

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

(See Instructions on Reverse Side)

Type Test:

- Open Flow  
 Deliverability

Test Date:  
7/8/2013

API No. 15  
15-067-21733-00-00

Company Linn Operating Inc.		Lease Hickok		Well Number A-4 ATU-65	
County Grant	Location SW SW SW SW	Section 2	TWP 29S	RNG (E/W) 38W	Acres Attributed 640
Field Hugoton-Panoma		Reservoir Chase		Gas Gathering Connection Jayhawk Gas Plant	
Completion Date 5/24/2013		Plug Back Total Depth 2629		Packer Set at N/A	
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 3099	Perforations 2414	To 2590
Tubing Size N/A	Weight N/A	Internal Diameter N/A	Set at N/A	Perforations N/A	To N/A
Type Completion (Describe) Single		Type Fluid Production Dry Gas		Pump Unit or Traveling Plunger? Yes / No NO	
Producing Thru (Annulus / Tubing) Annulus		% Carbon Dioxide .071		% Nitrogen 16.3480	
Vertical Depth(H) 3100		Pressure Taps Flange		(Meter Run) (Prover) Size 3.068	
Pressure Buildup: Shut in		7/8 20 13 at 11:00 AM		(AM) (PM) Taken 7/11 20 13 at 11:00 AM (AM) (PM)	
Well on Line: Started		7/11 20 13 at 11:00 AM		(AM) (PM) Taken 7/12 20 13 at 11:00 AM (AM) (PM)	

### OBSERVED SURFACE DATA

Duration of Shut-in 72 Hours

Static / Dynamic Property	Orifice Size (inches)	Circle one: Meter Prover Pressure (Pm) psig	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>t</sub> ) or (P <sub>c</sub> )		Tubing Wellhead Pressure (P <sub>w</sub> ) or (P <sub>t</sub> ) or (P <sub>c</sub> )		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-in	1	27.1	0	71	71	27.1	41.5	NA	NA	72	0
Flow	1	23.8	11.1	71	71	23.8	38.2	NA	NA	24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>b</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>
4.912	38.2	20.592	1.173	.9896	1	117.411	0	0

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>c</sub>)<sup>2</sup> = 1.7223 ; (P<sub>w</sub>)<sup>2</sup> = 1.4592 ; P<sub>d</sub> = \_\_\_\_\_ % (P<sub>c</sub> - 14.4) + 14.4 = \_\_\_\_\_ ; (P<sub>a</sub>)<sup>2</sup> = 0.207 ; (P<sub>d</sub>)<sup>2</sup> = \_\_\_\_\_

(P <sub>c</sub> ) <sup>2</sup> - (P <sub>a</sub> ) <sup>2</sup> or (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: 1. P <sub>c</sub> <sup>2</sup> - P <sub>a</sub> <sup>2</sup> 2. P <sub>c</sub> <sup>2</sup> - P <sub>d</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: $\frac{P_c^2 - P_w^2}{P_c^2 - P_a^2}$	Backpressure Curve Slope = "n" or Assigned Standard Slope	n x LOG	Antilog	Open Flow Deliverability Equals R x Antilog (Mcfd)
1.5153	.2630	5.761	.761	.85	.6464	4.4303	520.1690

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 17 day of July, 20 13.

RECEIVED  
KANSAS CORPORATION COMMISSION

Shawn Hildreth  
*Shawn Hildreth*  
For Company

Witness (if any)

AUG 05 2013

For Commission

For Company

Checked by

CONSERVATION DIVISION  
WICHITA, KS