



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

Well Name: Razor 27K-3407A
Location: NESW 27-T10N-R58W
License Number: 05-123-36773
Spud Date: 8/29/2013
Surface Coordinates: Lat.: 40.808608 Long.: -103.853094
Bottom Hole Coordinates: Lat.: 40.787983 Long.: -103.852189
Ground Elevation (ft): 4749.5 **K.B. Elevation (ft):** 4766
Logged Interval (ft): 5100 **To:** 12402 **Total Depth (ft):** 12402
Formation: Pierre, Sharon Springs, Niobrara
Type of Drilling Fluid: Water Based Mud

Region: Redtail Field
Drilling Completed: 9/5/2013

Printed by WellSight Log Viewer 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, Kyle Newman
Company: Acme Geologic Consulting
Address: 108 Berry Street
Little Rock, AR 72205

Drilling Company

Cade Drilling, LLC
Rig 23

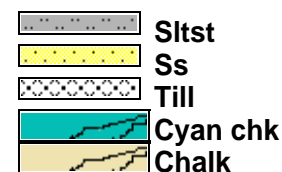
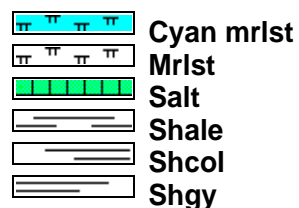
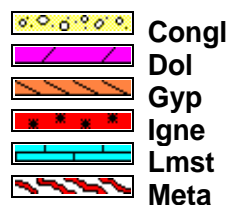
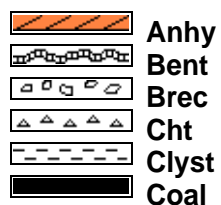
Gas Detection

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

Comments

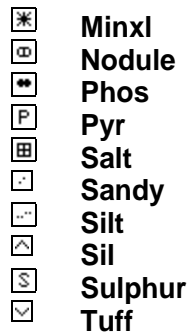
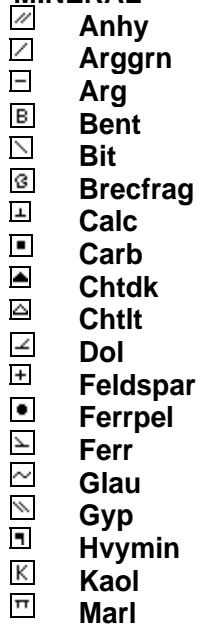
Lithologies and tops at drilled depths, not corrected to elogs. Where the well bore gas is 100% methane, the C1 line is moved to 85% for graphical purposes only.

ROCK TYPES

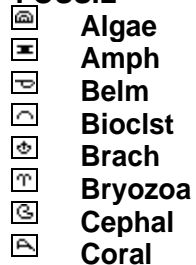


ACCESSORIES

MINERAL



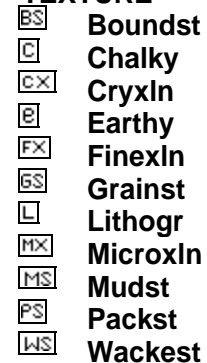
FOSSIL



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

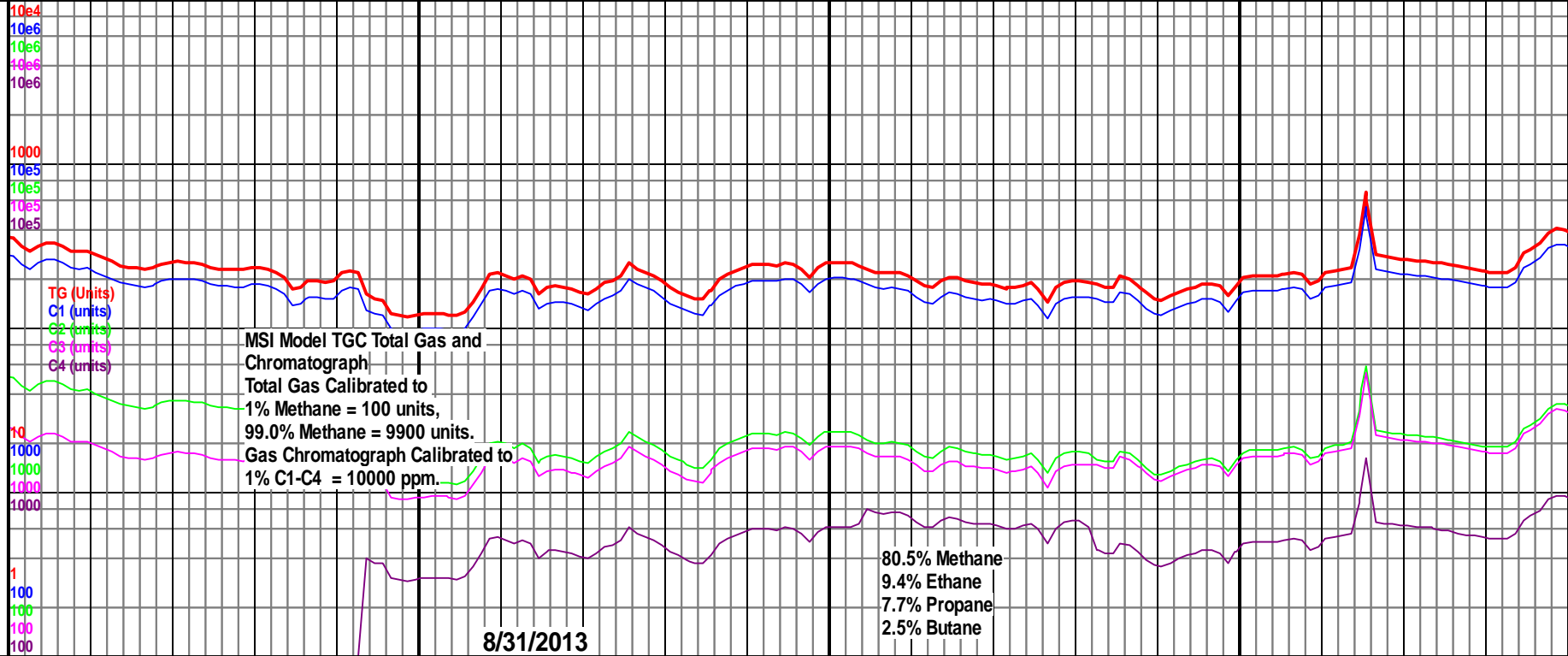
-  Core
-  Dst

EVENT

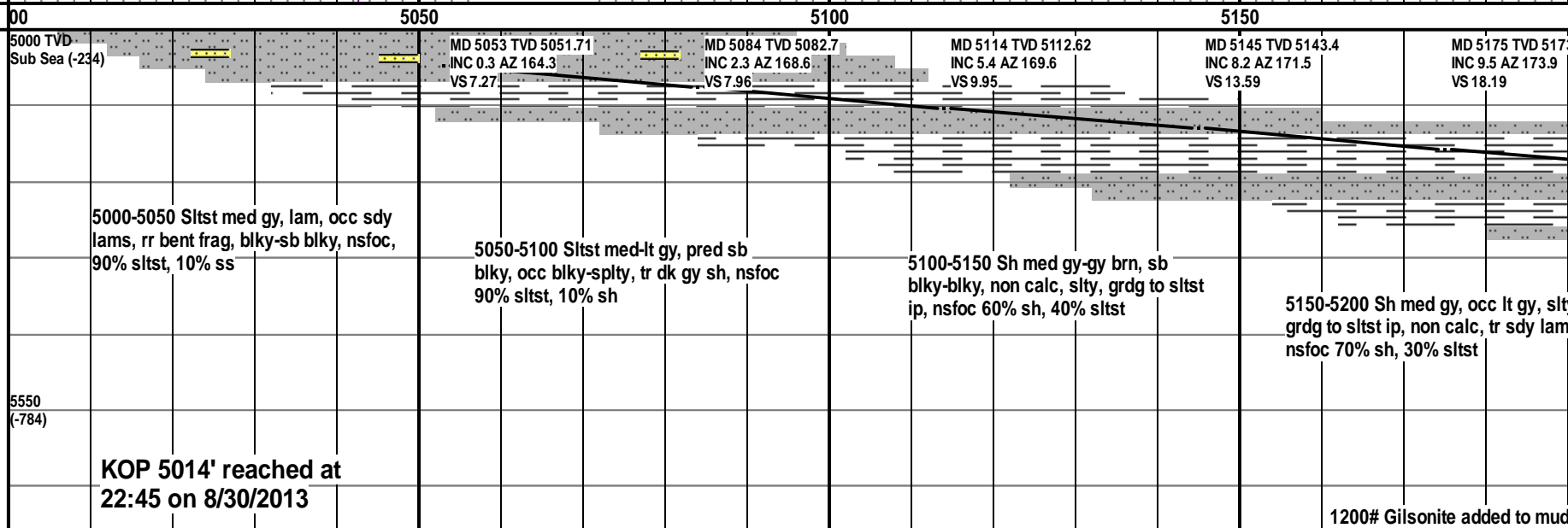
-  Rft
-  Sidewall

TG, C1-C4

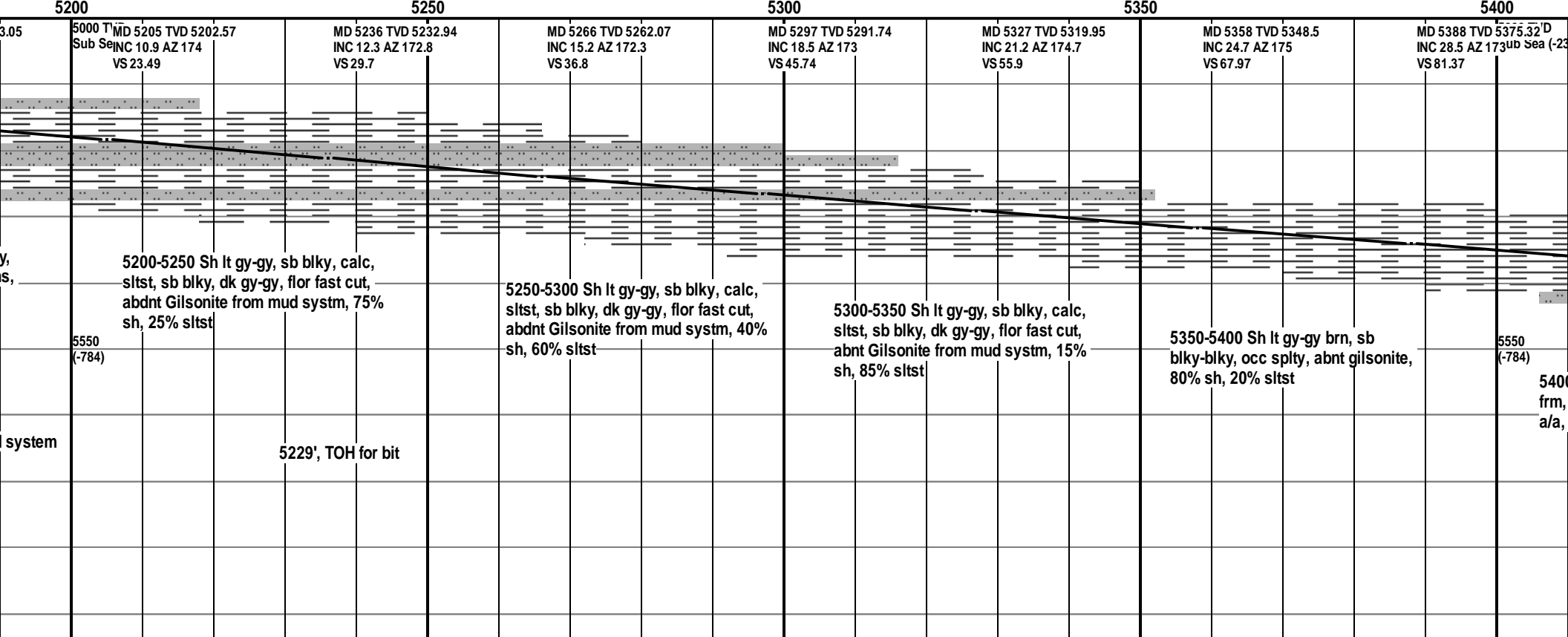
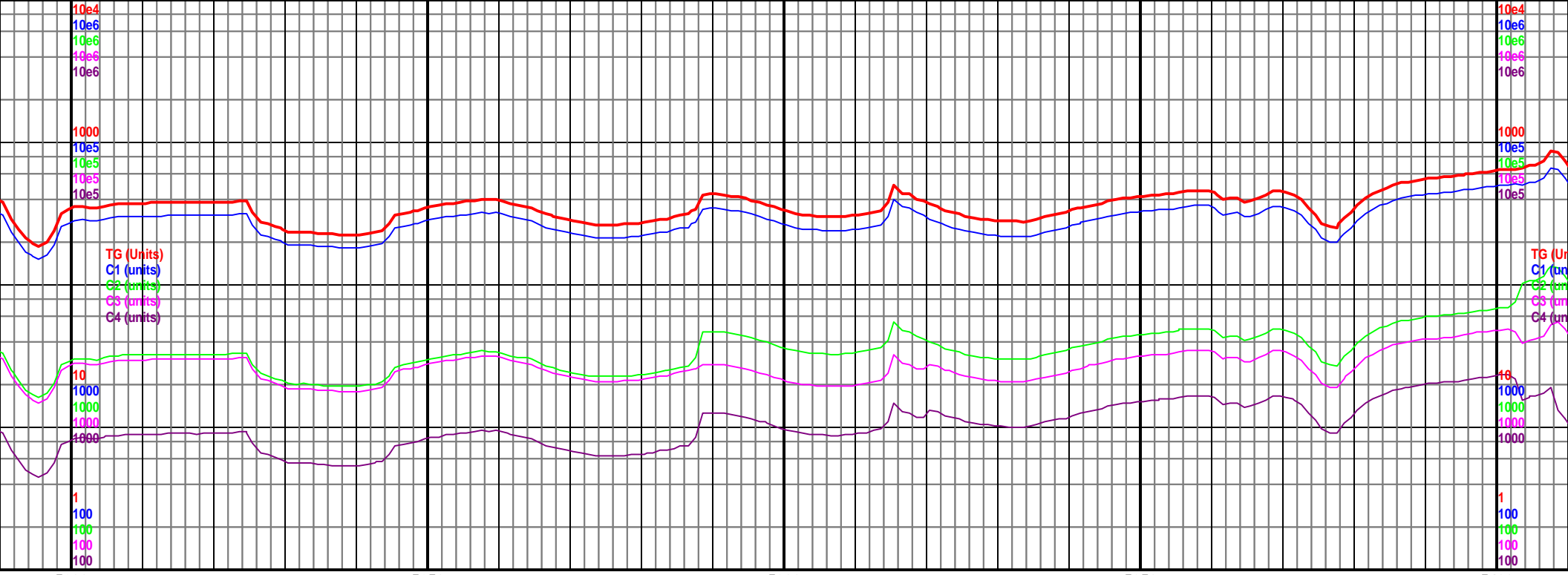
TG (Units) —
C1 (units) —
C2 (units) —
C3 (units) —
C4 (units) —

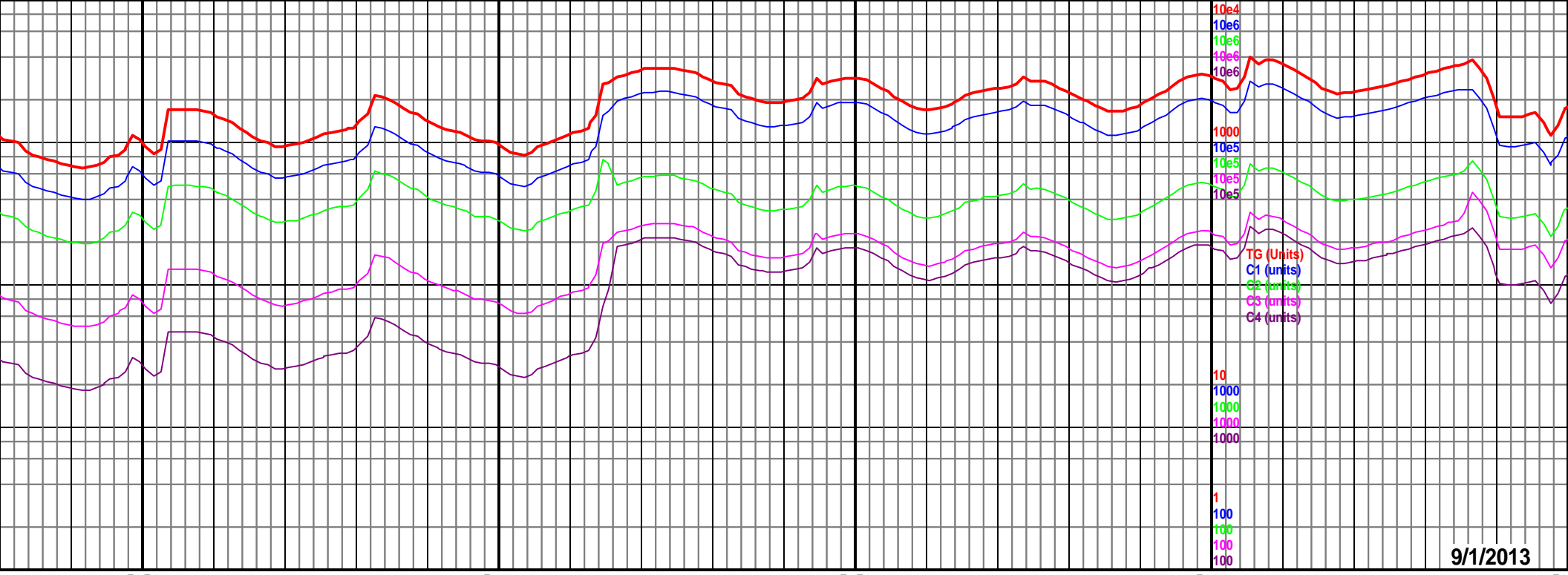


Depth



Well Bore Cross Section





9/1/2013

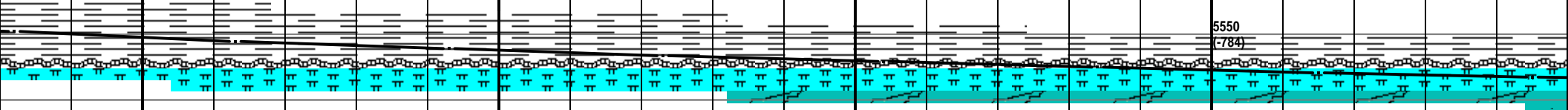
MD 5632 TVD 5546.16 INC 59.3 AZ 169.2 VS 248.51	MD 5663 TVD 5561.23 INC 62.5 AZ 169.3 VS 275.28	MD 5693 TVD 5574.22 INC 66.2 AZ 169.3 VS 302.01	MD 5723 TVD 5585.41 INC 70 AZ 169 VS 329.51	MD 5754 TVD 5595.37 INC 72.5 AZ 168.7 VS 358.49	MD 5784 TVD 5604.32 INC 72.8 AZ 168.5 VS 386.74	MD 5815 TVD 5612.94 INC 74.9 AZ 168.5 VS 416.1	MD 5845 TVD 5621.94 INC 77.1 AZ 168.5 VS 446.1
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18' MD,
TVD

P300 5674' MD,
5585' TVD

Sharon Springs
5763' MD, 5598' TVD

Niobrara 5785' MD,
5604' TVD



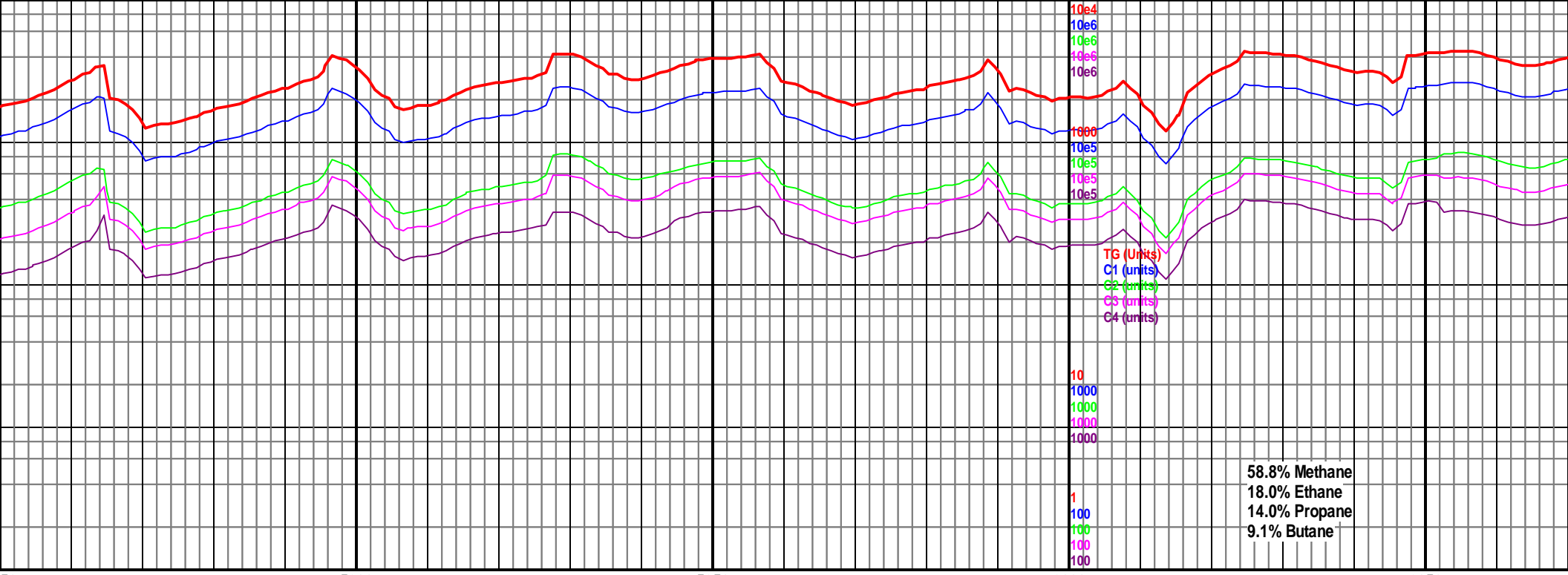
y, frm, sl slty,
ltst lams, g tr

5650-5700 Sh med-dk gy, frm, sl slty,
blky-splty, non calc, rr sltst lams, rr
bent, g tr gil, 100% sh

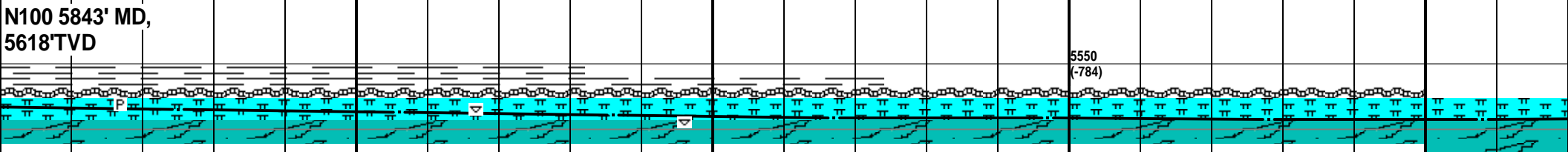
5700-5750 Sh dk gy, frm, blky-splty,
non calc, g tr gil, g tr bent, tan-pale
org, sdy ip, tr pyr, bri yel-org min
flor, 95% sh 5% bent

5750-5800 Sh dk gy, frm, blky-splty,
non calc, g tr gil, g tr bent, tan-pale
org, slty ip, bri yel-org min flor, 95%
sh 5% bent

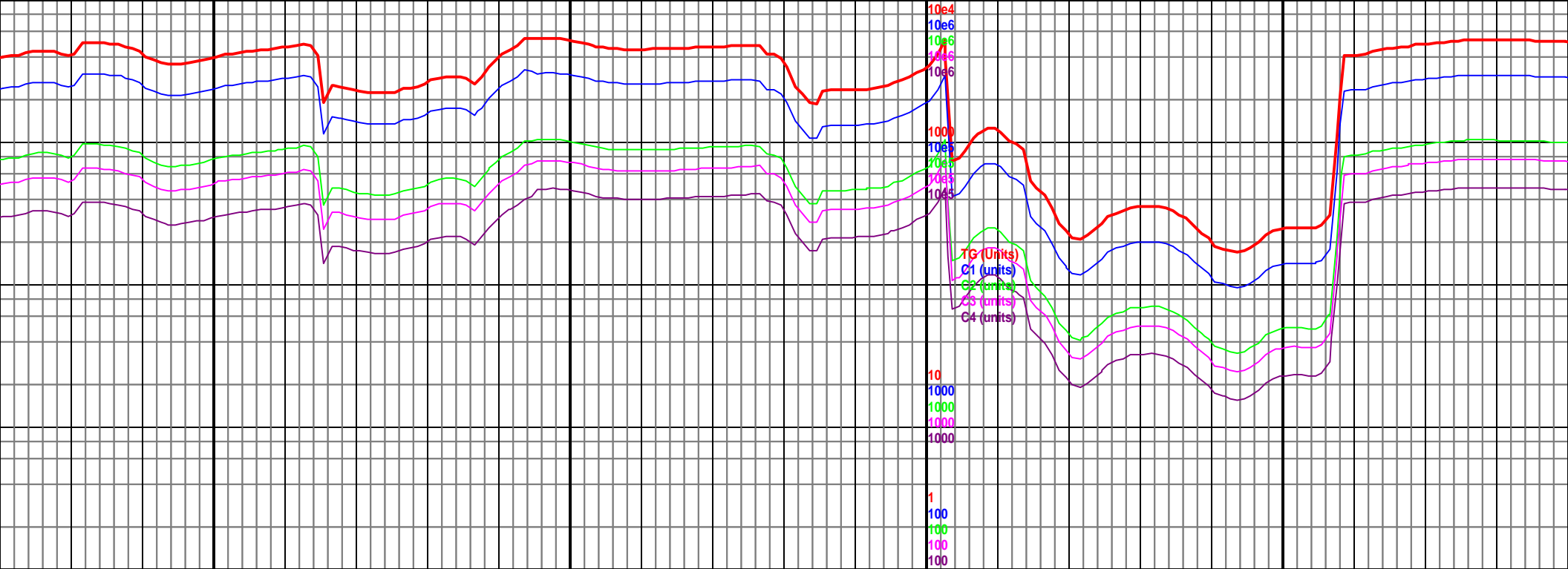
5800-5850 Mrlst med-dk gy, hd, g tr
bent a/a, tr lt gy brn chk with dull org
flor, 50% sh, 30% mrlst, 15% chk, 5%
bent



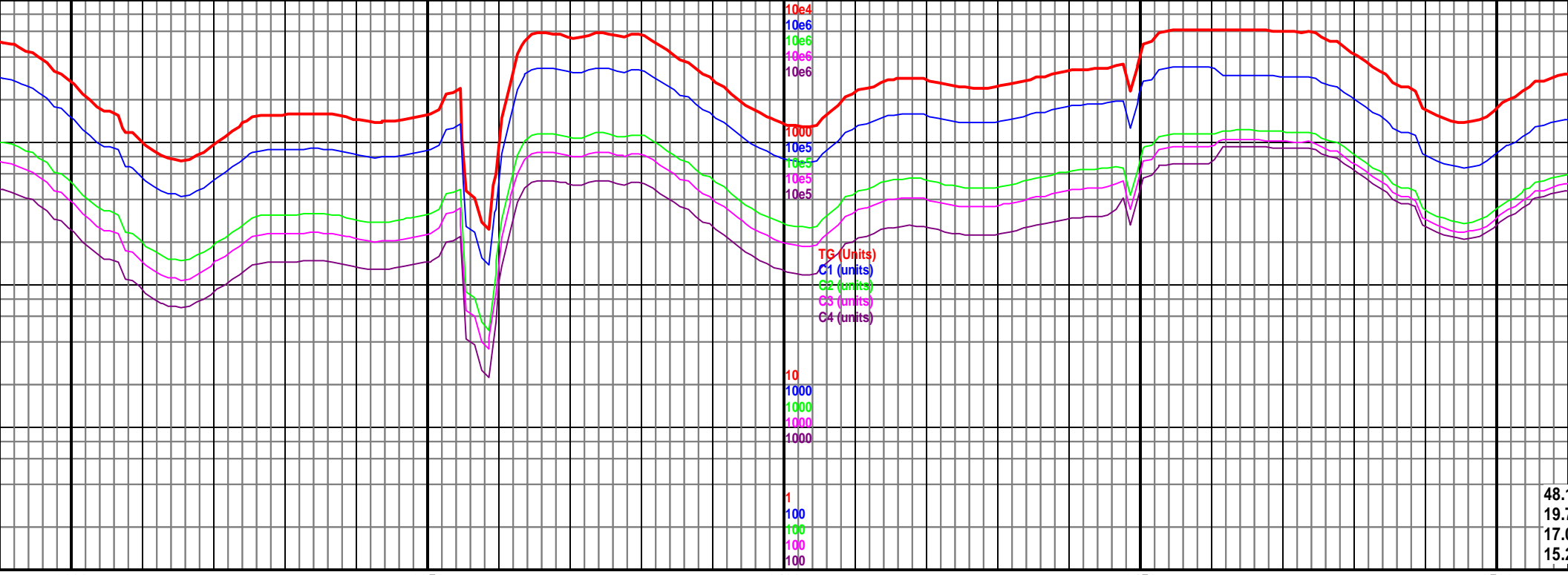
MD 5845 TVD 5619.99 INC 7.9 AZ 168.7 VS 4.87	MD 5875 TVD 5625.95 INC 79.2 AZ 168 VS 473.85	MD 5906 TVD 5631.38 INC 80.6 AZ 167.3 VS 503.88	MD 5936 TVD 5635.71 INC 82.8 AZ 166.7 VS 533.01	MD 5967 TVD 5638.93 INC 85.3 AZ 166.2 VS 563.22	MD 5997 TVD 5640.84 INC 87.4 AZ 165.7 VS 592.5	MD 6028 TVD 5641.76 INC 89.2 AZ 166.1 VS 622.8	MD 6058 TVD 5642.68 INC 90.6 AZ 166.2 VS 652.19
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5850-5900 Chk lt-med gy, bnnd ip, frm, sb blk, mod arg, abnt med gy mrlst, tr tan bent with bri yel min flor, rr pyr, g tr dull orng flor, 80% chk, 20% mrlst	5900-5950 Chk lt-med gy, bnnd ip, frm, sb blk, mod arg, abnt med gy mrlst, tr tan bent with bri yel min flor, rr inoc, g tr dull orng flor, 60% chk, 40% mrlst	5950-6000 Chk lt gy brn, banded-mottled, frm, sb blk, g tr med-dk gy mrlst, rr bent, abnt dull orng flor, 80% chk, 20% mrlst	6000-6050 Chk lt-med gy, bnnd ip, frm, sb blk, mod arg, abnt med gy mrlst, tr tan bent with bri yel min flor, rr pyr, g tr dull orng flor, 80% chk, 20% mrlst	6050-6100 Chk lt-med gy, bnnd ip, frm, sb blk, mod arg, abnt med gy mrlst, tr tan bent with bri yel min flor, rr pyr, g tr dull orng flor, 80% chk, 20% mrlst
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6100				6150				6200				6250			
5641.81 56.9				MD 6090 TVD 5641.19 INC 91.6 AZ 167.2 VS 683.6				MD 6121 TVD 5640.17 INC 92.2 AZ 166.9 VS 714.02				MD 6153 TVD 5638.88 INC 92.4 AZ 166.8 VS 745.39			
								MD 6184 TVD 5637.75 INC 91.8 AZ 166.4 VS 775.76				MD 6212 TVD 5636.89 INC 91.7 AZ 166.7 VS 803.19			
								7500 TVD Sub Sea (-234)							



6300

6350

6400

6450

6500

MD 6301 TVD 5634.41
INC 91.5 AZ 167.2
VS 890.51

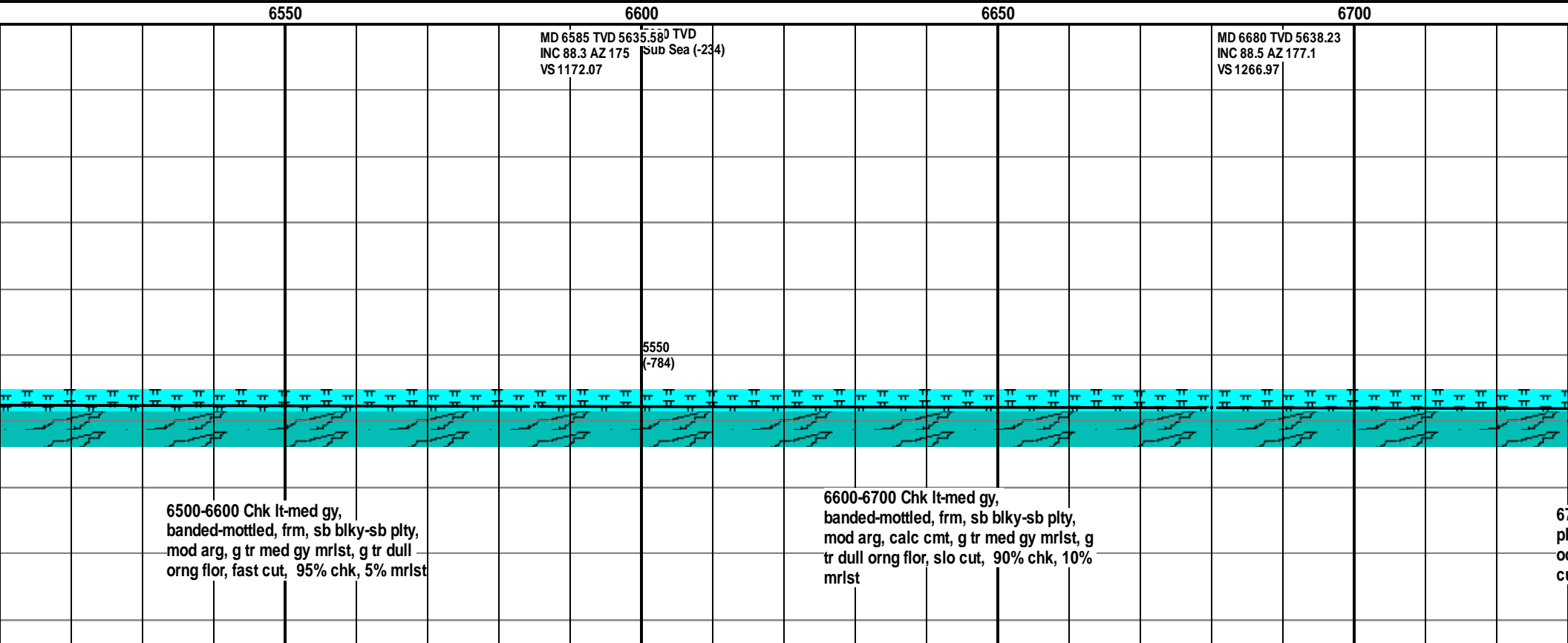
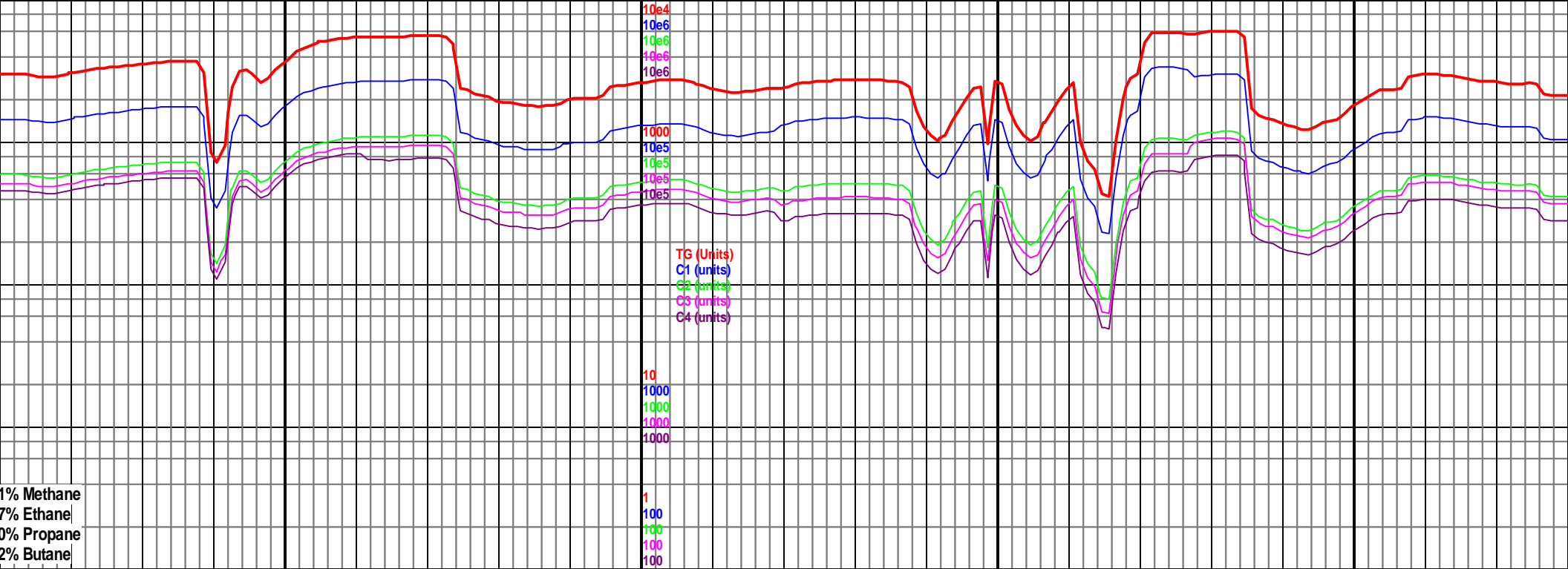
MD 6395 TVD 5633.09
INC 90.1 AZ 169.8⁽⁴⁾
VS 983.2

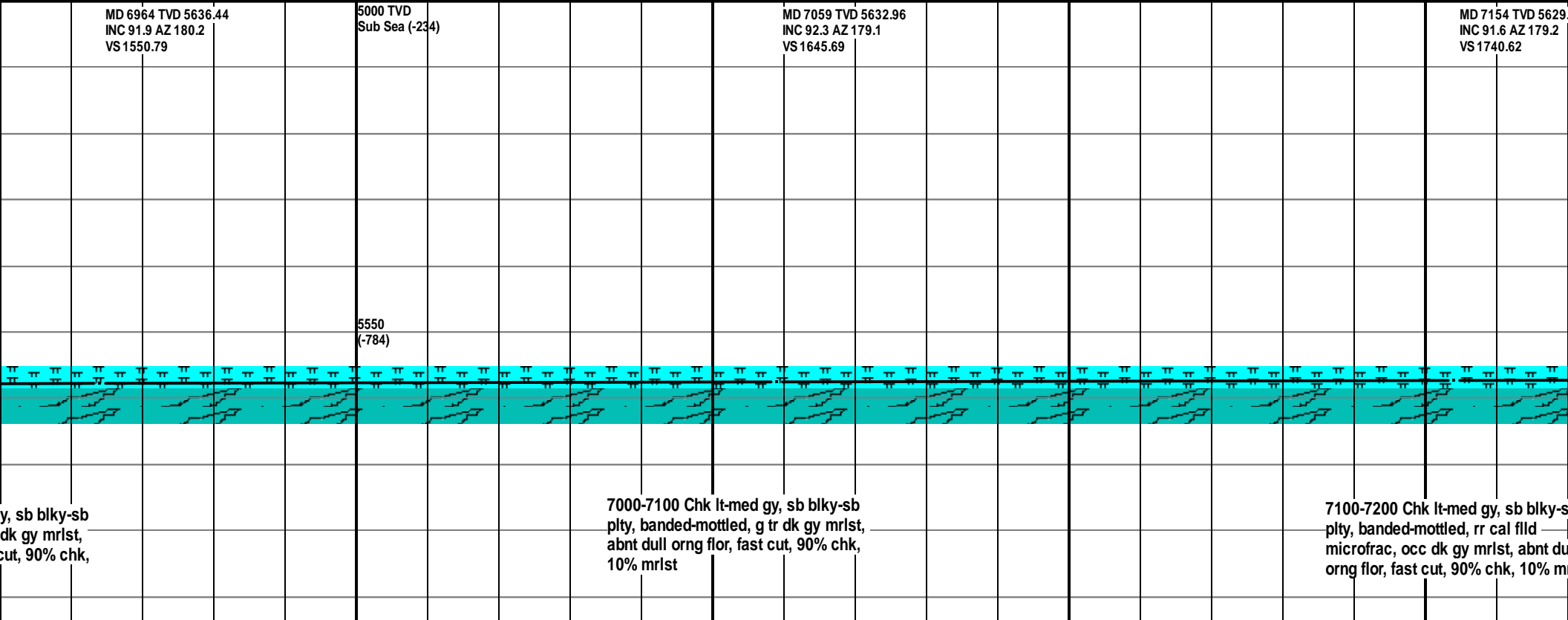
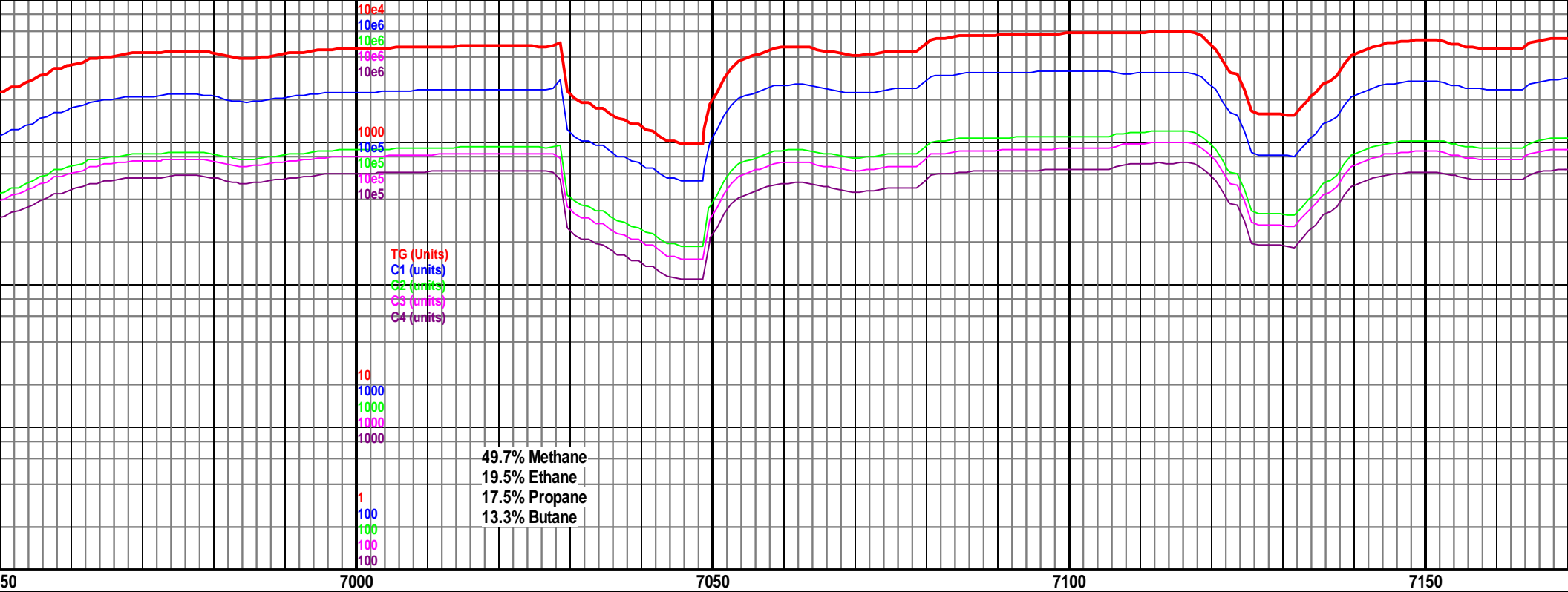
MD 6490 TVD 5633.59
INC 89.3 AZ 171.6
VS 1077.42

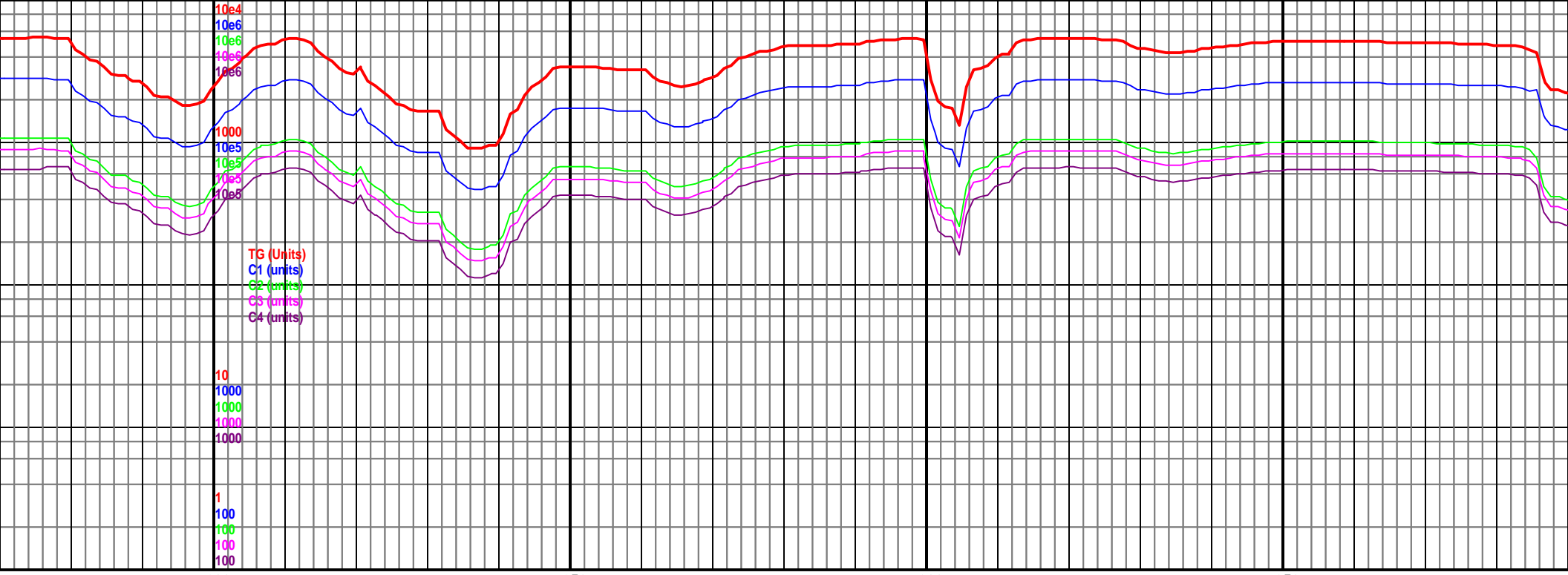
5550
(-784)

6300-6400 Chk lt-med gy,
banded-mottled, frm, sb blk-y-sb plty,
mod arg, g tr med gy mrlst g tr dull
orng flor, fast cut, 85% chk, 15% mrlst

6400-6500 Chk lt-med gy,
banded-mottled, frm, sb blk-y-sb plty,
mod arg, g tr med gy mrlst g tr dull
orng flor, slo cut, 90% chk, 10% mrlst







7200

7250

7300

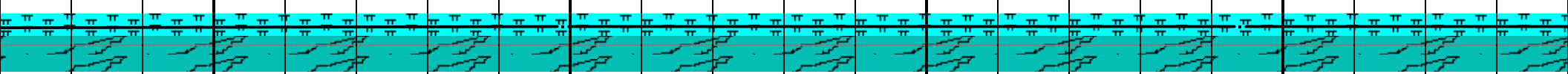
7350

7200 TVD 5000 TVD
Sub Sea (-234)

MD 7249 TVD 5627.82
INC 90.7 AZ 180.2
VS 1835.55

MD 7344 TVD 5627.65
INC 89.5 AZ 179.5
VS 1930.5

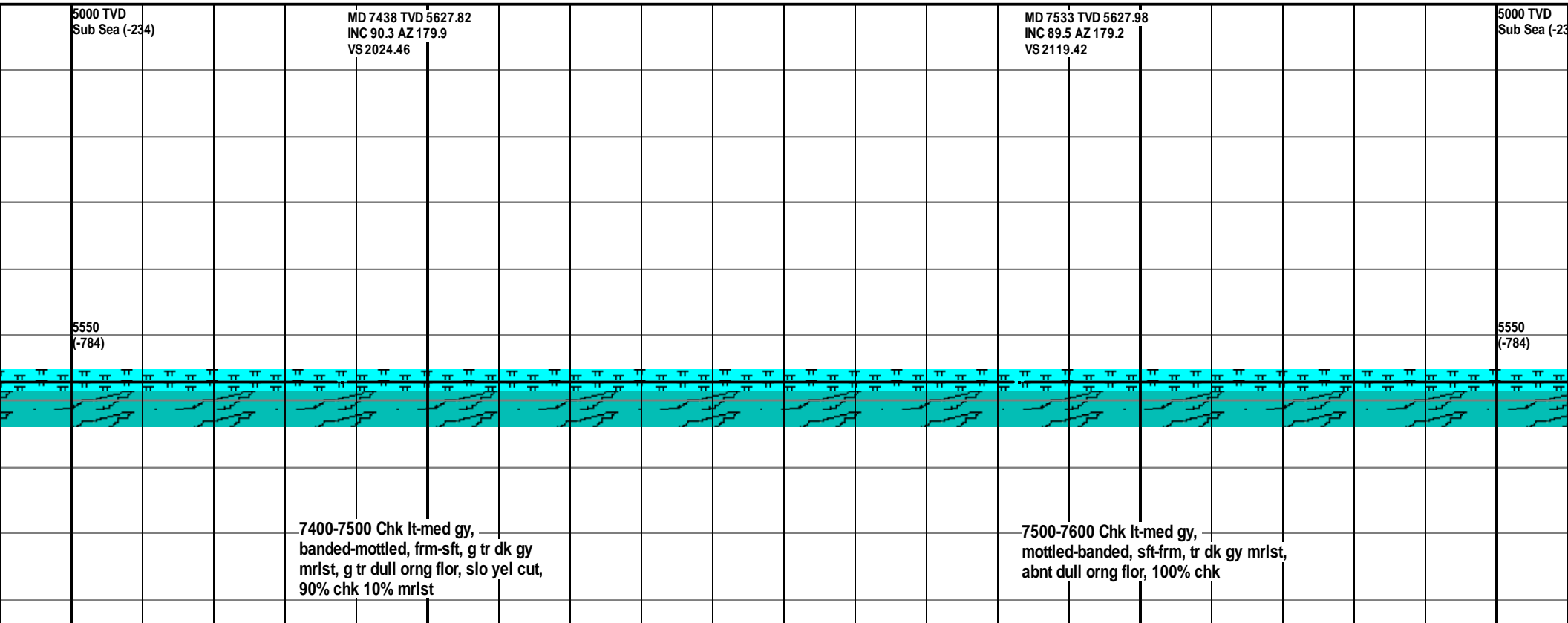
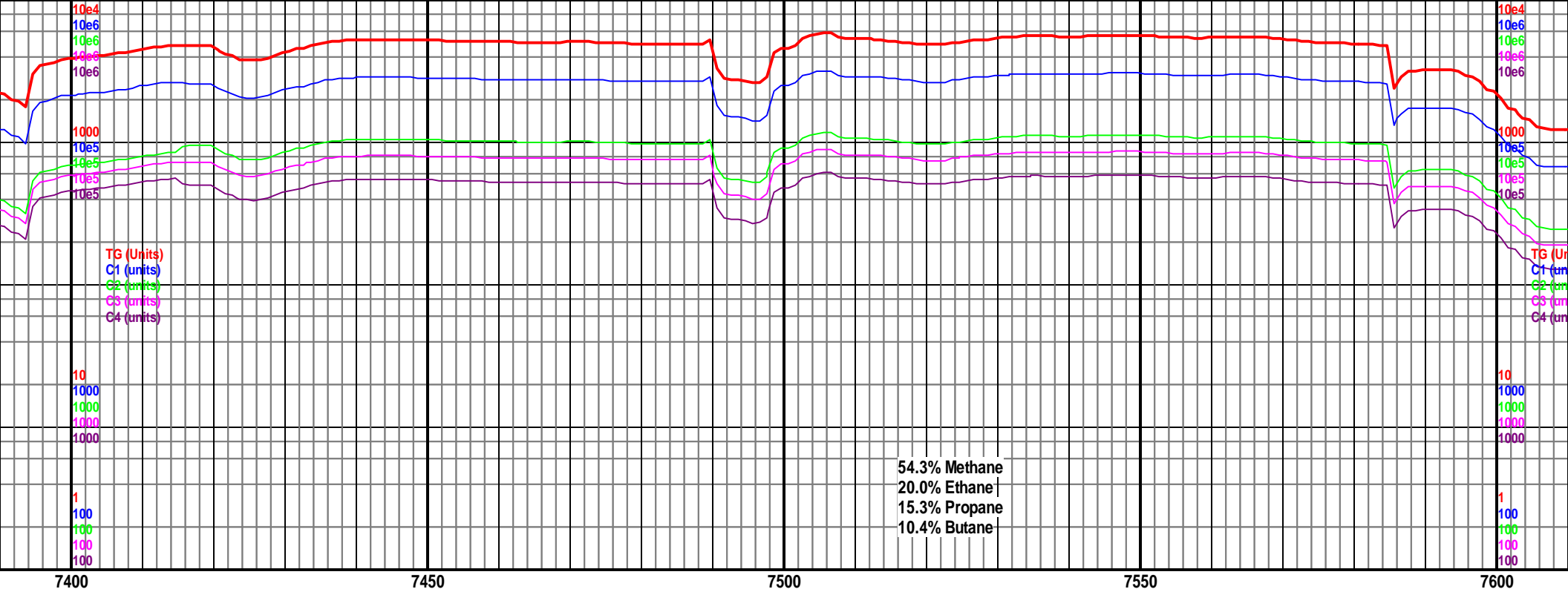
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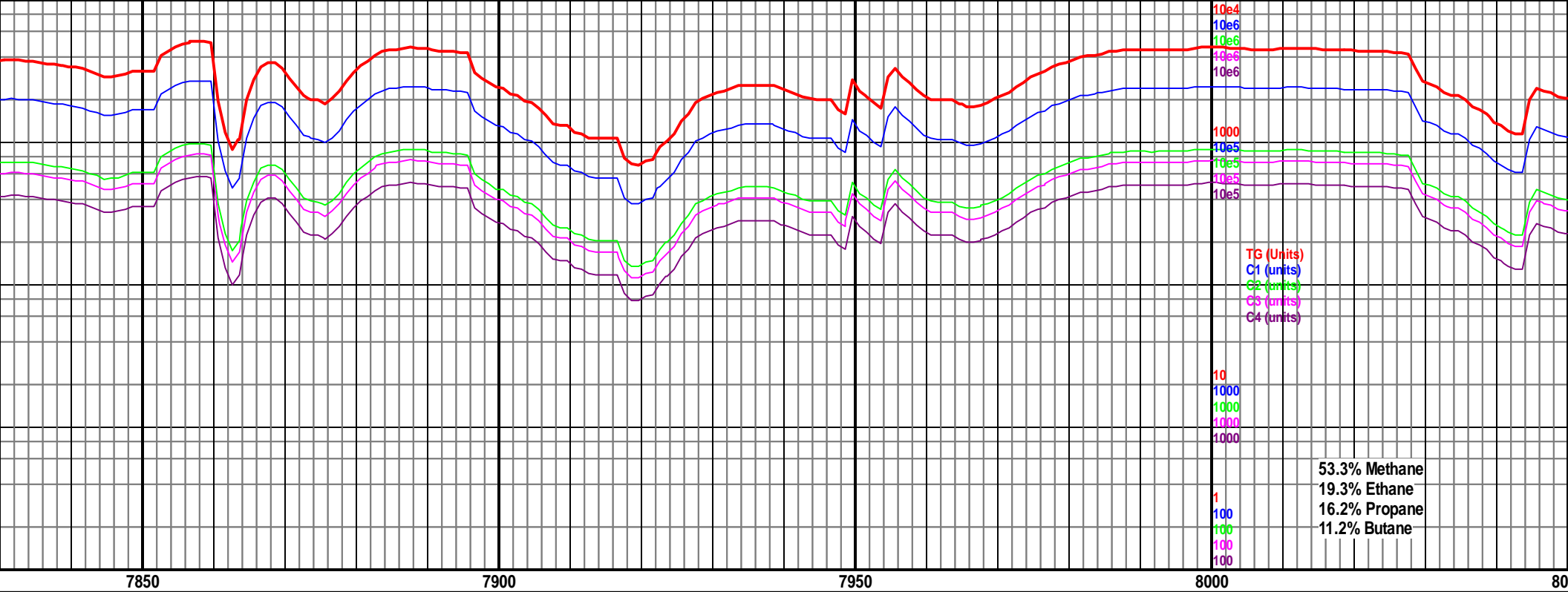


b
all
rlst

7200-7300 Mrlst med-dk gy, blk-y-sb
plty, frm-sl hd ip, abnt chk cont a/a, g tr
dull orng flor, slo cut, 80% mrlst, 20%
chk

7300-7400 Chk med gy, sb blk-y-sb plty,
frm, mottled ip, g tr dull orng flor, slo
cut, 60% chk, 40% mrlst





MD 7900 TVD 5626.95
INC 88.8 AZ 181.7
VS 2485.96

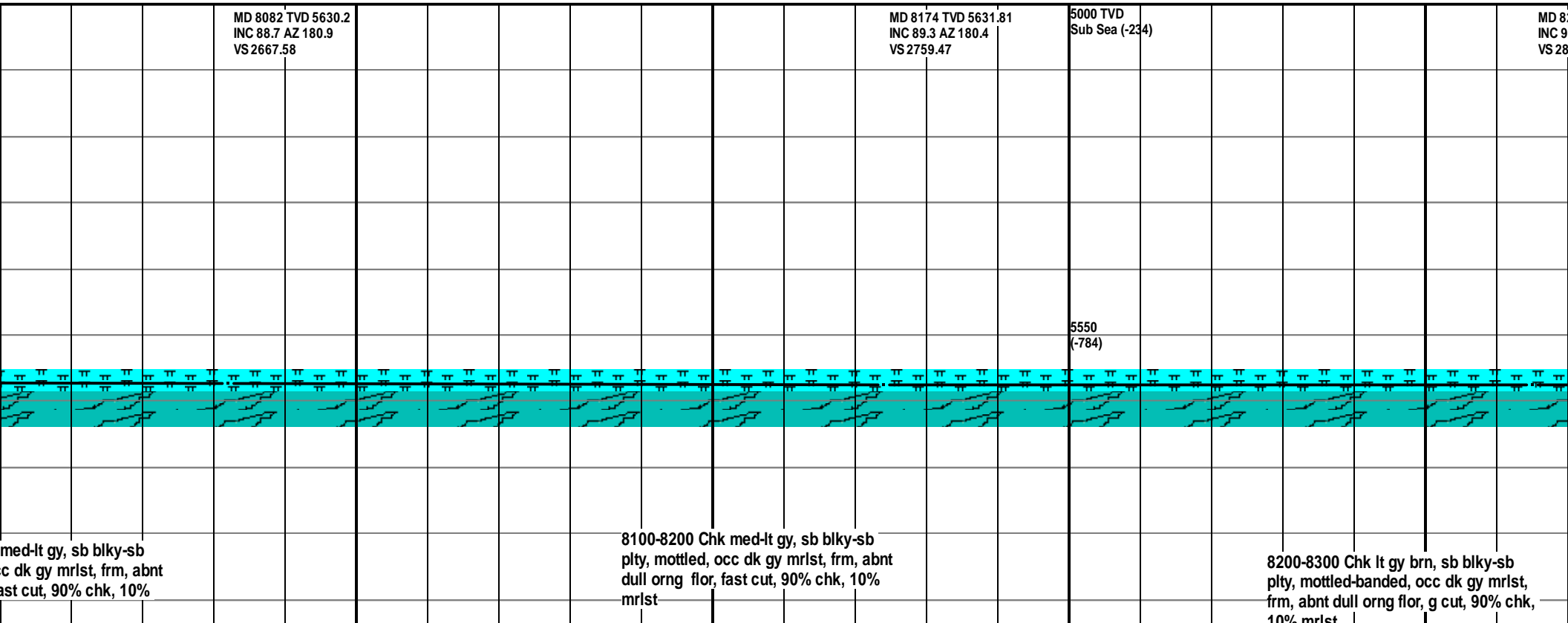
MD 7991 TVD 5628.54
INC 89.2 AZ 181.8^a (-234)
VS 2576.75

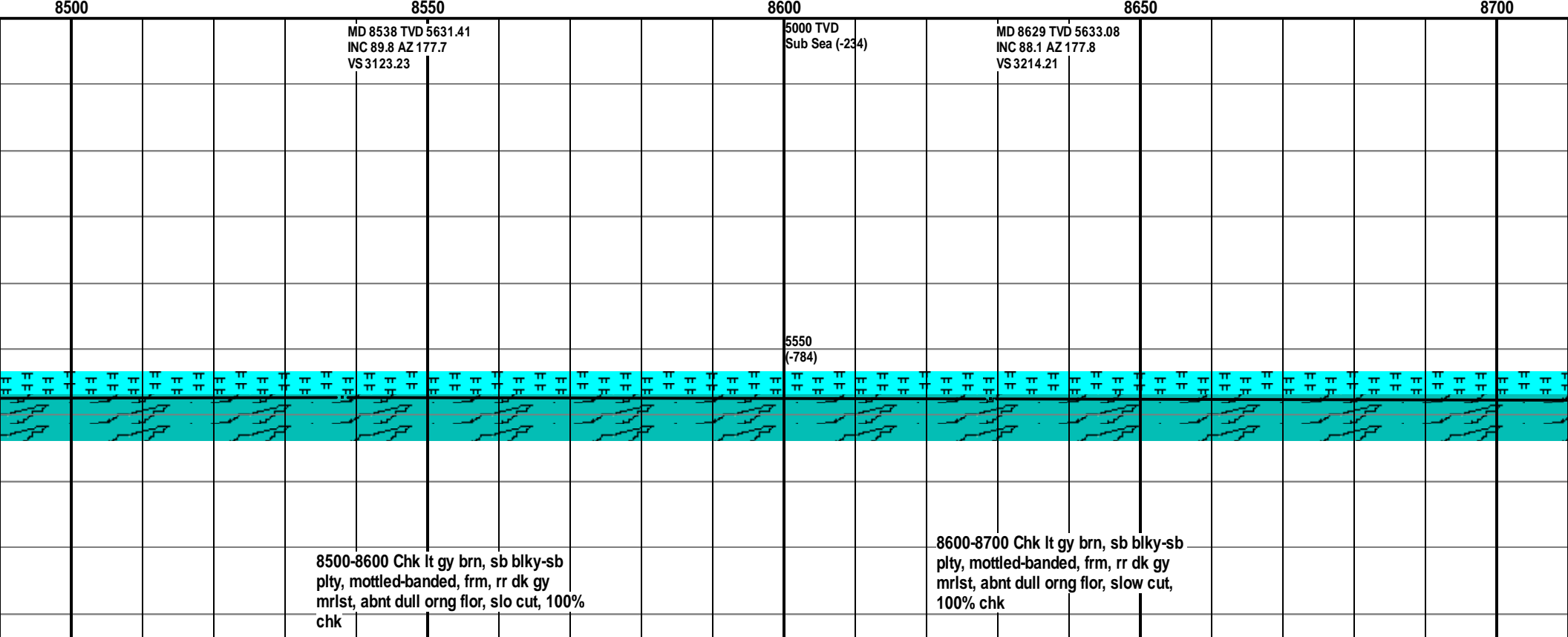
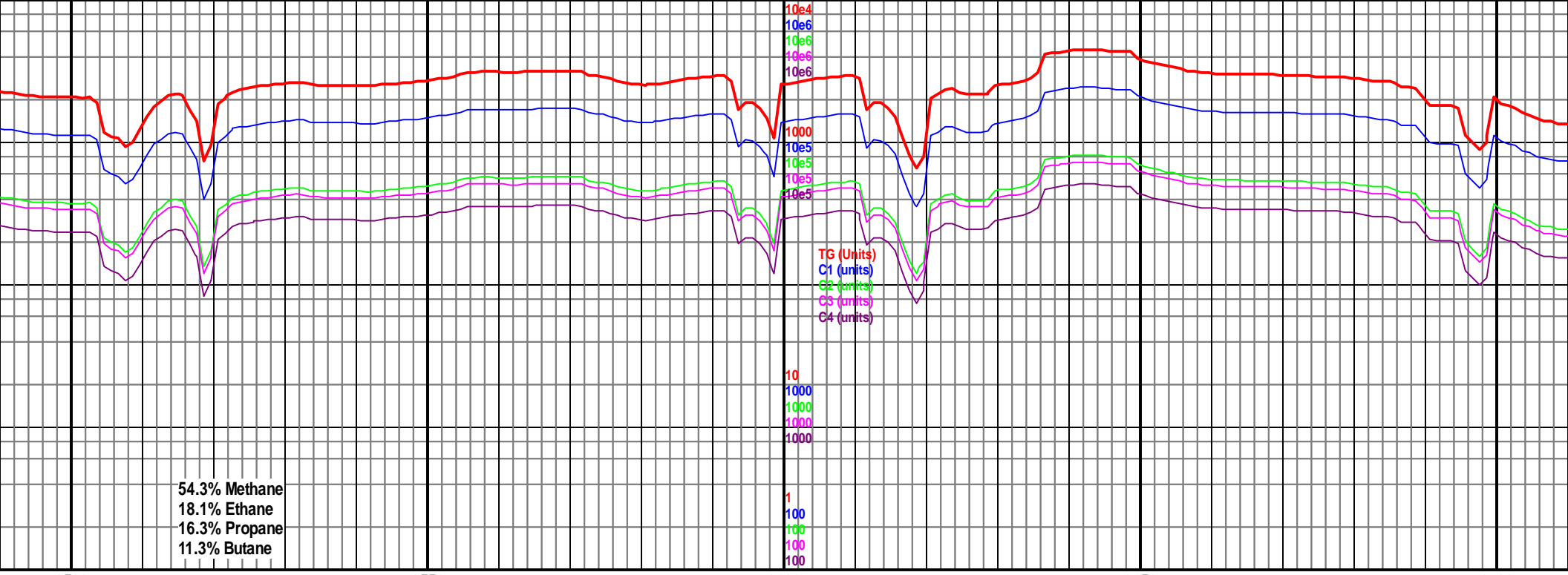
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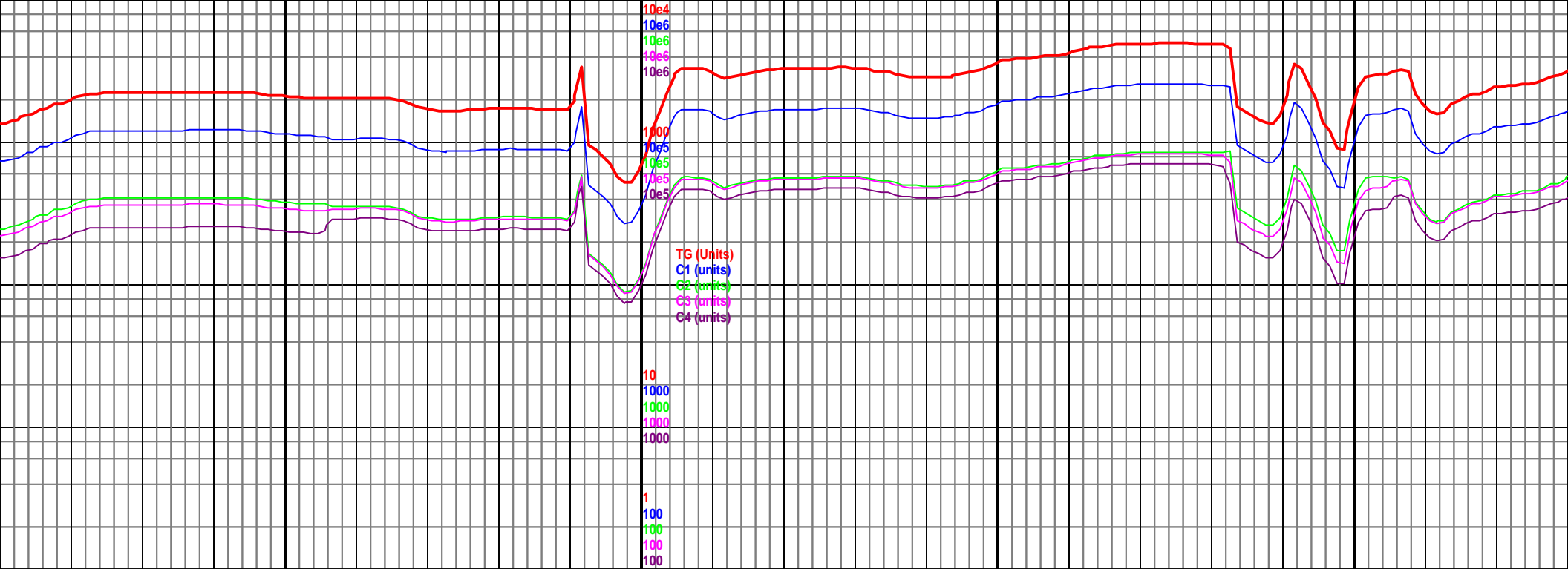
7800-7900 Chk lt-med gy, sb blk- sb
ply, banded-mottled-speck, occ dk gy
mrst, abnt dull orng flr, fast cut, 90%
chk, 10% mrst

7900-8000 Chk lt-med gy, sb blk- sb
ply, banded-mottled, occ dk gy mrst,
abnt dull orng flr, fast cut, 80% chk,
20% mrst

8000-8100 Chk
ply, mottled, oc
dull orng flr, fa
mrst







8750

8800

8850

8900

MD 8721 TVD 5635.89
INC 88.4 AZ 177.5
VS 3306.17

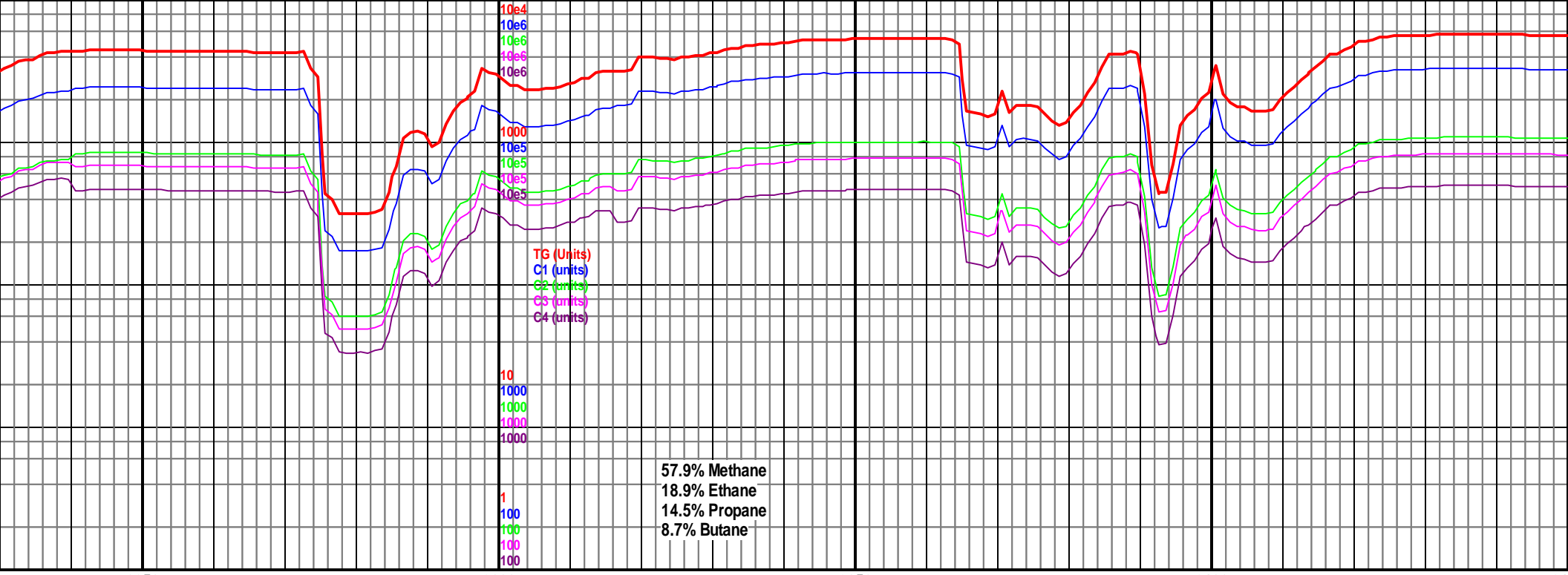
5000 TVD
Sub Sea (-234)
MD 8812 TVD 5638.75
INC 88 AZ 178.2
VS 3397.12

MD 8903 TVD 5640.49
INC 89.8 AZ 177.9
VS 3488.1

5550
(-784)

8700-8800 Chk lt gy-gy brn, sb plty-sb
blky, sft, g tr med gy mrlst, abnt dull
orng-yl flr, fast cut, 90% chk, 10%
mrlst

8800-8900 Chk lt gy brn, sb blky-sb
plty, mottled-banded, frm, rr dk gy
mrlst, abnt dull orng flr, g cut, 100%
chk



57.9% Methane
18.9% Ethane
14.5% Propane
8.7% Butane

8950

9000

9050

9100

9150

MD 8995 TVD 5640.58
INC 90.1 AZ 178.234
VS 3580.1

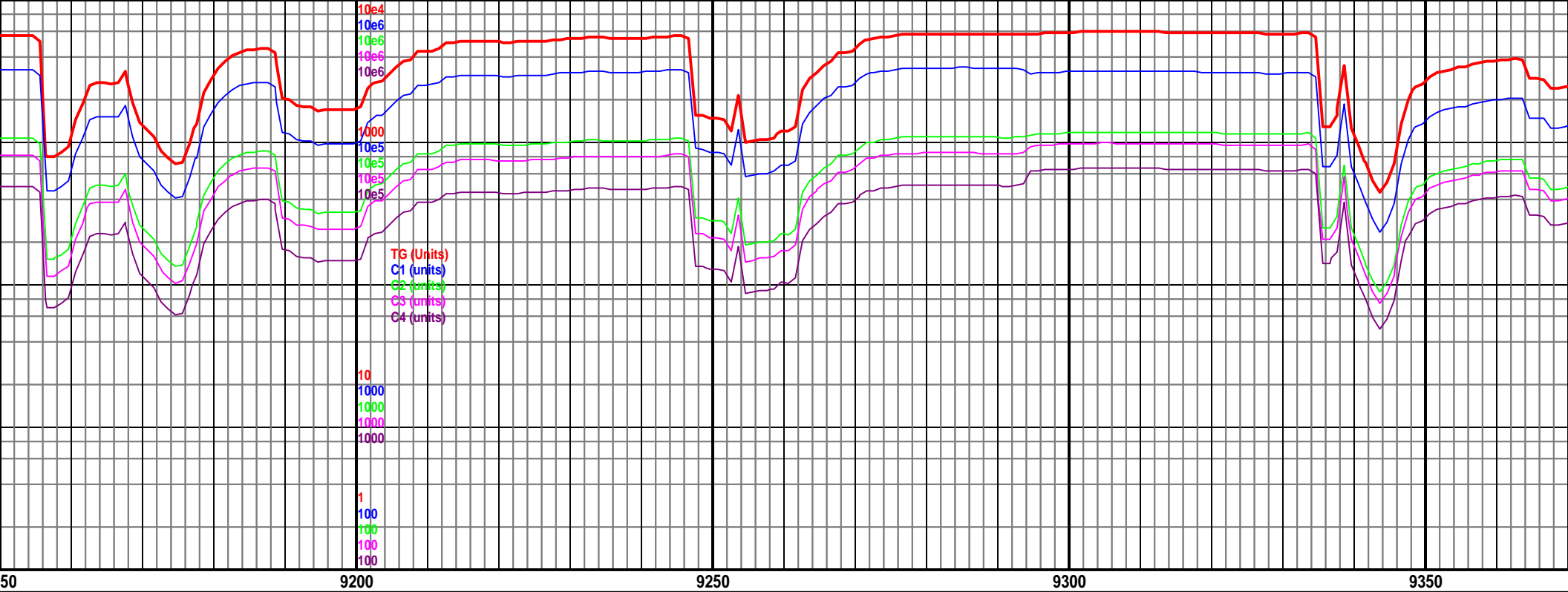
MD 9086 TVD 5639.94
INC 90.7 AZ 179.1
VS 3671.09

5550
(-784)

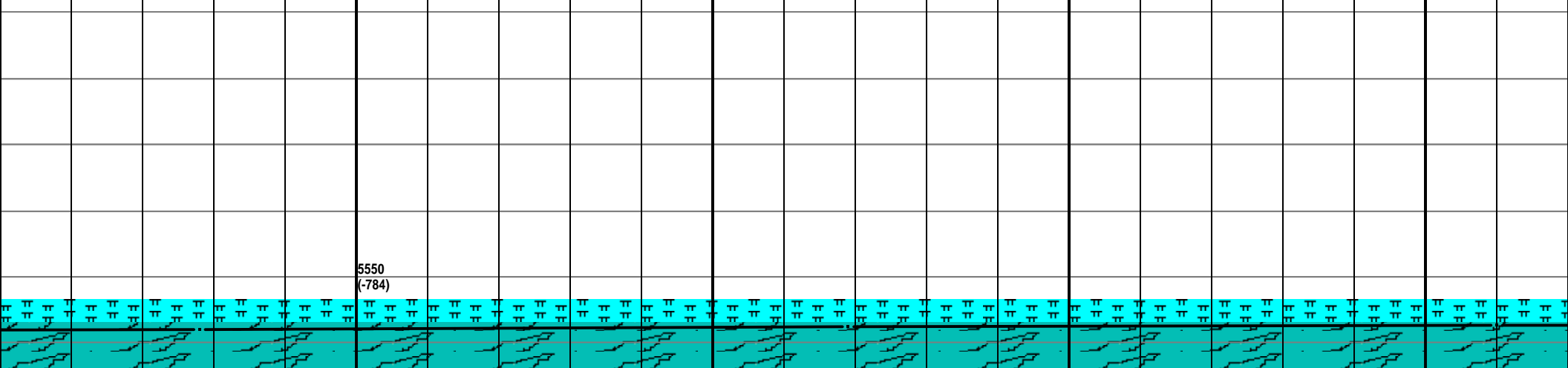
8900-9000 Chk lt gy brn, sb blk-y-sb
plty, mottled-banded, frm, rr dk gy
mr1st, abnt dull orng flr, g cut, 100%
chk

9000-9100 Chk lt gy brn, sb blk-y-sb
plty, mottled-banded, frm, rr dk gy
mr1st, abnt dull orng flr, g cut, 100%
chk

9100-9200 Chk lt g
plty, mottled-bande
mr1st, abnt dull orn
chk



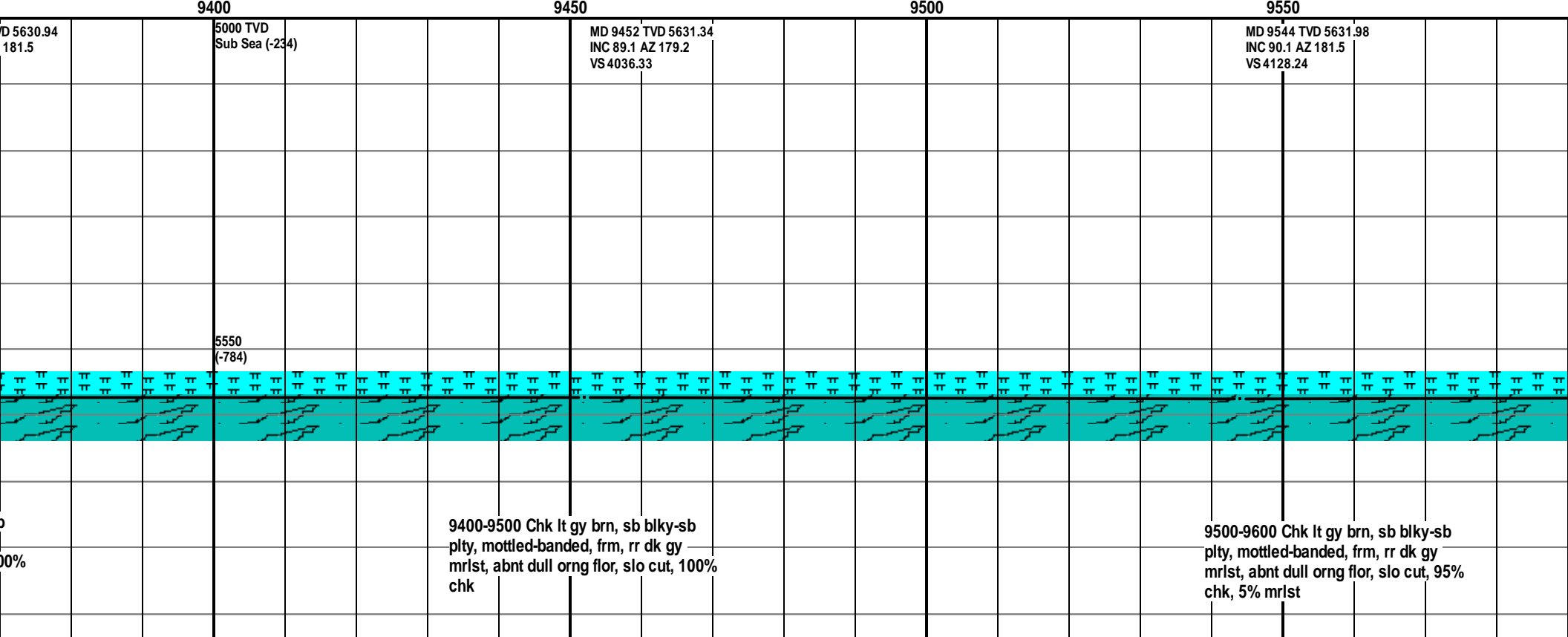
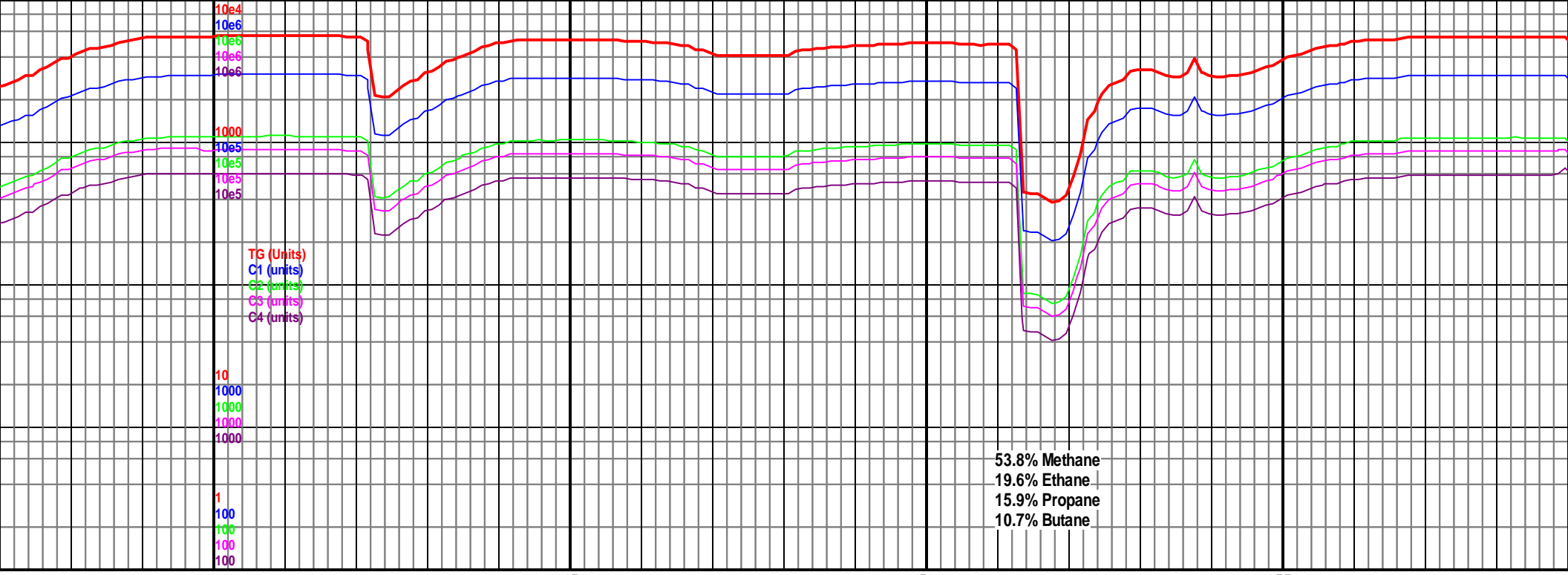
MD 9178 TVD 5637.29 INC 92.6 AZ 182.7 VS 3762.92	5000 TVD Sub Sea (-234)	MD 9269 TVD 5633.24 INC 92.5 AZ 181.3 VS 3853.61	MD 9360 TVD 5633.24 INC 90.4 AZ 181.3 VS 3944.41
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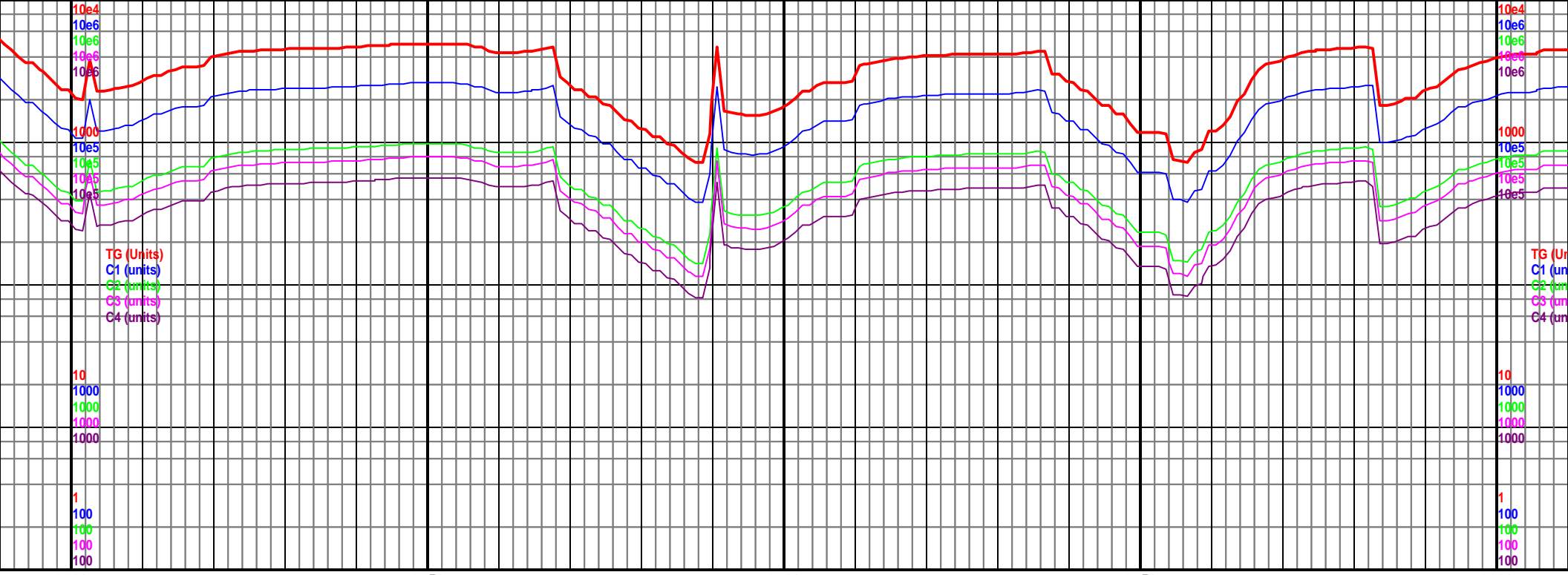


gy brn, sb blk-y-sb
 ed, frm, rr dk gy
 ng flor, g cut, 100%

9200-9300 Chk lt gy brn, sb blk-y-sb
 pty, mottled-banded, frm, rr dk gy
 mrlst, abnt dull orng flor, g cut, 100%
 chk

9300-9400 Chk lt gy brn, sb blk-y-sb
 pty, mottled-banded, frm, rr dk gy
 mrlst, abnt dull orng flor, slo cut, 10%
 chk





9600 9650 9700 9750 9800

5000 TVD
Sub Sea (-234)

MD 9635 TVD 5631.66
INC 90.3 AZ 181.9
VS 4219.05

MD 9727 TVD 5631.34
INC 90.1 AZ 180.8
VS 4310.89

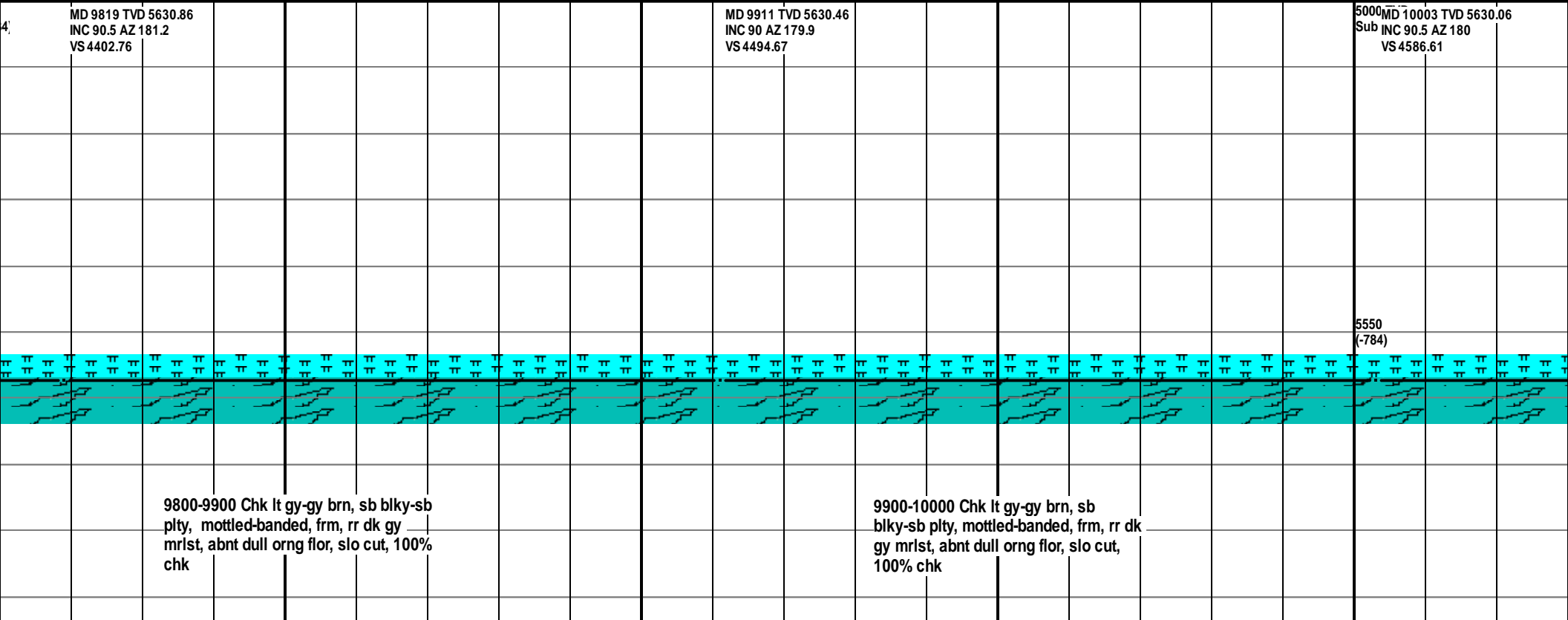
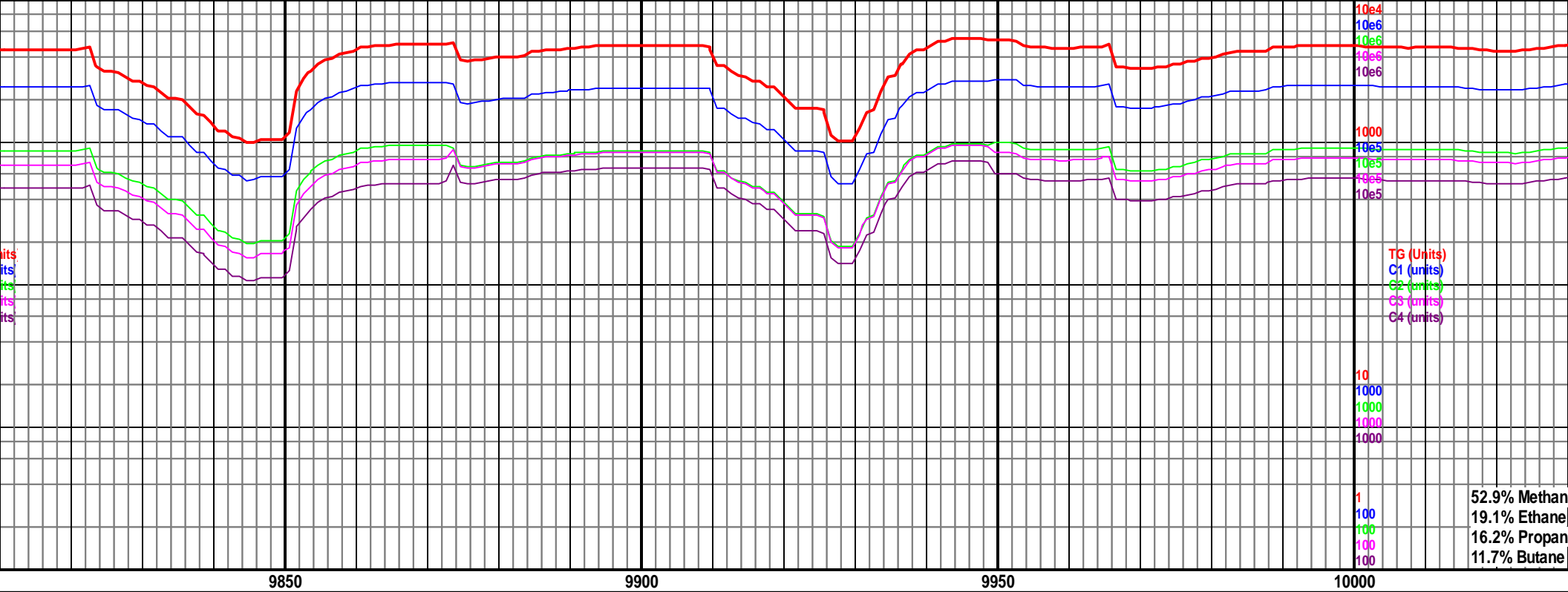
5000 TVD
Sub Sea (-234)

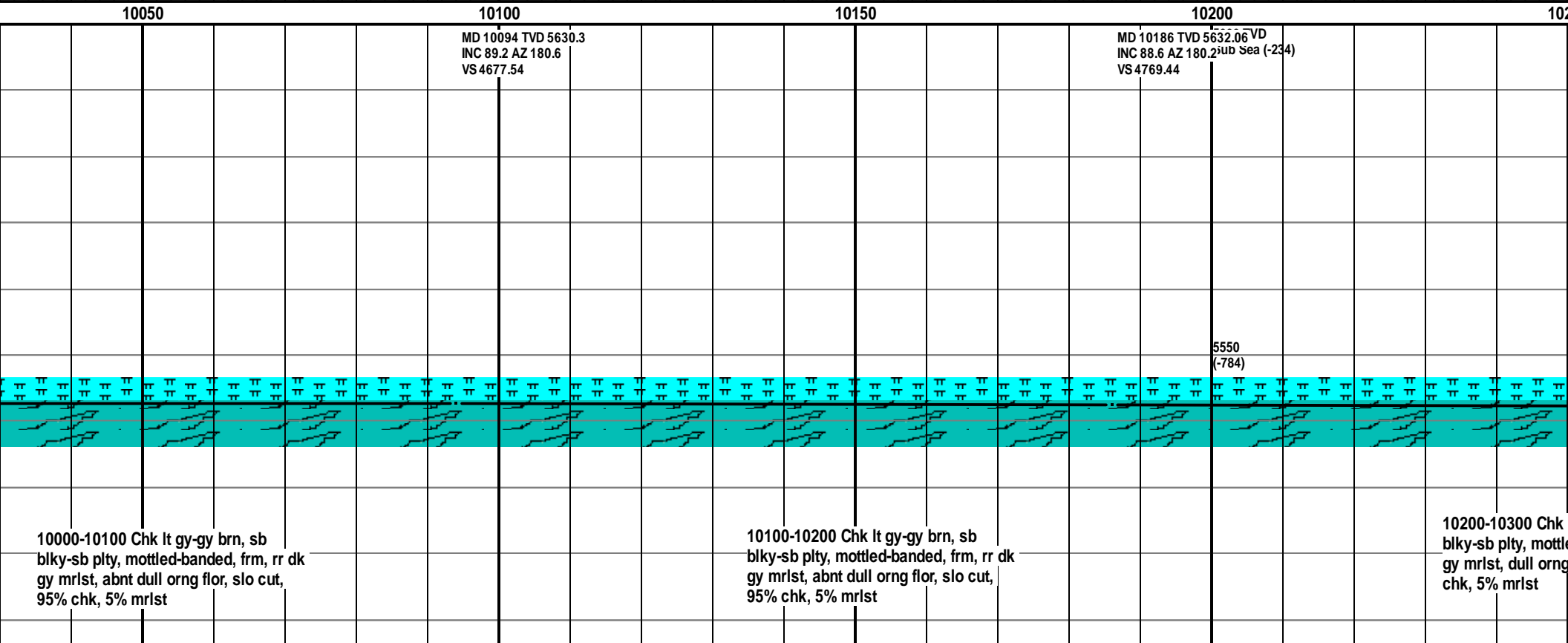
5550
(-784)

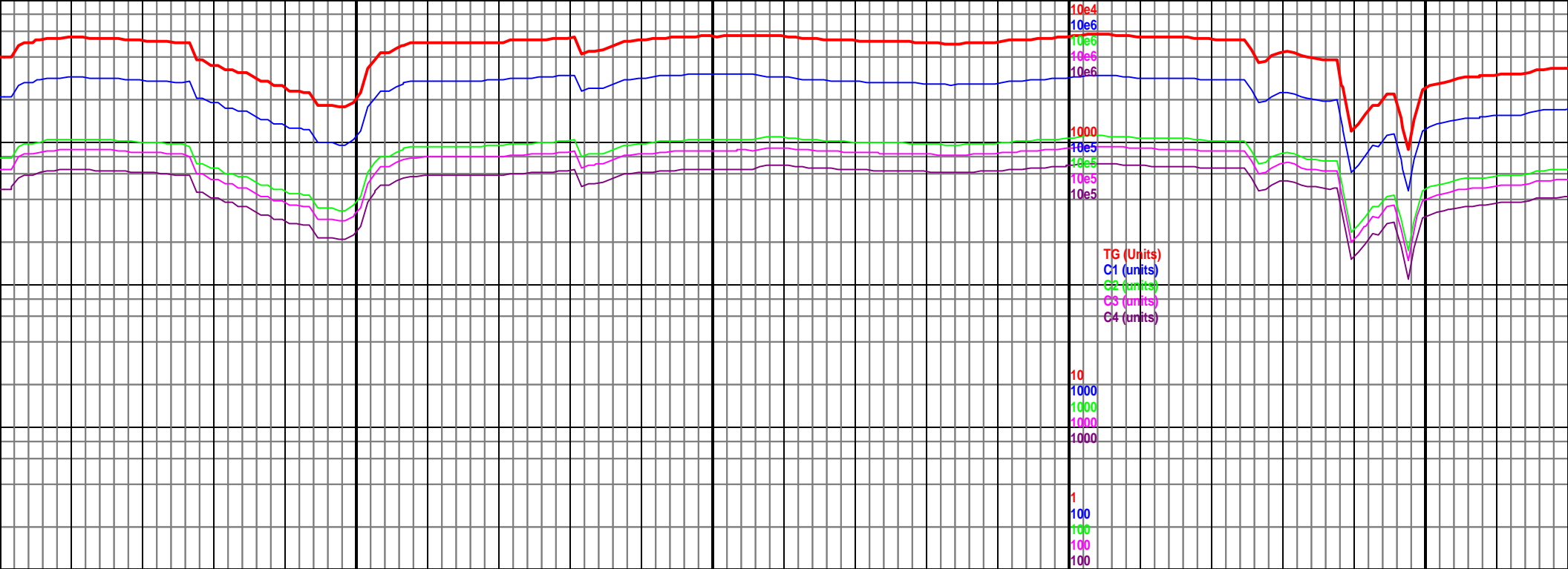
5550
(-784)

9600-9700 Chk lt gy-gy brn, sb blk-y-sb
plty, mottled-banded, frm, rr dk gy
mrlist, abnt dull orng flor, slo cut, 100%
chk

9700-9800 Chk lt gy-gy brn, sb blk-y-sb
plty, mottled-banded, frm, rr dk gy
mrlist, abnt dull orng flor, slo cut, 100%
chk







10250 10300 10350 10400 10450

MD 10278 TVD 5634.47
INC 88.4 AZ 179.9
VS 4861.35

MD 10369 TVD 5637.41
INC 87.9 AZ 179.1
VS 4952.27

5000 TVD
Sub Sea (-234)

MD 10461
INC 90.9 A
VS 5044.22

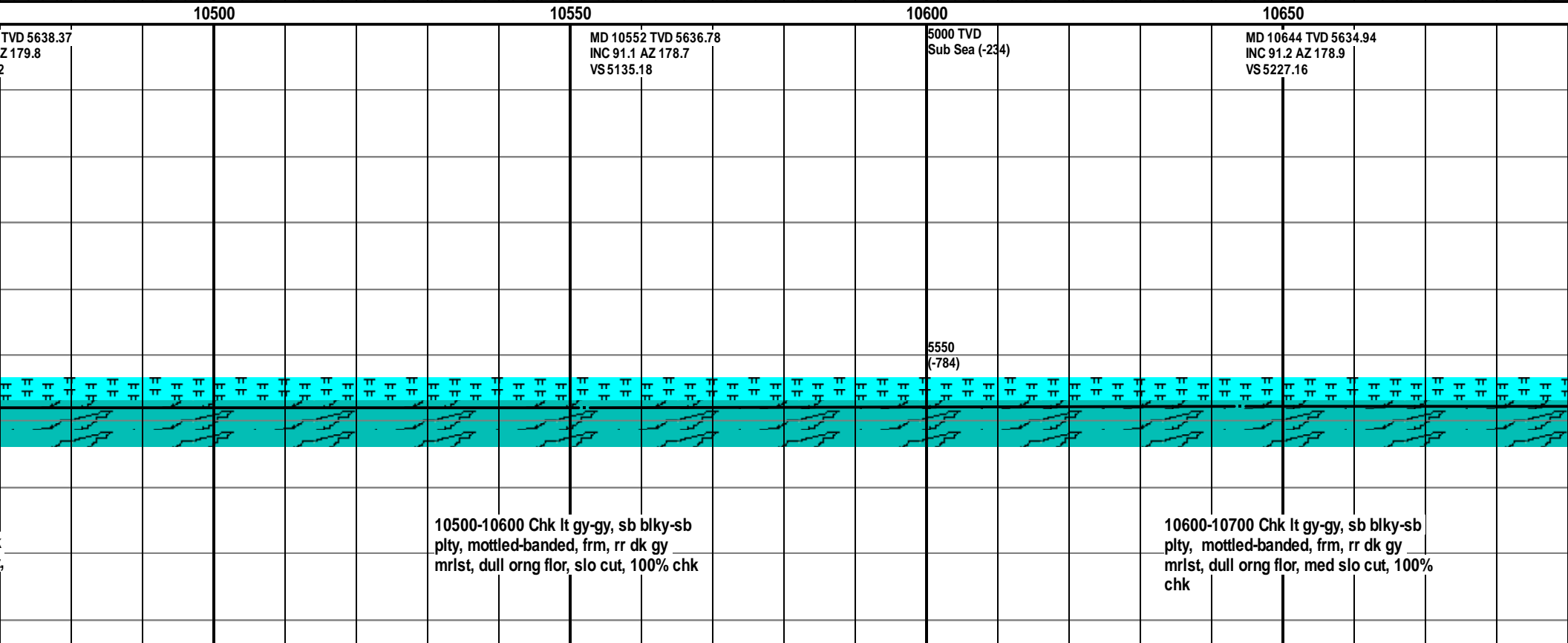
5550
(-784)

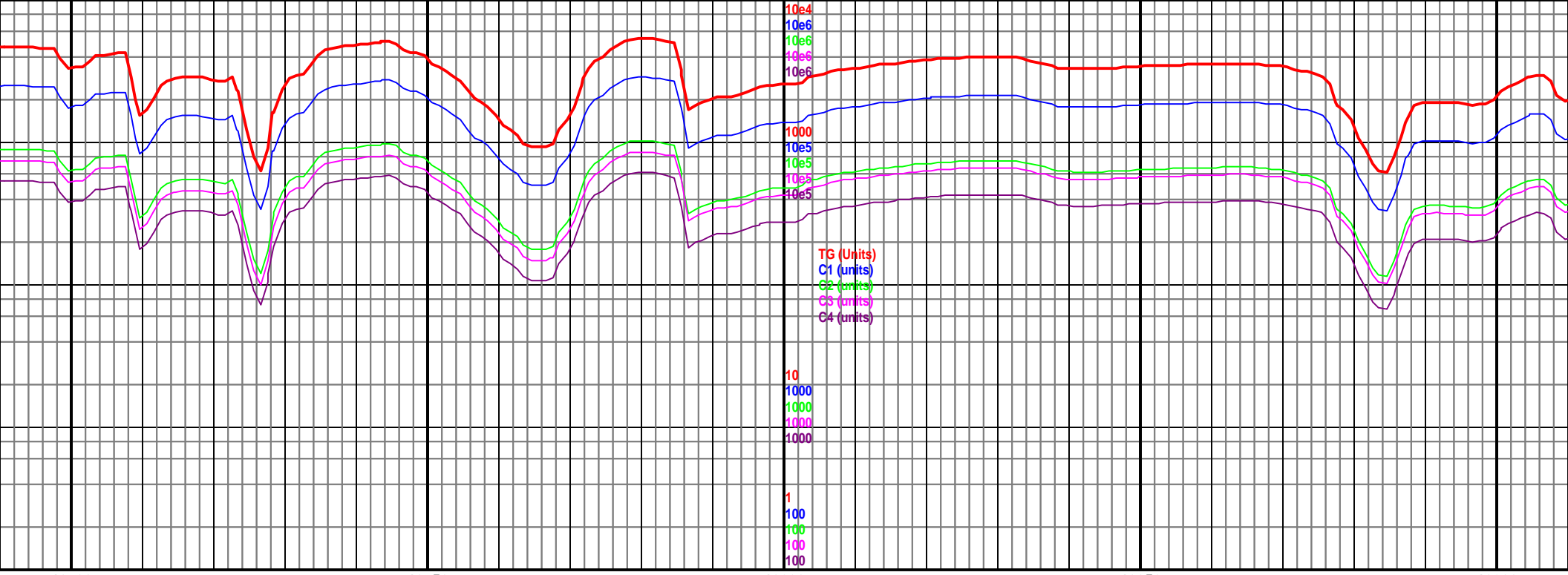


lt gy-gy brn, sb
ed-banded, frm, rr dk
flor, slo cut, 95%

10300-10400 Chk lt gy-gy brn, sb
blky-sb plty, mottled-banded, frm, rr dk
gy mrlst, rr bent, dull orng flor, slo cut,
90% chk, 10% mrlst

10400-10500 Chk lt gy-gy brn, sb
blky-sb plty, mottled-banded, frm, rr dk
gy mrlst, rr bent, dull orng flor, slo cut
95% chk, 5% mrlst





10700

10750

10800

10850

10900

MD 10736 TVD 5634.86
INC 88.9 AZ 180.2
VS 5319.12

5000 TVD
Sub Sea (-234)

MD 10827 TVD 5637
INC 88.4 AZ 178.8
VS 5410.06

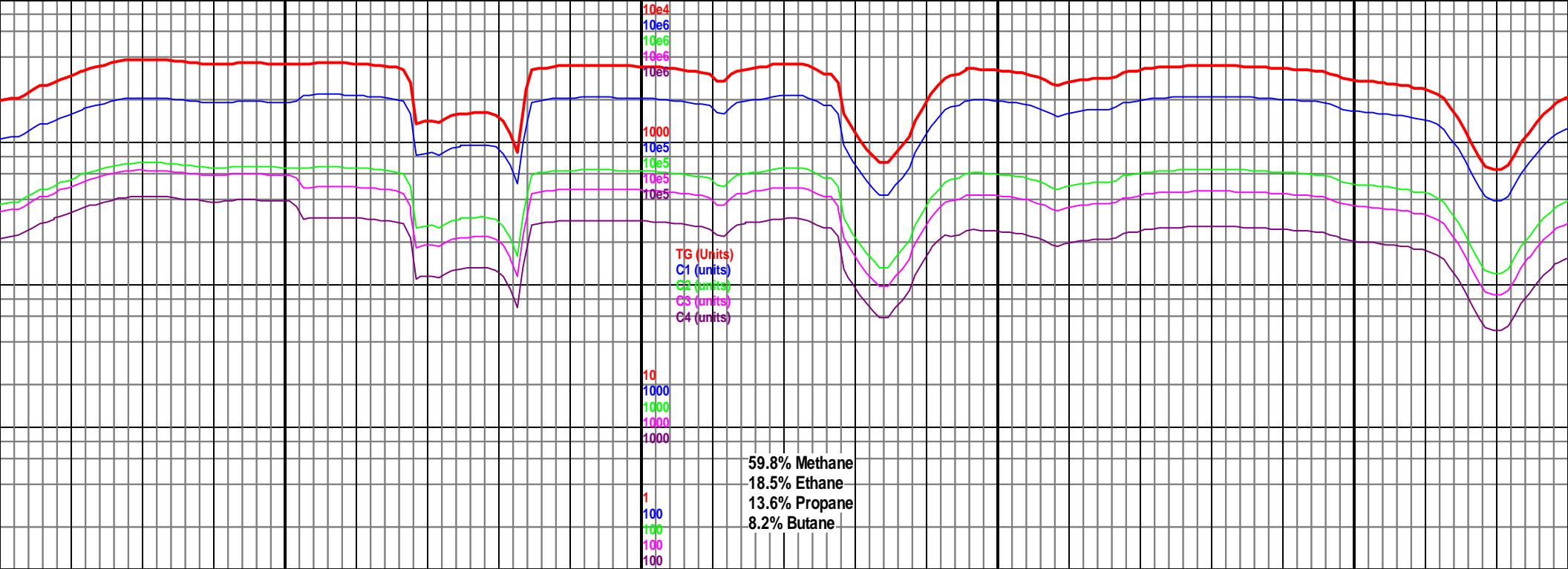
5550
(-784)



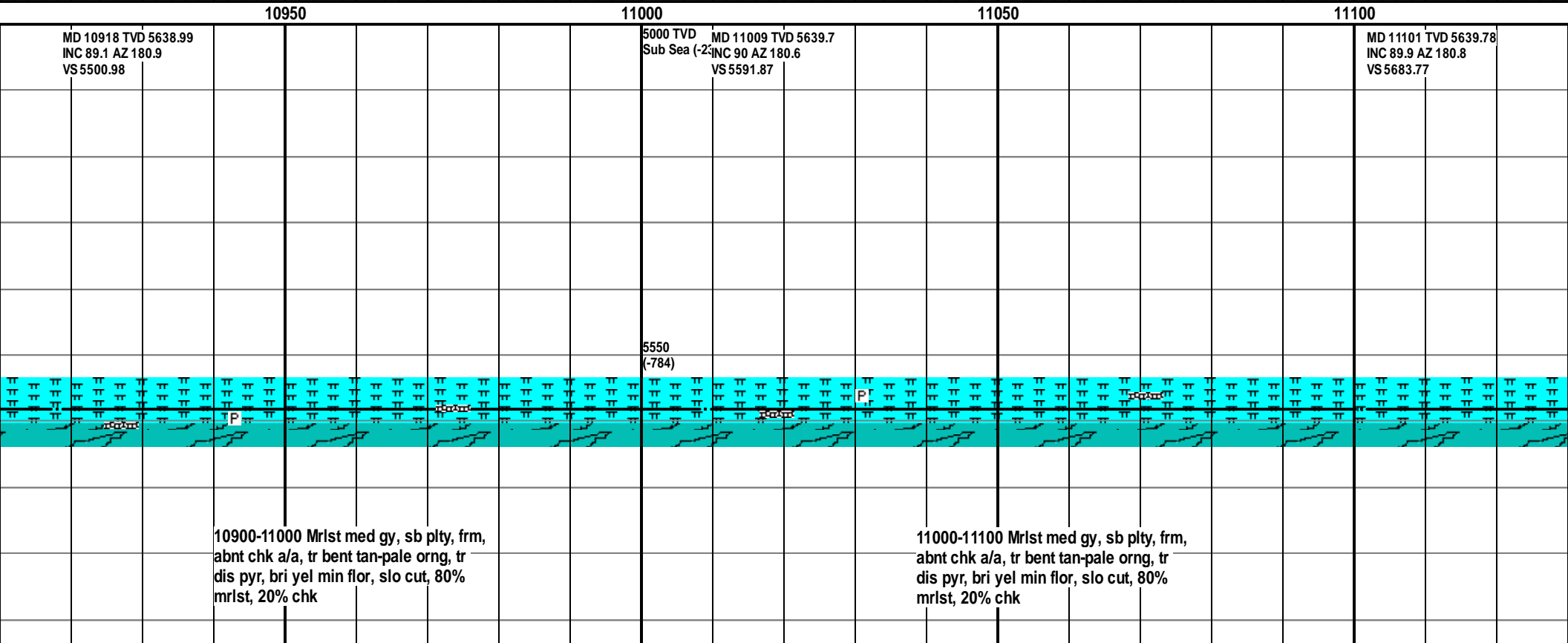
10700-10800 Chk lt gy-gy, sb blkly-sb
plty, mottled-banded, frm, rr dk gy
mrlst, abnt bent, dull orng flor, slo cut,
70% chk, 30% mrlst

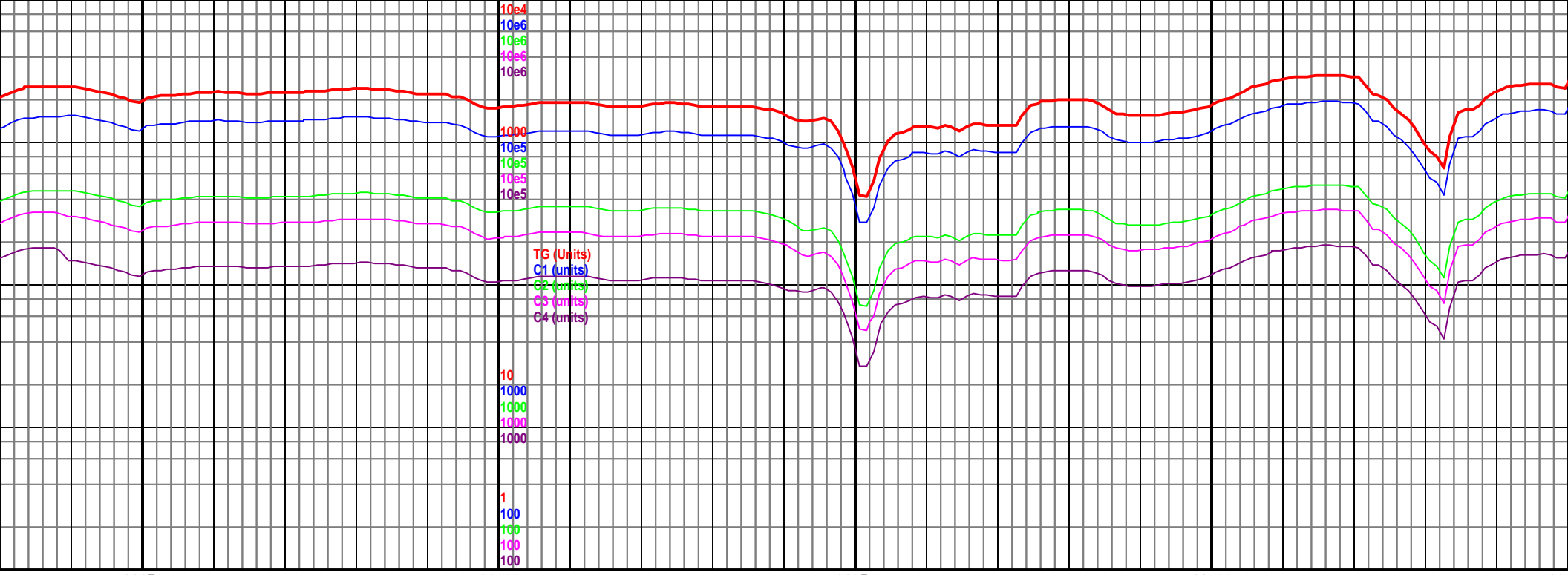
44' fault at 10786'

10800-10900 Mrlst med gy, sb plty, frm,
abnt chk a/a, tr bent tan-pale orng, tr
dis pyr, bri yel min flor, slo cut, 60%
mrlst, 40% chk



59.8% Methane
18.5% Ethane
13.6% Propane
8.2% Butane





11150

11200

11250

11300

11350

MD 11192 TVD 5640.34
INC 89.4 AZ 179.2 (-Z34)
VS 5774.71

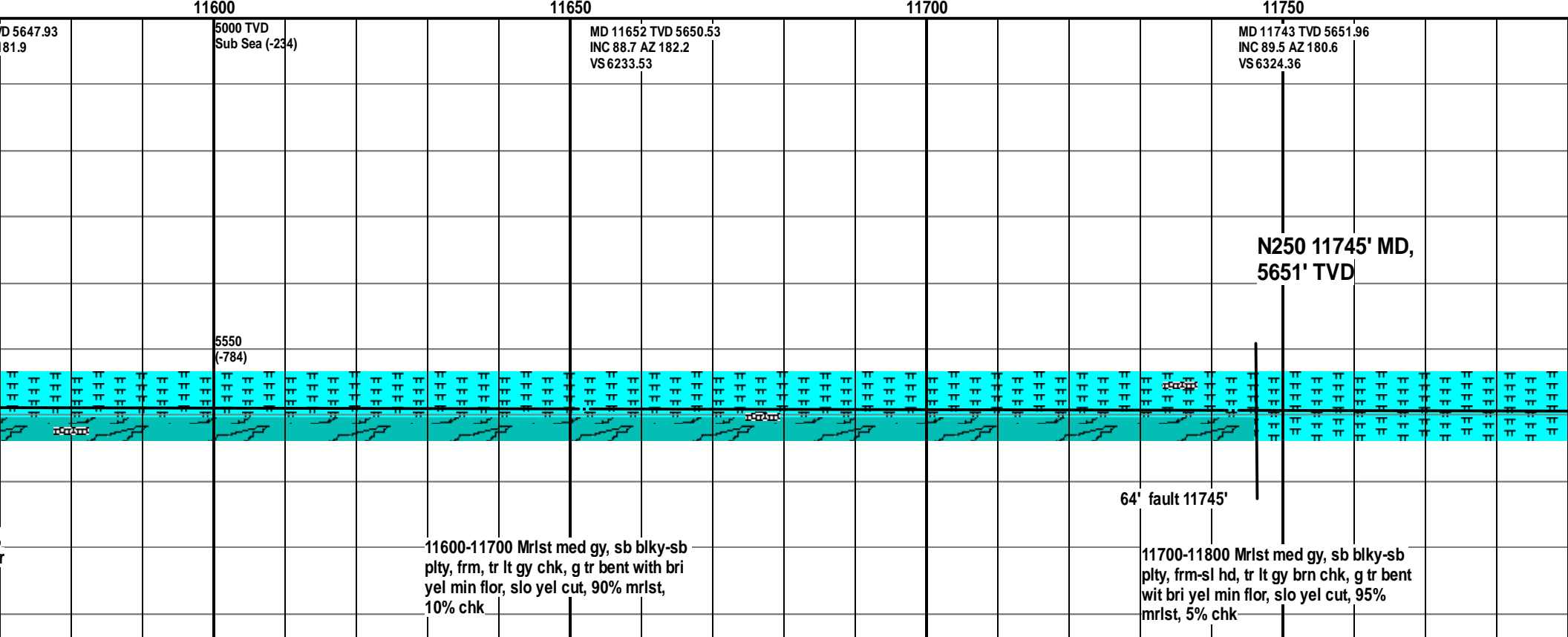
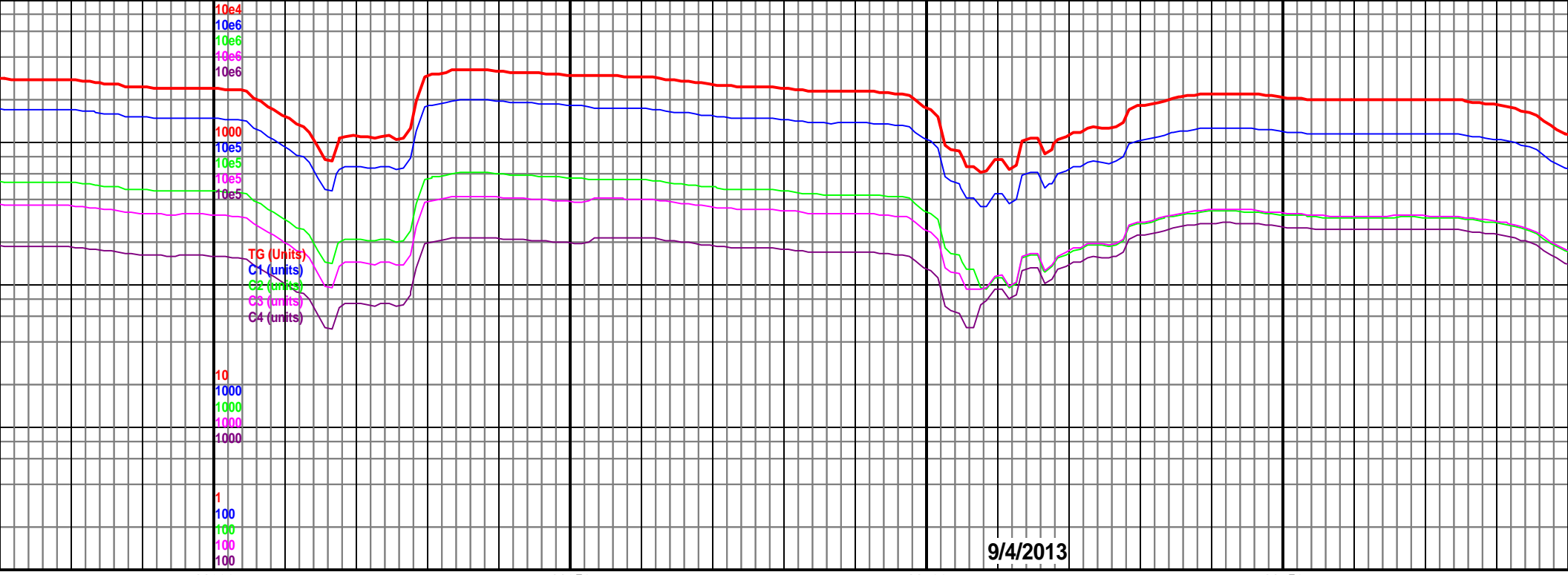
MD 11284 TVD 5640.82
INC 90 AZ 181.9
VS 5866.61

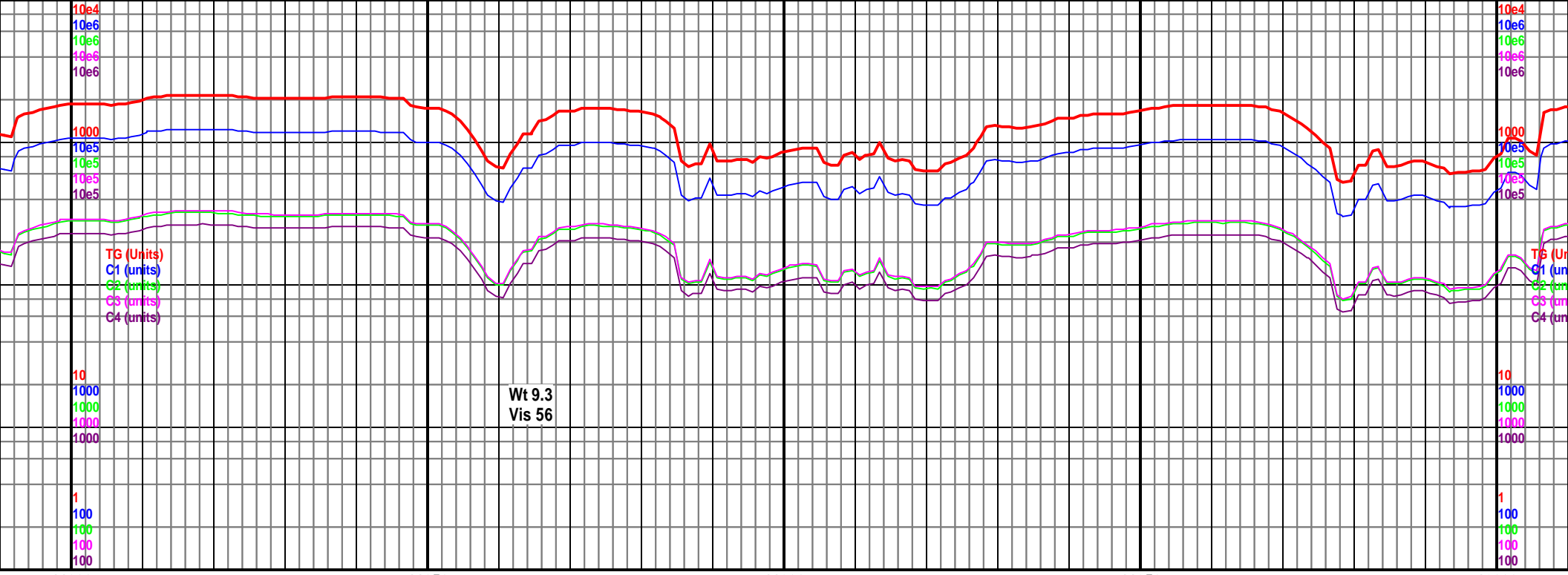
5550
(-784)

11100-11200 Mrlst med gy, sb plty, frm,
abnt chk a/a, abnt bent tan-pale orng, tr
dis pyr, bri yel min flor, slo cut, 80%
mrlst, 15% chk, 5% bent

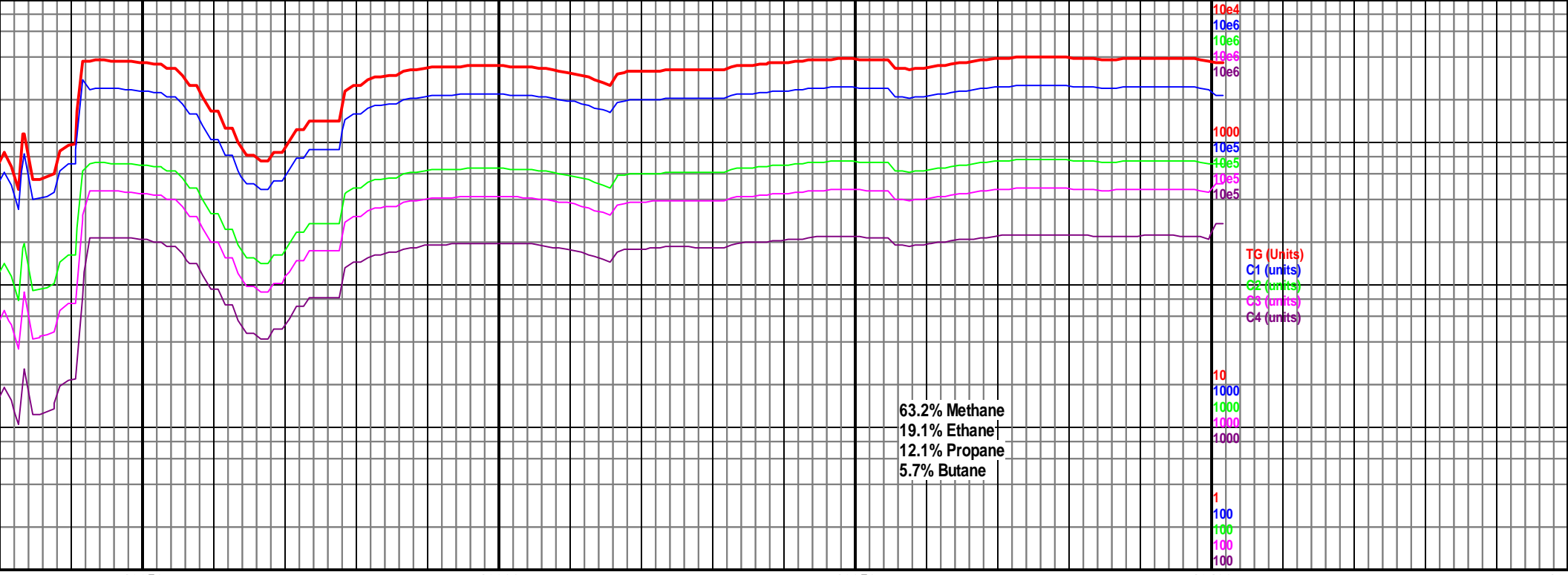
11200-11300 Mrlst med gy, sb plty, frm,
abnt chk a/a, abnt bent tan-pale orng, tr
dis pyr, bri yel min flor, slo cut, 80%
mrlst, 20% chk

11300-11400 Mrlst med gy, sb plty, frm,
abnt chk a/a, abnt bent tan-pale orng, tr
dis-msv pyr, bri yel min flor, slo cut, 80%
mrlst, 20% chk





11800	11850	11900	11950	12000
5000 TVD Sub Sea (-234)	MD 11834 TVD 5653.31 INC 88.8 AZ 179.9 VS 6415.27		MD 11925 TVD 5655.05 INC 89 AZ 179.2 VS 6506.22	5000 TVD Sub Sea (-234)
5550 (-784)				5550 (-784)
11800-11900 Mrlst med gy, sb blk-y-sb plty, frm, tr lt gy brn chk, g tr bent wit bri yel min flor, slo yel cut, 95% mrlst, 5% chk		11900-12000 Mrlst med gy, sb blk-y-sb plty, frm-sl hd, tr lt gy brn chk, g tr bent wit bri yel min flor, slo yel cut, 95% mrlst, 5% chk		



12250					12300					12350					12400					12402
																				</

