

KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Type Test:

(See Instructions on Reverse Side)

- Open Flow
 Deliverability

Test Date:
7/19/2013

API No. 15
15-187-21232-00-00

Company Linn Operating Inc.		Lease Winger		Well Number A-4 ATU-98	
County Stanton	Location NW NW NW NW	Section 5	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 2550		Packer Set at NA	
Casing Size 5.5	Weight 15.5	Internal Diameter 4.95	Set at 3124	Perforations 2306	To 2480
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 .0640		% Nitrogen 14.923	
Vertical Depth(H)		Pressure Taps Flange		(Meter Run) (Prover) Size 3.068	
Pressure Buildup: Shut in		7/19 20 13 at 11:00 AM		(AM) (PM) Taken 7/22 20 13 at 11:00 AM (AM) (PM)	
Well on Line: Started		7/22 20 13 at 11:00 AM		(AM) (PM) Taken 7/23 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 ₂ O	Flowing Temperature t	Well Head Temperature t	Casing Wellhead Pressure (P _w) or (P ₁) or (P _c)		Tubing Wellhead Pressure (P _w) or (P ₁) or (P _c)		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-in	1	42.2	0	73	73	42.2	56.6	NA	NA	72	0
Flow	1	36.2	13.2	73	73	36.2	56.6	NA	NA	24	0

FLOW STREAM ATTRIBUTES

Plate Coefficient (F _b) (F _p) Mcfd	Circle one Meter or Prover Pressure psia	Press Extension $\sqrt{P_m \times h}$	Gravity Factor F _g	Flowing Temperature Factor F _{tt}	Deviation Factor F _{pv}	Metered Flow R (Mcf/d)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G _m
4.912	56.6	25.844	1.169	.9877	1	146.566	0	0

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_c)^2 = 3.2036$; $(P_w)^2 = 2.5604$; $P_d = \underline{\hspace{2cm}}$ % $(P_c - 14.4) + 14.4 = \underline{\hspace{2cm}}$; $(P_o)^2 = 0.207$; $(P_o)^2 = \underline{\hspace{2cm}}$

$(P_c)^2 - (P_o)^2$ or $(P_c)^2 - (P_w)^2$	$(P_c)^2 - (P_w)^2$	Choose formula 1 or 2: 1. $P_c^2 - P_o^2$ 2. $P_c^2 - P_w^2$ divided by: $P_c^2 - P_w^2$	LOG of formula 1. or 2. and divide by: $P_c^2 - P_w^2$	Backpressure Curve Slope = "n" ----- Assigned Standard Slope	n x LOG $\left[\frac{\hspace{2cm}}{\hspace{2cm}} \right]$	Antilog	Open Flow Deliverability Equals R x Antilog (Mcf/d)
2.9966	.6432	4.659	.668	.85	.5680	3.6986	542.086

Open Flow Mcf/d @ 14.65 psia Deliverability Mcf/d @ 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 30th day of July, 20 13.

RECEIVED
KANSAS CORPORATION COMMISSION

Shawn Hildreth *Shawn Hildreth*
For Company

Witness (if any)

For Commission

AUG 05 2013

Checked by

CONSERVATION DIVISION
WICHITA, KS