

# Timothy G. Pierce

## Petroleum Geologist

### GEOLOGIST'S REPORT DRILLING TIME AND SAMPLE LOG

COMPANY Murfin Drilling Co., Inc.  
 LEASE Oelkers' A' #1-2  
 FIELD ELRU  
 LOCATION 1320' FNL & 2310' FWL  
 SEC 2 TWP 16S RGE 19W  
 COUNTY Rush STATE Kansas  
 CONTRACTOR Murfin Drilling Rig #16  
 SPUD 4-22-2014 COMP 5-01-2014  
 RTD 3685 LTD 3678  
 MUD UP 2735 TYPE MUD Chemical

SAMPLES SAVED FROM 2890 TO RTD  
 DRILLING TIME KEPT FROM 2890 TO RTD  
 SAMPLES EXAMINED FROM 2890 TO RTD  
 GEOLOGICAL SUPERVISION FROM 2750 TO RTD  
 GEOLOGIST ON WELL Tim Pierce

#### ELEVATIONS

KB 2022'  
 DF \_\_\_\_\_  
 GL 2017'  
 Measurements Are All  
 From Kelly Bushing

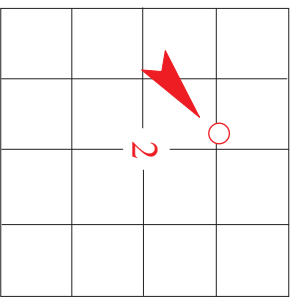
#### CASING

CONDUCTOR \_\_\_\_\_  
 SURFACE 8-5/8" at 1208'  
 PRODUCTION None

#### ELECTRICAL SURVEYS

DIL/DUCP/Sonic/Micro  
Pioneer Energy Svcs

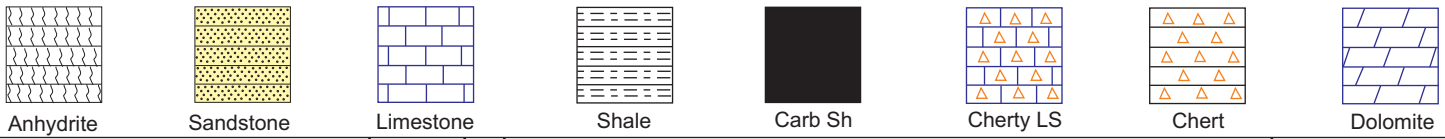
FORMATION TOPS	ELECTRIC LOG	SAMPLE
Anhydrite	1206 (+816)	1205 (+817)
Base/Anhydrite	1248 (+774)	NA
Topeka LS	2992 (-970)	3000 (-978)
Heebner Sh.	3268 (-1246)	3277 (-1255)
Lansing	3311 (-1289)	3325 (-1303)
Stark Sh.	3506 (-1484)	3515 (-1493)
BKC	3552 (-1530)	3562 (-1540)
Arbuckle	3602 (-1580)	3607 (-1585)



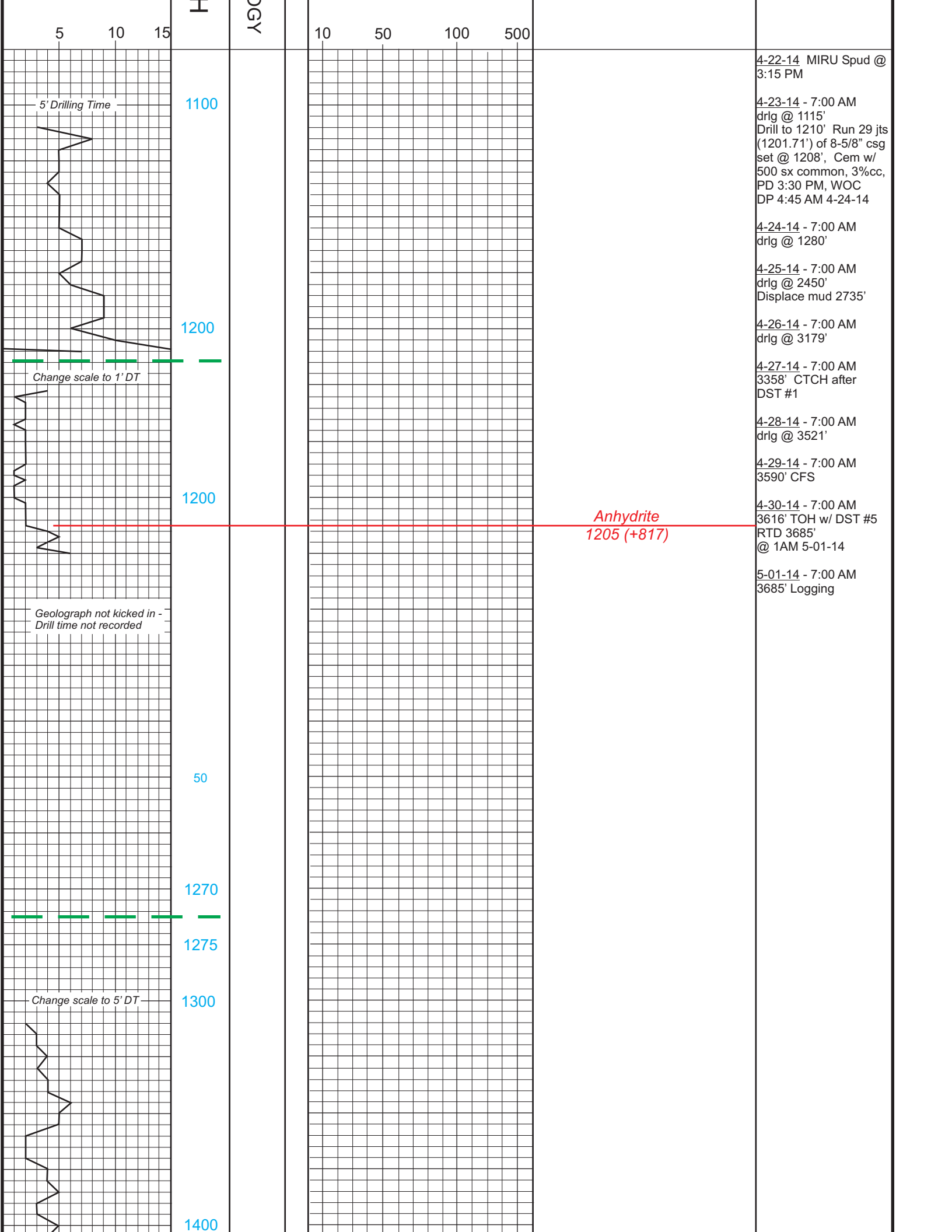
REMARKS An error on the tally board at 1241' resulted in a 6' difference in measurements. All drill time and formation tops below 1241' should be adjusted uphole 6 feet on this report.  
Drill stem test results indicate poor reservoir development in the LKC and a thin oil column in the Arbuckle above water.  
Therefore the decision was made to plug the Oelkers 'A' #1-2 as a dry hole on May 1, 2014.

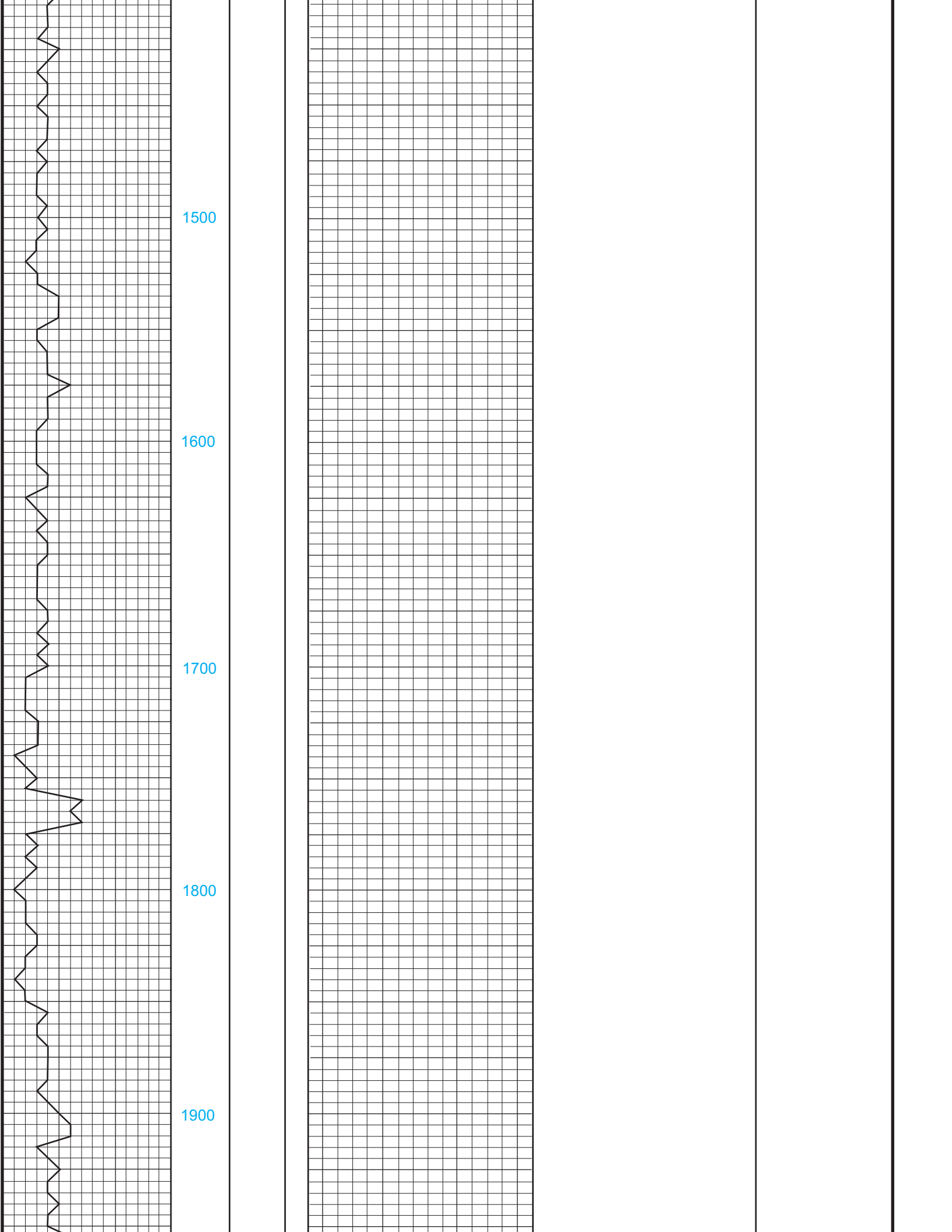
Timothy G. Pierce  
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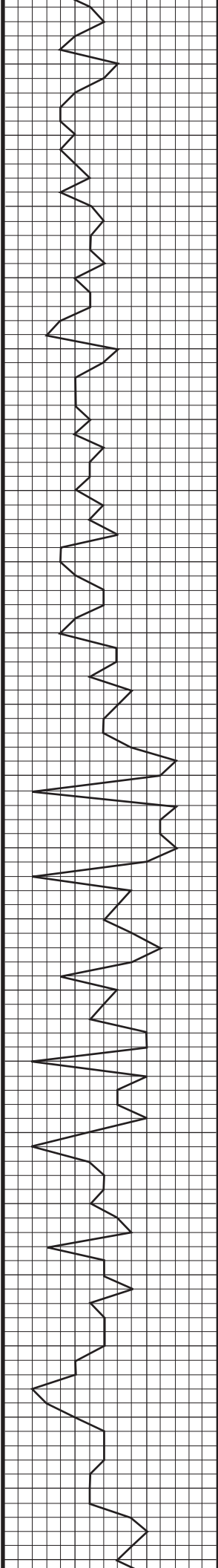
#### LEGEND



DRILLING TIME IN MINUTES PER FOOT Rate of Penetration Decreases →	DEPTH	LITHOLOG	GAS SCALE	SAMPLE DESCRIPTION	REMARKS
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2000

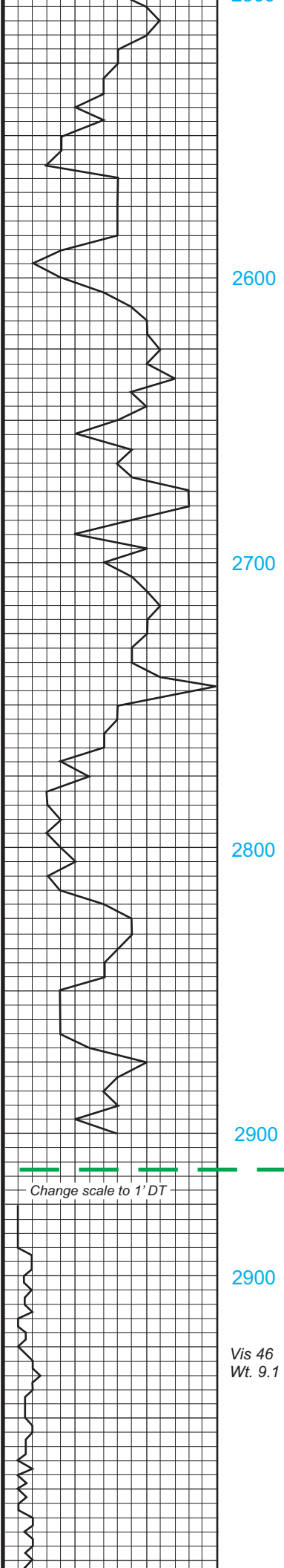
2100

2200

2300

2400

2500



2600

2700

2800

2900

2900

Change scale to 1' DT

Vis 46  
Wt. 9.1

*Sh - gr*

*LS - tan-brn-gr, fn xtl'n, dense*

*Sh - gr*

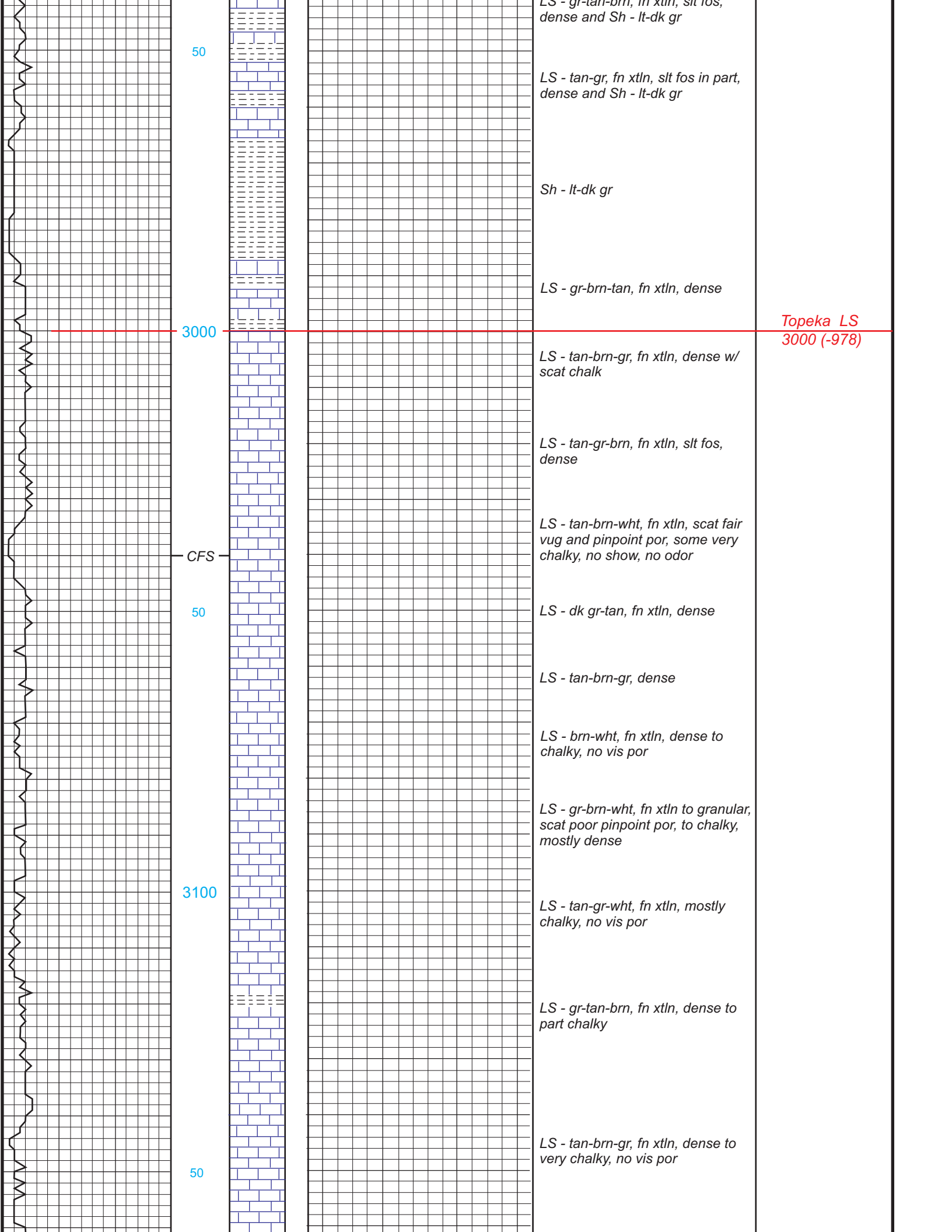
*LS - tan-gr, dense*

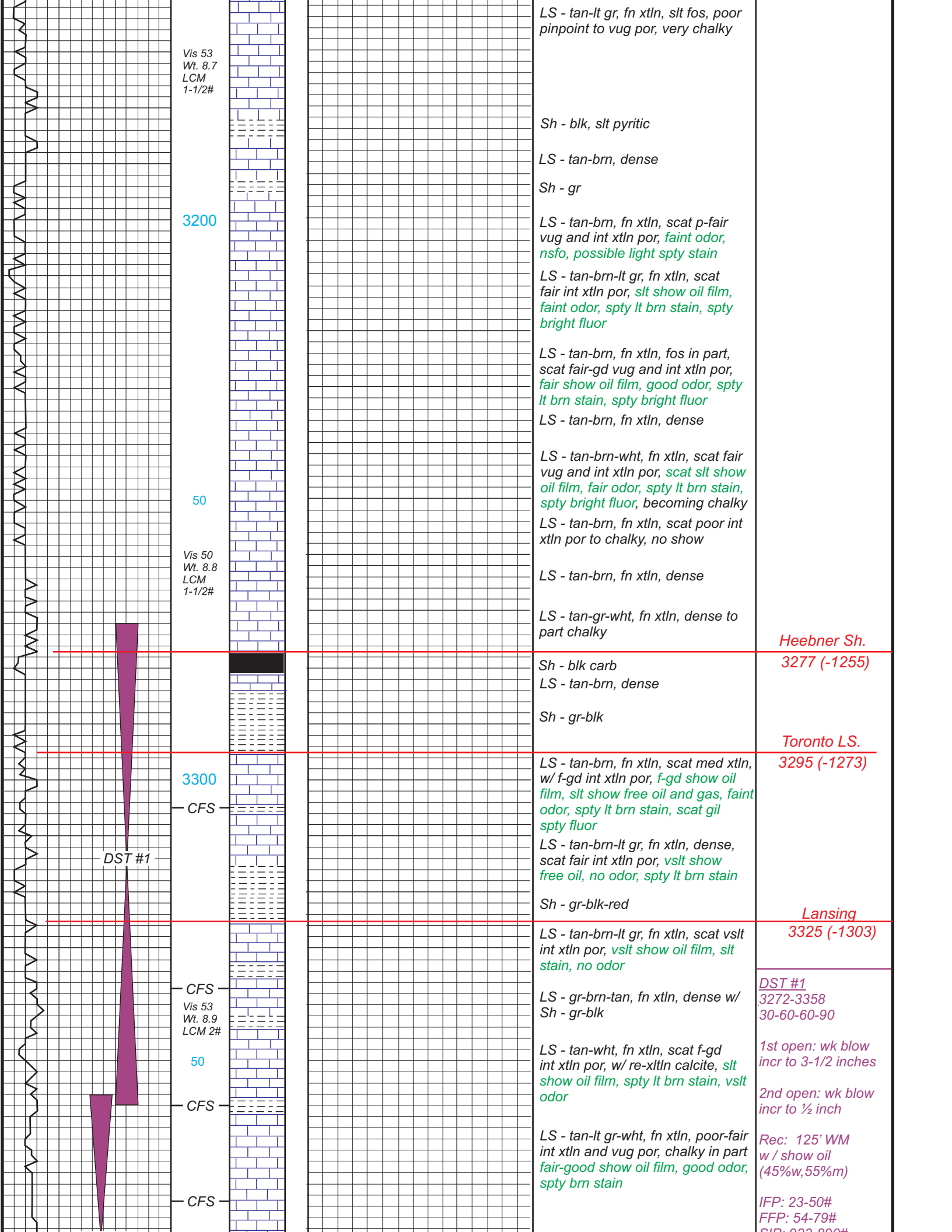
*Sh - gr*

*LS - gr-tan, dense*

*Sh - gr-blk*

*LS - gr tan brn fn xtl'n alt fac*





Vis 53  
Wt. 8.7  
LCM  
1-1/2#

3200

50

Vis 50  
Wt. 8.8  
LCM  
1-1/2#

3300

CFS

DST #1

CFS  
Vis 53  
Wt. 8.9  
LCM 2#

50

CFS

CFS

LS - tan-lt gr, fn xtl, slt fos, poor pinpoint to vug por, very chalky

Sh - blk, slt pyritic

LS - tan-brn, dense

Sh - gr

LS - tan-brn, fn xtl, scat p-fair vug and int xtl por, faint odor, nsfo, possible light spty stain

LS - tan-brn-lt gr, fn xtl, scat fair int xtl por, slt show oil film, faint odor, spty lt brn stain, spty bright fluor

LS - tan-brn, fn xtl, fos in part, scat fair-gd vug and int xtl por, fair show oil film, good odor, spty lt brn stain, spty bright fluor

LS - tan-brn, fn xtl, dense

LS - tan-brn-wht, fn xtl, scat fair vug and int xtl por, scat slt show oil film, fair odor, spty lt brn stain, spty bright fluor, becoming chalky

LS - tan-brn, fn xtl, scat poor int xtl por to chalky, no show

LS - tan-brn, fn xtl, dense

LS - tan-gr-wht, fn xtl, dense to part chalky

Heebner Sh.

3277 (-1255)

Sh - blk carb

LS - tan-brn, dense

Sh - gr-blk

Toronto LS.

3295 (-1273)

LS - tan-brn, fn xtl, scat med xtl, w/ f-gd int xtl por, f-gd show oil film, slt show free oil and gas, faint odor, spty lt brn stain, scat gil spty fluor

LS - tan-brn-lt gr, fn xtl, dense, scat fair int xtl por, vslt show free oil, no odor, spty lt brn stain

Sh - gr-blk-red

Lansing

3325 (-1303)

LS - tan-brn-lt gr, fn xtl, scat vslt int xtl por, vslt show oil film, slt stain, no odor

LS - gr-brn-tan, fn xtl, dense w/ Sh - gr-blk

DST #1  
3272-3358  
30-60-60-90

LS - tan-wht, fn xtl, scat f-gd int xtl por, w/ re-xtln calcite, slt show oil film, spty lt brn stain, vslt odor

1st open: wk blow incr to 3-1/2 inches

2nd open: wk blow incr to 1/2 inch

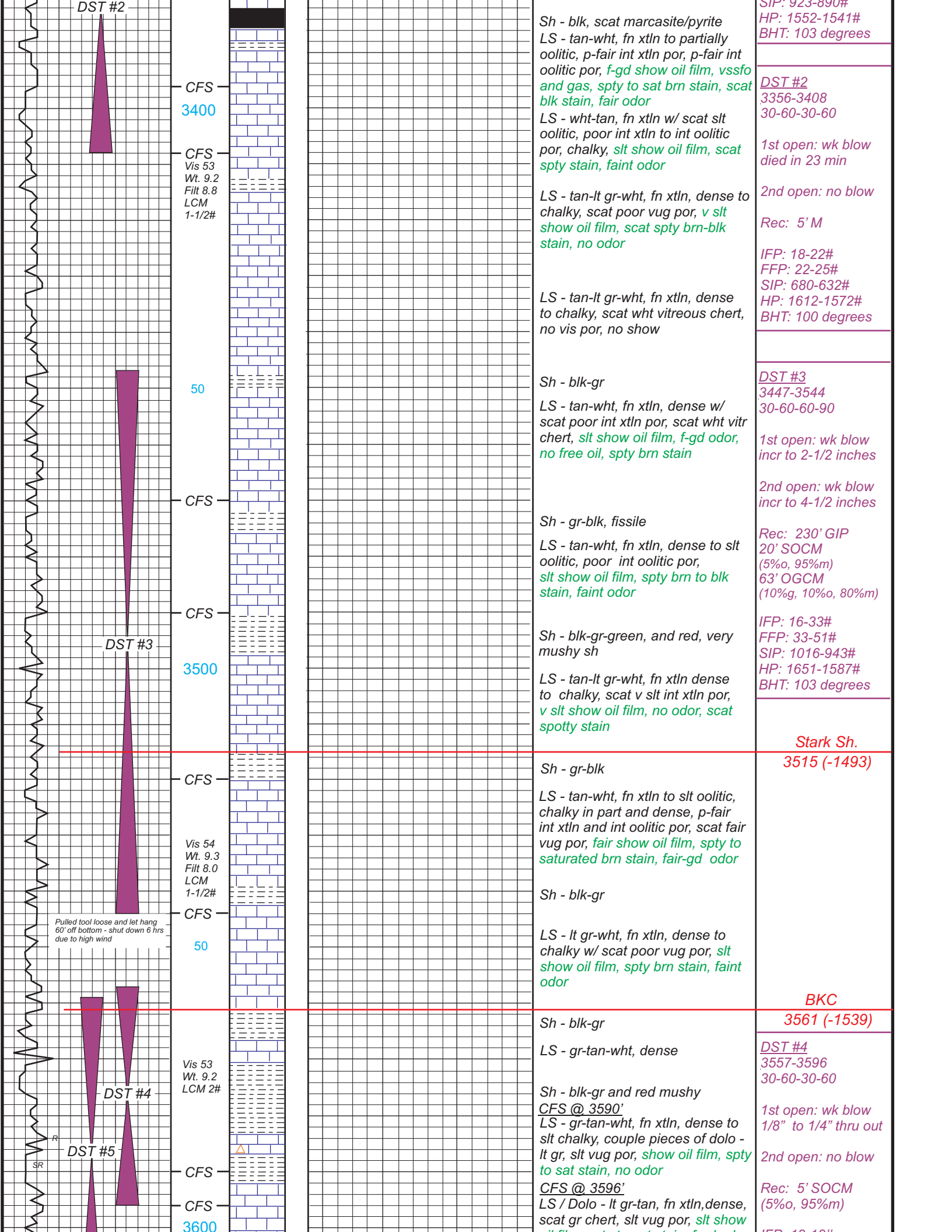
LS - tan-lt gr-wht, fn xtl, poor-fair int xtl and vug por, chalky in part fair-good show oil film, good odor, spty brn stain

Rec: 125' WM w/ show oil (45%w, 55%m)

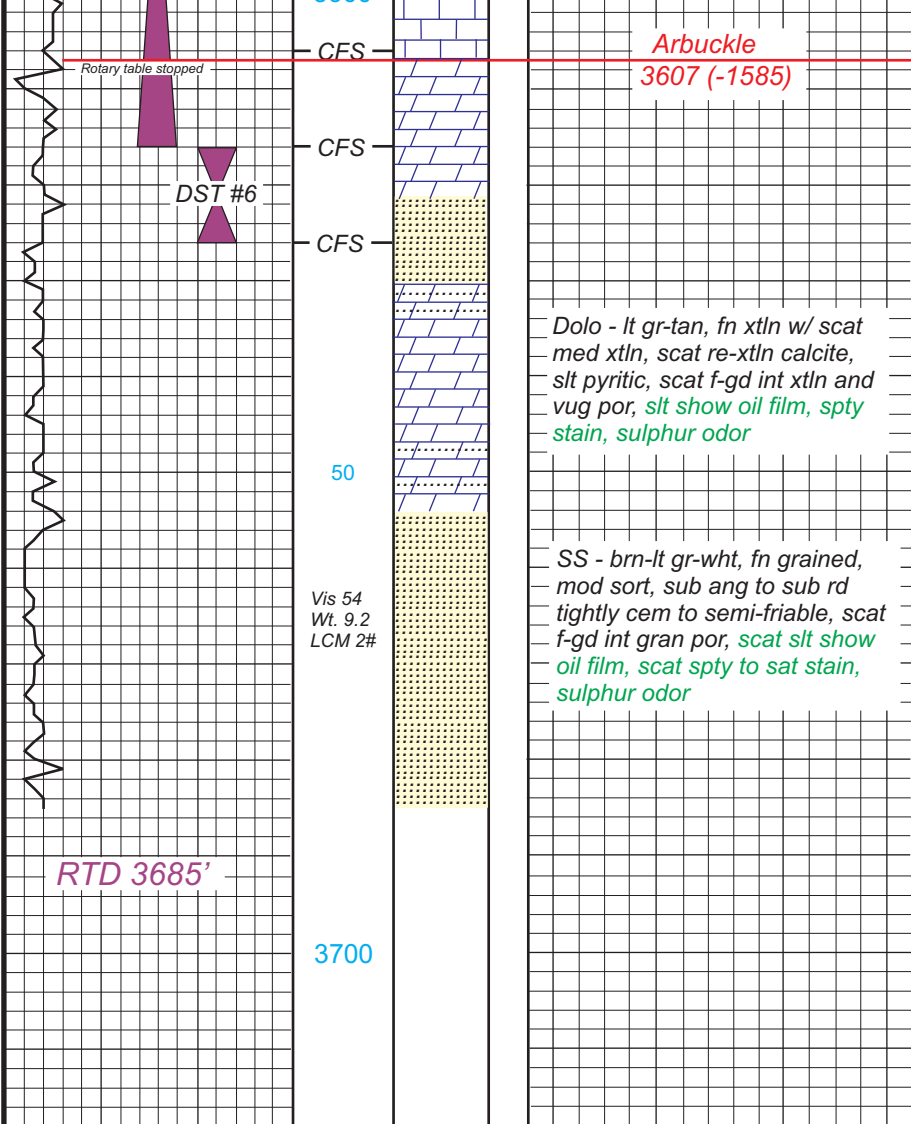
IFP: 23-50#

FFP: 54-79#

SIP: 232, 230#







**CFS @ 3606'**  
oil film, spty to sat stain, f-gd odor  
LS - tan-lt gr, fn xtn to granular, dense, no vis por, abundant Sh - blk-gr-red, fair odor, vslt show oil film

**CFS @ 3616'**  
Dolo - lt gr-tan-wht, fn and med xtn, abundant large re-xtn calcite shards, f-gd vug and int xtn por, vgd show oil film, scat f-gd show free oil and gas, strong odor, spty to sat brn stain

**CFS @ 3626'**  
Dolo - tan-wht, mostly fn to med xtn, p-f int xtn por, *slt show oil film spty stain*, and SS - wht-clear, fn grained, sub rd, tight to semi-fria clusters, *ss oil film, scat lt stain, f-gd odor in sample*

IFP: 18-18#  
SIP: 44-30#  
HP: 1718-1694#  
BHT: 99 degrees

**DST #5**  
3559-3616  
30-60-60-90

1st open: wk blow incr to 3-1/4 inches

2nd open: fair blow 1" incr to 4-1/2"

Rec: 63 VSOCM (5%o, 95%*m*)  
15' OCM (20%o, 80%*m*)  
15' CO  
39 deg gravity

IFP: 16-32#  
FFP: 34-45#  
SIP: 1034-1074#  
HP: 1768-1718#  
BHT: 101 degrees

**DST #6**  
3616-3626  
15-60-10-60

1st open: str blow OBB in 30 sec.

2nd open: str blow OBB in 30 sec.

Rec: 504' MW (70%*w*, 30%*m*)  
1953' W  
Chlorides 64,000

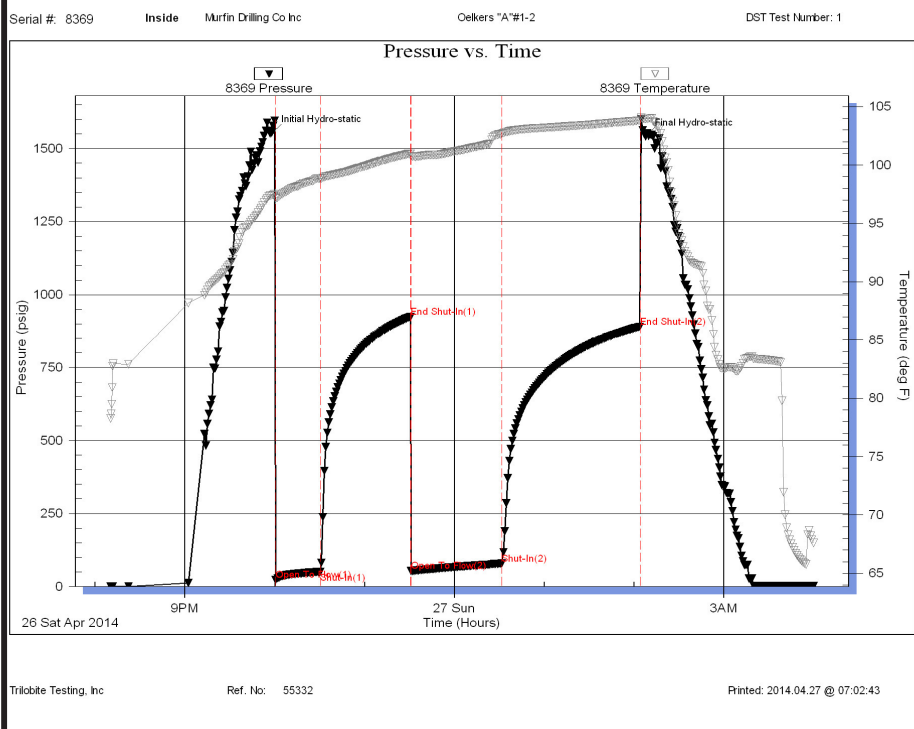
**DST #1**  
3272-3358  
30-60-60-90

1st open: wk blow incr to 3-1/2 inches

2nd open: wk blow incr to 1/2 inch

Rec: 125' WM w / show oil (45%*w*, 55%*m*)

IFP: 23-50#  
FFP: 54-79#  
SIP: 923-890#  
HP: 1552-1541#  
BHT: 103 degrees



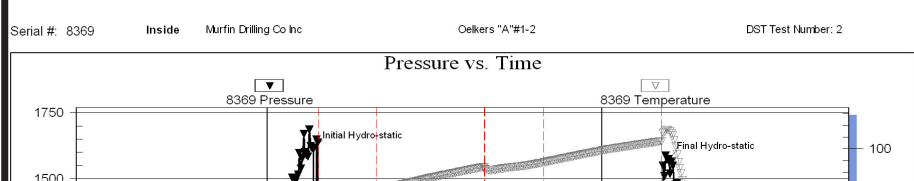
**DST #1**  
3272-3358  
30-60-60-90

1st open: wk blow incr to 3-1/2 inches

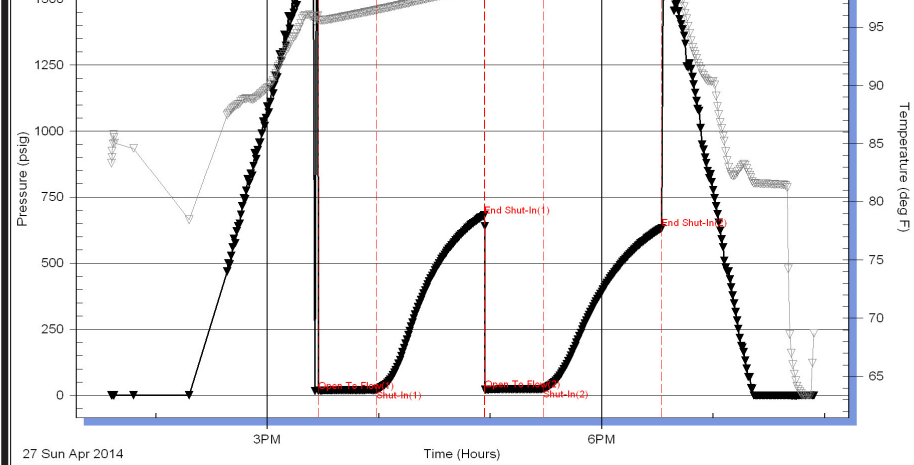
2nd open: wk blow incr to 1/2 inch

Rec: 125' WM w / show oil (45%*w*, 55%*m*)

IFP: 23-50#  
FFP: 54-79#  
SIP: 923-890#  
HP: 1552-1541#  
BHT: 103 degrees



**DST #2**



3356-3408  
30-60-30-60

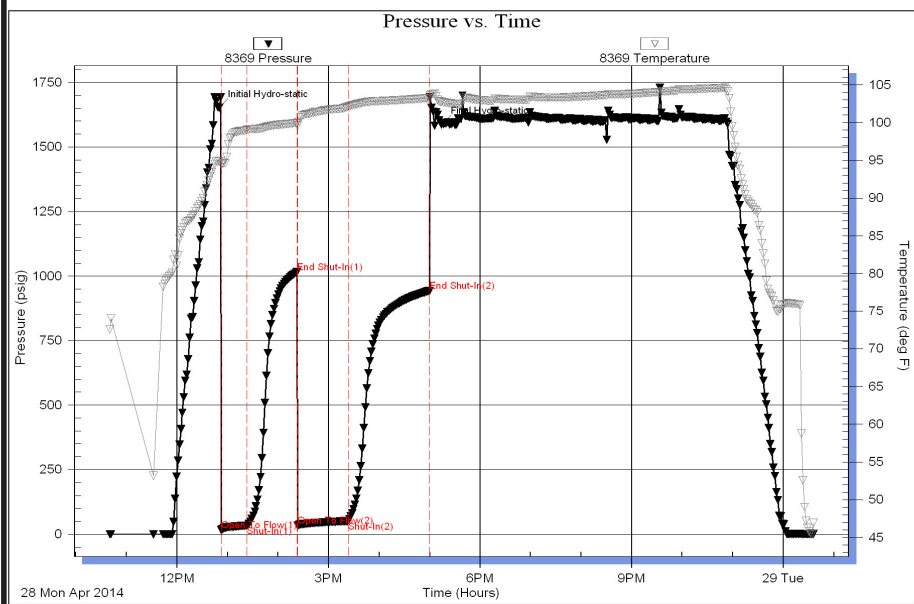
1st open: wk blow  
died in 23 min

2nd open: no blow

Rec: 5' M

IFP: 18-22#  
FFP: 22-25#  
SIP: 680-632#  
HP: 1612-1572#  
BHT: 100 degrees

Serial #: 8369 Inside Murfin Drilling Co Inc Oelkers "A" #1-2 DST Test Number: 3



DST #3  
3447-3544  
30-60-60-90

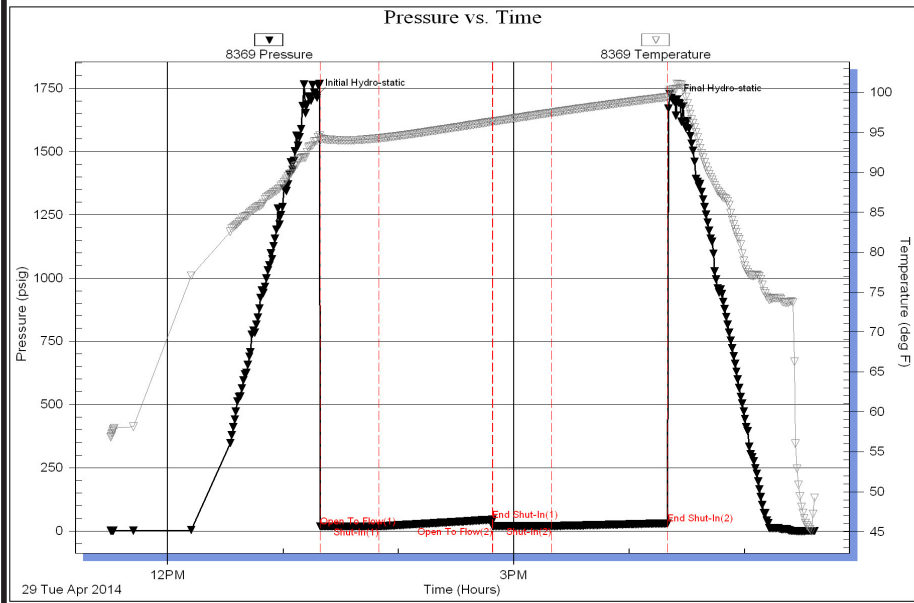
1st open: wk blow  
incr to 2-1/2 inches

2nd open: wk blow  
incr to 4-1/2 inches

Rec: 230' GIP  
20' SOCM  
(5%o, 95%m)  
63' OGCM  
(10%g, 10%o, 80%m)

IFP: 16-33#  
FFP: 33-51#  
SIP: 1016-943#  
HP: 1651-1587#  
BHT: 103 degrees

Serial #: 8369 Inside Murfin Drilling Co Inc Oelkers "A" #1-2 DST Test Number: 4



DST #4  
3557-3596  
30-60-30-60

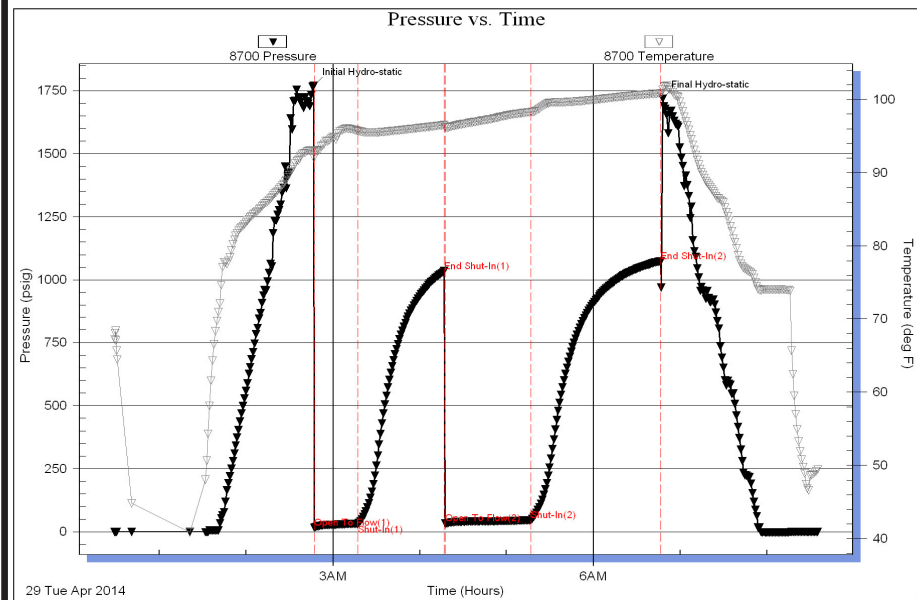
1st open: wk blow  
1/8" to 1/4" thru out

2nd open: no blow

Rec: 5' SOCM  
(5%o, 95%m)

IFP: 18-18#  
FFP: 18-19#  
SIP: 44-30#  
HP: 1718-1694#  
BHT: 99 degrees

Serial #: 8700 Outside Murfin Drilling Co Inc Oelkers "A" #1-2 DST Test Number: 5



**DST #5**  
3559-3616  
30-60-60-90

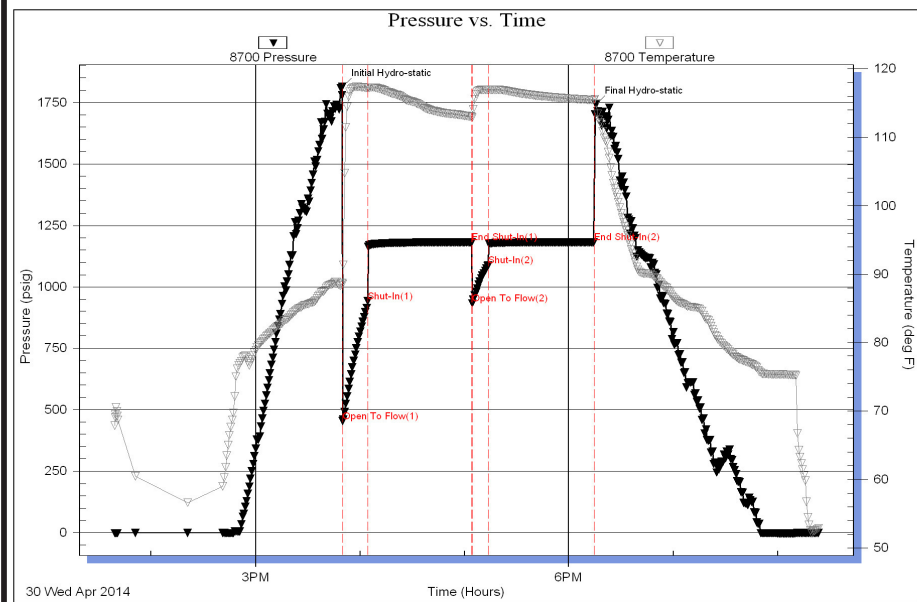
1st open: wk blow  
incr to 3-1/4 inches

2nd open: fair blow  
1" incr to 4-1/2"

Rec: 63 VSOCM  
(5%o, 95%m)  
15' OCM  
(20%o, 80%m)  
15' CO  
39 deg gravity

IFP: 16-32#  
FFP: 34-45#  
SIP: 1034-1074#  
HP: 1768-1718#  
BHT: 101 degrees

Serial #: 8700 Outside Murfin Drilling Co Inc Oelkers "A" #1-2 DST Test Number: 6



**DST #6**  
3616-3626  
15-60-10-60

1st open: str blow  
OBB in 30 sec.

2nd open: str blow  
OBB in 30 sec.

Rec: 504' MW  
(70%w, 30%m)  
1953' W  
Chlorides 64,000

IFP: 942-1182#  
FFP: 934-1088#  
SIP: 1182-1182#  
HP: 1813-1741#  
BHT: 116 degrees

