

STATE OF KANSAS - CORPORATION COMMISSION

FORM CG-1

MULTIPOINT BACK PRESSURE TEST

15-023-20276-0000

TYPE TEST: Initial Annual Special TEST DATE: 10/2/89

COMPANY: Harvest Energy Company LEASE: Andrist WELL NO.: 1-27

COUNTY: Cheyenne LOCATION: SWSESW SECTION: 27 TWP: 4S RNG: 39W ACRES:

FIELD: Wheeler RESERVOIR: Niobrara PIPELINE CONNECTION: none on test date

COMPLETION DATE: 9/25/89 PLUG BACK TOTAL DEPTH: 1,395' PACKER SET AT: n/a

CASING SIZE: 4 1/2" WT.: 10.5# ID: 4.052" SET AT: 1,407' PERF.: 1290' TO: 1308'

TUBING SIZE: n/a WT.: ID: SET AT: PERF.: TO:

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

PRODUCING THRU casing RESERVOIR TEMPERATURE F: 84 BAR PRESS - P_a: 13 14.4 Psia

GAS GRAVITY - G_g: .6 est. % CARBON DIOXIDE: % NITROGEN: API GRAVITY OF LIQUID:

VERTICAL DEPTH (H): 1,302' TYPE METER CONN.: none on test date (METER RUN) (PROVER) SIZE: 2" prover

REMARKS: 2" critical flow prover & dead weight tester.

OBSERVED DATA

DURATION OF SHUT-IN HR.

| RATE No. | ORIFICE SIZE in. | (METER) (PROVER) PRESSURE psig | DIEP. (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 | | 232 | | | | 232 | 245 | | | | |
| 1 | 5/32 | 229 | | 62 | | 229 | 242 | | | 1 | |
| 2 | 7/32 | 223 | | 62 | | 223 | 236 | | | 1 | |
| 3 | 10/32 | 217 | | 62 | | 217 | 230 | | | 1 | |
| 4 | 12/32 | 213 | | 62 | | 213 | 226 | | | 1 | |
| 5 | 12/32 | 125 | | 62 | | 125 | 138 | | | 24 | |

RATE OF FLOW CALCULATIONS

| RATE NO. | COEFFICIENT (F _b)(F _p) Mcfd | (METER) (PROVER) PRESSURE psia | EXTENSION $\sqrt{P_m \times h_w}$ | GRAVITY FACTOR F _g | FLOWING TEMP FACTOR F _t | DEVIATION FACTOR F _{pv} | RATE OF FLOW Q Mcfd | GOR | G _m |
|----------|---|--------------------------------|-----------------------------------|-------------------------------|------------------------------------|----------------------------------|---------------------|-----|----------------|
| 1 | .4380 | 242 | | 1.291 | .9981 | 1.0198 | 139 | | |
| 2 | .8608 | 236 | | 1.291 | .9981 | 1.0191 | 267 | | |
| 3 | 1.7140 | 230 | | 1.291 | .9981 | 1.0188 | 518 | | |
| 4 | 2.4390 | 226 | | 1.291 | .9981 | 1.0185 | 723 | | |
| 5 | 2.4390 | 138 | | 1.291 | .9981 | 1.0095 | 438 | | |

PRESSURE CALCULATIONS

| RATE NO. | P _i psia | P _c psia | P _w psia | (P _c) ² THOUSANDS | (P _w) ² THOUSANDS | PLOTING POINTS | | % SHUT-IN $100 \frac{P_w - P_a}{P_c - P_a}$ |
|----------|---------------------|---------------------|---------------------|--|--|---|--------|---|
| | | | | | | (P _c) ² - (P _w) ² THOUSANDS | Q Mcfd | |
| 1 | | 245 | 242 | 60.0 | 58.6 | 1.5 | 139 | 99 |
| 2 | | 245 | 236 | 60.0 | 55.7 | 4.3 | 267 | 96 |
| 3 | | 245 | 230 | 60.0 | 52.9 | 7.1 | 518 | 94 |
| 4 | | 245 | 226 | 60.0 | 51.1 | 8.9 | 723 | 92 |
| 5 | | 245 | 138 | 60.0 | 19.0 | 41.0 | 438 | 54 |

INDICATED WELLHEAD OPEN FLOW 622

Mcfd @ 14.65 psia

"n" = .928

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 14th day of September 1991.

RECEIVED

Witness (if any)

For Commission

SEP 18 1991

Alan L. Nackerud

For Company Alan L. Nackerud

Checked by