



**Scale 1:200 Imperial  
Measured Depth Log**

**Well Name:** Howard Federal 40N-22HZ  
**Location:** Weld County, CO.  
**License Number:** 05123382350000  
**Spud Date:** 10/10/13  
**Surface Coordinates:** 800'FSL & 905'FEL, SEC.27, T1N-R67W  
**Region:** Weld County  
**Drilling Completed:** 11/15/13  
**Bottom Hole Coordinates:** 2177'FSL & 75' FEL, SEC.22, T1N-R67W  
**Ground Elevation (ft):** 5068' **K.B. Elevation (ft):** 5084'  
**Logged Interval (ft):** 7700' **To:** 13938' **Total Depth (ft):** 13938'  
**Formation:** Niobrara B  
**Type of Drilling Fluid:** Water Based

Printed by HORIZONTAL.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

**OPERATOR**

**Company:** Anadarko Petroleum Corporation  
**Address:** Granite Tower  
1099 18th St., Suite 1800  
Denver, CO 80202

## GEOLOGIST

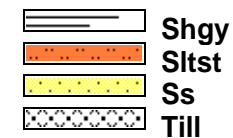
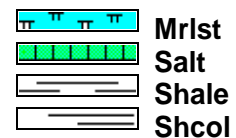
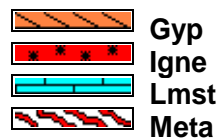
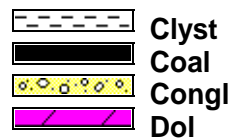
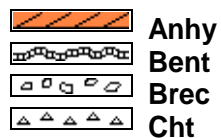
Name: Scott Crozier / Ben Thompson  
Company: Great Divide Consulting, Inc.  
Address: P.O. Box 630263  
Highlands Ranch, CO 80163

## Cores

## DSTs

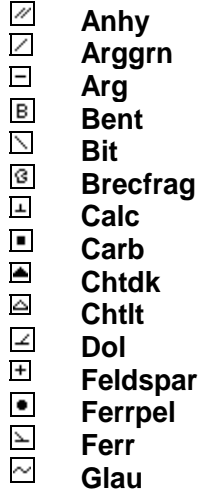
## Comments

## ROCK TYPES

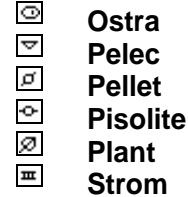
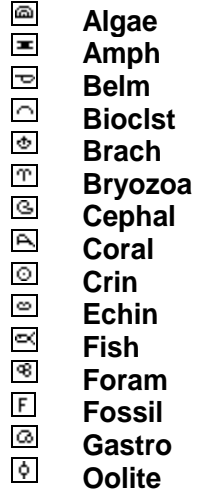


## ACCESSORIES

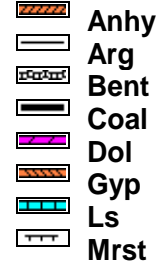
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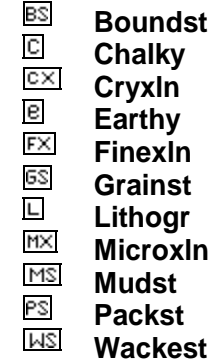
### FOSSIL










### STRINGER



### TEXTURE







**POROSITY**

 Earthy  
 Fenest  
 Fracture  
 Inter  
 Moldic  
 Organic  
 Pinpoint

**Vuggy****SORTING**

 Well  
 Moderate  
 Poor



**OTHER SYMBOLS****ROUNDING**

 Rounded  
 Subrnd  
 Subang  
 Angular


**OIL SHOW**

 Even

**Spotted**

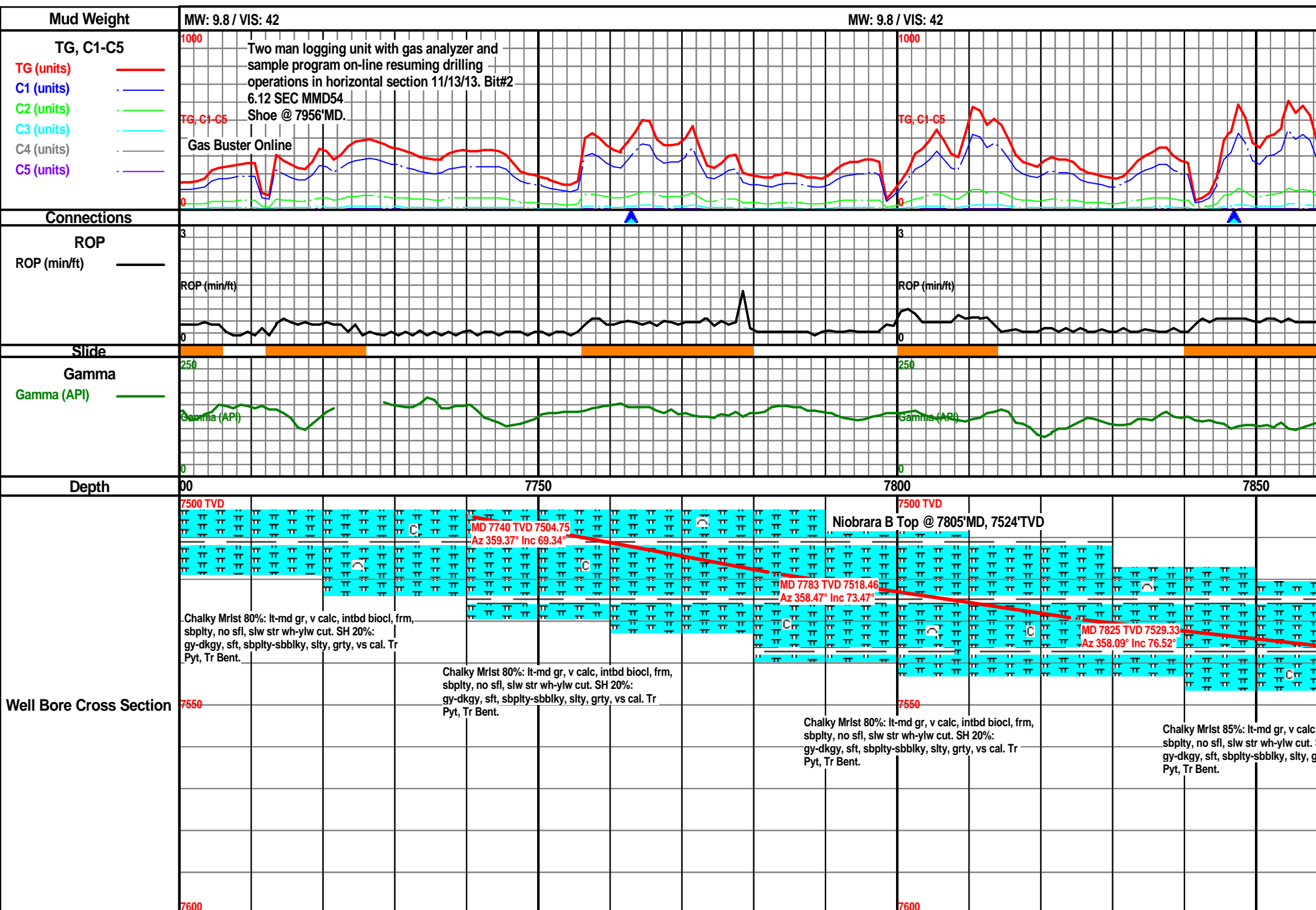
 Ques  
 Dead

**INTERVAL**

 Core  
 Dst

**EVENT**

 Rft  
 Connection



MW: 9.8 / VIS: 41

MW: 9.2 / VIS: 37

Curve TD of 7956'MD achieved @  
12:40am 11/12/13. T.O.O.H. for  
intermediate casing.

11/13/13 B.O.B. @ 11:00pm.

Trip Gas = 776 U

Gas Buster Online-TD

TG, C1-C5

RGP (min/ft)

Gamma (API)

7900

7950

8000

11/13/13 4:30am Depth @ 7956'MD.

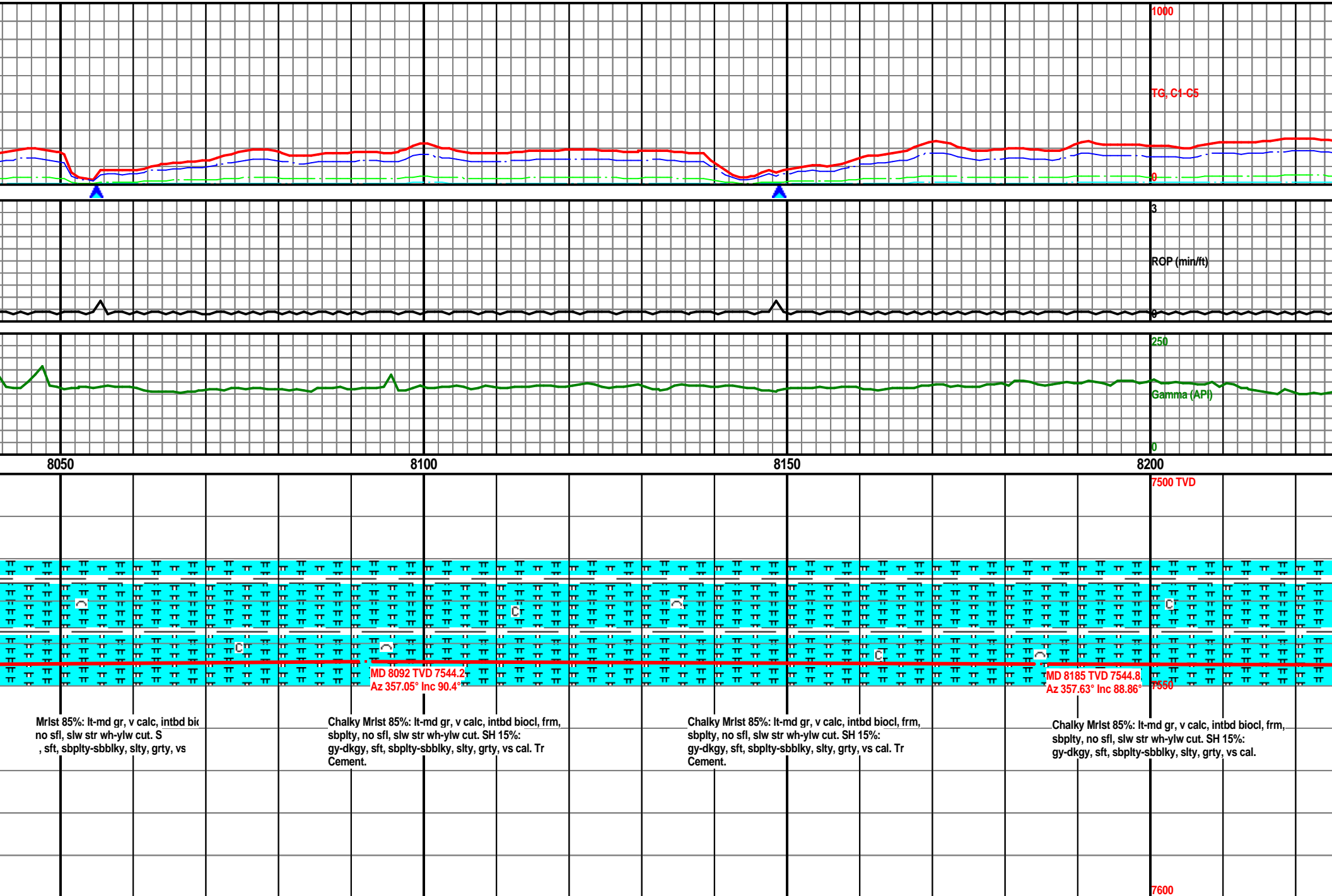
7500 TVD

MD 7868 TVD 7537.71  
Az 357.68° Inc 81°MD 7896 TVD 7541.29  
Az 357.83° Inc 84.31°MD 7999 TVD 7545.41  
Az 357.11° Inc 91.1°intbd bi  
rty, vsChalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal. Tr  
Cement.Chalky  
sbply,  
gy-dkgy  
Cement

7600

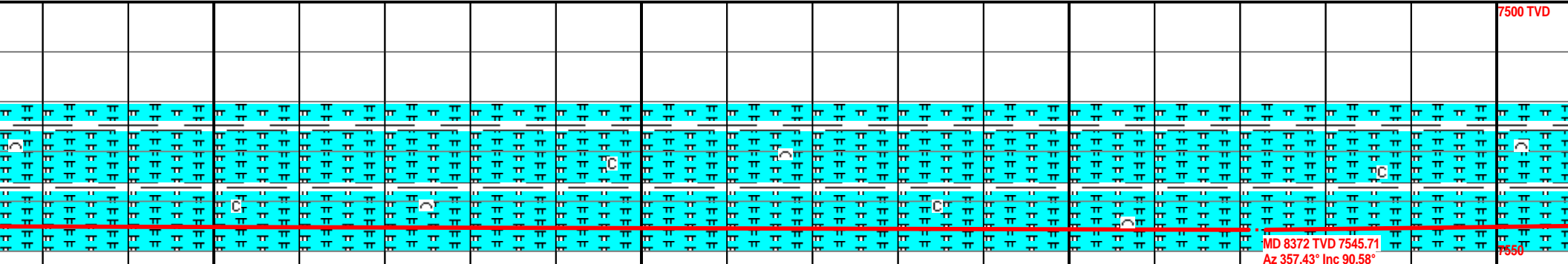
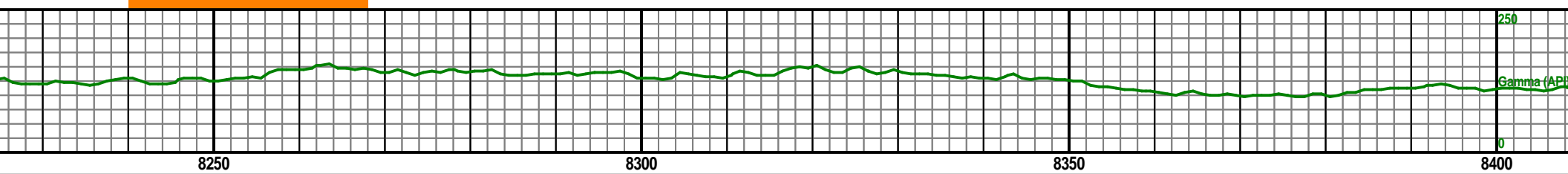
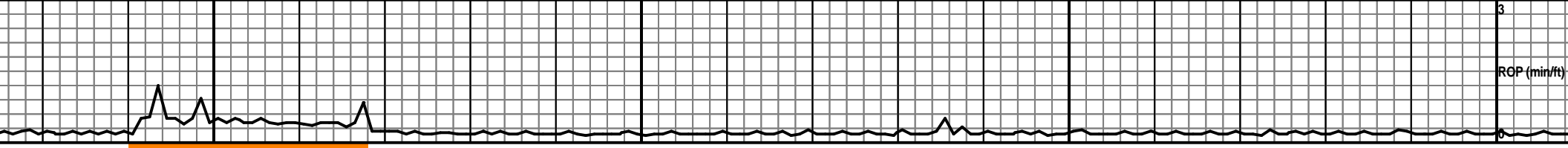
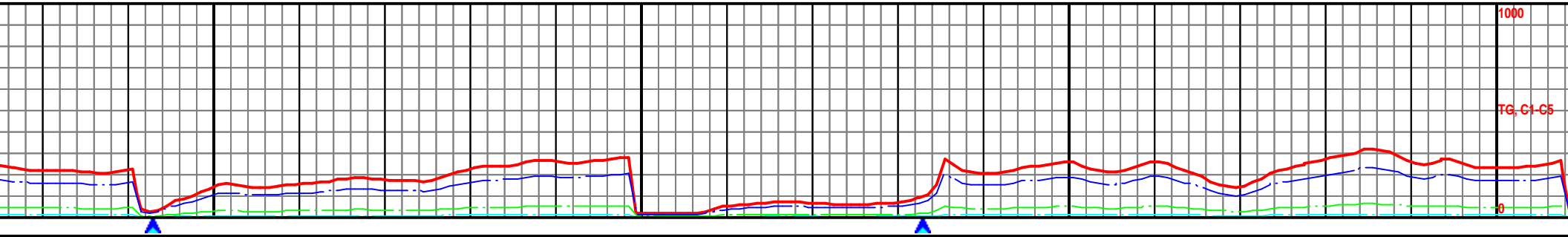
MW: 9.2 / VIS: 37

MW: 9.2 / VIS: 38



MW: 9.2 / VIS: 38

MW: 9.2 / VIS: 38



Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc,  
sbply, no sfl, slw str wh-ylw cut. S  
gy-dkgy, sft, sbply-sbbly, slty, g

7600

MW: 9.1 / VIS: 38

Gas Show #1  
8580' - 8960'

PG = 7

8450

8500

8550

MD 8561 TVD 7541.65'  
Az 357.63° Inc 91.88°

intbd bi  
rty

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbplty-sbbilky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbplty-sbbilky, slty, grty, vs cal.

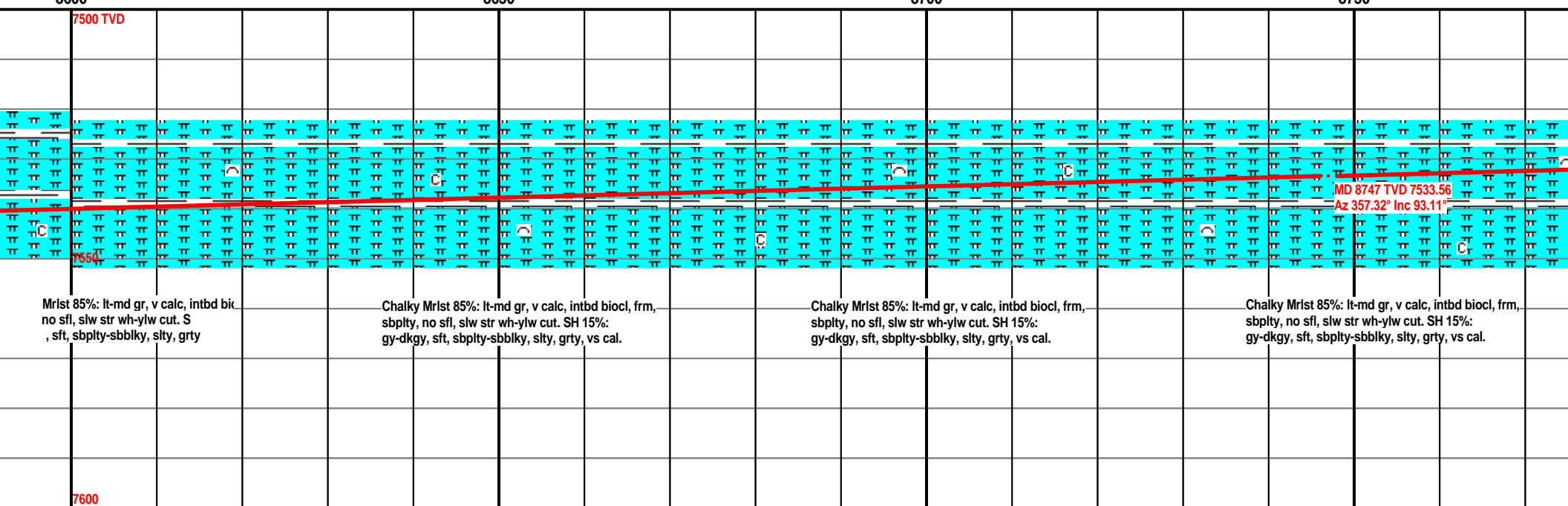
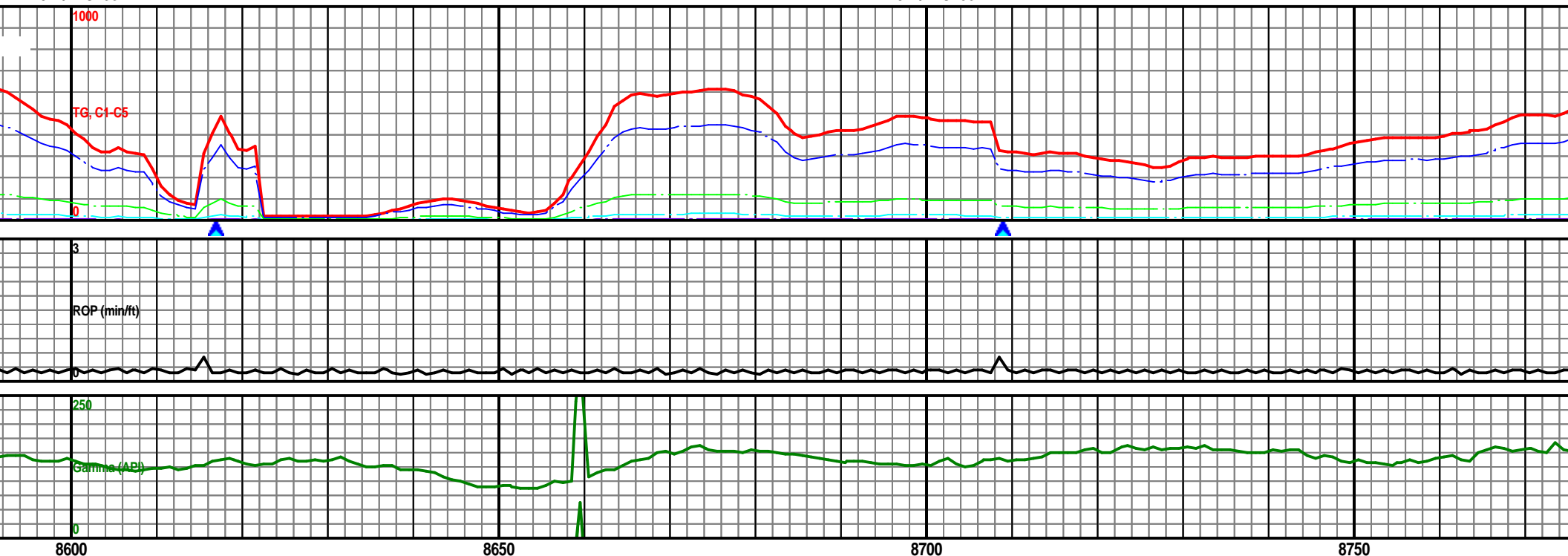
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbplty-sbbilky, slty, grty, vs cal.

Chalky  
sbplty,  
gy-dkgy



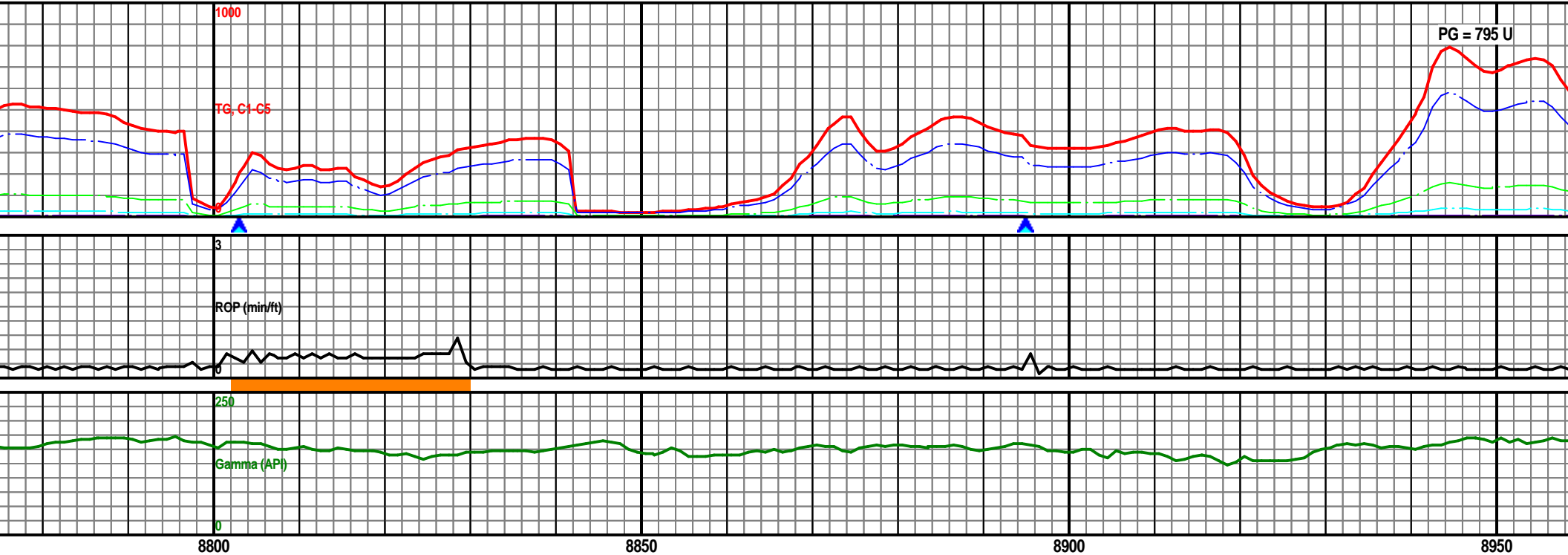
MW: 9.1 / VIS: 38

MW: 9.1 / VIS: 38



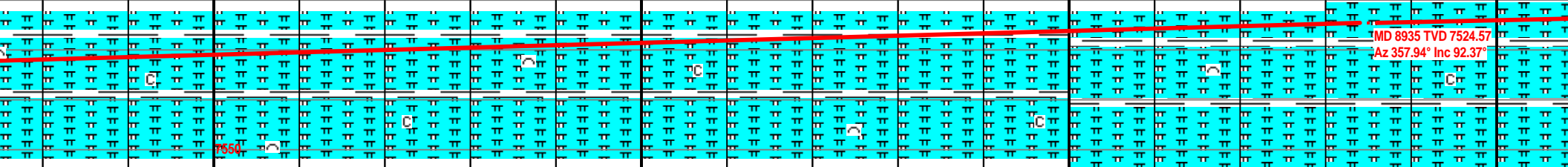
MW: 9.0 / VIS: 38

MW: 9.0 / VIS: 38



7500 TVD

11/14/13 4:30am Depth @ 8883'MD



Chalky Mrst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrst 85%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

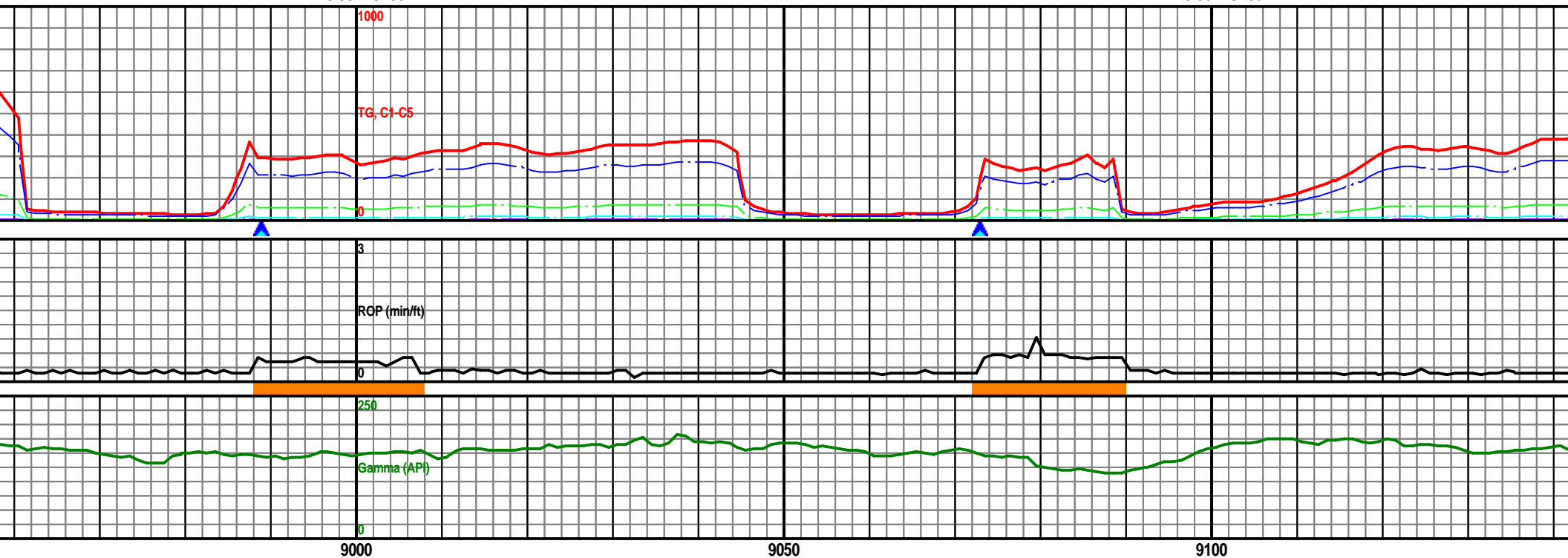
Chalky Mrst 80%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrst 80%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

7600

MW: 9.0 / VIS: 38

MW: 9.0 / VIS: 38



9000

9050

9100

7500 TVD

MD 9021 TVD 7521.48  
Az 357.86° Inc 91.75°

MD 9106 TVD 7519.34  
Az 357.38° Inc 91.13°

7550

7600

, intbd bi  
S  
rty

Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 20%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

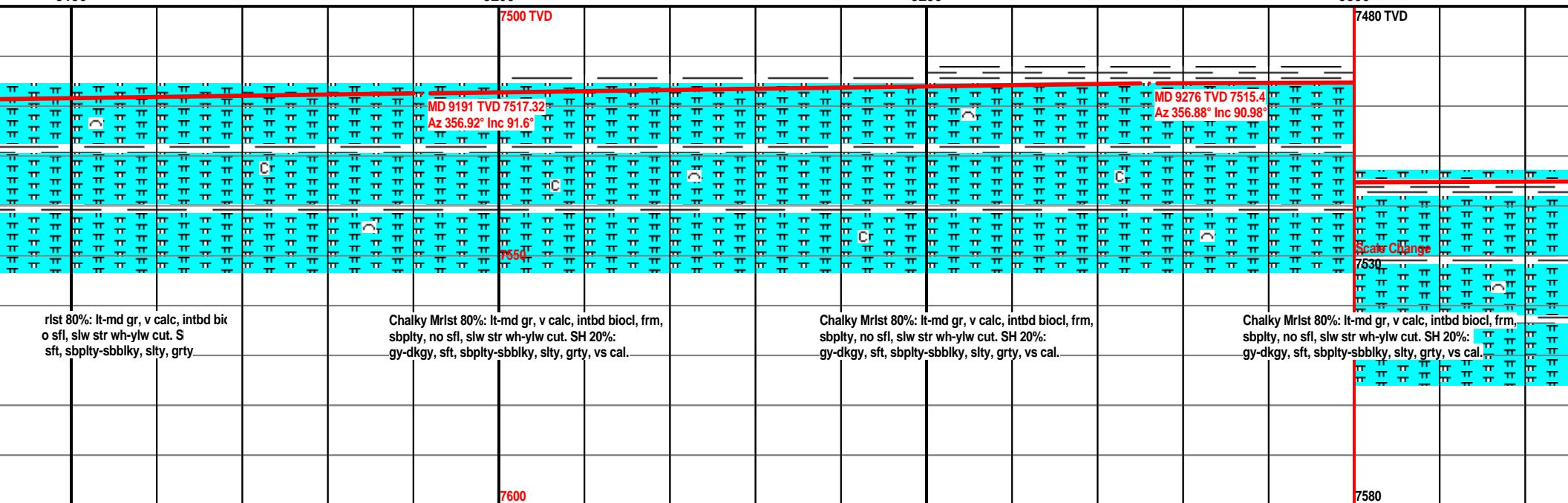
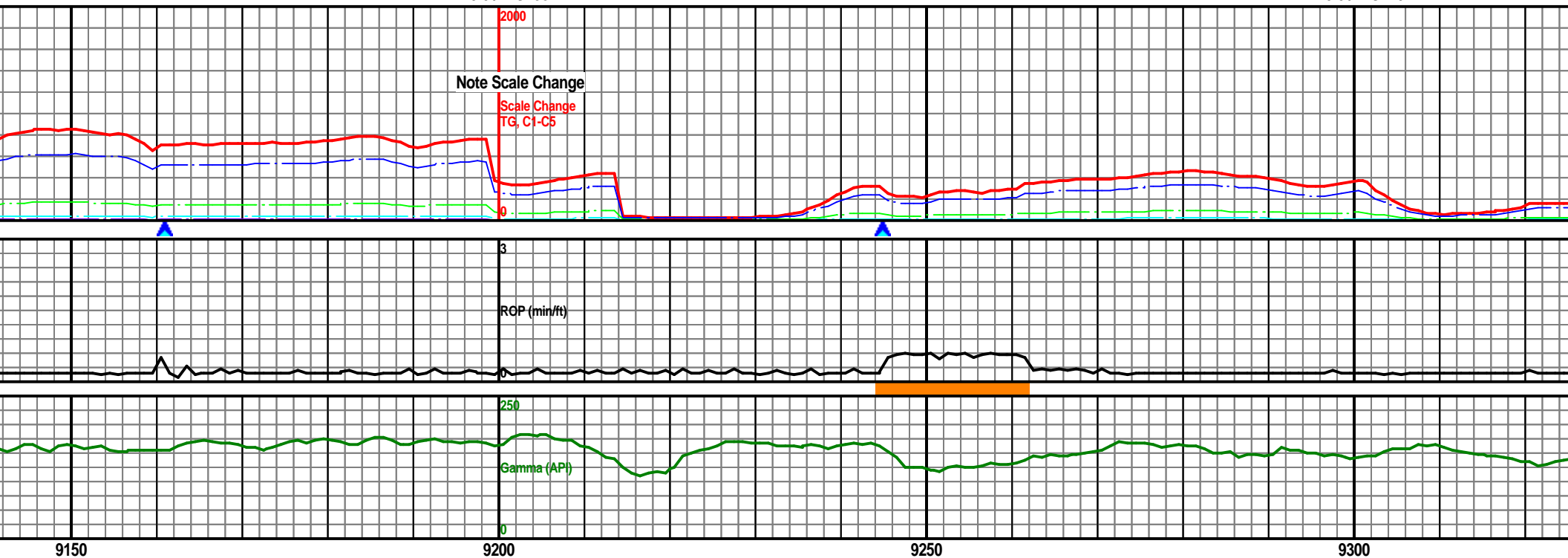
Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 20%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 20%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

Chalky M  
sbply, n  
gy-dkgy,

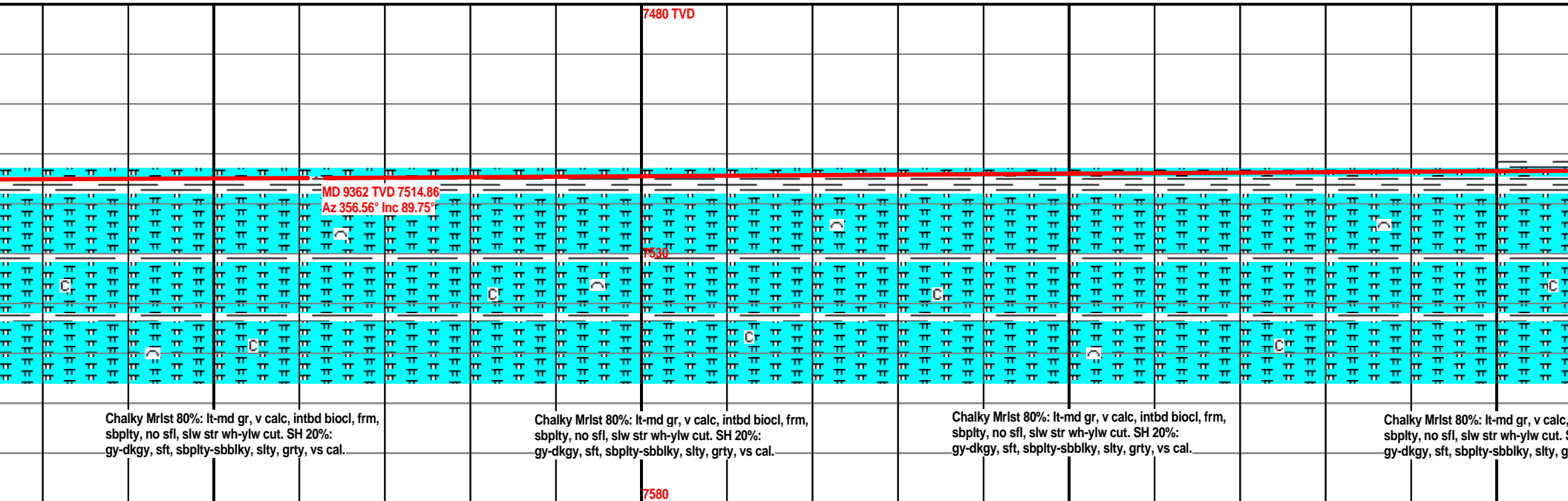
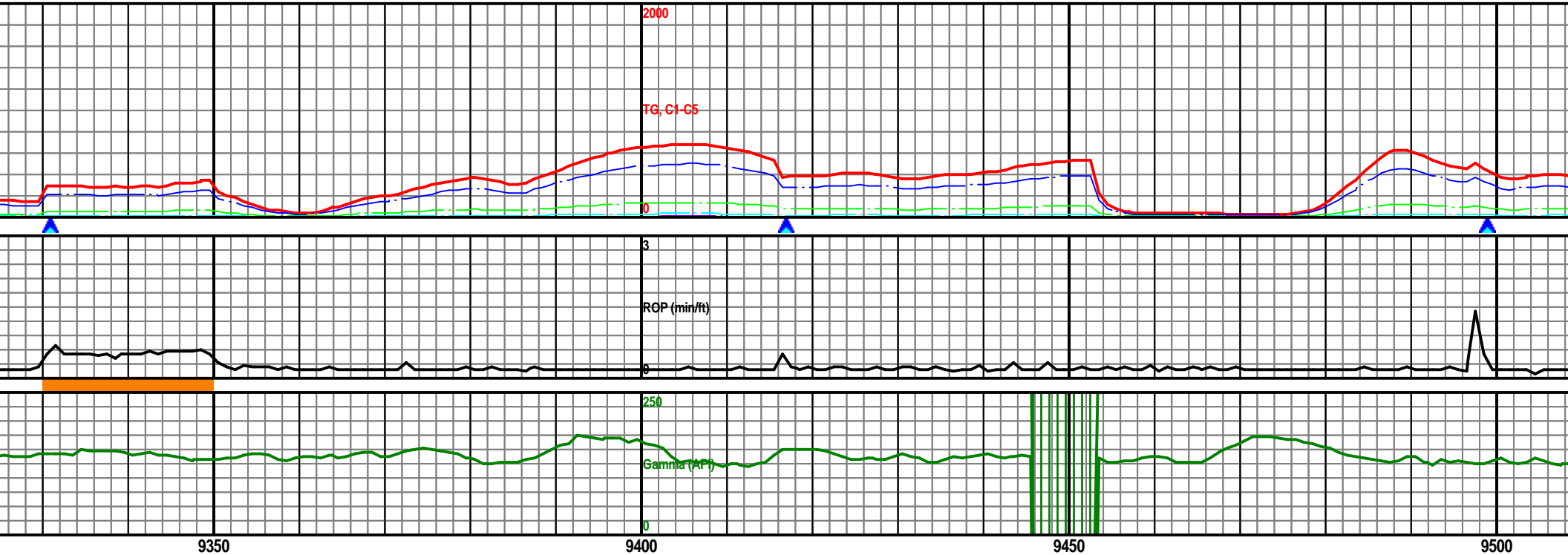
MW: 9.0 / VIS: 38

MW: 9.0 / VIS: 40

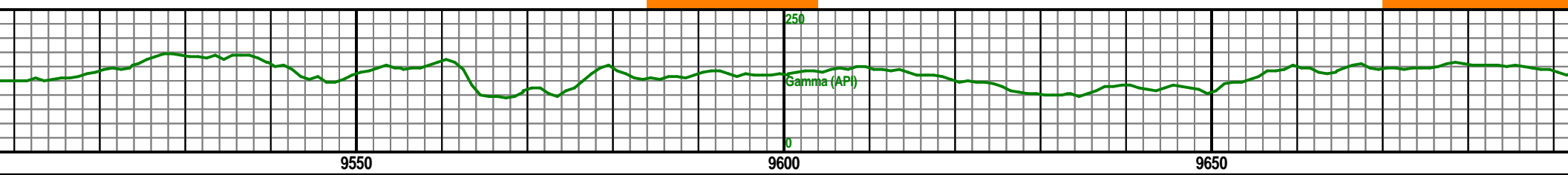
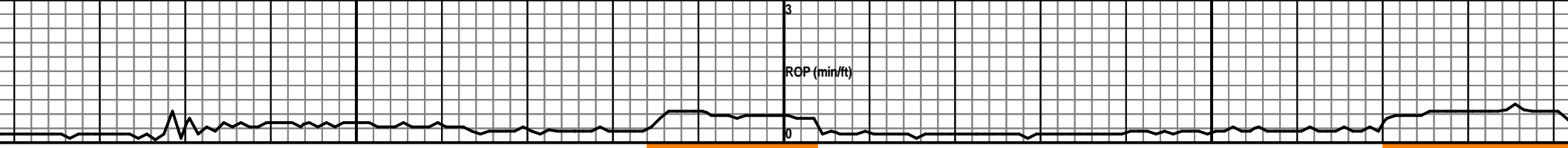
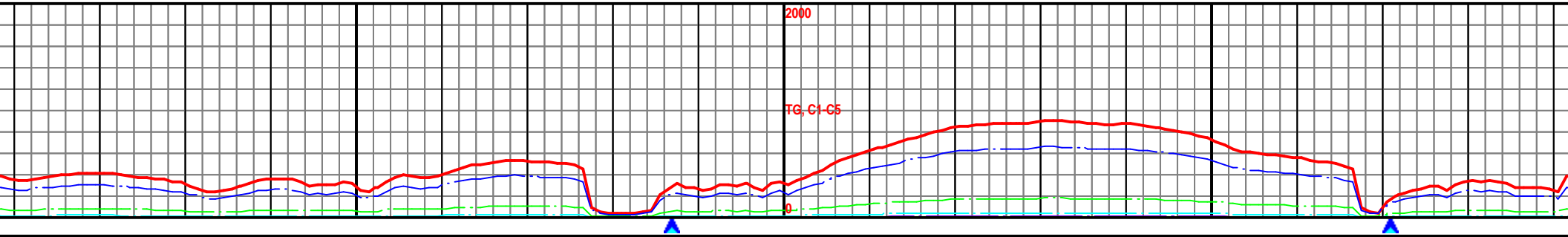


MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40



MW: 9.0 / VIS: 40



9550

9600

9650

Fault from Niobrara A shale to B chalk

7480 TVD

MD 9532 TVD 7513.18  
Az 355.91° Inc 91.38°

MD 9617 TVD 7511.31  
Az 356.51° Inc 91.14°

7530

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbblky, slty, grty, vs cal.

Chalky sbpity gy-dkgy

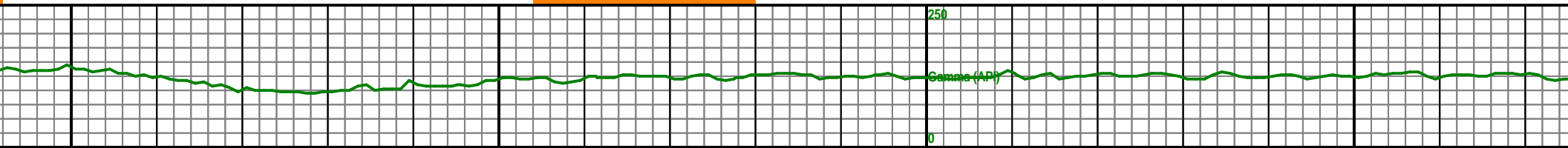
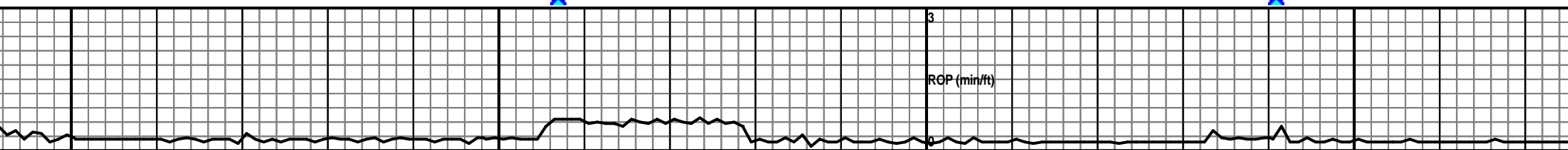
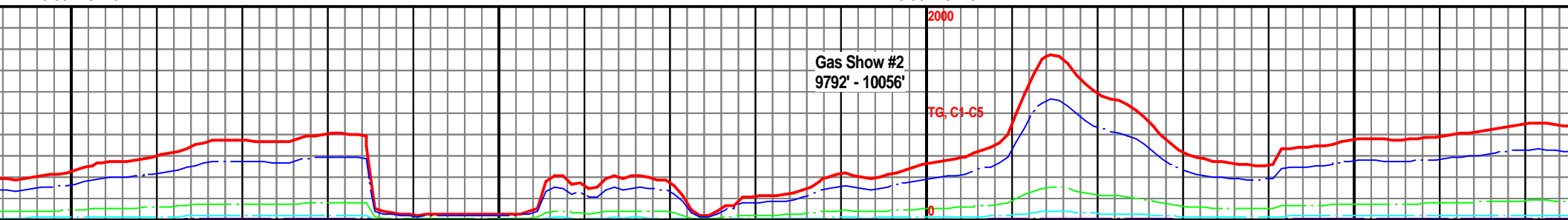
intbd bic  
rty

Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbpity-sbblky, slty, grty, vs cal.

7580

MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40

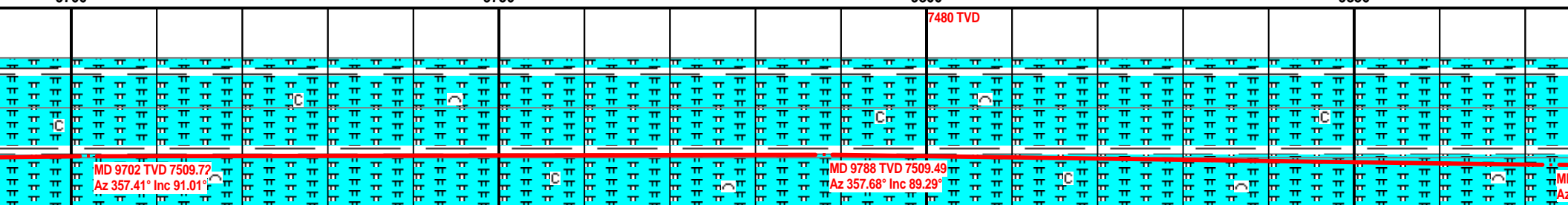


9700

9750

9800

9850



Mrlst 90%: lt-md gr, v calc, intbd biol, frm,  
no sfl, slw str wh-ylw cut. S  
y, sft, sbply-sbblky, slty, grty

Chalky Mrlst 90%: lt-md gr, v calc, intbd biol, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

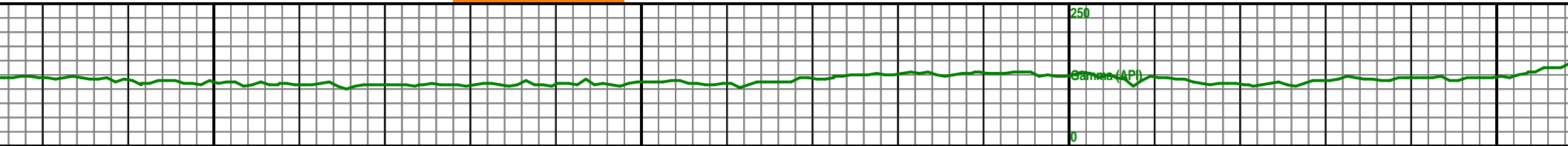
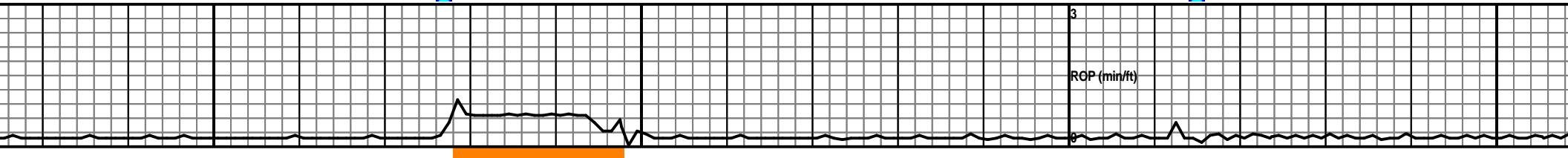
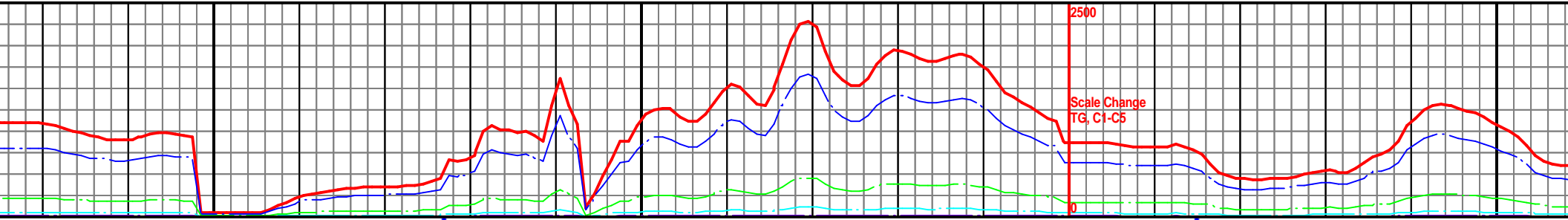
Chalky Mrlst 90%: lt-md gr, v calc, intbd biol, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biol, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

7580

MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40

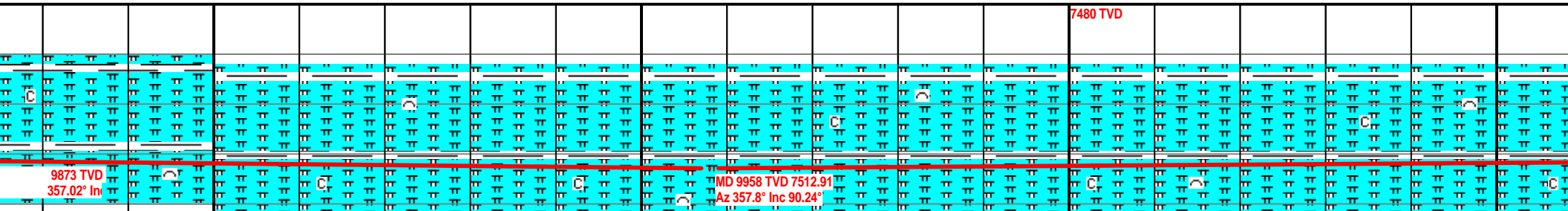


9900

9950

10000

10050



9873 TVD  
357.02° In

MD 9958 TVD 7512.91  
Az 357.8° Inc 90.24°

7530

7580

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

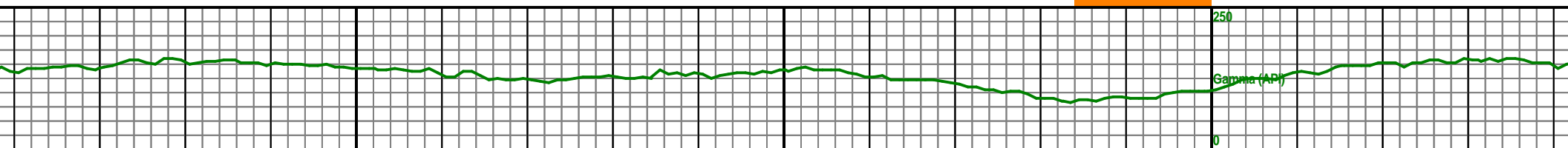
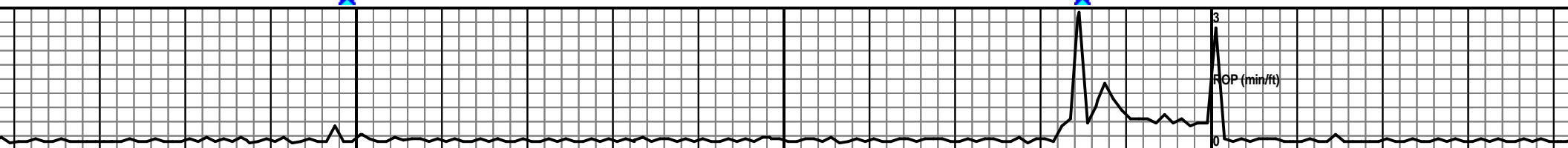
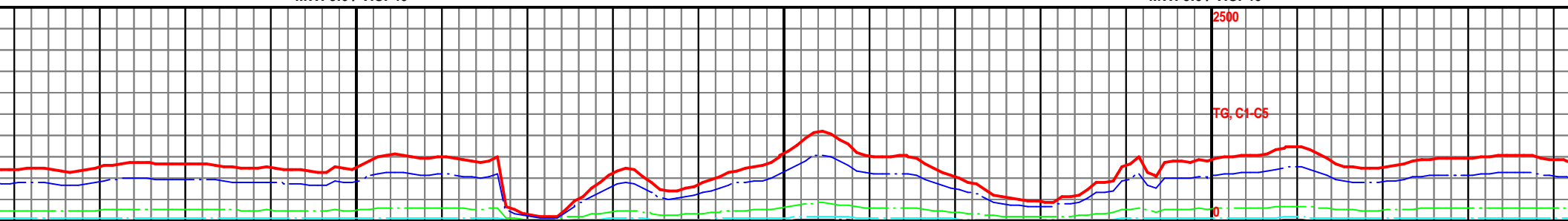
Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl,  
frm, sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.



MW: 9.0 / VIS: 40

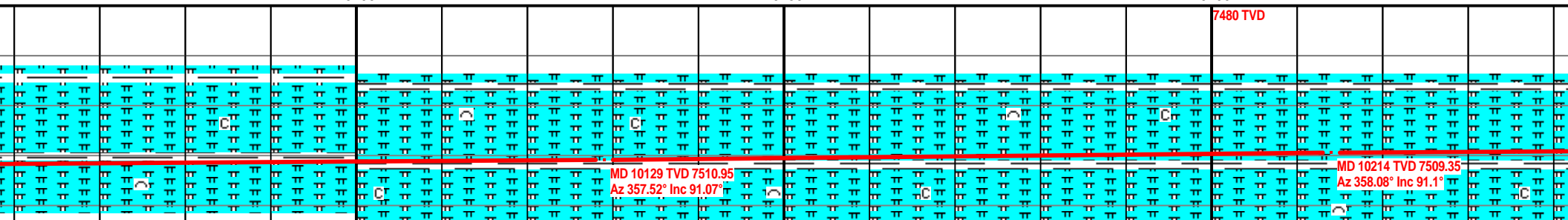
MW: 9.0 / VIS: 40



10100

10150

10200



MD 10129 TVD 7510.95  
Az 357.52° Inc 91.07°

MD 10214 TVD 7509.35  
Az 358.08° Inc 91.1°

intbd bio  
H 10%: g

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbply, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbply-sbblky, slty, grty, vs cal.

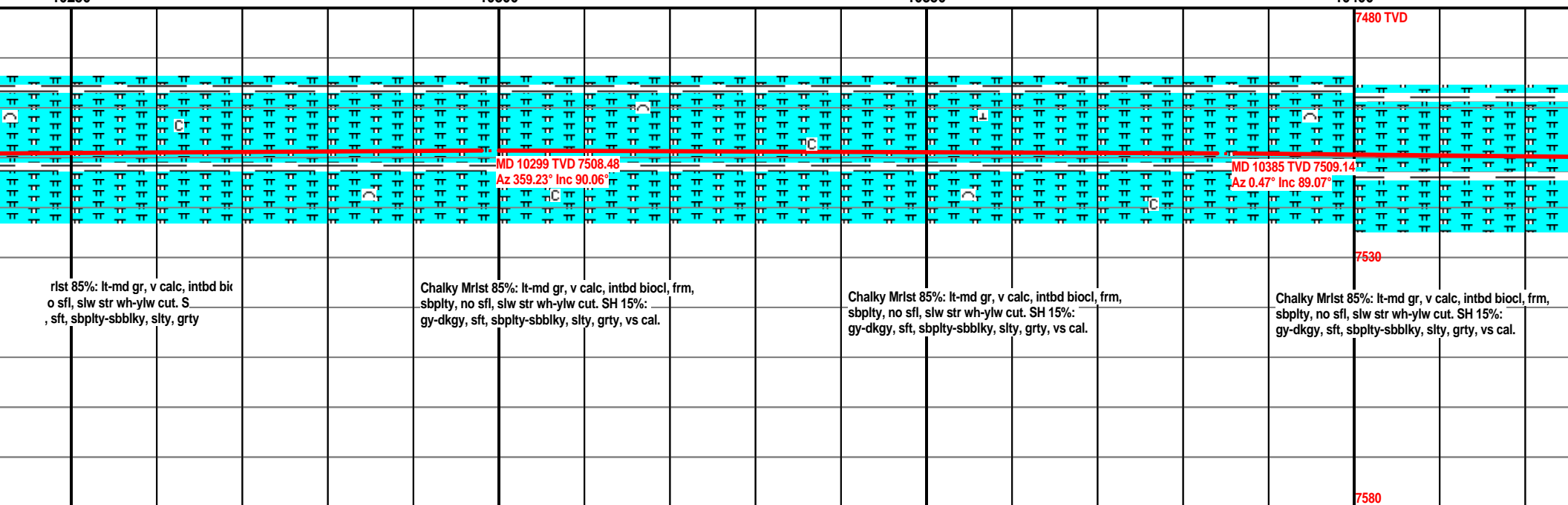
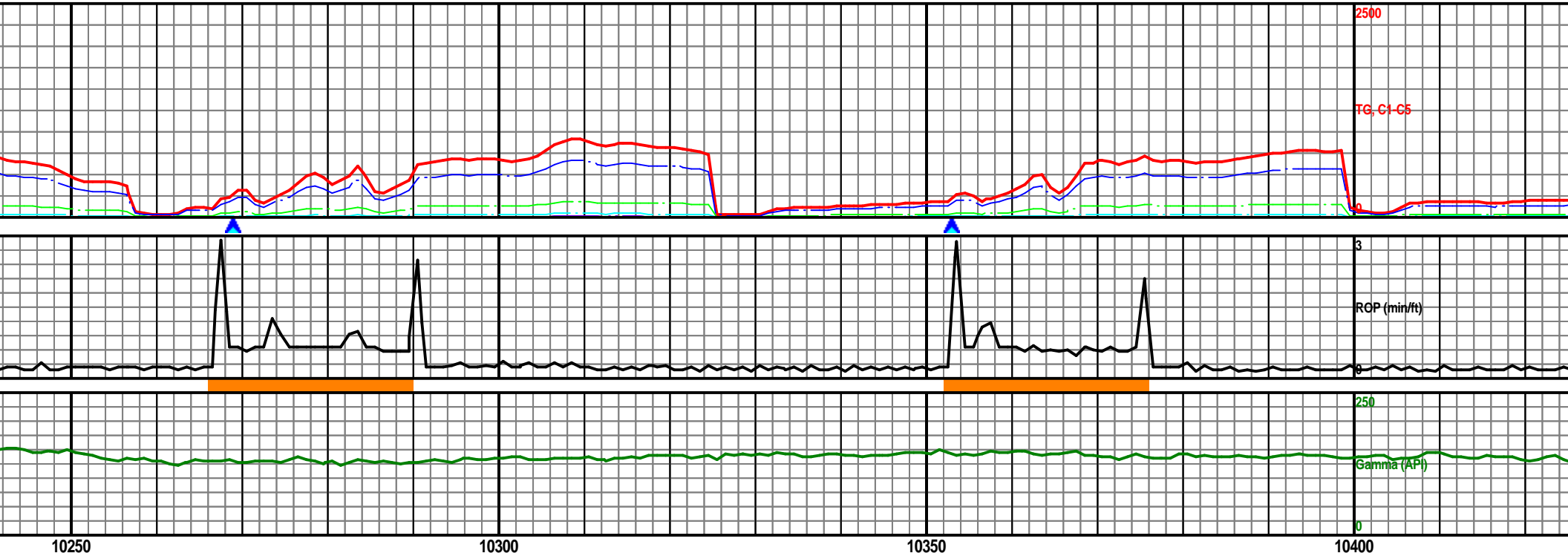
Chalky  
sbply,  
gy-dkgy

7530

7580

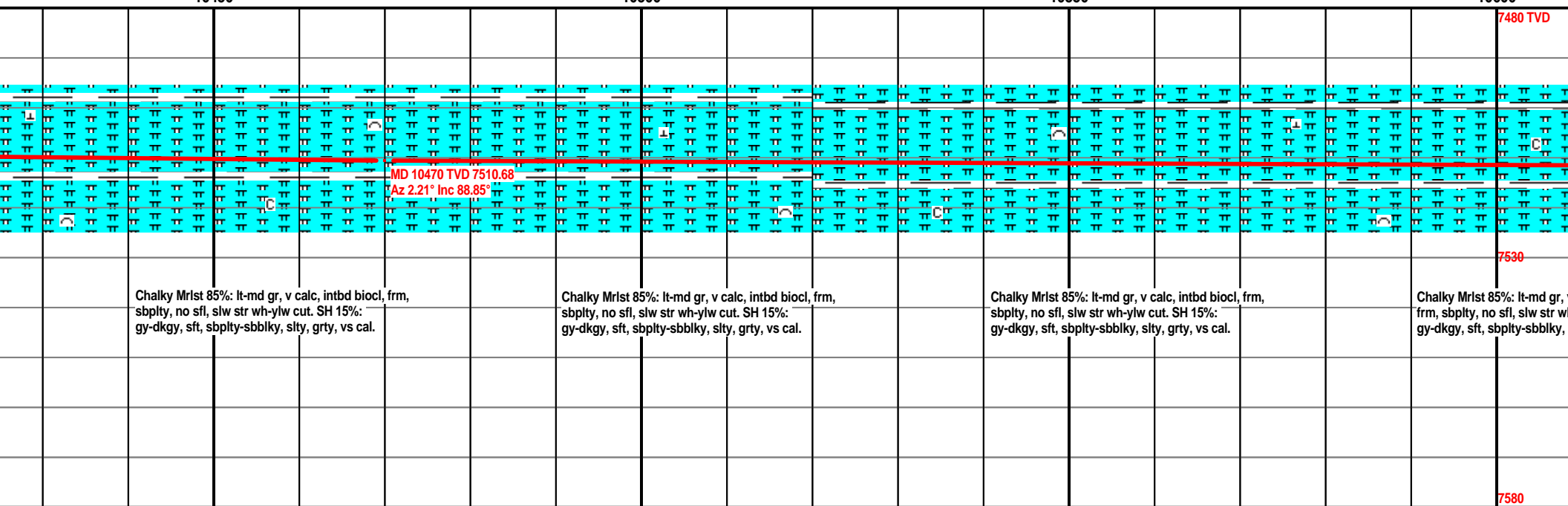
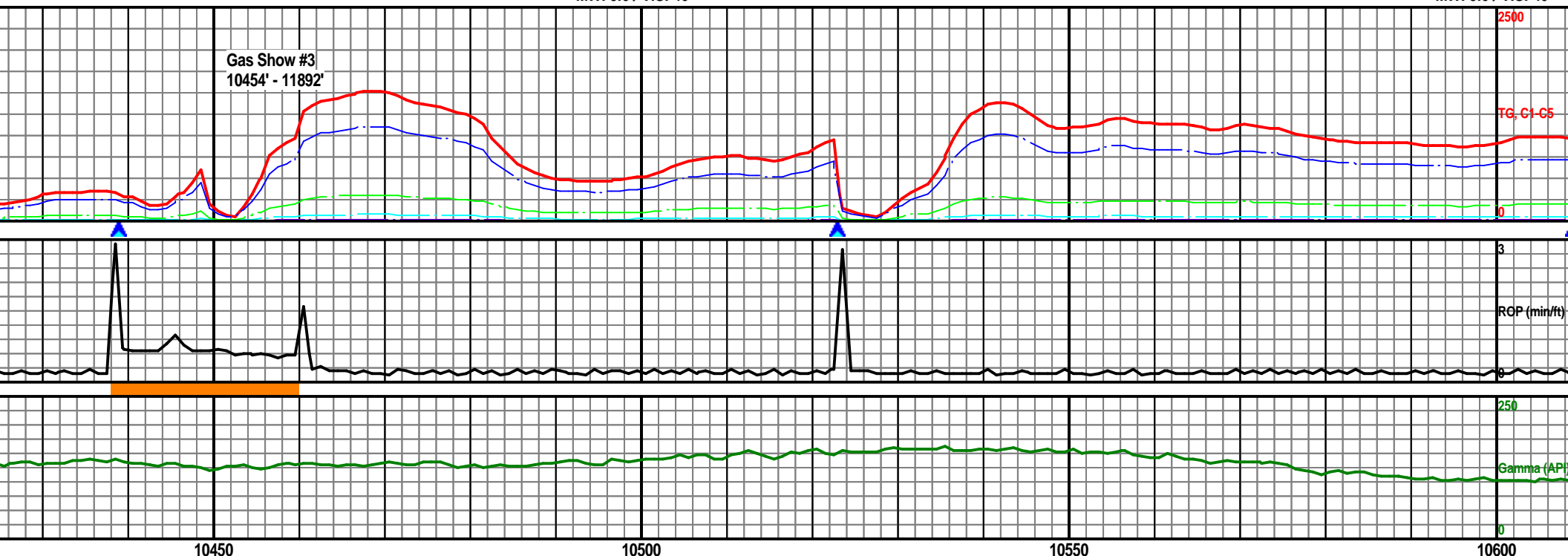
MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40

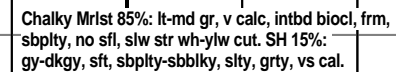


MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40

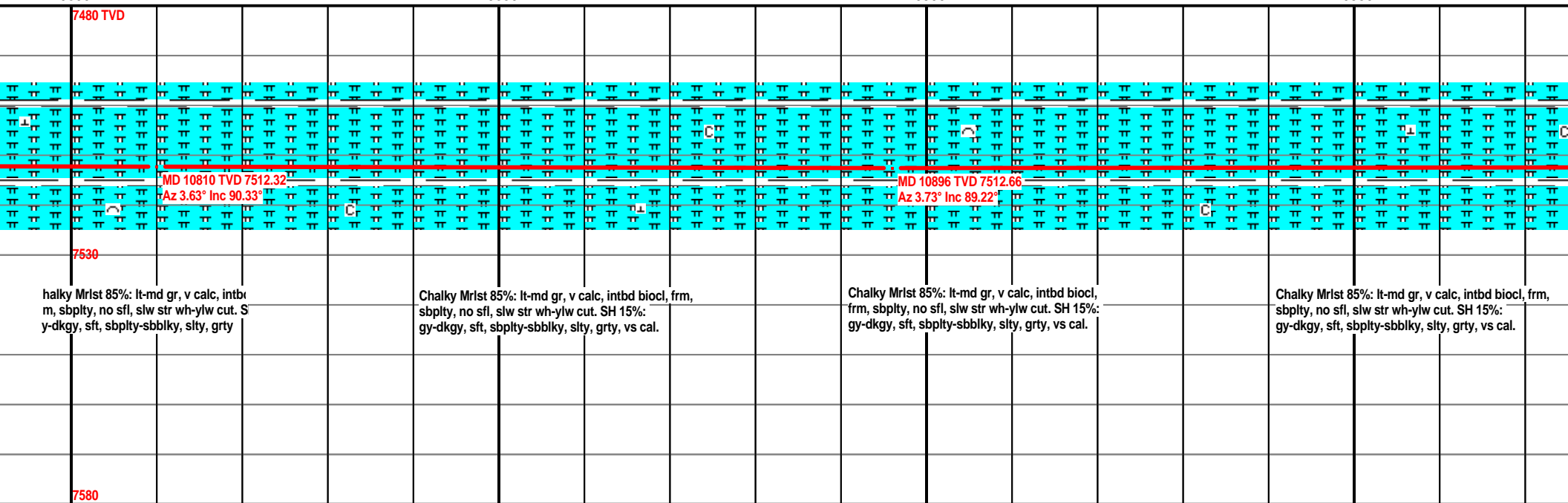
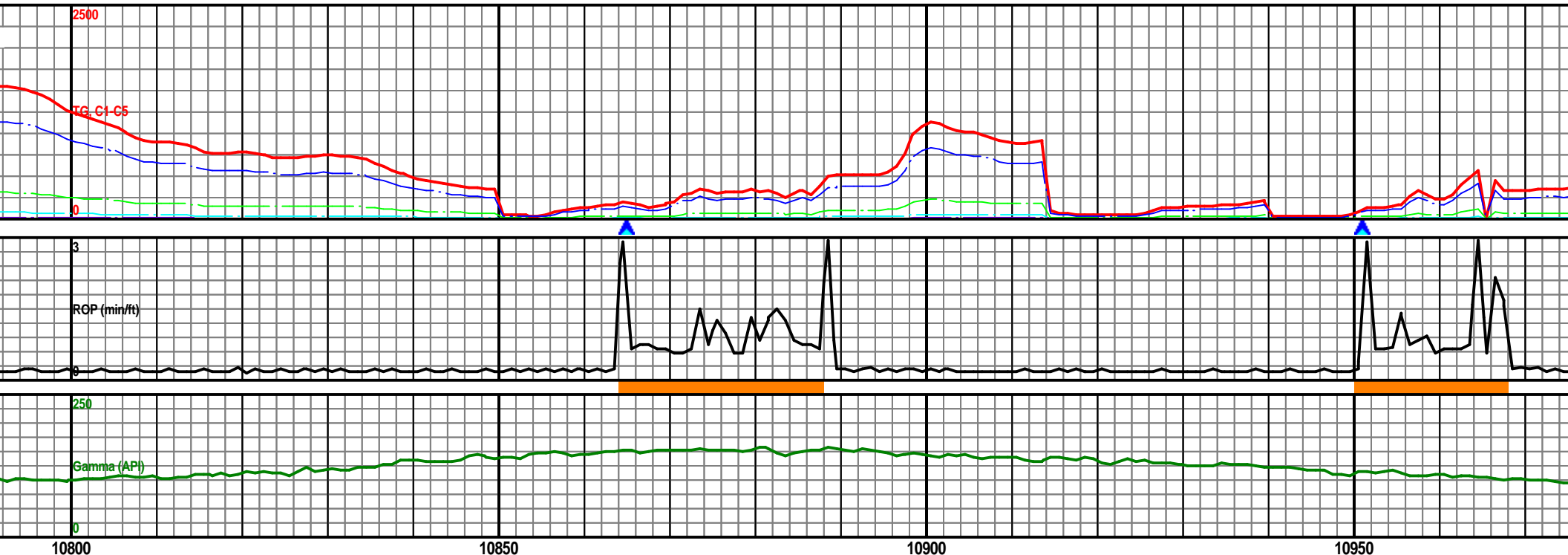


PG = 1765 L



MW: 9.0 / VIS: 40

MW: 9.1 / VIS: 42



Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbppty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbppty-sbbiky, slty, grty, vs cal.

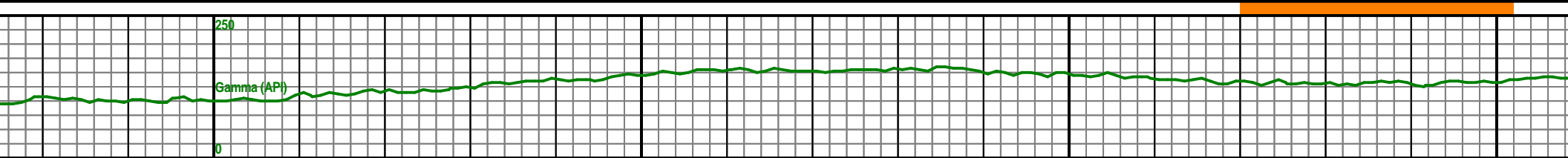
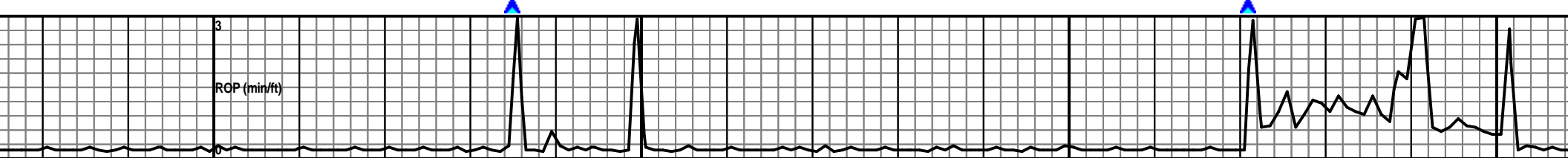
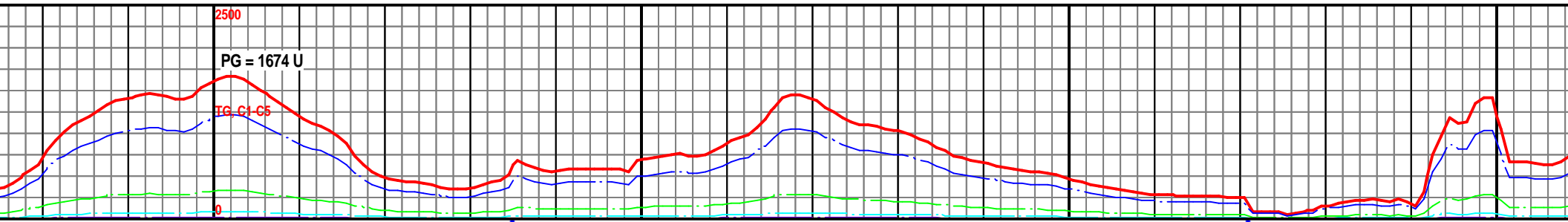
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbppty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbppty-sbbiky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbppty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbppty-sbbiky, slty, grty, vs cal.

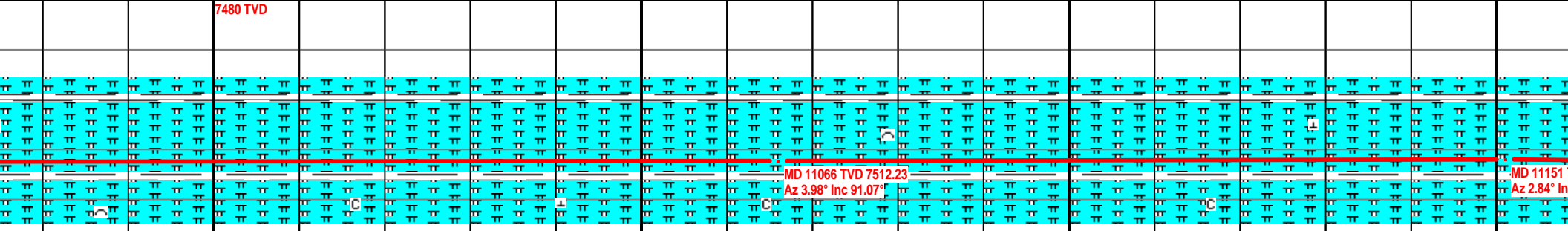
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbppty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbppty-sbbiky, slty, grty, vs cal.

MW: 9.1 / VIS: 42

MW: 9.0 / VIS: 43



11000 11050 11100 11150



Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

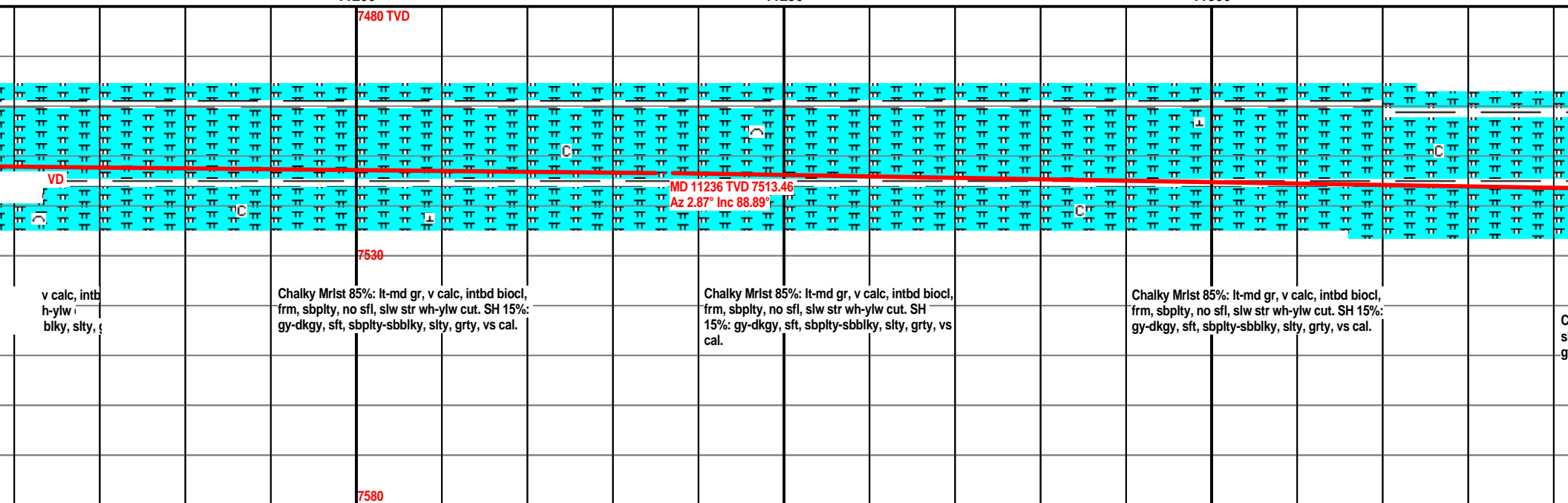
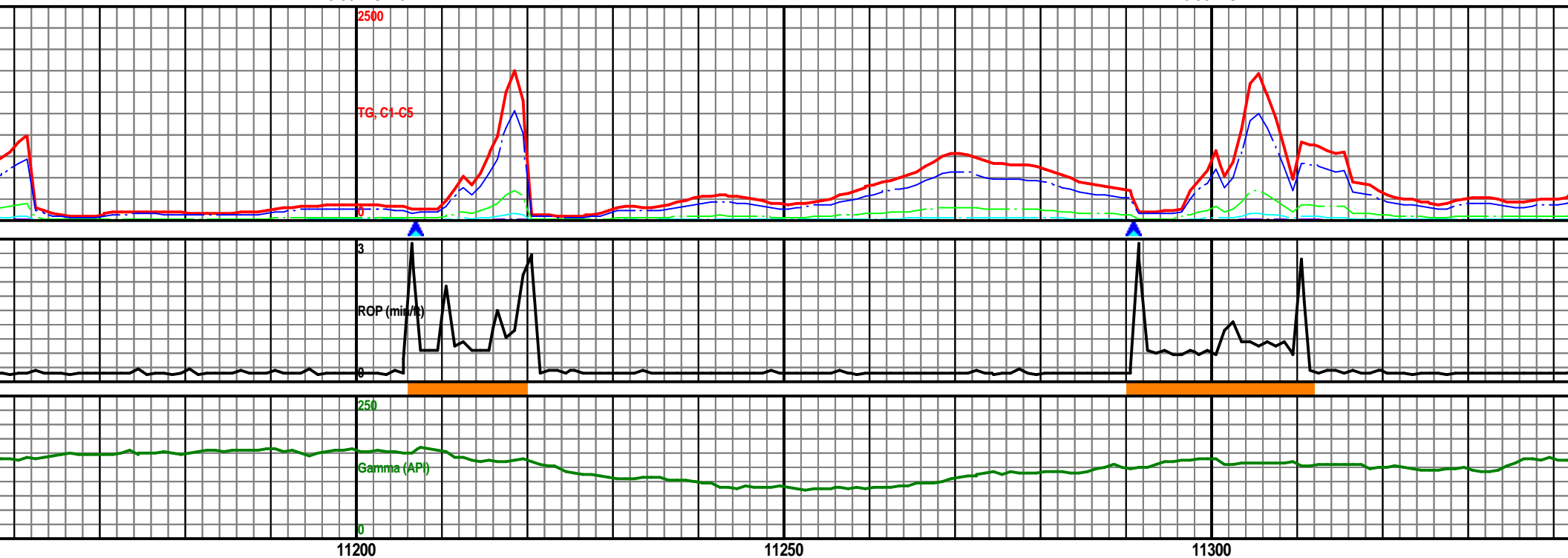
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, frm, sbplty, no sfl, slw str w 15%: gy-dkgy, sft, sbplty-sb cal.

7580

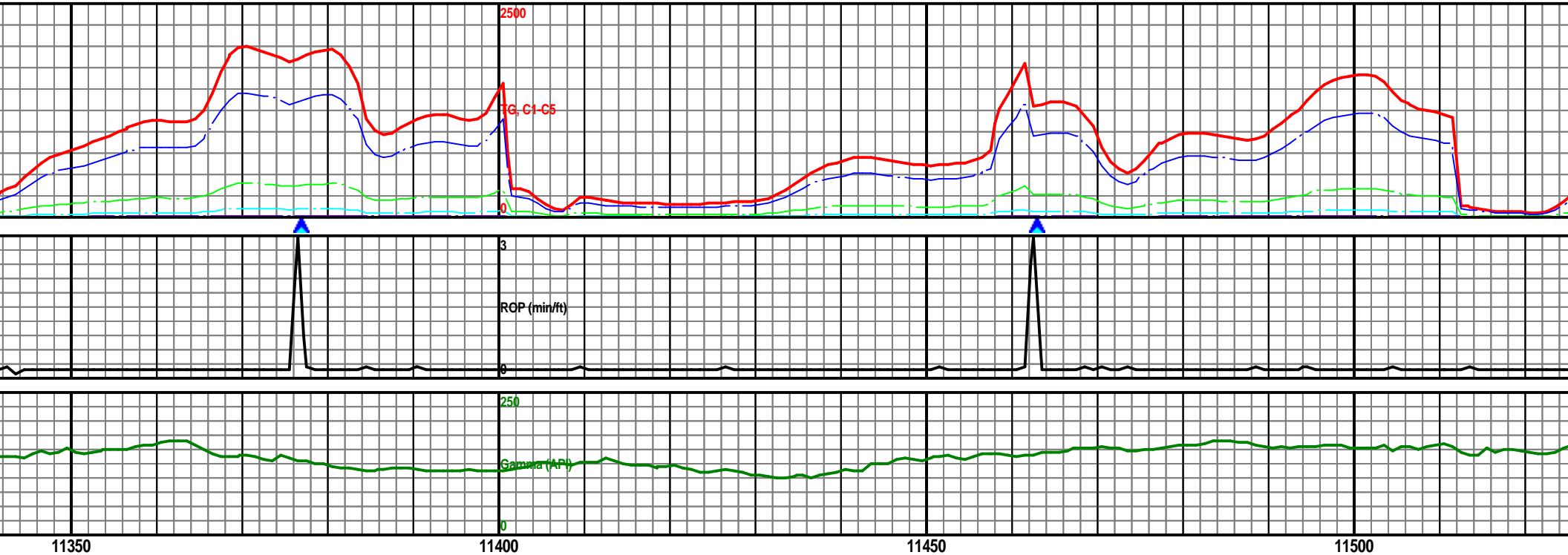
MW: 9.0 / VIS: 43

MW: 8.9 / VIS: 41

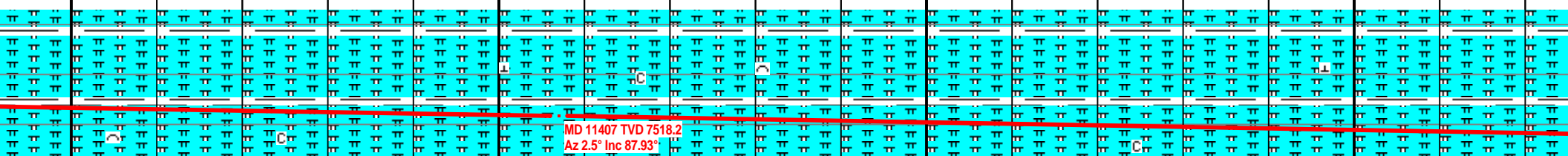


MW: 8.9 / VIS: 41

MW: 8.9 / VIS: 41



7480 TVD



7530

chalky Mrlst 85%: lt-md gr, v calc, intbd bioc, frm, sbply, no sfl, slw str wh-ylw cut. S y-dkgy, sft, sbply-sbbly, slty, grty.

Chalky Mrlst 85%: lt-md gr, v calc, intbd bioc, frm, sbply, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd bioc, frm, sbply, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

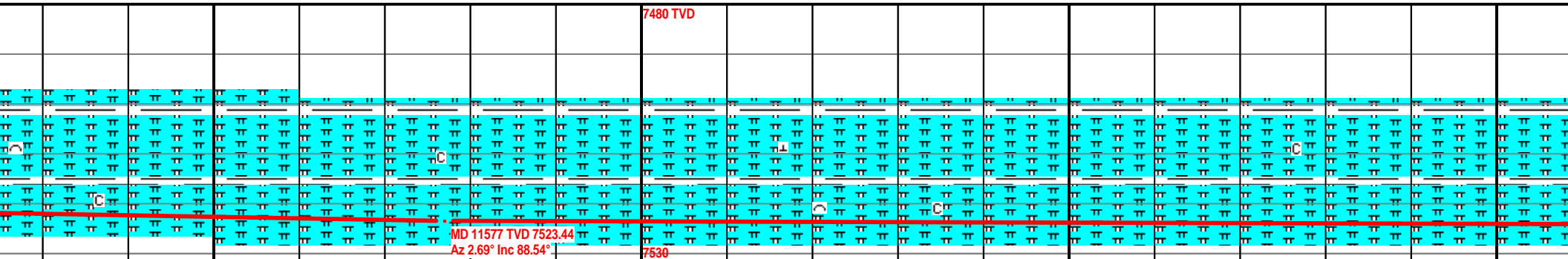
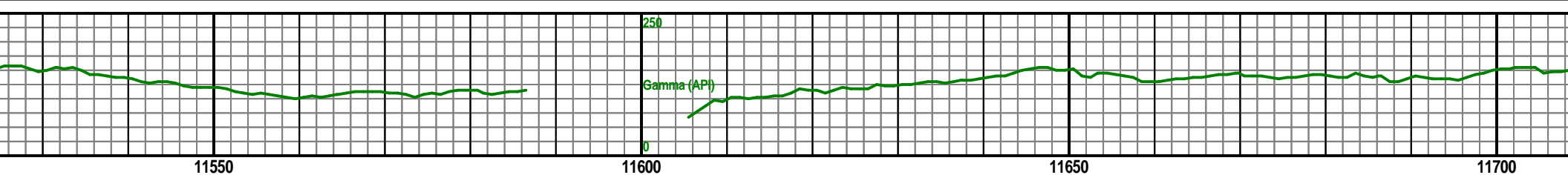
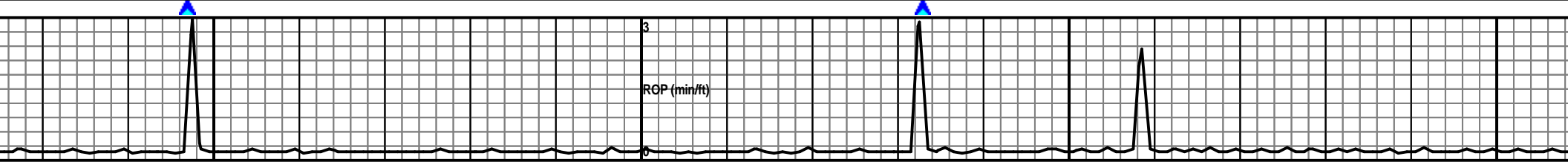
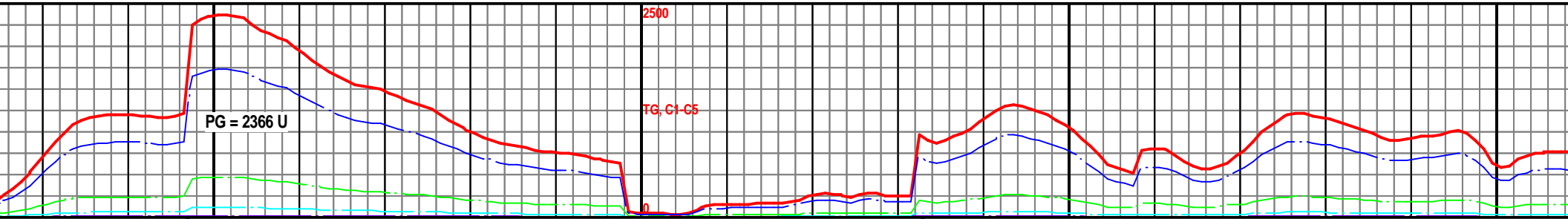
Chalky Mrlst 85%: lt-md gr, v calc, intbd bioc, frm, sbply, no sfl, slw str wh-ylw cut. SH 15%: gy-dkgy, sft, sbply-sbbly, slty, grty, vs cal.

7580



MW: 8.9 / VIS: 41

MW: 9.0 / VIS: 42



Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbplty-sbbkly, slty, grty, vs cal.

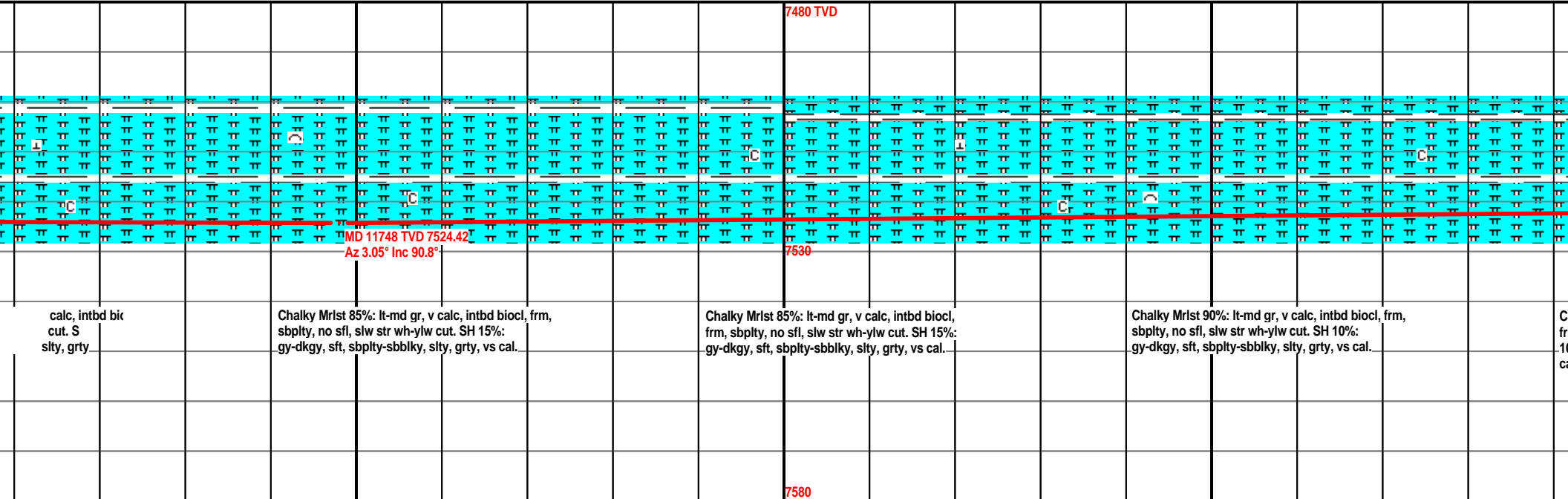
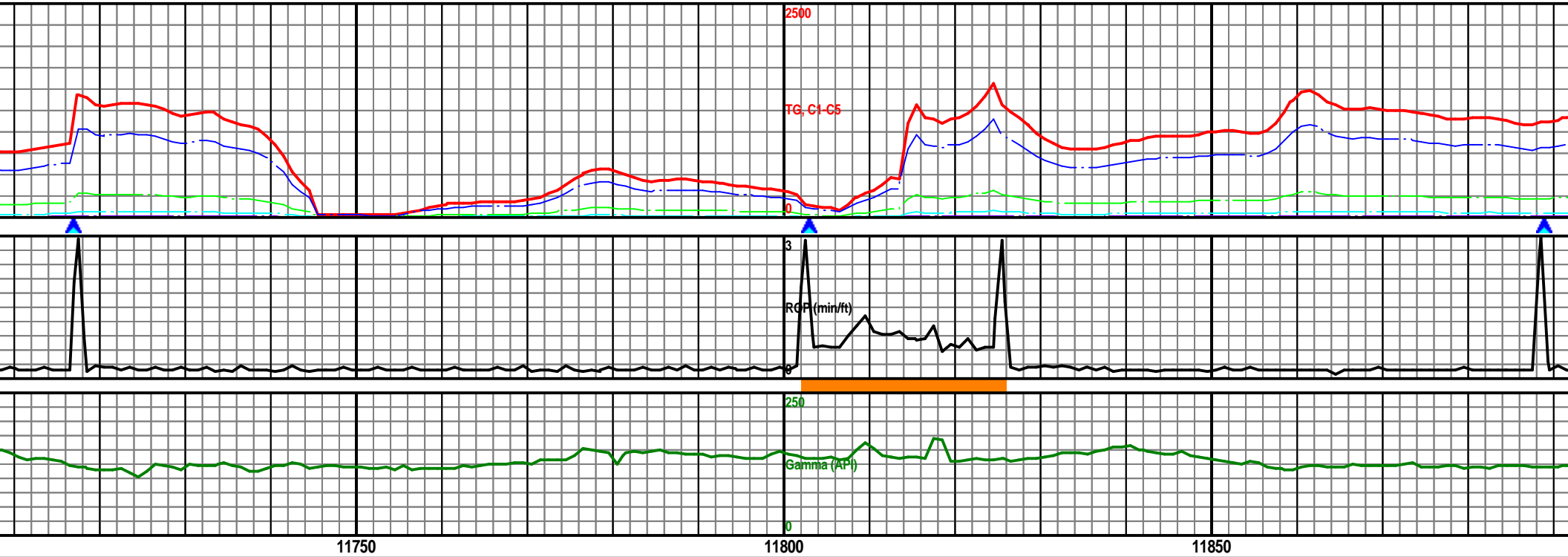
Chalky Mrlst 85%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 15%:  
gy-dkgy, sft, sbplty-sbbkly, slty, grty, vs cal.

Chalky Mrlst 85%: lt-md gr, v calc, intbd  
biocl, frm, sbplty, no sfl, slw str wh-ylw cut.  
SH 15%: gy-dkgy, sft, sbplty-sbbkly, slty,  
grty, vs cal.

Chalky Mrlst 85%: lt-md gr,  
sbplty, no sfl, slw str wh-ylw  
gy-dkgy, sft, sbplty-sbbkly,

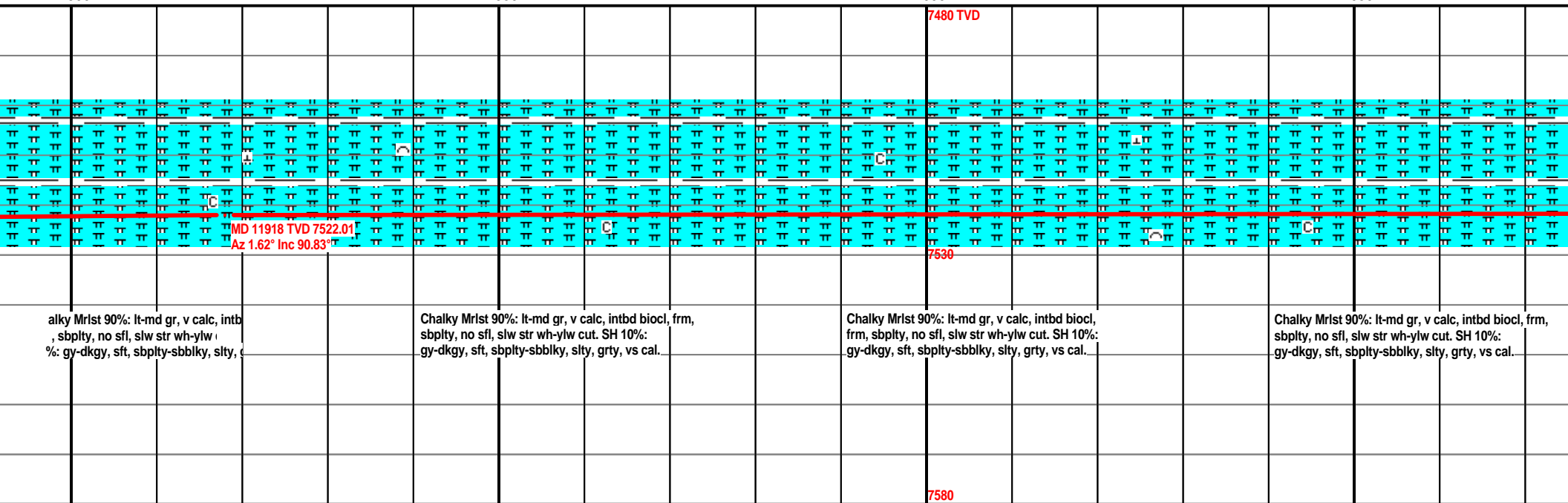
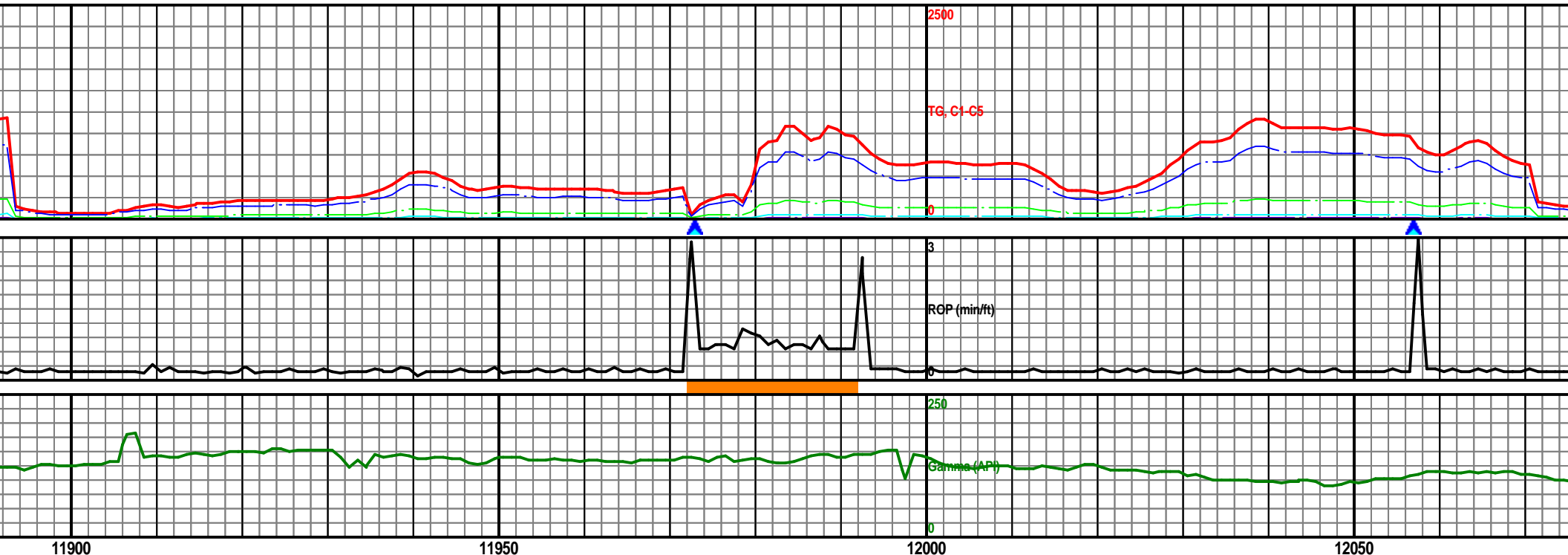
7580

MW: 9.0 / VIS: 42



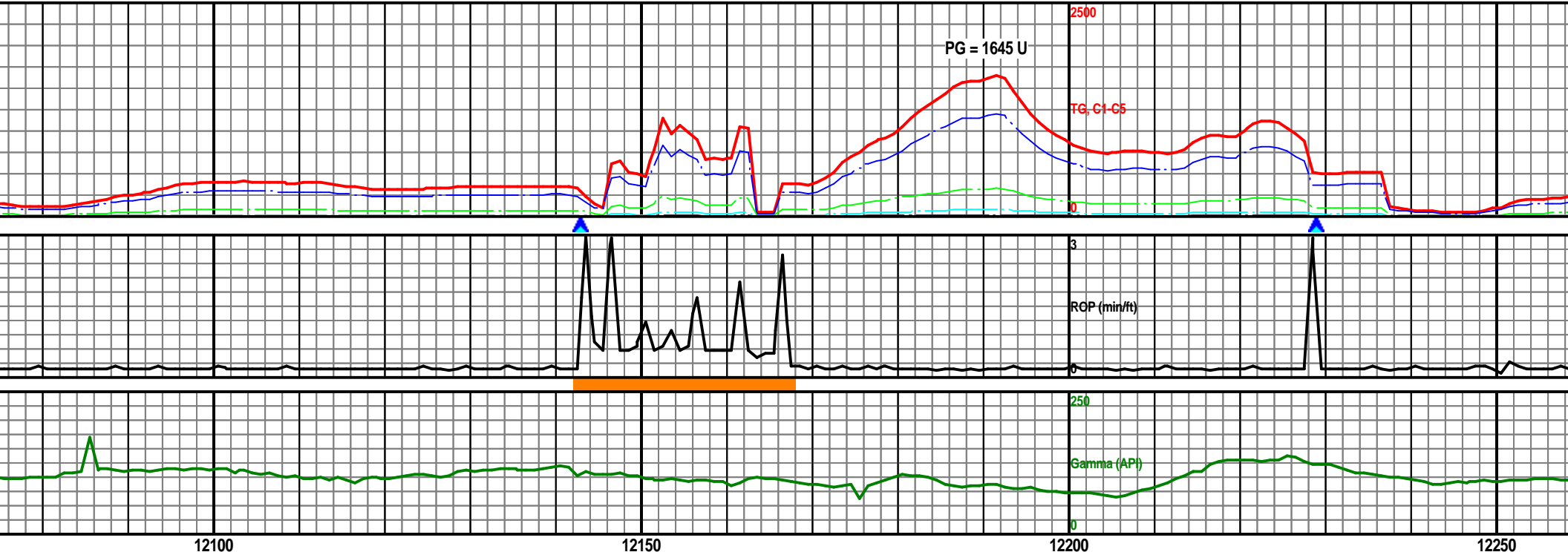
MW: 9.0 / VIS: 42

MW: 9.0 / VIS: 40



MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40

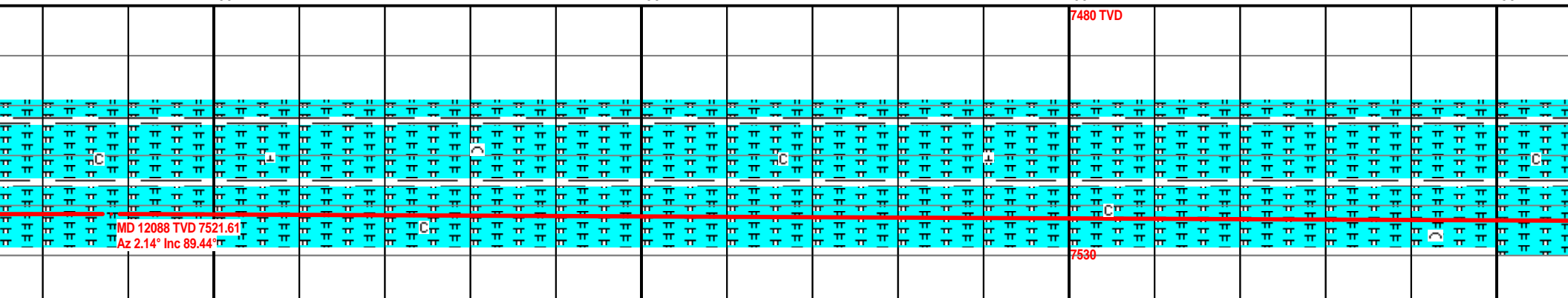


12100

12150

12200

12250



7480 TVD

7530

7580

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

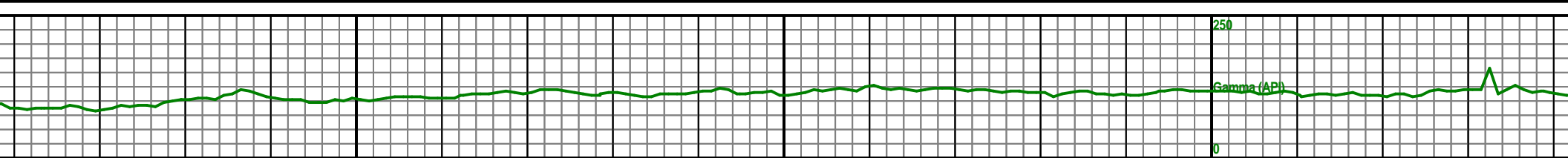
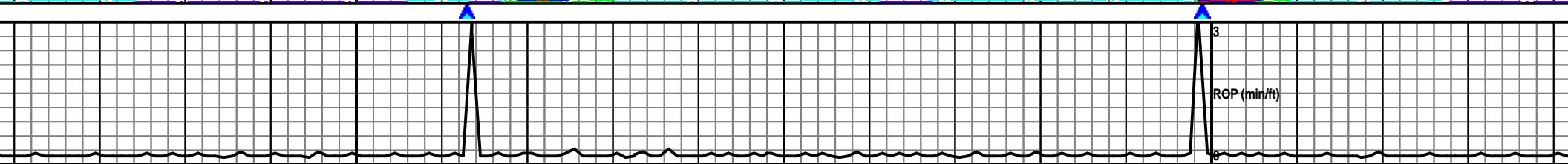
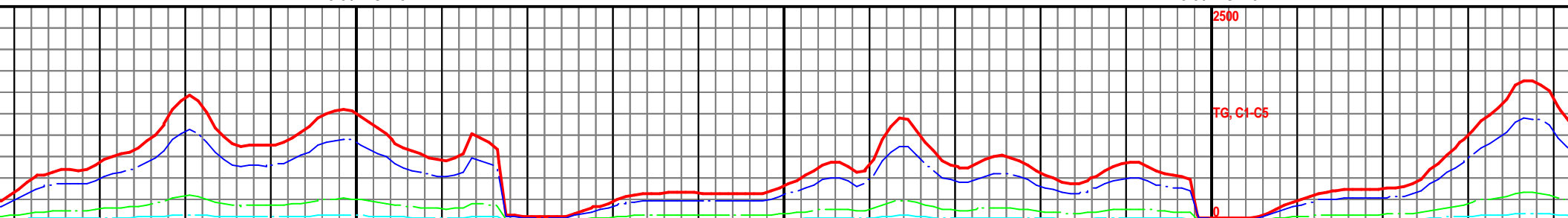
Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, frm, sbpity, no sfl, slw str wh-ylw cut. SH 10%: gy-dkgy, sft, sbpity-sbbiky, slty, grty, vs cal.

MW: 9.0 / VIS: 40

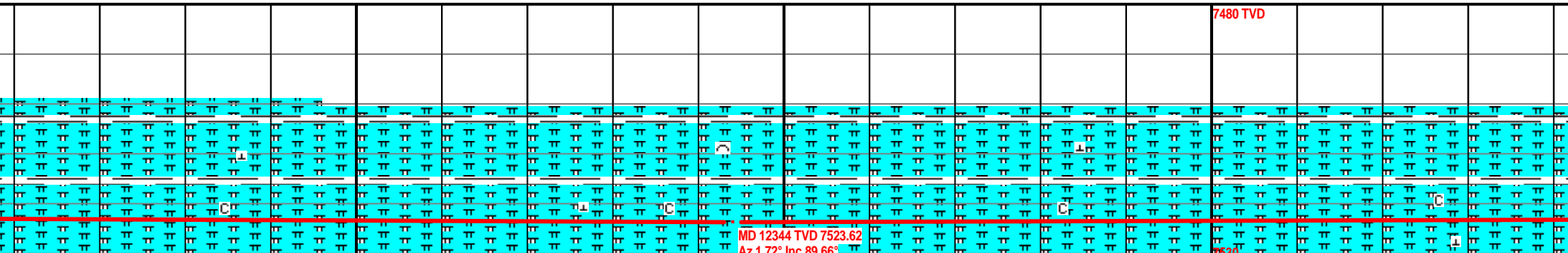
MW: 9.0 / VIS: 40



12300

12350

12400



calc, intbr  
-ylw cut. S  
silty, grty

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbkly, silty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbkly, silty, grty, vs cal.

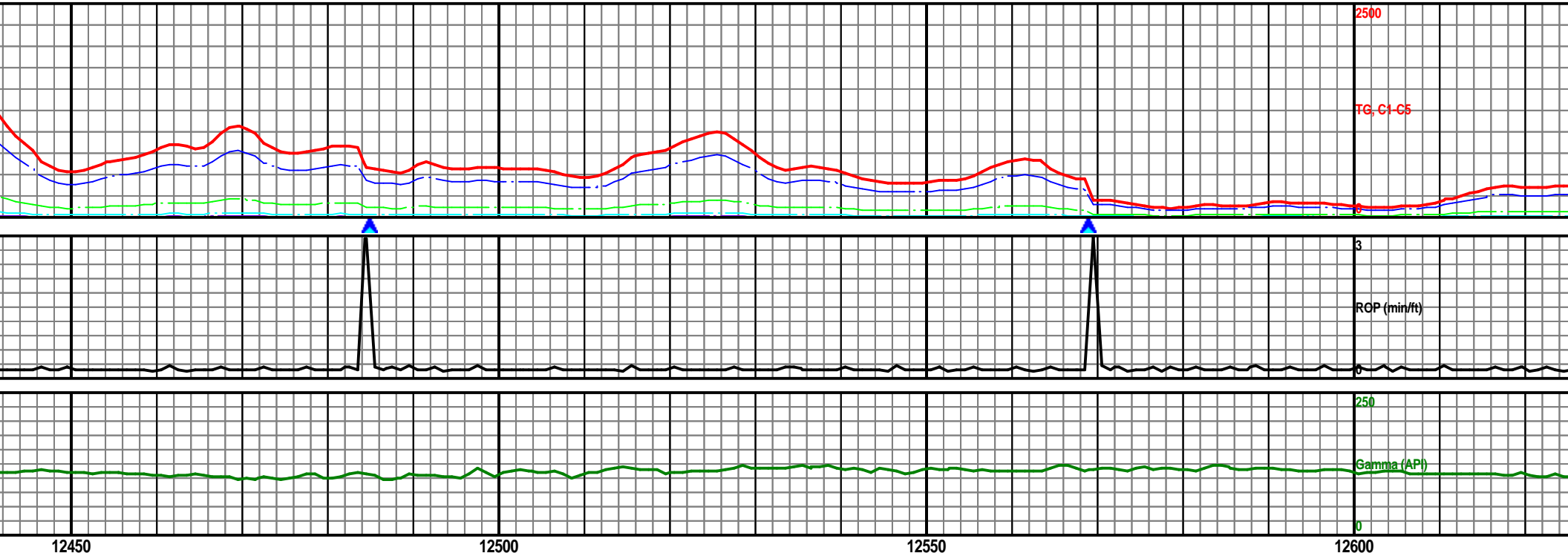
Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbkly, silty, grty, vs cal.

Chalky M  
sbplty, n  
gy-dkgy,

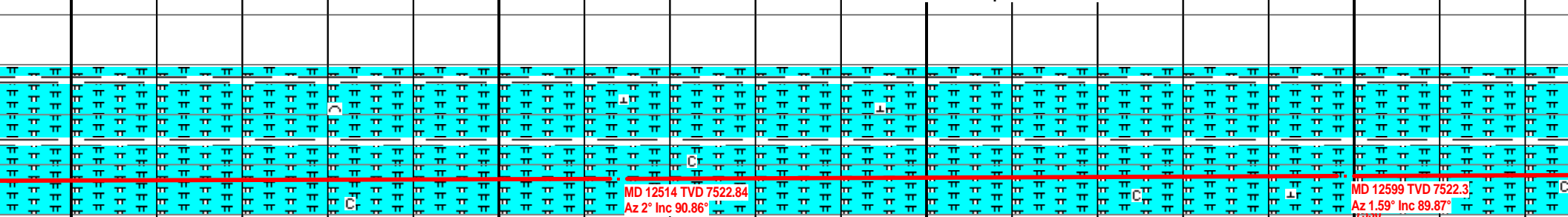
7580

MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40



11/15/13 4:30am Depth @ 12562'MD



rist 90%: lt-md gr, v calc, intbd biocl, frm,  
o sfl, slw str wh-ylw cut. S  
sft, sbplty-sbblky, slty, grty

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

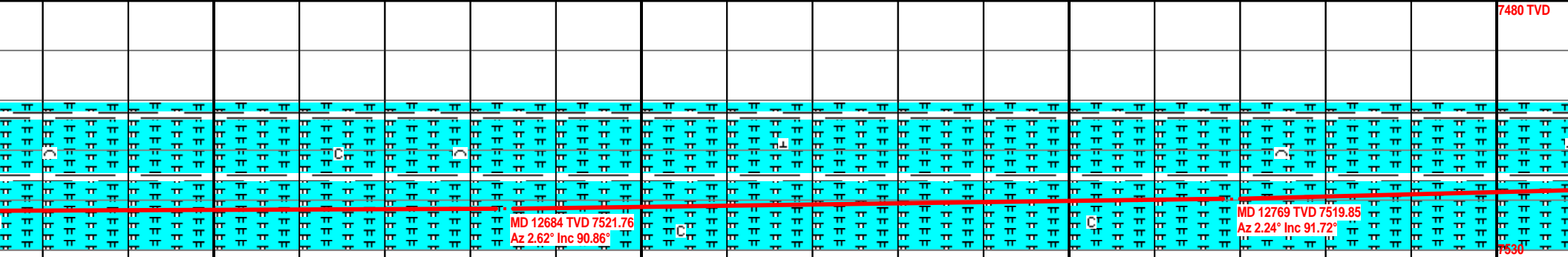
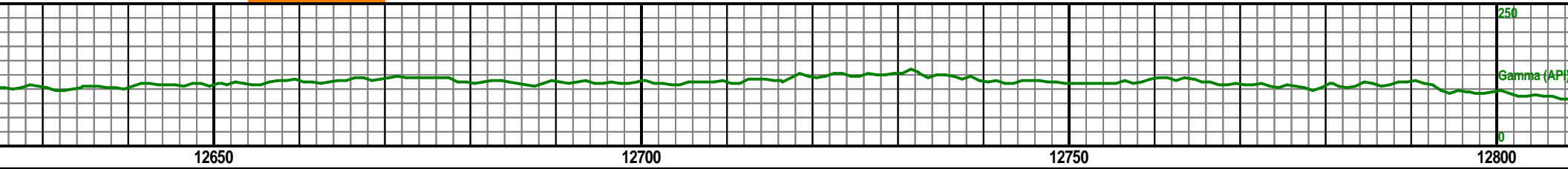
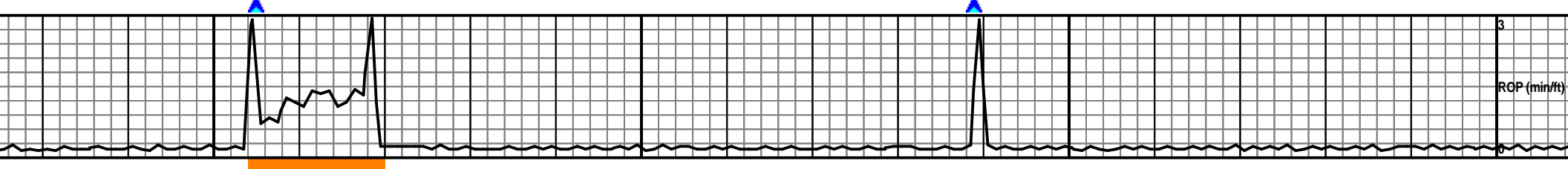
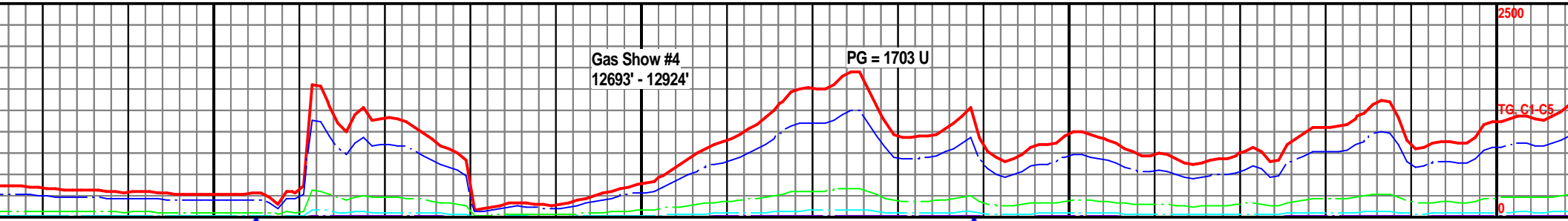
Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

7580

MW: 9.0 / VIS: 40

MW: 9.0 / VIS: 40



Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

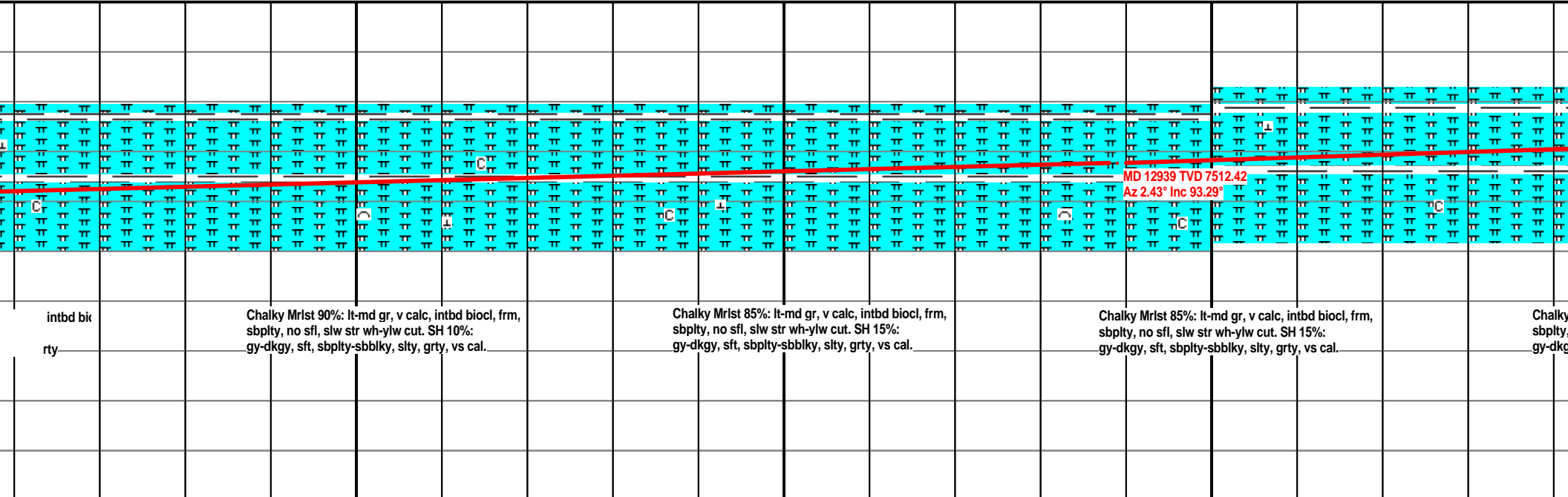
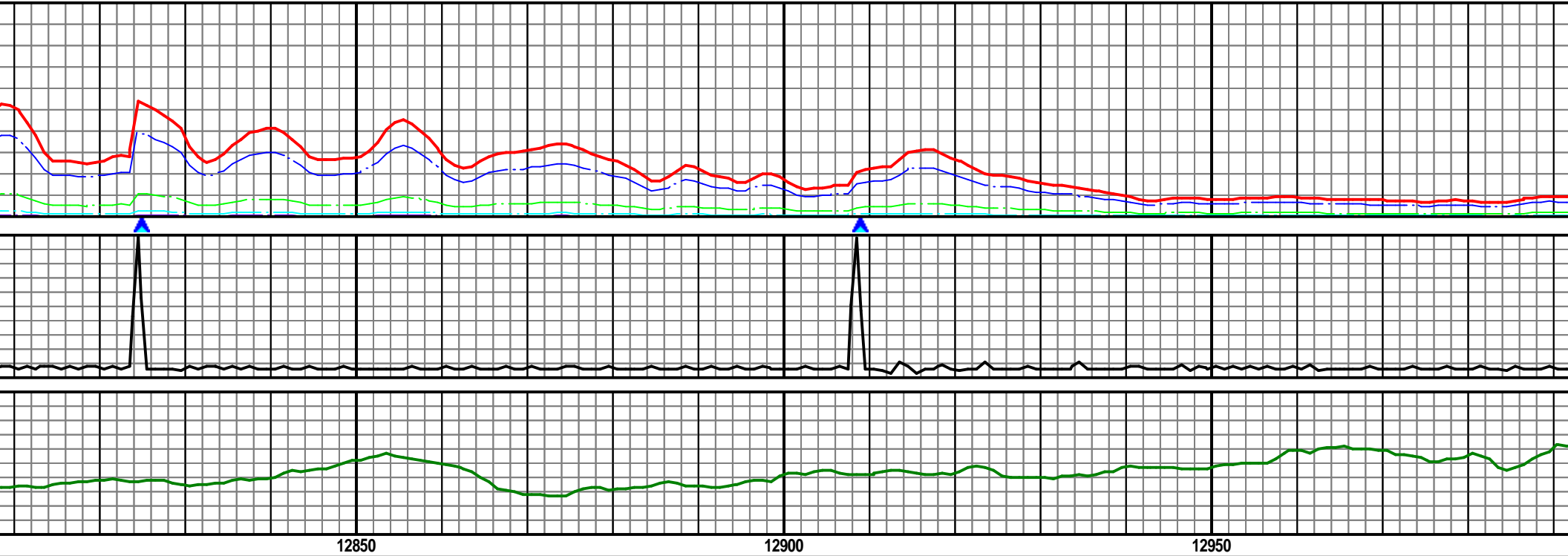
Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, g

7580

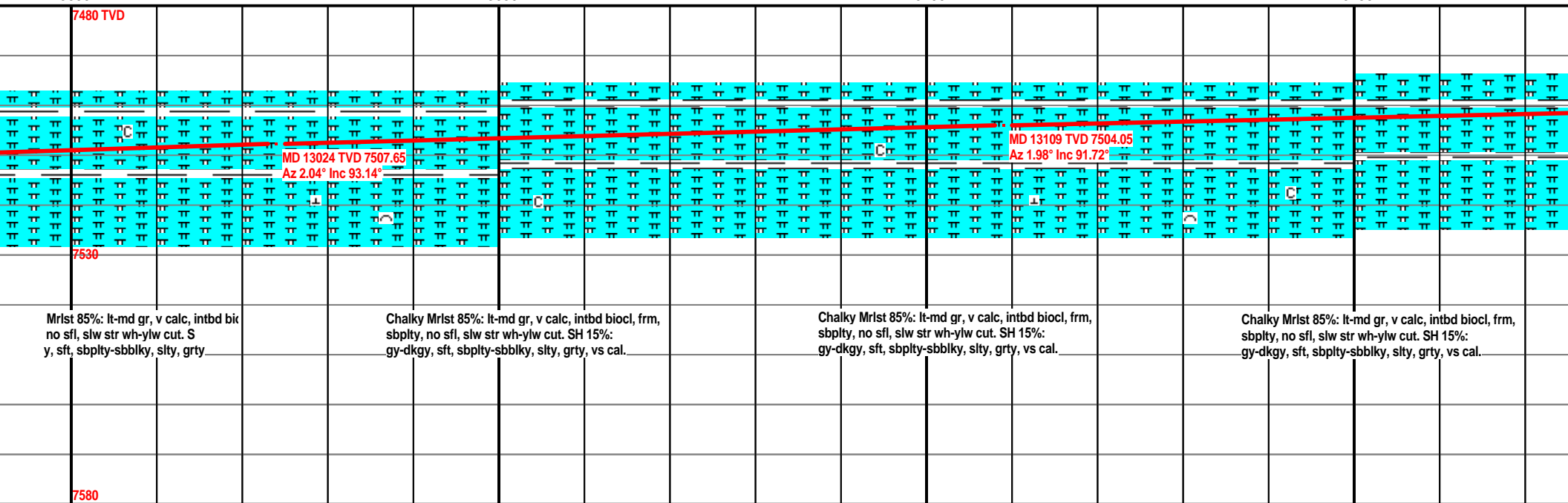
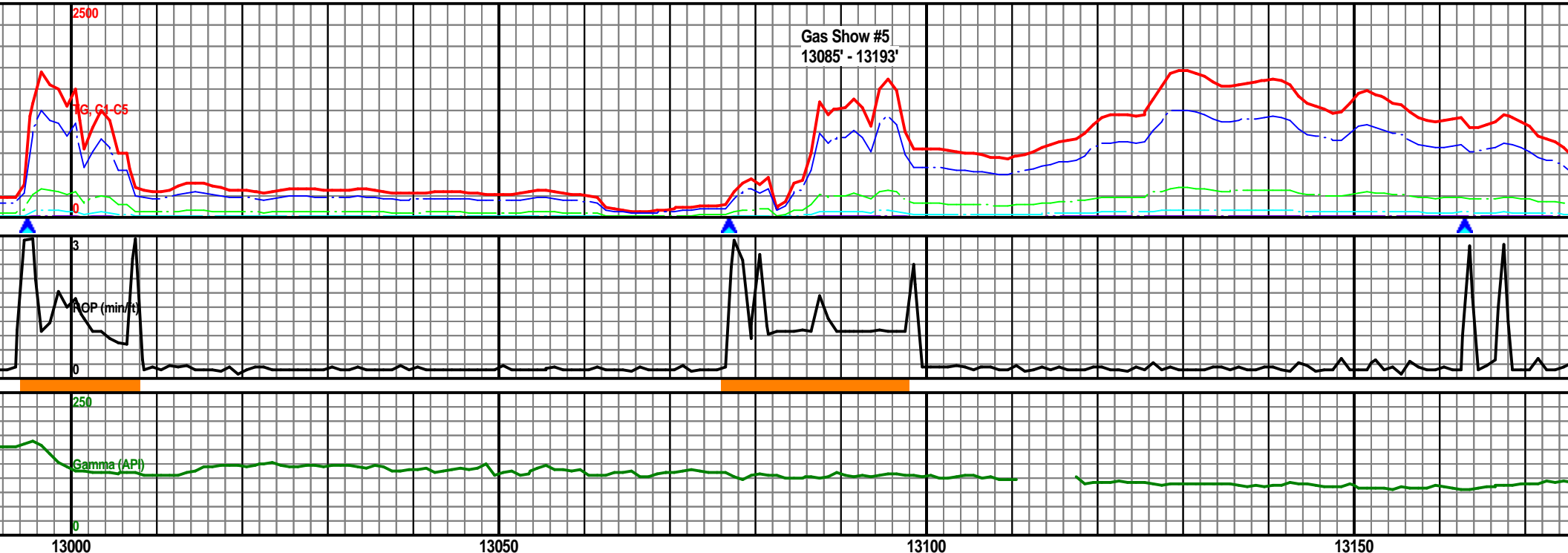
MW: 9.0 / VIS: 40





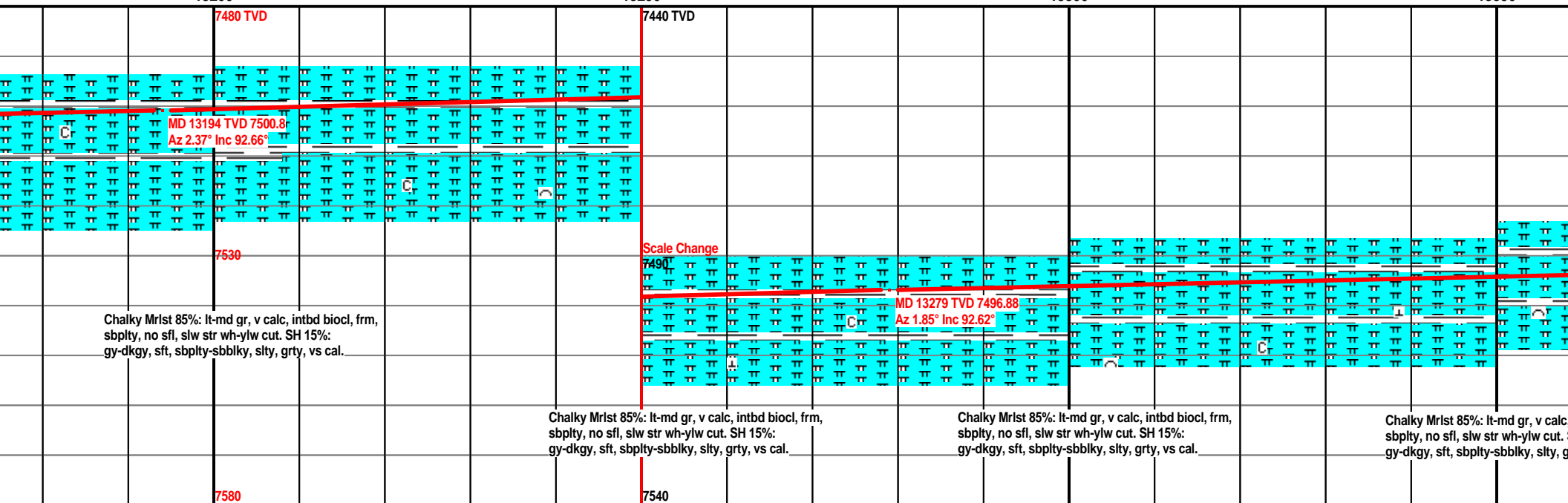
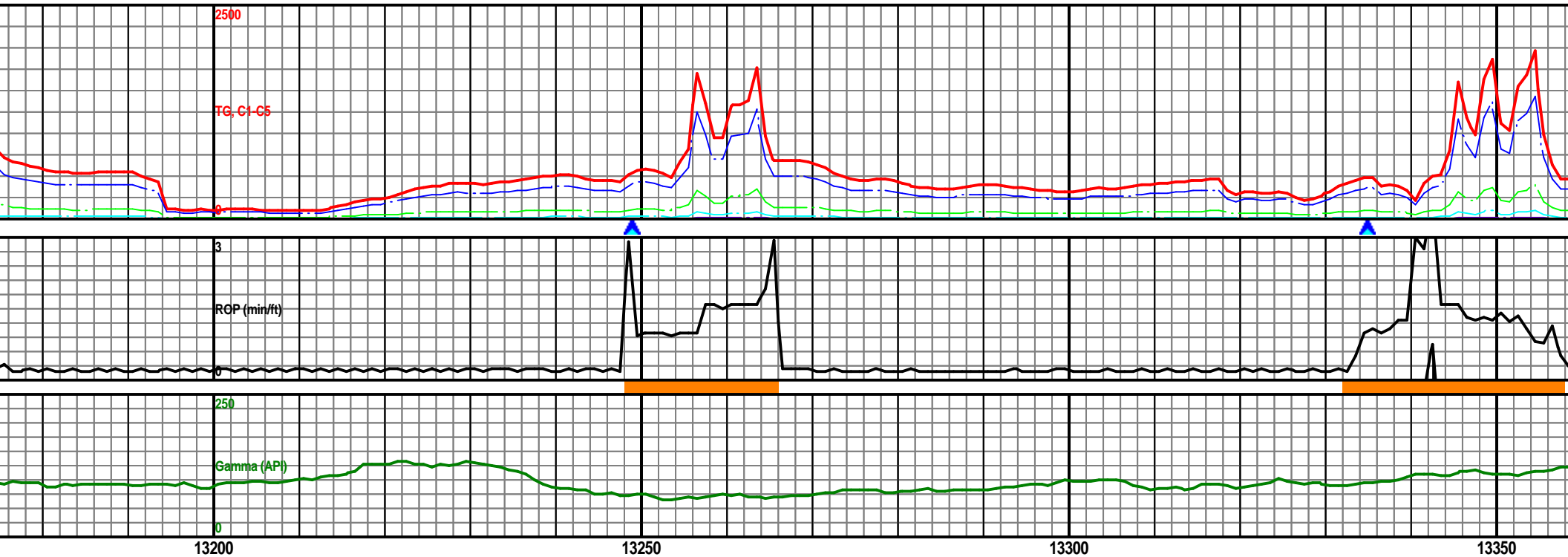
MW: 9.0 / VIS: 41

MW: 9.0 / VIS: 41



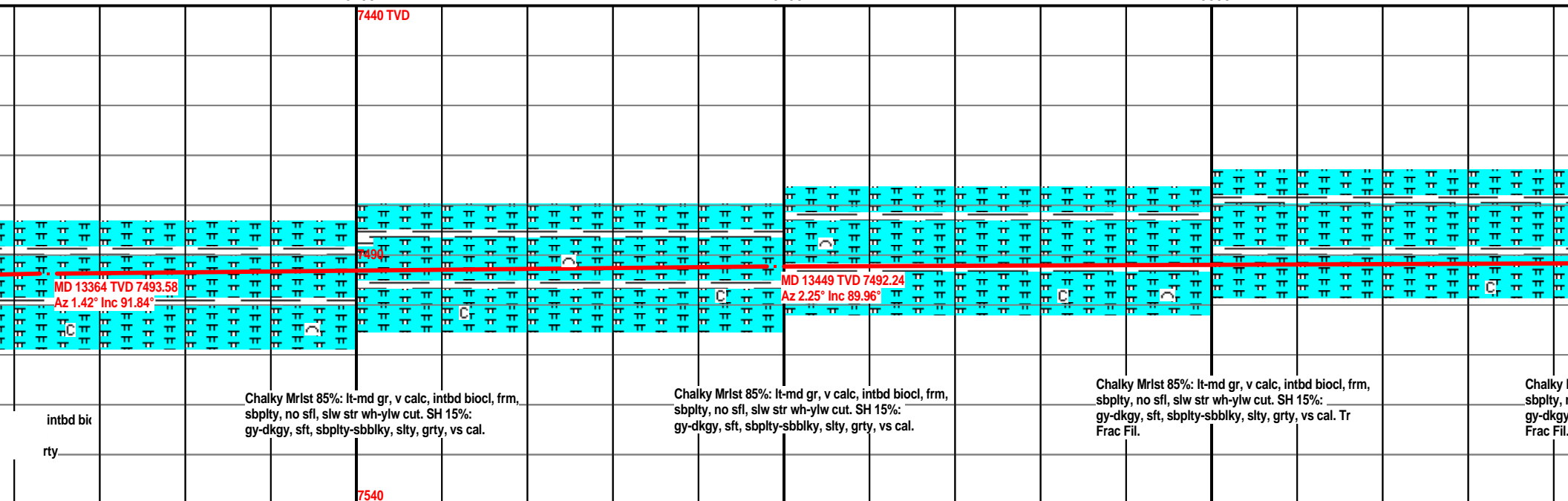
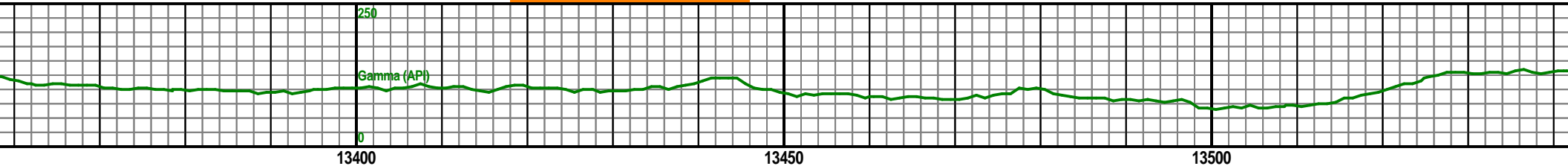
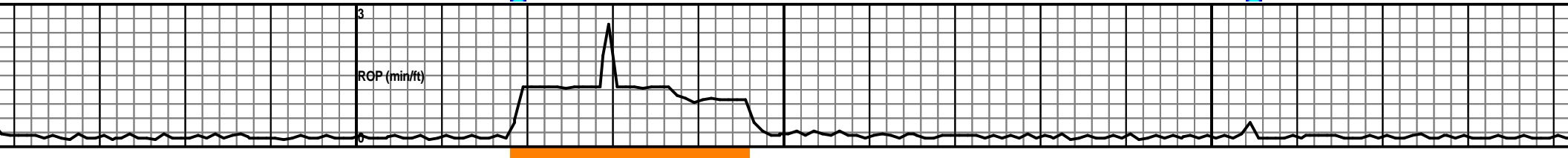
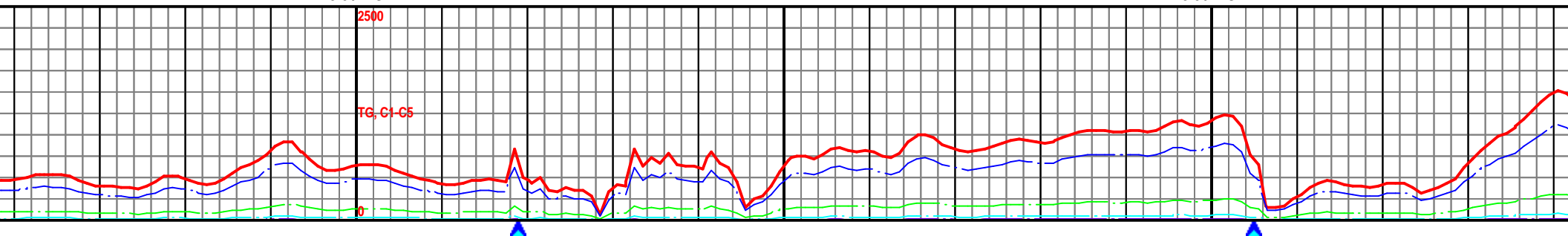
MW: 9.0 / VIS: 41

MW: 9.0 / VIS: 41



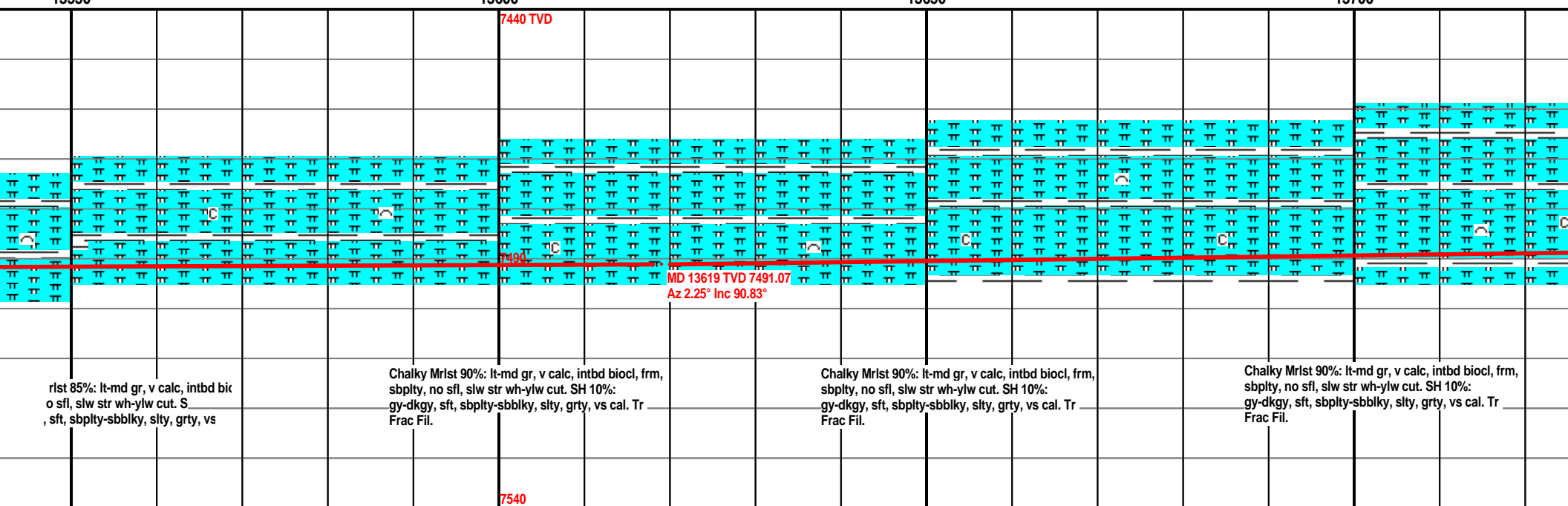
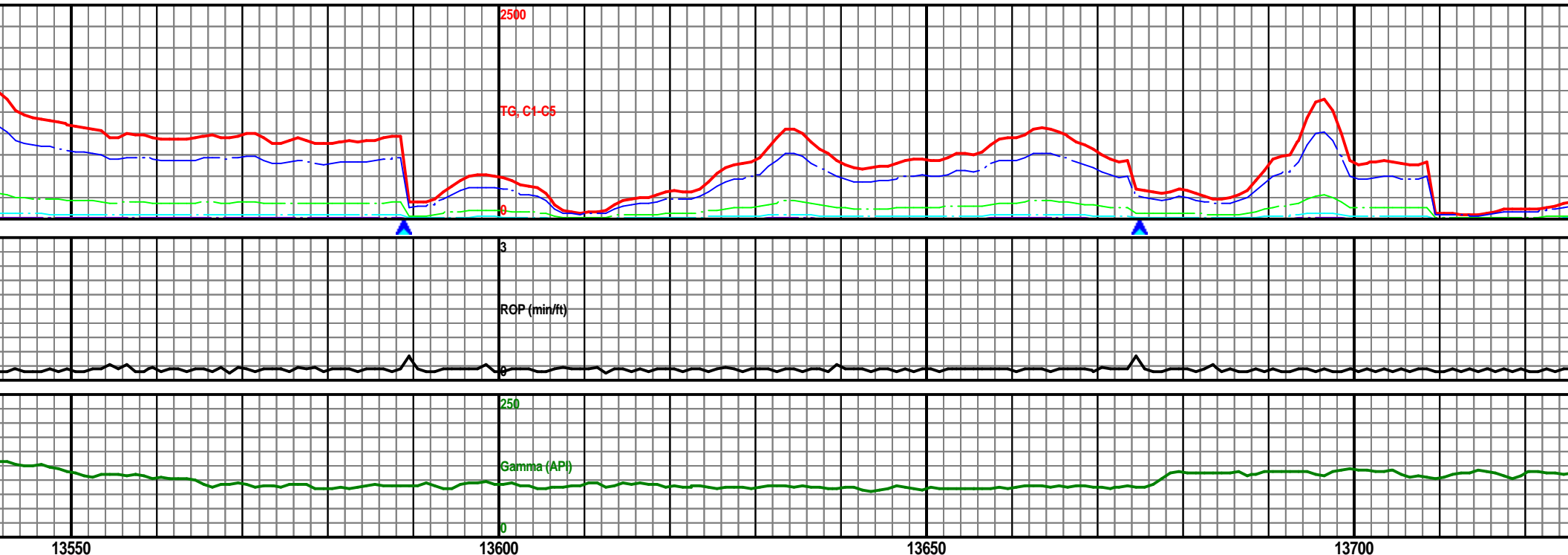
MW: 9.0 / VIS: 41

MW: 9.0 / VIS: 41



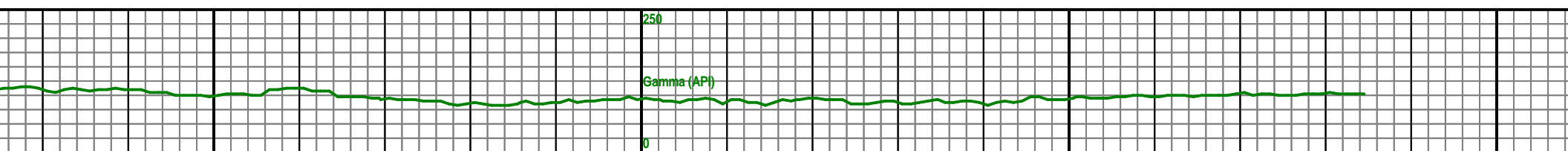
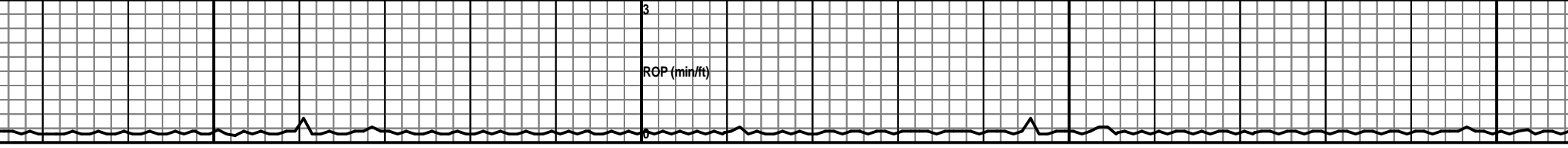
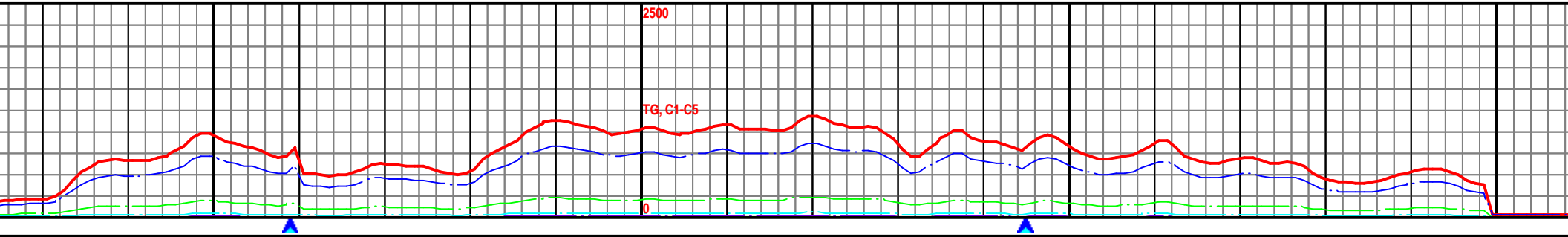
MW: 9.0 / VIS: 41

MW: 9.0 / VIS: 41



MW: 9.0 / VIS: 41

MW: 9.0 / VIS: 41

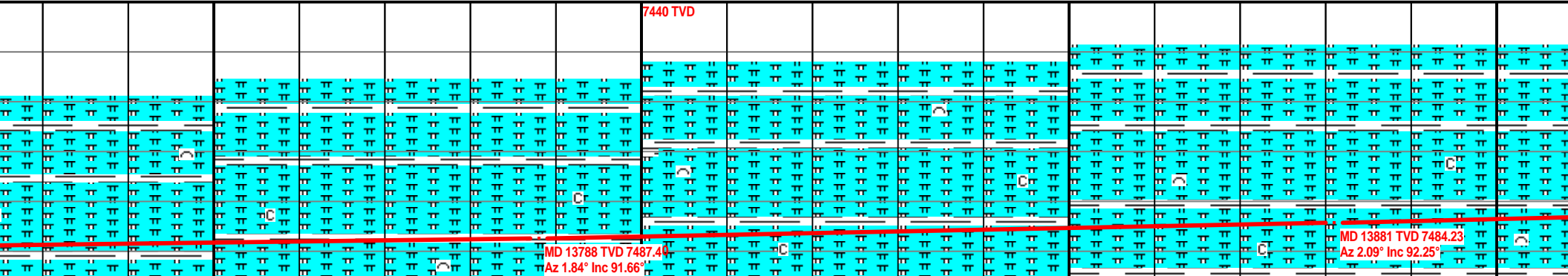


13750

13800

13850

13900



Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal. Tr  
Frac Fil.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl, frm,  
sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbiky, slty, grty, vs cal.

7540

TD of 13938' MD Achieved @  
4:30pm 11/15/13.

Casing Trip Gas = 3445 Units

Two man logging unit  
with sample program  
and gas analyzer  
released 11/17/13.

13950

Projection to Bit

MD 13938 TVD 7482  
Az 2.09° Inc 92.25°

intbd bic  
rty

Chalky Mrlst 90%: lt-md gr, v calc, intbd biocl,  
frm, sbplty, no sfl, slw str wh-ylw cut. SH 10%:  
gy-dkgy, sft, sbplty-sbbly, slty, grty, vs cal.