

15-181-20238-00-00

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

FORM O-2  
8-7-58  
29  
1-12-87

TYPE TEST:  Deliverability  Open Flow TEST DATE: Flow Test 6-2-87

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

COUNTY: Sherman LOCATION: NW 1/4 NW 1/4 SECTION: 11 TWP: 8S RNO: 39W ACRES:

FIELD: Goodland RESERVOIR: Niobrara PIPELINE CONNECTION: KNEnergy

COMPLETION DATE: 2-10-83 PLUG BACK TOTAL DEPTH: 1,013 PACKER SET AT: None

CASINO SIZE: 4 1/2" WT: 9.5 L.D.: SET AT: 1,031 PERF.: 996 TO: 1,010

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

TYPE COMPLETION (Describe): Frac 100,000# Sand 60 Ton CO2 439 Bbl H2O Gas TYPE FLUID PRODUCTION: Gas

PRODUCING THRU: Casing RESERVOIR TEMPERATURE F: BAR. PRESS - P<sub>a</sub>: 14.4 Psia

GAS GRAVITY - G<sub>g</sub>: 0.5827 % CARBON DIOXIDE: 1.28 % NITROGEN: 2.635 API GRAVITY OF LIQUID: --

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

SHUT-IN PRESSURE: SHUT IN 5-29 19 87 AT 10:57 (AM)(PM) TAKEN 6-1 19 87 AT 11:00 (AM)(PM)

FLOW TEST: STARTED 6-1 19 87 AT 11:02 (AM)(PM) TAKEN 6-2 19 87 AT 10:47 (AM)(PM)

OBSERVED DATA DURATION OF SHUT-IN 72 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	CASINO 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	--	--	--	--	--	23.0	37.4	--	--	72	--
FLOW	0.250	14.4	42.8	60	--	16.1	30.5	--	--	24	--

RATE OF FLOW CALCULATIONS

COEFFICIENT (F <sub>h</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	G <sub>m</sub>
12.71	28.8	35.11	1.31	1.0	1.0009	14	--	--

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P<sub>c</sub>)<sup>2</sup> = 1398.76 (P<sub>w</sub>)<sup>2</sup> = 930.25 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> =

(P <sub>c</sub> ) <sup>2</sup> - (P <sub>w</sub> ) <sup>2</sup> or (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>	$\frac{P_c^2 - P_w^2}{P_c^2 - P_w^2}$	LOG [ ]	"n"	n x LOG [ ]	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd
1191.40	468.51	2.54	0.41	0.893	0.36	2.30	32

OPEN FLOW 31 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 4 day of June, 1987

STATE CORPORATION COMMISSION  
1987  
Checked by [Signature]

Witness (if any)

For Commission

Checked by