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

Well Name:	Razor 21B-0910		
Well Id:			
Location:	21-T10N-R58W		
License Number:	05-123-37978-00	Region:	Redtail Field
Spud Date:	10/5/2014	Drilling Completed:	10/11/2014
Surface Coordinates:	Lat: 40.830200 Long: -103.868744		
Bottom Hole Coordinates:			
Ground Elevation (ft):	4837	K.B. Elevation (ft):	4854
Logged Interval (ft):	5224 To: 13997	Total Depth (ft):	13997
Formation:	Nibrara B Chalk		
Type of Drilling Fluid:	Water Based Mud		

OPERATOR

Company:	Whiting Oil & Gas Corp.
Address:	1700 Broadway Suite 2300 Denver, CO 80290

GEOLOGIST

Name:	Todd Nakata, Kyle Newman and Eli Denbesten
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, #458

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

- 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
- Sltstrg
- Ssstrg

TEXTURE

- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

POROSITY

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

SORTING

- Well
- Moderate
- Poor

ROUNDING

- Rounded
- Subrnd
- Subang
- Angular

OIL SHOW

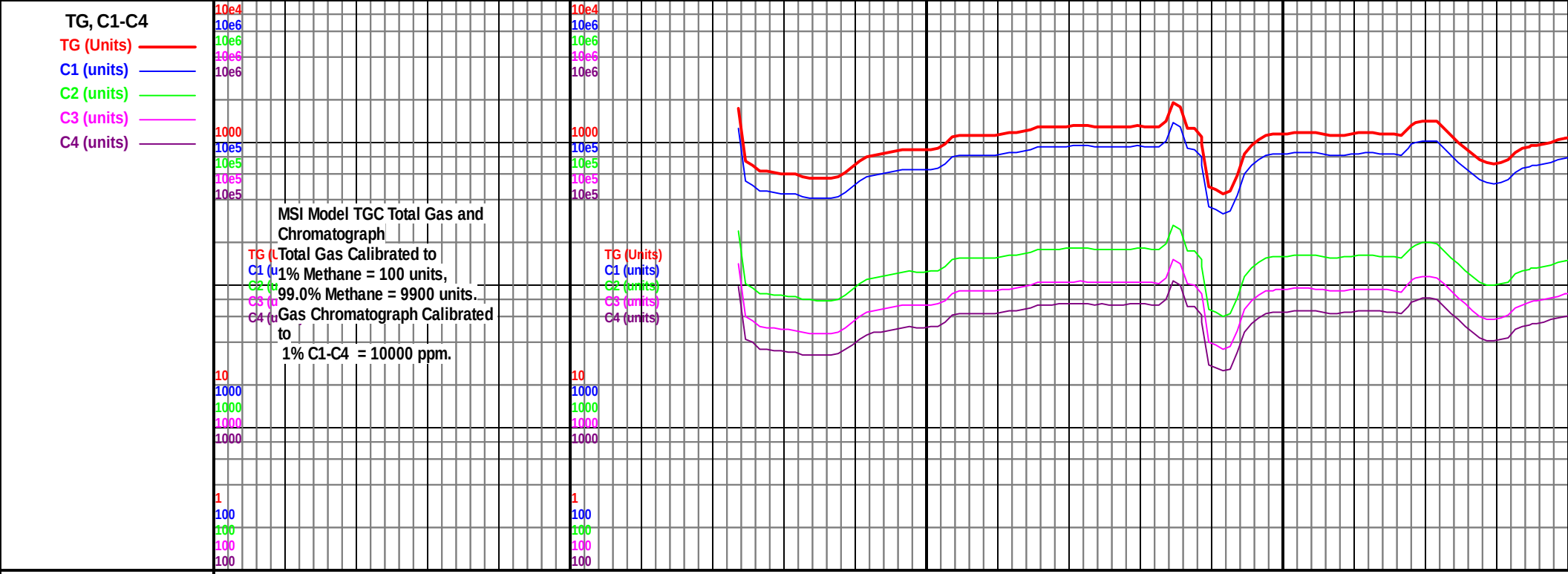
- Even
- Spotted
- Ques
- Dead

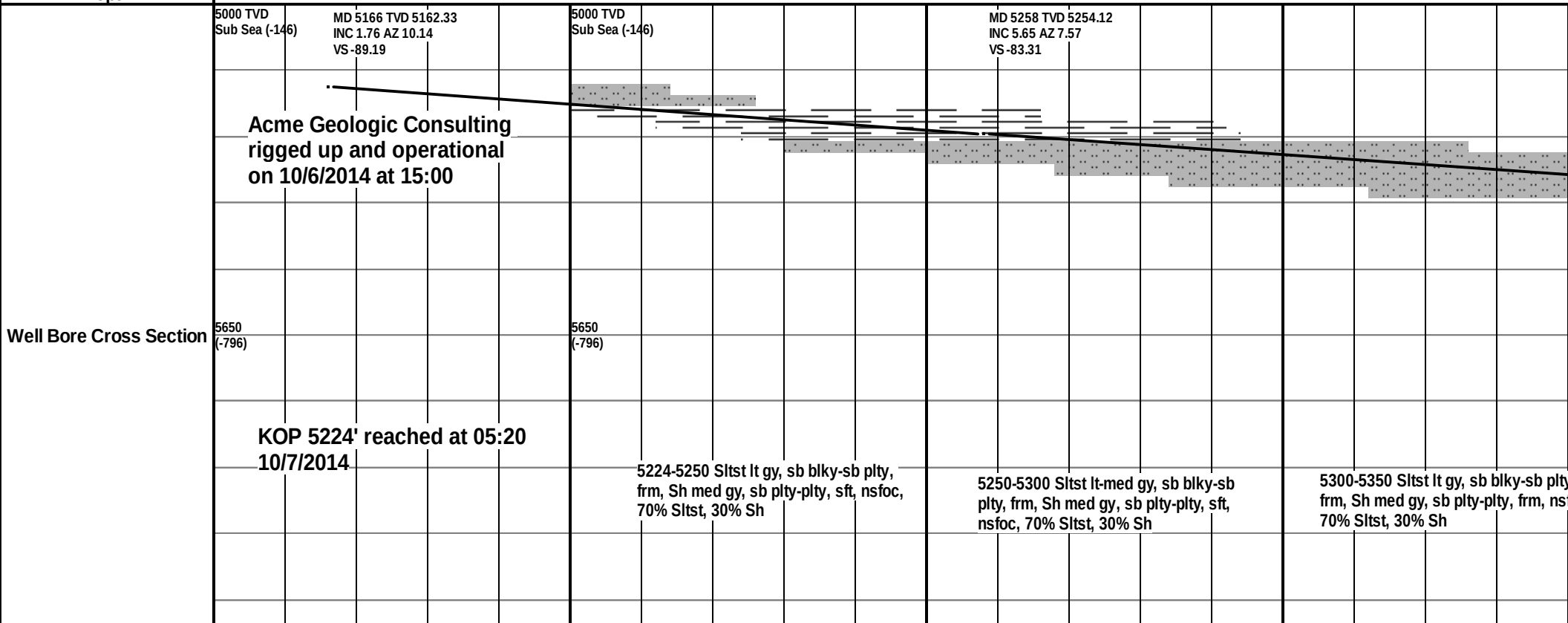
INTERVAL

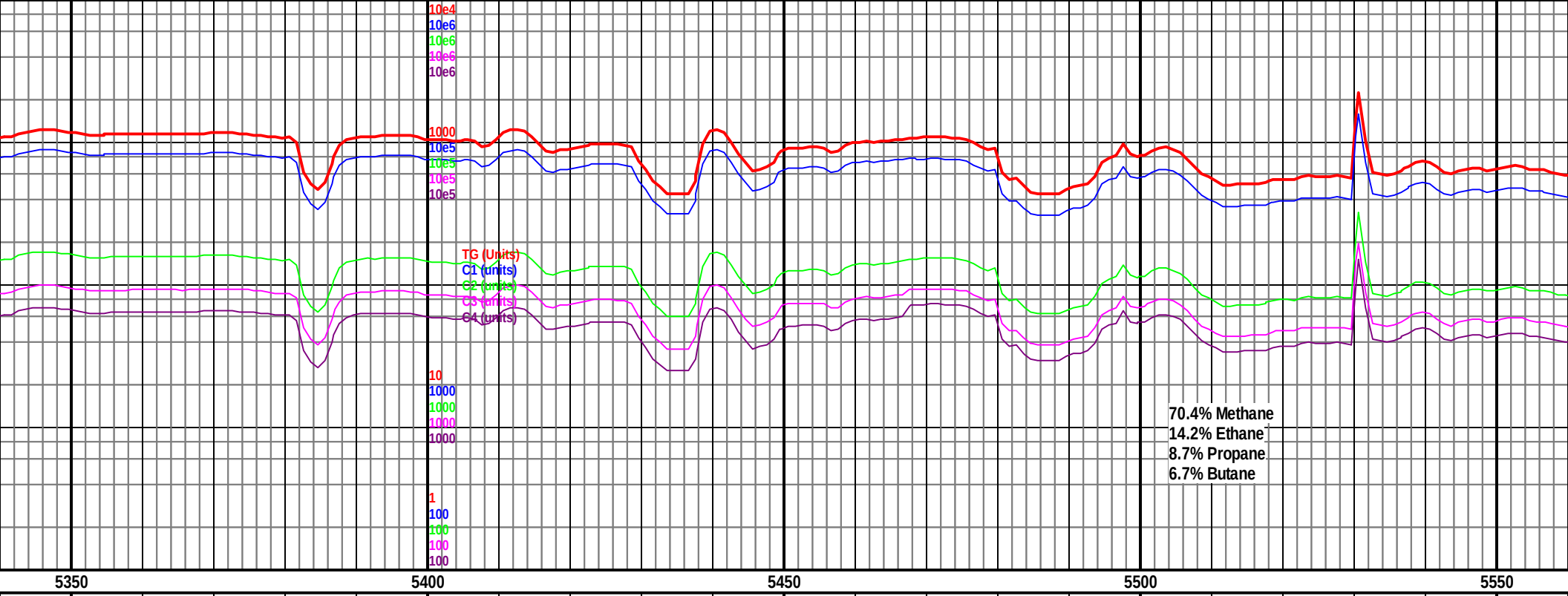
- Core
- Dst

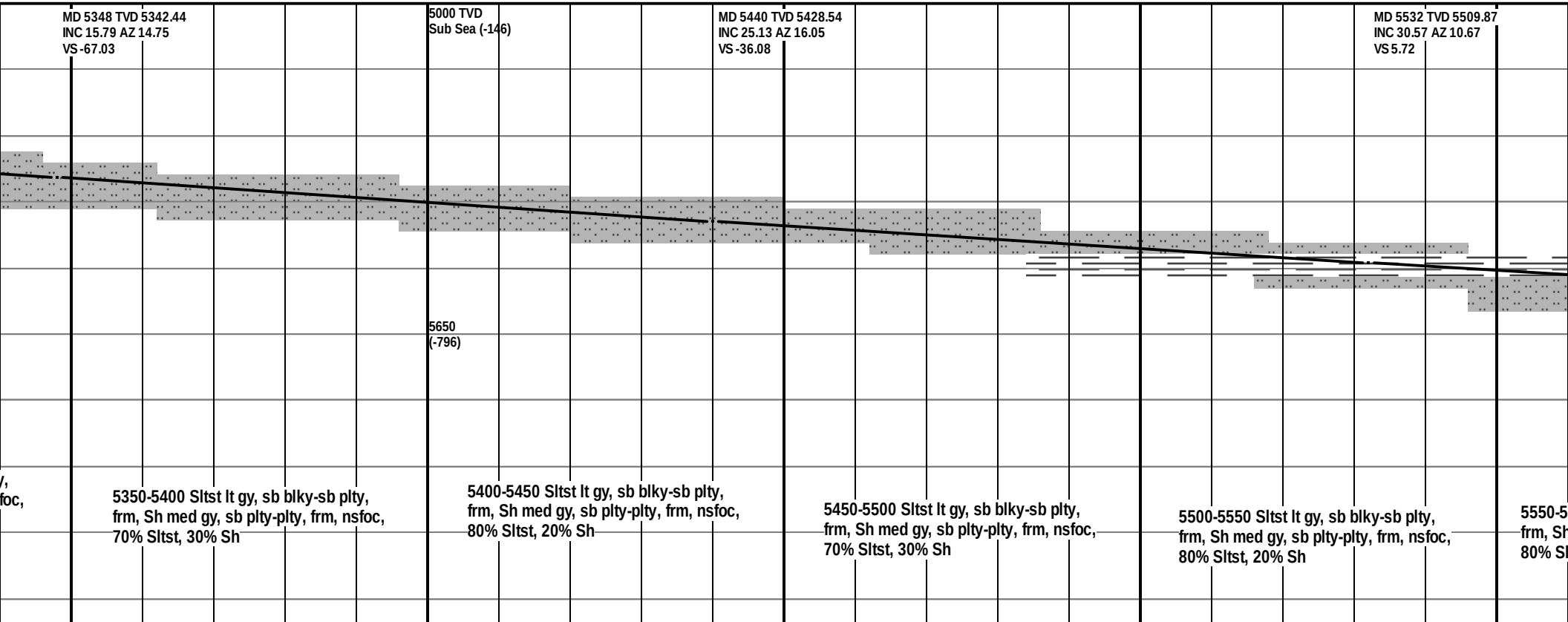
EVENT

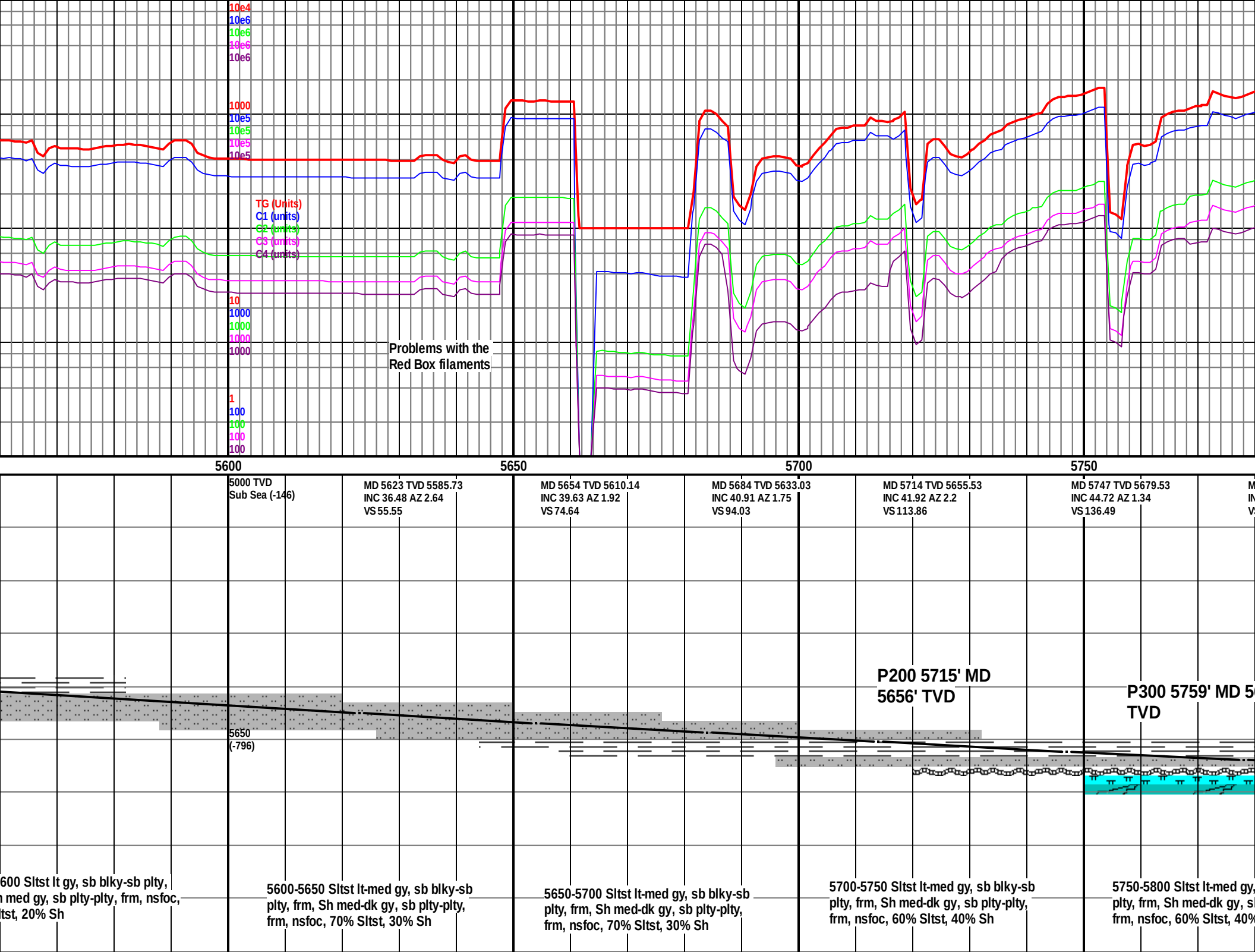
- Rft
- Sidewall

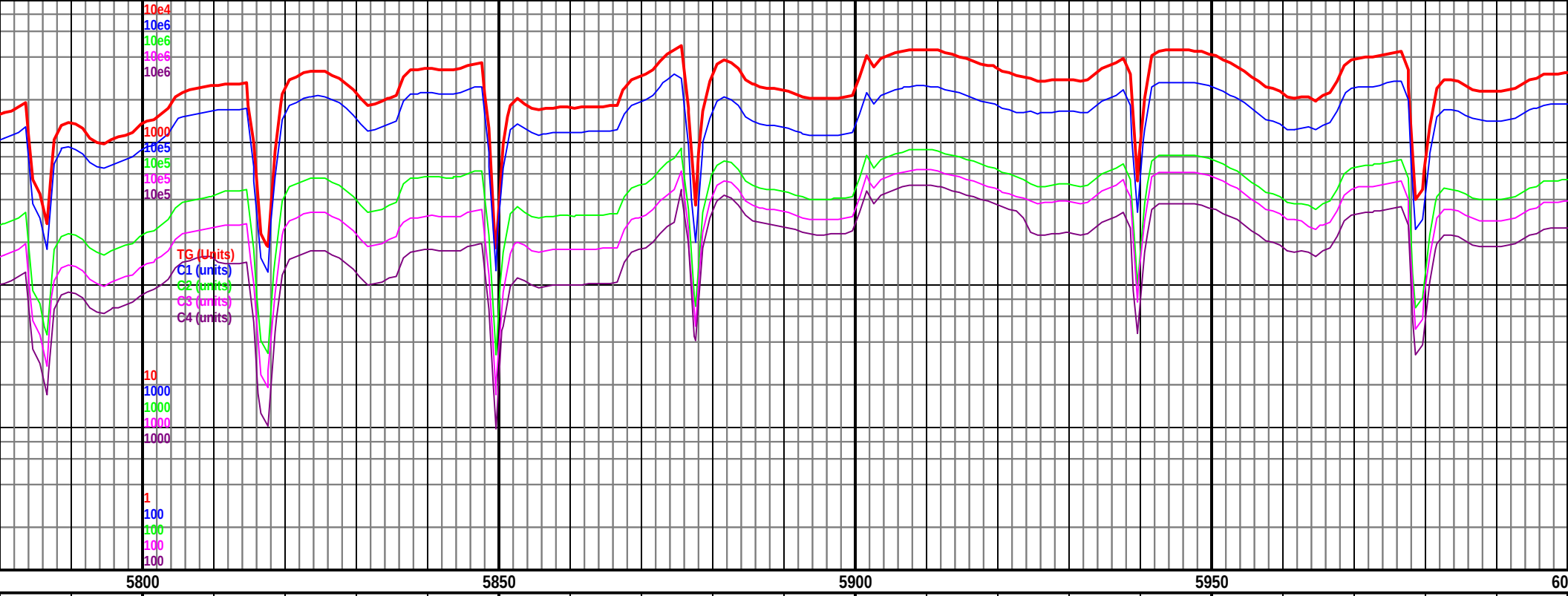

TG, C1-C4
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
MSI Model TGC Total Gas and Chromatograph
Total Gas Calibrated to
1% Methane = 100 units,
99.0% Methane = 9900 units.
Gas Chromatograph Calibrated to
1% C1-C4 = 10000 ppm.
Depth
50
5200
5250
5300


Well Bore Cross Section
5000 TVD
Sub Sea (-146)
MD 5166 TVD 5162.33
INC 1.76 AZ 10.14
VS -89.19
MD 5258 TVD 5254.12
INC 5.65 AZ 7.57
VS -83.31
Acme Geologic Consulting
rigged up and operational
on 10/6/2014 at 15:00
5650
(-796)
KOP 5224' reached at 05:20
10/7/2014
5224-5250 Sltst lt gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, sft, nsfoc, 70% Sltst, 30% Sh
5250-5300 Sltst lt-med gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, sft, nsfoc, 70% Sltst, 30% Sh
5300-5350 Sltst lt gy, sb blky-sb plty
frm, Sh med gy, sb plty-plty, frm, ns
70% Sltst, 30% Sh


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
70.4% Methane
14.2% Ethane
8.7% Propane
6.7% Butane
5350
5400
5450
5500
5550


MD 5348 TVD 5342.44
INC 15.79 AZ 14.75
VS -67.03
5000 TVD
Sub Sea (-146)
MD 5440 TVD 5428.54
INC 25.13 AZ 16.05
VS -36.08
MD 5532 TVD 5509.87
INC 30.57 AZ 10.67
VS 5.72
5650
(-796)
5350-5400 Sltst lt gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, frm, nsfoc, 70% Sltst, 30% Sh
5400-5450 Sltst lt gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, frm, nsfoc, 80% Sltst, 20% Sh
5450-5500 Sltst lt gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, frm, nsfoc, 70% Sltst, 30% Sh
5500-5550 Sltst lt gy, sb blky-sb plty, frm, Sh med gy, sb plty-plty, frm, nsfoc, 80% Sltst, 20% Sh


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Problems with the
Red Box filaments
5600
5650
5700
5750
5000 TVD
Sub Sea (-146)
MD 5623 TVD 5585.73
INC 36.48 AZ 2.64
VS 55.55
MD 5654 TVD 5610.14
INC 39.63 AZ 1.92
VS 74.64
MD 5684 TVD 5633.03
INC 40.91 AZ 1.75
VS 94.03
MD 5714 TVD 5655.53
INC 41.92 AZ 2.2
VS 113.86
MD 5747 TVD 5679.53
INC 44.72 AZ 1.34
VS 136.49
P200 5715' MD
5656' TVD
P300 5759' MD 5
TVD
5650
(-796)
600 Sltst lt gy, sb blky-sb plty,
h med gy, sb plty-plty, frm, nsfoc,
ltst, 20% Sh
5600-5650 Sltst lt-med gy, sb blky-sb
plty, frm, Sh med-dk gy, sb plty-plty,
frm, nsfoc, 70% Sltst, 30% Sh
5650-5700 Sltst lt-med gy, sb blky-sb
plty, frm, Sh med-dk gy, sb plty-plty,
frm, nsfoc, 70% Sltst, 30% Sh
5700-5750 Sltst lt-med gy, sb blky-sb
plty, frm, Sh med-dk gy, sb plty-plty,
frm, nsfoc, 60% Sltst, 40% Sh
5750-5800 Sltst lt-med gy,
plty, frm, Sh med-dk gy, s
frm, nsfoc, 60% Sltst, 40%



D 5778 TVD 5700.98
NC 47.72 AZ 358.62
S 158.86

5000 TVD
Sub Sea (-14

MD 5809 TVD 5720.96
INC 52.04 AZ 356.32
VS 182.53

MD 5842 TVD 5740.24
INC 56.42 AZ 356.22
VS 209.25

MD 5904 TVD 5773.1
INC 59.56 AZ 356.43
VS 261.7

MD 5937 TVD 5789.47
INC 60.98 AZ 356.24
VS 290.3

MD 5969 TVD 5804.53
INC 62.85 AZ 356.59
VS 318.48

Sharon Springs 5809' MD
5721' TVD

688'

P350 5791' MD
5710' TVD

Niobrara 5819' MD
5727' TVD

N100 5860' MD
5750' TVD

N200 5937' MD
5789' TVD

N250 5989' MD
5813' TVD

5650
(-796)

B

B

B

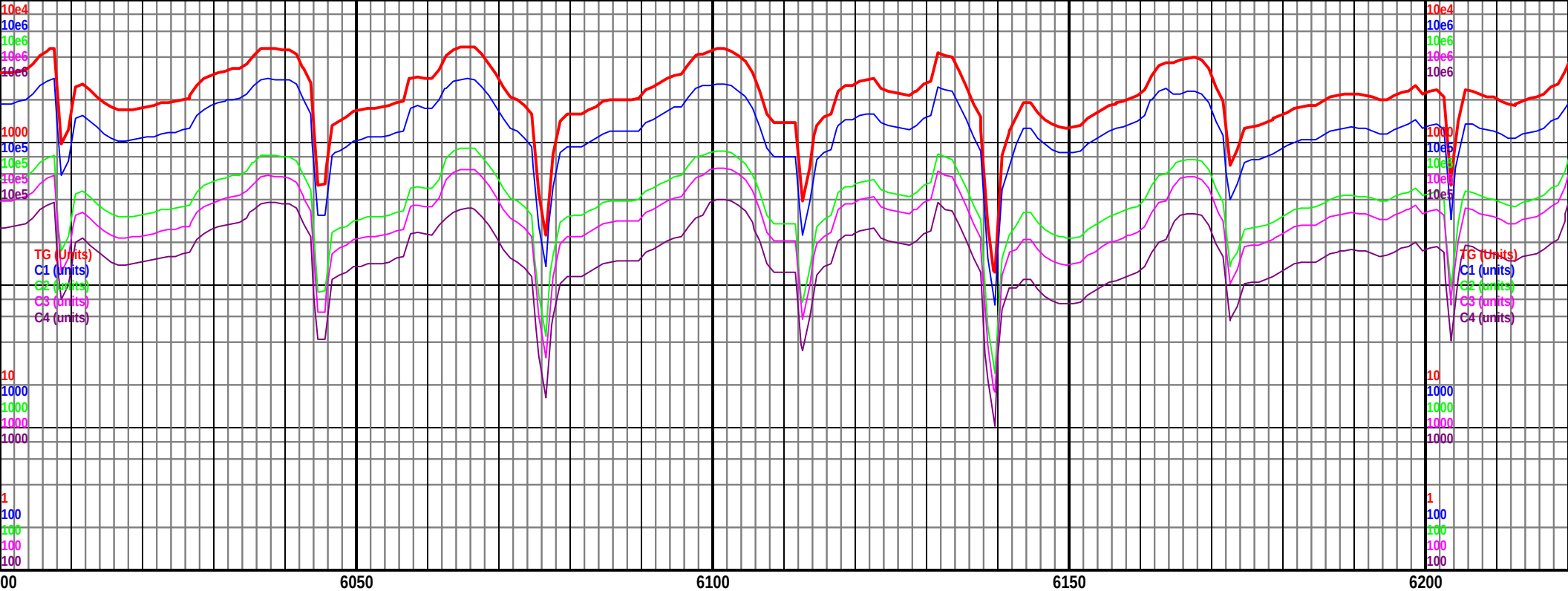
, sb blky-sb
b plty-plty,
% Sh

5800-5850 Mrlst dk gy, frm, sb blky-sb plty, Chk lt-med gy, sl frm-frm, sb blky, occ Bent, tan, occ brit yel min flor, slo mlky cut, 70% Mrlst, 25% Chk, 5% Bent

5850-5900 Chk lt-med gy, sl frm, sb blky, rr Mrlst dk gy, frm, sb blky, tr Bent, tr brit yel min flor, fast oil cut, 90% Chk, 10% Mrlst

5900-5950 Chk lt-med gy, sl frm, sb blky, rr Mrlst dk gy, frm, sb blky, tr Bent, tr brit yel min flor, fast oil cut, 90% Chk, 10% Mrlst

5950-6000 Mrlst dk gy, frm, sb blky, occ Chk lt-med gy, sl frm, sb blky, rr inoc, fast oil cut, 80% Marl, 20% Chk



MD 5999 TVD 5817.14
INC 67.43 AZ 357.68
VS 345.66

MD 6032 TVD 5829.19
INC 69.73 AZ 358.6
VS 376.36

MD 6064 TVD 5839.42
INC 72.99 AZ 359.07
VS 406.67

MD 6094 TVD 5847.54
INC 75.58 AZ 359.47
VS 435.54

MD 6127 TVD 5855.04
INC 78.16 AZ 359.39
VS 467.68

MD 6152 TVD 5859.66
INC 80.52 AZ 359.21
VS 492.24

5000 TVD
Sub Sea (-14

MD 6210 TV
INC 89.22 A
VS 549.95

5650
(-796)

N400 6002' MD 5819' TVD

N430 6092' MD 5847' TVD

5650
(-796)

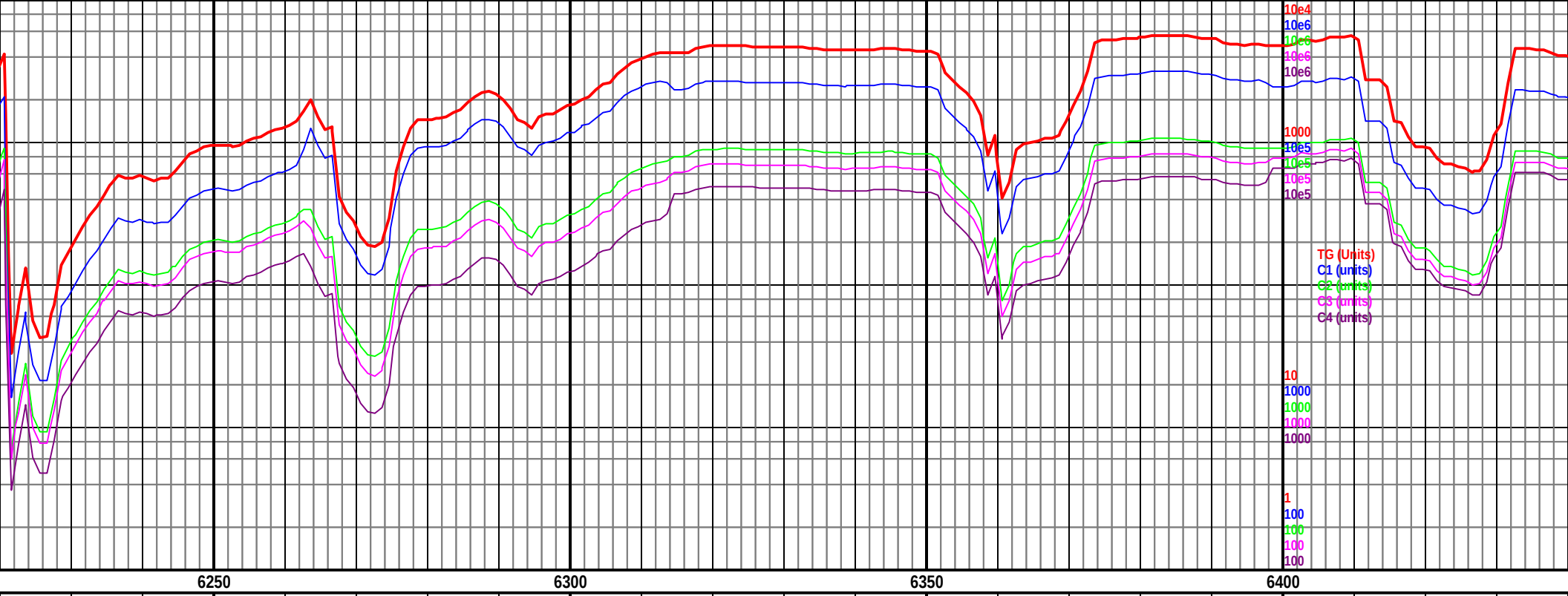
Interme reached 10/7/20 at 03:0

6000-6050 Mrlst dk gy, frm, sb blky, occ Chk lt-med gy, sl frm, sb blky, occ bent, rr inoc, fast oil cut, 80% Marl, 20% Chk

6050-6100 Chk lt gy-gy, sb blky-blky, frm, tr Mrlst med gy, frm, sb blky, rr Bent, rr inoc, sl oil cut, 80% Chk, 20% Mrlst

6100-6150 Chk lt gy-gy, blky, frm, mottled, dk lam ip, tr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, sl oil cut, 80% Chk, 20% Mrlst

6150-6200 Chk lt gy-gy, blky, frm, mottled, tr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, sl oil cut, 80% Chk, 20% Mrlst



VD 5864.84
Z 359.56

MD 6292 TVD 5866.91
INC 87.89 AZ 0.37
VS 631.92

MD 6387 TVD 5867.93 VD
INC 90.88 AZ 0.74 ID Sea (-146)
VS 726.9

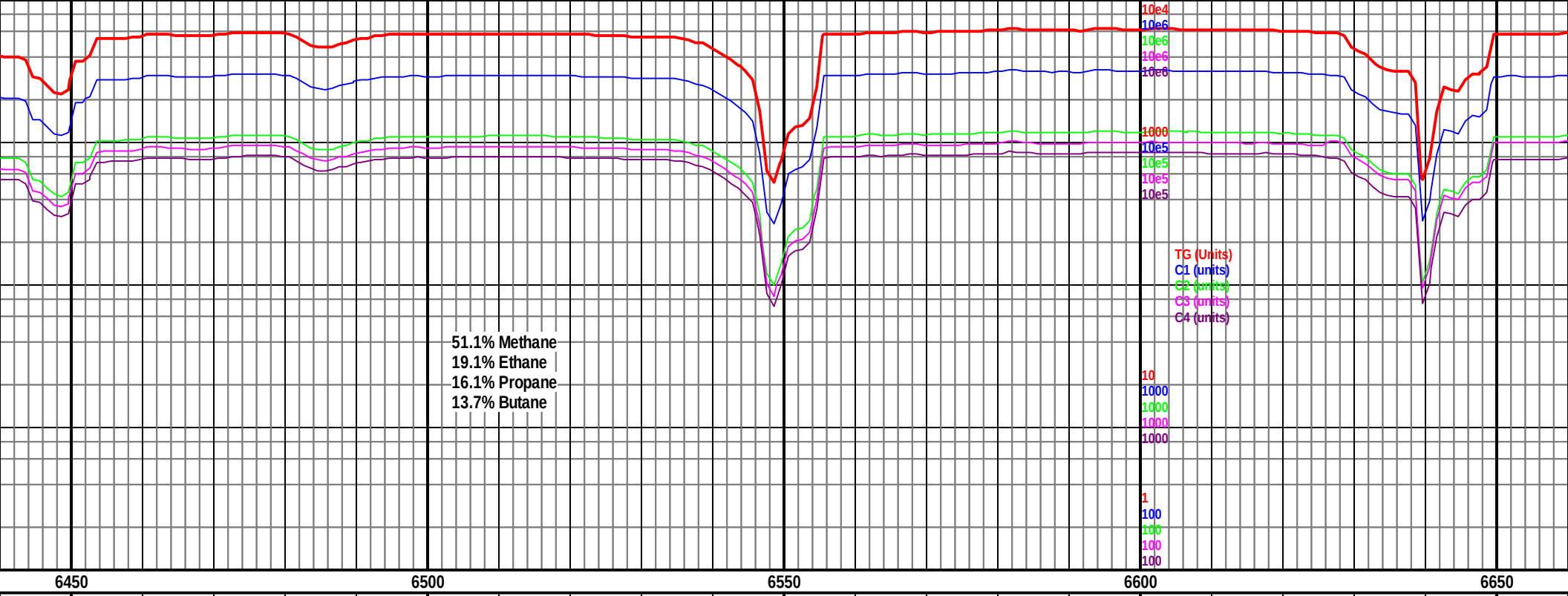
ediate casing point
d 6210' at 21:30 on
14, resumed drilling
0 on 10/9/2014

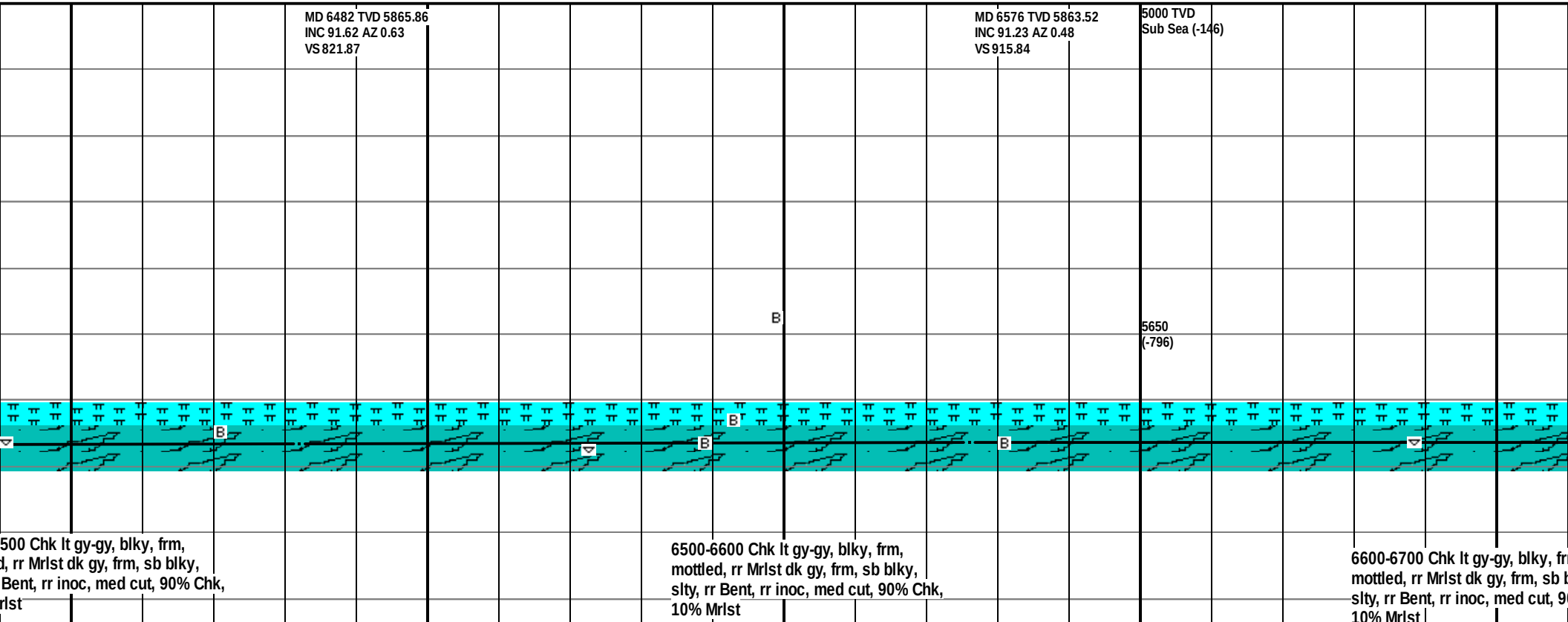
5650
(-796)

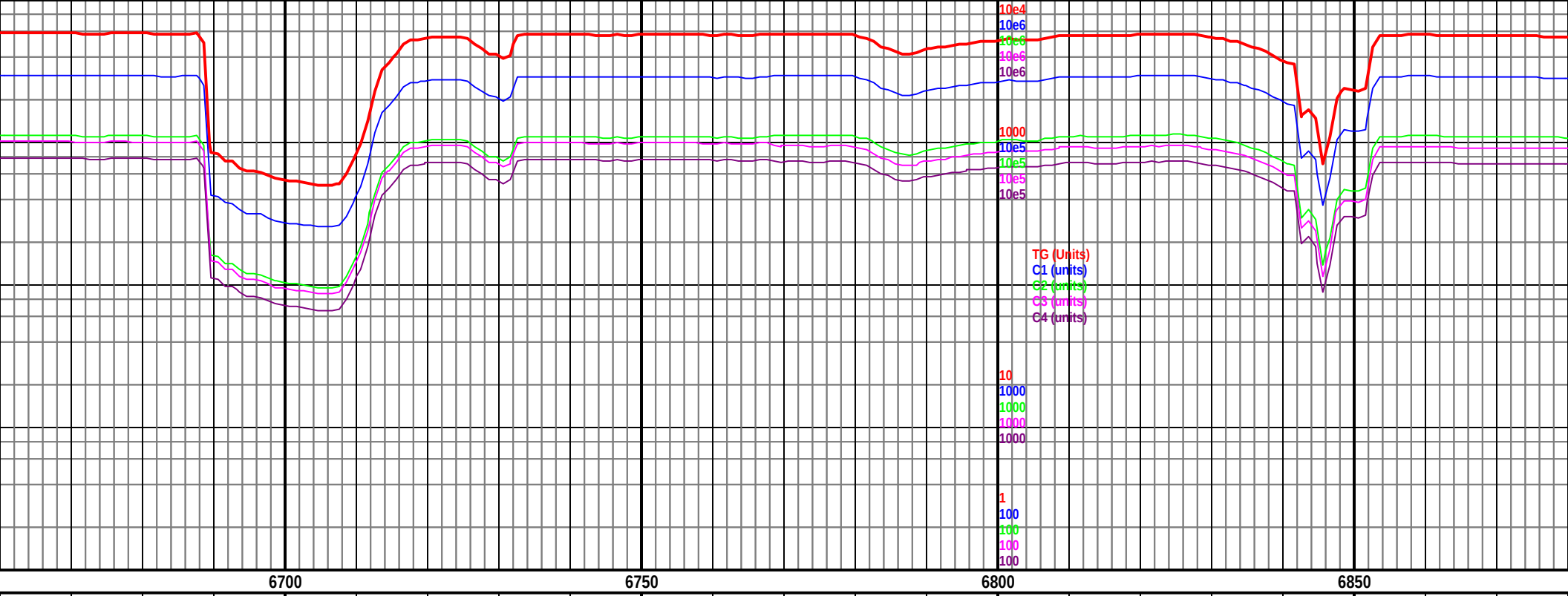
6200-6300 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, vis oil on sample, 90% Chk, 10% Mrlst

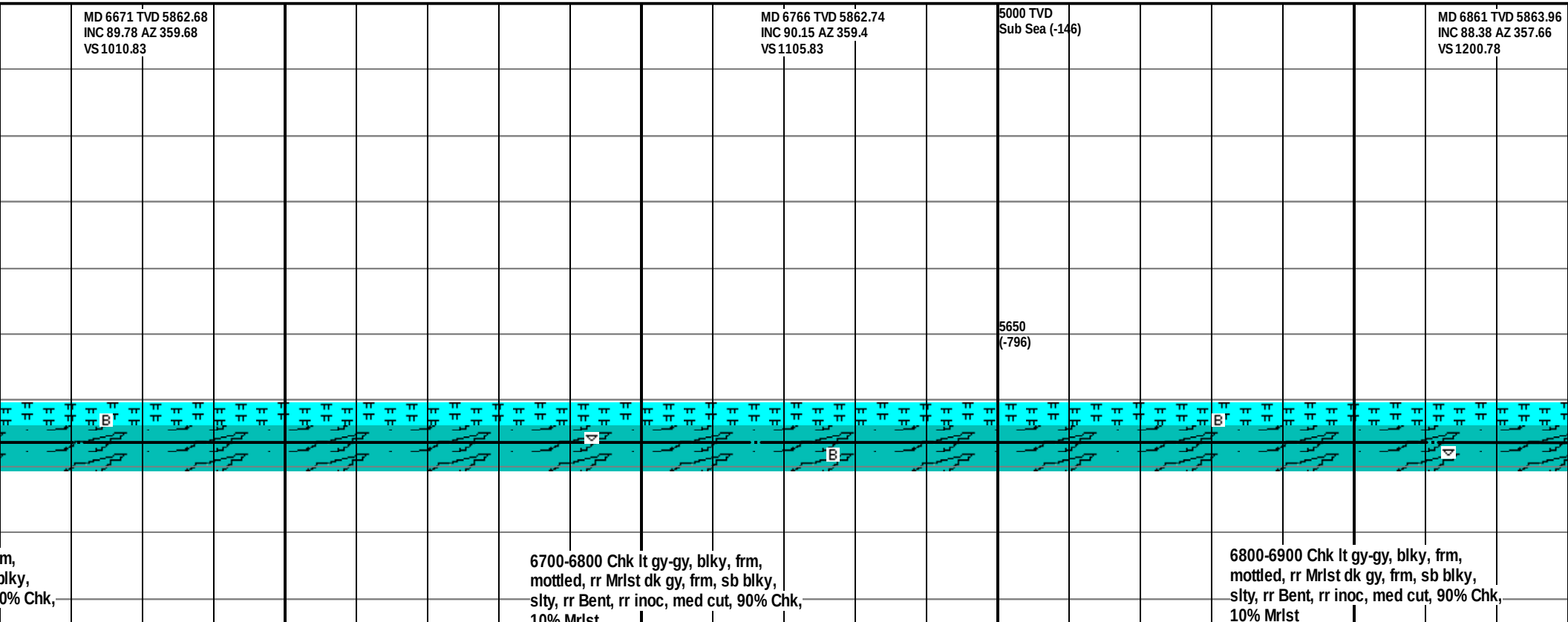
6300-6400 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, vis oil on sample, 90% Chk, 10% Mrlst

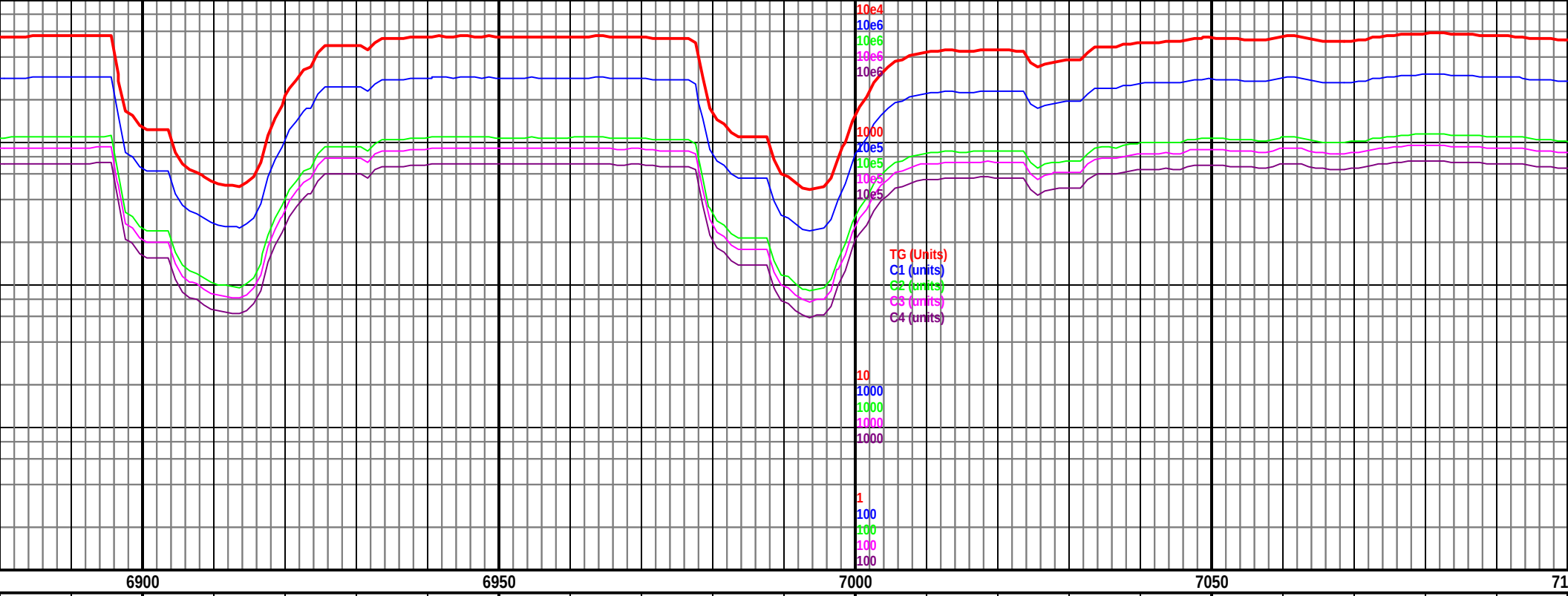
6400-6
mottled
slty, rr
10% Mr

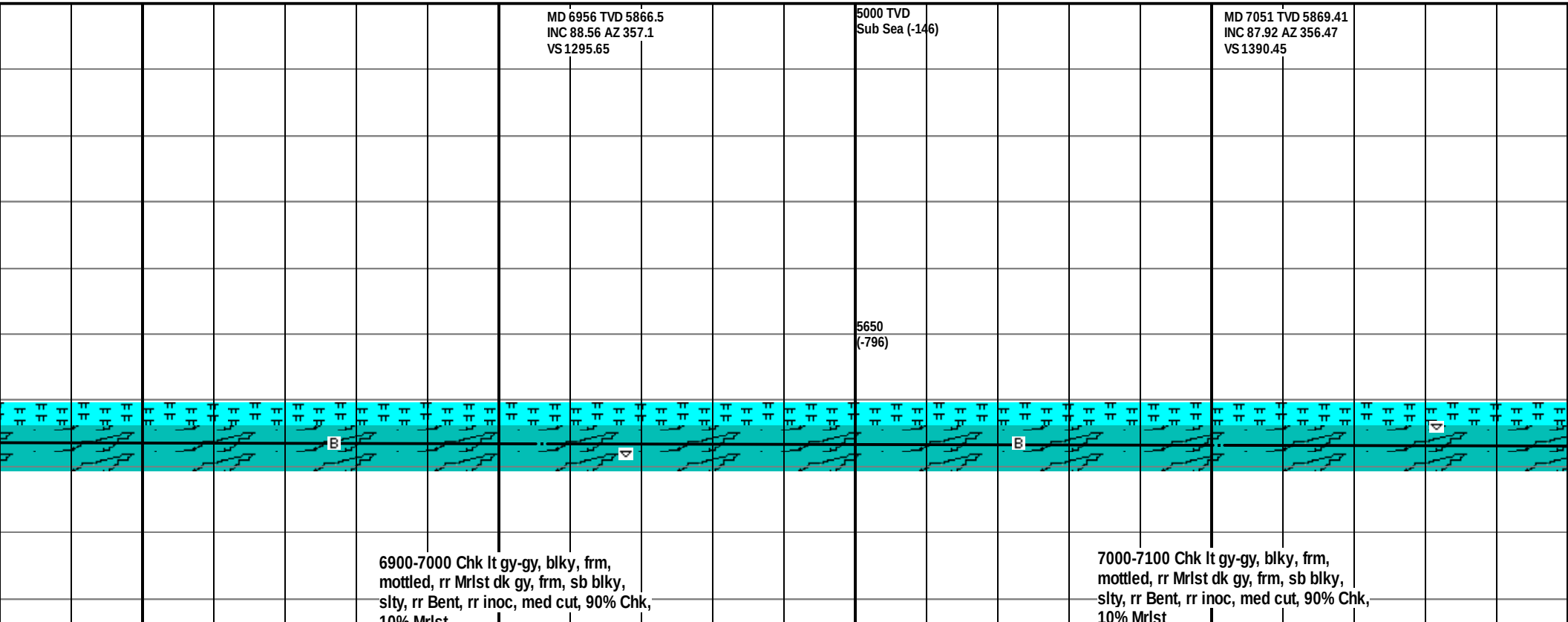

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
51.1% Methane
19.1% Ethane
16.1% Propane
13.7% Butane
10
1000
1000
1000
1000
1
100
100
100
100
6450
6500
6550
6600
6650

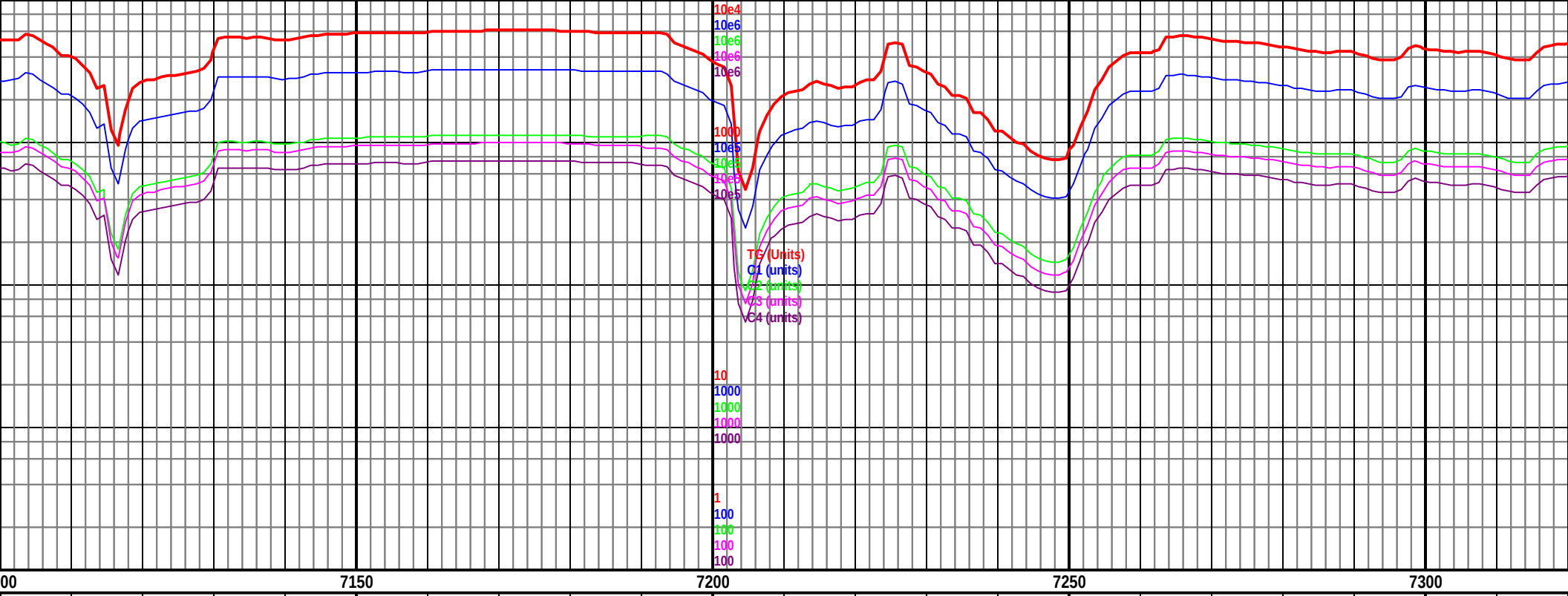

MD 6482 TVD 5865.86
INC 91.62 AZ 0.63
VS 821.87
MD 6576 TVD 5863.52
INC 91.23 AZ 0.48
VS 915.84
5000 TVD
Sub Sea (-146)
5650
(-796)
B
B
B
B
B
500 Chk lt gy-gy, blky, frm,
d, rr Mrlst dk gy, frm, sb blky,
Bent, rr inoc, med cut, 90% Chk,
rlst
6500-6600 Chk lt gy-gy, blky, frm,
mottled, rr Mrlst dk gy, frm, sb blky,
slty, rr Bent, rr inoc, med cut, 90% Chk,
10% Mrlst
6600-6700 Chk lt gy-gy, blky, fr
mottled, rr Mrlst dk gy, frm, sb
slty, rr Bent, rr inoc, med cut, 9
10% Mrlst

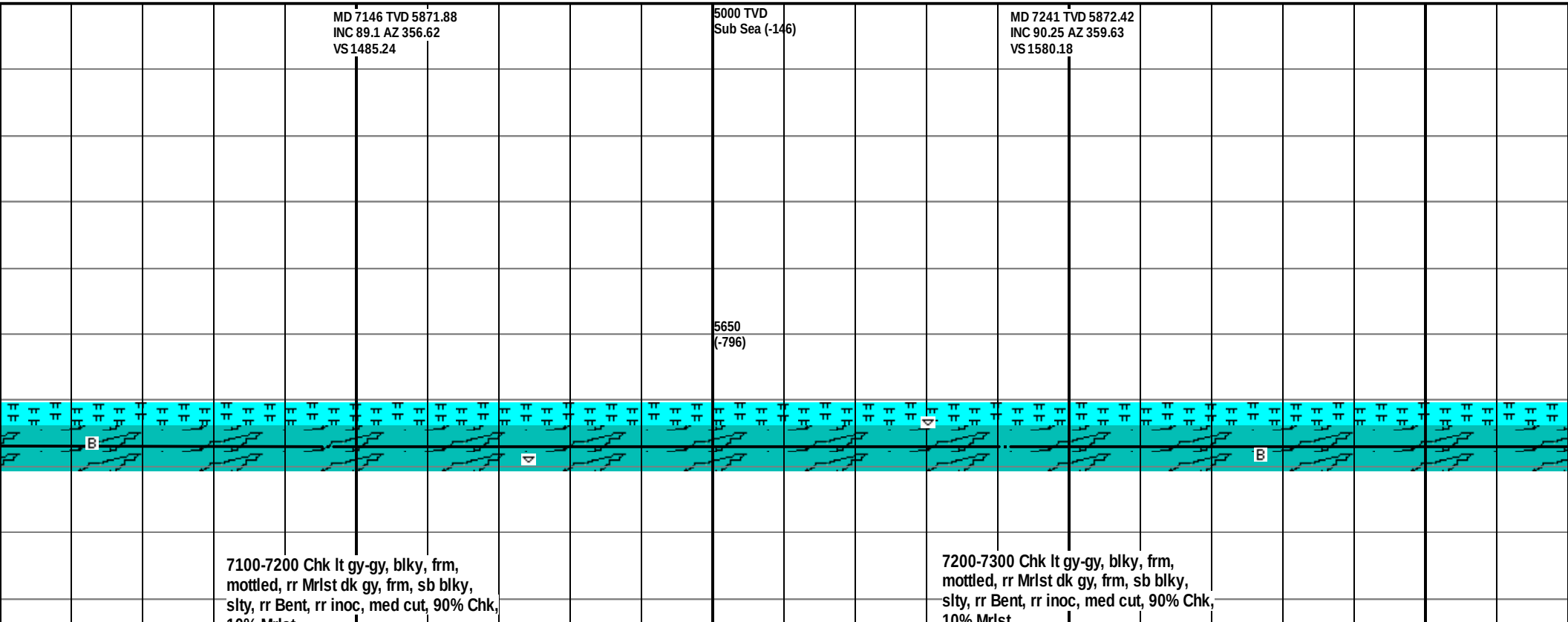

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
6700
6750
6800
6850

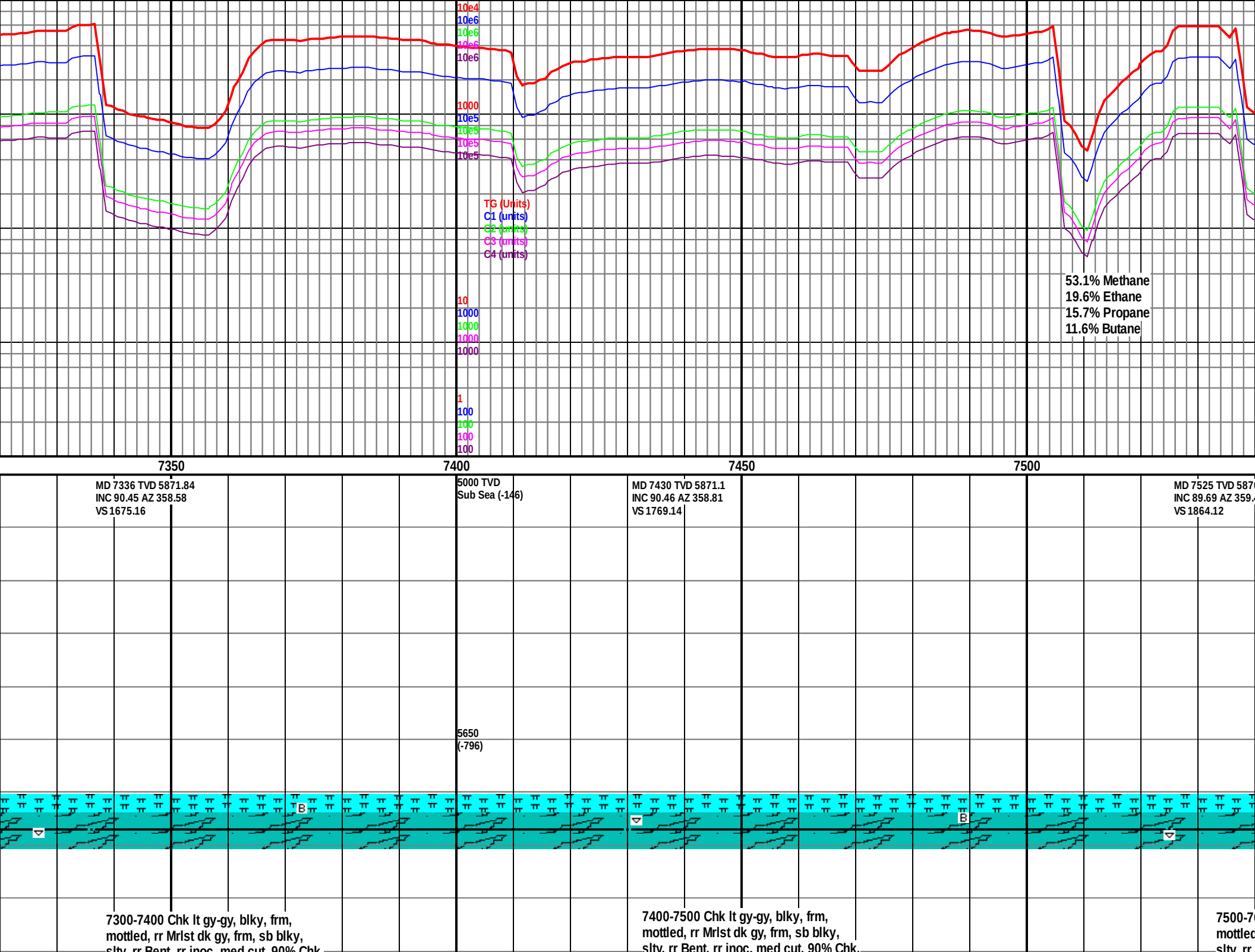

MD 6671 TVD 5862.68
INC 89.78 AZ 359.68
VS 1010.83
MD 6766 TVD 5862.74
INC 90.15 AZ 359.4
VS 1105.83
5000 TVD
Sub Sea (-146)
MD 6861 TVD 5863.96
INC 88.38 AZ 357.66
VS 1200.78
5650
(-796)
B
B
B
6700-6800 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk,
6800-6900 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk, 10% Mrlst

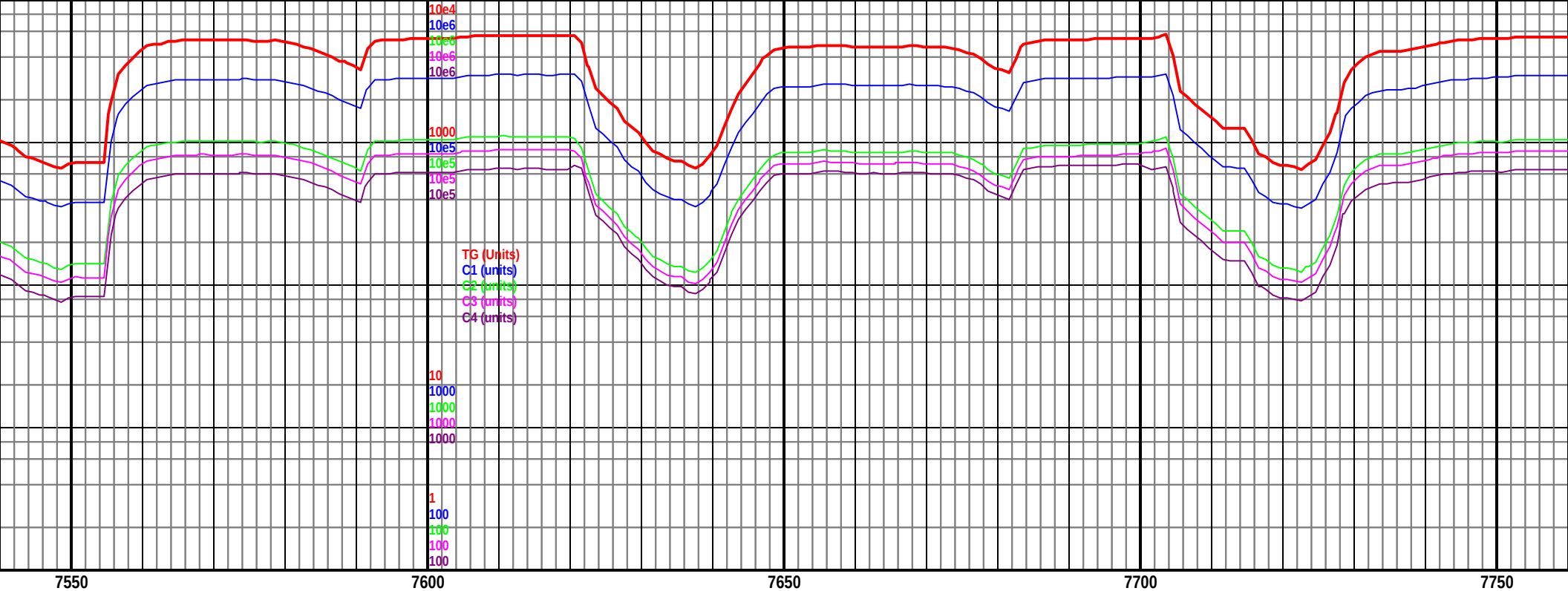

10e4
10e6
10e6
10e6
10e6
1000
20e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
6900
6950
7000
7050
71

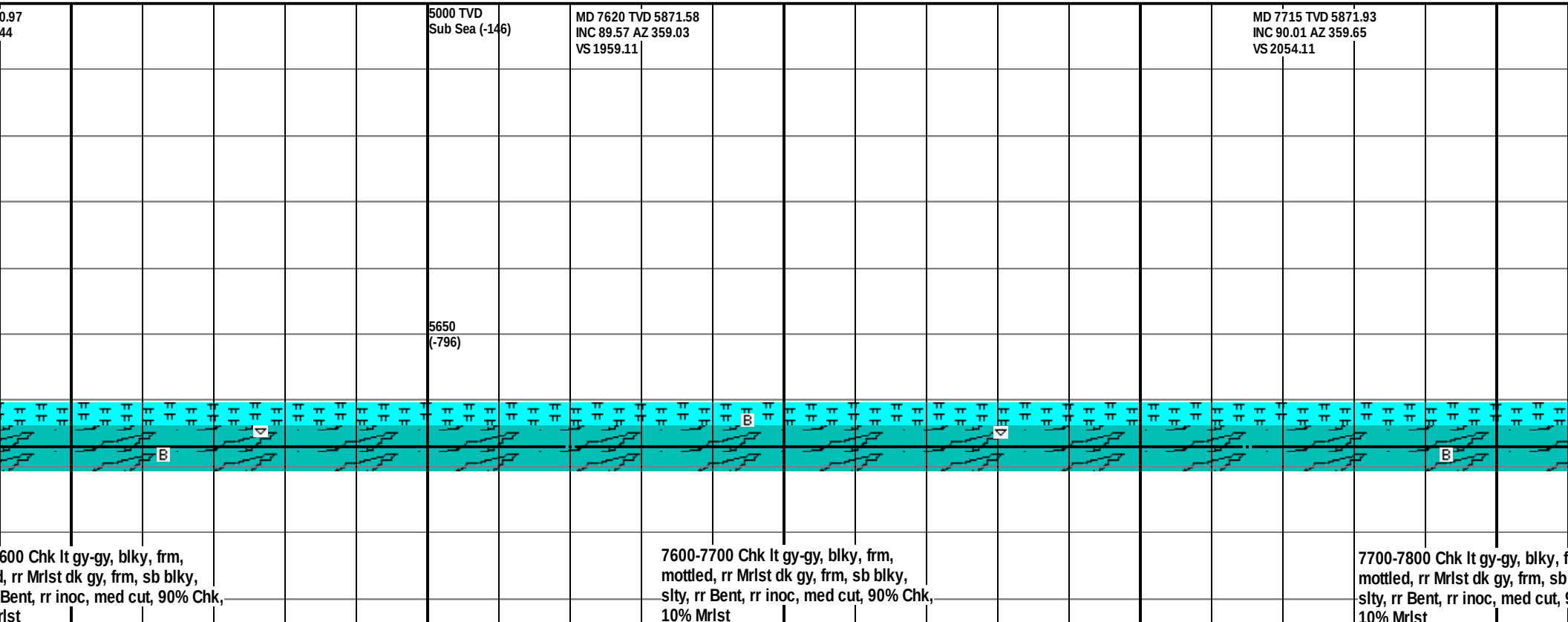

MD 6956 TVD 5866.5
INC 88.56 AZ 357.1
VS 1295.65
5000 TVD
Sub Sea (-146)
MD 7051 TVD 5869.41
INC 87.92 AZ 356.47
VS 1390.45
5650
(-796)
B
B
6900-7000 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk, 10% Mrlst
7000-7100 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk, 10% Mrlst

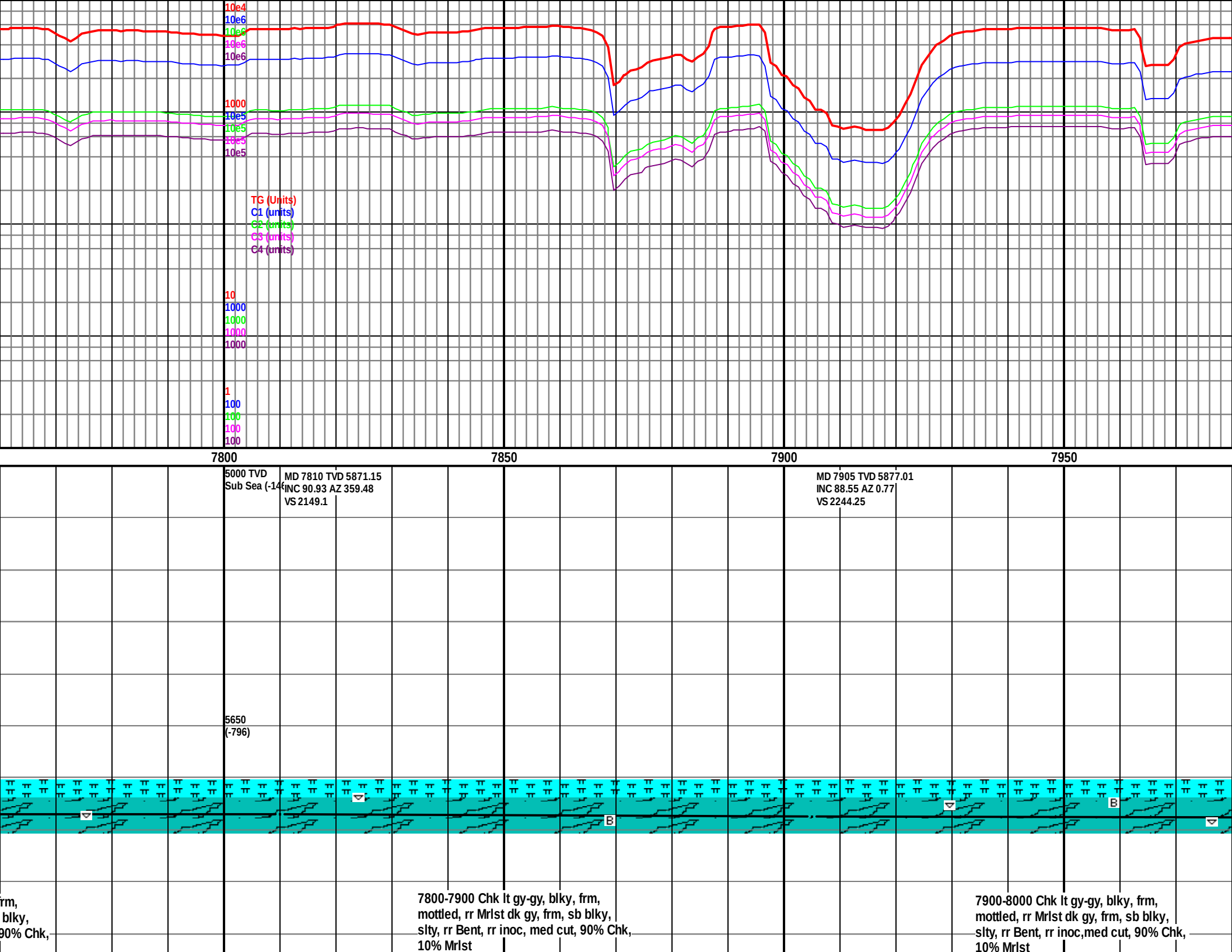

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
00
7150
7200
7250
7300

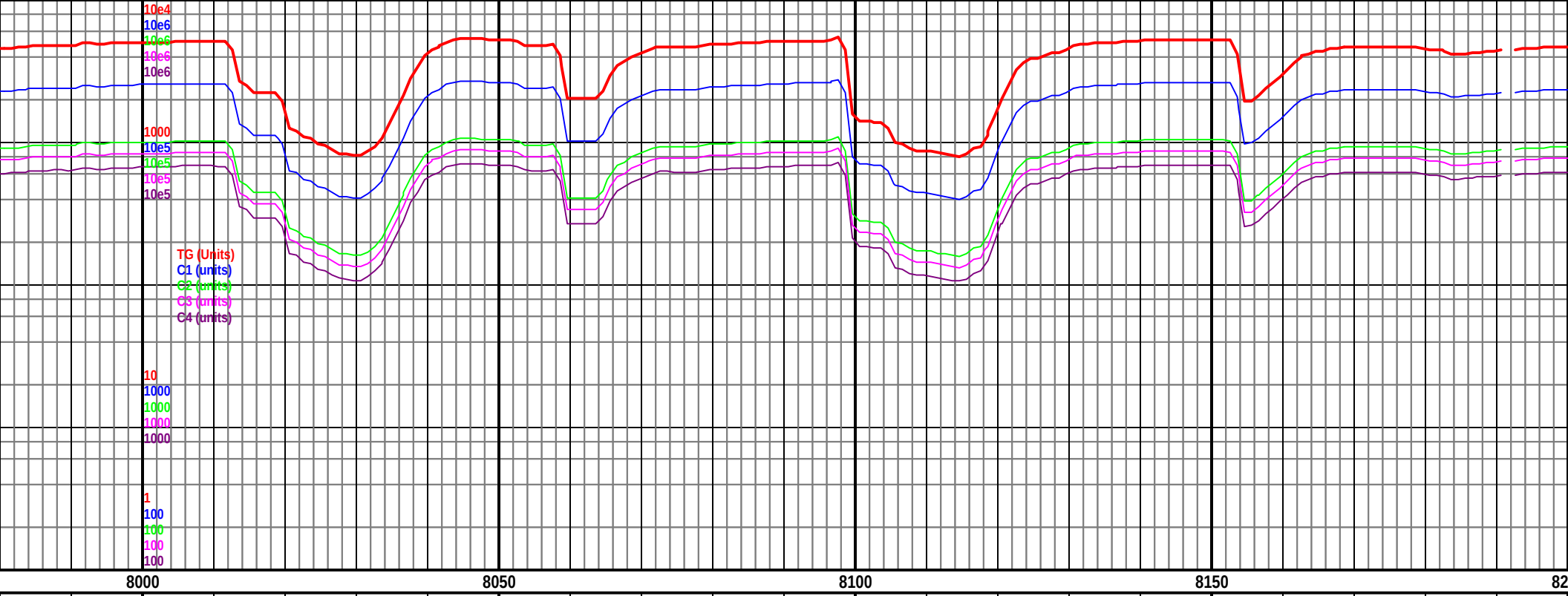

MD 7146 TVD 5871.88
INC 89.1 AZ 356.62
VS 1485.24
5000 TVD
Sub Sea (-146)
MD 7241 TVD 5872.42
INC 90.25 AZ 359.63
VS 1580.18
5650
(-796)
B
B
7100-7200 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk,
7200-7300 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk,

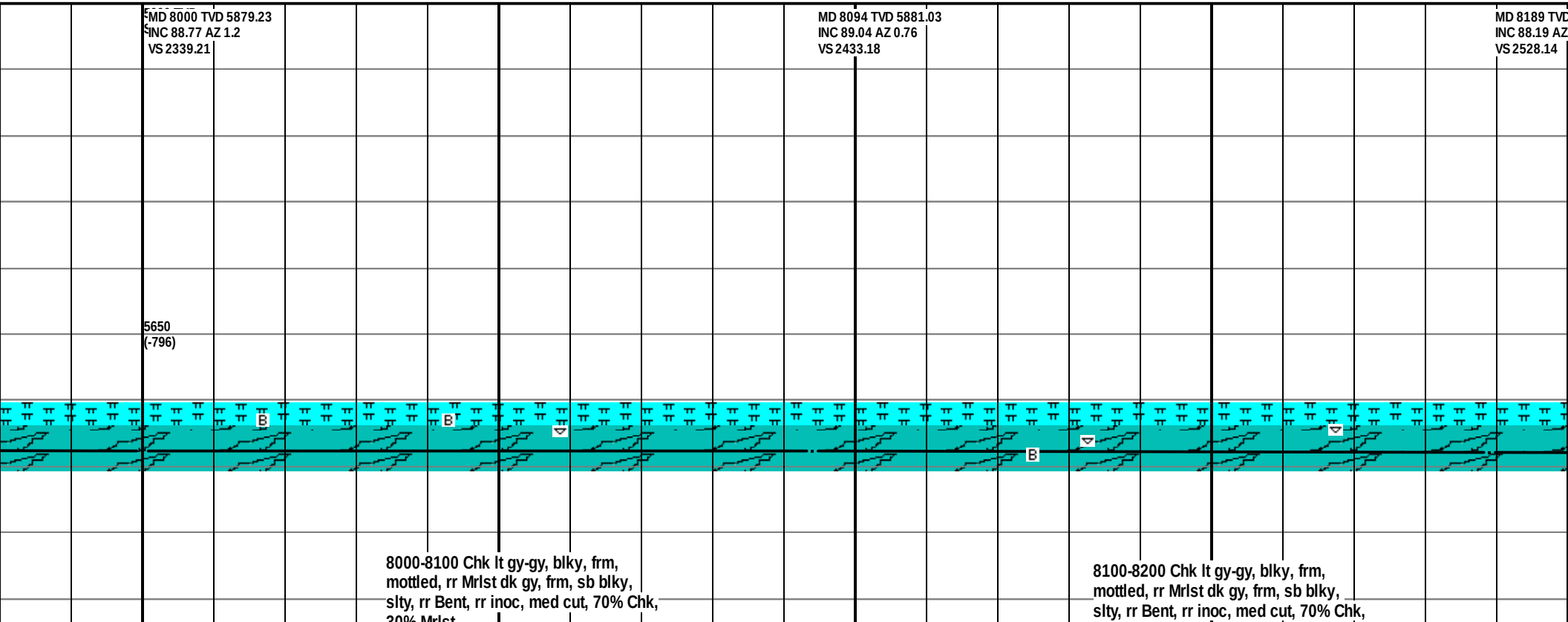

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
53.1% Methane
19.6% Ethane
15.7% Propane
11.6% Butane
7350
7400
7450
7500
MD 7336 TVD 5871.84
INC 90.45 AZ 358.58
VS 1675.16
5000 TVD
Sub Sea (-146)
MD 7430 TVD 5871.1
INC 90.46 AZ 358.81
VS 1769.14
MD 7525 TVD 587
INC 89.69 AZ 359.
VS 1864.12
5650
(-796)
B
B
7300-7400 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk, 10% Mrlst
7400-7500 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 90% Chk, 10% Mrlst
7500-7
mottled
slty, rr
10% Mr

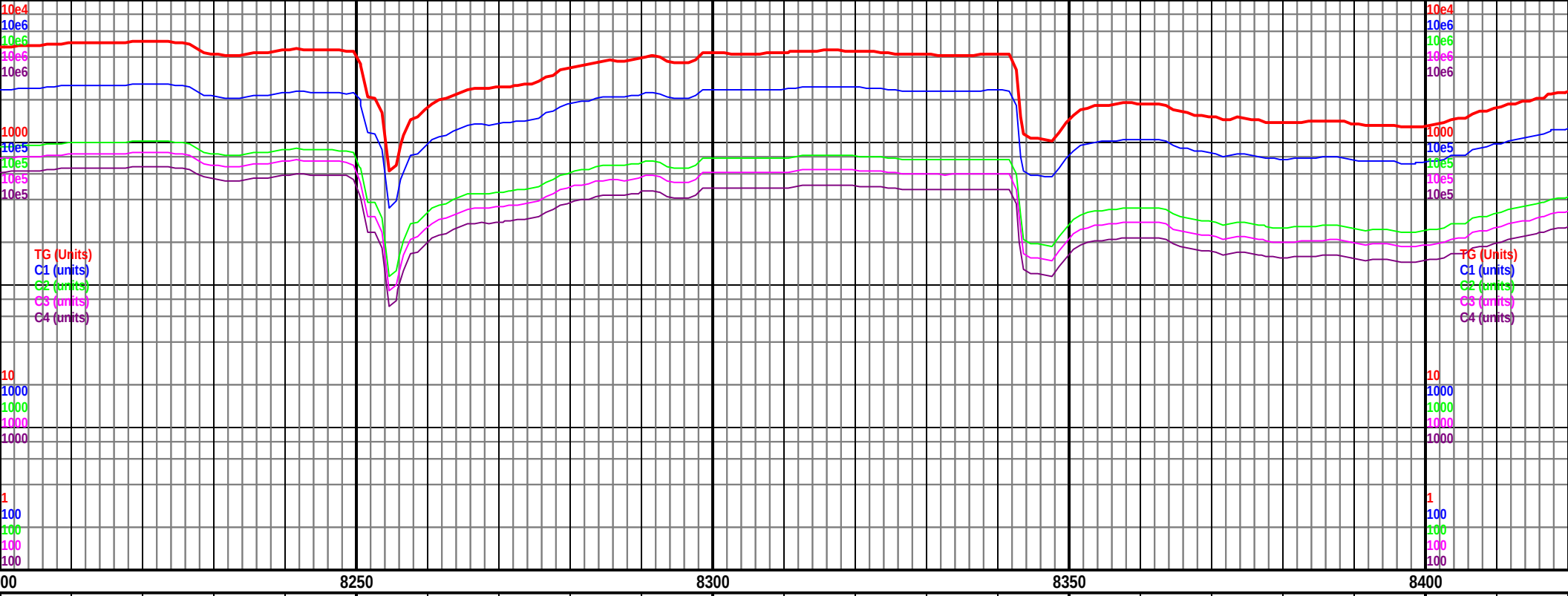

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
7550
7600
7650
7700
7750


0.97
44
5000 TVD
Sub Sea (-146)
MD 7620 TVD 5871.58
INC 89.57 AZ 359.03
VS 1959.11
MD 7715 TVD 5871.93
INC 90.01 AZ 359.65
VS 2054.11
5650
(-796)
B
B
B
600 Chk lt gy-gy, blky, frm,
l, rr Mrlst dk gy, frm, sb blky,
Bent, rr inoc, med cut, 90% Chk,
rlst
7600-7700 Chk lt gy-gy, blky, frm,
mottled, rr Mrlst dk gy, frm, sb blky,
slty, rr Bent, rr inoc, med cut, 90% Chk,
10% Mrlst
7700-7800 Chk lt gy-gy, blky, f
mottled, rr Mrlst dk gy, frm, sb
slty, rr Bent, rr inoc, med cut, 9
10% Mrlst


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
7800
7850
7900
7950
5000 TVD
Sub Sea (-146
MD 7810 TVD 5871.15
INC 90.93 AZ 359.48
VS 2149.1
MD 7905 TVD 5877.01
INC 88.55 AZ 0.77
VS 2244.25
5650
(-796)
B
B
rm,
blky,
90% Chk,
7800-7900 Chk lt gy-gy, blky, frm,
mottled, rr Mrlst dk gy, frm, sb blky,
slty, rr Bent, rr inoc, med cut, 90% Chk,
10% Mrlst
7900-8000 Chk lt gy-gy, blky, frm,
mottled, rr Mrlst dk gy, frm, sb blky,
slty, rr Bent, rr inoc,med cut, 90% Chk,
10% Mrlst


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
8000
8050
8100
8150
82


MD 8000 TVD 5879.23
INC 88.77 AZ 1.2
VS 2339.21
MD 8094 TVD 5881.03
INC 89.04 AZ 0.76
VS 2433.18
MD 8189 TVD
INC 88.19 AZ
VS 2528.14
5650
(-796)
B
B
B
8000-8100 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 70% Chk,
8100-8200 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr Bent, rr inoc, med cut, 70% Chk,



MD 8284 TVD 5885.45
INC 89.24 AZ 1.48
VS 2623.11

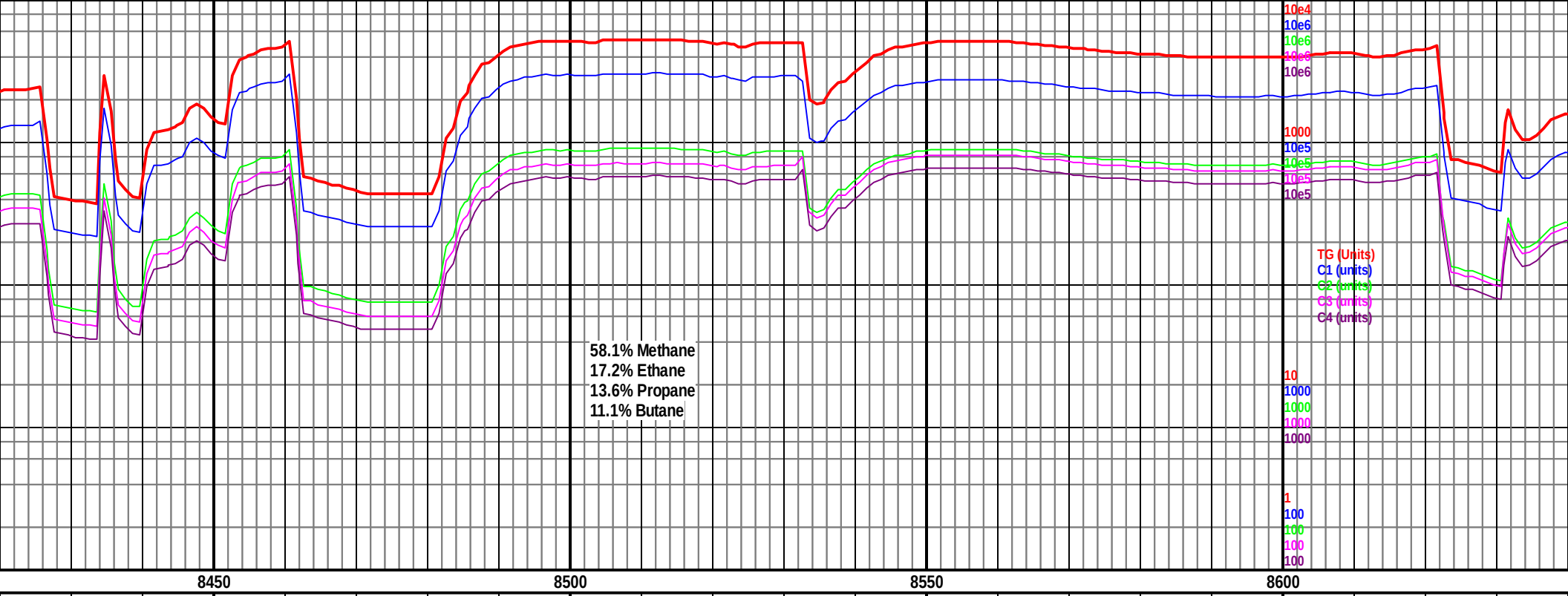
MD 8379 TVD 5884.47
INC 91.95 AZ 3.31
VS 2718.01

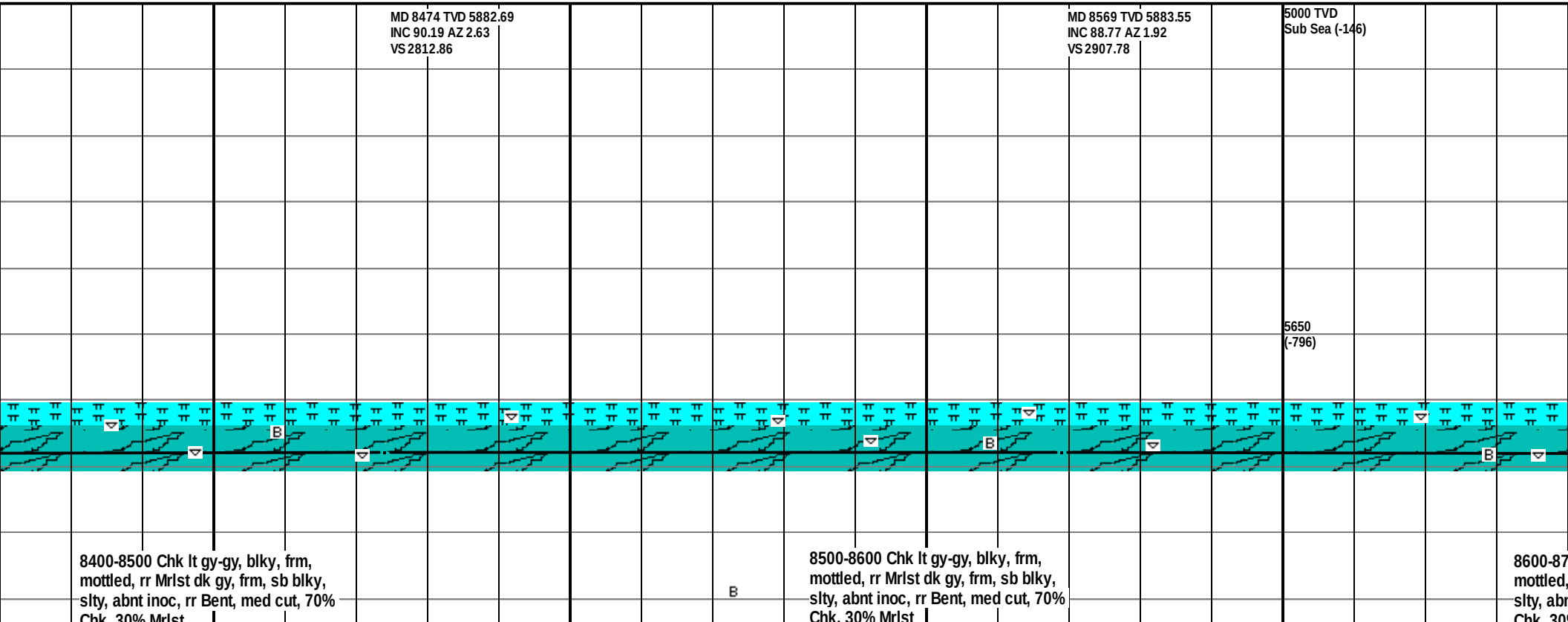
5000 TVD
Sub Sea (-146)

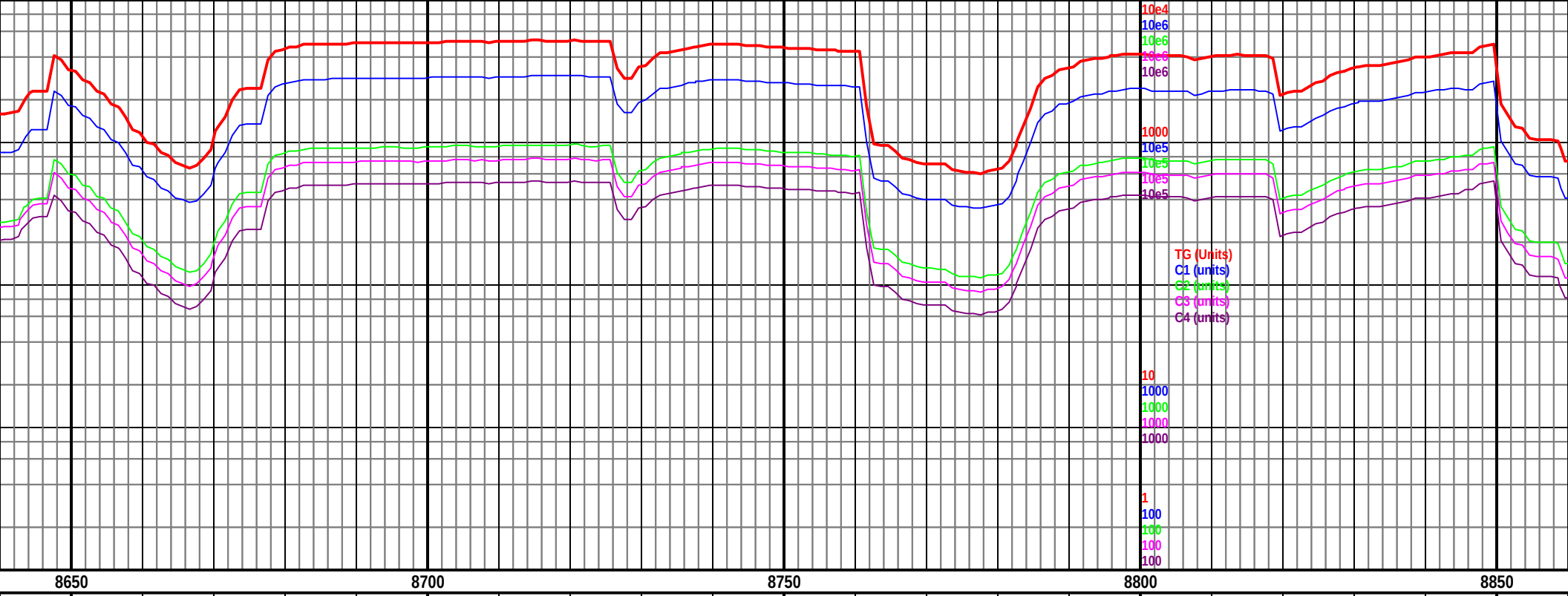
5650
(-796)

8200-8300 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, slo cut, 60% Chk, 40% Mrlst

8300-8400 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, med cut, 80% Chk, 20% Mrlst


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
58.1% Methane
17.2% Ethane
13.6% Propane
11.1% Butane
10
1000
1000
1000
1000
1
100
100
100
100
8450
8500
8550
8600


MD 8474 TVD 5882.69
INC 90.19 AZ 2.63
VS 2812.86
MD 8569 TVD 5883.55
INC 88.77 AZ 1.92
VS 2907.78
5000 TVD
Sub Sea (-146)
5650
(-796)
B
B
B
8400-8500 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, med cut, 70% Chk, 30% Mrlst
8500-8600 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, med cut, 70% Chk, 30% Mrlst
8600-87
mottled,
slty, abr
Chk, 30



MD 8664 TVD 5884.28
INC 90.35 AZ 1.9
VS 3002.72

MD 8758 TVD 5884
INC 89.99 AZ 1.79
VS 3096.67

5000 TVD
Sub Sea (-146)

MD 885
INC 89.2
VS 3191

5650
(-796)

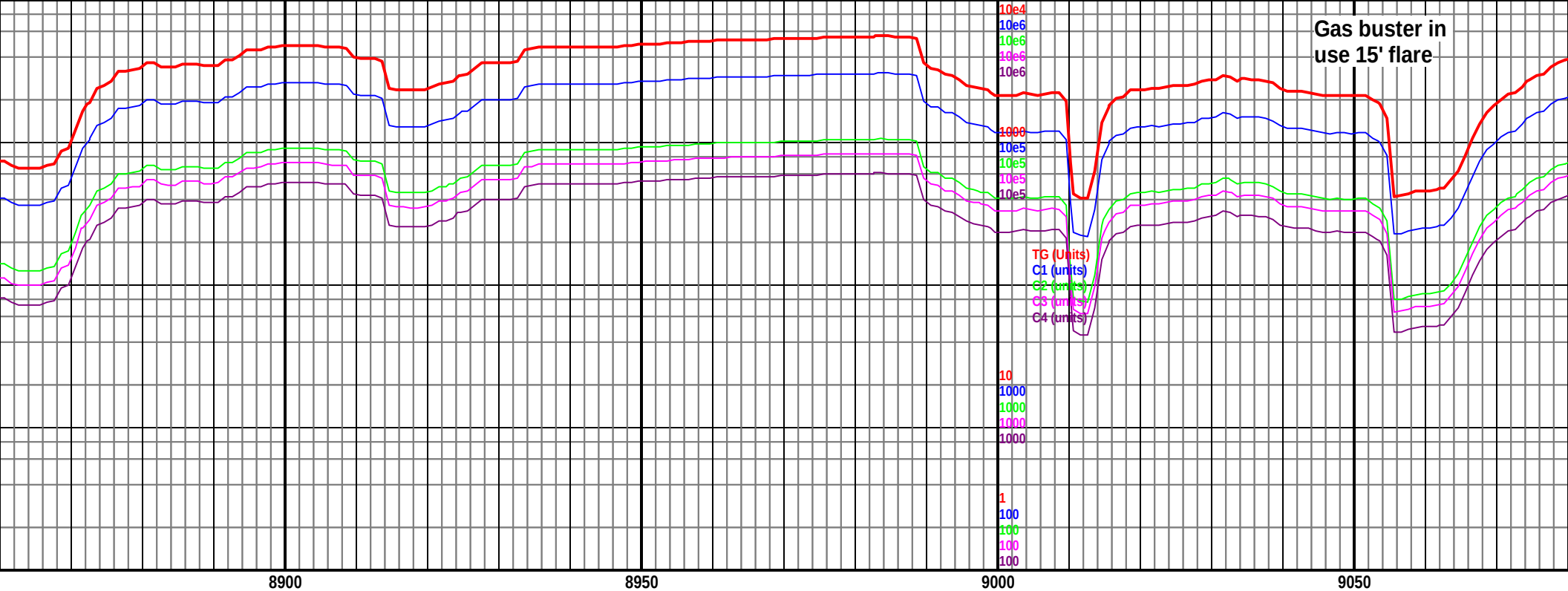
B

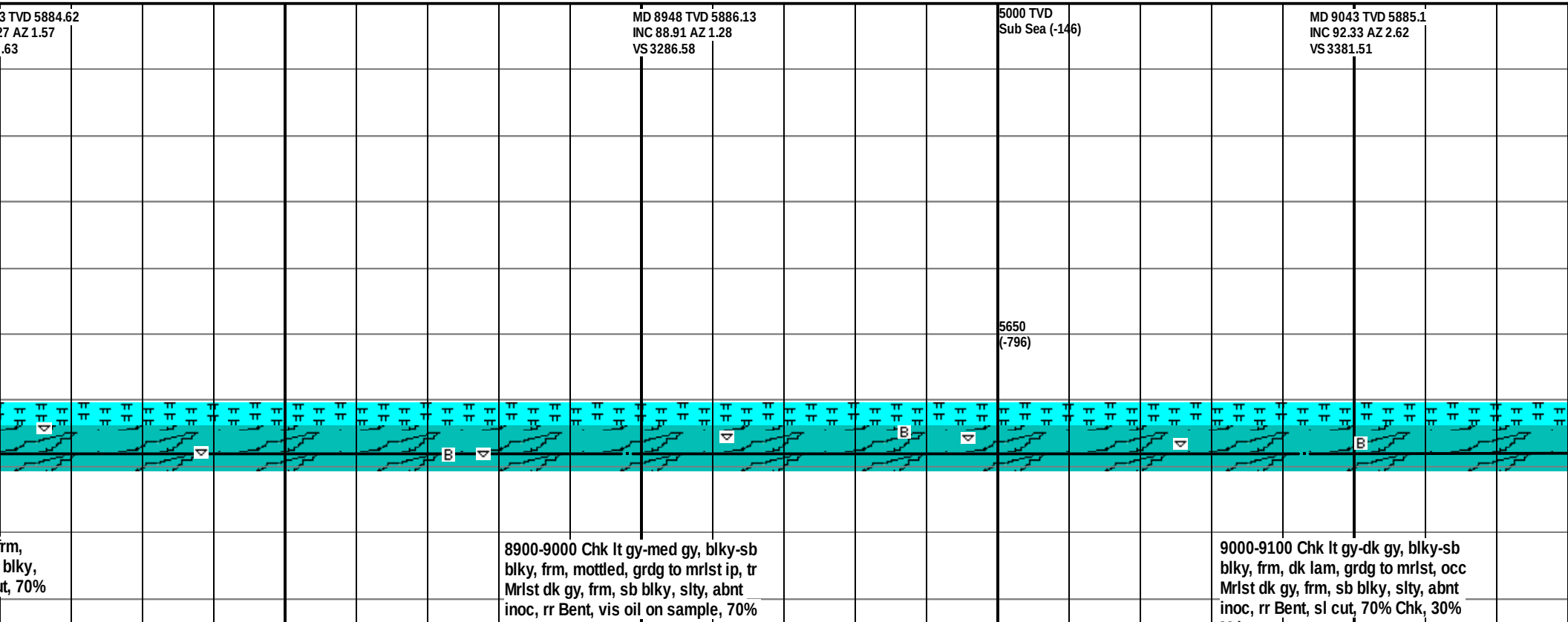
B

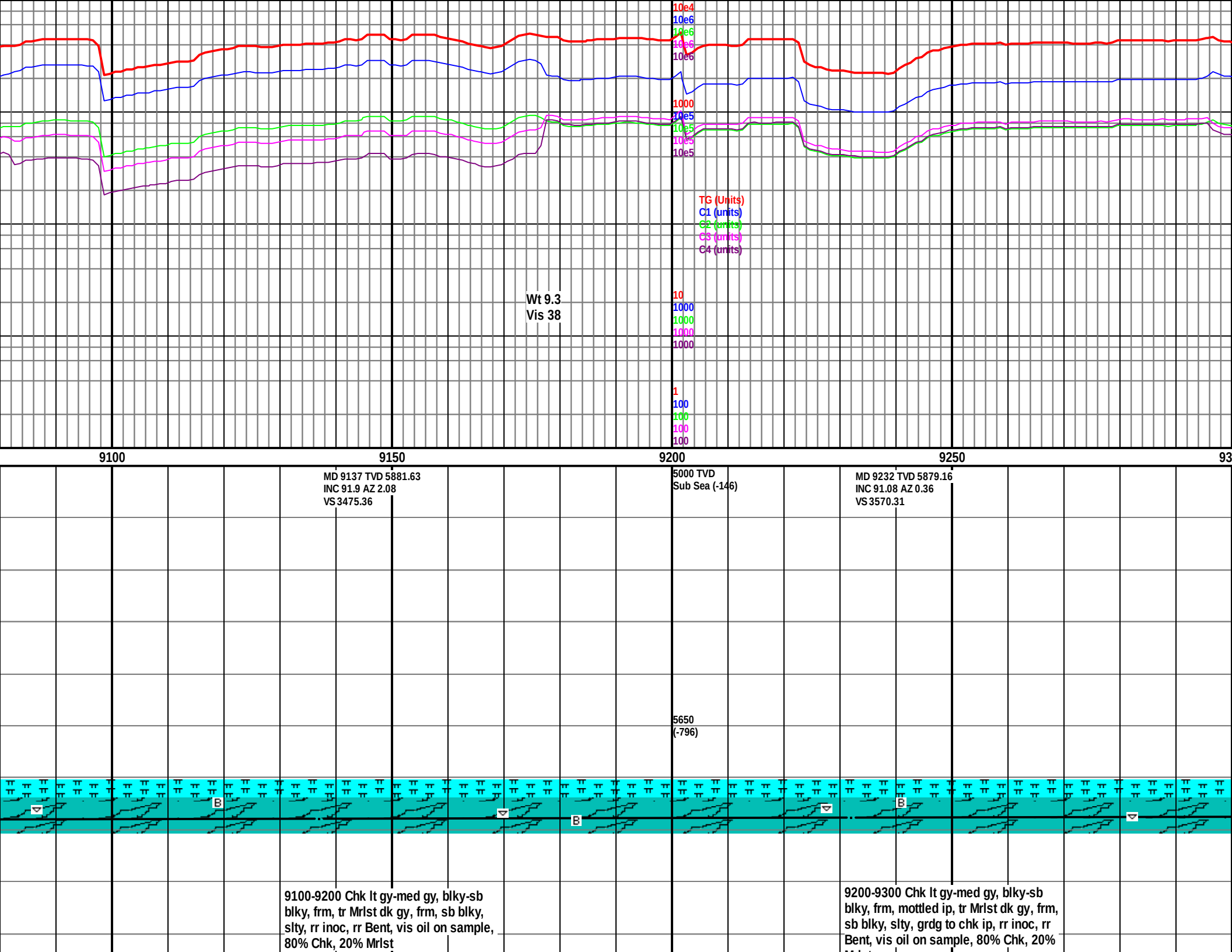
00 Chk lt gy-gy, blky, frm,
rr Mrlst dk gy, frm, sb blky,
nt inoc, rr Bent, med cut, 70%
% Mrlst

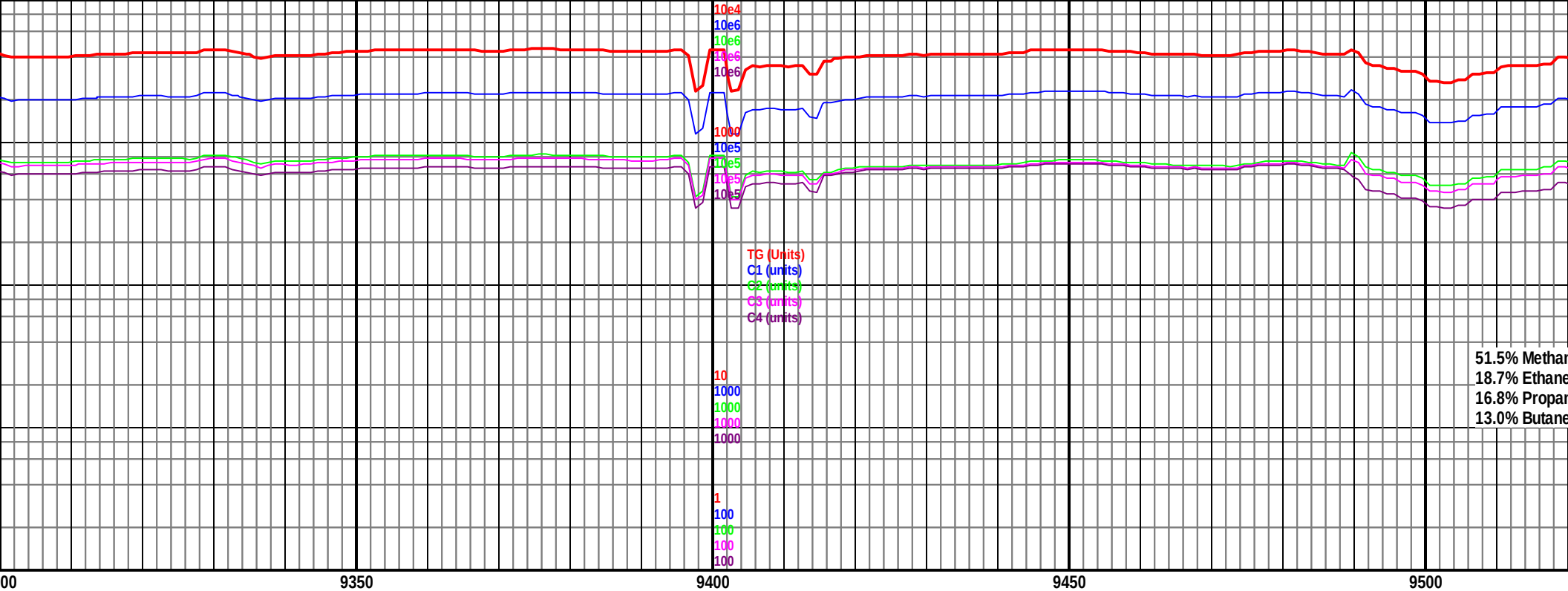
8700-8800 Chk lt gy-gy, blky, frm,
mottled, rr Mrlst dk gy, frm, sb blky,
slty, abnt inoc, rr Bent, med cut, 70%
Chk, 30% Mrlst

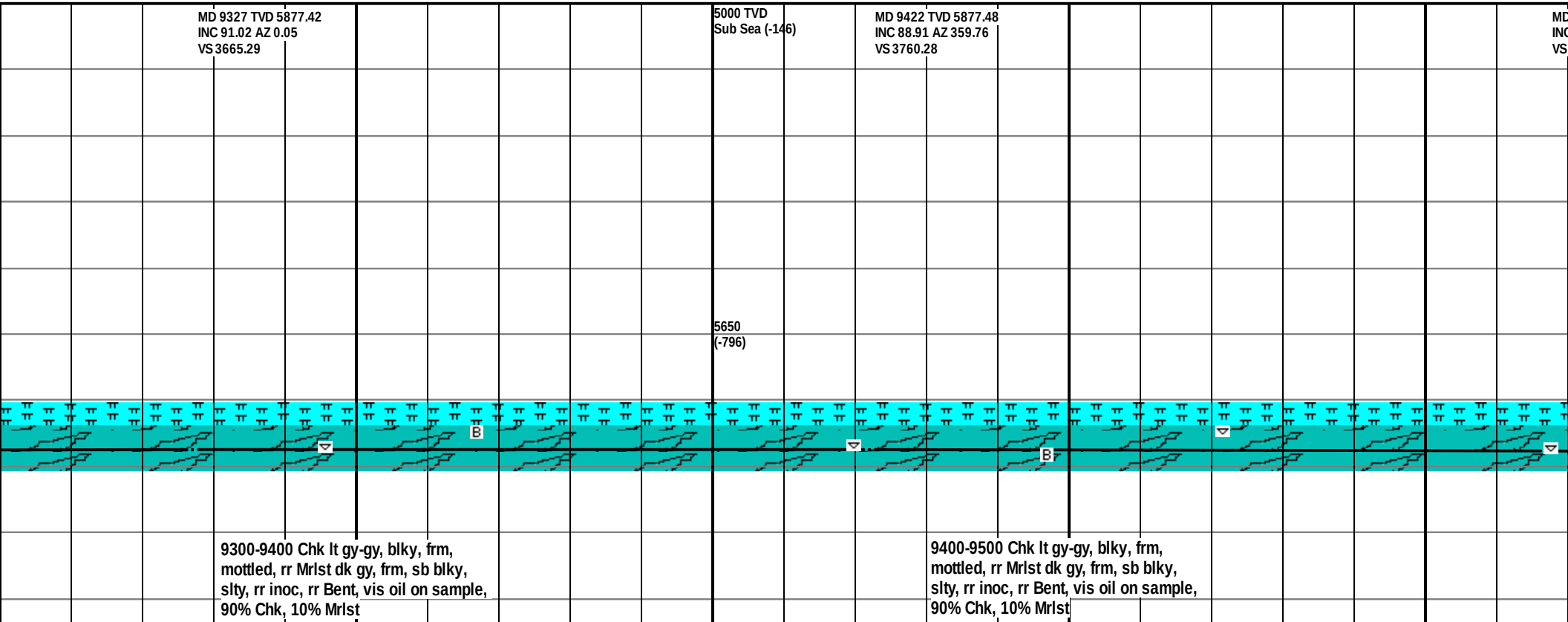
8800-8900 Chk lt gy-gy, blky, f
mottled, rr Mrlst dk gy, frm, sb
slty, abnt inoc, rr Bent, med cu
Chk, 30% Mrlst

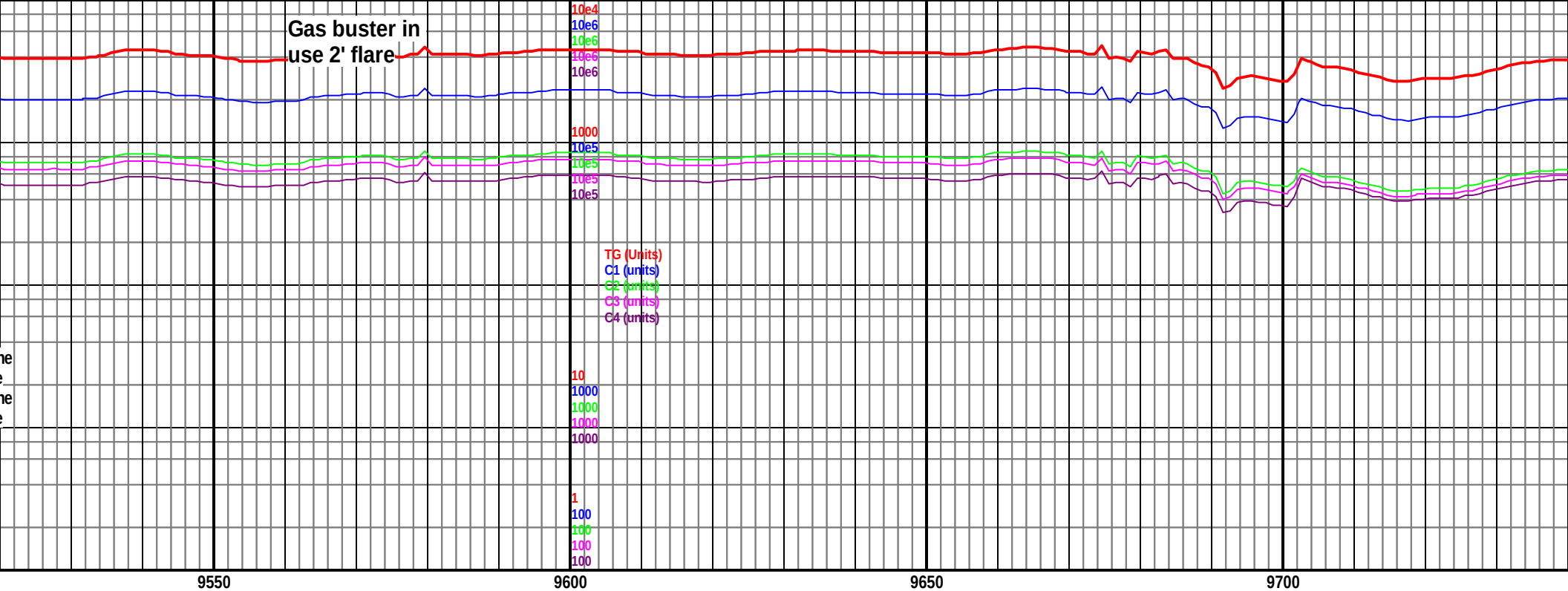

Gas buster in use 15' flare
10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
8900
8950
9000
9050

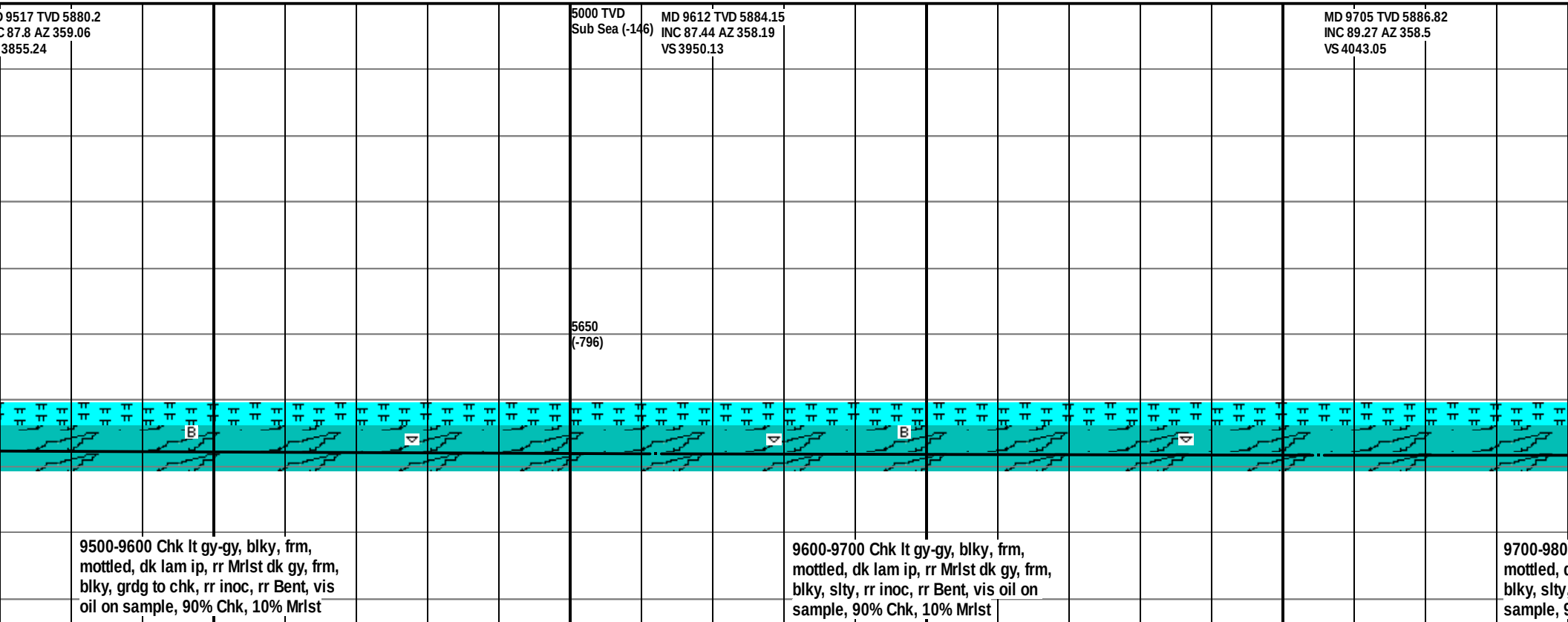

3 TVD 5884.62
27 AZ 1.57
.63
MD 8948 TVD 5886.13
INC 88.91 AZ 1.28
VS 3286.58
5000 TVD
Sub Sea (-146)
MD 9043 TVD 5885.1
INC 92.33 AZ 2.62
VS 3381.51
5650
(-796)
B
B
B
rm,
blky,
t, 70%
8900-9000 Chk lt gy-med gy, blky-sb blky, frm, mottled, grdg to mrlst ip, tr Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, vis oil on sample, 70%
9000-9100 Chk lt gy-dk gy, blky-sb blky, frm, dk lam, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, abnt inoc, rr Bent, sl cut, 70% Chk, 30%

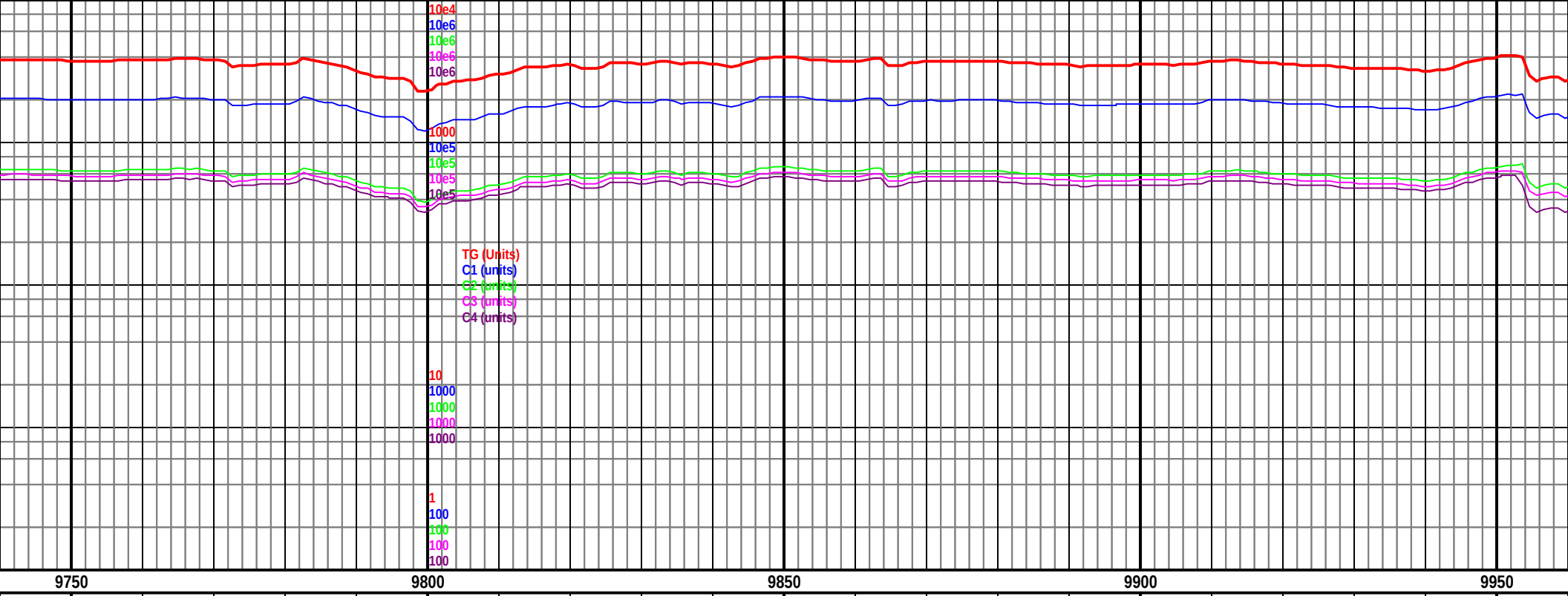

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Wt 9.3
Vis 38
10
1000
1000
1000
1000
1
100
100
100
100
9100
9150
9200
9250
93
MD 9137 TVD 5881.63
INC 91.9 AZ 2.08
VS 3475.36
5000 TVD
Sub Sea (-146)
MD 9232 TVD 5879.16
INC 91.08 AZ 0.36
VS 3570.31
5650
(-796)
B
B
B
9100-9200 Chk lt gy-med gy, blky-sb blky, frm, tr Mrlst dk gy, frm, sb blky, slty, rr inoc, rr Bent, vis oil on sample, 80% Chk, 20% Mrlst
9200-9300 Chk lt gy-med gy, blky-sb blky, frm, mottled ip, tr Mrlst dk gy, frm, sb blky, slty, grdg to chk ip, rr inoc, rr Bent, vis oil on sample, 80% Chk, 20%

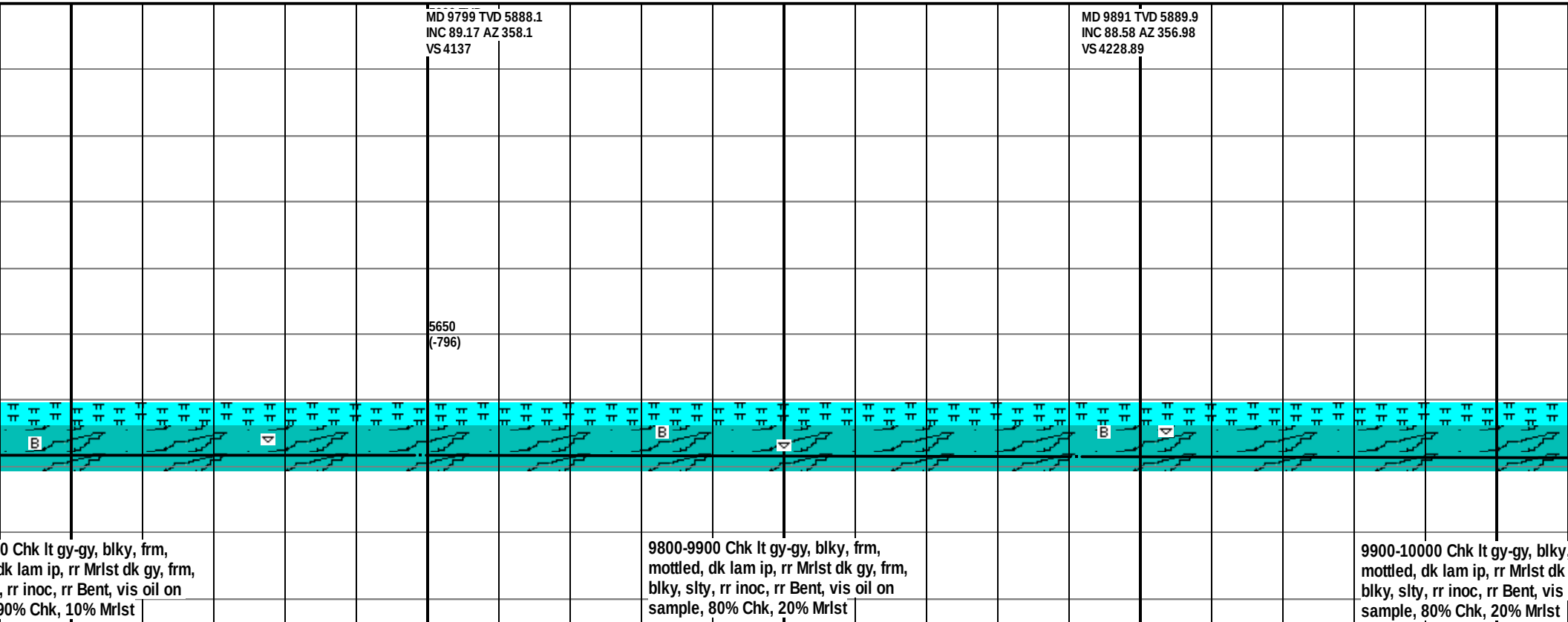

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
51.5% Methan
18.7% Ethane
16.8% Propan
13.0% Butane
00
9350
9400
9450
9500

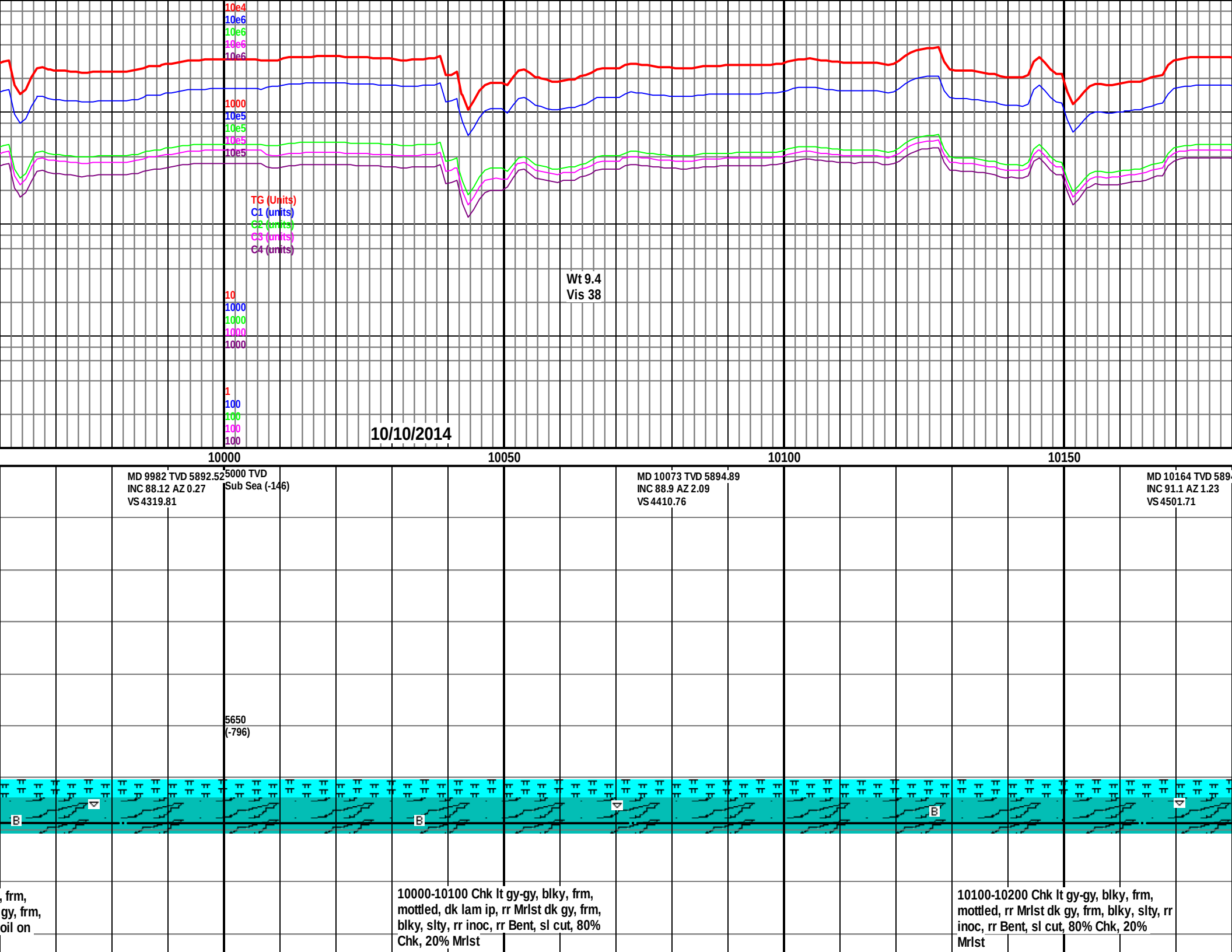

MD 9327 TVD 5877.42
INC 91.02 AZ 0.05
VS 3665.29
5000 TVD
Sub Sea (-146)
MD 9422 TVD 5877.48
INC 88.91 AZ 359.76
VS 3760.28
MD
INC
VS
5650
(-796)
B
B
9300-9400 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst
9400-9500 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst

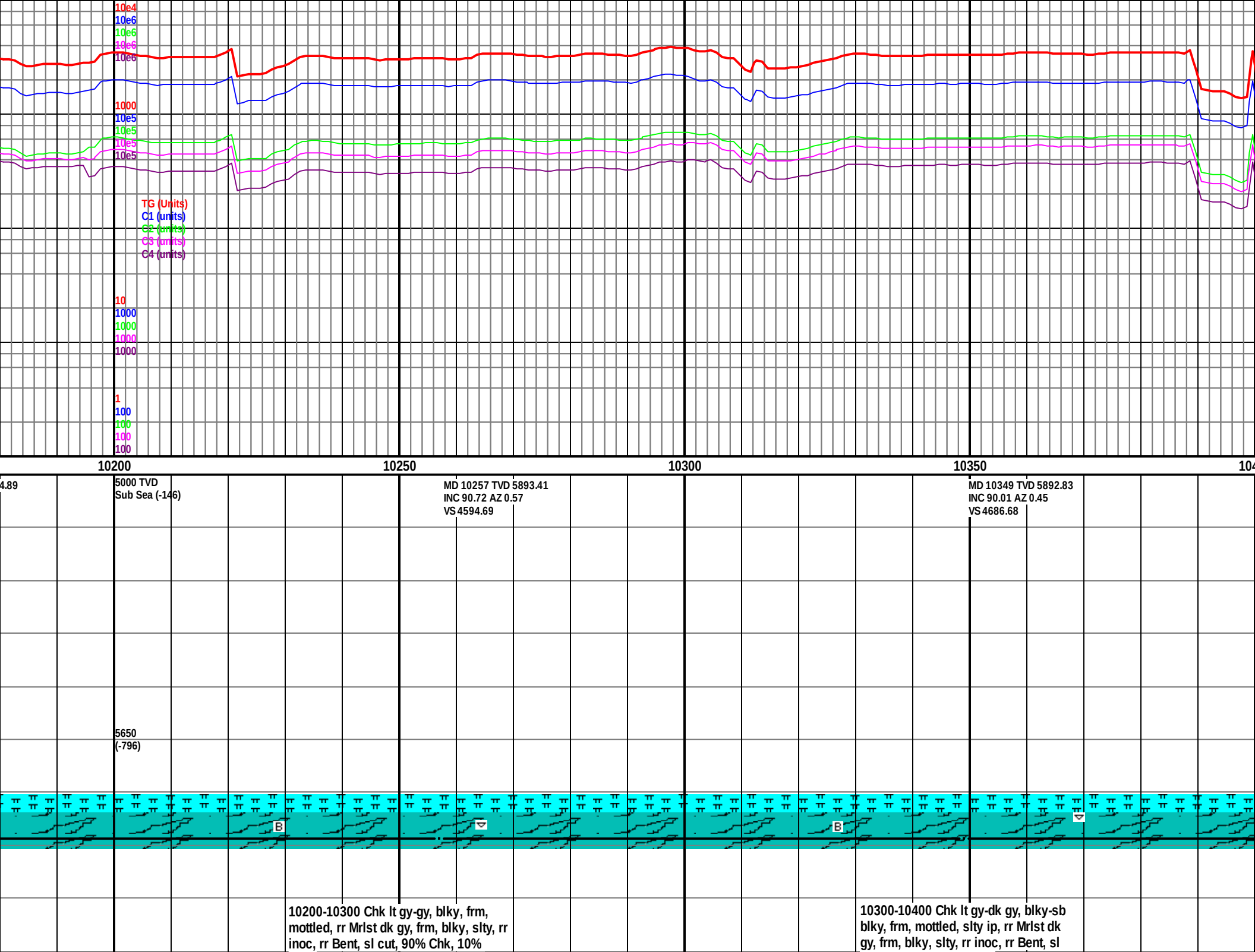

Gas buster in use 2' flare
10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
9550
9600
9650
9700

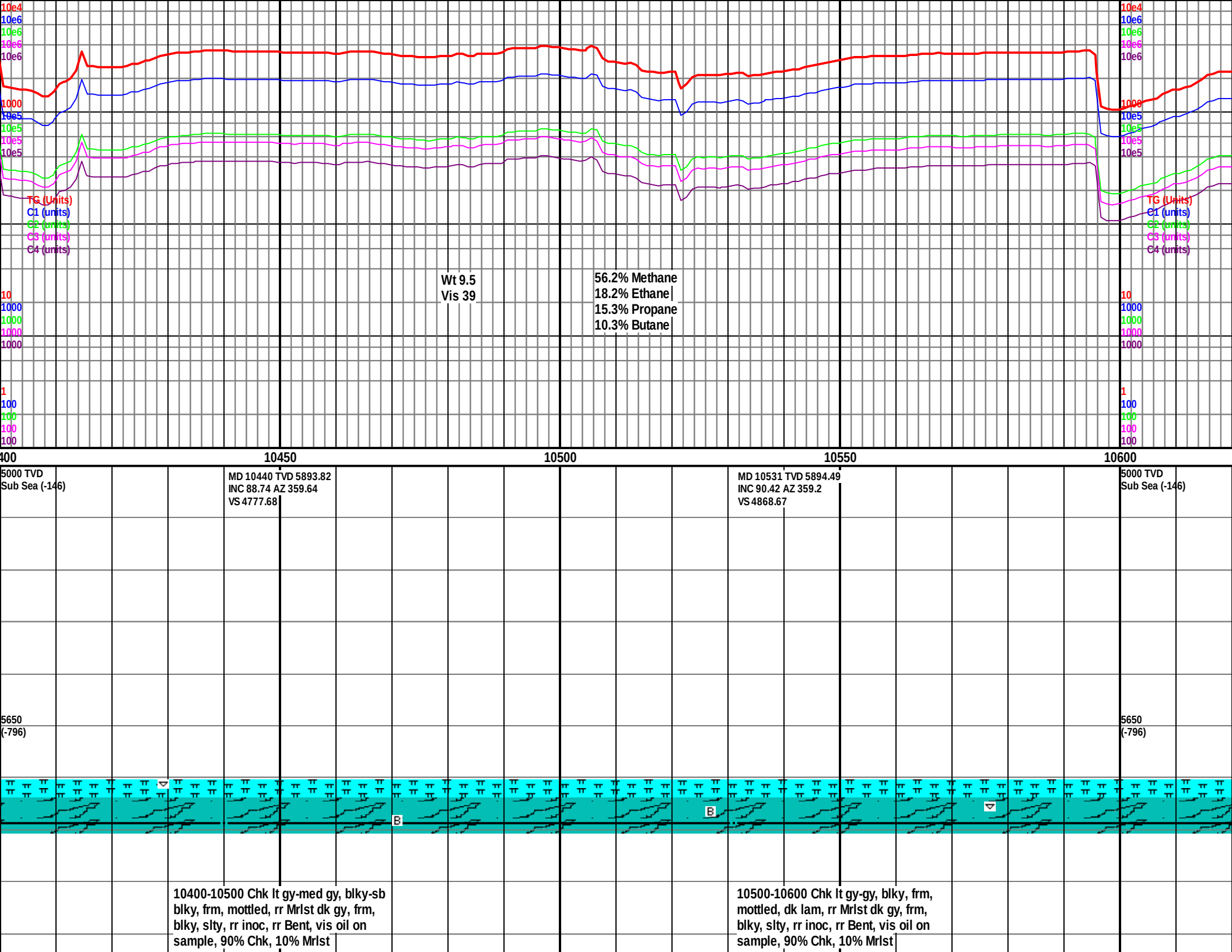

9517 TVD 5880.2
C 87.8 AZ 359.06
3855.24
5000 TVD
Sub Sea (-146)
MD 9612 TVD 5884.15
INC 87.44 AZ 358.19
VS 3950.13
MD 9705 TVD 5886.82
INC 89.27 AZ 358.5
VS 4043.05
5650
(-796)
B
B
9500-9600 Chk lt gy-gy, blky, frm, mottled, dk lam ip, rr Mrlst dk gy, frm, blky, grdg to chk, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst
9600-9700 Chk lt gy-gy, blky, frm, mottled, dk lam ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst

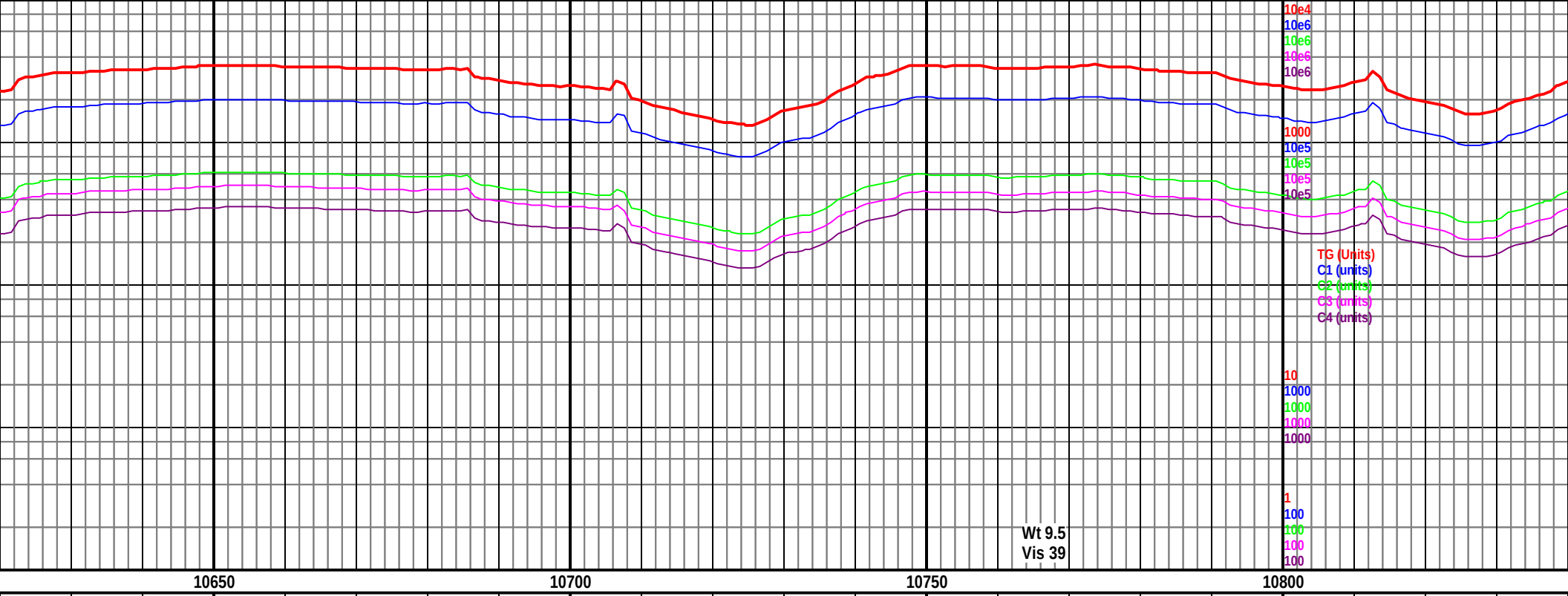

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
9750
9800
9850
9900
9950

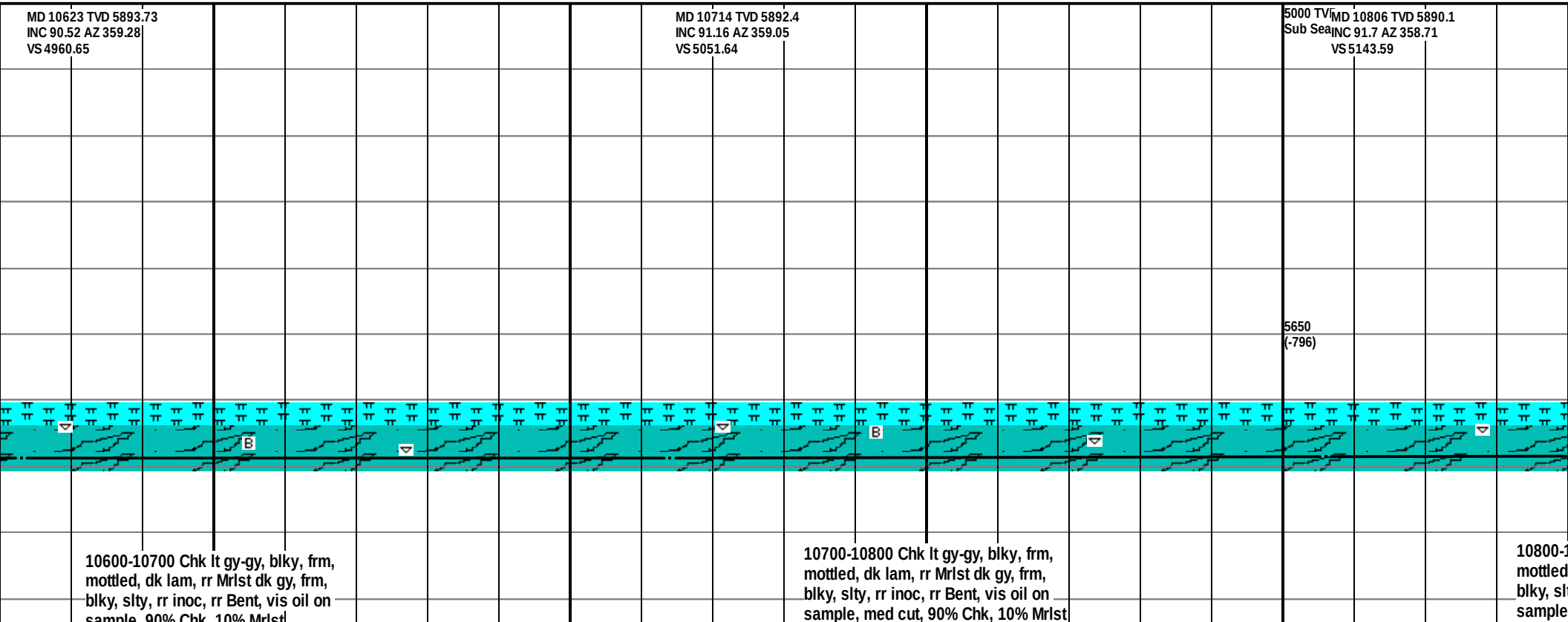

MD 9799 TVD 5888.1
INC 89.17 AZ 358.1
VS 4137
MD 9891 TVD 5889.9
INC 88.58 AZ 356.98
VS 4228.89
5650
(-796)
B
B
B
0 Chk lt gy-gy, blky, frm,
dk lam ip, rr Mrlst dk gy, frm,
, rr inoc, rr Bent, vis oil on
90% Chk, 10% Mrlst
9800-9900 Chk lt gy-gy, blky, frm,
mottled, dk lam ip, rr Mrlst dk gy, frm,
blky, slty, rr inoc, rr Bent, vis oil on
sample, 80% Chk, 20% Mrlst
9900-10000 Chk lt gy-gy, blky,
mottled, dk lam ip, rr Mrlst dk
blky, slty, rr inoc, rr Bent, vis
sample, 80% Chk, 20% Mrlst

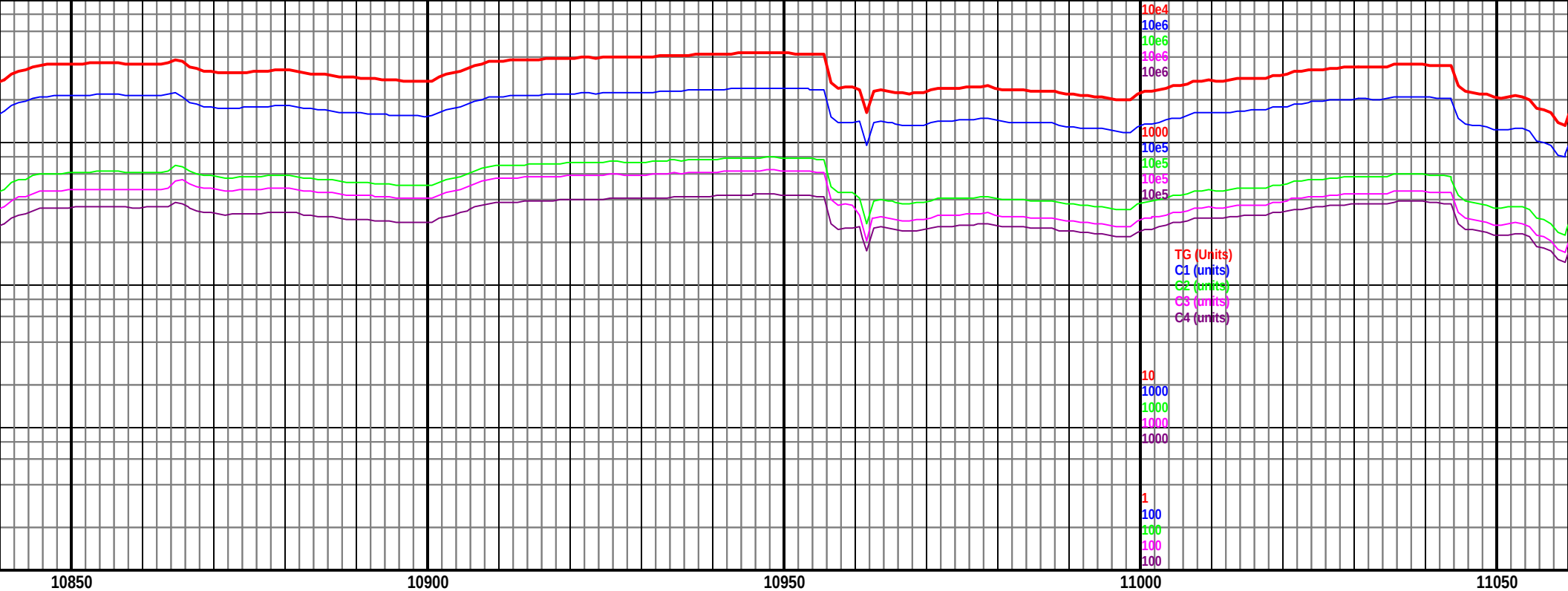

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Wt 9.4
Vis 38
10
1000
1000
1000
1000
1
100
100
100
100
10/10/2014
10000
10050
10100
10150
MD 9982 TVD 5892.52
INC 88.12 AZ 0.27
VS 4319.81
5000 TVD
Sub Sea (-146)
MD 10073 TVD 5894.89
INC 88.9 AZ 2.09
VS 4410.76
MD 10164 TVD 589
INC 91.1 AZ 1.23
VS 4501.71
5650
(-796)
B
B
B
, frm,
gy, frm,
oil on
10000-10100 Chk lt gy-gy, blky, frm, mottled, dk lam ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, sl cut, 80% Chk, 20% Mrlst
10100-10200 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, sl cut, 80% Chk, 20% Mrlst

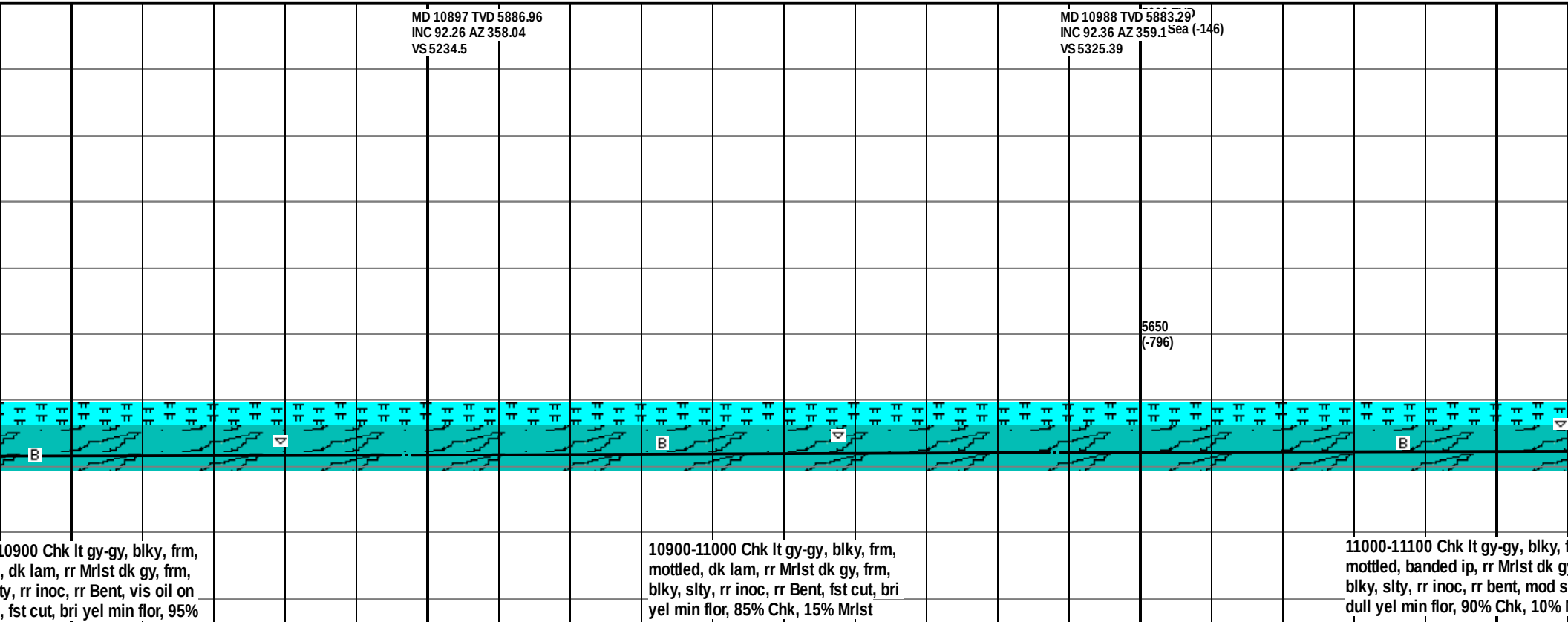

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
10200
10250
10300
10350
104
4.89
5000 TVD
Sub Sea (-146)
MD 10257 TVD 5893.41
INC 90.72 AZ 0.57
VS 4594.69
MD 10349 TVD 5892.83
INC 90.01 AZ 0.45
VS 4686.68
5650
(-796)
B
B
10200-10300 Chk lt gy-gy, blky, frm, mottled, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, sl cut, 90% Chk, 10% Mrlst
10300-10400 Chk lt gy-dk gy, blky-sb blky, frm, mottled, slty ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, sl cut, 90% Chk, 10% Mrlst

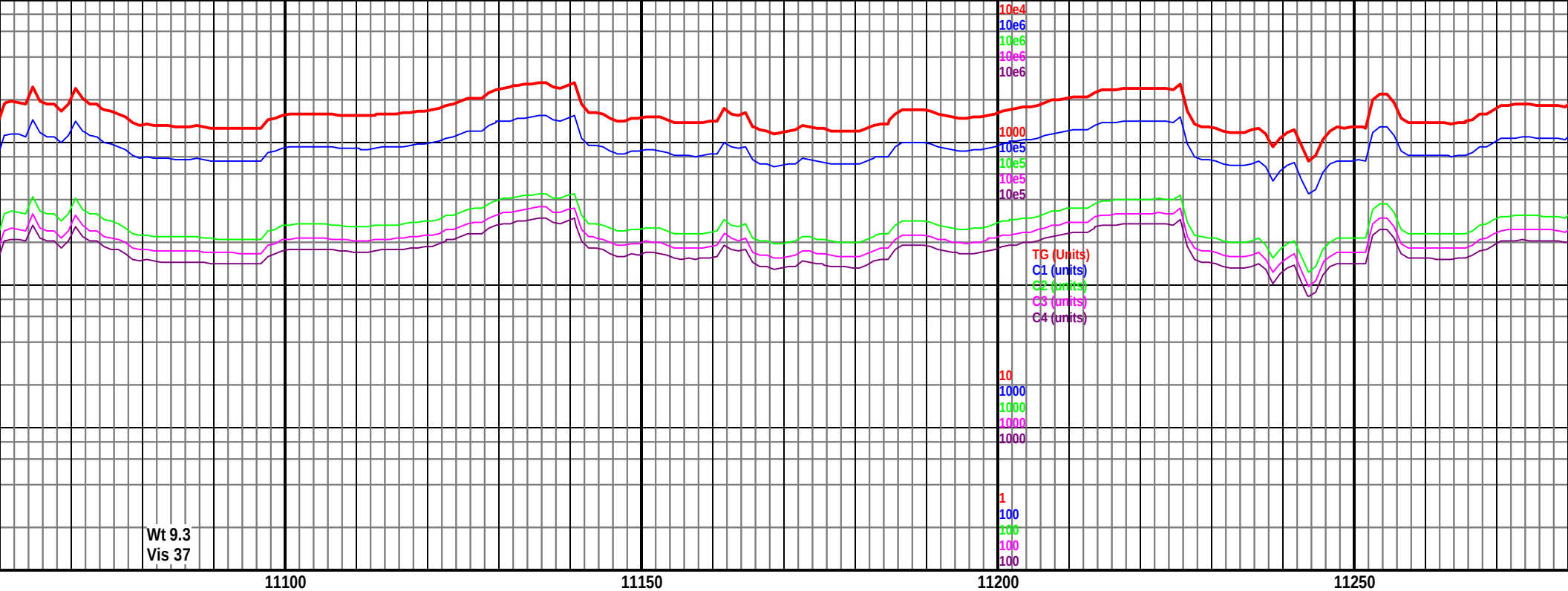

TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Wt 9.5
Vis 39
56.2% Methane
18.2% Ethane
15.3% Propane
10.3% Butane
400
10450
10500
10550
10600
5000 TVD
Sub Sea (-146)
MD 10440 TVD 5893.82
INC 88.74 AZ 359.64
VS 4777.68
MD 10531 TVD 5894.49
INC 90.42 AZ 359.2
VS 4868.67
5650
(-796)
B
10400-10500 Chk lt gy-med gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst
10500-10600 Chk lt gy-gy, blky, frm, mottled, dk lam, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, vis oil on sample, 90% Chk, 10% Mrlst

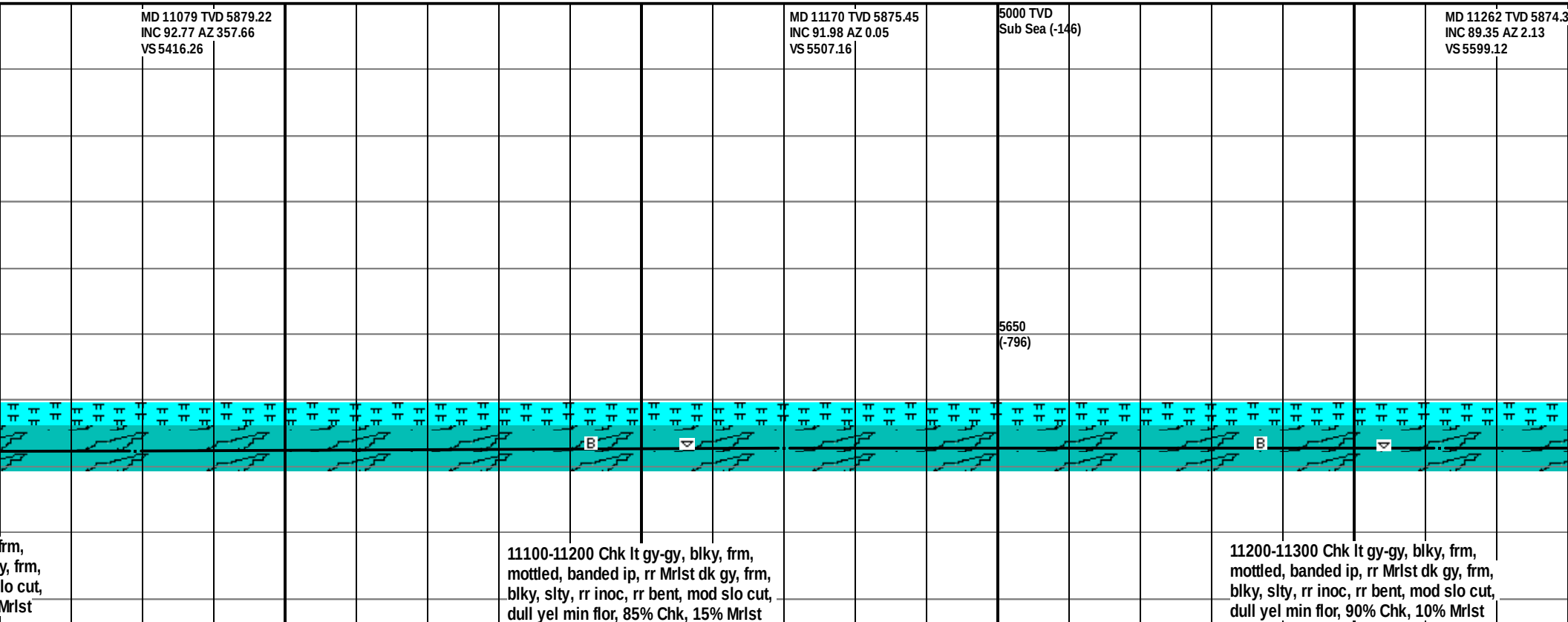

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Wt 9.5
Vis 39
10650
10700
10750
10800

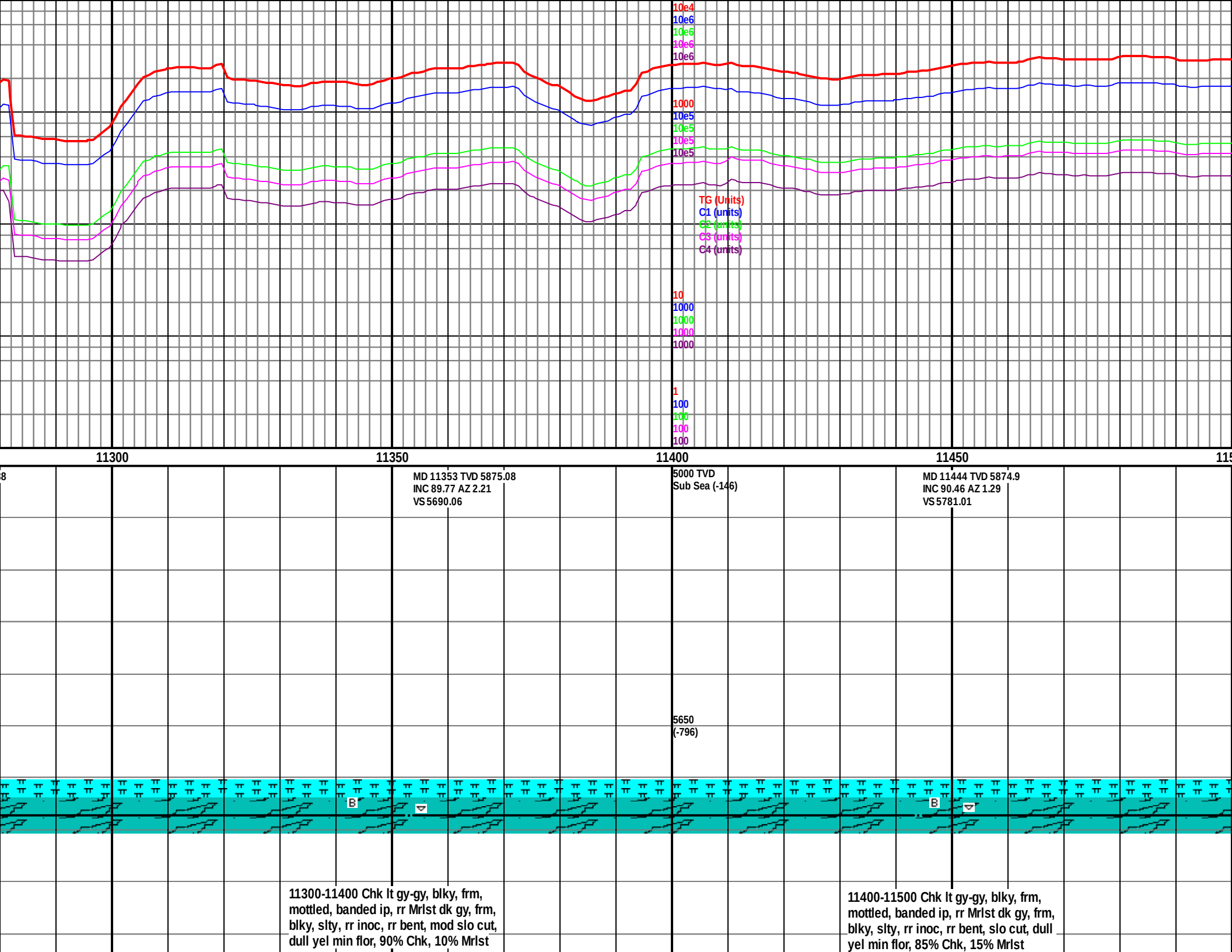

MD 10623 TVD 5893.73
INC 90.52 AZ 359.28
VS 4960.65
MD 10714 TVD 5892.4
INC 91.16 AZ 359.05
VS 5051.64
5000 TVD Sub Sea
MD 10806 TVD 5890.1
INC 91.7 AZ 358.71
VS 5143.59
5650
(-796)
B
B
10600-10700 Chk lt gy-gy, blky, frm, mottled, dk lam, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, vis oil on
10700-10800 Chk lt gy-gy, blky, frm, mottled, dk lam, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr Bent, vis oil on sample, med cut, 90% Chk, 10% Mrlst

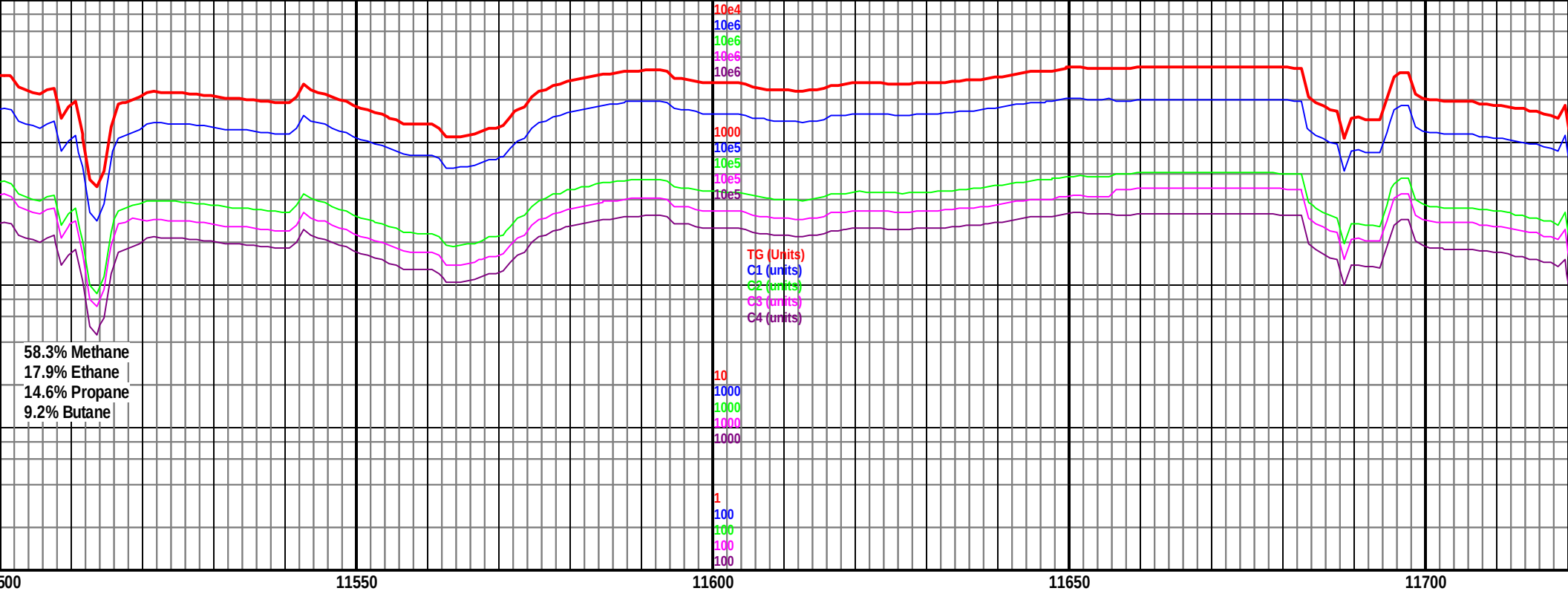

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
10850
10900
10950
11000
11050

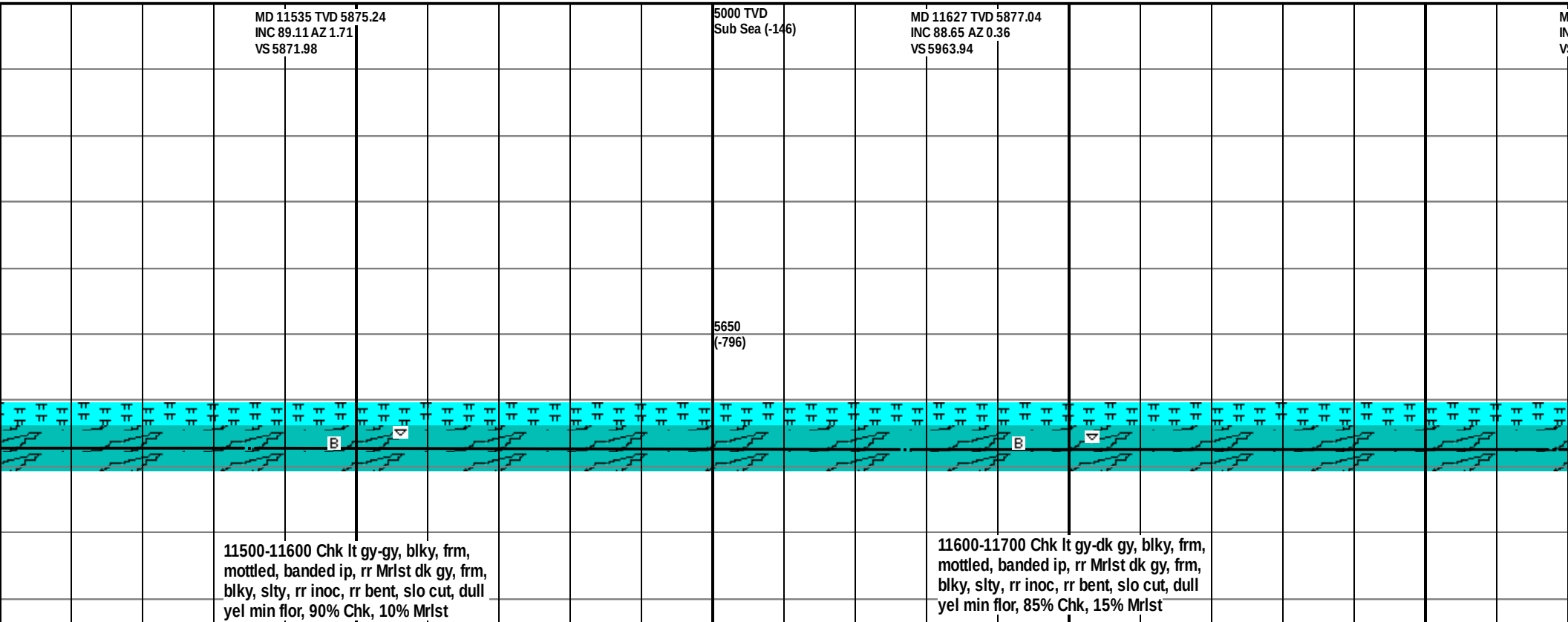

MD 10897 TVD 5886.96
INC 92.26 AZ 358.04
VS 5234.5
MD 10988 TVD 5883.29
INC 92.36 AZ 359.1
Sea (-146)
VS 5325.39
5650
(-796)
B
B
B
10900 Chk lt gy-gy, blky, frm,
, dk lam, rr Mrlst dk gy, frm,
ty, rr inoc, rr Bent, vis oil on
, fst cut, bri yel min flor, 95%
10900-11000 Chk lt gy-gy, blky, frm,
mottled, dk lam, rr Mrlst dk gy, frm,
blky, slty, rr inoc, rr Bent, fst cut, bri
yel min flor, 85% Chk, 15% Mrlst
11000-11100 Chk lt gy-gy, blky,
mottled, banded ip, rr Mrlst dk g
blky, slty, rr inoc, rr bent, mod s
dull yel min flor, 90% Chk, 10%

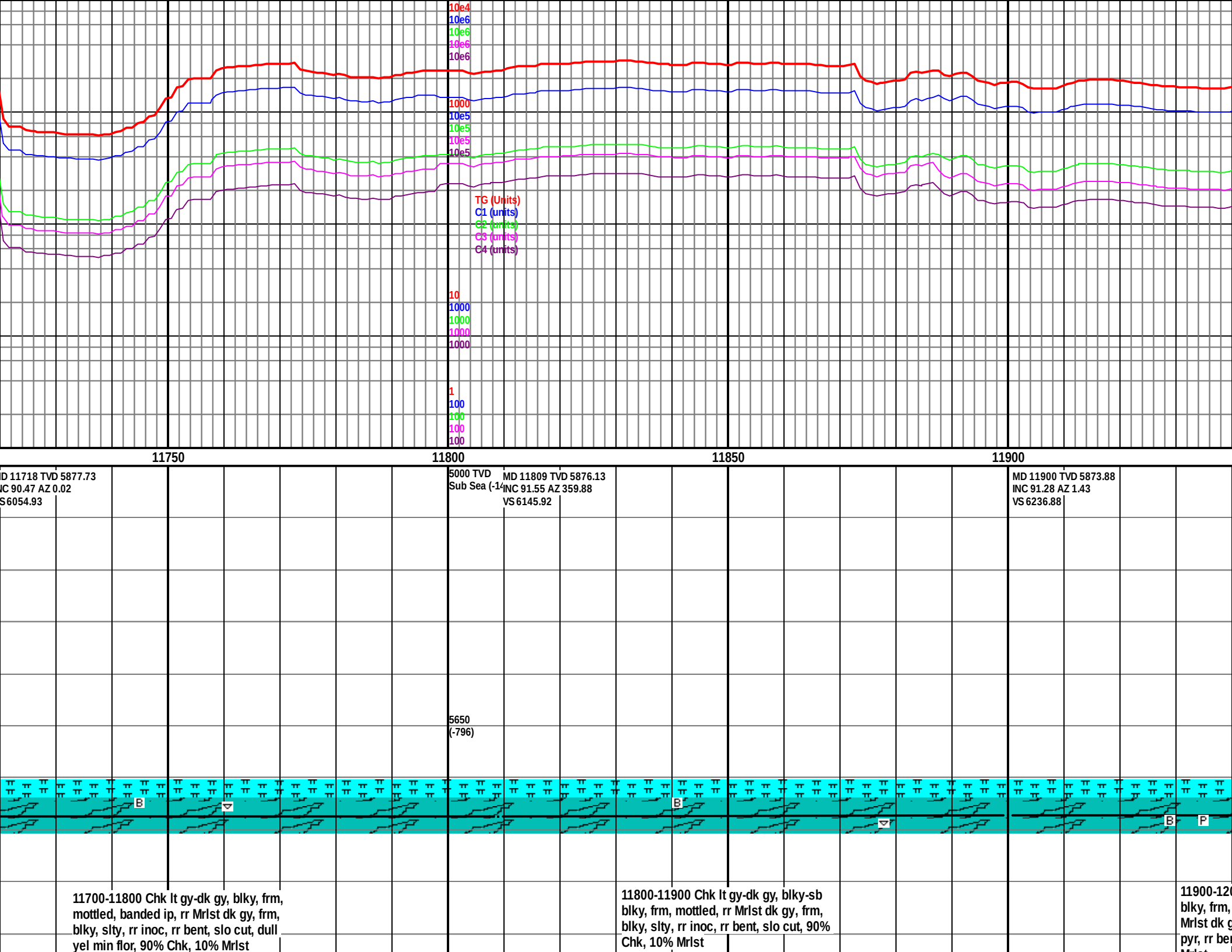

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Wt 9.3
Vis 37
11100
11150
11200
11250

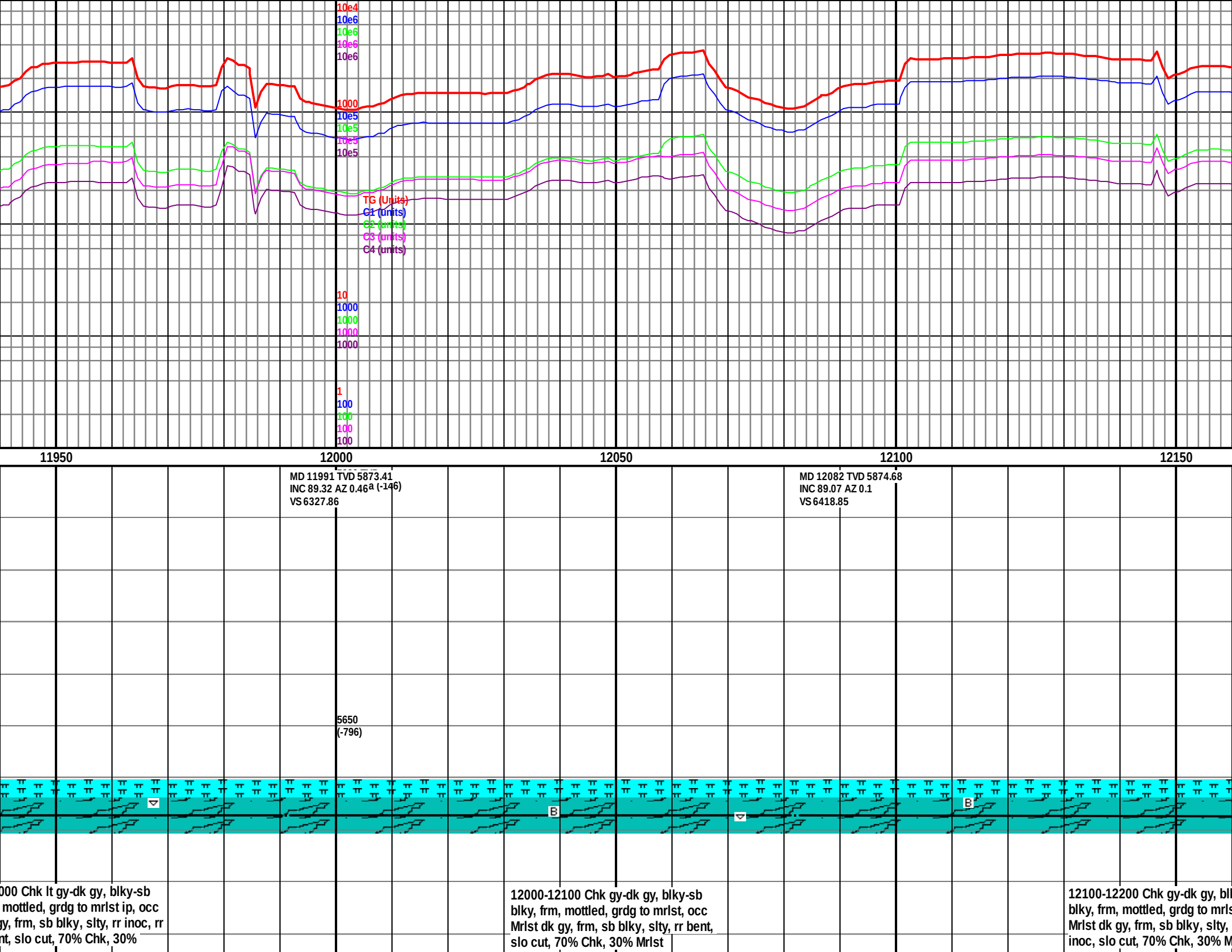

MD 11079 TVD 5879.22
INC 92.77 AZ 357.66
VS 5416.26
MD 11170 TVD 5875.45
INC 91.98 AZ 0.05
VS 5507.16
5000 TVD
Sub Sea (-146)
MD 11262 TVD 5874.3
INC 89.35 AZ 2.13
VS 5599.12
5650
(-796)
B
B
frm,
y, frm,
lo cut,
Mrlst
11100-11200 Chk lt gy-gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, mod slo cut, dull yel min flor, 85% Chk, 15% Mrlst
11200-11300 Chk lt gy-gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, mod slo cut, dull yel min flor, 90% Chk, 10% Mrlst

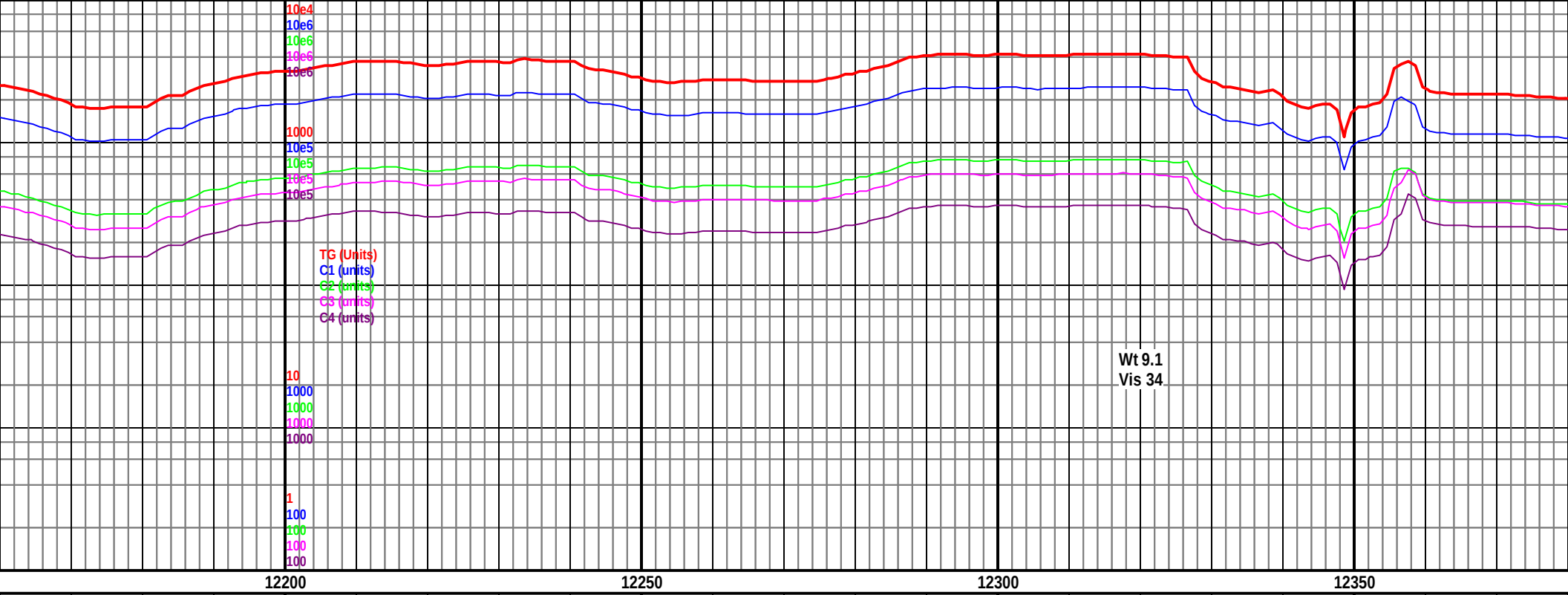

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
11300
11350
11400
11450
MD 11353 TVD 5875.08
INC 89.77 AZ 2.21
VS 5690.06
5000 TVD
Sub Sea (-146)
MD 11444 TVD 5874.9
INC 90.46 AZ 1.29
VS 5781.01
5650
(-796)
B
B
11300-11400 Chk lt gy-gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, mod slo cut, dull yel min flor, 90% Chk, 10% Mrlst
11400-11500 Chk lt gy-gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, slo cut, dull yel min flor, 85% Chk, 15% Mrlst

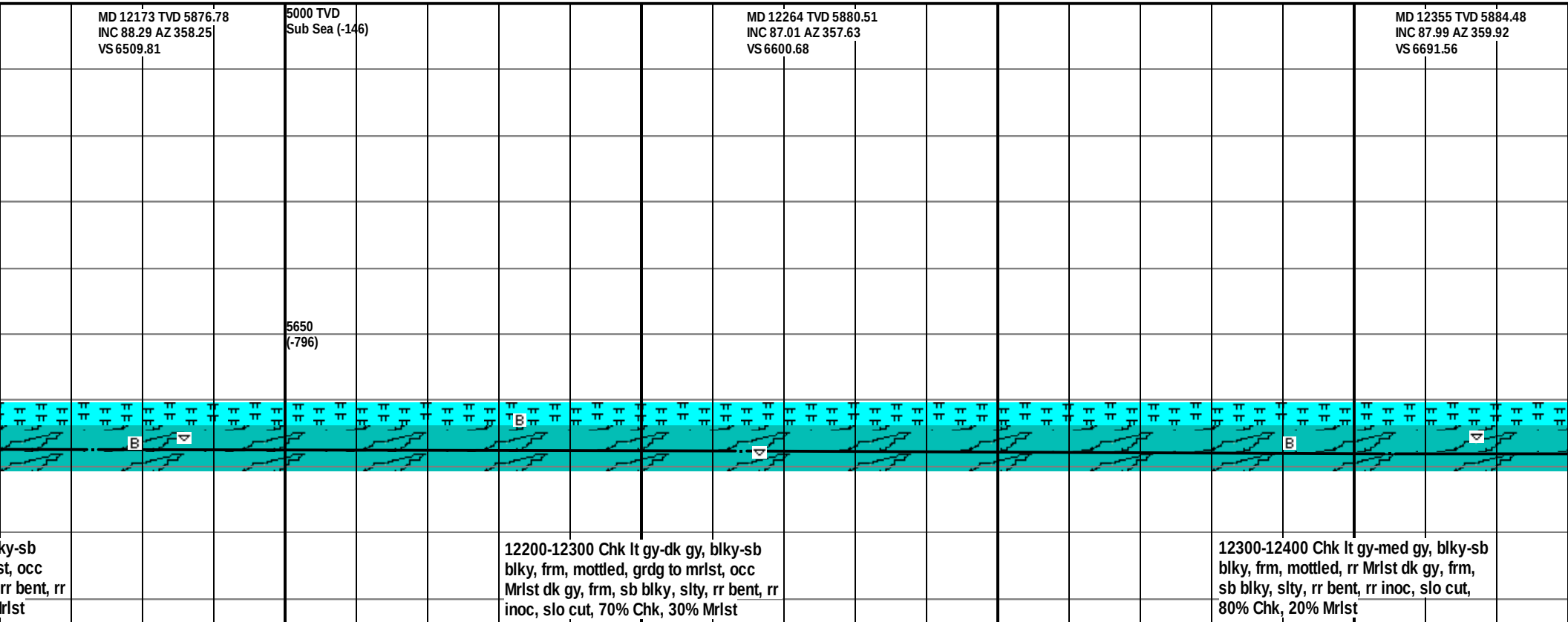

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
58.3% Methane
17.9% Ethane
14.6% Propane
9.2% Butane
500
11550
11600
11650
11700

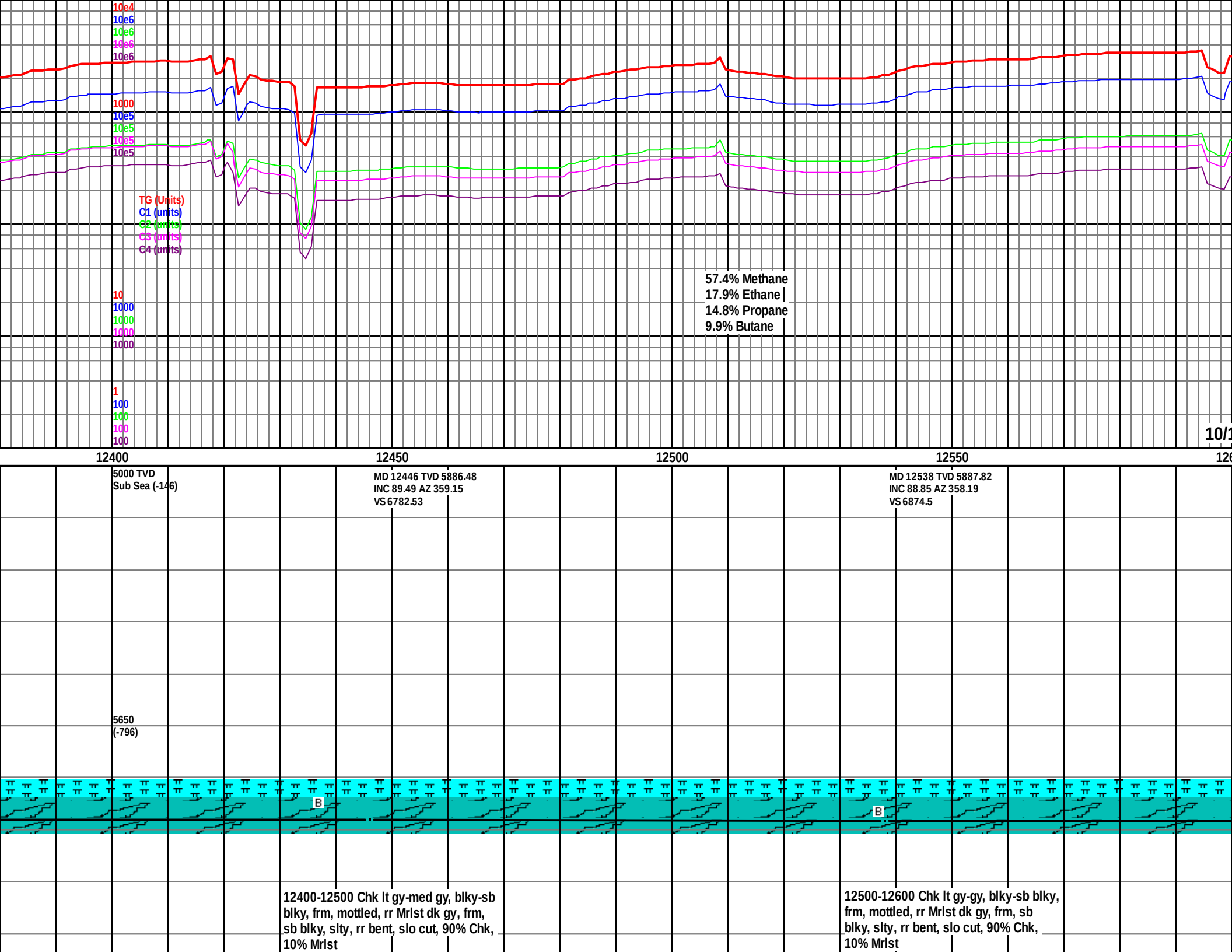

MD 11535 TVD 5875.24
INC 89.11 AZ 1.71
VS 5871.98
5000 TVD
Sub Sea (-146)
MD 11627 TVD 5877.04
INC 88.65 AZ 0.36
VS 5963.94
5650
(-796)
B
B
11500-11600 Chk lt gy-gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, slo cut, dull yel min flor, 90% Chk, 10% Mrlst
11600-11700 Chk lt gy-dk gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, slo cut, dull yel min flor, 85% Chk, 15% Mrlst

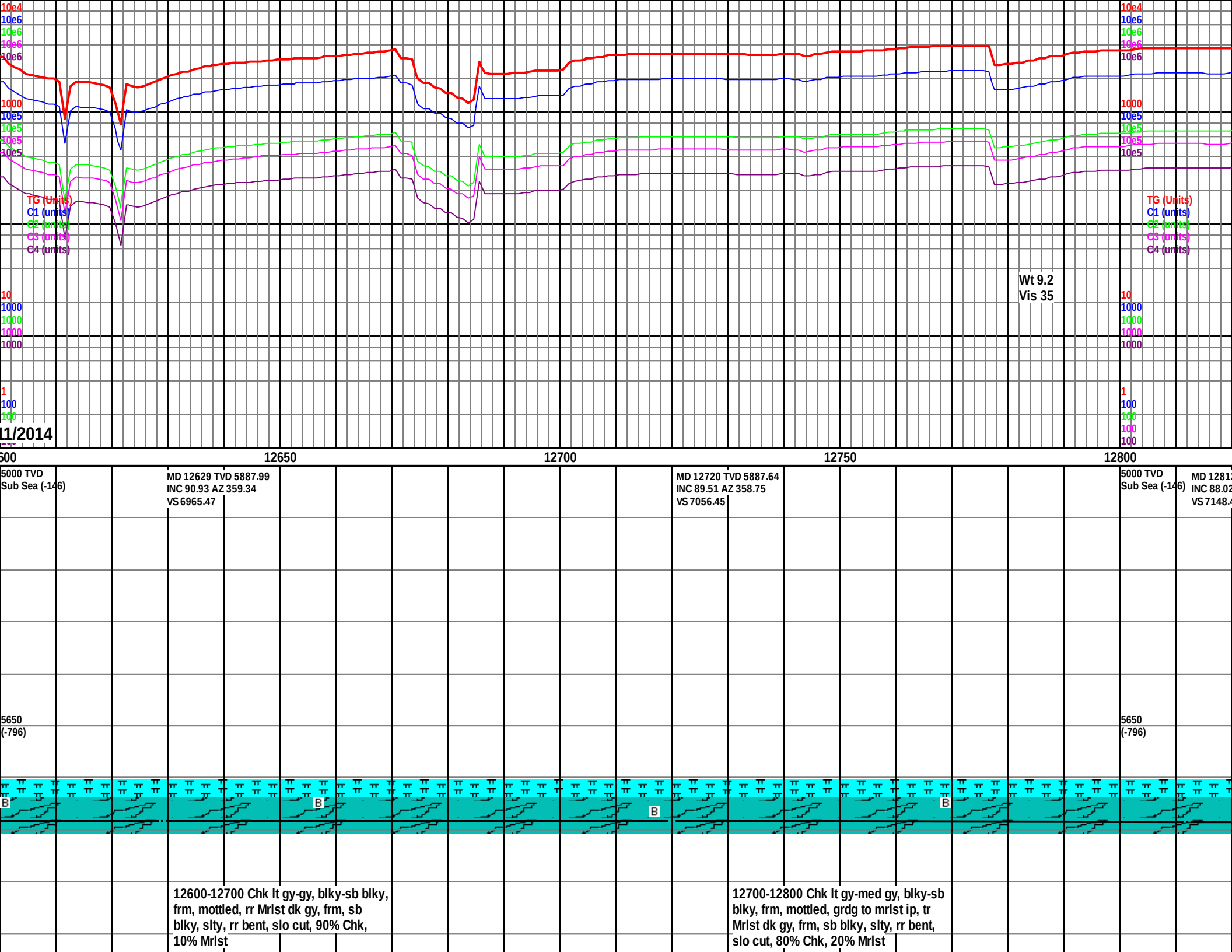

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
11750
11800
11850
11900
D 11718 TVD 5877.73
NC 90.47 AZ 0.02
S 6054.93
5000 TVD
Sub Sea (-14
MD 11809 TVD 5876.13
INC 91.55 AZ 359.88
VS 6145.92
MD 11900 TVD 5873.88
INC 91.28 AZ 1.43
VS 6236.88
5650
(-796)
B
B
B
P
11700-11800 Chk lt gy-dk gy, blky, frm, mottled, banded ip, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, slo cut, dull yel min flor, 90% Chk, 10% Mrlst
11800-11900 Chk lt gy-dk gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, blky, slty, rr inoc, rr bent, slo cut, 90% Chk, 10% Mrlst
11900-12
blky, frm,
Mrlst dk g
pyr, rr be

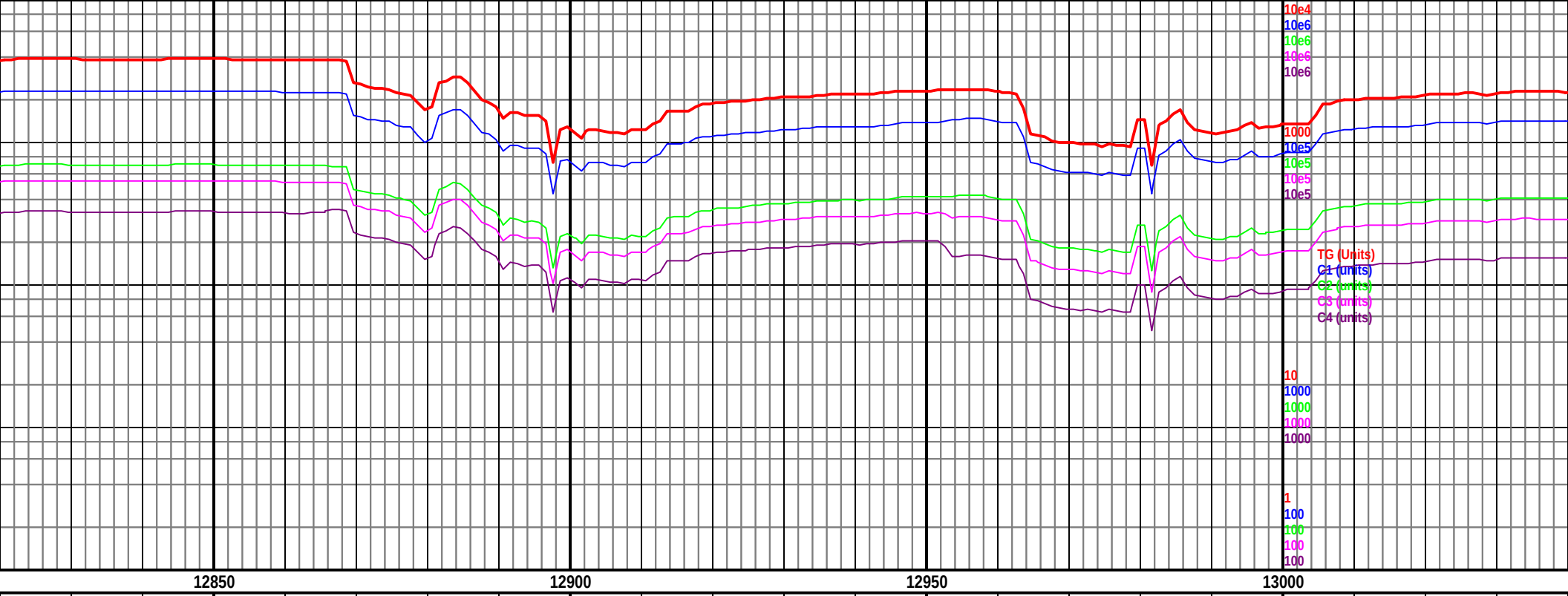

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
11950
12000
12050
12100
12150
MD 11991 TVD 5873.41
INC 89.32 AZ 0.46a (-146)
VS 6327.86
MD 12082 TVD 5874.68
INC 89.07 AZ 0.1
VS 6418.85
5650
(-796)
B
B
000 Chk lt gy-dk gy, blky-sb
mottled, grdg to mrlst ip, occ
gy, frm, sb blky, slty, rr inoc, rr
nt, slo cut, 70% Chk, 30%
12000-12100 Chk gy-dk gy, blky-sb
blky, frm, mottled, grdg to mrlst, occ
Mrlst dk gy, frm, sb blky, slty, rr bent,
slo cut, 70% Chk, 30% Mrlst
12100-12200 Chk gy-dk gy, bl
blky, frm, mottled, grdg to mrls
Mrlst dk gy, frm, sb blky, slty,
inoc, slo cut, 70% Chk, 30% M


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Wt 9.1
Vis 34
12200
12250
12300
12350


MD 12173 TVD 5876.78
INC 88.29 AZ 358.25
VS 6509.81
5000 TVD
Sub Sea (-146)
MD 12264 TVD 5880.51
INC 87.01 AZ 357.63
VS 6600.68
MD 12355 TVD 5884.48
INC 87.99 AZ 359.92
VS 6691.56
5650
(-796)
B
B
B
ky-sb
st, occ
rr bent, rr
lrlst
12200-12300 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, rr bent, rr inoc, slo cut, 70% Chk, 30% Mrlst
12300-12400 Chk lt gy-med gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr bent, rr inoc, slo cut, 80% Chk, 20% Mrlst


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
57.4% Methane
17.9% Ethane
14.8% Propane
9.9% Butane
12400
12450
12500
12550
5000 TVD
Sub Sea (-146)
MD 12446 TVD 5886.48
INC 89.49 AZ 359.15
VS 6782.53
MD 12538 TVD 5887.82
INC 88.85 AZ 358.19
VS 6874.5
5650
(-796)
B
B
12400-12500 Chk lt gy-med gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, 90% Chk, 10% Mrlst
12500-12600 Chk lt gy-gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, 90% Chk, 10% Mrlst


TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Wt 9.2
Vis 35
11/2014
12600
12650
12700
12750
12800
5000 TVD
Sub Sea (-146)
MD 12629 TVD 5887.99
INC 90.93 AZ 359.34
VS 6965.47
MD 12720 TVD 5887.64
INC 89.51 AZ 358.75
VS 7056.45
5650
(-796)
B
12600-12700 Chk lt gy-gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, 90% Chk, 10% Mrlst
12700-12800 Chk lt gy-med gy, blky-sb blky, frm, mottled, grdg to mrlst ip, tr Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, 80% Chk, 20% Mrlst



2 TVD 5889.62
2 AZ 358.82
41

MD 12903 TVD 5891.94
INC 89.06 AZ 359.47
VS 7239.37

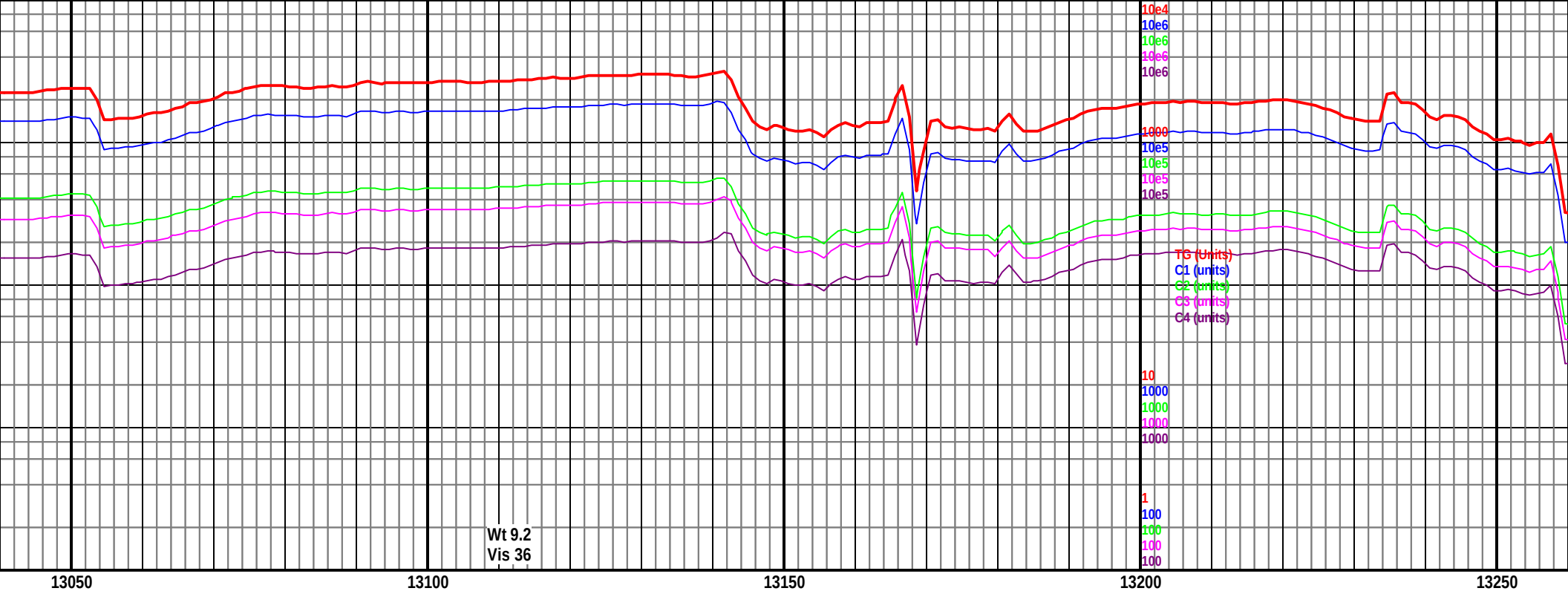
MD 12995 TVD 5890.24
INC 93.06 AZ 0.99
VS 7331.33

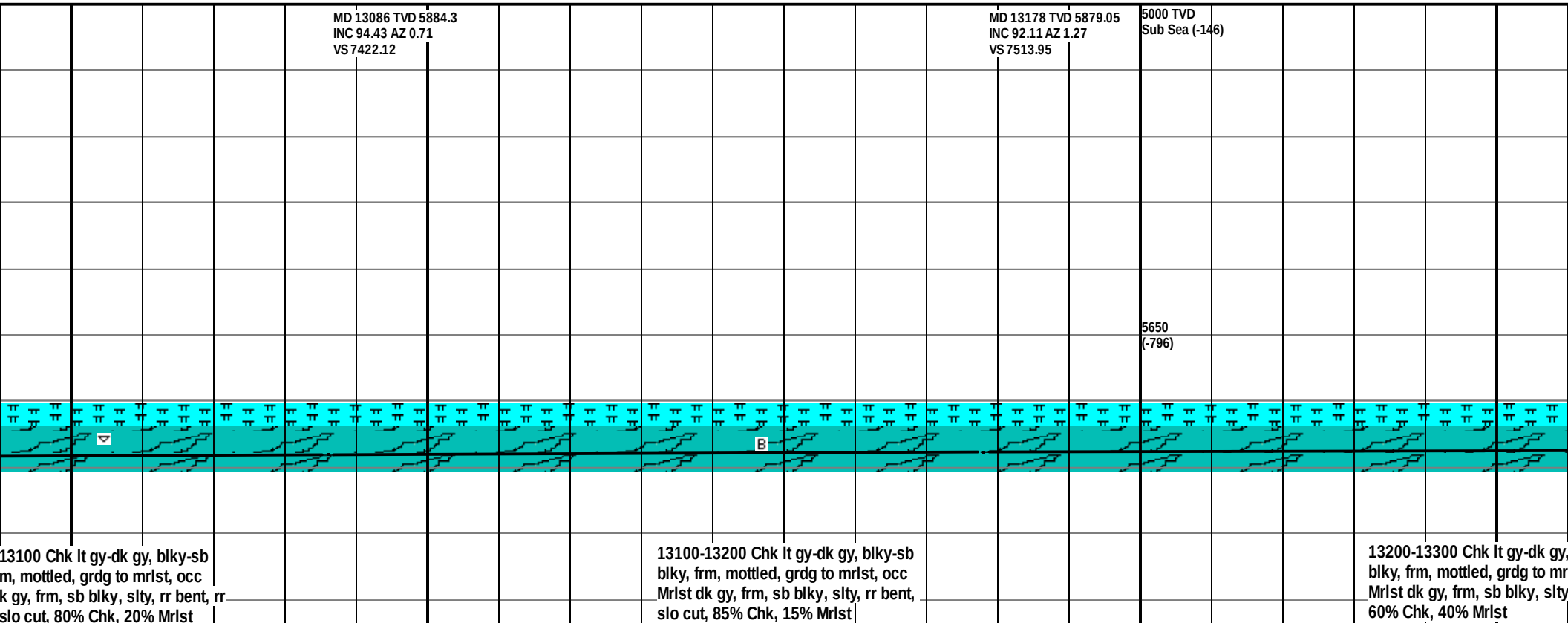
5650
(-796)

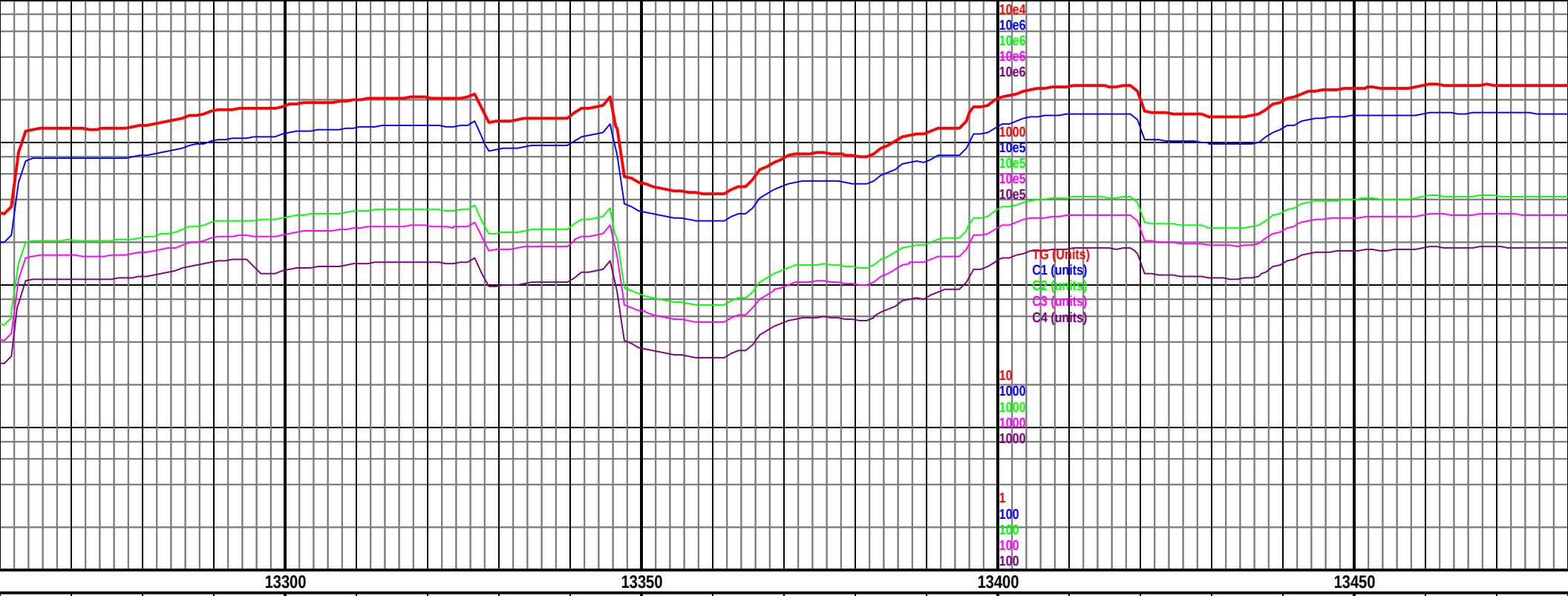
12800-12900 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, abnt LCM 60% Chk, 40% Mrlst

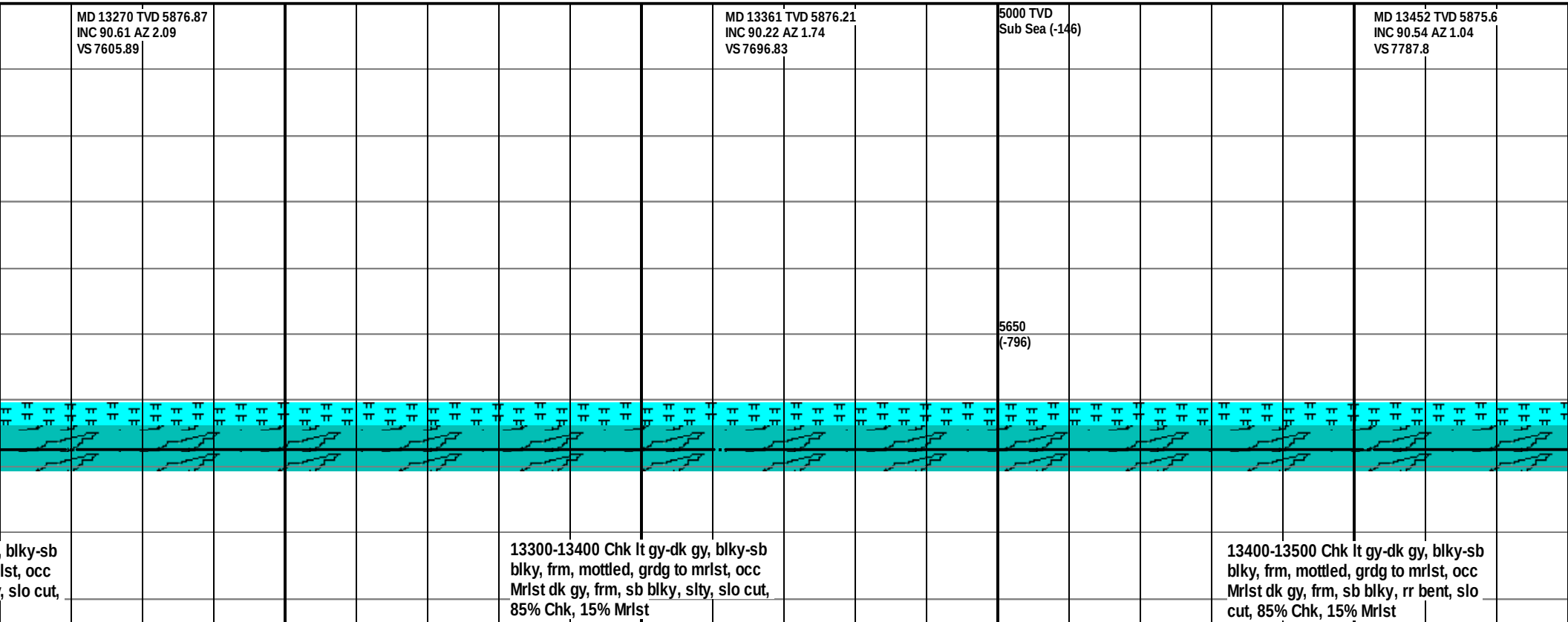
12900-13000 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, rr bent, rr inocs, slo cut, 75% Chk, 25% Mrlst

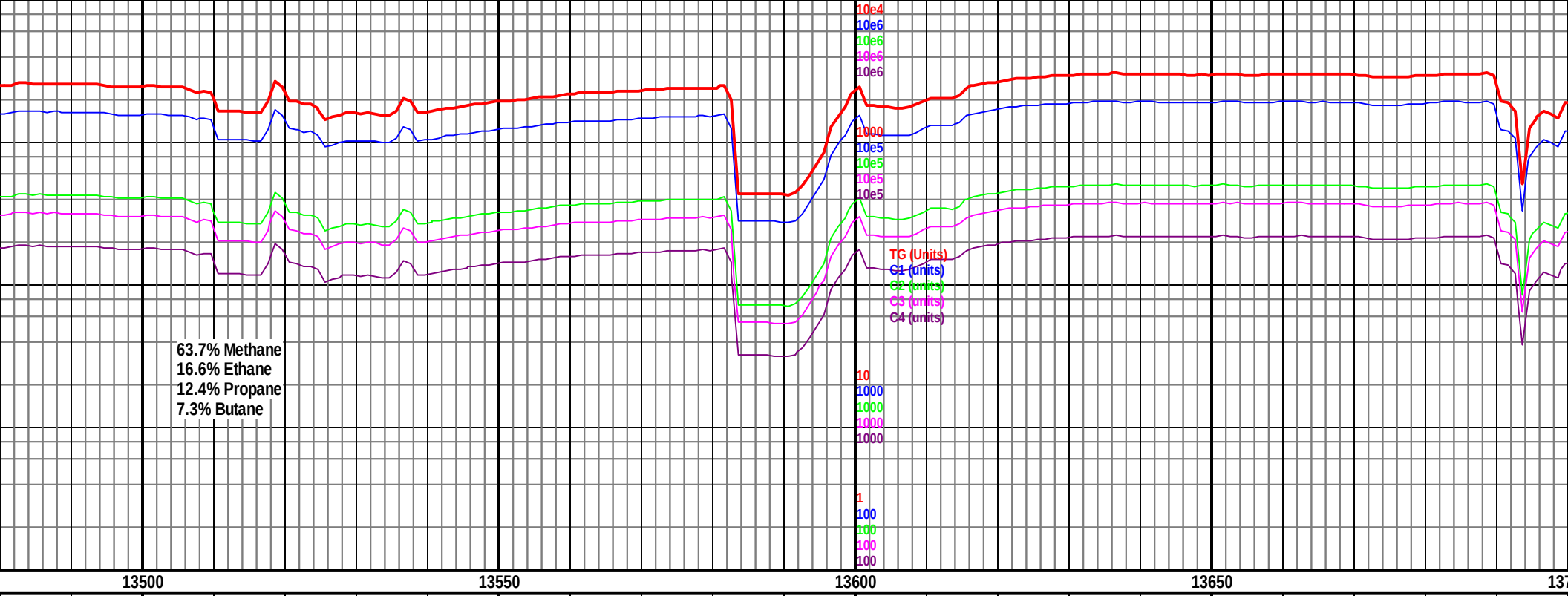
13000-
blky, fr
Mrlst d
inocs,

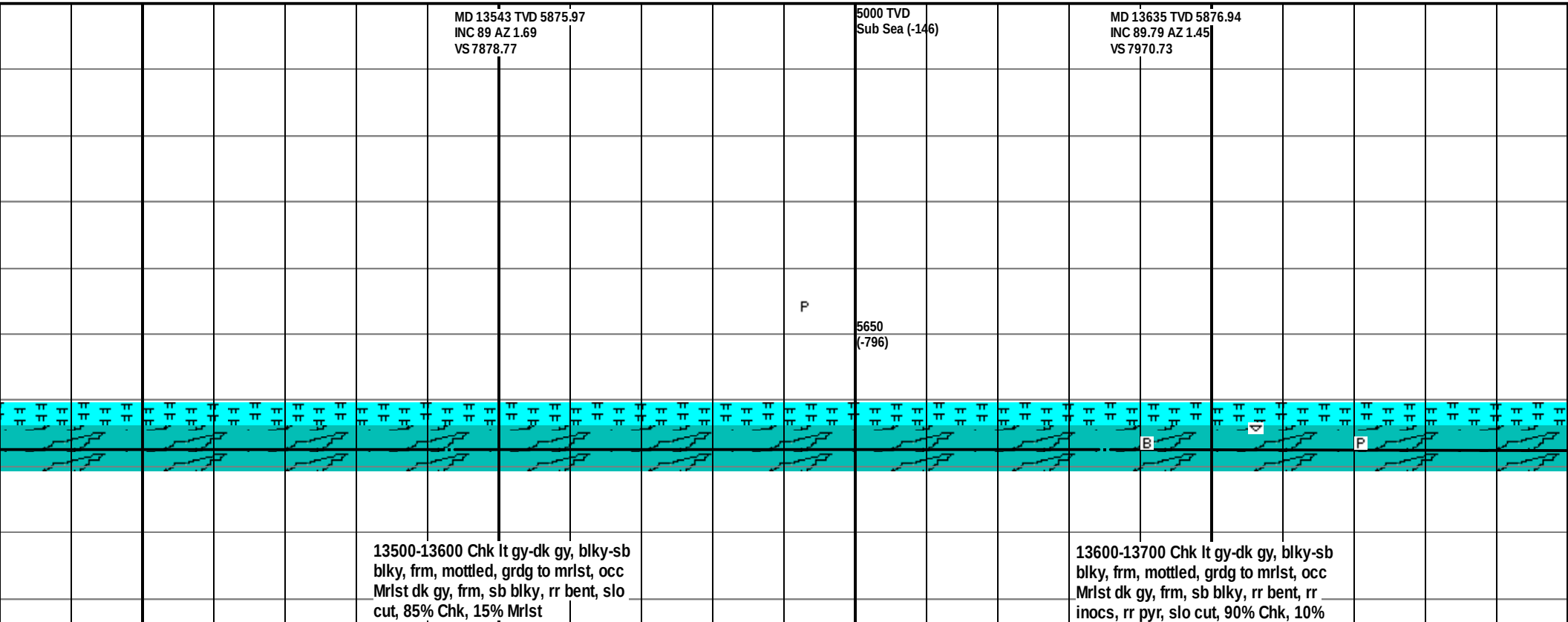

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Wt 9.2
Vis 36
13050
13100
13150
13200
13250

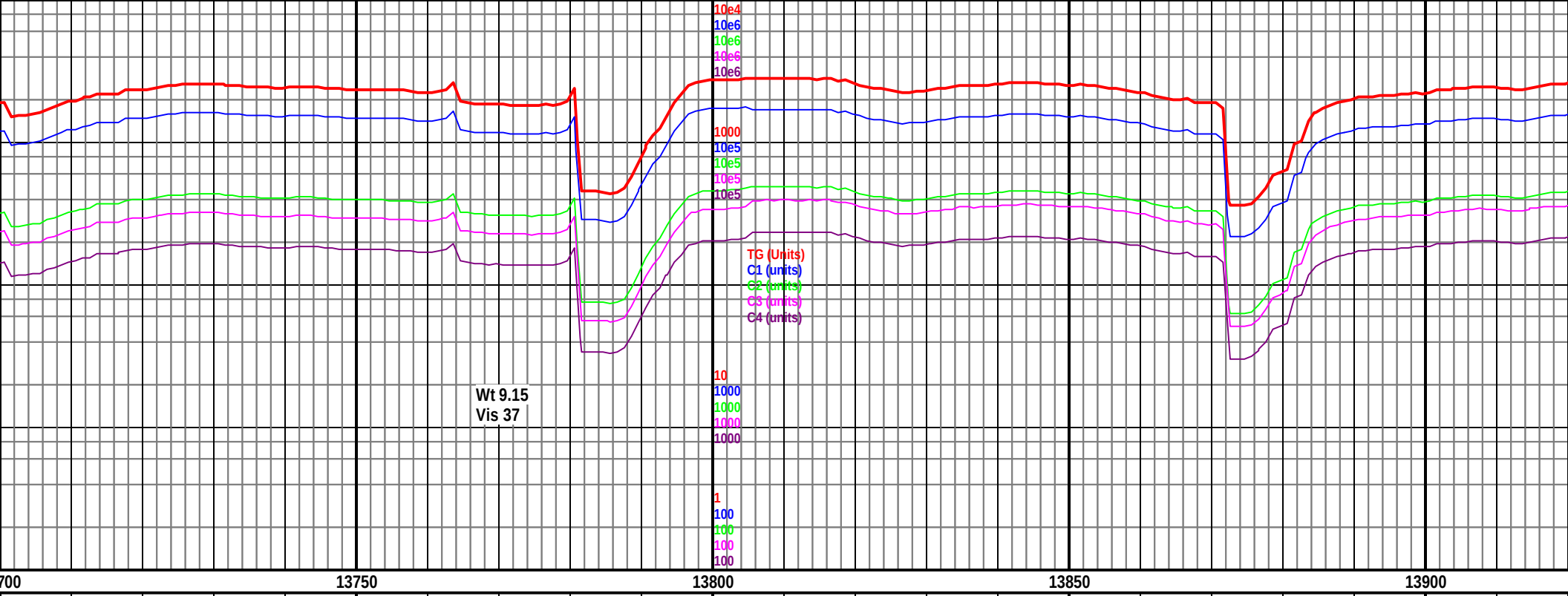

MD 13086 TVD 5884.3
INC 94.43 AZ 0.71
VS 7422.12
MD 13178 TVD 5879.05
INC 92.11 AZ 1.27
VS 7513.95
5000 TVD
Sub Sea (-146)
5650
(-796)
13100 Chk lt gy-dk gy, blky-sb
m, mottled, grdg to mrlst, occ
k gy, frm, sb blky, slty, rr bent, rr
slo cut, 80% Chk, 20% Mrlst
13100-13200 Chk lt gy-dk gy, blky-sb
blky, frm, mottled, grdg to mrlst, occ
Mrlst dk gy, frm, sb blky, slty, rr bent,
slo cut, 85% Chk, 15% Mrlst
13200-13300 Chk lt gy-dk gy,
blky, frm, mottled, grdg to mr
Mrlst dk gy, frm, sb blky, slty
60% Chk, 40% Mrlst

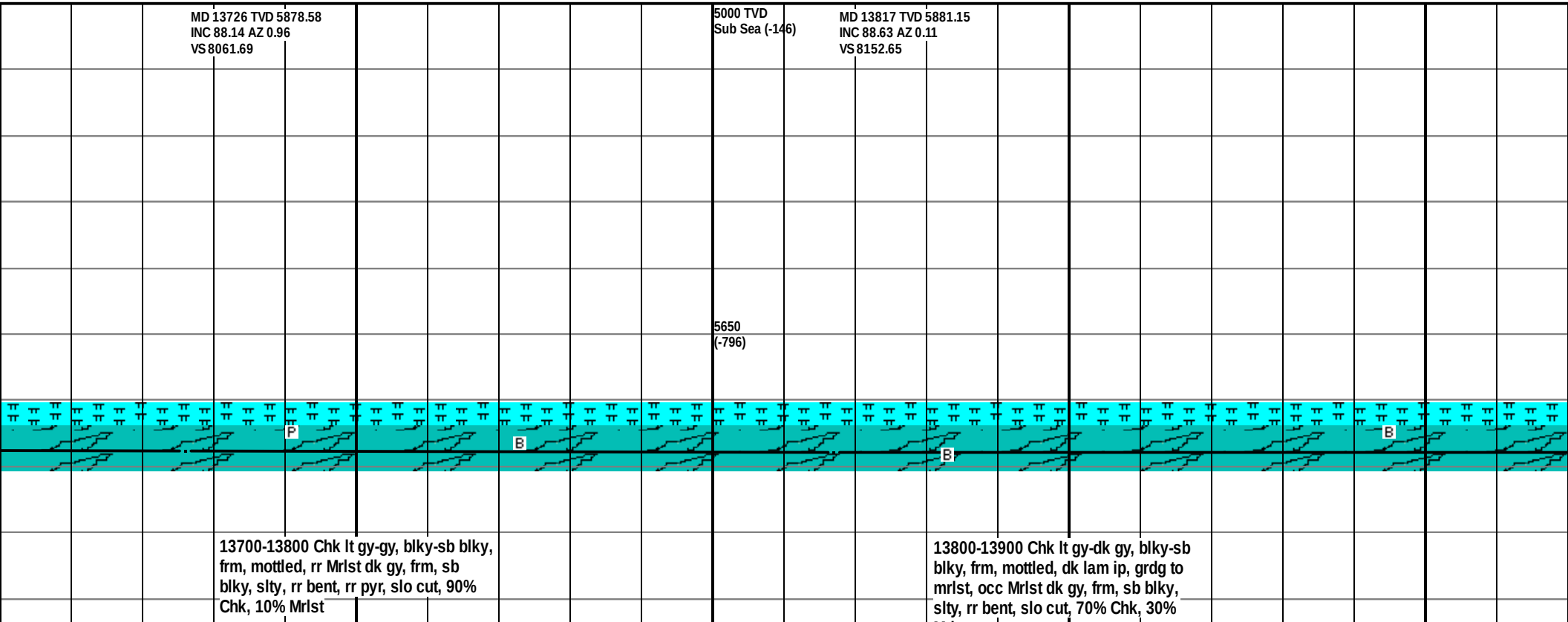

10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
13300
13350
13400
13450

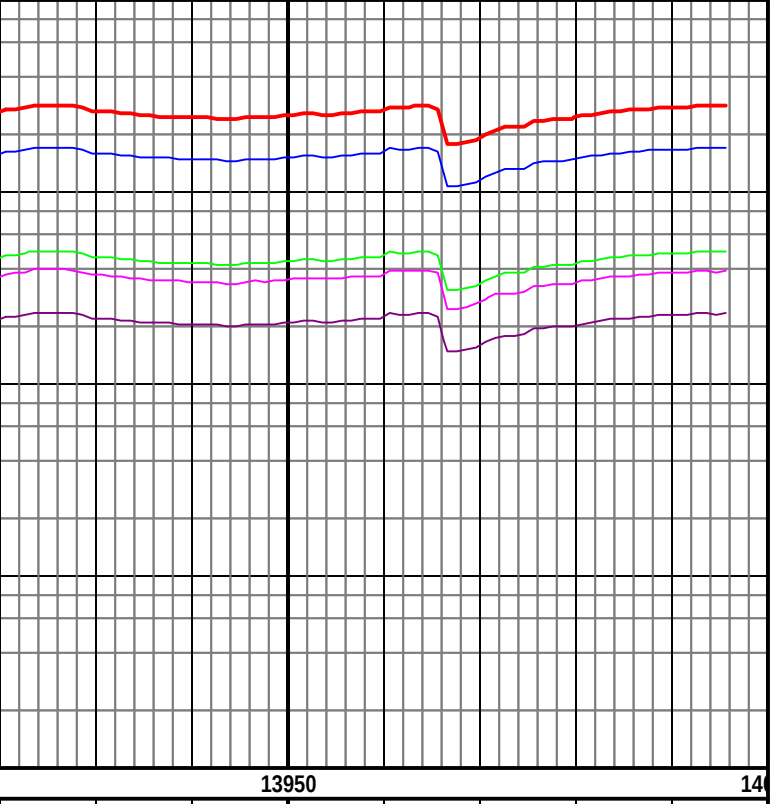

MD 13270 TVD 5876.87
INC 90.61 AZ 2.09
VS 7605.89
MD 13361 TVD 5876.21
INC 90.22 AZ 1.74
VS 7696.83
5000 TVD
Sub Sea (-146)
MD 13452 TVD 5875.6
INC 90.54 AZ 1.04
VS 7787.8
5650
(-796)
, blky-sb
lst, occ
, slo cut,
13300-13400 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, slo cut, 85% Chk, 15% Mrlst
13400-13500 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, rr bent, slo cut, 85% Chk, 15% Mrlst


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
63.7% Methane
16.6% Ethane
12.4% Propane
7.3% Butane
10
1000
1000
1000
1000
1
100
100
100
100
13500
13550
13600
13650


MD 13543 TVD 5875.97
INC 89 AZ 1.69
VS 7878.77
5000 TVD
Sub Sea (-146)
MD 13635 TVD 5876.94
INC 89.79 AZ 1.45
VS 7970.73
P
5650
(-796)
B
P
13500-13600 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, rr bent, slo cut, 85% Chk, 15% Mrlst
13600-13700 Chk lt gy-dk gy, blky-sb blky, frm, mottled, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, rr bent, rr inocs, rr pyr, slo cut, 90% Chk, 10%


10e4
10e6
10e6
10e6
10e6
1000
10e5
10e5
10e5
10e5
TG (Units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10
1000
1000
1000
1000
1
100
100
100
100
Wt 9.15
Vis 37
700
13750
13800
13850
13900


MD 13726 TVD 5878.58
INC 88.14 AZ 0.96
VS 8061.69
5000 TVD
Sub Sea (-146)
MD 13817 TVD 5881.15
INC 88.63 AZ 0.11
VS 8152.65
5650
(-796)
P
B
B
B
13700-13800 Chk lt gy-gy, blky-sb blky, frm, mottled, rr Mrlst dk gy, frm, sb blky, slty, rr bent, rr pyr, slo cut, 90% Chk, 10% Mrlst
13800-13900 Chk lt gy-dk gy, blky-sb blky, frm, mottled, dk lam ip, grdg to mrlst, occ Mrlst dk gy, frm, sb blky, slty, rr bent, slo cut, 70% Chk, 30%


13950
14
MD 13942 TVD 5883.83
INC 88.91 AZ 359.63
VS 8277.62
TD reached 13997' at 16:40
on 10/11/2014
B
13900-13997 Chk lt gy-dk gy, blky-sb
blky, frm, mottled, dk lam ip, grdg to
mrlst, occ Mrlst dk gy, frm, sb blky,
slty, rr bent, slo cut, 70% Chk, 30%