Scale 1:200 Imperial
Measured Depth Log

Well Name:	**Benson Farms 12C-23HZ**		
Location:	**Weld County, CO.**		
License Number:	**05123393970000**	**Region:**	**DJ Basin**
Spud Date:	**06/13/14**	**Drilling Completed:**	**06/19/14**
Surface Coordinates:	**2015'FSL & 50'FWL, SEC.24, T3N-R68W**		
Bottom Hole Coordinates:	**1720'FSL & 50'FWL, SEC.23, T3N-R68W**		
Ground Elevation (ft):	**4973'**	**K.B. Elevation (ft):**	**4989'**
Logged Interval (ft):	**7350' To: 13356'**	**Total Depth (ft):**	**13356'**
Formation:	**Codell**		
Type of Drilling Fluid:	**Water Base Mud**		

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OPERATOR

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

GEOLOGIST

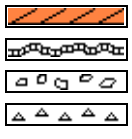
Name: Scott Crozier / Ben Thompson
Company: Great Divide Consulting, Inc.
Address: P.O. Box 630263
Highlands Ranch, CO 80163

Cores

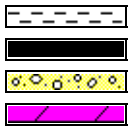
DSTs

Comments

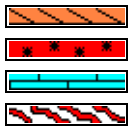
ROCK TYPES



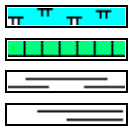
Anhy
Bent
Brec
Cht



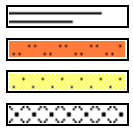
Clyst
Coal
Congl
Dol



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

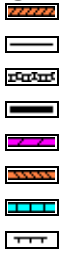
Gyp
Hvymin
Kaol
Marl
Minxl
Nodule
Phos
Pyr
Salt
Sandy
Silt
Sil
Sulphur
Tuff

FOSSIL

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

Ostra
Pelec
Pellet
Pisolite
Plant
Strom

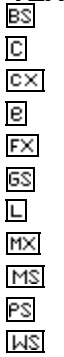
STRINGER



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

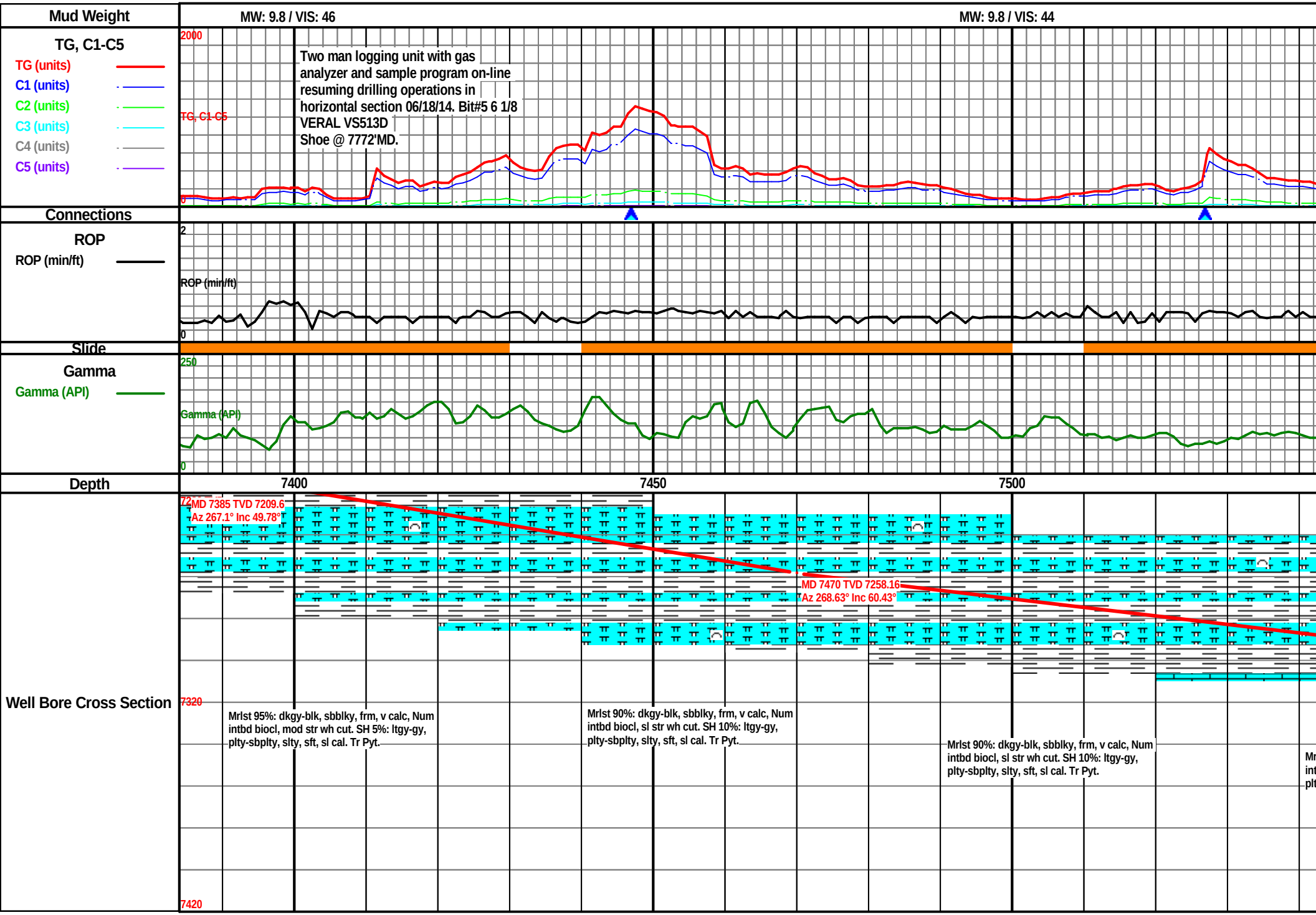
SORTING
- Well
- Moderate
- Poor

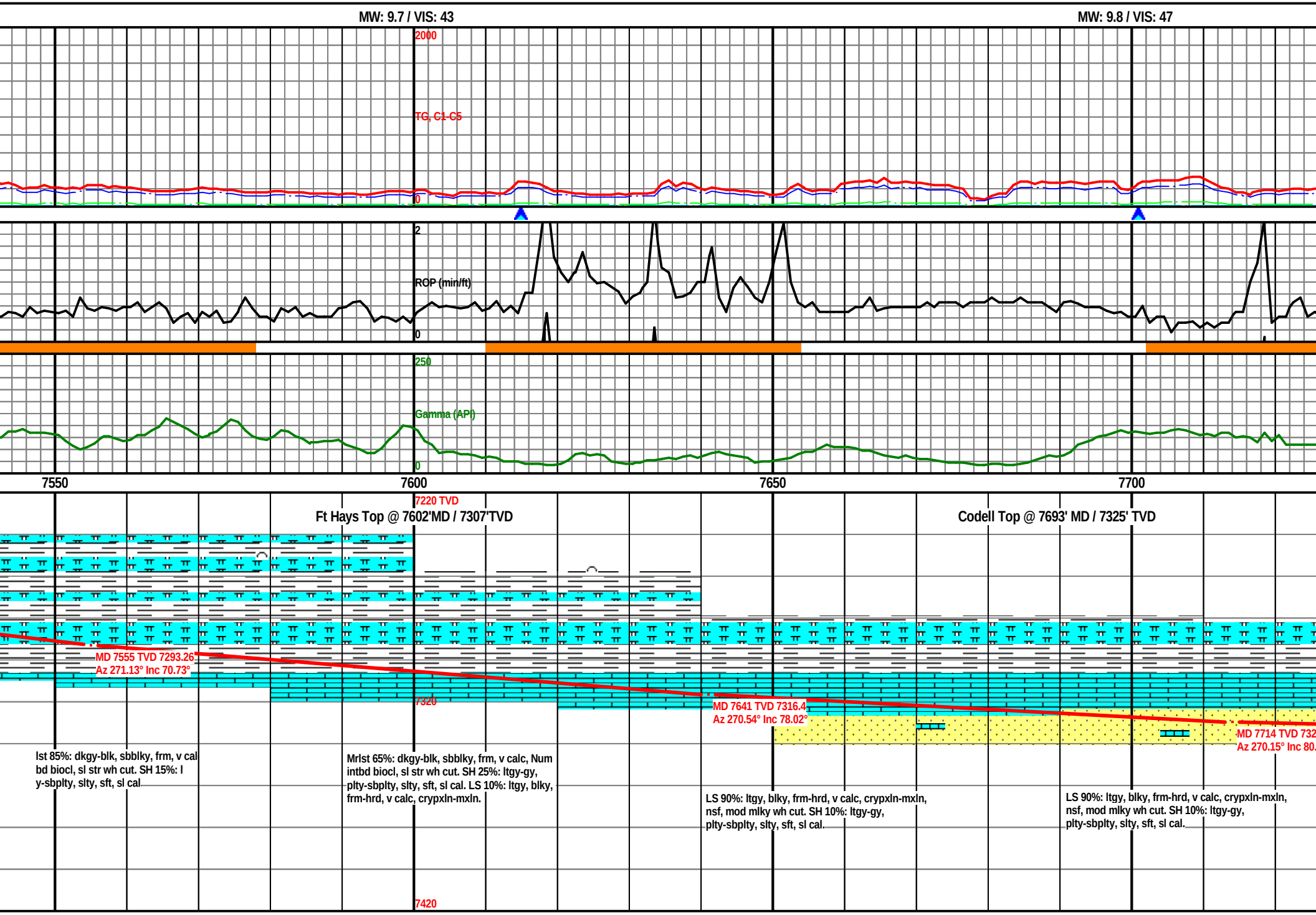
ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

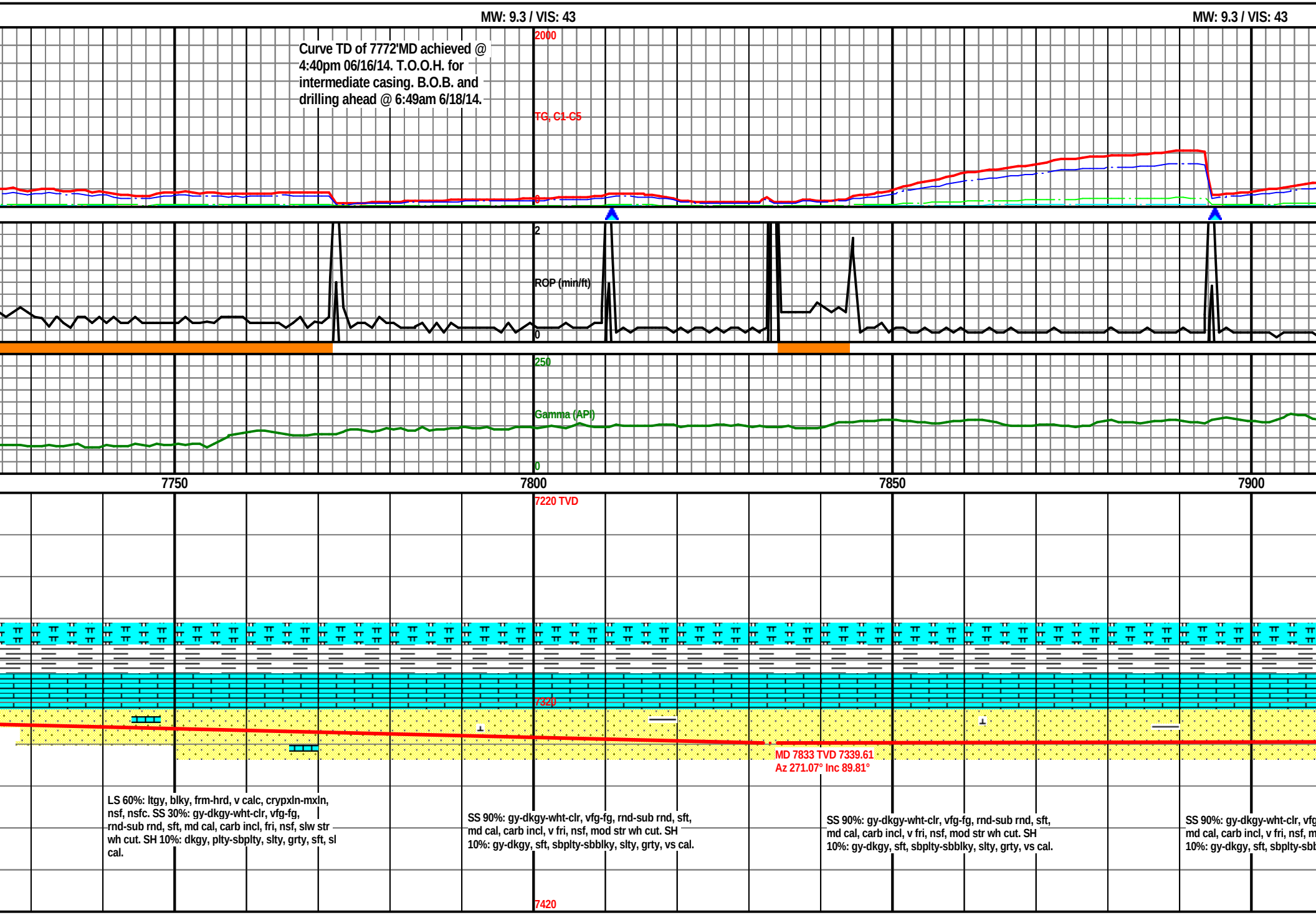
OIL SHOW
- Even
- Spotted
- Ques
- Dead

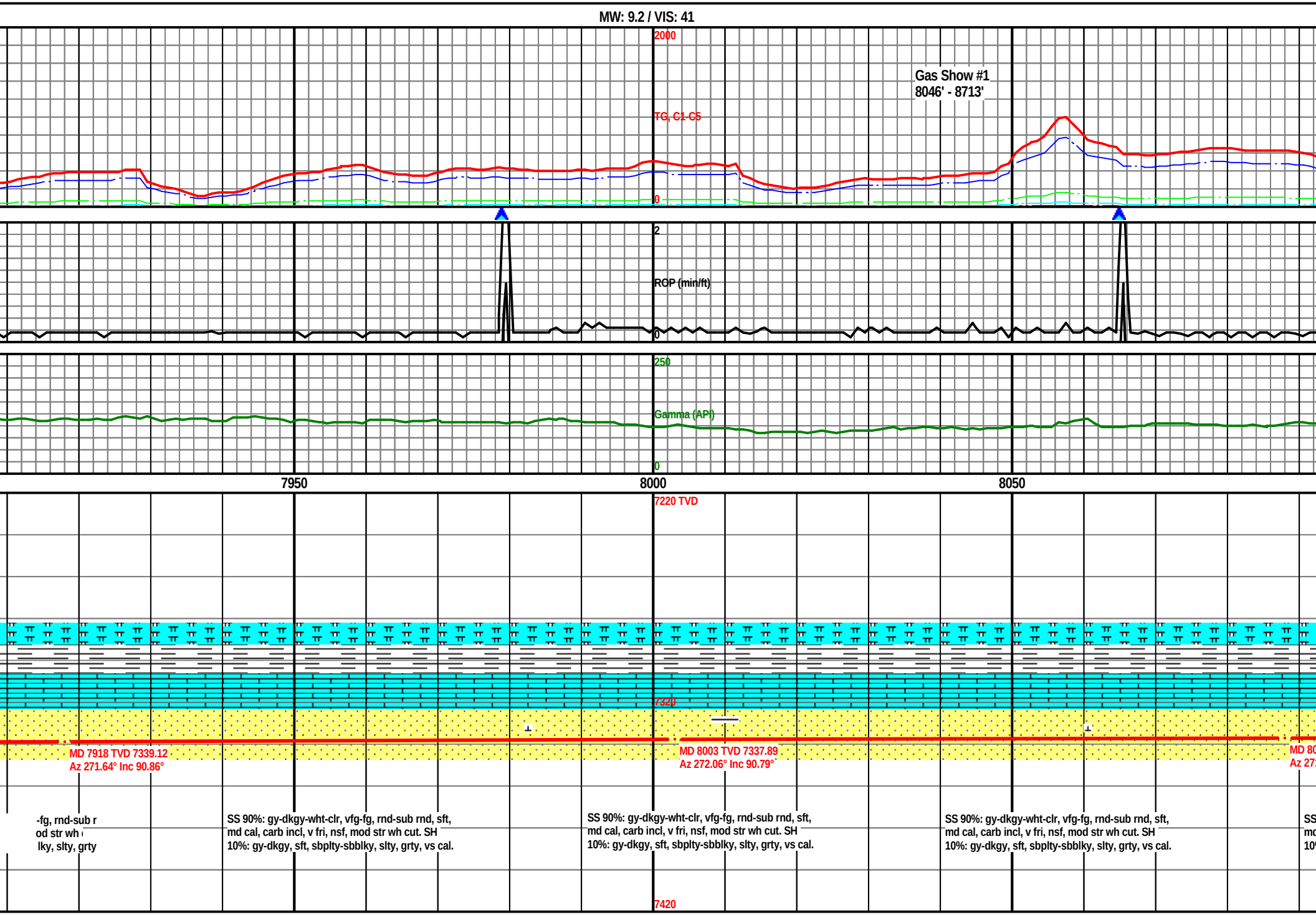
INTERVAL
- Core
- Dst

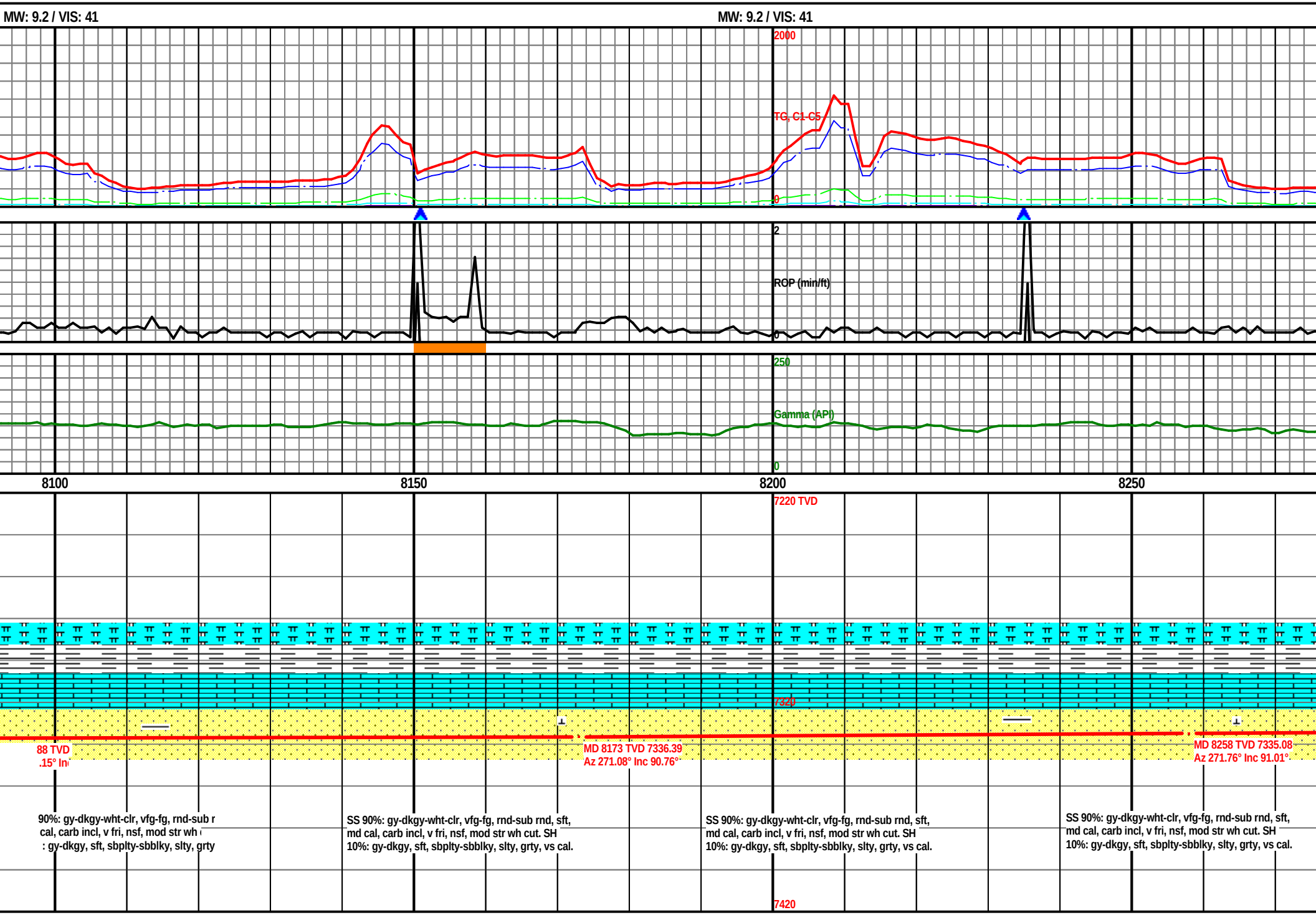
EVENT
- Rft
- Connection

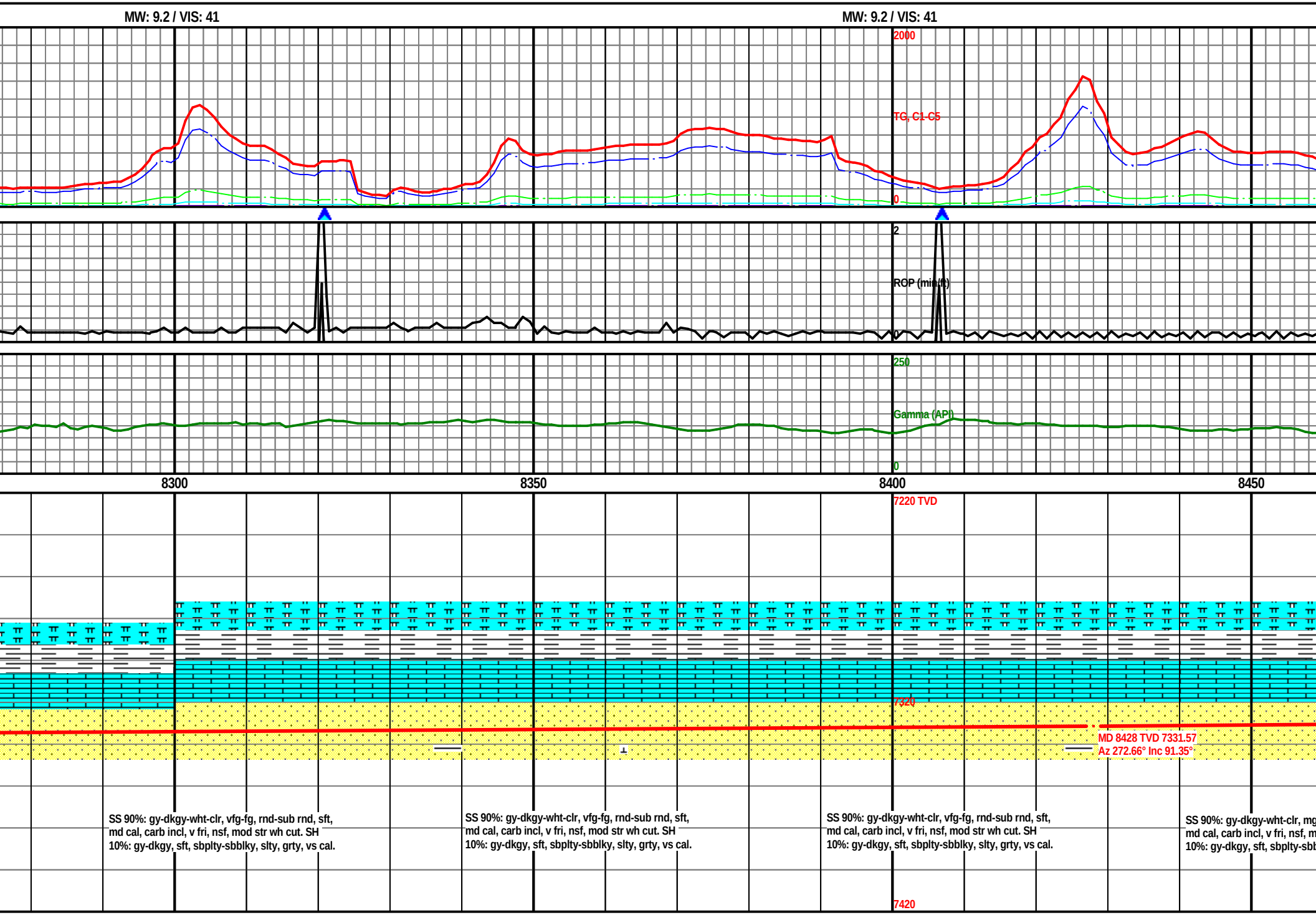

Mud Weight
MW: 9.8 / VIS: 46
MW: 9.8 / VIS: 44
TG, C1-C5
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
C5 (units)
2000
TG, C1-C5
0
Two man logging unit with gas analyzer and sample program on-line resuming drilling operations in horizontal section 06/18/14. Bit#5 6 1/8 VERAL VS513D Shoe @ 7772'MD.
Connections
ROP
ROP (min/ft)
2
ROP (min/ft)
0
Slide
Gamma
Gamma (API)
250
Gamma (API)
0
Depth
7400
7450
7500
Well Bore Cross Section
MD 7385 TVD 7209.6
Az 267.1° Inc 49.78°
MD 7470 TVD 7258.16
Az 268.63° Inc 60.43°
7320
7420
Mrlst 95%: dkgy-blk, sbblky, frm, v calc, Num intbd biocl, mod str wh cut. SH 5%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr Pyt.
Mrlst 90%: dkgy-blk, sbblky, frm, v calc, Num intbd biocl, sl str wh cut. SH 10%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr Pyt.
Mrlst 90%: dkgy-blk, sbblky, frm, v calc, Num intbd biocl, sl str wh cut. SH 10%: ltgy-gy, plty-sbplty, slty, sft, sl cal. Tr Pyt.

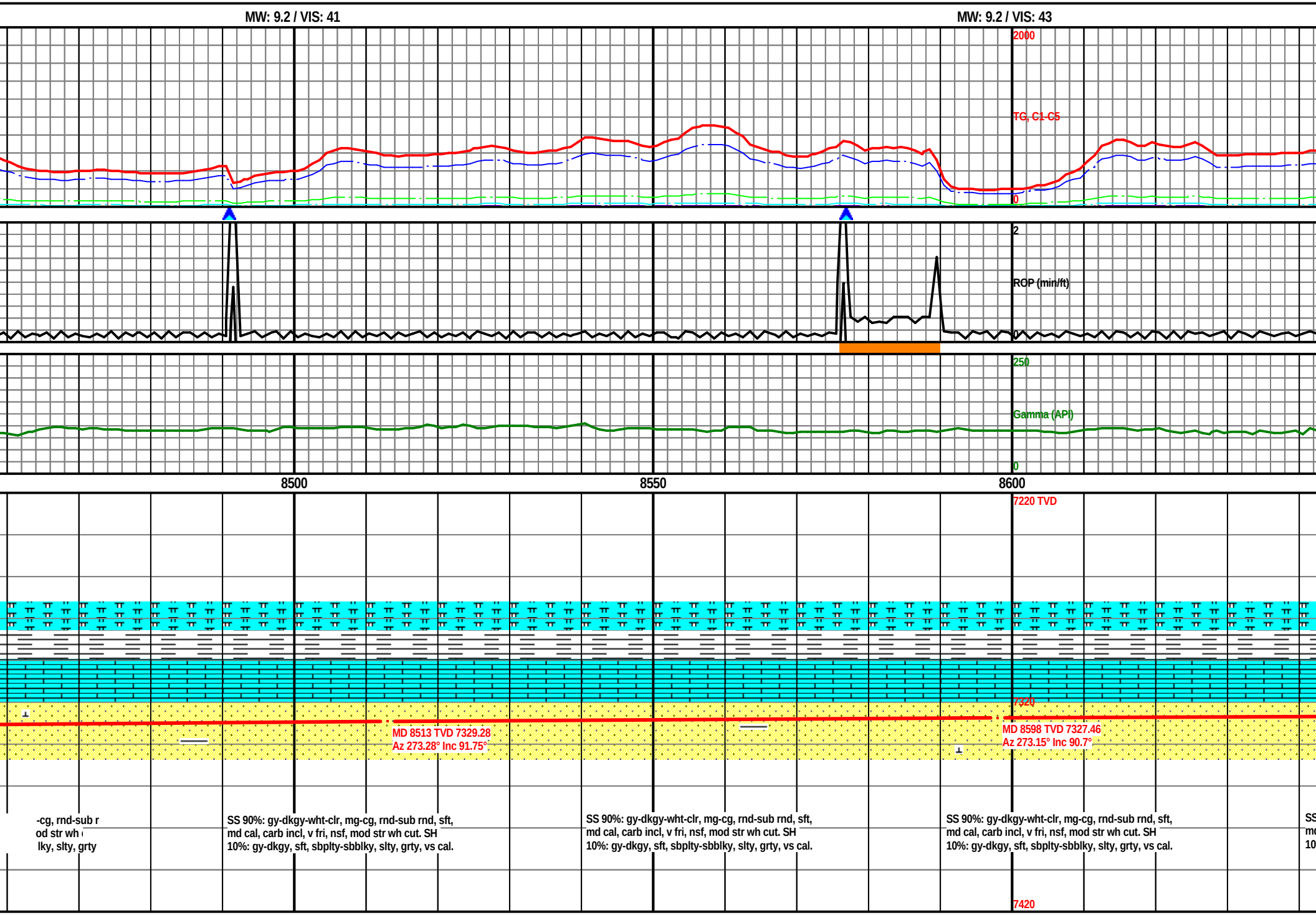

MW: 9.7 / VIS: 43
MW: 9.8 / VIS: 47
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
7550
7600
7650
7700
7220 TVD
Ft Hays Top @ 7602'MD / 7307'TVD
Codell Top @ 7693' MD / 7325' TVD
MD 7555 TVD 7293.26
Az 271.13° Inc 70.73°
MD 7641 TVD 7316.4
Az 270.54° Inc 78.02°
MD 7714 TVD 732
Az 270.15° Inc 80.
7320
7420
lst 85%: dkgy-blk, sbblky, frm, v cal
bd biocl, sl str wh cut. SH 15%: l
y-sbplty, slty, sft, sl cal
Mrlst 65%: dkgy-blk, sbblky, frm, v calc, Num
intbd biocl, sl str wh cut. SH 25%: ltgy-gy,
plty-sbplty, slty, sft, sl cal. LS 10%: ltgy, blky,
frm-hrd, v calc, crypxln-mxln.
LS 90%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, mod mlky wh cut. SH 10%: ltgy-gy,
plty-sbplty, slty, sft, sl cal.
LS 90%: ltgy, blky, frm-hrd, v calc, crypxln-mxln,
nsf, mod mlky wh cut. SH 10%: ltgy-gy,
plty-sbplty, slty, sft, sl cal.

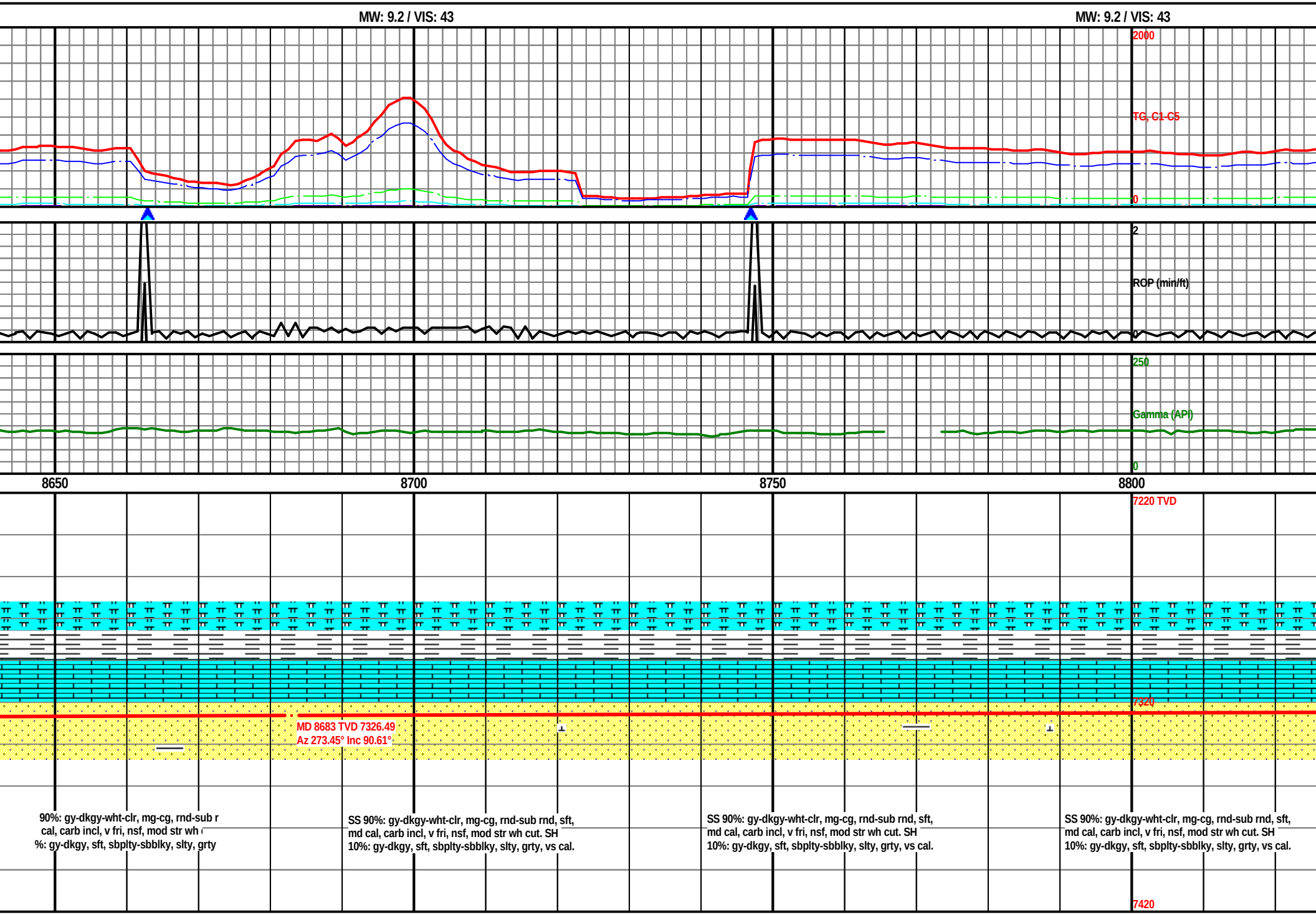

MW: 9.3 / VIS: 43
MW: 9.3 / VIS: 43
Curve TD of 7772'MD achieved @ 4:40pm 06/16/14. T.O.O.H. for intermediate casing. B.O.B. and drilling ahead @ 6:49am 6/18/14.
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
7750
7800
7850
7900
7220 TVD
7320
MD 7833 TVD 7339.61
Az 271.07° Inc 89.81°
LS 60%: ltgy, blky, frm-hrd, v calc, crypxln-mxln, nsf, nsfc. SS 30%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, 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, mod str wh cut. SH 10%: 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, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg
md cal, carb incl, v fri, nsf, m
10%: gy-dkgy, sft, sbplty-sbb
7420

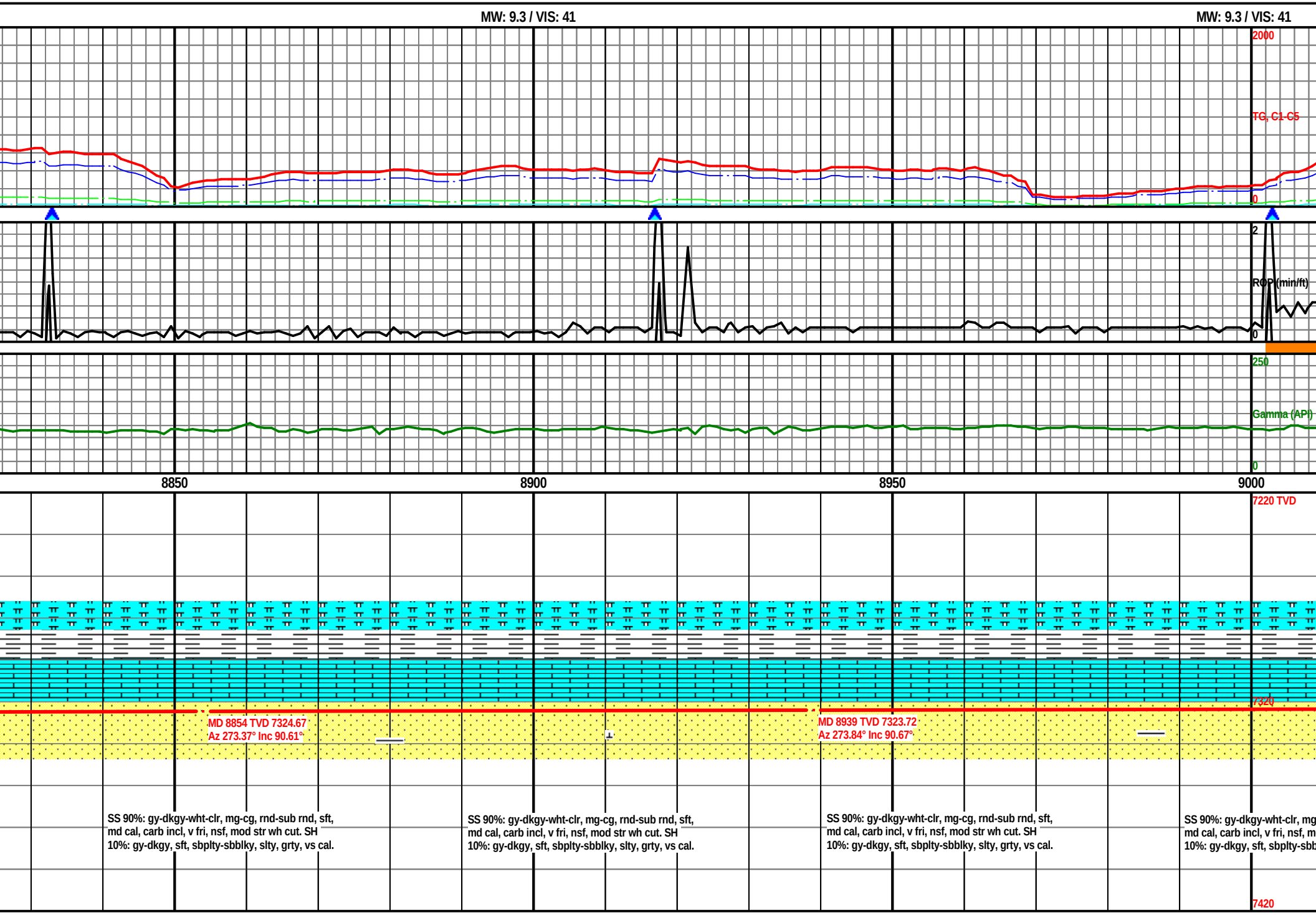

MW: 9.2 / VIS: 41
2000
Gas Show #1
8046' - 8713'
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
7950
8000
8050
7220 TVD
7320
7420
MD 7918 TVD 7339.12
Az 271.64° Inc 90.86°
MD 8003 TVD 7337.89
Az 272.06° Inc 90.79°
-fg, rnd-sub r
od str wh
lky, slty, grty
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

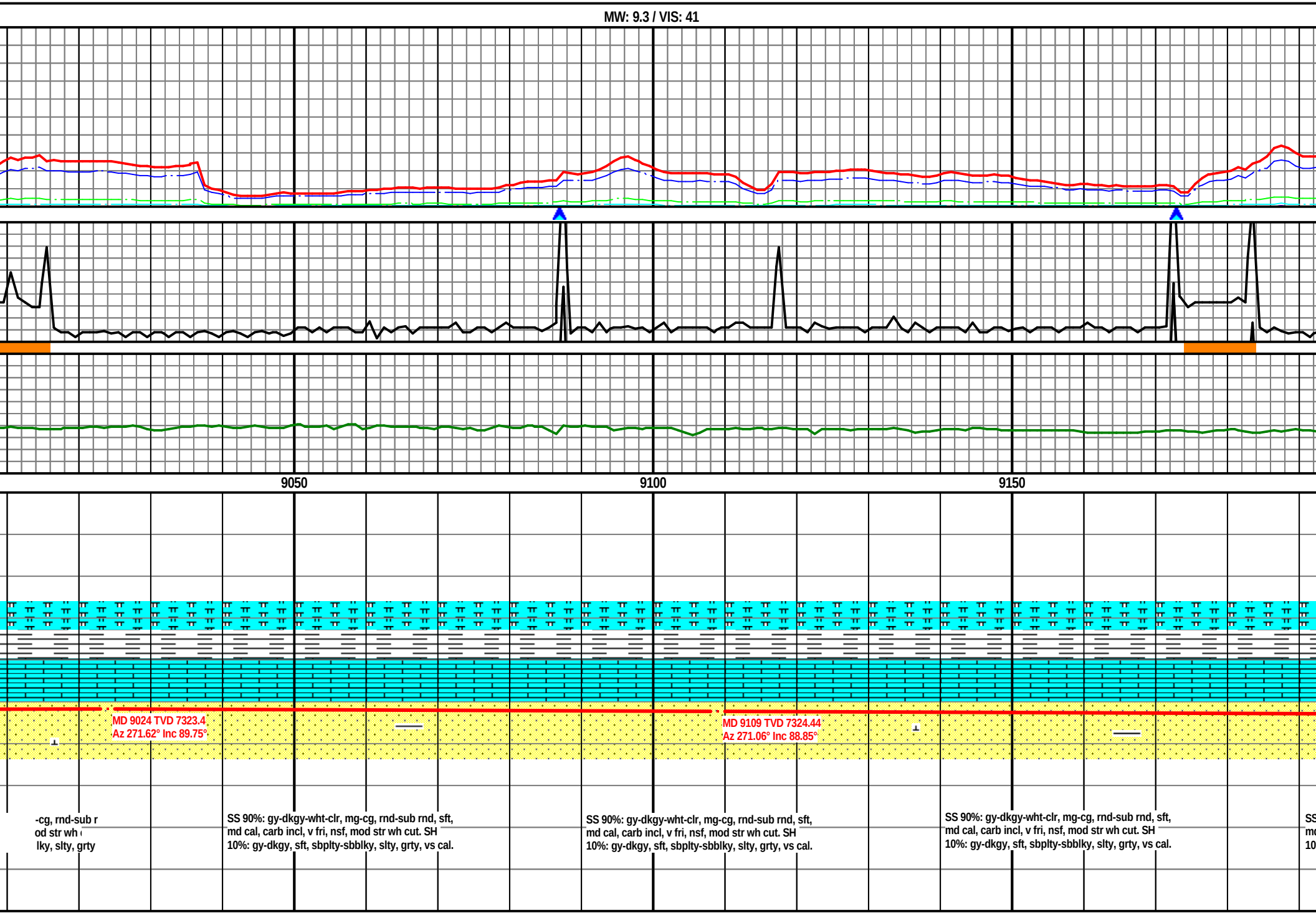

MW: 9.2 / VIS: 41
MW: 9.2 / VIS: 41
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
8100
8150
8200
8250
7220 TVD
7320
7420
88 TVD
.15° In
MD 8173 TVD 7336.39
Az 271.08° Inc 90.76°
MD 8258 TVD 7335.08
Az 271.76° Inc 91.01°
90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub r
cal, carb incl, v fri, nsf, mod str wh
: gy-dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

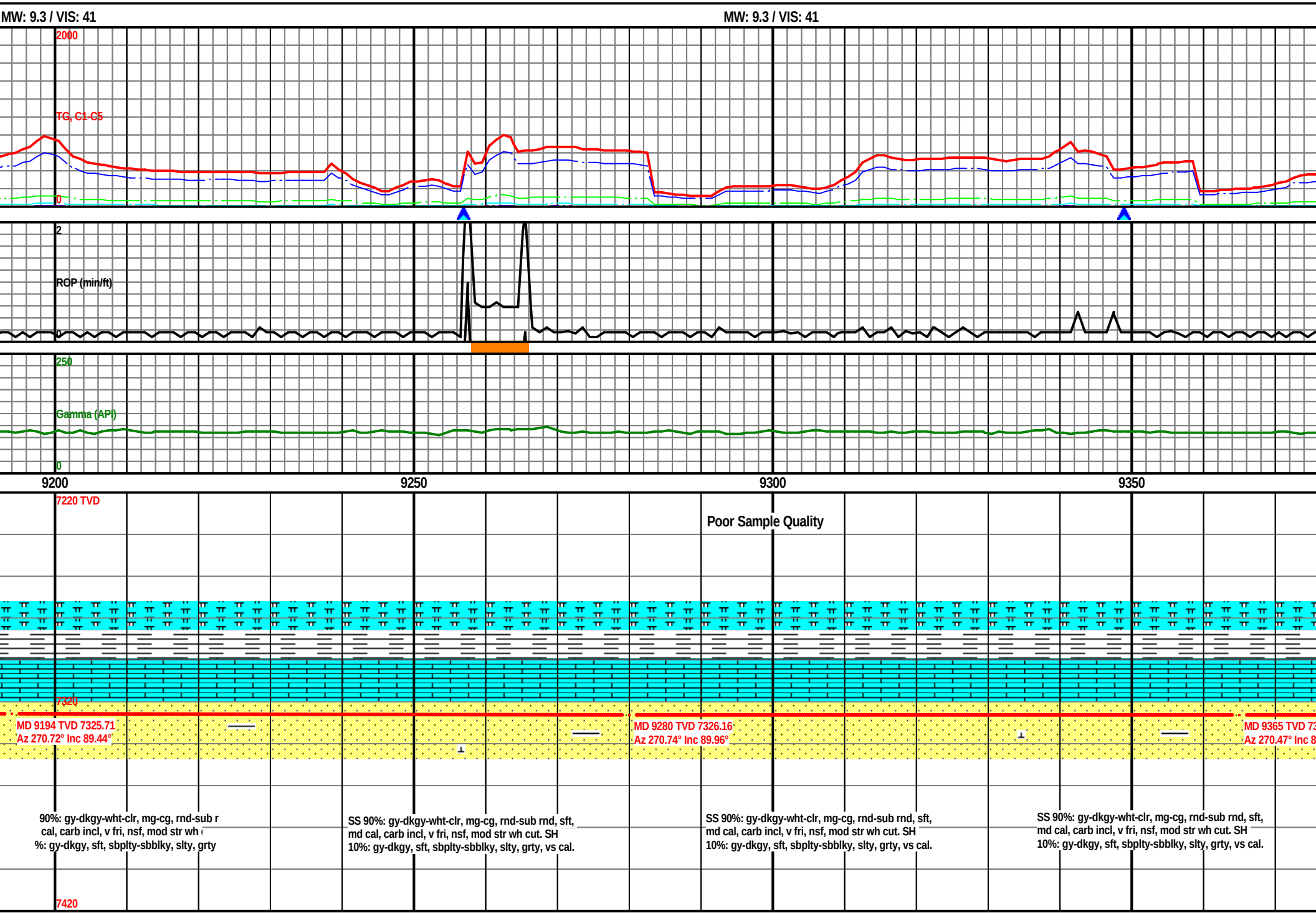

MW: 9.2 / VIS: 41
MW: 9.2 / VIS: 41
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
8300
8350
8400
8450
7220 TVD
7320
7420
MD 8428 TVD 7331.57
Az 272.66° Inc 91.35°
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg
md cal, carb incl, v fri, nsf, m
10%: gy-dkgy, sft, sbplty-sbb

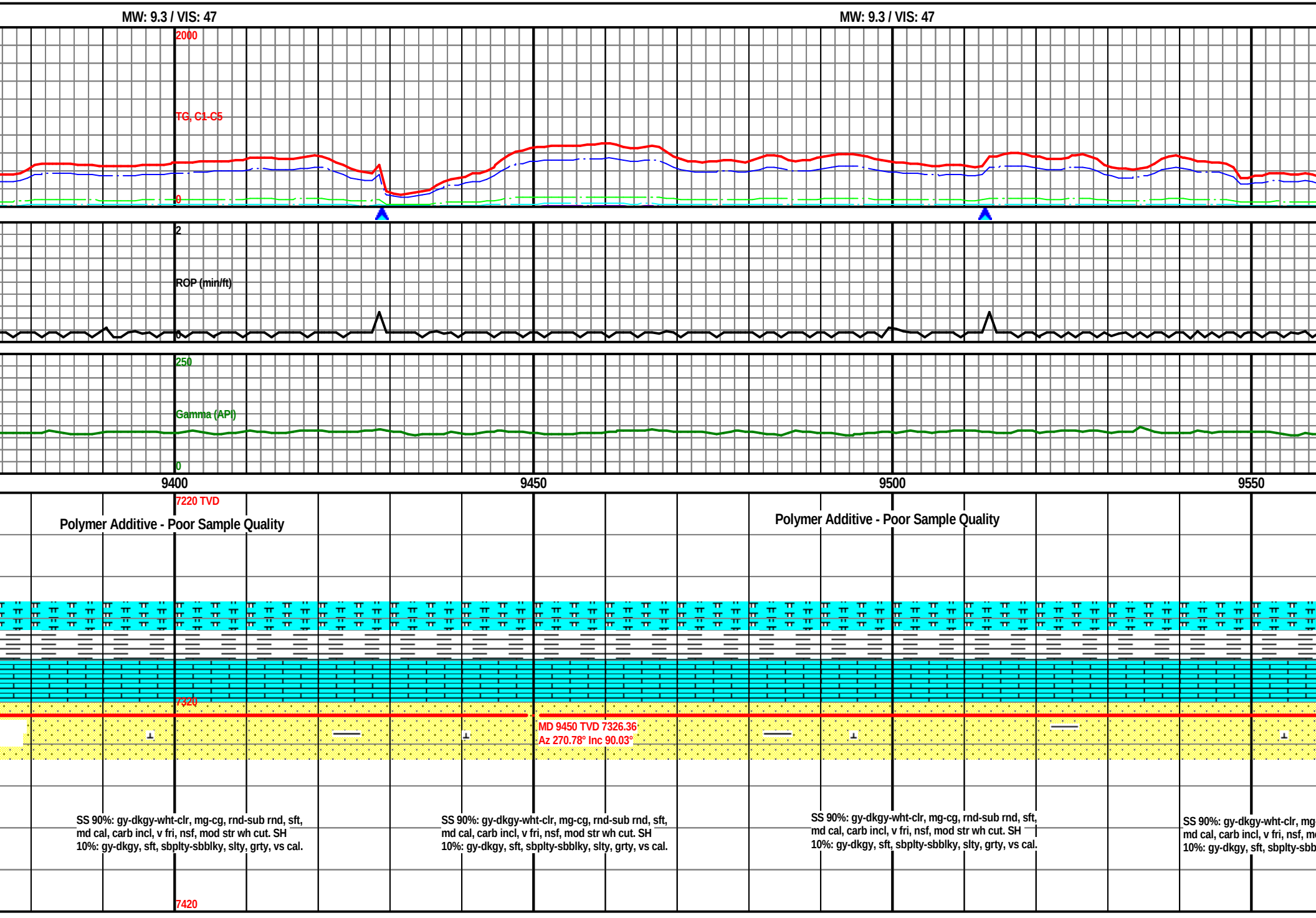

MW: 9.2 / VIS: 41
MW: 9.2 / VIS: 43
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
8500
8550
8600
7220 TVD
7320
MD 8513 TVD 7329.28
Az 273.28° Inc 91.75°
MD 8598 TVD 7327.46
Az 273.15° Inc 90.7°
-cg, rnd-sub r
od str wh
lky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

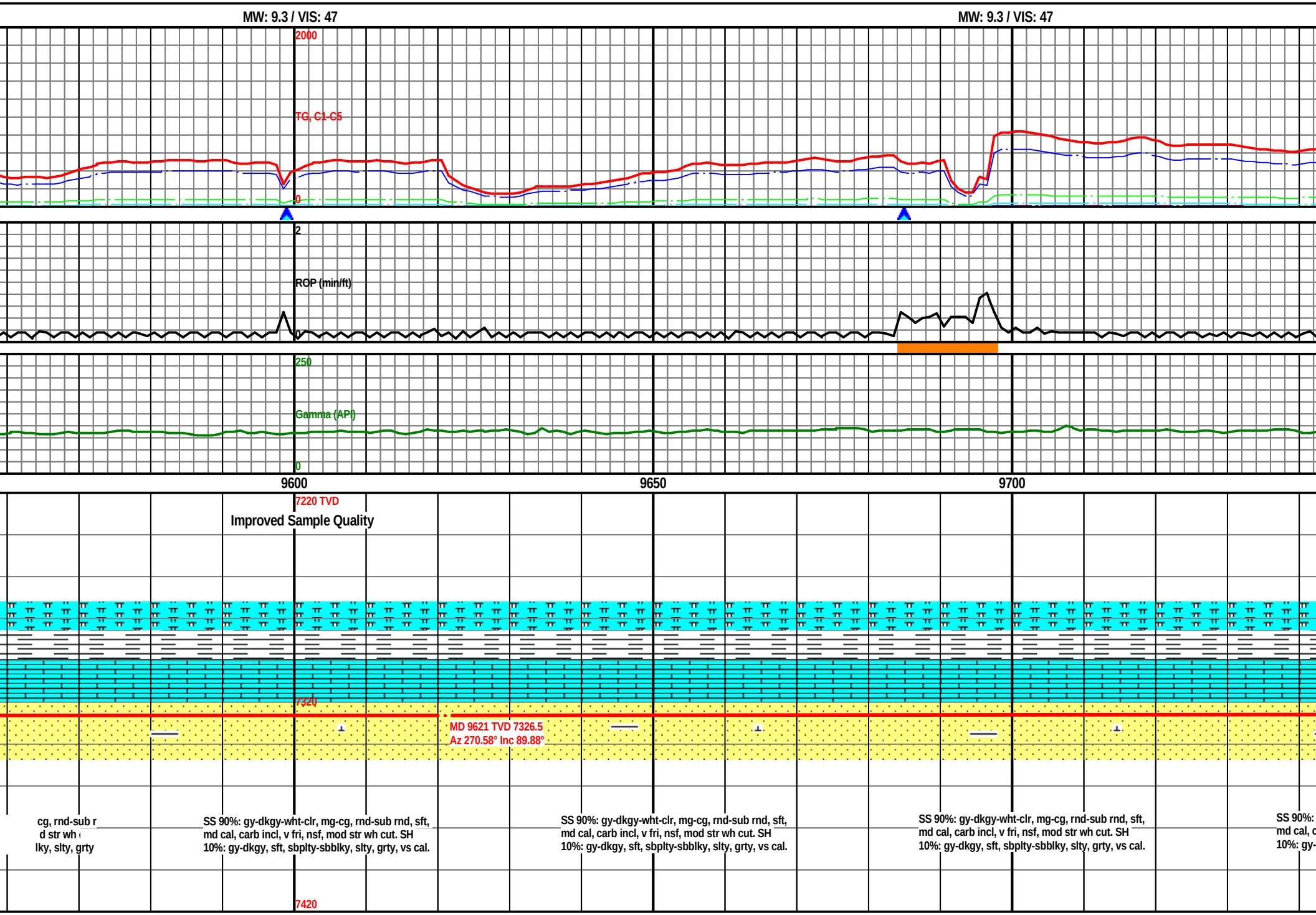

MW: 9.2 / VIS: 43
MW: 9.2 / VIS: 43
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
8650
8700
8750
8800
7220 TVD
7320
MD 8683 TVD 7326.49
Az 273.45° Inc 90.61°
90%: gy-dkgy-wht-clr, mg-cg, rnd-sub r
cal, carb incl, v fri, nsf, mod str wh
%: gy-dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

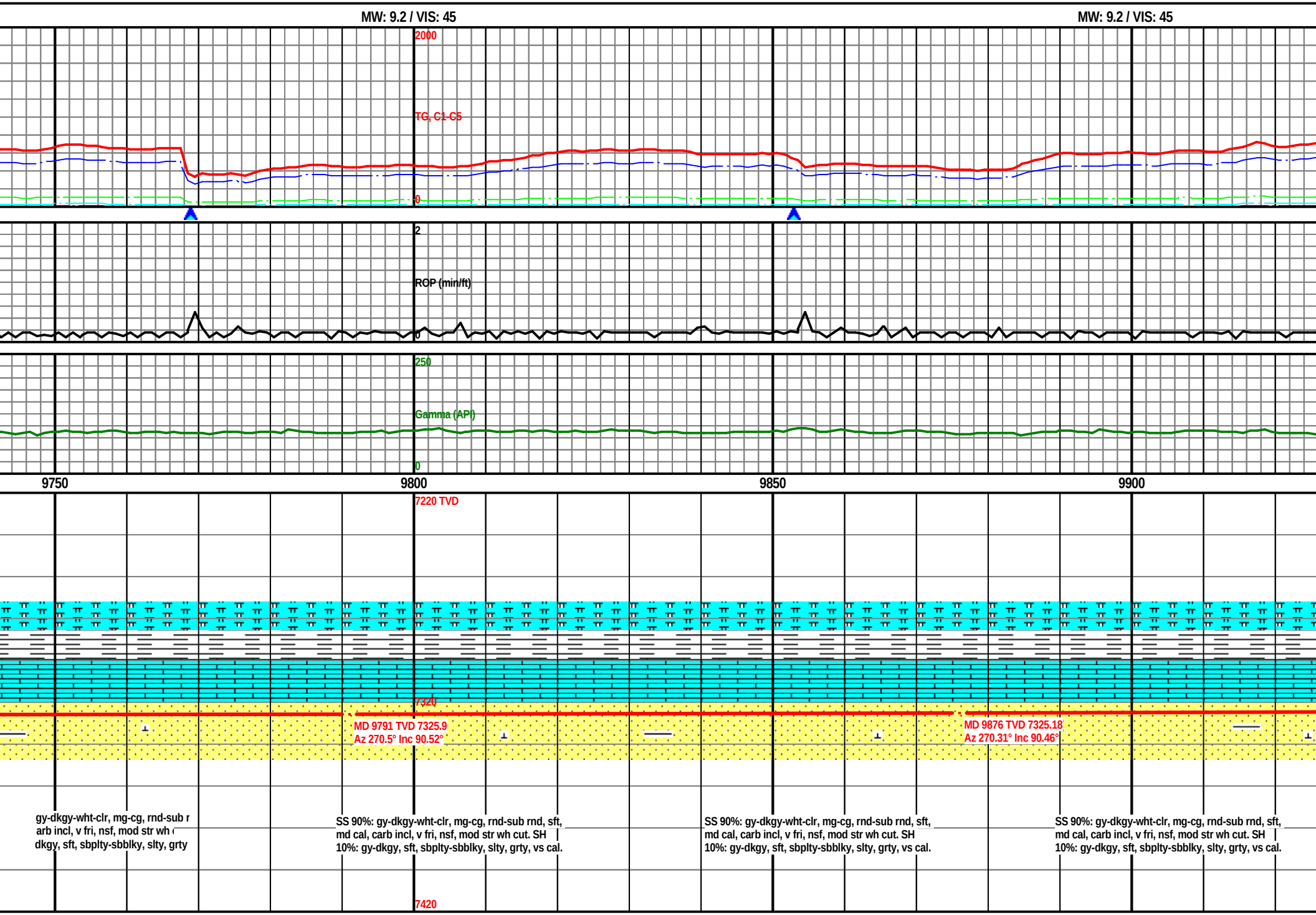

MW: 9.3 / VIS: 41
MW: 9.3 / VIS: 41
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
8850
8900
8950
9000
7220 TVD
7320
7420
MD 8854 TVD 7324.67
Az 273.37° Inc 90.61°
MD 8939 TVD 7323.72
Az 273.84° Inc 90.67°
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg
md cal, carb incl, v fri, nsf, m
10%: gy-dkgy, sft, sbplty-sbb

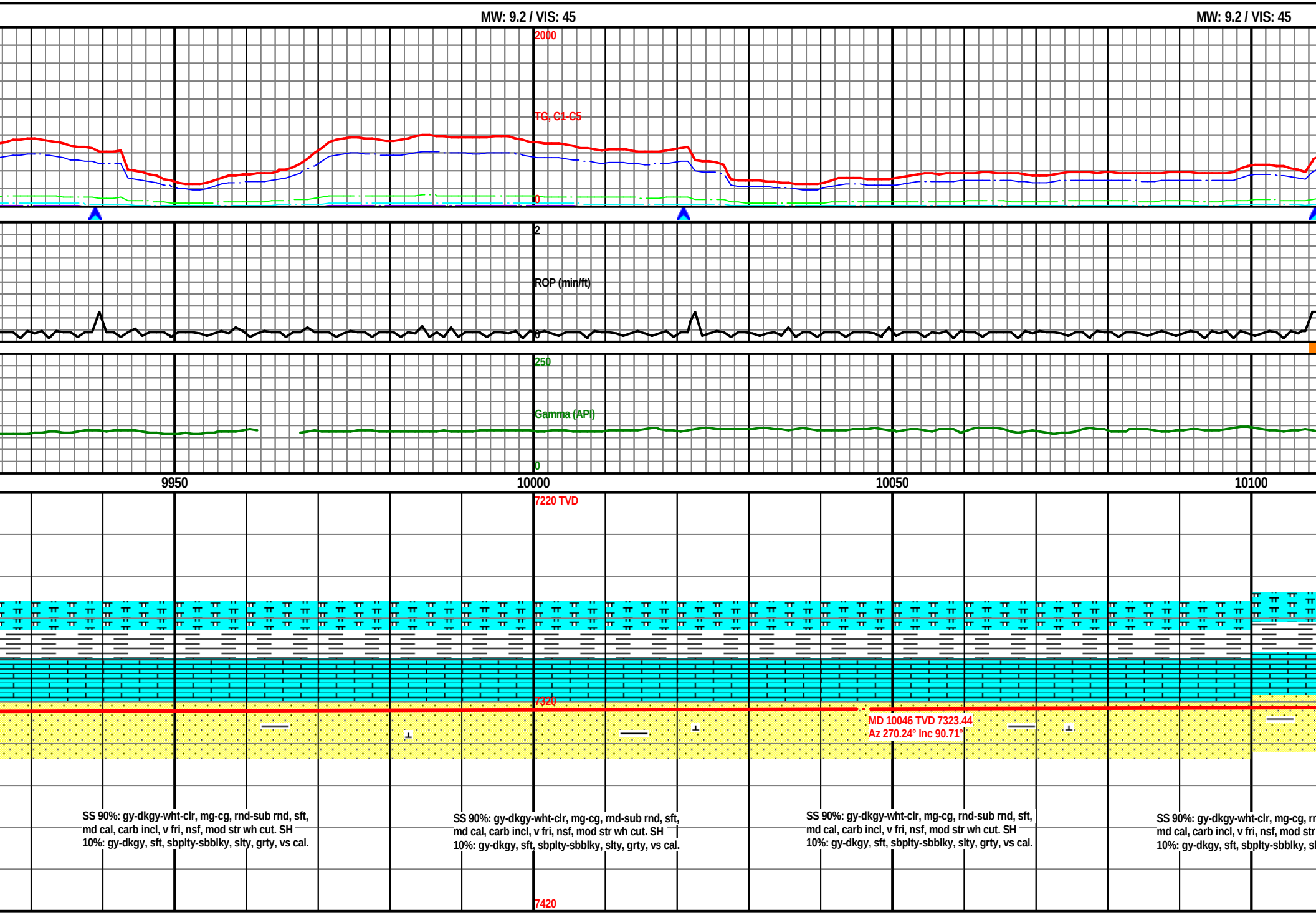

MW: 9.3 / VIS: 41
9050
9100
9150
MD 9024 TVD 7323.4
Az 271.62° Inc 89.75°
MD 9109 TVD 7324.44
Az 271.06° Inc 88.85°
-cg, rnd-sub r
od str wh
lky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

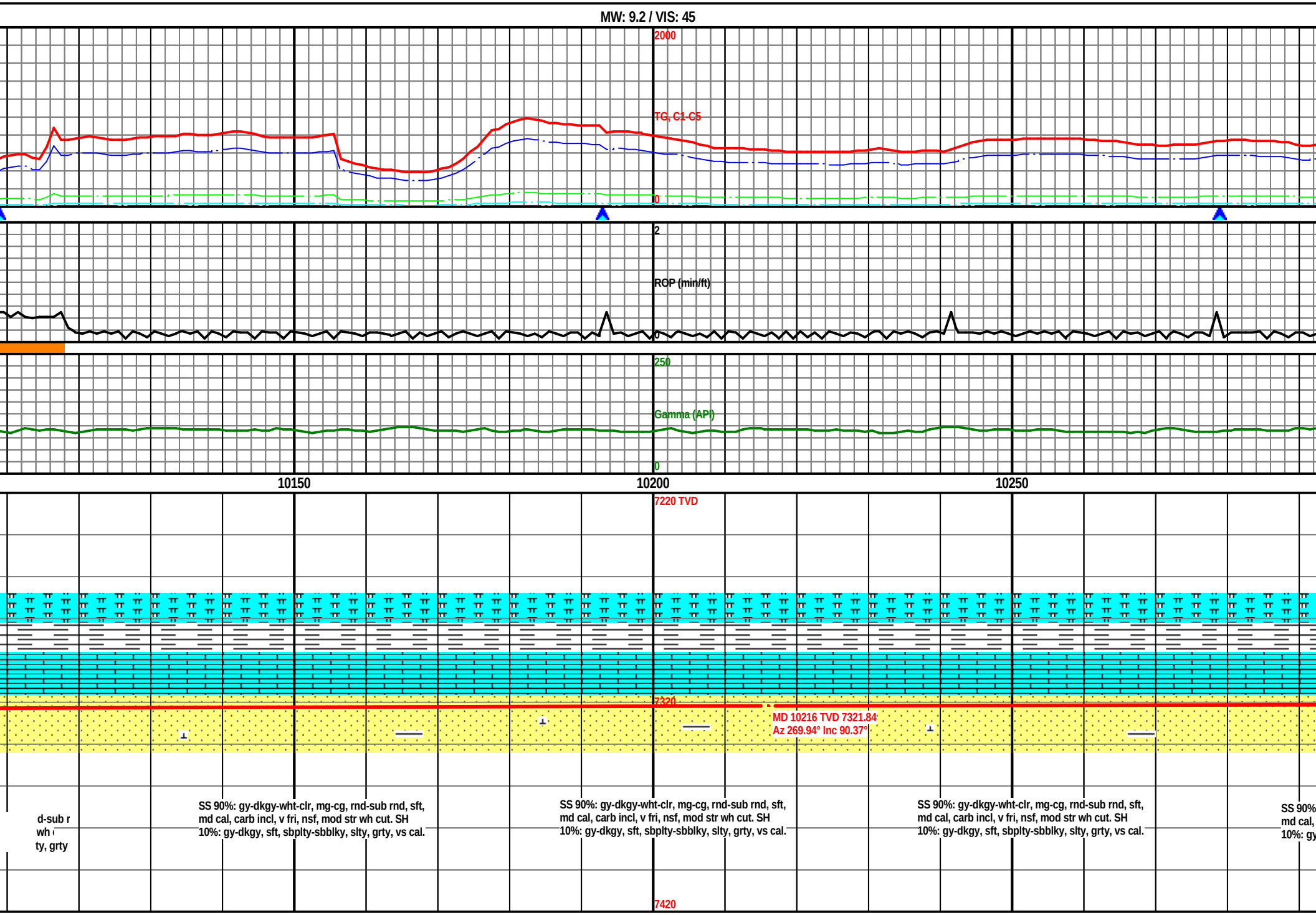

MW: 9.3 / VIS: 41
MW: 9.3 / VIS: 41
2000
TG, C1 C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
9200
9250
9300
9350
7220 TVD
Poor Sample Quality
7320
MD 9194 TVD 7325.71
Az 270.72° Inc 89.44°
MD 9280 TVD 7326.16
Az 270.74° Inc 89.96°
MD 9365 TVD 73
Az 270.47° Inc 8
90%: gy-dkgy-wht-clr, mg-cg, rnd-sub r
cal, carb incl, v fri, nsf, mod str wh
%: gy-dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

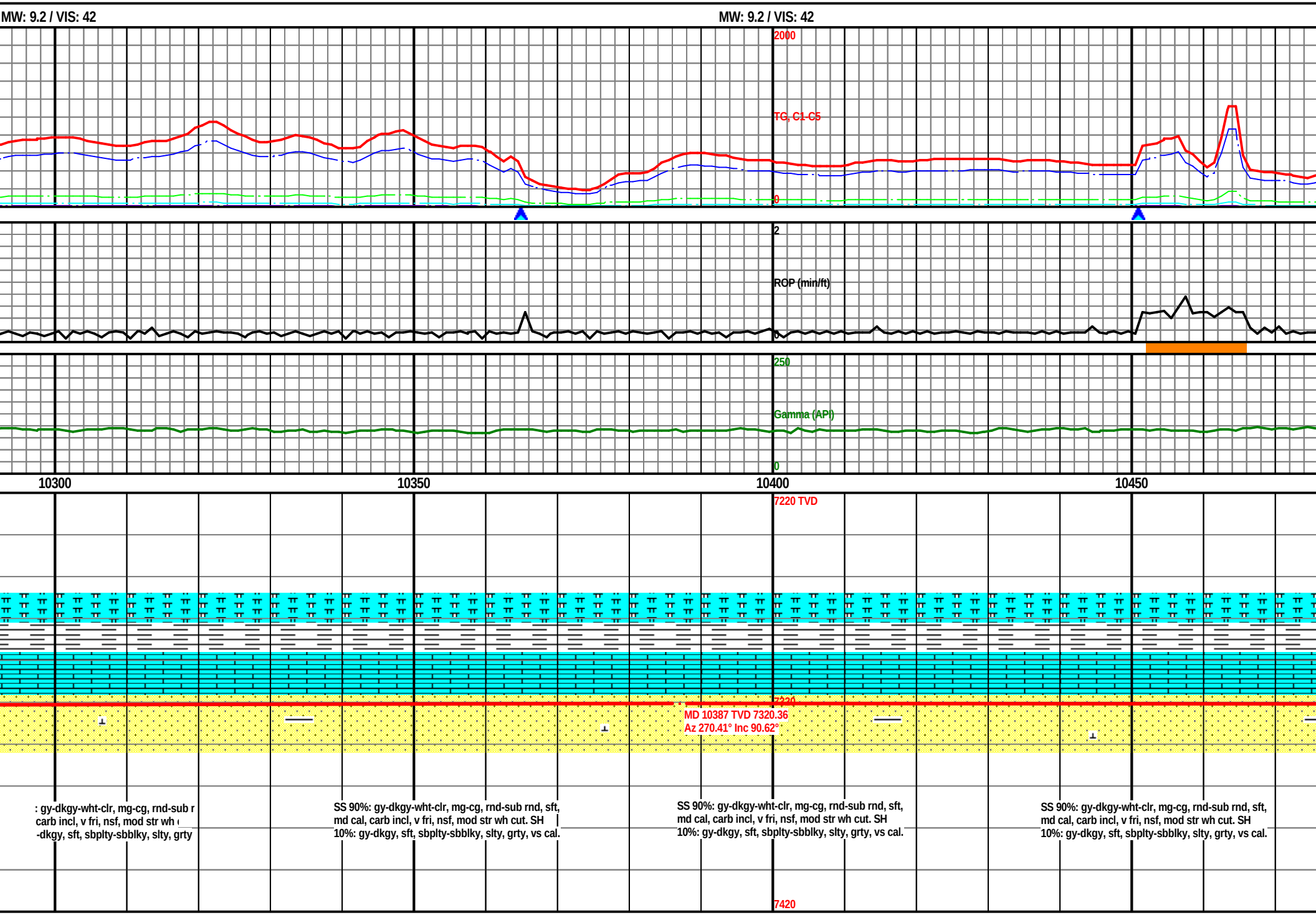

MW: 9.3 / VIS: 47
MW: 9.3 / VIS: 47
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
9400
9450
9500
9550
7220 TVD
Polymer Additive - Poor Sample Quality
Polymer Additive - Poor Sample Quality
7320
MD 9450 TVD 7326.36
Az 270.78° Inc 90.03°
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg
md cal, carb incl, v fri, nsf, m
10%: gy-dkgy, sft, sbplty-sbb
7420

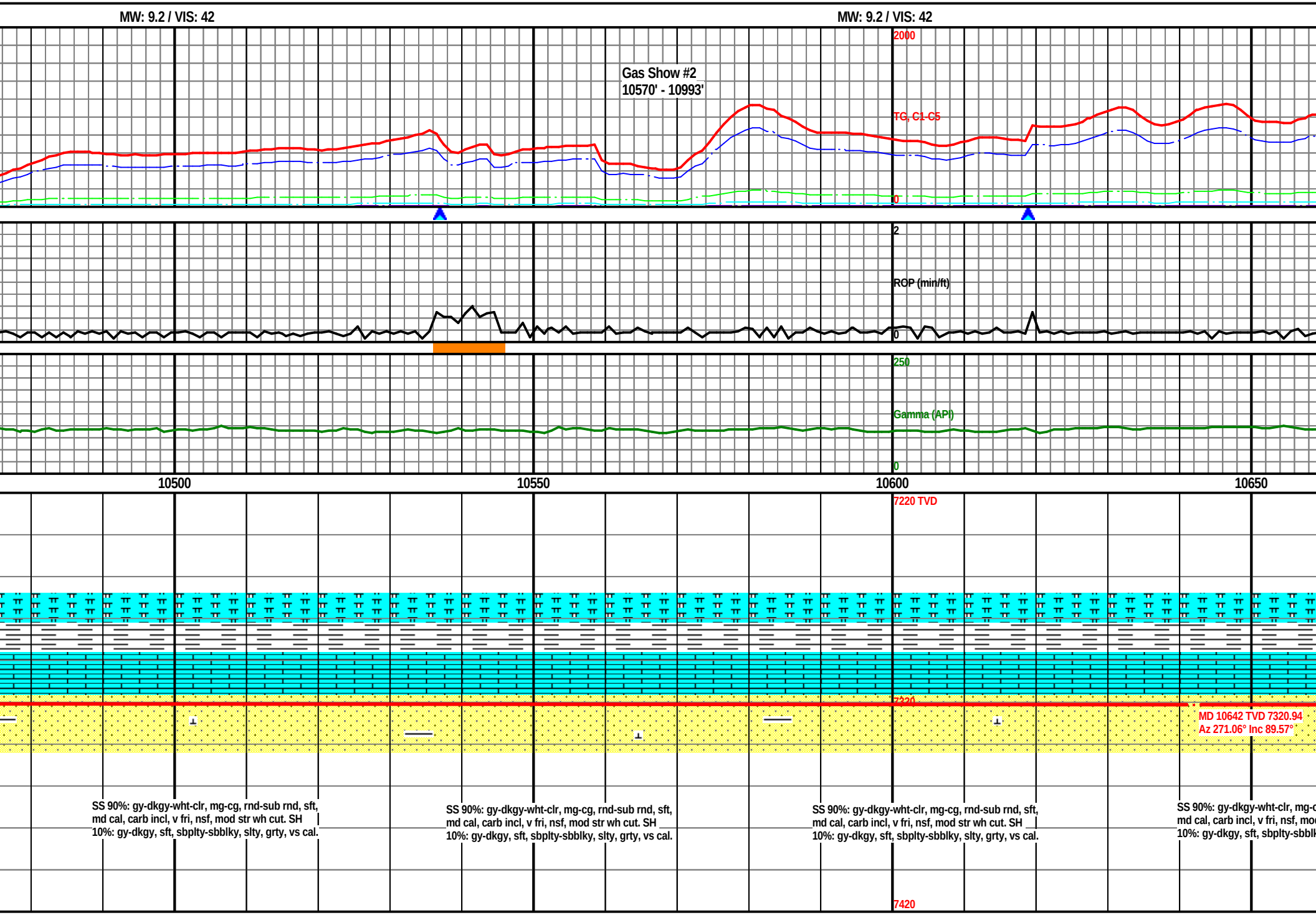

MW: 9.3 / VIS: 47
MW: 9.3 / VIS: 47
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
9600
9650
9700
7220 TVD
Improved Sample Quality
7320
MD 9621 TVD 7326.5
Az 270.58° Inc 89.88°
cg, rnd-sub r
d str wh
lky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%:
md cal, c
10%: gy-
7420

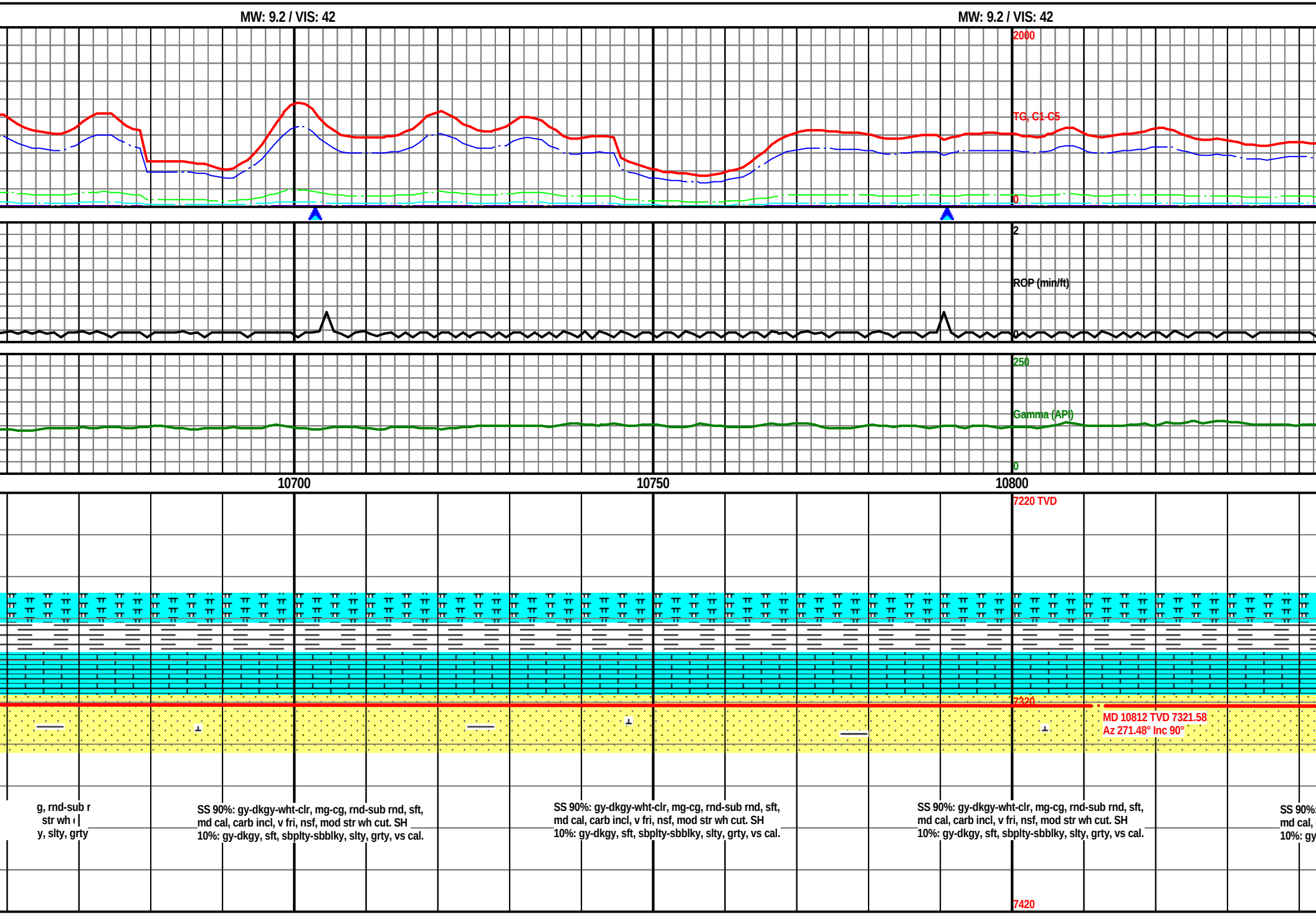

MW: 9.2 / VIS: 45
MW: 9.2 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
9750
9800
9850
9900
7220 TVD
7320
MD 9791 TVD 7325.9
Az 270.5° Inc 90.52°
MD 9876 TVD 7325.18
Az 270.31° Inc 90.46°
gy-dkgy-wht-clr, mg-cg, rnd-sub r
arb incl, v fri, nsf, mod str wh
dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

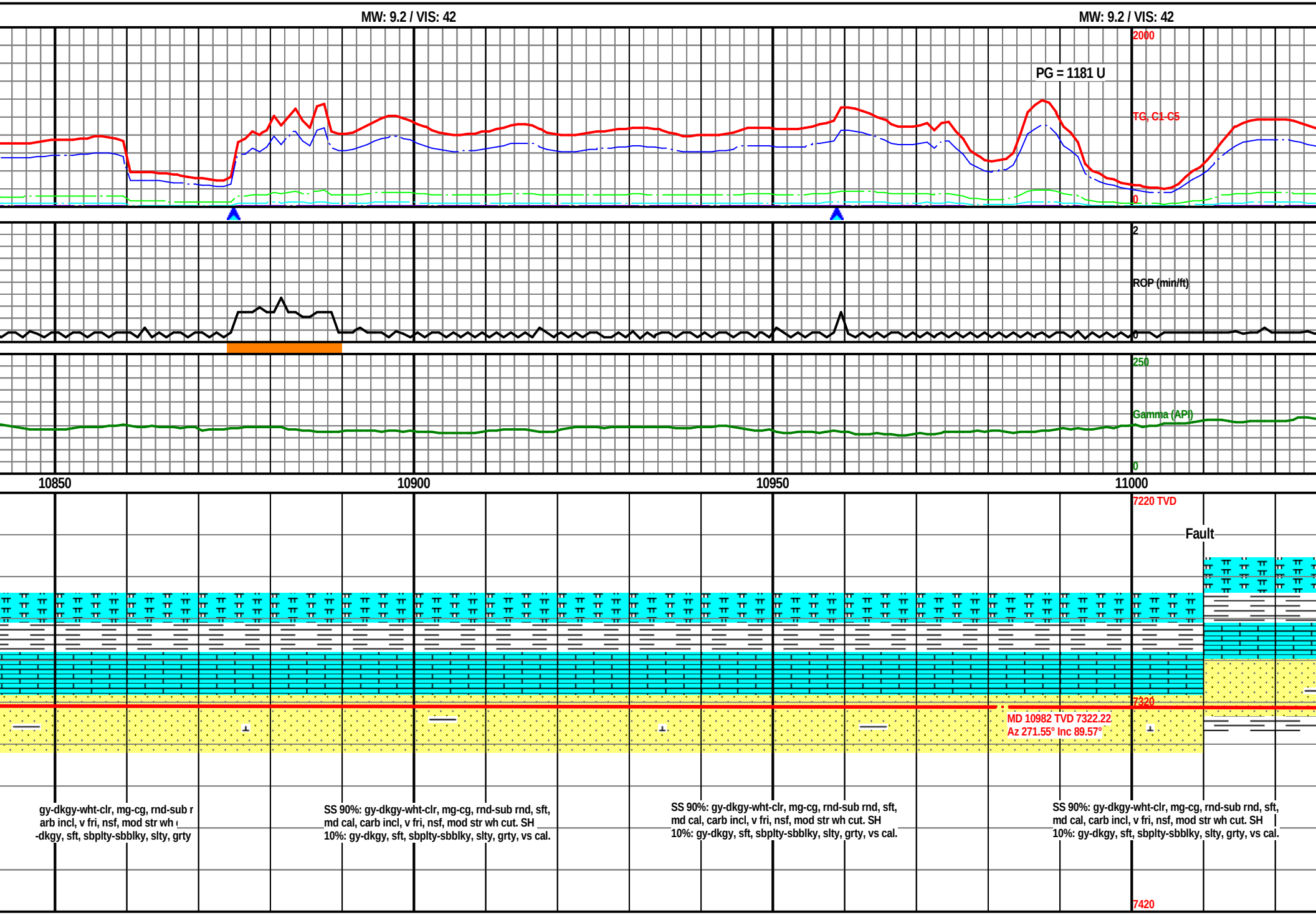

MW: 9.2 / VIS: 45
MW: 9.2 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
9950
10000
10050
10100
7220 TVD
7320
MD 10046 TVD 7323.44
Az 270.24° Inc 90.71°
7420
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rn
md cal, carb incl, v fri, nsf, mod str
10%: gy-dkgy, sft, sbplty-sbblky, sl

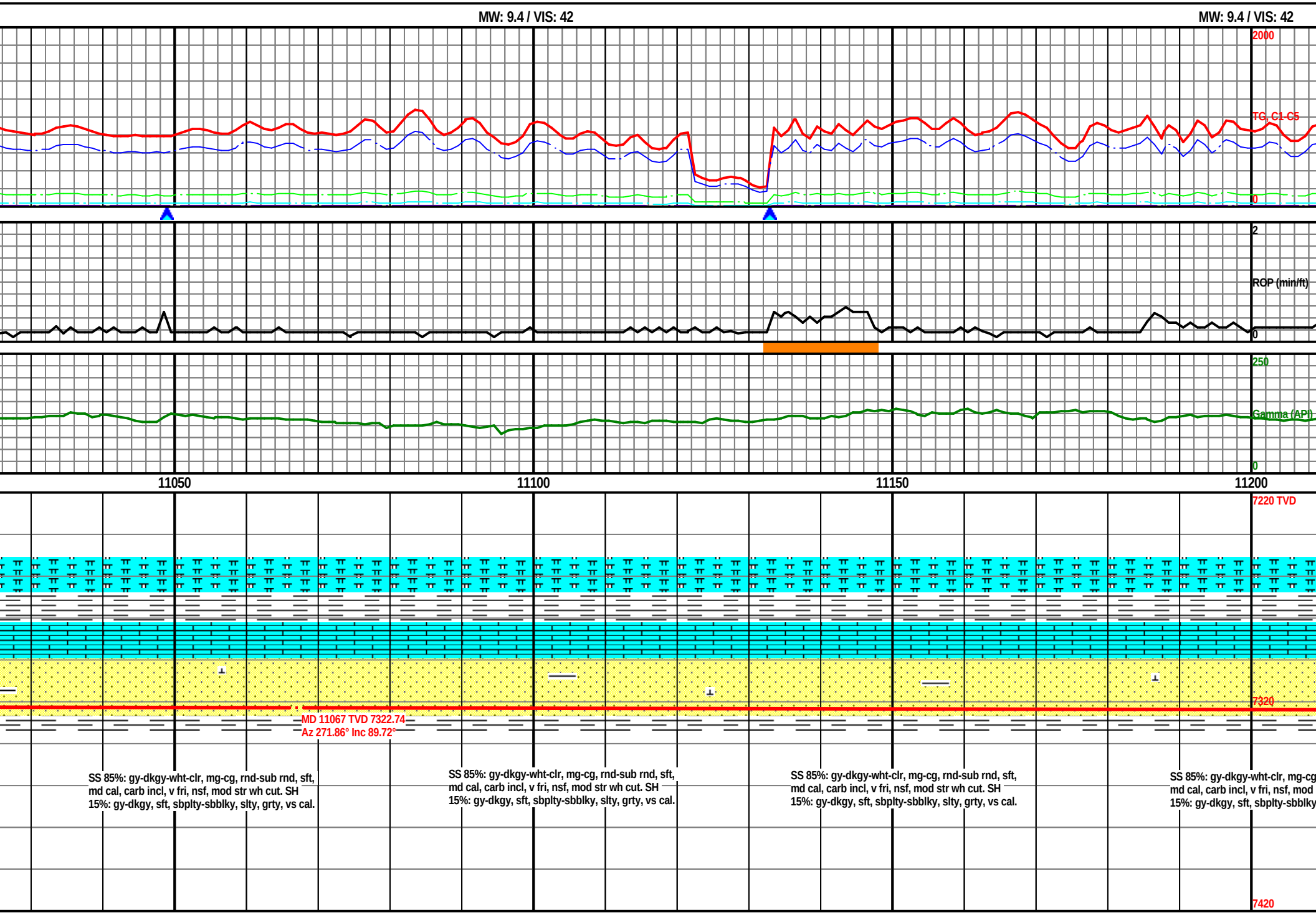

MW: 9.2 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
10150
10200
10250
7220 TVD
7320
MD 10216 TVD 7321.84
Az 269.94° Inc 90.37°
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

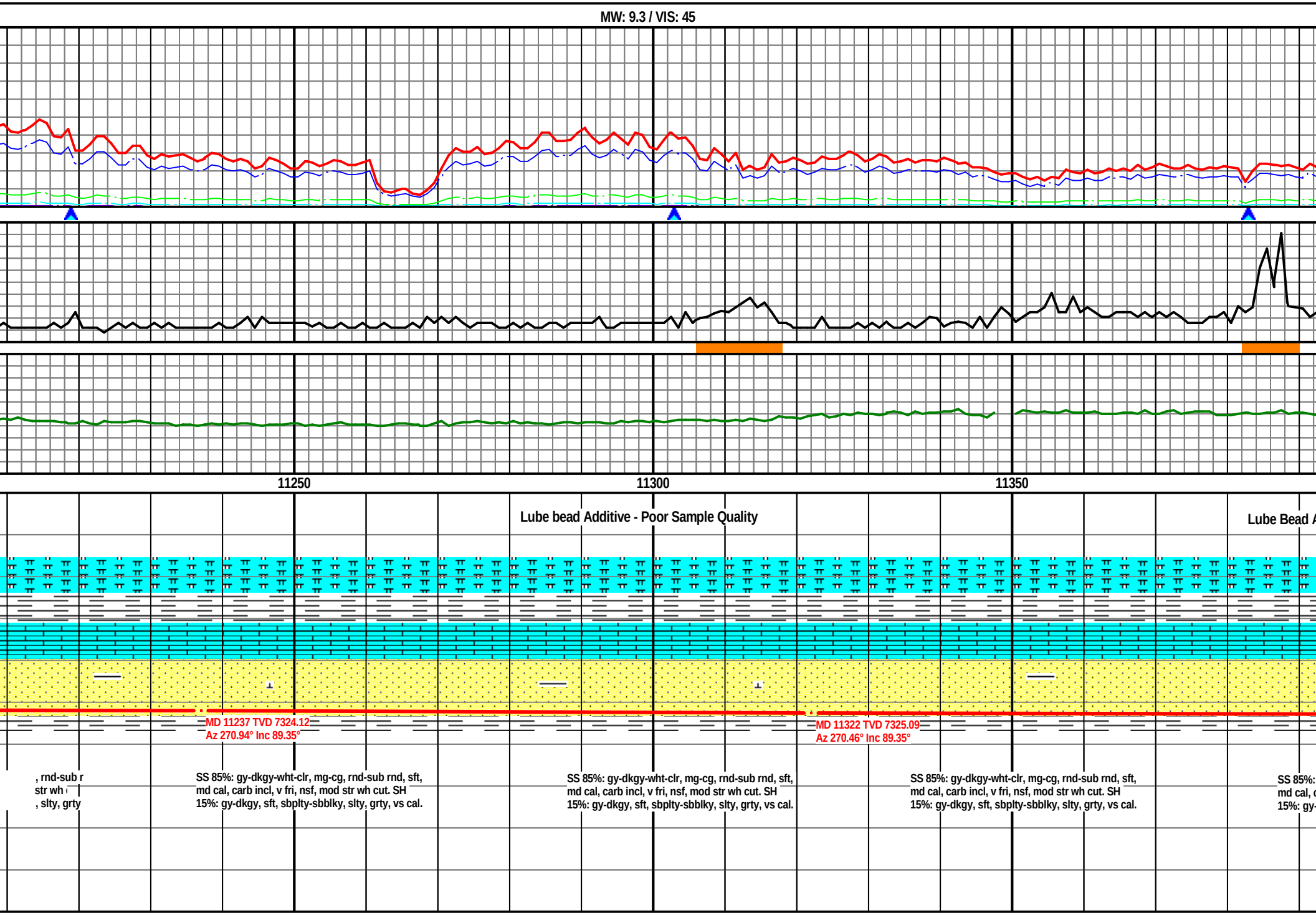

MW: 9.2 / VIS: 42
MW: 9.2 / VIS: 42
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
10300
10350
10400
10450
7220 TVD
7220
MD 10387 TVD 7320.36
Az 270.41° Inc 90.62°
7420
: gy-dkgy-wht-clr, mg-cg, rnd-sub r
carb incl, v fri, nsf, mod str wh
-dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

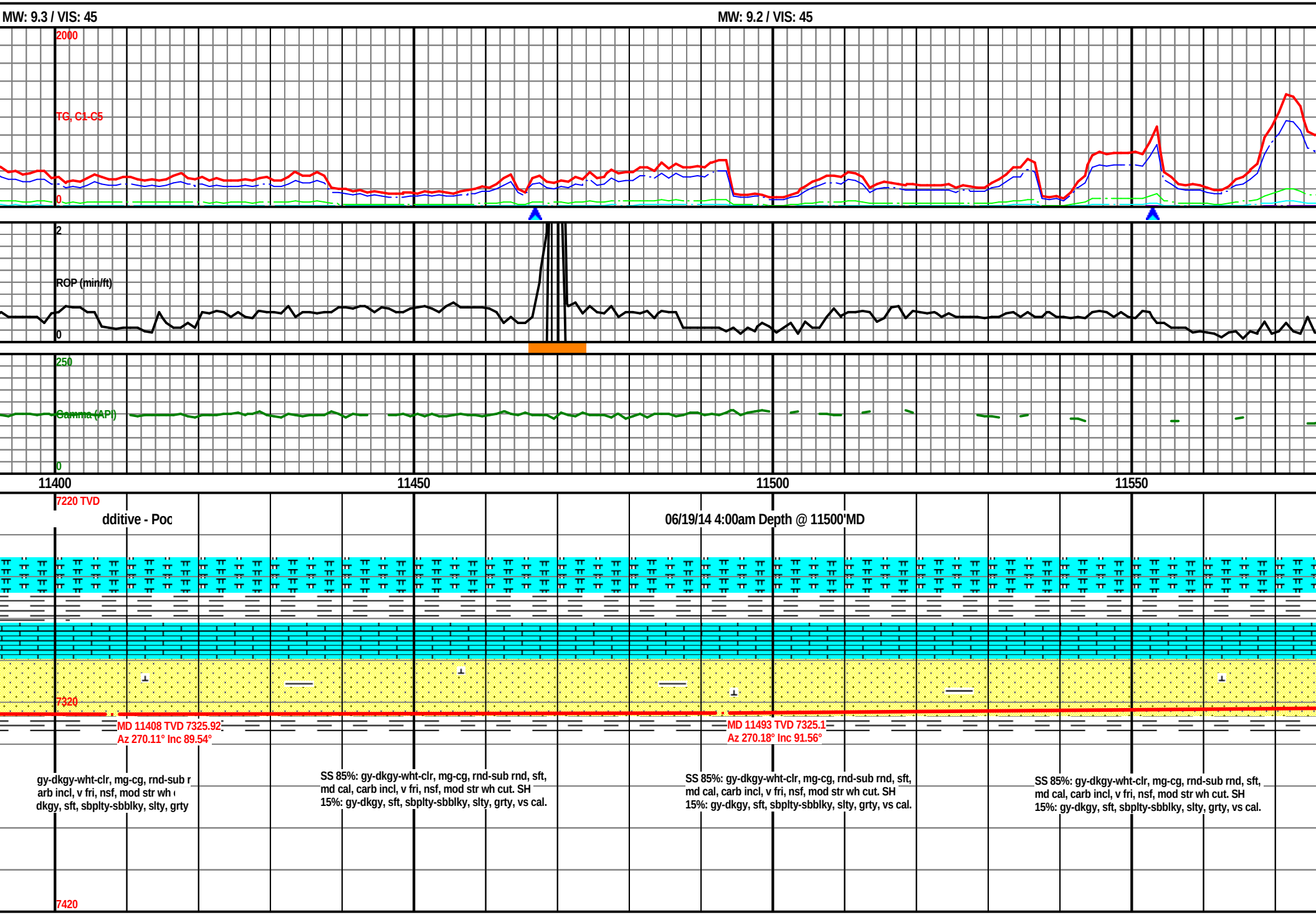

MW: 9.2 / VIS: 42
MW: 9.2 / VIS: 42
Gas Show #2
10570' - 10993'
2000
TG, C1 C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
10500
10550
10600
10650
7220 TVD
7220
MD 10642 TVD 7320.94
Az 271.06° Inc 89.57°
7420
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-c
md cal, carb incl, v fri, nsf, mo
10%: gy-dkgy, sft, sbplty-sbbl

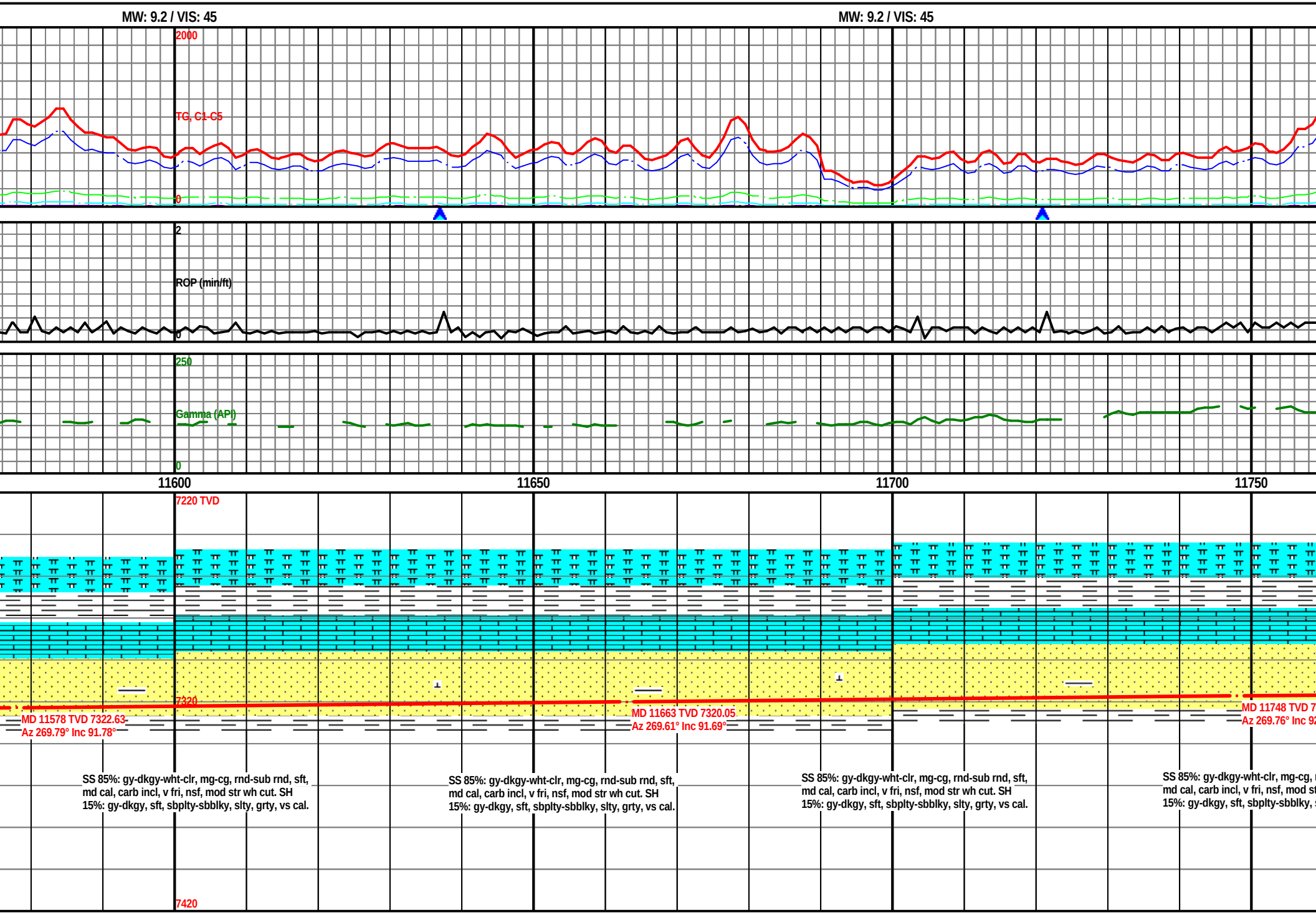

MW: 9.2 / VIS: 42
MW: 9.2 / VIS: 42
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
10700
10750
10800
7220 TVD
7320
MD 10812 TVD 7321.58
Az 271.48° Inc 90°
g, rnd-sub r
str wh
y, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%
md cal,
10%: gy
7420

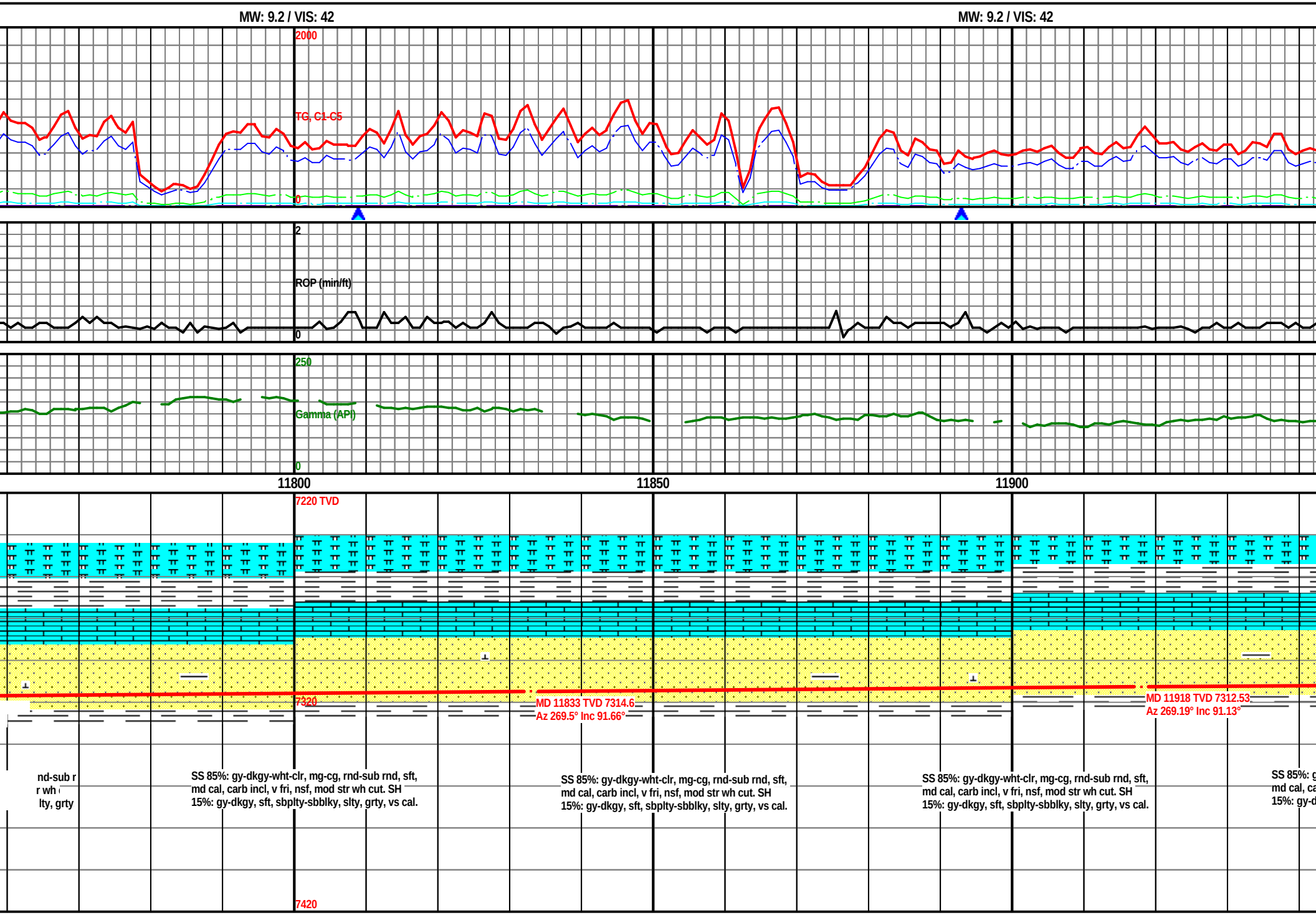

MW: 9.2 / VIS: 42
MW: 9.2 / VIS: 42
2000
PG = 1181 U
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
10850
10900
10950
11000
7220 TVD
Fault
7320
MD 10982 TVD 7322.22
Az 271.55° Inc 89.57°
gy-dkgy-wht-clr, mg-cg, rnd-sub r
arb incl, v fri, nsf, mod str wh
-dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

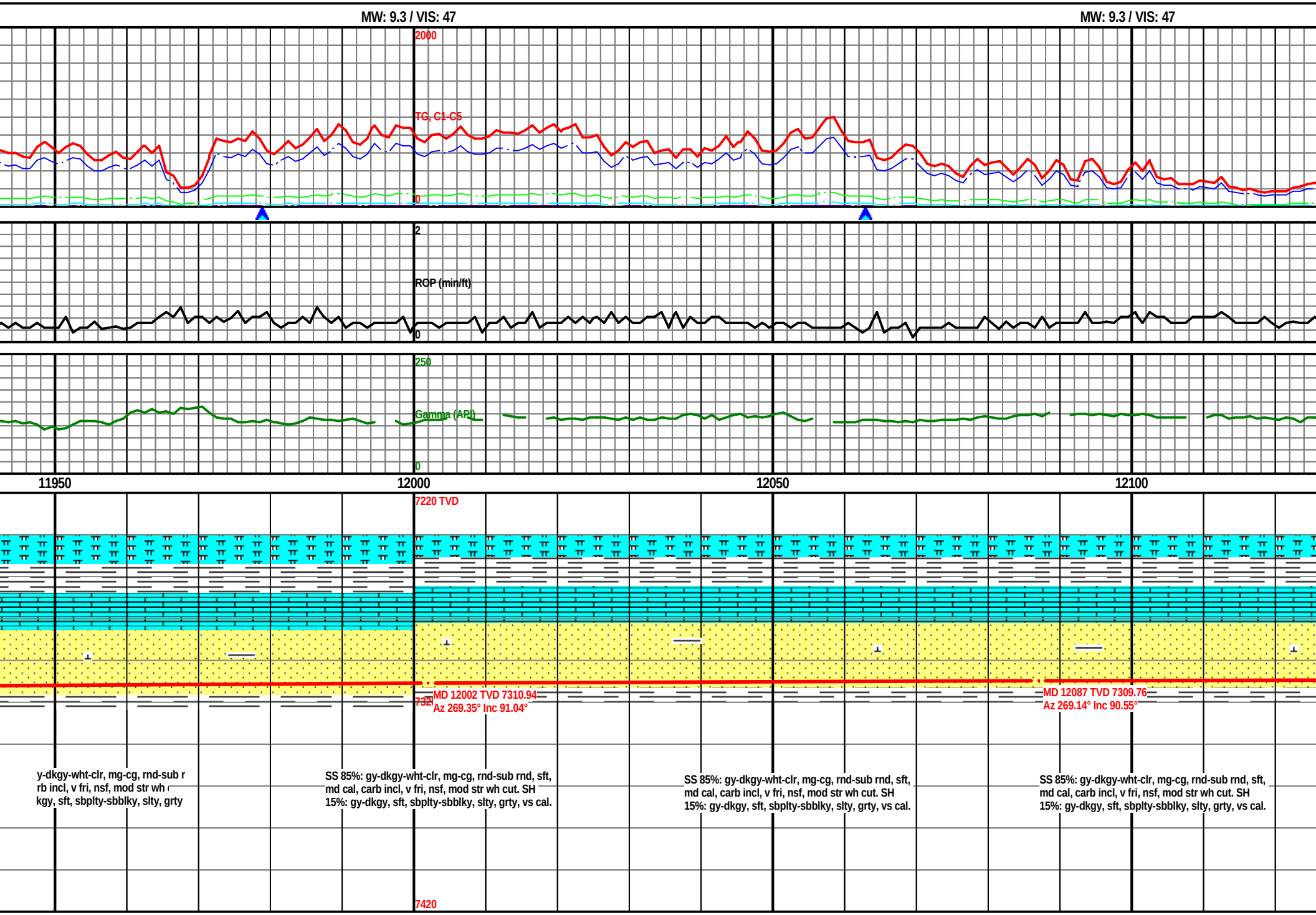

MW: 9.4 / VIS: 42
MW: 9.4 / VIS: 42
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
11050
11100
11150
11200
7220 TVD
7320
7420
MD 11067 TVD 7322.74
Az 271.86° Inc 89.72°
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg
md cal, carb incl, v fri, nsf, mod
15%: gy-dkgy, sft, sbplty-sbblky

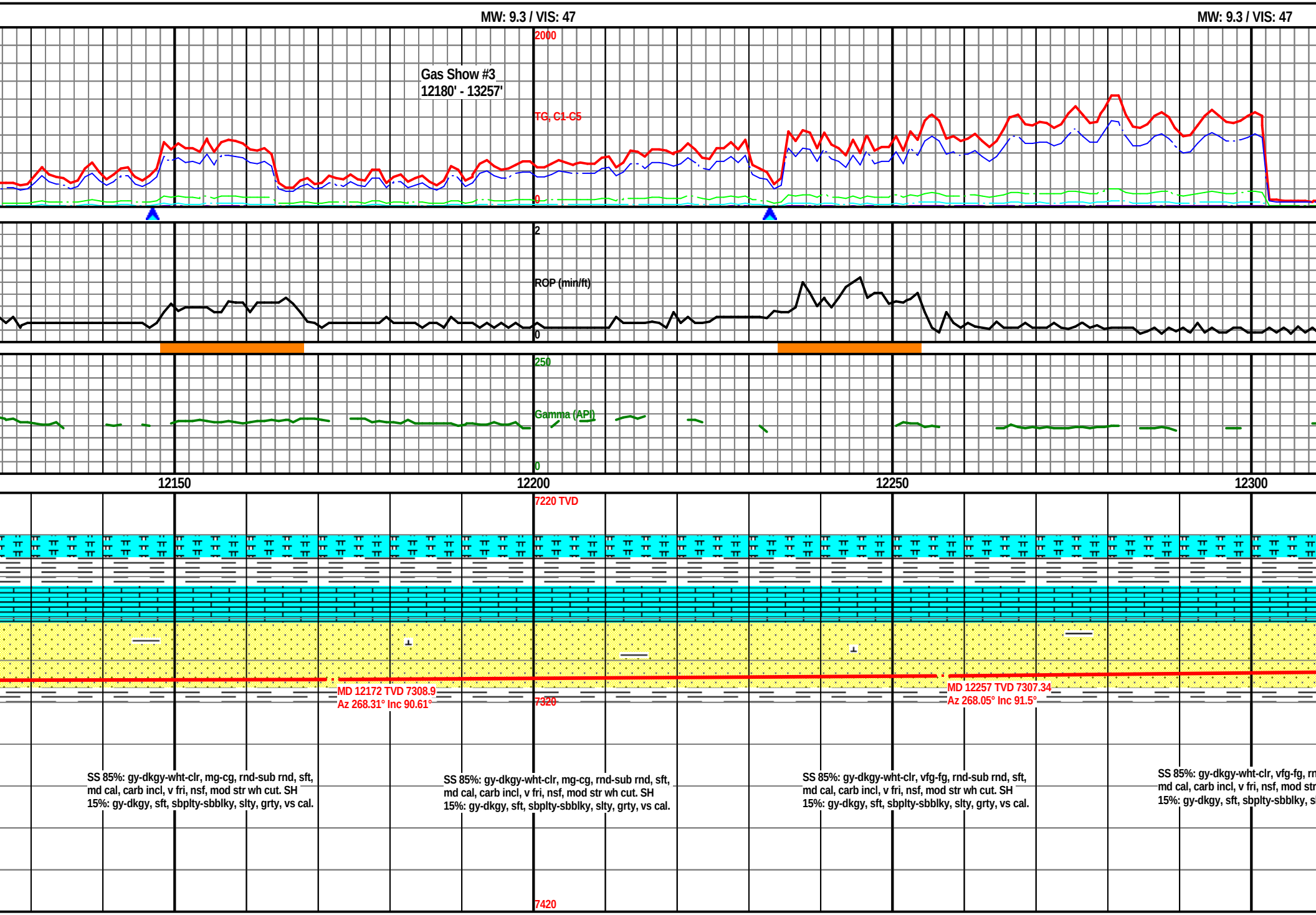

MW: 9.3 / VIS: 45
11250
11300
11350
Lube bead Additive - Poor Sample Quality
Lube Bead A
MD 11237 TVD 7324.12
Az 270.94° Inc 89.35°
MD 11322 TVD 7325.09
Az 270.46° Inc 89.35°
, rnd-sub r
str wh
, slty, grty
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%:
md cal,
15%: gy-

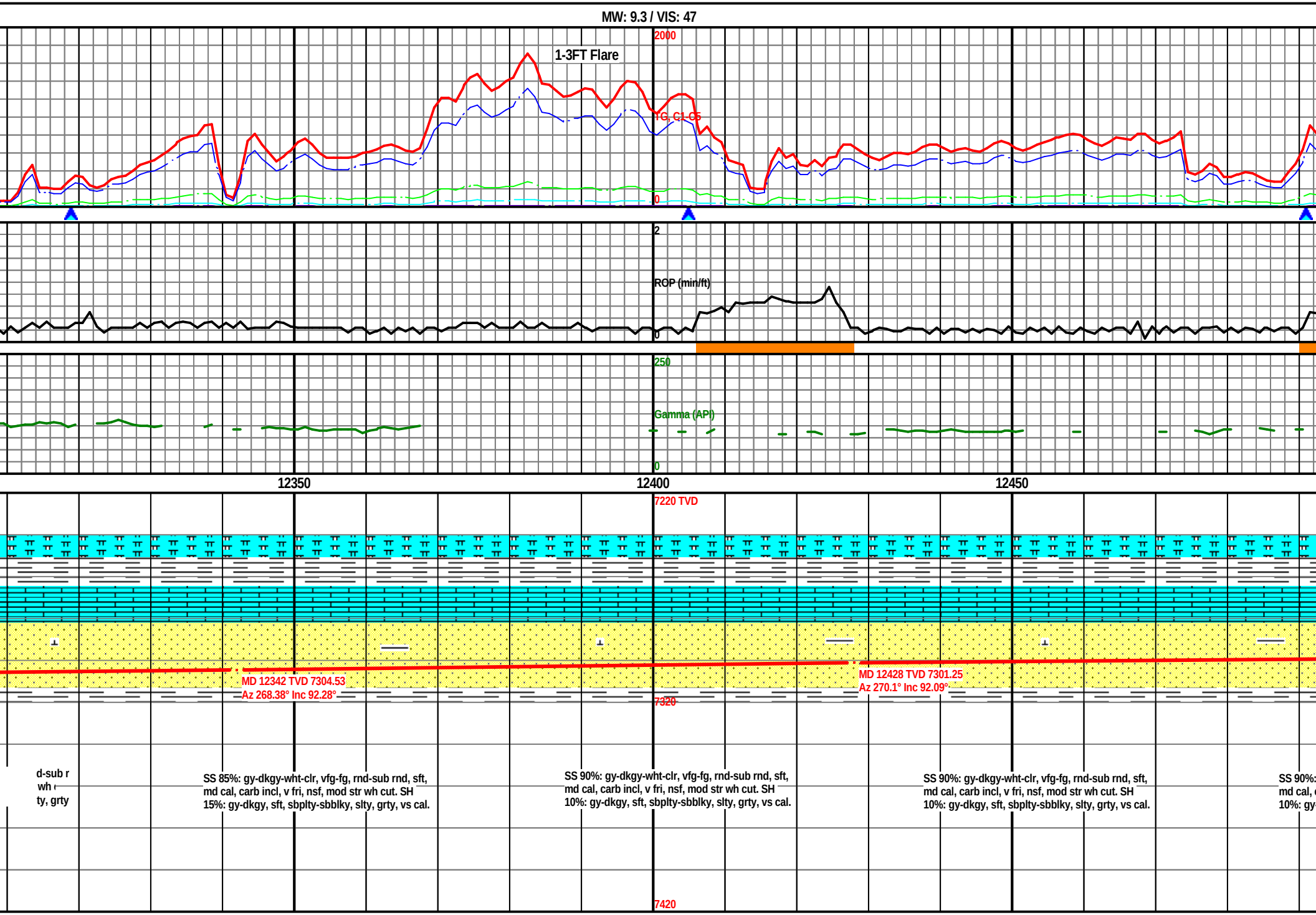

MW: 9.3 / VIS: 45
MW: 9.2 / VIS: 45
2000
TG, C1 C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
11400
11450
11500
11550
7220 TVD
dditive - Poc
06/19/14 4:00am Depth @ 11500'MD
7320
MD 11408 TVD 7325.92
Az 270.11° Inc 89.54°
MD 11493 TVD 7325.1
Az 270.18° Inc 91.56°
gy-dkgy-wht-clr, mg-cg, rnd-sub r
arb incl, v fri, nsf, mod str wh
dkgy, sft, sbplty-sbblky, slty, grty
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420

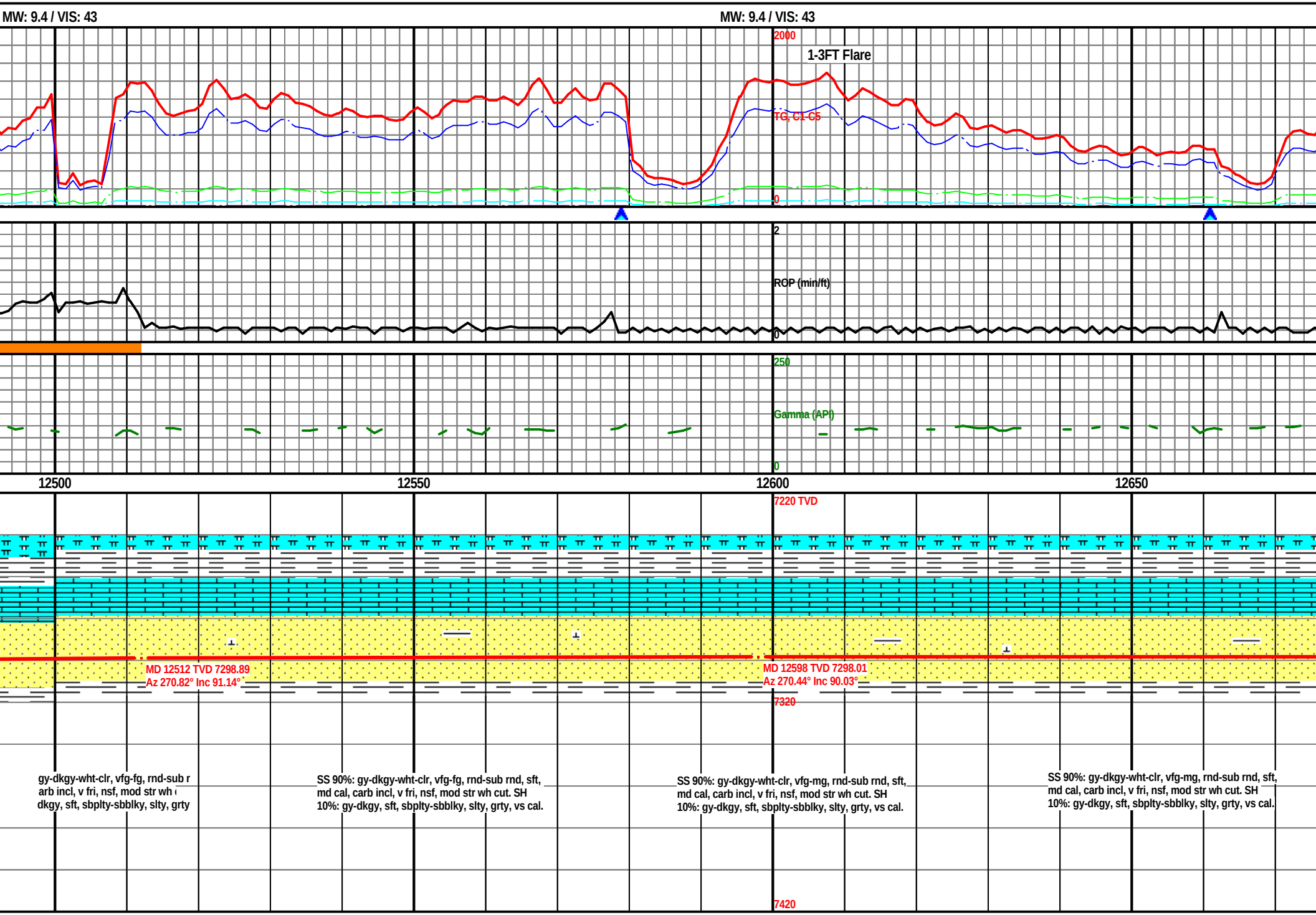

MW: 9.2 / VIS: 45
MW: 9.2 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
11600
11650
11700
11750
7220 TVD
7320
7420
MD 11578 TVD 7322.63
Az 269.79° Inc 91.78°
MD 11663 TVD 7320.05
Az 269.61° Inc 91.69°
MD 11748 TVD 7
Az 269.76° Inc 92
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg,
md cal, carb incl, v fri, nsf, mod st
15%: gy-dkgy, sft, sbplty-sbblky,

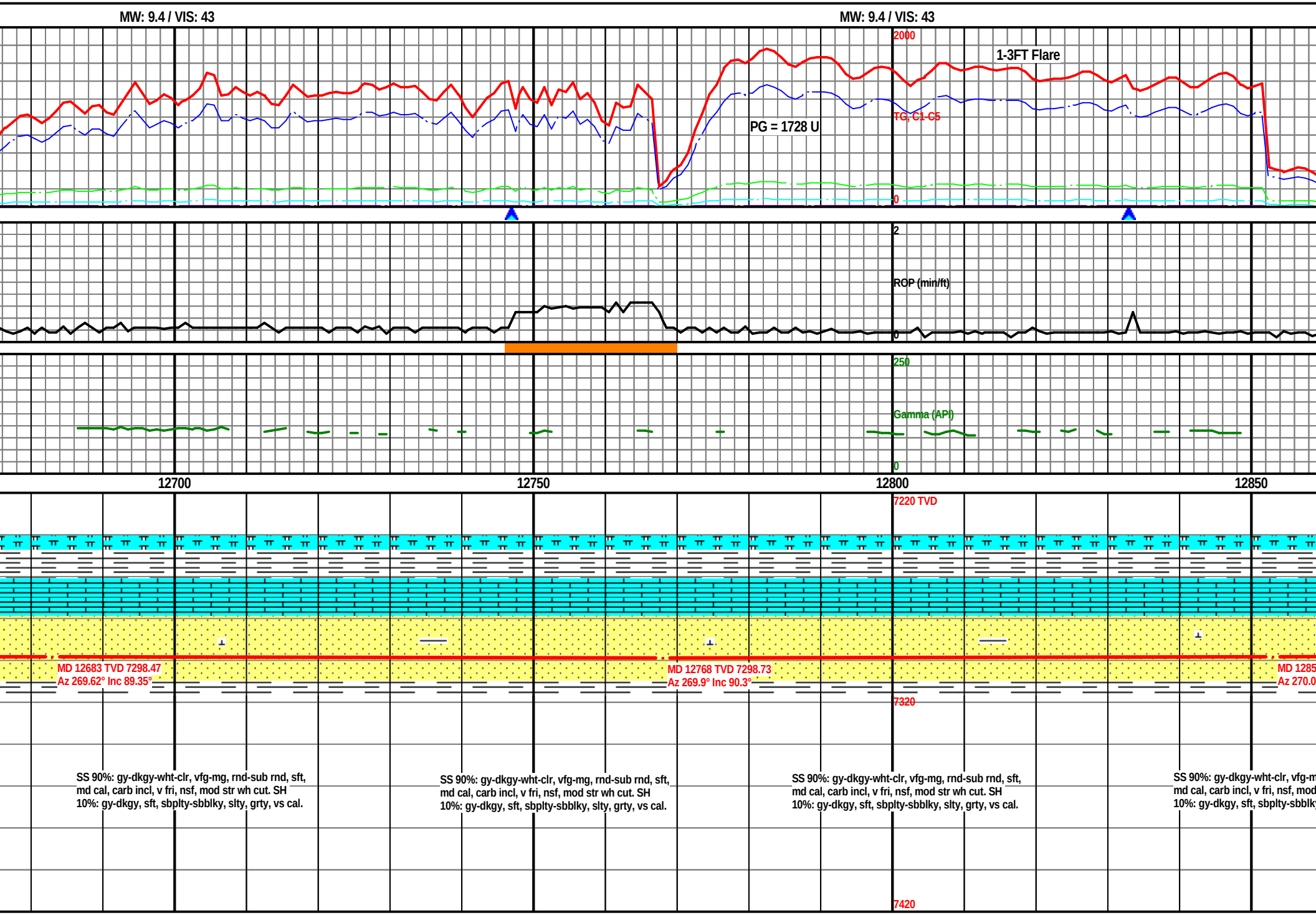

MW: 9.2 / VIS: 42
MW: 9.2 / VIS: 42
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
11800
11850
11900
7220 TVD
7320
7420
MD 11833 TVD 7314.6
Az 269.5° Inc 91.66°
MD 11918 TVD 7312.53
Az 269.19° Inc 91.13°
nd-sub r
r wh
lty, grty
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: g
md cal, ca
15%: gy-d

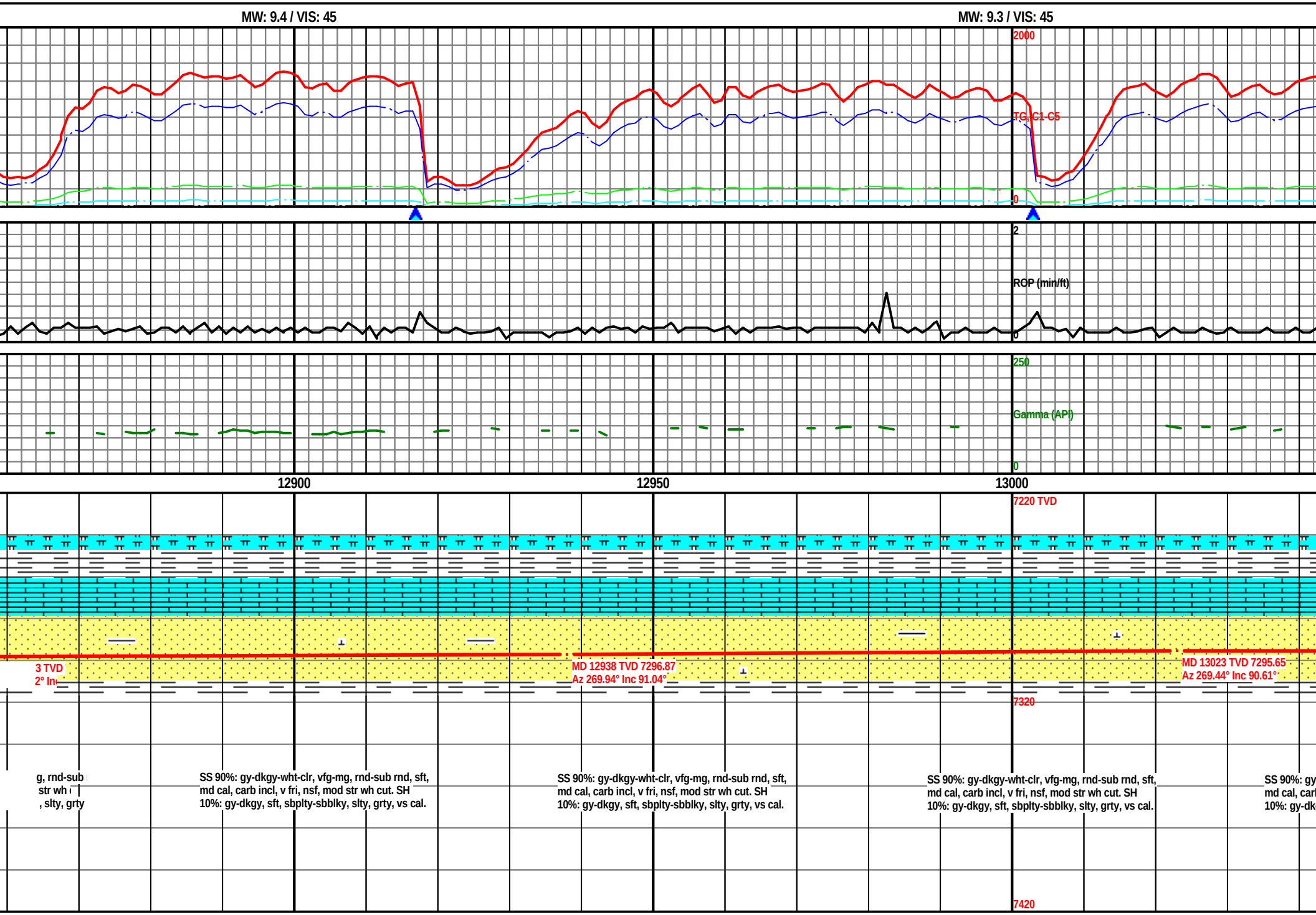

MW: 9.3 / VIS: 47
MW: 9.3 / VIS: 47
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
11950
12000
12050
12100
7220 TVD
MD 12002 TVD 7310.94
Az 269.35° Inc 91.04°
MD 12087 TVD 7309.76
Az 269.14° Inc 90.55°
7420
y-dkgy-wht-clr, mg-cg, rnd-sub r
rb incl, v fri, nsf, mod str wh
kgy, sft, sbplty-sbblky, slty, grty
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.

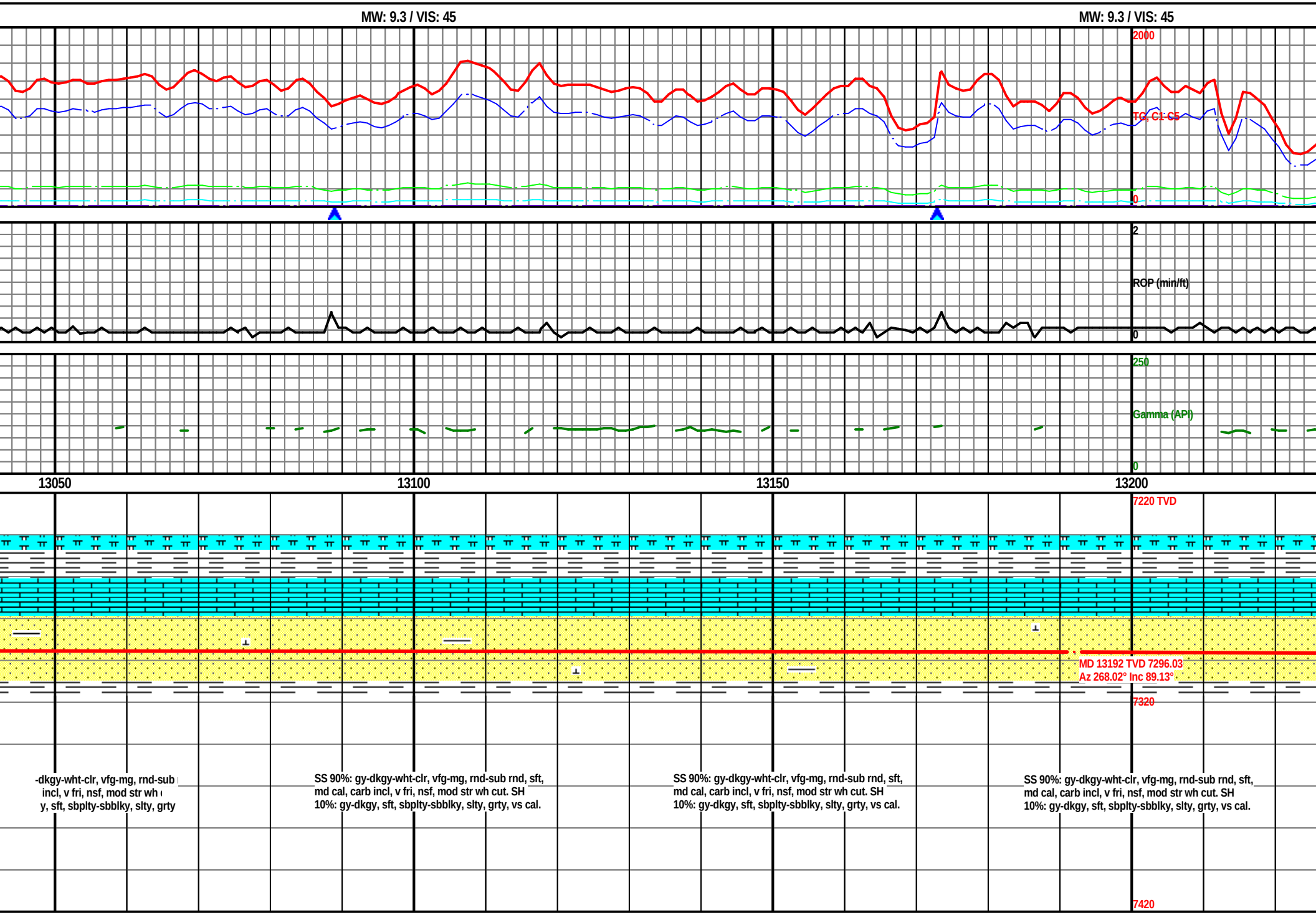

MW: 9.3 / VIS: 47
MW: 9.3 / VIS: 47
Gas Show #3
12180' - 13257'
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
12150
12200
12250
12300
7220 TVD
MD 12172 TVD 7308.9
Az 268.31° Inc 90.61°
MD 12257 TVD 7307.34
Az 268.05° Inc 91.5°
7320
7420
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, mg-cg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 85%: gy-dkgy-wht-clr, vfg-fg, rn
md cal, carb incl, v fri, nsf, mod str
15%: gy-dkgy, sft, sbplty-sbblky, s

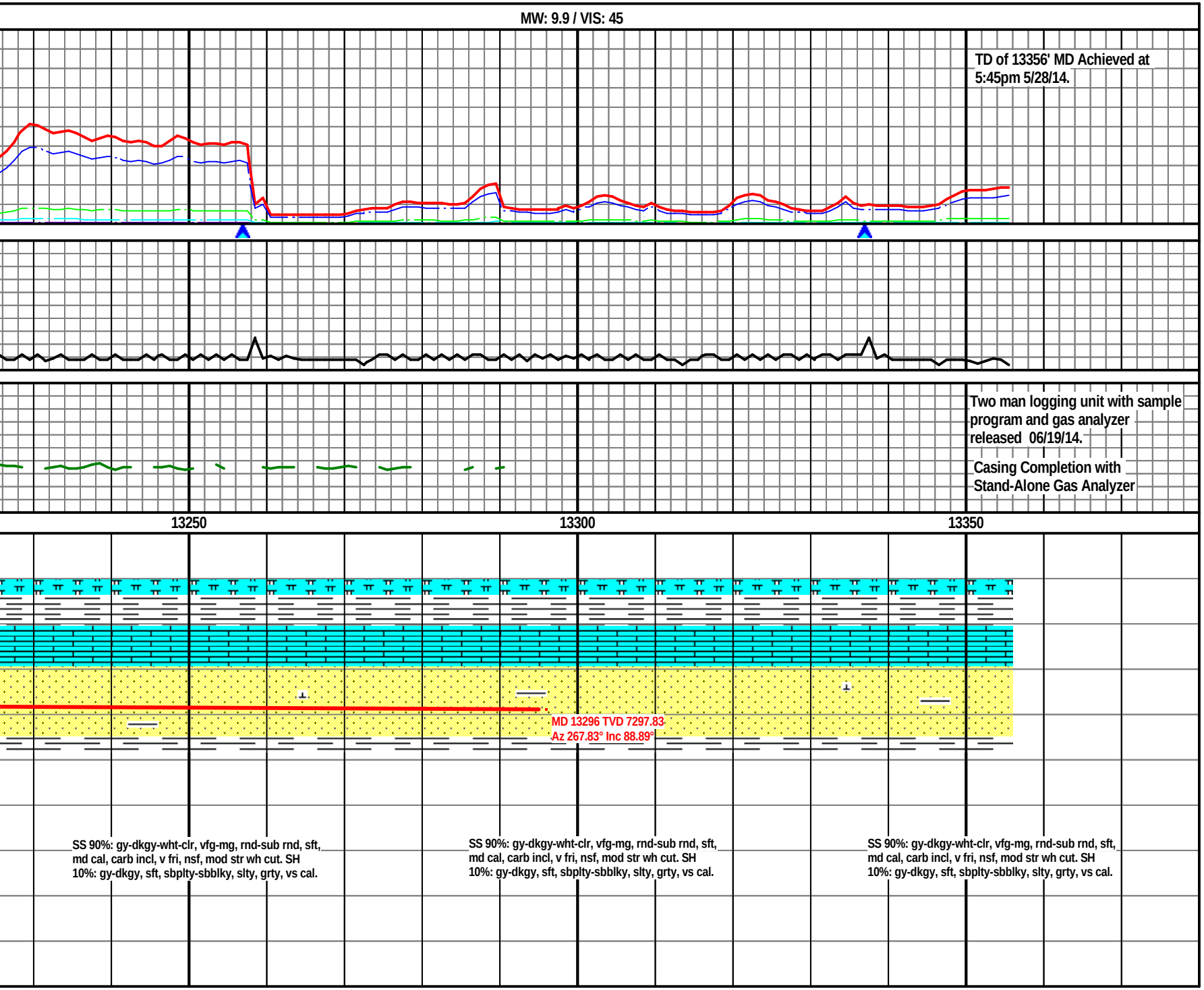

MW: 9.3 / VIS: 47
1-3FT Flare
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
12350
12400
12450
7220 TVD
MD 12342 TVD 7304.53
Az 268.38° Inc 92.28°
MD 12428 TVD 7301.25
Az 270.1° Inc 92.09°
7320
d-sub r
wh
ty, grty
SS 85%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
15%: 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, mod str wh cut. SH
10%: 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, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
7420


MW: 9.4 / VIS: 43
MW: 9.4 / VIS: 43
2000
1-3FT Flare
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
12500
12550
12600
12650
7220 TVD
MD 12512 TVD 7298.89
Az 270.82° Inc 91.14°
MD 12598 TVD 7298.01
Az 270.44° Inc 90.03°
7320
7420
gy-dkgy-wht-clr, vfg-fg, rnd-sub r
arb incl, v fri, nsf, mod str wh
dkgy, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, vfg-fg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.


MW: 9.4 / VIS: 43
MW: 9.4 / VIS: 43
2000
1-3FT Flare
TG, C1 C5
PG = 1728 U
0
2
ROP (min/ft)
0
250
Gamma (API)
0
12700
12750
12800
12850
7220 TVD
MD 12683 TVD 7298.47
Az 269.62° Inc 89.35°
MD 12768 TVD 7298.73
Az 269.9° Inc 90.3°
MD 1285
Az 270.0
7320
7420
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-m
md cal, carb incl, v fri, nsf, mod
10%: gy-dkgy, sft, sbplty-sbblk


MW: 9.4 / VIS: 45
MW: 9.3 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
12900
12950
13000
7220 TVD
3 TVD
2° In
MD 12938 TVD 7296.87
Az 269.94° Inc 91.04°
MD 13023 TVD 7295.65
Az 269.44° Inc 90.61°
7320
g, rnd-sub
str wh
, slty, grty
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy
md cal, carl
10%: gy-dk
7420


MW: 9.3 / VIS: 45
MW: 9.3 / VIS: 45
2000
TG, C1-C5
0
2
ROP (min/ft)
0
250
Gamma (API)
0
13050
13100
13150
13200
7220 TVD
MD 13192 TVD 7296.03
Az 268.02° Inc 89.13°
7320
7420
-dkgy-wht-clr, vfg-mg, rnd-sub
incl, v fri, nsf, mod str wh
y, sft, sbplty-sbblky, slty, grty
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft,
md cal, carb incl, v fri, nsf, mod str wh cut. SH
10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.


MW: 9.9 / VIS: 45
TD of 13356' MD Achieved at 5:45pm 5/28/14.
Two man logging unit with sample program and gas analyzer released 06/19/14.
Casing Completion with Stand-Alone Gas Analyzer
13250
13300
13350
MD 13296 TVD 7297.83
Az 267.83° Inc 88.89°
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.
SS 90%: gy-dkgy-wht-clr, vfg-mg, rnd-sub rnd, sft, md cal, carb incl, v fri, nsf, mod str wh cut. SH 10%: gy-dkgy, sft, sbplty-sbblky, slty, grty, vs cal.