

STATE OF KANSAS - CORPORATION COMMISSION

FORM 0-3
8-7-58
10
P2
2-18-91

ONE POINT STABILIZED OPEN FLOW OR DELIVERABILITY TEST

15-023-20277-0000

TYPE TEST: Deliverability Open Flow TEST DATE: 10/13/90

COMPANY: Harvest Energy Company LEASE: Raile WELL NO.: 1-29

COUNTY: Cheyenne LOCATION: S/2NESW SECTION: 29 TWP: 4S RND: 39W ACRES:

FIELD: Wheeler RESERVOIR: Niobrara PIPELINE CONNECTION: Peoples Natural Gas

COMPLETION DATE: 9/25/89 PLUG BACK TOTAL DEPTH: 1,371' PACKER SET AT: n/a

CASING SIZE: 4 1/2" WT.: 10.5# I.D.: 4.052" SET AT: 1,395' PERF.: 1,304' TO: 1,322'

TUBING SIZE: 1 1/2" WT.: 2.9# I.D.: 1.610" SET AT: 1,293' PERF.: TO:

TYPE COMPLETION (Describe): single gas TYPE FLUID PRODUCTION:

PRODUCING THRU tubing RESERVOIR TEMPERATURE: 89 BAR. PRESS - P_a: 14.4 Psia

GAS GRAVITY - G_g: .5868 % CARBON DIOXIDE: % NITROGEN: API GRAVITY OF LIQUID:

VERTICAL DEPTH (H): 1,316' TYPE METER CONN.: orifice (METER RUN)(PROVER) SIZE: 2" meter run

SHUT-IN PRESSURE: SHUT IN 9/25 1989 AT (AM)(PM) TAKEN 10/2 1989 AT (AM)(PM)

FLOW TEST: STARTED 10/13 1990 AT (AM)(PM) TAKEN 10/14 1990 AT (AM)(PM)

OBSERVED DATA

SHUT-IN OR FLOW	ORIFICE SIZE in.	(METER) (PROVER) PRESSURE psig	DIFF. in. (h _w)(h _d)	FLOWING TEMP. t	WELL-HEAD TEMP. t	CASING WELLHEAD PRESS		TUBING WELLHEAD PRESS		DURATION HOURS	LIQUID PROD. Bbls.
						psig	(P _w)(P _i)(P _c) psia	psig	(P _w)(P _i)(P _c) psia		
SHUT-IN						230		n/a			
FLOW	.375	50	43.4	60	60	130		50		24	

RATE OF FLOW CALCULATIONS

COEFFICIENT (P _i)(P _d) / Mcfd	(METER) (PROVER) PRESSURE psia	EXTENSION √P _m h _w	GRAVITY FACTOR F _g	FLOWING TEMP. FACTOR F _L	DEVIATION FACTOR F _{pv}	RATE OF FLOW R Mcfd	GOR	G _m
.6932622	64.4	52.867381	1.3074	1.0	1.0047	48.142673		

(OPEN FLOW) (DELIVERABILITY) CALCULATIONS

(P_c)² = 59.731360 (P_w)² = 4.1473600 P_d² = _____ % (P_c - 14.4) + 14.4 = _____ (P_d)² = 0.207 (P_d)² = _____

(P _c) ² - (P _w) ² or (P _c) ² - (P _d) ²	(P _c) ² - (P _w) ²	$\frac{P_c^2 - P_w^2}{P_c^2 - P_w^2}$	LOG []	"n"	n x LOG []	ANTILOG	OPEN FLOW DELIVERABILITY EQUALS R x ANTILOG Mcfd
57.657760	55.584000	1.0373085	.0159079	.85	.0135217	1.0316248	49.67

OPEN FLOW 49.67 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 13th day of February 1991

Witness (if any) _____
For Commission _____

FEB 18 1991

RECEIVED
STATE CORPORATION COMMISSION
Alan L. Nackerud
For Company
Alan L. Nackerud
Checked by _____