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

Well Name:	Badger 22C-3HZ		
API:	05123364560000		
Location:	Weld County, CO.		
License Number:		Region:	DJ Basin
Spud Date:	2/3/2015	Drilling Completed:	2/13/15
Surface Coordinates:	387' FNL, 1229' FWL, SEC 15, T1N-R68W		
Bottom Hole Coordinates:	2204' FSL, 1500' FWL, SEC 3, T1N-R68W		
Ground Elevation (ft):	5132'	K.B. Elevation (ft):	5157'
Logged Interval (ft):	7414' To: 16288'	Total Depth (ft):	16288'
Formation:	Codell		
Type of Drilling Fluid:	Water Base Mud		

Printed by HORIZONTAL.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Anadarko Petroleum Corporation
Address: 1099 18th Street, Suite 1800
Denver, CO 80202-1918

GEOLOGIST

Name: Kyle Pickard / Walt MacPhee
Company: Great Divide Consulting, Inc.
Address: 11990 North Grant Street, Suite 220
Northglenn, CO 80233

ROCK TYPES

Anhy
Bent
Brec
Cht
Clyst
Coal
Congl
Dol
Gyp
Igne
Lmst
Meta
Mrleb59
Mrlst
Salt
Shale
Shcol
Shgy
Sltst
Ss
Till

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
CryxIn
Earthy
FinexIn
Grainst
Lithogr
MicroxIn
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

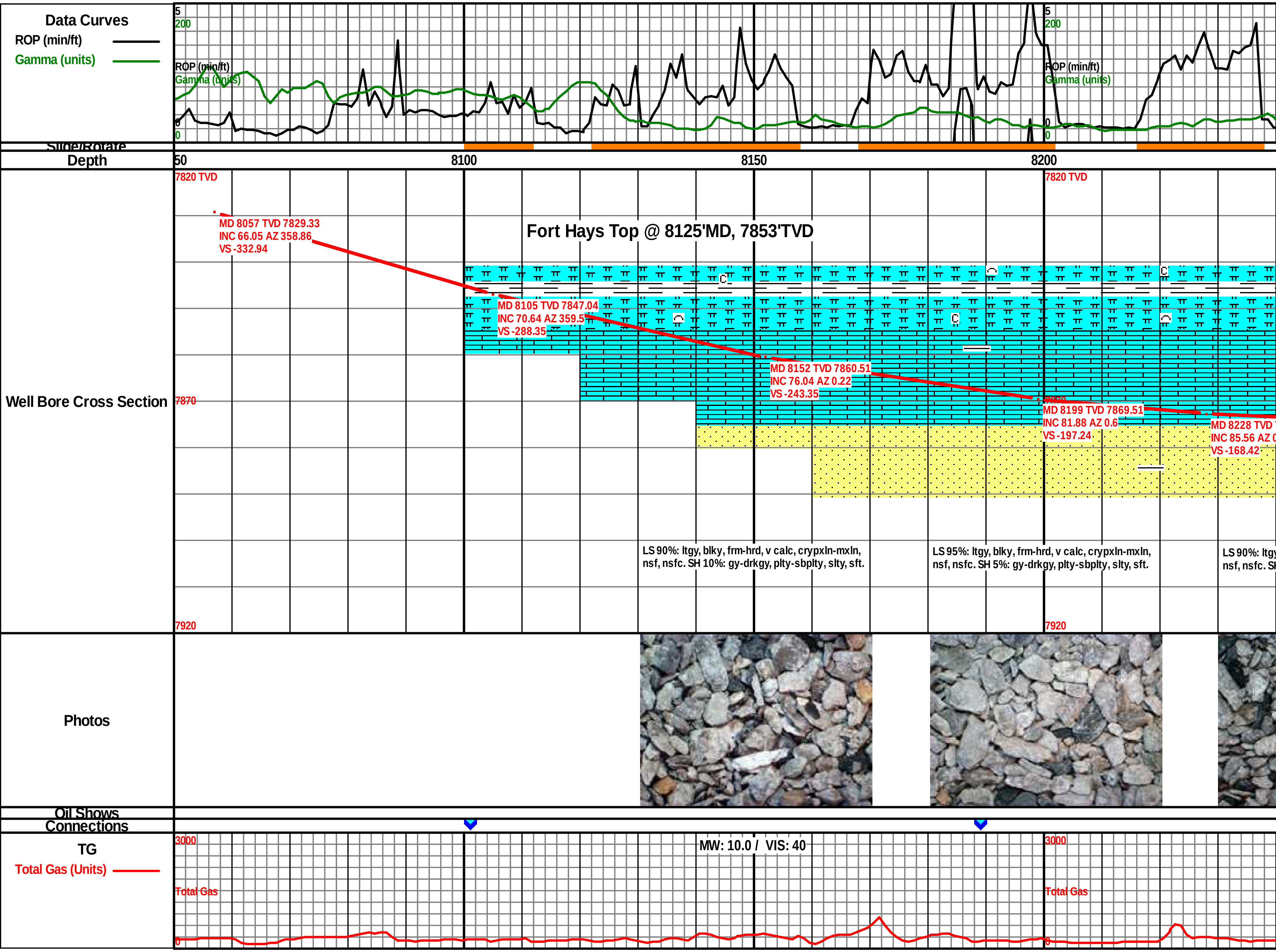
Even
Spotted
Ques
Dead

INTERVAL

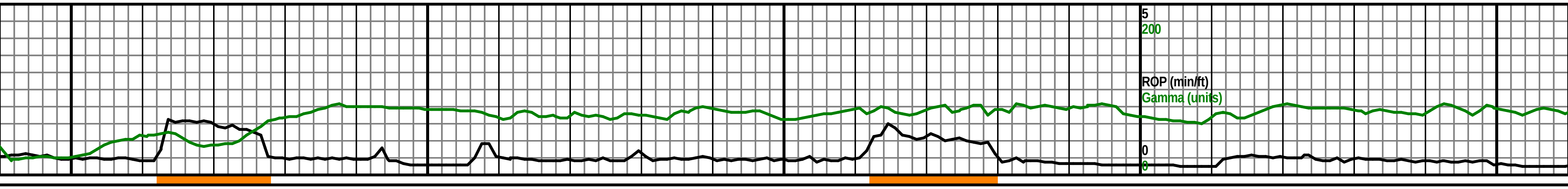
Core
Dst

EVENT

Rft
Sidewall



Data Curves
ROP (min/ft)
Gamma (units)
Slide/Rotate
Depth
8100
8150
8200
Well Bore Cross Section
7820 TVD
7870
7920
MD 8057 TVD 7829.33
INC 66.05 AZ 358.86
VS -332.94
Fort Hays Top @ 8125'MD, 7853'TVD
MD 8105 TVD 7847.04
INC 70.64 AZ 359.5
VS -288.35
MD 8152 TVD 7860.51
INC 76.04 AZ 0.22
VS -243.35
MD 8199 TVD 7869.51
INC 81.88 AZ 0.6
VS -197.24
MD 8228 TVD
INC 85.56 AZ 0
VS -168.42
LS 90%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 10%: gy-drkgy, plty-sbplty, slty, sft.
LS 95%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 5%: gy-drkgy, plty-sbplty, slty, sft.
LS 90%: ltgy
nsf, nsfc. SH
Photos
Oil Shows
Connections
TG
Total Gas (Units)
3000
Total Gas
MW: 10.0 / VIS: 40



8250 8300 8350 8400 8450

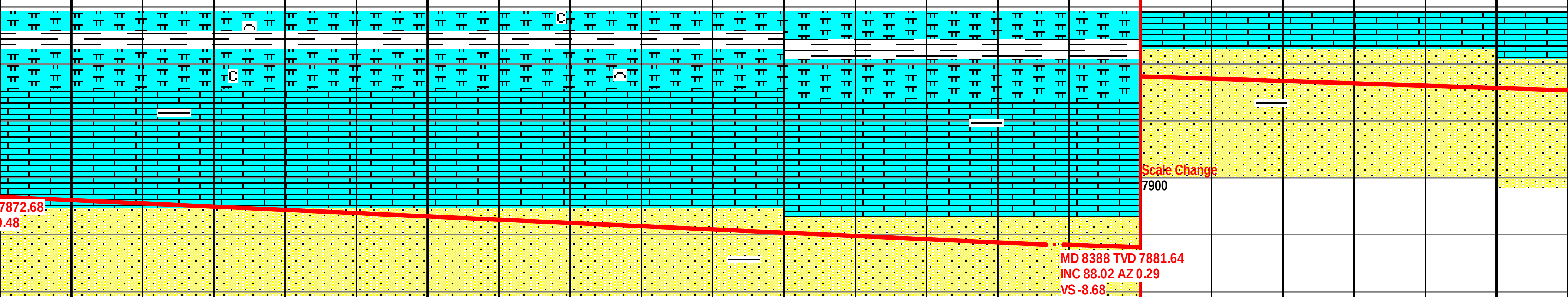
7850 TVD

Curve TD of 8293'MD achieved @ 11:17am 2/5/15. T.O.O.H. for intermediate casing.

B.O.B. and drilling ahead @ 7:18AM 2/7/15

Target: 7882' TVD @ 0' VS w/ 89.72° inclination
Drilling window: 5' up / 5' down

Codell Top @ 8266'MD, 7875'TVD

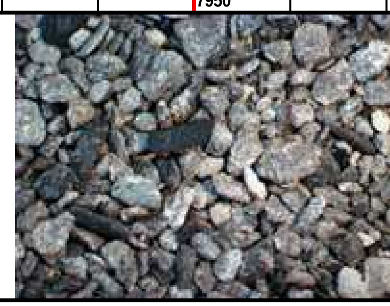


y, blky, frm-hrd, v calc, crypxln-mxln, H 10%: gy-drkgy, plty-sbplty, slty, sft.

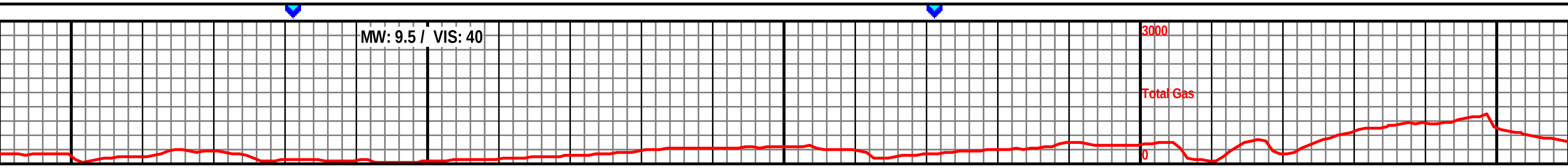
SS 60%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, fri, nsf, mod str wh cut. LS 25%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15%; gy-dkgy, sply-sbblky, slty, grty, sft.

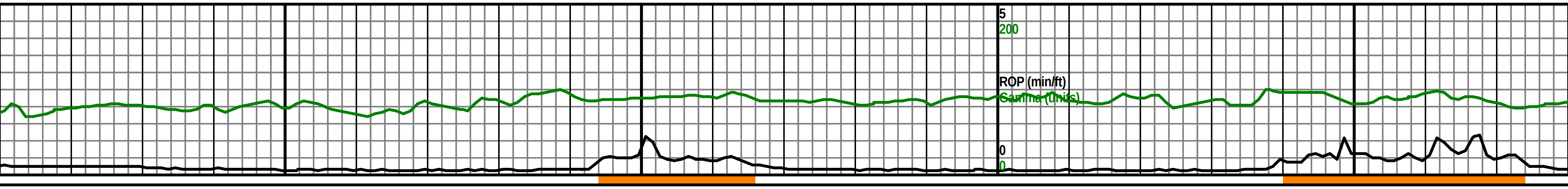
SS 70%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 20%; gy-dkgy, sply-sbblky, slty, grty, sft. LS 10%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc.

7950

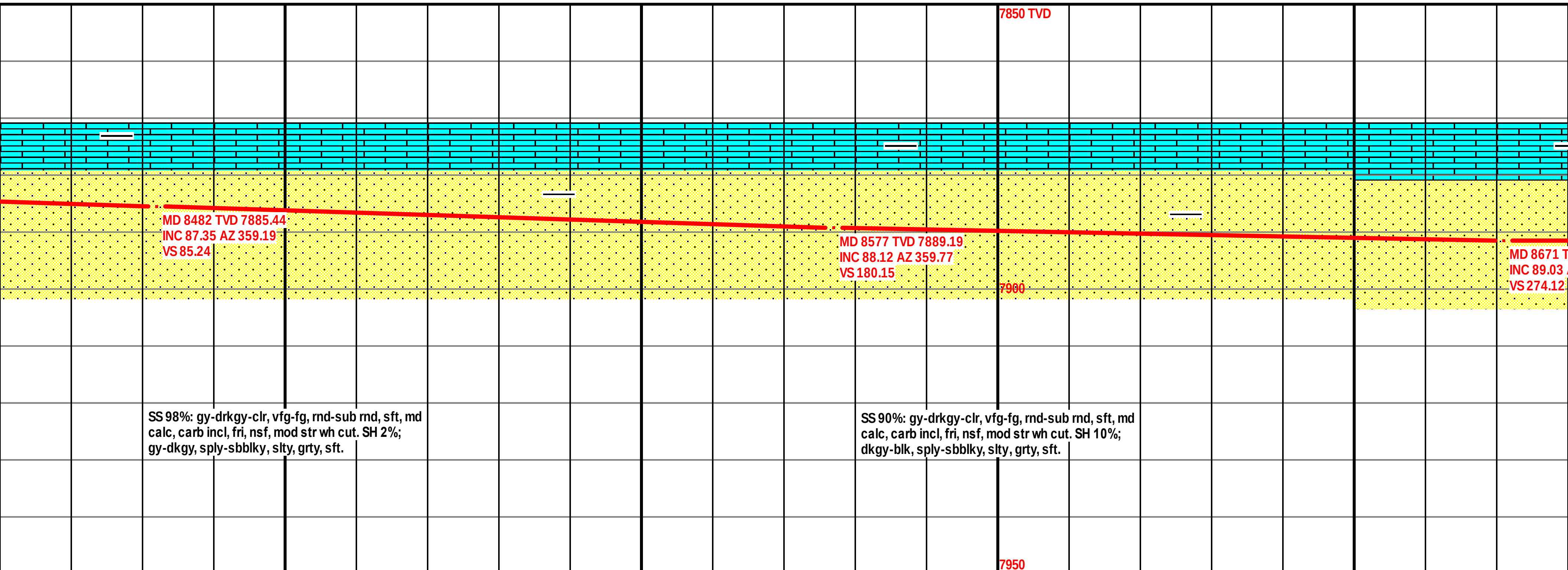


MW: 9.5 / VIS: 40



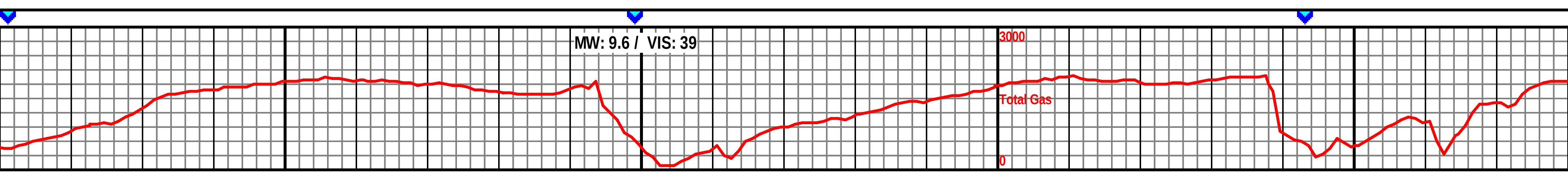


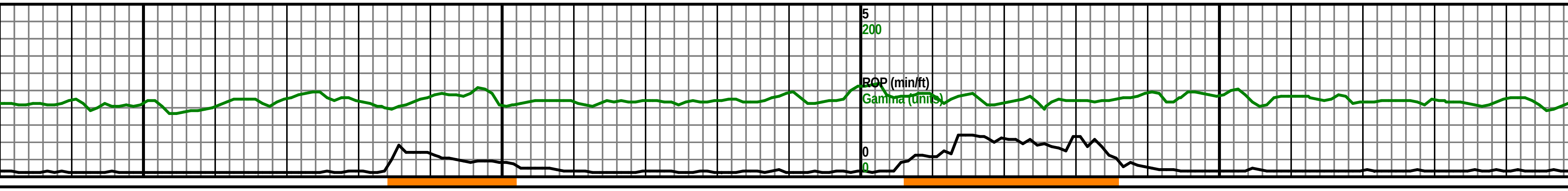
8500 8550 8600 8650



SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 2%; gy-dkgy, sply-sbblky, slty, grty, sft.

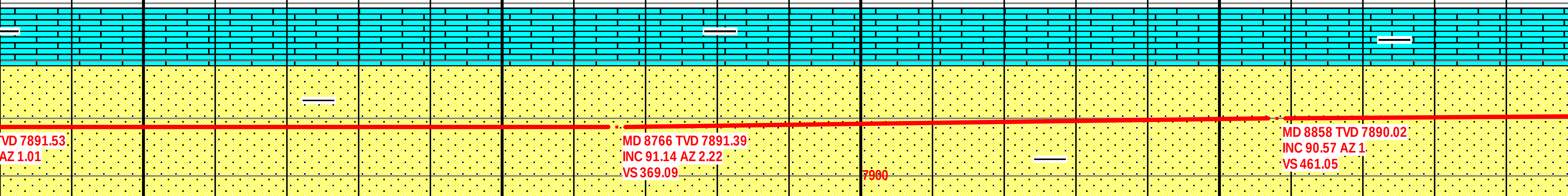
SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; dkgy-blk, sply-sbblky, slty, grty, sft.





8700 8750 8800 8850 89

7850 TVD

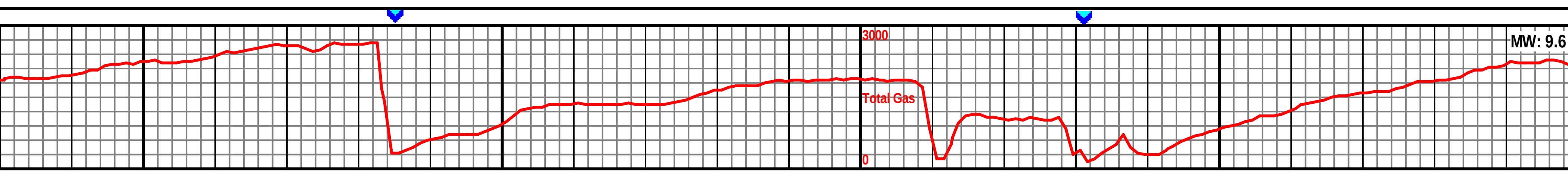


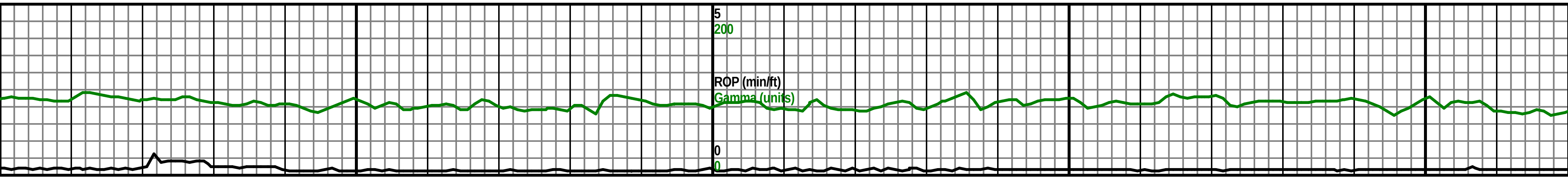
SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 90%: gy-drkgy-clr, vf calc, carb incl, fri, nsf, m dkgy-blk, sply-sbblky, sl

7950





00 | 8950 | 9000 | 9050 | 9100

7850 TVD

MD 8949 TVD 7889.27
INC 90.37 AZ 1
VS 552.04

MD 9041 TVD 7888.82
INC 90.2 AZ 0.41
VS 644.04

7900

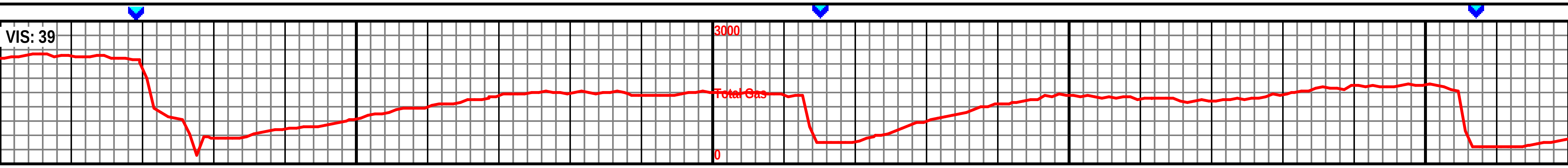
g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 10%;
lty, grty, sft.

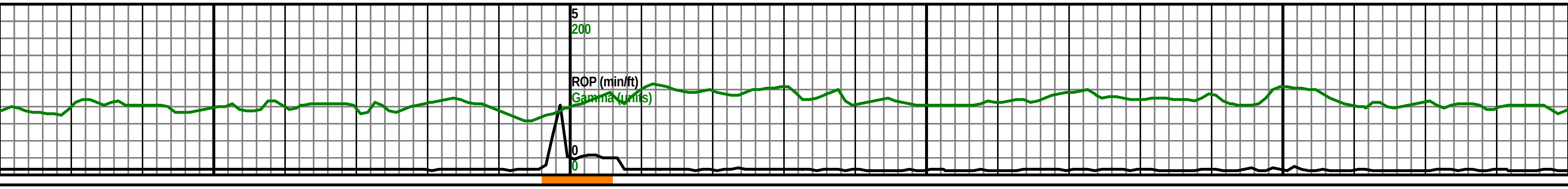
SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 2%;
gy-dkgy, sply-sbblky, slty, grty, sft.

SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 2%;
gy-dkgy, sply-sbblky, slty, grty, sft.

7950

VIS: 39





9150 9200 9250 9300

7850 TVD

MD 9132 TVD 7888.76
INC 89.87 AZ 0.5
VS 735.04

MD 9224 TVD 7888.33
INC 90.67 AZ 0.59
VS 827.04

MD 9315 TVD 7887.05
INC 90.94 AZ 0.69
VS 918.03

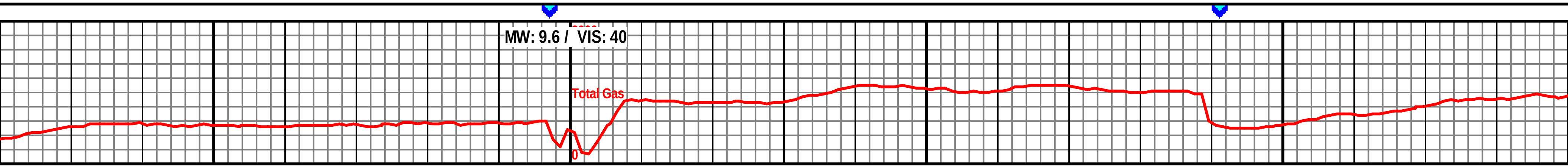
7900

SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

7950

MW: 9.6 / VIS: 40



5
200
ROP (min/ft)
Gamma (units)
0
0

9350 9400 9450 9500 9550

7850 TVD

MD 9406 TVD 7885.59
INC 90.91 AZ 0.93
VS 1009.01

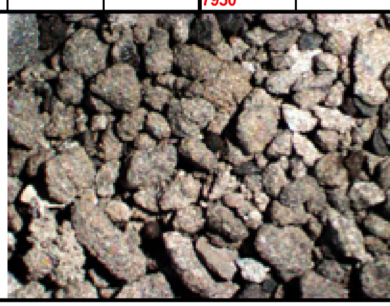
MD 9497 TVD 7886.49
INC 87.95 AZ 0.1
VS 1100

7900

SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 3%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 67%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. LS 30%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc.SH 3%; dkgy-blk, sply-sbblky, slty, grty, sft.

7950



3000
Total Gas
0

5
200

ROP (min/ft)
Gamma (units)

0
0

9600 9650 9700 9750

7850 TVD

MD 9588 TVD 7890.22
INC 87.35 AZ 359.94
VS 1190.92

7900

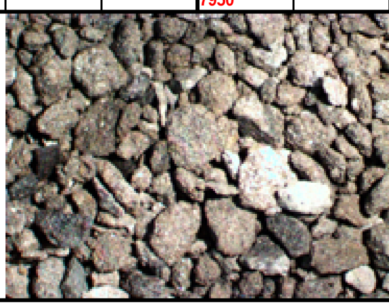
MD 9677 TVD 7893.53
INC 88.39 AZ 0.46
VS 1279.85

MD 9768 TVD
INC 88.96 AZ 3
VS 1370.83

SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. LS 2%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc.SH 1%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 96%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 4%; dkgy-blk, sply-sbblky, slty, grty, sft.

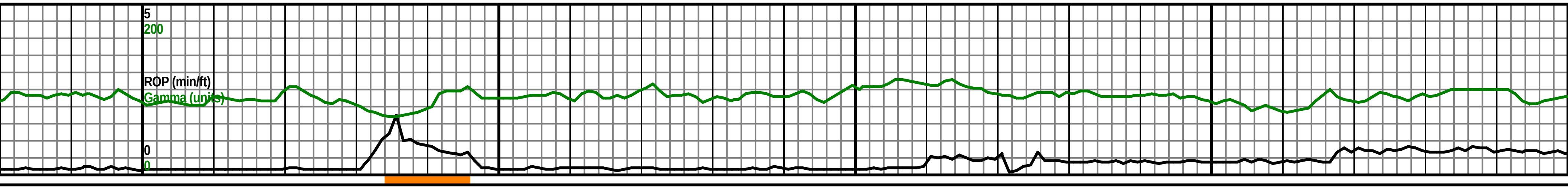
7950



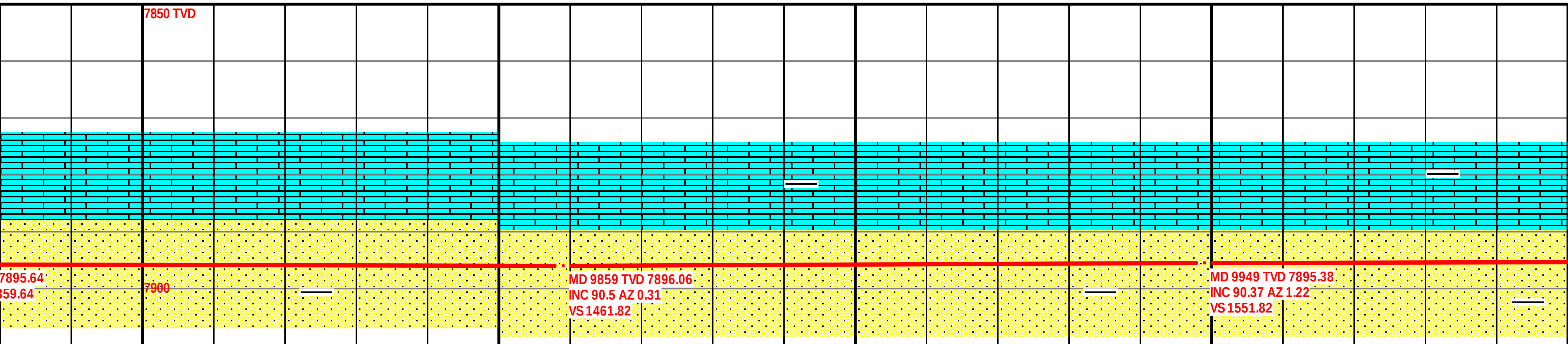
3000

Total Gas

0



9800 9850 9900 9950 100

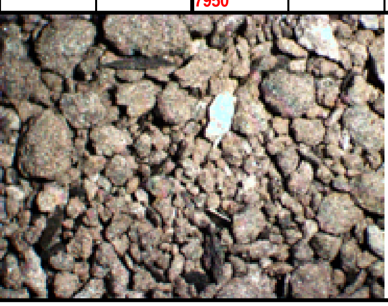


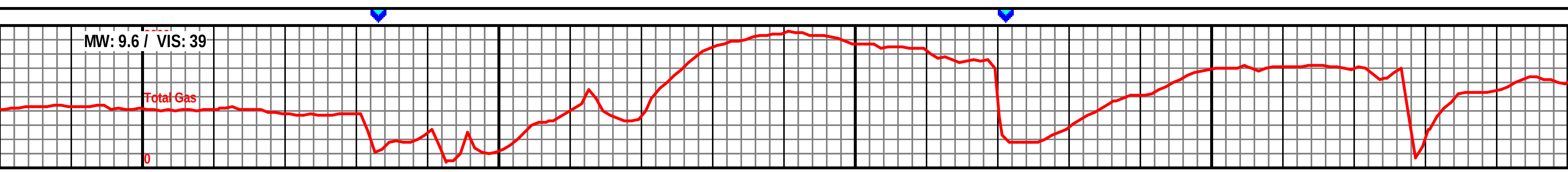
SS 99%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 1%; dkgy-blk, sply-sbblky, slty, grty, sft.

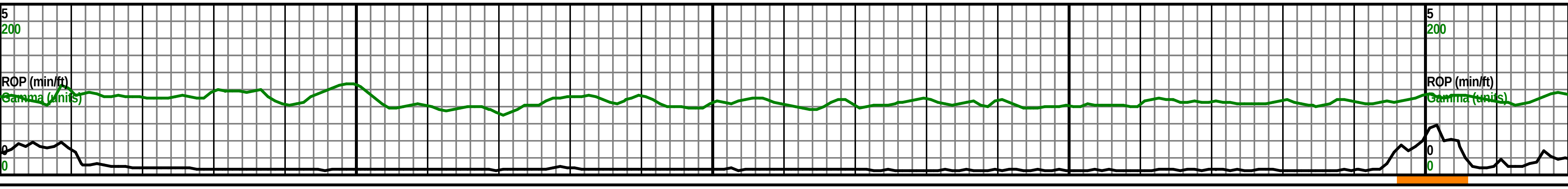
SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 2%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 95%: gy-drkgy-clr, vf
calc, carb incl, fri, nsf, m
dkgy-blk, sply-sbblky, sl

7950







000 10050 10100 10150 10200

7850 TVD

MD 10039 TVD 7895.19
INC 89.87 AZ 0.72
VS 1641.81

MD 10130 TVD 7894.77
INC 90.67 AZ 1.8
VS 1732.79

7900

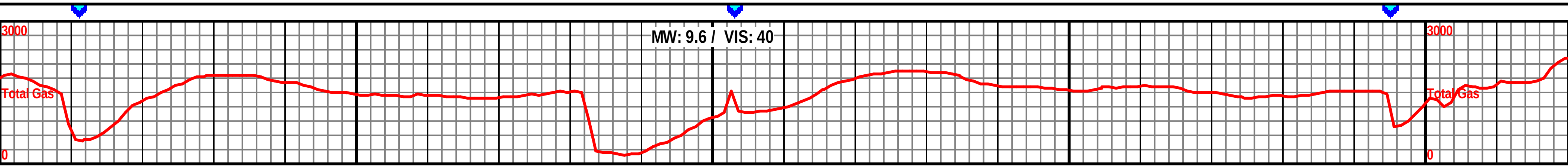
g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 5%;
ty, grty, sft.

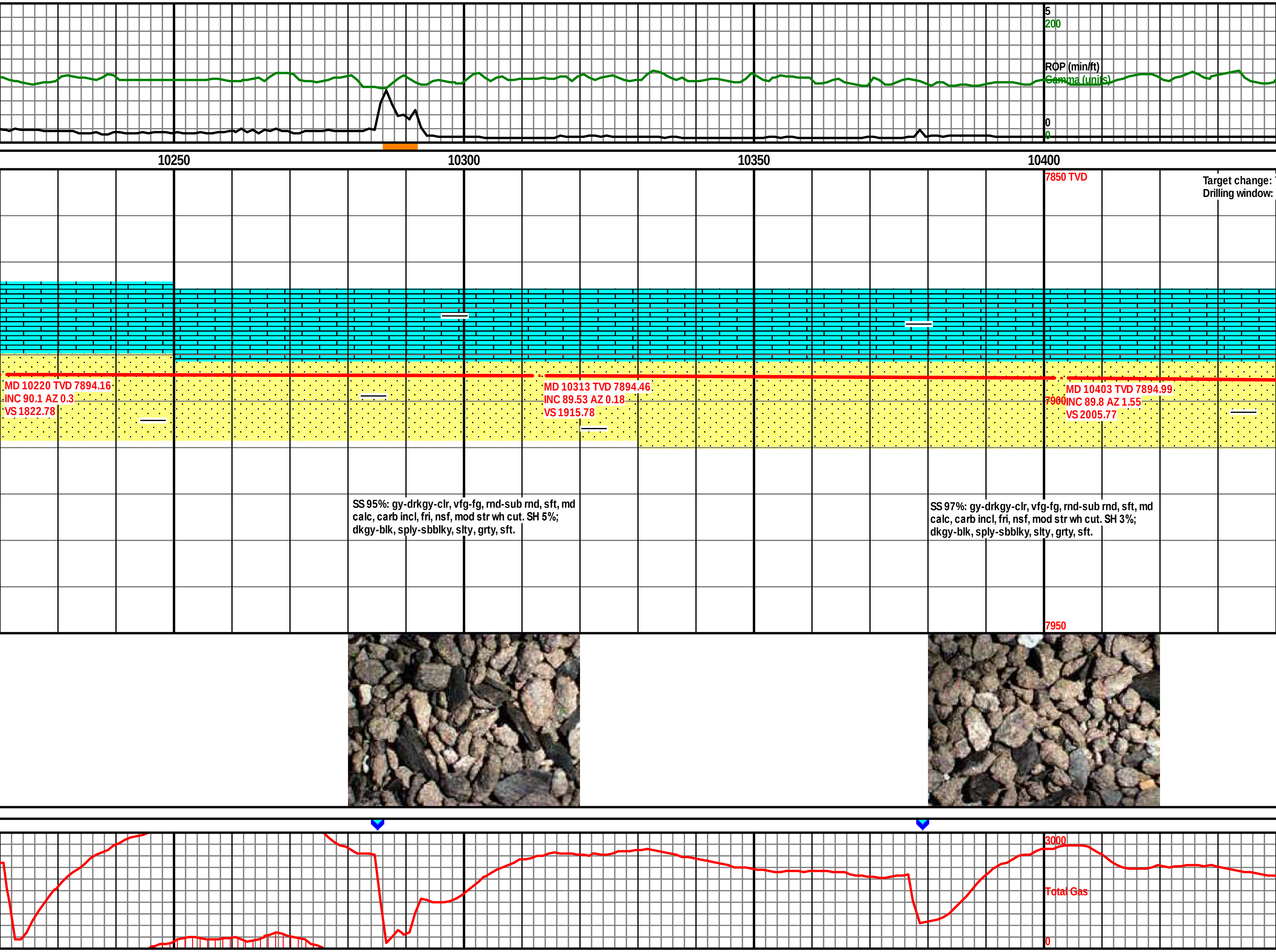
SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 3%;
dkgy-blk, sply-sbblky, slty, grty, sft.

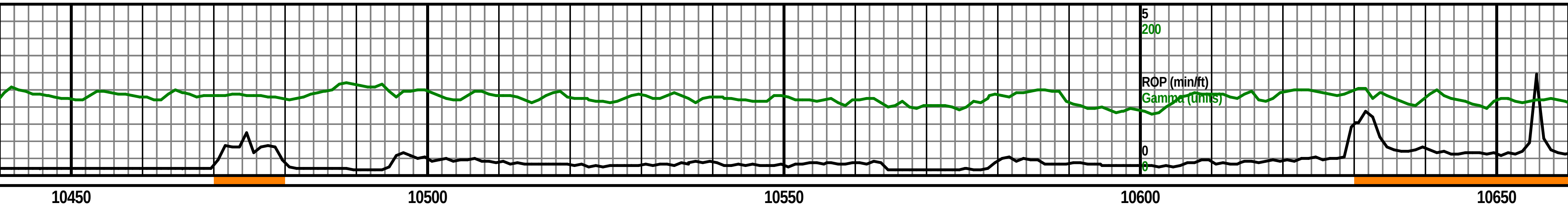
SS 99%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 1%;
dkgy-blk, sply-sbblky, slty, grty, sft.

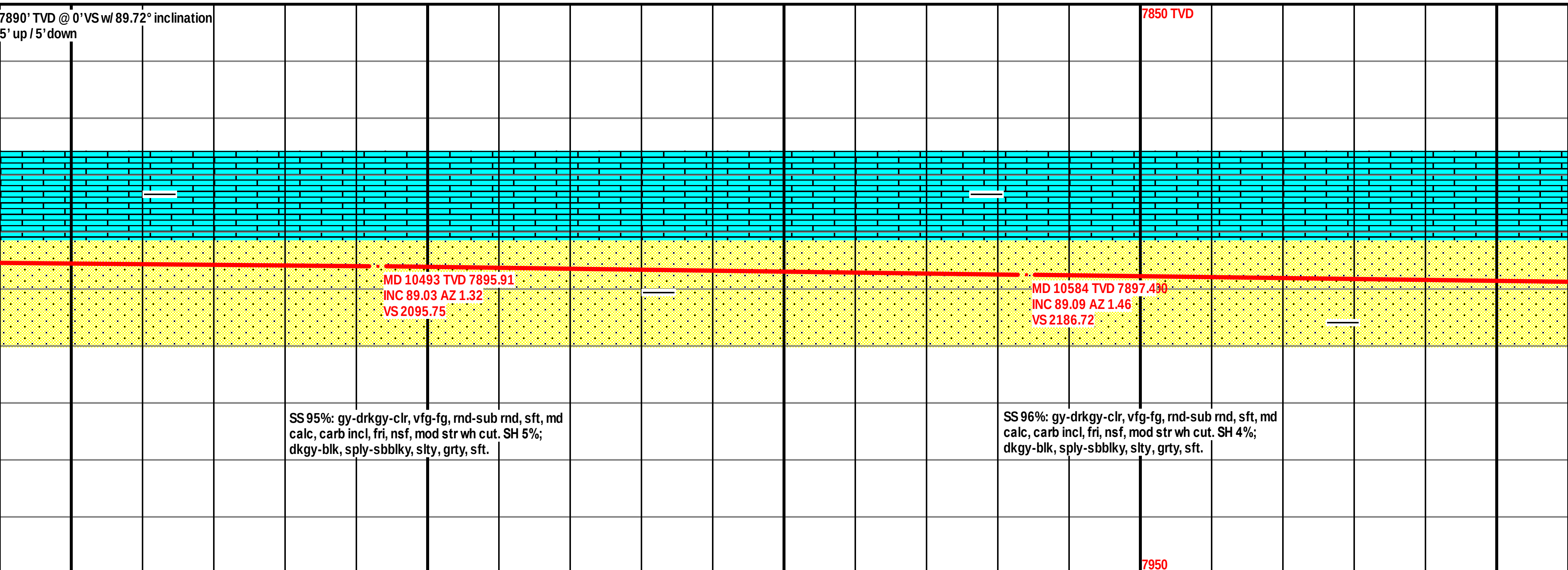
7950

MW: 9.6 / VIS: 40



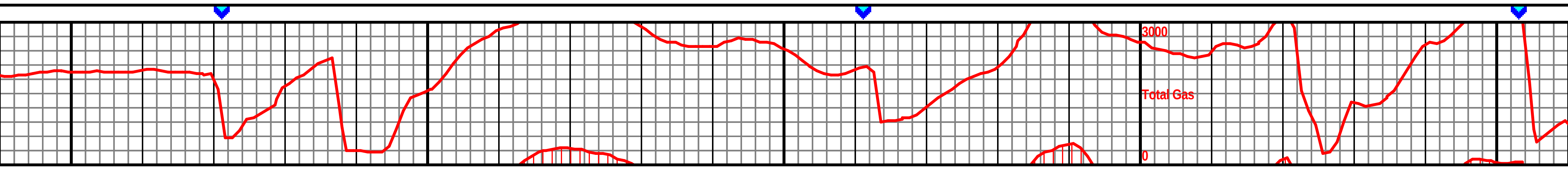

5
200
ROP (min/ft)
Gamma (units)
0
0
10250
10300
10350
10400
7850 TVD
Target change:
Drilling window:
MD 10220 TVD 7894.16
INC 90.1 AZ 0.3
VS 1822.78
MD 10313 TVD 7894.46
INC 89.53 AZ 0.18
VS 1915.78
7900
MD 10403 TVD 7894.99
INC 89.8 AZ 1.55
VS 2005.77
SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.
SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 3%; dkgy-blk, sply-sbblky, slty, grty, sft.
7950
3000
Total Gas
0

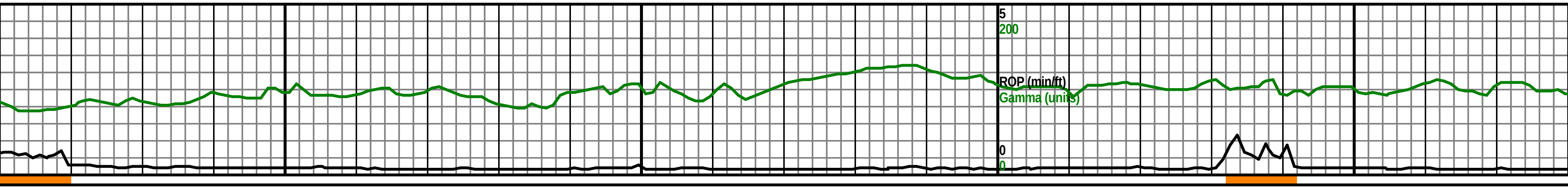




SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 96%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 4%; dkgy-blk, sply-sbblky, slty, grty, sft.





10700 10750 10800 10850

7850 TVD

MD 10678 TVD 7898.92
INC 89.06 AZ 0.24
VS 2280.71

7900

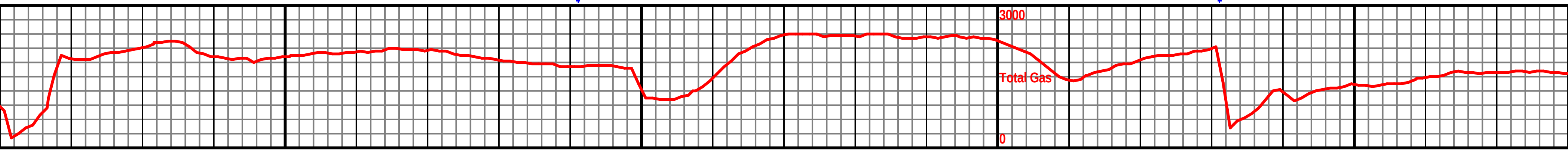
MD 10772 TVD 7900.71
INC 88.76 AZ 359.84
VS 2374.69

MD 10867 TVD
INC 89.46 AZ 35
VS 2469.67

SS 85%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 15%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; dkgy-blk, sply-sbblky, slty, grty, sft.

7950



5
200
ROP (min/ft)
Gamma (units)
0
0

10900 10950 11000 11050 111

7850 TVD

7900

7902.18
59.51

MD 10961 TVD 7902.9
INC 89.66 AZ 0.05
VS 2563.66

MD 11056 TVD 7903.76
INC 89.3 AZ 359.08
VS 2658.65

SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; dkgy-blk, sply-sbblky, slty, grty, sft.

SS 90%: gy-drkgy-clr, vf
calc, carb incl, fri, nsf, m
dkgy-blk, sply-sbblky, sl

7950

3000
Total Gas
0
MW: 9.6 / V

5
200
ROP (min/ft)
Gamma (units)
0
0

100 11150 11200 11250 11300

7850 TVD

7900

MD 11150 TVD 7904.48
INC 89.83 AZ 359.91
VS 2752.63

MD 11244 TVD 7904.94
INC 89.6 AZ 0.46
VS 2846.63

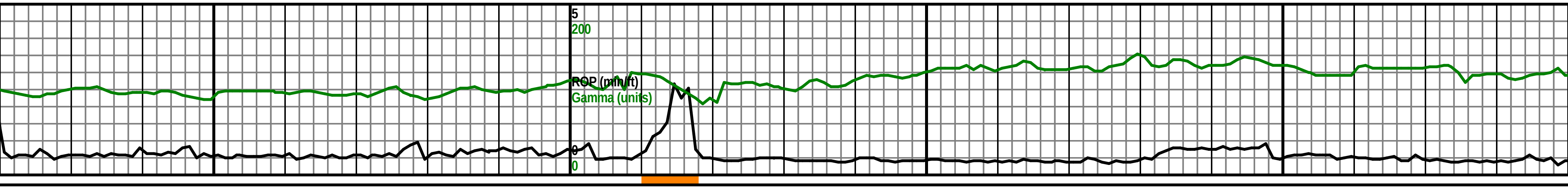
g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 10%;
ty, grty, sft.

SH 90%; blk, sply-sbblky, slty, grty, hrd. SS 10%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.

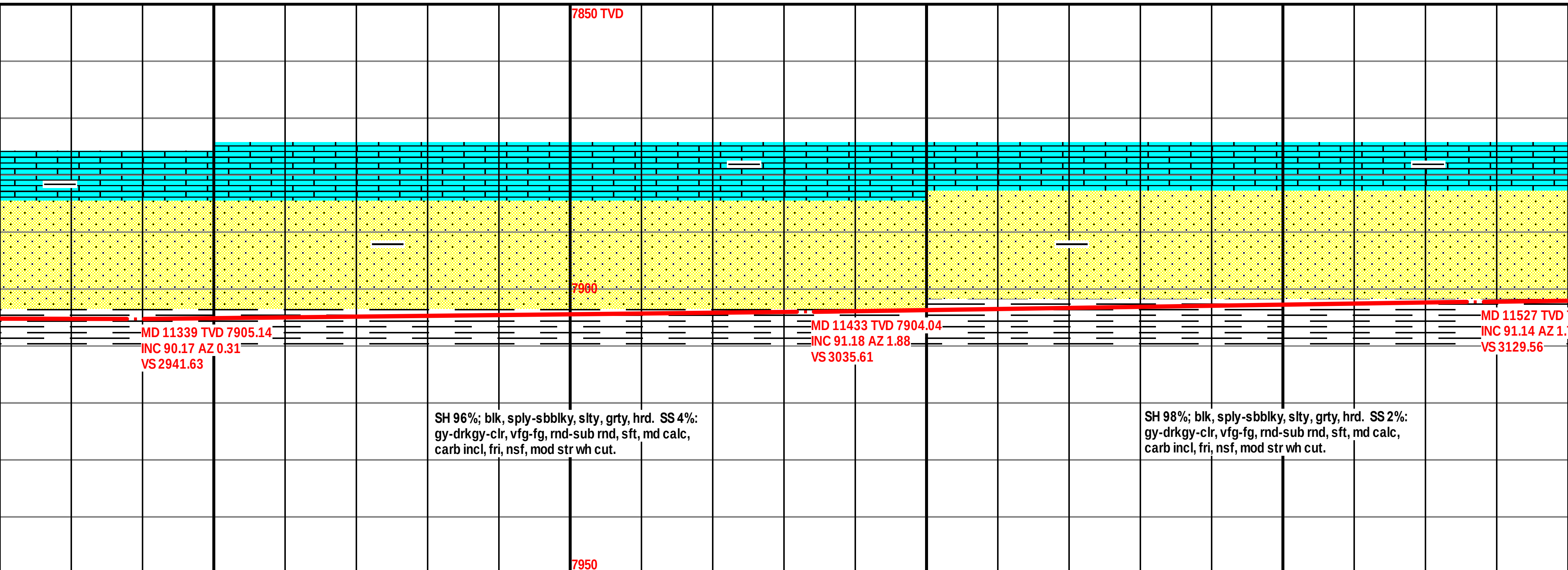
SH 96%; blk, sply-sbblky, slty, grty, hrd. SS 4%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.

7950

VIS: 39
3000
Total Gas
0

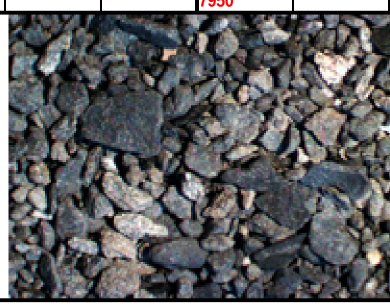


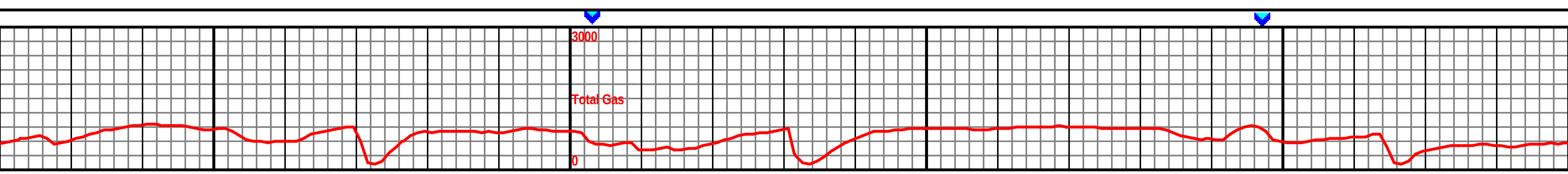
11350 11400 11450 11500

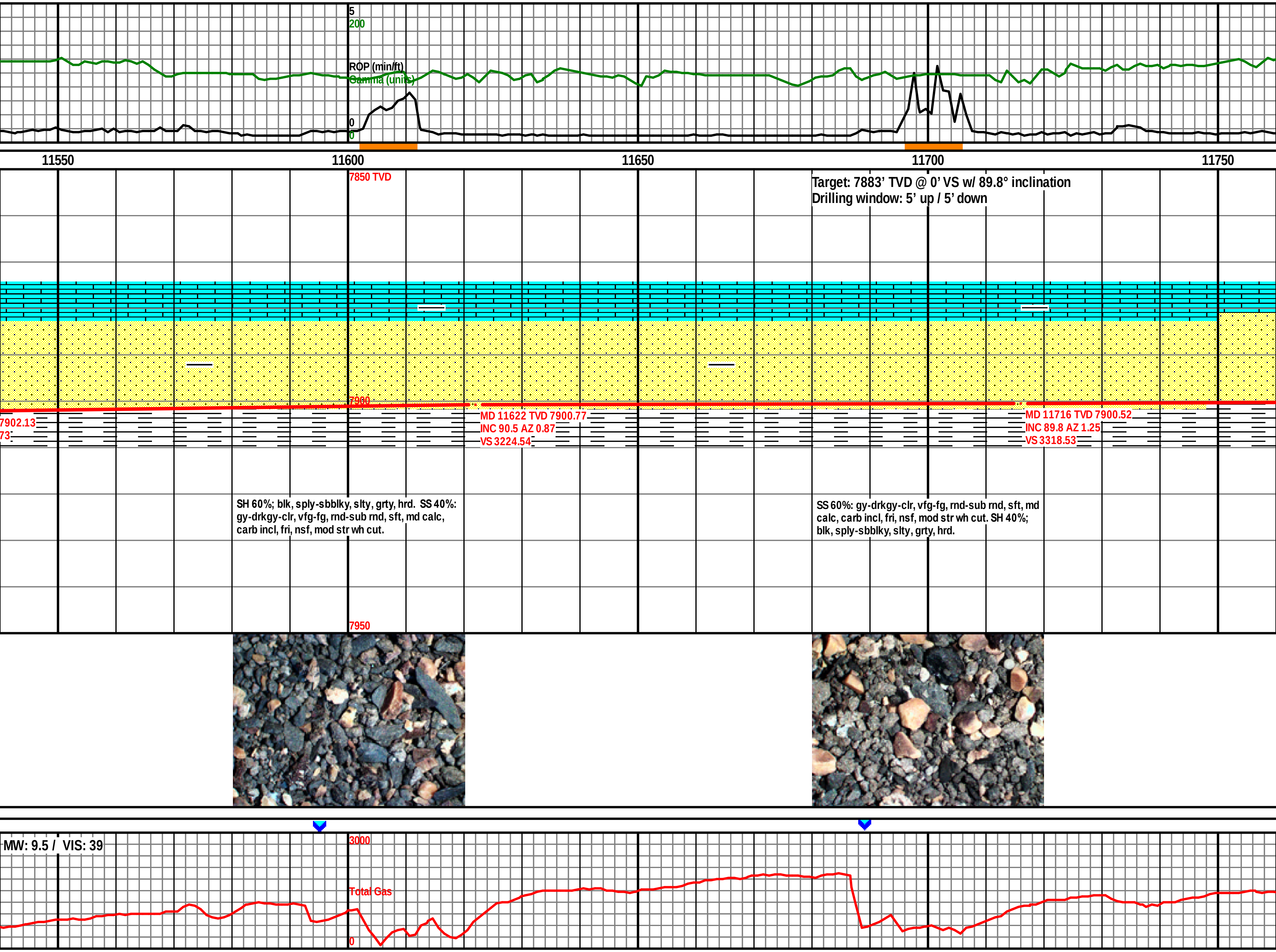


SH 96%; blk, sply-sbblky, slty, grty, hrd. SS 4%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.

SH 98%; blk, sply-sbblky, slty, grty, hrd. SS 2%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.






5
200
ROP (min/ft)
Gamma (units)
0
0
11550
11600
11650
11700
11750
7850 TVD
Target: 7883’ TVD @ 0’ VS w/ 89.8° inclination
Drilling window: 5’ up / 5’ down
7900
7902.13
73
MD 11622 TVD 7900.77
INC 90.5 AZ 0.87
VS 3224.54
MD 11716 TVD 7900.52
INC 89.8 AZ 1.25
VS 3318.53
SH 60%; blk, sply-sbblky, slty, grty, hrd. SS 40%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.
SS 60%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 40%; blk, sply-sbblky, slty, grty, hrd.
7950
MW: 9.5 / VIS: 39
3000
Total Gas
0

5
200
ROP (min/ft)
Gamma (units)
0
0

11800 11850 11900 11950

7850 TVD

7900

MD 11811 TVD 7899.94
INC 90.91 AZ 0.92
VS 3413.52

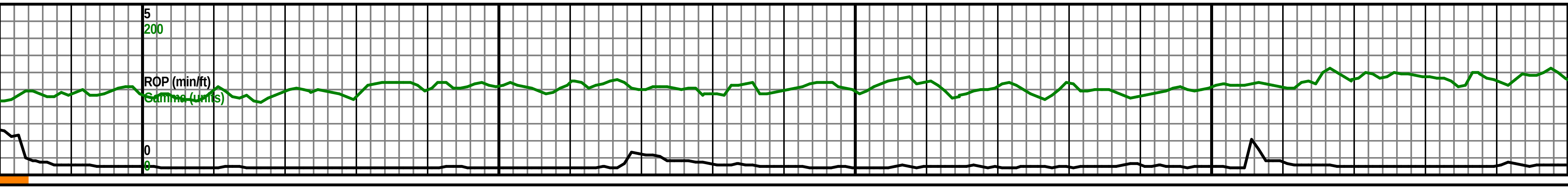
MD 11905 TVD 7898.28
INC 91.11 AZ 0
VS 3507.5

SH 90%; blk, sply-sbblky, slty, grty, hrd. SS 10%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut.

SS 70%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 30%; blk, sply-sbblky, slty, grty, hrd.

7950

3000
MW: 9.6 / VIS: 41
MW: 9.6 / VIS: 40
Total Gas
0



12000 12050 12100 12150 122

7850 TVD

Target: 7890' TVD @ 0'
Drilling window: 5' up /

MD 11999 TVD 7896.77
INC 90.74 AZ 358.41
VS 3601.47

MD 12094 TVD 7895.74
INC 90.5 AZ 359.03
VS 3696.42

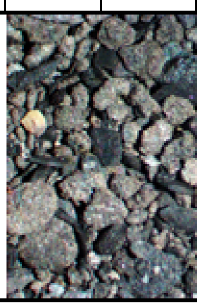
MD 12188 TVD
INC 90.77 AZ 3
VS 3790.39

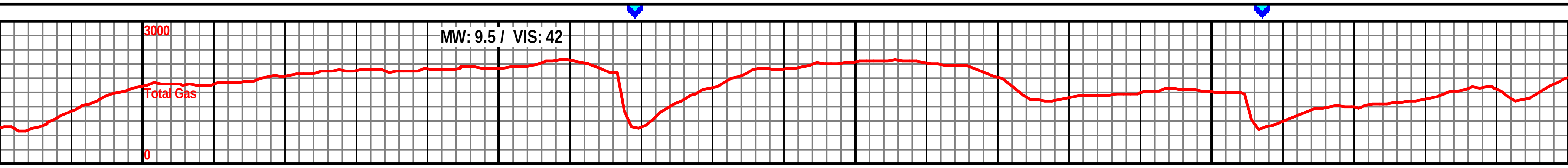
SS 80%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 20%; blk, sply-sbblky, slty, grty, hrd.

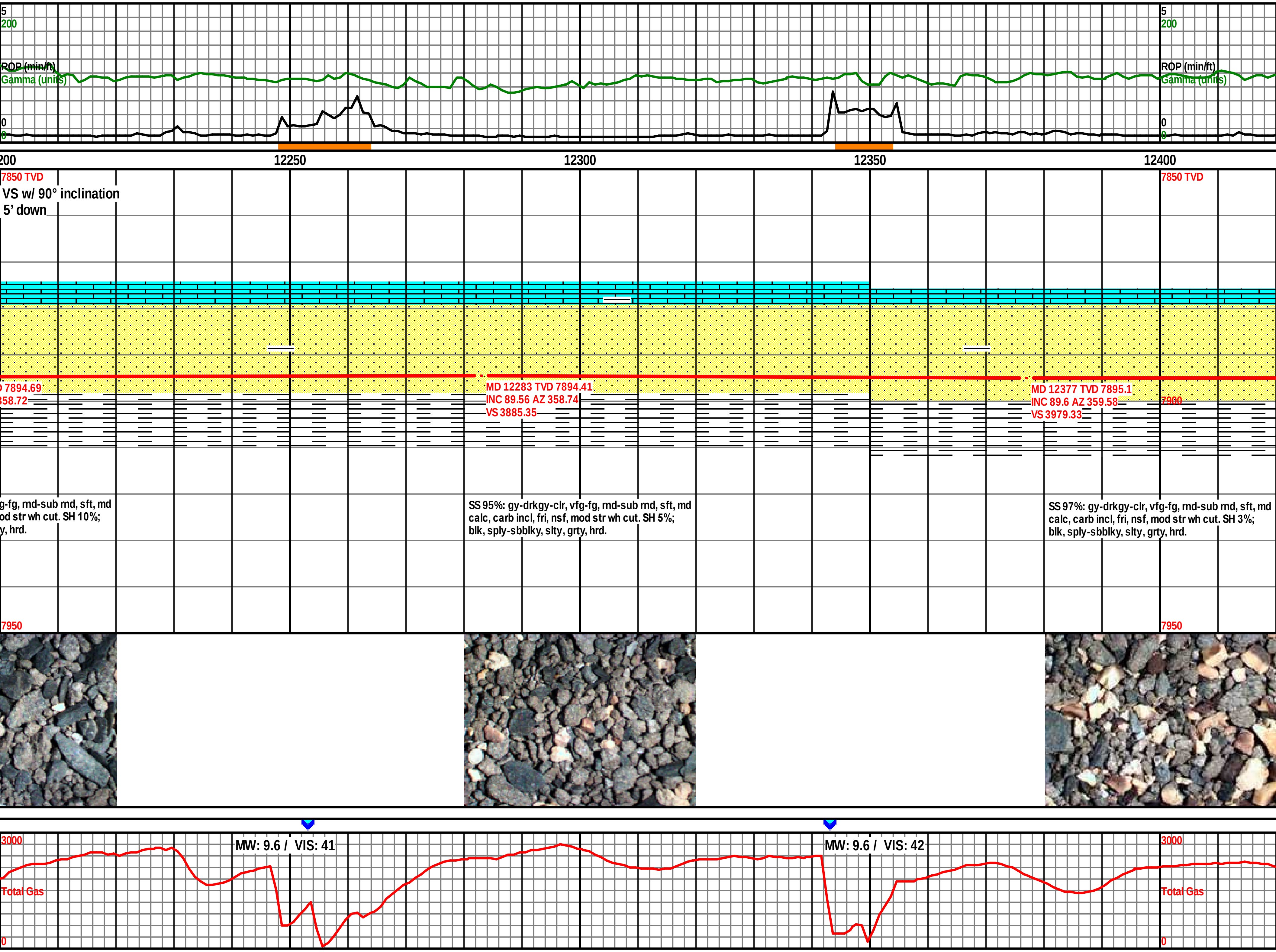
SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; blk, sply-sbblky, slty, grty, hrd.

SS 90%: gy-drkgy-clr, vfg
calc, carb incl, fri, nsf, m
blk, sply-sbblky, slty, grt

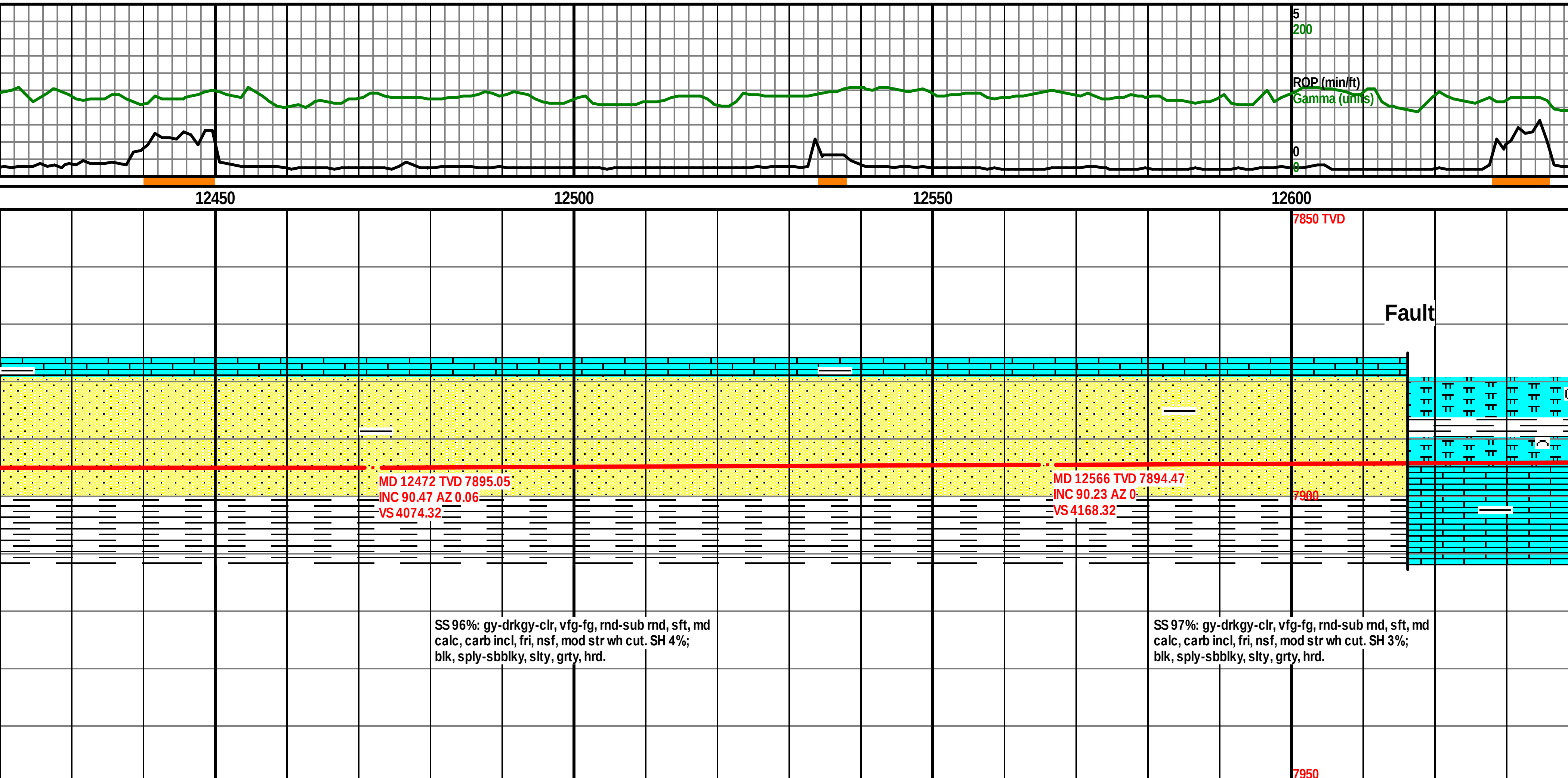
7950





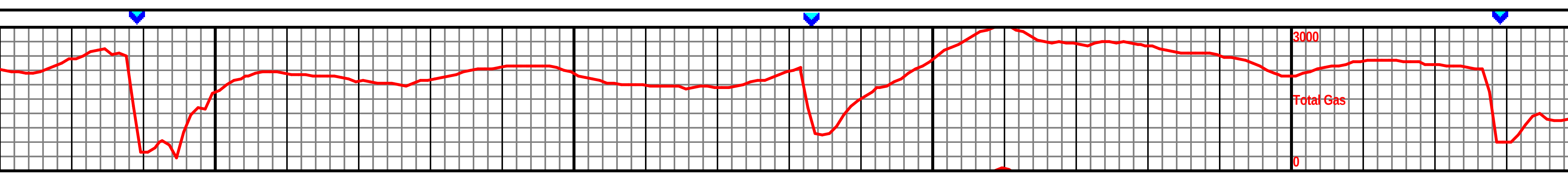


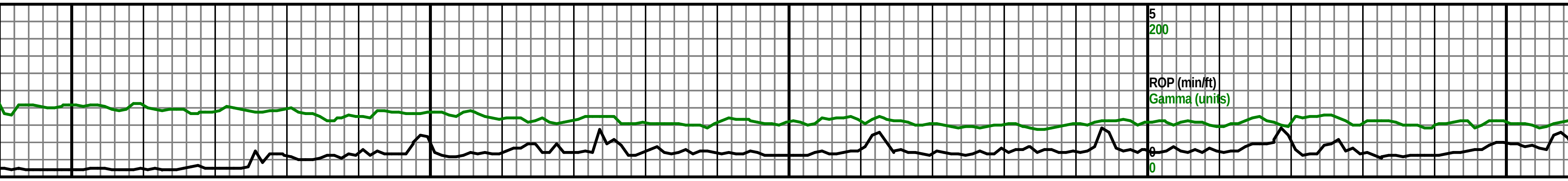
5
200
ROP (min/ft)
Gamma (units)
0
0
200
12250
12300
12350
12400
7850 TVD
VS w/ 90° inclination
5' down
7894.69
358.72
MD 12283 TVD 7894.41
INC 89.56 AZ 358.74
VS 3885.35
MD 12377 TVD 7895.1
INC 89.6 AZ 359.58
VS 3979.33
7900
g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 10%;
y, hrd.
SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 5%;
blk, sply-sbblky, slty, grty, hrd.
SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 3%;
blk, sply-sbblky, slty, grty, hrd.
7950
3000
MW: 9.6 / VIS: 41
MW: 9.6 / VIS: 42
Total Gas
0



SS 96%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 4%; blk, sply-sbblky, slty, grty, hrd.

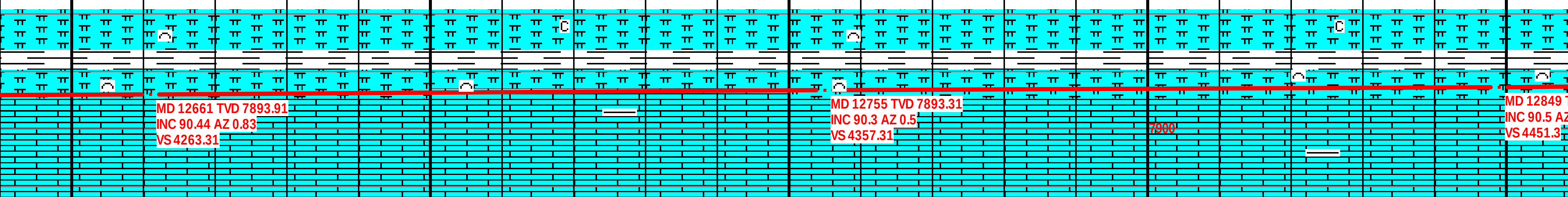
SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 3%; blk, sply-sbblky, slty, grty, hrd.





12650 12700 12750 12800 12850

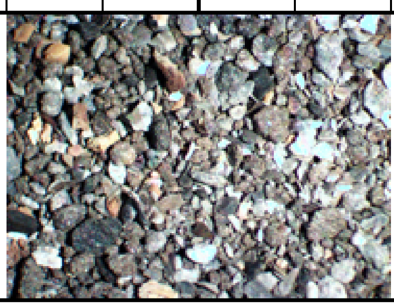
7850 TVD



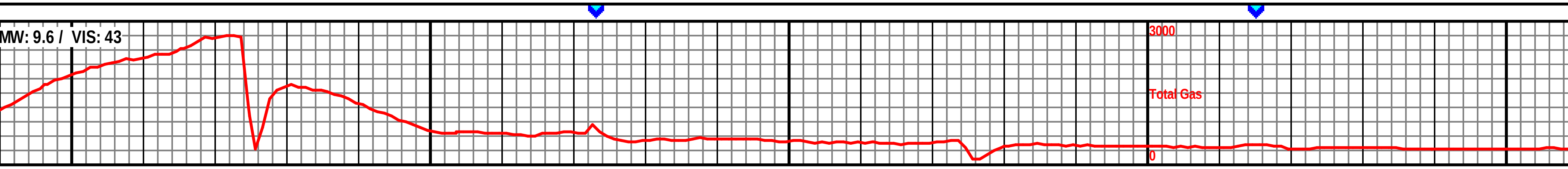
SS 67%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. LS 30%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 3%; blk, sply-sbblky, slty, grty, hrd.

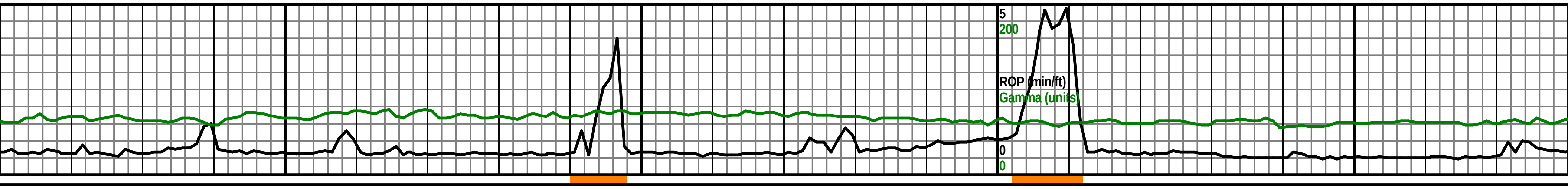
SS 40%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 30%; blk, sply-sbblky, slty, grty, hrd. LS 25%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. Mrlst 5%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut.

7950

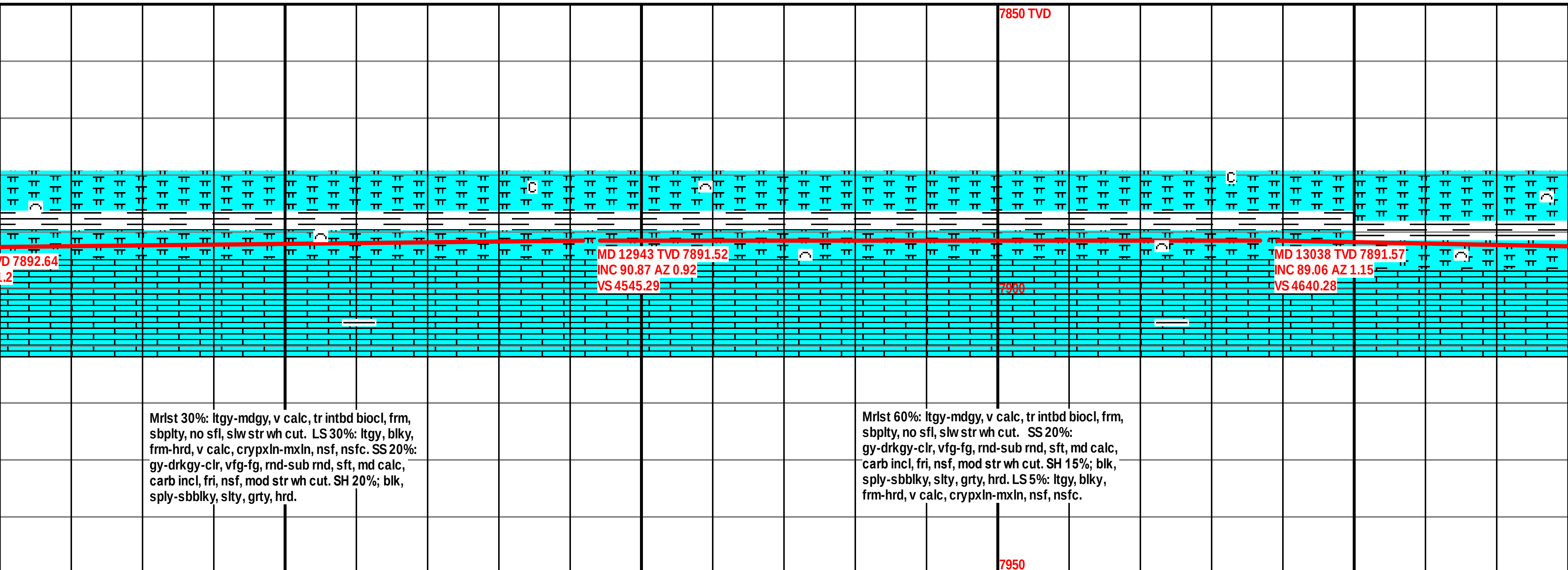


MW: 9.6 / VIS: 43



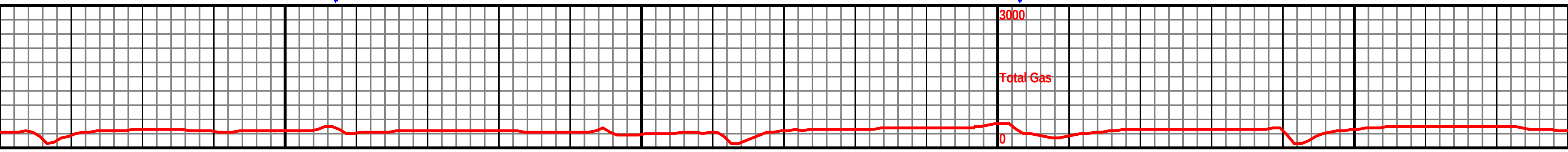


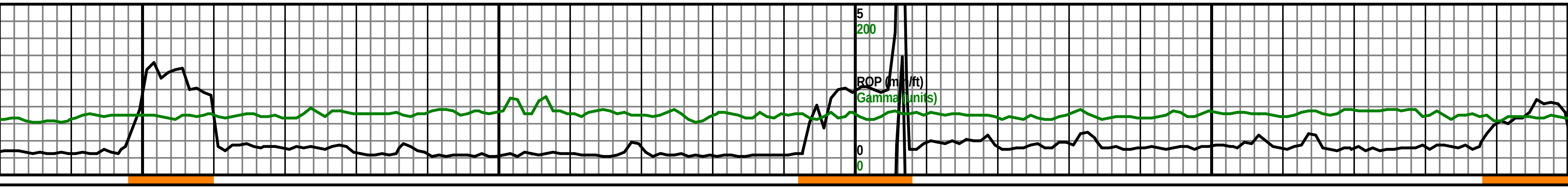
12900 12950 13000 13050



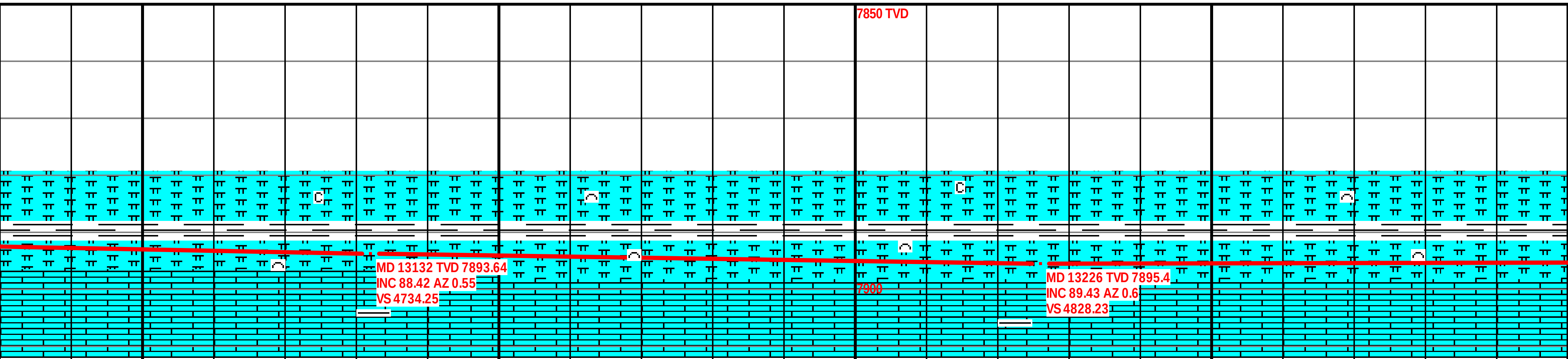
Mrlst 30%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. LS 30%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SS 20%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 20%; blk, sply-sbblky, slty, grty, hrd.

Mrlst 60%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SS 20%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 15%; blk, sply-sbblky, slty, grty, hrd. LS 5%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc.





13100 13150 13200 13250 133

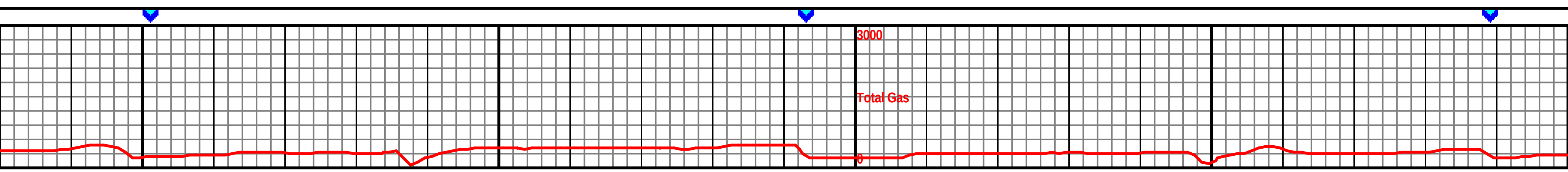


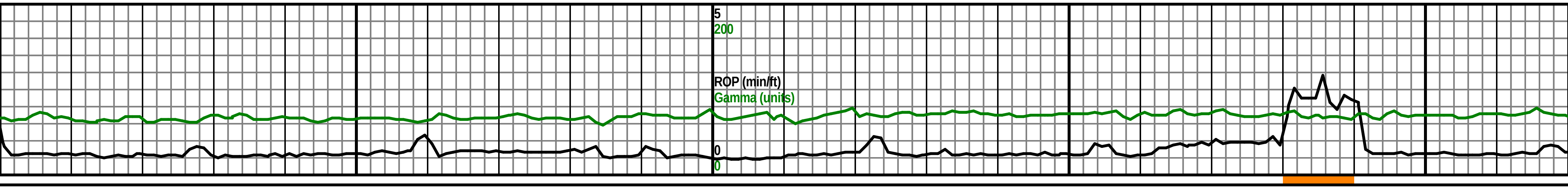
Mrlst 70%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 25%; blk, sply-sbblky, slty, grty, hrd. SS 5%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. Tr LS.

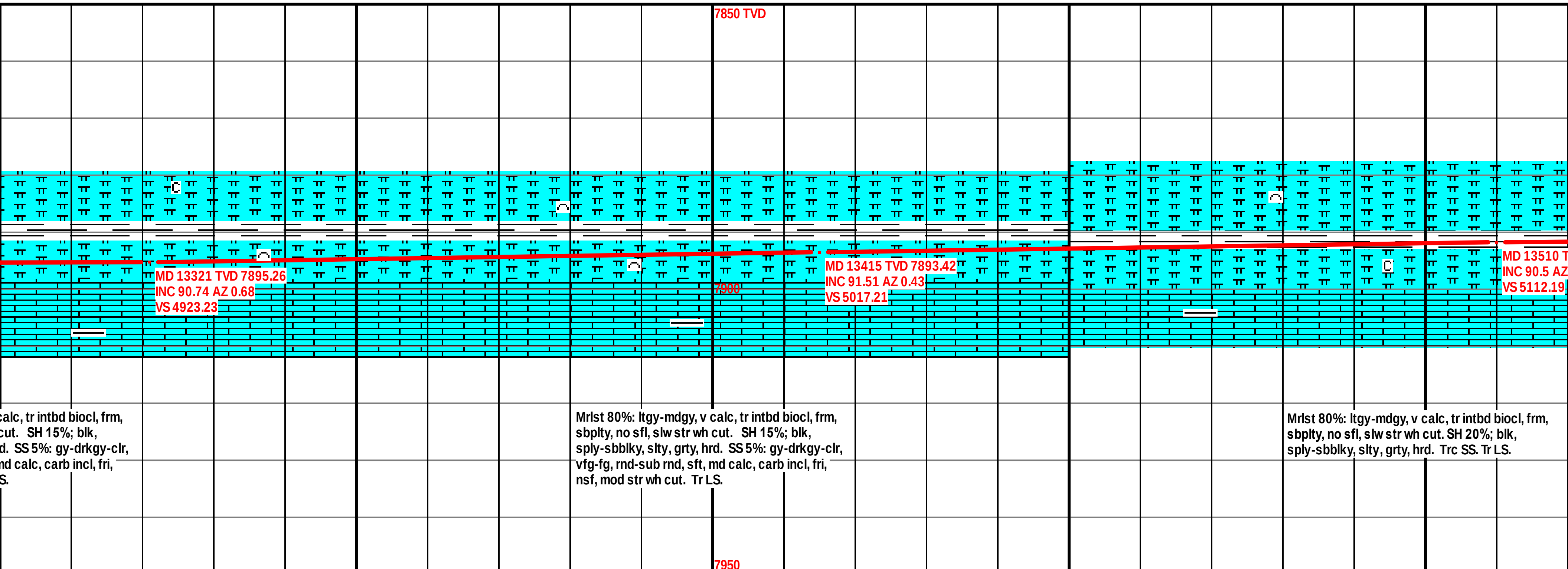
Mrlst 70%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 20%; blk, sply-sbblky, slty, grty, hrd. SS 10%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. Tr LS.

Mrlst 80%: ltgy-mdgy, v c
sbplty, no sfl, slw str wh c
sply-sbblky, slty, grty, hr
vfg-fg, rnd-sub rnd, sft, m
nsf, mod str wh cut. Tr L

7950



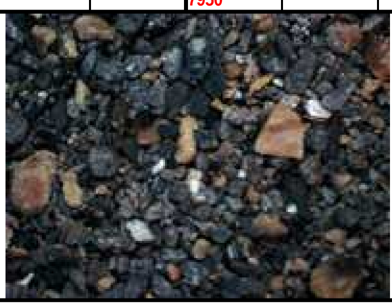




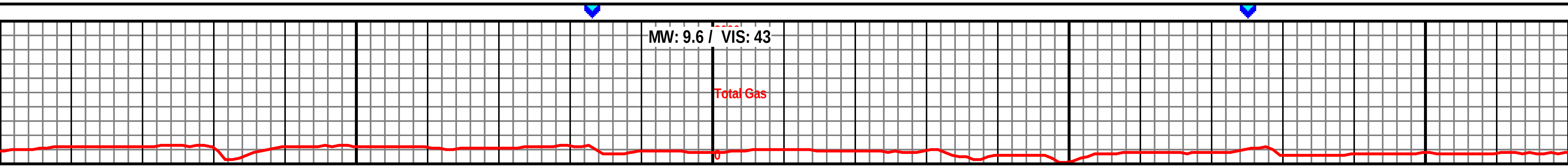
calc, tr intbd biocl, frm,
cut. SH 15%; blk,
d. SS 5%: gy-drkgy-clr,
nd calc, carb incl, fri,
S.

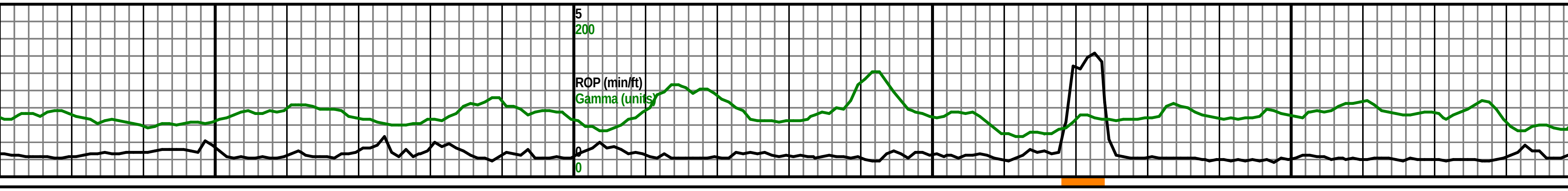
Mrlst 80%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 15%; blk, sply-sbblky, slty, grty, hrd. SS 5%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. Tr LS.

Mrlst 80%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 20%; blk, sply-sbblky, slty, grty, hrd. Trc SS. Tr LS.

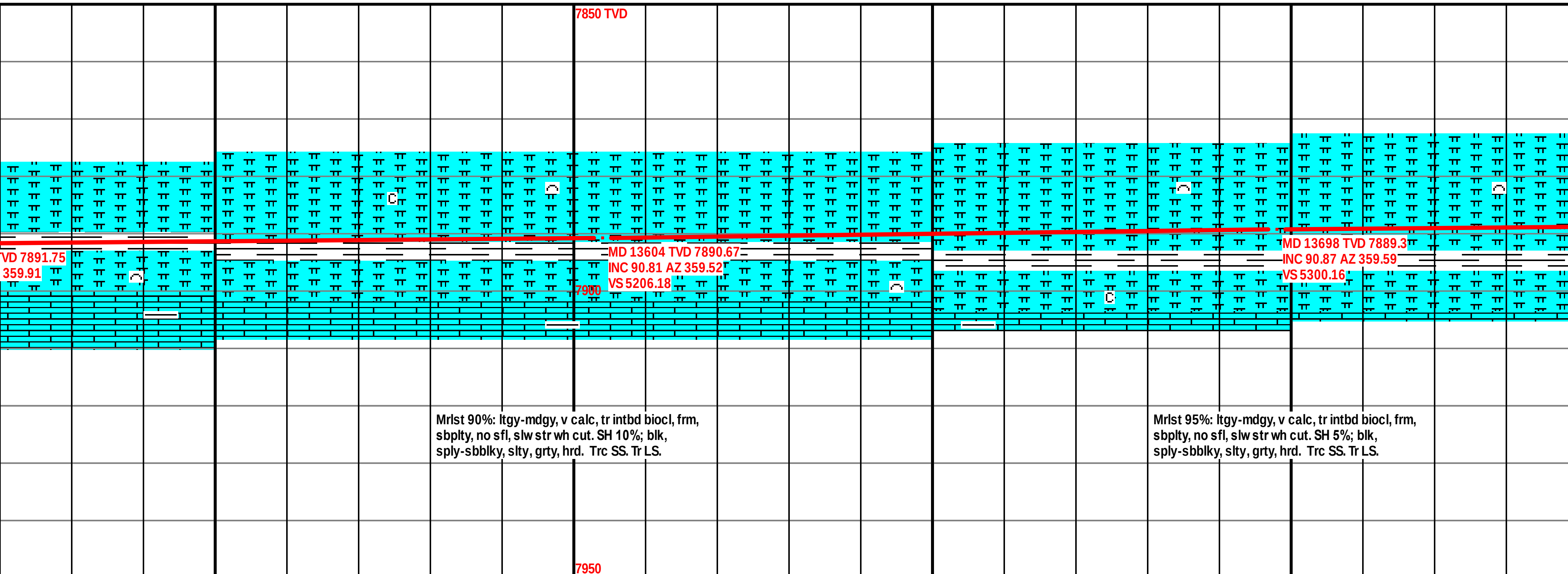


MW: 9.6 / VIS: 43



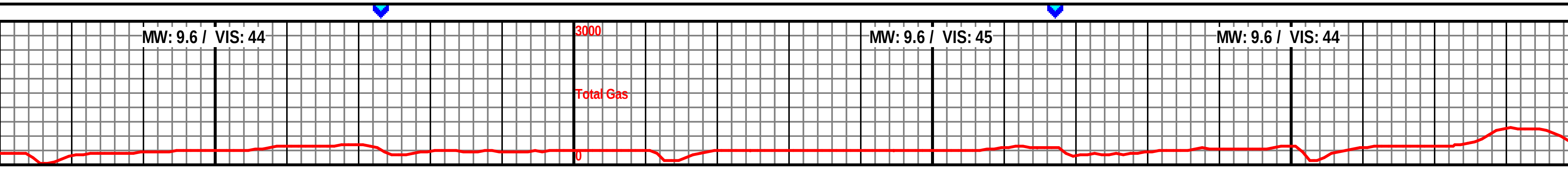


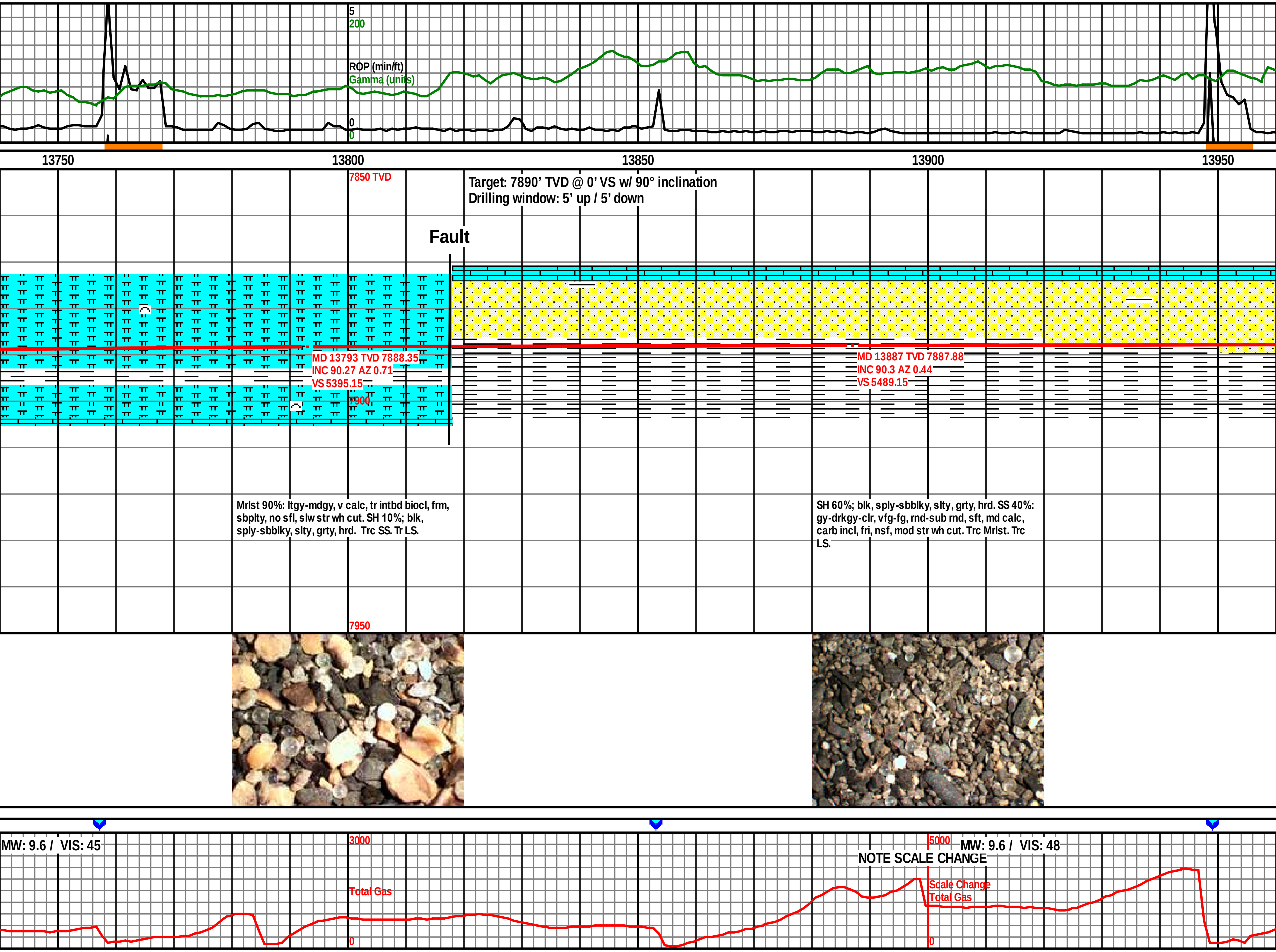
13550 13600 13650 13700



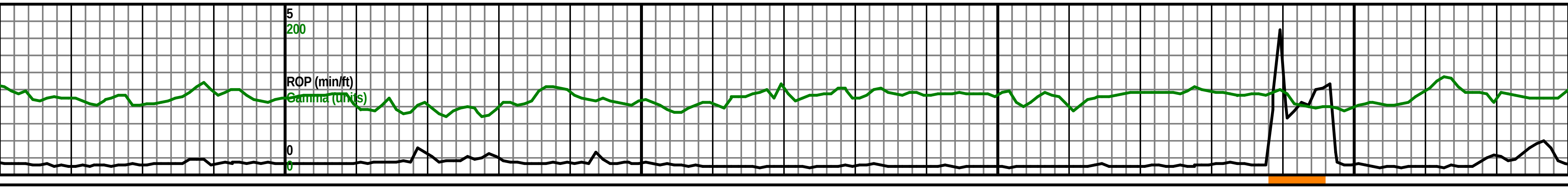
Mrlst 90%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 10%; blk, sply-sbblky, slty, grty, hrd. Trc SS. Tr LS.

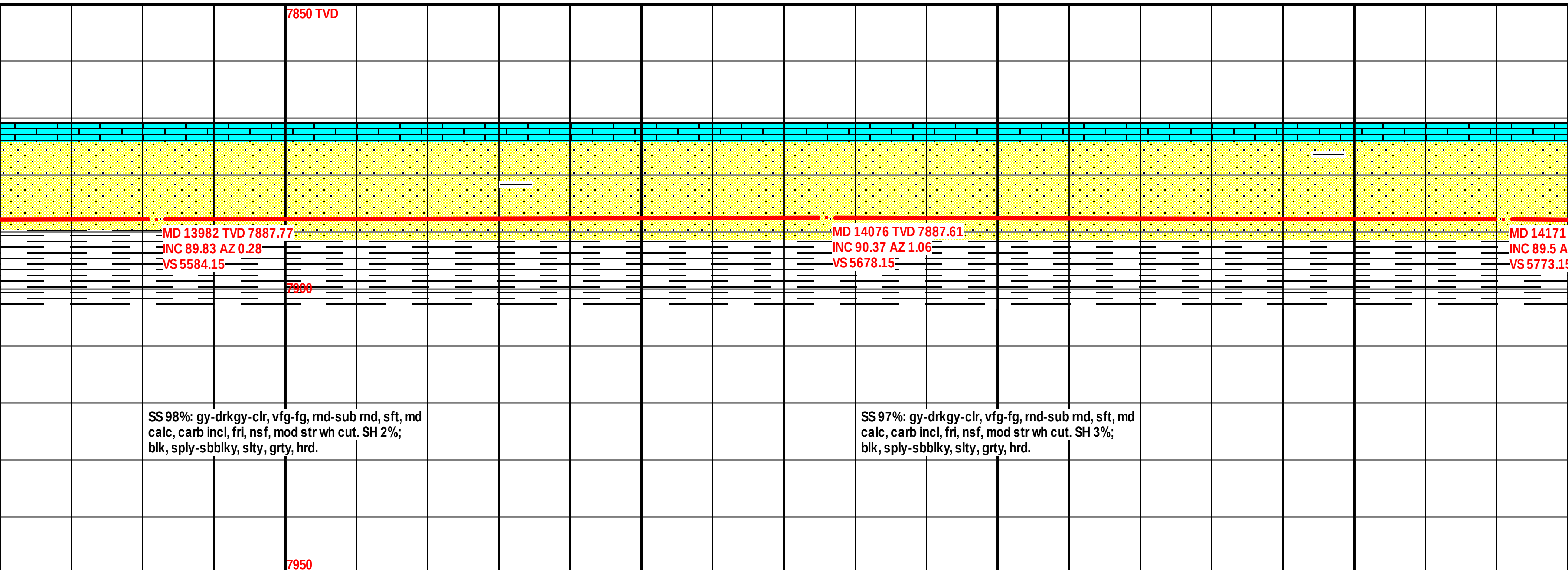
Mrlst 95%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 5%; blk, sply-sbblky, slty, grty, hrd. Trc SS. Tr LS.





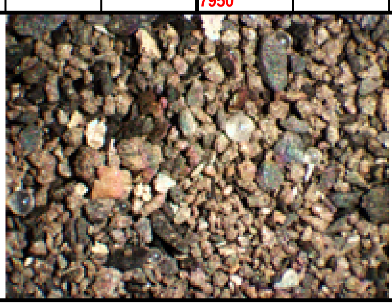
5
200
ROP (min/ft)
Gamma (units)
0
0
13750
13800
13850
13900
13950
7850 TVD
Target: 7890' TVD @ 0' VS w/ 90° inclination
Drilling window: 5' up / 5' down
Fault
MD 13793 TVD 7888.35
INC 90.27 AZ 0.71
VS 5395.15
7900
MD 13887 TVD 7887.88
INC 90.3 AZ 0.44
VS 5489.15
Mrlst 90%: ltgy-mdgy, v calc, tr intbd biocl, frm, sbplty, no sfl, slw str wh cut. SH 10%; blk, sply-sbblky, slty, grty, hrd. Trc SS. Tr LS.
SH 60%; blk, sply-sbblky, slty, grty, hrd. SS 40%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. Trc Mrlst. Trc LS.
7950
MW: 9.6 / VIS: 45
3000
Total Gas
0
5000
MW: 9.6 / VIS: 48
NOTE SCALE CHANGE
Scale Change
Total Gas
0

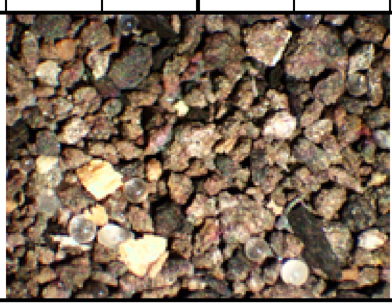


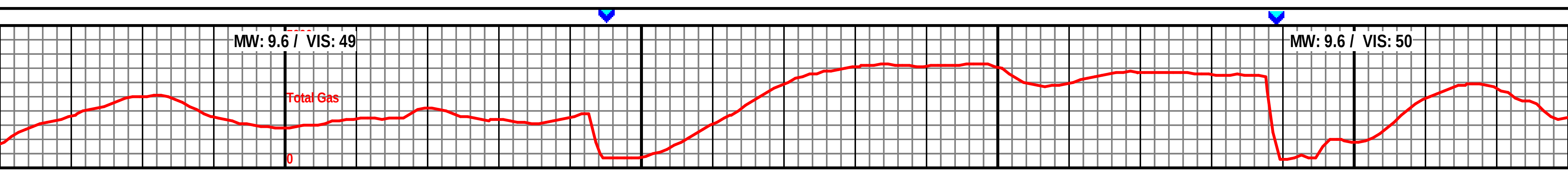


SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 2%; blk, sply-sbblky, slty, grty, hrd.

SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 3%; blk, sply-sbblky, slty, grty, hrd.







5
200
ROP (min/ft)
Gamma (units)
0
0

14200 14250 14300 14350 144

7850 TVD

TVD 7887.72
Z 0.42

MD 14265 TVD 7888.63
INC 89.39 AZ 0.27
VS 5867.14

MD 14359 TVD 7888.85
INC 90.34 AZ 0.98
VS 5961.14

7900

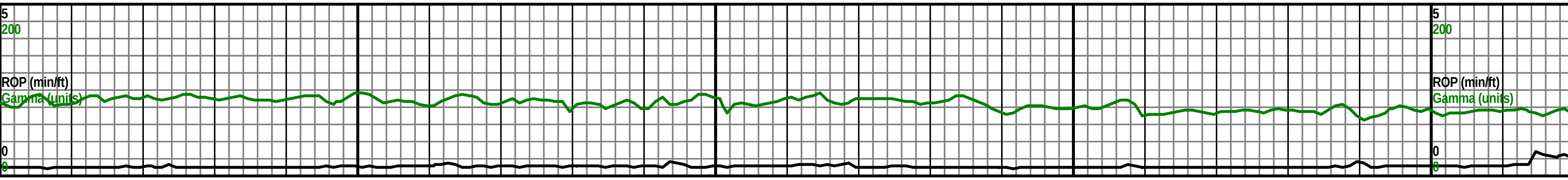
SS 92%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 8%; blk, sply-sbblky, slty, grty, hrd.

SS 85%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 15%; blk, sply-sbblky, slty, grty, hrd.

SS 90%: gy-drkgy-clr, vf
calc, carb incl, fri, nsf, m
blk, sply-sbblky, slty, grt

7950

5000
Total Gas
0



400 | 14450 | 14500 | 14550 | 14600

7850 TVD

7850 TVD

Target: 7940' TVD @ 0' VS w/ 90.50° inclination
Drilling window: 5' up / 5' down

MD 14453 TVD 7888.38
INC 90.24 AZ 0.89
VS 6055.13

MD 14548 TVD 7887.91
INC 90.34 AZ 0.63
VS 6150.13

7900

7900

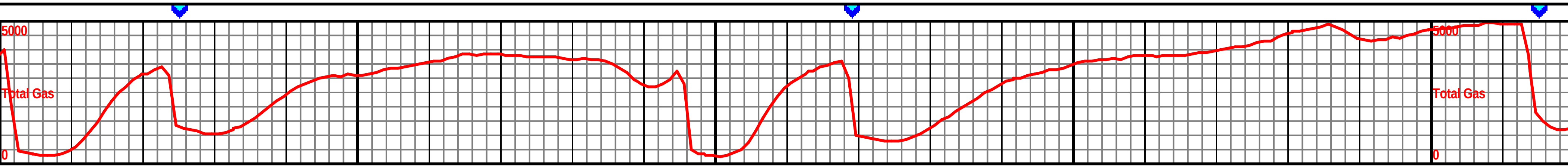
g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 10%;
y, hrd.

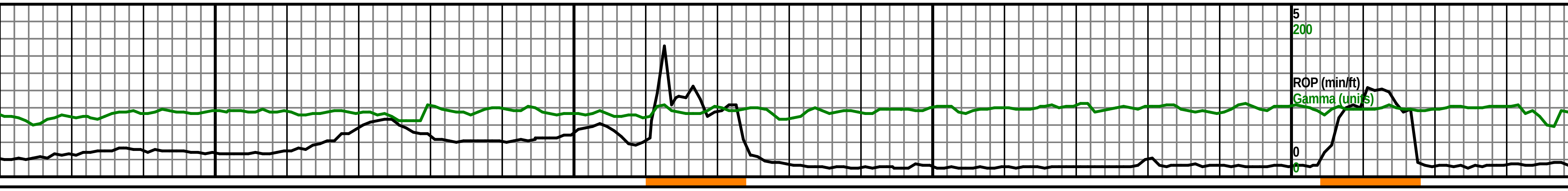
SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 5%;
blk, sply-sbblky, slty, grty, hrd.

SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 2%;
blk, sply-sbblky, slty, grty, hrd.

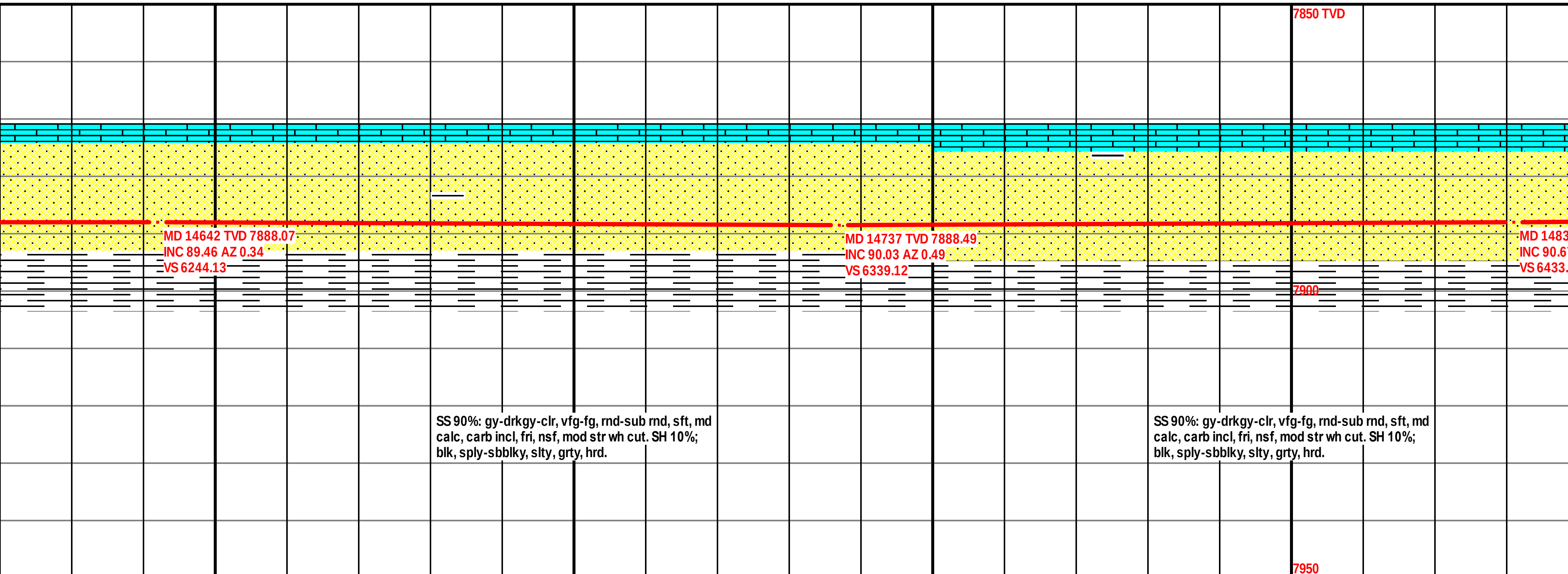
7950

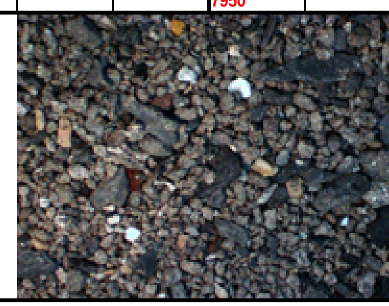
7950

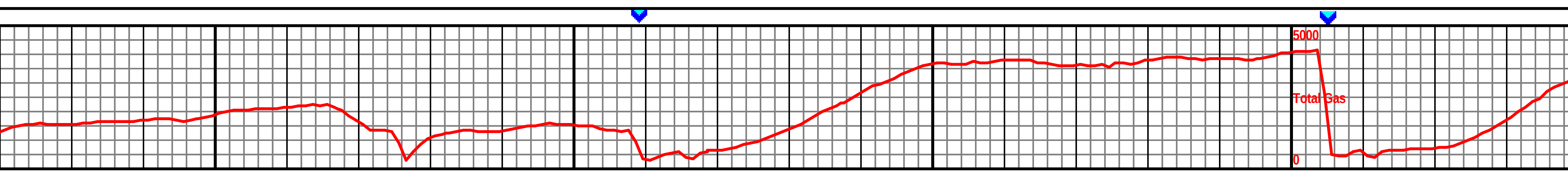




14650 14700 14750 14800







5
200
ROP (min/ft)
Gamma (units)
0
0

14850 14900 14950 15000 15050

7850 TVD

TVD 7887.91
AZ 0.83

MD 14926 TVD 7887.05
INC 90.37 AZ 0.77
VS 6528.11

MD 15020 TVD 7886.25
INC 90.6 AZ 0.17
VS 6622.11

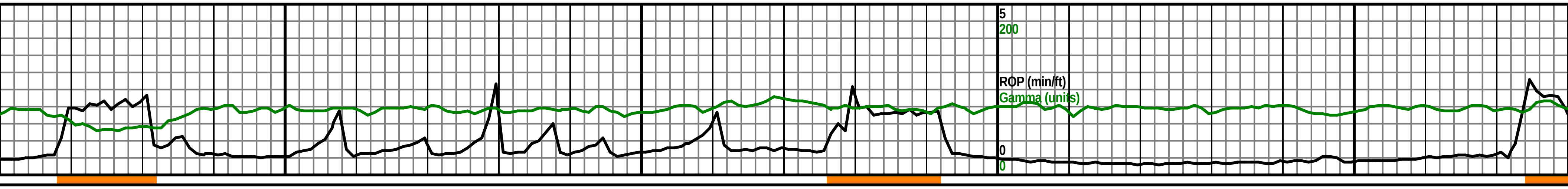
7900

SS 95%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; blk, sply-sbblky, slty, grty, hrd.

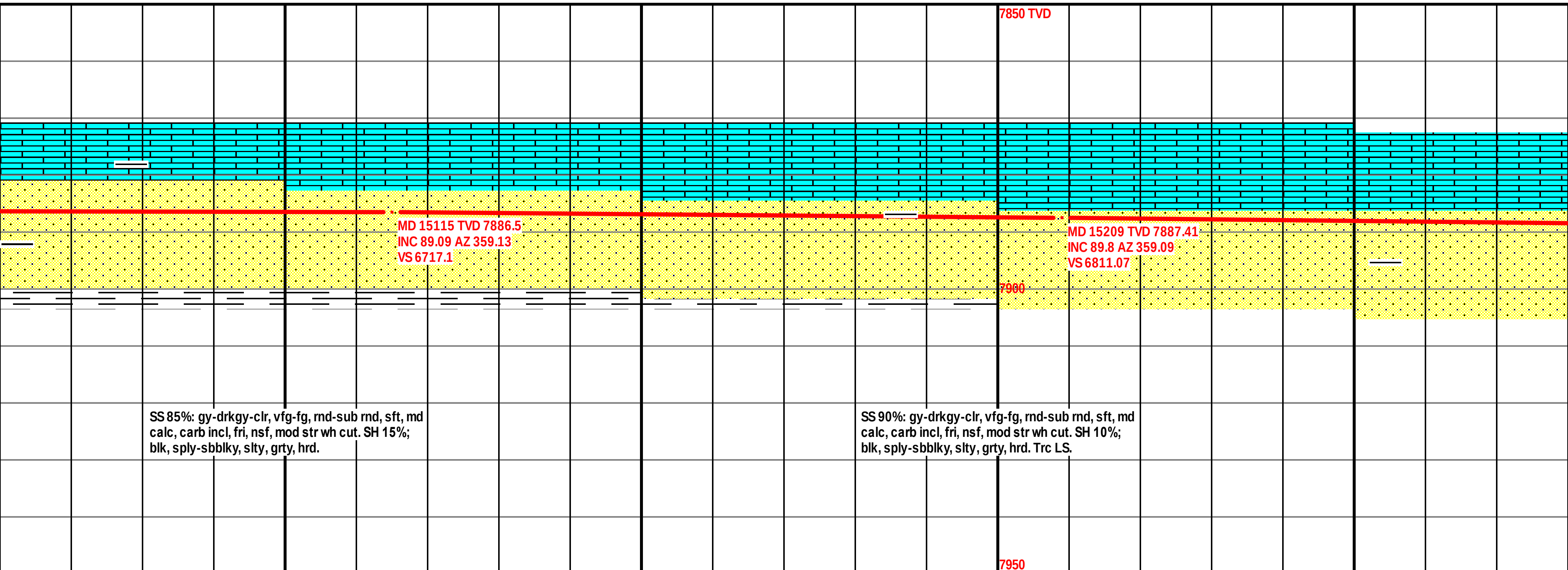
SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; blk, sply-sbblky, slty, grty, hrd.

7950

MW: 9.5 / VIS: 44
5000
Total Gas
0

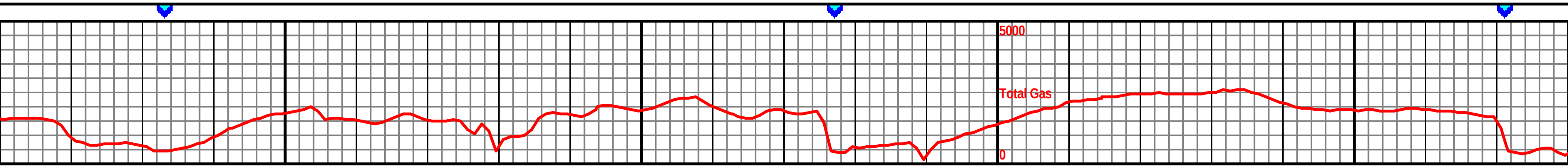


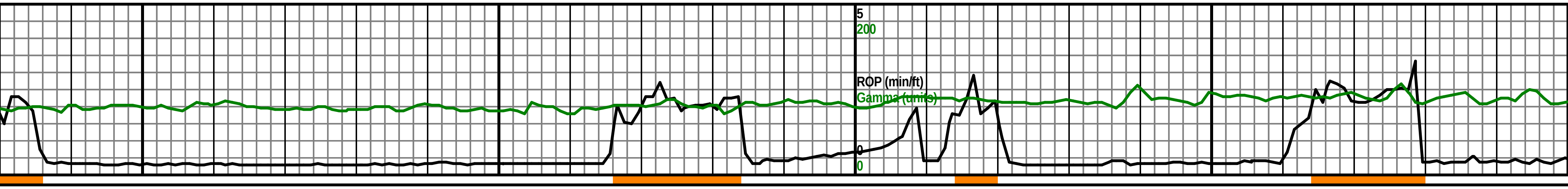
15100 15150 15200 15250



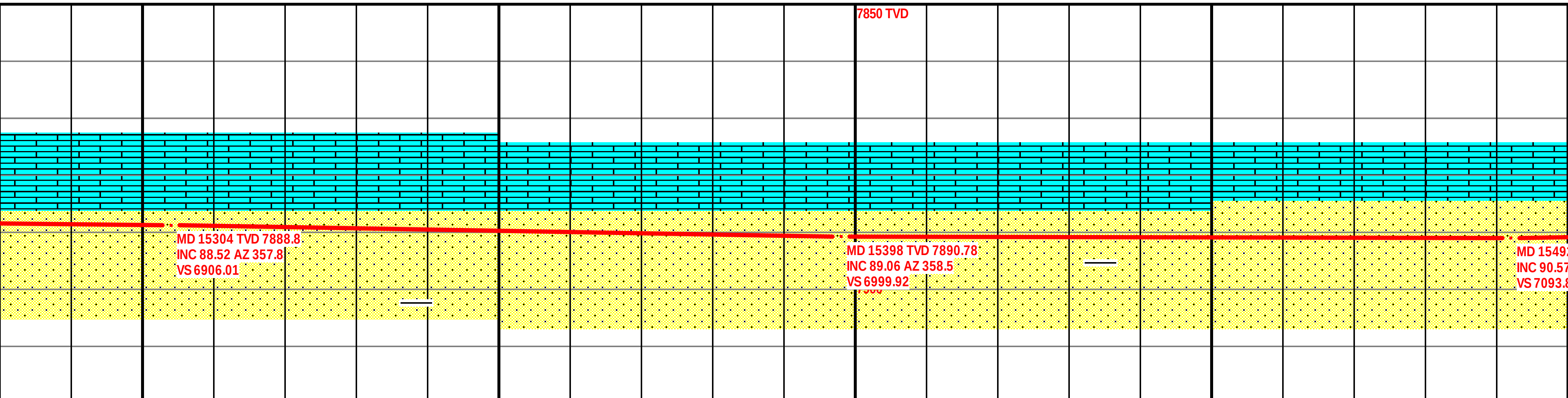
SS 85%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 15%; blk, sply-sbblky, slty, grty, hrd.

SS 90%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 10%; blk, sply-sbblky, slty, grty, hrd. Trc LS.





15300 15350 15400 15450 155

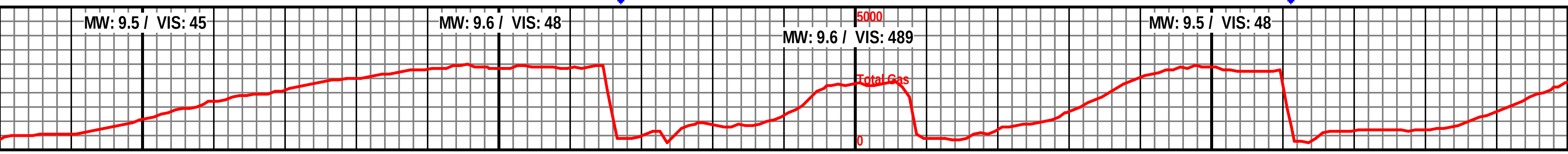


SS 85%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 15%; blk, sply-sbblky, slty, grty, hrd. Trc LS.

SS 98%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 2%; blk, sply-sbblky, slty, grty, hrd.

SS 97%: gy-drkgy-clr, vf calc, carb incl, fri, nsf, m blk, sply-sbblky, slty, grt





5
200
ROP (min/ft)
Gamma (units)
0
0

500 | 15550 | 15600 | 15650 | 15700

7850 TVD

2 TVD 7891.08
7 AZ 359.67
39

MD 15587 TVD 7889.05
INC 91.88 AZ 0
VS 7188.86

MD 15681 TVD 7886.19
INC 91.61 AZ 359.29
VS 7282.81

7900

g-fg, rnd-sub rnd, sft, md
od str wh cut. SH 3%;
y, hrd.

SS 97%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 3%;
blk, sply-sbblky, slty, grty, hrd.

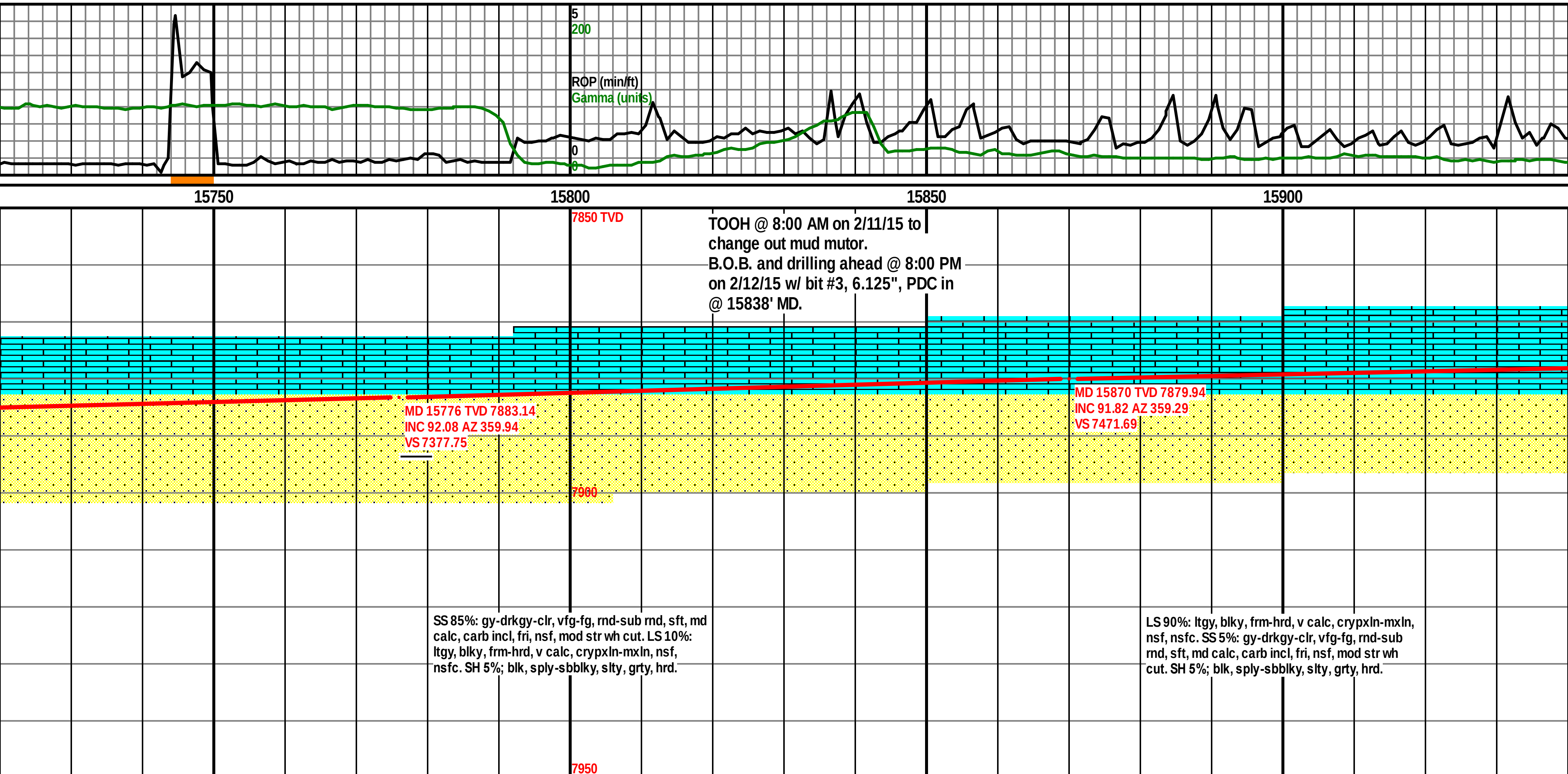
SS 96%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md
calc, carb incl, fri, nsf, mod str wh cut. SH 4%;
blk, sply-sbblky, slty, grty, hrd.

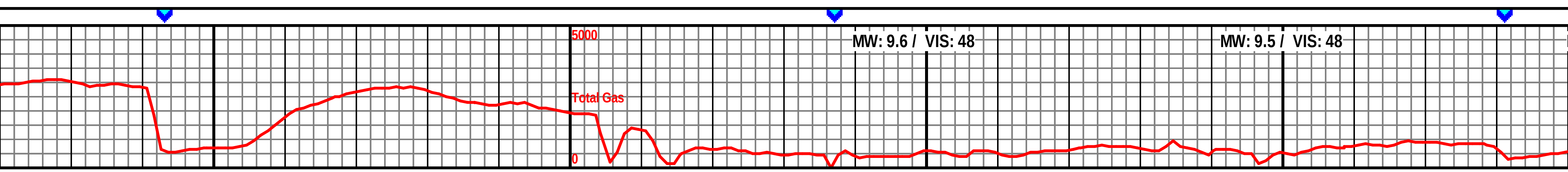
7950

MW: 9.6 / VIS: 48

MW: 9.5 / VIS: 52

5000
Total Gas
0


5
200
ROP (min/ft)
Gamma (units)
0
0
15750
15800
15850
15900
7850 TVD
TOOH @ 8:00 AM on 2/11/15 to change out mud mutor.
B.O.B. and drilling ahead @ 8:00 PM on 2/12/15 w/ bit #3, 6.125", PDC in @ 15838' MD.
MD 15776 TVD 7883.14
INC 92.08 AZ 359.94
VS 7377.75
MD 15870 TVD 7879.94
INC 91.82 AZ 359.29
VS 7471.69
7900
SS 85%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. LS 10%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 5%; blk, sply-sbblky, slty, grty, hrd.
LS 90%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SS 5%: gy-drkgy-clr, vfg-fg, rnd-sub rnd, sft, md calc, carb incl, fri, nsf, mod str wh cut. SH 5%; blk, sply-sbblky, slty, grty, hrd.
7950


5000
MW: 9.6 / VIS: 48
MW: 9.5 / VIS: 48
Total Gas
0

5
200
ROP (min/ft)
Gamma (units)
0
0

15950 16000 16050 16100 16150

7850 TVD

MD 15964 TVD 7877.51
INC 91.14 AZ 0.11
VS 7565.65

MD 16059 TVD 7875.86
INC 90.84 AZ 0.23
VS 7660.64

MD 161
INC 89.5
VS 7754

7900

LS 100%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. Trc Sh. Trc SS.

LS 100%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. Trc Sh. Trc SS.

7950

MW: 9.6 / VIS: 45

MW: 9.6 / VIS: 49

5000
Total Gas
0

5
200

ROP (min/ft)
Gamma (units)

0
0

16200 16250 16300 163

7850 TVD

53 TVD 7875.53
56 AZ 359.64
.63

MD 16226 TVD 7876.15
INC 89.46 AZ 358.5
VS 7827.61

MD 16288 TVD 7876.83
INC 89.46 AZ 358.5
VS 7889.57

Two man logging unit with sample program
released 2/13/15.

7900

LS 100%: ltgy, blky, frm-hrd, v calc,
crypxln-mxln, nsf, nsfc. Trc Sh.

LS 100%: ltgy, blky, frm-hrd, v calc,
crypxln-mxln, nsf, nsfc. Trc Sh.

7950

5000

MW: 9.7 / VIS: 51

Total Gas

TD of 16288' MD Achieved @
05:40AM 2/13//15.

0