



## DRILL STEM TEST REPORT

Prepared For: **Raymond Oil Company**

PO Box 48788  
Wichita, KS 67201

ATTN: Kevin Kessler

### **Michaelis #3**

### **3-14s-32w Logan,KS**

Start Date: 2014.08.07 @ 02:39:38

End Date: 2014.08.07 @ 11:19:08

Job Ticket #: 59019                      DST #: 1

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

Printed: 2014.08.13 @ 11:04:26



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Raymond Oil Company  
 PO Box 48788  
 Wichita, KS 67201  
 ATTN: Kevin Kessler

**3-14s-32w Logan,KS**

**Michaelis #3**

Job Ticket: 59019

**DST#: 1**

Test Start: 2014.08.07 @ 02:39:38

## GENERAL INFORMATION:

Formation: **Lansing 35**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 05:03:08

Time Test Ended: 11:19:08

Test Type: Conventional Bottom Hole (Initial)

Tester: Brandon Turley

Unit No: 60

Interval: **3930.00 ft (KB) To 3960.00 ft (KB) (TVD)**

Reference Elevations: 2885.00 ft (KB)

Total Depth: 3960.00 ft (KB) (TVD)

2874.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 11.00 ft

**Serial #: 8373**

**Inside**

Press@RunDepth: 291.42 psig @ 3931.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.07 End Date: 2014.08.07

Last Calib.: 2014.08.07

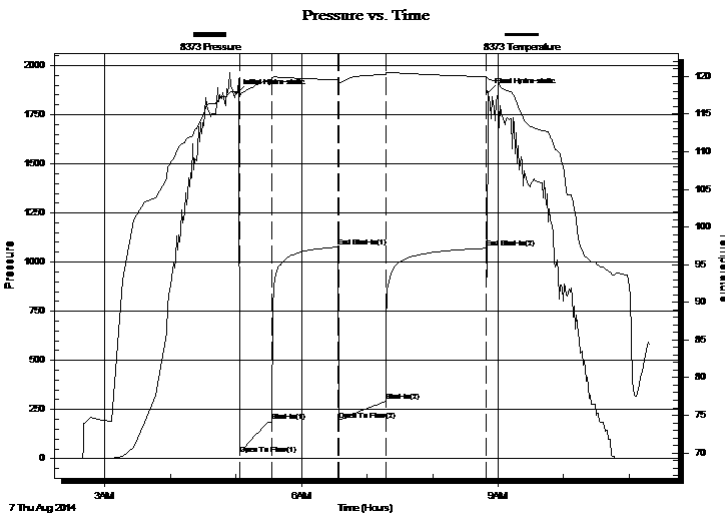
Start Time: 02:39:43 End Time: 11:19:08

Time On Btm: 2014.08.07 @ 05:00:38

Time Off Btm: 2014.08.07 @ 08:50:38

TEST COMMENT: IF: BOB in 20 min.  
 IS: No return.  
 FF: BOB in 40 min.  
 FS: No return.

## PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1857.68	118.00	Initial Hydro-static
3	24.57	117.35	Open To Flow (1)
33	190.08	119.62	Shut-In(1)
93	1076.89	119.56	End Shut-In(1)
94	196.66	119.19	Open To Flow (2)
137	291.42	120.25	Shut-In(2)
229	1070.61	119.97	End Shut-In(2)
230	1862.91	119.76	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
365.00	mcw 80%w 20%m	1.80
200.00	nw 50%w 50%m	2.81

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Raymond Oil Company

**3-14s-32w Logan, KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 59019

**DST#: 1**

ATTN: Kevin Kessler

Test Start: 2014.08.07 @ 02:39:38

## Tool Information

Drill Pipe:	Length: 3552.00 ft	Diameter: 3.80 inches	Volume: 49.83 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 365.00 ft	Diameter: 2.25 inches	Volume: 1.80 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 51.63 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	15.00 ft			String Weight: Initial 66000.00 lb
Depth to Top Packer:	3930.00 ft			Final 74000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	30.00 ft			
Tool Length:	58.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Stubb	1.00			3903.00	
Shut In Tool	5.00			3908.00	
Hydraulic tool	5.00			3913.00	
Jars	5.00			3918.00	
Safety Joint	3.00			3921.00	
Packer	5.00			3926.00	28.00 Bottom Of Top Packer
Packer	4.00			3930.00	
Stubb	1.00			3931.00	
Recorder	0.00	8373	Inside	3931.00	
Recorder	0.00	8166	Outside	3931.00	
Perforations	24.00			3955.00	
Bullnose	5.00			3960.00	30.00 Bottom Packers & Anchor

**Total Tool Length: 58.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 59019

**DST#: 1**

ATTN: Kevin Kessler

Test Start: 2014.08.07 @ 02:39:38

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

18000 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.18 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3000.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
365.00	mcw 80%w 20%m	1.795
200.00	mw 50%w 50%m	2.805

Total Length: 565.00 ft      Total Volume: 4.600 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

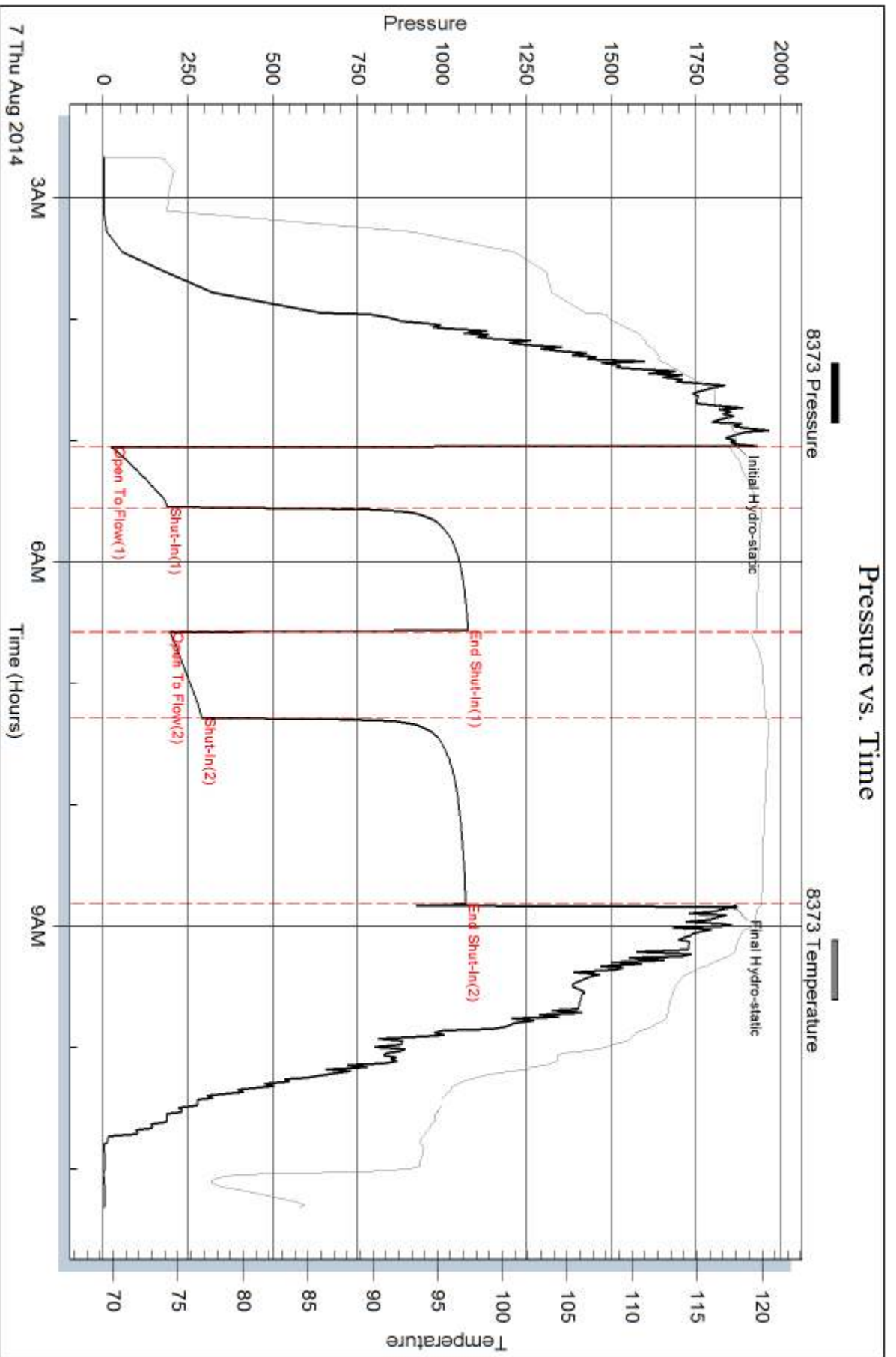
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .34@78=18000

### Pressure vs. Time

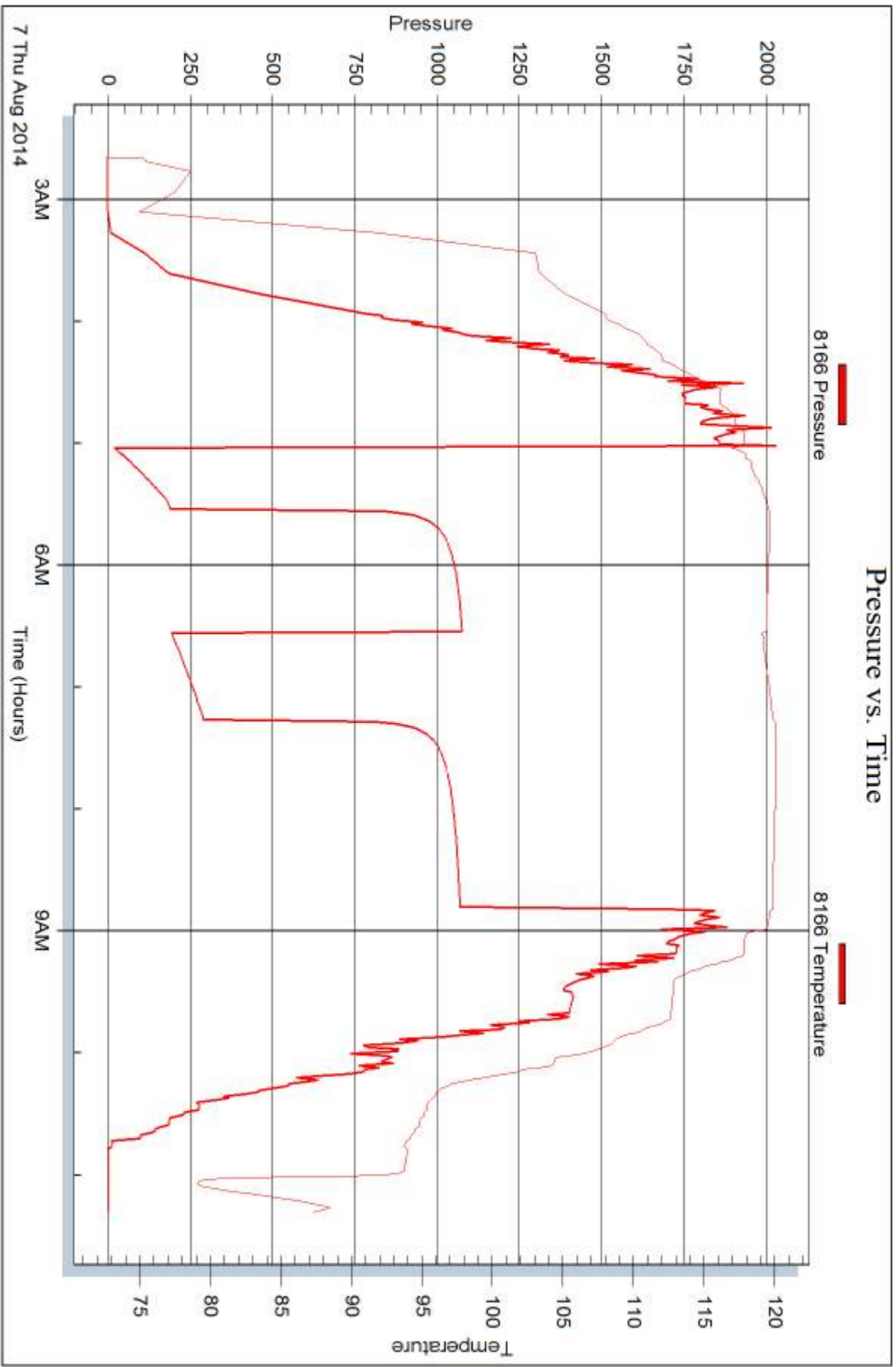


Serial #: 8166

Outside Raymond Oil Company

Michaelis #3

DST Test Number: 1



Trilobite Testing, Inc

Ref. No: 59019

Printed: 2014.08.13 @ 11:04:27



## DRILL STEM TEST REPORT

Prepared For: **Raymond Oil Company**

PO Box 48788  
Wichita, KS 67201

ATTN: Kevin Kessler

### **Michaelis #3**

### **3-14s-32w Logan,KS**

Start Date: 2014.08.08 @ 02:12:01

End Date: 2014.08.08 @ 10:01:31

Job Ticket #: 59020                      DST #: 2

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

Printed: 2014.08.13 @ 11:03:48





**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Raymond Oil Company  
 PO Box 48788  
 Wichita, KS 67201  
 ATTN: Kevin Kessler

**3-14s-32w Logan,KS**

**Michaelis #3**

Job Ticket: 59020

**DST#: 2**

Test Start: 2014.08.08 @ 02:12:01

## GENERAL INFORMATION:

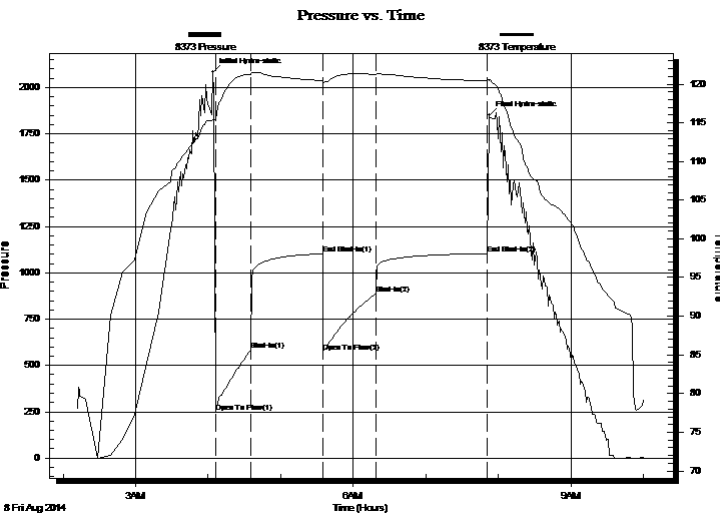
Formation: **Lansing 70-90**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 04:06:01  
 Time Test Ended: 10:01:31  
 Interval: **3990.00 ft (KB) To 4030.00 ft (KB) (TVD)**  
 Total Depth: 4030.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Good  
 Test Type: Conventional Bottom Hole (Reset)  
 Tester: Brandon Turley  
 Unit No: 60  
 Reference Elevations: 2885.00 ft (KB)  
 2874.00 ft (CF)  
 KB to GR/CF: 11.00 ft

## Serial #: 8373

Inside

Press@RunDepth: 888.17 psig @ 3991.00 ft (KB) Capacity: 8000.00 psig  
 Start Date: 2014.08.08 End Date: 2014.08.08 Last Calib.: 2014.08.08  
 Start Time: 02:12:06 End Time: 10:01:30 Time On Btm: 2014.08.08 @ 04:04:01  
 Time Off Btm: 2014.08.08 @ 07:52:31

TEST COMMENT: IF: BOB in 2 1/2 min.  
 IS: No return.  
 FF: BOB in 4 min.  
 FS: No return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2081.55	115.43	Initial Hydro-static
2	248.71	115.30	Open To Flow (1)
32	583.92	121.30	Shut-In(1)
91	1103.31	120.44	End Shut-In(1)
91	574.04	120.27	Open To Flow (2)
135	888.17	121.26	Shut-In(2)
227	1104.50	120.42	End Shut-In(2)
229	1849.63	120.52	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
1505.00	water 100%w	17.79
285.00	mcw 90%w 10%m	4.00
140.00	mcw 60%w 40%m	1.96

\* Recovery from multiple tests

## Gas Rates

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





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 59020

**DST#: 2**

ATTN: Kevin Kessler

Test Start: 2014.08.08 @ 02:12:01

## Tool Information

Drill Pipe:	Length: 3611.00 ft	Diameter: 3.80 inches	Volume: 50.65 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 25000.00 lb
Drill Collar:	Length: 365.00 ft	Diameter: 2.25 inches	Volume: 1.80 bbl	Weight to Pull Loose: 85000.00 lb
			<u>Total Volume: 52.45 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	14.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	3990.00 ft			Final 80000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	40.00 ft			
Tool Length:	68.00 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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Stubb	1.00			3963.00	
Shut In Tool	5.00			3968.00	
Hydraulic tool	5.00			3973.00	
Jars	5.00			3978.00	
Safety Joint	3.00			3981.00	
Packer	5.00			3986.00	28.00 Bottom Of Top Packer
Packer	4.00			3990.00	
Stubb	1.00			3991.00	
Recorder	0.00	8373	Inside	3991.00	
Recorder	0.00	8166	Outside	3991.00	
Perforations	1.00			3992.00	
Change Over Sub	1.00			3993.00	
Drill Pipe	31.00			4024.00	
Change Over Sub	1.00			4025.00	
Bullnose	5.00			4030.00	40.00 Bottom Packers & Anchor

**Total Tool Length: 68.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 59020

**DST#: 2**

ATTN: Kevin Kessler

Test Start: 2014.08.08 @ 02:12:01

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

47000 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 7.98 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 3200.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1505.00	water 100%w	17.786
285.00	mcw 90%w 10%m	3.998
140.00	mcw 60%w 40%m	1.964

Total Length: 1930.00 ft      Total Volume: 23.748 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

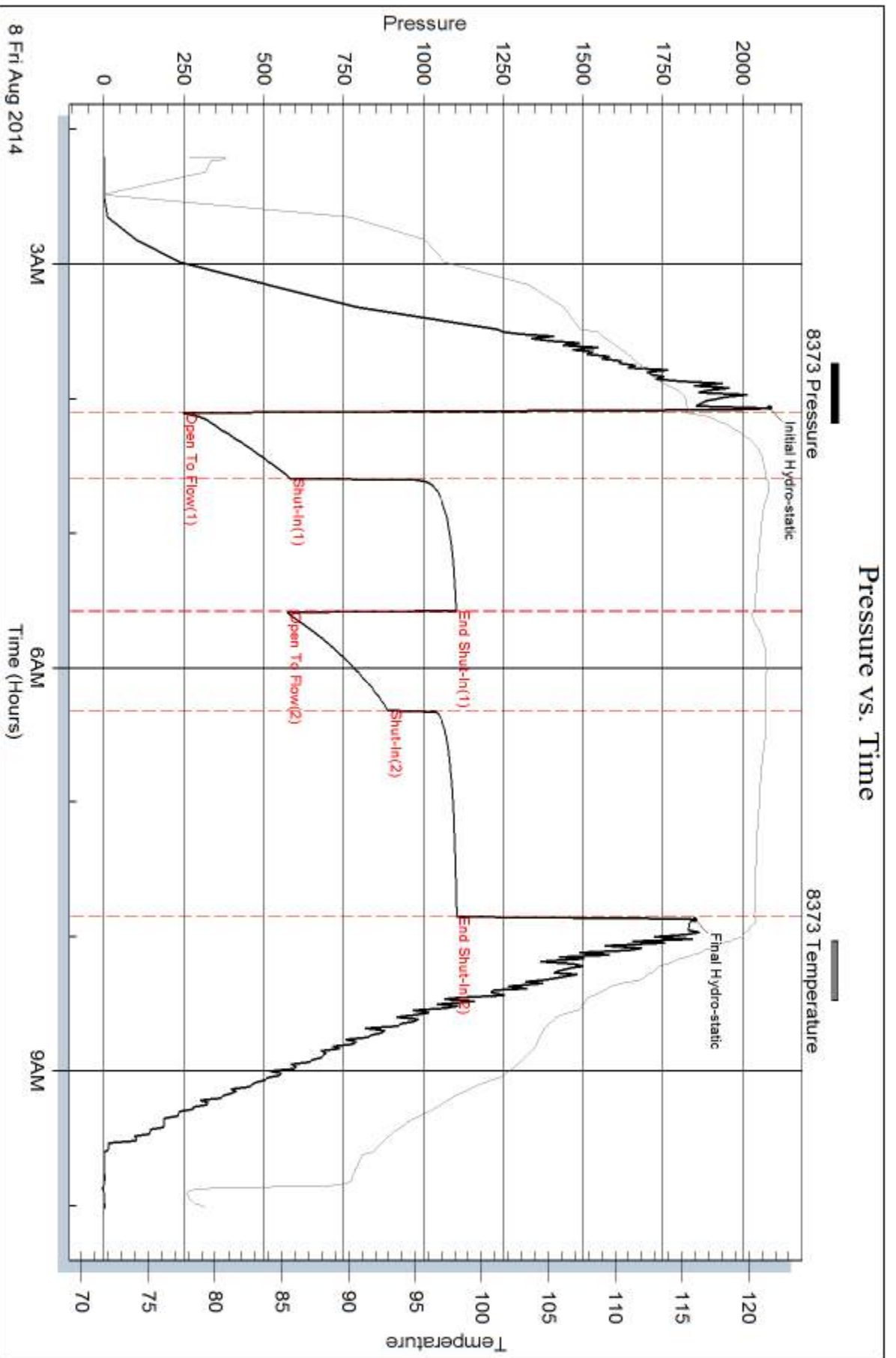
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: .14@80=47000

### Pressure vs. Time

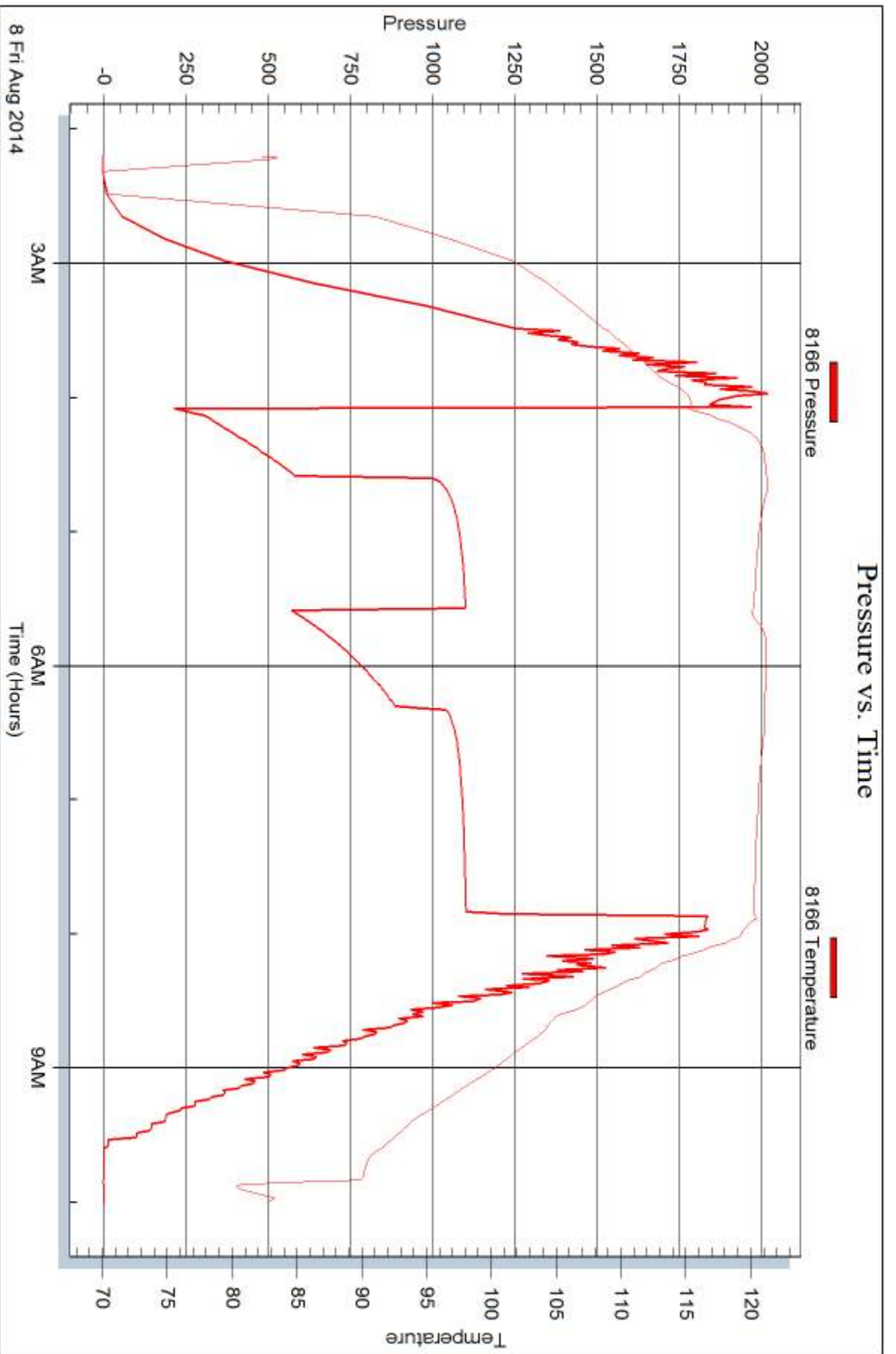


Serial #: 8166

Outside Raymond Oil Company

Michaelis #3

DST Test Number: 2



Trilobite Testing, Inc

Ref. No: 59020

Printed: 2014.08.13 @ 11:03:49



## DRILL STEM TEST REPORT

Prepared For: **Raymond Oil Company**

PO Box 48788  
Wichita, KS 67201

ATTN: Kevin Kessler

### **Michaelis #3**

#### **3-14s-32w Logan,KS**

Start Date: 2014.08.09 @ 07:33:00

End Date: 2014.08.09 @ 15:38:00

Job Ticket #: 56670                      DST #: 3

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

Printed: 2014.08.13 @ 11:00:04



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56670

**DST#: 3**

ATTN: Kevin Kessler

Test Start: 2014.08.09 @ 07:33:00

## GENERAL INFORMATION:

Formation: **Lansing 220 " L"**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 10:01:00

Time Test Ended: 15:38:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 60

**Interval: 4185.00 ft (KB) To 4210.00 ft (KB) (TVD)**

Reference Elevations: 2885.00 ft (KB)

Total Depth: 4210.00 ft (KB) (TVD)

2874.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8166 Outside**

Press@RunDepth: 66.88 psig @ 4186.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.09

End Date:

2014.08.09

Last Calib.:

2014.08.09

Start Time:

07:33:05

End Time:

15:37:59

Time On Btm:

2014.08.09 @ 10:00:30

Time Off Btm:

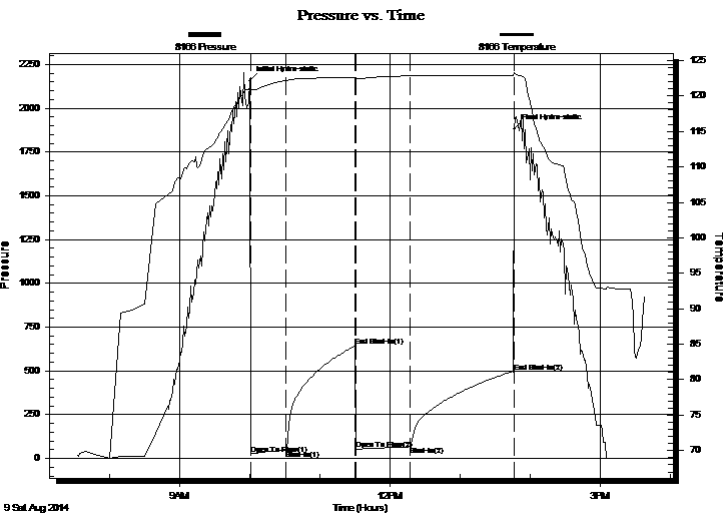
2014.08.09 @ 13:46:30

TEST COMMENT: 30: Weak Surface blow build to 1 1/2"

60: No Return.

45: No Blow .

90: No Return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2155.36	121.22	Initial Hydro-static
1	22.66	120.54	Open To Flow (1)
31	47.26	122.16	Shut-In(1)
90	643.22	122.56	End Shut-In(1)
91	52.53	122.32	Open To Flow (2)
137	66.88	122.82	Shut-In(2)
226	493.08	122.90	End Shut-In(2)
226	1882.85	123.31	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
95.00	mud	0.47

## Gas Rates

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

\* Recovery from multiple tests







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Raymond Oil Company

**3-14s-32w Logan, KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56670

**DST#: 3**

ATTN: Kevin Kessler

Test Start: 2014.08.09 @ 07:33:00

## Tool Information

Drill Pipe:	Length: 3804.00 ft	Diameter: 3.80 inches	Volume: 53.36 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: 30000.00 lb
Drill Collar:	Length: 365.00 ft	Diameter: 2.25 inches	Volume: 1.80 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 55.16 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	12.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4185.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	25.00 ft			
Tool Length:	53.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Stubb	1.00			4158.00	
Shut In Tool	5.00			4163.00	
Hydraulic tool	5.00			4168.00	
Jars	5.00			4173.00	
Safety Joint	3.00			4176.00	
Packer	5.00			4181.00	28.00 Bottom Of Top Packer
Packer	4.00			4185.00	
Stubb	1.00			4186.00	
Recorder	0.00	8373	Inside	4186.00	
Recorder	0.00	8166	Outside	4186.00	
Perforations	19.00			4205.00	
Bullnose	5.00			4210.00	25.00 Bottom Packers & Anchor

**Total Tool Length: 53.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56670

**DST#: 3**

ATTN: Kevin Kessler

Test Start: 2014.08.09 @ 07:33:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 55.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 10.38 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6400.00 ppm

Filter Cake: 2.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbl
95.00	mud	0.467

Total Length: 95.00 ft      Total Volume: 0.467 bbl

Num Fluid Samples: 0

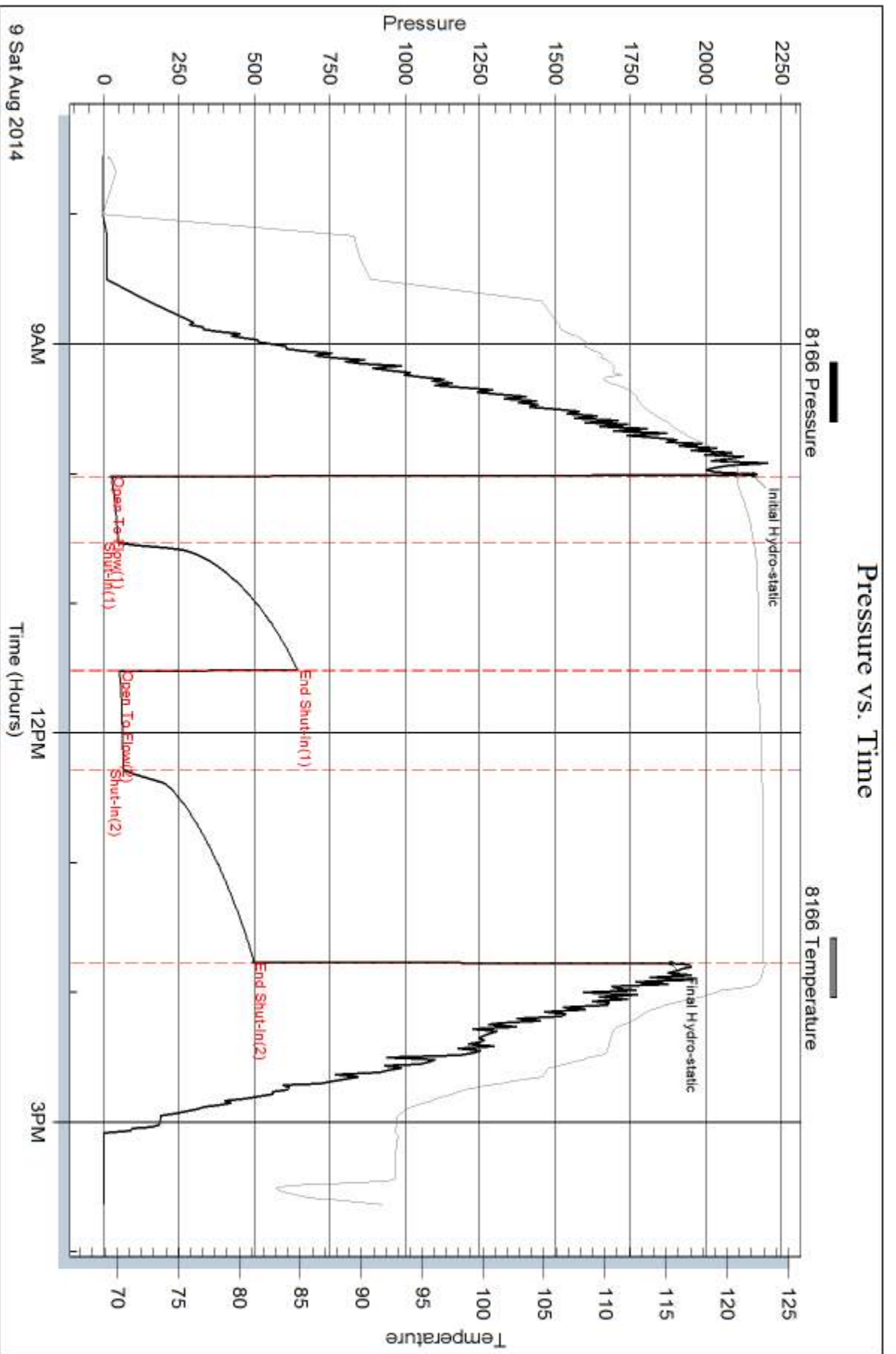
Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:



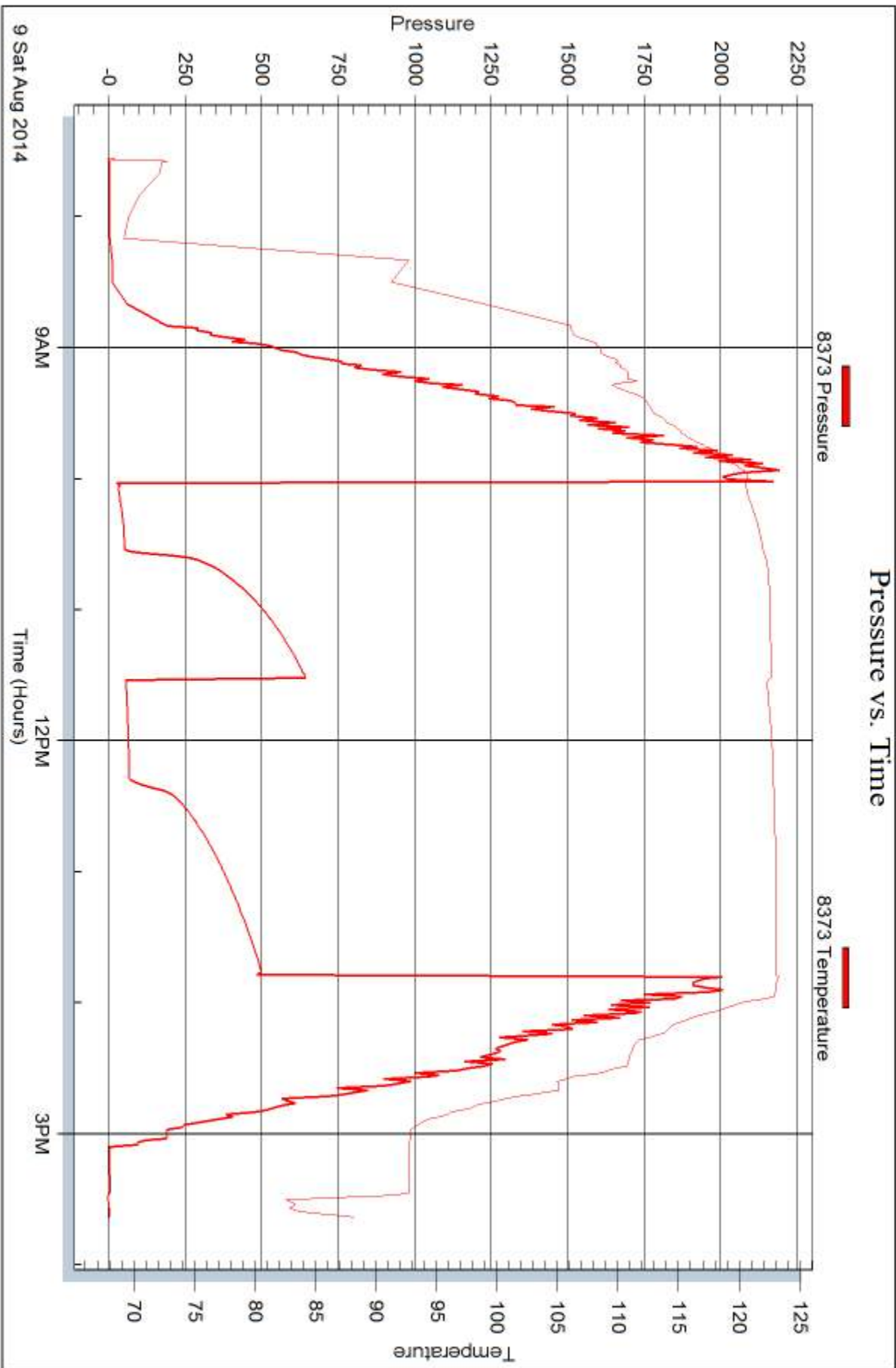
Serial #: 8373

Inside

Raymond Oil Company

Michaels #3

DST Test Number: 3





## DRILL STEM TEST REPORT

Prepared For: **Raymond Oil Company**

PO Box 48788  
Wichita, KS 67201

ATTN: Kevin Kessler

**Michaelis #3**

**3-14s-32w Logan,KS**

Start Date: 2014.08.10 @ 21:30:00

End Date: 2014.08.11 @ 05:42:00

Job Ticket #: 56671                      DST #: 4

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

Printed: 2014.08.13 @ 10:58:59

Raymond Oil Company

3-14s-32w Logan,KS

Michaelis #3

DST # 4

Cherokee/Johnson

2014.08.10



**TRILOBITE TESTING, INC.**

# DRILL STEM TEST REPORT

Raymond Oil Company

**3-14s-32w Logan, KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56671

**DST#: 4**

ATTN: Kevin Kessler

Test Start: 2014.08.10 @ 21:30:00

## GENERAL INFORMATION:

Formation: **Cherokee/Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 23:56:30

Time Test Ended: 05:42:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 60

**Interval: 4440.00 ft (KB) To 4530.00 ft (KB) (TVD)**

Reference Elevations: 2885.00 ft (KB)

Total Depth: 4530.00 ft (KB) (TVD)

2874.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8373**

**Inside**

Press@RunDepth: 48.72 psig @ 4441.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.10

End Date:

2014.08.11

Last Calib.: 2014.08.11

Start Time: 21:30:05

End Time:

05:41:59

Time On Btm: 2014.08.10 @ 23:56:00

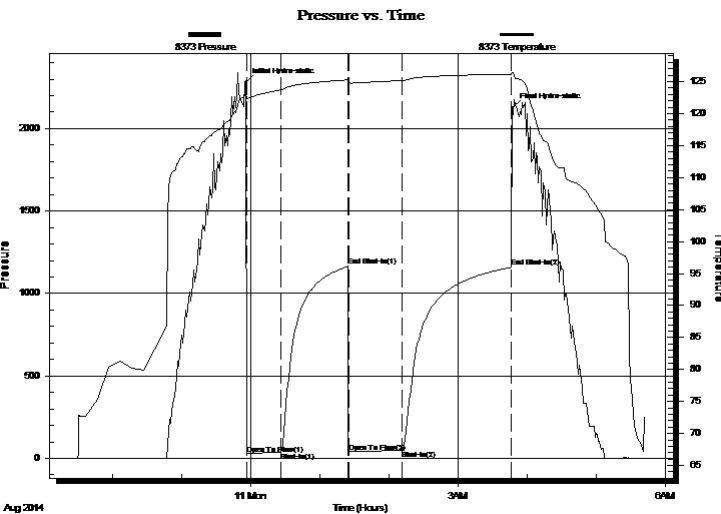
Time Off Btm: 2014.08.11 @ 03:47:30

TEST COMMENT: 30: 1/2" blow died in 20 min.

60: No Return.

45: No Blow .

90: No Return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2278.50	123.04	Initial Hydro-static
1	27.06	122.45	Open To Flow (1)
30	37.32	123.68	Shut-In(1)
89	1164.32	125.27	End Shut-In(1)
89	39.10	124.84	Open To Flow (2)
136	48.72	125.16	Shut-In(2)
231	1158.16	126.18	End Shut-In(2)
232	2124.32	126.41	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
15.00	mud	0.07

\* Recovery from multiple tests

## Gas Rates

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







**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Raymond Oil Company

**3-14s-32w Logan, KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56671

**DST#: 4**

ATTN: Kevin Kessler

Test Start: 2014.08.10 @ 21:30:00

## Tool Information

Drill Pipe:	Length: 4058.00 ft	Diameter: 3.80 inches	Volume: 56.92 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 365.00 ft	Diameter: 2.25 inches	Volume: 1.80 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 58.72 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	11.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4440.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	90.00 ft			
Tool Length:	118.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

## Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Stubb	1.00			4413.00	
Shut In Tool	5.00			4418.00	
Hydraulic tool	5.00			4423.00	
Jars	5.00			4428.00	
Safety Joint	3.00			4431.00	
Packer	5.00			4436.00	28.00 Bottom Of Top Packer
Packer	4.00			4440.00	
Stubb	1.00			4441.00	
Recorder	0.00	8373	Inside	4441.00	
Recorder	0.00	8166	Outside	4441.00	
Perforations	19.00			4460.00	
Change Over Sub	1.00			4461.00	
Drill Pipe	63.00			4524.00	
Change Over Sub	1.00			4525.00	
Bullnose	5.00			4530.00	90.00 Bottom Packers & Anchor

**Total Tool Length: 118.00**



**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

**FLUID SUMMARY**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56671

**DST#: 4**

ATTN: Kevin Kessler

Test Start: 2014.08.10 @ 21:30:00

## Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 54.00 sec/qt

Cushion Volume:

bbf

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

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6000.00 ppm

Filter Cake: 1.00 inches

## Recovery Information

Recovery Table

Length ft	Description	Volume bbf
15.00	mud	0.074

Total Length: 15.00 ft      Total Volume: 0.074 bbf

Num Fluid Samples: 0

Num Gas Bombs: 0

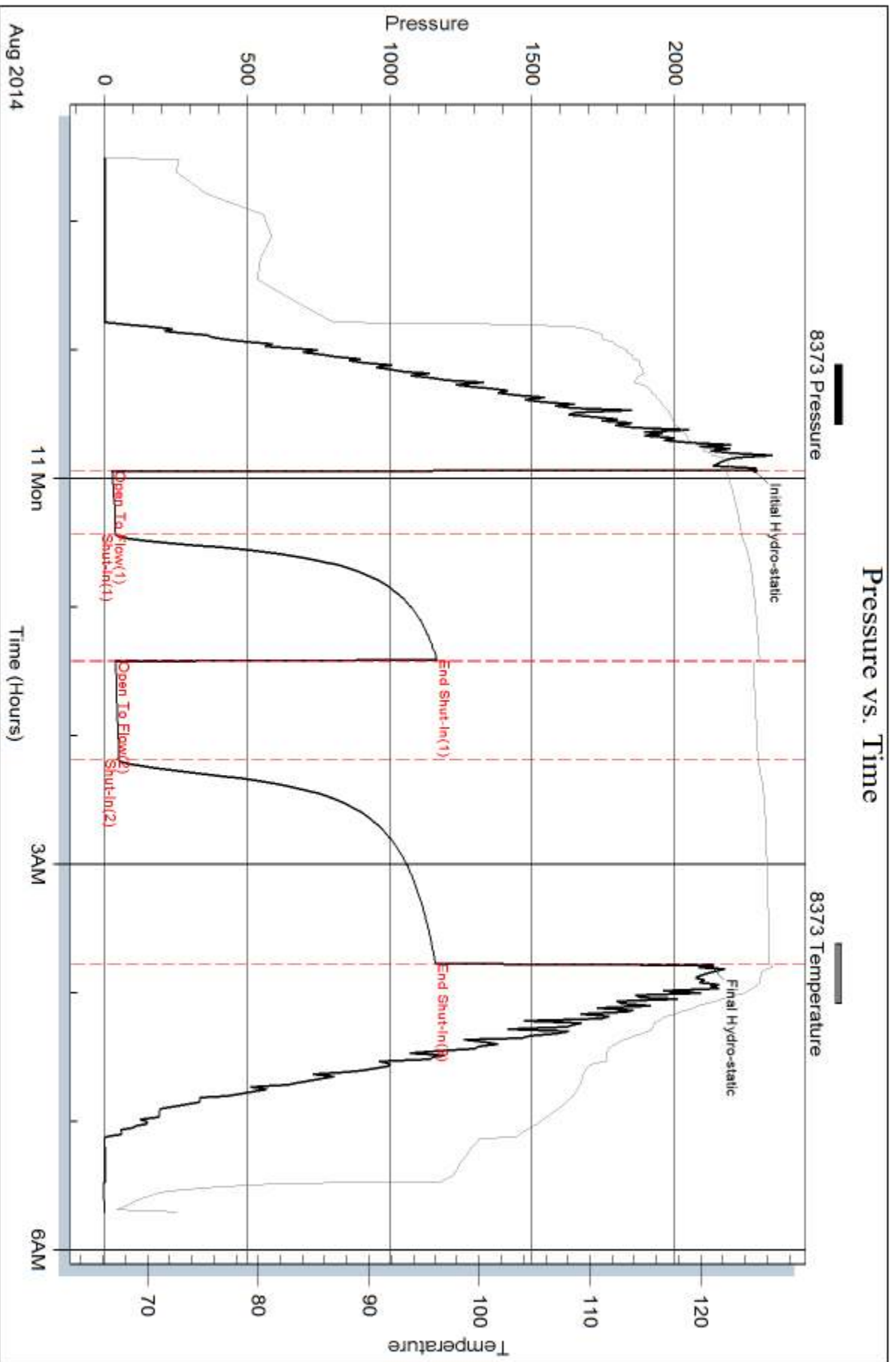
Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time

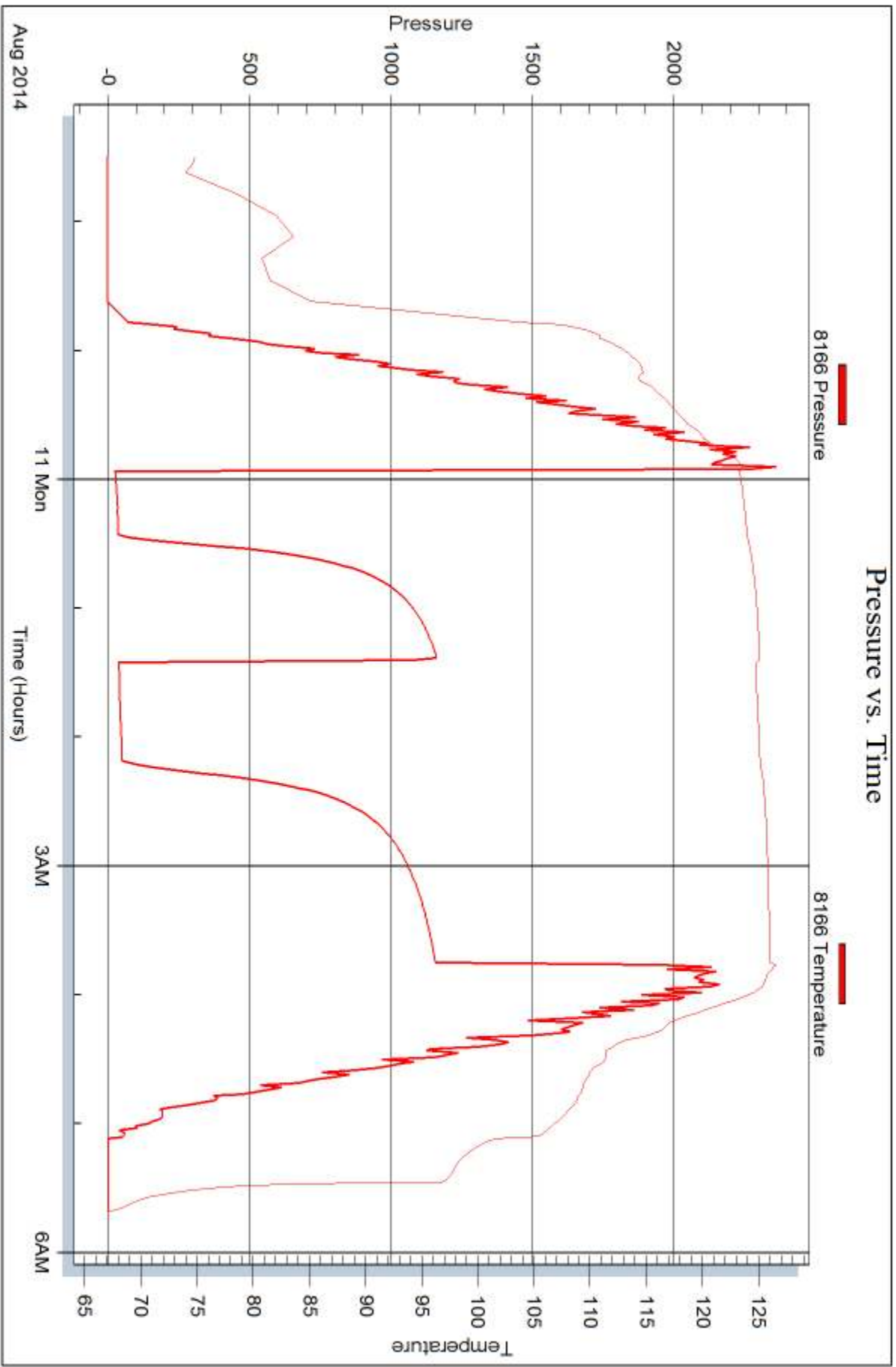


Serial #: 8166

Outside Raymond Oil Company

Michaelis #3

DST Test Number: 4





## DRILL STEM TEST REPORT

Prepared For: **Raymond Oil Company**

PO Box 48788  
Wichita, KS 67201

ATTN: Kevin Kessler

### **Michaelis #3**

### **3-14s-32w Logan,KS**

Start Date: 2014.08.11 @ 16:50:00

End Date: 2014.08.12 @ 00:33:00

Job Ticket #: 56672                      DST #: 5

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

Printed: 2014.08.13 @ 10:56:34



**TRILOBITE TESTING, INC**

# DRILL STEM TEST REPORT

Raymond Oil Company  
 PO Box 48788  
 Wichita, KS 67201  
 ATTN: Kevin Kessler

**3-14s-32w Logan, KS**

**Michaelis #3**

Job Ticket: 56672

**DST#: 5**

Test Start: 2014.08.11 @ 16:50:00

## GENERAL INFORMATION:

Formation: **Morrow sand**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 18:59:00

Time Test Ended: 00:33:00

Test Type: Conventional Bottom Hole (Reset)

Tester: Justin Harris

Unit No: 60

**Interval: 4520.00 ft (KB) To 4585.00 ft (KB) (TVD)**

Reference Elevations: 2885.00 ft (KB)

Total Depth: 4585.00 ft (KB) (TVD)

2874.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Poor

KB to GR/CF: 11.00 ft

**Serial #: 8373 Inside**

Press@RunDepth: 51.11 psig @ 4521.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.08.11

End Date:

2014.08.12

Last Calib.:

2014.08.12

Start Time: 16:50:05

End Time:

00:32:59

Time On Btm:

2014.08.11 @ 18:58:30

Time Off Btm:

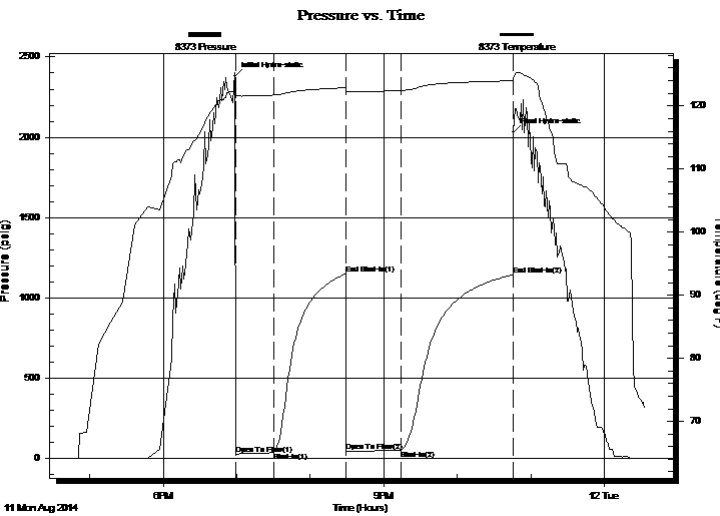
2014.08.11 @ 22:46:00

TEST COMMENT: 30: Weak surface blow died in 14 min.

60: No Return.

45: No Blow .

90: No Return.



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2380.10	122.45	Initial Hydro-static
1	28.18	121.38	Open To Flow (1)
32	37.67	121.73	Shut-In(1)
91	1150.38	122.88	End Shut-In(1)
91	46.24	122.39	Open To Flow (2)
136	51.11	122.45	Shut-In(2)
227	1144.89	124.01	End Shut-In(2)
228	2031.77	124.28	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
10.00	mud	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**

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56672

**DST#: 5**

ATTN: Kevin Kessler

Test Start: 2014.08.11 @ 16:50:00

## Tool Information

Drill Pipe:	Length: 4150.00 ft	Diameter: 3.80 inches	Volume: 58.21 bbl	Tool Weight: 2500.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 30000.00 lb
Drill Collar:	Length: 365.00 ft	Diameter: 2.25 inches	Volume: 1.80 bbl	Weight to Pull Loose: 80000.00 lb
			<u>Total Volume: 60.01 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	23.00 ft			String Weight: Initial 70000.00 lb
Depth to Top Packer:	4520.00 ft			Final 71000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	65.00 ft			
Tool Length:	93.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

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

Stubb	1.00			4493.00	
Shut In Tool	5.00			4498.00	
Hydraulic tool	5.00			4503.00	
Jars	5.00			4508.00	
Safety Joint	3.00			4511.00	
Packer	5.00			4516.00	28.00 Bottom Of Top Packer
Packer	4.00			4520.00	
Stubb	1.00			4521.00	
Recorder	0.00	8373	Inside	4521.00	
Recorder	0.00	8166	Outside	4521.00	
Perforations	26.00			4547.00	
Change Over Sub	1.00			4548.00	
Drill Pipe	31.00			4579.00	
Change Over Sub	1.00			4580.00	
Bullnose	5.00			4585.00	65.00 Bottom Packers & Anchor

**Total Tool Length: 93.00**





**TRILOBITE  
TESTING, INC**

# DRILL STEM TEST REPORT

## FLUID SUMMARY

Raymond Oil Company

**3-14s-32w Logan,KS**

PO Box 48788  
Wichita, KS 67201

**Michaelis #3**

Job Ticket: 56672

**DST#: 5**

ATTN: Kevin Kessler

Test Start: 2014.08.11 @ 16:50:00

### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

0 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 59.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 9.39 in<sup>3</sup>

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 6500.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbl
10.00	mud	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 #: 8373

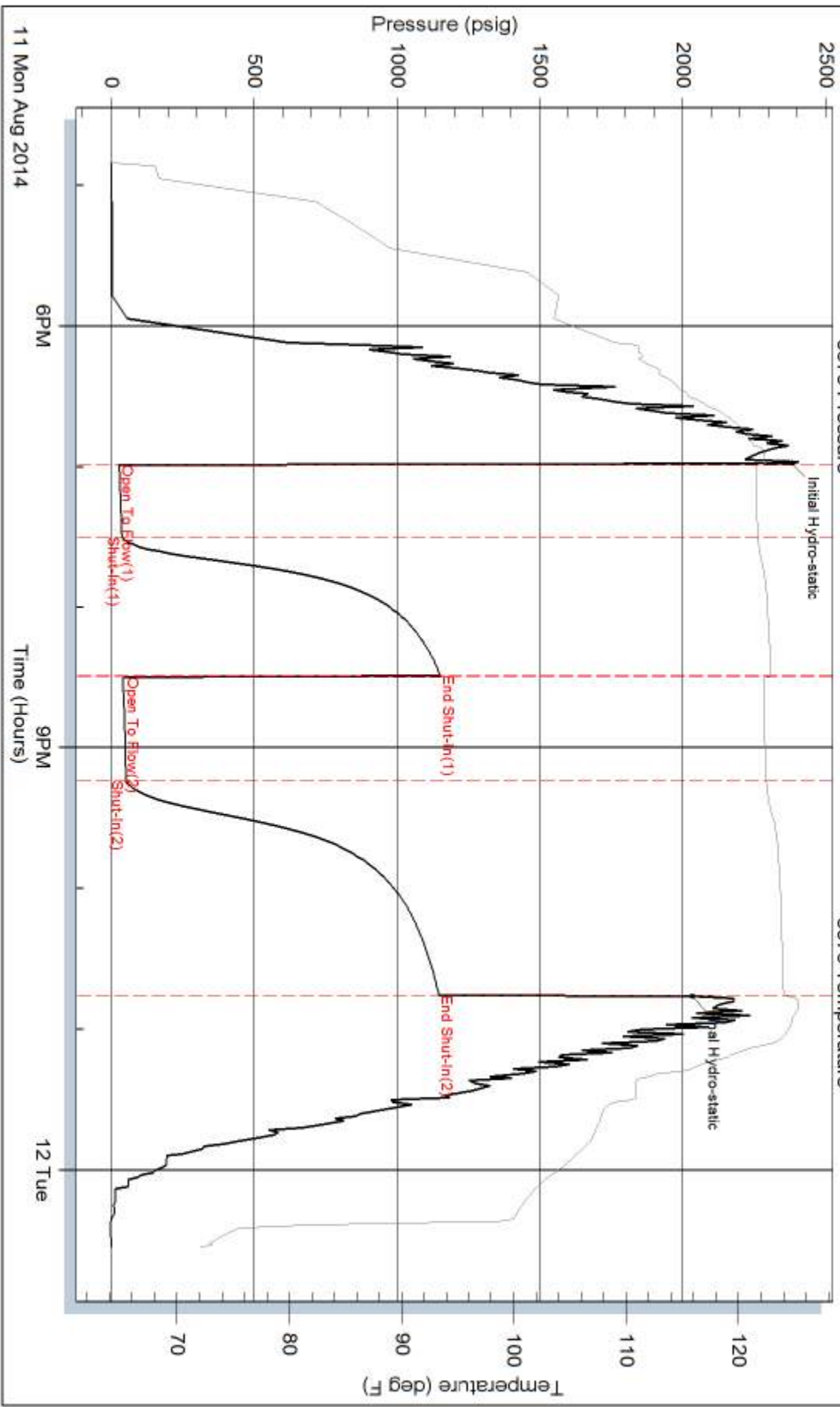
Inside

Raymond Oil Company

Michaelis #3

DST Test Number: 5

### Pressure vs. Time



Trilobite Testing, Inc

Ref. No: 56672

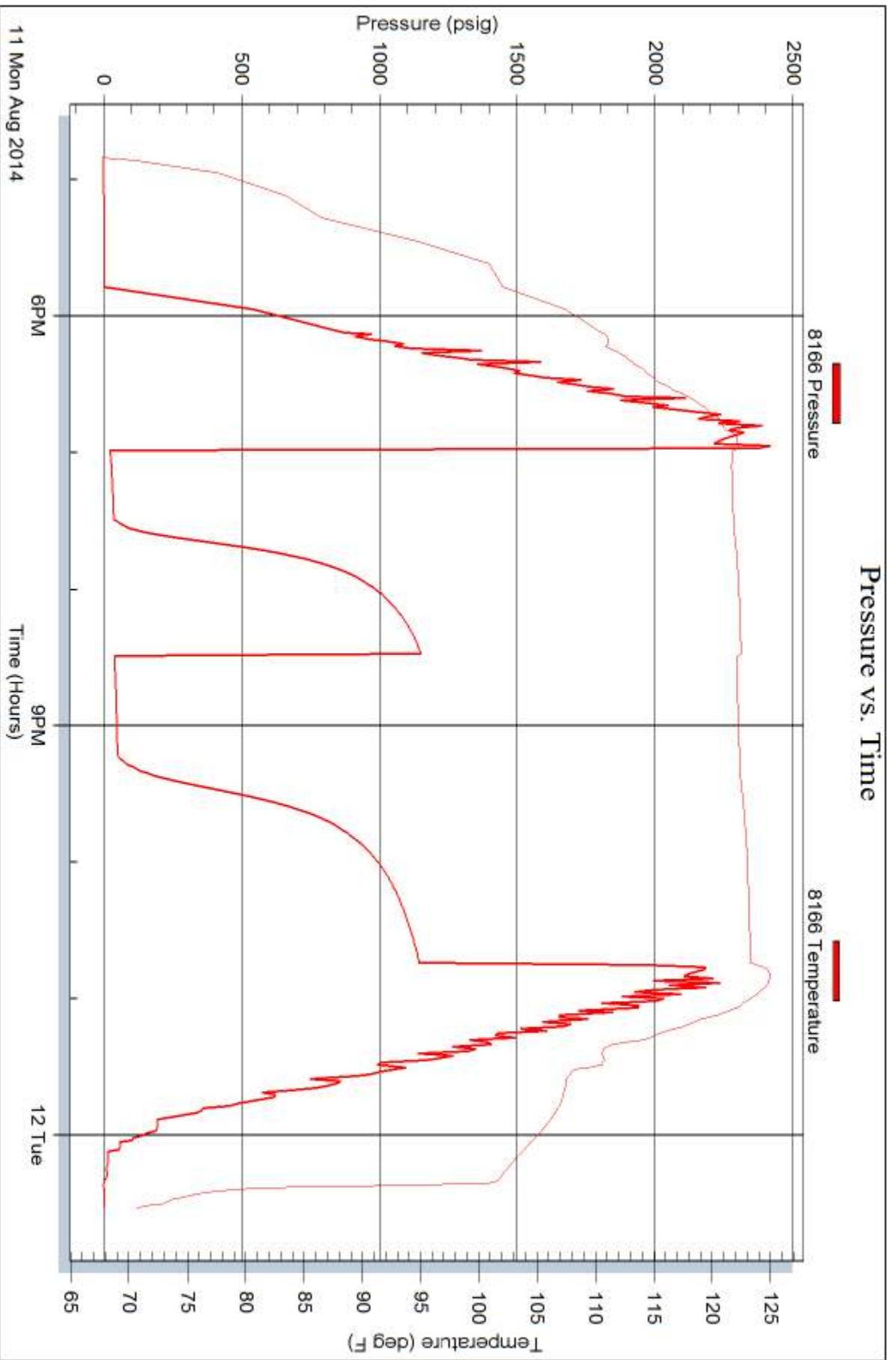
Printed: 2014.08.13 @ 10:56:35

Serial #: 8166

Outside Raymond Oil Company

Michaelis #3

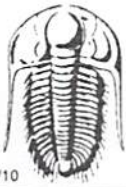
DST Test Number: 5



Trilobite Testing, Inc

Ref. No: 56672

Printed: 2014.08.13 @ 10:56:35



# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 59019

Well Name & No. Michaelis #3 Test No. 1 Date 8-7-14  
 Company Raymond oil company Elevation 2885 KB 2874 GL  
 Address P.O. Box 48788 Wichita, KS 67201  
 Co. Rep / Geo. Kevin Kessler Rig H2 #1  
 Location: Sec. 3 Twp. 14S Rge. 32W Co. Logan State KS

Interval Tested 3930 3960 Zone Tested Lmsing 35  
 Anchor Length 30 Drill Pipe Run 3552 Mud Wt. 8.8  
 Top Packer Depth 3925 Drill Collars Run 365 Vis 50  
 Bottom Packer Depth 3930 Wt. Pipe Run --- WL 7.2  
 Total Depth 3960 Chlorides 3000 ppm System LCM 1

Blow Description IF: BoB in 20 min.  
FS: NO return,  
FF: BoB in 40 min.  
FS: No return,

Rec	Feet of	%gas	%oil	%water	%mud
<u>200</u>	<u>MW</u>		<u>50</u>	<u>50</u>	
<u>365</u>	<u>MLW</u>		<u>80</u>	<u>20</u>	

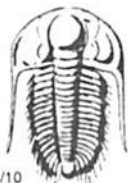
Rec Total 565 BHT 120 Gravity --- API RW .34 @ 78 °F Chlorides 18,000 ppm

(A) Initial Hydrostatic 1857  Test 1150 T-On Location 00:30  
 (B) First Initial Flow 24  Jars 250 T-Started 2:39  
 (C) First Final Flow 190  Safety Joint 75 T-Open 5:02  
 (D) Initial Shut-In 1076  Circ Sub N/C T-Pulled 8:47  
 (E) Second Initial Flow 196  Hourly Standby 2- ??? T-Out 11:20  
 (F) Second Final Flow 291  Mileage 64- 99.20  
 (G) Final Shut-In 1070  Sampler  
 (H) Final Hydrostatic 1862  Straddle  Ruined Shale Packer

Initial Open 30  Shale Packer  Ruined Packer  
 Initial Shut-In 60  Extra Packer  Extra Copies  
 Final Flow 45  Extra Recorder  Sub Total 0  
 Final Shut-In 90  Day Standby  Total  
 Accessibility 150 MP/DST Disc't  
 Sub Total 1724.20

Approved By Kevin Kessler Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 59020

Well Name & No. Michaelis #3 Test No. 2 Date 8-8-14  
 Company Raymond oil company Elevation 2885 KB 2874 GL  
 Address \_\_\_\_\_  
 Co. Rep / Geo. Kevin Kessler Rig H2#1  
 Location: Sec. 3 Twp. 143 Rge. 32W Co. Logan State KS

Interval Tested 3990 4030 Zone Tested Lansing 70-90  
 Anchor Length 40 Drill Pipe Run 3811 Mud Wt. 9.1  
 Top Packer Depth 3985 Drill Collars Run 365 Vis 54  
 Bottom Packer Depth 3990 Wt. Pipe Run \_\_\_\_\_ WL 8.0  
 Total Depth 4030 Chlorides 3200 ppm System LCM 1

Blow Description IF: BoB in 2 1/2 min.  
ISI No return,  
FFI BoB in 4 min,  
FS: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>140</u>	<u>MCW</u>			<u>60</u>	<u>40</u>
<u>285</u>	<u>MCW</u>			<u>90</u>	<u>10</u>
<u>1505</u>	<u>water</u>			<u>100</u>	
_____	_____				
_____	_____				

Rec Total 1930 BHT 120 Gravity \_\_\_\_\_ API RW 14 @ 80 ° F Chlorides 47,000 ppm

(A) Initial Hydrostatic <u>2081</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>1:00</u>
(B) First Initial Flow <u>248</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>2:12</u>
(C) First Final Flow <u>583</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>4:04</u>
(D) Initial Shut-In <u>1103</u>	<input checked="" type="checkbox"/> Circ Sub <u>NIL</u>	T-Pulled <u>7:49</u>
(E) Second Initial Flow <u>574</u>	<input checked="" type="checkbox"/> Hourly Standby _____	T-Out <u>10:00</u>
(F) Second Final Flow <u>888</u>	<input checked="" type="checkbox"/> Mileage <u>64</u> - <u>99.20</u>	Comments _____
(G) Final Shut-In <u>1104</u>	<input type="checkbox"/> Sampler _____	_____
(H) Final Hydrostatic <u>1849</u>	<input type="checkbox"/> Straddle _____	<input type="checkbox"/> Ruined Shale Packer _____

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 45  
 Final Shut-In 90

Shale Packer \_\_\_\_\_  
 Extra Packer \_\_\_\_\_  
 Extra Recorder \_\_\_\_\_  
 Day Standby \_\_\_\_\_  
 Accessibility 150

Sub Total 1824.20

Approved By Kevin Kessler Our Representative [Signature]

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. 56670

4/10

Well Name & No. Michaelis #3 Test No. 3 Date 08-09-14  
 Company Raymond oil company Elevation 2885 KB 2874 GL  
 Address P.O. Box 48788 Wichita, ks 67201  
 Co. Rep / Geo. Kiven Kessler Rig #12 #1  
 Location: Sec. 3 Twp. 17S Rge. 32W Co. logan State KS

Interval Tested 4185 4210 Zone Tested  Lansing 220' "L"  
 Anchor Length 25' Drill Pipe Run 3804 Mud Wt. 9.4  
 Top Packer Depth 4180 Drill Collars Run 365 Vis 55  
 Bottom Packer Depth 4185 Wt. Pipe Run Ø WL 10.4  
 Total Depth 4210 Chlorides 6400 ppm System LCM 1

Blow Description 30 weak surface Blow Build to 1 1/2"  
60 No Return  
45 No Blow  
90 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>95</u>	<u>Mud</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 95 BHT 123 Gravity — API RW — @ — ° F Chlorides — ppm

(A) Initial Hydrostatic <u>2155</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>6:35</u>
(B) First Initial Flow <u>23</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>7:33</u>
(C) First Final Flow <u>47</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>10:02</u>
(D) Initial Shut-In <u>643</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>13:49</u>
(E) Second Initial Flow <u>53</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>15:38</u>
(F) Second Final Flow <u>67</u>	<input checked="" type="checkbox"/> Mileage <u>64 RT</u> 99.20	Comments
(G) Final Shut-In <u>493</u>	<input type="checkbox"/> Sampler	
(H) Final Hydrostatic <u>1883</u>	<input type="checkbox"/> Straddle	<input type="checkbox"/> Ruined Shale Packer

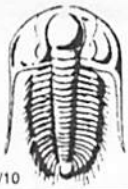
Initial Open 30  
 Initial Shut-In 40  
 Final Flow 45  
 Final Shut-In 90

Shale Packer  
 Extra Packer  
 Extra Recorder  
 Day Standby  
 Accessibility 150  
 Sub Total 1824.20

T-On Location 6:35  
 T-Started 7:33  
 T-Open 10:02  
 T-Pulled 13:49  
 T-Out 15:38  
 Comments  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1824.20  
 MP/DST Disc't

Approved By Kiven Kessler Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56671

Well Name & No. Michaelis #3 Test No. 4 Date 08-10-14  
 Company Raymond oil company Elevation 2885 KB 2874 GL  
 Address P.O. Box 48788 Wichita, KS 67201  
 Co. Rep / Geo. Kevin Kessler Rig #2 #1  
 Location: Sec. 3 Twp. 14S Rge. 32W Co. Igan State KS

Interval Tested 4440 4530 Zone Tested Cherokee/Johnson  
 Anchor Length 90 Drill Pipe Run 4058 Mud Wt. 9.2  
 Top Packer Depth 4435 Drill Collars Run 365 Vis 54  
 Bottom Packer Depth 4440 Wt. Pipe Run Ø WL 8.8  
 Total Depth 4530 Chlorides 4000 ppm System LCM 2

Blow Description 30 1/2 Blow Died in 20min  
40 No Return  
45 No Blow  
90 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>15</u>	<u>mud</u>				
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 15 BHT 124 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	<u>2278</u>	<input checked="" type="checkbox"/> Test	<u>1250</u>	T-On Location	<u>21:00</u>
(B) First Initial Flow	<u>27</u>	<input checked="" type="checkbox"/> Jars	<u>250</u>	T-Started	<u>21:30</u>
(C) First Final Flow	<u>37</u>	<input checked="" type="checkbox"/> Safety Joint	<u>75</u>	T-Open	<u>23:57</u>
(D) Initial Shut-In	<u>1164</u>	<input checked="" type="checkbox"/> Circ Sub	<u>N/C</u>	T-Pulled	<u>3:42</u>
(E) Second Initial Flow	<u>39</u>	<input type="checkbox"/> Hourly Standby		T-Out	<u>5:42</u>
(F) Second Final Flow	<u>49</u>	<input checked="" type="checkbox"/> Mileage	<u>64 BT</u> 99.20	Comments	
(G) Final Shut-In	<u>1158</u>	<input type="checkbox"/> Sampler			
(H) Final Hydrostatic	<u>2124</u>	<input type="checkbox"/> Straddle		<input type="checkbox"/> Ruined Shale Packer	

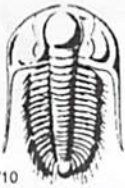
Initial Open 30  
 Initial Shut-In 60  
 Final Flow 45  
 Final Shut-In 90

<input type="checkbox"/> Shale Packer	<input type="checkbox"/> Extra Packer	<input type="checkbox"/> Extra Recorder	<input type="checkbox"/> Day Standby	<input checked="" type="checkbox"/> Accessibility	Sub Total
			<u>1d 4.25h</u>	<u>150</u>	<u>141.67</u>
					<u>1965.87</u>
					MP/DST Disc't

Sub Total 1824.20

Approved By [Signature] Our Representative [Signature]

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# TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

## Test Ticket

NO. 56672

Well Name & No. Michaelis #3 Test No. 5 Date 08-11-14  
 Company Raymond oil company Elevation 2885 KB 2874 GL  
 Address P.O. Box 48788 Wichita, KS 67201  
 Co. Rep / Geo. Kiven Kessler Rig #2 #1  
 Location: Sec. 3 Twp. 14s Rge. 32w Co. logan State KS

Interval Tested 4520, 4585 Zone Tested Marrow Sand  
 Anchor Length 65 Drill Pipe Run 4150 Mud Wt. 9.4  
 Top Packer Depth 4515 Drill Collars Run 365 Vis .59  
 Bottom Packer Depth 4520 Wt. Pipe Run Ø WL 9.6  
 Total Depth 4585 Chlorides 4500 ppm System LCM 2  
 Blow Description 30 Weak surface Blow Died in 14 min  
60 No Return  
45 No Blow  
90 No Return

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>mud</u>				

Rec Total 10 BHT 124 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic <u>2380</u>	<input checked="" type="checkbox"/> Test <u>1250</u>	T-On Location <u>16:00</u>
(B) First Initial Flow <u>28</u>	<input checked="" type="checkbox"/> Jars <u>250</u>	T-Started <u>14:50</u>
(C) First Final Flow <u>38</u>	<input checked="" type="checkbox"/> Safety Joint <u>75</u>	T-Open <u>19:00</u>
(D) Initial Shut-In <u>1150</u>	<input checked="" type="checkbox"/> Circ Sub <u>N/C</u>	T-Pulled <u>22:45</u>
(E) Second Initial Flow <u>44</u>	<input type="checkbox"/> Hourly Standby	T-Out <u>00:33</u>
(F) Second Final Flow <u>51</u>	<input checked="" type="checkbox"/> Mileage <u>64 BT</u> 99.20	Comments <u>8-12-14</u>
(G) Final Shut-In <u>1145</u>	<input type="checkbox"/> Sampler 99.20	<u>Wait on logger From 6pm</u>
(H) Final Hydrostatic <u>2032</u>	<input type="checkbox"/> Straddle	<u>Geo said pick up tool at 6pm</u>

Initial Open 30  
 Initial Shut-In 60  
 Final Flow 45  
 Final Shut-In 90

Accessibility 150  
 Sub Total 1923.40

Ruined Shale Packer  
 Ruined Packer  
 Extra Copies  
 Sub Total 0  
 Total 1923.40  
 MP/DST Disc't

Approved By Karen Kessler Our Representative [Signature]  
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