

Confidentiality Requested:

☐ Yes ☐ No

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

1136534

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

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: _____



1136534

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 (Attach Additional Sheets)	☐ Yes ☐ No	☐ Log	Formation (Top), Depth and Datum	☐ Sample
Samples Sent to Geological Survey	☐ Yes ☐ No	Name	Top	Datum
Cores Taken	☐ Yes ☐ No			
Electric Log Run	☐ Yes ☐ No			
List All E. Logs Run:				

CASING RECORD ☐ New ☐ 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
☐ Perforate				
☐ Protect Casing				
☐ Plug Back TD				
☐ 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 (Amount and Kind of Material Used)	Depth

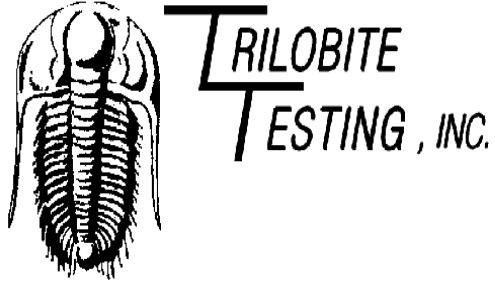
TUBING RECORD:	Size:	Set At:	Packer At:	Liner Run: ☐ Yes ☐ No
Date of First, Resumed Production, SWD or ENHR.	Producing Method: ☐ Flowing ☐ Pumping ☐ Gas Lift ☐ Other (Explain) _____			
Estimated Production Per 24 Hours	Oil Bbls.	Gas Mcf	Water Bbls.	Gas-Oil Ratio Gravity

DISPOSITION OF GAS: ☐ Vented ☐ Sold ☐ Used on Lease (If vented, Submit ACO-18.)	METHOD OF COMPLETION: ☐ Open Hole ☐ Perf. ☐ Dually Comp. ☐ Commingled (Submit ACO-5) ☐ Other (Specify) _____	PRODUCTION INTERVAL: _____ _____
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Form	ACO1 - Well Completion
Operator	Larson Engineering, Inc. dba Larson Operating Company
Well Name	WR Unit 1-27
Doc ID	1136534

Tops

Name	Top	Datum
Anhydrite	2138	+670
Base Anhydrite	2165	+641
Heebner	3918	-1110
Lansing	3960	-1152
Stark	4238	-1430
Pawnee	4440	-1632
Ft Scott	4492	-1684
Mississippi	4577	-1769



DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc.**

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

W R Unit #1-27

27-18s-29w Lane,KS

Start Date: 2013.02.11 @ 10:02:00

End Date: 2013.02.11 @ 15:25:39

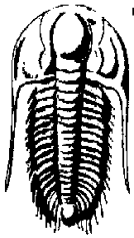
Job Ticket #: 49778 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.27 @ 09:50:04



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49778

DST#: 1

Test Start: 2013.02.11 @ 10:02:00

GENERAL INFORMATION:

Formation: **LKC " I "**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:55:40

Time Test Ended: 15:25:39

Test Type: Conventional Bottom Hole (Initial)

Tester: Will MacLean

Unit No: 58

Interval: 4181.00 ft (KB) To 4213.00 ft (KB) (TVD)

Total Depth: 4213.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: 8674 Inside

Press@RunDepth: 154.78 psig @ 4182.00 ft (KB)

Start Date: 2013.02.11

End Date:

2013.02.11

Start Time: 10:02:00

End Time:

15:25:39

Capacity: 8000.00 psig

Last Calib.: 2013.02.11

Time On Btm: 2013.02.11 @ 11:55:10

Time Off Btm: 2013.02.11 @ 13:11:10

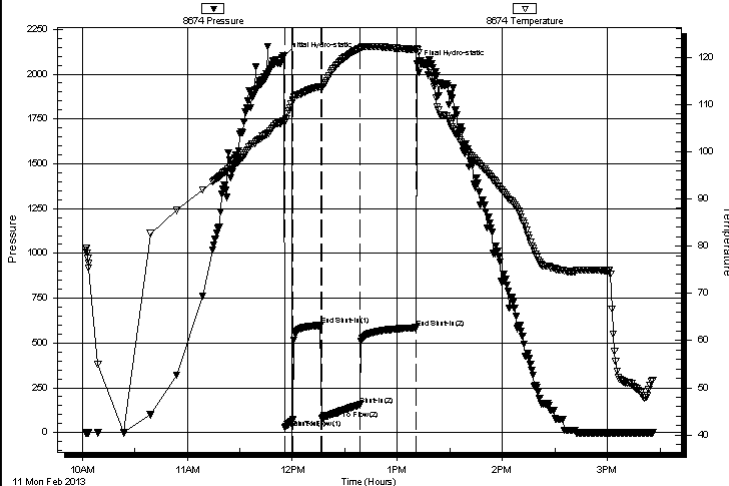
TEST COMMENT: IF- Weak Surface Blow Built to 4"

IS- No Blow

FF- Weak Surface Blow Built to BOB in 16 3/4 min

FS- Weak Surface Blow in 12 min

Pressure vs. Time



PRESSURE SUMMARY

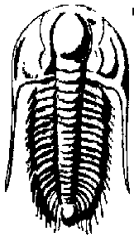
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2100.61	106.60	Initial Hydro-static
1	26.39	106.12	Open To Flow (1)
6	71.85	110.98	Shut-In(1)
21	598.46	113.75	End Shut-In(1)
22	76.51	113.56	Open To Flow (2)
44	154.78	121.81	Shut-In(2)
76	585.34	121.53	End Shut-In(2)
76	2055.49	121.88	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	WCM 38%w 62%w with Skim of Oil on	0.59
62.00	WCM 25%w 75%w with Skim of Oil on	0.62
62.00	OWCM 2%oil 48%w 50%w	0.87
47.00	WOCM 2%w 7%oil 91%w	0.66
15.00	WMCO 8%w 20%w 72%oil	0.21

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49778

DST#: 1

Test Start: 2013.02.11 @ 10:02:00

GENERAL INFORMATION:

Formation: **LKC "I"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:55:40

Time Test Ended: 15:25:39

Test Type: Conventional Bottom Hole (Initial)

Tester: Will MacLean

Unit No: 58

Interval: **4181.00 ft (KB) To 4213.00 ft (KB) (TVD)**

Total Depth: 4213.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8355** Outside

Press@RunDepth: psig @ 4182.00 ft (KB)

Start Date: 2013.02.11

End Date:

2013.02.11

Start Time: 10:01:30

End Time:

15:26:24

Capacity: 8000.00 psig

Last Calib.: 2013.02.11

Time On Btm:

Time Off Btm:

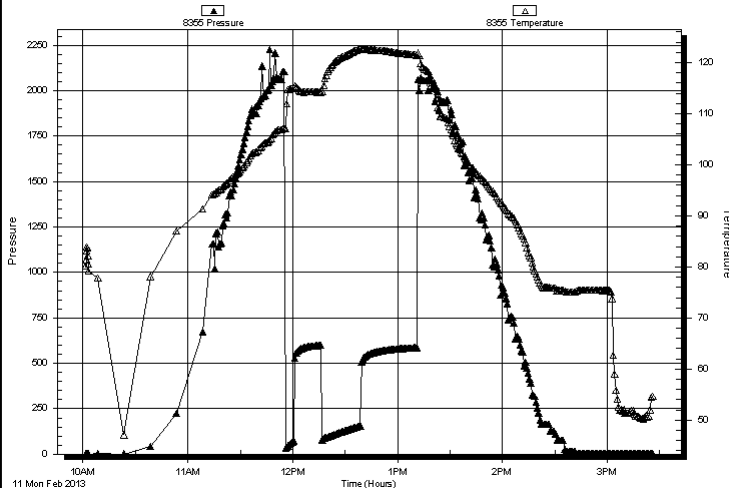
TEST COMMENT: IF- Weak Surface Blow Built to 4"

IS- No Blow

FF- Weak Surface Blow Built to BOB in 16 3/4 min

FS- Weak Surface Blow in 12 min

Pressure vs. Time



PRESSURE SUMMARY

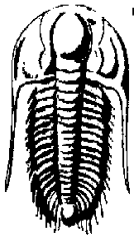
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
120.00	WCM 38%w 62%o with Skim of Oil on	0.59
62.00	WCM 25%w 75%o with Skim of Oil on	0.62
62.00	OWCM 2%oil 48%w 50%o	0.87
47.00	WOCM 2%w 7%oil 91%o	0.66
15.00	WMCO 8%w 20%o 72%oil	0.21

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49778

DST#: 1

ATTN: Vern Schrag

Test Start: 2013.02.11 @ 10:02:00

Tool Information

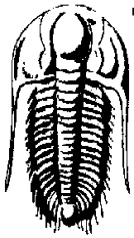
Drill Pipe:	Length:	4016.00 ft	Diameter:	3.80 inches	Volume:	56.33 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	24000.00 lb
Drill Collar:	Length:	147.00 ft	Diameter:	2.25 inches	Volume:	0.72 bbl	Weight to Pull Loose:	14000.00 lb
					Total Volume:	57.05 bbl	Tool Chased	ft
Drill Pipe Above KB:		10.00 ft					String Weight: Initial	62000.00 lb
Depth to Top Packer:		4181.00 ft					Final	62000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		32.00 ft						
Tool Length:		60.00 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			4154.00		
Shut In Tool	5.00			4159.00		
Hydraulic tool	5.00			4164.00		
Jars	5.00			4169.00		
Safety Joint	3.00			4172.00		
Packer	5.00			4177.00	28.00	Bottom Of Top Packer
Packer	4.00			4181.00		
Stubb	1.00			4182.00		
Recorder	0.00	8355	Outside	4182.00		
Recorder	0.00	8674	Inside	4182.00		
Perforations	28.00			4210.00		
Bullnose	3.00			4213.00	32.00	Bottom Packers & Anchor

Total Tool Length: 60.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49778

DST#: 1

ATTN: Vern Schrag

Test Start: 2013.02.11 @ 10:02:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 62.00 sec/qt

Water Loss: 6.33 in³

Resistivity: ohm.m

Salinity: 1800.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

37 deg API

Water Salinity:

6400 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	WCM 38%w 62%m with Skim of Oil on Top	0.590
62.00	WCM 25%w 75%m with Skim of Oil on Top	0.624
62.00	OWCM 2%oil 48%w 50%m	0.870
47.00	WOCM 2%w 7%oil 91%m	0.659
15.00	WMCO 8%w 20%m 72%oil	0.210

Total Length: 306.00 ft

Total Volume: 2.953 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: API is 36 @ 50f = 37

RW is 1. @ 63f = 6400

Serial #: 8674

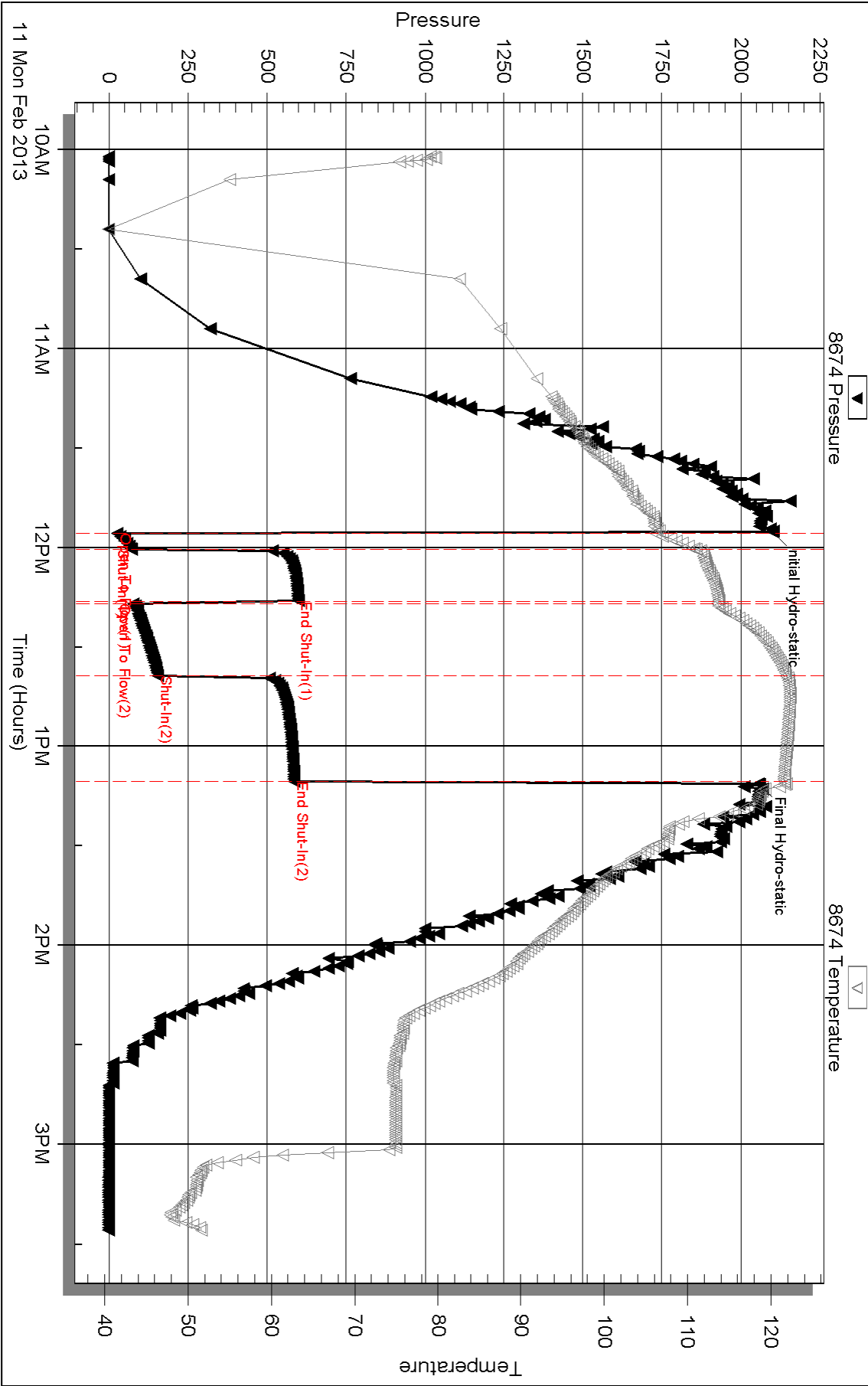
Inside

Larson Engineering Inc.

W R Unit #1-27

DST Test Number: 1

Pressure vs. Time

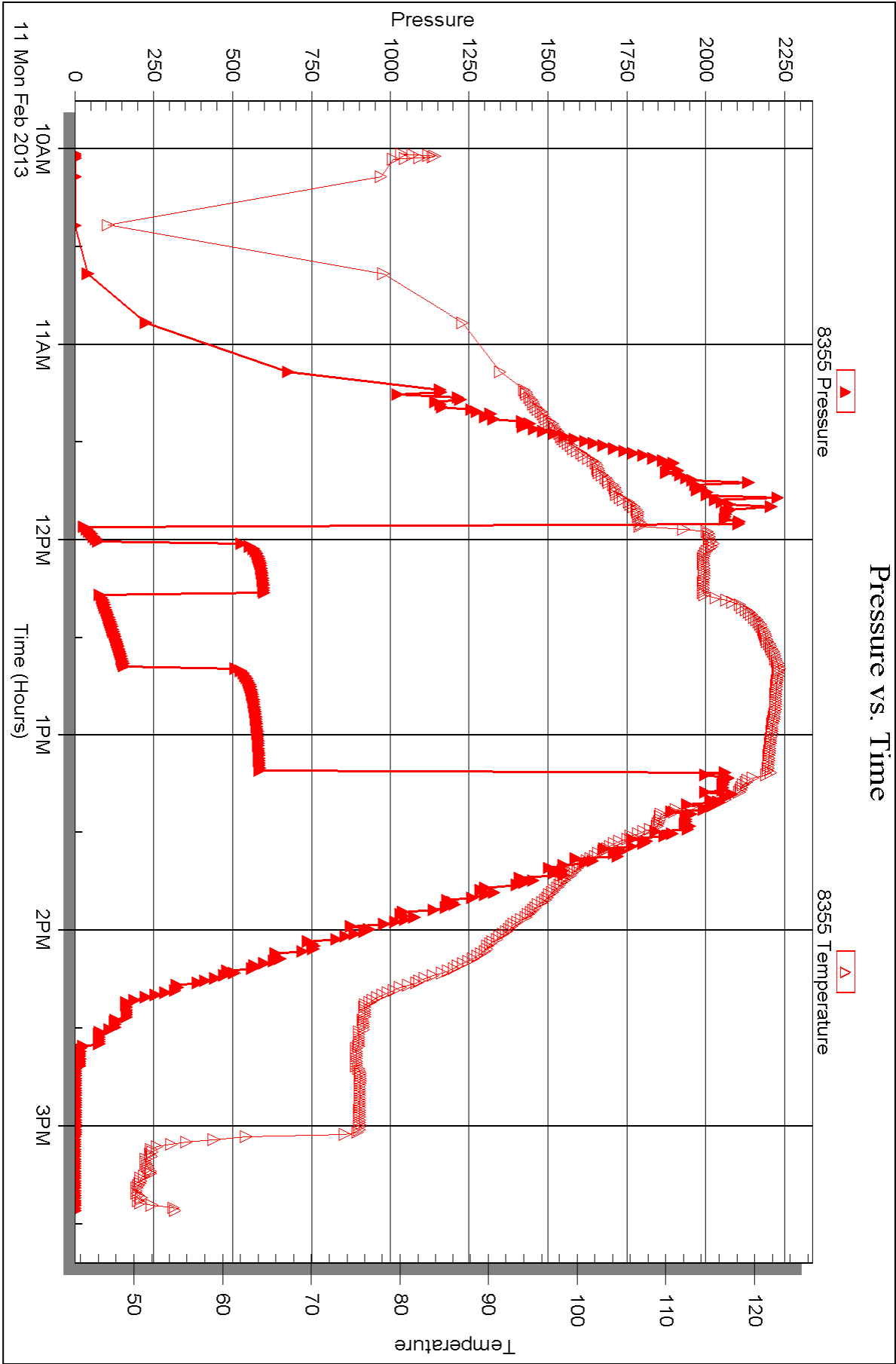


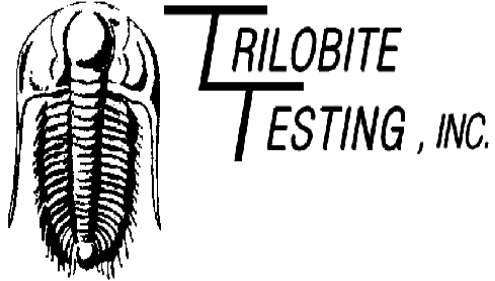
Serial #: 8355

Outside Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc.**

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

W R Unit #1-27

27-18s-29w Lane,KS

Start Date: 2013.02.12 @ 04:46:00

End Date: 2013.02.12 @ 10:16:24

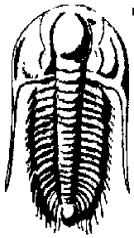
Job Ticket #: 49779 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.27 @ 09:49:16



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49779

DST#: 2

Test Start: 2013.02.12 @ 04:46:00

GENERAL INFORMATION:

Formation: **LKC "K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:45:55

Time Test Ended: 10:16:24

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4236.00 ft (KB) To 4260.00 ft (KB) (TVD)**

Total Depth: 4260.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8674** Inside

Press@RunDepth: 153.30 psig @ 4237.00 ft (KB)

Start Date: 2013.02.12

End Date:

2013.02.12

Start Time: 04:46:00

End Time:

10:16:24

Capacity: 8000.00 psig

Last Calib.: 2013.02.12

Time On Btm: 2013.02.12 @ 06:45:40

Time Off Btm: 2013.02.12 @ 07:57:40

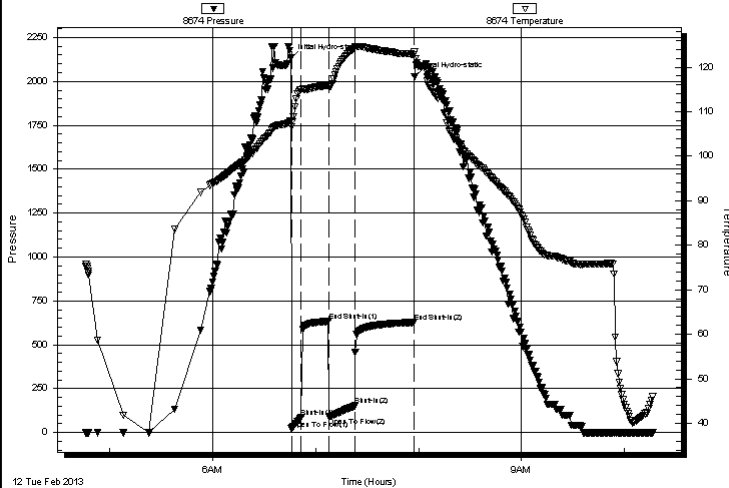
TEST COMMENT: IF- Weak Surface Blow Built to 4 1/2"

IS- No Blow

FF- Weak Surface Blow Built to BOB in 14 min

FS- No Blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2131.78	107.97	Initial Hydro-static
1	21.83	106.65	Open To Flow (1)
6	86.40	114.98	Shut-In (1)
22	633.89	115.88	End Shut-In (1)
23	89.85	115.60	Open To Flow (2)
38	153.30	124.41	Shut-In (2)
72	627.59	122.82	End Shut-In (2)
72	2025.34	123.41	Final Hydro-static

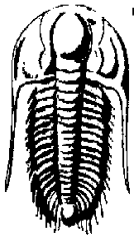
Recovery

Length (ft)	Description	Volume (bbl)
120.00	MCW 35%M 65%W	0.59
62.00	WCM 38%w 62%m	0.62
62.00	WCM 18%w 82%m with Oil Spots	0.87
60.00	WCM 4%w 96%m with Oil Spots	0.84

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49779

DST#: 2

Test Start: 2013.02.12 @ 04:46:00

GENERAL INFORMATION:

Formation: **LKC "K"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 06:45:55

Time Test Ended: 10:16:24

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4236.00 ft (KB) To 4260.00 ft (KB) (TVD)**

Total Depth: 4260.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8355** Outside

Press@RunDepth: psig @ 4237.00 ft (KB)

Start Date: 2013.02.12

End Date:

2013.02.12

Start Time: 04:45:15

End Time:

10:16:39

Capacity: 8000.00 psig

Last Calib.: 2013.02.12

Time On Btm:

Time Off Btm:

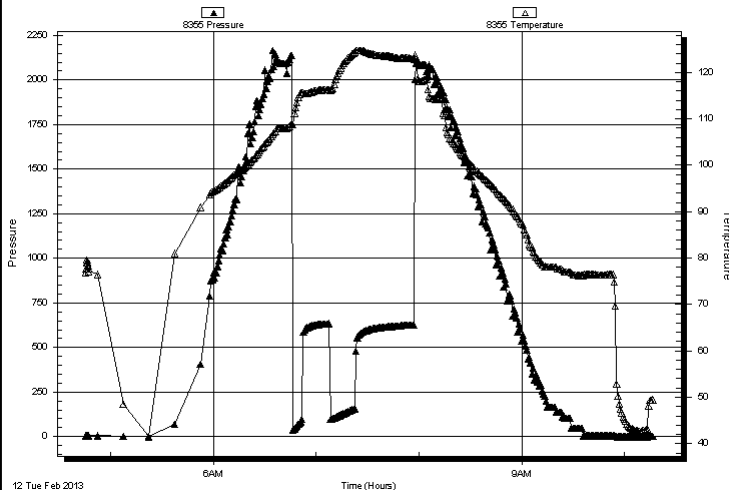
TEST COMMENT: IF- Weak Surface Blow Built to 4 1/2"

IS- No Blow

FF- Weak Surface Blow Built to BOB in 14 min

FS- No Blow

Pressure vs. Time



PRESSURE SUMMARY

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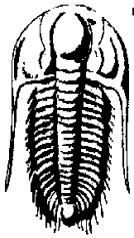
Recovery

Length (ft)	Description	Volume (bbl)
120.00	MCW 35%M 65%W	0.59
62.00	WCM 38%w 62%m	0.62
62.00	WCM 18%w 82%m with Oil Spots	0.87
60.00	WCM 4%w 96%m with Oil Spots	0.84

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49779

DST#: 2

ATTN: Vern Schrag

Test Start: 2013.02.12 @ 04:46:00

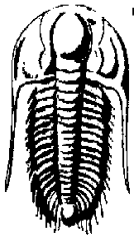
Tool Information

Drill Pipe:	Length:	4073.00 ft	Diameter:	3.80 inches	Volume:	57.13 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:	22000.00 lb
Drill Collar:	Length:	147.00 ft	Diameter:	2.25 inches	Volume:	0.72 bbl	Weight to Pull Loose:	8000.00 lb
					Total Volume:	57.85 bbl	Tool Chased	ft
Drill Pipe Above KB:		12.00 ft					String Weight: Initial	62000.00 lb
Depth to Top Packer:		4236.00 ft					Final	62000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		24.00 ft						
Tool Length:		52.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

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

Change Over Sub	1.00			4209.00	
Shut In Tool	5.00			4214.00	
Hydraulic tool	5.00			4219.00	
Jars	5.00			4224.00	
Safety Joint	3.00			4227.00	
Packer	5.00			4232.00	28.00 Bottom Of Top Packer
Packer	4.00			4236.00	
Stubb	1.00			4237.00	
Recorder	0.00	8355	Outside	4237.00	
Recorder	0.00	8674	Inside	4237.00	
Perforations	20.00			4257.00	
Bullnose	3.00			4260.00	24.00 Bottom Packers & Anchor

Total Tool Length: 52.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49779

DST#: 2

ATTN: Vern Schrag

Test Start: 2013.02.12 @ 04:46:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 55.00 sec/qt

Water Loss: 7.14 in³

Resistivity: ohm.m

Salinity: 1900.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	MCW 35%M 65%W	0.590
62.00	WCM 38%w 62%m	0.624
62.00	WCM 18%w 82%m with Oil Spots	0.870
60.00	WCM 4%w 96%m with Oil Spots	0.842

Total Length: 304.00 ft Total Volume: 2.926 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: RW is 1. @ 34f = 12,800

Serial #: 8674

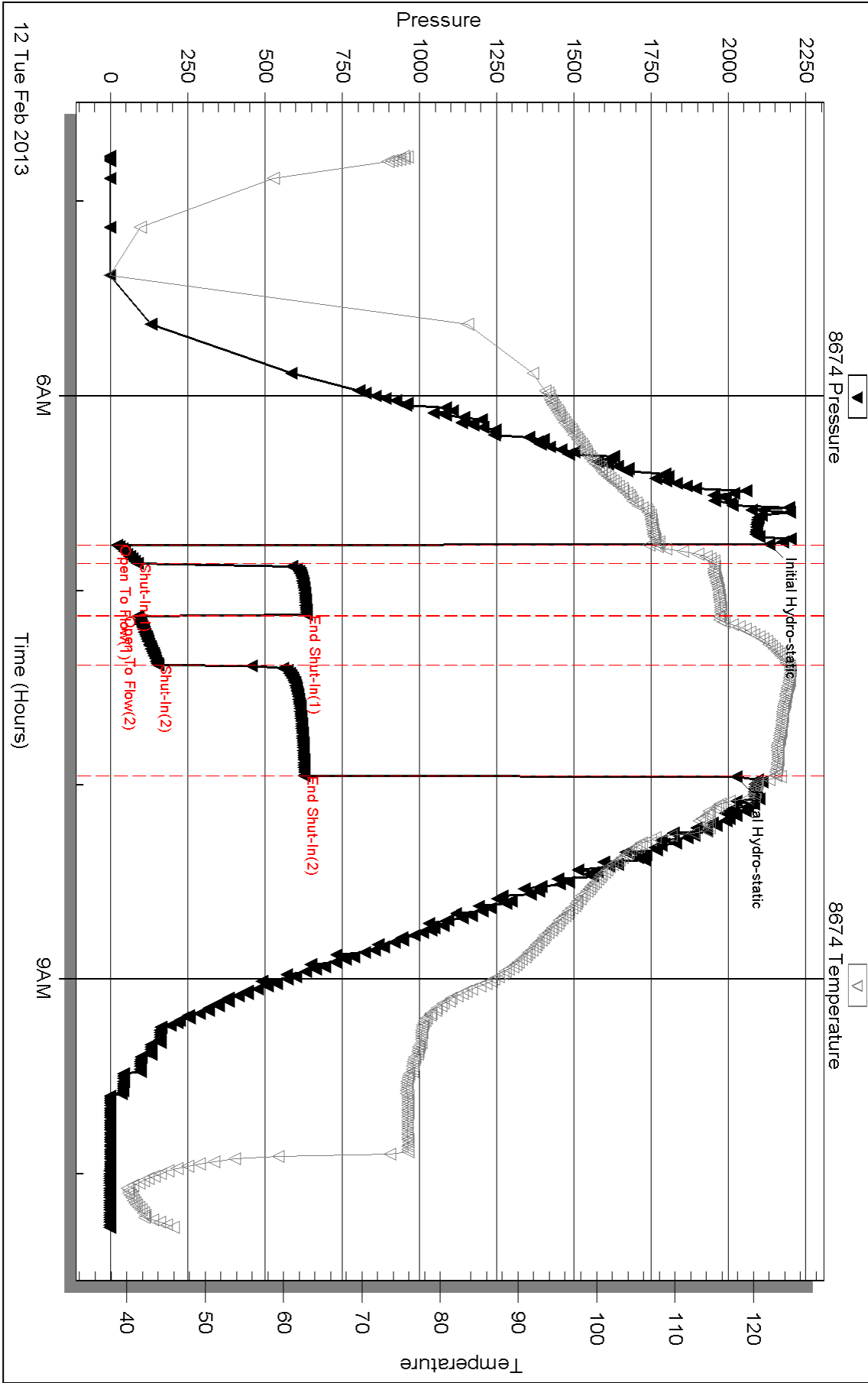
Inside

Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 2

Pressure vs. Time

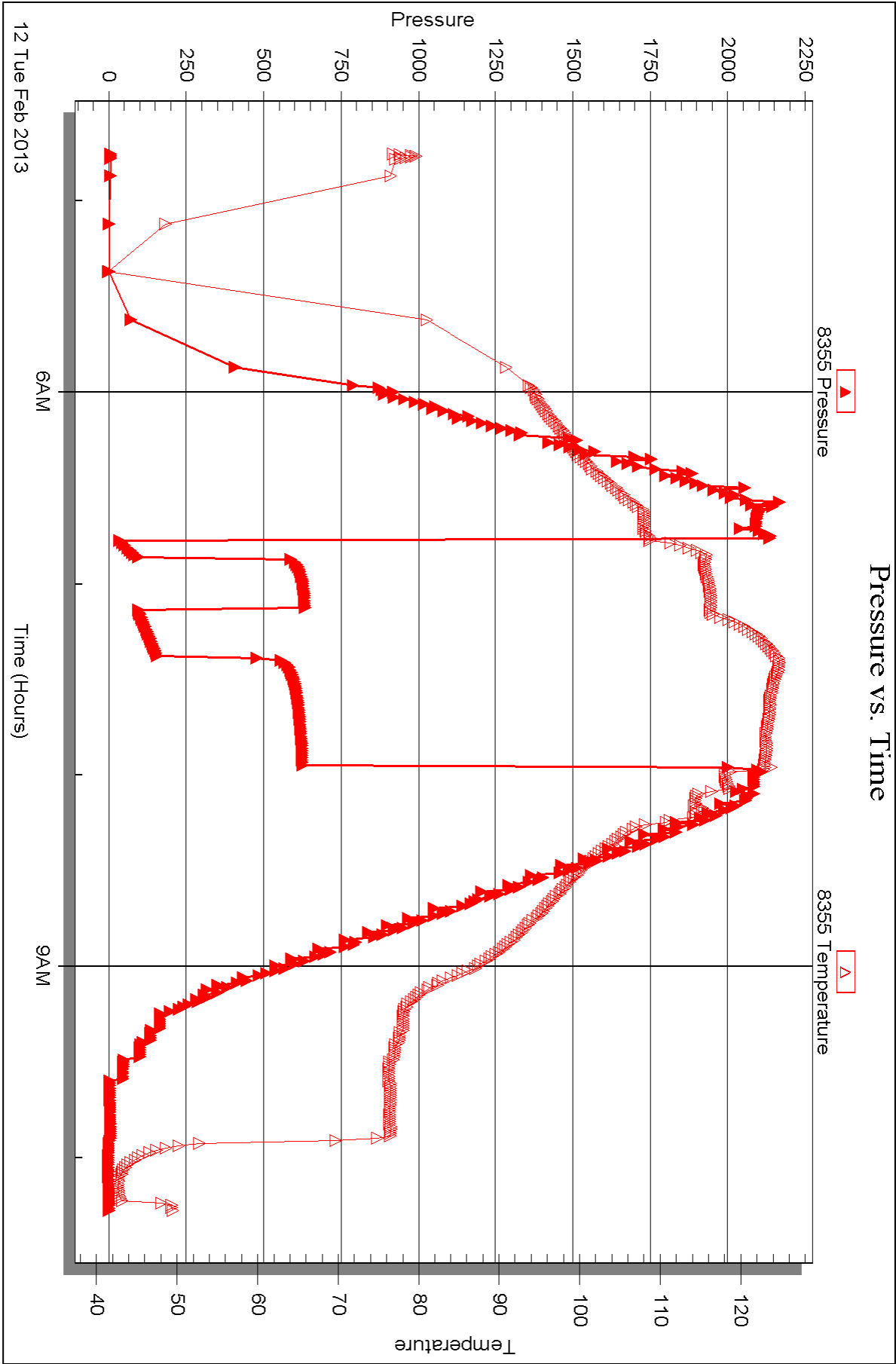


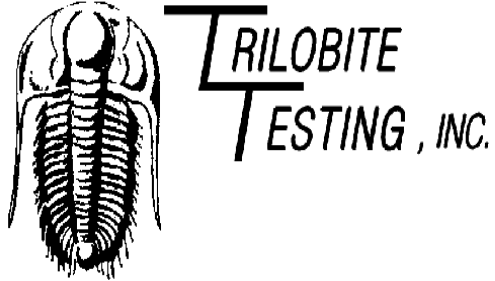
Serial #: 8355

Outside Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc.**

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

W R Unit #1-27

27-18s-29w Lane,KS

Start Date: 2013.02.12 @ 19:34:00

End Date: 2013.02.13 @ 01:02:39

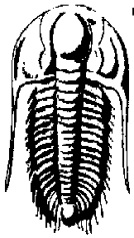
Job Ticket #: 47980 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.27 @ 09:48:36



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering Inc.

27-18s-29w Lane, KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 47980

DST#: 3

ATTN: Vern Schrag

Test Start: 2013.02.12 @ 19:34:00

GENERAL INFORMATION:

Formation: **LKC "L"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:45:55

Time Test Ended: 01:02:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4272.00 ft (KB) To 4286.00 ft (KB) (TVD)**

Total Depth: 4286.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8674** Inside

Press@RunDepth: 21.06 psig @ 4273.00 ft (KB)

Start Date: 2013.02.12

End Date:

2013.02.13

Start Time: 19:34:00

End Time:

01:02:39

Capacity: 8000.00 psig

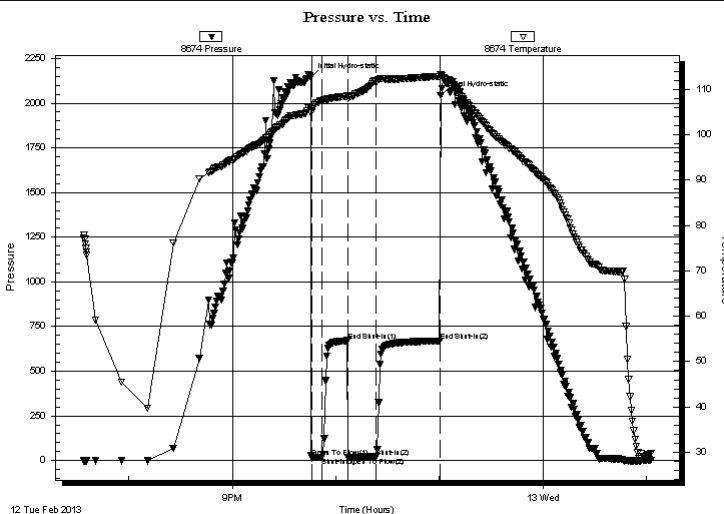
Last Calib.: 2013.02.13

Time On Btm: 2013.02.12 @ 21:45:25

Time Off Btm: 2013.02.12 @ 23:00:40

TEST COMMENT: IF- Weak Surface Blow
IS- No Blow
FF- Built to Weak Surface Blow
FS- No Blow

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2141.55	106.17	Initial Hydro-static
1	15.86	105.77	Open To Flow (1)
7	16.67	107.36	Shut-In(1)
22	670.36	108.51	End Shut-In(1)
22	17.46	108.08	Open To Flow (2)
38	21.06	111.80	Shut-In(2)
75	668.91	112.87	End Shut-In(2)
76	2043.76	113.29	Final Hydro-static

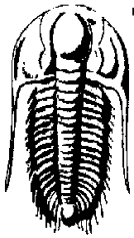
Recovery

Length (ft)	Description	Volume (bbl)
8.00	100% mud	0.04

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 47980

DST#: 3

Test Start: 2013.02.12 @ 19:34:00

GENERAL INFORMATION:

Formation: **LKC "L"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:45:55

Time Test Ended: 01:02:39

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4272.00 ft (KB) To 4286.00 ft (KB) (TVD)**

Total Depth: 4286.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8355** Outside

Press@RunDepth: psig @ 4273.00 ft (KB)

Start Date: 2013.02.12

End Date:

2013.02.13

Start Time: 19:33:15

End Time:

01:03:09

Capacity: 8000.00 psig

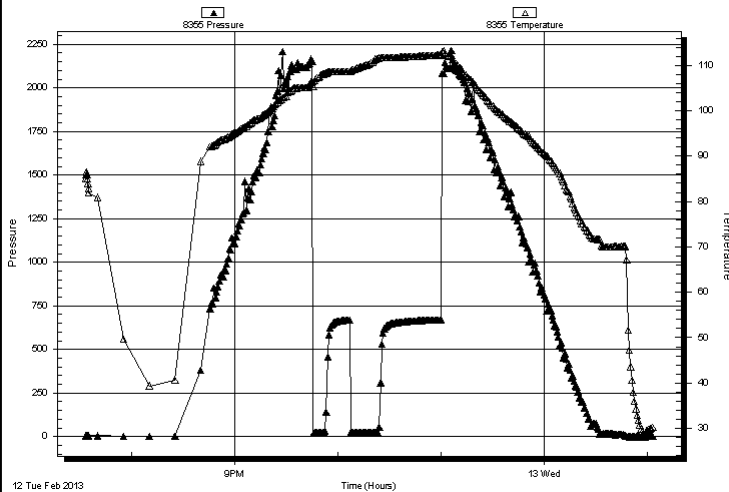
Last Calib.: 2013.02.13

Time On Btm:

Time Off Btm:

TEST COMMENT: IF- Weak Surface Blow
IS- No Blow
FF- Built to Weak Surface Blow
FS- No Blow

Pressure vs. Time



PRESSURE SUMMARY

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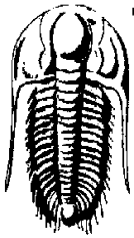
Recovery

Length (ft)	Description	Volume (bbl)
8.00	100% mud	0.04

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Larson Engineering Inc.

27-18s-29w Lane, KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 47980

DST#: 3

ATTN: Vern Schrag

Test Start: 2013.02.12 @ 19:34:00

Tool Information

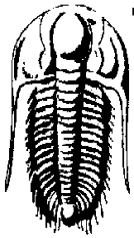
Drill Pipe:	Length:	4107.00 ft	Diameter:	3.80 inches	Volume:	57.61 bbl	Tool Weight:	2000.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	22000.00 lb
Drill Collar:	Length:	147.00 ft	Diameter:	2.25 inches	Volume:	0.72 bbl	Weight to Pull Loose:	8000.00 lb
					Total Volume:	58.33 bbl	Tool Chased	ft
Drill Pipe Above KB:		10.00 ft					String Weight: Initial	64000.00 lb
Depth to Top Packer:		4272.00 ft					Final	64000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		14.00 ft						
Tool Length:		42.00 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			4245.00	
Shut In Tool	5.00			4250.00	
Hydraulic tool	5.00			4255.00	
Jars	5.00			4260.00	
Safety Joint	3.00			4263.00	
Packer	5.00			4268.00	28.00 Bottom Of Top Packer
Packer	4.00			4272.00	
Stubb	1.00			4273.00	
Recorder	0.00	8355	Outside	4273.00	
Recorder	0.00	8674	Inside	4273.00	
Perforations	10.00			4283.00	
Bullnose	3.00			4286.00	14.00 Bottom Packers & Anchor

Total Tool Length: 42.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 47980

DST#: 3

ATTN: Vern Schrag

Test Start: 2013.02.12 @ 19:34:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 53.00 sec/qt

Water Loss: 6.76 in³

Resistivity: ohm.m

Salinity: 2500.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
8.00	100% mud	0.039

Total Length: 8.00 ft Total Volume: 0.039 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

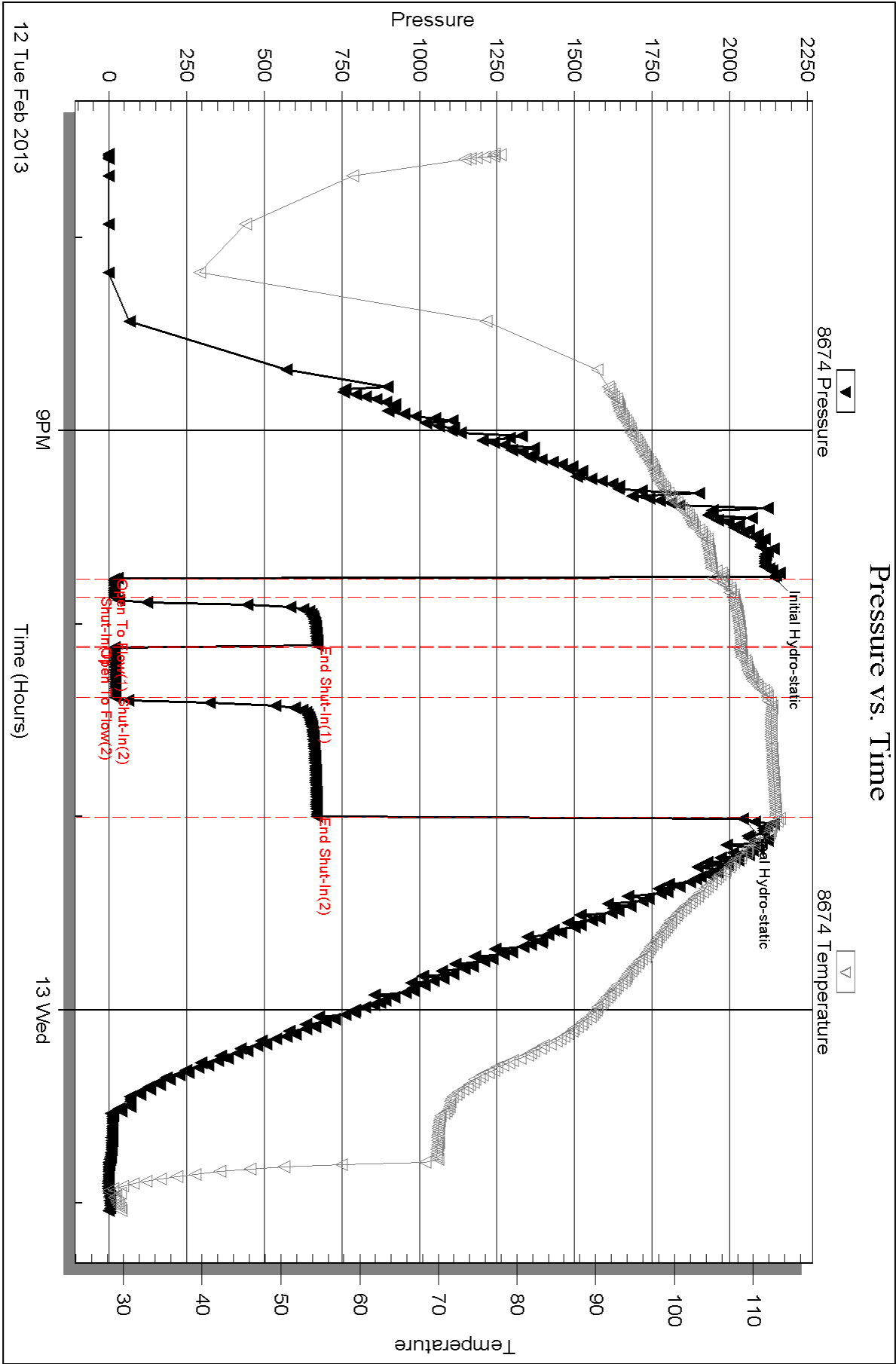
Serial #: 8674

Inside

Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 3

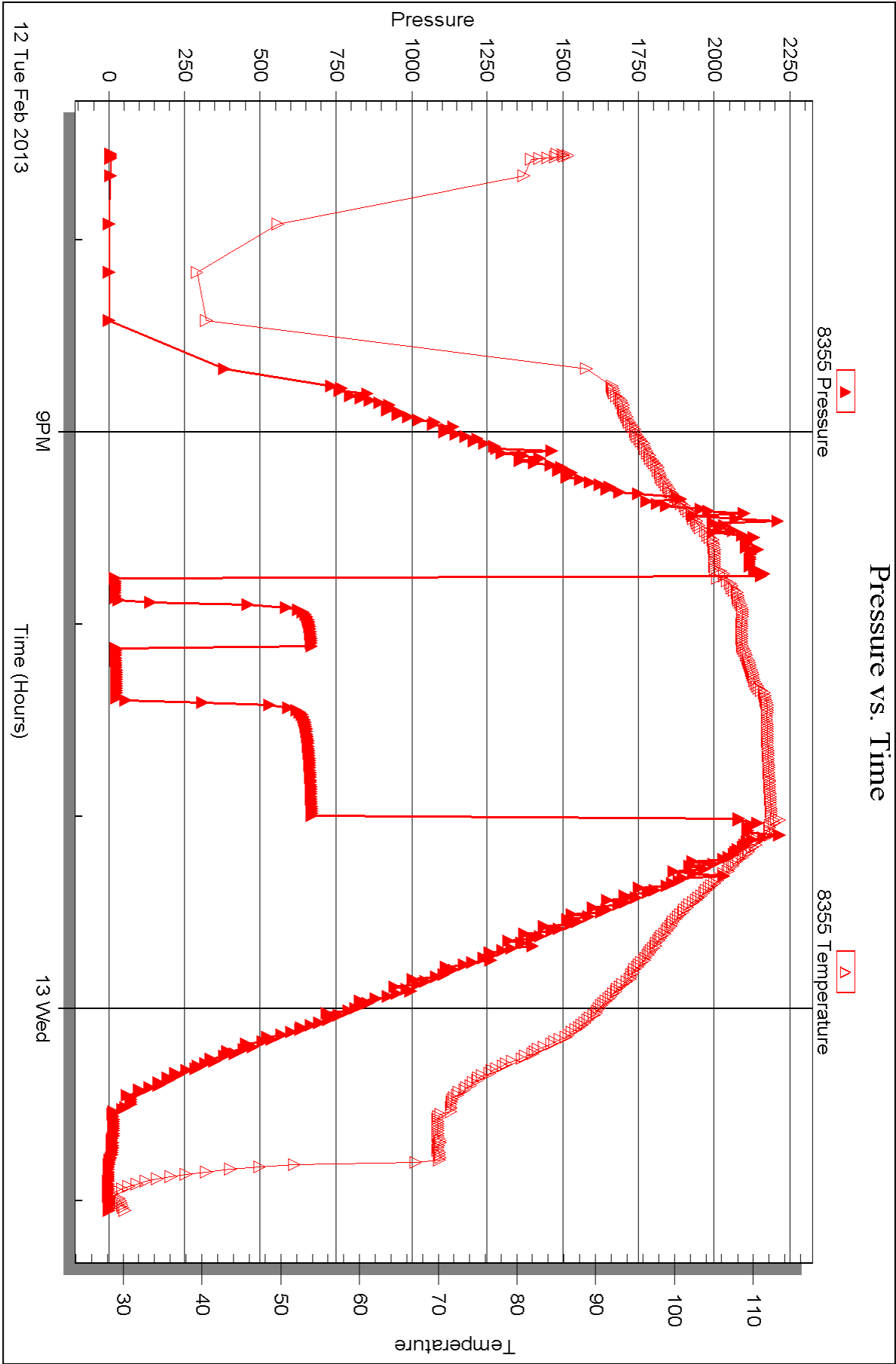


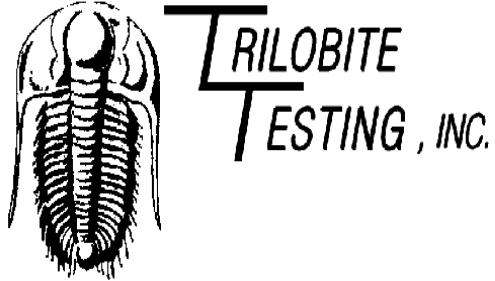
Serial #: 8355

Outside Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc.**

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

W R Unit #1-27

27-18s-29w Lane,KS

Start Date: 2013.02.13 @ 23:36:00

End Date: 2013.02.14 @ 05:45:24

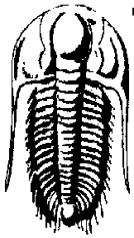
Job Ticket #: 49781 DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.27 @ 09:47:52



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49781

DST#: 4

Test Start: 2013.02.13 @ 23:36:00

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:37:10

Time Test Ended: 05:45:24

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4346.00 ft (KB) To 4410.00 ft (KB) (TVD)**

Total Depth: 4410.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8674** Inside

Press@RunDepth: 90.12 psig @ 4347.00 ft (KB)

Start Date: 2013.02.13

End Date:

2013.02.14

Start Time: 23:36:00

End Time:

05:45:24

Capacity: 8000.00 psig

Last Calib.: 2013.02.14

Time On Btm: 2013.02.14 @ 01:36:55

Time Off Btm: 2013.02.14 @ 03:31:40

TEST COMMENT: IF- Weak Surface Blow 1/2"

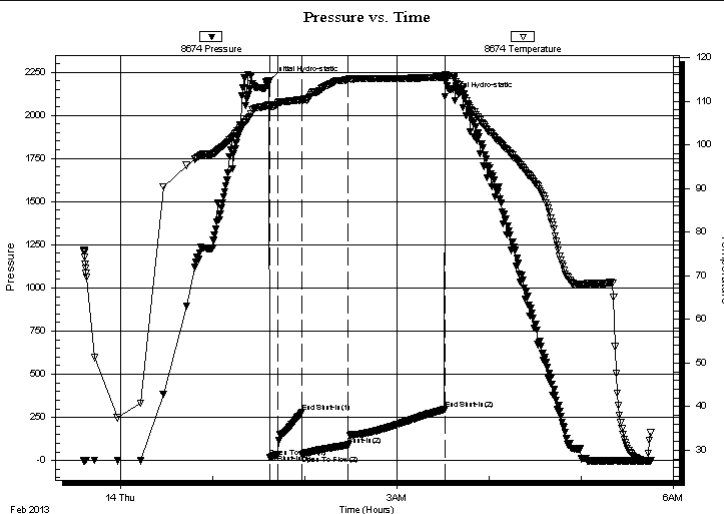
ISI- No Blow

FF- Weak Surface Blow Built to 2"

FSI- No Blow

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2200.17	109.22	Initial Hydro-static
1	17.87	108.33	Open To Flow (1)
6	34.60	109.71	Shut-In(1)
22	278.87	110.34	End Shut-In(1)
22	32.31	110.16	Open To Flow (2)
52	90.12	115.05	Shut-In(2)
115	296.51	115.59	End Shut-In(2)
115	2109.87	116.15	Final Hydro-static



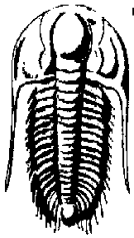
Recovery

Length (ft)	Description	Volume (bbl)
120.00	100%m	0.59
5.00	100%m with a Few Oil Spots	0.02

Gas Rates

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

* Recovery from multiple tests



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49781

DST#: 4

Test Start: 2013.02.13 @ 23:36:00

GENERAL INFORMATION:

Formation: **Marmaton**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:37:10

Time Test Ended: 05:45:24

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: 4346.00 ft (KB) To 4410.00 ft (KB) (TVD)

Total Depth: 4410.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: 8355 Outside

Press@RunDepth: psig @ 4347.00 ft (KB)

Start Date: 2013.02.13

End Date:

2013.02.14

Start Time: 23:35:15

End Time:

05:46:09

Capacity: 8000.00 psig

Last Calib.:

2013.02.14

Time On Btm:

Time Off Btm:

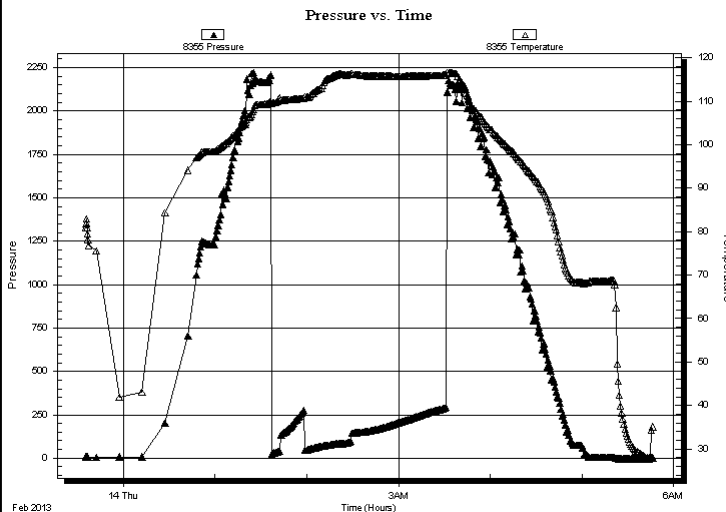
TEST COMMENT: IF- Weak Surface Blow 1/2"

IS- No Blow

FF- Weak Surface Blow Built to 2"

FS- No Blow

PRESSURE SUMMARY



Time
(Min.)

Pressure
(psig)

Temp
(deg F)

Annotation

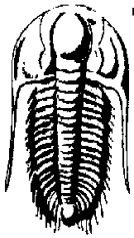
Recovery

Length (ft)	Description	Volume (bbl)
120.00	100%m	0.59
5.00	100%m with a Few Oil Spots	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

Larson Engineering Inc.

27-18s-29w Lane, KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49781

DST#: 4

ATTN: Vern Schrag

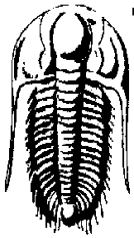
Test Start: 2013.02.13 @ 23:36:00

Tool Information

Drill Pipe:	Length:	4199.00 ft	Diameter:	3.80 inches	Volume:	58.90 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:	24000.00 lb
Drill Collar:	Length:	147.00 ft	Diameter:	2.25 inches	Volume:	0.72 bbl	Weight to Pull Loose:	4000.00 lb
					Total Volume:	59.62 bbl	Tool Chased	ft
Drill Pipe Above KB:		28.00 ft					String Weight: Initial	64000.00 lb
Depth to Top Packer:		4346.00 ft					Final	64000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		64.00 ft						
Tool Length:		92.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			4319.00	
Shut In Tool	5.00			4324.00	
Hydraulic tool	5.00			4329.00	
Jars	5.00			4334.00	
Safety Joint	3.00			4337.00	
Packer	5.00			4342.00	28.00 Bottom Of Top Packer
Packer	4.00			4346.00	
Stubb	1.00			4347.00	
Recorder	0.00	8355	Outside	4347.00	
Recorder	0.00	8674	Inside	4347.00	
Perforations	20.00			4367.00	
Change Over Sub	1.00			4368.00	
Drill Pipe	31.00			4399.00	
Change Over Sub	1.00			4400.00	
Perforations	7.00			4407.00	
Bullnose	3.00			4410.00	64.00 Bottom Packers & Anchor
Total Tool Length:	92.00				



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49781

DST#: 4

ATTN: Vern Schrag

Test Start: 2013.02.13 @ 23:36:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 60.00 sec/qt

Water Loss: 6.77 in³

Resistivity: ohm.m

Salinity: 2500.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

Oil API:

Water Salinity:

deg API

ppm

ft

bbl

psig

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	100%m	0.590
5.00	100%m with a Few Oil Spots	0.025

Total Length: 125.00 ft

Total Volume: 0.615 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

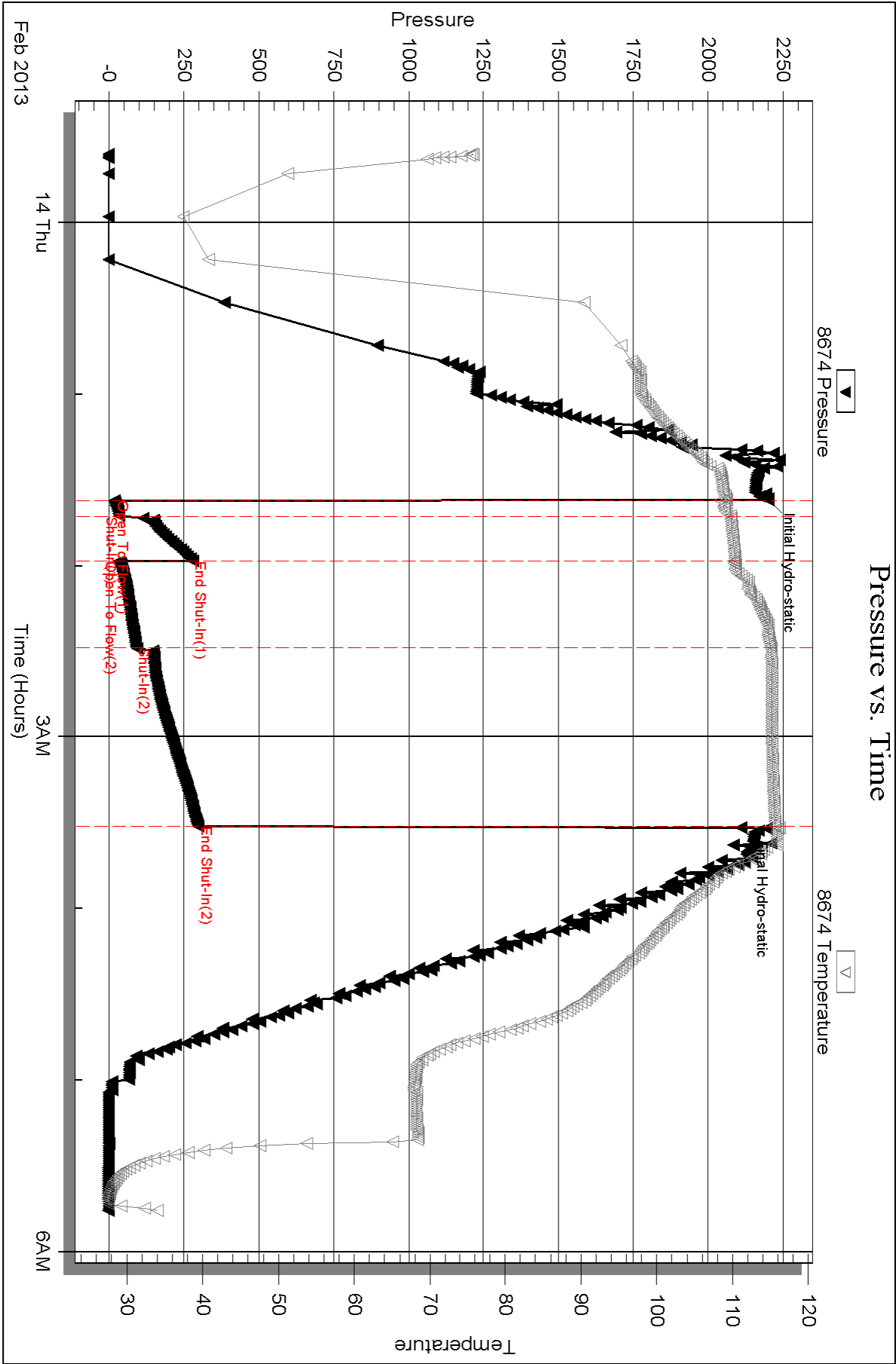
Serial #: 8674

Inside

Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 4

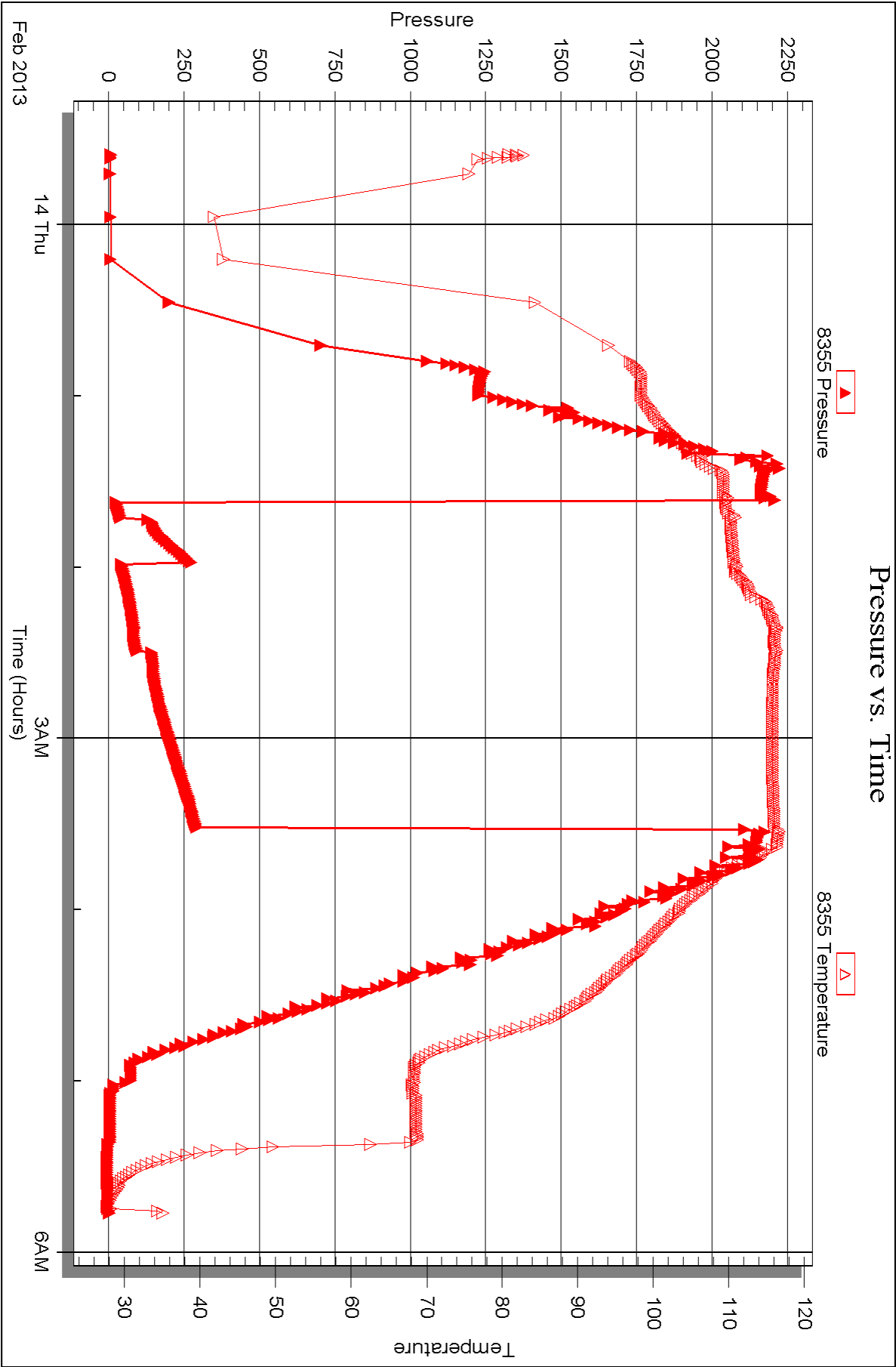


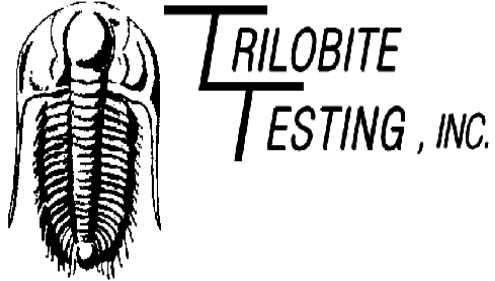
Serial #: 8355

Outside Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Larson Engineering Inc.**

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

W R Unit #1-27

27-18s-29w Lane,KS

Start Date: 2013.02.15 @ 04:00:00

End Date: 2013.02.15 @ 09:22:09

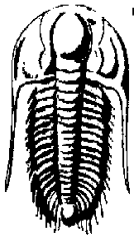
Job Ticket #: 49782 DST #: 5

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2013.02.27 @ 09:46:53



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49782

DST#: 5

Test Start: 2013.02.15 @ 04:00:00

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:48:40

Time Test Ended: 09:22:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4515.00 ft (KB) To 4568.00 ft (KB) (TVD)**

Total Depth: 4568.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8674** Inside

Press@RunDepth: 23.58 psig @ 4517.00 ft (KB)

Start Date: 2013.02.15

End Date:

2013.02.15

Start Time: 04:00:00

End Time:

09:22:09

Capacity: 8000.00 psig

Last Calib.: 2013.02.15

Time On Btm: 2013.02.15 @ 05:48:25

Time Off Btm: 2013.02.15 @ 06:59:10

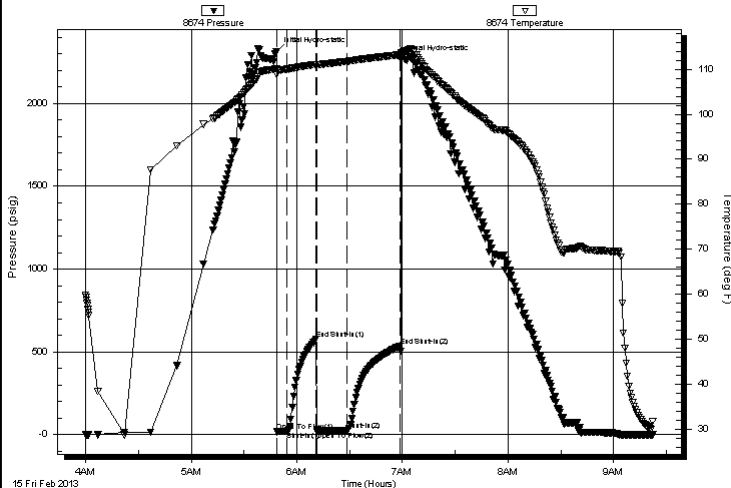
TEST COMMENT: IF- Weak Surface Blow 1/4"

IS- No Blow

FF- No Blow

FS- No Blow

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2314.26	110.20	Initial Hydro-static
1	17.19	108.77	Open To Flow (1)
6	18.98	110.01	Shut-In(1)
23	575.48	111.10	End Shut-In(1)
23	20.42	110.89	Open To Flow (2)
40	23.58	111.74	Shut-In(2)
71	535.86	113.22	End Shut-In(2)
71	2266.30	113.73	Final Hydro-static

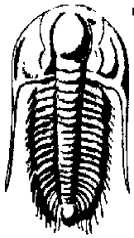
Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 2%oil 98%lm	0.02

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Larson Engineering Inc.

562 W State Rd 4
Olmitz KS 67564

ATTN: Vern Schrag

27-18s-29w Lane, KS

W R Unit #1-27

Job Ticket: 49782

DST#: 5

Test Start: 2013.02.15 @ 04:00:00

GENERAL INFORMATION:

Formation: **Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:48:40

Time Test Ended: 09:22:09

Test Type: Conventional Bottom Hole (Reset)

Tester: Will MacLean

Unit No: 58

Interval: **4515.00 ft (KB) To 4568.00 ft (KB) (TVD)**

Total Depth: 4568.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2808.00 ft (KB)

2801.00 ft (CF)

KB to GR/CF: 7.00 ft

Serial #: **8355** Outside

Press@RunDepth: psig @ 4517.00 ft (KB)

Start Date: 2013.02.15

End Date:

2013.02.15

Start Time: 03:59:15

End Time:

09:22:24

Capacity: 8000.00 psig

Last Calib.: 2013.02.15

Time On Btm:

Time Off Btm:

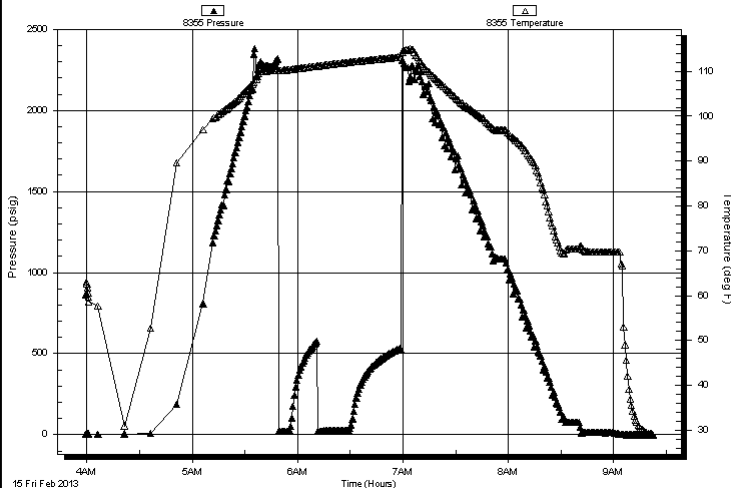
TEST COMMENT: IF- Weak Surface Blow 1/4"

IS- No Blow

FF- No Blow

FS- No Blow

Pressure vs. Time



PRESSURE SUMMARY

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

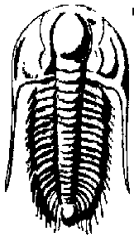
Recovery

Length (ft)	Description	Volume (bbl)
5.00	OCM 2%oil 98% μ m	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

Larson Engineering Inc.

27-18s-29w Lane, KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49782

DST#: 5

ATTN: Vern Schrag

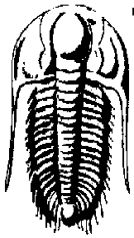
Test Start: 2013.02.15 @ 04:00:00

Tool Information

Drill Pipe:	Length:	4356.00 ft	Diameter:	3.80 inches	Volume:	61.10 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:	26000.00 lb
Drill Collar:	Length:	147.00 ft	Diameter:	2.25 inches	Volume:	0.72 bbl	Weight to Pull Loose:	12000.00 lb
					Total Volume:	61.82 bbl	Tool Chased	ft
Drill Pipe Above KB:		16.00 ft					String Weight: Initial	62000.00 lb
Depth to Top Packer:		4515.00 ft					Final	62000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		53.00 ft						
Tool Length:		81.00 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			4488.00	
Shut In Tool	5.00			4493.00	
Hydraulic tool	5.00			4498.00	
Jars	5.00			4503.00	
Safety Joint	3.00			4506.00	
Packer	5.00			4511.00	28.00 Bottom Of Top Packer
Packer	4.00			4515.00	
Stubb	1.00			4516.00	
Perforations	1.00			4517.00	
Recorder	0.00	8355	Outside	4517.00	
Recorder	0.00	8674	Inside	4517.00	
Perforations	15.00			4532.00	
Change Over Sub	1.00			4533.00	
Drill Pipe	31.00			4564.00	
Change Over Sub	1.00			4565.00	
Bullnose	3.00			4568.00	53.00 Bottom Packers & Anchor
Total Tool Length:	81.00				



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Larson Engineering Inc.

27-18s-29w Lane,KS

562 W State Rd 4
Olmitz KS 67564

W R Unit #1-27

Job Ticket: 49782

DST#: 5

ATTN: Vern Schrag

Test Start: 2013.02.15 @ 04:00:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 57.00 sec/qt

Water Loss: 8.77 in³

Resistivity: ohm.m

Salinity: 2800.00 ppm

Filter Cake: 2.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

deg API

ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
5.00	OCM 2%oil 98%m	0.025

Total Length: 5.00 ft Total Volume: 0.025 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

Serial #: 8674

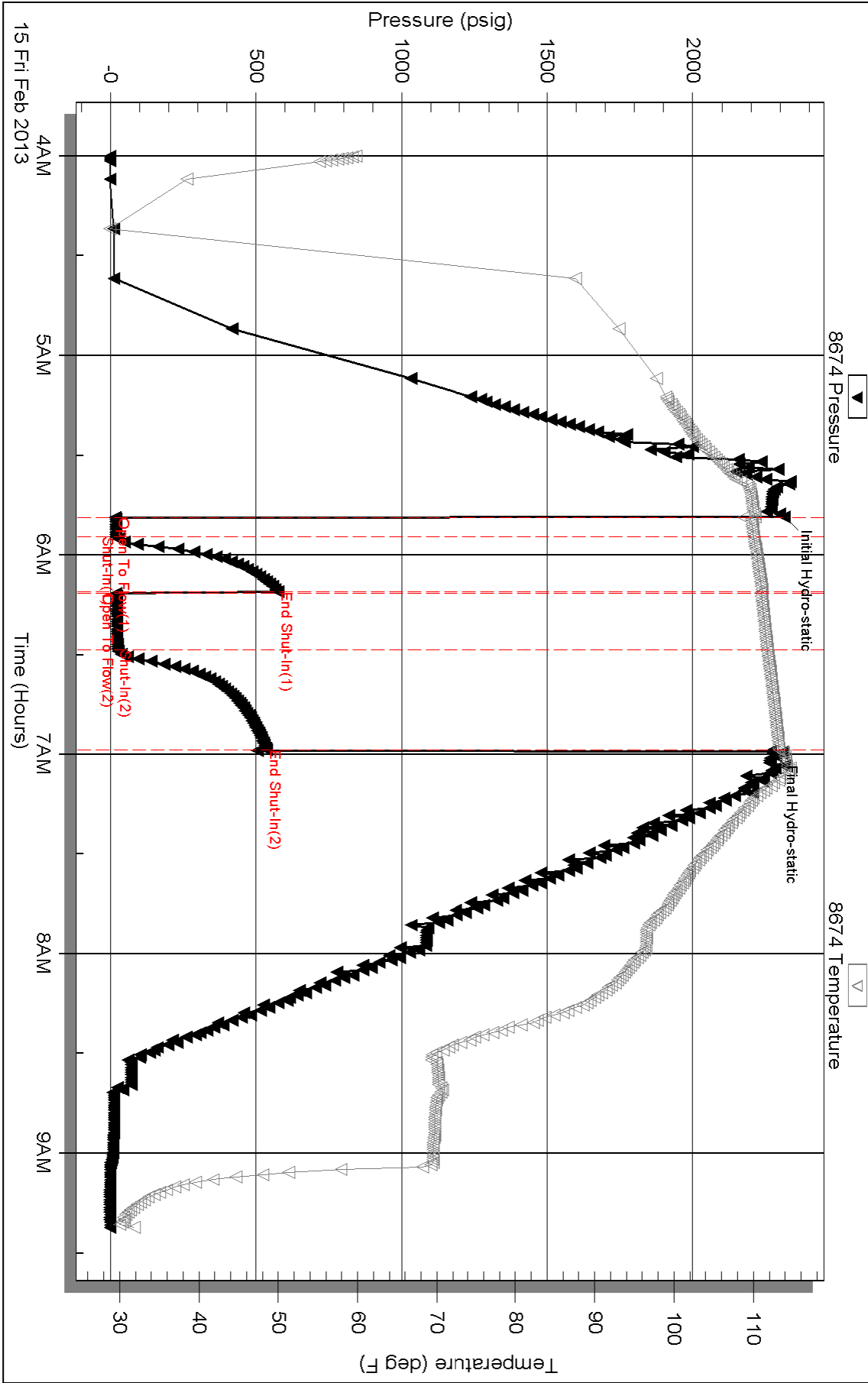
Inside

Larson Engineering Inc.

W R Unit #1-27

DST Test Number: 5

Pressure vs. Time

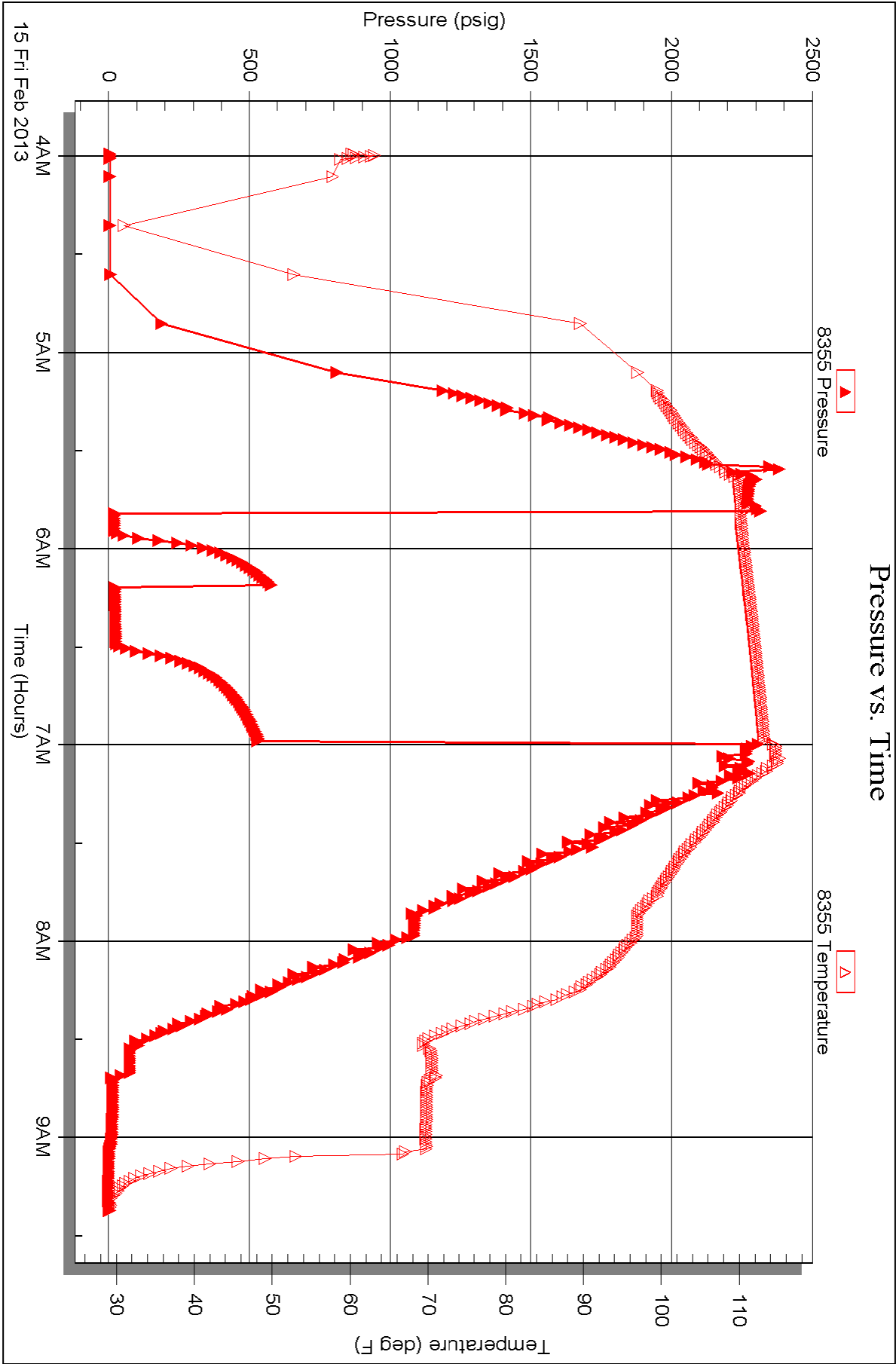


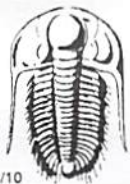
Serial #: 8355

Outside Larson Engineering Inc.

W/R Unit #1-27

DST Test Number: 5





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 49778

Well Name & No. WR Unit #1-27 Test No. DST #1 Date 2-11-13
 Company Larson Engineering Inc Elevation 2808 KB 2801 GL
 Address 562 W State Rd 4 Olmitz KS 67564
 Co. Rep / Geo. Vern Schrag Rig H-D Rig #3
 Location: Sec. 27 Twp. 18s Rge. 29W Co. Lane State KS

Interval Tested 4181-4213 Zone Tested LRC "I"
 Anchor Length 32 Drill Pipe Run 4016 Mud Wt. 9.1
 Top Packer Depth 4177 Drill Collars Run 147 Vis 62
 Bottom Packer Depth 4181 Wt. Pipe Run 0 WL 6.4
 Total Depth 4213 Chlorides 1500 ppm System LCM 116

Blow Description IF-Weak Surface Blow Built to 4"
ISI- No Blow
FF-Weak Surface Blow Built to BOB in 16 3/4 min
FSI-Weak Surface Blow in 12 min

Rec <u>15</u>	Feet of <u>WMCO</u>	%gas	<u>72</u> %oil	<u>8</u> %water	<u>20</u> %mud
Rec <u>47</u>	Feet of <u>WOCM</u>	%gas	<u>7</u> %oil	<u>2</u> %water	<u>91</u> %mud
Rec <u>62</u>	Feet of <u>OWCM</u>	%gas	<u>2</u> %oil	<u>48</u> %water	<u>50</u> %mud
Rec <u>62</u>	Feet of <u>WCM with SKnet Oil on Top</u>	%gas	%oil	<u>25</u> %water	<u>75</u> %mud
Rec <u>120</u>	Feet of <u>WCM with SKnet Oil on Top</u>	%gas	%oil	<u>38</u> %water	<u>62</u> %mud

Rec Total 306 BHT 118 Gravity 37 API RW 1 @ 63 °F Chlorides 6400 ppm

(A) Initial Hydrostatic 2100
 (B) First Initial Flow 26
 (C) First Final Flow 71
 (D) Initial Shut-In 598
 (E) Second Initial Flow 76
 (F) Second Final Flow 154
 (G) Final Shut-In 585
 (H) Final Hydrostatic 2055

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

☒ Test 1250
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub NIC
☐ Hourly Standby
☒ Mileage 48 RIT 74.40
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1649.40

T-On Location 9:08
 T-Started 10:02
 T-Open 11:55
 T-Pulled 13:11
 T-Out 15:25

Comments API is 36 @ 50°F = 37

☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1649.40
 MP/DST Disc't

Approved By _____

Our Representative NM m

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. **49779**

Well Name & No. WR Unit # 1-27 Test No. DST#2 Date 2-12-13
 Company Larson Engineering Inc Elevation 2808 KB 2801 GL
 Address 562 W State Rd 4 Olmitz KS 67564
 Co. Rep / Geo. Vern Schrag Rig H-D Rig #3
 Location: Sec. 27 Twp. 18s Rge. 29w Co. Lane State KS

Interval Tested 4236-4260 Zone Tested LKC "K"
 Anchor Length 24 Drill Pipe Run _____ Mud Wt. 9.3
 Top Packer Depth 4232 Drill Collars Run 147 Vis 55
 Bottom Packer Depth 4236 Wt. Pipe Run 0 WL 7.2
 Total Depth 4260 Chlorides 1900 ppm System LCM 116

Blow Description IF-Weak Surface Blow Built to 4 1/2"
ISI- No Blow
FF-Weak Surface Blow Built to 130B in 14min
FSI- No Blow

Rec <u>60</u>	Feet of <u>WCM with Oil Spots</u>	%gas	%oil <u>4</u>	%water <u>96</u>	%mud
Rec <u>62</u>	Feet of <u>WCM with Oil Spots</u>	%gas	%oil <u>18</u>	%water <u>82</u>	%mud
Rec <u>62</u>	Feet of <u>WCM</u>	%gas	%oil <u>38</u>	%water <u>62</u>	%mud
Rec <u>120</u>	Feet of <u>MCW</u>	%gas	%oil <u>65</u>	%water <u>35</u>	%mud
Rec _____	Feet of _____	%gas	%oil _____	%water _____	%mud

Rec Total 304 BHT 118 Gravity _____ API RW 1.4 @ 34 °F Chlorides 12800 ppm
 (A) Initial Hydrostatic 2131 ☒ Test 1250 T-On Location 3:30
 (B) First Initial Flow 21 ☒ Jars 250 T-Started 4:46
 (C) First Final Flow 86 ☒ Safety Joint 75 T-Open 6:45
 (D) Initial Shut-In 633 ☒ Circ Sub NIC T-Pulled 7:57
 (E) Second Initial Flow 89 ☐ Hourly Standby _____ T-Out 10:16
 (F) Second Final Flow 153 ☒ Mileage 48 R/T 74.40 Comments _____
 (G) Final Shut-In 627 ☐ Sampler _____
 (H) Final Hydrostatic 2025 ☐ Straddle _____
☐ Shale Packer _____
☐ Extra Packer _____
☐ Extra Recorder _____
☐ Day Standby _____
☐ Accessibility _____

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30
☐ Ruined Shale Packer _____
☐ Ruined Packer _____
☐ Extra Copies _____
 Sub Total 0
 Total 1649.40
 MP/DST Disc't _____

Sub Total 1649.40

Approved By Vern Schrag Our Representative Will Moore

Trilobite Testing Inc. shall not be liable for damaged or loss 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. **49780**

Well Name & No. WR Unit # 1-27 Test No. DST #3 Date 2-12-13
 Company Larson Engineering Inc Elevation 2808 KB 2801 GL
 Address 562 W State Rd 4 Olmitz KS 67564
 Co. Rep / Geo. Vern Schrag Rig H-D R.s #3
 Location: Sec. 27 Twp. 18s Rge. 29W Co. Lane State KS

Interval Tested 4272-4286 Zone Tested LKC "L"
 Anchor Length 14 Drill Pipe Run 4107 Mud Wt. 9.3
 Top Packer Depth 4268 Drill Collars Run 147 Vis 53
 Bottom Packer Depth 4272 Wt. Pipe Run 0 WL 6.8
 Total Depth 4286 Chlorides 2500 ppm System LCM 116

Blow Description IF- Weak Surface Blow
ISI- No Blow
FF- Built to Weak Surface Blow
FSI- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>8</u>	<u>Mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 8 BHT 109 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2141</u>	☒ Test 1250	T-On Location <u>18:48</u>
(B) First Initial Flow <u>15</u>	☒ Jars 250	T-Started <u>19:34</u>
(C) First Final Flow <u>16</u>	☒ Safety Joint 75	T-Open <u>21:45</u>
(D) Initial Shut-In <u>670</u>	☒ Circ Sub <u>NIC</u>	T-Pulled <u>23:00</u>
(E) Second Initial Flow <u>17</u>	☐ Hourly Standby	T-Out <u>1:02</u>
(F) Second Final Flow <u>21</u>	☒ Mileage <u>48 RIT</u> 74.40	Comments _____
(G) Final Shut-In <u>668</u>	☐ Sampler	☐ Ruined Shale Packer
(H) Final Hydrostatic <u>2043</u>	☐ Straddle	☐ Ruined Packer

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility

Sub Total 1649.40

Approved By Vern Schrag Our Representative Wm Ma...
 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. 49781

Well Name & No. WR Unit #1-27 Test No. DST #4 Date 2-13-13
 Company Larson Engineering Inc. Elevation 2808 KB 2801 GL
 Address 562 W State Rd 4 Olmitz KS 67564
 Co. Rep / Geo. Vern Schrag Rig H-D R.s #3
 Location: Sec. 27 Twp. 18s Rge. 29w Co. Lane State KS

Interval Tested 4346-4410 Zone Tested Marmanton
 Anchor Length 64 Drill Pipe Run 4199 Mud Wt. 9.2
 Top Packer Depth 4342 Drill Collars Run 147 Vis 60
 Bottom Packer Depth 4346 Wt. Pipe Run 0 WL 6.8
 Total Depth 4410 Chlorides 2500 ppm System LCM 116

Blow Description IF-Weak Surface Blow 1/2"
ISI- No Blow
FF-Weak Surface Blow Built to 2"
FSI- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>Mud with a Few Oil Spots</u>			<u>100</u>	
<u>120</u>	<u>Mud</u>			<u>100</u>	

Rec Total 125 BHT 111 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic 2200
 (B) First Initial Flow 17
 (C) First Final Flow 34
 (D) Initial Shut-In 278
 (E) Second Initial Flow 32
 (F) Second Final Flow 90
 (G) Final Shut-In 296
 (H) Final Hydrostatic 2109

☒ Test 1250
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub NIC
☐ Hourly Standby
☒ Mileage 418 RIT 74.40
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1649.40

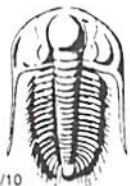
T-On Location 22:34
 T-Started 23:36
 T-Open 1:37
 T-Pulled 3:31
 T-Out 5:45
 Comments _____
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1649.40
 MP/DST Disc't _____

Initial Open 5
 Initial Shut-In 15
 Final Flow 30
 Final Shut-In 60

Approved By _____

Our Representative Will Mac

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. **49782**

Well Name & No. WR Unit #1-27 Test No. DST #5 Date 2-15-13
 Company Larson Engineering Elevation 2808 KB 2801 GL
 Address 562 W State Rd 4 Olmitz KS 67564
 Co. Rep / Geo. Vern Schrag Rig H-D Ris #3
 Location: Sec. 27 Twp. 18s Rge. 29w Co. Lane State KS

Interval Tested 4515-4568 Zone Tested Cherokee
 Anchor Length 53 Drill Pipe Run 4356 Mud Wt. 9.3
 Top Packer Depth 4511 Drill Collars Run 147 Vis 57
 Bottom Packer Depth 4515 Wt. Pipe Run 0 WL 8.8
 Total Depth 4568 Chlorides 2800 ppm System LCM 116

Blow Description IF-Weak Surface Blow 1/4"

ISI- No Blow

FF- No Blow

FSI- No Blow

Rec	Feet of	%gas	%oil	%water	%mud
<u>5</u>	<u>OCM</u>		<u>2</u>		<u>98</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 5 BHT 112 Gravity _____ API RW _____ @ _____ °F Chlorides _____ ppm

(A) Initial Hydrostatic <u>2314</u>	☒ Test <u>1250</u>	T-On Location <u>3:38</u>
(B) First Initial Flow <u>17</u>	☒ Jars <u>250</u>	T-Started <u>4:00</u>
(C) First Final Flow <u>18</u>	☒ Safety Joint <u>75</u>	T-Open <u>5:48</u>
(D) Initial Shut-In <u>575</u>	☒ Circ Sub <u>NIC</u>	T-Pulled <u>6:59</u>
(E) Second Initial Flow <u>20</u>	☐ Hourly Standby	T-Out <u>9:22</u>
(F) Second Final Flow <u>23</u>	☒ Mileage <u>48 RIT</u> 74.40	Comments _____
(G) Final Shut-In <u>535</u>	☐ Sampler	_____
(H) Final Hydrostatic <u>2266</u>	☐ Straddle	☐ Ruined Shale Packer
	☐ Shale Packer	☐ Ruined Packer
	☐ Extra Packer	☐ Extra Copies
	☐ Extra Recorder	Sub Total <u>0</u>
	☐ Day Standby	Total <u>1649.40</u>
	☐ Accessibility	MP/DST Disc't _____

Initial Open 5
 Initial Shut-In 15
 Final Flow 15
 Final Shut-In 30

Sub Total 1649.40

Approved By Vern Schrag

Our Representative Kim M

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CONSOLIDATED
ON Vail Services, LLC

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

256460

TICKET NUMBER 39314
LOCATION Oakley, KS
FOREMAN Kelly Gabel

FIELD TICKET & TREATMENT REPORT CEMENT

DATE	CUSTOMER #	WELL NAME & NUMBER		SECTION	TOWNSHIP	RANGE	COUNTY
2-5-13	4802	WR Unit 1-27		27	18	29	Lene
CUSTOMER			Dighton 2 S 2 W 34 N in + D				
Larsen Eng'r.				TRUCK #	DRIVER	TRUCK #	DRIVER
MAILING ADDRESS				405	Jerry P		
				566	Travis Williams		
CITY		STATE	ZIP CODE				

JOB TYPE <u>Surface</u>	HOLE SIZE <u>12 1/4</u>	HOLE DEPTH <u>283</u>	CASING SIZE & WEIGHT <u>8 7/8 24#</u>
CASING DEPTH <u>283</u>	DRILL PIPE _____	TUBING _____	OTHER _____
SLURRY WEIGHT <u>148</u>	SLURRY VOL _____	WATER gal/sk _____	CEMENT LEFT in CASING <u>20'</u>
DISPLACEMENT <u>2000</u> <u>16 3/4</u>	DISPLACEMENT PSI _____	MIX PSI _____	RATE _____

REMARKS: Safety meeting, rigged up on H.D. drilling #3, hooked up to circulate, mixed 150 JKS com 3%CC 2%gel, displaced down with 16 3/4 bbl water, shut in, washed out pumps & lines rigged down.

Cement did circulate

Approx 5 bbl to pit

Thank You
Kelly & crew

[illegible]

Ravin 3737

2:00 PM

AUTHORIZTION

TITLE

ESTIMATED TOTAL	4601.46
DATE	2-5-13

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

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

FIELD TICKET & TREATMENT REPORT

CEMENT

TICKET NUMBER 39319

LOCATION Oakley, KS

FOREMAN Kelly Gade

DATE	CUSTOMER #	WELL NAME & NUMBER	SECTION	TOWNSHIP	RANGE	COUNTY
2-16-13	4802	WR Unit 1-27	37	18	39	Lane
CUSTOMER			Dignior			
MAILING ADDRESS			TRUCK #	DRIVER	TRUCK #	DRIVER
Larsen Expl.			399	Damon M		
			528	Jordan L		
CITY	STATE	ZIP CODE				

JOB TYPE <u>PTA</u>	HOLE SIZE <u>7 1/8</u>	HOLE DEPTH _____	CASING SIZE & WEIGHT _____
CASING DEPTH _____	DRILL PIPE _____	TUBING _____	OTHER _____
SLURRY WEIGHT <u>142</u>	SLURRY VOL _____	WATER gal/sk _____	CEMENT LEFT in CASING _____
DISPLACEMENT _____	DISPLACEMENT PSI _____	MIX PSI _____	RATE _____

REMARKS: safety meeting, rigged up on HD drilling #3, mixed cement plugs & displaced.

50.5kS @ 2270

80 SKS @ 13.50

505K5 @ 700

50.5k3 @ 310

20 SKS @ 60

30 R4

Thank You
Kathy & crew

[illegible]

Rayin 3737

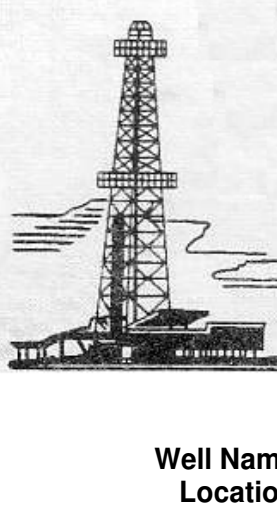
4:30 PM

AUTHORIZATION

TITLE

SALES TAX	2164.57
ESTIMATED TOTAL	16650.96
DATE 2-16-13	

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



WELLSITE GEOLOGIST'S REPORT

VERNON C. SCHRAG
CONSULTANT GEOLOGIST



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

Well Name: WR Unit #1-27
Location: NE NE SE NE SEC. 27-18s-29w
Licence Number: API: 15-101-22421
Spud Date: February 5, 2013
Surface Coordinates: 1485' FNL & 1' FEL

Region: Lane Co., KS
Drilling Completed: February 16, 2013

Bottom Hole Coordinates: 2801' K.B. Elevation (ft): 2808'
Ground Elevation (ft): 3800' To: RTD Total Depth (ft): 4645'
Logged Interval (ft): 3800' Formation: D&A Mississippi
Type of Drilling Fluid: Chemical Premix (Displaced)
Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR:

Company: Larson Engineering Inc.
Address: 562 West State Road 4
Olmits, KS 67564-8561

DRILLING CONTRACTOR:

H. D. Drilling, LLC, Rig #3 (#33935)

DP 4.5" XH (16.6#); DC 6.25" x 2.25" x 560', Kelly 40.30', Tool Joint 5.5" ; Bit: JZ-HA21 down to 3987', JZ-HA20 to RTD, 7-7/8", jets 15-15-15; rpm 80, WOB 35k; Kelly Bushing 7' above ground level; LeWayne "Lew" Tresner (tool pusher).

CASING:

8-5/8" (20#) casing at 281'

CIRCULATION SYSTEM:

Continental EMSCO D-300, duplex, 6 x 14, 60 spm, Chemical, premix, displaced about 3400'; earth pits, Morgan Mud, Inc., David Lines, Cade Lines.

OPEN HOLE LOGS:

DN, DI (SP) (Run-1); ML (Run-2); No Sonic; 5" detail LTD-3600; 2" DI to surface casing; LogTech-Pioneer Wireline, Hays, KS, D. Martin, Log total depth (4649') was four feet long to rotary total depth (4645').

Had difficulty getting ML run down through 3700. Required several attempts.

DRILL STEM TEST #1:

LKC "I": Interval: 4181-4213 (32'); Blow: weak incr 4" IFP, no RB, BOB 17 min FFP, weak surf RB 12 min FSIP; Times: 5-15-15-30; Recovery: no GIP, 306' TF: 15' WMCO (72%O, 8%W, 20%M; grav 37), 47' OWCM (7%O, 2%W, 91%M), 62' OWCM (2%O, 48%W, 50%M), 62' WM w/skim of oil (25%W, 75%M), 120' WM (38%W, 62%M); Pressures: HP: 2100-2055, SIP: 598-585, FP: 26-71, 76-154; BHT: 118 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.

DRILL STEM TEST #2:

LKC: "K": Interval: 4236-4260 (24'); Blow: weak incr 4.5" IFP, no RB, BOB 14 min FFP, no RB; Times: 5-15-15-30; Recovery: 304' TF: 60' SWCM (4%W, 96%M), 62' WCM (18%W, 82%M), 62' WCM (38%W, 62%M), 120' MW (65%W, 35%M, Rw 1.0 at 34 F, eq. chlorides 12,800 ppm); Pressures: HP: 2131-2015; SIP: 633-627, FP: 21-86, 89-153; BHT: 118 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.

DRILL STEM TEST #3:

LKC "Lower K, L": Interval: 4272-4286 (14'); Blow: weak surf blow thru; Times: 5-15-15-30; Recovery: 8' mud (100%M, no show); Pressures: HP: 2141-2043; SIP: 670-668, FP: 15-16, 17-21; BHT: 109 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.

DRILL STEM TEST #4:

Marmaton: Interval: 4346-4410 (64'); Blow: weak incr 1/2" IFP, no RB, weak incr 2" FFP, no RB; Times: 5-15-30-60; Recovery: 125' mud w/few oil spots on top; Pressures: HP: 2200-2109; SIP: 278-296; FP: 17-34, 32-90; BHT: 111 F; Unusual charts suggest two zones: Trilobite Testing, Inc., Scott City, KS, Will MacLeon.

DRILL STEM TEST #5:

Cherokee: Interval: 4515-4568 (53'); Blow: weak surf IFP, no RB, no blow FFP, no RB; Times: 5-15-15-30; Recovery: 5' SOCM (2%O, 98%M); Pressures: HP: 2314-2266, SIP: 575-535, FP: 17-18, 20-23; BHT: 112 F; Trilobite Testing, Inc., Scott City, KS, Will MacLeon.

ROP (min/ft) Five Ten	DST	Lithology	Depth Feet to 1000 ft	Geological Descriptions	Total Gas TG (units) Fifty One
0 START DIGITAL ROP 02/09-12:01 pm					0 Hot Wire 100
			3700		CALL GEO. 3397, 11:21pm 02/08/2013 ANHYDRITE 2138 (+670) B/ANHY 2165 (+641) SAMPLES WERE REQUESTED BY STATE SURVEY. WERE SUPERVISED BY GEO. TO INSURE ACCURATE LABELING & SUBMITTED.
			3750		MORGAN MUD: 3663: 02/09-12pm: VIS 60, WT 8.7, FIL 6.5, CHL 1900, LCM 1F.
0 START 10' SAMPLES ROP			3800	Shale: green, gray; coarse pyrites; LS: lt-md gray; vf-xtal; argill-alkali in part; shell impressions; no visible porosity; N.S. LS: It gray to lt brown; mic-vf xtal; chalky; no visible porosity; N.S. LS: It grayish-brown; vf-xtal; sli fos; rough textured in part; cherty; poor porosity; N.S., 3850. LS: It brown, mottled dk brown in part; vf-xtal; dark portions prob shaley; no visible porosity; N.S. LS: It brown to grayish brown; vf-xtal; dense; cherty; no visible porosity; N.S. LS: lt-md grayish brown; mic-vf xtal; chalky in part; sli fos; no visible porosity; N.S. LS: white to lt gray; mic-vf xtal; soft chalk in part; no apparent porosity; N.S.	0 Hot Wire 100
			3900	Shale: gray, green; coarse pyrites; LS: It grayish-brown w/dk brown specks; vf-xtal; dense; no visible porosity; N.S. HEEBNER 3918 (-1110) Shale: black; few chips 3930. LS: indistinct; Shale: gray, dk gray, brownish; limey; pyritic; LS: white to lt grayish brown; mic-vf xtal; chalky; dull mineral fluor; scattered pin-point porosity; N.S. LS: as above; Shale: gray; LANSING 3960 (-1152) LS: It gray; vf-xtal; sli oolitic; dense to chalky; scattered pin-point and shallow vugular porosity; dull mineral fluor; N.S. LS: as above but incr chalk; Shale: dk gray; LS: It gray w/dk gray pellets & grains; vf-xtal; dense; no visible porosity; N.S. LS: It brown; vf-xtal; mostly dense; chalky in part; poor vug porosity at best; N.S. LS: It brown to lt gray; mic-vf xtal; dense to sli chalky in part; no visible porosity; N.S. LS: as above; LS: It brown, lt gray; mic-vf xtal; dense; sli shaley in part; no visible porosity; N.S. LS: It brown; vf-xtal; some rough-textured may indicate coarse vugular; N.S., 4065 thru 30 60, then 1 chip vug porosity w/dk brn to black stain; no visible oil, 4070. LS: It brown to lt gray; vf xtal; dense to chalky in part; minor white to gray opa chert; no visible porosity; N.S. LS: It to dk brown; vf-xtal; coarsely oomoldic; fair oomoldic porosity; N.S. 4074-30 min. LS: lt-md brown; vf-xtal; med-coarse oomoldic; with much white, soft chalk; N.S. LS: white to lt brown; vf-xtal; dense to chalky in part; minor semi-trans chert; no visible porosity; N.S. LS: white to lt brown; mic-vf xtal; seemingly more chalky than above; N.S. LS: It brown w/lt gray portions; mic-vf xtal; no visible porosity; N.S. MUNCIE CREEK 4134 (-1326) Shale: black; carbon; trace 4150. LS: dk grayish-brown w/ like colored chert; vf-xtal; dense, platy; sli fos; no vis porosity; N.S. Shale: gray; LS: It brown to lt gray; mic-vf xtal; no visible grains; dense to sli chalky; no visible porosity; N.S. LS: It gray; vf-xtal; dense to sli chalky; trace gray chert; no visible porosity; N.S. LS: as above; LS: dk brown; vf-xtal; dense; N.S. LS: It grayish brown; mic-vf xtal; dense to sli chalky; no visible porosity; N.S. LS: It grayish brown; vf-xtal; trace w/speckled stain; does not yield oil; no odor or fluor; 1 chip 4210. LS: It gray; mic-vf xtal; trace fos-fragmental w/dry stain; no wet show, no odor; no fluor; 1 chip 4213-30 min. LS: It gray; vf-xtal; fine to med oolitic to oomoldic; good oomoldic porosity; N.S. 4225-30 min. LS: It gray; vf-xtal; dense to chalky; scattered pin point porosity; N.S. Shale: poorly represented; LS: dk-grayish brown; mic-vf xtal; dense; N.S. LS: white to gray; mic-vf xtal; much white, soft marl w/bright fluor; minor oomoldic w/trc dk brn stain & sli show oil; no odor; 4260-30. LS: white to lt gray; mic-vf xtal; dense to chalky; no visible porosity; N.S. LS: as above; HUSHPOCKNEY 4280 (-1472) Shale: black; carbon; pyritic; possible trace 4281-60m; few chips 4186-30m. LS: md-dk grayish brown; vf-xtal; dense; no visible porosity; N.S. LS: white to lt brn; mic-vf xtal; chalky oolite; v-poor int oil porosity; N.S. 4304-30m. LS: off-white, lt-md brown; mic-vf xtal; chalky in part; mostly dense; sli granular; poor porosity; N.S. LS: as above; LS: md-dk brown; vf-xtal; dense; sli shaley; no visible porosity; N.S. LS: It brown w/trc dk gray pellets; vf xtal; fine grainstone; oolitic in part; sli chalky; trc glauc; poor inter-grain porosity; N.S. LS: white to pinkish-brown; mic-vf xtal; chalky; granular; trc pin chert; no visible porosity; N.S. LS: lt-grayish brown to med brown; vf-xtal; dense; no visible porosity; N.S. LS: white to lt gray; mic-vf xtal; chalky; poor porosity; N.S. LS: white to lt gray; mic-vf xtal; dense to chalky; no visible porosity; N.S. LS: white to lt grayish brown; vf-xtal; fos-granular; trc orange chert; chalky; tight int gran porosity; trc lt brn stain & sli show oil; no odor; 4410 stop, again 4410-30m. LS: white to lt grayish brown; vf-xtal; mostly dense; no visible porosity; N.S., 4410-60m. LS: It brown to lt grayish-brown; vf-xtal; dense; trc orange crinoid; no visible porosity; N.S. LS: white to brown; mic-vf xtal; sli oolitic; chalky; no visible porosity; N.S. LS: white to brown; mic-vf xtal; dense to chalky; trc gray chert; no visible porosity; N.S. PAWNEE 4440 (-1632) LS: It brown; vf-xtal; dense; trc gray chert; no visible porosity; N.S. LS: lt-md brown; vf-xtal; dense; minor gray & smokey chert; no visible porosity; N.S. LS: dk brown; vf-xtal; dense; N.S. LS: lt-md brown; vf-xtal; chalky in part; trace coral fos; no apparent porosity; N.S., 4490. Shale: black; carbon; 4500. FT. SCOTT 4492 (-1684) LS: dk grayish brown, mottled lt brown; vf-xtal; dense; sli oolitic; no visible porosity; N.S. LS: lt-md brown; vf-xtal; dense; no visible porosity; N.S. LS: lt-md brown; vf-xtal; dense to sli chalky; no visible porosity; N.S. CHEROKEE 4517 (-1709) LS: lt-brown; mic-vf xtal; dense to chalky in part; trc gray chert; no visible porosity; N.S. LS: It brown; mic-vf xtal; firm but chalky; no visible porosity; N.S. LS: lt-brown; vf-xtal; dense to sli chalky; no visible porosity; N.S. LS: as above; LS: It brown; vf-xtal; trc tight vug porosity w/lt brown stain & sli show oil; no odor; 4568, 4568-30m. Shale/Siltst: gray, brown; calc in part; trc glauc; trc 4568-60m; incr after; Shale: conglomeritic; gray, green, maroon; orange cherts; pyritic; more silty; 4590. MISSISSIPPI 4577 (-1769) LS: It grayish brown; vf-xtal; chalky; portions; includes brn semi-trans chert; finely oolitic in part; no visible porosity; N.S., 4500. LS: as above; Dol: lt-md brown; f-xtal; sli sucrosic; tight int xtal porosity; N.S., starts 4620; LS: It brown, mottled dk brn; vf-xtal; includes v-fos opaq chert, tight int xtal porosity; N.S. Dol: v-lt-brown; f-xtal; tight int xtal porosity; N.S. Dol: as above; LS: lt-md brown; v-f xtal; dolomitic; dense; v-poor int xtal porosity; N.S. ROTARY TOTAL DEPTH 4645 (-1837)	0 Hot Wire 100
			4500		DST #1: I-ZONE: 4181-4213: WK BLOW, BOB 17 MIN FFP, 5-15-15-30; NO GIP; 15' WMCO, 291' SOCWM; SIP: 598-585, FP: 26-71, 76-154.
			4550		DST #2: K-ZONE: 4236-4260: BLOW 4" IFP, BOB 14 MIN FFP, 5-15-15-30; 182' WM, 120' MW; SIP: 633-627, FP: 21-86, 89-153.
			4600		DST #3: LOWER-K, MID-CRK: 4272-4286: WK BLOW DIED; 5-15-15-30; 8' MUD; SIP: 670-668, FP: 15-16, 17-21.
			4650		DST #4: MARMATON: 4346-4410; 1/2" BLOW; 5-15-30-60; 125' MUD; SIP: 278- 296, FP: 17-34, 32-90.
			4700		DST #5: CHER: 4515-4568: WK BLOW; 5-15-15-30; 5' MUD; SIP: 575-535; FP: 17-18, 20-23.
			4750		THERE WAS DIFFICULTY GETTING ML RUN DOWN THRU 3700.
			4800		PIONEER ENERGY SERVICES LTD 4649

Conservation Division
Finney State Office Building
130 S. Market, Rm. 2078
Wichita, KS 67202-3802



Phone: 316-337-6200
Fax: 316-337-6211
<http://kcc.ks.gov/>

Mark Sievers, Chairman
Thomas E. Wright, Commissioner
Shari Feist Albrecht, Commissioner

Sam Brownback, Governor

June 04, 2013

Thomas Larson
Larson Engineering, Inc. dba Larson Operating
Company
562 W STATE RD 4
OLMITZ, KS 67564-8561

Re: ACO1
API 15-101-22421-00-00
WR Unit 1-27
NE/4 Sec.27-18S-29W
Lane County, Kansas

Dear Production Department:

We are herewith requesting that the Well Completion Form ACO-1 and attached information for the subject well be held confidential for a period of two years.

Should you have any questions or need additional information regarding subject well, please contact our office.

Respectfully,
Thomas Larson