

### Well-Site Geologists

Tommy Pozzi  
Chris Stinson  
Chad Collins

Brara Geologic Consulting LLC

2812 1 Avenue North, Suite 430  
Billings, MT 59101

Software: HMG Strata Log

Horizontal Mudlog & Geosteering, Inc  
PO Box 20658, Albuquerque, NM 87154  
505-320-3432 [www.horizontalmudlog.com](http://www.horizontalmudlog.com)

### Operator

KGH Operating Company

### Well Name

Meagher 14-1H

### Operator Address

2812 1st Ave  
Billings, MT 59101

### Well Information

Field: North Gilsonite

Ground Elevation(ft): 6554.0

Region: Rio Blanco County, Colorado

KB Elevation(ft): 6568.6

Coordinates: 47° 41' 47.856 N 103° 43' 54.468 W

Spud Date: 7/3/2013

Location: 1630' FNL, 2700' FWL Sec. 14, T 1 S, R 10 KGH Operating Company Geologist(s):

State: Colorado/Rio Blanco

Thomas Hauptman

API Index: 05-103-11955

Rig Operator: Aztec Drilling Rig # 920

Rig Supervisor(s):

Tim McDonald

### Hole Data

13.5" to 813' MD  
8.75" to 5640' MD  
6.125" to 9755' MD

### Casing Data

9 5/8" Surface Casing set at 813' MD  
7" Intermediate Casing set at 5640' MD  
4.5" Production Casing set at 9755' MD

# Legend - Scale 1:240 (1" = 20')

## Lithology

|  |                    |
|--|--------------------|
|  | Anhydrite          |
|  | Bentonite          |
|  | Breccia            |
|  | Carbonaceous Shale |
|  | Cement             |
|  | Chert              |
|  | Claystone          |
|  | Coal               |
|  | Conglomerate       |
|  | Dolomite           |
|  | Fault or Fracture  |
|  | Glaucnrite         |
|  | Gypsum             |
|  | Limestone          |
|  | Marlstone          |
|  | Mudstone           |
|  | Salt               |
|  | Sandstone          |
|  | Shale              |
|  | Siltstone          |

## Graph Curves

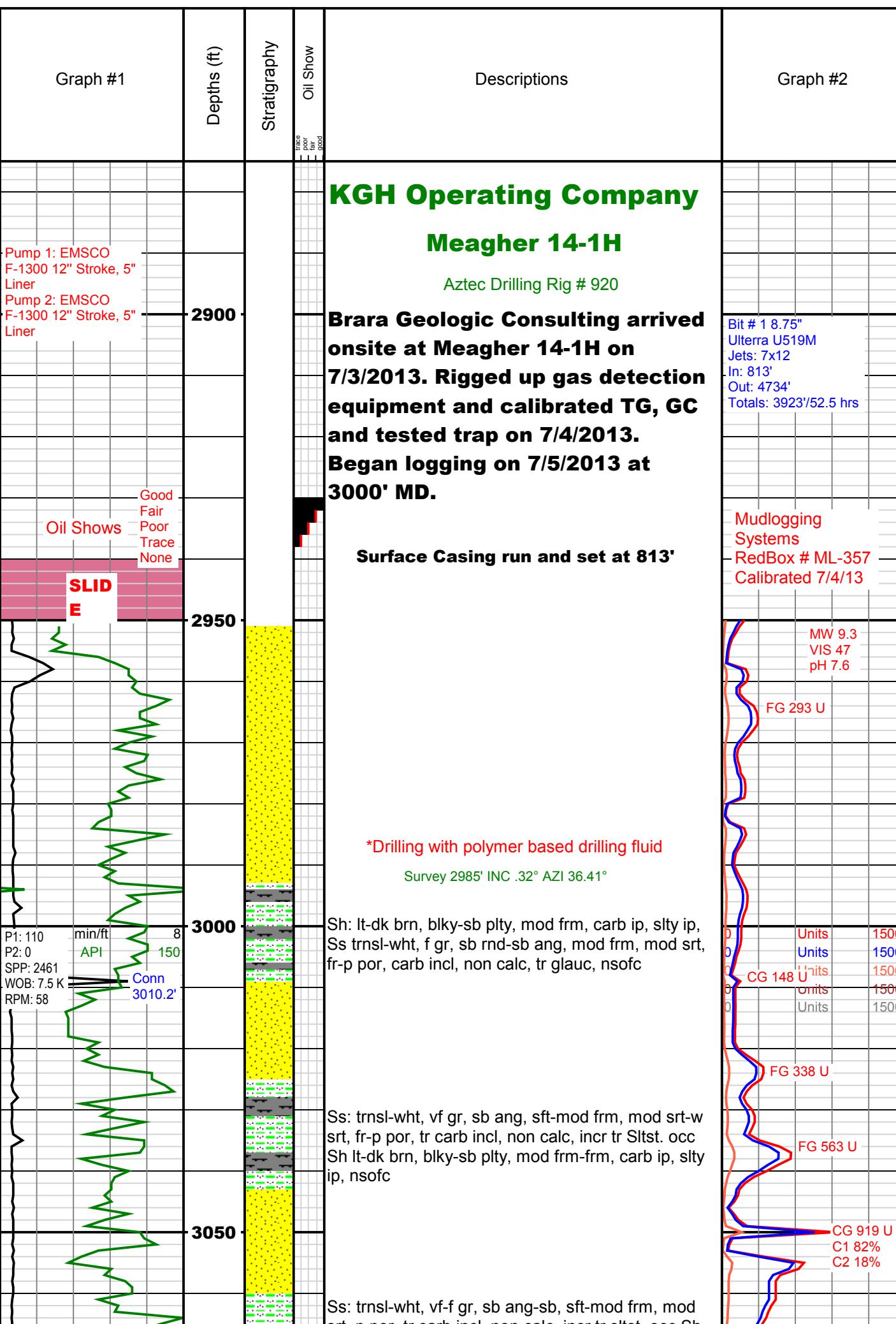
|                   |
|-------------------|
| Graph #1          |
| ROP (min/ft)      |
| Gamma (API)       |
| Graph #2          |
| TOTAL GAS (Units) |
| C1 (Units)        |
| C2 (Units)        |
| C3 (Units)        |
| C4 (Units)        |

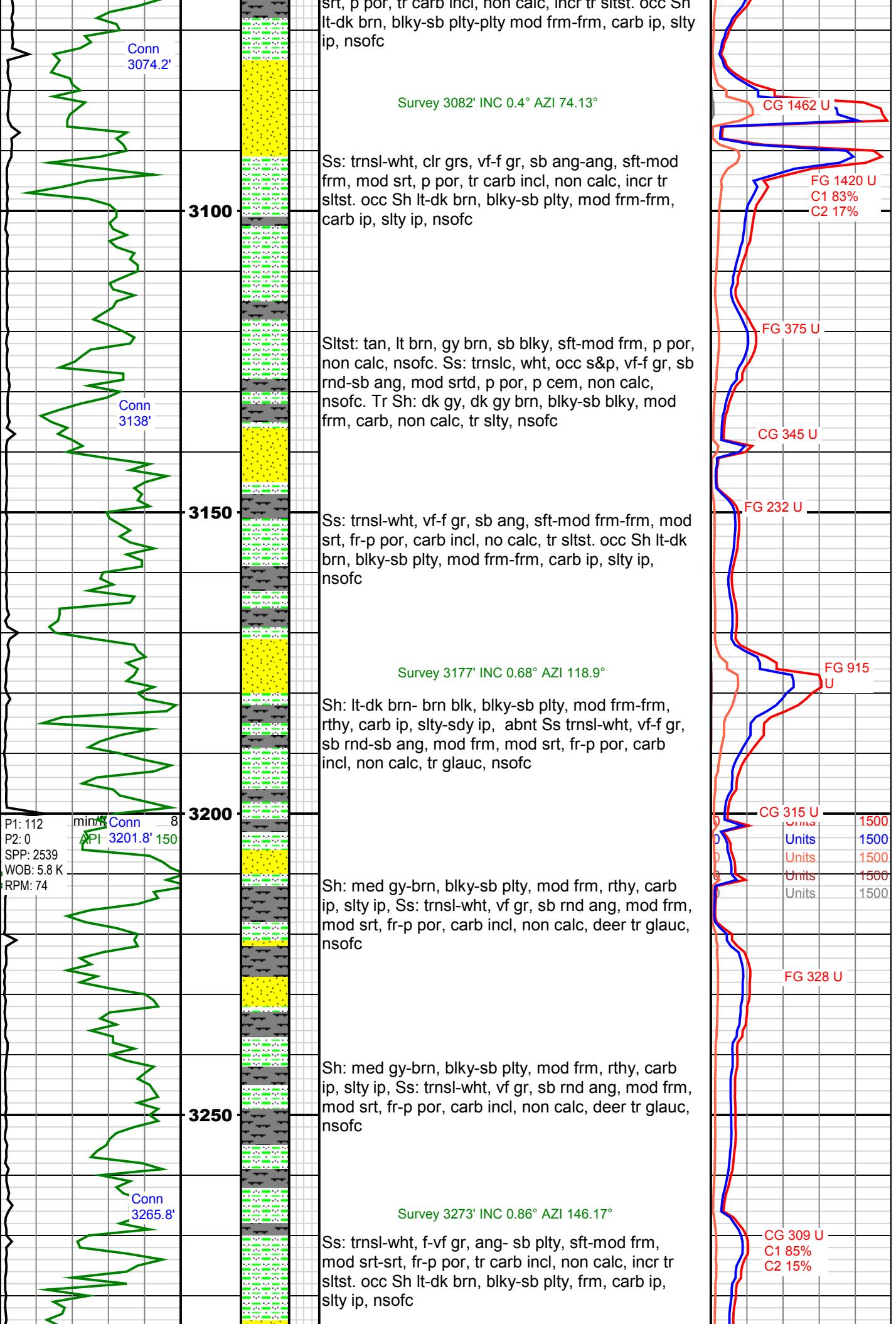
## Log Images

|  |                   |
|--|-------------------|
|  | Bit Trip          |
|  | Midnight          |
|  | Gas Show          |
|  | Oil Show          |
|  | Casing Show       |
|  | AM Report         |
|  | PM Report         |
|  | Tight Connection  |
|  | Fracture          |
|  | Formation Tops    |
|  | Formation Members |
|  | Pressure Test     |
|  | Carbonaceous      |
|  | Calcite           |
|  | Kaolinite         |
|  | Survey            |
|  | Pyrite            |
|  | Fossil            |
|  | Connection        |

## Intervals

|  |                |
|--|----------------|
|  | Connection     |
|  | Slide          |
|  | Rotate         |
|  | Core           |
|  | Recovered Core |





## MAIN COAL ZONE: 3292' MD, 3291.38' TVD, (+3277.22' MSL)

(-18' MSL from Prognosis)

Coal: blk, splnty, brit, sl frm, vit, nsofc. Ss: trnsl-wht, f-vf gr, ang- sb plty, sft-mod frm, mod srt-srt, fr-p por, tr carb incl, non calc, incr trsltst. occ Sh It-dk brn, blky-sb plty, frm, carb ip, slty ip, nsofc

3300

Conn  
3329.5'

3350

Conn  
3393.8'

3450

Conn  
3458.1'

3500

Survey 3370' INC 0.55° AZI 15.19°

Ss: trnsl-wht, vf gr, sb ang- sb plty, sft-mod frm, mod srt-srt, fr-p por, tr carb incl, non calc, incr trsltst. occ Sh It-dk brn, blky-sb plty, mod frm-frm, carb ip, slty ip, nsofc. Occ Coal: blk, splnty, brit, frm, vit lstr, nsofc

Sh: med gy-brn, blky-plty, mod frm-frm, rthy, carb ip, slty ip, Ss: trnsl-wht, vf gr, sb rnd ang, frm ip, mod srt-srt, fr-p por, carb incl, non calc, tr glauc, nsofc

Sh: med gy-dk brn, blky-plty, mod frm-frm, rthy, carb ip, slty ip grdg to slstst, Ss: trnsl-wht, vf gr, sb rnd ang, frm ip, mod srt-srt, fr-p por, carb incl, non calc, tr glauc, nsofc

Sh: med gy, blky-sb plty, mod frm, rthy, carb ip, slty ip, Ss: trnsl-wht, vf gr, sb rnd ang, mod frm, mod srt, fr-p por, carb incl, non calc, nsofc

Sh: med gy-dk gy, blky-sb plty, mod frm, rthy, carb ip, slty ip, Ss: trnsl-wht, vf gr, sb rnd-ang, mod frm, mod srt, fr-p por, carb incl, non calc, nsofc

Survey 3466' INC 0.48° AZI 43.46°

Ss: trnsl-wht, f gr, sb ang- sb plty, sft-mod frm, mod srt-srt, fr-p por, tr carb incl, non calc, incr slstst. occ Sh It-dk brn, blky-plty, mod frm, carb ip, slty ip, nsofc

MW 9.4  
VIS 47  
pH 7.6

CG 143 U

FG 156 U  
C1 83%  
C2 17%

FG 182 U

CG 211 U

|   | Units | 1500 |
|---|-------|------|
| 0 | Units | 1500 |

MW 9.4  
VIS 46  
pH 8.0

CG 126 U

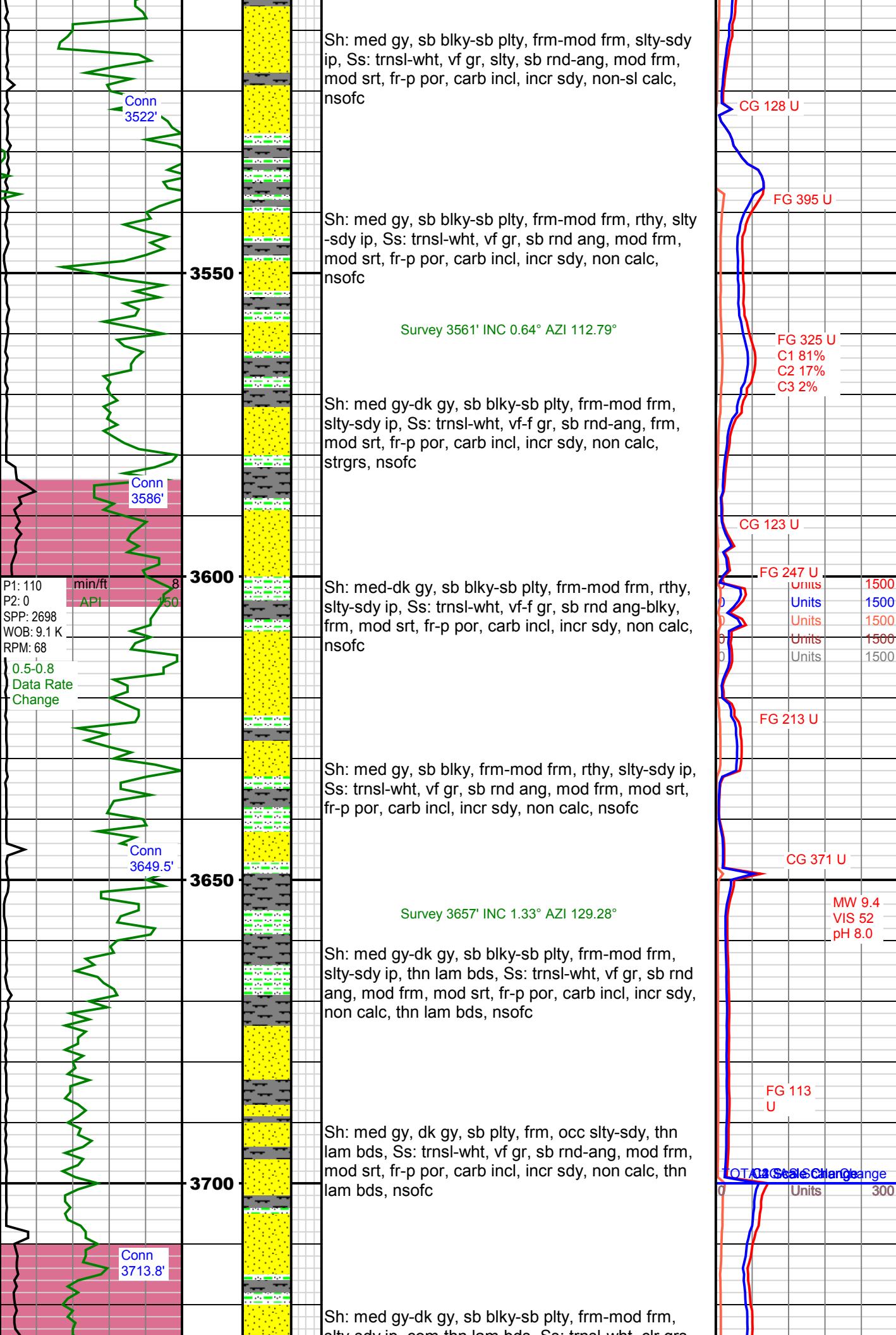
FG 167 U

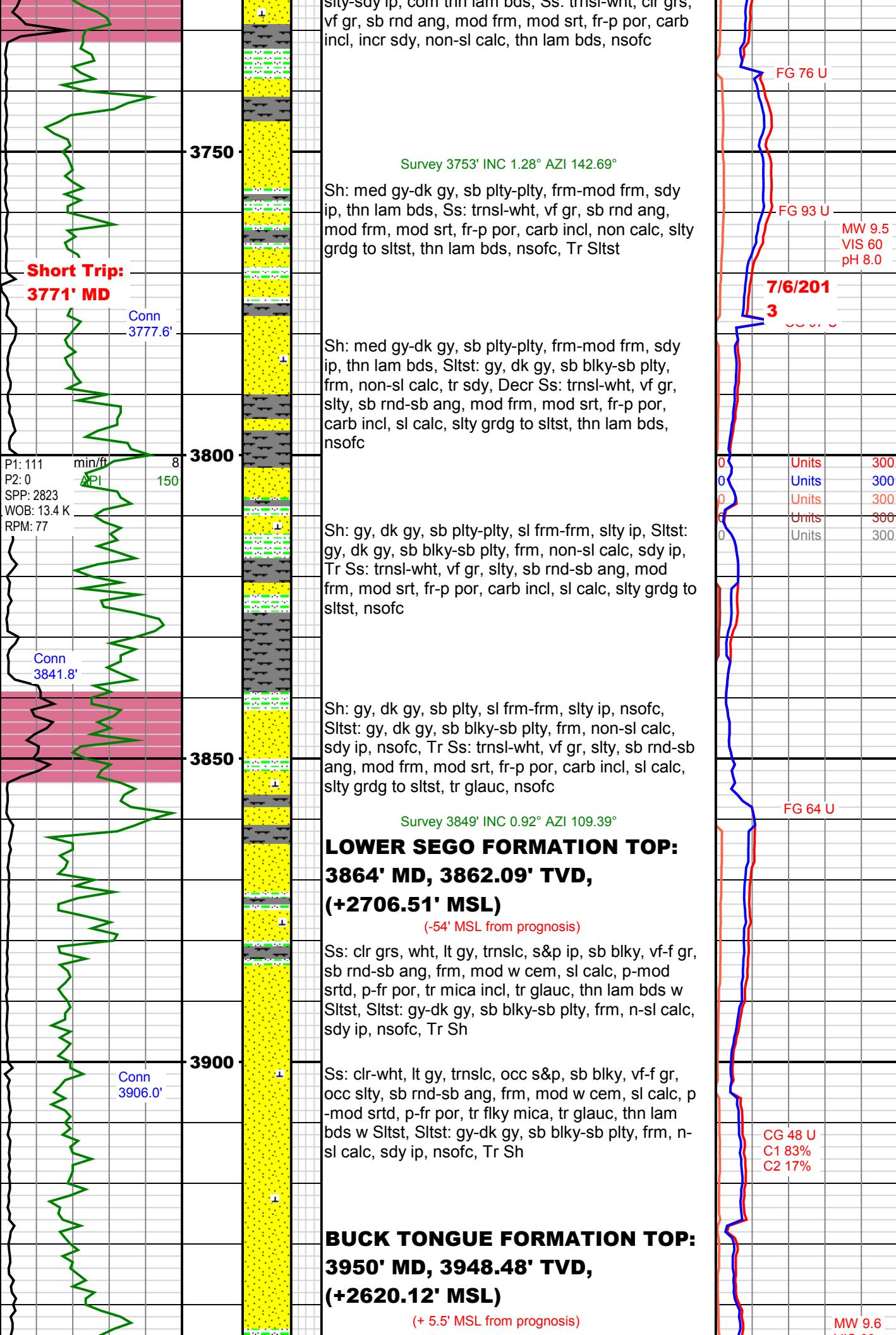
P1: 111  
P2: 0  
SPP: 2882  
WOB: 12.7 K  
RPM: 76

min/ft

API

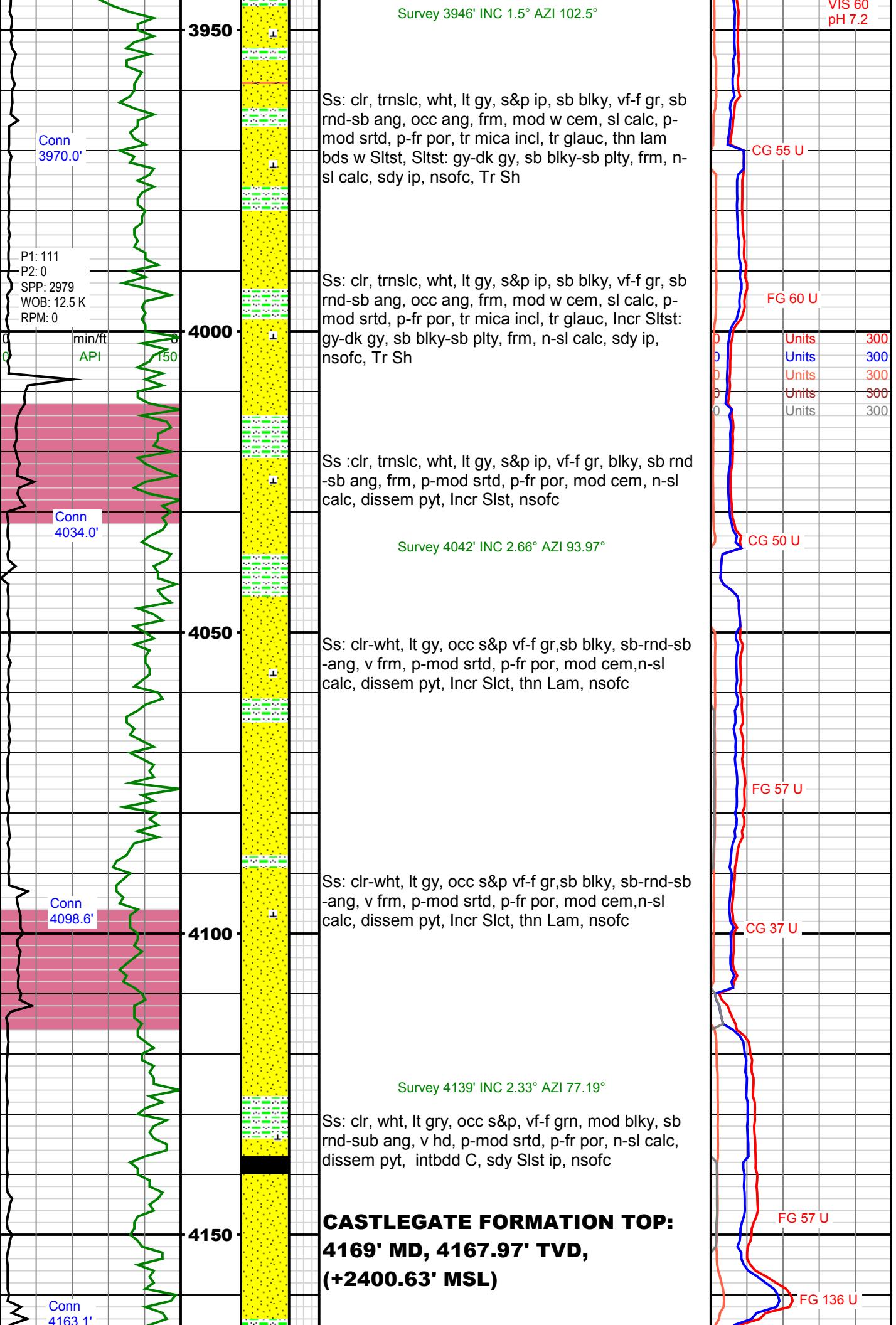
150

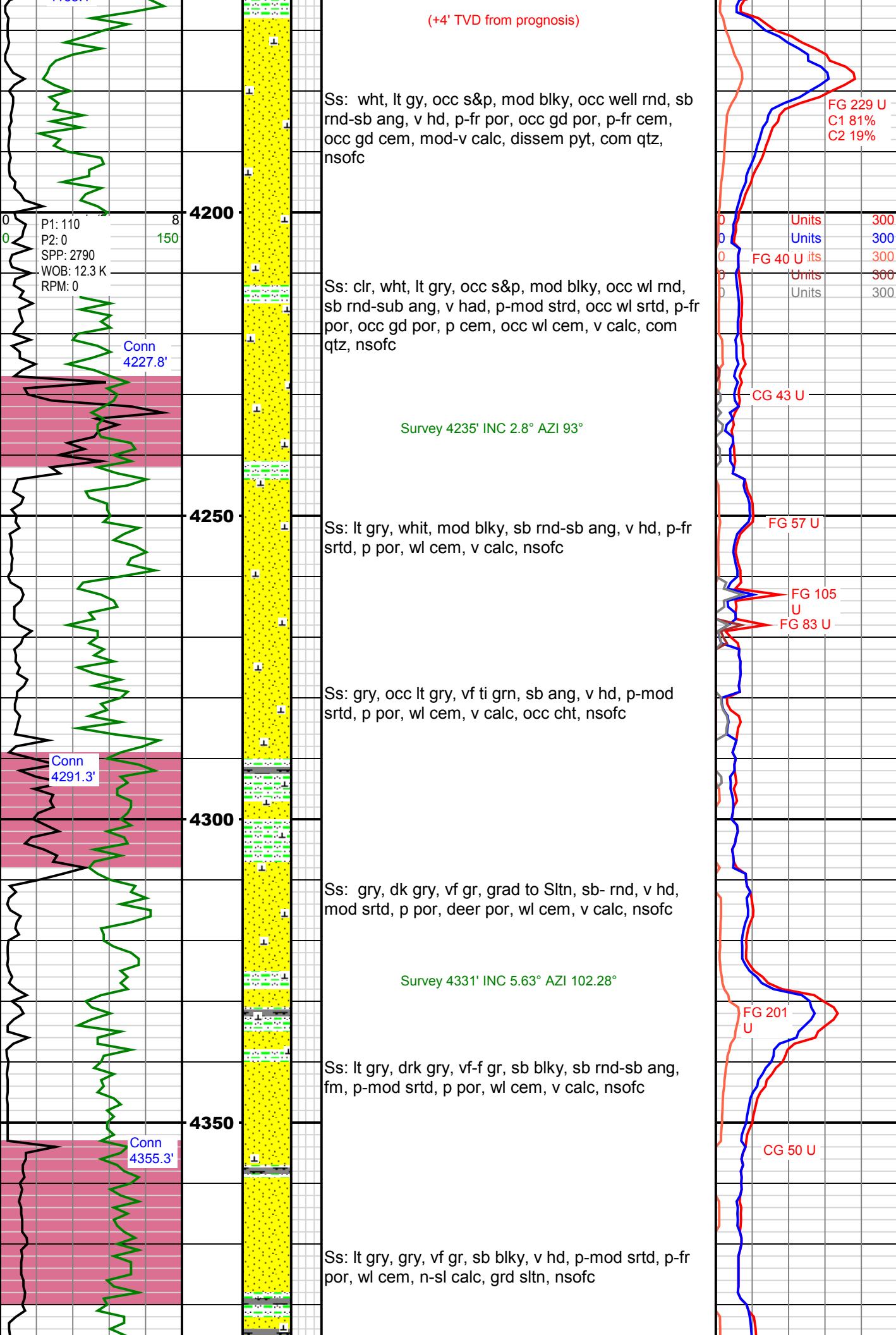


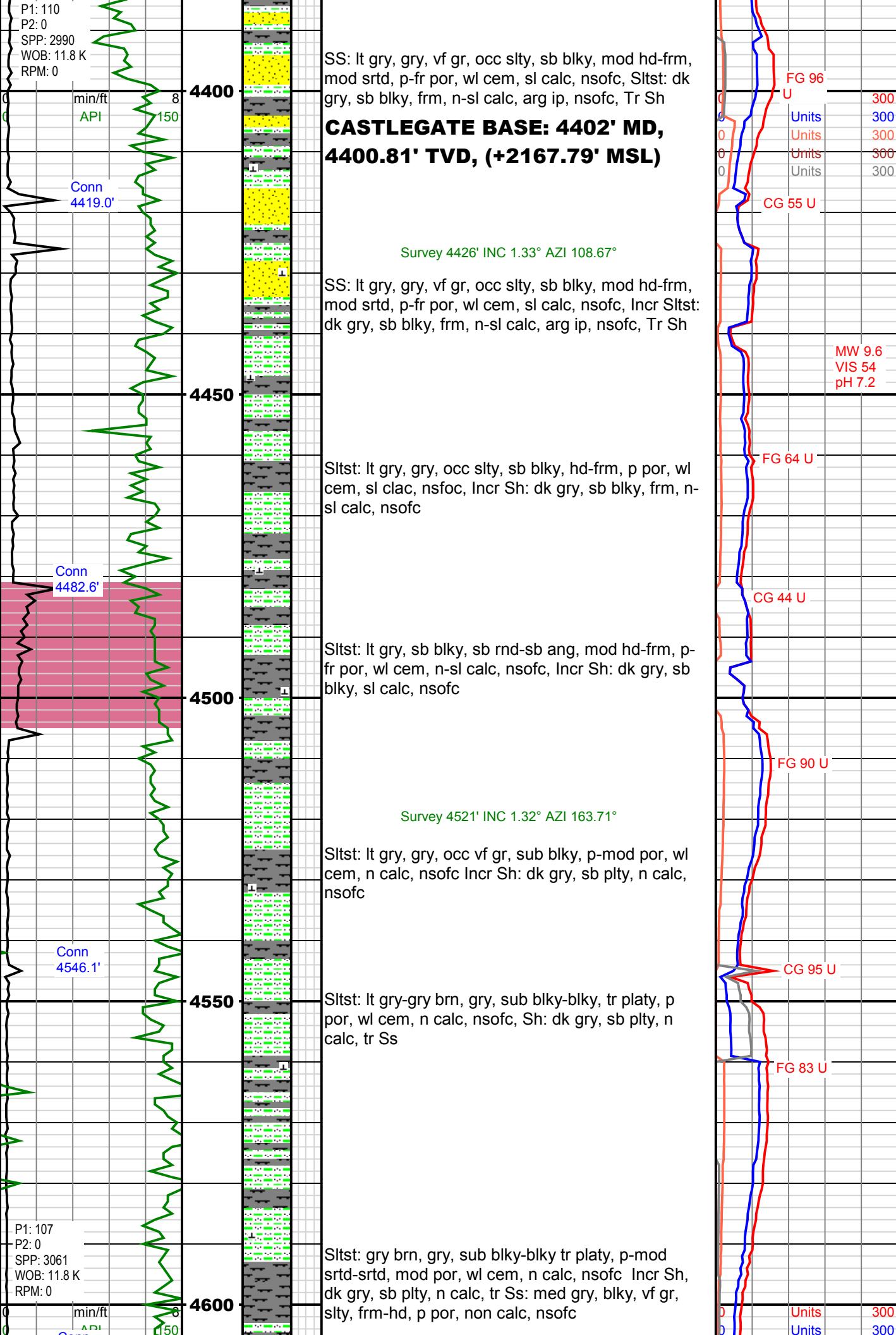


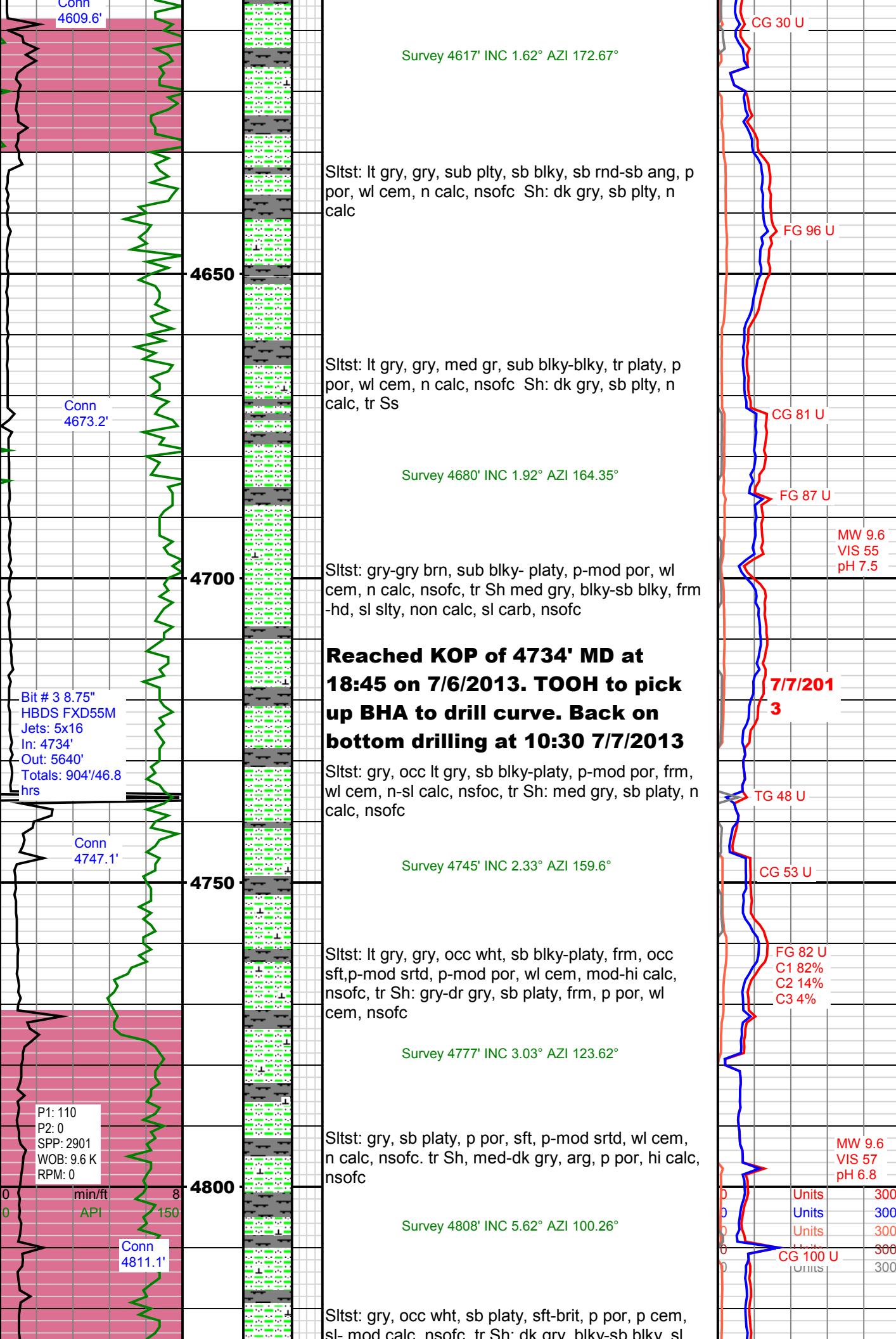
Survey 3946' INC 1.5° AZI 102.5°

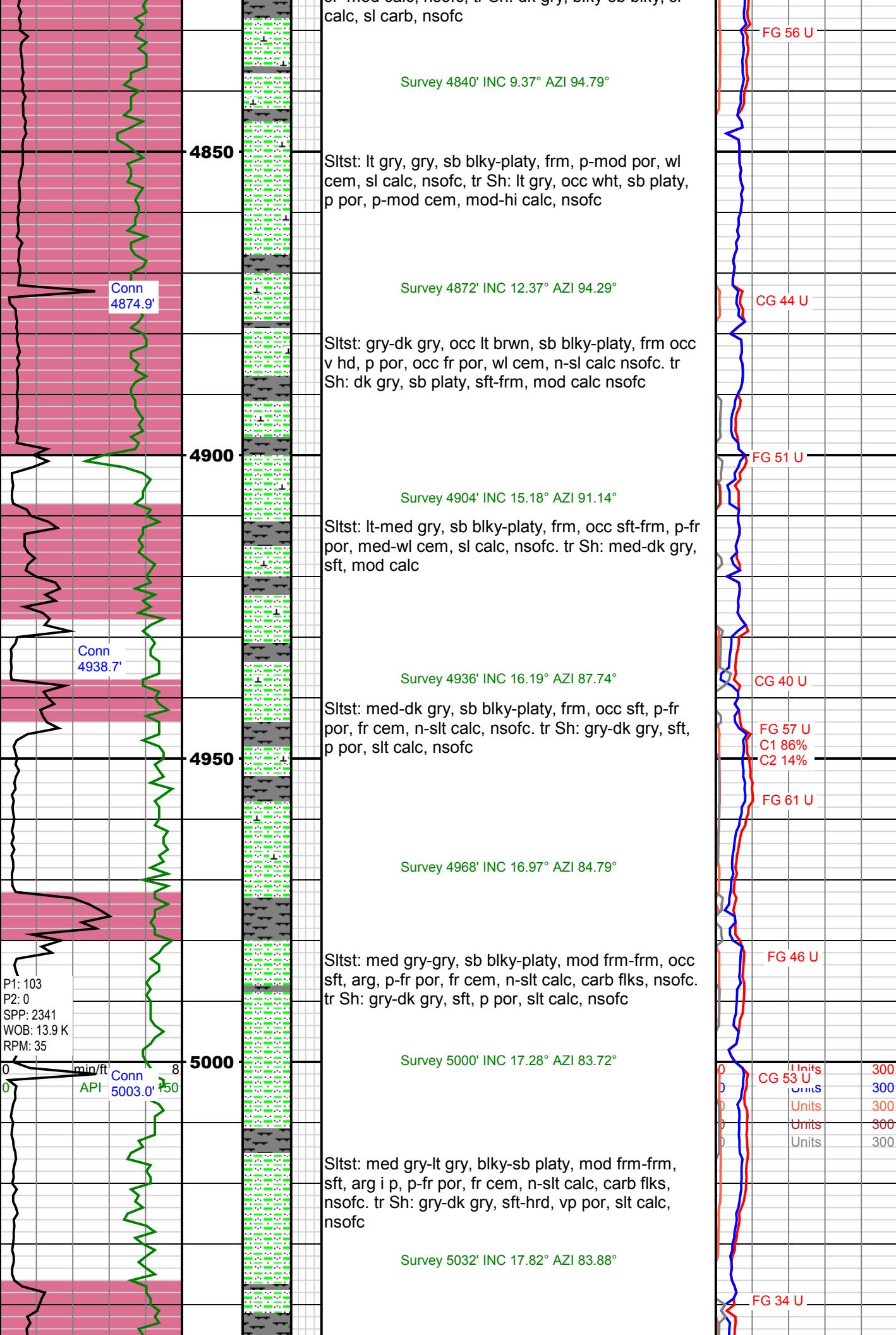
VIS 60  
pH 7.2

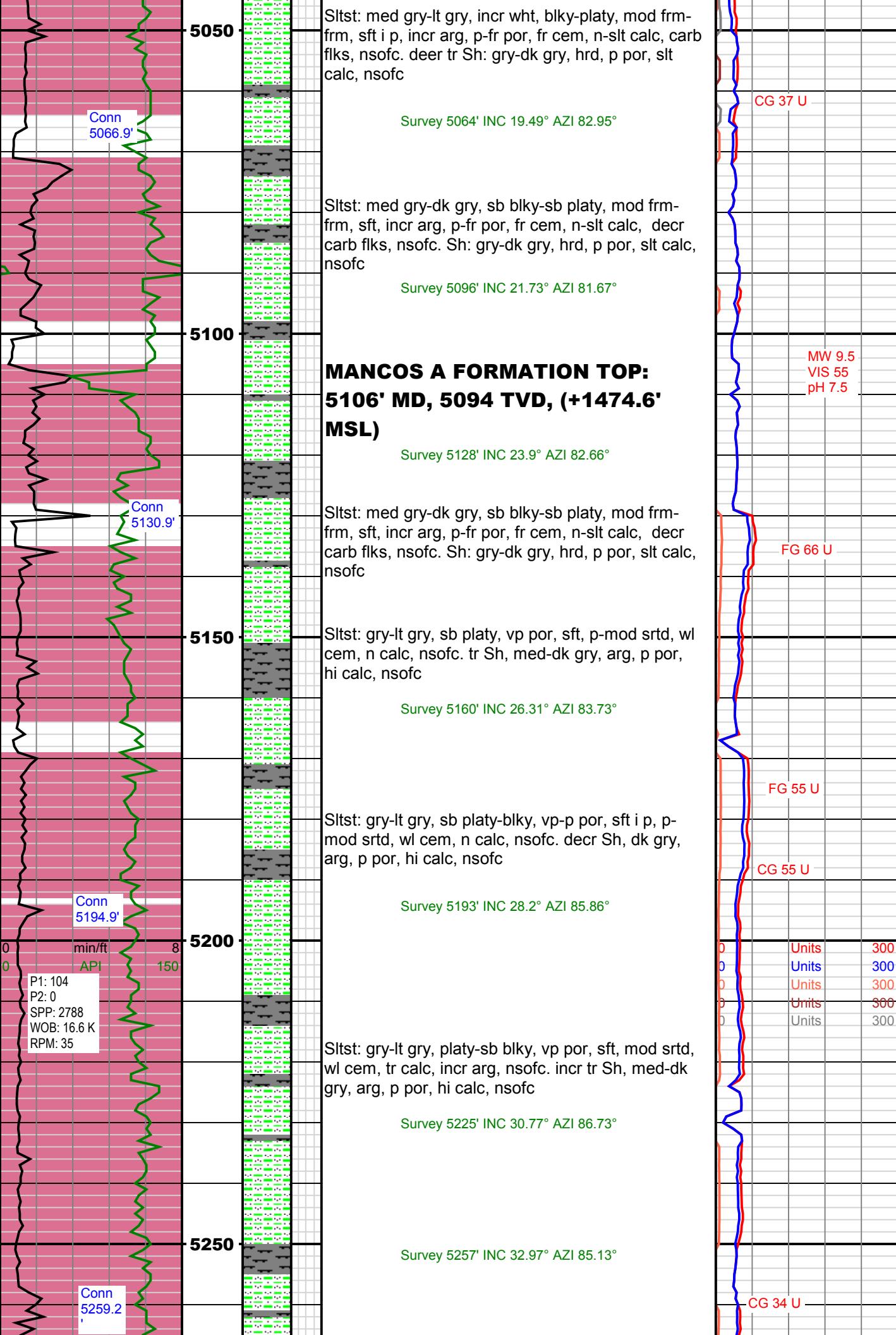


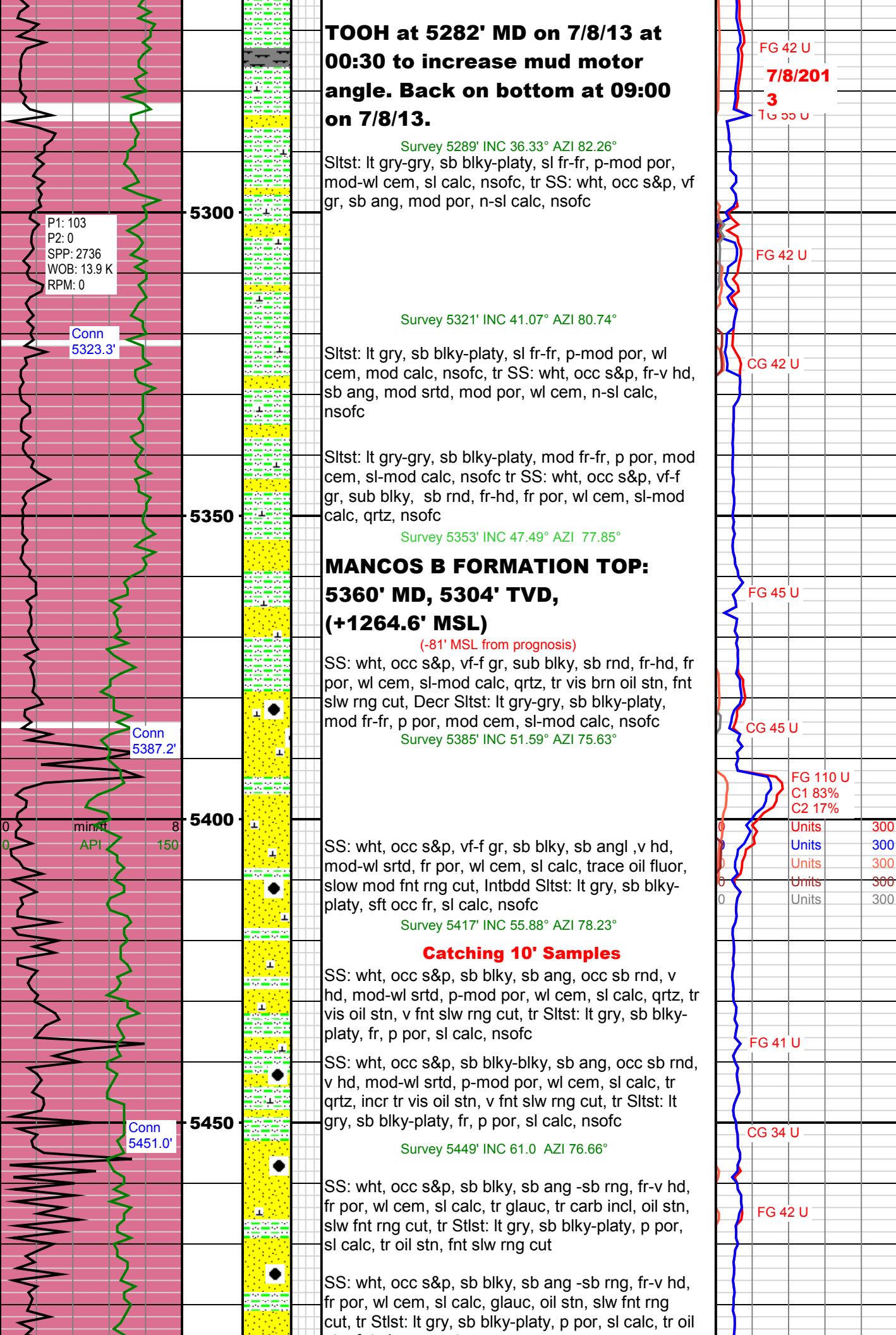




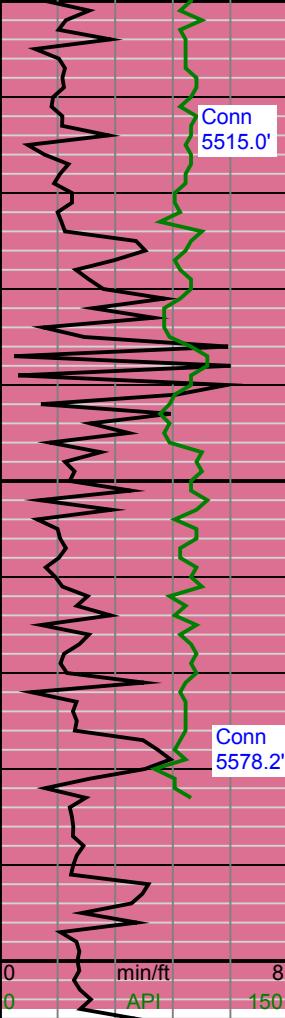








P1: 104  
P2: 0  
SPP: 2789  
WOB: 19.9 K  
RPM: 0



stn, fnt slw rng cut  
Survey 5481' INC 68.1° AZI 80.7474.87°

## TURBIDITE ZONE: 5502' MD, 5378.06' TVD, (+1190.54' MSL) (-121.5' MSL from prognosis)

SS: wht, occ s&p, sb blk, sb ang-sb rnd, fr-v hd, mod srt, occ wl srt, fr por, wl cem, sl calc, tr glauc, sl oil stn, tr Sltst: lt gry, sb blk-platy, p por, sl calc

Survey 5512' INC 74.22° AZI 74.76°

SS: wht, clr grs, gry, s&p, vf-f gr, sb blk-sb plty, sft-frm, mod srt, p-fr por, sl calc, tr glauc, tr carb incl, slw fnt rng cut, tr oil stn, Sltst: dk gy, gy, sb blk, sb plty, frm, sl brit, tr sdy, n por, sl calc, nsofc  
SS: wht, clr grs, gry, s&p, vf-f gr, sb blk-sb plty, sft-frm, mod srt, p-fr por, sl calc, tr glauc, tr carb incl, slw fnt rng cut, tr oil stn, Decr Sltst: dk gy, gy, sb blk, sb plty, frm, sl brit, bmcg incr sdy, n por, sl calc, nsofc, Tr Sh

Survey 5544' INC 81.52° AZI 74.63°

SS: wht, clr grs, lt gry, s&p, vf gr, sb blk-sb plty, sft-frm, mod srt, p-fr por, sl calc, tr glauc, tr carb incl, incr slw fnt rng cut, incr tr oil stn, Decr Sltst: dk gy, gy, sb blk, sb plty, frm, sl brit, bmcg incr sdy, n por, sl calc, nsofc, Tr Sh

Survey 5574' INC 88.15° AZI 75.01°

SS: wht, clr grs, s&p, f gr, blk-sb plty, sft-frm, mod srt, p-fr por, sl calc, tr glauc, tr carb incl, slw fnt rng cut, tr oil stn, Decr Sltst: dk gy, gy, sb blk, sb plty, frm, sl brit, bmcg incr sdy, n por, sl calc, nsofc, Tr Sh

SS: wht, clr grs, lt gry occ s&p, sb blk, sb ang-sb rnd, fr-v hd, mod srt, occ wl srt, fr por, wl cem, sl calc, tr glauc, sl oil stn, tr Sltst: lt gry, sb blk-platy, p por, sl calc, Tr sh

SS: wht-lt gy, clr grs, occ s&p, sb blk, sb ang-sb rnd, frm, mod srt, mod wl srt, fr por, wl cem, sl calc, tr glauc, sl oil stn, tr Sltst: gry-dk gy, sb blk-platy, p por, sl calc, Tr sh

MW 9.6  
VIS 68  
pH 6.8

CG 38 U  
C1 47%  
C2 0%  
C3 17%  
C4 36%

Gas Trap Test

CG 21 U

|         | Units | 300 |
|---------|-------|-----|
| FG 26 U | Jnits | 300 |
|         | Units | 300 |
|         | Units | 300 |
|         | Units | 300 |

Gas Trap Test

**KGH  
Operating  
Company**

**Meagher 14-  
1H**

**Landed Curve at 23:15 on  
7/8/2013 at 5640' MD, 5389.88'  
TVD, (+1178.72' MSL), 91.52° Inc,  
74.63° Azi.  
Landing Point Location: 4664.06'  
FNL & 3234.25' FWL, Section 14,  
T 1 S, R 104 W.**

**Brara  
Geologic  
Consulting**

**Aztec Drilling  
Rig # 920**