



## DRILL STEM TEST REPORT

Prepared For: **Werth Exploration Trust**

1308 Schwaller Ave.  
Hays Kansas 67601

ATTN: Herb Deines

### **Worcester 16-5**

### **16-7s-22w-Graham**

Start Date: 2014.07.07 @ 01:48:00

End Date: 2014.07.07 @ 07:50:00

Job Ticket #: 18348                      DST #: 1

Superior Testers Enterprises LLC  
PO Box 138 Great Bend KS 67530  
1-800-792-6902

Printed: 2014.07.07 @ 09:10:58



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ATTN: Herb Deines

Test Start: 2014.07.07 @ 01:48:00

## GENERAL INFORMATION:

Formation: **Lansing C**

Deviated: No Whipstock: ft (KB)

Time Tool Opened: 03:29:30

Time Test Ended: 07:50:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Dustin Ellis

Unit No: 3315-Hays-132

**Interval: 3582.00 ft (KB) To 3610.00 ft (KB) (TVD)**

Reference Elevations: 2341.00 ft (KB)

Total Depth: 3610.00 ft (KB) (TVD)

2334.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 8931**

**Inside**

Press@RunDepth: 276.14 psig @ 3605.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2014.07.07

End Date:

2014.07.07

Last Calib.:

2014.07.07

Start Time:

01:48:00

End Time:

07:50:00

Time On Btm:

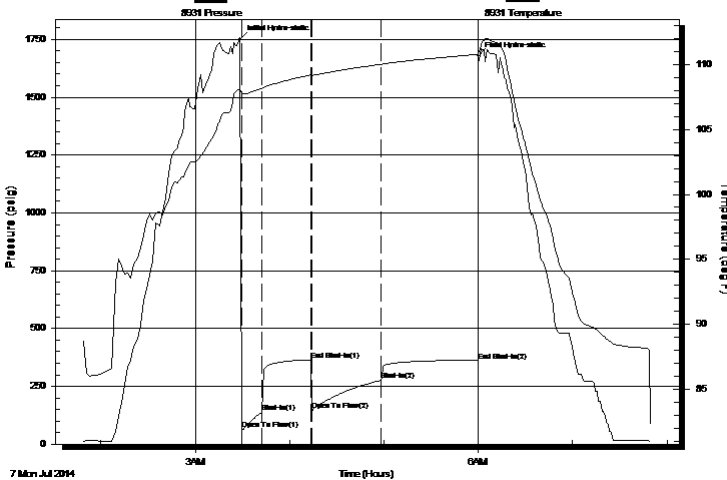
2014.07.07 @ 03:28:30

Time Off Btm:

2014.07.07 @ 06:00:00

**TEST COMMENT:** 1st Open 15 minutes Strong building blow built to the bottom of a 5 gallon bucket of water in 6 minutes.  
1st Shut in 30 minutes No blow back  
2nd Open 45 minutes Strong building blow built to the bottom of a 5 gallon bucket of water in 11 minutes.  
2nd Shut in 60 minutes No blow back.

Pressure vs. Time



## PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1750.88	108.15	Initial Hydro-static
1	62.60	107.76	Open To Flow (1)
14	139.26	108.17	Shut-In(1)
45	364.81	109.19	End Shut-In(1)
46	147.54	109.09	Open To Flow (2)
90	276.14	110.02	Shut-In(2)
152	359.02	110.78	End Shut-In(2)
152	1677.57	111.13	Final Hydro-static

## Recovery

Length (ft)	Description	Volume (bbl)
183.00	Very lightly oil spotted w atery mud	2.57
0.00	Mud 90% Water 10%	0.00
305.00	Muddy water w ater95% mud 5%	4.28
0.00	Chlorides 48,000 .3ohms 56 degrees	0.00

## Gas Rates

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



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Job Ticket: 18348

**DST#: 1**

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Time Test Ended: 07:50:00

Test Type: Conventional Bottom Hole (Initial)

Tester: Dustin Ellis

Unit No: 3315-Hays-132

**Interval: 3582.00 ft (KB) To 3610.00 ft (KB) (TVD)**

Reference Elevations: 2341.00 ft (KB)

Total Depth: 3610.00 ft (KB) (TVD)

2334.00 ft (CF)

Hole Diameter: 7.88 inches Hole Condition: Fair

KB to GR/CF: 7.00 ft

**Serial #: 6999 Outside**

Press@RunDepth: 364.77 psig @ 3605.00 ft (KB)

Capacity: 5000.00 psig

Start Date: 2014.07.07

End Date:

2014.07.07

Last Calib.:

2014.07.07

Start Time:

01:48:00

End Time:

07:50:30

Time On Btm:

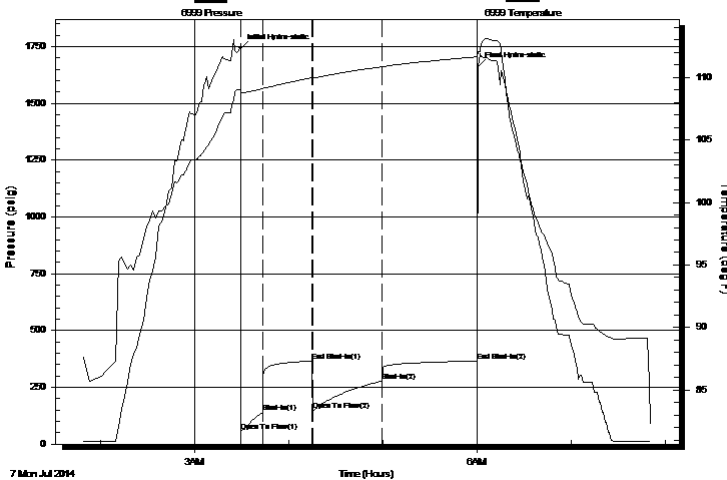
2014.07.07 @ 03:29:00

Time Off Btm:

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2nd Shut in 60 minutes No blow back.

Pressure vs. Time



PRESSURE SUMMARY

Time (Min.)	Pressure (psig)	Temp (deg F)	Annotation
0	1742.17	109.07	Initial Hydro-static
1	55.06	108.75	Open To Flow (1)
14	139.36	109.07	Shut-In(1)
46	363.55	109.97	End Shut-In(1)
46	147.19	109.95	Open To Flow (2)
90	277.43	110.85	Shut-In(2)
151	364.77	111.65	End Shut-In(2)
152	1659.89	112.10	Final Hydro-static

Recovery

Length (ft)	Description	Volume (bbl)
183.00	Very lightly oil spotted w atery mud	2.57
0.00	Mud 90% Water 10%	0.00
305.00	Muddy water w ater95% mud 5%	4.28
0.00	Chlorides 48,000 .3ohms 56 degrees	0.00

Gas Rates

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



# DRILL STEM TEST REPORT

TOOL DIAGRAM

Werth Exploration Trust

**16-7s-22w-Graham**

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**Worcester 16-5**

Job Ticket: 18348

**DST#: 1**

ATTN: Herb Deines

Test Start: 2014.07.07 @ 01:48:00

## Tool Information

Drill Pipe:	Length: 3567.00 ft	Diameter: 3.80 inches	Volume: 50.04 bbl	Tool Weight: 2000.00 lb
Heavy Wt. Pipe:	Length: 0.00 ft	Diameter: 0.00 inches	Volume: 0.00 bbl	Weight set on Packer: 20000.00 lb
Drill Collar:	Length: 0.00 ft	Diameter: 2.25 inches	Volume: 0.00 bbl	Weight to Pull Loose: 72000.00 lb
			<u>Total Volume: 50.04 bbl</u>	Tool Chased 0.00 ft
Drill Pipe Above KB:	5.00 ft			String Weight: Initial 50000.00 lb
Depth to Top Packer:	3582.00 ft			Final 51000.00 lb
Depth to Bottom Packer:	ft			
Interval between Packers:	28.00 ft			
Tool Length:	48.00 ft			
Number of Packers:	2	Diameter: 6.75 inches		

Tool Comments:

Tool Description	Length (ft)	Serial No.	Position	Depth (ft)	Accum. Lengths
Shut In Tool	5.00			3567.00	
Hydraulic tool	5.00			3572.00	
Top Packer	5.00			3577.00	
Packer	5.00			3582.00	20.00 Bottom Of Top Packer
Anchor	23.00			3605.00	
Recorder	0.00	8931	Inside	3605.00	
Recorder	0.00	6999	Outside	3605.00	
Bull Plug	5.00			3610.00	28.00 Anchor Tool

**Total Tool Length: 48.00**



# DRILL STEM TEST REPORT

## FLUID SUMMARY

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### Mud and Cushion Information

Mud Type: Gel Chem

Cushion Type:

Oil API:

deg API

Mud Weight: 9.00 lb/gal

Cushion Length:

ft

Water Salinity:

ppm

Viscosity: 60.00 sec/qt

Cushion Volume:

bbbl

Water Loss: 8.40 in<sup>3</sup>

Gas Cushion Type:

Resistivity: ohm.m

Gas Cushion Pressure:

psig

Salinity: 750.00 ppm

Filter Cake: 1.00 inches

### Recovery Information

Recovery Table

Length ft	Description	Volume bbbl
183.00	Very lightly oil spotted w atery mud	2.567
0.00	Mud 90% Water 10%	0.000
305.00	Muddy w ater w ater95% mud 5%	4.278
0.00	Chlorides 48,000 .3ohms 56 degrees	0.000

Total Length: 488.00 ft

Total Volume: 6.845 bbl

Num Fluid Samples: 0

Num Gas Bombs: 0

Serial #:

Laboratory Name:

Laboratory Location:

Recovery Comments:

### Pressure vs. Time

