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

LITHOLOGY STRIP LOG

WellSight Systems

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

Well Name: Shakespeare Oil Company, Inc. #2-14 Radnor
Location: 800' FNL, 550' FWL NW/4, Sec. 14-16S-34W
License Number: API #15-171-21056 **Region:** Scott County, KS
Spud Date: 5-13-2014 **Drilling Completed:** 5-24-2014
Surface Coordinates: 800' FNL, 550' FWL NW/4, Sec. 14-16S-34W

Bottom Hole Coordinates: Vertical hole

Ground Elevation (ft): 3117' **K.B. Elevation (ft):** 3129'
Logged Interval (ft): 3800' **To:** RTD **Total Depth (ft):** 4870'
Formation: Mississippian at RTD
Type of Drilling Fluid: Chemical - Displaced at 3504'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Shakespeare Oil Company, Inc.
Address: 202 West Main Street
Salem, IL 62881

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: Southwind Drilling Rig #70
Pusher: Sam Staggs

Surface Casing: 8 5/8" set at 267' w/180 sx
Production Casing: 5 1/2" set at +or- 4870'

Mud by: MudCo - Reid Atkins was the engineer.

DST's by: Trilobite - Cornelio Landa was the tester.

Logs by: Weatherford - MAI/MFE, MPD/MDN, MML, Sonic

Deviation Surveys: 1/2 deg. @ 268'; 2 deg. @ 4450'; 1 deg. @ 4870'

BIT RECORD

Bit #	Size	MFG	Type	Depth Out	Footage Cut	Hours on bit
1	12 1/4"	Reed		268'	268'	3
2	7 7/8"	Reed	S52	4870'	4602'	134 1/4

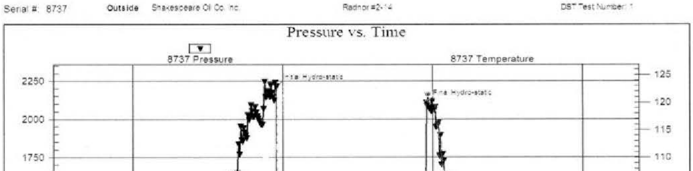
FORMATION TOPS AND STRUCTURAL COMPARISON

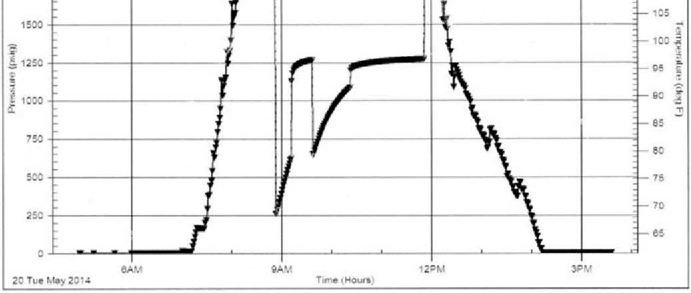
FORMATION	SAMPLE TOPS		LOG TOPS		COMPARISON WELLS A. SOCO Nichols #1-15 3130' KB B. SOCO Radnor #1-14 3125' KB	
	Depth 3129' KB	Datum	Depth 3129' KB	Datum	A	B
B/Anhydrite	2480'	+649	2476'	+653	+655	+657
Heebner	3995'	-866	3992'	-863	-854	-862
Lansing	4036'	-907	4035'	-906	-894	-903
Muncie Creek Shale	4212'	-1083	4212'	-1083	-1075	-1085
Stark Shale	4309'	-1180	4307'	-1178	-1168	-1179
Hushpuckney Shale	4353'	-1224	4350'	-1221	-1213	-1224
Marmaton	4446'	-1317	4443'	-1314	-1306	-1317
Pawnee	4518'	-1389	4521'	-1392	-1384	-1393
Lower Cherokee Sh.	4604'	-1475	4600'	-1471	-1466	-1476
Johnson Zone	4848'	-1519	4645'	-1516	-1510	-1522
Mississippian	4765'	-1636	4762'	-1633	-1628	-1655
RTD	4870'	-1741				
LTD			4868'	-1739		

DRILL STEM TESTS

DST No. 1 BKC to Marmaton "A"
Interval: 4384'-4450'
Times: 15-30-45-90
Recovery: 612' G&MCW (20g, 20m, 60w); 189' G&MCW (15g, 30m, 55w); 189' M&GCO (20m, 20o, 60g); 63' G&MCO (20g, 25m, 55o); 1386' GCW (10g, 90w) - total fluid 2439'; chl. 15,000
System chl. 10,000
FP: 259-620/645-1085 SIP: 1267-1276
HP: 2211-2106 BHT: 122 deg. F

IFP: strong blow, B.O.B. in one minute
ISIP: weak surface return blow
FFP: strong blow, B.O.B. in one minute
FSIP: weak surface return blow, died in 5 minutes





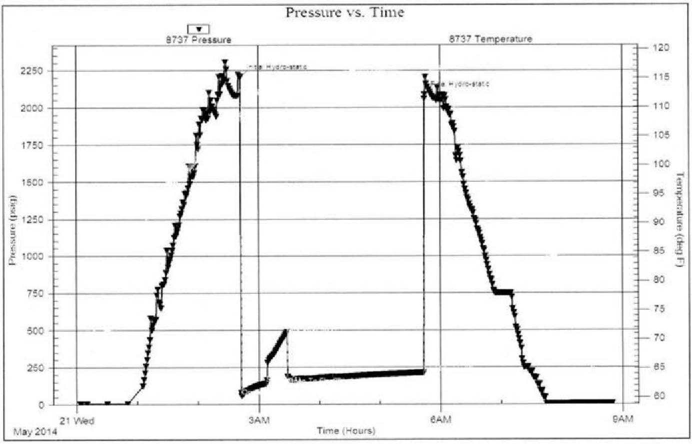
Trilobite Testing, Inc Ref. No: 56535 Printed: 2014.05.20 @ 15:44:30

DRILL STEM TESTS

DST No. 2 Marmaton "A" and "B"
Interval: 4412'-4465'
Times: 15-30-45-90
Recovery: 504' GIP; 63' CGO (50g, 50o); 126' CGO (30g, 70o); 189' M&GCO (25m, 30o, 45g); 126' G&OCM (30g, 30o, 40m) - total fluid 504'
FP: 57-142/182-186 SIP: 488-215
HP: 2204-2086 BHT: 118 deg. F

IFP: strong blow, B.O.B. in 4 minutes
ISIP: surface return blow, built to 1/2"
FFP: fair blow built to 7", decr. to 5 1/2"
FSIP: surface return blow, built to 1/4", died in 50 minutes

Serial #: 8737 **Outside** Shakespeare Oil Co. Inc. Radnor #2-14 DST Test Number: 2



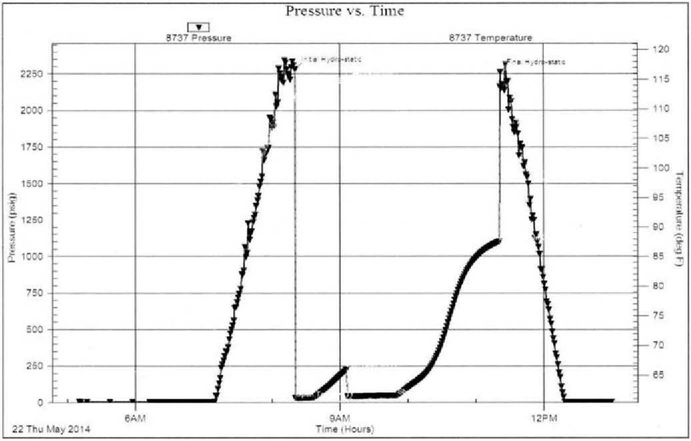
Trilobite Testing, Inc Ref. No: 56536 Printed: 2014.05.21 @ 08:57:15

DRILL STEM TESTS

DST No. 3 Myrick Station & Fort Scott
Interval: 4550'-4612'
Times: 15-30-45-90
Recovery: 504' GIP; 63' O&GCM (20o, 40g, 40m); 63' O&GCM (20g, 20o, 60m)
FP: 31-36/40-51 SIP: 231-1101
HP: 2280-2260 BHT: 118 deg. F

IFP: fair blow built to B.O.B. in 9 minutes
ISIP: no return blow
FFP: surface blow built to 7 1/2 inches, died back to 7 inches
FSIP: no return blow

Serial #: 8737 **Outside** Shakespeare Oil Co. Inc Radnor #2-14 DST Test Number: 3



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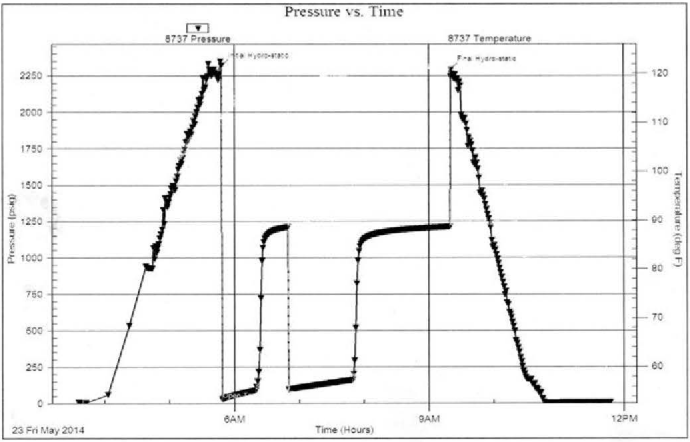
DRILL STEM TESTS

DST No. 4 Johnson Zone
Interval: 4638'-4720'
Times: 30-30-60-90
Recovery: 562' GIP; 5' G&OCM (30g, 30o, 40m); 126' G&MCO (25g, 35m, 40o); 126' G&OCM (10g, 15o, 75m) total fluid 257'; gravity 23 degrees
FP: 30-89/96-162 SIP: 1210-1212
HP: 2319-2294 BHT: 122 deg. F

IFP: fair blow, built to B.O.B. in 15 1/2 minutes
ISIP: no return blow
FFP: fair blow, built to B.O.B. in 20 minutes
FSIP: surface return blow, built to 6 inches

Serial #: 8737 **Outside** Shakespeare Oil Co. Inc Radnor #2-14 DST Test Number: 4



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ROCK TYPES

- Anhy
- Cht
- Coal
- Congl
- Dol
- Gyp
- Lmst
- Salt
- green shale
- Shale
- Shcol
- Sltst
- Ss
- Carb sh
- Dol
- Dtd
- Gry sh
- Sandylms
- redshale
- Shale
- Sltstn
- Shlyslts
- Sltysh
- Sdy dolo
- Shy dolo
- Shaly ls
- light 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
- Brecfrag
- 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
- Slty

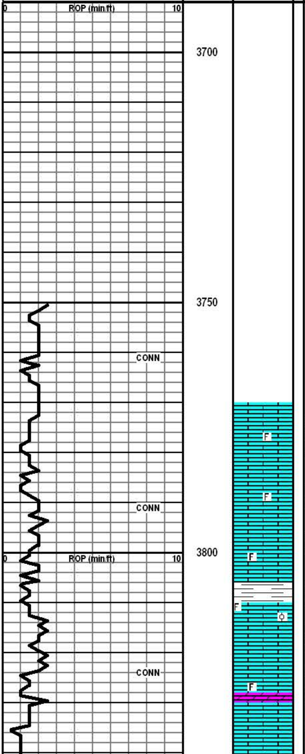
STRINGER

- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg
- Carbsh
- Clystn
- Dol
- Grysh
- Gryslt
- Lms
- Sandylms
- Sh
- Sltstn

OTHER SYMBOLS

INTERVALS		EVENTS		OIL SHOWS			
■	Core	▷	Rft	●	Even	○	Trace
⊡	Dst	▶	Dst top/base	◐	Spotted	▷	Dead
▣	Dst			?	Quest.	☒	Gas show

Curve Track 1 ROP (min/ft)	Depth	Lithology	Oil Shows	Geological Descriptions	Remarks



3800' spl - Ls: mix lt gray, tan vfxln dense; other sl mottled lt brn granular, foss with inter-particle por., N.S.; some lt to med gray dense, shaly and foss.; Sh: beds of med to dark gray

10' spl - Ls: predom. lt to med gray, med brn vf-cryptoxln, foss IP, poor-NVP; lesser offwhite, tan mic-vfxln dense, subchalky IP; some shales AA

20' spl - Ls: lt gray, tan, lt brn vf-cryptoxln; some more granular, sl foss.

30' spl - Sh: good influx lt to med gray; Ls: some tan, lt brn fn granular, foss and finely oolitic IP with fair inter-particle por., N.S.

40' spl - Ls: influx lt brn, tan foss, poor-NVP; lt gray, tan, lt brn vf-cryptoxln, NVP; much decr. shale %, some dark gray to black

50' spl - Ls: mottled brn/gray and tan granular, foss IP; med brn gran/foss, NVP; sl influx offwhite mic-vfxln dense; very scatt. tan fnxln Dolomite with good interxln and small vug. por., N.S.

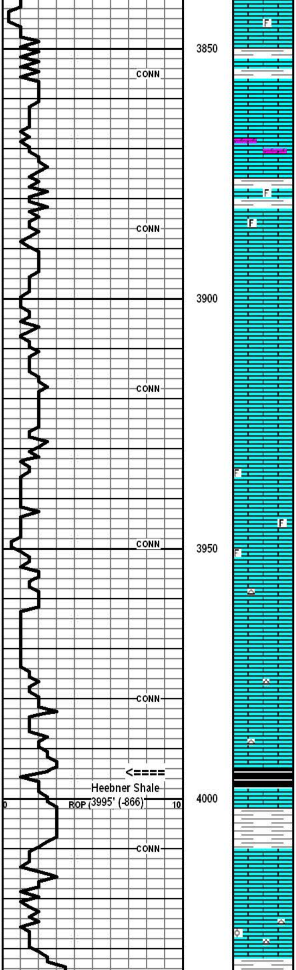
60' spl - Ls: lt gray, tan, lt brn predom. vfxln dense; some offwhite subchalky to chalky; Sh: med to dark gray

MudCo Mud Check at 3699'
10:40 AM on 5-18-2014

wt	vis	wl	pH	chl
9.0	54	11.2	9.0	11,000
PV	YP	GelS	lcm	solids
19	20	13/40	2#	4.1%

Report Depth and Activity

5-13-2014 MIRT, Spud at 8:00 PM
5-14 WOC @ 268'
5-15 Drlg. @ 1280'
5-16 Drlg. @ 2313'
5-17 Drlg. @ 3020'
5-18 Drlg. @ 3635'
5-19 Drlg. @ 4229'
5-20 DST No. 1 @ 4450'
5-21 DST No. 2 @ 4465'
5-22 DST No. 3 @ 4612'
5-23 DST No. 4 @ 4720'
5-24 RTD @ 4870', logging
5-25 Casing set to bottom



70' spl - Ls: influx tan, lt brn, lt gray fn granular, foss, gen. poor-NVP; lesser ofwhite, tan mic-vfxln dense; minor shale %

80' spl - Ls: very predom. tan, offwhite micxln to fn granular, some pp por.; lesser med gray and med brn cryptoxln; Sh: some red-brn and soft pale gray

90' spl - Ls: tan, lt brn, offwhite fn granular with pp and inter-particle por.; influx gray dense, shaly; very scatt. tan fnxln dolomite and offwhite chalky Ls

3900' spl - Ls: various fn granular, foss IP with inter-particle and scatt. fossil moldic por.; lesser offwhite mic-vfxln dense and gray, lt brn vf-cryptoxln; scatt. tan vfxln dolomite

10' spl - Ls: tan, lt brn, offwhite fn granular, foss IP with pp and inter-particle por.; other tan, lt gray, lt brn cryptoxln, NVP; some offwhite subchalky to chalky

20' spl - Ls: tan, offwhite micxln to fn granular with some por. AA; incr. offwhite, tan mic-vfxln dense; lesser med gray, lt to med brn cryptoxln

30' spl - Ls: becoming predom. various tan, lt brn, lt gray vfxln dense

40' spl - Ls: various dense AA; some mottled lt brn/gray granular, poor-NVP

50' spl - Ls: influx lt to med brn, med gray cryptoxln to sl mottled granular, poor-NVP, N.S.; Sh: some med to dark gray, black

60' spl - Ls: predom. tan, lt brn vfxln dense; some fn granular with poor inter-particle por.; lesser lt gray vf-cryptoxln

70' spl - Ls: lt brn, tan fn granular, foss IP with some intra-particle por.; influx offwhite, tan mic-vfxln dense, subchalky to occ white chalky

80' spl - Ls: mix fn granular, foss. AA and offwhite subchalky to chalky

90' spl - Ls: mix AA with influx tan, lt brn vf-cryptoxln; scatt. lt gray opq chert

4000' spl - Ls: mix AA; some mottled brn "mealy" dense; vsl cherty AA

10' spl - Ls: tan, lt brn predom. vfxln dense, NVP; common chalky AA; incr. Chert: lt gray, opq spicular; Sh: scatt. black carbon.

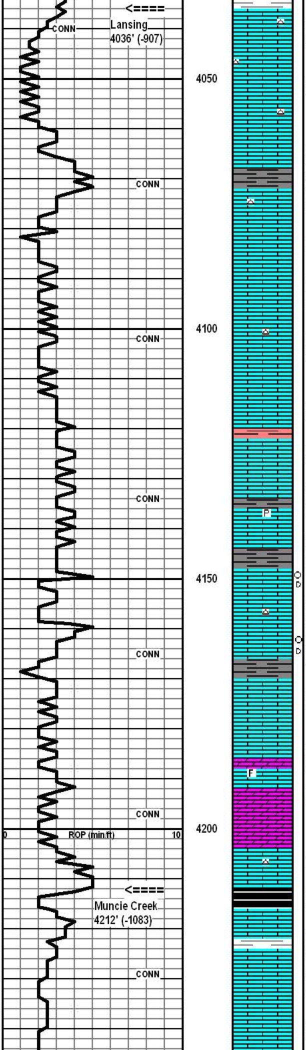
Heebner Shale 3995' (-866)

20' spl - Ls: mottled gray/brn granular; Sh: black carbon., pale gray, soft lt red-brn

30' spl - Ls: very predom. offwhite, tan mic-vfxln dense, subchalky to chalky; tan fn granular with poor to fair inter-particle and pp por., N.S.

40' spl - Ls: influx lt to med brn vf-cryptoxln; lesser mottled brn/gray sl granular

50' spl - Ls: influx tan, lt brn fn granular, foss and occ finely oolitic with some inter-particle por., N.S.; Chert: influx offwhite opq; Sh: gray



Lansing 4036' (-907)

60' spl - Ls: predom. tan, offwhite vfxln, mottled with gray IP, some pp por.; occ white chalky; scatt. lt gray, offwhite opq chert, N.S.

70' spl - Ls: mix AA, becoming predom. subchalky to chalky; scatt. chert; N.S.

80' spl - Ls: influx lt to med brn, gray-brn, sl mottled granular, poor-NVP, N.S.

90' spl - Ls: offwhite, tan mic-vfxln dense, subchalky to occ chalky; some tan fn granular with inter-particle and small vug. por., N.S.; lt gray, med brn cryptoxln; some offwhite opq chert and med gray shale

4100' spl - Ls: tan, lt to med brn, lt gray cryptoxln; tan, offwhite mic-vfxln dense, subchalky; some white chalky

10' spl - Ls: lt to med brn, lt gray, tan cryptoxln; some tan, offwhite fn granular with some inter-particle por.; lesser tan, offwhite mic-vfxln dense, N.S.

20' spl - Ls: mix AA, decr. cryptoxln, predom. tan, offwhite vfxln dense; more offwhite subchalky to chalky; trace offwhite opq chert

30' spl - Ls: offwhite, tan mic-vfxln dense AA with influx lt gray, lt brn, tan cryptoxln, NVP, N.S.

40' spl - Ls: mix AA with some gray, lt brn granular, poor-NVP; Sh: minor dark red-brn

50' spl - Ls: influx med to dark brn and gray cryptoxln, occ pyritic; some mottled dark gray granular, NVP; Sh: influx med to dark gray, occ black

60' spl - Sh: good influx lt to med gray; Ls: various tan, brn, gray vf-cryptoxln and sl mottled granular, poor-NVP, N.S.; 2-3 chips tan, lt gray granular with poor inter-particle por., pp dead brn oil and patchy brn stain, nfo, no odor

70' spl - Ls: various tan, brn, gray sl mottled granular, poor-NVP, N.S.; Sh: common med to dark gray; Chert: lt gray, offwhite opq

80' spl - Ls: mix gray, lt to med brn cryptoxln and mottled lt brn, tan granular, sl foss, poor-NVP; scatt. chert AA; trace tan mic-vfxln with pp stain, no odor, nfo; Sh: vc gray

90' spl - Ls: mix AA, some dark gray cryptoxln; trace show AA; spls very shaly (vc gray, brick red, red-brn)

4200' spl - Ls: influx tan, lt brn fn granular with inter-particle por.; some Dolomite: tan, offwhite vfxln with interxln por., N.S.; abund shales AA

10' spl - Ls: lt to med brn granular, sl foss., poor-NVP, N.S.; influx Dolo: tan, offwhite fn-vfxln with interxln por., N.S.

20' spl - Ls: various tan, brn vf-cryptoxln, NVP, N.S.; some offwhite subchalky; scatt. lt gray chert

30' spl - Sh: influx black carbon.; Ls: tan, lt to med brn, lt gray cryptoxln, NVP

Muncie Creek 4212' (-1083)

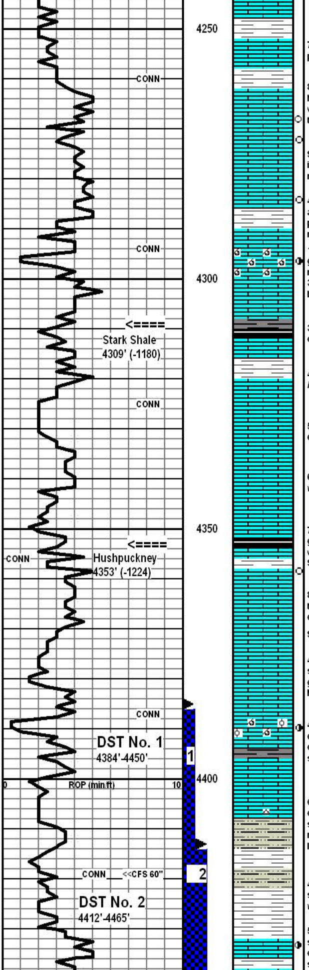
Poor samples from 4240'-4270'
abundant uphole red bed slough due to low mud viscosity. Will run premix

40' spl - Ls: lt to med brn, dark red-brn cryptoxln and mottled gray, lt brn granular, poor-NVP; spls very shaly (low viscosity mud)

50' spl - Ls: mix various lt to med brn, lt gray cryptoxln to sl mottled granular; new mottled gray/offwhite fn granular, N.S.; spls very shaly and poor

7:00 AM at 4229' on 5-19-2014

60' spl - Ls: lt gray, lt brn cryptoxln and mottled gray/brn granular, NVP, N.S.



70' spl - Ls: predom. mottled gray/brn granular AA - very poor and shaly spl

80' spl - improving quality - Ls: predom. various mottled tan, lt gray, lt brn granular, foss IP; lesser tan, lt gray vf-cryptoxln; trace offwhite vf-cryptoxln with spotty pp brn to black stain, one minute oil droplet, no odor

90' spl - Ls: several chips with shows AA with spotty interxln por., brn stain; flood lt gray, tan vf-cryptoxln sl mottled and granular IP, NVP, N.S.

4300' spl - Ls: flood lt gray, tan, lt brn predom. sl mottled and granular, NVP, N.S.; scatt. lt gray vf-cryptoxln with patchy brn stain, no odor, nfo, poor spotty interxln por.; Sh: med gray

10'/20'spls - Ls: scatt. chips lt gray, lt brn oolitic with fair to good oomoldic por. with spotty dark brn to black thick oily residue to tarry stain, trace listless oil; much barren por.; 3-4 chips offwhite dense with pp black stain; other various brn, gray cryptoxln to sl granular, NVP, N.S.

30' spl - Sh: some dark gray to black; Ls: lt to med brn, gray cryptoxln; lesser brn and gray granular

40' spl- Sh: more dark gray to black; Ls: various cryptoxln AA with influx tan, lt brn vfxln dense

50' spl - Ls: predom. various lt gray, offwhite, tan mic-vfxln dense; some fn granular, N.S.

60' spl - Ls: tan, lt gray cryptoxln and tan, lt gray fn granular with inter-particle por., N.S.

70' spl - Ls: mix tan, offwhite fn granular with por. AA; lt gray, tan cryptoxln to sl mottled granular; 3-4 chips offwhite vfxln with poor patchy interxln por. with spotty lt brn stain; Sh: some med to dark gray and black

80' spl - Ls: mix of tan, lt brn sl mottled granular, NVP and tan, offwhite fn granular AA; other offwhite, tan mic-vfxln dense

90' spl - Ls: mixed and mottled AA; Sh: vc gray, red-brn

4400'/4410' spls - Ls: various lt to med brn, tan vf-cryptoxln, some sl mottled granular, N.S.; good influx tan, lt brn, lt gray, offwhite fn granular with pp and inter-particle por., N.S.; Sh: sl influx dark gray to black

4419' spl - Ls: very predom. lt gray, tan, offwhite vfxln dense and lt gray, med brn cryptoxln; 3-4 chips tan, lt gray, oolitic with fair to good inter-oolitic por. with brn to black spotty tarry stain, dark irreg. shaped oil droplets; pyritic IP

CFS 4419' 30" spl - Ls: incr. gray, med brn cryptoxln; influx offwhite chalky; scatt. lt gray and gray-brn opq chert; 60" spl - Ls: various cryptoxln AA with more lt to med brn sl mottled granular, NVP, N.S.; Siltst: some lt gray, vvfg sandy IP; Sh: occ very soft and mushy pale gray, clayey

40' spl - abund various dense Ls's AA; some Siltst and shales AA; several chips Ls: tan, lt brn granular and foss with inter-particle por., dark brn to black stain, sfo, vsl odor

50' spl - Ls: very predom. lt gray, offwhite mic-vfxln, subchalky to chalky; lesser lt brn, lt gray vf-cryptoxln; 2-3 chips with edge stain; trace tn fn granular with rich oily stain, gd show dark brn fo

MudCo Mud Check at 4260'
10:00 AM on 5-19-2014

wt	vis	wl	pH	chl
9.3	50	10.4	10.0	10,000

PV	YP	GelS	lcm	solids
16	23	15/39	2#	6.3%

Stark Shale 4309' (-1180)

Hushpuckney 4353' (-1224)

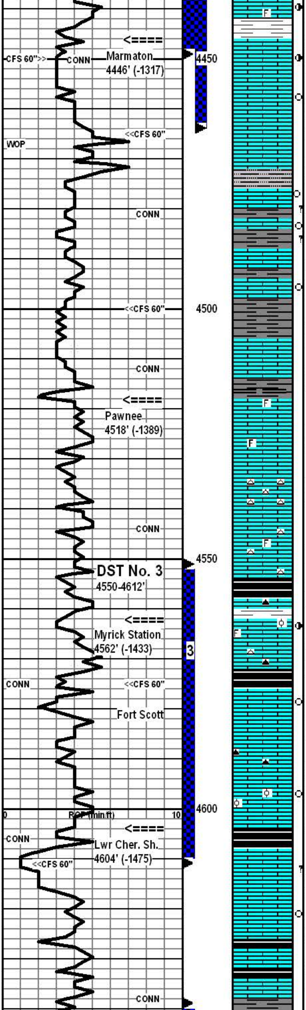
DST No. 1 BKC to Marmaton "A"
Interval: 4384'-4450'
Times: 15-30-45-90
IFP: strong blow, B.O.B. in one minute
ISIP: weak surface return blow
FFP: strong blow, B.O.B. in one minute
FSIP: weak surface return blow, died in 5 minutes
Recovery: 612' G&MCW (20g, 20m, 60w); 189' G&MCW (15g, 30m, 55w); 189' M&GCO (20m, 20o, 60g); 63' G&MCO (20g, 25m, 55o); 1386' GCW (10g, 90w) - total fluid 2439'; chl. 15,000
System chl. 10,000
FP: 259-620/645-1085 SIP: 1267-1276
HP: 2211-2106 BHT: 122 deg. F

DST No. 2 Marmaton "A" and "B"
Interval: 4412'-4465'
Times: 15-30-45-90
IFP: strong blow, B.O.B. in 4 minutes
ISIP: surface return blow, built to 1/2"
FFP: fair blow built to 7", decr. to 5 1/2"
FSIP: surface return blow, built to 1/4", died in 50 minutes
Recovery: 504' GIP; 63' CGO (50g, 50o); 126' CGO (30g, 70o); 189' M&GCO (25m, 30o, 45g); 126' G&OCM (30g, 30o, 40m) - total fluid 504'
FP: 57-142/182-186 SIP: 488-215
HP: 2204-2086 BHT: 118 deg. F

MudCo Mud Check at 4450'
9:30 AM on 5-20-2014

wt	vis	wl	pH	chl
9.3	50	9.6	10.5	9,000

PV	YP	GelS	lcm	solids
19	18	13/30	2#	6.6%



CFS 4450' spls - Ls: several chips tan, lt brn med to coarse granular and foss with inter-particle and vug. por. with vsl odor, brn to dark brn stain, shows brn to black free oil, some rich oily stain; 60" spl had influx med to dark brn, dark gray granular to cryptoxln, scatt. shows; Sh: soft lt gray

4465' CFS spls - Ls: mottled gray, lt brn, offwhite gran. with micxln matrix, N.S.; scatt. chips of offwhite, tan granular/foss/sl oolitic with poor-NVP with pp mostly black stain, rare lt brn free oil, faint to no odor; Sh: abund. vc gray

80' spl - still trashy with Sh: vc gray, sloughing red-beds; scatt. gray carbon. and micac. Siltst; Ls: lesser tan, lt to med gray vf-cryptoxln; some mottled gray granular, N.S.

90' spl - very shaly with cavings AA; Ls: predom. lt to med brn, med gray cryptoxln; some granular with poor-NVP; rare offwhite vf-cryptoxln with NVP, patchy stain, nfo, no odor

4500' spl - still very shaly with red beds AA; Ls: various gray, tan, brn predom. cryptoxln; 2-3 chips with patchy stain, nfo, no odor

CFS 4500' spls - >>>

20' spl - Sh: med gray; predom. Ls: various tan, lt brn, lt to dark gray cryptoxln; offwhite mic-vfxln dense; sl influx lt brn granular with poor-NVP, N.S.

30' spl - Sh: sl influx dark gray to black; Ls: mix tan, lt brn, lt to med gray cryptoxln to granular, NVP, N.S.; lesser tan, lt brn granular, foss, poor-NVP, N.S.

40' spl - incr. shale AA; Ls: various cryptoxln AA, occ dark gray cryptoxln; tan, lt brn granular/foss with offwhite micxln matrix, N.S.

50' spl - Ls: tan, lt gray cryptoxln and offwhite, tan mic-vfxln dese, subchalky IP; good influx of dove gray, offwhite and lt brn sharp chert, foss IP

60' spl - Ls: various cryptoxln and dense AA; some lt gray granular, foss, NVP, N.S.; cherty AA

70' spl - Sh: flood black carbon.; Ls: various gray, tan predom. cryptoxln; lesser tan, gray granular and offwhite vfxln dense; cherty AA, occ dark gray to black

4575' spl - Ls: scatt. lt brn fn granular, foss, oolitic IP with ft-vsl odor, some even stain, very predom. hard, tight, 3-4 chips more friable with some inter-particle por. with sl sfo, sg, stain; occ mottled gray/offwhite oolitic/foss chert, trace with stain in fossil moldic por. - CFS spls >>>

90' spl - Ls: tan, offwhite mic-vfxln dense; tan, lt brn cryptoxln and offwhite, lt gray granular to oolitic, poor-NVP, N.S.; 3-4 small chips tan, lt brn fn granular with inter-particle por. with spotty to subsat stain, trace fo, no odor

4600' spl - Ls: tan, lt gray, lt to med brn cryptoxln; other dense AA; some dark gray chert

10' spl - Ls: various cryptoxln and dense AA; sl influx tan, lt brn granular/oolitic, most with micxln matrix, N.S.; 2-3 oolite clusters with poor-fair inter-oolitic por. with lt stain, sg, ft odor on break, trace fo on break

CFS 4612' spls - >>>

30' spl - trashy spls - Ls: mix lt to med brn, tan predom. granular; some med brn cryptoxln and offwhite mic-vfxln dense; scatt. dove gray chert

40' spl - Ls: lt to med gray, tan cryptoxln, some gray granular, 2-3 chips gray-brn granular with poor-fair inter-particle and vug. por. with spotty stain, ft odor, sl sfo; Sh: black carbon., dark gray

50' spl - Ls: influx med gray, med brn cryptoxln, scatt. sl granular, NVP, N.S.; sl influx mottled gray, tan, brn granular, NVP; Sh: vc gray to black

Pipe strap at 4450' was 4.21' short to the board

7:00 AM at 4450' on 5-20-2014

CTCH 1 hour before drilling ahead

Marmaton 4446' (-1317)

7:00 AM at 4465' on 5-21-2014

CTCH 1 hour before drilling ahead

MudCo Mud Check at 4468'
12:40 PM on 5-21-2014

wt	vis	wl	pH	chl
9.0	49	10.4	10.0	10,000
PV	YP	GelS	lcm	solids
16	29	12/28	2#	4.6%

CFS 4500' 30" spl - Ls: sl influx offwhite, tan mic-vfxln dense; scatt. tan, lt to med brn cryptoxln, N.S.; Sh: influx soft, gummy lt gray; 60" spl - Sh: med to dark gray, much decr. red-beds; Ls: various tan, brn dark gray cryptoxln and mottled granular, 2 chips brn granular/sl oolitic & foss with poor inter-particle por., with spotty brn oily stain, nfo, no odor

Pawnee 4518' (-1389)

DST No. 3 Myrick Station & Fort Scott
Interval: 4550'-4612'
Times: 15-30-45-90
IFP: fair blow built to B.O.B. in 9 minutes
ISIP: no return blow
FFP: surface blow built to 7 1/2 inches, died back to 7 inches
FSIP: no return blow
Recovery: 504' GIP; 63' O&GCM (20o, 40g, 40m); 63' O&GCM (20g, 20o, 60m)
FP: 31-36/40-51 SIP: 231-1101
HP: 2280-2260 BHT: 118 deg. F

CFS 4575' 30" spl - Ls: predom. lt to med brn, lt gray, tan cryptoxln, NVP, N.S.; occ lt brn oolitic poor-NVP, N.S.; Chert: dove gray, black; Sh: influx black carbon.; 60" spl - Ls: predom. offwhite, tan vfxln; various cryptoxln AA;; scatt. gray, tan chert, foss. IP; Sh: black carbon.

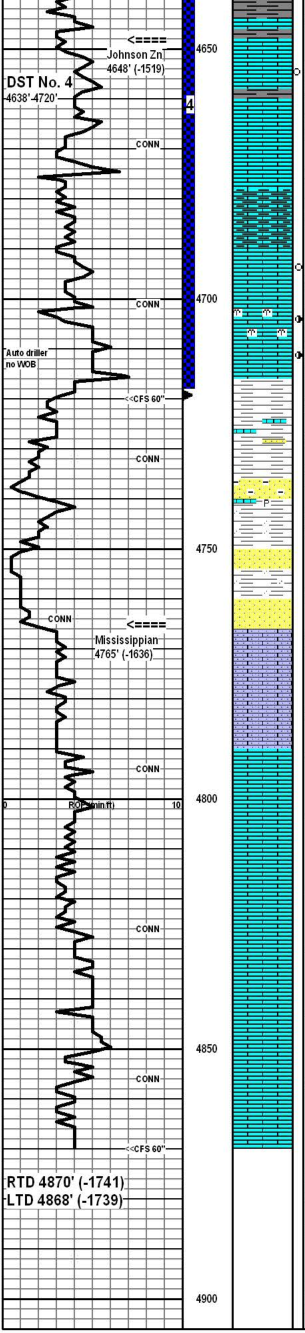
CFS 4612' 30" spl - Sh: black carbon.; Ls: abund. lt gray, tan vf-cryptoxln and lt brn granular to oolitic, NVP, N.S.; 60" spl - Ls: mix AA, some lt gray opq foss chert; Sh: black carbon.; trace oolitic with shows like 4610' spl

Lwr Cher. Sh. 4604' (-1475)

7:00 AM at 4612' on 5-22-2014

MudCo Mud Check at 4612'
9:30 AM on 5-22-2014

wt	vis	wl	pH	chl
9.3	52	10.2	11.0	7,000
PV	YP	GelS	lcm	solids
20	19	11/32	2#	6.7%



60' spl - Sh: vc gray with soft lt gray; Ls: various gray, brn, tan cryptoxln

70' spl - Ls: 2 chips lt gray vf-cryptoxln with isolated interxln por. with spotty stain, ft odor on break, nfo; 2 chips lt gray cryptoxln with isolated poor vug por. with sg, trace fo, lt stain, very hard

80' spl - very shaly and poor spls - Sh: flood med to dark gray, some black, red-brn (caving red-beds); Ls: various cryptoxln AA; sl influx offwhite, tan mic-vfxln dense

90' spl - very shaly and poor AA; Ls: various cryptoxln, NVP; one chip as in 70' spl with shows

4700' spl - very shaly and poor AA, influx gray-green shale; occ lt gray vfg Sst, N.S.; Ls: various gray, tan, lt brn predom. cryptoxln

10' spl - still very shaly AA; Ls: predom. med brn cryptoxln; trace lt brn micxln with listless oil; one coarse qtz grain with lt stain sg

20' spl - Ls: several chips tan with fenestral bryozoan porosity with sl odor, lt stain, sg, sfo

4700' CFS spls - more fenestral bryozoan Ls with shows AA; one cluster of well developed calcite xtals with spotty stain; other offwhite, tan mic-vfxln; lt gray, lt brn cryptoxln, N.S.; Sh: med to dark gray, red-brn

40' spl - Sh: flood vc gray, gray-green, mottled IP; some green sandy, abund. red-brn, brn, brick red

50' spl - Sh: vc AA; influx Ls: lt gray, tan vf-cryptoxln dense; trace Sst: lt gray, fg with shale partings, N.S.

60' spl - Sh: abund. gray-green, mottled IP with vc AA; some gray sandy, green sandy, green finely pyritic

70' spl - Sh: med to dark gray, lesser dark red-brn, some gray-green sandy; Ls: scatt. dark gray pyritic cryptoxln to granular

80' spl - Sh: vc gray, black, gray-green, lesser dark red-brn; Sst: scatt. lt gray fg, soft

90' spl - Ls: good influx lt gray, offwhite finely arenaceous with micxln to subchalky matrix, N.S.

Ls: sandy AA; some offwhite fg sandy, more chalky matrix, N.S.

Ls: offwhite, lt gray sandy with micxln to subchalky matrix

Ls: influx lt gray, tan fn granular, sandy IP

Ls: AA; some lt gray, brn cryptoxln

Ls: lt gray, tan granular, NVP

Ls: AA; tan, offwhite mic-vfxln dense

Ls: offwhite, tan dense AA; offwhite, tan fn granular with subchalky matrix

After review of DST's, samples and open hole logs, 5 1/2" casing was set for production testing.

Respectfully submitted,

Wesley D. Hansen
Petroleum Geologist
Kansas License No. 418

Johnson Zn 4648' (-1519)

DST No. 4 Johnson Zone
Interval: 4638'-4720'
Times: 30-30-60-90
IFP: fair blow, built to B.O.B. in 15 1/2 minutes
ISIP: no return blow
FFP: fair blow, built to B.O.B. in 20 minutes
FSIP: surface return blow, built to 6 inches
Recovery: 562' GIP; 5' G&OCM (30g, 30o, 40m); 126' G&MCO (25g, 35m, 40o); 126' G&OCM (10g, 15o, 75m) total fluid 257'; gravity 23 degrees
FP: 30-89/96-162 SIP: 1210-1212
HP: 2319-2294 BHT: 122 deg. F

Running premix

7:00 AM at 4720' on 5-23-2014

MudCo Mud Check at 4720'
10:40 AM on 5-23-2014

wt	vis	wl	pH	chl
9.2	50	9.6	10.5	5,000
PV	YP	GelS	lcm	solids
18	16	9/24	1#	5.7%

Mississippian 4765' (-1636)

Samples are 80-95% sloughing shales from here to RTD

7:00 AM at 4870' on 5-24-2014

RTD reached at 11:30 PM on 5-23-2014
CFS/CTCH 1 1/2 hours - drop survey
TOFL