Union Texas Petroleum

375 U.S. Highway 64
Farmington, New Mexico 87401
Telephone (505) 325-3587

MAY 18 1988
OIL CONSERVATION DIVISION
SANTA FE

May 13, 1988

Mr. Victor T. Lyons
Chief Engineer & Deputy Director
N. M. Oil Conservation Division
P. O. Box 2088
Santa Fe, NM 87501-2088

Dear Mr. Lyons:

During Case 9370 on Wednesday, May 11, 1988, you requested that I determine how Union Texas Petroleum Corporation is allocating the deliverability test data in our commingled wells.

We calculate the deliverability test as if the well was open in only one interval (the deeper interval). We then apply the well's production allocation, which has been approved by the District Office of the NMOCD, which splits the deliverability to the respective pools. Please examine the attached example.

If you have any other questions, we would be happy to meet with you at a convenient time.

Sincerely,

P. M. Pippin
Sr. Prod. Engr.

PMP:lmg

.70

# OIL CONSERVATION DIVISION

P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Form C-122-A
Revised 10-1-78

## WELL DELIVERABILITY TEST REPORT FOR 19 88

| POOL NAME | POOL SLOPE | FORMATION | COUNTY |
|---|---|---|---|
| Blanco | n = 0.75 | Mesaverde | Rio Arriba |

| COMPANY | | | WELL NAME AND NUMBER | | |
|---|---|---|---|---|---|
| Union Texas Petroleum Corp. | | | Jicarilla "H" No. 9 | | |
| UNIT LETTER | SECTION | TOWNSHIP | RANGE | PURCHASING PIPELINE | |
| B | 1 | 26N | 5W | Gas Co. of N.M. | |
| CASING O.D. - INCHES | CASING I.D. - INCHES | SET AT DEPTH - FEET | TUBING O.D. - INCHES | TUBING I.D. - INCHES | PERF. - TUBING PERF. - FEET |
| 7.625 5.500 | 6.969 4.950 | 4349 4189-8554 | 1.900 | 1.610 | 8429 |
| GAS PAY ZONE | | WELL PRODUCING THRU | | GAS GRAVITY | GRAVITY X LENGTH |
| FROM 6312 TO 8526 | | CASING | TUBING XX | .675 | 5690 |
| DATE OF FLOW TEST | | | DATE SHUT-IN PRESSURE MEASURED | | |
| FROM 4/6/88 TO 4/13/88 | | | 4/20/88 | | |

### PRESSURE DATA - ALL PRESSURES IN PSIA

| (a) Flowing Casing Pressure (DWT) | (b) Flowing Tubing Pressure (DWT) | (c) Flowing Meter Pressure (DWT) | (d) Flow Chart Static Reading | (e) Meter Error (Item c - Item d) | (f) Friction Loss (a - c) or (b - c) | (g) Average Meter Pressure (Integr.) |
|---|---|---|---|---|---|---|
| 422 | 312 | 308 | 308 | 0 | + 4 | 372 |

| (h) Corrected Meter Pressure (g + e) | (i) Avg. Wellhead Press. $P_t$ = (h + f) | (j) Shut-in Casing Pressure (DWT) | (k) Shut-in Tubing Pressure (DWT) | (l) $P_c$ = higher value of (j) or (k) | (m) Del. Pressure $P_d$ = 40 %$P_c$ | (n) Separator or Dehydrator Pr. (DWT) for critical flow only |
|---|---|---|---|---|---|---|
| 372 | 376 | 543 | 617 | 617 | 247 (432) | — |

### FLOW RATE CORRECTION (METER ERROR)

| Integrated Volume - MCF/D | Quotient of Item c / Item d | $\sqrt{\text{Item c / Item d}}$ | Corrected Volume |
|---|---|---|---|
| 112 | 1.000 | 1.000 | Q = 112 MCF/D |

### WORKING PRESSURE CALCULATION

| $(1-e^{-s})$ | $(P_c\,Q_{meas})^2$ (1000) | $R^2 = (1-e^{-s})(P_c\,Q_{meas})^2$ (1000) | $P_t^2$ | $P_w^2 = P_t^2 + R^2$ | $P_w = \sqrt{P_w^2}$ |
|---|---|---|---|---|---|
| .339 | 3399 | 1152 | 141,376 | 142,528 | 378 |

### DELIVERABILITY CALCULATION

$$D = Q\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2}\right]^n = 112 \left[\left(\frac{319,680}{238,161}\right)^{.75} = (1.3423)^{.75} = 1.2470\right] = 140 \text{ MCF/D}$$

(91)

REMARKS: double commingled by Order R8321
Mesaverde 35% = 49 mcf
Gallup 33% = 46 mcf
Dakota 32% = 45 mcf

### SUMMARY

| | | |
|---|---|---|
| Item h | 372 | Psia |
| $P_t$ | 617 | Psia |
| Q | 112 | MCF/D |
| $P_w$ | 378 | Psia |
| $P_d$ | 247 (432) | Psia |
| D | 49 | MCF/D |

Company: Union Texas Petroleum Corp.
By: Barbara Thomas 5/10/88
Title: Production Technician
Witnessed By:
Company:

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

Form C-122-A
Revised 10-1-78

# WELL DELIVERABILITY TEST REPORT FOR 19 88

| POOL NAME | POOL SLOPE | FORMATION | COUNTY |
|---|---|---|---|
| Basin | n=0.75 | Dakota | Rio Arriba |

| COMPANY | | | WELL NAME AND NUMBER | | |
|---|---|---|---|---|---|
| Unio Texas Petroleum Corp. | | | Jicarilla "G" No. 9 | | |
| UNIT LETTER | SECTION | TOWNSHIP | RANGE | PURCHASING PIPELINE | |
| B | 1 | 26N | 5W | Gas Co of N.M. | |
| CASING O.D. - INCHES | CASING I.D. - INCHES | SET AT DEPTH - FEET | TUBING O.D. - INCHES | TUBING I.D. - INCHES | PKR. - TUBING DEPTH - FEET |
| 7.625<br>5.500 | 6.969<br>4.950 | 4349<br>4189-8554 | 1.900 | 1.610 | 8429 |
| GAS PAY ZONE | | WELL PRODUCING THRU | | GAS GRAVITY | GRAVITY X LENGTH |
| FROM 6312 TO 8526 | | CASING | TUBING XX | .675 | 5690 |
| DATE OF FLOW TEST | | | DATE SHUT-IN PRESSURE MEASURED | | |
| FROM 4/6/88 TO 4/13/88 | | | 4/20/88 | | |

## PRESSURE DATA - ALL PRESSURES IN PSIA

| (a) Flowing Casing Pressure (DWT) | (b) Flowing Tubing Pressure (DWT) | (c) Flowing Meter Pressure (DWT) | (d) Flow Chart Static Reading | (e) Meter Error (Item c - Item d) | (f) Friction Loss (a-c) or (b-c) | (g) Average Meter Pressure (Integr.) |
|---|---|---|---|---|---|---|
| 422 | 312 | 308 | 308 | 0 | +4 | 372 |
| **(h) Corrected Meter Pressure (g + e)** | **(i) Avg. Wellhead Press. $P_t$ = (h+f)** | **(j) Shut-in Casing Pressure (DWT)** | **(k) Shut-in Tubing Pressure (DWT)** | **(l) $P_c$ = higher value of (j) or (k)** | **(m) Del. Pressure $P_d$ = 40 %$P_c$** | **(n) Separator or Dehydrator Pr. (DWT) for critical flow only** |
| 372 | 376 | 543 | 617 | 617 | 247 | — |

## FLOW RATE CORRECTION (METER ERROR)

| Integrated Volume - MCF/D | Quotient of Item e / Item d | $\sqrt{\text{Item e / Item d}}$ | Corrected Volume |
|---|---|---|---|
| 112 | 1.000 | 1.000 | Q = 112 MCF/D |

## WORKING PRESSURE CALCULATION

| $(1-e^{-s})$ | $(P_c\ Q_{int})^2\ (1000)$ | $R^2 = (1-e^{-s})(P_c\ Q_{int})^2(1000)$ | $P_t^2$ | $P_w^2 = P_t^2 + R^2$ | $P_w = \sqrt{P_w^2}$ |
|---|---|---|---|---|---|
| .339 | 3399 | 1152 | 141,376 | 142,528 | 378 |

## DELIVERABILITY CALCULATION

$$D = Q\left[\frac{P_c^2 - P_d^2}{P_c^2 - P_w^2}\right]^n = 112\left[\left(\frac{319,680}{238,161}\right)^{.75} = (1.3423)^{.75} = 1.2470\right] = 140 \text{ MCF/D}$$

REMARKS: downhole commingled by Order R8321
Mesaverde 35% = 49 mcf
Gallup 33% = 46 mcf
Dakota 32% = 45 mcf

## SUMMARY

| | | |
|---|---|---|
| Item h | 372 | Psia |
| $P_c$ | 617 | Psia |
| Q | 112 | MCF/D |
| $P_w$ | 378 | Psia |
| $P_d$ | 247 | Psia |
| D | 45 | MCF/D |

Company Unio Texas Petroleum Corp.
By Barbara Norman 5/10/89
Title Production Technician
Witnessed By
Company

STATE OF NEW MEXICO

# ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

June 8, 1988

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

Mr. William F. Carr
Campbell & Black
Attorneys at Law
Post Office Box 2208
Santa Fe, New Mexico

Re: CASE NO. 9370
ORDER NO. R-8658

Applicant:

Union Texas Petroleum Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Florene Davidson

FLORENE DAVIDSON
OC Staff Specialist

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD x

Other _____