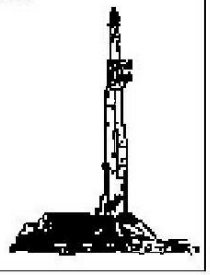
GOOLSBY BROTHERS
and associates, inc.

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:	**USA FED 01N-36HZ**
Location:	**Section 36, T3N, R66W, Weld County, CO.**
License Number:	**API: 05-123-36845, AFE: 2063656**
Region:	**Wattenberg**
Spud Date:	**July 24, 2013**
Drilling Completed:	**July 30, 2013**
Surface Coordinates:	**SE/SE Sec 36, T3N, R66W 460' FNL & 530' FEL**
	Lat: 40.176343 N Long: -104.718272 W
Bottom Hole Coordinates:	**Sec 36, T3N, R66W**
	Lat: 40.187910 N Long: -104.718642 W
Ground Elevation (ft):	**4,985**
K.B. Elevation (ft):	**5,010**
Logged Interval (ft):	**6,610' To: 11,677'**
Total Depth (ft):	**11,677'**
Formation:	**Pierre shales / sands, Niobrara "B" Target**
Type of Drilling Fluid:	**Polymer-Water**

OPERATOR

Company: **Anadarko Petroleum Corporation**
Address: **Granite Tower - 1099 18th St, Ste 1800**
Denver, CO 80202
CO Geologist, Tom Birmingham

GEOLOGIST

Name: **Alan Seeling/Marek Ciesnik**
Company: **Goolsby Brothers & Assoc. (GBA), Inc. (www.goolsbybrothers.com)**
Address: **575 Union Blvd.**
Suite 208,
Lakewood CO. 80228

E-logs

MWD Gamma: 951' - 11,677'
Resistivity: xxxx'-xxxx'

Casing

9 5/8" Surface Casing (IPSCO 36# J55) set @ 951'.
7" Intermediate Casing (IPSCO 26# P110) set @ 7,587'.
4 1/2" Production Liner set @xxxx'

Comments

1) Drilling Contractor: H&P 311
Pumps 1 & 2: Gardner Denver PZ 11 6" x 11" (.0914 bbl/stk)
Rig Manager: Jack Truett, James Baggett.
Drillers: Michael Munroe, Christopher Moore, Kenneth Jones, Christopher Beckstead.

2) Company Man: Doug Blair, Rick Oman, David Wells

3) Mud Company: Halliburton, Randal Phipps

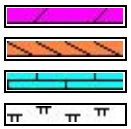
4) Directional Drilling: Scientific Drilling
Directional Drillers: Ian Ensell, John Noakes.
MWD: Joshua Denning, Mohamed Sharker.

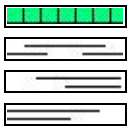
5) Gas Equipment: Mudlogging Systems Inc.
by Terra Services
Redbox # ML-419

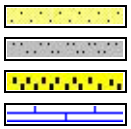
ROCK TYPES

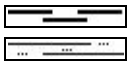

Anhy
Bent
Brec
Cht


Clyst
Coal
Oil sat.
Congl


Dol
Gyp
Lmst
Mrlst


Salt
Shale
Shcol
Shgy


Ss
Sltst
Ss
Chalk


Carb sh
Slty sh

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

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- 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

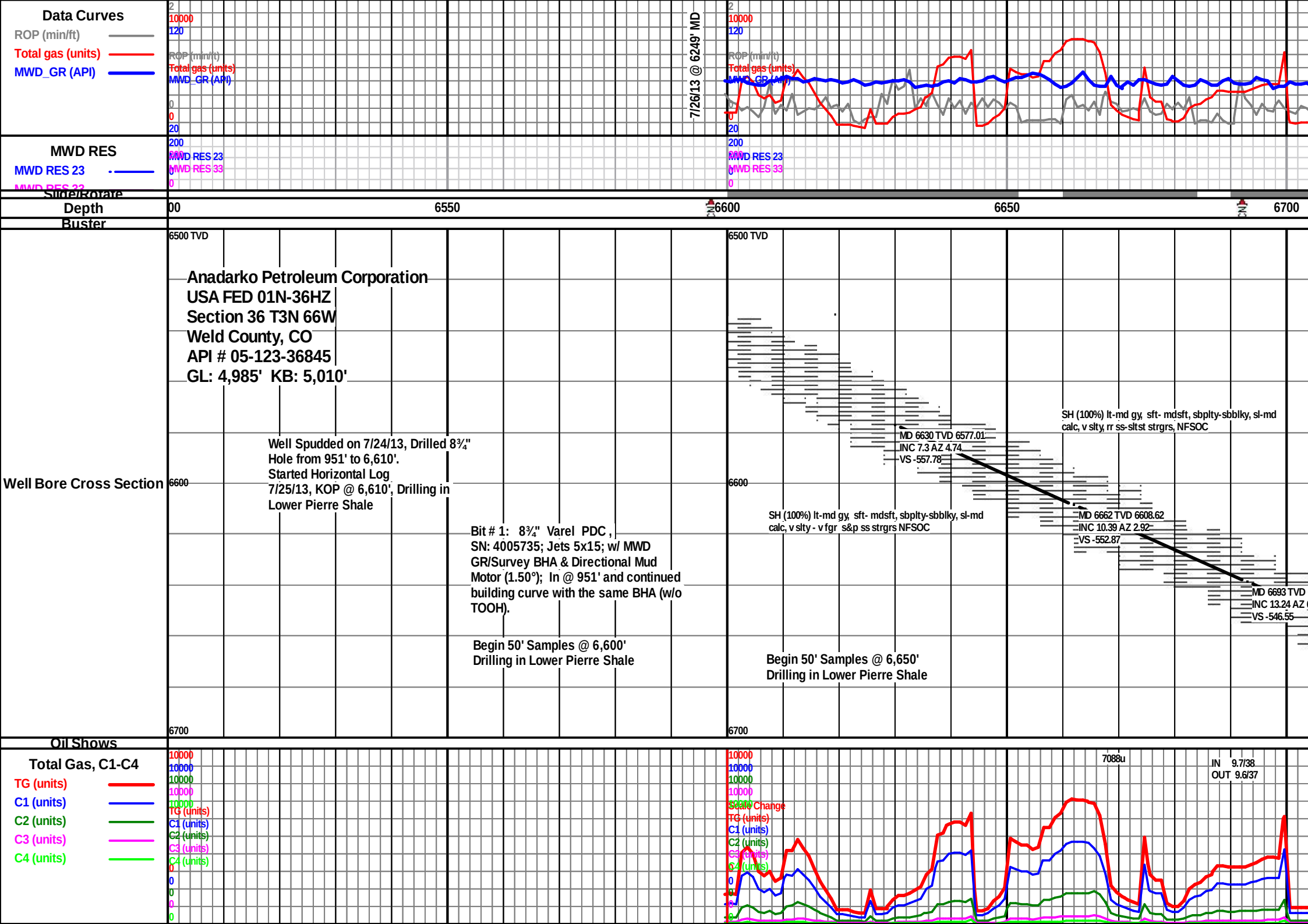
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

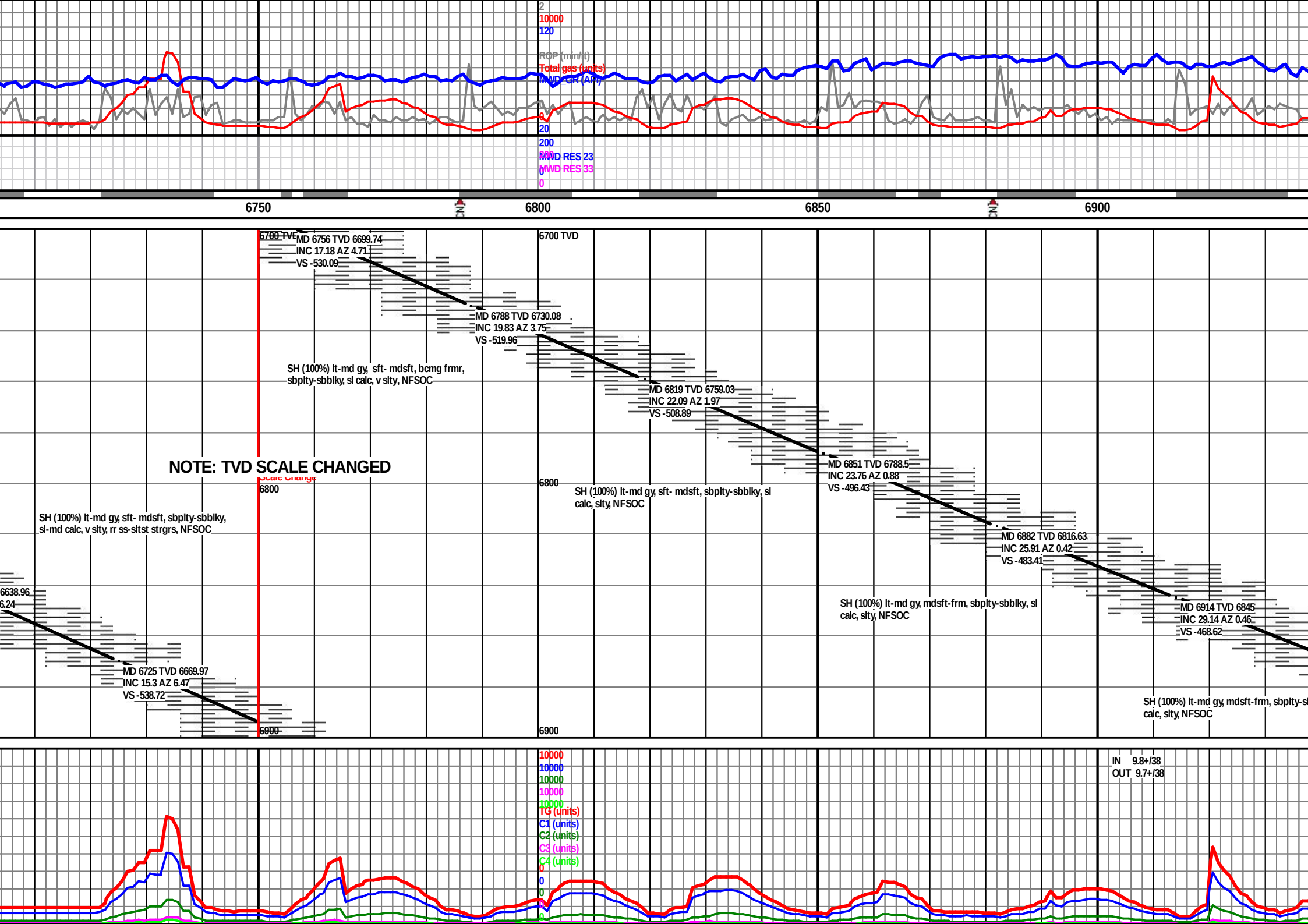
ROUNDING

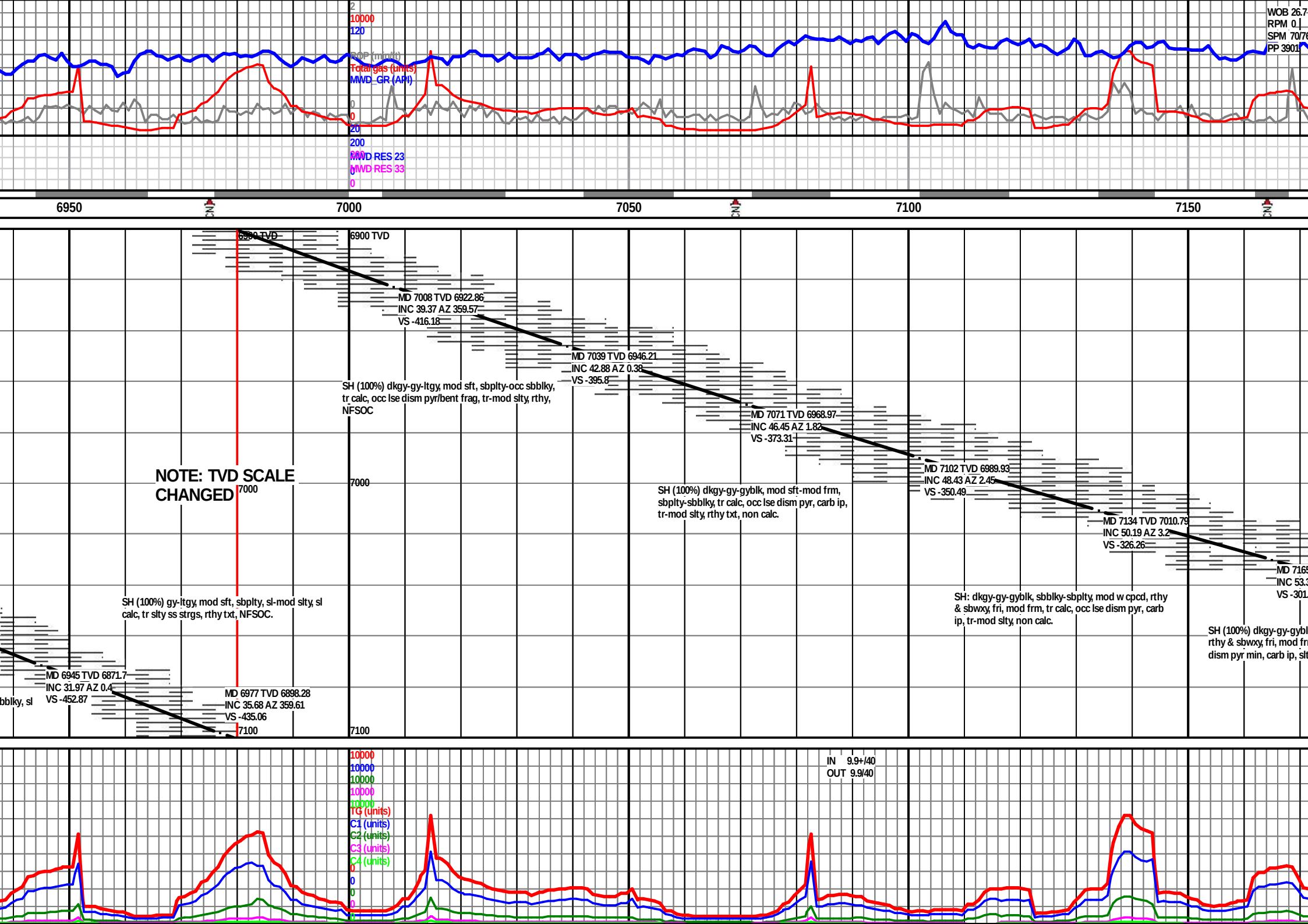
- Rounded
- Subrnd
- Subang
- Angular

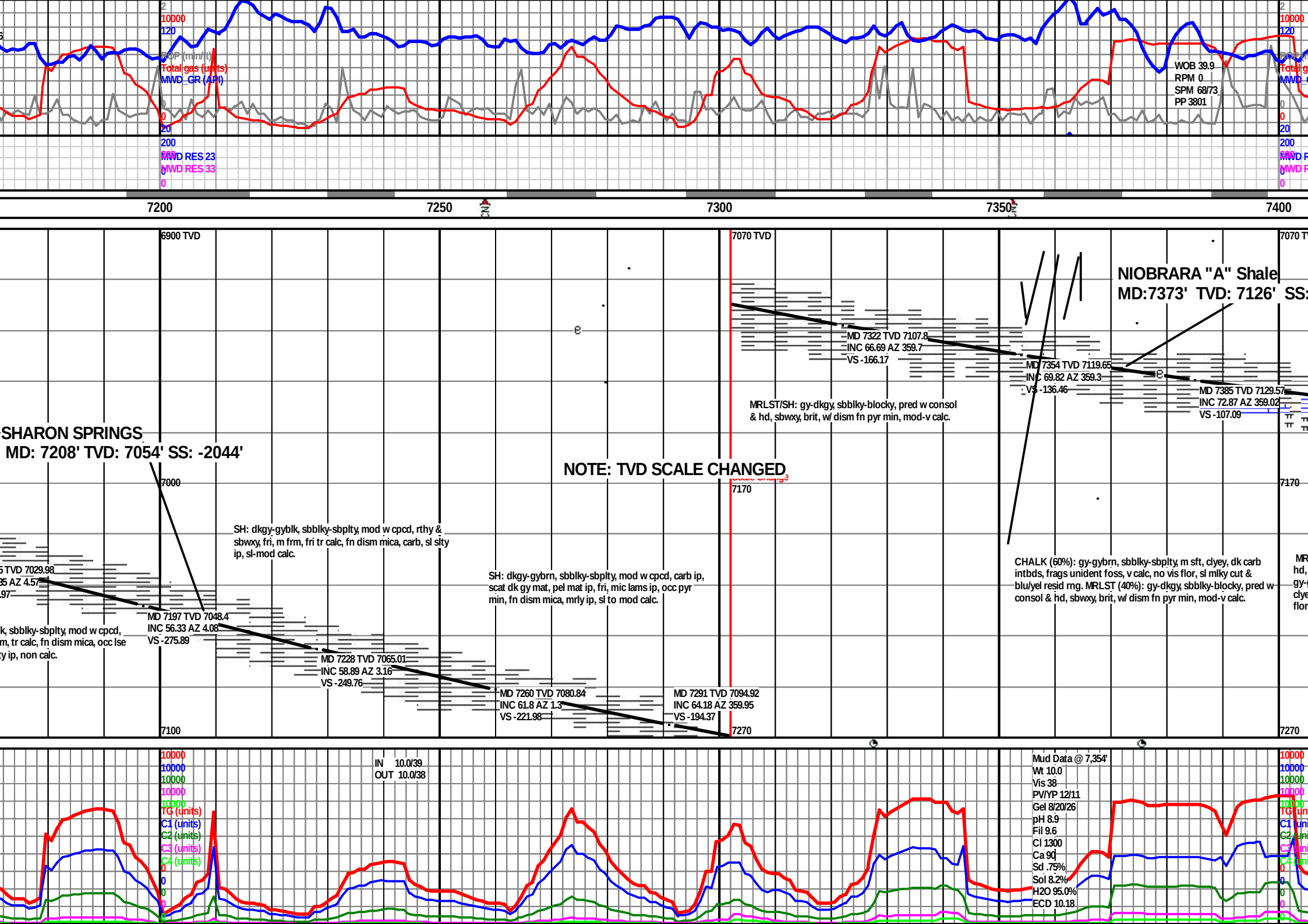
SORTING

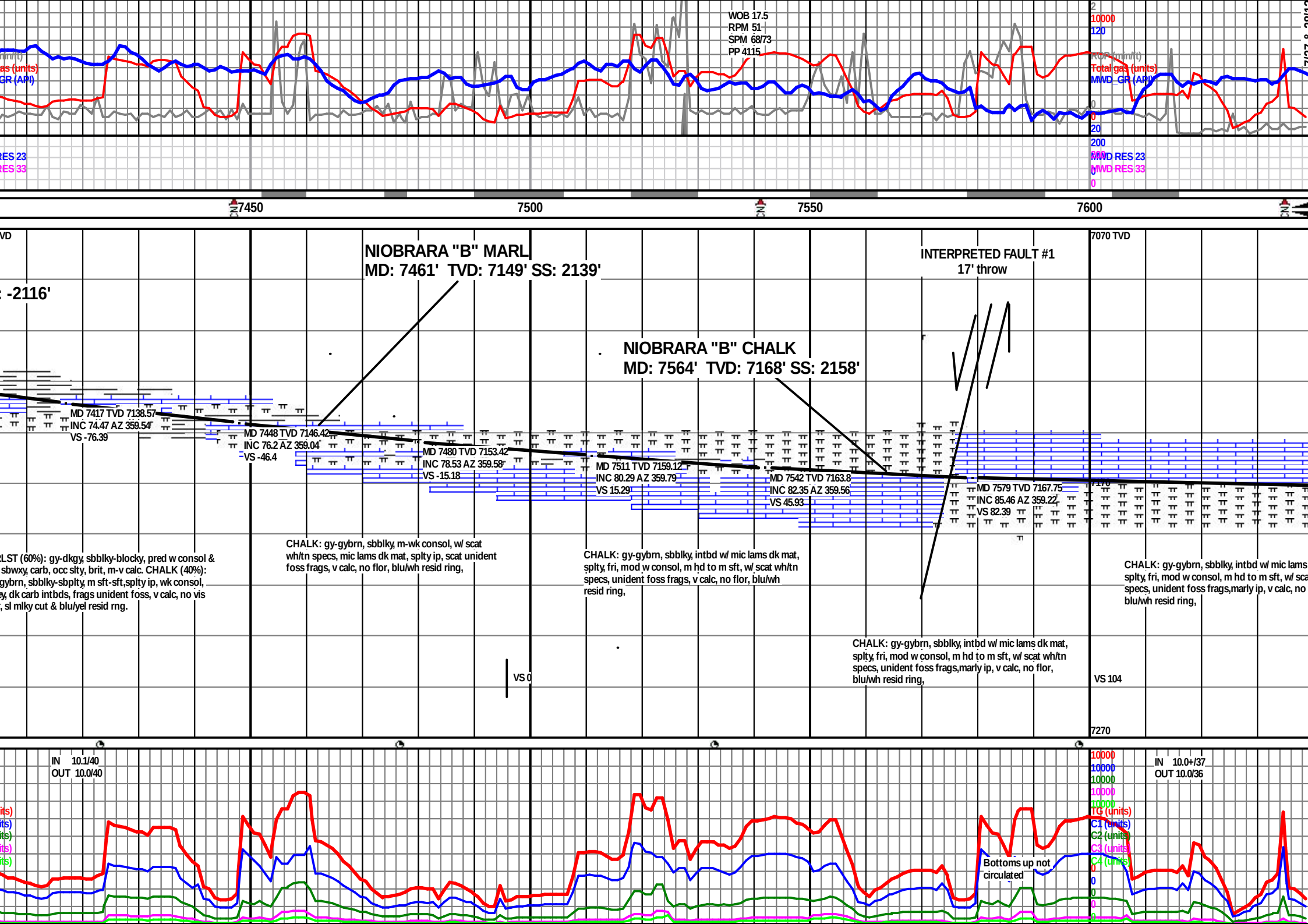
- Well
- Moderate
- Poor

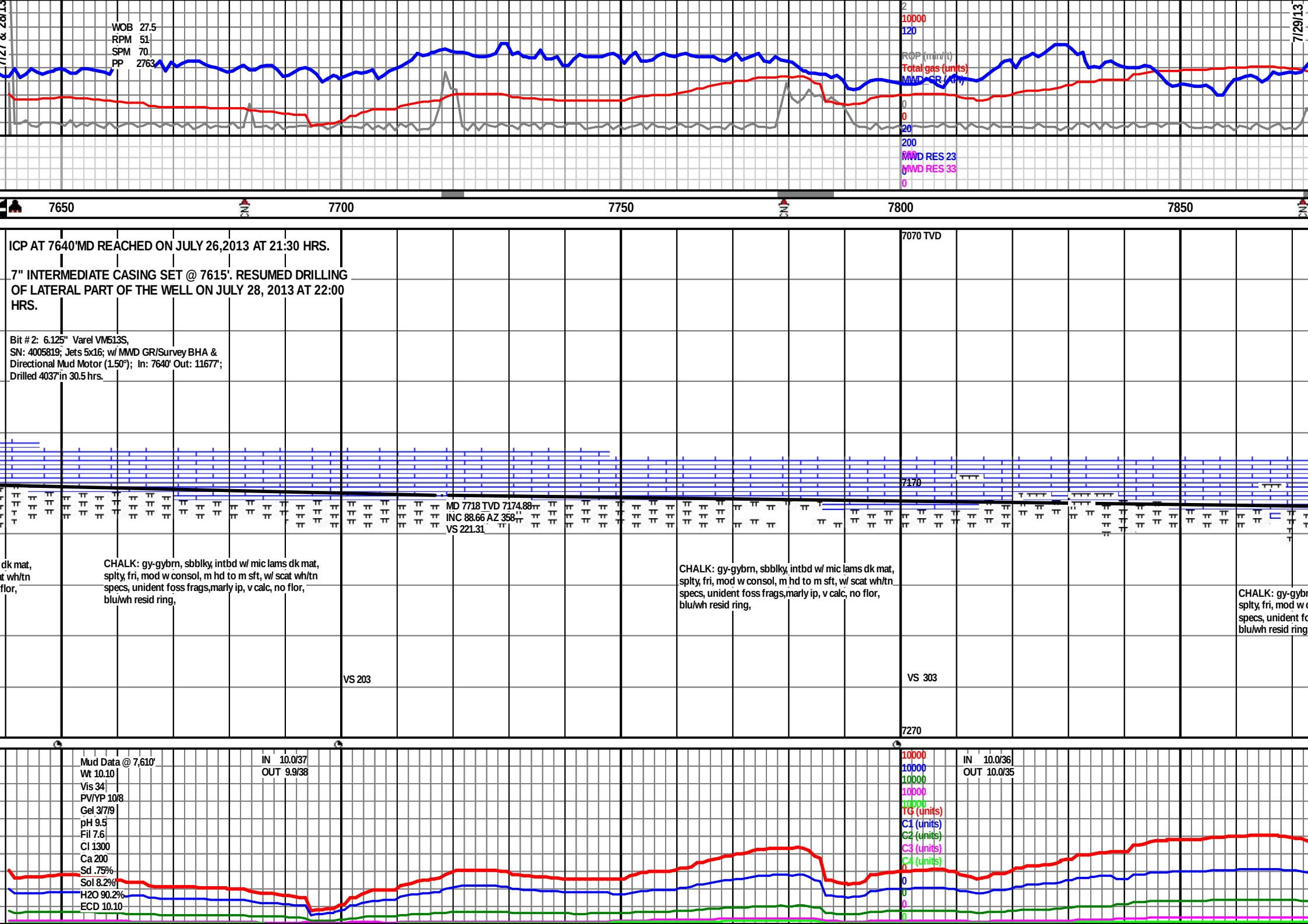

Data Curves
ROP (min/ft)
Total gas (units)
MWD_GR (API)
2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
7/26/13 @ 6249' MD
MWD RES
MWD RES 23
MWD RES 33
200
MWD RES 23
MWD RES 33
0
Slide/Rotate
Depth
6550
6600
6650
6700
Buster
Well Bore Cross Section
6500 TVD
Anadarko Petroleum Corporation
USA FED 01N-36HZ
Section 36 T3N 66W
Weld County, CO
API # 05-123-36845
GL: 4,985' KB: 5,010'
Well Spudded on 7/24/13, Drilled 8¾" Hole from 951' to 6,610'.
Started Horizontal Log 7/25/13, KOP @ 6,610', Drilling in Lower Pierre Shale
Bit # 1: 8¾" Varel PDC , SN: 4005735; Jets 5x15; w/ MWD GR/Survey BHA & Directional Mud Motor (1.50°); In @ 951' and continued building curve with the same BHA (w/o TOOH).
Begin 50' Samples @ 6,600'
Drilling in Lower Pierre Shale
MD 6630 TVD 6577.01
INC 7.3 AZ 4.74
VS -557.78
SH (100%) lt-md gy, sft- mdsft, sbplty-sbblky, sl-md calc, v slty - v fgr s&p ss strgrs NFSOC
SH (100%) lt-md gy, sft- mdsft, sbplty-sbblky, sl-md calc, v slty, rr ss-sltst strgrs, NFSOC
MD 6662 TVD 6608.62
INC 10.39 AZ 2.92
VS -552.87
MD 6693 TVD
INC 13.24 AZ
VS -546.55
Begin 50' Samples @ 6,650'
Drilling in Lower Pierre Shale
Oil Shows
Total Gas, C1-C4
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
10000
Scale Change
7088u
IN 9.7/38
OUT 9.6/37

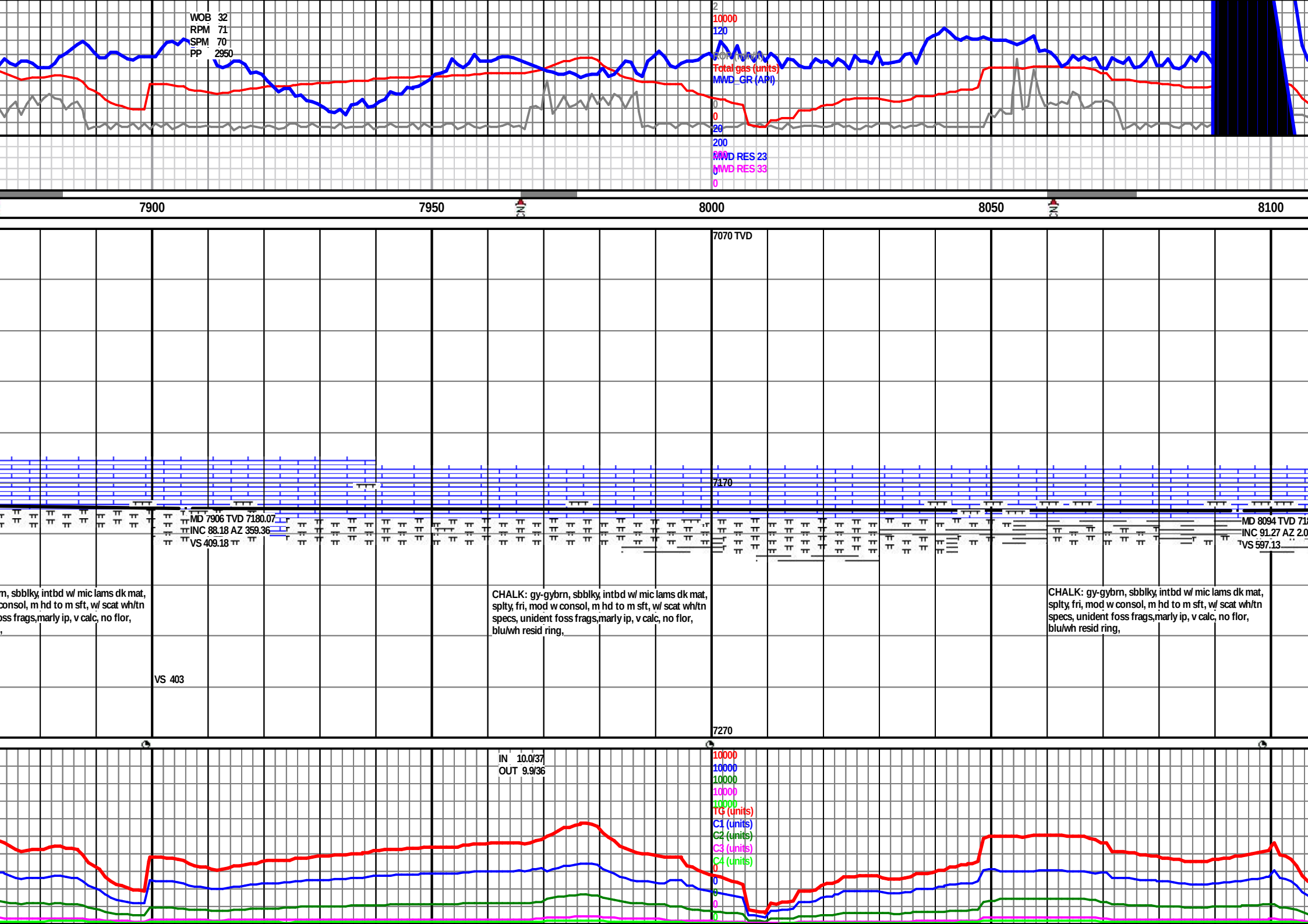

2
10000
120
ROP (mm/t)
Total gas (units)
MWD GR (API)
0
20
200
MWD RES 23
MWD RES 33
0
6750
6800
6850
6900
6700 TVD
MD 6756 TVD 6699.74
INC 17.18 AZ 4.71
VS -530.09
MD 6788 TVD 6730.08
INC 19.83 AZ 3.75
VS -519.96
SH (100%) lt-md gy, sft- mdsft, bcmg frmr, sbplty-sbblky, sl calc, v slty, NFSOC
MD 6819 TVD 6759.03
INC 22.09 AZ 1.97
VS -508.89
MD 6851 TVD 6788.5
INC 23.76 AZ 0.88
VS -496.43
NOTE: TVD SCALE CHANGED
6800
SH (100%) lt-md gy, sft- mdsft, sbplty-sbblky, sl calc, slty, NFSOC
SH (100%) lt-md gy, sft- mdsft, sbplty-sbblky, sl-md calc, v slty, rr ss-sltst strgrs, NFSOC
MD 6882 TVD 6816.63
INC 25.91 AZ 0.42
VS -483.41
SH (100%) lt-md gy, mdsft-frm, sbplty-sbblky, sl calc, slty, NFSOC
6638.96
6.24
MD 6914 TVD 6845
INC 29.14 AZ 0.46
VS -468.62
MD 6725 TVD 6669.97
INC 15.3 AZ 6.47
VS -538.72
6900
SH (100%) lt-md gy, mdsft-frm, sbplty-sl
calc, slty, NFSOC
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
IN 9.8+/38
OUT 9.7+/38

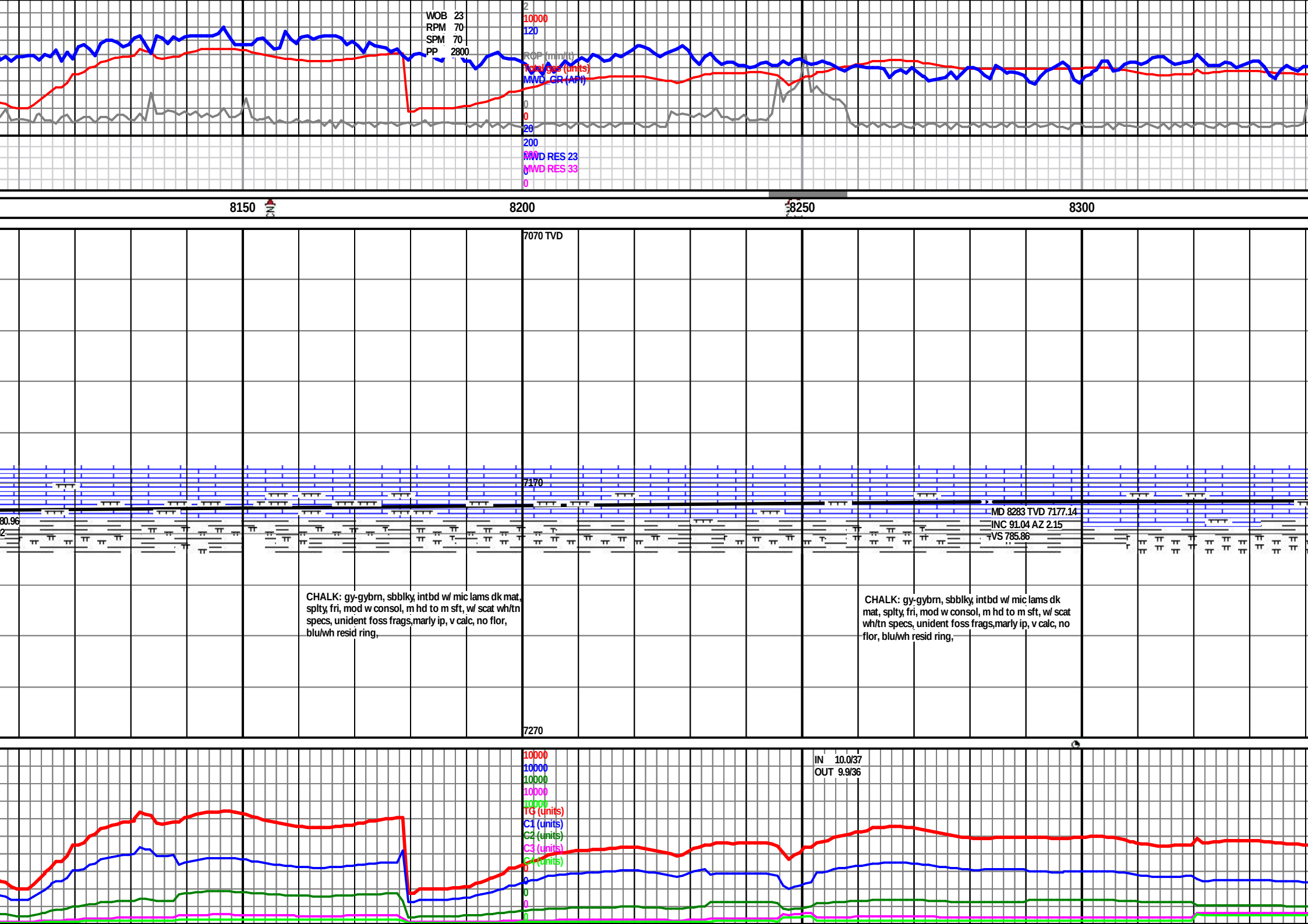

2
10000
120
ROP (min/ft)
Totalgas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
0
WOB 26.7
RPM 0
SPM 70/76
PP 3901
6950
7000
7050
7100
7150
6900 TVD
MD 7008 TVD 6922.86
INC 39.37 AZ 359.57
VS -416.18
MD 7039 TVD 6946.21
INC 42.88 AZ 0.38
VS -395.8
SH (100%) dkgy-gy-ltgy, mod sft, sbplty-occ sbblky, tr calc, occ lse dism pyr/bent frag, tr-mod slty, rthy, NFSOC
MD 7071 TVD 6968.97
INC 46.45 AZ 1.82
VS -373.31
MD 7102 TVD 6989.93
INC 48.43 AZ 2.45
VS -350.49
SH (100%) dkgy-gy-gyblk, mod sft-mod frm, sbplty-sbblky, tr calc, occ lse dism pyr, carb ip, tr-mod slty, rthy txt, non calc.
MD 7134 TVD 7010.79
INC 50.19 AZ 3.2
VS -326.26
NOTE: TVD SCALE CHANGED
7000
7000
SH (100%) gy-ltgy, mod sft, sbplty, sl-mod slty, sl calc, tr slty ss strgs, rthy txt, NFSOC.
SH: dkgy-gy-gyblk, sbblky-sbplty, mod w cpcd, rthy & sbwxy, fri, mod frm, tr calc, occ lse dism pyr, carb ip, tr-mod slty, non calc.
SH (100%) dkgy-gy-gybl
rthy & sbwxy, fri, mod fr
dism pyr min, carb ip, slt
bblky, sl
MD 6945 TVD 6871.7
INC 31.97 AZ 0.4
VS -452.87
MD 6977 TVD 6898.28
INC 35.68 AZ 359.61
VS -435.06
7100
7100
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0
IN 9.9+/40
OUT 9.9/40

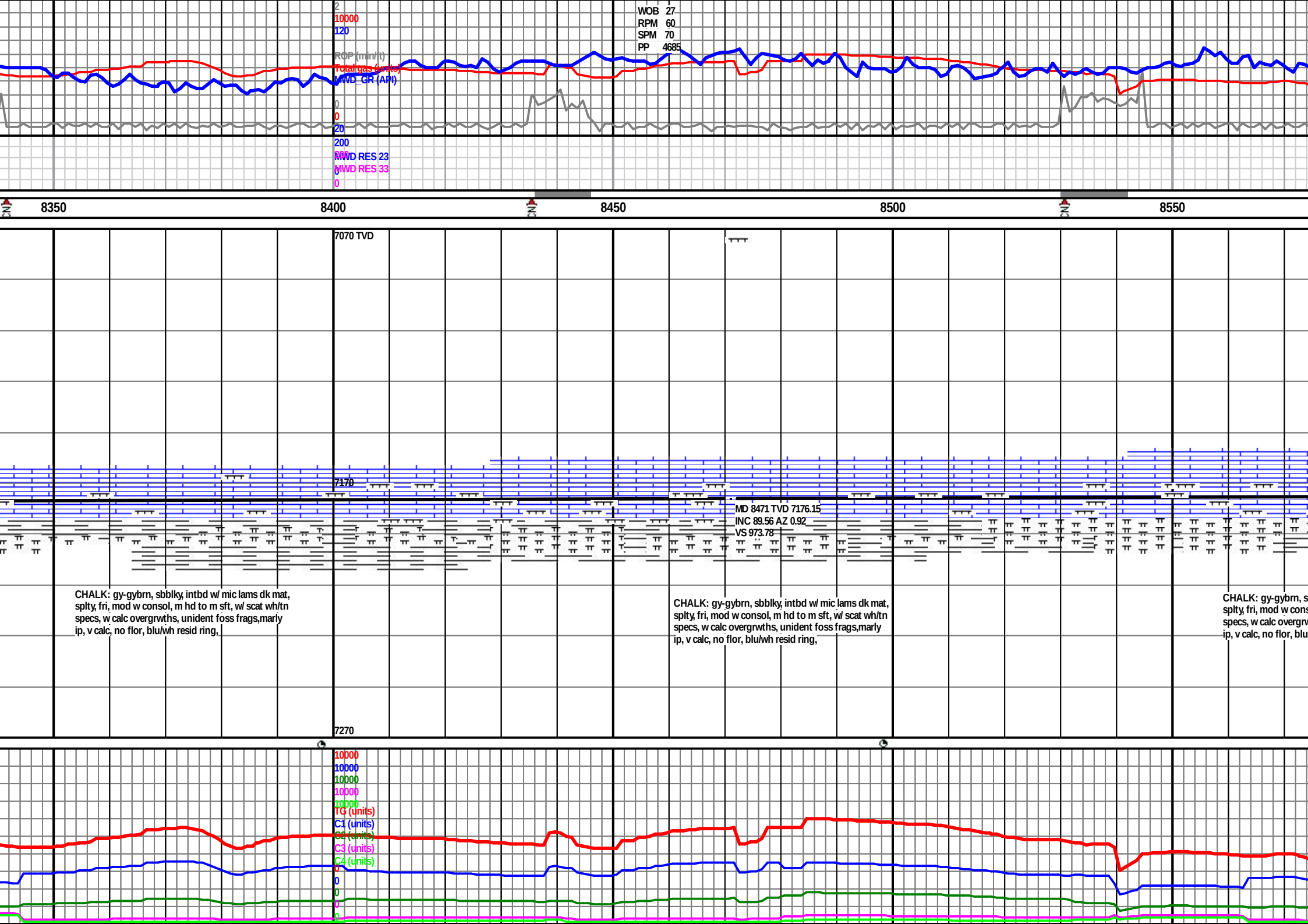

ROP (min/ft)
Total gas (units)
MWD_GR (API)
WOB 39.9
RPM 0
SPM 68/73
PP 3801
MWD RES 23
MWD RES 33
7200
7250
7300
7350
7400
6900 TVD
7070 TVD
7000
7100
7170
7270
NIOBRARA "A" Shale
MD:7373' TVD: 7126' SS:
SHARON SPRINGS
MD: 7208' TVD: 7054' SS: -2044'
NOTE: TVD SCALE CHANGED
MD 7322 TVD 7107.8
INC 66.69 AZ 359.7
VS -166.17
MD 7354 TVD 7119.65
INC 69.82 AZ 359.3
VS -136.46
MD 7385 TVD 7129.57
INC 72.87 AZ 359.02
VS -107.09
MRLST/SH: gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, brit, w/ dism fn pyr min, mod-v calc.
SH: dkgy-gyblk, sbblky-sbplty, mod w cpcd, rthy & sbwxy, fri, m frm, fri tr calc, fn dism mica, carb, sl slty ip, sl-mod calc.
SH: dkgy-gybrn, sbblky-sbplty, mod w cpcd, carb ip, scat dk gy mat, pel mat ip, fri, mic lams ip, occ pyr min, fn dism mica, mrly ip, sl to mod calc.
MD 7197 TVD 7048.4
INC 56.33 AZ 4.08
VS -275.89
MD 7228 TVD 7065.01
INC 58.89 AZ 3.16
VS -249.76
MD 7260 TVD 7080.84
INC 61.8 AZ 1.3
VS -221.98
MD 7291 TVD 7094.92
INC 64.18 AZ 359.95
VS -194.37
CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, clyey, dk carb intbds, frags unident foss, v calc, no vis flor, sl mlky cut & blu/yel resid rng. MRLST (40%): gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, brit, w/ dism fn pyr min, mod-v calc.
IN 10.0/39
OUT 10.0/38
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Mud Data @ 7,354'
Wt 10.0
Vis 38
PV/YP 12/11
Gel 8/20/26
pH 8.9
Fil 9.6
Cl 1300
Ca 90
Sd .75%
Sol 8.2%
H2O 95.0%
ECD 10.18

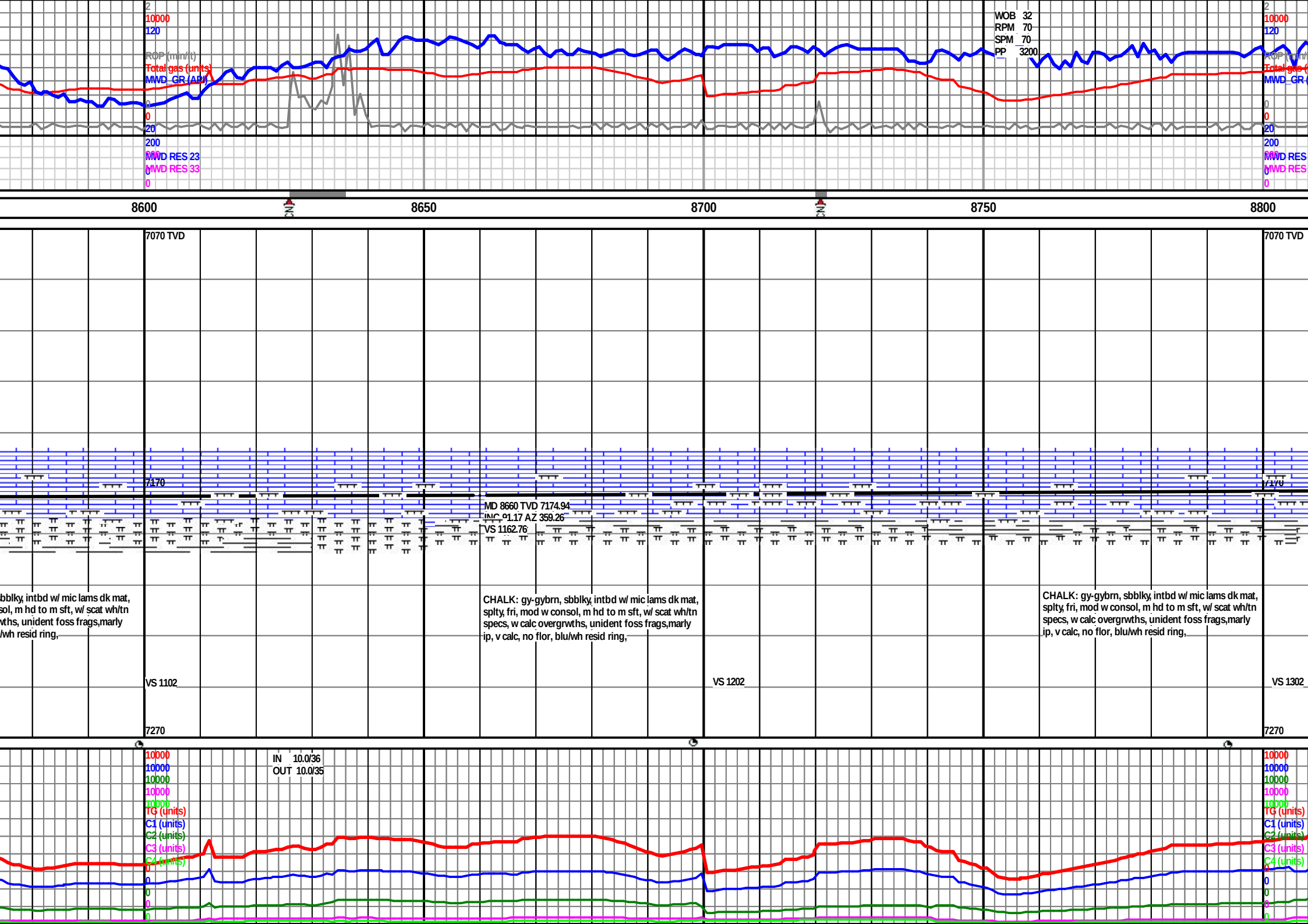

WOB 17.5
RPM 51
SPM 68/73
PP 4115
Total gas (units)
MWD_GR (API)
MWD RES 23
MWD RES 33
7450
7500
7550
7600
7070 TVD
NIOBRARA "B" MARL
MD: 7461' TVD: 7149' SS: 2139'
NIOBRARA "B" CHALK
MD: 7564' TVD: 7168' SS: 2158'
INTERPRETED FAULT #1
17' throw
MD 7417 TVD 7138.57
INC 74.47 AZ 359.54
VS -76.39
MD 7448 TVD 7146.42
INC 76.2 AZ 359.04
VS -46.4
MD 7480 TVD 7153.42
INC 78.53 AZ 359.58
VS -15.18
MD 7511 TVD 7159.12
INC 80.29 AZ 359.79
VS 15.29
MD 7542 TVD 7163.8
INC 82.35 AZ 359.56
VS 45.93
MD 7579 TVD 7167.75
INC 85.46 AZ 359.22
VS 82.39
CHALK: gy-gybrn, sbblky, m-wk consol, w/ scat wh/tn specs, mic lams dk mat, splty ip, scat unident foss frags, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
VS 0
VS 104
7270
IN 10.1/40
OUT 10.0/40
IN 10.0+/37
OUT 10.0/36
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
Bottoms up not circulated

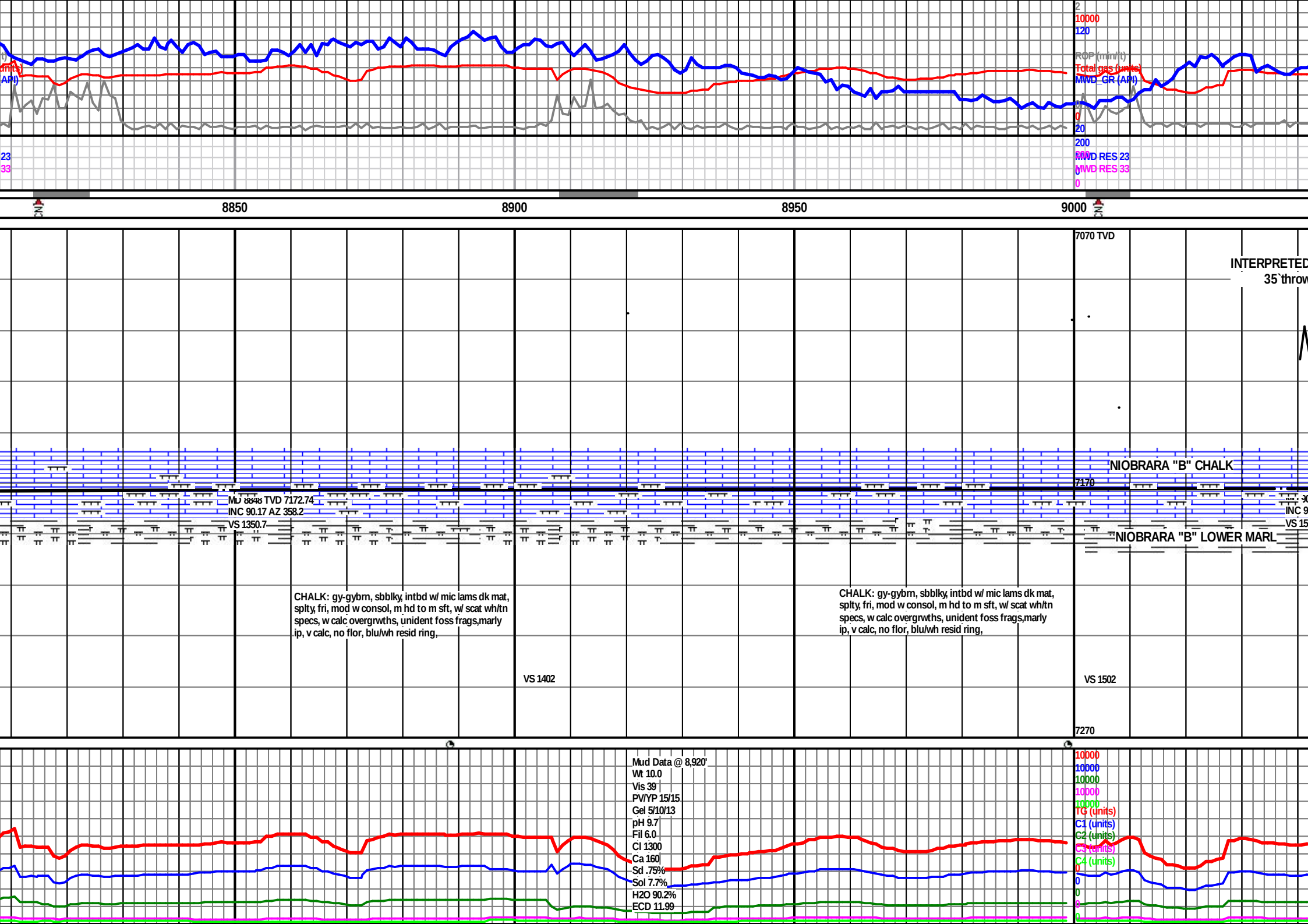

WOB 27.5
RPM 51
SPM 70
PP 2763
ROP (min/ft)
Total gas (units)
MWD GR (API)
MWD RES 23
MWD RES 33
7650
7700
7750
7800
7850
ICP AT 7640'MD REACHED ON JULY 26,2013 AT 21:30 HRS.
7" INTERMEDIATE CASING SET @ 7615'. RESUMED DRILLING OF LATERAL PART OF THE WELL ON JULY 28, 2013 AT 22:00 HRS.
Bit # 2: 6.125" Varel VM513S,
SN: 4005819; Jets 5x16; w/ MWD GR/Survey BHA & Directional Mud Motor (1.50°); In: 7640' Out: 11677';
Drilled 4037' in 30.5 hrs.
7070 TVD
7170
MD 7718 TVD 7174.88
INC 88.66 AZ 358°
VS 221.31
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
VS 203
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
VS 303
7270
Mud Data @ 7,610'
Wt 10.10
Vis 34
PV/YP 10/8
Gel 3/7/9
pH 9.5
Fil 7.6
Cl 1300
Ca 200
Sd .75%
Sol 8.2%
H2O 90.2%
ECD 10.10
IN 10.0/37
OUT 9.9/38
IN 10.0/36
OUT 10.0/35
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

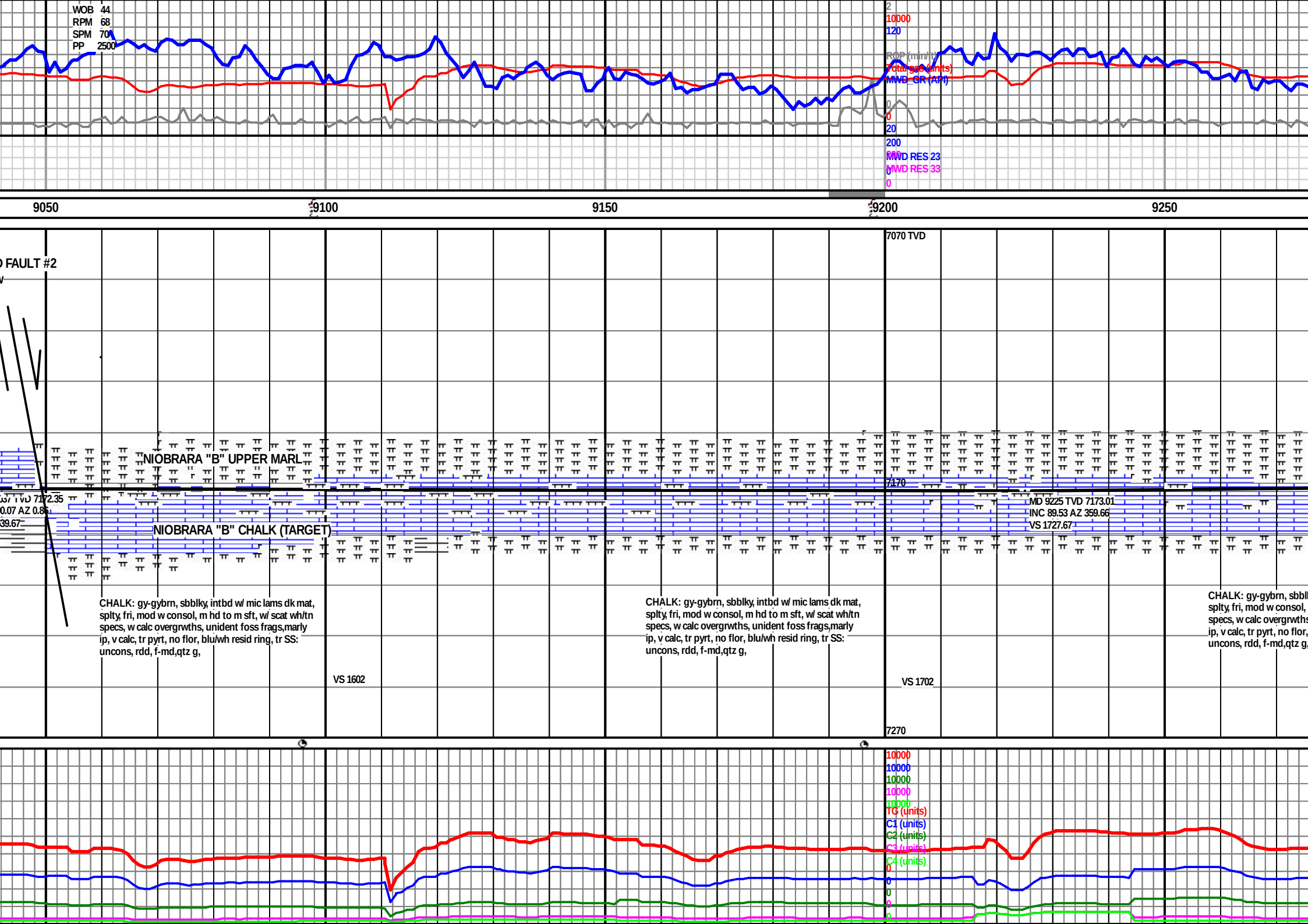

WOB 32
RPM 71
SPM 70
PP 2950
2
10000
120
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
7900
7950
8000
8050
8100
7070 TVD
7170
7270
MD 7906 TVD 7180.07
INC 88.18 AZ 359.36
VS 409.18
MD 8094 TVD 71
INC 91.27 AZ 2.0
VS 597.13
rn, sbblky, intbd w/ mic lams dk mat,
consol, m hd to m sft, w/ scat wh/tn
oss frags,marly ip, v calc, no flor,
,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, unident foss frags,marly ip, v calc, no flor,
blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, unident foss frags,marly ip, v calc, no flor,
blu/wh resid ring,
VS 403
IN 10.0/37
OUT 9.9/36
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0

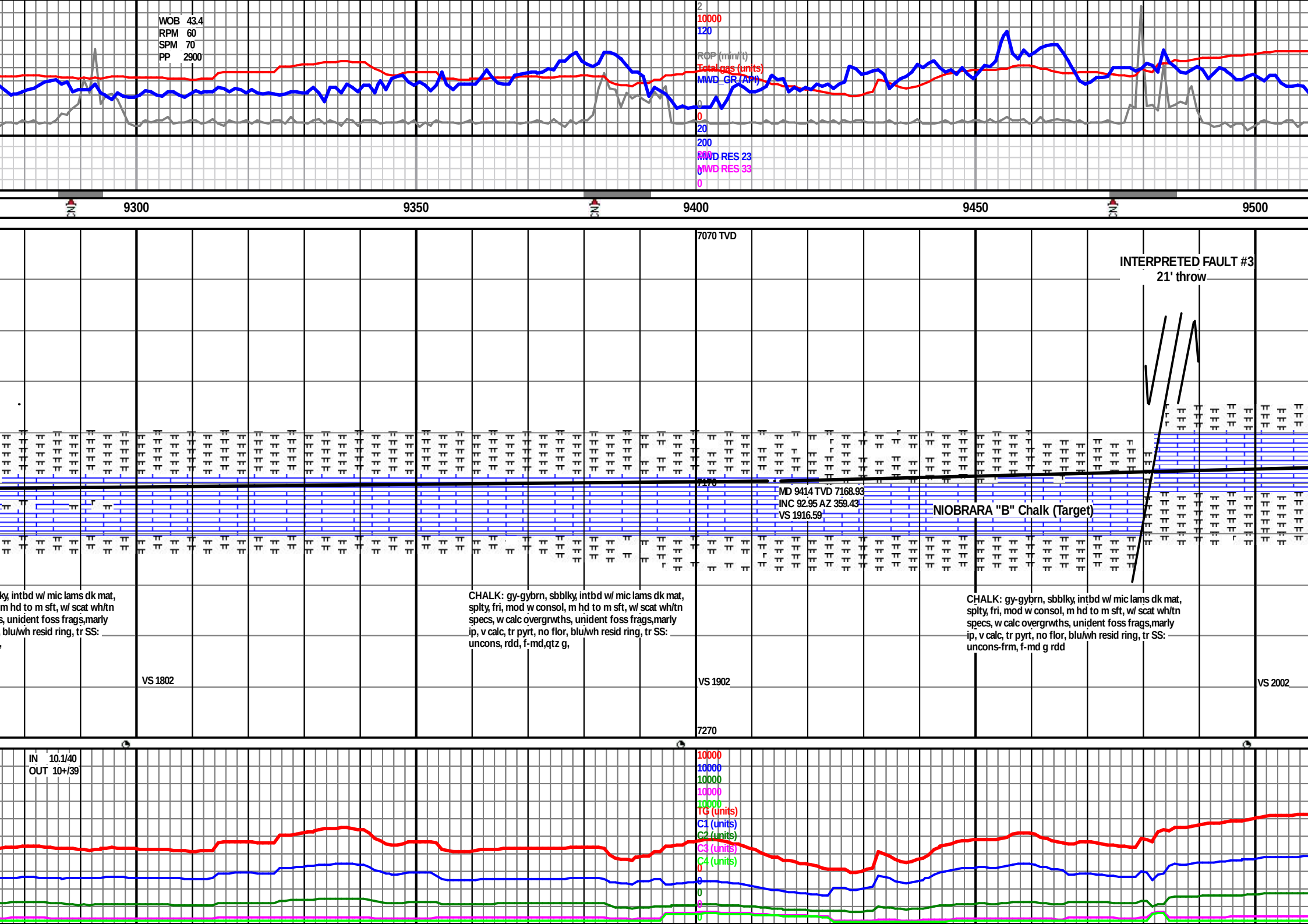

WOB 23
RPM 70
SPM 70
PP 2800
2
10000
120
ROP (min/ft)
Total Gas (units)
MWD_GR (API)
0
0
20
200
200
MWD RES 23
MWD RES 33
0
0
8150
8200
8250
8300
7070 TVD
7170
7270
MD 8283 TVD 7177.14
INC 91.04 AZ 2.15
VS 785.86
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0
IN 10.0/37
OUT 9.9/36

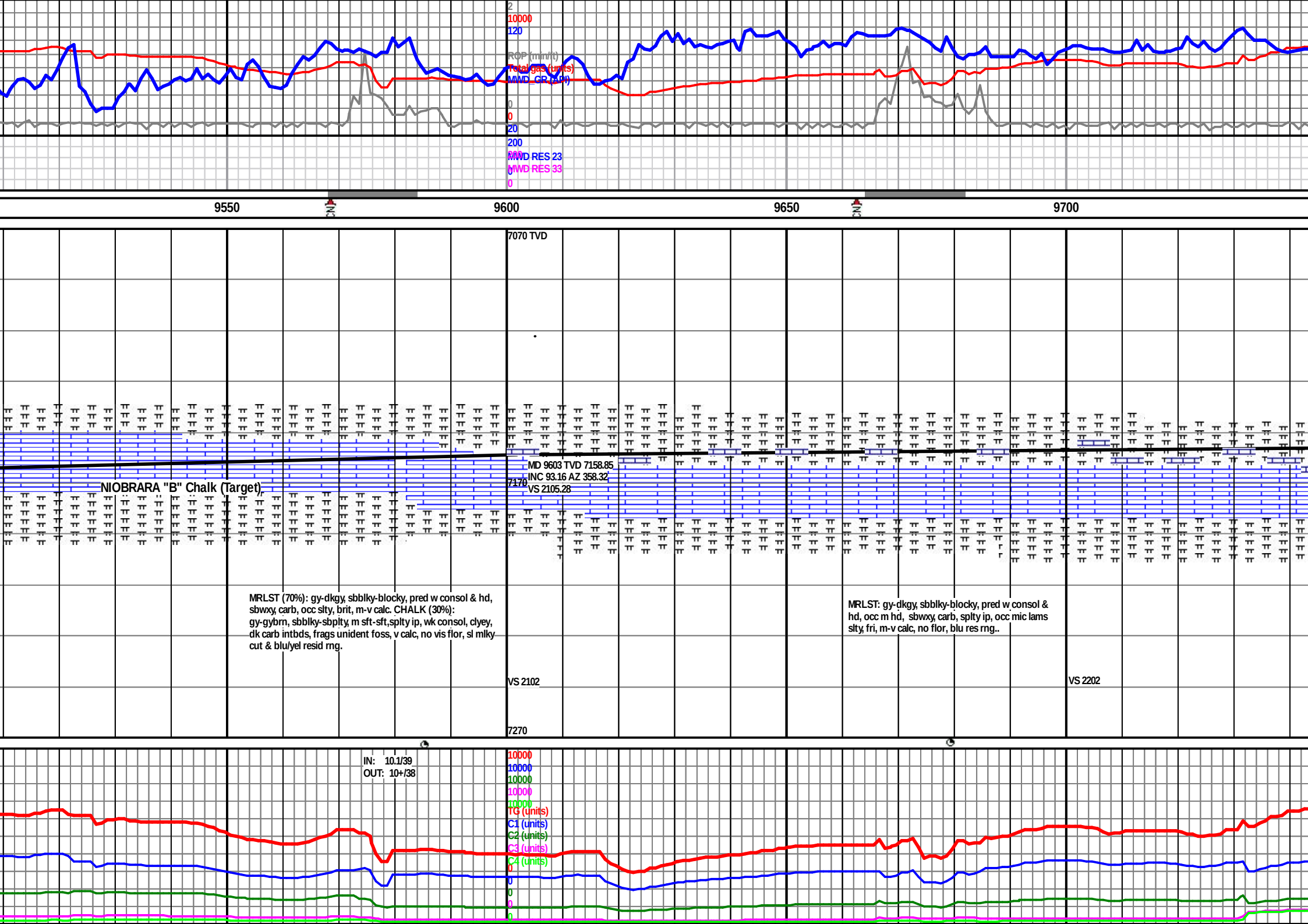

2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
0
WOB 27
RPM 60
SPM 70
PP 4685
8350
8400
8450
8500
8550
7070 TVD
7170
7270
MD 8471 TVD 7176.15
INC 89.56 AZ 0.92
VS 973.78
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, s
splty, fri, mod w cons
specs, w calc overgrw
ip, v calc, no flor, blu
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0

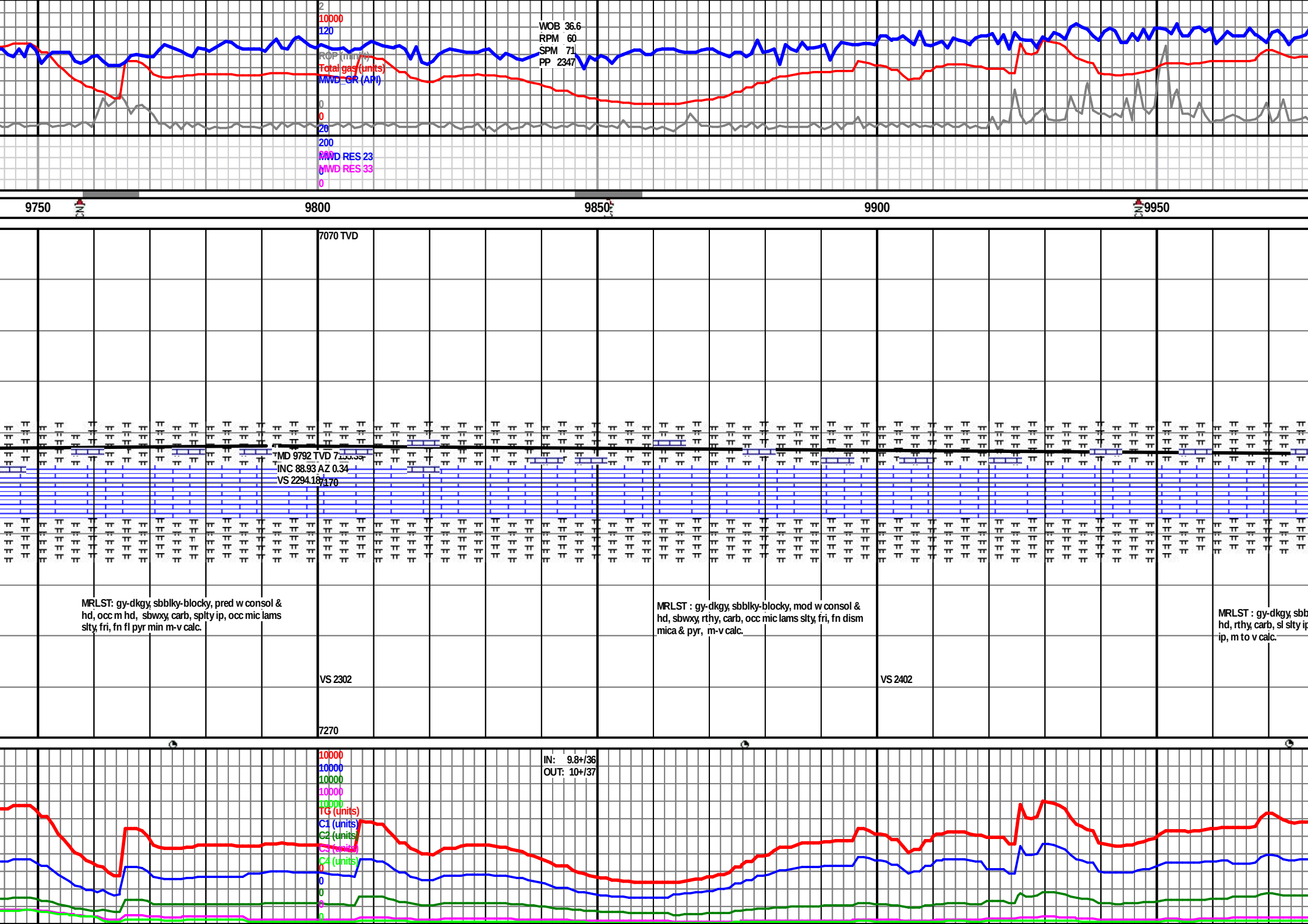

2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
20
200
MWD RES 23
MWD RES 33
WOB 32
RPM 70
SPM 70
PP 3200
8600
8650
8700
8750
8800
7070 TVD
7170
MD 8660 TVD 7174.94
INC 91.17 AZ 359.26
VS 1162.76
sbblky, intbd w/ mic lams dk mat,
sol, m hd to m sft, w/ scat wh/tn
wths, unident foss frags,marly
/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, w calc overgrwths, unident foss frags,marly
ip, v calc, no flor, blu/wh resid ring,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, w calc overgrwths, unident foss frags,marly
ip, v calc, no flor, blu/wh resid ring,
VS 1102
VS 1202
VS 1302
7270
IN 10.0/36
OUT 10.0/35
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

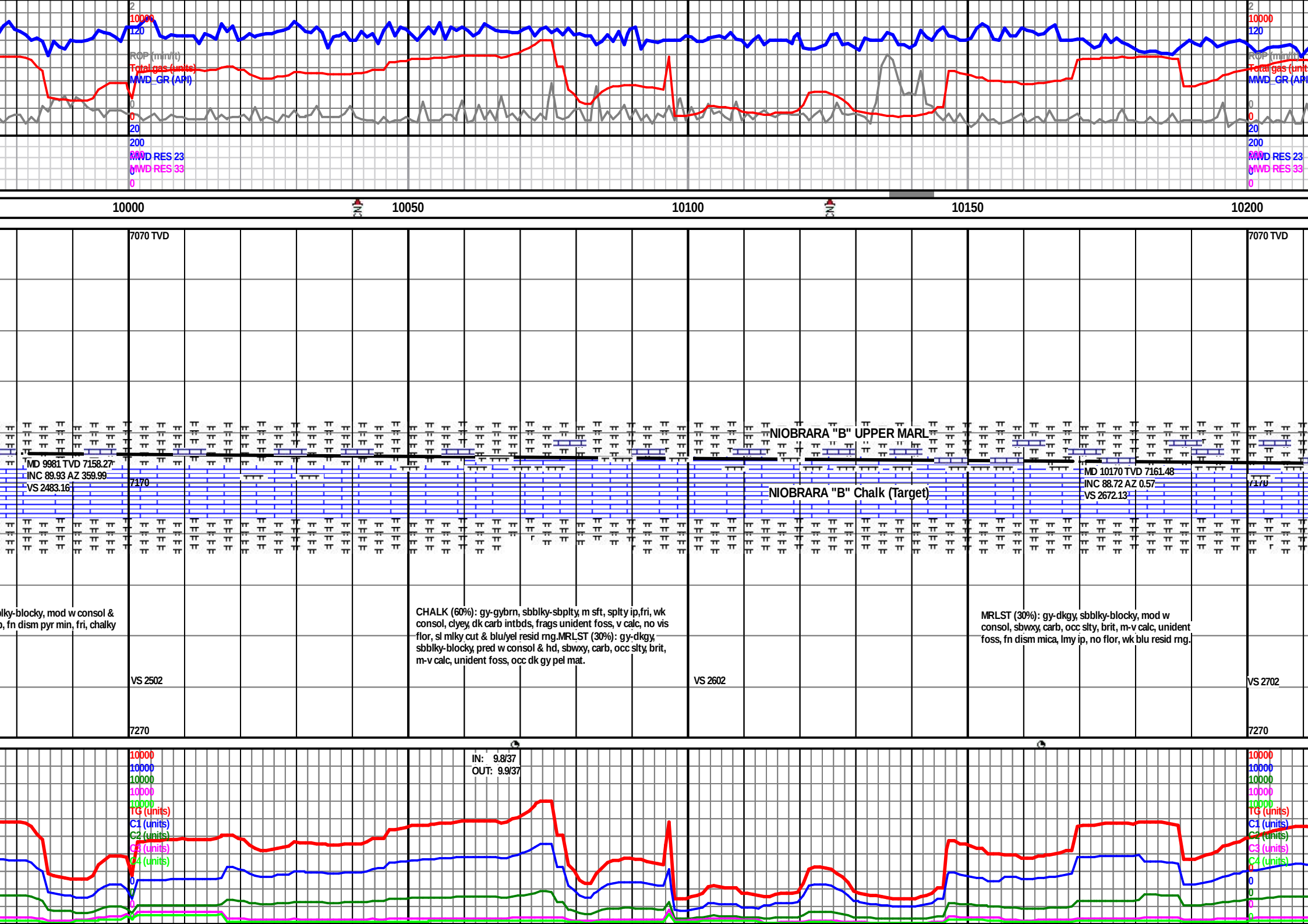

2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
20
200
MWD RES 23
MWD RES 33
0
8850
8900
8950
9000
7070 TVD
INTERPRETED
35` throw
NIOBRARA "B" CHALK
7170
MD 8848 TVD 7172.74
INC 90.17 AZ 358.2
VS 1350.7
NIOBRARA "B" LOWER MARL
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
VS 1402
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, no flor, blu/wh resid ring,
VS 1502
7270
Mud Data @ 8,920'
Wt 10.0
Vis 39
PV/YP 15/15
Gel 5/10/13
pH 9.7
Fil 6.0
Cl 1300
Ca 160
Sd .75%
Sol 7.7%
H2O 90.2%
ECD 11.99
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

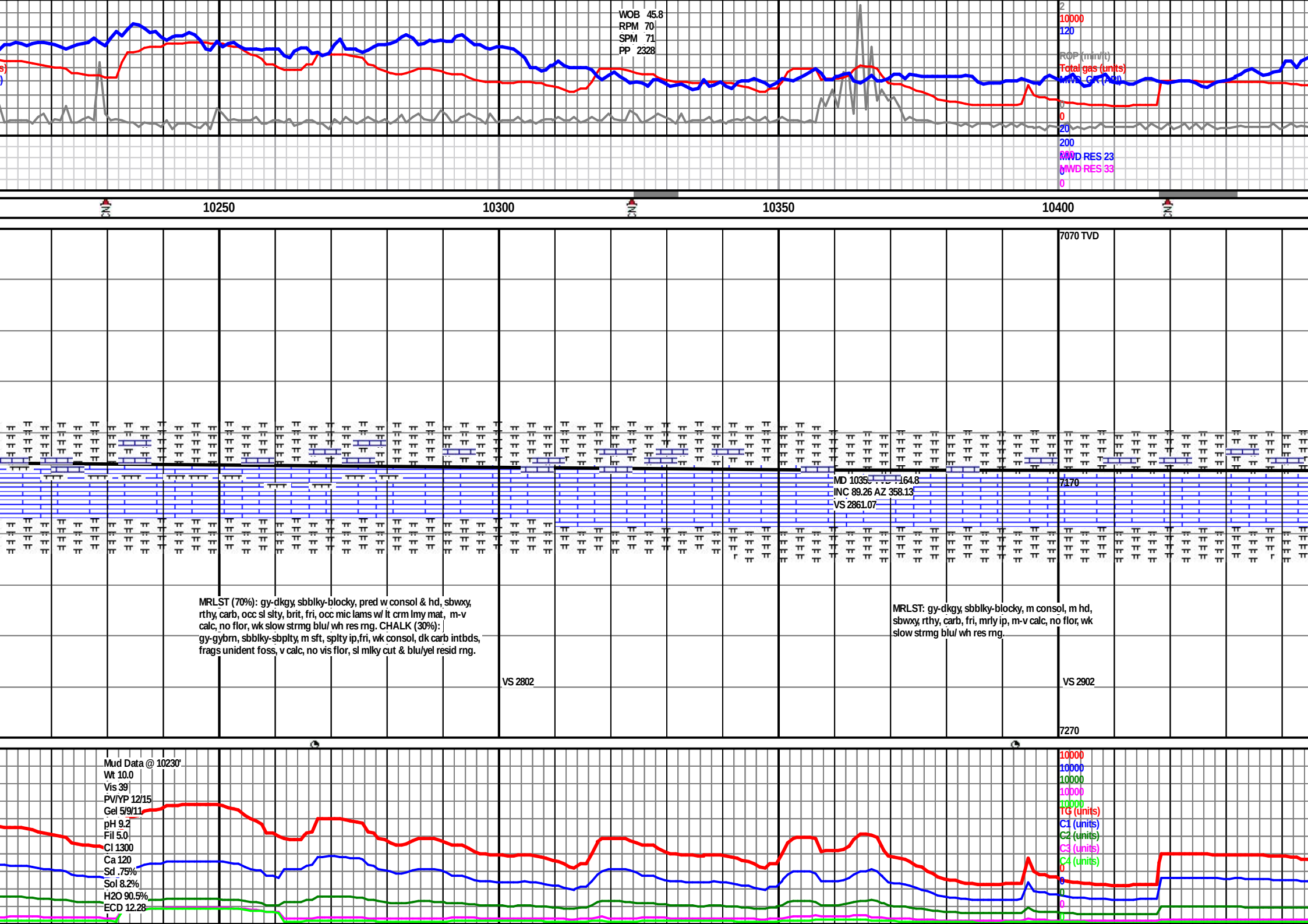

WOB 44
RPM 68
SPM 70
PP 2500
2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
9050
9100
9150
9200
9250
7070 TVD
D FAULT #2
NIOBRARA "B" UPPER MARL
7170
NIOBRARA "B" CHALK (TARGET)
MD 9225 TVD 7173.01
INC 89.53 AZ 359.66
VS 1727.67
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, tr pyrt, no flor, blu/wh resid ring, tr SS: uncons, rdd, f-md,qtz g,
VS 1602
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat, splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn specs, w calc overgrwths, unident foss frags,marly ip, v calc, tr pyrt, no flor, blu/wh resid ring, tr SS: uncons, rdd, f-md,qtz g,
VS 1702
7270
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0

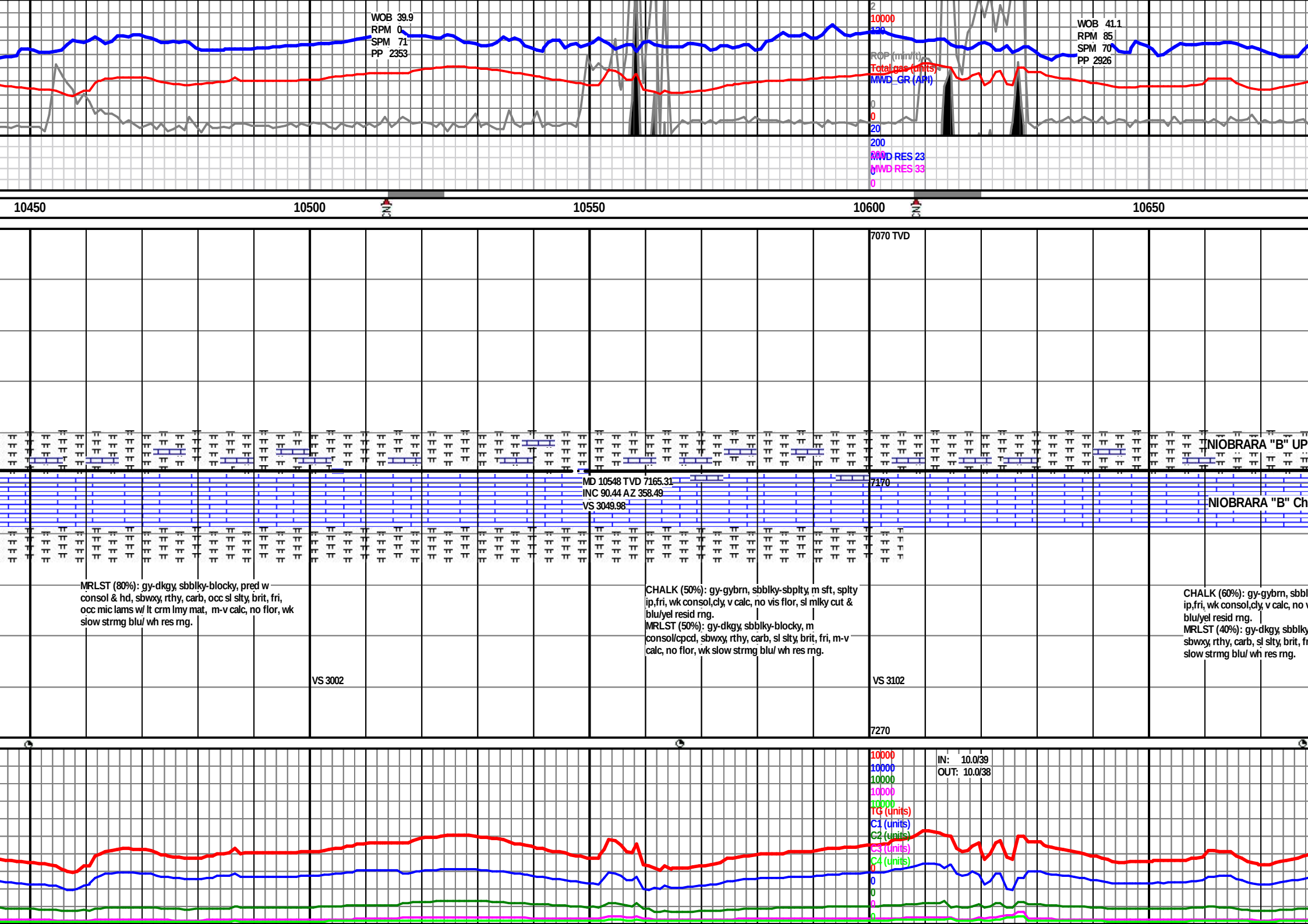

WOB 43.4
RPM 60
SPM 70
PP 2900
2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
9300
9350
9400
9450
9500
7070 TVD
INTERPRETED FAULT #3
21' throw
MD 9414 TVD 7168.93
INC 92.95 AZ 359.43
VS 1916.59
NIOBRARA "B" Chalk (Target)
ky, intbd w/ mic lams dk mat,
m hd to m sft, w/ scat wh/tn
s, unident foss frags,marly
blu/wh resid ring, tr SS:
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, w calc overgrwths, unident foss frags,marly
ip, v calc, tr pyrt, no flor, blu/wh resid ring, tr SS:
uncons, rdd, f-md,qtz g,
CHALK: gy-gybrn, sbblky, intbd w/ mic lams dk mat,
splty, fri, mod w consol, m hd to m sft, w/ scat wh/tn
specs, w calc overgrwths, unident foss frags,marly
ip, v calc, tr pyrt, no flor, blu/wh resid ring, tr SS:
uncons-frm, f-md g rdd
VS 1802
VS 1902
VS 2002
7270
IN 10.1/40
OUT 10+/39
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0

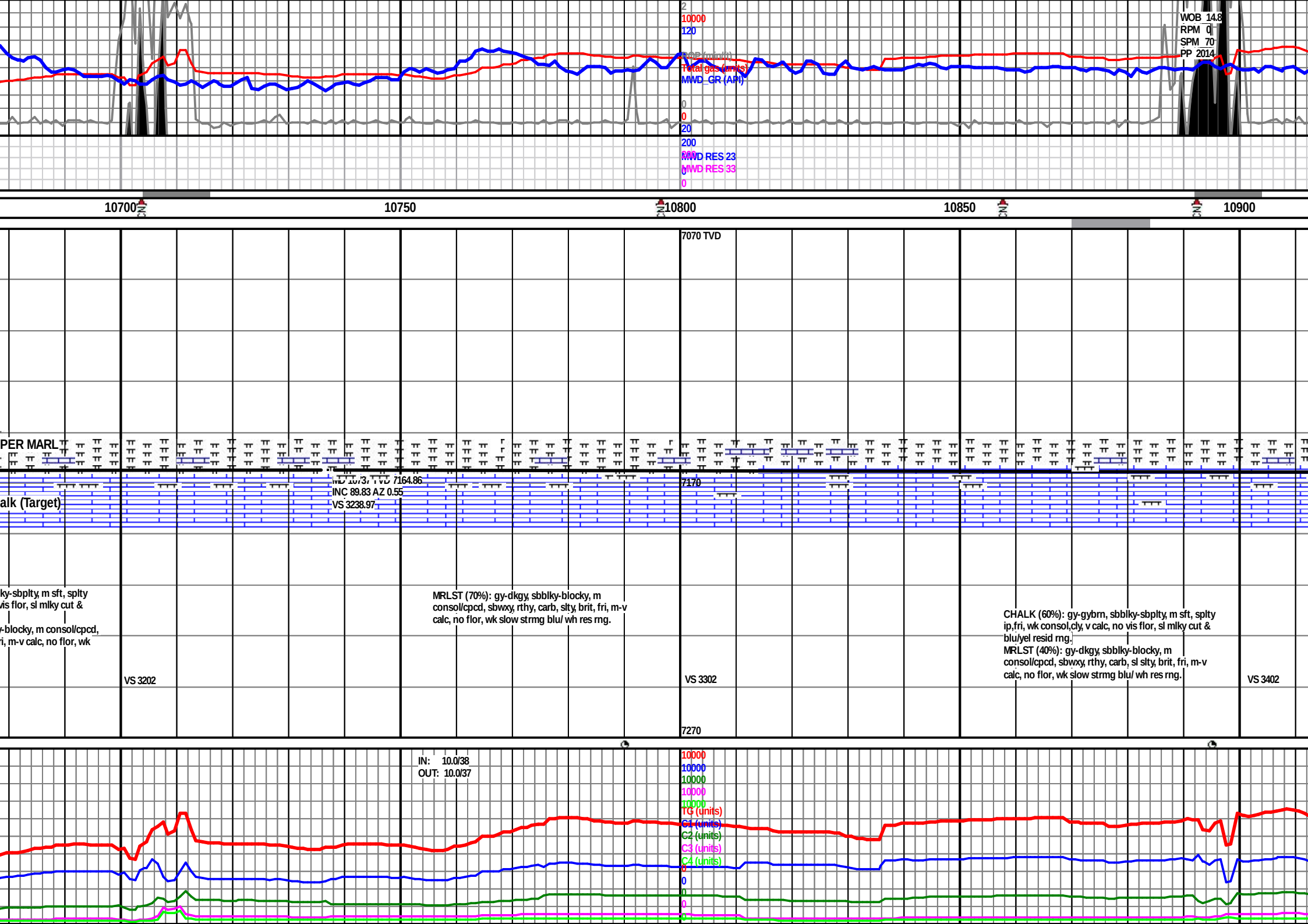

2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
9550
CN
9600
9650
CN
9700
7070 TVD
MD 9603 TVD 7158.85
INC 93.16 AZ 358.32
7170
VS 2105.28
NIOBRARA "B" Chalk (Target)
MRLST (70%): gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, carb, occ slty, brit, m-v calc. CHALK (30%): gy-gybrn, sbblky-sbplty, m sft-sft,splty ip, wk consol, clyey, dk carb intbds, frags unident foss, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST: gy-dkgy, sbblky-blocky, pred w consol & hd, occ m hd, sbwxy, carb, splty ip, occ mic lams slty, fri, m-v calc, no flor, blu res rng..
VS 2102
VS 2202
7270
IN: 10.1/39
OUT: 10+/38
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0

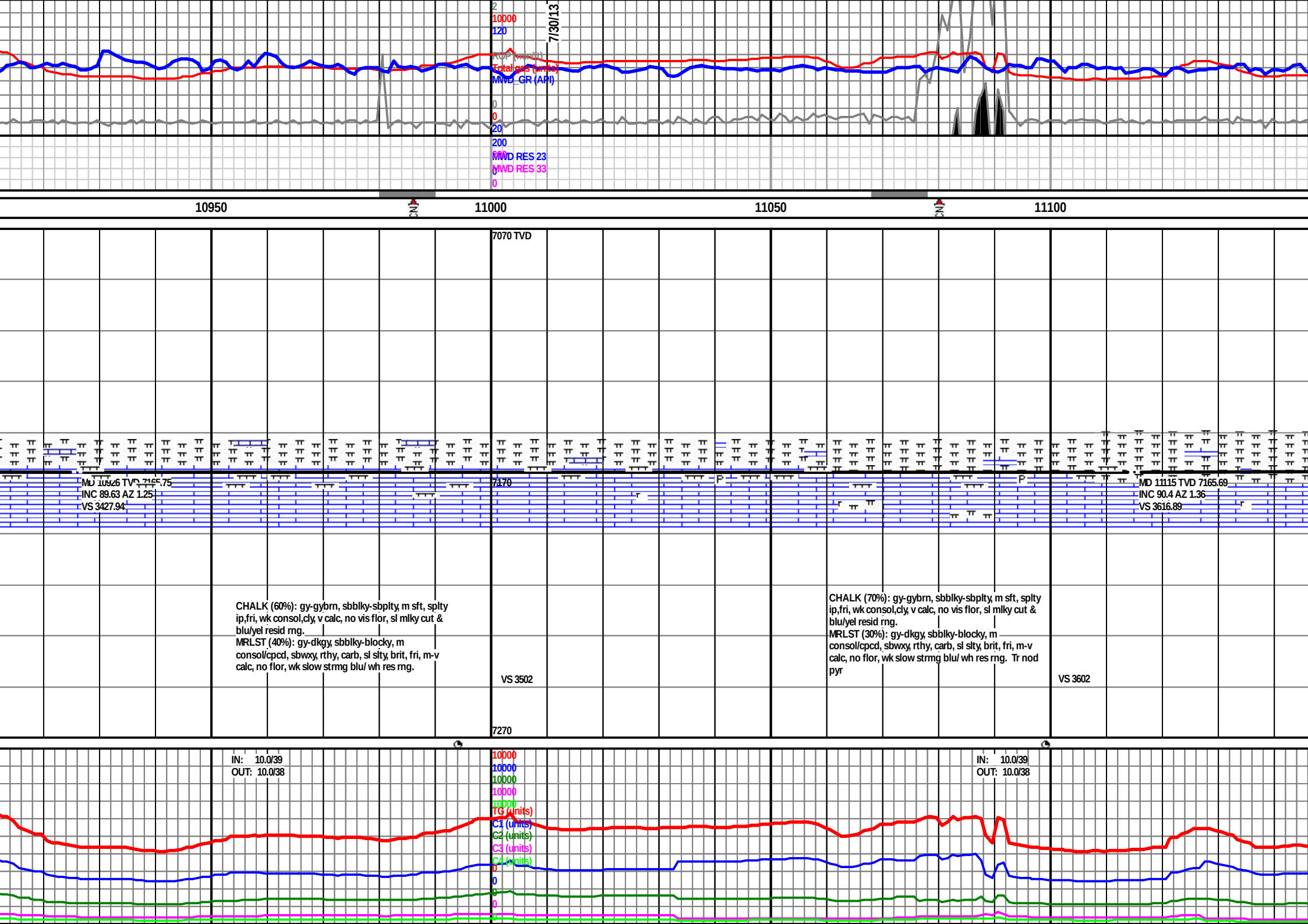

2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
0
WOB 36.6
RPM 60
SPM 71
PP 2347
9750
9800
9850
9900
9950
7070 TVD
MD 9792 TVD 7
INC 88.93 AZ 0.34
VS 2294.18
7170
MRLST: gy-dkgy, sbblky-blocky, pred w consol & hd, occ m hd, sbwxy, carb, splty ip, occ mic lams slty, fri, fn fl pyr min m-v calc.
MRLST : gy-dkgy, sbblky-blocky, mod w consol & hd, sbwxy, rthy, carb, occ mic lams slty, fri, fn dism mica & pyr, m-v calc.
MRLST : gy-dkgy, sbb
hd, rthy, carb, sl slty ip
ip, m to v calc.
VS 2302
VS 2402
7270
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0
IN: 9.8+/36
OUT: 10+/37

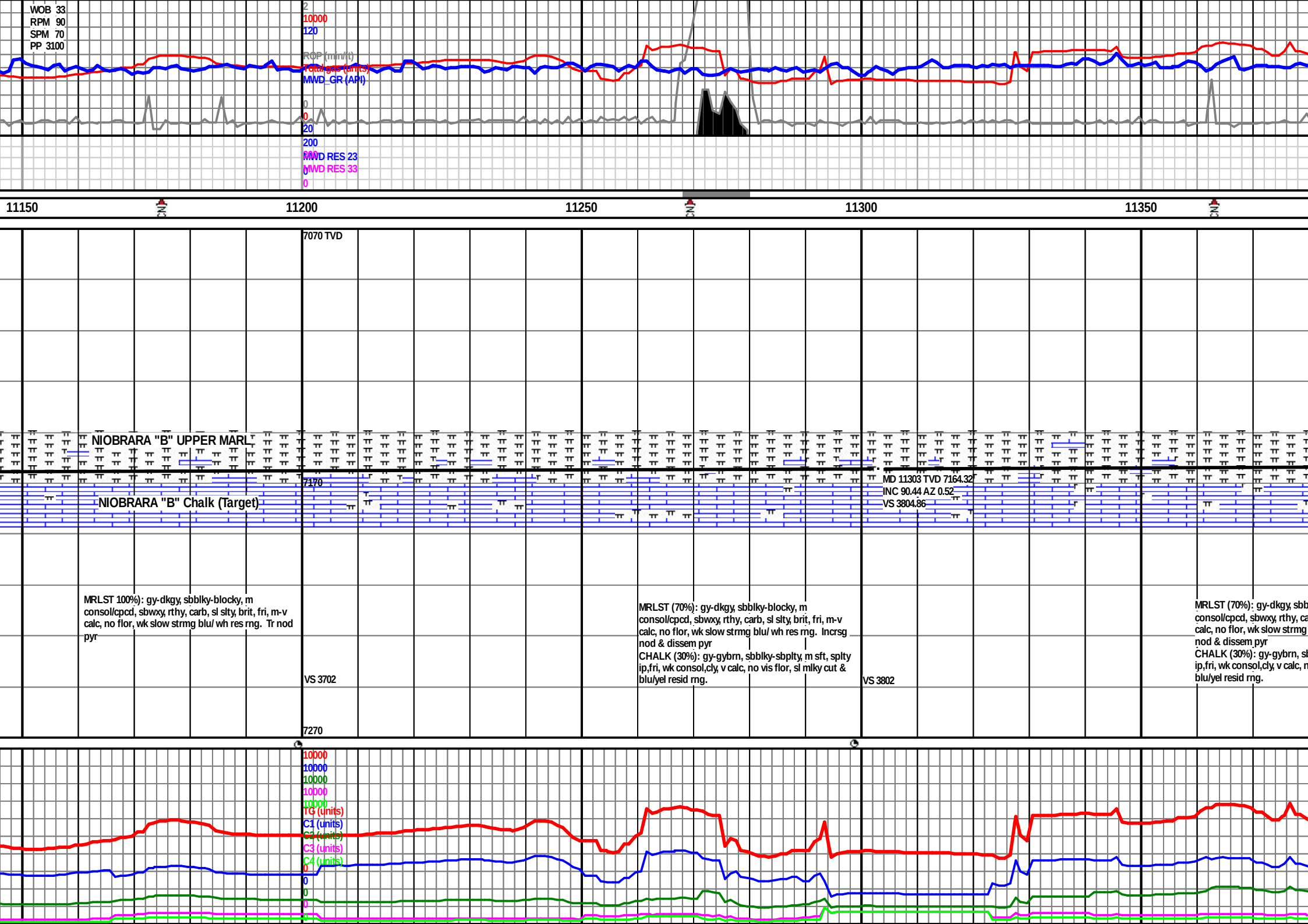

ROP (min/ft)
Total gas (units)
MWD_GR (API)
MWD RES 23
MWD RES 33
10000
10050
10100
10150
10200
7070 TVD
MD 9981 TVD 7158.27
INC 89.93 AZ 359.99
VS 2483.16
7170
NIOBRARA "B" UPPER MARL
NIOBRARA "B" Chalk (Target)
MD 10170 TVD 7161.48
INC 88.72 AZ 0.57
VS 2672.13
lky-blocky, mod w consol &
, fn dism pyr min, fri, chalky
CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol, clyey, dk carb intbds, frags unident foss, v calc, no vis flor, sl mlky cut & blu/yel resid rng.MRLST (30%): gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, carb, occ slty, brit, m-v calc, unident foss, occ dk gy pel mat.
MRLST (30%): gy-dkgy, sbblky-blocky, mod w consol, sbwxy, carb, occ slty, brit, m-v calc, unident foss, fn dism mica, lmy ip, no flor, wk blu resid rng.
VS 2502
VS 2602
VS 2702
7270
IN: 9.8/37
OUT: 9.9/37
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

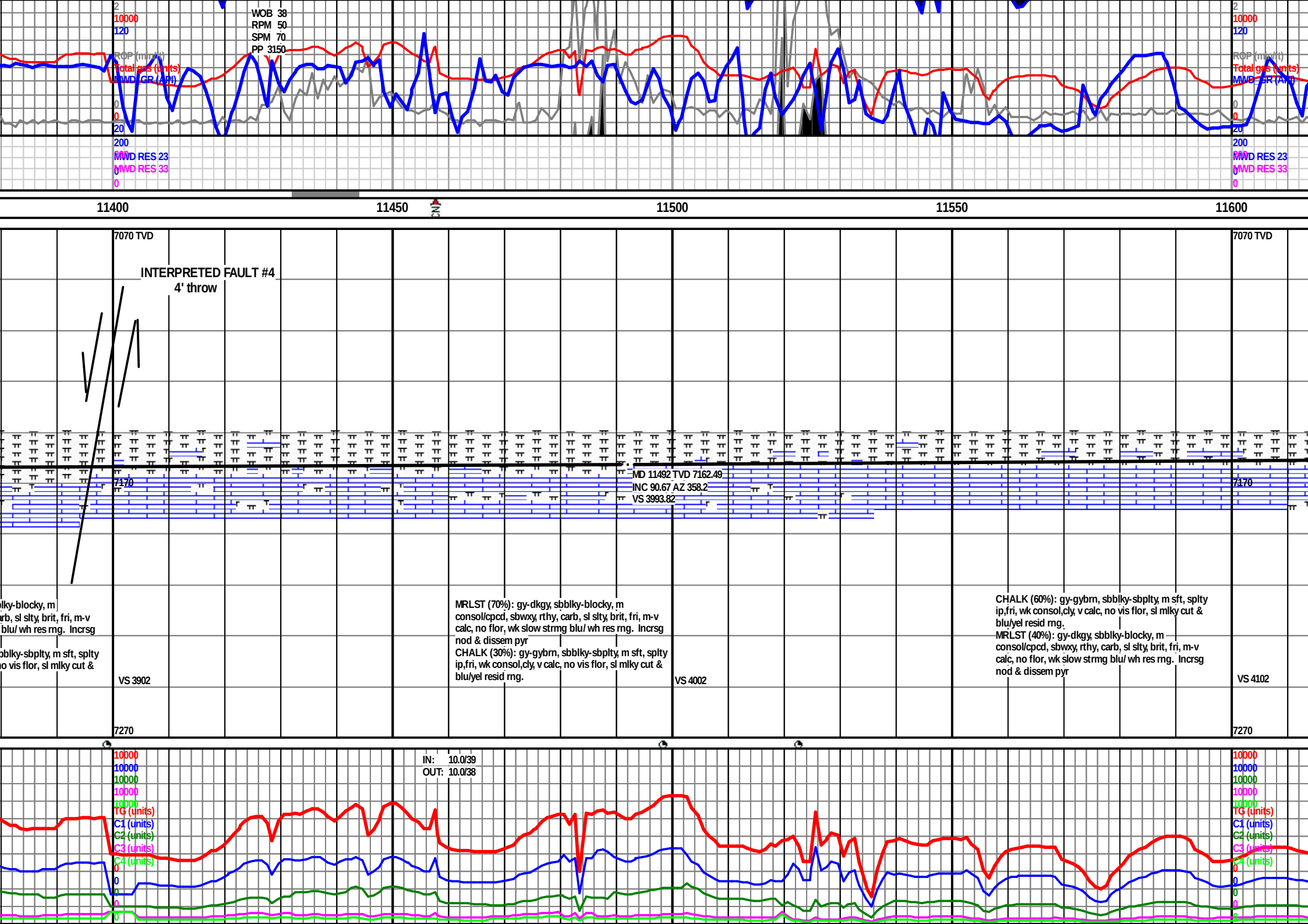

WOB 45.8
RPM 70
SPM 71
PP 2328
ROP (min/ft)
Total gas (units)
MWD GR (API)
MWD RES 23
MWD RES 33
10250
10300
10350
10400
7070 TVD
MD 1035
164.8
INC 89.26 AZ 358.13
VS 2861.07
7170
MRLST (70%): gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, rthy, carb, occ sl slty, brit, fri, occ mic lams w/ lt crm lmy mat, m-v calc, no flor, wk slow strmg blu/ wh res rng. CHALK (30%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol, dk carb intbds, frags unident foss, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST: gy-dkgy, sbblky-blocky, m consol, m hd, sbwxy, rthy, carb, fri, mrly ip, m-v calc, no flor, wk slow strmg blu/ wh res rng.
VS 2802
VS 2902
7270
Mud Data @ 10230'
Wt 10.0
Vis 39
PV/YP 12/15
Gel 5/9/11
pH 9.2
Fil 5.0
Cl 1300
Ca 120
Sd .75%
Sol 8.2%
H2O 90.5%
ECD 12.28
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)

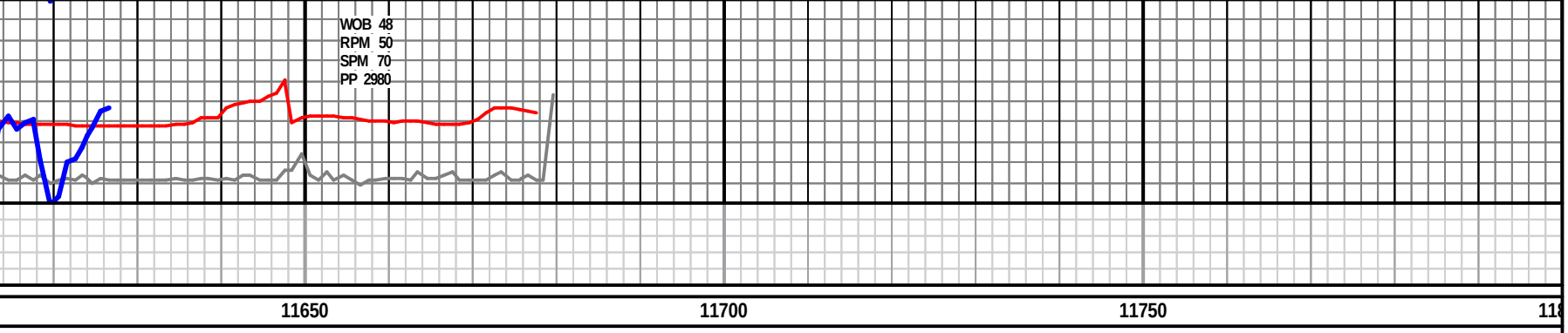

WOB 39.9
RPM 0
SPM 71
PP 2353
WOB 41.1
RPM 85
SPM 70
PP 2926
ROP (min/ft)
Total gas (units)
MWD_GR (API)
MWD RES 23
MWD RES 33
10450
10500
10550
10600
10650
7070 TVD
7170
7270
MD 10548 TVD 7165.31
INC 90.44 AZ 358.49
VS 3049.98
NIOBRARA "B" UP
NIOBRARA "B" Ch
MRLST (80%): gy-dkgy, sbblky-blocky, pred w consol & hd, sbwxy, rthy, carb, occ sl slty, brit, fri, occ mic lams w/ lt crm lmy mat, m-v calc, no flor, wk slow strmg blu/ wh res rng.
CHALK (50%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (50%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng.
CHALK (60%): gy-gybrn, sbbl
ip,fri, wk consol,cly, v calc, no v
blu/yel resid rng.
MRLST (40%): gy-dkgy, sbblky
sbwxy, rthy, carb, sl slty, brit, fr
slow strmg blu/ wh res rng.
VS 3002
VS 3102
IN: 10.0/39
OUT: 10.0/38
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)


2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
WOB 14.8
RPM 0
SPM 70
PP 2014
10700
10750
10800
10850
10900
7070 TVD
PER MARL
alk (Target)
MD 10737 TVD 7164.86
INC 89.83 AZ 0.55
VS 3238.97
7170
ky-sbplty, m sft, splty
vis flor, sl mlky cut &
y-blocky, m consol/cpcd,
ri, m-v calc, no flor, wk
VS 3202
MRLST (70%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng.
VS 3302
CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (40%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng.
VS 3402
7270
IN: 10.0/38
OUT: 10.0/37
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0


2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
7/30/13
10950
CN
11000
11050
CN
11100
7070 TVD
MD 10926 TVD 7165.75
INC 89.63 AZ 1.25
VS 3427.94
7170
MD 11115 TVD 7165.69
INC 90.4 AZ 1.36
VS 3616.89
CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (40%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng.
VS 3502
CHALK (70%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (30%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Tr nod pyr
VS 3602
7270
IN: 10.0/39
OUT: 10.0/38
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0
0
IN: 10.0/39
OUT: 10.0/38


WOB 33
RPM 90
SPM 70
PP 3100
2
10000
120
ROP (min/ft)
Total gas (units)
MWD_GR (API)
0
0
20
200
MWD RES 23
MWD RES 33
0
11150
11200
11250
11300
11350
7070 TVD
NIOBRARA "B" UPPER MARL
7170
NIOBRARA "B" Chalk (Target)
MD 11303 TVD 7164.32
INC 90.44 AZ 0.52
VS 3804.86
MRLST 100%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Tr nod pyr
MRLST (70%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Incrsg nod & dissem pyr
CHALK (30%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (70%): gy-dkgy, sbb
consol/cpcd, sbwxy, rthy, ca
calc, no flor, wk slow strmg
nod & dissem pyr
CHALK (30%): gy-gybrn, sl
ip,fri, wk consol,cly, v calc, n
blu/yel resid rng.
VS 3702
VS 3802
7270
10000
10000
10000
10000
10000
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)
0
0
0
0


WOB 38
RPM 50
SPM 70
PP 3150
ROP (min/ft)
Total gas (units)
MWD GR (API)
MWD RES 23
MWD RES 33
11400
11450
11500
11550
11600
7070 TVD
INTERPRETED FAULT #4
4' throw
7170
MD 11492 TVD 7162.49
INC 90.67 AZ 358.2
VS 3993.82
lky-blocky, m
rb, sl slty, brit, fri, m-v
blu/ wh res rng. Incrsg
bblky-sbplty, m sft, splty
o vis flor, sl mlky cut &
VS 3902
MRLST (70%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Incrsg nod & dissem pyr
CHALK (30%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
VS 4002
CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (40%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Incrsg nod & dissem pyr
VS 4102
7270
IN: 10.0/39
OUT: 10.0/38
TG (units)
C1 (units)
C2 (units)
C3 (units)
C4 (units)



11650 11700 11750 11

TD @ 11,677' REACHED AT 9:20 AM ON 7/30/13 4 1/2" LINER SET @ 11662' ON 7/30/13.

BIT #2 DRILLED 6,760' IN 62.5 HRS.

BHL: 4178.55ft Northing; 142.13 ft Easting;
Closure distance: 4178.67 ft

(Projected to the bit.)

THANK YOU !

MAREK CIESNIK
ALAN SEELING

(GOOLSBY BROTHERS & ASSOCIATES)

August 1, 2013

CHALK (60%): gy-gybrn, sbblky-sbplty, m sft, splty ip,fri, wk consol,cly, v calc, no vis flor, sl mlky cut & blu/yel resid rng.
MRLST (40%): gy-dkgy, sbblky-blocky, m consol/cpcd, sbwxy, rthy, carb, sl slty, brit, fri, m-v calc, no flor, wk slow strmg blu/ wh res rng. Incrsg nod & dissem pyr

VS 4202