



**WESLEY D. HANSEN Consulting Petroleum Geologist**

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KGS  
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Kansas License #418



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

**Well Name:** Murfin Drilling Company, Inc. #1-22 Focke Unit

**Location:** 1980' FNL, 100' FWL of Section 22-2S-34W

**License Number:** API: 15-153-21188

**Region:** Rawlins County, KS

**Spud Date:** 5-23-2017

**Drilling Completed:** 6-1-2017

**Surface Coordinates:** 1980' FNL, 100' FWL of Section 22-2S-34W

**Bottom Hole Vertical hole**

**Coordinates:**

**Ground Elevation (ft):** 3110'

**K.B. Elevation (ft):** 3115'

**Logged Interval (ft):** 3760'

**To:** RTD

**Total Depth (ft):** 4770'

**Formation:** Mississippian at RTD

**Type of Drilling Fluid:** Chemical - displaced at 3515'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 [www.WellSight.com](http://www.WellSight.com)

#### OPERATOR

**Company:** Murfin Drilling Co., Inc.

**Address:** 250 N. Water

Suite 300

Wichita, KS 67202

#### GEOLOGIST

**Name:** Wesley D. Hansen

**Company:** Wesley D. Hansen - Consulting Petroleum Geologist

**Address:** 212 N. Market, Suite 257

Wichita, KS 67202

Cellular: 316-772-6188

## COMMENTS

Contractor: Murfin Drilling Co., Inc. Rig #7  
Pushers: Kelly Wilson/Juan Tinoco

Surface Casing: 8 5/8" set at 304' w/225 sx  
Production Casing: P&A

Mud by: Morgan Mud - Cade Lines was the engineer.

DST's by: Trilobite - Martine Salinas was the tester.

Logs by: Pioneer Wireline (DIL, CN-CD, MEL, BHCS) - Dan Schmidt was the engineer

Deviation Surveys: 1 deg. @304'; 1/2 deg. @1519'; 1 deg. @3750'; 1 deg. @ 4150'; 1 deg. @ 4770'

Samples delivered to Kansas Well Sample Library in Wichita

## BIT RECORD

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC	VM-1 rr	304'	304'	3 1/2
2	7 7/8"	HTC	DP 506 rr	3750'	3446'	29 1/4
3	7 7/8"	HTC	GX20C rr	4770'	1020'	45

## FORMATION TOPS AND STRUCTURAL COMPARISON

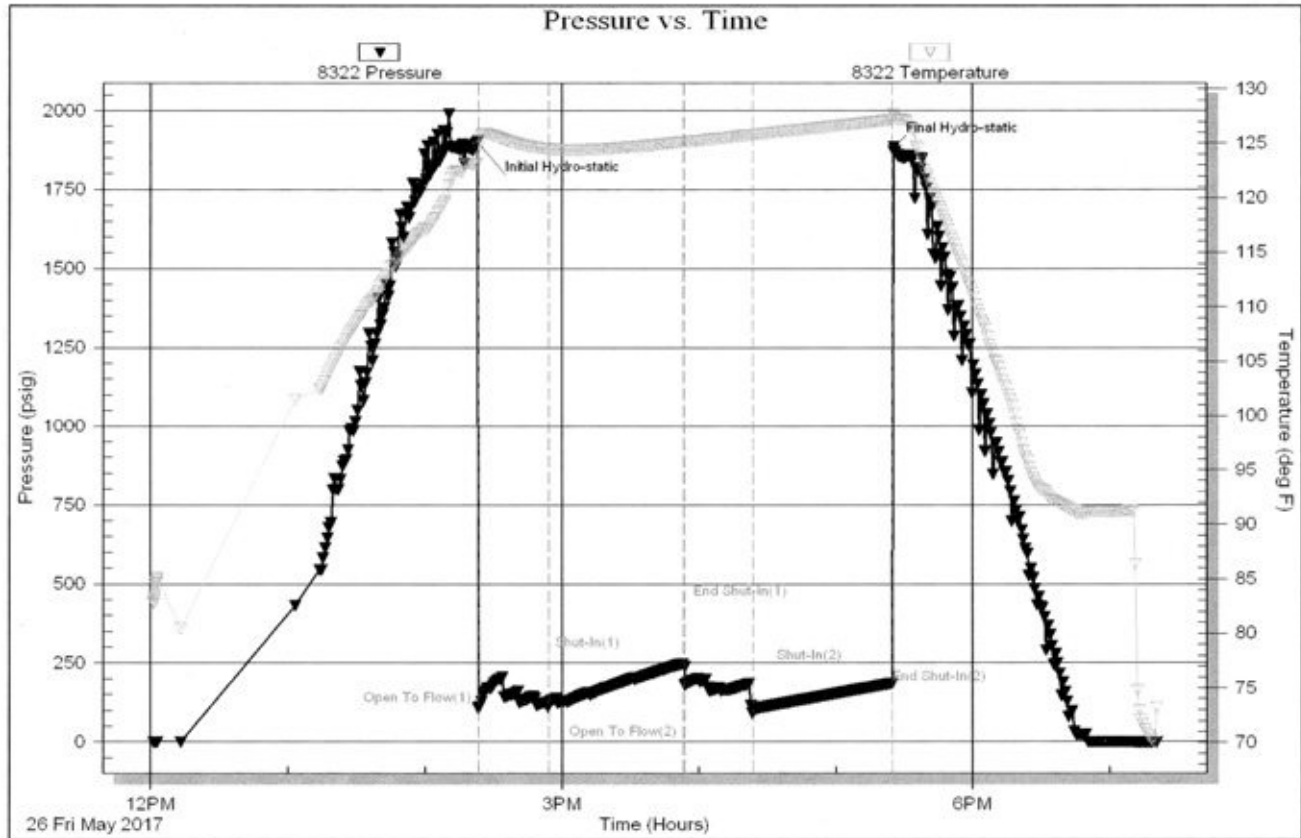
FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL K&E Focke #1 NWNWSE of 16-2S-34W 3136' KB
	Depth	Datum	Depth	Datum	
Anhydrite	2912'	+203	2914'	+201	+15
B/Anhydrite	2953'	+162	2954'	+161	+12
Topeka	3846'	-731	3847'	-732	+13
Oread	3971'	-856	3972'	-857	+3
Lansing	4032'	-917	4030'	-915	+5
Stark Shale	4246'	-1131	4244'	-1129	-1
Mound City	4293'	-1178	4290'	-1175	-1
Fort Scott	4410'	-1295	4408'	-1293	+5
Oakley	4482'	-1367	4483'	-1368	+4
Mississippian	4668'	-1553	4664'	-1549	-8
RTD	4770'	-1655			
LTD			4770'	-1655	

# DRILL STEM TESTS

DST No. 1 Oread  
Interval: 3940'-3975'  
Times: 30-60-30-60  
Recovery: 129' mud  
FP: 105-124/180-99 SIP: 248-185  
HP: 1902-1884 BHT: 127 deg. F

IFP: bridged off 18' off bottom, opened tool,  
broke thru bridge and went to bottom, bled  
off; had 1/4" blow that died in 19 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow  
definite plugging on chart

Serial #: 8322      Inside      Murfin Drilling Co. Inc      Focke Unit #1-22      DST Test Number: 1



# DRILL STEM TESTS

DST No. 2 Leavenworth-Lansing "A"  
Interval: 3994'-4060'  
Times: 30-60-60-90  
Recovery: 40' G&OCM (5g, 23o, 72m)  
FP: 17-25/29-33 SIP: 186-168  
HP: 2062-1894 BHT: 126 deg. F

IFP: surface blow built to 1 inch  
ISIP: no return blow  
FFP: surface blow built to 1/8 inch  
FSIP: no return blow  
8' of fill

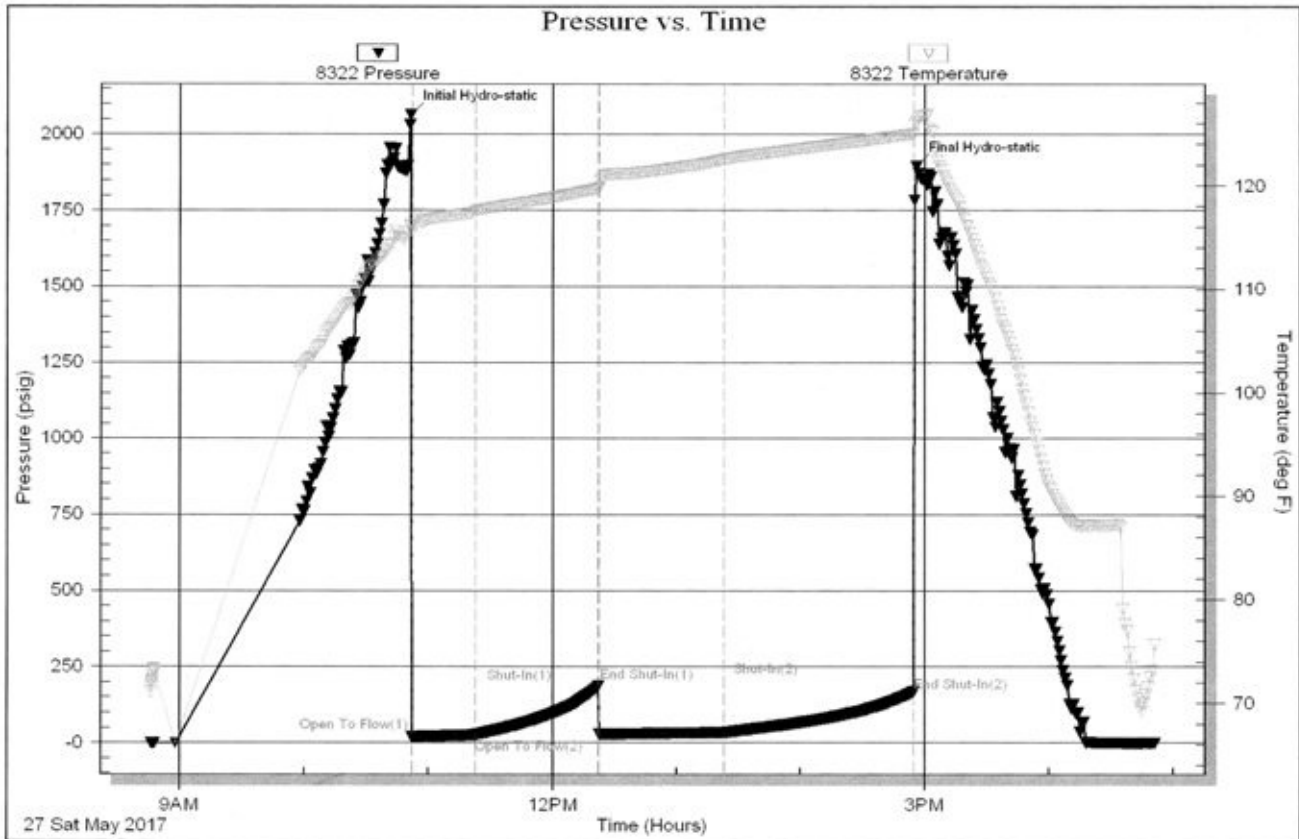
Serial #: 8322

Inside

Murfin Drilling Co. Inc

Focke Unit #1-22

DST Test Number: 2



Tribble Testing, Inc

Ref. No: 61238

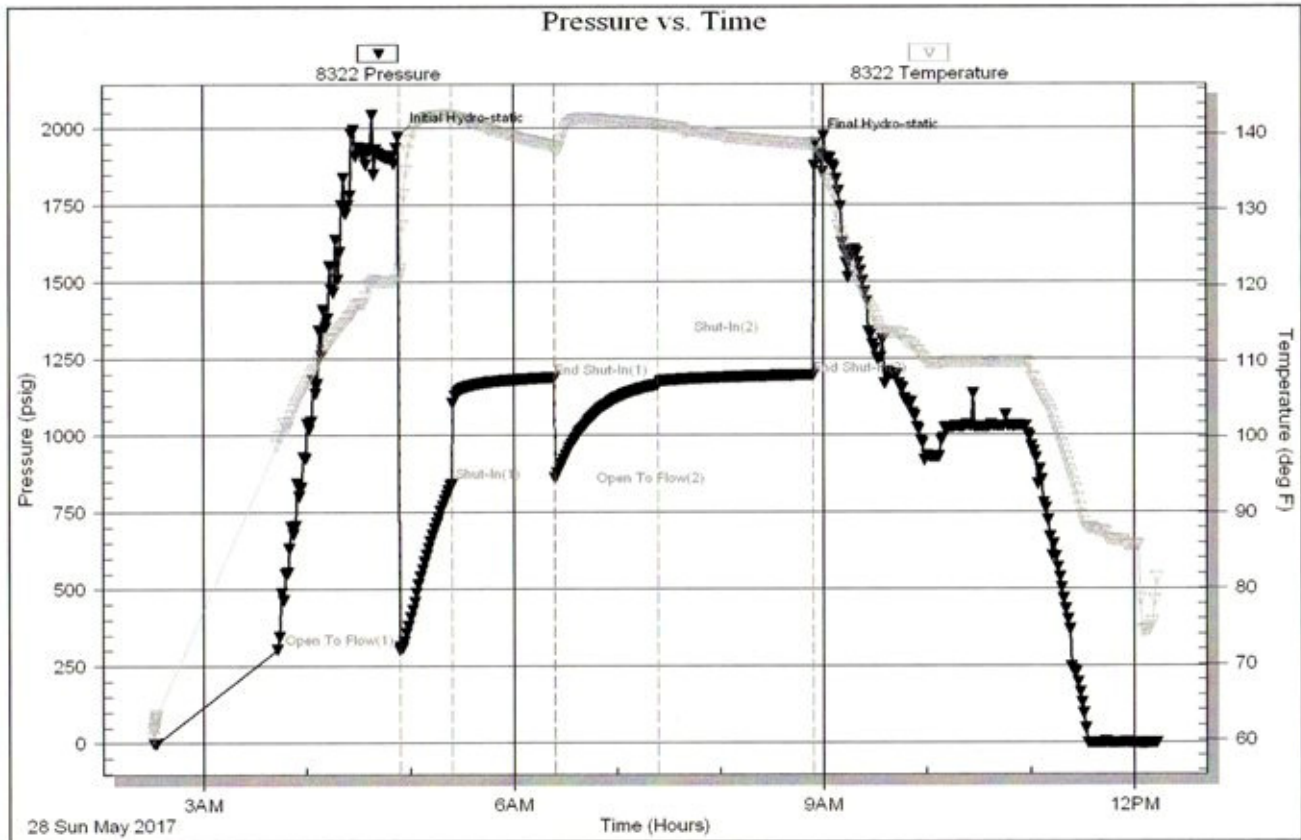
Printed: 2017.05.27 @ 17:18:48

# DRILL STEM TESTS

DST No. 3 Lansing "D"  
 Interval: 4049'-4110'  
 Times: 30-60-60-90  
 Recovery: 396' SO&WCM (10o, 41w, 47m);  
 reversed out 2124' SO&MCW (avg. 2o, avg. 82w,  
 avg. 17m); 124' SO&WCM below circ. sub (1o,  
 22w, 77m); total fluid 2644'  
 FP: 303-842/860-1165 SIP: 1189-1197  
 HP: 1970-1948 BHT: 138 deg. F

IFP: strong blow built to B.O.B. in 3  
 minutes  
 ISIP: weak surface return, died in 12  
 minutes  
 FFP: strong blow built B.O.B. in 3  
 minutes  
 FSIP: no return blow

Serial #: 8322      Inside      Murfin Drilling Co. Inc      Focke Unit #1-22      DST Test Number: 3



# DRILL STEM TESTS

DST No. 4 Lansing "G"  
Interval: 4118'-4150'  
Times: 30-60-60-90  
Recovery: 15' CGO (10g, 90o); 58' G&OCM (11g,  
41o, 48m)  
FP: 14-30/30-49 SIP: 1113-1093  
HP: 2021-2019 BHT: 131 deg. F

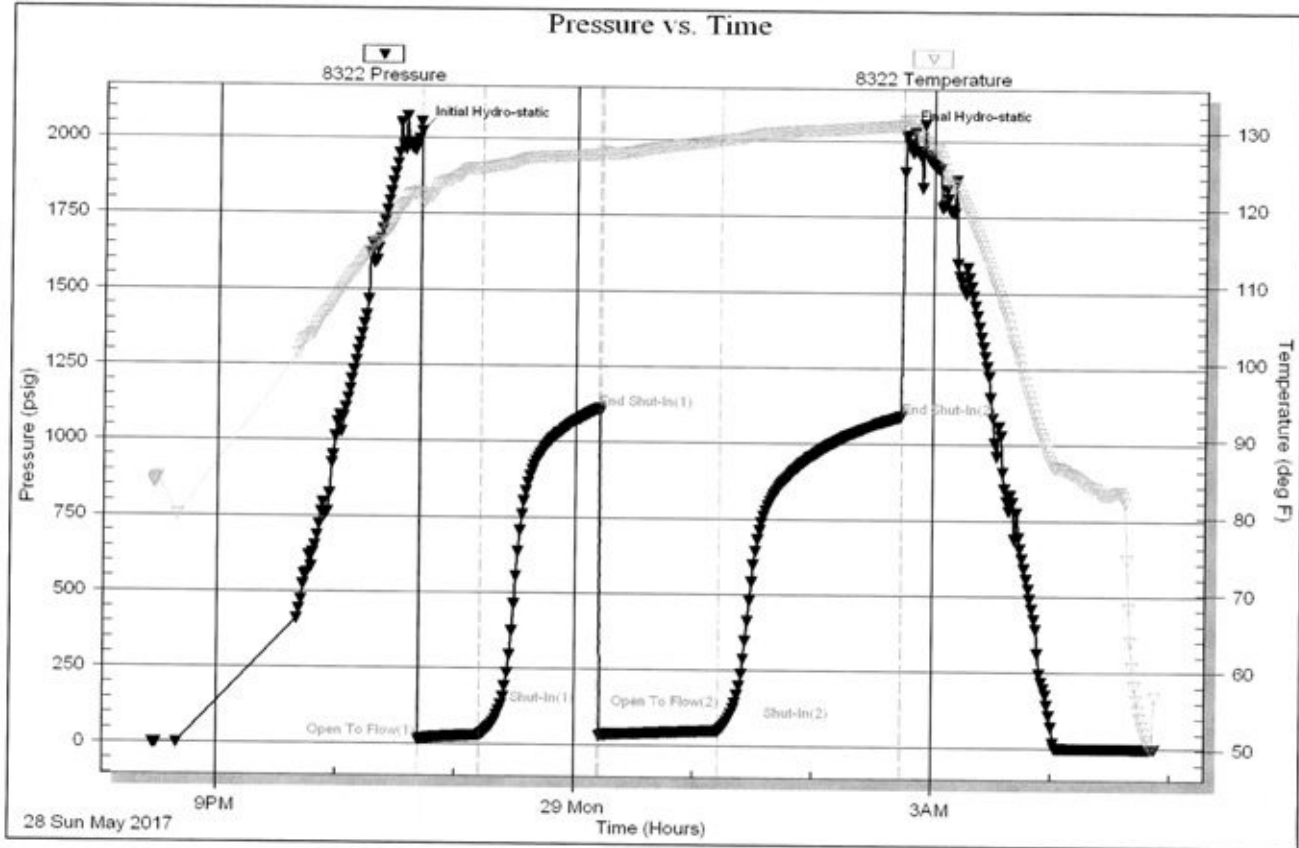
IFP: surface blow built to 2 inches  
ISIP: no return blow  
FFP: surface blow built to 4 inches  
FSIP: no return blow

Serial #: 8322

Inside Murtin Drilling Co. Inc

Focke Unit #1-22

DST Test Number: 4



Tribble Testing, Inc.

Ref. No: 61240

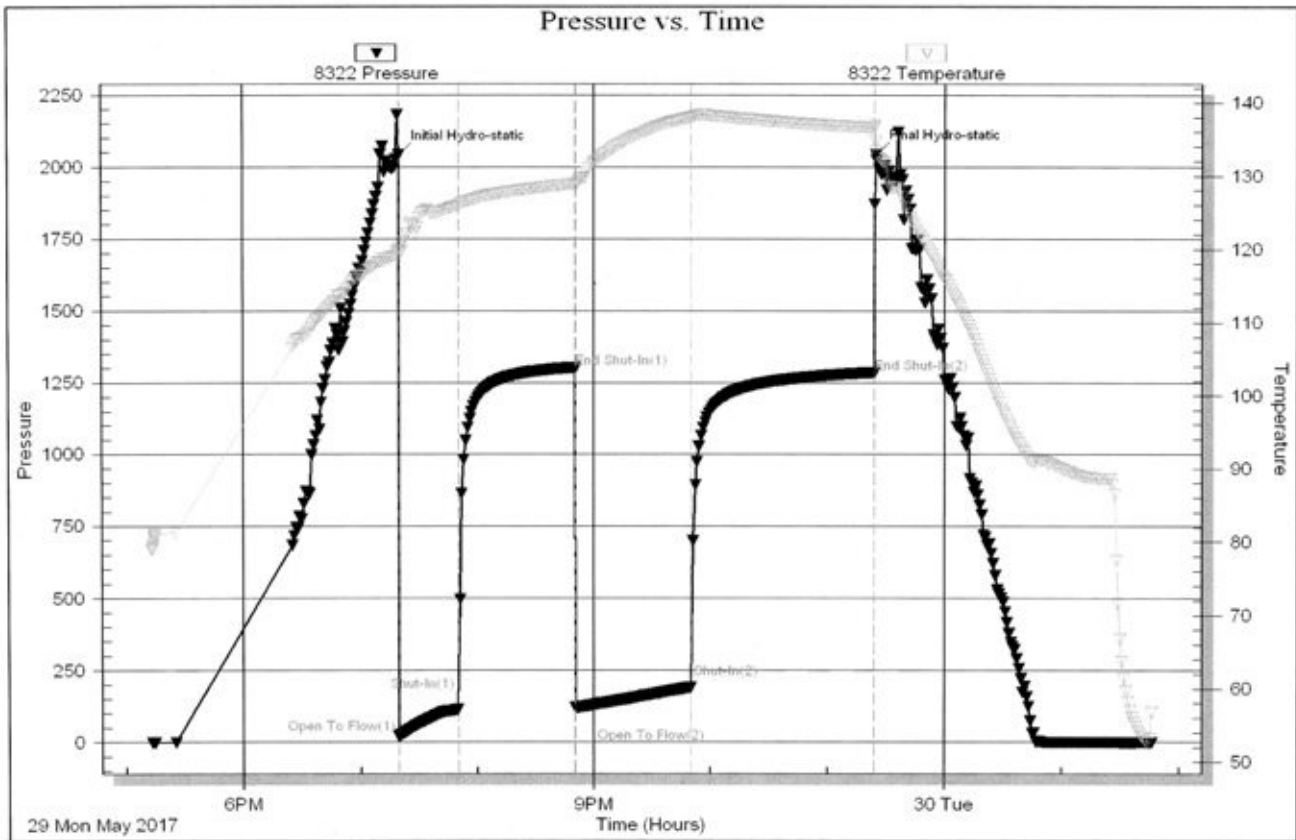
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# DRILL STEM TESTS

DST No. 5 Lansing "H" -"J"  
 Interval: 4158'-4250'  
 Times: 30-60-60-90  
 Recovery: 20' HWCM (40w, 60m); 176' MCW  
 (23m, 77w); 185' SO&WCM (1o, 44w, 55m);  
 total fluid 381'  
 FP: 20-113/120-190 SIP: 1302-1285  
 HP: 2040-2042 BHT: 135 deg. F

IFP: blow built to 9 inches  
 ISIP: no return blow  
 FFP: blow built to B.O.B. in 56 minutes  
 FSIP: no return blow

Serial #: 8322      Inside      Murfin Drilling Co. Inc      Focke Unit #1-22      DST Test Number: 5



Triobite Testing, Inc

Ref. No: 61242

Printed: 2017.05.30 @ 02:10:35

## ROCK TYPES

	Congl		Lmst		Carb sh		Sltstn
	Igne		Salt		Dol		Shlyslts
	Anhy		Shale		Dtd		Sndy/siltyshale
	Cht		Shcol		Grayshale		Silty dolo
	Coal		Siltstone		Sandylms		Shy dolo
	Congl		red sst		Redshale		Shaly ls
	Gyp		Sst		Greenshale		Dolomite

### ACCESSORIES

#### FOSSIL

- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant

- Strom
- Fuss
- Oomold

#### MINERAL

- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Breclfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp

- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff
- Chlorite
- Dol
- Sand
- Sltly

- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- red shale
- green shale
- Sltstn

#### STRINGER

- Anhy
- Arg

### OTHER SYMBOLS

#### INTERVALS

- Core
- Dst
- Dst

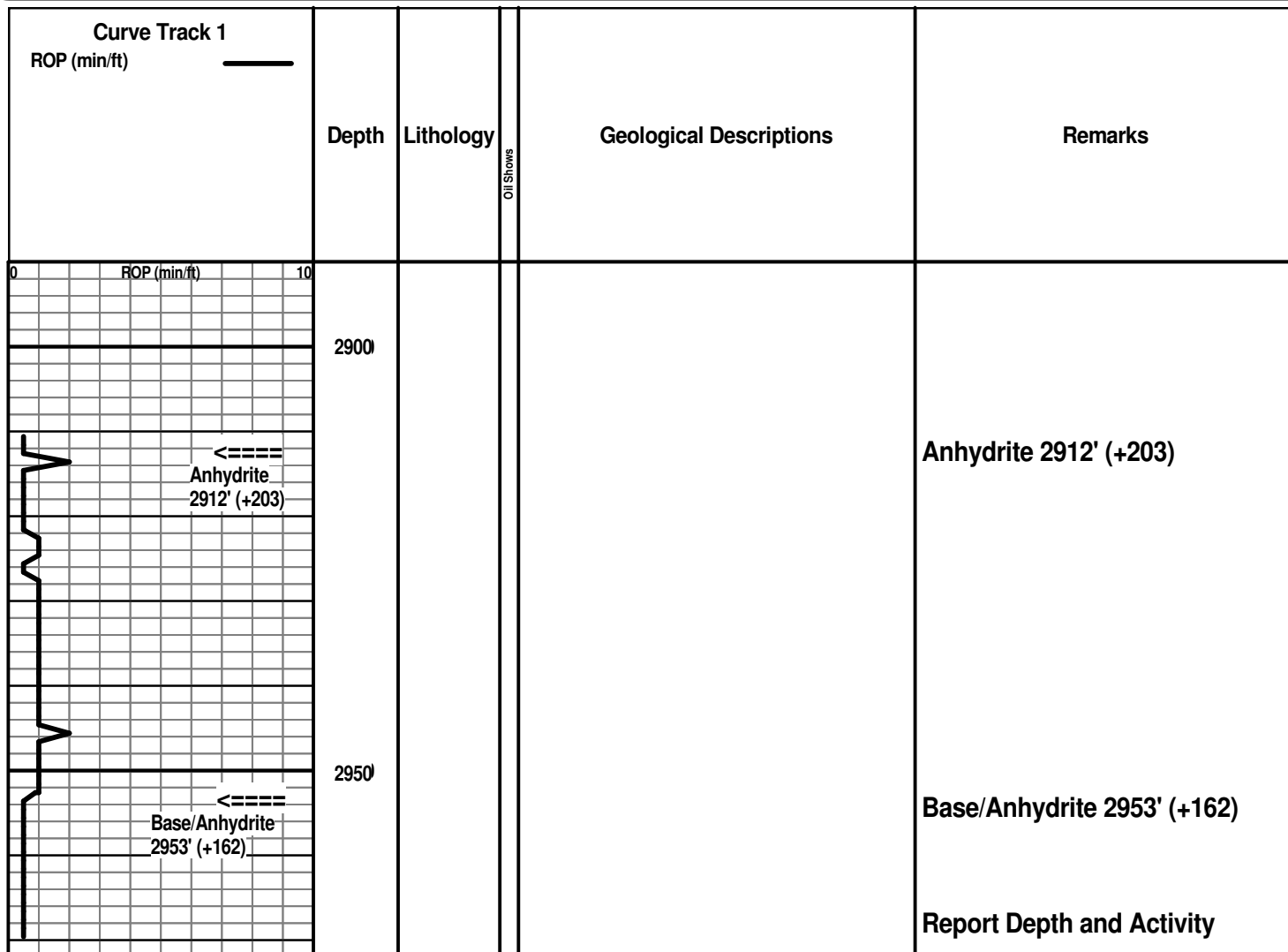
#### EVENTS

- Rft
- Dst top & bottom

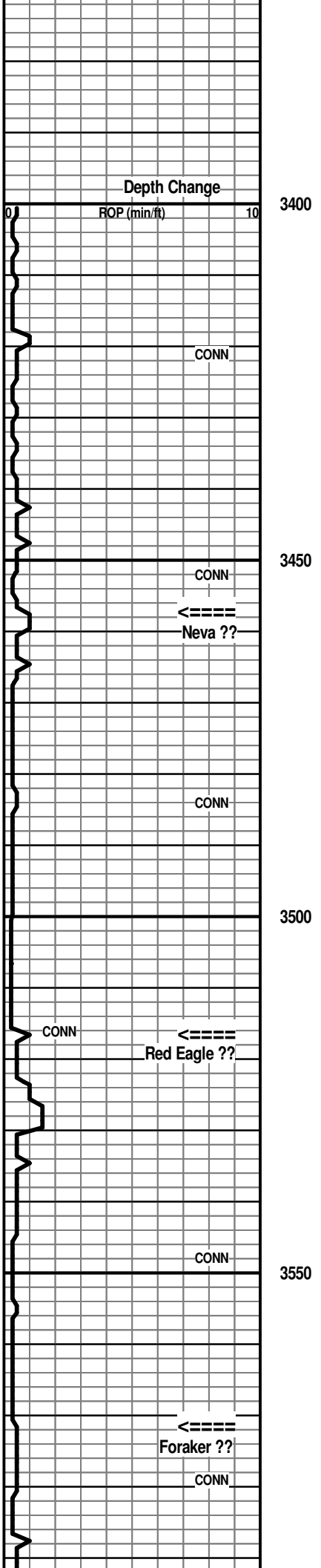
#### OIL SHOWS

- Even
- Spotted
- Quest.

- Trace
- Dead
- Gas show



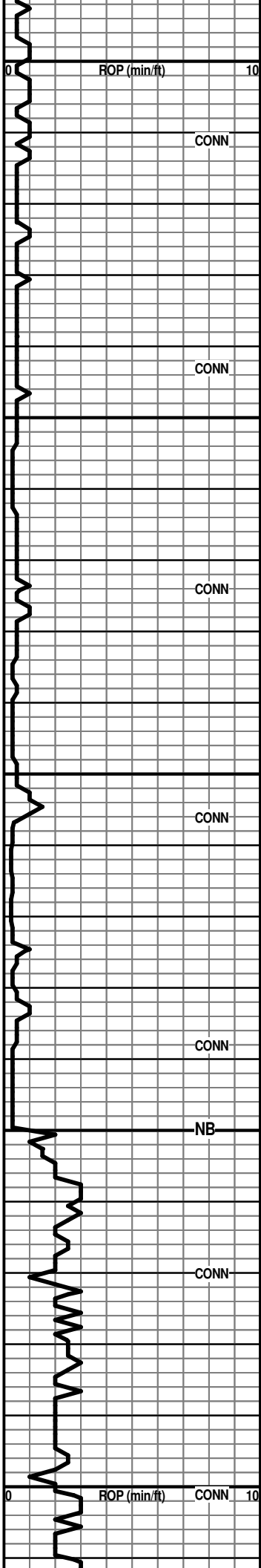




5-15-2017 Drilling water well  
 5-16 hauled 6 loads, waiting on weather  
 5-17/5-22 waiting on weather, muddy  
 5-23 Finish MIRT, Spud at 5:30 PM  
 5-24 WOC @ 304'  
 5-25 Drlg. @ 3160'  
 5-26 Repair rotary chain @ 3965'  
 5-27 DST #2 @ 4060'  
 5-28 DST #3 @4110'  
 5-29 CTCH post DST #4 @ 4150'  
 5-30 Drlg. @ 4263' post DST 5  
 5-31 Drlg. @ 4570'  
 6-1 RTD @ 4770' - logging completed at 1:15 AM - plugging

Drill time from 3400'-3750' from PDF bit courtesy of tool pusher, Kelly Wilson

Call point at 3460'



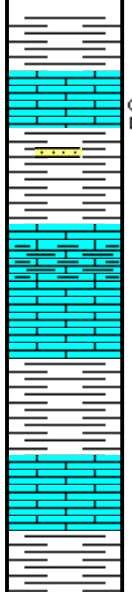
3600

3650

3700

3750

3800



60' spl - Sh: vc gray, lesser red-brn and red silty

70' spl - Ls: strong influx lt to med gray, lt brn granular to vfxln, NVP, mottled IP N.S.

80' spl - Sh: influx red-brn, silty IP; occ lt gray med grnd Sst, sl pyritic IP, N.S.; much decr. Ls AA; trace tan vfxln with patchy dead stain, milky cut, no odor, nfo

90' spl - Ls: several chips with dead stain AA; other lt gray, lt brn cryptoxln, NVP and offwhite mic-vfxln dense, subchalky IP, N.S.

3800' spl - Sh: new soft mushy red-brn; Ls: much decr. %; lt gray cryptoxln AA

10' spl - Ls: offwhite, lt gray fnxln, poor-NVP, some offwhite chalky; Sh: red-brn, lt green

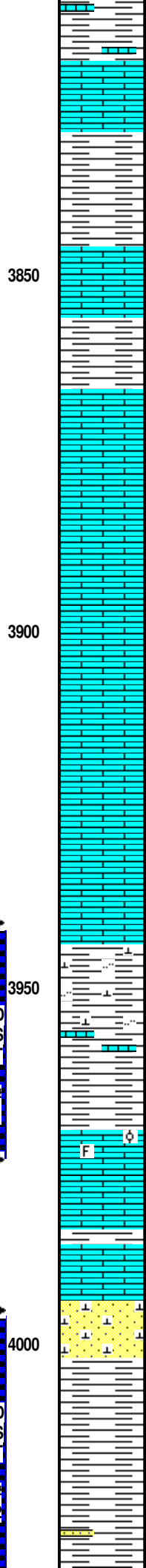
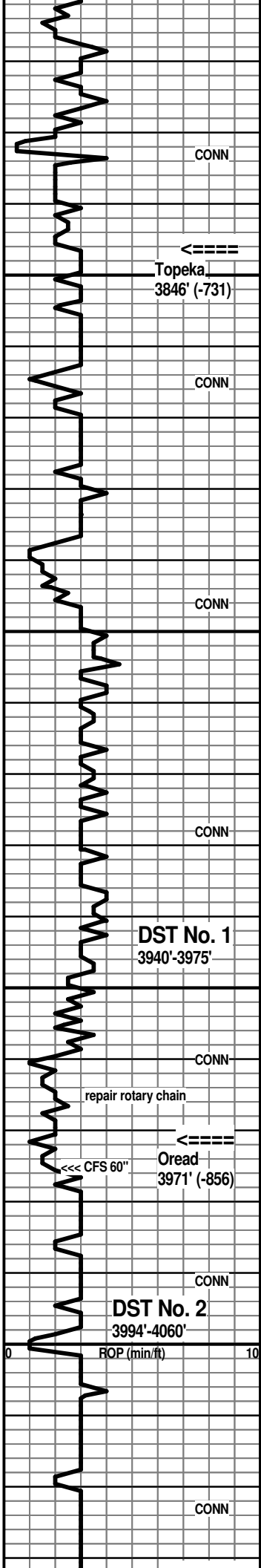
20' spl - Sh: flood red-brn, soft and mushy

Call point reached at 10:45 AM on 5-25-2017

Geologist on location at 3750' at 4:30 PM on 5-25-2017

tripped PDC bit at 3750' pipe strap at 3750' was 1.43' short

Start 10' samples at 3760'



30' spl - Sh: AA; sl incr. Ls: offwhite, lt gray cryptoxln, NVP, N.S.

40' spl - Ls: fair influx offwhite, lt gray, tan cryptoxln to granular IP, NVP, N.S.; Sh: red-brn

50' spl - Sh: incr. % red-brn, soft and mushy; some lt green; decr. Ls %

60' spl - Sh: flood soft, mushy red-brn

70' spl - Sh: AA with some Ls: offwhite, tan fn granular with poor-NVP, N.S.

80' spl - Ls: good influx fn granular dense AA with lt gray cryptoxln, NVP

90' spl - Ls: lt gray cryptoxln and offwhite mic-vfxln dense, N.S.

3900' spl - Ls: pred. mix AA with more offwhite mic-vfxln dense and tan fn granular with poor interxln por., N.S.; scatt. chips offwhite, lt gray with isolated vug. por. with black oily stain; some offwhite with patchy black gilsonitic stain, no odor, nfo

10' spl - Ls: occ chips with shows AA; pred. lt gray, tan cryptoxln and offwhite, tan mic-vfxln dense, subchalky IP

20' spl - Ls: mix lt to med gray cryptoxln and offwhite, lt gray mic-vfxln dense, NVP, N.S.

30' spl - Ls: mix AA with some lt to med gray shale

40' spl - Ls: mix offwhite mic-vfxln dense, lt to med gray cryptoxln, lt gray vfxln silty/shaly

50' spl - Ls: pred. lt to med gray vf-cryptoxln, NVP; lesser offwhite, lt gray dense AA

60' spl - Sh: flood med to dark gray silty and calcar.

70' spl - Sh: AA with sl influx Ls: dark gray, gray-brn cryptoxln

CFS 3975' 20" spl - Ls: influx tan, offwhite foss. and oolitic with some inter-particle por. and some vug. por. with dark brn to black stain, fair sfo, no odor; other offwhite, lt gray vf-cryptoxln, and offwhite, tan mic-vfxln dense, subchalky IP, NVP, N.S.; CFS 40"/60" spls - >>>

90' spl - Ls: mix offwhite, lt gray, tan cryptoxln; lesser offwhite, tan mic-vfxln dense, sl pyritic IP; and lt to med gray, dense, shaly

4000' spl - Ls: mix AA; sl incr. med gray shale

10' spl - Ls: tan, offwhite vf-cryptoxln, some gran. with rare vug. por. with patchy black stain, nfo; med brn cryptoxln; one chip lt brn with imbedded qtz grains with sat. stain; Sh: influx dark gray; Sst: lt gray vfg, soft with calc. cmt with patchy to sat. brn stain, sfo on break, fair odor, some N.S.

20' spl - Sh: influx soft gray and red-brn; Sst: common lt gray vfg, soft AA, some shows AA; some Ls: lt to med brn cryptoxln

30' spl - Sh: strong influx soft, mushy red-brn; lesser med to dark gray and green-gray; minor tan, offwhite cryptoxln Ls

40' spl - Sh: AA; some Sst: lt gray vfg calc.; Ls: tan, lt brn cryptoxln, occ with patchy stain; tan fn oolitic with some poor-fair inter-oolitic por. with patchy to sat. stain, sfo on break, ft odor on break, gas, tightly bound

**Topeka 3846' (-731)**

DST No. 1 Oread  
Interval: 3940'-3975'  
Times: 30-60-30-60  
IFP: bridged off 18' off bottom, opened tool, broke thru bridge and went to bottom, bled off; had 1/4" blow that died in 19 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow  
definite plugging on chart  
Recovery: 129' mud  
FP: 105-124/180-99 SIP: 248-185  
HP: 1902-1884 BHT: 127 deg. F

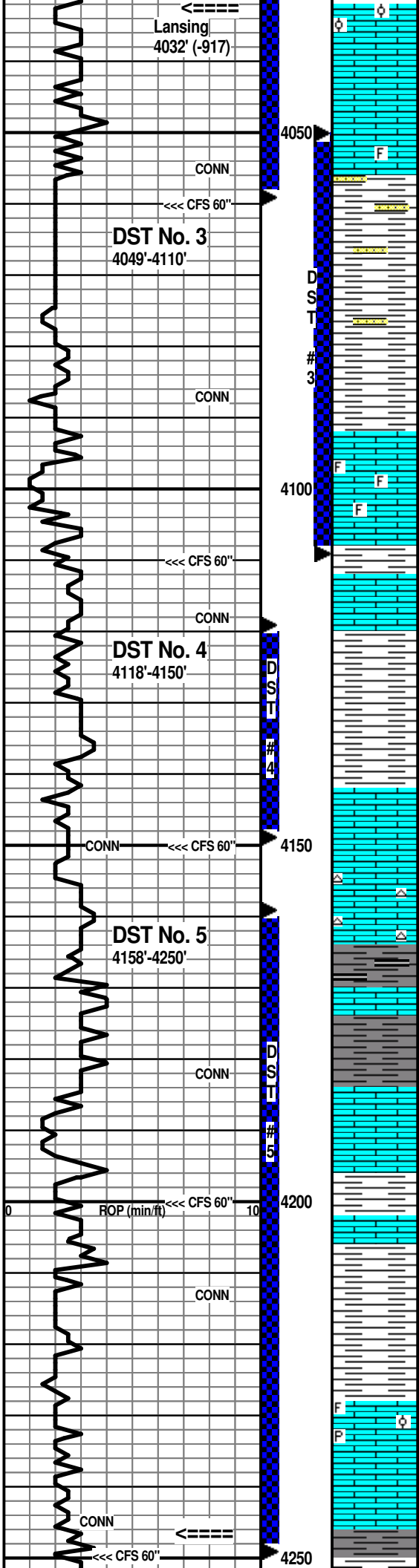
ran 5 stand short trip ahead of DST No. 1  
  
7:00 AM at 3965' on 5-26-2017

**Oread 3971' (-856)**  
CFS 40" spl - Ls: offwhite, lt gray, tan mic-vfxln dense AA; occ chips with shows AA; other lt to med gray cryptoxln, NVP; 60" spl - Ls: mix AA; fairly minor med gray and red-brn shale

**Morgan Mud Check at 3975'**  
10:40 AM on 5-26-2017  
wt vis wl pH chl  
8.8 62 6.0 11.0 1000  
PV YP Gels lcm solids  
21 22 7/28 3# 3.6%

DST No. 2 Leavenworth-Lansing "A"  
Interval: 3994'-4060'  
Times: 30-60-60-90  
IFP: surface blow built to 1 inch  
ISIP: no return blow  
FFP: surface blow built to 1/8 inch  
FSIP: no return blow  
Recovery: 40' G&OCM (5g, 23o, 72m)  
FP: 17-25/29-33 SIP: 186-168  
HP: 2062-1894 BHT: 126 deg. F  
8' of fill

**Lansing 4032' (-917)**



break, it odor on break, gen. tightly bound

50' spl - Ls: flood lt brn smooth cryptoxln, NVP, N.S.

60' spl - Ls: lt brn cryptoln AA, rare spotty stain, NVP

CFS 4060' 20" spl - Sh: influx vc gray, red-brn, gray-green; Sst: lt gray, tan vfg with patchy to sat. stain, nfo; Ls: AA; offwhite mic-vfxln dense; 40" spl - Ls: some lt brn gran/foss with some inter-particle por. with stain, sfo, sl odor; abund. vc gray shale; CFS 60" spl - >>>

70' spl - trashy; 80' spl - Sh: pred. red-brn, red-maroon; lesser lt to med gray; some Sst: lt gray vfg, silty and calcareous, N.S.

90' spl - Sh: very pred. red-brn, red-maroon; occ Sst AA

4100' spl - Sh: various AA; Ls: tan, offwhite vfxln with patchy stain, poor-NVP; several chips tan med to coarse gran. and foss. with vug. and inter-particle por with stain, vsf sfo on break, no odor

10' spl - Ls: shows AA; some offwhite gran. with black stain on xtl contacts, NVP; influx lt gray, some lt brn cryptoxln, NVP with patchy stain

CFS 4110 30" spl - Ls: various cryptoxln AA; influx offwhite subchalky to chalky; 60" spl - low volume, Ls: lt gray cryptoxln and offwhite subchalky to chalky

20' spl - quest. new rocks, Ls: mix AA; common Sh: red-brn, red-maroon, lt gray; 30' spl >>>

40' spl - flood Sh: pred. red-maroon, lesser red-brn

50' spl - Sh: mix AA; Ls: occ lt gray, tan cryptoxln to gran., NVP

CFS 4150' 30" spl - Ls: scatt. tan, lt brn gran. with some inter-particle and vug. por. with subsat-sat stain, no odor, good show bleeding oil, vsf sg; other lt gray, tan cryptoxln, NVP, N.S.; 60" spl - Ls: mix AA, shows AA; Sh: incr. % red-brn, red-maroon, med gray

60' spl - quest. new rocks; Ls: mix AA with influx chert: offwhite, opq; 70' spl - flood Ls: lt gray, some gray-brn cryptoxln, NVP; lt gray dense, shaly IP; Chert: offwhite opq, mottled orange opq

80' spl - Ls: influx dark gray cryptoxln, mottled IP, NVP; influx Sh: dark gray to black

90' spl - Sh: dark gray to black AA; Ls: dark gray, some dark brn cryptoxln

4200' spl - Ls: good influx offwhite vfxln dense, N.S.; several chips offwhite fn gran. with fair inter-particle and vug. por. with patchy black stain, vsf sfo, trace sg on break, no odor

CFS 4200' 30" spl - Ls: flood lt gray, tan pred. cryptoxln, NVP; other offwhite mic-vfxln dense, subchalky IP; occ white chalky; 60" spl - >>>

10' spl - Ls: mix lt to med gray, lt brn sl mottled gran. NVP; offwhite, tan fn gran. with ppt to patchy dead stain, no odor, nfo, gen. poor-NVP

20' spl - Ls: mix AA; good influx Sh: red-maroon, red-brn, med to dark gray

30' spl - Sh: very pred. dark red-brn, red-maroon

40' spl - Sh: AA, decr. %; Ls: several chips offwhite, tan fn gran., sl oolitic and foss. with vug. and fair inter-particle and ppt por. with poss. faint odor, subsat-sat stain in dry spls, fair show dark brn to black oil on break, vsf sg; occ dark brn pyritic, sl gran., N.S.

50' spl - Ls: some patchy stain AA; pred. tan, lt gray, some lt brn cryptoxln and offwhite, tan mic-vfxln subchalky to occ chalky, N.S.; trace tan cryptoxln with lt stain in vug. por.

CFS 4250' 30" spl - Ls: influx sl mottled lt to med brn, more gran., NVP, N.S.; Sh: sl influx lt to med gray, red-brn; 60" spl - >>>

CFS 4060' 60" spl - Ls: mix lt to med brn cryptoxln NVP and offwhite fnxln with spotty stain; Sh: pred. lt to med gray; Sst: lt gray, offwhite vfg, some shows AA

**short trip of 10-12 stands prior to DST 2**

**7:00 AM at 4060' on 5-27-2017**

**Morgan Mud Check at 4060'**

**10:30 AM on 5-27-2017**

wt vis wl pH chl  
8.6 56 6.4 10.5 1000

PV YP Gels lcm solids  
18 18 6/21 3# 2.2%

DST No. 3 Lansing "D"  
Interval: 4049'-4110'  
Times: 30-60-60-90  
IFP: strong blow built to B.O.B. in 3 minutes  
ISIP: weak surface return, died in 12 minutes  
FFP: strong blow built B.O.B. in 3 minutes  
FSIP: no return blow  
Recovery: 396' SO&WCM (10o, 41w, 47m); reversed out 2124' SO&MCW (avg. 2o, avg. 82w, avg. 17m); 124' SO&WCM below circ. sub (1o, 22w, 77m); total fluid 2644'  
FP: 303-842/860-1165 SIP: 1189-1197  
HP: 1970-1948 BHT: 138 deg. F

**7:00 AM at 4110' on 5-28-2017**

30' spl - Ls: scatt. chips tan, offwhite gran. with gen. poor inter-particle por. to NVP, with ppt stain, no odor, some listless oily film on break; tan, lt to med gray, lt brn cryptoxln, NVP, N.S.

**Morgan Mud Check at 4110'**

**12:05 PM on 5-28-2017**

wt vis wl pH chl  
9.0 45 6.4 10.5 900

PV YP Gels lcm solids  
13 12 5/20 4# 5.0%

**7:00 AM at 4150' on 5-29-2017**

DST No. 4 Lansing "G"  
Interval: 4118'-4150'  
Times: 30-60-60-90  
IFP: surface blow built to 2 inches  
ISIP: no return blow  
FFP: surface blow built to 4 inches  
FSIP: no return blow  
Recovery: 15' CGO (10g, 90o); 58' G&OCM (11g, 41o, 48m)  
FP: 14-30/30-49 SIP: 1113-1093  
HP: 2021-2019 BHT: 131 deg. F

CFS 4200' 60" spl - Ls: mix offwhite mic-vfxln subchalky with ppt por.; other lt gray cryptoxln to sl mottled gran., NVP, N.S.; Sh: sl influx dark gray to black

DST No. 5 Lansing "H" - "J"  
Interval: 4158'-4250'  
Times: 30-60-60-90  
IFP: blow built to 9 inches  
ISIP: no return blow  
FFP: blow built to B.O.B. in 56 minutes  
FSIP: no return blow  
Recovery: 20' HWCM (40w, 60m); 176' MCW (23m, 77w); 185' SO&WCM (1o, 44w, 55m); total fluid 381'  
FP: 20-113/120-190 SIP: 1302-1285  
HP: 2040-2042 BHT: 135 deg. F

**Stark Shale 4246' (-1131)**

CFS 4250' 60" spl - Ls: various dense AA; scatt. tan,

**Stark Shale**  
4246' (-1131)

CONN

←=====  
**Mound City**  
4293' (-1178)

<<< CFS 60"

CONN

CONN

4300

4350

CONN

4400

ROP (min/ft)

CONN

←=====  
**Fort Scott**  
4410' (-1295)

<<< CFS 60"

CONN

<<< rig repairs  
change swivel

4450

CONN

60' spl - trashy; 70' spl - Sh: AA, influx brn silty and finely pyritic gray; occ Ls: tan, lt gray cryptoxln

80' spl - flood Ls: lt gray, tan, lt brn pred. cryptoxln, gran. IP, NVP, N.S.; other offwhite, lt gray vfxln dense; much decr. Sh %

90' spl - Ls: mix AA with med brn cryptoxln and mottled gray gran. NVP; Sh: incr. dark red-brn, other med gray, dark gray to balck

4300' spl - Ls: lt to med gray, lt brn sl gran. to cryptoxln, NVP, N.S.; some mottled with maroon shale; Sh: some dark red-maroon, dark gray

CFS 4300' 30" spl - Sh: influx red-maroon, red-brn; Ls: various AA, decr. %; some offwhite mic-vfxln subchalky; 60" spl - >>>

10' spl - Ls/Sh mix AA with influx Sst: lt brn, lt gray vfg, very calcar. with some patchy stain, no odor, nfo, weak cut

20' spl - Ls: good influx pred. lt to med gray, tan cryptoxln; lesser lt brn gran. and lt gray vfxln, sl shaly

30' spl - influx Sh: lt red, lt red-brn; Ls: lt gray, offwhite sl gran., vsl foss., NVP, N.S.

40' spl - Sh: lt red-brn, lt red-maroon; Ls: lt gray, tan cryptoxln; lt to med gray gran. NVP, N.S.

50' spl - influx Ls: lt to med gray, very shaly to very calcar. gray shale, silty IP

60' spl - AA; other Ls: lt gray, tan, lt brn cryptoxln

70' spl - very shaly Ls AA; with incr. lt to med gray, gray-brn vf-cryptoxln Ls; Sh: influx gray, brn, lt red-maroon

80' spl - Sh: influx lt gray very soft and mushy, clayey; other brn, med gray, red-brn

90' spl - Ls: influx lt gray, tan, lt brn cryptoxln; lesser offwhite mic-vfxln dense, subchalky

4400' spl - Ls: mix AA; incr. offwhite mic-vfxln subchalky; Sh: streaks lt to med gray

10' spl - Ls: lt gray, offwhite mic-vfxln dense, shaly IP; lesser lt gray, lt brn cryptoxln; Sh: lt to med gray

20' spl - Sh: influx lt to med gray, red-brn, red-maroon, soft mushy lt red; Ls: much decr. %, some med gray, med brn cryptoxln

CFS 4420' 30" spl - flood Ls: some tan gran., oolitic IP with poor-fair inter-particle por., N.S.; pred. lt to med gray cryptoxln, NVP, N.S.; CFS 60" spl - >>>

30' spl - Ls: lt to med gray, some gray-brn cryptoxln; Sh: lt to med gray

40' spl - Sh: abund, lt to med gray; Ls: pred. various gray AA, decr. %

50' spl - pred. Ls: mix tan, lt gray, some lt brn cryptoxln; lesser tan mic-fxln with ppt por., subchalky matrix; Sh: dark red-brn, dark red, maroon, gray (spl's likely a little trashy from pulling stands for rig repair)

60' spl - Ls: pred. med gray cryptoxln to sl granular, NVP, N.S.; some lt to med gray shale

70' spl - Sh: influx med to dark gray, some black carb., some soft mushy lt gray; Ls: decr. % lt gray, lt brn cryptoxln and lt gray dense, shaly

80' spl - Sh: strong influx lt gray, very soft and mushy; minor cryptoxln Ls

offwhite vfxln with some small vug, por with patchy stain, no odor, nfo; incr. lt to med gray sl gran. to cryptoxln; Sh: incr. % AA

7:00 AM at 4263' on 5-30-2017

**Morgan Mud Check at 4250'**  
2:45 PM on 5-29-2017

wt vis wl pH chl  
8.9 74 6.0 11.0 1300  
PV YP Gels lcm solids  
24 27 8/34 4# 4.3%

**Mound City 4293' (-1178)**

CFS 4300' 60" spl - Ls: mix tan, lt gray cryptoxln to gran., NVP; Sh: red-maroon, red-brn

**Morgan Mud Check at 4305'**  
10:20 AM on 5-30-2017

wt vis wl pH chl  
8.9 88 6.4 11.5 1800  
PV YP Gels lcm solids  
28 28 11/34 4# 4.3%

**Fort Scott 4410' (-1295)**

CFS 4420' 60" spl Ls: mix AA, pred. various gray cryptoxln; lesser offwhite, lt gray mic-vfxln dense; scatt. gray opq chert

pulled drill pipe to collars to replace swivel at 4446'

90' spl - Sh: pred. med to dark gray, black; Ls: sl incr. % lt gray, med to dark brn cryptoxln, NVP and gray gran. with poor-NVP, N.S.

### Oakley 4482' (-1367)

4500' spl - flood Ls: lt to med brn, lt to med gray cryptoxln and tan, offwhite mic-vfxln dense, subchalky to chalky IP

10' spl - Ls: various cryptoxln AA; Sh: red-brn, some soft; med to dark gray

20' spl - Ls: lt to med gray, some lt to med brn cryptoxln; lesser offwhite subchalky to chalky

CFS 4520' 20" spl - Ls: mix AA; Sh: sl influx soft mushy lt red, occ green, gray; 40" spl - Sh: good influx soft red-brn, lt red; Ls: mix AA; 60" spl - shales AA, some mottled red-maroon/gray; some Sst: sl influx offwhite fg with red shale filled interstices

30' spl - no new rocks; 40' spl - some Sst: offwhite, tan vf-fg with fair-good inter-granular por., N.S.

50' spl - mix red-brn and red-maroon shales with Sst AA; occ very coarse single qtz grains

60' spl - Sst: incr. coarse to very coarse single qtz grains, lt gray, yellow, tan, ang-subrnd; scatt. fn-med grnd clusters, shaly IP, N.S.; Shales AA

70' spl - shales and loose grains AA; influx Sst: red-brn fn-med grnd clusters, shaly; some sandy pyrite

80' spl - Sh: pred. dark red-brn, sandy IP; Sst: dirty red-brn, gray shaly; scatt. single grains

90' spl - flood Sst: coarse to very coarse grains, ang-subrnd, gray, tan, yellow

7:00 AM at 4570' on 5-31-2017

4600' spl - sands AA; Sh: dark-red-brn, red-maroon, lesser gray, green, yellow, mottled IP

10' spl - pred. shales AA; Sst: influx dirty brn fg, tight, N.S.

20' spl - flood Sst: lt gray, tan, yellow, orange coarse to very coarse loose grains, ang-rnd, N.S.

30' spl - Sst: loose grains AA; some offwhite, lt gray vf-fg clusters, N.S.; influx Sh: pred. red-brn, red-maroon, some dark yellow and gray

40' spl - flood Sh: red-brn, dark red-maroon; Sst: brown fg, shaly, tight, vsl glauc. IP, silica cement

50' spl - still very shaly with Sst: influx offwhite, tan fg, silica cement, vsl glauc., with shale partings; some dark brn/red fg Sst AA; incr. loose grains

60' spl - Sst: very pred. loose grains of coarse to very coarse ang-subrnd; lesser dirty red, tight clusters, shaly, hard

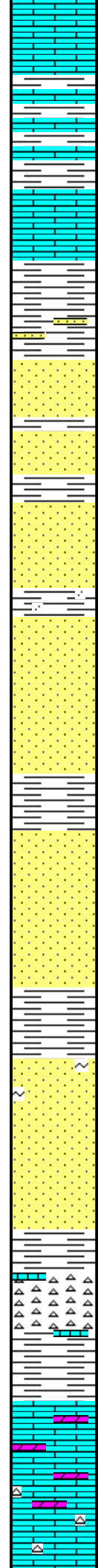
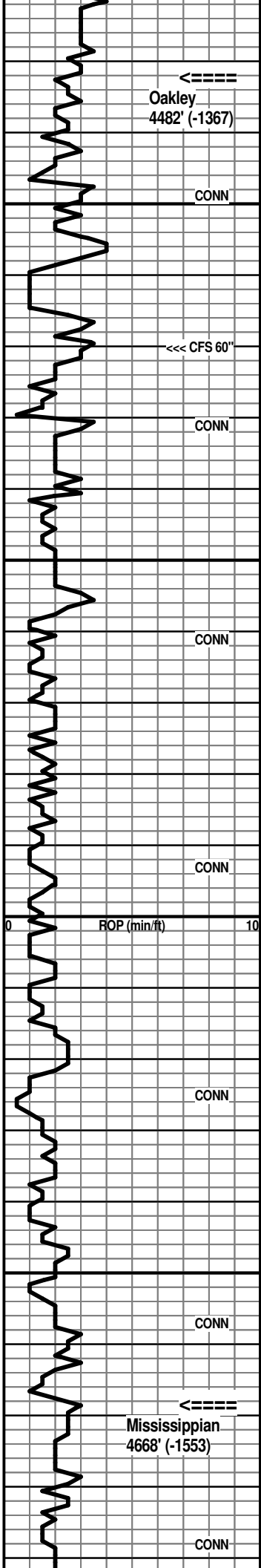
70' spl - flood Chert: tan, lt gray, yellow opq, some offwhite opq, weath. with some ppt por., N.S.; Ls: tan, offwhite gran., dense

80' spl - very cherty AA with influx yellow shale

### Mississippian 4668' (-1553)

90' spl - flood Ls: offwhite, tan mic-vfxln dense; Dolo: lt gray, offwhite vfxln, poor-NVP, N.S.

4700' spl - Ls/Dolo mix AA with offwhite opq, fresh chert



90' spl - Sh: pred. med to dark gray, black; Ls: sl incr. % lt gray, med to dark brn cryptoxln, NVP and gray gran. with poor-NVP, N.S.

4500' spl - flood Ls: lt to med brn, lt to med gray cryptoxln and tan, offwhite mic-vfxln dense, subchalky to chalky IP

10' spl - Ls: various cryptoxln AA; Sh: red-brn, some soft; med to dark gray

20' spl - Ls: lt to med gray, some lt to med brn cryptoxln; lesser offwhite subchalky to chalky

CFS 4520' 20" spl - Ls: mix AA; Sh: sl influx soft mushy lt red, occ green, gray; 40" spl - Sh: good influx soft red-brn, lt red; Ls: mix AA; 60" spl - shales AA, some mottled red-maroon/gray; some Sst: sl influx offwhite fg with red shale filled interstices

30' spl - no new rocks; 40' spl - some Sst: offwhite, tan vf-fg with fair-good inter-granular por., N.S.

50' spl - mix red-brn and red-maroon shales with Sst AA; occ very coarse single qtz grains

60' spl - Sst: incr. coarse to very coarse single qtz grains, lt gray, yellow, tan, ang-subrnd; scatt. fn-med grnd clusters, shaly IP, N.S.; Shales AA

70' spl - shales and loose grains AA; influx Sst: red-brn fn-med grnd clusters, shaly; some sandy pyrite

80' spl - Sh: pred. dark red-brn, sandy IP; Sst: dirty red-brn, gray shaly; scatt. single grains

90' spl - flood Sst: coarse to very coarse grains, ang-subrnd, gray, tan, yellow

4600' spl - sands AA; Sh: dark-red-brn, red-maroon, lesser gray, green, yellow, mottled IP

10' spl - pred. shales AA; Sst: influx dirty brn fg, tight, N.S.

20' spl - flood Sst: lt gray, tan, yellow, orange coarse to very coarse loose grains, ang-rnd, N.S.

30' spl - Sst: loose grains AA; some offwhite, lt gray vf-fg clusters, N.S.; influx Sh: pred. red-brn, red-maroon, some dark yellow and gray

40' spl - flood Sh: red-brn, dark red-maroon; Sst: brown fg, shaly, tight, vsl glauc. IP, silica cement

50' spl - still very shaly with Sst: influx offwhite, tan fg, silica cement, vsl glauc., with shale partings; some dark brn/red fg Sst AA; incr. loose grains

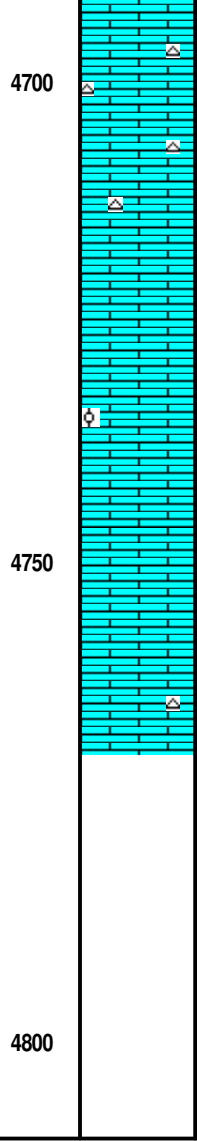
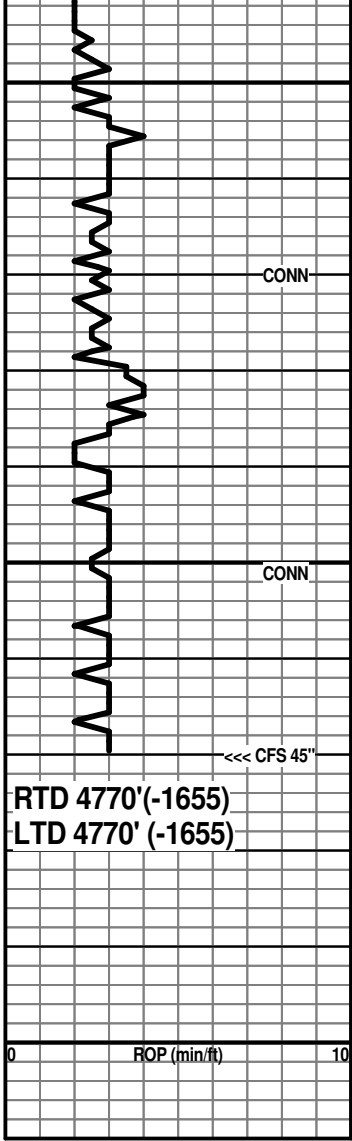
60' spl - Sst: very pred. loose grains of coarse to very coarse ang-subrnd; lesser dirty red, tight clusters, shaly, hard

70' spl - flood Chert: tan, lt gray, yellow opq, some offwhite opq, weath. with some ppt por., N.S.; Ls: tan, offwhite gran., dense

80' spl - very cherty AA with influx yellow shale

90' spl - flood Ls: offwhite, tan mic-vfxln dense; Dolo: lt gray, offwhite vfxln, poor-NVP, N.S.

4700' spl - Ls/Dolo mix AA with offwhite opq, fresh chert



10' spl - Ls: offwhite mic-vfxln dense; with lt brn, lt gray cryptoxln; common Chert: tan, lt yellow, opq, fresh

20' Ls: strong influx med brn smooth cryptoxln and offwhite subchalky with Chert: offwhite, tan opq fresh

30' Ls: various lt to med brn, lt gray cryptoxln and offwhite mic-vfxln dense, subchalky, non-cherty

40' Ls: pred. med gray, gray-brn cryptoxln NVP, pred. smooth

50' spl - Ls: influx offwhite, tan gran. to faintly oolitic IP with offwhite micxln matrix

60' spl - Ls: tan gran. AA with influx offwhite subchalky-chalky

70' Ls: pred. offwhite subchalky to chalky

CFS 4770' 20" spl - Ls: pred. subchalky to chalky AA; 45" spl - Ls: AA with occ tan cryptoxln and occ tan chert

After review of samples, DST's and log evaluation, the decision was made to plug the Focke Unit #1-22 as a dry hole.

Respectfully submitted,

Wesley D. Hansen  
 Petroleum Geologist  
 Kansas Licensed Geologist No. 418

Morgan Mud Check at 4745'  
 1:50 PM on 5-31-2017  
 wt vis wl pH chl  
 9.0 67 6.0 11.0 1600  
 PV YP Gels lcm solids  
 23 24 9/34 4# 5.0%

RTD was reached at 2:50 PM on 5-31-2017 - CFS 45" - short trip 10+ stands - CTCH 1 1/2 hours - survey - TOFL