

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

FORM C-3  
8-7-53

1-3-9

TYPE TEST:  Deliverability  Open Flow TEST DATE: 3/09/90 5-181-20225-00-00

COMPANY: GOODLAND GAS COMPANY LEASE: Armstrong WELL NO.: 1712

COUNTY: Sherman LOCATION: CNWN SECTION: 12 TWP: 8S RNO: 39W ACRES:

FIELD: Goodland RESERVOIR: Niobrara PIPELINE CONNECTION: KNEnergy

COMPLETION DATE: 6-18-82 PLUG BACK TOTAL DEPTH: 1,005 PACKER SET AT: None

CASINO SIZE: 4 1/2" WT.: 9.5#/ft. I.D.: SET AT: 1,072 PERF.: 930 TO: 950

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

TYPE COMPLETION (Describe): Frac 100,000# Sand, 600MCF CO<sub>2</sub>, 32,000 Gal. H<sub>2</sub>O TYPE FLUID PRODUCTION: Gas

PRODUCING THRU: Casing RESERVOIR TEMPERATURE: BAR. PRESS - P<sub>a</sub> Psia

GAS GRAVITY: 0.5837 % CARBON DIOXIDE: 1.98 % NITROGEN: 2.790 API GRAVITY OF LIQUID: --

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

SHUT-IN PRESSURE: SHUT IN 2/90 1990 AT 9:30 (AM) X TAKEN 2/12 1990 AT 10:40 (AM) X

FLOW TEST: STARTED 2/22 1990 AT 8:00 (AM) X TAKEN 2/23 1990 AT 8:00 (AM) X

**OBSERVED DATA**

SHUT-IN OR FLOW	ORIFICE SIZE In.	(METER) (PROVER) PRESSURE psig	DIFF. In. (h <sub>w</sub> )	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASINO WELLHEAD PRESS		TUBING WELLHEAD PRESS		DURATION HOURS	LIQUID PROD. Boia.
						psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia	psig	(P <sub>w</sub> )(P <sub>i</sub> )(P <sub>c</sub> ) psia		
SHUT-IN	--	--	--	--	--	23	37.4	--	--	72	--
FLOW	0.625	12.8	3.6	47	--	14	28.4	--	--	24	--

**RATE OF FLOW CALCULATIONS**

COEFFICIENT (F <sub>b</sub> )(P <sub>e</sub> ) <sup>2</sup> Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION √P <sub>m</sub> h <sub>w</sub>	GRAVITY FACTOR P <sub>a</sub>	FLOWING TEMP. FACTOR P <sub>t</sub>	DEVIATION FACTOR P <sub>pv</sub>	RATE OF FLOW R Mcfd	GOR	G <sub>m</sub>
1.914	27.2	9.91	1.3089	1.013	1.0010	25	--	--

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

(P<sub>c</sub>)<sup>2</sup> = 1.399 ; (P<sub>w</sub>)<sup>2</sup> = 0.807 ; P<sub>d</sub> = -- % ; (P<sub>c</sub> - 14.4) + 14.4 = -- ; (P<sub>w</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>	(P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup>	$\frac{P_c^2 - P_a^2}{P_c^2 - P_w^2}$	LOG [ ]	"n"	n x LOG [ ]	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd
1.192	0.592	2.012	0.304	0.85	0.258	1.81	46

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 31<sup>st</sup> day of Dec, 1990.

*John P. Sanders*  
For Company

Witness (if any)

Checked by

For Commission