



DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.09 @ 09:50:46

End Date: 2014.03.09 @ 15:50:01

Job Ticket #: 56290 DST #: 1

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

Printed: 2014.03.21 @ 13:46:40



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56290

DST#: 1

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 09:50:46

GENERAL INFORMATION:

Formation: **C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:20:46

Time Test Ended: 15:50:01

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 55

Interval: 3930.00 ft (KB) To 3955.00 ft (KB) (TVD)

Reference Elevations: 2876.00 ft (KB)

Total Depth: 3955.00 ft (KB) (TVD)

2868.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: 29.73 psig @ 3931.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.09

End Date:

2014.03.09

Last Calib.: 2014.03.09

Start Time: 09:50:46

End Time:

15:40:01

Time On Btm: 2014.03.09 @ 11:20:16

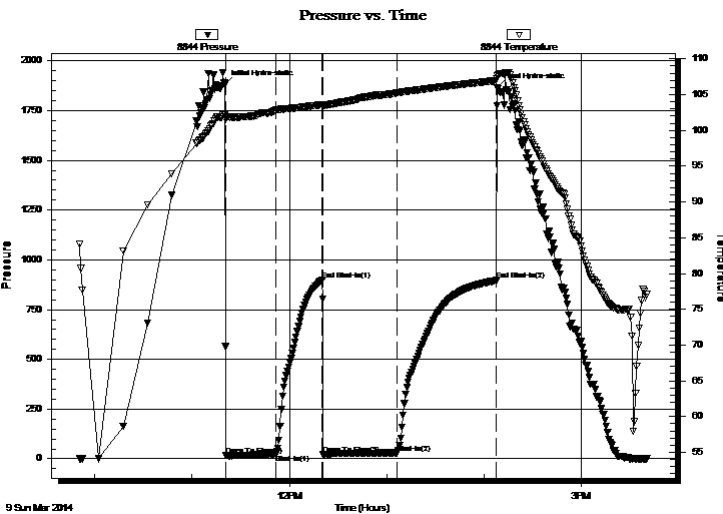
Time Off Btm: 2014.03.09 @ 14:08:01

TEST COMMENT: 1/4" blow , died in 22 min.

No return

Weak surface blow , flush tool after 5 min. 1/4" blow died back to very weak intermittent surface blow

No return



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1882.86	102.35	Initial Hydro-static
1	15.68	101.81	Open To Flow (1)
31	21.68	102.78	Shut-In(1)
60	898.58	103.60	End Shut-In(1)
61	22.86	103.33	Open To Flow (2)
106	29.73	105.27	Shut-In(2)
168	896.43	106.96	End Shut-In(2)
168	1866.66	107.57	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
30.00	mud w/oil spots 2" in free oil on top	0.15

Gas Rates

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

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56290

DST#: 1

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 09:50:46

GENERAL INFORMATION:

Formation: **C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 11:20:46

Time Test Ended: 15:50:01

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 55

Interval: 3930.00 ft (KB) To 3955.00 ft (KB) (TVD)

Reference Elevations: 2876.00 ft (KB)

Total Depth: 3955.00 ft (KB) (TVD)

2868.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 8.00 ft

Serial #: 6771

Inside

Press@RunDepth: psig @ 3931.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.09

End Date:

2014.03.09

Last Calib.:

2014.03.09

Start Time: 09:50:52

End Time:

15:40:22

Time On Btm:

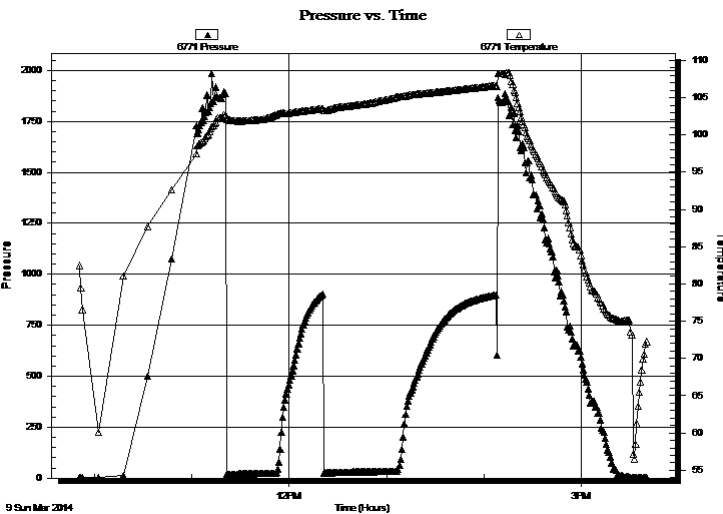
Time Off Btm:

TEST COMMENT: 1/4" blow , died in 22 min.

No return

Weak surface blow , flush tool after 5 min. 1/4" blow died back to very weak intermittent surface blow

No return



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
30.00	mud w/oil spots 2" in free oil on top	0.15

Gas Rates

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

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56290

DST#: 1

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 09:50:46

Tool Information

Drill Pipe:	Length:	3885.00 ft	Diameter:	3.80 inches	Volume:	54.50 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	70000.00 lb
					Total Volume:	54.65 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		13.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		3930.00 ft					Final	58000.00 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

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

Change Over Sub	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	6771	Inside	3931.00		
Recorder	0.00	8844	Outside	3931.00		
Perforations	19.00			3950.00		
Bullnose	5.00			3955.00	25.00	Bottom Packers & Anchor

Total Tool Length: 53.00



TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56290

DST#: 1

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 09:50:46

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 50.00 sec/qt

Water Loss: 7.13 in³

Resistivity: 0.00 ohm.m

Salinity: 2000.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	mud w /oil spots 2"in free oil on top	0.148

Total Length: 30.00 ft

Total Volume: 0.148 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

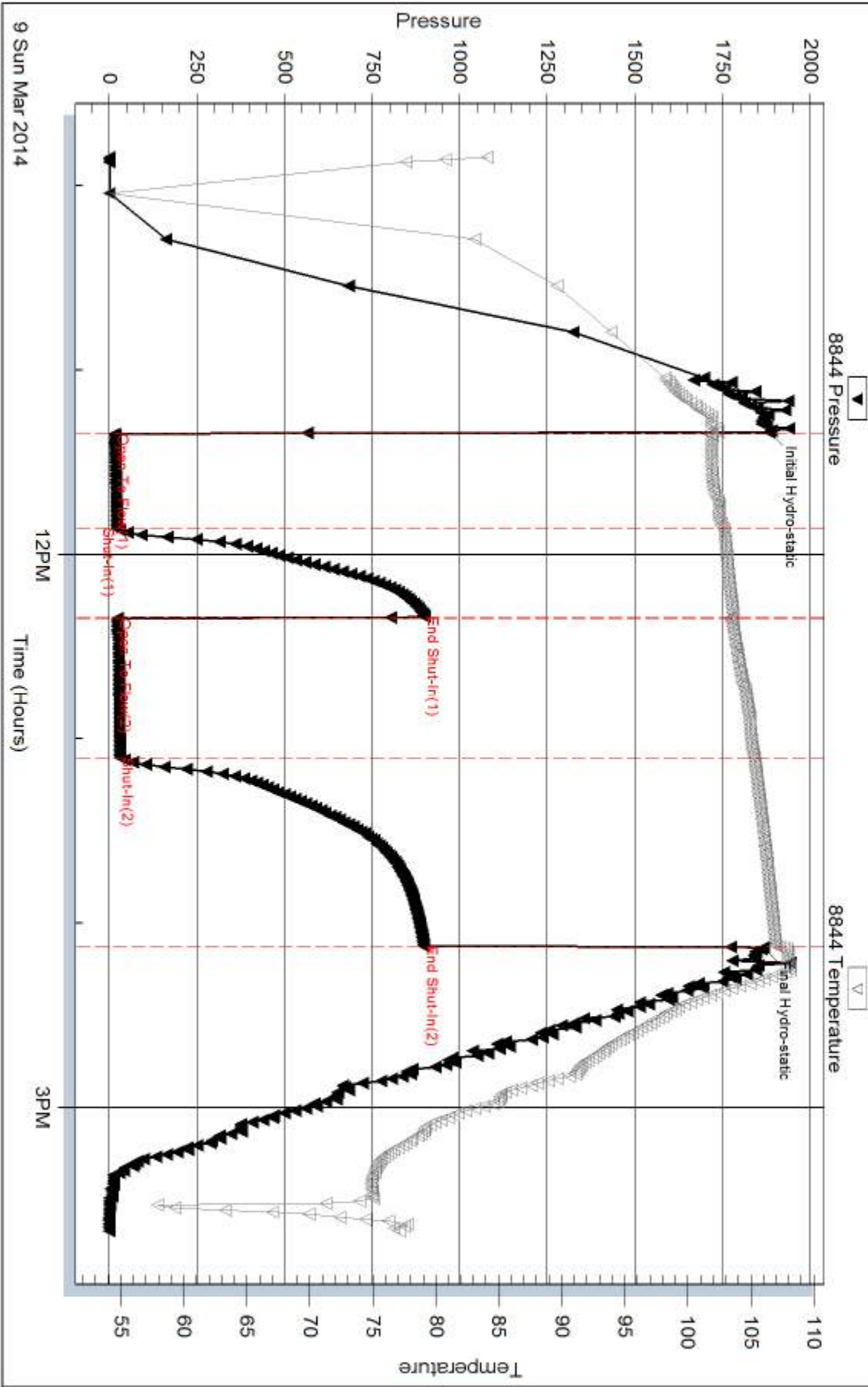
Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 1

Pressure vs. Time



Serial #: 6771

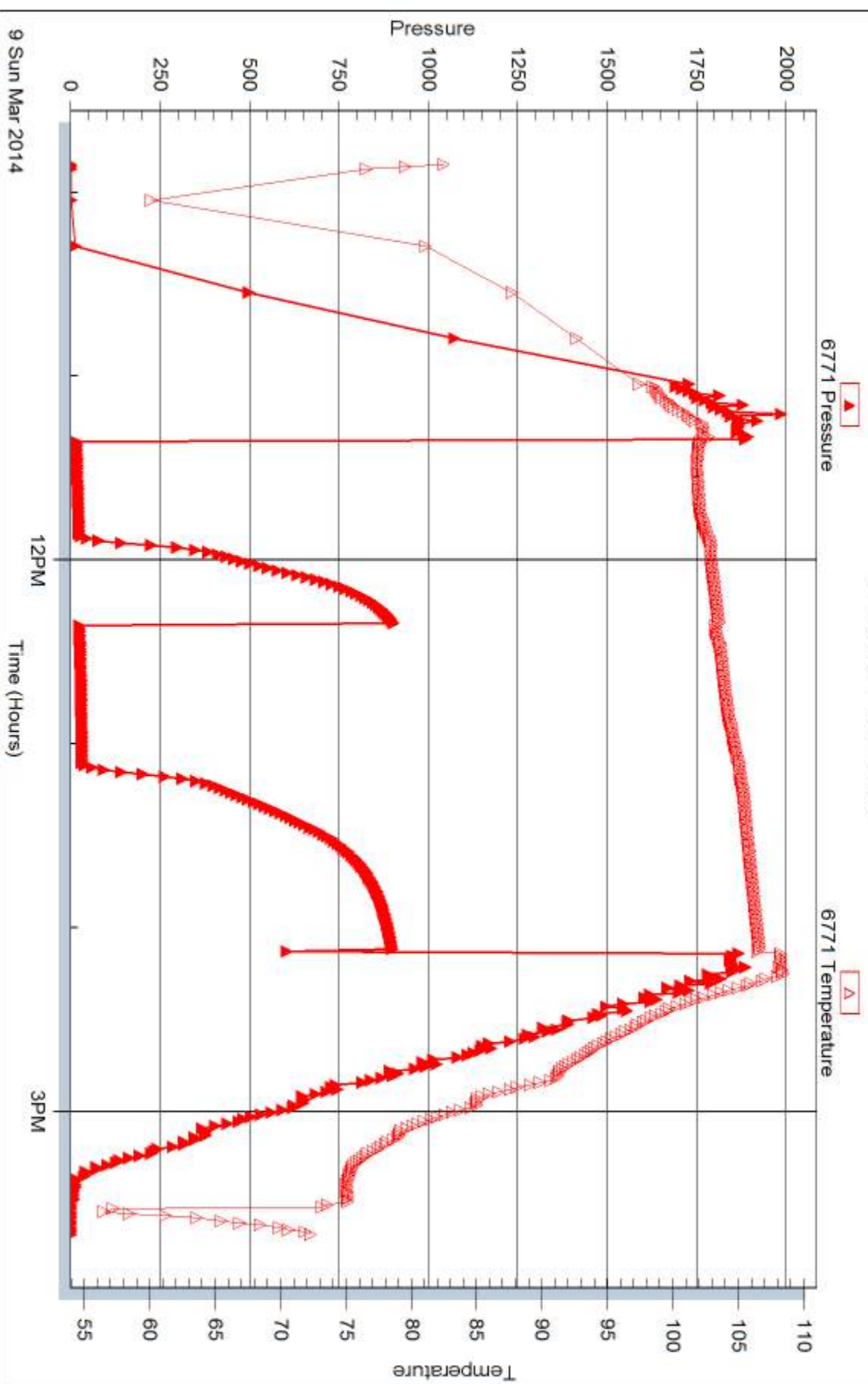
Inside

Ritchie Exploration

Joseph #4

DST Test Number: 1

Pressure vs. Time





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.09 @ 23:11:00

End Date: 2014.03.10 @ 05:10:30

Job Ticket #: 56291 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.21 @ 13:35:32



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

30-13-31 Gove, KS

Joseph #4

Job Ticket: 56291

DST#: 2

Test Start: 2014.03.09 @ 23:11:00

GENERAL INFORMATION:

Formation: **D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:33:15

Time Test Ended: 05:10:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3957.00 ft (KB) To 3982.00 ft (KB) (TVD)

Total Depth: 3982.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: 28.61 psig @ 3958.00 ft (KB)

Start Date: 2014.03.09

End Date:

2014.03.10

Start Time: 23:11:00

End Time:

04:57:30

Capacity: 8000.00 psig

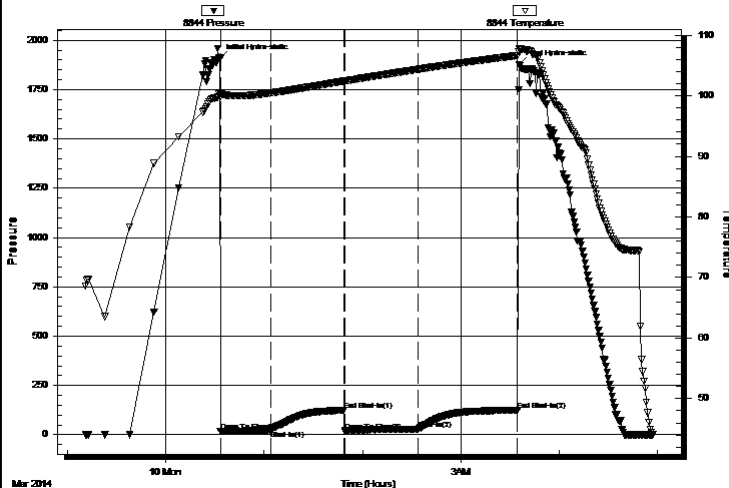
Last Calib.: 2014.03.10

Time On Btm: 2014.03.10 @ 00:33:00

Time Off Btm: 2014.03.10 @ 03:35:45

TEST COMMENT: 4 3/4" blow
No return
4 3/4" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1907.15	100.48	Initial Hydro-static
1	16.35	99.94	Open To Flow (1)
31	22.76	100.44	Shut-In(1)
76	124.11	102.42	End Shut-In(1)
77	18.25	102.42	Open To Flow (2)
121	28.61	104.36	Shut-In(2)
182	124.39	106.64	End Shut-In(2)
183	1878.03	107.73	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
45.00	s g m c o 5g 40m 55o	0.36
0.00	75' weak gas in pipe	0.00

Gas Rates

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



TRILOBITE
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DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56291

DST#: 2

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 23:11:00

GENERAL INFORMATION:

Formation: **D**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 00:33:15

Time Test Ended: 05:10:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3957.00 ft (KB) To 3982.00 ft (KB) (TVD)

Total Depth: 3982.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 3958.00 ft (KB)

Start Date: 2014.03.09

End Date:

2014.03.10

Start Time: 23:11:08

End Time:

04:57:53

Capacity: 8000.00 psig

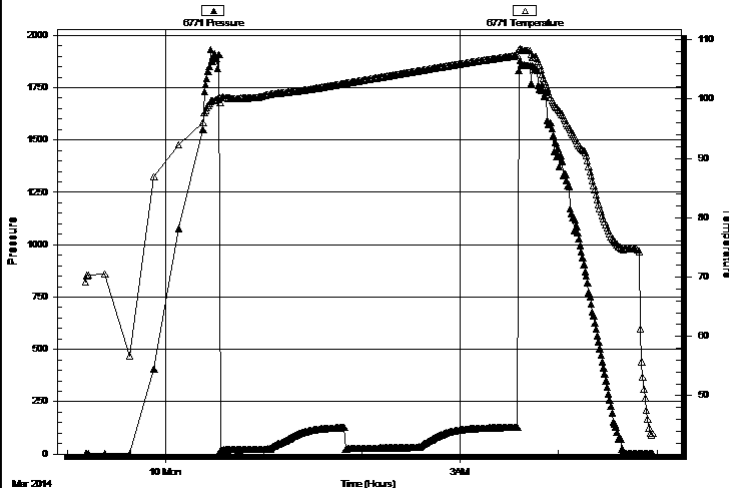
Last Calib.: 2014.03.10

Time On Btm:

Time Off Btm:

TEST COMMENT: 4 3/4" blow
No return
4 3/4" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
45.00	s g m c o 5g 40m 55o	0.36
0.00	75' weak gas in pipe	0.00

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

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56291

DST#: 2

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 23:11:00

Tool Information

Drill Pipe:	Length:	3917.00 ft	Diameter:	3.80 inches	Volume:	54.95 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	55.10 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		18.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		3957.00 ft					Final	58000.00 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	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
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Change Over Sub	1.00			3930.00	
Shut In Tool	5.00			3935.00	
Hydraulic tool	5.00			3940.00	
Jars	5.00			3945.00	
Safety Joint	3.00			3948.00	
Packer	5.00			3953.00	28.00 Bottom Of Top Packer
Packer	4.00			3957.00	
Stubb	1.00			3958.00	
Recorder	0.00	6771	Inside	3958.00	
Recorder	0.00	8844	Outside	3958.00	
Perforations	19.00			3977.00	
Bullnose	5.00			3982.00	25.00 Bottom Packers & Anchor

Total Tool Length: 53.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56291

DST#: 2

ATTN: Bob Peterson

Test Start: 2014.03.09 @ 23:11:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 50.00 sec/qt

Water Loss: 7.13 in³

Resistivity: 0.00 ohm.m

Salinity: 2000.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
45.00	s g m c o 5g 40m 55o	0.358
0.00	75' weak gas in pipe	0.000

Total Length: 45.00 ft

Total Volume: 0.358 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

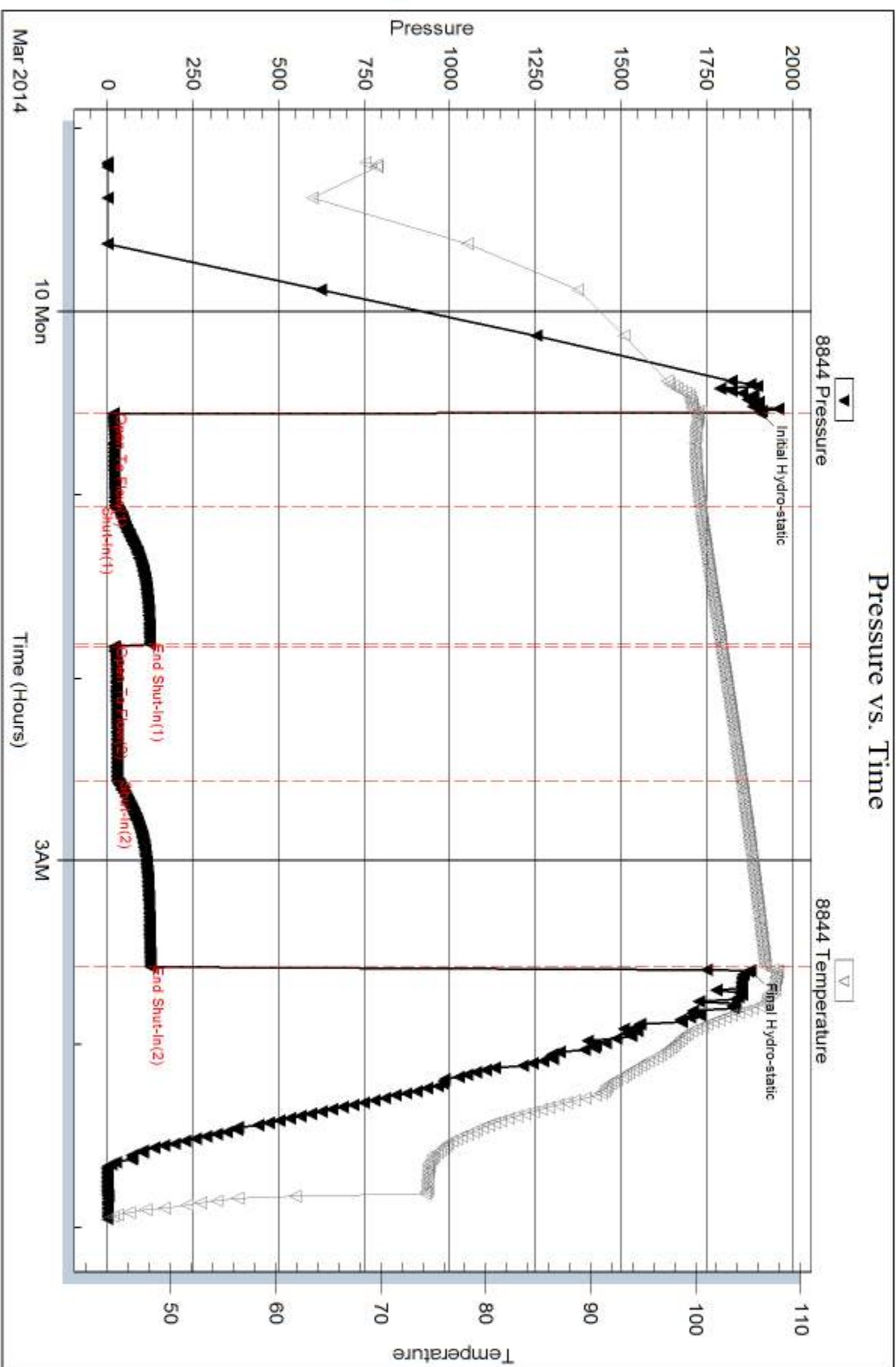
Recovery Comments:

Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 2



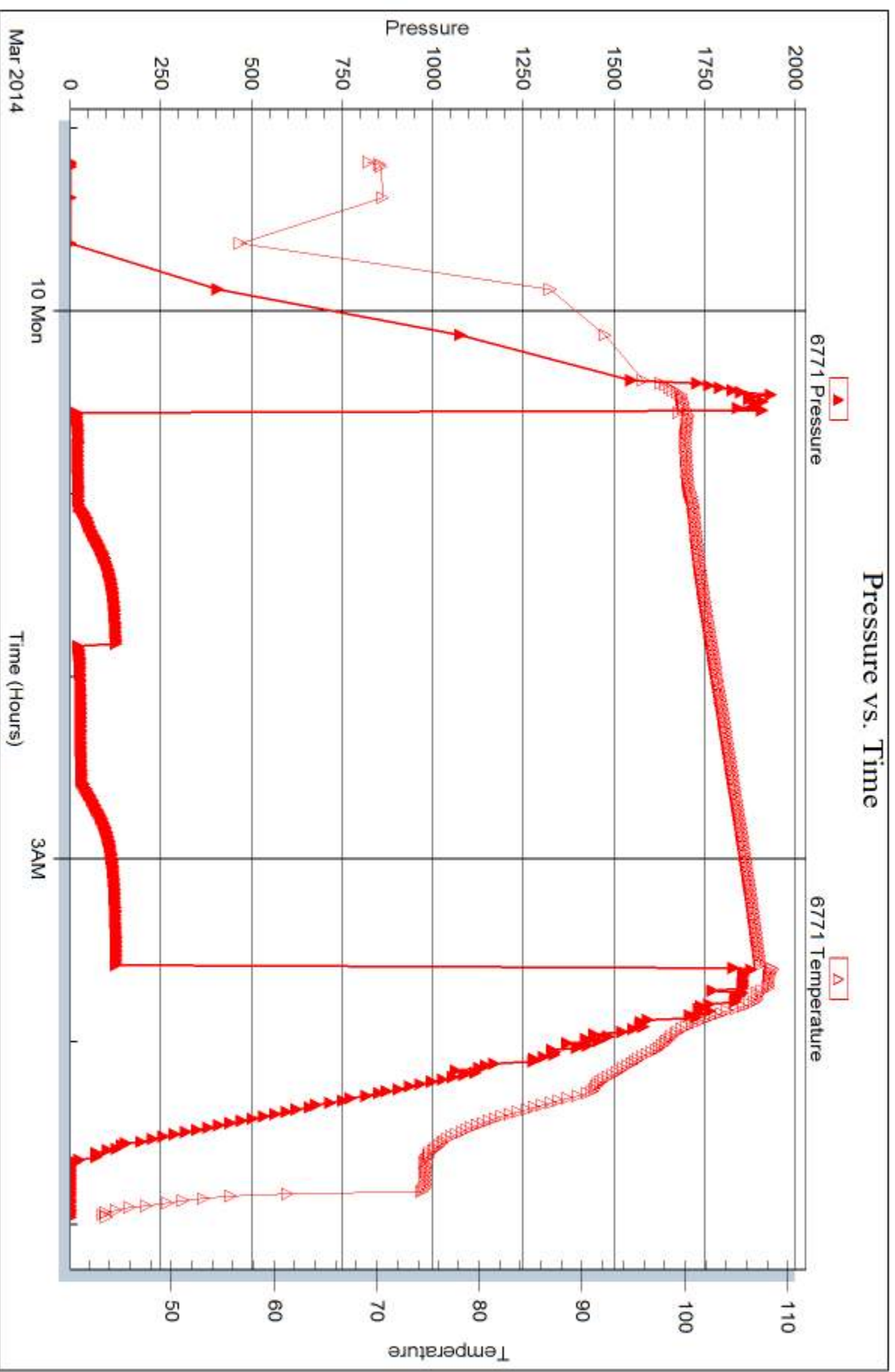
Serial #: 6771

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.10 @ 11:27:57

End Date: 2014.03.10 @ 17:45:27

Job Ticket #: 56292 DST #: 3

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

Printed: 2014.03.21 @ 13:34:50



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

30-13-31 Gove, KS

Joseph #4

Job Ticket: 56292

DST#: 3

Test Start: 2014.03.10 @ 11:27:57

GENERAL INFORMATION:

Formation: **E**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:49:57

Time Test Ended: 17:45:27

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3974.00 ft (KB) To 3990.00 ft (KB) (TVD)

Total Depth: 3990.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: 45.29 psig @ 3975.00 ft (KB)

Start Date: 2014.03.10

End Date:

2014.03.10

Start Time: 11:27:57

End Time:

17:27:27

Capacity: 8000.00 psig

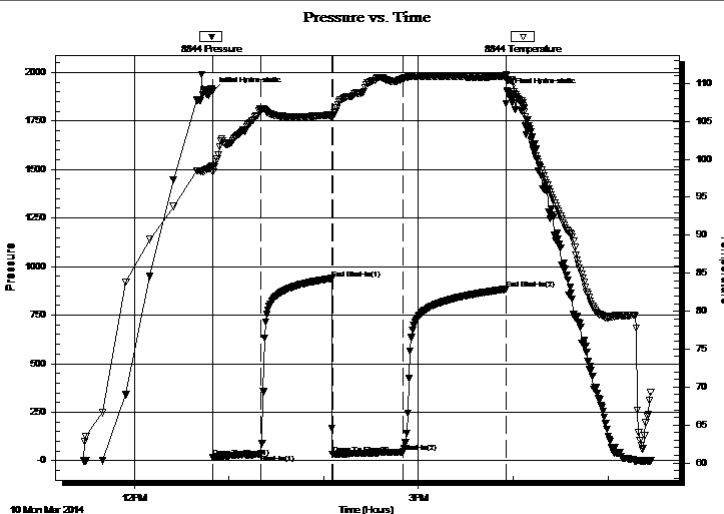
Last Calib.: 2014.03.10

Time On Btm: 2014.03.10 @ 12:49:42

Time Off Btm: 2014.03.10 @ 15:56:27

TEST COMMENT: 3" blow
No return
2 1/2" blow
No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1902.14	99.10	Initial Hydro-static
1	17.08	98.36	Open To Flow (1)
31	33.17	106.64	Shut-In(1)
76	938.74	105.84	End Shut-In(1)
76	33.99	105.59	Open To Flow (2)
121	45.29	110.64	Shut-In(2)
186	883.56	110.88	End Shut-In(2)
187	1896.10	110.42	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
70.00	m c w 40% m 60% w	0.71
0.00	show of oil on top 1" in	0.00

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

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56292

DST#: 3

ATTN: Bob Peterson

Test Start: 2014.03.10 @ 11:27:57

GENERAL INFORMATION:

Formation: **E**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 12:49:57

Time Test Ended: 17:45:27

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3974.00 ft (KB) To 3990.00 ft (KB) (TVD)

Total Depth: 3990.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 3975.00 ft (KB)

Start Date: 2014.03.10

End Date:

2014.03.10

Start Time: 11:28:09

End Time:

17:27:54

Capacity: 8000.00 psig

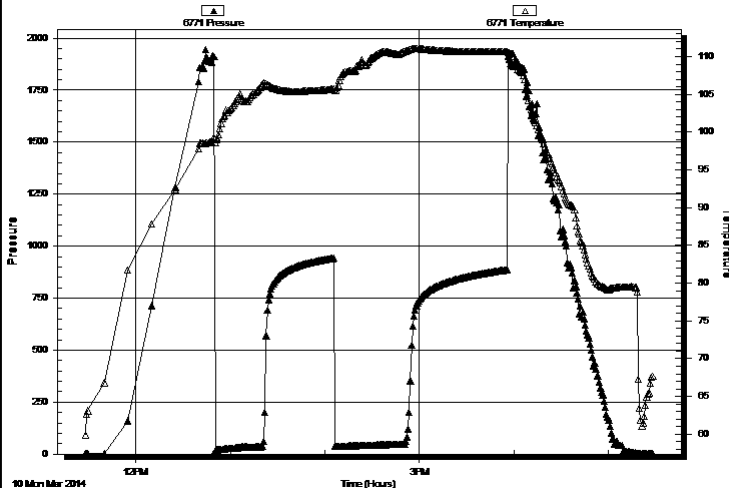
Last Calib.: 2014.03.10

Time On Btm:

Time Off Btm:

TEST COMMENT: 3" blow
No return
2 1/2" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
70.00	m c w 40% m 60% w	0.71
0.00	show of oil on top 1" in	0.00

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

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56292

DST#: 3

ATTN: Bob Peterson

Test Start: 2014.03.10 @ 11:27:57

Tool Information

Drill Pipe:	Length:	3949.00 ft	Diameter:	3.80 inches	Volume:	55.39 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	70000.00 lb
					Total Volume:	55.54 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		33.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		3974.00 ft					Final	58000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		16.00 ft						
Tool Length:		44.00 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			3947.00	
Shut In Tool	5.00			3952.00	
Hydraulic tool	5.00			3957.00	
Jars	5.00			3962.00	
Safety Joint	3.00			3965.00	
Packer	5.00			3970.00	28.00 Bottom Of Top Packer
Packer	4.00			3974.00	
Stubb	1.00			3975.00	
Recorder	0.00	6771	Inside	3975.00	
Recorder	0.00	8844	Outside	3975.00	
Perforations	10.00			3985.00	
Bullnose	5.00			3990.00	16.00 Bottom Packers & Anchor

Total Tool Length: 44.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56292

DST#: 3

ATTN: Bob Peterson

Test Start: 2014.03.10 @ 11:27:57

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 54.00 sec/qt

Water Loss: 6.35 in³

Resistivity: 0.00 ohm.m

Salinity: 2400.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity: 27000 ppm

0 deg API

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
70.00	m c w 40%m 60%w	0.709
0.00	show of oil on top 1" in	0.000

Total Length: 70.00 ft Total Volume: 0.709 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

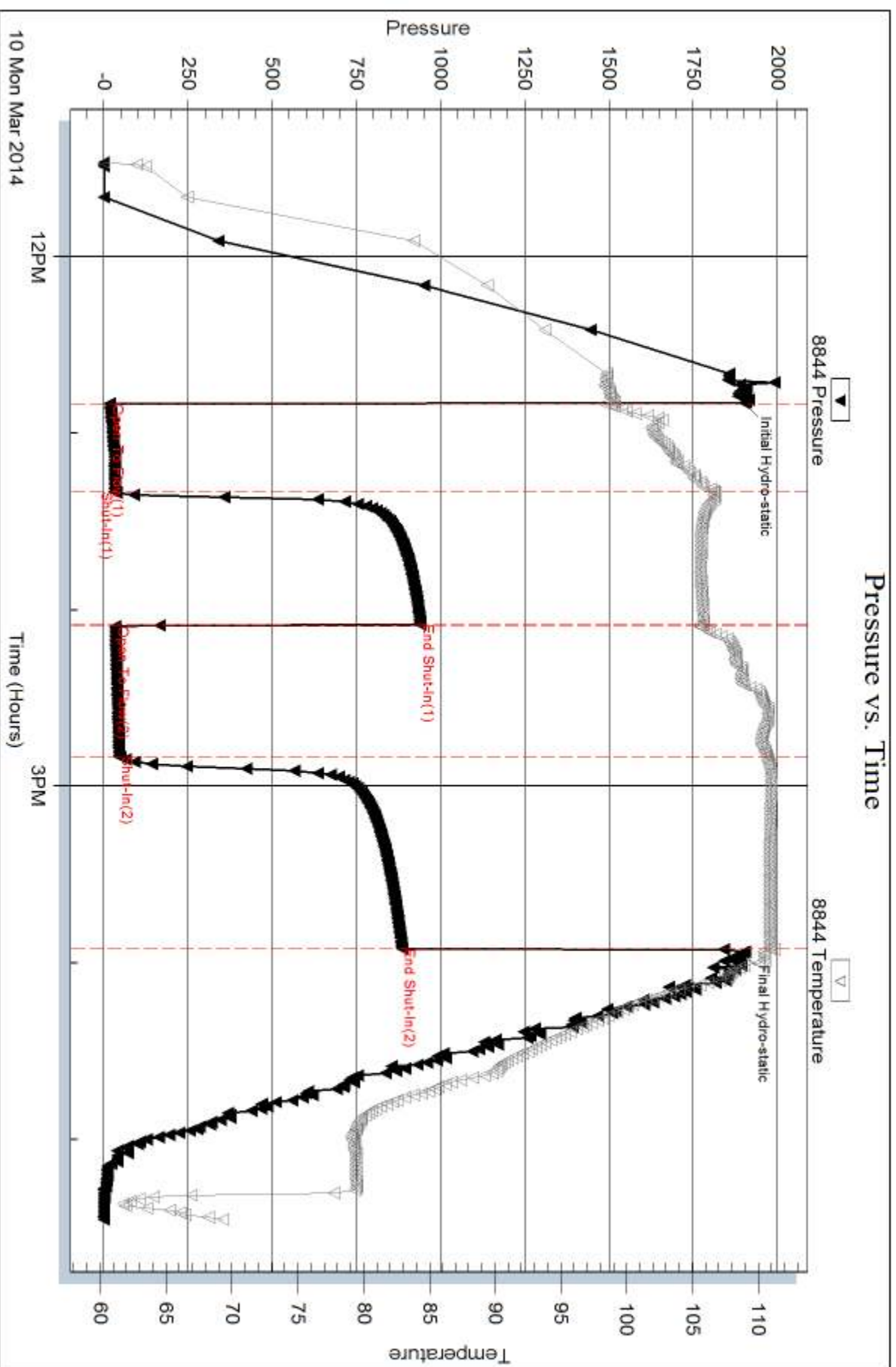
Recovery Comments: rw .228 @ 78°F = 27,000

Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 3



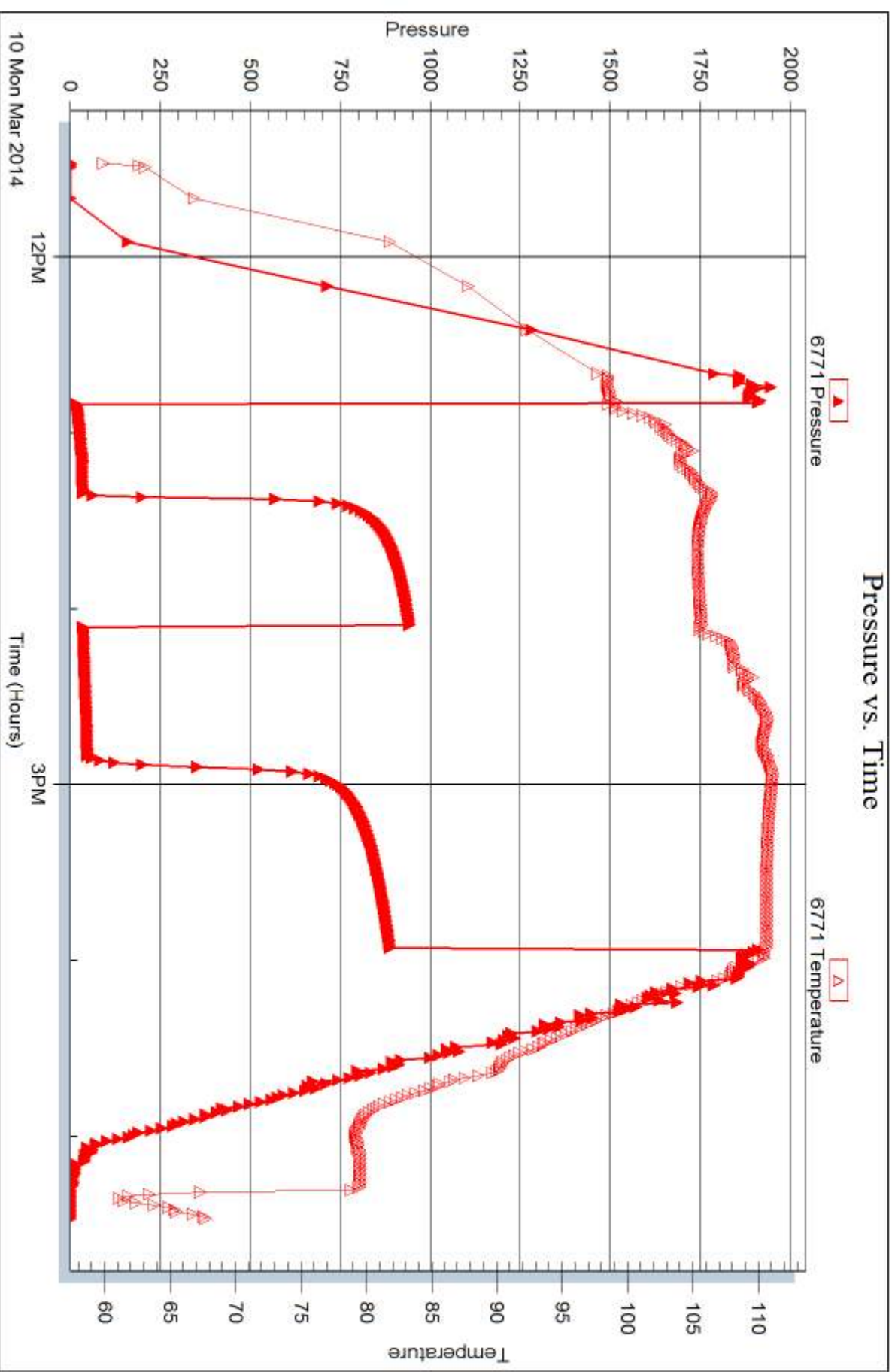
Serial #: 6771

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.11 @ 00:30:22

End Date: 2014.03.11 @ 07:05:22

Job Ticket #: 56293 DST #: 4

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

Printed: 2014.03.21 @ 13:34:24



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

30-13-31 Gove, KS

Joseph #4

Job Ticket: 56293

DST#: 4

Test Start: 2014.03.11 @ 00:30:22

GENERAL INFORMATION:

Formation: **F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:49:22

Time Test Ended: 07:05:22

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3986.00 ft (KB) To 4000.00 ft (KB) (TVD)

Total Depth: 4000.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: 51.90 psig @ 3987.00 ft (KB)

Start Date: 2014.03.11

End Date:

2014.03.11

Start Time: 00:30:22

End Time:

06:52:22

Capacity: 8000.00 psig

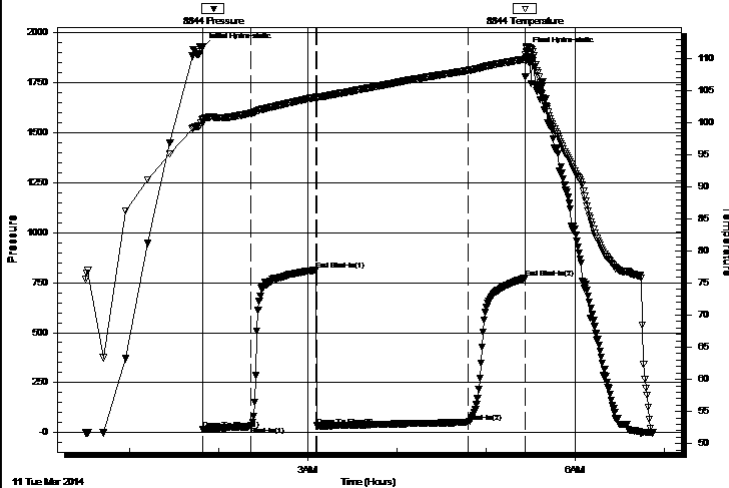
Last Calib.: 2014.03.11

Time On Btm: 2014.03.11 @ 01:49:07

Time Off Btm: 2014.03.11 @ 05:26:37

TEST COMMENT: 1" blow
No return
2 3/4" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1924.97	100.62	Initial Hydro-static
1	15.75	100.06	Open To Flow (1)
33	31.08	101.46	Shut-In(1)
77	813.68	103.99	End Shut-In(1)
77	34.38	103.79	Open To Flow (2)
179	51.90	108.13	Shut-In(2)
217	772.94	109.90	End Shut-In(2)
218	1905.95	111.65	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
85.00	m c w 20% m 80% w	0.92
2.00	free oil	0.03

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56293

DST#: 4

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 00:30:22

GENERAL INFORMATION:

Formation: **F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 01:49:22

Time Test Ended: 07:05:22

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 3986.00 ft (KB) To 4000.00 ft (KB) (TVD)

Total Depth: 4000.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 3987.00 ft (KB)

Start Date: 2014.03.11

End Date:

2014.03.11

Start Time: 00:30:18

End Time:

06:52:33

Capacity: 8000.00 psig

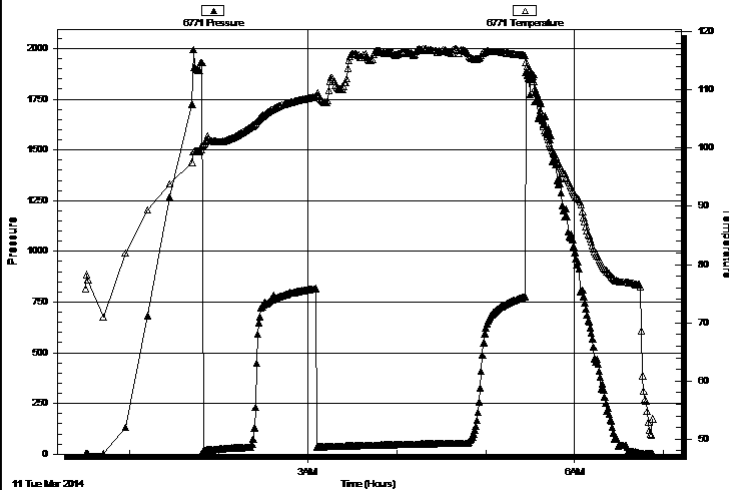
Last Calib.: 2014.03.11

Time On Btm:

Time Off Btm:

TEST COMMENT: 1" blow
No return
2 3/4" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
85.00	m c w 20% m 80% w	0.92
2.00	free oil	0.03

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56293

DST#: 4

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 00:30:22

Tool Information

Drill Pipe:	Length:	3948.00 ft	Diameter:	3.80 inches	Volume:	55.38 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	70000.00 lb
					Total Volume:	55.53 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		20.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		3986.00 ft					Final	58000.00 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			3959.00	
Shut In Tool	5.00			3964.00	
Hydraulic tool	5.00			3969.00	
Jars	5.00			3974.00	
Safety Joint	3.00			3977.00	
Packer	5.00			3982.00	28.00 Bottom Of Top Packer
Packer	4.00			3986.00	
Stubb	1.00			3987.00	
Recorder	0.00	6771	Inside	3987.00	
Recorder	0.00	8844	Outside	3987.00	
Perforations	8.00			3995.00	
Bullnose	5.00			4000.00	14.00 Bottom Packers & Anchor

Total Tool Length: 42.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56293

DST#: 4

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 00:30:22

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 54.00 sec/qt

Water Loss: 6.36 in³

Resistivity: 0.00 ohm.m

Salinity: 2400.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

40000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
85.00	m c w 20% m 80% w	0.919
2.00	free oil	0.028

Total Length: 87.00 ft Total Volume: 0.947 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw .217 @ 58°F=40,000 chlor

Ran over on time on second flow ran a 90min instead of a 30min.

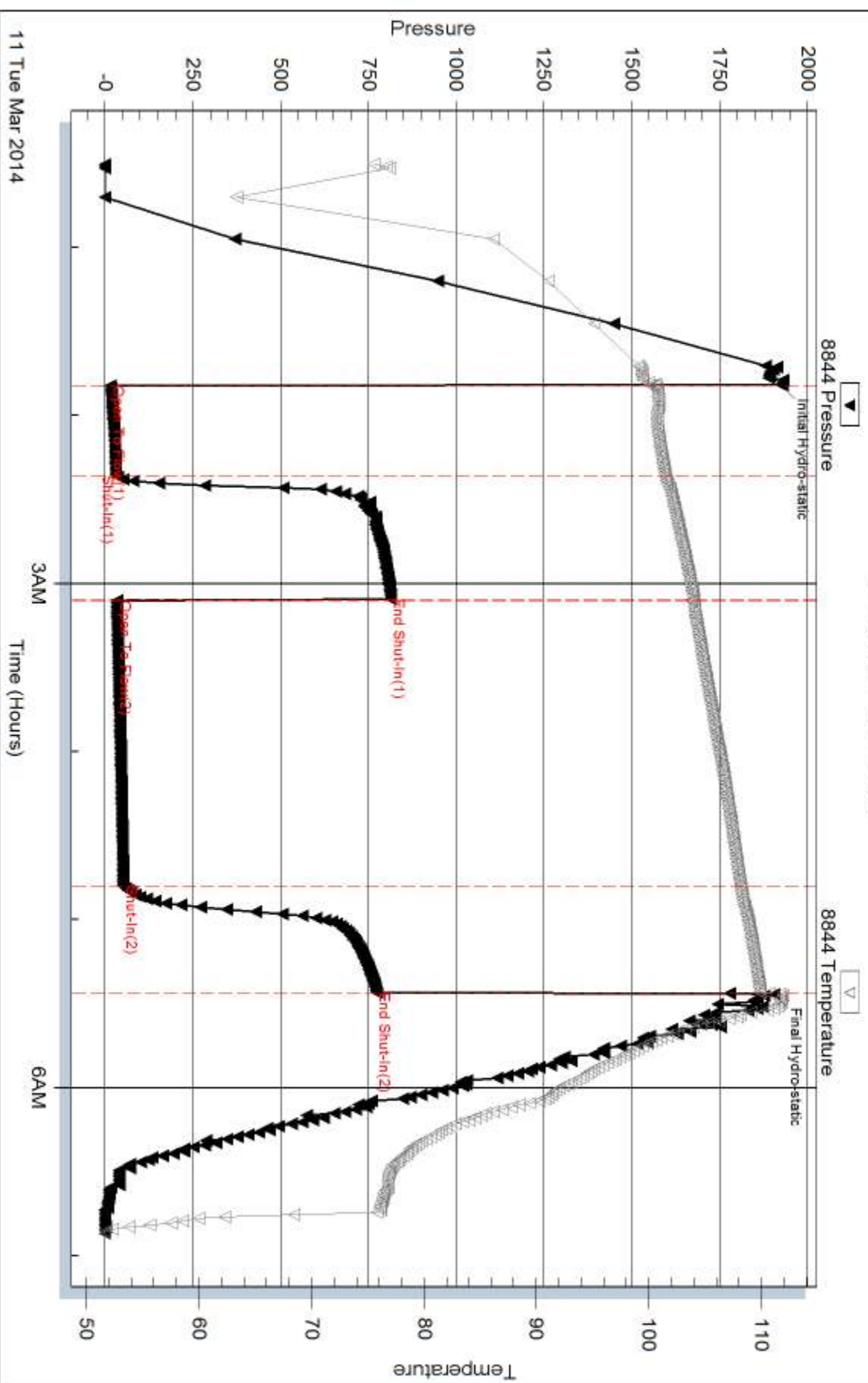
Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 4

Pressure vs. Time



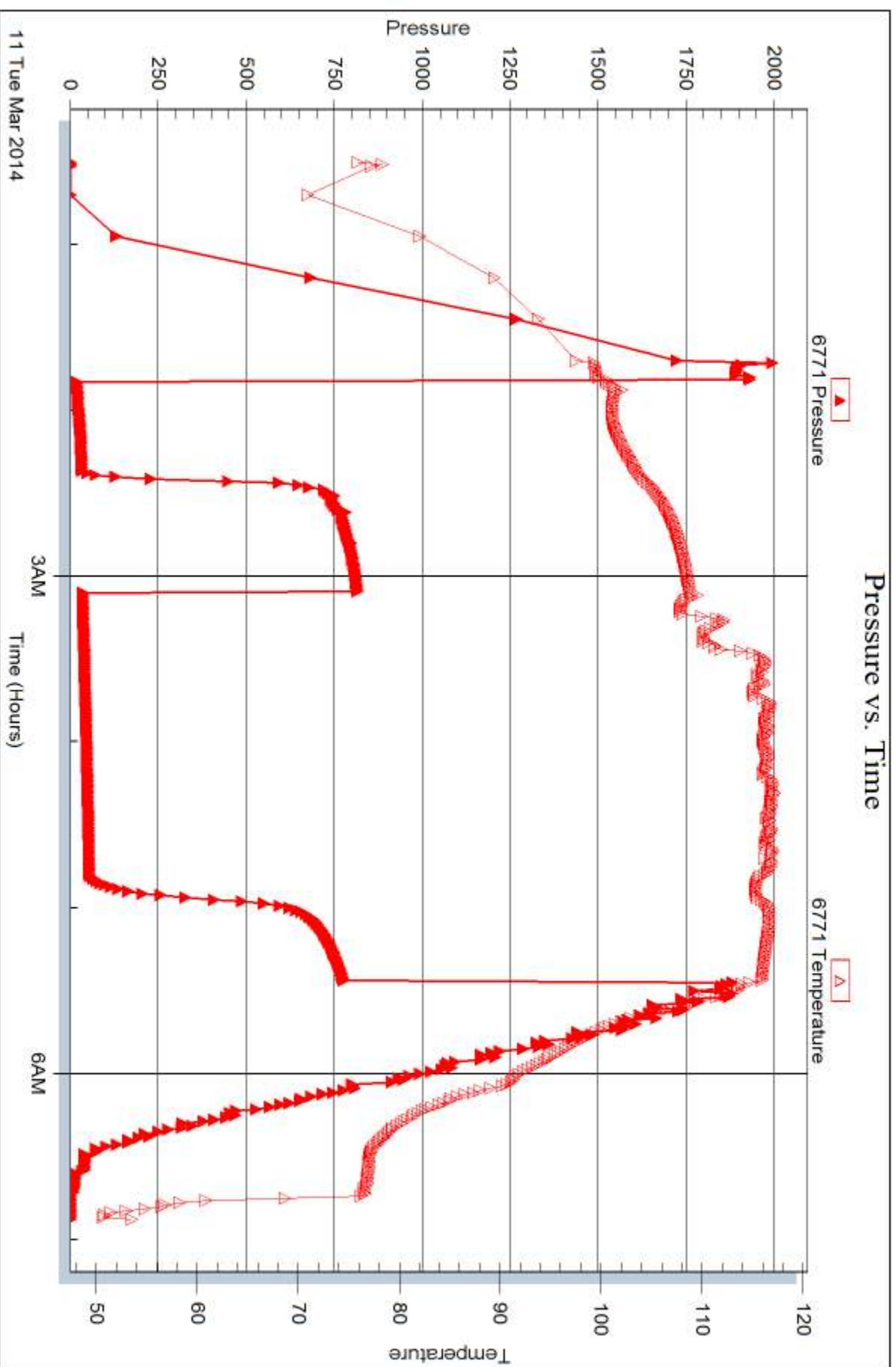
Serial #: 6771

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 4





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.11 @ 19:00:26

End Date: 2014.03.12 @ 02:35:56

Job Ticket #: 56294 DST #: 5

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

Printed: 2014.03.21 @ 13:33:47



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

30-13-31 Gove, KS

Joseph #4

Job Ticket: 56294

DST#: 5

Test Start: 2014.03.11 @ 19:00:26

GENERAL INFORMATION:

Formation: **G-H**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:23:11

Time Test Ended: 02:35:56

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4018.00 ft (KB) To 4085.00 ft (KB) (TVD)

Total Depth: 4085.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771 Inside

Press@RunDepth: 79.24 psig @ 4019.00 ft (KB)

Start Date: 2014.03.11

End Date:

2014.03.12

Start Time: 19:00:26

End Time:

02:17:56

Capacity: 8000.00 psig

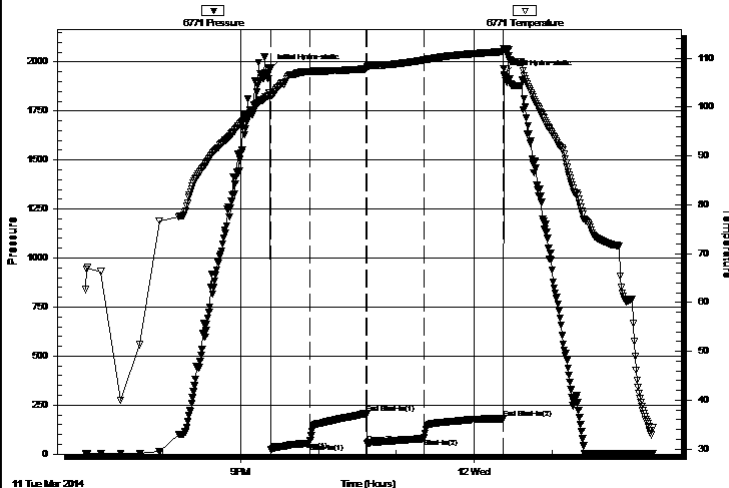
Last Calib.: 2014.03.12

Time On Btm: 2014.03.11 @ 21:22:41

Time Off Btm: 2014.03.12 @ 00:22:56

TEST COMMENT: 6" blow
No return
6" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1965.82	102.95	Initial Hydro-static
1	21.56	102.34	Open To Flow (1)
31	55.52	107.25	Shut-In(1)
74	208.57	107.82	End Shut-In(1)
75	52.73	108.18	Open To Flow (2)
119	79.24	109.59	Shut-In(2)
180	181.21	111.34	End Shut-In(2)
181	1934.76	111.94	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
130.00	w c m 50%w 50%m show on top	1.55

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56294

DST#: 5

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 19:00:26

GENERAL INFORMATION:

Formation: **G-H**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:23:11

Time Test Ended: 02:35:56

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4018.00 ft (KB) To 4085.00 ft (KB) (TVD)

Total Depth: 4085.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: psig @ 4019.00 ft (KB)

Start Date: 2014.03.11

End Date:

2014.03.12

Start Time: 19:00:36

End Time:

02:18:06

Capacity: 8000.00 psig

Last Calib.:

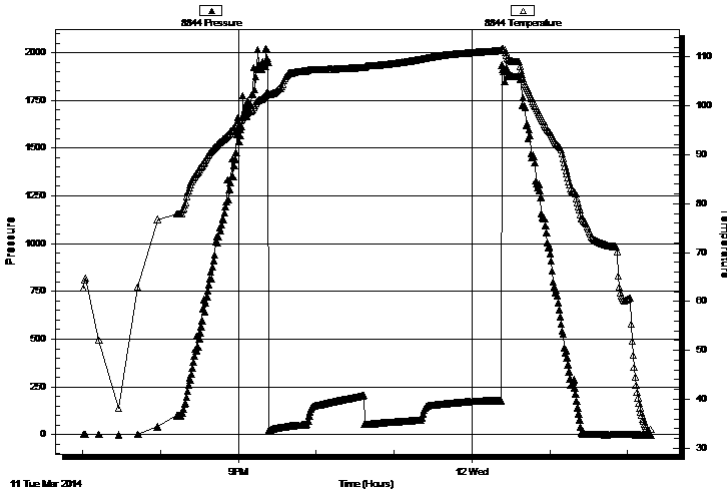
2014.03.12

Time On Btm:

Time Off Btm:

TEST COMMENT: 6" blow
No return
6" blow
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
130.00	w c m 50%w 50% m show on top	1.55

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56294

DST#: 5

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 19:00:26

Tool Information

Drill Pipe:	Length:	3982.00 ft	Diameter:	3.80 inches	Volume:	55.86 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	56.01 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		22.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		4018.00 ft					Final	59000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		67.00 ft						
Tool Length:		95.00 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		3991.00	
Shut In Tool	5.00		3996.00	
Hydraulic tool	5.00		4001.00	
Jars	5.00		4006.00	
Safety Joint	3.00		4009.00	
Packer	5.00		4014.00	28.00 Bottom Of Top Packer
Packer	4.00		4018.00	
Stubb	1.00		4019.00	
Recorder	0.00	6771 Inside	4019.00	
Recorder	0.00	8844 Outside	4019.00	
Perforations	27.00		4046.00	
Change Over Sub	1.00		4047.00	
Drill Pipe	32.00		4079.00	
Change Over Sub	1.00		4080.00	
Bullnose	5.00		4085.00	67.00 Bottom Packers & Anchor

Total Tool Length: 95.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56294

DST#: 5

ATTN: Bob Peterson

Test Start: 2014.03.11 @ 19:00:26

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 56.00 sec/qt

Water Loss: 7.17 in³

Resistivity: 0.00 ohm.m

Salinity: 2800.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

0 deg API

Water Salinity:

32000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
130.00	w c m 50%w 50%m show on top	1.550

Total Length: 130.00 ft Total Volume: 1.550 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw .311 @ 50*f= 32,000 chlor

Serial #: 6771

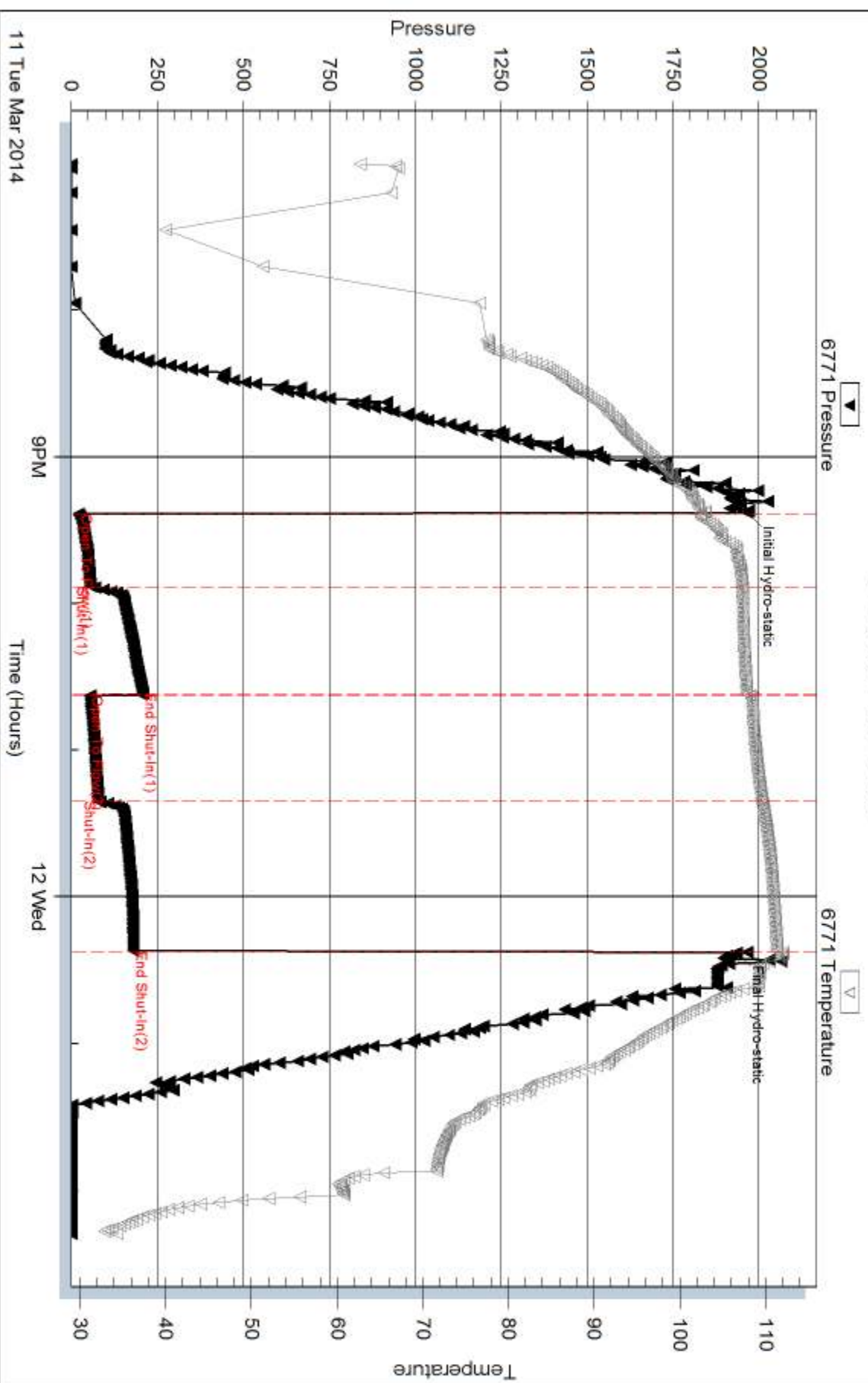
Inside

Ritchie Exploration

Joseph #4

DST Test Number: 5

Pressure vs. Time

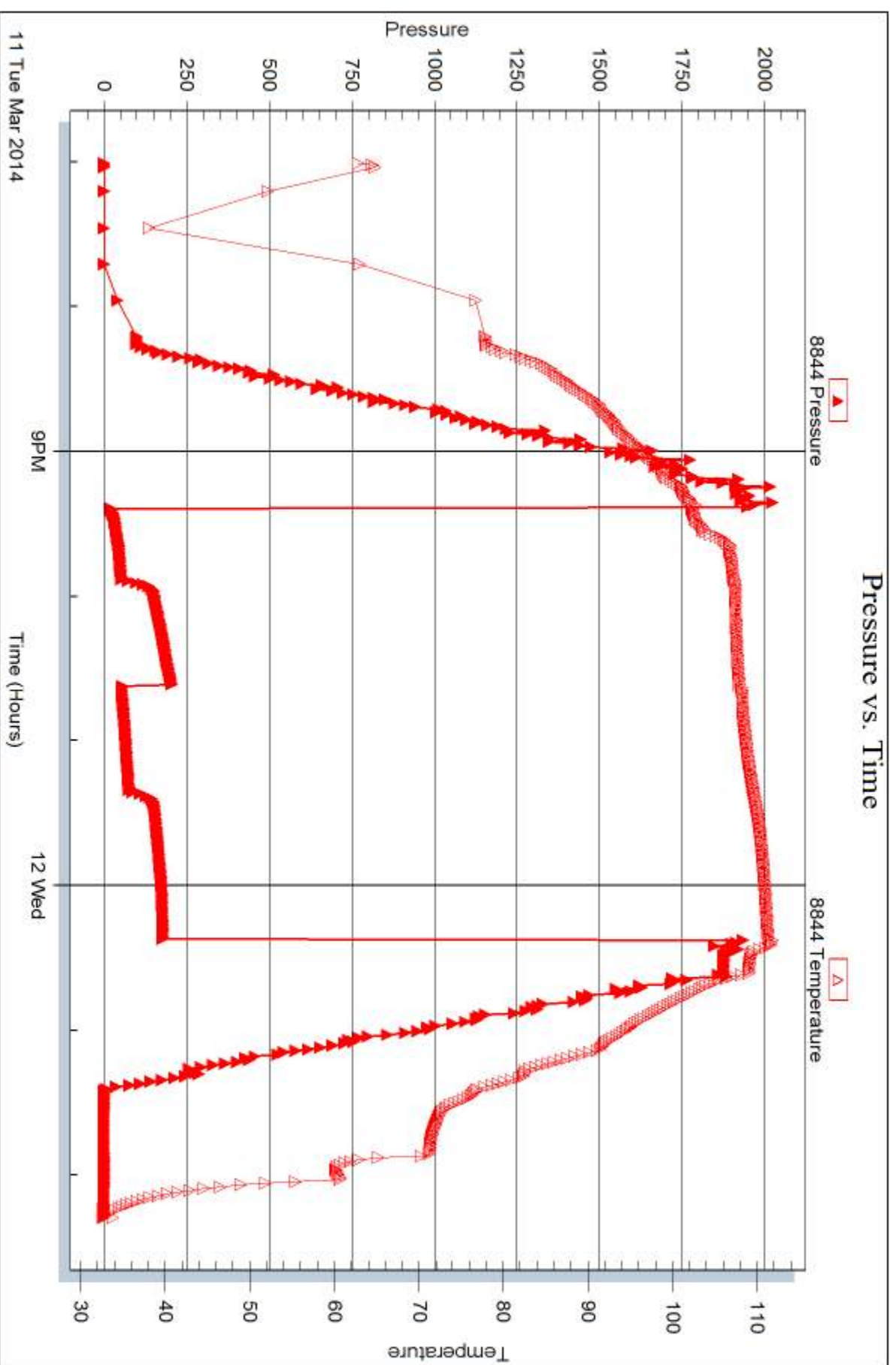


Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 5





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.12 @ 11:45:29

End Date: 2014.03.12 @ 18:50:59

Job Ticket #: 56295 DST #: 6

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.21 @ 13:33:16



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56295

DST#: 6

ATTN: Bob Peterson

Test Start: 2014.03.12 @ 11:45:29

GENERAL INFORMATION:

Formation: **I-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:13:29

Time Test Ended: 18:50:59

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4087.00 ft (KB) To 4145.00 ft (KB) (TVD)

Total Depth: 4145.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: 249.48 psig @ 4088.00 ft (KB)

Start Date: 2014.03.12

End Date:

2014.03.12

Start Time: 11:45:29

End Time:

18:33:59

Capacity: 8000.00 psig

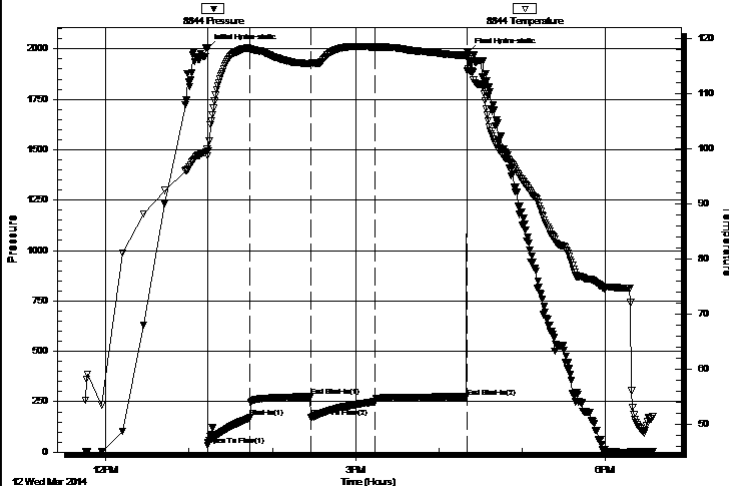
Last Calib.: 2014.03.12

Time On Btm: 2014.03.12 @ 13:13:14

Time Off Btm: 2014.03.12 @ 16:20:44

TEST COMMENT: B.O. B in 9 min
No return
B.O.B. in 24 min.
No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2003.87	100.09	Initial Hydro-static
1	34.75	98.80	Open To Flow (1)
31	170.43	118.13	Shut-In(1)
75	274.76	115.47	End Shut-In(1)
75	172.54	115.42	Open To Flow (2)
121	249.48	118.43	Shut-In(2)
187	274.48	116.93	End Shut-In(2)
188	1980.74	116.27	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
63.00	m c w 25m 75w	0.61
124.00	s m c w 10m 90w	1.74
248.00	water 100w	3.48

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

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56295

DST#: 6

ATTN: Bob Peterson

Test Start: 2014.03.12 @ 11:45:29

GENERAL INFORMATION:

Formation: **I-J**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 13:13:29

Time Test Ended: 18:50:59

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4087.00 ft (KB) To 4145.00 ft (KB) (TVD)

Total Depth: 4145.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771 Inside

Press@RunDepth: psig @ 4088.00 ft (KB)

Start Date: 2014.03.12

End Date:

2014.03.12

Start Time: 11:45:34

End Time:

18:34:34

Capacity: 8000.00 psig

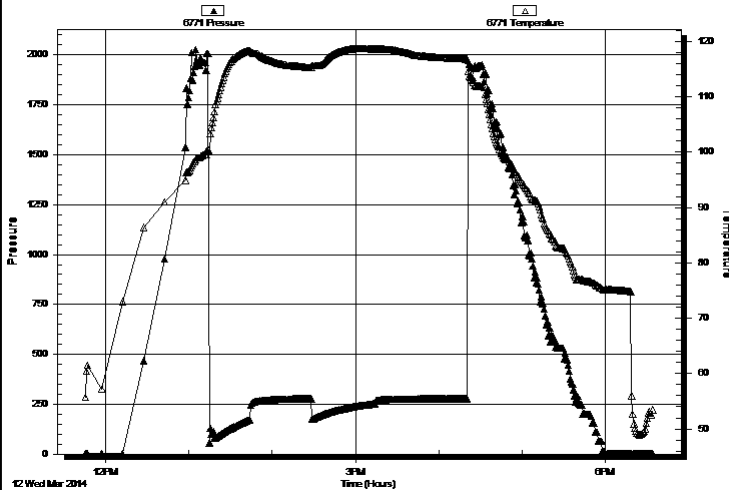
Last Calib.: 2014.03.12

Time On Btm:

Time Off Btm:

TEST COMMENT: B.O. B in 9 min
No return
B.O.B. in 24 min.
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Recovery

Length (ft)	Description	Volume (bbl)
63.00	m c w 25m 75w	0.61
124.00	s m c w 10m 90w	1.74
248.00	water 100w	3.48

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56295

DST#: 6

ATTN: Bob Peterson

Test Start: 2014.03.12 @ 11:45:29

Tool Information

Drill Pipe:	Length:	4046.00 ft	Diameter:	3.80 inches	Volume:	56.75 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	56.90 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		17.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		4087.00 ft					Final	62000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		58.00 ft						
Tool Length:		86.00 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			4060.00	
Shut In Tool	5.00			4065.00	
Hydraulic tool	5.00			4070.00	
Jars	5.00			4075.00	
Safety Joint	3.00			4078.00	
Packer	5.00			4083.00	28.00 Bottom Of Top Packer
Packer	4.00			4087.00	
Stubb	1.00			4088.00	
Recorder	0.00	6771	Inside	4088.00	
Recorder	0.00	8844	Outside	4088.00	
Perforations	18.00			4106.00	
Change Over Sub	1.00			4107.00	
Drill Pipe	32.00			4139.00	
Change Over Sub	1.00			4140.00	
Bullnose	5.00			4145.00	58.00 Bottom Packers & Anchor

Total Tool Length: 86.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56295

DST#: 6

ATTN: Bob Peterson

Test Start: 2014.03.12 @ 11:45:29

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 56.00 sec/qt

Water Loss: 7.17 in³

Resistivity: 0.00 ohm.m

Salinity: 2800.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

0 deg API

Water Salinity:

32000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
63.00	m c w 25m 75w	0.610
124.00	s m c w 10m 90w	1.739
248.00	water 100w	3.479

Total Length: 435.00 ft

Total Volume: 5.828 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

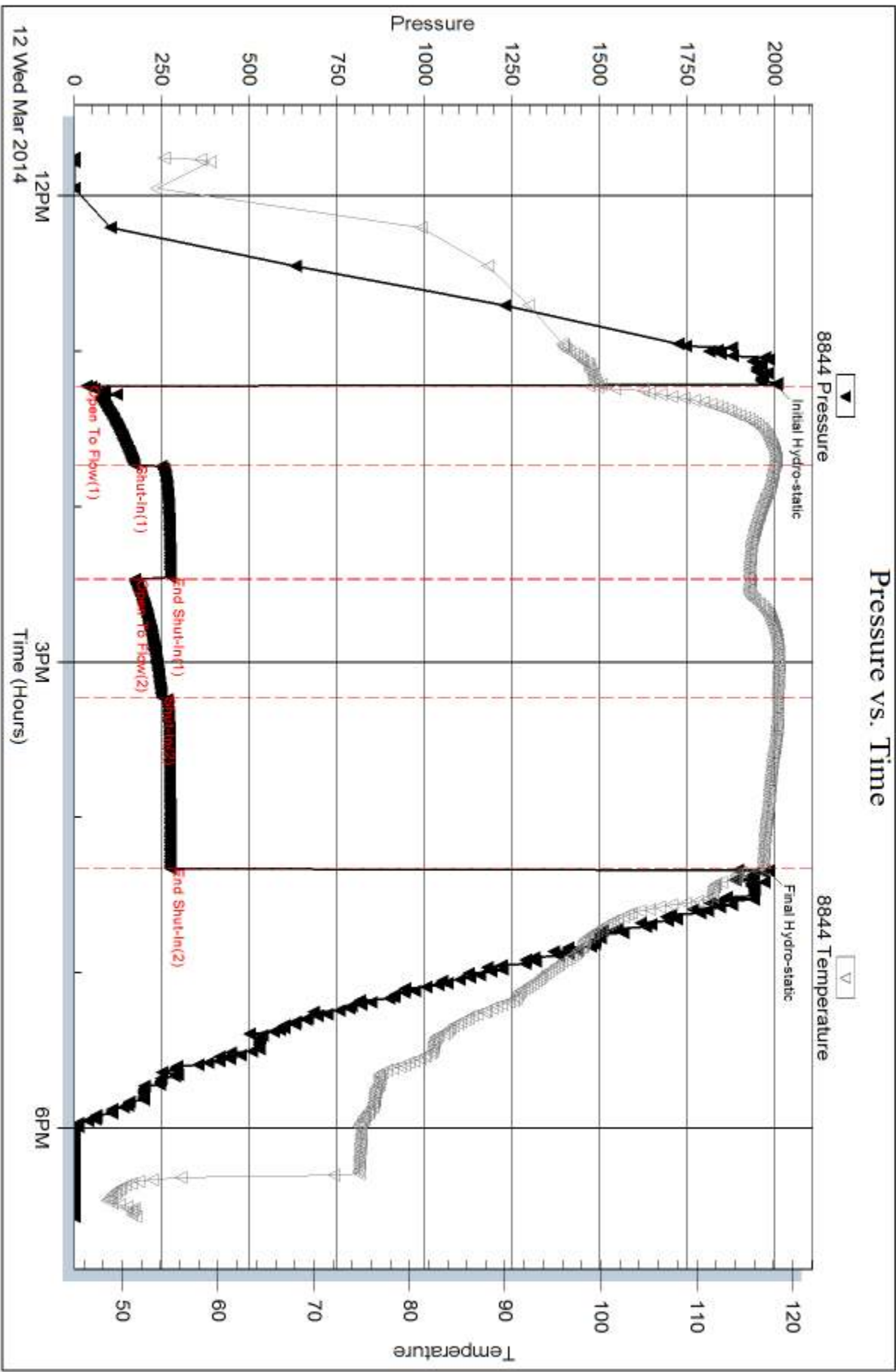
Recovery Comments: rw .231 @ 63*f =32,000 chlor

Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 6



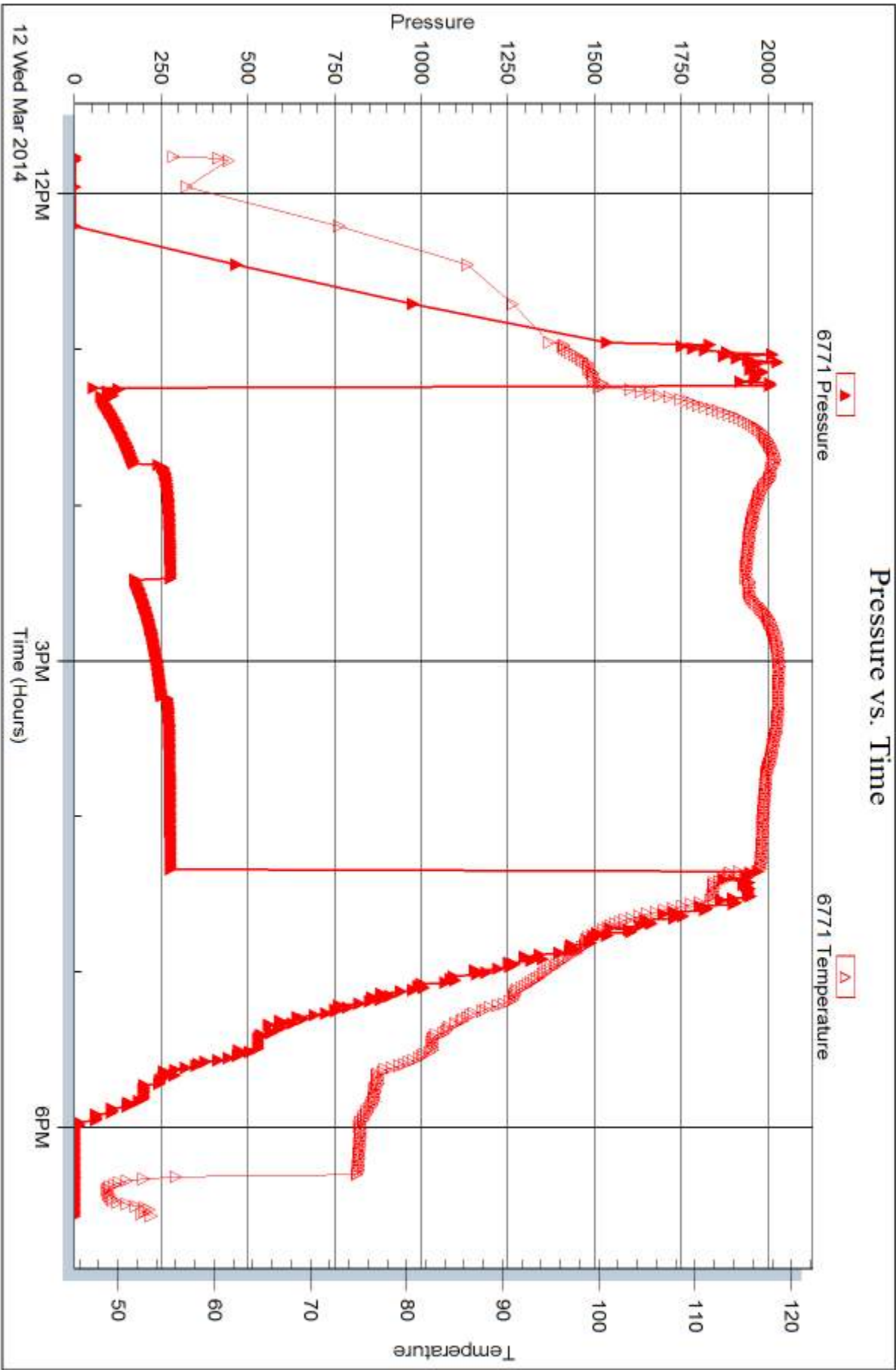
Serial #: 6771

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 6





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.13 @ 01:50:33

End Date: 2014.03.13 @ 09:05:03

Job Ticket #: 56296 DST #: 7

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

Printed: 2014.03.21 @ 13:32:53



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

30-13-31 Gove, KS

Joseph #4

Job Ticket: 56296

DST#: 7

Test Start: 2014.03.13 @ 01:50:33

GENERAL INFORMATION:

Formation: **K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:34:03

Time Test Ended: 09:05:03

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4140.00 ft (KB) To 4175.00 ft (KB) (TVD)

Total Depth: 4175.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 6771

Inside

Press@RunDepth: 666.30 psig @ 4141.00 ft (KB)

Start Date: 2014.03.13

End Date:

2014.03.13

Start Time: 01:50:33

End Time:

08:47:03

Capacity: 8000.00 psig

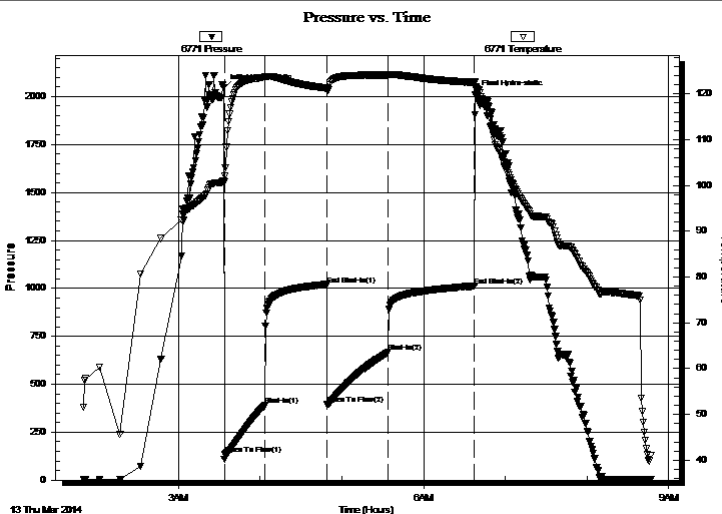
Last Calib.: 2014.03.13

Time On Btm: 2014.03.13 @ 03:33:18

Time Off Btm: 2014.03.13 @ 06:38:03

TEST COMMENT: B.O.B. in 4 min.
No return
B.O.B. in 6 1/2 min
No return

PRESSURE SUMMARY



Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2044.18	100.91	Initial Hydro-static
1	134.76	102.02	Open To Flow (1)
30	388.85	123.62	Shut-In(1)
76	1020.50	121.25	End Shut-In(1)
76	393.59	120.90	Open To Flow (2)
121	666.30	124.12	Shut-In(2)
184	1011.01	122.48	End Shut-In(2)
185	2009.01	121.41	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
1278.00	water 100w	17.65
186.00	s m c w 15m 85w	2.61

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

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56296

DST#: 7

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 01:50:33

GENERAL INFORMATION:

Formation: **K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:34:03

Time Test Ended: 09:05:03

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4140.00 ft (KB) To 4175.00 ft (KB) (TVD)

Total Depth: 4175.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8844 Outside

Press@RunDepth: psig @ 4141.00 ft (KB)

Start Date: 2014.03.13

End Date:

2014.03.13

Start Time: 01:50:56

End Time:

08:46:56

Capacity: 8000.00 psig

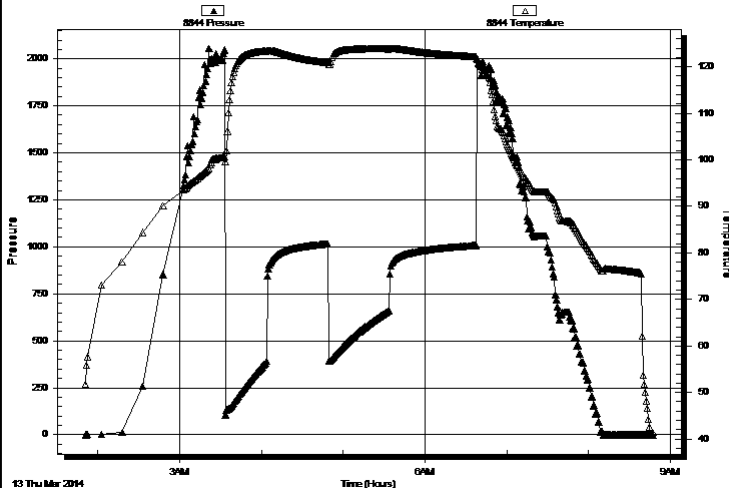
Last Calib.: 2014.03.13

Time On Btm:

Time Off Btm:

TEST COMMENT: B.O.B. in 4 min.
No return
B.O.B. in 6 1/2 min
No return

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
1278.00	water 100w	17.65
186.00	s m c w 15m 85w	2.61

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56296

DST#: 7

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 01:50:33

Tool Information

Drill Pipe:	Length:	4109.00 ft	Diameter:	3.80 inches	Volume:	57.64 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	57.79 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		27.00 ft					String Weight: Initial	56000.00 lb
Depth to Top Packer:		4140.00 ft					Final	61000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		35.00 ft						
Tool Length:		63.00 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			4113.00	
Shut In Tool	5.00			4118.00	
Hydraulic tool	5.00			4123.00	
Jars	5.00			4128.00	
Safety Joint	3.00			4131.00	
Packer	5.00			4136.00	28.00 Bottom Of Top Packer
Packer	4.00			4140.00	
Stubb	1.00			4141.00	
Recorder	0.00	6771	Inside	4141.00	
Recorder	0.00	8844	Outside	4141.00	
Perforations	29.00			4170.00	
Bullnose	5.00			4175.00	35.00 Bottom Packers & Anchor

Total Tool Length: 63.00



TRILOBITE
TESTING, INC

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56296

DST#: 7

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 01:50:33

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 53.00 sec/qt

Water Loss: 7.97 in³

Resistivity: 0.00 ohm.m

Salinity: 38000.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

0 deg API

Water Salinity:

24000 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
1278.00	water 100w	17.654
186.00	s m c w 15m 85w	2.609

Total Length: 1464.00 ft Total Volume: 20.263 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw .326 @ 64*f= 24,000 chlor

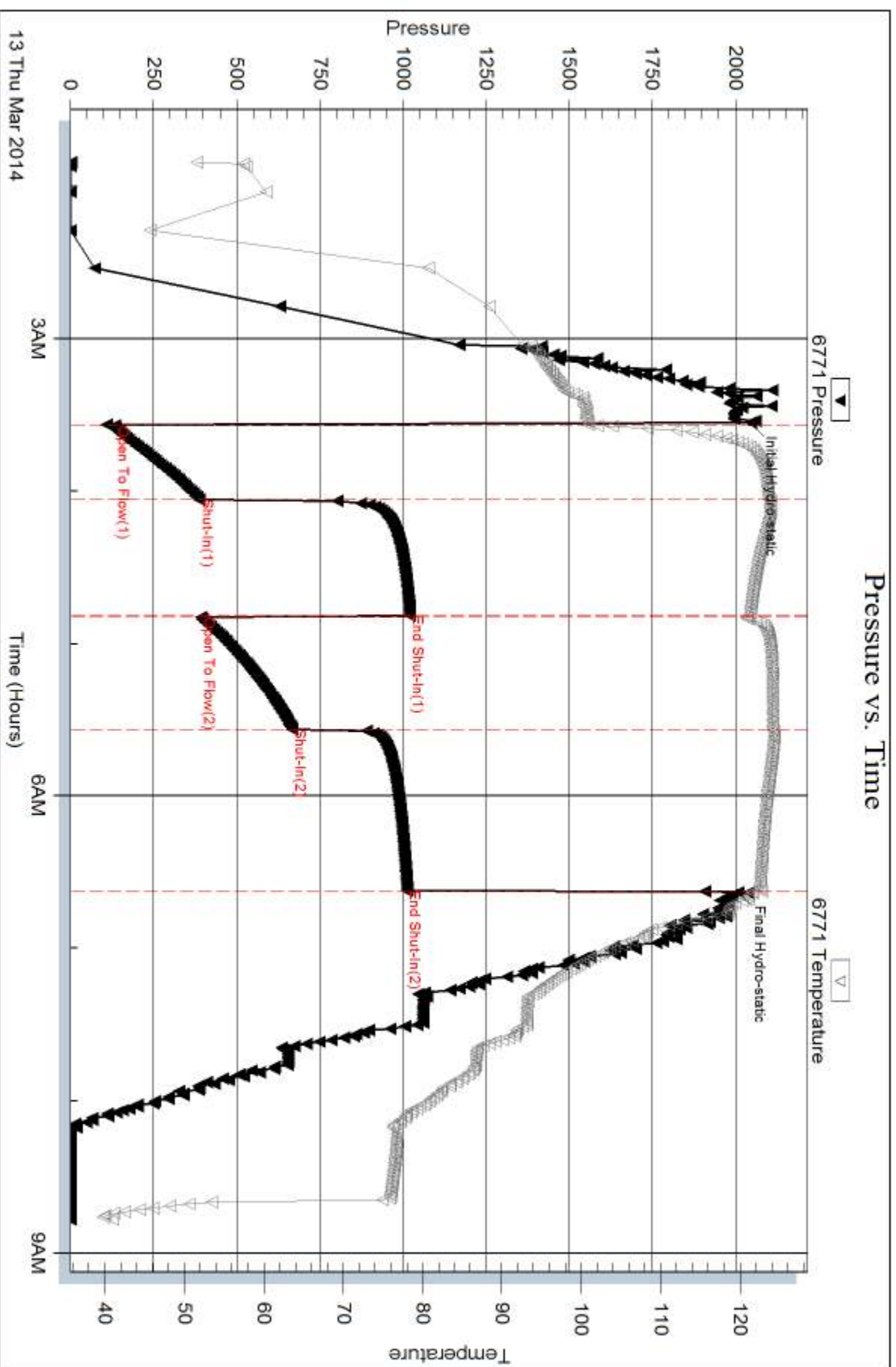
Serial #: 6771

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 7

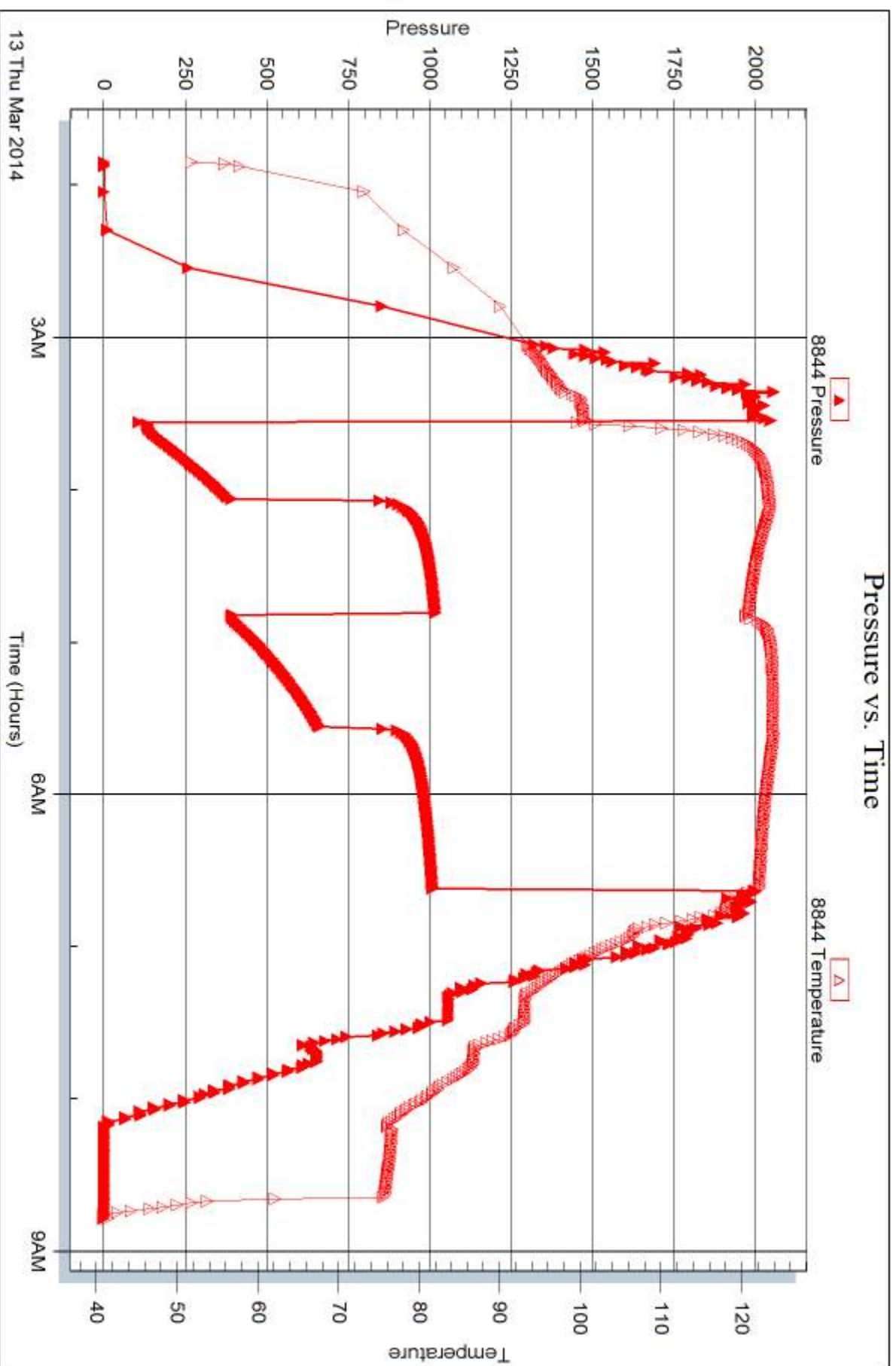


Serial #: 8844

Outside Ritchie Exploration

Joseph #4

DST Test Number: 7





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.13 @ 19:30:00

End Date: 2014.03.14 @ 02:16:15

Job Ticket #: 56390 DST #: 8

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

Printed: 2014.03.21 @ 13:32:27



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56390

DST#: 8

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 19:30:00

GENERAL INFORMATION:

Formation: **LKC -L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:28:00

Time Test Ended: 02:16:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: 4173.00 ft (KB) To 4248.00 ft (KB) (TVD)

Reference Elevations: 2876.00 ft (KB)

Total Depth: 4348.00 ft (KB) (TVD)

2868.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 8.00 ft

Serial #: 8522 Outside

Press@RunDepth: 99.21 psig @ 4174.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.13

End Date:

2014.03.14

Last Calib.: 2014.03.14

Start Time: 19:30:05

End Time:

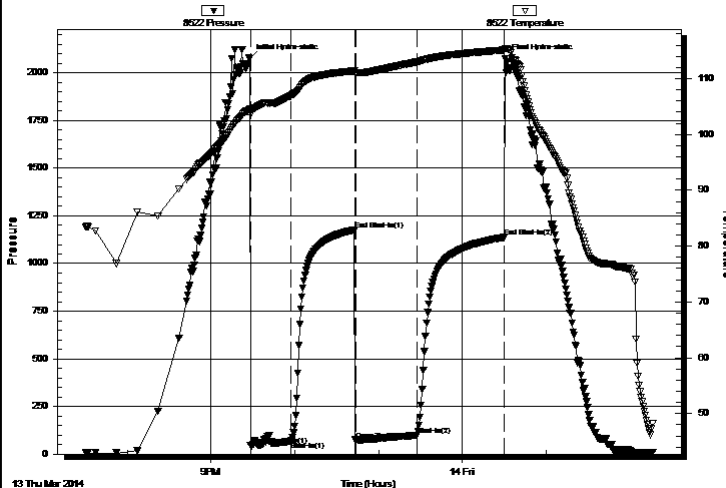
02:16:14

Time On Btm: 2014.03.13 @ 21:27:30

Time Off Btm: 2014.03.14 @ 00:30:30

TEST COMMENT: IF: BOB @ 25 min.
IS: No return.
FF: BOB @ 25 min.
FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2075.44	104.56	Initial Hydro-static
1	48.12	103.54	Open To Flow (1)
30	67.45	106.93	Shut-In(1)
76	1177.27	111.38	End Shut-In(1)
76	71.75	111.03	Open To Flow (2)
120	99.21	112.99	Shut-In(2)
183	1137.65	115.09	End Shut-In(2)
183	2074.46	115.40	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
60.00	gw ocm 15g 25w 20o 40m	0.57
90.00	gw mco 25g 15w 20m 40o	1.26
10.00	oil 100o	0.14
0.00	200' GIP	0.00

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

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56390

DST#: 8

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 19:30:00

GENERAL INFORMATION:

Formation: **LKC -L**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 21:28:00

Time Test Ended: 02:16:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: 4173.00 ft (KB) To 4248.00 ft (KB) (TVD)

Total Depth: 4348.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8678 Inside

Press@RunDepth: psig @ 4174.00 ft (KB)

Start Date: 2014.03.13

End Date:

2014.03.14

Start Time: 19:30:05

End Time:

02:15:14

Capacity: 8000.00 psig

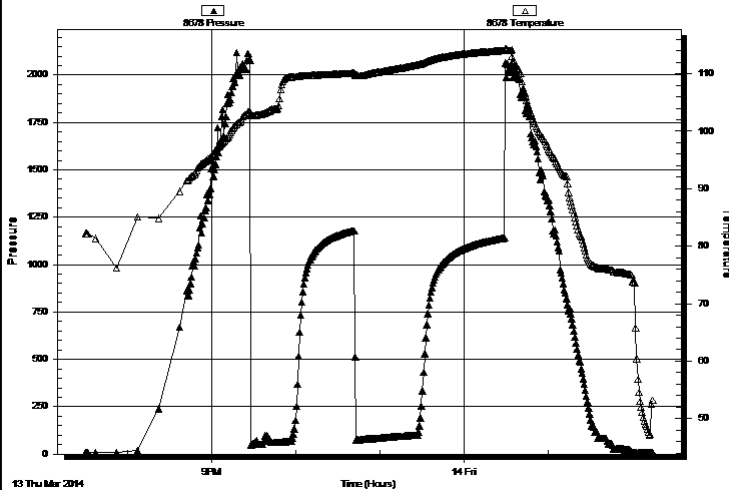
Last Calib.: 2014.03.14

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: BOB @ 25 min.
IS: No return.
FF: BOB @ 25 min.
FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
60.00	gw ocm 15g 25w 20o 40m	0.57
90.00	gw mco 25g 15w 20m 40o	1.26
10.00	oil 100o	0.14
0.00	200' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

TOOL DIAGRAM

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56390

DST#: 8

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 19:30:00

Tool Information

Drill Pipe:	Length:	4140.00 ft	Diameter:	3.80 inches	Volume:	58.07 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	75000.00 lb
					Total Volume:	58.22 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		24.00 ft					String Weight: Initial	56000.00 lb
Depth to Top Packer:		4173.00 ft					Final	57000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		75.00 ft						
Tool Length:		102.00 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			4147.00	
Shut In Tool	5.00			4152.00	
Hydraulic tool	5.00			4157.00	
Jars	5.00			4162.00	
Safety Joint	2.00			4164.00	
Packer	5.00			4169.00	27.00 Bottom Of Top Packer
Packer	4.00			4173.00	
Stubb	1.00			4174.00	
Recorder	0.00	8678	Inside	4174.00	
Recorder	0.00	8522	Outside	4174.00	
Perforations	6.00			4180.00	
Change Over Sub	1.00			4181.00	
Drill Pipe	63.00			4244.00	
Change Over Sub	1.00			4245.00	
Bullnose	3.00			4248.00	75.00 Bottom Packers & Anchor

Total Tool Length: 102.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56390

DST#: 8

ATTN: Bob Peterson

Test Start: 2014.03.13 @ 19:30:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 50.00 sec/qt

Water Loss: 9.58 in³

Resistivity: 0.00 ohm.m

Salinity: 2200.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

29 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
60.00	gw ocm 15g 25w 20o 40m	0.568
90.00	gw mco 25g 15w 20m 40o	1.262
10.00	oil 100o	0.140
0.00	200' GIP	0.000

Total Length: 160.00 ft

Total Volume: 1.970 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

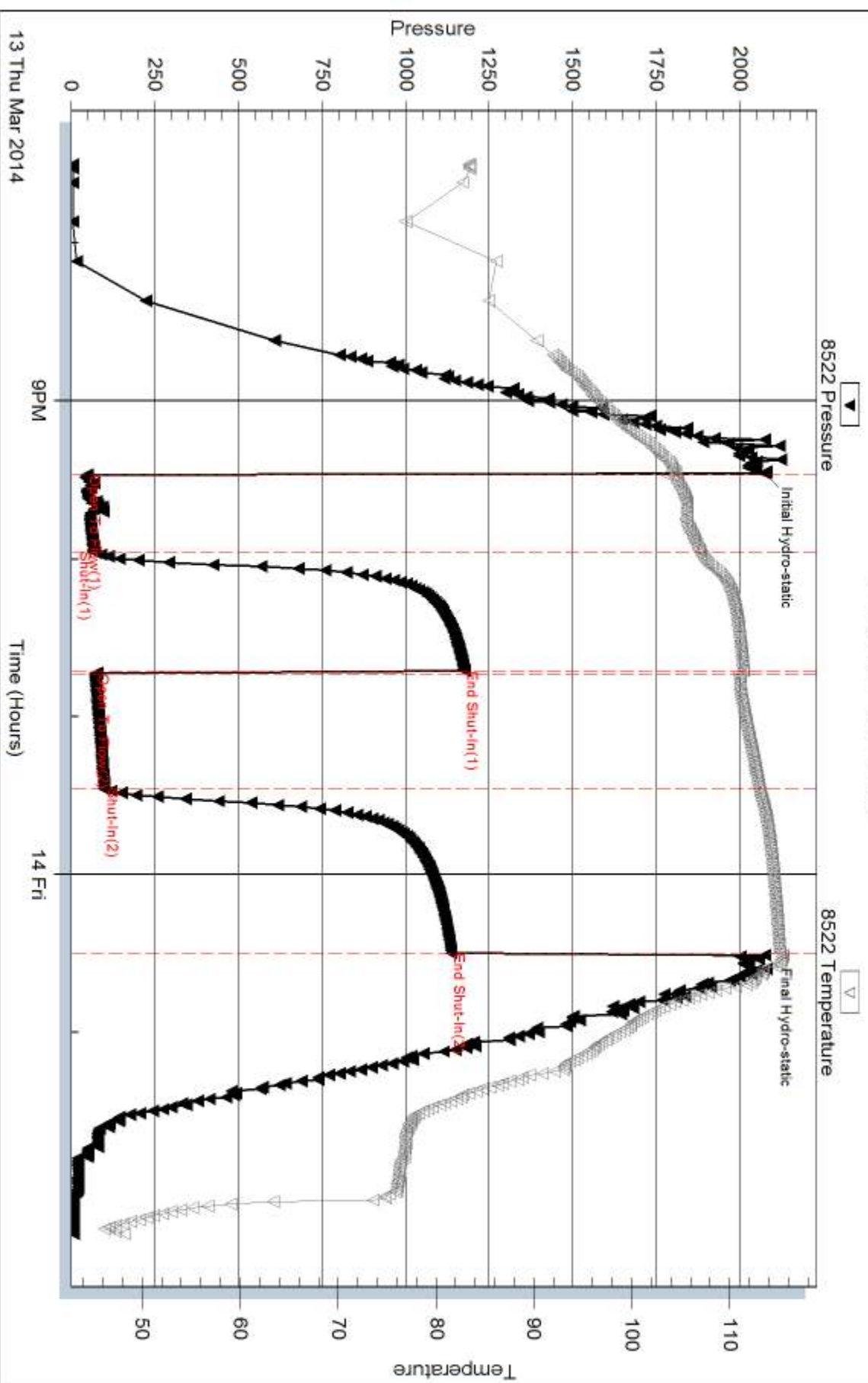
Serial #: 8522

Outside Ritchie Exploration

Joseph #4

DST Test Number: 8

Pressure vs. Time



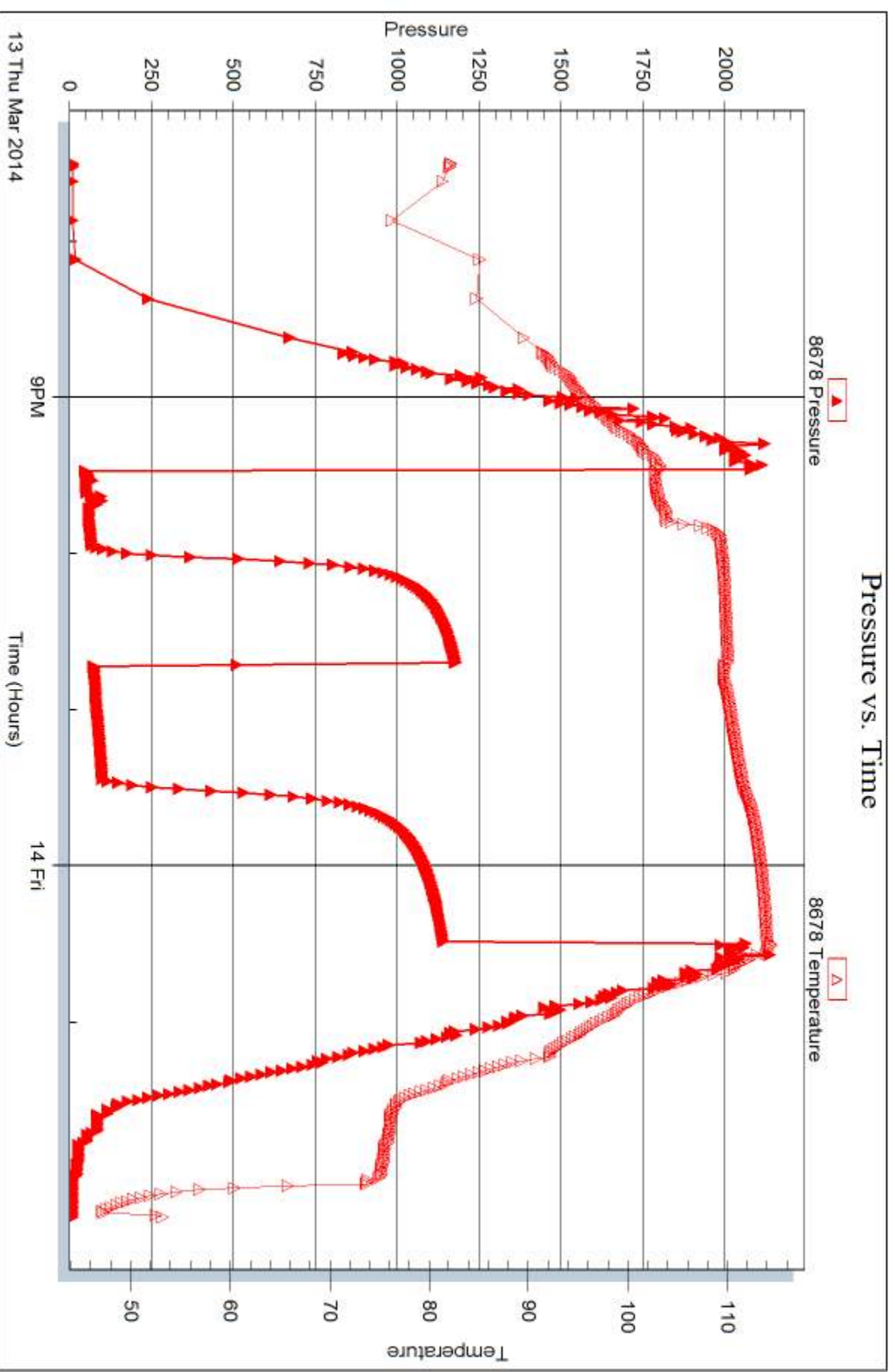
Serial #: 8678

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 8



Trilobite Testing, Inc

Ref. No: 56390

Printed: 2014.03.21 @ 13:32:29



DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.14 @ 19:50:00

End Date: 2014.03.15 @ 02:57:15

Job Ticket #: 56391 DST #: 9

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.21 @ 13:31:59

Ritchie Exploration

30-13-31 Gove,KS

Joseph #4

DST # 9

Pawnee - Ft. Scott

2014.03.14



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56391

DST#: 9

ATTN: Bob Peterson

Test Start: 2014.03.14 @ 19:50:00

GENERAL INFORMATION:

Formation: **Pawnee - Ft. Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:06:30

Time Test Ended: 02:57:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: **4298.00 ft (KB) To 4418.00 ft (KB) (TVD)**

Reference Elevations: 2876.00 ft (KB)

Total Depth: 4418.00 ft (KB) (TVD)

2868.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Good

KB to GR/CF: 8.00 ft

Serial #: 8522 Outside

Press@RunDepth: 106.20 psig @ 4299.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2014.03.14

End Date:

2014.03.15

Last Calib.: 2014.03.15

Start Time: 19:50:05

End Time:

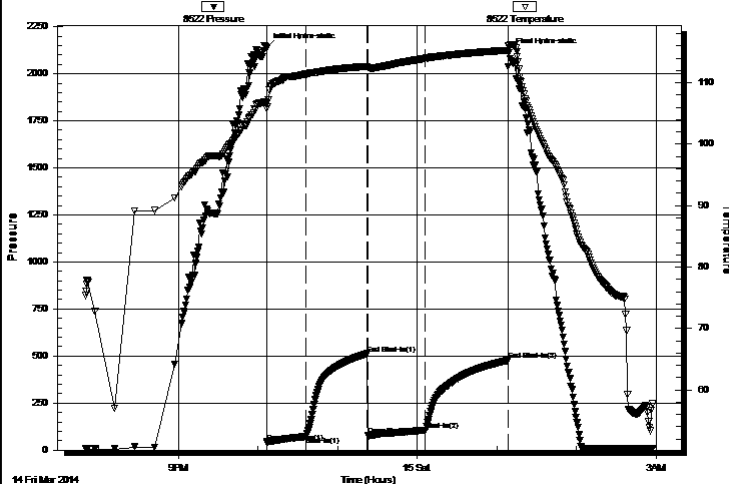
02:57:14

Time On Btm: 2014.03.14 @ 22:06:15

Time Off Btm: 2014.03.15 @ 01:09:15

TEST COMMENT: IF: BOB @ 8 min.
IS: 1" return.
FF: BOB @ 10 min.
FS: 3" return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2136.56	106.60	Initial Hydro-static
1	40.07	105.80	Open To Flow (1)
30	72.46	111.40	Shut-In(1)
76	512.21	112.67	End Shut-In(1)
77	79.14	112.50	Open To Flow (2)
120	106.20	113.95	Shut-In(2)
182	476.70	115.28	End Shut-In(2)
183	2111.96	116.07	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
185.00	gmco 20g 30m 50o	2.32
0.00	500' GIP	0.00

Gas Rates

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

* Recovery from multiple tests



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56391

DST#: 9

ATTN: Bob Peterson

Test Start: 2014.03.14 @ 19:50:00

GENERAL INFORMATION:

Formation: **Pawnee - Ft. Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 22:06:30

Time Test Ended: 02:57:15

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: **4298.00 ft (KB) To 4418.00 ft (KB) (TVD)**

Total Depth: 4418.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8678 Inside

Press@RunDepth: psig @ 4299.00 ft (KB)

Start Date: 2014.03.14

End Date:

2014.03.15

Start Time: 19:50:05

End Time:

02:55:59

Capacity: 8000.00 psig

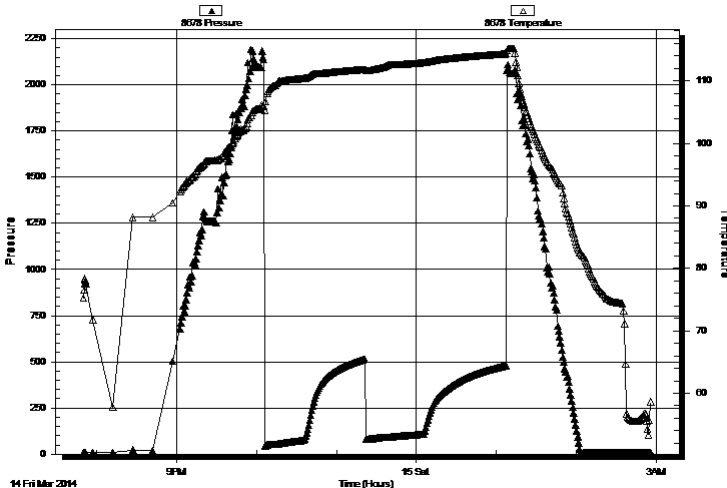
Last Calib.: 2014.03.15

Time On Btm:

Time Off Btm:

TEST COMMENT: IF: BOB @ 8 min.
IS: 1" return.
FF: BOB @ 10 min.
FS: 3" return.

Pressure vs. Time



PRESSURE SUMMARY

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

Length (ft)	Description	Volume (bbl)
185.00	gmco 20g 30m 50o	2.32
0.00	500' GIP	0.00

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

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56391

DST#: 9

ATTN: Bob Peterson

Test Start: 2014.03.14 @ 19:50:00

Tool Information

Drill Pipe:	Length:	4268.00 ft	Diameter:	3.80 inches	Volume:	59.87 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	85000.00 lb
					Total Volume:	60.02 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:	27.00 ft							
Depth to Top Packer:	4298.00 ft							
Depth to Bottom Packer:	ft							
Interval between Packers:	120.00 ft							
Tool Length:	147.00 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		4272.00	
Shut In Tool	5.00		4277.00	
Hydraulic tool	5.00		4282.00	
Jars	5.00		4287.00	
Safety Joint	2.00		4289.00	
Packer	5.00		4294.00	27.00 Bottom Of Top Packer
Packer	4.00		4298.00	
Stubb	1.00		4299.00	
Recorder	0.00	8678 Inside	4299.00	
Recorder	0.00	8522 Outside	4299.00	
Perforations	18.00		4317.00	
Change Over Sub	1.00		4318.00	
Drill Pipe	96.00		4414.00	
Change Over Sub	1.00		4415.00	
Bullnose	3.00		4418.00	120.00 Bottom Packers & Anchor

Total Tool Length: 147.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56391

DST#: 9

ATTN: Bob Peterson

Test Start: 2014.03.14 @ 19:50:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 58.00 sec/qt

Water Loss: 10.37 in³

Resistivity: 0.00 ohm.m

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
185.00	gmco 20g 30m 50o	2.322
0.00	500' GIP	0.000

Total Length: 185.00 ft

Total Volume: 2.322 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

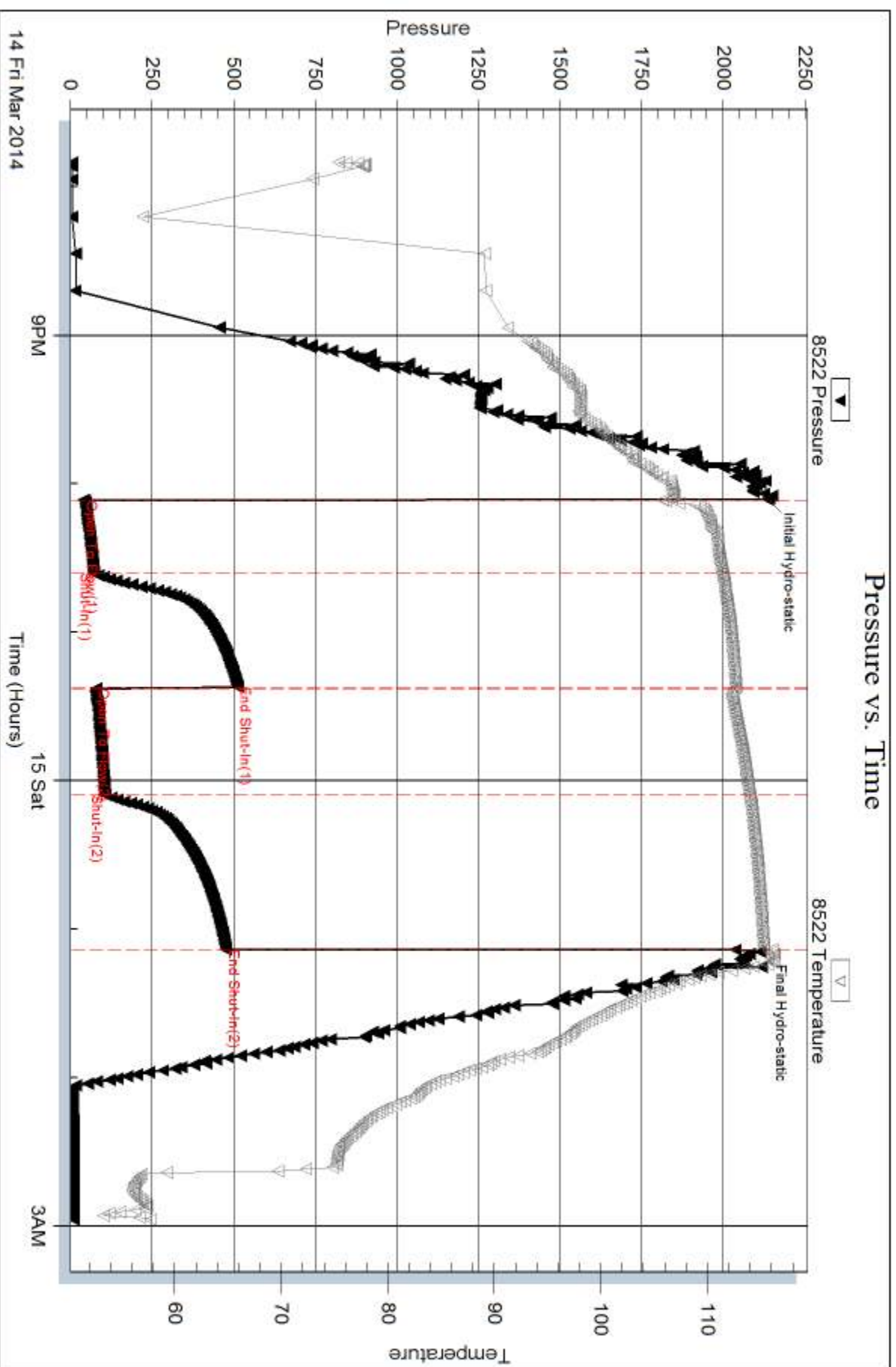
Recovery Comments:

Serial #: 8522

Outside Ritchie Exploration

Joseph #4

DST Test Number: 9



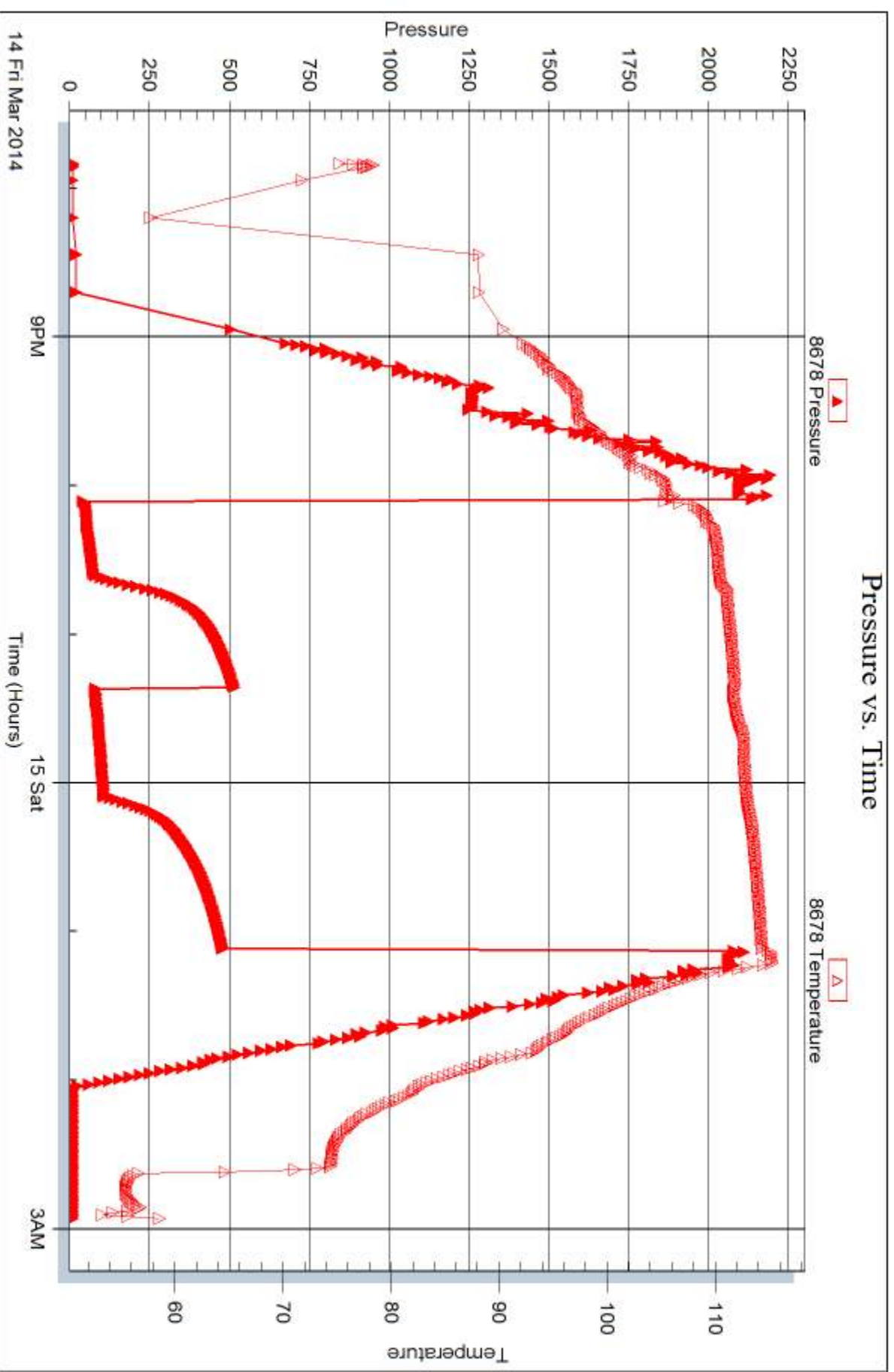
Serial #: 8678

Inside

Ritchie Exploration

Joseph #4

DST Test Number: 9





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

8100 E 22nd St N #700
Wichita, Ks 67278-3188

ATTN: Bob Peterson

Joseph #4

30-13-31 Gove,KS

Start Date: 2014.03.15 @ 14:05:00

End Date: 2014.03.15 @ 21:41:30

Job Ticket #: 56392 DST #: 10

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2014.03.21 @ 13:31:21



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56392

DST#: 10

ATTN: Bob Peterson

Test Start: 2014.03.15 @ 14:05:00

GENERAL INFORMATION:

Formation: **Johnson - Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:06:00

Time Test Ended: 21:41:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: 4415.00 ft (KB) To 4483.00 ft (KB) (TVD)

Total Depth: 4483.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8522 Outside

Press@RunDepth: 78.24 psig @ 4416.00 ft (KB)

Start Date: 2014.03.15

End Date:

2014.03.15

Start Time: 14:05:05

End Time:

21:41:29

Capacity: 8000.00 psig

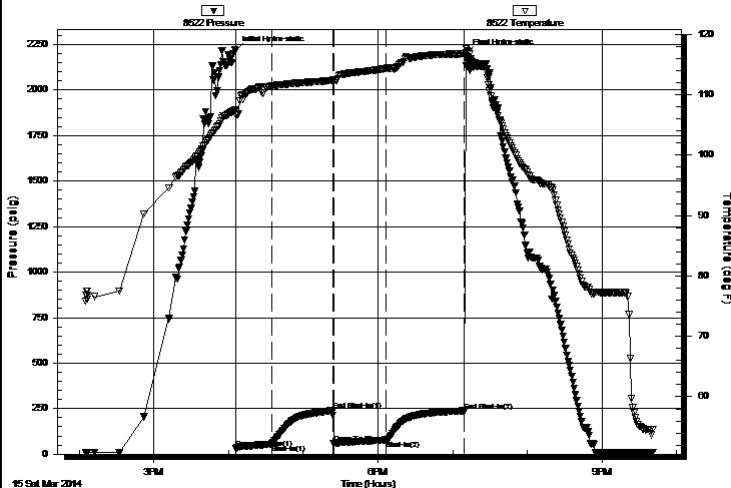
Last Calib.: 2014.03.15

Time On Btm: 2014.03.15 @ 16:05:45

Time Off Btm: 2014.03.15 @ 19:11:00

TEST COMMENT: IS: BOB @ 21 min.
IS: No return.
FF: BOB @ 17 min.
FS: No return.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2215.76	107.54	Initial Hydro-static
1	31.70	106.66	Open To Flow (1)
29	56.48	111.45	Shut-In(1)
78	239.12	112.36	End Shut-In(1)
79	57.05	112.41	Open To Flow (2)
121	78.24	114.36	Shut-In(2)
184	238.22	116.78	End Shut-In(2)
186	2202.89	117.58	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
120.00	socm 5o 95m	1.41
0.00	315' GIP	0.00

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

Ritchie Exploration

30-13-31 Gove, KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56392

DST#: 10

ATTN: Bob Peterson

Test Start: 2014.03.15 @ 14:05:00

GENERAL INFORMATION:

Formation: **Johnson - Cherokee**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:06:00

Time Test Ended: 21:41:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Bradley Walter

Unit No: 69

Interval: 4415.00 ft (KB) To 4483.00 ft (KB) (TVD)

Total Depth: 4483.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Good

Reference Elevations: 2876.00 ft (KB)

2868.00 ft (CF)

KB to GR/CF: 8.00 ft

Serial #: 8678 Inside

Press@RunDepth: psig @ 4416.00 ft (KB)

Start Date: 2014.03.15

End Date:

2014.03.15

Capacity: 8000.00 psig

Last Calib.:

2014.03.15

Start Time: 14:05:05

End Time:

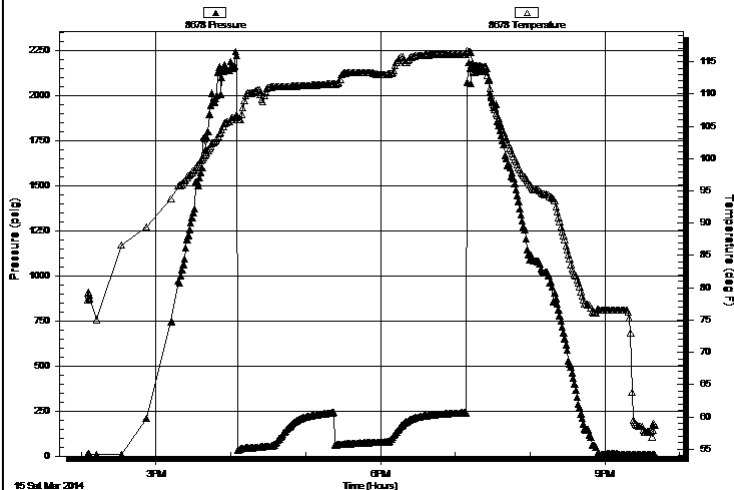
21:39:52

Time On Btm:

Time Off Btm:

TEST COMMENT: IS: BOB @ 21 min.
IS: No return.
FF: BOB @ 17 min.
FS: No return.

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	socm 5o 95m	1.41
0.00	315' GIP	0.00

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

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56392

DST#: 10

ATTN: Bob Peterson

Test Start: 2014.03.15 @ 14:05:00

Tool Information

Drill Pipe:	Length:	4364.00 ft	Diameter:	3.80 inches	Volume:	61.22 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	30.00 ft	Diameter:	2.25 inches	Volume:	0.15 bbl	Weight to Pull Loose:	82000.00 lb
					Total Volume:	61.37 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		6.00 ft					String Weight: Initial	58000.00 lb
Depth to Top Packer:		4415.00 ft					Final	60000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		68.00 ft						
Tool Length:		95.00 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			4389.00	
Shut In Tool	5.00			4394.00	
Hydraulic tool	5.00			4399.00	
Jars	5.00			4404.00	
Safety Joint	2.00			4406.00	
Packer	5.00			4411.00	27.00 Bottom Of Top Packer
Packer	4.00			4415.00	
Stubb	1.00			4416.00	
Recorder	0.00	8678	Inside	4416.00	
Recorder	0.00	8522	Outside	4416.00	
Perforations	30.00			4446.00	
Change Over Sub	1.00			4447.00	
Drill Pipe	32.00			4479.00	
Change Over Sub	1.00			4480.00	
Bullnose	3.00			4483.00	68.00 Bottom Packers & Anchor

Total Tool Length: 95.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

30-13-31 Gove,KS

8100 E 22nd St N #700
Wichita, Ks 67278-3188

Joseph #4

Job Ticket: 56392

DST#: 10

ATTN: Bob Peterson

Test Start: 2014.03.15 @ 14:05:00

Mud and Cushion Information

Mud Type: Gel Chem

Mud Weight: 9.00 lb/gal

Viscosity: 51.00 sec/qt

Water Loss: 7.19 in³

Resistivity: 0.00 ohm.m

Salinity: 4000.00 ppm

Filter Cake: 1.00 inches

Cushion Type:

Cushion Length:

Cushion Volume:

Gas Cushion Type:

Gas Cushion Pressure:

ft

bbl

psig

Oil API:

Water Salinity:

0 deg API

0 ppm

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
120.00	socm 5o 95m	1.410
0.00	315' GIP	0.000

Total Length: 120.00 ft

Total Volume: 1.410 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

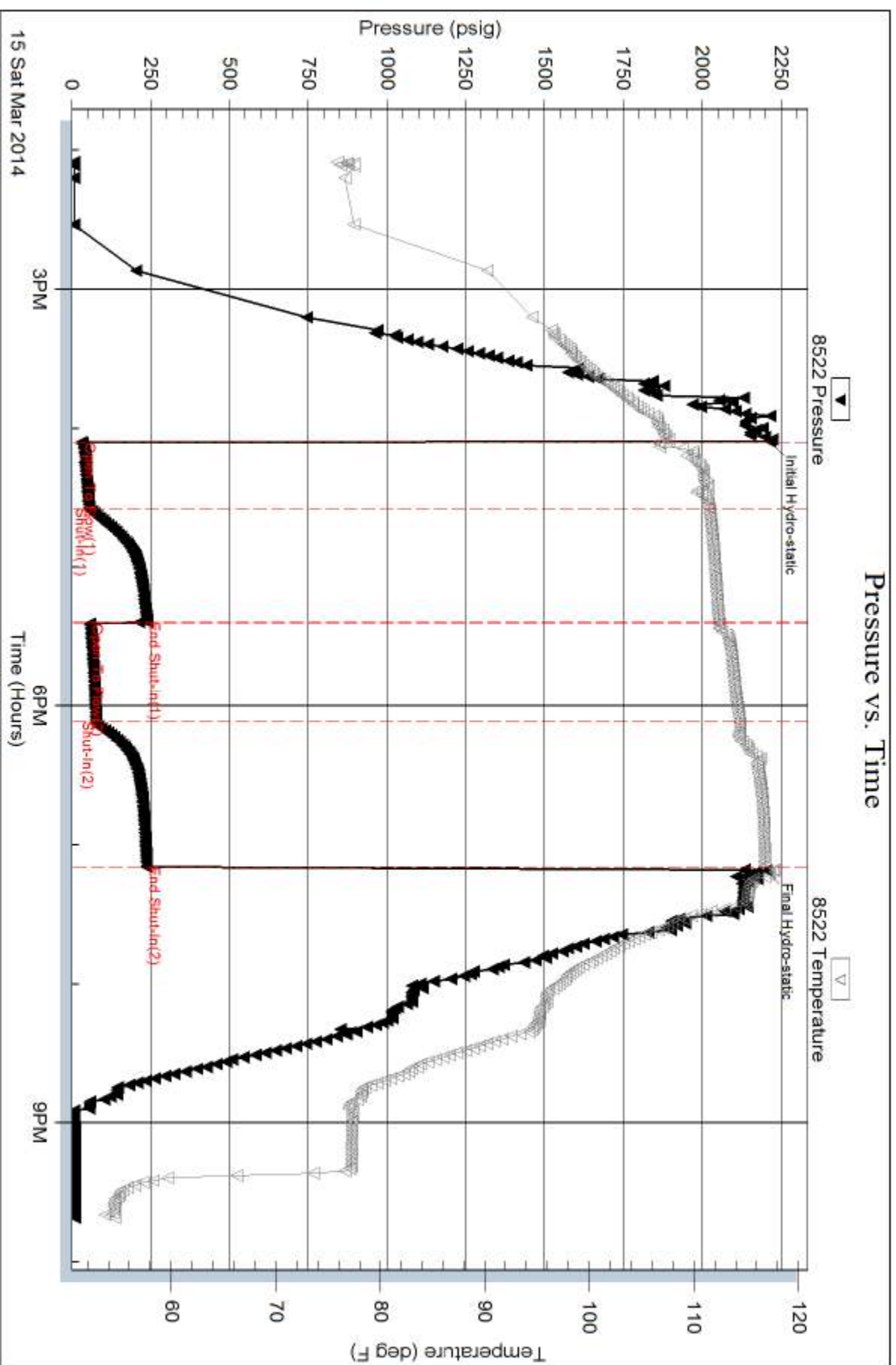
Recovery Comments:

Serial #: 8522

Outside Ritchie Exploration

Joseph #4

DST Test Number: 10



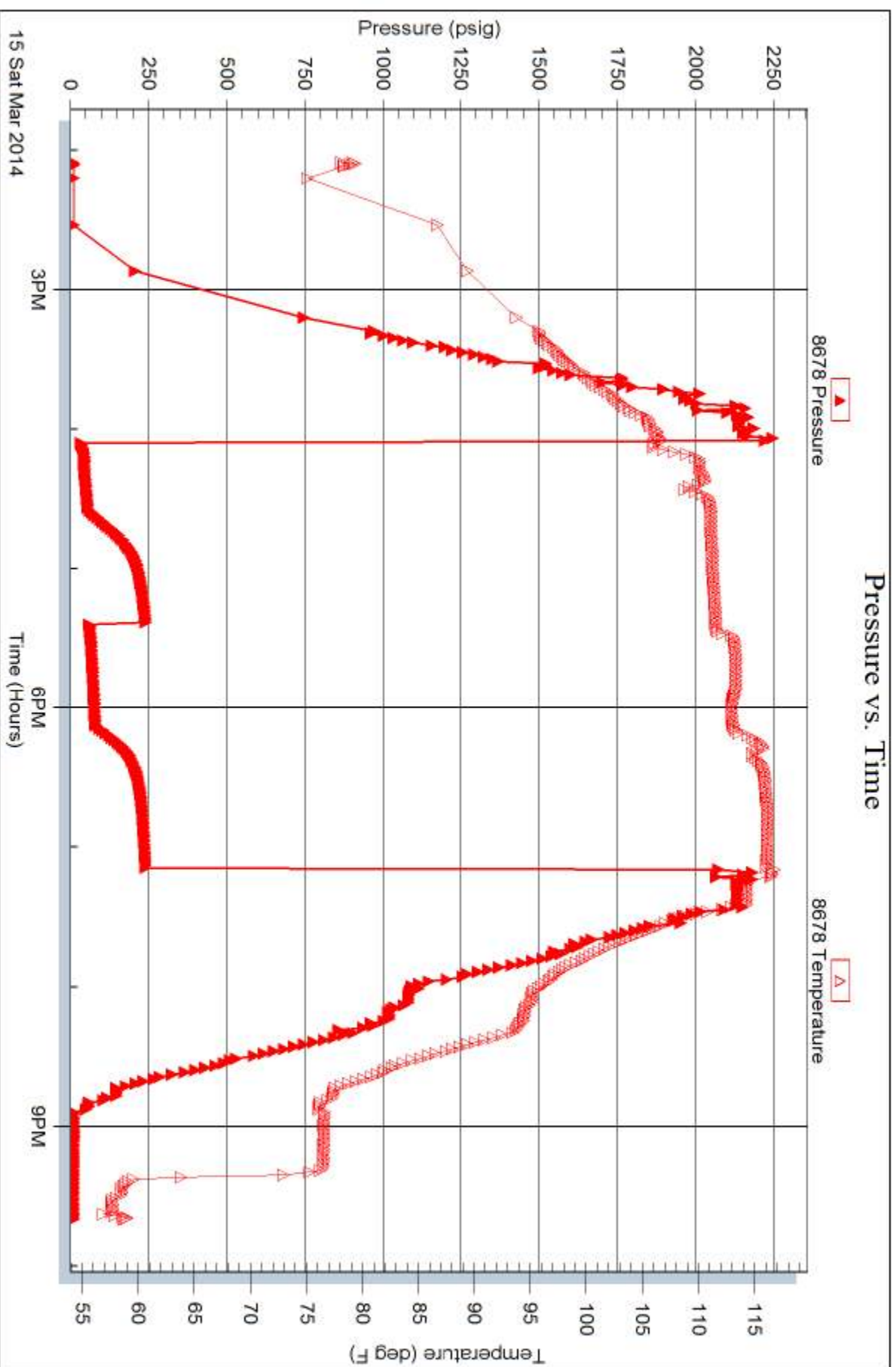
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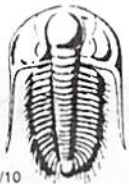
Inside

Ritchie Exploration

Joseph #4

DST Test Number: 10





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56290**

Well Name & No. Joseph #4 Test No. #1 Date 3-9-14
 Company Ritchie Exploration Elevation 2876 KB 2868 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278-3128
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Gove State KS

Interval Tested 3930 3955 Zone Tested C
 Anchor Length 25 Drill Pipe Run 3885' Mud Wt. 9.1
 Top Packer Depth 3925 Drill Collars Run 30' H-90 Vis 50
 Bottom Packer Depth 3930 Wt. Pipe Run — WL 7.2
 Total Depth 3955 Chlorides 2000 ppm System LCM #2
 Blow Description 1/4" in blow, died in 22 min
No return

Weak Surface blow, Flush Tool After 5 min 1/4" in blow died back to very
weak intermittent surface blow / F.S.I: No return

Rec	Feet of	%gas	%oil	%water	%mud
Rec <u>30'</u>	Feet of <u>plaid w/oil spots</u>	%gas <u>Spots</u>	%oil	%water <u>100</u>	%mud
Rec	Feet of <u>2" in free oil on top</u>	%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 30' BHT 107° Gravity — API RW — @ — °F Chlorides — ppm
 (A) Initial Hydrostatic 1882 ☒ Test 1150 T-On Location 09:30
 (B) First Initial Flow 15 ☒ Jars 250 T-Started 09:50
 (C) First Final Flow 21 ☒ Safety Joint 75' T-Open 11:21
 (D) Initial Shut-In 898 ☒ Circ Sub N/C T-Pulled 14:06
 (E) Second Initial Flow 22 ☐ Hourly Standby — T-Out —
 (F) Second Final Flow 29 ☒ Mileage 84 RT 130.20 Comments —
 (G) Final Shut-In 896 ☐ Sampler —
 (H) Final Hydrostatic 1866 ☐ Straddle —
☐ Shale Packer — ☐ Ruined Shale Packer —
☐ Extra Packer — ☐ Ruined Packer —
☐ Extra Recorder — ☐ Extra Copies —

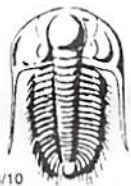
Initial Open 30
 Initial Shut-In 30
 Final Flow 45
 Final Shut-In 60

Sub Total 1605.20

Approved By [Signature]

Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56291**

Well Name & No. Joseph #4 Test No. #2 Date 3-10-14
 Company Ritchie Exploration Elevation 2870 KB 2868 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278-3188
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Gove State KS

Interval Tested 3957 3982 Zone Tested D
 Anchor Length 25 Drill Pipe Run 3970 Mud Wt. 9.1
 Top Packer Depth 3952 Drill Collars Run 30' H-90 Vis 50
 Bottom Packer Depth 3957 Wt. Pipe Run — WL 7.2
 Total Depth 3982 Chlorides 2000 ppm System LCM #2

Blow Description 4 3/4" in blow
No return
4 3/4" in blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>45'</u>	<u>sgmco</u>	<u>5</u>	<u>55</u>	<u>40</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of <u>75' wear GAS in P.P.</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

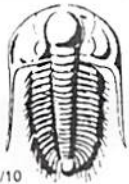
Rec Total 45' BHT 107° Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic	<u>1907</u>	☒ Test	<u>1150</u>	T-On Location	<u>22:45</u>
(B) First Initial Flow	<u>16</u>	☒ Jars	<u>250</u>	T-Started	<u>23:10</u>
(C) First Final Flow	<u>22</u>	☒ Safety Joint	<u>75</u>	T-Open	<u>00:34</u>
(D) Initial Shut-In	<u>124</u>	☒ Circ Sub	<u>N/C</u>	T-Pulled	<u>03:34</u>
(E) Second Initial Flow	<u>18</u>	☐ Hourly Standby		T-Out	<u>05:10</u>
(F) Second Final Flow	<u>28</u>	☒ Mileage	<u>8.1 RT</u> 130.20	Comments	
(G) Final Shut-In	<u>124</u>	☐ Sampler			
(H) Final Hydrostatic	<u>1878</u>	☐ Straddle			

Initial Open	<u>30</u>	☐ Ruined Shale Packer	
Initial Shut-In	<u>45</u>	☐ Ruined Packer	
Final Flow	<u>45</u>	☐ Extra Copies	
Final Shut-In	<u>60</u>	Sub Total	<u>0</u>
		Total	<u>1605.20</u>
		MP/DST Disc't	
		Sub Total	<u>1605.20</u>

Approved By RJP Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56292**

Well Name & No. Joseph #4 Test No. #3 Date 3-10-14
 Company Pitcher Exploration Elevation 2876 KB 2868 GL
 Address 8100 E 22nd St N #700 Wichita, KS 678
 Co. Rep / Geo. Bob Peterson Rig Dracery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Goose State KS

Interval Tested 3974 3990 Zone Tested E
 Anchor Length 16 Drill Pipe Run 3949 Mud Wt. 9.1
 Top Packer Depth 3969 Drill Collars Run 30' H-90 Vis 54
 Bottom Packer Depth 3974 Wt. Pipe Run --- WL 6.4
 Total Depth 3990 Chlorides 2400 ppm System LCM #1

Blow Description 3" blow
No return
2 1/2" blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>70'</u>	<u>MCW</u>		<u>60</u>	<u>40</u>	
Rec	Feet of <u>Show of free oil on top 1"</u>	%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

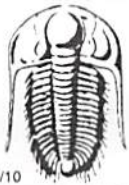
Rec Total 70' BHT 111° Gravity --- API RW .228 @ 78° F Chlorides 27,000 ppm

(A) Initial Hydrostatic <u>1902</u>	☒ Test <u>1150</u>	T-On Location <u>11:20</u>
(B) First Initial Flow <u>17</u>	☒ Jars <u>250</u>	T-Started <u>11:27</u>
(C) First Final Flow <u>33</u>	☒ Safety Joint <u>75</u>	T-Open <u>12:50</u>
(D) Initial Shut-In <u>938</u>	☒ Circ Sub <u>N/C</u>	T-Pulled <u>15:50</u>
(E) Second Initial Flow <u>33</u>	☐ Hourly Standby	T-Out
(F) Second Final Flow <u>45</u>	☒ Mileage <u>84 RT</u> <u>130.20</u>	Comments
(G) Final Shut-In <u>883</u>	☐ Sampler	
(H) Final Hydrostatic <u>1896</u>	☐ Straddle	☐ Ruined Shale Packer

Initial Open <u>30</u>	☐ Shale Packer	☐ Ruined Packer
Initial Shut-In <u>45</u>	☐ Extra Packer	☐ Extra Copies
Final Flow <u>45</u>	☐ Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>40</u>	☐ Day Standby	Total <u>1605.20</u>
	☐ Accessibility	MP/DST Disc't
	Sub Total <u>1605.20</u>	

Approved By [Signature] Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56293

Well Name & No. Joseph #4 Test No. #4 Date 3-11-14
Company Kitchen Exploration Elevation 2876 KB 2868 GL
Address 8100 E 22nd St N. #200 Wichita, KS 67228
Co. Rep / Geo. Bob Peterson Rig Discovery #1
Location: Sec. 30 Twp. 13 Rge. 31 Co. Gove State KS

Interval Tested 3986 4000 Zone Tested F
Anchor Length 14 Drill Pipe Run 3948 Mud Wt. 9.1
Top Packer Depth 3981 Drill Collars Run 30' H90 Vis 54
Bottom Packer Depth 3986 Wt. Pipe Run WL 6.4
Total Depth 4000 Chlorides 2400 ppm System LCM #1

Blow Description 1" blow
No return
2 3/4" blow (Ran over on time on 2nd flow ran a 90 min. instead of a 30 min)
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>2'</u>	<u>Free oil</u>	<u>100</u>			
<u>85'</u>	<u>mcw</u>		<u>80</u>	<u>20</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

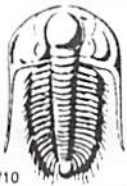
Rec Total 87' BHT 111 Gravity API RW .217@ 58°F Chlorides 40,000 ppm

(A) Initial Hydrostatic	<u>1924</u>	☒ Test	<u>1150</u>	T-On Location	<u>23:30</u>
(B) First Initial Flow	<u>13</u>	☒ Jars	<u>250</u>	T-Started	<u>00:30</u>
(C) First Final Flow	<u>.31</u>	☒ Safety Joint	<u>75</u>	T-Open	<u>01:50</u>
(D) Initial Shut-In	<u>813</u>	☒ Circ Sub	<u>N/C</u>	T-Pulled	<u>05:20</u>
(E) Second Initial Flow	<u>34</u>	☐ Hourly Standby		T-Out	<u>07:05</u>
(F) Second Final Flow	<u>51</u>	☒ Mileage	<u>SC/RT 130.20</u>	Comments	
(G) Final Shut-In	<u>712</u>	☐ Sampler			
(H) Final Hydrostatic		☐ Straddle		☐ Ruined Shale Packer	

Initial Open	<u>30</u>	☐ Shale Packer		☐ Ruined Packer	
Initial Shut-In	<u>45</u>	☐ Extra Packer		☐ Extra Copies	
Final Flow	<u>90</u>	☐ Extra Recorder		Sub Total	<u>0</u>
Final Shut-In	<u>45</u>	☐ Day Standby		Total	<u>1605.20</u>
		☐ Accessibility		MP/DST Disc't	
		Sub Total	<u>1605.20</u>		

Approved By Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56294**

Well Name & No. Joseph #4 Test No. #5 Date 3-12-14
 Company Pitcher Exploration Elevation 2874 KB 2868 GL
 Address 8100 E 22nd St N. #700 Wichita, KS 67278-3188
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Goose State KS

Interval Tested 4018 4085 Zone Tested G-H
 Anchor Length 67 Drill Pipe Run 3982 Mud Wt. 9.1
 Top Packer Depth 4013 Drill Collars Run 30' H-90 Vis 56
 Bottom Packer Depth 4018 Wt. Pipe Run WL 7.2
 Total Depth 4085 Chlorides 2800 ppm System LCM #1

Blow Description 6" in blow
No return
6" in blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>130</u>	<u>WCM</u>			<u>50</u>	<u>50</u>
Rec	Feet of <u>Shows O. low Top</u>	%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 130' BHT 112° Gravity API RW .311 @ 50° F Chlorides 32000 ppm
 (A) Initial Hydrostatic 1965 ☒ Test 1250 T-On Location 17:30
 (B) First Initial Flow 21 ☒ Jars 250 T-Started 19:00
 (C) First Final Flow 55 ☒ Safety Joint 75 T-Open 21:22
 (D) Initial Shut-In 208 ☒ Circ Sub N/C T-Pulled 00:22
 (E) Second Initial Flow 52 ☐ Hourly Standby T-Out
 (F) Second Final Flow 79 ☒ Mileage 84/10 130.20 Comments
 (G) Final Shut-In 181 ☐ Sampler
 (H) Final Hydrostatic 1934 ☐ Straddle ☐ Ruined Shale Packer
☐ Shale Packer ☐ Ruined Packer
☐ Extra Packer ☐ Extra Copies
☐ Extra Recorder Sub Total 0
☐ Day Standby Total 1705.20
☐ Accessibility MP/DST Disc't

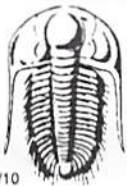
Initial Open 30
 Initial Shut-In 45
 Final Flow 43
 Final Shut-In 60

Sub Total 1705.20

Approved By

Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56295

Well Name & No. Joseph #4 Test No. #6 Date 3-12-14
 Company Ritchie Exploration Inc Elevation 2874 KB 2868 GL
 Address 8100 E 22nd St N. #700 Wichita Ks
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Gove State Ks

Interval Tested 4087 4145 Zone Tested F-J
 Anchor Length 58 Drill Pipe Run 4046 Mud Wt. 9.2
 Top Packer Depth 4082 Drill Collars Run 30' H-90 Vis 56
 Bottom Packer Depth 4087 Wt. Pipe Run — WL 7.2
 Total Depth 4145 Chlorides 2800 ppm System LCM #1

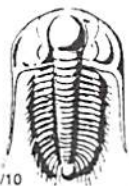
Blow Description B.O.B. in 9 min
No return
B.O.B. in 24 min.
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>63</u>	<u>mcw</u>		<u>75</u>	<u>25</u>	
<u>124</u>	<u>smcw</u>		<u>90</u>	<u>10</u>	
<u>248</u>	<u>water</u>		<u>100</u>		

Rec Total 435 BHT 118° Gravity — API RW 231 @ 63 °F Chlorides 32,000 ppm
 (A) Initial Hydrostatic 2003 ☒ Test 1250 T-On Location 11:30
 (B) First Initial Flow 34 ☒ Jars 250 T-Started 11:45
 (C) First Final Flow 170 ☒ Safety Joint 75 T-Open 13:15
 (D) Initial Shut-In 274 ☒ Circ Sub NK T-Pulled 16:15
 (E) Second Initial Flow 172 ☐ Hourly Standby — T-Out —
 (F) Second Final Flow 249 ☒ Mileage 840 130.20 Comments —
 (G) Final Shut-In 274 ☐ Sampler —
 (H) Final Hydrostatic 1980 ☐ Straddle —
☐ Shale Packer —
☐ Extra Packer —
☐ Extra Recorder —
☐ Day Standby —
☐ Accessibility —

Initial Open 30
 Initial Shut-In 45
 Final Flow 45
 Final Shut-In 60
☐ Ruined Shale Packer —
☐ Ruined Packer —
☐ Extra Copies —
 Sub Total 0
 Total 1705.20
 MP/DST Disc't —
 Sub Total 1705.20

Approved By — Our Representative [Signature]
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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56296**

Well Name & No. Joseph #1 Test No. #7 Date 3-13-14
 Company Ritchie Exploration Elevation 2876 KB 2868 GL
 Address 900 E 22nd St. N. #70 Wichita KS
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13 Rge. 31 Co. Osage State KS

Interval Tested 4140 4175 Zone Tested K
 Anchor Length 35 Drill Pipe Run 4109 Mud Wt. 8.1
 Top Packer Depth 4135 Drill Collars Run 30' H-90 Vis 5.3
 Bottom Packer Depth 4140 Wt. Pipe Run — WL 8.0
 Total Depth 4175 Chlorides 3800 ppm System LCM #1

Blow Description B.O.B. in 4 min
More than
B.O.B. in 1 1/2 min
More than

Rec	Feet of	%gas	%oil	%water	%mud
<u>186</u>	<u>Smell</u>		<u>85</u>	<u>15</u>	
<u>1278</u>	<u>Water</u>		<u>100</u>		

Rec Total 1364' BHT 124° Gravity — API RW .326 @ 64° F Chlorides 24,000 ppm

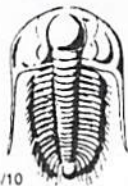
(A) Initial Hydrostatic <u>2064</u>	☒ Test <u>1250</u>	T-On Location <u>01:30</u>
(B) First Initial Flow <u>134</u>	☒ Jars <u>250</u>	T-Started <u>01:50</u>
(C) First Final Flow <u>388</u>	☒ Safety Joint <u>75</u>	T-Open <u>03:35</u>
(D) Initial Shut-In <u>1020</u>	☒ Circ Sub <u>N/C</u>	T-Pulled <u>06:35</u>
(E) Second Initial Flow <u>393</u>	☐ Hourly Standby	T-Out
(F) Second Final Flow <u>666</u>	☒ Mileage <u>81.47</u> <u>130.20</u>	Comments
(G) Final Shut-In <u>1011</u>	☐ Sampler	
(H) Final Hydrostatic <u>2009</u>	☐ Straddle	☐ Ruined Shale Packer

Initial Open <u>30</u>	☐ Shale Packer	☐ Ruined Packer
Initial Shut-In <u>45</u>	☐ Extra Packer	☐ Extra Copies
Final Flow <u>45</u>	☐ Extra Recorder	Sub Total <u>0</u>
Final Shut-In <u>60</u>	☐ Day Standby	Total <u>1705.20</u>
	☐ Accessibility	MP/DST Disc't
	Sub Total <u>1705.20</u>	

Approved By

Our Representative

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 56390

Well Name & No. Joseph #4 Test No. 8 Date 3/14/14
Company Ritchie Exploration Elevation 2876 KB 2868 GL
Address 8100 E 22nd St N #700 Wichita, KS 67278
Co. Rep / Geo. Bob Peterson Rig Discovery #1
Location: Sec. 30 Twp. 13s Rge. 31W Co. Gore State Ks

Interval Tested 4173 - 4248 Zone Tested LKC - L
Anchor Length 75 Drill Pipe Run 4140 Mud Wt. 9.1
Top Packer Depth 4168 Drill Collars Run 30 Vis 50
Bottom Packer Depth 4173 Wt. Pipe Run Ø WL 9.6
Total Depth 4248 Chlorides 4400 ppm System LCM 1#

Blow Description IF: BOB @ 25 min.
ISI: No return.
4F: BOB @ 25 min.
PSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>10</u>	<u>OTL</u>	<u>100</u>			
<u>90</u>	<u>GW mcd</u>	<u>25</u>	<u>40</u>	<u>15</u>	<u>20</u>
<u>60</u>	<u>GW ocm</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>40</u>
	<u>200' GIP</u>				

Rec Total 160 BHT 115 Gravity 29 API RW - @ - °F Chlorides - ppm

(A) Initial Hydrostatic	(B) First Initial Flow	(C) First Final Flow	(D) Initial Shut-In	(E) Second Initial Flow	(F) Second Final Flow	(G) Final Shut-In	(H) Final Hydrostatic
<u>2075</u>	<u>48</u>	<u>67</u>	<u>1177</u>	<u>71</u>	<u>99</u>	<u>1138</u>	<u>2074</u>

☒ Test 1250
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub NL
☐ Hourly Standby
☒ Mileage 24 AT 130.20
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility

T-On Location 1900
T-Started 1930
T-Open 2058
T-Pulled 2358
T-Out
Comments

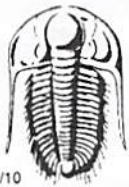
Initial Open 30
Initial Shut-In 45
Final Flow 45
Final Shut-In 60

Sub Total 1705.20

MP/DST Disc't

Approved By _____ Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56391**

Well Name & No. Joseph #4 Test No. 9 Date 3/15/14
 Company Ritchie Exploration Elevation 2876 KB 2868 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13S Rge. 31W Co. Gove State KS

Interval Tested 4298 4418 Zone Tested Pawnee - Ft Scott
 Anchor Length 120 Drill Pipe Run 4268 Mud Wt. 9.1
 Top Packer Depth 4293 Drill Collars Run 30 Vis 58
 Bottom Packer Depth 4298 Wt. Pipe Run 0 WL 10.4
 Total Depth 4418 Chlorides 5,000 ppm System LCM 1#
 Blow Description IF: BOB @ 8 min
ISI: 1" return.
FF: BOB @ 10 min
FSI:

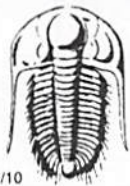
Rec <u>185</u>	Feet of <u>G MCO</u>	<u>20</u> %gas	<u>50</u> %oil	%water	<u>30</u> %mud
Rec	Feet of <u>500' GIP</u>	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total <u>185</u>	BHT <u>115</u>	Gravity	API RW	@	° F	Chlorides	ppm
(A) Initial Hydrostatic <u>2137</u>	☒ Test <u>1250</u>	T-On Location <u>1900</u>					
(B) First Initial Flow <u>40</u>	☒ Jars <u>250</u>	T-Started <u>1950</u>					
(C) First Final Flow <u>72</u>	☒ Safety Joint <u>75</u>	T-Open <u>2206</u>					
(D) Initial Shut-In <u>512</u>	☒ Circ Sub <u>N/C</u>	T-Pulled <u>0106</u>					
(E) Second Initial Flow <u>79</u>	☐ Hourly Standby	T-Out <u>0257</u>					
(F) Second Final Flow <u>106</u>	☒ Mileage <u>84 RT</u> <u>130.20</u>	Comments					
(G) Final Shut-In <u>477</u>	☐ Sampler						
(H) Final Hydrostatic <u>2112</u>	☐ Straddle						
	☐ Shale Packer	☐ Ruined Shale Packer					
	☐ Extra Packer	☐ Ruined Packer					
Initial Open <u>30</u>	☐ Extra Recorder	☐ Extra Copies					
Initial Shut-In <u>45</u>	☐ Day Standby	Sub Total <u>0</u>					
Final Flow <u>45</u>	☐ Accessibility	Total <u>1705.20</u>					
Final Shut-In <u>60</u>	Sub Total <u>1705.20</u>	MP/DST Disc't					

Approved By _____

Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **56392**

Well Name & No. Joseph #4 Test No. 10 Date 3/15/14
 Company Ritchie Exploration Elevation 2876 KB 2868 GL
 Address 8100 E 22nd St N #700 Wichita, KS 67278
 Co. Rep / Geo. Bob Peterson Rig Discovery #1
 Location: Sec. 30 Twp. 13S Rge. 31W Co. Gove State KS

Interval Tested 4415 - 4483 Zone Tested Jackson - Cherokee
 Anchor Length 68 Drill Pipe Run 4364 Mud Wt. 9.1
 Top Packer Depth 4410 Drill Collars Run 30 Vis 50
 Bottom Packer Depth 4415 Wt. Pipe Run 8 WL 7.2
 Total Depth 4483 Chlorides 4,000 ppm System LCM 1#

Blow Description IF: BOB @ 21 min
TSI: BOB @ 17 min No return
FF: BOB @ 17 min
FSI: No return.

Rec	Feet of	%gas	%oil	%water	%mud
<u>120</u>	<u>50cm</u>	<u>5</u>		<u>95</u>	
	<u>315' GIP</u>				

Rec Total 120 BHT 117 Gravity — API RW — @ — °F Chlorides — ppm

(A) Initial Hydrostatic 2216 ☒ Test 1250
 (B) First Initial Flow 32 ☒ Jars 250
 (C) First Final Flow 56 ☒ Safety Joint 75
 (D) Initial Shut-In 239 ☒ Circ Sub —
 (E) Second Initial Flow 57 ☐ Hourly Standby —
 (F) Second Final Flow 78 ☒ Mileage 84 RTX2 260.40
 (G) Final Shut-In 238 ☐ Sampler —
 (H) Final Hydrostatic 2203 ☐ Straddle —
☐ Shale Packer —
☐ Extra Packer —
☐ Extra Recorder —
☒ Day Standby 1d 2h
☐ Accessibility —

T-On Location 1330
 T-Started 1405
 T-Open 1606
 T-Pulled 1906
 T-Out 2147 2141
 Comments f/w Tools
@ 2345 on 3/16

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

☐ Ruined Shale Packer —
☒ Ruined Packer 320
☐ Extra Copies —
 Sub Total 800
 Total 2955.40
 MP/DST Disc't —
 Sub Total 1835.40

Approved By —

Our Representative —

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