

KANSAS CORPORATION COMMISSION
ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

FORM G-2
(Rev.8/98)

TYPE TEST:

- ☒ Open Flow
☒ Deliverability

TEST DATE: 11-4-1999 API No. 15-075-20568

Company Horsehoe Operating Inc		Lease Hazlett		Well Number 1	
County Hamilton	Location C SE SW	Section 22	TWP 21s	RNG (E/W) 41	Acres Attributed 640
Field Bradshaw	Reservoir Winfield	Gas Gathering Connection KN			
Completion Date 9-29-1995	Plug Back Total Depth 2783	Packer Set at			
Casing Size 4.500	Weight 10.500	Internal Diameter 4.052	Set at 2793	Perforations 2760	To 2773
Tubing Size 2.375	Weight 4.700	Internal Diameter 1.995	Set at 2774	Perforations	To
Type Completion (Describe) single gas	Type Fluid Production water	Pump Unit or Traveling Plunger? pumping unit			
Producing Thru (Annulus/Tubing) casing	% Carbon Dioxide .037	% Nitrogen 27.879		Gas Gravity- Gg .774	
Vertical Depth (ft) 2766	Pressure Taps flange	Meter Run Size 2.067			
Pressure Buildup: Shut in	10-31-1999 @ 9:00a	TAKEN	11-3-1999 @ 9:40am		
Well on Line: Started	11-3-1999 @ 9:40am	TAKEN	11-4-1999 @ 10:0am		

OBSERVED SURFACE DATA

Static/ Dynamic Property	Orifice Size in.	Meter Pressure psig	Pressure Diff. In. H ₂ O	Flowing Temp. t.	WellHead Temp. t.	Casing WellHead Press. (P _w) (P _t) (P _c)		Tubing WellHead Press. (P _w) (P _t) (P _c)		Duration (Hours)	Liquid Prod. Barrels
						psig	psia	psig	psia		
Shut-in						89	102			72.7	
Flow	.625	43.0	21.00	48		69	82			24.3	17.9

FLOW STREAM ATTRIBUTES

COEFFICIENT (F _b) Mcfd	(METER) PRESSURE psia	EXTENSION $\sqrt{P_m \times H_w}$	GRAVITY FACTOR Fg	FLOWING TEMP FACTOR Ft	DEVIATION FACTOR Fpv	RATE OF FLOW R Mcfd	GOR	G _m
1.910	56.2	34.35	1.1367	1.0117	1.0049	75	4289.3	1.526

(OPEN FLOW)(DELIVERABILITY) CALCULATIONS

(P _c) ² = 10.4		(P _w) ² = 6.8		42.1	%	(P _c - 14.4) + 14.4 =		(Pa) ² = 0.207
(P _c) ² - (P _a) ²		(P _c) ² - (P _w) ²				(P _d) ² 1.85		
or (P _c) ² - (P _d) ²								
		$\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2}$	LOG		Backpressure Curve Slope "n" or Assigned Standard Slope	n x LOG	Antilog	Open Flow Deliverability = R x Antilog Mcfd
10.27	3.68	2.792	.4459	.967	.4311	2.698	204	
8.60	3.68	2.337	.3686	.967	.3564	2.272	172	

OPEN FLOW 204 Mcfd @ 14.65 psia DELIVERABILITY 172 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 herein and that said report is true and correct. Executed this the 11 day of Nov, 19 99

Witness (if any)

For Commission

Original: Wichita
Copy: Dodge City
Copy: Horseshoe Operating

For Company

Checked by

KANSAS CORPORATION COMMISSION ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

Form G-2
(Rev. 8-98)

Type Test:

☒ Open Flow

☐ Deliverability

(See Instructions on Reverse Side)

Test Date: 8/25/99

API No. 15 - 075-205680000

Company Horseshoe Operating, Inc.		Lease Hazlett		Well Number 1	
County Hamilton	Location C SE SW SE	Section 22	TWP 21S	RNG (E/W) 41W	Acres Attributed 640
Field Bradshaw		Reservoir Winfield		Gas Gathering, Connection KN	
Completion Date 9-29-95		Plug Back Total Depth 2783'		Packer Set at	
Casing Size 4 1/2"	Weight 10.5	Internal Diameter 4.052	Set at 2793'	Perforations 2760-2773	
Tubing Size 2 3/8"	Weight 4.7	Internal Diameter 2.000	Set at 2774'	Perforations	
Type Completion (Describe) Single - Gas		Type Fluid Production Water		Pump Unit or Traveling Plunger? Yes / No	
Producing Thru (Annulus / Tubing)		% Carbon Dioxide		% Nitrogen	
Vertical Depth(H)		Pressure Taps		(Meter Run) (Prover) Size	
Pressure Buildup: Shut in 8/23 1999 at 7:00 (AM) (PM) Taken 19 at (AM) (PM)					
Well on Line: Started 8/25 1999 at 12:00 (AM) (PM) Taken 19 at (AM) (PM)					

OBSERVED SURFACE DATA

Duration of Shut-in 41 Hours

Static / Dynamic Property	Orifice Size inches	Circle one: Meter or Prover Pressure psig	Pressure Differential in (h) Inches H ₂ O	Flowing Temperature t	Well Head Temperature t	Casing Wellhead Pressure (P _w) or (P _i) or (P _c)		Tubing Wellhead Pressure (P _w) or (P _i) or (P _c)		Duration (Hours)	Liquid Produced (Barrels)
						psig	psia	psig	psia		
Shut-In							96		0		
Flow							59		0		

FLOW STREAM ATTRIBUTES

Plate Coefficient (F _b) (F _p) Mcfd	Circle one: Meter or Prover Pressure psia	Press Extension $\sqrt{P_m \times H_w}$	Gravity Factor F _g	Flowing Temperature Factor F _{tt}	Deviation Factor F _{pv}	Metered Flow R (Mcfd)	GOR (Cubic Feet/ Barrel)	Flowing Fluid Gravity G _m

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_c)^2 =$: $(P_w)^2 =$: $P_d =$ % $(P_c - 14.4) + 14.4 =$: $(P_a)^2 = 0.207$
 $(P_a)^2 =$

$(P_c)^2 - (P_a)^2$ or $(P_c)^2 - (P_d)^2$	$(P_c)^2 - (P_w)^2$	Choose formula 1 or 2: 1. $P_c^2 - P_a^2$ 2. $P_c^2 - P_d^2$ 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" ----- or ----- Assigned Standard Slope	n x LOG	Antilog	Open Flow Deliverability Equals R x Antilog Mcfd

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 14 day of September, 19 99.

Witness (if any)

For Commission

For Company

Checked by