

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION  
OIL & GAS CONSERVATION DIVISION

Form ACO-1

January 2018

Form must be Typed

Form must be Signed

All blanks must be Filled

WELL COMPLETION FORM  
WELL HISTORY - DESCRIPTION OF WELL & LEASE

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

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

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

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

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

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

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

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

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

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

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

Designate Type of Completion:

New Well  Re-Entry  Workover

Oil  WSW  SWD

Gas  DH  EOR

OG  GSW

CM (Coal Bed Methane)

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

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

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

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

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

Deepening  Re-perf.  Conv. to EOR  Conv. to SWD

Plug Back  Liner  Conv. to GSW  Conv. to Producer

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

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

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

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

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

Spud Date or Date Reached TD Completion Date or Recompletion Date

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

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

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

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

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

Footages Calculated from Nearest Outside Section Corner:

NE  NW  SE  SW

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

Datum:  NAD27  NAD83  WGS84

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

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

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

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

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

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

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

Multiple Stage Cementing Collar Used?  Yes  No

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

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

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

Drilling Fluid Management Plan

(Data must be collected from the Reserve Pit)

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

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

Location of fluid disposal if hauled offsite:

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

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

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

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

AFFIDAVIT

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

Submitted Electronically

KCC Office Use ONLY

Confidentiality Requested

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

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

Wireline Log Received  Drill Stem Tests Received

Geologist Report / Mud Logs Received

UIC Distribution

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

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

Sec. \_\_\_\_\_ Twp. \_\_\_\_\_ S. R. \_\_\_\_\_  East  West County: \_\_\_\_\_

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

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

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No Geologist Report / Mud Logs <input type="checkbox"/> Yes <input type="checkbox"/> No  List All E. Logs Run:	<input type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  Name Top Datum
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CASING RECORD <input type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives

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

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

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

DISPOSITION OF GAS: <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5) (Submit ACO-4)</i>	PRODUCTION INTERVAL: Top Bottom
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Shots Per Foot	Perforation Top	Perforation Bottom	Bridge Plug Type	Bridge Plug Set At	Acid, Fracture, Shot, Cementing Squeeze Record <i>(Amount and Kind of Material Used)</i>

TUBING RECORD:	Size:	Set At:	Packer At:	
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Form	ACO1 - Well Completion
Operator	Ritchie Exploration, Inc.
Well Name	HUTTON 2
Doc ID	1393875

Perforations

Shots Per Foot	Perforation Top	Perforation Bottom	BridgePlugType	BridgePlugSet At	Material Record
4	4347	4352			350 gallons 15% NE Acid w/Cla-Sta
4	4344	4347			
4	4009	4012			150 gallons 15% NE & 10 soluble-perf- ball-sealers
4	4000	4006			300 gallons 15% NE & 15 soluble-perf- ball-sealers
4	3972	3977			300 gallons 15% NE & 15 soluble-perf- ball-sealers
4	3914	3918			500 gallons 15% NE





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
 8100 E 22nd St N 700  
 Wichita, Ks 67278  
 ATTN: John Goldsmith

**5-14-27 Gove Ks**  
**Hutton #2**  
 Job Ticket: 64272      **DST#: 1**  
 Test Start: 2017.11.14 @ 10:48:24

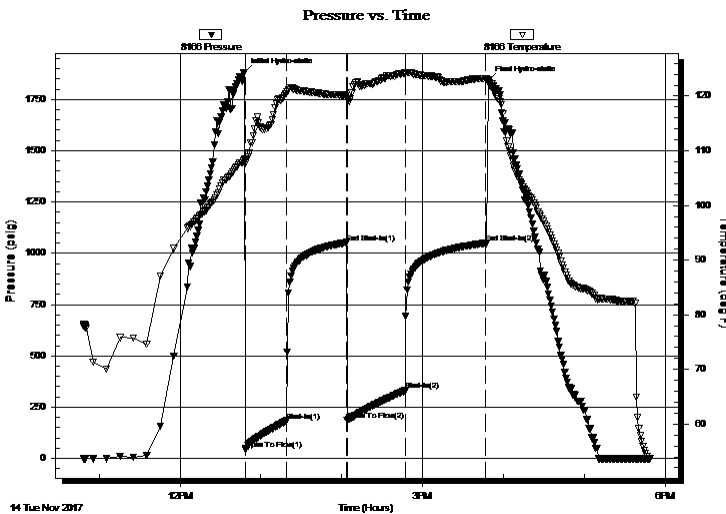
## GENERAL INFORMATION:

Formation: **E-F**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 12:48:54  
 Time Test Ended: 17:48:24  
 Interval: **3830.00 ft (KB) To 3868.00 ft (KB) (TVD)**  
 Total Depth: 3868.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2578.00 ft (KB)  
 2571.00 ft (CF)  
 KB to GR/CF: 7.00 ft

**Serial #: 8166 Outside**  
 Press@RunDepth: 330.87 psig @ 3831.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.11.14 End Date: 2017.11.14 Last Calib.: 2017.11.14  
 Start Time: 10:48:29 End Time: 17:48:23 Time On Btm: 2017.11.14 @ 12:47:54  
 Time Off Btm: 2017.11.14 @ 15:48:54

TEST COMMENT: IF: BOB in 8 min.  
 IS: No return.  
 FF: BOB in 11 min.  
 FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1881.29	108.46	Initial Hydro-static
1	45.98	108.42	Open To Flow (1)
31	183.38	120.44	Shut-In(1)
76	1052.19	120.06	End Shut-In(1)
76	185.08	119.55	Open To Flow (2)
119	330.87	124.18	Shut-In(2)
179	1049.30	123.17	End Shut-In(2)
181	1843.26	122.50	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
186.00	mcw 95%w 5%m	1.53
248.00	mcw 70%w 30%m	3.48
248.00	w cm oil spots 40%w 60%m	3.48
5.00	free oil 100%o	0.07

## Gas Rates

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



**TRILOBITE**  
**TESTING, INC.**

**DRILL STEM TEST REPORT**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

ATTN: John Goldsmith

Job Ticket: 64272

**DST#: 1**

Test Start: 2017.11.14 @ 10:48:24

**GENERAL INFORMATION:**

Formation: **E-F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:48:54

Time Test Ended: 17:48:24

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Turley

Unit No: 79

**Interval: 3830.00 ft (KB) To 3868.00 ft (KB) (TVD)**

Reference Elevations: 2578.00 ft (KB)

Total Depth: 3868.00 ft (KB) (TVD)

2571.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 7.00 ft

**Serial #: 6651 Inside**

Press@RunDepth: psig @ 3831.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.14

End Date: 2017.11.14

Last Calib.: 2017.11.14

Start Time: 10:48:18

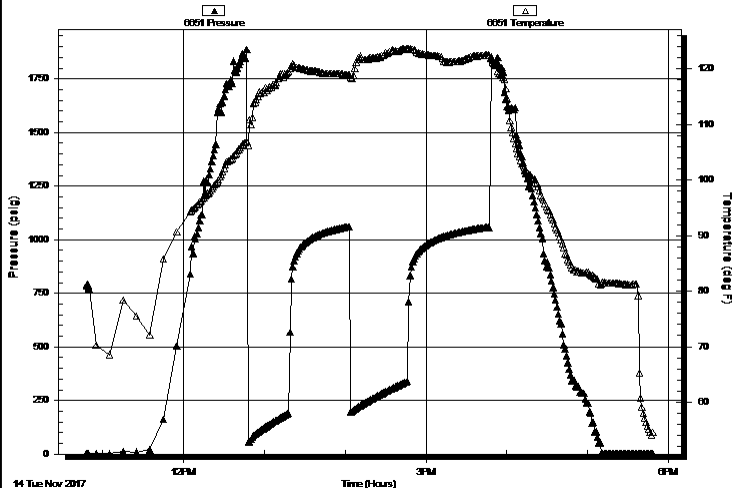
End Time: 17:48:12

Time On Btm:

Time Off Btm:

**TEST COMMENT:** IF: BOB in 8 min.  
IS: No return.  
FF: BOB in 11 min.  
FS: No return.

**Pressure vs. Time**



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

**Recovery**

Length (ft)	Description	Volume (bbl)
186.00	mcw 95%w 5%m	1.53
248.00	mcw 70%w 30%m	3.48
248.00	w cm oil spots 40%w 60%m	3.48
5.00	free oil 100%o	0.07

**Gas Rates**

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



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64272

**DST#: 1**

ATTN: John Goldsmith

Test Start: 2017.11.14 @ 10:48:24

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

7600 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.80 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4200.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
186.00	mcw 95%w 5%m	1.534
248.00	mcw 70%w 30%m	3.479
248.00	w cm oil spots 40%w 60%m	3.479
5.00	free oil 100%o	0.070

Total Length: 687.00 ft

Total Volume: 8.562 bbl

Num Fluid Samples: 0

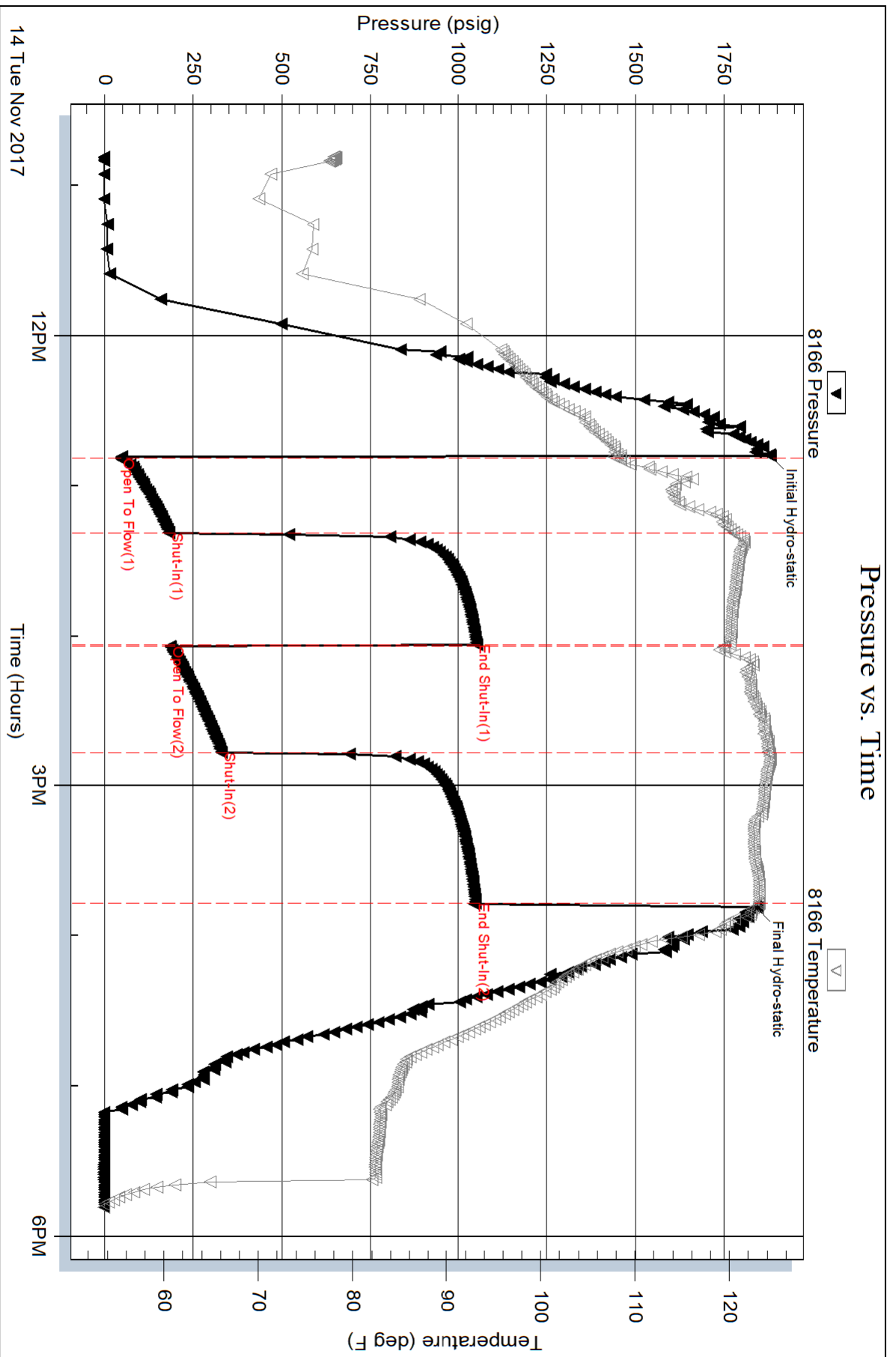
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .09@64=7600





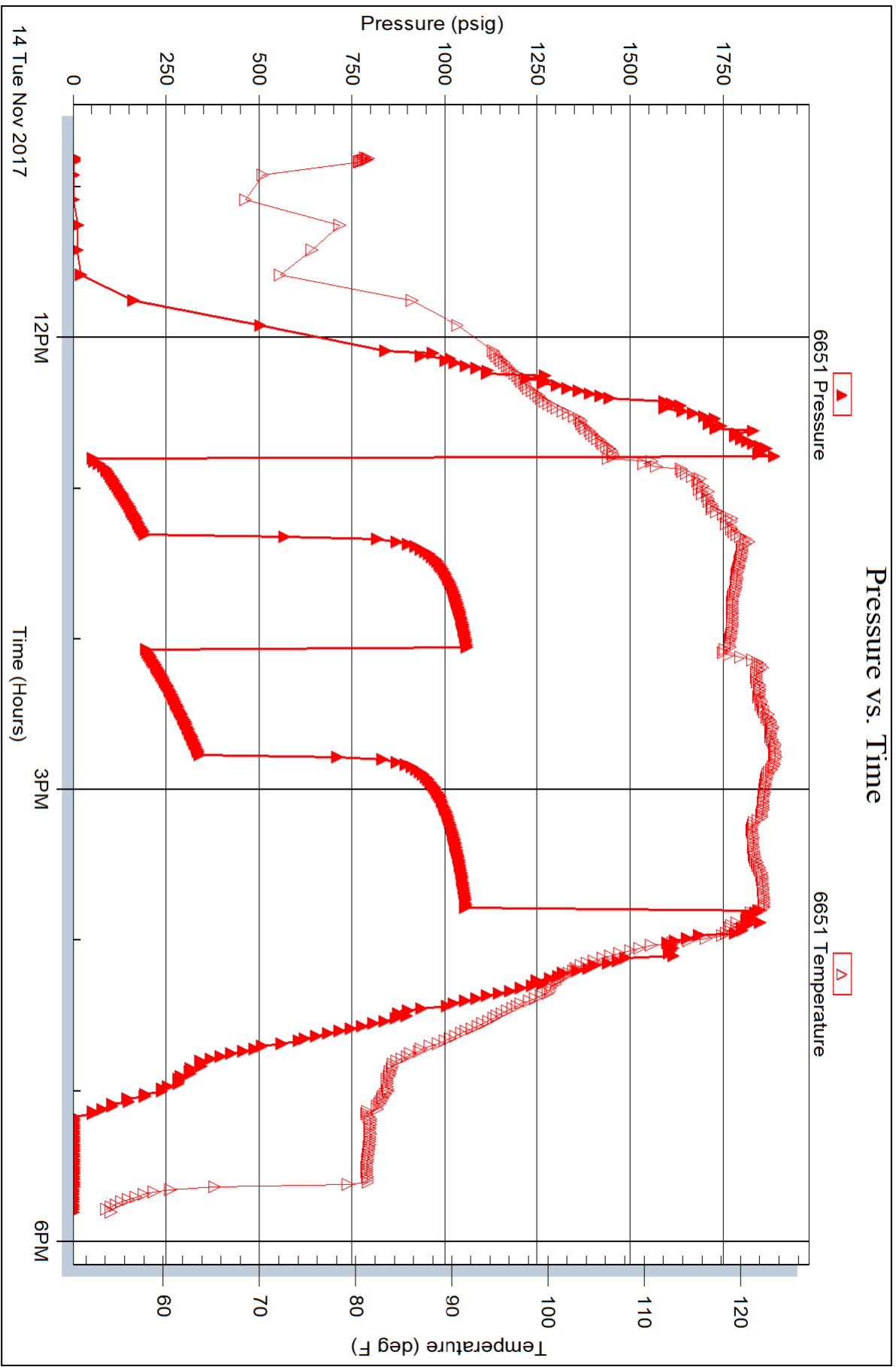
Serial #: 6651

Inside

Ritchie Exploration Inc

Hutton #2

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 64272

Printed: 2017.11.14 @ 22:23:02



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22nd St N 700  
Wichita, Ks 67278  
ATTN: John Goldsmith

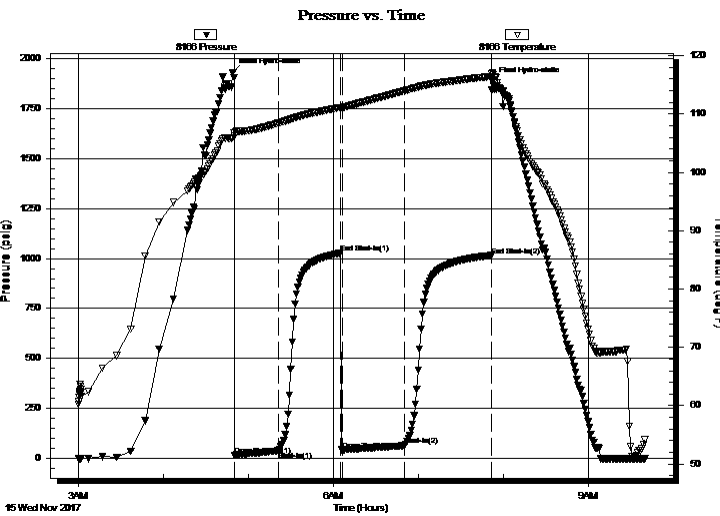
**5-14-27 Gove Ks**  
**Hutton #2**  
Job Ticket: 64273      **DST#: 2**  
Test Start: 2017.11.15 @ 02:59:42

## GENERAL INFORMATION:

Formation: **LKC H**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 04:50:12  
Time Test Ended: 09:39:42  
Interval: **3896.00 ft (KB) To 3934.00 ft (KB) (TVD)**  
Total Depth: 3868.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Brandon Turley  
Unit No: 79  
Reference Elevations: 2578.00 ft (KB)  
2571.00 ft (CF)  
KB to GR/CF: 7.00 ft

**Serial #: 8166      Outside**  
Press@RunDepth: 63.94 psig @ 3897.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.11.15      End Date: 2017.11.15      Last Calib.: 2017.11.15  
Start Time: 02:59:47      End Time: 09:39:41      Time On Btm: 2017.11.15 @ 04:48:42  
Time Off Btm: 2017.11.15 @ 07:52:12

**TEST COMMENT:** IF: 1/4 blow built to 3.  
IS: No return.  
FF: Surface blow built to 3 1/2.  
FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1929.71	105.91	Initial Hydro-static
2	16.42	106.24	Open To Flow (1)
32	38.75	108.43	Shut-In(1)
76	1026.65	111.13	End Shut-In(1)
78	41.00	111.15	Open To Flow (2)
121	63.94	113.96	Shut-In(2)
183	1015.08	116.46	End Shut-In(2)
184	1881.76	117.13	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	gocm 10%g 10%o 80%m	0.30
50.00	ocm 25%o 75%m	0.25

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

ATTN: John Goldsmith

Job Ticket: 64273

**DST#: 2**

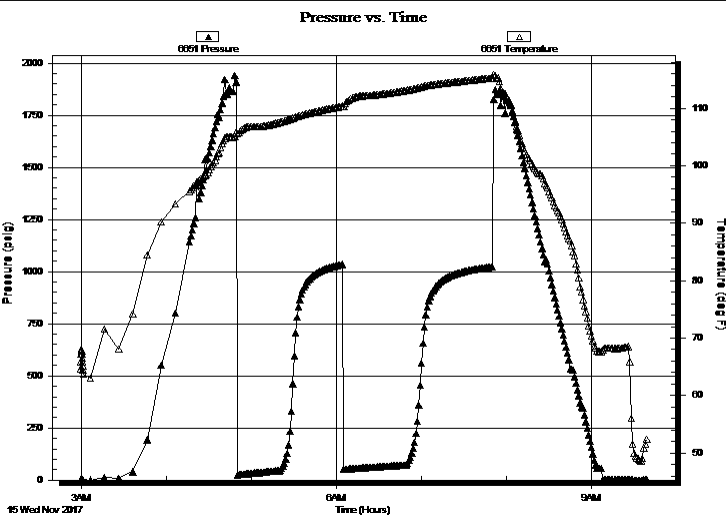
Test Start: 2017.11.15 @ 02:59:42

## GENERAL INFORMATION:

Formation: **LKC H**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:50:12  
 Time Test Ended: 09:39:42  
 Interval: **3896.00 ft (KB) To 3934.00 ft (KB) (TVD)**  
 Total Depth: 3868.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2578.00 ft (KB)  
 2571.00 ft (CF)  
 KB to GR/CF: 7.00 ft

**Serial #: 6651 Inside**  
 Press@RunDepth: psig @ 3897.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.11.15 End Date: 2017.11.15 Last Calib.: 2017.11.15  
 Start Time: 02:59:13 End Time: 09:39:07 Time On Btm:  
 Time Off Btm:

**TEST COMMENT:** IF: 1/4 blow built to 3.  
 IS: No return.  
 FF: Surface blow built to 3 1/2.  
 FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	gocm 10%g 10%o 80%m	0.30
50.00	ocm 25%o 75%m	0.25

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64273

**DST#: 2**

ATTN: John Goldsmith

Test Start: 2017.11.15 @ 02:59:42

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.20 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	gocm 10%g 10%o 80%m	0.295
50.00	ocm 25%o 75%m	0.246

Total Length: 110.00 ft

Total Volume: 0.541 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

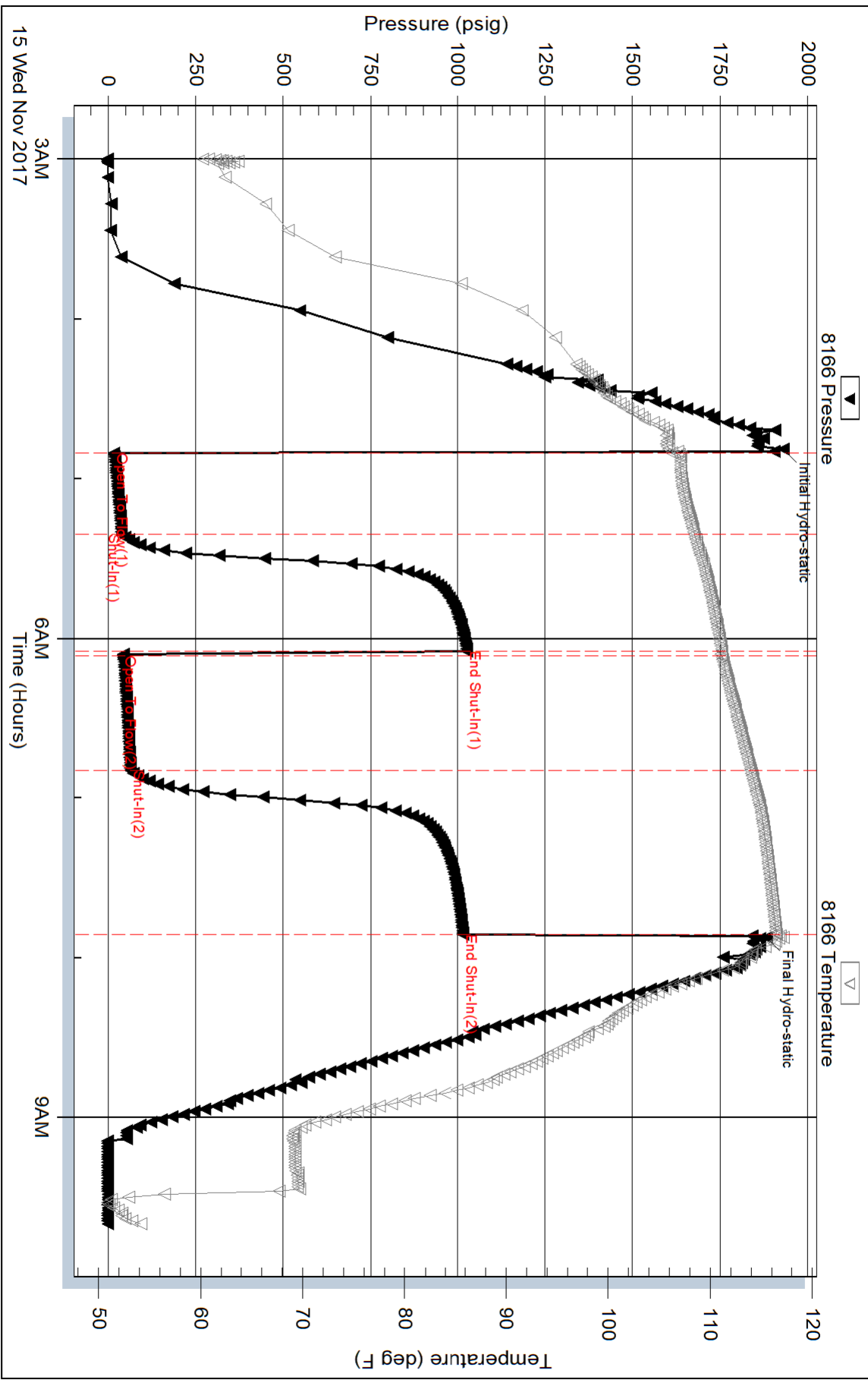
Serial #:

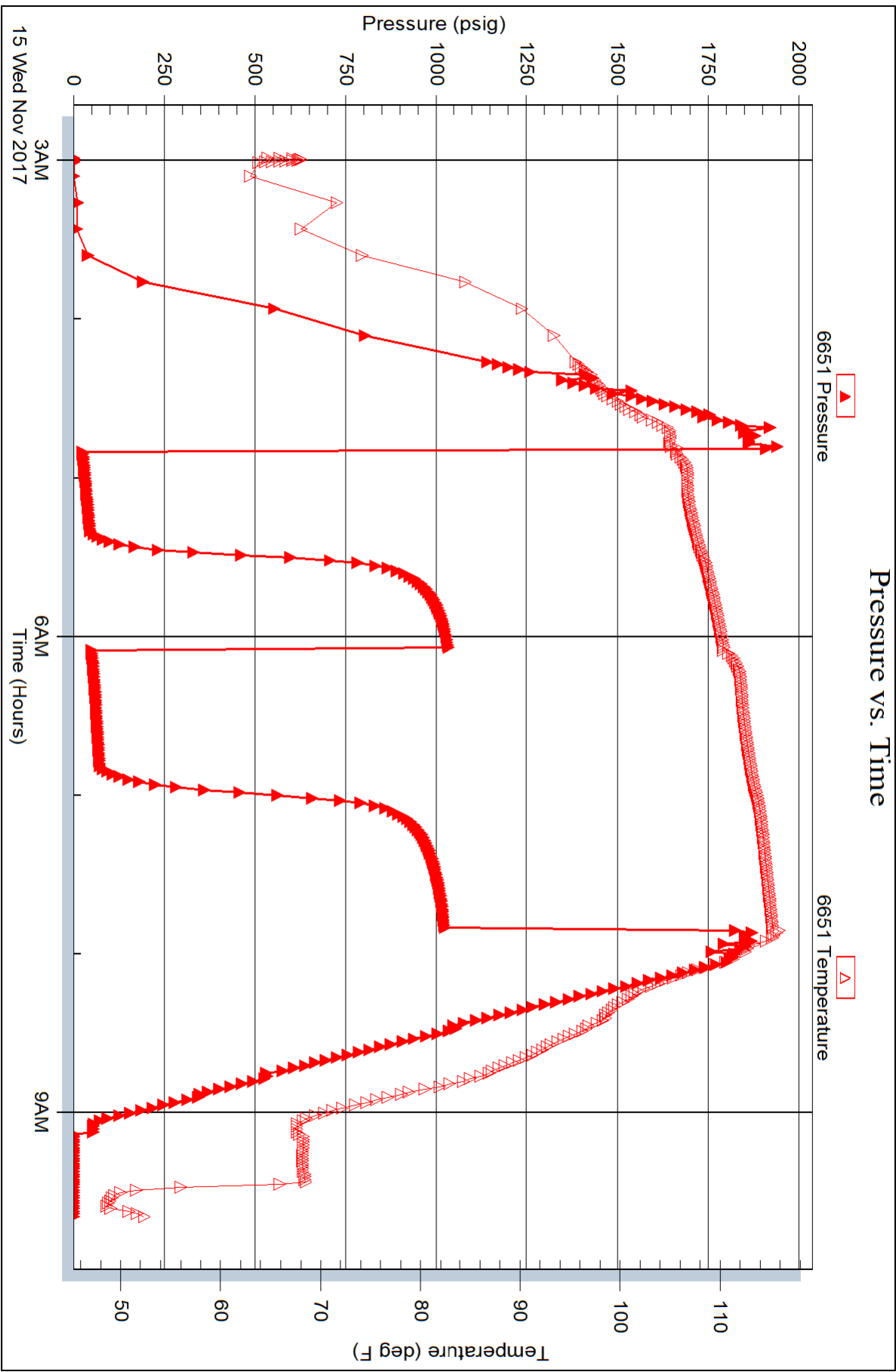
Laboratory Name:

Laboratory Location:

Recovery Comments:

# Pressure vs. Time







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22nd St N 700  
Wichita, Ks 67278  
ATTN: John Goldsmith

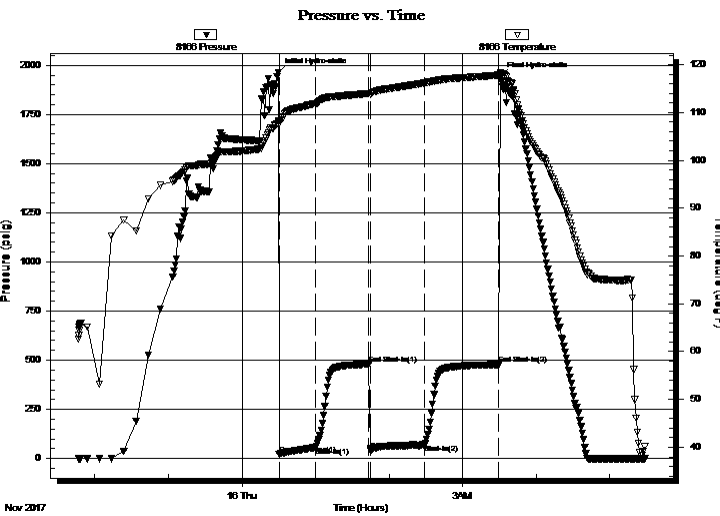
**5-14-27 Gove Ks**  
**Hutton #2**  
Job Ticket: 64274      **DST#: 3**  
Test Start: 2017.11.15 @ 21:46:39

## GENERAL INFORMATION:

Formation: **LKC J**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 00:30:09  
Time Test Ended: 05:29:09  
Interval: **3962.00 ft (KB) To 3990.00 ft (KB) (TVD)**  
Total Depth: 3990.00 ft (KB) (TVD)  
Hole Diameter: 7.88 inches Hole Condition: Good  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Brandon Turley  
Unit No: 79  
Reference Elevations: 2578.00 ft (KB)  
2571.00 ft (CF)  
KB to GR/CF: 7.00 ft

**Serial #: 8166      Outside**  
Press@RunDepth: 70.63 psig @ 3963.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.11.15      End Date: 2017.11.16      Last Calib.: 2017.11.16  
Start Time: 21:46:44      End Time: 05:29:08      Time On Btm: 2017.11.16 @ 00:29:39  
Time Off Btm: 2017.11.16 @ 03:30:39

**TEST COMMENT:** IF: BOB in 13 min.  
IS: Surace blow built to 1/4 died in 30 min.  
FF: BOB in 3 min.  
FS: Surface blow built to 3.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1963.89	108.28	Initial Hydro-static
1	20.95	107.75	Open To Flow (1)
31	55.41	111.86	Shut-In(1)
74	479.42	113.96	End Shut-In(1)
76	41.76	113.91	Open To Flow (2)
120	70.63	116.17	Shut-In(2)
180	477.69	117.81	End Shut-In(2)
181	1941.21	118.37	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	mcgo 30%g 40%o 30%m	0.30
100.00	mcgo 10%g 50%o 40%m	0.87
5.00	free oil 100%o	0.07
0.00	765 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64274

**DST#: 3**

ATTN: John Goldsmith

Test Start: 2017.11.15 @ 21:46:39

## GENERAL INFORMATION:

Formation: **LKC J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:30:09

Time Test Ended: 05:29:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

**Interval: 3962.00 ft (KB) To 3990.00 ft (KB) (TVD)**

Reference Elevations: 2578.00 ft (KB)

Total Depth: 3990.00 ft (KB) (TVD)

2571.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 7.00 ft

**Serial #: 6651 Inside**

Press@RunDepth: psig @ 3963.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.15 End Date: 2017.11.16

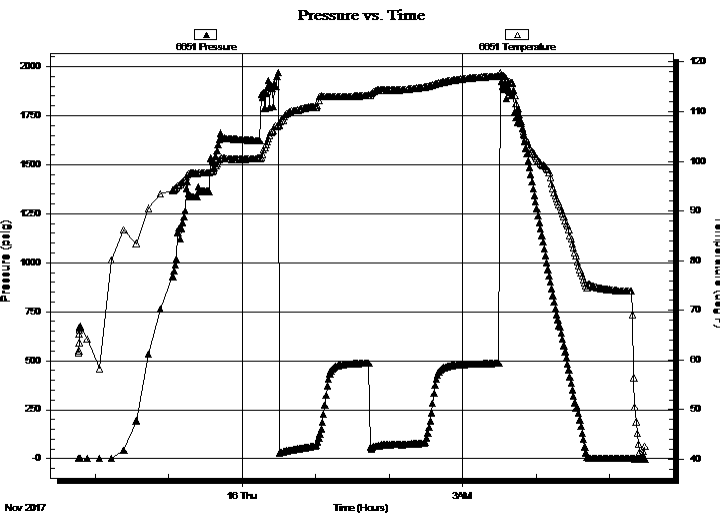
Last Calib.: 2017.11.16

Start Time: 21:46:38 End Time: 05:29:02

Time On Btm:

Time Off Btm:

**TEST COMMENT:** IF: BOB in 13 min.  
IS: Surace blow built to 1/4 died in 30 min.  
FF: BOB in 3 min.  
FS: Surface blow built to 3.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

## Recovery

Length (ft)	Description	Volume (bbl)
60.00	mcgo 30%g 40%o 30%m	0.30
100.00	mcgo 10%g 50%o 40%m	0.87
5.00	free oil 100%o	0.07
0.00	765 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64274

**DST#: 3**

ATTN: John Goldsmith

Test Start: 2017.11.15 @ 21:46:39

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 53.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.60 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	mcgo 30%g 40%o 30%m	0.295
100.00	mcgo 10%g 50%o 40%m	0.874
5.00	free oil 100%o	0.070
0.00	765 GIP	0.000

Total Length: 165.00 ft

Total Volume: 1.239 bbl

Num Fluid Samples: 0

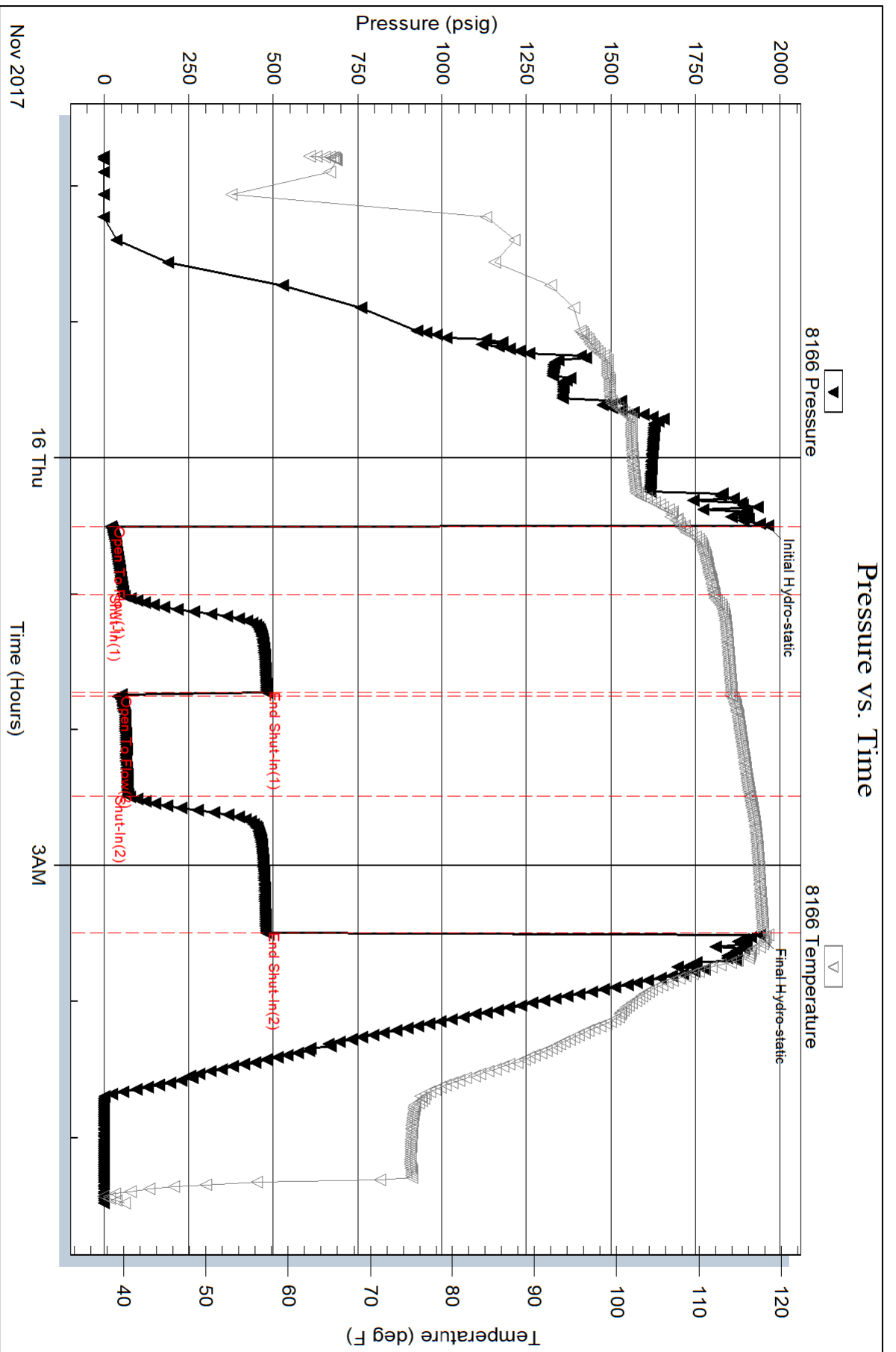
Num Gas Bombs: 0

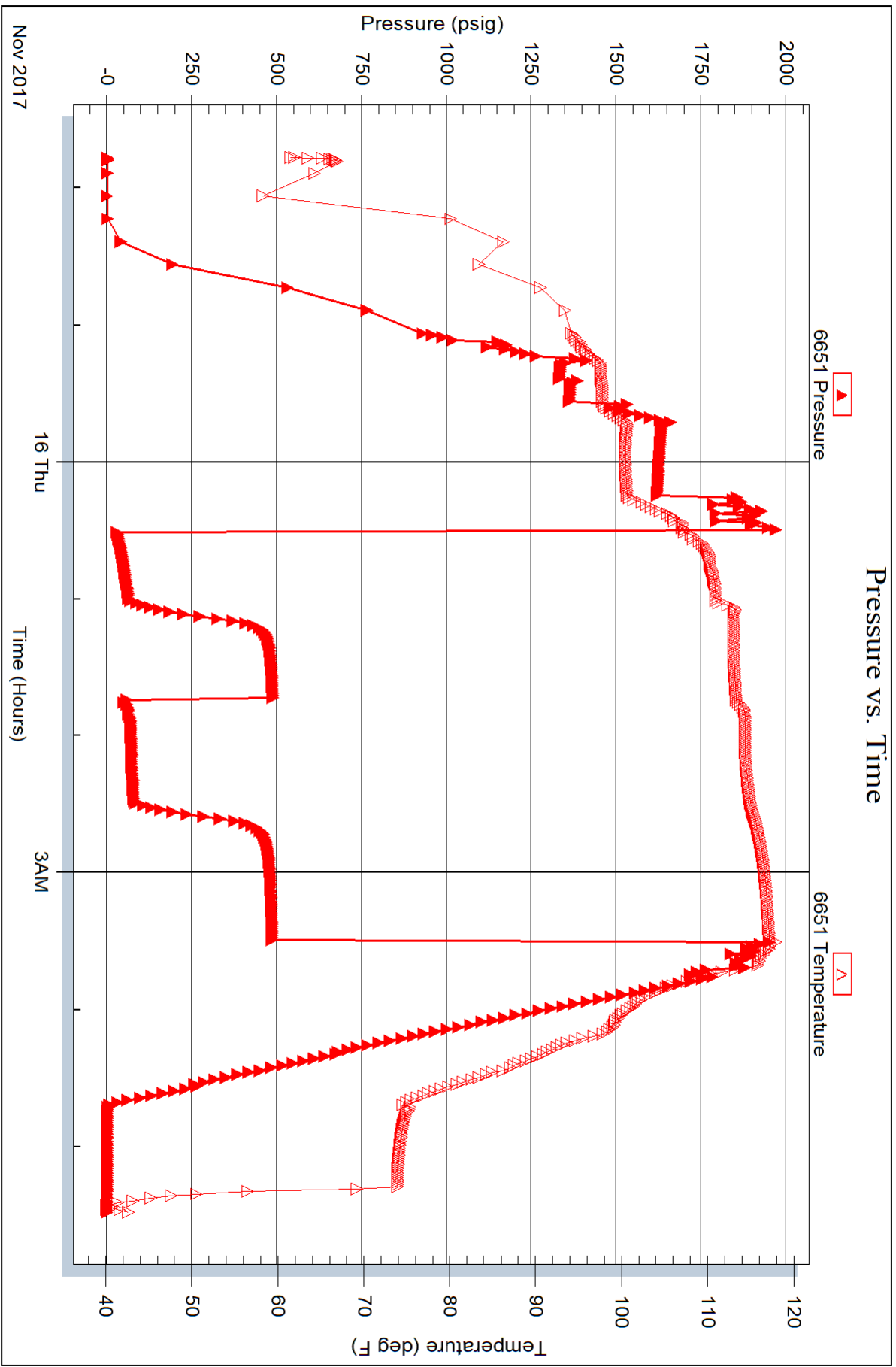
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22nd St N 700  
Wichita, Ks 67278  
ATTN: John Goldsmith

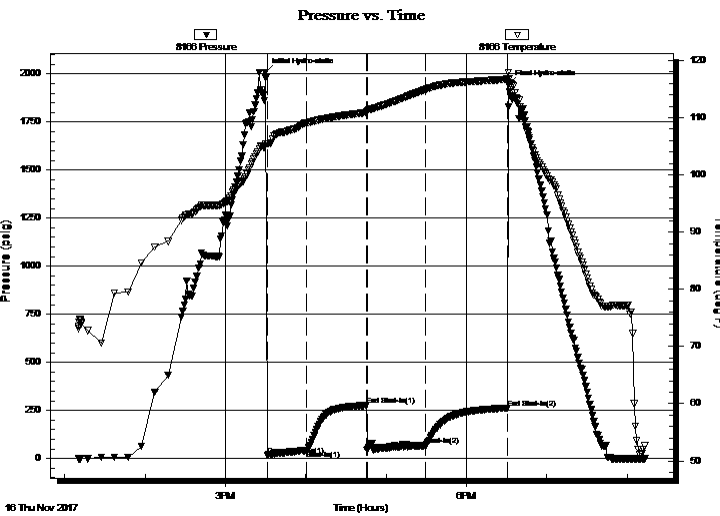
**5-14-27 Gove Ks**  
**Hutton #2**  
Job Ticket: 64275      **DST#: 4**  
Test Start: 2017.11.16 @ 13:10:11

## GENERAL INFORMATION:

Formation: **LKC-K**  
Deviated: No Whipstock: ft (KB)  
Time Tool Opened: 15:31:11  
Time Test Ended: 20:13:11  
Test Type: Conventional Bottom Hole (Reset)  
Tester: Brandon Turley  
Unit No: 79  
Interval: **3990.00 ft (KB) To 4020.00 ft (KB) (TVD)**  
Reference Elevations: 2578.00 ft (KB)  
Total Depth: 4020.00 ft (KB) (TVD)      2571.00 ft (CF)  
Hole Diameter: 7.88 inches Hole Condition: Good      KB to GR/CF: 7.00 ft

**Serial #: 8166      Outside**  
Press@RunDepth: 68.87 psig @ 3991.00 ft (KB)      Capacity: 8000.00 psig  
Start Date: 2017.11.16      End Date: 2017.11.16      Last Calib.: 2017.11.16  
Start Time: 13:10:16      End Time: 20:13:10      Time On Btm: 2017.11.16 @ 15:29:41  
Time Off Btm: 2017.11.16 @ 18:31:41

**TEST COMMENT:** IF: 1/4 blow built to 5.  
IS: No return.  
FF: BOB in 25 min.  
FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2006.17	105.12	Initial Hydro-static
2	17.11	105.39	Open To Flow (1)
31	40.44	109.10	Shut-In(1)
76	275.28	110.90	End Shut-In(1)
76	41.46	111.02	Open To Flow (2)
120	68.87	114.90	Shut-In(2)
181	261.75	116.72	End Shut-In(2)
182	1945.68	116.84	Final Hydro-static

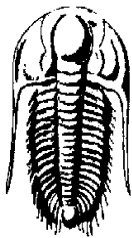
## Recovery

Length (ft)	Description	Volume (bbl)
60.00	gocm 10%g 5%o 85%m	0.30
60.00	ocm 5%o 95%m	0.31
0.00	190 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE  
TESTING, INC.**

## DRILL STEM TEST REPORT

Ritchie Exploration Inc

8100 E 22nd St N 700  
Wichita, Ks 67278

ATTN: John Goldsmith

**5-14-27 Gove Ks**

**Hutton #2**

Job Ticket: 64275

**DST#: 4**

Test Start: 2017.11.16 @ 13:10:11

### GENERAL INFORMATION:

Formation: **LKC-K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 15:31:11

Time Test Ended: 20:13:11

Interval: **3990.00 ft (KB) To 4020.00 ft (KB) (TVD)**

Total Depth: 4020.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

Reference Elevations: 2578.00 ft (KB)

2571.00 ft (CF)

KB to GR/CF: 7.00 ft

**Serial #: 6651**      **Inside**

Press@RunDepth: psig @ 3991.00 ft (KB)

Start Date: 2017.11.16

End Date:

2017.11.16

Capacity: 8000.00 psig

Last Calib.:

2017.11.16

Start Time: 13:10:08

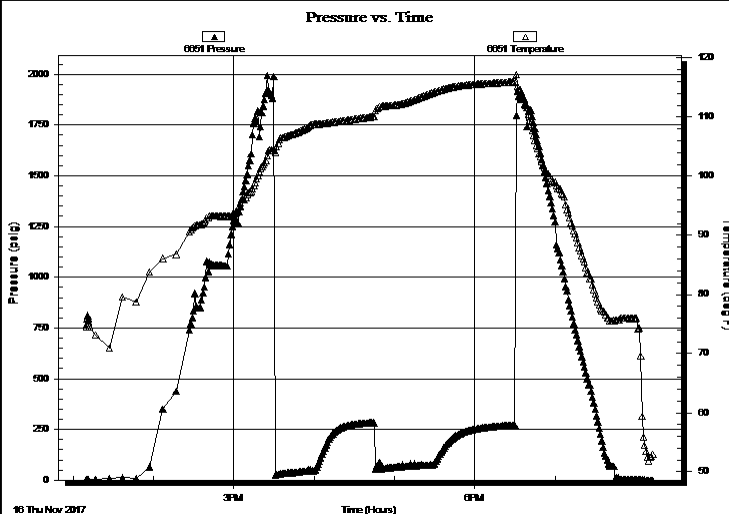
End Time:

20:13:02

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: 1/4 blow built to 5.  
IS: No return.  
FF: BOB in 25 min.  
FS: No return.



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

### Recovery

Length (ft)	Description	Volume (bbl)
60.00	gocm 10%g 5%o 85% m	0.30
60.00	ocm 5%o 95% m	0.31
0.00	190 GIP	0.00

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64275

**DST#: 4**

ATTN: John Goldsmith

Test Start: 2017.11.16 @ 13:10:11

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.20 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 2600.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	gocm 10%g 5%o 85%m	0.295
60.00	ocm 5%o 95%m	0.313
0.00	190 GIP	0.000

Total Length: 120.00 ft      Total Volume: 0.608 bbl

Num Fluid Samples: 0

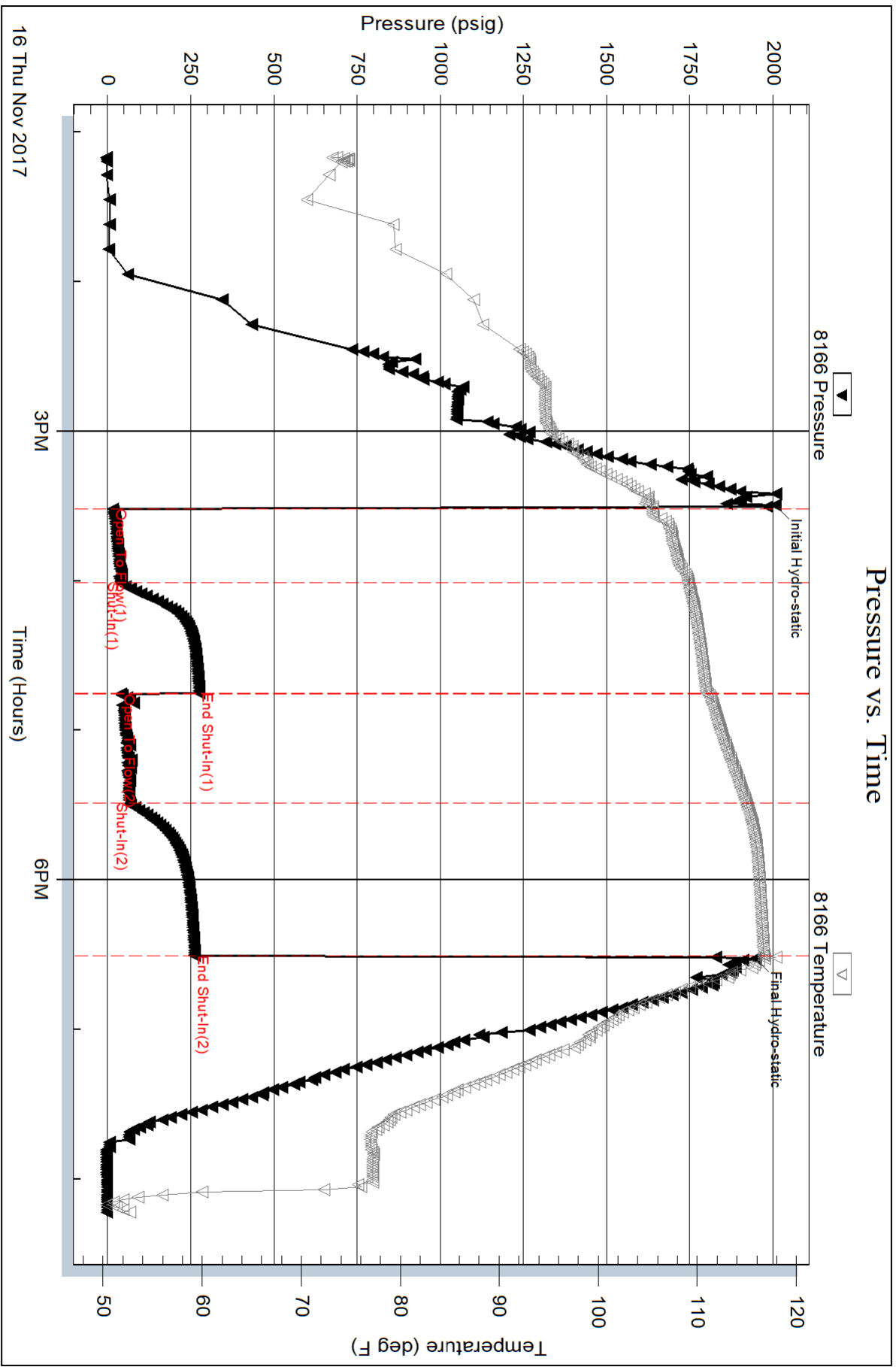
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:









**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
 8100 E 22nd St N 700  
 Wichita, Ks 67278  
 ATTN: John Goldsmith

**5-14-27 Gove Ks**

**Hutton #2**

Job Ticket: 64276

**DST#: 5**

Test Start: 2017.11.18 @ 07:10:16

## GENERAL INFORMATION:

Formation: **Ft Scott**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 09:05:16  
 Time Test Ended: 12:48:46  
 Interval: **4240.00 ft (KB) To 4280.00 ft (KB) (TVD)**  
 Total Depth: 4280.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2578.00 ft (KB)  
 2571.00 ft (CF)  
 KB to GR/CF: 7.00 ft

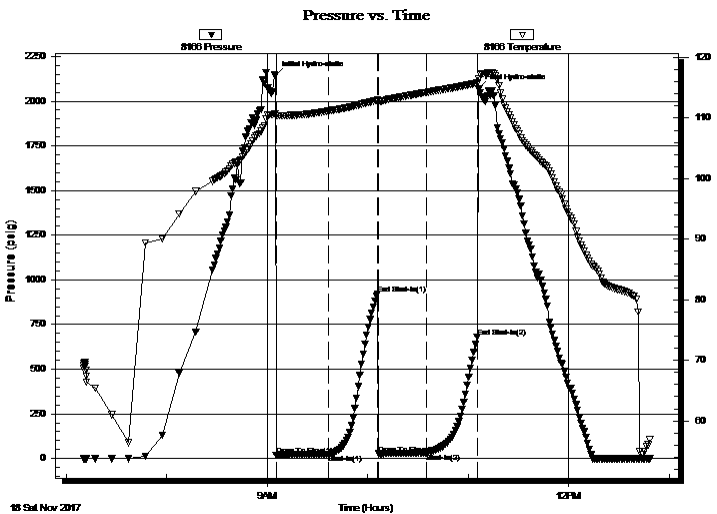
**Serial #: 8166**

**Outside**

Press@RunDepth: 31.86 psig @ 4241.00 ft (KB)  
 Start Date: 2017.11.18 End Date: 2017.11.18  
 Start Time: 07:10:21 End Time: 12:48:45  
 Capacity: 8000.00 psig  
 Last Calib.: 2017.11.18  
 Time On Btm: 2017.11.18 @ 09:04:46  
 Time Off Btm: 2017.11.18 @ 11:06:16

**TEST COMMENT:** IF: 1/4 blow died in 14 min.  
 IS: No return.  
 FF: No blow . Flushed tool no blow .  
 FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2143.41	110.78	Initial Hydro-static
1	19.50	110.37	Open To Flow (1)
32	24.26	111.18	Shut-In(1)
61	921.64	112.94	End Shut-In(1)
62	26.10	112.65	Open To Flow (2)
91	31.86	114.27	Shut-In(2)
121	678.25	115.80	End Shut-In(2)
122	2069.05	116.50	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100%m	0.02

\* Recovery from multiple tests

## Gas Rates

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



# TRILOBITE TESTING, INC.

## DRILL STEM TEST REPORT

Ritchie Exploration Inc

8100 E 22nd St N 700  
Wichita, Ks 67278

ATTN: John Goldsmith

5-14-27 Gove Ks

Hutton #2

Job Ticket: 64276

DST#: 5

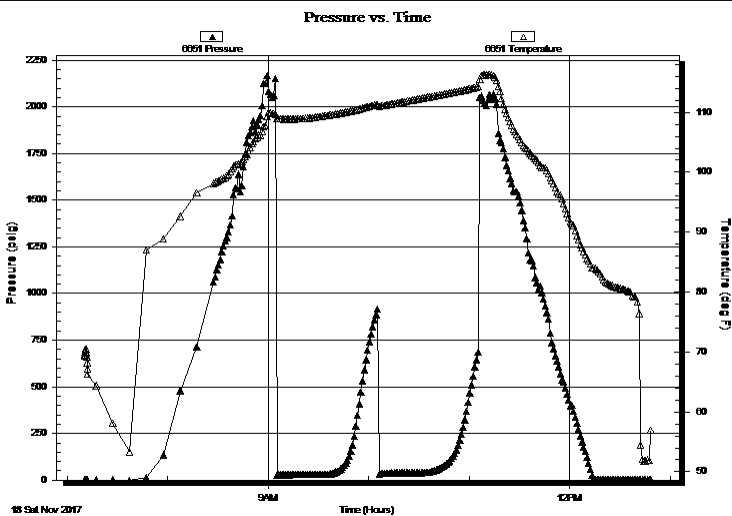
Test Start: 2017.11.18 @ 07:10:16

### GENERAL INFORMATION:

Formation:	<b>Ft Scott</b>		
Deviated:	No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Reset)
Time Tool Opened:	09:05:16		Tester: Brandon Turley
Time Test Ended:	12:48:46		Unit No: 79
Interval:	<b>4240.00 ft (KB) To 4280.00 ft (KB) (TVD)</b>		Reference Elevations: 2578.00 ft (KB)
Total Depth:	4280.00 ft (KB) (TVD)		2571.00 ft (CF)
Hole Diameter:	7.88 inches	Hole Condition: Good	KB to GR/CF: 7.00 ft

<b>Serial #: 6651</b>	<b>Inside</b>		
Press@RunDepth:	psig @	4241.00 ft (KB)	Capacity: 8000.00 psig
Start Date:	2017.11.18	End Date: 2017.11.18	Last Calib.: 2017.11.18
Start Time:	07:10:32	End Time: 12:48:56	Time On Btm:
			Time Off Btm:

TEST COMMENT: IF: 1/4 blow died in 14 min.  
IS: No return.  
FF: No blow . Flushed tool no blow .  
FS: No return.



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	mud 100% <sub>m</sub>	0.02

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64276

**DST#: 5**

ATTN: John Goldsmith

Test Start: 2017.11.18 @ 07:10:16

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.79 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	mud 100%m	0.025

Total Length: 5.00 ft      Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

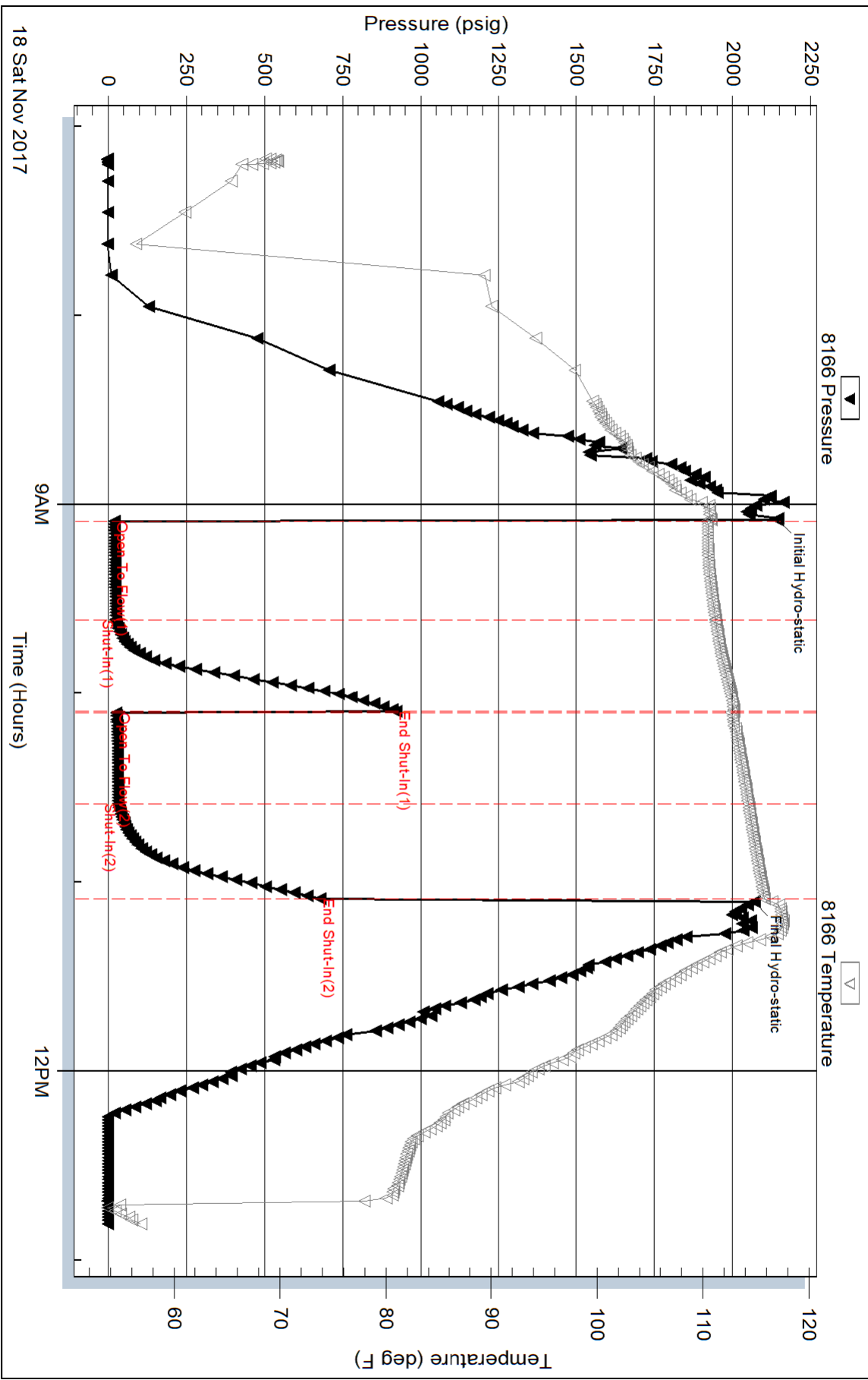
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

# Pressure vs. Time



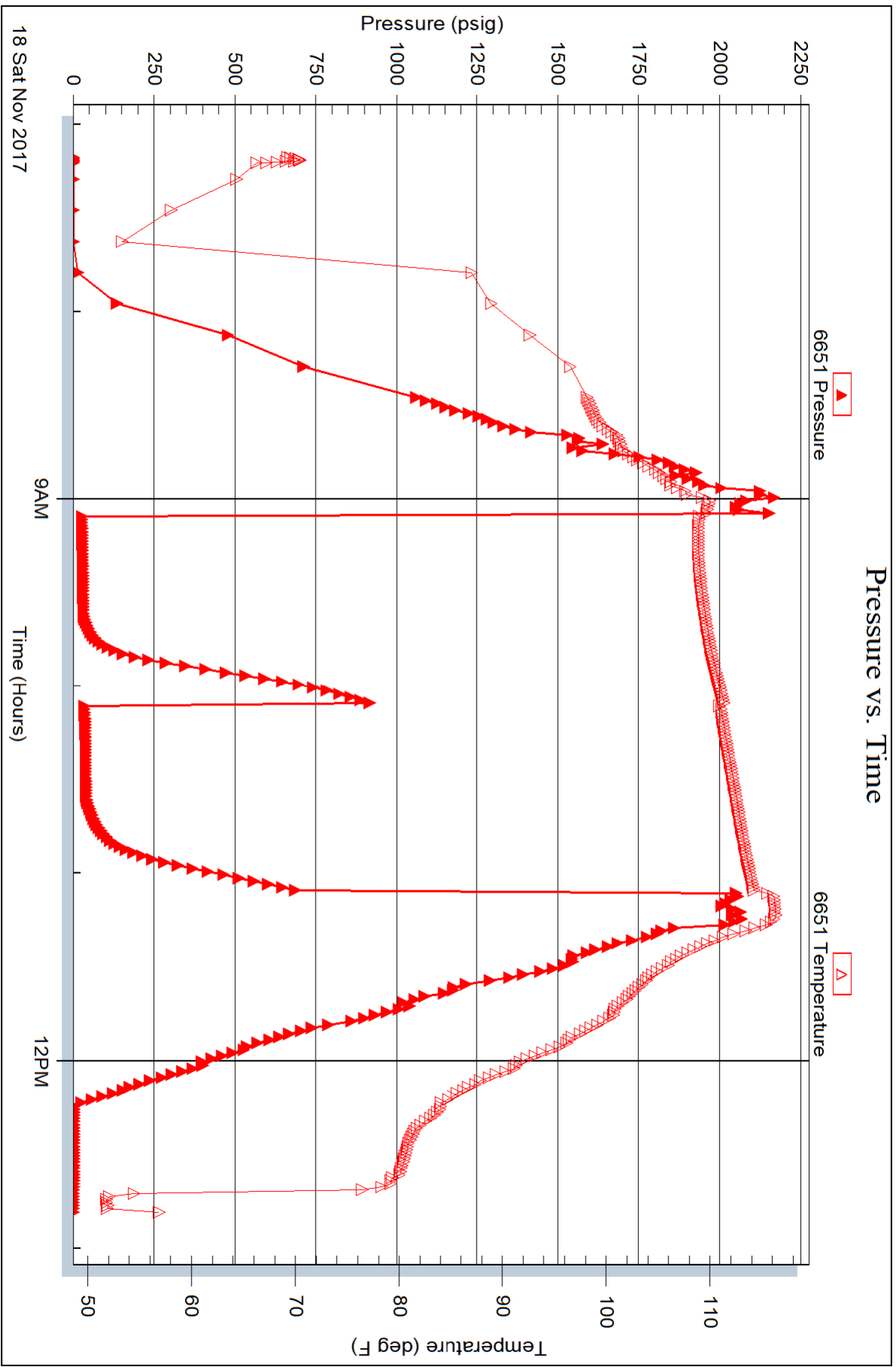
Serial #: 6651

Inside

Ritchie Exploration Inc

Hutton #2

DST Test Number: 5





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
8100 E 22nd St N 700  
Wichita, Ks 67278  
ATTN: John Goldsmith

**5-14-27 Gove Ks**

**Hutton #2**

Job Ticket: 64277

**DST#: 6**

Test Start: 2017.11.19 @ 00:31:14

## GENERAL INFORMATION:

Formation: **Miss**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 02:34:44  
 Time Test Ended: 07:53:44  
 Interval: **4322.00 ft (KB) To 4352.00 ft (KB) (TVD)**  
 Total Depth: 4352.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2578.00 ft (KB)  
 2571.00 ft (CF)  
 KB to GR/CF: 7.00 ft

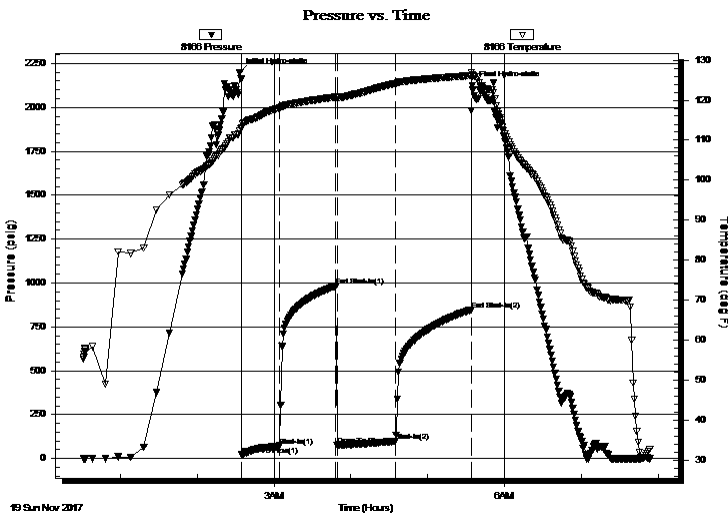
**Serial #: 8166**

**Outside**

Press@RunDepth: 97.94 psig @ 4323.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2017.11.19 End Date: 2017.11.19 Last Calib.: 2017.11.19  
 Start Time: 00:31:19 End Time: 07:53:43 Time On Btm: 2017.11.19 @ 02:33:14  
 Time Off Btm: 2017.11.19 @ 05:34:44

**TEST COMMENT:** IF: 1/4 blow BOB in 28 min.  
 IS: No return.  
 FF: BOB in 30 min.  
 FS: Surface blow died in 20 min.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2199.35	112.27	Initial Hydro-static
2	20.96	113.19	Open To Flow (1)
31	72.37	118.01	Shut-In(1)
75	983.03	120.77	End Shut-In(1)
76	76.66	120.54	Open To Flow (2)
122	97.94	124.17	Shut-In(2)
181	847.07	126.16	End Shut-In(2)
182	2124.53	126.40	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
124.00	gocm 5%g 15%o 80%m	0.66
107.00	go 15%g 85%o	1.50
0.00	141 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

## DRILL STEM TEST REPORT

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64277

**DST#: 6**

ATTN: John Goldsmith

Test Start: 2017.11.19 @ 00:31:14

### GENERAL INFORMATION:

Formation: **Miss**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 02:34:44

Time Test Ended: 07:53:44

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

**Interval: 4322.00 ft (KB) To 4352.00 ft (KB) (TVD)**

Reference Elevations: 2578.00 ft (KB)

Total Depth: 4352.00 ft (KB) (TVD)

2571.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 7.00 ft

**Serial #: 6651 Inside**

Press@RunDepth: psig @ 4323.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2017.11.19

End Date:

2017.11.19

Last Calib.:

2017.11.19

Start Time: 00:31:17

End Time:

07:53:41

Time On Btm:

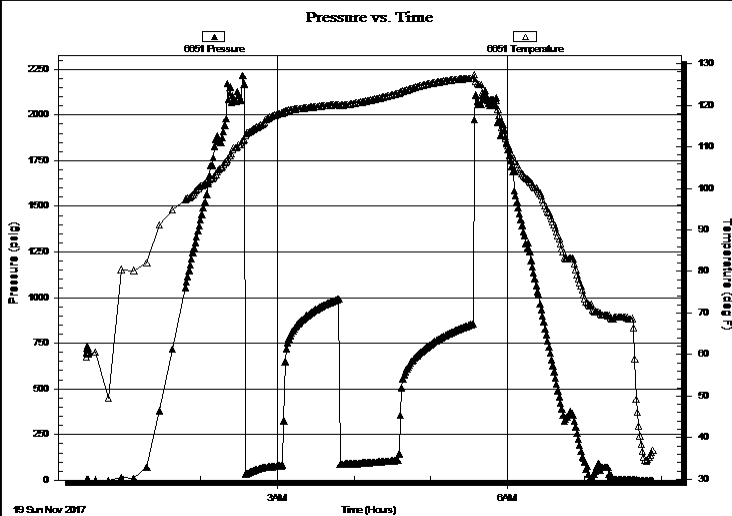
Time Off Btm:

TEST COMMENT: IF: 1/4 blow BOB in 28 min.

IS: No return.

FF: BOB in 30 min.

FS: Surface blow died in 20 min.



### PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

### Recovery

Length (ft)	Description	Volume (bbl)
124.00	gocm 5%g 15%o 80%m	0.66
107.00	go 15%g 85%o	1.50
0.00	141 GIP	0.00

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64277

**DST#: 6**

ATTN: John Goldsmith

Test Start: 2017.11.19 @ 00:31:14

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

37 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 58.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 5500.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
124.00	gocm 5%g 15%o 80%m	0.664
107.00	go 15%g 85%o	1.501
0.00	141 GIP	0.000

Total Length: 231.00 ft      Total Volume: 2.165 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

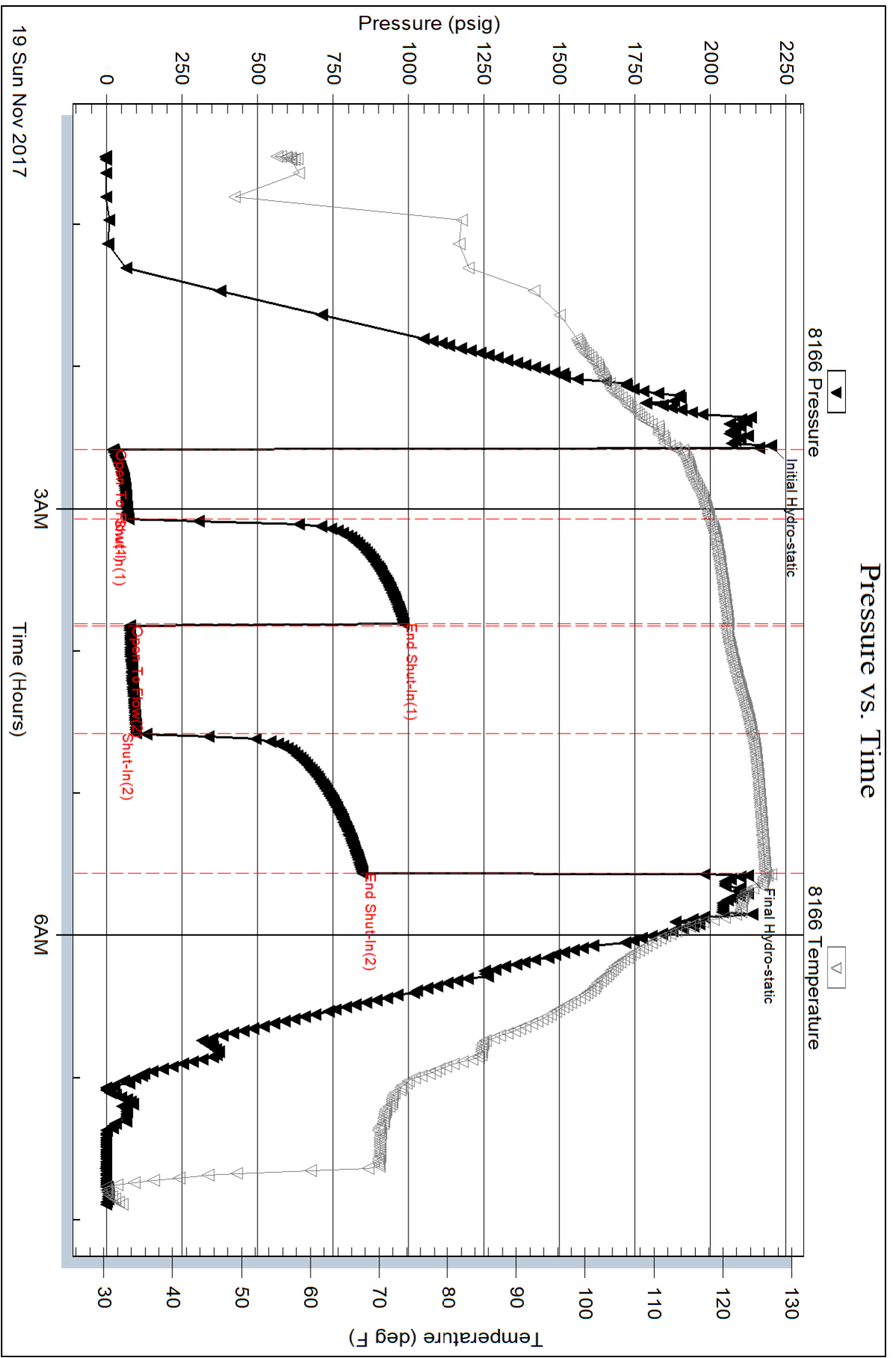
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 35@40=37





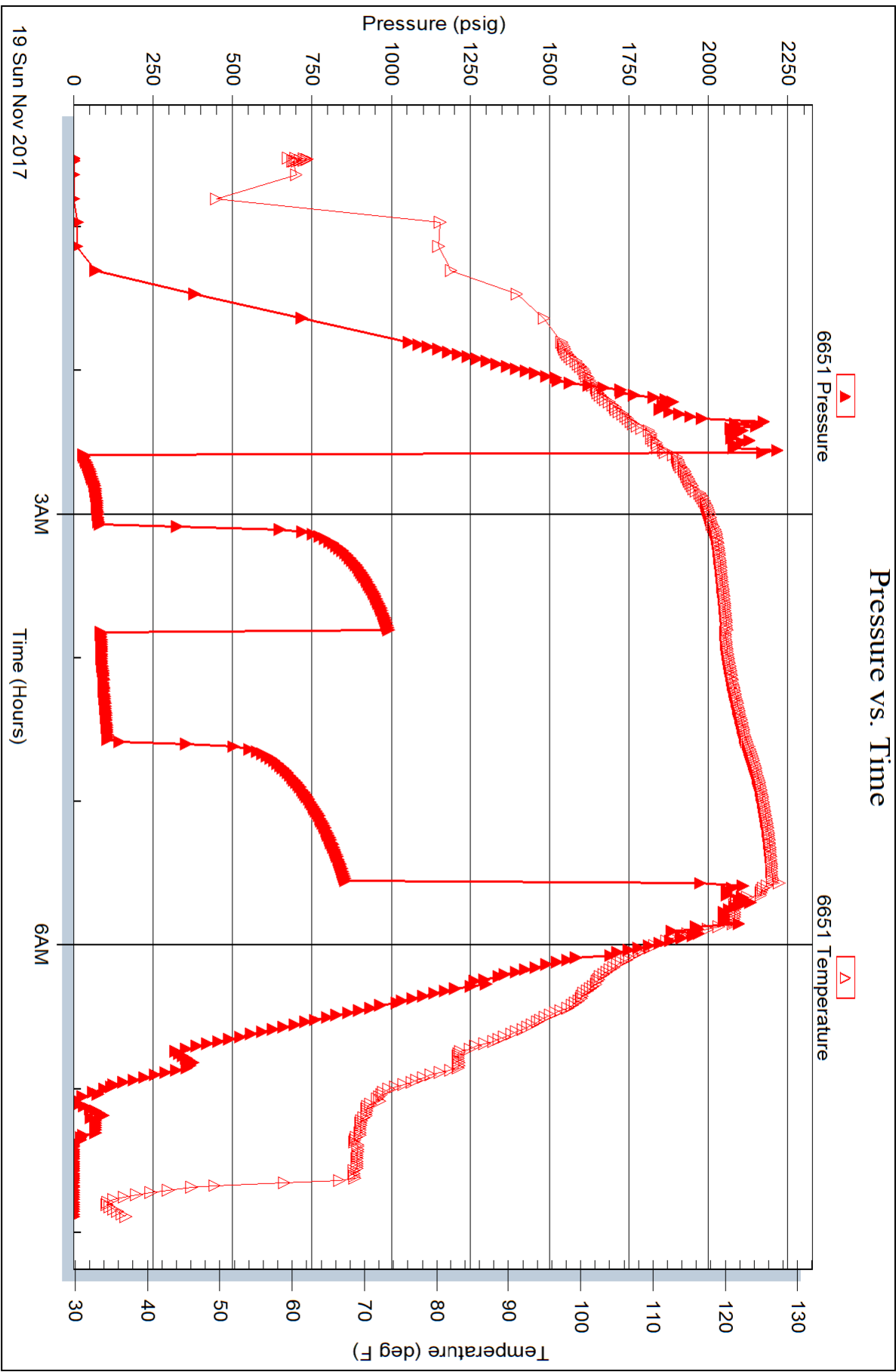
Serial #: 6651

Inside

Ritchie Exploration Inc

Hutton #2

DST Test Number: 6





**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc  
 8100 E 22nd St N 700  
 Wichita, Ks 67278  
 ATTN: John Goldsmith

**5-14-27 Gove Ks**

**Hutton #2**

Job Ticket: 64278

**DST#: 7**

Test Start: 2017.11.19 @ 15:25:05

## GENERAL INFORMATION:

Formation: **Miss #2**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 17:16:35  
 Time Test Ended: 22:46:05  
 Interval: **4351.00 ft (KB) To 4362.00 ft (KB) (TVD)**  
 Total Depth: 4362.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brandon Turley  
 Unit No: 79  
 Reference Elevations: 2578.00 ft (KB)  
 2571.00 ft (CF)  
 KB to GR/CF: 7.00 ft

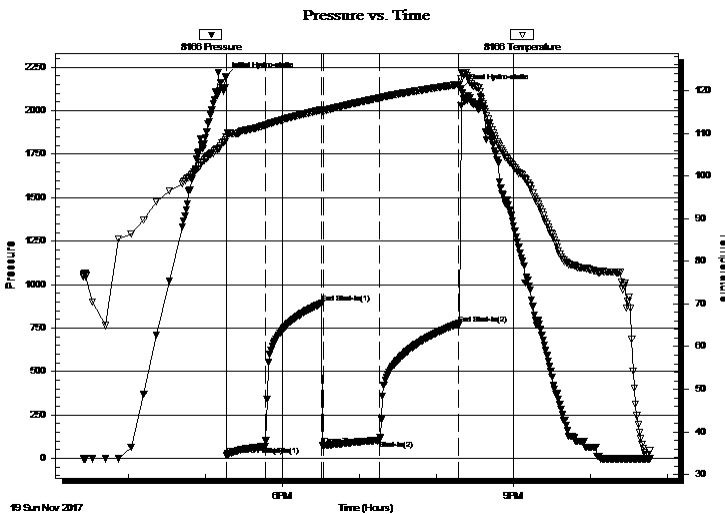
**Serial #: 8166**

**Outside**

Press@RunDepth: 105.03 psig @ 4352.00 ft (KB)  
 Start Date: 2017.11.19 End Date: 2017.11.19  
 Start Time: 15:25:10 End Time: 22:46:04  
 Capacity: 8000.00 psig  
 Last Calib.: 2017.11.19  
 Time On Btm: 2017.11.19 @ 17:15:35  
 Time Off Btm: 2017.11.19 @ 20:19:35

**TEST COMMENT:** IF: BOB in 22 min.  
 IS: No return.  
 FF: BOB in 30 min.  
 FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2197.82	108.47	Initial Hydro-static
1	19.29	109.01	Open To Flow (1)
31	69.21	111.86	Shut-In(1)
75	891.67	115.49	End Shut-In(1)
76	73.94	115.25	Open To Flow (2)
120	105.03	118.25	Shut-In(2)
182	775.21	121.44	End Shut-In(2)
184	2128.32	124.17	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 10%g 20%o 70%m	0.30
191.00	go 10%g 90%o	2.17
0.00	119 GIP	0.00

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64278

**DST#: 7**

ATTN: John Goldsmith

Test Start: 2017.11.19 @ 15:25:05

## GENERAL INFORMATION:

Formation: **Miss #2**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 17:16:35

Time Test Ended: 22:46:05

Test Type: Conventional Bottom Hole (Reset)

Tester: Brandon Turley

Unit No: 79

**Interval: 4351.00 ft (KB) To 4362.00 ft (KB) (TVD)**

Total Depth: 4362.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2578.00 ft (KB)

2571.00 ft (CF)

KB to GR/CF: 7.00 ft

**Serial #: 6651** Inside

Press@RunDepth: psig @ 4352.00 ft (KB)

Start Date: 2017.11.19

End Date: 2017.11.19

Capacity: 8000.00 psig

Last Calib.: 2017.11.19

Start Time: 15:25:06

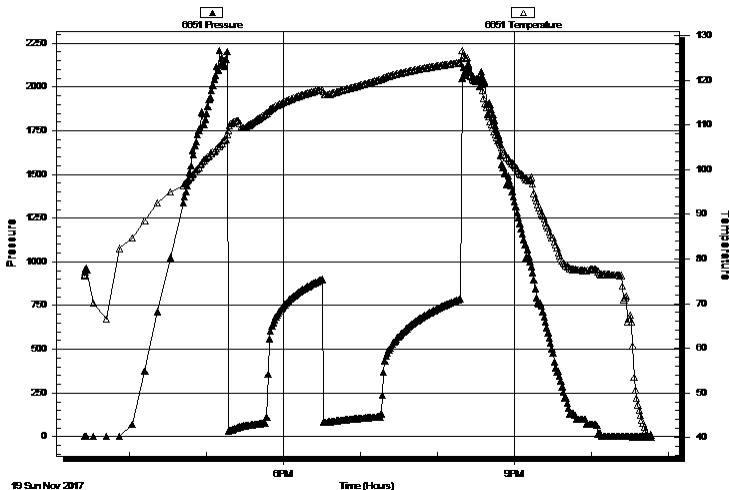
End Time: 22:46:00

Time On Btm:

Time Off Btm:

**TEST COMMENT:** IF: BOB in 22 min.  
IS: No return.  
FF: BOB in 30 min.  
FS: No return.

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation

## Recovery

Length (ft)	Description	Volume (bbl)
62.00	gocm 10%g 20%o 70%m	0.30
191.00	go 10%g 90%o	2.17
0.00	119 GIP	0.00

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Ritchie Exploration Inc

**5-14-27 Gove Ks**

8100 E 22nd St N 700  
Wichita, Ks 67278

**Hutton #2**

Job Ticket: 64278

**DST#: 7**

ATTN: John Goldsmith

Test Start: 2017.11.19 @ 15:25:05

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

37 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.99 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4400.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
62.00	gocm 10%g 20%o 70%m	0.305
191.00	go 10%g 90%o	2.169
0.00	119 GIP	0.000

Total Length: 253.00 ft      Total Volume: 2.474 bbl

Num Fluid Samples: 0

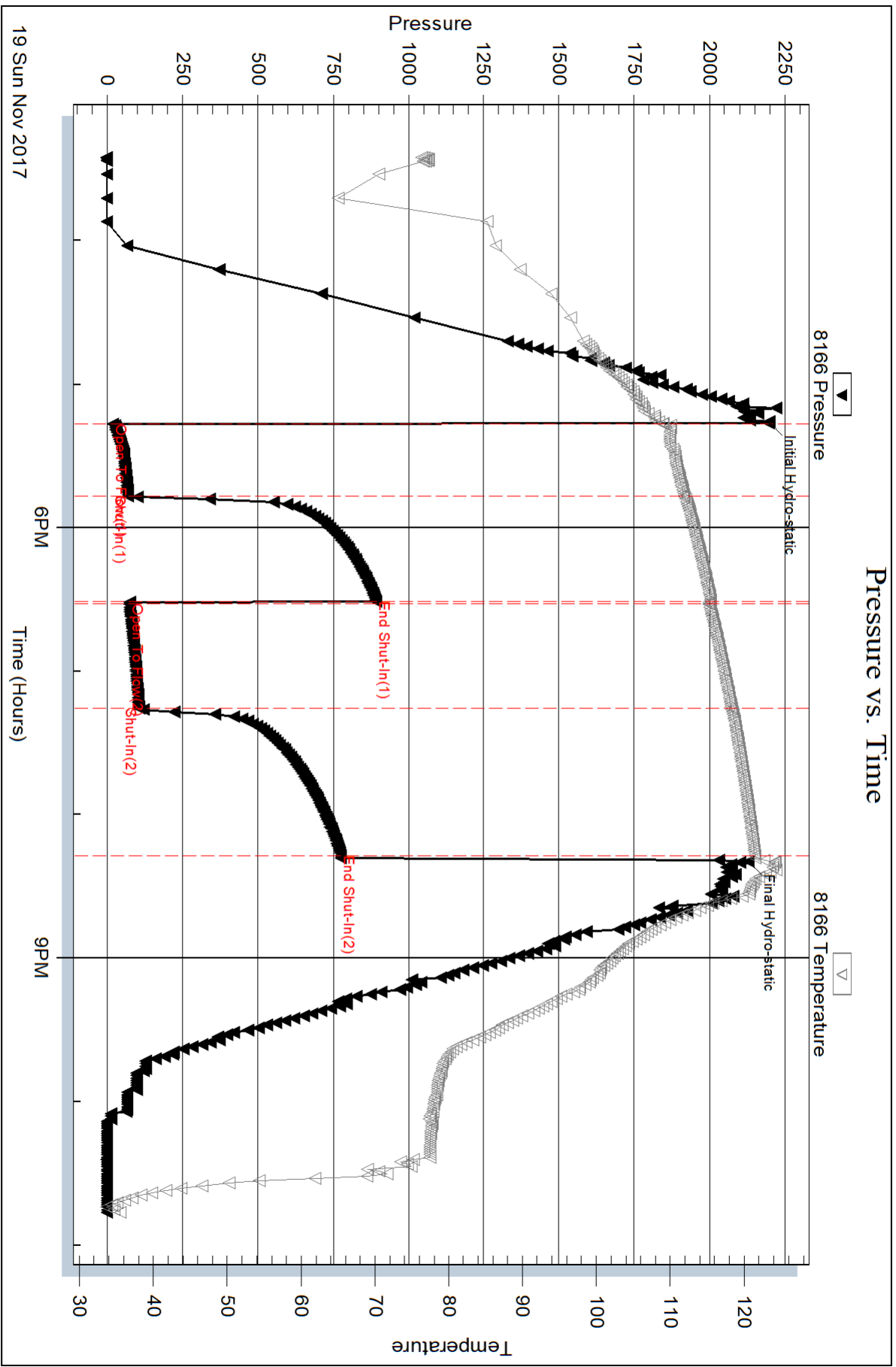
Num Gas Bombs: 0

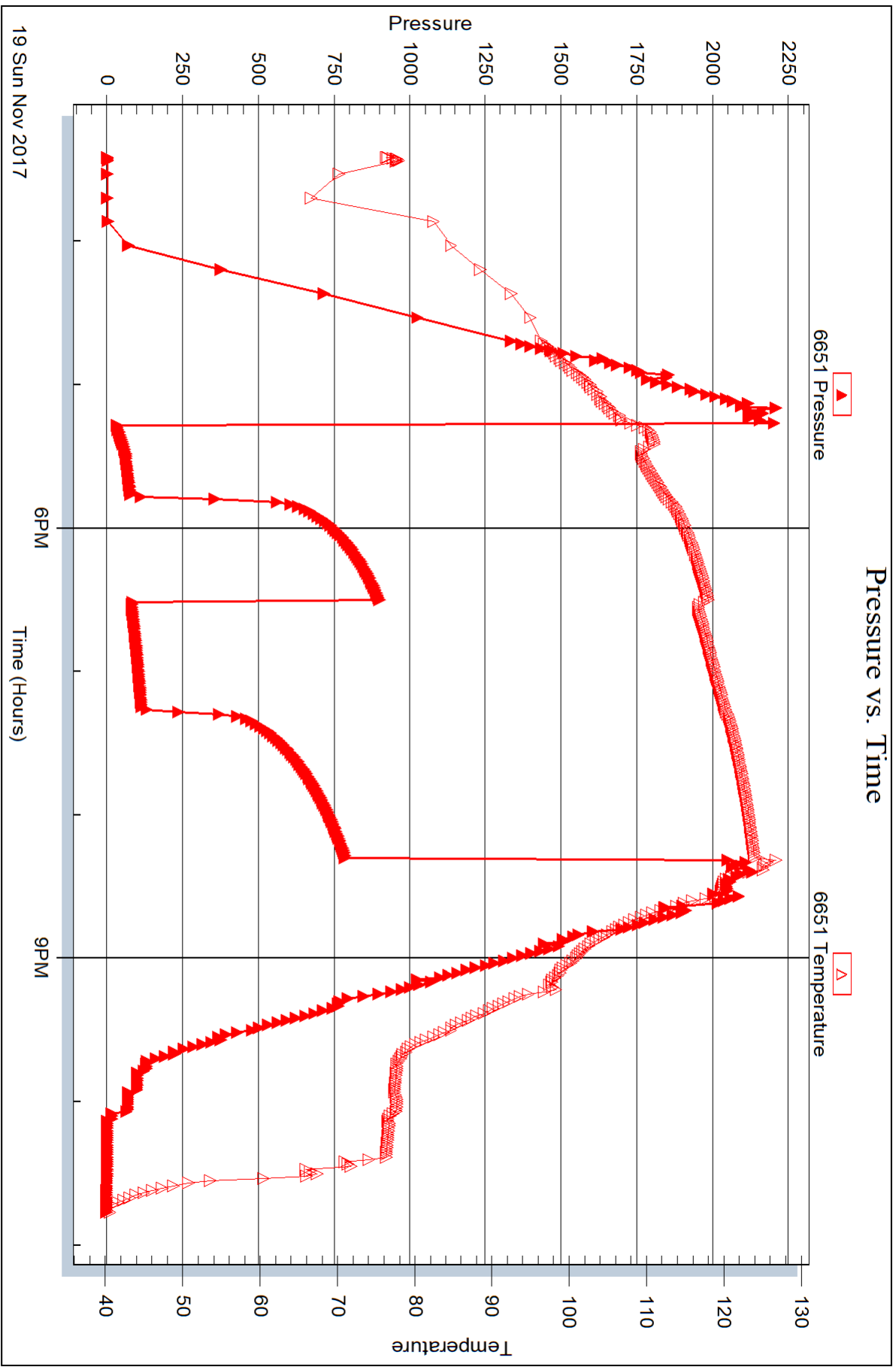
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: 35@40=37





# Wellsite Services, LLC

John Goldsmith  
(316) 640-0236

427 Roosevelt St.  
Cheney, KS 67025

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

Well Name: #2 Hutton  
API: 15-063-22316  
Location: 335' FSL & 1450' FWL, Sec 6-14S-27W, S2 S2 SW  
License Number: REI #4767  
Spud Date: 11/9/2017  
Surface Coordinates: LAT: 38.8593732  
LONG: -100.3671451  
Bottom Hole Vertical Hole  
Coordinates: 3/4 Degree Deviation  
Ground Elevation (ft): 2570'  
Logged Interval (ft): 3500' To: RTD  
Formation: Mississippian at RTD  
Type of Drilling Fluid: Chemical

Region: Gove County  
Drilling Completed: 11/20/2017

K.B. Elevation (ft): 2578'  
Total Depth (ft): 4500'

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

### OPERATOR

Company: Ritchie Exploration Inc.  
Address: 8100 E. 22nd St. N. #700  
Wichita, KS 67226  
(316) 691-9500

### GEOLOGIST

Name: John Goldsmith  
Company: Wellsite Services LLC  
Address: 427 Roosevelt St.  
Cheney, KS 67025  
(316) 640-0236

### RIG RECORDS

Contractor: WW Drilling Rig #12  
Pusher: Calvin Phannensteil  
(785) 743-8120

Collar Tally: 443'

Pump: National K-380  
Liner & Stroke: 6 x 14

### BIT RECORDS

Size:	Type:	Footage:	Condition:	Hours:	Serial #:
12 1/4"	Sm-tooth	0-221'	RR	3	RH7490
7 7/8"	Sm-F27	221'-4500'	New	128	RJ4319

### COMMENTS

Surface Casing: 5 joints of 8 5/8" set @ 220'  
Production Casing: 4.5" production casing was set.  
Mud by: MudCo  
DST's by: Trilobite Testing  
Logs by: Pioneer Energy Services (DIL, CN-CD, ML)  
RTD=4500' LTD=4500'



**FORMATION TOPS**

<b>FORMATION</b>	<b>SAMPLE TOPS</b>		<b>LOG TOPS</b>	
	<b>Depth</b>	<b>Datum</b>	<b>Depth</b>	<b>Datum</b>
B/Anhydrite	2062'	+516	2060'	+518
Stotler	3355'	-777	3353'	-775
Heebner Shale	3726'	-1148	3723'	-1145
Toronto	3746'	-1168	3744'	-1166
Lansing	3763'	-1185	3760'	-1182
Muncie Creek Shale	3904'	-1326	3901'	-1323
Stark Shale	3992'	-1414	3989'	-1411
Hushpuckney Shale	4022'	-1444	4019'	-1441
Base of KC	4044'	-1466	4043'	-1464
Marmaton	4084'	-1506	4080'	-1502
Pawnee	4198'	-1620	4195'	-1617
Ft Scott	4252'	-1674	4250'	-1672
Cherokee Shale	4278'	-1700	4275'	-1697
Morrow	4334'	-1756	4333'	-1755
Mississippian	4342'	-1764	4340'	-1762
RTD	4500'	-1922		
LTD			4500'	-1922

## DST's

**DST #1 "LKC E/F" 3830'-3868' 11-14-17 30-45-45-60**  
 1st Blw: Blw blt to BOB in 8min (No BB)  
 2nd Blw: Blw blt to BOB in 11min (No BB)  
 IFP: 45-183# ISIP: 1052# FFP: 185-330# FSIP: 1049#  
 Hyd: 1881-1843#  
 Rec: 5' Oil, 248' WCMw/OS (40%Wtr), 248' MCW (70%Wtr), 186' MCW (95%Wtr).

**DST #2 "LKC H" 3896'-3934' 11-15-17 30-45-45-60**  
 1st Blw: 1/4 blw blt to 3" (No BB)  
 2nd Blw: Surf blw blt to 3.5" (No BB)  
 IFP: 16-38# ISIP: 1026# FFP: 41-63# FSIP: 1015#  
 Hyd: 1929-1881#  
 Rec: 50' OCM (25%Oil), 60' GOCM (10%Gas, 10% Oil).

**DST #3 "LKC J" 3962'-3990' 11-15-17 30-45-45-60**  
 1st Blw: Blw blt to BOB in 13min (Surf BB dead in 30min)  
 2nd Blw: Blw blt to BOB in 3min (3" BB)  
 IFP: 20-55# ISIP: 479# FFP: 41-70# FSIP: 477#  
 Hyd: 1963-1941#  
 Rec: 5' CO, 100' MCGO (10%Gas, 50%Oil), 60' MCGO (30%Gas, 40%Oil), 765' GIP.




**DST #4 "LKC K" 3990'-4020' 11-16-17 30-45-45-60**  
 1st Blw: 1/4" blw blt to 5" (No BB)  
 2nd Blw: Blw blt to BOB in 25min (No BB)  
 IFP: 17-40# ISIP: 275# FFP: 41-68# FSIP: 261#  
 Hyd: 2006-1945#  
 Rec: 60' OCM (5%Oil), 60'GOCM (10%Gas, 5%Oil), 140' GIP.

**DST #5 "Ft Scott" 4240'-4280' 11-18-17 30-30-30-30**  
 1st Blw: 1/4 blw dead in 14min (No BB)  
 2nd Blw: No blw (No BB)  
 IFP: 19-24# ISIP: 921# FFP: 26-31# FSIP: 678#  
 Hyd: 2143-2069#  
 Rec: 5' Mud.




**DST #6 "Miss" 4322'-4352' 11-19-17 30-45-45-60**  
 1st Blw: 1/4" blw blt to BOB in 28min (No BB)  
 2nd Blw: Blw blt to BOB in 30min (No BB)  
 IFP: 20-72# ISIP: 983# FFP: 76-97# FSIP: 847#  
 Hyd: 2199-2124#  
 Rec: 107'GO (85%Oil), 124'GOCM (5%Gas, 15%Oil), 141'GIP.

**DST #7 "Miss #2" 4351'-4362' 11-19-17 30-45-45-60**  
 1st Blw: Blw blt to BOB in 22min (No BB)  
 2nd Blw: Blw blt to BOB in 30min (No BB)  
 IFP: 19-69# ISIP: 891# FFP: 73-105# FSIP: 775#  
 Hyd: 2197-2128#  
 Rec: 191'GO (90%Oil), 62'GOCM (10%Gas, 20%Oil), 119'GIP.

### ROCK TYPES

 Anhy  
 Cht  
 Congl

 Dol  
 Lmst  
 Shale

 Sltst  
 Ss  
 Carb sh

 Sandylms  
 Shaly ls

# ACCESSORIES

### EVENTS

- Circ
- Conn

### FOSSIL

- Brach
- Bryozoa
- Crin



- Foram**
- Fossil**
- Gastro**
- Oolite**
- Ostra**
- Fuss**
- Oolcast**

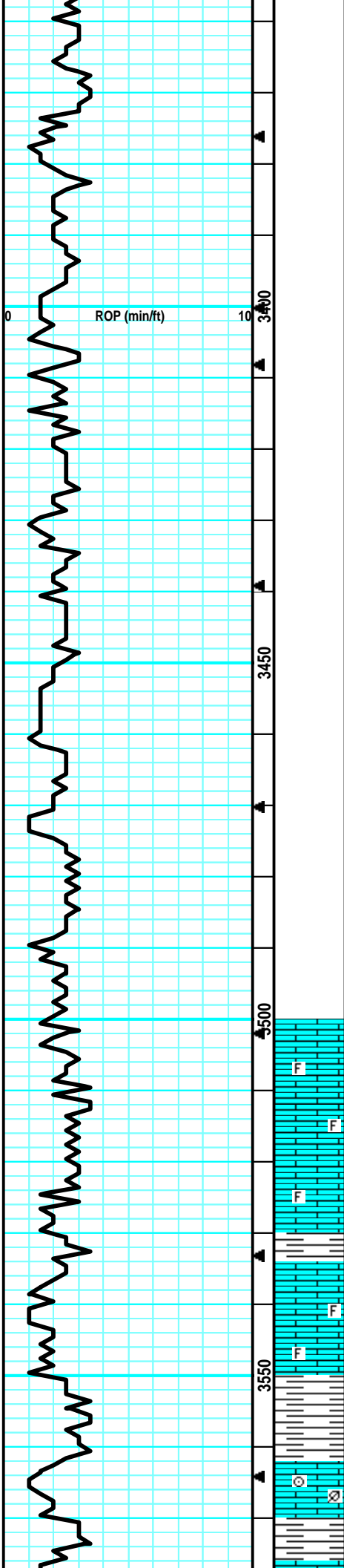
### MINERAL

- Calc
- Chtdk
- Chtlt
- Glau
- Pyr
- Sil

### TEXTURE

- Chalky
- Crsxn
- Finexln
- Microxln

Drilling Time ROP (min/ft)		Depth	Lithology	CFS Point	Oil Shows	Geological Descriptions	Remarks
0	10					<b>Morning Activity/Report</b>	Survey @ 221' = 1/2 Degree
		2050				<p>11/09/2017: Spud @ 2:45pm            11/10/17: drlg @ 495'            11/11/17: drlg @ 2032'            11/12/17: drlg @ 2846'            11/13/17: drlg @ 3495'            11/14/17: Testing @ 3868' (DST #1)            11/15/17: Testing @ 3934' (DST #2 &amp; #3)            11/16/17: TIH after test @ 3990' (DST #4)            11/17/17: drlg @ 4085'            11/18/17: Testing @ 4280' (DST #5)            11/19/17: Testing @ 4352' (DST #6 &amp; #7)            11/20/17: Prepping for E-Log (RTD = 4500')</p>	<b>Anhydrite @ 2026' (+552)</b>
		2050					<b>B/Anhydrite @ 2062' (+516)</b>
		3300				<b>Drilling Time @ 3300' on 11/12/17</b>	<p>Mud Report #2            2140' 11/11/17            Wt Vis pH            9.4 31 7.0            Filt Chl LCM            n/c 7.0K 1#</p> <p style="text-align: right;">Mud Report #3            2951' 11/12/17            Wt Vis pH            9.3 32 7.0            Filt Chl LCM            n/c 36K Tr</p>
		3350					<b>Displaced Mud @ 3214' 550bbbls</b>
		3350					<b>Stotler @ 3355' (-777)</b>



**Samples Caught @ 3500' on 11/13/17**

LS: gry, mott, fn xln, fw foss, mostly dense, many firm, tr-nvp, svrl SH: gry, silty, firm, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss, sm brittle, tr-nvp, sm SH: drk gry/gry, silty, sm firm, no cup odr, ns.

LS: lt gry/lt tan, sing, micro-fn xln, fw foss crin/frags, mostly dense, sm brittle, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/tan, slght mott, fn xln, fw foss frags, mostly dense, many firm, tr-nvp, fw SH: gry, silty, med crush, no cup odr, ns.

LS: lt gry/tan, slght mott, fn xln, fw foss frags, sm dense, fw w/ drk min stns, no fluor/cut, fw SH: gry, silty, no cup odr, nsfo.

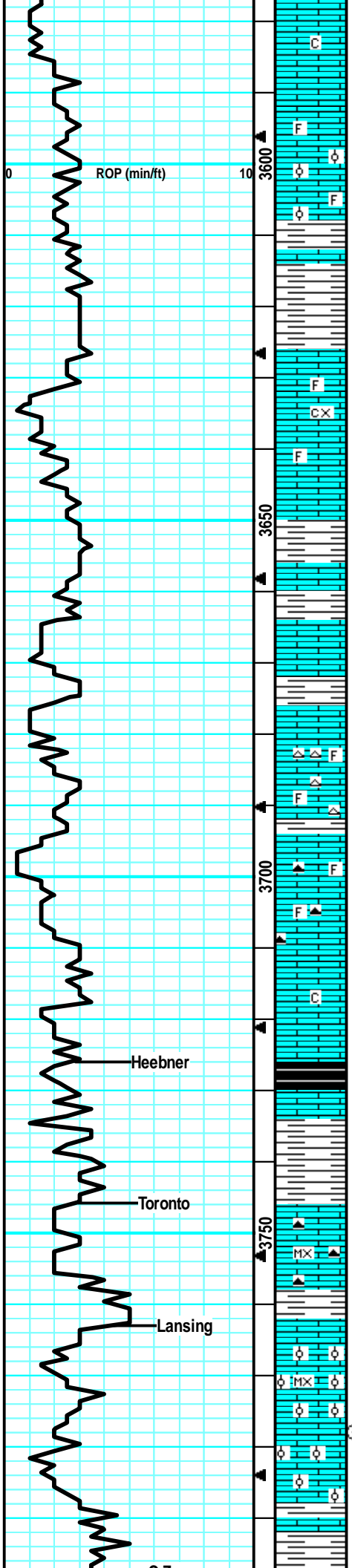
LS: gry/tan, slght mott, fn xln, fw foss frags, mostly dense, sm brittle, fw pcs w/ drk min stns, no fluor/cut, pos drk dead oil, nsfo, no odr.

LS: gry/tan, mott, fn xln, sm dense, many brittle, sub-chlky in prt, sm spttd min stns, no fluor/cut, nsfo, no cup odr.

LS: gry/lt tan, slght mott, fn xln, fw foss, crin/frags, mostly dense, sm brittle, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/drk tan, slght mott, fn xln, fw gritty, sm dense, sm firm, tr-nvp, fw SH: gry, silty, no cup odr, ns.

Mud Report #4  
 3564' 11/13/17  
 Wt Vis pH  
 8.9 49 11.5  
 Filr Chl LCM  
 6.8 4.2K 2#



LS: gry/tan, slight mott, fn xln, sm gritty, fw brittle, mstly firm, tr-nvp, 2 pcs w/ hvy min stns, no fluor/cut, nsfo, no cup odr.

LS: tan/lt gry, slight mott, fn xln, fw foss/ool, many brittle, pr intxln por in sm, sub-chlky, fw pcs pur chl, no cup odr, ns.

LS: tan/gry, mott in prt, fn xln, fw foss frags, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw SH: gry/brn, silty, no odr, ns.

LS: gry/tan, mott, fn xln, sm foss, many brittle, sub-chlky in prt, tr-nvp, fw SH: gry/blu/brn, silty, fissile, no cup odr, ns.

LS: tan, mott, fn xln, sm foss, mostly brittle, sub-chlky, many w/ spttd lght brn min stns, no fluor/cut, nsfo, no cup odr.

LS: tan/gry, mott, fn-crs xln, fw foss frags, mostly flakey, sm brittle, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, fw foss frags, mostly dense, sm brittle, sub-chlky, in prt, tr-nvp, no cup odr, ns.

LS: lt tan/lt gry, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, mostly dense, sub-chlky, sm brittle, tr-nvp, fw SH: gry/brn, silty, no cup odr, ns.

LS: tan/lt gry, sing, fn xln, mostly dense, sm firm, fw sub-chlky in prt, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: crm/lt tan, slight mott, fn xln, fw foss frags, mostly brittle, sub-chlky, tr-pr intxln por in sm, fw Chert: crm, foss/fuss, sharp, no odr, ns.

LS: tan/lt tan, slight mott, fn xln, sm v foss, sub-chlky, brittle, tr-pr intfoss por, fw SH: gry, silty, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, foss in prt, mostly brittle, sm flakey like, pr intfoss por in sm, fw Chert: tan, foss, no cup odr, ns.

LS: tan/gry, slight mott, fn xln, sub-chlky, brittle, tr-pr intxln por in sm, spttd lght brn min stns, no fluor/cut, nsfo, no cup odr.

LS: tan/gry, slight mott, fn xln, spttd drk min stns, no fluor/cut, sm firm, tr-nvp, sm SH: drk gry/blk, silty, carb, no cup odr, ns.

SH: blk/drk gry, silty, soft, carb, fw LS: tan, slight mott, fn xln, dense, sm firm, tr-nvp, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, dense, sub-chlky, sm firm, fw flakey, tr-nvp, fw SH: gry, fissile, no cup odr, ns.

LS: crm/lt tan/lt gry, sing, micro-fn xln, mosty dense, sub-chlky, brittle, tr-nvp, fw Chert: tan, foss, sharp, no cup odr, ns.

LS: crm/lt tan, sing, fn xln, ool, mostly brittle, sub-chlky, tr-pr intool por, fw pcs SH: gry, silty, no cup odr, ns.

LS: crm/lt tan, slight mott, micro-fn xln, sm v ool, mostly brittle, sub-chlky, tr-pr intool por, no cup odr, ns.

LS: crm/lt tan, slight mott, fn xln, sm v ool, mostly brittle, sub chlky in prt, tr-pr intool por in fw, fw pcs pur chl, no cup odr, ns.

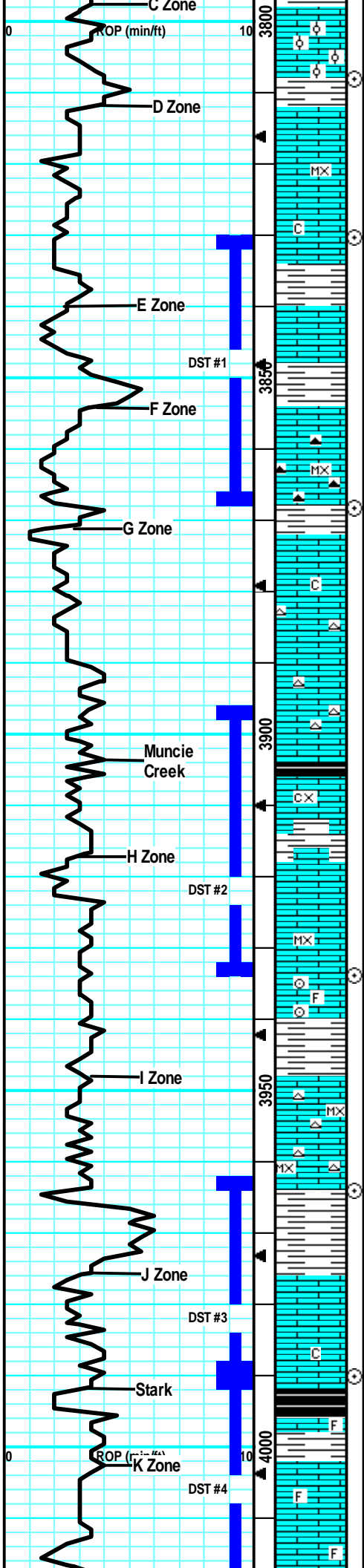
LS: gry/tan, slight mott, fn xln, many dense, flakey/mealy, fw firm, tr-nvp, svrl SH: gry/brn, silty, no cup odr, ns.

Heebner @ 3726' (-1148)

Toronto @ 3746' (-1168)

Lansing @ 3763' (-1185)

CFS @ 3778'  
(30"/60")



cup odr, ns.

LS: lt tan, slight mott, fn xln, mostly v ool, many dense, sm brittle, tr-pr intool por in v fw, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, mostly dense, sm firm, tr-nvp, fw SH: gry/blu, silty, med crush, no odr, ns.

LS: lt tan, sing, micro-fn xln, mostly dense, sm brittle, v fw firm, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: lt gry/crm, sing, fn xln, mostly dense, sm brittle, sub-chlky, tr-nvp, svrl pcs pur chlk, svrel SH: gry/blu, fissile, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, mostly dense, sm firm, fn ppt intxn por in svrl pcs. spstd drk brn stns in 1 doz pcs, ssfo on brk w/ fw gas bubs, wk cup odr.

LS: gry/tan, 3-4 more pcs w/ sho, mostly dense LS, lrg influx of SH: gry/blu, silty, soft, wk cup odr, vssfo.

LS: tan/lt tan sing, micro-fn xln, mostly dense, sm firm, sub-chlky in prt, fw pcs pur chlk, fw Chert: tan, sharp, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, mostly brittle, sub-chlky in prt, sm fr intxn por, svrl SH: gry/blu/brn, silty, no cup odr, ns.

LS: tan/lt tan, sing, fn xln, mostly brittle, sub-chlky in prt, tr-nvp, sm Chert: wht/opaq, sharp, svrl pcs pur chlk, no cup odr, ns.

LS: lt gry/lt tan, sing, fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw Chert: wht/opaq, sharp, svrl pcs pur chlk, no odr, ns.

SH: drk gry/blk, silty, sm carb, fw LS: gry, slight mott, fn xln, mostly dense, many flakey, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/lt brn, mott, fn-crs xln, mostly dense, many flakey, many firm, fw pcs w/ fr intxn por, hvy sat stns in 3-4 pcs, strng cup odr, ssfo.

LS: tan, slight mott in prt, fn xln, mostly brittle, fr-gd in xln por, patchy lght brn stns, gd fluor/cut, ssfo in 30% of pcs, strng cup odr.

LS: crm/lt gry, sing, micro-fn xln, mostly dense, mostly brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: tan/lt gry, slight mott, fn xln, fw foss/crin, many flakey/mealy, sub-chlky in prt, tr-nvp, svrl SH: drk gry, silty, no cup odr, ns.

LS: lt gry/tan, slight mott, fn xln, sub-chlky in prt, many flakey/mealy, sm firm, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: crm/lt gry/lt tan, sing, micro-fn xln, mostly dense, sm brittle, sub-chlky in prt, tr-nvp, fw pcs pur chlk, fw SH: drk gry, no cup odr, ns.

LS: lt tan/tan, sing, micro-fn xln, mostly dense, fw brittle, tr-nvp, fw Chert: wht/opaq, sharp, no cup odr, ns.

SH: drk gry/blu, silty, med crush, svrl LS: tan/lt tan, sing, fn xln, sub-chlky, sm brittle, tr-pr ppt intxn por, 3 pcs w/ spstd lght brn stns, no odr, vssfo, pos from zone above.

LS: lt tan/tan, sing, fn xln, mostly dense, chlky in prt, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

LS: lt tan/lt gry, slight mott, fn xln, mostly brittle, sm fr intxn por, spstd lght brn stns, in 8-10 pcs, ssfo on brk, gd cup odr, 60" Smpl: much of the same w/ incrs of SH.

LS: gry/lt tan, slight mott, fn xln, fw foss frags, mostly dense, sub-chlky in prt, tr-nvp, svrl SH: blk/drk gry, silty, many carb, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, fw foss, sm dense, fw sat lght brn, gd vuggy por, dul yel fluor/strm cut, gd sfo, gd cup odr.

LS: tan/lt gry, slight mott, fn xln, sm foss, many dense, fw pcs w/ patchy lght brn stns, dul yel fluor, strm cut, strng cup odr, ssfo in 4-5 pcs, 60" Smpl: much of the

**CFS @ 3808'**  
(30"/60")

**CFS @ 3830'**  
(30"/60")

DST #1 "LKC E/F" 3830'-3868'  
11-14-17 30-45-45-60  
1st Blw: Blw blt to BOB in 8min (No BB)  
2nd Blw: Blw blt to BOB in 11min (No BB)  
IFP: 45-183# ISIP: 1052# FFP:  
185-330# FSIP: 1049#  
Hyd: 1881-1843#  
Rec: 5' Oil, 248' WCMw/OS (40%Wtr), 248'  
MCW (70%Wtr), 186' MCW (95%Wtr).

**CFS @ 3868'**  
(30"/60")

**Pipe Strap 1.08 Short**

Survey @ 3868' = 1/4 Degree

Mud Report #5  
3868' 11/14/17

Wt	Vis	pH
9.1	54	11.0
Filt	Chl	LCM
7.2	4.5K	2#

**Muncie Creek @ 3904' (-1326)**

DST #2 "LKC H" 3896'-3934' 11-15-17  
30-45-45-60  
1st Blw: 1/4 blw blt to 3" (No BB)  
2nd Blw: Surf blw blt to 3.5" (No BB)  
IFP: 16-38# ISIP: 1026# FFP: 41-63# FSIP:  
1015#  
Hyd: 1929-1881#  
Rec: 50' OCM (25%Oil), 60' GOCM (10%Gas,  
10% Oil).

**CFS @ 3934'**  
(30"/60")

Mud Report #6  
3934' 11/15/17

Wt	Vis	pH
9.0	53	10.5
Filt	Chl	LCM
7.6	4.5K	2#

**CFS @ 3964'**  
(30"/60")

DST #3 "LKC J" 3962'-3990' 11-15-17  
30-45-45-60  
1st Blw: Blw blt to BOB in 13min (Surf BB dead  
in 30min)  
2nd Blw: Blw blt to BOB in 3min (3" BB)  
IFP: 20-55# ISIP: 479# FFP: 41-70# FSIP:  
477#  
Hyd: 1963-1941#  
Rec: 5' CO, 100' MCGO (10%Gas, 50%Oil), 60'  
MCGO (30%Gas, 40%Oil), 765' GIP.

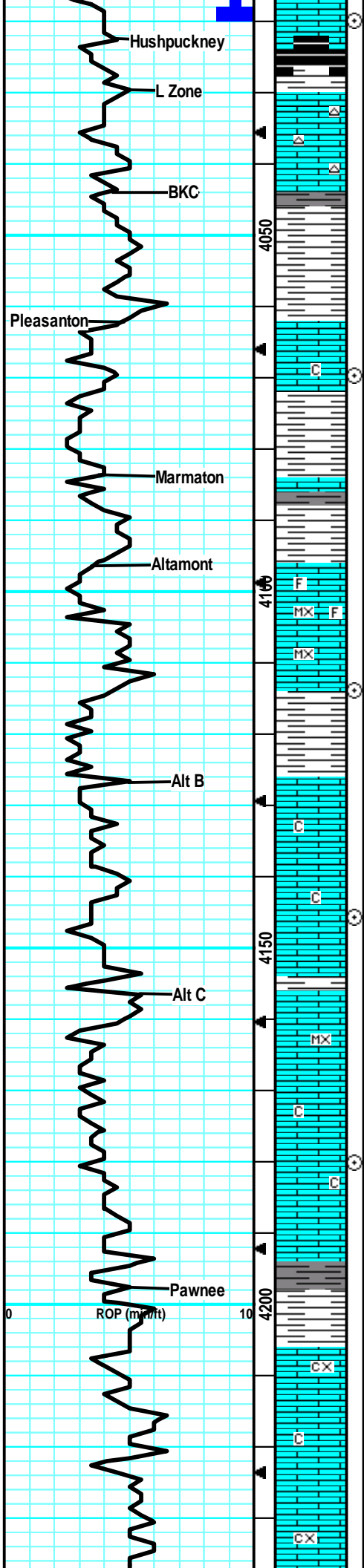
**CFS @ 3990'**  
(30"/60")

**Stark @ 3992' (-1414)**

Mud Report #7  
3996' 11/16/17

Wt	Vis	pH
9.1	60+	11.0 Filt
Chl	LCM	
7.2	2.6K	2#

**CFS @ 4020'**  
(30"/60")



same as above and sm red bed slough.

LS: tan/lt tan/lt gry, slight mott, fn xln, sm dense, sm brit, sub-chlky in prt, tr-? ppt intxln por in sm, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, slight mott, fn xln, sub-chlky in prt, mostly dense, fw firm, tr-nvp, fw Chert: whtopaq, sharp, sm SH: gry/blk, silty, fw carb, soft, no cup odr, ns.

LS: tan/gry, slight mott in prt, fn xln, mostly dense, sub-chlky in prt, tr-nvp, abund SH: gry/brn, silty, soft, no cup odr, ns.

SH: gry/brn, silty, sm v soft, sm muddy like, fw LS: gry/tan, slight mott, fn xln, sub-chlky, mostly dense, no cup odr, ns.,

LS: lt gry/tan, sing, fn xln, mostly dense, sub-chlky in prt, sm firm, tr-nvp, ? fnt cup odr, no pcs of sho rx found.

LS: gry/lt tan, slight mott, fn xln, mostly dense, sub-chlky, fw firm, tr-nvp, abund SH: gry/drk gry, silty, soft, no cup odr, ns.

SH: gry/brn/drk gry, silty, soft, sm muddy like, fw SitStn: brn, gritty, v soft, fw LS: gry/tan, fn xln, sub-chlky, tr-nvp, no cup odr, ns.

SH: gry/drk gry/brn, silty, soft, fw LS: gry/tan, slight mott, fn xln, dense, sub-chlky, tr-nvp, no odr, ns.

LS: gry/tan, slight mott, micro-fn xln, fw foss, mostly dense, sm brittle, fw firm, tr-nvp, fw pcs w/ drk brn/blk min stns, no fluor/cut, pos drk dead oil, fw pcs of pur chlk, nsfo, no cup odr.

Much of the same micro-fn dense, LS, 3-4 pcs w/ the drk patchy stns, no fluor, dead oil?, infix of SH: gry/brn, silty, soft, no cup odr.

LS: lt tan/gry, slight mott, fn xln, mostly dense, many flakey/mealy, sub-chlky in prt, tr-nvp, svrl SH: gry, silty, fissile, no cup odr, ns.

LS: gry/tan, mott in prt, fn xln, mostly flakey/mealy, sub-chlky in prt, fw firm, tr-nvp, sm SH: drk gry/gry, silty, no cup odr, ns.

LS: gry/tan, mott, fn xln, mostly dense, fw flakey/mealy, 2 pcs w/ pos stn, no fluor/cut, no cup odr, no sho.

LS: lt gry/lt tan, slight mott, fn xln, mostly dense, sm brittle, fw firm, sub-chlky in prt, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: gry/lt tan, slight mott, fn xln, mostly dense, sub-chlky in prt, tr-nvp, no cup odr, ns.

LS: gry/tan, slight mott in prt, fn xln, mostly dense, fw flakey, sub-chlky, tr-nvp, fw SH: gry/brn, silty, fissile, no cup odr, ns.

LS: lt gry/crm, sing, micro-fn xln, mostly dense, many brittle, sm firm, tr-nvp, pos oil stn in 2nd rxln in frac, ? fluor, no cut, nsfo, no cup odr.

LS: lt gry/crm, sing, fn xln, sub-chlky, mostly dense, many firm, fw brittle, fw pcs pur chlk, no cup odr, ns.

LS: gry/tan, sing, fn xln, sub-chlky in prt, mostly dense, many firm, fw flakey, tr-nvp, no cup odr, ns.

LS: gry/lt brn, slight mott, fn xln, mostly dense, many hard, sm flakey/mealy, fw sub-chlky in prt, tr-nvp, fw SH: drk gry, silty, no cup odr, ns.

LS: gry/lt brn, slight mott in prt, fn w/ fw crs xln rx, mostly dense, hard, sub-chlky, tr-nvp, fw pcs pur chlk, no cup odr, ns.

LS: gry/lt brn, mostly sing, fn xln, mostly dense, hard, tr-nvp, fw SH: gry, silty, no odr, ns.

LS: gry/tan, slight mott in prt, fn xln, mostly dense, hard, fw flakey/mealy, tr-nvp, fw SH: gry, silty, no cup odr, ns.

LS: gry/lt brn, sing, fn-crs xln, mostly dense, hard, sm flakey/mealy, tr-nvp, fw pcs pur chlk, fw SH: gry/brn,

**Hushpuckney @ 4022' (-1144)**

DST #4 "LKC K" 3990'-4020'  
 11-16-17 30-45-45-60  
 1st Blw: 1/4" blw blt to 5" (No BB)  
 2nd Blw: Blw blt to BOB in 25min (No BB)  
 IFP: 17-40# ISIP: 275# FFP: 41-68#  
 FSIP: 261#  
 Hyd: 2006-1945#  
 Rec: 60' OCM (5%Oil), 60'GOCM  
 (10%Gas, 5%Oil), 140' GIP.

**BKC @ 4044' (-1466)**

CFS @ 4070'  
 (30"/60")

**Marmaton @ 4084' (-1506)**

CFS @ 4114'  
 (30"/60")

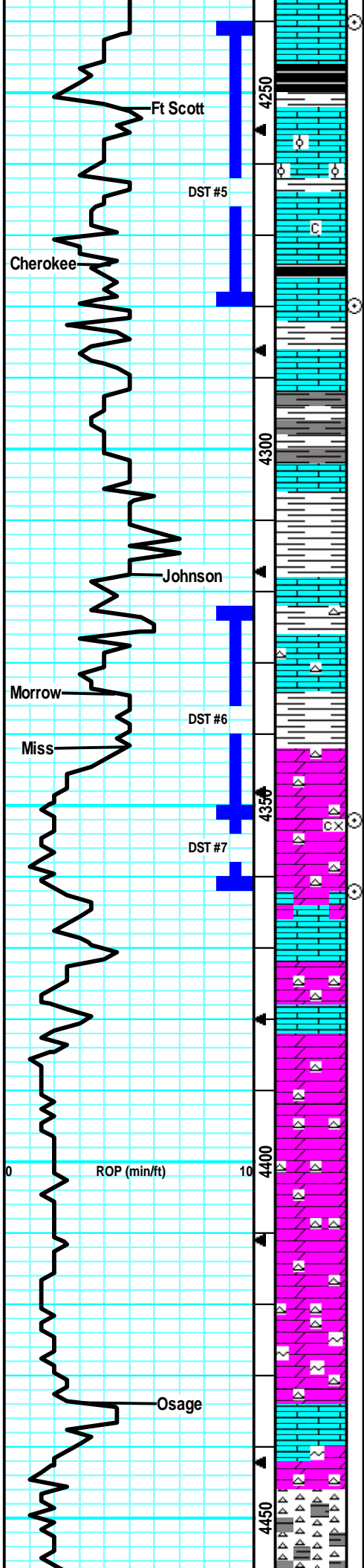
Mud Report #8  
 4114' 11/17/17

Wt	Vis	pH
9.1	58	9.0
Filt	Chl	LCM
8.8	5.0K	2#

CFS @ 4146'  
 (30"/60")

CFS @ 4180'  
 (30"/60")

**Pawnee @ 4198' (-1620)**



silty, fn odr, ns.  
 SH: drk gry/blk, silty, soft, mostly carb, fw LS: gry, mott, fn xln, dense, hard, tr-nvp, no cup odr, ns.  
 SH: blk/drk gry, silty, soft, mostly carb, sm LS: gry/tan, sing, fn xln, mostly dense, sm firm, tr-nvp, no cup odr, ns.  
 LS: tan/gry, slight mott, fn xln, sm ool, mostly dense, many firm, pr intool/scat vug por, stns in por w/ vssfo on brk, gd fluor/cut, vssfo, wk odr.  
 LS: tan/lt tan, slight mott, fn xln, mostly flakey/mealy, sm firm, sm pr ppt intxln por and pr scat vug por, lght brn spttd stn in 5-6 pcs, vssfo on brk, faint cup odr.  
 LS: gry/tan, slight mott, fn xln, many dense, sub-chlky in prt, tr-nvp, lrg amount of SH: gry/drk gry/blk, silty, fw carb, no cup odr, ns.  
 SH: gry/drk gry, silty, soft, fw fissile, sm LS: gry/tan, slight mott, fn xln, dense, sub-chlky, tr-nvp, no cup odr, ns.  
 SH: drk gry/gry, silty, soft, fw LS: gry/tan, slight mott, fn xln, dense, no cup odr, ns.  
 LS: gry/lt tan, slight mott in prt, fn xln, mostly dense, sub-chlky in prt, sm brittle, tr-nvp, fw pcs pur chl, fw SH: drk gry, silty, no odr, ns.  
 LS: gry/lt tan, slight mott, fn xln, mostly dense, many firm, sub-chlky, fw SH: gry/blu, silty, soft, fw Chert: yel/org, tip, sharp, no cup odr, ns.  
 LS: lt tan/lt gry, slight mott, fn xln, sandy/gritty, firm, sm hard, tr-? intxin por, abund of Chert: pink/yel/org, trip sharp, fw Silty/Sandy SH, no odr, ns.  
 DOL: gry/brn, fn xln, sucros, britl, fr-gd intxln por, fw w/ scat vugs, satrd rx w/ oil, gd sho on brk, fo floatin in try, strng cup odr, sm Chert: wht/gry, drk blk patchy stns, no fluor, drk dead oil.  
 DOL: gry/lt brn, fn-crs xln, britl yet firm, gd rhmb vuggy por, hvy sat stns, gd fluor/cut, strg cup odr, gd sho fo.  
 DOL: gry/lt brn, fn xln, many dense, firm, sm gd rhmb vuggy por, hvy sat stns in por, gd fluor/cut, fr sho fo in fw pcs gd cup odr.  
 DOL: gry, fn-crs xln, many firm, sucrosic gd intx por, dvy drk brn/blk stns in por, dul yel flur, gd cut, much hvyr drkr oil than above, gd cup odr.  
 DOL: gry, sing, fn xln, many dense, fw pcs w/ gd intxln por and drk blk stns, mostly like from above only 6-7 pcs, faint cup odr.  
 DOL: tan/gry, sing, fn xln, mostly dense, sm firm, tr-? intxln por, svrl Chert: wht/opaq, sharp, fw pcs pur chl, no cup odr, ns.  
 DOL: lt tan/lt gry, sing, fn xln, many brittle, sm firm, tr-? intxln por, svrl Chert: wht/gry, sharp, sm pur chl, no cup odr, ns.  
 DOL: lt tan/lt gry, sing, fn xln, many brittle, sm firm, tr-? intxln por, svrl pcs pur chl, fw Chert: gry/wht, sharp, no cup odr, ns.  
 DOL: gry/lt tan, sing, fn xln, mostly brittle, sm firm, tr-ppt intxln por in fw, abund Chert: wht/gry, sharp, svrl pcs pur chl, no cup odr, ns.  
 DOL: tan/gry, fw slight mott, fn xln, many brittle, sm firm, fw glauc specs, tr-nvp, svrl Chert: wht/lt gry, sharp, no cup odr, ns.  
 DOL: tan/lt gry, sing, fn xln, many brittle, tr-nvp, fw LS: lt brn/tan, slight mott, fn xln, flakey/mealy, tr-nvp, fw Chert: wht/gry, sharp, no cup odr, ns.  
 Chert: wht/tan/gry, slight mott, hard, sharp, sm DOL: tan, sing, fn xln, sm brittle, tr-nvp, fw LS: lt tan, slight mott, fn xln, sub-chlky, tr-nvp, no odr, ns.

**CFS @ 4240' (30"/60")**  
**Ft Scott @ 4252' (-1674)**  
 DST #5 "Ft Scott" 4240'-4280'  
 11-18-17 30-30-30-30  
 1st Blw: 1/4 blw dead in 14min (No BB)  
 2nd Blw: No blw (No BB)  
 IFP: 19-24# ISIP: 921# FFP: 26-31#  
 FSIP: 678#  
 Hyd: 2143-2069#  
 Rec: 5' Mud.  
**Cherokee @ 4278' (-1700)**  
**CFS @ 4280' (30"/60")**

Mud Report #9	
4280'	11/18/17
Wt	Vis pH
9.2	58 9.0
Filt	Chl LCM
9.6	5.5K 2#

DST #6 "Miss" 4322'-4352' 11-19-17  
 30-45-45-60  
 1st Blw: 1/4" blw blt to BOB in 28min (No BB)  
 2nd Blw: Blw blt to BOB in 30min (No BB)  
 IFP: 20-72# ISIP: 983# FFP: 76-97#  
 FSIP: 847#  
 Hyd: 2199-2124#  
 Rec: 107'GO (15%Oil), 124'GOCM (5%Gas, 15%Oil), 141'GIP.  
**Morrow @ 4334' (-1756)**  
**Miss @ 4342' (-1764)**

**CFS @ 4352' (30"/60")**

Mud Report #10	
4352'	11/19/17
Wt	Vis pH
9.3	54 10.0
Filt	Chl LCM
8.0	4.4K 2#

**CFS @ 4362' (30"/60")**  
 DST #7 "Miss #2" 4351'-4362'  
 11-19-17 30-45-45-60  
 1st Blw: Blw blt to BOB in 22min (No BB)  
 2nd Blw: Blw blt to BOB in 30min (No BB)  
 IFP: 19-69# ISIP: 891# FFP: 73-105#  
 FSIP: 775#  
 Hyd: 2197-2128#  
 Rec: 191'GO (90%Oil), 62'GOCM (10%Gas, 20%Oil), 119'GIP.

Shale began to slough in last 60'-70ft...



mod, in xln, sub-chky, tr-nvp, no odr, ns.

Lrg infx of SH: gry/brn, silty, soft, most likely slough from up odr, svrl Chert: wht/gry, sharp, hard, fw DOL: tan, sing, fn xln, tr-nvp, no cup odr, ns.

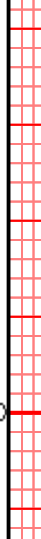
Mostly SH: gry/brn, silty, soft, slough from above, sm Chert: wht/gry, sharp, no cup odr, ns.

SH: gry/brn, silty, sm Chert: gry/why, hard, fw DOL: tan, sing, fn xln, tr-? intxln por in fw, no odr, ns.

SH: brn/gry/drk gry, silty, soft, fw Chert: wht/gry, sharp, hard, fw DOL: tan, sing, fn xln, fw firm, tr-? intxln por, no cup odr, ns.

CFS @ 4500'  
(30"/60")

Survey @ 4500' = 3/4 Degree



RTD: 4500' (-1922)  
LTD: 4500' (-1922)

4500



# RITCHIE

EXPLORATION, INC.  
Wichita, Kansas

## #2 Hutton

335' FSL & 1450' FWL

5' N & 130' E of S/2 S/2 SW/4 Section 6-14S-27W

Gove County, Kansas

API# 15-063-22316-0000

Elevation: GL: 2570', KB: 2578'

Sample Tops			Ref. Well
Anhydrite	2036'	+542	-10
B/Anhydrite	2062'	+516	-1
Stotler	3355'	-777	-4
Heebner	3726'	-1148	-3
Toronto	3746'	-1168	-3
Lansing	3763'	-1185	-4
Muncie Shale	3904'	-1326	-2
Stark	3992'	-1414	Flat
Hush	4023'	-1445	-1
BKC	4044'	-1466	+1
Marmaton	4084'	-1506	-1
Pawnee	4192'	-1614	+6
Fort Scott	4252'	-1674	+2
Cherokee Shale	4278'	-1700	+1
Morrow	4324'	-1746	+2
Mississippian	4334'	-1756	+2
RTD	4500'	-1922	



9570/9469

TICKET NUMBER 54942  
LOCATION Oakley KS  
FOREMAN Jerry Y

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

FIELD TICKET & TREATMENT REPORT  
CEMENT

Invoice #811852  
KS

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
1-22-17	7173	Hutton #2	5	14S	27W	Gove
CUSTOMER Ritchie Exp			Park 165 @ 145			
MAILING ADDRESS P.O. Box 783188			TRUCK #	DRIVER	TRUCK #	DRIVER
CITY Wichita			753	Travis W		
STATE KS			7727-127	Miles S		
ZIP CODE 67278-3188						

JOB TYPE Port Color HOLE SIZE \_\_\_\_\_ HOLE DEPTH \_\_\_\_\_ CASING SIZE & WEIGHT 4 1/2  
 CASING DEPTH \_\_\_\_\_ DRILL PIPE \_\_\_\_\_ TUBING 2 3/8 OTHER PC @ 2000  
 SLURRY WEIGHT 12.5 SLURRY VOL 1-89 WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING \_\_\_\_\_  
 DISPLACEMENT 6 3/4 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE \_\_\_\_\_

REMARKS: Safety meeting on rig upon Hutton Exp test tool @ 1300 ft held 5 min  
 taking rate 5 bbl per 800 ft mix 350 sks lite blend VII with 800 sks hulls  
 circulating cement to surface wash up and displace 6 3/4 bbl shut down close tool  
 press to 1300 ft hold 5 min run 5 1/2 hrs & reurge clean with 20 bbl fresh bbl  
 pull tubing press casing to 500 ft & shut in

Thank you  
Jerry Y

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0451	1	PUMP CHARGE	1900.00	1900.00
CE0002	35	MILEAGE	7.15	250.25
CE0710	10.05	tan. mileage delivery	1.75	921.81
CC5831	14809 350 sks	lite blend VII	17.50	6125.00
CC6070	500 #	hulls	1.00	500.00
			Subtotal	9697.06
			-30%	2909.12
			Subtotal	6787.94
			SALES TAX	394.19
			ESTIMATED TOTAL	7182.14

Ravin 3737

AUTHORIZATION Guy Rowe

TITLE

DATE

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



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

9502/9428

No. 0464- P. 2  
TICKET NUMBER 54926  
LOCATION Oakley KS  
FOREMAN Jerry

FIELD TICKET & TREATMENT REPORT  
CEMENT

INVOICE # 811805 KS

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
11-20-17	7173	Hutton # 2	5	14S	27W	Gove
CUSTOMER <u>R. Lohic</u>			TRUCK #			
MAILING ADDRESS <u>P.O. BOX 783188</u>			DRIVER			
CITY <u>Wichita</u>			TRUCK #			
STATE <u>KS</u>			DRIVER			
ZIP CODE <u>67278-3188</u>			TRUCK #			
			DRIVER			

JOB TYPE long string HOLE SIZE 7 7/8 HOLE DEPTH 4500 CASING SIZE & WEIGHT 4 1/2" 10.5#  
 CASING DEPTH 4497 DRILL PIPE \_\_\_\_\_ TUBING \_\_\_\_\_ OTHER Port Collar 2010  
 SLURRY WEIGHT 142 SLURRY VOL 142 WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING 44  
 DISPLACEMENT 70 3/4 DISPLACEMENT PSI 750 MAX PSI 1600 RATE \_\_\_\_\_

REMARKS: Sally mending orig upon WW12 run float Egan turbobars on 1, 2, 3, 5, 7, 9, 14, 58, 10, 25 baskets on 12, 59, 74 Port collar report 59 @ 2610 run casing in to further pump well then circ 1 hr pump 5 bbl H<sub>2</sub>O, mud flush 5 H<sub>2</sub>O, mix 220 sks Hi-Kobland III @ 5.00/sk 1/2 CDI-26 @ 14# desolher shut down release plug clean pump lines Displace with 70 1/2 bbl final lift 750# plug landed @ 1600# released back to float held press back to 600# & shut in

Thank you  
Jerry & crew

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
CE0453	1	PUMP CHARGE	2800.00	2800.00
CE0002	35	MILEAGE	7.15	250.25
CE0710	11.75	ten mileage delivery	1.75	719.69
CC5862	14798 250 sks	Hi-Kobland III	26.00	6500.00
CC6077	1250 #	Kalsol	.50	625.00
CC6008	63 #	CDI-26	7.85	494.55
CC6155	35 #	CAF-38	10.20	357.00
CC6125	14799 500 gal	mud flush	.65	325.00
CP8253	1	4 1/2 latch down Assy	340.00	340.00
CP8484	1	4 1/2 AFW float shoe	470.00	470.00
CP8575	10	4 1/2 Tur-ba Press	95.00	950.00
CP8628	3	4 1/2 baskets	350.00	1050.00
CP8775	1	4 1/2 Port Collar	2750.00	2750.00
		Subtotal		17631.49
		-30%		5289.45
		Subtotal		12342.04
		SALES TAX		824.76
		ESTIMATED TOTAL		13166.80

Revin 3737

AUTHORIZATION [Signature] TITLE \_\_\_\_\_ DATE \_\_\_\_\_

I am authorized to receive and accept services rendered by the contractor on the back of this form or in the customer's account records, at our office, and conditions of service on the back of this form are in effect for services identified on this form.

Received Time: Nov. 21, 2017 3:48AM No. 1675



9480/9366

TICKET NUMBER 54940

LOCATION Oakley KS

FOREMAN Miles Shaw

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

FIELD TICKET & TREATMENT REPORT  
CEMENT

INVOICE #811764 US

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
11-9-17	7173	Hutton #2	5	14S	27W	Gove
CUSTOMER <u>R. Fehre Exploration</u>			Park US Exit			
MAILING ADDRESS <u>P.O. Box 189188</u>			10 South onto Rig on E.S.			
CITY <u>Wichita</u>		STATE <u>KS</u>	ZIP CODE <u>67278-3188</u>			
TRUCK #	DRIVER	TRUCK #	DRIVER			
<u>731</u>	<u>Cory D</u>	<u>460</u>	<u>Seth D</u>			

JOB TYPE Surface HOLE SIZE 12 1/4" HOLE DEPTH 220' CASING SIZE & WEIGHT 8 5/8" 23 #  
 CASING DEPTH 220' DRILL PIPE \_\_\_\_\_ TUBING \_\_\_\_\_ OTHER \_\_\_\_\_  
 SLURRY WEIGHT 14.8 SLURRY VOL 1.36 WATER gal/sk \_\_\_\_\_ CEMENT LEFT in CASING 20'  
 DISPLACEMENT 12.5615 DISPLACEMENT PSI \_\_\_\_\_ MIX PSI \_\_\_\_\_ RATE \_\_\_\_\_

REMARKS: Safety meeting and Regal on W/O drilling Rig #17 circulate casing  
Mid 165 SX Surface blend II Class A cement w/ 3% calcium 2% ed displac  
12.5615 water slurt in Cement did circulate

*Thanks Miles Shaw*

ACCOUNT CODE	QUANTITY or UNITS	DESCRIPTION of SERVICES or PRODUCT	UNIT PRICE	TOTAL
<u>CE0471</u>	<u>1</u>	<u>PUMP CHARGE</u>	<u>1150.00</u>	<u>1150.00</u>
<u>CE0002</u>	<u>35</u>	<u>MILEAGE</u>	<u>7.15</u>	<u>250.25</u>
<u>CE0711</u>	<u>7.76 tons</u>	<u>Ton Mileage delivery mix</u>	<u>660.00</u>	<u>660.00</u>
<u>CE5871</u>	<u>14682</u>	<u>165 SX Surface blend II</u>	<u>24.00</u>	<u>3960.00</u>
			<u>Subtotal</u>	<u>6020.25</u>
			<u>less 30% discount</u>	<u>1806.07</u>
			<u>Subtotal</u>	<u>4214.18</u>
			<u>8.5% SALES TAX</u>	<u>235.62</u>
			<u>ESTIMATED TOTAL</u>	<u>\$4449.80</u>

Ravn 3737

AUTHORIZATION [Signature] TITLE Tool pusher DATE \_\_\_\_\_

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