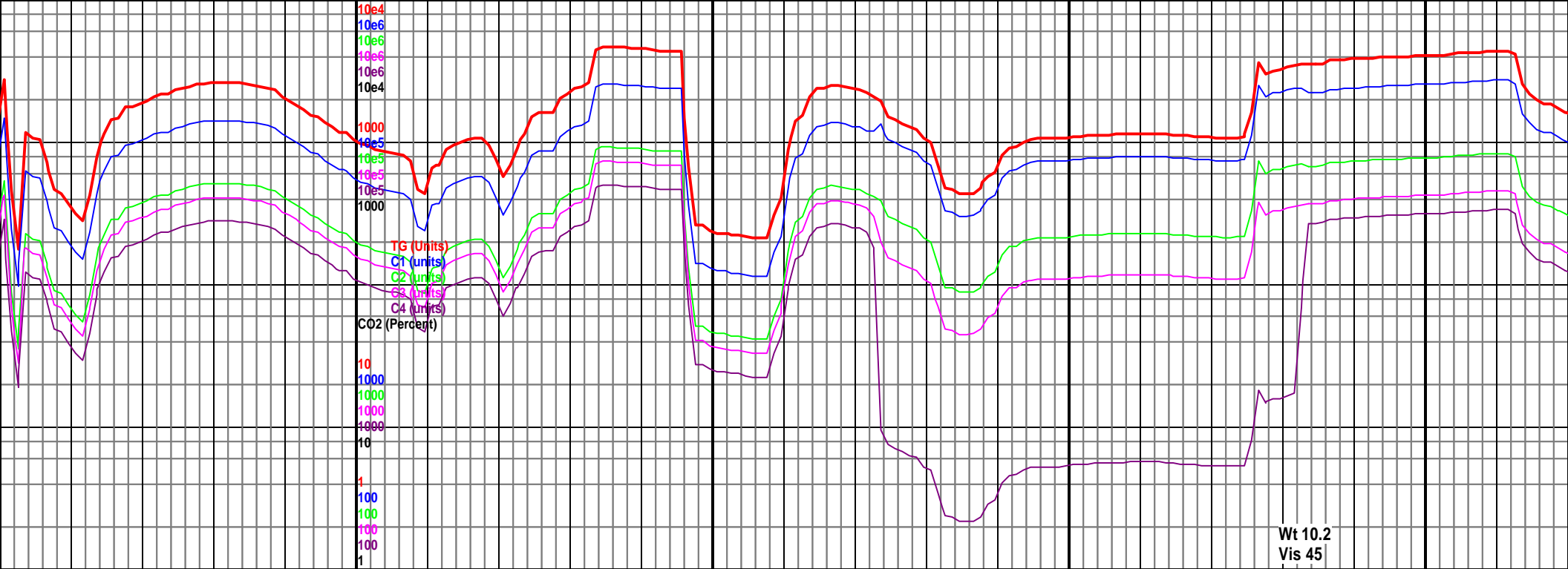
12000-12100 Mrlst med-dk gy, blk,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, rr bent, slo cut,
90% mrlst, 10% chk



12100-12200 Mrlst med-dk gy, blkly, frm, Chk lt-med gy, sb bkly, sft-frm, banded ip, arg, rr inoc, rr bent, slo cut, 90% mrlst. 10% chk

12200-12300 Mrlst med-dk gy, blkly, frm, Chk lt-med gy, sb bkly, sft-frm, banded ip, arg, rr inoc, rr bent, rr pvrite. slo cut. 95% mrlst. 5% chk

12300-12400 Mrlst med-dk gy, blkly, frm, Chk lt-med gy, sb bkly, sft-frm, banded ip, arg, rr inoc, rr bent, rr pvrite. slo cut. 95% mrlst. 5% chk



MD 12384 TVD 5604.820 TVD
INC 89.8 AZ 181.45 Sub Sea (-153)
VS 6997.01

MD 12476 TVD 5605.24
INC 89.67 AZ 182.14
VS 7088.97

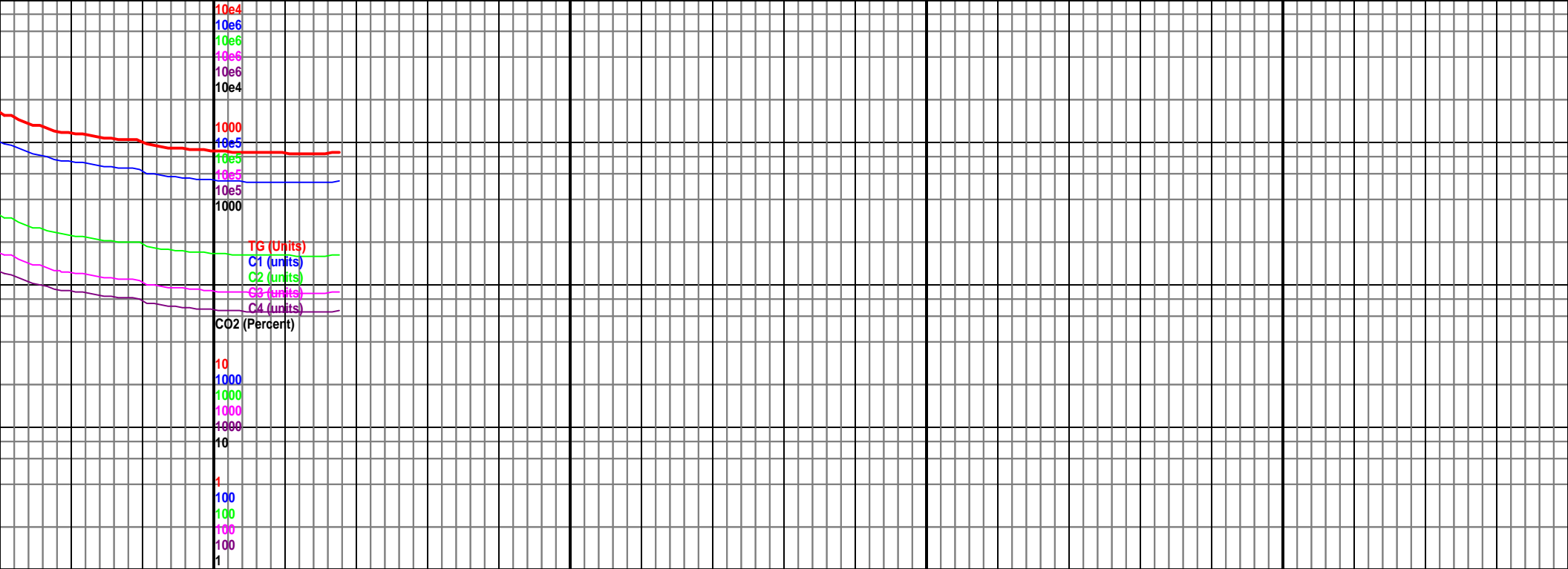
MD
INC
VS

5425
(-628)

st med-dk gy, blk,
y, sb bkly, sft-frm,
r inoc, slo cut, 95%

12400-12500 Mrlst med-dk gy, blk,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, rr bent, slo cut,
95% mrlst, 5% chk

12500-12600 Mrlst med-dk gy, blk,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, rr bent, slo cut,
90% mrlst, 10% chk



12600 12650 12700 12750

12567 TVD 5605.94
C 89.45 AZ 181.62
7179.91

4950 TVD
Sub Sea (-153)

5425
(-628)

TOOH for mud motor at
05:18 on 7/30/2014. TIH at
14:15



12600-12700 Mrlst med-dk gy, blkly,
frm, Chk lt-med gy, sb bkly, sft-frm,
banded ip, arg, rr inoc, rr bent, slo cut,
90% mrlst, 10% chk

10e4
10e6
10e6
10e6
10e6
10e4

1000
10e5
10e5
10e5
10e5
1000

TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C02 (Percent)

10
1000
1000
1000
1000
10

1
100
100
100
100
1

12800

12850

12900

12950

13

4950 TVD
Sub Sea (-153)

5425
(-628)