

Confidentiality Requested:

Yes  No

**KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION**

Form ACO-1

January 2018

**Form must be Typed**

**Form must be Signed**

**All blanks must be Filled**

**WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE**

OPERATOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Address 1: \_\_\_\_\_

Address 2: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_ + \_\_\_\_\_

Contact Person: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTRACTOR: License # \_\_\_\_\_

Name: \_\_\_\_\_

Wellsite Geologist: \_\_\_\_\_

Purchaser: \_\_\_\_\_

Designate Type of Completion:

New Well  Re-Entry  Workover

Oil  WSW  SWD

Gas  DH  EOR

OG  GSW

CM (Coal Bed Methane)

Cathodic  Other (Core, Expl., etc.): \_\_\_\_\_

If Workover/Re-entry: Old Well Info as follows:

Operator: \_\_\_\_\_

Well Name: \_\_\_\_\_

Original Comp. Date: \_\_\_\_\_ Original Total Depth: \_\_\_\_\_

Deepening  Re-perf.  Conv. to EOR  Conv. to SWD  
 Plug Back  Liner  Conv. to GSW  Conv. to Producer

Commingled Permit #: \_\_\_\_\_

Dual Completion Permit #: \_\_\_\_\_

SWD Permit #: \_\_\_\_\_

EOR Permit #: \_\_\_\_\_

GSW Permit #: \_\_\_\_\_

Spud Date or Date Reached TD Completion Date or Recompletion Date

API No.: \_\_\_\_\_

Spot Description: \_\_\_\_\_

\_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

\_\_\_\_\_ Feet from  North /  South Line of Section

\_\_\_\_\_ Feet from  East /  West Line of Section

Footages Calculated from Nearest Outside Section Corner:

NE  NW  SE  SW

GPS Location: Lat: \_\_\_\_\_, Long: \_\_\_\_\_  
(e.g. xx.xxxxx) (e.g. -xxx.xxxxx)

Datum:  NAD27  NAD83  WGS84

County: \_\_\_\_\_

Lease Name: \_\_\_\_\_ Well #: \_\_\_\_\_

Field Name: \_\_\_\_\_

Producing Formation: \_\_\_\_\_

Elevation: Ground: \_\_\_\_\_ Kelly Bushing: \_\_\_\_\_

Total Vertical Depth: \_\_\_\_\_ Plug Back Total Depth: \_\_\_\_\_

Amount of Surface Pipe Set and Cemented at: \_\_\_\_\_ Feet

Multiple Stage Cementing Collar Used?  Yes  No

If yes, show depth set: \_\_\_\_\_ Feet

If Alternate II completion, cement circulated from: \_\_\_\_\_

feet depth to: \_\_\_\_\_ w/ \_\_\_\_\_ sx cmt.

**Drilling Fluid Management Plan**

*(Data must be collected from the Reserve Pit)*

Chloride content: \_\_\_\_\_ ppm Fluid volume: \_\_\_\_\_ bbls

Dewatering method used: \_\_\_\_\_

Location of fluid disposal if hauled offsite:

Operator Name: \_\_\_\_\_

Lease Name: \_\_\_\_\_ License #: \_\_\_\_\_

Quarter \_\_\_\_\_ Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West

County: \_\_\_\_\_ Permit #: \_\_\_\_\_

**AFFIDAVIT**

I am the affiant and I hereby certify that all requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.

Submitted Electronically

**KCC Office Use ONLY**

Confidentiality Requested

Date: \_\_\_\_\_

Confidential Release Date: \_\_\_\_\_

Wireline Log Received  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

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](mailto: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 <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  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: _____	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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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				

1. Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*
2. Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 3)*
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) (Submit ACO-4)</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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# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

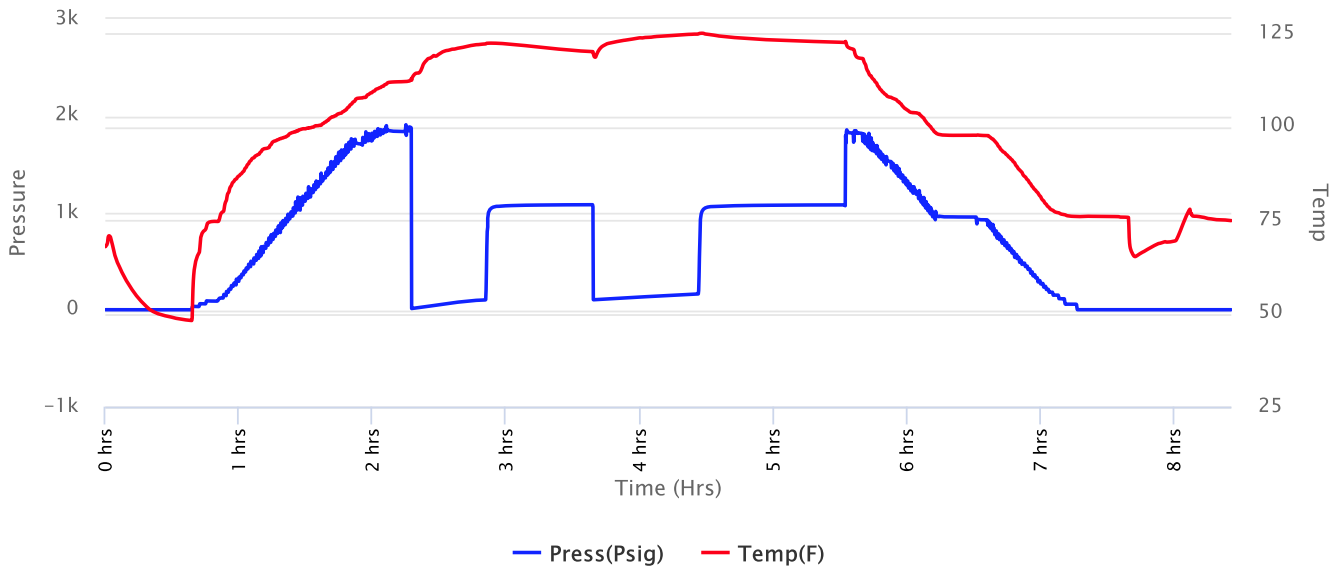
**DST #1      Formation: Toronto      Test Interval: 3892 - 3941'      Total Depth: 3941'**

Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

Electronic Volume Estimate:  
298'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 8.5" at 30 min	Current Reading: 0" at 45 min	Current Reading: 9.3" at 45 min	Current Reading: 0" at 60 min
Max Reading: 8.5"	Max Reading: 0"	Max Reading: 9.3"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #1**      **Formation: Toronto**      **Test Interval: 3892 - 3941'**      **Total Depth: 3941'**

Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

### Recovered

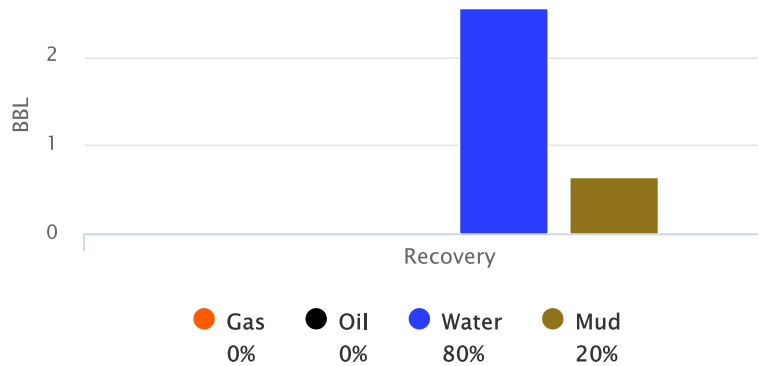
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
341	3.1947845	MCW	0	0	80	20

Total Recovered: 341 ft  
Total Barrels Recovered: 3.1947845

Reversed Out  
NO

Initial Hydrostatic Pressure	1837	PSI
Initial Flow	12 to 104	PSI
<b>Initial Closed in Pressure</b>	<b>1083</b>	<b>PSI</b>
Final Flow Pressure	104 to 163	PSI
<b>Final Closed in Pressure</b>	<b>1073</b>	<b>PSI</b>
Final Hydrostatic Pressure	1835	PSI
Temperature	126	°F
Pressure Change Initial Close / Final Close	1.0	%

### Recovery at a glance





**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #1      Formation: Toronto      Test Interval: 3892 -      Total Depth: 3941'**  
**3941'**  
Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

**BUCKET MEASUREMENT:**

1st Open: 1/4 in. blow building to 8 1/2 ins. in 30 mins.  
1st Close: No blow back.  
2nd Open: 1/4 in. blow building to 9 1/4 ins. in 45 mins.  
2nd Close: No blow back.

**REMARKS:**

Tool Sample: 0% Gas 0% Oil 90% Water 10% Mud

Ph: 7

Measured RW: .29 @ 63 degrees °F

RW at Formation Temp: 0.152 @ 126 °F

Chlorides: 38,000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #1**      **Formation: Toronto**      **Test Interval: 3892 - 3941'**      **Total Depth: 3941'**  
Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

### Down Hole Makeup

<b>Heads Up:</b> 20.54 FT	<b>Packer 1:</b> 3886.82 FT
<b>Drill Pipe:</b> 3701.74 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 3891.82 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 3876.24 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 3930 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 49.18	<b>Surface Choke:</b> 1"
<u><b>Anchor Makeup</b></u>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 3 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 1 FT	
<b>Drill Pipe: (in anchor):</b> 31.18 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 1 FT	
<b>Perforations: (below):</b> 12 FT <i>4 1/2-FH</i>	



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #1**      **Formation: Toronto**      **Test Interval: 3892 - 3941'**      **Total Depth: 3941'**

Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

### Mud Properties

**Mud Type:** Chemical      **Weight:** 8.8      **Viscosity:** 49      **Filtrate:** 6.4      **Chlorides:** 3,200 ppm





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #1      Formation: Toronto      Test Interval: 3892 - 3941'      Total Depth: 3941'**

Time On: 05:00 10/26      Time Off: 13:11 10/26  
Time On Bottom: 07:14 10/26      Time Off Bottom: 10:14 10/26

### 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: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #2**      **Formation: Lans C**      **Test Interval: 3962 - 3990'**      **Total Depth: 3990'**

Time On: 22:47 10/26      Time Off: 05:46 10/27  
Time On Bottom: 01:02 10/27      Time Off Bottom: 03:17 10/27

Electronic Volume Estimate:  
18'

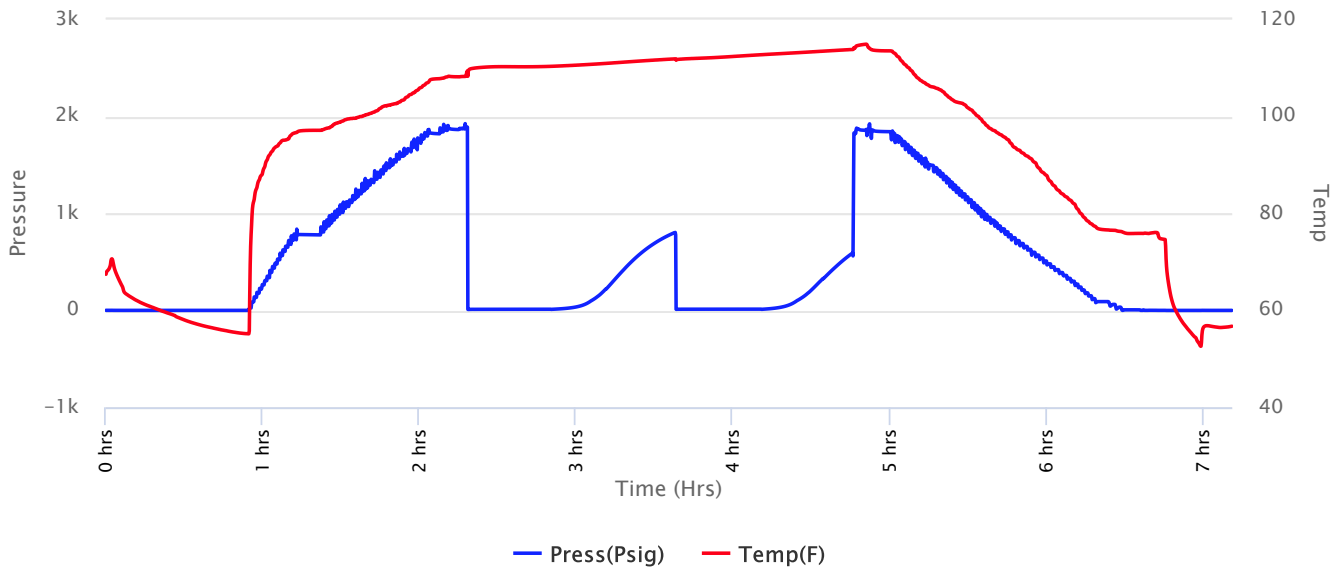
1st Open  
Minutes: 30  
Current Reading:  
.20" at 30 min  
Max Reading: .6"

1st Close  
Minutes: 45  
Current Reading:  
0" at 45 min  
Max Reading: 0"

2nd Open  
Minutes: 30  
Current Reading:  
0" at 30 min  
Max Reading: 0"

2nd Close  
Minutes: 30  
Current Reading:  
0" at 30 min  
Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #2**      **Formation: Lans C**      **Test Interval: 3962 - 3990'**      **Total Depth: 3990'**

Time On: 22:47 10/26      Time Off: 05:46 10/27  
Time On Bottom: 01:02 10/27      Time Off Bottom: 03:17 10/27

### Recovered

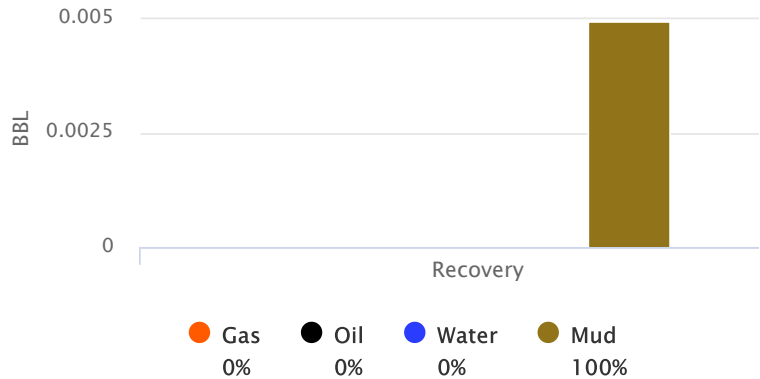
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
1	0.00492	M	0	0	0	100

Total Recovered: 1 ft  
Total Barrels Recovered: 0.00492

**Reversed Out**  
NO

Initial Hydrostatic Pressure	1871	PSI
Initial Flow	10 to 12	PSI
<b>Initial Closed in Pressure</b>	<b>804</b>	<b>PSI</b>
Final Flow Pressure	11 to 13	PSI
<b>Final Closed in Pressure</b>	<b>591</b>	<b>PSI</b>
Final Hydrostatic Pressure	1880	PSI
Temperature	114	°F
Pressure Change Initial Close / Final Close	26.4	%

### Recovery at a glance





**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

<b>DST #2</b>	<b>Formation: Lans C</b>	<b>Test Interval: 3962 - 3990'</b>	<b>Total Depth: 3990'</b>
	Time On: 22:47 10/26	Time Off: 05:46 10/27	
	Time On Bottom: 01:02 10/27	Time Off Bottom: 03:17 10/27	

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1/2 inch in 30 mins.

1st Close: NOBB

2nd Open: No Blow

2nd Close: NOBB

**REMARKS:**

Tool Sample: 0% Gas 0% Oil 0% Water 100% Mud



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #2**      **Formation: Lans C**      **Test Interval: 3962 - 3990'**      **Total Depth: 3990'**  
Time On: 22:47 10/26      Time Off: 05:46 10/27  
Time On Bottom: 01:02 10/27      Time Off Bottom: 03:17 10/27

### Down Hole Makeup

<b>Heads Up:</b> 13.12 FT	<b>Packer 1:</b> 3957 FT
<b>Drill Pipe:</b> 3764.5 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 3962 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 3946.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 3964 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 28	<b>Surface Choke:</b> 1"
<b><u>Anchor Makeup</u></b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 27 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #2      Formation: Lans C      Test Interval: 3962 -      Total Depth: 3990'**  
**3990'**  
Time On: 22:47 10/26      Time Off: 05:46 10/27  
Time On Bottom: 01:02 10/27      Time Off Bottom: 03:17 10/27

**Mud Properties**

**Mud Type:** Chem      **Weight:** 9      **Viscosity:** 46      **Filtrate:** 8.6      **Chlorides:** 3000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**26**  
2018

**DST #2**      **Formation: Lans C**      **Test Interval: 3962 - 3990'**      **Total Depth: 3990'**  
Time On: 22:47 10/26      Time Off: 05:46 10/27  
Time On Bottom: 01:02 10/27      Time Off Bottom: 03:17 10/27

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
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Time	Orifice	PSI	MCF/D
------	---------	-----	-------



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

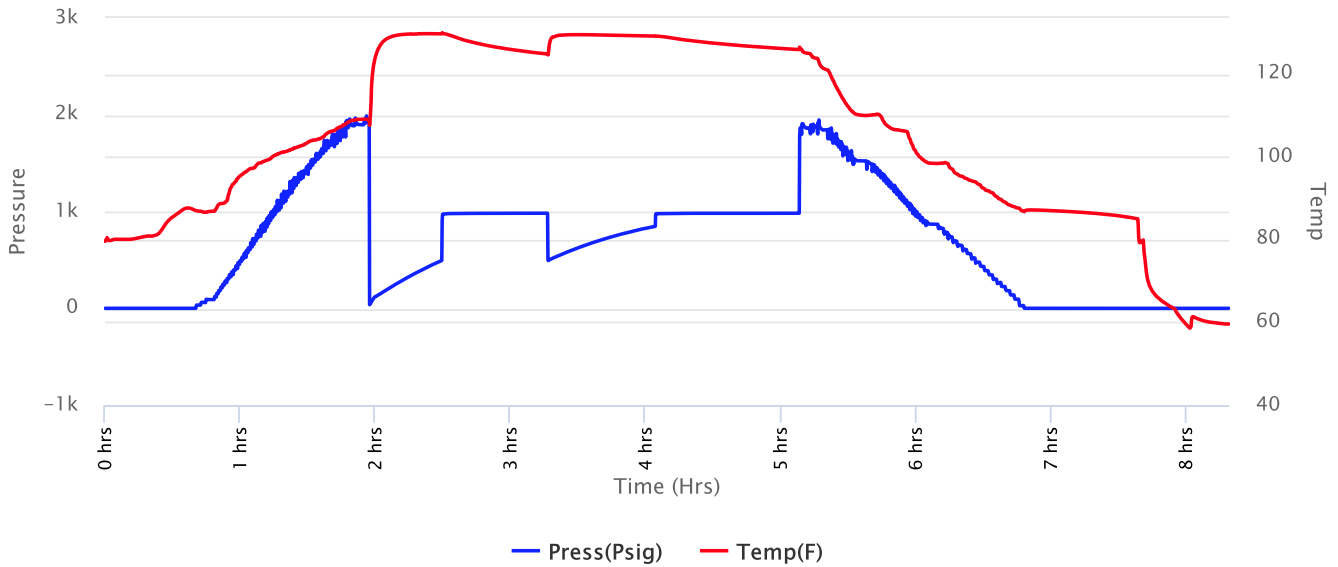
**DATE**  
October  
**27**  
2018

**DST #3**      **Formation: Lans "E&F"**      **Test Interval: 4020 - 4050'**      **Total Depth: 4050'**  
Time On: 17:22 10/27      Time Off: 01:28 10/28  
Time On Bottom: 19:17 10/27      Time Off Bottom: 22:17 10/27

Electronic Volume Estimate:  
2196'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 109.2" at 30 min	Current Reading: 0" at 45 min	Current Reading: 122.6" at 45 min	Current Reading: 0" at 60 min
Max Reading: 109.2"	Max Reading: 0"	Max Reading: 122.6"	Max Reading: 0"

Inside Recorder







# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Test Complete

**DATE**  
 October  
**27**  
 2018

**DST #3**      **Formation: Lans "E&F"**      **Test Interval: 4020 - 4050'**      **Total Depth: 4050'**  
 Time On: 17:22 10/27      Time Off: 01:28 10/28  
 Time On Bottom: 19:17 10/27      Time Off Bottom: 22:17 10/27

Recovered

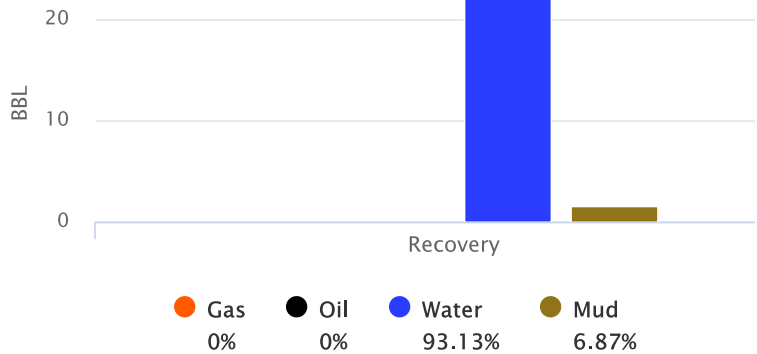
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
248	3.52904	HMCW	0	0	65	35
1550	20.3988545	SLMCW	0	0	98	2

Total Recovered: 1798 ft  
 Total Barrels Recovered: 23.9278945

Reversed Out  
 NO

Initial Hydrostatic Pressure	1896	PSI
Initial Flow	38 to 494	PSI
<b>Initial Closed in Pressure</b>	<b>982</b>	<b>PSI</b>
Final Flow Pressure	498 to 848	PSI
<b>Final Closed in Pressure</b>	<b>983</b>	<b>PSI</b>
Final Hydrostatic Pressure	1892	PSI
Temperature	131	°F
Pressure Change Initial Close / Final Close	0.0	%

**Recovery at a glance**





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**27**  
2018

DST #3	Formation: Lans "E&F"	Test Interval: 4020 - 4050'	Total Depth: 4050'
	Time On: 17:22 10/27	Time Off: 01:28 10/28	
	Time On Bottom: 19:17 10/27	Time Off Bottom: 22:17 10/27	

### BUCKET MEASUREMENT:

1st Open: 1/2 in. blow building. BOB in 3 mins.  
1st Close: No blow back.  
2nd Open: 1/2 in. blow building. BOB in 3 3/4 mins.  
2nd Close: No blow back.

### REMARKS:

Tool Sample: 0% Gas 0% Oil 99% Water 1% Mud

Ph: 7

Measured RW: .39 @ 52 degrees °F

RW at Formation Temp: 0.166 @ 131 °F

Chlorides: 27,000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**27**  
2018

**DST #3**      **Formation: Lans "E&F"**      **Test Interval: 4020 - 4050'**      **Total Depth: 4050'**  
Time On: 17:22 10/27      Time Off: 01:28 10/28  
Time On Bottom: 19:17 10/27      Time Off Bottom: 22:17 10/27

### Down Hole Makeup

<b>Heads Up:</b> 16.83 FT	<b>Packer 1:</b> 4015 FT
<b>Drill Pipe:</b> 3826.21 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4020 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4004.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4022 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 30	<b>Surface Choke:</b> 1"
<u><b>Anchor Makeup</b></u>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 29 FT <i>4 1/2-FH</i>	



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

### Operation:

Test Complete

### DATE

October

**27**

2018

DST #3

Formation: Lans  
"E&F"

Test Interval: 4020 -  
4050'

Total Depth: 4050'

Time On: 17:22 10/27

Time Off: 01:28 10/28

Time On Bottom: 19:17 10/27 Time Off Bottom: 22:17 10/27

### Mud Properties

**Mud Type:** Chemical

**Weight:** 9.0

**Viscosity:** 50

**Filtrate:** 9.6

**Chlorides:** 4,000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**27**  
2018

**DST #3**      **Formation: Lans "E&F"**      **Test Interval: 4020 - 4050'**      **Total Depth: 4050'**  
Time On: 17:22 10/27      Time Off: 01:28 10/28  
Time On Bottom: 19:17 10/27      Time Off Bottom: 22:17 10/27

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

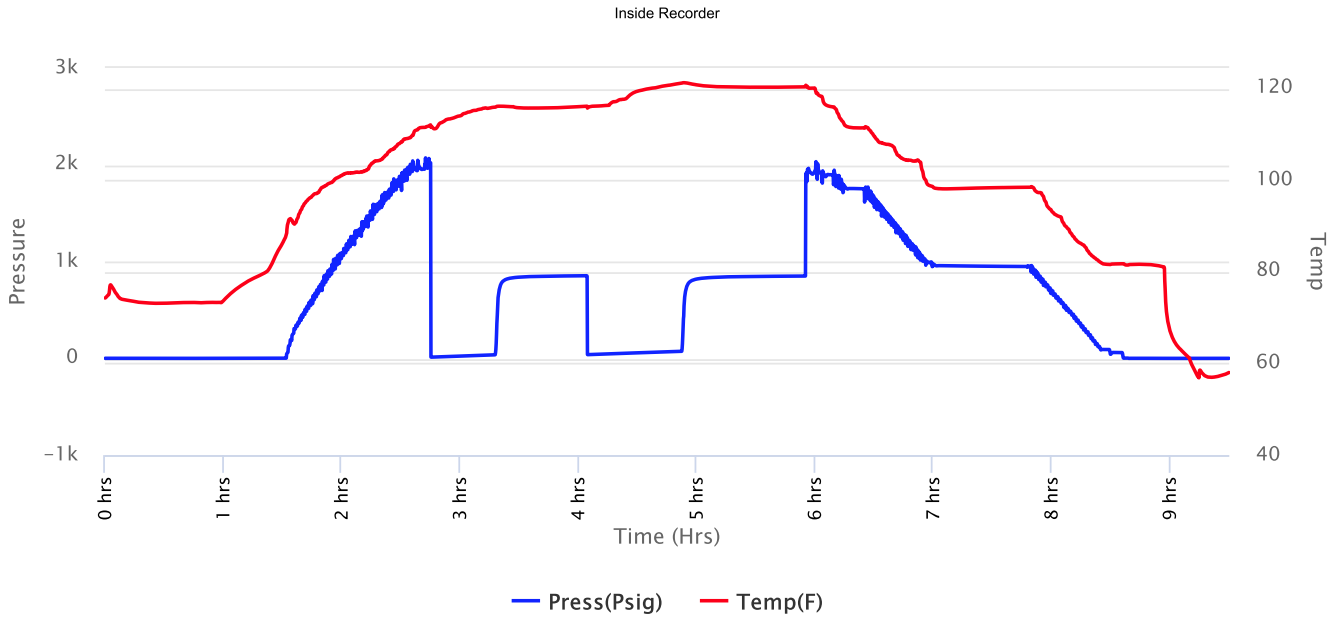
**DATE**  
October  
**28**  
2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 - 4180'      Total Depth: 4180'**

Time On: 16:41 10/28      Time Off: 01:55 10/29  
Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

Electronic Volume Estimate:  
64'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 1.2" at 30 min	Current Reading: 0" at 45 min	Current Reading: .8" at 45 min	Current Reading: 0" at 60 min
Max Reading: 1.2"	Max Reading: 0"	Max Reading: .8"	Max Reading: 0"





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Test Complete

**DATE**  
 October  
**28**  
 2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 - 4180'      Total Depth: 4180'**

Time On: 16:41 10/28      Time Off: 01:55 10/29  
 Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

Recovered

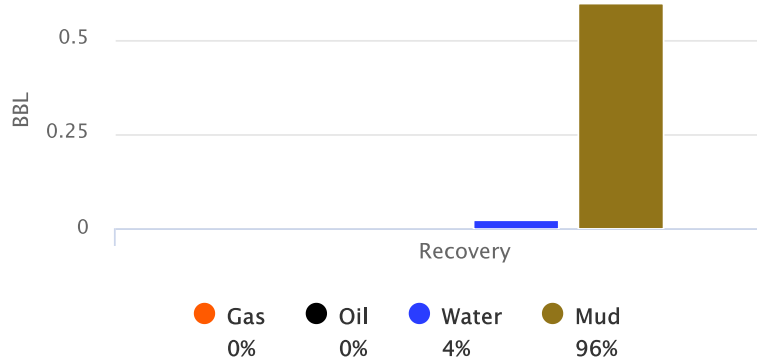
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
126	0.61992	SLWCM	0	0	4	96

Total Recovered: 126 ft  
 Total Barrels Recovered: 0.61992

**Reversed Out**  
 NO

Initial Hydrostatic Pressure	1954	PSI
Initial Flow	12 to 37	PSI
<b>Initial Closed in Pressure</b>	<b>853</b>	<b>PSI</b>
Final Flow Pressure	39 to 73	PSI
<b>Final Closed in Pressure</b>	<b>850</b>	<b>PSI</b>
Final Hydrostatic Pressure	1952	PSI
Temperature	122	°F
Pressure Change Initial Close / Final Close	0.4	%

**Recovery at a glance**





**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**28**  
2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 -      Total Depth: 4180'**  
**4180'**  
Time On: 16:41 10/28      Time Off: 01:55 10/29  
Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

**BUCKET MEASUREMENT:**

1st Open: 1/4 in. blow building to 1 1/4 ins. in 30 mins.  
1st Close: No blow back.  
2nd Open: Weak, surface blow building to 3/4 in. in 45 mins.  
2nd Close: No blow back.

**REMARKS:**

There were very slight oil specks in the mud but did not show up in the grind outs.  
Tool Sample: 0% Gas 0% Oil 5% Water 95% Mud





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**28**  
2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 - 4180'      Total Depth: 4180'**  
Time On: 16:41 10/28      Time Off: 01:55 10/29  
Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

### Down Hole Makeup

<b>Heads Up:</b> 18.21 FT	<b>Packer 1:</b> 4139 FT
<b>Drill Pipe:</b> 3951.59 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4144 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4128.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4146 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 36	<b>Surface Choke:</b> 1"
<b><u>Anchor Makeup</u></b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 35 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**28**  
2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 -      Total Depth: 4180'**  
**4180'**

Time On: 16:41 10/28      Time Off: 01:55 10/29  
Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

**Mud Properties**

**Mud Type:** Chemical      **Weight:** 9.1      **Viscosity:** 53      **Filtrate:** 8.8      **Chlorides:** 3,500 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Test Complete

**DATE**  
October  
**28**  
2018

**DST #4      Formation: Lans "I"      Test Interval: 4144 - 4180'      Total Depth: 4180'**  
Time On: 16:41 10/28      Time Off: 01:55 10/29  
Time On Bottom: 19:22 10/28      Time Off Bottom: 22:22 10/28

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

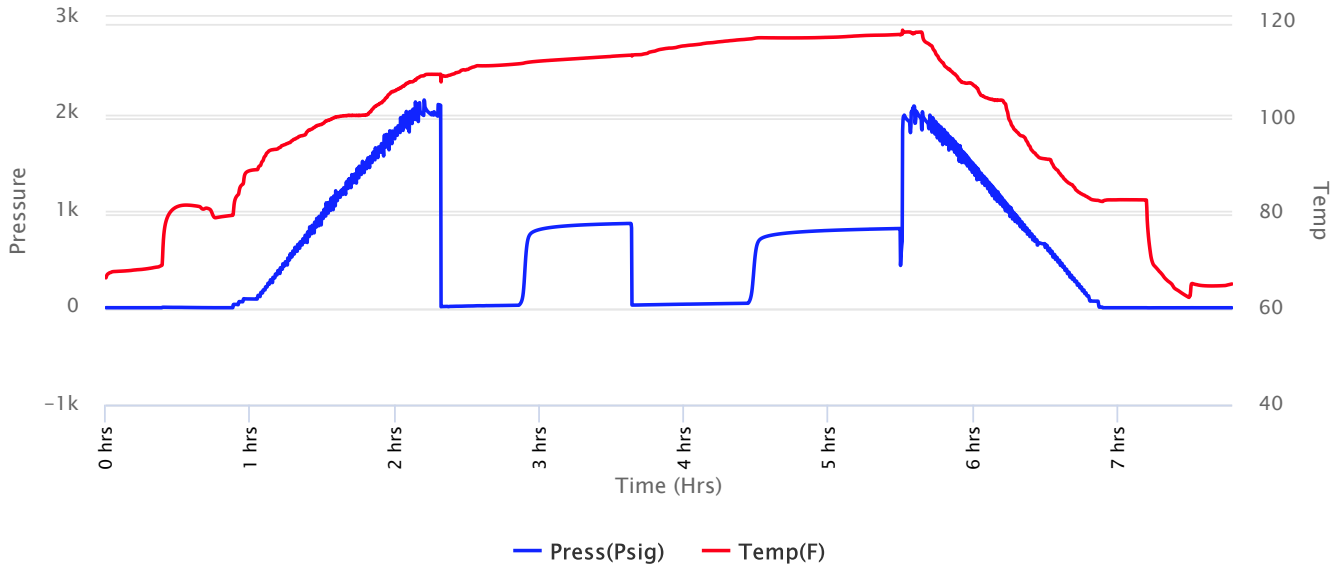
**DATE**  
October  
**29**  
2018

**DST #5**      **Formation: Lans k**      **Test Interval: 4200 - 4230'**      **Total Depth: 4230'**  
Time On: 14:02 10/29      Time Off: 21:36 10/29  
Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

Electronic Volume Estimate:  
39'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 1" at 30 min	Current Reading: 0" at 45 min	Current Reading: .20" at 45 min	Current Reading: 0" at 60 min
Max Reading: 1"	Max Reading: 0"	Max Reading: .20"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 October  
**29**  
 2018

**DST #5**      **Formation: Lans k**      **Test Interval: 4200 - 4230'**      **Total Depth: 4230'**  
 Time On: 14:02 10/29      Time Off: 21:36 10/29  
 Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

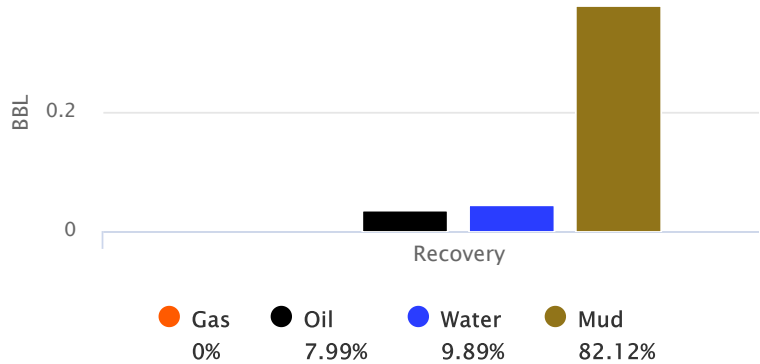
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
1	0.00492	O	0	100	0	0
31	0.15252	SLOCM	0	15	0	85
62	0.30504	SLOCSLWCM	0	3	15	82

Total Recovered: 94 ft  
 Total Barrels Recovered: 0.46248

**Reversed Out**  
 NO

**Recovery at a glance**



Initial Hydrostatic Pressure	1976	PSI
Initial Flow	10 to 26	PSI
<b>Initial Closed in Pressure</b>	<b>869</b>	<b>PSI</b>
Final Flow Pressure	28 to 46	PSI
<b>Final Closed in Pressure</b>	<b>817</b>	<b>PSI</b>
Final Hydrostatic Pressure	1978	PSI
Temperature	118	°F
Pressure Change Initial Close / Final Close	6.0	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
October  
**29**  
2018

**DST #5      Formation: Lans k      Test Interval: 4200 -      Total Depth: 4230'**  
**4230'**  
Time On: 14:02 10/29      Time Off: 21:36 10/29  
Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1 inch in 30 mins  
1st Close: NOBB  
2nd Open: WSB. Built to 1/4 inch in 45 mins  
2nd Close: NOBB

**REMARKS:**

Tool Sample: 0% Gas 5% Oil 10% Water 85% Mud  
Ph: 7  
Measured RW: .42 @ 64 degrees °F  
RW at Formation Temp: 0.238 @ 118 °F  
Chlorides: 16000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**29**  
2018

**DST #5**      **Formation: Lans k**      **Test Interval: 4200 - 4230'**      **Total Depth: 4230'**  
Time On: 14:02 10/29      Time Off: 21:36 10/29  
Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

### Down Hole Makeup

<b>Heads Up:</b> 25.56 FT	<b>Packer 1:</b> 4195 FT
<b>Drill Pipe:</b> 4014.94 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4200 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4184.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4202 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 30	<b>Surface Choke:</b> 1"
<b>Anchor Makeup</b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 29 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
October  
**29**  
2018

**DST #5      Formation: Lans k      Test Interval: 4200 -      Total Depth: 4230'**  
**4230'**  
Time On: 14:02 10/29      Time Off: 21:36 10/29  
Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

**Mud Properties**

**Mud Type:** Chem      **Weight:** 9.2      **Viscosity:** 58      **Filtrate:** 9.6      **Chlorides:** 4000 ppm





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**29**  
2018

**DST #5**      **Formation: Lans k**      **Test Interval: 4200 - 4230'**      **Total Depth: 4230'**  
Time On: 14:02 10/29      Time Off: 21:36 10/29  
Time On Bottom: 16:18 10/29      Time Off Bottom: 19:18 10/29

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**30**  
2018

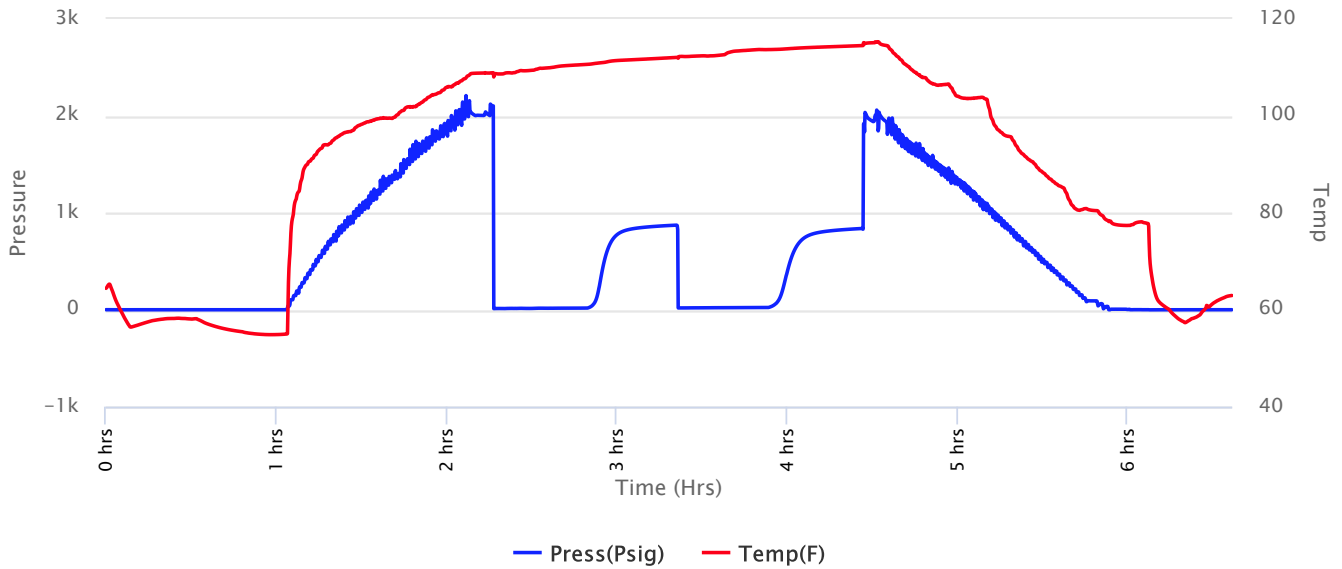
**DST #6      Formation: Lans L      Test Interval: 4230 - 4270'      Total Depth: 4270'**

Time On: 06:12 10/30      Time Off: 12:38 10/30  
Time On Bottom: 08:26 10/30      Time Off Bottom: 10:26 10/30

Electronic Volume Estimate:  
23'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 30	Minutes: 30	Minutes: 30
Current Reading: .1" at 30 min	Current Reading: 0" at 30 min	Current Reading: 0" at 30 min	Current Reading: 0" at 30 min
Max Reading: .7"	Max Reading: 0"	Max Reading: 0"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 October  
**30**  
 2018

**DST #6**      **Formation: Lans L**      **Test Interval: 4230 - 4270'**      **Total Depth: 4270'**  
 Time On: 06:12 10/30      Time Off: 12:38 10/30  
 Time On Bottom: 08:26 10/30      Time Off Bottom: 10:26 10/30

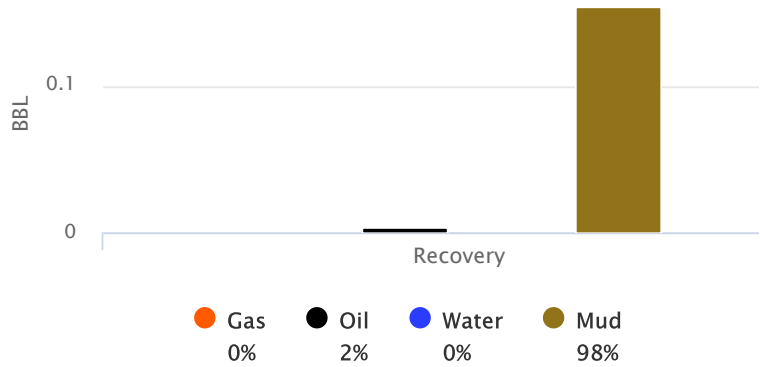
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
32	0.15744	SLOCM	0	2	0	98

Total Recovered: 32 ft  
 Total Barrels Recovered: 0.15744

Reversed Out  
 NO

**Recovery at a glance**



Initial Hydrostatic Pressure	2002	PSI
Initial Flow	11 to 18	PSI
<b>Initial Closed in Pressure</b>	<b>873</b>	<b>PSI</b>
Final Flow Pressure	19 to 23	PSI
<b>Final Closed in Pressure</b>	<b>838</b>	<b>PSI</b>
Final Hydrostatic Pressure	2003	PSI
Temperature	116	°F
Pressure Change Initial Close / Final Close	3.9	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
October  
**30**  
2018

<b>DST #6</b>	<b>Formation: Lans L</b>	<b>Test Interval: 4230 - 4270'</b>	<b>Total Depth: 4270'</b>
	Time On: 06:12 10/30	Time Off: 12:38 10/30	
	Time On Bottom: 08:26 10/30	Time Off Bottom: 10:26 10/30	

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 3/4 inch in 30 mins  
1st Close: NOBB  
2nd Open: No Blow  
2nd Close: NOBB

**REMARKS:**

Tool Sample: 0% Gas 1% Oil 0% Water 99% Mud



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**30**  
2018

**DST #6**      **Formation: Lans L**      **Test Interval: 4230 - 4270'**      **Total Depth: 4270'**  
Time On: 06:12 10/30      Time Off: 12:38 10/30  
Time On Bottom: 08:26 10/30      Time Off Bottom: 10:26 10/30

### Down Hole Makeup

<b>Heads Up:</b> 26.79 FT	<b>Packer 1:</b> 4225 FT
<b>Drill Pipe:</b> 4046.17 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4230 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4214.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4232 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 40	<b>Surface Choke:</b> 1"
<b>Anchor Makeup</b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 39 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
October  
**30**  
2018

**DST #6      Formation: Lans L      Test Interval: 4230 -      Total Depth: 4270'**  
**4270'**  
Time On: 06:12 10/30      Time Off: 12:38 10/30  
Time On Bottom: 08:26 10/30      Time Off Bottom: 10:26 10/30

**Mud Properties**

**Mud Type:** Chem      **Weight:** 9.2      **Viscosity:** 58      **Filtrate:** 9.6      **Chlorides:** 4000 ppm



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**30**  
2018

**DST #6**      **Formation: Lans L**      **Test Interval: 4230 - 4270'**      **Total Depth: 4270'**  
Time On: 06:12 10/30      Time Off: 12:38 10/30  
Time On Bottom: 08:26 10/30      Time Off Bottom: 10:26 10/30

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

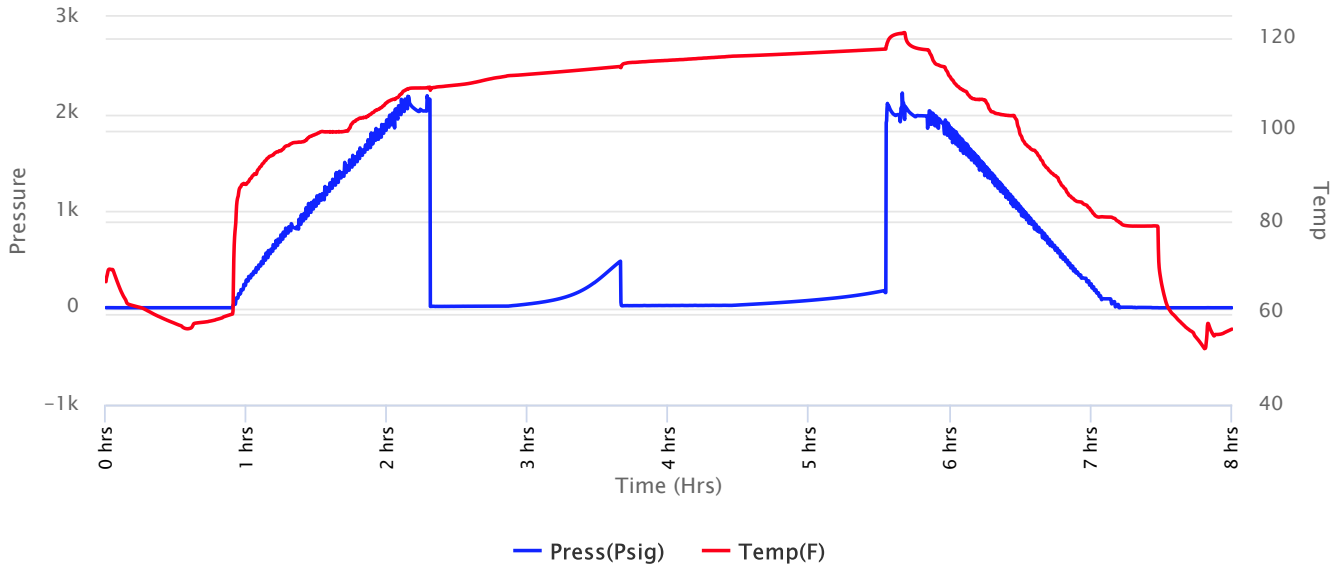
**DATE**  
October  
**31**  
2018

**DST #7**    **Formation: Altamont**    **Test Interval: 4290 - 4340'**    **Total Depth: 4340'**  
**A**  
Time On: 00:12 10/31    Time Off: 07:59 10/31  
Time On Bottom: 02:27 10/31    Time Off Bottom: 05:27 10/31

Electronic Volume Estimate:  
66'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 1.4" at 30 min	Current Reading: 0" at 45 min	Current Reading: .6" at 45 min	Current Reading: 0" at 60 min
Max Reading: 1.4"	Max Reading: 0"	Max Reading: .6"	Max Reading: 0"

Inside Recorder







# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**31**  
2018

**DST #7**    **Formation: Altamont A**    **Test Interval: 4290 - 4340'**    **Total Depth: 4340'**  
Time On: 00:12 10/31    Time Off: 07:59 10/31  
Time On Bottom: 02:27 10/31    Time Off Bottom: 05:27 10/31

### Recovered

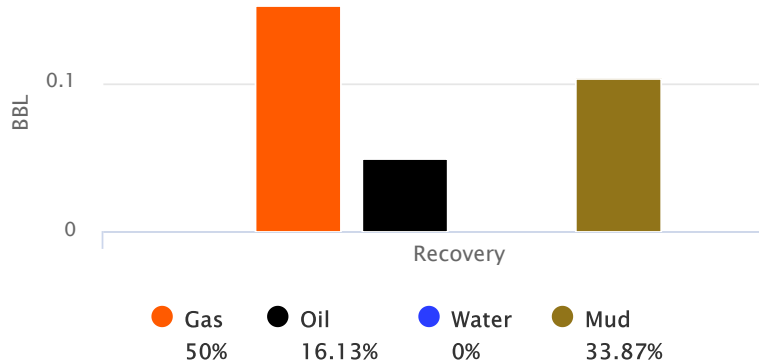
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
31	0.15252	G	100	0	0	0
1	0.00492	O	0	100	0	0
30	0.1476	HOCM	0	30	0	70

Total Recovered: 62 ft  
Total Barrels Recovered: 0.30504

Reversed Out  
NO

Initial Hydrostatic Pressure	2028	PSI
Initial Flow	13 to 17	PSI
<b>Initial Closed in Pressure</b>	<b>480</b>	<b>PSI</b>
Final Flow Pressure	20 to 25	PSI
<b>Final Closed in Pressure</b>	<b>177</b>	<b>PSI</b>
Final Hydrostatic Pressure	2029	PSI
Temperature	118	°F
Pressure Change Initial Close / Final Close	63.1	%

### Recovery at a glance





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**

Uploading recovery &  
pressures

**DATE**

October

**31**

2018

DST #7 Formation: Altamont A Test Interval: 4290 - 4340' Total Depth: 4340'

Time On: 00:12 10/31

Time Off: 07:59 10/31

Time On Bottom: 02:27 10/31 Time Off Bottom: 05:27 10/31

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1 1/2 inch in 30 mins

1st Close: NOBB

2nd Open: WSB. Built to 1/2 inch in 45 mins

2nd Close: NOBB

**REMARKS:**

Tool Sample: 0% Gas 30% Oil 0% Water 70% Mud





**Company: Ritchie Exploration, Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 October  
**31**  
 2018

DST #7    Formation: Altamont    Test Interval: 4290 -    Total Depth: 4340'  
   A                                   4340'

Time On: 00:12 10/31            Time Off: 07:59 10/31  
 Time On Bottom: 02:27 10/31    Time Off Bottom: 05:27 10/31

**Mud Properties**

**Mud Type:** Chem        **Weight:** 9.3        **Viscosity:** 57        **Filtrate:** 9.6        **Chlorides:** 4200 ppm





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

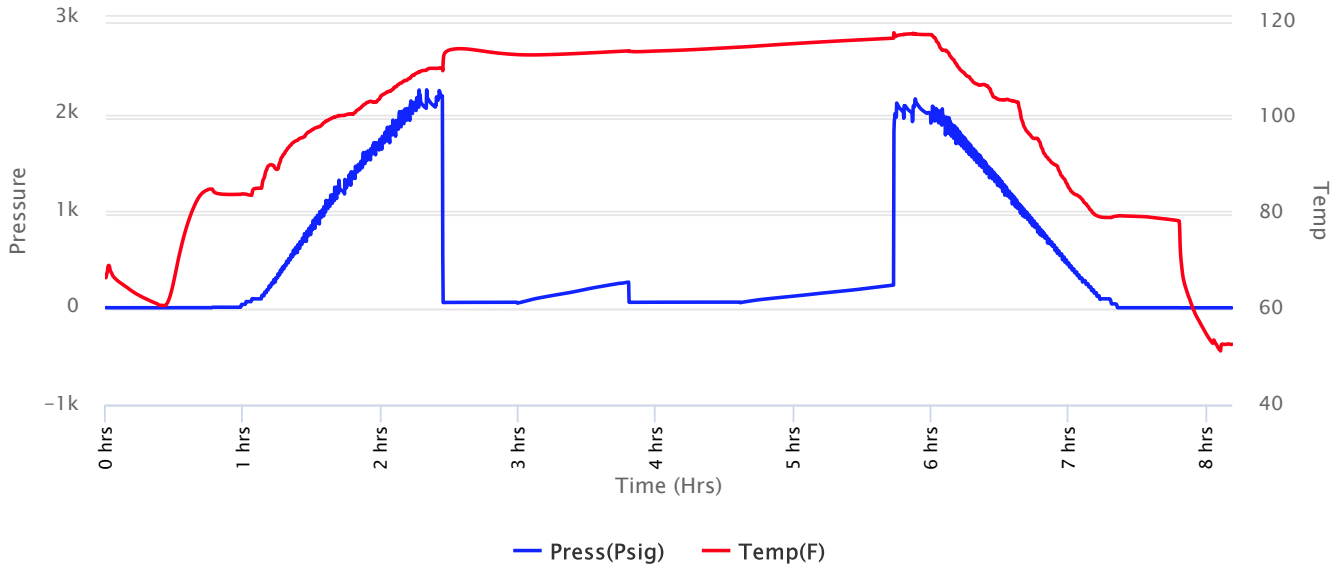
**DATE**  
October  
**31**  
2018

**DST #8**    **Formation: Altamont B**    **Test Interval: 4340 - 4380'**    **Total Depth: 4380'**  
Time On: 18:20 10/31    Time Off: 02:18 11/01  
Time On Bottom: 20:44 10/31    Time Off Bottom: 23:44 10/31

Electronic Volume Estimate:  
113'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 60
Current Reading: 2.3" at 30 min	Current Reading: 0" at 45 min	Current Reading: 0" at 45 min	Current Reading: 0" at 60 min
Max Reading: 3.4"	Max Reading: 0"	Max Reading: 0"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
 County: SCOTT  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 2973 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 261

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 October  
**31**  
 2018

**DST #8**    **Formation: Altamont B**    **Test Interval: 4340 - 4380'**    **Total Depth: 4380'**  
 Time On: 18:20 10/31    Time Off: 02:18 11/01  
 Time On Bottom: 20:44 10/31    Time Off Bottom: 23:44 10/31

Recovered

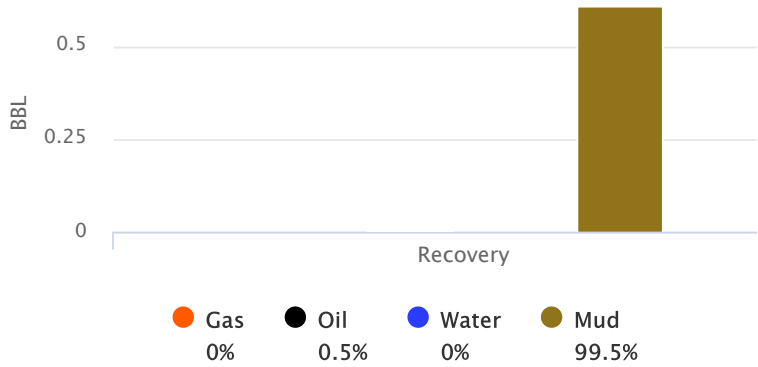
Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
62	0.30504	SLOCM	0	1	0	99
62	0.30504	M	0	0	0	100

Total Recovered: 124 ft  
 Total Barrels Recovered: 0.61008

**Reversed Out**  
 NO

Initial Hydrostatic Pressure	2056	PSI
Initial Flow	53 to 56	PSI
<b>Initial Closed in Pressure</b>	<b>264</b>	<b>PSI</b>
Final Flow Pressure	56 to 58	PSI
<b>Final Closed in Pressure</b>	<b>234</b>	<b>PSI</b>
Final Hydrostatic Pressure	2056	PSI
Temperature	117	°F
Pressure Change Initial Close / Final Close	11.6	%

**Recovery at a glance**





**Company: Ritchie Exploration, Inc.**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Lease: Brookover 35-A #1**

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**31**  
2018

**DST #8 Formation: Altamont Test Interval: 4340 - Total Depth: 4380'**  
**B 4380'**  
Time On: 18:20 10/31 Time Off: 02:18 11/01  
Time On Bottom: 20:44 10/31 Time Off Bottom: 23:44 10/31

**BUCKET MEASUREMENT:**

1st Open: 3 1/2 Blow. Blow didn't Build  
1st Close: NOBB  
2nd Open: No Blow  
2nd Close: NOBB

**REMARKS:**

Took in about 4 foot of mud on opening.  
Tool Sample: 0% Gas 40% Oil 0% Water 60% Mud





# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**31**  
2018

**DST #8**      **Formation: Altamont B**      **Test Interval: 4340 - 4380'**      **Total Depth: 4380'**  
Time On: 18:20 10/31      Time Off: 02:18 11/01  
Time On Bottom: 20:44 10/31      Time Off Bottom: 23:44 10/31

### Down Hole Makeup

<b>Heads Up:</b> 10.08 FT	<b>Packer 1:</b> 4335 FT
<b>Drill Pipe:</b> 4139.46 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4340 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4324.42 FT
<b>Collars:</b> 178.05 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4342 FT
<b>Test Tool:</b> 33.57 FT <i>ID-3 1/2-FH</i> <i>Jars</i> <i>Safety Joint</i>	<b>Well Bore Size:</b> 7 7/8
<b>Total Anchor:</b> 40	<b>Surface Choke:</b> 1"
<b>Anchor Makeup</b>	<b>Bottom Choke:</b> 5/8"
<b>Packer Sub:</b> 1 FT	
<b>Perforations: (top):</b> 0 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> 0 FT	
<b>Drill Pipe: (in anchor):</b> 0 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 0 FT	
<b>Perforations: (below):</b> 39 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: Brookover 35-A #1**

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**

Uploading recovery &  
pressures

**DATE**

October

**31**

2018

DST #8 Formation: Altamont Test Interval: 4340 - Total Depth: 4380'  
B 4380'

Time On: 18:20 10/31

Time Off: 02:18 11/01

Time On Bottom: 20:44 10/31

Time Off Bottom: 23:44 10/31

**Mud Properties**

**Mud Type: Chem**

**Weight: 9.2**

**Viscosity: 68**

**Filtrate: 10.4**

**Chlorides: 5000 ppm**



# Company: Ritchie Exploration, Inc.

## Lease: Brookover 35-A #1

SEC: 35 TWN: 17S RNG: 32W  
County: SCOTT  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 2973 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 261

**Operation:**  
Uploading recovery & pressures

**DATE**  
October  
**31**  
2018

**DST #8**      **Formation: Altamont B**      **Test Interval: 4340 - 4380'**      **Total Depth: 4380'**  
Time On: 18:20 10/31      Time Off: 02:18 11/01  
Time On Bottom: 20:44 10/31      Time Off Bottom: 23:44 10/31

### Gas Volume Report

1st Open

2nd Open

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

Time	Orifice	PSI	MCF/D
------	---------	-----	-------

■



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

Well Name: #1 BROOKOVER  
Well Id: 35A  
Location: 870' FNL, 1147' FEL, Sec 35-T17S-R32W, Scott County, Kansas  
License Number: API: 15-171-21236 Region: Scott County  
Spud Date: 10/21/2018 Drilling Completed: 11/03/2018  
Surface Coordinates: Lat: 38.5385085  
Long: -100.8187153  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 2973' K.B. Elevation (ft): 2981'  
Logged Interval (ft): 3600' To: RTD Total Depth (ft): 4656'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

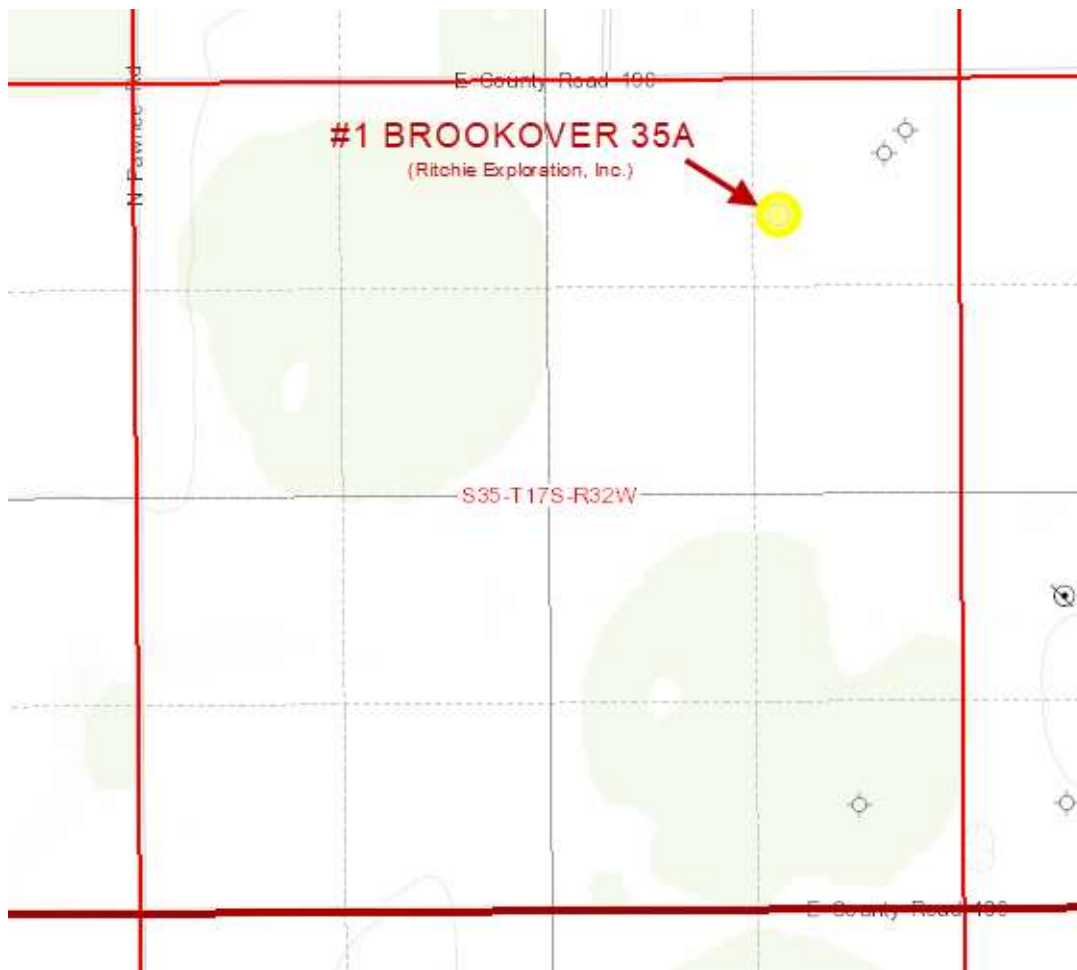
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: Ritchie Exploration, Inc.  
Address: 8100 E. 22nd Street N., Bldg 700  
Wichita, KS 67226  
316-691-9500

GEOLOGIST

Name: Kent R. Matson  
Company: Matson Geological Services, LLC  
Address: 33300 W. 15th Street S.  
Garden Plain, Kansas 67050  
316-644-1975; kent4m@hotmail.com



### COMMENTS

Ritchie Exploration Company Geologist: John Goldsmith, 316-640-0236 (cell).

Contractor: WW Drilling Company, Rig #12.

Tool Pusher: Calvin Pfannenstiel, 785-743-8120 (cell).

Surface Casing: 8 5/8" set at 220' (KB) w/165sx cement.

Production Casing: Based on field observations of drill cuttings, DST results and electric log evaluation, production casing was not installed and the hole was plugged.

Mud by: Mud-Co/Service Mud, Inc., Reid Atkins, 785-694-3741 (cell).

DST's by: Diamond Testing, Ricky Ray, 620-617-7261 (cell).

Logs by: ELI (DI w/GR, CND, Micro, and Sonic), Jeff Luebbers, 785-259-1435 (cell).

RTD= 4656'

LTD= 4655'

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3512'	-531	3510'	-529
Heebner Shale	3896'	-933	3895'	-932
Lansing	3938'	-957	3937'	-956
Muncie Creek Shale	4116'	-1135	4118'	-1137
Stark Shale	4212'	-1231	4210'	-1229
Hushpuckney Shale	4246'	-1265	4244'	-1263
Base of KC	4285'	-1304	4285'	-1304
Marmaton	4314'	-1333	4314'	-1333
Altamont	4335'	-1354	4334'	-1353
Pawnee	4417'	-1436	4415'	-1434
Myrick Station	4452'	-1471	4454'	-1473
Fort Scott	4466'	-1485	4465'	-1484
Cherokee Shale	4491'	-1510	4489'	-1508
Johnson	4530'	-1549	4531'	-1550
Mississippian	4572'	-1591	4574'	-1593
RTD	4656'	-1675		
LTD			4655'	-1674

## ROCK TYPES

### LITHOLOGY

	Anhy
	Cht
	Coal
	Congl
	Dol
	Gyp
	Lmst
	Salt
	Shale
	Shcol
	Shgy
	Sltst
	Ss
	Carb sh
	Dol
	Dtd
	Gry sh
	Sandy lms
	Shale
	Sltstn
	Shlyslts

	Sitysh
	Sdy dolo
	Silty dolo
	Shy dolo
	Shaly ls

### FOSSIL

	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral
	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite

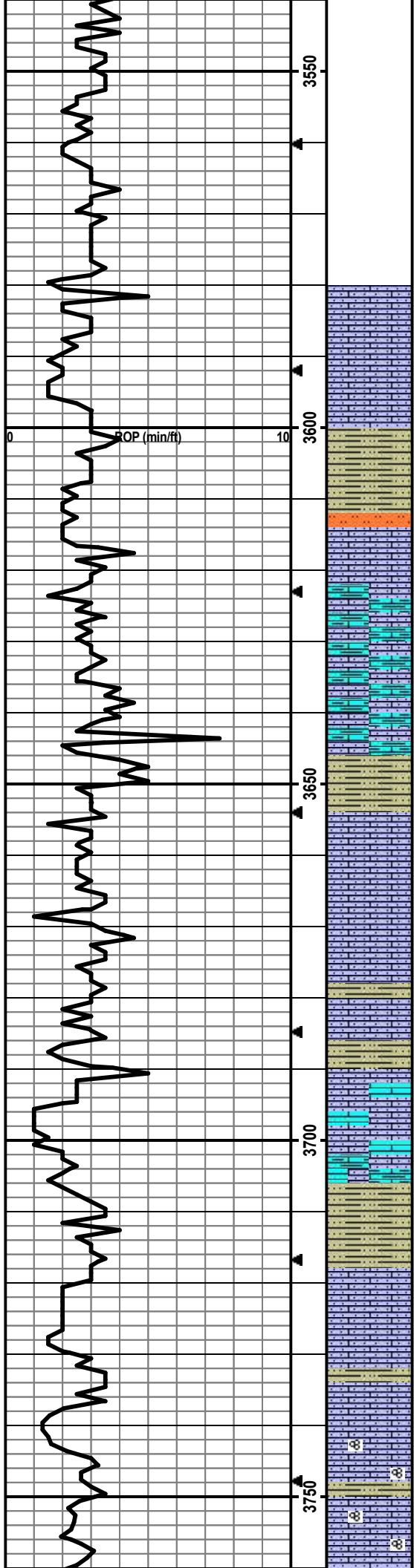
### MINERAL

	Ostra
	Pelec
	Pellet
	Pisolite
	Plant
	Strom
	Fuss
	Oomold
	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
	Sly

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
	0 10 33				<b>Morning Report Depth/Activity (7:00 am)</b> 10/21/2018, MIRU/Spud. 10/22, drilling @ 800'. 10/23, drilling @ 2410'. 10/24, drilling @ 3216'. 10/25, drilling @ 3685'. 10/26, TIH w/test tool for DST#1 @ 3941'. 10/27, TIH w/bit after DST#2 @ 3990'. 10/28, drilling @ 4095'. 10/29, drilling @ 4190'. 10/30, TIH w/test tool for DST#6 @ 4270'. 10/31, TOH w/test tool for DST#7 @ 4340'. 11/01, CTCH after DST#8 @ 4380'. 11/02, drilling @ 4550'. 11/03, CTCH for electric logging @ 4656'.	Mud-Co/Service Mud Inc. Check #1 @ 0' 10/20/18, predrilling instructions.  Mud-Co/Service Mud Inc. Check #2 @ 1208' 10/22/18 11:10am wt vis pH chl 8.7 28 7.5 150 Filt LCM n/c 0  Mud-Co/Service Mud Inc. Check #3 @ 2727' 10/23/18 01:20pm wt vis pH chl 9.3 32 7.0 30000 Filt LCM n/c 2  Mud-Co/Service Mud Inc. Check #4 @ 3310' 10/24/18 11:10am wt vis pH chl 9.0 32 7.0 28000 Filt LCM n/c 4
	0 10 3400				<b>Anhydrite: Top @ 2296', Base @ 2318' (based on drill time).</b>  <<<<<< Oil Shows indicator: Left Block 0-10 tray pcs w/show, Middle Block 10-20 tray pcs w/show, Right Block 20+ tray pcs w/show	Mud-Co/Service Mud Inc. Check #5 @ 3803' 10/25/18 12:15pm wt vis pH chl 8.8 49 11.0 3200 Filt LCM 6.4 4  Mud-Co/Service Mud Inc. Check #6 @ 3941' 10/26/18 09:35am wt vis pH chl 9.0 46 11.0 3000 Filt LCM 7.2 3
	3450				<b>Formation tops and lithologies have been adjusted to correlate to the electric log.</b>  <b>ROP Data begins @ 3450' on 10/24/2018</b>	Mud-Co/Service Mud Inc. Check #7 @ 4004' 10/27/18 09:30am wt vis pH chl 9.0 50 10.0 4000 Filt LCM 9.6 3  Mud-Co/Service Mud Inc. Check #8 @ 4140' 10/28/18 09:20am wt vis pH chl 9.1 53 9.5 3500 Filt LCM 8.8 3
	3500				<b>Conducted drilling mud displacement @ 3466' -3498'.</b>	Mud-Co/Service Mud Inc. Check #9 @ 4230' 10/29/18 01:00pm wt vis pH chl 9.2 58 9.5 4000 Filt LCM 9.6 3  Mud-Co/Service Mud Inc. Check #10 @ 4270' 10/30/18 12:30pm wt vis pH chl 9.3 57 9.0 4200 Filt LCM 9.6 2  Mud-Co/Service Mud Inc. Check #11 @ 4352' 10/31/18 11:30am wt vis pH chl 9.2 68 9.0 5000 Filt LCM 10.4 2  Mud-Co/Service Mud Inc. Check #12 @ 4427' 11/01/18 02:00pm wt vis pH chl 9.1 67 11.0 4500





**Drill cutting samples at 10' intervals start at 3600'.**

LS: cm/lt gry, micro-f xtal, vry silty/sndy, some chalky, foss frags, no vis por, no odor, ns.

LS: cm/lt gry-bm/gry, micro-f xtal, vry silty/sndy, some chalky, foss frag, no vis por, no odor, ns.

SH: lt-m gry/bm, vry silty, carb, firm.

LS: cm/gry, micro-med, vry silty/sndy, arg, foss frags, no vis por, no odor, ns.

SH: lt-m gry/green-gry/maroon, vry silty/sndy, some Sltstn: gry/bm/maroon, arg, friable, no odor, ns.

LS: gry, micro-f xtal, vry arg, silty, no vis por, no odor, ns.

LS: lt-m gry, micro-f xtal, vry arg, silty/sndy, no vis por, no odor, ns.

LS: same as above, no odor, ns.

SH: m-dk gry, some vry silty, slt carb, firm, no odor, ns.

LS: cm/lt gry, micro-f xtal, vry silty/sndy, some chalky, no vis por, no vis por, no odor, ns.

LS: lt-m bm/gry-bm, micro-f xtal, silty/sndy, arg, min chalky, no vis por, no odor, ns.

SH: m-dk gry, vry silty/sndy, firm, friable, no odor, ns.

LS: lt-m bm/gry/gry mottling, f-med xtal, some vry silty/sndy, arg, foss frags, no vis por, no odor, ns.

LS: lt-m bm, f-med xtal, some vry silty, arg, some chalky, foss frags, no vis por, no odor, ns. Some SH: m-dk gry, silty, firm.

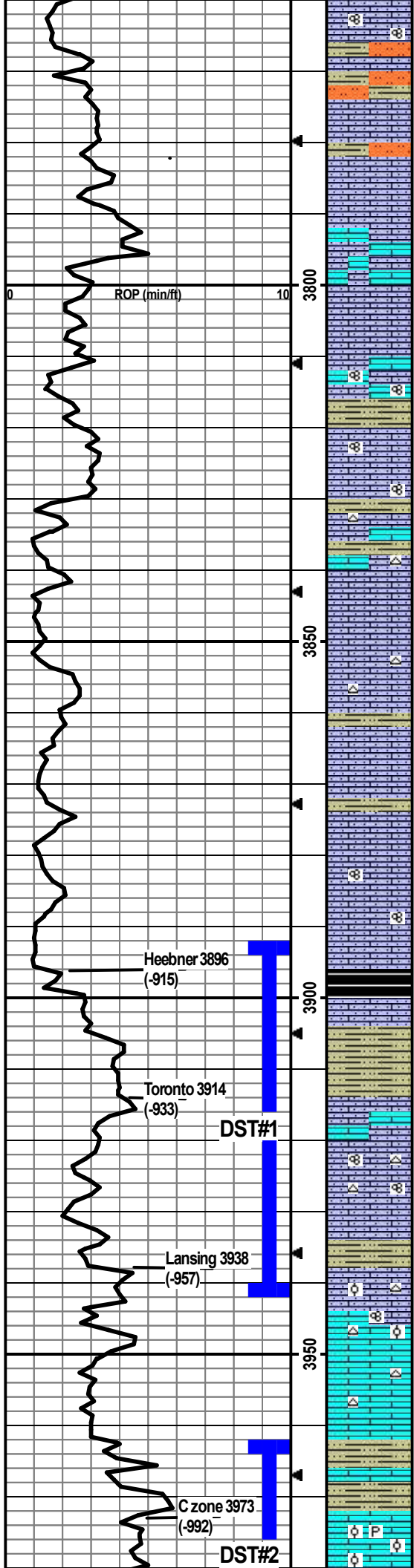
SH: m-dk gry/bm, vry silty, firm, no odor, ns.

LS: cm/lt bm, vf-m xtal, vry silty/sndy, foss frags, some ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, micro-f xtal, vry silty/sndy, chalky, ppt-f in-xtal por, no odor, ns. Some SH: gry/bm, vry silty/sndy, firm.

LS: cm/lt bm/lt gry-bm, micro-med xtal, silty/sndy, chalky, foss frags/fusln, ppt-f in-xtal por, no odor, ns.

LS: cm/lt bm, f-m xtal, silty/sndy, chalky, foss frags/fusln, f-m in-xtal por, no odor, ns.



LS: cm/lt bm/lt gry, vry silty/sndy, chalky, foss frags/fusln, ppt-m in-xtal por, no odor; ns.

SH: lt-dk gry/dk bm, vry silty/sndy, some Sttstn: lt gry, arg, friable, no odor; ns.

LS: lt bm/gry, f-m xtal, vry silty/sndy, arg, chalky, foss frags, no vis por, no odor, ns.

LS: cm/lt bm/lt gry-bm, micro-med xtal, some vry silty/sndy, no vis por, no odor, ns.

SH: lt-dk gry, vry silty/sndy, firm; some Sttstn: lt gry, friable, arg, firm, no odor, ns.

LS: cm/lt gry/lt bm, micro-f xtal, some silty/sndy, chalky, min foss frags, no vis por, no odor; ns.

LS: cm/lt bm, micro-med xtal, silty/sndy, chalky, foss frags, no vis por; no odor, ns.

LS: cm/lt gry/lt bm, micro-fn xtal, foss frags/fusln, min chalky silty/sndy, ppt-f in-xtal por, no odor; ns.

LS: cm/lt bm, micro-med xtal, foss frags/fusln, vry silty, some chalky, arg, ppt-f in-xtal por, no odor; ns.

LS: cm/lt gry, micro-fn xtal, foss frags, some vry silty, some chalky, lt gry/cm/bm chert, ppt-vf in-xtal por, no odor; ns. Some SH: med-dk gry, silty, firm.

LS: cm/lt bm, vfn-fn xtal, foss frags, silty/sndy, some chalky, ppt-fn w/min med-crs in-xtal por, no odor; ns.

LS: cm/lt bm/lt gry mottling, micro-f xtal, foss frags, silty/sndy, sht/cm chert, ppt-med in-xtal por, no odor; ns.

LS: cm/lt bm/lt gry, some lt gry mottling, micro-f xtal, foss frags, silty/sndy, ppt-f w/some med-crs in-xtal por, no odor; ns.

LS: cm/lt bm/lt gry, micro-f xtal, silty/sndy, min foss frags, ppt-f in-xtal por, some med gry SH, silty, firm, no odor, ns.

LS: cm/lt bm, some gry and dk bm mottling, micro-med xtal, foss frags/fusln, silty/sndy, chalky, ppt-f in-xtal por, no odor; ns.

LS: lt-med bm, micro-f xtal, vry silty/sndy, foss frags, some chalky easy crush, lt bm chert, ppt-f in-xtal por, no odor; ns.

SH: m-dk gry/blk, slit carb, silty, firm, fissile, no odor, ns.

LS: cm/lt bm, micro-f xtal, silty, foss frags, chalky, 5 pcs w/ppt-f in-xtal por w/sfo, slit dul flor, yel crush cut, slit crush odor, sfo.

SH: m-dk gry, silty, slit carb, firm.

LS: wht/cm/lt bm, micro-med xtal, foss frags, some silty, approx 10-15% of tray w/sfo, ppt-m in-xtal, dul yel flor, gd odor, vgsfo.

LS: wht/cm/min lt bm, micro-f xtal, some chalky, silty, wht/lt gry/lt bm chert, foss frags/fusln, ppt-fn in-xtal por, no odor, 1 pce w/fn in-xtal por w/sfo dul yel flor, ssfo.

LS: cm/lt gry, micro-f xtal, some chalky, silty, min foss frags, 2 pcs w/ppt-m in-xtal por w/sfo, dul yel flor, no odor, ssfo.

SH: lt-dk gry/min lt green-gry, slit carb, slit silty, firm, fissile.

LS: cm, f-vf xtal, some silty, some chalky, foss frags/fusln/some ool, wht/cm/lt bm chert, ppt-med in-xtal/in-ool por w/some f-med oo-castic por, no odor, ns.

LS: cm, micro-med xtal w/2ndry xtals, some chalky, min foss frags, min wht/cm chert, min ppt-fn in-xtal por, no odor, ns.

LS: cm/lt bm, micro-med xtal w/2ndry xtals, foss frags, some chalky, no vis por, no odor; ns. Some SH: dk gry/blk, slit carb, silty, firm, no odor; ns.

LS: wht/cm, micro-med xtal, min chalky, min pyritic, foss frags/abund ool, 38 pcs w/vf-med in-xtal/in-ool por w/sfo, gd odor, dul yel flor, gsfo.

CFS @ 3850'  
Stop/30"/60"

CFS @ 3873'  
Stop/30"/60"

Conducted 32 stand wiper trip at 3873' connection.

**DST#1) 3892-3941**  
**Toronto**  
 30/45/45/60  
 1st 1/4" blow built to 8.5"; no BB.  
 2nd 1/4" blow built to 9.25"; no BB.  
 IFP 12-104#  
 ISIP 1083#  
 FFP 104-163#  
 FSIP 1073#  
 HP 1837-1835#  
 Recvd: 341' MCW (20%M, 80%W).

CFS @ 3941'  
Stop/30"/60"

Pipe strap TOH for DST #1 at 3941' was 0.32' short to the board.

CFS @ 3970'  
Stop/30"/60"

Heebner 3896 (-915)

Toronto 3914 (-933)

**DST#1**

Lansing 3938 (-957)

C zone 3973 (-992)

**DST#2**

ROP (min/ft)

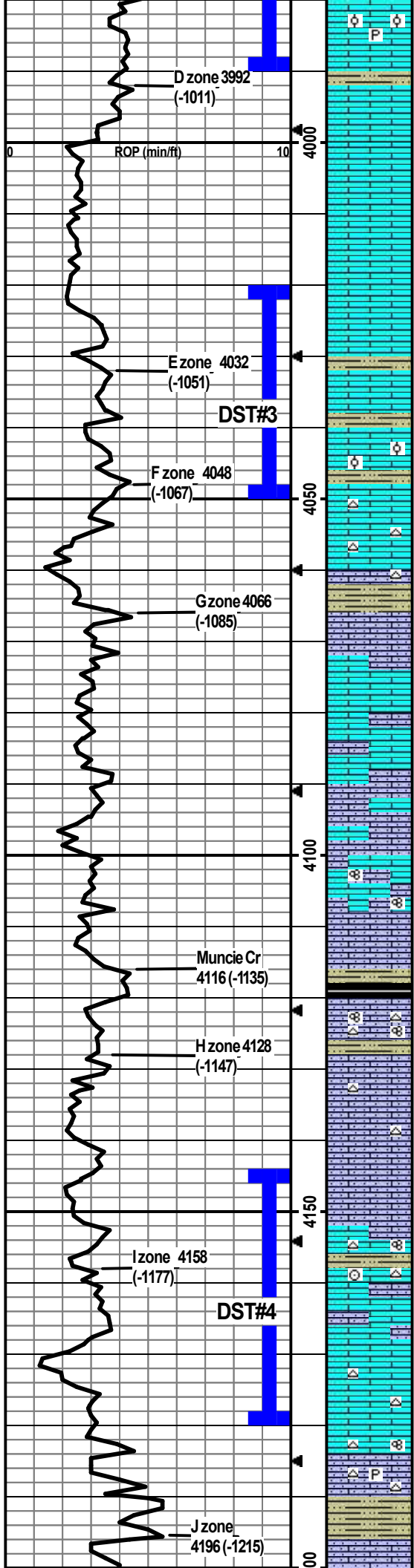
3800

3850

3900

3950

3973



LS: cm, micro-f xtl, some ool, some pyritic, 11 pcs w/ppt-fn/min med in-xtal/in-ool por w/sfo, dul yel flor, slt odor, sfo.

CFS @ 3990'  
Stop/30"/60"

**DST2) 3962-3990  
Lansing C-zone**

30/45/30/30  
1st) WSB built to 1/2", no BB.  
2nd) No blow, no BB.  
IFP 10-12#  
ISIP 804#  
FFP 11-13#  
FSIP 591#  
HP 1871-1880#  
Recvd: 1' Mud.

LS: cm/lt bm/lt gry, micro-f, foss frags, no vis por, no odor, ns. Some SH: lt-dk gry/min blk and green-gry, some vry silty, firm, slt carb, no odor, ns.

CFS @ 4020'  
Stop/30"/60"

LS: cm/lt bm, micro-med xtl, foss frags, smpl vry chalky, no vis por, no odor, ns.

LS: cm/lt gry-bm, micro-med xtl, foss frags, smpl vry chalky, mostly dense w/some f-crs in-xtal por, no odor, ns.

LS: cm/lt bm, micro-med xtl, foss frags, silty/sndy, chalky, some ppt-med in-xtal por, 1 pce w/ppt-f in-xtal por w/sfo, slt crush odor, dul yel flor, ssfo. Some SH: med-dk gry/maroon/lt gry-green, silty, soft-firm.

CFS @ 4040'  
Stop/30"/60"

LS: cm/lt-med bm, micro-med xtl, min foss frags, 15 pcs w/ppt-med in-xtal por, show in bm LS, dull yel flor, good odor, gsfo.

LS: cm/lt bm, micro-med xtl, foss frags/dense ool, chalky, min ppt-f in-xtal por, 2 pcs w/f-m in-xtal por w/sfo, dul yel flor, crush odor, ssfo.

CFS @ 4050'  
Stop/30"/60"

SH: m-dk gry/bm/maroon, some vry silty/sndy, soft-firm, no odor, ns.

LS: cm/lt bm, micro-f xtl, min foss frags, some chalky, wht/cm/lt bm chert, no vis por, no odor, ns.

**DST3) 4020-4050  
Lansing E &  
F-zones**

30/45/45/60  
1st) 1/2" blow built to BOB in 3 min; no BB.  
2nd) 1/2" blow built to BOB in 3.75 min; no BB.  
IFP 38-494#  
ISIP 982#  
FFP 498-848#  
FSIP 983#  
HP 1896-1892#  
Recvd: 1798' Total Fluid: 248'  
MCW (35%M, 65%W), 1550'  
SMCW (2%M, 98%W).

LS: cm, micro-med xtl, vry silty/sndy, min foss frags, some chalk, wht/cm/lt gry chert, min ppt-m in-xtal por, no odor, ns.

LS: cm/lt gry/lt bm, micro-med xtl, min foss frags, increase in chalk than above, some silty/sndy, wht/lt bm chert, min ppt-f in-xtal por, no odor, ns.

LS: cm/lt gry, micro-f xtl, some 2ndry xtals, some silty/sndy, some chalky, min foss frags, min f-crs in-xtal por, no odor, ns.

LS: cm/lt gry, micro-f xtl, some 2ndry xtals, silty/sndy, some chalky, no vis por, no odor, ns.

LS: cm/lt gry, micro-med xtl, sampl vry chalky, some silty/sndy, foss frags/fusln, min f-m in-xtal por, no odor, ns.

SH: med-dk gry/min blk, silty, slt carb, firm.

LS: cm/lt gry/lt bm, micro-med xtl, some silty/sndy, some chalky, min foss frags, min f-m in-xtal por, no odor, ns.

SH: med-dk gry/blk, some vry silty, soft-firm.

LS: cm/lt-med bm/gry, micro-med xtl, some silty/sndy, foss frags/fusln, cm/lt gry chert, v/med in-xtal por, 1 pce w/ppt-f in-xtal por w/sfo, slt odor, dul yel flor, ssfo.

LS: cm/lt-med bm, micro-med xtl, chalky, silty/sndy, wht/lt gry/bm chert, 1 pce w/ppt-med in-xtal por w/sfo, slt odor, ssfo.

CFS @ 4140'  
Stop/30"/60"

LS: cm/lt gry, micro-med xtl, some chalky, some silty, min ppt-f in-xtal por, no odor, ns. SH: lt-med gry, silty, firm.

**DST4) 4144-4180  
Lansing I-zone**

30/45/45/60  
1st) 1/4" blow built to 1.25"; no BB.  
2nd) WSB built to 3/4"; no BB.  
IFP 12-37#  
ISIP 853#  
FFP 39-73#  
FSIP 850#  
HP 1954-1952#  
Recvd: 126' WCM (4%W, 96%M).

SH: lt-dk gry/blk, silty, firm.

LS: cm/lt gry/lt-med bm, micro-med xtl, foss frags/fusln/crin, wht/lt gry/bm chert, pyritic, no vis por, gd odor but no show.

LS: cm/lt-med bm/gry, micro-med w/some crs xtl, 2ndry xtals, some silty/sndy, 2 pcs w/sfo, min f-crs in-xtal por, gd odor, ssfo.

LS: cm/lt bm, micro-med, min foss frags, wht chert, 20-25% of tray w/sfo, f-crs in-xtal por, dul yel flor, strong odor, vgsfo.

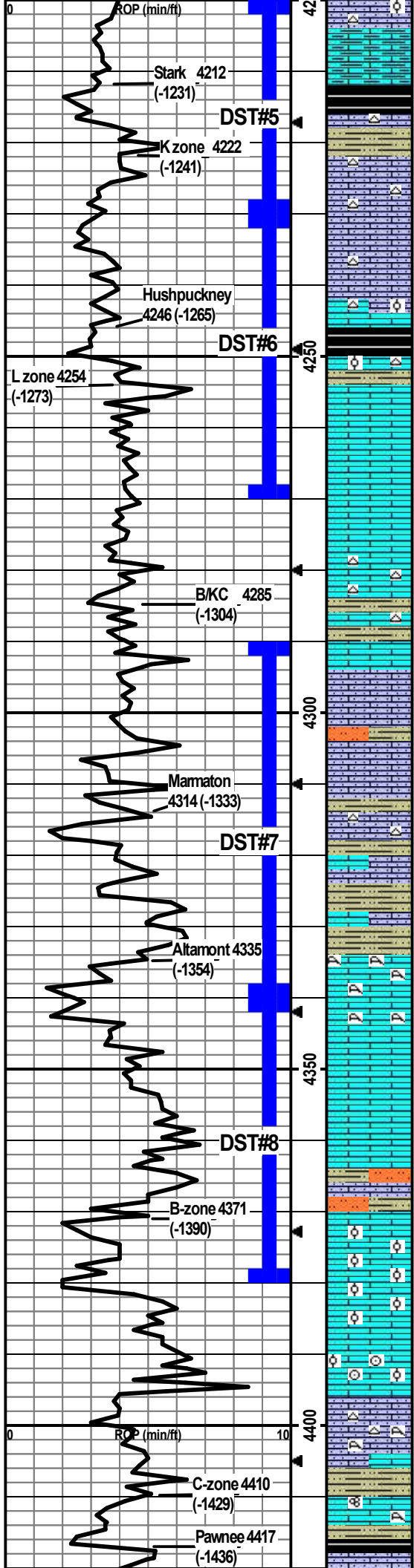
CFS @ 4180'  
Stop/30"/60"

LS: cm/lt-med bm, micro-med xtl, foss frags/fusln, some chalky, lt-med brn chert, some ppt-med in-xtal por, slt odor, 1 pce w/sfo (assume from above), ssfo.

SH: lt-dk gry/lt green-gry, silty, firm.

LS: cm/lt-med bm, micro-f xtl, silty, some chalky, wht/lt gry chert, min pyritic, no vis por, no odor, ns.

CFS @ 4200'



LS: cm/lt-m bm, micro-f xtal, foss frags/min dense ool, vry silty, chalky, wht/lt bm chert, no vis por, no odor, ns.

SH: m-dk gry/bm/blk, vry silty, firm.

LS: cm/lt-m bm/lt gry, micro-m xtal, foss frags, some silty, lt gry chert, 12 pcs w/ppt-med in-xtal por w/sfo, dul yel flor, gd odor, sfo.

LS: cm/lt gry/bm, micro-med xtal, foss frags min lt gry chert, 11 pcs w/f-crs in-xtal por w/sfo, dul yel flor, stg odor, sfo.

LS: cm/lt bm, micro-f xtal, foss frags, silty, chalky, wht gry chert, no vis por, gd cup odor w/6 pcs w/sfo w/ppt-m in-xtal por assume from above. SH: m-dk gry, silty, slt carb, firm.

LS: cm/lt-m bm, micro-med xtal, some silty, chalky, wht/lt gry chert, foss frags/dense ool, 3 pcs w/ppt-f in-xtal/in-ool por w/sfo, dul yel flor, slt odor, sfo.

LS: cm/lt-med bm/gry, micro-med xtal, foss frags, approx 10% of tray w/sfo, ppt-f w/some med in-xtal por, dull yel flor, gs odor, gsfo.

LS: cm/lt gry/lt bm, micro-f xtal, min foss frags, chalky, 3 pcs w/ppt-f in-xtal por w/sfo, dul yel flor, gd odor, sfo.

LS: cm/lt gry/bm, micro-f xtal, min foss frags, some chalky, some lt gry/lt bm chert, 5 pcs w/f-m in-xtal por w/sfo, dul yel flor, gd odor, sfo.

LS: cm/lt-m bm, micro-m xtal, foss frags, bm chert, 4 pcs w/f-m in-xtal por w/sfo, dul yel flor, slt crush odor, sfo.

LS: cm/lt-m bm, micro-m xtal, foss frags, some vry silty/sndy, some chalky, min f-m in-xtal por, slt crush odor, ns.  
Sltstrn: lt gry, vf, pred qtz, hard, some friable; min SH: lt-m gry, vry silty, firm.

LS: cm/lt-m bm, micro-m xtal, foss frags, some silty/sndy, 3 pcs w/ppt-m in-xtal por w/sfo, dul yel flor, slt odor, Sltstrn/SH as above.

LS: cm/lt-dk bm, micro-m xtal, foss frags, vry silty/sndy, orange-brn chert, appx 25% of smpl w/sfo, oil floating on smpl water, entire smpl glistens w/oil sheen, dul yel flor, ppt-f in-xtal por, gd odor, gsfo.

LS: cm/lt-dk bm, micro-m xtal, foss frags, some vry silty/sndy, appx 25% of smpl w/sfo, oil floating on smpl water, smpl glistens w/oil sheen, dul yel flor, ppt-m in-xtal por, gd odor, gsfo.

LS: cm/lt bm, micro-m xtal, foss frags/coral, appx 25% of smpl w/sfo, oil floating on smpl water, coral has m-crs tubular por and is all oil saturated, stg odor, gsfo.

LS: wht/cm/lt-m bm, micro-m xtal, some vry sndy, arg, foss frags/fush, mostly no vis por, 3 pcs w/ppt-f in-xtal por w/sfo, crush odor, ssfo.

SH: m-dk gry/dk brn, some silty, firm. SS: wht/lt gry, vf, pred qtz, min glau, hard, some friable.

LS: cm/lt gry/lt gry-bm, micro-med xtal, foss frags, some vry sndy, 2 pcs w/ppt-f in-xtal por w/sfo, dul yel flor, slt odor, ssfo.

LS: cm/lt bm, micro-med xtal w/crs 2ndry xtals, foss frags, 10-15% of tray w/sfo, ppt-f w/min med in-xtal por, oil floating in smpl water, dul yel flor, stg odor, gsfo.

LS: cm/lt bm, micro-med xtal, foss frags/ool, 20-25% of tray w/sfo, ppt-m in-xtal w/m-crs oo-castic por, oil floating in smpl water, dul yel flor, stg odor, gsfo.

LS: cm/lt bm, micro-m xtal, some chalky, min foss frags w/abund ool, 10-15% of tray w/sfo, blk and bm oil, ppt-m in-xtal/in-ool por, stg odor, gsfo.

LS: cm/lt bm, micro-m xtal, smpl vry chalky, foss frags/crin/ool, 12 pcs w/sfo, ppt-m in-xtal/in-ool por, gd odor, gsfo.

LS: cm/lt bm, micro-med xtal, foss frags/coral-opaque, some silty/sndy, some chalky, wht/lt bm chert, no vis por except fm in coral, no odor, ns. 2 pcs w/sfo from above.

SH: m-dk gry/green-gry/blk, silty, slt carb, firm.

LS: cm/lt-m bm, micro-m xtal, some vry silty/chalky, foss frags/fush/coral-opaque, mostly no vis por/coral fm por, 4 pcs w/sfo w/ppt-f in-xtal por, no odor, sfo.

SH: dk gry/blk, slt carb, silty, firm-vry firm, fissile. LS: med-dk brn, micro-med xtal, foss frags, no vis por, no odor, ns. 2 pcs w/sfo assume from above.

CFS @ 4230'  
Stop/30"/60"

**DST5) 4200-4230  
Lansing K-zone**

30/45/45/60  
1st) WSB built to 1"; no BB.  
2nd) WSB built to 1/4"; no BB.  
IFP 10-26#  
ISIP 869#  
FFP 28-46#  
FSIP 817#  
HP 1976-1978#  
Recvd: 94' Total Fluid: 1' CO, 31' OCM (15%O, 85%M), 62' OCWCM (3%O, 15%W, 82%M).

CFS @ 4270'  
Stop/30"/60"

**DST6) 4230-4270  
Lansing L-zone**

30/30/30/30  
1st) WSB built to 3/4"; no BB.  
2nd) no blow; no BB.  
IFP 11-18#  
ISIP 873#  
FFP 19-23#  
FSIP 838#  
HP 2002-2003#  
Recvd: 32' OCM (2%O, 98%M).

**DST7) 4290-4340  
Altamont A-zone**

30/45/45/60  
1st) WSB built to 1.5"; no BB.  
2nd) WSB built to 1/2"; no BB.  
IFP 13-17#  
ISIP 480#  
FFP 20-25#  
FSIP 177#  
HP 2028-2029#  
Recvd: 31' GIP, 1'CO, 30' OCM (30%O, 70%M).

CFS @ 4340'  
Stop/30"/60"

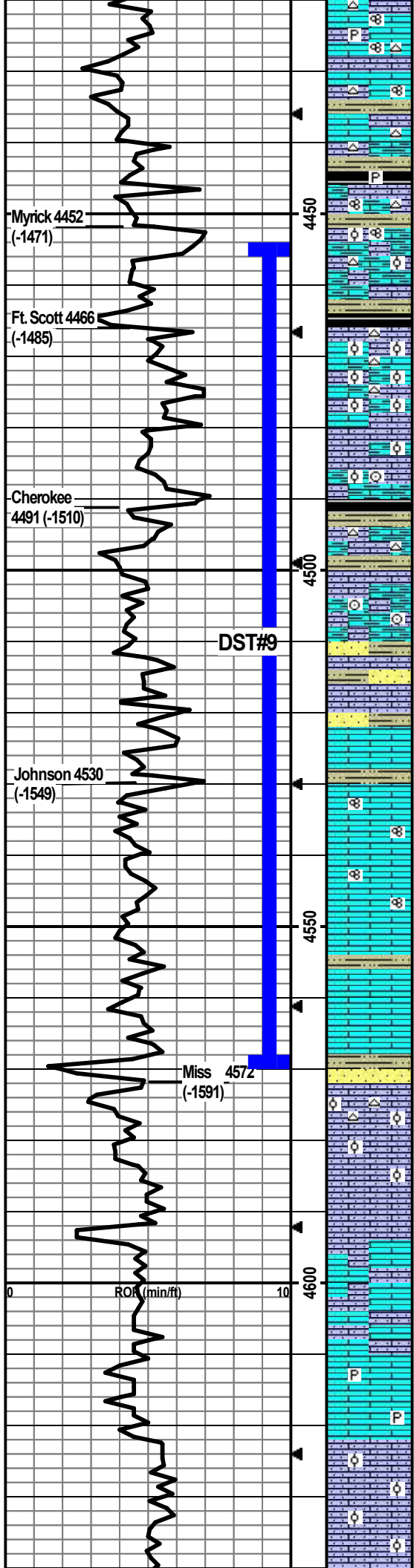
CFS @ 4363'  
Stop/30"/60"

CFS @ 4380'  
Stop/30"/60"

CFS @ 4395'  
Stop/30"/60"

**DST8) 4340-4380  
Altamont B-zone**

30/45/45/60  
Had 4' surge of mud on opening.  
1st) 3.5" blow died back to 2.3"; no BB.  
2nd) no blow; no BB.



LS: cm/lt brn/lt gry, micro-f xtal, min foss frags/fusln, some silty/sndy, some chalky, wht/lt gry chert, min pyritic, mostly no vis por, 5 pcs w/ppt-vf in-xtal por w/sfo, dul yel flor, no odor, ns. Min SH: gry-dk gry, silty, firm.

LS: cm/lt bm, micro-med xtal, min foss frags/fusln, some silty/sndy, some chalky, min lt gry/lt bm chert, 4 pcs w/sfo w/ppt in-xtal por, dul yel flor, slit odor, sfo.

LS: lt-med bm/some dk bm, micro-med, foss frags, vry silty/sndy, arg, min chalky, wht/bm chert, no vis por, no odor, ns. SH: dk gry/blk, silty, pyritic, firm.

LS: cm/lt bm, micro-m xtal, silty/sndy, arg, min lt gry chert, some chalky, foss frags/fusln/dense ool, min vf-m in-xtal por, no odor, ns. Some SH: m-dk gry/blk, silty, slit carb, firm.

SH: dk gry/blk, slit carb, firm-hard, fissile.

LS: brn, micro-med xtal, foss frags/abund dense ool, some silty/sndy, arg, some chalky, cm/lt-dk gry/bm chert, no vis por, no odor, ns.

LS: cm/lt-m brn, micro-m xtal, foss frags/dense ool, some silty/sndy, arg, gry/bm chert, no vis por, 1 pce w/blk tar oil, no flor/no cut, no odor, ns.

LS: cm/lt-m brn/gry-brn, micro-m xtal, some silty/sndy, arg, foss frags/crin/min ool, 2 pcs w/ppt-vf in-xtal por w/sfo, dul yel flor, no odor, sfo.

SH: dk gry/lt green-gry/blk, some vry silty/sndy, soft-firm.

LS: cm/gry/bm, micro-m xtal, silty/sndy, arg, lt gry/bm chert, foss frags, 11 pcs w/ppt-m in-xtal w/sfo, dul yel flor, no odor, sfo. SH: m-dk gry/blk, silty, firm.

LS: cm/lt bm, micro-m xtal, some silty/sndy, some arg, foss frags/some dense ool, 21 pcs w/ppt-m in-xtal por w/sfo, dul yel flor, slit cup odor, gsfo.

LS: cm/lt-m bm, micro-med xtal, silty/sndy, some arg, foss frags, no vis por, 1 pce w/ppt-f in-xtal por w/sfo, no odor, ns. SH: m-dk gry/blk, vry silty/sndy, firm; SS: gry/lt bm, vf-f, pred qtz, carb, hard, friable, no odor, ns.

LS: cm/lt bm, micro-f xtal, some chalky, min foss frags, 9 pcs w/f-m in-xtal por w/sfo, dul yel flor, crush odor, sfo.

LS: lt-m bm, micro-m xtal, some chalky, min foss frags/fusln, 4 pcs w/ppt-f in-xtal por w/sfo, dul yel flor, slit crush odor, sfo.

LS: same as above, 2 pcs w/f-m in-xtal por w/sfo, dul yel flor, slit crush odor, sfo.

LS: cm/lt-m bm, micro-m xtal, some vry chalky, foss frags, 2 pcs w/blk tar oil w/ppt por, 4 pcs w/bm fo w/ppt-vf por, no odor, dul yel flor/cut, sfo.

LS: cm/lt bm, micro-m xtal, some chalky, foss frags, 19 pcs w/ppt-m in-xtal por w/sfo-bm oil, few pcs w/blk tar oil, yel flor/cut, slit crush odor, sfo.

12 pcs LS from trash smpl w/sfo, ppt-m in-xtal por, crush odor, sfo. Few SS pcs, 2 w/sfo, f-m, pred qtz, friable.

LS: wht/cm, micro-m xtal, vry chalky, vry sndy, wht/lt orange brn ool chert, foss frags/ool, 9 pcs w/ppt-m in-xtal/in-ool por, crush odor, dul yel flor, sfo. Some SS: wht/lt gry, f-m, pred qtz, hard, friable, 2 pcs w/sfo.

LS: cm: vf-m xtal, vry chalky, vry sndy, foss frags/some ool, no vis por, no odor, ns.

LS: cm/lt gry bm, micro-m xtal, some chalky, some sndy, foss frags, no vis por, no odor, ns.

LS: cm/min lt gry-bm, micro-m xtal, some chalky, some sndy, foss frags, no vis por, no odor, ns.

LS: lt bm, micro xtal, some pyritic, no vis por, no odor, ns.

LS: cm/lt bm, micro-m xtal, some chalky, vry sndy, some dense ool, no vis por, no odor, ns.

LS: cm/lt bm, micro-m xtal w/some 2ndry xtals, some chalky, vry sndy, increase in dense ool, no vis por, no odor, ns.

IFP 53-56#  
ISIP 264#  
FFP 56-58#  
FSIP 234#  
HP 2056-2056#  
Recvd: 124' Total Fluid: 62' OCM (1%O, 99%M), 62' Mud.

CFS @ 4450'  
Stop/30"/60"

CFS @ 4470'  
Stop/30"/60"

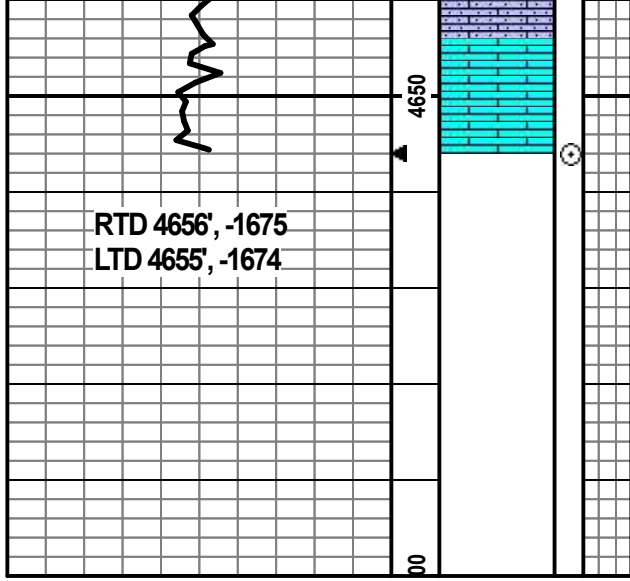
CFS @ 4520'  
Stop/30"/60"

CFS @ 4550'  
Stop/30"/60"

CFS @ 4570'  
Stop/30"/60"

**DST9) 4454-4570 Ft Scott thru Mississippian**

30/30/30/30  
1st 1/4" built to 1.25"; no BB.  
2nd) No blow; no BB.  
IFP 14-16#  
ISIP 35#  
FFP 16-16#  
FSIP 28#  
HP 2105-2105#  
Recvd: 20' Mud.



RTD 4656', -1675  
 LTD 4655', -1674

LS: cm/lt bm, micro xtal, no vis por, no odor, ns.

LS: wht/crm, micro xtal, no vis por, no odor, ns.

TD @4656'

CFS @4656'  
 Stop/30"/60"  
 Cir 1.5 hr to collect samples and  
 condition hole then TOH for  
 logging.



## #1 Brookover 35A

870' FNL & 1,147' FEL

120' N & 157' W of SW NE NE Section 35-17S-32W

Scott County, Kansas

API# 15-171-21236-0000

Elevation: GL: 2,973', KB: 2,981'

Sample Tops			Ref. Well
Anhydrite	2296	+685	+3
B/Anhydrite	2318	663	-1
Stotler	3512	-531	+2
Heebner	3896	-915	Flat
Toronto	3916	-935	Flat
Lansing	3943	-962	Flat
Muncie	4107	-1126	+9
Stark	4203	-1222	+11
Hush	4232	-1251	+17
BKC	4276	-1295	+9
Marmaton	4300	-1319	+15
Altamont	4312	-1331	+19
Pawnee	4401	-1420	+14
Myrick	4436	-1455	+19
Ft. Scott	4446	-1465	+20
Cherokee	4463	-1482	+26
Johnson	4501	-1520	+29
Morrow			
Mississippian	4531	-1550	+46
RTD	4656	-1675	



PRESSURE PUMPING LLC  
PO Box 884, Chanute, KS 66720  
620-431-9210 or 800-467-8676

11854  
11937

TICKET NUMBER 55883  
LOCATION Oakley Ks  
FOREMAN Walt Dunkel

FIELD TICKET & TREATMENT REPORT  
CEMENT

Invoice #814397

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY	
10-21-18	7073	Dunkel 354-#1	35	17	32	Scott	
CUSTOMER Kitchie Explorations		May 4+ 832ft East to Rockwood		TRUCK #	DRIVER	TRUCK #	DRIVER
MAILING ADDRESS P.O. BOX 783188		35-1W 6E		753	Cory Wilson		
CITY Wichita		STATE KS		70	Miles Shaw		
		ZIP CODE 67178-3188		697	Walt Dunkel		

JOB TYPE Surface HOLE SIZE 12 1/4 HOLE DEPTH 221' CASING SIZE & WEIGHT \_\_\_\_\_  
 CASING DEPTH 221 DRILL PIPE \_\_\_\_\_ TUBING \_\_\_\_\_ OTHER \_\_\_\_\_  
 SLURRY WEIGHT 15.2 SLURRY VOL \_\_\_\_\_ WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING 15-20'  
 DISPLACEMENT 12 3/4 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE 4 BPM

REMARKS: Safety Meeting, Rig up on WLD #12, Circ casing on bottom  
Mix 165 sks cony 3% cc - 2% cal, Displace 12 3/4 BBL H2O. Shut in  
Cement Dec Circ  
Approx 2 BBL to RT

Thank You  
Walt & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
Ce0471	1	PUMP CHARGE	1,150.00	1,150.00
Ce0002	40	MILEAGE	7.15	286.00
Ce0711	7.76	Ton Mileage Delivery	175	660.00
Ce5371	1.65	Surface Blend II	24.00	396.00
				6,056.00
		25% Disc		1,514.00
				4,542.00
		SALES TAX		252.45
		ESTIMATED TOTAL		4,794.45

AVIN 3737 AUTHORIZATION [Signature] TITLE [Signature] DATE 10-21-18

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.





PRESSURE PUMPING LLC  
PO Box 884, Chanute, KS 66720  
620-431-9210 or 800-467-8676

11980  
11802

TICKET NUMBER 55940  
LOCATION DeKleg, KS  
FOREMAN Jerry Y

FIELD TICKET & TREATMENT REPORT  
CEMENT

Invoice # 814530 Ks

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
11-3-18	2173	Brookover 35 A# 1	35	175	32W	Scott
CUSTOMER Ritchie Exp.			SOUTH CITY N43200 SE 1S 14E			
MAILING ADDRESS P.O. Box 783188			TRUCK #	DRIVER	TRUCK #	DRIVER
CITY Wichita			STATE KS	ZIP CODE 67278-3188	731	Cory D
JOB TYPE <u>Plug</u>			HOLE SIZE <u>7 7/8</u>	HOLE DEPTH <u>4656</u>	CASING SIZE & WEIGHT	
CASING DEPTH			DRILL PIPE <u>4 1/2</u>	TUBING	OTHER	
SLURRY WEIGHT <u>138</u>			SLURRY VOL <u>6.42</u>	WATER gal/sk	CEMENT LEFT in CASING	
DISPLACEMENT			DISPLACEMENT PSI	MIX PSI	RATE	

REMARKS: Sifty meeting + rig upon WW12 plug as ordered with 270skts  
60/40 42gal 1/4" fl seal  
50skts @ 2320'  
80skts @ 1530'  
50skts @ 780'  
40skts @ 250'  
20skts @ 60'  
30skts Rest hole

Thank you  
Jerry & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0491	1	PUMP CHARGE	1900.00	1900.00
CE0602	50	MILEAGE	7.15	357.50
CE0710	11.61	ten milage delivery	1.75	1015.88
CC5829	270skts	lit & bleed fl	16.00	4320.00
CC6015	68 fl	fl seal	3.00	204.00
			Subtotal	7797.38
			-20%	1559.48
			Subtotal	6237.90
			SALES TAX	307.63
			ESTIMATED TOTAL	6545.53

Flavin 3737  
AUTHORIZATION [Signature] TITLE Tool Pusher DATE 11-3-18

I acknowledge that the payment terms, unless specifically amended in writing on the front of the form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.