



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. #1-11 Culwell JT
Location: 1980' FNL, 660' FWL of Section 11-1S-37W
License Number: API: 15-023-21383
Spud Date: 2-27-2014
Surface Coordinates: 1980' FNL, 660' FWL of Section 11-1S-37W
Region: Cheyenne County, KS
Drilling Completed: 3-08-2014

Bottom Hole Vertical hole
Coordinates:
Ground Elevation (ft): 3121' **K.B. Elevation (ft):** 3134'
Logged Interval (ft): 3420' **To:** RTD **Total Depth (ft):** 4660'
Formation: Cherokee at RTD
Type of Drilling Fluid: Chemical - Displaced at 3440'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 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 #25
Pusher: Ray Bland

Surface Casing: 8 5/8" set at 231' w/200sx
Production Casing: 5 1/2" set at 4655' w/400 sx

Mud by: Morgan Mud - Dave Korte was the engineer

DST's by: Trilobite - James Winder was the tester

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

Deviation Surveys: 1/2 deg. @ 233'; 0.2 deg. @ 715'; 0.2 deg. @ 1823'; 1.2 deg. @ 2330'; 0.2 deg. @ 2838'; 0.4 deg. @ 3504'; 6.4 deg. @ 4160'; 6 1/2 deg. @ 4210'; 6.1 deg. @ 4500'; 4.7 deg. @ 4660'

BIT RECORD

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"		GMS	233'	233'	3 3/4
2	7 7/8"	HTC	DP506F	3504'	3271'	49 3/4
3	7 7/8"	HTC	GX20Crr	4660'	1156'	60

FORMATION TOPS AND STRUCTURAL COMPARISON

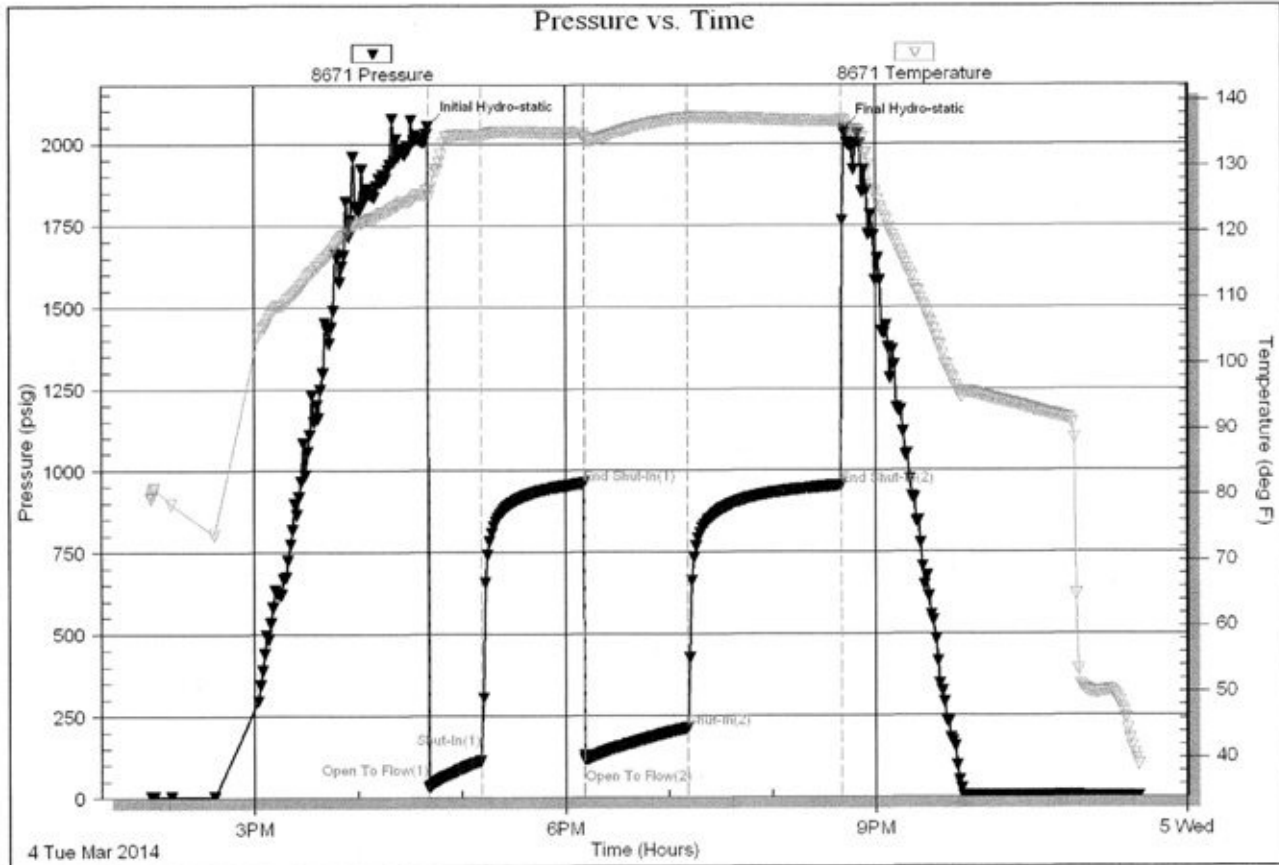
FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELLS MDCI Culwell B 1-11 11-1S-37W 3146' KB
	Depth	Datum	Depth	Datum	
Anhydrite	3073'	+61	3074'	+60	-4
B/Anhydrite	3109'	+25	3106'	+28	-3
Neva	3531'	-397	3530'	-396	-3
Red Eagle	3593'	-459	3594'	-460	flat
Foraker	3642'	-508	3638'	-504	+1
Topeka	3867'	-733	3864'	-730	-3
Oread	4000'	-866	3998'	-864	-4
Lansing	4082'	-948	4080'	-946	-4
Stark Shale	4300'	-1166	4296'	-1162	-4
BKC	4358'	-1224	4351'	-1217	-7
Pawnee	4476'	-1342	4473'	-1339	-6
Cherokee Shale	4565'	-1431	4559'	-1425	-3
RTD	4660'	-1526			
LTD			4639'	-1505	

DRILL STEM TESTS

DST No. 1 Lansing "D"
 Interval: 4100'-4160'
 Times: 30-60-60-90
 Recovery: 475' GIP; 230' CGO (21g, 77o, 2m);
 45' O&GCM (16g, 18o, 66m); 190' OG&WCM
 (13g, 3o, 27w, 57m); Gravity 26 deg.
 FP: 33-112/118-212 SIP: 959-952
 HP: 2053-2041 BHT: 137 deg. F

IFP: good blow, B.O.B. in 9 1/2 minutes
 ISIP: 1 inch return blow
 FFP: good blow, B.O.B. in 12 minutes
 FSIP: 4 inch return blow

Serial #: 8671 Inside Marfin Drilling Co., Inc. Core # JT #1-11 DST Test Number: 1

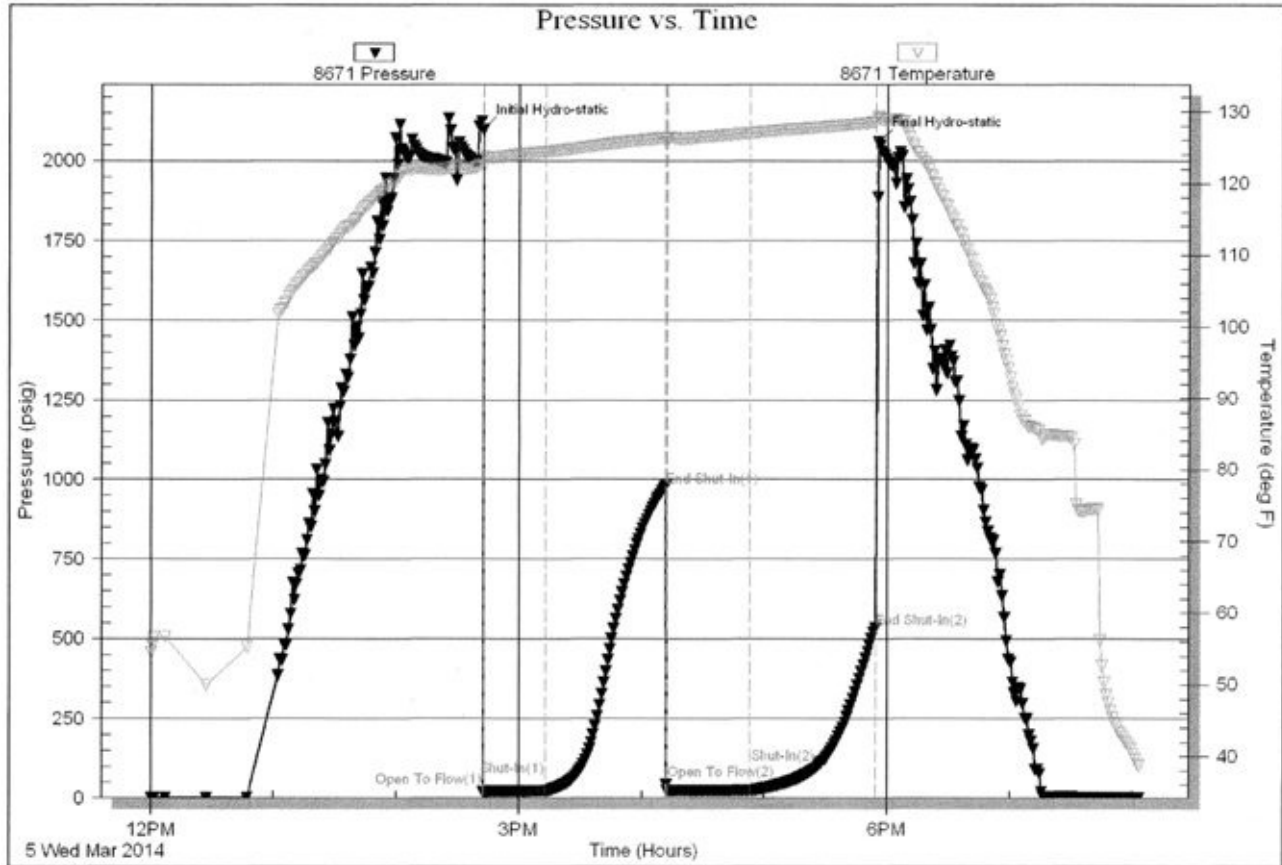


DRILL STEM TESTS

DST No. 2 Lansing "G" Zone
Interval: 4169'-4210'
Times: 30-60-30-60
Recovery: 10' VSL O&GCM (2g, 4o, 94m)
FP: 19-22/23-24 SIP: 979-534
HP: 2098-2058 BHT: 129 deg. F

IFP: weak 1/4" blow, died in 20 minutes
ISIP: no return blow
FFP: no blow
FSIP: no return blow

Serial #: 8671 Inside Murfin Drilling Co., Inc. Cuiwell JT #1-11 DST Test Number: 2

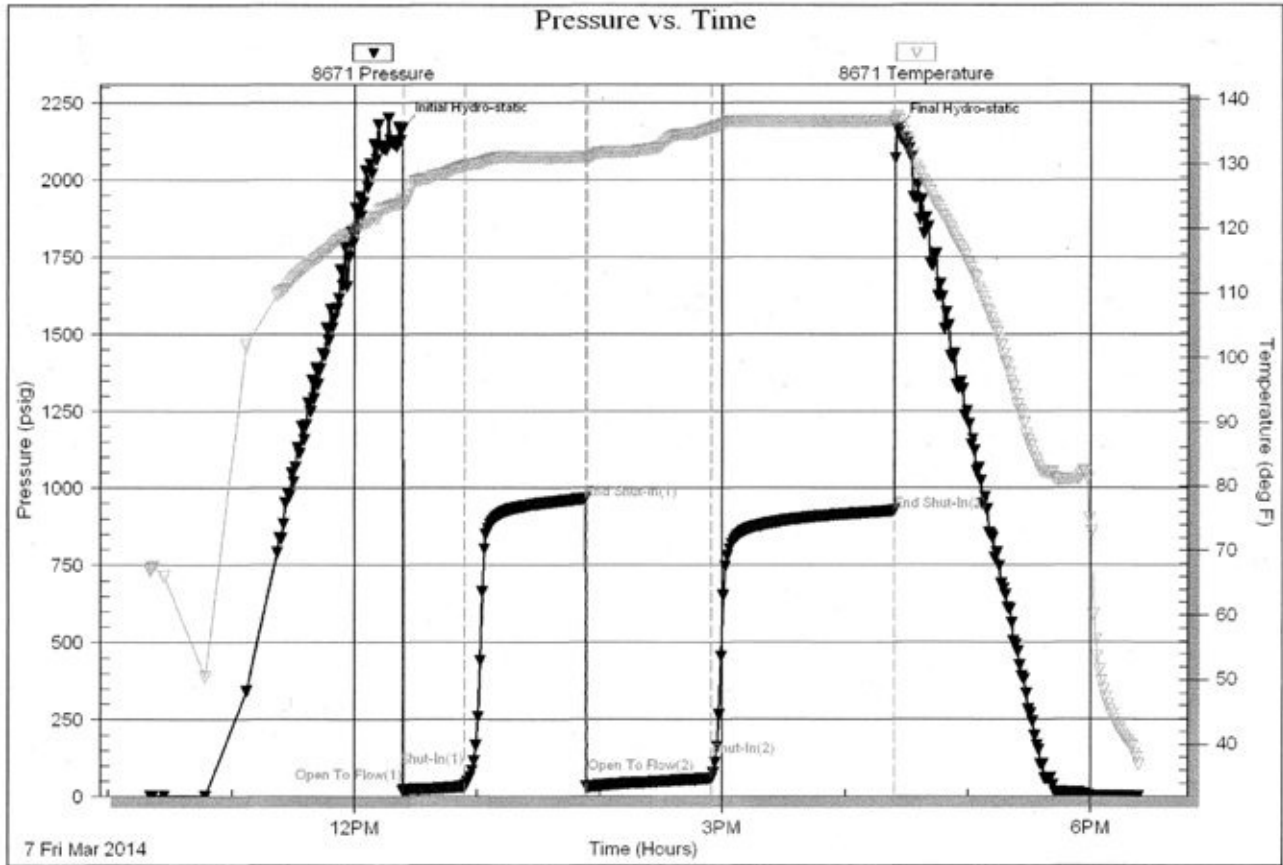


DRILL STEM TESTS

DST No. 3 Pawnee
 Interval: 4450'-4500'
 Times: 30-60-60-90
 Recovery: 380' GIP; 85' CO (2g, 2m, 96o); 20'
 G&OCM (7g, 23o, 70m), Gravity 36.2
 FP: 20-32/29-59 SIP: 965-927
 HP: 2168-2165 BHT: 137 deg. F

IFP: fair blow bldg. to 9 1/4 inches
 ISIP: no return blow
 FFP: fair to good blow bldg. to B.O.B. in 25 minutes
 FSIP: no return blow

Serial #: 8671 Inside Murfin Drilling Co., Inc. Cuiwell JT #1-11 DST Test Number: 3



ROCK TYPES

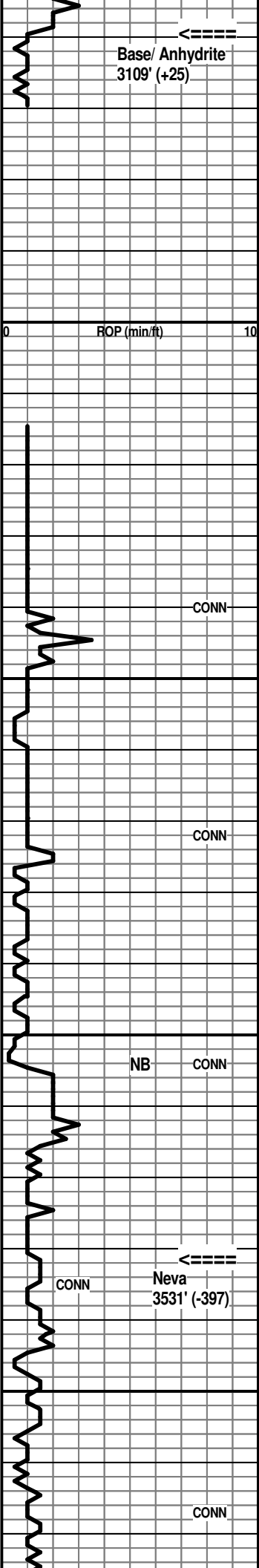
- Anhy
- Cht
- Coal
- Congl
- Dol
- Gyp
- Lmst

- Salt
- Shale
- Shcol
- Shgy
- Siltst
- Ss
- Carb sh

- Dol
- Dtd
- Gry sh
- Sandylms
- redshale
- Shale
- Siltstn

- Shlyslts
- Sltysb
- Sdy dolo
- Silty dolo
- Shy dolo
- Shaly ls

Base/ Anhydrite 3109' (+25)



Samples of no value

Samples of no value

7:00 AM at 3504' on 3-3-2014
Tripped PDC bit at 3504'
Strap was 1.92' long to board

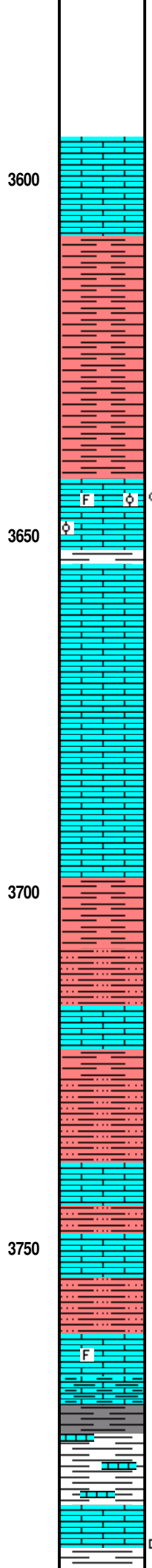
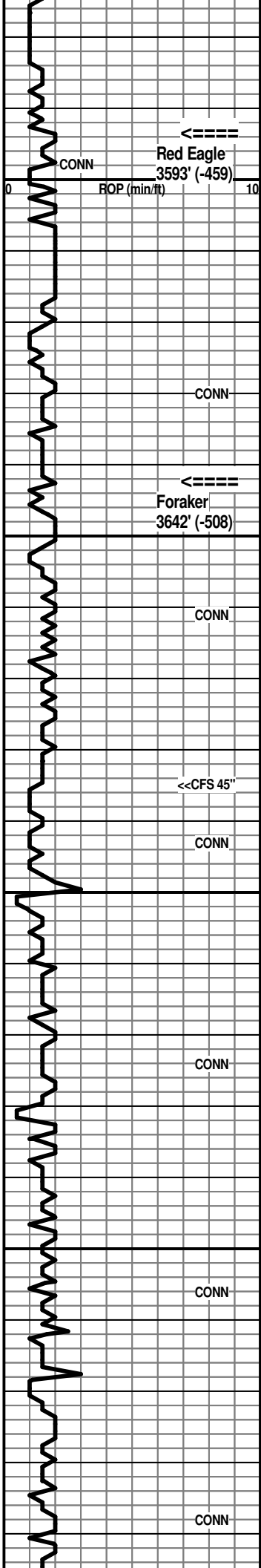
Neva 3531' (-397)

Morgan Mud Check at 3597'
 10:00 AM on 3-3-2014
 wt vis wl pH chl
 9.0 90 4.8 10.5 700
 PV YP GelS lcm solids
 34 28 30/42 2# 5.0%

Red Eagle 3593' (-459)

Geologist on location at 3611'

Foraker 3642' (-508)



Ls: lt gray, offwhite mic-vfxln dense, sl shaly and silty; lesser lt brn, tan cryptoxln

Ls: offwhite, lt gray dense AA; more lt brn vf-cryptoxln; Sh: sl influx red-brn silty to soft

40' spl - flood Sh: red-brn predom. silty; lesser soft mushy

Sh: mix AA

60' spl - Ls: flood lt gray, offwhite vfxln dense, silty IP, poor-NVP, N.S.; several chips tan, brn granular, foss. and oolitic IP with inter-particle por., with subsat. to sat. dark brn to black stain, fair-good shows dark brn gen. listless oil, no odor

70' spl - Ls: mix AA with good influx Sh: gray, purplish gray, silty and red-brn silty shale and siltst

80' spl - flood Ls: med gray fn-vfxln sl mottled, shaly IP; med gray and gray-brn vfxln dense, poor-NVP; lesser offwhite, lt gray mic-vfxln dense, N.S.

CFS 3685' 20" spl - Ls: influx offwhite mic-vfxln dense and lt gray, gray-brn vf-cryptoxln, occ yellow tinted; sl influx offwhite subchalky;
 45" spl - Ls: lt gray, some gray-brn vf-cryptoxln and offwhite mic-vfxln dense, subchalky, N.S.

3700' spl - Ls: flood white chalky; other lt gray, tan, lt brn mic-vfxln dense

Ls: mottled med to dark gray, sl granular and shaly IP; tan, lt brn predom. vfxln dense; some fn-vfxln with pp por., N.S.

20' spl - flood Sh: med to dark red-brn; lesser mushy lt red

Sh: AA decr. %; more silty to red-brn siltst; Ls: mix tan, lt brn, lt gray vfxln dense; lesser offwhite, tan mic-fnxln with some pp por., N.S.

Ls: tan, lt gray, lt brn mic-vfxln dense; Sh: med to dark red-brn, silty with red Siltst

50' spl - predom. red-brn shales and Siltst AA; Ls: tan, lt gray vfxln dense

60' spl - Ls/Sh/Siltst mix AA; with good influx pinkish-tan fn-vfxln Ls

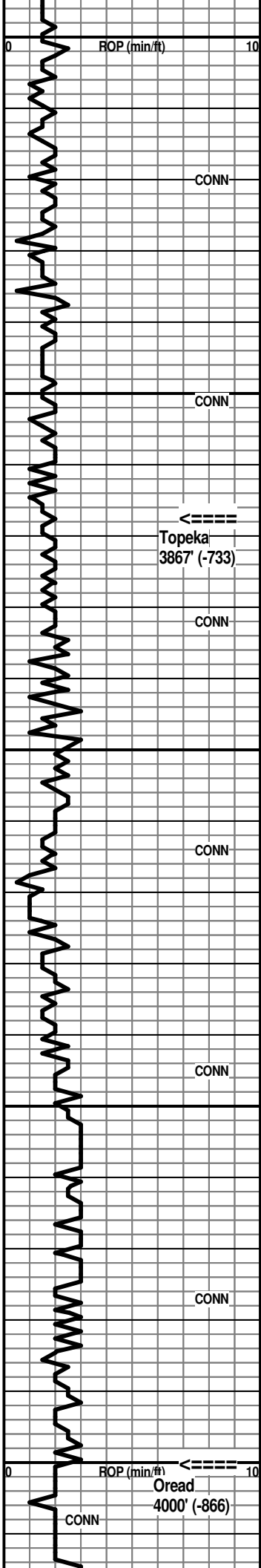
70' spl - Ls: pinkish-tan AA; some tan, lt brn cryptoxln; Sh: med to dark red-brn, silty to soft

80' spl - flood Ls: mottled lt to med brn granular, sl foss., poor-NVP, N.S.; Sh: some lt maroon

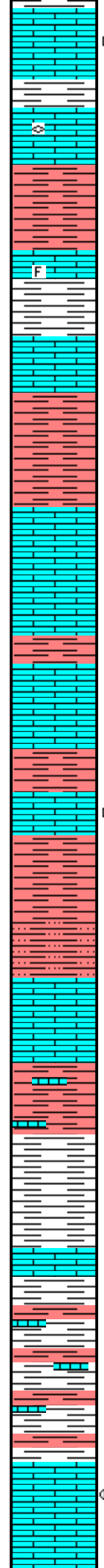
90' spl - Ls: AA with good influx med to dark gray silty and shaly; Sh: dark gray calcar.; some red-brn Siltst

3800' spl - Ls: mix tan, lt gray, lt brn granular, poor-NVP, foss. IP, N.S.; Sh: med to dark red-brn silty, maroon, med gray

10' spl - Ls: various granular AA; some gray granular with black gilsonite stain, nfo, no odor; Sh: red-brn, brick red, maroon, med gray and gray-green



3800
3850
3900
3950
4000



20' spl - Ls/Sh mix AA; common black spotty stain in poor to fair inter-particle por.; some offwhite subchalky to chalky with spotty dead stain

30' spl - Ls/Sh mix AA with influx tan, lt gray, lt brn cryptoxln, trace fussionids, N.S.

40' spl - flood Sh: soft red, gummy

50' spl - Ls: persistant shows of dead stain AA; some tan foss. with inter-particle and some vug. por. with subsat to sat brn stain, nfo, no odor; Sh: red, red-brn

60' spl - Ls: common lt gray, tan, lt brn granular with spotty black stain in inter-particle por., no odor; other tan, lt gray cryptoxln, NVP; Sh: med to dark red-brn, lt to med gray

70' spl - flood Sh: med red-brn, silty to soft

80' spl - decr. shale % AA; Ls: lt to med brn, lt gray cryptoxln, NVP

90' spl - very predom. Ls: various cryptoxln AA; some mottled lt red and pale gray cryptoxln; lesser tan, lt gray granular with poor inter-particle por., N.S.

3900' spl - Ls: various cryptoxln and granular AA with beds of med to dark red-brn shale

10' spl - Ls: tan, lt brn, lt gray cryptoxln; lesser offwhite, tan mic-vfxln dense; much decr. shale % AA

20' spl - Ls: incr. offwhite subchalky to chalky; Sh: incr. med to dark red-brn, some red-maroon and med gray

30' spl - Ls: tan, lt brn, lt gray cryptoxln to granular; occ with black stain in pp and inter-particle por., nfo, no odor; Sh: incr. dark red-brn

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

50' spl - predom. shales AA with red Siltst; sl influx Ls: tan, lt gray, lt brn vf-cryptoxln, NVP

60' spl - Ls: tan, lt brn, lt gray cryptoxln and offwhite mic-vfxln dense; Sh: med to dark red-brn, silty to soft; some lt gray, trace maroon

70' spl - Sh: good influx maroon and gray-maroon

80' spl - Sh: predom. lt maroon AA; some lt green

90' spl - Ls: influx lt gray, lt to med brn cryptoxln; occ red-brn cryptoxln; Sh: influx lt to med gray calcar.

4000' spl - Sh: AA with good influx red, red-brn silty and calcar.; Ls: some AA with new brn/gray granular with offwhite micxln matrix

10' spl - Sh: mix AA with Ls: lt to med gray, lt brn cryptoxln, trace with vug. por. with black tarry stain

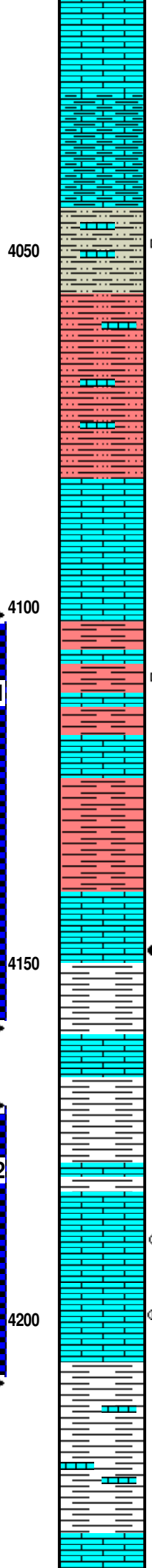
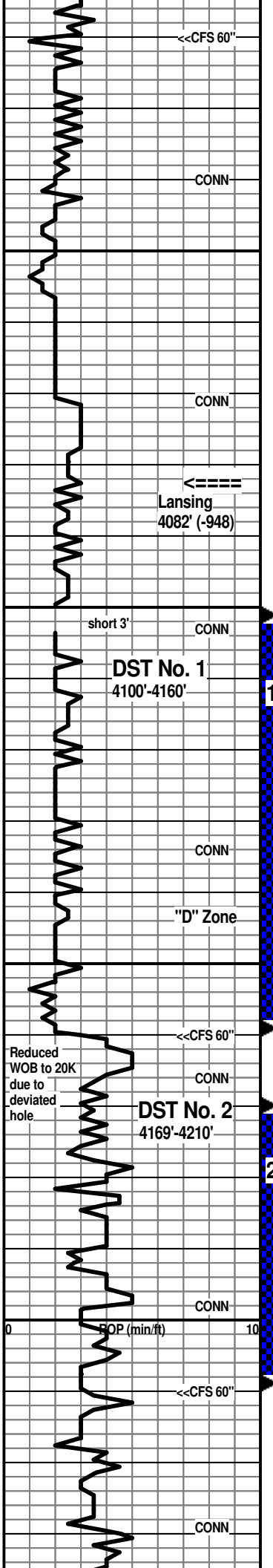
20' spl - Ls: predom. tan, lt gray vf-cryptoxln, NVP, N.S. and offwhite mic-vfxln dense, subchalky IP, N.S.; some tan fn granular with inter-particle por. with pp dark brn stain, sl shows minute oil droplets, gen. listless, no odor; common offwhite, lt gray dense with pp black stain, no odor, nfo

Rig service

Topeka 3867' (-733)

Oread 4000' (-866)

CFS 4020' 30" spl - flood Ls: tan, lt brn cryptoxln and offwhite mic-vfxln dense, subchalky to chalky, N.S.; 60" spl - Ls: mix AA with sl influx med brn cryptoxln; very scatt. gray, offwhite with pp black stain; Sh: sl influx



CFS 4020' spls >>>

30' spl - Ls: mix various cryptoxln and offwhite dense AA

40' spl - Ls: flood med to dark gray, med brn, gray-brn cryptoxln and some med gray dense, shaly

50' spl - Ls: mix AA

60' spl - Ls: mix AA; some lt gray vfg Sst and lt gray Siltst, occ with patchy dark stain, nfo, no odor

70' spl - Siltst: lt gray, offwhite, some with speckled black dead stain; some med gray shale; Ls: predom. lt gray, some tan vf-cryptoxln, NVP and offwhite mic-vfxln dense, subchalky IP

80' spl - Sh: good influx red-brn, silty with red-brn Siltst; decr. various cryptoxln Ls's AA, occ red-brn cryptoxln Ls

90' spl - Sh: influx brick red, red-brn silty and red-brn Siltst; Ls: influx lt to med brn, lt gray cryptoxln, NVP, N.S.

4100' spl - flood Ls: various cryptoxln AA; offwhite, tan mic-vfxln dense, subchalky to chalky, N.S.

10' spl - Ls: very predom. lt to med brn, lt gray cryptoxln; lesser offwhite, tan dense subchalky, N.S.

20' spl - Ls: mix AA

30' spl - Ls: mix AA, N.S.; occ offwhite, tan mic-vfxln with patchy black tarry stain, no odor, nfo; Sh: influx med to dark red-brn, silty to soft and mushy

40' spl - Ls: tan, lt to med brn, lt gray cryptoxln; Sh: red-brn silty with some red-brn Siltst

50' spl - becoming predom. Sh: med to dark red-brn, silty IP with lt to med gray, occ purple

60' spl - flood Ls: predom. tan, lt gray, lt brn cryptoxln, NVP and lesser offwhite mic-vfxln dense, subchalky IP, N.S.; scatt. tan cryptoxln with poor vug. and edge porosity with patchy lt stain, trace minute oil droplets, no odor

CFS 4160' 30' spl - Ls: mix AA; with 4-5 chips tan, offwhite granular with inter-particle and some vug. por. with brn to black pp and subsat stain, sl-fair sfo, trace sg, no odor; Sh: good influx med to dark gray, red-brn and maroon

70'/80' spls - Sh: abund. dark red-brn and lt to med gray; lesser Ls: tan, lt gray granular to cryptoxln, NVP

90' spl - Sh: dark red-brn, red-maroon, lt to med gray; some Ls: gray, tan, brn granular to cryptoxln, poor-NVP; scatt. offwhite subchalky

4200' spl - Ls: influx tan, brn vf-cryptoxln with pp dark stain, sl-fair sfo on break, no odor; offwhite, tan, brn mic-vfxln with some pp por. with patchy brn stain; scatt. subsat to sat stain in dry spl; shales AA

10' spl - flood Ls: tan, lt gray cryptoxln; influx offwhite, tan mic-vfxln dense, subchalky, N.S.; several chips tan cryptoxln, occ foss. with some intra-particle and vug. por. with lt stain, ?faint odor

4210' CFS spls - >>>

20' spl - Ls: lt to med gray vf-cryptoxln, shaly IP; Sh: lt to med gray calcar., dark red-brn

30' spl - Sh: lt to med gray calcar.; lesser red-brn; Ls: lt to med gray, lt to med brn cryptoxln, NVP, N.S.; 2-3 chips lt gray, lt brn with small vug. por.. one chip with subsat. brn stain

40' spl - good influx Sh: med to dark red-brn, red-maroon, lt to med gray; scatt. cryptoxln Ls's

50' spl - flood Ls: tan, lt gray sl granular, NVP, N.S.

med gray and red-brn

Lansing 4082' (-948)

DST No. 1 Lansing "D"
Interval: 4100'-4160'
Times: 30-60-60-90
IFP: good blow, B.O.B. in 9 1/2 minutes
ISIP: 1 inch return blow
FFP: good blow, B.O.B. in 12 minutes
FSIP: 4 inch return blow
Recovery: 475' GIP; 230' CGO (21g, 77o, 2m);
45' O&GCM (16g, 18o, 66m); 190' OG&WCM (13g, 3o, 27w, 57m); Gravity 26 deg.
FP: 33-112/118-212 SIP: 959-952
HP: 2053-2041 BHT: 137 deg. F

7:00 AM at 4120' on 3-4-2014

Morgan Mud Check at 4133'
7:30 AM on 3-4-2014
wt vis wl pH chl
9.5 65 6.0 9.5 700
PV YP GelS lcm solids
30 24 24/36 4# 8.6%

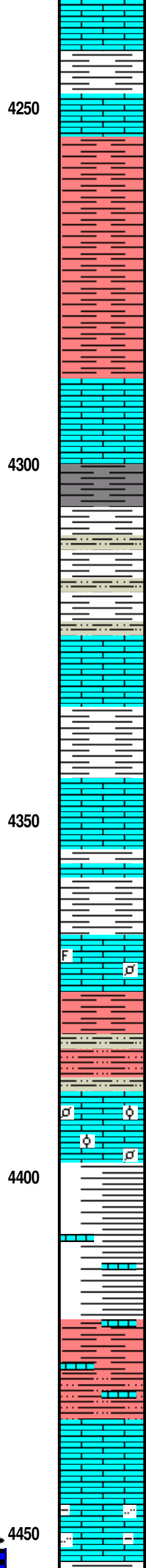
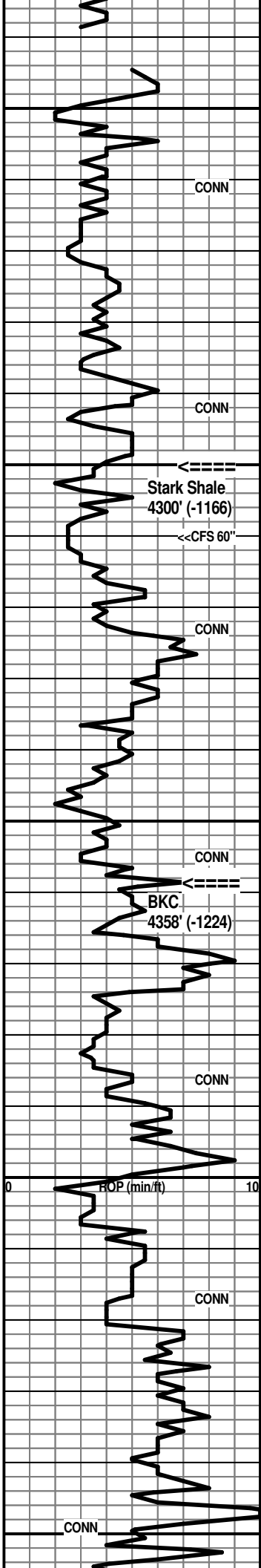
CFS 4160' 60" spl - Ls: mix lt to med brn, lt gray cryptoxln and offwhite, lt gray mic-vfxln dense; Sh: mix AA

DST No. 2 Lansing "G" Zone
Interval: 4169'-4210'
Times: 30-60-30-60
IFP: weak 1/4" blow, died in 20 minutes
ISIP: no return blow
FFP: no blow
FSIP: no return blow
Recovery: 10' VSL G&OCM (2g, 4o, 94m)
FP: 19-22/23-24 SIP: 979-534
HP: 2098-2058 BHT: 129 deg. F

CFS 4210' 30" spl - Ls: several chips with por. AA with fair-good sfo on break, trace sg, pp to spotty brn stain; predom. various cryptoxln and dense AA, NVP, N.S.; 60" spl - dense Ls's AA with decr. shows; Sh: incr. med gray, dark red-brn

7:00 AM at 4210' on 3-5-2014

Morgan Mud Check at 4210'
7:30 AM on 3-5-2014
wt vis wl pH chl
9.4 58 6.2 10.0 800
PV YP GelS lcm solids
26 16 24/38 4# 7.9%



offwhite, tan mic-vfxln dense, N.S.; trace offwhite fn granular with poor inter-particle por. with black pp stain, nfo, no odor

60' spl - predom. Sh: lt to med gray, lesser red-brn and lt green; Ls: offwhite, lt gray mic-vfxln dense, N.S.; 3-4 chips offwhite fn-vfxln with pp dark stain AA

70' spl - very shaly mix AA, with more red-brn, maroon and red-maroon; Ls: various dense AA with some med to dark brn cryptoxln; scatt. chips AA with black tarry stain

80' spl - Sh: predom. dark red-brn; much decr. Ls %, tan, lt gray granular to cryptoxln, N.S.

90' spl - Sh: very predom. dark red-brn; more soft and mushy; Ls: minor tan, lt gray cryptoxln, NVP; trace offwhite mic-vfxln with spotty black stain, nfo, no odor

4300' spl - flood Ls: tan, lt gray cryptoxln, predom. NVP; lesser offwhite mic-vfxln dense, N.S.; scatt. offwhite, tan vf-cryptoxln with spotty vug. por. with black tarry stain, nfo, no odor

10' spl - Ls: mix AA with scatt. offwhite cryptoxln with spotty vug. por. with black stain, slow bleeding gas on brkn surface, nfo, no odor; Sh: dark red-brn, some lt gray

CFS 4310' spls - >>>

20' spl - more shaly than above with lt red calcar. Siltst; various dense Ls's

30' spl - Sh: med to dark red-brn, lesser silty lt gray; Siltst: lt to med red; minor tan, lt gray cryptoxln Ls

40' spl - flood Ls: mix lt gray, tan cryptoxln and offwhite, lt gray mic-vfxln dense, NVP, N.S.; much decr. shale %

50' spl - Ls: various AA, some sl granular; incr. % of Sh: med to dark red-brn, red-maroon, some brick red and med gray

60' spl - flood Ls: mix lt gray, lt to med brn cryptoxln, sl granular, NVP, N.S.

70' spl - Ls: mix AA with incr. Sh: dark red-brn, dark red-maroon, soft red

80' spl - flood Ls: lt gray, tan, lt brn cryptoxln with lesser lt brn, lt gray granular, sl foss. to pelletic, NVP, N.S.; very minor shale

90' spl - strong influx Sh: lt to med red-brn, silty with red and gray Siltst

4400' spl - flood Ls: lt to med brn granular, NVP; lt gray vf-cryptoxln, some gray granular and shaly; sl influx tan, lt brn fn oolitic/pelletic with spar matrix, NVP, N.S.; much decr. shale and siltst

10' spl - flood Sh: lt to med purple and purplish-gray, some mottled; med to dark red-brn; much decr. various Ls's AA

20' spl - Sh: various AA; Ls: minor mottled tan/brn granular and lt brn, lt gray cryptoxln

30' spl - Sh: med to dark red-brn silty and red-brn Siltst; some mottled red-brn shaly Ls, NVP, N.S.

40' spl - shales and red-brn Siltst AA; minor tan, lt brn granular Ls

50' spl - flood Ls: tan, lt brn, offwhite granular with poor-NVP, N.S.; lesser lt to med brn cryptoxln; much decr. red-brn shale

60' spl - flood Ls: lt to med gray dense, shaly and silty, NVP, N.S.

7:00 AM at 4296' on 3-6-2014

Stark Shale 4300' (-1166)

CFS 4310' 30" spl - mix AA with incr. Sh: red-brn, lt red silty and more med gray; 60" spl - Sh: med to dark gray; Ls: tan, lt gray, lt brn cryptoxln, sl granular IP, NVP; other offwhite, tan mic-vfxln dense, N.S.

Morgan Mud Check at 4300'

7:15 AM on 3-6-2014

wt	vis	wl	pH	chl
9.3	57	6.0	9.5	700
PV	YP	GelS	lcm	solids
26	14	22/38	4#	7.4%

BKC 4358' (-1224)

DST No. 3 Pawnee
Interval: 4450'-4500'
Times: 30-60-60-90
IFP: fair blow bldg. to 9 1/4 inches

DST No. 3
4450'-4500'

Pawnee
4476' (-1342)

CONN

3

4500

CONN

CONN

4550

Cherokee Shale
4565' (-1431)

CONN

4600

ROP (min/ft)

CONN

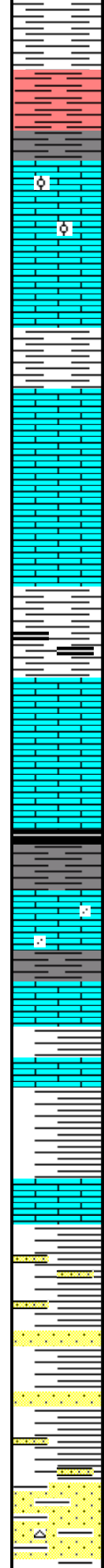
4650

CONN

<<CFS 60"

RTD 4660' (-1526)
LTD 4639' (-1505)**

** Due to the deviation of the hole, the tool was probably



70' spl - Ls: sl predom. gray AA; occ med brn cryptoxln; Sh: some lt to med gray

80' spl - Ls: sl influx med brn, gray granular; other lt to med brn cryptoxln; Sh: good influx med to dark red-brn, red-maroon, maroon

90' spl - Sh: mix AA with influx med to dark gray; Ls: lt to med brn, lt gray cryptoxln to granular, NVP, N.S.; several chips tan granular, oolitic IP with poor-fair inter-particle por. with pp brn stain, patchy to subsat stain in dry spl, fair sfo on break, some listless, no sg, no odor

4500' spl - Ls: flood lt to med gray, predom. cryptoxln, NVP; other lt to med gray mic-vfxln dense, N.S.

CFS 4500' spls - >>>

10' spl - trashy; predom. vc gray shales, more dark gray

20' spl - Sh: abund. med gray, some dark gray, lesser red-brn; Ls: lt to med gray, lt brn vf-cryptoxln

30' spl - Ls: lt to med gray vf-cryptoxln, shaly IP, NVP, N.S.

40' spl - Ls's AA; with med to dark gray to black shales

50' spl - Ls AA with sl influx med brn cryptoxln; Sh: influx dark gray, some black carbon.

60' spl - Ls: influx tan, lt gray granular NVP; lesser offwhite, tan mic-vfxln dense; Sh: predom. med gray

70' spl - Ls: tan, lt gray, lt brn cryptoxln to sl granular, NVP, N.S.

80' spl - Ls: various AA with sl influx dark brn, dark gray cryptoxln; Sh: good influx lt to med gray

90' spl - Sh: decr. % with new dark gray to black; Ls: various lt to med brn granular to cryptoxln, NVP, N.S.; influx tan, lt gray, offwhite finely sandy, N.S.

4600' spl - Ls: predom. lt to med brn granular to cryptoxln AA; incr. offwhite, lt gray mic-vfxln dense, subchalky; Sh: vc gray, some dark red-brn, trace mottled dark yellow/maroon

10' spl - Ls: lt to med brn, lt gray cryptoxln to some granular, NVP, N.S.; decr. offwhite, lt gray mic-vfxln dense; Sh: predom. lt to med gray, occ dark red-brn, red-maroon

20' spl - strong influx Sh: lt to med gray, dark red-maroon, med to dark red, mottled red/green and yellow/gray, purple

30' spl - Ls: various cryptoxln and granular; Sh: predom. lt to med gray and lt gray fissile

40' spl - flood Sh: mix lt to med gray, gray-green, with influx multi-colored (dark yellow, common purple, maroon, dark red-maroon); Sst: scatt. lt gray, offwhite, fg and shaly; scatt. very coarse loose grains, N.S.

50' spl - Sh: multi-colored AA, common purple; incr. Sst: lt red, lt brn, lt yellow, fg, calcar. and shaly, N.S.

60' spl - multi-colored shales and tight shaly Sst

CFS 4660' 30" spl - multi-colored shales AA; Sst: offwhite, lt gray mostly fg poor-NVP, N.S.; some fn-coarse grnd, N.S.; influx dark red-brn shaly Sst and sandy shale; trace orange chert

Because of the positive results of DST's 1 and 3, 5 1/2" casing was set for production testing.

Respectfully submitted,

ISIP: no return blow
FFP: fair to good blow bldg. to B.O.B. in 25 minutes
FSIP: no return blow
Recovery: 380' GIP; 85' CO (2g, 2m, 96o); 20' G&OCM (7g, 23o, 70m), Gravity 36.2
FP: 20-32/29-59 SIP: 965-927
HP: 2168-2165 BHT: 137 deg. F

Pawnee 4476' (-1342)

CFS 4500' 30" spl - Ls: lt to med gray cryptoxln; some gray-brn cryptoxln and gray dense, shaly, N.S.; 60" spl - Ls: mix various gray AA; scatt. lt brn granular with shows AA; Sh: trace dark gray to black

7:00 AM at 4500' on 3-7-2014

Morgan Mud Check at 4500'

7:15 AM on 3-7-2014

wt vis wl pH chl
8.9 65 6.2 10.0 600
PV YP GeIS lcm solids
24 20 18/34 4# 5.0%

Cherokee Shale 4565' (-1431)

7:00 AM at 4630' on 3-8-2014

Morgan Mud Check at 4648'

9:50 AM on 3-8-2014

wt vis wl pH chl
9.2 75 5.6 10.0 1000
PV YP GeIS lcm solids
28 28 22/36 4# 6.4%

CFS 4660' 60" spl - multi-colored shales AA with dark red-brn shaly Sst and sandy shale; some offwhite fg tight Sst, N.S.

RTD reached at 9:30 AM on 3-8-2014

CFS/CTCH 90" - Drop survey - TOFL

hole, the tool was probably
dragging the side of the
wellbore making LTD difficult to
determine.

Wesley D. Hansen
Petroleum Geologist
Kansas License No. 418