

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

Type Test:

- Open Flow  
 Deliverability

Test Date:  
1/23/2015

API No. 15  
15-187-21307-00-00

(See Instructions on Reverse Side)

Company LINN Operating, Inc.		Lease EDWARDS			Well Number A-5 ATU-449	
County Stanton	Location NW NE NE NE	Section 33	TWP 29S	RNG (E/W) 39W	Acres Attributed 640	
Field Hugoton-Panoma		Reservoir Chase & Council Grove		Gas Gathering Connection Jayhawk Gas Plant		
Completion Date 12/11/2014		Plug Back Total Depth NA		Packer Set at NA		
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 772	Perforations 2320	To 2627	
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 0.057		% Nitrogen 17.298		Gas Gravity - G <sub>g</sub> 0.731
Vertical Depth(H) Flange		Pressure Taps Flange			(Meter Run) (Prover) Size 3.068	
Pressure Buildup: Shut in		1/23	20 15	at 11:00 AM	(AM) (PM) Taken	1/26 20 15 at 11:00 AM (AM) (PM)
Well on Line: Started		1/26	20 15	at 11:00 AM	(AM) (PM) Taken	1/27 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 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>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	1.00	43.7	0	49	49	43.7	58.1	NA	NA	72	0
Flow	1.00	37.6	9.8	49	49	37.6	52.0	NA	NA	24	0

### FLOW STREAM ATTRIBUTES

Plate Coefficient (F <sub>d</sub> ) (F <sub>v</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	52	22.574	1.170	1.0109	1	131.112	0	0

### (OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>c</sub>)<sup>2</sup> = 3.3756 : (P<sub>w</sub>)<sup>2</sup> = 2.7040 : P<sub>d</sub> = \_\_\_\_\_ % (P<sub>c</sub> - 14.4) + 14.4 = \_\_\_\_\_ : (P<sub>d</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: $\left[ \frac{P_c^2 - P_w^2}{P_c^2 - P_w^2} \right]$	Backpressure Curve Slope = "n" ----- or 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)
3.1686	0.6716	4.7179	0.6738	.850	0.5727	3.7384	490.1527

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 29th day of January, 20 15.

**KCC WICHITA**      Shawn Hildreth *Shawn Hildreth*  
Witness (if any)      For Company

JAN 30 2015

For Commission      Checked by

RECEIVED