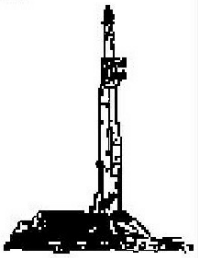
GOOLSBY BROTHERS
and associates, inc.
575 Union Blvd, Suite 208
Lakewood, CO 80228
303-945-2860 Office
Geological Wellsite
Supervision
www.goolsbybrothers.com
PETCOM



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

Well Name:	**Falken 32C-9-L**
API:	**051234511500**
Location:	**NE/SE Section 11 T6N R66W Weld County, CO.**
License Number:	**Region: Wattenberg**
Spud Date:	**September 17, 2017 Drilling Completed: September 24, 2017**
Surface Coordinates:	**1904'FSL & 276'FEL NE/SE Sec. 11 T6N R66W**
	Lat/Long: 40°30'02.869"N/ 104°44'09.402"W
Bottom Hole	**Planned: 2509'FSL & 300'FEL, SEC.9 T6N R66W**
Coordinates:	**Projected: 2498'FSL & 275'FEL, SEC.9 T6N R66W**
Ground Elevation (ft):	**4,810' K.B. Elevation (ft): 4,835'**
Logged Interval (ft):	**6,600' To: 19,120' Total Depth (ft): 19,120' DMTD**
Formation:	**Codell**
Type of Drilling Fluid:	**OBM (LSND Surface).**

OPERATOR

Company: SRC Energy, Inc
Address: 1675 Broadway, Suite 2600
Denver, Colorado 80202
(720) 616-4300

GEOLOGIST

Name: Tekabe Gedamu & Dallan Gardner
Company: Goolsby Brothers & Assoc. (GBA), Inc. (www.goolsbybrothers.com)
Address: 575 Union Blvd. Suite 208,
Lakewood CO. 80228
Tel 303-618-7736

E-logs

MWD GR from S.C. to 19,108' MD

Casing

9 5/8" Surface Casing pre set @ 1785' MD.
5 1/2" Production Liner run on 9/26/2017.

Comments

1) Drilling Contractor: Precision Drilling, Rig #562
Pumps 1&2: Rostell F-1600 5" x 12" (.0692 Bbls./stroke)
Toolpusher: Michael Ellingsworth, Tyson Westgard.

2) Company Man: Kent Priddy
Kevin Brakovec
Tim Jones
Kalib Ford

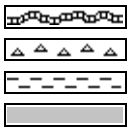
3) Mud Comapny : Reliable Drilling Fluids
Engineer: Wally Yates, Scott Allen

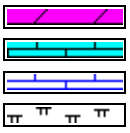
4) Directional Drilling: Baker Hughes
Drillers: Ryan Kielian, Jeremiah Samson
MWD: Matthew Leopold, Baker Remote Field Operations.

5) Gas Equipment: Pason Gas Analyzer (Spectrometer)

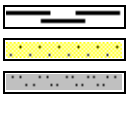
6) Wellsite Geologist: Dallan Gardner, & Tekabe Gedamu

ROCK TYPES


Bent
Cht
Clyst
Oil sat.


Dol
Lmst
Chalk
Mrlst


Mrlst_sh (intbdd)
Shale
Shgy
Slty sh


Carb sh
Ss
Sltst

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

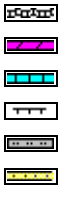
FOSSIL


Algae
Amph
Belm
Bioclst
Brach
Bryozoa


Cephal
Coral
Crin
Echin
Fish
Foram
Fossil
Gastro
Oolite
Ostra
Pelec
Pellet
Pisolite
Plant
Strom

STRINGER


Chlkstg
Arg


Bent
Dol
Ls
Mrst
Sltstrg
Ssstrg

TEXTURE


Boundst
Chalky
Cryxln
Earthy
Finexln
Grainst
Lithogr
Microxln
Mudst
Packst
Wackest

OTHER SYMBOLS

OIL SHOWS

- Even
- Spotted
- Ques
- Dead
- Vspotty
- near even

POROSITY TYPE

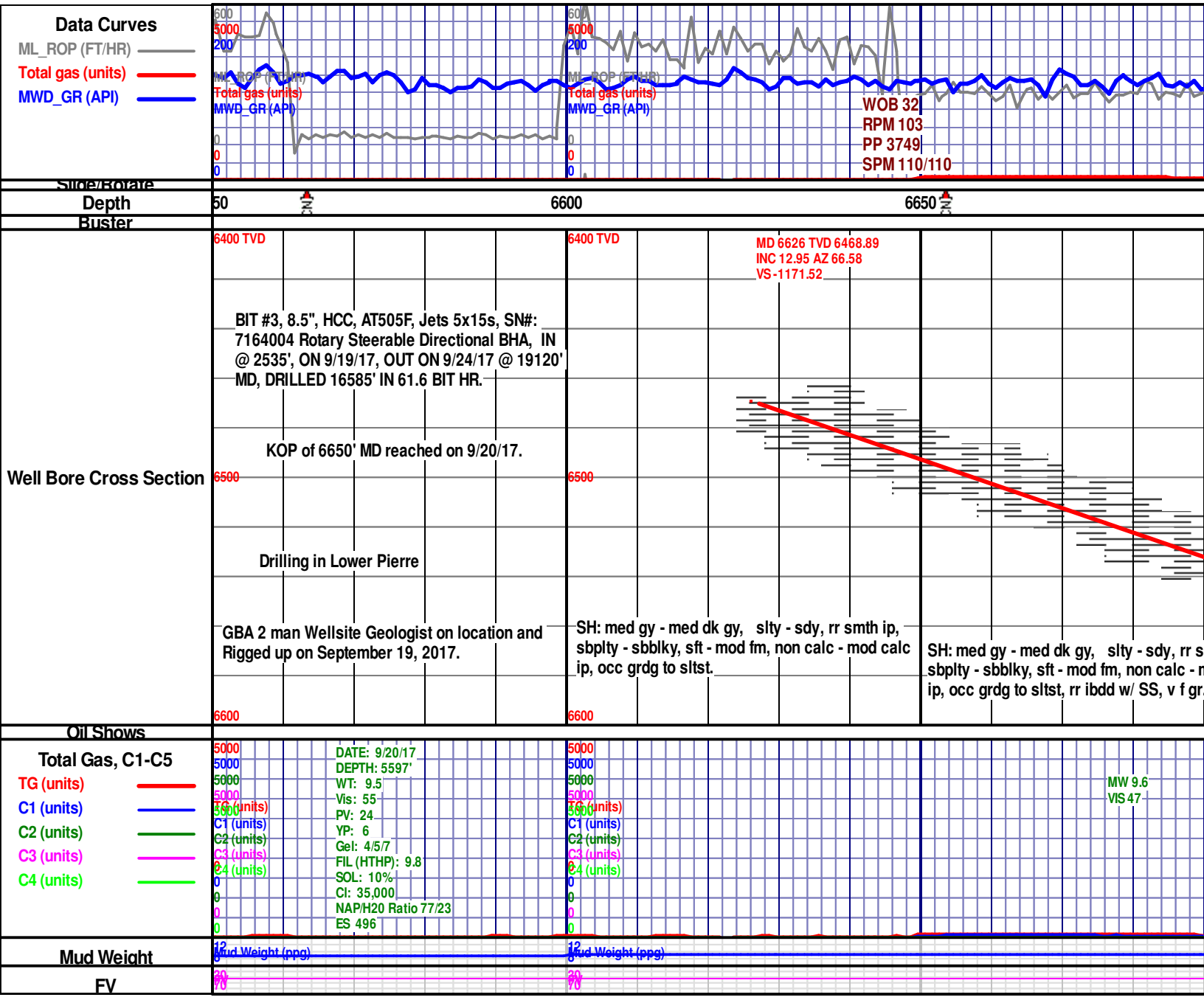
- E Earthy
- Fenest
- F Fracture
- Inter
- Moldic
- Organic
- P Pinpoint
- V Vuggy

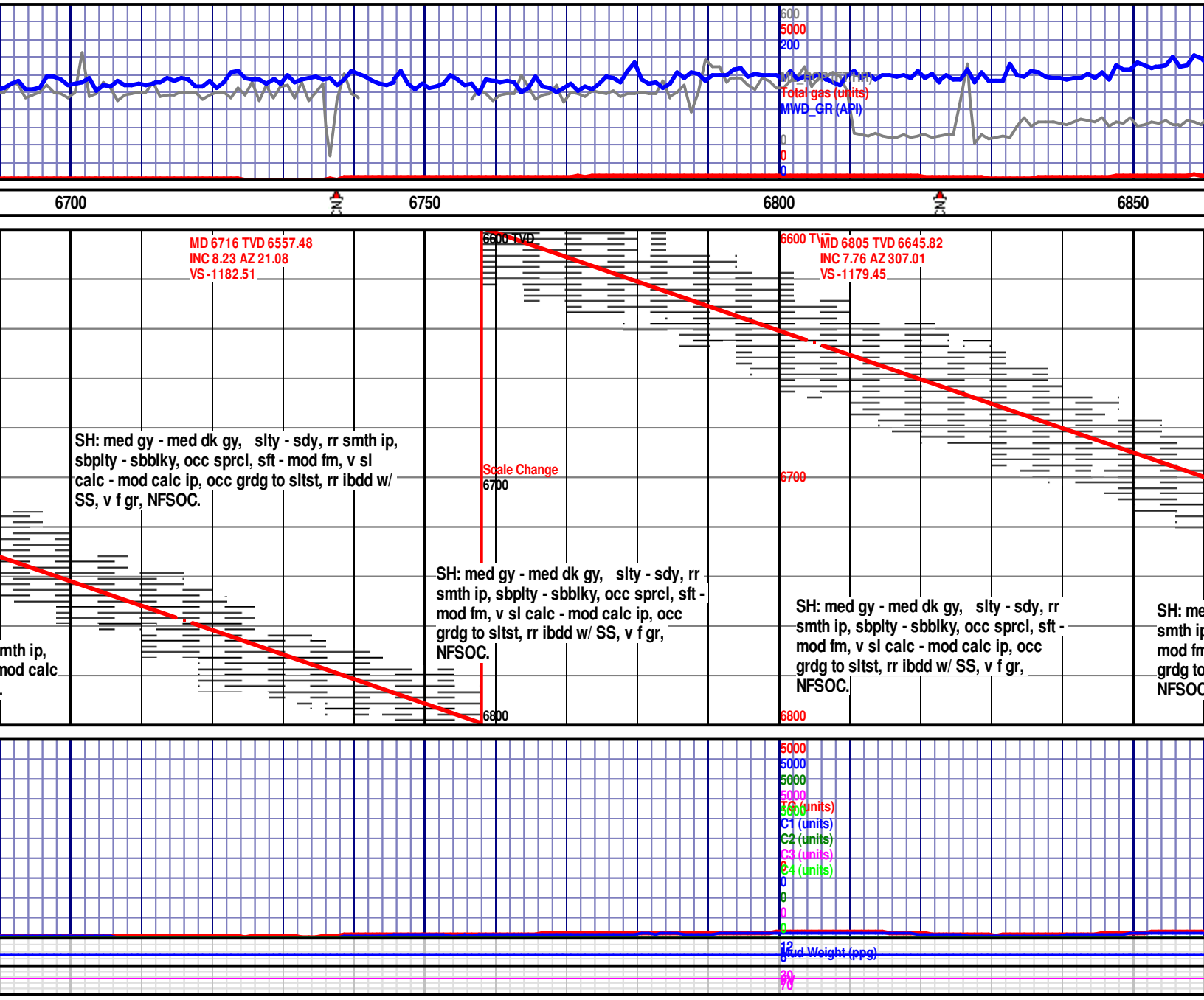
ROUNDING

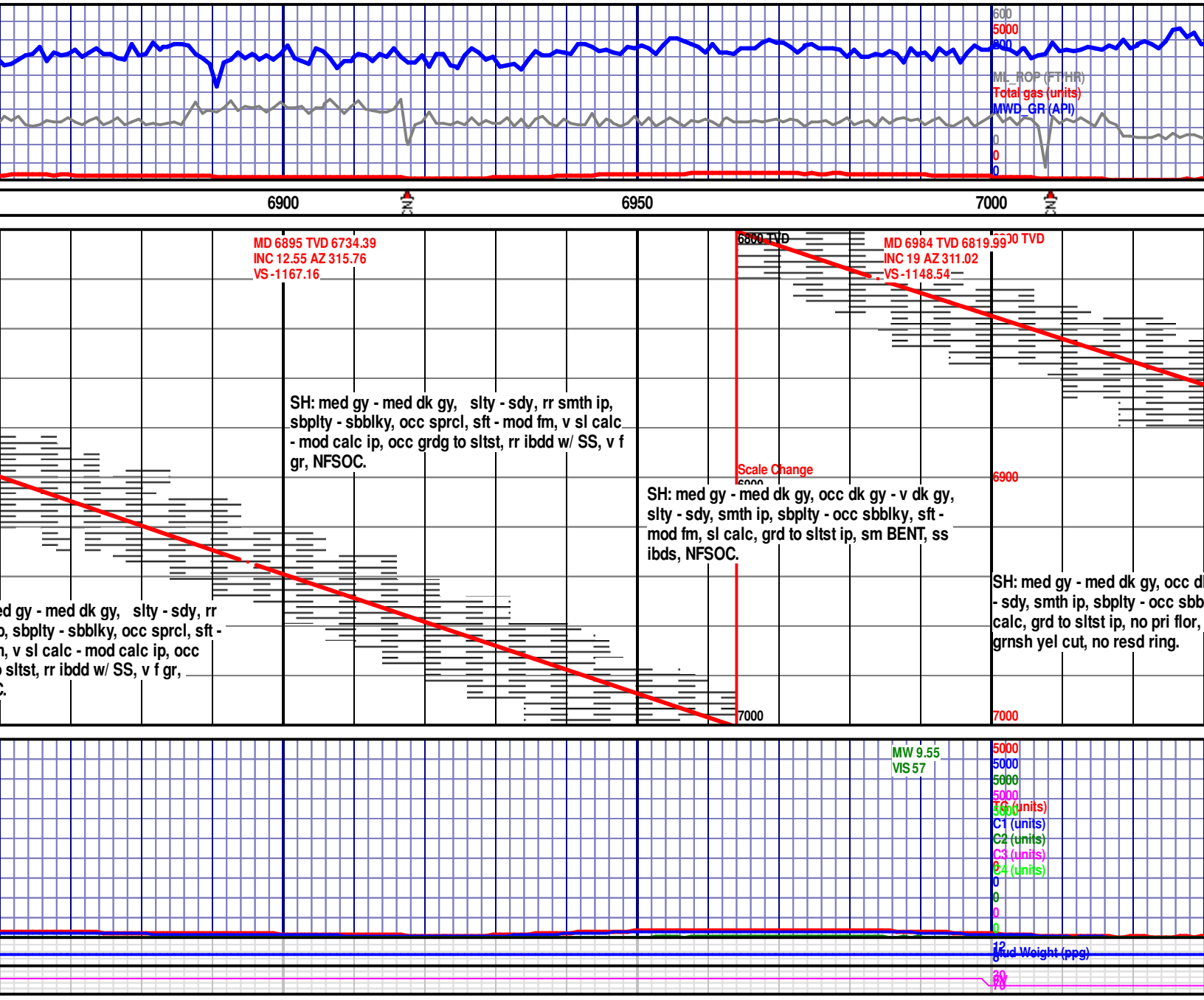
- R Rounded
- r Subrnd
- a Subang
- A Angular

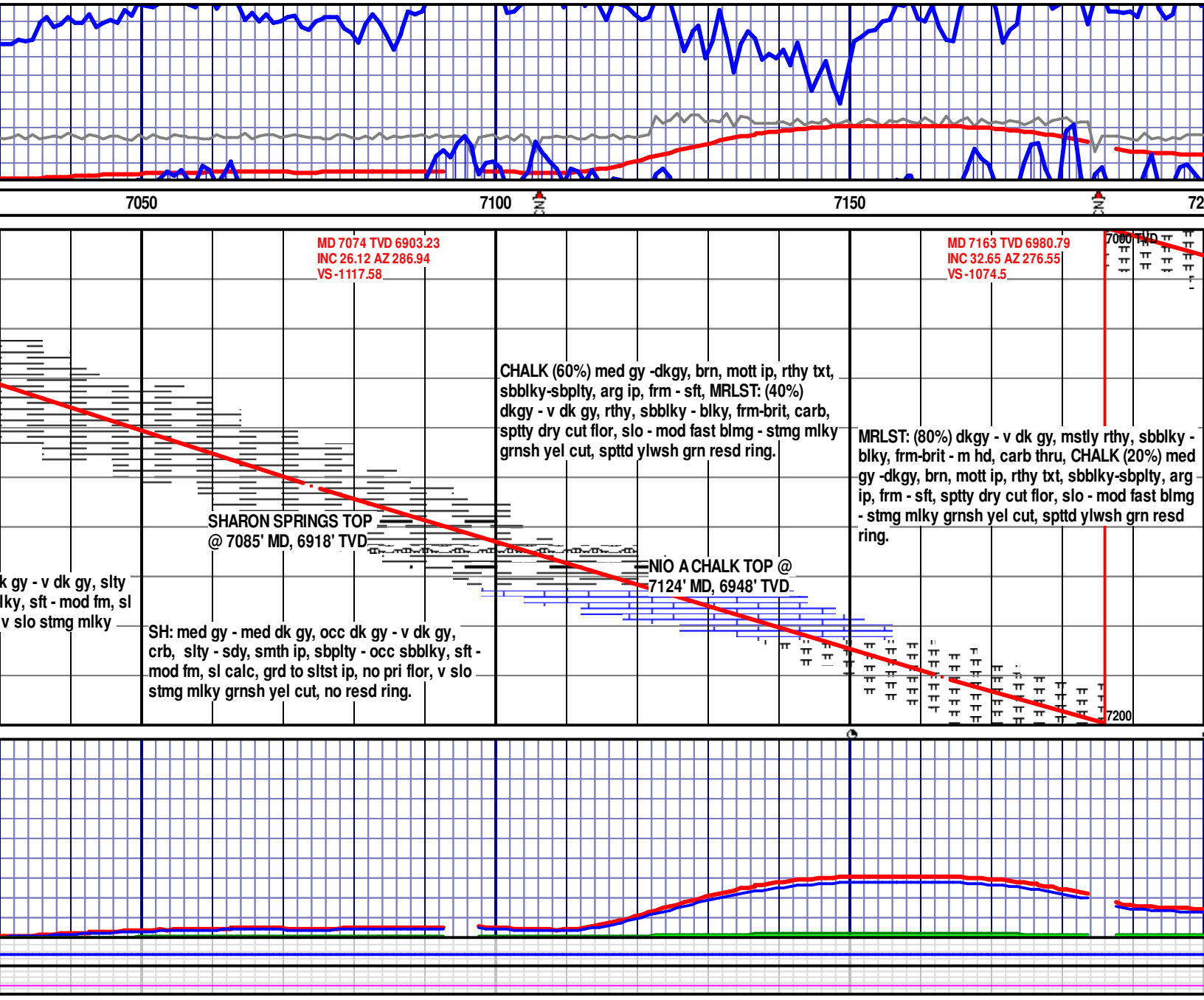
SORTING

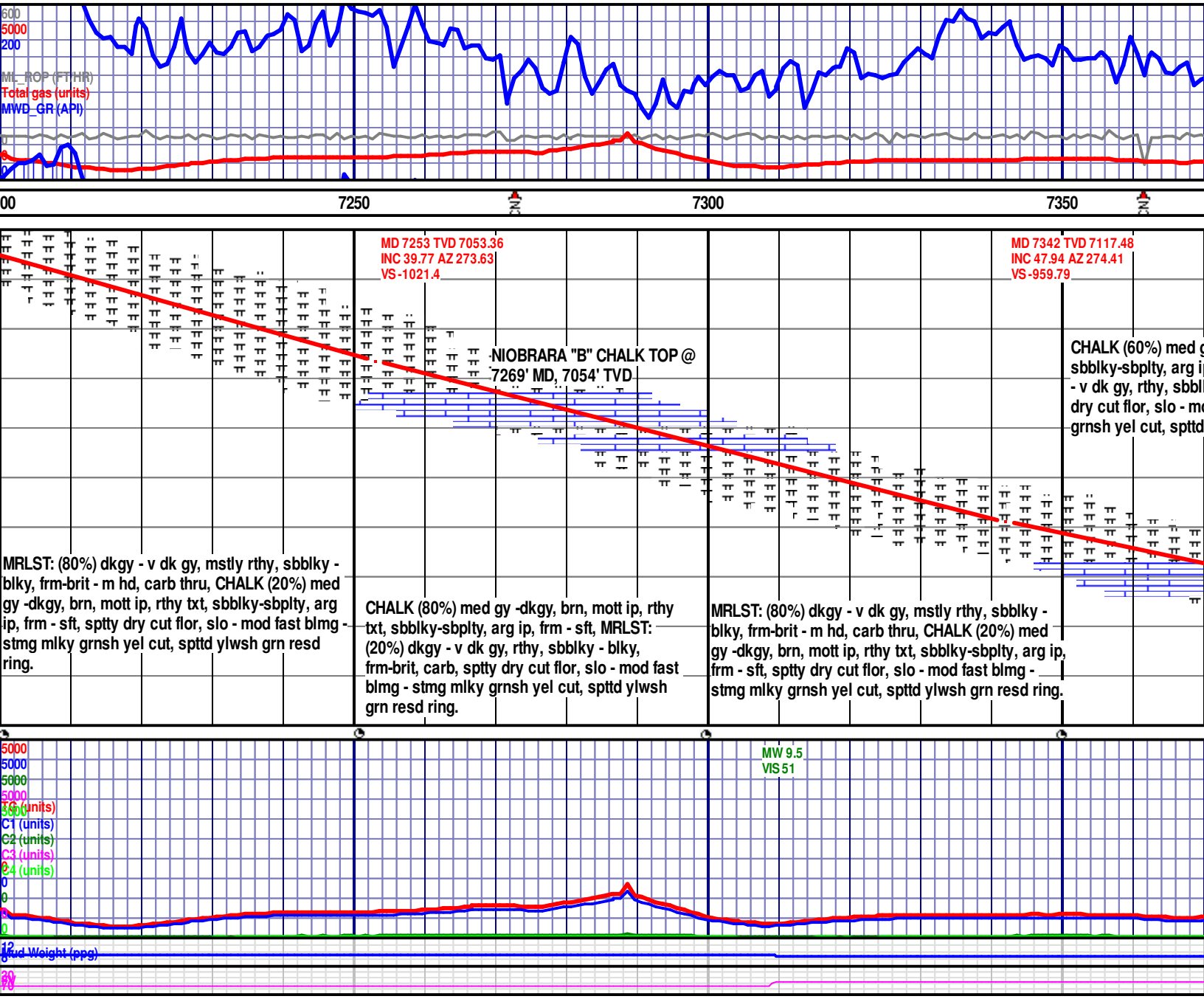
- W Well
- M Moderate
- P Poor

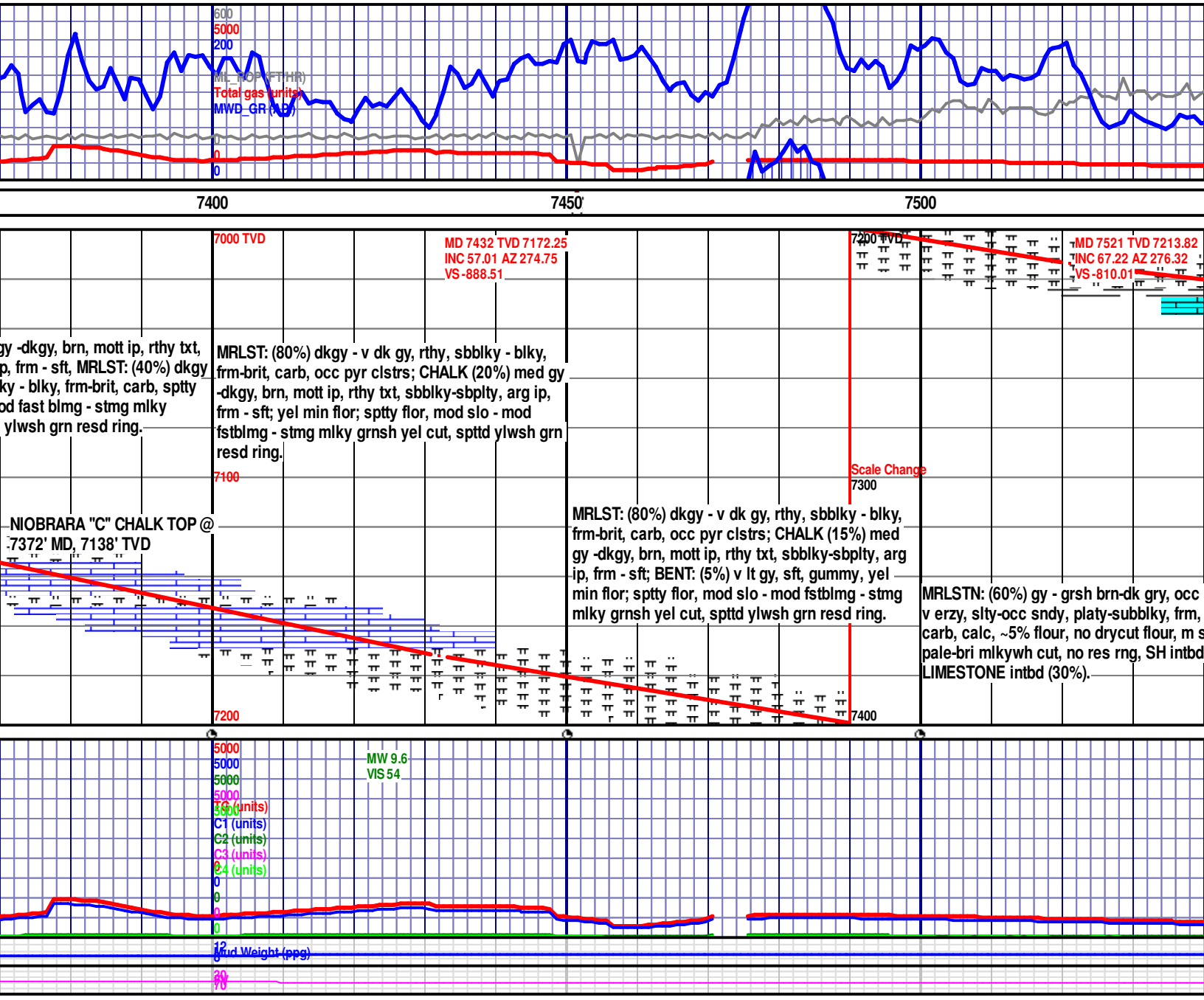

Data Curves
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
600
5000
200
0
0
0
WOB 32
RPM 103
PP 3749
SPM 110/110
Slide/Rotate
Depth
50
6600
6650
Buster
6400 TVD
MD 6626 TVD 6468.89
INC 12.95 AZ 66.58
VS -1171.52
BIT #3, 8.5", HCC, AT505F, Jets 5x15s, SN#: 7164004 Rotary Steerable Directional BHA, IN @ 2535', ON 9/19/17, OUT ON 9/24/17 @ 19120' MD, DRILLED 16585' IN 61.6 BIT HR.
KOP of 6650' MD reached on 9/20/17.
Well Bore Cross Section
6500
Drilling in Lower Pierre
GBA 2 man Wellsite Geologist on location and Rigged up on September 19, 2017.
SH: med gy - med dk gy, slty - sdy, rr smth ip, sbplty - sbblky, sft - mod fm, non calc - mod calc ip, occ grdg to sltst.
SH: med gy - med dk gy, slty - sdy, rr s
sbplty - sbblky, sft - mod fm, non calc - m
ip, occ grdg to sltst, rr ibdd w/ SS, v f gr
6600
Oil Shows
Total Gas, C1-C5
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
5000
DATE: 9/20/17
DEPTH: 5597'
WT: 9.5
Vis: 55
PV: 24
YP: 6
Gel: 4/5/7
FIL (HTHP): 9.8
SOL: 10%
CI: 35,000
NAP/H2O Ratio 77/23
ES 496
MW 9.6
VIS 47
Mud Weight
Mud Weight (ppg)
12
FV
30
70

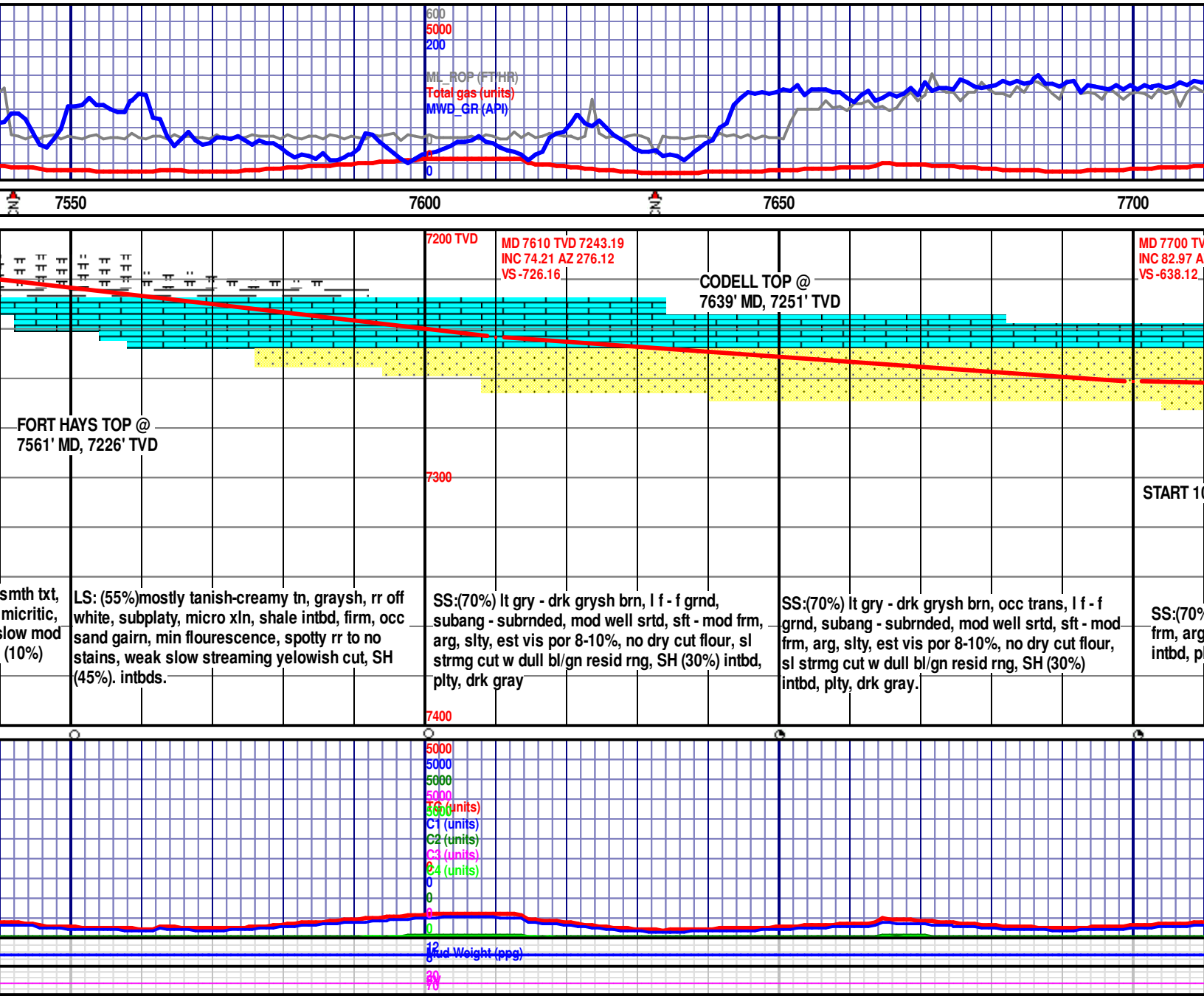

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
6700
6750
6800
6850
MD 6716 TVD 6557.48
INC 8.23 AZ 21.08
VS -1182.51
SH: med gy - med dk gy, slty - sdy, rr smth ip, sbplty - sbblky, occ sprcl, sft - mod fm, v sl calc - mod calc ip, occ grdg to sltst, rr ibdd w/ SS, v f gr, NFSOC.
6600 TVD
Scale Change
6700
6800
SH: med gy - med dk gy, slty - sdy, rr smth ip, sbplty - sbblky, occ sprcl, sft - mod fm, v sl calc - mod calc ip, occ grdg to sltst, rr ibdd w/ SS, v f gr, NFSOC.
6600 TVD
MD 6805 TVD 6645.82
INC 7.76 AZ 307.01
VS -1179.45
6700
6800
SH: med gy - med dk gy, slty - sdy, rr smth ip, sbplty - sbblky, occ sprcl, sft - mod fm, v sl calc - mod calc ip, occ grdg to sltst, rr ibdd w/ SS, v f gr, NFSOC.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70

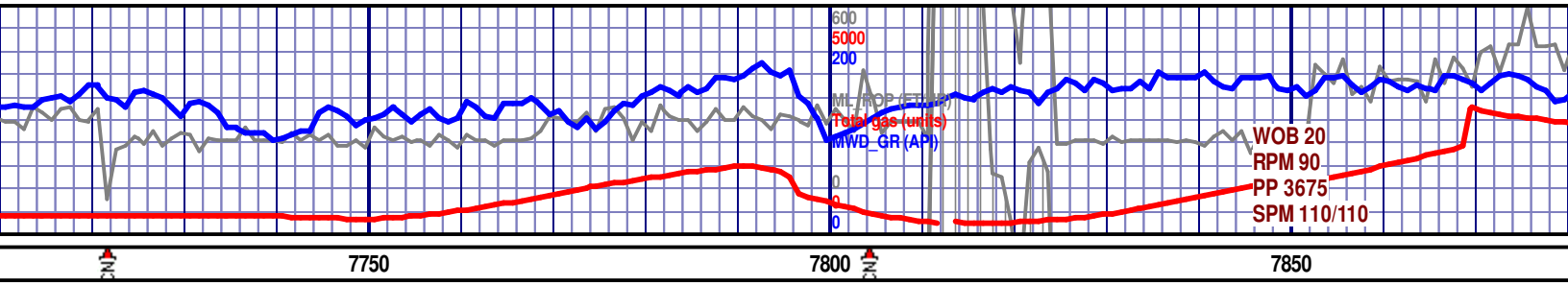

600
5000
ML ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
6900
6950
7000
MD 6895 TVD 6734.39
INC 12.55 AZ 315.76
VS -1167.16
6800 TVD
MD 6984 TVD 6819.99
INC 19 AZ 311.02
VS -1148.54
SH: med gy - med dk gy, slty - sdy, rr smth ip, sbplty - sbblky, occ sprcl, sft - mod fm, v sl calc - mod calc ip, occ grdg to sltst, rr ibdd w/ SS, v f gr, NFSOC.
Scale Change
SH: med gy - med dk gy, occ dk gy - v dk gy, slty - sdy, smth ip, sbplty - occ sbblky, sft - mod fm, sl calc, grd to sltst ip, sm BENT, ss ibds, NFSOC.
6900
7000
7000
SH: med gy - med dk gy, occ d
- sdy, smth ip, sbplty - occ sbb
calc, grd to sltst ip, no pri flor,
grnsh yel cut, no resd ring.
MW 9.55
VIS 57
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
20

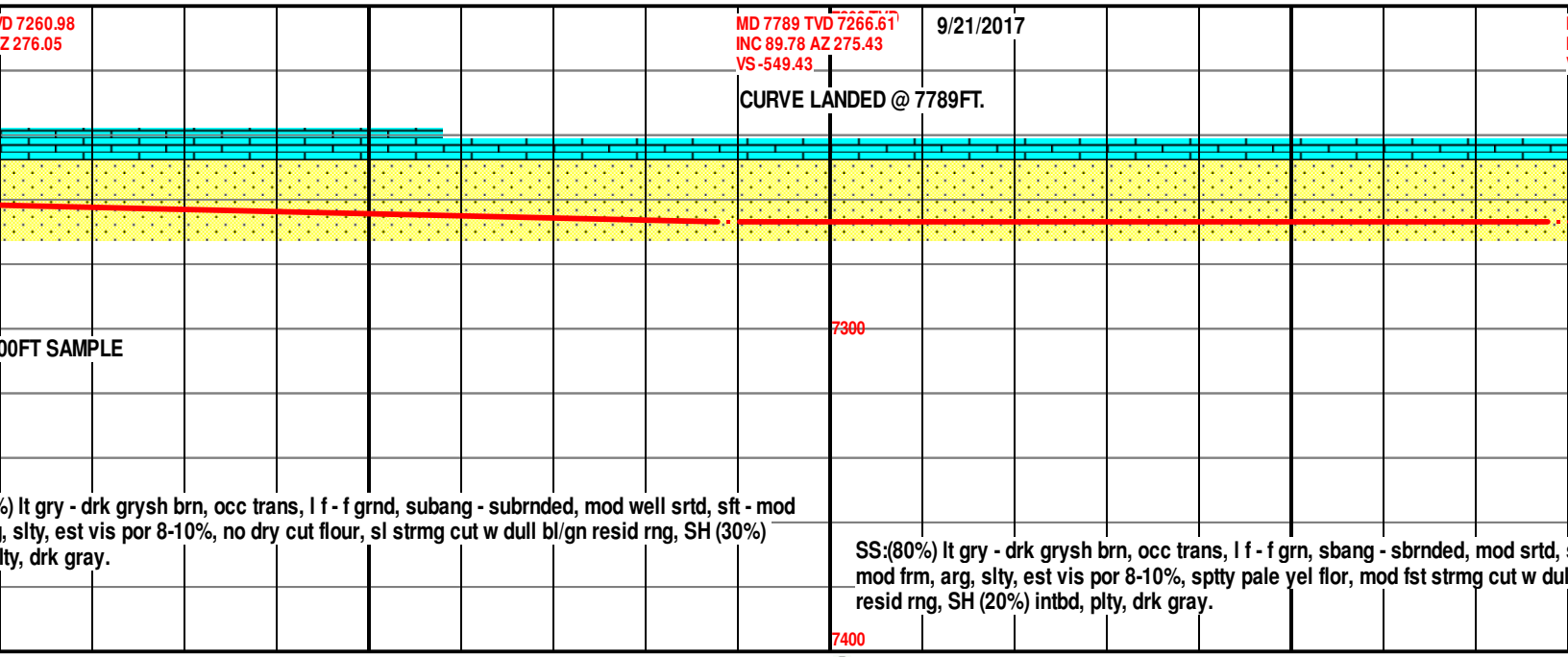

7050
7100
7150
72
MD 7074 TVD 6903.23
INC 26.12 AZ 286.94
VS-1117.58
MD 7163 TVD 6980.79
INC 32.65 AZ 276.55
VS-1074.5
7000 TVD
CHALK (60%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft, MRLST: (40%) dkgy - v dk gy, rthy, sbblky - blky, frm-brit, carb, sptty dry cut flor, slo - mod fast blmg - stmg mlky grnsh yel cut, spttd ylwsh grn resd ring.
MRLST: (80%) dkgy - v dk gy, mstly rthy, sbblky - blky, frm-brit - m hd, carb thru, CHALK (20%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft, sptty dry cut flor, slo - mod fast blmg - stmg mlky grnsh yel cut, spttd ylwsh grn resd ring.
SHARON SPRINGS TOP @ 7085' MD, 6918' TVD
NIO A CHALK TOP @ 7124' MD, 6948' TVD
k gy - v dk gy, slty
lky, sft - mod fm, sl
v slo stmg mlky
SH: med gy - med dk gy, occ dk gy - v dk gy, crb, slty - sdy, smth ip, sbplty - occ sbblky, sft - mod fm, sl calc, grd to sltst ip, no pri flor, v slo stmg mlky grnsh yel cut, no resd ring.
7200

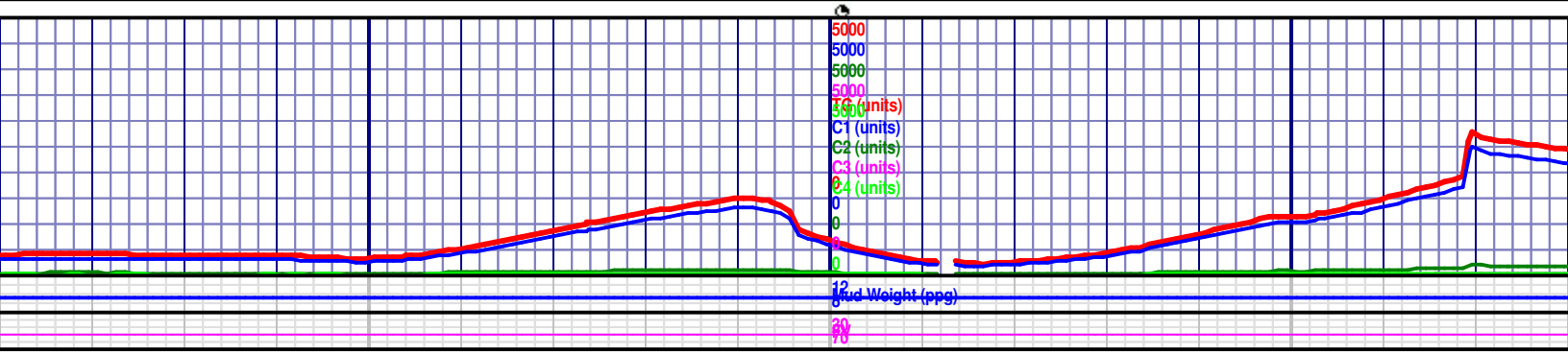

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
00
7250
7300
7350
MD 7253 TVD 7053.36
INC 39.77 AZ 273.63
VS -1021.4
MD 7342 TVD 7117.48
INC 47.94 AZ 274.41
VS -959.79
NIOBRARA "B" CHALK TOP @
7269' MD, 7054' TVD
CHALK (60%) med g
sbblky-sbplty, arg i
- v dk gy, rthy, sbbl
dry cut flor, slo - mo
grnsh yel cut, sptd
MRLST: (80%) dkgy - v dk gy, mstly rthy, sbblky - blky, frm-brit - m hd, carb thru, CHALK (20%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft, sptty dry cut flor, slo - mod fast blmg - stmg mlky grnsh yel cut, sptd ylwsh grn resd ring.
CHALK (80%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft, MRLST: (20%) dkgy - v dk gy, rthy, sbblky - blky, frm-brit, carb, sptty dry cut flor, slo - mod fast blmg - stmg mlky grnsh yel cut, sptd ylwsh grn resd ring.
MRLST: (80%) dkgy - v dk gy, mstly rthy, sbblky - blky, frm-brit - m hd, carb thru, CHALK (20%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft, sptty dry cut flor, slo - mod fast blmg - stmg mlky grnsh yel cut, sptd ylwsh grn resd ring.
MW 9.5
VIS 51
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Mud Weight (ppg)

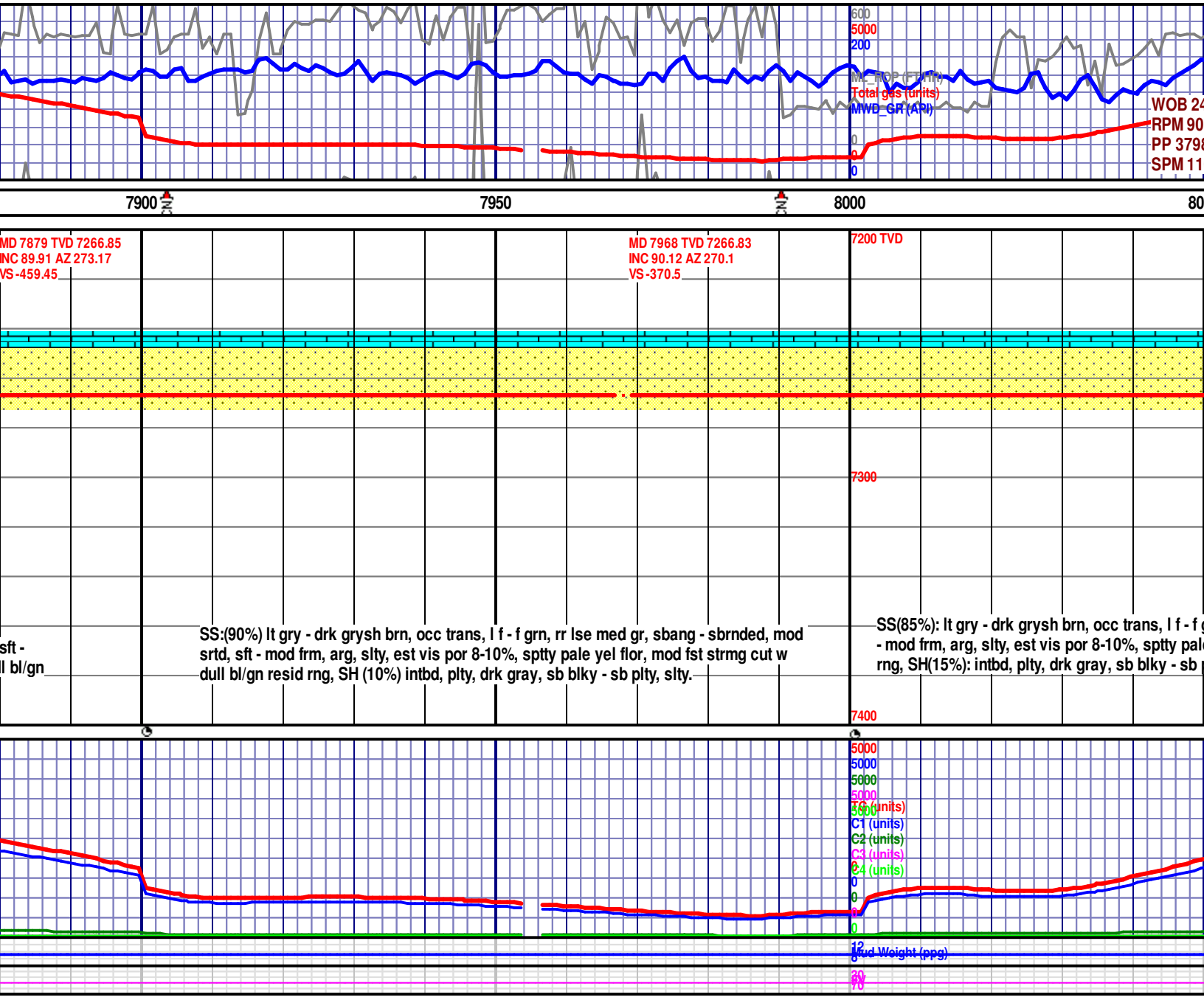

600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
7400
7450
7500
7000 TVD
MD 7432 TVD 7172.25
INC 57.01 AZ 274.75
VS -888.51
7200 TVD
MD 7521 TVD 7213.82
INC 67.22 AZ 276.32
VS -810.01
gy -dkgy, brn, mott ip, rthy txt,
p, frm - sft, MRLST: (40%) dkgy
ky - blky, frm-brit, carb, sptty
od fast blmg - stmg mlky
ylwsh grn resd ring.
MRLST: (80%) dkgy - v dk gy, rthy, sbblky - blky, frm-brit, carb, occ pyr clstrs; CHALK (20%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft; yel min flor; sptty flor, mod slo - mod fstblmg - stmg mlky grnsh yel cut, sptd ylwsh grn resd ring.
7100
Scale Change
7300
NIOBRARA "C" CHALK TOP @
7372' MD, 7138' TVD
MRLST: (80%) dkgy - v dk gy, rthy, sbblky - blky, frm-brit, carb, occ pyr clstrs; CHALK (15%) med gy -dkgy, brn, mott ip, rthy txt, sbblky-sbplty, arg ip, frm - sft; BENT: (5%) v lt gy, sft, gummy, yel min flor; sptty flor, mod slo - mod fstblmg - stmg mlky grnsh yel cut, sptd ylwsh grn resd ring.
MRLSTN: (60%) gy - grsh brn-dk gry, occ
v erzy, slty-occ sndy, platy-subblky, frm,
carb, calc, ~5% flour, no drycut flour, m s
pale-bri mlkywh cut, no res rng, SH intbd
LIMESTONE intbd (30%).
7200
7400
5000
5000
5000
5000
MW 9.6
VIS 54
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70

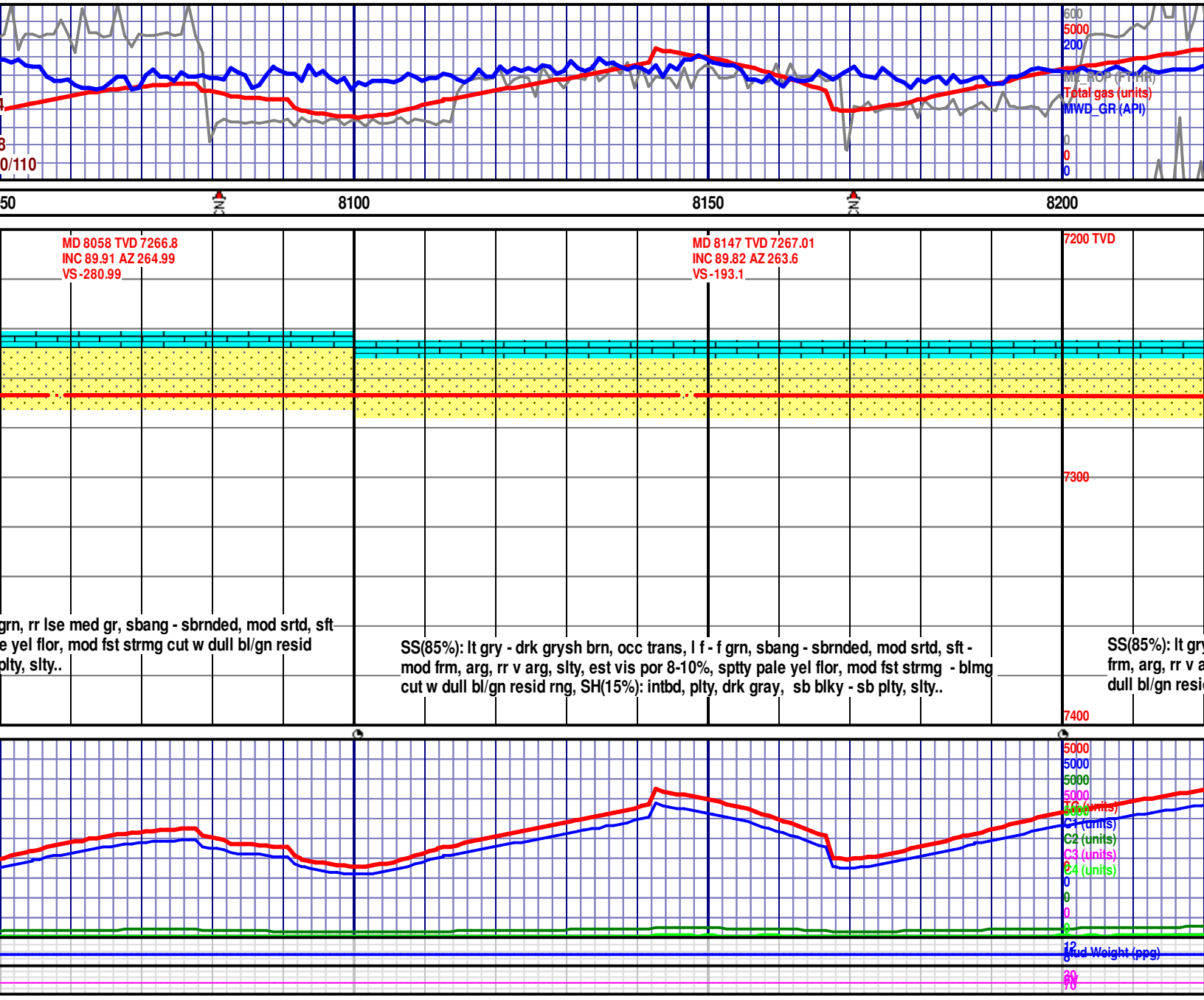

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
7550
7600
7650
7700
7200 TVD
MD 7610 TVD 7243.19
INC 74.21 AZ 276.12
VS -726.16
CODELL TOP @
7639' MD, 7251' TVD
MD 7700 TV
INC 82.97 A
VS -638.12
FORT HAYS TOP @
7561' MD, 7226' TVD
7300
START 1
smth txt,
micritic,
slow mod
(10%)
LS: (55%)mostly tanish-creamy tn, graysh, rr off white, subplaty, micro xln, shale intbd, firm, occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cut, SH (45%). intbds.
SS:(70%) lt gry - drk grysh brn, l f - f grnd, subang - subrnded, mod well srtd, sft - mod frm, arg, slty, est vis por 8-10%, no dry cut flour, sl strmg cut w dull bl/gn resid rng, SH (30%) intbd, plty, drk gray
SS:(70%) lt gry - drk grysh brn, occ trans, l f - f grnd, subang - subrnded, mod well srtd, sft - mod frm, arg, slty, est vis por 8-10%, no dry cut flour, sl strmg cut w dull bl/gn resid rng, SH (30%) intbd, plty, drk gray.
SS:(70%
frm, arg
intbd, pl
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
8
30
70

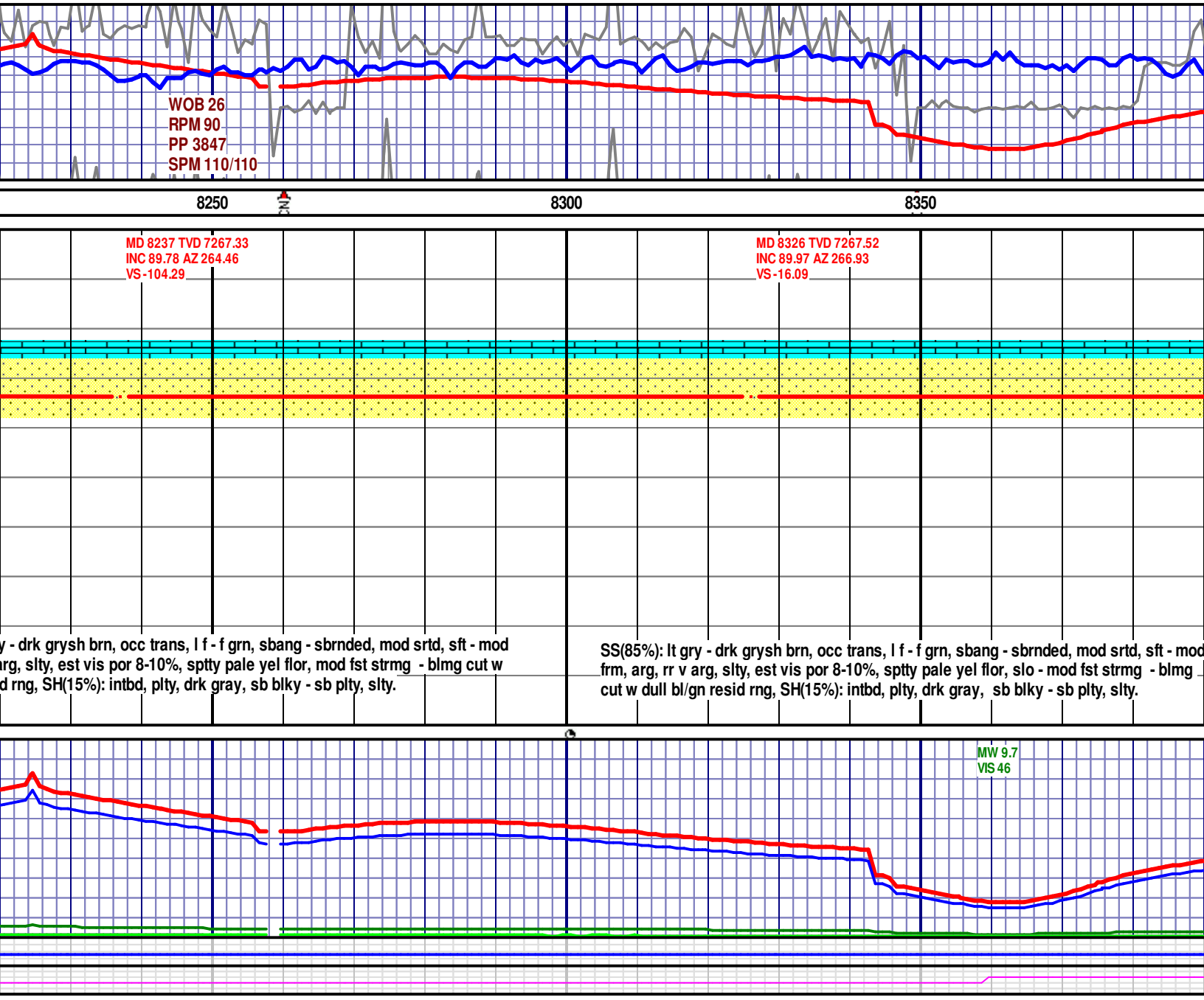

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
WOB 20
RPM 90
PP 3675
SPM 110/110
7750
7800
7850

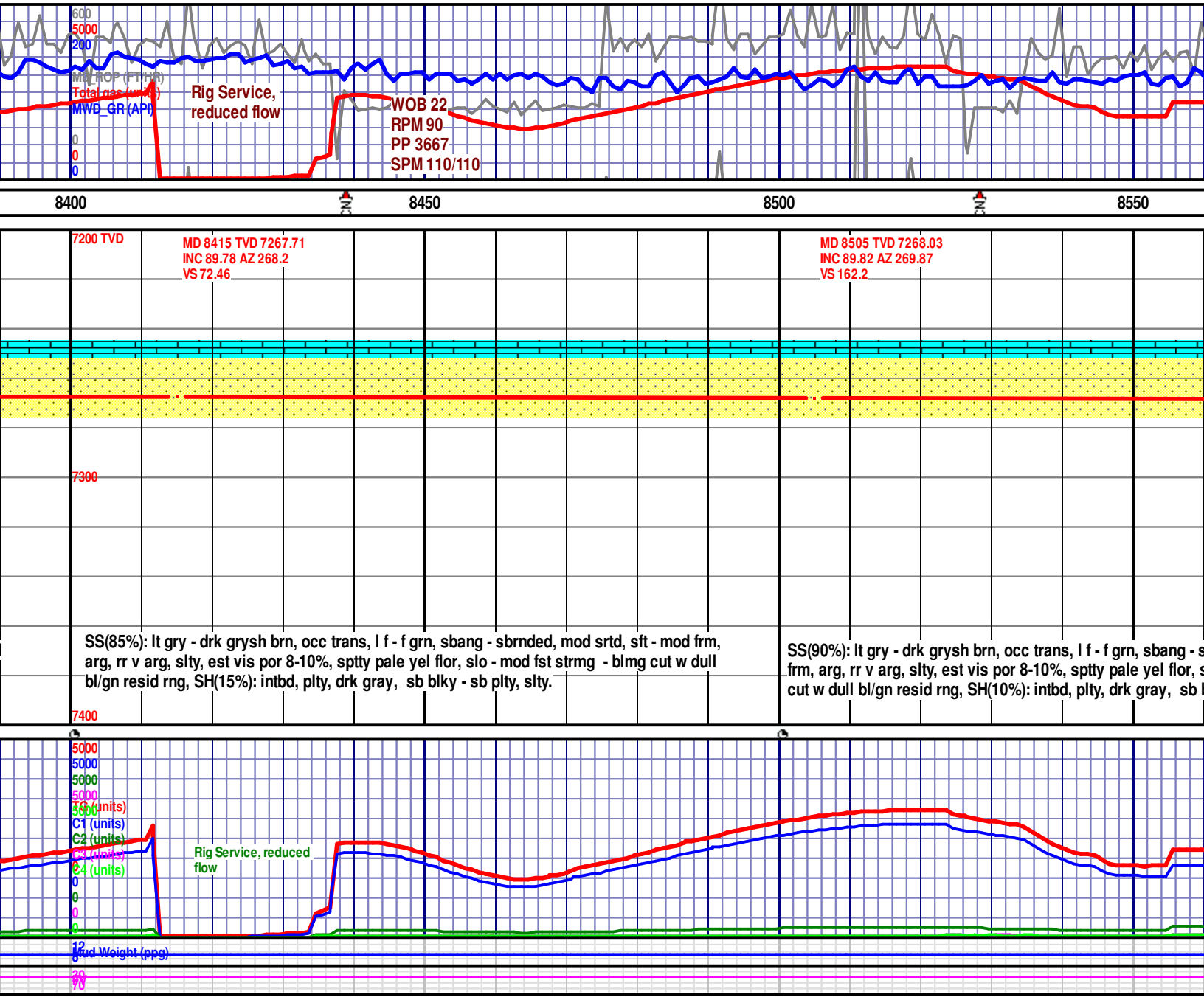

D 7260.98
Z 276.05
MD 7789 TVD 7266.61
INC 89.78 AZ 275.43
VS -549.43
9/21/2017
CURVE LANDED @ 7789FT.
7300
00FT SAMPLE
%) lt gry - drk grysh brn, occ trans, l f - f grnd, subang - subrnded, mod well srtd, sft - mod
, slty, est vis por 8-10%, no dry cut flour, sl strmg cut w dull bl/gn resid rng, SH (30%)
lty, drk gray.
SS:(80%) lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd,
mod frm, arg, slty, est vis por 8-10%, sptty pale yel flor, mod fst strmg cut w dul
resid rng, SH (20%) intbd, plty, drk gray.
7400

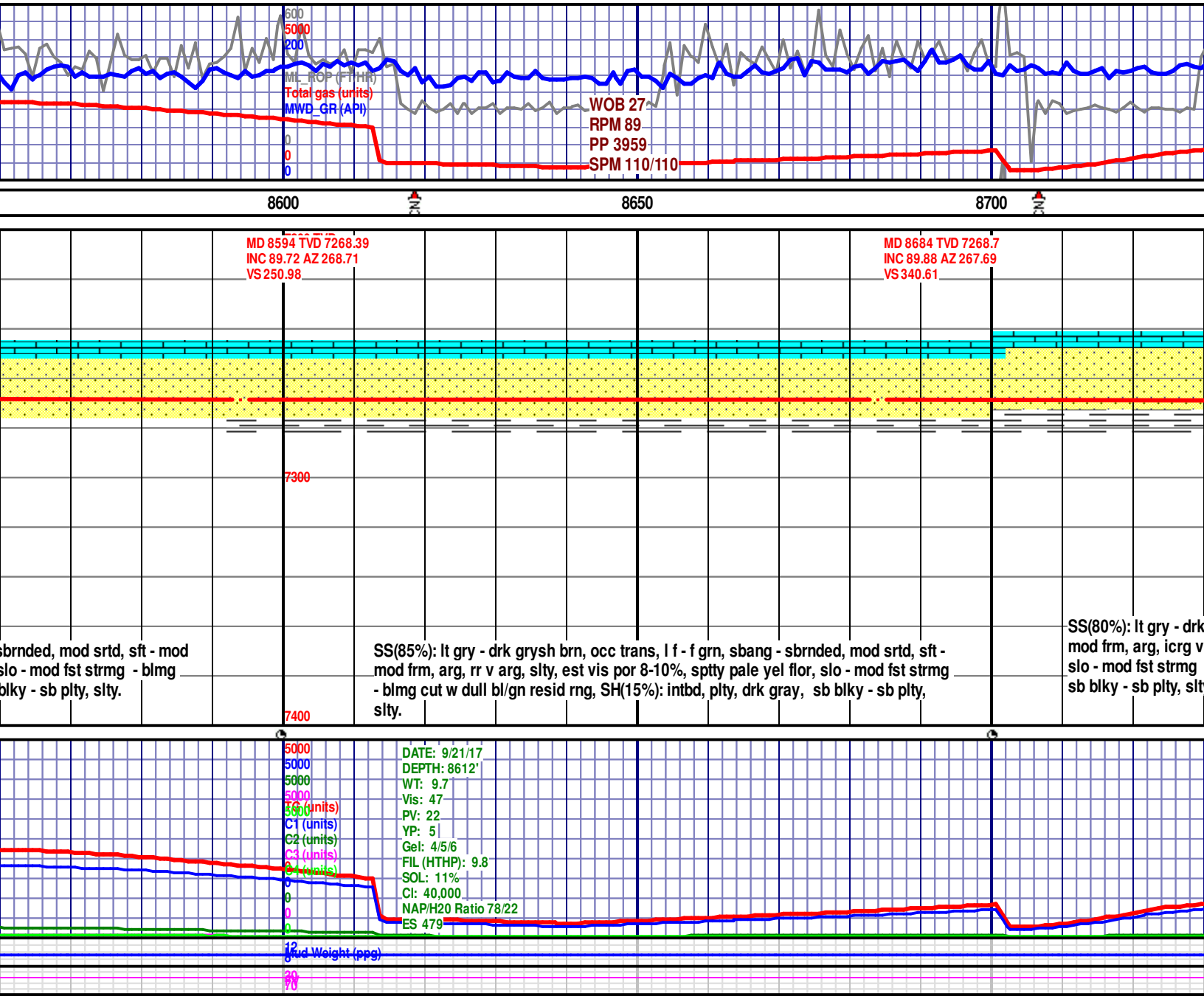

5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
12
Mud Weight (ppg)
30
70

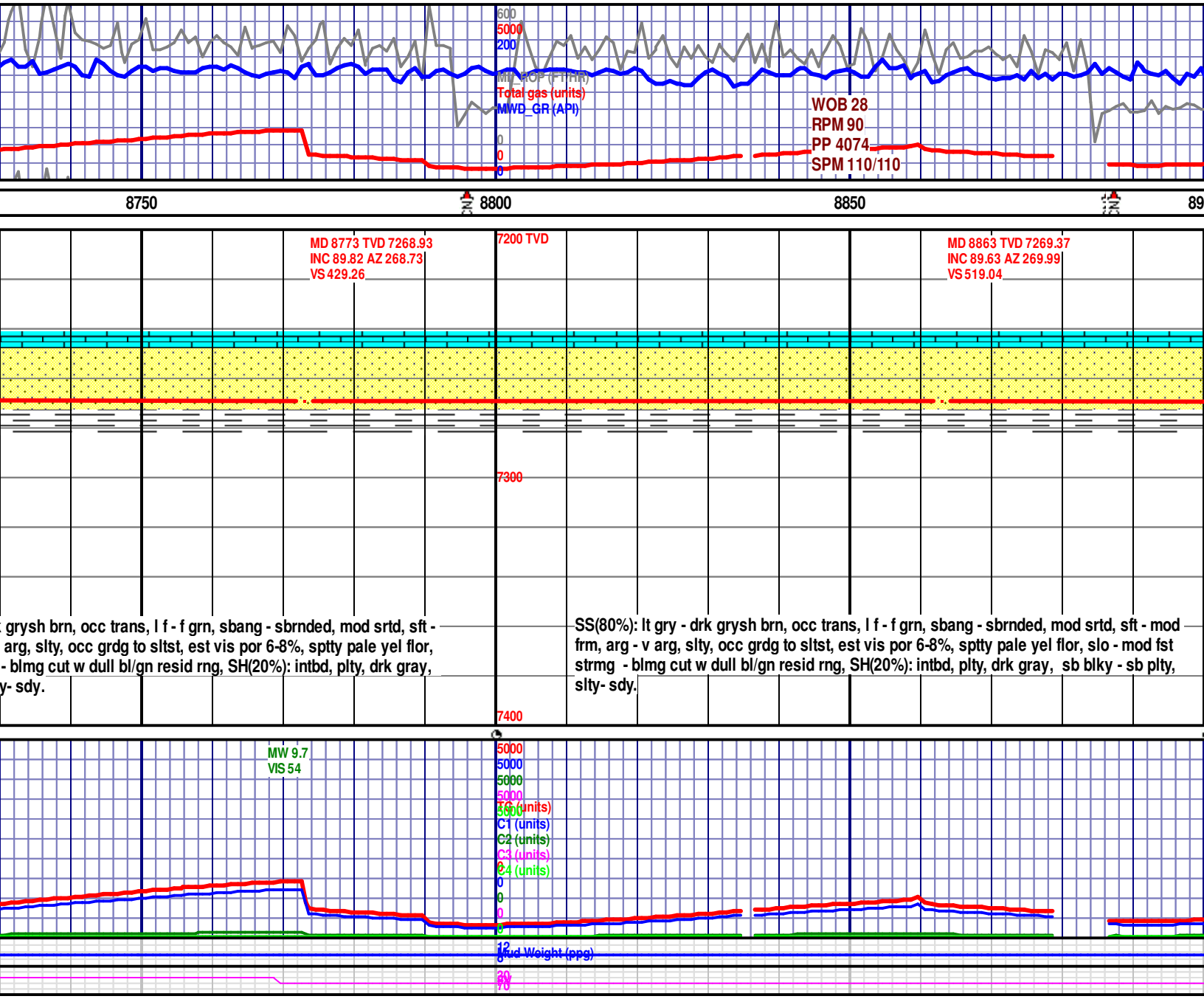

600
5000
200
Total gas (units)
MWD_GR (API)
WOB 24
RPM 90
PP 3798
SPM 11
7900
7950
8000
80
MD 7879 TVD 7266.85
INC 89.91 AZ 273.17
VS -459.45
MD 7968 TVD 7266.83
INC 90.12 AZ 270.1
VS -370.5
7200 TVD
7300
7400
sft -
l bl/gn
SS:(90%) lt gry - drk grysh brn, occ trans, l f - f grn, rr lse med gr, sbang - sbrnded, mod srtd, sft - mod frm, arg, slty, est vis por 8-10%, sptty pale yel flor, mod fst strmg cut w dull bl/gn resid rng, SH (10%) intbd, plty, drk gray, sb blky - sb plty, slty.
SS(85%): lt gry - drk grysh brn, occ trans, l f - f
- mod frm, arg, slty, est vis por 8-10%, sptty pal
rng, SH(15%): intbd, plty, drk gray, sb blky - sb
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Mud Weight (ppg)

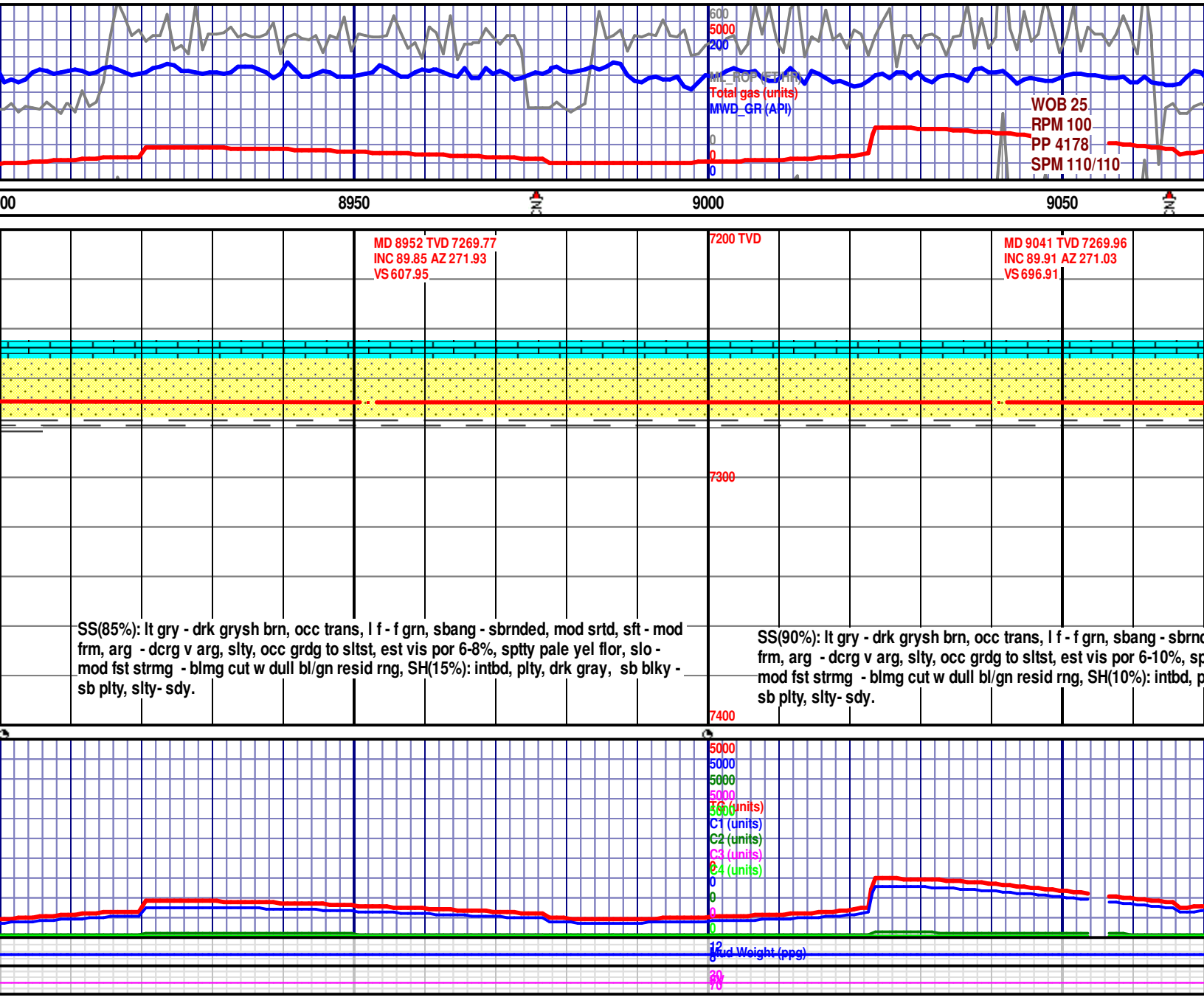

600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
0/110
50
8100
8150
8200
MD 8058 TVD 7266.8
INC 89.91 AZ 264.99
VS -280.99
MD 8147 TVD 7267.01
INC 89.82 AZ 263.6
VS -193.1
7200 TVD
7300
7400
grn, rr lse med gr, sbang - sbrnded, mod srtd, sft
e yel flor, mod fst strmg cut w dull bl/gn resid
plty, slty..
SS(85%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft -
mod frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg
cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty..
SS(85%): lt gry
frm, arg, rr v a
dull bl/gn resi
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70

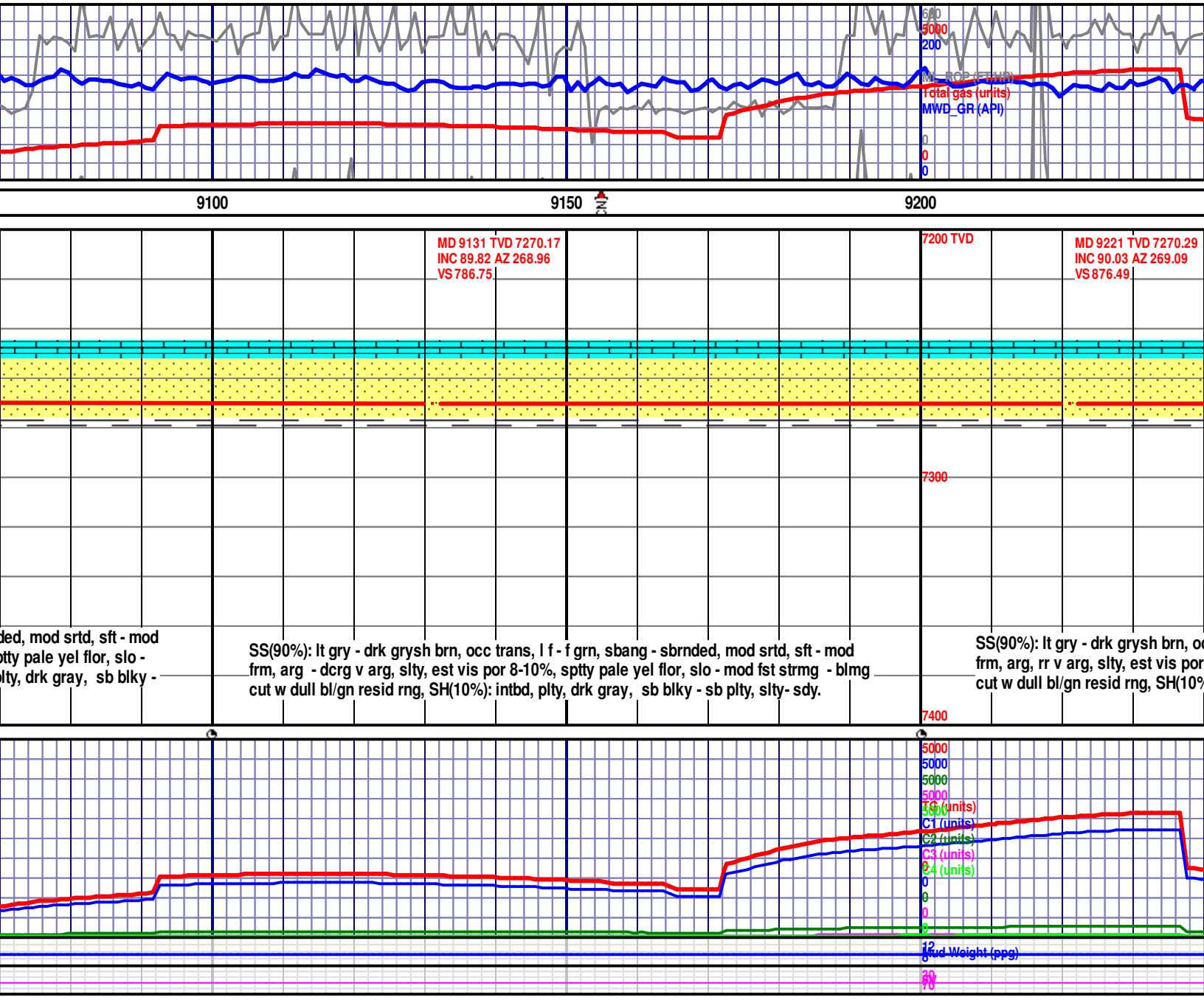

WOB 26
RPM 90
PP 3847
SPM 110/110
8250
8300
8350
MD 8237 TVD 7267.33
INC 89.78 AZ 264.46
VS -104.29
MD 8326 TVD 7267.52
INC 89.97 AZ 266.93
VS -16.09
y - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod
arg, slty, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w
d rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty.
SS(85%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod
frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg
cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty.
MW 9.7
VIS 46

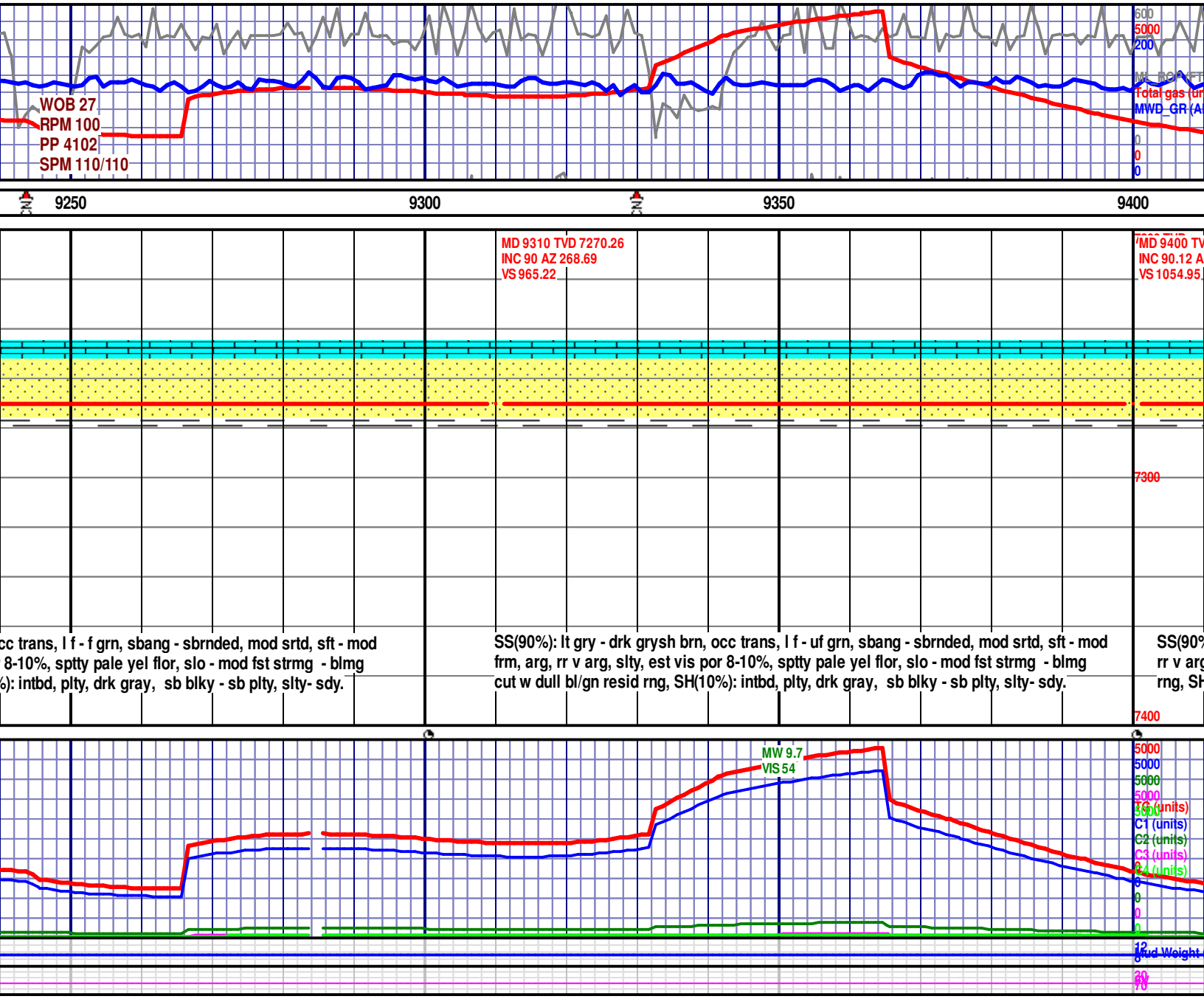

600
5000
200
MM_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
Rig Service,
reduced flow
WOB 22
RPM 90
PP 3667
SPM 110/110
8400
CN
8450
8500
CN
8550
7200 TVD
MD 8415 TVD 7267.71
INC 89.78 AZ 268.2
VS 72.46
MD 8505 TVD 7268.03
INC 89.82 AZ 269.87
VS 162.2
7300
SS(85%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty.
SS(90%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - s
frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, s
cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
Rig Service, reduced
flow
12
Mud Weight (ppg)
30
70

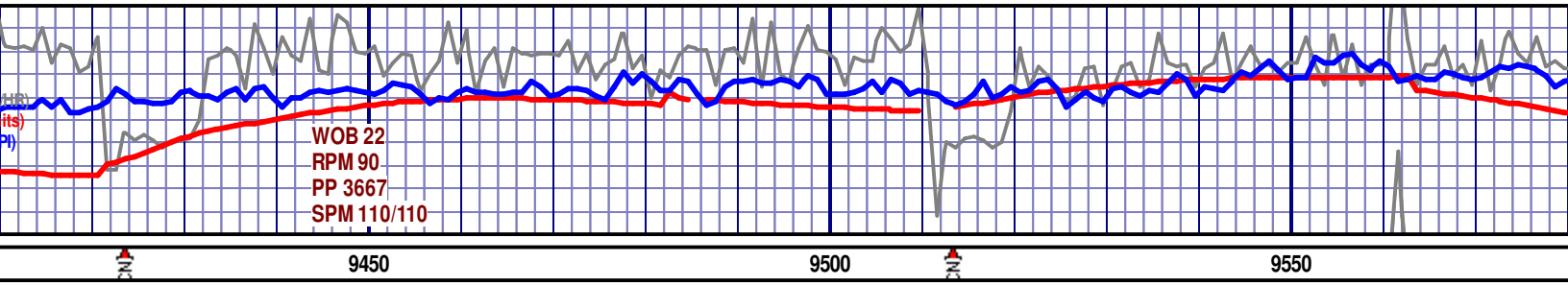

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 27
RPM 89
PP 3959
SPM 110/110
8600
8650
8700
MD 8594 TVD 7268.39
INC 89.72 AZ 268.71
VS 250.98
MD 8684 TVD 7268.7
INC 89.88 AZ 267.69
VS 340.61
7300
7400
sbrnded, mod srtd, sft - mod
slo - mod fst strmg - blmg
blky - sb plty, slty.
SS(85%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft -
mod frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg
- blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty,
slty.
SS(80%): lt gry - drk
mod frm, arg, icrg v
slo - mod fst strmg
sb blky - sb plty, slt
5000
5000
5000
5000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
20
70
DATE: 9/21/17
DEPTH: 8612'
WT: 9.7
Vis: 47
PV: 22
YP: 5
Gel: 4/5/6
FIL (HTHP): 9.8
SOL: 11%
Cl: 40,000
NAP/H20 Ratio 78/22
ES 479


600
5000
200
MD_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 28
RPM 90
PP 4074
SPM 110/110
8750
8800
8850
MD 8773 TVD 7268.93
INC 89.82 AZ 268.73
VS 429.26
7200 TVD
MD 8863 TVD 7269.37
INC 89.63 AZ 269.99
VS 519.04
7300
7400
k grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft -
arg, slty, occ grdg to sltst, est vis por 6-8%, sptty pale yel flor,
- blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray,
y- sdy.
SS(80%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod
frm, arg - v arg, slty, occ grdg to sltst, est vis por 6-8%, sptty pale yel flor, slo - mod fst
strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty,
slty- sdy.
MW 9.7
VIS 54
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
20
70


600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 25
RPM 100
PP 4178
SPM 110/110
00
8950
9000
9050
MD 8952 TVD 7269.77
INC 89.85 AZ 271.93
VS 607.95
7200 TVD
MD 9041 TVD 7269.96
INC 89.91 AZ 271.03
VS 696.91
7300
7400
SS(85%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - dcrg v arg, slty, occ grdg to sltst, est vis por 6-8%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty- sdy.
SS(90%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnd
frm, arg - dcrg v arg, slty, occ grdg to sltst, est vis por 6-10%, sp
mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, p
sb plty, slty- sdy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70


5000
200
Total gas (units)
MWD_GR (API)
0
0
0
9100
9150
9200
MD 9131 TVD 7270.17
INC 89.82 AZ 268.96
VS 786.75
7200 TVD
MD 9221 TVD 7270.29
INC 90.03 AZ 269.09
VS 876.49
7300
7400
SS(90%): lt gry - drk grysh brn, occ trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - dcrg v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sdy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
8


WOB 27
RPM 100
PP 4102
SPM 110/110
600
5000
200
0
0
0
9250
9300
9350
9400
MD 9310 TVD 7270.26
INC 90 AZ 268.69
VS 965.22
MD 9400 TV
INC 90.12 A
VS 1054.95
7300
7400
cc trans, l f - f grn, sbang - sbrnded, mod srtd, sft - mod
8-10%, sptty pale yel flor, slo - mod fst strmg - blmg
%): intbd, plty, drk gray, sb blky - sb plty, slty- sdy.
SS(90%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod
frm, arg, rr v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg
cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sdy.
SS(90%
rr v arg
rng, SH
MW 9.7
VIS 54
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
0
12
Mud Weight
30
70



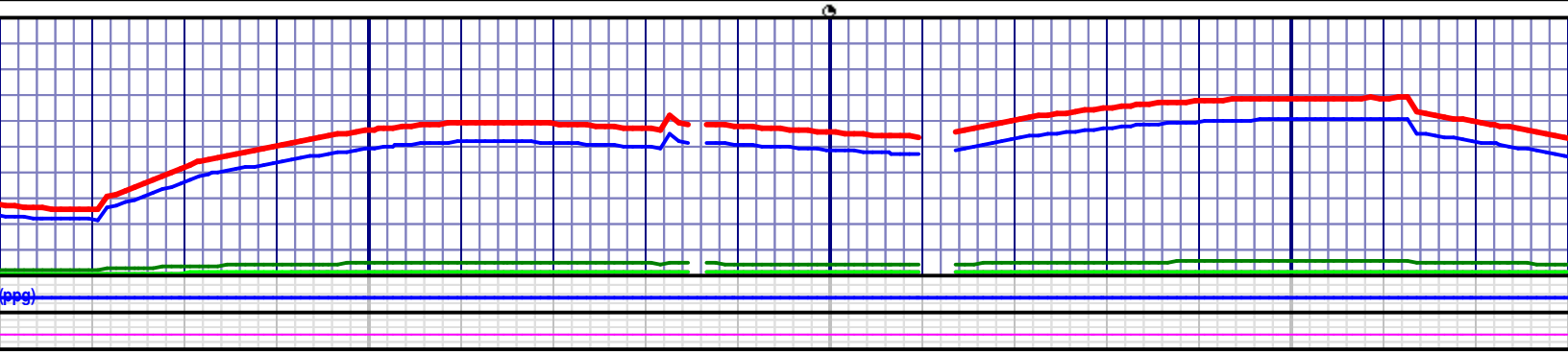
9450 9500 9550

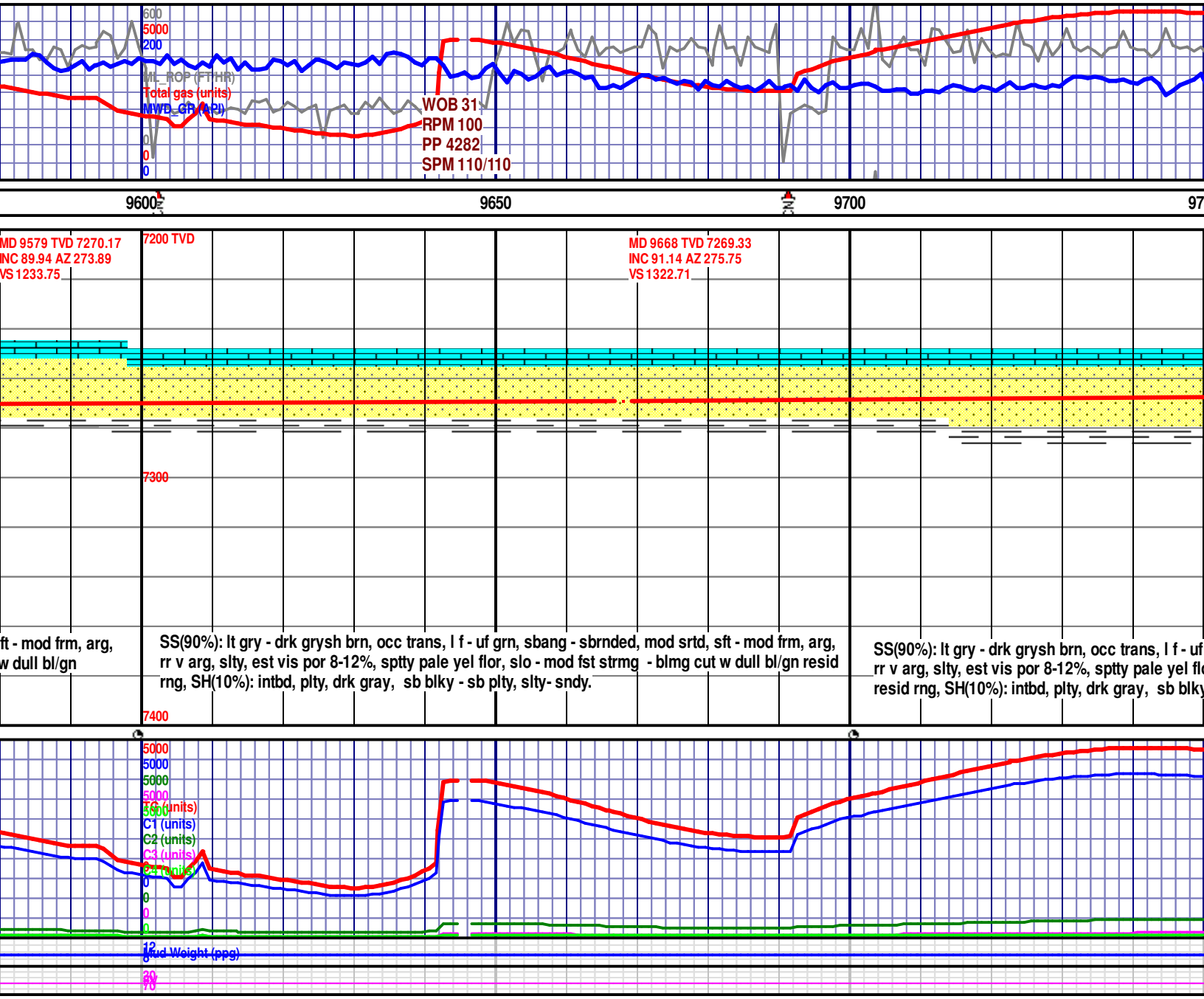
D 7270.17
Z 268.98

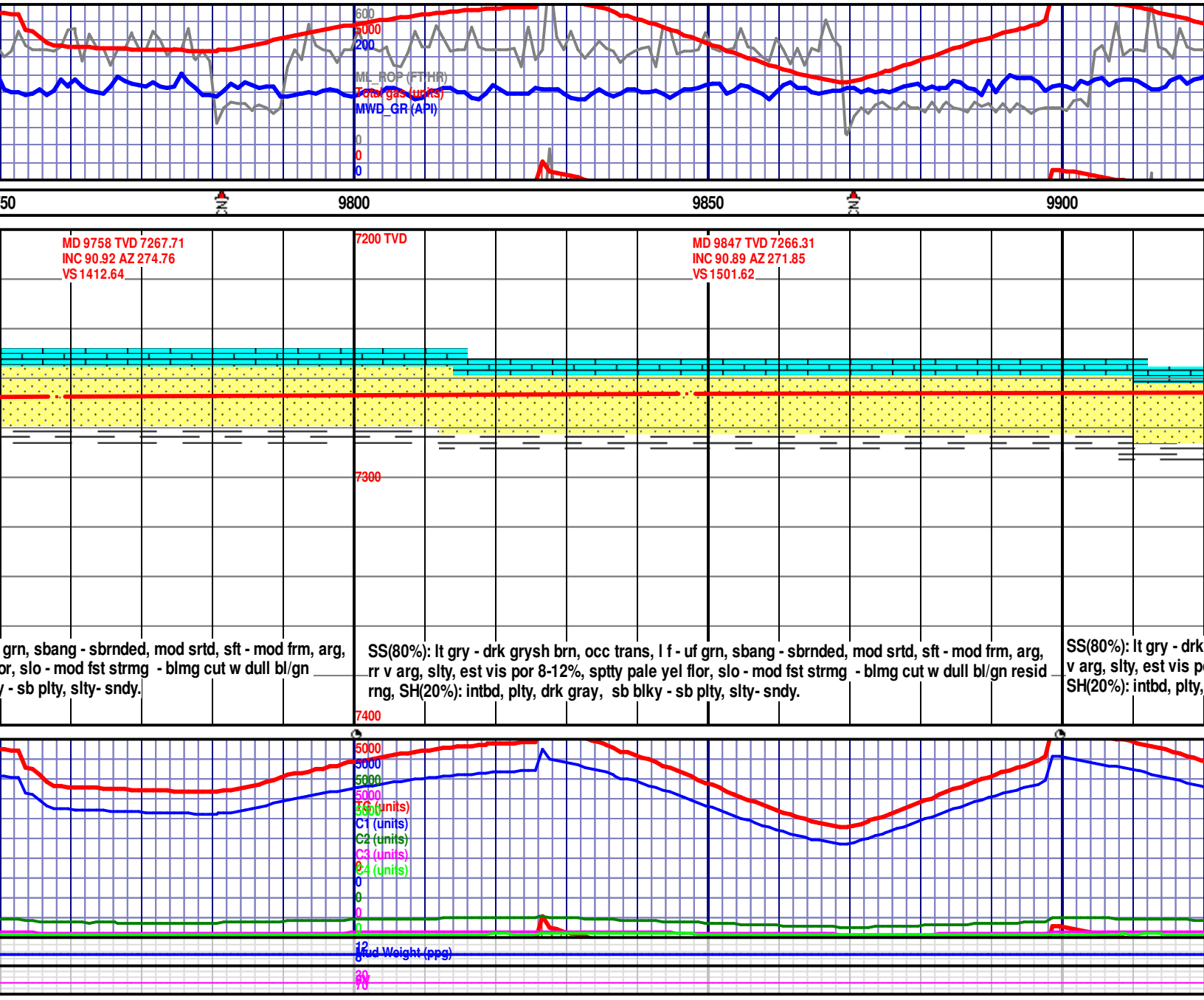
MD 9489 TVD 7270.1
INC 89.97 AZ 270.63
VS 1143.77

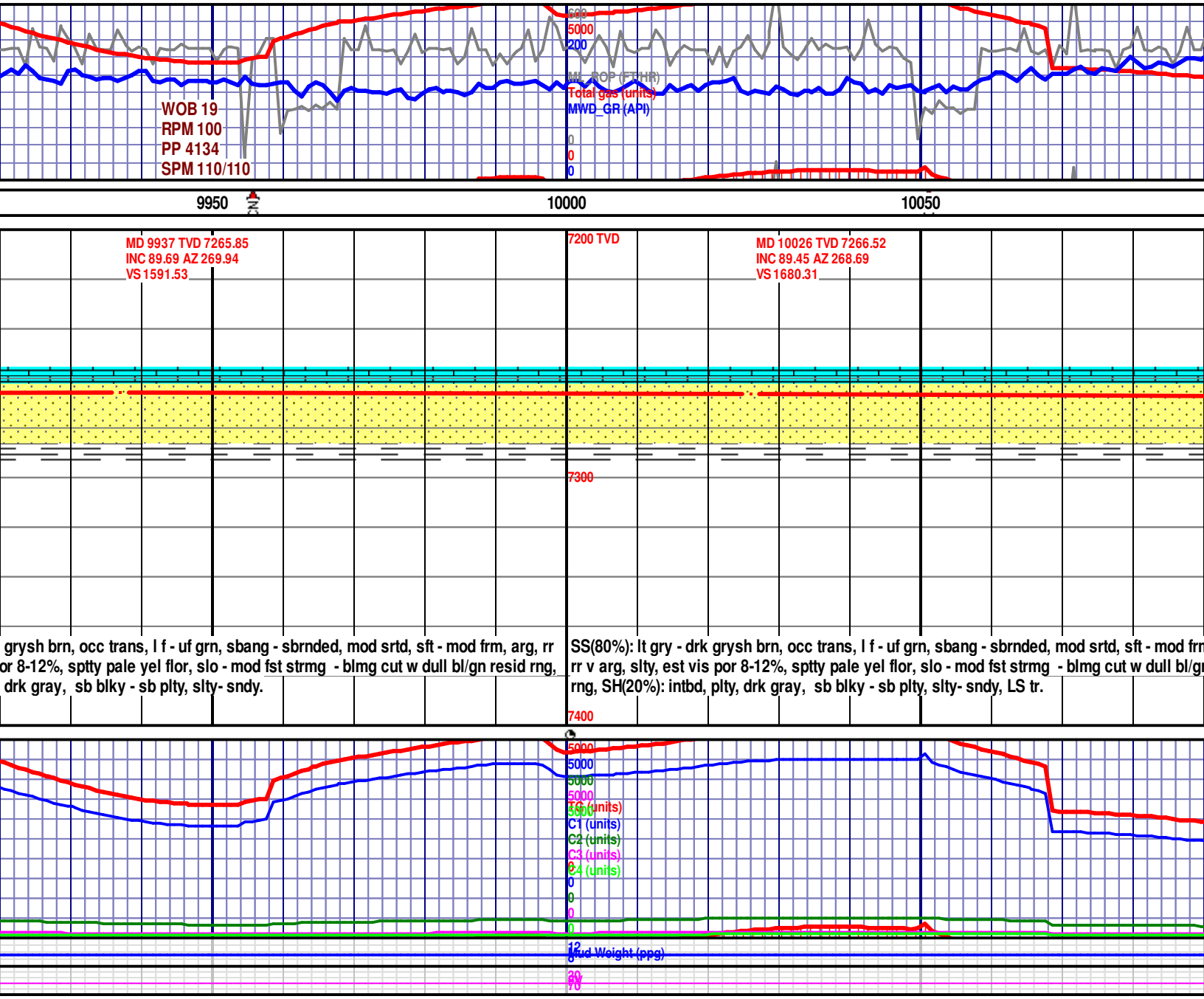
%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, g, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid H(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

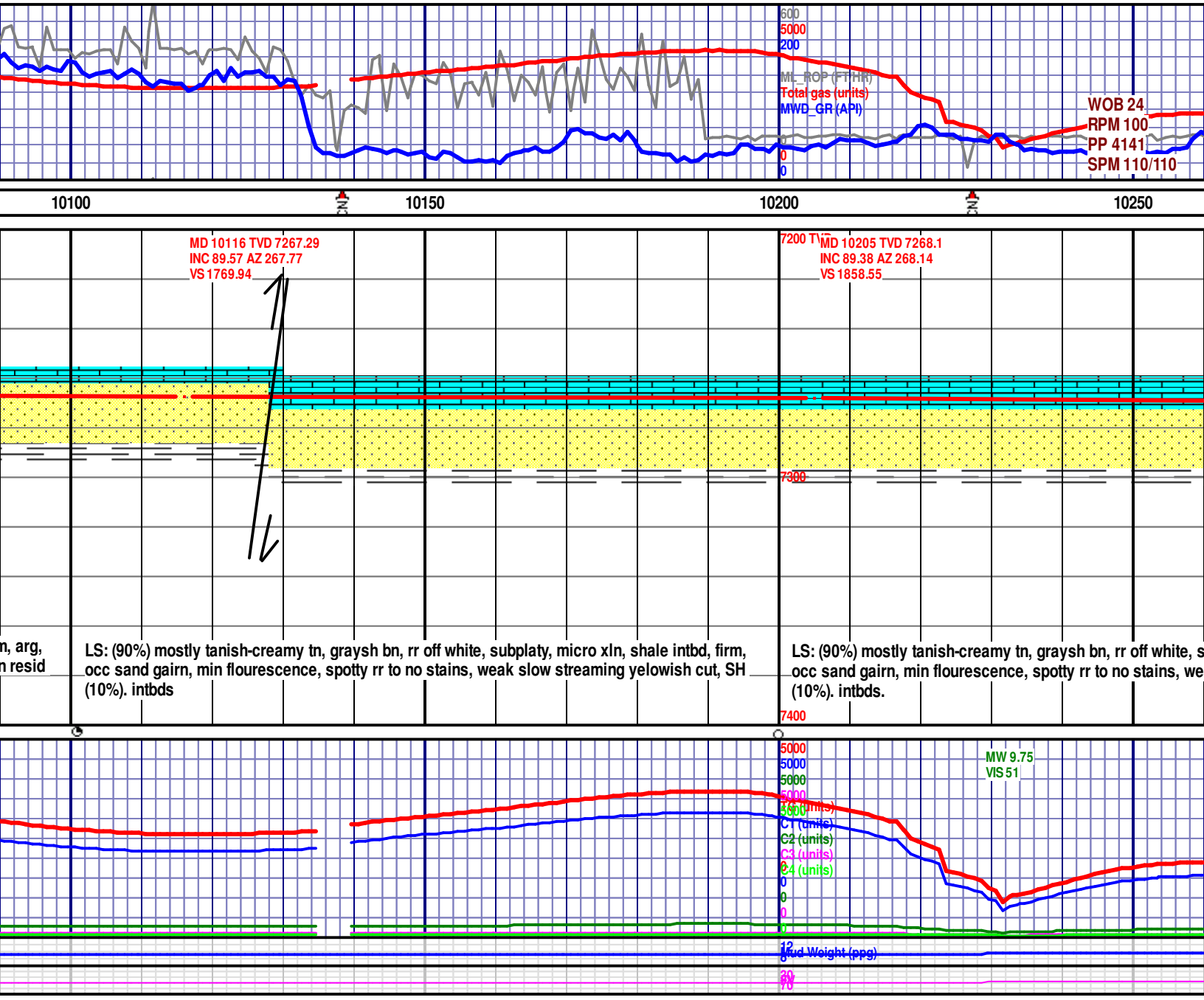
SS(90%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, s rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

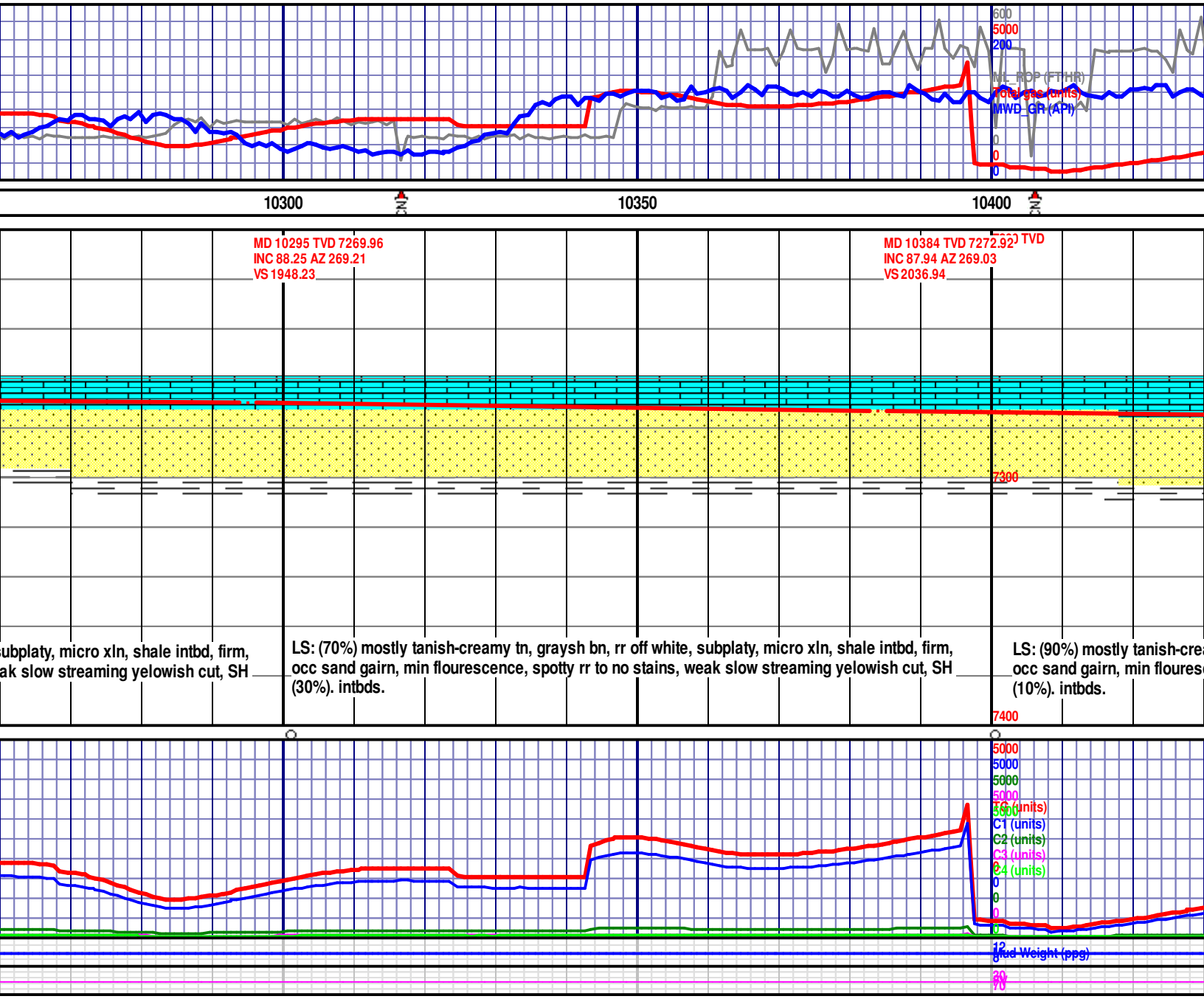


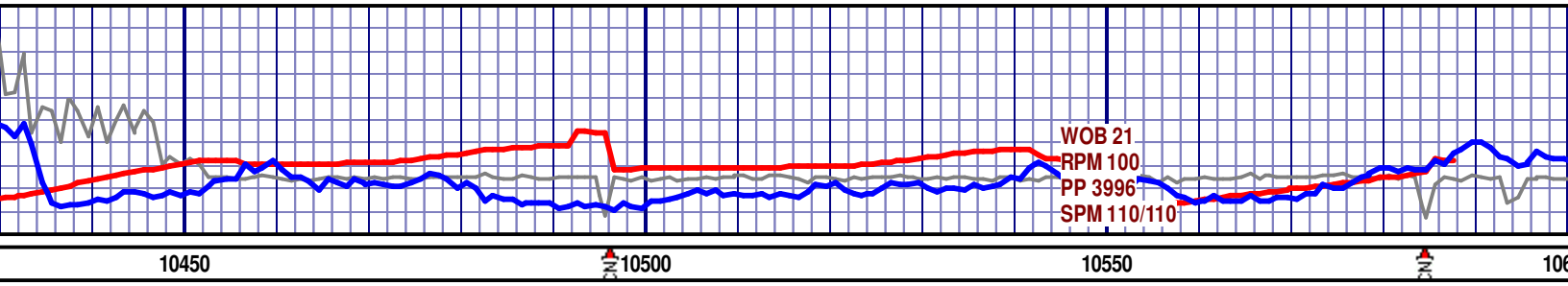

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 31
RPM 100
PP 4282
SPM 110/110
9600
9650
9700
97
MD 9579 TVD 7270.17
INC 89.94 AZ 273.89
VS 1233.75
7200 TVD
MD 9668 TVD 7269.33
INC 91.14 AZ 275.75
VS 1322.71
7300
ft - mod frm, arg,
w dull bl/gn
SS(90%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l f - uf
rr v arg, slty, est vis por 8-12%, sptty pale yel fl
resid rng, SH(10%): intbd, plty, drk gray, sb blky
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
50
9800
9850
9900
MD 9758 TVD 7267.71
INC 90.92 AZ 274.76
VS 1412.64
7200 TVD
MD 9847 TVD 7266.31
INC 90.89 AZ 271.85
VS 1501.62
7300
7400
grn, sbang - sbrnded, mod srtd, sft - mod frm, arg,
or, slo - mod fst strmg - blmg cut w dull bl/gn
- sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg,
rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid
rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk
v arg, slty, est vis p
SH(20%): intbd, plty,
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
90


WOB 19
RPM 100
PP 4134
SPM 110/110
5000
200
MWD_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
9950
10000
10050
MD 9937 TVD 7265.85
INC 89.69 AZ 269.94
VS 1591.53
7200 TVD
MD 10026 TVD 7266.52
INC 89.45 AZ 268.69
VS 1680.31
7300
grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr
or 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng,
drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm
rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn
rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy, LS tr.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
30
70


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
WOB 24
RPM 100
PP 4141
SPM 110/110
10100
10150
10200
10250
MD 10116 TVD 7267.29
INC 89.57 AZ 267.77
VS 1769.94
7200 TVD
MD 10205 TVD 7268.1
INC 89.38 AZ 268.14
VS 1858.55
7300
n, arg,
n resid
LS: (90%) mostly tanish-creamy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd, firm, occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cut, SH (10%). intbds
LS: (90%) mostly tanish-creamy tn, graysh bn, rr off white, s
occ sand gairn, min flourescence, spotty rr to no stains, we
(10%). intbds.
7400
5000
5000
5000
5000
5000 (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
8
30
70
MW 9.75
VIS 51


600
5000
200
INT. ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
10300
10350
10400
MD 10295 TVD 7269.96
INC 88.25 AZ 269.21
VS 1948.23
MD 10384 TVD 7272.92
INC 87.94 AZ 269.03
VS 2036.94
7300
subplaty, micro xln, shale intbd, firm,
ak slow streaming yelowish cut, SH
LS: (70%) mostly tanish-creamy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd, firm,
occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cut, SH
(30%). intbds.
LS: (90%) mostly tanish-crea
occ sand gairn, min flouresc
(10%). intbds.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70



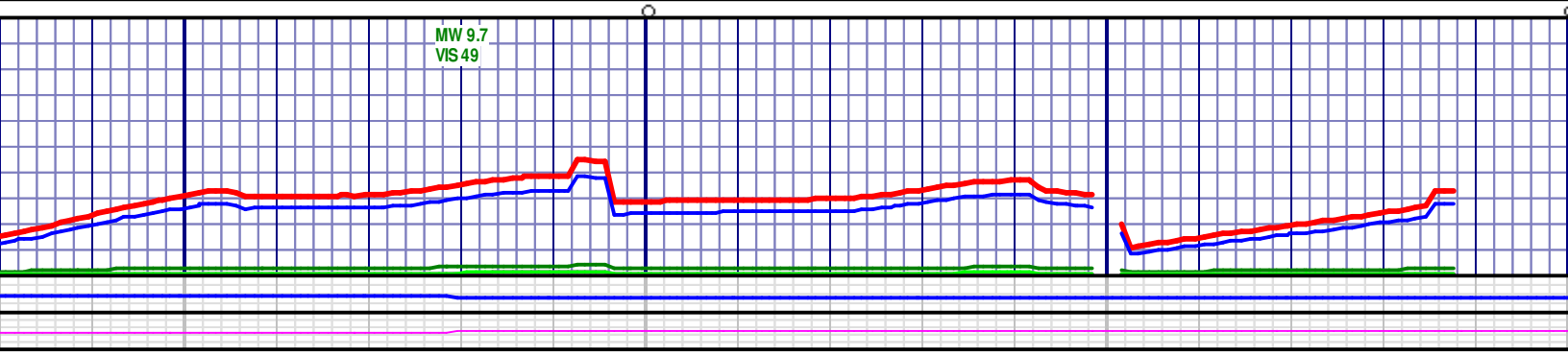
10450 | 10500 | 10550 | 106

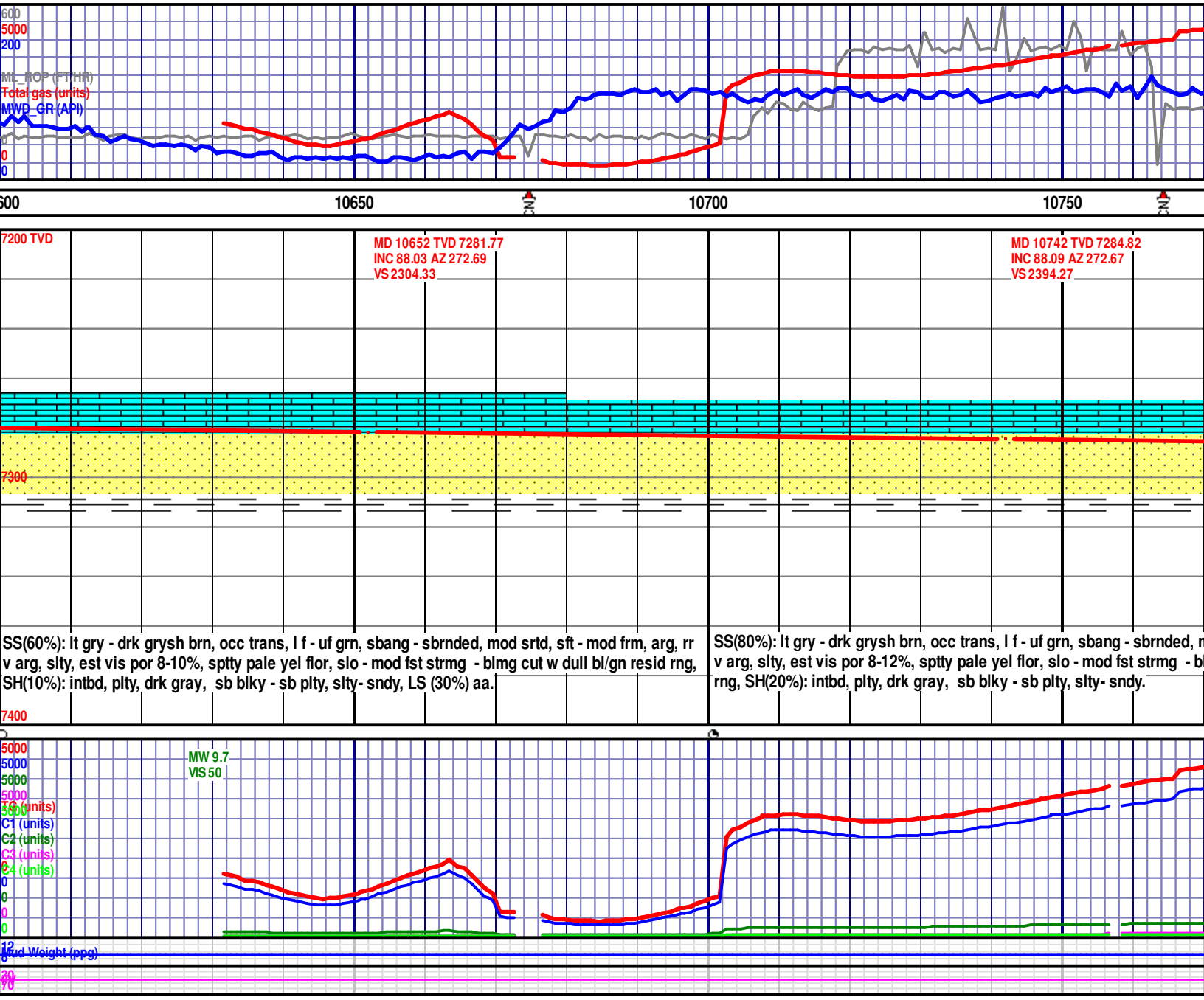
MD 10474 TVD 7276.04
INC 88.09 AZ 268.77
VS 2126.61

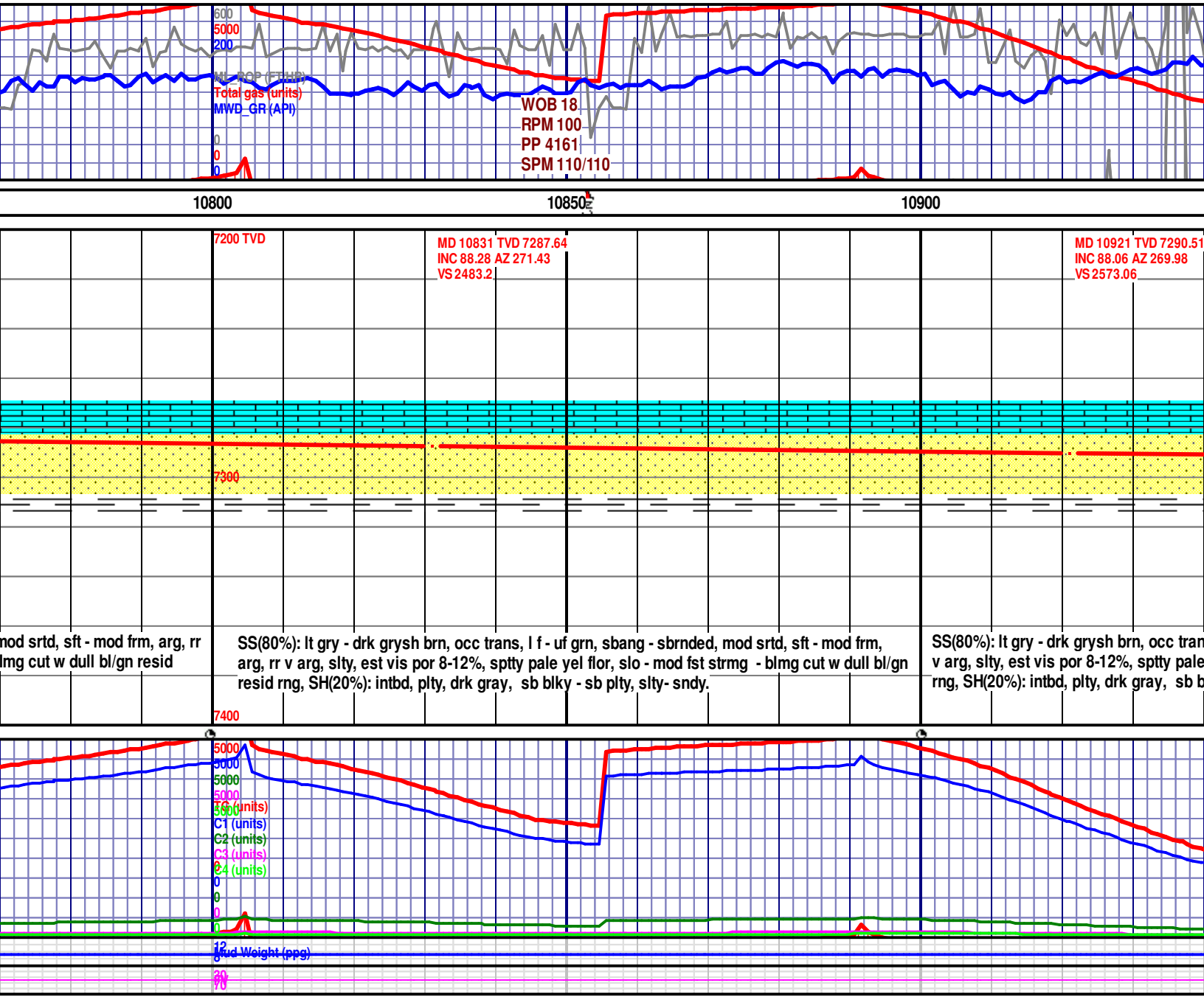
MD 10563 TVD 7278.88
INC 88.25 AZ 271.12
VS 2215.41

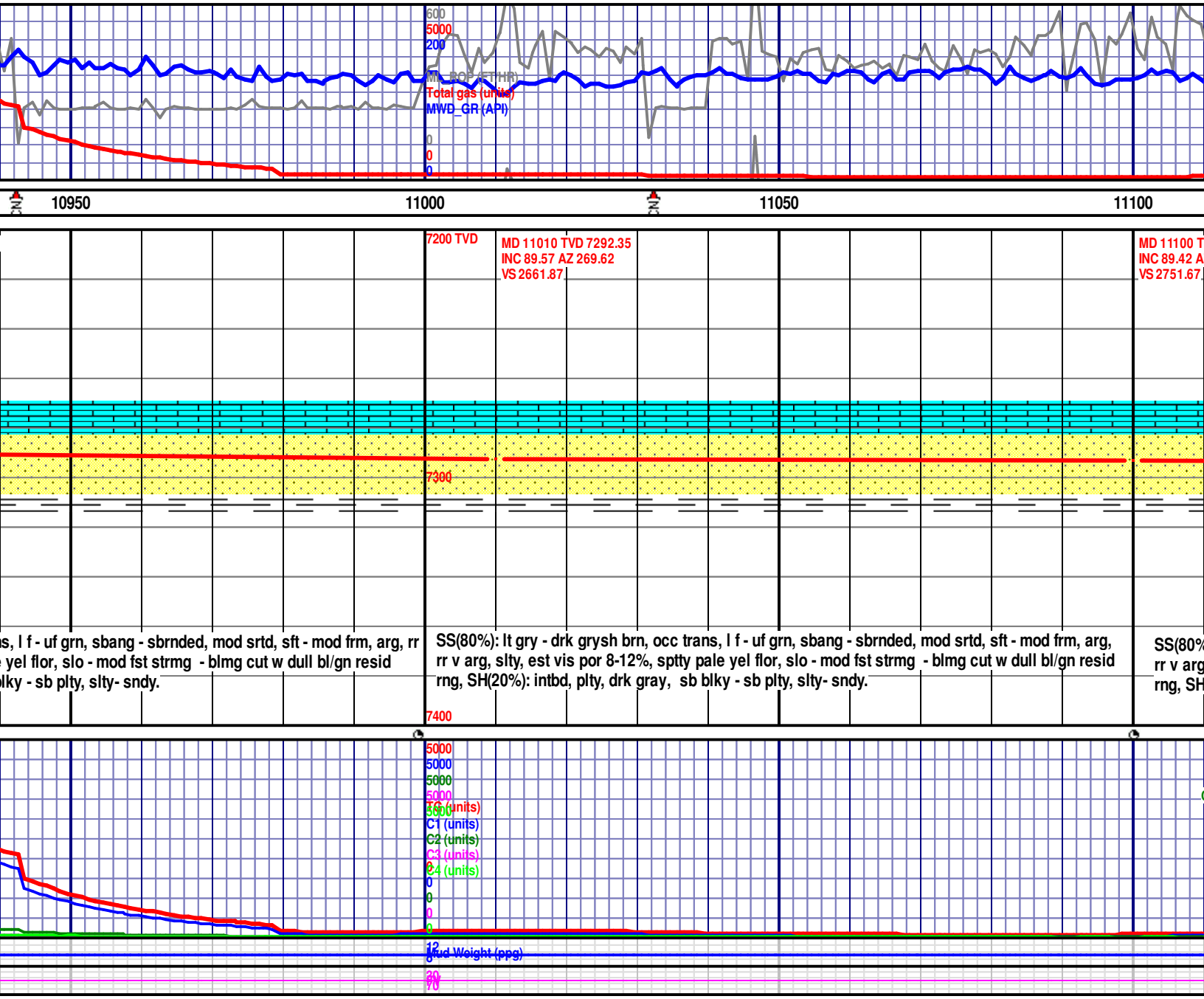
amy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd, firm, cence, spotty rr to no stains, weak slow streaming yelowish cut, SH

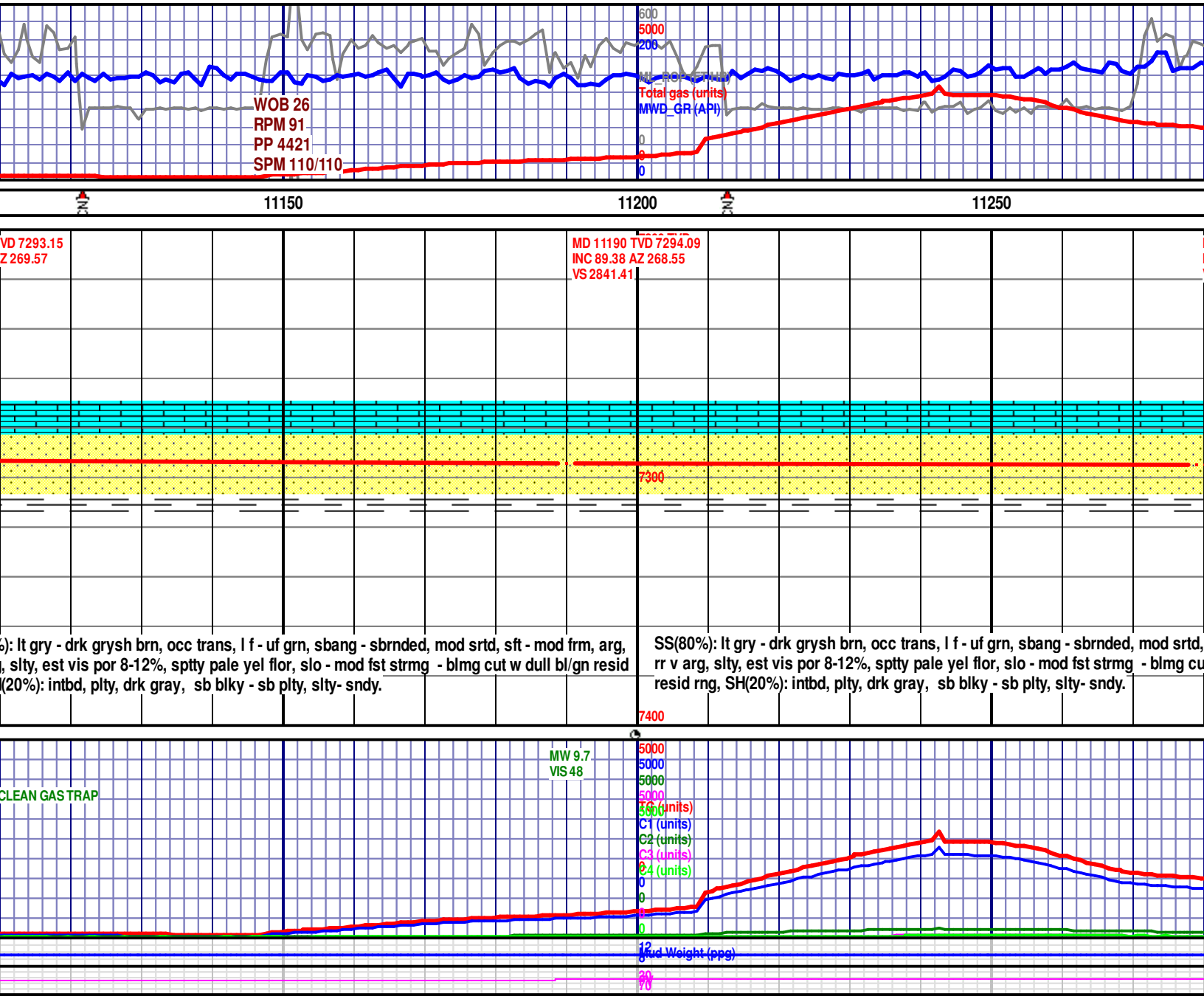
LS: (90%) mostly tanish-creamy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd, firm, occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cut, SH (10%). intbds.

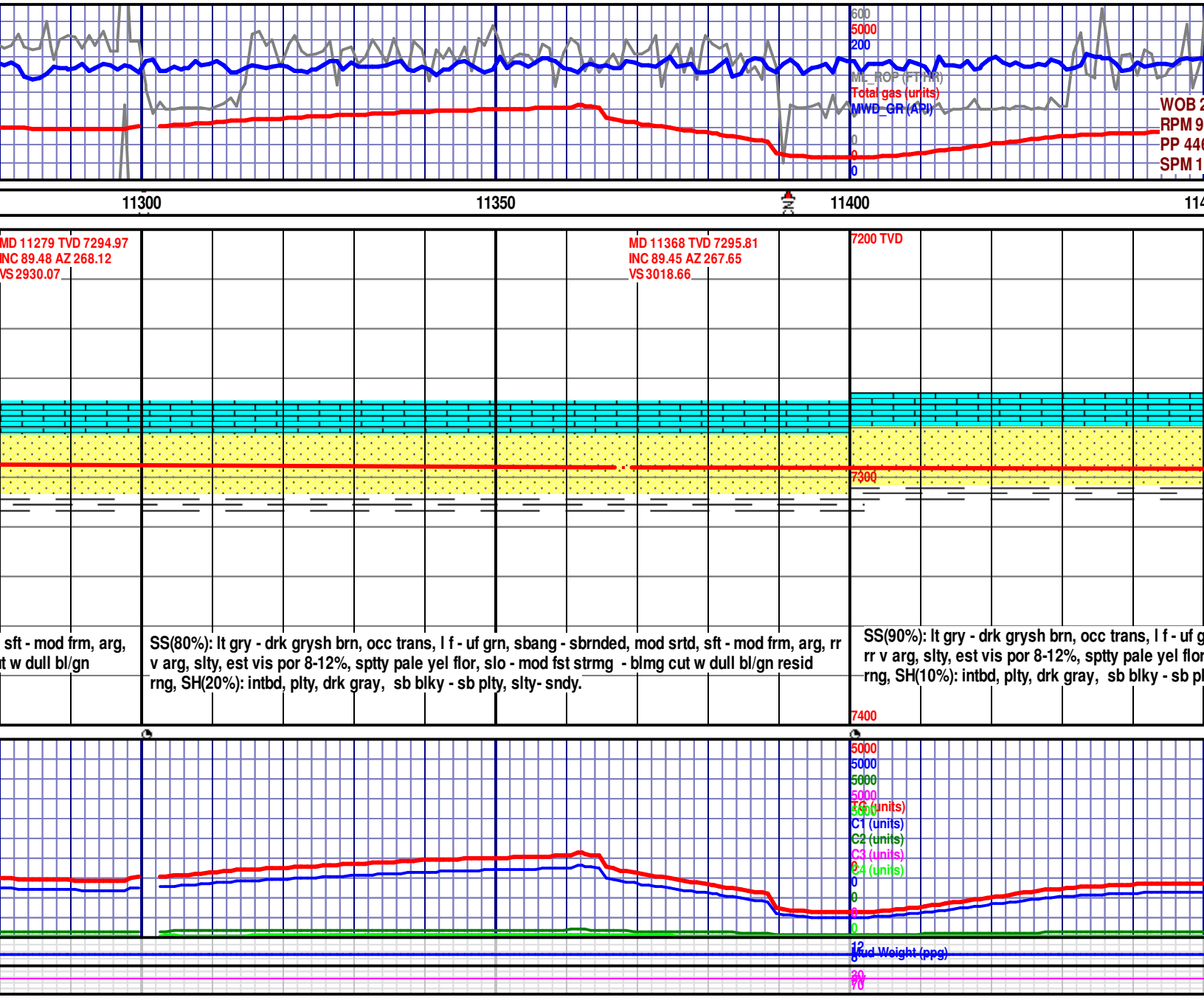


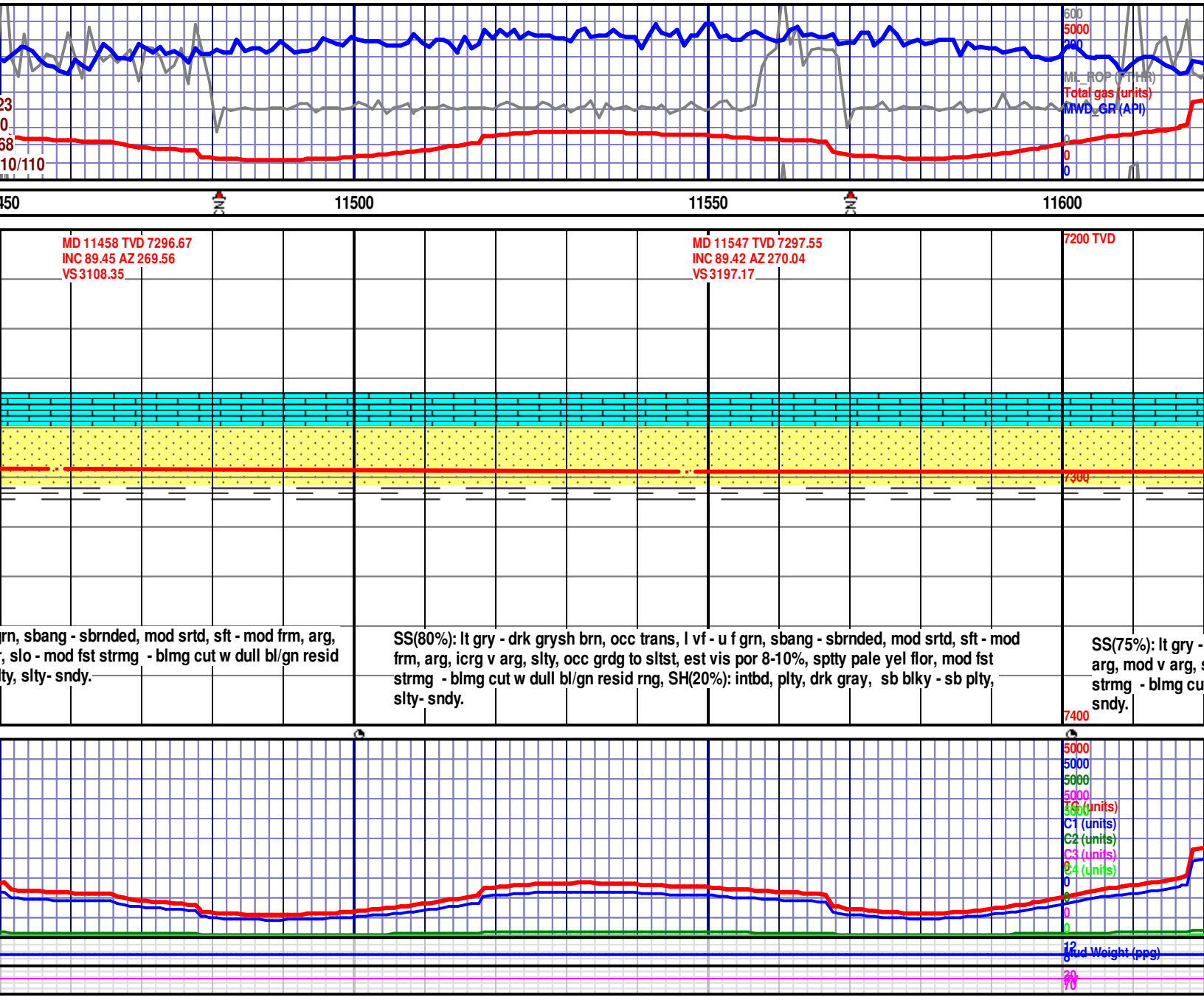

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
600
10650
INC
10700
10750
INC
7200 TVD
MD 10652 TVD 7281.77
INC 88.03 AZ 272.69
VS 2304.33
MD 10742 TVD 7284.82
INC 88.09 AZ 272.67
VS 2394.27
7300
SS(60%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr
v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng,
SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy, LS (30%) aa.
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, r
v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - bl
rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
7400
5000
5000
5000
5000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
MW 9.7
VIS 50
12
Mud Weight (ppg)
30
70

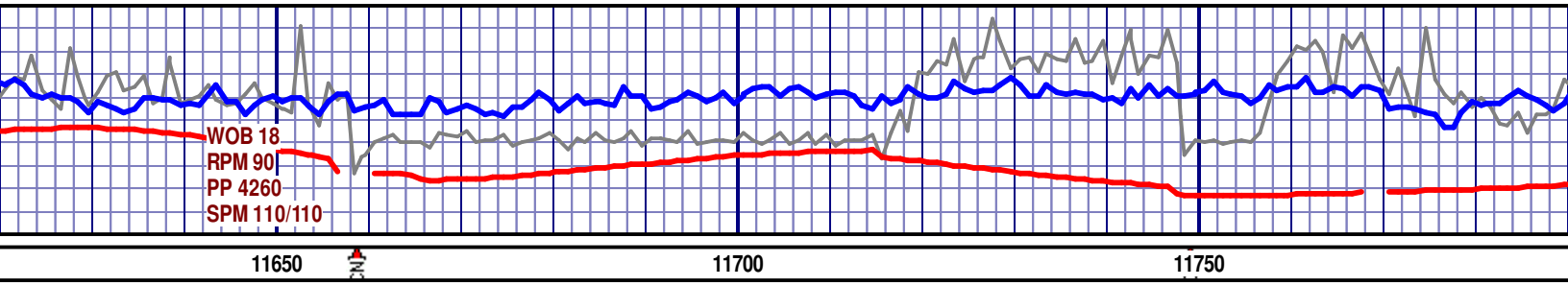

600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 18
RPM 100
PP 4161
SPM 110/110
10800
10850
10900
7200 TVD
MD 10831 TVD 7287.64
INC 88.28 AZ 271.43
VS 2483.2
MD 10921 TVD 7290.51
INC 88.06 AZ 269.98
VS 2573.06
7300
mod srtd, sft - mod frm, arg, rr
lmg cut w dull bl/gn resid
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ tran
v arg, slty, est vis por 8-12%, sptty pale
rng, SH(20%): intbd, plty, drk gray, sb b
7400
5000
5000
5000
5000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70

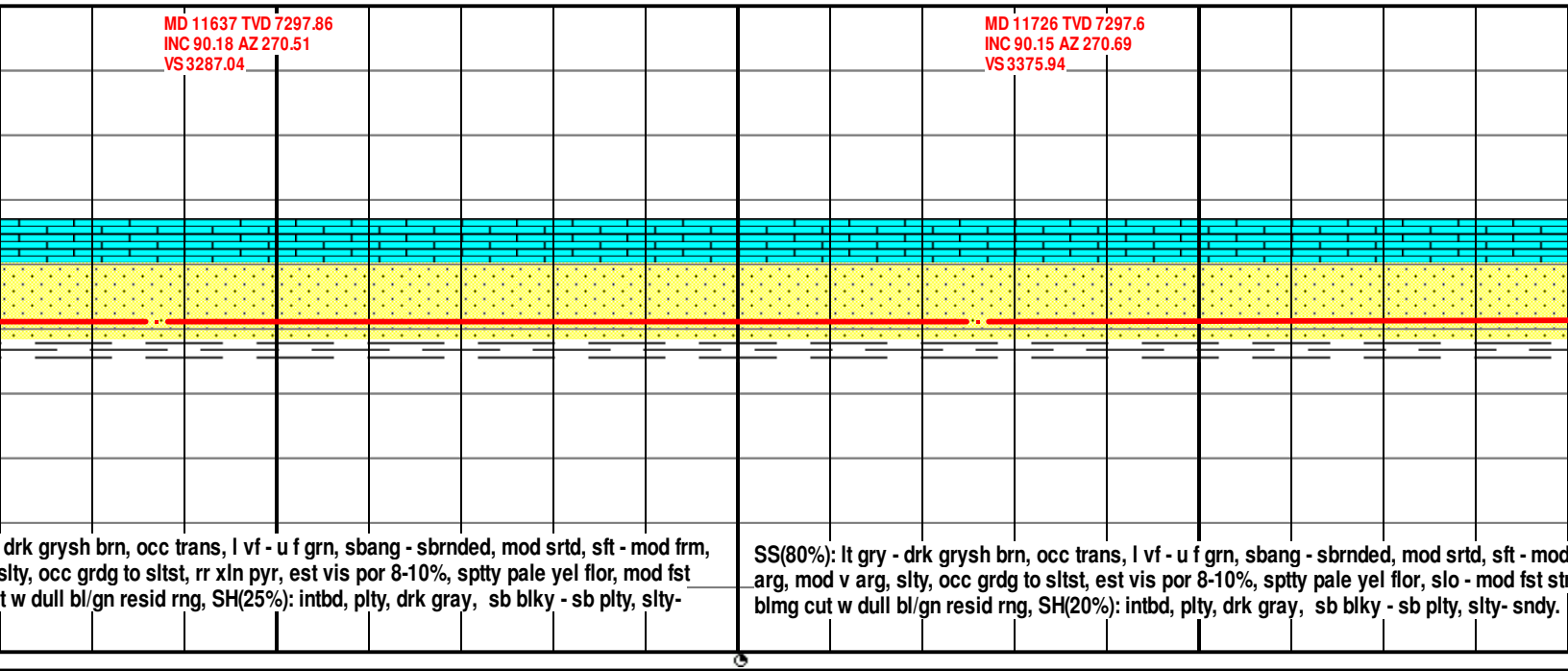

600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
10950
11000
11050
11100
7200 TVD
MD 11010 TVD 7292.35
INC 89.57 AZ 269.62
VS 2661.87
MD 11100 T
INC 89.42 A
VS 2751.67
7300
7400
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid
rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
30
70
Mud Weight (ppg)


WOB 26
RPM 91
PP 4421
SPM 110/110
600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
11150
11200
11250
VD 7293.15
Z 269.57
MD 11190 TVD 7294.09
INC 89.38 AZ 268.55
VS 2841.41
7300
%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg,
, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid
(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd,
rr v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cu
resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
7400
MW 9.7
VIS 48
CLEAN GAS TRAP
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
8
20
70


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 2
RPM 9
PP 44
SPM 1
11300
11350
11400
114
MD 11279 TVD 7294.97
INC 89.48 AZ 268.12
VS 2930.07
MD 11368 TVD 7295.81
INC 89.45 AZ 267.65
VS 3018.66
7200 TVD
7300
7400
sft - mod frm, arg,
t w dull bl/gn
SS(80%): lt gry - drk grysh brn, occ trans, l f - uf grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, rr
v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid
rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l f - uf g
rr v arg, slty, est vis por 8-12%, sptty pale yel flor
rng, SH(10%): intbd, plty, drk gray, sb blky - sb pl
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
12
Mud Weight (ppg)
30

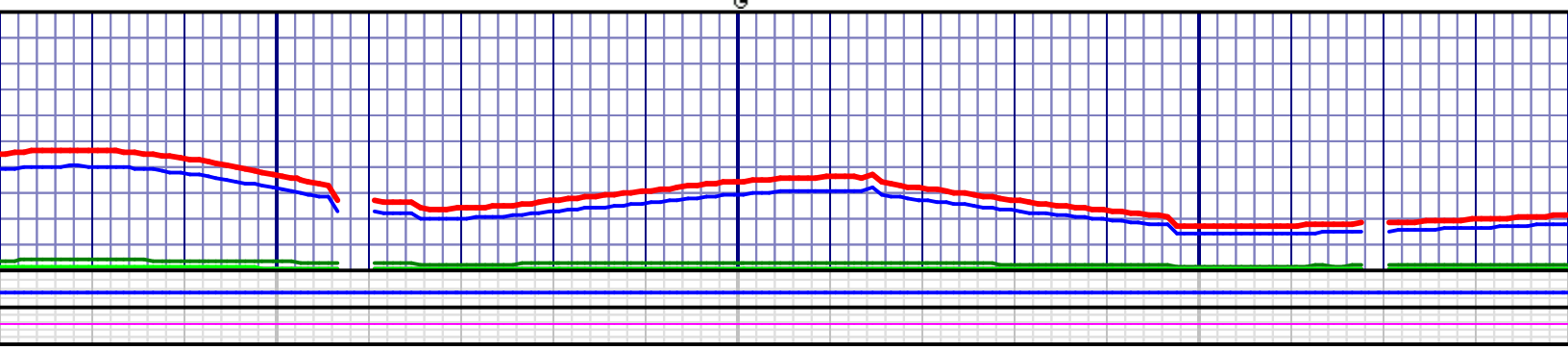

600
5000
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
23
0
68
10/110
450
INC
11500
11550
INC
11600
MD 11458 TVD 7296.67
INC 89.45 AZ 269.56
VS 3108.35
MD 11547 TVD 7297.55
INC 89.42 AZ 270.04
VS 3197.17
7200 TVD
7300
7400
rn, sbang - sbrnded, mod srtd, sft - mod frm, arg,
, slo - mod fst strmg - blmg cut w dull bl/gn resid
ty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, icrg v arg, slty, occ grdg to sltst, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(75%): lt gry -
arg, mod v arg,
strmg - blmg cu
sndy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70

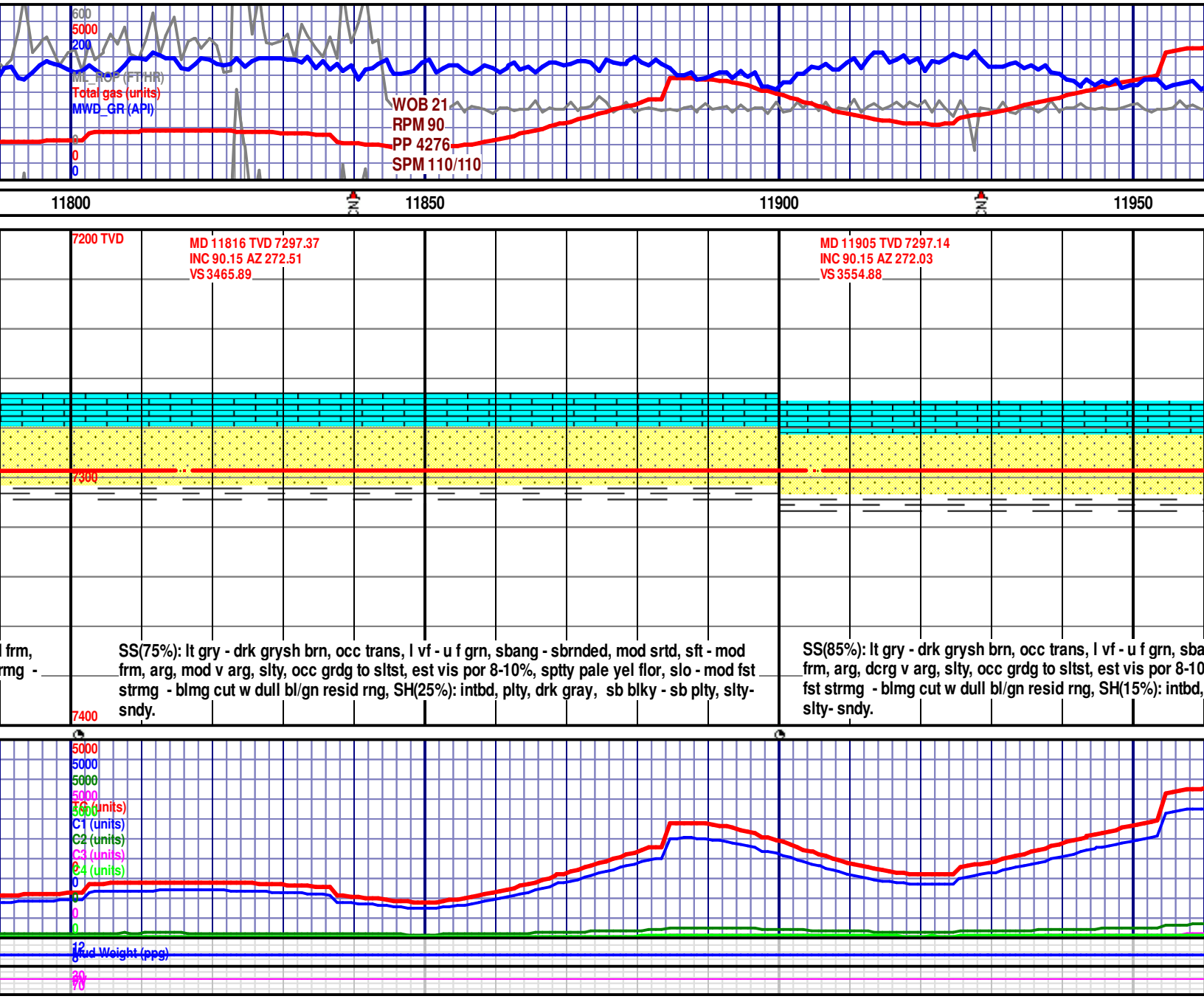


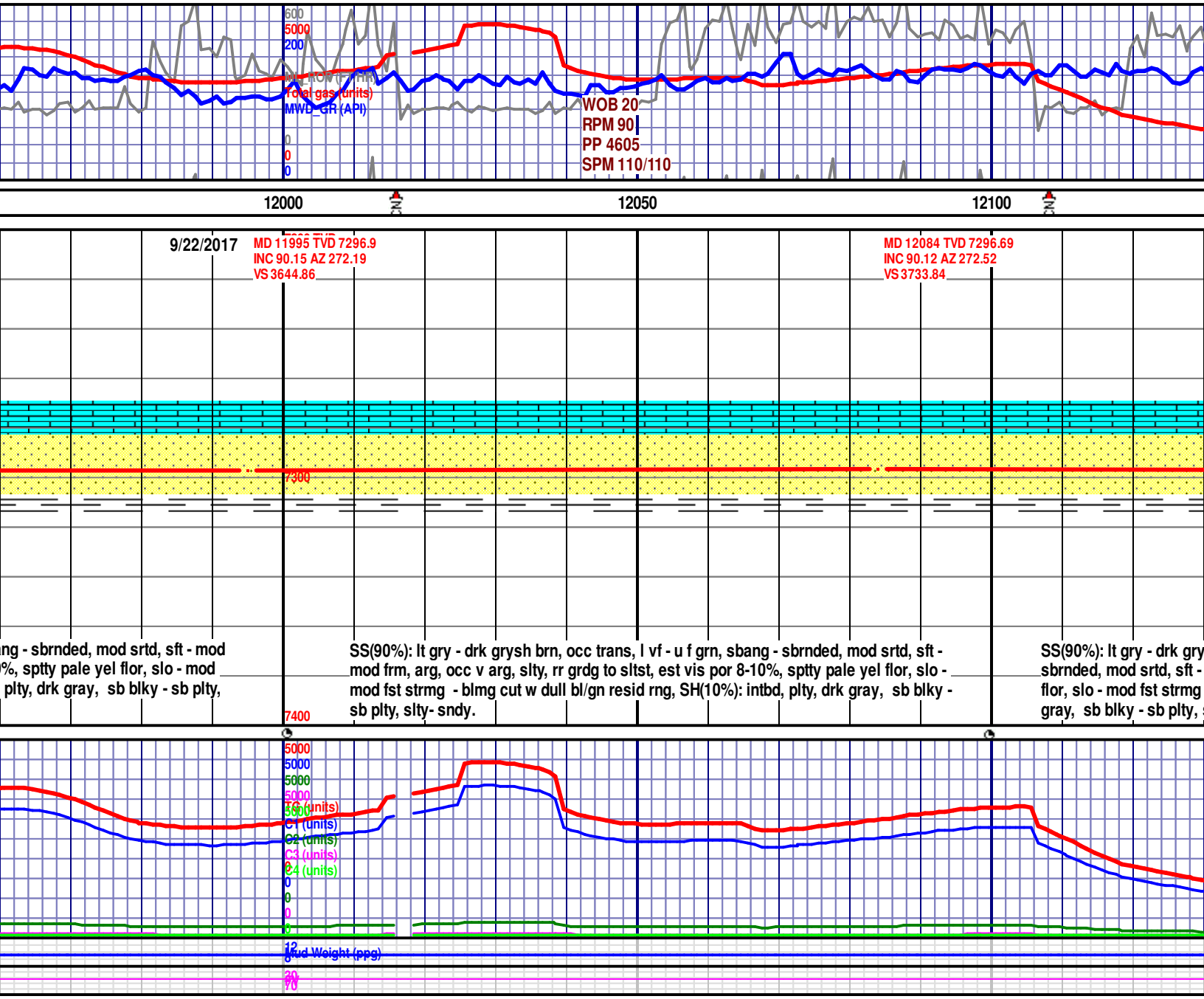


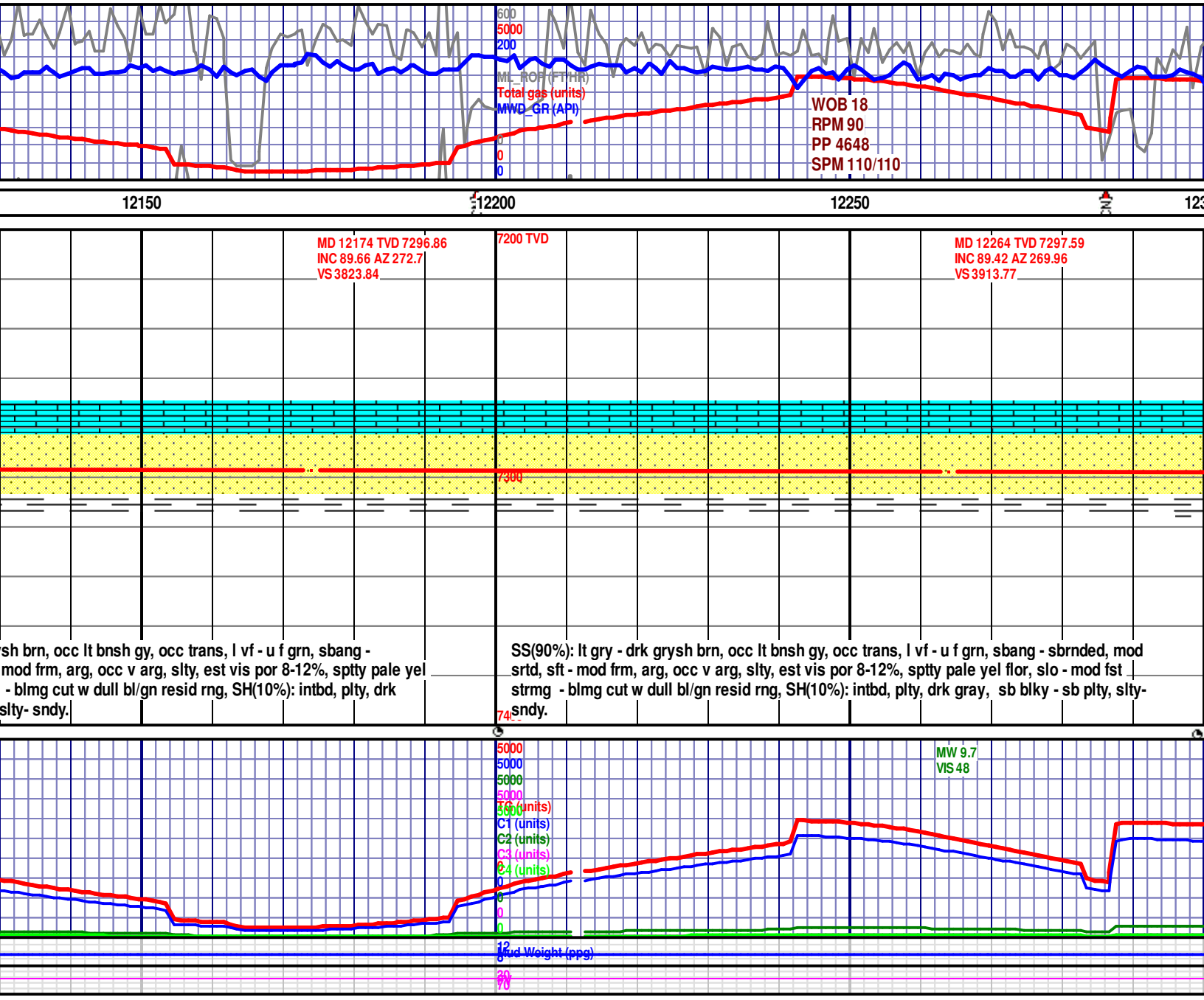
drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm,
slty, occ grdg to sltst, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst
t w dull bl/gn resid rng, SH(25%): intbd, plty, drk gray, sb blky - sb plty, slty-

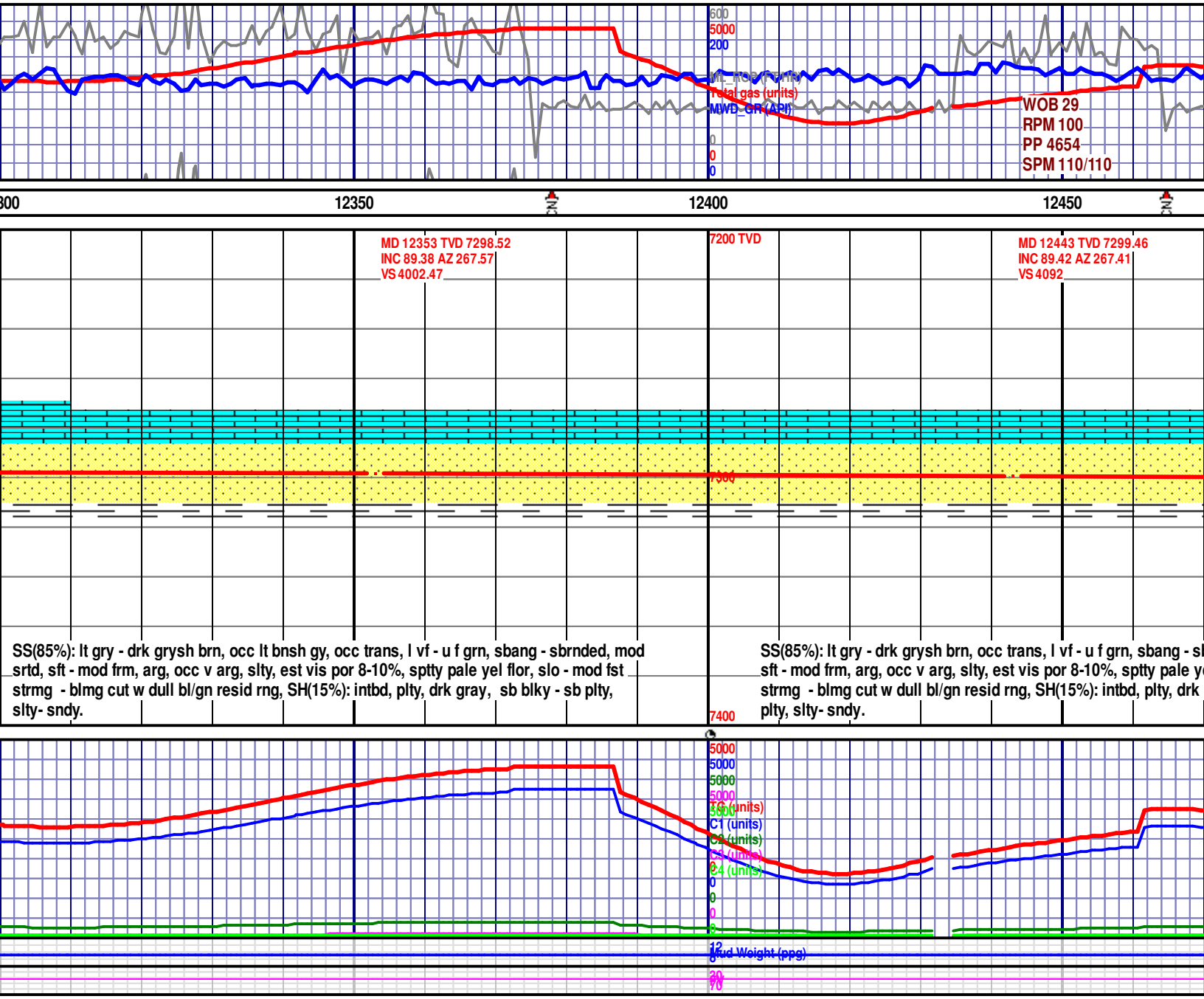
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod
arg, mod v arg, slty, occ grdg to sltst, est vis por 8-10%, sptty pale yel flor, slo - mod fst st
blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

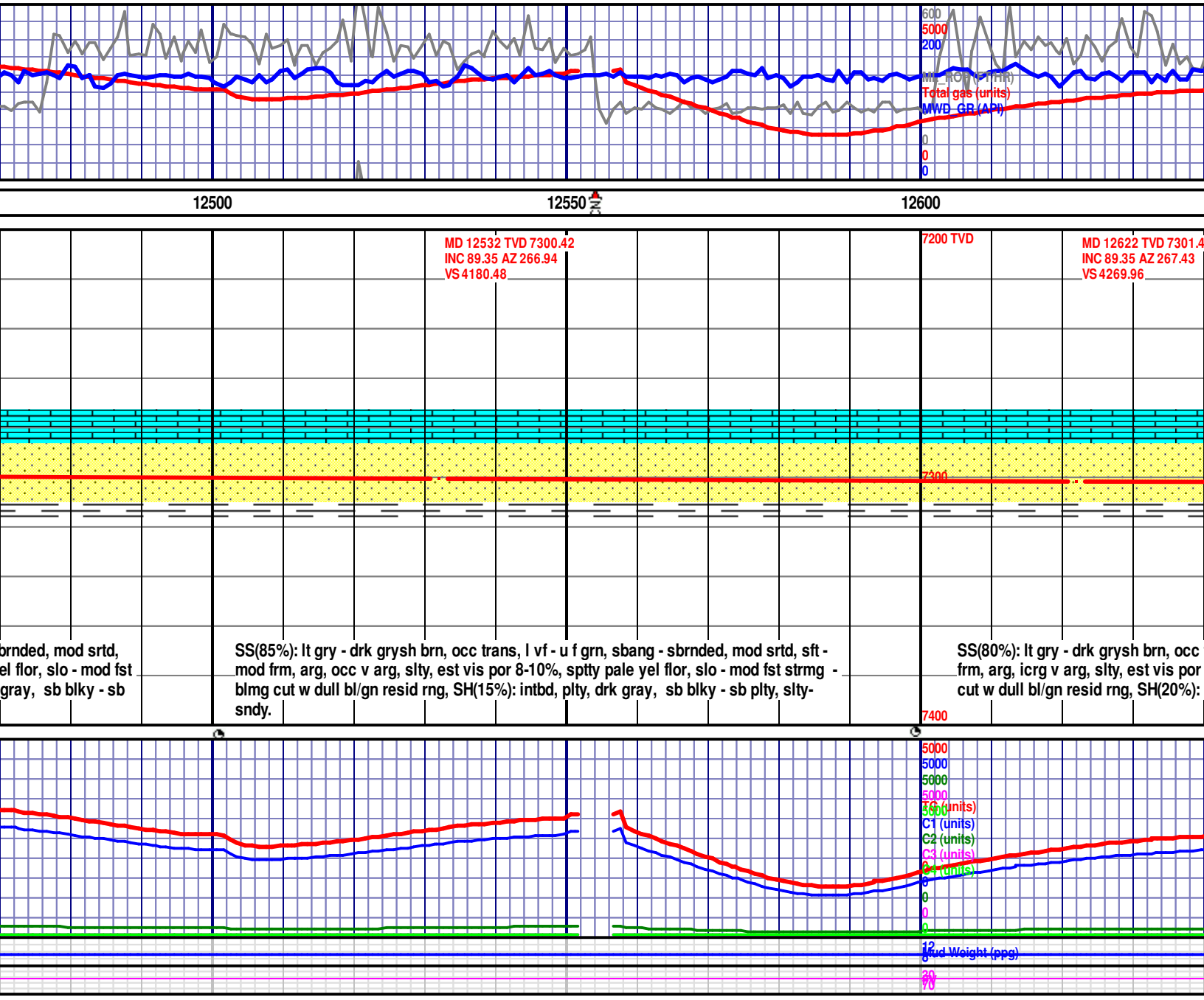


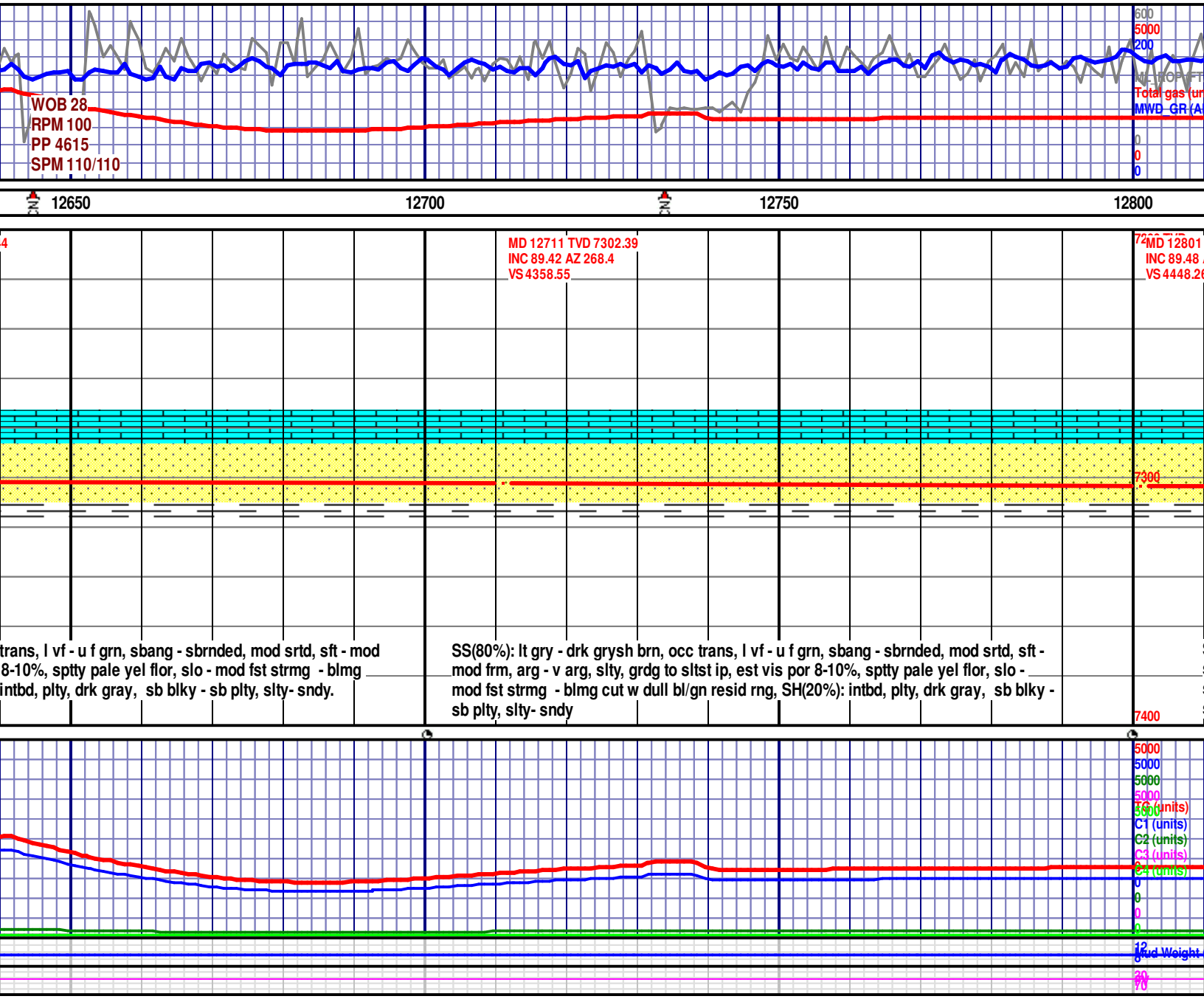

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
WOB 21
RPM 90
PP 4276
SPM 110/110
11800
11850
11900
11950
7200 TVD
MD 11816 TVD 7297.37
INC 90.15 AZ 272.51
VS 3465.89
MD 11905 TVD 7297.14
INC 90.15 AZ 272.03
VS 3554.88
7300
7400
SS(75%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, mod v arg, slty, occ grdg to sltst, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(25%): intbd, plty, drk gray, sb blky - sb plty, slty-sndy.
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sba frm, arg, dcrg v arg, slty, occ grdg to sltst, est vis por 8-10 fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, slty- sndy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Mud Weight (ppg)

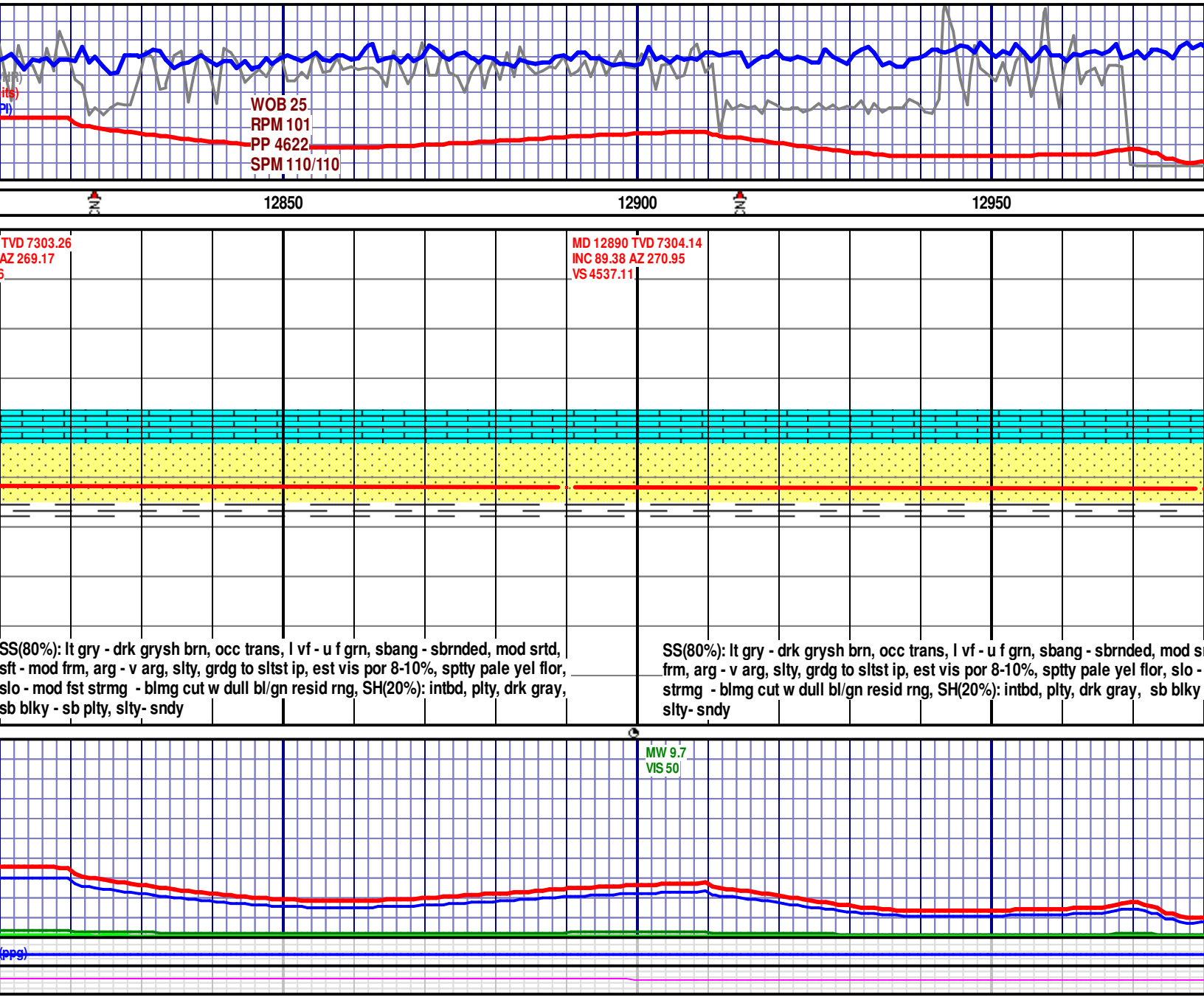

600
5000
200
ROP (ft/hr)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 20
RPM 90
PP 4605
SPM 110/110
12000
12050
12100
9/22/2017
MD 11995 TVD 7296.9
INC 90.15 AZ 272.19
VS 3644.86
MD 12084 TVD 7296.69
INC 90.12 AZ 272.52
VS 3733.84
7300
ng - sbrnded, mod srtd, sft - mod
%, sptty pale yel flor, slo - mod
plty, drk gray, sb blky - sb plty,
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft -
mod frm, arg, occ v arg, slty, rr grdg to sltst, est vis por 8-10%, sptty pale yel flor, slo -
mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky -
sb plty, slty- sndy.
SS(90%): lt gry - drk gry
sbrnded, mod srtd, sft -
flor, slo - mod fst strmg
gray, sb blky - sb plty,
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
8
30
70

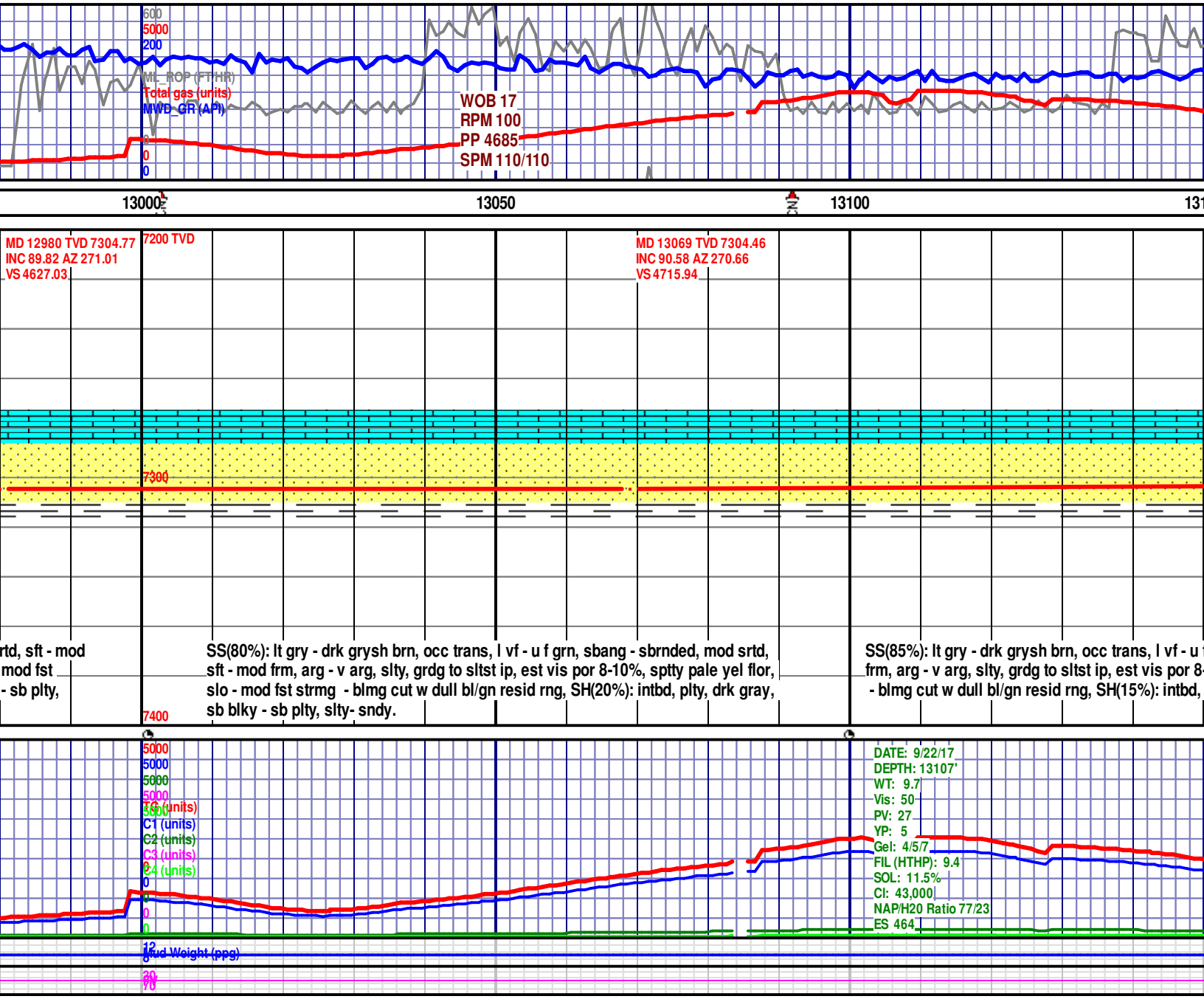

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
WOB 18
RPM 90
PP 4648
SPM 110/110
12150
12200
12250
MD 12174 TVD 7296.86
INC 89.66 AZ 272.7
VS 3823.84
7200 TVD
MD 12264 TVD 7297.59
INC 89.42 AZ 269.96
VS 3913.77
7300
sh brn, occ lt bnsh gy, occ trans, l vf - u f grn, sbang -
mod frm, arg, occ v arg, slty, est vis por 8-12%, sptty pale yel
- blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk
slty- sndy.
SS(90%): lt gry - drk grysh brn, occ lt bnsh gy, occ trans, l vf - u f grn, sbang - sbrnded, mod
srtd, sft - mod frm, arg, occ v arg, slty, est vis por 8-12%, sptty pale yel flor, slo - mod fst
strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty-
sndy.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
MW 9.7
VIS 48
Mud Weight (ppg)

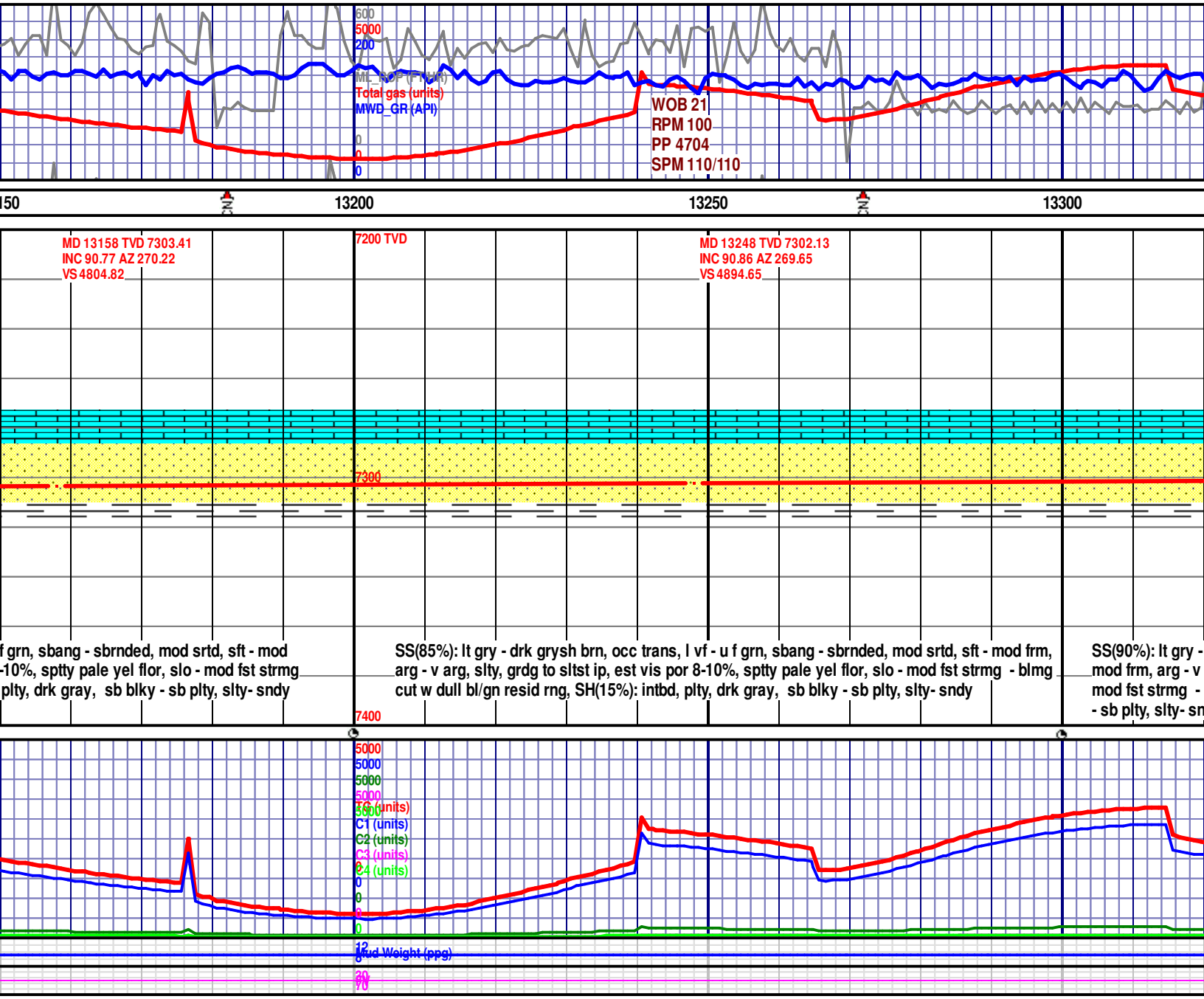

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 29
RPM 100
PP 4654
SPM 110/110
12350
12400
12450
MD 12353 TVD 7298.52
INC 89.38 AZ 267.57
VS 4002.47
7200 TVD
MD 12443 TVD 7299.46
INC 89.42 AZ 267.41
VS 4092
7300
SS(85%): lt gry - drk grysh brn, occ lt bnsh gy, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, occ v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sl
sft - mod frm, arg, occ v arg, slty, est vis por 8-10%, sptty pale y
strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk
plty, slty- sndy.
7400
5000
5000
5000
5000
C1 (units)
0
0
0
12
Mud Weight (ppg)
8
20
70

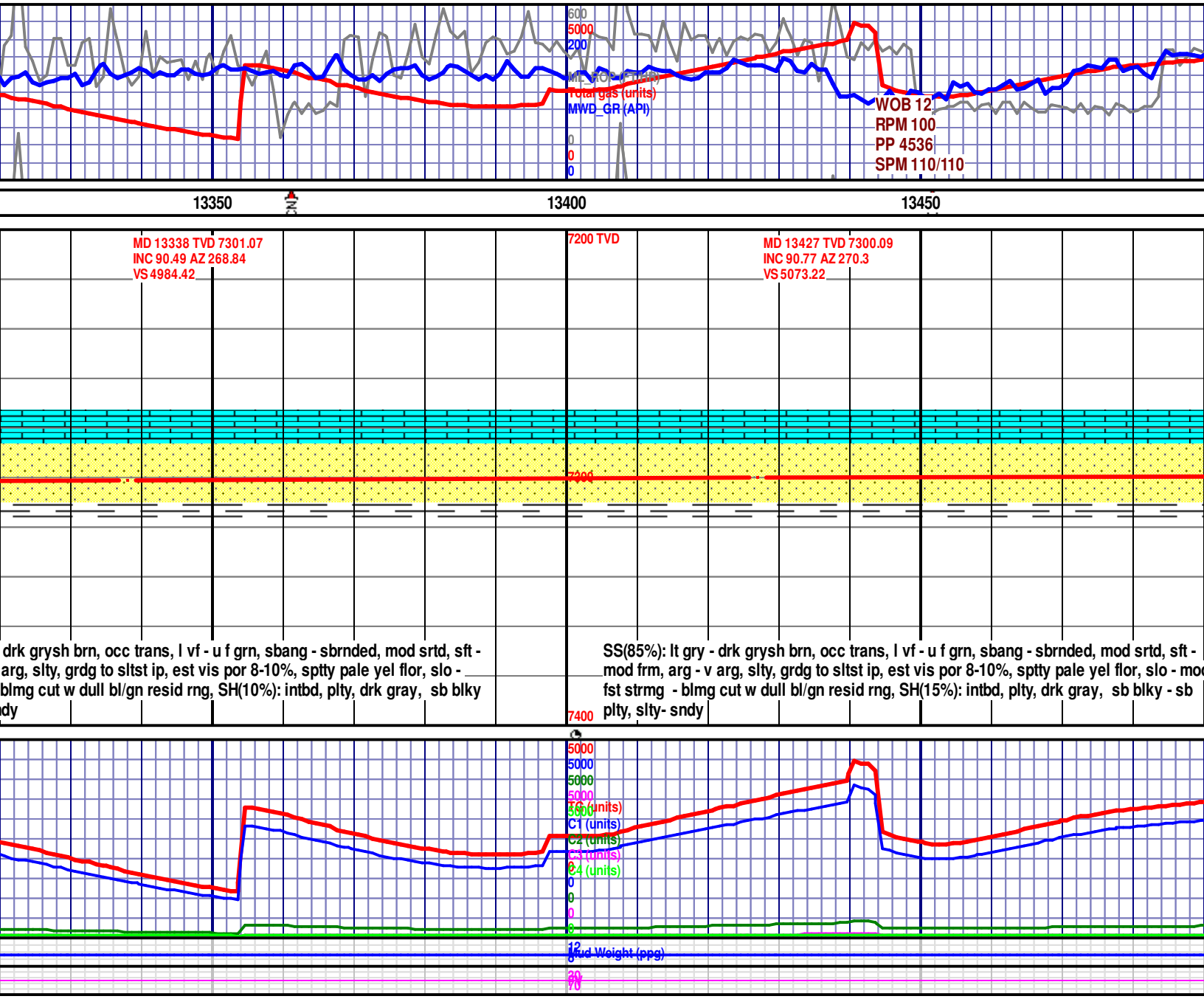

600
5000
200
Total gas (units)
MWD GR (API)
0
0
0
12500
12550
12600
MD 12532 TVD 7300.42
INC 89.35 AZ 266.94
VS 4180.48
7200 TVD
MD 12622 TVD 7301.4
INC 89.35 AZ 267.43
VS 4269.96
7300
brnded, mod srtd,
el flor, slo - mod fst
gray, sb blky - sb
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, occ v arg, slty, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty-sndy.
SS(80%): lt gry - drk grysh brn, occ
frm, arg, icrg v arg, slty, est vis por
cut w dull bl/gn resid rng, SH(20%):
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70

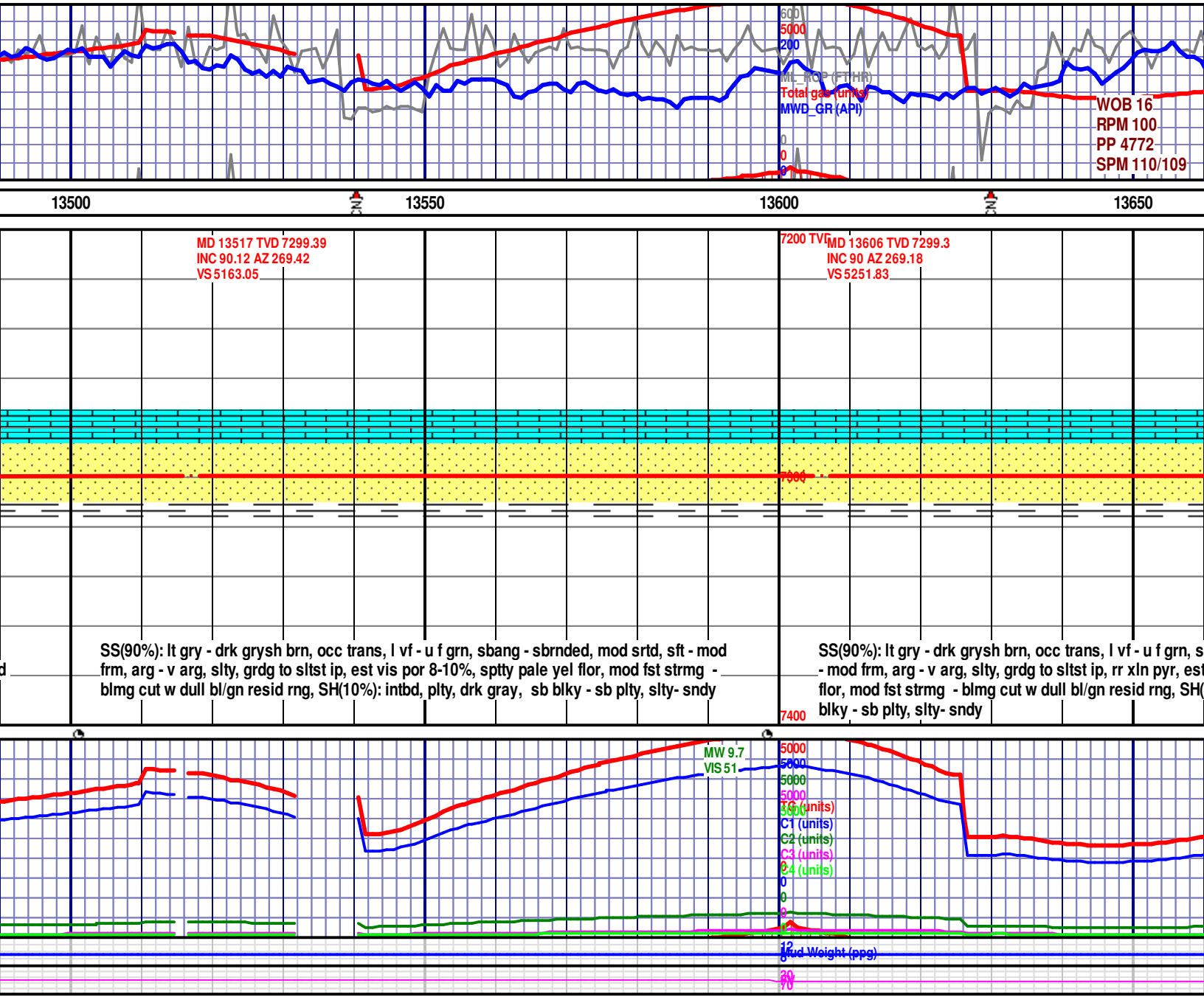

WOB 28
RPM 100
PP 4615
SPM 110/110
600
5000
200
Total gas (ur
MWD_GR (A
0
0
0
12650
12700
12750
12800
MD 12711 TVD 7302.39
INC 89.42 AZ 268.4
VS 4358.55
MD 12801
INC 89.48
VS 4448.26
7300
7400
trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod
8-10%, sptty pale yel flor, slo - mod fst strmg - blmg
intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft -
mod frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo -
mod fst strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky -
sb plty, slty- sndy
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
0
12
Mud Weight
30
70

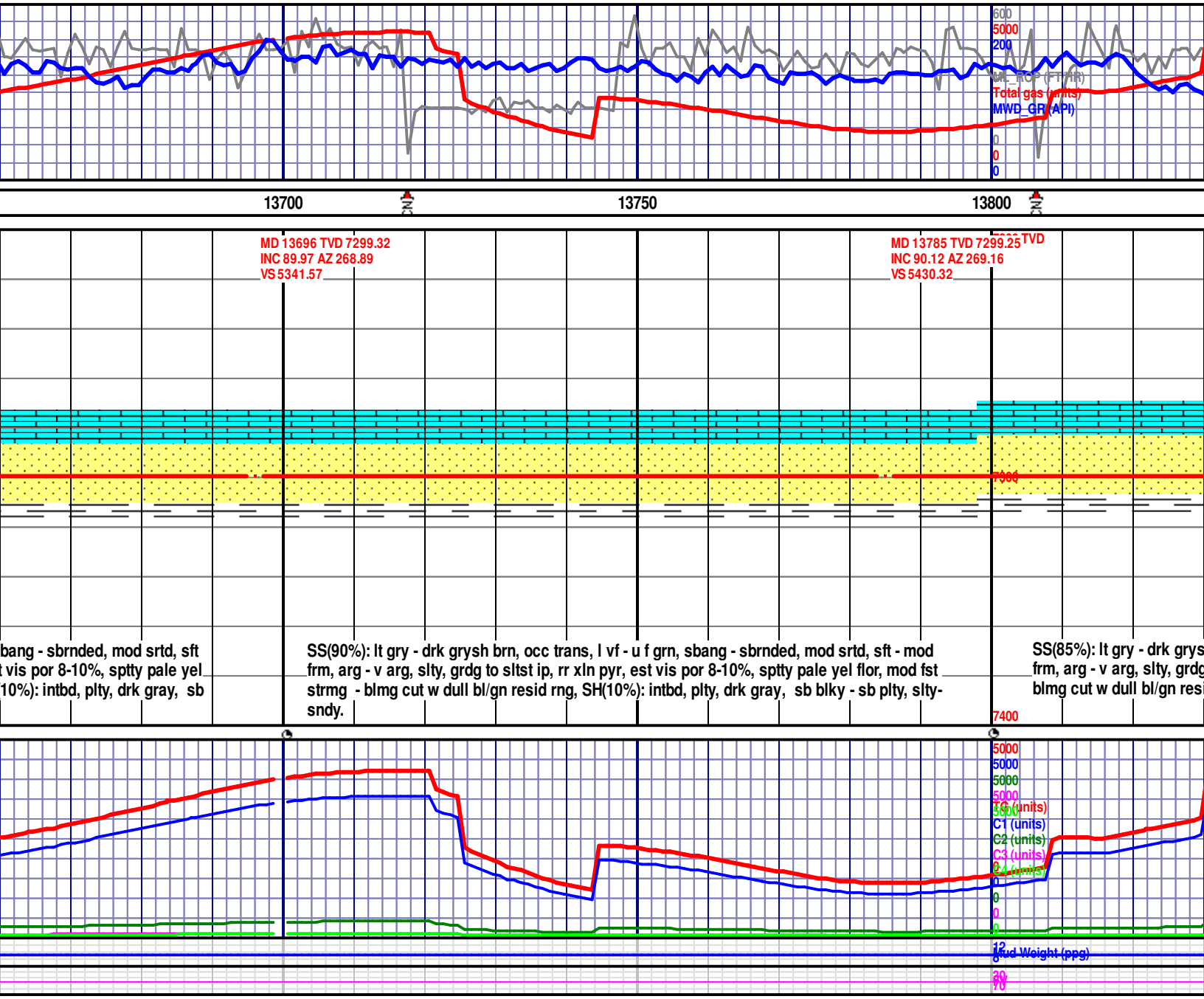

WOB 25
RPM 101
PP 4622
SPM 110/110
12850
12900
12950
TVD 7303.26
AZ 269.17
MD 12890 TVD 7304.14
INC 89.38 AZ 270.95
VS 4537.11
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod s
frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo -
strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky
slty- sndy
MW 9.7
VIS 50
(ppg)

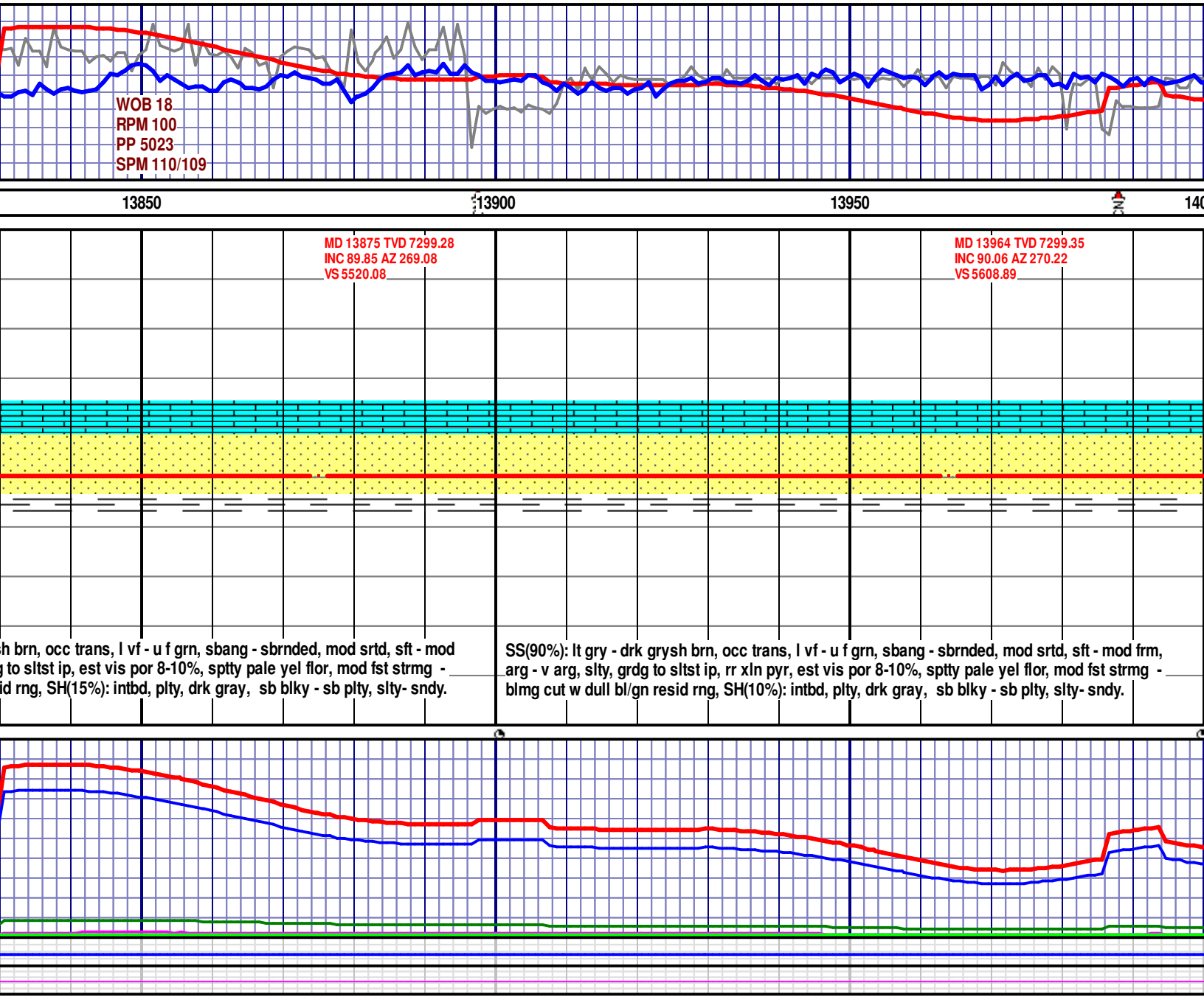

600
5000
200
MIL_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
WOB 17
RPM 100
PP 4685
SPM 110/110
13000
13050
13100
MD 12980 TVD 7304.77
INC 89.82 AZ 271.01
VS 4627.03
7200 TVD
MD 13069 TVD 7304.46
INC 90.58 AZ 270.66
VS 4715.94
7300
rtd, sft - mod
mod fst
- sb plty,
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u
frm, arg - v arg, slty, grdg to sltst ip, est vis por 8
- blmg cut w dull bl/gn resid rng, SH(15%): intbd,
7400
5000
5000
5000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
30
70
DATE: 9/22/17
DEPTH: 13107'
WT: 9.7
Vis: 50
PV: 27
YP: 5
Gel: 4/5/7
FIL (HTHP): 9.4
SOL: 11.5%
CI: 43,000
NAP/H20 Ratio 77/23
ES 464

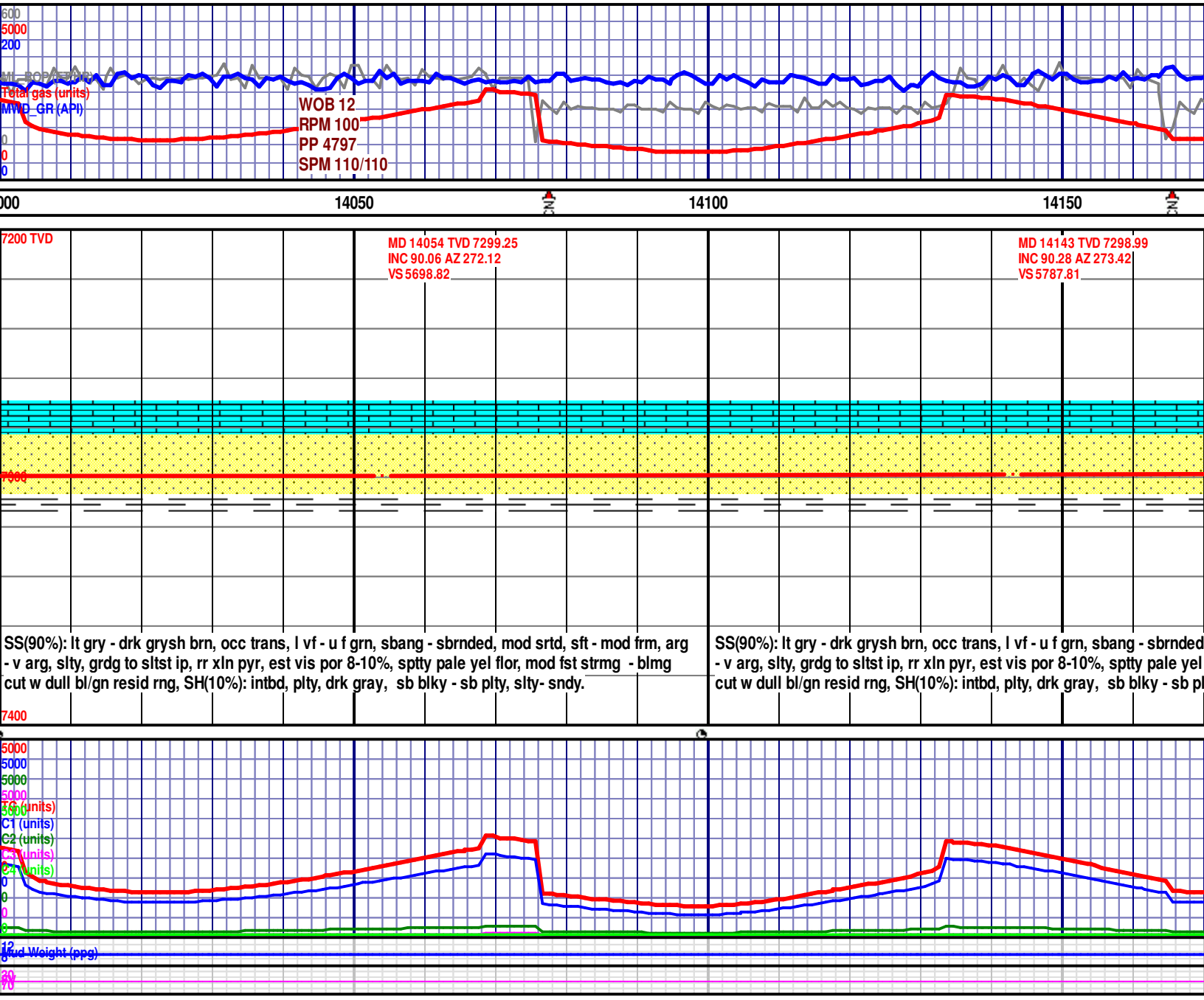

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 21
RPM 100
PP 4704
SPM 110/110
150
13200
13250
13300
MD 13158 TVD 7303.41
INC 90.77 AZ 270.22
VS 4804.82
7200 TVD
MD 13248 TVD 7302.13
INC 90.86 AZ 269.65
VS 4894.65
7300
f grn, sbang - sbrnded, mod srtd, sft - mod
-10%, sptty pale yel flor, slo - mod fst strmg
plty, drk gray, sb blky - sb plty, slty- sndy
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm,
arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo - mod fst strmg - blmg
cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy
SS(90%): lt gry -
mod frm, arg - v
mod fst strmg -
- sb plty, slty- sn
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
90

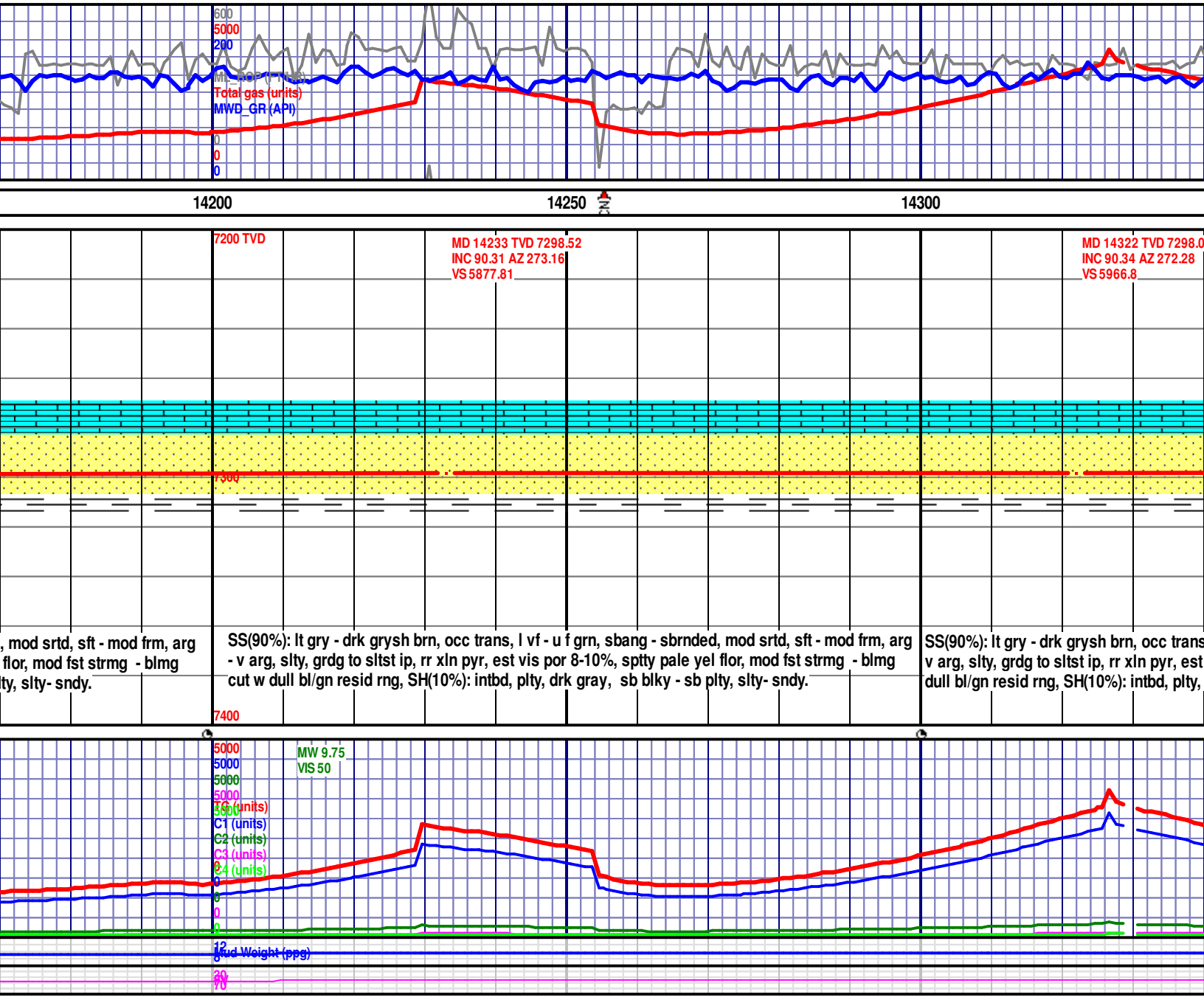

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 12
RPM 100
PP 4536
SPM 110/110
13350
13400
13450
MD 13338 TVD 7301.07
INC 90.49 AZ 268.84
VS 4984.42
7200 TVD
MD 13427 TVD 7300.09
INC 90.77 AZ 270.3
VS 5073.22
7300
drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft -
arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo -
blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky
ndy
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft -
mod frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, slo - mod
fst strmg - blmg cut w dull bl/gn resid rng, SH(15%): intbd, plty, drk gray, sb blky - sb
plty, slty- sndy
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70

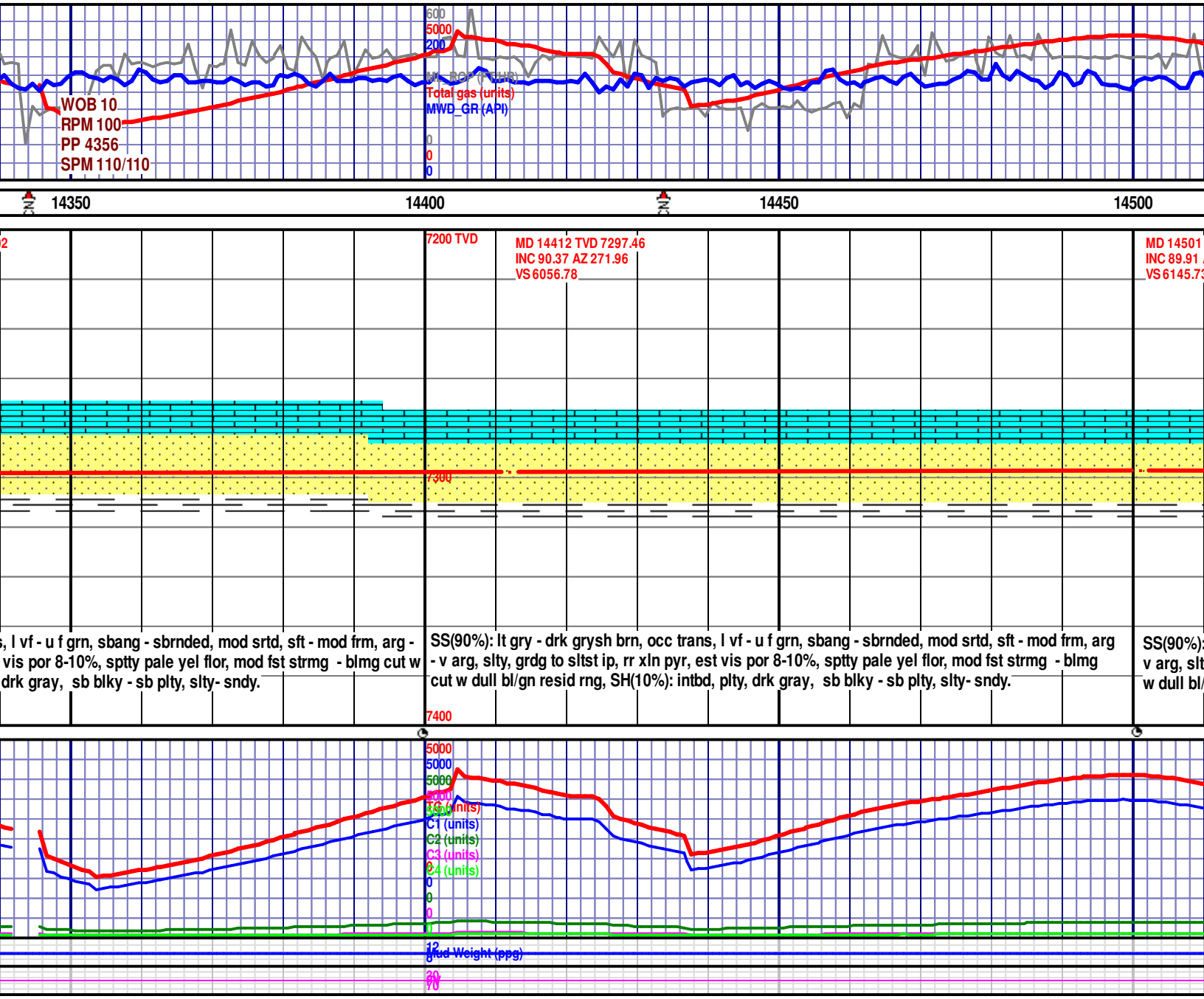

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
WOB 16
RPM 100
PP 4772
SPM 110/109
13500
13550
13600
13650
MD 13517 TVD 7299.39
INC 90.12 AZ 269.42
VS 5163.05
7200 TVD
MD 13606 TVD 7299.3
INC 90 AZ 269.18
VS 5251.83
7300
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, s
- mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est
flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(
blky - sb plty, slty- sndy
7400
MW 9.7
VIS 51
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
12
Mud Weight (ppg)
30

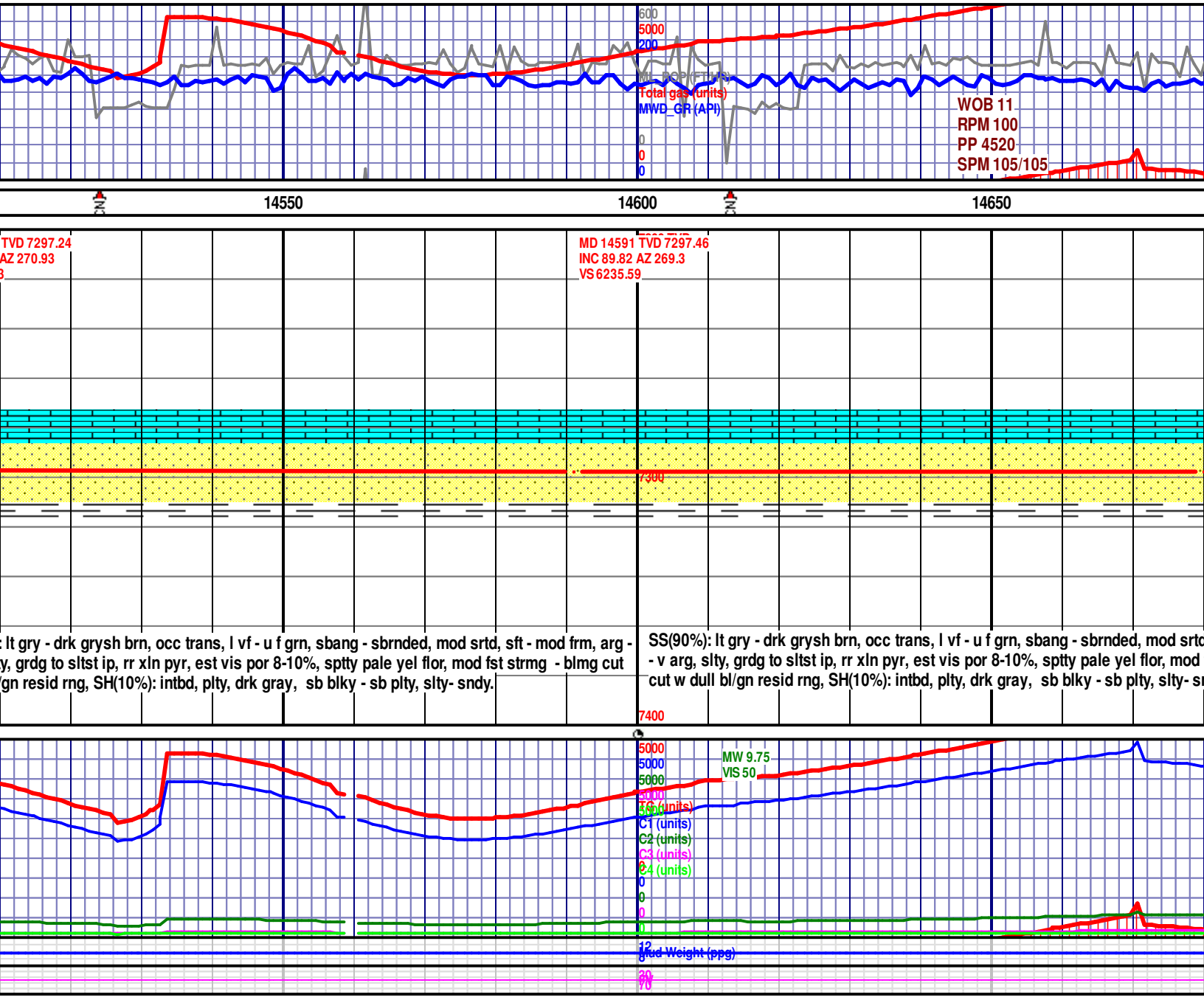

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
13700
INC
13750
13800
INC
MD 13696 TVD 7299.32
INC 89.97 AZ 268.89
VS 5341.57
MD 13785 TVD 7299.25
INC 90.12 AZ 269.16
VS 5430.32
TVD
7400
bang - sbrnded, mod srtd, sft
t vis por 8-10%, sptty pale yel
10%): intbd, plty, drk gray, sb
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod
frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst
strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty-
sndy.
SS(85%): lt gry - drk grys
frm, arg - v arg, slty, grdg
blmg cut w dull bl/gn resi
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70

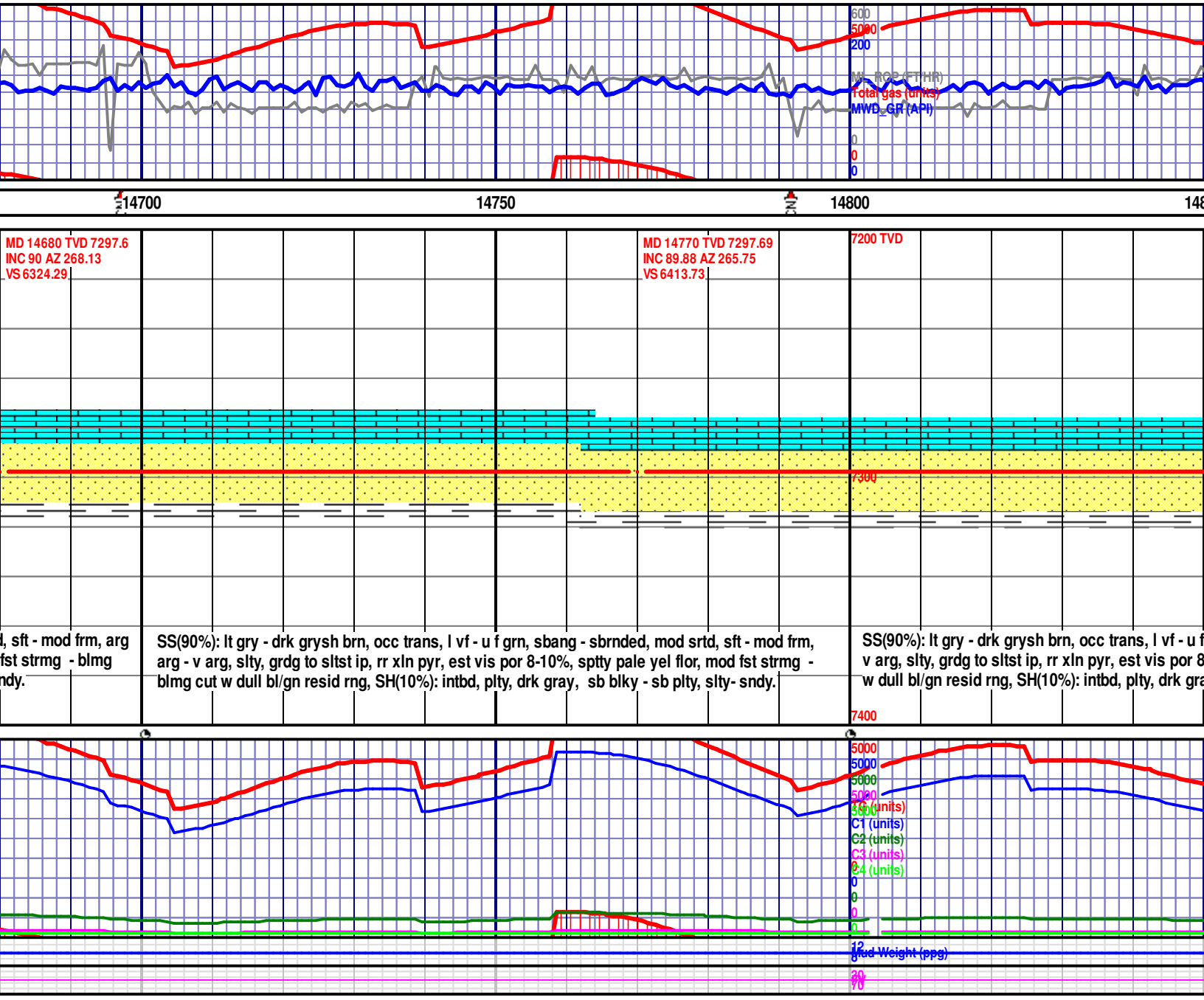

WOB 18
RPM 100
PP 5023
SPM 110/109
13850
13900
13950
MD 13875 TVD 7299.28
INC 89.85 AZ 269.08
VS 5520.08
MD 13964 TVD 7299.35
INC 90.06 AZ 270.22
VS 5608.89
h brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod
g to sltst ip, est vis por 8-10%, sptty pale yel flor, mod fst strmg -
id rng, SH(15%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm,
arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg -
blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

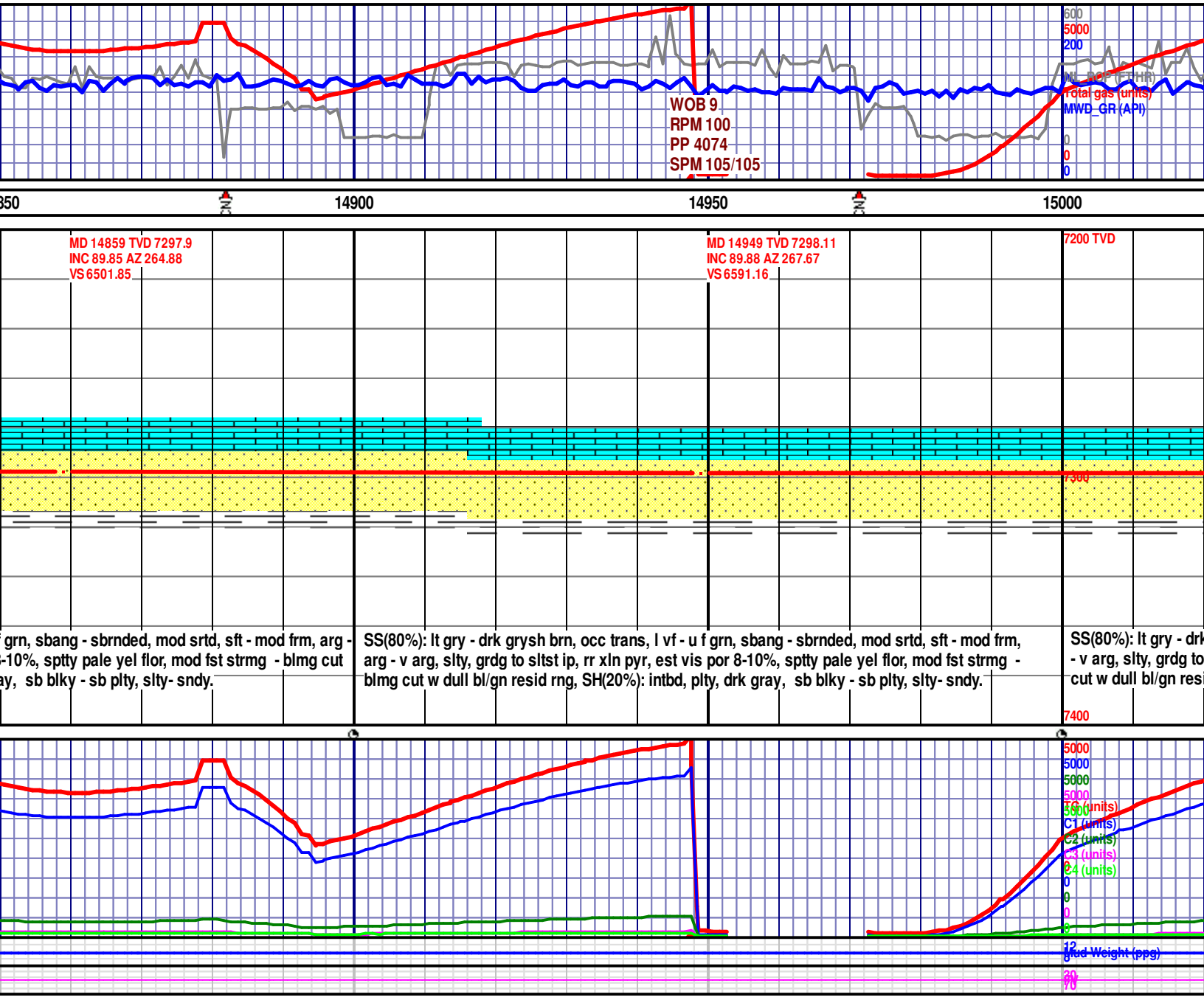

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 12
RPM 100
PP 4797
SPM 110/110
000
14050
14100
14150
7200 TVD
MD 14054 TVD 7299.25
INC 90.06 AZ 272.12
VS 5698.82
MD 14143 TVD 7298.99
INC 90.28 AZ 273.42
VS 5787.81
7400
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb pl
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
0
0
0
12
Mud Weight (ppg)
30
70

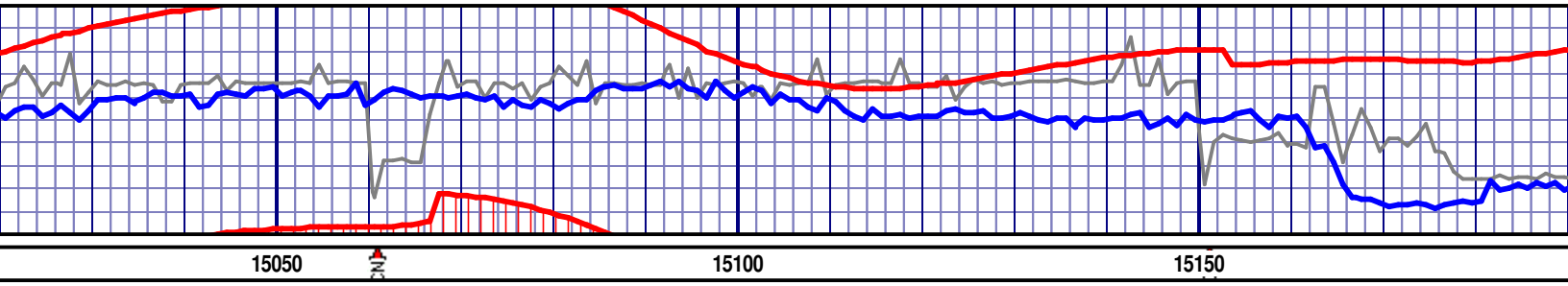

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
14200
14250
14300
7200 TVD
MD 14233 TVD 7298.52
INC 90.31 AZ 273.16
VS 5877.81
MD 14322 TVD 7298.0
INC 90.34 AZ 272.28
VS 5966.8
7300
, mod srtd, sft - mod frm, arg
flor, mod fst strmg - blmg
lty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans
v arg, slty, grdg to sltst ip, rr xln pyr, est
dull bl/gn resid rng, SH(10%): intbd, plty,
7400
5000
5000
5000
5000
MW 9.75
VIS 50
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70


600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 10
RPM 100
PP 4356
SPM 110/110
14350
14400
14450
14500
7200 TVD
MD 14412 TVD 7297.46
INC 90.37 AZ 271.96
VS 6056.78
MD 14501
INC 89.91
VS 6145.73
7300
7400
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70


600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 11
RPM 100
PP 4520
SPM 105/105
CN
14550
14600
CN
14650
TVD 7297.24
AZ 270.93
MD 14591 TVD 7297.46
INC 89.82 AZ 269.3
VS 6235.59
7300
lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg -
y, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut
/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd
- v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod
cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- s
7400
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
MW 9.75
VIS 50
12
Mud Weight (ppg)
30
70


600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
14700
14750
14800
MD 14680 TVD 7297.6
INC 90 AZ 268.13
VS 6324.29
MD 14770 TVD 7297.69
INC 89.88 AZ 265.75
VS 6413.73
7200 TVD
7300
7400
, sft - mod frm, arg
fst strmg - blmg
ndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f
v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8
w dull bl/gn resid rng, SH(10%): intbd, plty, drk gra
5000
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70


600
5000
200
INC_DOF (°/100FT)
Total gas (units)
MWD_GR (API)
WOB 9
RPM 100
PP 4074
SPM 105/105
0
0
0
350
14900
14950
15000
MD 14859 TVD 7297.9
INC 89.85 AZ 264.88
VS 6501.85
MD 14949 TVD 7298.11
INC 89.88 AZ 267.67
VS 6591.16
7200 TVD
7300
7400
f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg -
8-10%, sptty pale yel flor, mod fst strmg - blmg cut
ay, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm,
arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg -
blmg cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk
- v arg, slty, grdg to
cut w dull bl/gn resi
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
12
Mud Weight (ppg)
30
70



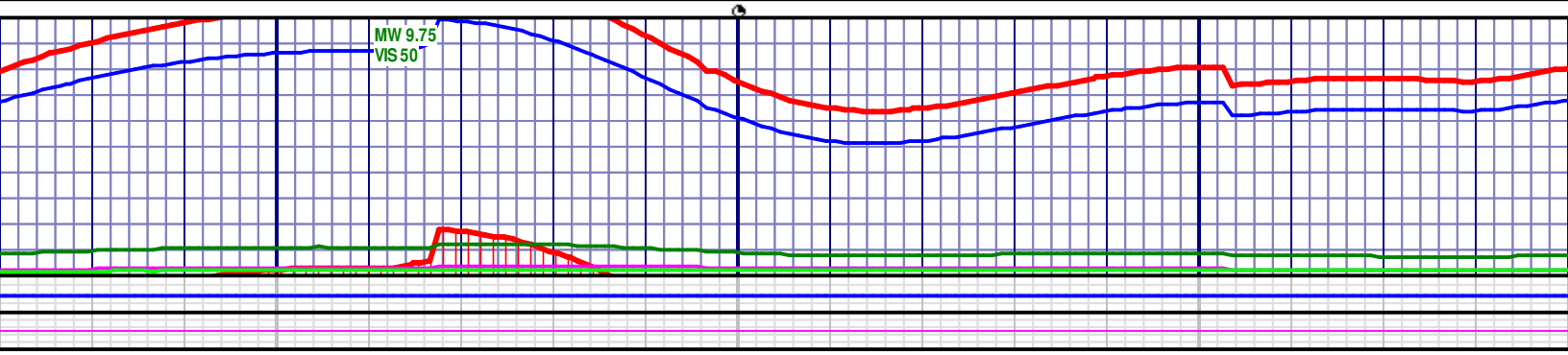
15050 15100 15150

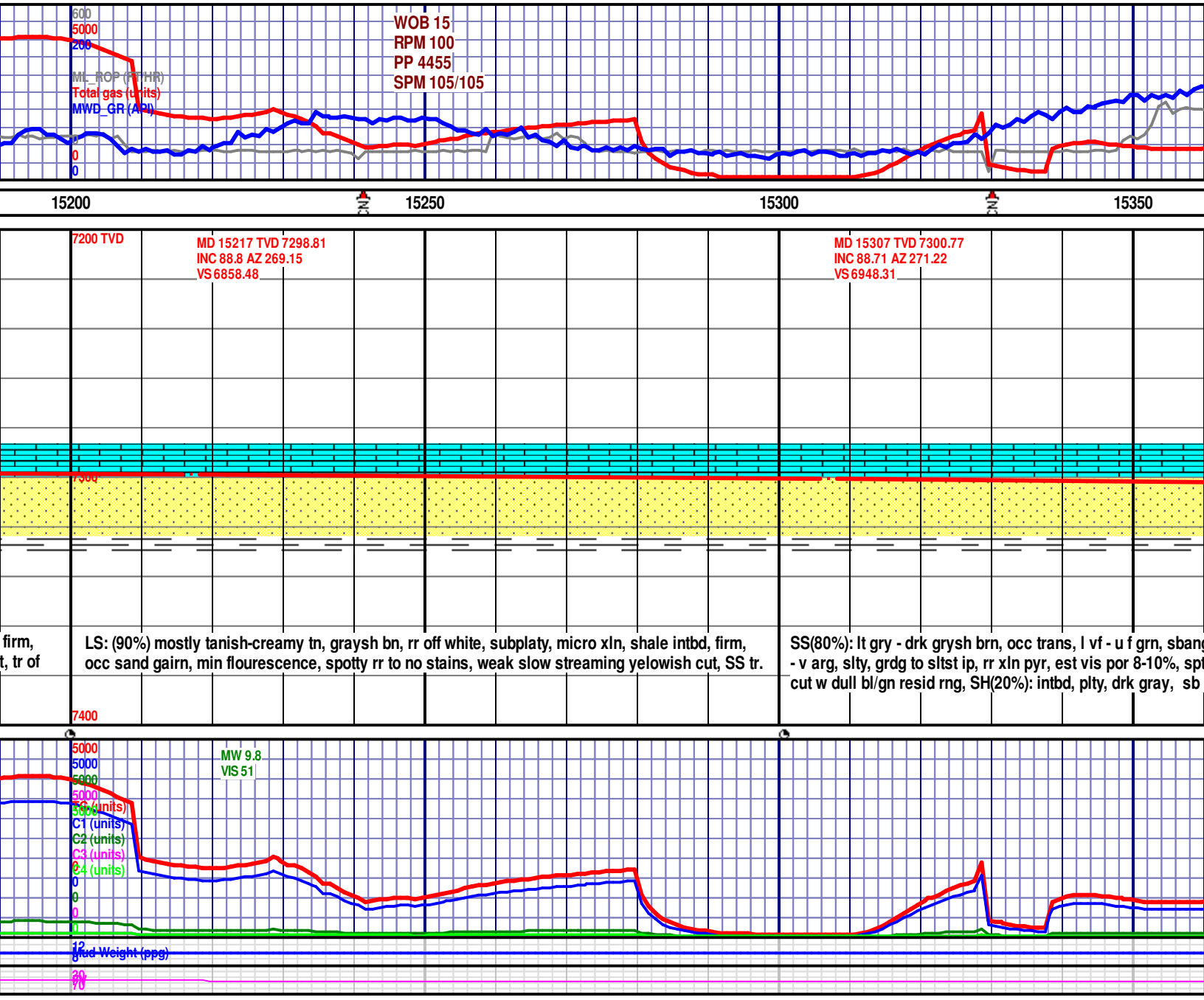
MD 15038 TVD 7298.09
INC 90.15 AZ 269.69
VS 6679.86

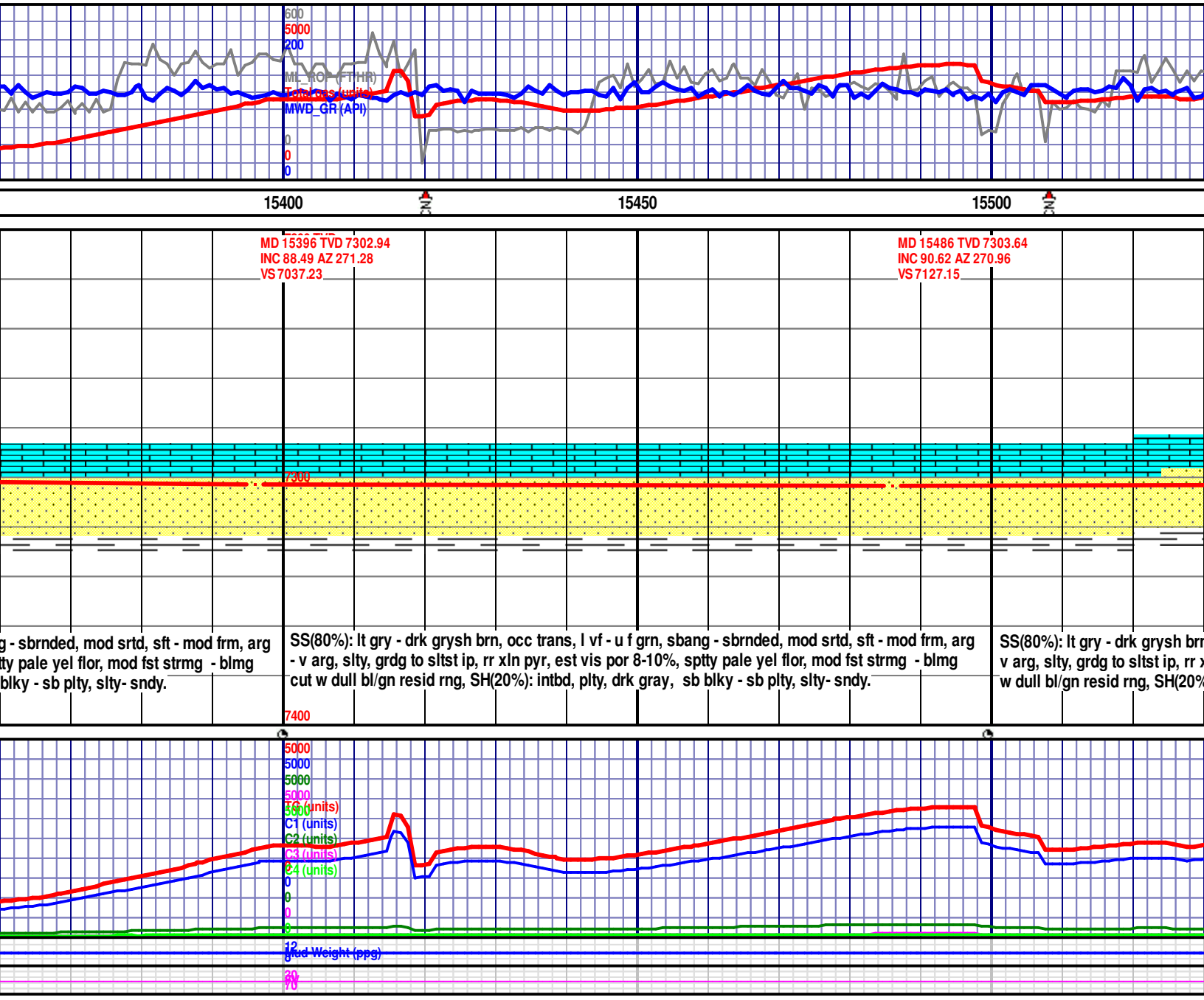
MD 15128 TVD 7297.92
INC 90.06 AZ 269.79
VS 6769.69

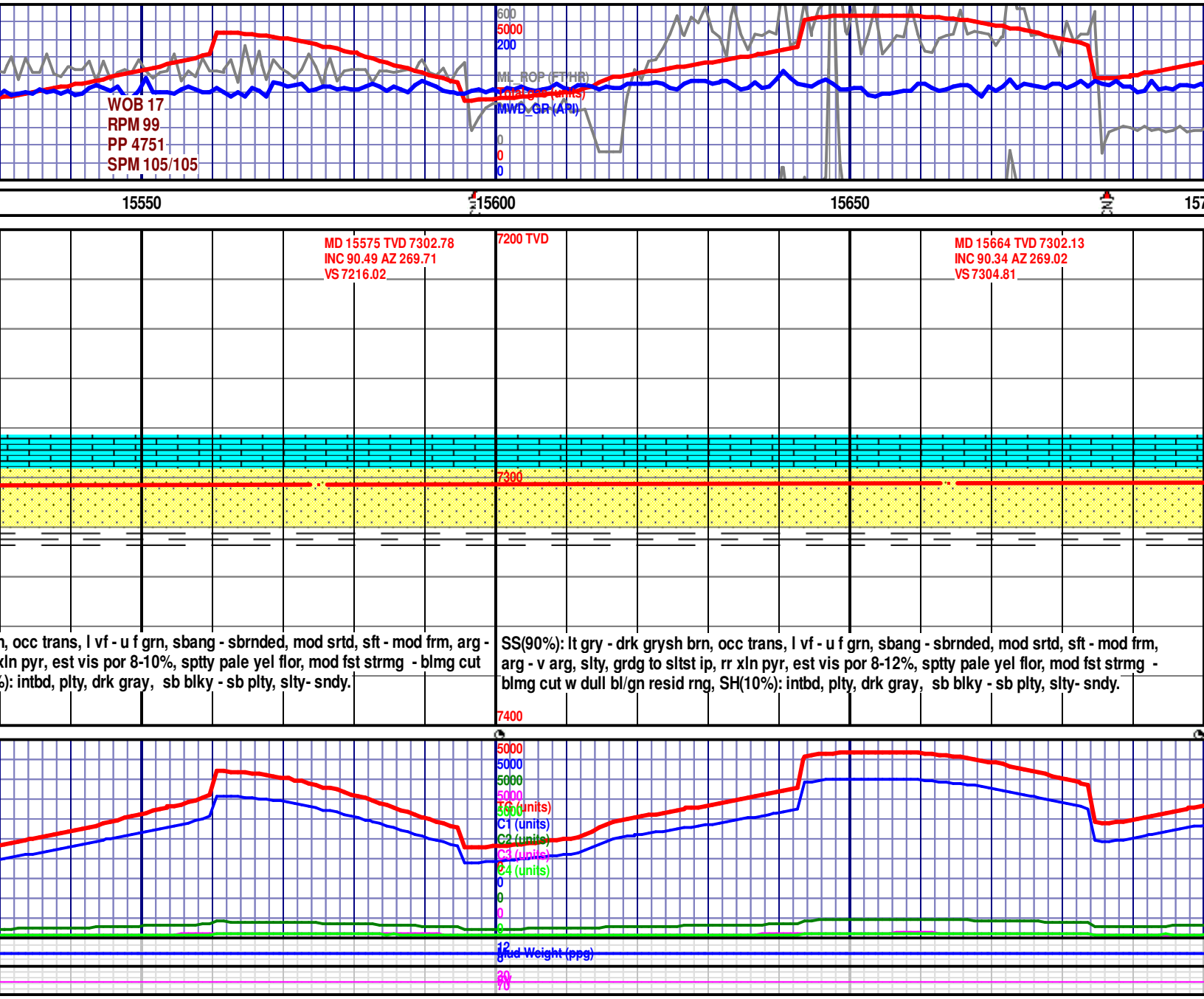
k grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg
sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg
id rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

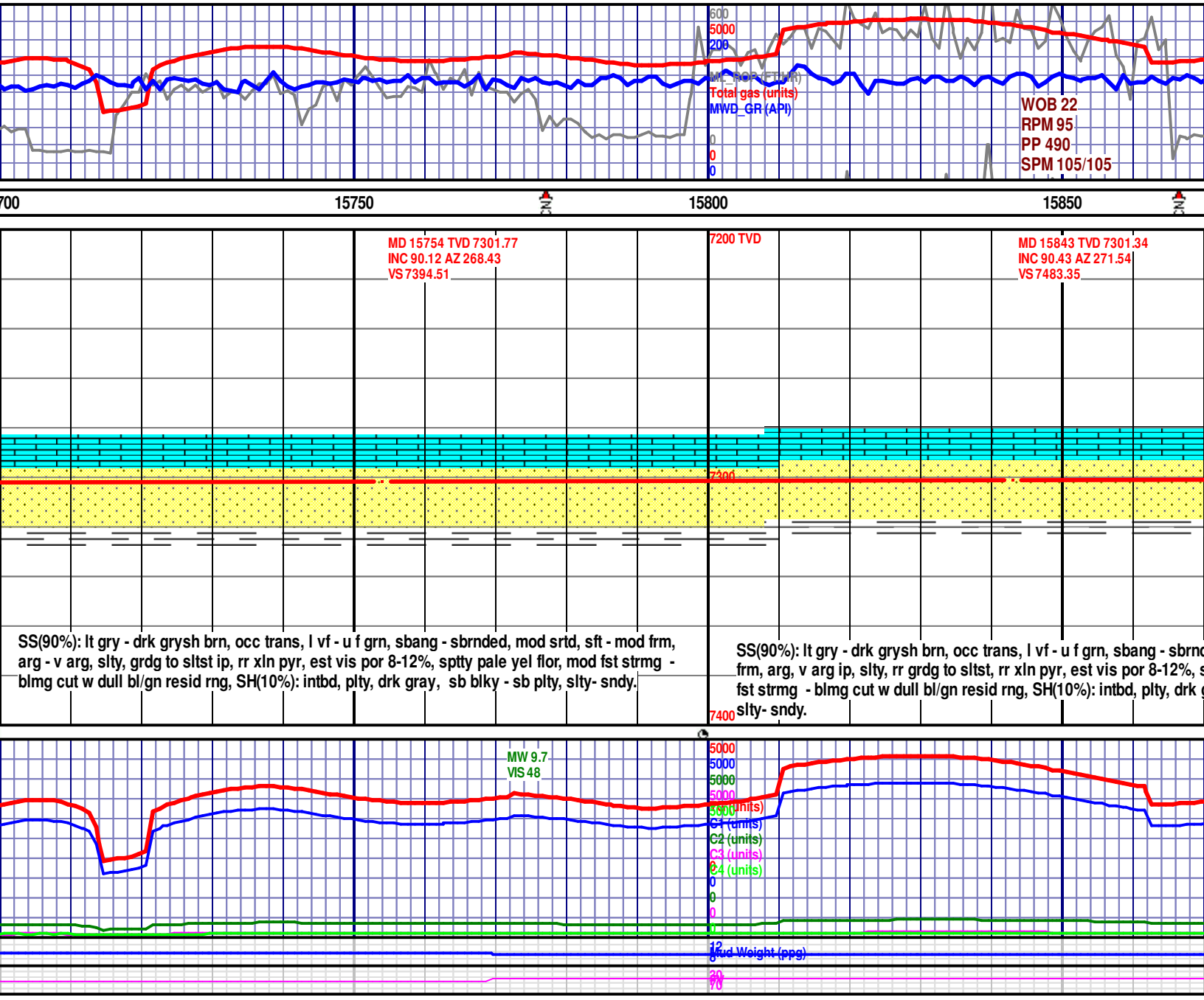
LS: (90%) mostly tanish-creamy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd,
occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cu
SS.

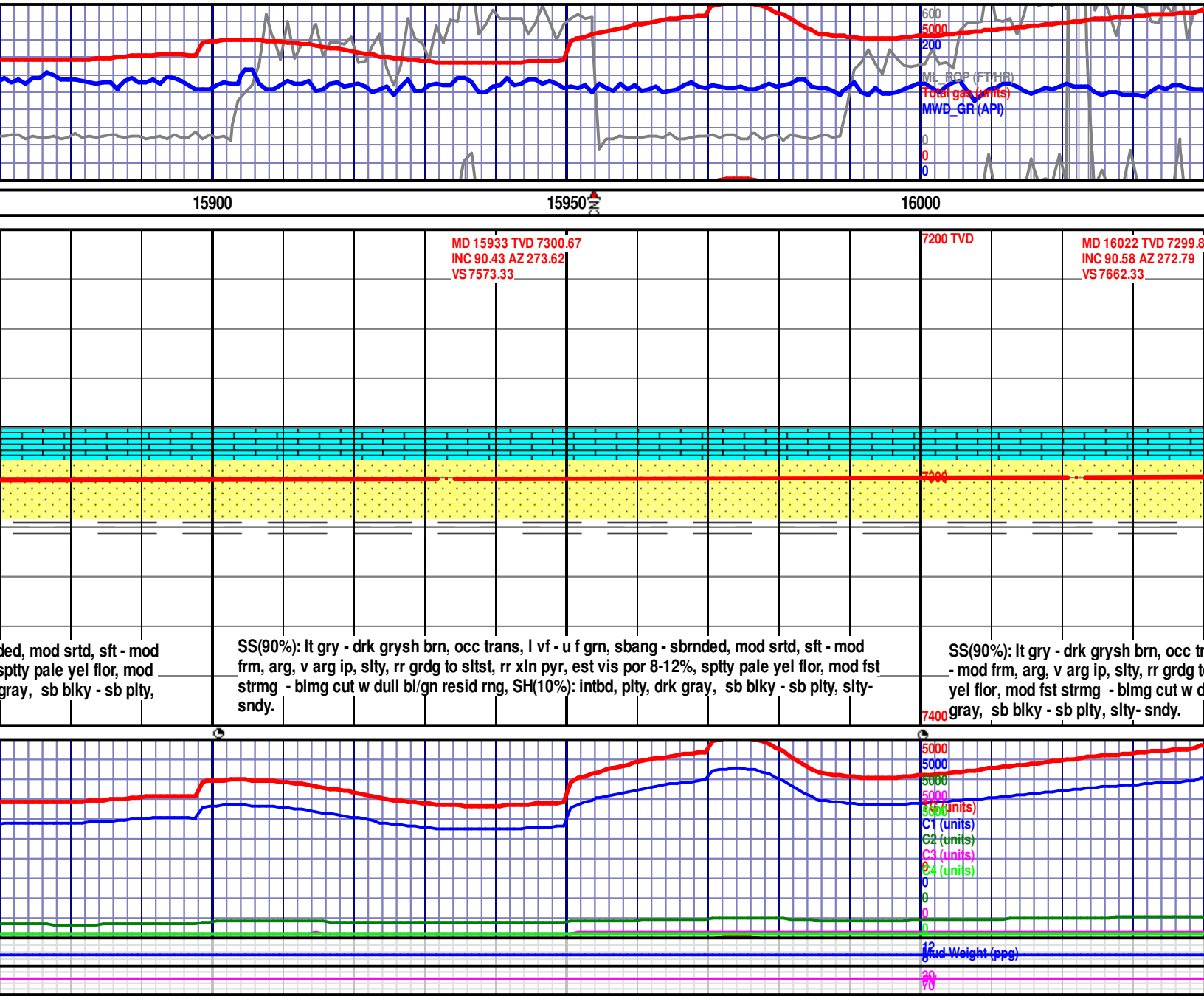


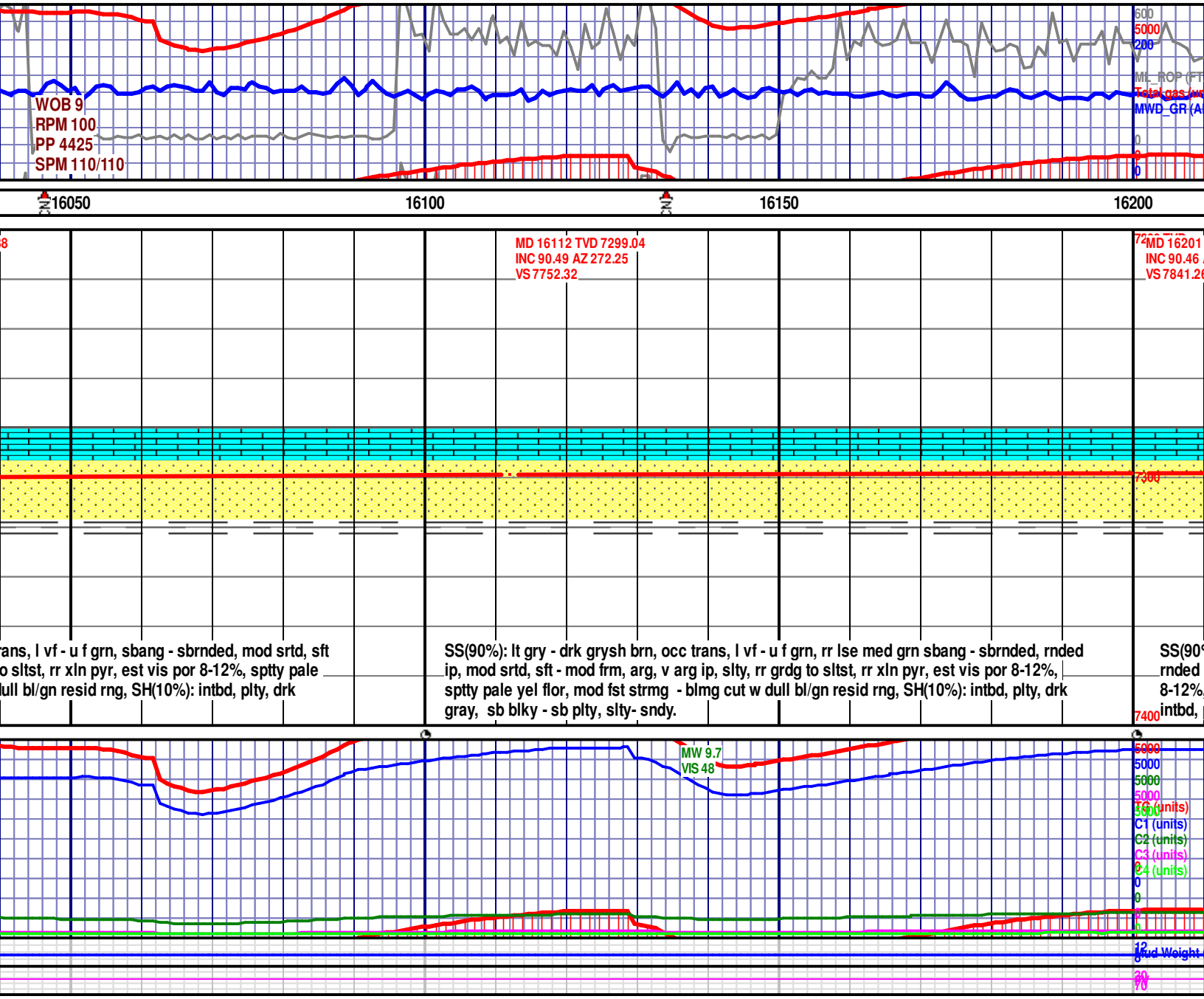

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 15
RPM 100
PP 4455
SPM 105/105
15200
INC
15250
15300
INC
15350
7200 TVD
MD 15217 TVD 7298.81
INC 88.8 AZ 269.15
VS 6858.48
MD 15307 TVD 7300.77
INC 88.71 AZ 271.22
VS 6948.31
7300
firm,
t, tr of
LS: (90%) mostly tanish-creamy tn, graysh bn, rr off white, subplaty, micro xln, shale intbd, firm, occ sand gairn, min flourescence, spotty rr to no stains, weak slow streaming yelowish cut, SS tr.
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, spt cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
MW 9.8
VIS 51
12
8
Mud Weight (ppg)
30
70

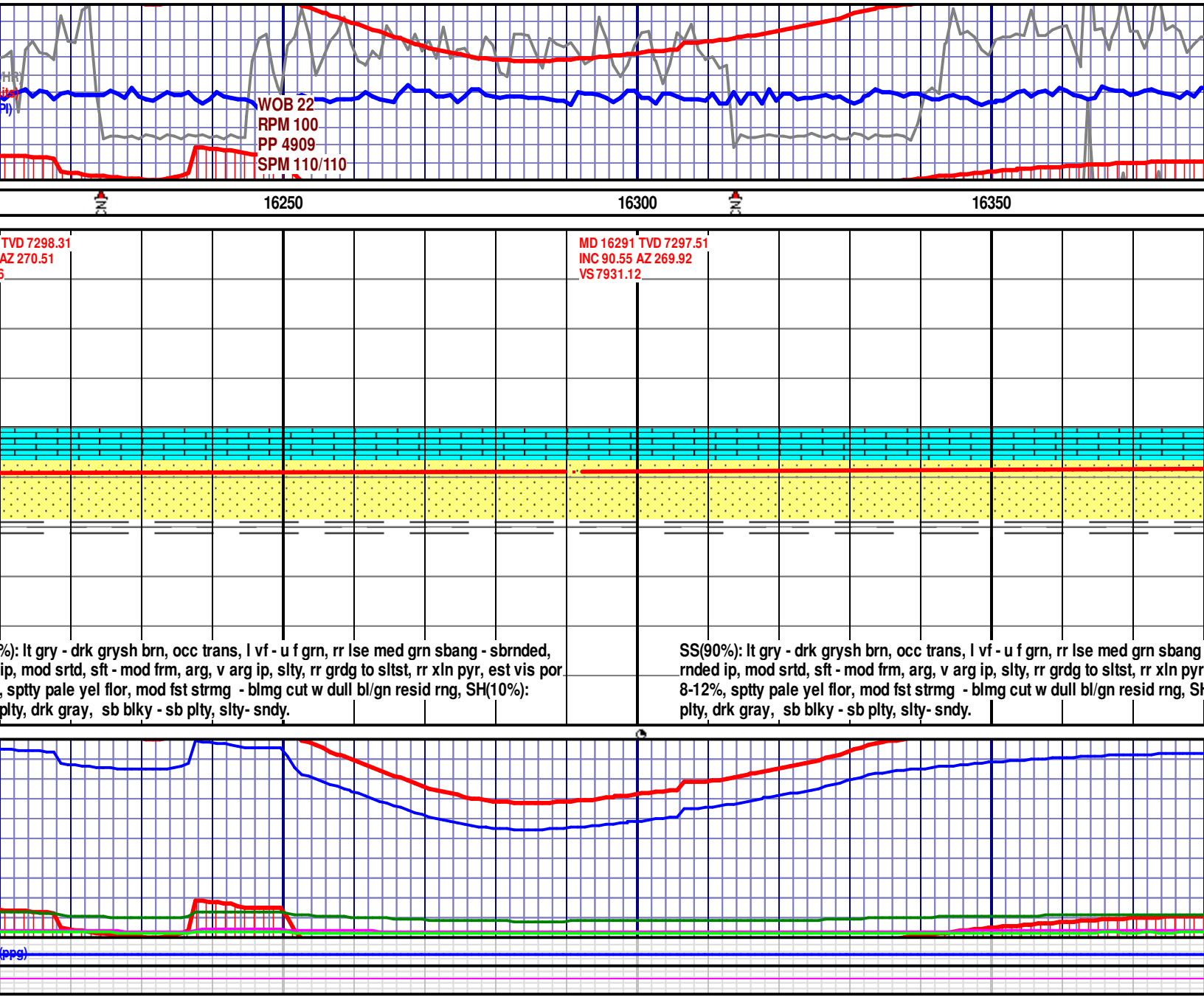

600
5000
200
MWD_GR (API)
0
0
0
15400
15450
15500
MD 15396 TVD 7302.94
INC 88.49 AZ 271.28
VS 7037.23
MD 15486 TVD 7303.64
INC 90.62 AZ 270.96
VS 7127.15
7300
g - sbrnded, mod srtd, sft - mod frm, arg
tty pale yel flor, mod fst strmg - blmg
blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg
- v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg
cut w dull bl/gn resid rng, SH(20%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(80%): lt gry - drk grysh brn
v arg, slty, grdg to sltst ip, rr x
w dull bl/gn resid rng, SH(20%
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70

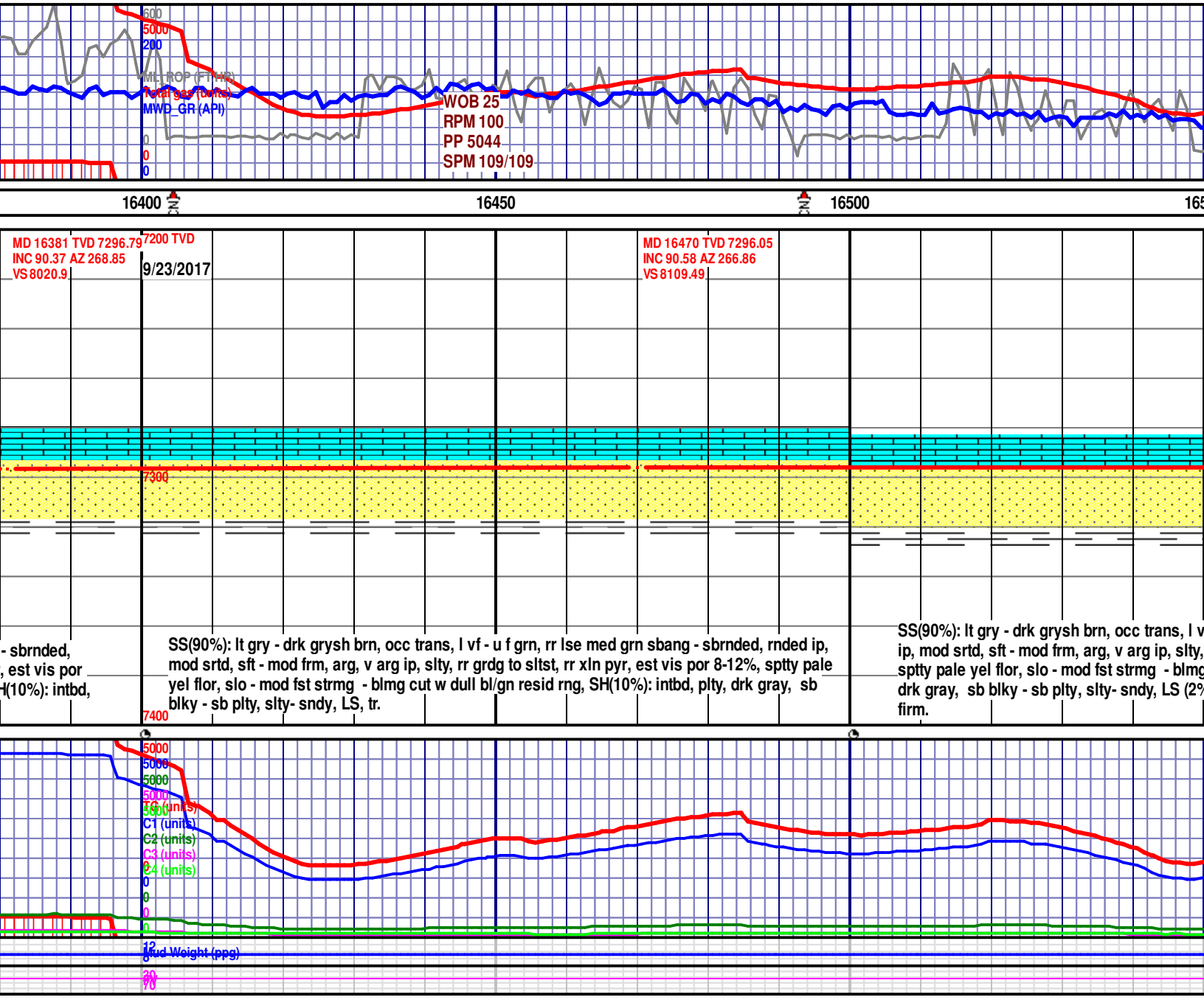

WOB 17
RPM 99
PP 4751
SPM 105/105
600
5000
200
ML_ROP (FT/HR)
MWD_GR (API)
0
0
0
15550
15600
15650
MD 15575 TVD 7302.78
INC 90.49 AZ 269.71
VS 7216.02
7200 TVD
MD 15664 TVD 7302.13
INC 90.34 AZ 269.02
VS 7304.81
7300
, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg -
xln pyr, est vis por 8-10%, sptty pale yel flor, mod fst strmg - blmg cut
%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm,
arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-12%, sptty pale yel flor, mod fst strmg -
blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
20
70

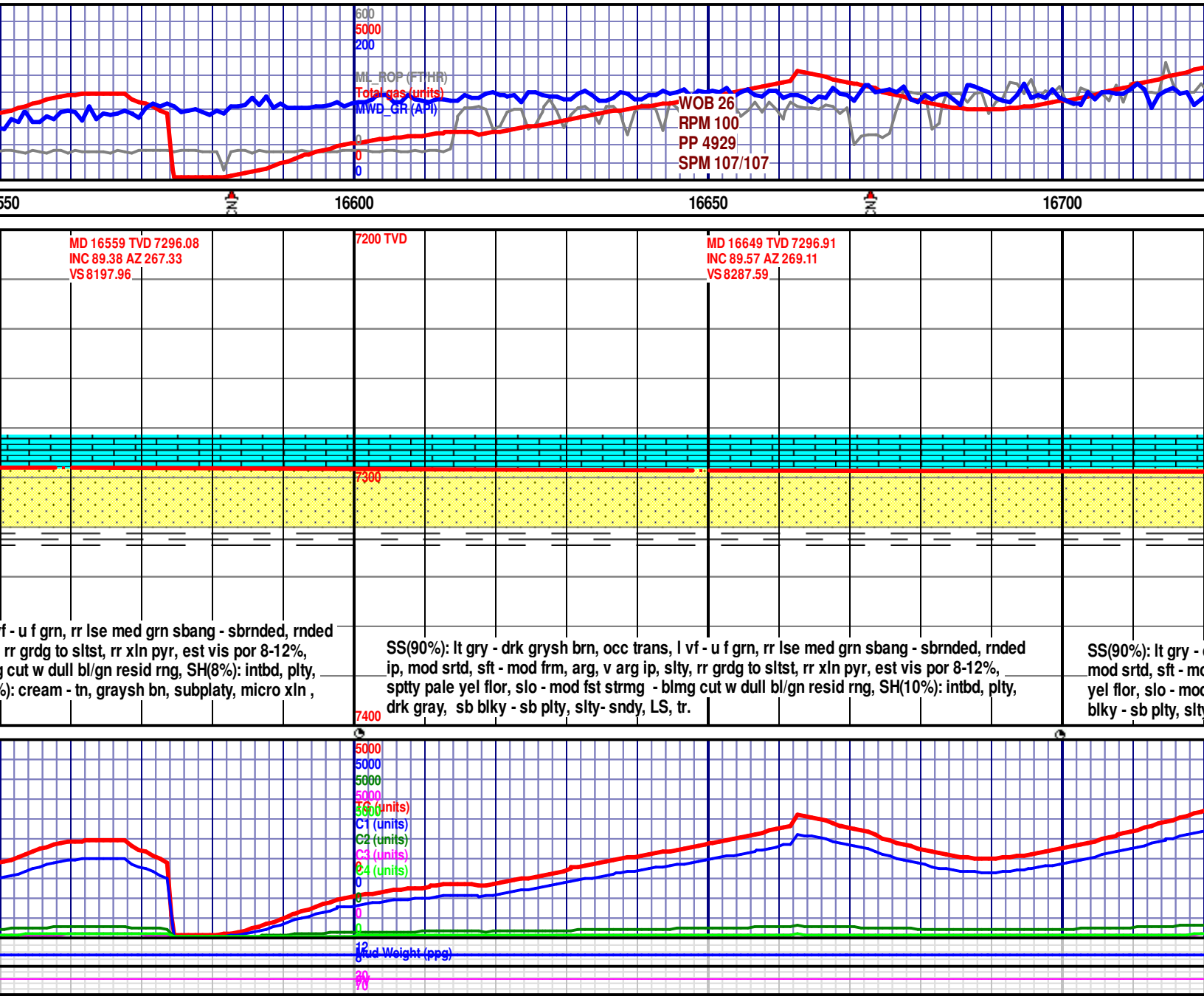

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
WOB 22
RPM 95
PP 490
SPM 105/105
700
15750
15800
15850
MD 15754 TVD 7301.77
INC 90.12 AZ 268.43
VS 7394.51
7200 TVD
MD 15843 TVD 7301.34
INC 90.43 AZ 271.54
VS 7483.35
7300
7400
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg - v arg, slty, grdg to sltst ip, rr xln pyr, est vis por 8-12%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnd
frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, s
fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk g
slty- sndy.
MW 9.7
VIS 48
5000
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70

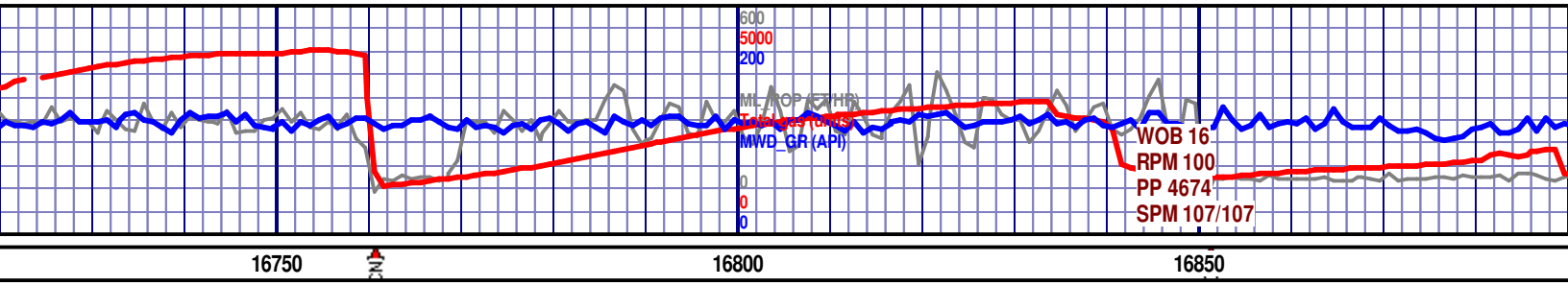

600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
15900
15950
16000
MD 15933 TVD 7300.67
INC 90.43 AZ 273.62
VS 7573.33
7200 TVD
MD 16022 TVD 7299.8
INC 90.58 AZ 272.79
VS 7662.33
7200
ded, mod srtd, sft - mod
sptty pale yel flor, mod
gray, sb blky - sb plty,
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, sbang - sbrnded, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty-sndy.
SS(90%): lt gry - drk grysh brn, occ tr
- mod frm, arg, v arg ip, slty, rr grdg t
yel flor, mod fst strmg - blmg cut w d
gray, sb blky - sb plty, slty- sndy.
7400
5000
5000
5000
5000
5000
units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70


WOB 9
RPM 100
PP 4425
SPM 110/110
600
5000
200
MWD_GR (A
0
0
0
16050
16100
16150
16200
MD 16112 TVD 7299.04
INC 90.49 AZ 272.25
VS 7752.32
MD 16201
INC 90.46
VS 7841.26
7300
7400
rans, l vf - u f grn, sbang - sbrnded, mod srtd, sft
o sltst, rr xln pyr, est vis por 8-12%, sptty pale
ull bl/gn resid rng, SH(10%): intbd, plty, drk
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded
ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%,
sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk
gray, sb blky - sb plty, slty- sndy.
SS(90
rnded
8-12%
intbd,
MW 9.7
VIS 48
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight
20
70

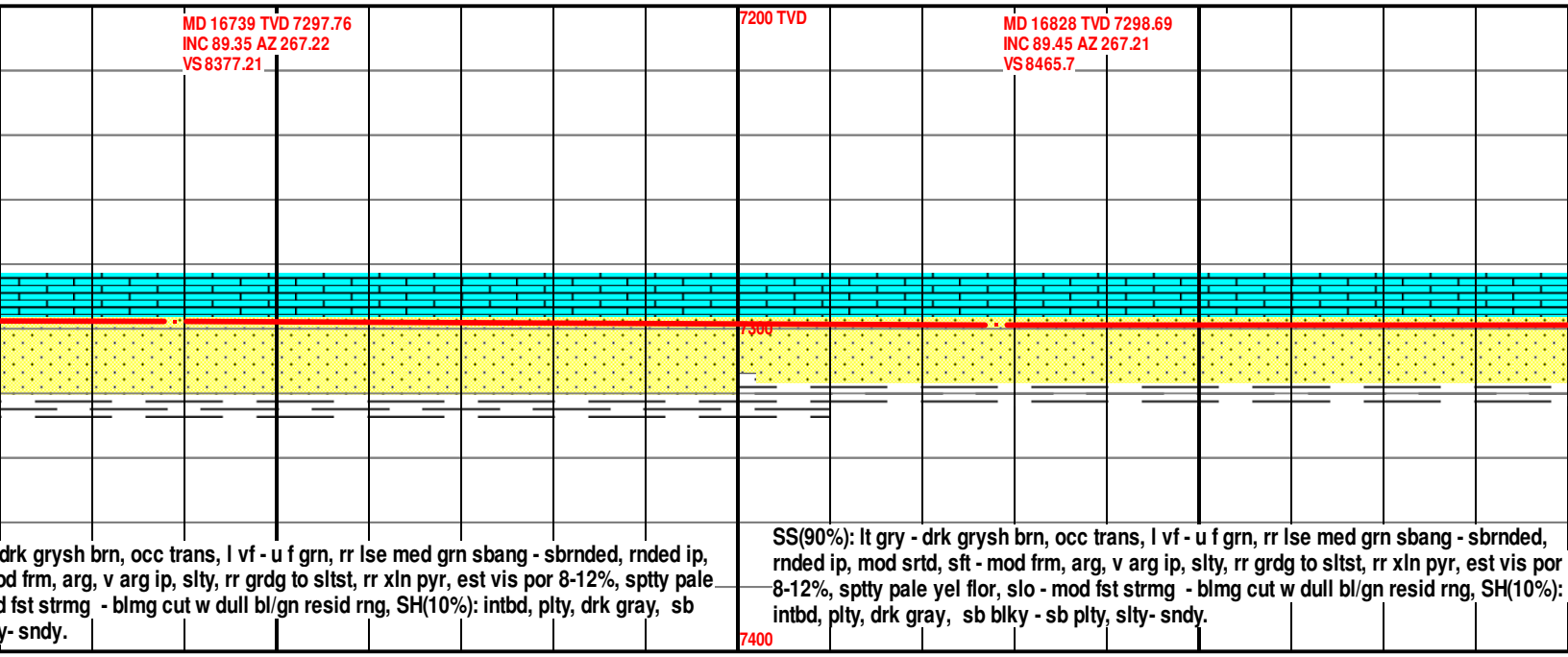

WOB 22
RPM 100
PP 4909
SPM 110/110
16250
16300
16350
TVD 7298.31
AZ 270.51
MD 16291 TVD 7297.51
INC 90.55 AZ 269.92
VS 7931.12
%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded,
ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por
, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%):
plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang
rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr
8-12%, sptty pale yel flor, mod fst strmg - blmg cut w dull bl/gn resid rng, SH
plty, drk gray, sb blky - sb plty, slty- sndy.
(ppg)


600
5000
200
MIL ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 25
RPM 100
PP 5044
SPM 109/109
16400
16450
16500
MD 16381 TVD 7296.79
INC 90.37 AZ 268.85
VS 8020.9
7200 TVD
9/23/2017
MD 16470 TVD 7296.05
INC 90.58 AZ 266.86
VS 8109.49
7300
7400
- sbrnded,
, est vis por
H(10%): intbd,
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy, LS, tr.
SS(90%): lt gry - drk grysh brn, occ trans, l v
ip, mod srtd, sft - mod frm, arg, v arg ip, slty,
sptty pale yel flor, slo - mod fst strmg - blmg
drk gray, sb blky - sb plty, slty- sndy, LS (2%
firm.
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
20
70


600
5000
200
MI_ROP (FTHR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 26
RPM 100
PP 4929
SPM 107/107
550
16600
16650
16700
MD 16559 TVD 7296.08
INC 89.38 AZ 267.33
VS 8197.96
7200 TVD
MD 16649 TVD 7296.91
INC 89.57 AZ 269.11
VS 8287.59
7300
7400
f - u f grn, rr lse med grn sbang - sbrnded, rnded
rr grdg to sltst, rr xln pyr, est vis por 8-12%,
g cut w dull bl/gn resid rng, SH(8%): intbd, plty,
%): cream - tn, graysh bn, subplaty, micro xln ,
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded
ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%,
sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty,
drk gray, sb blky - sb plty, slty- sndy, LS, tr.
SS(90%): lt gry -
mod srtd, sft - mo
yel flor, slo - mod
blky - sb plty, slty
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
90

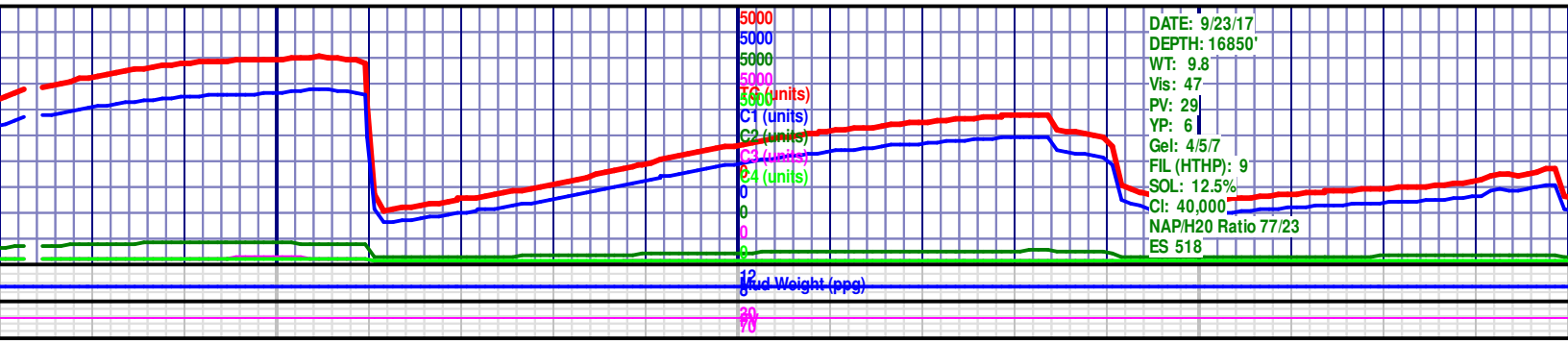


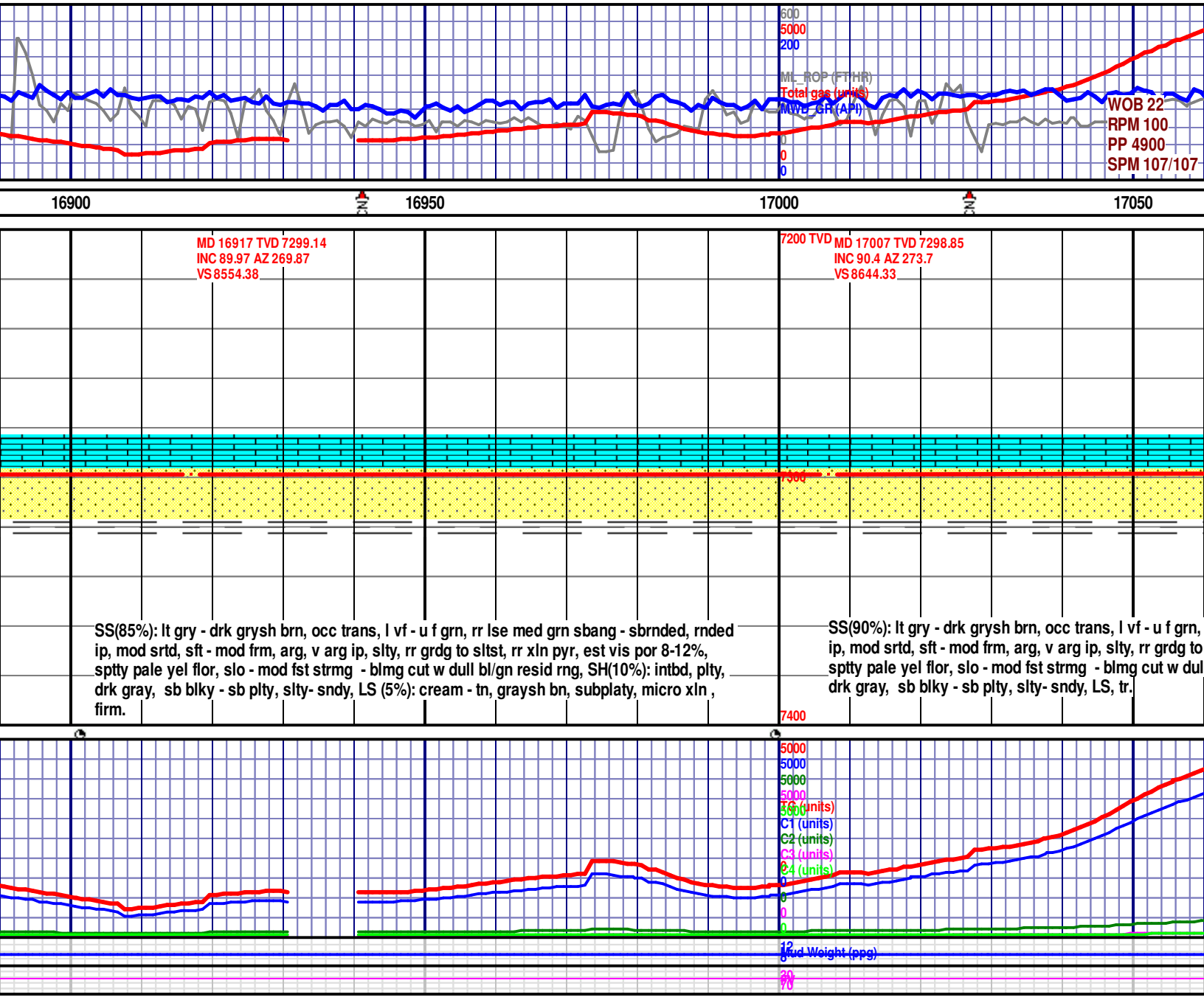
16750 16800 16850

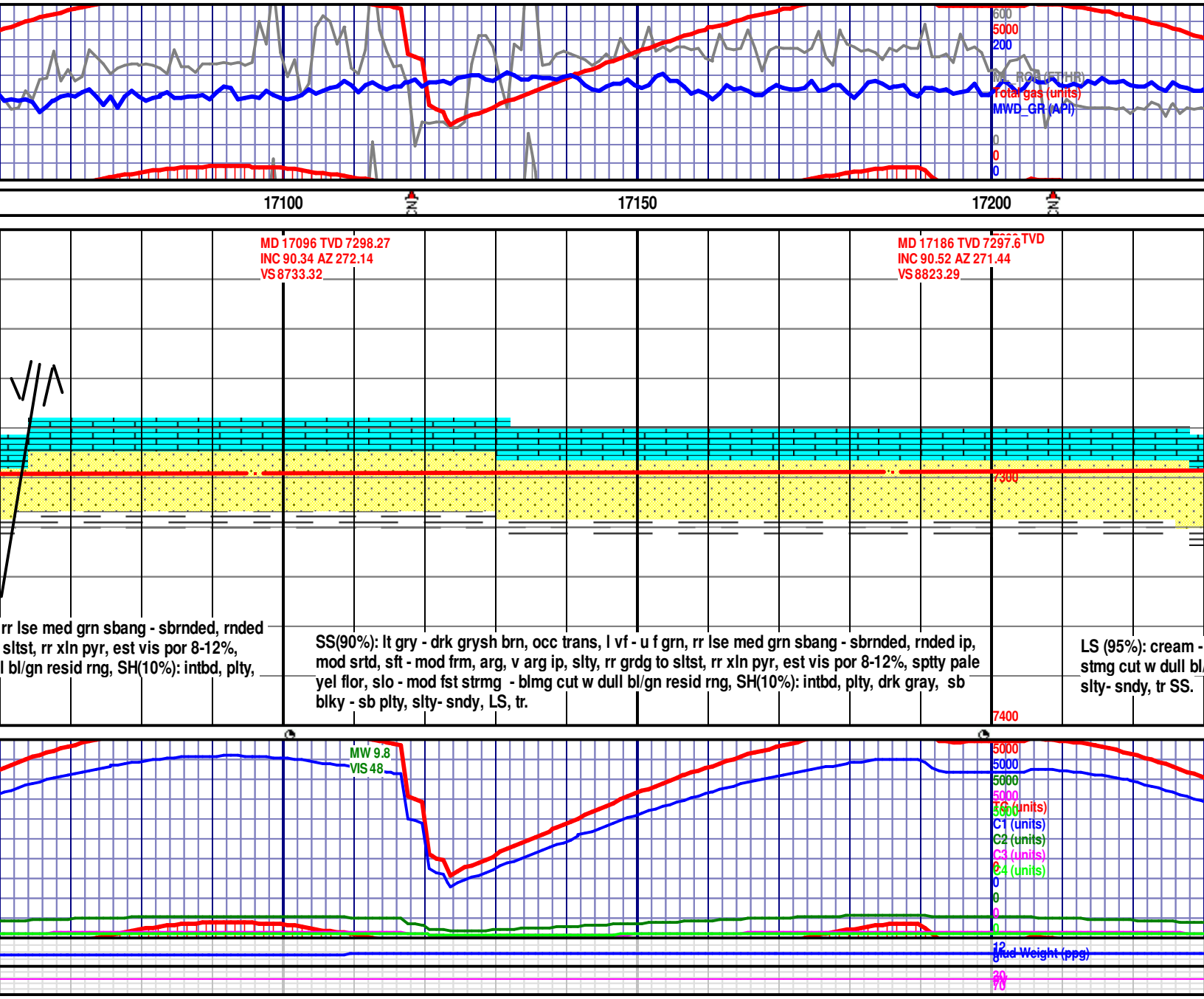


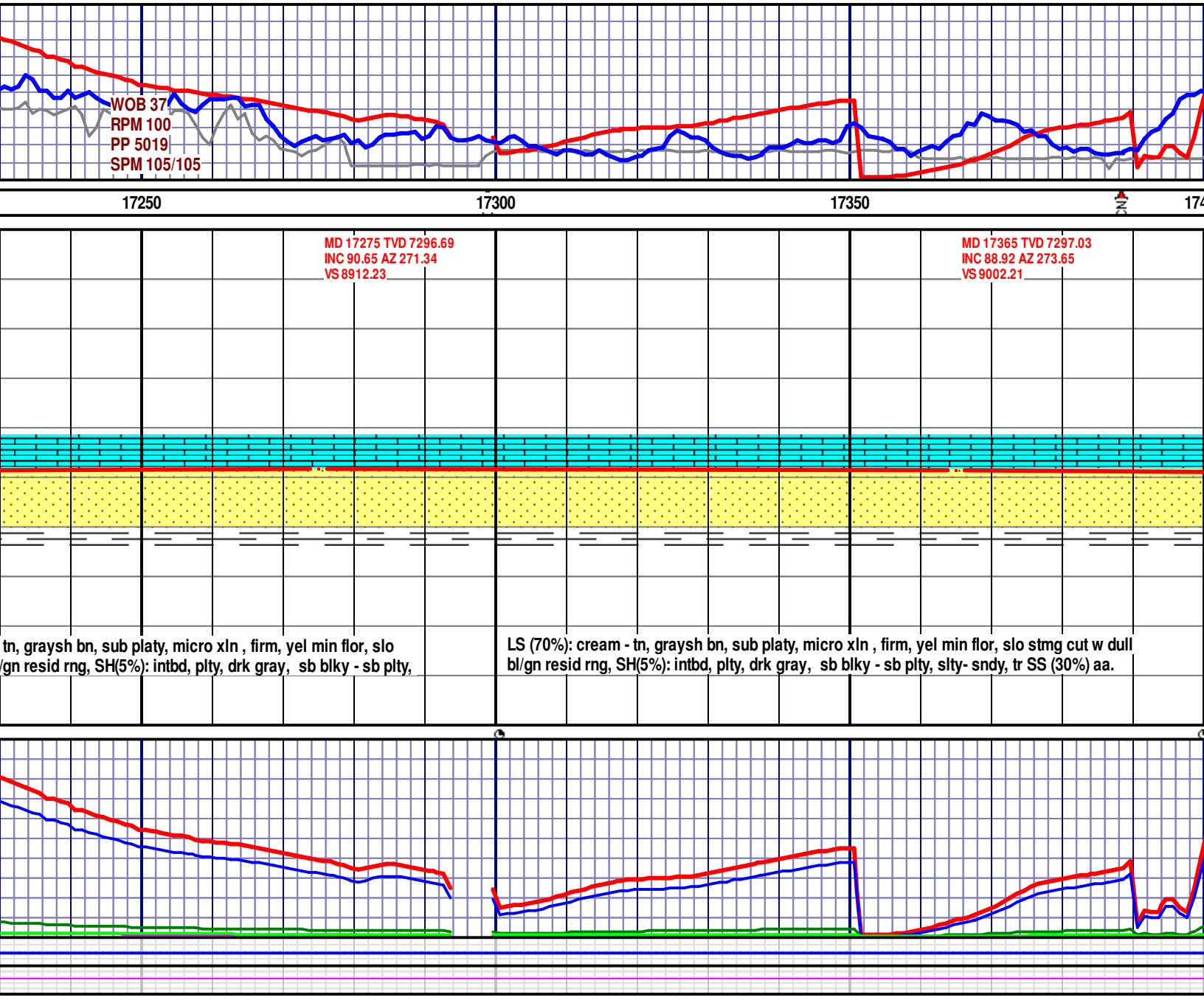
drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, od frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale d fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb y- sndy.

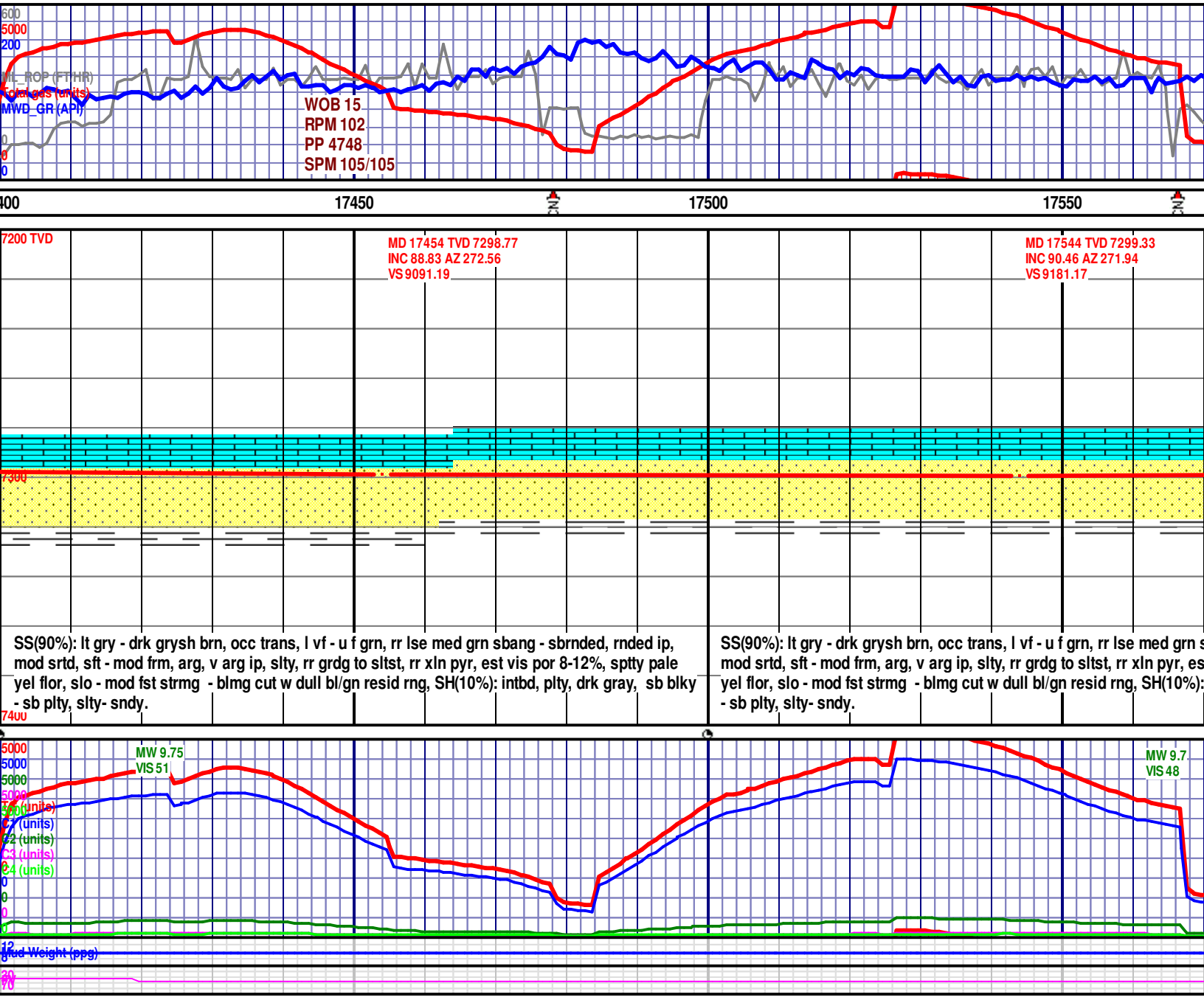
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

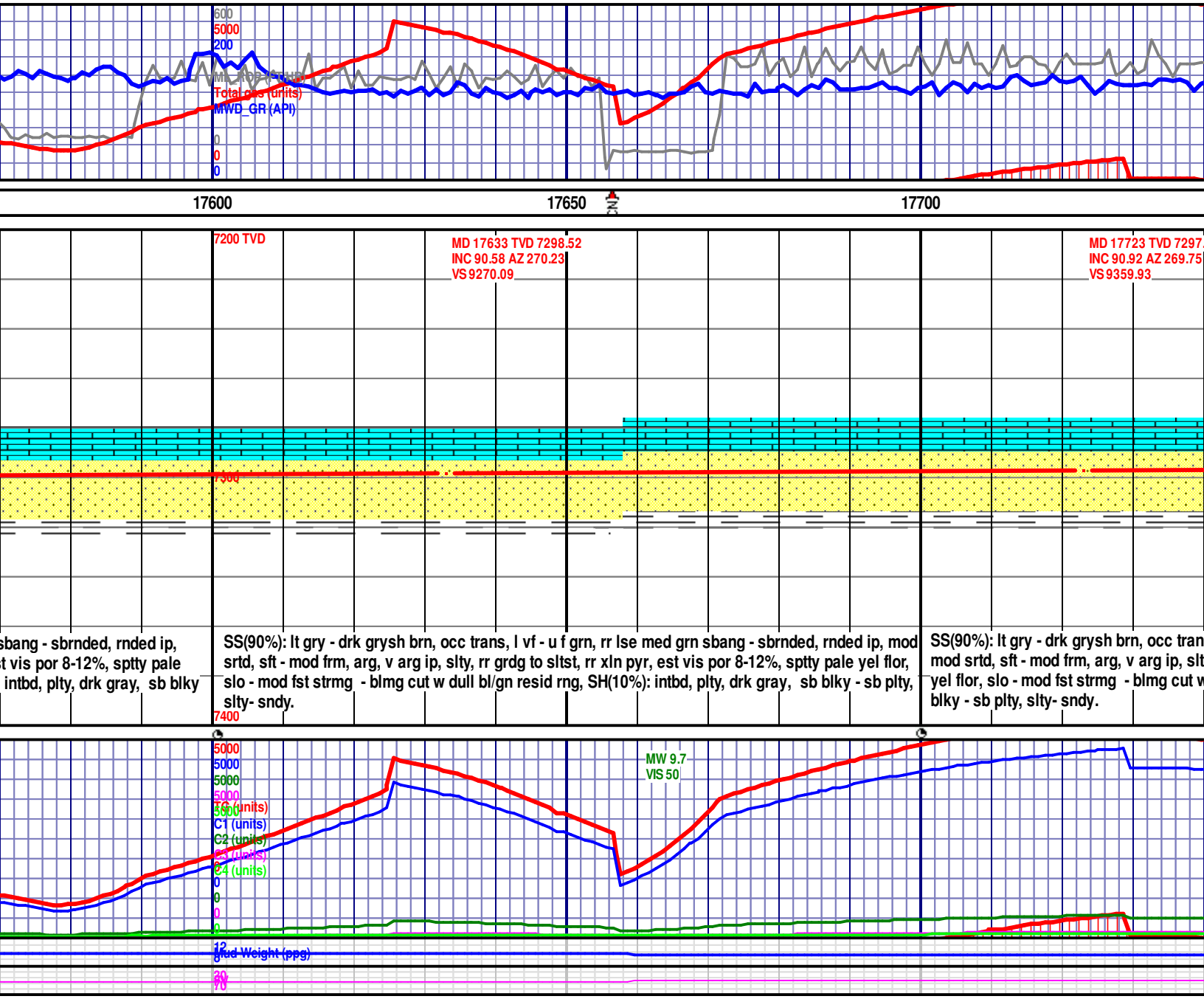


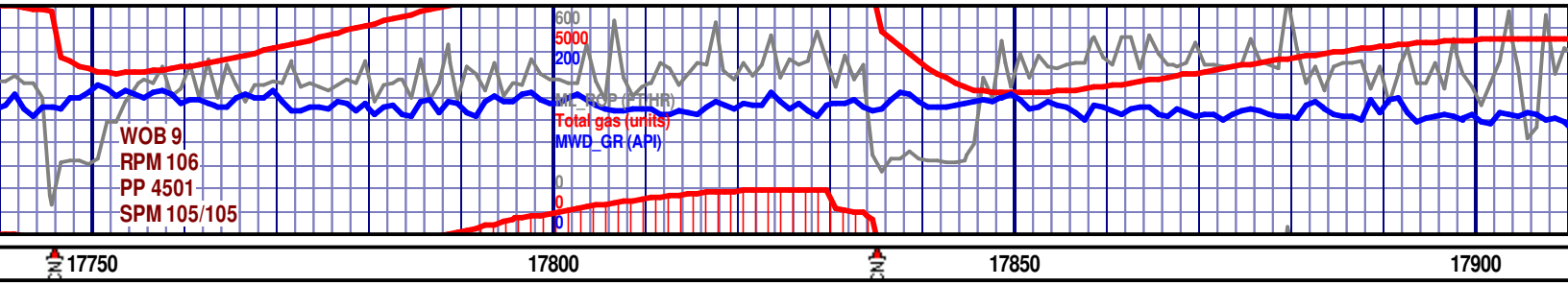

600
5000
200
MI_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
WOB 22
RPM 100
PP 4900
SPM 107/107
16900
16950
17000
17050
MD 16917 TVD 7299.14
INC 89.97 AZ 269.87
VS 8554.38
7200 TVD
MD 17007 TVD 7298.85
INC 90.4 AZ 273.7
VS 8644.33
SS(85%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy, LS (5%): cream - tn, graysh bn, subplaty, micro xln , firm.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sptty pale yel flor, slo - mod fst strmg - blmg cut w dul drk gray, sb blky - sb plty, slty- sndy, LS, tr.
7400
5000
5000
5000
5000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30

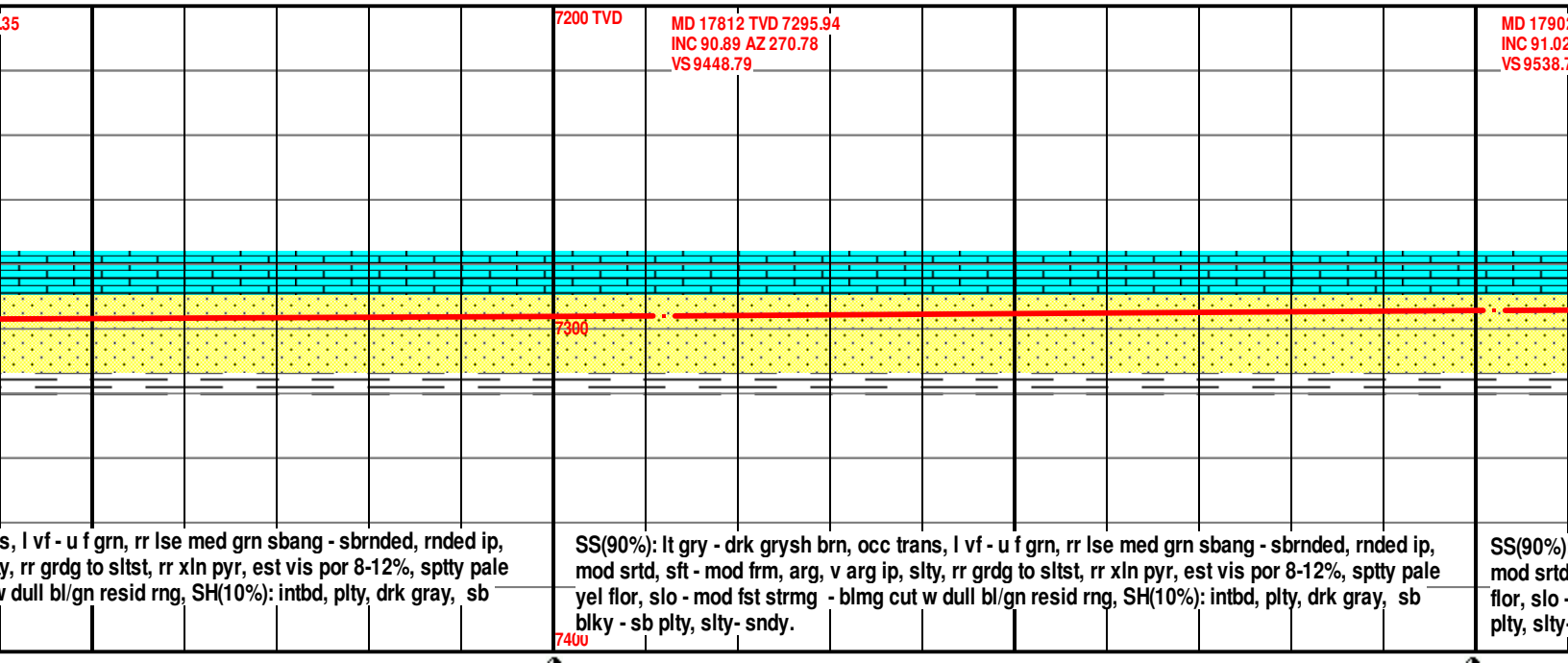

600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
17100
17150
17200
MD 17096 TVD 7298.27
INC 90.34 AZ 272.14
VS 8733.32
MD 17186 TVD 7297.6
INC 90.52 AZ 271.44
VS 8823.29
7300
7400
rr lse med grn sbang - sbrnded, rnded
sltst, rr xln pyr, est vis por 8-12%,
l bl/gn resid rng, SH(10%): intbd, plty,
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip,
mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale
yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb
blky - sb plty, slty- sndy, LS, tr.
LS (95%): cream -
stmg cut w dull bl
slty- sndy, tr SS.
MW 9.8
VIS 48
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70


WOB 37
RPM 100
PP 5019
SPM 105/105
17250
17300
17350
MD 17275 TVD 7296.69
INC 90.65 AZ 271.34
VS 8912.23
MD 17365 TVD 7297.03
INC 88.92 AZ 273.65
VS 9002.21
tn, graysh bn, sub platy, micro xln , firm, yel min flor, slo
/gn resid rng, SH(5%): intbd, plty, drk gray, sb blky - sb plty,
LS (70%): cream - tn, graysh bn, sub platy, micro xln , firm, yel min flor, slo stmg cut w dull
bl/gn resid rng, SH(5%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy, tr SS (30%) aa.


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 15
RPM 102
PP 4748
SPM 105/105
400
17450
17500
17550
7200 TVD
MD 17454 TVD 7298.77
INC 88.83 AZ 272.56
VS 9091.19
MD 17544 TVD 7299.33
INC 90.46 AZ 271.94
VS 9181.17
7300
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn s mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, es yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): - sb plty, slty- sndy.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
20
70
MW 9.75
VIS 51
MW 9.7
VIS 48


600
5000
200
Total gas (units)
MWD_GR (API)
0
0
0
17600
17650
17700
7200 TVD
MD 17633 TVD 7298.52
INC 90.58 AZ 270.23
VS 9270.09
MD 17723 TVD 7297
INC 90.92 AZ 269.75
VS 9359.93
7300
sbang - sbrnded, rnded ip,
t vis por 8-12%, sptty pale
intbd, plty, drk gray, sb blky
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ tran
mod srtd, sft - mod frm, arg, v arg ip, slt
yel flor, slo - mod fst strmg - blmg cut w
blky - sb plty, slty- sndy.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70
MW 9.7
VIS 50

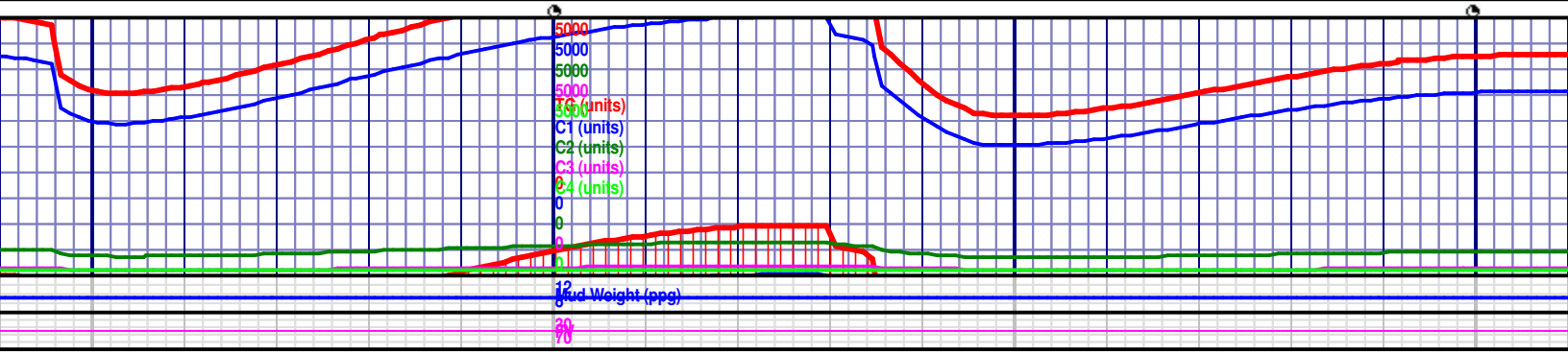


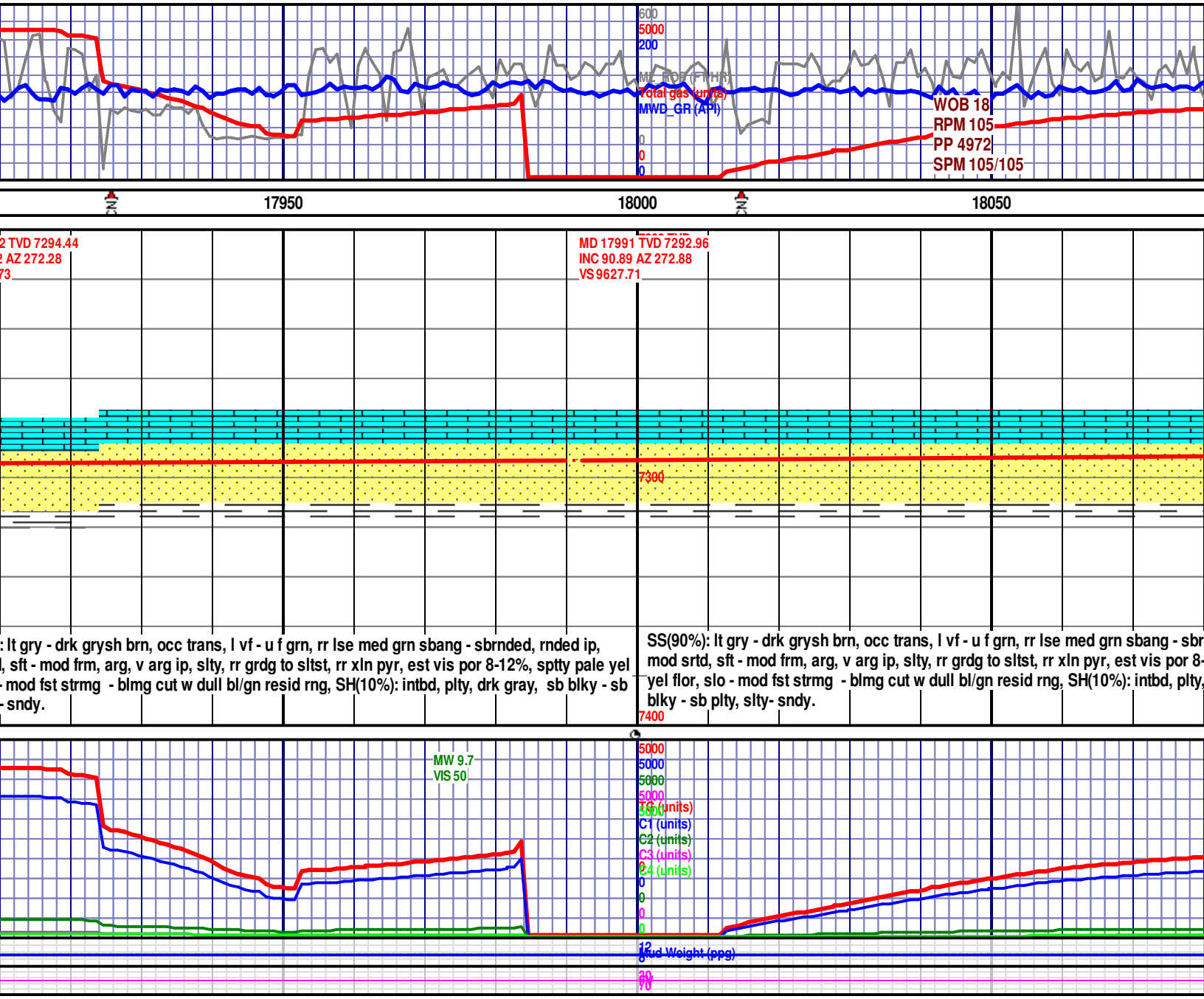


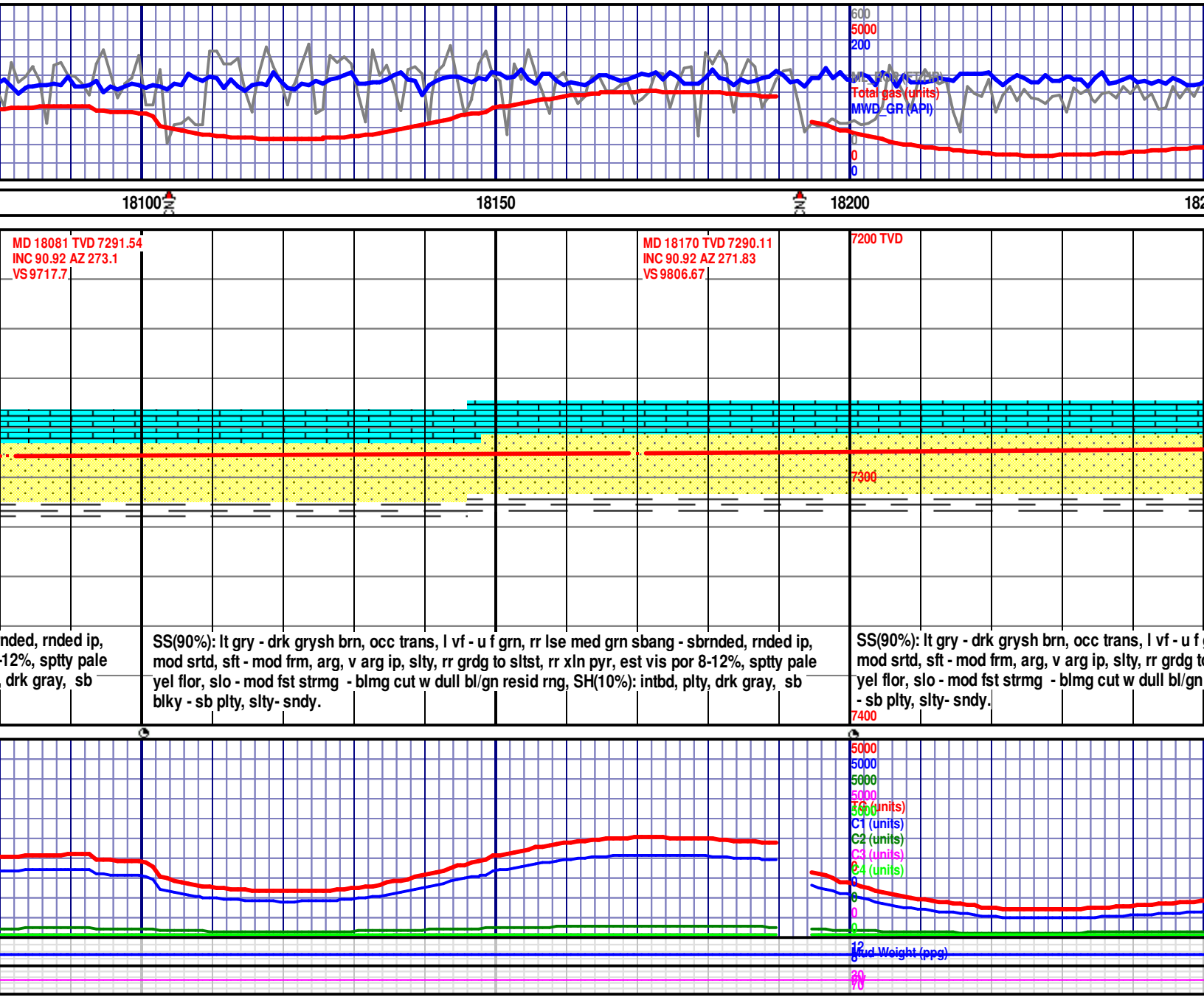
s, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, y, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb

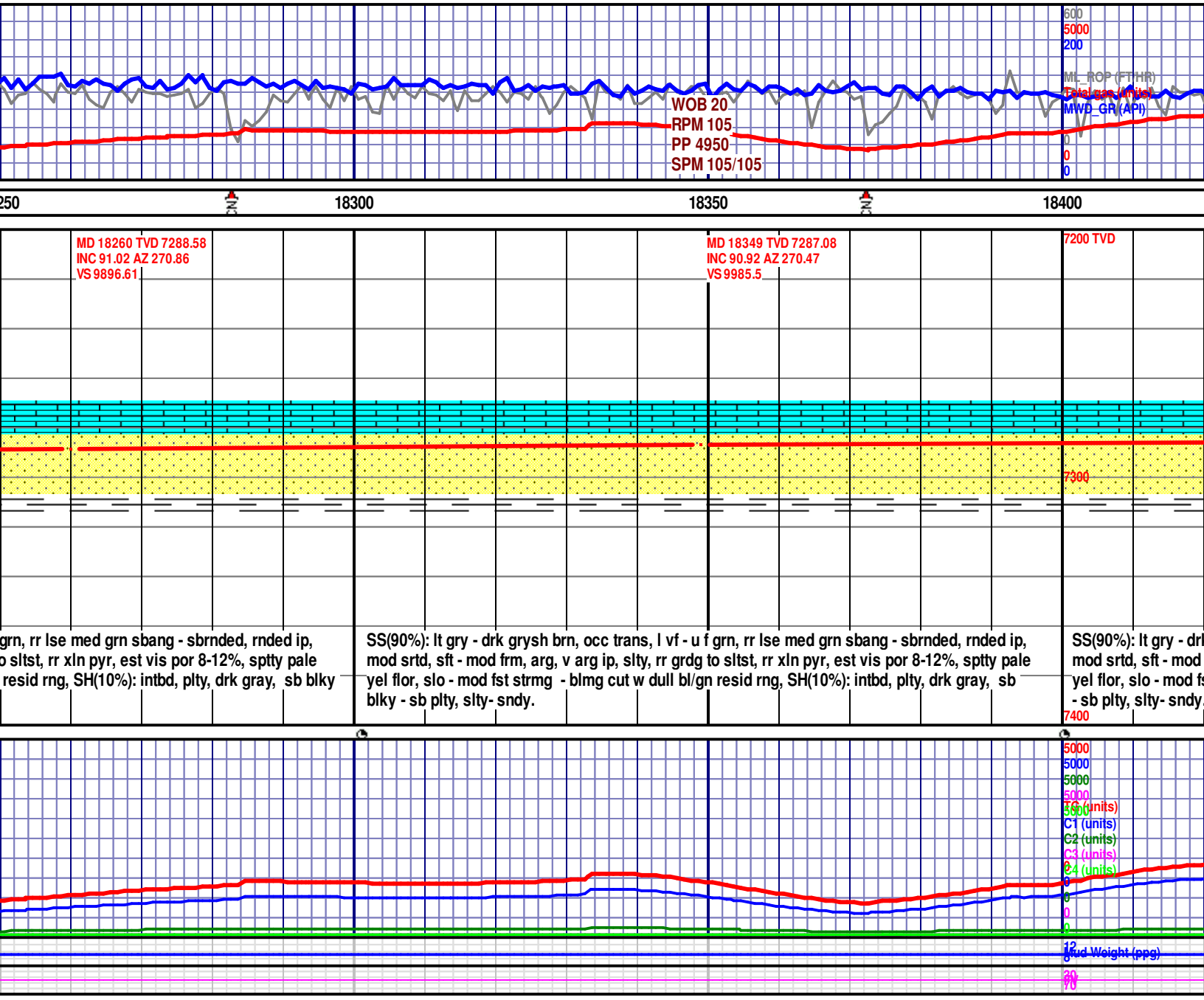
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.

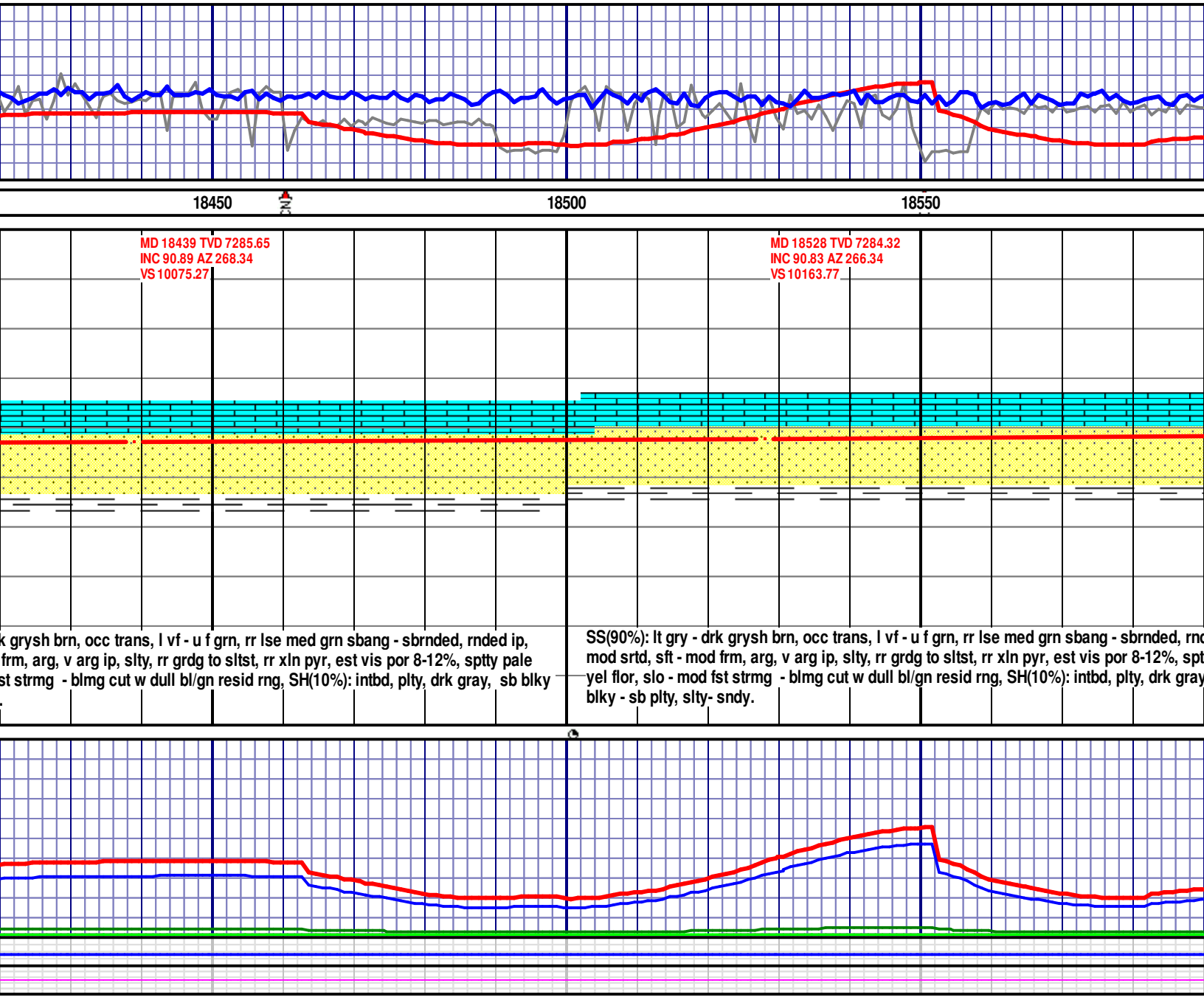
SS(90%) mod srtd flor, slo - plty, slty-

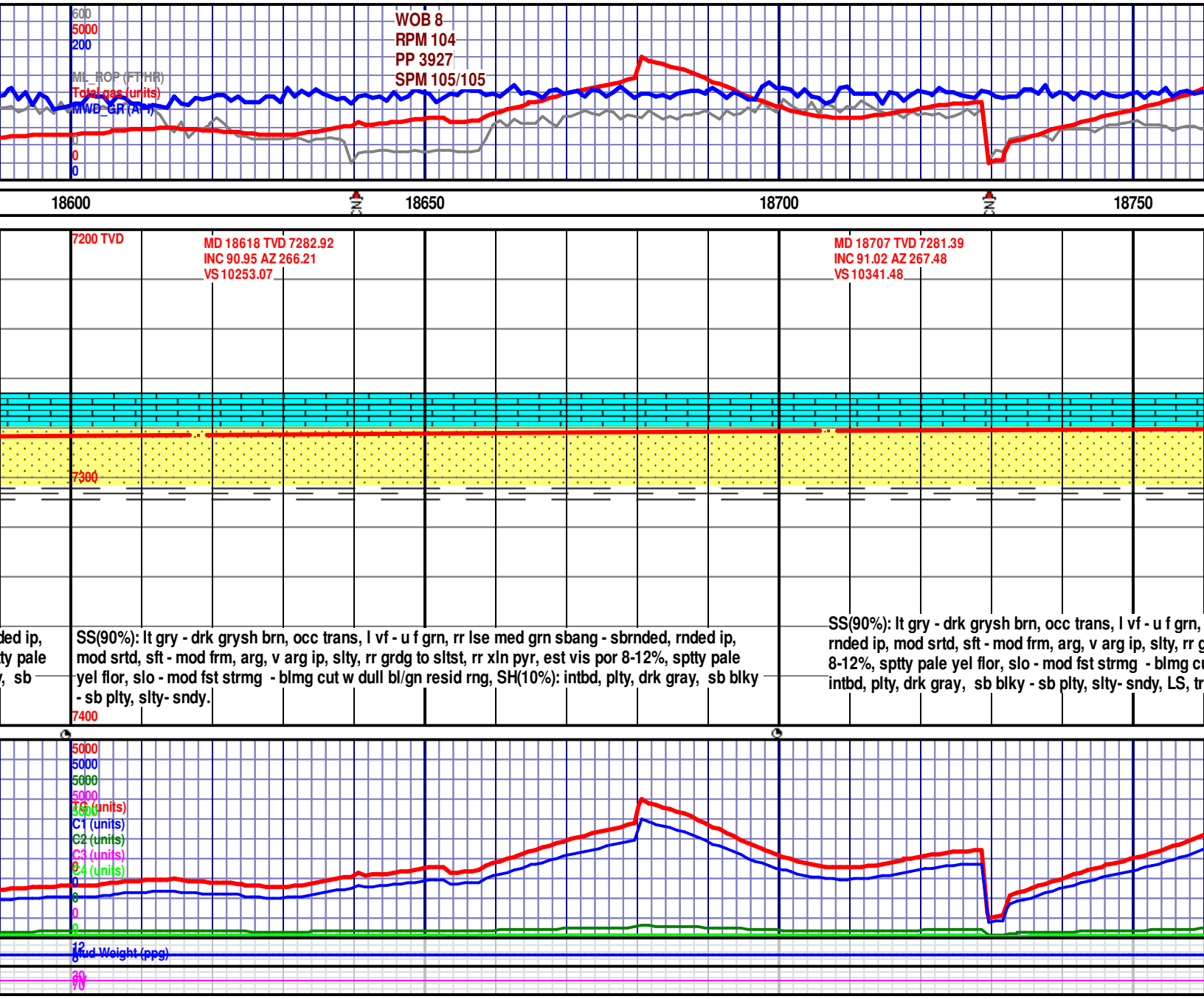


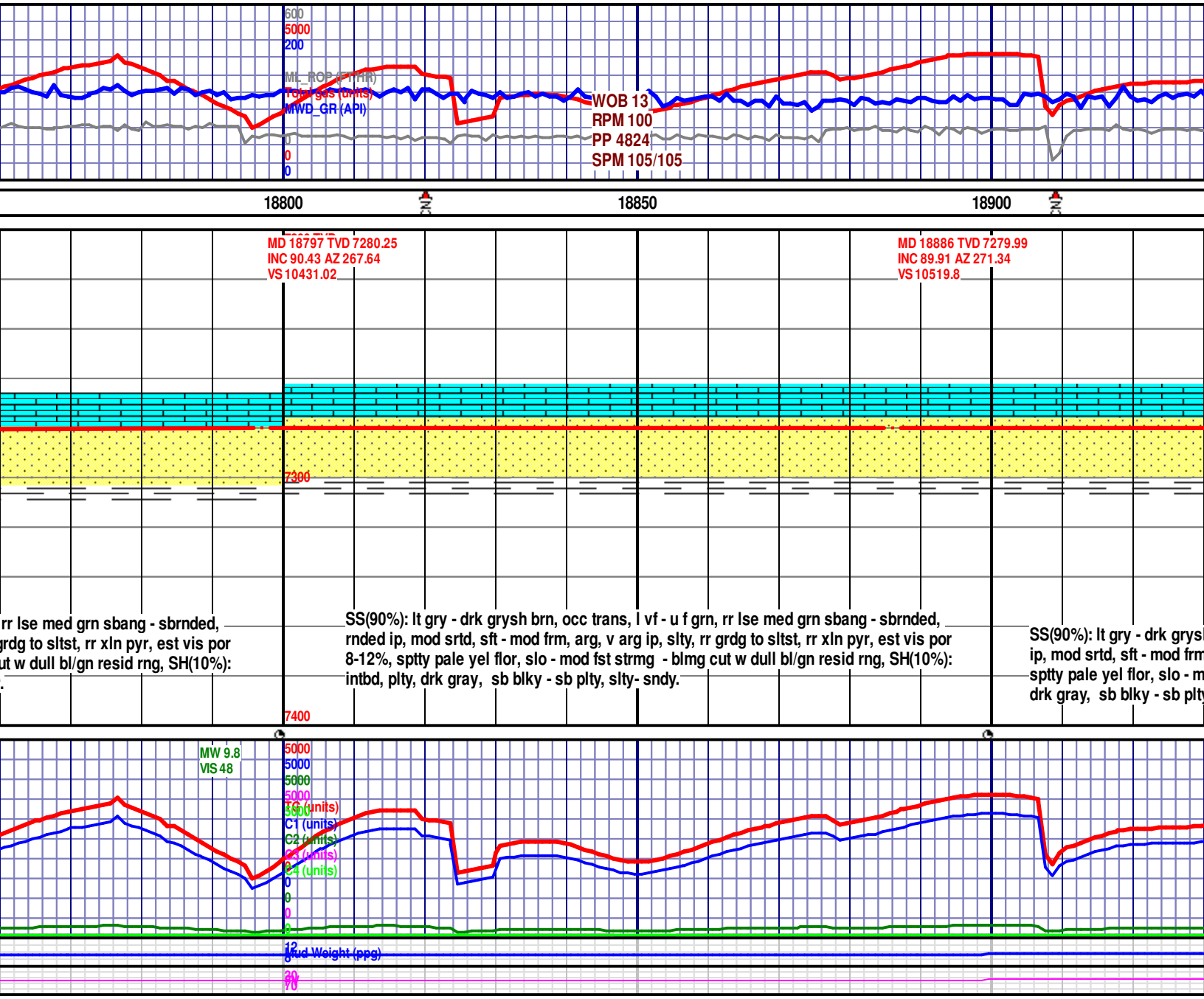

600
5000
200
ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 18
RPM 105
PP 4972
SPM 105/105
17950
18000
18050
2 TVD 7294.44
2 AZ 272.28
73
MD 17991 TVD 7292.96
INC 90.89 AZ 272.88
VS 9627.71
7300
: lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip,
l, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel
- mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb
- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbr
mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-
yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty,
blky - sb plty, slty- sndy.
7400
MW 9.7
VIS 50
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
20
70

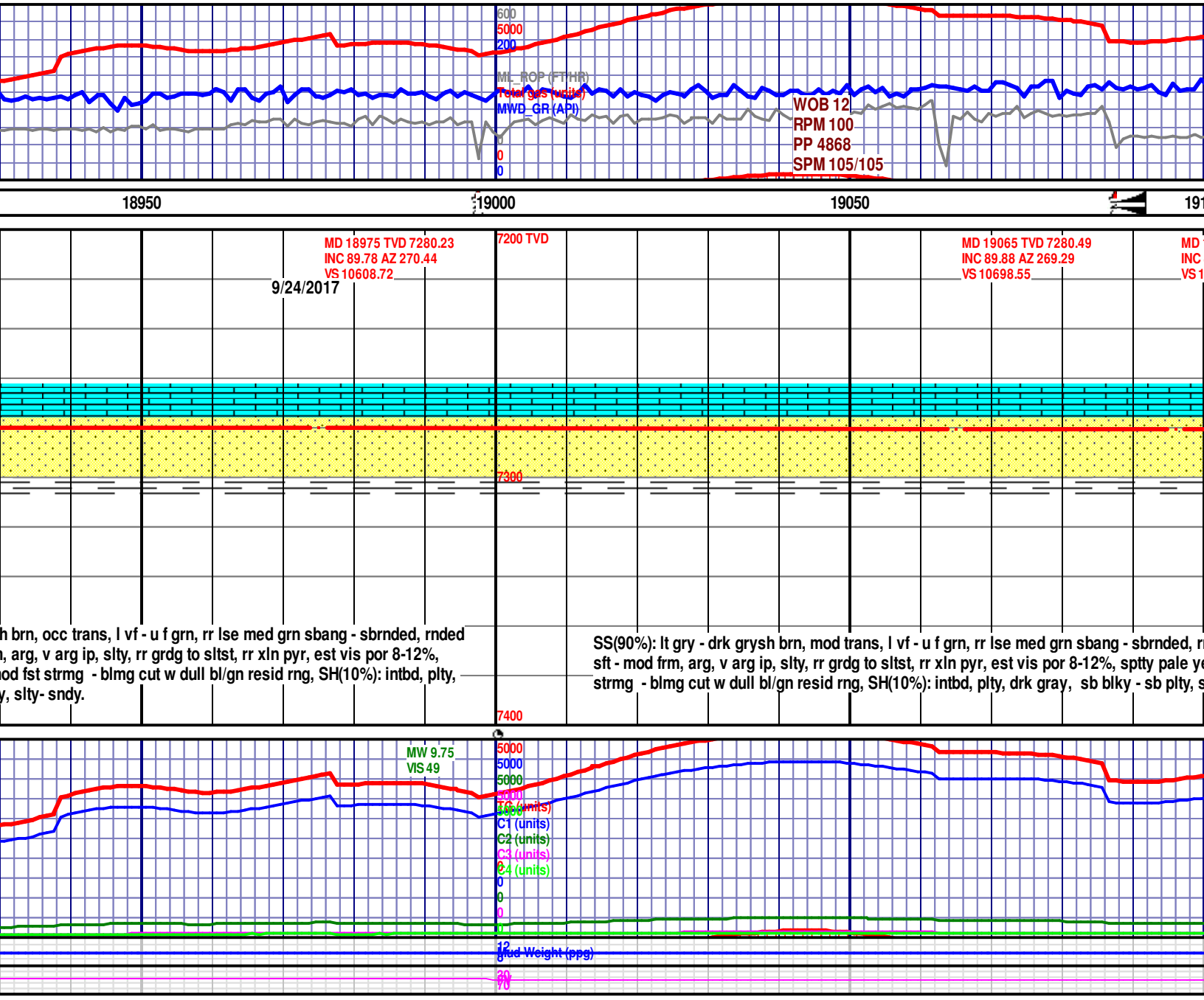

600
5000
200
MWD_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
18100
18150
18200
182
MD 18081 TVD 7291.54
INC 90.92 AZ 273.1
VS 9717.7
MD 18170 TVD 7290.11
INC 90.92 AZ 271.83
VS 9806.67
7200 TVD
7300
nded, rnded ip,
-12%, sptty pale
drk gray, sb
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f
mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg t
yel flor, slo - mod fst strmg - blmg cut w dull bl/gn
- sb plty, slty- sndy.
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70

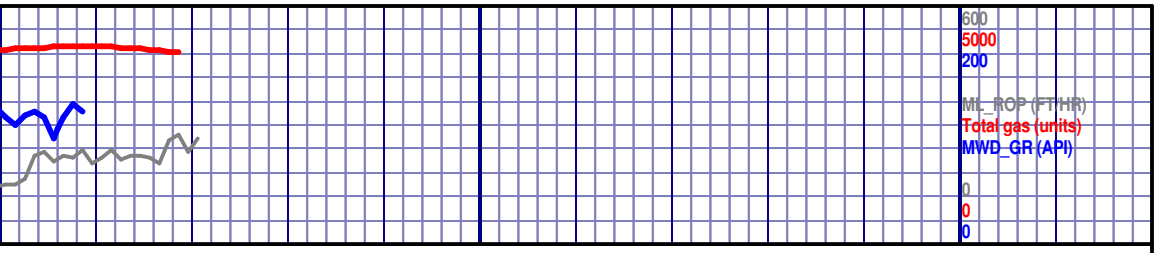

600
5000
200
IML_ROP (FT/HR)
Total gas (units)
IMWD_GR (API)
WOB 20
RPM 105
PP 4950
SPM 105/105
0
0
0
250
18300
18350
18400
MD 18260 TVD 7288.58
INC 91.02 AZ 270.86
VS 9896.61
MD 18349 TVD 7287.08
INC 90.92 AZ 270.47
VS 9985.5
7200 TVD
7300
7400
grn, rr lse med grn sbang - sbrnded, rnded ip,
o sltst, rr xln pyr, est vis por 8-12%, sptty pale
resid rng, SH(10%): intbd, plty, drk gray, sb blky
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip,
mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale
yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb
blky - sb plty, slty- sndy.
SS(90%): lt gry - drl
mod srtd, sft - mod
yel flor, slo - mod fs
- sb plty, slty- sndy
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
8
30
70


18450
18500
18550
MD 18439 TVD 7285.65
INC 90.89 AZ 268.34
VS 10075.27
MD 18528 TVD 7284.32
INC 90.83 AZ 266.34
VS 10163.77
k grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip,
frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale
st strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnd
mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, spt
yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray
blky - sb plty, slty- sndy.


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 8
RPM 104
PP 3927
SPM 105/105
18600
CN
18650
18700
CN
18750
7200 TVD
MD 18618 TVD 7282.92
INC 90.95 AZ 266.21
VS 10253.07
MD 18707 TVD 7281.39
INC 91.02 AZ 267.48
VS 10341.48
7300
ded ip,
ty pale
, sb
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn,
rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr g
8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cu
intbd, plty, drk gray, sb blky - sb plty, slty- sndy, LS, tr
7400
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
Mud Weight (ppg)
30
70


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
0
WOB 13
RPM 100
PP 4824
SPM 105/105
18800
INC
18850
18900
INC
MD 18797 TVD 7280.25
INC 90.43 AZ 267.64
VS 10431.02
MD 18886 TVD 7279.99
INC 89.91 AZ 271.34
VS 10519.8
7300
rr lse med grn sbang - sbrnded,
grdg to sltst, rr xln pyr, est vis por
ut w dull bl/gn resid rng, SH(10%):
.
SS(90%): lt gry - drk grysh brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded,
rnded ip, mod srtd, sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por
8-12%, sptty pale yel flor, slo - mod fst strmg - blmg cut w dull bl/gn resid rng, SH(10%):
intbd, plty, drk gray, sb blky - sb plty, slty- sndy.
SS(90%): lt gry - drk grysh
ip, mod srtd, sft - mod frm
sptty pale yel flor, slo - m
drk gray, sb blky - sb plty
7400
MW 9.8
VIS 48
5000
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70


600
5000
200
ML_ROP (FT/HR)
Total gas (units)
MWD_GR (API)
0
0
WOB 12
RPM 100
PP 4868
SPM 105/105
18950
19000
19050
191
MD 18975 TVD 7280.23
INC 89.78 AZ 270.44
VS 10608.72
9/24/2017
7200 TVD
MD 19065 TVD 7280.49
INC 89.88 AZ 269.29
VS 10698.55
MD
INC
VS 1
7300
h brn, occ trans, l vf - u f grn, rr lse med grn sbang - sbrnded, rnded
, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%,
od fst strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty,
y, slty- sndy.
SS(90%): lt gry - drk grysh brn, mod trans, l vf - u f grn, rr lse med grn sbang - sbrnded, r
sft - mod frm, arg, v arg ip, slty, rr grdg to sltst, rr xln pyr, est vis por 8-12%, sptty pale y
strmg - blmg cut w dull bl/gn resid rng, SH(10%): intbd, plty, drk gray, sb blky - sb plty, s
7400
MW 9.75
VIS 49
5000
5000
5000
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
12
8
Mud Weight (ppg)
30
70



100 19150 19200

19096 TVD 7280.56
89.88 AZ 269.13
0729.47

MD 19120 TVD 7280.61
INC 89.88 AZ 269.13
VS 10753.41

7200 TVD

Final survey is a projection to the bit

Formation Tops

	MD	TVD	SSD
Sharon Springs	7085'	6918'	-2083'
Niobrara A Chalk	7124'	6948'	-2113'
Niobrara B Chalk	7269'	7054'	-2219'
Niobrara C Chalk	7372'	7138'	-2303'
Niobrara K Marker	7463'	7194'	-2359'
Fort Hays	7561'	7226'	-2391'
Codell	7693'	7251'	-2416'
Target Heel	7789'	7267'	-2432'
Target Toe	19120'	7281'	-2446'

7300

TD of 19,120' reached at 1:00 on 9/24/2017

nded ip, mod srtd,
el flor, slo - mod fst
slty- sndy.

7400