

BEFORE EXAMINER ~~NOTED~~

OIL CONSERVATION COMMISSION

EXHIBIT NO. 6CASE NO. 2788

NEW MEXICO OIL CONSERVATION COMMISSION

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Form C-122

Revised 12-1-55

Pool Wildcat Formation (Perm) Canyon Dol. County EddyInitial X Annual _____ Special _____ Date of Test 1/9-10/1963Company Ralph Lowe Lease Indian Basin "A" Well No. 1 (Upper)Unit 1 Sec. 22 Twp. 21S Rge. 23E Purchaser NoneCasing 7 Wt. 16.0 I.D. 8.276 Set at 8385 Perf. 7505 To 7572Tubing 10-RD Wt. 4.70 I.D. 3.995 Set at 7280 Perf. _____ To _____Gas Pay: From 7505 To 7572 L 7280 xGL 1.067 -GL 4856 Bar.Press. 13.2Producing Thru: Casing _____ Tubing X Type Well Gas-Gas Dual

Single-Bradenhead-G. G. or G.O. Dual

Date of Completion: 12-24-62 Packer Baker "K" 7280 Reservoir Temp. 146°F

OBSERVED DATA

Tested Through (Prover) (Choke) (Meter) Type Taps Flange

| No. | Flow Data | | | | | Tubing Data | | Casing Data | | Duration of Flow Hr. |
|-----|----------------------|------------------------|-------------|----------------------|-----------|-------------|-----------|-------------|-----------|----------------------|
| | (Prover) (Line) Size | (Choke) (Orifice) Size | Press. psig | Diff. h _w | Temp. °F. | Press. psig | Temp. °F. | Press. psig | Temp. °F. | |
| SI | | | | | | 2354 | | | | Over 72 |
| 1. | 3.068 | 1.750 | 655 | 18.5 | 37 | 2335 | | | | 6 |
| 2. | 3.068 | 1.750 | 655 | 20.0 | 77 | 2256 | | | | 6 |
| 3. | 3.068 | 1.750 | 655 | 20.0 | 78 | 2110 | | | | 6 |
| 4. | 3.068 | 1.750 | 655 | 20.0 | 80 | 2013 | | | | 6 |
| 5. | | | | | | | | | | |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_w P_f}$ | Pressure psia | Flow Temp. Factor F _t | Gravity Factor F _g | Compress. Factor F _{pv} | Rate of Flow Q-MCFPD @ 15.025 psia |
|-----|-----------------------|------------------|---------------|----------------------------------|-------------------------------|----------------------------------|------------------------------------|
| 1. | 20.15 | 50.13 | | .9532 | .9721 | 1.063 | 2036 |
| 2. | 20.15 | 49.13 | | .9540 | .9721 | 1.059 | 2890 |
| 3. | 20.15 | 200.24 | | .9822 | .9721 | 1.059 | 4079 |
| 4. | 20.15 | 213.33 | | .9815 | .9721 | 1.063 | 5062 |
| 5. | | | | | | | |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 82.681 cf/bbl.
Gravity of Liquid Hydrocarbons 55.4 deg.
F_c 9.936 (1-e^{-s}) .290Specific Gravity Separator Gas. 635
Specific Gravity Flowing Fluid. 7051
P_c 2367.2 P_c² 5603.6

| No. | P _t (psia) | P _t ² | F _c Q | (F _c Q) ² | (F _c Q) ² (1-e ^{-s}) | P _w ² | P _c ² -P _w ² | Cal. P _w | P _w /P _c |
|-----|-----------------------|-----------------------------|------------------|---------------------------------|--|-----------------------------|--|---------------------|--------------------------------|
| 1. | 2319.2 | 5378.7 | 70.23 | 4932.3 | 476.2 | 5444.9 | 100.7 | 2344.1 | .9902 |
| 2. | 2269.2 | 5149.0 | 72.72 | 5288.3 | 504.2 | 5303.5 | 220.1 | 2320.2 | .9800 |
| 3. | 2167.2 | 4706.0 | 66.35 | 4382.1 | 466.5 | 4703.3 | 400.3 | 2272.3 | .9599 |
| 4. | 2031.2 | 4126.0 | 60.30 | 3636.1 | 353.5 | 4094.3 | 759.3 | 2205.0 | .9298 |
| 5. | | | | | | | | | |

Absolute Potential: 1.300 MCFPD; n .400COMPANY Ralph LoweADDRESS P.O. Box 342, Pecos, N.M.AGENT and TITLE Charles T. Jones Charlie T. Jones, Petroleum Engineer

WITNESSED _____

COMPANY _____

Print No. 101 Date 1/10/63REMARKS See conditions: 7505-75727104-71557155-7177

ILLEGIBLE

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w).
MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater.
psia

P_w = Static wellhead working pressure as determined at the end of flow period.
(Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressability factor.

n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .

NEW MEXICO OIL CONSERVATION CO.

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Wildcat Formation (Penn) Canyon Dol. County Eddy
Initial X Annual _____ Special _____ Date of Test 1/9-10
Company Ralph Lowe Lease Indian Basin "A" Well No. 1 (U)
Unit J Sec. 22 Twp. 21S Rge. 23E Purchaser None
Casing 7 Wt. 26.0 I.D. 8.276 Set at 9385 Perf. 7505 To 7572
Tubing 5 10-RD Wt. 4.70 I.D. 1.995 Set at 7280 Perf. _____ To _____
Gas Pay: From 7505 To 7572 L 7280 $\alpha_{\text{fix}} = .667$ -GL 4856 Bar. Press. 13
Producing Thru: Casing _____ Tubing X Type Well Gas-Gas Dual
Date of Completion: 12-24-62 Packer Baker "K" 7280 Reservoir Temp. 146°F

OBSERVED DATA

| Tested Through <u>(Prover) (Choke) (Meter)</u> | | | | | | Type Taps <u>Flange</u> | |
|--|----------------------------|------------------------------|----------------|----------------|--------------|-------------------------|--------------|
| Flow Data | | | | | | Tubing Data | |
| No. | (Prover) (Line) Size | (Choke) (Orifice) Size | Press. psig | Diff. h_w | Temp. °F. | Press. psig | Temp. °F. |
| SI | | | | | | 2354 | Over 72 |
| 1. | 3.068 | 1.750 | 655 | 14.5 | 67 | 2306 | 6 |
| 2. | 3.068 | 1.750 | 655 | 30.0 | 77 | 2256 | 6 |
| 3. | 3.068 | 1.750 | 655 | 60.0 | 79 | 2154 | 6 |
| 4. | 3.068 | 1.750 | 655 | 90.0 | 69 | 2018 | 6 |
| 5. | | | | | | | |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_{wpf}}$ | Pressure psia | Flow Temp. Factor F_t | Gravity Factor F_g | Compress. Factor F_{pv} | Rate of Q-MCFPD @ 15.025 |
|-----|--------------------------|------------------|------------------|-------------------------------|----------------------------|---------------------------------|--------------------------------|
| 1. | 20.15 | 98.43 | | .9933 | .9721 | 1.063 | 2036 |
| 2. | 20.15 | 141.58 | | .9840 | .9721 | 1.059 | 2890 |
| 3. | 20.15 | 200.23 | | .9822 | .9721 | 1.059 | 4079 |
| 4. | 20.15 | 245.23 | | .9915 | .9721 | 1.063 | 5062 |
| 5. | | | | | | | |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 83,831 cf/bbl.
Gravity of Liquid Hydrocarbons 58.4 deg.
 P_c 0.936 $(1-e^{-s})$.284
Specific Gravity Separator Gas _____
Specific Gravity Flowing Fluid _____
 P_c 2367.2 P_c^2 5603.6

| No. | P_t Pt (psia) | P_t^2 | $F_c Q$ | $(F_c Q)^2$ | $(F_c Q)^2$ $(1-e^{-s})$ | P_w^2 | $P_c^2 - P_w^2$ | Cal. P_w |
|-----|--------------------|---------|---------|-------------|-----------------------------|---------|-----------------|---------------|
| 1. | 2319.2 | 5376.7 | 20.23 | 409.3 | 116.7 | 5494.9 | 108.7 | 2344.1 |
| 2. | 2269.2 | 5149.3 | 28.72 | 824.3 | 234.2 | 5383.5 | 220.1 | 2320.2 |
| 3. | 2167.2 | 4696.8 | 40.53 | 1642.7 | 466.5 | 5163.3 | 440.3 | 2272.3 |
| 4. | 2031.2 | 4125.8 | 50.90 | 2590.1 | 713.5 | 4844.3 | 759.3 | 2201.0 |
| 5. | | | | | | | | |

Absolute Potential: 14,250 MCFPD; n .500
COMPANY Ralph Lowe
ADDRESS P. O. Box 832, Midland, Texas
AGENT and TITLE Archie P. Farr, Petroleum Engineer
WITNESSED _____
COMPANY _____

| Point No. | Distillate, bbl/day | REMARKS- Temperatures: |
|-----------|---------------------|------------------------|
| 1 | 25.9 | 7505-7517 |
| 2 | 30.5 | 7524-7533 |
| 3 | 35.7 | 7538-7572 |
| 4 | 41.3 | |

ILLEGIBLE

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

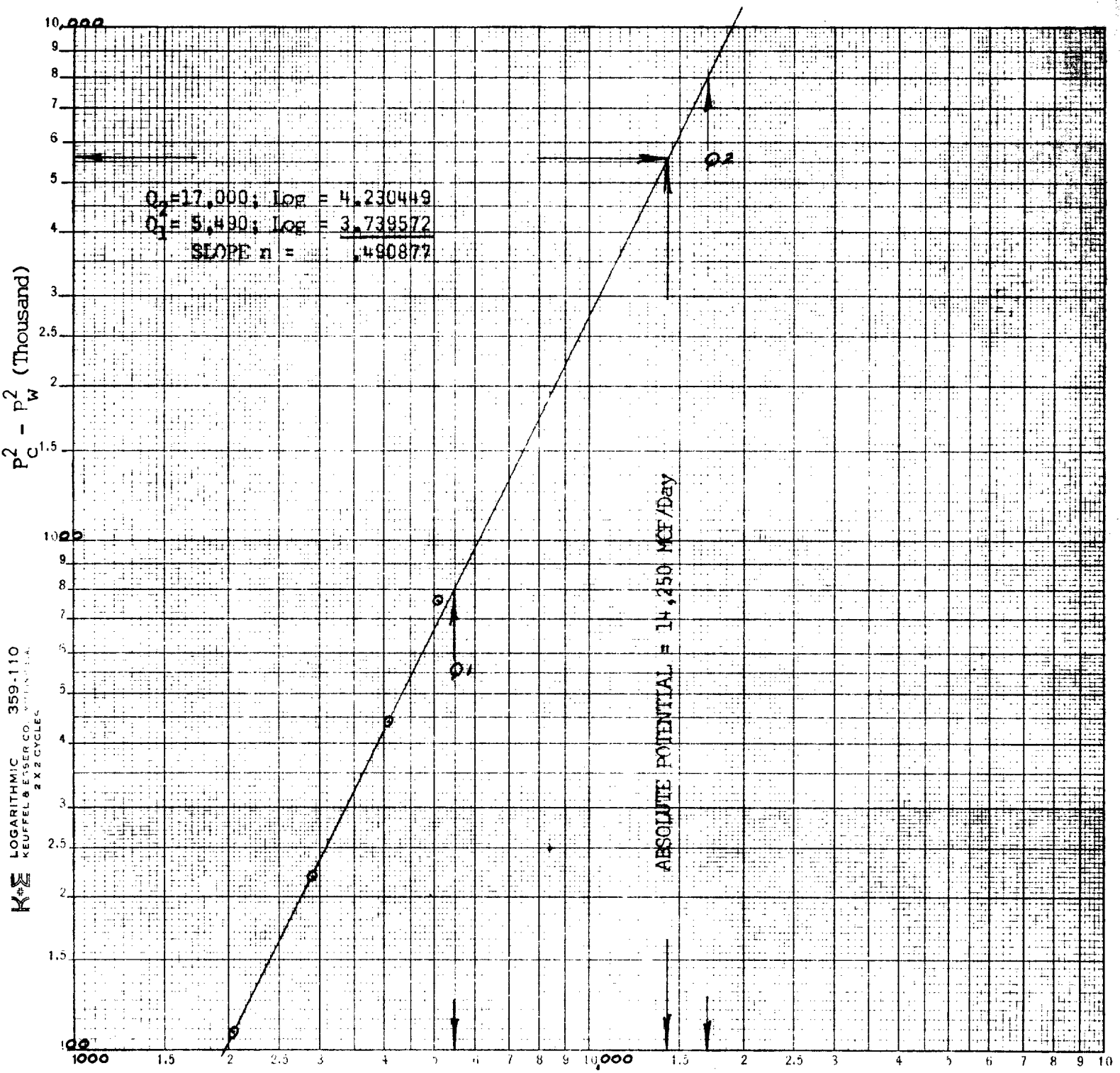
- Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w). MCF/da. @ 15.025 psia and 60° F.
- P_{cs} = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater. psia
- P_w = Static wellhead working pressure as determined at the end of flow period. (Casing if flowing thru tubing, tubing if flowing thru casing.) psia
- P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia
- P_f = Meter pressure, psia.
- p_m = Differential meter pressure, inches water.
- G = Gravity correction factor.
- F_t = Flowing temperature correction factor.
- F_{pv} = Supercompressibility factor.
- n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .

COMPANY Ralph Lowe
 WELL Indian Basin "A" 1 (Upper)
 LOCATION J-22-21-S-23E

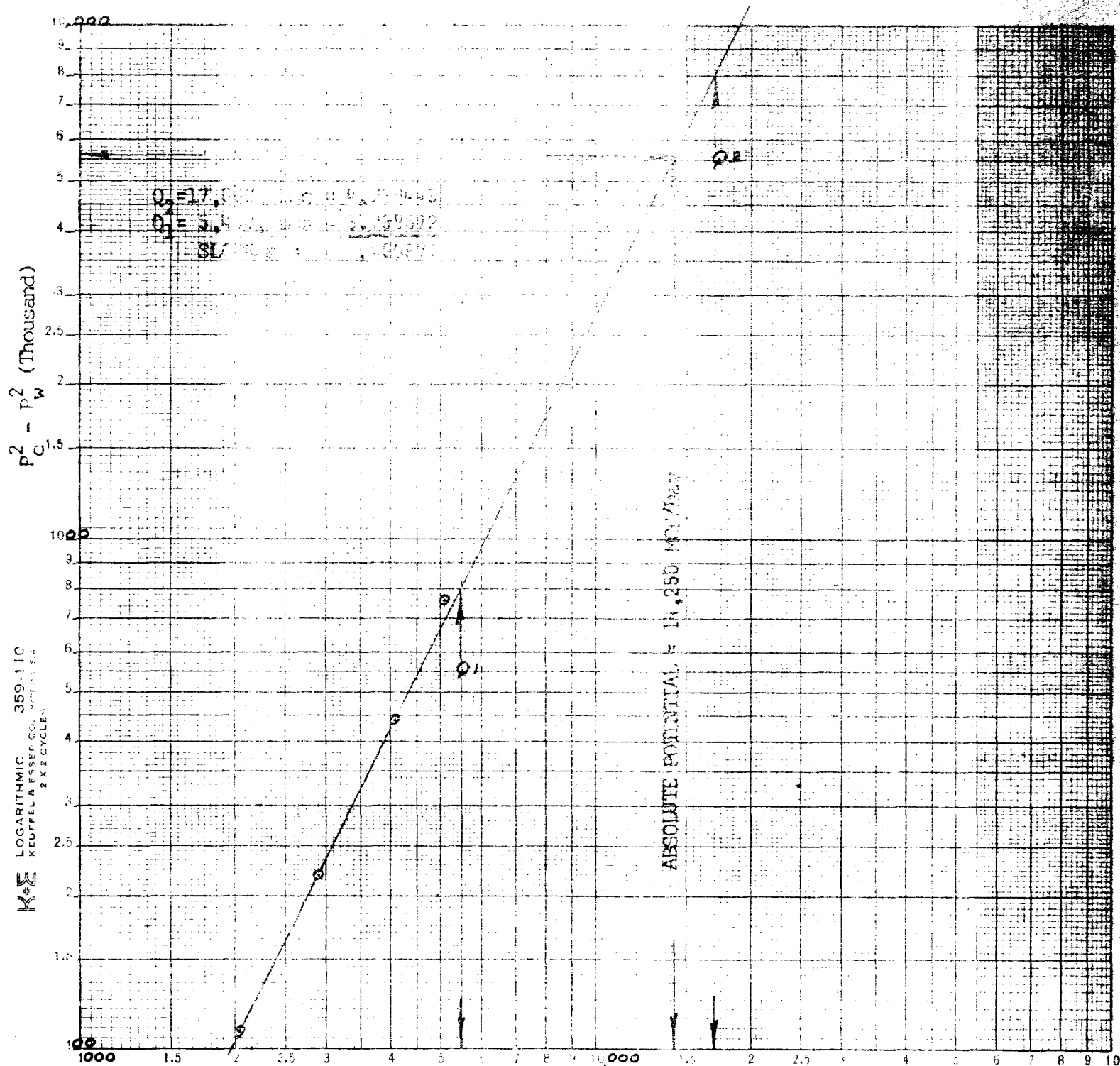
COUNTY Eddy
 DATE 1/9-10/1963

Case
 2788



ILLEGIBLE

COMPANY Ralph Lowe
 WELL Indian Basin "A" 1 (Upper)
 LOCATION J-22-21-S-23E
 COUNTY Eddy
 DATE 1/9-10/1963



Q-MCF/Day @ 15.025 PSIA - 60°F

ILLEGIBLE

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-122

Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Wildcat Formation (Penn) Canyon Dol. County Eddy
Initial X Annual _____ Special _____ Date of Test 1/9-10/1963
Company Ralph Lowe Lease Indian Basin "A" Well No. 1 (Upper)
Unit J Sec. 22 Twp. 21S Rge. 23E Purchaser None
Casing 7 Wt. 26.0 I.D. 6.276 Set at 9385 Perf. 7505 To 7572
Tubing 2"10-RD Wt. 4.70 I.D. 1.995 Set at 7280 Perf. _____ To _____
Gas Pay: From 7505 To 7572 L 7280 xGMix = .667 -GL 4856 Bar.Press. 13.2
Producing Thru: Casing _____ Tubing X Type Well Gas-Gas Dual
Single-Bradenhead-G. G. or G.O. Dual
Date of Completion: 12-24-62 Packer Baker "K" 7280 Reservoir Temp. 146°F

OBSERVED DATA

Tested Through (Prover) (Choke) (Meter) Type Taps Flange

| No. | Flow Data | | | | | Tubing Data | | Casing Data | | Duration of Flow Hr. |
|-----|----------------------------|------------------------------|----------------|-------------------------|--------------|----------------|--------------|----------------|--------------|----------------------------|
| | (Prover) (Line) Size | (Choke) (Orifice) Size | Press. psig | Diff. h _w | Temp. °F. | Press. psig | Temp. °F. | Press. psig | Temp. °F. | |
| SI | | | | | | 2354 | | | | Over 72 |
| 1. | 3.068 | 1.750 | 655 | 14.5 | 67 | 2306 | | | | 6 |
| 2. | 3.068 | 1.750 | 655 | 30.0 | 77 | 2256 | | | | 6 |
| 3. | 3.068 | 1.750 | 655 | 60.0 | 79 | 2154 | | | | 6 |
| 4. | 3.068 | 1.750 | 655 | 90.0 | 69 | 2018 | | | | 6 |
| 5. | | | | | | | | | | |

FLOW CALCULATIONS

| No. | Coefficient (24-Hour) | $\sqrt{h_w p_f}$ | Pressure psia | Flow Temp. Factor F _t | Gravity Factor F _g | Compress. Factor F _{pv} | Rate of Flow Q-MCFPD @ 15.025 psia |
|-----|--------------------------|------------------|------------------|--|-------------------------------------|--|--|
| 1. | 20.15 | 98.43 | | .9933 | .9721 | 1.063 | 2036 |
| 2. | 20.15 | 141.58 | | .9840 | .9721 | 1.059 | 2890 |
| 3. | 20.15 | 200.23 | | .9822 | .9721 | 1.059 | 4079 |
| 4. | 20.15 | 245.23 | | .9915 | .9721 | 1.063 | 5062 |
| 5. | | | | | | | |

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 83.831 cf/bbl.
Gravity of Liquid Hydrocarbons 58.4 deg.
P_c 9.936 (1-e^{-s}) .284
Specific Gravity Separator Gas .635
Specific Gravity Flowing Fluid .7451
P_c 2367.2 P_c 5603.6

| No. | P _t (psia) | P _t ² | F _c Q | (F _c Q) ² | (F _c Q) ² (1-e ^{-s}) | P _w ² | P _c ² -P _w ² | Cal. P _w | P _w / P _c |
|-----|-----------------------|-----------------------------|------------------|---------------------------------|---|-----------------------------|--|------------------------|------------------------------------|
| 1. | 2319.2 | 5378.7 | 20.23 | 409.3 | 116.2 | 5494.9 | 108.7 | 2344.1 | .9902 |
| 2. | 2269.2 | 5149.3 | 28.72 | 824.8 | 234.2 | 5383.5 | 220.1 | 2320.2 | .9801 |
| 3. | 2167.2 | 4696.8 | 40.53 | 1642.7 | 466.5 | 5163.3 | 440.3 | 2272.3 | .9599 |
| 4. | 2031.2 | 4125.8 | 50.30 | 2530.1 | 718.5 | 4844.3 | 759.3 | 2201.0 | .9298 |
| 5. | | | | | | | | | |

Absolute Potential: 14,250 MCFPD; n .500
COMPANY Ralph Lowe
ADDRESS P. O. Box 832, Midland, Texas
AGENT and TITLE Archie P. Farr, Petroleum Engineer
WITNESSED _____
COMPANY _____

| Point No. | Distillate, bbl/day | REMARKS - Perforations: |
|-----------|---------------------|-------------------------|
| 1 | 28.6 | 7505-7517 |
| 2 | 30.5 | 7524-7533 |
| 3 | 45.7 | 7539-7572 |
| 4 | 63.0 | |

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w).
MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater.
psia

P_w = Static wellhead working pressure as determined at the end of flow period.
(Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressability factor.

n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .

COMPANY Ralph Lowe
 WELL Indian Basin "A" 1 (Upper)
 LOCATION J-22-21-S-23E

COUNTY Eddy
 DATE 1/9-10/1963

Case 2788

