Timothy G. Pierce

Petroleum Geologist

GEOLOGIST'S REPORT

DRILLING TIME AND SAMPLE LOG

COMPANY Murfin Drilling Co.,Inc.

LEASE Pound #1-3

FIELD Mikes Meteor

LOCATION E/2 NE NE (660' FNL & 330' FEL)

SEC 3 TWSP 23S RGE 12W

COUNTY Stafford STATE Kansas

CONTRACTOR Murfin Drilling Rig #21

SPUD 6-06-2014 COMP 6-13-2014

RTD 3916 LTD 3894

MUD UP 2653 TYPE MUD Chemical

SAMPLES SAVED FROM 2690 TO RTD

DRILLING TIME KEPT FROM 580-660 2690 TO RTD

SAMPLES EXAMINED FROM 2690 TO RTD

GEOLOGICAL SUPERVISION FROM 2780 to RTD

GEOLOGIST ON WELL Tim Pierce

ELEVATIONS

KB 1841'

DF

GL 1830'

Measurements Are All From Kelly Bushing

CASING

CONDUCTOR

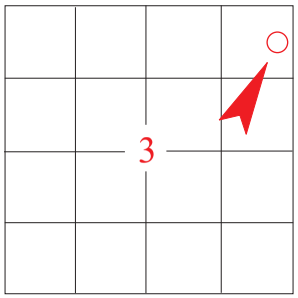
SURFACE 9-5/8" at 645'

PRODUCTION 5-1/2" at

ELECTRICAL SURVEYS

DIL, CN/D, Sonic, Micro
Dipole Sonic - Halliburton

FORMATION TOPS	ELECTRIC LOG	SAMPLE
Anhydrite	Behind casing	613 (+1228)
Base/Anhydrite	Behind casing	635 (+1206)
Topeka LS	2796 (-955)	2795 (-954)
Heebner Sh.	3169 (-1328)	3173 (-1332)
Lansing	3305 (-1464)	3309 (-1468)
Stark Sh.	3523 (-16828)	3529 (-1688)
Simpson	3724 (-1883)	3729 (-1888)
Arbuckle	3779 (-1938)	3801 (-1960)



API # 15-185-23,874

REMARKS *Drilled 8-3/4" hole to allow for coring. The well was cored from 3612' to 3737'. The core barrel was then cut into smaller sections and removed from location. The rock was not examined for rock type, porosity, or oil shows except at the cut ends of each section of the core barrel. Cuttings were examined at 10' intervals during the core process attempting to determine lithology, formation tops, etc A drill stem test covering the cored interval indicated a probable productive zone in the Viola. Several Kansas City zones carried slight sample shows, none of these zones were tested. There were no other zones of interest indicated by sample examination or electric logs.*

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LEGEND

Dolomite
Chert
Cherty LS
Carb Sh
Shale
Limestone
Sandstone
Anhydrite

GAS SCALE

LITHOLO

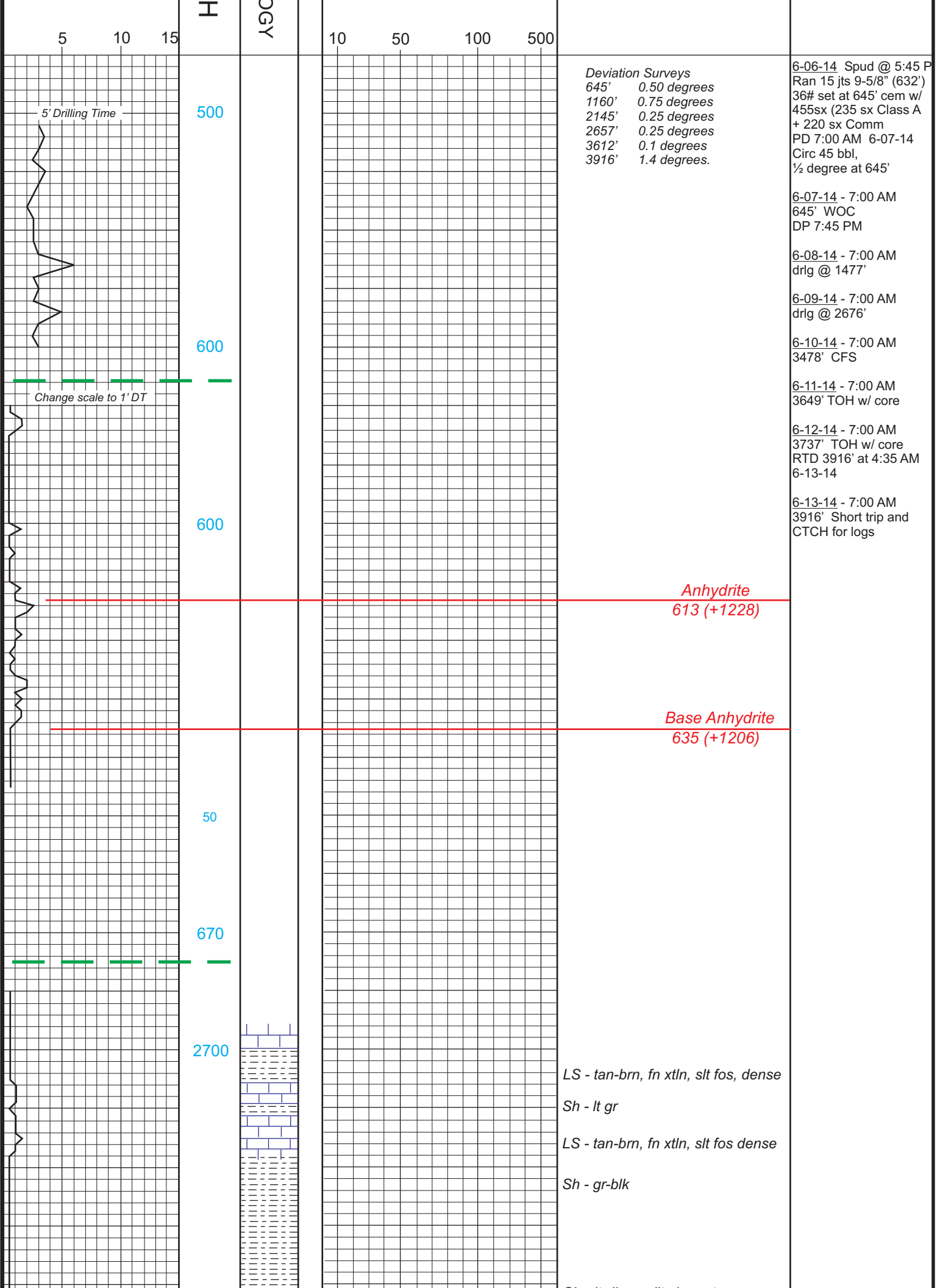
DEPT

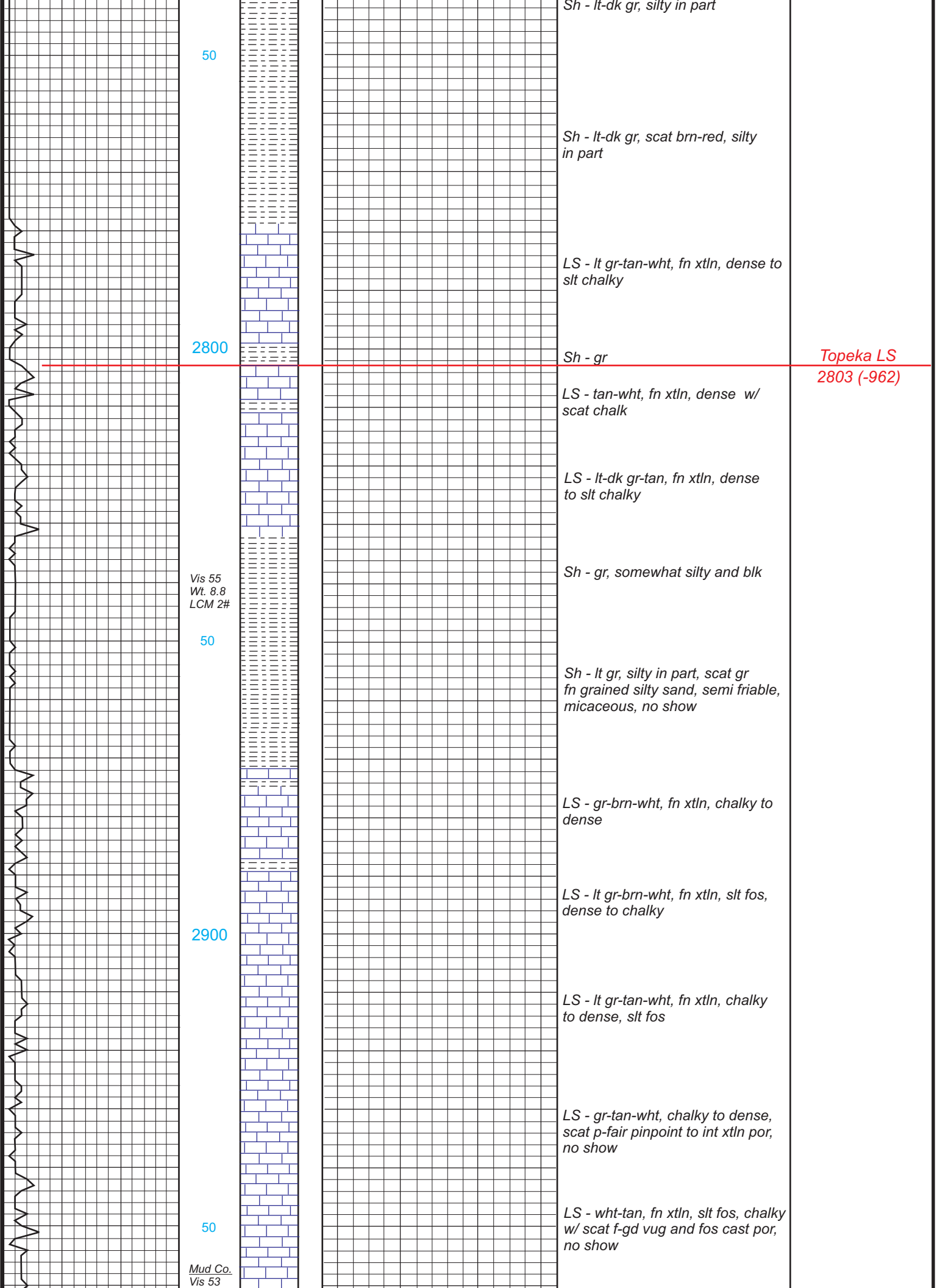
DRILLING TIME IN MINUTES PER FOOT

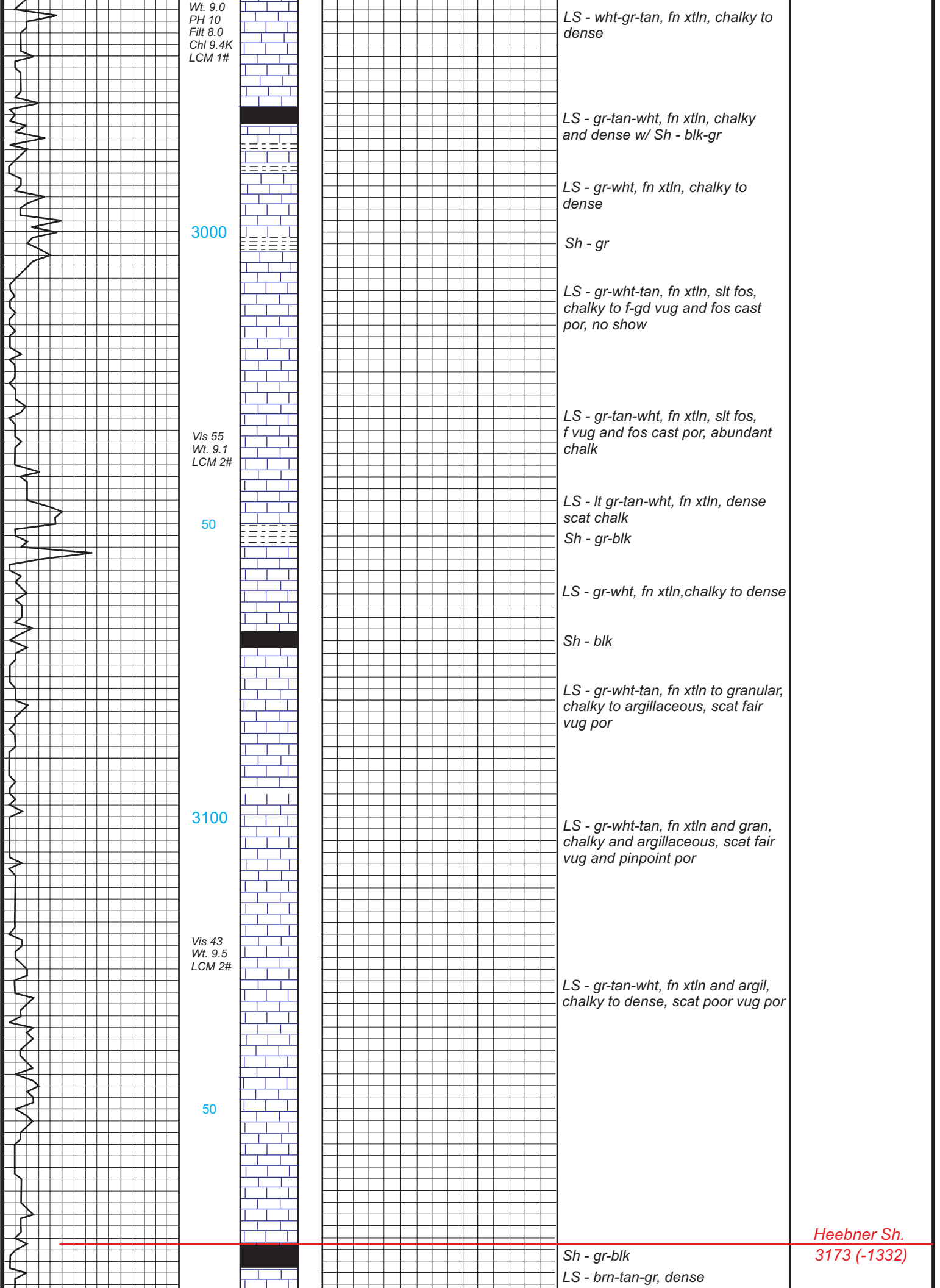
Rate of Penetration Decreases

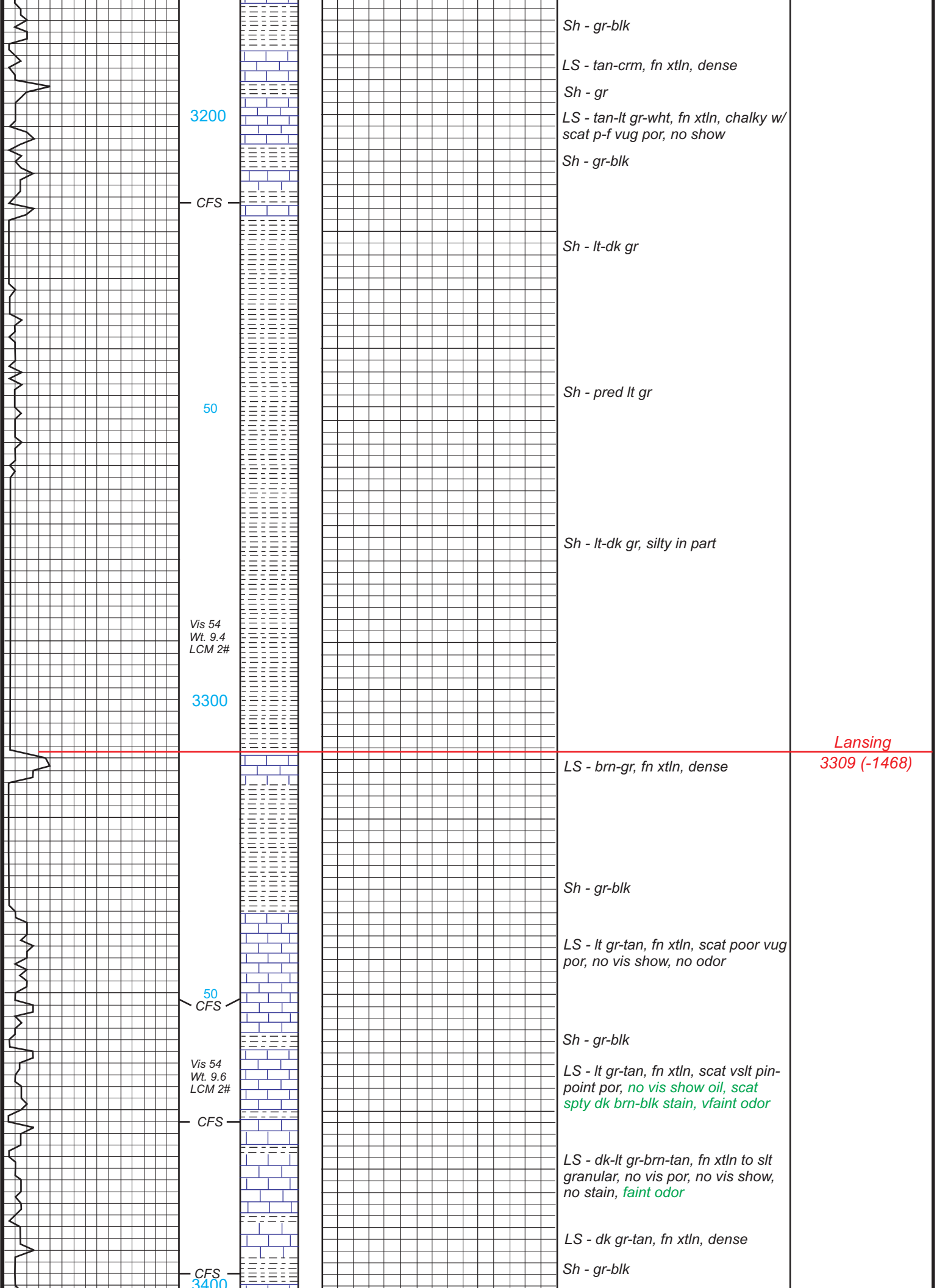
SAMPLE DESCRIPTION

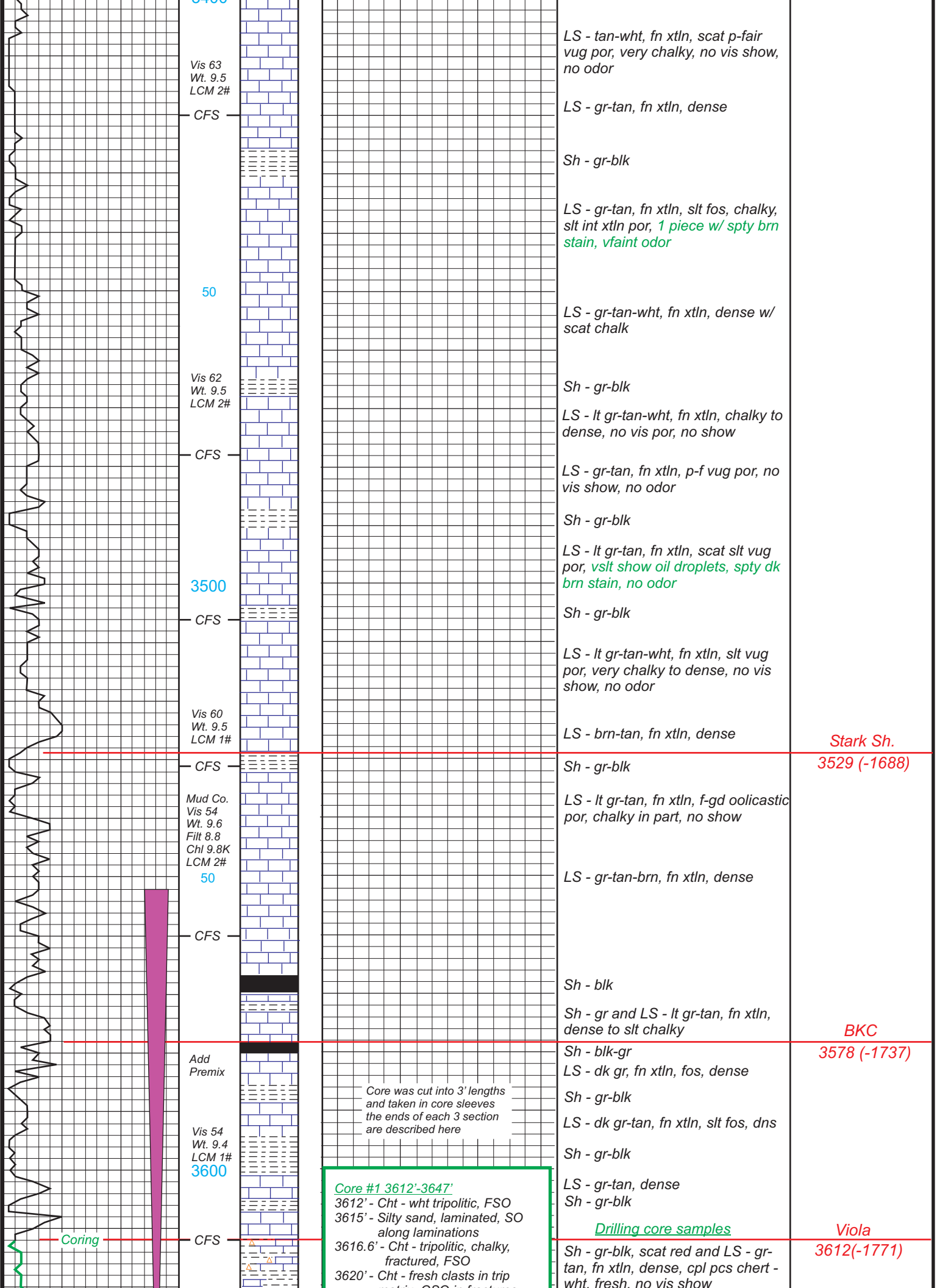
REMARKS

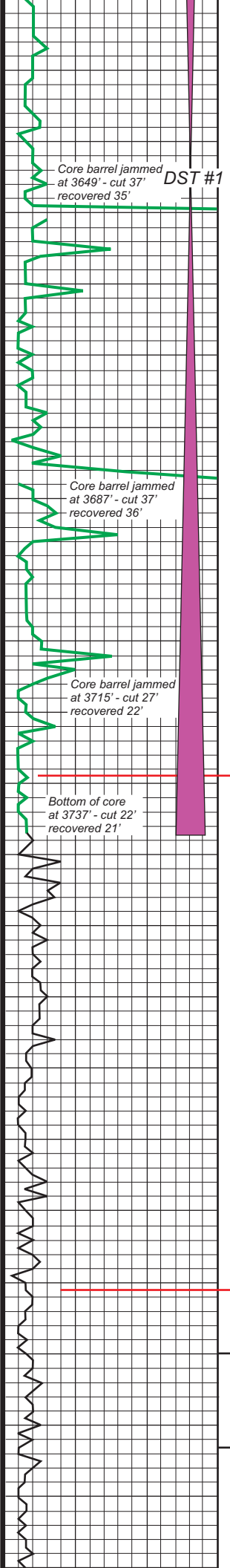

5
10
15
H
OGY
10
50
100
500
5' Drilling Time
500
600
Change scale to 1' DT
600
50
670
2700
Deviation Surveys
645' 0.50 degrees
1160' 0.75 degrees
2145' 0.25 degrees
2657' 0.25 degrees
3612' 0.1 degrees
3916' 1.4 degrees.
Anhydrite
613 (+1228)
Base Anhydrite
635 (+1206)
LS - tan-brn, fn xtln, slt fos, dense
Sh - lt gr
LS - tan-brn, fn xtln, slt fos dense
Sh - gr-blk
6-06-14 Spud @ 5:45 P
Ran 15 jts 9-5/8" (632')
36# set at 645' cem w/
455sx (235 sx Class A
+ 220 sx Comm
PD 7:00 AM 6-07-14
Circ 45 bbl,
½ degree at 645'
6-07-14 - 7:00 AM
645' WOC
DP 7:45 PM
6-08-14 - 7:00 AM
drlg @ 1477'
6-09-14 - 7:00 AM
drlg @ 2676'
6-10-14 - 7:00 AM
3478' CFS
6-11-14 - 7:00 AM
3649' TOH w/ core
6-12-14 - 7:00 AM
3737' TOH w/ core
RTD 3916' at 4:35 AM
6-13-14
6-13-14 - 7:00 AM
3916' Short trip and
CTCH for logs


Sh - lt-dk gr, silty in part
50
Sh - lt-dk gr, scat brn-red, silty in part
LS - lt gr-tan-wht, fn xtln, dense to slt chalky
2800
Sh - gr
Topeka LS
2803 (-962)
LS - tan-wht, fn xtln, dense w/ scat chalk
LS - lt-dk gr-tan, fn xtln, dense to slt chalky
Sh - gr, somewhat silty and blk
Vis 55
Wt. 8.8
LCM 2#
50
Sh - lt gr, silty in part, scat gr fn grained silty sand, semi friable, micaceous, no show
LS - gr-brn-wht, fn xtln, chalky to dense
LS - lt gr-brn-wht, fn xtln, slt fos, dense to chalky
2900
LS - lt gr-tan-wht, fn xtln, chalky to dense, slt fos
LS - gr-tan-wht, chalky to dense, scat p-fair pinpoint to int xtln por, no show
LS - wht-tan, fn xtln, slt fos, chalky w/ scat f-gd vug and fos cast por, no show
50
Mud Co.
Vis 53


Wt. 9.0
PH 10
Filt 8.0
Chl 9.4K
LCM 1#
3000
Vis 55
Wt. 9.1
LCM 2#
50
3100
Vis 43
Wt. 9.5
LCM 2#
50
LS - wht-gr-tan, fn xtln, chalky to dense
LS - gr-tan-wht, fn xtln, chalky and dense w/ Sh - blk-gr
LS - gr-wht, fn xtln, chalky to dense
Sh - gr
LS - gr-wht-tan, fn xtln, slt fos, chalky to f-gd vug and fos cast por, no show
LS - gr-tan-wht, fn xtln, slt fos, f vug and fos cast por, abundant chalk
LS - lt gr-tan-wht, fn xtln, dense scat chalk
Sh - gr-blk
LS - gr-wht, fn xtln,chalky to dense
Sh - blk
LS - gr-wht-tan, fn xtln to granular, chalky to argillaceous, scat fair vug por
LS - gr-wht-tan, fn xtln and gran, chalky and argillaceous, scat fair vug and pinpoint por
LS - gr-tan-wht, fn xtln and argil, chalky to dense, scat poor vug por
Heebner Sh.
3173 (-1332)
Sh - gr-blk
LS - brn-tan-gr, dense


Sh - gr-blk
LS - tan-crm, fn xtln, dense
Sh - gr
3200
LS - tan-lt gr-wht, fn xtln, chalky w/ scat p-f vug por, no show
Sh - gr-blk
CFS
Sh - lt-dk gr
Sh - pred lt gr
50
Sh - lt-dk gr, silty in part
Vis 54
Wt. 9.4
LCM 2#
3300
Lansing
3309 (-1468)
LS - brn-gr, fn xtln, dense
Sh - gr-blk
LS - lt gr-tan, fn xtln, scat poor vug por, no vis show, no odor
50
CFS
Sh - gr-blk
Vis 54
Wt. 9.6
LCM 2#
LS - lt gr-tan, fn xtln, scat vslt pin-point por, no vis show oil, scat spty dk brn-blk stain, vfaint odor
CFS
LS - dk-lt gr-brn-tan, fn xtln to slt granular, no vis por, no vis show, no stain, faint odor
LS - dk gr-tan, fn xtln, dense
CFS
Sh - gr-blk
3400


Vis 63
Wt. 9.5
LCM 2#
CFS
50
Vis 62
Wt. 9.5
LCM 2#
CFS
3500
CFS
Vis 60
Wt. 9.5
LCM 1#
CFS
Mud Co.
Vis 54
Wt. 9.6
Filt 8.8
Chl 9.8K
LCM 2#
50
CFS
Add
Premix
Vis 54
Wt. 9.4
LCM 1#
3600
Coring
CFS
LS - tan-wht, fn xtln, scat p-fair vug por, very chalky, no vis show, no odor
LS - gr-tan, fn xtln, dense
Sh - gr-blk
LS - gr-tan, fn xtln, slt fos, chalky, slt int xtln por, 1 piece w/ spty brn stain, vfaint odor
LS - gr-tan-wht, fn xtln, dense w/ scat chalk
Sh - gr-blk
LS - lt gr-tan-wht, fn xtln, chalky to dense, no vis por, no show
LS - gr-tan, fn xtln, p-f vug por, no vis show, no odor
Sh - gr-blk
LS - lt gr-tan, fn xtln, scat slt vug por, vslt show oil droplets, spty dk brn stain, no odor
Sh - gr-blk
LS - lt gr-tan-wht, fn xtln, slt vug por, very chalky to dense, no vis show, no odor
LS - brn-tan, fn xtln, dense
Stark Sh.
3529 (-1688)
Sh - gr-blk
LS - lt gr-tan, fn xtln, f-gd oolicastic por, chalky in part, no show
LS - gr-tan-brn, fn xtln, dense
Sh - blk
Sh - gr and LS - lt gr-tan, fn xtln, dense to slt chalky
BKC
3578 (-1737)
Sh - blk-gr
LS - dk gr, fn xtln, fos, dense
Sh - gr-blk
LS - dk gr-tan, fn xtln, slt fos, dns
Sh - gr-blk
LS - gr-tan, dense
Sh - gr-blk
Drilling core samples
Viola
3612(-1771)
Sh - gr-blk, scat red and LS - gr-tan, fn xtln, dense, cpl pcs chert - wht, fresh, no vis show
Core was cut into 3' lengths and taken in core sleeves the ends of each 3 section are described here
Core #1 3612'-3647'
3612' - Cht - wht tripolitic, FSO
3615' - Silty sand, laminated, SO along laminations
3616.6' - Cht - tripolitic, chalky, fractured, FSO
3620' - Cht - fresh clasts in trip



matrix, GSO in fractures
3623' - Cht - fresh w/ weathered surfaces, GSO
3626' - Cht - fresh w/ weathered surfaces, f-gd edge stain
3629' - Cht - fresh and weath, GSO on weath surfaces
3632' - Cht - rubble FSO on weath surfaces
3635' - Sh - grn-gr and weath chert, SSO
3638' - Cht - weath w/ FSO and some grn-gr sh
3641' - Sh - gr-grn and tripolitic chert w/ fair brn stain
3644' - Cht - tripolitic w/ g stain mixed w/ grn slt waxy sh
3647' - Cht - tripolitic, gd brn stn, and scat grn waxy sh

Core #2 3650'-3687'
3653' - Sh - gr w/ cht, fair stain
3656' - skipped
3659' - Sh - blk
3662' - Cht - fresh & weath, GSO gd stain
3665' - Cht - weath w/ lt grn sh/clay gd dk brn stain
3668' - Sh - lt grn & weath chert gd brn stain
3671' - Sh - gr-grn-blk, stain?
3674' - Sh - blk-grn and chert mix dk stain
3677' - Cht - tan-wht, fresh to slt weath, dk stain
3680' - Cht - wht-tan fresh to slt weath, some grn sh/clay mixed, blk stain in fractures
3682' - Sh - blk
3683' - Cht - wht & blk, slt weath dk blk stain
3686' - Cht - gr-blk, blk stain along edges and in fractures

Core #3 3688'-3715
3691 - Cht - gr-blk, fresh and lt grn sh/clay
3694 - Cht - gr, fresh,blk asphaltic stain in fractures
3697 - Cht - gr, fresh, fair vug por, blk stain in fractures
3700 - Cht - gr-blk, fresh and grn clay
3703 - Cht - gr-blk, fresh and grn clay
3706 - Cht - red-brn, fresh and grn clay
3709 - Cht - wht-gr, slt weathered, blk asphaltic stain
3712 - lost
3715 - lost

Core #4 3715'-3737
3718' - Sh - blk
3721' - Sh - gr-green
3724' - Cht - blk, fresh, vitreous
3727' - Cht - gr-blk-brn, fresh
3730' - Sh - red-green-gr
3733' - Sh - gr-green-red
3736' - Sh - green

Total cored interval - 125' (3612'-3737')
Total recovery - 114'

Sh - gr-red, w/ LS - tan, dense, scat gr-tan-wht vitreous chert, no apparent show, no odor

Sh - lt-dk gr-red and LS - tan, scat tan-wht vitreous chert, no vis show, no odor

Sh and chert - wht-tan, fresh to devitrified, no vis stain

Pred sh w/ chert - wht-tan, fresh to tripolitic and chalky, scat slt edge stain on fresh chert, fair pinpoint por in tripolitic w/ spty stain, no odor

Sh and chert - wht-tan, fresh w/ scat weathered edges and lt stain to tripolitic w/ spty brn stain, no odor

Sh and chert - wht-tan mostly fresh w/ brn-blk edge stain, scat tripolitic w/ spty to sat brn stain

Sh and chert - wht-tan, weath to fresh, scat fair pinpoint to vug por, spty dk brn-blk stain, no odor

Sh and chert - wht, fresh & weath, scat edge staining on fresh cht, scat fair por in devitrified cht, spty dk brn and blk stain

Chert - tan-wht, mostly fresh w/ scat blk stain on slt weath edges, some weathered cht w/ fair pp porosity, spty brn-blk stain

Chert - tan-wht, fresh w/ blk edge stain, some weath chert w/ brn-blk stain

Sh - gr-blk and varicolored, some waxy w/ polished surfaces, abundant chert - wht-tan, fresh w/ fair edge stain, scat weathered chert - fair pinpoint por, spty to sat brn-blk stain

Sh - pred gr-blk w/ varicolored shales, some tan chert, fresh, w/ scat edge stain, scat gr-brn-tan dense limestone

Sh - gr-blk and varicolored

Predominately Sh - gr-blk w/ Dolo - tan-brn, fn xtln, slt pelletal, dense

Sh - blk-gr w/ tan-wht vitr chert w/ Dolo - lt gr-tan-wht, fn xtln, scat p-fair vug and int xtln por, mostly dense, no show

Sh - gr-blk, varicolored w/ chert & Dolo - brn-tan, fn xtln, dense w/

DST #1
3552-3737
30-60-60-90

1st open: wk blow incr to OBB in 12"
no return blow

2nd open: wk blow incr to 4"
no return blow

Rec: 120' GIP
615' Total Fluid
495' GOCM
(25%g,6%o,69%m)
120' GOWCM
(5%g,1%o,5%w,89%m)

IFP: 81-215#
FFP: 227-308#
SIP: 1099-1024#
HP: 1833-1744#
BHT: 107 degrees

Simpson
3729 (-1888)

Arbuckle
3801 (-1960)

scat poor int xtln por, no show

50

Sh - blk-gr and chert w/
Dolo - lt gr-tan, fn xtln, scat -poor int xtln and vug por, no show

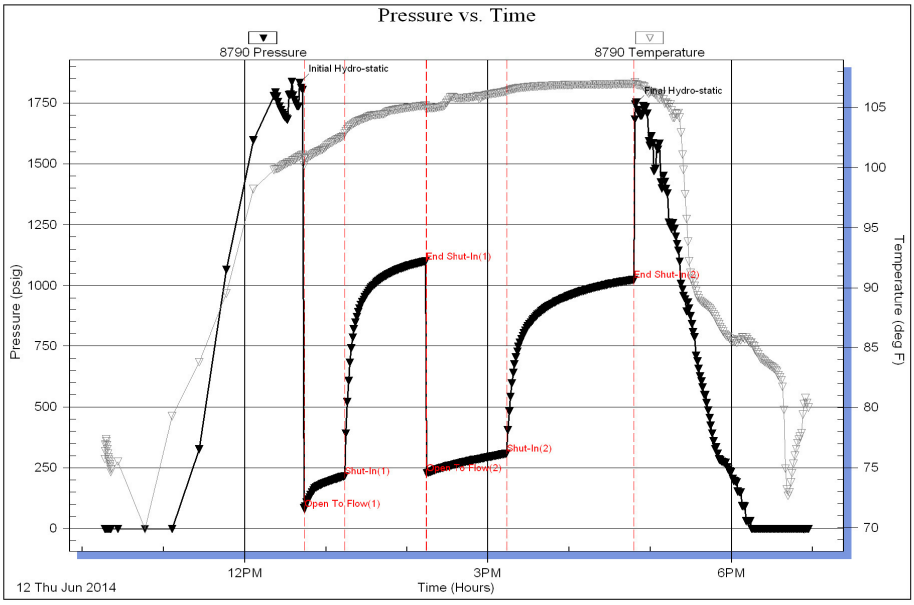
Mud Co
Vis 62
Wt. 9.5
PH 8.5
Filt 12.4
Chl 14 K
LCM ½#

Sh - gr-blk, vitreous chert and
Dolo - lt gr-wht, fn xtln, scat int xtln and vug por, 1 piece w/ show oil film, sat brn stn

3900

Sh - gr-blk, chert and
Dolo - lt gr-wht, fn xtln, some med xtln, gd vug and int xtln por, no show

Serial #: 8790 **Inside** Murfin Drlg. Co., Inc. Pound 1-3 DST Test Number: 1



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