

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

FORM G-2  
8-7-58

TYPE TEST:  Deliverability  Open Flow TEST DATE: 6-2-86 **15-181-20267-00-00**

COMPANY: GOODLAND GAS COMPANY LEASE: Armstrong WELL NO.: 1-11A

COUNTY: Sherman LOCATION: SW $\frac{1}{4}$ , SW $\frac{1}{4}$ , NW $\frac{1}{4}$  SECTION: 11 TWP: 8S RNG: 40W ACRES:

FIELD: Goodland RESERVOIR: Niobrara PIPELINE CONNECTION: KN Energy

COMPLETION DATE: PLUG BACK TOTAL DEPTH: PACKER SET AT: None

CASING SIZE: 4 $\frac{1}{2}$ " WT.: 9.5#/ft. L.D.: SET AT: 1341 PERF.: 1212 TO: 1237

TUBING SIZE: None WT.: L.D.: SET AT: PERF.: TO:

TYPE FLUID PRODUCTION: Gas  
 PRODUCING THRU: Casing RESERVOIR TEMPERATURE: F 13.2 BAR. PRESS - P<sub>a</sub>: XXX P<sub>sia</sub>

GAS GRAVITY - G<sub>x</sub>: 0.5837 % CARBON DIOXIDE: 1.98 % NITROGEN: 2.79 API GRAVITY OF LIQUID:

VERTICAL DEPTH (H): TYPE METER CONN.: Orifice (METER RUN)(PROVER) SIZE: 2.067

SHUT-IN PRESSURE: SHUT IN: 5-27 AT 86 (AM)(PM) TAKEN: 5-30 AT 86 (AM)(PM)  
 FLOW TEST: STARTED: 5-30 AT 86 (AM)(PM) TAKEN: 6-2 AT 86 (AM)(PM)

OBSERVED DATA DURATION OF SHUT-IN: HR.

| SHUT-IN OR FLOW | ORIFICE SIZE in. | (METER) (PROVER) PRESSURE psig | DIFF. in. (h <sub>w</sub> )(h <sub>d</sub> ) | FLOWING TEMP. t | WELL-HEAD TEMP. t | CASING WELLHEAD PRESS. |  | TUBING WELLHEAD PRESS. |  | DURATION HOURS | LIQUID PROD. Bbls. |
|-----------------|------------------|--------------------------------|--|-----------------|-------------------|------------------------|--|------------------------|--|----------------|--------------------|
|                 |                  |                                |  |                 |                   | psig                   | (P <sub>w</sub> )(P <sub>t</sub> )(P <sub>c</sub> ) psia | psig                   | (P <sub>w</sub> )(P <sub>t</sub> )(P <sub>c</sub> ) psia |                |                    |
| SHUT-IN         | --               | --                             | --   | --              | --                | 34                     | 47.2   | --                     | --   | 72             | --                 |
| FLOW            | 0.500            | --                             | --   | 65              | --                | 16.8                   | 30   | --                     | --   | 72             | --                 |

**RATE OF FLOW CALCULATIONS**

| COEFFICIENT (F <sub>p</sub> )(F <sub>d</sub> ) Mcfd | (METER) (PROVER) PRESSURE psia | EXTENSION $\sqrt{P_m h_w}$ | GRAVITY FACTOR F <sub>g</sub> | FLOWING TEMP. FACTOR F <sub>L</sub> | DEVIATION FACTOR F <sub>pv</sub> | RATE OF FLOW R Mcfd | GOR | Q <sub>m</sub> |
|---|--------------------------------|----------------------------|-------------------------------|-------------------------------------|----------------------------------|---------------------|-----|----------------|
| 50.5  | --                             | --                         | 1.3089                        | 0.9952                              | 1.0010                           | 50                  | --  | --             |

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

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

| $\frac{(P_c)^2 - (P_w)^2}{(P_c)^2 - (P_d)^2}$ | $\frac{(P_c)^2 - (P_w)^2}{(P_c)^2 - (P_d)^2}$ | $\frac{P_c^2 - P_w^2}{P_c^2 - P_d^2}$ | LOG [ ] | "n"   | n x LOG [ ] | ANTILOG | OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd |
|---|---|---------------------------------------|---------|-------|-------------|---------|--|
|   |   |                                       |         | 0.500 | 0.095       | 1.244   | 62   |
| 2.054   | 1.328   | 1.547                                 | 0.189   | 1.000 | 0.189       | 1.547   | 77   |

OPEN FLOW 62-77 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 25<sup>th</sup> day of NOV, 1986. Robert M. Richardson  
 For Company

Witness (if any) \_\_\_\_\_  
 For Commission \_\_\_\_\_  
 Checked by DEC 1 1986