



Operator Name: Production Drilling Inc Lease Name: Rhian Well #: 1  
 Sec. 12 Twp. 8 S. R. 22  East  West County: Graham

**INSTRUCTIONS:** Show important tops and base 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. Attach complete copy of all Electric Wire-line Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(Attach Additional Sheets)</i>  Samples Sent to Geological Survey <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Cores Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Electric Log Run <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Electric Log Submitted Electronically <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>(If no, Submit Copy)</i>  List All E. Logs Run: <small>Radiation Guard Log</small>	<input checked="" type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample  <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Name</th> <th style="text-align: left;">Top</th> <th style="text-align: left;">Datum</th> </tr> </thead> <tbody> <tr> <td>Topeka</td> <td>3012</td> <td>-952</td> </tr> <tr> <td>Heebner</td> <td>3221</td> <td>-1161</td> </tr> <tr> <td>Toronto</td> <td>3242</td> <td>-1182</td> </tr> <tr> <td>LK-C</td> <td>3256</td> <td>-1196</td> </tr> <tr> <td>Arbuckle</td> <td>3556</td> <td>-1504</td> </tr> </tbody> </table>	Name	Top	Datum	Topeka	3012	-952	Heebner	3221	-1161	Toronto	3242	-1182	LK-C	3256	-1196	Arbuckle	3556	-1504
Name	Top	Datum																	
Topeka	3012	-952																	
Heebner	3221	-1161																	
Toronto	3242	-1182																	
LK-C	3256	-1196																	
Arbuckle	3556	-1504																	

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
Surface Pipe	12 1/4	8 5/8	23	223	common	150	2%gel -3% CC
Production String	7 7/8	5 1/2	15.5	3563	Q-PRO	150	10% Salt

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	# Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input checked="" type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone	0-1596	QMDL	225	

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record (Amount and Kind of Material Used)	Depth
LK-C K	3446-48	750 gal 15%	3447
LK-C J	3424-30	750 gal 15%	3425
LK-C F	3336-42	0	
RECEIVED KANSAS CORPORATION COMMISSION JUN 09 2010 CONSERVATION DIVISION WICHITA, KS			

TUBING RECORD: Size: <u>2 7/8</u> Set At: <u>3515</u> Packer At: <u>3515</u> Liner Run: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Date of First, Resumed Production, SWD or ENHR. <u>3-18-2010</u>	Producing Method: <input type="checkbox"/> Flowing <input checked="" type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain) _____
Estimated Production Per 24 Hours	Oil Bbls. <u>71</u> Gas Mcf <u>0</u> Water Bbls. <u>30</u> Gas-Oil Ratio _____ Gravity <u>35</u>

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 checked="" type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <i>(Submit ACO-5)</i> <i>(Submit ACO-4)</i> <input type="checkbox"/> Other (Specify) _____	PRODUCTION INTERVAL: <u>3448-3336</u>
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# QUALITY OILWELL CEMENTING, INC.

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

Home Office P.O. Box 32 Russell, KS 67065

No. 3694

Date	12-4-09	Sec.	12	Twp.	8	Range	22	County	Barber	State	Kansas	On Location		Finish	3:45 PM
Lease	Rhoads	Well No.	1		Location		Boggs W 3/4 W 40								
Contractor	Discovery Drilling Rig 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.								
Type Job	D.V. (Top)				Charge To		Productive Drilling								
Hole Size	7 7/8		T.D.		3582		Street								
Csg.	5 1/2 15.50 lbs		Depth		3560		City								
Tbg. Size			Depth				State								
Tool	D.V. #49		Depth		1595		The above was done to satisfaction and supervision of owner agent or contractor.								
Cement Left in Csg.			Shoe Joint				CEMENT								
Meas Line			Displace		38241		Amount Ordered 300 Q-MIX								
<b>EQUIPMENT</b>							Common								
Pumptrk	1	No.	Cementer		Steve		Poz. Mix								
			Helper				Gel								
Bulktrk	10	No.	Driver		Dave		Calcium								
			Driver		Dave		Hulls								
Bulktrk		No.	Driver		Kend		Salt								
			Driver		Dave		Flowseal								
<b>JOB SERVICES &amp; REMARKS</b>							Handling								
Remarks:							Mileage								
30" Red Hole							<div style="text-align: center;"> <p>RECEIVED KANSAS CORPORATION COMMISSION</p> <p>JUN 09 2010</p> <p>CONSERVATION DIVISION WICHITA, KS</p> </div>								
15" Blue Hole															
Mix 20's							Guide Shoe								
Land plug @ 1500 ps. 9' below tool							Centralizer								
Float Hole							Baskets								
Cement slat Curabit							AFU Inserts								
							Pumptrk Charge								
							Mileage								
							Tax								
							Discount								
X Signature <i>[Signature]</i>							Total Charge								

## GENERAL TERMS AND CONDITIONS

**DEFINITIONS:** In these terms and conditions, "Quality" shall mean Quality Oilwell Cementing, Inc., and "Customer" shall refer to the party identified by that term on the front of this contract. As applicable, "Job" relates to the services described on the front side of this contract, "merchandise" refers to the material described on the front of this contract and to any other materials, products, or supplies used, sold, or furnished under the requirements of this contract.

– **TERMS:** Unless satisfactory credit has been established, "CUSTOMER" must tender full cash payment to "QUALITY" before the job is undertaken or merchandise is delivered. If satisfactory credit has been established, the terms of payment for the job and/or merchandise, including bulk cement, are net cash, payable in 30 days from the completion of the job and/or delivery of the merchandise. For all past due invoices, "CUSTOMER" agrees to pay interest on amounts invoiced at a rate of 18 percent per annum until paid. Notwithstanding the foregoing in no event shall this Contract provide for interest exceeding the maximum rate of interest that "CUSTOMER" may agree to pay under applicable law. If any such interest should be provided for, it shall be and hereby is deemed to be a mistake, and this contract shall be automatically reformed to lower the rate of interest to the maximum legal contract rate, any amounts previously paid as excess interest shall be deducted from the amounts owing from the "CUSTOMER" or at the option of "QUALITY," refunded directly to "CUSTOMER." For purposes of this paragraph, QUALITY and CUSTOMER agree that KANSAS law shall apply. Any discounts granted with this contract are null and void if the charges are not paid when due.

– **ATTORNEY FEES:** In any legal action or proceeding between the parties to enforce any of the terms of this Service Contract, or in any way pertaining to the term of this Contract, the prevailing party shall be entitled to recover all expenses, including, but not limit to, a reasonable sum as and attorney's fees.

– **PRICES AND TAXES:** All merchandise listed in "QUALITY'S" current price shall schedule are F.O.B. QUALITY'S local station and are subject to change without notice. All prices are exclusive of any federal, state, local, or special taxes for the sale or use of the merchandise or services listed. The amount of taxes required to be paid by QUALITY shall be added to the quoted prices charged to CUSTOMER.

– **TOWING CHARGES:** QUALITY will make a reasonable attempt to get to and from each job site using its own equipment. Should QUALITY be unable to do so because of poor or inadequate road conditions, and should it become necessary to employ a tractor or other pulling equipment to get to or from the job site, the tractor or pulling equipment will be supplied by CUSTOMER or, if furnished by QUALITY, will be charged to and paid by CUSTOMER.

– **PREPARATION CHARGES:** If a job and/or merchandise is ordered and CUSTOMER cancels the order after preparation of a chemical solution or other material, CUSTOMER will pay QUALITY for the expenses incurred by QUALITY as a result of the cancellation.

– **DEADHAUL, CHARGES:** Unless otherwise specified on the front of this Contract, a deadhaul charges as set forth in QUALITY'S current price book will be charged each way for each service unit which is ordered by CUSTOMER but not used.

– **SERVICE CONDITIONS AND LIABILITIES:** 1. QUALITY carries public liability and property damage insurance, but since there are so many uncertain and unknown conditions beyond QUALITY'S control, QUALITY shall not be liable for injuries to property or persons or for loss or damage arising from the performance of the job or delivery of the merchandise. Customer shall be responsible for and indemnify, defend, and hold harmless QUALITY, its officers, agents and employees, from and against any and all claims or suits for:

(A) Damage to property or for bodily injury, sickness, disease, or death, brought by any person, including CUSTOMER and/or the well owner; and:

(B) Oil spills, pollution, surface or sub-surface damage, injury to the well, reservoir loss, or damage arising from a well blowout arising out of or in connection with QUALITY'S performance of the job or furnishing of merchandise in accordance with this contract, unless such loss or damage is caused by the willful misconduct or gross negligence of QUALITY or its employees.

2. With respect to any of QUALITY'S tools, equipment, or instruments which are lost in the well or damaged when performing or attempting to perform the job or, in the case of marine operations, are lost or damaged at any time after delivery to the landing for CUSTOMER and before return to QUALITY at the landing, CUSTOMER shall either recover the lost item without cost to QUALITY or reimburse QUALITY the current replacement cost of the item unless the loss or damage results from the sole negligence of QUALITY or its employees.

3. QUALITY does not assume any liability or responsibility for damages or conditions resulting from chemical action in cements caused by contamination of water or other fluids.

**WARRANTIES:** 1. QUALITY warrants all merchandise manufactured or furnished by it to be free from defects in material and workmanship under normal use and service when installed, and used, and/or serviced in the manner provided and intended. QUALITY'S obligation under this warranty is expressly limited to repair replacement, or allowance for credit, at its option, for any merchandise which is determined by QUALITY to be defective. THIS IS THE SOLE WARRANTY OF QUALITY AND NO OTHER WARRANTY IS APPLICABLE, EITHER EXPRESS OR OTHERWISE IMPLIED, IN FACT OR IN LAW, INCLUDING ANY WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE, CUSTOMER'S sole and only remedy with regard to any defective merchandise shall be the repair or replacement thereof or allowance for credit as herein provided, and QUALITY shall not be liable for any consequential, special, incidental, or punitive damages resulting from or caused by defective materials, products or supplies.

2. More specifically:

(A) Nothing in this contract shall be constructed as a warranty by QUALITY of the success or the effectiveness of the result of any work done or merchandise used, sold, or furnished under this contract.

(B) Nothing in this contract shall be construed as a warranty of the accuracy or correctness of any facts, information, or data furnished by QUALITY or any interpretation of test, meter readings, chart information, analysis or research, or recommendations made by QUALITY, unless the inaccuracy or incorrectness is caused by the willful misconduct or gross negligence of QUALITY or its employees in the preparation or furnishing of such facts, information or data. (C) Work done by QUALITY shall be under the direct supervision and control of the CUSTOMER or his agent and QUALITY will accomplish the job as an independent contractor and not as an employee or agent of the CUSTOMER.

# QUALITY OILWELL CEMENTING, INC.

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

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

No. 3693

Date	12-4-09	Sec.	12	Twp.	8	Range	22	County	Geary	State	Kansas	On Location		Finish	1.15pm
Lease	Phon	Well No.	1		Location		Tring 163W Winto								
Contractor	Discipline Drilling				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.								
Type Job	DK		S		Charge To		Production Drilling								
Hole Size	7 7/8		T.D.		3582										
Csg.	5 1/2 15-501		Depth		3563										
Tbg. Size			Depth												
Tool DV	18		Depth		1595		City		State						
Cement Left in Csg.	<del>18</del>		Shoe Joint		<del>18</del>		The above was done to satisfaction and supervision of owner agent or contractor.								
Meas. Line			Displace		84 1/2 Bbl		<b>CEMENT</b>								

EQUIPMENT			Amount Ordered
Pumptrk	1	No. Cementer Helper	150 Cem 10% Salt
Bulktrk	1	No. Driver	Common
Bulktrk		No. Driver	Poz. Mix
Bulktrk		No. Driver	Gel.

**JOB SERVICES & REMARKS**

Remarks:

Run 300 Gal Mud Clean-48  
Followed by 10 Bbl RCL

Mix 150 cc Cem 10% Salt  
Displace 84 1/2 Bbl

Land plug @ 1200 ps

Float Hole

FLOAT EQUIPMENT	
Guide Shoe	1 Parker Shoe
Centralizer	8
Baskets	3
AFU Inserts	1 2 Shoe Tool w/ 1/2 inch chain assembly

RECEIVED  
KANSAS CORPORATION COMMISSION

JUN 09 2010

CONSERVATION DIVISION  
WICHITA, KS

Signature <i>Chris W. ...</i>	Pumptrk Charge	
	Mileage	
	Tax	
	Discount	
	Total Charge	

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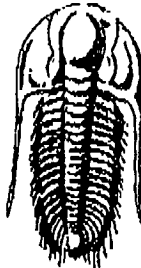
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6-23-10

Fax to: 316-337-6211



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

Prepared For: **Production Drlg Inc**  
1023 Reservation Rd  
Hays Ks 67601

ATTN: Larry Patterson

**12-8-22 Graham Ks**

**Rhian # 1**

Start Date: 2009.12.01 @ 20:23:50

End Date: 2009.12.02 @ 02:07:50

Job Ticket #: 36669                      DST #: 1

**RECEIVED  
JUN 23 2010  
KCC WICHITA**

Trilobite Testing, Inc  
PO Box 1733 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Production Drlg Inc

Rhian # 1

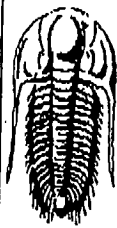
12-8-22 Graham Ks

DST # 1

C

LKC

2009.12.01



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

Production Drlg Inc

Rhian # 1

1023 Reservation Rd  
Hays Ks 67601

12-B-22 Graham Ks

ATTN: Larry Patterson

Job Ticket: 36669

DST#: 1

Test Start: 2009.12.01 @ 20:23:50

**GENERAL INFORMATION:**

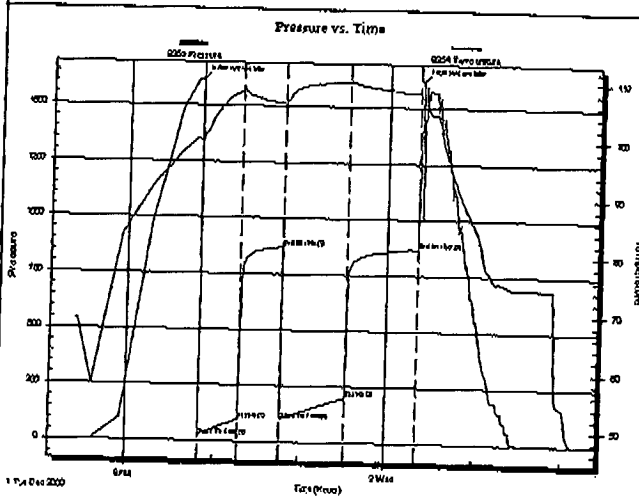
Formation: C LKC  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 21:49:50  
 Time Test Ended: 02:07:50  
 Interval: 3280.00 ft (KB) To 3305.00 ft (KB) (TVD)  
 Total Depth: 3305.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 Inches Hole Condition: Good

Test Type: Conventional Bottom Hole  
 Tester: Dan Bangle  
 Unit No: 38

Reference Elevations: 2060.00 ft (KB)  
 2052.00 ft (CF)  
 KB to GR/CF: 8.00 ft

Serial #: 8354 Ins/Idc  
 Press@RunDepth: 199.31 psig @ 3281.00 ft (KB)  
 Start Date: 2009.12.01 End Date: 2009.12.02  
 Start Time: 20:23:51 End Time: 02:07:50  
 Capacity: 8000.00 psig  
 Last Calib.: 2009.12.02  
 Time On Btm: 2009.12.01 @ 21:49:20  
 Time Off Btm: 2009.12.02 @ 00:22:50

TEST COMMENT: IF-Strong B-B in 10 min  
 IS-Weak steady surface blow  
 FF-Strong B-B in 12 min  
 FS-Weak steady surface blow



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1613.98	99.78	Initial Hydro-static
1	20.60	99.30	Open To Flow (1)
28	97.44	108.05	Shut-In(1)
57	871.12	108.01	End Shut-In(1)
58	102.38	105.94	Open To Flow (2)
103	199.31	109.88	Shut-In(2)
152	868.16	107.99	End Shut-In(2)
154	1613.59	107.24	Final Hydro-static

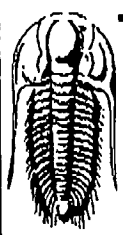
**Recovery**

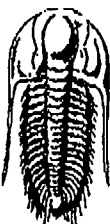
Length (ft)	Description	Volume (bbl)
120.00	Mdy Wtr	1.41
120.00	Silty OC Mdy Wtr 10%o 60%w 30%r	1.68
60.00	HOCM 40%o 60%r	0.84
50.00	CO	0.70
0.00	258 GIP	0.00
0.00	Rw .09 @ 80 = 80000ppm	0.00

**Gas Rates**

Choke (Inches)	Pressure (psig)	Gas Rate (Mc/d)



 <p style="font-size: 2em; font-weight: bold; margin: 0;">TRILOBITE TESTING, INC</p>	DRILL STEM TEST REPORT		TOOL DIAGRAM		
	<p>Production Drtg Inc 1023 Reservation Rd Hays Ks 67601 ATTN: Larry Patterson</p>	<p>Rhlan # 1 12-8-22 Graham Ks Job Ticket: 36669      DST#: 1 Test Start: 2009.12.01 @ 20:23:50</p>			
<b>Tool Information</b>					
Drill Pipe:	Length: 3233.00 ft	Diameter: 3.80 inches	Volume: 45.35 bbl	Tool Weight: 2000.00 lb	
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb	
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 100000.0 lb	
			Total Volume: 45.50 bbl	Tool Chased 5.00 ft	
Drill Pipe Above KB:	3.00 ft			String Weight: Initial 58000.00 lb	
Depth to Top Packer:	3280.00 ft			Final 60000.00 lb	
Depth to Bottom Packer:	ft				
Interval between Packers:	25.00 ft				
Tool Length:	45.00 ft				
Number of Packers:	2	Diameter:	6.75 inches		
Tool Comments:					
<b>Tool Description</b>					
	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3281.00	
Shut In Tool	5.00			3286.00	
Hydraulic tool	5.00			3271.00	
Packer	5.00			3276.00	20.00      Bottom Of Top Packer
Packer	4.00			3280.00	
Stubb	1.00			3281.00	
Recorder	0.00	8354	Inside	3281.00	
Recorder	0.00	8520	Outside	3281.00	
Perforations	21.00			3302.00	
Bullnose	3.00			3305.00	25.00      Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>45.00</b>				



**TRILOBITE TESTING, INC**

**DRILL STEM TEST REPORT**

**FLUID SUMMARY**

Production Drig Inc Rhian # 1  
 1023 Reservation Rd 12-8-22 Graham Ks  
 Hays Ks 67601 Job Ticket: 36669 DST#: 1  
 ATTN: Larry Patterson Test Start: 2009.12.01 @ 20:23:50

**Mud and Cushion Information**

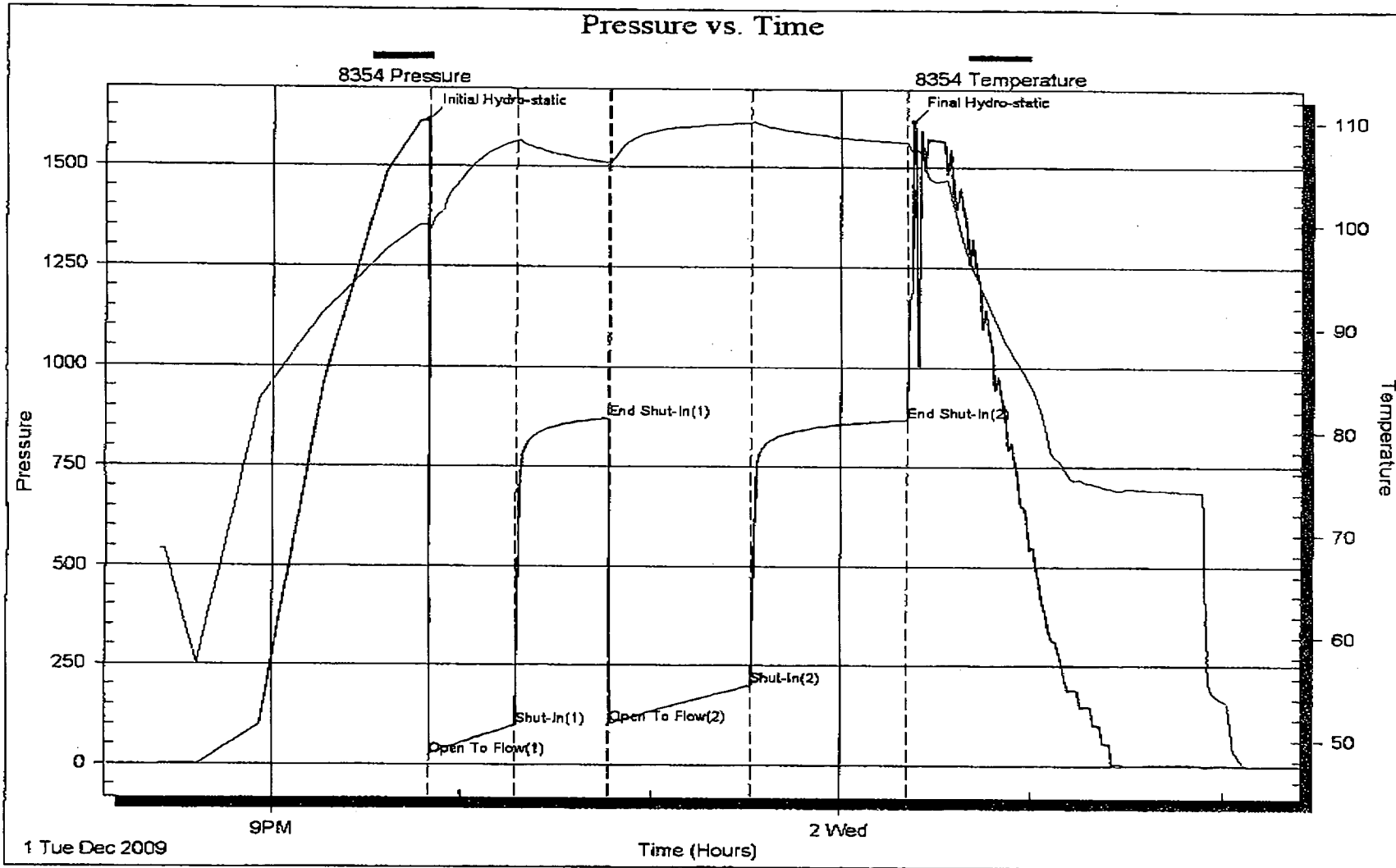
Mud Type: Gel Chem	Cushion Type:	Oil API: 34 deg API
Mud Weight: 9.00 lb/gal	Cushion Length: ft	Water Salinity: 80000 ppm
Viscosity: 52.00 sec/qt	Cushion Volume: bbl	
Water Loss: 7.17 in <sup>3</sup>	Gas Cushion Type:	
Resistivity: ohm.m	Gas Cushion Pressure: psig	
Salinity: 2000.00 ppm		
Filter Cake: inches		

**Recovery Information**

Recovery Table

Length ft	Description	Volume bbl
120.00	Mdy Wtr	1.410
120.00	SillyOCMdyWtr 10%o 60%w 30%m	1.683
60.00	HOCM 40%o 60%m	0.842
50.00	CO	0.701
0.00	258 GIP	0.000
0.00	Rw .09 @ 80 = 80000ppm	0.000

Total Length: 350.00 ft      Total Volume: 4.636 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:



RECEIVED  
 JUN 22 2010  
 KCC WICHITA

RECEIVED  
 JUN 23 2010  
 KCC WICHITA

JUN-23-2010 WED 04:54 PM

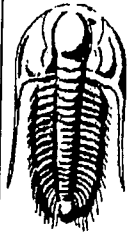
MRS

FAX No. 7856251180

P. 005

JUN 09 2010

CONSERVATION DIVISION  
WICHITA, KS



**TRILOBITE  
TESTING, INC.**

**DRILL STEM TEST REPORT**

Production Drlg Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

ATTN: Larry Patterson

Job Ticket: 36670

**DST#: 2**

Test Start: 2009.12.02 @ 07:53:05

**GENERAL INFORMATION:**

Formation: **D LKC**  
Deviated: **No Whipstock:** ft (KB)

Time Tool Opened: 09:10:35

Time Test Ended: 12:31:35

Test Type: Conventional Bottom Hole

Tester: Dan Bangle

Unit No: 38

Interval: **3306.00 ft (KB) To 3320.00 ft (KB) (TVD)**

Total Depth: 3320.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2060.00 ft (KB)

2052.00 ft (CF)

KB to GR/CF: 8.00 ft

**Serial #: 8354**

Inside

Press@RunDepth: 49.20 psig @ 3307.00 ft (KB)

Start Date: 2009.12.02

End Date:

2009.12.02

Capacity:

8000.00 psig

Start Time: 07:53:06

End Time:

12:31:35

Last Calib.:

2009.12.02

Time On Btm:

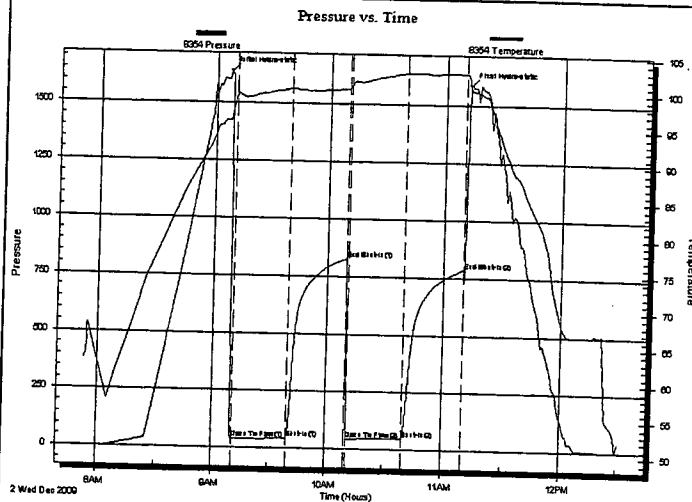
2009.12.02 @ 09:07:35

Time Off Btm:

2009.12.02 @ 11:12:05

TEST COMMENT: IF-Weak building to 4"

FF-Weak building to 1 1/2"



**PRESSURE SUMMARY**

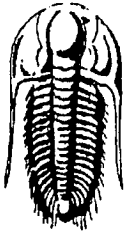
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1638.54	95.91	Initial Hydro-static
3	38.97	99.47	Open To Flow (1)
32	43.02	100.41	Shut-In(1)
62	825.81	100.39	End Shut-In(1)
63	44.35	100.88	Open To Flow (2)
92	49.20	102.70	Shut-In(2)
123	784.10	102.65	End Shut-In(2)
125	1588.19	100.82	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
55.00	HOCM 10%o 90% m	0.50
15.00	HOCM 40%o 60% m	0.21
5.00	OO	0.07

**Gas Rates**

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



**TRILOBITE  
TESTING, INC**

## DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Production Drlg Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

Job Ticket: 36670

**DST#: 2**

ATTN: Larry Patterson

Test Start: 2009.12.02 @ 07:53:05

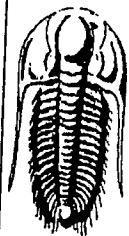
### Tool Information

Drill Pipe:	Length: 3264.00 ft	Diameter: 3.80 inches	Volume: 45.79 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 45.94 bbl</u>	Tool Chased 8.00 ft
Drill Pipe Above KB:	8.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3306.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	14.00 ft			
Tool Length:	34.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		
Tool Comments:				

### Tool Description

**Length (ft) Serial No. Position Depth (ft) Accum. Lengths**

Change Over Sub	1.00			3287.00	
Shut In Tool	5.00			3292.00	
Hydraulic tool	5.00			3297.00	
Packer	5.00			3302.00	20.00 Bottom Of Top Packer
Packer	4.00			3306.00	
Stubb	1.00			3307.00	
Recorder	0.00	8354	Inside	3307.00	
Recorder	0.00	8520	Outside	3307.00	
Perforations	10.00			3317.00	
Bullnose	3.00			3320.00	14.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>34.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Production Drlg Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

ATTN: Larry Patterson

Job Ticket: 36670

**DST#: 2**

Test Start: 2009.12.02 @ 07:53:05

## Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 52.00 sec/qt

Water Loss: 7.17 in<sup>3</sup>

Resistivity: ohm.m

Salinity: 2000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbbl

psig

Oil API:

Water Salinity:

deg API

ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
55.00	HOCM 10%o 90%m	0.498
15.00	HOCM 40%o 60%m	0.210
5.00	CO	0.070

Total Length: 75.00 ft

Total Volume: 0.778 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

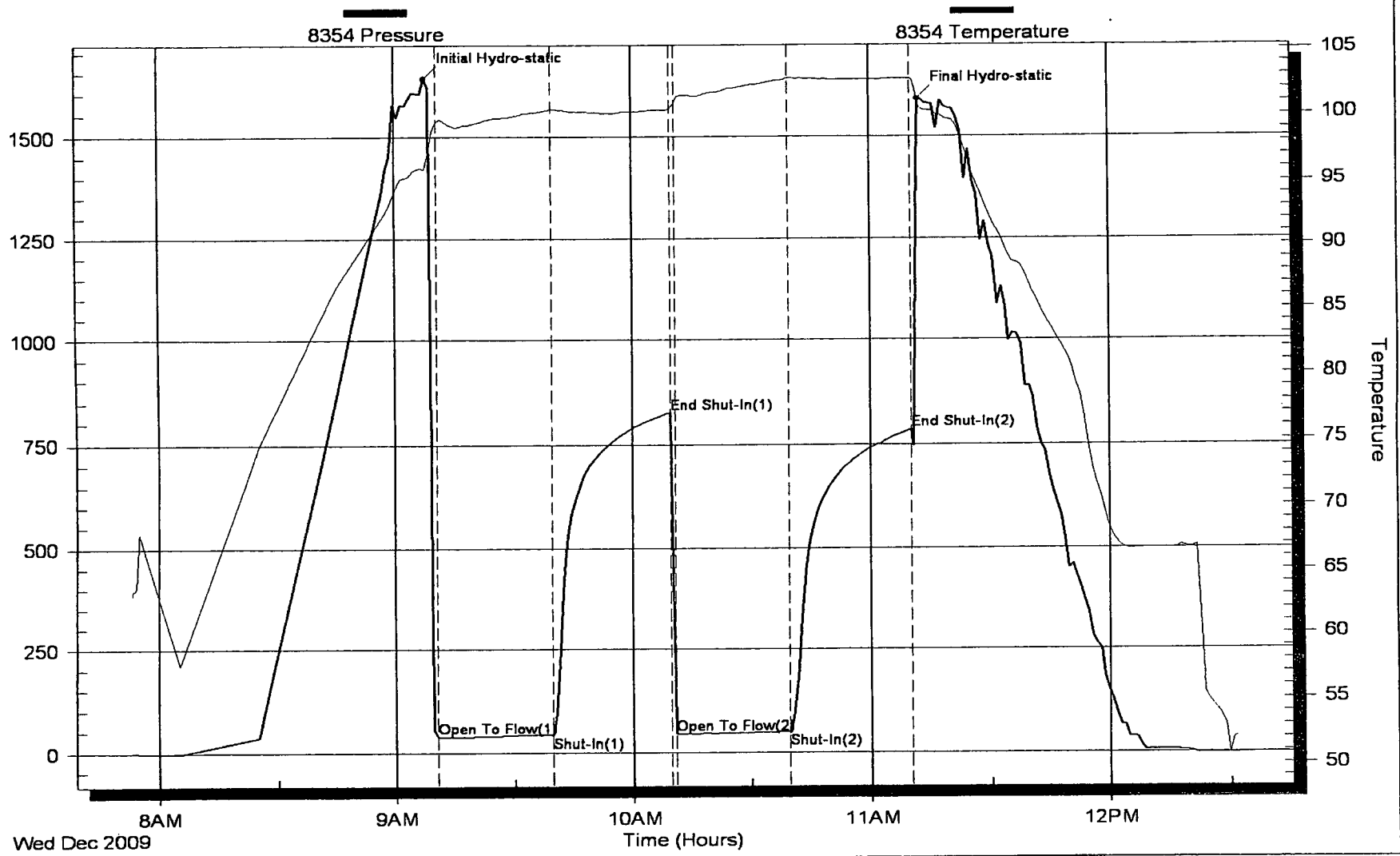
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time



JUN 09 2010

CONSERVATION DIVISION  
WICHITA, KS



**TRILOBITE  
TESTING, INC**

**DRILL STEM TEST REPORT**

Production Drlg Inc

1023 Reservation Rd  
Hays Ks 67601

ATTN: Larry Patterson

**Rhian # 1**

**12-8-22 Graham Ks**

Job Ticket: 36671

**DST#: 3**

Test Start: 2009.12.02 @ 17:55:58

**GENERAL INFORMATION:**

Formation: **E-F LKC**  
 Deviated: **No Whipstock:** ft (KB)  
 Time Tool Opened: 19:10:58  
 Time Test Ended: 23:38:58

Test Type: **Conventional Bottom Hole**

Tester: **Dan Bangle**

Unit No: **38**

Interval: **3322.00 ft (KB) To 3345.00 ft (KB) (TVD)**

Total Depth: **3345.00 ft (KB) (TVD)**

Hole Diameter: **7.88 inches** Hole Condition: **Good**

Reference Elevations: **2060.00 ft (KB)**

**2052.00 ft (CF)**

KB to GR/CF: **8.00 ft**

**Serial #: 8354**

**Inside**

Press@RunDepth: **145.05 psig @ 3323.00 ft (KB)**

Start Date: **2009.12.02**

End Date:

**2009.12.02**

Capacity: **8000.00 psig**

Start Time: **17:55:59**

End Time:

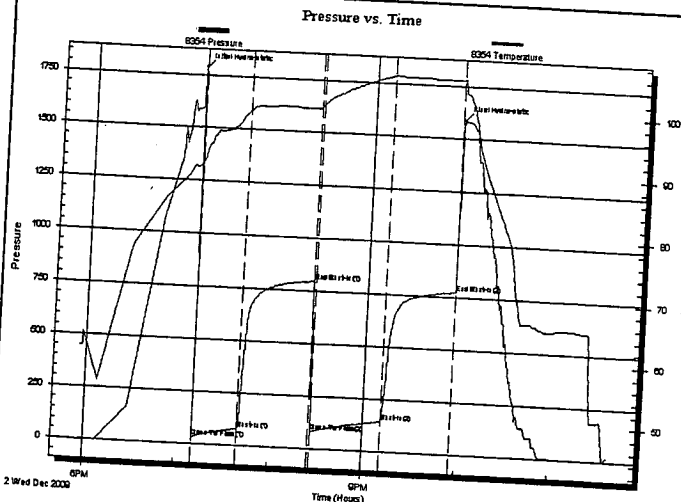
**23:38:58**

Last Calib.: **2009.12.02**

Time On Btm: **2009.12.02 @ 19:10:28**

Time Off Btm: **2009.12.02 @ 21:56:58**

**TEST COMMENT:** IF-Strong B-B in 12 min  
 IS-Weak surface blow  
 FF-Strong B-B in 14 min  
 FSI-Weak surface blow



**PRESSURE SUMMARY**

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1785.89	89.97	Initial Hydro-static
1	31.79	90.09	Open To Flow (1)
30	81.05	98.78	Shut-In(1)
75	797.55	99.70	End Shut-In(1)
76	84.74	100.24	Open To Flow(2)
121	145.05	105.45	Shut-In(2)
166	774.86	105.23	End Shut-In(2)
167	1588.71	103.91	Final Hydro-static

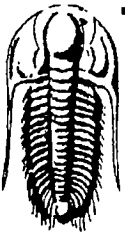
**Recovery**

Length (ft)	Description	Volume (bbi)
60.00	Silty OC/My Wtr 4% 66%w 30%m	0.57
90.00	MCO 60%o 40%m	1.26
90.00	MCO 80%o 20%m	1.26
100.00	CO	1.40
0.00	360 GIP	0.00
0.00	Rw .12 @ 80 = 66000ppm	0.00

**Gas Rates**

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





**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Production Drig Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

Job Ticket: 36671

**DST#: 3**

ATTN: Larry Patterson

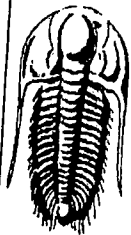
Test Start: 2009.12.02 @ 17:55:58

## Tool Information

Drill Pipe:	Length: 3295.00 ft	Diameter: 3.80 inches	Volume: 46.22 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 60000.00 lb
			<u>Total Volume: 46.37 bbl</u>	Tool Chased 4.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3322.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	25.00 ft			
Tool Length:	45.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3303.00	
Shut In Tool	5.00			3308.00	
Hydraulic tool	5.00			3313.00	
Packer	5.00			3318.00	20.00 Bottom Of Top Packer
Packer	4.00			3322.00	
Stubb	1.00			3323.00	
Recorder	0.00	8354	Inside	3323.00	
Recorder	0.00	8520	Outside	3323.00	
Perforations	21.00			3344.00	
Bullnose	3.00			3347.00	25.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>45.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Production Drlg Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

ATTN: Larry Patterson

Job Ticket: 36671

**DST#: 3**

Test Start: 2009.12.02 @ 17:55:58

## Mud and Cushion Information

Mud Type: Gel Chem  
Mud Weight: 9.00 lb/gal  
Viscosity: 52.00 sec/qt  
Water Loss: 7.97 in<sup>3</sup>  
Resistivity: ohm.m  
Salinity: 2600.00 ppm  
Filter Cake: inches

Cushion Type:  
Cushion Length: ft  
Cushion Volume: bbl  
Gas Cushion Type:  
Gas Cushion Pressure: psig

Oil API: 34 deg API  
Water Salinity: 66000 ppm

## Recovery Information

**Recovery Table**

Length ft	Description	Volume bbl
60.00	SillyOCMdyWtr 4% 66%w 30%m	0.568
90.00	MCO 60%o 40%m	1.262
90.00	MCO 80%o 20%m	1.262
100.00	CO	1.403
0.00	360 GIP	0.000
0.00	Rw .12 @ 80 = 66000ppm	0.000

Total Length: 340.00 ft      Total Volume: 4.495 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

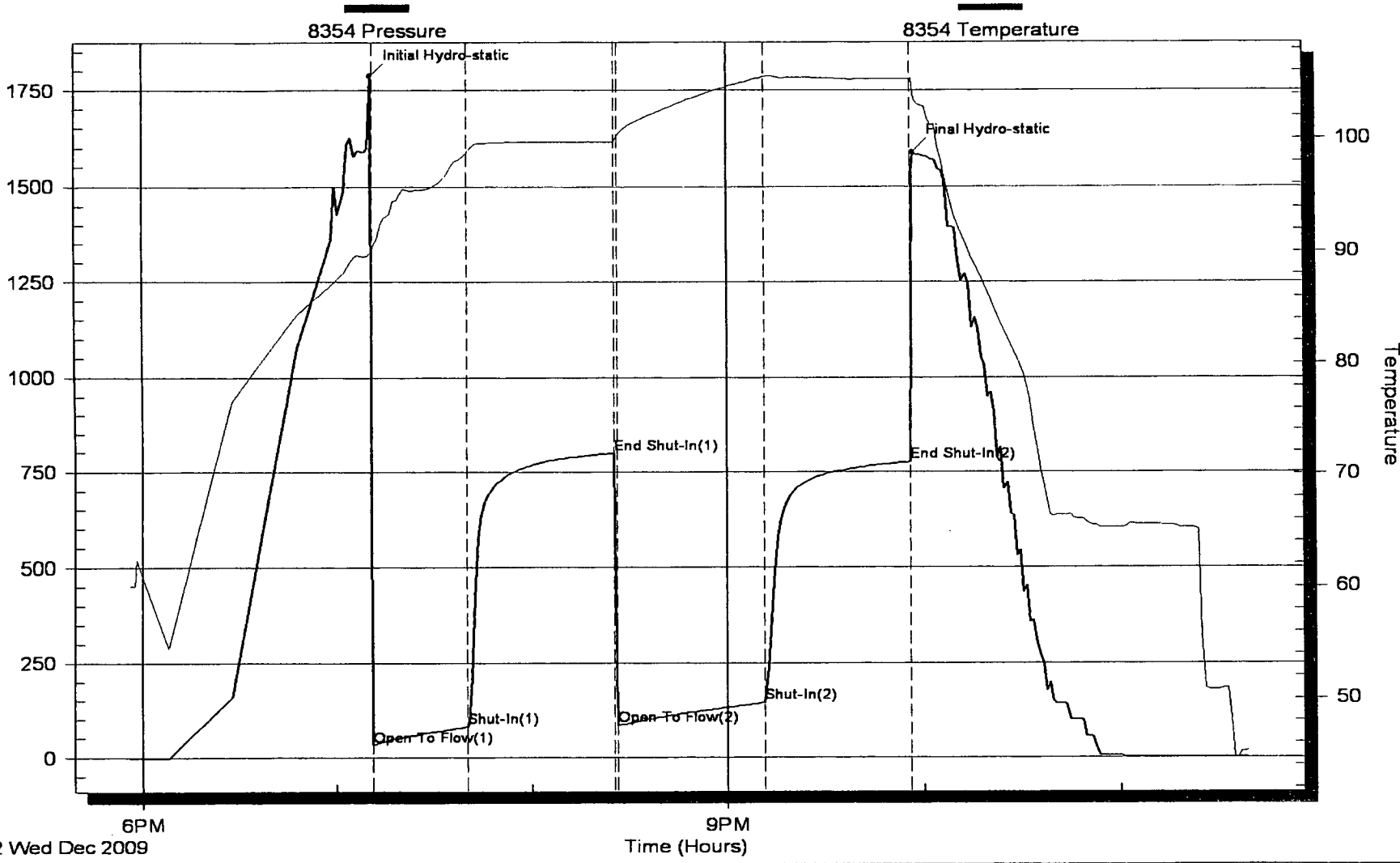
Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #:

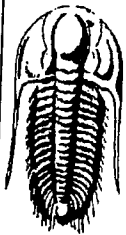
### Pressure vs. Time



Wed Dec 2009

JUN 09 2010

CONSERVATION DIVISION  
WICHITA, KS



**TRILOBITE  
TESTING, INC**

**DRILL STEM TEST REPORT**

Production Drig Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

ATTN: Larry Patterson

Job Ticket: 36672

**DST#: 4**

Test Start: 2009.12.03 @ 17:25:54

**GENERAL INFORMATION:**

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:09:24  
 Time Test Ended: 00:06:24  
 Interval: **3564.00 ft (KB) To 3582.00 ft (KB) (TVD)**  
 Total Depth: **3582.00 ft (KB) (TVD)**  
 Hole Diameter: **7.88 inches** Hole Condition: Good

Test Type: Conventional Bottom Hole  
 Tester: Dan Bangle  
 Unit No: 38

Reference Elevations: 2060.00 ft (KB)  
 2052.00 ft (CF)  
 KB to GR/CF: 8.00 ft

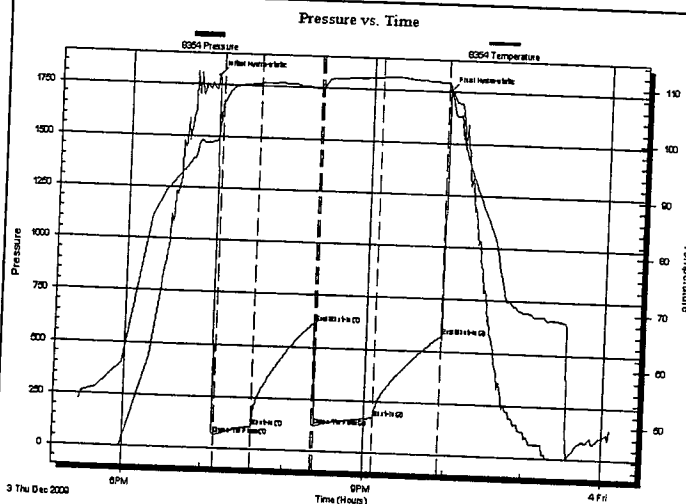
**Serial #: 8354**

**Inside**

Press@RunDepth: 169.99 psig @ 3565.00 ft (KB)  
 Start Date: 2009.12.03 End Date: 2009.12.04  
 Start Time: 17:25:55 End Time: 00:06:24

Capacity: 8000.00 psig  
 Last Calib.: 2009.12.04  
 Time On Btm: 2009.12.03 @ 19:05:24  
 Time Off Btm: 2009.12.03 @ 21:57:24

**TEST COMMENT:** IF-Strong B-B in 2 min  
 IS-Weak surface blow  
 FF-Strong B-B in 9 min  
 FS-Weak surface blow



**PRESSURE SUMMARY**

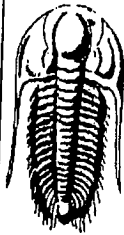
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1793.99	99.04	Initial Hydro-static
4	68.08	105.78	Open To Flow (1)
31	110.87	109.32	Shut-In(1)
76	617.07	108.77	End Shut-In(1)
77	121.06	108.62	Open To Flow (2)
121	169.99	111.04	Shut-In(2)
171	571.86	110.43	End Shut-In(2)
172	1752.12	109.54	Final Hydro-static

**Recovery**

Length (ft)	Description	Volume (bbl)
90.00	HMCO 60%o 40%o m	0.99
390.00	CO	5.47
0.00	258 GIP	0.00

**Gas Rates**

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Production Drig Inc

1023 Reservation Rd  
Hays Ks 67601

ATTN: Larry Patterson

Rhian # 1

12-8-22 Graham Ks

Job Ticket: 36672

DST#: 4

Test Start: 2009.12.03 @ 17:25:54

## GENERAL INFORMATION:

Formation: **Arbuckle**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 19:09:24  
 Time Test Ended: 00:06:24  
 Interval: **3564.00 ft (KB) To 3582.00 ft (KB) (TVD)**  
 Total Depth: 3582.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good

Test Type: Conventional Bottom Hole  
 Tester: Dan Bangle  
 Unit No: 38

Reference Elevations: 2060.00 ft (KB)  
 2052.00 ft (CF)  
 KB to GR/CF: 8.00 ft

Serial #: 8354

Inside

Press@RunDepth: 169.99 psig @ 3565.00 ft (KB)

Start Date: 2009.12.03 End Date:

Start Time: 17:25:55 End Time:

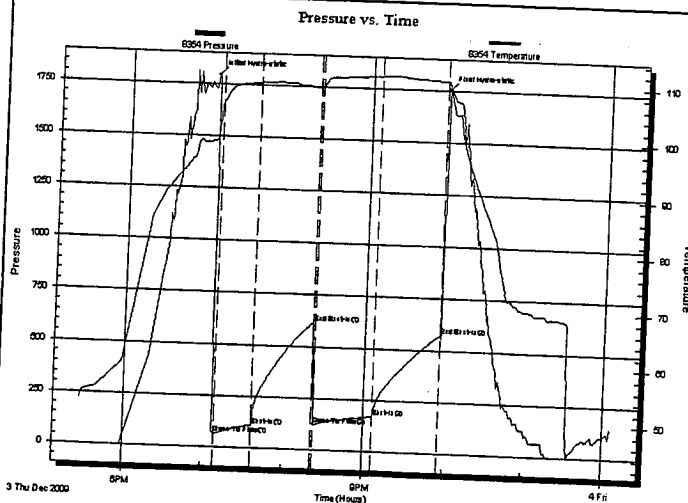
Capacity: 8000.00 psig

Last Calib.: 2009.12.04

Time On Btm: 2009.12.03 @ 19:05:24

Time Off Btm: 2009.12.03 @ 21:57:24

TEST COMMENT: IF-Strong B-B in 2 min  
 IS-Weak surface blow  
 FF-Strong B-B in 9 min  
 FS-Weak surface blow



## PRESSURE SUMMARY

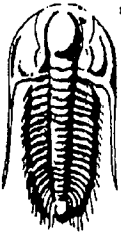
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1793.99	99.04	Initial Hydro-static
4	68.08	105.78	Open To Flow (1)
31	110.87	109.32	Shut-In(1)
76	617.07	108.77	End Shut-In(1)
77	121.06	108.62	Open To Flow (2)
121	169.99	111.04	Shut-In(2)
171	571.86	110.43	End Shut-In(2)
172	1752.12	109.54	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
90.00	HIMCO 60%o 40% m	0.99
390.00	CO	5.47
0.00	258 GIP	0.00

## Gas Rates

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



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Production Drig Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

Job Ticket: 36672

**DST#: 4**

ATTN: Larry Patterson

Test Start: 2009.12.03 @ 17:25:54

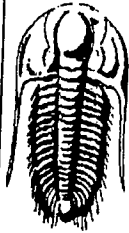
## Tool Information

Drill Pipe:	Length: 3515.00 ft	Diameter: 3.80 inches	Volume: 49.31 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 65000.00 lb
		<b>Total Volume:</b>	<b>49.46 bbl</b>	Tool Chased 0.00 ft
Drill Pipe Above KB:	1.00 ft			String Weight: Initial 58000.00 lb
Depth to Top Packer:	3564.00 ft			Final 58000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	18.00 ft			
Tool Length:	38.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			3545.00	
Shut In Tool	5.00			3550.00	
Hydraulic tool	5.00			3555.00	
Packer	5.00			3560.00	20.00 Bottom Of Top Packer
Packer	4.00			3564.00	
Stubb	1.00			3565.00	
Recorder	0.00	8354	Inside	3565.00	
Recorder	0.00	8520	Outside	3565.00	
Perforations	14.00			3579.00	
Bullnose	3.00			3582.00	18.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>38.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Production Drig Inc

**Rhian # 1**

1023 Reservation Rd  
Hays Ks 67601

**12-8-22 Graham Ks**

Job Ticket: 36672

**DST#: 4**

ATTN: Larry Patterson

Test Start: 2009.12.03 @ 17:25:54

## Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 45.00 sec/qt

Water Loss: 6.19 in<sup>3</sup>

Resistivity: ohm.m

Salinity: 3000.00 ppm

Filter Cake: inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

32 deg API

ppm

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
90.00	HMCO 60%o 40%m	0.989
390.00	CO	5.471
0.00	258 GIP	0.000

Total Length: 480.00 ft

Total Volume: 6.460 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

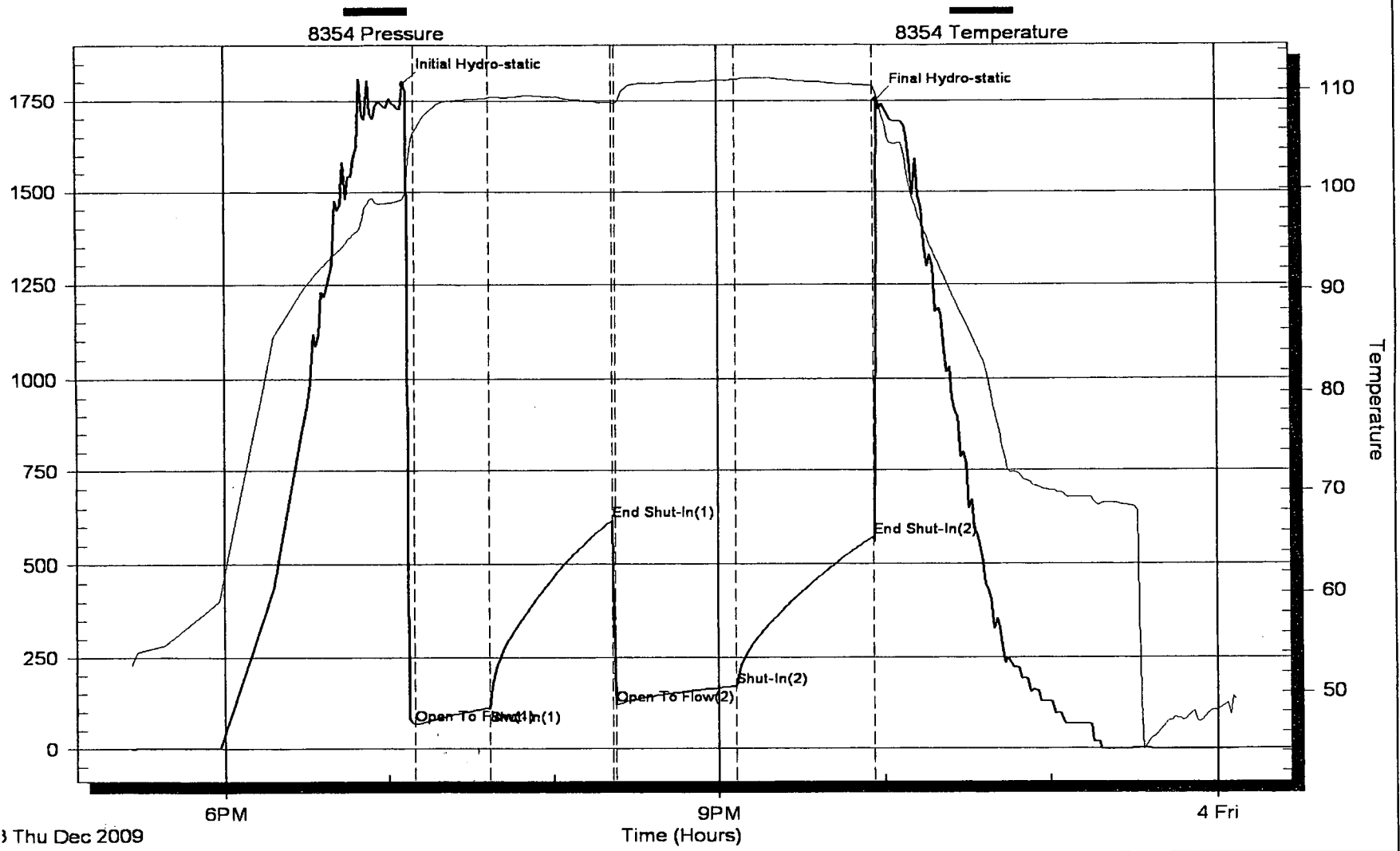
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time



3 Thu Dec 2009