



**WESLEY D. HANSEN Consulting Petroleum Geologist**

212 N. Market, Suite 257, Wichita, KS 67202  
Office: 316-267-7313 Cellular ; 316-772-6188

**KGS  
AAPG  
Kansas License #418**



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

**Well Name:** Murfin Drilling Co., Inc. #1-1 Erickson "B"  
**Location:** 725' FNL, 1650' FEL of Section 1-5S-31W  
**License Number:** API: 15-153-20943  
**Spud Date:** 8-27-2013  
**Surface Coordinates:** 725' FNL, 1650' FEL of Section 1-5S-31W  
**Region:** Rawlins County, KS  
**Drilling Completed:** 9-4-2013

**Bottom Hole Vertical hole  
Coordinates:**  
**Ground Elevation (ft):** 2812' **K.B. Elevation (ft):** 2823'  
**Logged Interval (ft):** 3540' **To:** RTD **Total Depth (ft):** 4447'  
**Formation:** Mississippian at RTD  
**Type of Drilling Fluid:** Chemical - Displaced at 3308'

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  
**Office:** 316-263-7313 **Cellular:** 316-772-6188

## COMMENTS

Contractor: Murfin Drilling Co., Inc. Rig #2  
Pusher: Arturo Cabezas

Surface Casing: 8 5/8" set at 225' w/190sx  
Production Casing: P&A

Mud by: Morgan Mud - Dave Lines was the engineer

DST's by: Trilobite - Chuck Kreutzer was the tester

Logs by: Pioneer Wireline (DIL, CN-CD, MEL, BHCS)

Deviation Surveys: 1/4 deg. @ 225'; 3/4 deg. @ 2518'; 1/4 deg. @ 3530'; 1/2 deg. @ 3890'; 1 deg. @4447'

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	HTC		225'	225'	
2	7 7/8"	HTC	DP506	3530'	3305'	29 1/4
3	7 7/8"	HTC	GX22S	4447'	1142'	54 3/4

## FORMATION TOPS AND STRUCTURAL COMPARISON

FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELL MDCI Zola Unit 1-1 1-5S-31W 2871' KB
	Depth	Datum	Depth	Datum	
Anhydrite	2555'	+268	2558'	+265	flat
B/Anhydrite	2598'	+225	2593'	+230	flat
Topeka	3641'	-818	3644'	-821	-4
Heebner	3812'	-989	3814'	-991	-4
Lansing	3858'	-1035	3862'	-1039	-4
Stark Shale	4025'	-1202	4026'	-1203	-4
BKC	4077'	-1254	4076'	-1253	-2
Pawnee	4190'	-1367	4192'	-1369	-7
Fort Scott	4259'	-1436	4263'	-1440	-6
Cherokee Shale	4272'	-1449	4274'	-1451	-5
Mississippian	4380'	-1557	4384'	-1561	-2
RTD	4447'	-1624			
LTD			4450'	-1627	

# DRILL STEM TESTS

DST No. 1 Toronto-Lansing "A" and "B"  
 Interval: 3812'-3890'  
 Times: 30-60-60-90  
 Recovery: 62' M; 62' WCM (20w, 80m); 62'  
 MCW (40m, 60w); 176' MCW (10m, 90w),  
 chl. 20,000  
 FP: 23-114/118-185 SIP: 1261-1252  
 HP: 1936-1842 BHT: 120 deg. F

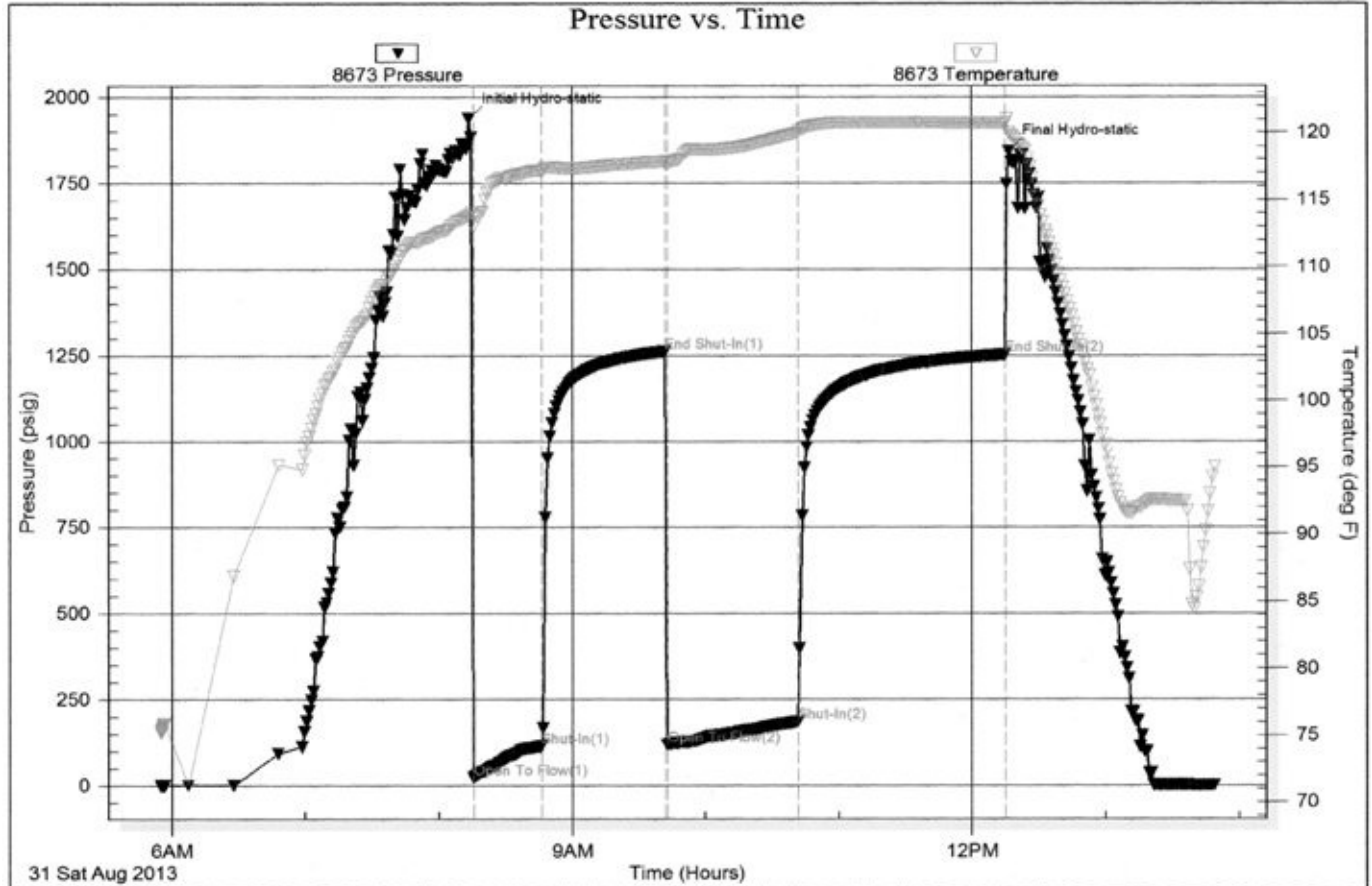
IFP: weak blow bldg. to 6 inches  
 ISIP: no return blow  
 FFP: weak blow at 5" mark, bldg. to 4 inches  
 FSIP: no return blow

Serial #: 8673

Inside Murfin Drilling company Inc

Erickson 'B' 1-1

DST Test Number: 1



# DRILL STEM TESTS

DST No. 2 Lansing "F"  
Interval: 3914'-3940'  
Times: 30-60-60-90  
Recovery: 5' M with oil specks  
FP: 19-19/19-19 SIP: 35-31  
HP: 1932-1842 BHT: 118 deg. F

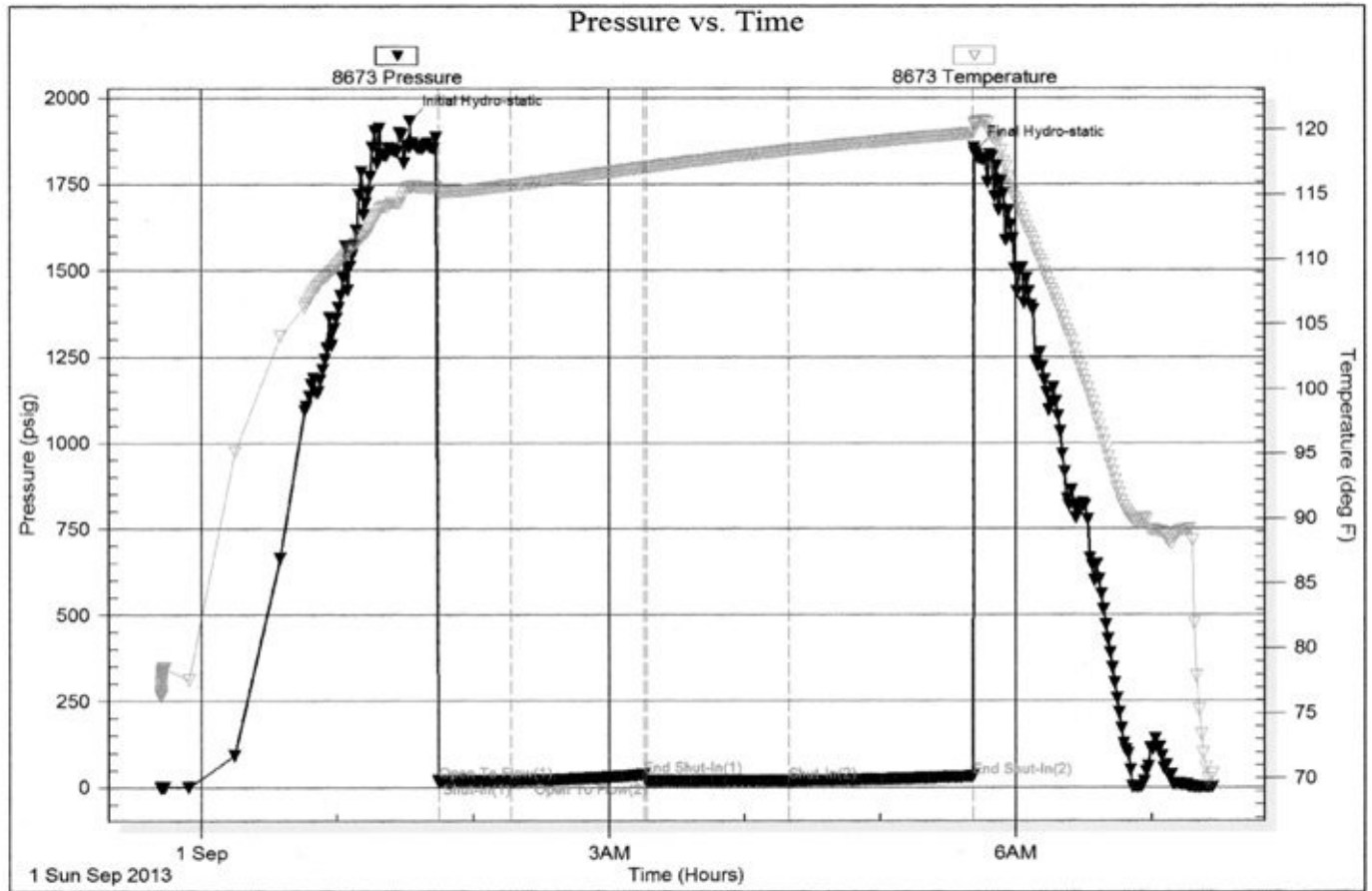
IFP: weak surface blow, died in 3 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow

Serial #: 8673

Inside Murfin Drilling company Inc

Brickson 'B' 1-1

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 52737

Printed: 2013.09.01 @ 23:38:49

# DRILL STEM TESTS

DST No. 3 Lansing "H" and "J"  
Interval: 3960'-4030'  
Times: 30-60-30-60  
Recovery: 20' M w/oil specks  
FP: 21-28/31-37 SIP: 1021-966  
HP: 2004-1825 BHT: 117 deg. F

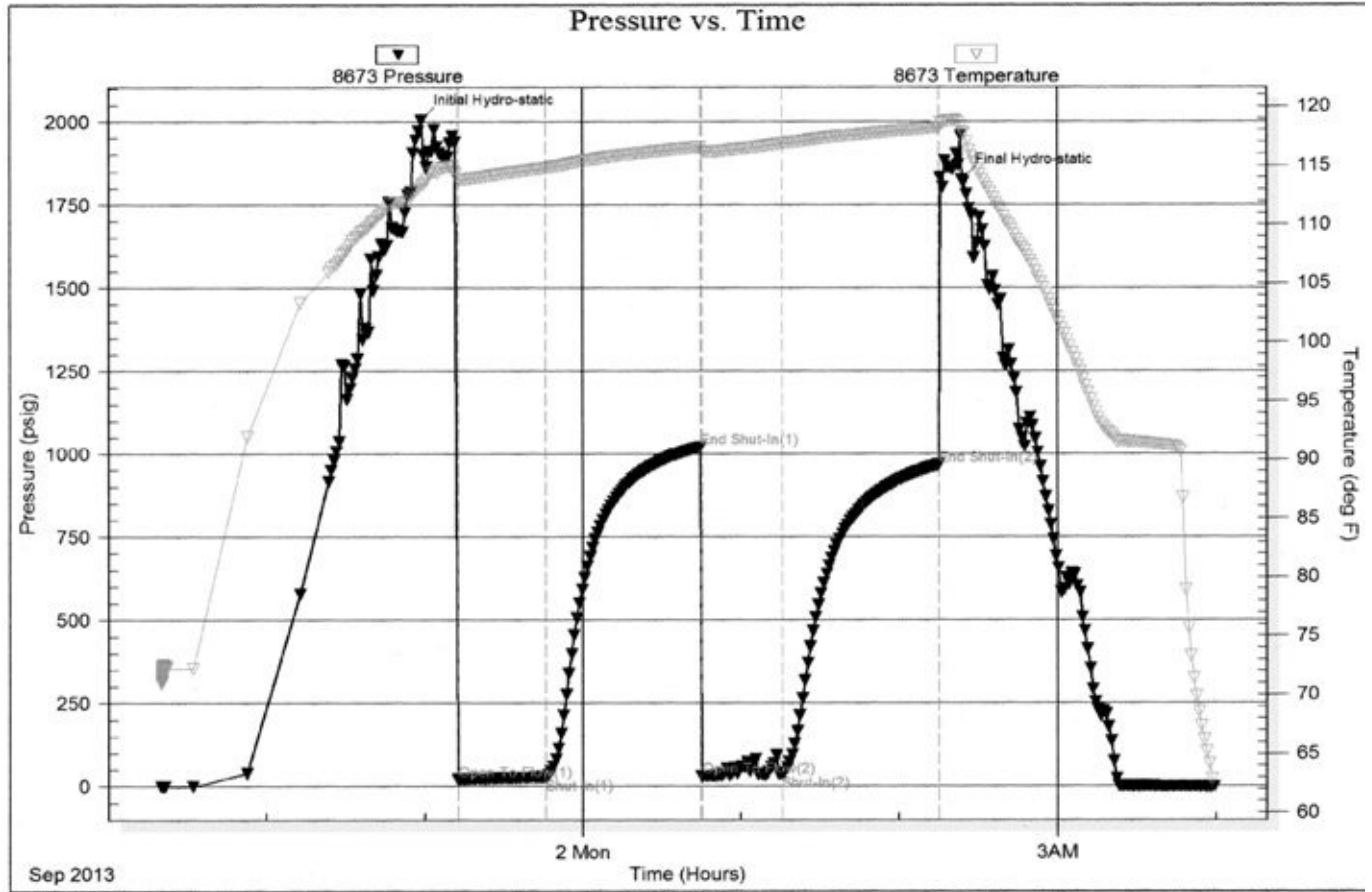
IFP: weak blow, died in 20 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow

Serial #: 8673

Inside Murfin Drilling company Inc

Erickson 'B' 1-1

DST Test Number: 3



Trilobite Testing, Inc

Ref. No: 52738

Printed: 2013.09.02 @ 05:39:23

# DRILL STEM TESTS

DST No. 4 Cherokee  
 Interval: 4260'-4310'  
 Times: 30-60-30-60  
 Recovery: 5' M  
 FP: 25-25/28-40 SIP: 60-53  
 HP: 2285-2106 BHT: 119 deg. F

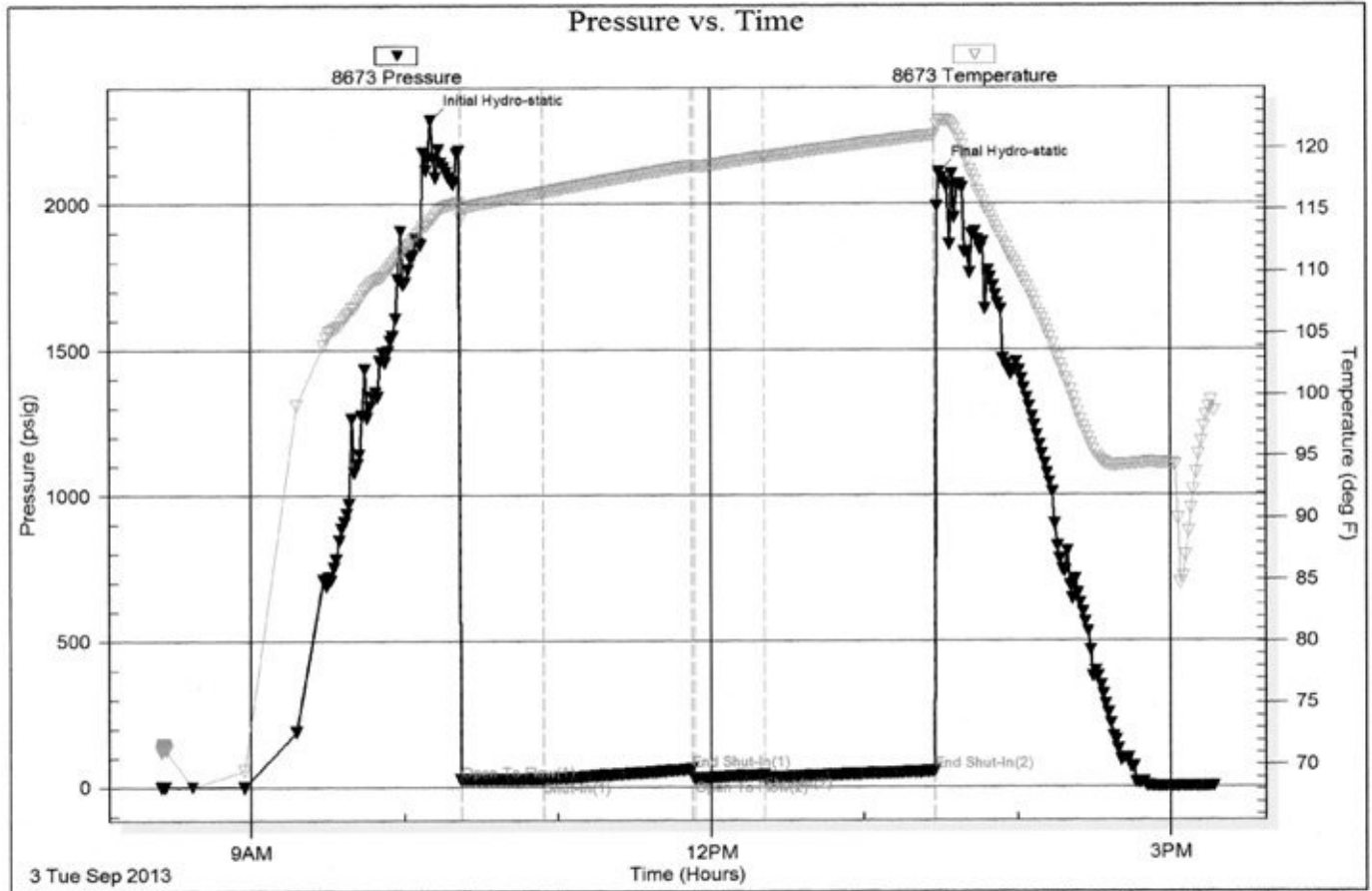
IFP: weak blow, died in 20 minutes  
 ISIP: no return blow  
 FFP: no blow  
 FSIP: no return blow

Serial #: 8673

Inside Murfin Drilling company inc

Brickson 'B' 1-1

DST Test Number: 4



Trilobite Testing, Inc

Ref. No: 52739

Printed: 2013.09.03 @ 15:56:14

## ROCK TYPES

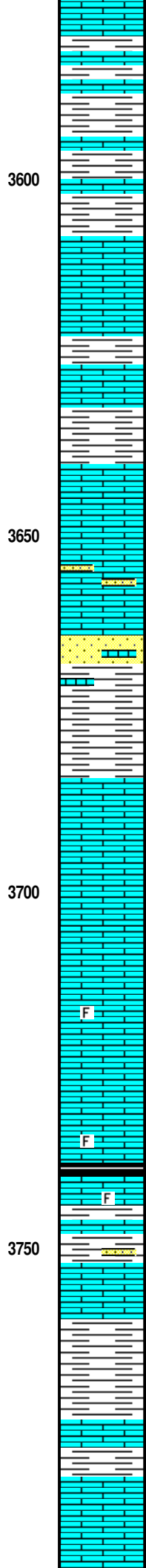
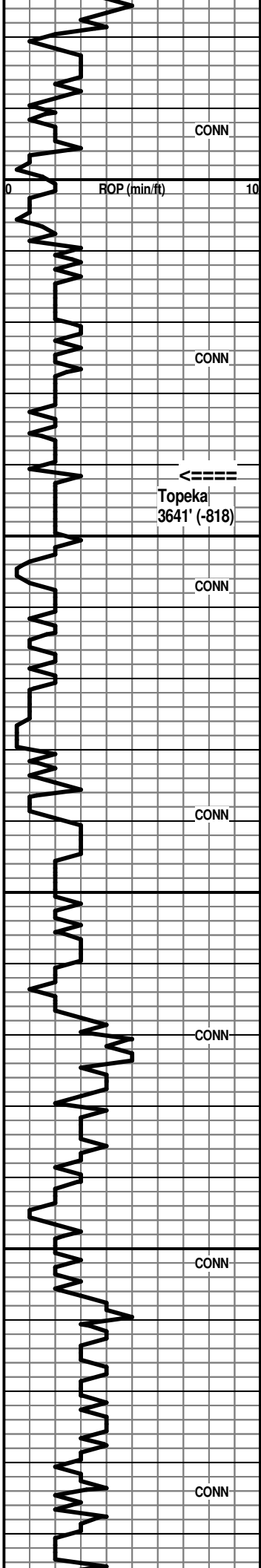
	Anhy
	Cht
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	Ls colorless
	Lmst

	Salt
	Shale
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	Carb sh

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	Gry sh
	Sandylms
	redshale
	Shale
	Siltstn

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	Siltysh
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	Silty dolo
	Shy dolo
	Shaly ls





50' spl - flood Ls: lt gray, lt brn mottled, sl granular; lesser offwhite subchalky to chalky; rare shale

3600' washes red; Sh: strong influx soft red-brn; Ls: lesser various dense, AA

10' spl - washes red; flood Sh: soft red-brn; with lesser Ls: lt to med gray, lt gray-brn vf-cryptoxln

20' spl - washes red; Sh: red-brn AA with some med gray; Ls: some gray dense, shaly

30' spl - flood Ls: predom. lt to med gray, tinted with yellow IP; lesser gray-brn all cryptoxln; some offwhite chalky

40' spl - Ls: various AA with influx gray granular with offwhite micxn matrix; Sh: influx med to dark gray and black calcar.

50' spl - Ls: predom. lt to med gray, some purplish gray vf-cryptoxln; lesser offwhite, lt gray micxn, subchalky to chalky; Sh: vsi influx brick red, red-brn

60' spl - washes red; Sh: strong influx soft red-brn; Ls: mix offwhite, lt gray mic-vfxln, subchalky to chalky; some lt brn granular, NVP, N.S.

70' spl - washes red; Sh: common red-brn AA; Ls: incr. % of various AA

80' spl - Ls: influx offwhite, lt gray mic-vfxln dense and offwhite mic-fnxln subchalky to chalky; lesser lt gray cryptoxln; scatt. offwhite, tan fg dolomitic Sst, N.S.

90' spl - Sh: red-brn, silty IP, washes red; very common Ls: offwhite, lt gray mic-vfxln dense; white chalky and tan, lt brn fn granular, N.S.; more Sst: offwhite, tan fg, N.S.

3700' spl - flood Sh: red-brn, soft, gummy

10' spl - flood Ls: mix of tan, offwhite micxn, chalky and tan, offwhite mic-vfxln, dense, subchalky IP, N.S.

20' spl - Ls: very predom. chalky to subchalky AA; some tan fn granular with some inter-particle por., with micxn matrix

30' spl - Ls: predom. AA with sl influx lt gray vf-cryptoxln, NVP; occ foss. with intra-particle por., N.S.

40' spl - Ls: decr. various AA; influx lt to med gray, med brn cryptoxln, NVP, N.S.; tan granular NVP, N.S.

50' spl - Ls: various tan, lt gray, lt brn predom. cryptoxln; some tan, lt gray granular, poor-NVP and offwhite subchalky to chalky

60' spl - Ls: flood lt to med brn, some gray gran. and foss. IP with poor-NVP; lesser mottled tan, brn mic-fnxln, N.S.; Sh: sl influx black carbon.

70' spl - sl influx Sh: vc gray to black, gray-green, red-brn; some Sst: lt gray vf-fg, N.S.; Ls: influx various tan, lt gray, lt brn sl granular with some inter-particle por. and various cryptoxln, N.S.

80' spl - washes red; Sh: influx soft red-brn; Ls: mix AA with influx lt to med gray cryptoxln

90' spl - Ls: tan, lt brn vf-cryptoxln, some sl granular, NVP, N.S.; Sh: influx med to dark gray and lt gray soft, mushy

3800' spl - Ls: tan, lt brn fn granular with some inter-particle and small vug. por., N.S.; other tan, offwhite mic-vfxln dense

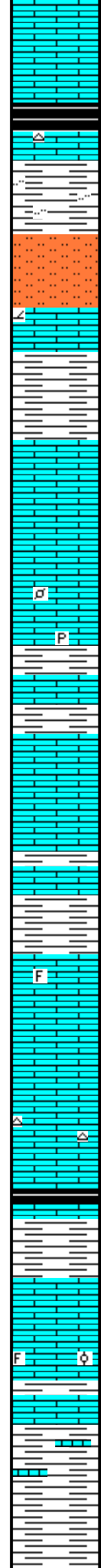
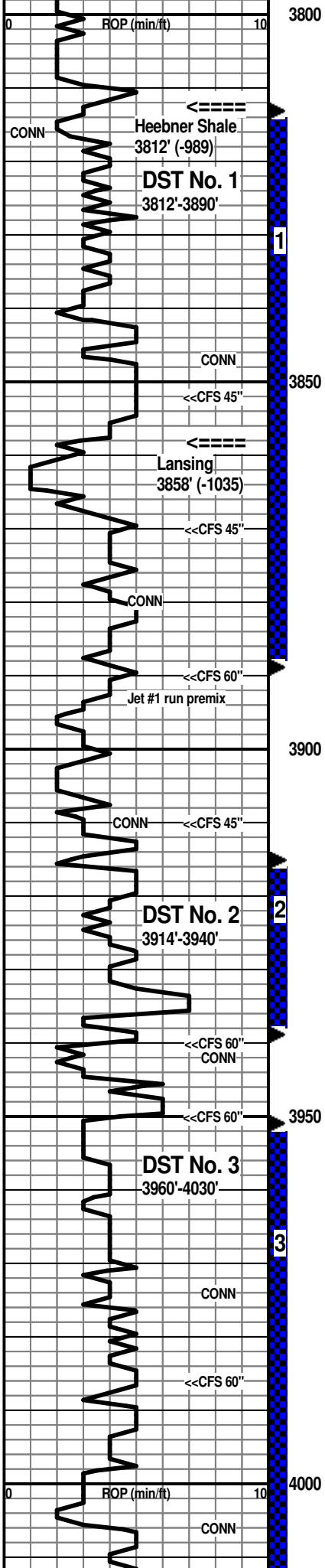
10' spl - Ls: tan, lt brn fn gran. AA; tan, offwhite mic-fnxln with poor subchalky; influx offwhite subchalky to

**Topeka 3641' (-818)**

**Morgan Mud Check at 3695'**  
 12:00 PM on 8-30-2013  
 wt vis wl pH chl  
 8.6 57 5.6 11.0 900  
 PV YP GelS lcm solids  
 18 18 11/26 4# 2.2%



with pp por., subchalky, inflx on white mica to chalky, N.S.



20' spl - Ls: mix AA with some inter-particle and occ vug. por.

30' spl - Ls: mix AA with scatt. offwhite opq chert; Sh: some black carbon.

40' spl - incr. black carbon. shale; Ls: influx med to dark brn, gray, gray-brn cryptoxln; inflx lt to med gray shale and med gray silty shale

50'/52' spls - flood Siltst: lt brn, red-brn sl dolomitic, vf sandy IP; Ls: tan, lt brn vf-cryptoxln, granular IP with spotty vug. por. and inter-particle por. with dark brn to black oily stain, sfo, no odor; occ tan vfxln dolomite with patchy stain

CFS 3852' 20" spl - Ls: some shows AA with other tan, offwhite dense, NVP, N.S.; Sh: very soft lt gray, dark gray to black, red-brn; 45" Ls: various tan, offwhite mic-vfxln dense and gran. AA; Sh: AA

60' spl - flood Sh: lt to med red-brn, soft, gummy

70' spl - decr. Shale % AA; Ls: tan, cream mic-vfxln dense with poor pp por. with dark brn to black stain, gilsonitic IP, nfo, no odor

CFS 3870' 20" spl - Ls: flood tan, lt brn mic-vfxln and fn gran. with pp por., subchalky IP, N.S.; scatt. chips with shows AA; 45" spl >>>

80' spl - Ls: various cryptoxln and offwhite, tan dense AA; scatt. tan granular with inter-particle por. with dark brn pp stain, sfo, no odor

90' spl - Ls: mix AA, more gray, lt brn cryptoxln; trace tan gran. with dark brn to black stain; inflx Sh: red-brn, dark red-maroon

CFS 3890' spls >>>

3900' spl - trashy, multi-colored shales; 10' spl - very shaly AA; Ls: influx lt gray, tan gran., some spotty vug. por. with dark brn to black goeey oil stain and oil; some tan, offwhite mic-vfxln with patchy stain

CFS 3910' 20" spl - flood Ls: mix of tan, lt gray vf-cryptoxln; abund. offwhite, tan mic-vfxln dense, subchalky IP; some white chalky, N.S.; 45" spl - Ls: predom. var. AA; trace tan cryptoxln with vug. por., black stain, vsl sfo; trace offwhite micxln with spotty stain; Sh: lt to med gray, brick red

20'/30' spls - Ls: predom. various cryptoxln and dense subchalky AA; some offwhite micxln with patchy to sat. stain in dry spls; Sh: red-brn, dark red-maroon, med to dark gray

40' spl - Ls: several chips tan, lt brn gran. and foss. with vug. and inter-particle por., with vsl odor, fair-good sfo, sl gassy, patchy to sat. brn stain; occ gray gran. with inter-particle and black pp stain; CFS 3940' spls - >>>

CFS 3950' 30" spl - flood Ls: offwhite, tan mic-vfxln, subchalky to chalky; tan, lt gray vf-cryptoxln, some sl granular, N.S.; 60" spl - Ls: various AA; sl incr. dark red-brn shale

60' spl - Ls: sl influx tan cryptoxln with isolated vug. por. with dark stain; some offwhite mic-vfxln with poor pp por. with dead black stain; inflx Chert: lt gray, blue gray, tan opq sharp; 70' spl - Ls: influx lt to med gray, med brn cryptoxln and offwhite mic-vfxln dense, subchalky; Sh: sl influx dark gray to black carbon.

80' spl - washes red; Sh: soft red and gray-green; Ls: good influx mottled med to dark gray and med to dark brn cryptoxln, NVP, N.S.

86' spl - Ls: fair influx tan vf-cryptoxln with scatt. vug., pp, and edge por. with sl odor, lt brn stain, sl show dark brn oil, sl sg; lesser offwhite mic-vfxln dense, subchalky, some pp por. with patchy brn to black stain

CFS 3986' spls - >>>

4000' spl - Ls: mix AA with influx lt gray, lt to med brn mottled gran. NVP, N.S.; Sh: influx lt to med gray, some very soft lt gray

10' spl - washes red; Sh: flood red-brn, soft, gummy; Ls: mottled gran. AA with offwhite mic-vfxln dense, subchalky, N.S.

20' spl - Sh: red-brn soft, gummy

30' spl - Ls: sl influx tan fn gran. with pp and inter-particle por., some small vug. por. with ft-vsl odor, pp brn stain, good shows lt brn oil on break, sl sg; scatt. tan cryptoxln

### Heebner Shale 3812' (-989)

DST No. 1 Toronto-Lansing "A" and "B"  
Interval: 3812'-3890'  
Times: 30-60-60-90  
IFP: weak blow bldg. to 6 inches  
ISIP: no return blow  
FFP: weak blow at 5" mark, bldg. to 4 inches  
FSIP: no return blow  
Recovery: 62' M; 62' WCM (20w, 80m); 62' MCW (40m, 60w); 176' MCW (10m, 90w), chl. 20,000  
FP: 23-114/118-185 SIP: 1261-1252  
HP: 1936-1842 BHT: 120 deg. F

### Lansing 3858' (-1035)

CFS 3870' 45" - Ls: flood tan, lt gray cryptoxln, NVP and offwhite, tan mic-vfxln dense, NVP, N.S.

CFS 3890' 30" spl - Ls: scatt. chips tan vf-cryptoxln, sl pelletic, with small vug. por., dark brn to black pp stain, sl sfo, no odor; some gray granular with good vug. and inter-particle por. with stain; other tan, gray cryptoxln and offwhite dense, N.S.; Sh: influx soft red-brn, mushy pale gray; 60" spl - Ls: more gray gran. with shows AA; tan, lt brn cryptoxln, occ sl pyritic, N.S.; decr. shale %

7:00 AM at 3890' on 8-31-2013  
pipe strap was 1.04' short to the board

### Morgan Mud Check at 3890'

11:00 AM on 8-31-2013  
wt vis wl pH chl  
9.3 62 6.4 10.5 1100  
PV YP GelS lcm solids  
19 21 15/35 4# 7.1%

CFS 3940' 30" spl - Ls: flood offwhite, tan, lt gray mic-vfxln dense; lesser micxln-fn gran. with some pp por., N.S.; rare chips with shows AA; 60" spl - Ls: offwhite, lt gray mic-vfxln subchalky to chalky; lesser lt gray, lt brn cryptoxln, NVP, N.S.

7:00 AM at 3940' on 9-1-2013

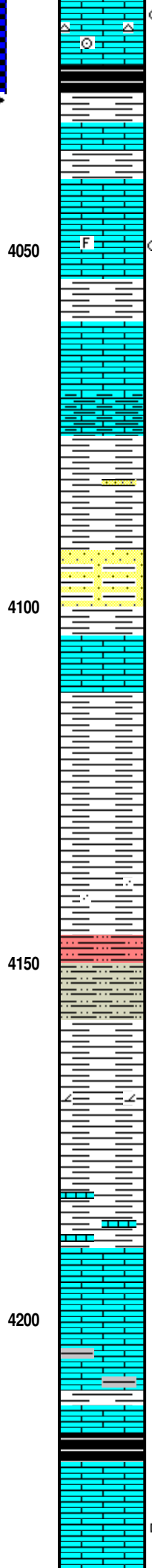
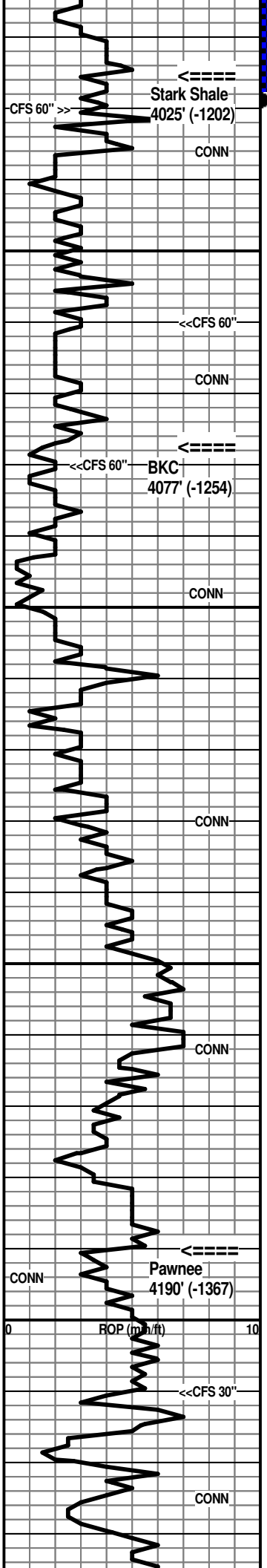
DST No. 2 Lansing "F"  
Interval: 3914'-3940'  
Times: 30-60-60-90  
IFP: weak surface blow, died in 3 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow  
Recovery: 5' M with oil specks  
FP: 19-19/19-19 SIP: 35-31  
HP: 1932-1842 BHT: 118 deg. F

CFS 3986' 30" spl - Ls: scatt. shows AA, vsl odor; predom. mix tan, lt gray cryptoxln and offwhite mic-vfxln dense, subchalky, occ chalky, N.S.; some brn fn oolitic and foss. with inter-particle por., N.S.; 60" spl - Ls very predom. tan cryptoxln, NVP and offwhite mic-vfxln dense, subchalky to chalky

### Morgan Mud Check at 3986'

2:30 PM on 9-1-2013  
wt vis wl pH chl  
9.0 65 5.6 11.5 1000  
PV YP GelS lcm solids  
20 22 11/26 4# 5.0%

CFS 4030' 30" spl - Ls: predom. lt to med brn, lt gray cryptoxln; common offwhite dense; scatt. shows AA;



with irreg. vug. por. with lt brn stain, sfo; spls are predom. offwhite, tan mic-vfxln dense, subchalky and lesser lt gray, tan cryptoxln, NVP; sl influx orange chert

CFS 4030' spls - >>>

50' spl - Sh: red-brn, med to dark gray, gray-green; minor Ls: lt gray granular, NVP and offwhite mic-vfxln dense

60' spl - flood Ls: tan, offwhite mic-vfxln dense and tan, lt gray vf-cryptoxln, NVP, N.S.

CFS 4060' 30" spl - Ls: mix AA, more lt to med gray cryptoxln; one chip tan gran. sl foss. with pp stain, vsl sfo, no odor; 60" spl - Ls: tan, lt to med gray vf-cryptoxln and offwhite, tan mic-vfxln dense, subchalky to occ chalky; persistant med to dark red-brn, lt to med gray and brick red shales

80' spl - Ls: predom. tan, lt gray vf-cryptoxln, NVP; influx lt to med gray shaly Ls and calcar. shale

CFS 4080' 30" spl - common var. dense Ls's AA; Sh: good influx soft lt red and soft lt gray; spls wash red/gray; 60' spl - Sh: lt to med red-brn, lt to med gray, soft, mushy

90'/4100' spls - Sh: vc gray, black, red-brn; some lt gray soft vvfg Sst, N.S.; some tan, gray cryptoxln Ls

10' spl - very predom. Sh: AA; influx red-brn finely sandy shale and red-brn vfg Sst, N.S.

20' spl - abund. shales and red-brn vvfg Sst AA; influx Ls: offwhite, lt gray mic-vfxln dense and lt gray-brn granular, NVP, N.S.

30' spl - Sh: lt to med red-brn and lt to med gray, soft, mushy

40' spl - shales AA

50' spl - Sh: very predom. soft red-brn; lesser lt red speckled and vf sandy shale

60' spl - Sh: red-brn, vc gray with influx gray, silty; Siltst: influx red-brn and gray; Ls: fairly minor mottled tan, lt brn granular and tan mic-vfxln dense

70' spl - Sh: abund. red-brn, lt to med gray, silty IP; very minor Ls %

80' spl - flood very soft lt gray, mushy shales and lt gray, firm dolomitic shale

90' spl - Sh: lt to med gray and greenish gray; lesser red-brn and occ yellow-green

4200' spl - Ls: strong influx tan, lt brn cryptoxln and tan sl granular to occ oolitic with micxln matrix, poor to NVP

10' spl - Ls: becoming predom. tan, lt brn, lt gray cryptoxln; Sh: lt to med gray

CFS 4210' 30" spl - flood lt to med gray shaly Ls to calcar. shale

20' spl - very predom. Sh: lt to med gray; Ls: tan, lt to med gray vf-cryptoxln, dense, shaly IP

30' spl - Sh: flood dark gray to black carbon.; Ls: sl influx med to dark brn and gray cryptoxln

40' spl - flood Ls: new tan fn granular with pp and inter-particle por., N.S.; tan, lt to med brn cryptoxln and some offwhite chalky, N.S.; one chip tan dense with scatt. black gilsonite flecks

Sh: influx med to dark gray; 60" spl - Sh: good influx med to dark gray, some black; Ls: var. dense AA; trace crinoids

**Stark Shale 4025' (-1202)**

7:00 AM at 4036' on 9-2-2013

DST No. 3 Lansing "H" and "J"  
Interval: 3960'-4030'  
Times: 30-60-30-60  
IFP: weak blow, died in 20 minutes  
ISIP: no return blow  
FFP: no blow  
FSIP: no return blow  
Recovery: 20' M w/oil specks  
FP: 21-28/31-37 SIP: 1021-966  
HP: 2004-1825 BHT: 117 deg. F

**BKC 4077' (-1254)**

**Morgan Mud Check at 4111'**  
11:55 AM on 9-2-2013  
wt vis wl pH chl  
8.9 74 5.6 11.0 900  
PV YP GelS lcm solids  
21 27 14/34 4# 4.3%

**Pawnee 4190' (-1367)**

DST No. 4 Cherokee  
Interval: 4260'-4310'  
Times: 30-60-30-60

DST NO. 4  
4260'-4310'

CONN  
Fort Scott  
4259' (-1436)

Cherokee Sh.  
4272' (-1449)

CONN

4300

<<CFS 60"

CONN

4350

CONN

4400

CONN

4450

Mississippian  
4380' (-1557)

4400

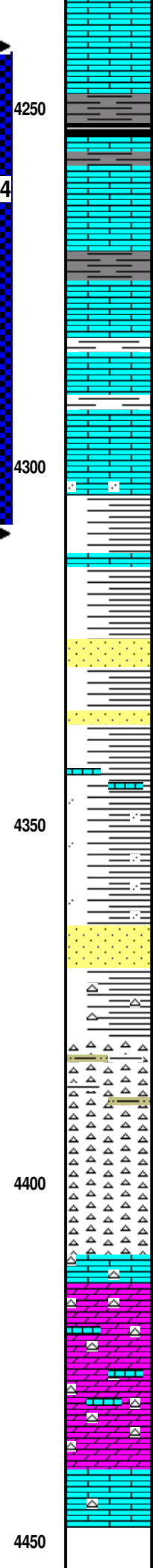
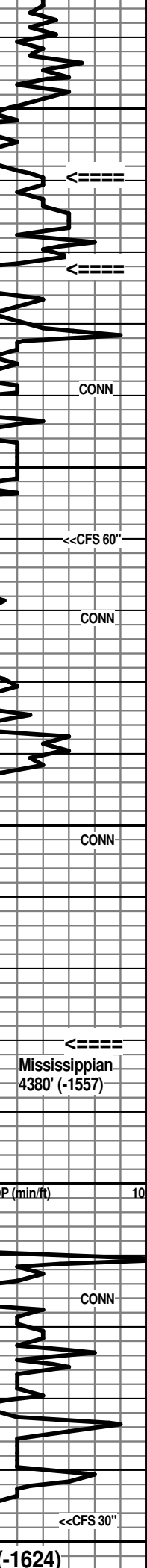
CONN

4450

CONN

<<CFS 30"

RTD 4447' (-1624)



50' spl - Ls: flood lt to med gray vf-cryptoxln; Sh: med gray very calcar.

60' spl - Ls: some med brn cryptoxln and gray dense AA; one chip tan fnxln with pp brn stain, good sfo on break, poor inter-particle por., no odor; Sh: lt to med gray with sl influx dark gray to black carbon.

70' spl - Sh: abund. dark gray to black; Ls: influx med to dark brn, dark gray cryptoxln; lesser offwhite mic-vfxln dense, subchalky, N.S.

80' spl - flood Ls: lt to med brn sl mottled cryptoxln; lesser offwhite dense, subchalky AA; trace to occ dark gray granular with offwhite micxln matrix, N.S.

90' spl - Sh: dark gray to black; Ls: lt to med brn cryptoxln, scatt. lt brn cryptoxln with spotty stain, trace minute oil droplets, no odor; lesser tan fn granular, sandy IP and offwhite dense, subchalky, N.S.

4300' spl - Ls: predom. lt to med brn cryptoxln, some mottled, sl granular, NVP, N.S.; occ tan, lt brn vf-cryptoxln with scatt. poor vug. and pp por. with dark brn to black stain, sl show dark brn to black listless oil; Sh: dark gray to black

10' spl - Ls: tan, lt brn cryptoxln and tan, offwhite mic-vfxln dense; scatt. offwhite subchalky to chalky; trace lt gray, offwhite vf-fg Sst, shaly IP, N.S.

CFS 4310' spls - >>>

20' spl - Sh: lt to dark red-brn, lt to med gray, purple; only scatt. Ls

30' spl - Sh: multi-colored AA, some mottled yellow/purple; Ls: influx lt to med brn cryptoxln, yellow tinted IP

40' spl - Sh: mc AA with influx Sst: orange and red tinted fn-med clusters and common med to very coarse single grains, some dark red-brn fg, shaly, N.S.

50' spl - predom. mc shales AA, new dark yellow; scatt. tan, lt brn cryptoxln Ls; much decr. Sst %

60' spl - Sh: mc AA, some sandy; influx Sst: tan, red-brn fn-med grnd, shaly, N.S.; fairly common Ls: tan, lt brn, lt gray cryptoxln and offwhite micxln dense

70' spl - flood Sh: strong influx dark yellow with various red, purple, commonly mottled and sandy

80' spl - Sh: multi-colored, mottled and sandy AA; Sst: good influx offwhite, lt gray vf-fg calcar.; some tan and red tinted; some med to very coarse single grains, N.S.

90' spl - Sh: multi-colored AA, decr. %; Chert: good influx offwhite, tan weath. IP and tan, offwhite, orange opq, sharp, N.S.

4400' spl - Chert: offwhite, tan opq, sharp; some offwhite weath. with pp por., N.S.; Sh: influx dark yellow and dark orange Siltst, N.S.

10' spl - Chert: mix various fresh, sharp to weath. AA; occ vug. por. in mottled yellow chert, N.S.

20' spl - Chert: various AA; sl influx offwhite, sl dolomitic Ls and trace-occ tan sucrosic Dolomite, N.S.

30' spl - Ls and dolomite AA, very cherty, N.S.

40' spl - Dolomite tan, offwhite fn-vfxln, some good interxln and small vug. por.; tan, offwhite vfxln dolomitic Ls; common cherts AA

47' spl - Dolo: tan, offwhite mic-vfxln dense and some tan cryptoxln, limy; minor chert

CFS 4447' 30" spl - flood Ls: tan, offwhite mic-vfxln dense and tan sl granular to cryptoxln, NVP, N.S.; scatt. chert

IFP: weak blow, died in 20 minutes  
 ISIP: no return blow  
 FFP: no blow  
 FSIP: no return blow  
 Recovery: 5' M  
 FP: 25-25/28-40 SIP: 60-53  
 HP: 2285-2106 BHT: 119 deg. F

### Fort Scott 4259' (-1436)

### Cherokee Sh. 4272' (-1449)

CFS 4310' 30" spl - Ls: common various cryptoxln and dense AA; influx Sh: red-brn, med to dark gray, occ lt green and yellow/green; 60" spl - Sh: various AA, occ purple; common L's AA

7:00 AM at 4310' on 9-3-2013

#### Morgan Mud Check at 4310'

11:30 AM on 9-3-2013  
 wt vis wl pH chl  
 9.3 72 6.4 10.5 900  
 PV YP GelS lcm solids  
 21 27 13/35 4# 7.1%

### Mississippian 4380' (-1557)

7:00 AM at 4447' on 9-4-2013

RTD reached at 2:30 AM on 9-4-2013

