

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
--	---

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)</i> <i>(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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## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration Inc**

8100 E 22ND St N #700  
Wichita, KS 67278

ATTN: Bob Peterson

**Hendrich - LaRosh #1**

**34-8S-14W Osborne,KS**

Start Date: 2018.12.12 @ 15:47:00

End Date: 2018.12.12 @ 21:22:30

Job Ticket #: 64743                      DST #: 1

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.12.19 @ 10:32:06

Ritchie Exploration Inc

34-8S-14W Osborne,KS

Hendrich - LaRosh #1

DST # 1

Severy Sand

2018.12.12



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

ATTN: Bob Peterson

Job Ticket: 64743

**DST#: 1**

Test Start: 2018.12.12 @ 15:47:00

## GENERAL INFORMATION:

Formation: **Severy Sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:23:50

Time Test Ended: 21:22:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Martine Salinas

Unit No: 82

**Interval: 2778.00 ft (KB) To 2800.00 ft (KB) (TVD)**

Reference Elevations: 1888.00 ft (KB)

Total Depth: 2800.00 ft (KB) (TVD)

1883.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8959**

**Inside**

Press@RunDepth: 24.66 psig @ 2779.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.12.12

End Date:

2018.12.12

Last Calib.:

2018.12.12

Start Time: 15:47:01

End Time:

21:22:30

Time On Btm:

2018.12.12 @ 17:23:40

Time Off Btm:

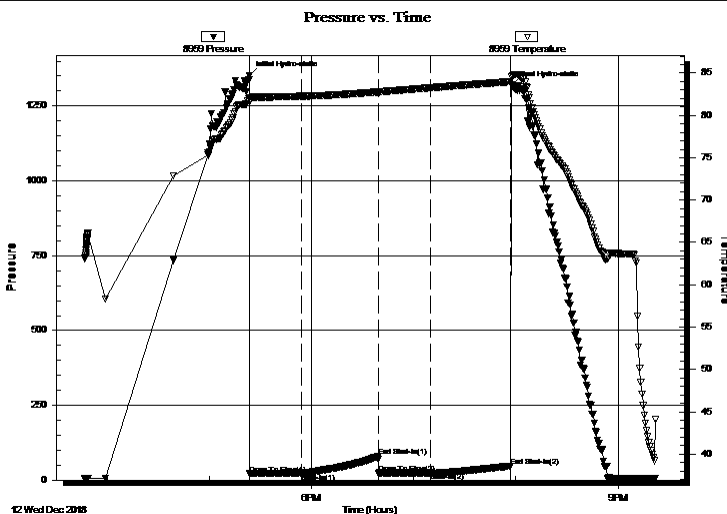
2018.12.12 @ 19:57:20

TEST COMMENT: 30-IF-Surface blow built to 1/8"

45-ISI-No blow

30-FF-No blow

45-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1352.60	82.05	Initial Hydro-static
1	20.79	81.63	Open To Flow (1)
31	24.03	82.26	Shut-In(1)
76	79.22	82.77	End Shut-In(1)
76	22.77	82.75	Open To Flow (2)
106	24.66	83.26	Shut-In(2)
153	47.33	83.98	End Shut-In(2)
154	1319.42	84.55	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
2.00	100% Mud	0.01
0.00	Oil spots in tool	0.00

## Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64743

**DST#: 1**

ATTN: Bob Peterson

Test Start: 2018.12.12 @ 15:47:00

## Tool Information

Drill Pipe:	Length: 2595.00 ft	Diameter: 3.80 inches	Volume: 36.40 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: 37.28 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	2778.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	22.00 ft			
Tool Length:	50.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			2755.00	
Hydraulic tool	5.00	1113		2760.00	
Jars	5.00	01-07		2765.00	
Safety Joint	3.00	-001		2768.00	
Packer	5.00			2773.00	28.00 Bottom Of Top Packer
Packer	5.00			2778.00	
Stubb	1.00			2779.00	
Recorder	0.00	8959	Inside	2779.00	
Recorder	0.00	8734	Outside	2779.00	
Perforations	16.00			2795.00	
Bullnose	5.00			2800.00	22.00 Bottom Packers & Anchor

**Total Tool Length: 50.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64743

**DST#: 1**

ATTN: Bob Peterson

Test Start: 2018.12.12 @ 15:47:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 63.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
2.00	100% Mud	0.010
0.00	Oil spots in tool	0.000

Total Length: 2.00 ft      Total Volume: 0.010 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

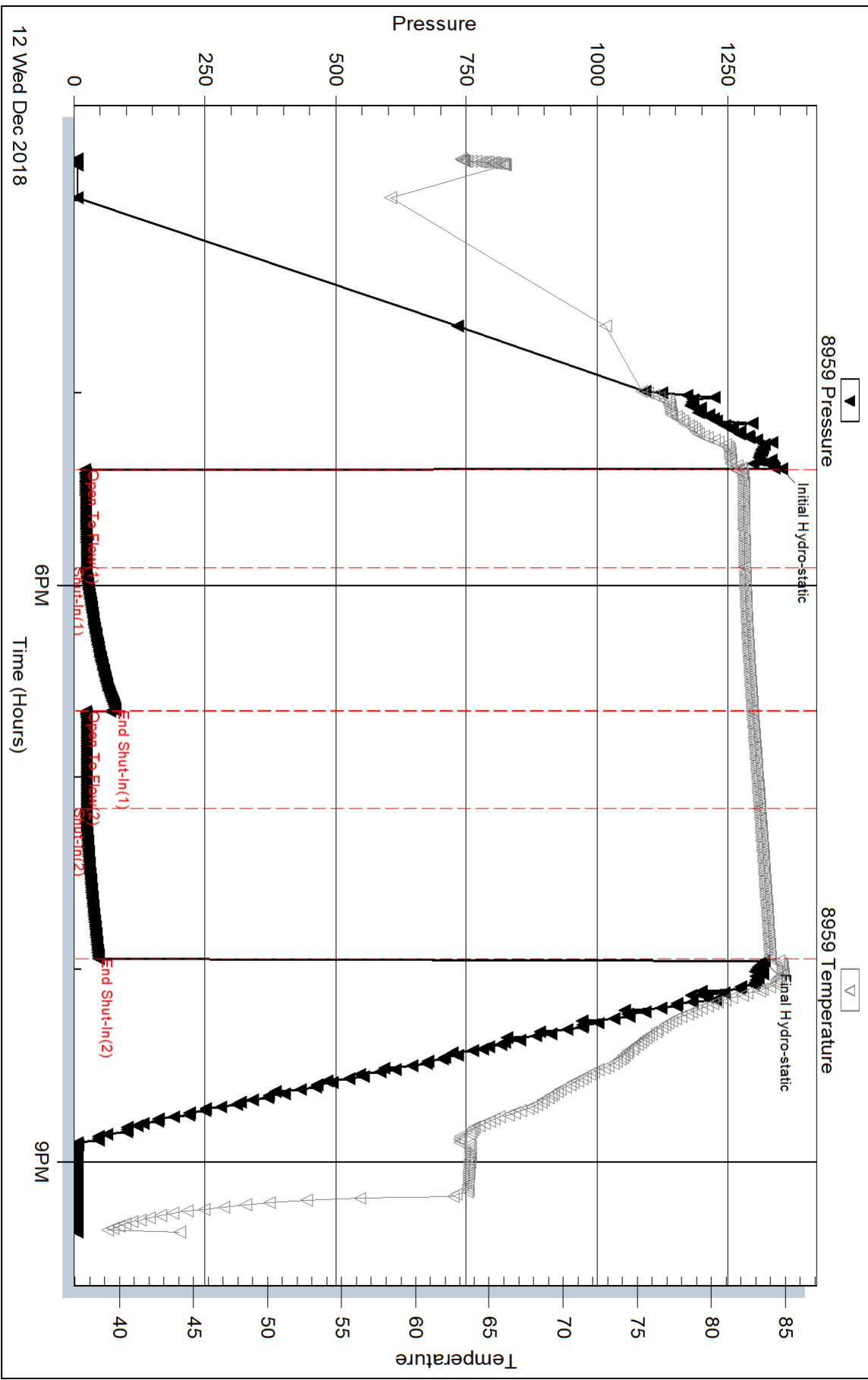
Laboratory Name:

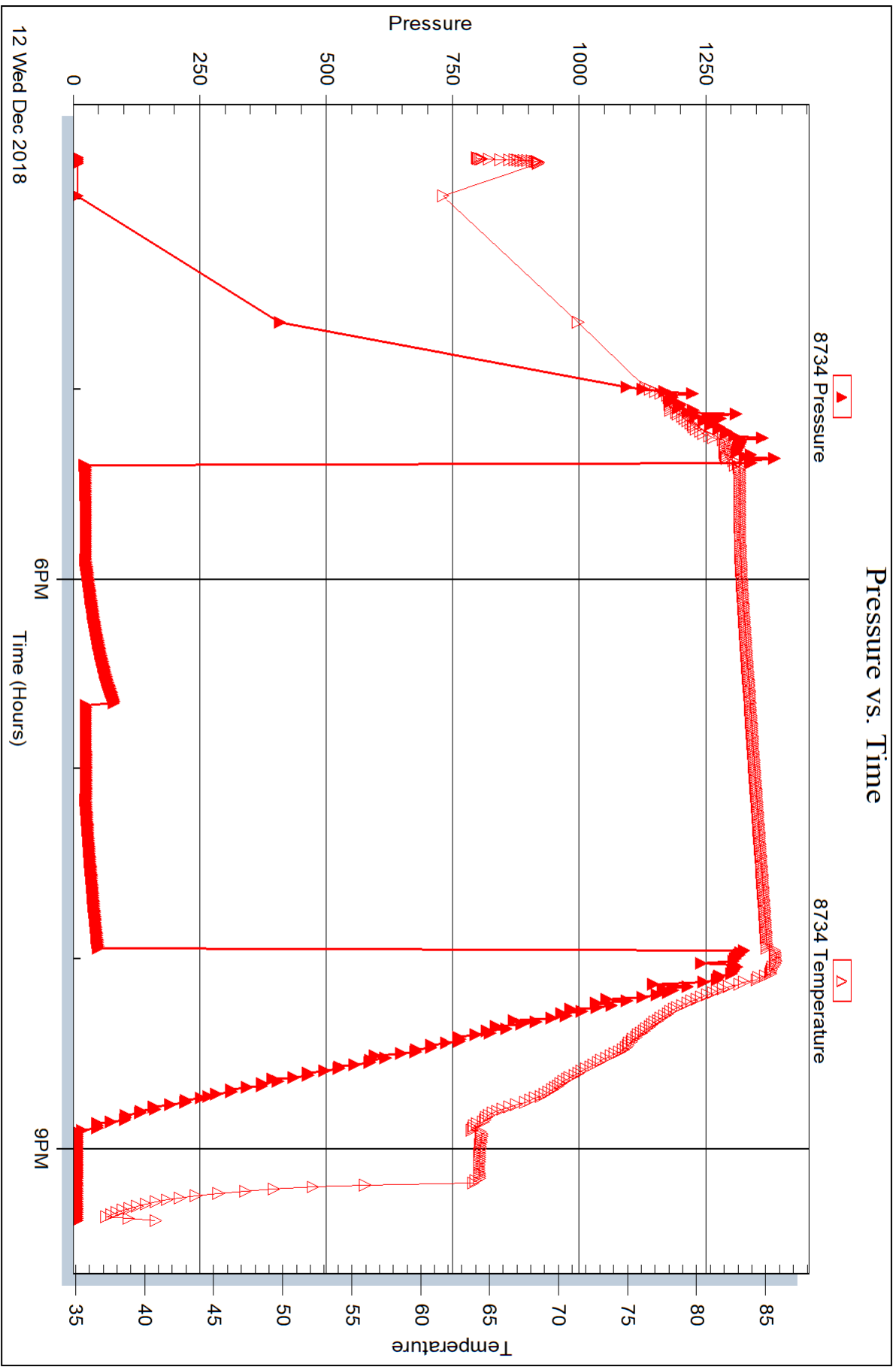
Laboratory Location:

Recovery Comments:



### Pressure vs. Time







## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration Inc**

8100 E 22ND St N #700  
Wichita, KS 67278

ATTN: Bob Peterson

**Hendrich - LaRosh #1**

**34-8S-14W Osborne,KS**

Start Date: 2018.12.13 @ 08:05:00

End Date: 2018.12.13 @ 14:09:20

Job Ticket #: 64744                      DST #: 2

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.12.19 @ 10:31:45

Ritchie Exploration Inc

34-8S-14W Osborne,KS

Hendrich - LaRosh #1

DST # 2

Topoka

2018.12.13



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22ND St N #700  
Wichita, KS 67278  
ATTN: Bob Peterson

**34-8S-14W Osborne, KS**

**Hendrich - LaRosh #1**

Job Ticket: 64744 **DST#: 2**

Test Start: 2018.12.13 @ 08:05:00

## GENERAL INFORMATION:

Formation: **Topeka**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 09:32:00  
 Time Test Ended: 14:09:20  
 Interval: **2866.00 ft (KB) To 2886.00 ft (KB) (TVD)**  
 Total Depth: 2886.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Martine Salinas  
 Unit No: 82  
 Reference Elevations: 1888.00 ft (KB)  
 1883.00 ft (CF)  
 KB to GR/CF: 5.00 ft

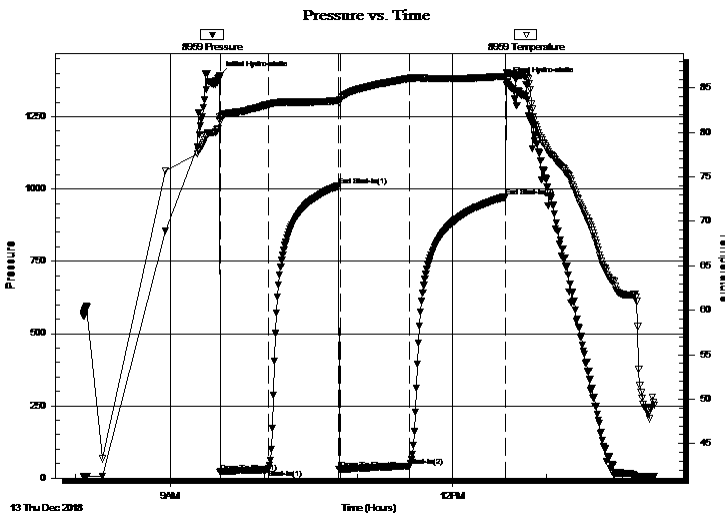
## Serial #: 8959

Inside

Press@RunDepth: 42.11 psig @ 2867.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2018.12.13 End Date: 2018.12.13 Last Calib.: 2018.12.13  
 Start Time: 08:05:01 End Time: 14:09:20 Time On Btm: 2018.12.13 @ 09:31:50  
 Time Off Btm: 2018.12.13 @ 12:35:00

TEST COMMENT: 30-IF-Surface blow built to 1 3/4"  
 45-ISI-No blow  
 45-FF-Surface blow @ 4 mins built to 1"  
 60-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1391.05	81.72	Initial Hydro-static
1	21.17	81.26	Open To Flow (1)
31	29.52	83.13	Shut-In(1)
76	1010.29	83.58	End Shut-In(1)
77	31.31	83.63	Open To Flow (2)
121	42.11	86.08	Shut-In(2)
183	972.60	86.32	End Shut-In(2)
184	1370.17	86.72	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
30.00	SOS/MCW 2%O, 23%M, 75%W	0.15

\* Recovery from multiple tests

## Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64744

**DST#: 2**

ATTN: Bob Peterson

Test Start: 2018.12.13 @ 08:05:00

## Tool Information

Drill Pipe:	Length: 2687.00 ft	Diameter: 3.80 inches	Volume: 37.69 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 46000.00 lb
			<u>Total Volume: 38.57 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	27.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	2866.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	20.00 ft			
Tool Length:	48.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Shut In Tool	5.00			2843.00	
Hydraulic tool	5.00	1113		2848.00	
Jars	5.00	01-07		2853.00	
Safety Joint	3.00	-001		2856.00	
Packer	5.00			2861.00	28.00 Bottom Of Top Packer
Packer	5.00			2866.00	
Stubb	1.00			2867.00	
Recorder	0.00	8959	Inside	2867.00	
Recorder	0.00	8734	Outside	2867.00	
Perforations	14.00			2881.00	
Bullnose	5.00			2886.00	20.00 Bottom Packers & Anchor

**Total Tool Length: 48.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64744

**DST#: 2**

ATTN: Bob Peterson

Test Start: 2018.12.13 @ 08:05:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

47000 ppm

Viscosity: 62.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.19 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	SOS/MCW 2%O, 23%M, 75%W	0.148

Total Length: 30.00 ft      Total Volume: 0.148 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

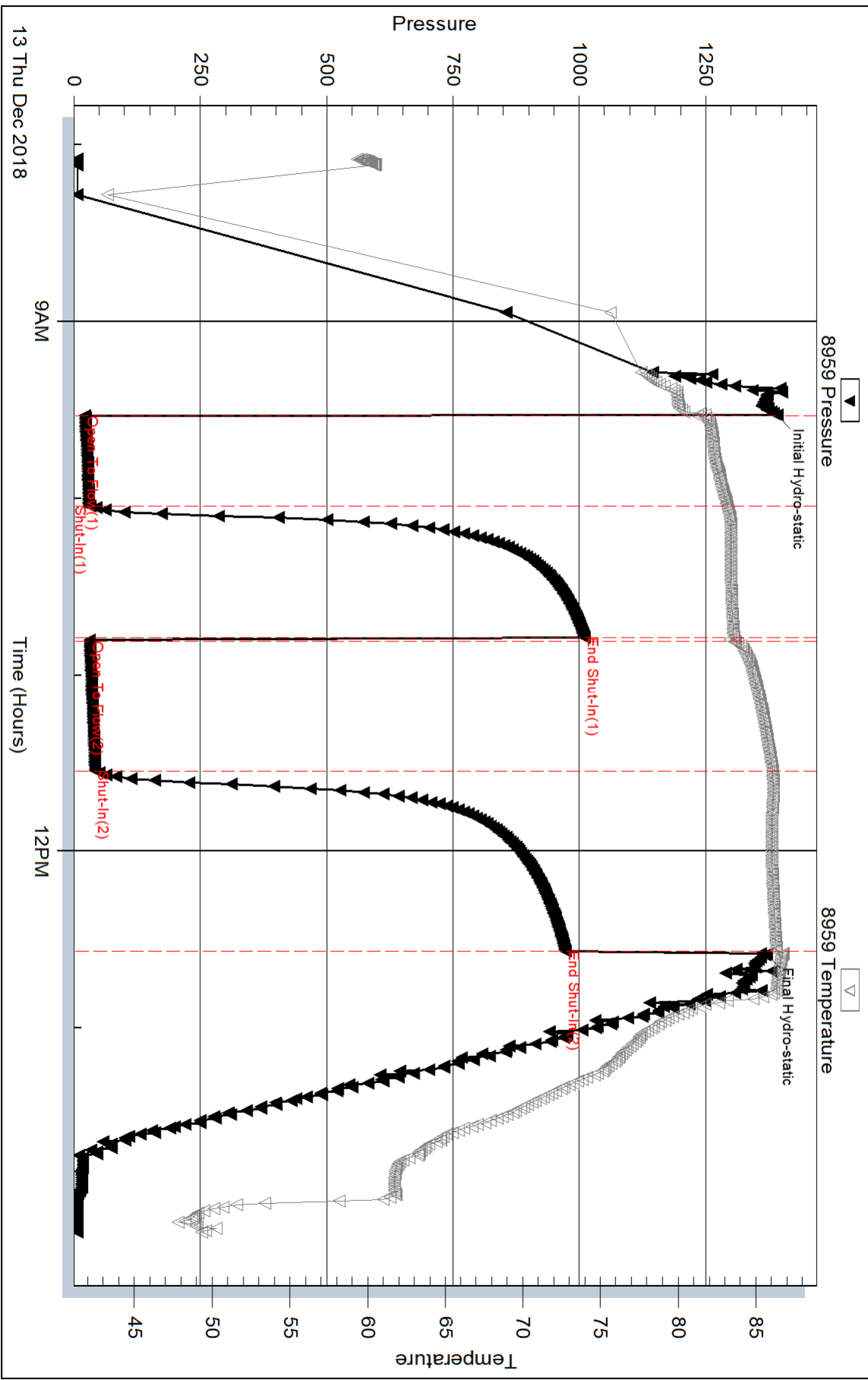
Serial #:

Laboratory Name:

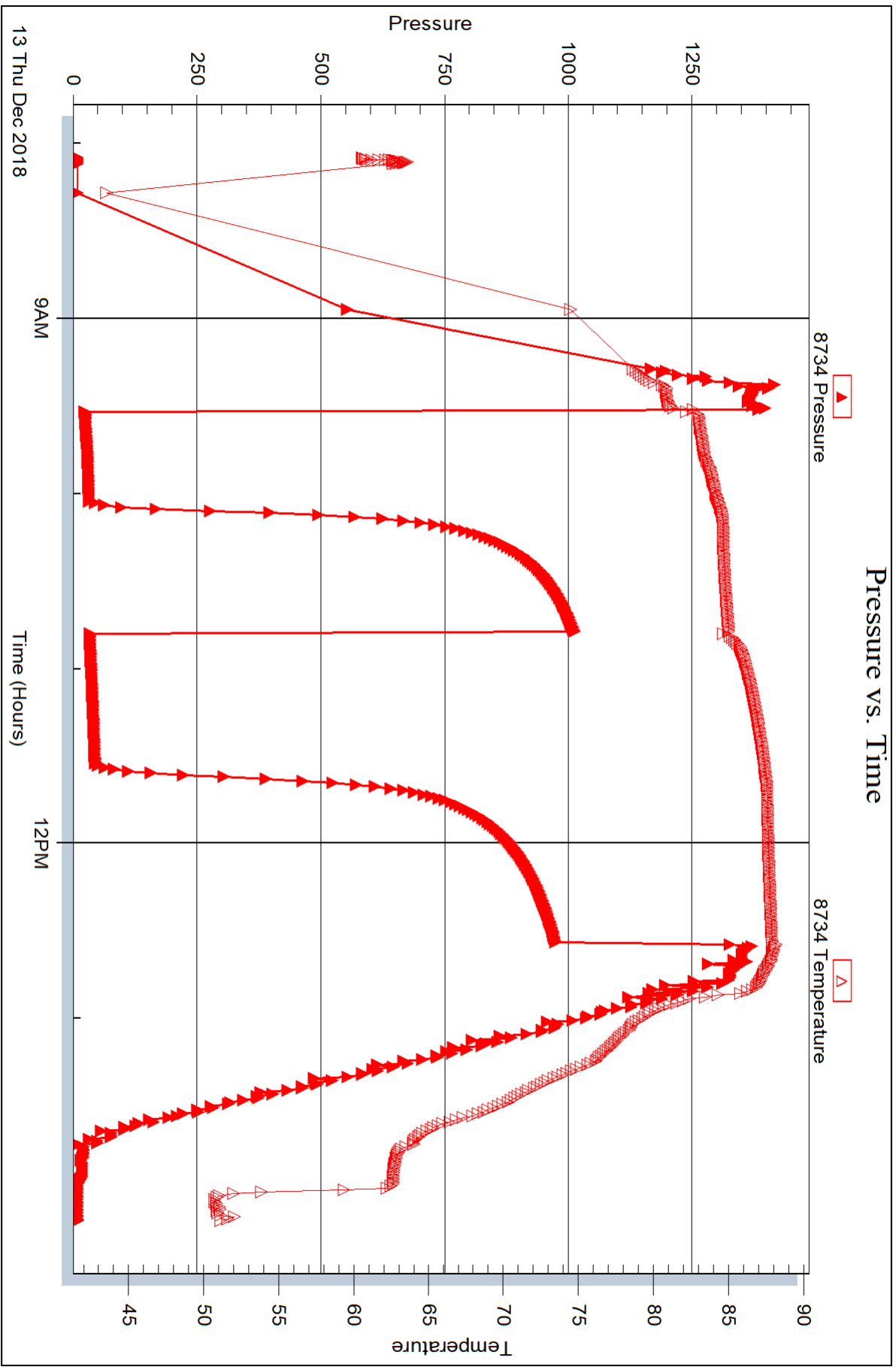
Laboratory Location:

Recovery Comments: RW= .228 @ 51.2 degs = 47,000 PPM

### Pressure vs. Time









## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration Inc**

8100 E 22ND St N #700  
Wichita, KS 67278

ATTN: Bob Peterson

### **Hendrich - LaRosh #1**

#### **34-8S-14W Osborne,KS**

Start Date: 2018.12.14 @ 16:43:00

End Date: 2018.12.14 @ 22:17:00

Job Ticket #: 64745                      DST #: 3

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.12.19 @ 10:31:23



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22ND St N #700  
Wichita, KS 67278  
ATTN: Bob Peterson

**34-8S-14W Osborne, KS**

**Hendrich - LaRosh #1**

Job Ticket: 64745 **DST#: 3**

Test Start: 2018.12.14 @ 16:43:00

## GENERAL INFORMATION:

Formation: **LKC " B - C "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:15:50

Time Test Ended: 22:17:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

**Interval: 3123.00 ft (KB) To 3185.00 ft (KB) (TVD)**

Reference Elevations: 1888.00 ft (KB)

Total Depth: 3185.00 ft (KB) (TVD)

1883.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8959**

**Inside**

Press@RunDepth: 29.44 psig @ 3124.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.12.14 End Date: 2018.12.14

Last Calib.: 2018.12.14

Start Time: 16:43:01 End Time: 22:17:00

Time On Btm: 2018.12.14 @ 18:15:40

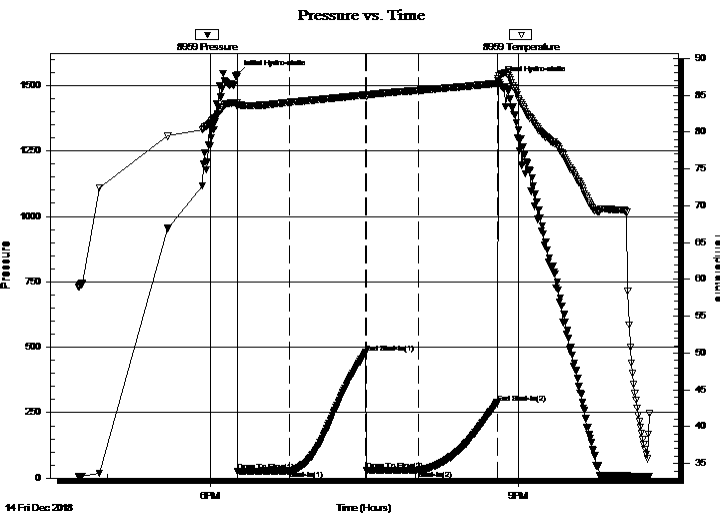
Time Off Btm: 2018.12.14 @ 20:48:00

**TEST COMMENT:** 30-IF-Surface blow built to 3/4"

45-ISI-No blow

30-FF-No blow

45-FSI-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1541.07	84.01	Initial Hydro-static
1	26.88	83.48	Open To Flow (1)
31	28.31	84.03	Shut-In(1)
75	479.38	85.02	End Shut-In(1)
76	29.56	84.86	Open To Flow (2)
106	29.44	85.64	Shut-In(2)
152	287.93	86.57	End Shut-In(2)
153	1517.78	87.23	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	100% Mud	0.05

\* Recovery from multiple tests

## Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64745

**DST#: 3**

ATTN: Bob Peterson

Test Start: 2018.12.14 @ 16:43:00

## Tool Information

Drill Pipe:	Length: 2939.00 ft	Diameter: 3.80 inches	Volume: 41.23 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 50000.00 lb
			<u>Total Volume: 42.11 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 45000.00 lb
Depth to Top Packer:	3123.00 ft			Final 45000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	62.00 ft			
Tool Length:	90.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3100.00	
Hydraulic tool	5.00	1113		3105.00	
Jars	5.00	01-07		3110.00	
Safety Joint	3.00	-001		3113.00	
Packer	5.00			3118.00	28.00 Bottom Of Top Packer
Packer	5.00			3123.00	
Stubb	1.00			3124.00	
Recorder	0.00	8959	Inside	3124.00	
Recorder	0.00	8734	Outside	3124.00	
Perforations	22.00			3146.00	
Change Over Sub	1.00			3147.00	
Drill Pipe	32.00			3179.00	
Change Over Sub	1.00			3180.00	
Bullnose	5.00			3185.00	62.00 Bottom Packers & Anchor

**Total Tool Length: 90.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64745

**DST#: 3**

ATTN: Bob Peterson

Test Start: 2018.12.14 @ 16:43:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 65.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1900.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	100% Mud	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

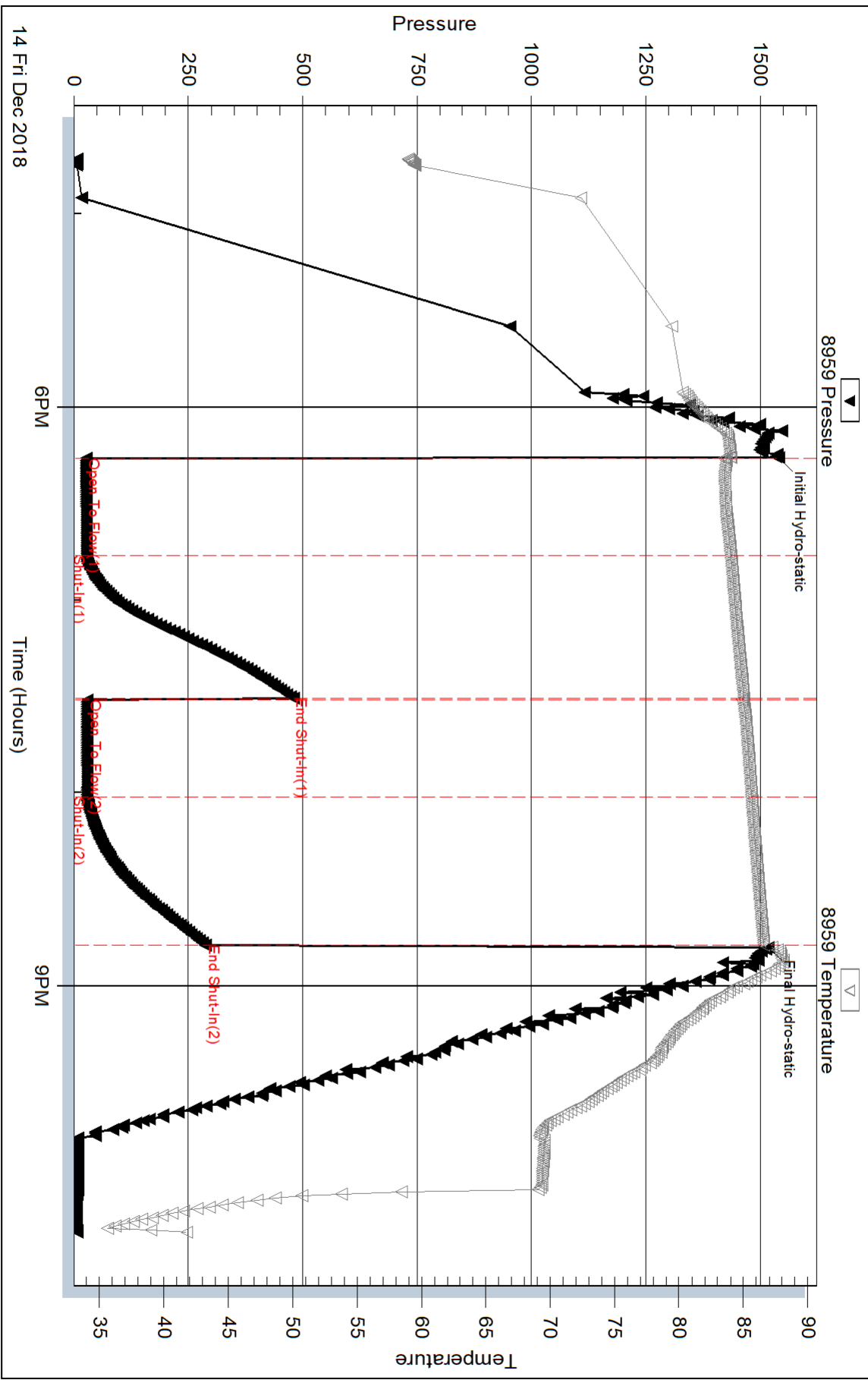
Serial #:

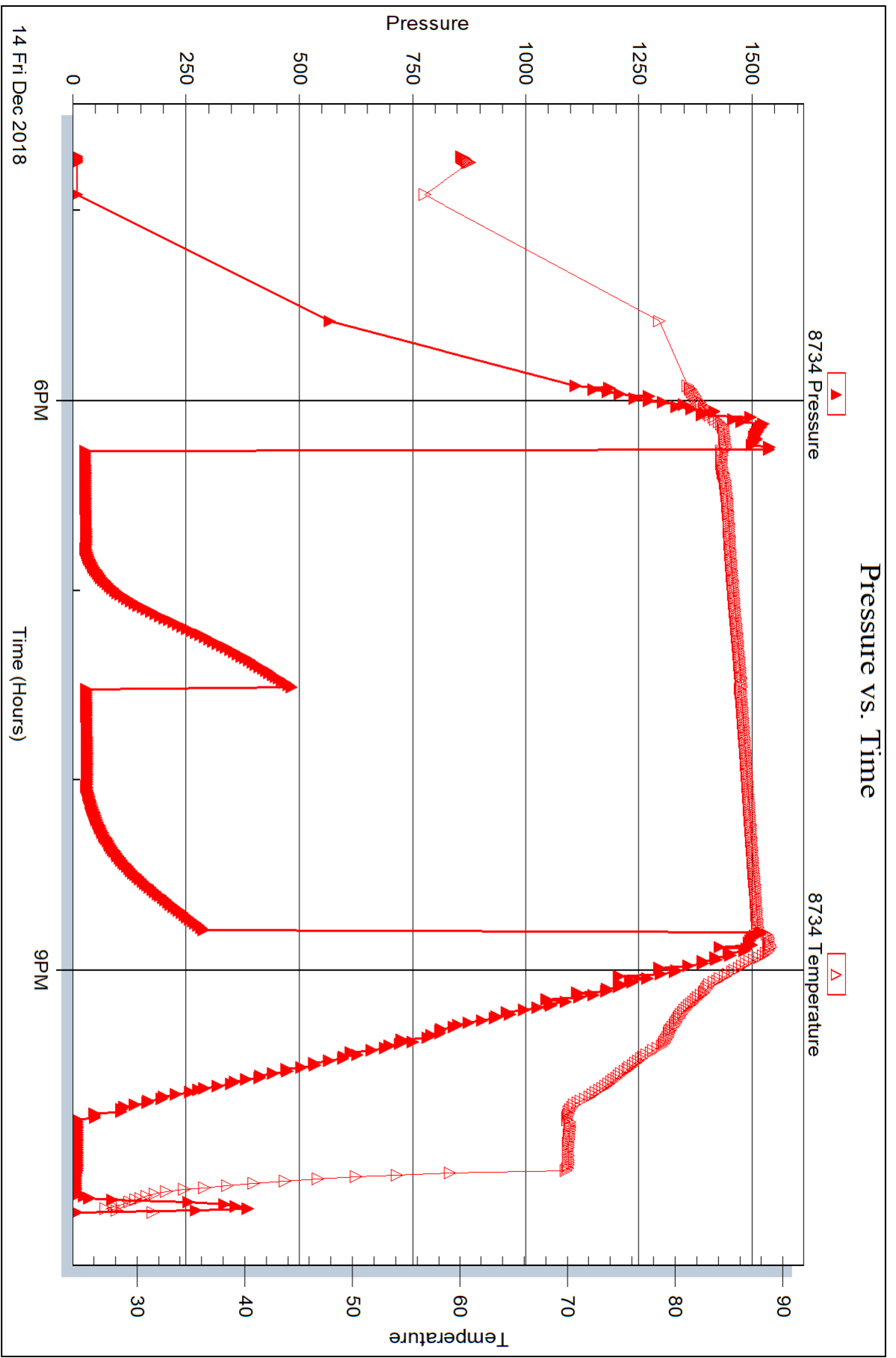
Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time









## DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration Inc**

8100 E 22ND St N #700  
Wichita, KS 67278

ATTN: Bob Peterson

### **Hendrich - LaRosh #1**

### **34-8S-14W Osborne,KS**

Start Date: 2018.12.15 @ 06:38:00

End Date: 2018.12.15 @ 13:06:09

Job Ticket #: 64746                      DST #: 4

Trilobite Testing, Inc  
1515 Commerce Parkway Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2018.12.19 @ 10:31:01

Ritchie Exploration Inc

34-8S-14W Osborne,KS

Hendrich - LaRosh #1

DST # 4

LKC " D "

2018.12.15



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

ATTN: Bob Peterson

Job Ticket: 64746

**DST#: 4**

Test Start: 2018.12.15 @ 06:38:00

## GENERAL INFORMATION:

Formation: **LKC " D "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:16:30

Time Test Ended: 13:06:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Martine Salinas

Unit No: 82

**Interval: 3186.00 ft (KB) To 3210.00 ft (KB) (TVD)**

Reference Elevations: 1888.00 ft (KB)

Total Depth: 3210.00 ft (KB) (TVD)

1883.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 5.00 ft

**Serial #: 8959**

**Inside**

Press@RunDepth: 28.95 psig @ 3187.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2018.12.15

End Date:

2018.12.15

Last Calib.:

2018.12.15

Start Time: 06:38:01

End Time:

13:06:10

Time On Btm:

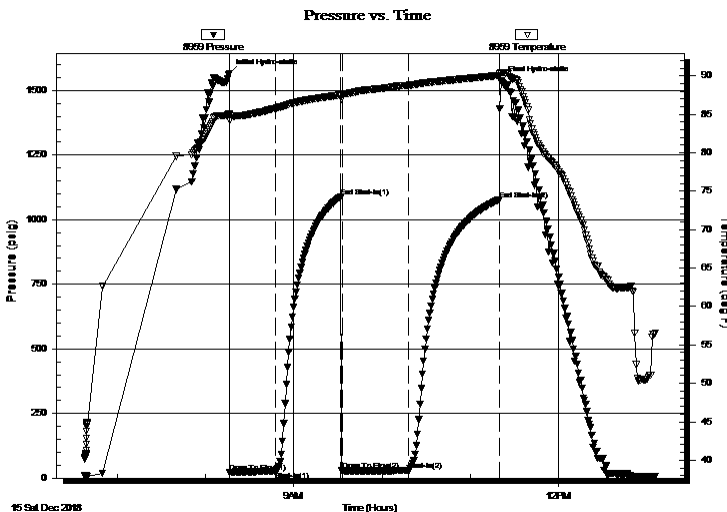
2018.12.15 @ 08:16:20

Time Off Btm:

2018.12.15 @ 11:20:50

**TEST COMMENT:** 30-IF-Surface blow built to 1 1/4"  
45-ISI-No blow  
45-FF-Surface blow @ 5 mins built to 1/8"  
60-FSI-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1566.21	85.02	Initial Hydro-static
1	21.95	84.24	Open To Flow (1)
32	25.04	85.79	Shut-In(1)
76	1089.17	87.52	End Shut-In(1)
77	28.73	87.60	Open To Flow (2)
122	28.95	88.77	Shut-In(2)
184	1078.02	90.05	End Shut-In(2)
185	1536.73	90.45	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	WCM 10%W, 90%M	0.05

## Gas Rates

Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64746

**DST#: 4**

ATTN: Bob Peterson

Test Start: 2018.12.15 @ 06:38:00

## Tool Information

Drill Pipe:	Length: 3003.00 ft	Diameter: 3.80 inches	Volume: 42.12 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 178.00 ft	Diameter: 2.25 inches	Volume: 0.88 bbl	Weight to Pull Loose: 48000.00 lb
			<u>Total Volume: 43.00 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 46000.00 lb
Depth to Top Packer:	3186.00 ft			Final 46000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	24.00 ft			
Tool Length:	52.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
------------------	-------------	------------	----------	------------	----------------

Shut In Tool	5.00			3163.00	
Hydraulic tool	5.00	1113		3168.00	
Jars	5.00	01-07		3173.00	
Safety Joint	3.00	-001		3176.00	
Packer	5.00			3181.00	28.00 Bottom Of Top Packer
Packer	5.00			3186.00	
Stubb	1.00			3187.00	
Recorder	0.00	8959	Inside	3187.00	
Recorder	0.00	8734	Outside	3187.00	
Perforations	18.00			3205.00	
Bullnose	5.00			3210.00	24.00 Bottom Packers & Anchor

**Total Tool Length: 52.00**



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**34-8S-14W Osborne, KS**

8100 E 22ND St N #700  
Wichita, KS 67278

**Hendrich - LaRosh #1**

Job Ticket: 64746

**DST#: 4**

ATTN: Bob Peterson

Test Start: 2018.12.15 @ 06:38:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

10000 ppm

Viscosity: 72.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1900.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	WCM 10%W, 90%M	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

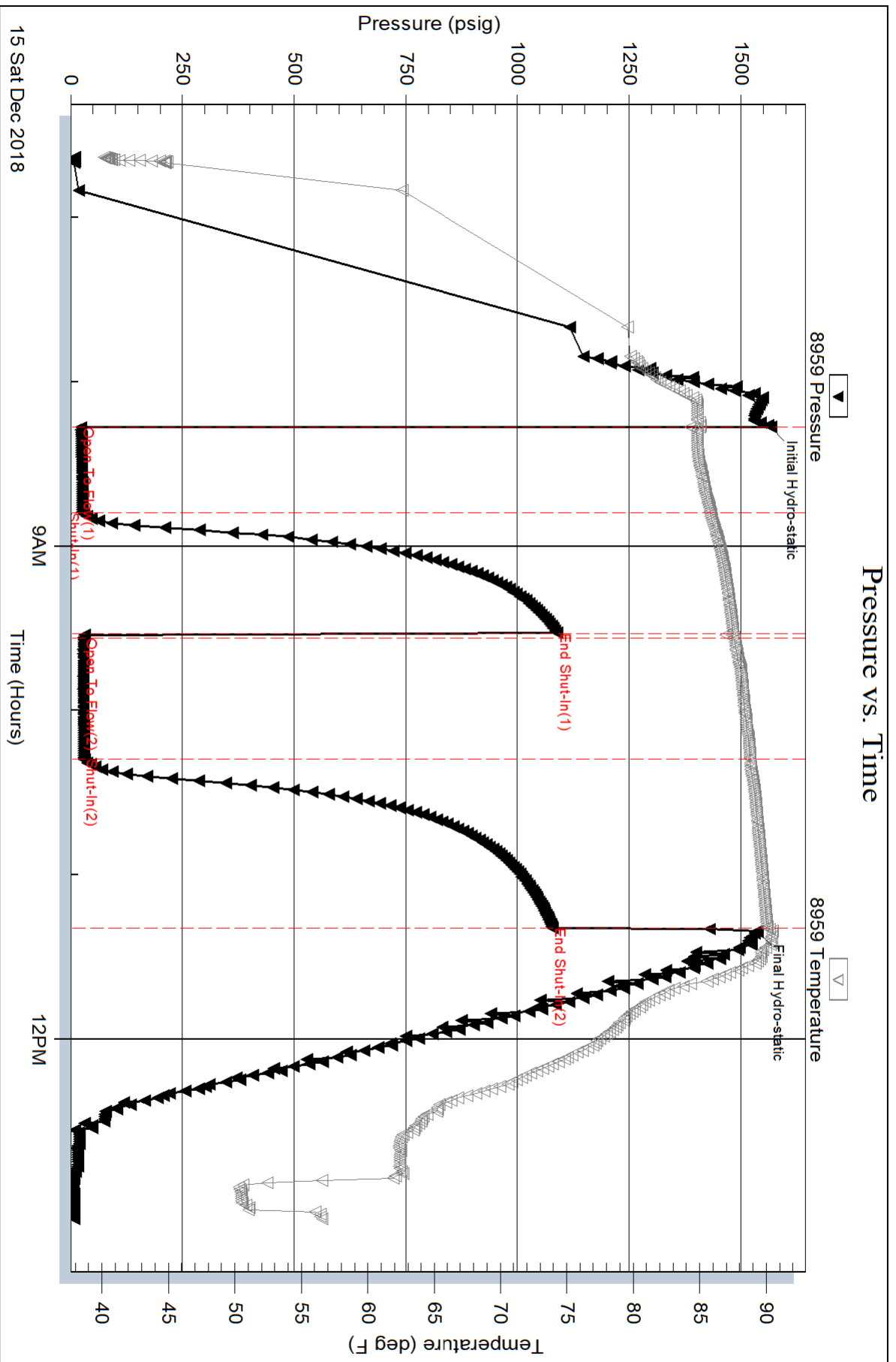
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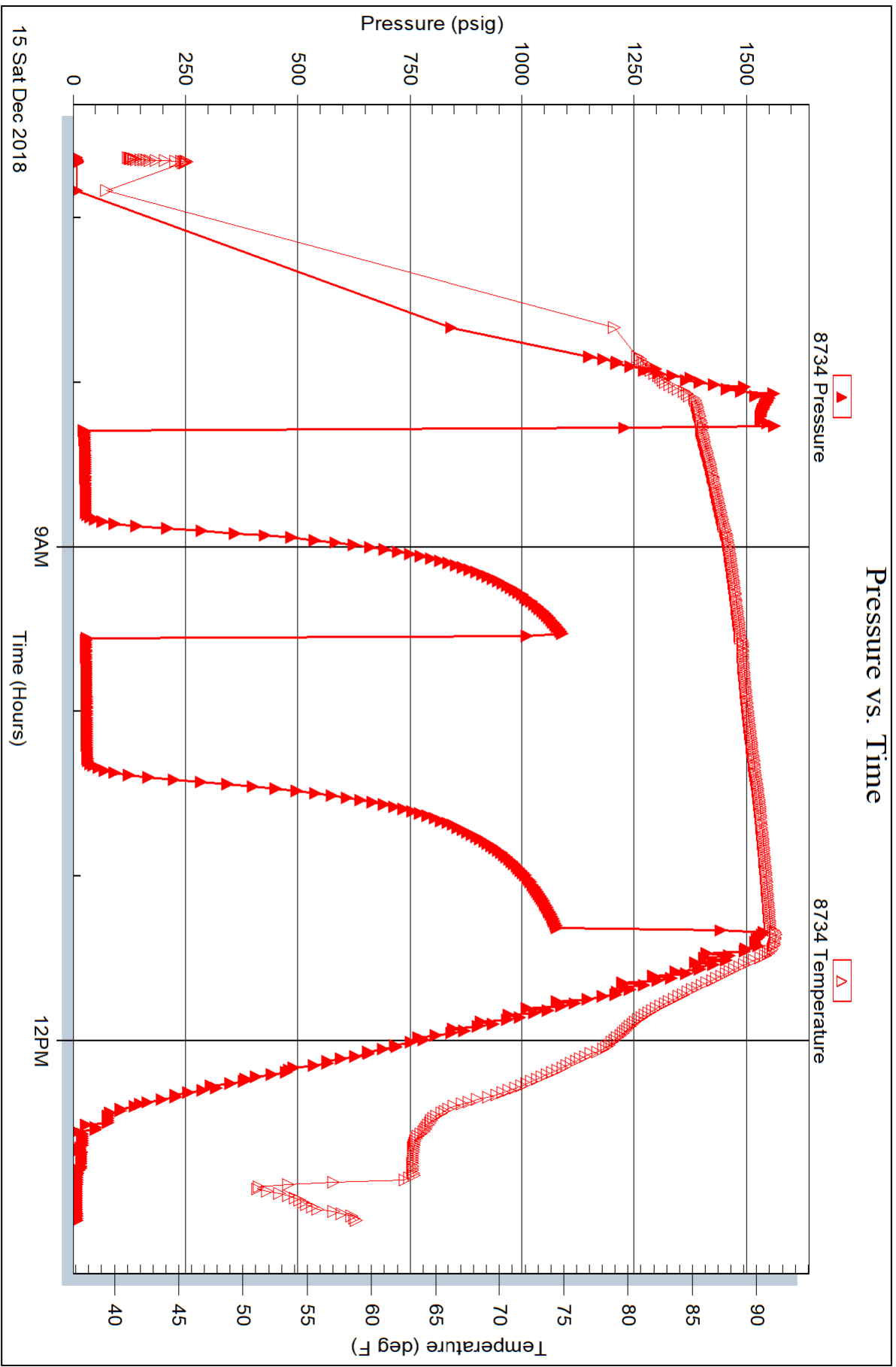
Laboratory Name:

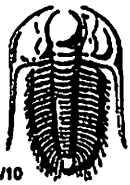
Laboratory Location:

Recovery Comments: RW= .780 @ 55.5 degs = 10,000ppm

# Pressure vs. Time







# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 64743

Well Name & No. #1 Hendrich-LaRosh Test No. 1 Date 12-12-18  
 Company Ritchie Exploration Inc Elevation 1888 KB 1883 GL  
 Address 8100 E 22<sup>nd</sup> ST N #700 Wichita, KS 67278  
 Co. Rep / Geo. Bob Petersen Rig Murfin #8  
 Location: Sec. 34 Twp BS. Rge. 14W. Co. Osborne State KS

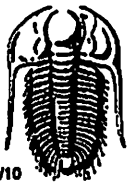
Interval Tested 2778 - 2800 Zone Tested Severy Sand.  
 Anchor Length 22' Drill Pipe Run 2595. Mud Wt. 8.8  
 Top Packer Depth 2773 Drill Collars Run 178 Vls 63  
 Bottom Packer Depth 2778 Wt. Pipe Run — WL 5.2  
 Total Depth 2800 Chlorides 500 ppm System LCM 2#  
 Blow Description IF - S. blow built to 1/8"  
ISI - No blow  
FF - No blow  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>2</u>	<u>Mud</u>			<u>100</u>	
<u>0</u>	<u>Oil Spots in tool</u>				

Rec Total 2 BHT 85 Gravity — API RW — @ — ° F Chlorides — ppm  
 (A) Initial Hydrostatic 1353  Test 1050 T-On Location 14:50  
 (B) First Initial Flow 21  Jars 250 T-Started 15:47  
 (C) First Final Flow 24  Safety Joint 75 T-Open 17:24  
 (D) Initial Shut-In 79  Circ Sub — T-Pulled 19:54  
 (E) Second Initial Flow 23  Hourly Standby — T-Out 21:23  
 (F) Second Final Flow 25  Mileage 146 RT From Hays.<sup>146</sup> Comments —  
 (G) Final Shut-In 47  Sampler —  
 (H) Final Hydrostatic 1319  Straddle —  Ruined Shale Packer —  
 Shale Packer —  Ruined Packer —  
 Extra Packer —  Extra Copies —  
 Extra Recorder — Sub Total 0  
 Day Standby — Total 1521  
 Accessibility — MP/DST Disc't —  
 Sub Total 1521

Approved By \_\_\_\_\_ Our Representative Mark [Signature]  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 64744

Well Name & No. #1 Hendrich-LaRosh Test No. 2 Date 12-13-18  
 Company Ritchie Exploration Inc Elevation 1288 KB 1883 GL  
 Address 8100 E 22nd ST N #700 Wichita, KS 67278  
 Co. Rep / Geo. Bob Peterson Rig Muckin #8  
 Location: Sec. 34 Twp 8S. Rge. 14W Co. Osborne State KS

Interval Tested 2866-2886 Zone Tested Topeka  
 Anchor Length 20' Drill Pipe Run 2687 Mud Wt. 9.0  
 Top Packer Depth 2861 Drill Collars Run 178 Vis 62  
 Bottom Packer Depth 2866 Wt. Pipe Run — WL 5.2  
 Total Depth 2886 Chlorides 500 ppm System LCM 2#

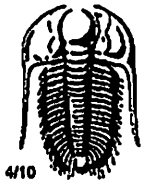
Blow Description IF - S. blow built to 1 3/4"  
ISI - No blow  
FF - S. blow @ 4 mins built to 1"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>30</u>	<u>SOS/MCW</u>	<u>2</u>	<u>75</u>	<u>23</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 30 BHT 87 Gravity — API RW 228 @ 51.2 °F Chlorides 47,000 ppm

(A) Initial Hydrostatic 1391  Test 1050 T-On Location 06:50  
 (B) First Initial Flow 21  Jars 250 T-Started 08:05  
 (C) First Final Flow 30  Safety Joint 75 T-Open 09:32  
 (D) Initial Shut-In 1010  Circ Sub \_\_\_\_\_ T-Pulled 12:32  
 (E) Second Initial Flow 31  Hourly Standby \_\_\_\_\_ T-Out 14:09  
 (F) Second Final Flow 42  Mileage 146 RT 146 Comments \_\_\_\_\_  
 (G) Final Shut-In 923  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1370  Straddle \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Initial Open 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Initial Shut-In 45  Day Standby \_\_\_\_\_ Total 1521  
 Final Flow 45  Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Final Shut-In 60 Sub Total 1521

Approved By \_\_\_\_\_ Our Representative Mark John  
 Trilobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 64745

Well Name & No. #1 Hendrich-LaRosh Test No. 3 Date 12-14-18  
 Company Ritchie Exploration Inc. Elevation 1888 KB 1883 GL  
 Address 8100 E 22<sup>nd</sup> ST N #700, Wichita, KS 67278  
 Co. Rep / Geo. Bob Petersen Rig Murfin #8  
 Location: Sec. 34 Twp 8S. Rge. 14W. Co. Osborne State KS

Interval Tested 3123-3185 Zone Tested LKC "B-C"  
 Anchor Length 62' Drill Pipe Run 2939 Mud Wt. 9.0  
 Top Packer Depth 3118 Drill Collars Run 178 Vls 65  
 Bottom Packer Depth 3123 Wt. Pipe Run — WL 6.0  
 Total Depth 3185 Chlorides 1900 ppm System LCM 2#  
 Blow Description IS - S. blow built to 3/4"

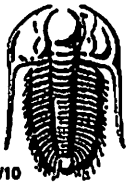
ISI - No blow  
FF - No blow  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 10 BHT 87 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 1541  Test 1050 T-On Location 16:00  
 (B) First Initial Flow 27  Jars 250 T-Started 16:43  
 (C) First Final Flow 28  Safety Joint 75 T-Open 18:16  
 (D) Initial Shut-In 479  Circ Sub — T-Pulled 20:46  
 (E) Second Initial Flow 30  Hourly Standby — T-Out 22:17  
 (F) Second Final Flow 29  Mileage 146 RT <sup>146</sup> Comments —  
 (G) Final Shut-In 288  Sampler —  
 (H) Final Hydrostatic 1518  Straddle —  Ruined Shale Packer —  
 Shale Packer —  Ruined Packer —  
 Extra Packer —  Extra Copies —  
 Extra Recorder — Sub Total 0  
 Day Standby — Total 1521  
 Accessibility — MP/DST Disc't —  
 Sub Total 1521

Approved By \_\_\_\_\_ Our Representative [Signature]  
 Triobite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 64746

Well Name & No. #1 Hendrich-LaRosh Test No. 4 Date 12-15-18  
 Company Ritchie Exploration Inc Elevation 1888 KB 1883 GL  
 Address 8100 E 22<sup>nd</sup> ST N. #700 Wichita, KS 67278  
 Co. Rep / Geo. Bob Petersen Rig Murfin#8  
 Location: Sec. 34 Twp 8S. Rge. 14W. Co. Osborne State KS

Interval Tested 3186-3210 Zone Tested LKC "D"  
 Anchor Length 24' Drill Pipe Run 3003 Mud Wt. 9.2  
 Top Packer Depth 3181 Drill Collars Run 178 Vls 72  
 Bottom Packer Depth 3186 Wt. Pipe Run — WL 6.0  
 Total Depth 3210 Chlorides 1900 ppm System LCM 2#

Blow Description IF - S. blow built to 1 1/4"  
ISI - No blow  
FF - S. blow @ 5 mins built to 1/8"  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>WCM</u>		<u>10</u>	<u>90</u>	
<u>0</u>	<u>Oil spots in tool</u>				

Rec Total 10 BHT 91 Gravity — API RW .780 @ 55.5 °F Chlorides 10,000 ppm

(A) Initial Hydrostatic 1566  Test 1050 T-On Location 06:30  
 (B) First Initial Flow 28  Jars 250 T-Started 06:38  
 (C) First Final Flow 25  Safety Joint 75 T-Open 08:16  
 (D) Initial Shut-In 1089  Circ Sub — T-Pulled 11:16  
 (E) Second Initial Flow 29  Hourly Standby — T-Out 13:07  
 (F) Second Final Flow 29  Mileage 146 RT x 2 146+146 Comments Tools loaded @  
 (G) Final Shut-In 1078  Sampler — 10:00 12-18-18  
 (H) Final Hydrostatic 1537  Straddle —  
 Ruined Shale Packer —

Initial Open 30  Shale Packer —  
 Initial Shut-In 45  Extra Packer —  Ruined Packer —  
 Final Flow 45  Extra Recorder —  Extra Copies —  
 Final Shut-In 60  Day Standby x 2 2.5d 8.75h Sub Total 1600  
 Accessibility — Total 3267  
 Sub Total 1667 MP/DST Disc't —

Approved By \_\_\_\_\_ Our Representative [Signature]

TriLOBite Testing Inc. shall not be liable for damaged of any kind of the property or personnel of the one for whom a test is made, or for any loss suffered or sustained, directly or indirectly, through the use of its equipment, or its statements or opinion concerning the results of any test, tools lost or damaged in the hole shall be paid for at cost by the party for whom the test is made.



## #1 Hendrich-LaRosh

886' FSL & 1,611' FEL

104' S & 39' E of NE SW SE Section 34-8S-14W

Osborne County, Kansas

API# 15-141-20481-0000

Elevation: GL: 1,883', KB: 1,888'

Sample Tops			Ref. Well
Anhydrite	1103	+785	-5
B/Anhydrite	1136	+752	-4
Stotler	2629	-741	+4
Tarkio	2681	-793	+5
Topeka	2842	-954	+5
Heebner	3089	-1201	+9
Toronto	3114	-1226	+10
Lansing	3140	-1252	+11
Muncie	3281	-1393	
Stark	3357	-1469	
Hush	3388	-1500	
BKC	3421	-1533	
Myric	3536	-1648	
Ft. Scott	3545	-1657	
Cherokee	3563	-1675	
Mississippian	3661	-1773	
Viola	3760	-1872	
Granite	3981	-2093	
RTD	3996	-2108	





# GEOLOGIST'S REPORT

## DRILLING TIME AND SAMPLE LOG

**RITCHIE EXPLORATION, INC.**

**HENDRICH-LAROSH #1**  
 34-8-14W  
 886' FSL & 1611' FEL  
 OSBORNE COUNTY, KANSAS  
 API: 15-141-20481-00-00  
 X: 1754428.21 Y: 356710.46 (NAD KS-N)

DRILLING CONTR: MURFIN RIG #8  
 SPUD: 12-08-18 COMP: 12-18-18  
 MUD UP: 2400' TYPE MUD: CHEM.  
 DRILL TIME: 2200' to RTD  
 RTD: 3996' LTD: 3998'  
 SAMPLES SAVED: 2400' to RTD  
 GEOLOGIST: ROBERT J. PETERSEN

**ELEVATION**  
 KB: 1888'  
 GL: 1883'  
 LOG MEASURED FROM: KB

**SURFACE CASING**  
 23# 8 5/8" SET @220'  
 Cem. W/ 150 SX

**PRODUCTION CASING**  
 D&A

**WELL LOG SURVEYS**  
 ELI WIRELINE  
 DUAL INDUCTION  
 COMPENSATED NEUTRON  
 MICRORESISTIVITY  
 SONIC

**ELECTRIC LOG TOPS**

FORMATION	DEPTH	DATE	POSITION	POS B
ROOT SH	2560	-672	+3	-10
STOTLER	2629	-741	+4	-22
TARKIO LS	2681	-793	+5	-23
SEVERY	2780	-892	+4	-29
TOPEKA	2843	-955	+4	-29
30' ZONE	2873	-985	+7	-31
HEEBNER	3090	-1202	+8	-37
TORONTO	3114	-1226	+10	-38
LANSING	3140	-1252	+11	-36
MC	3283	-1395	N/A	-40
STAR	3358	-1470	N/A	-37
STARK	3388	-1500	N/A	-37
BKC	3422	-1534	N/A	-34
MARM	3426	-1538	N/A	-37
CHEROKEE	3565	-1677	N/A	-46
MISS	3660	-1772	N/A	-45
VIOLA	3725	-1837	N/A	-45
TD	3998	-2110	715' Deeper	198' Deeper



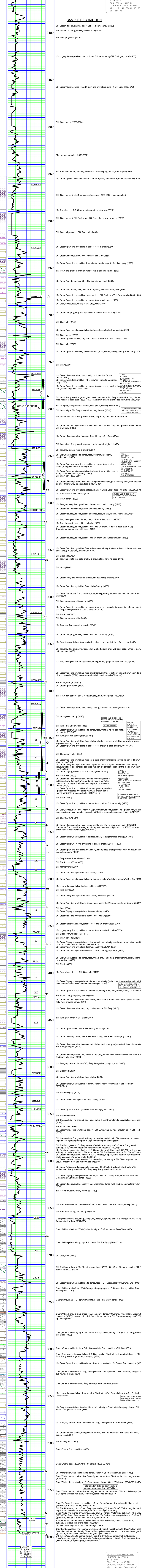
**REFERENCE WELL**

REF. WELL A 15-141-20445-00-00 BRUCE OIL WILLA #1 1490' FSL & 975' FWL 11-9-14W	REF. WELL B 15-141-20446-00-00 BRUCE OIL ALICE #2 330' FSL & 330' FWL 24-6-14W
--	---

**DAILY LOG REPORT @7:00 A.M.**

12-07-18 LOAD RIG  
 12-08-18 MIRU SPUD  
 12-10-18 1490' WOC  
 12-11-18 2200' DRILLING  
 12-12-18 2790' DRILLING  
 12-13-18 2886' TOH DST #2  
 12-14-18 3098 DRILLING  
 12-15-18 3210' PU TOOLS DST#4  
 12-16-18 3390' DRILLING  
 12-17-18 3840' DRILLING  
 12-18-18 3896' LOGGING

**REMARKS**  
 THIS WELL WAS PLUGGED BY THE OPERATOR



RITCHIE EXPLORATION, INC.  
 HENDRICH-LAROSH #1  
 34-8-14W  
 886' FSL & 1611' FEL  
 OSBORNE COUNTY, KANSAS  
 API: 15-141-20481-00-00  
 EL 1888 KB

**SAMPLE DESCRIPTION**

LS: Cream, fine crystalline, dolo + SH; Red/gray, sandy (2400)  
 SH: Gray + LS: Gray, fine crystalline, dolo (2410)  
 SH: Dark gray/black (2420)  
 LS: Lt gray, fine crystalline, chalky, dolo + SH; Gray, sandy/SH; Dark gray (2430-2450)  
 LS: Cream/lt gray, dense + LS: Lt gray, fine crystalline, dolo + SH; Gray (2460-2490)  
 SH: Gray, sandy (2500-2520)  
 Mud up poor samples (2530-2550)  
 SD: Red, fine to med, sub ang, silty + LS: Cream/lt gray, dense, dolo in part (2560)  
 LS: Cream/yellow min stain, dense, cherty /LS: Gray, dense + SH; Gray, silty-sandy (2570)  
 SH: Gray, sandy + LS: Cream/gray, dense, arg (2580-2600) (poor samples)  
 LS: Tan, dense, + SD; Gray, very fine grained, silty, mic (2610)  
 SH: Gray, sandy + SH; Dark gray + LS: Gray, dense, arg, sl cherty (2620)  
 SH: Gray, silty-sandy + SD; Gray, mic (2630)  
 LS: Cream/gray, fine crystalline to dense, foss, sl cherty (2640)  
 LS: Cream, fine crystalline, foss, chalky + SH; Gray (2650)  
 LS: Cream/gray, fine crystalline, foss, chalky, sandy in part + SH; Dark gray (2670)  
 SD: Gray, fine grained, angular, micaceous, tr dead oil flakes (2670)  
 LS: Cream/tan, dense, foss +SH; Dark gray/gray, sandy (2680)  
 LS: Cream/tan, dense, foss, mottled + LS: Gray, fine crystalline, dolo (2680)  
 LS: Cream/gray, fine crystalline, foss, chalky + SH; Dark gray/SH; Gray, sandy (2680/15-30\*)  
 LS: Cream/gray, fine crystalline to dense, foss, tr stain, nso (2690)  
 LS: Gray, dense, foss, chalky + SH; Gray, silty (2700)  
 LS: Cream/tan/gray, very fine crystalline to dense, foss, chalky (2710)  
 SH: Gray, silty (2720)  
 LS: Cream/gray, very fine crystalline to dense, foss, chalky, tr edge stain (2720)  
 SH: Gray, sandy (2730)  
 LS: Cream/gray/tan/brown, very fine crystalline to dense, foss, chalky (2730)  
 SH: Gray, silty (2740)  
 LS: Cream/gray, very fine crystalline to dense, foss, sl dolo, cherty + SH; Gray (2750)  
 SH: Gray (2760)  
 LS: Cream, fine crystalline, foss, chalky, sl dolo + LS: Brown, dense (2770)  
 LS: Gray, dense, foss, mottled + SH; Gray/SD; Gray, fine grained, silty (2780)  
 LS: Cream/gray, fine crystalline to dense, foss/ool in part, chalky (2790) **DST #1**  
 2778-2802  
 FF: BUILT TO 18"  
 FF: NO FLOW  
 RECOVERED:  
 15 MC  
 SP: 105-1078  
 HP: 135-13198  
 BHT: 85F  
 MUDCO MUD CHECK 2807  
 VIS @W/ 8 W/LS 5.0/CLM 2#  
 CHLORIDES: 500 PPM  
 SD: Gray, fine grained, angular, glauc, vstso, no odor + SH; Gray, sandy + LS: Gray, dense, foss, mottle, tr edge stain (2800) + LS: Tan/brown, dense, slight edge stain, nso (2800/15\*)  
 SD: Tan/gray, fine grained/coarse, calc, glauc, sl mic (2800/30-45\*)  
 SH: Gray, silty + SD; Gray, fine grained, angular-mic (2810)  
 SH: Gray + SD; Gray, fine grained, friable, silty + LS: Tan, dense, foss (2820)  
 LS: Cream/tan, fine crystalline to dense, foss, chalky + SD; Gray, fine grained, friable to hard + SH; Dark gray (2830)  
 LS: Cream, fine crystalline to dense, foss, blocky + SH; Black (2840)  
 SD: Gray/clear, fine grained, angular to subrounded, sl glauc (2850)  
 LS: Tan/gray, dense, foss, cherty (2850)  
 LS: Gray, fine crystalline to dense, foss, subgranular, cherty, tr edge stain (2860)  
 LS: Cream/tan/gray, very fine crystalline to dense, foss, chalky, sl dolo, tr edge stain + SH; Gray (2870)  
 LS: Cream/gray, very fine crystalline to dense, foss, mottled/chalky + LS: Tan/brown, dense, cherty (2980)  
 SH: Gray, silty (2880-2886)  
 LS: Cream, fine crystalline, angular, chalky w/wood modic por, gsfso (brown), odor, med brown sat on dry + Chert; Gray, sand, foss (2886/15-30\*) **MUDCO MUD CHECK 2907**  
 VIS @W/ 8 W/LS 5.0/CLM 2#  
 CHLORIDES: 500 PPM  
 SH: Gray, sandy (2900)  
 LS: Tan/gray, very fine crystalline to dense, foss, chalky, cherty (2910)  
 LS: Cream/tan/gray, fine crystalline to dense, foss, chalky, sl dolo, cherty (2920/15\*)  
 LS: Tan, fine crystalline, ool/foss, chalky (2930)  
 LS: Cream/tan/gray, fine crystalline, ool/foss, cherty, sl dolo, tr dead stain + LS: Cream/gray, dense, arg + SH; Gray (2940)  
 LS: Cream/tan/gray, fine crystalline, chalky, cherty (black/foss/angul) (2950)  
 LS: Cream/tan, fine crystalline, foss, subgranular, chalky, tr stain, tr dead oil flakes, nso, no odor (2960) + LS: Gray, dense (2960/30\*)  
 SH: Black (2960/30\*)  
 LS: Tan, fine crystalline, dolo, chalky, tr brown stain, nso, no odor (2970)  
 SH: Gray (2980)  
 LS: Cream, very fine crystalline, sl foss, cherty (white), chalky (2990)  
 LS: Cream/tan, fine crystalline, foss, chalky/cherty (3000)  
 LS: Cream/tan/brown, fine crystalline, foss, chalky, cherty, brown stain, nso, no odor + SH; Gray (3010)  
 SH: Gray/green-gray, silty-sandy (3020)  
 LS: Cream/gray, fine crystalline to dense, foss, cherty, tr patchy brown stain, nso, no odor + LS: Gray, fine crystalline, sl dolo, chalky (3020/15\*)  
 SH: Black (3020/30\*)  
 SH: Gray/green-gray, silty (3030)  
 LS: Tan/gray, fine crystalline, chalky (3040)  
 LS: Cream/tan/gray, fine crystalline, foss, chalky, cherty (3050)  
 LS: Gray, fine crystalline, foss, mottled, chalky, cherty, spot stain, nso, no odor (3060)  
 LS: Cream, fine crystalline, foss, mottled, chalky, cherty (dark gray) w/ir poor ppt por, tr spot stain, nso, no odor (3070)  
 LS: Tan, fine crystalline, foss-granular, chalky, cherty (gray-blocky) + SH; Gray (3080)  
 LS: Cream/tan, fine crystalline, foss, cherty (gray) w/ir poor ppt por, patchy brown stain-flakey oil, nso, no odor (3090) increase dead stain in chalky-mealy (3090/15\*)  
 SH: Black, carb (3090/30\*)  
 LS: Cream/gray, dense (3100)  
 SH: Gray, silty-sandy + SD; Green gray/gray, hard, tr SH; Red (3120/3130)  
 LS: Cream, fine crystalline, foss, chalky, cherty, tr brown spot stain (3130-3140)  
 SH: Gray/green, sandy (3140) **MUDCO MUD CHECK 3137**  
 VIS @W/ 8 W/LS 5.0/CLM 2#  
 CHLORIDES: 1,900 PPM  
 SH: Red + LS: Lt gray, foss (3150) **ADDED PREMIX**  
 LS: Cream/lt gray, fine crystalline to dense, foss, tr stain, no vis por, nso, no odor (3150/15-30\*)  
 SH: Red/gray, silty-sandy (3150/30-45\*)  
 LS: Cream/tan, fine crystalline, foss, chalky, cherty, tr coarse crystalline regrowth, tr brown edge stain on dry (3160)  
 LS: Cream/gray, fine crystalline to dense, foss, chalky, sl dolo, cherty (3165/15-30\*)  
 SH: Green/gray, silty (3180)  
 LS: Cream/tan, fine crystalline, ool/foss/ir poor modic por, tr lt brown stain on dry (3185)  
 LS: Cream, very fine crystalline, ool, w/ir poor modic por, light to med brown stain on dry (3185/30\*)  
 LS: Cream/lt gray, ool/foss, chalky, cherty (3185/45-60\*)  
 SH: Gray, silty (3200)  
 LS: Cream/tan, fine crystalline w/med to coarse crystalline, ool/foss, cherty (lt/ir) w/ir poor to fair modic por, inter-crystalline por, bright fl, sfo broken sample, lt brown stain on dry (3200)  
 LS: Cream/gray, fine crystalline w/coarse crystalline, ool/foss, gran in part w/coarse crystalline w/coarse, chalky, dec fl, no vis por (3210) increase chalky (3210/ 15-45\*) **DST #4**  
 3188-3210  
 FF: Built to 15"  
 FF: STAFFED  
 BUILT TO 15"  
 RECOVERED:  
 10 WCM W/OL, SPOTS ON TOOL  
 SP: 105-1078  
 HP: 135-13198  
 BHT: 91F  
 CHL: 10,000 PPM  
 MUDCO MUD CHECK 3210\*  
 VIS @W/ 8 W/LS 5.0/CLM 2#  
 CHLORIDES: 1,500 PPM  
 LS: Cream/gray, fine crystalline to dense, foss, chalky + SH; Gray, silty (3230)  
 LS: Gray, dense, hard, foss, weak LS stain (3240) tr poor modic por, weak stain (3240/15\*)  
 SH: Gray (3240/15-30\*)  
 LS: Cream, fine crystalline, foss, tr poor modic por, sfo, no odor, weak stain (3250/15\*)  
 LS: Cream/tan, dense, white disc + LS: Cream, fine crystalline, sandy-SD; White, fine grained, subangular, well-cemented to friable, abundant SH; Red/green mottled + SH; Black (3590/30\*)  
 LS: Cream, dense, chalky, sandy + SH; Green/gray/red-sandy + SD; Clear, angular, hard (3600) increase SH; Maroon, sandy (3610)  
 LS: Cream/white/gray, fine crystalline to dense + SH; Mustard, yellow+ Chert; Yellow/SD; White/clear, fine grained calc/SD; Gray, very fine grained, hard (3620)  
 LS: Cream/lt gray, fine crystalline to dense, sl foss/dolo, chalky + SH; Gray/maroon + SD; Cream/white, very fine grained (3630)  
 LS: Cream, fine crystalline, chalky + LS: Cream/tan, dense +SH; Red/green/mustard yellow (3640)  
 SH: Green/red/olive, tr silty purple sd (3650)  
 SH: Red, sandy w/hard concretions (flood) tr weathered chert/LS: Cream, chalky (3660)  
 SH: Red, silty, sandy, tr Chert; gray (3670)  
 Chert, White/yellow, trip, sharp/Dolo; Gray, blocky/LS: Gray, dense, blocky (3670/30\*) + SH; Tan/gray/yellow-hard (3670/45\*)  
 Chert, White, trip/Chert, White/yellow, blocky + LS: Gray, dense, foss (3680-3690)  
 Chert, White/yellow, sharp, tr pink tr chert + SH; Red/gray (3700-3710)  
 LS: Gray, dolo (3710)  
 SH: Red/sandy, hard + SD; Clear/tan, ang, hard (3720) + SH; Green/dark gray, soft + SH; Red, sandy, nematite (3730)  
 LS: Cream, fine crystalline to dense, foss +SH; Green/black/ir SS; Gray, vfg (3740)  
 Chert, White, sl trip/Chert, White/orange, sharp-opaque + LS: Lt gray, fine crystalline, foss +SH; Black/green (3750)  
 Chert, white, sharp + Dolo; Cream/white, dense + LS: Gray, dense (3760)  
 Chert, White/lt gray, tr pink, sharp + LS: Tan/gray, dense, tr SD; Gray, fine, tr Dolo; Cream, fine crystalline (3770) increase dolo + LS: Gray, dense, mottle + SH; Black/green/gray, tr SD; White, fg, friable (3780)  
 Chert, Gray, speckled/gritty + Dolo, Gray, fine crystalline, chalky (3790) + tr LS: Gray, dense + SH; Black (3800)  
 Chert, Gray, speckled/gritty + Dolo, Cream/white, fine crystalline +SH; Gray (3810)  
 Dolo, Cream/white, fine crystalline +LS; Gray, mottle, Chert, White, tr dead oil stain + tr SD; Tan, fine grained, angular/SH; Dark gray (3820)  
 LS: Cream/gray, fine crystalline-dense, dolo, foss, mottled + LS: Cream, fine crystalline (3830)  
 Chert, Gray, speckled + LS: Gray, fine crystalline, dolo, speckled, tr SD; Clear/tan, fine grained, sub rounded, friable (3840)  
 Chert, Gray, speckled + Dolo; Gray, fine crystalline to dense, (3850)  
 LS: Lt gray, fine crystalline, dolo, speck + Chert; White/SD; Gray, sl glauc + tr SH; Tan/red, blocky (3860) **MUDCO MUD CHECK 3857**  
 VIS @W/ 8 W/LS 5.0/CLM 2#  
 CHLORIDES: 1,800 PPM  
 LS: Gray, fine crystalline, fossil mottle, sl dolo, chalky + Chert; White/tan/gray, sharp + SH; Black (3870) increase chert (3880)  
 LS: Tan/gray, dense, fossil, mottled/Dolo; Gray, fine crystalline, Chert; White (3890)  
 LS: Cream, dense, sl dolo, tr edge stain, weak fl, nso, no odor + LS: Tan w/ir min stain, dense, foss (3900)  
 SH: Black/green (3910)  
 Dolo; Cream, fine crystalline (3920)  
 Dolo; Cream, dense (3930/15\*) + SH; Black (3930 30-45\*)  
 LS: White/lt gray, fine crystalline to dense, chalky + Chert; Gray/tan, angular (3940)  
 Dolo; White, dense, chalky + LS: Cream/gray, dense, foss, Chert; White/gray, ang opaque (3940/30\*)  
 Dolo; White, dense, chalky + LS; White/gray, dense, blocky + Chert; White, ool/clear qtz (3960) tr Dolo; White w/ir min stain, coarse crystalline /ool chert (3970)  
 Dolo; Tan/gray, fine to med crystalline + Chert; Cream/orange, tr weathered feldspar, red yellow/Qtz; LS: Gray, dense, blocky (3975)  
 SH: Black/dark gray/red + Chert; Gray, speck (slough?) fresh Qtz/SS; Yellow, angular, hard bright fl, ir (3975/15\*) SS; Yellow, hard fl, ir show (3975/30-45\*)  
 Dolo; White, fine to med crystalline, sandy, chalky + Chert; White/red ool chert + SH; Gray (3985/15\*) + Dolo; Gray, dense, blocky, tr Dolo; Tan/yellow, coarse crystalline, tr LS; Gray, foss (gray/ool) (ooz/gh?) + SH; Red, blocky, pyrite (3985/30\*)  
 +SH; Green/purple/hematite nso/SH; Black/SD; Yellow/tan, fine to coarse, hard, subangular to rounded, pyrite nso (3985/45\*)  
 Qtz SD; Clear, ang, hard/fresh Qtz; Orange (3996)  
 Qtz; SS; Clear/yellow, fine coarse, well rounded, hard fl (fso) Fresh qtz; Clear/yellow, fresh, Quartzite; Yellow, hard, Blocky Shale red/gray/yellow (weath fs app.), trace weathered granite (qtz/red fs) tr Muscovite interbedded w/pyrite layer (3996/30\*)  
 LS: Cream, fine crystalline, foss, hard fl, nso /SS; Pink, fine grained, friable, Quartzite, Clear/gray, hard, pink; Blocky Shale; Red/gray/weath fs app.), Blocky Red, hematite, hard (weath gr app.); SH; Dark, blocky, sand, soft (3996/60\*)

RITCHIE EXPLORATION, INC.  
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 OSBORNE COUNTY, KANSAS  
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