

# KANSAS CORPORATION COMMISSION

## ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

- Open Flow  
 Deliverability

(See instructions on Reverse Side)

Test Date:  
12/5/2013

API No. 15  
15-187-21238-00-00

Company LINN Operating, Inc.		Lease Chadd		Well Number 5 ATU-20	
County Stanton	Location NE NE NE NE	Section 16	TWP 27S	RNG (E/W) 39W	Acres Attributed 640
Field Hugoton-Panoma		Reservoir Chase & Council Grove		Gas Gathering Connection Jayhawk Gas Plant	
Completion Date 9/18/2013		Plug Back Total Depth		Packer Set at NA	
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 3114	Perforations 2406	To 2907
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? Yes / No NO	
Producing Thru (Annulus / Tubing) Annulus		% Carbon Dioxide 0.017		% Nitrogen 15.369	
Vertical Depth(H)		Pressure Taps Flange		(Meter Run) (Prover) Size 3.068	
Pressure Buildup:		Shut In 12/5 20 13 at 11:00 AM (AM) (PM) Taken 12/8 20 13 at 11:00 AM (AM) (PM)			
Well on Line:		Started 12/8 20 13 at 11:00 AM (AM) (PM) Taken 12/9 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 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>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	1.75	32.9	0	44	44	32.9	47.3	NA	NA	72	0
Flow	1.75	28.3	3.5	44	44	28.3	42.7	NA	NA	24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>s</sub> ) (F <sub>p</sub> ) Mcd	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 (Mcd)	GOR (Cubic Foot/ Barrel)	Flowing Fluid Gravity G <sub>m</sub>
16.01	42.7	12.225	1.175	1.0155	1	233.599	0	0

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>e</sub>)<sup>2</sup> = 2.2373 ; (P<sub>w</sub>)<sup>2</sup> = 1.8233 ; P<sub>d</sub> = \_\_\_\_\_ % (P<sub>c</sub> - 14.4) + 14.4 = \_\_\_\_\_ ; (P<sub>a</sub>)<sup>2</sup> = 0.207 ; (P<sub>g</sub>)<sup>2</sup> = \_\_\_\_\_

(P <sub>e</sub> ) <sup>2</sup> - (P <sub>a</sub> ) <sup>2</sup> or (P <sub>e</sub> ) <sup>2</sup> - (P <sub>g</sub> ) <sup>2</sup>	(P <sub>e</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup>	Choose formula 1 or 2: 1. P <sub>e</sub> <sup>2</sup> - P <sub>a</sub> <sup>2</sup> 2. P <sub>e</sub> <sup>2</sup> - P <sub>g</sub> <sup>2</sup> divided by: P <sub>e</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup>	LOG of formula 1. or 2. and divide by: $\frac{P_e^2 - P_a^2}{P_e^2 - P_w^2}$	Backpressure Curve Slope = "n" ----- or ----- Assigned Standard Slope	n x LOG [ ]	Antilog	Open Flow Deliverability Equals R x Antilog (Mcd)
2.0303	0.4140	4.9041	0.6906	.850	0.5870	3.8634	902.4940

Open Flow Mcd @ 14.65 psia      Deliverability Mcd @ 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 27th day of December, 20 13.

\_\_\_\_\_  
Witness (if any)

Shawn Hildreth *Shawn Hildreth*  
\_\_\_\_\_  
For Company

\_\_\_\_\_  
For Commission

\_\_\_\_\_  
Checked by