

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

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

TYPE TEST: Deliverability Open Flow TEST DATE: 3/09/90 15-181-20238-00-00

COMPANY: GOODLAND GAS COMPANY LEAD: Armstrong WELL NO.: 1511

COUNTY: Sherman LOCATION: NW1/4 NW1/4 SECTION: 11 TWP: 8S RNG: 39W ACRES:

FIELD: Goodland RESERVOIR: Niobrara PIPELINE CONNECTION: KNEnergy

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

CASING SIZE: 4 1/2" WT: 9.5#/ft. I.D.: SET AT: 1,031 PERF.: 9966 TO: 1,010

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

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

PRODUCING THRU: Casing RESERVOIR TEMPERATURE: BAR. PRESS - P_a Psia

GAS GRAVITY - G_g: 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 2/9 90 AT 10:00 (AM)(PM) TAKEN 2/12 90 AT 11:00 (AM)(PM) X

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

OBSERVED DATA

SHUT-IN OR FLOW	ORIFICE SIZE In.	(METER) (PROVER) PRESSURE psig	DIFF. In. (hw)(hx)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELL-HEAD PRESS		TUBING WELL-HEAD PRESS		DURATION HOURS	LIQUID PROD. Boils.
						psig	(P _w)(P _i)(P _c) psia	psig	(P _w)(P _i)(P _c) psia		
SHUT-IN	--	--	--	--	--	32	46.4	--	--	72	--
FLOW	0.875	15	1.0	30	--	14	28.4	--	--	24	--

RATE OF FLOW CALCULATIONS

COEFFICIENT (F _s) (X ₆) Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION $\sqrt{P_m z h w}$	GRAVITY FACTOR F _g	FLOWING TEMP. P _t	DEVIATION FACTOR F _{pv}	RATE OF FLOW R Mcfd	GOR	G _m
3.824	29.4	5.42	1.3089	1.030	1.0013	28	--	--

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P_c)² = 2.153 ; (P_w)² = 0.807 ; P_d = -- % ; (P_c - 14.4) + 14.4 = -- ; (P_w)² = 0.207 ; (P_d)² = --

$\frac{(P_c)^2 - (P_d)^2}{(P_c)^2 - (P_w)^2}$	$(P_c)^2 - (P_w)^2$	$\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2}$	LOG []	"n"	n x LOG []	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd
1.946	1.346	1.445	0.160	0.85	0.136	1.37	38

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. Sanders
 For Company

Witness (if any)

For Commissioner

CORPORATION COMMISSION
 WASHINGTON, D.C. 20540

Checked by