

1371715



Operator Name: _____ Lease Name: _____ Well #: _____

Sec. _____ Twp. _____ S. R. _____ East West County: _____

INSTRUCTIONS: Show important tops of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed.

Final Radioactivity Log, Final Logs run to obtain Geophysical Data and Final Electric Logs must be emailed to kcc-well-logs@kcc.ks.gov. Digital electronic log files must be submitted in LAS version 2.0 or newer AND an image file (TIFF or PDF).

Drill Stem Tests Taken <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
Cores Taken	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Electric Log Run	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Geologist Report / Mud Logs	<input type="checkbox"/> Yes <input type="checkbox"/> No			
List All E. Logs Run:				

CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate				
<input type="checkbox"/> Protect Casing				
<input type="checkbox"/> Plug Back TD				
<input type="checkbox"/> Plug Off Zone				

- Did you perform a hydraulic fracturing treatment on this well? Yes No *(If No, skip questions 2 and 3)*
- Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons? Yes No *(If No, skip question 3)*
- Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry? Yes No *(If No, fill out Page Three of the ACO-1)*

Date of first Production/Injection or Resumed Production/Injection:	Producing Method: <input type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other <i>(Explain)</i> _____				
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i>	PRODUCTION INTERVAL: Top _____ Bottom _____
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:
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Form	ACO1 - Well Completion
Operator	L. D. Drilling, Inc.
Well Name	KNOTTS 1-13
Doc ID	1371715

All Electric Logs Run

COMPENSATED DENSITY / NEUTRON PE LOG
DUAL INDUCTION LOG
MICRO LOG
SONIC LOG

Form	ACO1 - Well Completion
Operator	L. D. Drilling, Inc.
Well Name	KNOTTS 1-13
Doc ID	1371715

Tops

Name	Top	Datum
ANHYDRITE	1472	+723
BASE ANHYDRITE	1514	+681
HEEBNER	3670	-1475
LANSING	3718	-1523
BASE KANSAS CITY	4066	-1871
PAWNEE	4148	-1953
FORT SCOTT	4228	-2033
CHEROKEE	4252	-2057
MISSISSIPPI 'U' WARSAW	4318	-2123
MISSISSIPPI OSAGE	4347	-2152

(Final)

BASIC

energy services, L.P.

TREATMENT REPORT

Customer <i>LD Drilling</i>	Lease No.	Date <i>10/11/2017</i>	
Lease <i>Knotts</i>	Well # <i>1-13</i>		
Field Order # <i>13275</i>	Station <i>P1921111</i>	Casing	Depth
Type Job <i>242/PTA</i>	Formation	County <i>Ness</i>	State <i>Ks</i>
		Legal Description <i>13-19-23</i>	

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME		
Casing Size	Tubing Size	Shots/Ft		Acid		RATE	PRESS	ISIP
<i>4 1/2</i>				Pre Pad		Max		5 Min.
Depth <i>1530</i>	Depth	From	To	Pad		Min		10 Min.
Volume <i>21.7</i>	Volume	From	To	Frac		Avg		15 Min.
Max Press	Max Press	From	To			HHP Used		Annulus Pressure
Well Connection	Annulus Vol.	From	To	Flush <i>Freshwater</i>		Gas Volume		Total Load
Plug Depth	Packer Depth	From	To					

Customer Representative <i>RICK</i>	Station Manager <i>Justin Westerman</i>	Treater <i>Darin Franklin</i>
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Service Units	<i>92911</i>	<i>84981</i>	<i>19843</i>	<i>19889</i>	<i>19860</i>				
Driver Names	<i>Darin</i>	<i>McGraw</i>	<i>McGraw</i>	<i>Clymer</i>	<i>Clymer</i>				

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>5:15pm</i>					<i>On location / SSPCH meeting</i>
					<i>230 SK 60/40 P02 + 4% G61</i>
					<i>13.78 PPS, 1.43 VEIL, 6.92 WATER</i>
					<i>1530' - 50 SK</i>
<i>7:00am</i>	<i>100</i>		<i>8</i>	<i>5</i>	<i>PUMP 8 WATER</i>
	<i>100</i>		<i>12</i>	<i>5</i>	<i>MIX 50 SK</i>
	<i>100</i>		<i>15 1/2</i>	<i>5</i>	<i>DISPLACE 15 1/2 WATER</i>
					<i>720' - 80 SK</i>
	<i>100</i>		<i>9</i>	<i>5</i>	<i>PUMP 9 WATER</i>
	<i>100</i>		<i>20</i>	<i>5</i>	<i>MIX 80 SK</i>
	<i>100</i>		<i>3</i>	<i>5</i>	<i>DISPLACE 3 WATER</i>
					<i>300' - 50 SK</i>
	<i>100</i>		<i>3</i>	<i>5</i>	<i>PUMP 3 WATER</i>
	<i>100</i>		<i>12</i>	<i>5</i>	<i>MIX 50 SK</i>
	<i>100</i>		<i>1/2</i>	<i>5</i>	<i>DISPLACE 1/2 BBL WATER</i>
					<i>60' - 20 SK</i>
	<i>50</i>		<i>5</i>	<i>3</i>	<i>MIX 20 SK</i>
					<i>REG HOLE</i>
	<i>50</i>		<i>7</i>	<i>3</i>	<i>MIX 30 SK</i>
<i>9:00pm</i>					<i>JOB COMPLETE / DARIN & CREW</i>
					<i>THANK YOU!!!</i>



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
28
 2017

DST #1 **Formation: Ft. Scott** **Test Interval: 4208 - 4254'** **Total Depth: 4254'**
 Time On: 15:14 09/28 Time Off: 21:56 09/28
 Time On Bottom: 17:40 09/28 Time Off Bottom: 19:40 09/28

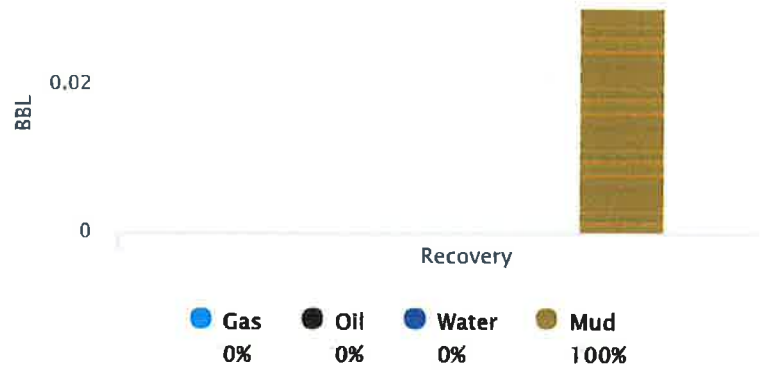
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
3	0.03078	M	0	0	0	100

Total Recovered: 3 ft
 Total Barrels Recovered: 0.03078

Reversed Out
 NO

Recovery at a glance



Initial Hydrostatic Pressure	1942	PSI
Initial Flow	11 to 12	PSI
Initial Closed in Pressure	52	PSI
Final Flow Pressure	12 to 13	PSI
Final Closed in Pressure	26	PSI
Final Hydrostatic Pressure	1932	PSI
Temperature	115	°F
Pressure Change Initial Close / Final Close	49.7	%



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

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 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
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DATE
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28
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Time On: 15:14 09/28 Time Off: 21:56 09/28
 Time On Bottom: 17:40 09/28 Time Off Bottom: 19:40 09/28

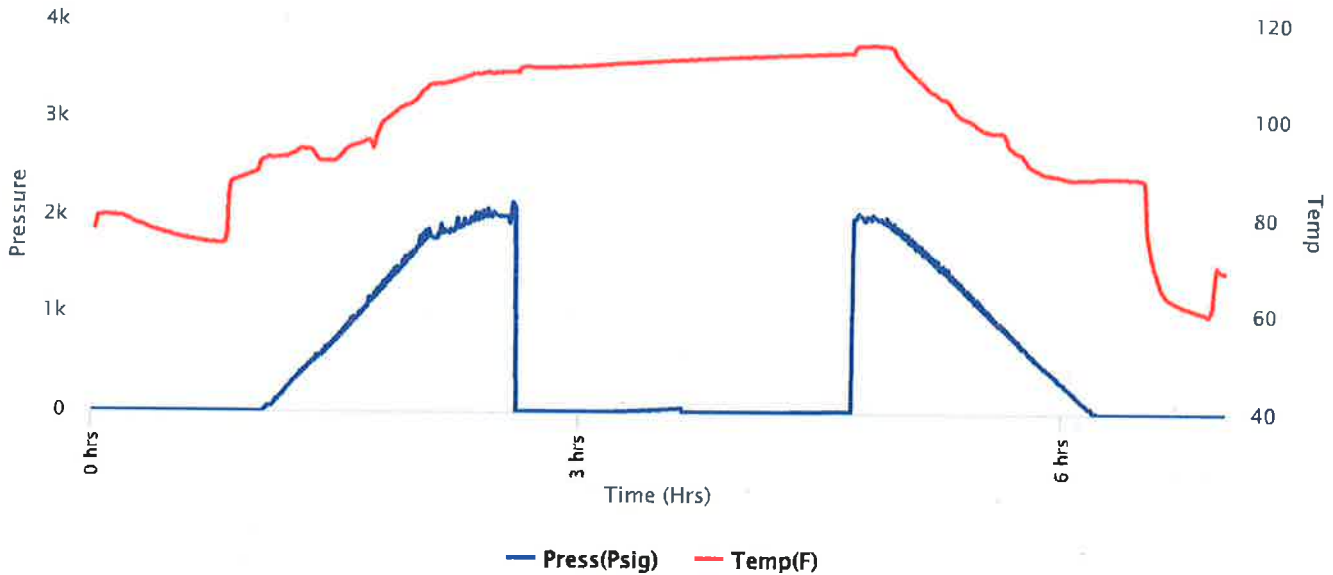
Electronic Volume Estimate:
 0'

1st Open
 Minutes: 30
 0" at 30 min

1st Close
 Minutes: 30
 0" at 30 min

2nd Open
 Minutes: 30
 0" at 30 min

2nd Close
 N/A





Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc -
 Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE September 28 2017

DST #1 Formation: Ft. Scott Test Interval: 4208 - 4254' Total Depth: 4254'
 Time On: 15:14 09/28 Time Off: 21:56 09/28
 Time On Bottom: 17:40 09/28 Time Off Bottom: 19:40 09/28

Down Hole Makeup

Heads Up: 8.38 FT	Packer 1: 4203.28 FT
Drill Pipe: 4184.09 FT ID-3 1/4	Packer 2: 4208.28 FT
Weight Pipe: 0 FT ID-2 7/8	Top Recorder: 4192.7 FT
Collars: 0 FT ID-2 1/4	Bottom Recorder: 4247 FT
Test Tool: 33.57 FT ID-3 1/2-FH Jars Safety Joint	Well Bore Size: 7 7/8
Total Anchor: 45.72	Surface Choke: 1"
	Bottom Choke: 5/8"

Anchor Makeup

Packer Sub: 1 FT

Perforations: (top): 3 FT
4 1/2-FH

Change Over: 1 FT

Drill Pipe: (in anchor): 31.72 FT
ID-3 1/4

Change Over: 1 FT

Perforations: (below): 8 FT
4 1/2-FH



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

DATE September 28 2017

DST #1 Formation: Ft. Scott Test Interval: 4208 - Total Depth: 4254'
4254'

Time On: 15:14 09/28 Time Off: 21:56 09/28
Time On Bottom: 17:40 09/28 Time Off Bottom: 19:40 09/28

Mud Properties

Mud Type: Chemical Weight: 9.35 Viscosity: 46 Filtrate: 10.4 Chlorides: 7,800 ppm



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
29
 2017

DST #2 **Formation: Mississippian** **Test Interval: 4248 - 4330'** **Total Depth: 4330'**
 Time On: 11:26 09/29 Time Off: 18:01 09/29
 Time On Bottom: 13:49 09/29 Time Off Bottom: 15:49 09/29

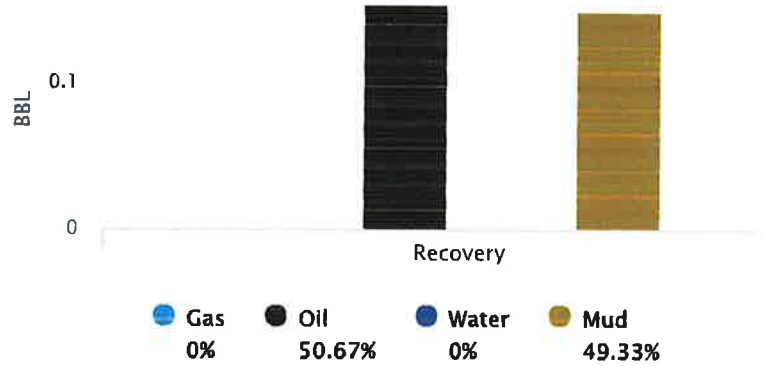
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
10	0.1026	O	0	100	0	0
20	0.2052	OCM	0	26	0	74

Total Recovered: 30 ft
 Total Barrels Recovered: 0.3078

Reversed Out
 NO

Recovery at a glance



Initial Hydrostatic Pressure	2048	PSI
Initial Flow	13 to 20	PSI
Initial Closed in Pressure	232	PSI
Final Flow Pressure	21 to 22	PSI
Final Closed in Pressure	82	PSI
Final Hydrostatic Pressure	2042	PSI
Temperature	113	°F
Pressure Change Initial Close / Final Close	64.9	%



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

DATE September 29 2017

DST #2	Formation: Mississippian	Test Interval: 4248 - 4330'	Total Depth: 4330'
	Time On: 11:26 09/29	Time Off: 18:01 09/29	
	Time On Bottom: 13:49 09/29	Time Off Bottom: 15:49 09/29	

REMARKS:

IF: 1 3/4 inch blow
ISI: No BB
FF: Weak surface blow
FSI: No BB

TOOL SAMPLE: 17% OIL, 83% MUD

Gravity: 38.9 @ 60 degrees F



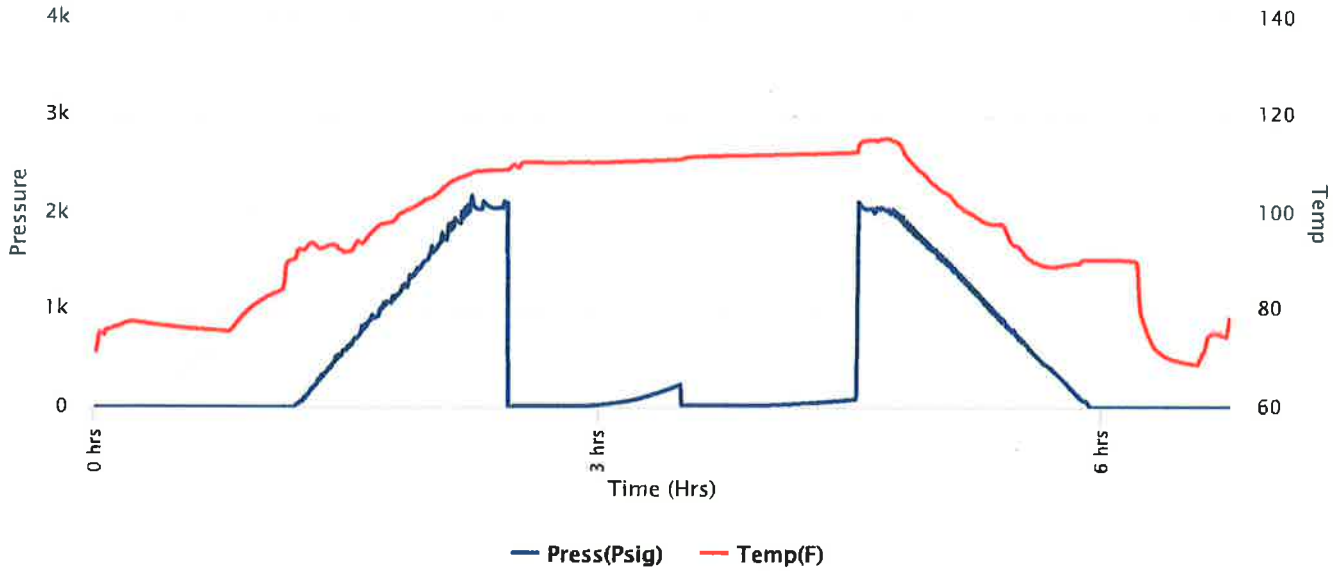
Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
29
 2017

DST #2 **Formation: Mississippian** **Test Interval: 4248 - 4330'** **Total Depth: 4330'**
 Time On: 11:26 09/29 Time Off: 18:01 09/29
 Time On Bottom: 13:49 09/29 Time Off Bottom: 15:49 09/29

Electronic Volume Estimate:	<u>1st Open</u> Minutes: 30	1st Close Minutes: 30	<u>2nd Open</u> Minutes: 30	2nd Close Minutes: 30
21'	1.9" at 30 min	0" at 30 min	0" at 30 min	0" at 30 min





Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

DATE September 29 2017

DST #2	Formation: Mississippian	Test Interval: 4248 - 4330'	Total Depth: 4330'
	Time On: 11:26 09/29	Time Off: 18:01 09/29	
	Time On Bottom: 13:49 09/29	Time Off Bottom: 15:49 09/29	

Mud Properties

Mud Type: Chemical	Weight: 9.3	Viscosity: 51	Filtrate: 9.6	Chlorides: 8,200 ppm
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Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
30
 2017

DST #3 **Formation: Mississippian** **Test Interval: 4327 - 4348'** **Total Depth: 4348'**
 Time On: 23:36 09/29 Time Off: 04:08 09/30
 Time On Bottom: 00:00 01/01 Time Off Bottom: 02:16 09/30

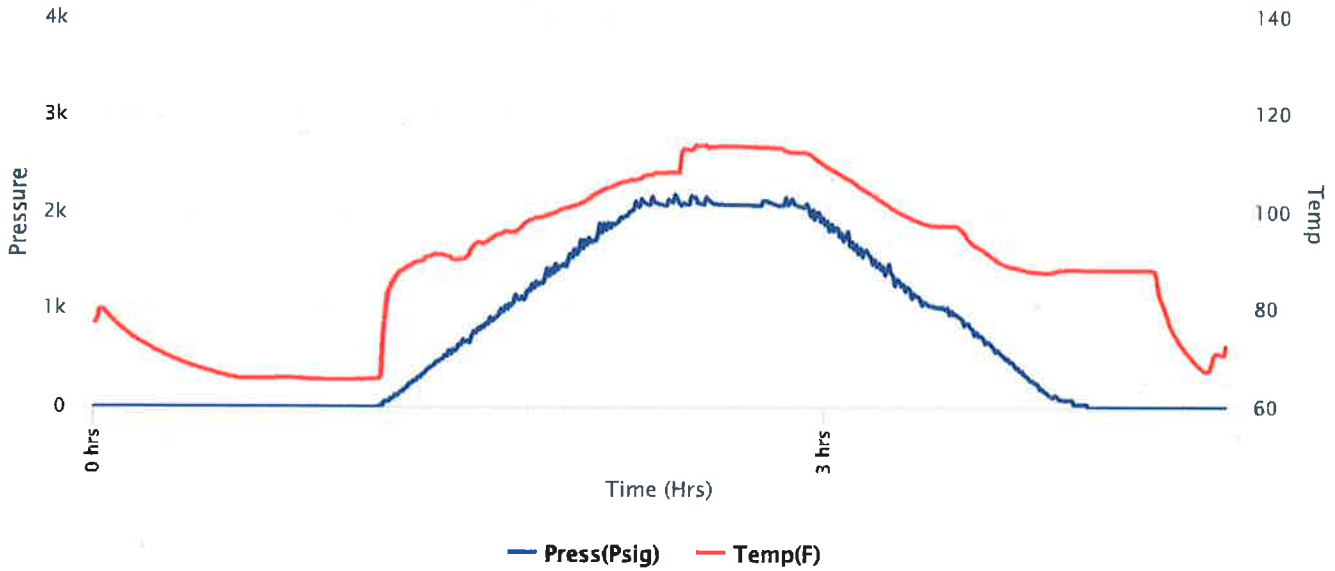
Electronic Volume Estimate:
 0'

1st Open
 N/A

1st Close
 N/A

2nd Open
 N/A

2nd Close
 N/A





Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
30
 2017

DST #3 **Formation: Mississippian** **Test Interval: 4327 - 4348'** **Total Depth: 4348'**
 Time On: 23:36 09/29 Time Off: 04:08 09/30
 Time On Bottom: 00:00 01/01 Time Off Bottom: 02:16 09/30

Recovered

Foot	BBLs
205	2.1033

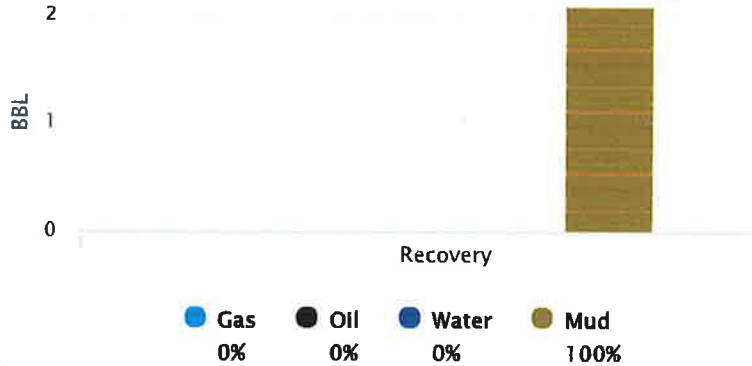
Description of Fluid	Gas %	Oil %	Water %	Mud %
M	0	0	0	100

Total Recovered: 205 ft
 Total Barrels Recovered: 2.1033

Reversed Out
 NO

Recovery at a glance

Initial Hydrostatic Pressure	0	PSI
Initial Flow	0	PSI
Initial Closed in Pressure	0	PSI
Final Flow Pressure	0	PSI
Final Closed in Pressure	0	PSI
Final Hydrostatic Pressure	0	PSI
Temperature	0	°F
Pressure Change Initial Close / Final Close	0.0	%





Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

DATE September 30 2017

DST #3	Formation: Mississippian	Test Interval: 4327 - 4348'	Total Depth: 4348'
	Time On: 23:36 09/29	Time Off: 04:08 09/30	
	Time On Bottom: 00:00 01/01	Time Off Bottom: 02:16 09/30	

REMARKS:

PACKER FAILURE



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

DATE September 30 2017

DST #3	Formation: Mississippian	Test Interval: 4327 - 4348'	Total Depth: 4348'
	Time On: 23:36 09/29	Time Off: 04:08 09/30	
	Time On Bottom: 00:00 01/01	Time Off Bottom: 02:16 09/30	

Mud Properties

Mud Type: Chemical	Weight: 9.3	Viscosity: 51	Filtrate: 9.6	Chlorides: 8,200 ppm
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Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc -
 Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE September 30 2017

DST #3 **Formation:** **Test Interval: 4327 -** **Total Depth: 4348'**
 Mississippian **4348'**
 Time On: 23:36 09/29 Time Off: 04:08 09/30
 Time On Bottom: 00:00 01/01 Time Off Bottom: 02:16 09/30

Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
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Time	Orifice	PSI	MCF/D
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Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
30
 2017

DST #4 **Formation: Mississippian** **Test Interval: 4335 - 4348'** **Total Depth: 4348'**
 Time On: 04:35 09/30 Time Off: 10:17 09/30
 Time On Bottom: 06:24 09/30 Time Off Bottom: 08:24 09/30

Recovered

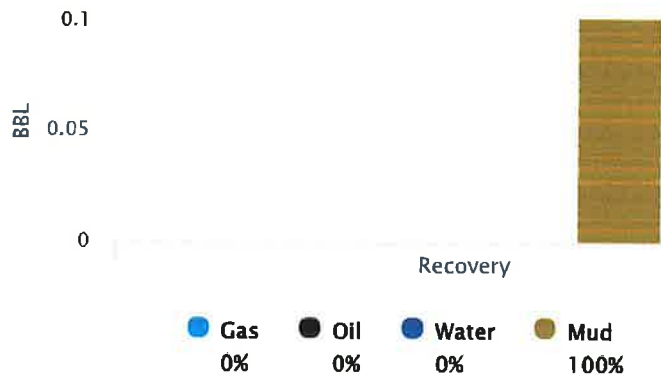
Foot	BBLs
10	0.1026

Description of Fluid	Gas %	Oil %	Water %	Mud %
M	0	0	0	100

Total Recovered: 10 ft
 Total Barrels Recovered: 0.1026

Reversed Out
 NO

Recovery at a glance



Initial Hydrostatic Pressure	2091	PSI
Initial Flow	10 to 13	PSI
Initial Closed in Pressure	1240	PSI
Final Flow Pressure	14 to 15	PSI
Final Closed in Pressure	1210	PSI
Final Hydrostatic Pressure	2082	PSI
Temperature	118	°F
Pressure Change Initial Close / Final Close	2.4	%



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

<p>DATE September 30 2017</p>

DST #4	Formation: Mississippian	Test Interval: 4335 - 4348'	Total Depth: 4348'
	Time On: 04:35 09/30	Time Off: 10:17 09/30	
	Time On Bottom: 06:24 09/30	Time Off Bottom: 08:24 09/30	

REMARKS:

IF: 1 inch blow
ISI: No BB
FF: Weak surface blow
FSI: No BB

TOOL SAMPLE: TRACE OIL, 100% MUD



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

DATE
 September
30
 2017

DST #4 **Formation: Mississippian** **Test Interval: 4335 - 4348'** **Total Depth: 4348'**
 Time On: 04:35 09/30 Time Off: 10:17 09/30
 Time On Bottom: 06:24 09/30 Time Off Bottom: 08:24 09/30

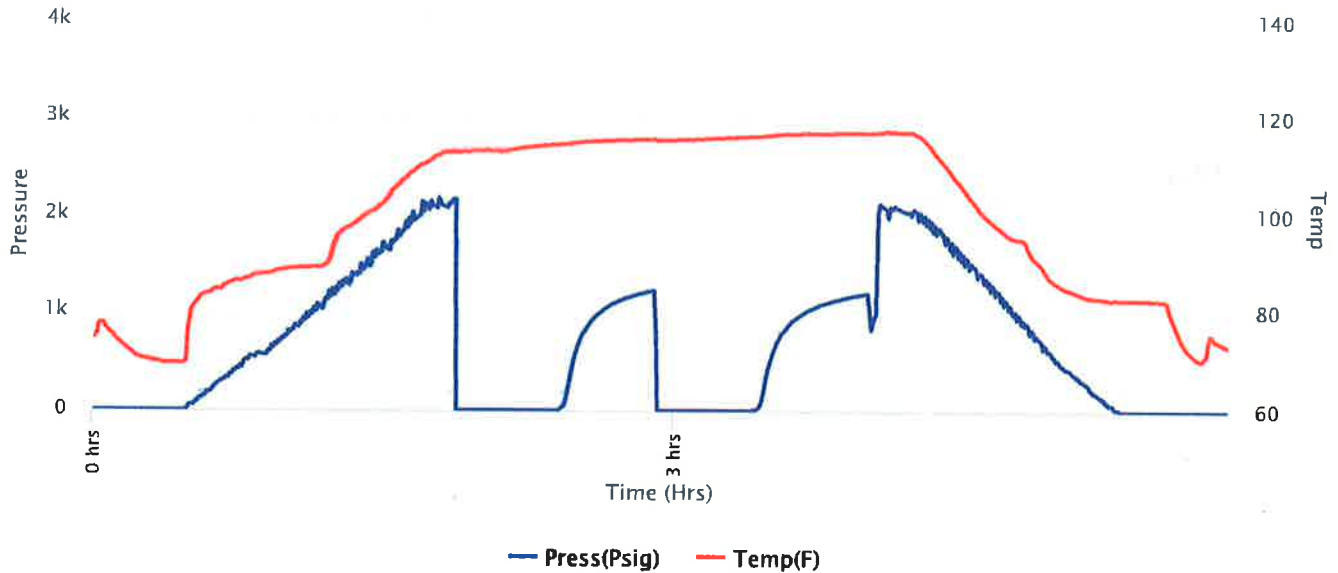
Electronic Volume Estimate:
 13'

1st Open
 Minutes: 30
 1.1" at 30 min

1st Close
 Minutes: 30
 0" at 30 min

2nd Open
 Minutes: 30
 0" at 30 min

2nd Close
 Minutes: 30
 0" at 30 min





Company: L. D. Drilling, Inc
Lease: Knotts #1-13

SEC: 13 TWN: 19S RNG: 23W
 County: NESS
 State: Kansas
 Drilling Contractor: L. D. Drilling, Inc - Rig 1
 Elevation: 2190 GL
 Field Name: Pfaff East
 Pool: WILDCAT
 Job Number: 65

<p>DATE September 30 2017</p>
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DST #4 **Formation:** Mississippian **Test Interval:** 4335 - 4348' **Total Depth:** 4348'

Time On: 04:35 09/30 Time Off: 10:17 09/30
 Time On Bottom: 06:24 09/30 Time Off Bottom: 08:24 09/30

Down Hole Makeup

Heads Up: 8.14 FT	Packer 1: 4330 FT
Drill Pipe: 4310.57 FT ID-3 1/4	Packer 2: 4335 FT
Weight Pipe: 0 FT ID-2 7/8	Top Recorder: 4319.42 FT
Collars: 0 FT ID-2 1/4	Bottom Recorder: 4337 FT
Test Tool: 33.57 FT ID-3 1/2-FH Jars Safety Joint	Well Bore Size: 7 7/8
Total Anchor: 13	Surface Choke: 1"
Anchor Makeup	Bottom Choke: 5/8"
Packer Sub: 1 FT	
Perforations: (top): 0 FT 4 1/2-FH	
Change Over: 0 FT	
Drill Pipe: (in anchor): 0 FT ID-3 1/4	
Change Over: 0 FT	
Perforations: (below): 12 FT 4 1/2-FH	



Company: L. D. Drilling, Inc
Lease: Knotts #1-13

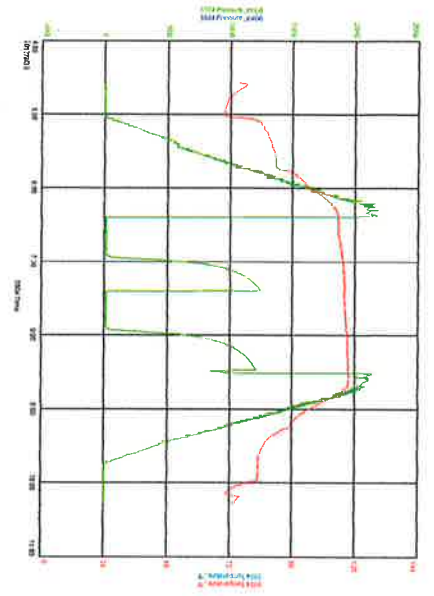
SEC: 13 TWN: 19S RNG: 23W
County: NESS
State: Kansas
Drilling Contractor: L. D. Drilling, Inc -
Rig 1
Elevation: 2190 GL
Field Name: Pfaff East
Pool: WILDCAT
Job Number: 65

<p>DATE September 30 2017</p>

DST #4	Formation: Mississippian	Test Interval: 4335 - 4348'	Total Depth: 4348'
	Time On: 04:35 09/30	Time Off: 10:17 09/30	
	Time On Bottom: 06:24 09/30	Time Off Bottom: 08:24 09/30	

Mud Properties

Mud Type: Chemical	Weight: 9.3	Viscosity: 51	Filtrate: 9.6	Chlorides: 8,200 ppm
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KIM B. SHOEMAKER
 CONSULTING GEOLOGIST
 316-684-9709 * WICHITA, KS

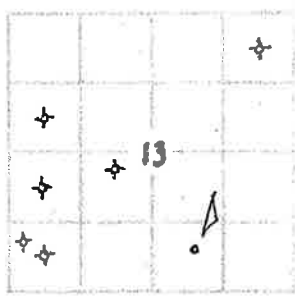
GEOLOGIST'S REPORT
 DRILLING TIME AND SAMPLE LOG

COMPANY L. D. DRILLING, INC.
 LEASE #1-13 KNOTTS
 FIELD PSAFF EAST
 LOCATION 690' FSL & 1867' FEL
 SEC. 13 TWP. 19s RGE. 23w
 COUNTY NESS STATE KANSAS
 CONTRACTOR L. D. DRILLING, INC.
 SPUD 9-22-17 COMP 9-30-17
 RTD 4450 LTD 4450
 MUD WT 3520 TYPE MUD CHEMICAL

ELEVATIONS
 KB 2195
 DF _____
 GL 2190
 Measurements Are All From 2195 KB
 CASING SURFACE 8 5/8" @ 244'
 PRODUCTION _____
 ELECTRICAL SURVEYS
 DUAL IND, DENS-N. MICRO SONIC

SAMPLES SAVED FROM 3600 TO 4450
 DRILLING TIME KEPT FROM 3500 TO 4450
 SAMPLES EXAMINED FROM 3600 TO 4450
 GEOLOGICAL SUPERVISION FROM 3800 TO 4450
 GEOLOGIST ON WELL KIM B. SHOEMAKER

FORMATION TOPS	LOG	SAMPLES
ANHYDRITE	1472+723	1474+721
B/ANH.	1514+681	1513+682
HEEBNER	3670-1475	3671-1476
LANSING	3718-1523	3718-1523
B/KC	4066-1871	4065-1870
PAWNEE	4148-1953	4148-1953
FORT SCOT	4228-2033	4227-2032
CNERDKEE	4252-2057	4250-2055
MISSISSIPPI 'U', WARSAW	4318-2123	4320-2125
MISS. OSAGE	4347-2152	4348-2153



API: 15-135-25975

REMARKS

9-22-17 SPUD
 9-23 @ 247'
 9-24 @ 1700'
 9-25 @ 2640'
 9-26 @ 3265'
 9-27 @ 3925'
 9-28 @ 4214'
 9-29 @ 4312'
 9-30 @ 4340'
 10-1 @ 4450'

LEGEND

- Anhydrite
- Soil
- Sandstone
- Shale
- Gyps. sh.
- Limestone
- Co. Limestone
- Siltstone
- Dolomite



SAMPLE DESCRIPTIONS

DEPTH MSD	REMARKS
1474 + 721	ANHYDRITE
1513 + 682	B/ANH.
1500	
1550	

1550

Mud Check ✓ @ 3412

WT: 30

WT: 98

WT: 110

CL: 76000

3500

3600

3700

Samples are Lagged

Δ wt

ls. Th. ls. Foss. Calcitic.

ls. wt. Foss. - ls. wt. calby

ls. wt. ls. Foss. Calcitic

HEEBNER 3671-1976

Sh. Sil. Calc.

ls. wt. ls. Foss. Sil. Foss.

Sh. ls. ls.

ls. wt. Foss. vs. ls. calby

ls. wt. vs. Foss. vs. calby

Sh. ls. ls.

LANSING 3718-1523

ls. wt. ls. Foss. Sil. A

Sh. ls. ls.

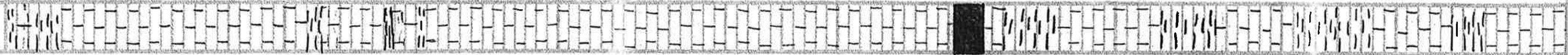
ls. wt. ls. Foss. vs. calby

Sh. ls. ls.

ls. wt. ls. Foss. Sil. A

ls. wt. Foss. Calcitic

TORONTO



3800

3900

4000

4100

LS. wt. Foss. Calotte
 LS. wt. Sil. Foss. Chalky
 Sh. Gy. LS. Bl. Gy. VSI Foss.
 LS. wt. VSI Foss.
 A Bl. wt
 LS. wt. Sil. Foss. Sil. A
 LS. wt. Sil. Foss. and Sil. Chalky
 A. wt.
 LS. wt. VSI Foss. Sil. Chalky
 LS. wt. Sil. Foss. Sil. A. Calotte
 Sh. Gy. LS. Bl. Gy. VSI Foss.
 Sh. DE. Gy.
 LS. Th. Gy. VSI A VSI Foss.
 LS. Th. VSI Foss.
 Sh. Bl. DE. Gy.
 A. Gy. Th.
 LS. wt. 001-000. Sil. Calotte
 LS. Th. Gy. VSI Foss. Sil. A
 Sh. Gy. DE. Gy.
 LS. wt. Bl. Gy. 000. Sil. and Sil. Calotte
 A. DE. Gy.
 LS.
 Sh. Gy. Bl. Gy.
 LS. wt. 001. 000. Sil. and Sil. Chalky
 LS. Th. Bl. VSI A
 Sh. Bl. Carb.
 Sh. Bl. Gy.
 LS. wt. VSI Foss. Chalky
 Sh. DE. Gy. Gy.
 Sh. Bl.
 LS. wt. Sil. Foss. Sil. Chalky
 A. wt.
 LS. Bl. VSI A
 BIKC 4065-1870
 Sh. Bl.
 LS. Bl. VSI Foss.
 LS. Th. Bl. Sil. A
 Sh. Bl. Macrom. Gy.
 LS. Bl. Gy. Sil. Chalky
 LS. wt. Sil. Foss. and Sil. Calotte

VIS: 44
 WT: 91
 WL: 96
 CHL: 6200

