Scale 1:200 Imperial
Measured Depth Log

Well Name:	**Grenemyer 14C-3HZ**		
Location:	**Weld County, CO.**		
License Number:	**05123384160000**	**Region:**	**DJ Basin**
Spud Date:	**12/21/13**	**Drilling Completed:**	**01/12/14**
Surface Coordinates:	**636'FNL, 2605'FEL, Sec 27, T1N-R67W**		
Bottom Hole Coordinates:	**460'FSL, 2104'FWL, Sec 3, T1S-R67W**		
Ground Elevation (ft):	**5049'**	**K.B. Elevation (ft):**	**5069'**
Logged Interval (ft):	**7900' To: 16697'**	**Total Depth (ft):**	**16697'**
Formation:	**Codell / Ft Hays**		
Type of Drilling Fluid:	**Water Based Mud Vertical / Oil Based Mud Lateral**		

OPERATOR

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

GEOLOGIST

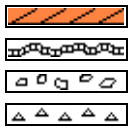
Name: Scott Crozier / Ben Thompson
Company: Great Divide Consulting, Inc.
Address: P.O. Box 630263
Highlands Ranch, CO 80163

Cores

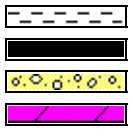
DSTs

Comments

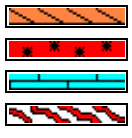
ROCK TYPES



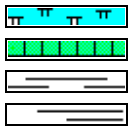
Anhy
Bent
Brec
Cht



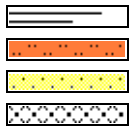
Clyst
Coal
Congl
Dol



Gyp
Igne
Lmst
Meta



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

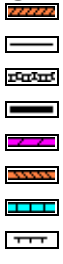
Gyp
Hvymin
Kaol
Marl
Minxl
Nodule
Phos
Pyr
Salt
Sandy
Silt
Sil
Sulphur
Tuff

FOSSIL

Algae
Amph
Belm
Bioclst
Brach
Bryozoa
Cephal
Coral
Crin
Echin
Fish
Foram
Fossil
Gastro
Oolite

Ostra
Pelec
Pellet
Pisolite
Plant
Strom

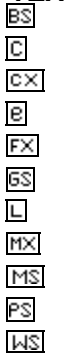
STRINGER



Anhy
Arg
Bent
Coal
Dol
Gyp
Ls
Mrst

Sltstrg
Ssstrg

TEXTURE



Boundst
Chalky
Cryxln
Earthy
Finexln
Grainst
Lithogr
Microxln
Mudst
Packst
Wackest

OTHER SYMBOLS

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

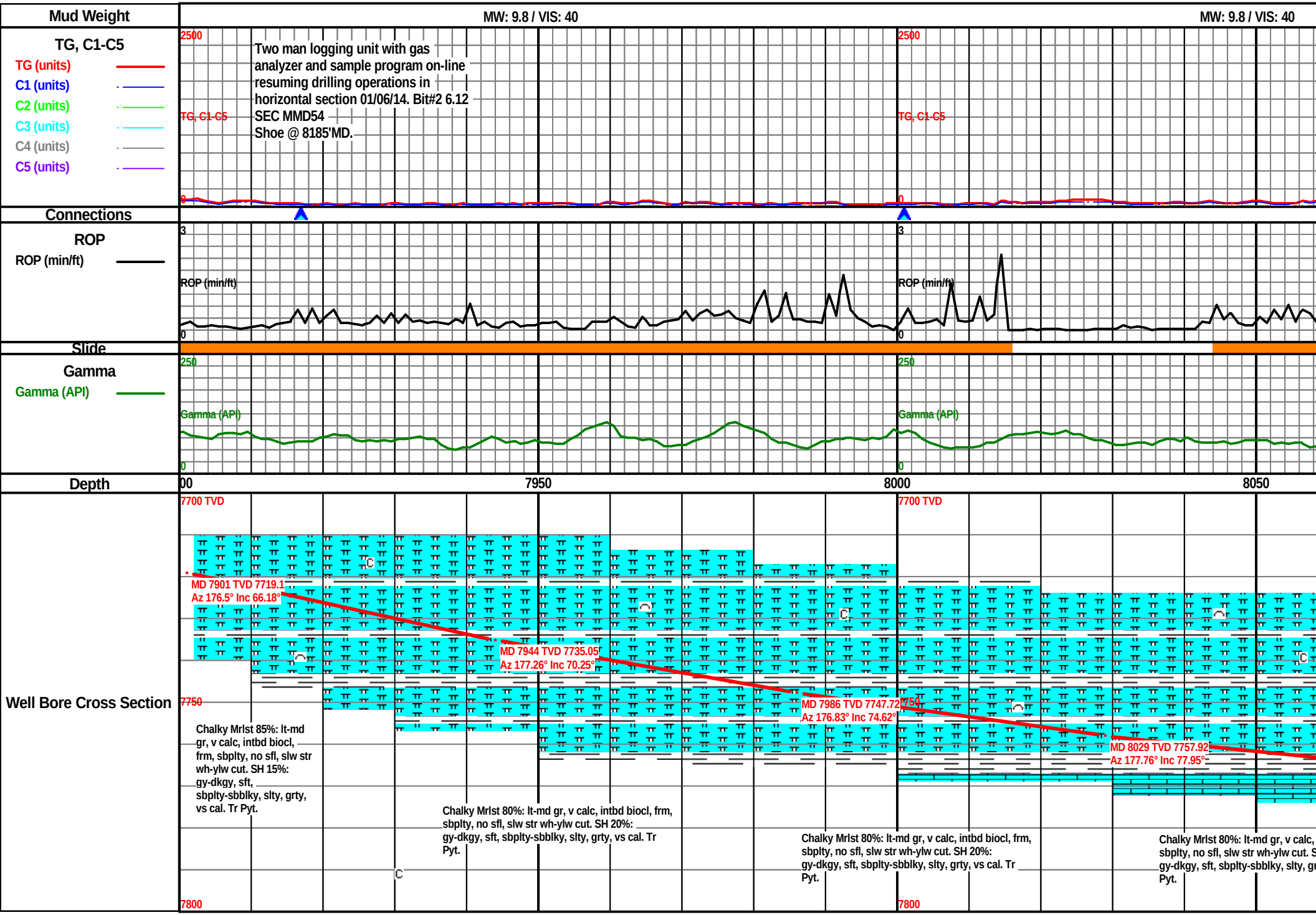
SORTING
- Well
- Moderate
- Poor

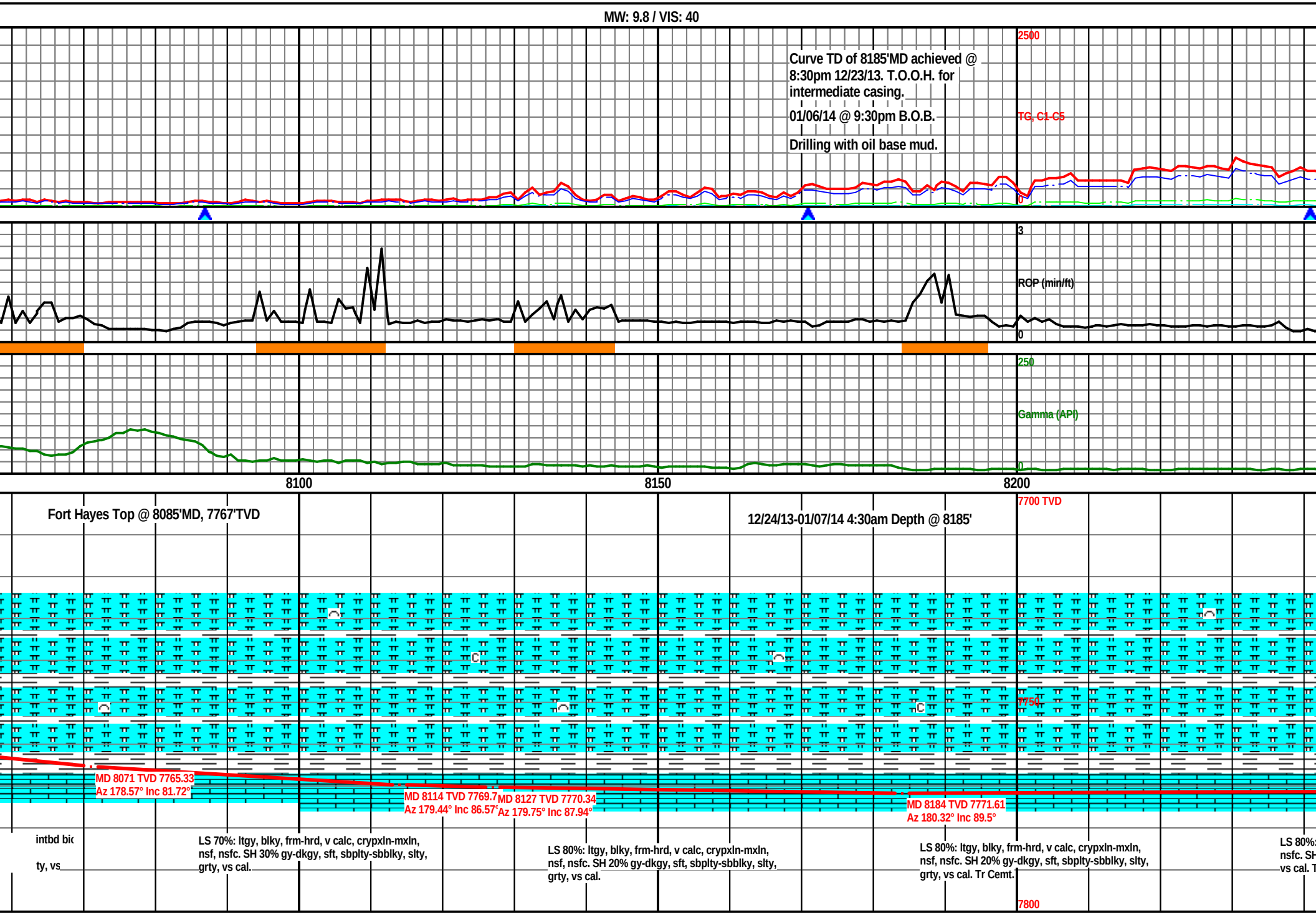
ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

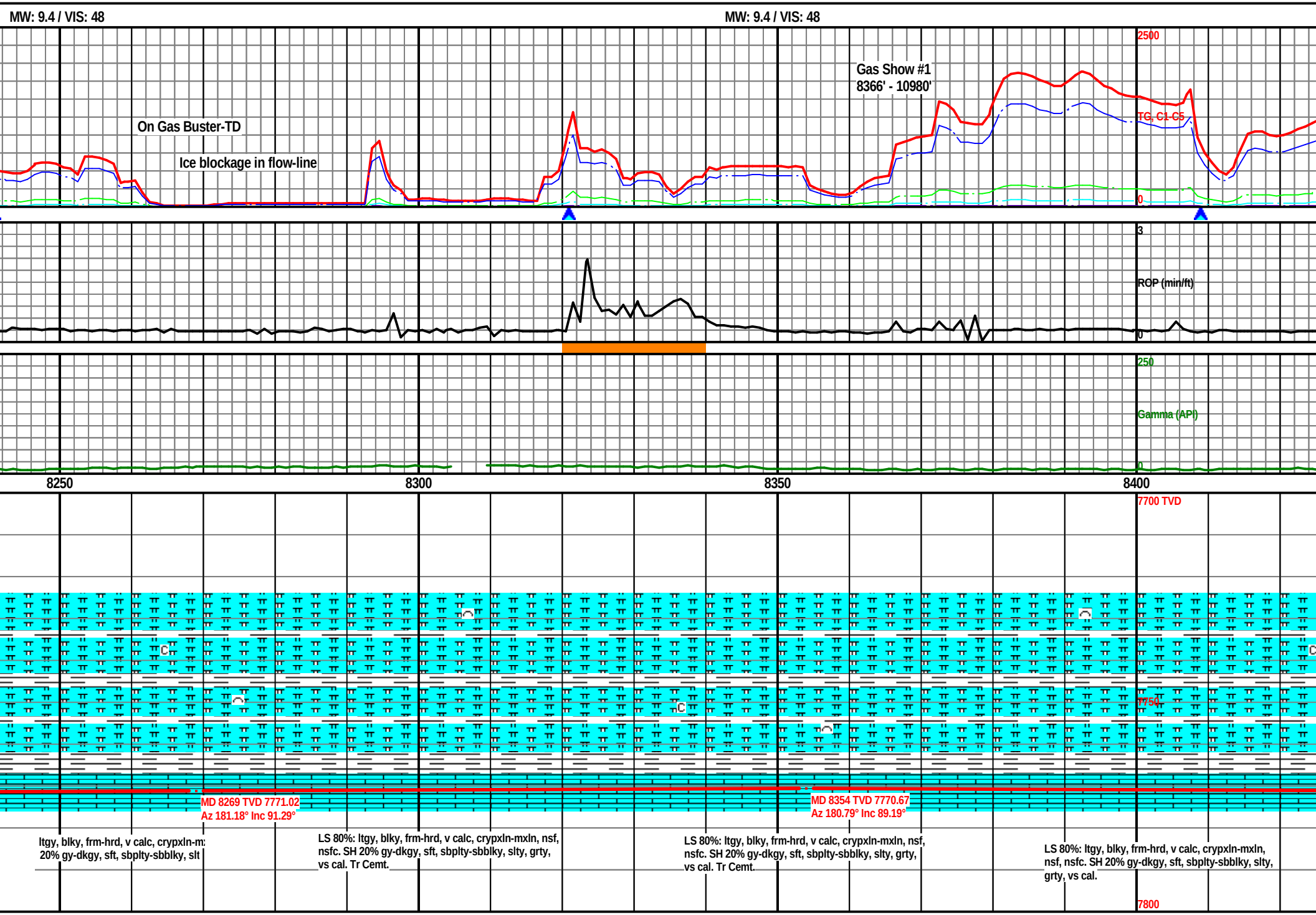
OIL SHOW
- Even
- Spotted
- Ques
- Dead

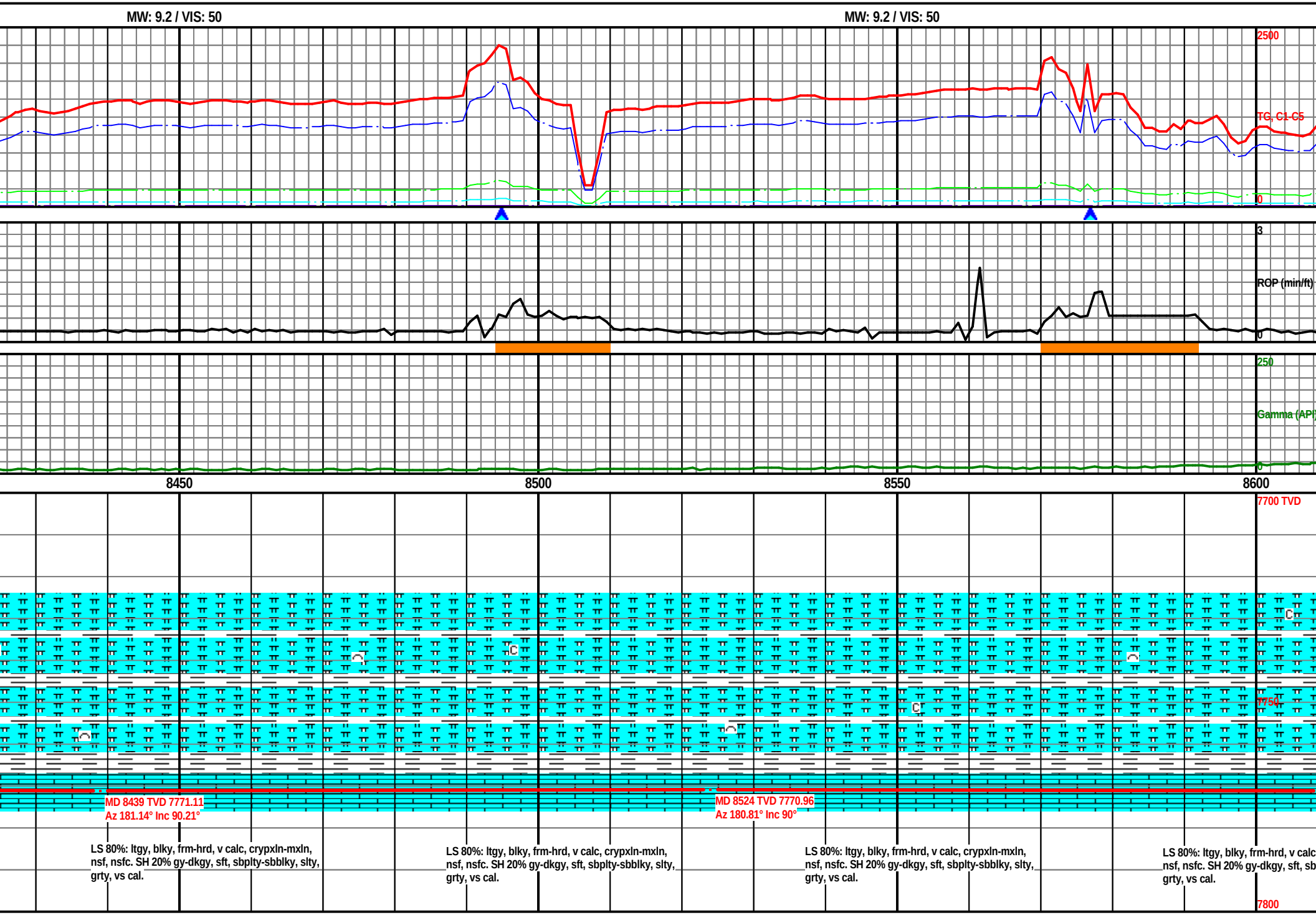
INTERVAL
- Core
- Dst

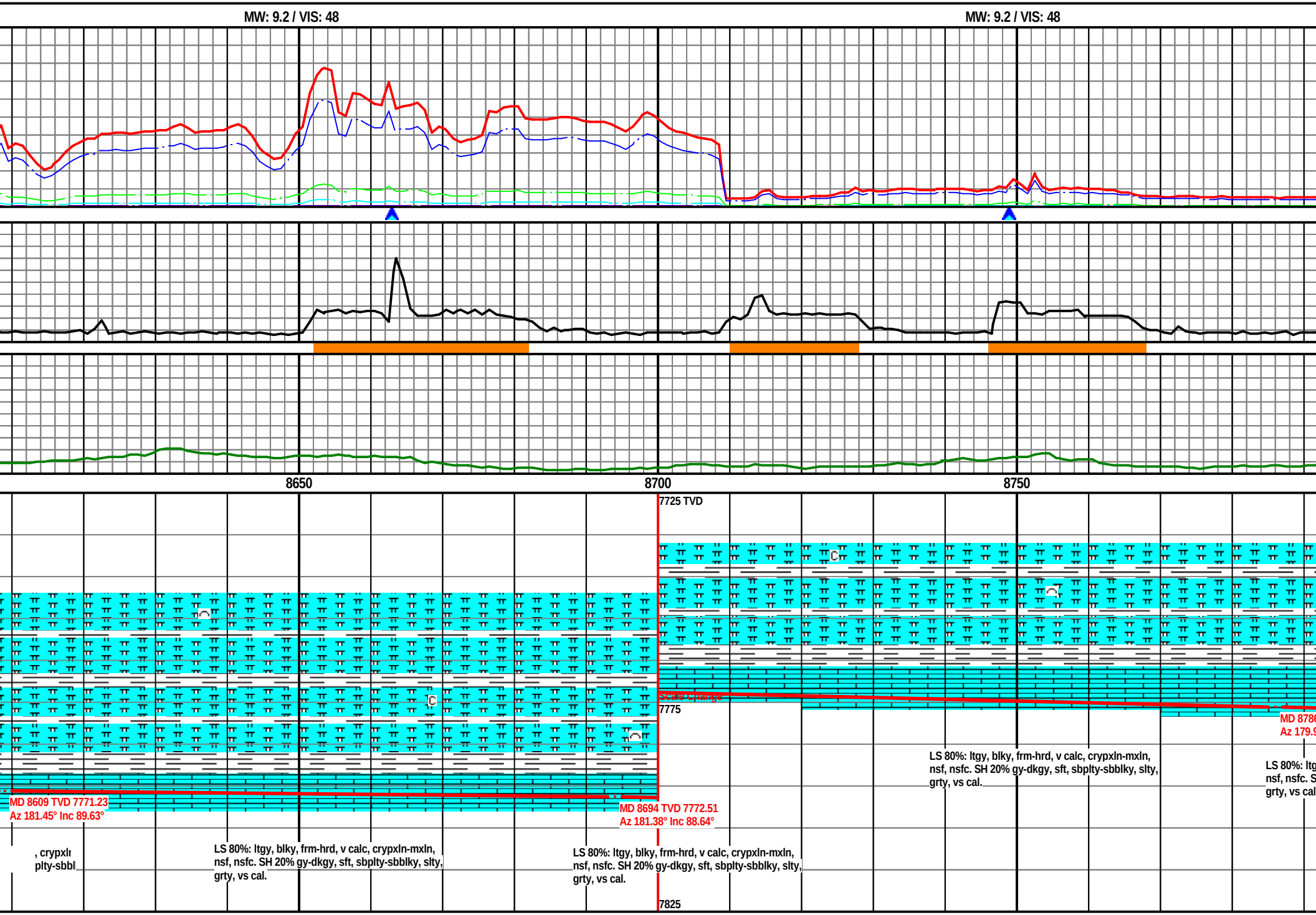
EVENT
- Rft
- Connection

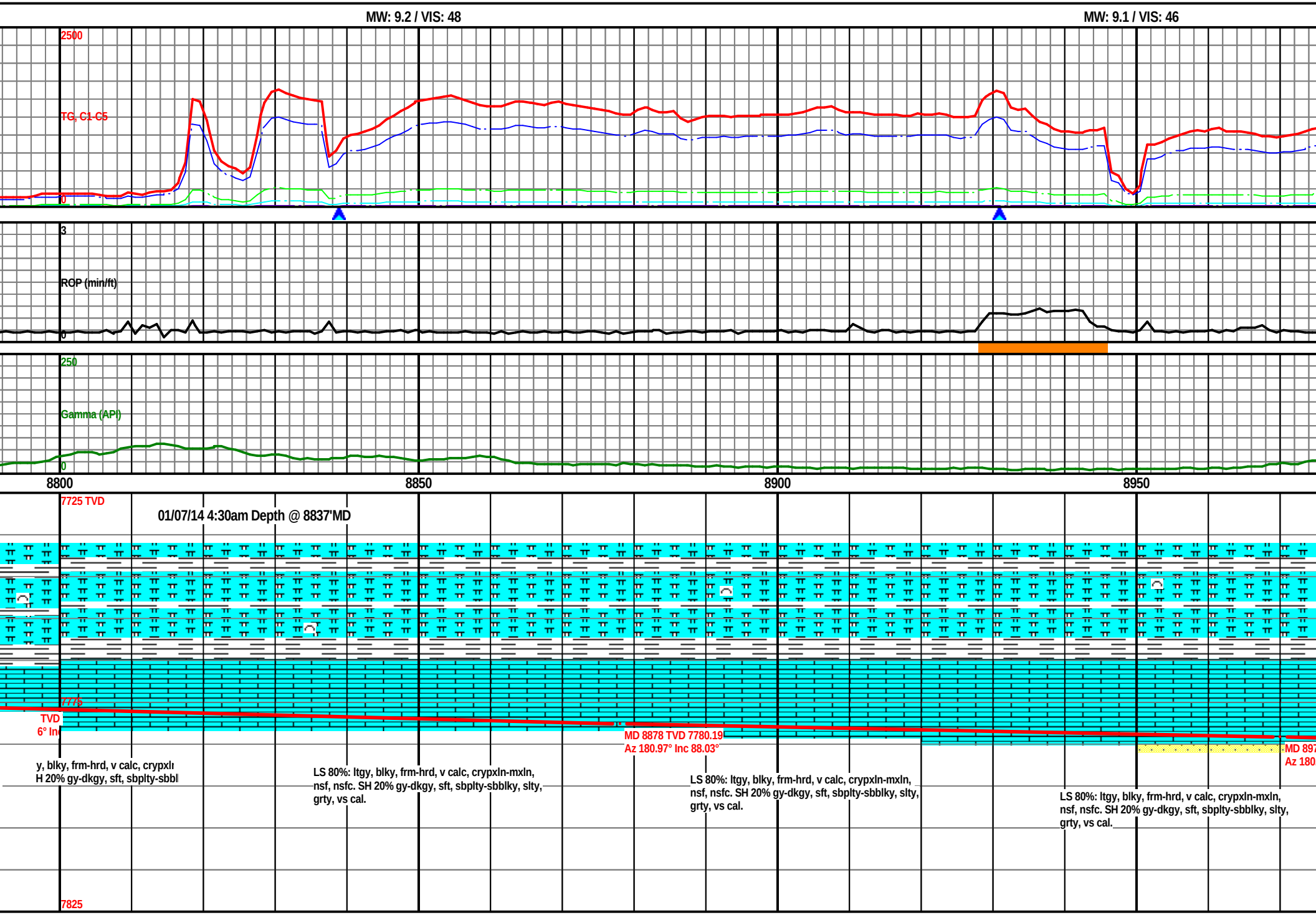

Mud Weight
MW: 9.8 / VIS: 40
MW: 9.8 / VIS: 40
TG, C1-C5
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)
2500
TG, C1-C5
0
Two man logging unit with gas analyzer and sample program on-line resuming drilling operations in horizontal section 01/06/14. Bit#2 6.12 SEC MMD54 Shoe @ 8185'MD.
Connections
ROP
ROP (min/ft)
3
0
Slide
Gamma
Gamma (API)
250
0
Depth
00
7950
8000
8050
Well Bore Cross Section
7700 TVD
7750
7800
MD 7901 TVD 7719.1
Az 176.5° Inc 66.18°
MD 7944 TVD 7735.05
Az 177.26° Inc 70.25°
MD 7986 TVD 7747.72
Az 176.83° Inc 74.62°
MD 8029 TVD 7757.92
Az 177.76° Inc 77.95°
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. Tr Pyt.
Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr Pyt.
Chalky Mrlst 80%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 20%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr Pyt.
Chalky Mrlst 80%: lt-md gr, v calc, sbplty, no sfl, slw str wh-ylw cut. S gy-dkgy, sft, sbplty-sbblky, slty, gr Pyt.

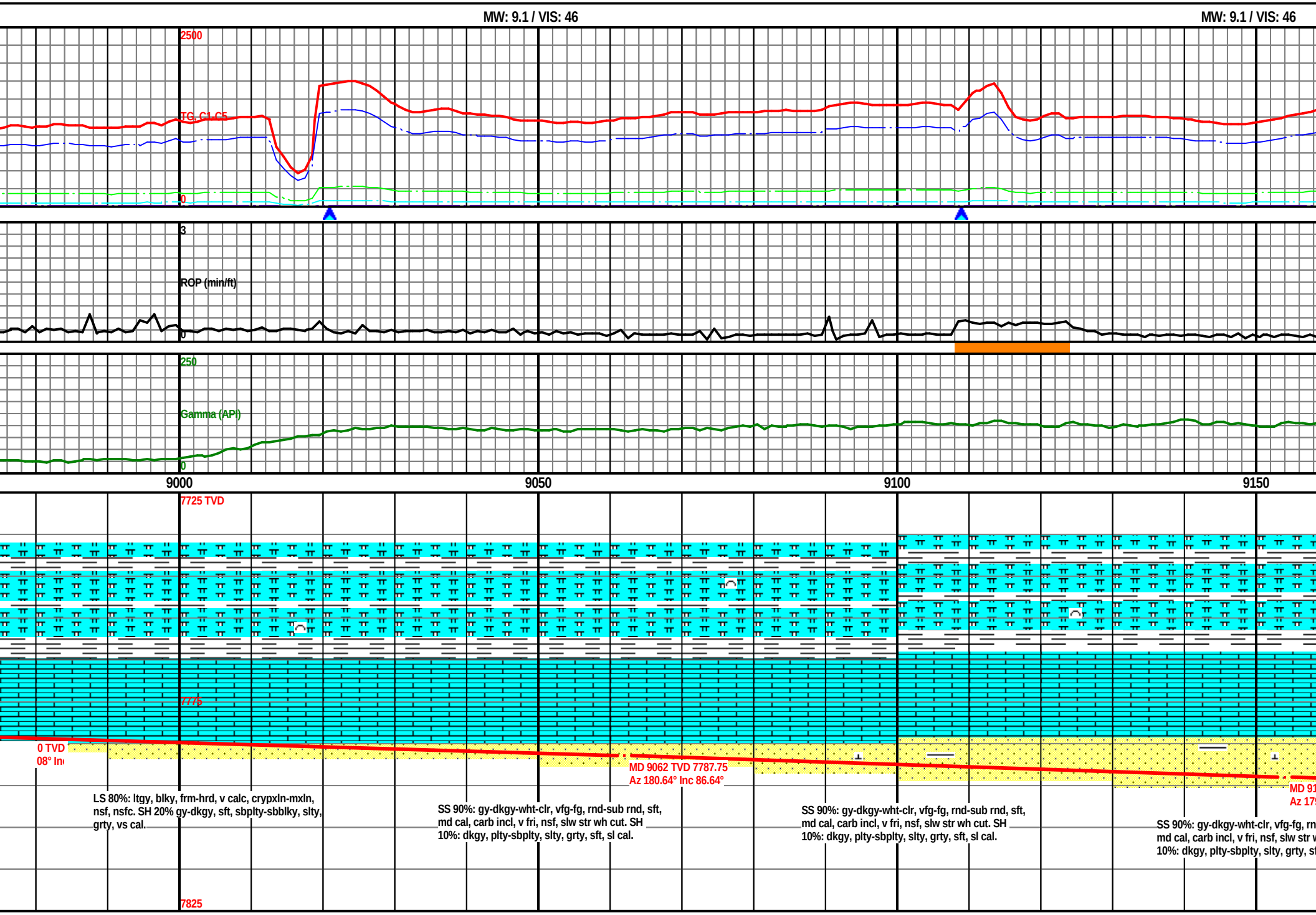

MW: 9.8 / VIS: 40
Curve TD of 8185'MD achieved @ 8:30pm 12/23/13. T.O.O.H. for intermediate casing.
01/06/14 @ 9:30pm B.O.B.
Drilling with oil base mud.
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
8100
8150
8200
Fort Hayes Top @ 8085'MD, 7767'TVD
12/24/13-01/07/14 4:30am Depth @ 8185'
7700 TVD
7750
7800
MD 8071 TVD 7765.33
Az 178.57° Inc 81.72°
MD 8114 TVD 7769.7
Az 179.44° Inc 86.57°
MD 8127 TVD 7770.34
Az 179.75° Inc 87.94°
MD 8184 TVD 7771.61
Az 180.32° Inc 89.5°
intbd bic
ty, vs
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr Cemt.
LS 80%:
nsfc. SH
vs cal. T

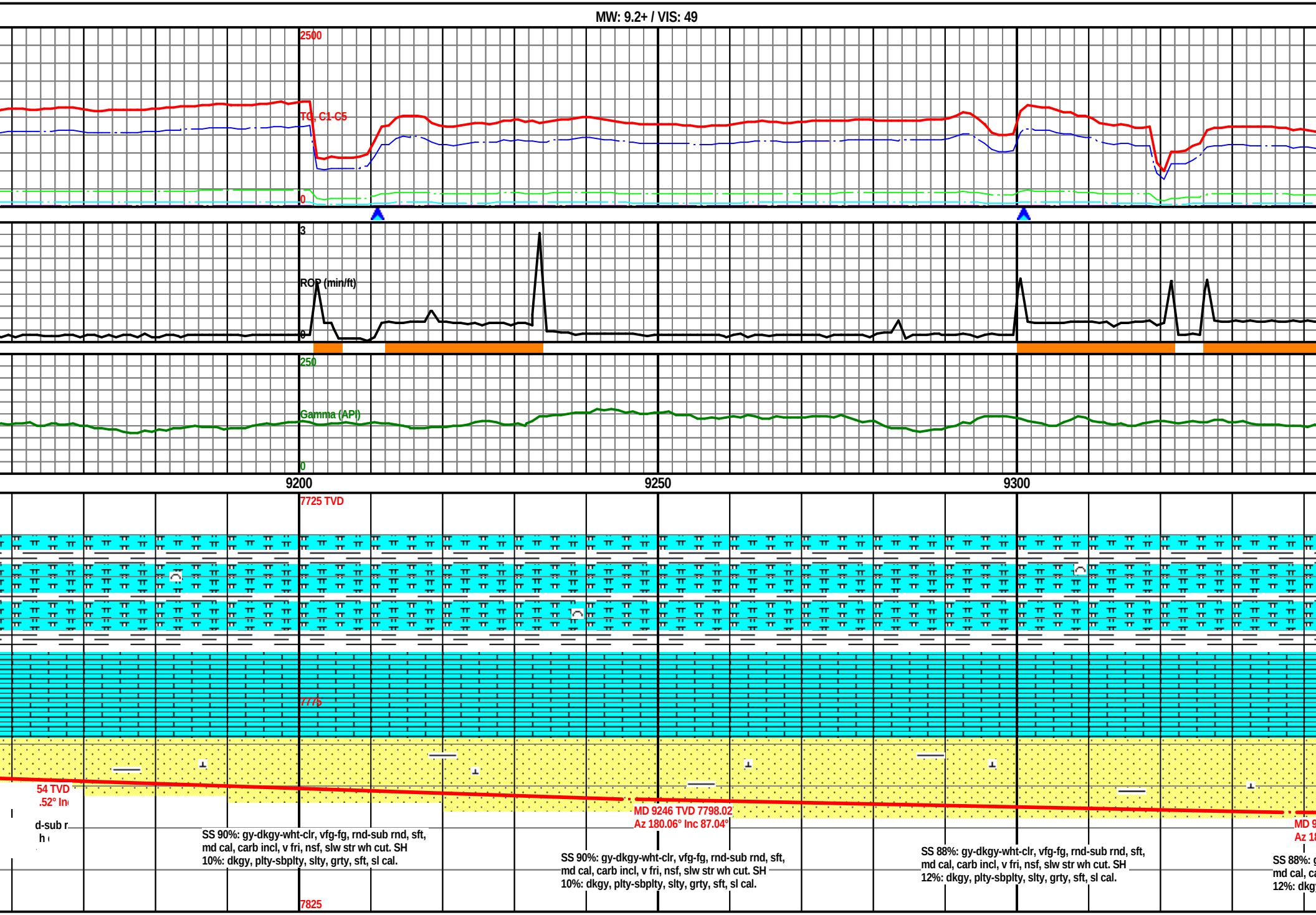

MW: 9.4 / VIS: 48
MW: 9.4 / VIS: 48
Gas Show #1
8366' - 10980'
On Gas Buster-TD
Ice blockage in flow-line
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
8250
8300
8350
8400
7700 TVD
7750
7800
MD 8269 TVD 7771.02
Az 181.18° Inc 91.29°
MD 8354 TVD 7770.67
Az 180.79° Inc 89.19°
ltgy, blky, frm-hrd, v calc, crypxln-m
20% gy-dkgy, sft, sbplty-sbblky, slt
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr Cemt.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr Cemt.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

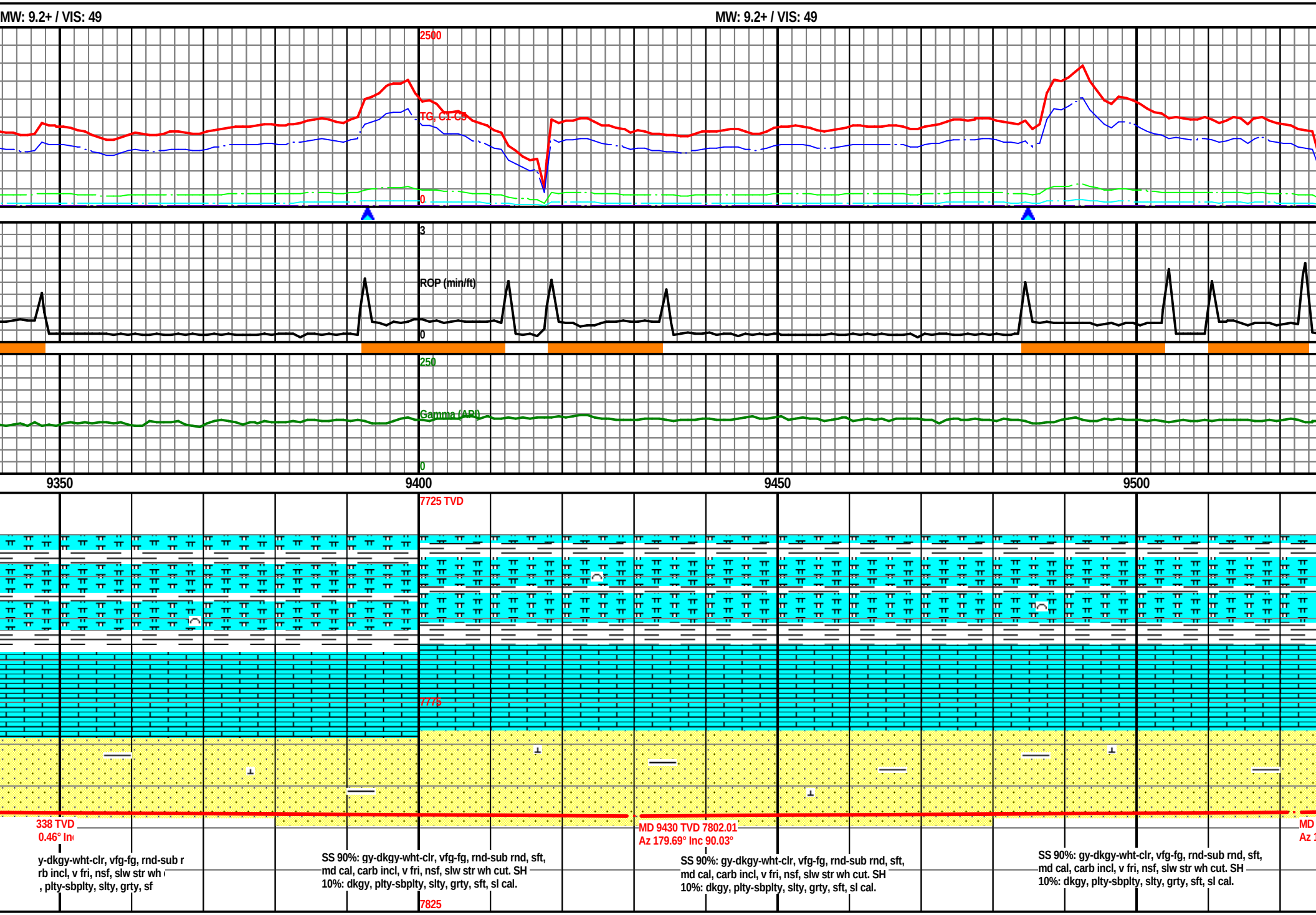

MW: 9.2 / VIS: 50
MW: 9.2 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
8450
8500
8550
8600
7700 TVD
7750
7800
MD 8439 TVD 7771.11
Az 181.14° Inc 90.21°
MD 8524 TVD 7770.96
Az 180.81° Inc 90°
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc
nsf, nsfc. SH 20% gy-dkgy, sft, sb
grty, vs cal.

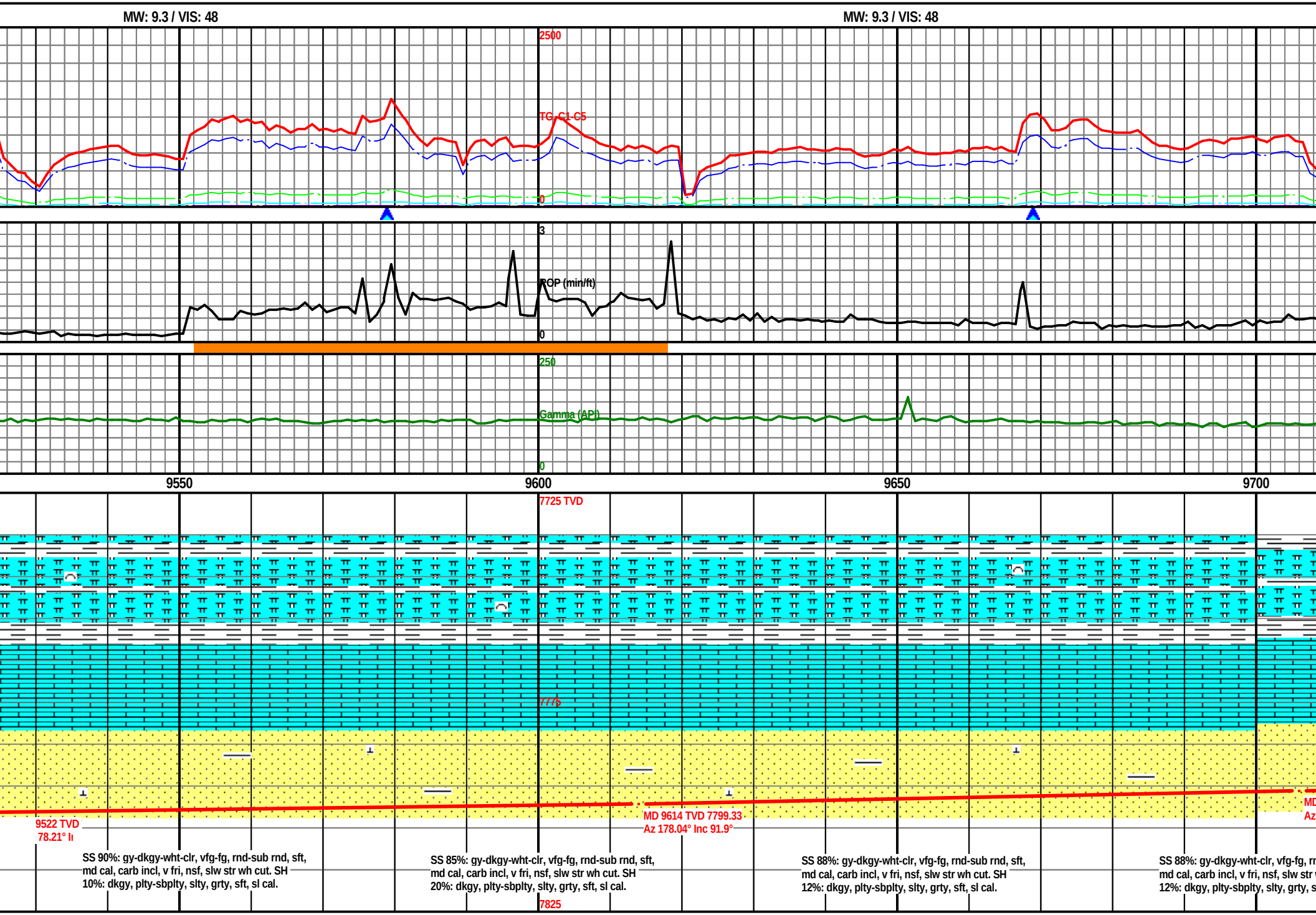

MW: 9.2 / VIS: 48
MW: 9.2 / VIS: 48
8650
8700
8750
7725 TVD
7775
7825
MD 8609 TVD 7771.23
Az 181.45° Inc 89.63°
MD 8694 TVD 7772.51
Az 181.38° Inc 88.64°
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

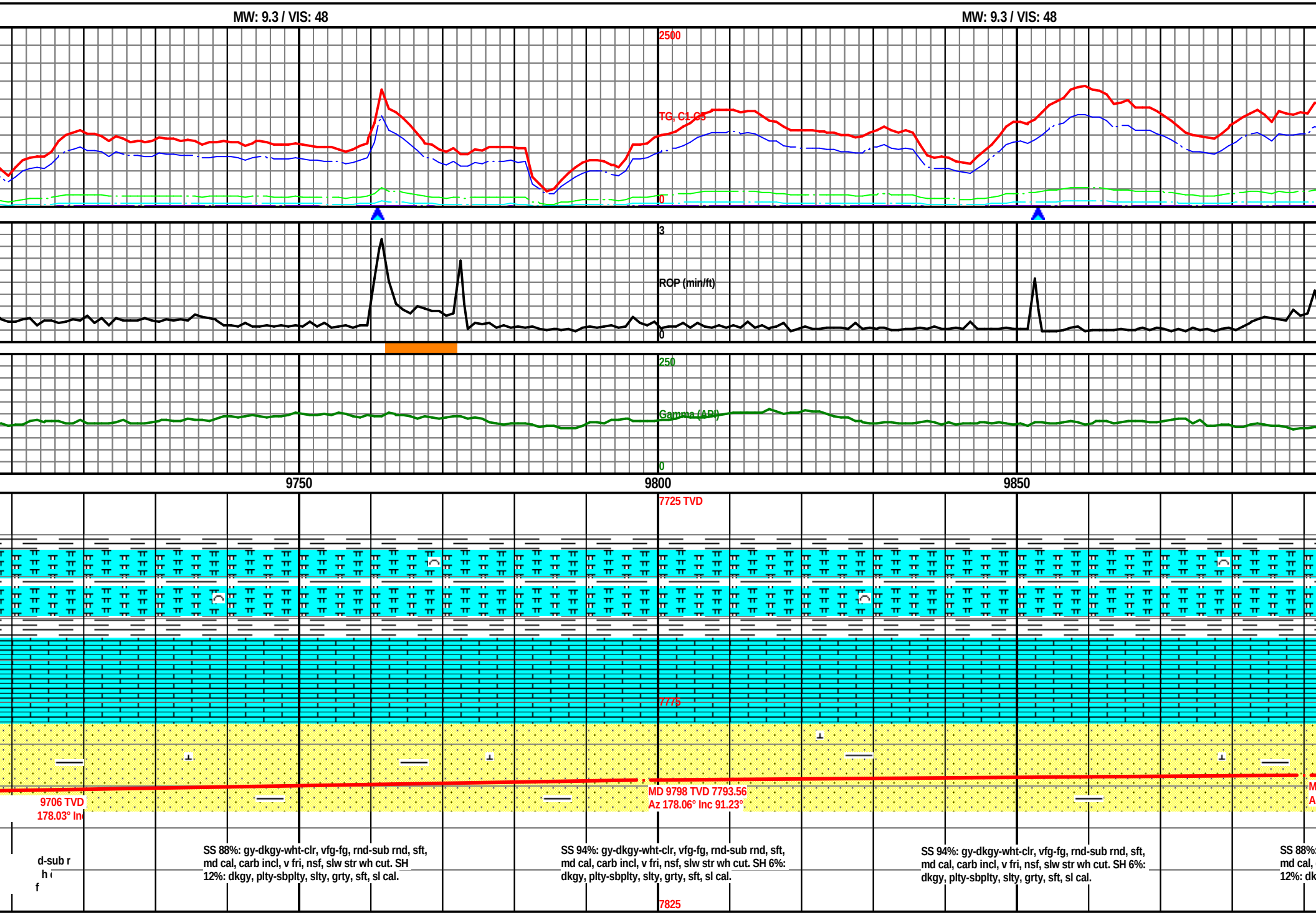

MW: 9.2 / VIS: 48
MW: 9.1 / VIS: 46
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
8800
8850
8900
8950
7725 TVD
01/07/14 4:30am Depth @ 8837'MD
7775
TVD
6° In
MD 8878 TVD 7780.19
Az 180.97° Inc 88.03°
MD 897
Az 180
y, blky, frm-hrd, v calc, crypxl
H 20% gy-dkgy, sft, sbplty-sbbl
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7825

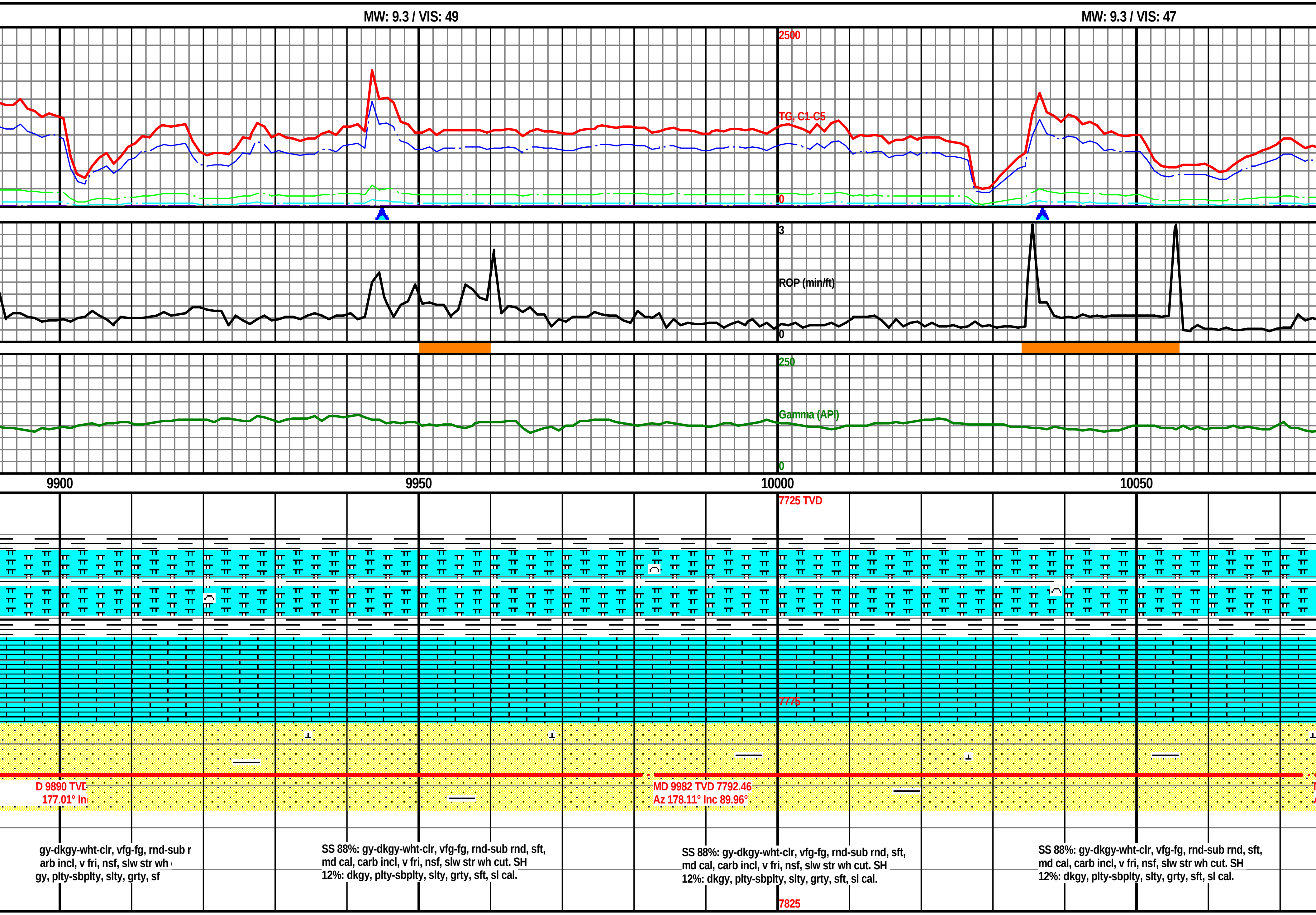

MW: 9.1 / VIS: 46
MW: 9.1 / VIS: 46
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9000
9050
9100
9150
7725 TVD
7775
7825
0 TVD
08° Inc
MD 9062 TVD 7787.75
Az 180.64° Inc 86.64°
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 90%: gy-dkgy-wht-clr, vfg-fg, rn
md cal, carb incl, v fri, nsf, slw str
10%: dkgy, plty-sbplty, slty, grty, s


MW: 9.2+ / VIS: 49
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9200
9250
9300
7725 TVD
7775
7825
54 TVD
.52° In
d-sub r
h
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
MD 9246 TVD 7798.02
Az 180.06° Inc 87.04°
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
MD 9
Az 18
SS 88%: g
md cal, ca
12%: dkg

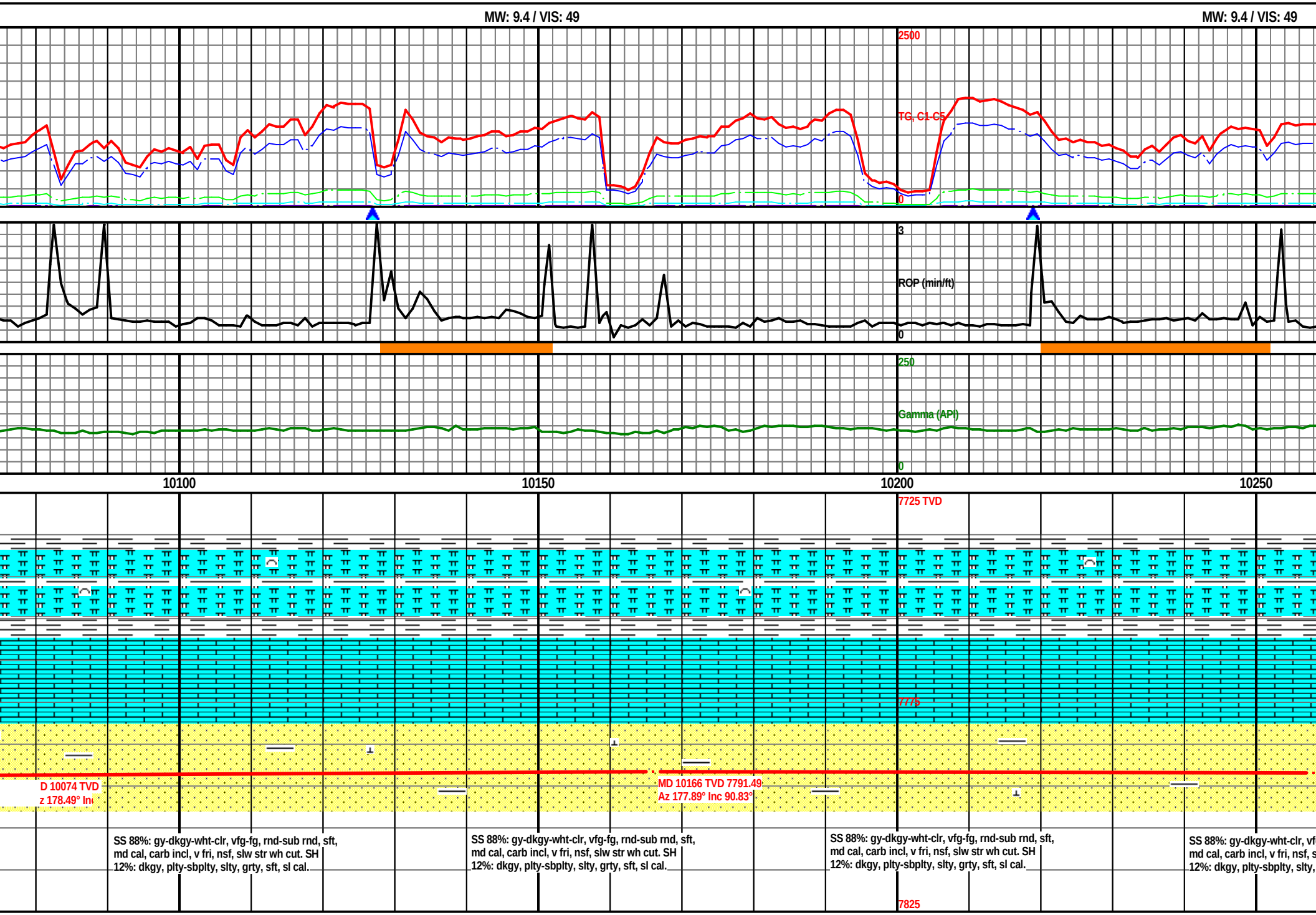

MW: 9.2+ / VIS: 49
MW: 9.2+ / VIS: 49
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9350
9400
9450
9500
7725 TVD
7775
7825
338 TVD
0.46° In
y-dkgy-wht-clr, vfg-fg, rnd-sub r
rb incl, v fri, nsf, slw str wh
, plty-sbplty, slty, grty, sf
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
MD 9430 TVD 7802.01
Az 179.69° Inc 90.03°
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
MD
Az

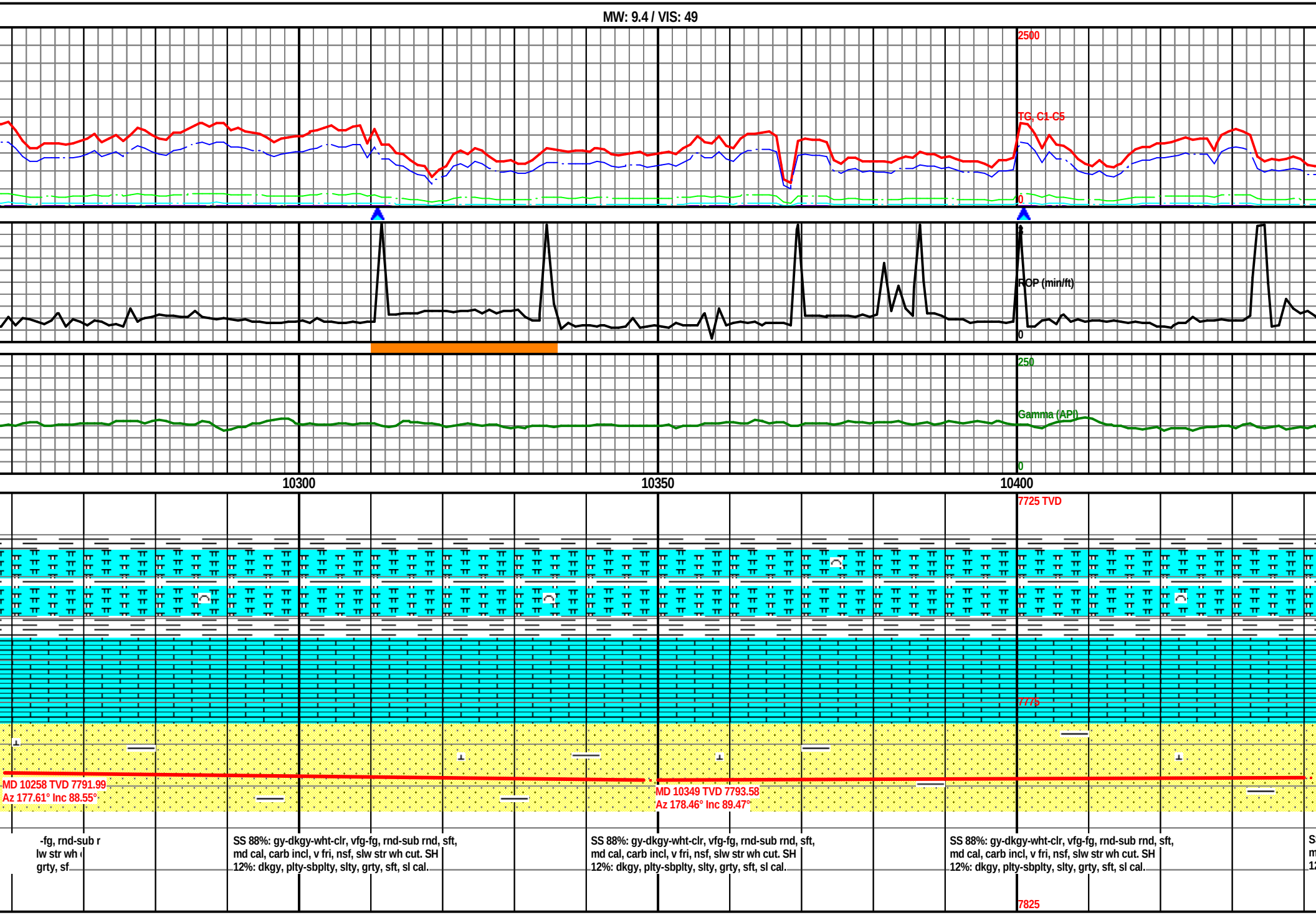

MW: 9.3 / VIS: 48
MW: 9.3 / VIS: 48
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9550
9600
9650
9700
7725 TVD
7775
9522 TVD
78.21° Inc
MD 9614 TVD 7799.33
Az 178.04° Inc 91.9°
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 10%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 85%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 20%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
7825
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rn
md cal, carb incl, v fri, nsf, slw str
12%: dkgy, plty-sbplty, slty, grty, s

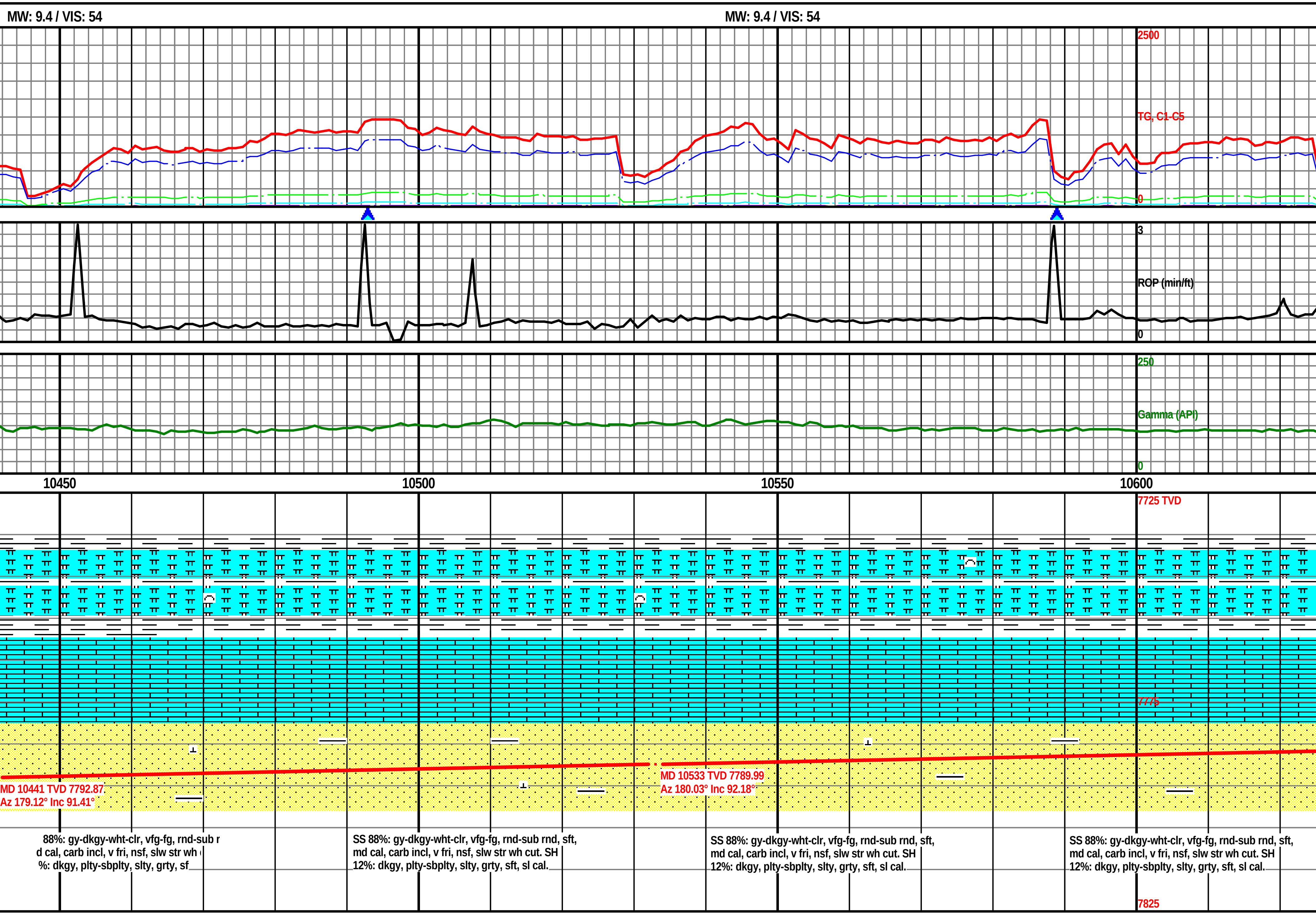

MW: 9.3 / VIS: 48
MW: 9.3 / VIS: 48
2500
TG, C1, C3
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9750
9800
9850
7725 TVD
7775
9706 TVD
178.03° Inc
MD 9798 TVD 7793.56
Az 178.06° Inc 91.23°
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 94%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 6%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 94%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 6%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
7825

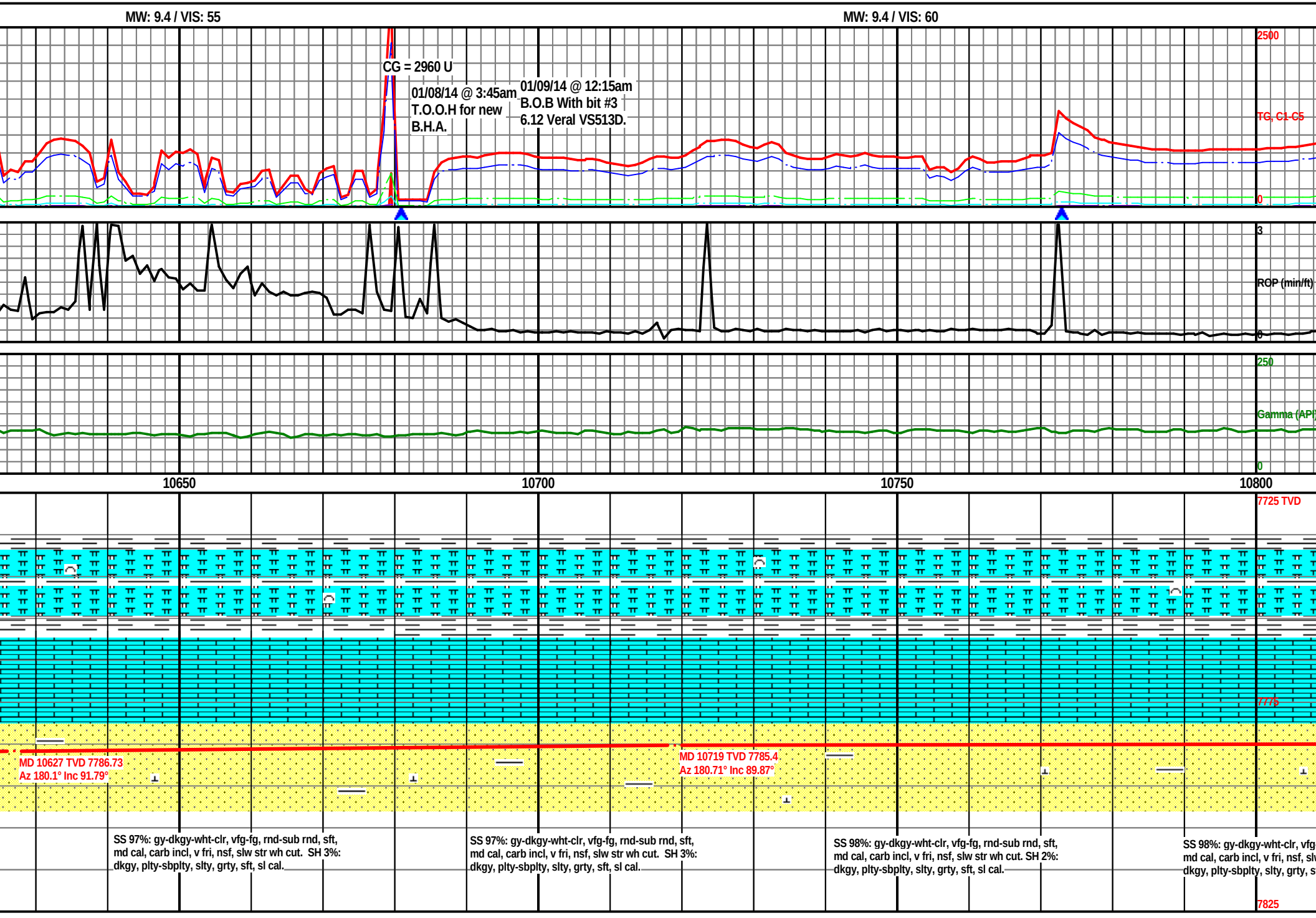


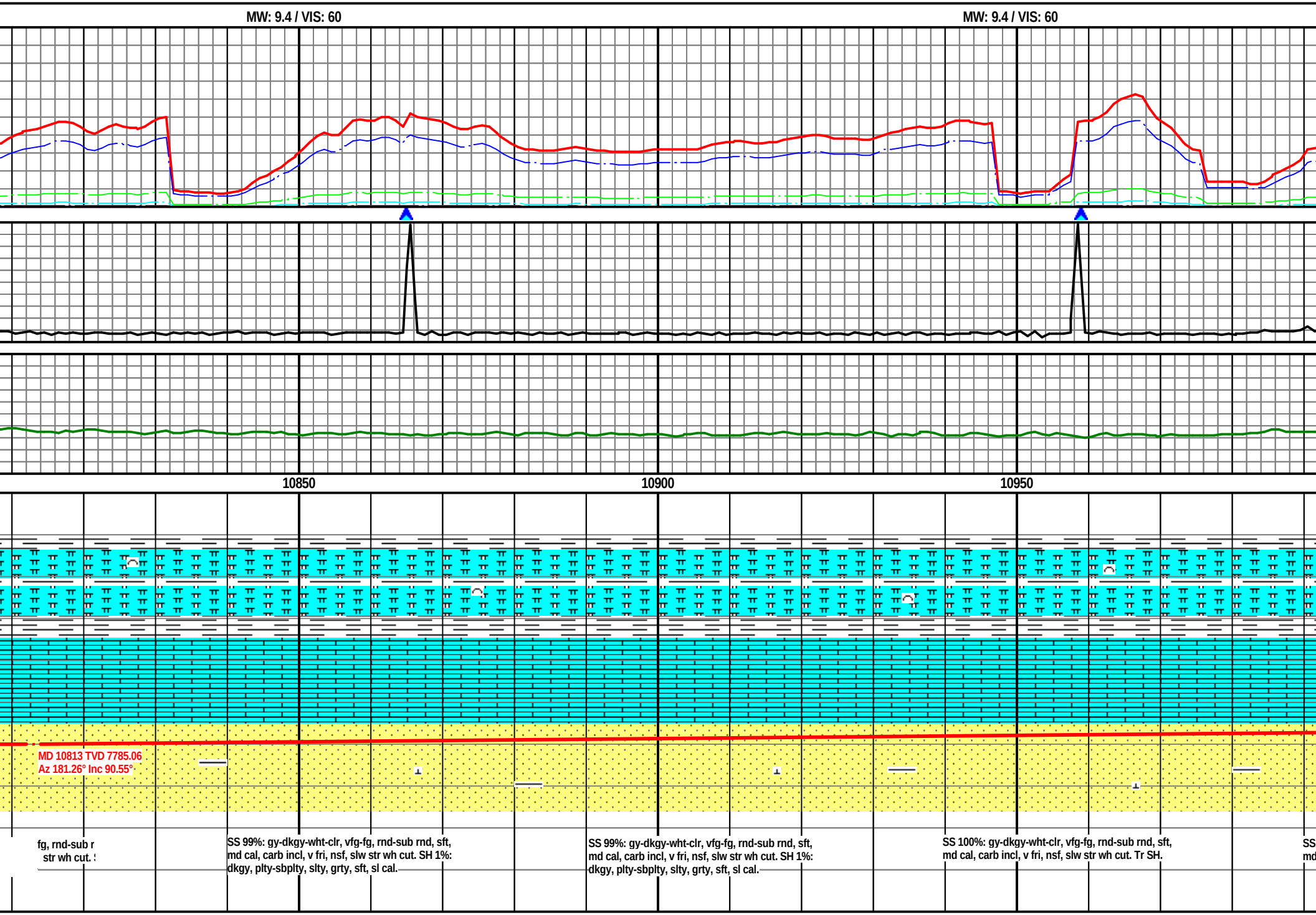
MW: 9.3 / VIS: 49
MW: 9.3 / VIS: 47
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
9900
9950
10000
10050
7725 TVD
7775
D 9890 TVD
177.01° In
MD 9982 TVD 7792.46
Az 178.11° Inc 89.96°
gy-dkgy-wht-clr, vfg-fg, rnd-sub r
arb incl, v fri, nsf, slw str wh
gy, plty-sbplty, slty, grty, sf
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
7825

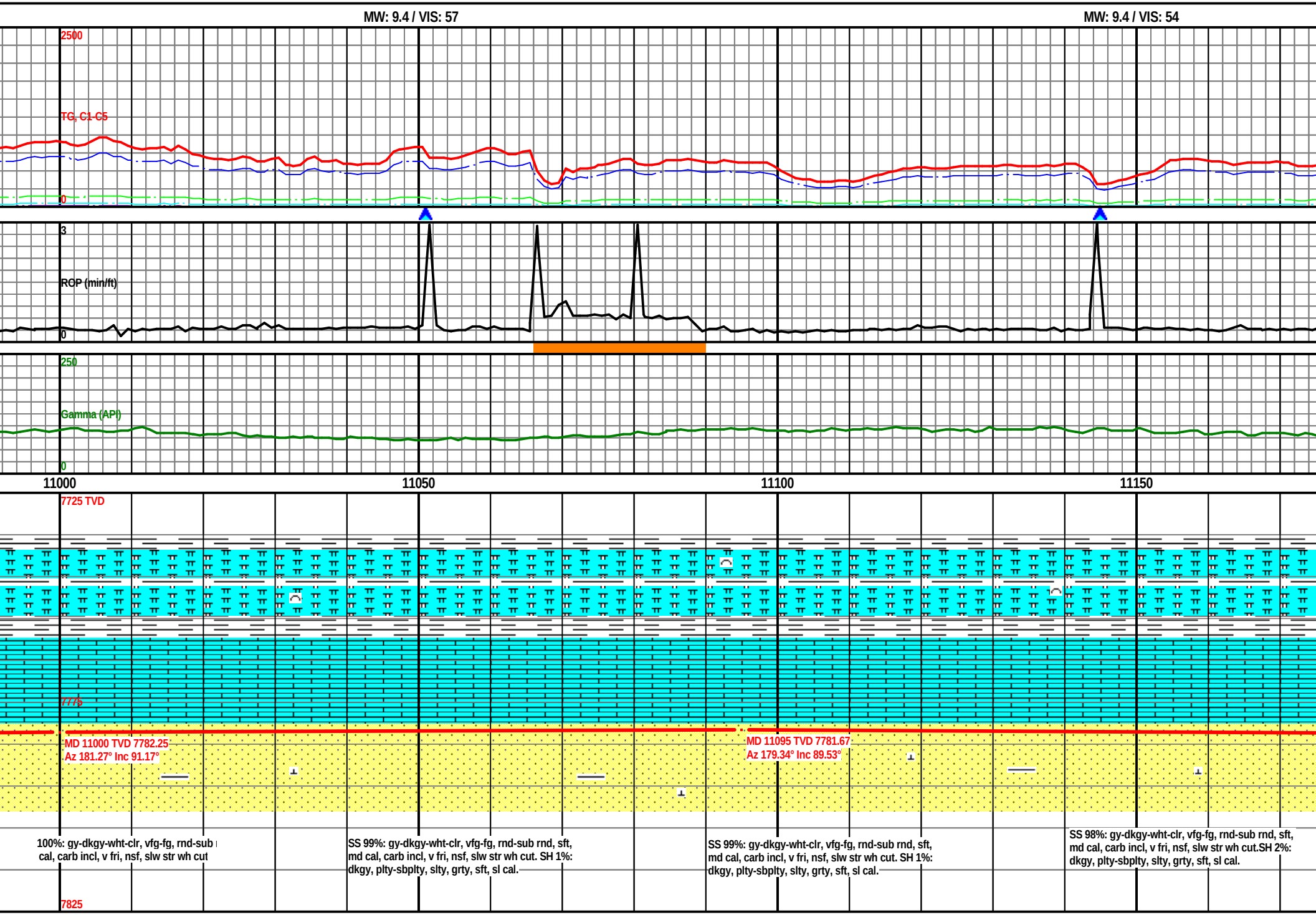

MW: 9.4 / VIS: 49
MW: 9.4 / VIS: 49
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
10100
10150
10200
10250
7725 TVD
7775
7825
D 10074 TVD
z 178.49° In
MD 10166 TVD 7791.49
Az 177.89° Inc 90.83°
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vf
md cal, carb incl, v fri, nsf, s
12%: dkgy, plty-sbplty, slty,

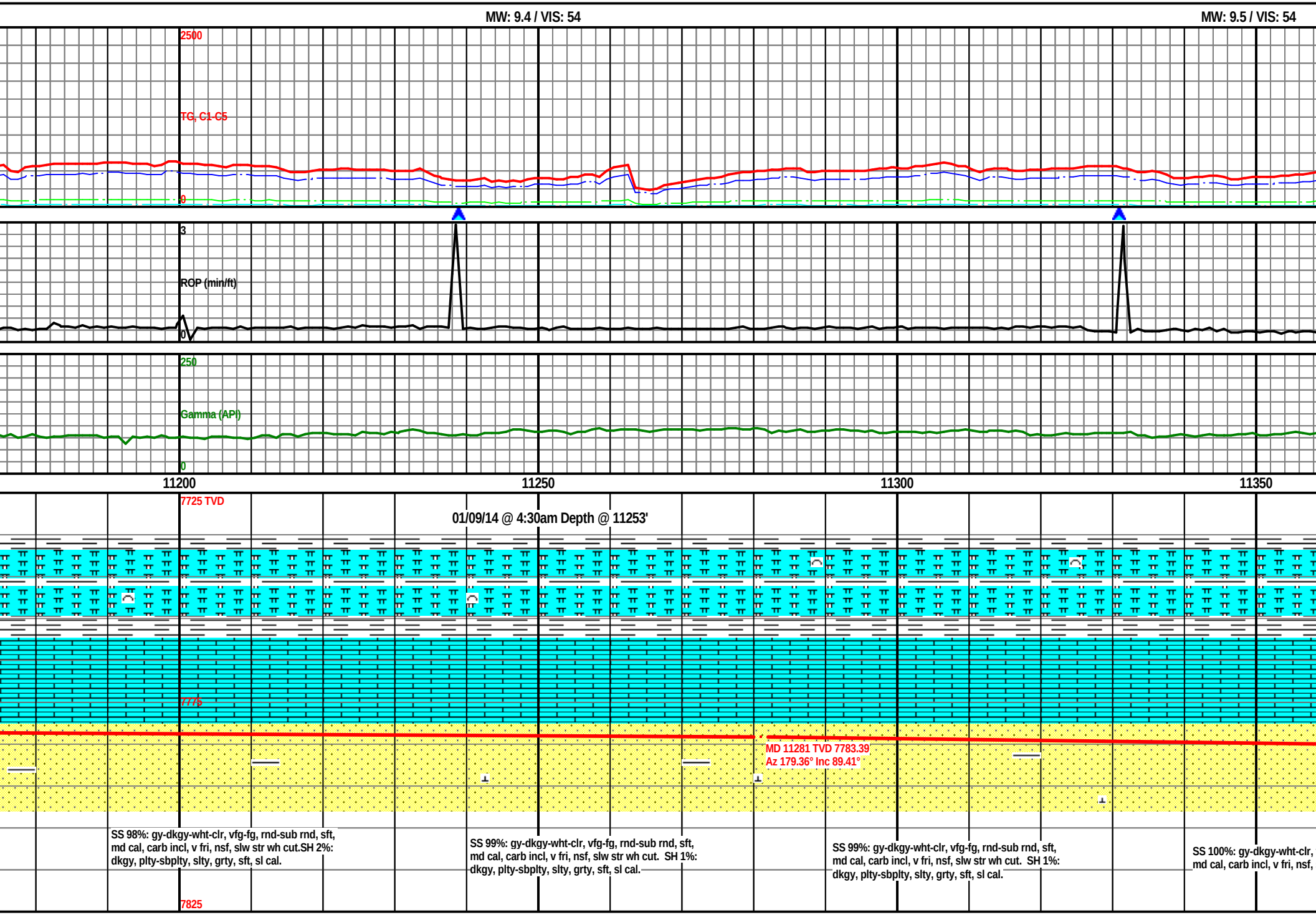

MW: 9.4 / VIS: 49
2500
TG, C1-C5
0
ROP (min/ft)
0
250
Gamma (API)
0
10300
10350
10400
7725 TVD
7775
7825
MD 10258 TVD 7791.99
Az 177.61° Inc 88.55°
MD 10349 TVD 7793.58
Az 178.46° Inc 89.47°
-fg, rnd-sub r
lw str wh
grty, sf
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.

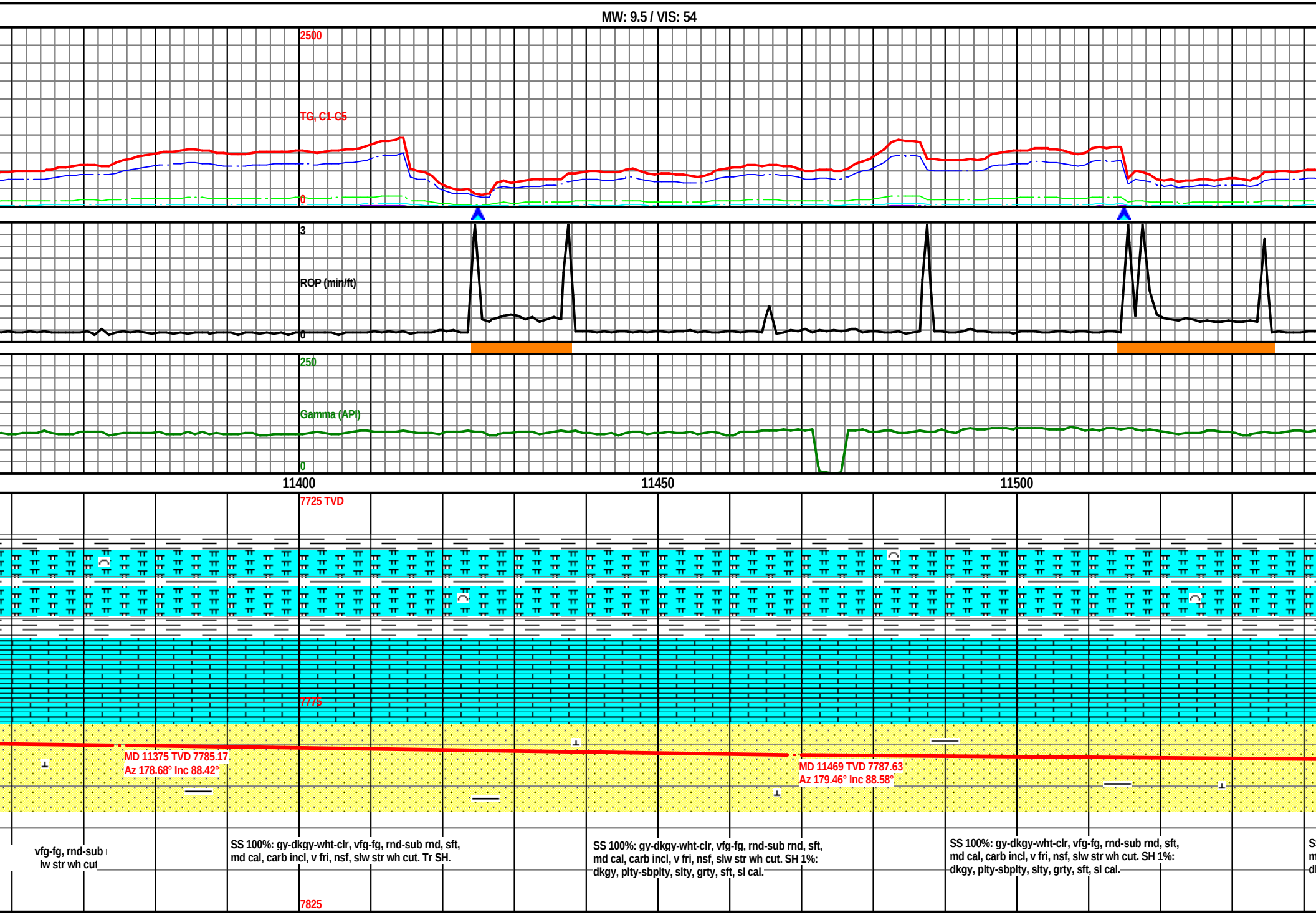

MW: 9.4 / VIS: 54
MW: 9.4 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
10450
10500
10550
10600
7725 TVD
7775
7825
MD 10441 TVD 7792.87
Az 179.12° Inc 91.41°
MD 10533 TVD 7789.99
Az 180.03° Inc 92.18°
88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub r
d cal, carb incl, v fri, nsf, slw str wh
%: dkgy, plty-sbplty, slty, grty, sf
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 88%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH
12%: dkgy, plty-sbplty, slty, grty, sft, sl cal.

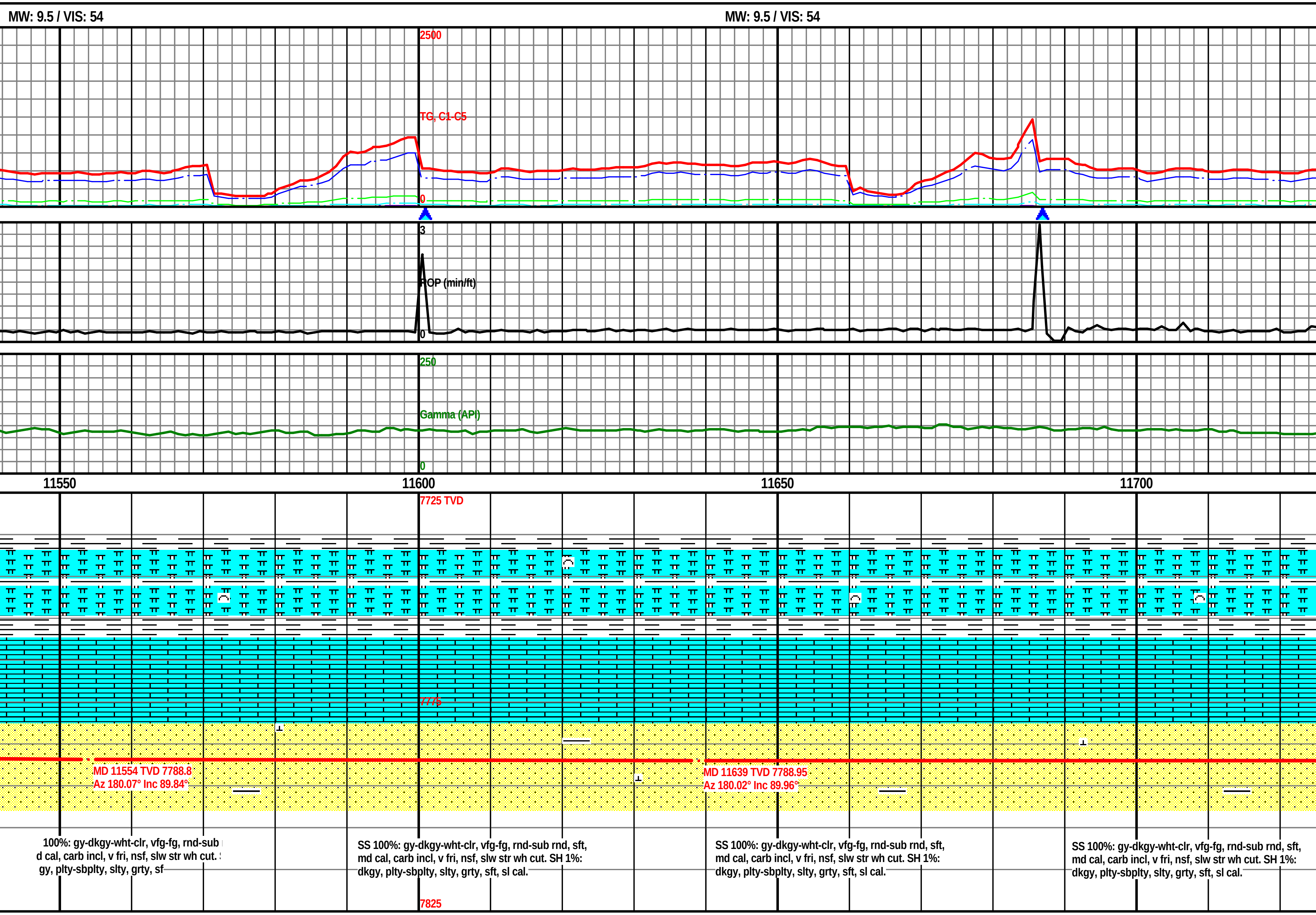

MW: 9.4 / VIS: 55
MW: 9.4 / VIS: 60
CG = 2960 U
01/08/14 @ 3:45am
T.O.O.H for new
B.H.A.
01/09/14 @ 12:15am
B.O.B With bit #3
6.12 Veral VS513D.
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
10650
10700
10750
10800
7725 TVD
7775
7825
MD 10627 TVD 7786.73
Az 180.1° Inc 91.79°
MD 10719 TVD 7785.4
Az 180.71° Inc 89.87°
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 98%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 2%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 98%: gy-dkgy-wht-clr, vfg
md cal, carb incl, v fri, nsf, sl
dkgy, plty-sbplty, slty, grty, s

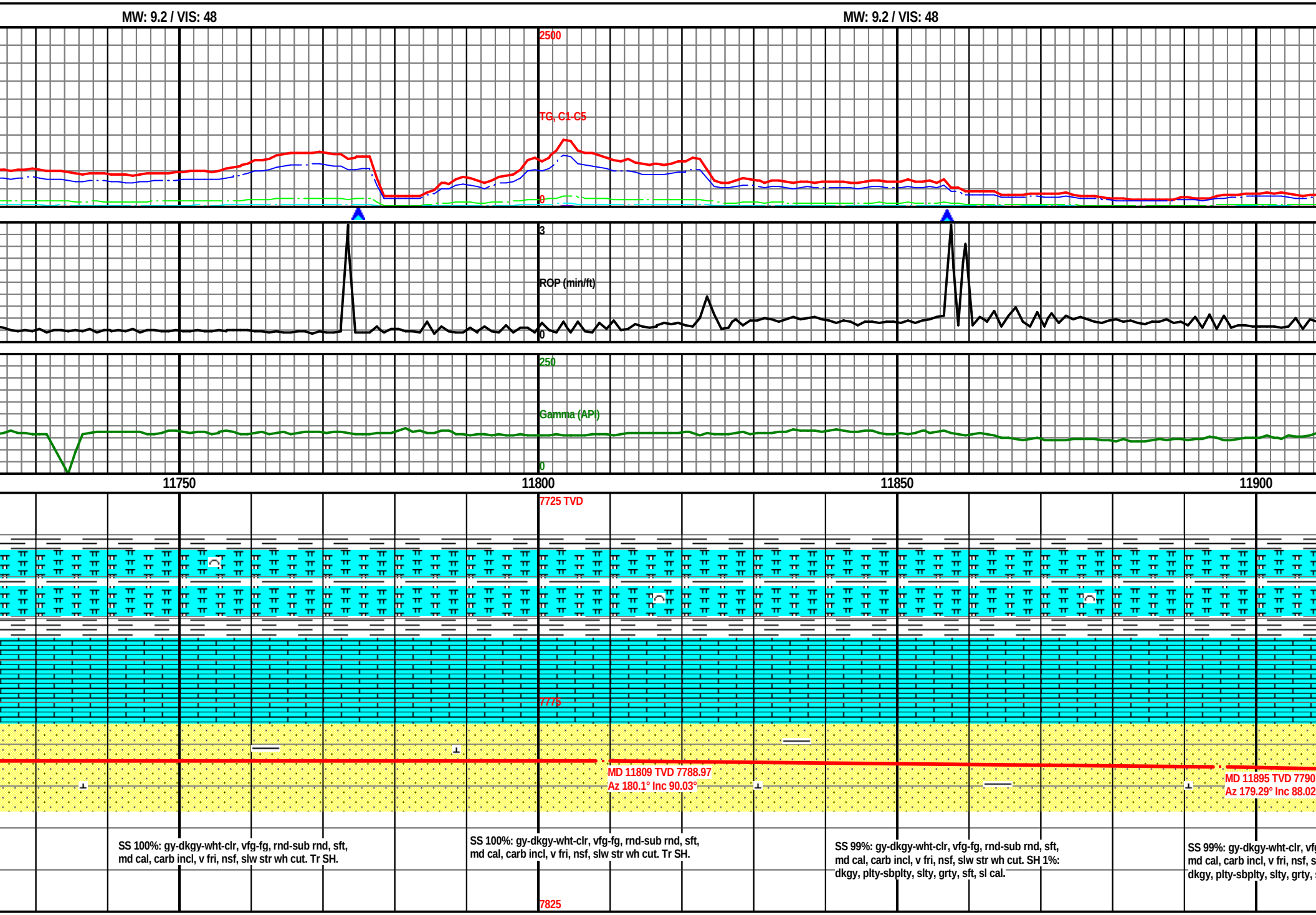

MW: 9.4 / VIS: 60
MW: 9.4 / VIS: 60
10850
10900
10950
MD 10813 TVD 7785.06
Az 181.26° Inc 90.55°
fg, rnd-sub r
str wh cut. S
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.

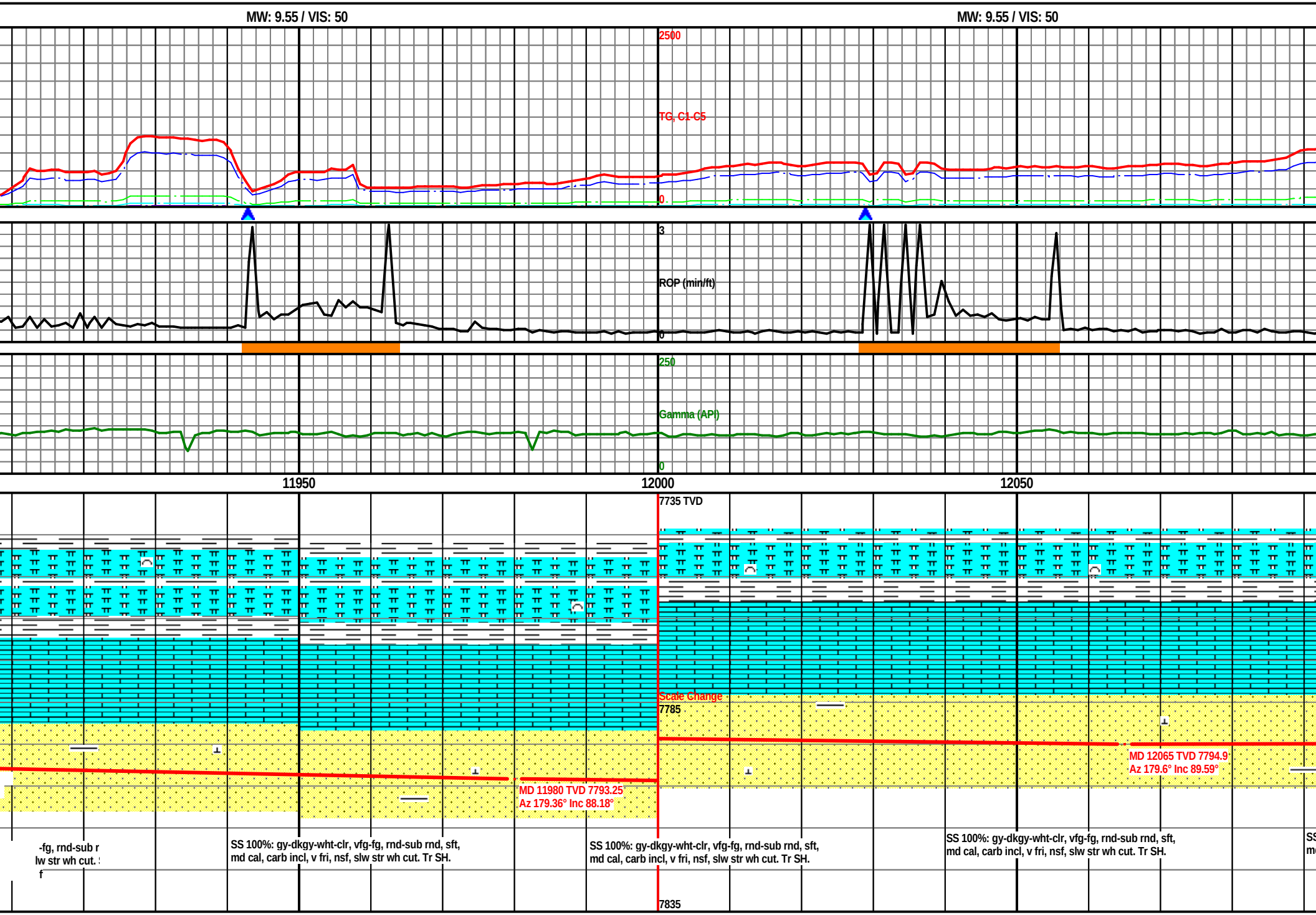

MW: 9.4 / VIS: 57
MW: 9.4 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11000
11050
11100
11150
7725 TVD
7775
7825
MD 11000 TVD 7782.25
Az 181.27° Inc 91.17°
MD 11095 TVD 7781.67
Az 179.34° Inc 89.53°
100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub
cal, carb incl, v fri, nsf, slw str wh cut
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 98%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut.SH 2%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.

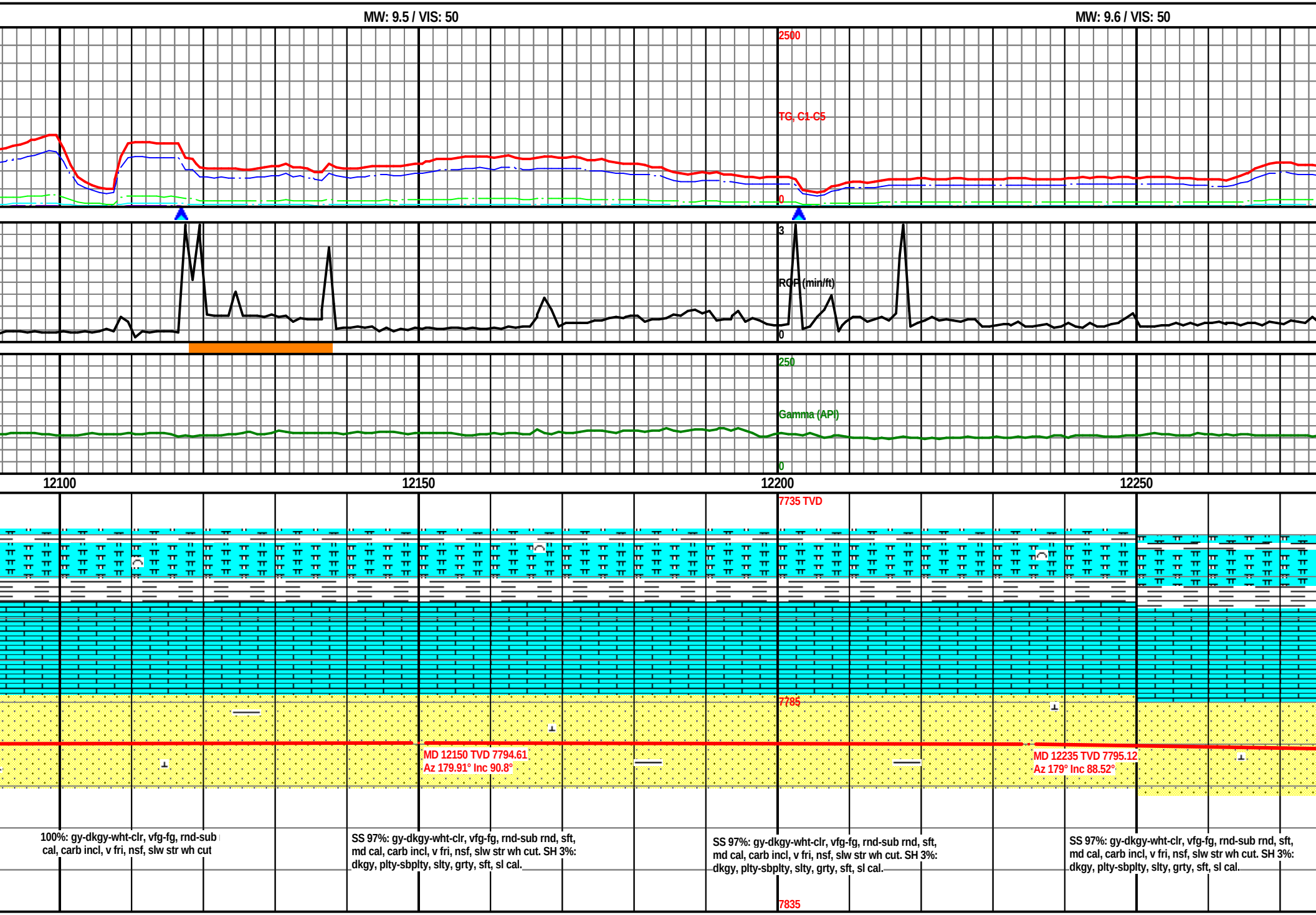

MW: 9.4 / VIS: 54
MW: 9.5 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11200
11250
11300
11350
7725 TVD
01/09/14 @ 4:30am Depth @ 11253'
7775
MD 11281 TVD 7783.39
Az 179.36° Inc 89.41°
SS 98%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut.SH 2%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 100%: gy-dkgy-wht-clr, md cal, carb incl, v fri, nsf,
7825

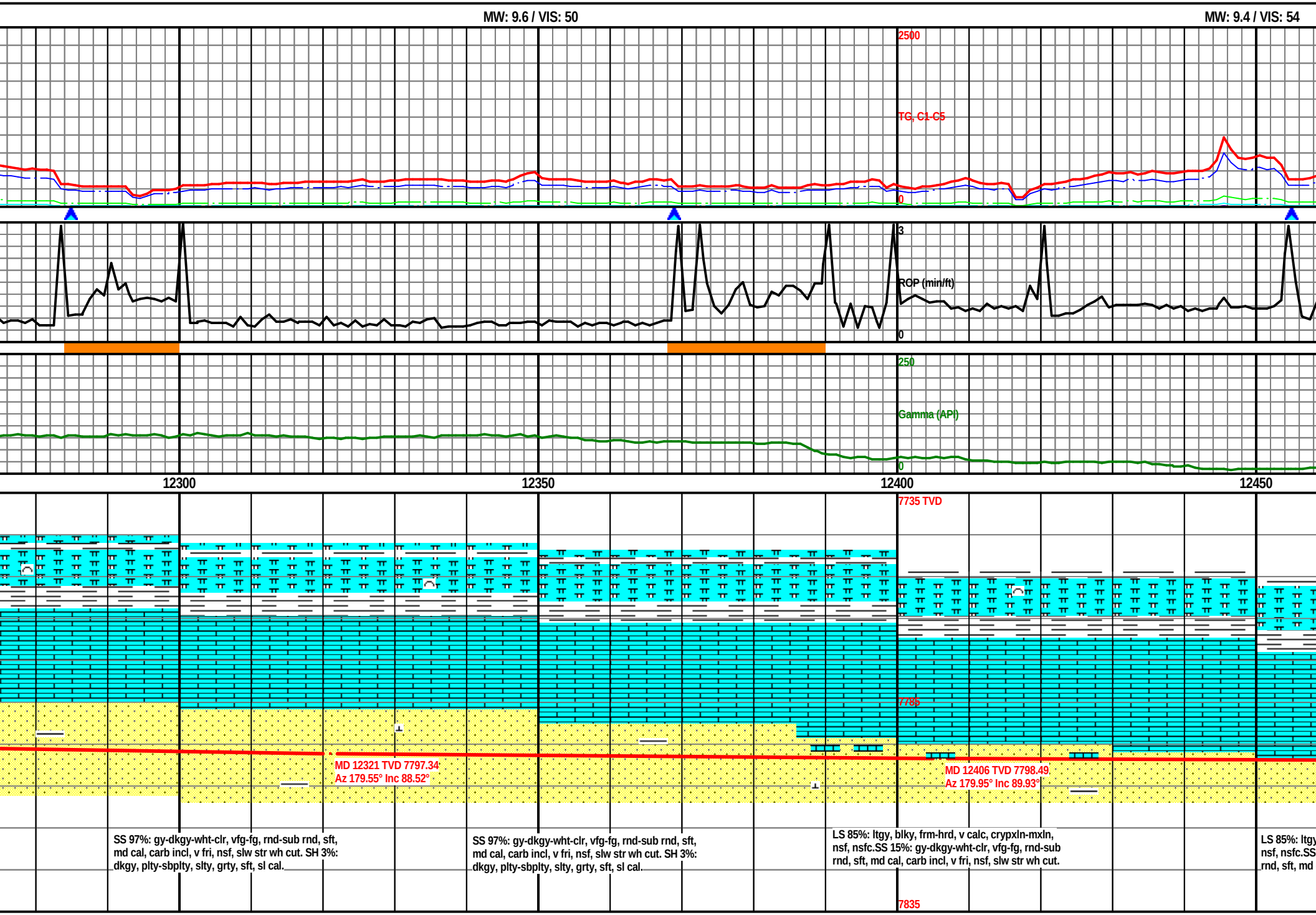

MW: 9.5 / VIS: 54
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11400
11450
11500
7725 TVD
7775
7825
MD 11375 TVD 7785.17
Az 178.68° Inc 88.42°
MD 11469 TVD 7787.63
Az 179.46° Inc 88.58°
vfg-fg, rnd-sub
lw str wh cut
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.

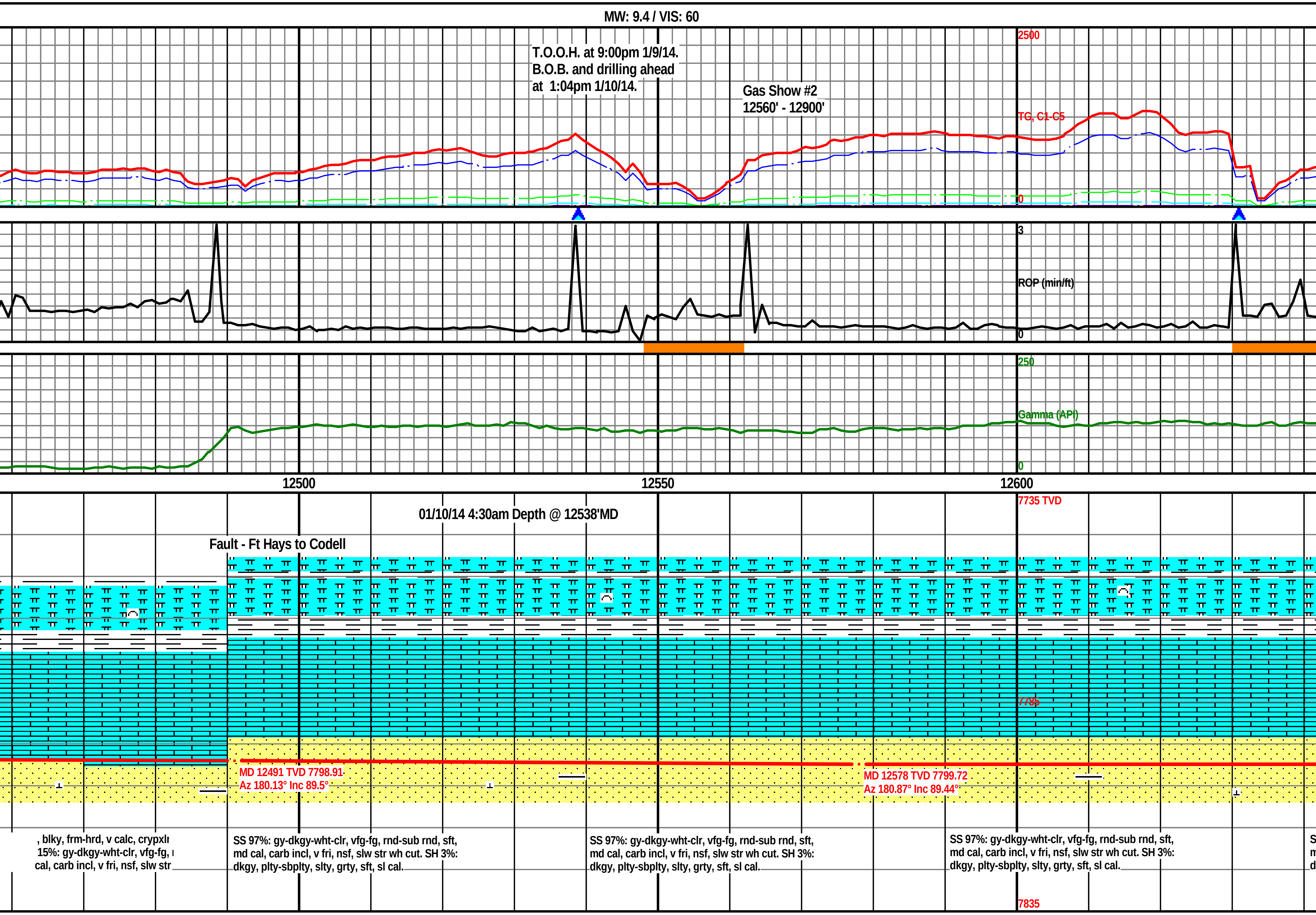

MW: 9.5 / VIS: 54
MW: 9.5 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11550
11600
11650
11700
7725 TVD
7775
MD 11554 TVD 7788.8
Az 180.07° Inc 89.84°
MD 11639 TVD 7788.95
Az 180.02° Inc 89.96°
100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub
d cal, carb incl, v fri, nsf, slw str wh cut.
gy, plty-sbplty, slty, grty, sf
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
7825

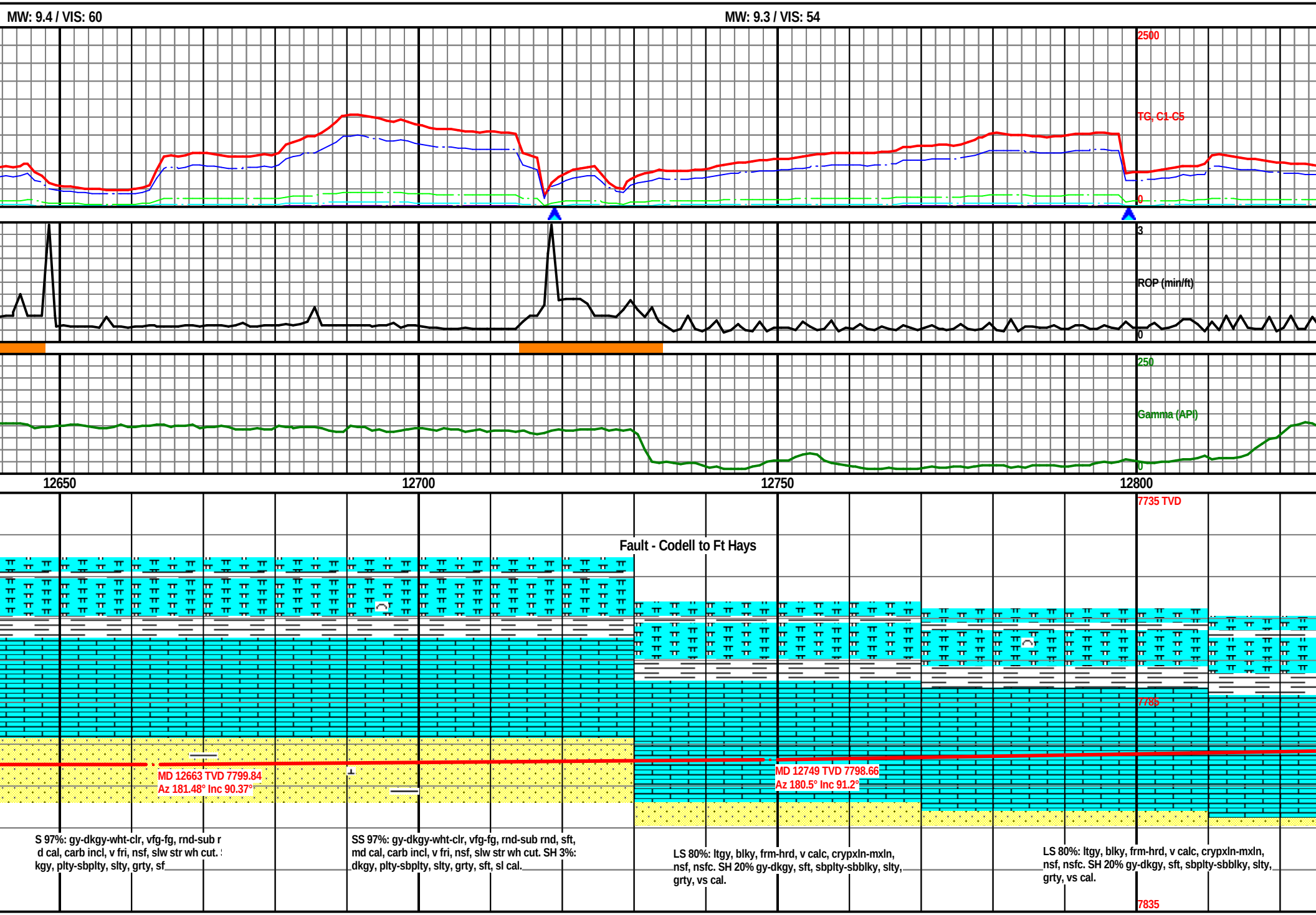

MW: 9.2 / VIS: 48
MW: 9.2 / VIS: 48
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11750
11800
11850
11900
7725 TVD
7775
7825
MD 11809 TVD 7788.97
Az 180.1° Inc 90.03°
MD 11895 TVD 7790
Az 179.29° Inc 88.02
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
SS 99%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 1%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 99%: gy-dkgy-wht-clr, vfg
md cal, carb incl, v fri, nsf, s
dkgy, plty-sbplty, slty, grty,

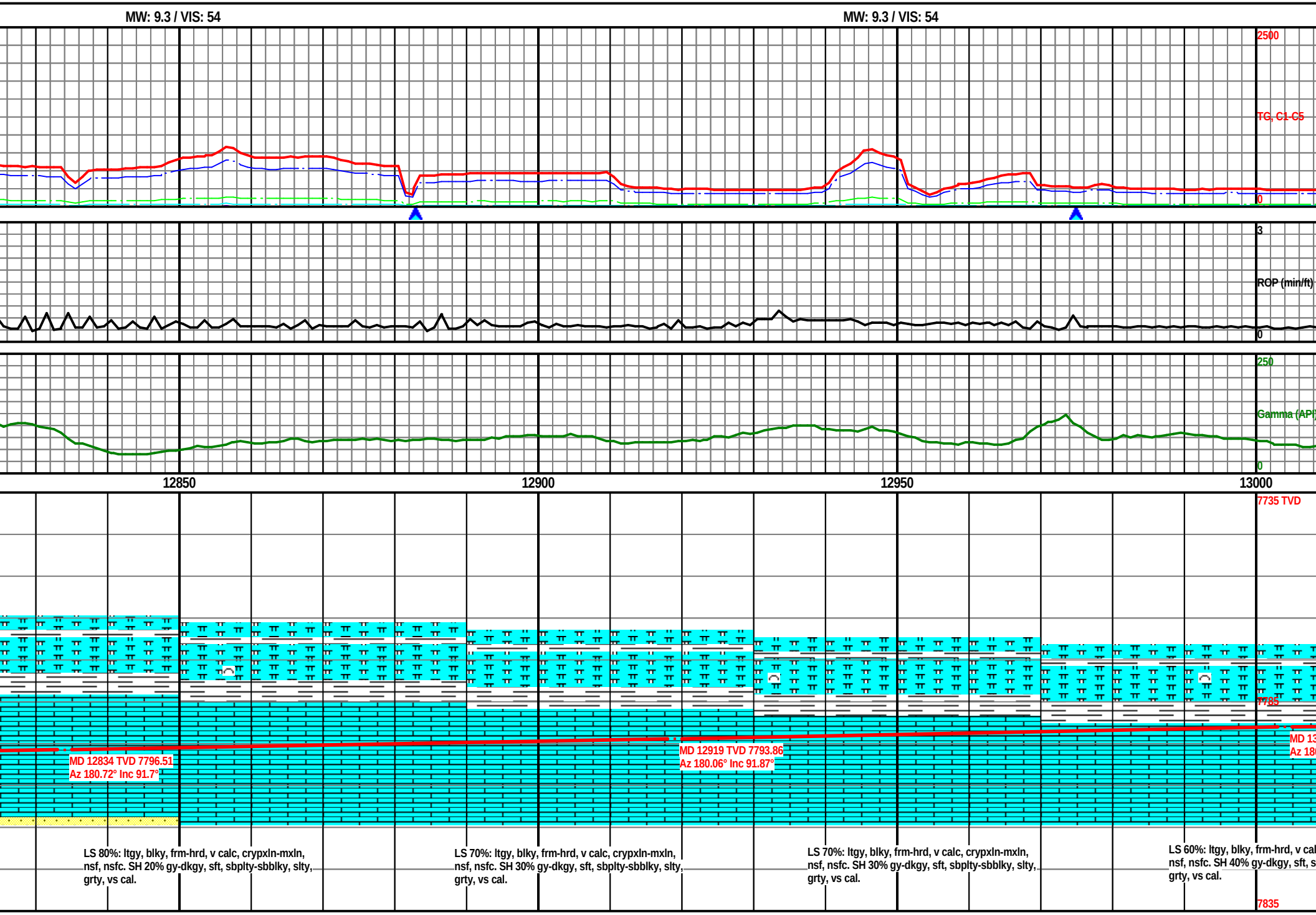

MW: 9.55 / VIS: 50
MW: 9.55 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
11950
12000
12050
7735 TVD
Scale Change
7785
MD 11980 TVD 7793.25
Az 179.36° Inc 88.18°
MD 12065 TVD 7794.9
Az 179.6° Inc 89.59°
-fg, rnd-sub r
lw str wh cut.
f
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
SS 100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. Tr SH.
7835

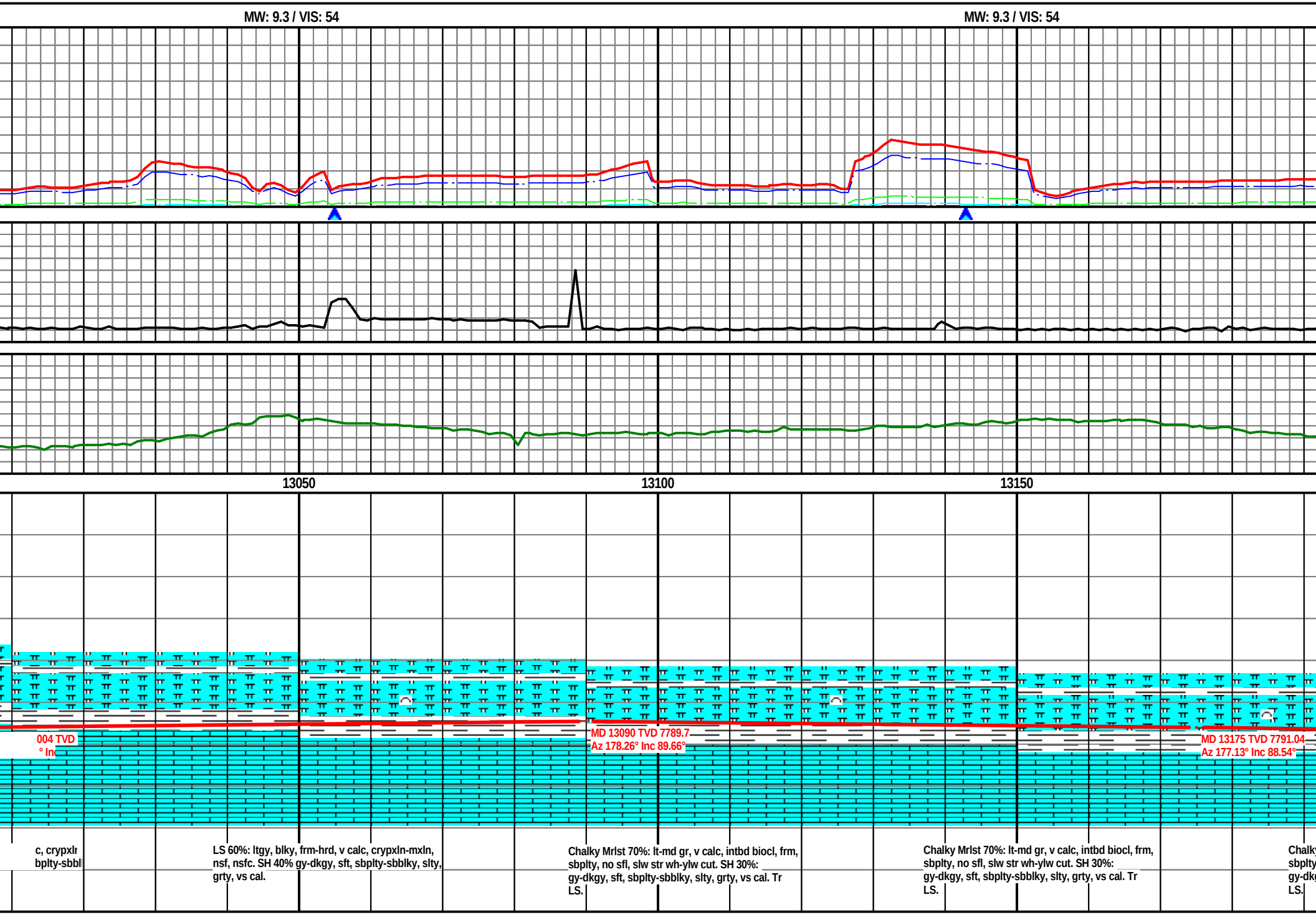

MW: 9.5 / VIS: 50
MW: 9.6 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
12100
12150
12200
12250
7735 TVD
7785
MD 12150 TVD 7794.61
Az 179.91° Inc 90.8°
MD 12235 TVD 7795.12
Az 179° Inc 88.52°
7835
100%: gy-dkgy-wht-clr, vfg-fg, rnd-sub cal, carb incl, v fri, nsf, slw str wh cut
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.

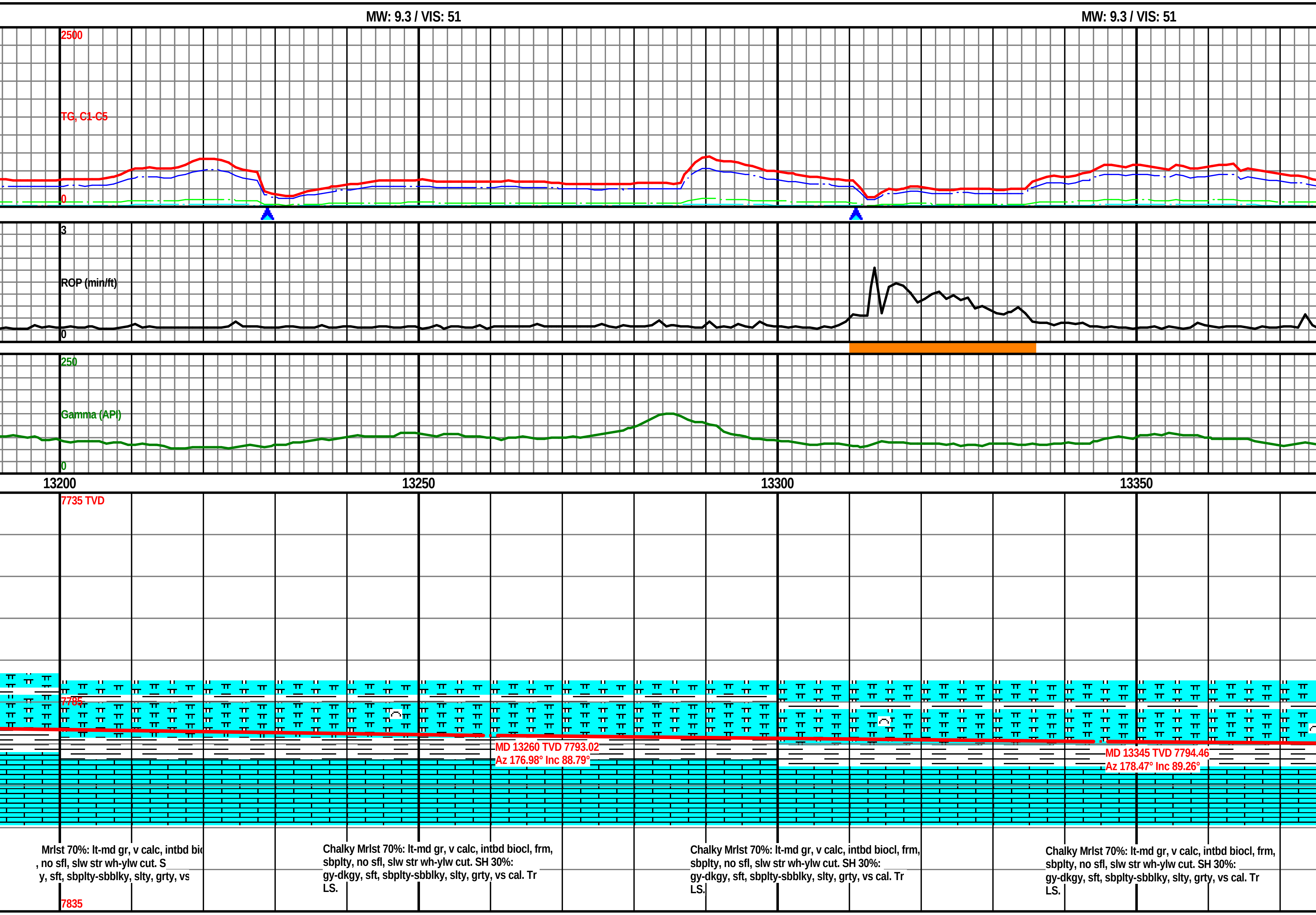

MW: 9.6 / VIS: 50
MW: 9.4 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
12300
12350
12400
12450
7735 TVD
7785
7835
MD 12321 TVD 7797.34
Az 179.55° Inc 88.52°
MD 12406 TVD 7798.49
Az 179.95° Inc 89.93°
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%: dkgy, plty-sbplty, slty, grty, sft, sl cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc.SS 15%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, slw str wh cut.


MW: 9.4 / VIS: 60
T.O.O.H. at 9:00pm 1/9/14.
B.O.B. and drilling ahead
at 1:04pm 1/10/14.
Gas Show #2
12560' - 12900'
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
12500
12550
12600
7735 TVD
01/10/14 4:30am Depth @ 12538'MD
Fault - Ft Hays to Codell
7785
MD 12491 TVD 7798.91
Az 180.13° Inc 89.5°
MD 12578 TVD 7799.72
Az 180.87° Inc 89.44°
, blky, frm-hrd, v calc, crypxl
15%: gy-dkgy-wht-clr, vfg-fg,
cal, carb incl, v fri, nsf, slw str
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
7835

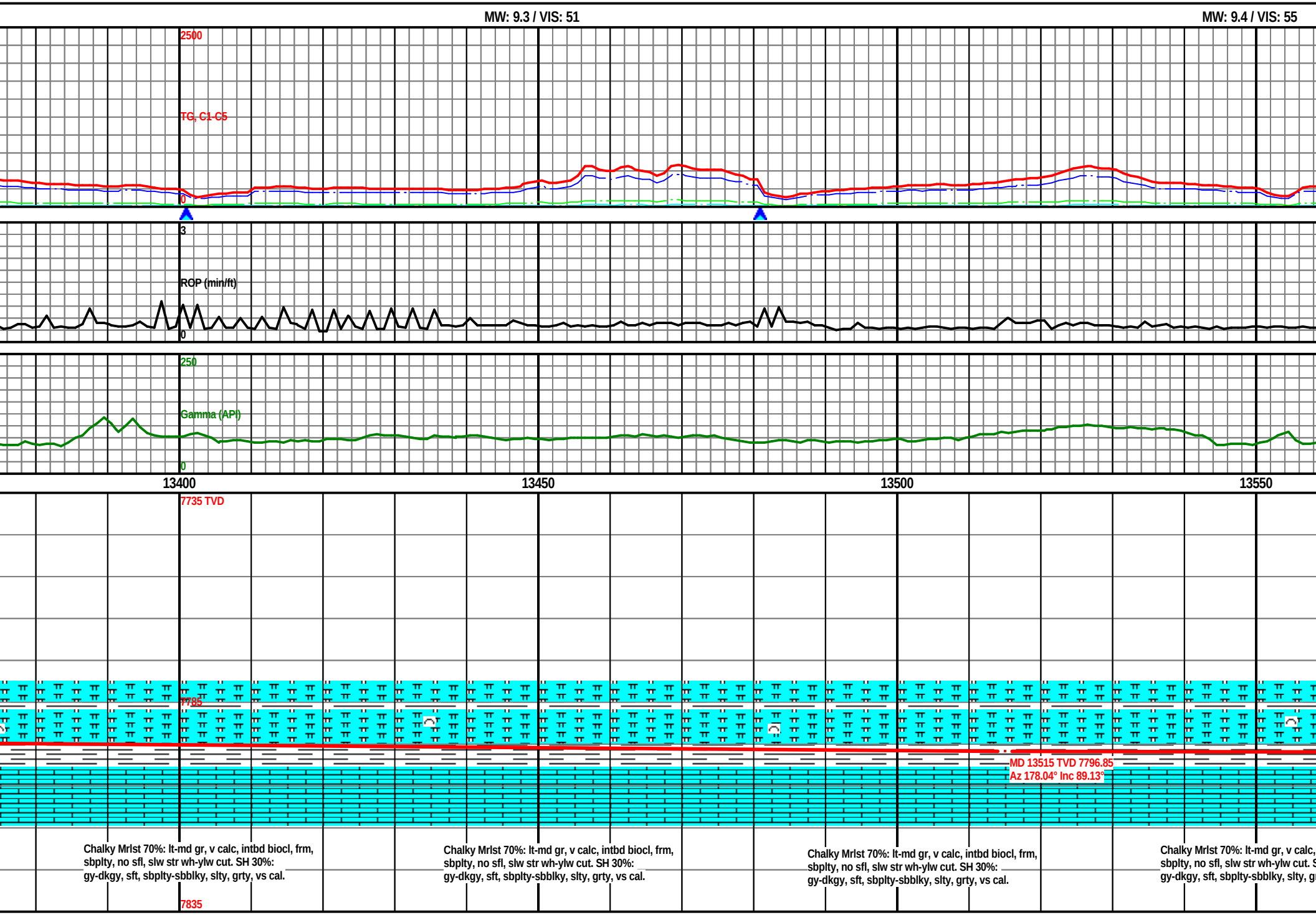

MW: 9.4 / VIS: 60
MW: 9.3 / VIS: 54
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
12650
12700
12750
12800
7735 TVD
Fault - Codell to Ft Hays
7785
7835
MD 12663 TVD 7799.84
Az 181.48° Inc 90.37°
MD 12749 TVD 7798.66
Az 180.5° Inc 91.2°
S 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub r
d cal, carb incl, v fri, nsf, slw str wh cut.
kgy, plty-sbplty, slty, grty, sf
SS 97%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, slw str wh cut. SH 3%:
dkgy, plty-sbplty, slty, grty, sft, sl cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.

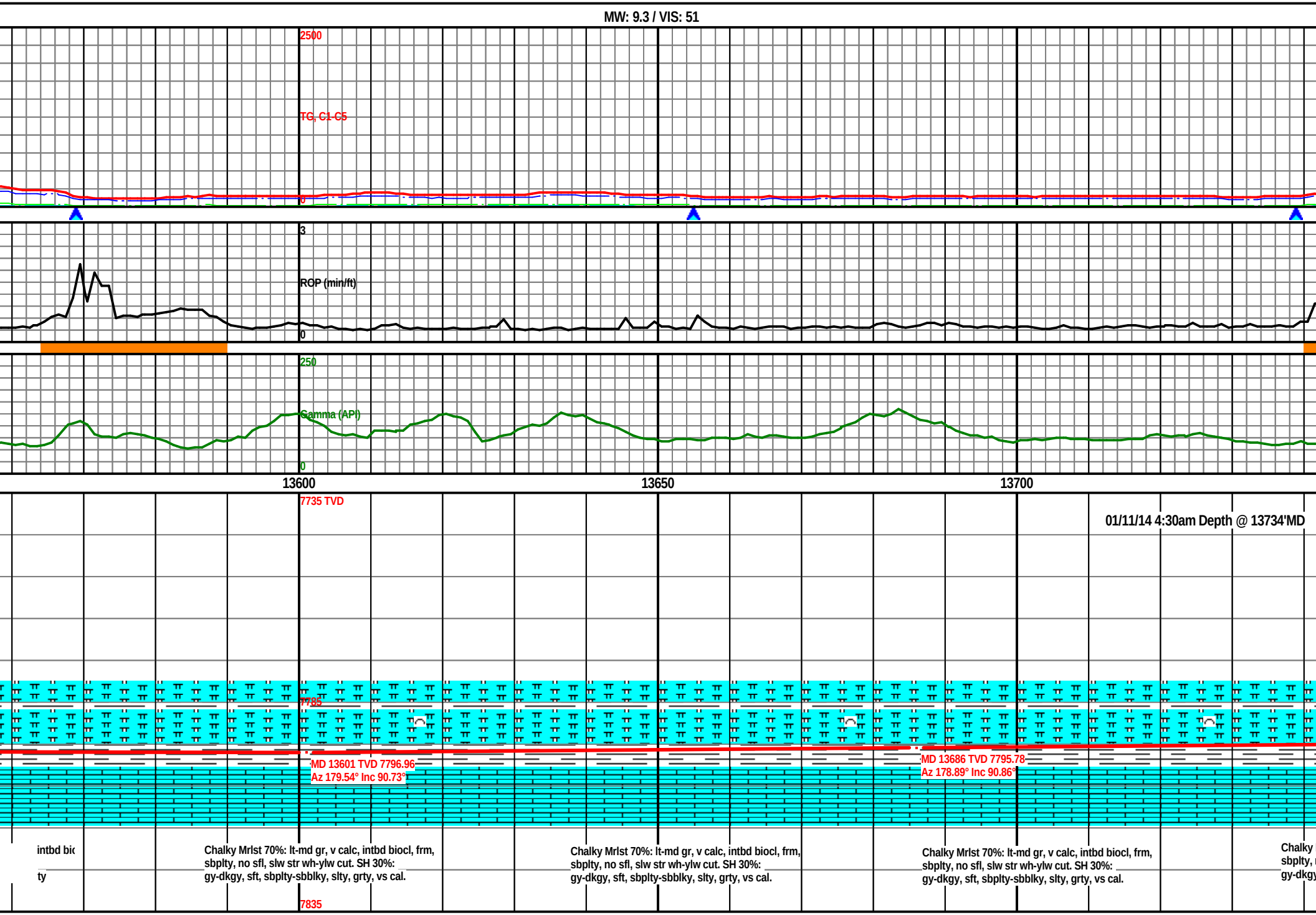

MW: 9.3 / VIS: 54
MW: 9.3 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
12850
12900
12950
13000
7735 TVD
7785
7835
MD 12834 TVD 7796.51
Az 180.72° Inc 91.7°
MD 12919 TVD 7793.86
Az 180.06° Inc 91.87°
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 60%: ltgy, blky, frm-hrd, v cal
nsf, nsfc. SH 40% gy-dkgy, sft, s
grty, vs cal.

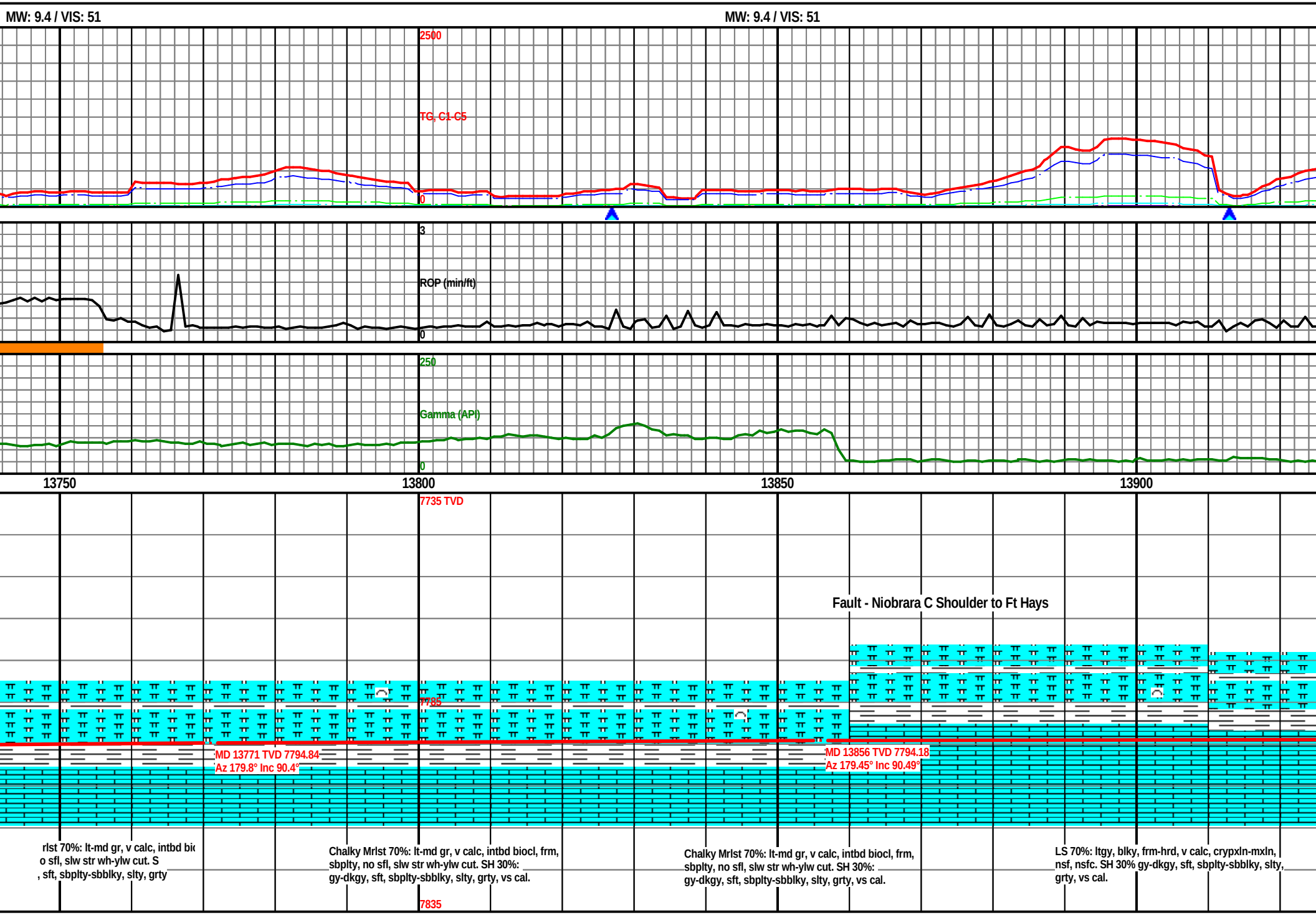

MW: 9.3 / VIS: 54
MW: 9.3 / VIS: 54
13050
13100
13150
004 TVD
° In
MD 13090 TVD 7789.7
Az 178.26° Inc 89.66°
MD 13175 TVD 7791.04
Az 177.13° Inc 88.54°
c, crypxln
bplty-sbbl
LS 60%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 40% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalk
sbplty
gy-dk
LS.

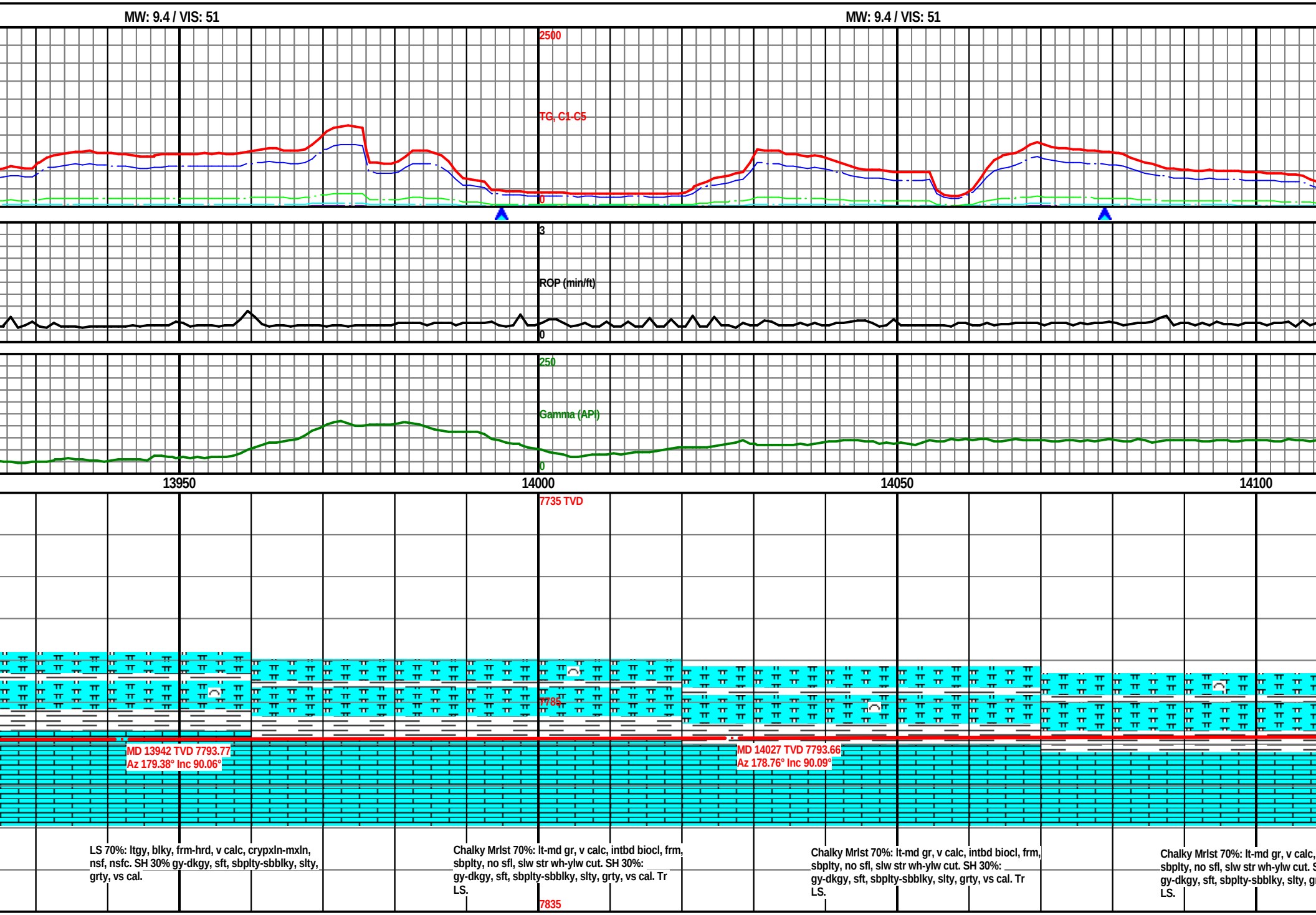


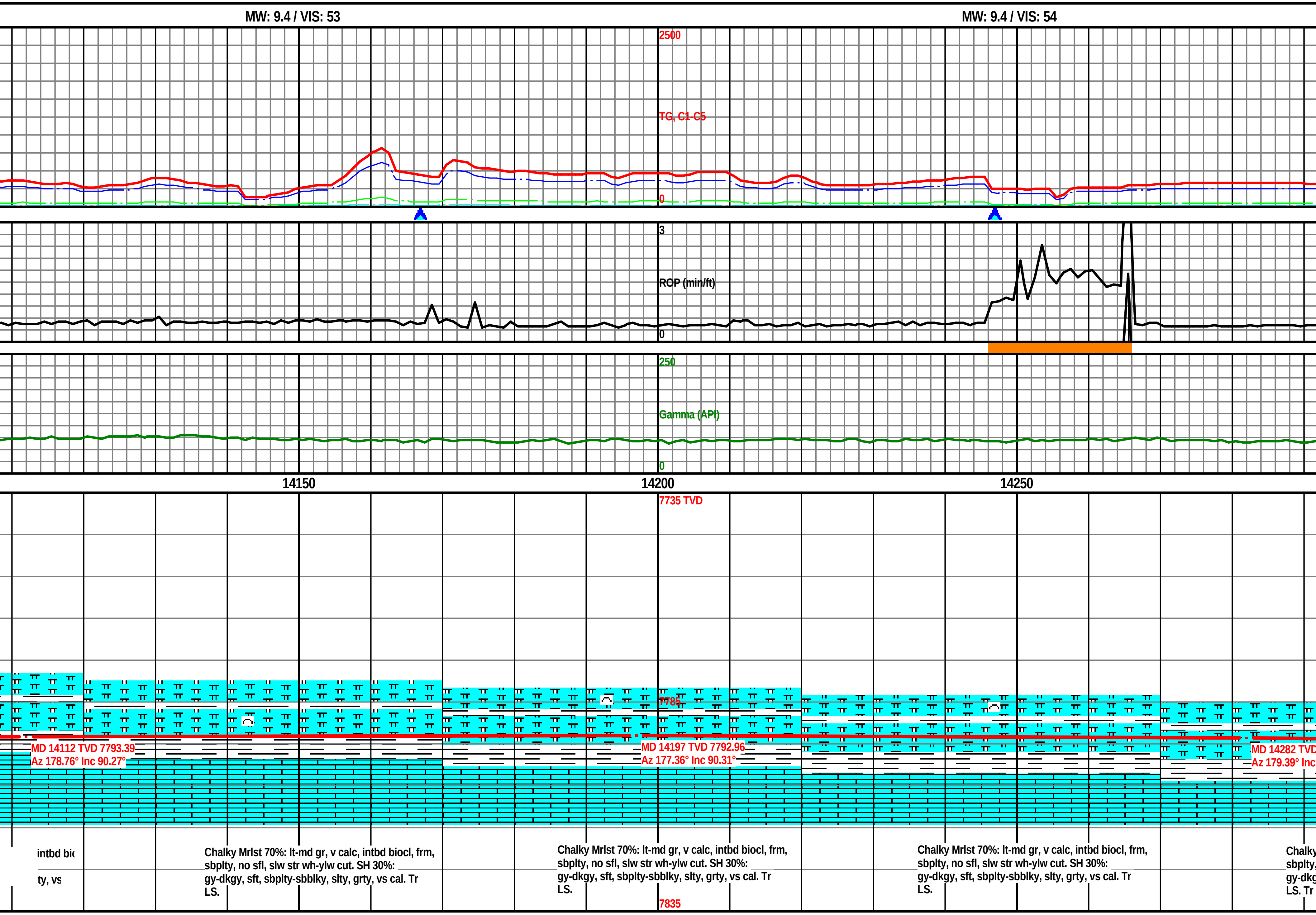
MW: 9.3 / VIS: 51
MW: 9.3 / VIS: 51
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
13200
13250
13300
13350
7735 TVD
7785
MD 13260 TVD 7793.02
Az 176.98° Inc 88.79°
MD 13345 TVD 7794.46
Az 178.47° Inc 89.26°
Mrlst 70%: lt-md gr, v calc, intbd bio
, no sfl, slw str wh-ylw cut. S
y, sft, sbplty-sbblky, slty, grty, vs
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
7835


MW: 9.3 / VIS: 51
MW: 9.4 / VIS: 55
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
13400
13450
13500
13550
7735 TVD
7785
MD 13515 TVD 7796.85
Az 178.04° Inc 89.13°
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7835

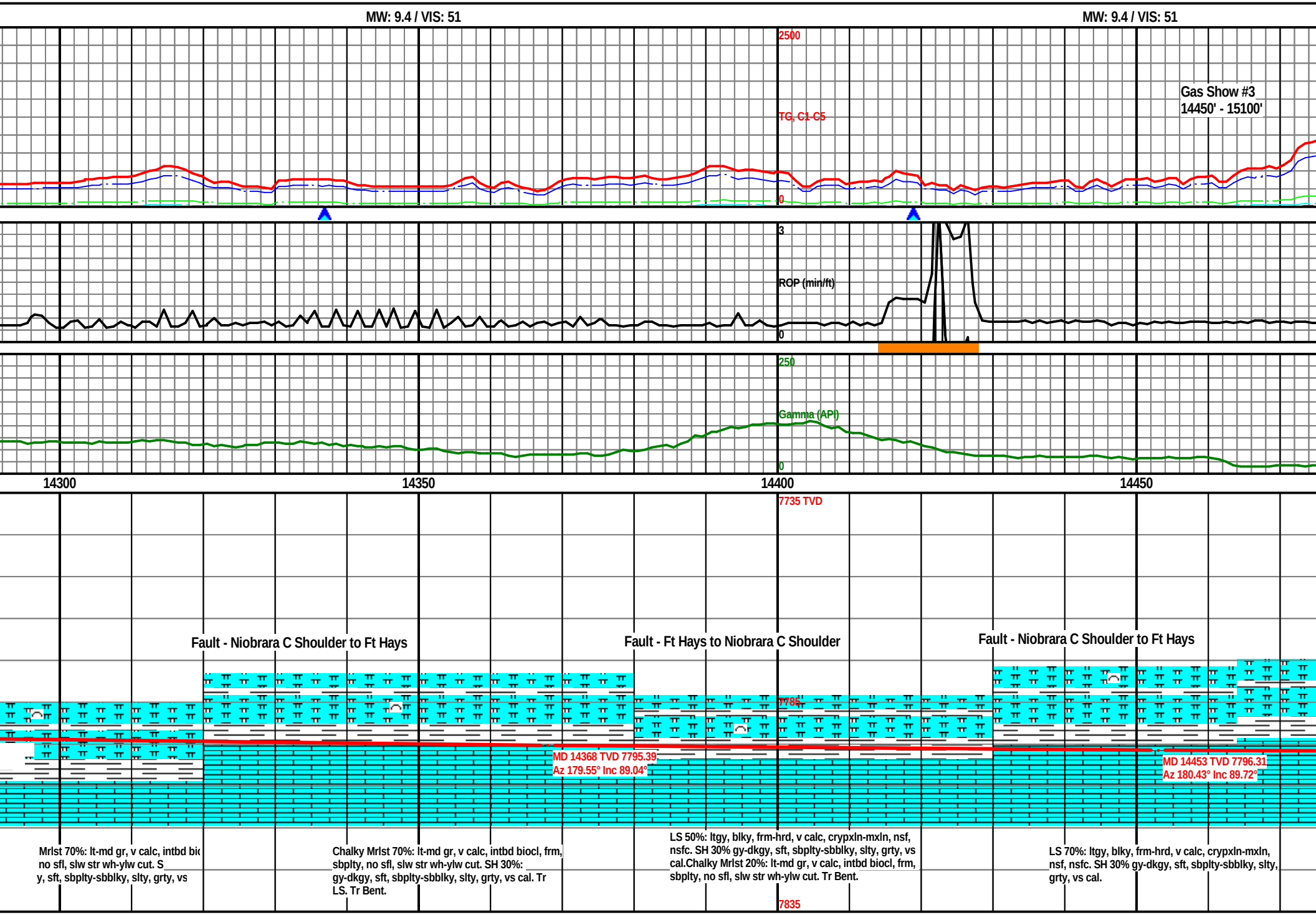

MW: 9.3 / VIS: 51
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
13600
13650
13700
7735 TVD
01/11/14 4:30am Depth @ 13734'MD
7785
MD 13601 TVD 7796.96
Az 179.54° Inc 90.73°
MD 13686 TVD 7795.78
Az 178.89° Inc 90.86°
intbd bic
ty
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky
sbplty,
gy-dkgy
7835

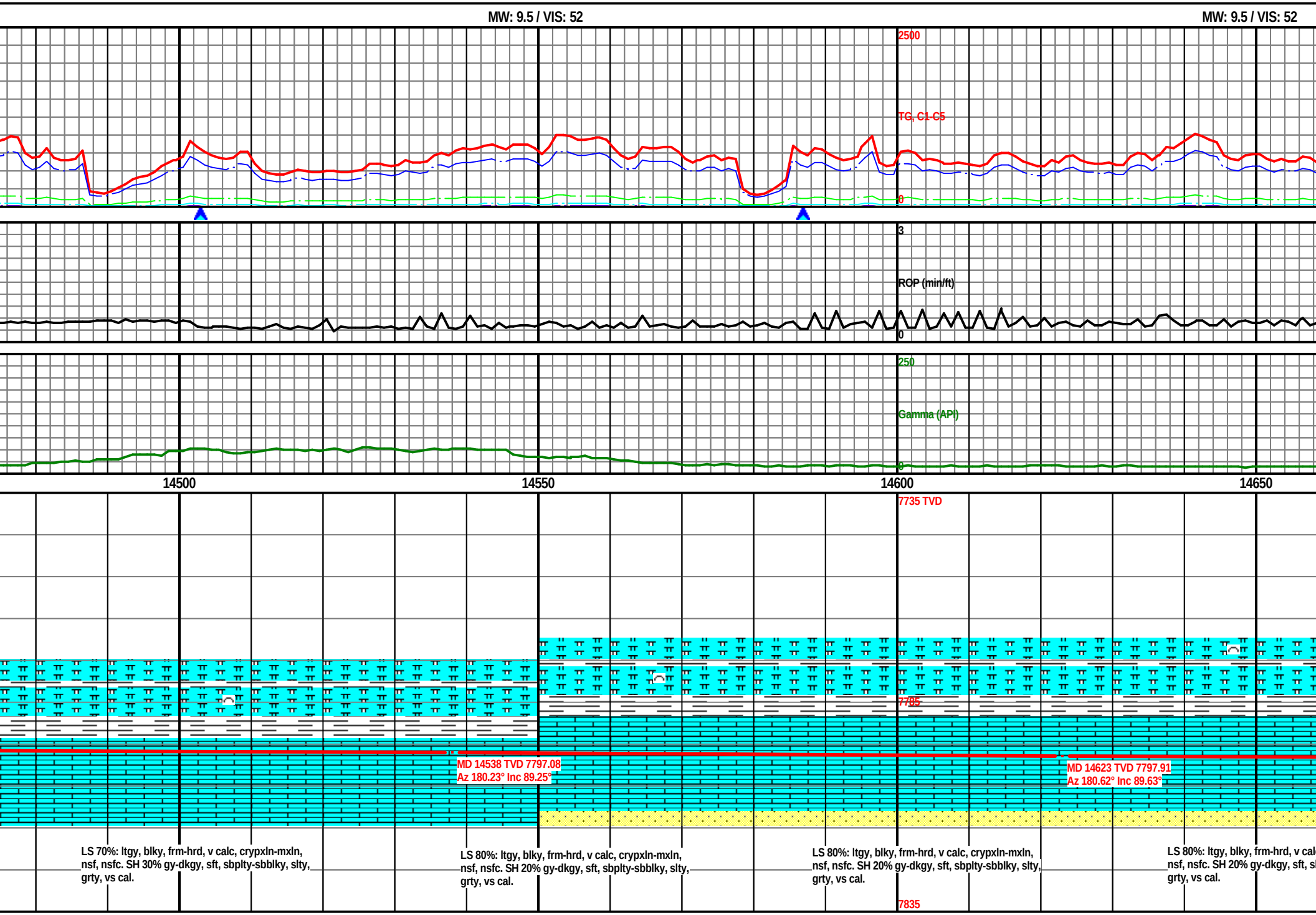

MW: 9.4 / VIS: 51
MW: 9.4 / VIS: 51
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
13750
13800
13850
13900
7735 TVD
7785
7835
MD 13771 TVD 7794.84
Az 179.8° Inc 90.4°
MD 13856 TVD 7794.18
Az 179.45° Inc 90.49°
Fault - Niobrara C Shoulder to Ft Hays
rlst 70%: lt-md gr, v calc, intbd bi
o sfl, slw str wh-ylw cut. S
, sft, sbplty-sbblky, slty, grty
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

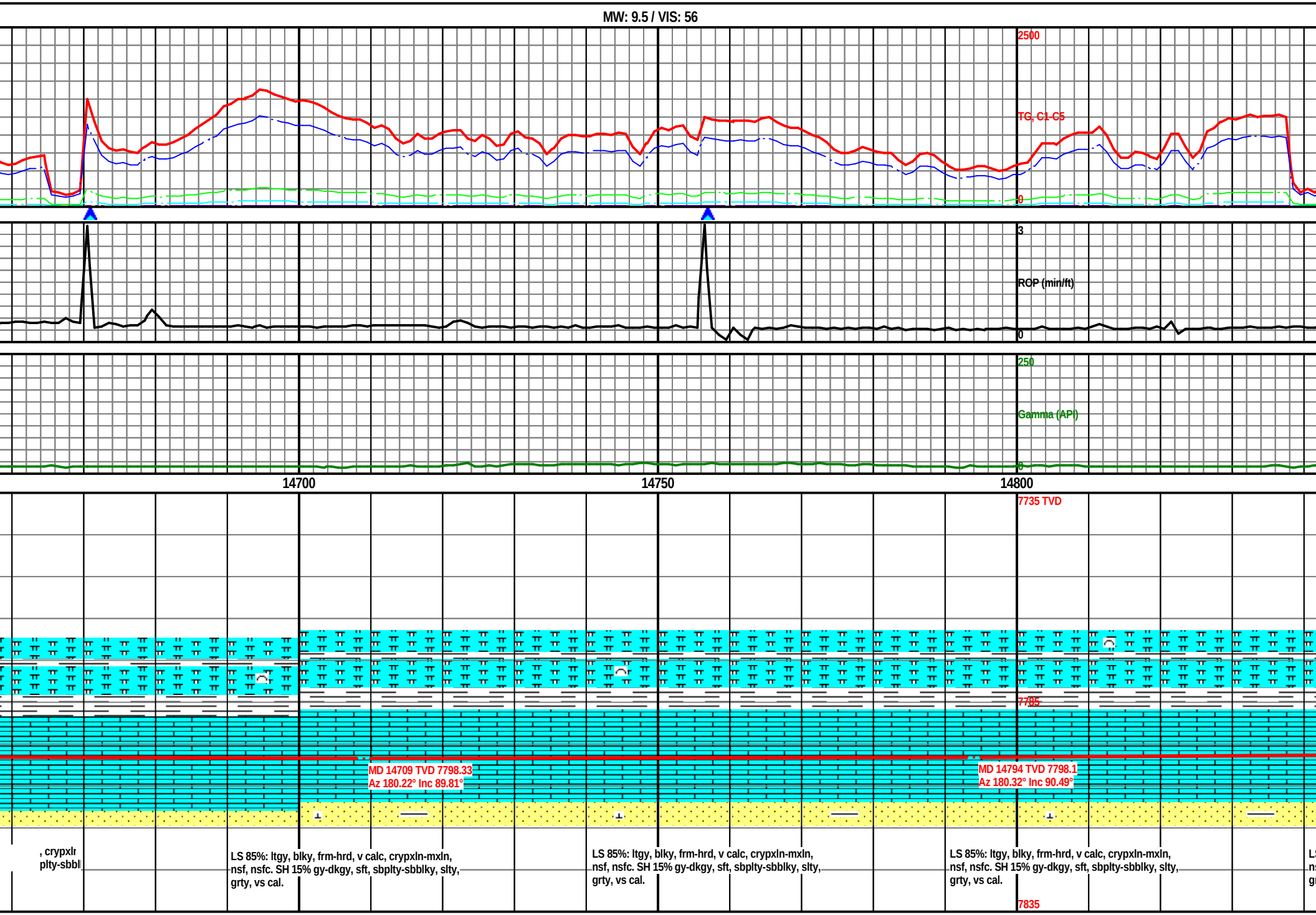

MW: 9.4 / VIS: 51
MW: 9.4 / VIS: 51
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
13950
14000
14050
14100
7735 TVD
7785
7835
MD 13942 TVD 7793.77
Az 179.38° Inc 90.06°
MD 14027 TVD 7793.66
Az 178.76° Inc 90.09°
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, sbplty, no sfl, slw str wh-ylw cut. S gy-dkgy, sft, sbplty-sbblky, slty, g LS.

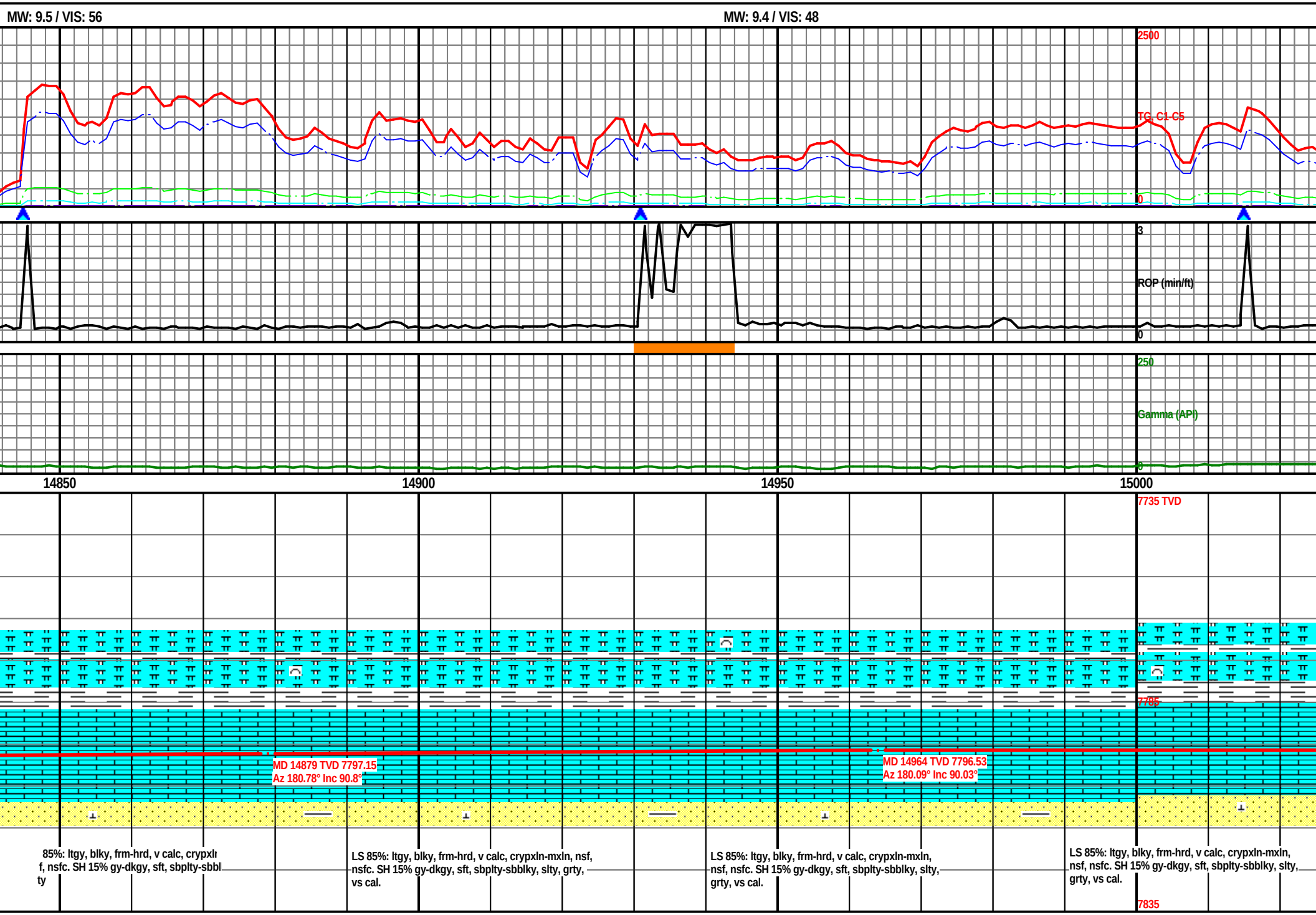


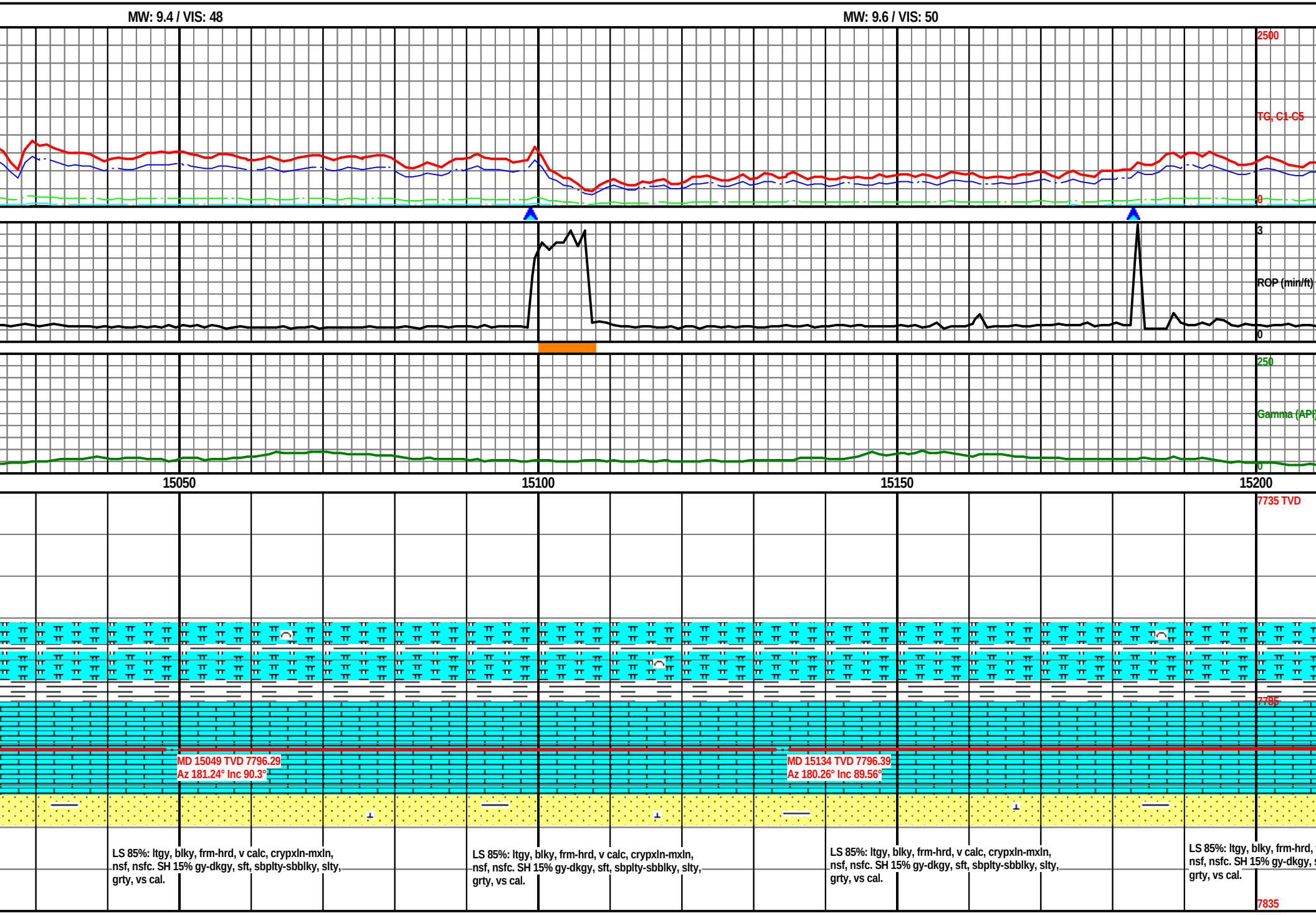
MW: 9.4 / VIS: 53
MW: 9.4 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
14150
14200
14250
7735 TVD
7785
7835
MD 14112 TVD 7793.39
Az 178.76° Inc 90.27°
MD 14197 TVD 7792.96
Az 177.36° Inc 90.31°
MD 14282 TVD
Az 179.39° Inc
intbd bic
ty, vs
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm, sbplty, no sfl, slw str wh-ylw cut. SH 30%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr LS.
Chalky
sbplty,
gy-dkg
LS. Tr

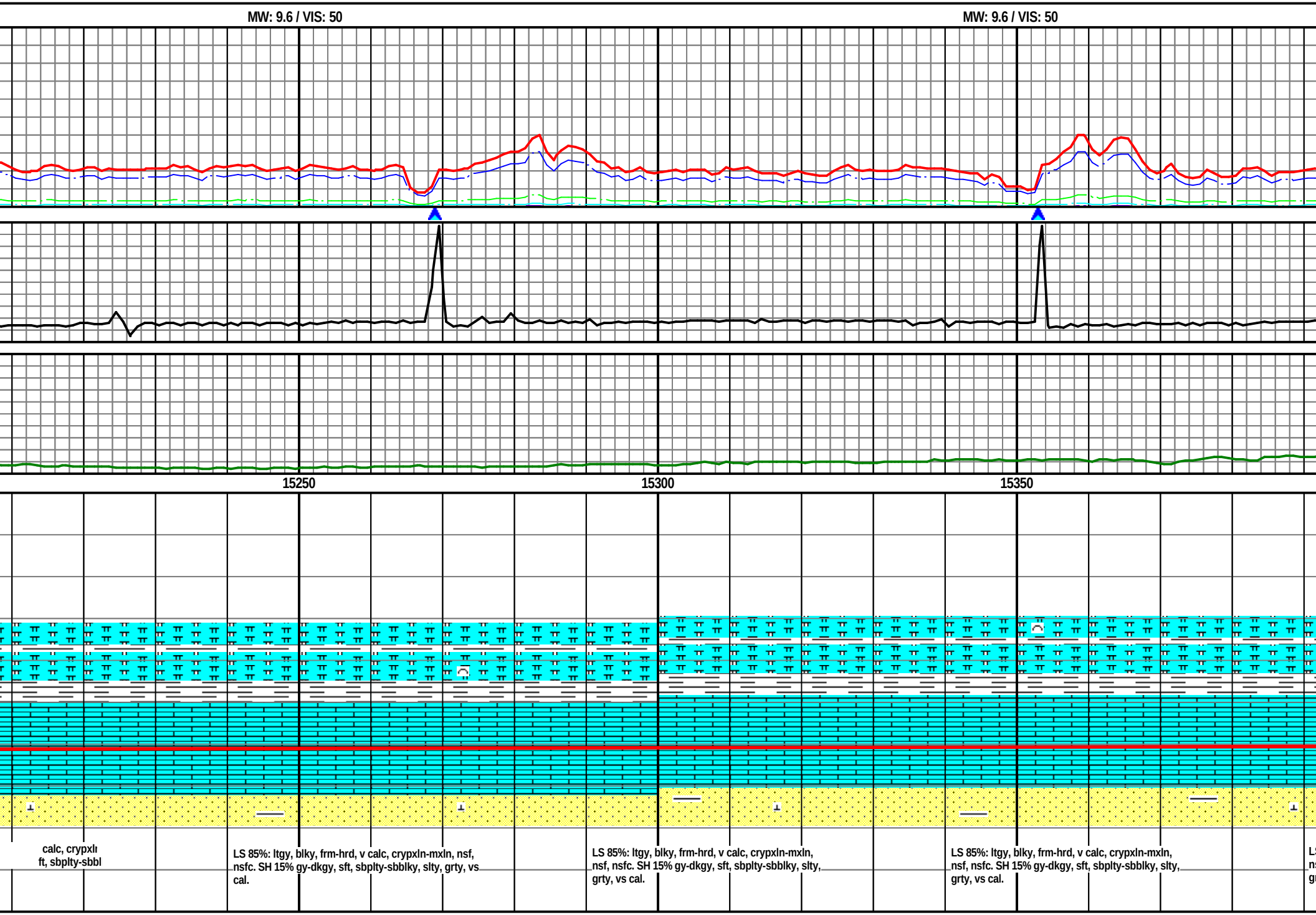

MW: 9.4 / VIS: 51
MW: 9.4 / VIS: 51
2500
TG, C1-C5
Gas Show #3
14450' - 15100'
0
3
ROP (min/ft)
0
250
Gamma (API)
0
14300
14350
14400
14450
7735 TVD
Fault - Niobrara C Shoulder to Ft Hays
Fault - Ft Hays to Niobrara C Shoulder
Fault - Niobrara C Shoulder to Ft Hays
7785
MD 14368 TVD 7795.39
Az 179.55° Inc 89.04°
MD 14453 TVD 7796.31
Az 180.43° Inc 89.72°
Mrlst 70%: lt-md gr, v calc, intbd bio
no sfl, slw str wh-ylw cut. S
y, sft, sbplty-sbblky, slty, grty, vs
Chalky Mrlst 70%: lt-md gr, v calc, intbd biocl, frm,
sbplty, no sfl, slw str wh-ylw cut. SH 30%:
gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal. Tr
LS. Tr Bent.
LS 50%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf,
nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs
cal.Chalky Mrlst 20%: lt-md gr, v calc, intbd biocl, frm,
sbplty, no sfl, slw str wh-ylw cut. Tr Bent.
7835
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.

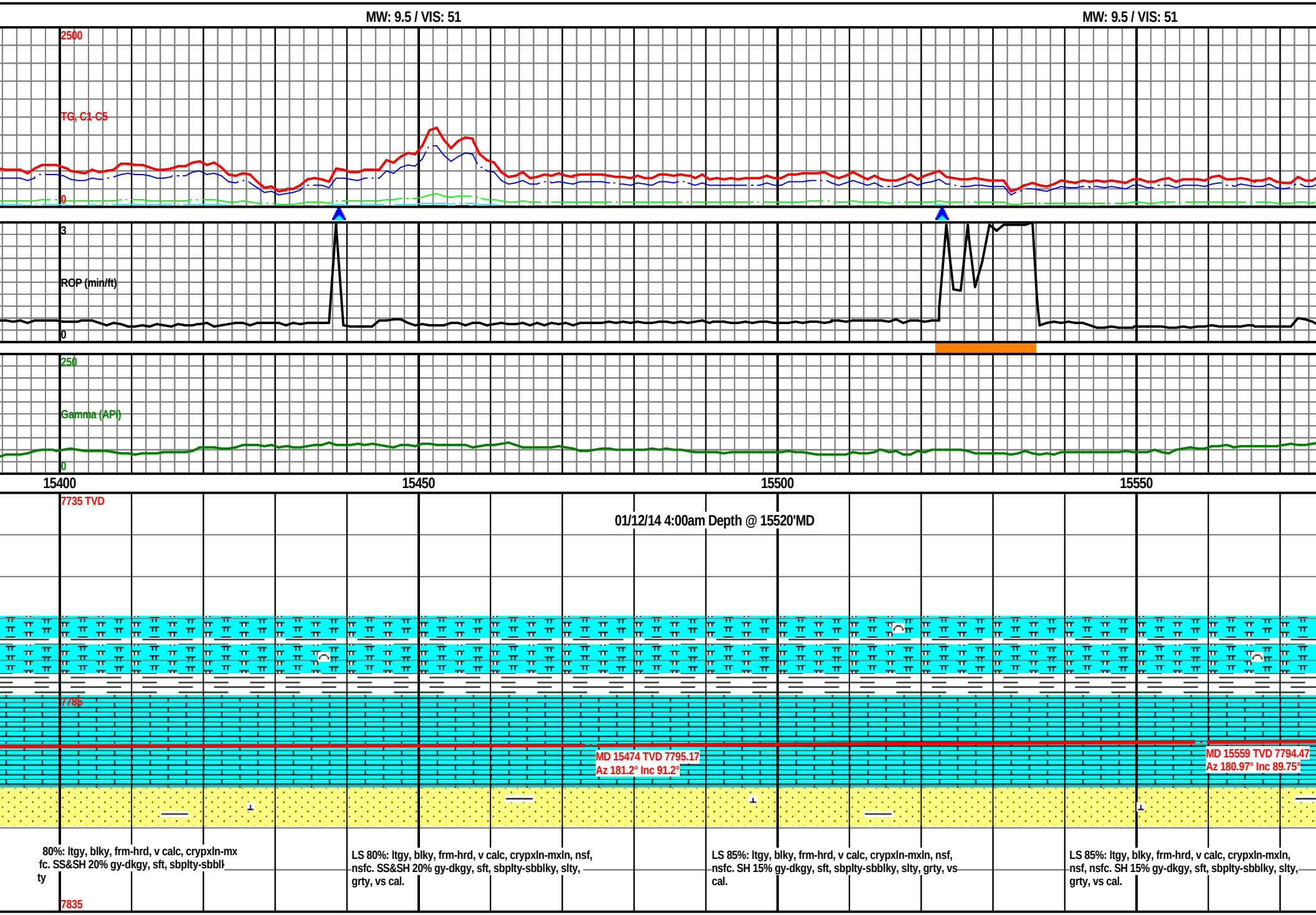

MW: 9.5 / VIS: 52
MW: 9.5 / VIS: 52
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
14500
14550
14600
14650
7735 TVD
7785
7835
MD 14538 TVD 7797.08
Az 180.23° Inc 89.25°
MD 14623 TVD 7797.91
Az 180.62° Inc 89.63°
LS 70%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 30% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 20% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 80%: ltgy, blky, frm-hrd, v cal
nsf, nsfc. SH 20% gy-dkgy, sft, s
grty, vs cal.

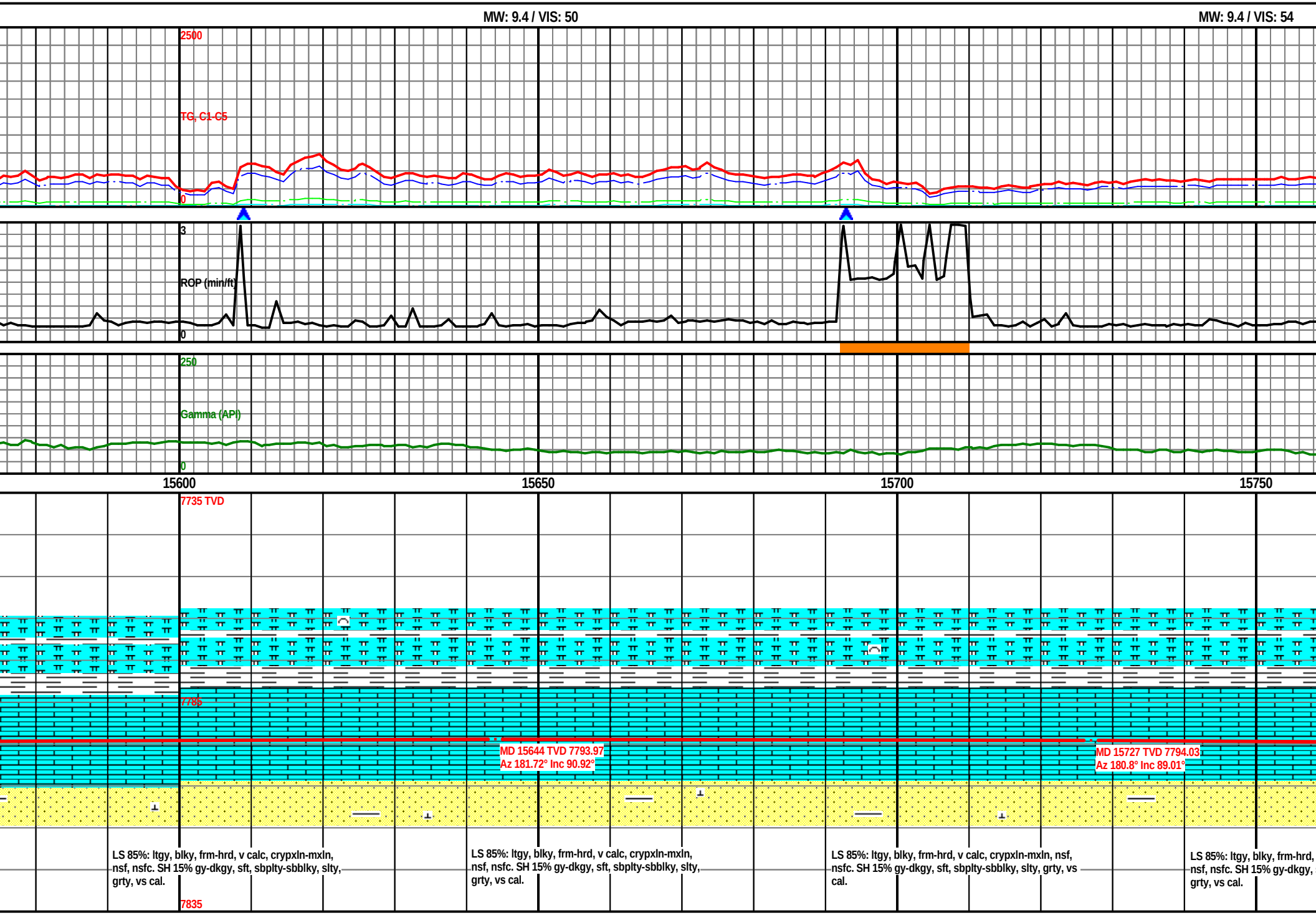

MW: 9.5 / VIS: 56
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
14700
14750
14800
7735 TVD
7785
MD 14709 TVD 7798.33
Az 180.22° Inc 89.81°
MD 14794 TVD 7798.1
Az 180.32° Inc 90.49°
, crypxln
plty-sbbl
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7835

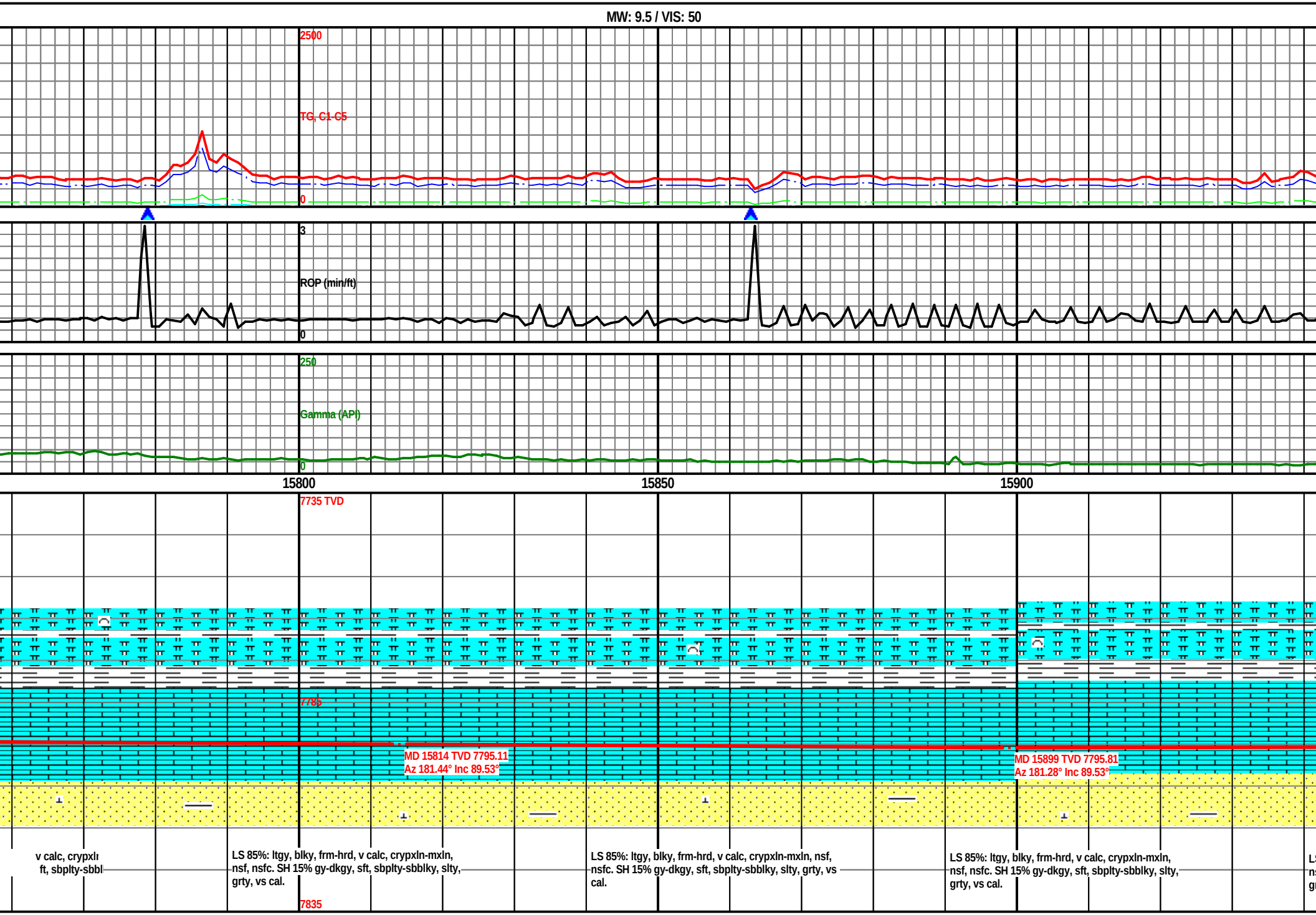

MW: 9.5 / VIS: 56
MW: 9.4 / VIS: 48
2500
TG, C1 C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
14850
14900
14950
15000
7735 TVD
7785
7835
MD 14879 TVD 7797.15
Az 180.78° Inc 90.8°
MD 14964 TVD 7796.53
Az 180.09° Inc 90.03°
85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

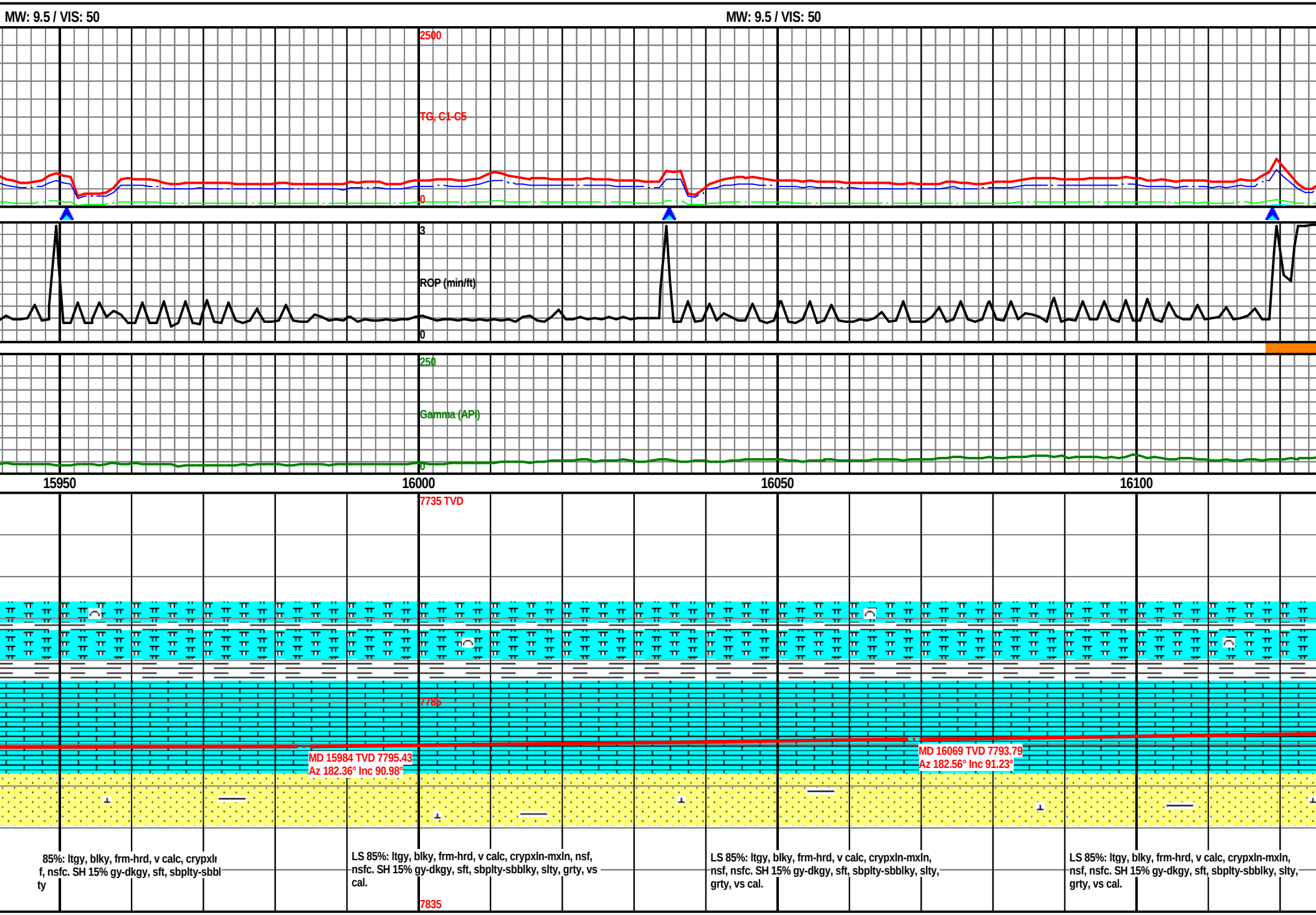

MW: 9.4 / VIS: 48
MW: 9.6 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
15050
15100
15150
15200
7735 TVD
7785
MD 15049 TVD 7796.29
Az 181.24° Inc 90.3°
MD 15134 TVD 7796.39
Az 180.26° Inc 89.56°
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, nsf, nsfc. SH 15% gy-dkgy,
grty, vs cal.
7835

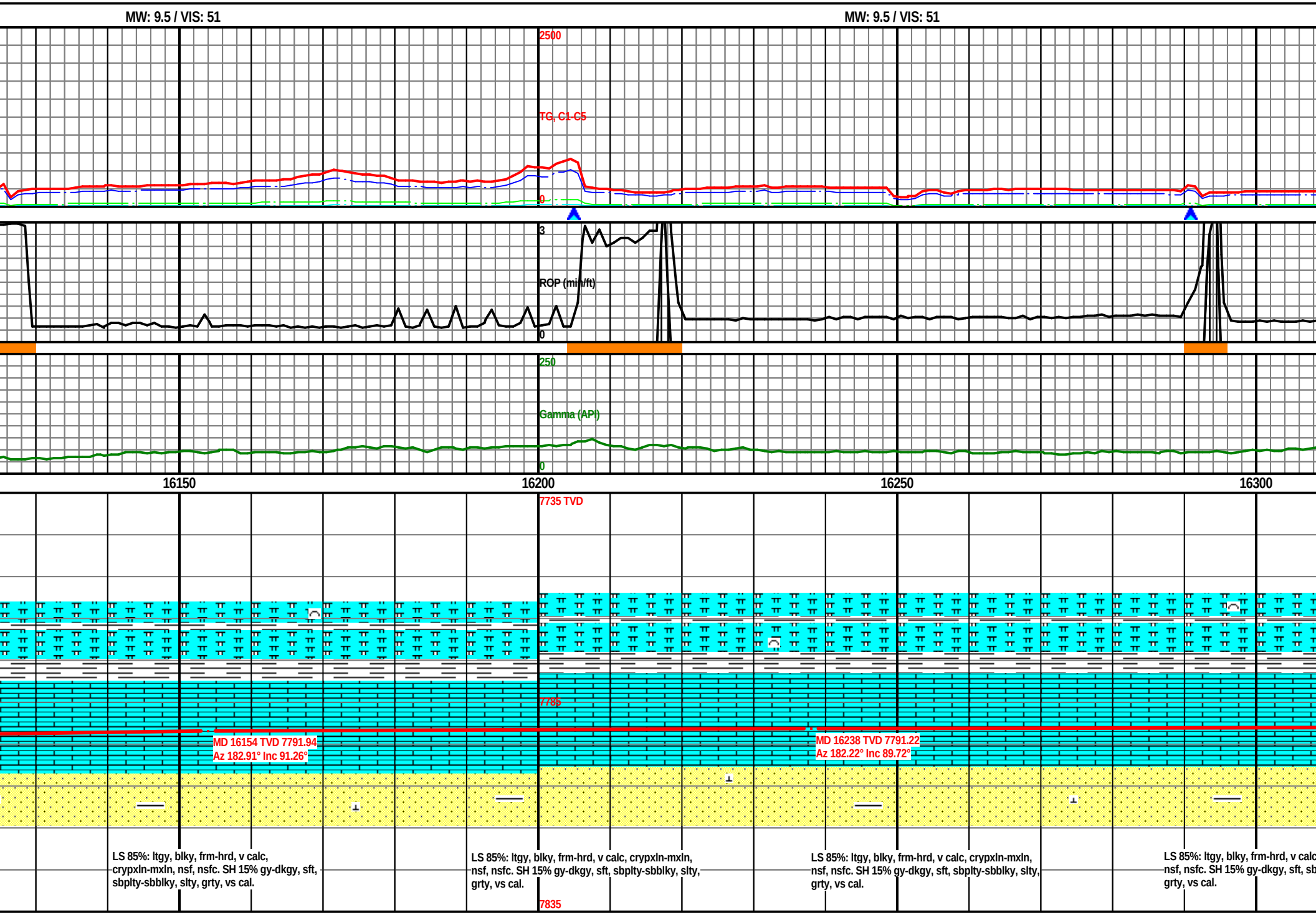

MW: 9.6 / VIS: 50
MW: 9.6 / VIS: 50
15250
15300
15350
calc, crypxln
ft, sbplty-sbbl
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

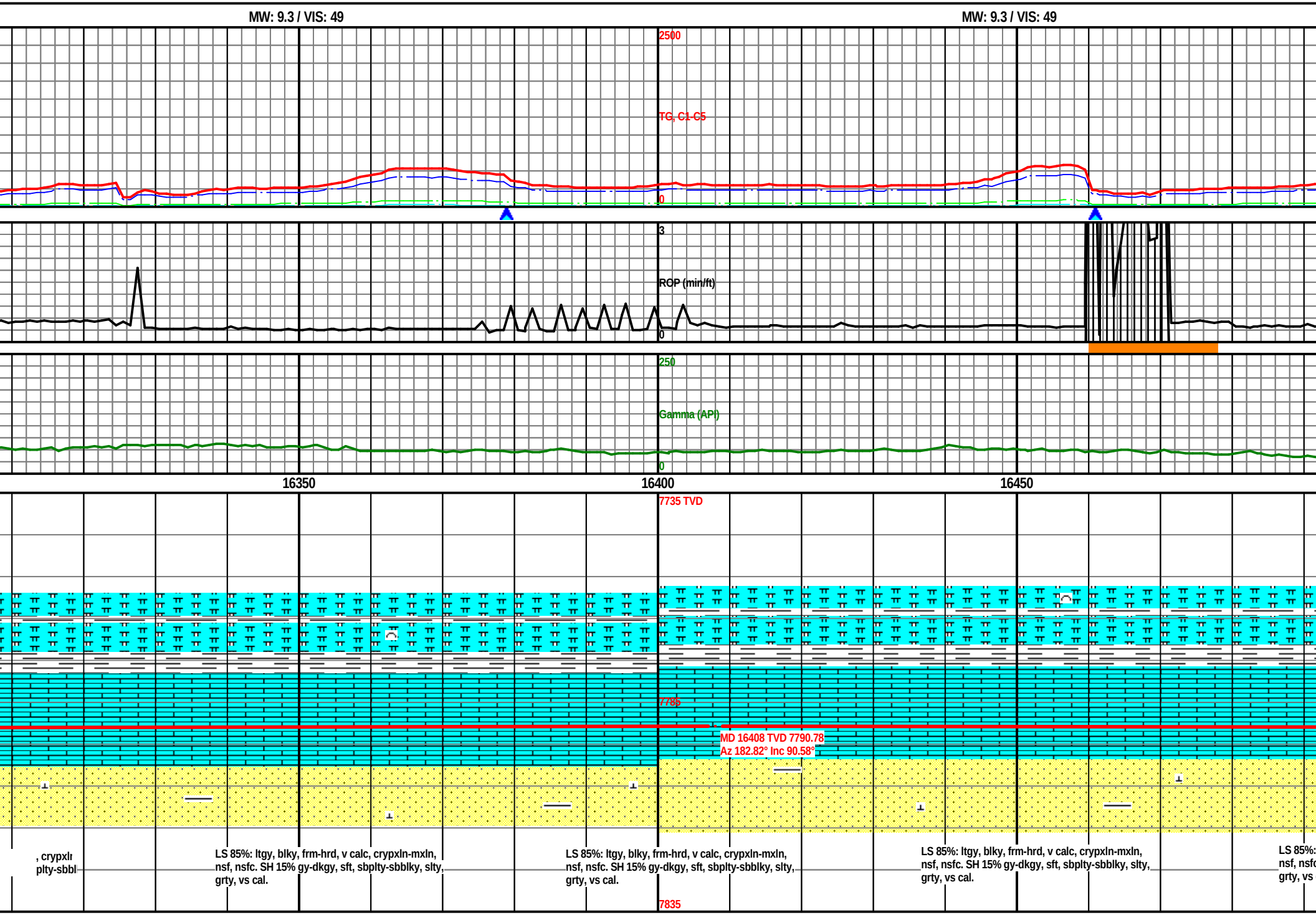

MW: 9.5 / VIS: 51
MW: 9.5 / VIS: 51
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
15400
15450
15500
15550
7735 TVD
01/12/14 4:00am Depth @ 15520'MD
7785
MD 15474 TVD 7795.17
Az 181.2° Inc 91.2°
MD 15559 TVD 7794.47
Az 180.97° Inc 89.75°
80%: ltgy, blky, frm-hrd, v calc, crypxln-mx
fc. SS&SH 20% gy-dkgy, sft, sbplty-sbbl
ty
LS 80%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf,
nsfc. SS&SH 20% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf,
nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs
cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.
7835

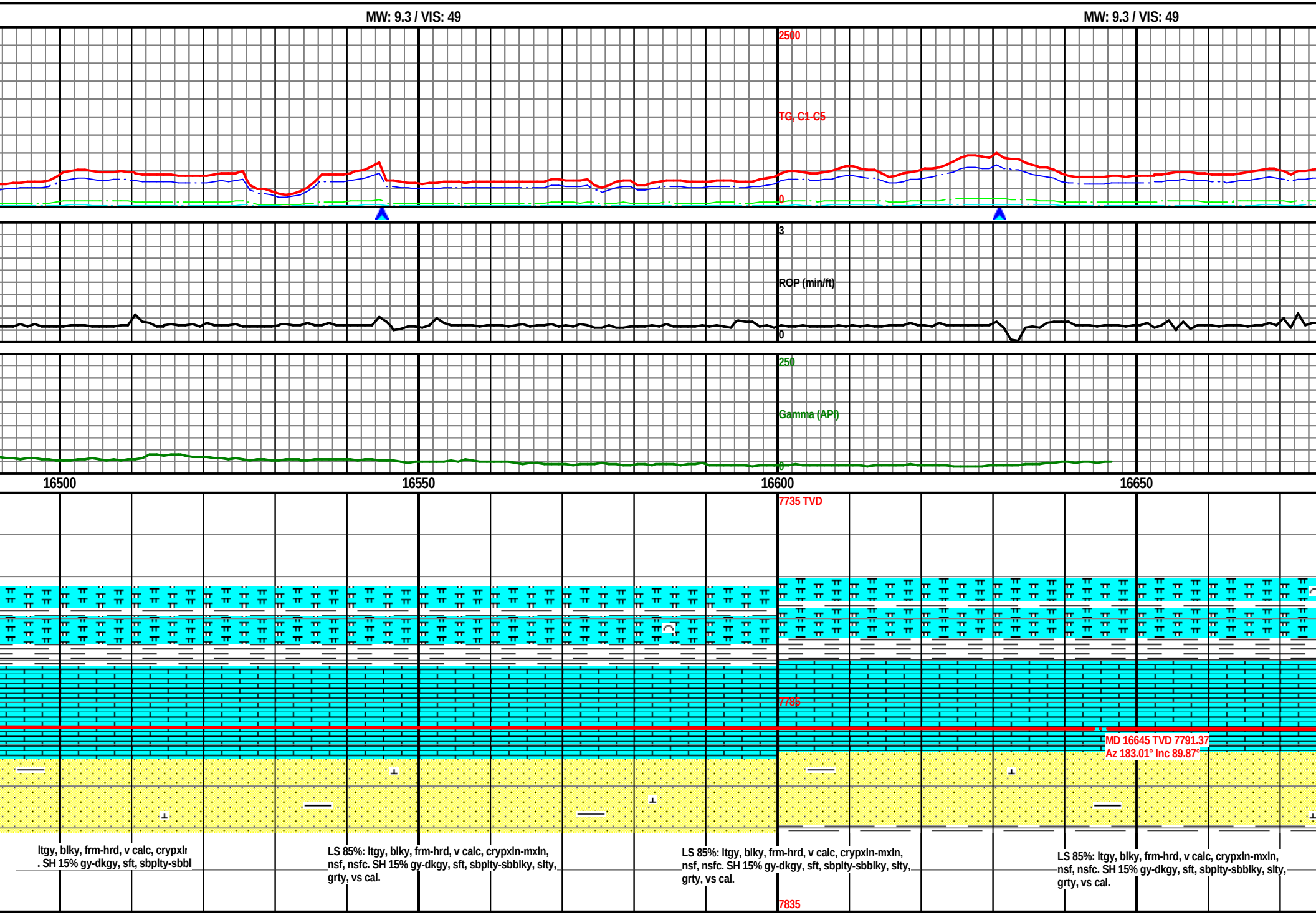

MW: 9.4 / VIS: 50
MW: 9.4 / VIS: 54
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
15600
15650
15700
15750
7735 TVD
7785
MD 15644 TVD 7793.97
Az 181.72° Inc 90.92°
MD 15727 TVD 7794.03
Az 180.8° Inc 89.01°
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, nsf, nsfc. SH 15% gy-dkgy, grty, vs cal.
7835

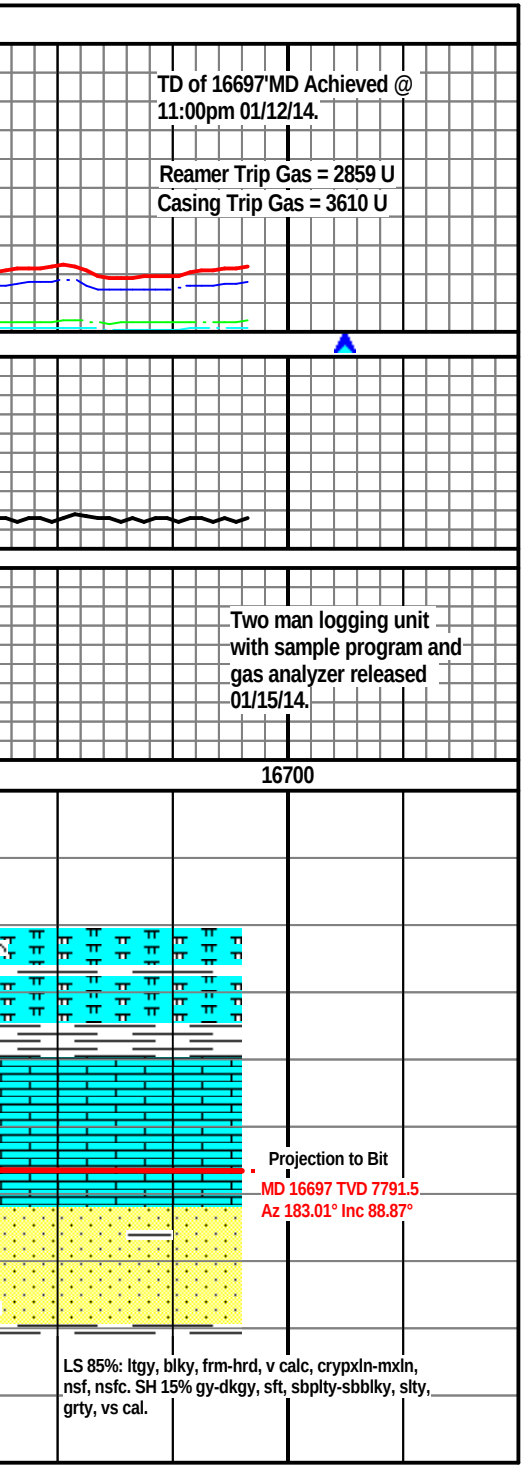

MW: 9.5 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
15800
15850
15900
7735 TVD
7785
7835
MD 15814 TVD 7795.11
Az 181.44° Inc 89.53°
MD 15899 TVD 7795.81
Az 181.28° Inc 89.53°
v calc, crypxln
ft, sbplty-sbbl
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.


MW: 9.5 / VIS: 50
MW: 9.5 / VIS: 50
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
15950
16000
16050
16100
7735 TVD
7785
7835
MD 15984 TVD 7795.43
Az 182.36° Inc 90.98°
MD 16069 TVD 7793.79
Az 182.56° Inc 91.23°
85%: ltgy, blky, frm-hrd, v calc, crypxln
f, nsfc. SH 15% gy-dkgy, sft, sbplty-sbbl
ty
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf,
nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs
cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.


MW: 9.5 / VIS: 51
MW: 9.5 / VIS: 51
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
16150
16200
16250
16300
7735 TVD
7785
7835
MD 16154 TVD 7791.94
Az 182.91° Inc 91.26°
MD 16238 TVD 7791.22
Az 182.22° Inc 89.72°
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc
nsf, nsfc. SH 15% gy-dkgy, sft, sb
grty, vs cal.


MW: 9.3 / VIS: 49
MW: 9.3 / VIS: 49
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
16350
16400
16450
7735 TVD
7790
MD 16408 TVD 7790.78
Az 182.82° Inc 90.58°
7835
, crypxln
plty-sbbl
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%:
nsf, nsfc
grty, vs


MW: 9.3 / VIS: 49
MW: 9.3 / VIS: 49
2500
TG, C1-C5
0
3
ROP (min/ft)
0
250
Gamma (API)
0
16500
16550
16600
16650
7735 TVD
7785
MD 16645 TVD 7791.37
Az 183.01° Inc 89.87°
7835
ltgy, blky, frm-hrd, v calc, crypxln
. SH 15% gy-dkgy, sft, sbplty-sbbl
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.


TD of 16697'MD Achieved @
11:00pm 01/12/14.
Reamer Trip Gas = 2859 U
Casing Trip Gas = 3610 U
Two man logging unit
with sample program and
gas analyzer released
01/15/14.
16700
Projection to Bit
MD 16697 TVD 7791.5
Az 183.01° Inc 88.87°
LS 85%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, nsfc. SH 15% gy-dkgy, sft, sbplty-sbblky, slty,
grty, vs cal.