

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

(See Instructions on Reverse Side)

Type Test:

- Open Flow  
 Deliverability

Test Date:  
7/28/2013

API No. 15  
15-187-21224-00-00

Company Linn Operating Inc				Lease Spurgeon		Well Number 4 ATU-71	
County Stanton	Location NW NW NW NW	Section 16	TWP 28S	RNG (E/W) 39W	Acres Attributed 640		
Field Hugoton-Panoma		Reservoir Chase		Gas Gathering Connection Jayhawk Gas Plant			
Completion Date 6/20/2013		Plug Back Total Depth 2580		Packer Set at NA			
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 3084	Perforations 2297	To 2468		
Tubing Size NA	Weight NA	Internal Diameter NA	Set at NA	Perforations NA	To NA		
Type Completion (Describe) Single		Type Fluid Production Dry Gas		Pump Unit or Traveling Plunger? NO		Yes / No	
Producing Thru (Annulus / Tubing) Annulus		% Carbon Dioxide .0729		% Nitrogen 16.2999		Gas Gravity - G <sub>g</sub> .7280	
Vertical Depth(H) Flange		Pressure Taps				(Meter Run) (Prover) Size 3.068	
Pressure Buildup: Shut in 7/28		20 13 at 11:00 AM		(AM) (PM) Taken 7/31		20 13 at 11:00 AM (AM) (PM)	
Well on Line: Started 7/31		20 13 at 11:00 AM		(AM) (PM) Taken 8/1		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 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>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	43.2	43.2	73	73	43.2	57.6	NA	NA	72	0
Flow	1	37.0	37.0	73	73	37.0	51.4	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>t</sub>	Deviation Factor F <sub>pv</sub>	Metered Flow R (Mcfd)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G <sub>m</sub>
4.912	51.4	32.697	1.172	.9877	1	185.928	0	0

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>c</sub>)<sup>2</sup> = 3.3178 : (P<sub>w</sub>)<sup>2</sup> = 2.6420 : 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)
3.1108	.6758	4.607	.663	.85	.5636	3.6609	680.6675

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 1st day of August, 20 13.

RECEIVED  
KANSAS CORPORATION COMMISSION

Shawn Hildreth *Shawn Hildreth*

Witness (if any)

For Company

AUG 05 2013

For Commission

Checked by

CONSERVATION DIVISION  
WICHITA, KS