

ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

TYPE TEST:  Deliverability  Open Flow TEST DATE: 3/09/90

COMPANY: GOODLAND GAS COMPANY LEASE: Wolf Eyth WELL NO.: 1-2

COUNTY: Sherman LOCATION: SW 1/4, SW 1/4 SECTION: 2 TWP: 8S RNO: 40W ACRES:

FIELD: Goodland RESERVOIR: Niobrara PIPELINE CONNECTION: KNEnergy

COMPLETION DATE: PLUG BACK TOTAL DEPTH: 1270' PACKER SET AT: None

CASING SIZE: 4 1/2" WT.: 9.5#/ft. I.D.: 1342' SET AT: 1204' PERFORATION: TO 1242'

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

TYPE COMPLETION (Describe): TYPE FLUID PRODUCTION: Gas

Frac 82,600# Sd. 40 tons CO2. 633 Bbls H2O

PRODUCING THRU: Casing RESERVOIR TEMPERATURE: BAR. PRESS - Pa

GAS GRAVITY - Gg: 0.5960 % 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 2/9 1990 AT 11:00 (AM)(PM) TAKEN 2/12 1990 AT 8:30 (AM)(PM)

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

OBSERVED DATA

DURATION OF SHUT-IN 72 HR.

SHUT-IN OR FLOW	ORIFICE SIZE In.	(METER) (PROVER) PRESSURE psig	DIFF. In. (hw)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS		TUBING WELLHEAD PRESS		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(Pw)(P1)(Pc) psia	psig	(Pw)(P1)(Pc) psia		
SHUT-IN	--	--	--	--	--	35	49.4	--	--	72	--
FLOW	0.5	17.1	13.7	33	--	15	29.4	--	--	24	--

RATE OF FLOW CALCULATIONS

COEFFICIENT (F <sub>0</sub> ) (Z <sub>0</sub> ) Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m \times h_w}$	GRAVITY FACTOR F <sub>g</sub>	FLOWING TEMP. FACTOR F <sub>t</sub>	DEVIATION FACTOR F <sub>pv</sub>	RATE OF FLOW R Mcfd	GOR	G <sub>m</sub>
1.219	31.5	20.77	1.2953	1.027	1.0015	34	--	--

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_c)^2 = 2.440$ ;  $(P_w)^2 = 0.864$ ;  $P_d = \text{---}$  %  $(P_c - 14.4) + 14.4 = \text{---}$ ;  $(P_w)^2 = 0.207$ ;  $(P_d)^2 = \text{---}$

$\frac{(P_c)^2 - (P_d)^2}{(P_c)^2 - (P_w)^2}$	$(P_c)^2 - (P_w)^2$	$\left[ \frac{P_c^2 - P_d^2}{P_c^2 - P_w^2} \right]$	LOG [ ]	"n"	n x LOG [ ]	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd
2.233	1.576	1.417	0.151	0.85	0.129	1.34	45

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 3/10 day of Dec, 1990

*John P. Sanders*  
For Company

Witness (if any)

For Commission

(Checked by

1-2-91