



## DRILL STEM TEST REPORT

Prepared For: **Royal Energy**

P.O. Box 1820  
Dodge City ,Kansas 67801

ATTN: Eli Felts

**Alpers #2**

**4-23s-12w Stafford**

Start Date: 2018.09.05 @ 06:17:00

End Date: 2018.09.05 @ 12:08:00

Job Ticket #: 01008                      DST #: 2

Eagle Testers  
1309 Patton Road    Great Bend, Kansas 67530  
620-791-7394

Printed: 2018.09.05 @ 12:29:17

Royal Energy  
4-23s-12w Stafford  
Alpers #2  
DST # 2  
Kansas City "H & I"  
2018.09.05



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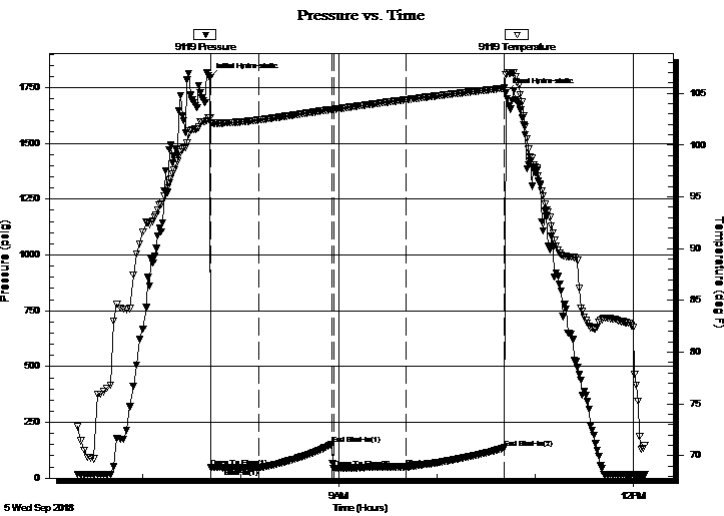
**4-23s-12w Stafford**  
**Alpers #2**  
 Job Ticket: 01008 **DST#: 2**  
 Test Start: 2018.09.05 @ 06:17:00

## GENERAL INFORMATION:

Formation: **Kansas City "H & I"**  
 Deviated: No Whipstock: ft (KB)  
 Test Type: Conventional Bottom Hole (Initial)  
 Time Tool Opened: 07:41:00 Tester: Gene Budig  
 Time Test Ended: 12:08:00 Unit No: 1  
 Interval: **3440.00 ft (KB) To 3470.00 ft (KB) (TVD)** Reference Elevations: 1851.00 ft (KB)  
 Total Depth: 3470.00 ft (KB) (TVD) 1841.00 ft (CF)  
 Hole Diameter: 7.88 inches Hole Condition: Fair KB to GR/CF: 10.00 ft

**Serial #: 9119 Inside**  
 Press@RunDepth: 135.45 psig @ 3465.00 ft (KB) Capacity: 5000.00 psig  
 Start Date: 2018.09.05 End Date: 2018.09.05 Last Calib.: 2018.09.05  
 Start Time: 06:20:00 End Time: 12:07:30 Time On Btm: 2018.09.05 @ 07:41:00  
 Time Off Btm: 2018.09.05 @ 10:42:00

**TEST COMMENT:** 1st Opening 30 Minutes weak building blow built to 2 inches into the water  
 1st Shut-In 45 Minutes  
 2nd Opening 45 Minutes weak blow for 36 minutes and died  
 2nd Shut-In 60 Minutes



## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1794.40         | 102.68       | Initial Hydro-static |
| 1           | 48.23           | 102.20       | Open To Flow (1)     |
| 30          | 45.72           | 102.44       | Shut-In(1)           |
| 75          | 151.53          | 103.46       | End Shut-In(1)       |
| 76          | 42.61           | 103.45       | Open To Flow (2)     |
| 120         | 48.84           | 104.39       | Shut-In(2)           |
| 180         | 135.45          | 105.50       | End Shut-In(2)       |
| 181         | 1728.35         | 106.81       | Final Hydro-static   |

## Recovery

| Length (ft) | Description                          | Volume (bbl) |
|-------------|--------------------------------------|--------------|
| 15.00       | gassy mud                            | 0.21         |
| 0.00        | slight show of oil between the tools | 0.00         |
|             |                                      |              |
|             |                                      |              |
|             |                                      |              |

## Gas Rates

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



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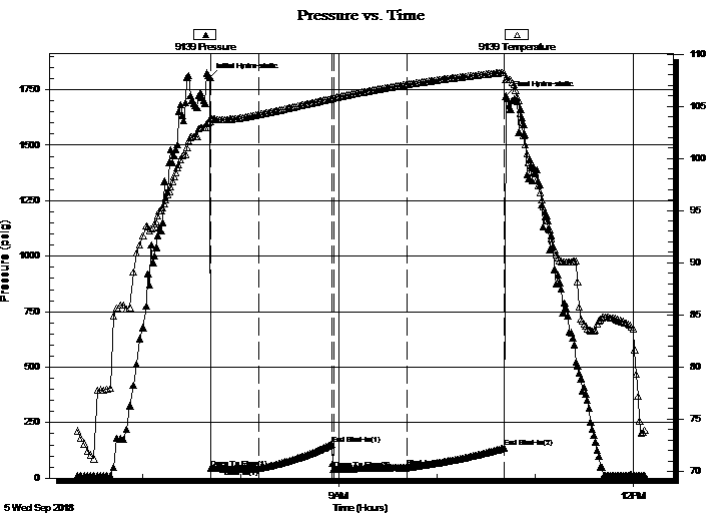
**4-23s-12w Stafford**  
**Alpers #2**  
 Job Ticket: 01008 **DST#: 2**  
 Test Start: 2018.09.05 @ 06:17:00

## GENERAL INFORMATION:

Formation: **Kansas City "H & I"**  
 Deviated: No Whipstock: ft (KB)  
 Time Tool Opened: 07:41:00  
 Time Test Ended: 12:08:00  
 Interval: **3440.00 ft (KB) To 3470.00 ft (KB) (TVD)**  
 Total Depth: 3470.00 ft (KB) (TVD)  
 Hole Diameter: 7.88 inches Hole Condition: Fair  
 Test Type: Conventional Bottom Hole (Initial)  
 Tester: Gene Budig  
 Unit No: 1  
 Reference Elevations: 1851.00 ft (KB)  
 1841.00 ft (CF)  
 KB to GR/CF: 10.00 ft

**Serial #: 9139 Outside**  
 Press@RunDepth: 136.97 psig @ 3465.00 ft (KB) Capacity: 5000.00 psig  
 Start Date: 2018.09.05 End Date: 2018.09.05 Last Calib.: 2018.09.05  
 Start Time: 06:20:00 End Time: 12:07:30 Time On Btm: 2018.09.05 @ 07:41:00  
 Time Off Btm: 2018.09.05 @ 10:42:00

**TEST COMMENT:** 1st Opening 30 Minutes weak building blow built to 2 inches into the water  
 1st Shut-In 45 Minutes  
 2nd Opening 45 Minutes weak blow for 36 minutes and died  
 2nd Shut-In 60 Minutes



## PRESSURE SUMMARY

| Time (Min.) | Pressure (psig) | Temp (deg F) | Annotation           |
|-------------|-----------------|--------------|----------------------|
| 0           | 1804.42         | 103.53       | Initial Hydro-static |
| 1           | 45.22           | 103.89       | Open To Flow (1)     |
| 30          | 43.75           | 104.20       | Shut-In(1)           |
| 75          | 153.87          | 105.71       | End Shut-In(1)       |
| 76          | 40.79           | 105.80       | Open To Flow (2)     |
| 121         | 47.37           | 107.08       | Shut-In(2)           |
| 180         | 136.97          | 108.24       | End Shut-In(2)       |
| 181         | 1721.22         | 107.59       | Final Hydro-static   |

## Recovery

| Length (ft) | Description                          | Volume (bbl) |
|-------------|--------------------------------------|--------------|
| 15.00       | gassy mud                            | 0.21         |
| 0.00        | slight show of oil between the tools | 0.00         |
|             |                                      |              |
|             |                                      |              |
|             |                                      |              |

## Gas Rates

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



# DRILL STEM TEST REPORT

**TOOL DIAGRAM**

Royal Energy  
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 ATTN: Eii Felts

**4-23s-12w Stafford**  
**Alpers #2**  
 Job Ticket: 01008 **DST#: 2**  
 Test Start: 2018.09.05 @ 06:17:00

## Tool Information

|                           |                    |                       |                                |                        |             |
|---------------------------|--------------------|-----------------------|--------------------------------|------------------------|-------------|
| Drill Pipe:               | Length: 3424.00 ft | Diameter: 3.80 inches | Volume: 48.03 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: 0.00 inches | Volume: 0.00 bbl               | Weight to Pull Loose:  | 68000.00 lb |
|                           |                    |                       | <u>Total Volume: 48.03 bbl</u> | Tool Chased            | 0.00 ft     |
| Drill Pipe Above KB:      | 14.00 ft           |                       |                                | String Weight: Initial | 40000.00 lb |
| Depth to Top Packer:      | 3440.00 ft         |                       |                                | Final                  | 40000.00 lb |
| Depth to Bottom Packer:   | ft                 |                       |                                |                        |             |
| Interval between Packers: | 30.00 ft           |                       |                                |                        |             |
| Tool Length:              | 60.00 ft           |                       |                                |                        |             |
| Number of Packers:        | 2                  | Diameter: 6.75 inches |                                |                        |             |

Tool Comments:

## Tool Description

| Tool Description          | Length (ft)  | Serial No. | Position | Depth (ft) | Accum. Lengths                |
|---------------------------|--------------|------------|----------|------------|-------------------------------|
| Shut In Tool              | 5.00         |            |          | 3415.00    |                               |
| Hydraulic tool            | 5.00         |            |          | 3420.00    |                               |
| Jars                      | 5.00         |            |          | 3425.00    |                               |
| Safety Joint              | 5.00         |            |          | 3430.00    |                               |
| Packer                    | 5.00         |            |          | 3435.00    | 30.00 Bottom Of Top Packer    |
| Packer                    | 5.00         |            | Fluid    | 3440.00    |                               |
| Anchor                    | 25.00        |            |          | 3465.00    |                               |
| Recorder                  | 0.00         | 9119       | Inside   | 3465.00    |                               |
| Recorder                  | 0.00         | 9139       | Outside  | 3465.00    |                               |
| Bullnose                  | 5.00         |            |          | 3470.00    | 30.00 Bottom Packers & Anchor |
| <b>Total Tool Length:</b> | <b>60.00</b> |            |          |            |                               |



# 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: 64.00 sec/qt          | Cushion Volume: bbl        |                 |         |
| Water Loss: 9.19 in <sup>3</sup> | Gas Cushion Type:          |                 |         |
| Resistivity: ohm.m               | Gas Cushion Pressure: psig |                 |         |
| Salinity: 10500.00 ppm           |                            |                 |         |
| Filter Cake: 1.00 inches         |                            |                 |         |

### Recovery Information

Recovery Table

| Length<br>ft | Description                           | Volume<br>bbl |
|--------------|---------------------------------------|---------------|
| 15.00        | gassy mud                             | 0.210         |
| 0.00         | slight show of oil betw een the tools | 0.000         |

Total Length: 15.00 ft      Total Volume: 0.210 bbl  
 Num Fluid Samples: 0      Num Gas Bombs: 0      Serial #:  
 Laboratory Name:      Laboratory Location:  
 Recovery Comments:

### Pressure vs. Time

