

Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1244628  
OIL & GAS CONSERVATION DIVISION

Form ACO-1  
August 2013

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  SIOW
- Gas  D&A  ENHR  SIGW
- OG  GSW  Temp. Abd.
- 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 ENHR  Conv. to SWD
- Plug Back  Conv. to GSW  Conv. to Producer
- Commingled Permit #: \_\_\_\_\_
- Dual Completion Permit #: \_\_\_\_\_
- SWD Permit #: \_\_\_\_\_
- ENHR Permit #: \_\_\_\_\_
- GSW Permit #: \_\_\_\_\_

Spud Date or Recompletion Date	Date Reached TD	Completion Date or Recompletion Date
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API No. 15 - \_\_\_\_\_

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
- Geologist Report Received
- UIC Distribution
- ALT  I  II  III Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

1244628

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

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

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

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

Drill Stem Tests Taken <input type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Run <input type="checkbox"/> Yes <input type="checkbox"/> No  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				

Did you perform a hydraulic fracturing treatment on this well?  Yes  No *(If No, skip questions 2 and 3)*

Does the volume of the total base fluid of the hydraulic fracturing treatment exceed 350,000 gallons?  Yes  No *(If No, skip question 3)*

Was the hydraulic fracturing treatment information submitted to the chemical disclosure registry?  Yes  No *(If No, fill out Page Three of the ACO-1)*

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record <i>(Amount and Kind of Material Used)</i>	Depth

TUBING RECORD: Size: \_\_\_\_\_ Set At: \_\_\_\_\_ Packer At: \_\_\_\_\_ Liner Run:  Yes  No

Date of First, Resumed Production, SWD or ENHR: \_\_\_\_\_ Producing Method:  
 Flowing  Pumping  Gas Lift  Other *(Explain)* \_\_\_\_\_

Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio	Gravity

<b>DISPOSITION OF GAS:</b> <input type="checkbox"/> Vented <input type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	<b>METHOD OF COMPLETION:</b> <input type="checkbox"/> Open Hole <input type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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Form	ACO1 - Well Completion
Operator	Farmer, John O., Inc.
Well Name	Hageman 1
Doc ID	1244628

All Electric Logs Run

Compensated Density Neutron Log
Dual Induction Log
Micro Resistivity Log
Cement Bond Log

Form	ACO1 - Well Completion
Operator	Farmer, John O., Inc.
Well Name	Hageman 1
Doc ID	1244628

Tops

Name	Top	Datum
Anhydrite	1378'	(+646)
Topeka	2931'	(-907)
Heebner	3143'	(-1119)
Toronto	3166'	(-1142)
Lansing	3186'	(-1162)
Base/KC	3408'	(-1384)
Arbuckle	3440'	(-1416)
L.T.D.	3507'	(-1483)





JOB LOG

SWIFT Services, Inc.

DATE 11-24-14 PAGE NO. 7

CUSTOMER John O. Farmer WELL NO. #1 LEASE Hageman JOB TYPE Longstring TICKET NO. 26904

CHART NO.	TIME	RATE (BPM)	VOLUME (BBL) (GAL)	PUMPS		PRESSURE (PSI)		DESCRIPTION OF OPERATION AND MATERIALS
				T	C	TUBING	CASING	
	0800							on loc w/ FE
								RTD 3510'
								5 1/2" x 14 # x 35 1/2' x 28'
								Cent 1, 3, 5, 7, 9, 11, 13, 15, 49 1/2 way up
								Base 2, 16, 49 1/2 way up
								P.C. 49 @ 1387'
	0830							start FE
	1015							Break Circ
	1055	2	7					Plug RH 30sks EA-2
	1100	5	0			200		start 500gal Mudflush
	1102	5	12/0			200		start 20bbl KCL flush
	1106	5	20/0			200		start 145sks EA-2 Cement
	1113		36					End Cement
								wash P & L
								Drop L.D. Plug
	1120	6	0			200		start Displacement
	1130	5	63			250		Catch Cement
	1135		85			200/400		Land Plug
								Release Pressure
								Float Held
								Thank you
								Nick, David E., Austin + Jared

New

# QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

Phone 785-483-2025  
Cell 785-324-1041

Home Office P.O. Box 32 Russell, KS 67665

No. 1358

Date 12-4-14	Sec.	Twp.	Range	County Rooks	State KS	On Location	Finish 1:00pm
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Location Plainvill N to SRd, 1/2E, Nn2

Lease Hageman	Well No. 1	Owner To Quality Oilwell Cementing, Inc. You are hereby requested to rent cementing equipment and furnish cementer and helper to assist owner or contractor to do work as listed.
Contractor		
Type Job Port collar		
Hole Size	T.D.	Charge To John O Farmer
Csg. 5 1/2"	Depth	Street
Tbg. Size 2"	Depth.	City State
Tool Port Collar	Depth 1358	The above was done to satisfaction and supervision of owner agent or contractor.
Cement Left in Csg.	Shoe Joint	Cement Amount Ordered 225 sx QMDC 1/4 #F10

Meas Line	Displace	Used 220
EQUIPMENT		Common 220 QMDC

Pumptrk 5	No.	Cement Helper Brett	Poz. Mix
Bulktrk 14	No.	Driver Tyson	Gel.
Bulktrk P4	No.	Driver Travis	Calcium

### JOB SERVICES & REMARKS

Remarks:	Hulls
Rat Hole	Salt
Mouse Hole	Flowseal
Centralizers	Kol-Seal
Baskets	Mud CLR 48
D/V or Port Collar	CFL-117 or CD110 CAF 38
	Sand

Tested tool to 1000 psi Open tool  
Mix 220 sx and displaced. Closed tool  
and tested to 900 psi. Ran in and wasted  
clean,

Cement did circulate

Handling 225
Mileage

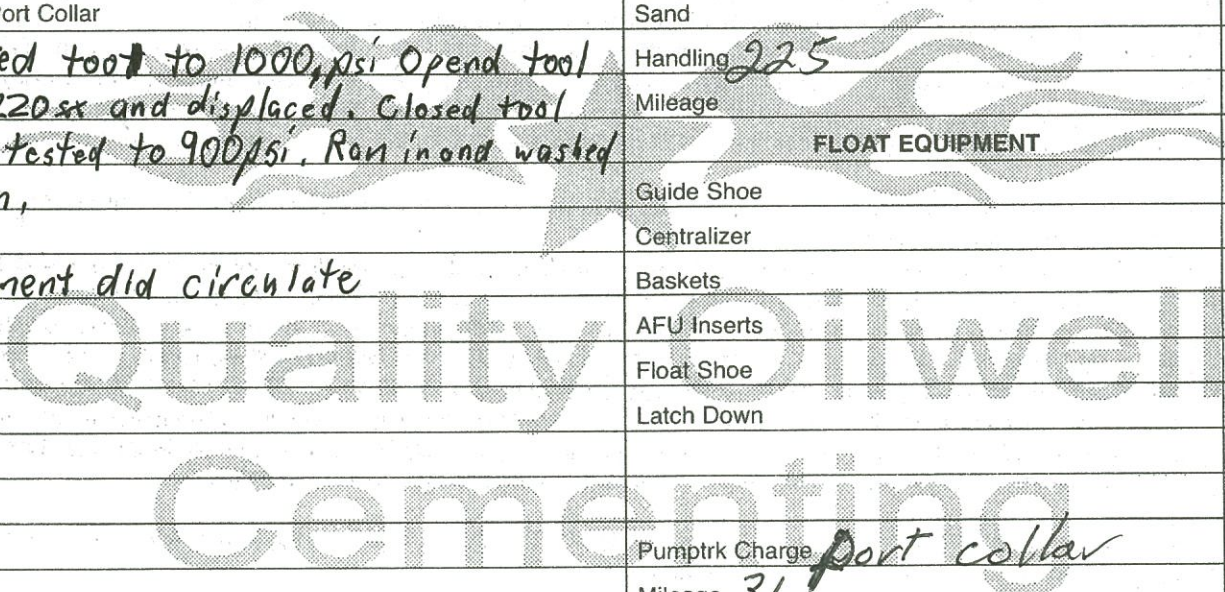
### FLOAT EQUIPMENT

Guide Shoe
Centralizer
Baskets
AFU Inserts
Float Shoe
Latch Down

Pumptrk Charge port collar
Mileage 31

Tax
Discount
Total Charge

X Signature *[Signature]*







## DRILL STEM TEST REPORT

Prepared For: **John O. Farmer, Inc.**

PO Box 352  
Russell KS 67665

ATTN: Austin Klaus

### **Hageman #1**

#### **36-8s-18w Rooks,KS**

Start Date: 2014.11.21 @ 07:05:00

End Date: 2014.11.21 @ 13:11:00

Job Ticket #: 62534                      DST #: 1

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

Printed: 2014.11.26 @ 10:45:08

John O. Farmer, Inc.    36-8s-18w Rooks,KS    Hageman #1    DST # 1    LKC    2014.11.21



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62534

**DST#: 1**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 07:05:00

## GENERAL INFORMATION:

Formation: **LKC**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:03:45

Time Test Ended: 13:11:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3136.00 ft (KB) To 2115.00 ft (KB) (TVD)**

Reference Elevations: 2024.00 ft (KB)

Total Depth: 3215.00 ft (KB) (TVD)

2019.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8934**

**Inside**

Press@RunDepth: 109.78 psig @ 3137.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.21

End Date:

2014.11.21

Last Calib.: 2014.11.21

Start Time: 07:05:05

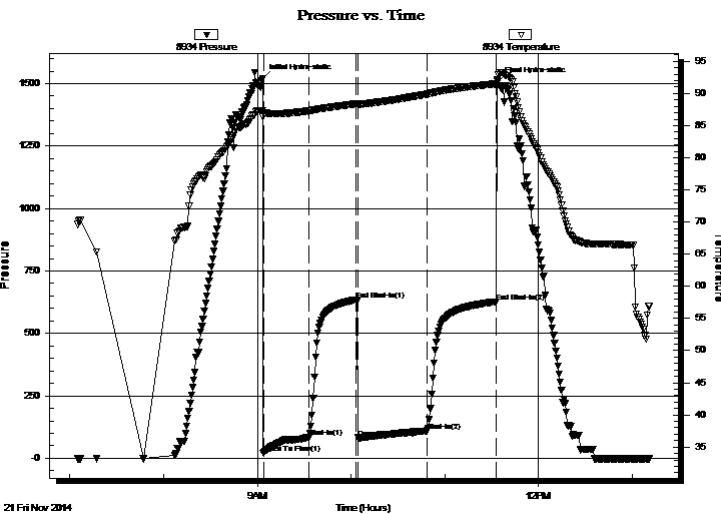
End Time:

13:10:59

Time On Btm: 2014.11.21 @ 09:03:15

Time Off Btm: 2014.11.21 @ 11:34:15

TEST COMMENT: IF-9" blow  
IS-No blow  
FF-BOB in 32 min  
FS-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1519.07	87.29	Initial Hydro-static
1	19.78	86.35	Open To Flow (1)
30	83.11	87.29	Shut-In(1)
60	634.58	88.38	End Shut-In(1)
62	81.60	88.30	Open To Flow (2)
106	109.78	89.91	Shut-In(2)
150	627.10	91.49	End Shut-In(2)
151	1507.34	92.98	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
90.00	25%O 75%M	0.44
185.00	SGMCO 5%G 75%O 20%M	2.32

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62534

**DST#: 1**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 07:05:00

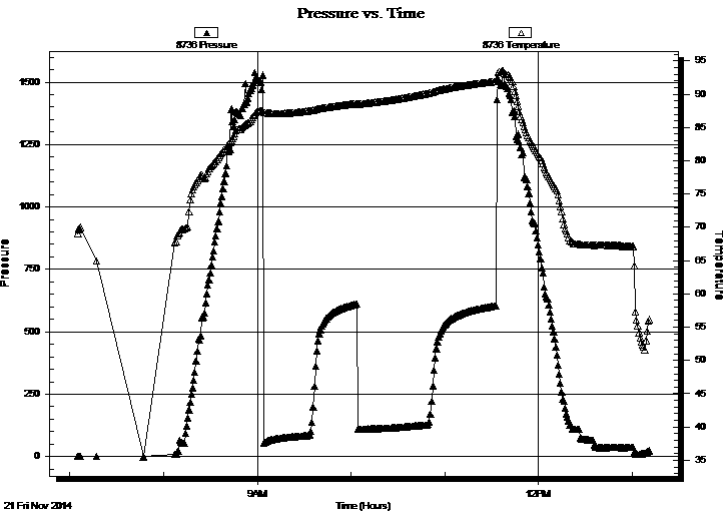
### GENERAL INFORMATION:

Formation: <b>LKC</b>	Deviated: No Whipstock:	ft (KB)	Test Type: Conventional Bottom Hole (Initial)
Time Tool Opened: 09:03:45	Time Test Ended: 13:11:00		Tester: Brett Dickinson
			Unit No: 59
<b>Interval: 3136.00 ft (KB) To 2115.00 ft (KB) (TVD)</b>			Reference Elevations: 2024.00 ft (KB)
Total Depth: 3215.00 ft (KB) (TVD)			2019.00 ft (CF)
Hole Diameter: 7.88 inches	Hole Condition: Fair		KB to GR/CF: 5.00 ft

**Serial #: 8736** **Outside**

Press@RunDepth: psig @ 3137.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.11.21	End Date: 2014.11.21
Start Time: 07:05:05	End Time: 13:11:14
	Last Calib.: 2014.11.21
	Time On Btm:
	Time Off Btm:

**TEST COMMENT:** IF-9" blow  
IS-No blow  
FF-BOB in 32 min  
FS-No blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
90.00	25%O 75%M	0.44
185.00	SGMCO 5%G 75%O 20%M	2.32

### Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62534

**DST#: 1**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 07:05:00

## Tool Information

Drill Pipe:	Length: 3020.00 ft	Diameter: 3.80 inches	Volume: 42.36 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	24.00 ft			String Weight: Initial 35000.00 lb
Depth to Top Packer:	3136.00 ft			Final 35000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	79.00 ft			
Tool Length:	99.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3121.00	
Hydraulic tool	5.00			3126.00	
Packer	5.00			3131.00	20.00 Bottom Of Top Packer
Packer	5.00			3136.00	
Stubb	1.00			3137.00	
Recorder	0.00	8934	Inside	3137.00	
Recorder	0.00	8736	Outside	3137.00	
Perforations	10.00			3147.00	
Change Over Sub	1.00			3148.00	
Drill Pipe	63.00			3211.00	
Change Over Sub	1.00			3212.00	
Bullnose	3.00			3215.00	79.00 Bottom Packers & Anchor

**Total Tool Length: 99.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62534

**DST#: 1**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 07:05:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	25%O 75%M	0.443
185.00	SGMCO 5%G 75%O 20%M	2.322

Total Length: 275.00 ft      Total Volume: 2.765 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

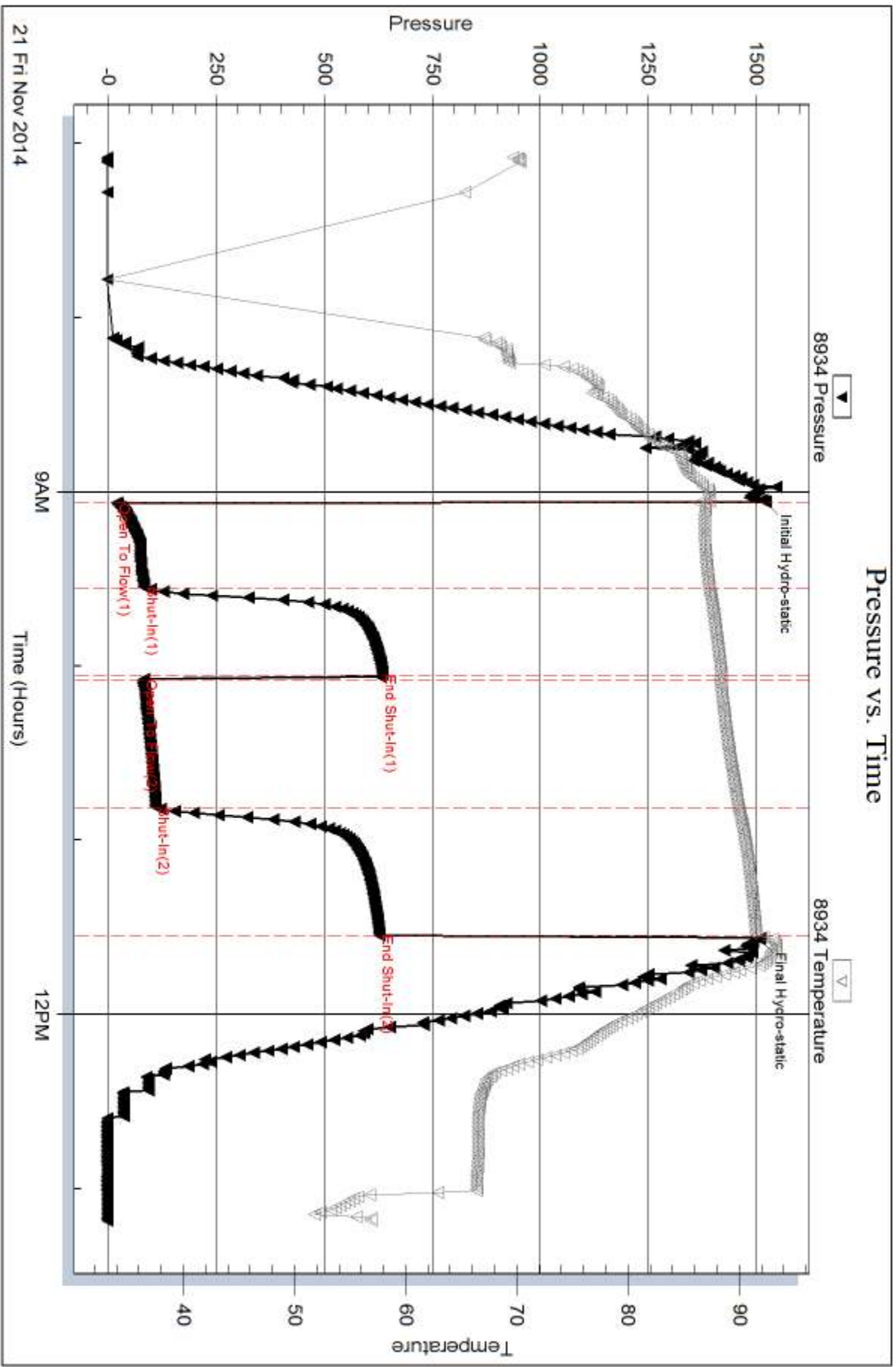
Serial #: 8934

Inside

John O. Farmer, Inc.

Hegeman #1

DST Test Number: 1



21 Fri Nov 2014

9AM

Time (Hours)

12PM

Triobite Testing, Inc

Ref. No: 62534

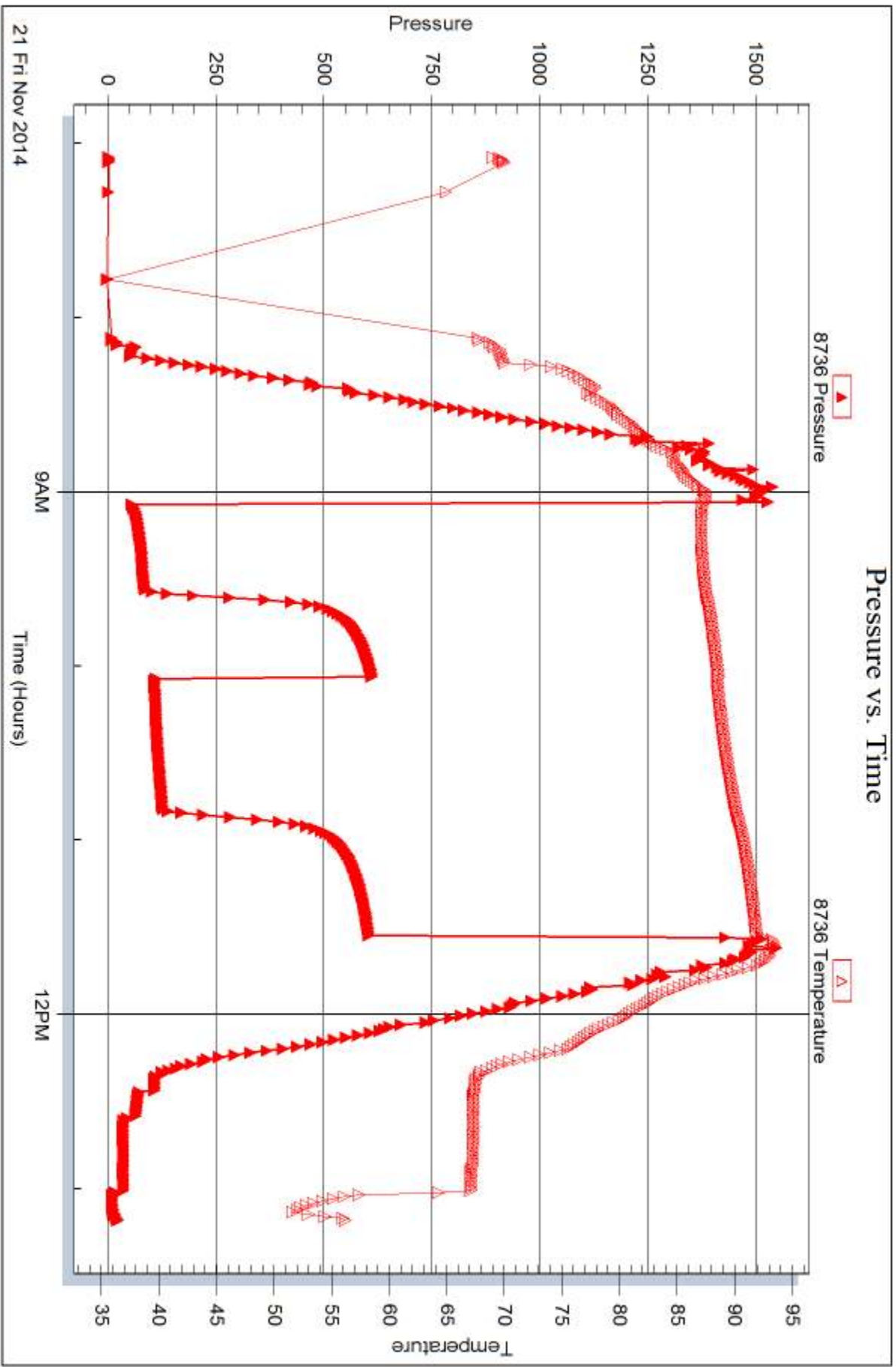
Printed: 2014.11.26 @ 10:45:09

Serial #: 8736

Outside John O. Farmer, Inc.

Hegeman #1

DST Test Number: 1





## DRILL STEM TEST REPORT

Prepared For: **John O. Farmer, Inc.**

PO Box 352  
Russell KS 67665

ATTN: Austin Klaus

### **Hageman #1**

#### **36-8s-18w Rooks, KS**

Start Date: 2014.11.21 @ 19:35:00

End Date: 2014.11.22 @ 00:43:45

Job Ticket #: 62535                      DST #: 2

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

Printed: 2014.11.26 @ 10:44:47





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62535

**DST#: 2**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 19:35:00

## GENERAL INFORMATION:

Formation: **KC "C"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:16:00

Time Test Ended: 00:43:45

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3212.00 ft (KB) To 3238.00 ft (KB) (TVD)**

Reference Elevations: 2024.00 ft (KB)

Total Depth: 3238.00 ft (KB) (TVD)

2019.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8934**

**Inside**

Press@RunDepth: 56.34 psig @ 3213.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.21

End Date:

2014.11.22

Last Calib.: 2014.11.22

Start Time: 19:35:05

End Time:

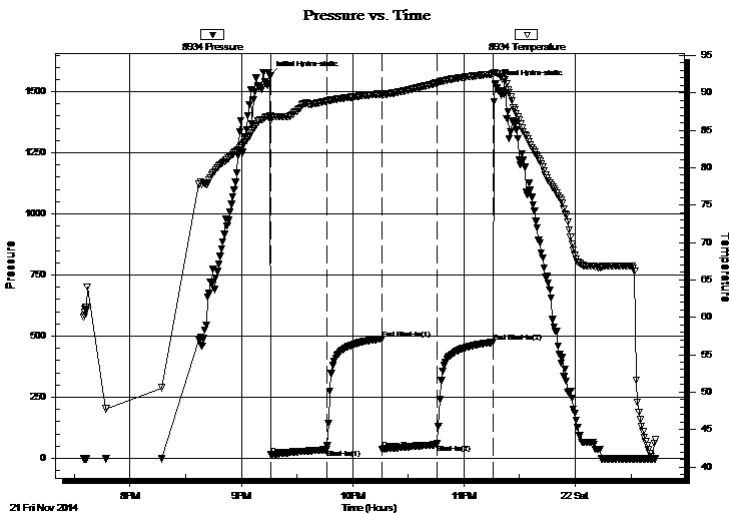
00:43:44

Time On Btm: 2014.11.21 @ 21:15:30

Time Off Btm: 2014.11.21 @ 23:16:45

TEST COMMENT: IF-1 1/2" blow  
IS-No blow  
FF-Weak surface blow  
FS-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1564.14	86.90	Initial Hydro-static
1	13.98	86.31	Open To Flow (1)
31	38.38	88.88	Shut-In(1)
60	489.26	89.86	End Shut-In(1)
61	38.37	89.71	Open To Flow (2)
90	56.34	91.31	Shut-In(2)
120	474.83	92.50	End Shut-In(2)
122	1528.76	92.69	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
65.00	OS MCW 30%M 70%W	0.32

\* Recovery from multiple tests

## Gas Rates

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



**TRILOBITE TESTING, INC**

### DRILL STEM TEST REPORT

John O. Farmer, Inc.

36-8s-18w Rooks, KS

PO Box 352  
Russell KS 67665

Hageman #1

Job Ticket: 62535

DST#: 2

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 19:35:00

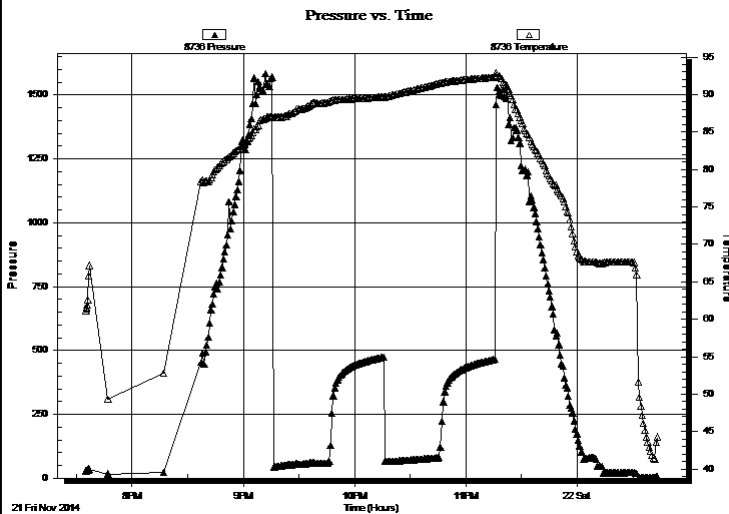
#### GENERAL INFORMATION:

Formation: **KC "C"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:16:00  
 Time Test Ended: 00:43:45  
 Interval: **3212.00 ft (KB) To 3238.00 ft (KB) (TVD)**  
 Total Depth: 3238.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Reference Elevations: 2024.00 ft (KB)  
 2019.00 ft (CF)  
 KB to GR/CF: 5.00 ft

**Serial #: 8736 Outside**

Press@RunDepth: psig @ 3213.00 ft (KB)	Capacity: 8000.00 psig
Start Date: 2014.11.21 End Date: 2014.11.22	Last Calib.: 2014.11.22
Start Time: 19:35:05 End Time: 00:43:44	Time On Btm: Time Off Btm:

TEST COMMENT: IF-1 1/2" blow  
 IS-No blow  
 FF-Weak surface blow  
 FS-No blow



#### PRESSURE SUMMARY

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

#### Recovery

Length (ft)	Description	Volume (bbl)
65.00	OS MCW 30%M 70%W	0.32

#### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62535

**DST#: 2**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 19:35:00

## Tool Information

Drill Pipe:	Length: 3085.00 ft	Diameter: 3.80 inches	Volume: 43.27 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose:	34000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
			- bbl	String Weight: Initial	34000.00 lb
Drill Pipe Above KB:	13.00 ft			Final	34000.00 lb
Depth to Top Packer:	3212.00 ft				
Depth to Bottom Packer:	ft				
Interval between Packers:	26.00 ft				
Tool Length:	46.00 ft				
Number of Packers:	2	Diameter:	6.75 inches		
Tool Comments:					

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3197.00	
Hydraulic tool	5.00			3202.00	
Packer	5.00			3207.00	20.00 Bottom Of Top Packer
Packer	5.00			3212.00	
Stubb	1.00			3213.00	
Recorder	0.00	8934	Inside	3213.00	
Recorder	0.00	8736	Outside	3213.00	
Perforations	22.00			3235.00	
Bullnose	3.00			3238.00	26.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>46.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62535

**DST#: 2**

ATTN: Austin Klaus

Test Start: 2014.11.21 @ 19:35:00

## 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: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
65.00	OS MCW 30%M 70%W	0.320

Total Length: 65.00 ft      Total Volume: 0.320 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8934

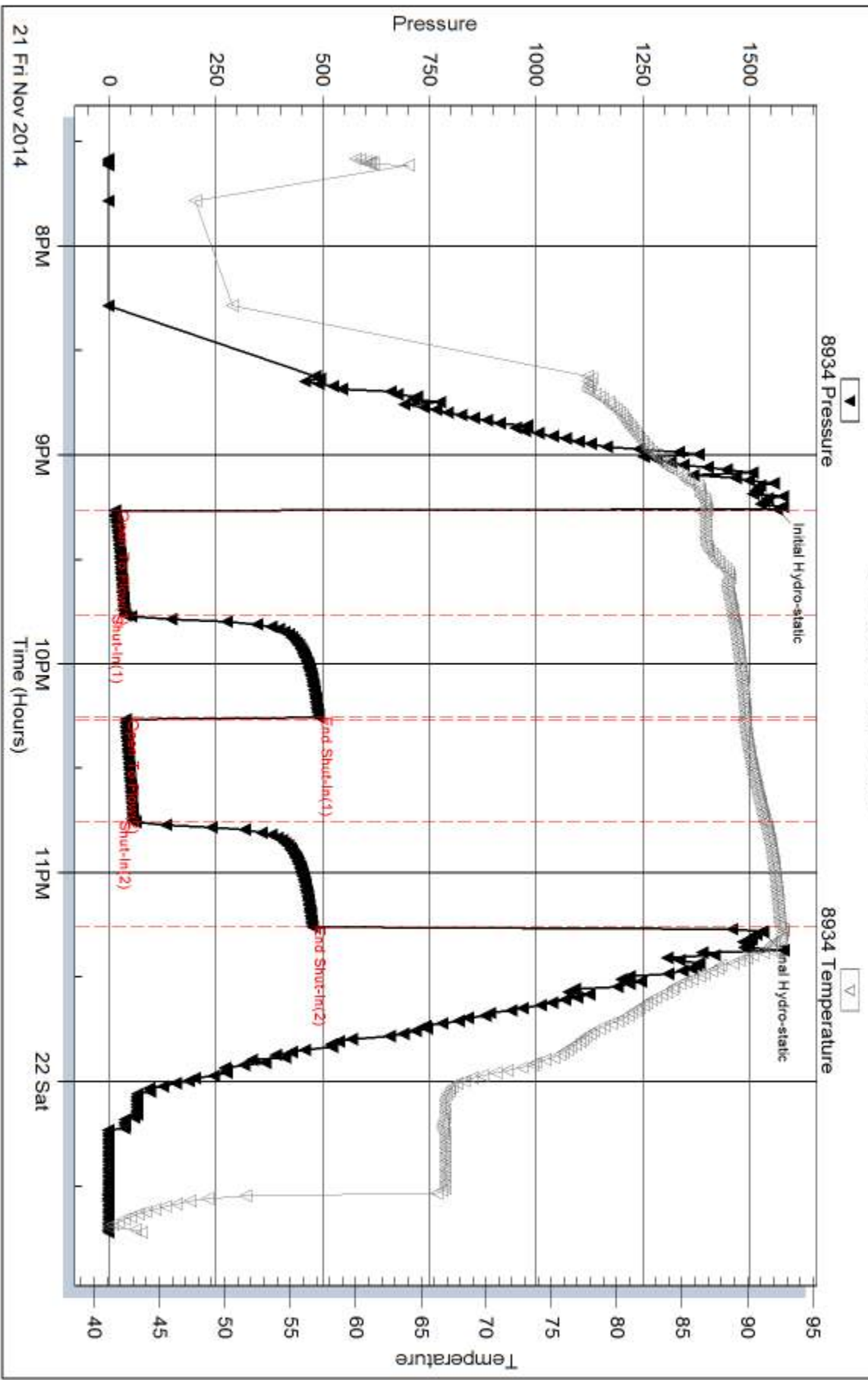
Inside

John O. Farmer, Inc.

Hegeman #1

DST Test Number: 2

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 62535

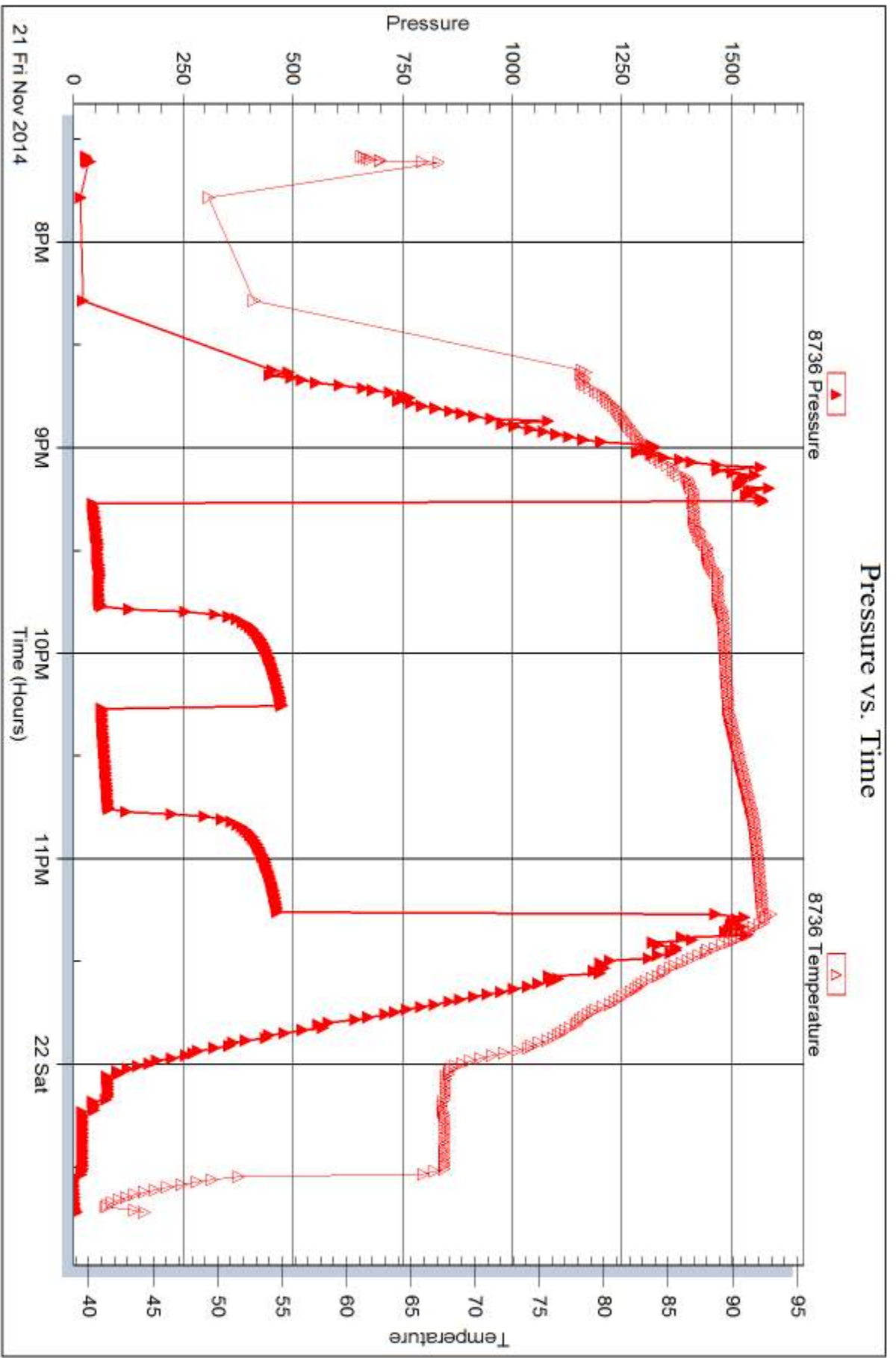
Printed: 2014, 11, 26 @ 10:44:48

Serial #: 8736

Outside John O. Farmer, Inc.

Hegeman #1

DST Test Number: 2



Triobite Testing, Inc

Ref. No: 62535

Printed: 2014.11.26 @ 10:44:48



## DRILL STEM TEST REPORT

Prepared For: **John O. Farmer, Inc.**

PO Box 352  
Russell KS 67665

ATTN: Austin Klaus

### **Hageman #1**

#### **36-8s-18w Rooks, KS**

Start Date: 2014.11.22 @ 09:25:00

End Date: 2014.11.22 @ 15:12:15

Job Ticket #: 62536                      DST #: 3

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

Printed: 2014.11.26 @ 10:44:25



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62536

**DST#: 3**

ATTN: Austin Klaus

Test Start: 2014.11.22 @ 09:25:00

## GENERAL INFORMATION:

Formation: **KC"E-F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:49:30

Time Test Ended: 15:12:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3256.00 ft (KB) To 3282.00 ft (KB) (TVD)**

Reference Elevations: 2024.00 ft (KB)

Total Depth: 3282.00 ft (KB) (TVD)

2019.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8934 Inside**

Press@RunDepth: 64.42 psig @ 3257.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.22

End Date: 2014.11.22

Last Calib.: 2014.11.22

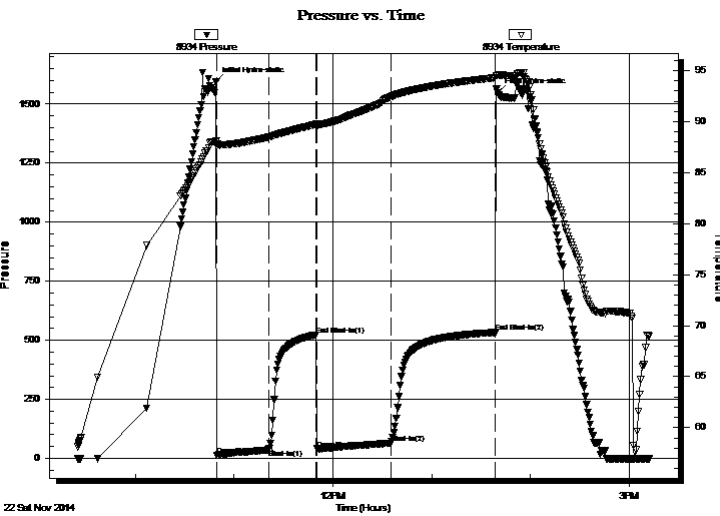
Start Time: 09:25:05

End Time: 15:12:14

Time On Btm: 2014.11.22 @ 10:49:00

Time Off Btm: 2014.11.22 @ 13:40:00

TEST COMMENT: IF-1/4" blow  
IS-No blow  
FF-1/4" blow  
FS-No blow



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1594.93	88.15	Initial Hydro-static
1	13.98	87.59	Open To Flow (1)
32	35.84	88.46	Shut-In(1)
61	522.97	89.73	End Shut-In(1)
62	39.97	89.61	Open To Flow (2)
106	64.42	92.42	Shut-In(2)
170	532.92	94.28	End Shut-In(2)
171	1548.21	94.54	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
69.00	OS MCW 40%M 60%W	0.34
1.00	Free Oil	0.00

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62536

**DST#: 3**

ATTN: Austin Klaus

Test Start: 2014.11.22 @ 09:25:00

## Tool Information

Drill Pipe:	Length: 3148.00 ft	Diameter: 3.80 inches	Volume: 44.16 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose:	35000.00 lb
			<u>Total Volume:</u>	Tool Chased	0.00 ft
Drill Pipe Above KB:	32.00 ft			String Weight: Initial	35000.00 lb
Depth to Top Packer:	3256.00 ft			Final	35000.00 lb
Depth to Bottom Packer:	ft				
Interval between Packers:	26.00 ft				
Tool Length:	46.00 ft				
Number of Packers:	2	Diameter: 6.75 inches			

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3241.00	
Hydraulic tool	5.00			3246.00	
Packer	5.00			3251.00	20.00 Bottom Of Top Packer
Packer	5.00			3256.00	
Stubb	1.00			3257.00	
Recorder	0.00	8934	Inside	3257.00	
Recorder	0.00	8736	Outside	3257.00	
Perforations	22.00			3279.00	
Bullnose	3.00			3282.00	26.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>46.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62536

**DST#: 3**

ATTN: Austin Klaus

Test Start: 2014.11.22 @ 09:25:00

### 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:

35000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
69.00	OS MCW 40%M 60%W	0.339
1.00	Free Oil	0.005

Total Length: 70.00 ft      Total Volume: 0.344 bbl

Num Fluid Samples: 0

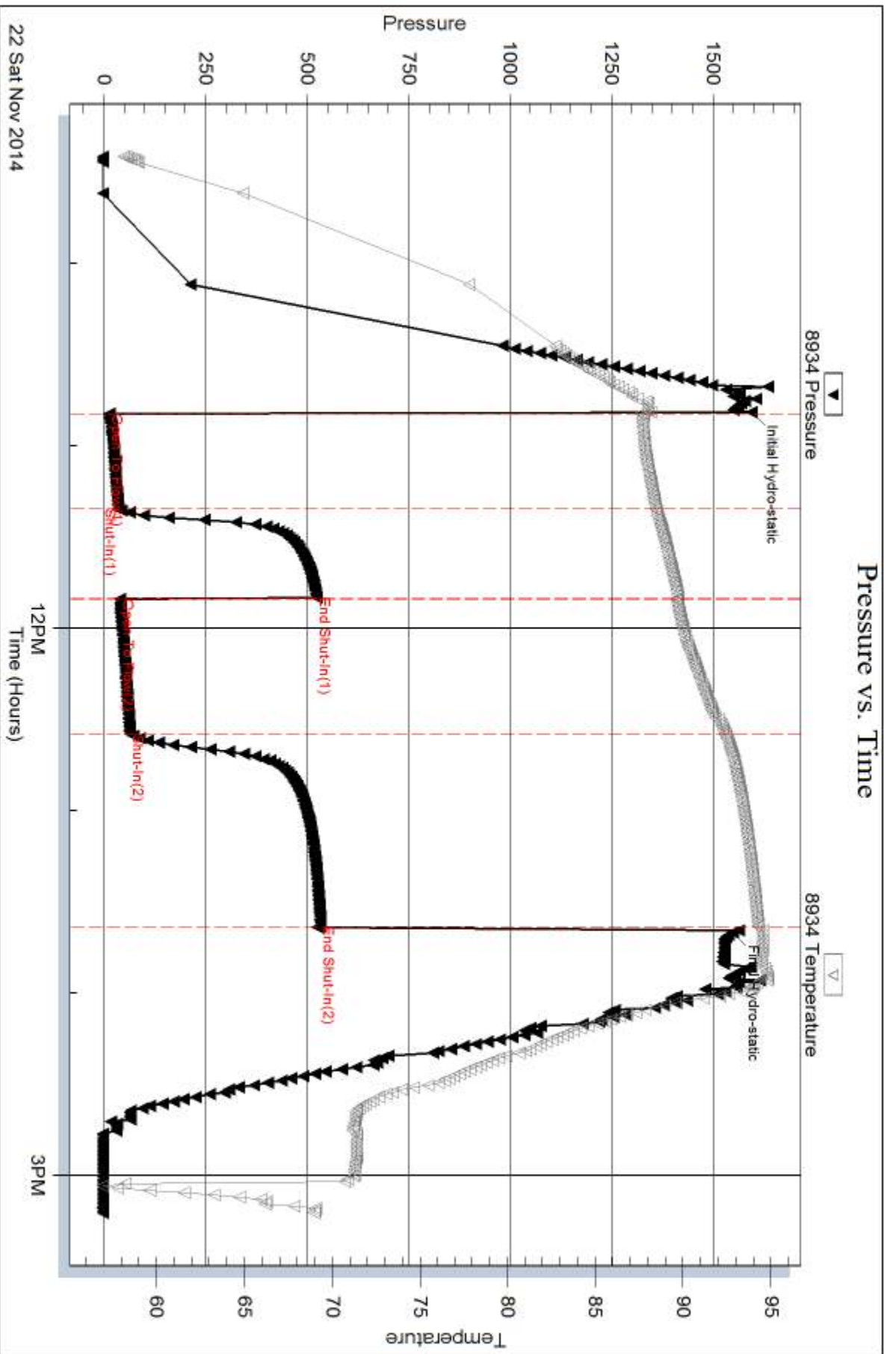
Num Gas Bombs: 0

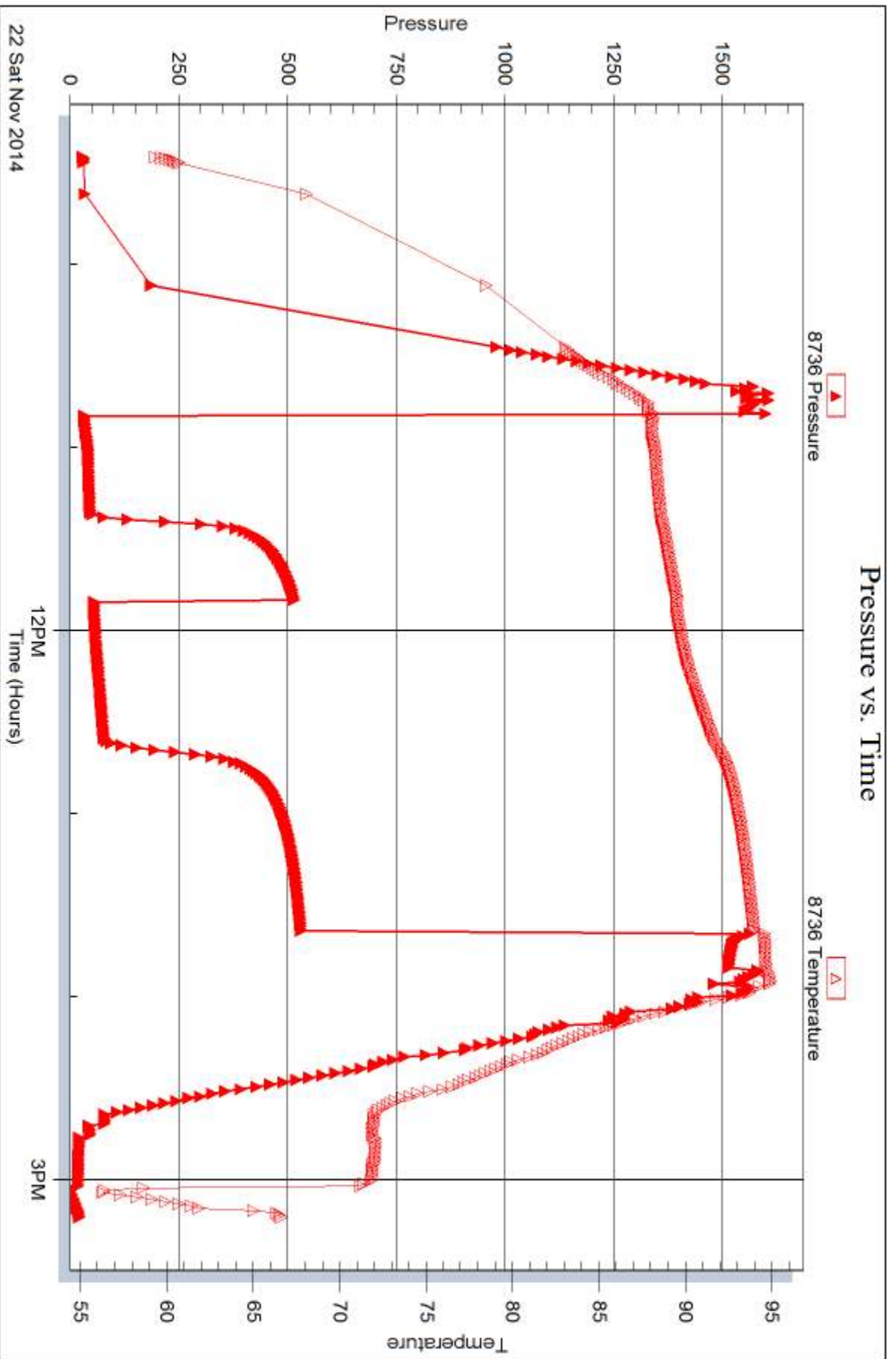
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **John O. Farmer, Inc.**

PO Box 352  
Russell KS 67665

ATTN: Austin Klaus

### **Hageman #1**

#### **36-8s-18w Rooks, KS**

Start Date: 2014.11.23 @ 02:00:00

End Date: 2014.11.23 @ 09:30:15

Job Ticket #: 62537                      DST #: 4

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

Printed: 2014.11.26 @ 10:44:01



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62537

**DST#: 4**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 02:00:00

## GENERAL INFORMATION:

Formation: **KC H-K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 04:42:00

Time Test Ended: 09:30:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3297.00 ft (KB) To 3400.00 ft (KB) (TVD)**

Reference Elevations: 2024.00 ft (KB)

Total Depth: 3400.00 ft (KB) (TVD)

2019.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8934 Inside**

Press@RunDepth: 193.56 psig @ 3298.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.23

End Date:

2014.11.23

Last Calib.: 2014.11.23

Start Time: 02:00:05

End Time:

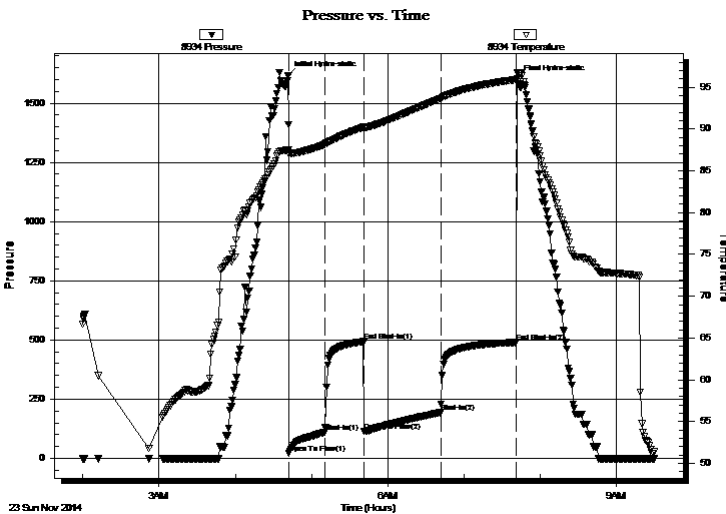
09:30:14

Time On Btm: 2014.11.23 @ 04:41:30

Time Off Btm: 2014.11.23 @ 07:41:30

**TEST COMMENT:** IF-BOB in 17 min  
IS-1/4" blow  
FF-BOB in 15 min  
FS-1" blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1617.63	87.50	Initial Hydro-static
1	21.16	87.03	Open To Flow (1)
29	111.13	88.17	Shut-In(1)
60	493.02	90.21	End Shut-In(1)
60	113.56	90.11	Open To Flow (2)
120	193.56	93.64	Shut-In(2)
180	489.67	95.89	End Shut-In(2)
180	1602.39	96.68	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
125.00	V SOMCW 3%O 77%W 20%M	0.66
125.00	SOWCM 10%O 30%W 60%M	1.75
190.00	GO 35%G 65%O	2.67

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

ATTN: Austin Klaus

Job Ticket: 62537

**DST#: 4**

Test Start: 2014.11.23 @ 02:00:00

## GENERAL INFORMATION:

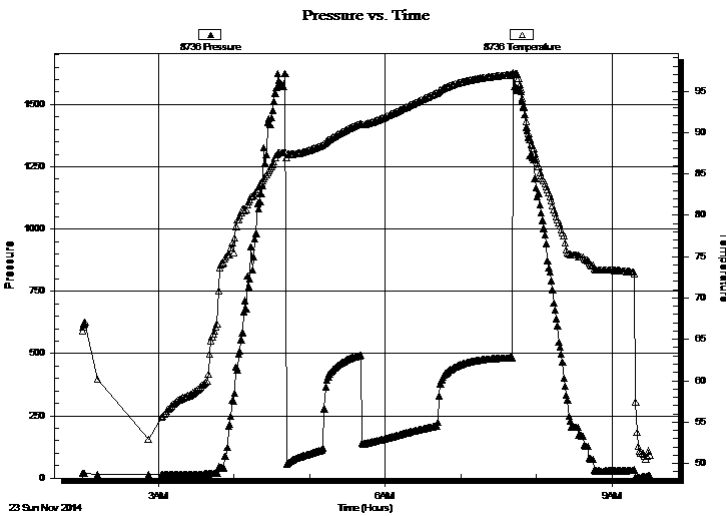
Formation:	<b>KC H-K"</b>			Test Type:	Conventional Bottom Hole (Reset)
Deviated:	No Whipstock:		ft (KB)	Tester:	Brett Dickinson
Time Tool Opened:	04:42:00			Unit No:	59
Time Test Ended:	09:30:15			Reference Elevations:	2024.00 ft (KB)
<b>Interval:</b>	<b>3297.00 ft (KB) To 3400.00 ft (KB) (TVD)</b>				2019.00 ft (CF)
Total Depth:	3400.00 ft (KB) (TVD)			KB to GR/CF:	5.00 ft
Hole Diameter:	7.88 inches	Hole Condition:	Fair		

**Serial #: 8736 Outside**

Press@RunDepth:	psig @ 3298.00 ft (KB)	Capacity:	8000.00 psig
Start Date:	2014.11.23	End Date:	2014.11.23
Start Time:	02:00:05	End Time:	09:29:59
		Last Calib.:	2014.11.23
		Time On Btm:	
		Time Off Btm:	

**TEST COMMENT:** IF-BOB in 17 min  
IS-1/4" blow  
FF-BOB in 15 min  
FS-1" blow

## PRESSURE SUMMARY



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

## Recovery

Length (ft)	Description	Volume (bbl)
125.00	V SOMCW 3%O 77%W 20%M	0.66
125.00	SOWCM 10%O 30%W 60%M	1.75
190.00	GO 35%G 65%O	2.67

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62537

**DST#: 4**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 02:00:00

## Tool Information

Drill Pipe:	Length: 3180.00 ft	Diameter: 3.80 inches	Volume: 44.61 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 45000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 34000.00 lb
Depth to Top Packer:	3297.00 ft			Final 35000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	103.00 ft			
Tool Length:	123.00 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			3282.00	
Hydraulic tool	5.00			3287.00	
Packer	5.00			3292.00	20.00 Bottom Of Top Packer
Packer	5.00			3297.00	
Stubb	1.00			3298.00	
Recorder	0.00	8934	Inside	3298.00	
Recorder	0.00	8736	Outside	3298.00	
Perforations	4.00			3302.00	
Change Over Sub	1.00			3303.00	
Drill Pipe	93.00			3396.00	
Change Over Sub	1.00			3397.00	
Bullnose	3.00			3400.00	103.00 Bottom Packers & Anchor

**Total Tool Length: 123.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62537

**DST#: 4**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 02:00:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

34 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

58000 ppm

Viscosity: 57.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
125.00	VSOMCW 3%O 77%W 20%M	0.660
125.00	SOWCM 10%O 30%W 60%M	1.753
190.00	GO 35%G 65%O	2.665

Total Length: 440.00 ft

Total Volume: 5.078 bbl

Num Fluid Samples: 0

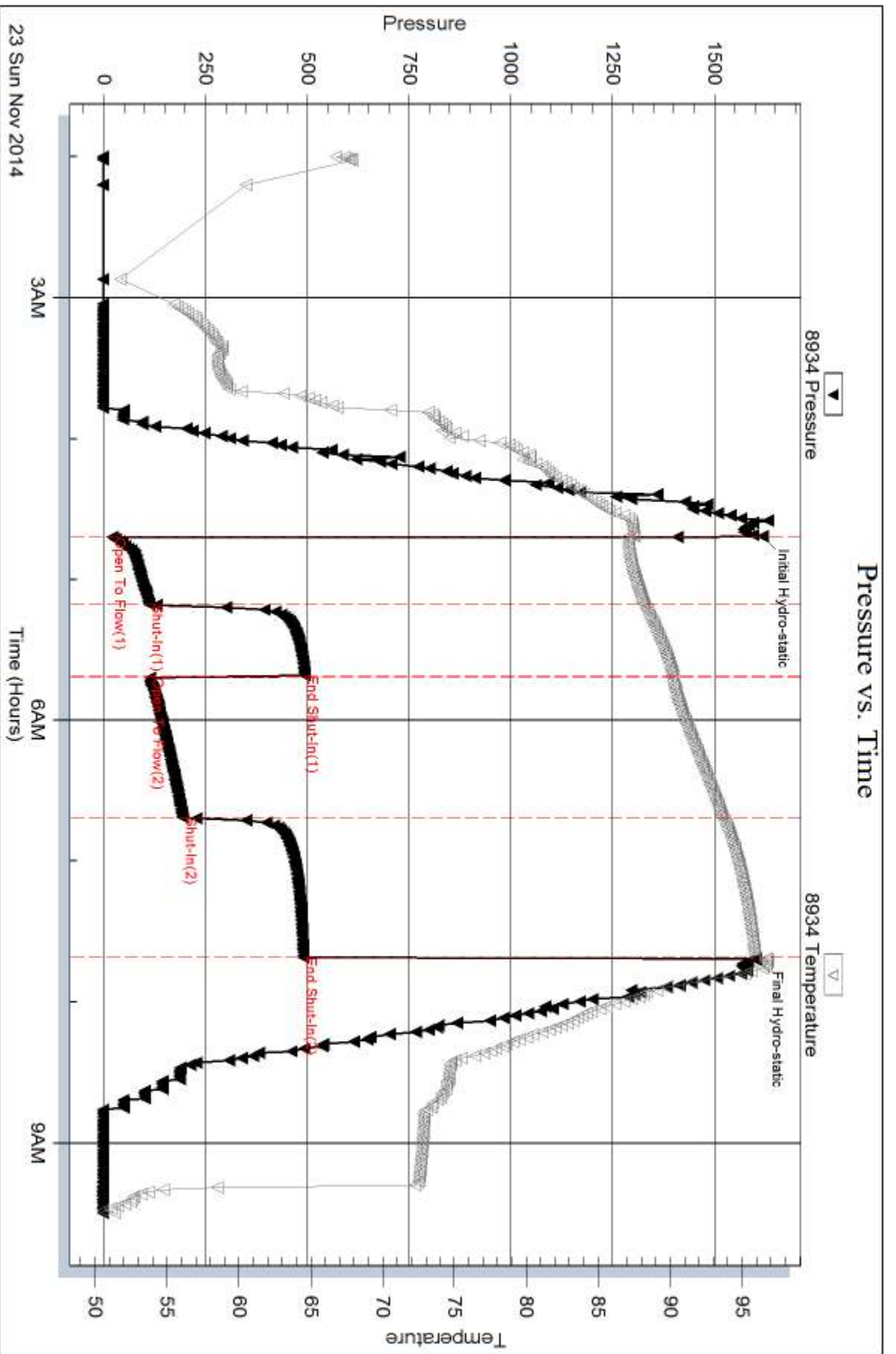
Num Gas Bombs: 0

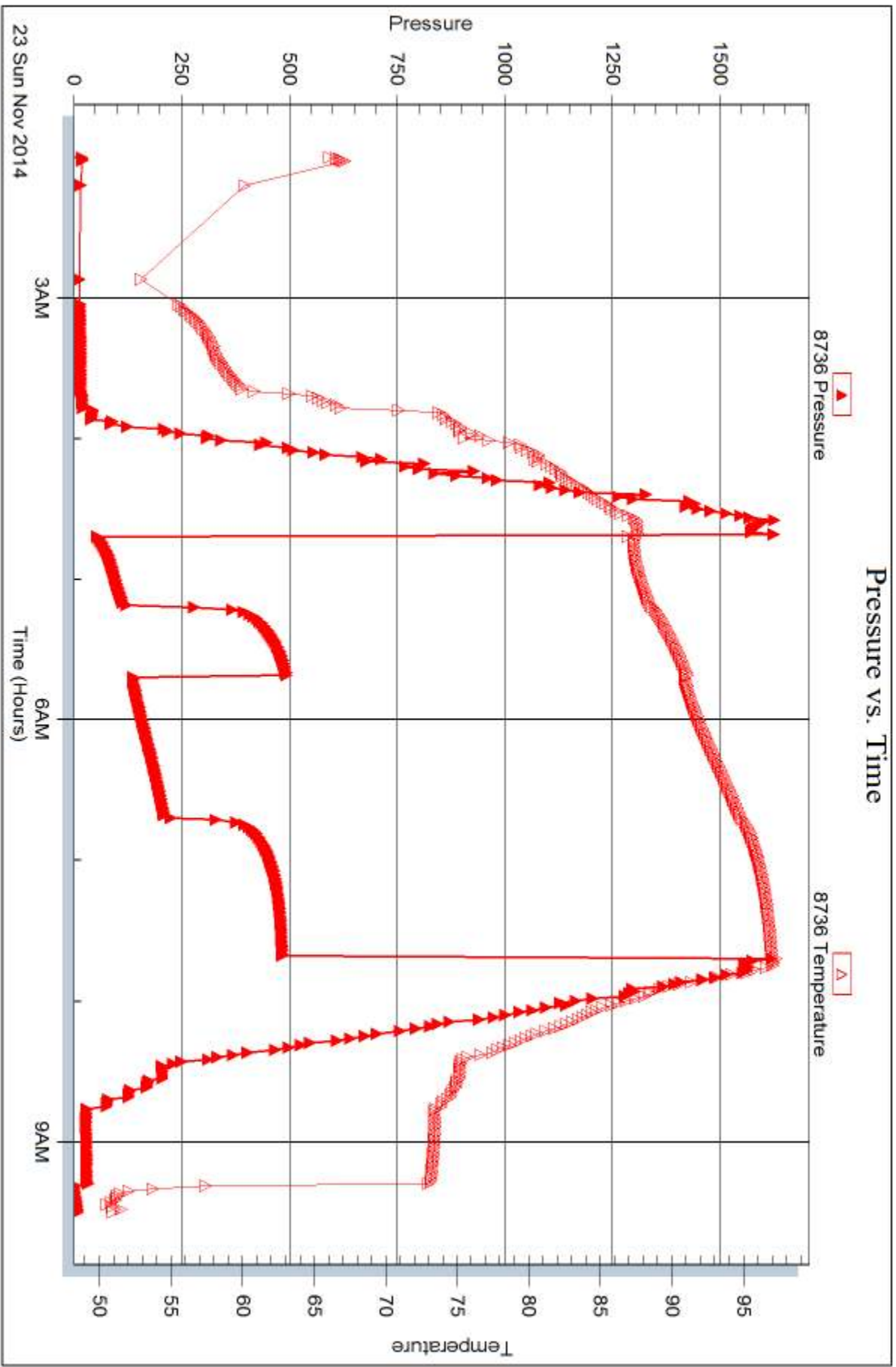
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:







## DRILL STEM TEST REPORT

Prepared For: **John O. Farmer, Inc.**

PO Box 352  
Russell KS 67665

ATTN: Austin Klaus

### **Hageman #1**

#### **36-8s-18w Rooks, KS**

Start Date: 2014.11.23 @ 21:05:00

End Date: 2014.11.24 @ 02:30:15

Job Ticket #: 62538                      DST #: 5

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

Printed: 2014.11.26 @ 10:43:28



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62538

**DST#: 5**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 21:05:00

## GENERAL INFORMATION:

Formation: **Arb.**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:44:45

Time Test Ended: 02:30:15

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3404.00 ft (KB) To 3460.00 ft (KB) (TVD)**

Total Depth: 3510.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2024.00 ft (KB)

2019.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8957**

**Inside**

Press@RunDepth: 22.41 psig @ 3405.00 ft (KB)

Start Date: 2014.11.23

End Date:

2014.11.24

Start Time: 21:05:05

End Time:

02:30:14

Capacity: 8000.00 psig

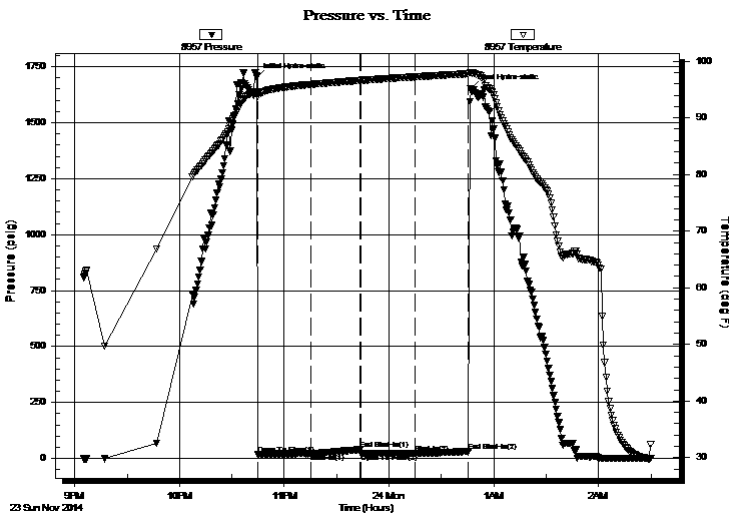
Last Calib.: 2014.11.24

Time On Btm: 2014.11.23 @ 22:44:15

Time Off Btm: 2014.11.24 @ 00:46:45

TEST COMMENT: IF-1/4in blow  
IS-No blow  
FF-No blow  
FS-No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1701.54	94.49	Initial Hydro-static
1	17.30	93.74	Open To Flow (1)
31	21.42	95.90	Shut-In(1)
60	38.86	96.60	End Shut-In(1)
60	22.05	96.61	Open To Flow (2)
91	22.41	97.25	Shut-In(2)
122	30.82	97.79	End Shut-In(2)
123	1650.56	98.01	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

## Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE TESTING, INC.**

## DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

ATTN: Austin Klaus

Job Ticket: 62538

**DST#: 5**

Test Start: 2014.11.23 @ 21:05:00

### GENERAL INFORMATION:

Formation: **Arb.**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:44:45

Time Test Ended: 02:30:15

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3404.00 ft (KB) To 3460.00 ft (KB) (TVD)**

Total Depth: 3510.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2024.00 ft (KB)

2019.00 ft (CF)

KB to GR/CF: 5.00 ft

**Serial #: 8934 Below (Straddle)**

Press@RunDepth: psig @ 3477.00 ft (KB)

Start Date: 2014.11.23

End Date:

2014.11.24

Start Time: 21:05:05

End Time:

02:33:29

Capacity: 8000.00 psig

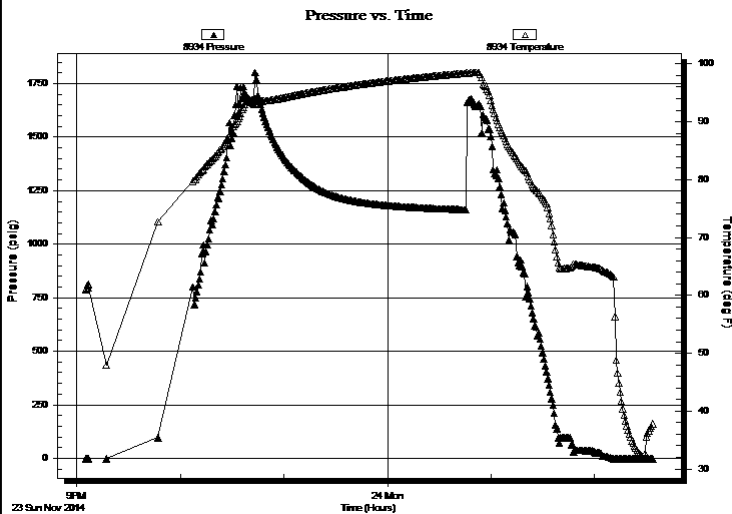
Last Calib.:

2014.11.24

Time On Btm:

Time Off Btm:

TEST COMMENT: IF-1/4in blow  
IS-No blow  
FF-No blow  
FS-No blow



### PRESSURE SUMMARY

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

### Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

### Gas Rates

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

\* Recovery from multiple tests



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62538

**DST#: 5**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 21:05:00

## GENERAL INFORMATION:

Formation: **Arb.**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:44:45

Time Test Ended: 02:30:15

Test Type: Conventional Straddle (Reset)

Tester: Brett Dickinson

Unit No: 59

**Interval: 3404.00 ft (KB) To 3460.00 ft (KB) (TVD)**

Reference Elevations: 2024.00 ft (KB)

Total Depth: 3510.00 ft (KB) (TVD)

2019.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 5.00 ft

**Serial #: 8736 Outside**

Press@RunDepth: psig @ 3405.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.11.23

End Date:

2014.11.24

Last Calib.:

2014.11.24

Start Time: 21:05:05

End Time:

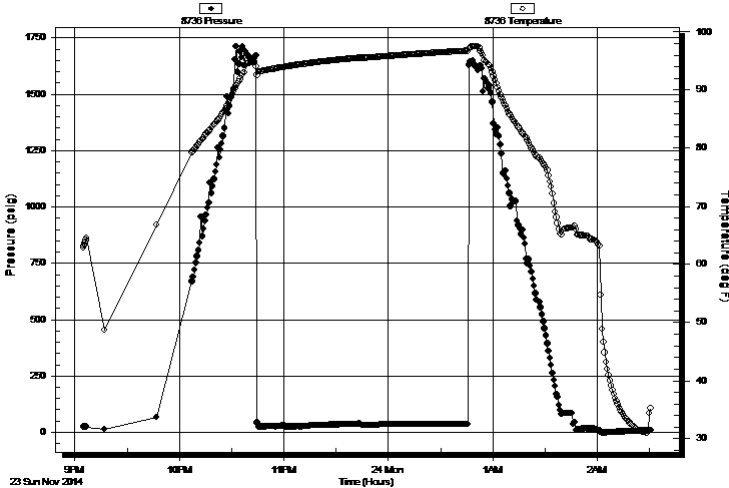
02:30:29

Time On Btm:

Time Off Btm:

**TEST COMMENT:** IF-1/4in blow  
IS- No blow  
FF- No blow  
FS- No blow

**Pressure vs. Time**



## PRESSURE SUMMARY

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

## Recovery

Length (ft)	Description	Volume (bbl)
5.00	Mud	0.02

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62538

**DST#: 5**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 21:05:00

## Tool Information

Drill Pipe:	Length: 3270.00 ft	Diameter: 3.80 inches	Volume: 45.87 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.70 inches	Volume: - bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 120.00 ft	Diameter: 2.25 inches	Volume: 0.59 bbl	Weight to Pull Loose: 40000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	6.00 ft			String Weight: Initial 35000.00 lb
Depth to Top Packer:	3404.00 ft			Final 35000.00 lb
Depth to Bottom Packer:	3460.00 ft			
Interval between Packers:	56.00 ft			
Tool Length:	130.00 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			3389.00	
Hydraulic tool	5.00			3394.00	
Packer	5.00			3399.00	20.00 Bottom Of Top Packer
Packer	5.00			3404.00	
Stubb	1.00			3405.00	
Recorder	0.00	8957	Inside	3405.00	
Recorder	0.00	8736	Outside	3405.00	
Perforations	7.00			3412.00	
Change Over Sub	1.00			3413.00	
Drill Pipe	32.00			3445.00	
Change Over Sub	1.00			3446.00	
Perforations	10.00			3456.00	
Blank Off Sub	4.00			3460.00	56.00 Tool Interval
Packer	5.00			3465.00	
Perforations	12.00			3477.00	
Recorder	0.00	8934	Below	3477.00	
Change Over Sub	1.00			3478.00	
Drill Pipe	32.00			3510.00	
Change Over Sub	1.00			3511.00	
Bullnose	3.00			3514.00	54.00 Bottom Packers & Anchor

**Total Tool Length: 130.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

John O. Farmer, Inc.

**36-8s-18w Rooks, KS**

PO Box 352  
Russell KS 67665

**Hageman #1**

Job Ticket: 62538

**DST#: 5**

ATTN: Austin Klaus

Test Start: 2014.11.23 @ 21:05:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: sec/qt

Cushion Volume:

bbbl

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

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: ppm

Filter Cake: inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	Mud	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:

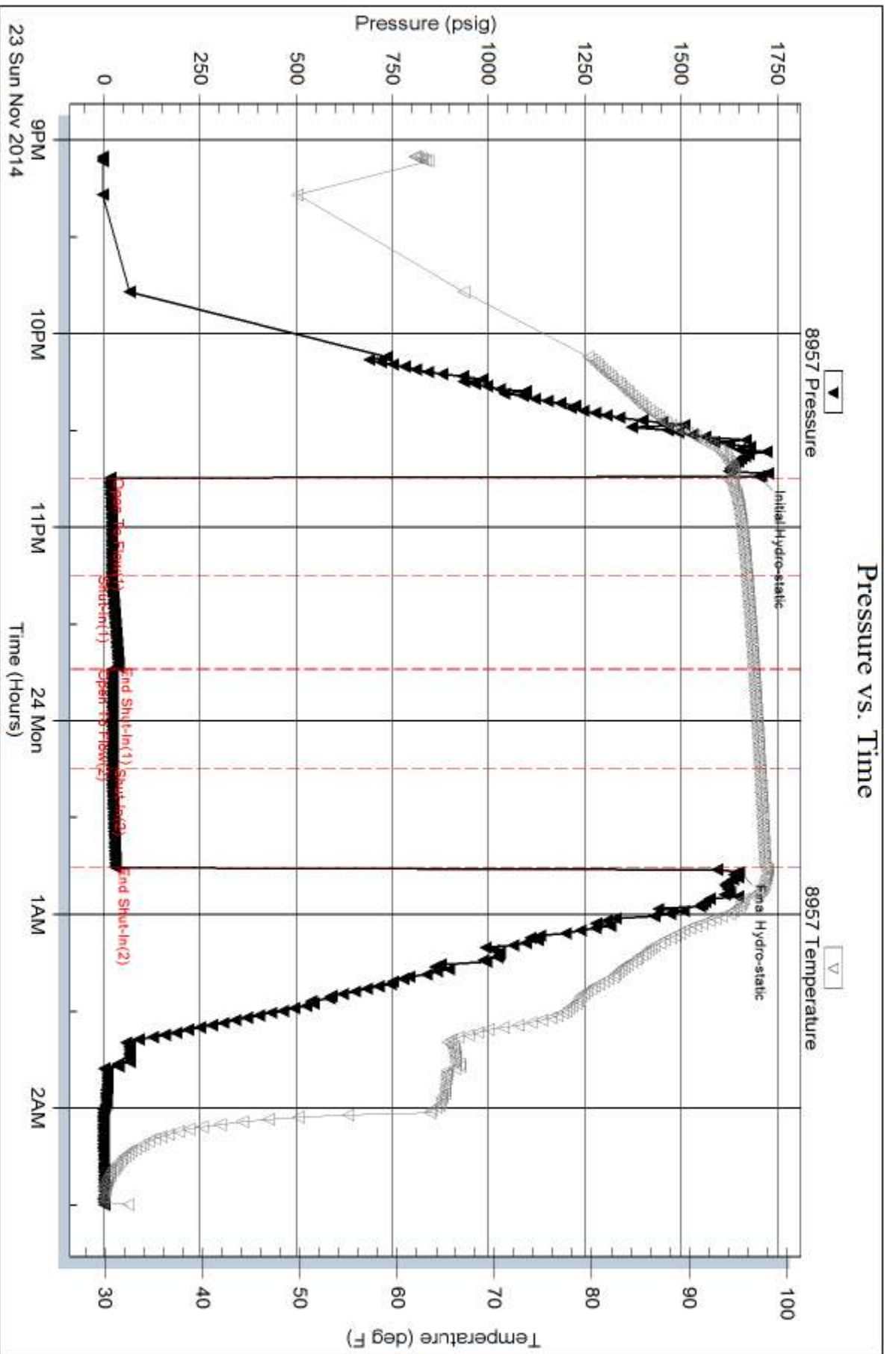
Serial #: 8957

Inside

John O. Farmer, Inc.

Hegeman #1

DST Test Number: 5



Tribble Testing, Inc

Ref. No: 62538

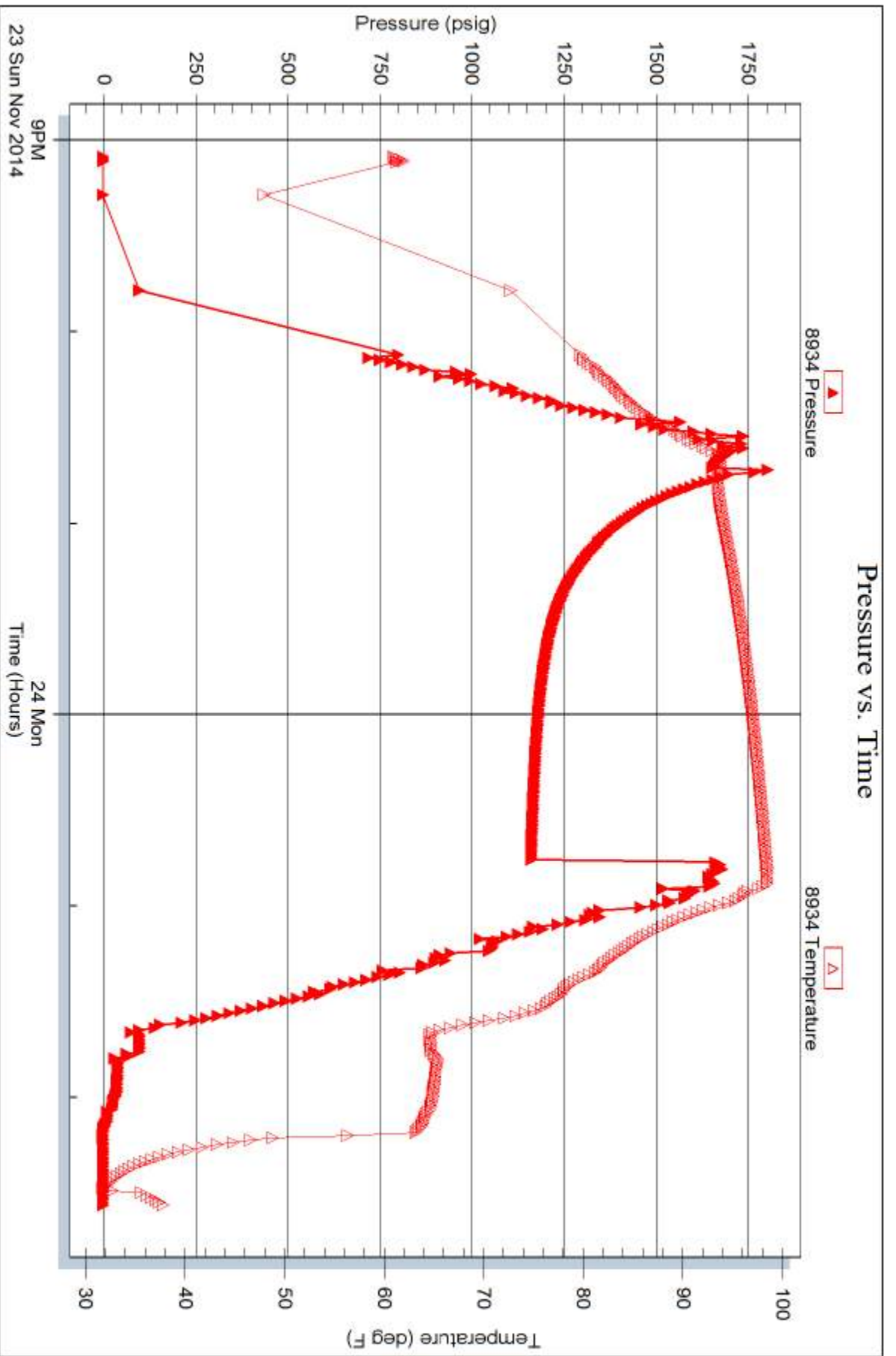
Printed: 2014.11.26 @ 10:43:30

Serial #: 8934

Below (Straddle): Farmer, Inc.

Hegeman #1

DST Test Number: 5



Triobite Testing, Inc

Ref. No: 62538

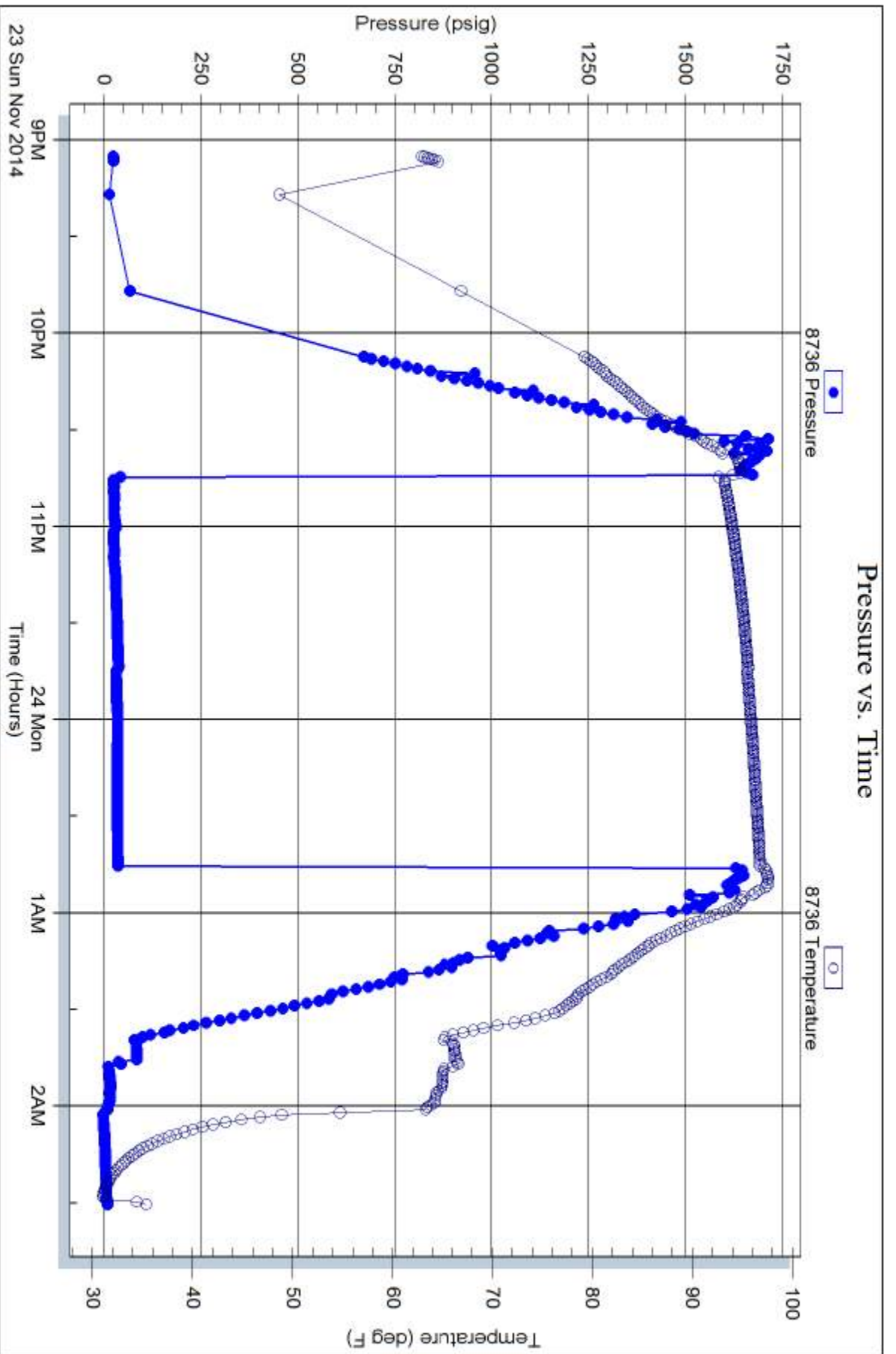
Printed: 2014.11.26 @ 10:43:30

Serial #: 8736

Outside John O. Farmer, Inc.

Hegeman #1

DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 62538

Printed: 2014.11.26 @ 10:43:30



Well Name & No. Hageman #1 Test No. 1 Date 11/21/14  
 Company John O. Farmer, Inc Elevation 2024 KB 2019 GL  
 Address \_\_\_\_\_  
 Co. Rep / Geo. Austin Klaus Rig WW #6  
 Location: Sec. 36 Twp. 8S Rge. 18W Co. Rooks State KS

Interval Tested 3136-3215 Zone Tested LKC  
 Anchor Length 79 Drill Pipe Run \_\_\_\_\_ Mud Wt. \_\_\_\_\_  
 Top Packer Depth 3131 Drill Collars Run 120 Vis \_\_\_\_\_  
 Bottom Packer Depth 3136 Wt. Pipe Run \_\_\_\_\_ WL \_\_\_\_\_  
 Total Depth 3215 Chlorides \_\_\_\_\_ ppm System LCM \_\_\_\_\_  
 Blow Description IF - 9 in blow  
ISI - No blow  
EF - BOBIN 32 min  
PSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>90</u>	<u>OCU</u>	<u>25</u>		<u>75</u>	
<u>185</u>	<u>SGMCO</u>	<u>5</u>	<u>75</u>	<u>20</u>	
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____
Rec _____	Feet of _____	%gas _____	%oil _____	%water _____	%mud _____

Rec Total 275 BHT 91 Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

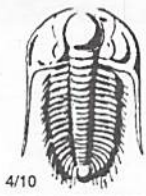
(A) Initial Hydrostatic 1,519  Test 1150 T-On Location 6:40  
 (B) First Initial Flow 20  Jars \_\_\_\_\_ T-Started 7:05  
 (C) First Final Flow 83  Safety Joint \_\_\_\_\_ T-Open 9:05  
 (D) Initial Shut-In 635  Circ Sub \_\_\_\_\_ T-Pulled 11:35  
 (E) Second Initial Flow 82  Hourly Standby \_\_\_\_\_ T-Out 13:15  
 (F) Second Final Flow 110  Mileage 66-T 102.30 Comments \_\_\_\_\_  
 (G) Final Shut-In 627  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 4,507  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 30  
 Final Flow 60  
 Final Shut-In 60

Sub Total 1252.30  
 Total 1252.30  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Brian D...

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. 62535

Well Name & No. Hageman #1 Test No. 2 Date 11/21/14  
 Company John O. Farmer, Inc. Elevation 2024 KB 2019 GL  
 Address PO Box 352 Russell KS 67665  
 Co. Rep / Geo. Austin Klaus Rig WW #6  
 Location: Sec. 36 Twp. 8s Rge. 18w Co. Rooks State KS

Interval Tested 3212 - 3238 Zone Tested KC<sup>cc</sup>  
 Anchor Length 26 Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.2  
 Top Packer Depth 3207 Drill Collars Run 120 Vis 57  
 Bottom Packer Depth 3212 Wt. Pipe Run — WL 7.6  
 Total Depth 3238 Chlorides 750 ppm System LCM 4#  
 Blow Description IF - 1 1/2 in blow  
ISI - No blow  
FF - weak surface blow  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>65</u>	<u>05 MCW</u>			<u>70</u>	<u>30</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 65 BHT 93 Gravity \_\_\_\_\_ API RW .19 @ 40 °F Chlorides 72,000 ppm  
 (A) Initial Hydrostatic 1,564  Test 1150 T-On Location 19:20  
 (B) First Initial Flow 14  Jars \_\_\_\_\_ T-Started 19:35  
 (C) First Final Flow 38  Safety Joint \_\_\_\_\_ T-Open 21:15  
 (D) Initial Shut-In 489  Circ Sub \_\_\_\_\_ T-Pulled 23:15  
 (E) Second Initial Flow 38  Hourly Standby \_\_\_\_\_ T-Out 00:45  
 (F) Second Final Flow 56  Mileage 66RT 102.30 Comments \_\_\_\_\_  
 (G) Final Shut-In 474  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1,529  Straddle \_\_\_\_\_  
 Ruined Shale Packer \_\_\_\_\_  
 Ruined Packer \_\_\_\_\_  
 Extra Copies \_\_\_\_\_  
 Initial Open 30  Shale Packer \_\_\_\_\_  
 Initial Shut-In 30  Extra Packer \_\_\_\_\_  
 Final Flow 30  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 30  Day Standby \_\_\_\_\_ Total 1252.30  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1252.30

Approved By \_\_\_\_\_ Our Representative Butt D...

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. 62536

Well Name & No. Hageman #1 Test No. 3 Date 11/22/14  
 Company John O. Farmer, Inc. Elevation 2024 KB 2019 GL  
 Address PO Box 352 Russell KS 67665  
 Co. Rep / Geo. Austin Klaus Rig WW#6  
 Location: Sec. 36 Twp. 8s Rge. 18w Co. Rooks State KS

Interval Tested 3256 - 3282 Zone Tested KC "E-F"  
 Anchor Length 26 Drill Pipe Run \_\_\_\_\_ Mud Wt. 9.2  
 Top Packer Depth 3251 Drill Collars Run 120 Vis 57  
 Bottom Packer Depth 3256 Wt. Pipe Run \_\_\_\_\_ WL 7.6  
 Total Depth 3282 Chlorides 750 ppm System LCM 4#  
 Blow Description IF - 1/4 in blow  
ISI - No blow  
FF - 1/4 in blow  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>69</u>	<u>OSMCW</u>			<u>60</u>	<u>40</u>
<u>1</u>	<u>Free Oil</u>				

Rec Total 70 BHT 94 Gravity \_\_\_\_\_ API RW .25 @ 35 °F Chlorides 35,000 ppm  
 (A) Initial Hydrostatic 1595  Test 1150 T-On Location 9:25  
 (B) First Initial Flow 14  Jars \_\_\_\_\_ T-Started 9:25  
 (C) First Final Flow 36  Safety Joint \_\_\_\_\_ T-Open 10:47  
 (D) Initial Shut-In 523  Circ Sub \_\_\_\_\_ T-Pulled 13:32  
 (E) Second Initial Flow 40  Hourly Standby \_\_\_\_\_ T-Out 15:10  
 (F) Second Final Flow 64  Mileage 66CT 102.30 Comments \_\_\_\_\_  
 (G) Final Shut-In 533  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1548  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_  
 Sub Total 1252.30  
 Initial Open 30  
 Initial Shut-In 30  
 Final Flow 43  
 Final Shut-In 60  
 Sub Total 0  
 Total 1252.30  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Brett Johnson  
 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. 62537

Well Name & No. Hageman #1 Test No. 4 Date 11/23/14  
 Company John O. Farmer, Inc. Elevation 2024 KB 2019 GL  
 Address PO Box 352 Russell KS 67665  
 Co. Rep / Geo. Austin Klaus Rig WW #6  
 Location: Sec. 36 Twp. 8s Rge. 18w Co. Rooks State KS

Interval Tested 3297-3400 Zone Tested KC "H-K"  
 Anchor Length 103 Drill Pipe Run 3180 Mud Wt. 9.2  
 Top Packer Depth 3292 Drill Collars Run 120 Vis 57  
 Bottom Packer Depth 3297 Wt. Pipe Run - WL 2.6  
 Total Depth 3400 Chlorides 250 ppm System LCM 4#  
 Blow Description IF - BOB in 17min  
ISF - 1/4 in  
FF - BOB in 15min  
FSI - 1 in blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>125</u>	<u>V50 MCW</u>	<u>3</u>	<u>77</u>	<u>20</u>	<u></u>
<del>125</del>	<u>SOWCM</u>	<u>10</u>	<u>30</u>	<u>60</u>	<u></u>
<del>190</del>	<u>60</u>				
		<u>35</u>	<u>65</u>		

Rec Total ~~440~~ 440 BHT Gravity 34 API RW .15 @ 60 °F Chlorides 58,000 ppm

(A) Initial Hydrostatic 1,618  Test 1150 T-On Location 00:50  
 (B) First Initial Flow 21  Jars T-Started 2:00  
 (C) First Final Flow 111  Safety Joint T-Open 4:42  
 (D) Initial Shut-In 493  Circ Sub T-Pulled 7:42  
 (E) Second Initial Flow 114  Hourly Standby T-Out 9:30  
 (F) Second Final Flow 194  Mileage 66.7 102.30 Comments \_\_\_\_\_  
 (G) Final Shut-In 490  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1,602  Straddle \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility \_\_\_\_\_

Initial Open 30  
 Initial Shut-In 30  
 Final Flow 60  
 Final Shut-In 60

Sub Total 1252.30  
 Total 1252.30  
 MP/DST Disc't \_\_\_\_\_

Approved By \_\_\_\_\_ Our Representative Burt Dickman

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 62538

Well Name & No. Hageman #1 Test No. 5 Date 11/23/14  
 Company John O. Farmer, Inc. Elevation 2027 KB 2019 GL  
 Address PO Box 352 Russell KS 67665  
 Co. Rep / Geo. Austin Klaus Rig WW #6  
 Location: Sec. 36 Twp. 8s Rge. 18w Co. Reeds State KS

Interval Tested 3404 - 3460 Zone Tested Arb.  
 Anchor Length 56 Drill Pipe Run \_\_\_\_\_ Mud Wt. \_\_\_\_\_  
 Top Packer Depth 3399, 3404 Drill Collars Run 120 Vis \_\_\_\_\_  
 Bottom Packer Depth 3460 Wt. Pipe Run - WL \_\_\_\_\_  
 Total Depth 3510 Chlorides \_\_\_\_\_ ppm System LCM \_\_\_\_\_

Blow Description IF - 1/4 in blow  
ISF - No blow  
FF - No blow  
FSF - No blow

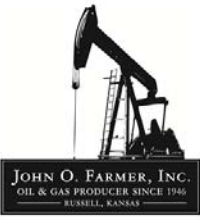
Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud</u>				
____	____				
____	____				
____	____				
____	____				

Rec Total 5 BHT \_\_\_\_\_ Gravity \_\_\_\_\_ API RW \_\_\_\_\_ @ \_\_\_\_\_ °F Chlorides \_\_\_\_\_ ppm

(A) Initial Hydrostatic 1,702  Test 1150 T-On Location 20:45  
 (B) First Initial Flow 17  Jars \_\_\_\_\_ T-Started 21:05  
 (C) First Final Flow 21  Safety Joint \_\_\_\_\_ T-Open 22:45  
 (D) Initial Shut-In 39  Circ Sub \_\_\_\_\_ T-Pulled 00:45  
 (E) Second Initial Flow 22  Hourly Standby \_\_\_\_\_ T-Out 2:30  
 (F) Second Final Flow 22  Mileage 66.7 102.30 Comments \_\_\_\_\_  
 (G) Final Shut-In 31  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1,651  Straddle 600  Ruined Shale Packer \_\_\_\_\_  
 Shale Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  Extra Copies \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_ Sub Total 0  
 Day Standby \_\_\_\_\_ Total 1852.30  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1852.30

Approved By \_\_\_\_\_ Our Representative Butt Dickerson

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.



# AUSTIN B. KLAUS



Cell 785.650.3629  
Work 785.483.3145  
Ext 225

PO BOX 352  
Russell, KS 67665  
austin.klaus@johnofarmer.com

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

Well Name: Hageman #1  
Location: Rooks County  
License Number: API #15-163-24,274-0000  
Spud Date: 11/14/14  
Surface Coordinates: Section 36 - Township 8 South - Range 18 West  
1,710' FSL & 570' FWL  
Bottom Hole Coordinates: Vertical well with minimal deviation, same as above  
Ground Elevation (ft): 2,019' K.B. Elevation (ft): 2,024'  
Logged Interval (ft): 2,900' To: RTD Total Depth (ft): 3,510'  
Formation: LKC, Arbuckle  
Type of Drilling Fluid: Chemical (Andy's)  
Region: Kansas  
Drilling Completed: 11/24/14

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

## OPERATOR

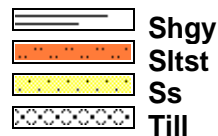
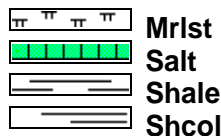
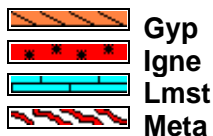
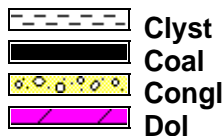
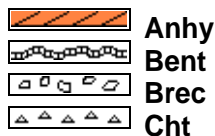
Company: John O. Farmer, Inc  
Address: 370 W. Wichita Ave  
Russell, KS 67665

## Comments

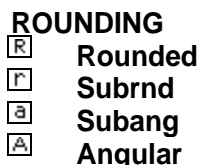
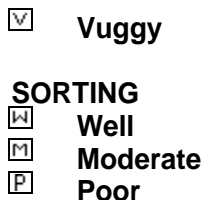
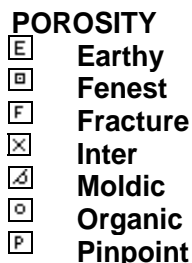
The Hageman #1 well was drilled by WW Rig #6 (Tool Pusher: Mark Biggie).

The location for the Hageman #1 well was found via 3-D seismic survey. Geologic samples were collected and evaluated from 2,900'-3,510'. Structurally, the Hageman #1 ran 19' high to our correlation well, Hageman #1 (G-D Oil Operations), at the Lansing. A bottom-hole test was conducted covering Toronto - LKC B, yielding positive results. Three additional tests were conducted in the LKC C, E-F, & H-K respectively, with the Lansing H-K test being the only one yielding positive results. The Arbuckle horizon was picked 8' high to our previously drilled Weigel Unit #1, 3,000' to the north. Upon completion of the logging operation a straddle test was conducted in the Arbuckle, yielding negative results. Upon completion of the drill stem test, the decision was made to set 5 1/2" production casing to further evaluate the Hageman #1 well on 11/24/14.

**ROCK TYPES**



**OTHER SYMBOLS**



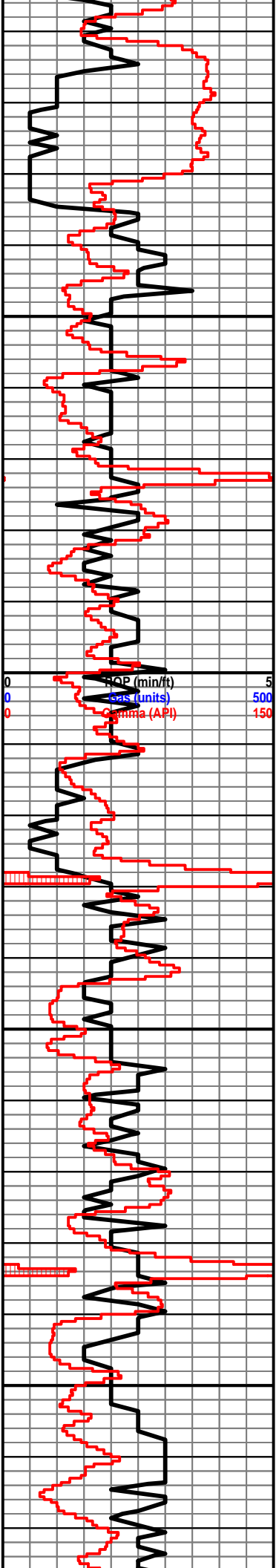
Curve Track 1		Depth	Lithology	Geological Descriptions	DST/Mud/Survey
ROP (min/ft)	—				
Gas (units)	- - - - -				
Gamma (API)	—				
0	ROP (min/ft)	5			
0	Gas (units)	500			
0	Gamma (API)	150			
	11/14/14 @				
	2:00pm Spud				
0	ROP (min/ft)	5	2800		
0	Gas (units)	500			
0	Gamma (API)	150			
	11/15/14				
	433', Drilling				
	11/16/14				
	1,966', Drilling				
	11/17/14				
	2,161', shut down				
	due to mud pump				
	11/20/14		2850		
	2,705', Drilling				
	11/21/14				
	3,215', Trip for DST				
	#1				
	11/22/14				
	3,278', Circulate				
	for samples				
	11/23/14				
	3,400' DST #4				
	11/24/14		2900		
	3,510', lay down				
	drill pipe				

The open-hole logging was performed by Mr. Gus Pfannenstiel with Gemini Wireline, LLC (Hays, KS). Logs included: Compensated Density/Compensated Neutron, Dual Induction, and Microresistivity logs.

Tester: Brett Dickinson  
Mud Engineer: Aaron Blew

Formation tops and datums from the open-hole logs include the following:

Anhydrite	1378	646
Topeka	2931	-907
Heebner	3143	-1119
Toronto	3166	-1142
Lansing	3186	-1162
B/KC	3408	-1384
Congi.		
Arbuckle	3440	-1416
RTD		
LTD	3507	-1483



Ls: tan-lt gry, fn-sub xln, mostly DNS

Sh: lt gry-drk gry

**Topeka 2935' (-911)**

Ls: tan-lt gry, fn-sub xln, mostly DNS, NSFO, scat chert-off wh

Sh: drk gry

Wt: 8.7  
Vis: 7.6

Ls: off wh-tan, fn xln, scat int xln porosity, NSFO, no odor, scat fossil

Sh: lt gry

Sh: lt gry-drk gry

Ls: tan-gry, fn-sub xln, mostly DNS, no visible porosity, scat chalk

Ls: tan-lt gry, fn xln, poor int xln porosity, scat chert-off wh

Sh: drk gry-blk

Sh: lt gry-drk gry

Ls: tan-lt gry, fn xln, scat int xln porosity, chalky, scat fossil

Ls: ala

Sh: drk gry-blk, carb

Ls: tan-lt gry, fn xln, poor pp vuggy porosity, scat chert-off wh

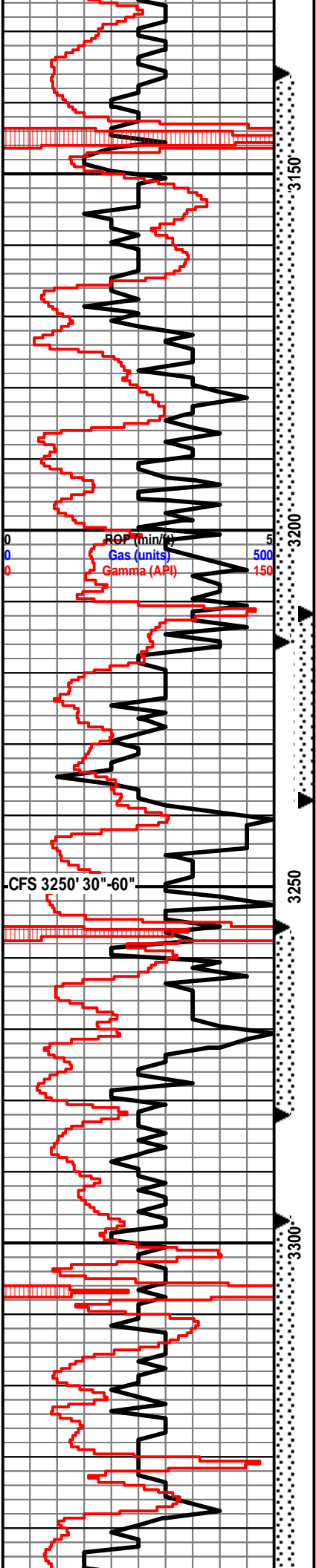
Ls: tan-lt gry, fn-sub xln, mostly DNS, scat chert-off wh

Wt: 9.2  
Vis: 57

DST #1 3,136-3,215' Toronto-LKC B  
30"-30"-45"-45"

IF: weak blow built to 9", no blow back  
EF: ROF in 32 minutes, no blow back

Sh: drk gry



Ls: off wh-tan, fn xln, scat int xln & pp vuggy porosity, scat oil st, SSFO, sl odor

**Heebner 3147' (-1123)**

Sh: blk, carb, fissile

Sh: drk gry-brn

**Toronto 3170' (-1146)**

Ls: off wh-tan, fn xln, scat pp vuggy porosity, scat dead oil st, NSFO, no odor

Sh: lt gry-drk gry

**Lansing 3188' (-1164)**

Ls: off wh-tan, fn xln, fossil, poor-fair int fossil porosity, fair oil sat, SSFO, sl odor

Ls: off wh-tan, fn xln, poor int xln & pp vuggy porosity, fair oil st, VSSFO, sl odor, scat chert-off wh

Sh: drk gry

Ls: off wh-tan, fn xln, poor int xln porosity, scat oil sat, SSFO, sl odor

Sh: drk gry-blk

Ls: off wh-tan, fn xln, fossil, poor int xln porosity, DNS, NSFO

CFS 3250' 30"-60"

Sh: drk gry-blk

Ls: off wh-tan, fn xln, scat int xln & pp vuggy porosity, scat oil st, VSSFO, sl odor

Ls: off wh-tan, fn xln, fair int xln porosity, fair oil sat, SSFO, sl chalky

Sh: drk gry

Sh: drk gry-blk

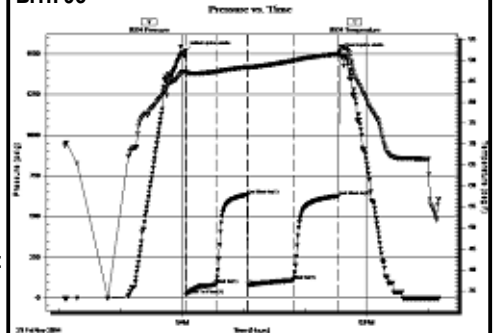
Ls: off wh-tan, fn xln, scat int xln porosity, scat chert-off wh, NSFO

Ls: off wh-tan, fn xln, scat int xln porosity, hvv chert-off wh, chalky, NSFO

Sh: drk gry

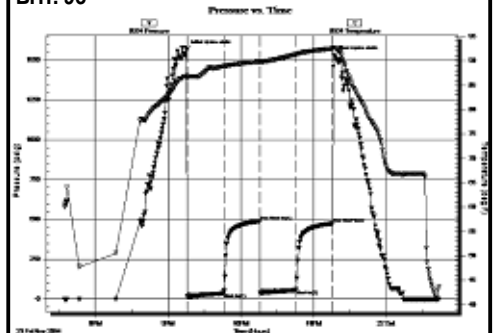
Ls: off wh-tan, fn-md xln, fair int xln & pp vuggy porosity, fair-good oil sat, FSFO, fair odor, scat chert-off wh, chalky

FP: 185' SGMO (5% G, 20% M, 75% O), 90' HOCM (25% O, 75% M)  
 FP: 20-83, 82-110#  
 SIP: 635-627#  
 HP: 1,519-1,507  
 BHT: 93



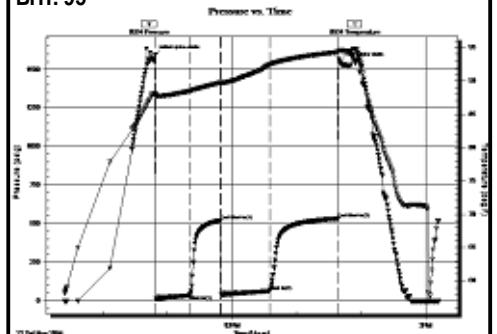
DST #2 3,212-3,238' LKC C  
 30"-30"-30"-30"

IF: weak blow built to 1.5"  
 FF: weak surface blow  
 Rec: 65' MW (30% M, 70% W)  
 FP: 14-38, 38-56#  
 SIP: 489-474#  
 HP: 1,564-1,529#  
 BHT: 93



DST #3 3,256-3,282' LKC E-F  
 30"-30"-45"-45"

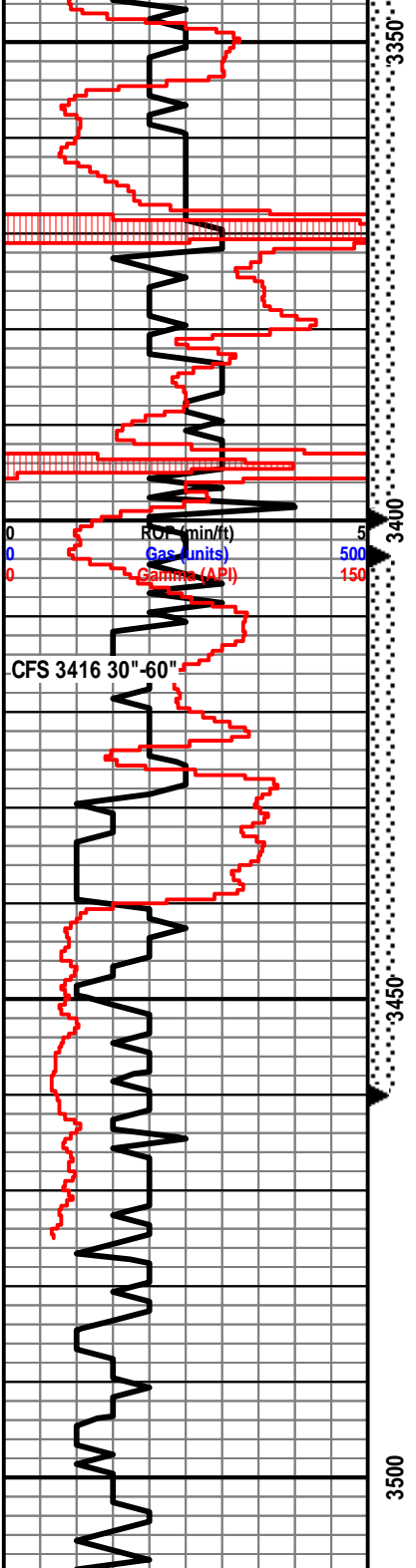
IF: weak blow built to .25"  
 FF: weak blow built to .25"  
 Rec: 1' CO, 69' MW (40% M, 60% W)  
 FP: 14-36, 40-64#  
 SIP: 523-533#  
 HP: 1,595-1,548#  
 BHT: 95



Wt: 9.2  
 Vis: 45

DST #4 3,297-3,400' LKC H-K  
 30"-30"-60"-60"

IF: BOB in 17 minutes, .25" blow back  
 FF: BOB in 15 minutes, 1" blow back  
 Rec: 190' GMO (35% G, 65% O), 125' OCWM (10% O, 30% W, 60% M), 125' SOCMM (3% O, 20% M, 77% W)  
 FP: 21-111, 114-194#  
 SIP: 493-490#  
 HP: 1,617-1,602#  
 BHT: 92



Sh: drk gry

Ls: off wh-tan, fn xln, scat fossil, fair int xln porosity, sl-fair oil sat, SSFO, sl odor, chalky

Sh: drk gry-blk

Ls: off wh-tan, fn xln, scat int xln porosity, sl oil sat, NSFO, no odor

Sh: drk gry

Ls: off wh-tan, fn xln, poor int xln porosity, NSFO

**BKC 3411' (1387)**

Sh: drk gry-brn

Sh: lt gry-drk gry-brn

Ls: tan-brn, fn-md xln, scat int xln porosity, scat oil st, NSFO

**Arbuckle 3441' (-1417)**

Dolo: off wh-tan, fn-md xln, fair sucrosic xln porosity, fair oil sat, SSFO, sl-fair odor

Dolo: off wh-tan, fn-md xln, poor-fair int xln porosity, fair-good oil sat, SSFO, fair odor, hvv chert-off wh

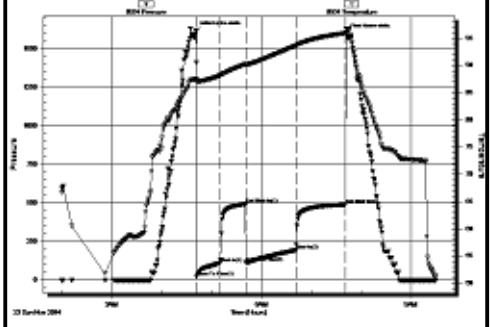
Dolo: off wh-lt brn, md xln, poor-fair int xln porosity, fair oil sat, VSSFO, fair odor,

Dolo: off wh-tan, fn-crs xln, ool, poor int xln & oom porosity, fair oil sat, VSSFO, sl-fair odor

Dolo: off wh-tan, fn-crs xln, poor int xln porosity, scat oil st, NSFO, no odor

Dolo: ala

BHT: 93



Wt: 9  
Vis: 47

DST #5 3,404-3,460' Top 20' of Arbuckle  
30"-30"-30"-30"

IF: weak blow built to .25"  
FF: no blow  
Rec: 5' Mud  
FP: 17-21, 22-22#  
SIP: 39-31#  
HP: 1,702-1,651#  
BHT: 98

