

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 \_\_\_\_\_ 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. 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: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

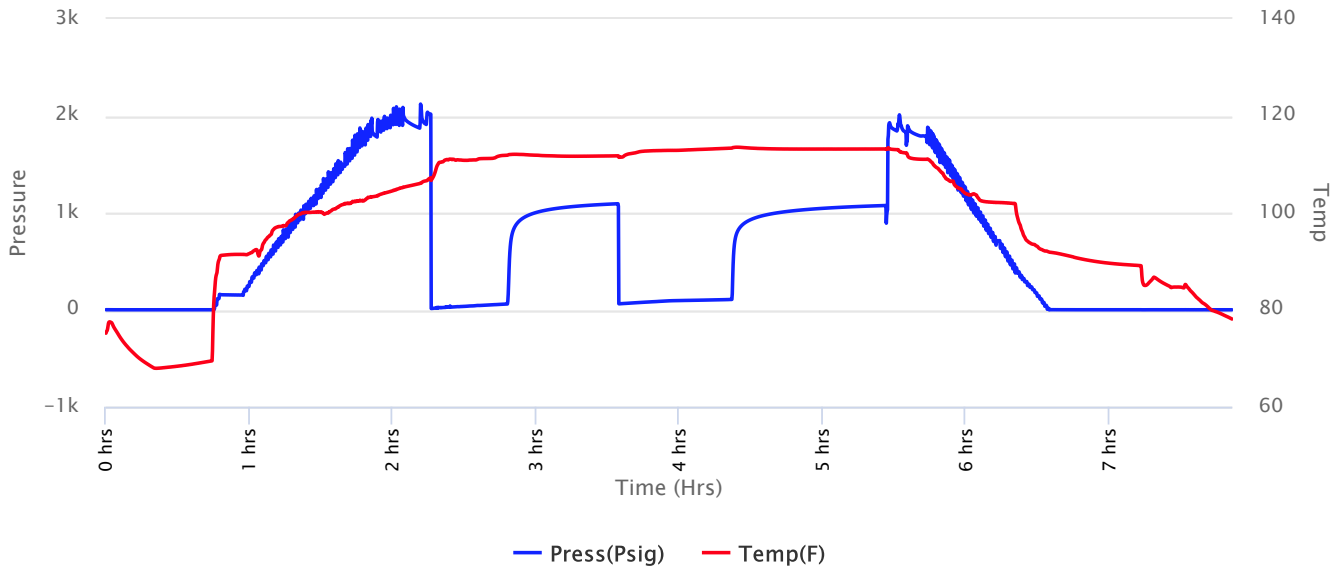
**DATE**  
August  
**06**  
2018

**DST #1**      **Formation: Toronto**      **Test Interval: 4031 - 4070'**      **Total Depth: 4070'**  
Time On: 06:00 08/06      Time Off: 13:38 08/06  
Time On Bottom: 08:12 08/06      Time Off Bottom: 11:12 08/06

Electronic Volume Estimate:  
165'

<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: 2.7" at 30 min	Current Reading: 0" at 45 min	Current Reading: 2.6" at 45 min	Current Reading: 0" at 60 min
Max Reading: 2.7"	Max Reading: 0"	Max Reading: 2.6"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
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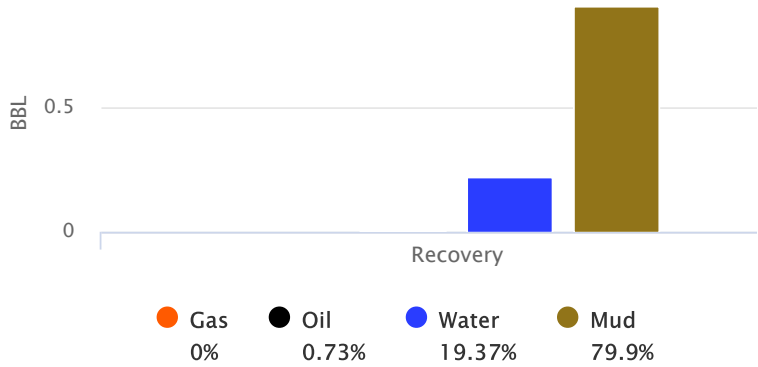
### Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
135	0.8349454	SLOCSLWCM	0	1	10	89
62	0.30504	HWCM	0	0	45	55

Total Recovered: 197 ft  
Total Barrels Recovered: 1.1399854

Reversed Out  
NO

### Recovery at a glance



Initial Hydrostatic Pressure	1873	PSI
Initial Flow	13 to 60	PSI
<b>Initial Closed in Pressure</b>	<b>1094</b>	<b>PSI</b>
Final Flow Pressure	62 to 107	PSI
<b>Final Closed in Pressure</b>	<b>1076</b>	<b>PSI</b>
Final Hydrostatic Pressure	1874	PSI
Temperature	114	°F
Pressure Change Initial Close / Final Close	1.7	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
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**06**  
2018

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**4070'**  
Time On: 06:00 08/06      Time Off: 13:38 08/06  
Time On Bottom: 08:12 08/06      Time Off Bottom: 11:12 08/06

**BUCKET MEASUREMENT:**

1st Open: 2 3/4 inch  
1st Close: 0  
2nd Open: 2 3/4 inch  
2nd Close: 0

**REMARKS:**

Tool Sample: 5% Gas 0% Oil 45% Water 50% Mud

Ph: 7

Measured RW: .39 @ 79 degrees °F

RW at Formation Temp: 0.277 @ 114 °F

Chlorides: 25,000 ppm



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County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**06**  
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**DST #1**      **Formation: Toronto**      **Test Interval: 4031 - 4070'**      **Total Depth: 4070'**  
Time On: 06:00 08/06      Time Off: 13:38 08/06  
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### Down Hole Makeup

<b>Heads Up:</b> 8.37 FT	<b>Packer 1:</b> 4026 FT
<b>Drill Pipe:</b> 3828.14 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4031 FT
<b>Weight Pipe:</b> 0 FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4015.42 FT
<b>Collars:</b> 178.66 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4037 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> 39	<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> 4 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> 34 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
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**06**  
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**DST #1      Formation: Toronto      Test Interval: 4031 -      Total Depth: 4070'**  
**4070'**  
Time On: 06:00 08/06      Time Off: 13:38 08/06  
Time On Bottom: 08:12 08/06      Time Off Bottom: 11:12 08/06

**Mud Properties**

**Mud Type:** Chem      **Weight:** 8.7      **Viscosity:** 61      **Filtrate:** 7.2      **Chlorides:** 4000 ppm





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County: LOGAN  
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Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

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**DATE**  
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Time On: 06:00 08/06      Time Off: 13:38 08/06  
Time On Bottom: 08:12 08/06      Time Off Bottom: 11:12 08/06

### 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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County: LOGAN  
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Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

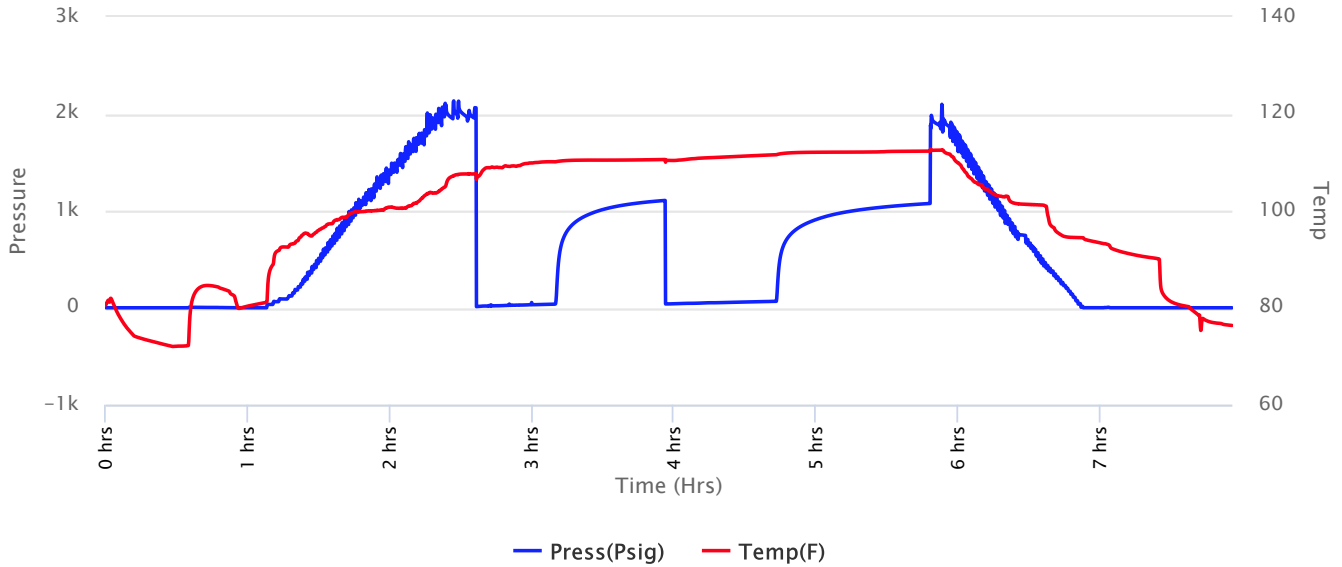
**DATE**  
August  
**07**  
2018

**DST #2      Formation: Lans C      Test Interval: 4107 - 4140'      Total Depth: 4140'**  
Time On: 01:48 08/07      Time Off: 09:31 08/07  
Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

Electronic Volume Estimate:  
73'

<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: .9" at 45 min	Current Reading: 0" at 60 min
Max Reading: 1.4"	Max Reading: 0"	Max Reading: .9"	Max Reading: 0"

Inside Recorder





**Company: Ritchie Exploration, Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
 County: LOGAN  
 State: Kansas  
 Drilling Contractor: WW Drilling, LLC - Rig 12  
 Elevation: 3318 GL  
 Field Name: Wildcat  
 Pool: WILDCAT  
 Job Number: 201

**Operation:**  
 Uploading recovery & pressures

**DATE**  
 August  
**07**  
 2018

**DST #2**      **Formation: Lans C**      **Test Interval: 4107 - 4140'**      **Total Depth: 4140'**  
 Time On: 01:48 08/07      Time Off: 09:31 08/07  
 Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

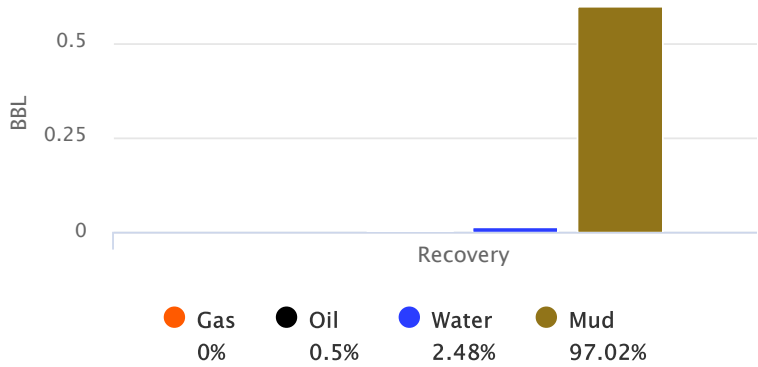
Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
63	0.30996	SLOCM	0	1	0	99
62	0.30504	SLWCM	0	0	5	95

Total Recovered: 125 ft  
 Total Barrels Recovered: 0.615

Reversed Out  
 NO

Initial Hydrostatic Pressure	1958	PSI
Initial Flow	12 to 38	PSI
<b>Initial Closed in Pressure</b>	<b>1107</b>	<b>PSI</b>
Final Flow Pressure	40 to 67	PSI
<b>Final Closed in Pressure</b>	<b>1076</b>	<b>PSI</b>
Final Hydrostatic Pressure	1969	PSI
Temperature	113	°F
Pressure Change Initial Close / Final Close	2.8	%

**Recovery at a glance**





**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
August  
**07**  
2018

**DST #2      Formation: Lans C      Test Interval: 4107 -      Total Depth: 4140'**  
**4140'**  
Time On: 01:48 08/07      Time Off: 09:31 08/07  
Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1 1/4 inch  
1st Close: 0  
2nd Open: WSB. Built to 3/4 inch  
2nd Close: 0

**REMARKS:**

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



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Elevation: 3318 GL  
Field Name: Wildcat  
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**07**  
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Time On: 01:48 08/07      Time Off: 09:31 08/07  
Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

### Down Hole Makeup

<b>Heads Up:</b> 26.34 FT	<b>Packer 1:</b> 4102 FT
<b>Drill Pipe:</b> 3922.11 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4107 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4091.42 FT
<b>Collars:</b> 178.66 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> -31 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> 33	<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> 32 FT <i>4 1/2-FH</i>	



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Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
August  
**07**  
2018

**DST #2      Formation: Lans C      Test Interval: 4107 -      Total Depth: 4140'**  
**4140'**  
Time On: 01:48 08/07      Time Off: 09:31 08/07  
Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

**Mud Properties**

**Mud Type:** Chem      **Weight:** 9.1      **Viscosity:** 55      **Filtrate:** 8      **Chlorides:** 4500 ppm



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Elevation: 3318 GL  
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Job Number: 201

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August  
**07**  
2018

**DST #2      Formation: Lans C      Test Interval: 4107 - 4140'      Total Depth: 4140'**  
Time On: 01:48 08/07      Time Off: 09:31 08/07  
Time On Bottom: 04:21 08/07      Time Off Bottom: 07:21 08/07

### 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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County: LOGAN  
State: Kansas  
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Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**09**  
2018

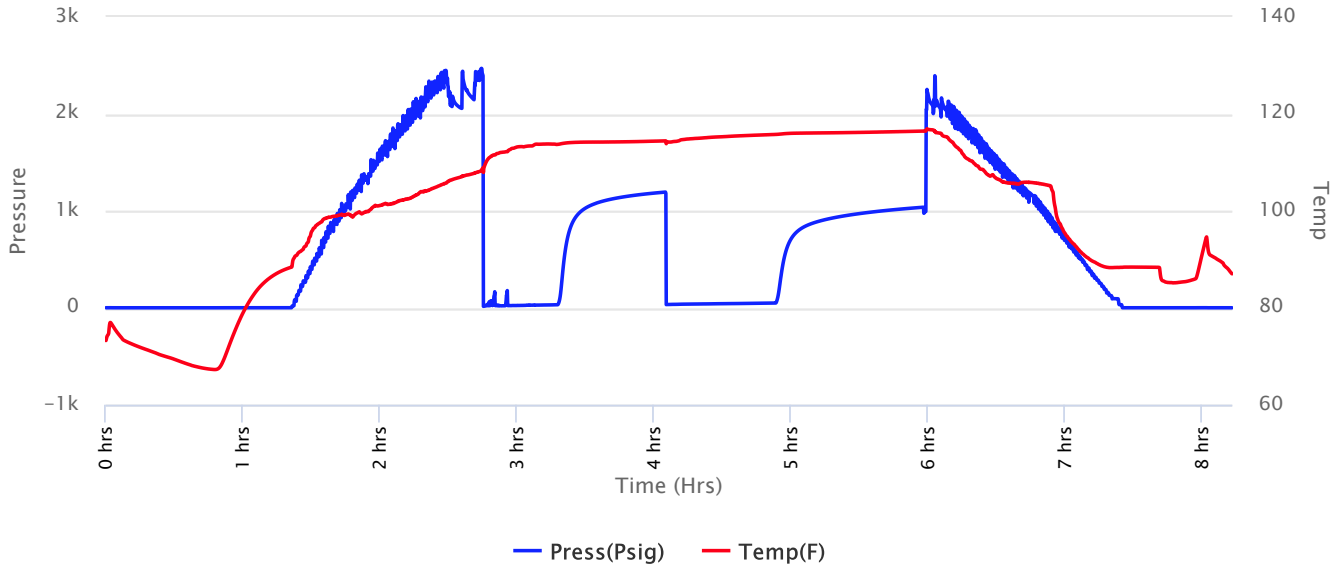
**DST #3**    **Formation: Altamont**    **Test Interval: 4476 - 4530'**    **Total Depth: 4530'**

Time On: 03:51 08/09    Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09    Time Off Bottom: 09:32 08/09

Electronic Volume Estimate:  
35'

<u>1st Open</u>	<u>1st Close</u>	<u>2nd Open</u>	<u>2nd Close</u>
Minutes: 30	Minutes: 45	Minutes: 45	Minutes: 40
Current Reading: .8" at 30 min	Current Reading: 0" at 45 min	Current Reading: .1" at 45 min	Current Reading: 0" at 40 min
Max Reading: .9"	Max Reading: 0"	Max Reading: .1"	Max Reading: 0"

Inside Recorder







# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**09**  
2018

**DST #3**    **Formation: Altamont**    **Test Interval: 4476 - 4530'**    **Total Depth: 4530'**

Time On: 03:51 08/09    Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09    Time Off Bottom: 09:32 08/09

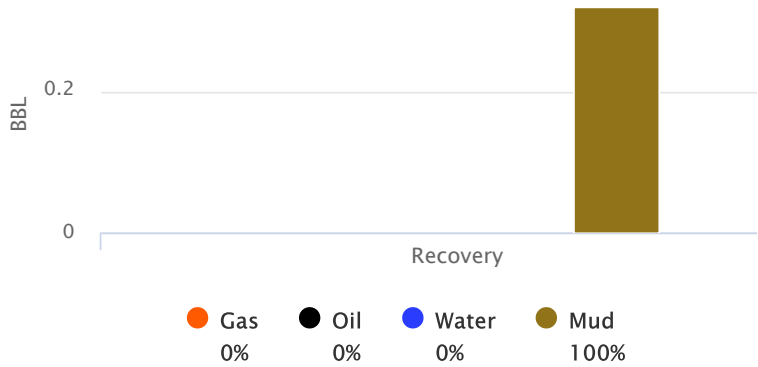
Recovered

Foot	BBLs	Description of Fluid	Gas %	Oil %	Water %	Mud %
65	0.3198	M	0	0	0	100

Total Recovered: 65 ft  
Total Barrels Recovered: 0.3198

Reversed Out  
NO

### Recovery at a glance



Initial Hydrostatic Pressure	2057	PSI
Initial Flow	15 to 32	PSI
<b>Initial Closed in Pressure</b>	<b>1194</b>	<b>PSI</b>
Final Flow Pressure	33 to 50	PSI
<b>Final Closed in Pressure</b>	<b>1037</b>	<b>PSI</b>
Final Hydrostatic Pressure	2073	PSI
Temperature	117	°F
Pressure Change Initial Close / Final Close	13.1	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
August  
**09**  
2018

**DST #3      Formation: Altamont      Test Interval: 4476 -      Total Depth: 4530'**  
**4530'**

Time On: 03:51 08/09      Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09      Time Off Bottom: 09:32 08/09

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1 inch  
1st Close: 0  
2nd Open: WSB. Blow Did Not Build  
2nd Close: 0

**REMARKS:**

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



# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**09**  
2018

**DST #3      Formation: Altamont      Test Interval: 4476 - 4530'      Total Depth: 4530'**  
  
Time On: 03:51 08/09      Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09      Time Off Bottom: 09:32 08/09

### Down Hole Makeup

<b>Heads Up:</b> 34.87 FT	<b>Packer 1:</b> 4470.78 FT
<b>Drill Pipe:</b> 4299.42 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4475.78 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4460.2 FT
<b>Collars:</b> 178.66 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4514 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> 54.22	<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> 3 FT <i>4 1/2-FH</i>	
<b>Change Over:</b> .5 FT	
<b>Drill Pipe: (in anchor):</b> 31.72 FT <i>ID-3 1/2</i>	
<b>Change Over:</b> 1 FT	
<b>Perforations: (below):</b> 17 FT <i>4 1/2-FH</i>	



**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
August  
**09**  
2018

**DST #3      Formation: Altamont      Test Interval: 4476 -      Total Depth: 4530'**  
**4530'**

Time On: 03:51 08/09      Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09      Time Off Bottom: 09:32 08/09

**Mud Properties**

**Mud Type:** Chem      **Weight:** 9.2      **Viscosity:** 48      **Filtrate:** 8.8      **Chlorides:** 5500 ppm



# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**09**  
2018

**DST #3    Formation: Altamont    Test Interval: 4476 - 4530'    Total Depth: 4530'**  
Time On: 03:51 08/09    Time Off: 11:51 08/09  
Time On Bottom: 06:32 08/09    Time Off Bottom: 09:32 08/09

### Gas Volume Report

1st Open

2nd Open

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

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



# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

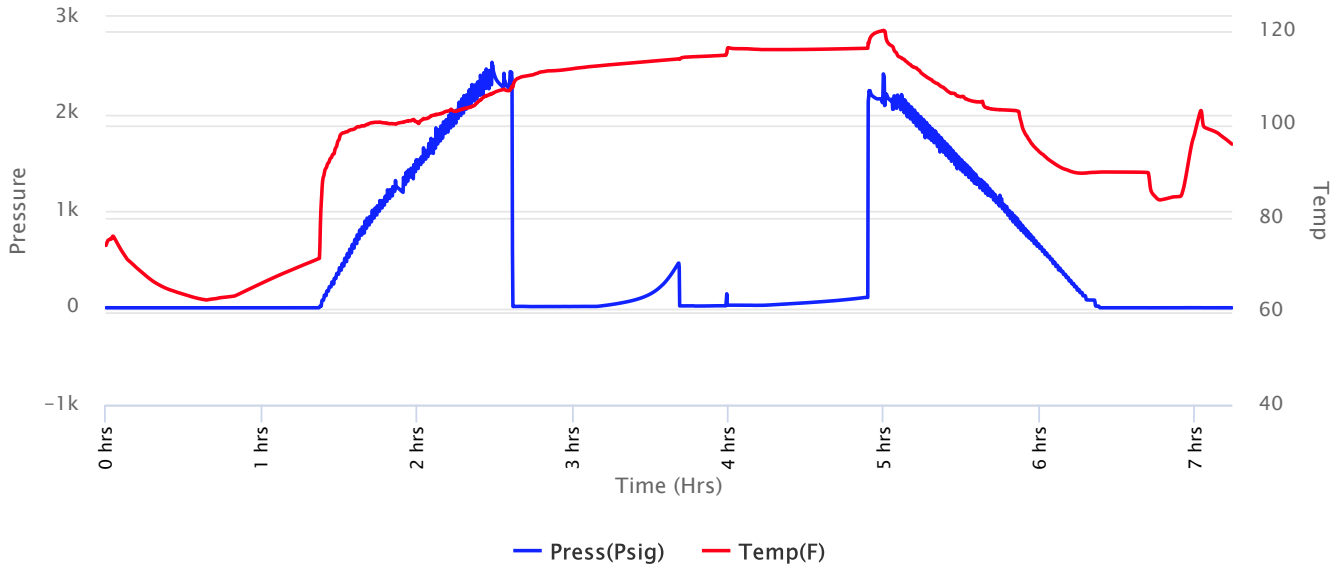
**DATE**  
August  
**10**  
2018

**DST #4**      **Formation: Myrick Station**      **Test Interval: 4608 - 4630'**      **Total Depth: 4630'**  
Time On: 06:09 08/10      Time Off: 13:11 08/10  
Time On Bottom: 08:42 08/10      Time Off Bottom: 10:42 08/10

Electronic Volume Estimate:  
22'

<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: .15" at 30 min	Current Reading: 0" at 30 min	Current Reading: 0" at 30 min	Current Reading: 0" at 30 min
Max Reading: .6"	Max Reading: 0"	Max Reading: 0"	Max Reading: 0"

Inside Recorder





# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**10**  
2018

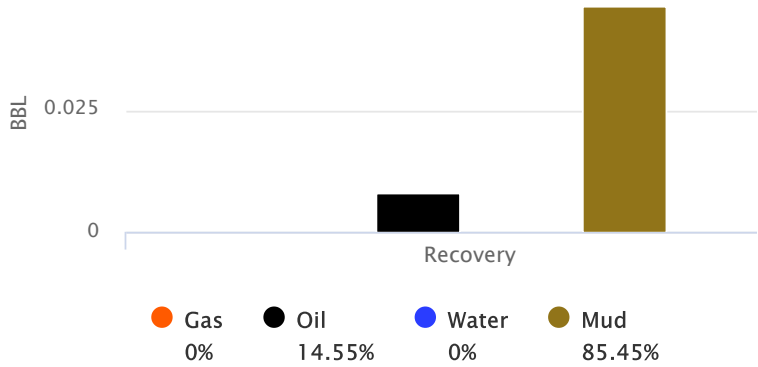
**DST #4**      **Formation: Myrick Station**      **Test Interval: 4608 - 4630'**      **Total Depth: 4630'**  
Time On: 06:09 08/10      Time Off: 13:11 08/10  
Time On Bottom: 08:42 08/10      Time Off Bottom: 10:42 08/10

Recovered		Description of Fluid	Gas %	Oil %	Water %	Mud %
Foot	BBLs					
1	0.00492	O	0	100	0	0
10	0.0492	SLOCM	0	6	0	94

Total Recovered: 11 ft  
Total Barrels Recovered: 0.05412

Reversed Out  
NO

### Recovery at a glance



Initial Hydrostatic Pressure	2275	PSI
Initial Flow	13 to 15	PSI
<b>Initial Closed in Pressure</b>	<b>462</b>	<b>PSI</b>
Final Flow Pressure	19 to 26	PSI
<b>Final Closed in Pressure</b>	<b>108</b>	<b>PSI</b>
Final Hydrostatic Pressure	2240	PSI
Temperature	117	°F
Pressure Change Initial Close / Final Close	76.6	%



**Company: Ritchie Exploration,  
Inc.**

**Lease: J. Gerstberger #1**

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State: Kansas  
Drilling Contractor: WW Drilling, LLC -  
Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery &  
pressures

**DATE**  
August  
**10**  
2018

<b>DST #4</b>	<b>Formation: Myrick Station</b>	<b>Test Interval: 4608 - 4630'</b>	<b>Total Depth: 4630'</b>
	Time On: 06:09 08/10	Time Off: 13:11 08/10	
	Time On Bottom: 08:42 08/10	Time Off Bottom: 10:42 08/10	

**BUCKET MEASUREMENT:**

1st Open: WSB. Built to 1/2 inch blow.

1st Close: 0

2nd Open: No Blow.

2nd Close: 0

**REMARKS:**

Flushed Tool 18 mins into 2nd Flow, Good Surge!

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





# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
Field Name: Wildcat  
Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
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**10**  
2018

**DST #4**      **Formation: Myrick Station**      **Test Interval: 4608 - 4630'**      **Total Depth: 4630'**  
Time On: 06:09 08/10      Time Off: 13:11 08/10  
Time On Bottom: 08:42 08/10      Time Off Bottom: 10:42 08/10

### Down Hole Makeup

<b>Heads Up:</b> 28.55 FT	<b>Packer 1:</b> 4603 FT
<b>Drill Pipe:</b> 4425.32 FT <i>ID-3 1/2</i>	<b>Packer 2:</b> 4608 FT
<b>Weight Pipe:</b> FT <i>ID-2 7/8</i>	<b>Top Recorder:</b> 4592.42 FT
<b>Collars:</b> 178.66 FT <i>ID-2 1/4</i>	<b>Bottom Recorder:</b> 4614 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> 22	<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> 4 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> 17 FT <i>4 1/2-FH</i>	





# Company: Ritchie Exploration, Inc.

## Lease: J. Gerstberger #1

SEC: 28 TWN: 15S RNG: 36W  
County: LOGAN  
State: Kansas  
Drilling Contractor: WW Drilling, LLC - Rig 12  
Elevation: 3318 GL  
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Pool: WILDCAT  
Job Number: 201

**Operation:**  
Uploading recovery & pressures

**DATE**  
August  
**10**  
2018

**DST #4**      **Formation: Myrick Station**      **Test Interval: 4608 - 4630'**      **Total Depth: 4630'**  
Time On: 06:09 08/10      Time Off: 13:11 08/10  
Time On Bottom: 08:42 08/10      Time Off Bottom: 10:42 08/10

### 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: J. GERSTBERGER  
Well Id: #1  
Location: 1661' FNL, 710' FWL, Sec 28-T15S-R36W, Logan County, Kansas  
License Number: API: 15-109-21560 Region: Logan County  
Spud Date: 08/01/2018 Drilling Completed: 08/12/2018  
Surface Coordinates: Lat: 38.7258143  
Long: -100.3330986  
Bottom Hole Vertical hole  
Coordinates:  
Ground Elevation (ft): 3318' K.B. Elevation (ft): 3326'  
Logged Interval (ft): 3600' To: RTD Total Depth (ft): 5000'  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

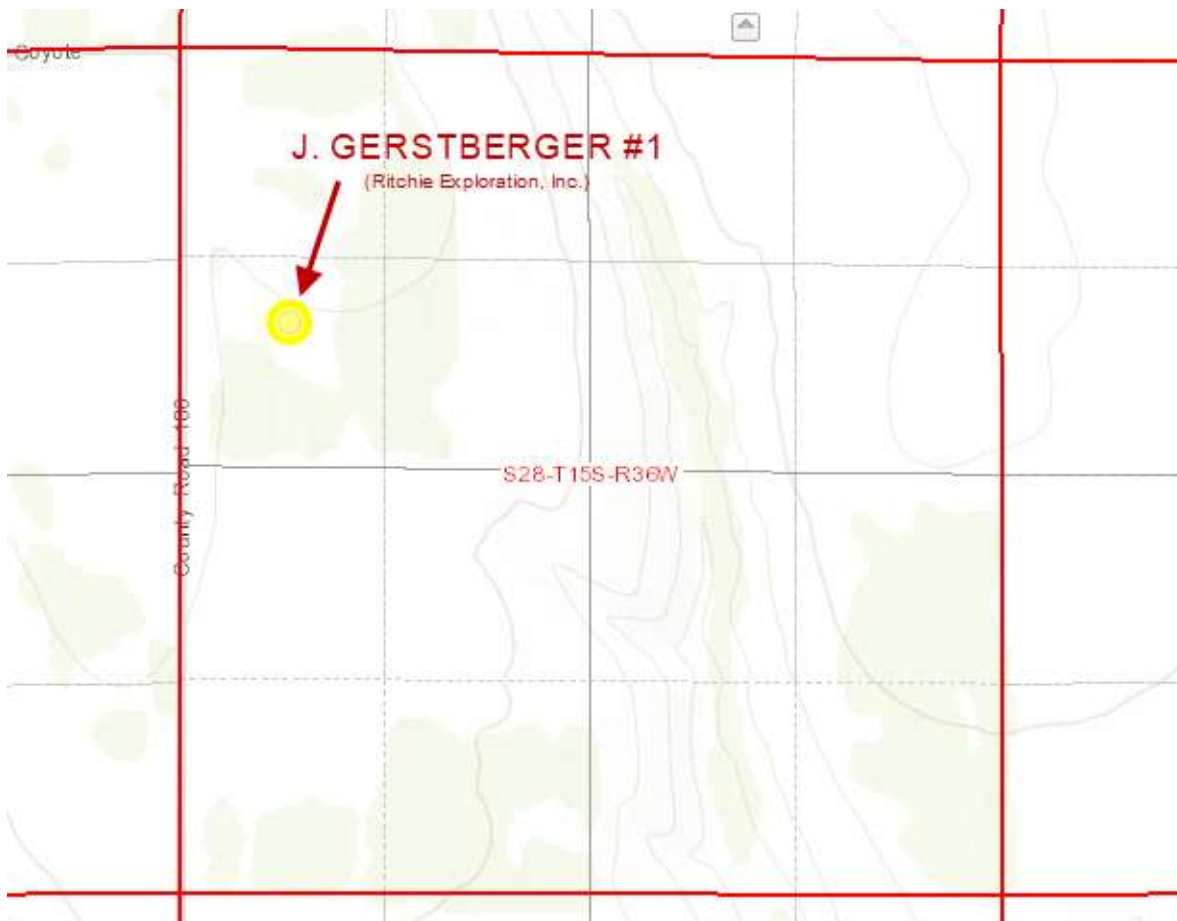
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

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 221' (KB) w/170sx cement.

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

Mud by: Mud-Co/Service Mud, Inc., Tony Maestas, 316-772-6679 (cell).

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

Logs by: Pioneer (DI w/GR, CND, Micro, and Sonic), Ian Mabb, 785-625-3858 (office).

RTD= 5000'

LTD= 4996'

## FORMATION TOPS

FORMATION	SAMPLE TOPS		LOG TOPS	
	Depth	Datum	Depth	Datum
Stotler	3657'	-331	3652'	-326
Heebner Shale	4034'	-729	4025'	-699
Lansing	4092'	-766	4082'	-756
Muncie Creek Shale	4266'	-940	4259'	-933
Stark Shale	4356'	-1030	4349'	-1023
Hushpuckney Shale	4400'	-1074	4393'	-1067
Base of KC	4441'	-1115	4436'	-1110
Marmaton	4474'	-1148	4470'	-1144
Altamont	4487'	-1161	4481'	-1155
Pawnee	4575'	-1249	4573'	-1247
Myrick Station	4620'	-1294	4614'	-1288
Fort Scott	4636'	-1310	4629	-1303
Cherokee Shale	4664'	-1338	4658'	-1332
Johnson	4748'	-1422	4743'	-1417
Morrow	4801'	-1475	4798'	-1472
Mississippian	4890'	-1564	4884'	-1558
RTD	5000'	-1674		
LTD			4996'	-1670

## 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

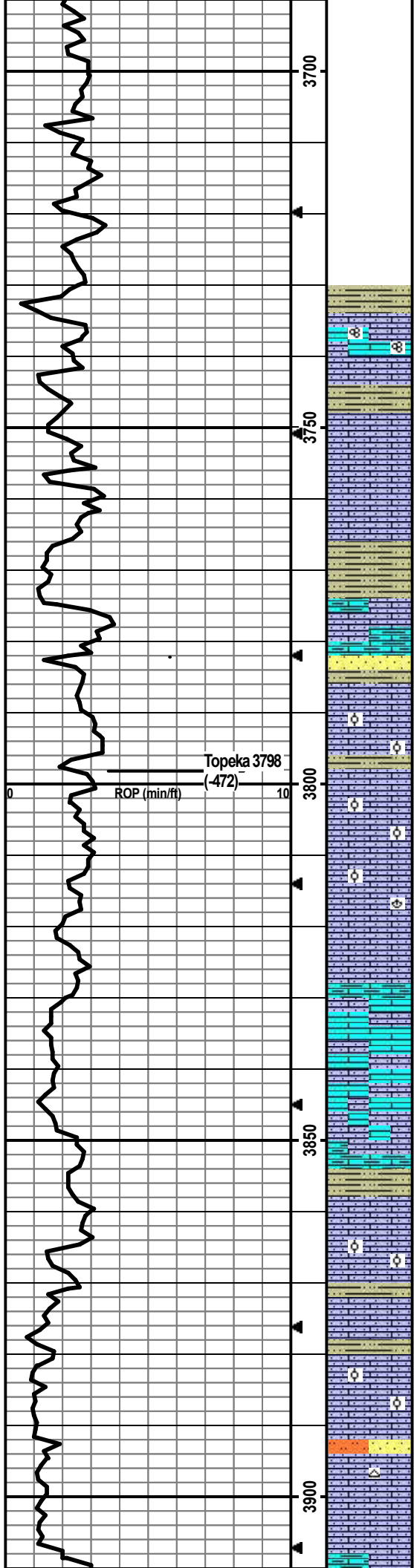
	Algae
	Amph
	Belm
	Bioclst
	Brach
	Bryozoa
	Cephal
	Coral
	Crin
	Echin
	Fish
	Foram
	Fossil
	Gastro
	Oolite

### 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
	Sity

Rate of Penetration (ROP) ROP (min/ft)	Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
	<p>3500</p> <p>3600</p> <p>3650</p> <p>3657</p>				<p><b>Morning Report Depth/Activity (7:00 am)</b></p> <p>08/01/2018, MIRU/Spud.  08/02, drilling @614'.  08/03, drilling @2468'.  08/04, drilling @3275'.  08/05, drilling @3790  08/06, TIH for DST#1 @4070'.  08/07, DST#2 @4140'.  08/08, drilling @4361'.  08/09, DST#3 @4530'.  08/10, TIH for DST#4 @4630'.  08/11, drilling @4755'.  08/12, CFS @5000' TD; electric logged.</p> <p><b>Anhydrite: Top @ 2598', Base @ 2617' (based on drill time).</b></p> <p>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.</p> <p><b>ROP Data begins @ 3600' on 08/04/2018</b></p> <p><b>Formation tops and lithologies have been adjusted to correlate to the electric log.</b></p>	<p><b>Displaced drilling mud @ 3450'.</b></p> <p>Mud-Co/Service Mud Inc. Check #1 @ 0' 08/01/18, predrilling instructions.</p> <p>Mud-Co/Service Mud Inc. Check #2 @ 2556' 08/03/18 08:25am  wt vis pH chl  9.5 32 7 69000  Filt LCM  n/c 2</p> <p>Mud-Co/Service Mud Inc. Check #3 @ 3319' 08/04/18 08:20am  wt vis pH chl  9.7 30 7 63000  Filt LCM  n/c 1</p> <p>Mud-Co/Service Mud Inc. Check #4 @ 3807' 08/05/18 07:15am  wt vis pH chl  8.7 61 11.0 4000  Filt LCM  7.2 3</p> <p>Mud-Co/Service Mud Inc. Check #5 @ 4070' 08/06/18 09:45am  wt vis pH chl  9.1 55 10.0 4500  Filt LCM  8.0 3</p> <p>Mud-Co/Service Mud Inc. Check #6 @ 4140' 08/07/18 09:40am  wt vis pH chl  9.3 50 10.0 5000  Filt LCM  8.8 2</p> <p>Mud-Co/Service Mud Inc. Check #7 @ 4391' 08/08/18 09:45am  wt vis pH chl  9.2 48 10.0 5500  Filt LCM  8.8 2</p> <p>Mud-Co/Service Mud Inc. Check #8 @ 4530' 08/09/18 09:45am  wt vis pH chl  9.4 53 10.5 7000  Filt LCM  9.6 1</p> <p>Mud-Co/Service Mud Inc. Check #9 @ 4630' 08/10/18 09:15am  wt vis pH chl  9.4 48 10.0 7400  Filt LCM  9.6 1</p> <p>Mud-Co/Service Mud Inc. Check #10 @ 4753' 08/11/18 07:00am  wt vis pH chl  9.3 58 9.0 8000  Filt LCM  9.6 1</p>



**Drill cutting samples at 10' intervals start at 3750'.**

SH: med gry, vry silty, slit carb, firm, fissile, no odor, ns.  
 LS: tan-bm, micro-med xtal, foss frags/fusln, some silty/sndy, some chalky, no vis por, no odor, ns.

SH: dk gry, silty, firm, no odor, ns.  
 LS: cm/tan/lt gry, micro-med, vry silty/sndy, some chalky, foss frags, no vis por, no odor, ns.

LS: cm/tan/lt gry, micro-med xtal, vry silty/sndy, foss frags, ppt-med in-xtal por, no odor, ns.

SH: lt-med gry, vry silty/sndy, carb, firm, fissile, no odor, ns.

LS: cm/tan/bm, micro-med xtal, foss frags, vry silty/sndy, arg, some f-m in-xtal por, no odor, ns.

SH: lt-dk gry/dk bm, vry silty, carb, firm, fissile. SS: lt gry/lt green-gry/bm-pink, vf-m, sr-wr, pred qtz, glac, arg, friable, no odor, ns.

LS: cm/tan, micro-med xtal, foss frags/dense ool, vry silty/sndy, f-m in-xtal por, no odor, ns.

LS: cm/tan/lt gry, micro-med xtal, foss frags/few dense ool, vry silty/sndy, f-m in-xtal por, no odor, ns.

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

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

LS: cm/tan/lt gry, micro-med xtal, some silty, foss frags, min ppt-fn in-xtal por, no odor, ns.

LS: cm/tan/min gry mottling, micro-f xtal, some vry silty/sndy, some chalky, foss frags, some ppt-f in-xtal por, no odor, ns.

LS: as above, some vry arg. SH: lt-dk gry, vry silty/sndy, some friable, firm, no odor, ns.

LS: cm/tan/lt gry, micro-med xtal, vry silty/sndy, foss frags/dense ool, min ppt-f in-xtal por, no odor, ns.

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

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

LS: cm/lt bm, micro-med xtal, silty/sndy, some chalky, min wht chert, foss frags, min ppt-f in-xtal por, no odor, ns. SS: gry, vf-f, sr-wr, vry arg, hard but friable, no odor, ns.

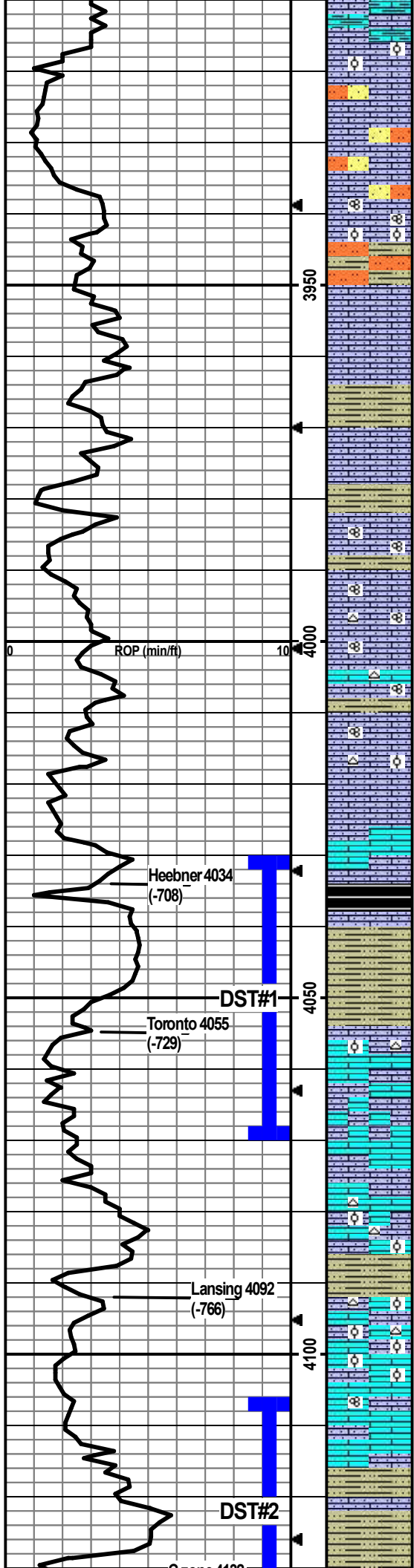
LS: cm/lt bm, micro-med xtal, vry silty/sndy, min chalky, some ppt-f in-xtal por, no odor, ns.

Survey Record  
 Deg @ Ft  
 0.5 @ 221'  
 0.75 @ 4070'  
 0.5 @ 5000'

Made 28 stand wiper/short trip at the 3907' connection.

CFS @ 3907  
 Stop/45"





LS: cm/lt bm/lt gry-bm, micro-f xtal, vry silty/sndy, foss frags/min dense ool, ppt-fn in-xtal, no odor, ns.

LS: cm/tan/lt gry, micro-med xtal, vry silty/sndy, foss frags, some ppt-med in-xtal por, no odor, ns.  
 SS/Sitstn: lt gry-gry, pred qtz, vf-f, vry arg, hard, friable, no odor, ns.

LS/SS/Sitstn: as above, no odor, ns.

LS: crm/lt bm/gry, micro-med xtal, foss frags/fusln/dense ool, vry silty/sndy some ppt-med in-xtal por, no odor, ns.  
 Sitstn: lt-med gry/bm, vry arg, slt carb, firm, some friable, no odor, ns.

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

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

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

SH: lt-med gry, vry silty/sndy, slt carb, soft-firm; some Sitstn: lt gry, pred qtz, vry arg, slt carb, firm, friable, no odor, ns.

LS: cm/gry, micro-med xtal, vry silty/sndy, foss frags/fusln, min ppt-med in-xtal por, no odor, ns.

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

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

SH: lt gry/bm, vry silty, firm, no odor, ns.

LS: cm/lt bm/lt gry, micro-med, vry silty/sndy, some chalky, min wht chert, foss frags/min fusln/min dense ool, some ppt-med in-xtal por, no odor, ns.

LS: cm/lt gry/lt bm, micro-med w/some crs, some vry silty/sndy, some chalky, foss frags/dense ool, some ppt-med in-xtal por, no odor, ns.

SH: dk gry/blk, slt carb, firm, fissile, no odor, ns.

SH: lt-dk gry/green-gry/bm, some vry silty, firm, fissile, no odor, ns.

LS: cm/lt bm/lt gry, micro-med w/some crs, some silty/sndy, some crs xtal calcite, min wht chert, foss frags/min dense ool, min ppt-f in-xtal por/some med oo-castic por, no odor, ns.

LS: cm/lt bm, micro-med xtal, some silty/sndy, some chalky, foss frags, 9 pcs w/ppt-f in-xtal por w/sfo, dul yel flor, slt crush odor, sfo.

LS: crm/lt bm, micro-med xtal, some sandy, some chalky, min wht chert, min f-med in-xtal por, 1 pce w/sfo w/ppt-med in-xtal por, dul yel flor, no odor, ssfo. SH: lt-dk gry/green-gry, some vry silty, soft-firm.

LS: crm/lt-med bm, micro-med xtal, foss frags/ool, some vry sndy, some chalky, min wht/lt gry chert, some f-m in-xtal/in-oolitic/med oo-castic por, 1 pce w/ppt-f in-xtal por w/sfo, dul yel flor, no odor, ssfo.

Abund ool in 60min smpl. 2 non-ool pcs w/sfo prob from above.

LS: cm/lt bm, micro-med xtal, foss frags/abund ool, some sndy, some chalky, min wht chert, ppt-med in-xtal/oo-castic por, 1 pce non-ool w/ppt-f in-xtal por w/sfo, dul yel flor, no odor, ssfo.

LS: crm/lt bm, micro-med xtal, some silty, some chalky, min foss frags/fusln/min ool, some vf-m in-xtal por por, no odor, ns.

SH: lt-dk gry/blk, some vry silty/sndy, vry sndy is friable, slt carb, firm-hard, fissile, no odor, ns.

LS: crm/lt brn/gry, micro-med xtal, some sndy, some chalky, foss frags/dense ool, no vis

CFS @ 4020'  
 Stop/30"/60"

**DST1) 4031-4070  
 Toronto**

30/45/45/60  
 1st) built to 2.7" blow; no BB.  
 2nd) built to 2.6"; no BB.  
 IFP 13-60#  
 ISIP 1094#  
 FFP 62-107#  
 FSIP 1076#  
 HP 1873-1874#  
 Recvd: 197' Total Fluid: 135'  
 OCWCM (1%O, 10%W, 89%M), 62'  
 WCM (45%W, 55%M).

CFS @ 4070'  
 Stop/30"/60"

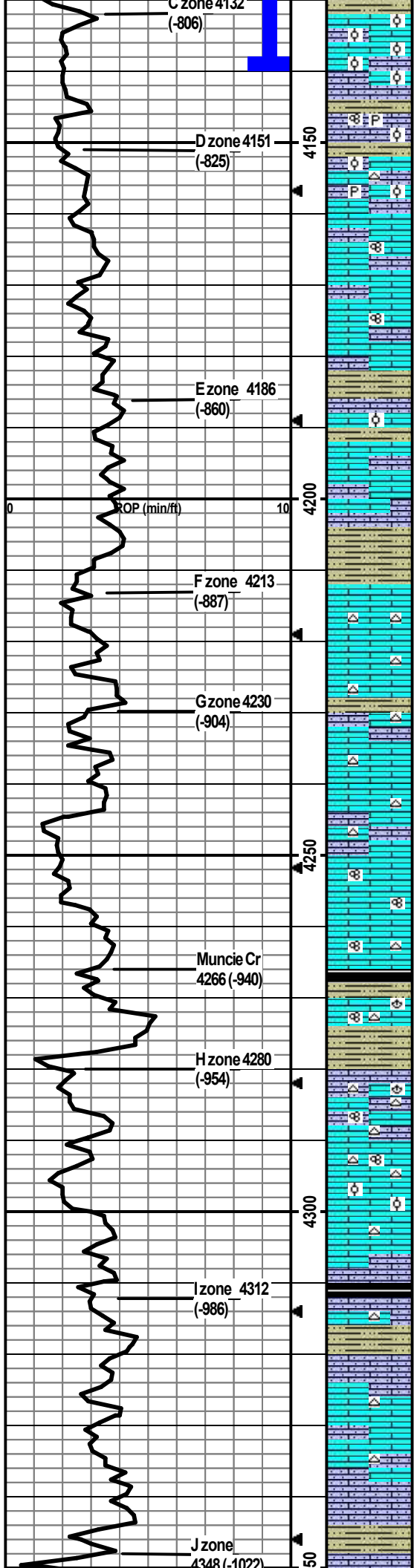
Pipe strap TOH for DST #1  
 at 4070' was 2.06' short to  
 the board.

CFS @ 4090'  
 Stop/30"/60"

CFS @ 4098'  
 Stop/30"/60"

**DST2) 4107-4140  
 Lansing C-zone**

30/45/45/60  
 1st) WSB built to 1.4" blow; no BB.  
 2nd) WSB built to 0.9"; no BB.  
 IFP 12-38#  
 ISIP 1107#  
 FFP 40-67#  
 FSIP 1076#  
 HP 1958-1969  
 Recvd: 125' Total Fluid: 63' OCM



por, no odor, ns.  
 LS: cm/tan, micro-med xtal, foss frags/abund ool, some chalky, some silty/sndy, 30+ pcs w/ppt-crs in-xtal/in-ool por w/sfo, dul flor, good odor, gsfo.

SH: lt-dk gry, some vry silty, slt carb, soft-firm, fissile.  
 LS: cm/lt brn, micro-med xtal, foss frags/fusln/min ool, some silty/sndy, some chalky, min pyritic, ppt-med in-xtal por, 2 ool pcs w/ppt-f in-ool por w/sfo, dul yel flor, no odor, ssfo.  
 LS: crm, micro-med xtal, some calcite xtals, foss frags/min ool, some silty/sndy, min pyritic, min wht chert, some ppt-med in-xtal por, 3 ool pcs w/ppt-f in-ool por w/sfo, no odor, ns.

LS: crm: micro-med xtal, some calcite xtals, min foss frags/fusln, some silty/sndy, some chalky, min f-m in-xtal por. no odor, ns.  
 LS: same as above, no odor, ns.  
 SH: med-dk gry/green-gry/lt brn, vry silty, slt carb, soft-firm, no odor, ns.  
 LS: crm/lt-med brn, micro-med xtal, foss frags/2 ool pcs, some chalky, some silty/sndy, 1 ool pcs w/ppt-f in-ool por w/sfo, dull yel flor, no odor, ssfo.  
 LS: crm/lt-med brn/lt gry, micro-med w/some calcite xtals, foss frags, some chalky, some silty/sndy, min f-med in-xtal por, no odor, ns.  
 LS: crm/lt brn, micro-med xtal, foss frags, some grainy, some chalky, some vry silty, no vis por, no odor, ns.  
 SH: lt-med gry/brn, vry silty/sndy, soft-firm, no odor, ns.  
 LS: crm/tan/lt gry, micro-med xtal, min foss frags, some silty, some chalky, good amt wht/lt gry chert, no vis por, no odor, ns.  
 LS: crm/lt brn/lt gry, micro-med xtal, some chalky, some wht/lt gry chert, foss frags, no vis por, no odor, ns.  
 LS: crm/tan, micro-med xtal, foss frags, some grainy, some silty, chalky, min wht/lt gry chert, no vis por, no odor, ns.  
 LS: crm/tan/lt gry, micro-f w/min med xtal, some sndy, some chalky, some wht/lt gry chert, some foss frags, no vis por, no odor, ns.  
 LS: crm/tan/lt gry, mostly micro w/some f-m xtal, some chalky, min foss frags/fusln, min f-m in-xtal por, no odor, ns.  
 LS: crm/lt brn/lt gry-brn, micro-med xtal, min foss frags/fusln, min brn/lt gry chert, min f-m in-xtal por, no odor, ns.  
 SH: lt-dk gry/blk, silty, slt carb, soft-firm, fissile.  
 LS: crm/tan/lt gry, micro-med xtal, some grainy, some chalky, wht chert, foss frags/fusln/brac, some f-m in-xtal por, no odor, ns.  
 SH: med-dk gry/blk, some silty, slt carb, soft-firm, fissile.  
 LS: crm/tan/lt gry, mostly micro-fn w/some med xtal, some silty/sndy, some chalky, foss frags/fusln/brac, good amt wht chert, min f-m in-xtal por, no odor, ns.  
 LS: crm/tan/lt gry, micro-med, foss frags/fusln/ool, some chalky, wht/lt gry chert w/fusln, min f-m in-xtal por, no odor, ns.  
 LS: crm/lt-m brn/gry, micro-med xtal, some chalky, some sndy, foss frags, min wht chert, no vis por, no odor, ns.  
 SH: med gry, vry silty/sndy, slt carb, firm, fissile.  
 LS: crm/lt gry/brn, micro-med xtal, some sndy, some chalky, foss frags, min wht chert, no vis por, no odor, ns.  
 SH: med-dk gry/dk red-brn, some vry silty, soft-firm.  
 LS: crm/lt brn/lt gry, micro-med, some sndy, some chalky, foss frags, wht chert, no vis por, no odor, ns.  
 LS: crm/lt-med brn/lt gry-brn, micro-med, foss frags/fusln, some silty, min wht chert, some chalky, no vis por, no odor, ns.  
 Flood of SH: lt-dk gry, green-gry, some vry silty, soft-firm, no odor, ns.

(1%O, 99%M), 62' WCM (5%W, 95%M).

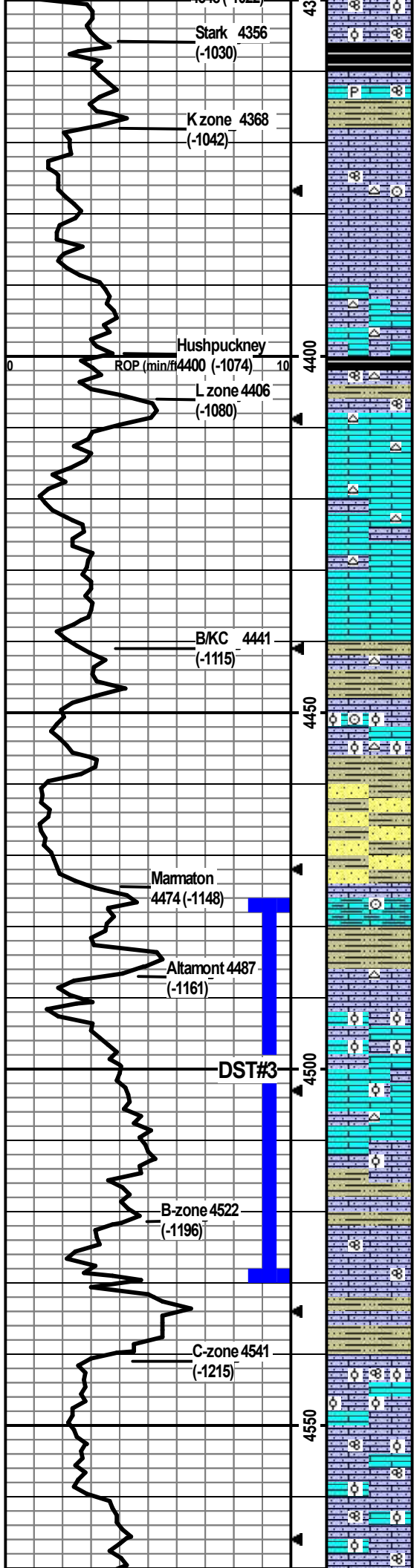
CFS @ 4140'  
Stop/30"/60"

CFS @ 4160'  
Stop/30"/60"

CFS @ 4216'  
Stop/30"/60"

CFS @ 4290'  
Stop/30"/60"

CFS @ 4330'  
Stop/30"/60"



LS: cm some w/gry mottling/lt-med bm, micro-med xtal, abund foss frags/fusln/ool, silty/sndy, some chalky, no vis por, no odor, ns.

SH: dk gry/blk, silty, slt carb, firm, fissile.  
 LS: cm/lt-med bm, micro-med xtal, foss frags/fusln, some vry silty/sndy, arg, min pyritic, no vis por, no odor, ns.

SH: med-dk gry/dk red-bm, some vry silty, firm, fissile.  
 LS: cm/tan/lt gry, micro-med xtal, vry silty/sndy, some chalky, foss frags/crin/fusln, min wht/lt gry chert, min f-m in-xtal por, no odor, ns.

LS: cm/tan/lt bm, micro-med xtal, foss frags, vry silty/sndy, chalky, min ppt-fn in-xtal por, no odor, ns.

LS: cm some w/gry mottling/lt-med bm, micro-med xtal, some chalky, some silty/sndy, foss frags, wht/lt gry chert, no vis por, no odor, ns.

SH: med-dk gry/blk/green-gry/brn/maroon, silty, slt carb, soft-firm, fissile.

LS: cm/lt-med bm/gry, micro-med xtal, some chalky, some silty/sndy, foss frags/fusln, wht/lt gry chert, no vis por, no odor, ns.

LS: cm/lt bm/gry, micro-med xtal, some chalky, some silty/sndy, foss frags, min wht/lt gry chert, 2 pcs w/med-crs in-xtal por w/sfo, dul yel flor, no odor, ssfo.

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

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

SH: med-dk gry/green-gry/brn/red brn, some vry silty, slt carb, soft-firm, no odor, ns. LS: cm/lt bm/lt gry, micro-med xtal, some silty, some chalky, min wht chert, foss frags, no vis por, no odor, ns.

LS: lt brn/lt gry brn, micro-med xtal, some silty/sndy, some gry chert, foss frags/crin/dense ool, min ppt-f in-xtal/in-ool por, 1 ool pce w/ppt-f in-ool por w/sfo, dul yel flor, no odor, ssfo.

SH: med-dk gry/brn/red brn, some vry silty, soft-firm, fissile.

SH: as above w/SS: wht/lt gry, vf-f, sr-wr, pred qtz, arg, friable, no odor, ns.

LS: cm/lt bm-bm, micro-med xtal, some silty, some arg, foss frags/crin, no vis por, no odor, ns. SH/SS as above, no odor, ns.

SH: lt-dk gry/lt gry-green, maroon, brn, some vry silty, firm, fissile, no odor, ns. LS: cm/lt bm, micro-med xtal, some vry silty/sndy, min lt gry chert, foss frags, some ppt-m in-xtal por, no odor, ns.

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

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

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

SH: med-dk gry/blk, silty, firm, fissile.

LS: cm/lt-med bm, micro-med xtal, bm is blocky tex, some vry silty/sndy, some chalky, foss frags/fusln, min ppt-f in-xtal por, no odor, ns.

SH: med-dk gry/bm, silty, slt carb, soft-firm, no odor, ns.

LS: cm/lt bm/lt-med gry, micro-med xtal, abund chalk, some vry silty/sndy, foss frags/fusln/dense ool, min ppt-f in-xtal/in-ool por, no odor, ns.

LS: cm w/some gry mottling/lt gry-bm, micro-med xtal, some vry silty/sndy, some chalky, foss frags/fusln/ool, 1 pce wf-m in-xtal por w/sfo, dul yel flor, no odor, ssfo.

LS: as above w/increase in chalky, 1 pce wf-m in-xtal por w/sfo, dul yel flor, no odor, ssfo.

CFS @ 4360'  
 Stop/30"/60"

CFS @ 4390'  
 Stop/30"/60"

CFS @ 4420'  
 Stop/30"/60"

**DST3) 4476-4530**  
**Altamont**  
 30/45/45/60  
 1st WSB built to 1" blow; no BB.  
 2nd WSB; no BB.  
 IFP 15-32#  
 ISIP 1194#  
 FFP 33-50#  
 FSIP 1037#  
 HP 2057-2073  
 Recvd: 65' Mud 100%.

CFS @ 4510'  
 Stop/30"/60"

CFS @ 4530'  
 Stop/30"/60"

CFS @ 4550'  
 Stop/30"/60"



Pawnee 4575  
(-1249)

Myrick Station  
4620 (-1294)

Ft. Scott 4636  
(-1310)

Cherokee  
4664 (-1338)

Johnson 4748  
(-1422)

DST#4

ROP (min/ft)

0 10

4600

4650

4700

4750

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

LS: crm/lt-m brn/gry, micro-med xtal, some silty/sndy, some chalky, foss frags/fusn/ool, 1 ool pce w/ppt-m in-xtal por w/sfo, dul yel flor, no odor, ssfo.

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

LS: lt-med brn/lt-med gry, micro-f xtal, vry silty/sndy, some chalky, lt gry/lt brn chert, arg, min foss frags/fusn, no vis por, no odor, ns.

LS: cm/lt brn/gry, micro-med xtal, vry silty/sndy, some chalky, gry arg, wht/lt gry chert, foss frags/fusn, no vis por, no odor, ns.

SH: med-dk gry/blk, some vry silty, slt carb, soft-firm, fissile, no odor, ns.

LS: cm/lt-med brn, micro-med xtal, vry silty/sndy, some chalky, some arg, lt gry chert, foss frags/fusn/crin/ool, 17 pcs 30min and 15 in 60min w/ppt-med in-xtal/in-ool por w/sfo, dul yel flor, gd odor, gsfo.

SH: med-dk gry/blk/lt green-gry, some vry silty, slt carb, soft-firm.  
LS: crm/lt gry/lt brn, micro-fn xtal/min med, some crm w/gry inclusions, some vry silty/sndy, some chalky, min foss frags/fusn/dense ool, no vis por, no odor, ns.

LS: lt-med brn, micro-f xtal, some silty/sndy, lt brn/lt gry chert, min foss frags, no vis por, no odor, ns.

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

SH: med-dk gry/blk/bm, some vry silty, slt carb, firm, fissile, no odor, ns.

LS: crm/lt-med gry-brn, micro-med, some sndy, some chalky, some arg, foss frags/crin/brac/min ool, no vis por, no odor, ns.

SH: med-dk gry, slt carb, some silty, firm, fissile, no odor, ns.

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

SH: med-dk gry, slt carb, silty, firm, fissile, no odor, ns.

LS: lt gry/lt-med brn, micro-med xtal, some vry silty, foss frags/fusn, no vis por, 1 pce w/ppt-f in-xtal por w/sfo, dul yel flor, no odor, ssfo. SH: lt-dk gry, some vry silty, slt carb, soft-firm, fissile, no odor, ns.

LS: crm/lt gry/lt brn, micro-fn xtal, vry silty, some chalky, min foss frags, no vis por, no odor, ns.

SH: lt-dk gry, some silty, slt carb, soft-firm, fissile, no odor, ns.

LS: crm/lt gry-brn, micro-med xtal, silty, some arg, foss frags, no vis por, no odor, ns.

SH: med-dk gry, some silty, slt carb, firm, fissile, no odor, ns.

LS: crm/lt-m brn/lt-m gry, micro-med xtal, some vry silty, foss frags/crin, no vis por, no odor, ns.

LS: lt-m brn/gry, micro-med xtal, some silty, some glassy, min wht/bm chert, foss frags, no vis por, no odor, ns.

LS: crm/lt-m brn/lt gry, micro-med xtal, some vry silty, min chalky, some arg, foss frags, no vis por, no odor, ns.

SH: med-dk gry, some silty, soft-firm, fissile, no odor, ns.

LS: crm/lt gry/lt brn, micro-med, some silty, some chalky, brn chert, foss frags, no vis por, no odor, ns.

LS: crm/lt-m brn/lt gry, micro-med xtal, some xtal calcite, min chalk, min foss frags, no vis por, no odor, ns.

LS: lt-med brn/lt gry, micro-f w/some med xtal, silty/sndy, min brn chert, min foss frags, no vis por, no odor, ns.

LS: lt-dk gry/lt brn, micro-med xtal, some vry silty, some vry arg, dk brn/dk gry-blk chert, some foss frags/fusn/crin, no vis por, no odor, ns.

CFS @ 4598'  
Stop/30"/60"

**DST4) 4608-4630  
Myrick Station**

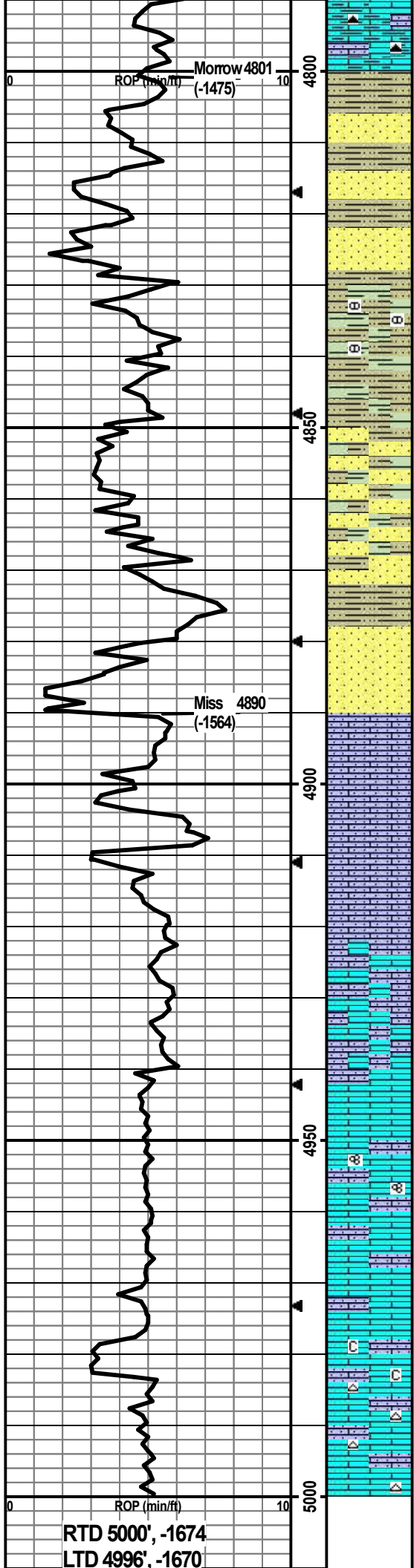
30/30/30/30  
1st WSB built to 1/2", died back to 0.15"; no BB.  
2nd) No blow, flushed tool, no blow; no BB.  
IFP 13-15#  
ISIP 462#  
FFP 19-26#  
FSIP 108#  
HP 2275-2240#  
Recvd: 1' O, 10' OCM (6%O, 94%M).

CFS @ 4630'  
Stop/30"/60"

CFS @ 4660'  
Stop/30"/60"

CFS @ 4690'  
Stop/30"/60"

CFS @ 4770'  
Stop/30"/60"



LS: cm/lt-dk gry/lt-med bm, some silty, some vry arg, min foss frags, some dk bm/orange chert, no vis por, no odor, ns.

SS: lt-gry/lt-dk gry/lt-med bm, vf-f, pred qtz, min glac, some arg, hard, no vis por, no odor, ns. Min SH: dk gry/min mustard yel, vry silty, carb, firm-hard, no odor, ns.

SS: lt gry-green/lt gry/lt bm, vf-m, pred qtz, vry glac, vry arg, soft-hard, some friable, no vis por, no odor, ns. SH: lt gry-green/lt gry, vry silty/sndy, slt carb, soft-firm.

SS: wht/lt gry-green/lt gry, vf-m, pred qtz, glac, some arg, firm-hard, some friable, no vis por, no odor, ns. SH: lt-gry green/lt-med gry/mustard yel, slt carb, firm, fissile.

SH: lt-dk gry/gry-green/mustard yel, bm LS nodules, slt carb, some silty, firm, no odor, ns.

Flood of SH: abund lt gry/med gry/gry green/mustard yel/lt bm, greasy, some silty, firm, no odor, ns.

SH: as above; SS: lt gry/lt green, f-m pred qtz, sa-r, carb, glac, hard, some friable, no odor, ns.

SH: lt-med gry/gry green/mustard yel/orange red, some vry silty/sndy, slt carb, firm. SS: wht/lt gry/green/orange red, f-m, sa-r, carb, some glac, hard, some friable, no odor, ns.

SS: as above; SH: lt-dk gry/gry green/red bm/orange bm, some vry silty/sndy, carb, firm, no odor, ns.

SS: wht/lt gry, vry clean, some blk mineral stringers, vf-f qtz, some carb, hard, semi friable, no odor, ns.

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

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

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

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

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

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

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

LS: as above w/cm/lt bm chert, no odor, ns.

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

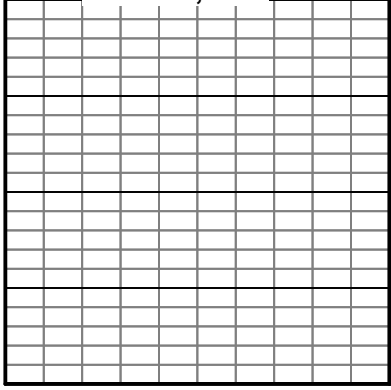
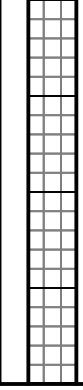
TD @5000'

CFS @4830'  
Stop/30"/60"

CFS @4895'  
Stop/30"/60"

CFS @5000'  
Stop/30"/60"  
Made 10 std ST, CTCH 1 hr, TOH  
for logging.

RTD 5000', -1674  
LTD 4996', -1670

	50				
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### #1 J. Gerstberger

1,661' FNL & 710' FWL

11' S & 50' E of N/2 SW NW Section 28-15S-36W

Logan County, Kansas

API# 15-109-21560-0000

Elevation: GL: 3,318', KB: 3,326'

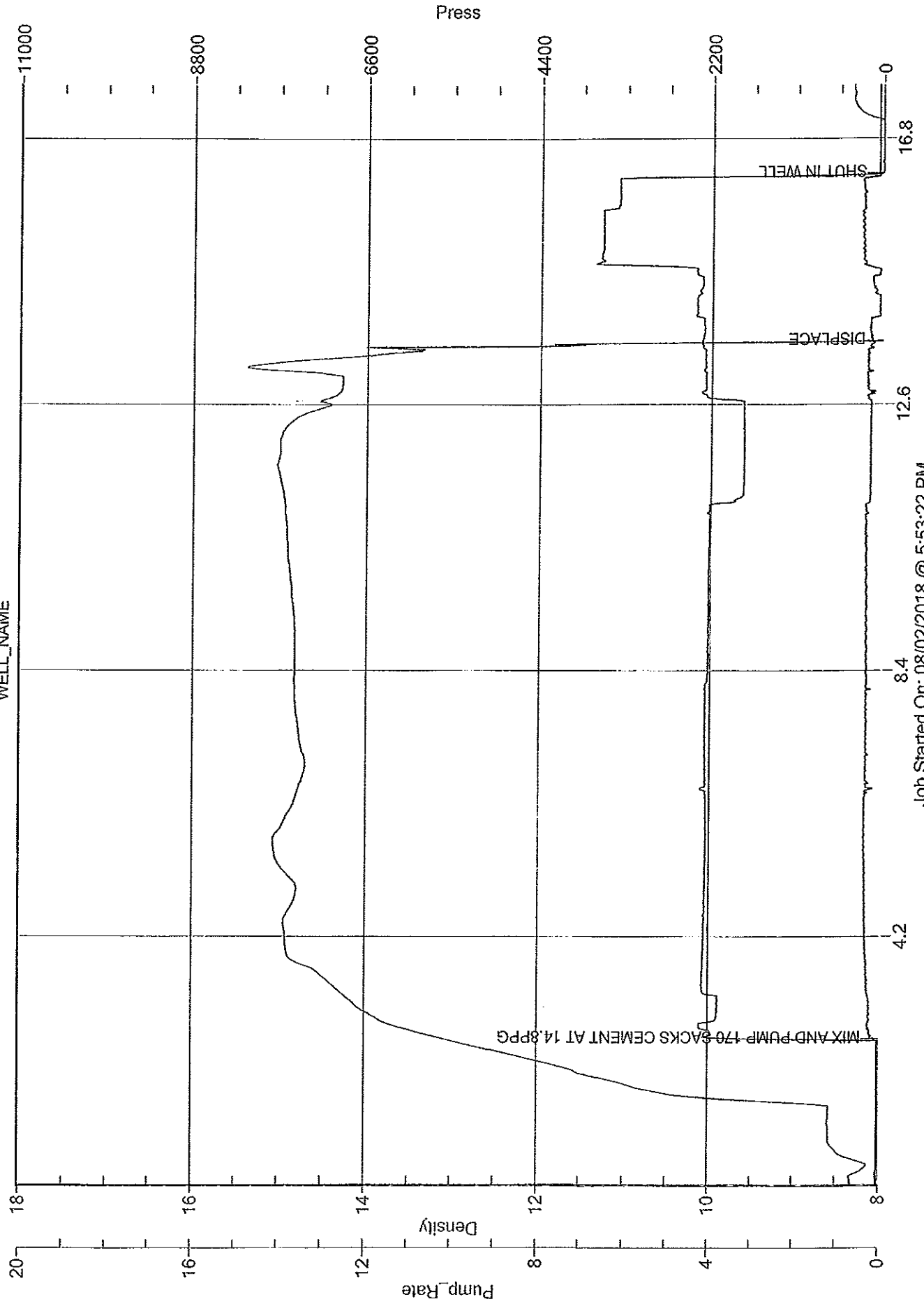
Sample Tops			Ref. Well
Anhydrite	2598	+728	+3
B/Anhydrite	2617	+709	+1
Stotler	3657	-331	+4
Heebner	4034	-708	-7
Toronto	4055	-729	-5
Lansing	4077	-751	-3
Muncie	4266	-940	-12
Stark	4356	-1030	-10
Hush	4400	-1074	-8
BKC	4441	-1115	-8
Marmaton	4474	-1148	-2
Altamont	4492	-1166	-1
Pawnee	4575	-1249	+1
Myrick	4620	-1294	+2
Ft. Scott	4636	-1310	+1
Cherokee	4664	-1338	+3
Johnson	4748	-1422	+5
Morrow	4799	-1473	+7
Mississippian	4912	-1586	+15
RTD	5000	-1674	







Ritchie Exploration  
WELL\_NAME




Job Started On: 08/02/2018 @ 5:53:22 PM



HURRICANE SERVICES INC

Customer	Ritchie exploration	Lease & Well #	J Gerstberger # 1		Date	8/12/2018	
Service District	Oakley,KS	County & State	Logan,KS	Legals S/T/R	28-15-36	Job #	
Job Type	PTA	<input type="checkbox"/> PROD	<input type="checkbox"/> INJ	<input type="checkbox"/> SWD	New Well?	<input type="checkbox"/> YES <input type="checkbox"/> No	Ticket #
Equipment #	Driver	Job Safety Analysis - A Discussion of Hazards & Safety Procedures					
163/250	Lupe	<input type="checkbox"/> Hard hat	<input type="checkbox"/> Gloves	<input type="checkbox"/> Lockout/Tagout	<input type="checkbox"/> Warning Signs & Flagging		
230	Paul	<input type="checkbox"/> H2S Monitor	<input type="checkbox"/> Eye Protection	<input type="checkbox"/> Required Permits	<input type="checkbox"/> Fall Protection		
28	Dane	<input type="checkbox"/> Safety Footwear	<input type="checkbox"/> Respiratory Protection	<input type="checkbox"/> Slip/Trip/Fall Hazards	<input type="checkbox"/> Specific Job Sequence/Expectations		
		<input type="checkbox"/> FRC/Protective Clothing	<input type="checkbox"/> Additional Chemical/Add PPE	<input type="checkbox"/> Overhead Hazards	<input type="checkbox"/> Muster Point/Medical Locations		
		<input type="checkbox"/> Hearing Protection	<input type="checkbox"/> Fire Extinguisher	<input type="checkbox"/> Additional concerns or issues noted below			
<b>Comments</b>							
All cement and chemicals delivered from the Oakley,KS service center							
Product/Service Code	Description	Unit of Measure	Quantity			Net Amount	
C001	Heavy Equip. One Way	ml	116.00			\$320.46	
C002	Light Equip. One Way	ml	58.00			\$73.95	
C003	Ton Mileage - One way	mi	624.00			\$689.62	
C019	Cement Pump	ea	1.00			\$807.60	
CP010	60/40 Pozmix Cement	sack	240.00			\$2,821.40	
CP016	Banfonte Gel	lb	826.00			\$210.63	
CP020	FLO-Seal	lb	60.00			\$109.65	
CP057	Wooden 8 5/8"	ea	1.00			\$91.80	
Customer Section: On the following scale how would you rate Hurricane Services Inc.?						Net: \$4,924.90	
Based on this job, how likely is it you would recommend HSI to a colleague?						Total Taxable \$ - Tax Rate:	
<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10   Extremly Unlky						State tax laws deem certain products and services used on new wells to be sales tax exempt. Hurricane Services relies on the customer provided well information above to make a determination if services and/or products are tax exempt.	
						Sale Tax: \$ -	
						Total: \$ 4,924.90	
HSI Representative: <i>Dane Retzlaff</i>							

**TERMS:** Cash in advance unless Hurricane Services Inc. (HSI) has approved credit prior to sale. Credit terms of sale for approved accounts are total invoice due on or before the 30th day from the date of invoice. Past due accounts shall pay interest on the balance past due at the rate of 1 1/2% per month or the maximum allowable by applicable state or federal laws. In the event it is necessary to employ an agency and/or attorney to effect the collection, Customer hereby agrees to pay all fees directly or indirectly incurred for such collection. In the event that Customer's account with HSI becomes delinquent, HSI has the right to revoke any discounts previously applied in arriving at net invoice price. Upon revocation, the full invoice price without discount is immediately due and subject to collection. Prices quoted are estimates only and are good for 30 days from the date of issue. Pricing does not include federal, state, or local taxes, or royalties and stated price adjustments. Actual charges may vary depending upon time, equipment, and material ultimately required to perform these services. Any discount is based on 30 days net payment terms or cash. **DISCLAIMER NOTICE:** Technical data is presented in good faith, but no warranty is stated or implied. HSI assumes no liability for advice or recommendations made concerning the results from the use of any product or service. The information presented is a best estimate of the actual results that may be achieved and should be used for comparison purposes and HSI makes no guarantee of future production performance. Customer represents and warrants that well and all associated equipment in acceptable condition to receive services by HSI. Likewise, the customer guarantees proper operational care of all customer owned equipment and property while HSI is on location performing services. The authorization below acknowledges the receipt and acceptance of all terms/conditions stated above, and Hurricane has been provided accurate well information in determining taxable services.

x  CUSTOMER AUTHORIZATION SIGNATURE

**TREATMENT REPORT**



**HURRICANE SERVICES INC**

Customer: Ritche exploration	Date: 8/12/2018	Ticket #: ICT1287
Field Rep: Calvin		
Address: 8100 E 22nd st N# 700		
City, State:		
County, Zip:		

Field Order No.:		Open Hole:		Perf Depths (ft)	Perfs
Well Name:	J. Gertberger # 1	Casing Depth:			
Location:	Logan Co KS	Casing Size:			
Formation:		Drill pipe depth:			
Type of Service:	Cement	Drill pipe size:	4 1/2		
Well Type:	OIL	Liner Depth:			
Age of Well:	New	Liner Size:			
Packer Type:		Liner Top:			
Packer Depth:		Liner Bottom:			
Treatment Via:		Total Depth:			
				Total Perfs	0

TIME	INJECTION RATE		PRESSURE		REMARKS	PROP (lbs)	HCL (gls)	FLUID (bbls)
	FLUID	N2/CO2	STP	ANNULUS				
8:30 PM					Arrive on location			
8:35 PM					Safety meeting			
8:45 PM					Rig up			
10:18 PM	3.5		260.0		pump water ahead			10.00
10:22 PM	4.0		260.0		Mix 60 sks of 60/40 Poz mix 4% gel .25 flo 1.43 yield			8.00
10:27 PM	4.0		230.0		Displace to 2610			37.00
10:30 PM					Rig pulls to 1370			
11:19 PM	4.0		270.0		Mix 100 ske			26.00
11:23 PM	4.0		260.0		Displace to 1370			19.00
11:28 PM					Rig pulls to 270			
12:32 AM	4.0		220.0		Mix 60 sks			8.00
12:37 AM	2.0		200.0		Displace			3.60
12:40 AM					Rig comes out of hole			
2:40 AM					Drop plug			
2:42 AM	3.0		140.0		Plug Rh with 30 sks and top 40 with 10 sks			10.00
2:48 AM					Wash up			
2:50 AM					Rig down			
3:15 AM					Depart			

Max Fl. Rate	Avg Fl. Rate	Max PSI	Avg PSI
4.0	3.6	270.0	227.5

**PRODUCTS USED**

Pumped 240 sacks 60/40 poz with 4% gel, 1/4#/sk flo

Treater: Dane Retzlaff

Customer: