

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

Type Test:

(See Instructions on Reverse Side)

- Open Flow  
 Deliverability

Test Date:  
9/27/2011

API No. 15  
15-199-20359 - 0000

Company Raven Resources, LLC		Lease Nelson		Well Number #1-26A	
County Wallace County	Location SW/4 SE/4	Section 26	TWP 11S	RNG (E/W) 42W	Acres Attributed
Field Niobrara		Reservoir Niobrara			
Completion Date 8/2008		Plug Back Total Depth 1221.15'		Packer Set at	
Casing Size 4 1/2"	Weight 10.5	Internal Diameter	Set at 1235.13'	Perforations 1058' - 1090'	To
Tubing Size 2 3/8"	Weight 4.7	Internal Diameter	Set at 1047.54'	Perforations	To
Type Completion (Describe) CO2 Frac "Single Gas"		Type Fluid Production Only Gas		Pump Unit or Traveling Plunger? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Producing Thru (Annulus / Tubing) Tubing		% Carbon Dioxide		% Nitrogen <u>NO</u>	
Vertical Depth(H)		Pressure Taps		(Meter Run) (Prover) Size .500"	
Pressure Buildup:	Shut in 9/26	20 11 at 9 am	(AM) (PM) Taken 9/27	20 11 at 9 am	(AM) (PM)
Well on Line:	Started 9/27	20 11 at 9 am	(AM) (PM) Taken 9/28	20 11 at 9 am	(AM) (PM)

### OBSERVED SURFACE DATA

Duration of Shut-in 24 Hours

Static / Dynamic Property	Orifice Size (Inches)	Circle one: Meter Prover Pressure psig (Pm)	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>i</sub> ) or (P <sub>e</sub> )		Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>i</sub> ) or (P <sub>e</sub> )		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-in	.500"	15.1	0			7		7		24	0
Flow	.500"	16	2			5		5		24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>s</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>dv</sub>	Metered Flow R (Mcfd)	GOR (Barrel)	Flowing Fluid Gravity G <sub>w</sub>
							RECEIVED NOV 14 2011	

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

**KCC WICHITA** (PH) # 0.207

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

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

Open Flow Mcfd @ 14.65 psia      Deliverability Mcfd @ 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 10<sup>th</sup> day of Nov, 2011.

Witness (if any)

For Company

For Commission

Checked by

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 Raven Resources, LLC 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 Nelson 1-26A 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: 11/10/11

RECEIVED

NOV 14 2011

KCC WICHITA

Signature:   
Title: Managing Member

**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.

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

Type Test:

(See Instructions on Reverse Side)

- Open Flow  
 Deliverability

Test Date:  
9/27/2011

API No. 15  
15-199-20359

Company Raven Resources, LLC		Lease Nelson		Well Number #1-26A	
County Wallace County	Location SW/4 SE/4	Section 26	TWP 11S	RNG (E/W) 42W	Acres Attributed
Field		Reservoir Niobrara	Gas Gathering Connection Closed gathering system (West Kansas Pipeline)		
Completion Date 8/2008		Plug Back Total Depth 1221.15'		Packer Set at	
Casing Size 4 1/2"	Weight 10.5	Internal Diameter	Set at 1235.13'	Perforations 1058' - 1090'	To
Tubing Size 2 3/8"	Weight 4.7	Internal Diameter	Set at 1047.54'	Perforations	
Type Completion (Describe) CO2 Frac		Type Fluid Production		Pump Unit or Traveling Plunger? Yes / No	
Producing Thru (Annulus / Tubing) Tubing		% Carbon Dioxide		% Nitrogen	
Vertical Depth(H)		Pressure Taps		Gas Gravity - G <sub>g</sub>	
				(Meter Run) (Prover) Size .500"	
Pressure Buildup: Shut in <u>9/26</u> 20 <u>11</u> at <u>9 am</u> (AM) (PM) Taken <u>9/27</u> 20 <u>11</u> at <u>9 am</u> (AM) (PM)					
Well on Line: Started <u>9/27</u> 20 <u>11</u> at <u>9 am</u> (AM) (PM) Taken <u>9/28</u> 20 <u>11</u> at <u>9 am</u> (AM) (PM)					

RECEIVED  
NOV 04 2011  
KCC WICHITA

### 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>i</sub> ) or (P <sub>c</sub> )		Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>i</sub> ) or (P <sub>c</sub> )		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-in	.500"	15.1	0			7		7		24	0
Flow	.500"	16	2			5		5		24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>d</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>tt</sub>	Deviation Factor F <sub>pv</sub>	Metered Flow R (Mcfd)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G <sub>m</sub>

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

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

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

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

(P <sub>o</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup> or (P <sub>o</sub> ) <sup>2</sup> - (P <sub>g</sub> ) <sup>2</sup>	(P <sub>o</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup>	Choose formula 1 or 2: 1. P <sub>c</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> 2. P <sub>c</sub> <sup>2</sup> - P <sub>g</sub> <sup>2</sup> 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: $\left[ \frac{P_c^2 - P_w^2}{P_c^2 - P_w^2} \right]$	Backpressure Curve Slope = "n" ----- Assigned Standard Slope	n x LOG $\left[ \frac{P_c^2 - P_w^2}{P_c^2 - P_w^2} \right]$	Antilog	Open Flow Deliverability Equals R x Antilog (Mcfd)

Open Flow Mcfd @ 14.65 psia Deliverability Mcfd @ 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 25 day of October, 20 11.

\_\_\_\_\_  
For Company

Witness (if any)

For Commission

Checked by

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 Raven Resources, LLC 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 Nelson 1-26A 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

RECEIVED  
NOV 04 2011  
KCC WICHITA

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

Date: 10/25/11

Signature: 

Title: Mgr. Member

**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.

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

Type Test:

- Open Flow  
 Deliverability

(See Instructions on Reverse Side)

Test Date: 9/27/11

API No. 15

Company		Lease <u>Nelson</u>			Well Number <u>1-26A</u>	
County	Location	Section	TWP	RNG (E/W)	Acres Attributed	
Field		Reservoir		Gas Gathering Connection		
Completion Date		Plug Back Total Depth		Packer Set at		
Casing Size	Weight	Internal Diameter	Set at	Perforations	To	
Tubing Size	Weight	Internal Diameter	Set at	Perforations	To	
Type Completion (Describe)		Type Fluid Production		Pump Unit or Traveling Plunger? Yes / No		
Producing Thru (Annulus / Tubing)		% Carbon Dioxide		% Nitrogen		Gas Gravity - G <sub>g</sub>
Vertical Depth(H)		Pressure Taps			(Motor Run) (Prover) Size	
Pressure Buildup: Shut In <u>9/26</u> 20 <u>11</u> at <u>9:00</u> (AM) (PM) Taken <u>9/27</u> 20 <u>11</u> at <u>9:00</u> (AM) (PM)						
Well on Line: Started <u>9/27</u> 20 <u>11</u> at <u>9:00</u> (AM) (PM) Taken <u>9/28</u> 20 <u>11</u> at <u>9:00</u> (AM) (PM)						

### OBSERVED SURFACE DATA

Duration of Shut-in: 24 Hours

Static / Dynamic Property	Orifice Size (Inches)	Circle one: Motor or Prover Pressure psig (Pm)	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>2</sub> )		Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>1</sub> ) or (P <sub>2</sub> )		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-in						7		7		24	0
Flow						5		5		24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>0</sub> ) (F <sub>1</sub> ) Mcfd	Circle one: Motor or Prover Pressure psia	Probe Extension $\sqrt{P_w \times h}$	Gravity Factor F <sub>g</sub>	Flowing Temperature Factor F <sub>t</sub>	Deviation Factor F <sub>sv</sub>	Metered Flow R (Mcfd)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>1</sub>)<sup>2</sup> = \_\_\_\_\_ : (P<sub>2</sub>)<sup>2</sup> = \_\_\_\_\_ : P<sub>d</sub> = \_\_\_\_\_ % (P<sub>d</sub> - 14.4) + 14.4 = \_\_\_\_\_ :

(P <sub>1</sub> ) <sup>2</sup> - (P <sub>2</sub> ) <sup>2</sup> or (P <sub>1</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup>	(P <sub>d</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup>	Choose formula 1 or 2: 1. P <sub>1</sub> <sup>2</sup> - P <sub>2</sub> <sup>2</sup> 2. P <sub>1</sub> <sup>2</sup> - P <sub>d</sub> <sup>2</sup> divided by: P <sub>d</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>	LOG of formula 1. or 2. and divide by P <sub>d</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>	Backpressure Curve Slope = "n" ----- or ----- Assigned Standard Slope	n x LOG [ ]	Antilog	Open Flow Deliverability Equals R x Antilog (Mcfd)

Open Flow Mcfd @ 14.65 psia      Deliverability Mcfd @ 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 \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

\_\_\_\_\_  
Witness (if any)  
For Commission

\_\_\_\_\_  
For Company  
Checked by

RECEIVED  
NOV 04 2011  
BDC WICHITA

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 Raven Resources LLC 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 Wilson 1-26 A 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: 9/27/11

Signature: [Handwritten Signature]

Title: Pumper

RECEIVED  
NOV 04 2011  
KCC WICHITA

**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.