GEOSEARCH LOGGING INC.

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

Well Name:	Windoes 2244H		
Location:	Harrison County, WV		
License Number:	47-033-05406	Region:	Appalachia
Spud Date:	12/18/2010	Drilling Completed:	
Surface Coordinates:	Lat: 39.1273167 Long		
Bottom Hole Coordinates:			
Ground Elevation (ft):	1,324'	K.B. Elevation (ft):	1,340'
Logged Interval (ft):	2,670' To:	Total Depth (ft):	
Formation:	Marcellus		
Type of Drilling Fluid:	Air Drilling, Oil Based Mud		

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: XTO Energy
Address: 600 E. Exchange Ave.
Fort Worth, TX 76164

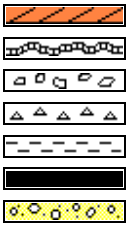
GEOLOGIST

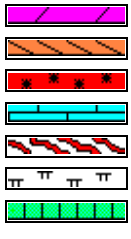
Name: Randy Shuman, Kelley Hartley, Daniel Blake
Company: Geosearch Logging, Inc.
Address: P.O. Box 6005
Edmond, OK 73083-6005
(405) 340-5545

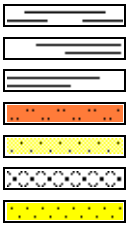
Comments

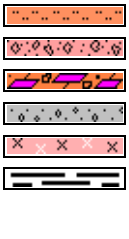
2 Manned Logging Service
Start Logging Date: 12/24/2010
Released Logging Date:
Drilling Contractor: UDI #209
PC193,ML126,HASP V-42, H-33

ROCK TYPES


Anhy
Bent
Brec
Cht
Clyst
Coal
Congl


Dol
Gyp
Igne
Lmst
Meta
Mrlst
Salt


Shale
Shcol
Shgy
Sltst
Ss
Till
Sandstn


Siltstn
Granwash
Dolowash
Cement
Granite
Hotshale

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
- BS Boundst
- C Chalky
- CX Cryxln
- E Earthy
- FX Finexln
- GS Grainst
- L Lithogr
- MX Microxln
- MS Mudst
- PS Packst
- WS Wackest

OTHER SYMBOLS

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

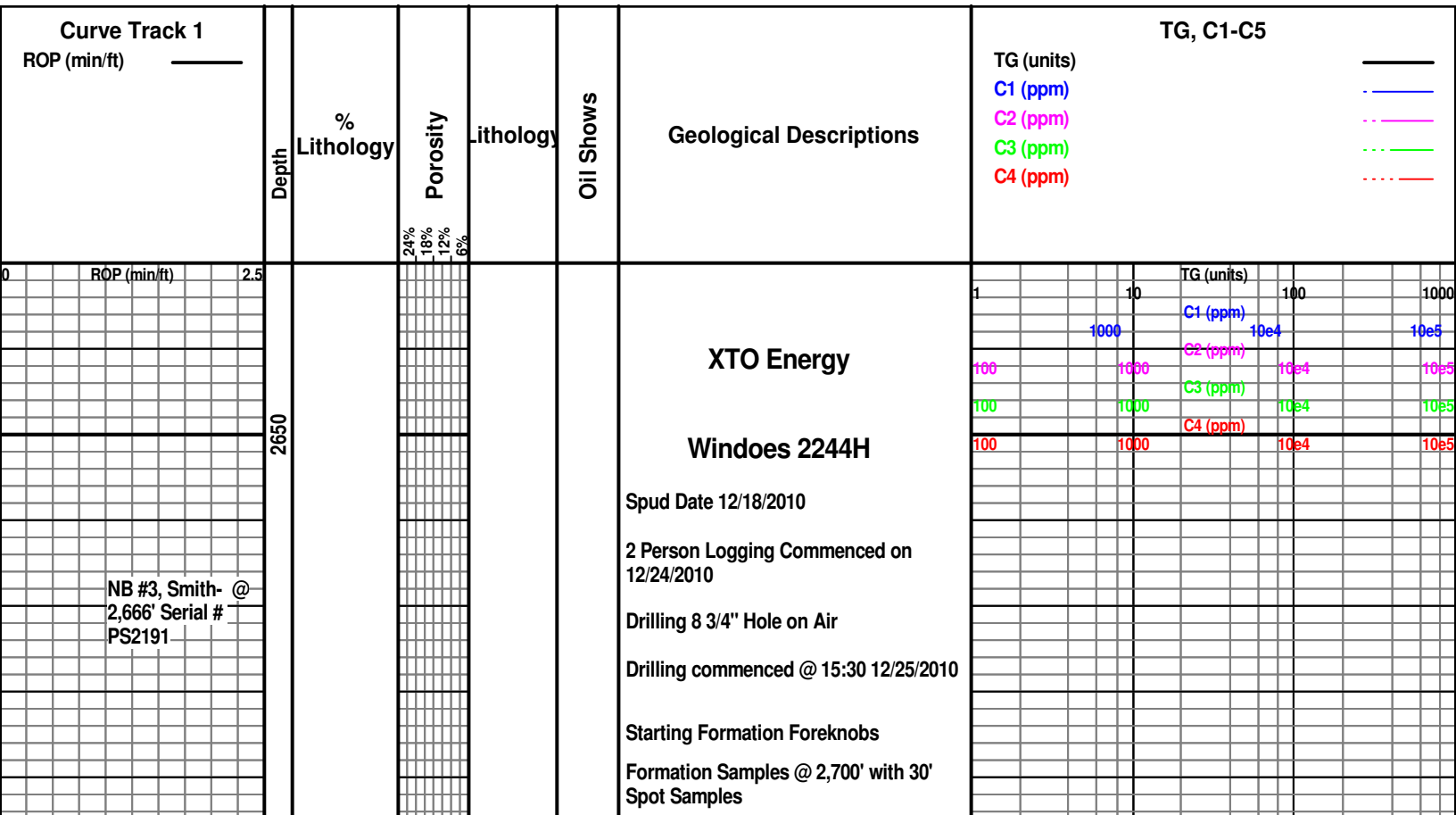
SORTING
- W Well
- M Moderate
- P Poor

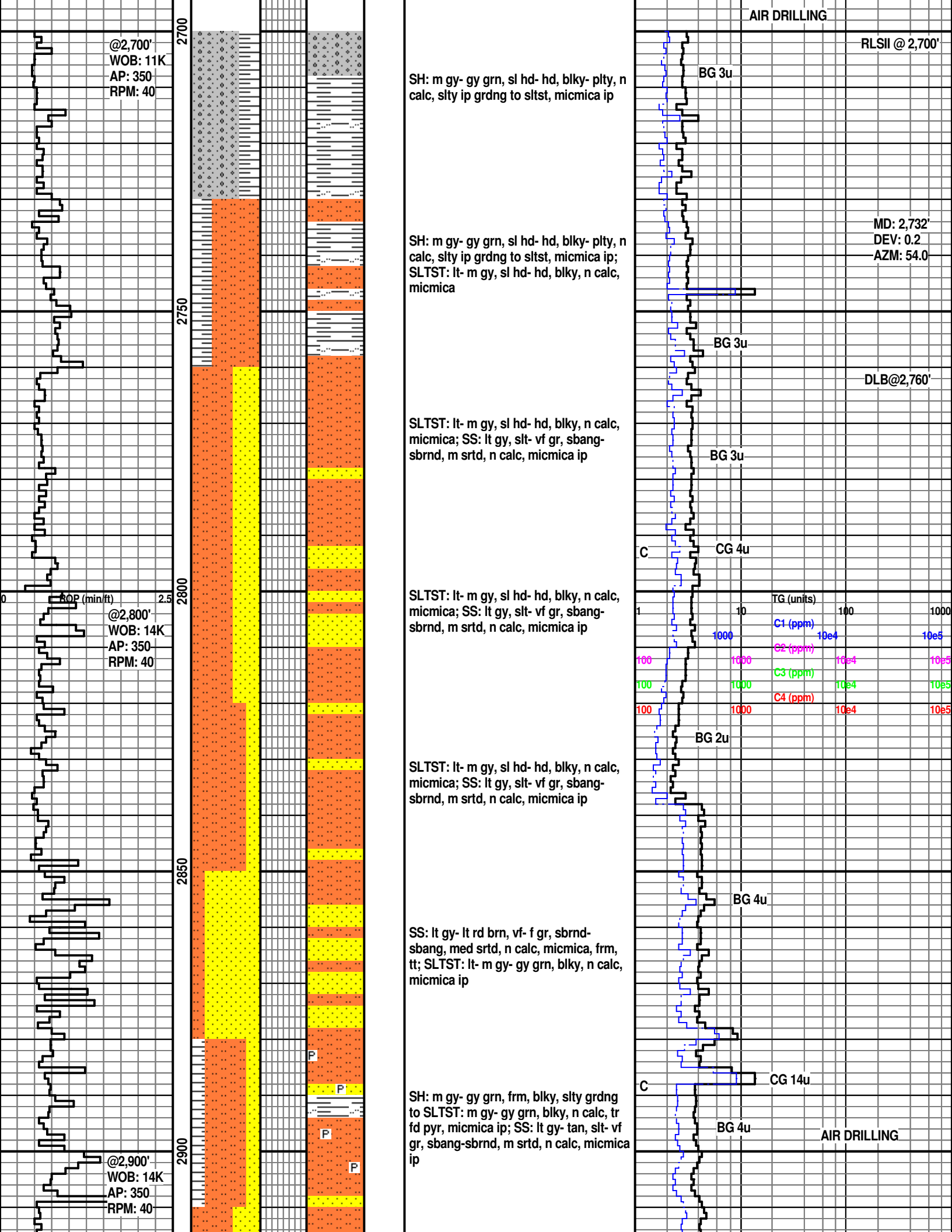
ROUNDING
- R Rounded
- Subrnd
- a Subang
- A Angular

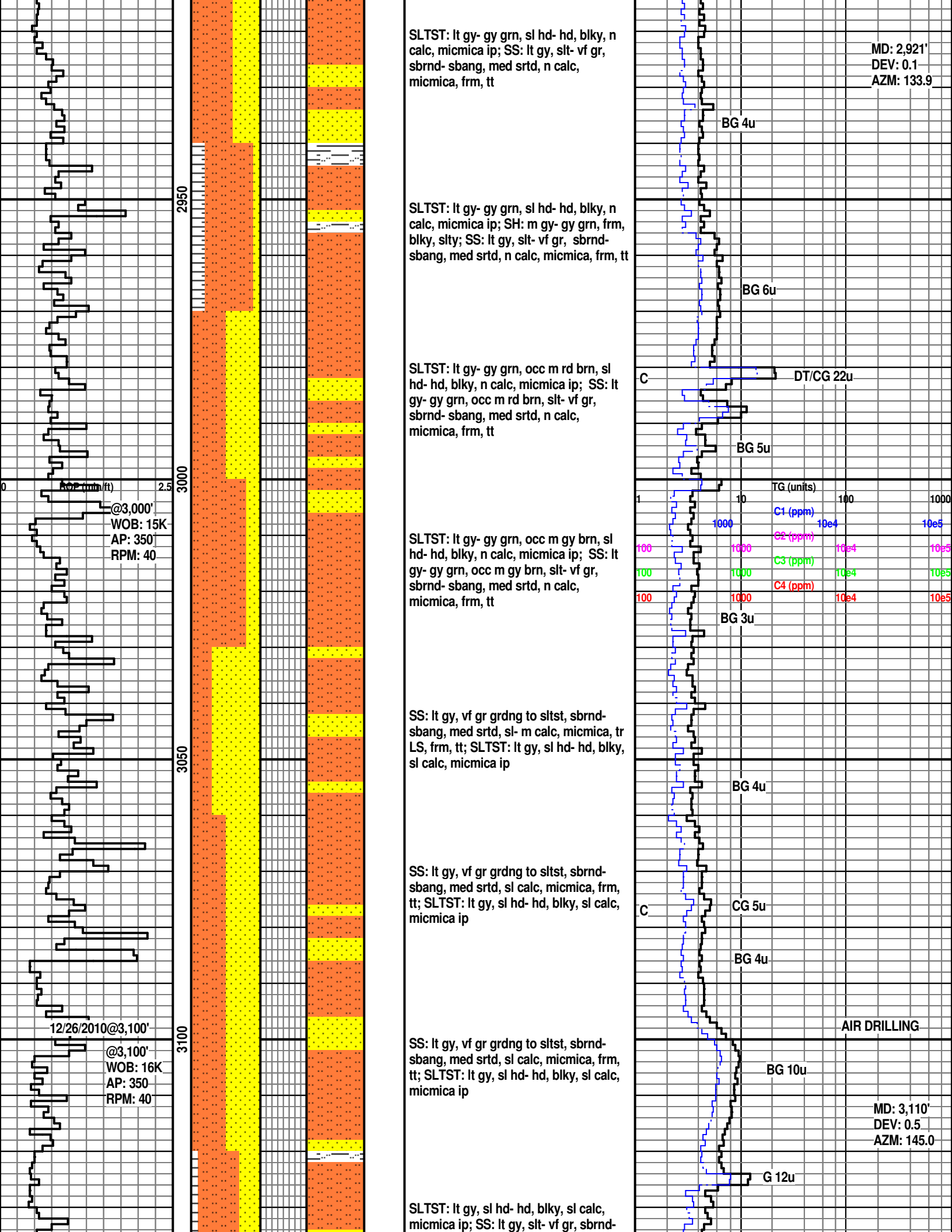
OIL SHOWS
- Even
- Spotted
- Ques
- D Dead
- Poor
- Fair
- Good
- Excelent
- Csgshoe

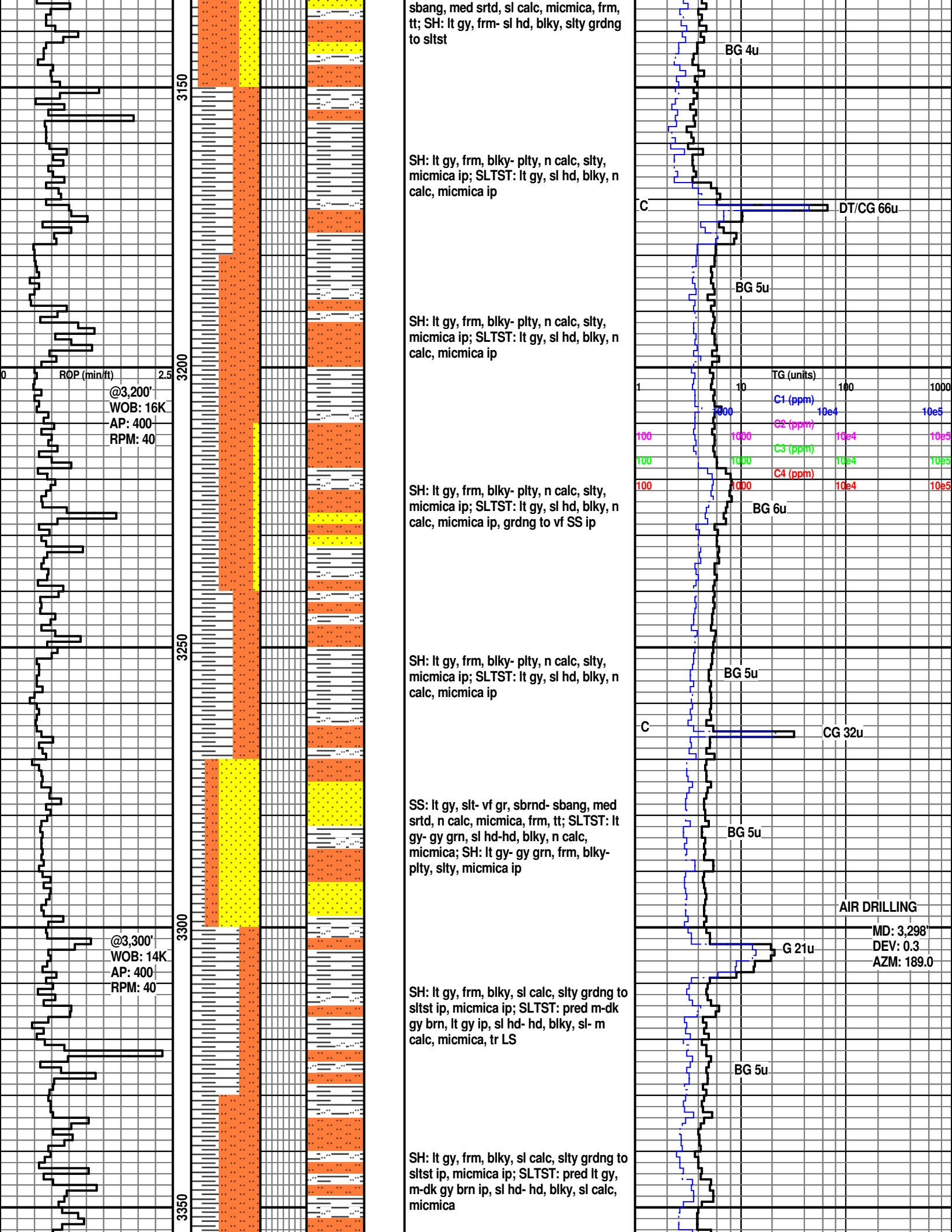
INTERVALS
- Core
- Dst

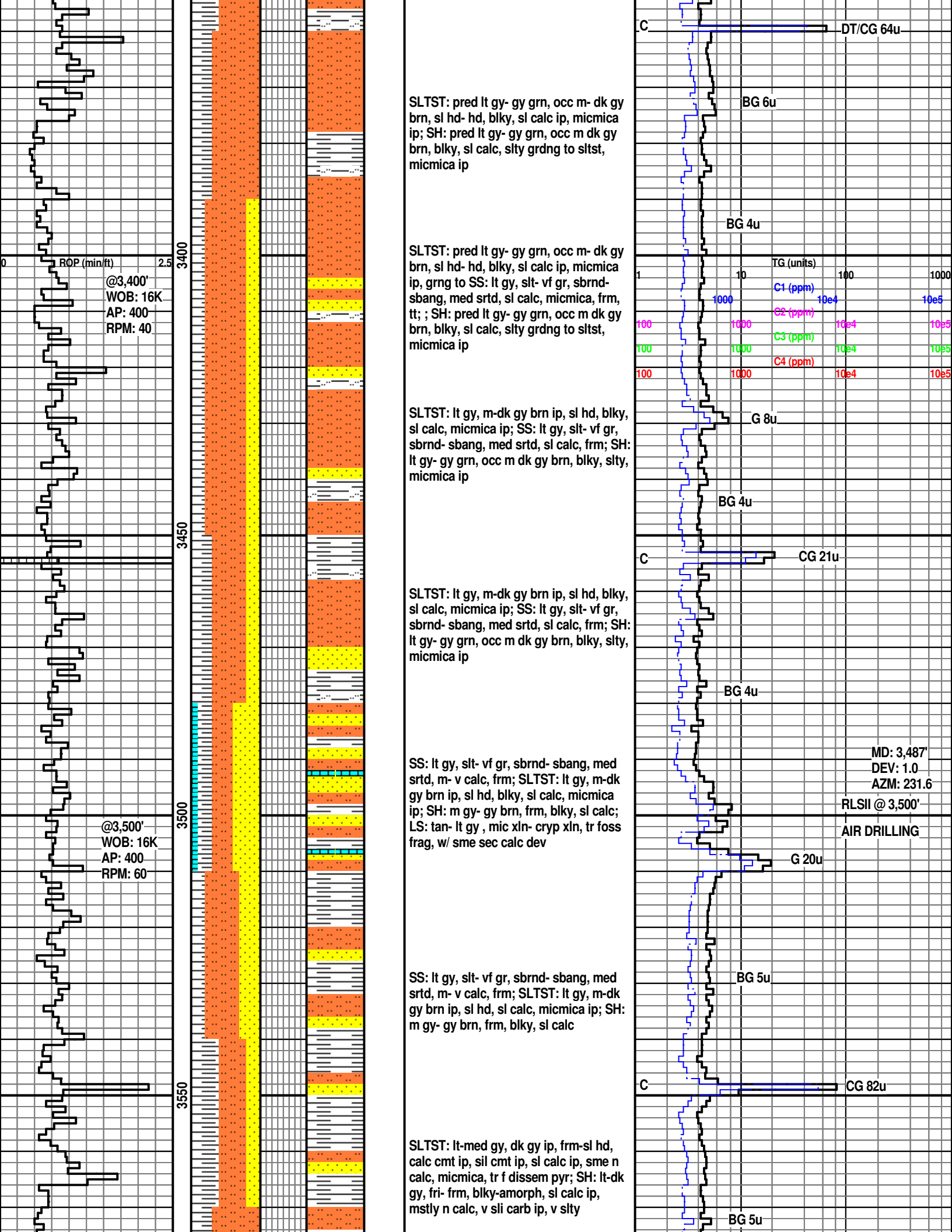
EVENTS
- Rft
- Sidewall

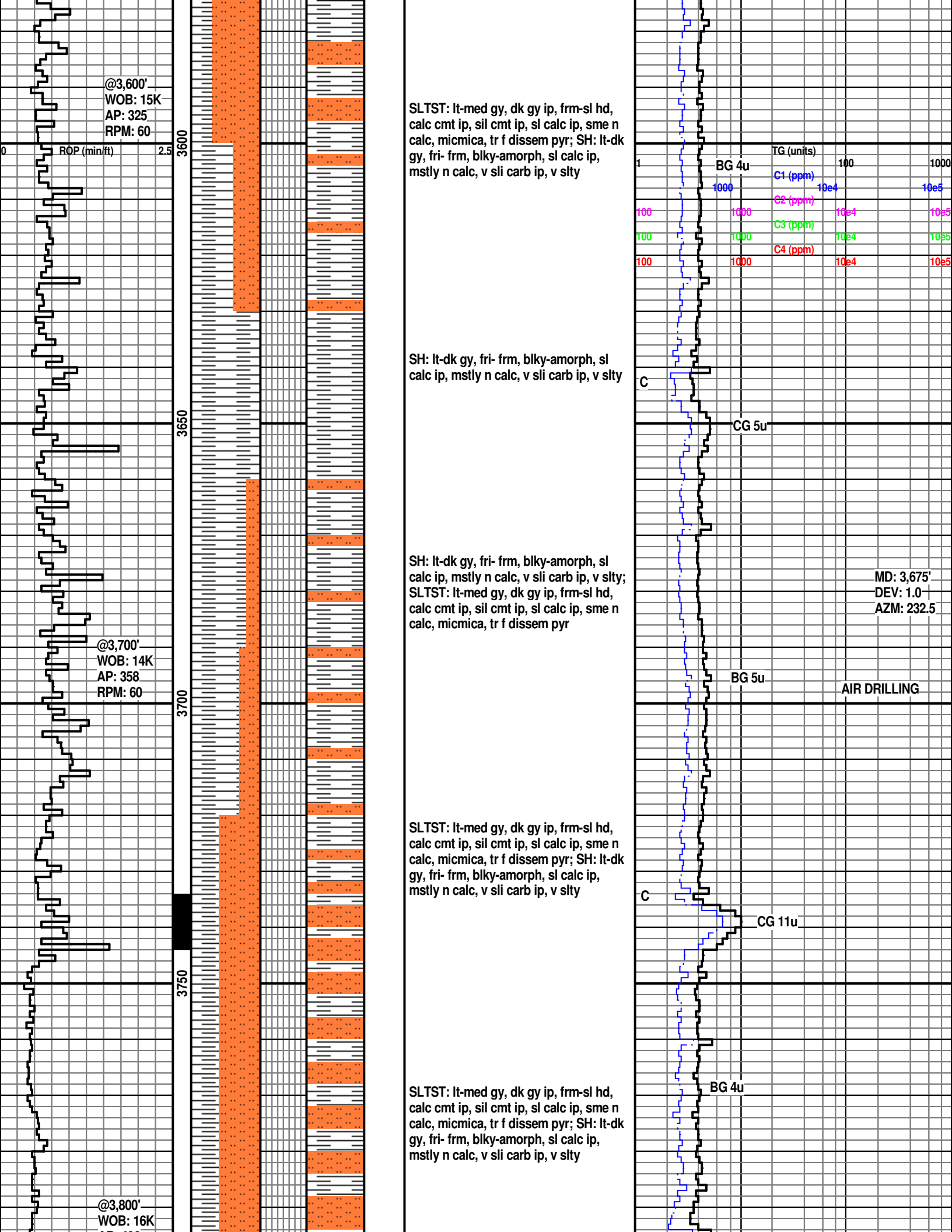


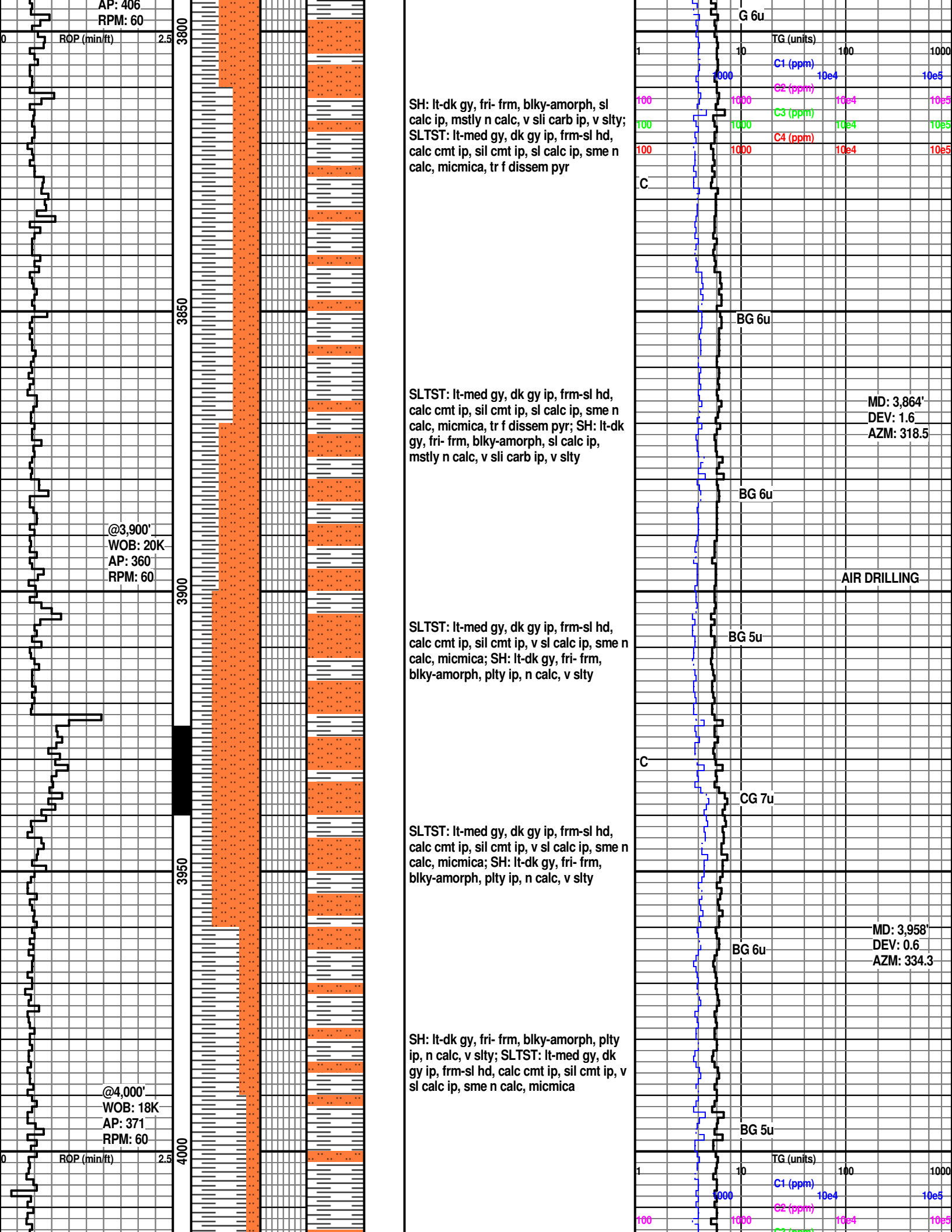

AIR DRILLING
RLSII @ 2,700'
@2,700'
WOB: 11K
AP: 350
RPM: 40
2700
SH: m gy- gy grn, sl hd- hd, blky- plty, n calc, slty ip grdng to sltst, micmica ip
BG 3u
MD: 2,732'
DEV: 0.2
AZM: 54.0
SH: m gy- gy grn, sl hd- hd, blky- plty, n calc, slty ip grdng to sltst, micmica ip; SLTST: lt- m gy, sl hd- hd, blky, n calc, micmica
2750
BG 3u
DLB@2,760'
SLTST: lt- m gy, sl hd- hd, blky, n calc, micmica; SS: lt gy, slt- vf gr, sbang-sbrnd, m srtd, n calc, micmica ip
BG 3u
C
CG 4u
0
ROP (min/ft)
2.5
2800
@2,800'
WOB: 14K
AP: 350
RPM: 40
SLTST: lt- m gy, sl hd- hd, blky, n calc, micmica; SS: lt gy, slt- vf gr, sbang-sbrnd, m srtd, n calc, micmica ip
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
BG 2u
SLTST: lt- m gy, sl hd- hd, blky, n calc, micmica; SS: lt gy, slt- vf gr, sbang-sbrnd, m srtd, n calc, micmica ip
2850
BG 4u
SS: lt gy- lt rd brn, vf- f gr, sbrnd-sbang, med srtd, n calc, micmica, frm, tt; SLTST: lt- m gy- gy grn, blky, n calc, micmica ip
P
P
P
P
C
CG 14u
SH: m gy- gy grn, frm, blky, slty grdng to SLTST: m gy- gy grn, blky, n calc, tr fd pyr, micmica ip; SS: lt gy- tan, slt- vf gr, sbang-sbrnd, m srtd, n calc, micmica ip
BG 4u
AIR DRILLING
2900
@2,900'
WOB: 14K
AP: 350
RPM: 40


SLTST: lt gy- gy grn, sl hd- hd, blky, n calc, micmica ip; SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, n calc, micmica, frm, tt
MD: 2,921'
DEV: 0.1
AZM: 133.9
BG 4u
SLTST: lt gy- gy grn, sl hd- hd, blky, n calc, micmica ip; SH: m gy- gy grn, frm, blky, slty; SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, n calc, micmica, frm, tt
BG 6u
SLTST: lt gy- gy grn, occ m rd brn, sl hd- hd, blky, n calc, micmica ip; SS: lt gy- gy grn, occ m rd brn, slt- vf gr, sbrnd- sbang, med srtd, n calc, micmica, frm, tt
C
DT/CG 22u
BG 5u
2950
3000
0
ROP (min/ft)
2.5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
@3,000'
WOB: 15K
AP: 350
RPM: 40
SLTST: lt gy- gy grn, occ m gy brn, sl hd- hd, blky, n calc, micmica ip; SS: lt gy- gy grn, occ m gy brn, slt- vf gr, sbrnd- sbang, med srtd, n calc, micmica, frm, tt
BG 3u
SS: lt gy, vf gr grdng to sltst, sbrnd- sbang, med srtd, sl- m calc, micmica, tr LS, frm, tt; SLTST: lt gy, sl hd- hd, blky, sl calc, micmica ip
BG 4u
3050
SS: lt gy, vf gr grdng to sltst, sbrnd- sbang, med srtd, sl calc, micmica, frm, tt; SLTST: lt gy, sl hd- hd, blky, sl calc, micmica ip
C
CG 5u
BG 4u
12/26/2010@3,100'
AIR DRILLING
3100
@3,100'
WOB: 16K
AP: 350
RPM: 40
SS: lt gy, vf gr grdng to sltst, sbrnd- sbang, med srtd, sl calc, micmica, frm, tt; SLTST: lt gy, sl hd- hd, blky, sl calc, micmica ip
BG 10u
MD: 3,110'
DEV: 0.5
AZM: 145.0
G 12u
SLTST: lt gy, sl hd- hd, blky, sl calc, micmica ip; SS: lt gy, slt- vf gr, sbrnd-


sbang, med srtd, sl calc, micmica, frm, tt; SH: lt gy, frm- sl hd, blky, slty grdng to sltst
BG 4u
3150
SH: lt gy, frm, blky- plty, n calc, slty, micmica ip; SLTST: lt gy, sl hd, blky, n calc, micmica ip
C
DT/CG 66u
BG 5u
SH: lt gy, frm, blky- plty, n calc, slty, micmica ip; SLTST: lt gy, sl hd, blky, n calc, micmica ip
0
ROP (min/ft)
2.5
3200
@3,200'
WOB: 16K
AP: 400
RPM: 40
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
SH: lt gy, frm, blky- plty, n calc, slty, micmica ip; SLTST: lt gy, sl hd, blky, n calc, micmica ip, grdng to vf SS ip
BG 6u
3250
SH: lt gy, frm, blky- plty, n calc, slty, micmica ip; SLTST: lt gy, sl hd, blky, n calc, micmica ip
BG 5u
C
CG 32u
SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, n calc, micmica, frm, tt; SLTST: lt gy- gy grn, sl hd-hd, blky, n calc, micmica; SH: lt gy- gy grn, frm, blky- plty, slty, micmica ip
BG 5u
AIR DRILLING
MD: 3,298'
DEV: 0.3
AZM: 189.0
3300
@3,300'
WOB: 14K
AP: 400
RPM: 40
G 21u
SH: lt gy, frm, blky, sl calc, slty grdng to sltst ip, micmica ip; SLTST: pred m-dk gy brn, lt gy ip, sl hd- hd, blky, sl- m calc, micmica, tr LS
BG 5u
SH: lt gy, frm, blky, sl calc, slty grdng to sltst ip, micmica ip; SLTST: pred lt gy, m-dk gy brn ip, sl hd- hd, blky, sl calc, micmica
3350


0
ROP (min/ft)
2.5
3400
@3,400'
WOB: 16K
AP: 400
RPM: 40
3450
3500
@3,500'
WOB: 16K
AP: 400
RPM: 60
3550
SLTST: pred lt gy- gy grn, occ m- dk gy brn, sl hd- hd, blky, sl calc ip, micmica ip; SH: pred lt gy- gy grn, occ m dk gy brn, blky, sl calc, slty grdng to sltst, micmica ip
SLTST: pred lt gy- gy grn, occ m- dk gy brn, sl hd- hd, blky, sl calc ip, micmica ip, grng to SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, sl calc, micmica, frm, tt; ; SH: pred lt gy- gy grn, occ m dk gy brn, blky, sl calc, slty grdng to sltst, micmica ip
SLTST: lt gy, m-dk gy brn ip, sl hd, blky, sl calc, micmica ip; SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, sl calc, frm; SH: lt gy- gy grn, occ m dk gy brn, blky, slty, micmica ip
SLTST: lt gy, m-dk gy brn ip, sl hd, blky, sl calc, micmica ip; SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, sl calc, frm; SH: lt gy- gy grn, occ m dk gy brn, blky, slty, micmica ip
SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, m- v calc, frm; SLTST: lt gy, m-dk gy brn ip, sl hd, blky, sl calc, micmica ip; SH: m gy- gy brn, frm, blky, sl calc; LS: tan- lt gy , mic xln- cryp xln, tr foss frag, w/ sme sec calc dev
SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, m- v calc, frm; SLTST: lt gy, m-dk gy brn ip, sl hd, sl calc, micmica ip; SH: m gy- gy brn, frm, blky, sl calc
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr; SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
C
DT/CG 64u
BG 6u
BG 4u
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
G 8u
BG 4u
C
CG 21u
BG 4u
MD: 3,487'
DEV: 1.0
AZM: 231.6
RLSII @ 3,500'
AIR DRILLING
G 20u
BG 5u
C
CG 82u
BG 5u


@3,600'
WOB: 15K
AP: 325
RPM: 60
0
ROP (min/ft)
2.5
3600
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr; SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
TG (units)
1
100
1000
BG 4u
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
C
3650
CG 5u
SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr
MD: 3,675'
DEV: 1.0
AZM: 232.5
@3,700'
WOB: 14K
AP: 358
RPM: 60
BG 5u
AIR DRILLING
3700
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr; SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
C
CG 11u
3750
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr; SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
BG 4u
@3,800'
WOB: 16K


AP: 406
RPM: 60
0
ROP (min/ft)
2.5
3800
SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr
G 6u
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
C
3850
BG 6u
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, sl calc ip, sme n calc, micmica, tr f dissem pyr; SH: lt-dk gy, fri- frm, blky-amorph, sl calc ip, mstly n calc, v sli carb ip, v slty
MD: 3,864'
DEV: 1.6
AZM: 318.5
BG 6u
@3,900'
WOB: 20K
AP: 360
RPM: 60
AIR DRILLING
3900
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica; SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty
BG 5u
C
CG 7u
3950
SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica; SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty
MD: 3,958'
DEV: 0.6
AZM: 334.3
BG 6u
SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica
@4,000'
WOB: 18K
AP: 371
RPM: 60
BG 5u
4000
0
ROP (min/ft)
2.5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5

C3 (ppm)

C4 (ppm)

100 1000 10e4 10e5

SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica

BG 5u

4050

BG 6u

MD: 4,051'
DEV: 0.8
AZM: 304.4

SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica

@4,100'
WOB: 18K
AP: 373
RPM: 60

SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica

AIR DRILLING

4100

BG 5u

C

CG 7u

SH: lt-dk gy, fri- frm, blky-amorph, plty ip, n calc, v slty; SLTST: lt-med gy, dk gy ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica

BG 5u

4150

MD: 4,146'
DEV: 1.2
AZM: 278.3

Butane Test

SH: lt-dk gy, brn ip, fri- frm, blky-amorph, sli calc, sme n calc, v slty; SLTST: lt-med gy, dk gy-dk brn ip, frm-sl hd, calc cmt ip, sil cmt ip, v sl calc ip, sme n calc, micmica

@4,200'
WOB: 19K
AP: 370
RPM: 60

4200

Butane Test

0 ROP (min/ft) 2.5

TG (units)

1 10 100 1000

C1 (ppm)

C

1000 10e4 10e5

C2 (ppm)

100 1000 10e4 10e5

C3 (ppm)

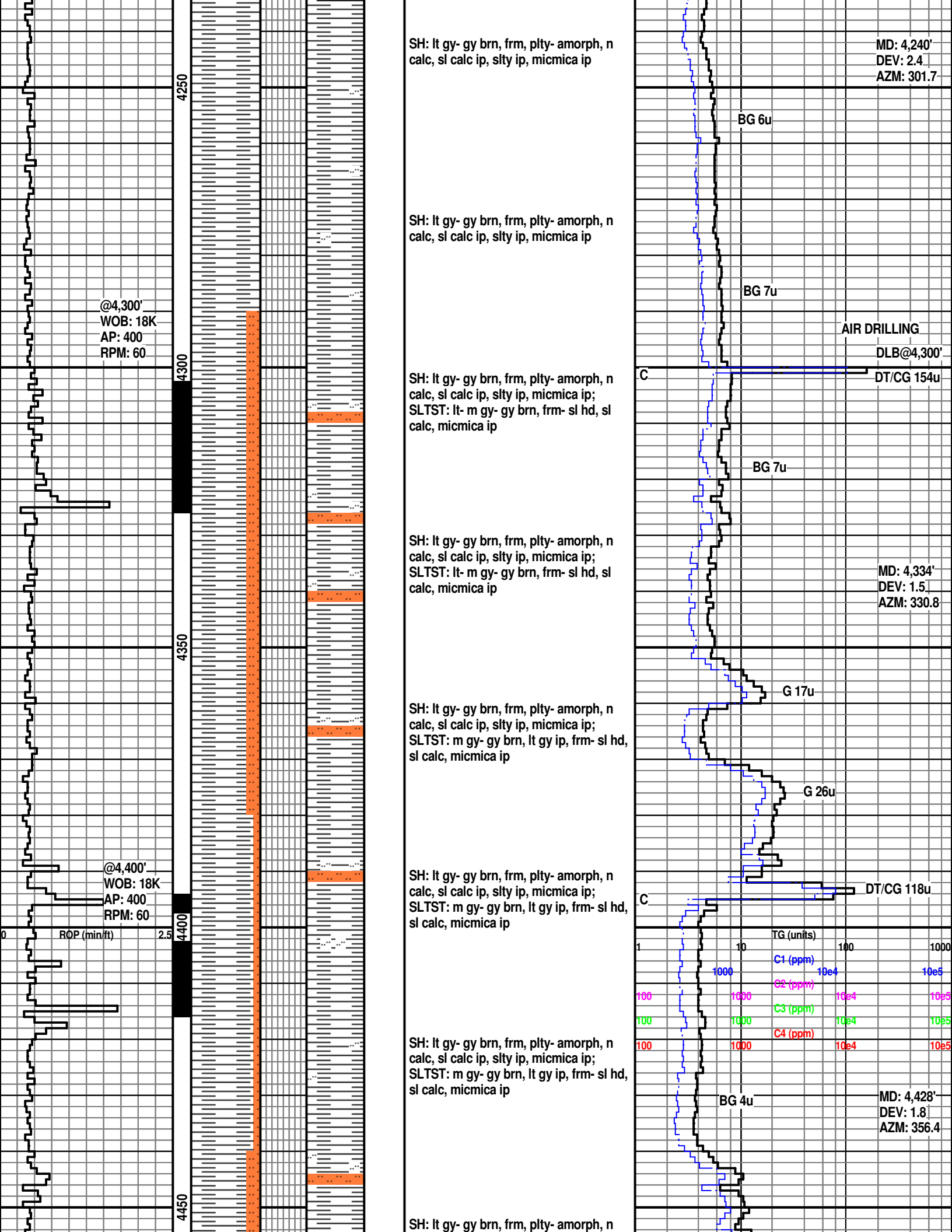
100 1000 10e4 10e5

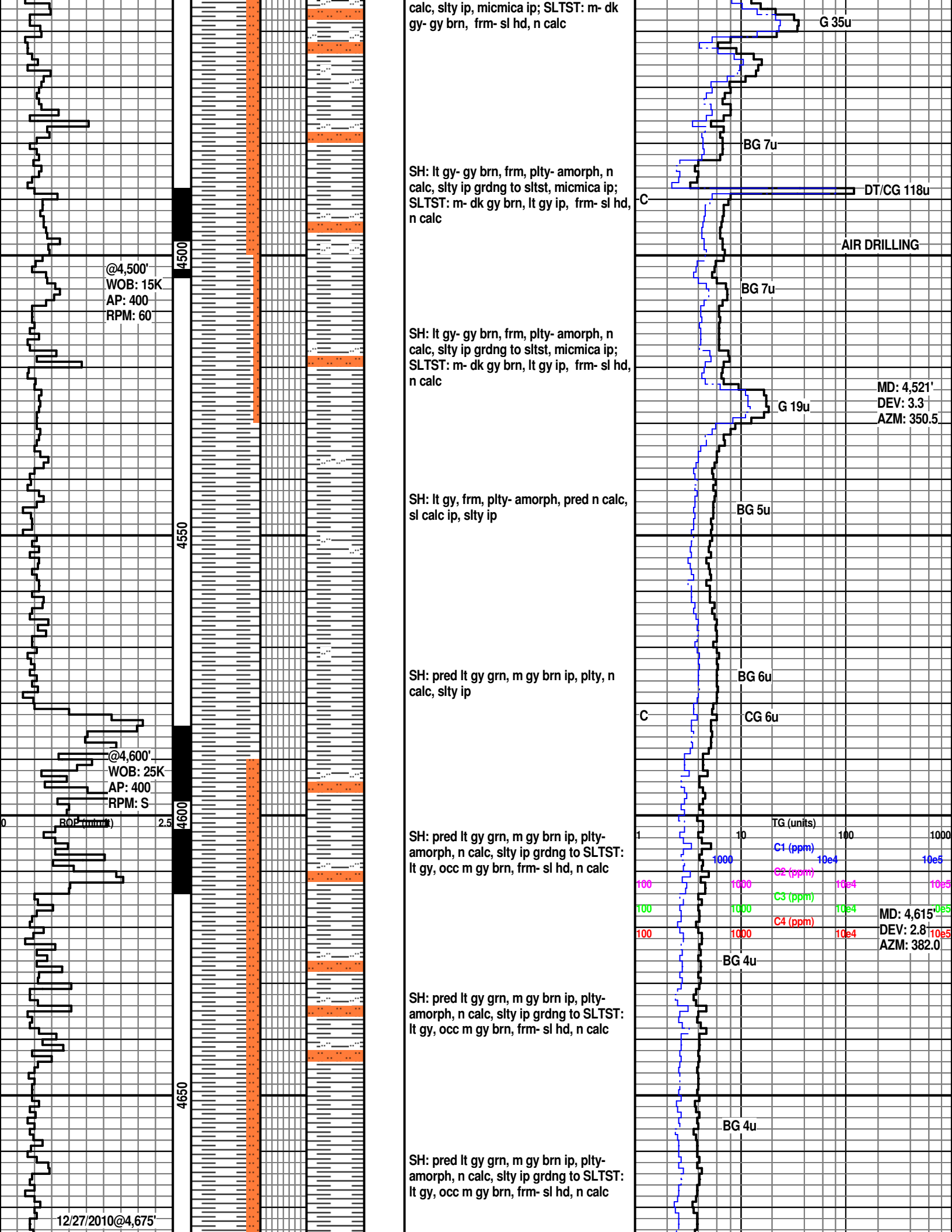
C4 (ppm)

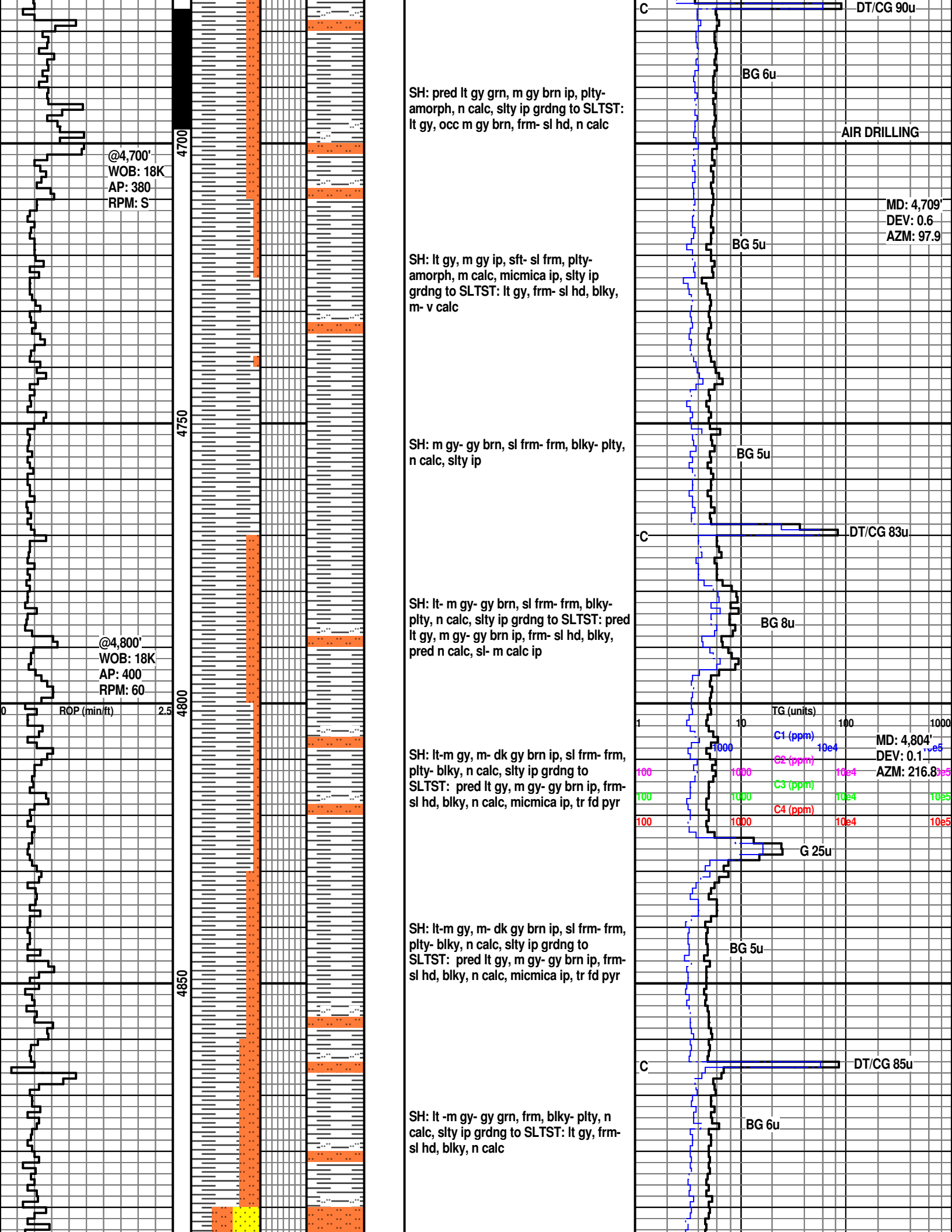
100 1000 10e4 10e5

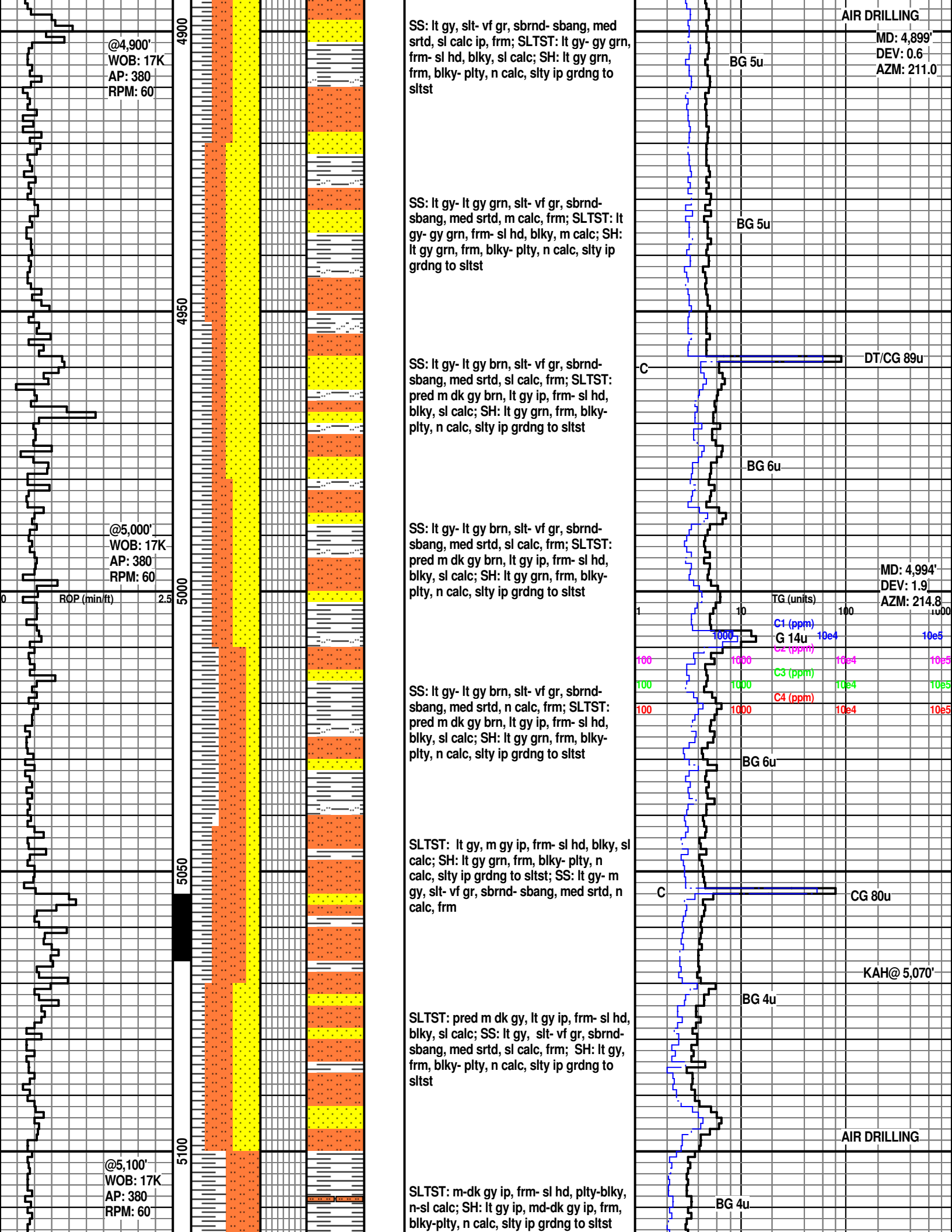
SH: lt gy, fri- frm, plty-amorph, sme v sli calc, mstly n calc, sme slt

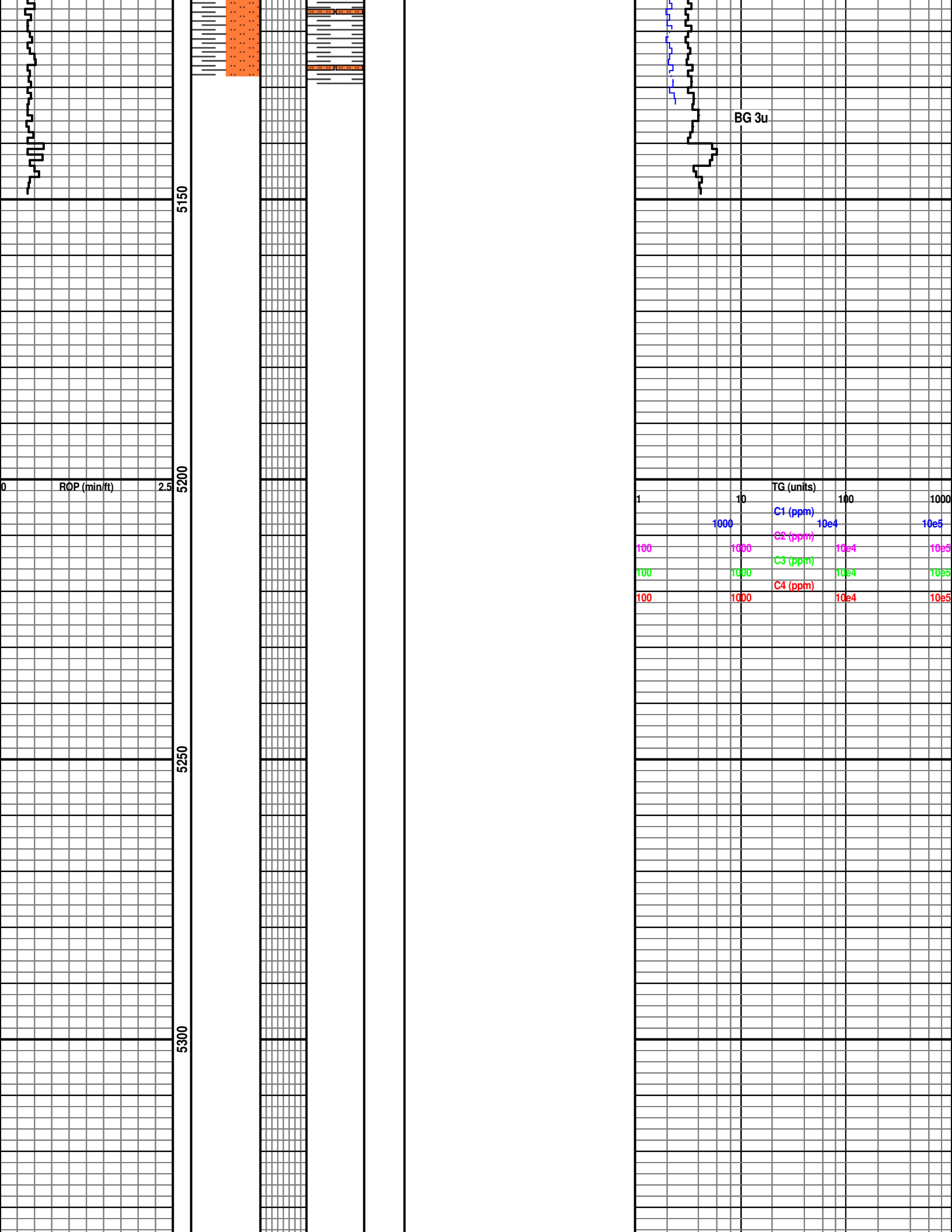
BG 5u


4250
4300
4350
4400
4450
@4,300'
WOB: 18K
AP: 400
RPM: 60
@4,400'
WOB: 18K
AP: 400
RPM: 60
0
ROP (min/ft)
2.5
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip; SLTST: lt- m gy- gy brn, frm- sl hd, sl calc, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip; SLTST: lt- m gy- gy brn, frm- sl hd, sl calc, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip; SLTST: m gy- gy brn, lt gy ip, frm- sl hd, sl calc, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip; SLTST: m gy- gy brn, lt gy ip, frm- sl hd, sl calc, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n calc, sl calc ip, slty ip, micmica ip; SLTST: m gy- gy brn, lt gy ip, frm- sl hd, sl calc, micmica ip
SH: lt gy- gy brn, frm, plty- amorph, n
MD: 4,240'
DEV: 2.4
AZM: 301.7
BG 6u
BG 7u
AIR DRILLING
DLB@4,300'
C
DT/CG 154u
BG 7u
MD: 4,334'
DEV: 1.5
AZM: 330.8
G 17u
G 26u
C
DT/CG 118u
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
BG 4u
MD: 4,428'
DEV: 1.8
AZM: 356.4

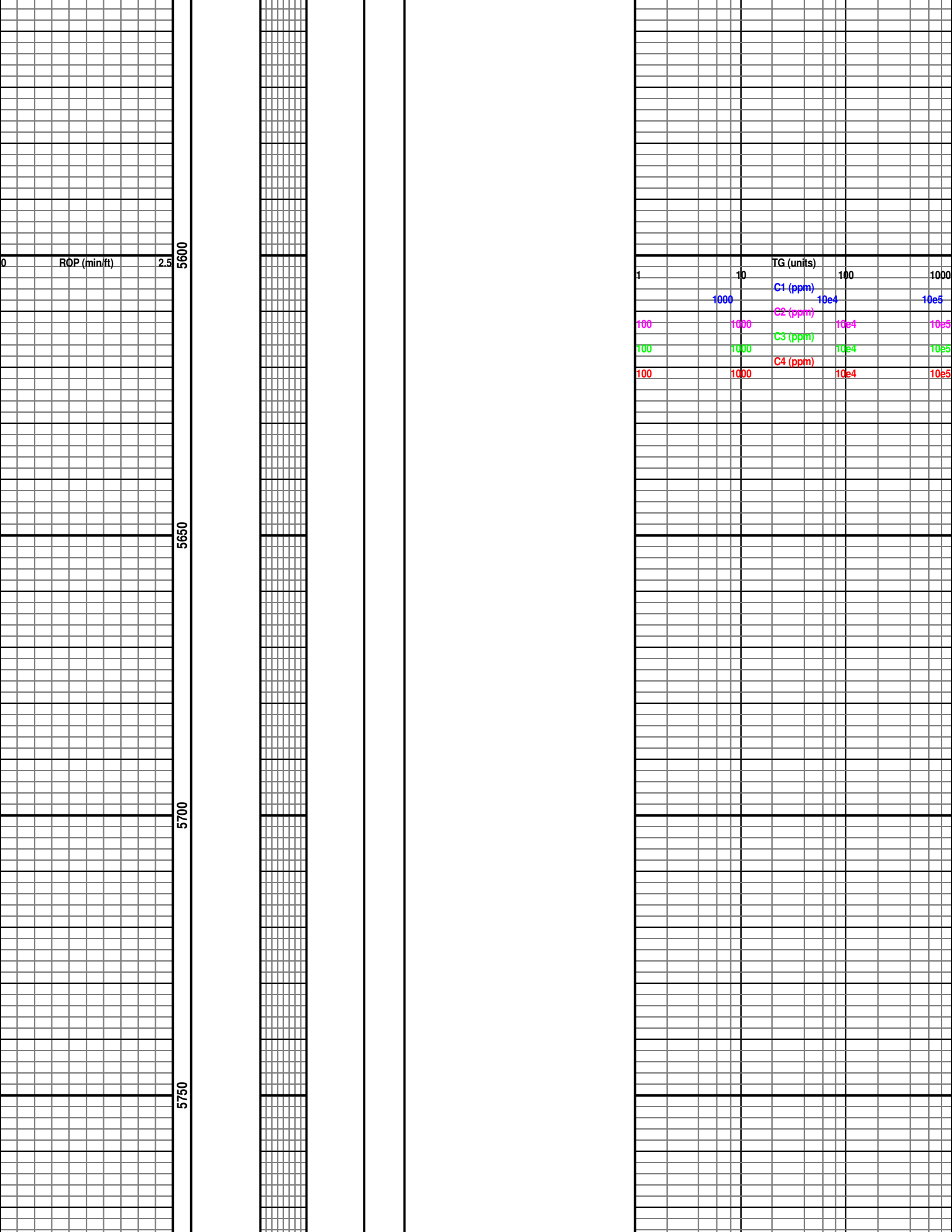

calc, slty ip, micmica ip; SLTST: m- dk gy- gy brn, frm- sl hd, n calc
G 35u
BG 7u
SH: lt gy- gy brn, frm, plty- amorph, n calc, slty ip grdng to sltst, micmica ip; SLTST: m- dk gy brn, lt gy ip, frm- sl hd, n calc
C
DT/CG 118u
AIR DRILLING
4500
@4,500'
WOB: 15K
AP: 400
RPM: 60
BG 7u
SH: lt gy- gy brn, frm, plty- amorph, n calc, slty ip grdng to sltst, micmica ip; SLTST: m- dk gy brn, lt gy ip, frm- sl hd, n calc
MD: 4,521'
DEV: 3.3
AZM: 350.5
G 19u
SH: lt gy, frm, plty- amorph, pred n calc, sl calc ip, slty ip
BG 5u
4550
SH: pred lt gy grn, m gy brn ip, plty, n calc, slty ip
BG 6u
C
CG 6u
@4,600'
WOB: 25K
AP: 400
RPM: S
4600
0
ROP (min/ft)
2.5
SH: pred lt gy grn, m gy brn ip, plty- amorph, n calc, slty ip grdng to SLTST: lt gy, occ m gy brn, frm- sl hd, n calc
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
MD: 4,615'
DEV: 2.8
AZM: 382.0
BG 4u
SH: pred lt gy grn, m gy brn ip, plty- amorph, n calc, slty ip grdng to SLTST: lt gy, occ m gy brn, frm- sl hd, n calc
4650
BG 4u
SH: pred lt gy grn, m gy brn ip, plty- amorph, n calc, slty ip grdng to SLTST: lt gy, occ m gy brn, frm- sl hd, n calc
12/27/2010@4,675'

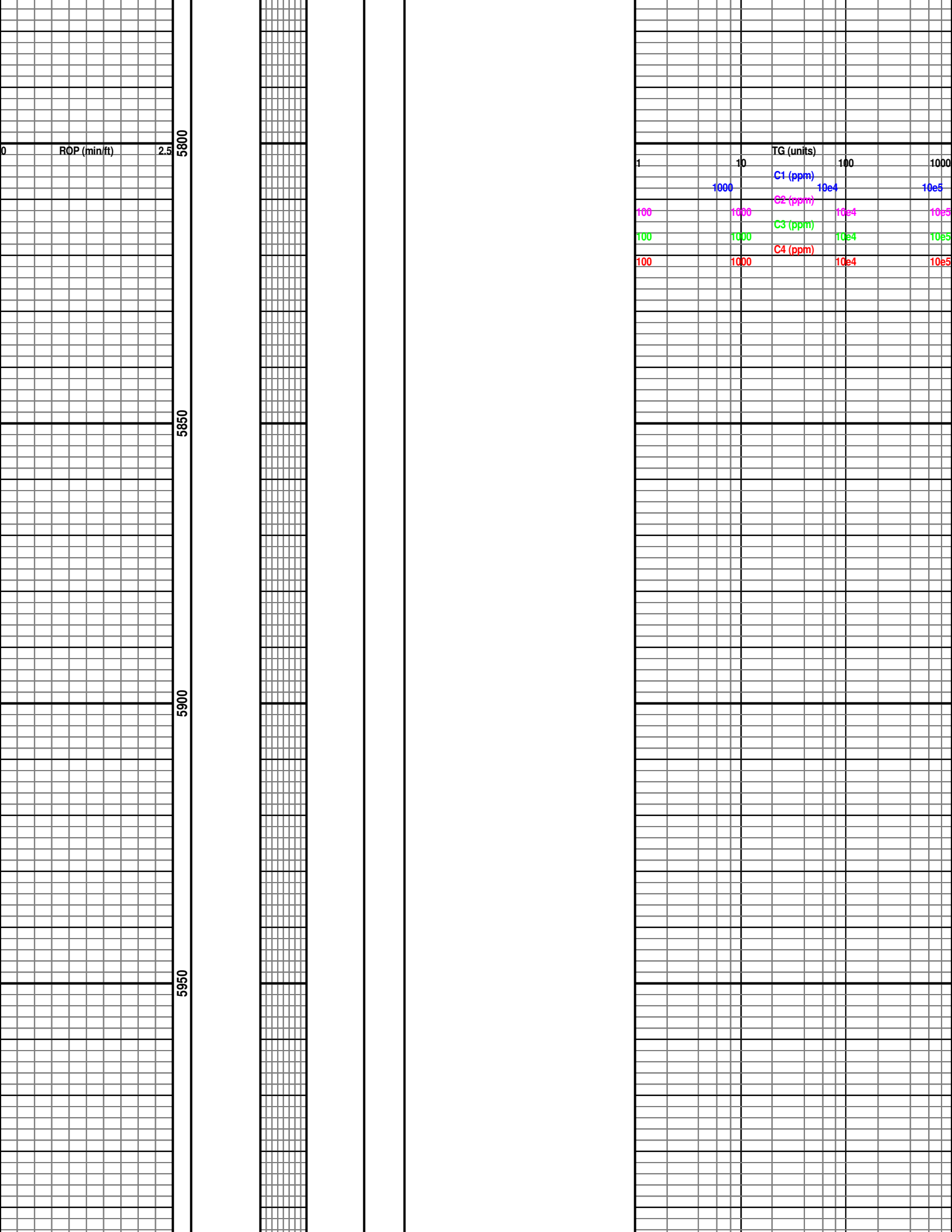

4700
4750
4800
4850
@4,700'
WOB: 18K
AP: 380
RPM: S
@4,800'
WOB: 18K
AP: 400
RPM: 60
0
ROP (min/ft)
2.5
SH: pred lt gy grn, m gy brn ip, plty-amorph, n calc, slty ip grdng to SLTST: lt gy, occ m gy brn, frm- sl hd, n calc
SH: lt gy, m gy ip, sft- sl frm, plty-amorph, m calc, micmica ip, slty ip grdng to SLTST: lt gy, frm- sl hd, blky, m- v calc
SH: m gy- gy brn, sl frm- frm, blky- plty, n calc, slty ip
SH: lt- m gy- gy brn, sl frm- frm, blky-plty, n calc, slty ip grdng to SLTST: pred lt gy, m gy- gy brn ip, frm- sl hd, blky, pred n calc, sl- m calc ip
SH: lt-m gy, m- dk gy brn ip, sl frm- frm, plty- blky, n calc, slty ip grdng to SLTST: pred lt gy, m gy- gy brn ip, frm- sl hd, blky, n calc, micmica ip, tr fd pyr
SH: lt-m gy, m- dk gy brn ip, sl frm- frm, plty- blky, n calc, slty ip grdng to SLTST: pred lt gy, m gy- gy brn ip, frm- sl hd, blky, n calc, micmica ip, tr fd pyr
SH: lt -m gy- gy grn, frm, blky- plty, n calc, slty ip grdng to SLTST: lt gy, frm- sl hd, blky, n calc
C
DT/CG 90u
BG 6u
AIR DRILLING
MD: 4,709'
DEV: 0.6
AZM: 97.9
BG 5u
BG 5u
C
DT/CG 83u
BG 8u
TG (units)
1
10
100
1000
C1 (ppm)
C2 (ppm)
C3 (ppm)
C4 (ppm)
1000
10e4
10e5
100
MD: 4,804'
DEV: 0.1
AZM: 216.8
G 25u
BG 5u
C
DT/CG 85u
BG 6u

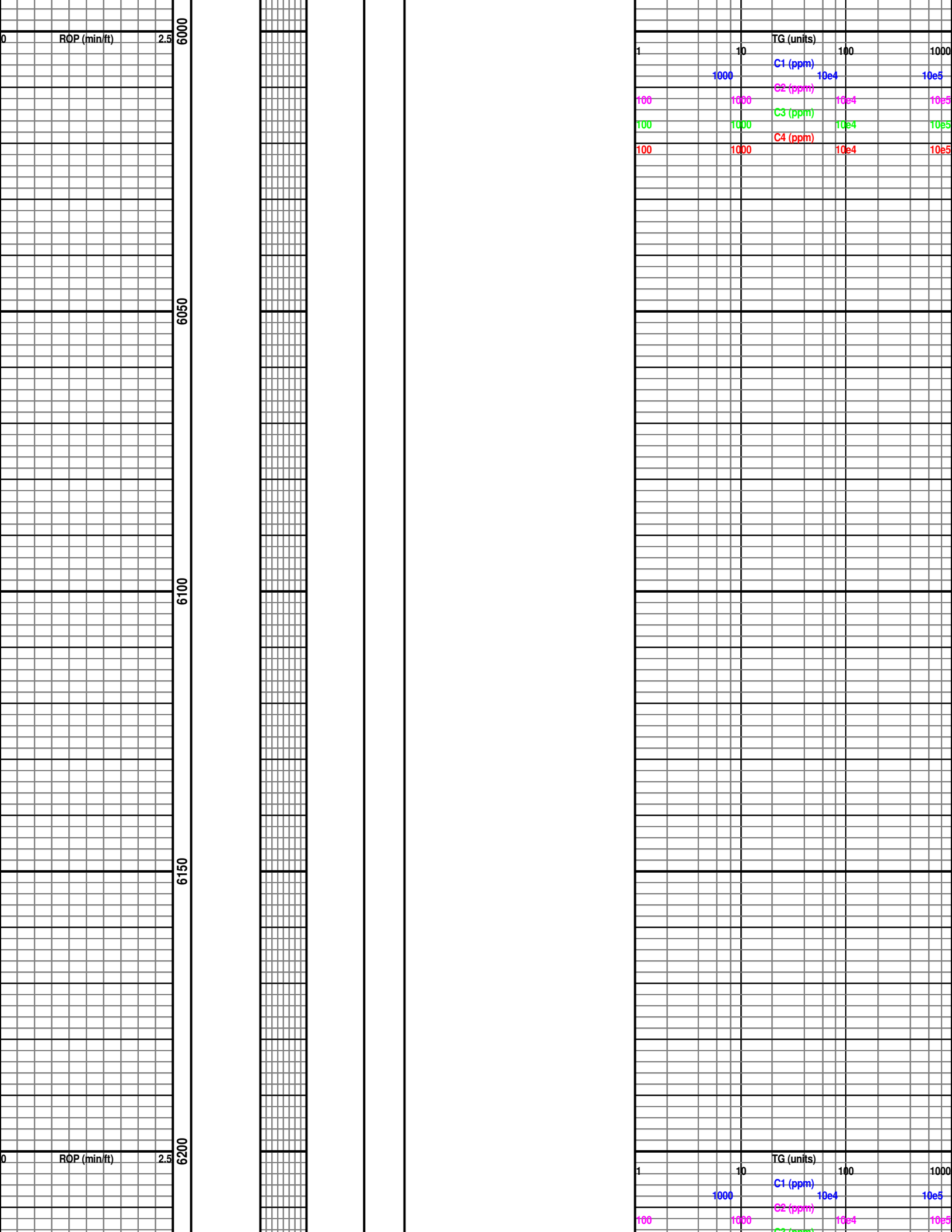

@4,900'
WOB: 17K
AP: 380
RPM: 60
@5,000'
WOB: 17K
AP: 380
RPM: 60
@5,100'
WOB: 17K
AP: 380
RPM: 60
0
ROP (min/ft)
2.5
4900
4950
5000
5050
5100
SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, sl calc ip, frm; SLTST: lt gy- gy grn, frm- sl hd, blky, sl calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst
SS: lt gy- lt gy grn, slt- vf gr, sbrnd- sbang, med srtd, m calc, frm; SLTST: lt gy- gy grn, frm- sl hd, blky, m calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst
SS: lt gy- lt gy brn, slt- vf gr, sbrnd- sbang, med srtd, sl calc, frm; SLTST: pred m dk gy brn, lt gy ip, frm- sl hd, blky, sl calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst
SS: lt gy- lt gy brn, slt- vf gr, sbrnd- sbang, med srtd, sl calc, frm; SLTST: pred m dk gy brn, lt gy ip, frm- sl hd, blky, sl calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst
SS: lt gy- lt gy brn, slt- vf gr, sbrnd- sbang, med srtd, n calc, frm; SLTST: pred m dk gy brn, lt gy ip, frm- sl hd, blky, sl calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst
SLTST: lt gy, m gy ip, frm- sl hd, blky, sl calc; SH: lt gy grn, frm, blky- plty, n calc, slty ip grdng to sltst; SS: lt gy- m gy, slt- vf gr, sbrnd- sbang, med srtd, n calc, frm
SLTST: pred m dk gy, lt gy ip, frm- sl hd, blky, sl calc; SS: lt gy, slt- vf gr, sbrnd- sbang, med srtd, sl calc, frm; SH: lt gy, frm, blky- plty, n calc, slty ip grdng to sltst
SLTST: m-dk gy ip, frm- sl hd, plty-blky, n-sl calc; SH: lt gy ip, md-dk gy ip, frm, blky-plty, n calc, slty ip grdng to sltst
AIR DRILLING
MD: 4,899'
DEV: 0.6
AZM: 211.0
BG 5u
BG 5u
DT/CG 89u
C
BG 6u
MD: 4,994'
DEV: 1.9
AZM: 214.8
TG (units)
1
10
100
1000
C1 (ppm)
G 14u
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
BG 6u
C
CG 80u
KAH@ 5,070'
BG 4u
AIR DRILLING
BG 4u

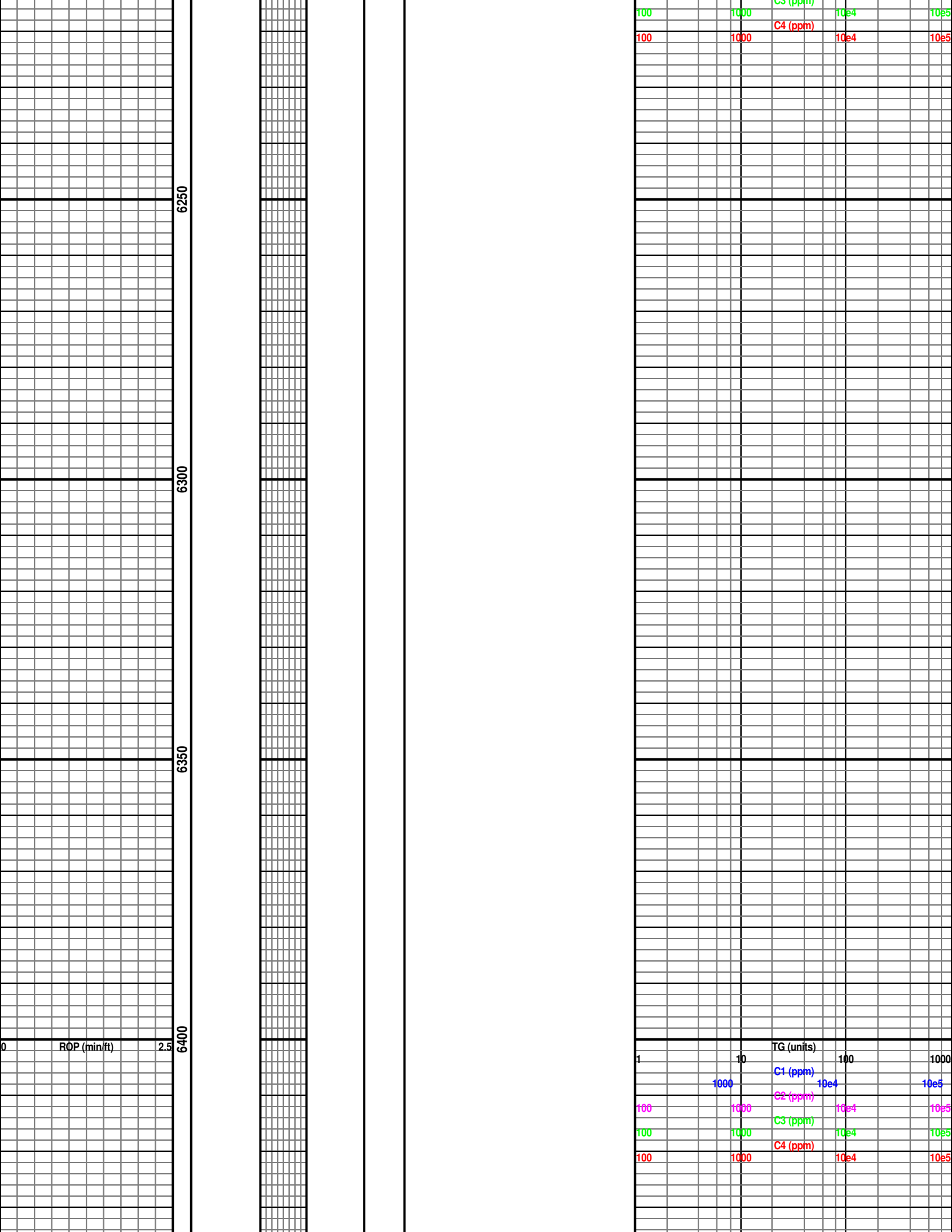

BG 3u
5150
5200
5250
5300
0
ROP (min/ft)
2.5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5


5350
5400
5450
5500
5550
0
ROP (min/ft)
2.5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5


0
ROP (min/ft)
2.5
5600
5650
5700
5750
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5


0
ROP (min/ft)
2.5
5800
5850
5900
5950
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5


0
ROP (min/ft)
2.5
6000
6050
6100
6150
6200
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
0
ROP (min/ft)
2.5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5


6250
6300
6350
6400
0
ROP (min/ft)
2.5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5
TG (units)
1
10
100
1000
C1 (ppm)
1000
10e4
10e5
C2 (ppm)
100
1000
10e4
10e5
C3 (ppm)
100
1000
10e4
10e5
C4 (ppm)
100
1000
10e4
10e5

6450

6500

6550

00