

DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

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

ATTN: Max Lovely

Phillips Ottley #1

18-13s-31w Logan,KS

Start Date: 2012.11.24 @ 05:00:15

End Date: 2012.11.24 @ 13:10:30

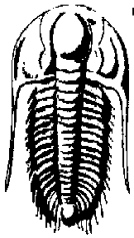
Job Ticket #: 49888 DST #: 1

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.12.03 @ 11:01:59



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan, KS

Phillips Ottley #1

Job Ticket: 49888

DST#: 1

Test Start: 2012.11.24 @ 05:00:15

GENERAL INFORMATION:

Formation: **C,D,E,F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:10:45

Time Test Ended: 13:10:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 55

Interval: 3997.00 ft (KB) To 4072.00 ft (KB) (TVD)

Total Depth: 4072.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 6667 Inside

Press@RunDepth: 194.63 psig @ 3998.00 ft (KB)

Start Date: 2012.11.24

End Date:

2012.11.24

Start Time: 05:00:15

End Time:

12:48:30

Capacity: 8000.00 psig

Last Calib.: 2012.11.24

Time On Btm: 2012.11.24 @ 08:10:30

Time Off Btm: 2012.11.24 @ 10:46:00

TEST COMMENT: Slide tool 6' to bottom 3" blow built to B.O.B. in 20 min

No return

B.O.B. in 28 min.

No return

PRESSURE SUMMARY

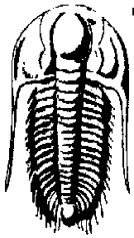
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1965.85	108.17	Initial Hydro-static
1	35.85	107.50	Open To Flow (1)
31	119.53	109.95	Shut-In(1)
75	1085.67	112.83	End Shut-In(1)
76	123.87	112.51	Open To Flow (2)
106	194.63	113.97	Shut-In(2)
155	1052.65	115.65	End Shut-In(2)
156	1879.41	114.04	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
125.00	w c m 35w 65m	1.75
240.00	s m c w 10m 90w	3.37

Gas Rates

	Choke (inches)	Pressure (psig)	Gas Rate (Mcf/d)
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DRILL STEM TEST REPORT

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan,KS

Phillips Ottley #1

Job Ticket: 49888

DST#: 1

Test Start: 2012.11.24 @ 05:00:15

GENERAL INFORMATION:

Formation: **C,D,E,F**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 08:10:45

Time Test Ended: 13:10:30

Test Type: Conventional Bottom Hole (Initial)

Tester: Shane McBride

Unit No: 55

Interval: 3997.00 ft (KB) To 4072.00 ft (KB) (TVD)

Total Depth: 4072.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 8368 Outside

Press@RunDepth: psig @ 3998.00 ft (KB)

Start Date: 2012.11.24

End Date:

2012.11.24

Start Time: 05:00:15

End Time:

12:48:30

Capacity: 8000.00 psig

Last Calib.: 2012.11.24

Time On Btm:

Time Off Btm:

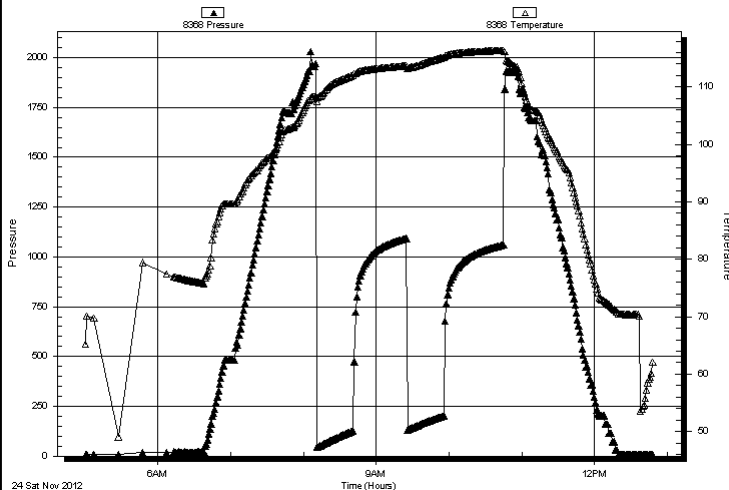
TEST COMMENT: Slide tool 6' to bottom 3" blow built to B.O.B. in 20 min

No return

B.O.B. in 28 min.

No return

Pressure vs. Time



PRESSURE SUMMARY

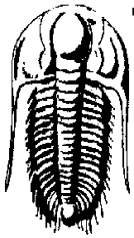
Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
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Recovery

Length (ft)	Description	Volume (bbl)
125.00	w c m 35w 65m	1.75
240.00	s m c w 10m 90w	3.37

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

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49888

DST#: 1

ATTN: Max Lovely

Test Start: 2012.11.24 @ 05:00:15

Tool Information

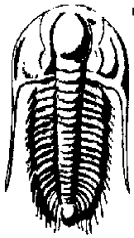
Drill Pipe:	Length:	3976.00 ft	Diameter:	3.80 inches	Volume:	55.77 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	80000.00 lb
					Total Volume:	55.77 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		6.00 ft					String Weight: Initial	60000.00 lb
Depth to Top Packer:		3997.00 ft					Final	62000.00 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
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Change Over Sub	1.00		3971.00	
Shut In Tool	5.00		3976.00	
Hydraulic tool	5.00		3981.00	
Jars	5.00		3986.00	
Safety Joint	2.00		3988.00	
Packer	5.00		3993.00	27.00 Bottom Of Top Packer
Packer	4.00		3997.00	
Stubb	1.00		3998.00	
Recorder	0.00	6667 Inside	3998.00	
Recorder	0.00	8368 Outside	3998.00	
Perforations	4.00		4002.00	
Change Over Sub	1.00		4003.00	
Drill Pipe	63.00		4066.00	
Change Over Sub	1.00		4067.00	
Bullnose	5.00		4072.00	75.00 Bottom Packers & Anchor

Total Tool Length: 102.00



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DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49888

DST#: 1

ATTN: Max Lovely

Test Start: 2012.11.24 @ 05:00:15

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:

31500 ppm

Viscosity: 42.00 sec/qt

Cushion Volume:

bbl

Water Loss: 9.54 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
125.00	w c m 35w 65m	1.753
240.00	s m c w 10m 90w	3.367

Total Length: 365.00 ft

Total Volume: 5.120 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw .219 @ 67°F = 31,500 chlor

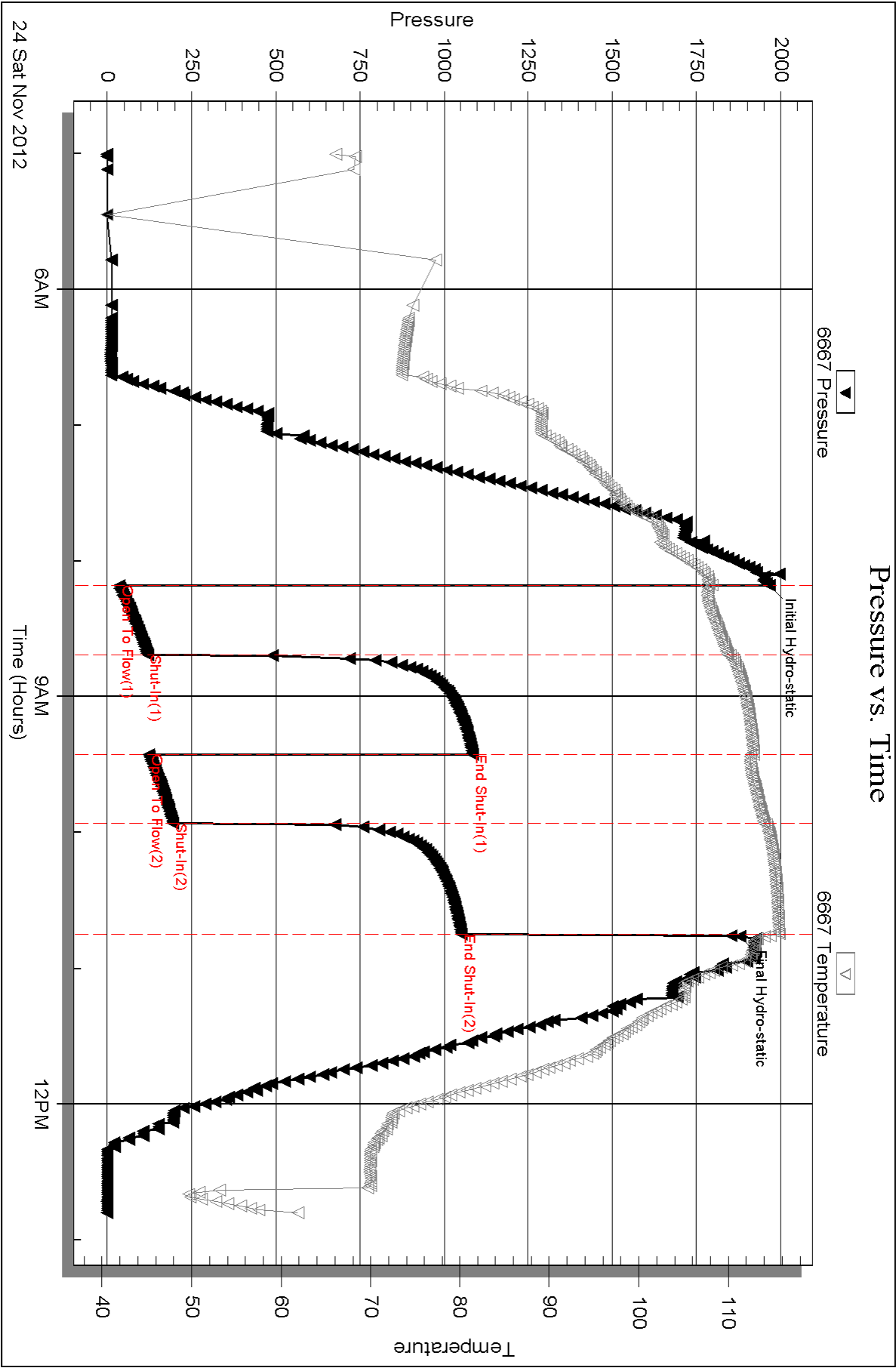
Serial #: 6667

Inside

Ritchie Exploration

Phillips Otley #1

DST Test Number: 1

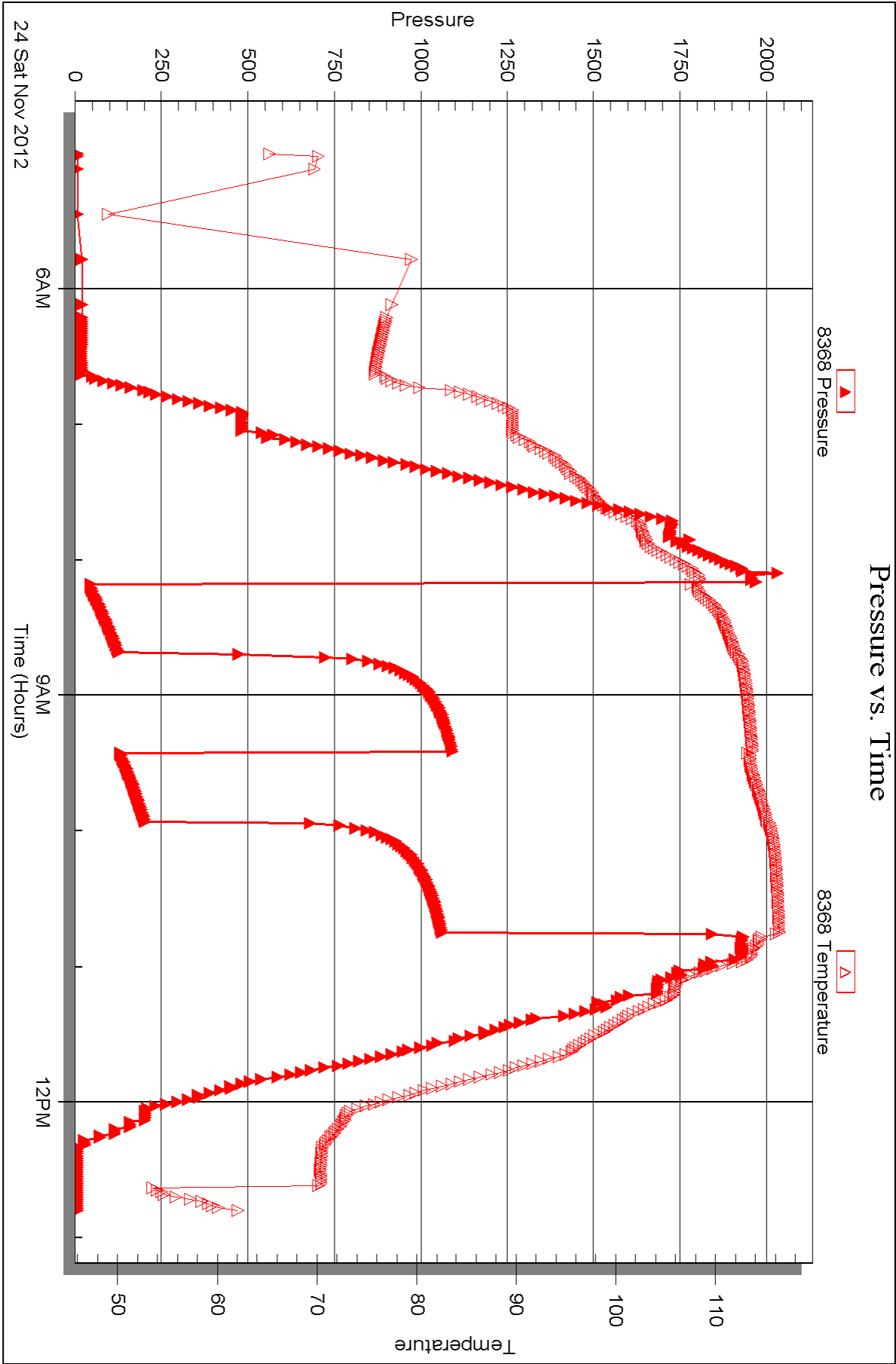


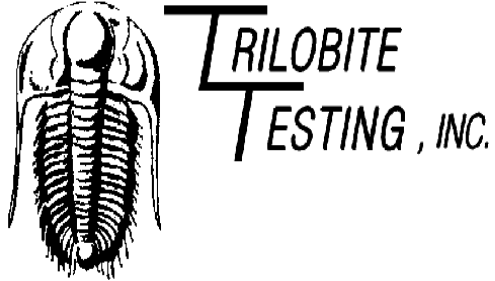
Serial #: 8368

Outside Ritchie Exploration

Phillips Otley #1

DST Test Number: 1





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

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

ATTN: Max Lovely

Phillips Ottley #1

18-13s-31w Logan,KS

Start Date: 2012.11.25 @ 15:03:40

End Date: 2012.11.25 @ 22:03:55

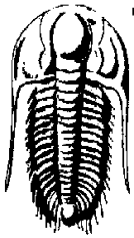
Job Ticket #: 49889 DST #: 2

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.12.03 @ 11:00:39



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan, KS

Phillips Ottley #1

Job Ticket: 49889

DST#: 2

Test Start: 2012.11.25 @ 15:03:40

GENERAL INFORMATION:

Formation: **K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:45:55

Time Test Ended: 22:03:55

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4196.00 ft (KB) To 4237.00 ft (KB) (TVD)

Total Depth: 4237.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 6667 Inside

Press@RunDepth: 92.11 psig @ 4197.00 ft (KB)

Start Date: 2012.11.25

End Date:

2012.11.25

Start Time: 15:03:40

End Time:

21:40:55

Capacity: 8000.00 psig

Last Calib.: 2012.11.25

Time On Btm: 2012.11.25 @ 16:45:25

Time Off Btm: 2012.11.25 @ 19:49:40

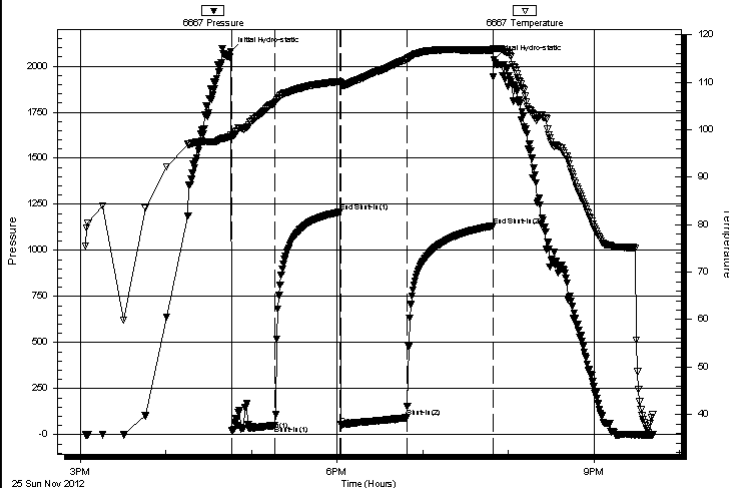
TEST COMMENT: 5" surging blow

No return

5" blow

No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2080.14	98.84	Initial Hydro-static
1	22.79	98.49	Open To Flow (1)
31	50.26	105.75	Shut-In(1)
77	1208.06	110.18	End Shut-In(1)
77	53.45	109.82	Open To Flow (2)
124	92.11	114.78	Shut-In(2)
184	1133.46	116.76	End Shut-In(2)
185	2036.72	117.12	Final Hydro-static

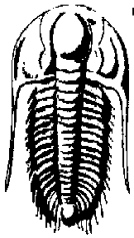
Recovery

Length (ft)	Description	Volume (bbl)
30.00	w c m 40w 60m	0.42
120.00	m c w 15m 85w	1.68

Gas Rates

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



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Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan,KS

Phillips Ottley #1

Job Ticket: 49889

DST#: 2

Test Start: 2012.11.25 @ 15:03:40

GENERAL INFORMATION:

Formation: **K**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:45:55

Time Test Ended: 22:03:55

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4196.00 ft (KB) To 4237.00 ft (KB) (TVD)

Total Depth: 4237.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 8368 Outside

Press@RunDepth: psig @ 4197.00 ft (KB)

Start Date: 2012.11.25

End Date:

2012.11.25

Start Time: 15:03:55

End Time:

21:40:55

Capacity: 8000.00 psig

Last Calib.: 2012.11.25

Time On Btm:

Time Off Btm:

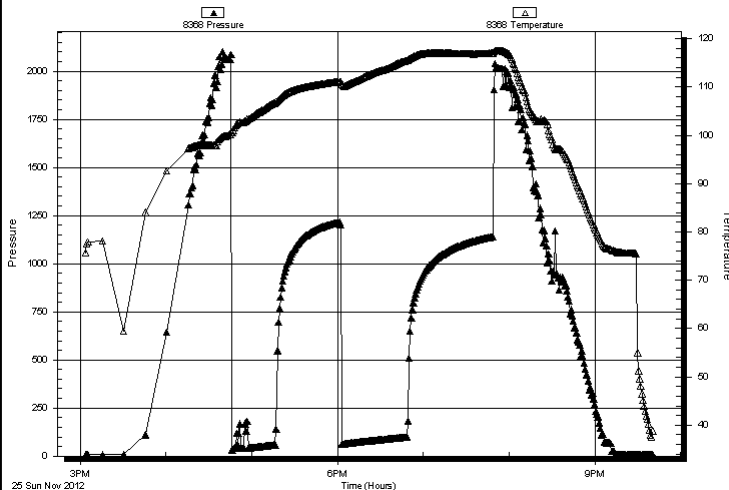
TEST COMMENT: 5" surging blow

No return

5" blow

No return

Pressure vs. Time



PRESSURE SUMMARY

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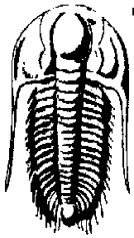
Recovery

Length (ft)	Description	Volume (bbl)
30.00	w c m 40w 60m	0.42
120.00	m c w 15m 85w	1.68

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

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49889

DST#: 2

ATTN: Max Lovely

Test Start: 2012.11.25 @ 15:03:40

Tool Information

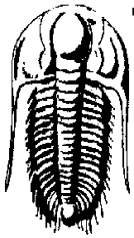
Drill Pipe:	Length:	4194.00 ft	Diameter:	3.80 inches	Volume:	58.83 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	80000.00 lb
					Total Volume:	58.83 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		25.00 ft					String Weight: Initial	62000.00 lb
Depth to Top Packer:		4196.00 ft					Final	63000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		41.00 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

Change Over Sub	1.00			4170.00	
Shut In Tool	5.00			4175.00	
Hydraulic tool	5.00			4180.00	
Jars	5.00			4185.00	
Safety Joint	2.00			4187.00	
Packer	5.00			4192.00	27.00 Bottom Of Top Packer
Packer	4.00			4196.00	
Stubb	1.00			4197.00	
Recorder	0.00	6667	Inside	4197.00	
Recorder	0.00	8368	Outside	4197.00	
Perforations	3.00			4200.00	
Change Over Sub	1.00			4201.00	
Drill Pipe	30.00			4231.00	
Change Over Sub	1.00			4232.00	
Bullnose	5.00			4237.00	41.00 Bottom Packers & Anchor

Total Tool Length: 68.00



TRILOBITE
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DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49889

DST#: 2

ATTN: Max Lovely

Test Start: 2012.11.25 @ 15:03:40

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:

28500 ppm

Viscosity: 50.00 sec/qt

Cushion Volume:

bbl

Water Loss: 6.38 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
30.00	w c m 40w 60m	0.421
120.00	m c w 15m 85w	1.683

Total Length: 150.00 ft

Total Volume: 2.104 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments: rw .402 @ 40*f= 28,500

Serial #: 6667

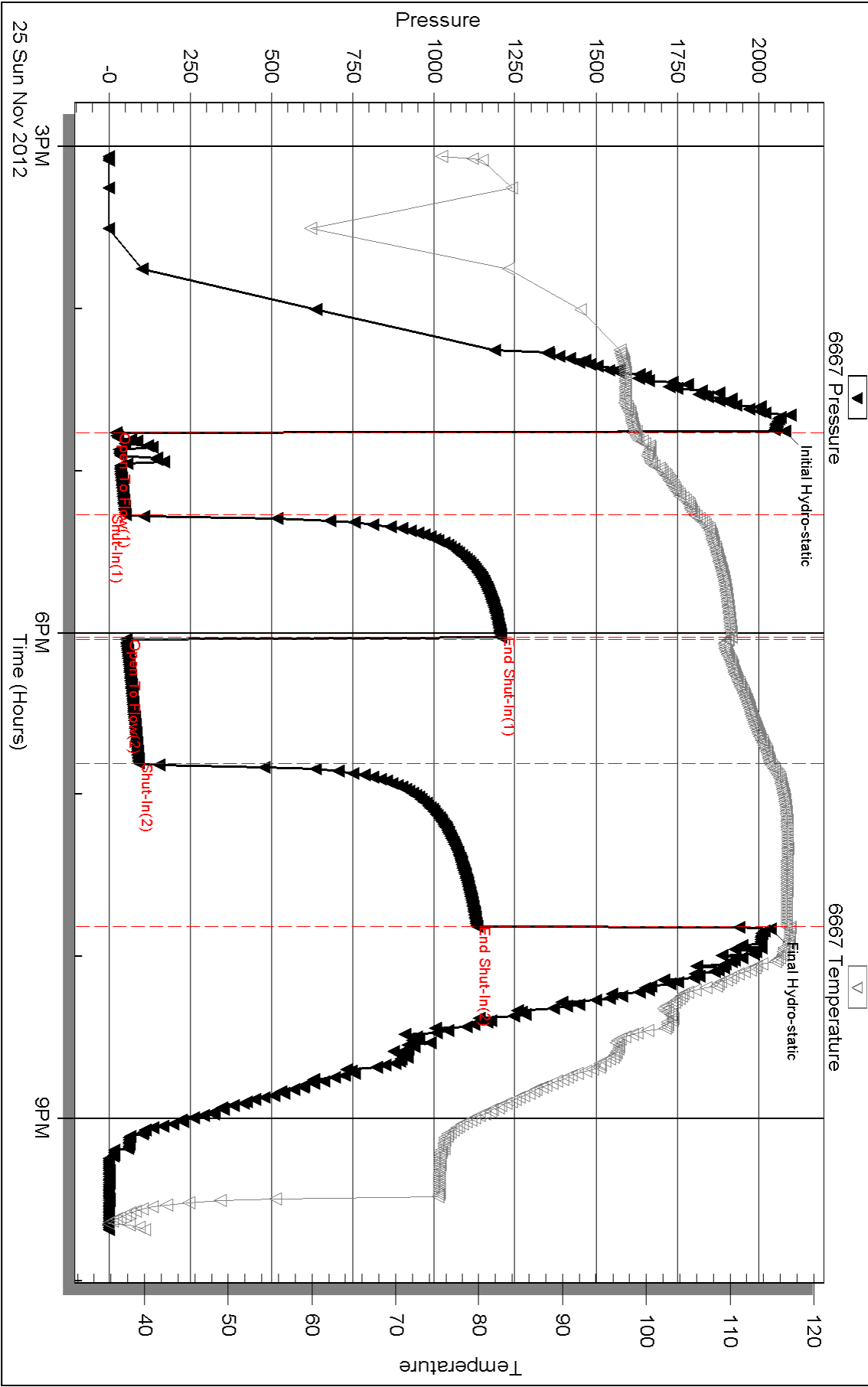
Inside

Ritchie Exploration

Phillips Otley #1

DST Test Number: 2

Pressure vs. Time

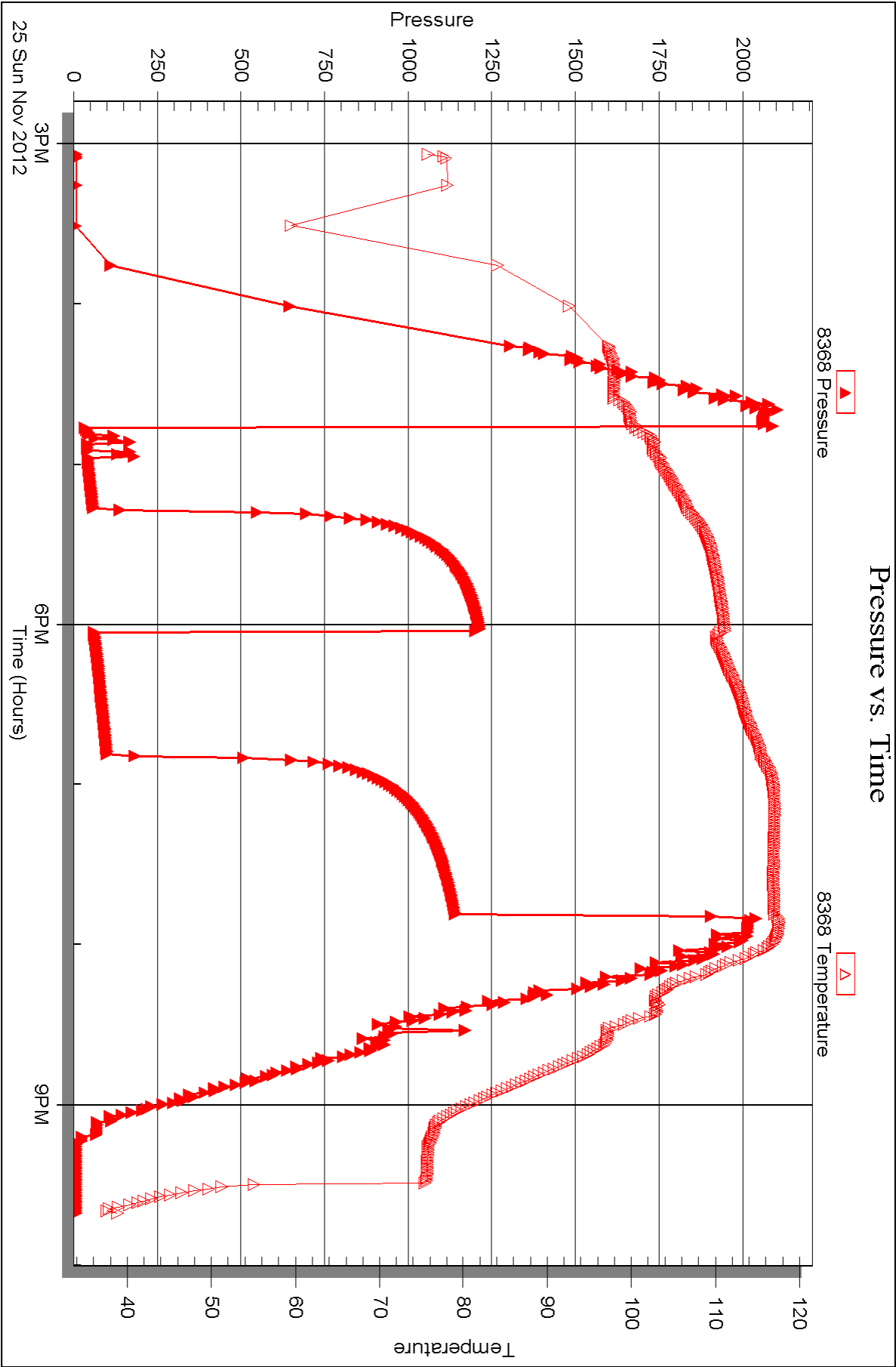


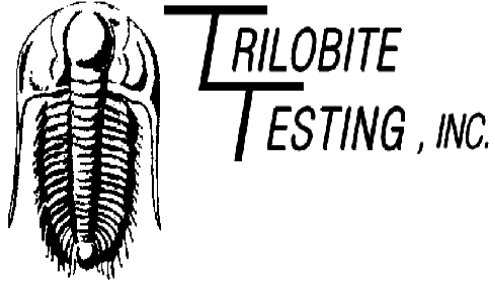
Serial #: 8368

Outside Ritchie Exploration

Phillips Otley #1

DST Test Number: 2





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

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

ATTN: Max Lovely

Phillips Ottley #1

18-13s-31w Logan,KS

Start Date: 2012.11.27 @ 14:03:26

End Date: 2012.11.27 @ 20:10:56

Job Ticket #: 49890 DST #: 3

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.12.03 @ 11:00:00

Ritchie Exploration

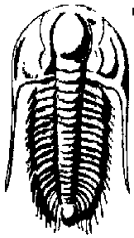
18-13s-31w Logan,KS

Phillips Ottley #1

DST # 3

Myrick St - Ft Scott

2012.11.27



**TRILOBITE
TESTING, INC.**

DRILL STEM TEST REPORT

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan, KS

Phillips Ottley #1

Job Ticket: 49890

DST#: 3

Test Start: 2012.11.27 @ 14:03:26

GENERAL INFORMATION:

Formation: **Myrick St - Ft Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:02:11

Time Test Ended: 20:10:56

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4436.00 ft (KB) To 4520.00 ft (KB) (TVD)

Total Depth: 4520.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 6667 Inside

Press@RunDepth: 27.91 psig @ 4437.00 ft (KB)

Start Date: 2012.11.27

End Date:

2012.11.27

Start Time: 14:03:26

End Time:

19:56:56

Capacity: 8000.00 psig

Last Calib.: 2012.11.27

Time On Btm: 2012.11.27 @ 16:01:56

Time Off Btm: 2012.11.27 @ 18:04:56

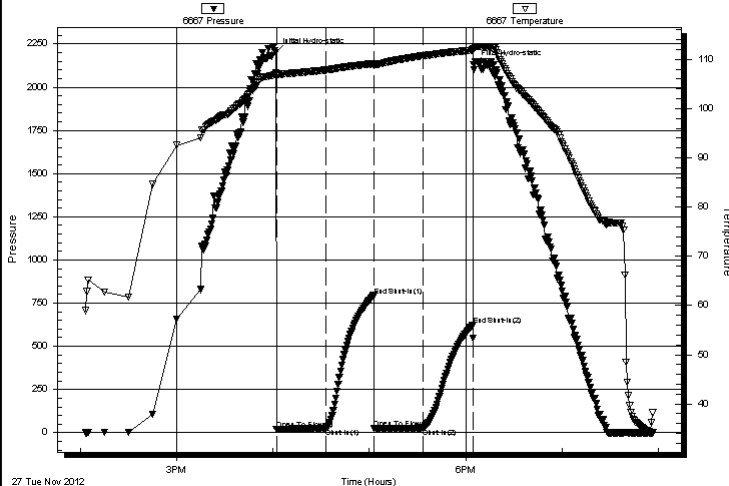
TEST COMMENT: 1/2" blow died in 25 min.

No return

No blow

No return

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2201.44	107.40	Initial Hydro-static
1	19.84	106.97	Open To Flow (1)
31	24.68	107.82	Shut-In(1)
61	793.57	109.12	End Shut-In(1)
61	25.41	108.77	Open To Flow (2)
92	27.91	110.74	Shut-In(2)
123	624.15	111.85	End Shut-In(2)
123	2131.49	112.06	Final Hydro-static

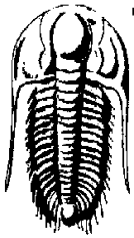
Recovery

Length (ft)	Description	Volume (bbl)
28.00	mud 100% m	0.39

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

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

ATTN: Max Lovely

18-13s-31w Logan,KS

Phillips Ottley #1

Job Ticket: 49890

DST#: 3

Test Start: 2012.11.27 @ 14:03:26

GENERAL INFORMATION:

Formation: **Myrick St - Ft Scott**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 16:02:11

Time Test Ended: 20:10:56

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4436.00 ft (KB) To 4520.00 ft (KB) (TVD)

Reference Elevations: 2943.00 ft (KB)

Total Depth: 4520.00 ft (KB) (TVD)

2937.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 6.00 ft

Serial #: 8368 Outside

Press@RunDepth: psig @ 4437.00 ft (KB)

Capacity: 8000.00 psig

Start Date: 2012.11.27

End Date:

2012.11.27

Last Calib.:

2012.11.27

Start Time: 14:03:26

End Time:

19:56:41

Time On Btm:

Time Off Btm:

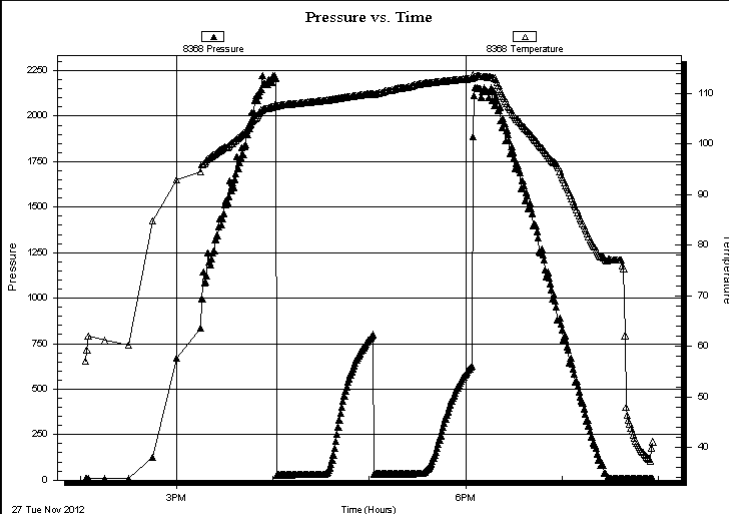
TEST COMMENT: 1/2" blow died in 25 min.

No return

No blow

No return

PRESSURE SUMMARY



Time
(Min.)

Pressure
(psig)

Temp
(deg F)

Annotation

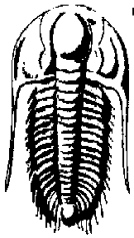
Recovery

Length (ft)	Description	Volume (bbl)
28.00	mud 100%m	0.39

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

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49890

DST#: 3

ATTN: Max Lovely

Test Start: 2012.11.27 @ 14:03:26

Tool Information

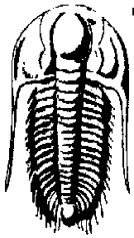
Drill Pipe:	Length:	4415.00 ft	Diameter:	3.80 inches	Volume:	61.93 bbl	Tool Weight:	1500.00 lb
Heavy Wt. Pipe:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight set on Packer:	25000.00 lb
Drill Collar:	Length:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	85000.00 lb
					Total Volume:	61.93 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		6.00 ft					String Weight: Initial	65000.00 lb
Depth to Top Packer:		4436.00 ft					Final	65000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		84.00 ft						
Tool Length:		111.00 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			4410.00		
Shut In Tool	5.00			4415.00		
Hydraulic tool	5.00			4420.00		
Jars	5.00			4425.00		
Safety Joint	2.00			4427.00		
Packer	5.00			4432.00	27.00	Bottom Of Top Packer
Packer	4.00			4436.00		
Stubb	1.00			4437.00		
Recorder	0.00	6667	Inside	4437.00		
Recorder	0.00	8368	Outside	4437.00		
Perforations	13.00			4450.00		
Change Over Sub	1.00			4451.00		
Drill Pipe	63.00			4514.00		
Change Over Sub	1.00			4515.00		
Bullnose	5.00			4520.00	84.00	Bottom Packers & Anchor

Total Tool Length: 111.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 49890

DST#: 3

ATTN: Max Lovely

Test Start: 2012.11.27 @ 14:03:26

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: 51.00 sec/qt

Cushion Volume:

bbl

Water Loss: 9.52 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 5000.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
28.00	mud 100%m	0.393

Total Length: 28.00 ft

Total Volume: 0.393 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

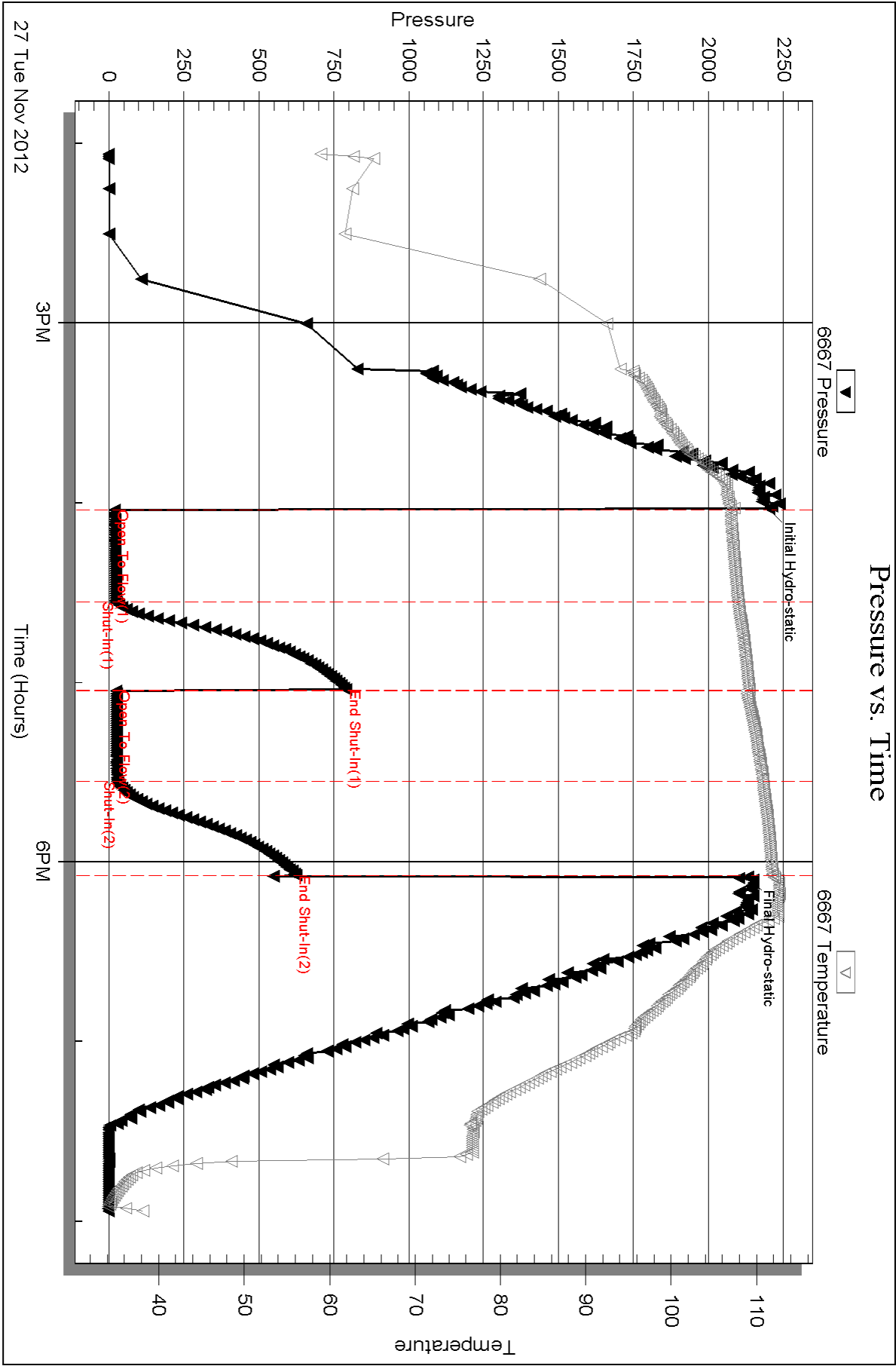
Serial #: 6667

Inside

Ritchie Exploration

Phillips Otley #1

DST Test Number: 3

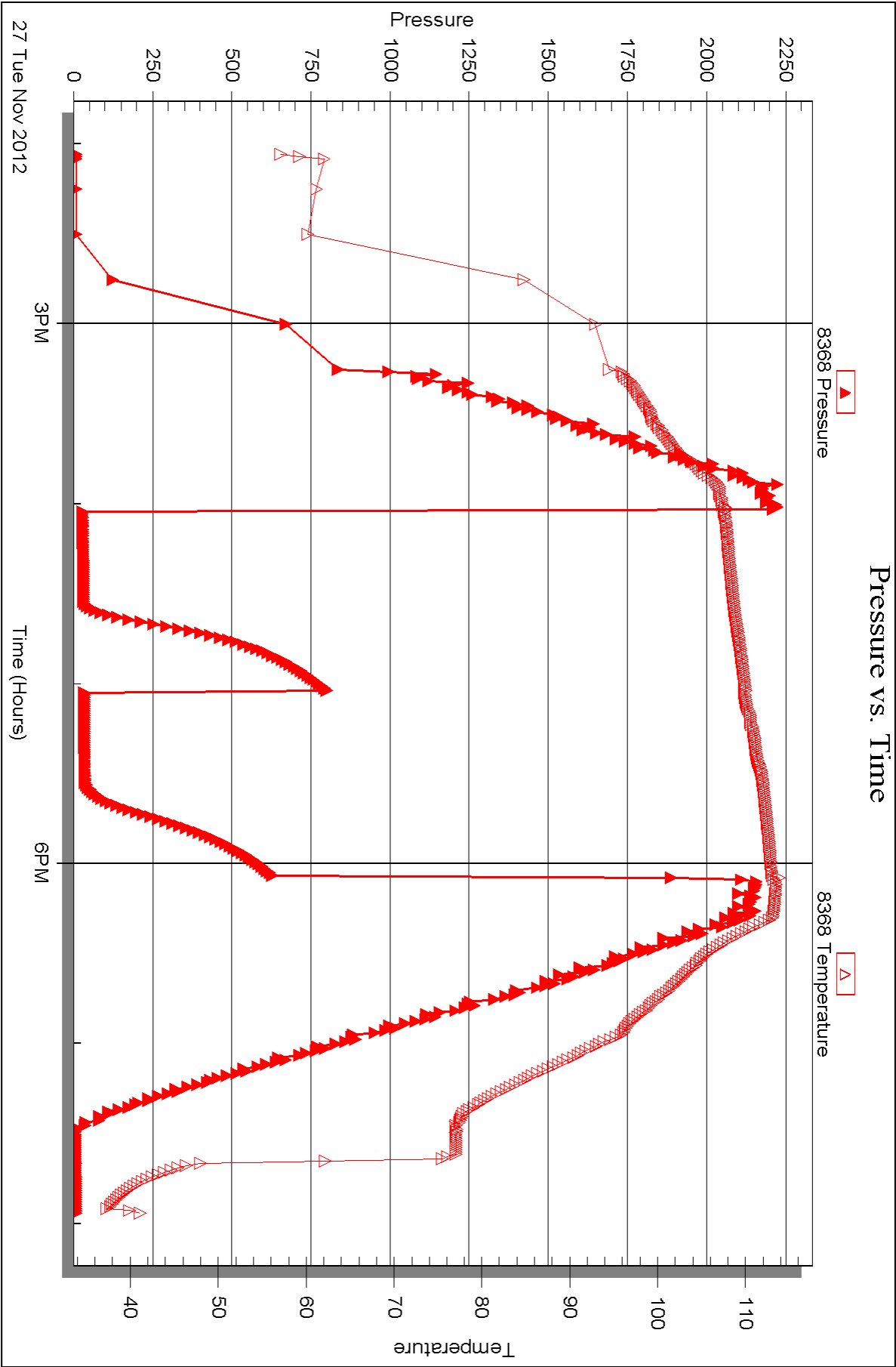


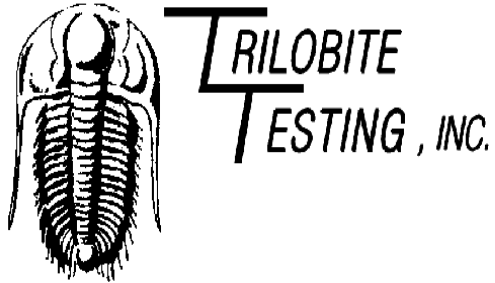
Serial #: 8368

Outside Ritchie Exploration

Phillips Otley #1

DST Test Number: 3





DRILL STEM TEST REPORT

Prepared For: **Ritchie Exploration**

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

ATTN: Max Lovely

Phillips Ottley #1

18-13s-31w Logan,KS

Start Date: 2012.11.28 @ 07:35:15

End Date: 2012.11.28 @ 15:20:30

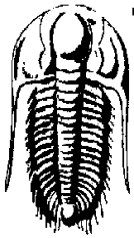
Job Ticket #: 48891 DST #: 4

Trilobite Testing, Inc

PO Box 362 Hays, KS 67601

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

Printed: 2012.12.03 @ 10:59:09



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan, KS

Phillips Ottley #1

Job Ticket: 48891

DST#: 4

Test Start: 2012.11.28 @ 07:35:15

GENERAL INFORMATION:

Formation: **Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:21:15

Time Test Ended: 15:20:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4519.00 ft (KB) To 4563.00 ft (KB) (TVD)

Total Depth: 4563.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 6667 Inside

Press@RunDepth: 358.22 psig @ 4520.00 ft (KB)

Start Date: 2012.11.28

End Date:

2012.11.28

Start Time: 07:35:15

End Time:

14:57:30

Capacity: 8000.00 psig

Last Calib.: 2012.11.28

Time On Btm: 2012.11.28 @ 09:21:00

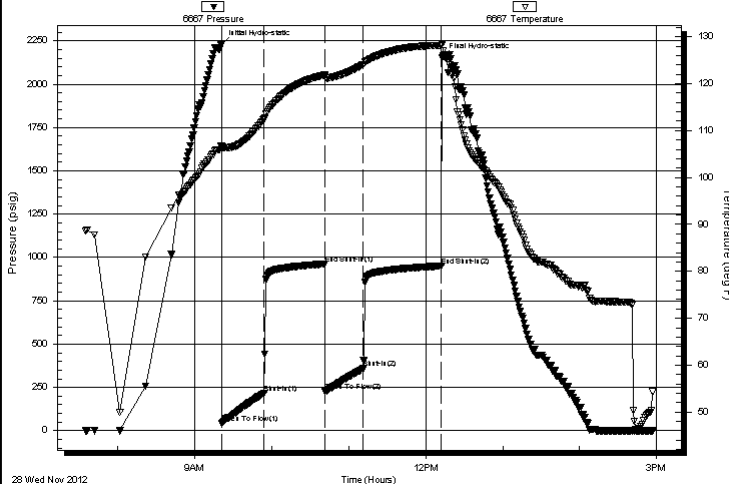
Time Off Btm: 2012.11.28 @ 12:12:45

TEST COMMENT: B.O.B. in 3 min.
B.O.B. return in 15 min.
B.O.B. @ open
B.O.B. in 30 min.

PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	2229.78	106.78	Initial Hydro-static
1	42.24	106.35	Open To Flow (1)
34	216.63	112.41	Shut-In(1)
81	962.18	121.82	End Shut-In(1)
81	229.77	121.48	Open To Flow (2)
111	358.22	124.07	Shut-In(2)
172	951.33	128.16	End Shut-In(2)
172	2151.77	128.37	Final Hydro-static

Pressure vs. Time



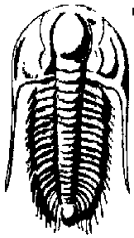
Recovery

Length (ft)	Description	Volume (bbl)
660.00	c g o 15g 85o	9.26
240.00	g m c o 20g 30m 50o	3.37
0.00	1440' 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

Ritchie Exploration

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

ATTN: Max Lovely

18-13s-31w Logan,KS

Phillips Ottley #1

Job Ticket: 48891

DST#: 4

Test Start: 2012.11.28 @ 07:35:15

GENERAL INFORMATION:

Formation: **Johnson**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 09:21:15

Time Test Ended: 15:20:30

Test Type: Conventional Bottom Hole (Reset)

Tester: Shane McBride

Unit No: 55

Interval: 4519.00 ft (KB) To 4563.00 ft (KB) (TVD)

Total Depth: 4563.00 ft (KB) (TVD)

Hole Diameter: 7.88 inches Hole Condition: Fair

Reference Elevations: 2943.00 ft (KB)

2937.00 ft (CF)

KB to GR/CF: 6.00 ft

Serial #: 8368 Outside

Press@RunDepth: psig @ 4520.00 ft (KB)

Start Date: 2012.11.28

End Date:

2012.11.28

Start Time: 07:35:15

End Time:

14:57:30

Capacity: 8000.00 psig

Last Calib.:

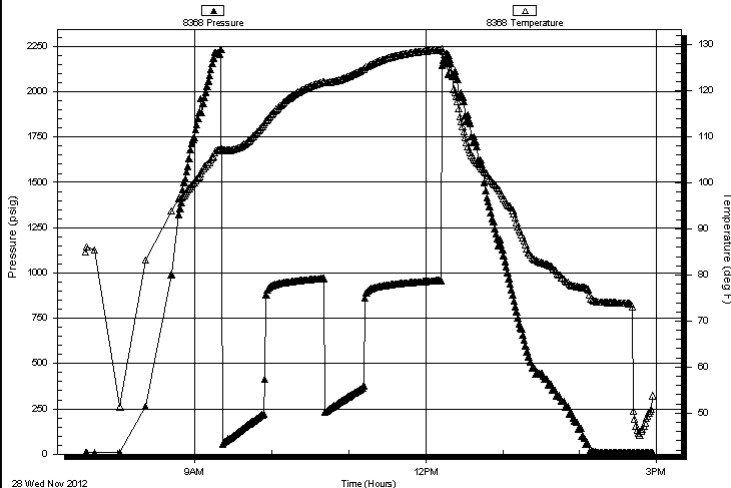
2012.11.28

Time On Btm:

Time Off Btm:

TEST COMMENT: B.O.B. in 3 min.
B.O.B. return in 15 min.
B.O.B. @ open
B.O.B. in 30 min.

Pressure vs. Time



PRESSURE SUMMARY

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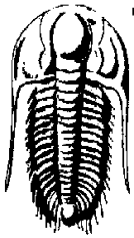
Recovery

Length (ft)	Description	Volume (bbl)
660.00	c g o 15g 85o	9.26
240.00	g m c o 20g 30m 50o	3.37
0.00	1440' gas in pipe	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

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 48891

DST#: 4

ATTN: Max Lovely

Test Start: 2012.11.28 @ 07:35:15

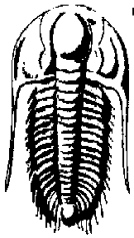
Tool Information

Drill Pipe:	Length:	4514.00 ft	Diameter:	3.80 inches	Volume:	63.32 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:	0.00 ft	Diameter:	0.00 inches	Volume:	0.00 bbl	Weight to Pull Loose:	85000.00 lb
					Total Volume:	63.32 bbl	Tool Chased	0.00 ft
Drill Pipe Above KB:		15.00 ft					String Weight: Initial	66000.00 lb
Depth to Top Packer:		4519.00 ft					Final	71000.00 lb
Depth to Bottom Packer:		ft						
Interval between Packers:		44.00 ft						
Tool Length:		64.00 ft						
Number of Packers:		2	Diameter:	6.75 inches				
Tool Comments:								

Tool Description

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Change Over Sub	1.00			4500.00	
Shut In Tool	5.00			4505.00	
Hydraulic tool	5.00			4510.00	
Packer	5.00			4515.00	20.00 Bottom Of Top Packer
Packer	4.00			4519.00	
Stubb	1.00			4520.00	
Recorder	0.00	6667	Inside	4520.00	
Recorder	0.00	8368	Outside	4520.00	
Perforations	4.00			4524.00	
Change Over Sub	1.00			4525.00	
Drill Pipe	32.00			4557.00	
Change Over Sub	1.00			4558.00	
Bullnose	5.00			4563.00	44.00 Bottom Packers & Anchor

Total Tool Length: 64.00



TRILOBITE
TESTING, INC.

DRILL STEM TEST REPORT

FLUID SUMMARY

Ritchie Exploration

18-13s-31w Logan,KS

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

Phillips Ottley #1

Job Ticket: 48891

DST#: 4

ATTN: Max Lovely

Test Start: 2012.11.28 @ 07:35:15

Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

29 deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

0 ppm

Viscosity: 49.00 sec/qt

Cushion Volume:

bbl

Water Loss: 7.19 in³

Gas Cushion Type:

Resistivity: 0.00 ohm.m

Gas Cushion Pressure:

psig

Salinity: 4500.00 ppm

Filter Cake: 1.00 inches

Recovery Information

Recovery Table

Length ft	Description	Volume bbl
660.00	c g o 15g 85o	9.258
240.00	g m c o 20g 30m 50o	3.367
0.00	1440' gas in pipe	0.000

Total Length: 900.00 ft

Total Volume: 12.625 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

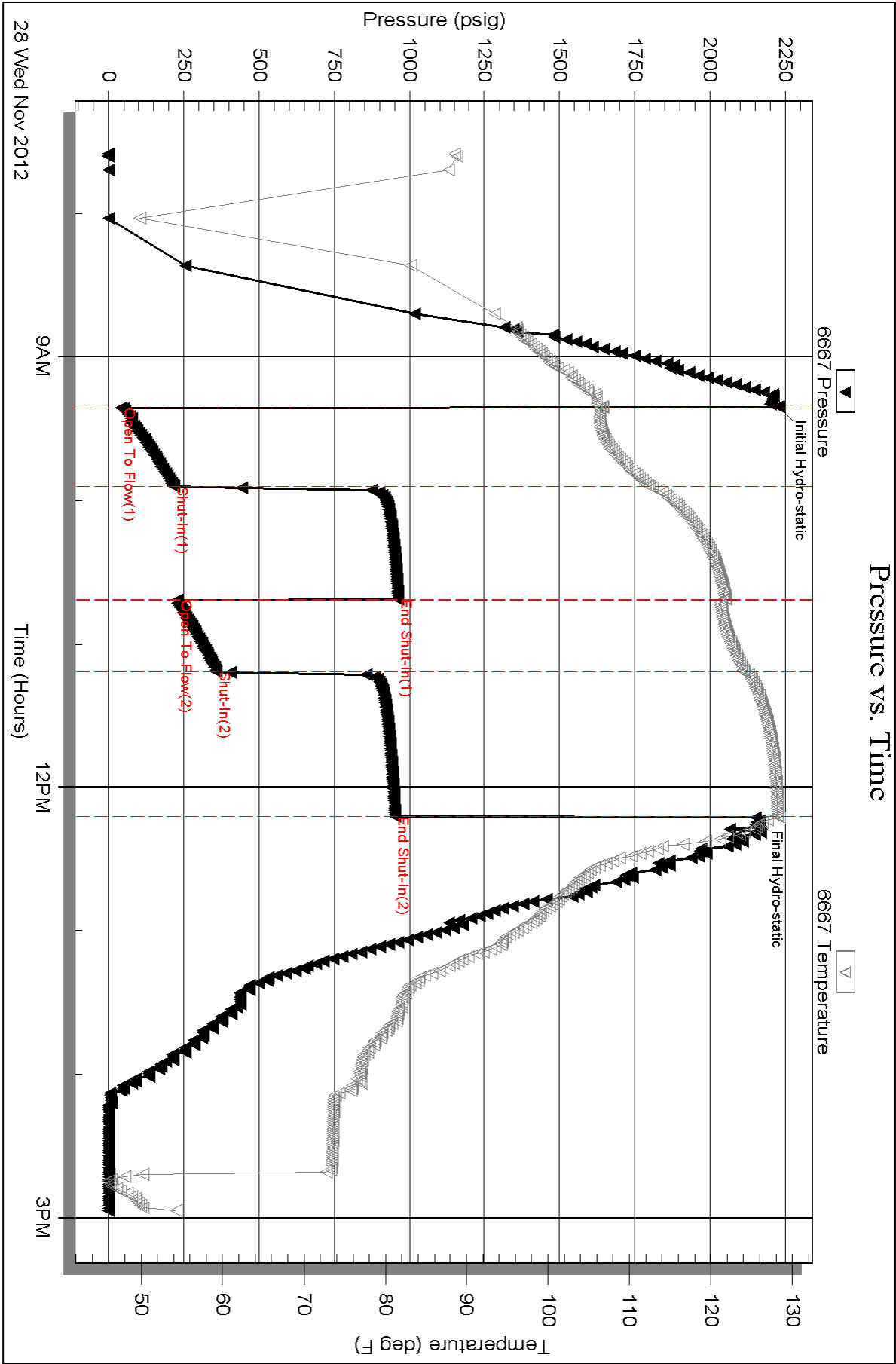
Serial #: 6667

Inside

Ritchie Exploration

Phillips Otley #1

DST Test Number: 4

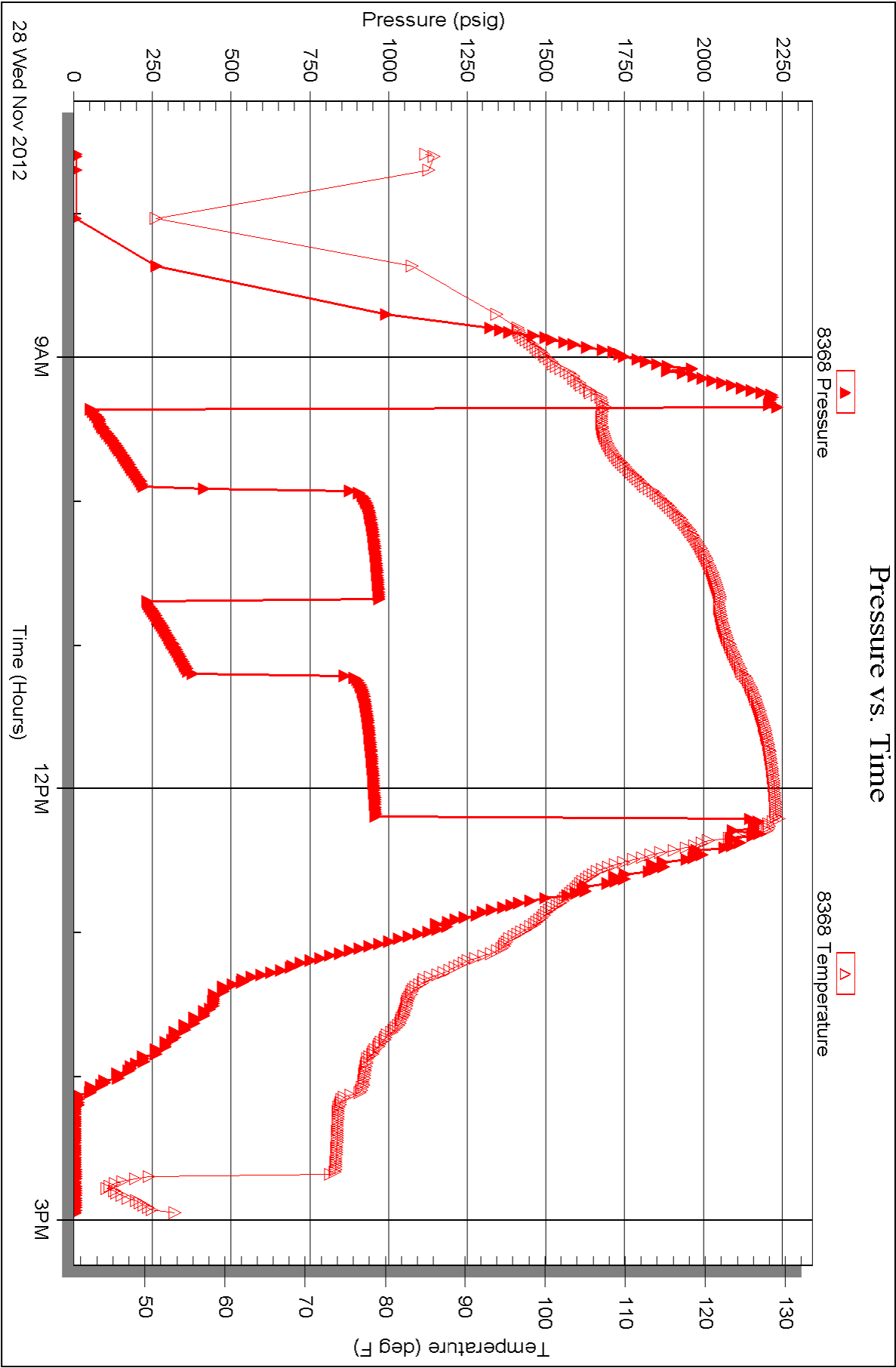


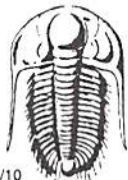
Serial #: 8368

Outside Ritchie Exploration

Phillips Otley #1

DST Test Number: 4





TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **49888**

Well Name & No. Phillips - Otley #1 Test No. #1 Date 11/24/12
 Company Ritchie Exploration Inc Elevation 2943 KB 2935 GL
 Address 8100 E 22nd St. N#700 Wichita, KS 67218-3188
 Co. Rep / Geo. Max Lovely Rig Drill #2
 Location: Sec. 18 Twp. 13 Rge. 31W Co. KS State KS

Interval Tested 3997 4072 Zone Tested C, D, E, F
 Anchor Length 75 Drill Pipe Run 3976 Mud Wt. 9.4
 Top Packer Depth 3992 Drill Collars Run — Vis 42
 Bottom Packer Depth 3997 Wt. Pipe Run — WL 9.4
 Total Depth 4072 Chlorides 5000 ppm System LCM #1
 Blow Description Slid into hole to bottom 3' in blow built to B.O.B. in 20 min.
No return
B.O.B. in 28 min
No return

Rec <u>125</u>	Feet of <u>WCM</u>	%gas	%oil	<u>35</u>	%water	<u>65</u>	%mud
Rec <u>240</u>	Feet of <u>SMCW</u>	%gas	%oil	<u>91</u>	%water	<u>10</u>	%mud
Rec	Feet of	%gas	%oil		%water		%mud
Rec	Feet of	%gas	%oil		%water		%mud
Rec	Feet of	%gas	%oil		%water		%mud

Rec Total 365 BHT 115° Gravity — API RW 219 @ 67 °F Chlorides 31500 ppm
 (A) Initial Hydrostatic 1965 ☒ Test 1250 T-On Location 04:03
 (B) First Initial Flow 35 ☒ Jars 250 T-Started 05:00
 (C) First Final Flow 119 ☒ Safety Joint 75 T-Open 08:10
 (D) Initial Shut-In 1085 ☒ Circ Sub N/C T-Pulled 10:40
 (E) Second Initial Flow 123 ☐ Hourly Standby — T-Out 13:10
 (F) Second Final Flow 194 ☒ Mileage 74 RT 116.25 Comments —
 (G) Final Shut-In 1052 ☐ Sampler —
 (H) Final Hydrostatic 1879 ☐ Straddle —
☐ Shale Packer —
☐ Extra Packer —
☐ Extra Recorder —
☐ Day Standby —
☐ Accessibility —

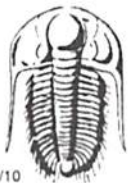
Initial Open 30
 Initial Shut-In 45
 Final Flow 30
 Final Shut-In 45

☐ Ruined Shale Packer —
☐ Ruined Packer —
☐ Extra Copies —
 Sub Total 0
 Total 1691.25
 MP/DST Disc't —

Approved By —

Our Representative —

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. **49889**

Well Name & No. Phillips - Otley #1 Test No. #2 Date 11/25/12
 Company Ritchie Exploration Elevation 2943 KB 2937 GL
 Address 8100 E 22nd St N. #700 Wichita, KS 67228-3188
 Co. Rep / Geo. Max Lovey Rig Duke #2
 Location: Sec. 18 Twp. 13S Rge. 3W Co. KS State KS

Interval Tested 4196 4237 Zone Tested R
 Anchor Length 41 Drill Pipe Run 4194' Mud Wt. 9.4
 Top Packer Depth 4191 Drill Collars Run — Vis 50
 Bottom Packer Depth 4196 Wt. Pipe Run — WL 6.4
 Total Depth 4237 Chlorides 5000 ppm System LCM #1

Blow Description 5" in. Surging blow
4th return
5" in. blow
4th return

Rec	Feet of	%gas	%oil	%water	%mud
<u>30'</u>	<u>WCM</u>			<u>40</u>	<u>60</u>
<u>120'</u>	<u>MCW</u>			<u>85</u>	<u>15</u>
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 150' BHT — Gravity — API RW 402 @ 40 °F Chlorides 28500 ppm

(A) Initial Hydrostatic 2080
 (B) First Initial Flow 22
 (C) First Final Flow 50
 (D) Initial Shut-In 1208
 (E) Second Initial Flow 53
 (F) Second Final Flow 92
 (G) Final Shut-In 1133
 (H) Final Hydrostatic 2036

☒ Test 1250
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub N/C
☐ Hourly Standby
☒ Mileage 74.15 116.25
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1691.25

T-On Location 14:40
 T-Started 15:03
 T-Open 16:50
 T-Pulled 19:50
 T-Out 22:03
 Comments —
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1691.25
 MP/DST Disc't —

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

Approved By Max Lovey

Our Representative [Signature]

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TRILOBITE TESTING INC.

1515 Commerce Parkway • Hays, Kansas 67601

Test Ticket

NO. 49890

Well Name & No. Phillips - Otley #1 Test No. #3 Date 11/27/12
 Company Ritchie Exploration Inc. Elevation 2943 KB 2937 GL
 Address 8100 E 22nd St N. #700 Wichita, KS 67278-3198
 Co. Rep / Geo. Max Lowery Rig Duke #2
 Location: Sec. 18 Twp. 13 Rge. 3W Co. KS

Interval Tested 4436 4520 Zone Tested Myra St / Ft. Scott
 Anchor Length 84 Drill Pipe Run 4415 Mud Wt. 9.3
 Top Packer Depth 4431 Drill Collars Run — Vis 51
 Bottom Packer Depth 4436 Wt. Pipe Run — WL 7.2
 Total Depth 4520 Chlorides 5000 ppm System LCM #1
 Blow Description 1/2" in blow died in 25 min.
No return
No blow
No return

Rec	Feet of	%gas	%oil	%water	%mud
<u>28</u>	<u>mud</u>			<u>100</u>	
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud
Rec	Feet of	%gas	%oil	%water	%mud

Rec Total 28' BHT 112° Gravity — API RW — @ — °F Chlorides — ppm

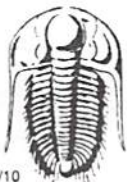
(A) Initial Hydrostatic 2201
 (B) First Initial Flow 19
 (C) First Final Flow 24
 (D) Initial Shut-In 793
 (E) Second Initial Flow 25
 (F) Second Final Flow 27
 (G) Final Shut-In 624
 (H) Final Hydrostatic 2131

☒ Test 1250
☒ Jars 250
☒ Safety Joint 75
☒ Circ Sub N/C
☐ Hourly Standby
☒ Mileage 7415 116.25
☐ Sampler
☐ Straddle
☐ Shale Packer
☐ Extra Packer
☐ Extra Recorder
☐ Day Standby
☐ Accessibility
 Sub Total 1691.25

T-On Location 12145
 T-Started 14103
 T-Open 16102
 T-Pulled 18102
 T-Out —
 Comments —
☐ Ruined Shale Packer
☐ Ruined Packer
☐ Extra Copies
 Sub Total 0
 Total 1691.25
 MP/DST Disc't —

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

Approved By Max Lowery 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. **49891**

Well Name & No. Phillips - Otley #1 Test No. #4 Date 11/28/12
 Company Ketchum Explorations Inc Elevation 2943 KB 2937 GL
 Address 8100 E 22nd N #700 Wichita, KS 67228-3188
 Co. Rep / Geo. Maximally Rig Duke #2
 Location: Sec. 18 Twp. 13 Rge. 3W Co. Cone State KS

Interval Tested 4519 4563 Zone Tested Johnson
 Anchor Length 44 Drill Pipe Run 4514 Mud Wt. 9.4
 Top Packer Depth 4514 Drill Collars Run — Vis 49
 Bottom Packer Depth 4519 Wt. Pipe Run — WL 6.4
 Total Depth 4563 Chlorides 4500 ppm System LCM #1

Blow Description B.O.B. in 3 min
B.O.B. Return in 15 min
B.O.B. @ open
B.O.B. return in 30 min.

Rec	Feet of	%gas	%oil	%water	%mud
<u>660</u>	<u>C90</u>	<u>15</u>	<u>85</u>		
<u>240</u>	<u>gsmco</u>	<u>20</u>	<u>50</u>		<u>30</u>

Rec Total 900' BHT 128° Gravity 29 API RW — @ —° F Chlorides — ppm

(A) Initial Hydrostatic <u>2229</u>	☒ Test <u>1250</u>	T-On Location <u>07:15</u>
(B) First Initial Flow <u>42</u>	☐ Jars <u>—</u>	T-Started <u>07:35</u>
(C) First Final Flow <u>216</u>	☐ Safety Joint <u>—</u>	T-Open <u>09:23</u>
(D) Initial Shut-In <u>962</u>	☒ Circ Sub <u>N/C</u>	T-Pulled <u>12:08</u>
(E) Second Initial Flow <u>229</u>	☐ Hourly Standby <u>—</u>	T-Out <u>15:20</u>
(F) Second Final Flow <u>358</u>	☒ Mileage <u>74 RT</u> <u>116.25</u>	Comments <u>—</u>
(G) Final Shut-In <u>951</u>	☐ Sampler <u>—</u>	
(H) Final Hydrostatic <u>2151</u>	☐ Straddle <u>—</u>	

Initial Open <u>30</u>	☐ Ruined Shale Packer <u>—</u>
Initial Shut-In <u>45</u>	☐ Ruined Packer <u>—</u>
Final Flow <u>30</u>	☐ Extra Copies <u>—</u>
Final Shut-In <u>60</u>	Sub Total <u>0</u>
	Total <u>1366.25</u>
	MP/DST Disc't <u>—</u>
	Sub Total <u>1366.25</u>

Approved By [Signature] Our Representative [Signature]
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