STATE OF KANSAS — CORPORATION COMMISSION

FORM C-2 8-7-50 p2 1-3-91

ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

TYPE TEST: ☐ Deliverability ☒ Open Flow TEST DATE: 3/09/90 15-181-20226-00-00

COMPANY	LEASE	WELL NO.
GOODLAND GAS COMPANY	Armstrong	1-2

COUNTY	LOCATION	SECTION	TWP	RNG	ACRES
Sherman	NE/4	2	8S	39W.	

FIELD	RESERVOIR	PIPELINE CONNECTION
Goodland	Niobrara	KNEnergy

COMPLETION DATE	PLUG BACK TOTAL DEPTH	PACKER SET AT
6/10/82	1038	None

CASING SIZE	WT.	I.D.	SET AT	PERF.	TO
4½"	9.5#/ft.		1143	980	1000

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

TYPE COMPLETION (Describe)	TYPE FLUID PRODUCTION
Frac 100,000# Sand, 32,000 Gel Water & 6000 MCF CO_2	Gas

PRODUCING THRU	RESERVOIR TEMPERATURE °F	BAR. PRESS — P_a
Casing		Psia

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

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

SHUT-IN PRESSURE: SHUT IN 2/9 19 90 AT 9:30 (AM)(PM) TAKEN 2/12 19 90 AT 10:40 (AM)(PM)

FLOW TEST: STARTED 2/22 19 90 AT 8:00 (AM)(PM) TAKEN 2/23 19 90 AT 8:00 (AM)(PM)

DURATION OF SHUT-IN 72 HR.

OBSERVED DATA

SHUT-IN OR FLOW	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIFF. in. (h_w)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS. psig	CASING WELLHEAD PRESS. $(P_w)(P_t)(P_c)$ psia	TUBING WELLHEAD PRESS. psig	TUBING WELLHEAD PRESS. $(P_w)(P_t)(P_c)$ psia	DURATION HOURS	LIQUID PROD. Bbls.
SHUT-IN	--	--	--	--	--	25	39.4	--	--	72	--
FLOW	0.625	12.8	13.7	47	--	14	28.4	--	--	24	--

RATE OF FLOW CALCULATIONS

COEFFICIENT $(F_b)(F_p)$ Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m x h_w}$	GRAVITY FACTOR F_g	FLOWING TEMP. FACTOR F_t	DEVIATION FACTOR F_{pv}	RATE OF FLOW R Mcfd	GOR	G_m
1.914	27.2	9991	1.3089	1.013	1.0010	25	--	--

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

$(P_c)^2$ = 1.399 ; $(P_w)^2$ = 0.807 ; P_d = -- % ; $(P_c - 14.4) + 14.4$ = -- ; $(P_a)^2$=0.207 $(P_d)^2$ = --

$(P_c)^2-(P_a)^2$ or $(P_c)^2-(P_d)^2$	$(P_c)^2-(P_w)^2$	$\frac{P_c^2-P_a^2}{P_c^2-P_d^2}$ / $P_c^2-P_w^2$	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 31st day of Dec, 1990.

John P. Landers
For Company

Witness (If any)

For Commission

Checked by

RECEIVED
Wichita, Kansas