

# KANSAS CORPORATION COMMISSION

## ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

- Open Flow  
 Deliverability

Test Date:  
2/14/2015

API No. 15  
15-187-21308-00-00

Company LINN Operating, Inc.		Lease PETTIJOHN		Well Number 5 ATU-381	
County Stanton	Location SE SE SE SE	Section 26	TWP 28S	RNG (E/W) 39W	Acres Attributed 640
Field Hugoton-Panoma		Reservoir Chase & Council Grove		Gas Gathering Connection Jayhawk Gas Plant	
Completion Date 12/14/14		Plug Back Total Depth NA		Packer Set at NA	
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 772	Perforations 2348	To 2691
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		% Nitrogen	
Vertical Depth(H)		Pressure Taps Flange		(Meter Run) (Prover) Size 3.068	
Pressure Buildup: Shut in 2/14 20 15 at 11:00 AM (AM) (PM) Taken 2/17 20 15 at 11:00 AM (AM) (PM)					
Well on Line: Started 2/17 20 15 at 11:00 AM (AM) (PM) Taken 2/18 20 15 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>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	0.750	20.5	0	36	36	20.5	34.9	NA	NA	72	0
Flow	0.750	17.6	5.0	36	36	17.6	32.0	NA	NA	24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>p</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>
2.74	32	12.649	1.162	1.0241	1	41.233	0	0

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>c</sub>)<sup>2</sup> = 1.2180 ; (P<sub>w</sub>)<sup>2</sup> = 1.0240 ; P<sub>d</sub> = \_\_\_\_\_ % (P<sub>c</sub> - 14.4) + 14.4 = \_\_\_\_\_ ; (P<sub>c</sub>)<sup>2</sup> = 0.207 ; (P<sub>d</sub>)<sup>2</sup> = \_\_\_\_\_

(P <sub>c</sub> ) <sup>2</sup> - (P <sub>d</sub> ) <sup>2</sup> or (P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</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>d</sub> <sup>2</sup> 2. P <sub>c</sub> <sup>2</sup> - P <sub>w</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: $\frac{P_c^2 - P_w^2}{P_c^2 - P_w^2}$	Backpressure Curve Slope = "n" ----- Assigned Standard Slope	n x LOG [ ]	Antilog	Open Flow Deliverability Equals R x Antilog (Mcfd)
1.0110	0.1940	5.2111	0.7169	.850	0.6094	4.0681	167.7419

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 3rd day of March, 20 15.

Received  
KANSAS CORPORATION COMMISSION

*Shawn Hedrick*  
For Company

Witness (if any)

For Commission

MAR 06 2015

Checked by

CONSERVATION DIVISION  
WICHITA, KS