

# LITHOLOGY STRIP LOG

## WellSight Systems

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

Well Name: Patara Oil and Gas Wray Mesa 36-34-47-20

Location: Sec 36-47N-20W

License Number:

Spud Date: 07 Aug 2010

Surface Coordinates: 1945 FNL 975 FEL

Region: Montrose Co., CO

Drilling Completed:

Bottom Hole Coordinates:

Ground Elevation (ft): 7280

K.B. Elevation (ft): 7300

Logged Interval (ft): 2406 To: TD

Total Depth (ft):

Formation: Hermose Gp (Hatch)

Type of Drilling Fluid: MI Flo Pro NT

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.com

### OPERATOR

Company: Patara Oil and Gas, LLC

Address: 600 17th St., Ste. 1900S  
Denver, CO 80202

### GEOLOGIST

Name: Kurt A. Anderson

Company: Anderson Geological Services, Inc.

Address: POB 216  
Franktown, CO  
303-688-3840

### Rig

Nabors Rig 946

Bill Cook, Toolpusher

### Mud

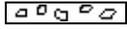
MI

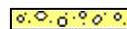
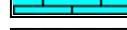
Debroid Braud

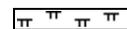
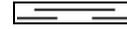
### On Site

Robert Martin

### ROCK TYPES

 Anhy  
 Bent  
 Brec  
 Cht  
 Clyst  
 Coal

 Congl  
 Dol  
 Gyp  
 Igne  
 Lmst  
 Meta

 Mrlst  
 Salt  
 Shale  
 Shcol  
 Shgy  
 Slstst

 Ss  
 Till  
 Gy 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**

- Anhy
- Arg
- Bent
- Coal
- Dol

- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

**TEXTURE**

- Boundst
- Chalky
- Cryxln
- Earthy
- Finxln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

### OTHER SYMBOLS

**POROSITY TYPE**

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

**SORTING**

- Well
- Moderate
- Poor

**ROUNDING**

- Rounded
- Subrnd
- Subang
- Angular

**OIL SHOWS**

- Blank
- Gas
- Even
- Spotted
- Ques
- Dead

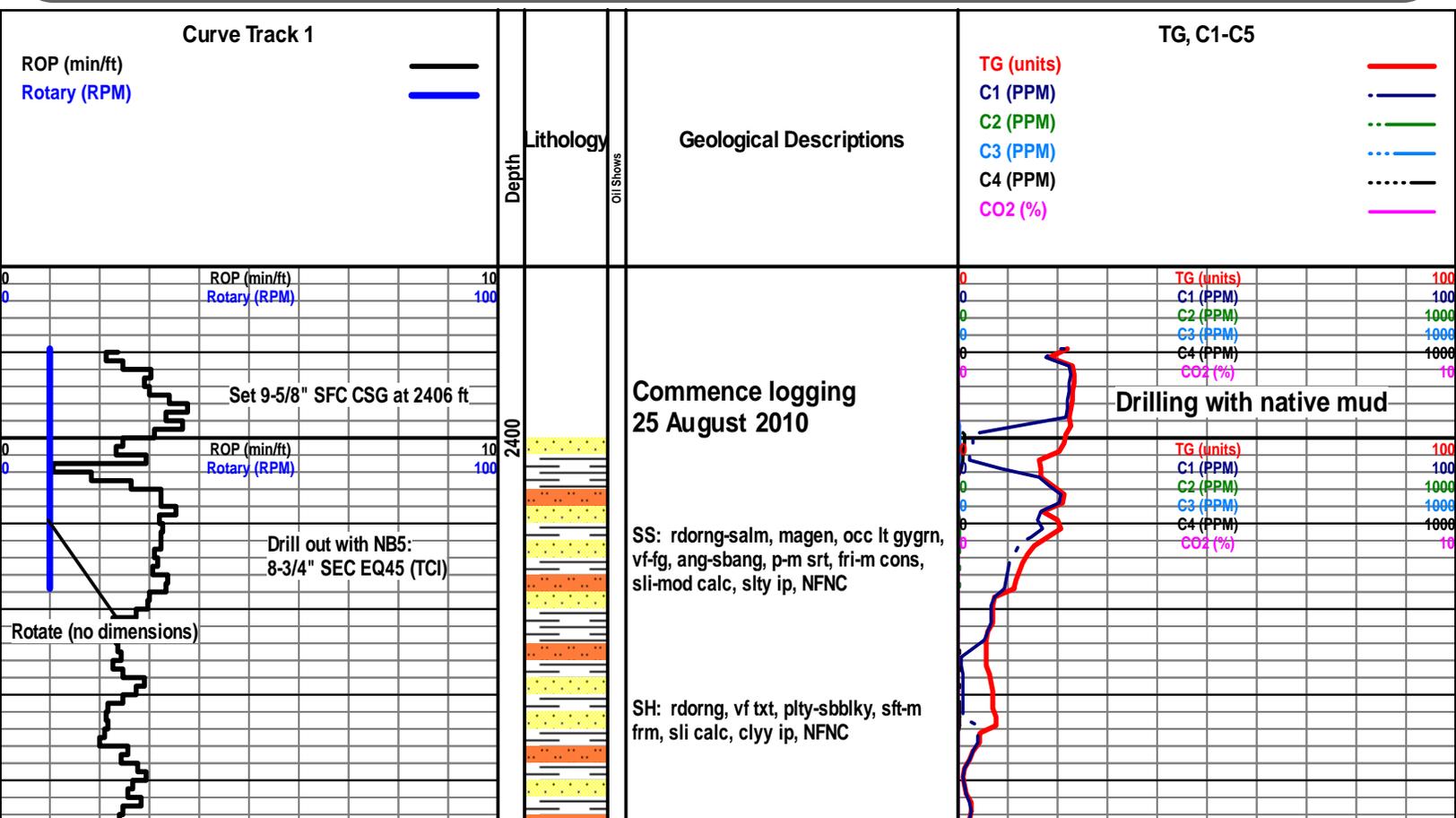
**INTERVALS**

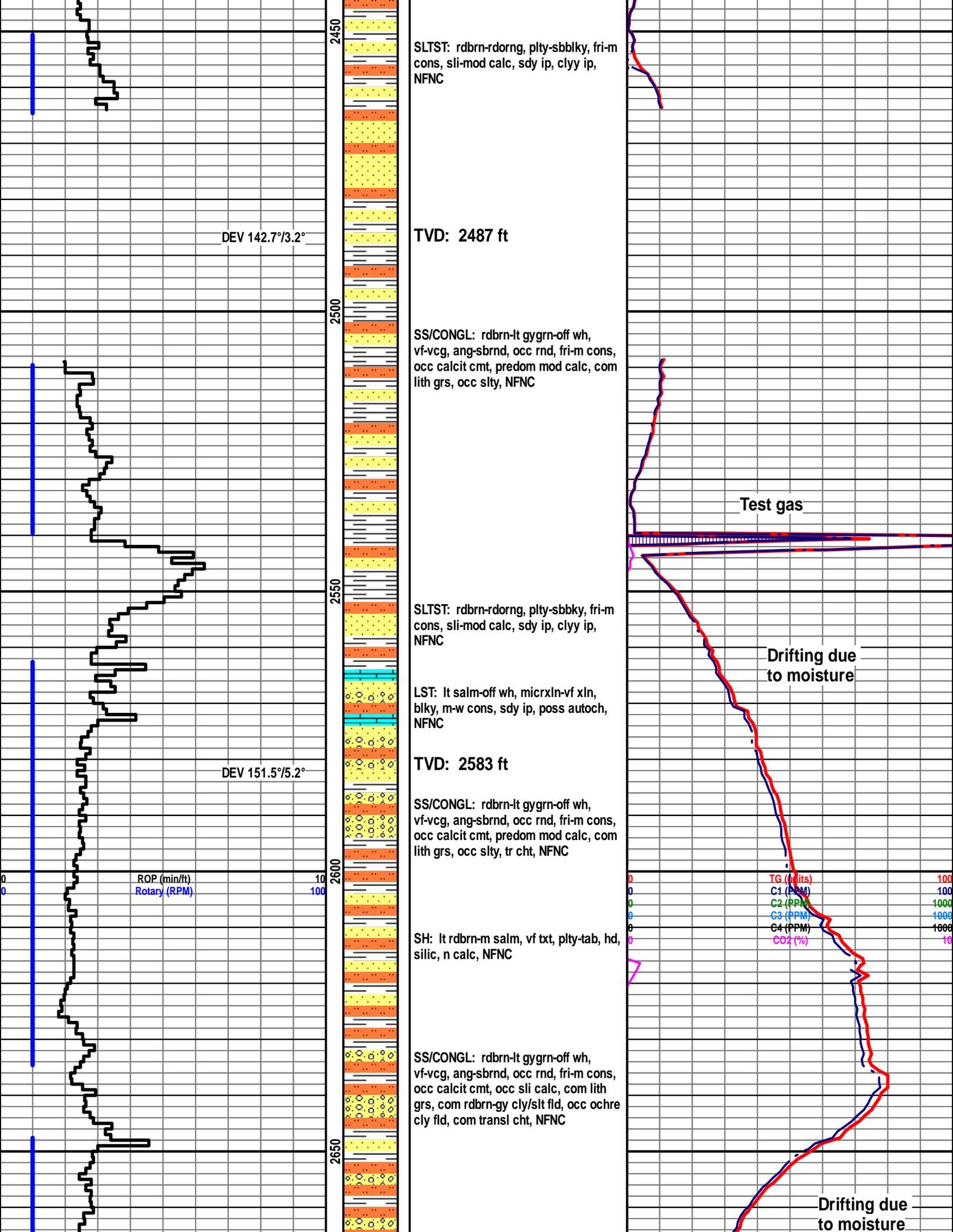
- Core

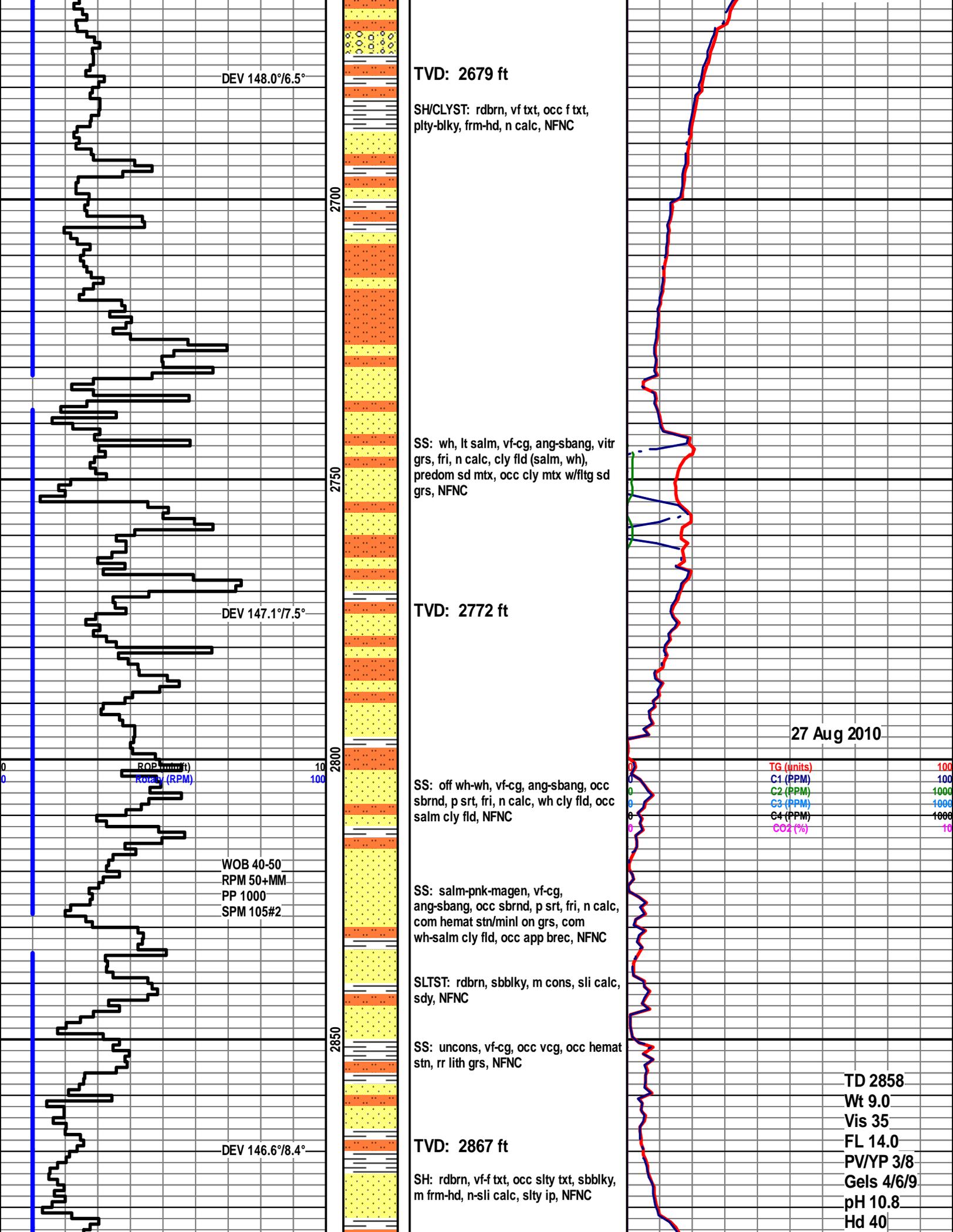
- Dst
- Bit change

**EVENTS**

- Rft
- Sidewall







DEV 148.0°/6.5°

TVD: 2679 ft

SH/CLYST: rdbrn, vf txt, occ f txt, plty-blky, frm-hd, n calc, NFNC

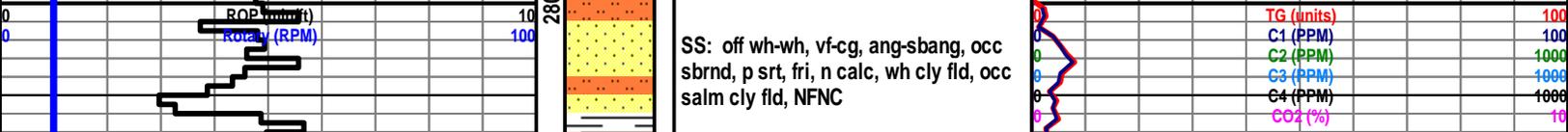
2700

SS: wh, lt salm, vf-cg, ang-sbang, vitr grs, fri, n calc, cly fld (salm, wh), predom sd mtx, occ cly mtx w/fltg sd grs, NFNC

2750

DEV 147.1°/7.5°

TVD: 2772 ft



ROP (mm/h)  
RPM (RPM)

SS: off wh-wh, vf-cg, ang-sbang, occ sbrnd, p srt, fri, n calc, wh cly fld, occ salm cly fld, NFNC

WOB 40-50  
RPM 50+MM  
PP 1000  
SPM 105#2

SS: salm-pnk-magen, vf-cg, ang-sbang, occ sbrnd, p srt, fri, n calc, com hemat stn/minl on grs, com wh-salm cly fld, occ app brec, NFNC

SLTST: rdbrn, sbblky, m cons, sli calc, sdy, NFNC

2850

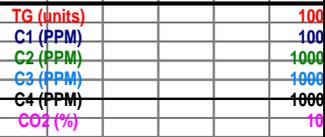
SS: uncons, vf-cg, occ vcg, occ hemat stn, rr lith grs, NFNC

DEV 146.6°/8.4°

TVD: 2867 ft

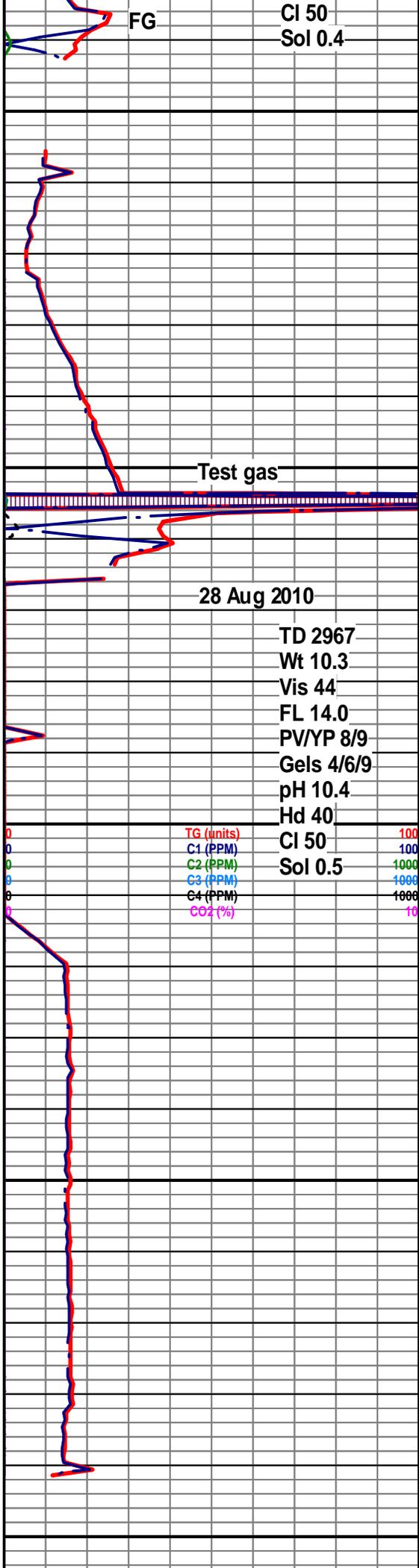
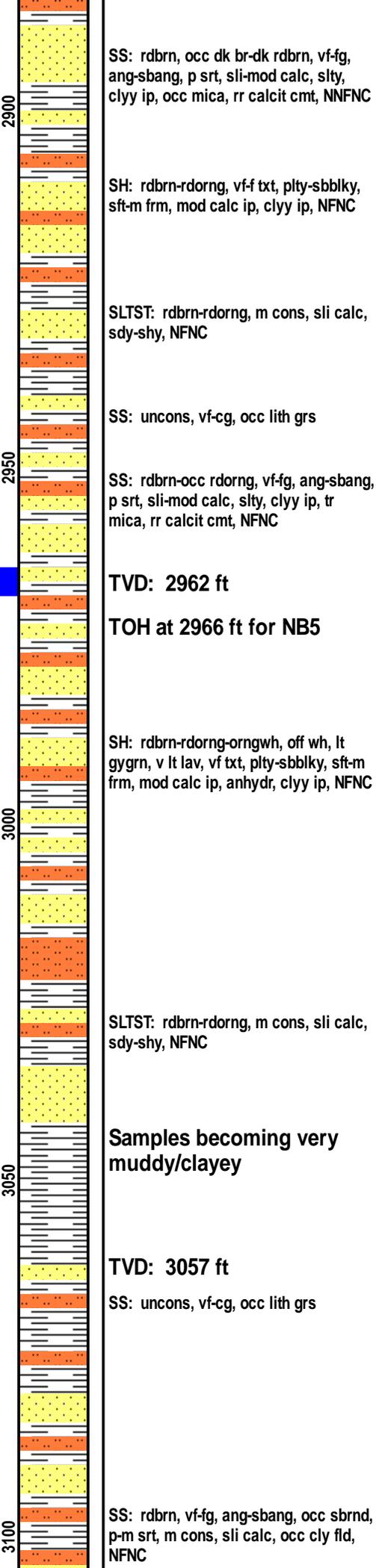
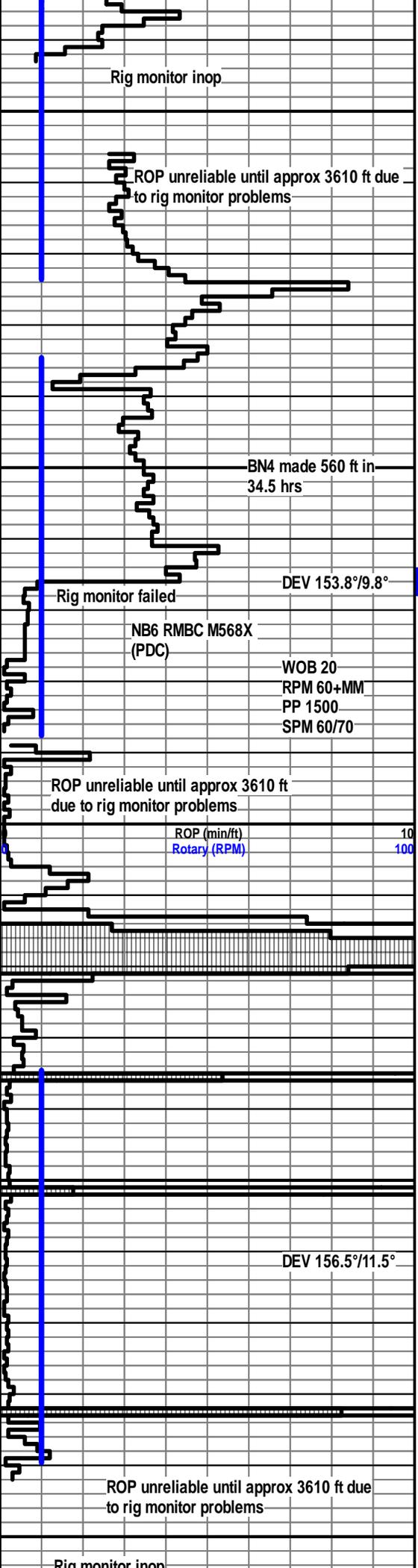
SH: rdbrn, vf-f txt, occ slty txt, sbblky, m frm-hd, n-sli calc, slty ip, NFNC

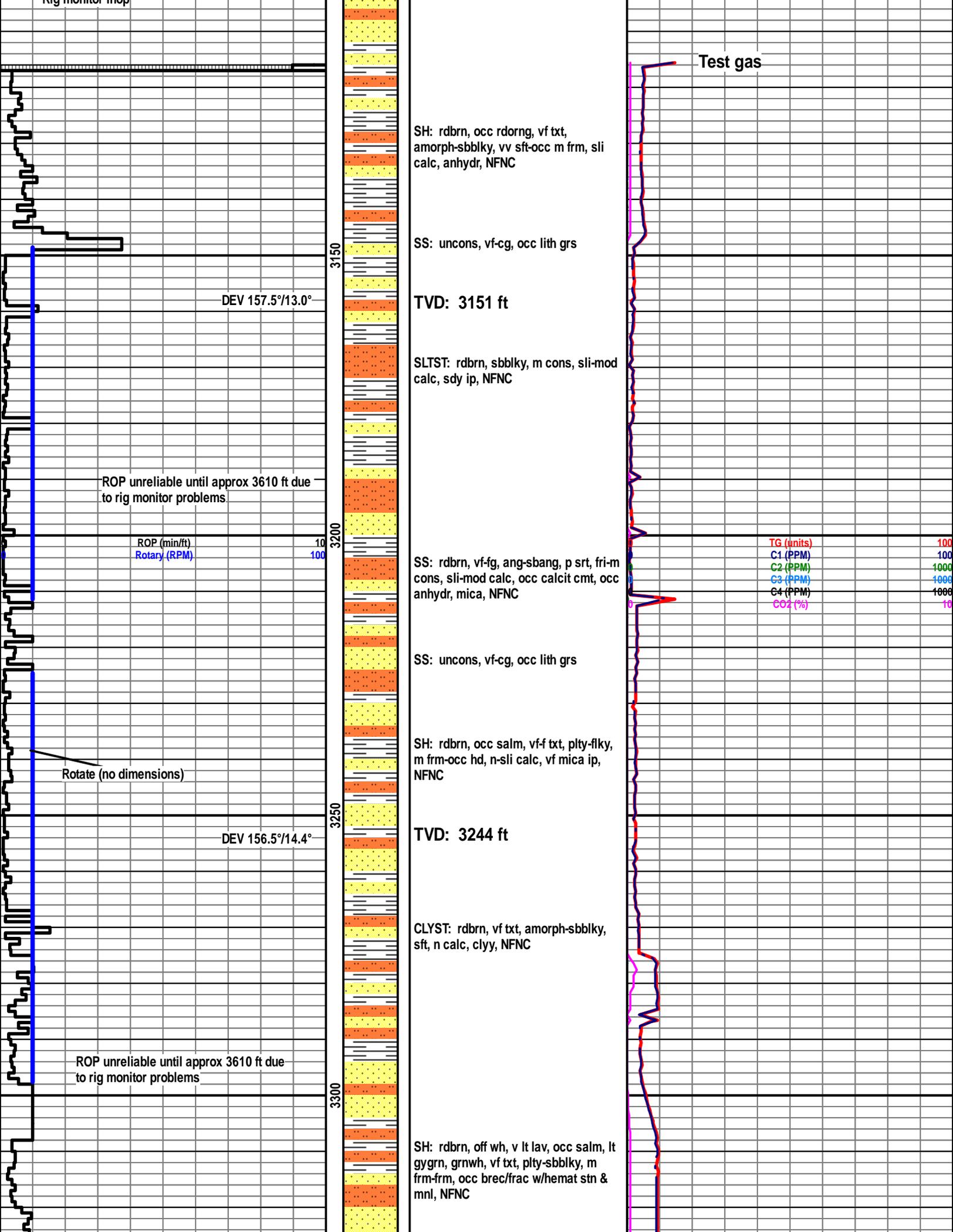
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TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10

TD 2858  
Wt 9.0  
Vis 35  
FL 14.0  
PV/YP 3/8  
Gels 4/6/9  
pH 10.8  
Hd 40





SH: rdbrn, occ rdorng, vf txt, amorph-sbblky, vv sft-occ m frm, sli calc, anhydr, NFNC

SS: uncons, vf-cg, occ lith grs

TVD: 3151 ft

SLTST: rdbrn, sbblky, m cons, sli-mod calc, sdy ip, NFNC

ROP unreliable until approx 3610 ft due to rig monitor problems

ROP (min/ft)  
Rotary (RPM)

SS: rdbrn, vf-fg, ang-sbang, p srt, fri-m cons, sli-mod calc, occ calcit cmt, occ anhydr, mica, NFNC

SS: uncons, vf-cg, occ lith grs

SH: rdbrn, occ salm, vf-f txt, pty-flky, m frm-occ hd, n-sli calc, vf mica ip, NFNC

Rotate (no dimensions)

TVD: 3244 ft

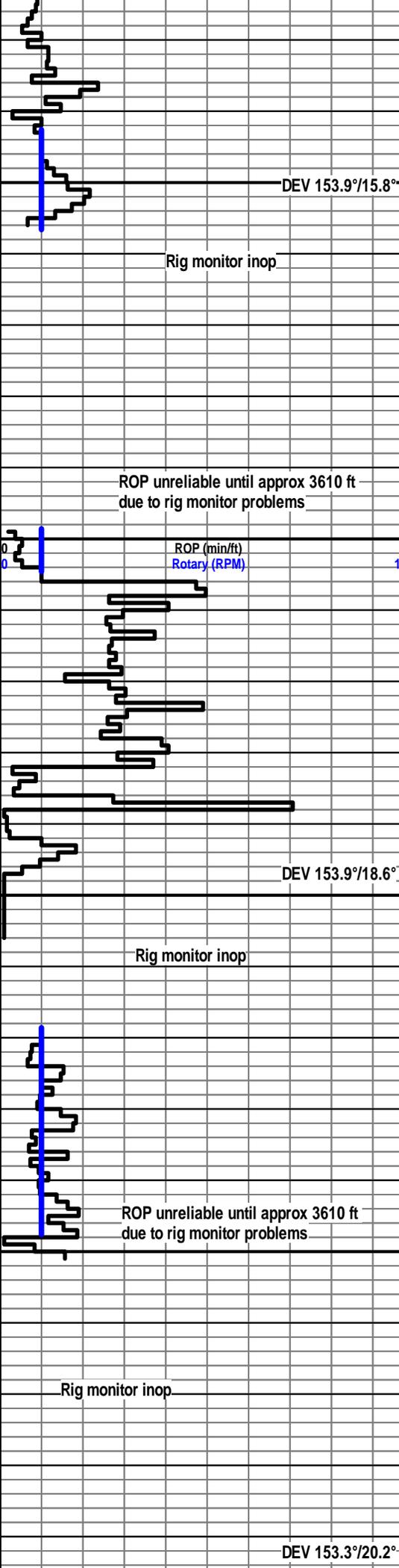
CLYST: rdbrn, vf txt, amorph-sbblky, sft, n calc, clyy, NFNC

ROP unreliable until approx 3610 ft due to rig monitor problems

SH: rdbrn, off wh, v lt lav, occ salm, lt gygrn, grnwh, vf txt, pty-sbblky, m frm-frm, occ brec/frac w/hemat stn & mnl, NFNC

Test gas

TG (units)	100
C1 (PPM)	100
C2 (PPM)	1000
C3 (PPM)	1000
C4 (PPM)	1000
CO2 (%)	10



SS: uncons, vf-cg, occ lith grs

TVD: 3338 ft

SLTST: rdbrn, sbbkly, m cons, sli calc, sdy ip, NFNC

SS: uncons, vf-cg, occ lith grs

ROP unreliable until approx 3610 ft due to rig monitor problems

ROP (min/ft)  
Rotary (RPM)

CLYST/SH: rdorngr-orngwh, vf-f txt, rndd, sft, clyy, n-sli calc, anhydr, NFNC

SH: rdbrn, vf-f txt, sbbkly-flky, m frm, n calc, NFNC

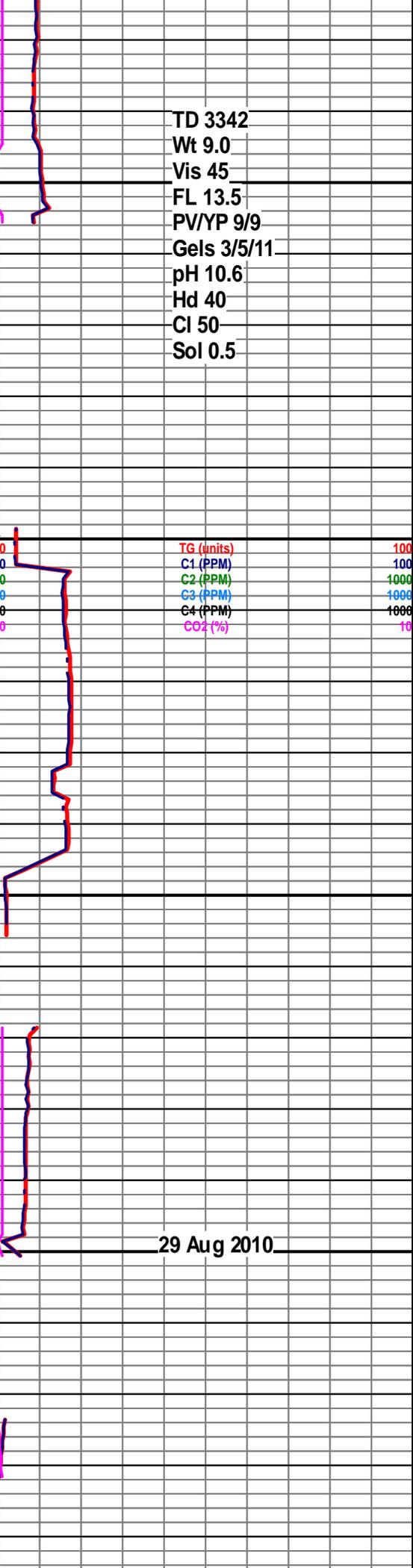
TVD: 3429 ft

SS: rdbrn-rdorngr, vf-fg, sbang, p-m srt, m cons, sli calc, occ mod calc, vf mica, NFNC

SLTST: rdbrn, sbbkly, m cons, sli calc, sdy ip, NFNC

SS: rdbrn, vf-fg, sbang, p-m srt, m cons, sli calc, occ mod calc, vf mica, NFNC

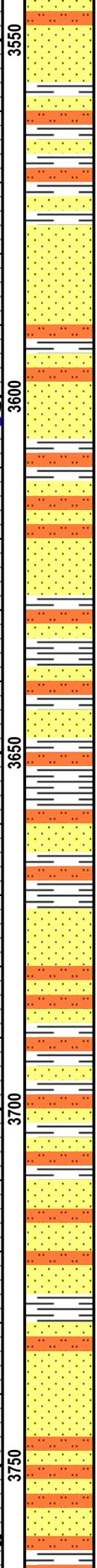
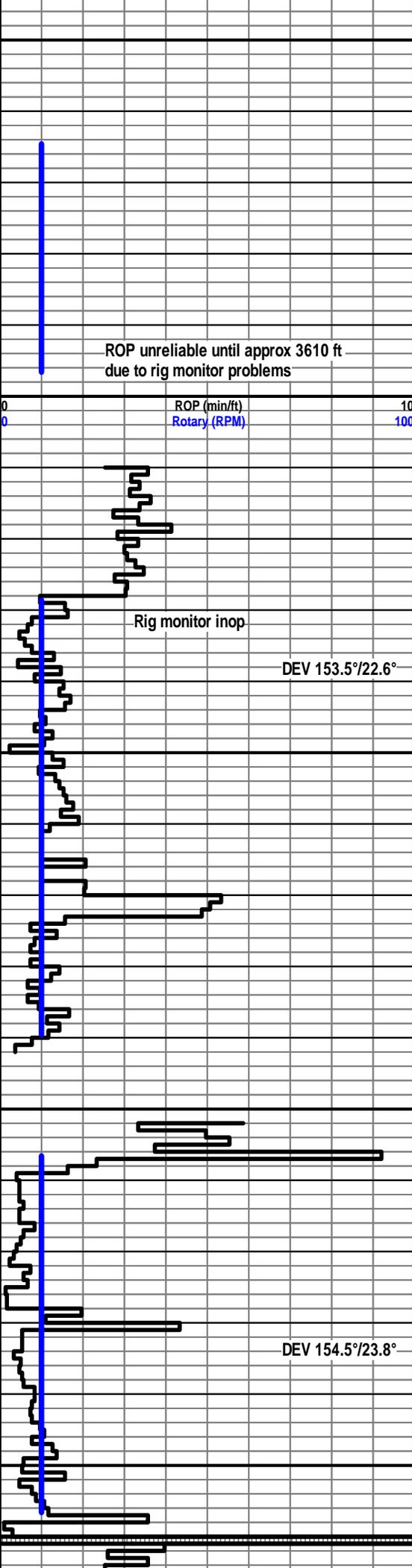
TVD: 3519 ft



TD 3342  
Wt 9.0  
Vis 45  
FL 13.5  
PV/YP 9/9  
Gels 3/5/11  
pH 10.6  
Hd 40  
Cl 50  
Sol 0.5

TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10

29 Aug 2010



SLTST: rdbrn, sbblky, m cons, sli calc, sdy ip, NFNC

SS: rdbrn, vf-fg, sbang, p-m srt, m cons, sli calc, occ mod calc, vf mica, NFNC

SLTST: rdbrn, sbblky, m cons, sli calc, sdy ip, NFNC

SS: rdbrn, vf-fg, sbang, p-m srt, m cons, sli calc, occ mod calc, vf mica, NFNC

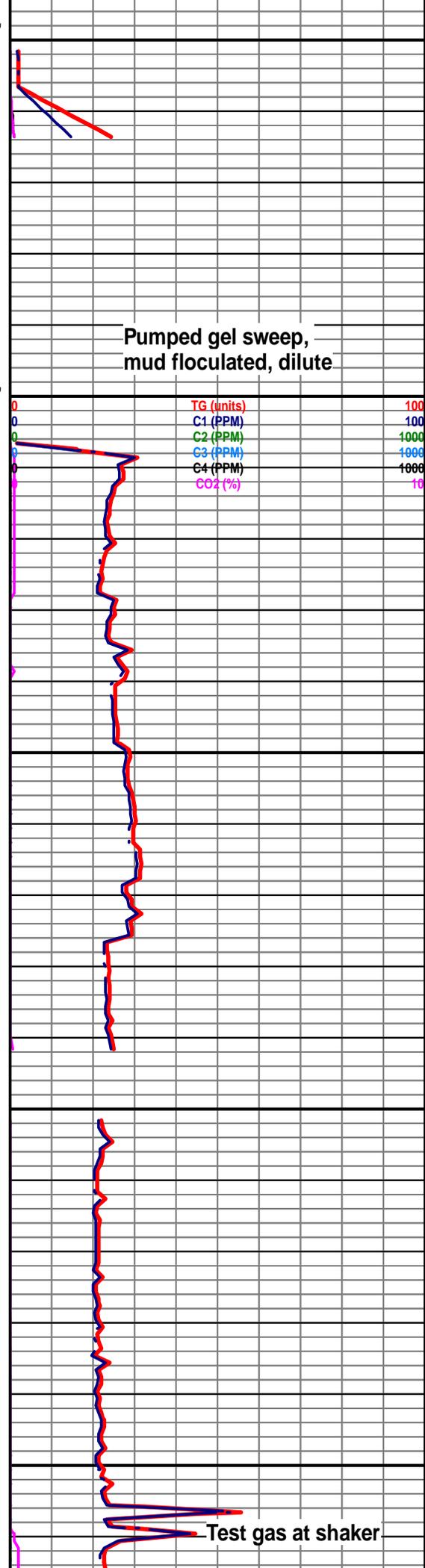
SS: rdbrn, vf-ufg, sbang, p-m srt, m cons, sli calc, occ mod calc, tr mica, NFNC

Short trip at 3702 ft to casing shoe. Tight 2XX off bottom. Pulled to 280K

NOTE: chunks and flakes (up to 1") circulated out after short trip

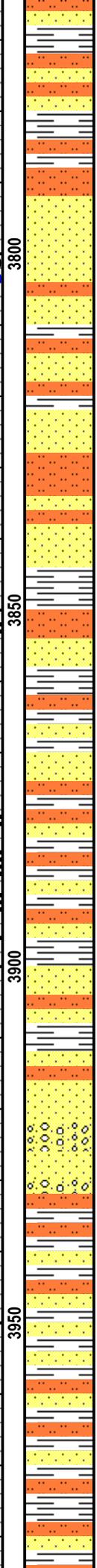
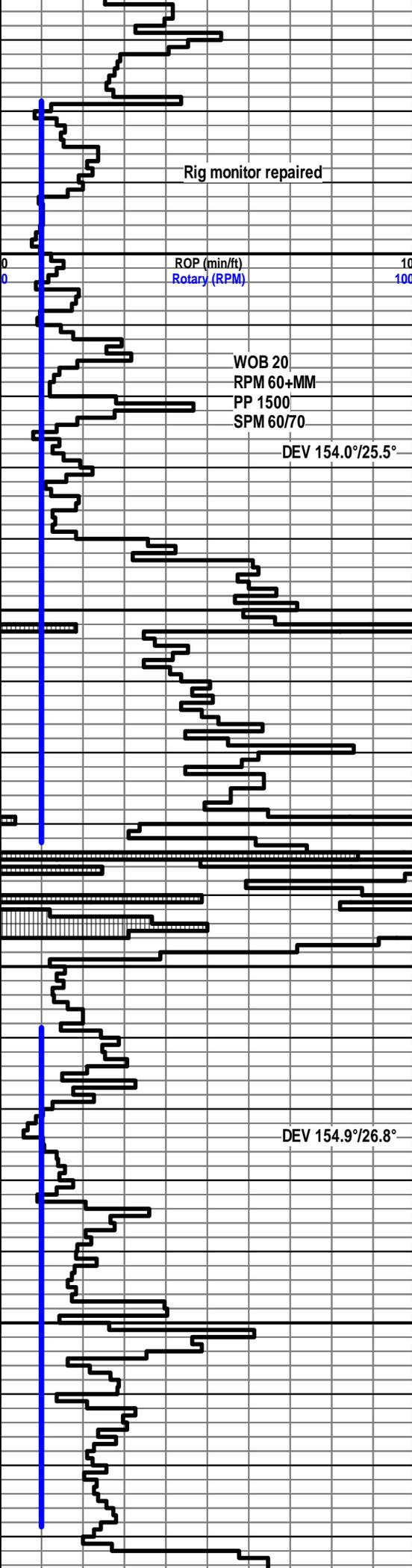
SS: rdbrn, vf-ufg, sbang, p-m srt, m cons, sli calc, occ mod calc, vf mica, NFNC

SLTST: rdbrn, sbblky, m cons, sli-mod calc, sdy ip, sli argil, NFNC



TVD: 3608 ft

TVD: 3697 ft



SS: rdbrn, vf-ufg, sbang, p-m srt, m cons, sli calc, occ mod calc, tr mica, NFNC

SS: rdbrn-rdorn, vf-ufg, sbang, p-m srt, m cons, sli calc, occ mod calc, anhydr, tr mica, NFNC

SLTST: rdbrn-rdorn, plty-sbblky, m cons, mod calc, sdy ip, sli argil, NFNC

**TVD: 3782 ft**

SS: rdbrn-rdorn, vf-ufg, sbang, p-m srt, fri-m cons, sli calc, occ mod calc, anhydr, tr mica, NFNC

SH: rdbrn-rdorn, vf-f txt, plty-sbblky, sft-m frm, n-sli calc, occ vf mica, NFNC

SH: rdorn-orngh, vf txt, amorph-sbblky, vv sft-sft, sli-occ mod calc, anhydr, clyy, NFNC

SLTST: rdbrn-rdorn, plty-sbblky, fri-m cons, sli-mod calc, sdy ip, sli argil, NFNC

SH: rdorn-orngh, vf txt, amorph-sbblky, vv sft-sft, sli calc, anhydr, clyy, NFNC

SLTST: rdbrn-rdorn, plty-sbblky, fri-m cons, sli-mod calc, anhydr, tr mica, NFNC

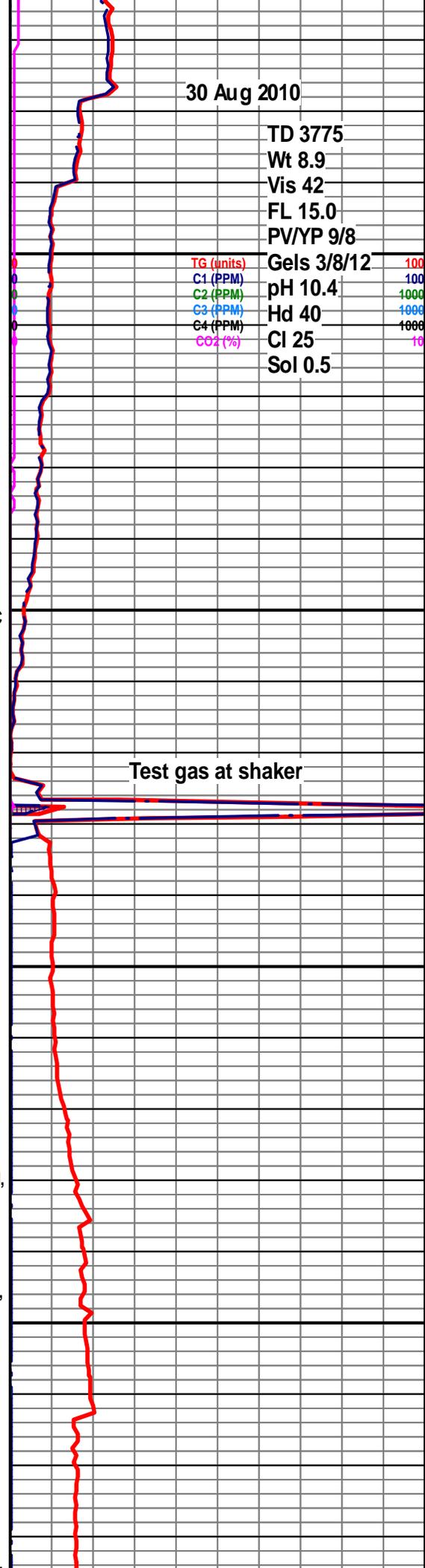
**TVD: 3868 ft**

SS/CONGL: uncons, vf-vcg, ang-sbrnd, com lith grs, NFNC

SH: rdorn-orn, vf txt, amorph-sbblky, vv sft-sft, sli calc, anhydr, NFNC

SLTST: rdbrn-rdorn, plty-sbblky, fri-m cons, sli-mod calc, sdy ip, sli argil, NFNC

SH: rdorn-orn, vf txt, amorph-sbblky,

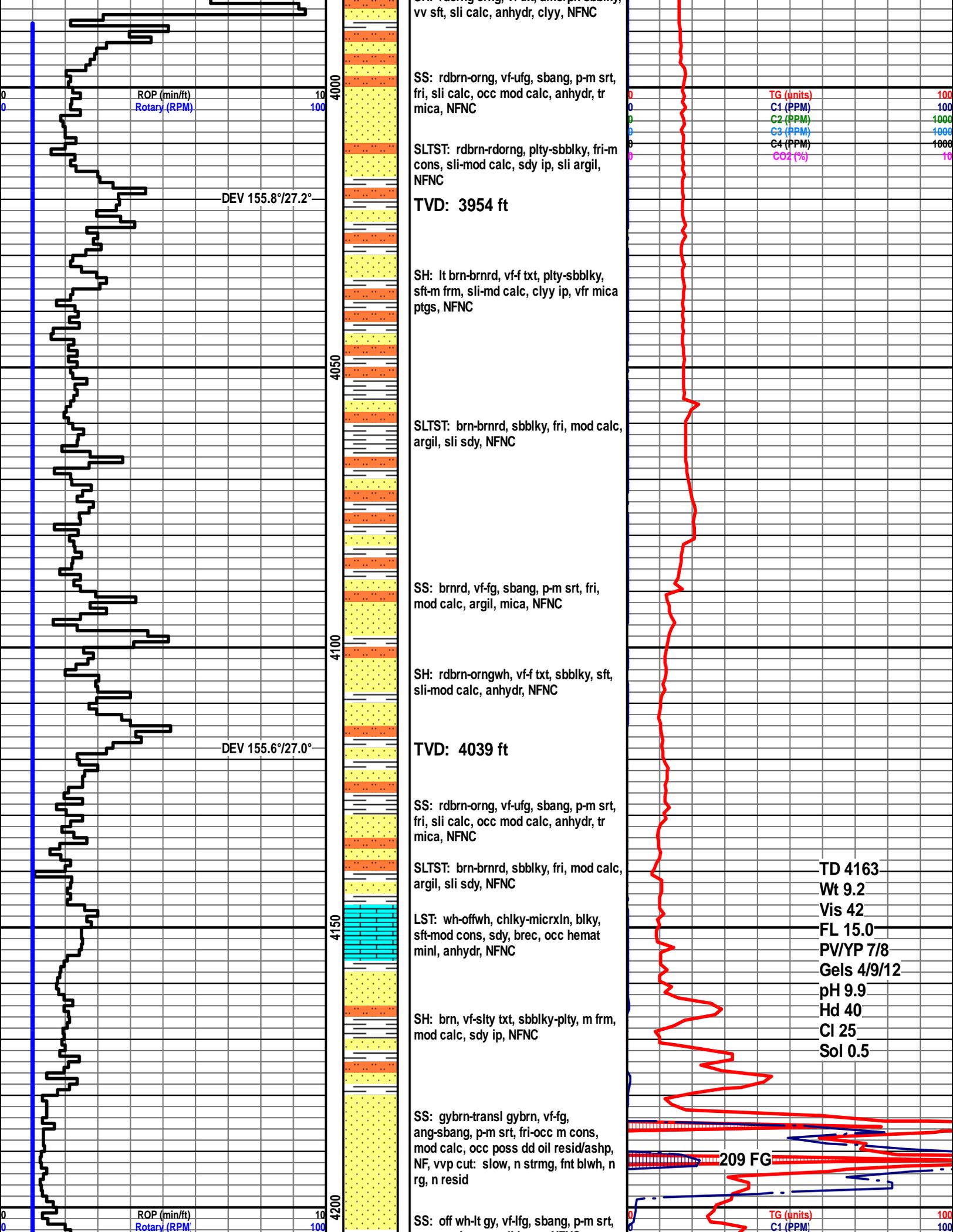


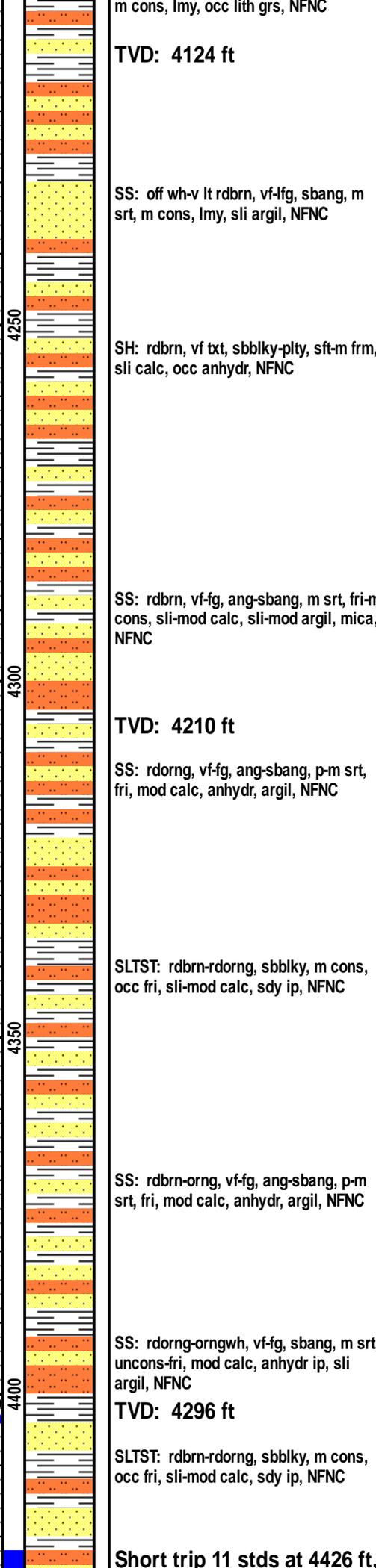
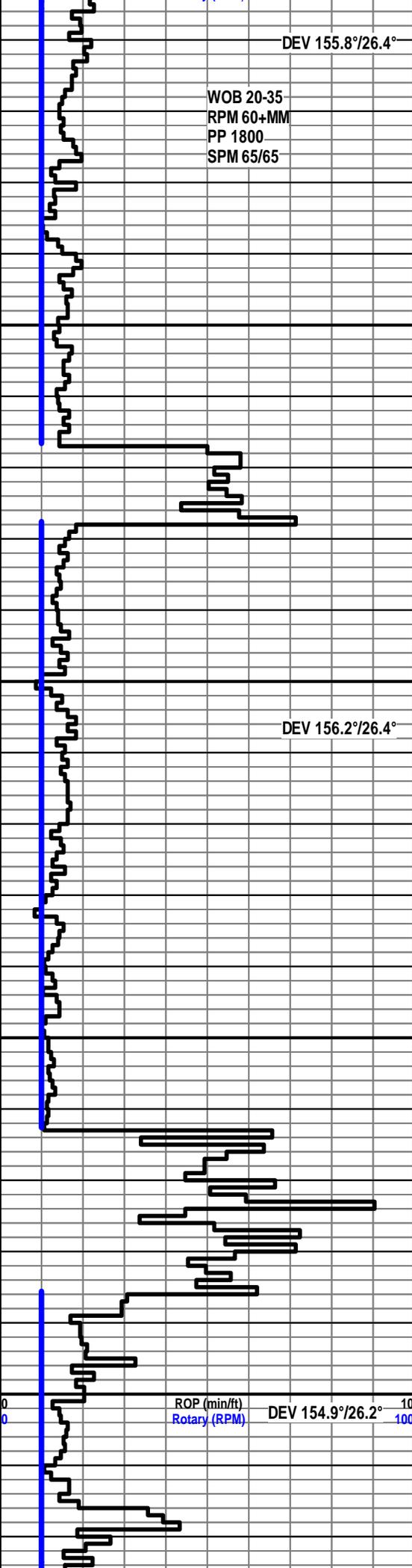
30 Aug 2010

TD 3775  
 Wt 8.9  
 Vis 42  
 FL 15.0  
 PV/YP 9/8  
 Gels 3/8/12  
 pH 10.4  
 Hd 40  
 Cl 25  
 Sol 0.5

TG (units)  
 C1 (PPM)  
 C2 (PPM)  
 C3 (PPM)  
 C4 (PPM)  
 CO2 (%)

100  
 100  
 1000  
 1000  
 1000  
 10





m cons, lmy, occ lith grs, NFNC

**TVD: 4124 ft**

SS: off wh-v lt rdbn, vf-lfg, sbang, m srt, m cons, lmy, sli argil, NFNC

SH: rdbn, vf txt, sbblky-plty, sft-m frm, sli calc, occ anhydr, NFNC

SS: rdbn, vf-fg, ang-sbang, m srt, fri-m cons, sli-mod calc, sli-mod argil, mica, NFNC

**TVD: 4210 ft**

SS: rdorg, vf-fg, ang-sbang, p-m srt, fri, mod calc, anhydr, argil, NFNC

SLTST: rdbn-rdorg, sbblky, m cons, occ fri, sli-mod calc, sdy ip, NFNC

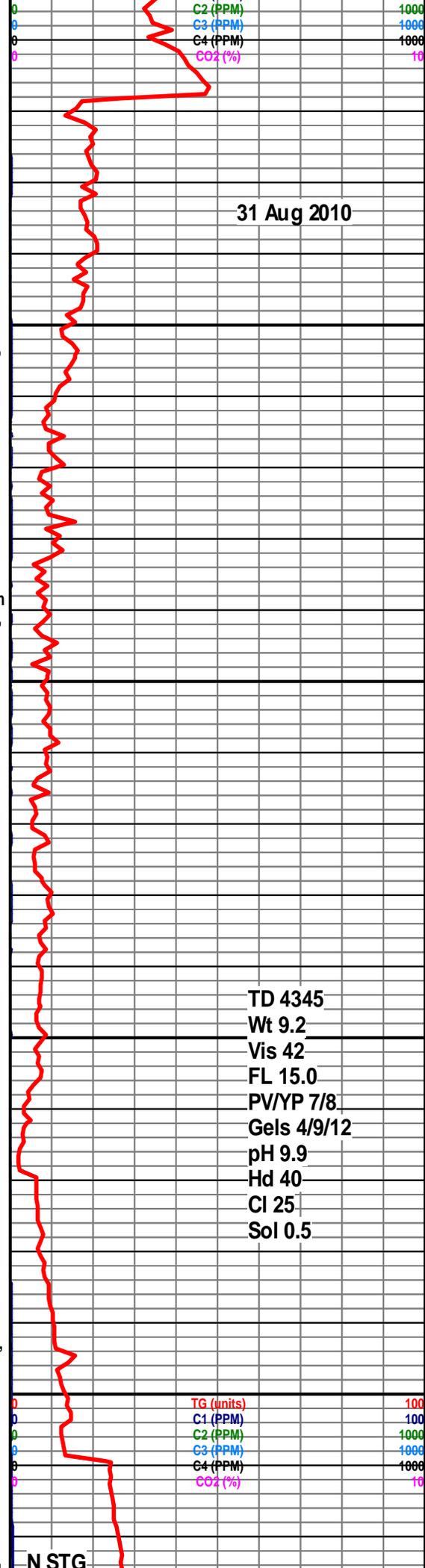
SS: rdbn-org, vf-fg, ang-sbang, p-m srt, fri, mod calc, anhydr, argil, NFNC

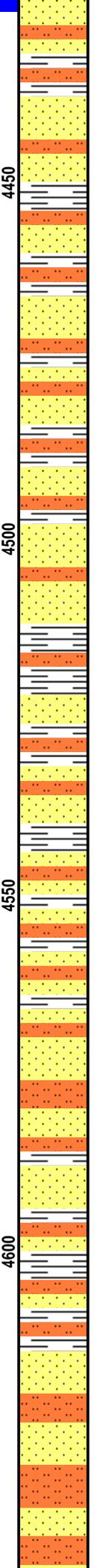
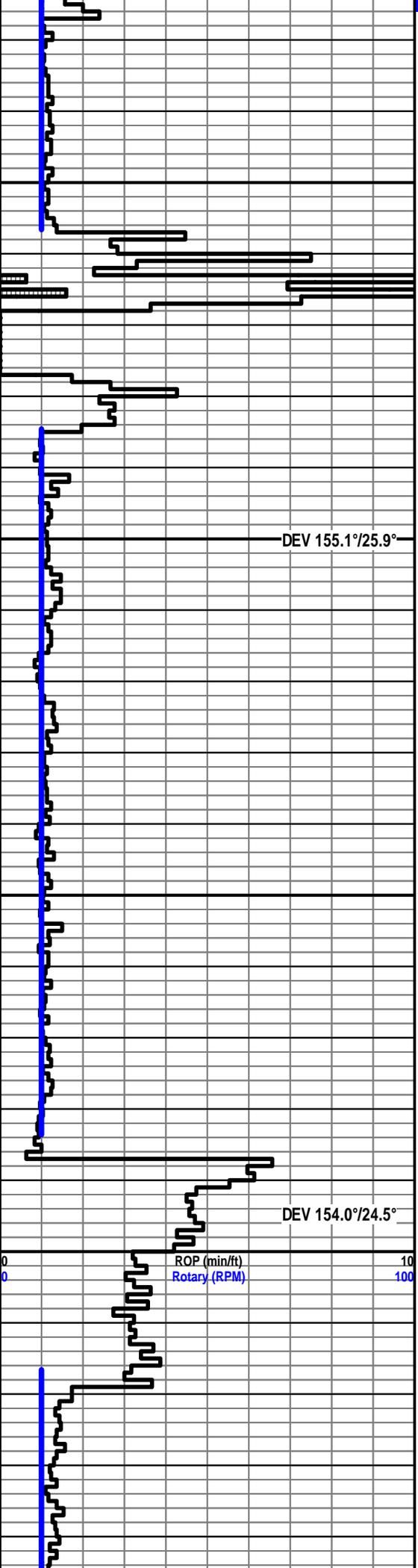
SS: rdorg-orgwh, vf-fg, sbang, m srt, uncons-fri, mod calc, anhydr ip, sli argil, NFNC

**TVD: 4296 ft**

SLTST: rdbn-rdorg, sbblky, m cons, occ fri, sli-mod calc, sdy ip, NFNC

Short trip 11 stds at 4426 ft.





**no problems**

SS: rdbrn-rdorng, vf-fg, ang-sbang, p srt, fri-m cons, mod calc, sli argil, occ lith grs, mica, NFNC

SH: rdbrn, f txt, plty, m frm-frm, n calc, occ vf mica ptgs, NFNC

SH/CLYST: rdbrn, rdorng, vf txt, plty-sbblky, sft, sli calc ip, NFNC

SLTST: rdbrn-rdorng, sbblky, m cons, occ fri, sli calc, sdy ip, NFNC

**TVD: 4382 ft**

SS: rdbrn, rdorng, vf-ufg, ang-sbang, p srt, m cons, sli calc, tr lith grs, sli argil, mica, anhydr, NFNC

SLTST: rdbrn-rdorng, sbblky, m cons, occ fri, sli-mod calc, sdy ip, NFNC

SH: orngwh, vf txt, chlky ip, sbblky, sft, lmy, anhydr, NFNC

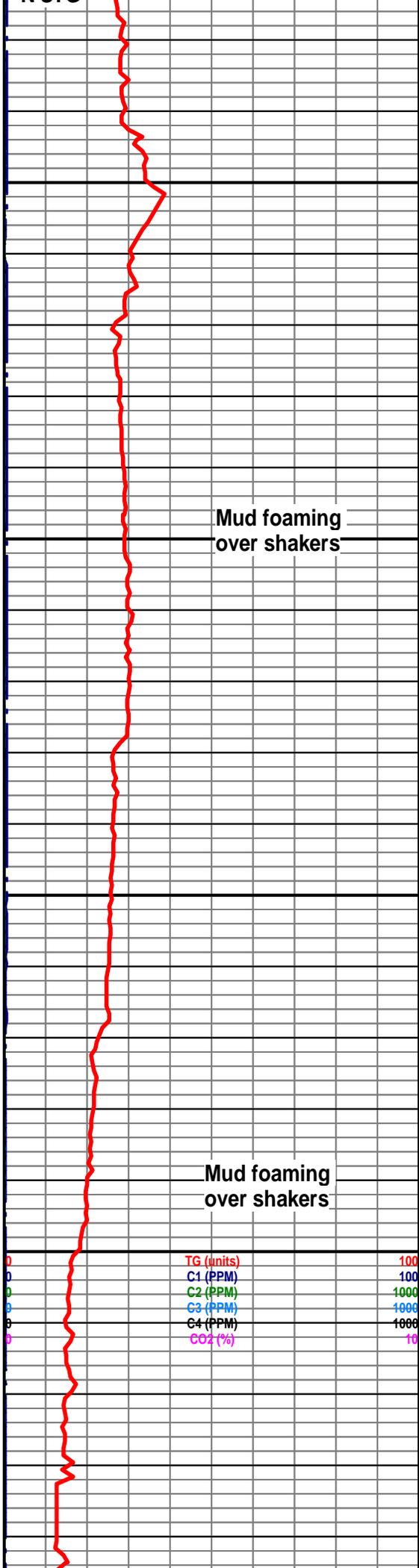
SH: rdbrn, vf txt, plty, frm, n calc, NFNC

SLTST: rdorng, sbblky, fri-m cons, sli-mod calc, sdy ip, NFNC

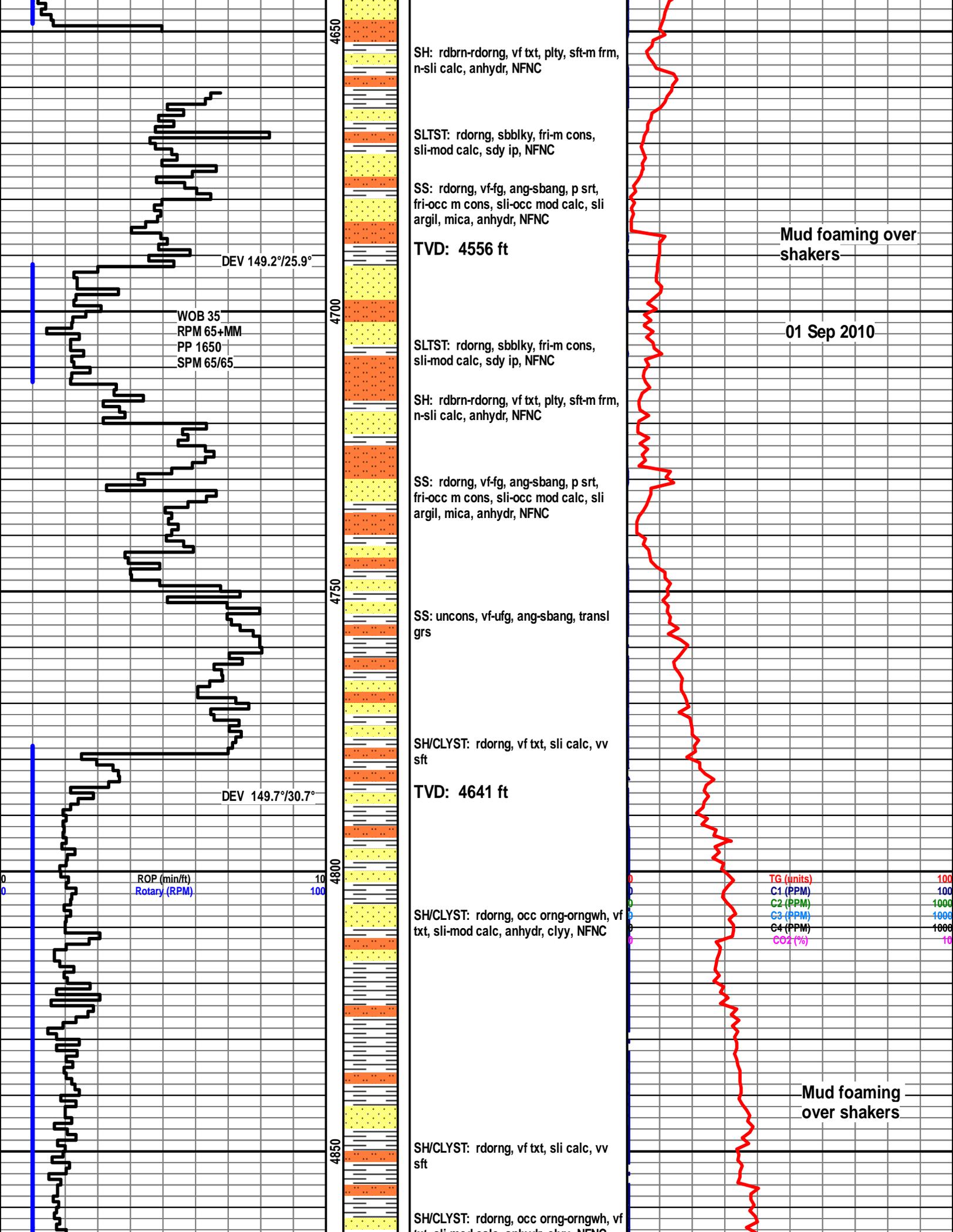
**TVD: 4469 ft**

SH: rdbrn-rdorng, vf txt, plty, sft-m frm, n-sli calc, anhydr, NFNC

SS: rdorng, vf-fg, ang-sbang, p srt, fri-occ m cons, sli-occ mod calc, sli argil, mica, argil, NFNC



TG (units) 100  
 C1 (PPM) 100  
 C2 (PPM) 1000  
 C3 (PPM) 1000  
 C4 (PPM) 1000  
 CO2 (%) 10



SH: rdbrn-rdorng, vf txt, plty, sft-m frm, n-sli calc, anhydr, NFNC

SLTST: rdorng, sbbly, fri-m cons, sli-mod calc, sdy ip, NFNC

SS: rdorng, vf-fg, ang-sbang, p srt, fri-occ m cons, sli-occ mod calc, sli argil, mica, anhydr, NFNC

TVD: 4556 ft

Mud foaming over shakers

01 Sep 2010

SLTST: rdorng, sbbly, fri-m cons, sli-mod calc, sdy ip, NFNC

SH: rdbrn-rdorng, vf txt, plty, sft-m frm, n-sli calc, anhydr, NFNC

SS: rdorng, vf-fg, ang-sbang, p srt, fri-occ m cons, sli-occ mod calc, sli argil, mica, anhydr, NFNC

SS: uncons, vf-ufg, ang-sbang, transl grs

SH/CLYST: rdorng, vf txt, sli calc, vv sft

TVD: 4641 ft

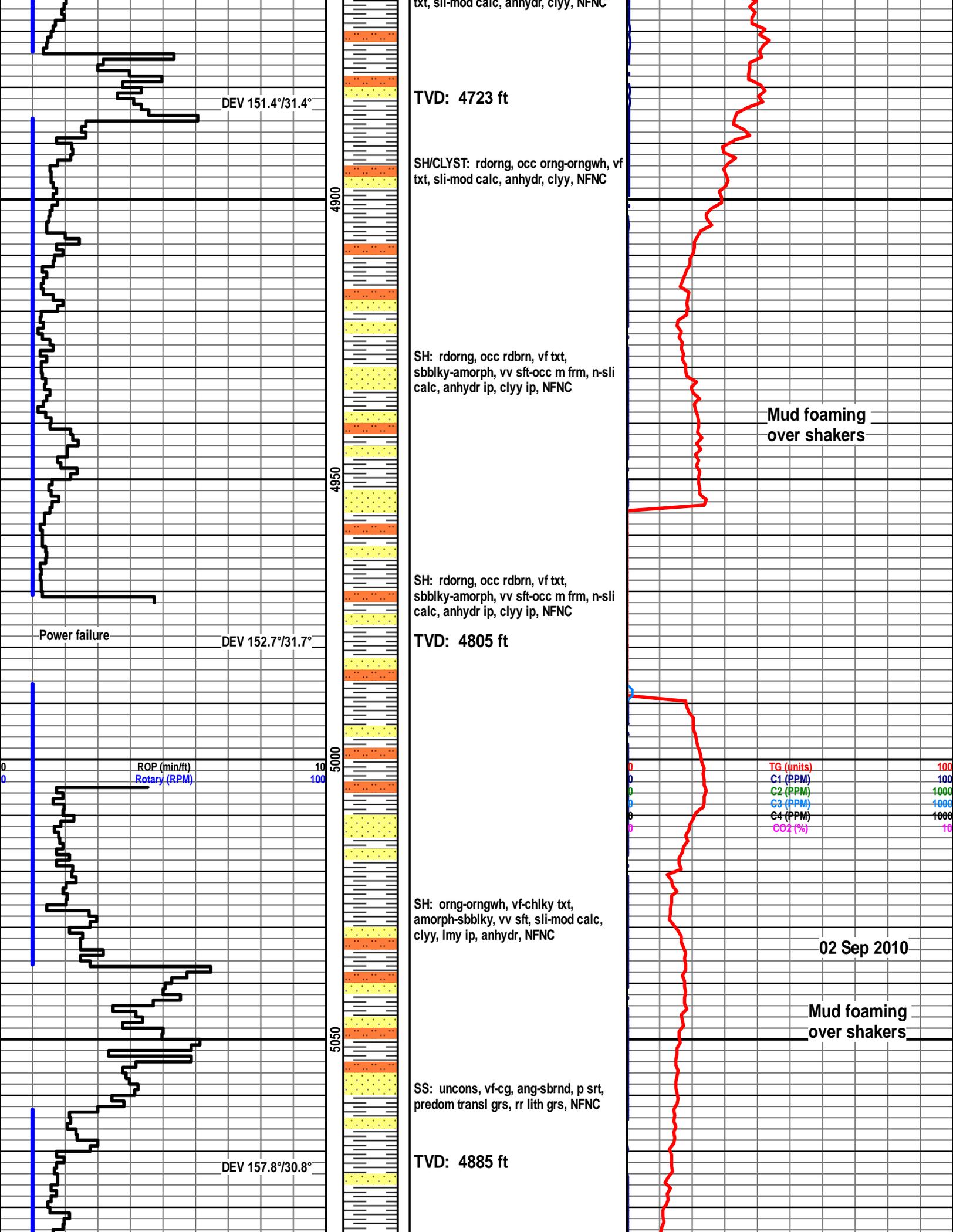
SH/CLYST: rdorng, occ orng-orngwh, vf txt, sli-mod calc, anhydr, clyy, NFNC

TG (units) 100  
 C1 (PPM) 100  
 C2 (PPM) 1000  
 C3 (PPM) 1000  
 C4 (PPM) 1000  
 CO2 (%) 10

SH/CLYST: rdorng, vf txt, sli calc, vv sft

SH/CLYST: rdorng, occ orng-orngwh, vf txt, sli-mod calc, anhydr, clyy, NFNC

Mud foaming over shakers



DEV 151.4°/31.4°

TVD: 4723 ft

SH/CLYST: rdorng, occ orng-orngwh, vf txt, sli-mod calc, anhydr, clyy, NFNC

SH: rdorng, occ rdbrn, vf txt, sbblky-amorph, vv sft-occ m frm, n-sli calc, anhydr ip, clyy ip, NFNC

Mud foaming over shakers

4900

4950

5000

5050

Power failure

DEV 152.7°/31.7°

TVD: 4805 ft

SH: rdorng, occ rdbrn, vf txt, sbblky-amorph, vv sft-occ m frm, n-sli calc, anhydr ip, clyy ip, NFNC

ROP (min/ft)  
Rotary (RPM)

TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

SH: orng-orngwh, vf-chlky txt, amorph-sbblky, vv sft, sli-mod calc, clyy, lmy ip, anhydr, NFNC

02 Sep 2010

Mud foaming over shakers

DEV 157.8°/30.8°

TVD: 4885 ft

SS: uncons, vf-cg, ang-sbrnd, p srt, predom transl grs, rr lith grs, NFNC

WOB 35  
RPM 65+MM  
PP 1800  
SPM 65/70

SS: uncons, vf-mg, occ cg, ang-sbrnd,  
p srt, com transl grs, tr lith grs, NFNC

SS: uncons, vf-mg, ang-sbrnd, p srt,  
predom transl grs, occ lith grs, occ  
hemat stn

TVD: 4969 ft

SS: uncons, vf-mg, ang-sbrnd, p srt,  
predom transl grs, occ lith grs, occ  
hemat stn

SH: rdorng-orngwh, vf txt,  
amorph-sbblky, vv sft, sli-mod calc,  
anhydr, clyy, NFNC

SS: uncons, vf-cg, ang-sbrnd, predom  
transl grs, occ lith grs, rr hemat stn

TVD: 5051 ft

SH: rdong, vf txt, amorph, vv sft, sli  
calc, v clyy, NFNC

SH: rdorng-orngwh, occ wh-grnwh, vf  
txt, amorph-sbblky, sli-mod calc,  
anhydr, cdy (vf ufg, shng), NFNC

Mud foaming  
over shakers

TD 5180

Wt 9.1

Vis 44

FL 15.0

PV/YP 8/13

Gels 5/9/14

pH 9.5

Hd 200

CI 100

Sol 0.7

TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

Test gas

DEV 158.7°/30.2°

ROP (min/ft)  
Rotary (RPM)

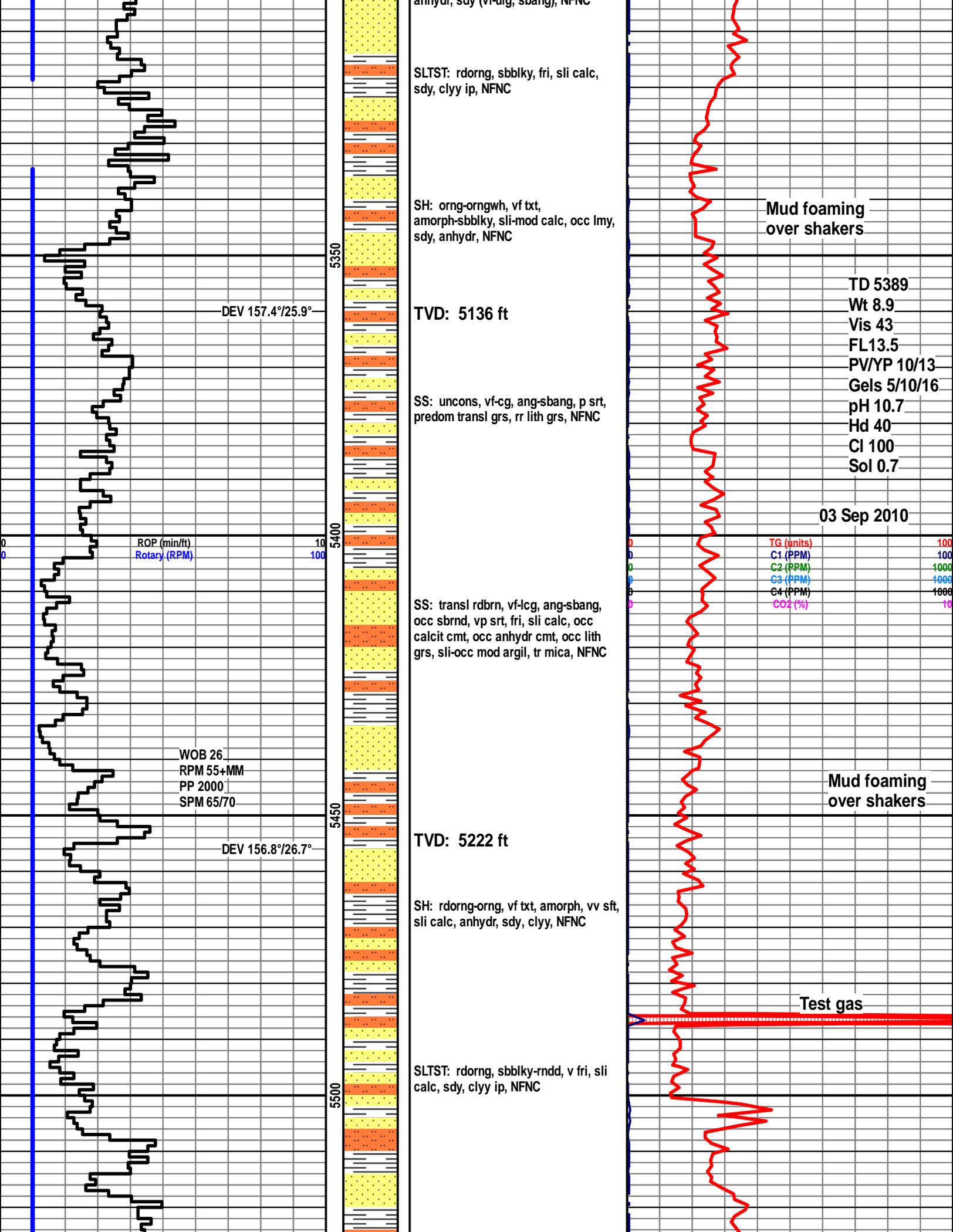
DEV 158.9°/28.8°

0  
10  
100

10  
100

5100  
5150  
5200  
5250  
5300

100  
100  
1000  
1000  
1000  
10



SLTST: rdorng, sbblky, fri, sli calc, sdy, clyy ip, NFNC

SH: orng-orngwh, vf txt, amorph-sbblky, sli-mod calc, occ lmy, sdy, anhydr, NFNC

TVD: 5136 ft

SS: uncons, vf-cg, ang-sbang, p srt, predom transl grs, rr lith grs, NFNC

SS: transl rdbn, vf-lcg, ang-sbang, occ sbrnd, vp srt, fri, sli calc, occ calcit cmt, occ anhydr cmt, occ lith grs, sli-occ mod argil, tr mica, NFNC

TVD: 5222 ft

SH: rdorng-orng, vf txt, amorph, vv sft, sli calc, anhydr, sdy, clyy, NFNC

SLTST: rdorng, sbblky-rnnd, v fri, sli calc, sdy, clyy ip, NFNC

Mud foaming over shakers

TD 5389  
Wt 8.9  
Vis 43  
FL13.5  
PV/YP 10/13  
Gels 5/10/16  
pH 10.7  
Hd 40  
Cl 100  
Sol 0.7

03 Sep 2010

TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10

Mud foaming over shakers

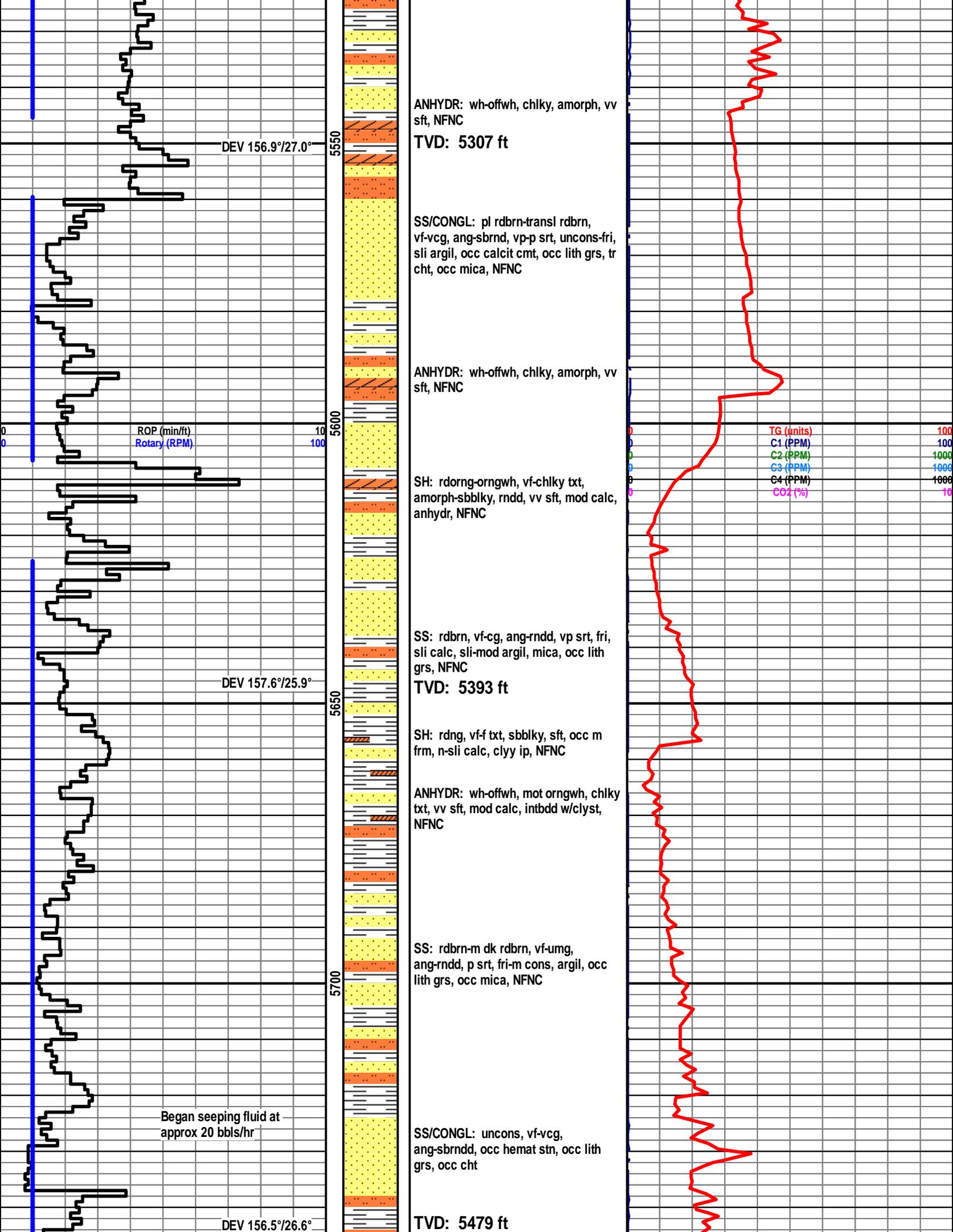
Test gas

ROP (min/ft)  
Rotary (RPM)

WOB 26  
RPM 55+MM  
PP 2000  
SPM 65/70

DEV 157.4°/25.9°

DEV 156.8°/26.7°



DEV 156.9°/27.0°

5550

ANHYDR: wh-offwh, chlky, amorph, vv sft, NFNC

TVD: 5307 ft

SS/CONGL: pl rdbrn-transl rdbrn, vf-vcg, ang-sbrnd, vp-p srt, uncons-fri, sli argil, occ calcit cmt, occ lith grs, tr cht, occ mica, NFNC

ANHYDR: wh-offwh, chlky, amorph, vv sft, NFNC

ROP (min/ft)  
Rotary (RPM)

5600

SH: rdornng-orngwh, vf-chlky txt, amorph-sbblky, rndd, vv sft, mod calc, anhydr, NFNC

SS: rdbrn, vf-cg, ang-rndd, vp srt, fri, sli calc, sli-mod argil, mica, occ lith grs, NFNC

TVD: 5393 ft

DEV 157.6°/25.9°

5650

SH: rdng, vf-f txt, sbblky, sft, occ m frm, n-sli calc, clyy ip, NFNC

ANHYDR: wh-offwh, mot orngwh, chlky txt, vv sft, mod calc, intbdd w/clyst, NFNC

SS: rdbrn-m dk rdbrn, vf-umg, ang-rndd, p srt, fri-m cons, argil, occ lith grs, occ mica, NFNC

Began seeping fluid at approx 20 bbls/hr

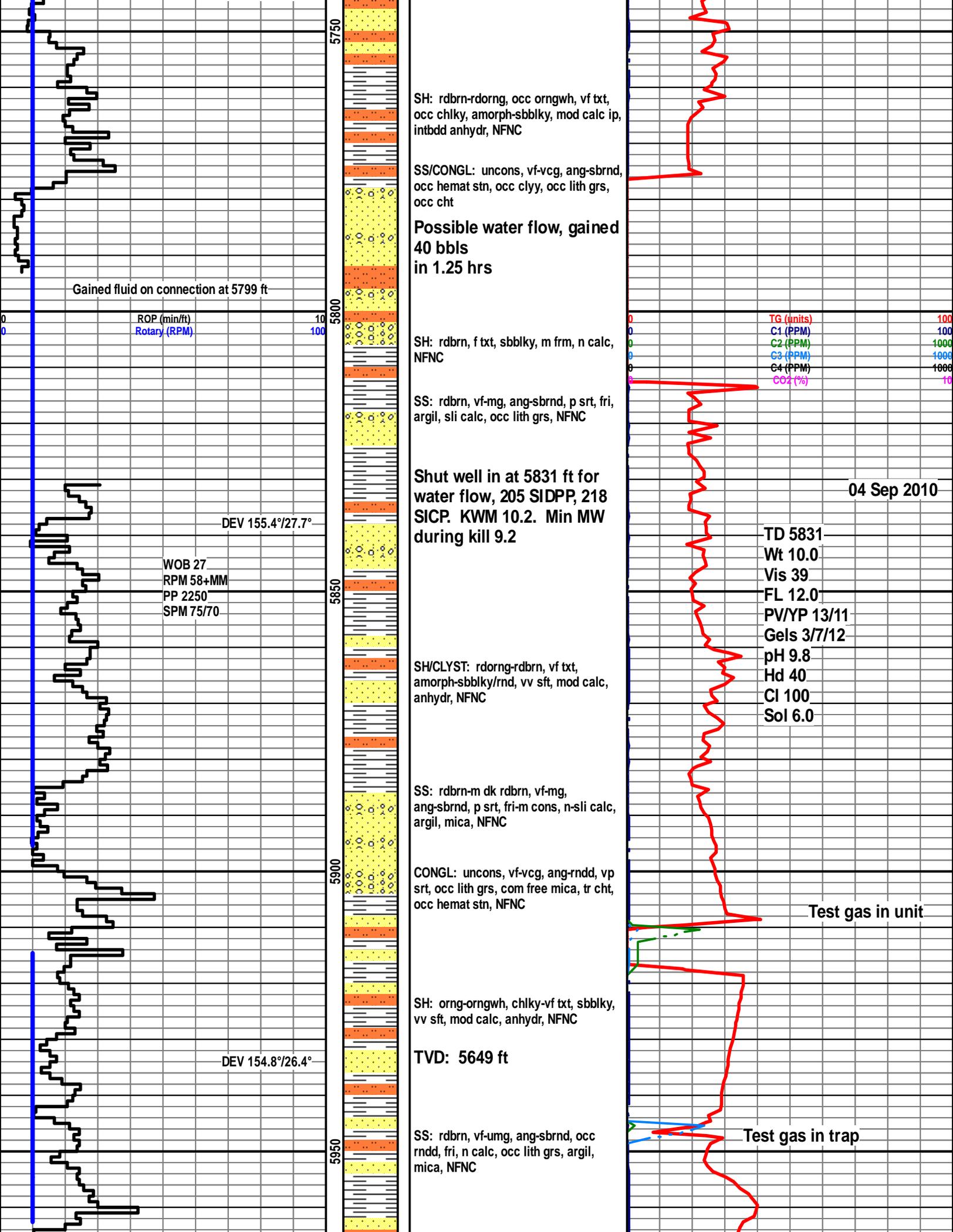
5700

SS/CONGL: uncons, vf-vcg, ang-sbrndd, occ hemat stn, occ lith grs, occ cht

TVD: 5479 ft

DEV 156.5°/26.6°

TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10



SH: rdbrn-rdorng, occ orngwh, vf txt, occ chlky, amorph-sbblky, mod calc ip, intbdd anhydr, NFNC

SS/CONGL: uncons, vf-vcg, ang-sbrnd, occ hemat stn, occ clyy, occ lith grs, occ cht

**Possible water flow, gained 40 bbls in 1.25 hrs**

Gained fluid on connection at 5799 ft

ROP (min/ft)  
Rotary (RPM)

SH: rdbrn, f txt, sbblky, m frm, n calc, NFNC

SS: rdbrn, vf-mg, ang-sbrnd, p srt, fri, argil, sli calc, occ lith grs, NFNC

**Shut well in at 5831 ft for water flow, 205 SIDPP, 218 SICP. KWM 10.2. Min MW during kill 9.2**

DEV 155.4°/27.7°

WOB 27  
RPM 58+MM  
PP 2250  
SPM 75/70

TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

04 Sep 2010

TD 5831  
Wt 10.0  
Vis 39  
FL 12.0  
PV/YP 13/11  
Gels 3/7/12  
pH 9.8  
Hd 40  
Cl 100  
Sol 6.0

SH/CLYST: rdorng-rdbrn, vf txt, amorph-sbblky/rnd, vv sft, mod calc, anhydr, NFNC

SS: rdbrn-m dk rdbrn, vf-mg, ang-sbrnd, p srt, fri-m cons, n-sli calc, argil, mica, NFNC

CONGL: uncons, vf-vcg, ang-rndd, vp srt, occ lith grs, com free mica, tr cht, occ hemat stn, NFNC

Test gas in unit

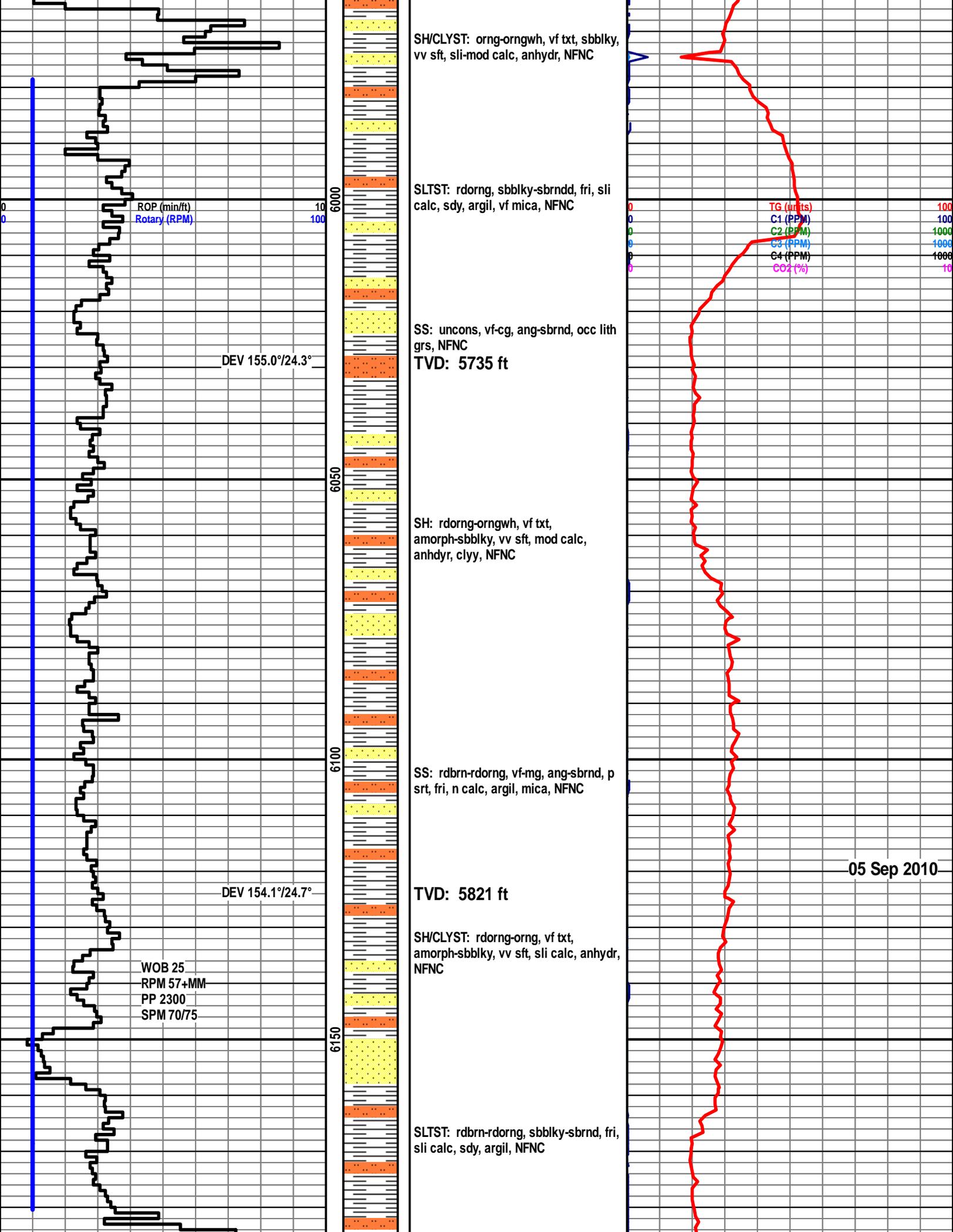
SH: orng-orngwh, chlky-vf txt, sbblky, vv sft, mod calc, anhydr, NFNC

**TVD: 5649 ft**

DEV 154.8°/26.4°

SS: rdbrn, vf-umg, ang-sbrnd, occ rndd, fri, n calc, occ lith grs, argil, mica, NFNC

Test gas in trap



SH/CLYST: orng-orngwh, vf txt, sbbkly, vv sft, sli-mod calc, anhydr, NFNC

SLTST: rdorng, sbbkly-sbrndd, fri, sli calc, sdy, argil, vf mica, NFNC

SS: uncons, vf-cg, ang-sbrnd, occ lith grs, NFNC  
**TVD: 5735 ft**

SH: rdorng-orngwh, vf txt, amorph-sbbkly, vv sft, mod calc, anhydr, clyy, NFNC

SS: rdbrn-rdorng, vf-mg, ang-sbrnd, p srt, fri, n calc, argil, mica, NFNC

**TVD: 5821 ft**

SH/CLYST: rdorng-orng, vf txt, amorph-sbbkly, vv sft, sli calc, anhydr, NFNC

SLTST: rdbrn-rdorng, sbbkly-sbrnd, fri, sli calc, sdy, argil, NFNC

ROP (min/ft)  
 Rotary (RPM)

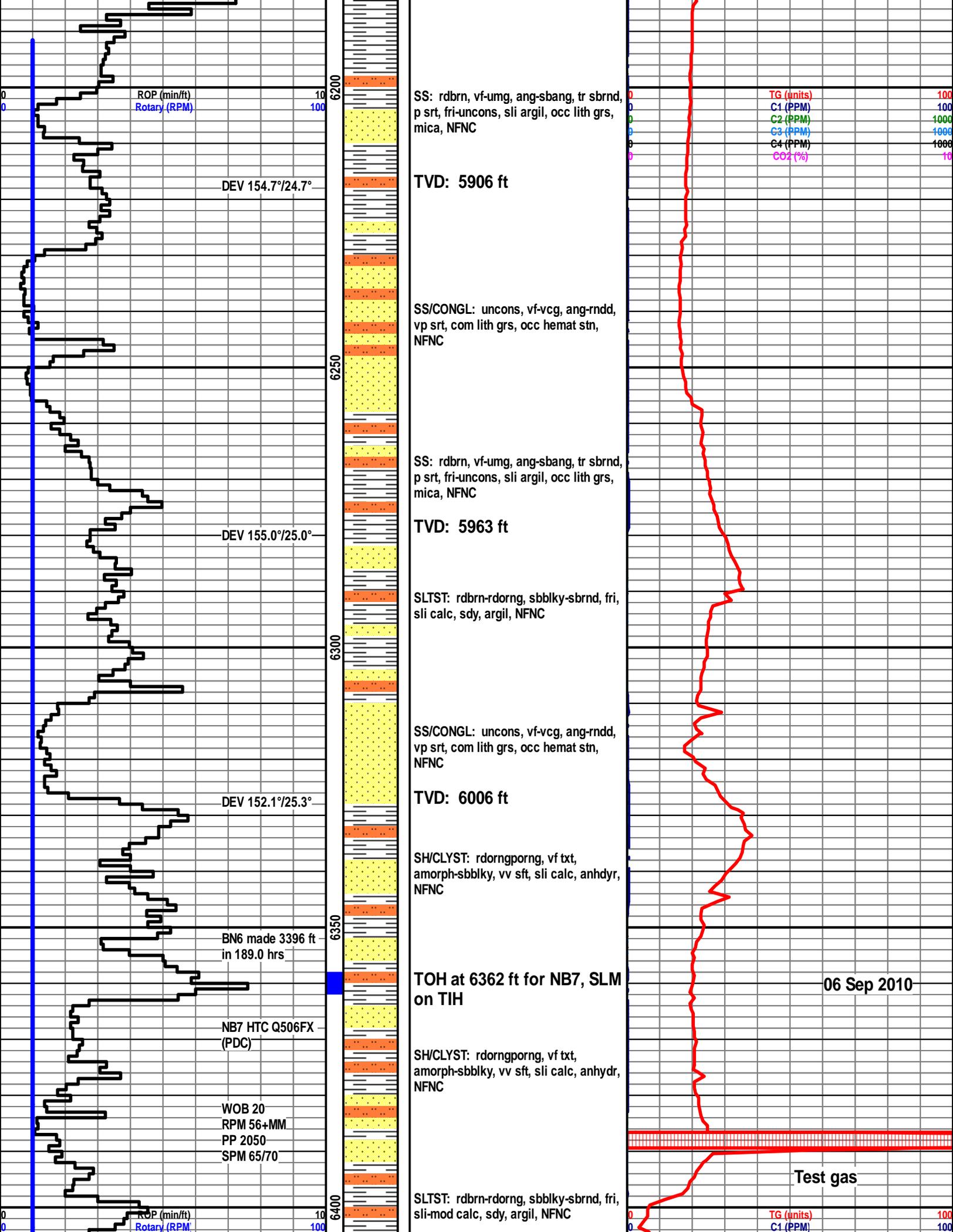
DEV 155.0°/24.3°

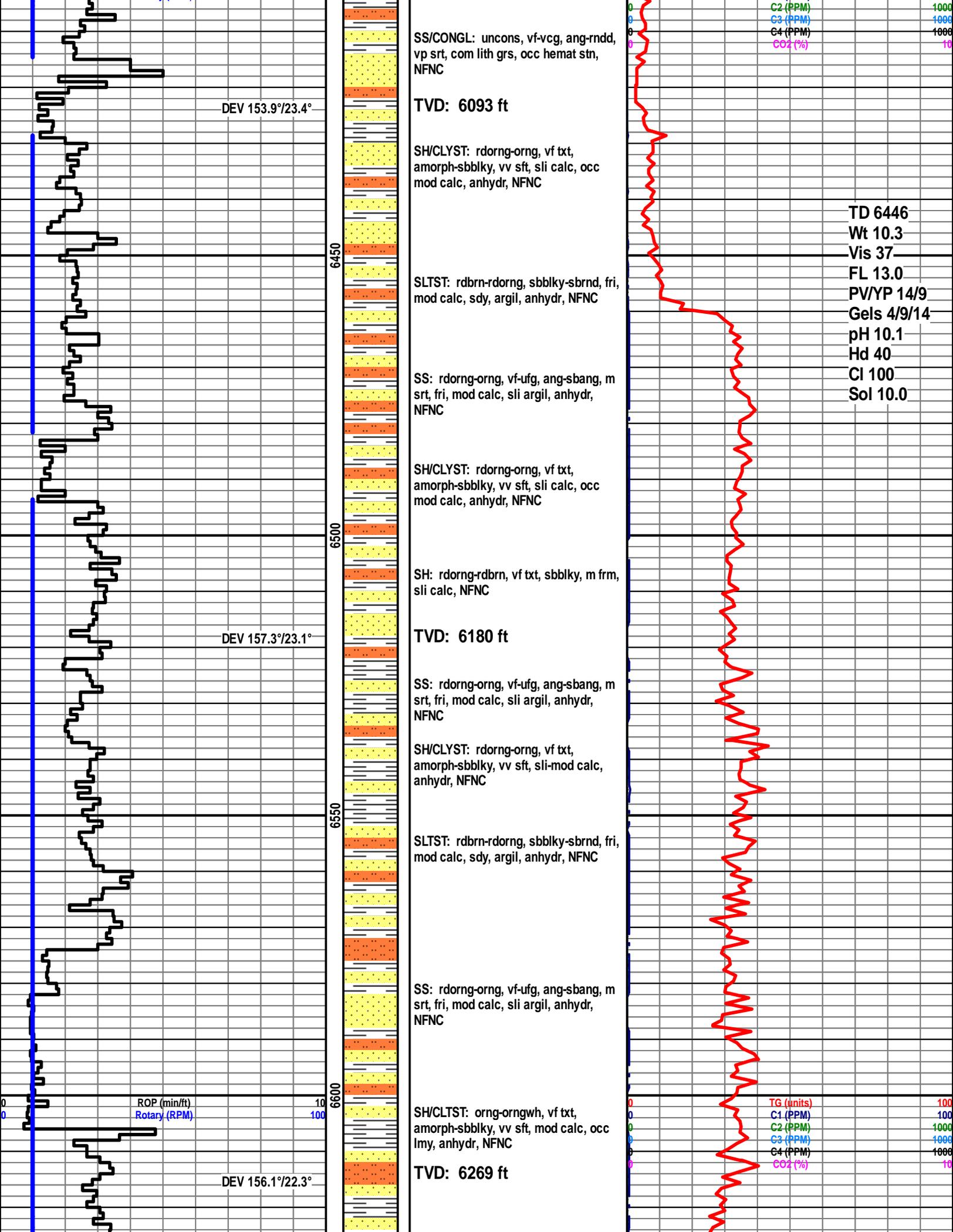
DEV 154.1°/24.7°

WOB 25  
 RPM 57+MM  
 PP 2300  
 SPM 70/75

TG (units)  
 C1 (PPM)  
 C2 (PPM)  
 C3 (PPM)  
 C4 (PPM)  
 CO2 (%)

05 Sep 2010





WOB 20  
RPM 56+MM  
PP 2050  
SPM 65/70

6650

SLTST: rdbrn-rdorg, sbblky-sbrnd, fri,  
mod calc, argil, anhydr, NFNC

6700

SH/CLYST: orng-orngwh, vf txt,  
amorph-sbblky, vv sft, mod calc, occ  
lmy, anhydr, NFNC

SS: orng, vf-ufg, ang-sbang, m srt, fri,  
mod-v calc, sli argil, anhydr, NFNC

DEV 155.8°/21.8°

TVD: 6357 ft

SH: orng-orngwh, vf txt, sbblky-rndd,  
vv sft, lmy, anhydr, NFNC

6750

SH/CLYST: salm-orngwh, vf txt,  
sbblky-rndd, vv sft, v calc-lmy, anhydr,  
NFNC

SH/CLYST: salm-orngwh, occ mot  
orng-wh, vf txt, sbblky-rndd, vv sft,  
mod-v calc, anhydr, occ free anhydr,  
NFNC

6800

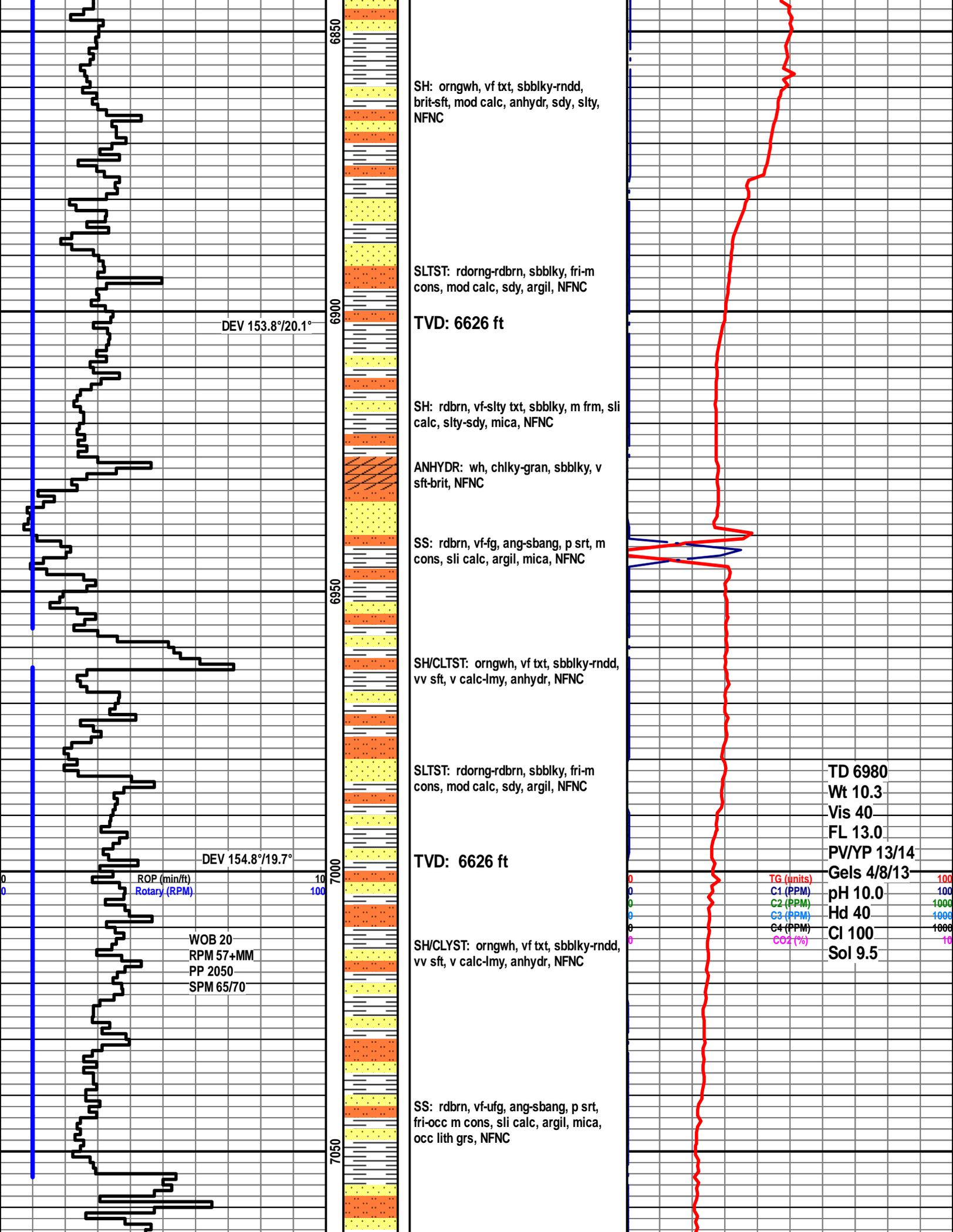
TVD: 6537 ft

SH: orngwh-salm, vf-slty txt,  
flky-sbblky, brit-sft, mod calc, occ  
calcit, sdy-slty ip, anydr, NFNC

ROP (min/ft)  
Rotary (RPM)

DEV 154.8°/21.4°

TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10



SH: orngwh, vf txt, sbblky-rndd, brit-sft, mod calc, anhydr, sdy, sly, NFNC

SLTST: rdorng-rdbrn, sbblky, fri-m cons, mod calc, sdy, argil, NFNC

TVD: 6626 ft

SH: rdbrn, vf-sly txt, sbblky, m frm, sli calc, sly-sdy, mica, NFNC

ANHYDR: wh, chlky-gran, sbblky, v sft-brit, NFNC

SS: rdbrn, vf-fg, ang-sbang, p srt, m cons, sli calc, argil, mica, NFNC

SH/CLTST: orngwh, vf txt, sbblky-rndd, vv sft, v calc-lmy, anhydr, NFNC

SLTST: rdorng-rdbrn, sbblky, fri-m cons, mod calc, sdy, argil, NFNC

TVD: 6626 ft

SH/CLYST: orngwh, vf txt, sbblky-rndd, vv sft, v calc-lmy, anhydr, NFNC

SS: rdbrn, vf-ufg, ang-sbang, p srt, fri-occ m cons, sli calc, argil, mica, occ lith grs, NFNC

DEV 153.8°/20.1°

DEV 154.8°/19.7°

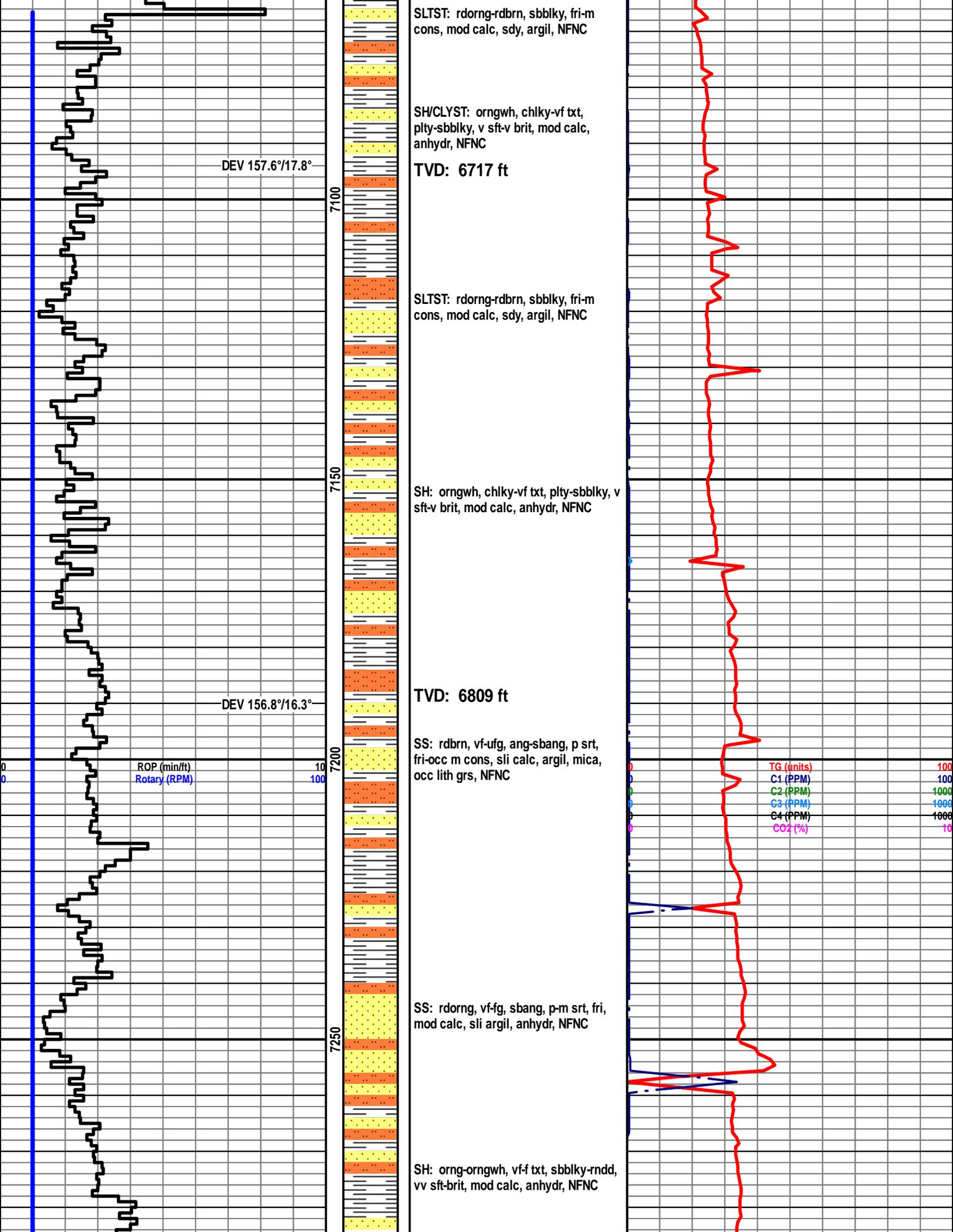
ROP (min/ft)  
Rotary (RPM)

WOB 20  
RPM 57+MM  
PP 2050  
SPM 65/70

TD 6980  
Wt 10.3  
Vis 40  
FL 13.0  
PV/YP 13/14  
Gels 4/8/13  
pH 10.0  
Hd 40  
CI 100  
Sol 9.5

TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

100  
100  
1000  
1000  
1000  
10



DEV 157.6°/17.8°

7100

SLTST: rdorngrbrn, sbblky, fri-m  
cons, mod calc, sdy, argil, NFNC

TVD: 6717 ft

SH/CLYST: orngwh, chlky-vf txt,  
plty-sbblky, v sft-v brit, mod calc,  
anhydr, NFNC

7150

SH: orngwh, chlky-vf txt, plty-sbblky, v  
sft-v brit, mod calc, anhydr, NFNC

DEV 156.8°/16.3°

7200

TVD: 6809 ft

SS: rdbrn, vf-ufg, ang-sbang, p srt,  
fri-occ m cons, sli calc, argil, mica,  
occ lith grs, NFNC

ROP (min/ft)  
Rotary (RPM)

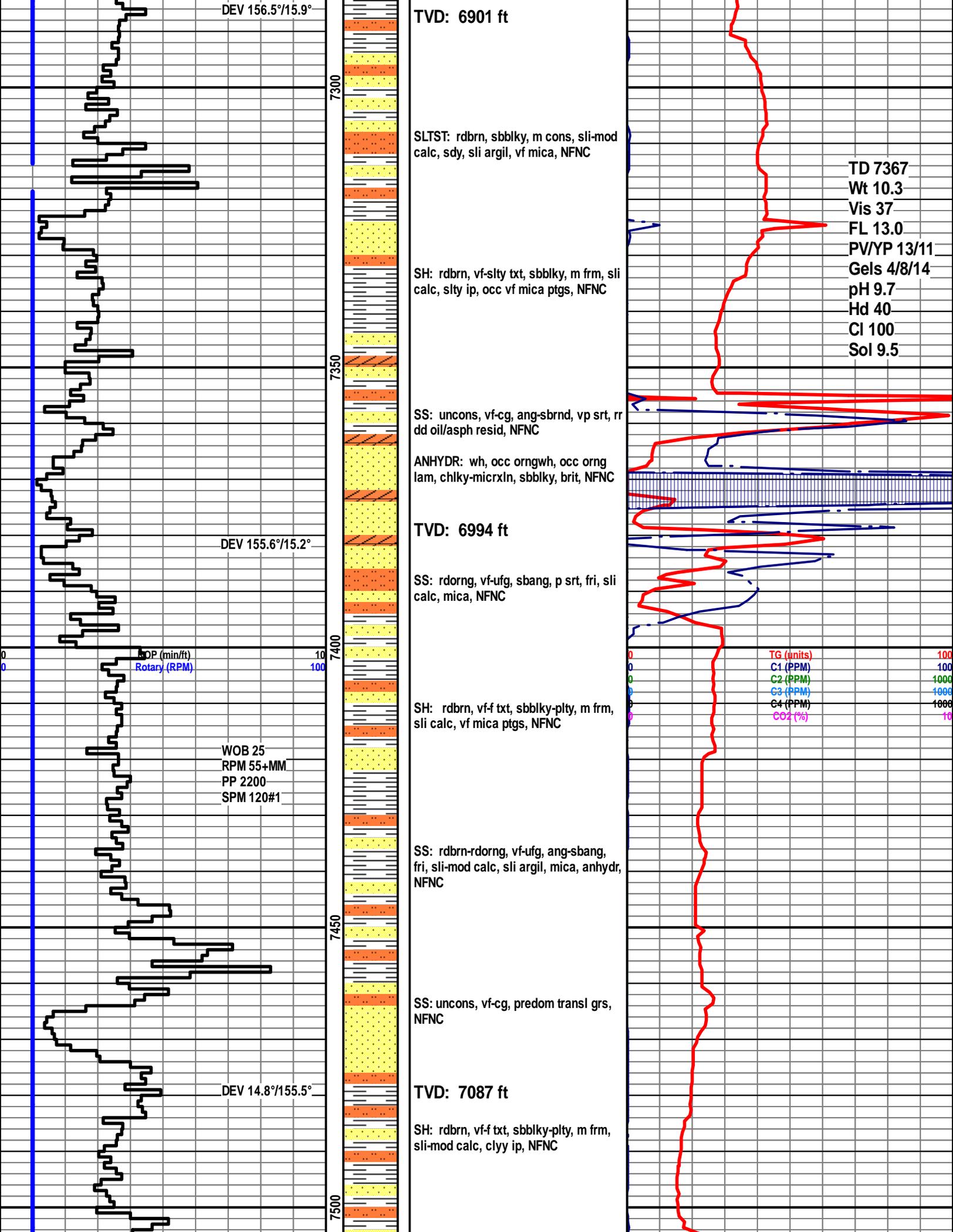
10  
100

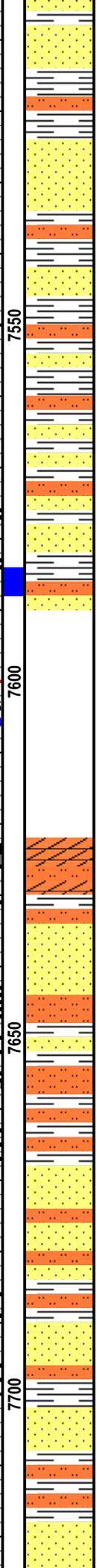
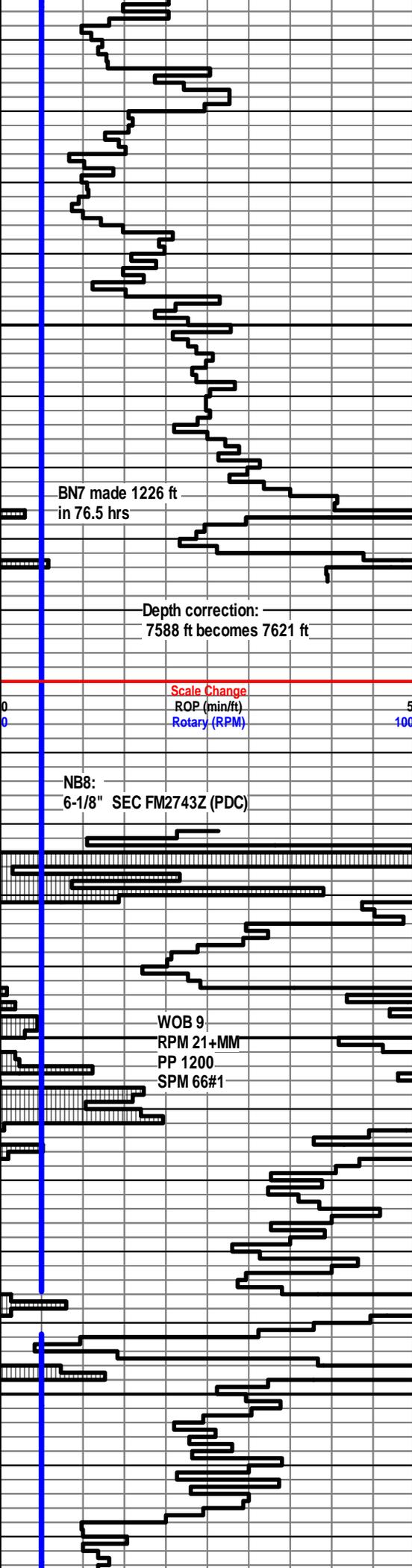
7250

SS: rdorngr, vf-fg, sbang, p-m srt, fri,  
mod calc, sli argil, anhydr, NFNC

SH: orng-orngwh, vf-f txt, sbblky-rndd,  
vv sft-brit, mod calc, anhydr, NFNC

TG (units) 100  
C1 (PPM) 100  
C2 (PPM) 1000  
C3 (PPM) 1000  
C4 (PPM) 1000  
CO2 (%) 10





SS: rdbrn-rdorg, vf-ufg, ang-sbang, fri, sli-mod calc, sli argil, mica, anhydr, NFNC

SS: uncon, vf-cg, predom transl grs, NFNC

SH/CLYST: rdbrn-rdorg, occ orngwh, vf-chlky txt, sblky-plty, sft-occ m frm, clyy, mod calc, anhydr, NFNC

TOH at 7588 ft for 7" casing on 09 Sep 2010, lost part of MM, stuck 2 logging tools, drill out 22 Sep 2010

Change out directional contractors

Lay down 4-1/2" DP, pick up 3-1/2" DP, change to 5-1/2" pump liners

ANHYDR: transl-wh, chlky-crs xln, occ argil, sft-m cons, lmy ip, NFNC

SS/CONGL: uncon, vf-cg, ang-sbang, occ transl grs, occ lith, grs, NFNC

SS: orngwh-rdbrn, vf-uf, ang-sbang, p-m srt, fri-m cons, mod calc, occ anhydr cmt, argil ip, mica, NFNC

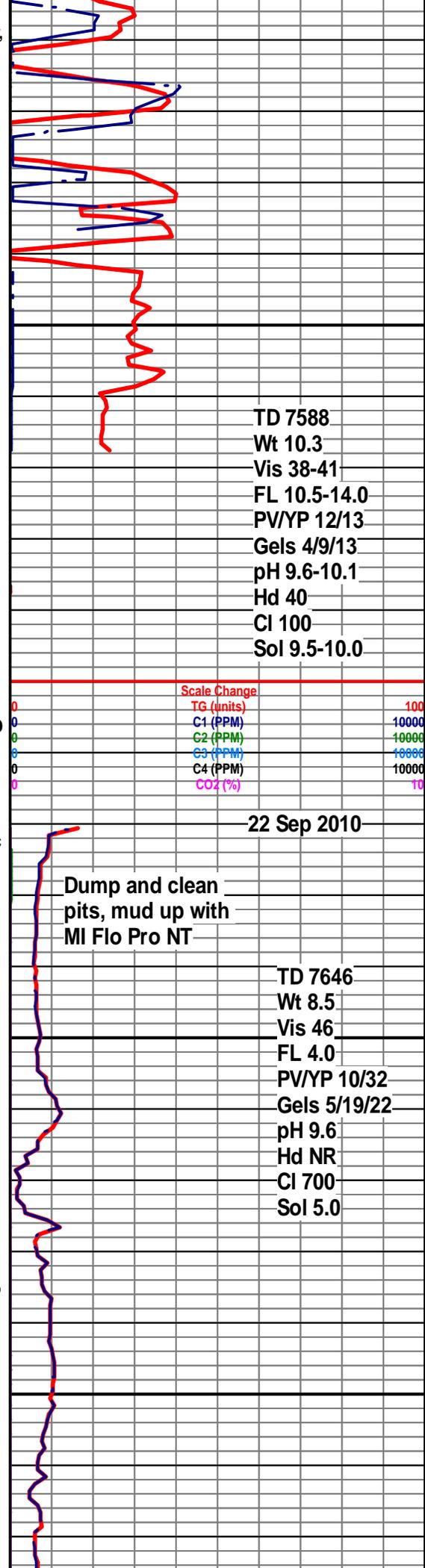
SLTST: rdbrn-rdorg, sblky-sbrndd, fri, mod calc, anhydr, sdy, sli argil, NFNC

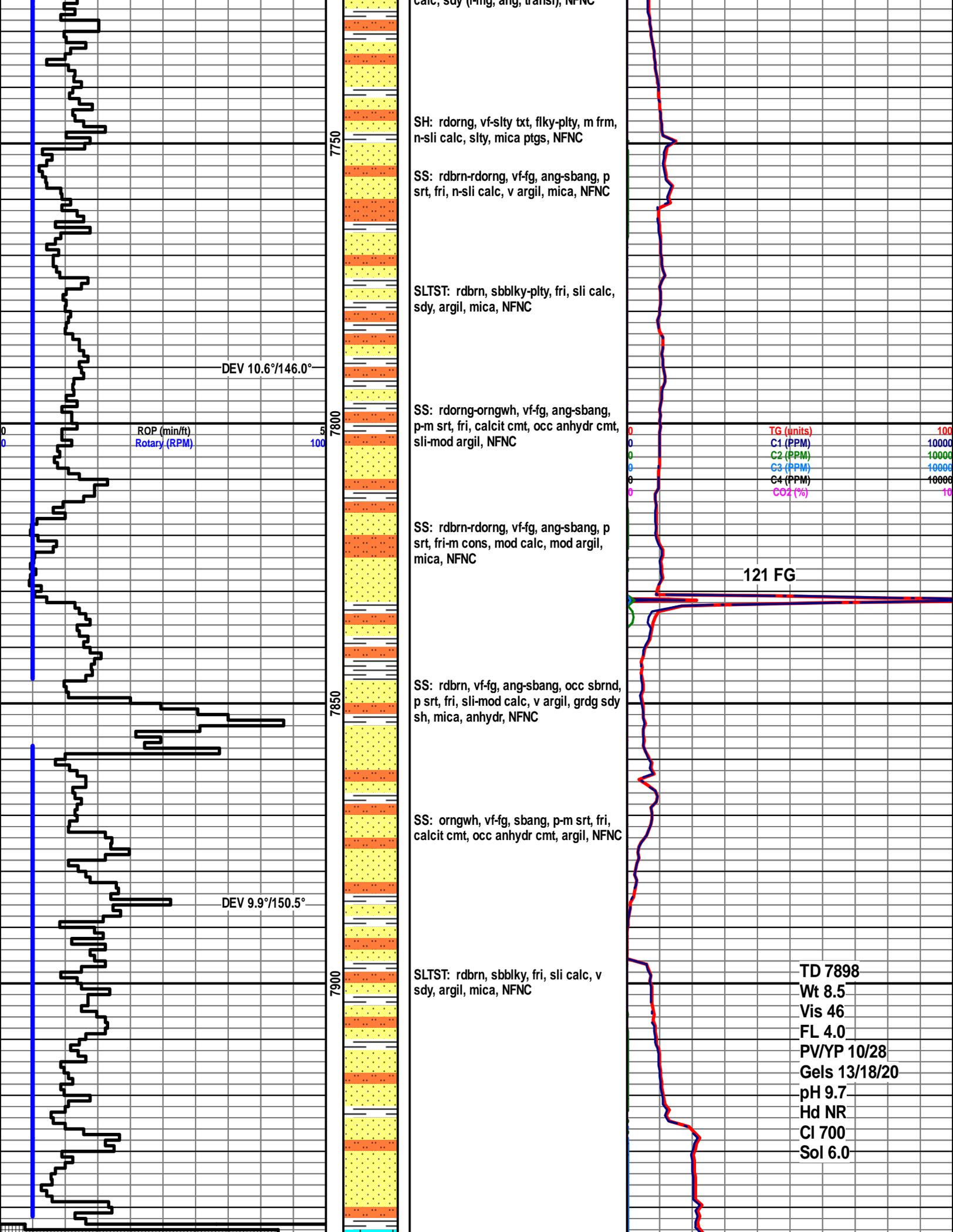
SH: rdbrn, vf txt, plty, sft-m frm, n calc, clyy, NFNC

SS: uncon, transl-opq grs, vf-cg, ang-sbrnd, occ wh cly resid

SS: m dk rdbrn, vf-lmg, ang-sbrnd, p srt, fri, sli calc, argil, mica, NFNC

SH: rdbrn, vf txt, sblky, m frm-frm, n calc, sdy (frm, ang transl), NFNC





calc, sdy (frng, ang, trans), NFNC

SH: rdornng, vf-slty txt, flky-plty, m frm, n-sli calc, slty, mica ptgs, NFNC

SS: rdbrn-rdornng, vf-fg, ang-sbang, p srt, fri, n-sli calc, v argil, mica, NFNC

SLTST: rdbrn, sbblky-plty, fri, sli calc, sdy, argil, mica, NFNC

DEV 10.6°/146.0°

SS: rdornng-orngwh, vf-fg, ang-sbang, p-m srt, fri, calcit cmt, occ anhydr cmt, sli-mod argil, NFNC

ROP (min/ft)  
Rotary (RPM)

TG (units) 100  
C1 (PPM) 10000  
C2 (PPM) 100000  
C3 (PPM) 1000000  
C4 (PPM) 10000000  
CO2 (%) 10

SS: rdbrn-rdornng, vf-fg, ang-sbang, p srt, fri-m cons, mod calc, mod argil, mica, NFNC

121 FG

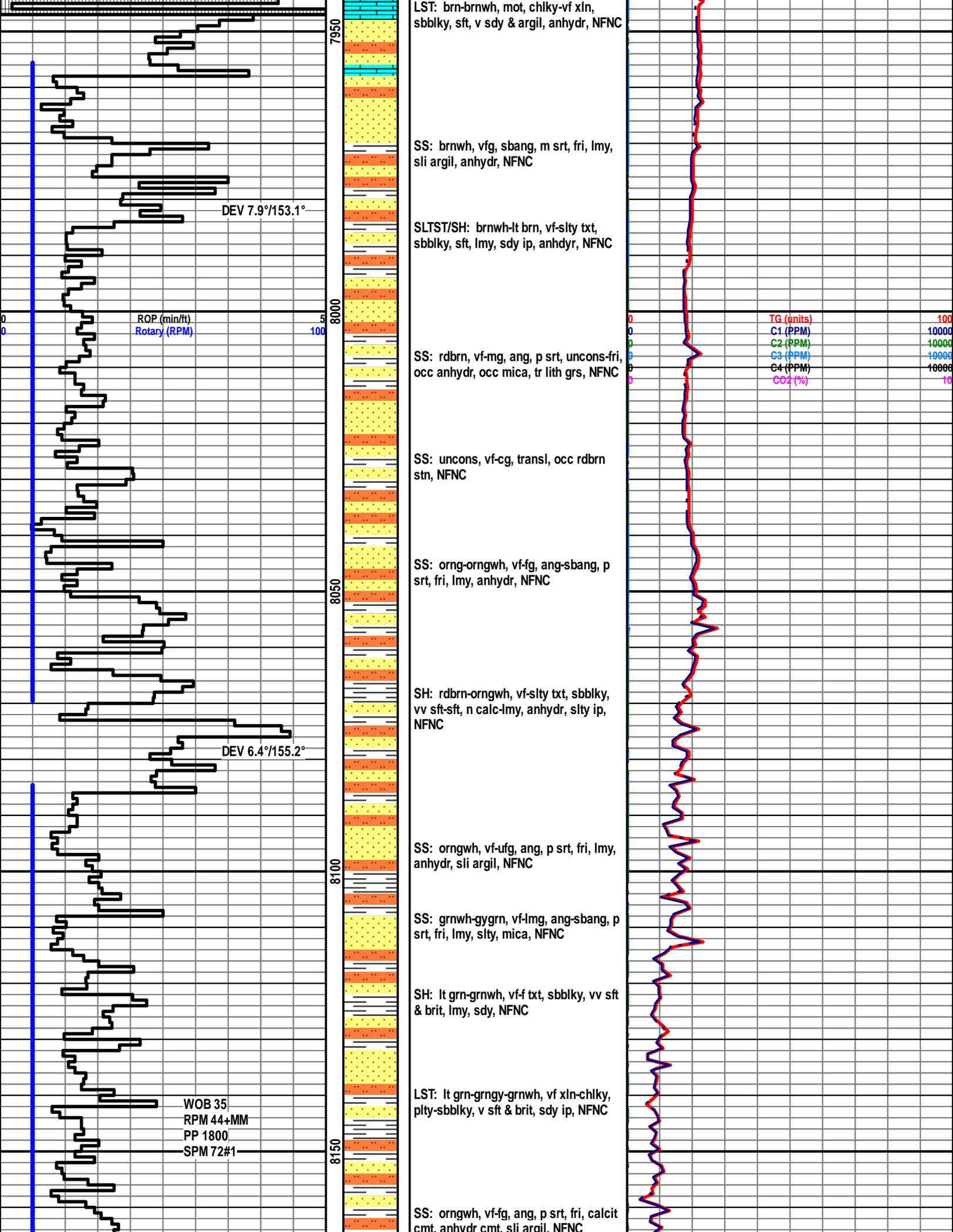
SS: rdbrn, vf-fg, ang-sbang, occ sbrnd, p srt, fri, sli-mod calc, v argil, grdg sdy sh, mica, anhydr, NFNC

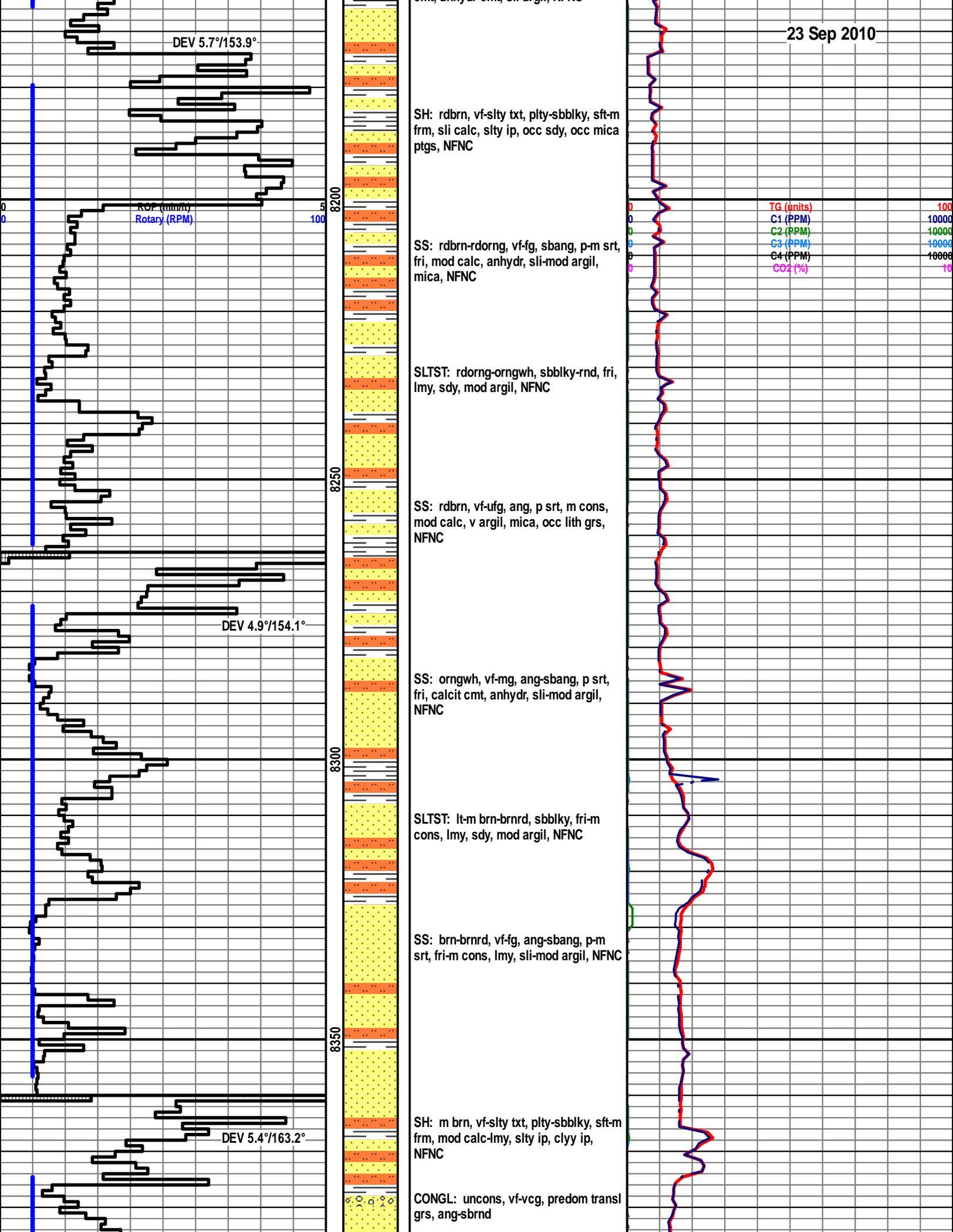
SS: orngwh, vf-fg, sbang, p-m srt, fri, calcit cmt, occ anhydr cmt, argil, NFNC

DEV 9.9°/150.5°

SLTST: rdbrn, sbblky, fri, sli calc, v sdy, argil, mica, NFNC

TD 7898  
Wt 8.5  
Vis 46  
FL 4.0  
PV/YP 10/28  
Gels 13/18/20  
pH 9.7  
Hd NR  
Cl 700  
Sol 6.0





DEV 5.7°/153.9°

ROP (min/ft)  
Rotary (RPM)

SH: rdbrn, vf-slty txt, plty-sbblky, sft-m frm, sli calc, slty ip, occ sdy, occ mica ptgs, NFNC

SS: rdbrn-rdorg, vf-fg, sbang, p-m srt, fri, mod calc, anhydr, sli-mod argil, mica, NFNC

SLTST: rdorg-orgwh, sbblky-rnd, fri, lmy, sdy, mod argil, NFNC

SS: rdbrn, vf-ufg, ang, p srt, m cons, mod calc, v argil, mica, occ lith grs, NFNC

DEV 4.9°/154.1°

SS: orgwh, vf-mg, ang-sbang, p srt, fri, calcit cmt, anhydr, sli-mod argil, NFNC

SLTST: lt-m brn-brnrd, sbblky, fri-m cons, lmy, sdy, mod argil, NFNC

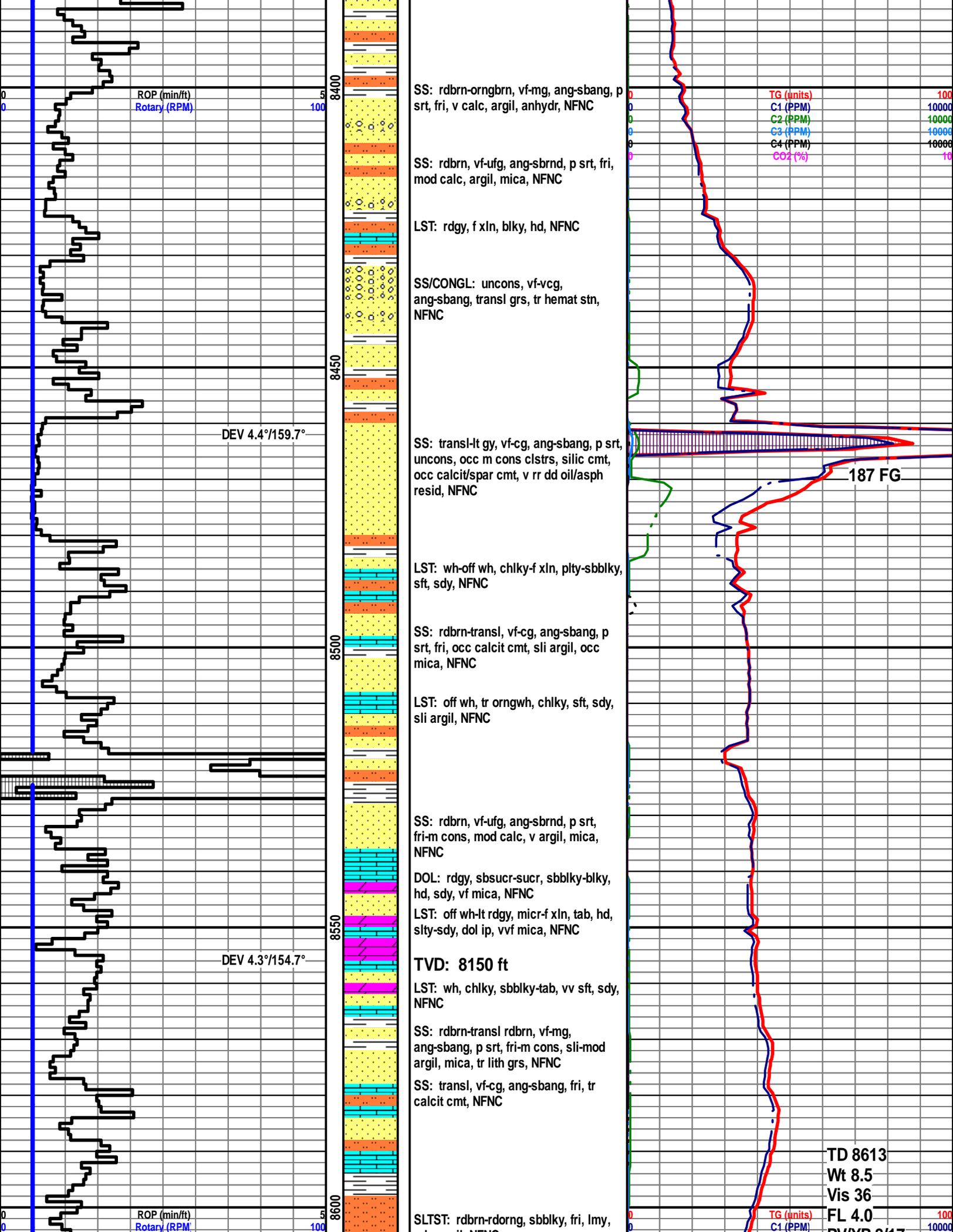
SS: brn-brnrd, vf-fg, ang-sbang, p-m srt, fri-m cons, lmy, sli-mod argil, NFNC

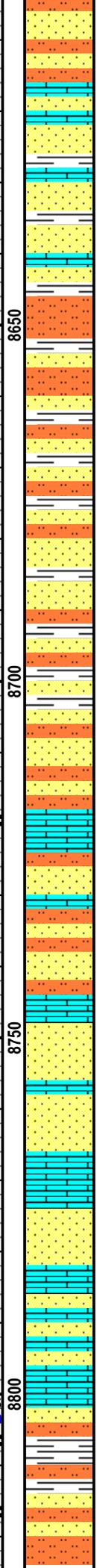
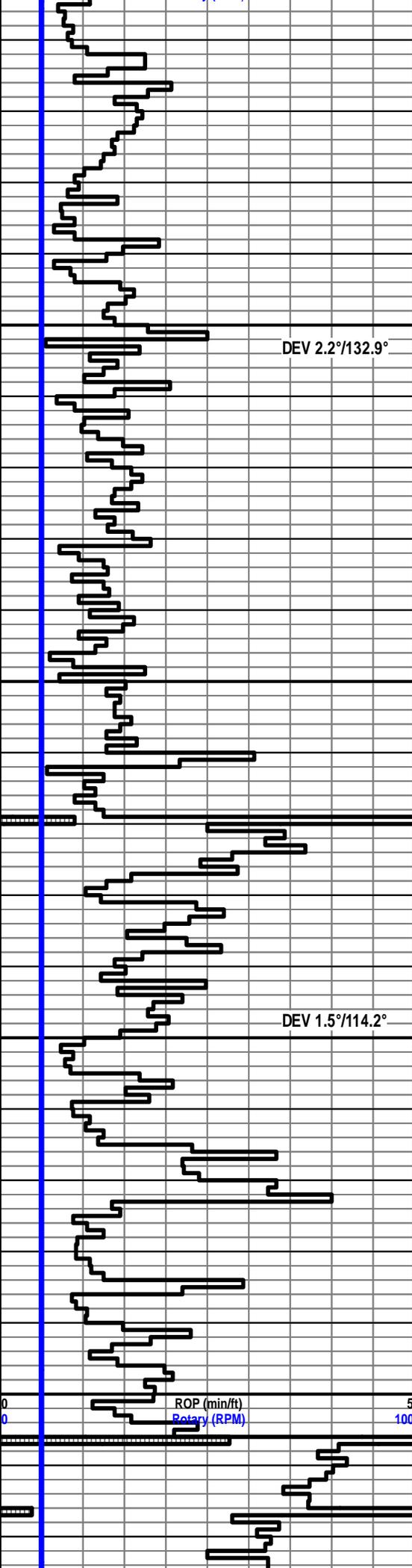
DEV 5.4°/163.2°

SH: m brn, vf-slty txt, plty-sbblky, sft-m frm, mod calc-lmy, slty ip, clyy ip, NFNC

CONGL: uncons, vf-vcg, predom transl grs, ang-sbrnd

TG (units) 100  
 C1 (PPM) 10000  
 C2 (PPM) 10000  
 C3 (PPM) 10000  
 C4 (PPM) 10000  
 CO2 (%) 10





sdv, argil, NFNC

SS: rdornng-orngwh, vf-ufg, ang-sbang, p-m srt, fri, lmy, anhydr, sli argil, NFNC

LST: off wh-orngwh, chlky, plty, sft, sdy, NFNC

SS: transl-transl rdbrn, vf-umg, ang, p srt, fri-uncons, sli argil ip, v rr dd oil/asph resid, NFNC

**TVD: 8246 ft**

SS: rdbrn-rdornng, vf-ufg, ang-sbang, p srt, fri, lmy, sli argil, NFNC

SLTST: rdornng, sbblky, fri, lmy, sdy, sli argil, NFNC

SS: orngwh-rdornng, vf-ufg, ang-sbang, p srt, fri, lmy, anhydr, mod argil, NFNC

SLTST: lt-m brn-lt brnrd, sbblky, m cons, lmy, sdy ip, argil, NFNC

LST: lt brn, slty-vf xln, sbblky, m cons, slty, argil, grdg lmy sltst, NFNC

SS: offwh-lt gybrn, vf-cg, ang-sbang, p srt, fri, lmy-calcit cmt, mica, occ mod argil, tr lith grs, NFNC

SS: lt-m brn, brnwh, vfg, sbang, m srt, m cons, lmy, slty, sli-mod argil, NFNC

**TVD: 8342 ft**

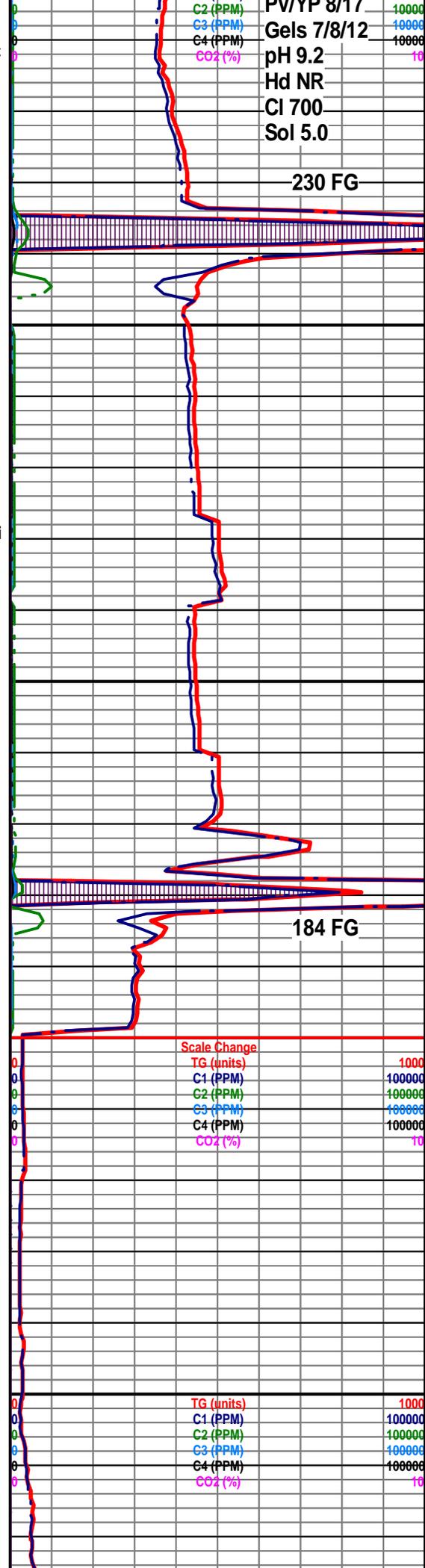
SS: rdbrn-lt brn, vf-ufg, ang, p srt, fri, lmy, com calcit cmt, anhydr, mica, argil, NFNC

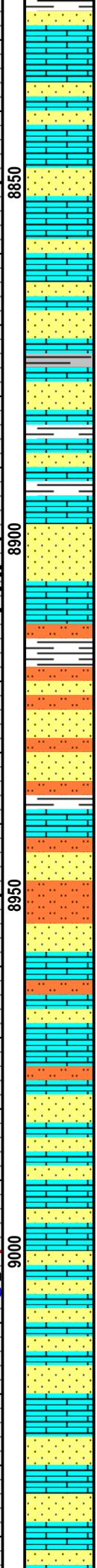
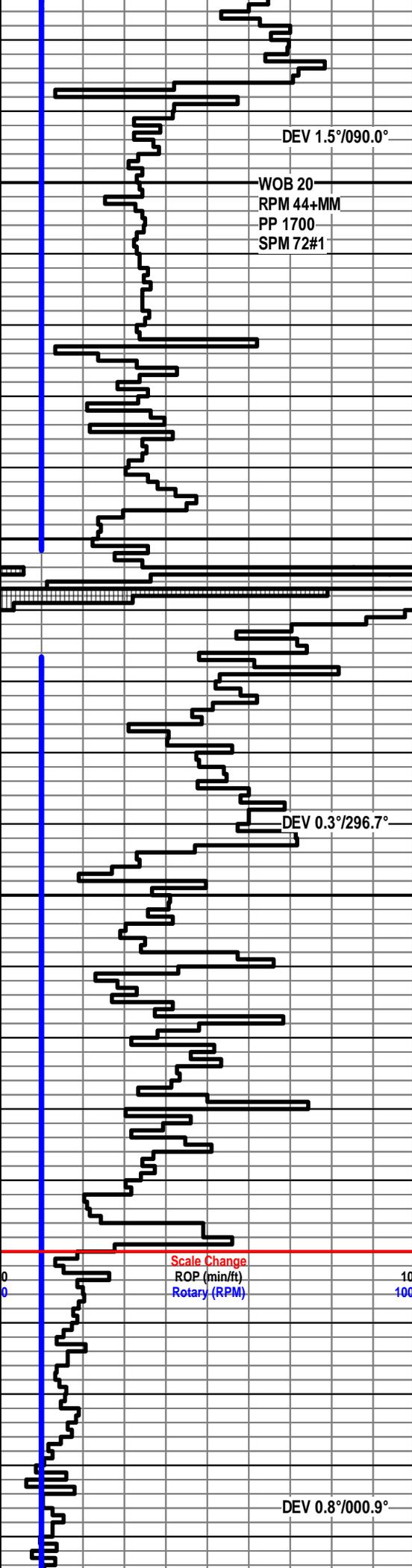
LST: lt gy-gygrn, sucr, sbblky, w cons, sdy ip, NFNC

LST: off wh-v lt gy, chlky-f xln, plty, sft-p cons, sli slty-sdy, dol ip, rr vf xln pyr, NFNC

SH: rdbrn, vf-f txt, sbblky, m frm, sli calc, slty ip, NFNC

SS: rdornng-rdbrn, vf-ufg, ang-sbang, p srt, fri, mod calc, argil, mica, NFNC





LST: lt-m dk gybrn, micr-vf xln, plty-tab, w cons-hd, slty-sdy ip, occ cht, occ frac, rr vf xln pyr, NF, vp cut: mod rap, n strmg, fnt blwh, n rg, n resid

**TVD: 8438 ft**

SS: uncon, vf-mg, ang-sbrnd, occ rnd, occ wh cly resid, rr dd oil resid, NFNC

LST: lt-m dk gybrn, micr-vf xln, plty-tab, w cons-hd, slty-sdy ip, occ cht, occ frac, rr vf xln pyr, NF, vp cut: mod rap, n strmg, fnt blwh, n rg, n resid

SH: dk gybrn, f txt, plty, sft, lmy, NFNC

SH: rdbrn, vf-slty txt, sblky, m frm-frm, sli calc, sdy, mica, NFNC

SS: rdbrn, vf-fg, ang-sbang, p srt, m cons, sli calc, argil, mica, NFNC

LST: wh-orngwh, chlky, sft, plty, sdy, NFNC

SLTST: orngwh-pl rdbrn, sblky, lmy, sdy, sli argil, NFNC

SS: uncon, vf-cg, ang-sbang, com transl grs, NFNC

SLTST: blgy-gygrn, sblky-plty, n calc, mica, NFNC

**TVD: 8534 ft**

SH: blgy, wxy-sbwxy, flky-plty, sft-m frm, n calc, mica, NFNC

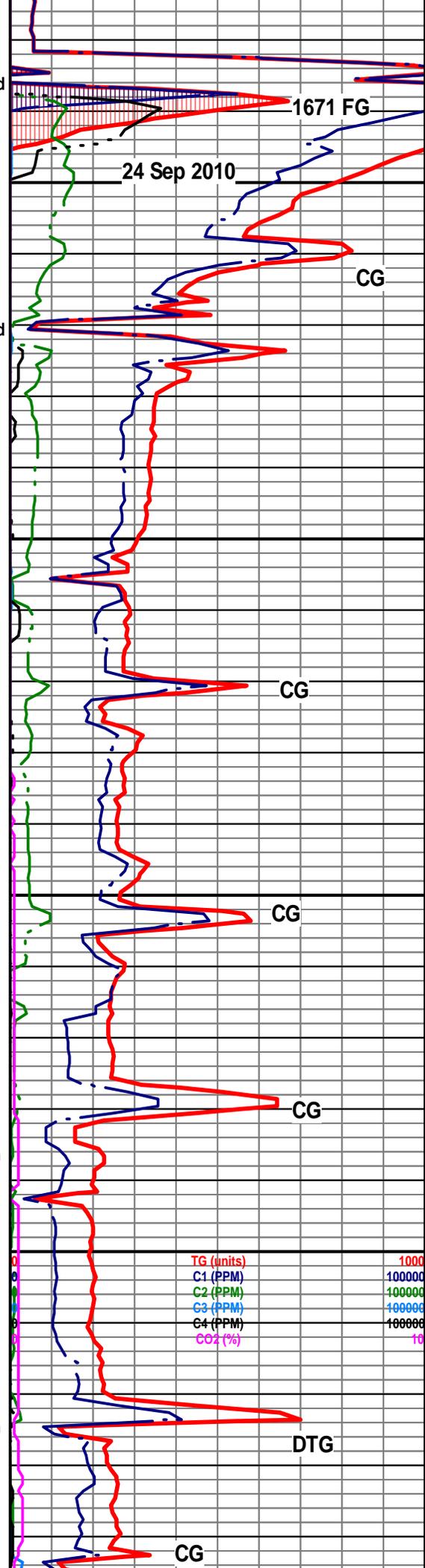
LST: wh-off wh, chlky-vf xln, plty-flky, sft, tr mica, NFNC

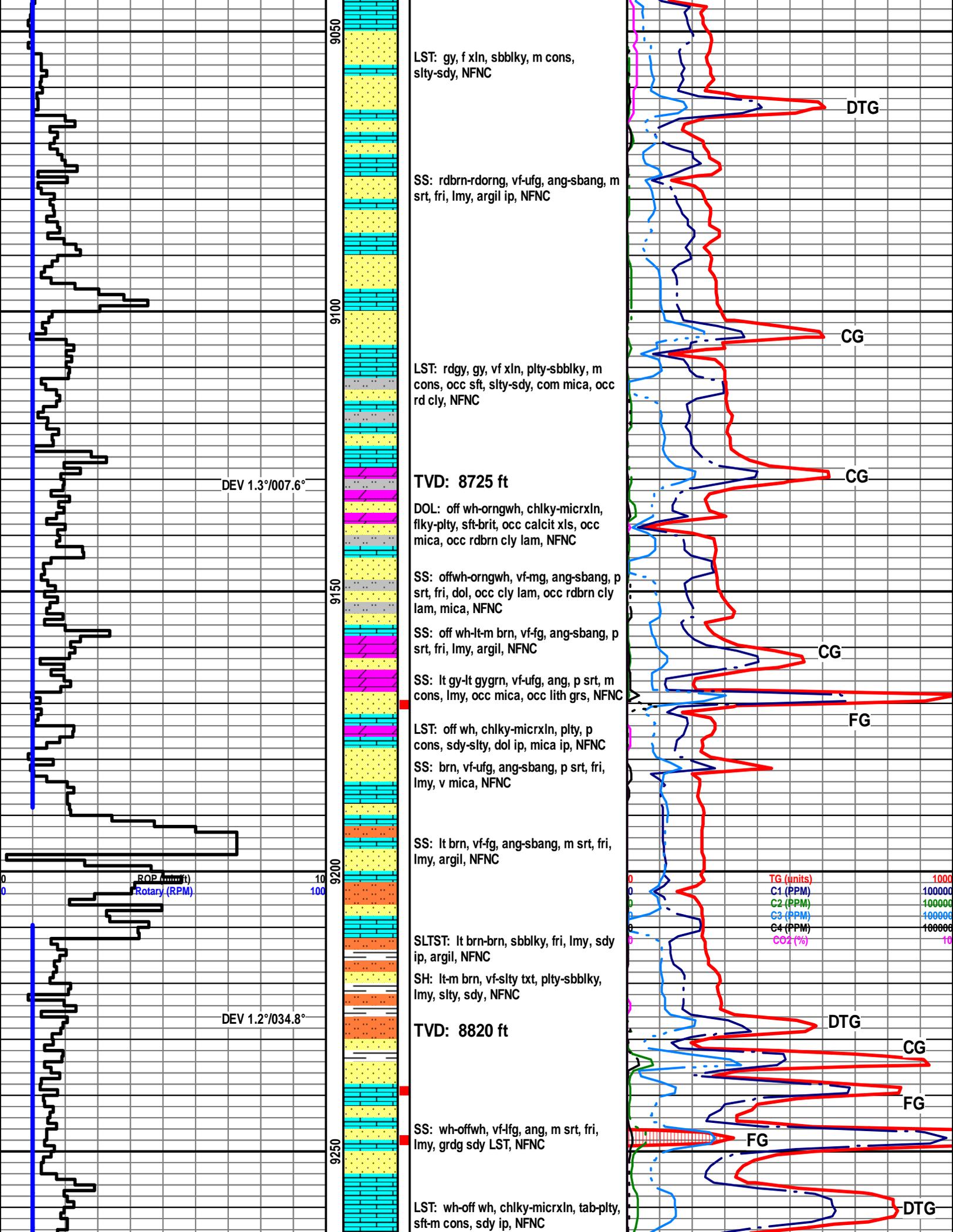
SS: rdbrn-rdorng, vf-ufg, ang-sbang, m srt, fri, lmy, argil ip, NFNC

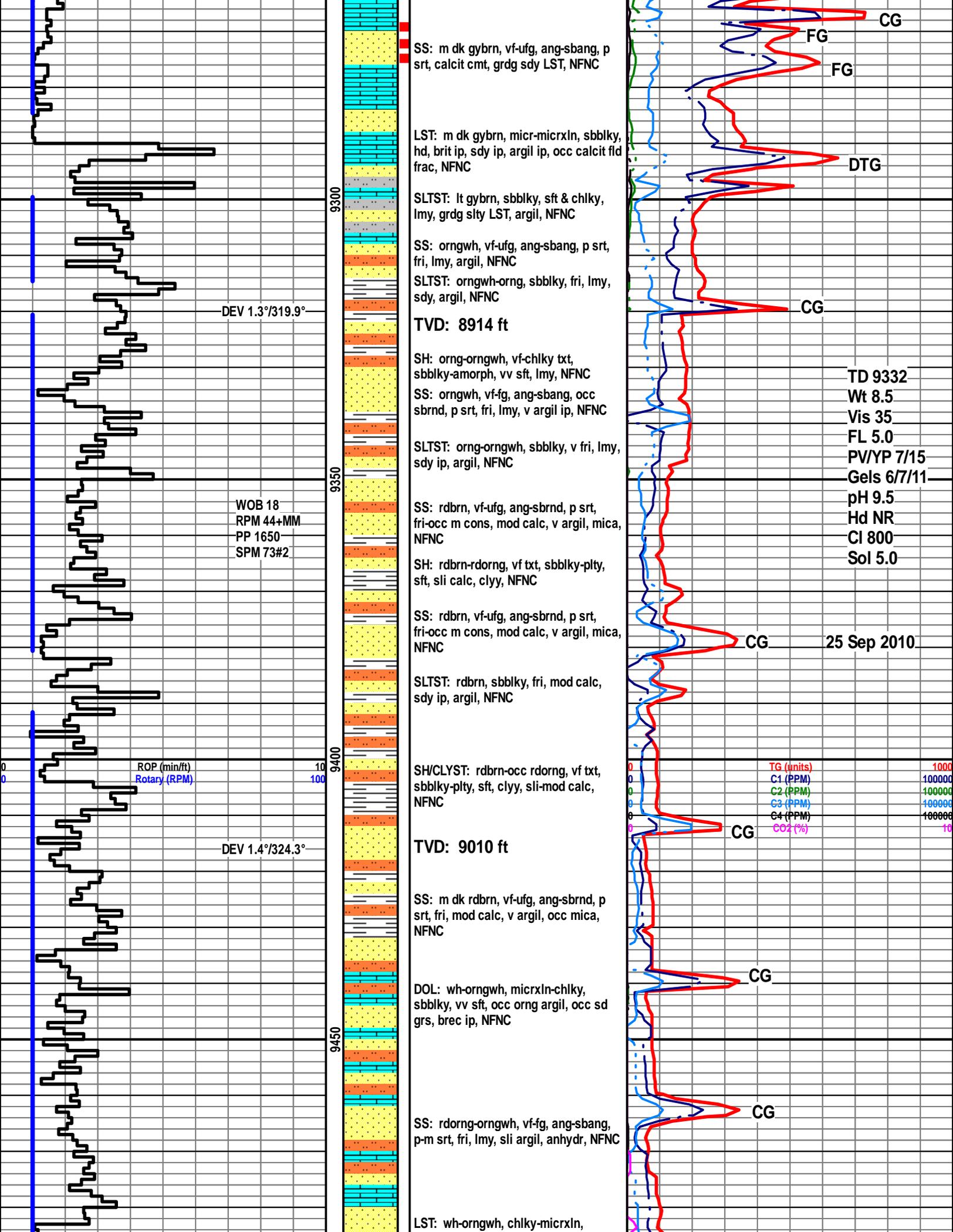
LST: gybrn, f xln-sucr, blk-sbblky, w cons-hd, occ sd grs (mg, rdd), slty ip, rr calcit fld frac, tr cht (transl gybrn), NFNC

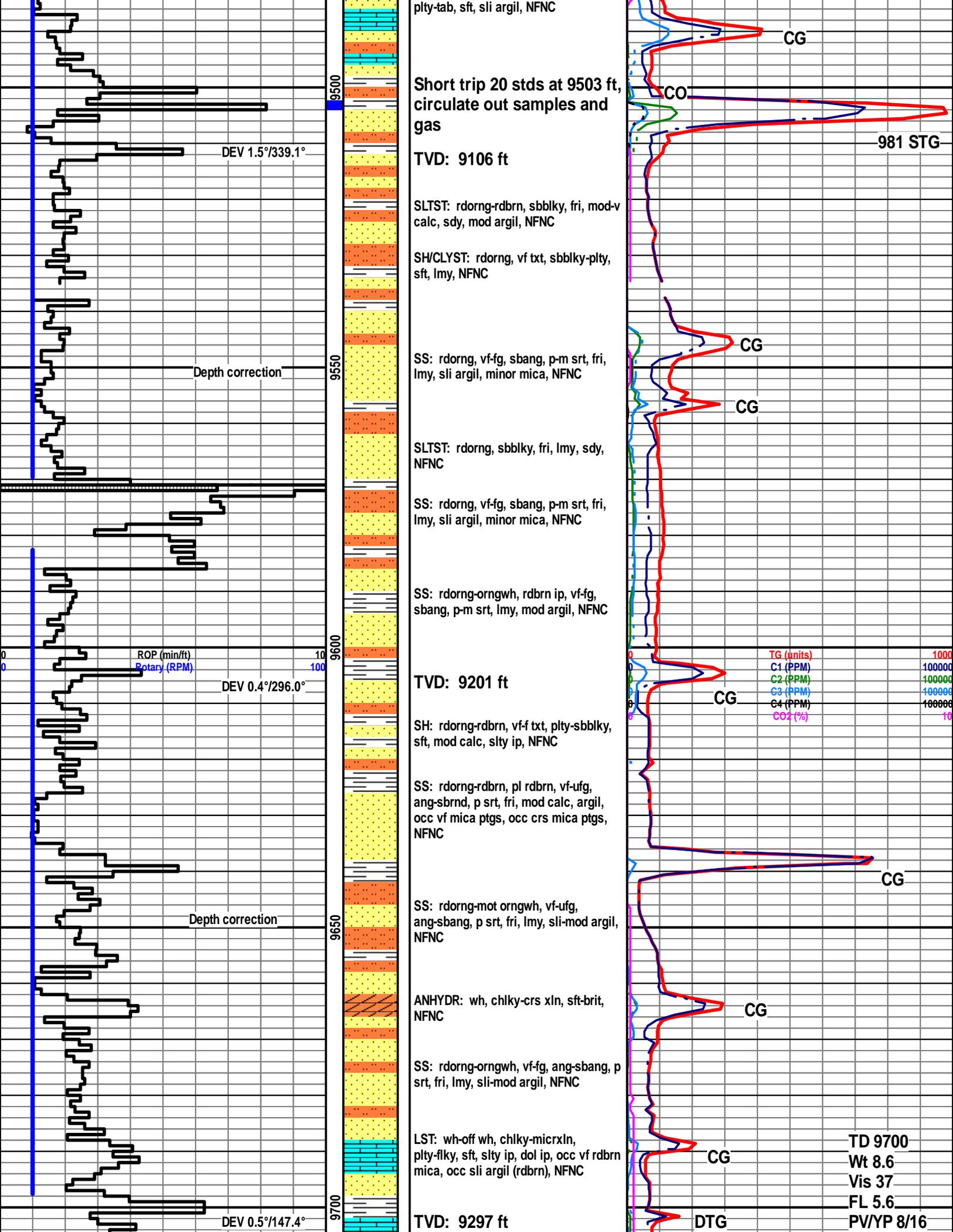
SS: rdbrn-rdorng, vf-ufg, ang-sbang, m srt, fri, lmy, argil ip, NFNC

**TVD: 8630 ft**









Gels 8/15/17  
pH 9.0  
Hd 80  
Cl 800  
Sol 2.0

26 Sep 2010

WOB 15  
RPM 44+MM  
PP 1700  
SPM 70#1

ROP (min/ft)  
Rotary (RPM)

DEV 0.6°/336.7°

LST: wh-off wh, chlky-micrxln,  
plty-flky, sft, slty ip, NFNC

SH: lt gybrn, chlky-f txt, plty, v sft, lmy,  
grdg argil LST, NFNC

LST: gy-lt gybrn, chlky-crs xln, v  
sft-hd, tab-sbblky, sli argil, NFNC

SLTST: rdbrn, occ pl rdbrn, sbblky,  
fri-m cons, mod calc, sdy, argil, vf  
mica, NFNC

SS: rdbrn, vf-ufg, ang-sbang, p srt, fri,  
v calc, mica, argil, NFNC

SH: rdbrn-m dk rdbrn, vf-slty txt, m  
frm, mod calc, slty ip, NFNC

SS: orng-orngwh, vf-fg, sbang, m srt,  
fri, lmy, argil, NFNC

TVD: 9393 ft

LST: wh-orngwh, chlky-micrxln,

DOL: wh-orngwh, occ rdbrn lam/vns,  
micrxln, plty, brit, sdy ip, NFNC

SLTST: rdbrn, sbblky, fri, mod calc,  
sdv, argil, NFNC

SH: orngwh-rdorng, vf-chlky txt,  
amorph-sbblky, vv sft, lmy, NFNC

SS: orng-orngwh, vf-fg, ang-sbang, p-m  
srt, fri, lmy, sli argil, NFNC

LST: wh-off wh, micrxln, flky, brit, sli  
sdv, NFNC

TVD: 9488 ft

SH: rdbrn-rdorng, vf txt, sbblky, m frm,  
sli calc, NFNC

SLTST: rdbrn, sbblky, fri-m cons, mod  
calc, sdy ip, argil, NFNC

TG (units) 1000  
C1 (PPM) 100000  
C2 (PPM) 100000  
C3 (PPM) 100000  
C4 (PPM) 100000  
CO2 (%) 10

CG

DTG

CG

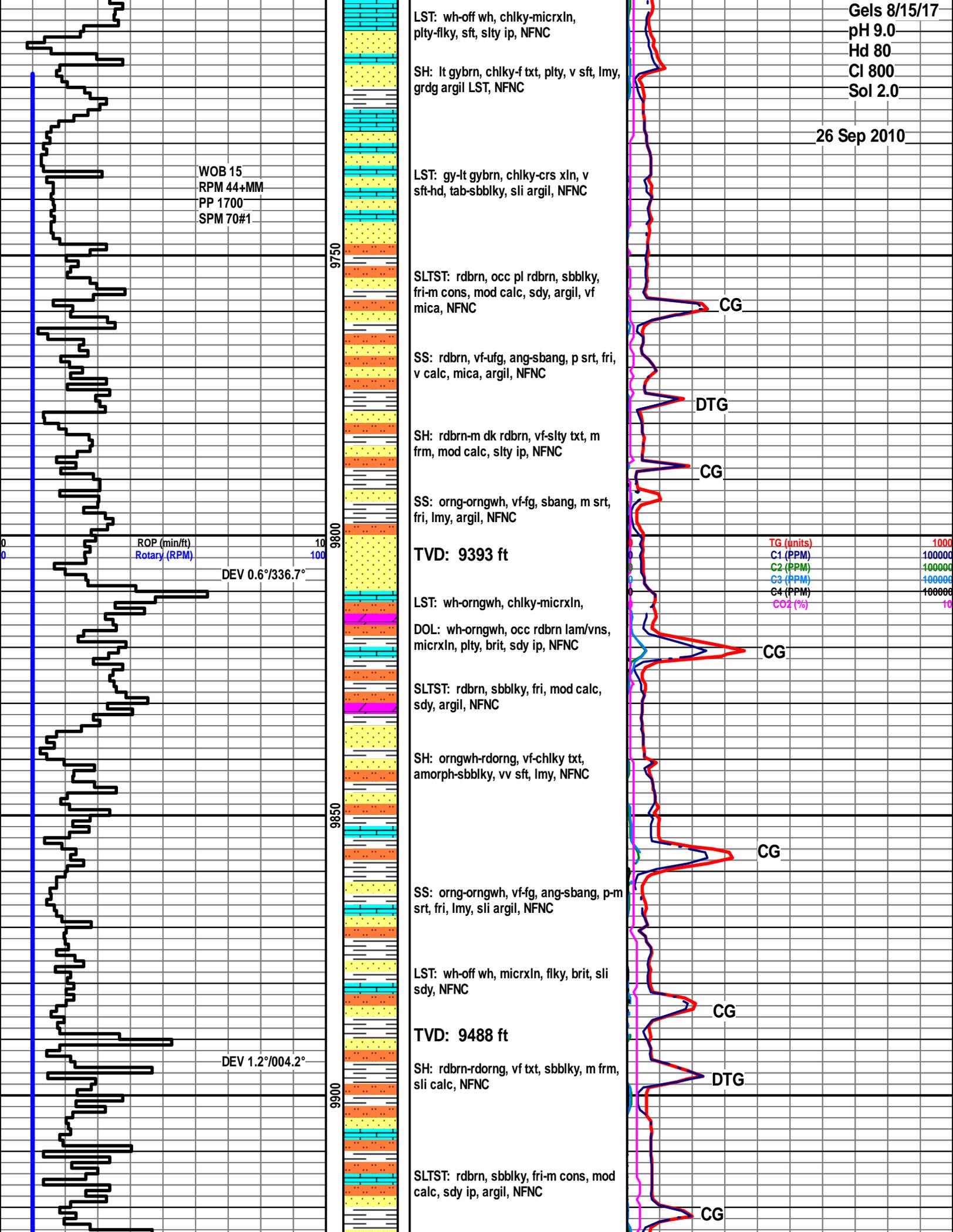
CG

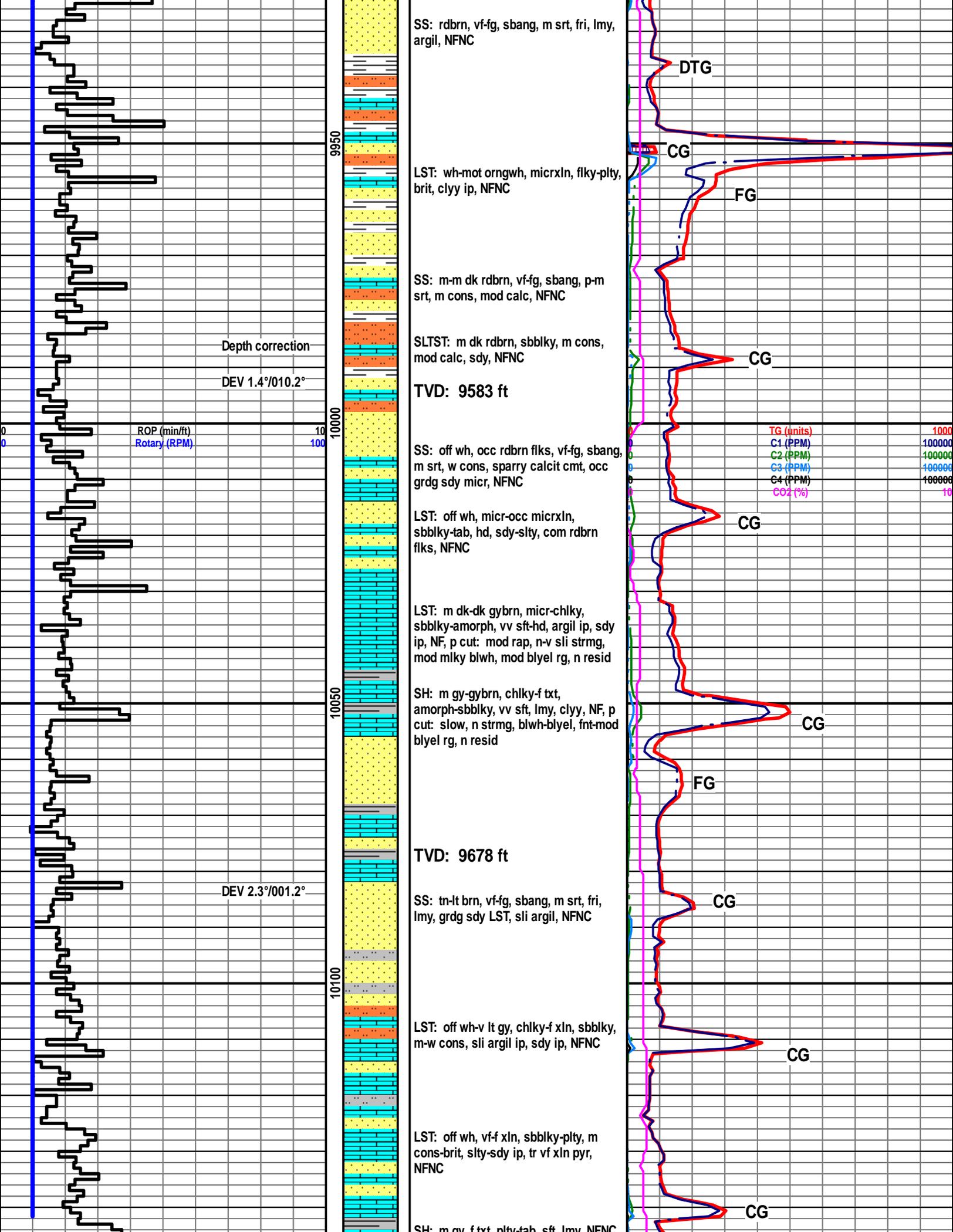
CG

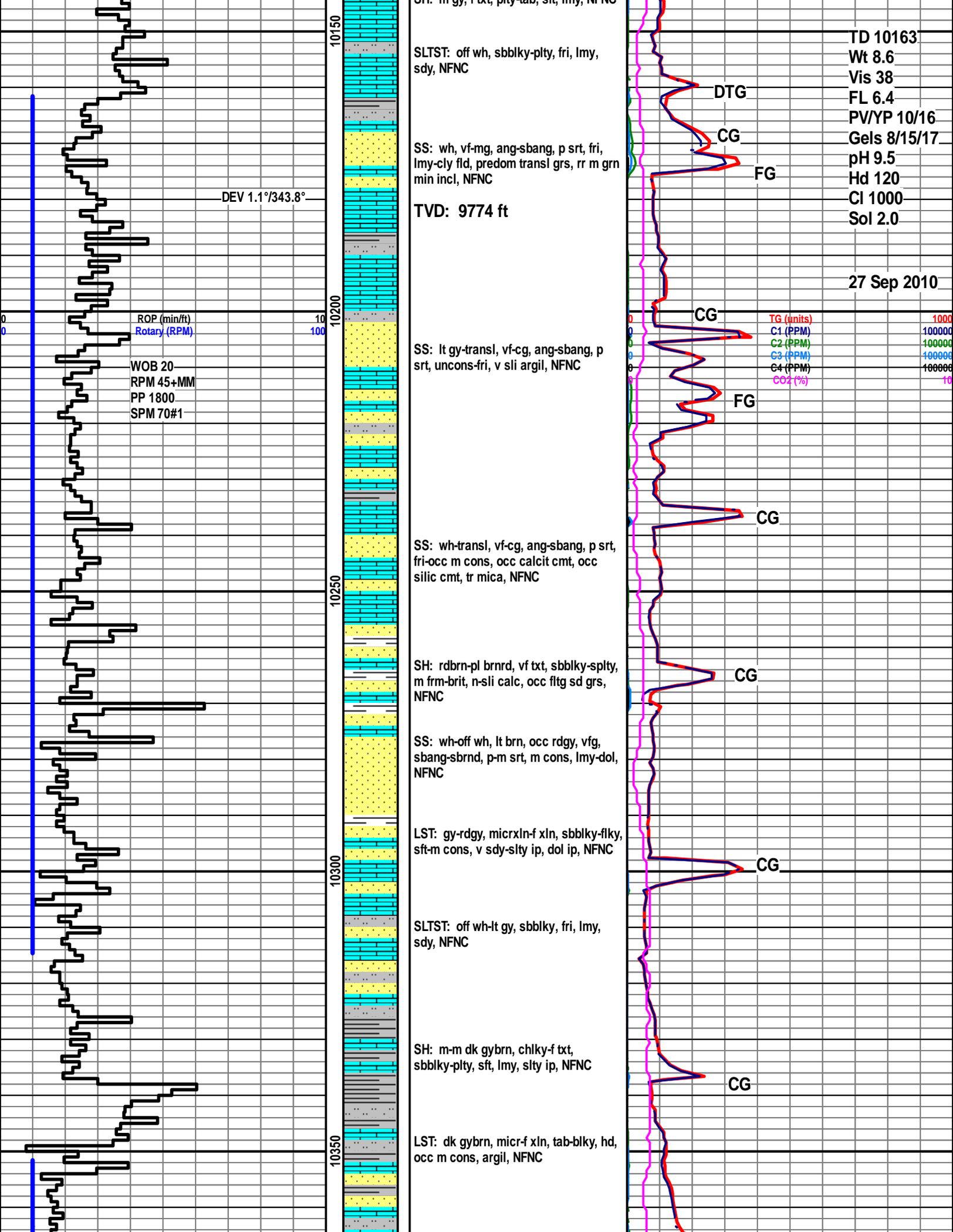
CG

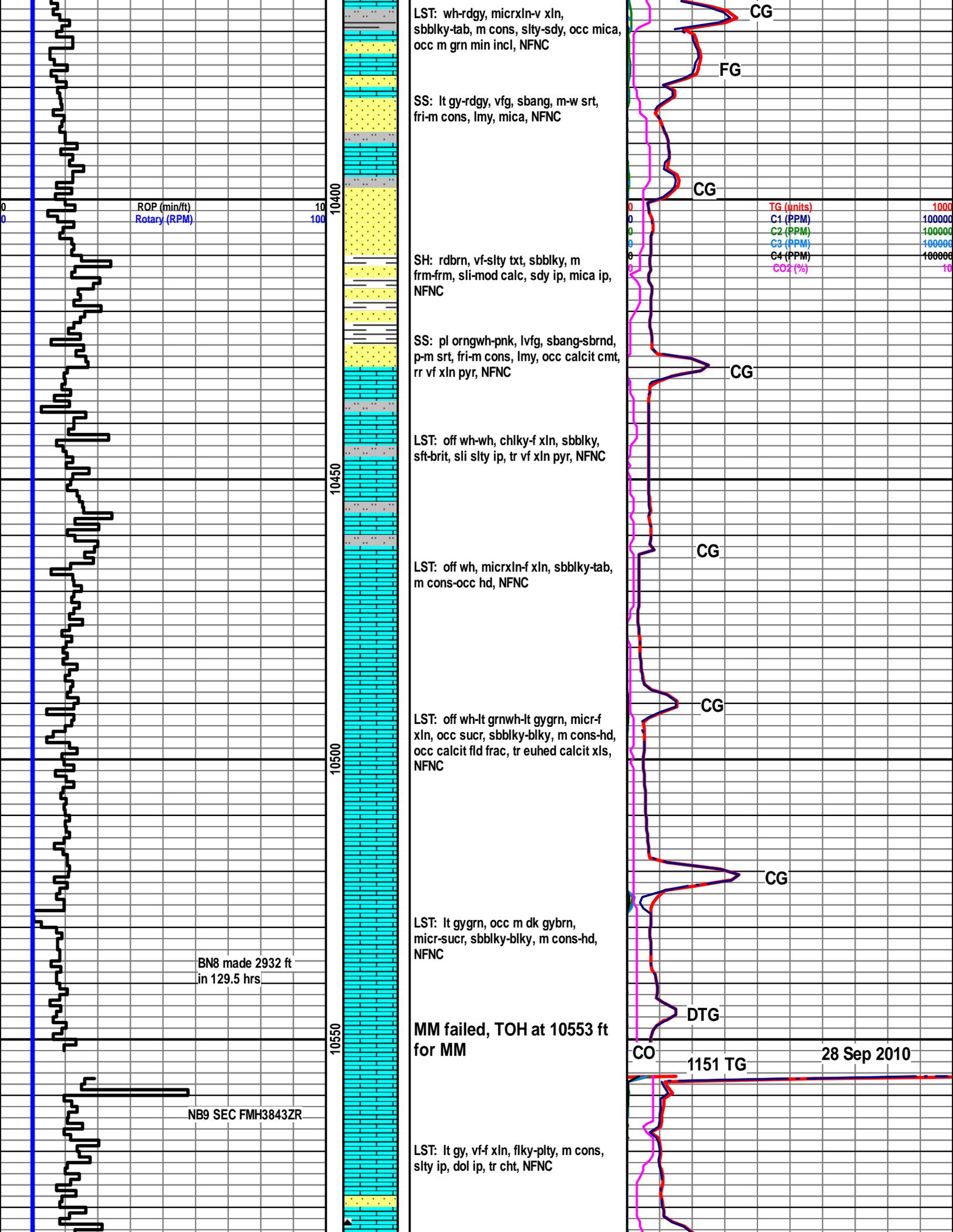
DTG

CG









ROP (min/ft)  
Rotary (RPM)

10400  
10450  
10500  
10550

LST: wh-rdgy, micrxln-v xln, sbbly-tab, m cons, slty-sdy, occ mica, occ m grn min incl, NFNC

SS: lt gy-rdgy, vfg, sbang, m-w srt, fri-m cons, lmy, mica, NFNC

SH: rdbrn, vf-sly txt, sbbly, m frm-frm, sli-mod calc, sdy ip, mica ip, NFNC

SS: pl orngwh-pnk, lvfg, sbang-sbrnd, p-m srt, fri-m cons, lmy, occ calcit cmt, rr vf xln pyr, NFNC

LST: off wh-wh, chlky-f xln, sbbly, sft-brit, sli slty ip, tr vf xln pyr, NFNC

LST: off wh, micrxln-f xln, sbbly-tab, m cons-occ hd, NFNC

LST: off wh-lt grnwh-lt gygrn, micr-f xln, occ sucr, sbbly-blky, m cons-hd, occ calcit fld frac, tr euhed calcit xls, NFNC

LST: lt gygrn, occ m dk gybrn, micr-sucr, sbbly-blky, m cons-hd, NFNC

MM failed, TOH at 10553 ft for MM

LST: lt gy, vf-f xln, flky-plty, m cons, slty ip, dol ip, tr cht, NFNC

CG

FG

CG

CG

CG

CG

CG

DTG

CO

1151 TG

28 Sep 2010

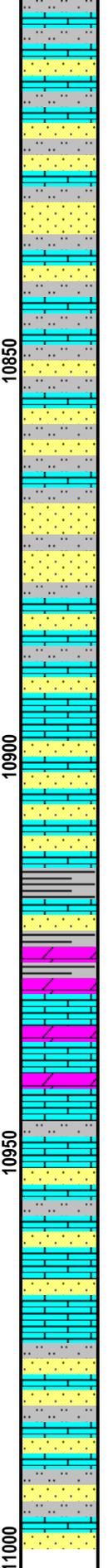
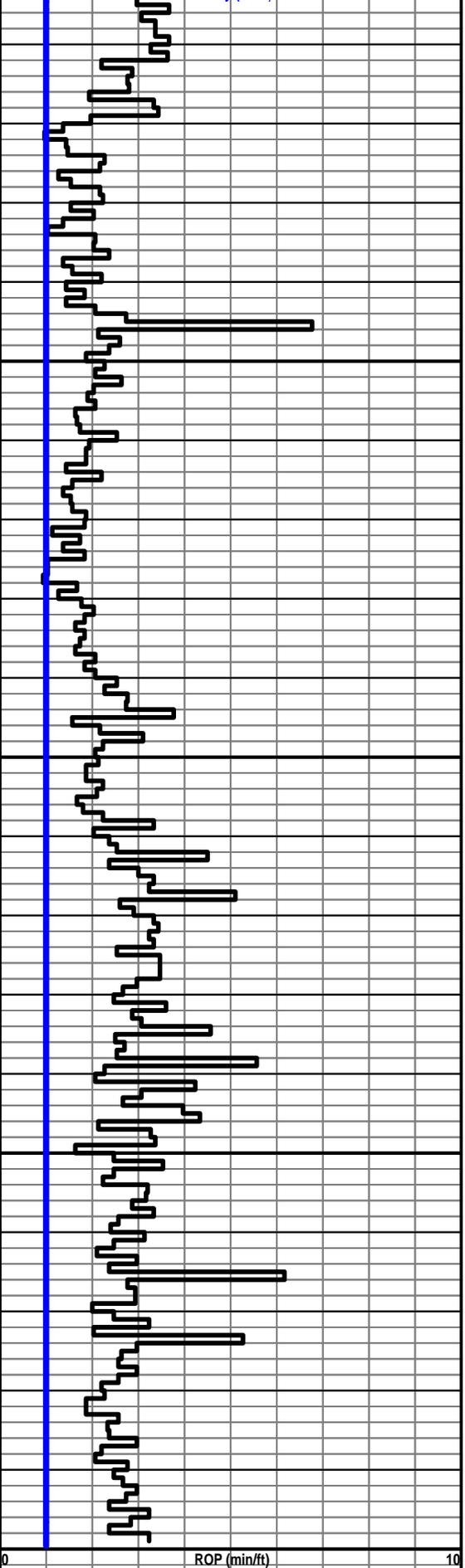
TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

1000  
100000  
100000  
100000  
100000  
10

BN8 made 2932 ft in 129.5 hrs

NB9 SEC FMH3843ZR





SLTST: off wh, sbbky-rnnd, fri, lmy, sdy, NFNC

LST: lt gy, chlky, amorph-tab, vv sft, slty ip, NFNC

SS: wh-off wh, lt gy, vfg, sbang, m srt, fri-m cons, mod calc-calcit cmt, slty, vf mica, NFNC

SLTST: lt gy-off wh, sbblky-blky, m-w cons, calcit cmt, sdy ip, NFNC

SS: uncons, vf-umg, sbrnd, sli cly fld

SS: off wh-lt gy, occ thn blk lam, vf-fg, sbang, m srt, fri, mod-v calc, mica, occ lith grs, NF, p cut: rap, fnt blgrn-blyel, vv fnt blgrn rg, n resid

LST: m gy, chlky, tab, sft, NFNC

SS: lt gy-v lt gygrn, vf-lfg, sbang, m srt, hd, calcit cmt, tr vvf xln pyr, NFNC

SH: m dk gybrn, chlky-f txt, sbblky-tab, sft-m frm, lmy-mod calc, dol ip, NF, vp cut: mod rap, n strmg, fnt blgrn, n rg, n resid

DOL: off wh-lt gy, sucr, sbblky, m cons-hd, sdy-slty, occ vvf xln pyr, NFNC

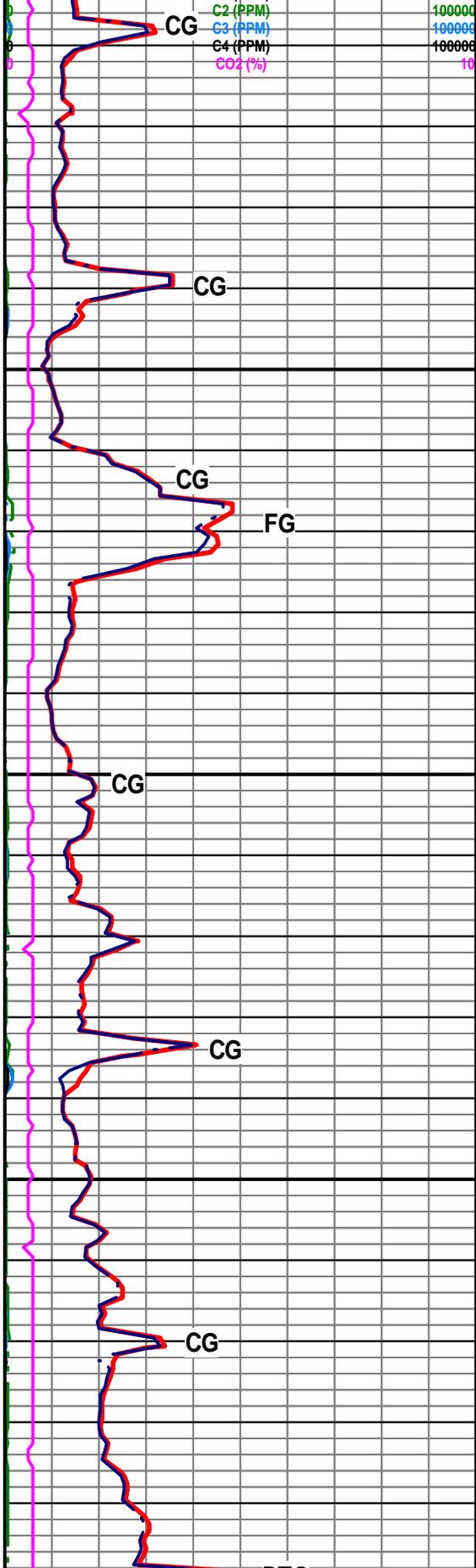
LST: dk gybrn, micr-crs xln, tab-blky, predom hd, sdy ip, mod argil ip, com vvf xln pyr, NFNC

SS: dk gybrn, vf-fg, ang-sbang, p srt, w cons, calcit cmt, argil, com vvf xln pyr, NFNC

LST: dk gybrn, chlky, sbblky, sft, slty, NF, vp cut: mod rap, mod blgrn, n resid, n rg

SLTST: m-dk gybrn, sbblky, fri, lmy, sdy, NFNC

TD at 11000 ft on  
29 Sep 2010



TG (units)  
C1 (PPM)  
C2 (PPM)  
C3 (PPM)  
C4 (PPM)  
CO2 (%)

