

# KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

- Open Flow **BST**  
 Deliverability

(See Instructions on Reverse Side)

Test Date:  
7/9/2015

API No. 15  
023-21261-0000

|   |                  |                                  |                 |   |                        |
|---|------------------|----------------------------------|-----------------|---|------------------------|
| Company<br>Rosewood Resources, Inc.                 |                  | Lease<br>Zweygardt               |                 | Well Number<br>24-19  |                        |
| County<br>Cheyenne                                  | Location<br>SESW | Section<br>19                    | TWP<br>3S       | RNG (E/W)<br>40W  | Acres Attributed<br>80 |
| Field<br>Cherry Creek                               |                  | Reservoir<br>Niobrara            |                 | Gas Gathering Connection<br>Branch Systems Inc.   |                        |
| Completion Date<br>9/15/2010                        |                  | Plug Back Total Depth<br>1465'   |                 | Packer Set at   |                        |
| Casing Size<br>4 1/2"                               | Weight<br>10.5#  | Internal Diameter<br>6.366       | Set at<br>1503' | Perforations<br>1266'   | To<br>1296'            |
| Tubing Size<br>NONE                                 | Weight           | Internal Diameter                | Set at          | Perforations  | To                     |
| Type Completion (Describe)<br>Single (Conventional) |                  | Type Fluid Production<br>Dry Gas |                 | Pump Unit or Traveling Plunger? Yes <input checked="" type="radio"/> No <input type="radio"/> |                        |
| Producing Thru (Annulus / Tubing)<br>Annulus        |                  | % Carbon Dioxide                 |                 | % Nitrogen  |                        |
| Vertical Depth(H)<br>1515'                          |                  | Pressure Taps<br>Flange          |                 | (Meter Run) (Prover) Size<br>2"   |                        |
| Pressure Buildup: Shut in 7-9                       |                  | 20 15 at 6:10                    |                 | (AM) <input checked="" type="radio"/> (PM) Taken 7-10   |                        |
| Well on Line: Started 7-10                          |                  | 20 15 at 6:25                    |                 | (AM) <input checked="" type="radio"/> (PM) Taken 7-11   |                        |

### OBSERVED SURFACE DATA

Duration of Shut-in 24 Hours

| Static / Dynamic Property | Orifice Size (Inches) | Circle one: Meter Prover Pressure psig (P <sub>m</sub> ) | Pressure Differential in Inches H <sub>2</sub> O | Flowing Temperature t | Well Head Temperature t | Casing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>1</sub> ) or (P <sub>c</sub> ) |       | Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>1</sub> ) or (P <sub>c</sub> ) |      | Duration (Hours) | Liquid Produced (Barrels) |
|---------------------------|-----------------------|--|--|-----------------------|-------------------------|--|-------|--|------|------------------|---------------------------|
|                           |                       |  |  |                       |                         | psig   | psia  | psig   | psia |                  |                           |
| Shut-In                   |                       |  |  |                       |                         | 173  | 187.4 |  |      |                  |                           |
| Flow                      |                       |  |  |                       |                         | 51   | 65.4  |  |      | 24               |                           |

### FLOW STREAM ATTRIBUTES

| Plate Coefficient (F <sub>v</sub> ) (F <sub>p</sub> ) Mcfd | Circle one: Meter or Prover Pressure psia | Press Extension $\sqrt{P_m \times h}$ | Gravity Factor F <sub>g</sub> | Flowing Temperature Factor F <sub>t</sub> | Deviation Factor F <sub>pv</sub> | Metered Flow R (Mcf/d) | GOR (Cubic Feet/ Barrel) | Flowing Fluid Gravity G <sub>m</sub> |
|--|---|---------------------------------------|-------------------------------|---|----------------------------------|------------------------|--------------------------|--------------------------------------|
|  |   |                                       |                               |   |                                  | 49                     |                          |                                      |

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>a</sub>)<sup>2</sup> = 0.207

(P<sub>c</sub>)<sup>2</sup> = \_\_\_\_\_ : (P<sub>w</sub>)<sup>2</sup> = \_\_\_\_\_ : P<sub>d</sub> = \_\_\_\_\_ % (P<sub>c</sub> - 14.4) + 14.4 = \_\_\_\_\_ :

(P<sub>o</sub>)<sup>2</sup> = \_\_\_\_\_

| (P <sub>c</sub> ) <sup>2</sup> - (P <sub>a</sub> ) <sup>2</sup><br>or<br>(P <sub>c</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup> | (P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup> | Choose formula 1 or 2:<br>1. P <sub>c</sub> <sup>2</sup> - P <sub>a</sub> <sup>2</sup><br>2. P <sub>c</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup><br>divided by: P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> | LOG of formula 1. or 2. and divide by: $\left[ \frac{P_c^2 - P_w^2}{P_c^2 - P_a^2} \right]$ | Backpressure Curve Slope = "n"<br>----- or -----<br>Assigned Standard Slope | n x LOG $\left[ \frac{P_c^2 - P_w^2}{P_c^2 - P_a^2} \right]$ | Antilog | Open Flow Deliverability Equals R x Antilog (Mcf/d) |
|--|---|---|---|---|--|---------|---|
|  |   |   |   |   |  |         |   |

Open Flow

Mcf/d @ 14.65 psia

Deliverability

Mcf/d @ 14.65 psia

The undersigned authority, on behalf of the Company, states that he is duly authorized to make the above report and that he has knowledge of the facts stated therein, and that said report is true and correct. Executed this the 18 day of December, 20 15.

Witness (if any)

**KCC WICHITA**

*Janell Martiny*  
For Company

For Commission

**APR 07 2016**

Checked by

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I declare under penalty of perjury under the laws of the state of Kansas that I am authorized to request exempt status under Rule K.A.R. 82-3-304 on behalf of the operator Rosewood Resources, Inc.

and that the foregoing pressure information and statements contained on this application form are true and correct to the best of my knowledge and belief based upon available production summaries and lease records of equipment installation and/or upon type of completion or upon use being made of the gas well herein named.

I hereby request a one-year exemption from open flow testing for the Zweygardt 24-19 gas well on the grounds that said well:

(Check one)

- is a coalbed methane producer
- is cycled on plunger lift due to water
- is a source of natural gas for injection into an oil reservoir undergoing ER
- is on vacuum at the present time; KCC approval Docket No. \_\_\_\_\_
- is not capable of producing at a daily rate in excess of 250 mcf/D

I further agree to supply to the best of my ability any and all supporting documents deemed by Commission staff as necessary to corroborate this claim for exemption from testing.

Date: 12/18/15

**KCC WICHITA**  
**APR 07 2016**  
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Signature: *Janell Martiny*  
Title: Production Assistant

**Instructions:** If a gas well meets one of the eligibility criteria set out in KCC regulation K.A.R. 82-3-304, the operator may complete the statement provided above in order to claim exempt status for the gas well.

At some point during the current calendar year, wellhead shut-in pressure shall have been measured after a minimum of 24 hours shut-in/buildup time and shall be reported on the front side of this form under **OBSERVED SURFACE DATA**. Shut-in pressure shall thereafter be reported yearly in the same manner for so long as the gas well continues to meet the eligibility criterion or until the claim of eligibility for exemption **IS** denied.

The G-2 form conveying the newest shut-in pressure reading shall be filed with the Wichita office no later than December 31 of the year for which it's intended to acquire exempt status for the subject well. The form must be signed and dated on the front side as though it was a verified report of annual test results.

W2742

Zweygarde 2419

St. Francis

St. Francis

Flow

July-15

FloBoss

| DATE      | Tubing<br>PSI | Casing<br>PSI | STATIC | MCF | SPM | CYCLE | HRS<br>DOWN | Water<br>BBLs | REMARKS<br>(Maximum length 110 characters) |
|-----------|---------------|---------------|--------|-----|-----|-------|-------------|---------------|--|
| 7/1/2015  |               | 49            | 62     | 56  | 5   | 24    | 0           | 33            |  |
| 7/2/2015  |               | 49            | 62     | 56  | 5   | 24    | 0           | 33            |  |
| 7/3/2015  |               | 51            | 64     | 56  | 5   | 24    | 0           | 33            |  |
| 7/4/2015  |               | 52            | 65     | 56  | 5   | 24    | 0           | 33            |  |
| 7/5/2015  |               | 52            | 65     | 56  | 5   | 24    | 0           | 33            |  |
| 7/6/2015  |               | 51            | 64     | 54  | 5   | 24    | 2           | 33            |  |
| 7/7/2015  |               | 51            | 64     | 54  | 5   | 24    | 0           | 33            |  |
| 7/8/2015  |               | 51            | 64     | 52  | 5   | 24    | 16          | 33            | turn off p u                               |
| 7/9/2015  |               | 71            | 84     | 2   | 5   | 24    | 24          | 0             |  |
| 7/10/2015 |               | 173           | 186    | 0   | 5   | 24    | 14          | 0             |  |
| 7/11/2015 |               | 99            | 112    | 46  | 5   | 24    | 0           | 0             |  |
| 7/12/2015 |               | 76            | 89     | 70  | 5   | 24    | 0           | 0             |  |
| 7/13/2015 |               | 60            | 73     | 59  | 5   | 24    | 0           | 0             | 0 restarted pu                             |
| 7/14/2015 |               | 52            | 65     | 59  | 5   | 24    | 0           | 33            |  |
| 7/15/2015 |               | 53            | 66     | 61  | 5   | 24    | 0           | 33            |  |
| 7/16/2015 |               | 51            | 64     | 55  | 5   | 24    | 0           | 33            |  |
| 7/17/2015 |               | 51            | 64     | 50  | 5   | 24    | 0           | 33            |  |
| 7/18/2015 |               | 50            | 63     | 48  | 5   | 24    | 0           | 33            |  |
| 7/19/2015 |               | 49            | 62     | 47  | 5   | 24    | 0           | 33            |  |
| 7/20/2015 |               | 49            | 62     | 46  | 5   | 24    | 0           | 33            | pu off                                     |
| 7/21/2015 |               | 52            | 65     | 45  | 5   | 24    | 2           | 33            |  |
| 7/22/2015 |               | 49            | 62     | 45  | 5   | 24    | 0           | 33            |  |
| 7/23/2015 |               | 49            | 62     | 43  | 5   | 24    | 0           | 33            |  |
| 7/24/2015 |               | 49            | 62     | 43  | 5   | 24    | 0           | 33            |  |
| 7/25/2015 |               | 49            | 62     | 43  | 5   | 24    | 0           | 33            |  |
| 7/26/2015 |               | 49            | 62     | 43  | 5   | 24    | 0           | 33            |  |
| 7/27/2015 |               | 48            | 61     | 42  | 5   | 24    | 0           | 33            |  |
| 7/28/2015 |               | 48            | 61     | 41  | 5   | 24    | 0           | 33            |  |
| 7/29/2015 |               | 48            | 61     | 41  | 5   | 24    | 0           | 33            |  |
| 7/30/2015 |               | 48            | 61     | 41  | 5   | 24    | 0           | 33            |  |
| 7/31/2015 |               | 48            | 61     | 41  | 5   | 24    | 0           | 33            |  |

Total

1451

858

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W2742



St. Francis

St. Francis

Flow

August-15

FloBoss

| DATE      | Tubing<br>PSI | Casing<br>PSI | STATIC | MCF | SPM | CYCLE | HRS<br>DOWN | Water<br>BBLs | REMARKS<br>(Maximum length 110 characters) |
|-----------|---------------|---------------|--------|-----|-----|-------|-------------|---------------|--|
| 8/1/2015  |               | 47            | 60     | 53  | 5   | 24    | 0           | 34            |  |
| 8/2/2015  |               | 47            | 60     | 54  | 5   | 12    | 0           | 18            | Motor down                                 |
| 8/3/2015  |               | 48            | 61     | 48  | 5   | 0     | 0           | 0             |  |
| 8/4/2015  |               | 47            | 60     | 45  | 5   | 0     | 0           | 0             |  |
| 8/5/2015  |               | 47            | 60     | 43  | 5   | 0     | 0           | 0             |  |
| 8/6/2015  |               | 47            | 60     | 42  | 5   | 0     | 0           | 0             |  |
| 8/7/2015  |               | 47            | 60     | 42  | 5   | 0     | 0           | 0             |  |
| 8/8/2015  |               | 48            | 61     | 41  | 5   | 0     | 0           | 0             |  |
| 8/9/2015  |               | 49            | 62     | 41  | 5   | 0     | 0           | 0             |  |
| 8/10/2015 |               | 51            | 64     | 41  | 5   | 0     | 0           | 0             |  |
| 8/11/2015 |               | 53            | 66     | 41  | 5   | 0     | 0           | 0             |  |
| 8/12/2015 |               | 53            | 66     | 41  | 5   | 0     | 0           | 0             |  |
| 8/13/2015 |               | 53            | 66     | 40  | 5   | 0     | 0           | 0             |  |
| 8/14/2015 |               | 53            | 66     | 40  |     |       |             | 0             |  |
| 8/15/2015 |               | 54            | 67     | 40  |     |       |             | 0             |  |
| 8/16/2015 |               | 55            | 68     | 40  |     |       |             | 0             |  |
| 8/17/2015 |               | 55            | 68     | 40  |     |       |             | 0             |  |
| 8/18/2015 |               | 54            | 67     | 40  |     |       |             | 0             |  |
| 8/19/2015 |               | 53            | 66     | 40  | 5   | 12    | 0           |               | 17 turn on p u put on tag, check tomorrow  |
| 8/20/2015 |               | 53            | 66     | 40  | 5   | 12    | 0           | 33            |  |
| 8/21/2015 |               | 54            | 67     | 40  | 5   | 12    | 0           | 33            |  |
| 8/22/2015 |               | 54            | 67     | 40  | 5   | 12    | 0           | 33            |  |
| 8/23/2015 |               | 54            | 67     | 40  | 5   | 12    | 0           | 33            |  |
| 8/24/2015 |               | 53            | 66     | 38  | 5   | 12    | 0           | 33            |  |
| 8/25/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |
| 8/26/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |
| 8/27/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |
| 8/28/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |
| 8/29/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |
| 8/30/2015 |               | 54            | 67     | 38  | 5   | 12    | 4           | 33            |  |
| 8/31/2015 |               | 54            | 67     | 38  | 5   | 12    | 0           | 33            |  |

Total

1276

465

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W2742

Zweygardt-24-19

St. Francis

St. Francis

Flow

September-15

FloBoss

| DATE      | Tubing<br>PSI | Casing<br>PSI | STATIC | MCF | SPM | CYCLE | HRS<br>DOWN | Water<br>BBLs | REMARKS<br>(Maximum length 110 characters) |
|-----------|---------------|---------------|--------|-----|-----|-------|-------------|---------------|--|
| 9/1/2015  |               | 50            | 63     | 37  | 5   | 24    | 0           | 33            |  |
| 9/2/2015  |               | 48            | 61     | 37  | 5   | 24    | 0           | 33            |  |
| 9/3/2015  |               | 52            | 65     | 20  | 5   | 24    | 0           | 33            |  |
| 9/4/2015  |               | 52            | 65     | 33  | 5   | 24    | 0           | 33            |  |
| 9/5/2015  |               | 61            | 74     | 38  | 5   | 24    | 0           | 33            |  |
| 9/6/2015  |               | 70            | 83     | 42  | 5   | 24    | 0           | 33            |  |
| 9/7/2015  |               | 60            | 73     | 45  | 5   | 24    | 0           | 33            |  |
| 9/8/2015  |               | 59            | 72     | 47  | 5   | 24    | 0           | 33            |  |
| 9/9/2015  |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/10/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/11/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/12/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/13/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/14/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/15/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/16/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/17/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/18/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/19/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/20/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/21/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/22/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/23/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/24/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/25/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/26/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/27/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/28/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/29/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 9/30/2015 |               | 51            | 64     | 49  | 5   | 24    | 0           | 33            |  |
| 10/1/2015 |               |               | 13     |     |     |       |             | 0             |  |

Total

1377

990

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