

**OIL CONSERVATION COMMISSION**

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

January 16, 1970

Mr. Robert N. Enfield  
P. O. Box 807  
Roswell, New Mexico 88201

Administrative Order TX-32

Dear Mr. Enfield:

Reference is made to your request for approval of the completion of your Hudson Federal Well No. 1, located in Unit 0 of Section 30, Township 18 South, Range 33 East, Lea County, New Mexico, as a tubingless completion, to produce gas from the Queen formation through 4½ inch casing.

It is my understanding that although the well was completed in May of 1963, no pipeline connection could be obtained until now. Further, that although the gas does have a high nitrogen content, no liquids are produced which would cause production through the casing to be inefficient or impractical.

Pursuant to the authority granted me by Rule 107 d (4), you are hereby authorized to produce the subject well as described above. The Commission does reserve the right however to rescind this order if it appears that conditions have changed which render casing production inadvisable.

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

ALP/DSN/og

cc: Oil Conservation Commission - Hobbs  
Well File (Santa Fe OCC)

ROBERT N. ENFIELD  
OIL PROPERTIES  
P. O. BOX 807  
ROSWELL, NEW MEXICO 88201

DEC 1 1969

November 26, 1969

505 622-5552

Mr. D. S. Nutter  
NEW MEXICO OIL CONSERVATION COMMISSION  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Robert N. Enfield #1 Hudson-  
Federal, located 660' FSL &  
1980' FEL, Sec. 30, T18S, R33E,  
Lea County, New Mexico

Dear Dan:

As discussed with you earlier this week, I would like to apply for an exception to Rule 107D-2, so I would be allowed to produce this dry gas well as a tubingless completion through 4 $\frac{1}{2}$ " casing.

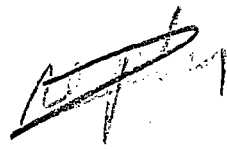
This well was completed May 1, 1963 as a dry gas well with a high nitrogen content and for the last six years we have been unable to secure a pipeline connection. Phillips Petroleum is presently in the area and has offered me a connection on this well. I am attaching hereto the latest test we have made on this well by Coleman Engineering Company of Hobbs and a recent C-122 which is being filed with your Hobbs office showing that this well makes absolutely no liquids of any kind whatsoever and due to the high nitrogen content has a low economic value to its gas.

It is requested that the Oil Conservation Commission grant me administrative approval to produce this well through 4 $\frac{1}{2}$ " casing as a tubingless completion. If there is any further information you need, please advise.

Yours very truly,

  
Robert N. Enfield

RNE:pms  
Encl.

  
TX -  
issued  
chk for cc



# COLEMAN PETROLEUM ENGINEERING COMPANY

PHONE EXPRESS 3-3813

611 GRIMES

P. O. BOX 1829

HOBBS, NEW MEXICO

DEC 1 1969

NOVEMBER 17, 1969

ROBERT N. ENFIELD  
P. O. Box 807  
ROSWELL, NEW MEXICO

RE: UNDESIGNATED PENROSE QUEEN  
HUDSON FEDERAL, No. 1  
4-POINT BACK PRESSURE TEST  
& GAS SAMPLE & ANALYSIS

GENTLEMEN:

IN COMPLIANCE WITH YOUR INSTRUCTIONS, A 4-POINT BACK PRESSURE TEST WAS CONDUCTED, AND THE ABSOLUTE OPEN FLOW POTENTIAL WAS CALCULATED TO BE 1390 MCF/D. THE AVERAGE GAS PRODUCTION WAS RECORDED AS 815.7 MCF/D WITH 0.00 BO/D.

THE SAMPLE TAKEN DURING TEST YIELDED COMPONENT PERCENTAGES AS FOLLOWS:

|                        |        |
|------------------------|--------|
| CARBON DIOXIDE         | NIL    |
| NITROGEN               | 55.62  |
| OXYGEN                 | 0.00   |
| HYDROGEN SULFIDE       | 0.00   |
| METHANE                | 35.97  |
| ETHANE                 | 2.65   |
| PROPANE                | 2.08   |
| ISO BUTANE             | 0.31   |
| NORMAL BUTANE          | 0.68   |
| ISO PENTANE            | 0.30   |
| NORMAL PENTANE         | 0.34   |
| HEXANE PLUS            | 2.05   |
| TOTAL                  | 100.00 |
| CALCULATED SP. G       | 0.8960 |
| CALCULATED BTU SAT DRY | 623    |
| CALCULATED BTU SAT WET | 612    |

VERY TRULY YOURS

COLEMAN PETROLEUM ENG. CO.

JOE A. COLEMAN

**NEW MEXICO OIL CONSERVATION COMMISSION** **DEC 1 1969**  
**MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL**

Form C-122  
Revised 9-1-65

|   |            |                                  |                            |                                       |   |
|---|------------|----------------------------------|----------------------------|---------------------------------------|---|
| Type Test<br><input type="checkbox"/> Initial <input type="checkbox"/> Annual <input checked="" type="checkbox"/> Special |            |                                  |                            | Test Date<br>11-12-69                 |   |
| Company<br>ROBERT N. ENFIELD  |            |                                  | Connection<br>NONE         |                                       |   |
| Pool<br>UNDESIGNATED  |            |                                  | Formation<br>PENROSE QUEEN |                                       | Unit<br>40  |
| Completion Date<br>5-3-1963   |            | Total Depth<br>4349'             | Plug Back TD<br>-          | Elevation<br>3752'DF                  | Farm or Lease Name<br>HUDSON FEDERAL                |
| Csg. Size<br>4 1/2"   | Wt.<br>9.5 | d<br>4.090                       | Set At<br>4330'            | Perforations:<br>From 4330' To 4349'  | Well No.<br>No. 1                                   |
| Tbg. Size<br>-  | Wt.<br>-   | d<br>-                           | Set At<br>-                | Perforations:<br>From - To -          | Unit    Sec.    Twp.    Rge.<br>0    30    18    33 |
| Type Well - Single - Bradenhead - G.G. or G.O. Multiple<br>SINGLE   |            |                                  |                            | Packer Set At<br>NONE                 | County<br>LEA                                       |
| Producing Thru<br>CASING  |            | Reservoir Temp. °F<br>92 @ 4330' | Mean Annual Temp. °F<br>60 | Baro. Press. - P <sub>g</sub><br>13.2 | State<br>NEW MEXICO                                 |
| L<br>4340'  | H<br>-     | G <sub>g</sub><br>0.896          | % CO <sub>2</sub><br>0.00  | % N <sub>2</sub><br>55.62             | % H <sub>2</sub> S<br>0.00                          |
| Prover<br>X   |            | Meter Run<br>-                   | Taps<br>-                  |                                       |   |

| FLOW DATA |                  |       |              |                 |                      | TUBING DATA |                     | CASING DATA |                 | Duration of Flow |          |
|-----------|------------------|-------|--------------|-----------------|----------------------|-------------|---------------------|-------------|-----------------|------------------|----------|
| NO.       | Prover Line Size | X     | Orifice Size | Press. p.s.i.g. | Diff. h <sub>w</sub> | Temp. °F    | Press. p.s.i.g. DWT | Temp. °F    | Press. p.s.i.g. |                  | Temp. °F |
| SI        |                  |       |              |                 |                      |             | 1429                | 75          | -               | -                | 6 YEARS  |
| 1.        | 2                | 15/64 | 1/2          | 210             | -                    | 45          | 745                 | -           | -               | -                | 1.0      |
| 2.        | 2                | 13/64 | 1/2          | 180             | -                    | 43          | 845                 | -           | -               | -                | 1.0      |
| 3.        | 2                | 12/64 | 1/2          | 152             | -                    | 38          | 989                 | -           | -               | -                | 1.0      |
| 4.        | 2                | 10/64 | 1/2          | 102             | -                    | 34          | 1111                | -           | -               | -                | 1.0      |
| 5.        | 2                | 23/64 | 1/2          | 225             | -                    | 40          | 375                 | -           | -               | -                |          |

| RATE OF FLOW CALCULATIONS |                       |                  |                         |                       |                               |   |                      |
|---------------------------|-----------------------|------------------|-------------------------|-----------------------|-------------------------------|---|----------------------|
| NO.                       | Coefficient (24 Hour) | $\sqrt{h_w P_m}$ | Pressure P <sub>m</sub> | Flow Temp. Factor Ft. | Gravity Factor F <sub>g</sub> | Super Compress. Factor, F <sub>pv</sub> | Rate of Flow Q, Mcfd |
| 1                         | 4.279                 | -                | 223.2                   | 1.015                 | 1.056                         | 1.023                                   | 1047.2               |
| 2                         | 4.279                 | -                | 193.2                   | 1.017                 | 1.056                         | 1.020                                   | 905.6                |
| 3                         | 4.279                 | -                | 165.2                   | 1.022                 | 1.056                         | 1.017                                   | 776.0                |
| 4                         | 4.279                 | -                | 115.2                   | 1.026                 | 1.056                         | -                                       | 534.1                |
| 5                         | 4.279                 | -                | 238.2                   | 1.020                 | 1.056                         | 1.027                                   | 1127.5               |

|     |                |          |                |       |  |
|-----|----------------|----------|----------------|-------|--|
| NO. | P <sub>r</sub> | Temp. °R | T <sub>r</sub> | z     | Gas Liquid Hydrocarbon Ratio <u>DRY GAS</u> Mcf/bbl.   |
| 1.  | 0.37           | 505      | 1.42           | 0.955 | A.P.I. Gravity of Liquid Hydrocarbons <u>-</u> Deg.    |
| 2.  | 0.32           | 503      | 1.41           | 0.961 | Specific Gravity Separator Gas <u>0.896</u> XXXXXXXXXX |
| 3.  | 0.27           | 498      | 1.40           | 0.966 | Specific Gravity Flowing Fluid <u>XXXXX</u> -          |
| 4.  | 0.19           | 494      | 1.39           | -     | Critical Pressure <u>601</u> P.S.I.A. - P.S.I.A.       |
| 5.  | 0.40           | 500      | 1.40           | 0.909 | Critical Temperature <u>356</u> °R - °R                |

|     |                             |                               |                             |   |   |
|-----|-----------------------------|-------------------------------|-----------------------------|---|---|
| NO. | P <sub>r</sub> <sup>2</sup> | P <sub>w</sub> * <sup>2</sup> | P <sub>r</sub> <sup>2</sup> | P <sub>r</sub> <sup>2</sup> - P <sub>w</sub> <sup>2</sup> | (1) $\frac{P_r^2}{P_r^2 - P_w^2} = 1.972$ (2) $\left[ \frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.821$<br><br>AOF = Q $\left[ \frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1413$ |
| 1   | -                           | 897.2                         | 805.0                       | 1977.9  |   |
| 2   | -                           | 1004.2                        | 1008.4                      | 1774.5  |   |
| 3   | -                           | 1171.2                        | 1371.7                      | 1411.2  |   |
| 4   | -                           | 1314.2                        | 1727.1                      | 1055.8  |   |

|   |                                 |                       |
|---|---------------------------------|-----------------------|
| Absolute Open Flow <u>1390</u> Mcfd @ 15.025  | Angle of Slope @ <u>48° 38'</u> | Slope, n <u>0.881</u> |
| Remarks: * BHP @ (-578) 4340' USED FOR PRESSURE CALCULATIONS  |                                 |                       |
| Approved By Commission: _____ Conducted By: <u>COLEMAN PET. ENG. CO.</u> Calculated By: <u>JOE A. COLEMAN</u> Checked By: <u>JOE A. COLEMAN</u> |                                 |                       |



# COLEMAN PETROLEUM ENGINEERING COMPANY

DEC 1 1969

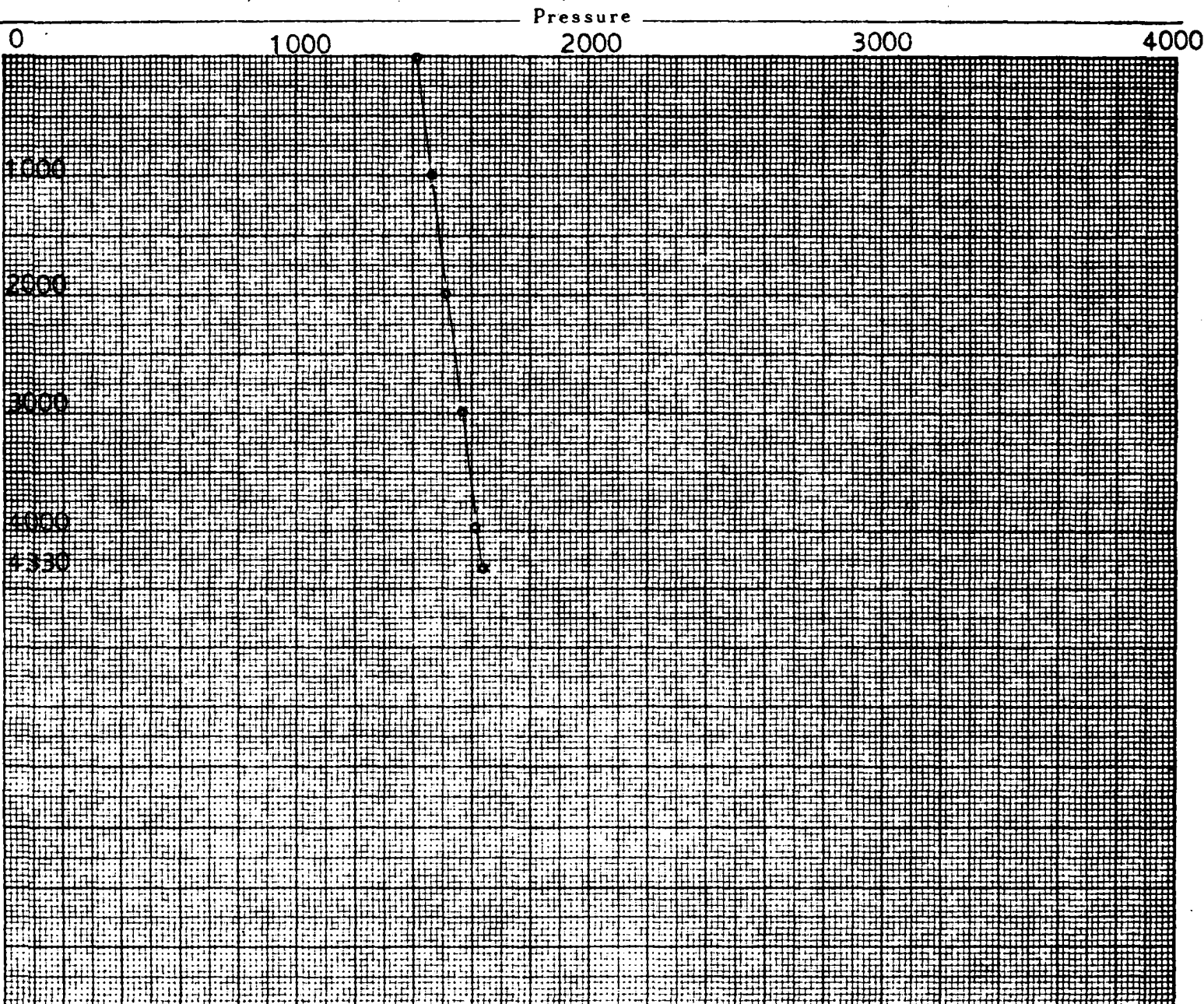
PHONE EXPRESS 3-3813  
611 GRIMES  
P. O. BOX 1829  
HOBBS, NEW MEXICO

## BOTTOM HOLE PRESSURE RECORD

OPERATOR ROBERT N. ENFIELD  
FIELD UNDESIGNATED FORMATION PENROSE GAS  
LEASE HUDSON FEDERAL WELL No. 1  
COUNTY LEA STATE NEW MEXICO  
DATE 11-12-69 TIME 11:00 AM  
Status SHUT IN Test depth 4330'  
Time S. 16 YEARS Last test date INITIAL  
Tub Pres. 1429DWT BHP last test -  
Cas. Pres. - BHP change -  
Elev. 3752' DF Fluid top NONE  
Datum (-578') \*\* Water top NONE  
Temp. @ 92° F Run by WEAVER  
Cal. No. A4586N Chart No. 1

| Depth      | Pressure | Gradient |
|------------|----------|----------|
| 0          | 1429     | -        |
| 1000       | 1475     | .046     |
| 2000       | 1525     | .050     |
| 3000       | 1575     | .050     |
| 4000       | 1625     | .050     |
| 4330       | 1654     | .088     |
| 4340(-578) | 1655* ** | (.088)   |

\* EXTRAPOLATED PRESSURE  
\*\* MID POINT OF CASING PERFORATIONS



COMPANY ROBERT N. ENFIELD

WELL HUDSON FEDERAL, NO. 1

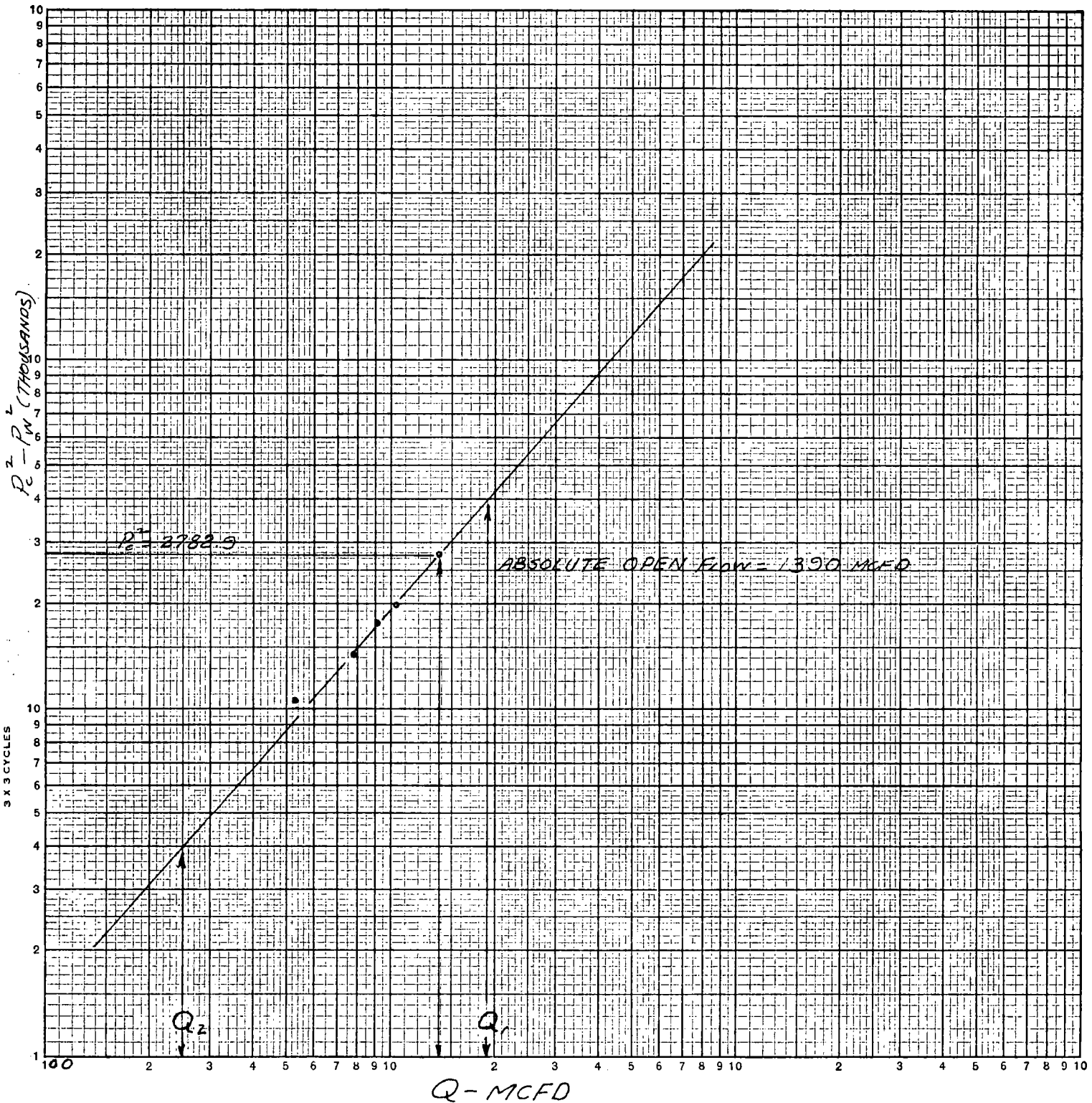
LOCATION UNIT 0 SEC. 30 18 S 33 E

COUNTY LEA COUNTY NEW MEXICO

DATE NOVEMBER 12, 1969

DEC 1 1969

K&E LOGARITHMIC 359-120G  
KEUFFEL & ESSER CO. MADE IN U.S.A.  
3 X 3 CYCLES



$$Q_1 = 1900 \text{ MCFD}, \text{ LOG } Q_1 = 3.27875$$

$$Q_2 = 250 \text{ MCFD}, \text{ LOG } Q_2 = 2.39794$$

$$n = 0.88081 = 0.881$$



## COLEMAN PETROLEUM ENGINEERING COMPANY

DEC 1 1969

PHONE EXPRESS 3-3813  
611 GRIMES  
P. O. BOX 1829  
HOBBS, NEW MEXICO

## BOTTOM HOLE PRESSURE RECORD

OPERATOR ROBERT N ENFIELDFIELD UNDESIGNATED FORMATION PENROSE GASLEASE HUDSON FEDERAL WELL No. 1COUNTY LEA STATE NEW MEXICODATE 11-13-69 TIME 11:00 AMStatus FLOWING ON Test depth 4330'~~XXXXXX~~ 10/64" CH Last test date -Tub Pres. 1122 BHP last test -Cas. Pres. - BHP change -Elev. 3752' DF Fluid top FLOWINGDatum (-578)\*\* Water top -Temp. @ 92°F Run by WEAVERCal. No. A4586N Chart No. 1

| Depth      | Pressure | Gradient |
|------------|----------|----------|
| 0          | 1122     | -        |
| 1000       | 1155     | .033     |
| 2000       | 1186     | .031     |
| 3000       | 1224     | .038     |
| 4000       | 1271     | .047     |
| 4330       | 1300     | .088     |
| 4340(-578) | 1301* ** | (.088)   |

\* EXTRAPOLATED PRESSURE

\*\* MID POINT OF CASING PERFORATIONS

