

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

FORM G-2  
(Rev.8/98)

TYPE TEST:

- ☒ Open Flow  
☒ Deliverability

TEST DATE: 2-2-01

API No.

|                                           |                                |                                                 |                         |                      |                         |
|-------------------------------------------|--------------------------------|-------------------------------------------------|-------------------------|----------------------|-------------------------|
| Company<br>Horsehoe Operating Inc         |                                | Lease<br>Harding                                |                         | Well Number<br>3     |                         |
| County<br>Greeley                         | Location<br>C SE               | Section<br>10                                   | TWP<br>20s              | RNG(E/W)<br>40w      | Acres Attributed<br>160 |
| Field<br>Bradshaw                         | Reservoir<br>Winfield          | Gas Gathering Connection<br>Oneok               |                         |                      |                         |
| Completion Date<br>10-13-2000             | Plug Back Total Depth<br>2874  | Packer Set at                                   |                         |                      |                         |
| Casing Size<br>4.500                      | Weight<br>10.500               | Internal Diameter<br>2873                       | Set at<br>2835          | Perforations<br>2850 | To                      |
| Tubing Size<br>2.375                      | Weight<br>4.700                | Internal Diameter<br>1.995                      | Set at<br>2861          | Perforations         | To                      |
| Type Completion (Describe)<br>acid        | Type Fluid Production<br>water | Pump Unit or Traveling Plunger?<br>pumping unit |                         |                      |                         |
| Producing Thru(Annulus/Tubing)<br>Annulus | % Carbon Dioxide<br>.022       | % Nitrogen<br>28.584                            | Gas Gravity- Gg<br>.765 |                      |                         |
| Vertical Depth (H)<br>2842                | Pressure Taps<br>Flange        | Meter Run Size<br>2.067                         |                         |                      |                         |
| Pressure Buildup: Shut in                 | 01-29-01 @ 8:00                | TAKEN                                           | 02-01-01 @ 10:35        |                      |                         |
| Well on Line: Started                     | 02-01-01 @ 10:35               | TAKEN                                           | 02-02-01 @ 11:35        |                      |                         |

**OBSERVED SURFACE DATA**

| Static/<br>Dynamic<br>Property | Orifice<br>Size<br>in. | Meter<br>Pressure<br>psig | Pressure<br>Diff.<br>In. H <sub>2</sub> O | Flowing<br>Temp.<br>t. | WellHead<br>Temp.<br>t. | Casing WellHead Press.<br>(P <sub>w</sub> ) (P <sub>t</sub> ) (P <sub>c</sub> ) |      | Tubing WellHead Press.<br>(P <sub>w</sub> ) (P <sub>t</sub> ) (P <sub>c</sub> ) |      | Duration<br>(Hours) | Liquid<br>Prod.<br>Barrels |
|--------------------------------|------------------------|---------------------------|-------------------------------------------|------------------------|-------------------------|---------------------------------------------------------------------------------|------|---------------------------------------------------------------------------------|------|---------------------|----------------------------|
|                                |                        |                           |                                           |                        |                         | psig                                                                            | psia | psig                                                                            | psia |                     |                            |
| Shut-in                        |                        |                           |                                           |                        |                         | 84                                                                              | 98   |                                                                                 |      | 74.5                |                            |
| Flow                           | .375                   | 45.0                      | 5.00                                      | 31                     |                         | 63                                                                              | 77   |                                                                                 |      | 25.0                |                            |

**FLOW STREAM ATTRIBUTES**

| COEFFICIENT<br>(F <sub>b</sub> )<br>Mcf/d | (METER)<br>PRESSURE<br>psia | EXTENSION<br>$\sqrt{P_m \times H_w}$ | GRAVITY<br>FACTOR<br>Fg | FLOWING TEMP<br>FACTOR<br>Ft | DEVIATION<br>FACTOR<br>Fpv | RATE OF FLOW<br>R<br>Mcf/d | GOR | G <sub>m</sub> |
|-------------------------------------------|-----------------------------|--------------------------------------|-------------------------|------------------------------|----------------------------|----------------------------|-----|----------------|
| .690                                      | 59.4                        | 17.23                                | 1.1433                  | 1.0291                       | 1.0056                     | 14                         |     | .765           |

**(OPEN FLOW)(DELIVERABILITY) CALCULATIONS**

| (OPEN FLOW) (DELIVERABILITY) CALCULATIONS        |                     |                                                                                                |       |                                                                         |                  |                                             | $(P_a)^2 = 0.207$ |
|--------------------------------------------------|---------------------|------------------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------|------------------|---------------------------------------------|-------------------|
| $(P_c)^2 = 9.7$                                  | $(P_w)^2 = 6.0$     | 45.7                                                                                           | %     | $(P_c - 14.4) + 14.4 =$                                                 | $(P_d)^2 = 2.03$ |                                             |                   |
| $(P_c)^2 - (P_a)^2$<br>or<br>$(P_c)^2 - (P_d)^2$ | $(P_c)^2 - (P_w)^2$ | $\frac{(P_c)^2 - (P_a)^2}{(P_c)^2 - (P_w)^2}$ or $\frac{(P_c)^2 - (P_d)^2}{(P_c)^2 - (P_w)^2}$ | LOG   | Backpressure Curve Slope "n"<br>---- or ----<br>Assigned Standard Slope | n x LOG          | Antilog                                     |                   |
|                                                  |                     |                                                                                                |       |                                                                         |                  | Open Flow Deliverability = R x Antilog Mcfd |                   |
| 9.48                                             | 3.69                | 2.568                                                                                          | .4096 | .768                                                                    | .3146            | 2.063                                       |                   |
| 7.66                                             | 3.69                | 2.076                                                                                          | .3171 | .768                                                                    | .2436            | 1.752                                       |                   |
|                                                  |                     |                                                                                                |       |                                                                         |                  | 29                                          |                   |
|                                                  |                     |                                                                                                |       |                                                                         |                  | 24                                          |                   |

OPEN FLOW 29 Mcfd @ 14.65 psia DELIVERABILITY 24 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 9 day of Feb 2001

Witness (if any)

For Company

For Commission

Checked by

I declare under penalty or perjury under the laws of the state of Kansas that I am authorized to request exempt status under rule K.A.R. 82-3-304 on behalf of the operator Horsehoe Operating Inc and that the foregoing information and statements contained on this application form are true and correct to the best of my knowledge and belief based upon gas production records and records of equipment installation and/or of type completion or upon use of the gas well herein named.

I hereby request a permanent exemption from open flow testing for the Harding gas well on the grounds that said well:

(check one)

- ☐ is a coalbed methane producer
- ☐ is cycled on plunger lift due to water
- ☐ is a source of natural gas for injection into an oil reservoir undergoing ER
- ☐ is on vacuum at the present time; KCC approval Docket No. \_\_\_\_\_
- ☐ is incapable of producing at a daily rate in excess of 150 mcf/D

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

#### Instructions:

All active gas wells must have at least an original G-2 form on file with the conservation division. If a gas well meets the eligibility criteria set out in KCC regulation K.A.R. 82-3-304, the operator may complete the statement provided above in order to obtain a testing exemption.

At some point during the succeeding calendar year, wellhead shut-in pressure shall be measured after a minimum of 24 hours shut-in/buildup time and shall be reported on the front side of this form under "observed surface data." Shut-in pressure shall thereafter be reported yearly in the same manner.

The G-2 form conveying the newest shut-in pressure reading shall be filed with the Wichita office no later than thirty (30) days after the taking of the pressure reading. The form must be signed and dated on the front side as though it was a verified report of test results.