



Confidentiality Requested:

Yes  No

KANSAS CORPORATION COMMISSION 1201358  
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: \_\_\_\_\_

1201358

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 <i>(Attach Additional Sheets)</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Log	Formation (Top), Depth and Datum	<input type="checkbox"/> Sample
Samples Sent to Geological Survey	<input type="checkbox"/> Yes <input type="checkbox"/> No	Name	Top	Datum
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:				

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> _____ <input type="checkbox"/> Other <i>(Specify)</i> _____	<b>PRODUCTION INTERVAL:</b> _____ _____
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## DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86  
Plainville, KS 67663

ATTN: Marc Downing

### **Waggoner #24-1**

#### **24-9S-25W Graham,KS**

Start Date: 2014.03.28 @ 09:36:46

End Date: 2014.03.28 @ 16:20:46

Job Ticket #: 54024                      DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.04.03 @ 13:35:56

H&C Oil Operating, Inc.

24-9S-25W Graham,KS

Waggoner #24-1

DST # 1

LKC "C-D"

2014.03.28



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54024

**DST#: 1**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 09:36:46

## GENERAL INFORMATION:

Formation: **LKC "C-D"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:06:16

Time Test Ended: 16:20:46

Test Type: Conventional Bottom Hole (Initial)

Tester: Brannan L

Unit No: 48

**Interval: 3893.00 ft (KB) To 3940.00 ft (KB) (TVD)**

Reference Elevations: 2544.00 ft (KB)

Total Depth: 3940.00 ft (KB) (TVD)

2537.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 7.00 ft

## Serial #: 8372

Inside

Press@RunDepth: 611.15 psig @ 3936.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.28

End Date:

2014.03.28

Last Calib.:

2014.03.28

Start Time: 09:36:47

End Time:

16:20:46

Time On Btm:

2014.03.28 @ 12:04:46

Time Off Btm:

2014.03.28 @ 13:58:46

## TEST COMMENT:

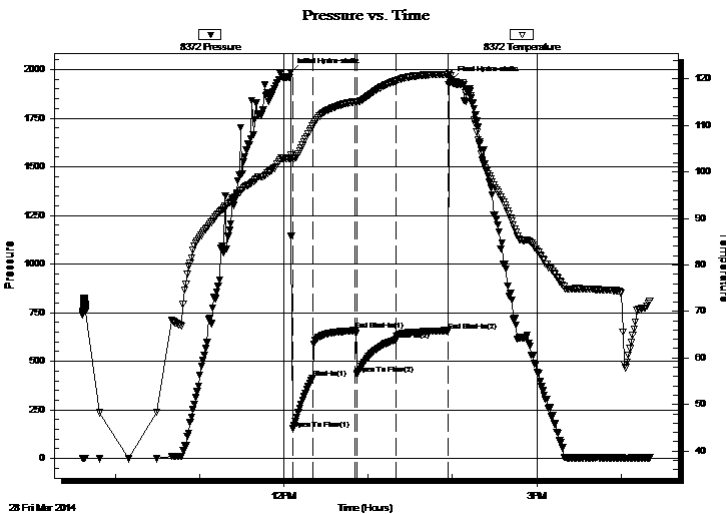
15- IF- BOB 1 min

30- IS- No blow

30- FF- Built very quickly to 2 1/2" then slowly died. Dead @ 25 mins

30- FS- No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1983.95	102.95	Initial Hydro-static
2	152.80	102.81	Open To Flow (1)
16	414.94	109.79	Shut-In(1)
46	658.05	115.11	End Shut-In(1)
47	432.62	115.06	Open To Flow (2)
75	611.15	119.60	Shut-In(2)
112	657.46	120.95	End Shut-In(2)
114	1942.59	120.68	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
1260.00	MW, 30%M 70%W	16.95

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54024

**DST#: 1**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 09:36:46

## Tool Information

Drill Pipe:	Length: 3869.00 ft	Diameter: 3.75 inches	Volume: 52.85 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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: 70000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 5.00 ft
Drill Pipe Above KB:	26.00 ft			String Weight: Initial 53000.00 lb
Depth to Top Packer:	3893.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.00 ft			
Tool Length:	67.00 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			3874.00	
Shut In Tool	5.00			3879.00	
Hydraulic tool	5.00			3884.00	
Packer	5.00			3889.00	20.00 Bottom Of Top Packer
Packer	4.00			3893.00	
Stubb	1.00			3894.00	
Perforations	9.00			3903.00	
Change Over Sub	1.00			3904.00	
Drill Pipe	32.00			3936.00	
Recorder	0.00	8372	Inside	3936.00	
Recorder	0.00	8321	Outside	3936.00	
Change Over Sub	1.00			3937.00	
Bullnose	3.00			3940.00	47.00 Bottom Packers & Anchor

**Total Tool Length: 67.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54024

**DST#: 1**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 09:36:46

## 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:

66000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.78 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1260.00	MW, 30%M 70%W	16.950

Total Length: 1260.00 ft      Total Volume: 16.950 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

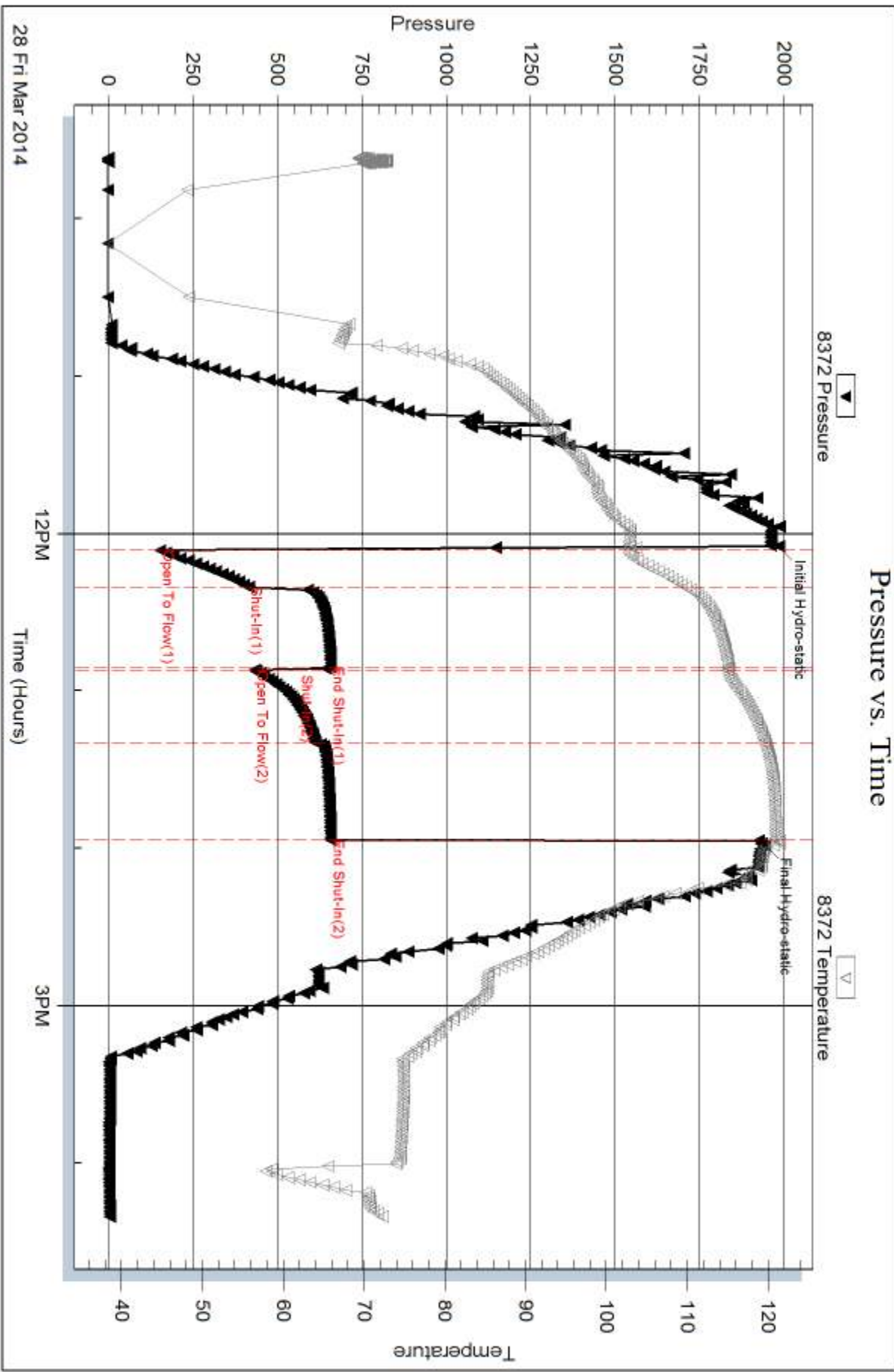
Serial #: 8372

Inside

H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 1

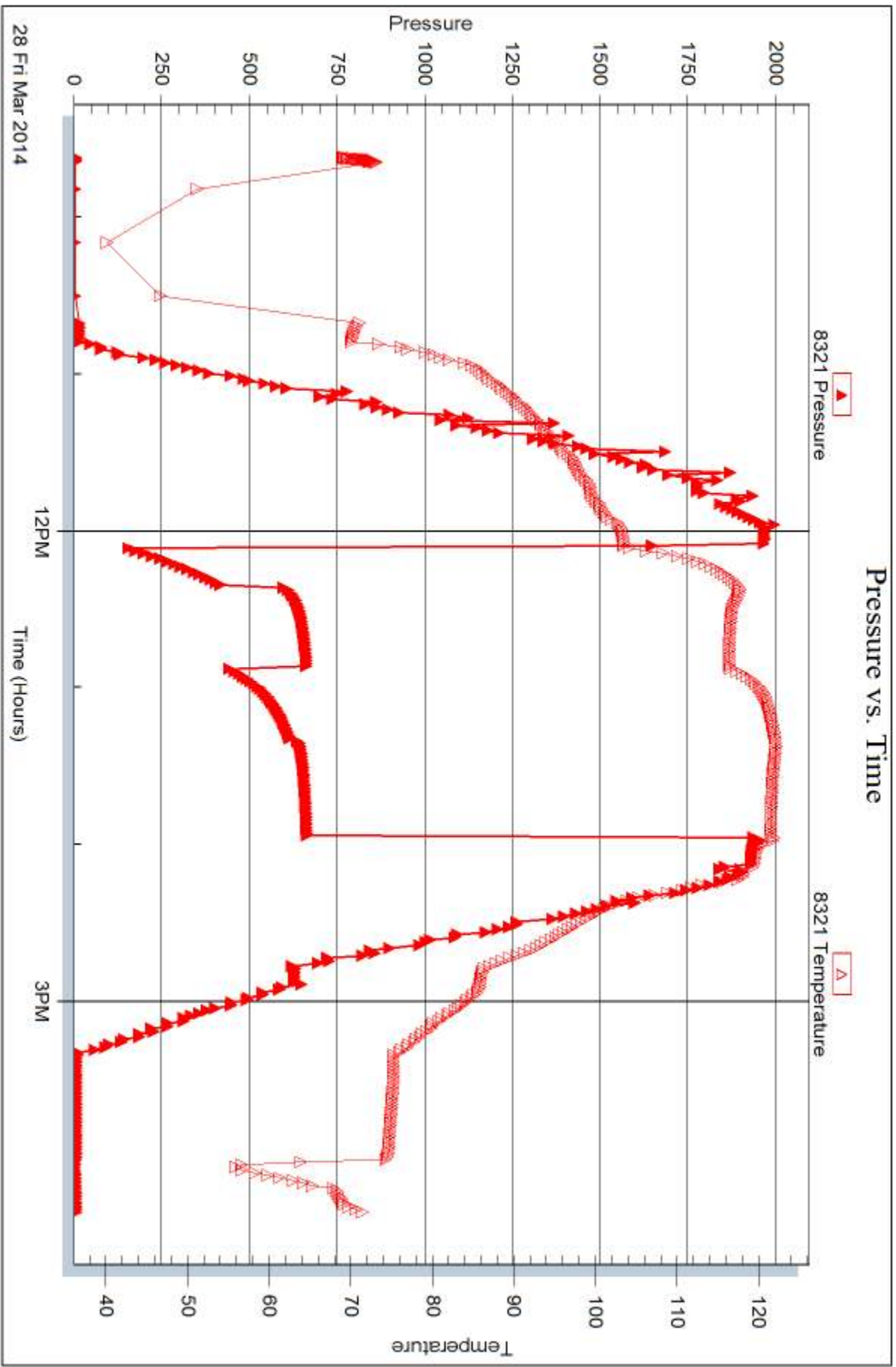


Serial #: 8321

Outside H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 1



Triobite Testing, Inc

Ref. No: 54024

Printed: 2014.04.03 @ 13:35:58



## DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86  
Plainville, KS 67663

ATTN: Marc Downing

### **Waggoner #24-1**

#### **24-9S-25W Graham,KS**

Start Date: 2014.03.28 @ 23:08:10

End Date: 2014.03.29 @ 06:04:40

Job Ticket #: 54025                      DST #: 2

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.04.03 @ 13:35:30



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54025

**DST#: 2**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 23:08:10

## GENERAL INFORMATION:

Formation: **LKC "F"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:05:40

Time Test Ended: 06:04:40

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan L

Unit No: 48

**Interval: 3934.00 ft (KB) To 3964.00 ft (KB) (TVD)**

Reference Elevations: 2544.00 ft (KB)

Total Depth: 3964.00 ft (KB) (TVD)

2537.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8372**

**Inside**

Press@RunDepth: 190.45 psig @ 3961.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.28

End Date:

2014.03.29

Last Calib.:

2014.03.29

Start Time: 23:08:11

End Time:

06:04:40

Time On Btm:

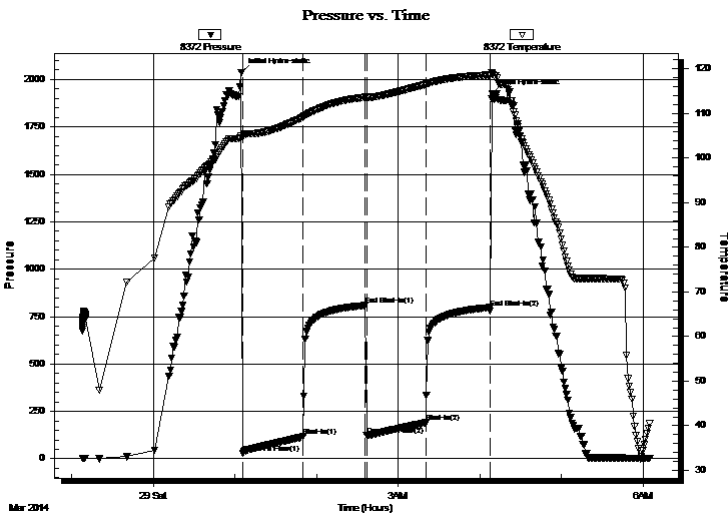
2014.03.29 @ 01:04:40

Time Off Btm:

2014.03.29 @ 04:09:10

TEST COMMENT: 45- IF- BOB 22 mins  
45- IS- No blow  
45- FF- BOB 29 mins  
45- FS- No blow

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2037.31	104.92	Initial Hydro-static
1	30.59	104.60	Open To Flow (1)
46	118.20	109.20	Shut-In(1)
91	808.86	113.64	End Shut-In(1)
92	122.61	113.46	Open To Flow (2)
136	190.45	116.49	Shut-In(2)
183	797.83	118.63	End Shut-In(2)
185	1924.62	118.86	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
375.00	MW, 40%M 60%W	4.86

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC.**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54025

**DST#: 2**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 23:08:10

## Tool Information

Drill Pipe:	Length: 3901.00 ft	Diameter: 3.75 inches	Volume: 53.29 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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: 58000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	17.00 ft			String Weight: Initial 53000.00 lb
Depth to Top Packer:	3934.00 ft			Final 55000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	50.00 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			3915.00	
Shut In Tool	5.00			3920.00	
Hydraulic tool	5.00			3925.00	
Packer	5.00			3930.00	20.00 Bottom Of Top Packer
Packer	4.00			3934.00	
Stubb	1.00			3935.00	
Perforations	26.00			3961.00	
Recorder	0.00	8372	Inside	3961.00	
Recorder	0.00	8321	Outside	3961.00	
Bullnose	3.00			3964.00	30.00 Bottom Packers & Anchor
<b>Total Tool Length:</b>	<b>50.00</b>				



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 54025

**DST#: 2**

ATTN: Marc Downing

Test Start: 2014.03.28 @ 23:08:10

## 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:

85000 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 6.77 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 1400.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
375.00	MW, 40%M 60%W	4.860

Total Length: 375.00 ft      Total Volume: 4.860 bbl

Num Fluid Samples: 0

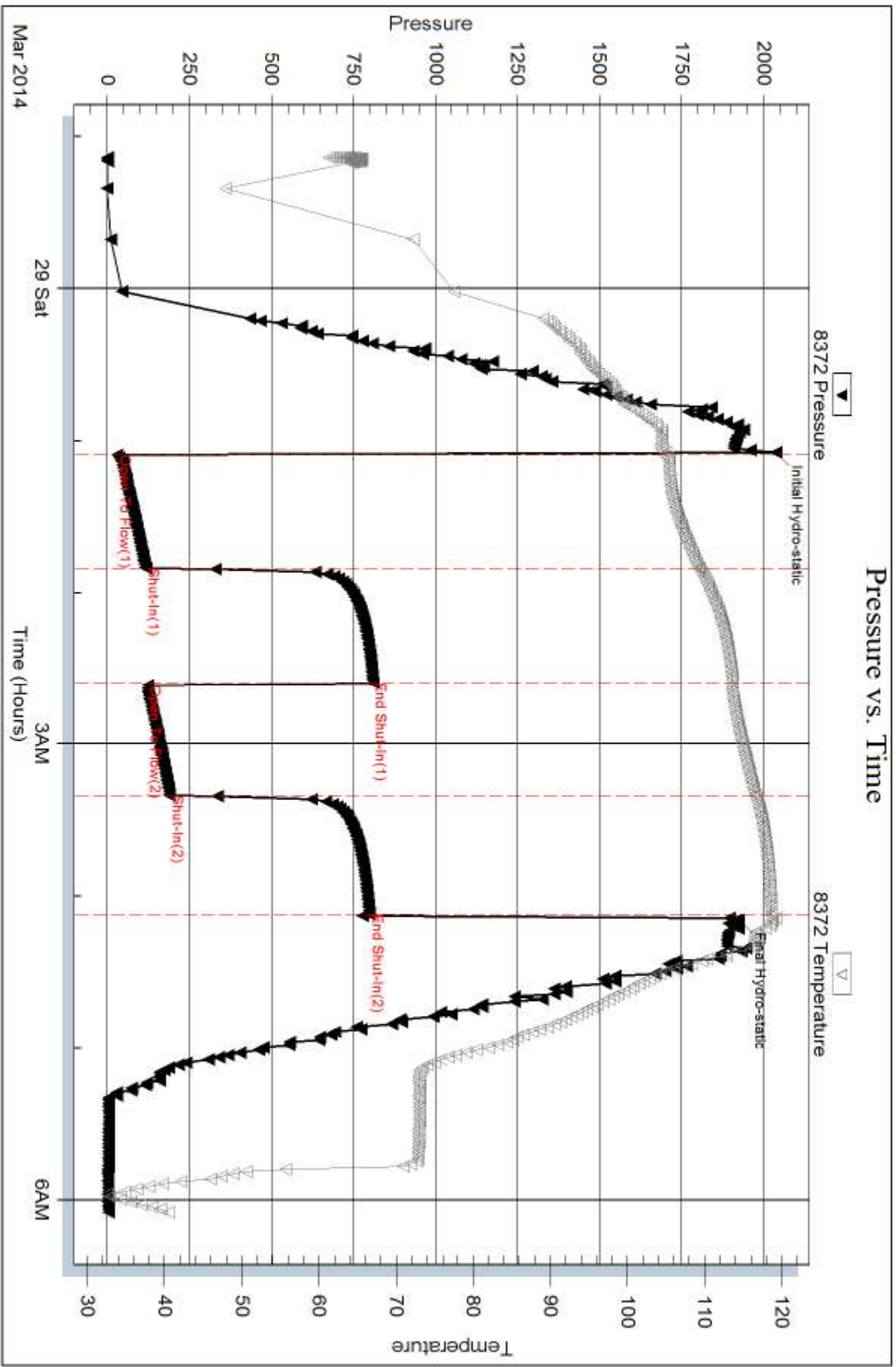
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

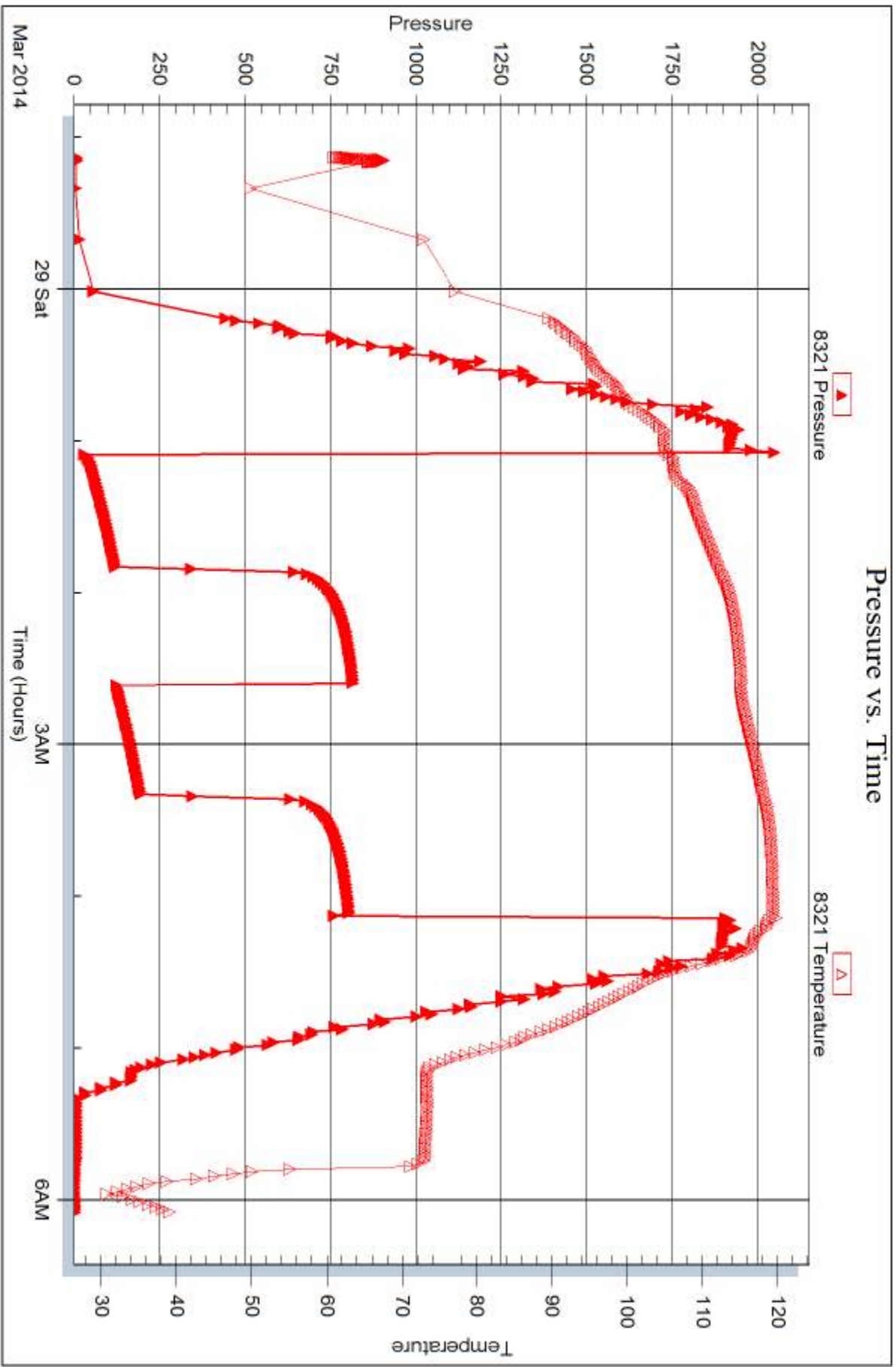


Serial #: 8321

Outside H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 2



TriLobite Testing, Inc

Ref. No: 54025

Printed: 2014.04.03 @ 13:35:32





## DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86  
Plainville, KS 67663

ATTN: Marc Downing

### **Waggoner #24-1**

#### **24-9S-25W Graham,KS**

Start Date: 2014.03.29 @ 16:25:00

End Date: 2014.03.29 @ 23:57:00

Job Ticket #: 55379                      DST #: 3

Trilobite Testing, Inc  
PO Box 362 Hays, KS 67601  
ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.04.03 @ 13:34:39

H&C Oil Operating, Inc.  
24-9S-25W Graham,KS  
Waggoner #24-1  
DST # 3  
LKC "H.J."  
2014.03.29



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 55379

**DST#: 3**

ATTN: Marc Downing

Test Start: 2014.03.29 @ 16:25:00

## GENERAL INFORMATION:

Formation: **LKC "H-J"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:15:00

Time Test Ended: 23:57:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Brannan L/Phillip Ga

Unit No: 48

**Interval: 3995.00 ft (KB) To 4065.00 ft (KB) (TVD)**

Reference Elevations: 2544.00 ft (KB)

Total Depth: 4065.00 ft (KB) (TVD)

2537.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 7.00 ft

**Serial #: 8372**

**Inside**

Press@RunDepth: 1097.26 psig @ 4061.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.29

End Date:

2014.03.29

Last Calib.:

2014.03.30

Start Time: 16:25:01

End Time:

23:57:00

Time On Btm:

2014.03.29 @ 18:14:30

Time Off Btm:

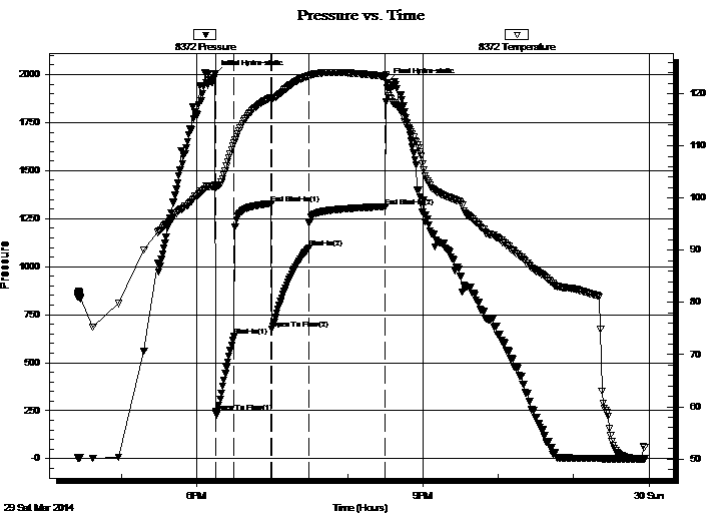
2014.03.29 @ 20:31:30

**TEST COMMENT:** 15-IF-BOB in 30 secs

30-ISI-1 1/2" Return

30-FF-BOB in 1 min

60-FSI-2 3/4" Return



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2002.48	102.49	Initial Hydro-static
1	244.07	102.11	Open To Flow (1)
15	639.62	110.60	Shut-In(1)
45	1328.67	119.18	End Shut-In(1)
45	674.29	119.07	Open To Flow (2)
75	1097.26	123.39	Shut-In(2)
136	1313.14	123.31	End Shut-In(2)
137	1958.38	121.17	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
63.00	M, 100% m, with oil spots	0.60
1512.00	GSOMCW, 5%g, 5%o, 10%m, 80%w	20.65
315.00	GOMCW, 30%g, 10%o, 10%m, 50%w	4.30
378.00	GOSMCW, 15%g, 10%o, 5%m, 70w	5.16

## Gas Rates

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

\* Recovery from multiple tests





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 55379

**DST#: 3**

ATTN: Marc Downing

Test Start: 2014.03.29 @ 16:25:00

## Tool Information

Drill Pipe:	Length: 3967.00 ft	Diameter: 3.75 inches	Volume: 54.19 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: ft	Diameter: 2.75 inches	Volume: - 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: 61000.00 lb
			<u>Total Volume: - bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	22.00 ft			String Weight: Initial 53000.00 lb
Depth to Top Packer:	3995.00 ft			Final 59000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	70.00 ft			
Tool Length:	90.00 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			3976.00	
Shut In Tool	5.00			3981.00	
Hydraulic tool	5.00			3986.00	
Packer	5.00			3991.00	20.00 Bottom Of Top Packer
Packer	4.00			3995.00	
Stubb	1.00			3996.00	
Perforations	4.00			4000.00	
Change Over Sub	1.00			4001.00	
Drill Pipe	60.00			4061.00	
Recorder	0.00	8372	Inside	4061.00	
Recorder	0.00	8321	Outside	4061.00	
Change Over Sub	1.00			4062.00	
Bullnose	3.00			4065.00	70.00 Bottom Packers & Anchor

**Total Tool Length: 90.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 55379

**DST#: 3**

ATTN: Marc Downing

Test Start: 2014.03.29 @ 16:25:00

## 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:

ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.58 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
63.00	M, 100%m, with oil spots	0.598
1512.00	GSOMCW, 5%g, 5%o, 10%m, 80%w	20.655
315.00	GOMCW, 30%g, 10%o, 10%m, 50%w	4.303
378.00	GOSMCW, 15%g, 10%o, 5%m, 70w	5.164

Total Length: 2268.00 ft      Total Volume: 30.720 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: Salinity: .133 @ 47 degrees = 94,000



Serial #: 8372

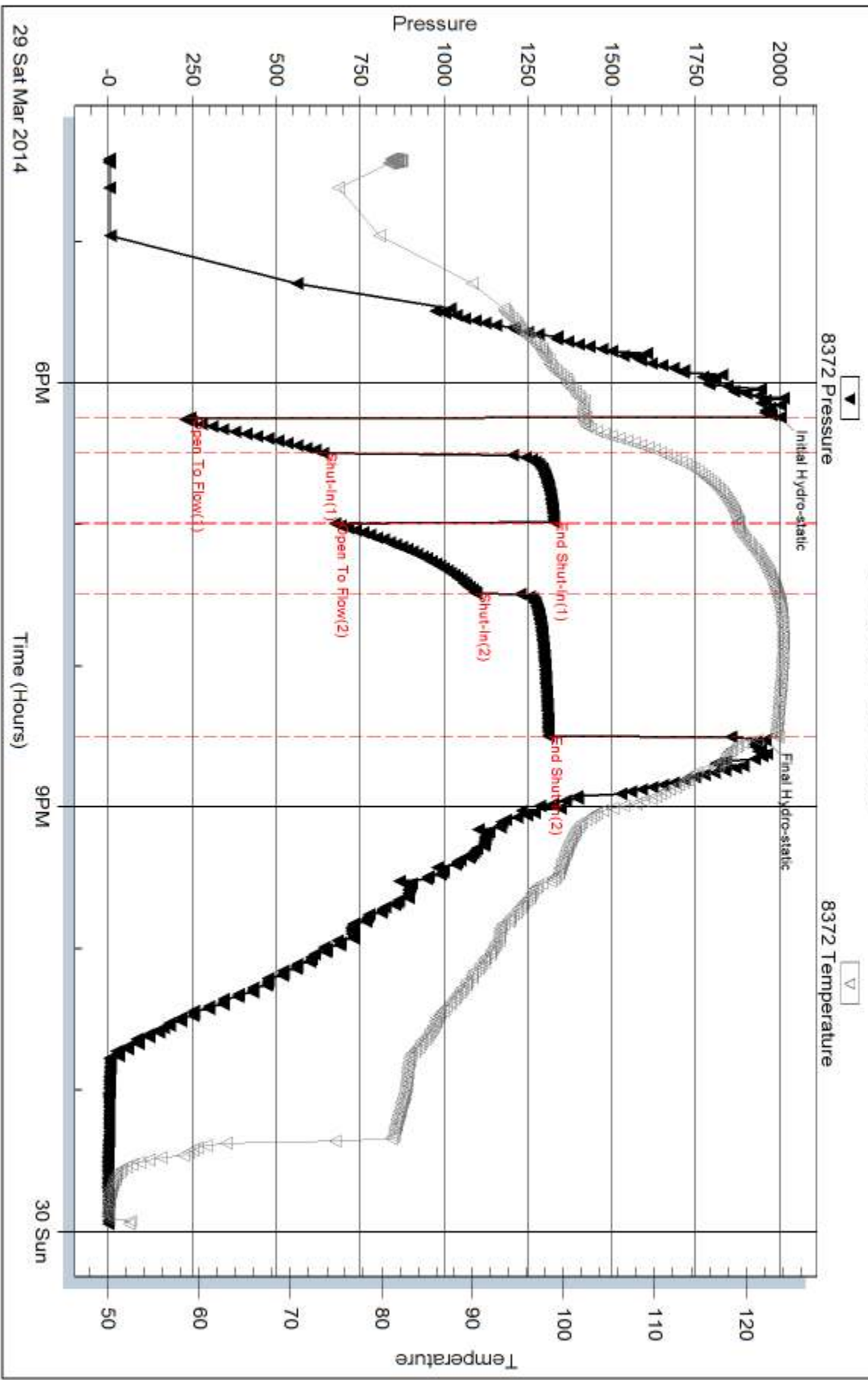
Inside

H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 3

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 55379

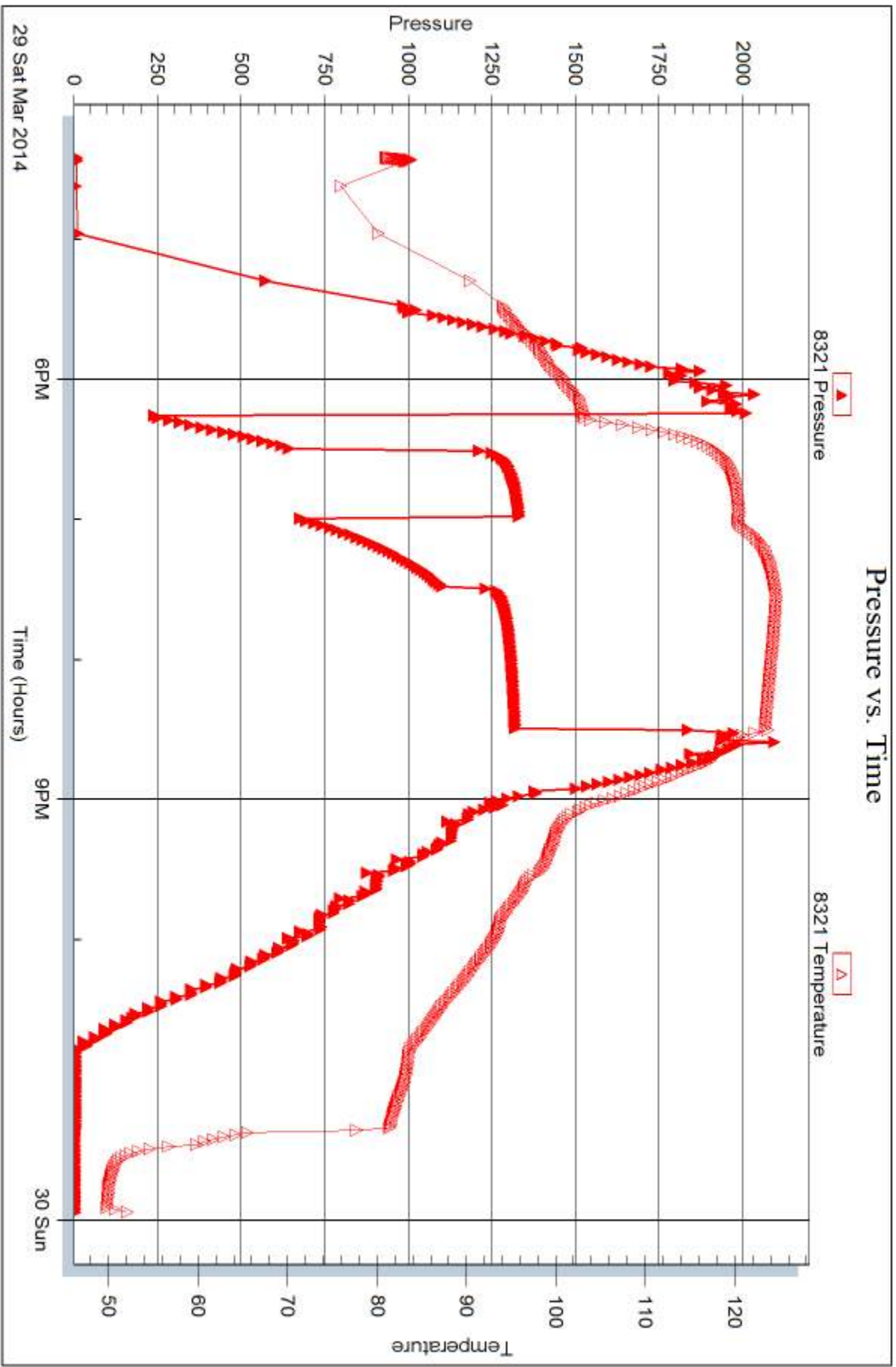
Printed: 2014.04.03 @ 13:34:42

Serial #: 8321

Outside H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 3



Triobite Testing, Inc

Ref. No: 55379

Printed: 2014.04.03 @ 13:34:42



## DRILL STEM TEST REPORT

Prepared For: **H&C Oil Operating, Inc.**

PO Box 86  
Plainville, KS 67663

ATTN: Marc Downing

### **Waggoner #24-1**

#### **24-9S-25W Graham,KS**

Start Date: 2014.03.30 @ 07:39:00

End Date: 2014.03.30 @ 13:20:00

Job Ticket #: 57512                      DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

ph: 785-625-4778 fax: 785-625-5620

Printed: 2014.04.03 @ 13:33:47



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 57512

**DST#: 4**

ATTN: Marc Downing

Test Start: 2014.03.30 @ 07:39:00

## GENERAL INFORMATION:

Formation: **LKC "K&L"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:45:30

Time Test Ended: 13:20:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Phillip Gage

Unit No: 48

**Interval: 4062.00 ft (KB) To 4108.00 ft (KB) (TVD)**

Reference Elevations: 2544.00 ft (KB)

Total Depth: 4108.00 ft (KB) (TVD)

2537.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 7.00 ft

**Serial #: 8372**

**Inside**

Press@RunDepth: 35.94 psig @ 4105.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.30

End Date:

2014.03.30

Last Calib.:

2014.03.30

Start Time: 07:39:01

End Time:

13:20:00

Time On Btm:

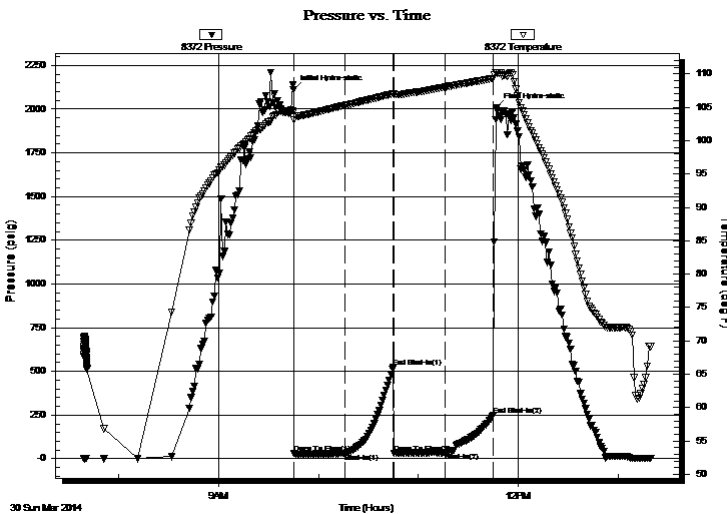
2014.03.30 @ 09:45:00

Time Off Btm:

2014.03.30 @ 11:47:00

**TEST COMMENT:** 30-IF-Built to 3/8"  
30-ISI-No Return  
30-FF-No Blow  
30-FSI-No Return

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2111.41	104.37	Initial Hydro-static
1	30.98	103.17	Open To Flow (1)
31	31.50	105.28	Shut-In(1)
60	523.26	107.03	End Shut-In(1)
61	32.58	106.86	Open To Flow (2)
91	35.94	108.02	Shut-In(2)
120	247.84	109.32	End Shut-In(2)
122	2005.80	110.15	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	M, 100% m with oil spots	0.05

## Gas Rates

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

\* Recovery from multiple tests







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 57512

**DST#: 4**

ATTN: Marc Downing

Test Start: 2014.03.30 @ 07:39:00

## Tool Information

Drill Pipe:	Length: 4027.00 ft	Diameter: 3.75 inches	Volume: 55.01 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 2.75 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 30.00 ft	Diameter: 2.25 inches	Volume: 0.15 bbl	Weight to Pull Loose: 65000.00 lb
			<u>Total Volume: 55.16 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 54000.00 lb
Depth to Top Packer:	4062.00 ft			Final 54000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	47.00 ft			
Tool Length:	67.00 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			4043.00	
Shut In Tool	5.00			4048.00	
Hydraulic tool	5.00			4053.00	
Packer	5.00			4058.00	20.00 Bottom Of Top Packer
Packer	4.00			4062.00	
Stubb	1.00			4063.00	
Perforations	10.00			4073.00	
Change Over Sub	1.00			4074.00	
Drill Pipe	31.00			4105.00	
Recorder	0.00	8372	Inside	4105.00	
Recorder	0.00	8321	Outside	4105.00	
Change Over Sub	1.00			4106.00	
Bullnose	3.00			4109.00	47.00 Bottom Packers & Anchor

**Total Tool Length: 67.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

H&C Oil Operating, Inc.

**24-9S-25W Graham,KS**

PO Box 86  
Plainville, KS 67663

**Waggoner #24-1**

Job Ticket: 57512

**DST#: 4**

ATTN: Marc Downing

Test Start: 2014.03.30 @ 07:39:00

## 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: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 5.59 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 2800.00 ppm

Filter Cake: inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	M, 100%mw ith oil spots	0.049

Total Length: 10.00 ft      Total Volume: 0.049 bbl

Num Fluid Samples: 0

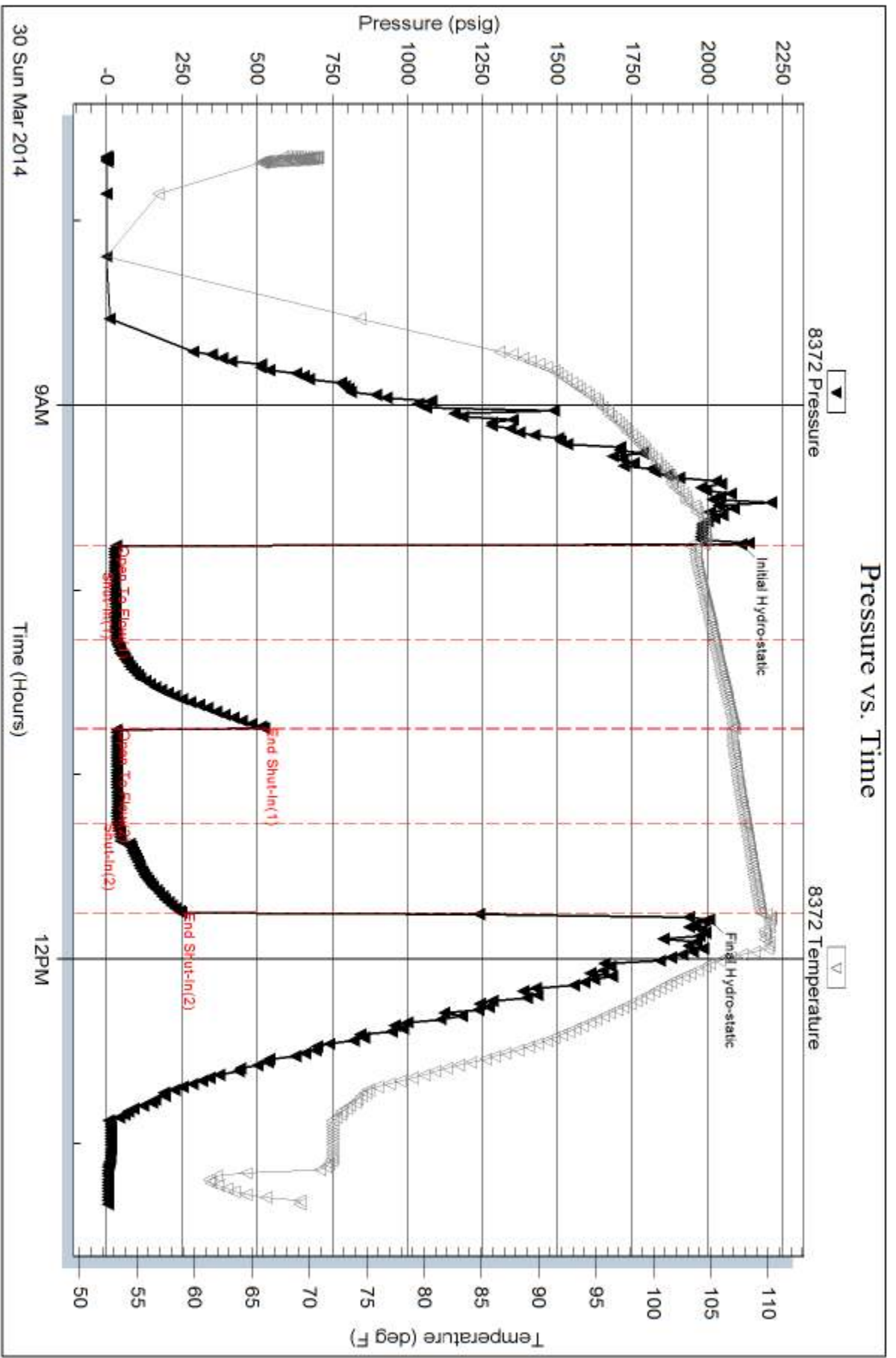
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

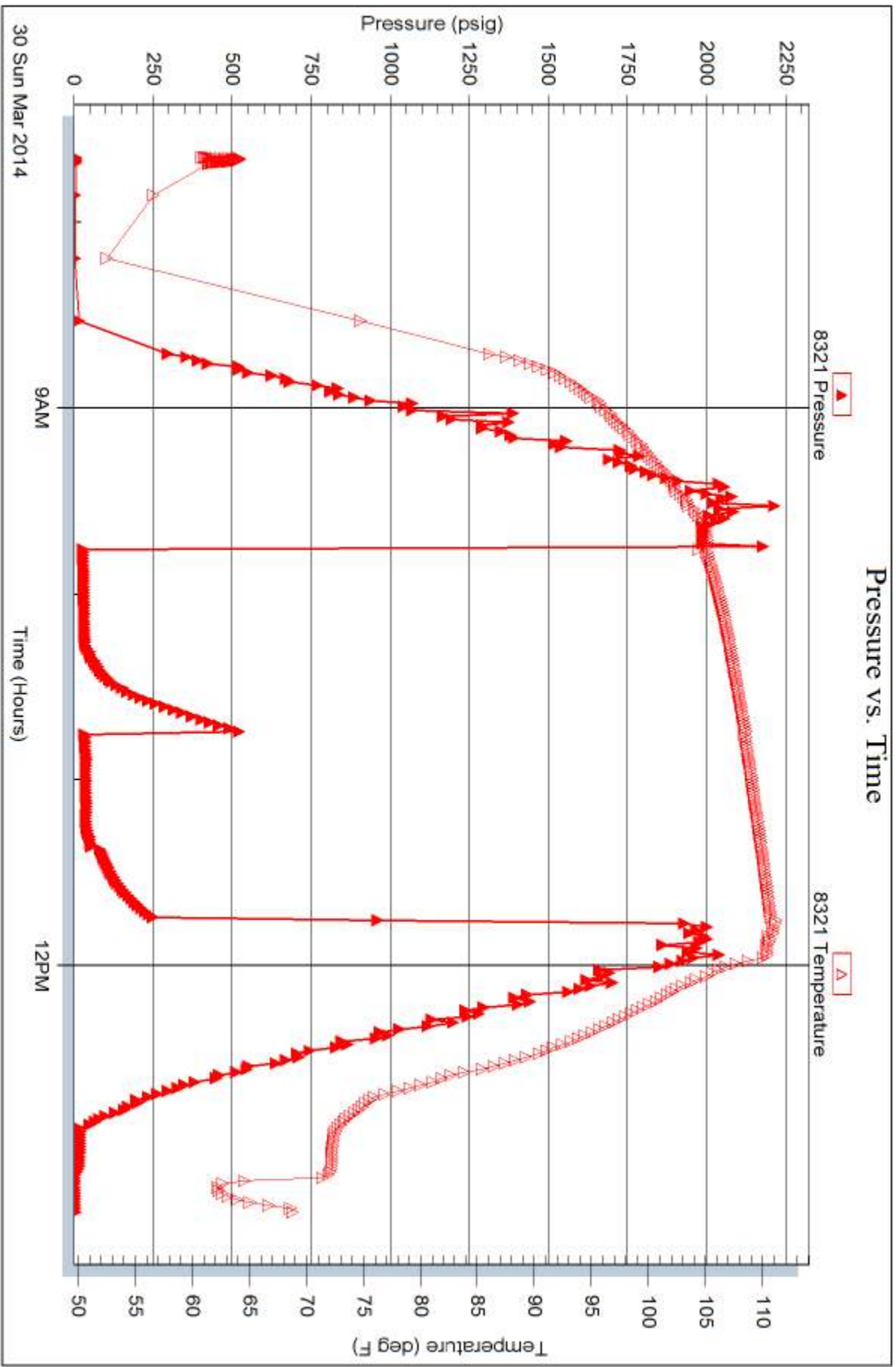


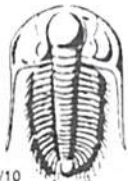
Serial #: 8321

Outside H&C Oil Operating, Inc.

Waggoner #24-1

DST Test Number: 4





# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 54024

Well Name & No. Waggoner #24-1 Test No. 1 Date 3/28/14  
 Company H&C Oil Operating, Inc. Elevation 2544 KB 2537 GL  
 Address PO Box 86 Plainville, KS 67663  
 Co. Rep / Geo. Marc Downing Rig American Eagle 2  
 Location: Sec. 24 Twp. 9S Rge. 25W Co. Graham State KS

Interval Tested 3893-3940 Zone Tested LKC "C-D"  
 Anchor Length 47' Drill Pipe Run 3869 Mud Wt. 9.4  
 Top Packer Depth 3888 Drill Collars Run 30 Vis 55  
 Bottom Packer Depth 3893 Wt. Pipe Run          WL 6.8  
 Total Depth 3940 Chlorides 1,400 ppm System LCM 3#

Blow Description IF - BOB 1 min  
ISI - No blow  
FF - Built very quickly to 2 1/2" then slowly died. Dead @ 25 min  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>1260</u>	<u>MW</u>			<u>70%</u>	<u>30%</u>

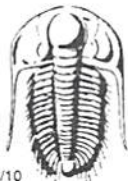
Rec Total 1260' BHT 121° Gravity          API RW .1 @ 69 °F Chlorides 66000 ppm  
 (A) Initial Hydrostatic 1984  Test 1150 T-On Location 0922  
 (B) First Initial Flow 153  Jars          T-Started 0922 0937  
 (C) First Final Flow 415  Safety Joint          T-Open 0937 1206  
 (D) Initial Shut-In 658  Circ Sub          T-Pulled 1351  
 (E) Second Initial Flow 433  Hourly Standby          T-Out 1621  
 (F) Second Final Flow 611  Mileage 134 RT 207.70 Comments           
 (G) Final Shut-In 657  Sampler           
 (H) Final Hydrostatic 1943  Straddle           
 Shale Packer           
 Extra Packer           
 Extra Recorder           
 Day Standby           
 Accessibility         

Initial Open 15  
 Initial Shut-In 30  
 Final Flow 30  
 Final Shut-In 30  
 Sub Total 0  
 Total 1357.70  
 MP/DST Disc't           
 Sub Total 1357.70

Approved By          Our Representative Brannan L

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 54025

Well Name & No. Waggoner #24-1 Test No. 2 Date 3/29/14  
 Company H&C Oil Operating, Inc. Elevation 2544 KB 2537 GL  
 Address PO Box 86 Plainville, KS 67663  
 Co. Rep / Geo. Marc Downing Rig American Eagle 2  
 Location: Sec. 24 Twp. 9S Rge. 25W Co. Graham State KS

Interval Tested 3934-3964 Zone Tested LKC "F"  
 Anchor Length 30' Drill Pipe Run 3901 Mud Wt. 9.4  
 Top Packer Depth 3929 Drill Collars Run 36 Vis 55  
 Bottom Packer Depth 3934 Wt. Pipe Run \_\_\_\_\_ WL 6.8  
 Total Depth 3964 Chlorides 1,400 ppm System LCM 3#

Blow Description IF-BOB 22 mins  
ISI - No blow  
FF-BOB 29 mins  
FSI - No blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>375</u>	<u>MW</u>		<u>60</u>	<u>40</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 375' BHT 119° Gravity \_\_\_\_\_ API RW .25 @ 23 °F Chlorides 85,000 ppm

(A) Initial Hydrostatic 2037  Test 1150 T-On Location 2303  
 (B) First Initial Flow 31  Jars \_\_\_\_\_ T-Started 2308  
 (C) First Final Flow 118  Safety Joint \_\_\_\_\_ T-Open 0106  
 (D) Initial Shut-In 809  Circ Sub \_\_\_\_\_ T-Pulled 0406  
 (E) Second Initial Flow 123  Hourly Standby \_\_\_\_\_ T-Out 0605  
 (F) Second Final Flow 190  Mileage 134 RT 207.70 Comments \_\_\_\_\_  
 (G) Final Shut-In 298  Sampler \_\_\_\_\_  
 (H) Final Hydrostatic 1925  Straddle \_\_\_\_\_

Initial Open 45  Shale Packer \_\_\_\_\_  Ruined Shale Packer \_\_\_\_\_  
 Initial Shut-In 45  Extra Packer \_\_\_\_\_  Ruined Packer \_\_\_\_\_  
 Final Flow 45  Extra Recorder \_\_\_\_\_ Sub Total 0  
 Final Shut-In 45  Day Standby \_\_\_\_\_ Total 1357.70  
 Accessibility \_\_\_\_\_ MP/DST Disc't \_\_\_\_\_  
 Sub Total 1357.70

Approved By \_\_\_\_\_ Our Representative Braman L

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. **55379**

4/10

Well Name & No. Waggoner #24-1 Test No. 3 Date 3/29/14  
 Company H&C Oil Operating, Inc. Elevation 2544 KB 2537 GL  
 Address PO Box 86 Plainville, KS 67663  
 Co. Rep / Geo. Marc Downing Rig American Eagle 2  
 Location: Sec. 24 Twp. 9S Rge. 25W Co. Graham State KS

Interval Tested 3995-4065 Zone Tested LKC-"A-J"  
 Anchor Length 20' Drill Pipe Run 3967 Mud Wt. 9.4  
 Top Packer Depth 3990 Drill Collars Run 30 Vis 60  
 Bottom Packer Depth 3995 Wt. Pipe Run          WL 5.6  
 Total Depth 4065 Chlorides 2800 ppm System LCM 5#

Blow Description IF- BOB in 30sec  
ISI- 1 1/2 Return  
FF- BOB in 1min  
FSI- 2 3/4" Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>63</u>	<u>M with oil spots</u>			<u>100</u>	
<u>1512</u>	<u>SOCM</u>	<u>5</u>	<u>5</u>	<u>80</u>	<u>10</u>
<u>315</u>	<u>OCM</u>	<u>30</u>	<u>10</u>	<u>50</u>	<u>10</u>
<u>378</u>	<u>OCM</u>	<u>15</u>	<u>10</u>	<u>5</u>	<u>70</u>
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 2268 BHT 123 Gravity          API RW 133 @ 47 °F Chlorides 94,000 ppm  
 Test 1250 T-On Location 1620  
 Jars T-Started 1625  
 Safety Joint T-Open 18:15  
 Circ Sub T-Pulled 20:30  
 Hourly Standby T-Out 23:58  
 Mileage 134 RT 207.70  
 Sampler  
 Straddle  
 Shale Packer  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility

Initial Open 15  
 Initial Shut-In 30  
 Final Flow 30  
 Final Shut-In 60

Sub Total  
 Total  
 MP/DST Disc't

Approved By \_\_\_\_\_ Our Representative Brannon L. Phillips

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 57512

Well Name & No. Waggoner #24-1 Test No. 4 Date 3-30-14  
 Company H+C Oil Operating, Inc Elevation 2544 KB 2537 GL  
 Address P.O. Box 86 Plainville, KS 67663  
 Co. Rep / Geo. Mark Downing Rig American Eagle 2  
 Location: Sec. 24 Twp. 9S Rge. 25W Co. Covadham State KS

Interval Tested 4062-4108 Zone Tested LKC "K+L"  
 Anchor Length 46' Drill Pipe Run 4027 Mud Wt. 9.4  
 Top Packer Depth 4103 Drill Collars Run 30 Vis 60  
 Bottom Packer Depth 4108 Wt. Pipe Run          WL 5.6  
 Total Depth 4108 Chlorides 2,800 ppm System LCM 5#  
 Blow Description IF- Built to 3/8"  
ISI- No Return  
FF- No Blow  
FSI- No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>M with oil spots</u>			<u>100</u>	

Rec Total 10 BHT 110 Gravity          API RW          °F Chlorides          ppm

(A) Initial Hydrostatic 2111  Test 1250 T-On Location 07:27  
 (B) First Initial Flow 30  Jars          T-Started 07:39  
 (C) First Final Flow 31  Safety Joint          T-Open 09:46  
 (D) Initial Shut-In 523  Circ Sub          T-Pulled 11:46  
 (E) Second Initial Flow 32  Hourly Standby          T-Out 13:21  
 (F) Second Final Flow 35  Mileage 134 RT x 2 415.40 Comments           
 (G) Final Shut-In 247  Sampler           
 (H) Final Hydrostatic 2005  Straddle           Ruined Shale Packer           
 Shale Packer           Ruined Packer           
 Extra Packer           Extra Copies           
 Extra Recorder          Sub Total 0  
 Day Standby          Total 1665.40  
 Accessibility          MP/DST Disc't           
 Sub Total 1665.40

Approved By \_\_\_\_\_ Our Representative Phil Gray

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.



# QUALITY OILWELL CEMENTING, INC.

Federal Tax I.D.# 20-2886107

No. 7099

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

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

Date	3-31-14	Sec.	24	Twp.	9	Range	25	County	Graham	State	KS	On Location	10:30 AM
Lease <u>Wagoner</u> Well No. <u>24-1</u> Contractor <u>American Eagle #2</u> Location <u>Wakeeney IV is Red line 10w to 160 1 1/2 N</u>													
Type Job	Plug												
Hole Size	7 7/8												
Csg. Drill Pips	T.D. 4154												
Tbg. Size	Depth												
Tool	Depth												
Cement Left in Csg.	Shoe Joint												
Meas Line	Displace												
<b>EQUIPMENT</b>													
Pumptrk 16	No.	Cementer											
		Helper	B.H.Y										
Bulktrk 17	No.	Driver	David										
Bulktrk Pu	No.	Driver	Brett										
<b>JOB SERVICES &amp; REMARKS</b>													
Remarks:													
Rat Hole	30 sk												
Mouse Hole													
Centralizers													
Baskets													
DV or Port Collar													
	1st Plug @ 2250 w/ 25 sk												
	2nd Plug @ 1380 w/ 100 sk												
	3rd Plug @ 300 w/ 40 sk												
	4th Plug @ 40 w/ 10 sk												
	FLOAT EQUIPMENT												
	Handling 212												
	Mileage												
	Guide Shoe												
	Centralizer												
	Baskets												
	AFU Inserts												
	Float Shoe												
	Latch Down												
	1 Dry Hole Plug												
	Pumptrk Charge												
	36 plug												
	Mileage												
	36												
	Tax												
	Discount												
	Total Charge												

X Bruce MacKubin  
Signature

