

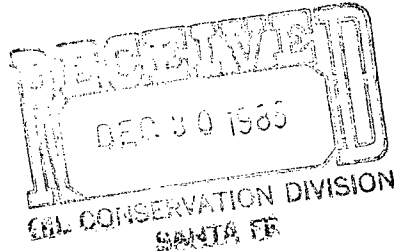
# EXXON COMPANY, U.S.A.

POST OFFICE BOX 1600 • MIDLAND, TEXAS 79702-1600

PRODUCTION DEPARTMENT  
SOUTHWEST/ROCKY MOUNTAIN DIVISION

J.K. LYTLE  
SENIOR TECHNICAL ADVISOR  
REGULATORY AFFAIRS

December 27, 1985



Downhole Commingling Request  
N.M. "V" State #11  
Lea County, New Mexico

New Mexico Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

ATTENTION: Mr. David Catanach

Gentlemen:

Exxon respectfully requests NMOCDD approval to downhole commingle the Blinebry, Drinkard, and Tubb formations in the N.M. "V" State #11. Permission to dually complete this well was authorized by administrative order DC-771. If permission to downhole commingle is received, this well will be placed on sucker rod pump to effectively lift formation fluids from the wellbore resulting in increased flow rates, and increase ultimate recovery from these three zones.

The Blinebry is currently flowing 68 kCF/Day and the Tubb is currently flowing 4 BOPD and 32 kCF/Day. the Drinkard quit flowing in 1980 in the N.M. "V" State Nos. 3 and 6, direct offsets, and quit flowing in 1975 in the N.M. "V" State #1, a direct offset. The Tubb has 1700' of fluid on the formation face in this wellbore. The Blinebry and Drinkard zones have 2000-3000' of fluid on the formation face in each of the direct offsets. Downhole commingling will enable Exxon to place the well on sucker rod pump to remove the formation fluids at an economical rate.

The Drinkard zone is currently behind pipe in the N.M. "V" State #11. Exxon feels like there are producible oil and gas reserves in the Drinkard formation, but cannot economically justify doing the workover due to the extend of depletion of the reservoir. Based on the offset information, it would not be economical to produce the Drinkard by itself. The Drinkard zone is included in the downhole commingling request to present this waste.

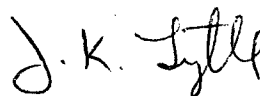
The Blinebry and Tubb formations are rapidly reaching the point where artificial lift is necessary to produce these zones at an economical rate. If downhole commingling is not approved, one of the zones will be squeezed and the other will be placed on sucker rod pump. It is doubtful that it will be

economical to re-enter the squeezed zone in the future due to the low potential. Downhole commingling is being requested to present this waste.

The Blinebry, Drinkard, and Tubb zones currently satisfy the requirements necessary to apply for downhole commingling (see Attachment 1). The items Exxon must submit to the Commission to obtain approval are listed on Attachment 2, and subsequent attachments contain the data noted in Attachments 1 and 2.

Please contact J. W. Jordan (915) 523-3650 if any further information is required.

Yours truly,

A handwritten signature in dark ink, appearing to read "J. K. Lytle". The signature is fluid and cursive, with the first letters of each word being capitalized and prominent.

J. K. Lytle

JKL:djc  
Attachments

c: Offset Operators (Certified Mail)  
District I - NMOCD, Hobbs, NM

## ATTACHMENT 1

### N. M. "V" State #11 - Downhole Commingling - Requirements

The Blinebry and Drinkard formations in the above well satisfy the requirements necessary for downhole commingling as follows:

1. The total combined daily oil production from the oil zones before commingling does not exceed 40 BOPD. Currently neither zone is able to flow. 6290' is the depth of the bottom perforation in the Tubb formation. The Drinkard has not yet been perforated.
2. Oil zones require artificial lift, or, both zones are capable of flowing. Both zones now require artificial lift, which will be installed when the two zones are commingled.
3. Neither zone produces more than 40 BWPD. Neither zone is now able to flow.
4. The fluids from each zone are compatible with the fluids from the other, and combining the fluids will not result in the formation of precipitates which damage either reservoir. See attached data.
5. The total value of the crude will not be reduced by commingling. See attached data.
6. Ownership of the zones to be commingled is common (including working interest, royalty, and overriding royalty).
7. The commingling will not jeopardize the efficiency of present or future secondary recovery operations in either of the zones to be commingled. Current plans are to commingle these zones for waterflood in the proposed Blinebry-Drinkard Waterflood Unit.
8. The commingling is necessary to permit a zone or zones to be produced which would not otherwise be economically producible.
9. There will be no crossflow between zones to be commingled.
10. The bottomhole pressure of the lower pressure zone is not less than 50 percent of the bottomhole pressure of the higher pressure zone adjusted to a common datum. See attached data.

ATTACHMENT 2

N. M. "V" State #11 - Downhole Commingling - Data Required

To obtain approval for downhole commingling, we have enclosed the following data pursuant to Rule 303(C)(2)(a through j):

1. Exxon's name and address:

Exxon Corporation  
1700 West Broadway  
Andrews, TX 79714

2. Lease name, well number, well location, and name of pools to be commingled:

New Mexico "V" State No. 11, 2080' FSL, 2080' FWL, Section 10, T-21-S, R-37-E, Lea County, New Mexico. Pools to be commingled: Blinebry, Drinkard, and Tubb. Authorization to dually complete-Order No. DC-771.

3. A plat of the area showing the acreage dedicated to the well and the ownership of all offsetting leases: Attached.

4. A 24-hour productivity test on Division Form C-116 showing the amount of oil, gas, and water produced from each zone: Attached.

5. A production decline curve for both zones showing that for a period of at least one year, a steady rate of decline has been established for each zone which will permit a reasonable allocation of the commingled production to each zone for statistical purposes: Attached.

6. A current bottomhole pressure for each zone capable of flowing:

Estimated BHP - Blinebry 830#, based on measured BHP in the N.M. "V" State #7, a direct offset. Measured BHP - Tubb 660#. Estimated BHP - Drinkard 720#, based on measured BHP in the N.M. "V" State Nos. 3 and 6, direct offsets. Common datum - mid perms of Blinebry (5674').

BHP Bomb data are attached.

7. A description of the fluid characteristics of each zone showing that the fluids will not be incompatible in the wellbore:

See attached hydrocarbon analysis. The Blinebry hydrocarbon analysis is from the N.M. "V" State #7, a direct offset, and the Drinkard hydrocarbon analysis is from the N.M. "V" State #6, a direct offset. Exxon has commingled these fluids at the surface and has encountered no incompatibility problems.

8. A computation showing that the value of the commingled production will not be less than the sum of the values of the individual streams: Attached.

9. A formula for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such a formula:

$$\text{Blinebry Pool: Oil Allocation} = \left[ \frac{12e^{-(0.3662)t} + 8e^{-(0.2310)t}}{14e^{-(0.5135)t}} + 1 \right]^{-1} = 0.0435$$

$$\text{Gas Allocation} = \left[ \frac{83e^{-(0.1495)t} + 300e^{-(0.3662)t}}{300e^{-(0.1436)t}} + 1 \right]^{-1} = 0.7536$$

$$\text{Tubb Pool: Oil Allocation} = \left[ \frac{14e^{-(0.5135)t} + 12e^{-(0.3662)t}}{8e^{-(0.2310)t}} + 1 \right]^{-1} = 0.7379$$

$$\text{Gas Allocation} = \left[ \frac{300e^{-(0.1436)t} + 83e^{-(0.1495)t}}{300e^{-(0.3662)t}} + 1 \right]^{-1} = 0.0521$$

Where  $t$  = time between January 1, 1974 and January 1, 1986 = 12 years

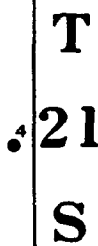
Drinkard Pool: Oil Allocation = 1 - Blinebry Oil Allocation - Tubb Oil Allocation = 0.2186  
 Gas Allocation = 1 - Blinebry Gas Allocation - Tubb Gas Allocation = 0.1943

Computations of the production allocations to each zone are attached.

10. A statement that all offset operators and, in case of a well on Federal land, the United States Geological Survey, has been notified in writing of the proposed commingling:

All offset operators (list attached) have been notified by copy of this application.

**R 37 E**



**ACREAGE DEDICATED TO THE N.M. "V" STATE #11**

**CAL DAY ALLOW.**

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Edella

## INDIVIDUAL WELL TEST REPORT

DO NOT WRITE IN SHADED AREAS -  
DIVISION OFFICE USE ONLY

DATE

8-31-85

LEASE

TYPE TEST

N.M. "V" STATE

G.O.P.

FIELD

WELL NO.

CAL DAY ALLOW.

SCHED. DAY ALLOW.

METHOD OF PRODUCTION  
(CHECK ONE)☐ PUMP ☒ FLOW ☐ GAS LIFT

11

ARTIFICIAL LIFT (CHECK ONE)

☐ CENT. ☐ ROD ☐ PLUNGER ☐ HYD. ☐ KOBE ☐ OTHER

PRIME MOVER (CHECK ONE)

☐ GAS ENG. ☐ ELEC. ☐ OTHER

## FORS TAG INFORMATION

| KP ONLY   | RCD TYPE   | BATT. BATH | ZONE              | COMPLETION NUMBER    | TEST DATE         | ELAPSED TEST TIME | STATUS      | METHOD | TYPE TEST | ALLOW TYPE     | DAYS OFF PROD. | LENGTH OF STROKE | STROKES PER MINUTE | PUMP SIZE INCHES | TIME PUMPED DURING TEST |
|-----------|------------|------------|-------------------|----------------------|-------------------|-------------------|-------------|--------|-----------|----------------|----------------|------------------|--------------------|------------------|-------------------------|
| 1 2 3 4 5 | 6 7 8 9 10 | 11 12      | 13 14 15 16 17 18 | 19 20 21 22 23 24 25 | MO DAY YR         | HRS MIN           | ITEM        | ITEM   | ITEM      | ITEM           | ITEM           | ITEM             | ITEM               | ITEM             | ITEM                    |
| A 0 1 1 6 |            |            |                   | 8 19 85              | 20 21 22 23 24 25 | 26 27 28 29       | 30 31 32 33 | 34 35  | 36 37 38  | 39 40 41 42 43 | 44 45 46 47    | 48 49 50 51      | 52 53 54 55        | 56 57 58 59      | 60                      |

## OIL OR GAS WELL PRODUCTION

| KP ONLY | TEST OIL OR CONDENSATE (BBLs) | TOTAL FLUID (BBLs) | TEST WATER (BBLs) | OIL OR COND. GRAV. | OIL OR COND. TEMP. | FLUID CHOKE SIZE | TUBING PRESSURE | BEGINNING CASING PRESSURE | ENDING CASING PRESSURE | TRAP PRESSURE  | SHUT-IN WELLHEAD PRESSURE |
|---------|-------------------------------|--------------------|-------------------|--------------------|--------------------|------------------|-----------------|---------------------------|------------------------|----------------|---------------------------|
| 1 2 3   | ITEM                          | ITEM               | ITEM              | ITEM               | ITEM               | ITEM             | ITEM            | ITEM                      | ITEM                   | ITEM           | ITEM                      |
| A 0 2   | 26 27 28 29 30 31             | 32 33 34 35 36 37  | 38 39 40 41 42 43 | 44 45 46           | 47 48 49 50        | 51 52 53 54      | 55 56 57 58 59  | 60 61 62 63 64            | 65 66 67 68 69         | 70 71 72 73 74 | 75 76 77 78 79 80         |

## OUTPUT GAS OR GAS WELL DATA

ENTER EITHER ITEM 30 THRU ITEM 35 OR ITEM 36 &amp; 37

| KP ONLY | LINE SIZE   | PLATE SIZE  | SPRING SIZE | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | OUTPUT GAS VOLUME (MCF) | GAS GRAV. | ART. LIFT | PRIME MOVER | HIS COMMENTS |
|---------|-------------|-------------|-------------|-------------|-----------------|------------------|-------------------------|-----------|-----------|-------------|--------------|
| 1 2 3   | ITEM        | ITEM        | ITEM        | ITEM        | ITEM            | ITEM             | ITEM                    | ITEM      | ITEM      | ITEM        | ITEM         |
| A 0 3   | 26 27 28 29 | 30 31 32 33 | 34 35 36 37 | 38 39 40 41 | 42 43           | 44 45            | 46 47 48 49 50          | 51 52 53  | 54 55     | 56 57       | 58 59 60     |

E1 PASO meter

113.08 X 0.9804 X 1.2403 X 0.977

134.438 X 0.7071 X 4.1 X 7.3 X 0.24

68.284

## INPUT GAS

GAS LIFT CHOKE DATA

ENTER EITHER ITEM 54 THRU 59 OR ITEM 60

| KP ONLY | INTERMITTER TIME | INTERMITTER INTERVAL | INPUT LINE PRESSURE | CHOKES      | TYPE TEST   | ALLOWABLE TYPE |
|---------|------------------|----------------------|---------------------|-------------|-------------|----------------|
| 1 2 3   | ITEM             | ITEM                 | ITEM                | ITEM        | ITEM        | ITEM           |
| A 0 4   | 26 27 28 29      | 30 31 32 33          | 34 35 36 37 38      | 39 40 41 42 | 43 44 45 46 | 47 48 49 50    |

| KP ONLY | INTERMITTER TIME | INTERMITTER INTERVAL | INPUT LINE PRESSURE | CHOKES      | TYPE TEST   | ALLOWABLE TYPE |
|---------|------------------|----------------------|---------------------|-------------|-------------|----------------|
| 1 2 3   | ITEM             | ITEM                 | ITEM                | ITEM        | ITEM        | ITEM           |
| A 0 4   | 26 27 28 29      | 30 31 32 33          | 34 35 36 37 38      | 39 40 41 42 | 43 44 45 46 | 47 48 49 50    |

## FOR DISTRICT USE ONLY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| HIS COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |
| CODES - 1-20 (LOOK AT FOR IMMEDIATE ACTION)<br>1. Well going to water<br>2. Well going high COR<br>3. Well going low COR<br>4. Rapid decrease in production<br>5. Need to raise allowable properly<br>6. Production restricted by surface facilities<br>7. Suspected well response casing leak<br>8. Pump not operating properly<br>9. Production restricted by surface facilities<br>10. Information<br>11. Well shut in - need for information<br>12. Flow by beach<br>13. Flaming on treatment<br>14. Well pump down<br>15. High fluid level<br>16. FFW was after workover<br>17. Test after well work<br>18. Test after treatment<br>19. Suspected non-representative test |  |

## TYPE TEST

CODES -

1. Scheduled GO-2

2. Special GO-2

3. Routine GO-2

4. Potential or Repentant

5. Allocation

6. Information

7. Monthly GO-2

8. Information

9. Information

10. Information

11. Information

12. Information

13. Information

14. Information

15. Information

16. Information

17. Information

## CHOKES

CODES -

1. Centrifugal

2. Rod Pump

3. Plunger

4. Hydraulic

5. KOBE

6. Other

7. P

8. X

9. X

10. X

11. X

12. X

13. X

14. X

15. X

16. X

17. X

18. X

19. X

20. X

## ARTIFICIAL LIFT

CODES -

1. Centrifugal

2. Rod Pump

3. Plunger

4. Hydraulic

5. KOBE

6. Other

7. P

8. X

9. X

10. X

11. X

12. X

13. X

14. X

15. X

16. X

17. X

18. X

19. X

20. X

SIGNATURE

Ed Keller

## INDIVIDUAL WELL TEST REPORT

DO NOT WRITE IN SHADED AREAS -  
DIVISION OFFICE USE ONLY

DATE

8-31-85

LEASE

TYPE TEST

N.M. "V" STATE

G.O.R.

FIELD

WELL NO.

CAL DAY ALLOW.

SCHED. DAY ALLOW.

DRINKARD

METHOD OF PRODUCTION  
(CHECK ONE)☐ PUMP☒ FLOW☐ GAS LIFT

ARTIFICIAL LIFT (CHECK ONE)

☐ KOBÉ☐ OTHER

PRIME MOVER (CHECK ONE)

☐ GAS ENG.☐ ELEC.☐ OTHER

## FORS TAG INFORMATION

## PUMPING WELLS ONLY

| KP ONLY | ACD TYPE | BATT. | SUB BATT. | ZONE | COMPLETION NUMBER | TEST DATE | ELAPSED TEST TIME |     | STATUS | METHOD | TYPE TEST | ALLOW TYPE | DAYS OFF PROD. | LENGTH OF STROKE | STROKES PER MINUTE | PUMP SIZE INCHES | TIME PUMPED DURING TEST |     |
|---------|----------|-------|-----------|------|-------------------|-----------|-------------------|-----|--------|--------|-----------|------------|----------------|------------------|--------------------|------------------|-------------------------|-----|
|         |          |       |           |      |                   |           | HRS               | MIN |        |        |           |            |                |                  |                    |                  | HRS                     | MIN |
| 1       | 2        | 3     | 4         | 5    | 6                 | 7         | 8                 | 9   | 10     | 11     | 12        | 13         | 14             | 15               | 16                 | 17               | 18                      | 19  |
| A       | 0        | 1     | 6         |      |                   |           |                   |     |        |        |           |            |                |                  |                    |                  |                         |     |

## OIL OR GAS WELL PRODUCTION

| KP ONLY | TEST OIL OR CONDENSATE (BBL/S) | TOTAL FLUID (BBL/S) | TEST WATER (BBL/S) | OIL OR COND. GRAV. | OIL OR COND. TEMP. | FLUID CHOKE SIZE | TUBING PRESSURE | BEGINNING CASING PRESSURE | ENDING CASING PRESSURE | TRAP PRESSURE | SHUT-IN WELLHEAD PRESSURE |
|---------|--------------------------------|---------------------|--------------------|--------------------|--------------------|------------------|-----------------|---------------------------|------------------------|---------------|---------------------------|
|         |                                |                     |                    |                    |                    |                  |                 |                           |                        |               |                           |
| 1       | 2                              | 3                   | 4                  | 5                  | 6                  | 7                | 8               | 9                         | 10                     | 11            | 12                        |
| A       | 0                              | 2                   |                    |                    |                    |                  |                 |                           |                        |               |                           |

## OUTPUT GAS OR GAS WELL DATA

ENTER EITHER ITEM 30 THRU ITEM 35 OR ITEM 36 &amp; 37

| KP ONLY | LINE SIZE | PLATE SIZE | SPRING SIZE | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | OUTPUT GAS VOLUME (MCF) | GAS GRAV. | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | MOMENTS |
|---------|-----------|------------|-------------|-------------|-----------------|------------------|-------------------------|-----------|-------------|-----------------|------------------|---------|
|         |           |            |             |             |                 |                  |                         |           |             |                 |                  |         |
| 1       | 2         | 3          | 4           | 5           | 6               | 7                | 8                       | 9         | 10          | 11              | 12               | 13      |
| A       | 0         | 3          |             |             |                 |                  |                         |           |             |                 |                  |         |

| KP ONLY | LINE SIZE | PLATE SIZE | SPRING SIZE | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | MOMENTS |
|---------|-----------|------------|-------------|-------------|-----------------|------------------|---------|
|         |           |            |             |             |                 |                  |         |
| 1       | 2         | 3          | 4           | 5           | 6               | 7                | 8       |
| A       | 0         | 3          |             |             |                 |                  |         |

| KP ONLY | LINE SIZE | PLATE SIZE | SPRING SIZE | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | MOMENTS |
|---------|-----------|------------|-------------|-------------|-----------------|------------------|---------|
|         |           |            |             |             |                 |                  |         |
| 1       | 2         | 3          | 4           | 5           | 6               | 7                | 8       |
| A       | 0         | 3          |             |             |                 |                  |         |

This zone  
Dead

## GAS LIFT CHOKE DATA

ENTER EITHER ITEM 54 THRU 59 OR ITEM 60

| KP ONLY | INTER. MITTER TIME | INTER. MITTER INTERVAL | INPUT LINE PRESSURE | CHOKE SIZE | LINE SIZE | PLATE SIZE | SPRING SIZE | DIFF. RANGE | AVG. RED (DIFF) | AVG. BLUE (STAT) | GAS LIFT VOLUME (MCF) | CONTROL TOTAL |
|---------|--------------------|------------------------|---------------------|------------|-----------|------------|-------------|-------------|-----------------|------------------|-----------------------|---------------|
|         |                    |                        |                     |            |           |            |             |             |                 |                  |                       |               |
| 1       | 2                  | 3                      | 4                   | 5          | 6         | 7          | 8           | 9           | 10              | 11               | 12                    | 13            |
| A       | 0                  | 4                      |                     |            |           |            |             |             |                 |                  |                       |               |

FOR DISTRICT USE ONLY

THIS COMMENTS

CODES - 1-20 (LOOK AT FOR IMMEDIATE ACTION)

- Well going to water
- Well going high GOH
- Well flows and dies
- Rapid decrease in production
- Need to raise allowable properly
- Production restricted by surface facilities.

CODES - 21-40 INFORMATION

- Well shut in; tested for information
- Flows by heads
- Flowing on intermitter
- Well pumps down
- High fluid level
- FRW test after workover
- Test after hot oil treatment
- Test after non-representative test

TYPE TEST

CODES -

1 - Scheduled  
2 - Special  
3 - Routine  
4 - Potential or Repotential  
5 - Allocation  
6 - Information  
7 - Monthly  
8 - GO-2

CHOKES -

CODES -

1 - Initial  
2 - Routine  
3 - Special  
4 - Routine  
5 - Special  
6 - Routine  
7 - Information

ARTIFICIAL LIFT

CODES -

1 - Central  
2 - Rod Pump  
3 - Plunger  
4 - Hydraulic  
5 - Kober  
6 - Other

PRIME MOVER

1 - Gas Engine  
2 - Electric Motor  
3 - Other

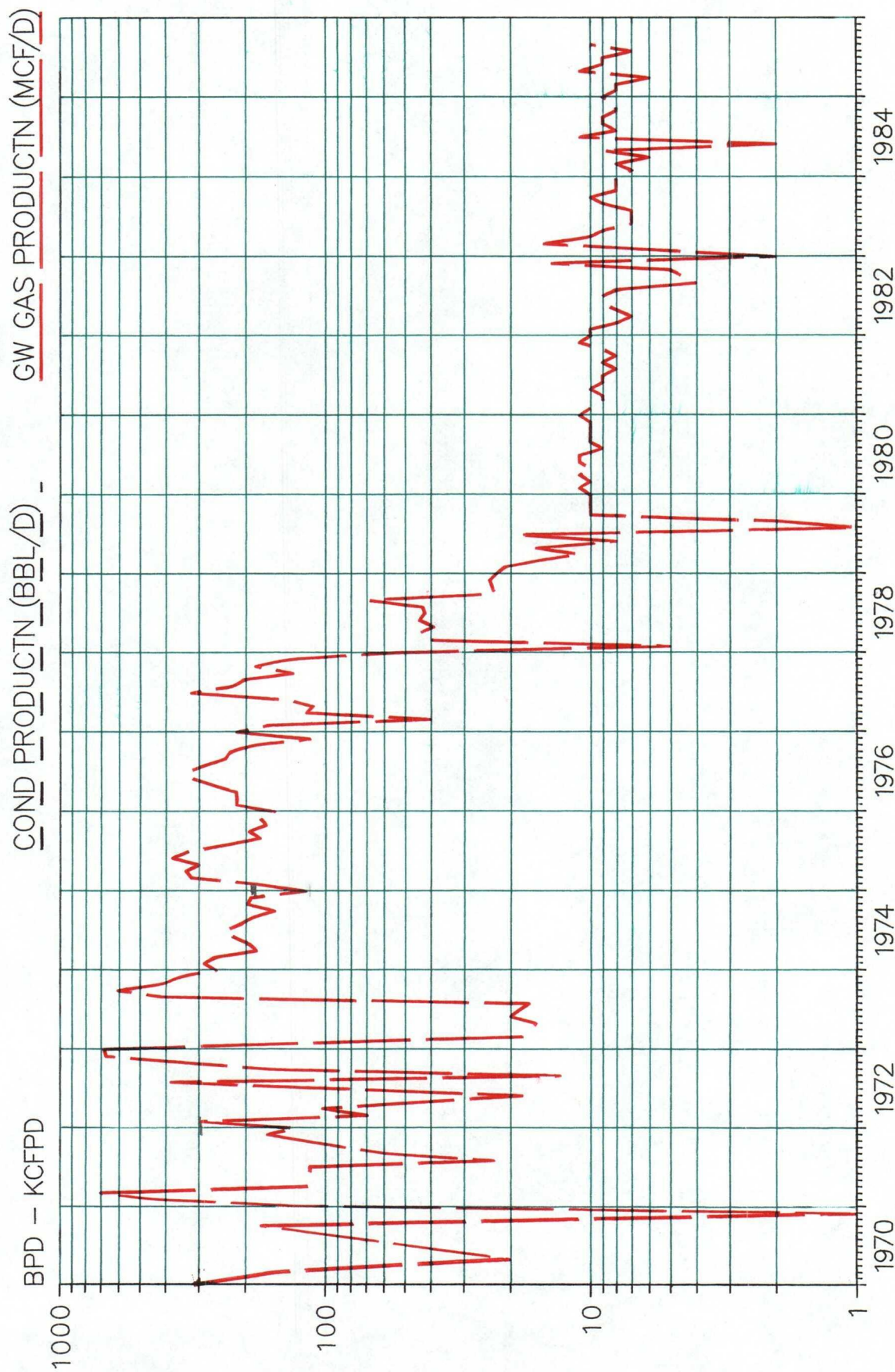
CODES -

- 1 - Prorated
- 2 - Exempt
- 3 - Marginal
- 5 - Discover

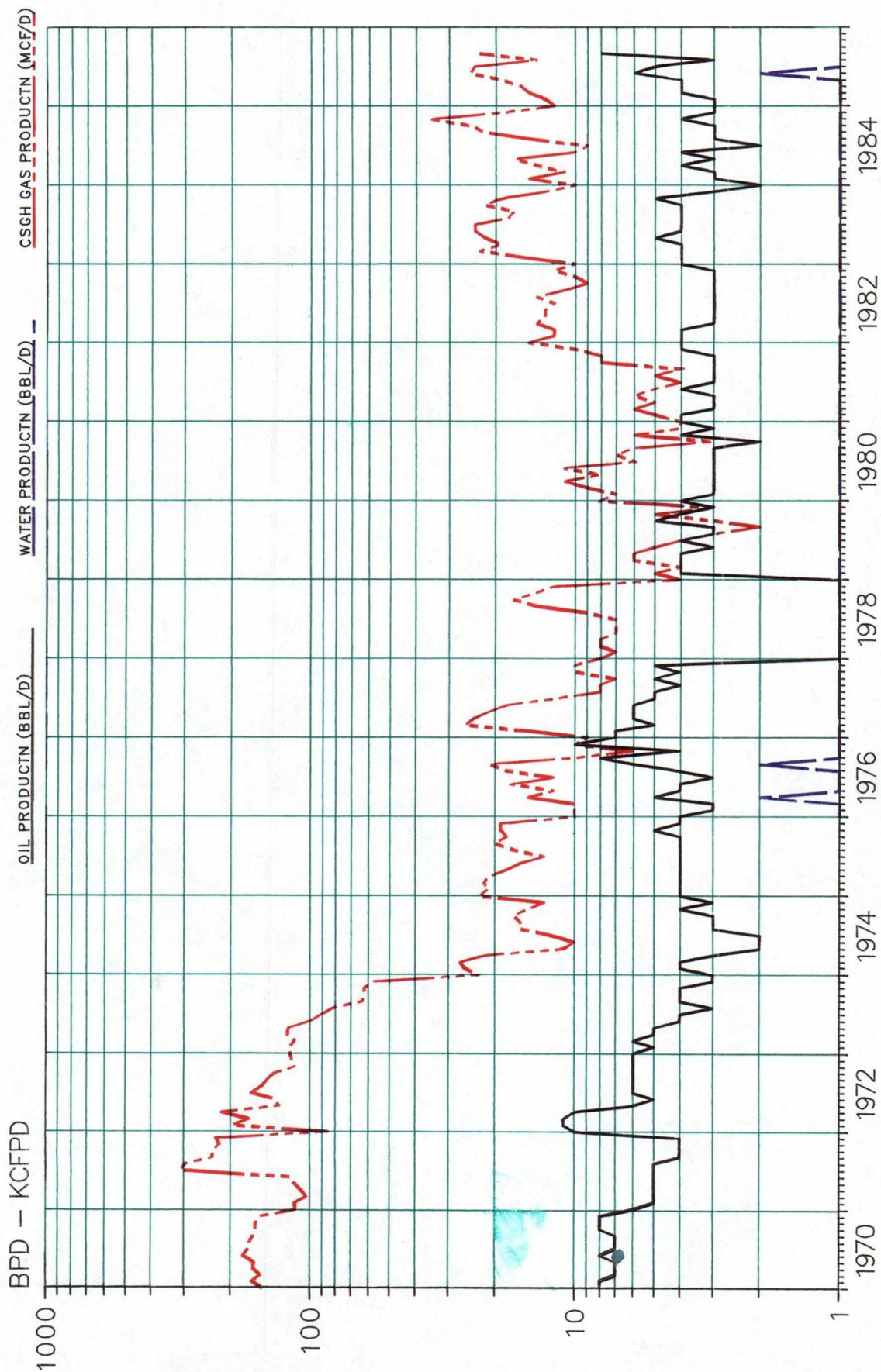
SIGNATURE

Ed Collier

DISTRICT - 30 ANDREWS  
FIELD - 3306 PADDOCK  
RESERVOIR - 405 BLINEBRY GAS  
WELL - 0011 LSE-61992 NEW MEXICO V STATE



DISTRICT - 30 ANDREWS  
FIELD - 3306 PADDOCK  
RESERVOIR - 45' TUBB OIL  
WELL - 0011 LSE-61992 NEW MEXICO V STATE



# JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

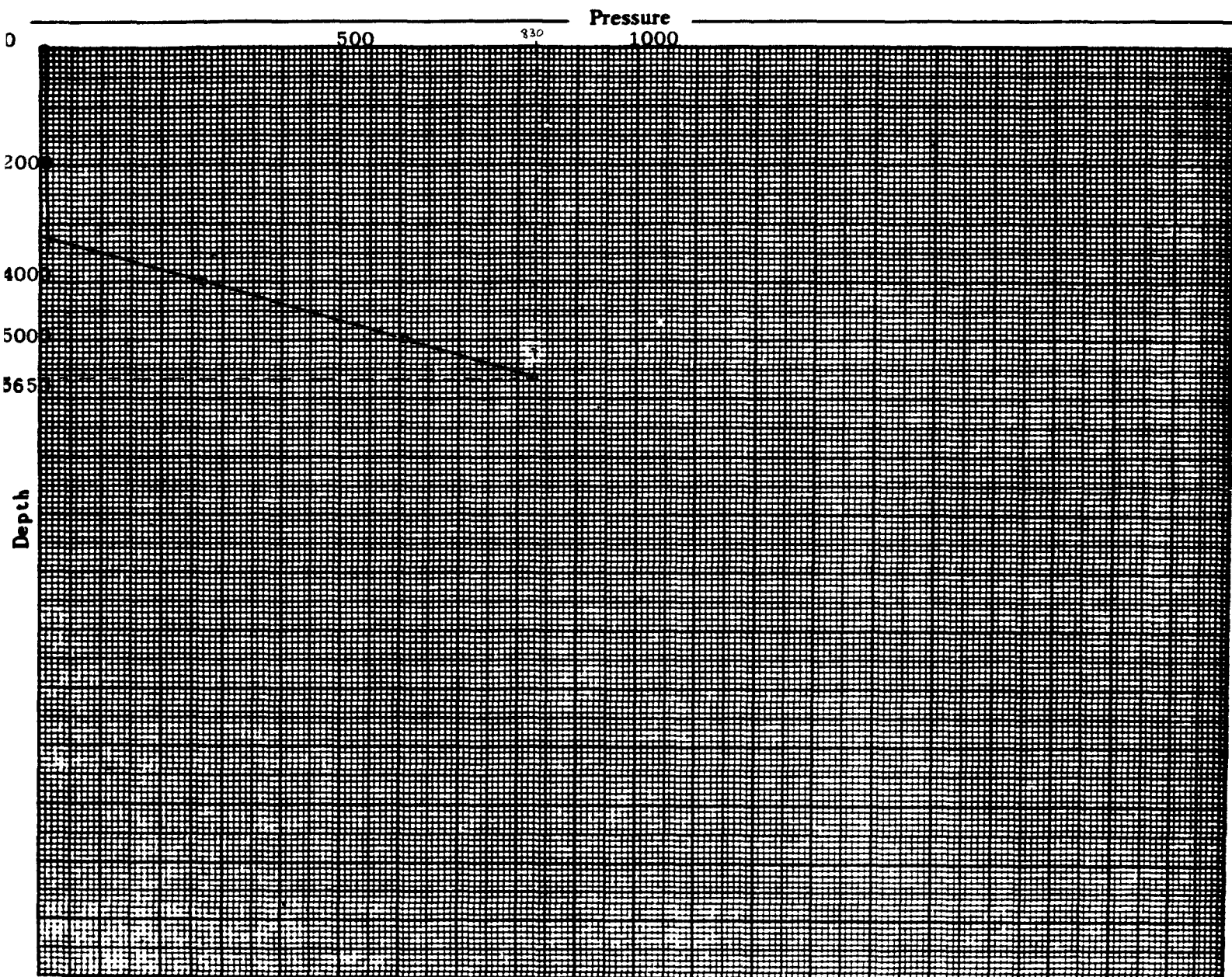
OPERATOR Exxon Company USA  
FIELD B-D-T  
FORMATION Blinebry  
LEASE New Mexico V State WELL No. 7  
COUNTY Lea STATE New Mexico  
DATE 8/13/85 TIME 4:00 PM  
Status Shut in  
Test Depth 5650'  
Time S. I. 7 days Last test date -  
Tub Pres. 7 BHP last test -  
Cas. Pres. PKR BHP change -  
Elev. 3469' RDB Fluid top 3245'  
Datum (-2334)\*\* Water top None  
Temp. @ - Run by JSI #13  
Cal. No. 42254 Chart No. 4

## BOTTOM HOLE PRESSURE RECORD

| Depth        | Pressure | Gradient |
|--------------|----------|----------|
| 0            | 7        | -        |
| 2000         | 9        | .001     |
| 4000         | 267      | .129     |
| 5000         | 607      | .340     |
| 5650         | 824      | .334     |
| 5803 (-2334) | 875 * ** | (.334)   |

\* EXTRAPOLATED PRESSURE

\*\* MIDPOINT OF CASING PERFORATIONS



# JARREL SERVICES, INC.

POST OFFICE BOX 1854

PHONES 505 393-5396 — 393-8274

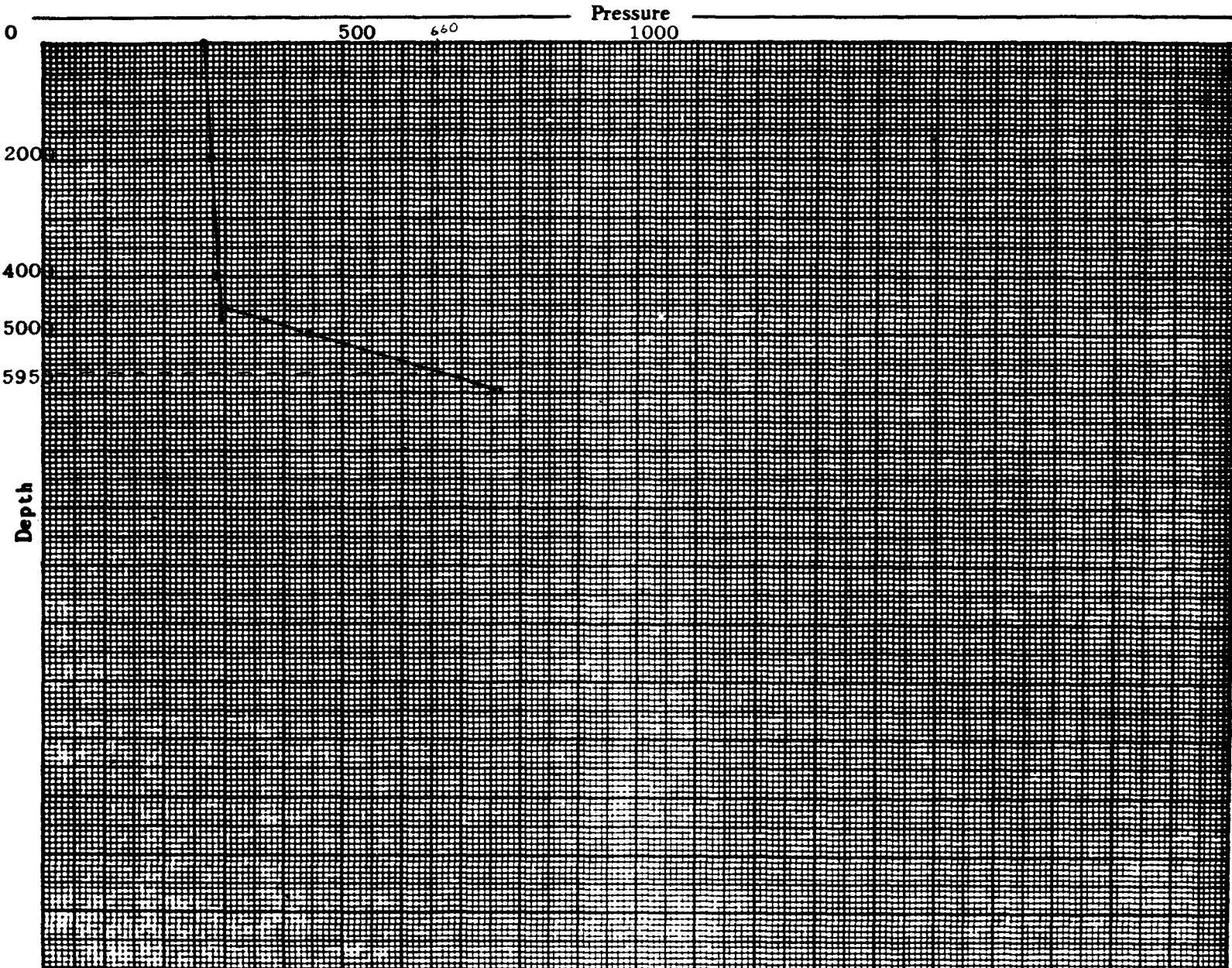
HOBBS, NEW MEXICO 88240

## BOTTOM HOLE PRESSURE RECORD

OPERATOR Exxon Company USA  
FIELD B-D-T  
FORMATION Tubb  
LEASE New Mexico V State WELL No. 11  
COUNTY Lea STATE New Mexico  
DATE 8/12/85 TIME 2:00 PM  
Status Shut in  
Test Depth 5950'  
Time S. I. 7 days Last test date -  
Tub Pres. 266 BHP last test -  
Cas. Pres. Dual BHP change -  
Elev. 3452' GL Fluid top 4545'  
Datum (-2747)\*\* Water top None  
Temp. @ - Run by JSI #13  
Cal. No. 20275 Chart No. 2

| Depth        | Pressure | Gradient |
|--------------|----------|----------|
| 0            | 266      | -        |
| 2000         | 277      | .006     |
| 4000         | 288      | .006     |
| 5000         | 443      | .155     |
| 5950         | 760      | .334     |
| 6199 (-2747) | 843 * ** | (.334)   |

\* EXTRAPOLATED PRESSURE  
\*\* MIDPOINT OF CASING PERFORATIONS



# JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

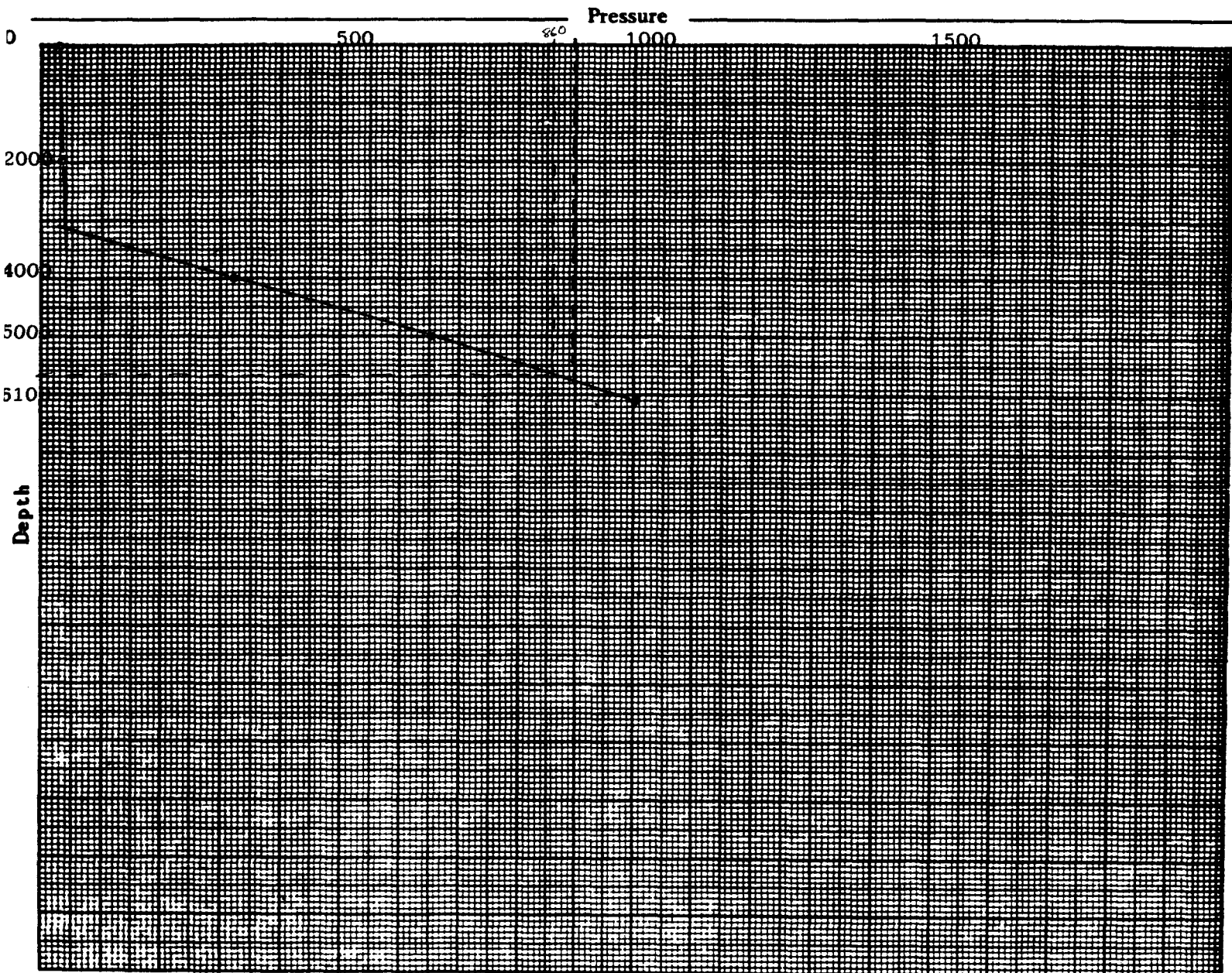
HOBBS, NEW MEXICO 88240

## BOTTOM HOLE PRESSURE RECORD

OPERATOR Exxon Company USA  
 FIELD B-D-T  
 FORMATION Drinkard  
 LEASE New Mexico V State WELL No. 3  
 COUNTY Lea STATE New Mexico  
 DATE 8/14/85 TIME 11:00 AM  
 Status Shut in  
 Test Depth 6100'  
 Time S. I. 7 days Last test date -  
 Tub Pres. 29 BHP last test -  
 Cas. Pres. Dual BHP change -  
 Elev. 3463' DF Fluid top 3136'  
 Datum (-3026)\* Water top None  
 Temp. @ - Run by JSI #13  
 Cal. No. 42254 Chart No. 6

| Depth        | Pressure  | Gradient |
|--------------|-----------|----------|
| 0            | 29        | -        |
| 2000         | 33        | .002     |
| 4000         | 322       | .145     |
| 5000         | 654       | .332     |
| 6100         | 1002      | .316     |
| 6489 (-3026) | 1125 * ** | (.316)   |

\* EXTRAPOLATED PRESSURE  
 \*\* MIDPOINT OF CASING PERFORATIONS



# JARREL SERVICES, INC.

POST OFFICE BOX 1854

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

## BOTTOM HOLE PRESSURE RECORD

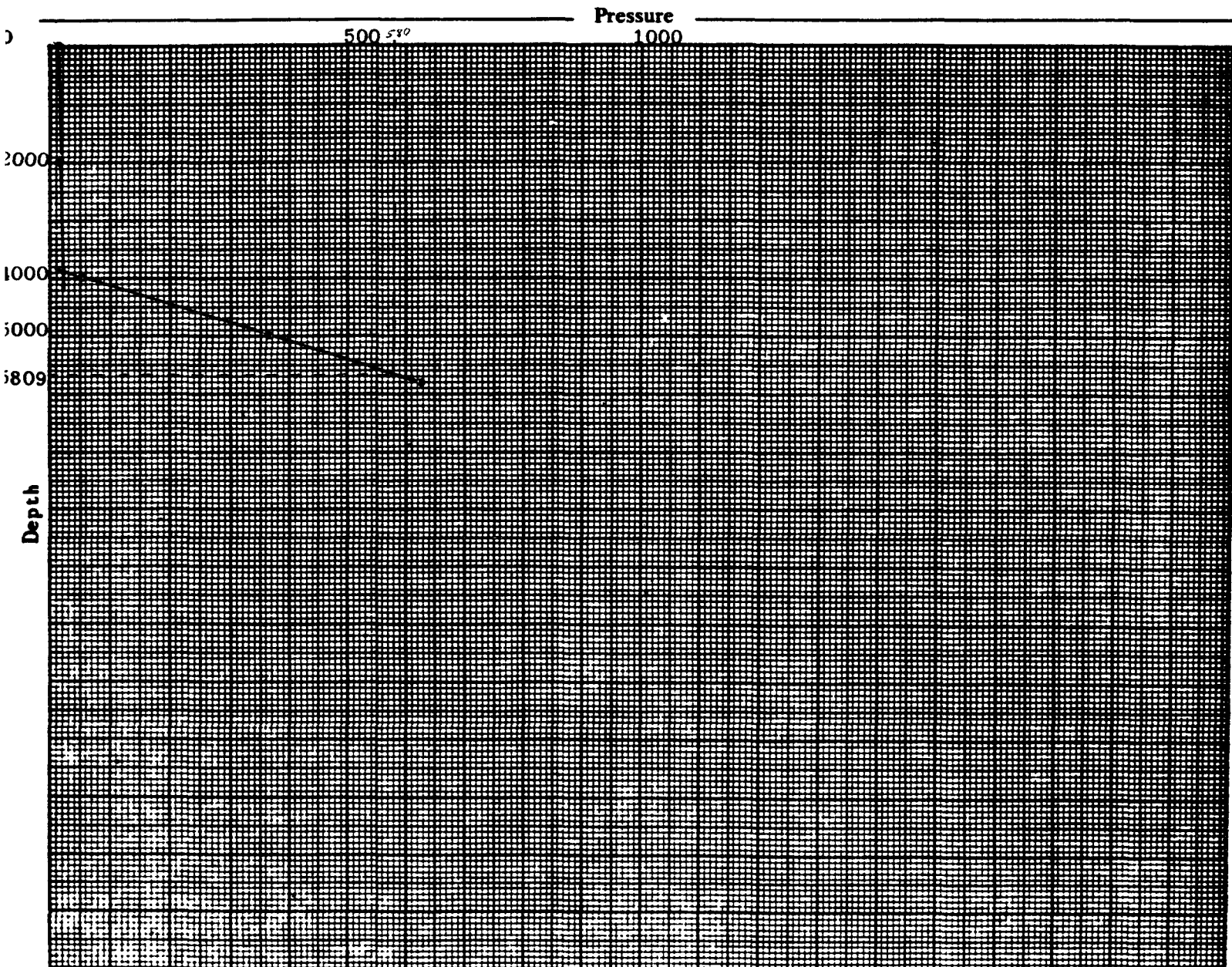
OPERATOR Exxon Company USA  
 FIELD B-D-T  
 FORMATION Drinkard  
 LEASE New Mexico V State WELL No. 6  
 COUNTY Lea STATE New Mexico  
 DATE 8/13/85 TIME 12:00 N  
 Status Shut in  
 Test Depth 5809' +  
 Time S. I. 7 days Last test date -  
 Tub Pres. 13 BHP last test -  
 Cas. Pres. Dual BHP change -  
 Elev. 3465' RDB Fluid top 3868'  
 Datum (-3133)\*\* Water top None  
 Temp. @ - Run by JSI #13  
 Cal. No. 42254 Chart No. 3

| Depth        | Pressure | Gradient |
|--------------|----------|----------|
| 0            | 13       | -        |
| 2000         | 16       | .002     |
| 4000         | 51       | .018     |
| 5000         | 364      | .313     |
| 5809 +       | 627      | .325     |
| 6598 (-3133) | 883 * ** | (.325)   |

+ HIT OBSTRUCTION

\* EXTRAPOLATED PRESSURE

\*\* MIDPOINT OF CASING PERFORATIONS





**NEW-TEX  
LAB**

PHONE 505/393-3561

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

**ANALYSIS CERTIFICATE**

CLIENT: EXXON COMPANY USA  
ADDRESS: 1700 W BROADWAY  
CITY, STATE: ANDREWS, TX 79714

ANALYSIS NUMBER: 7810  
DATE OF RUN: 8 12 85  
DATE SECURED: 8 12 85

SAMPLE IDENT: "V" STATE #7 - BLINEBRY ZONE  
SAMPLING PRESS: 20 PSIG SAMPLING TEMP: 93 DEG F

REMARKS: WELL SHUT IN INDEFINITE TIME;

REMARKS: H2S - NONE DETECTED

\*\*\*\*\* GAS ANALYSIS \*\*\*\*\*

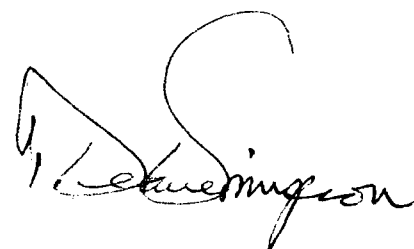
|                | MOLE<br>PERCENT | GAL/<br>MCF |
|----------------|-----------------|-------------|
| NITROGEN       | 0.979           |             |
| CARBON DIOXIDE | 0.000           |             |
| METHANE        | 84.547          |             |
| ETHANE         | 8.174           | 2.180       |
| PROPANE        | 3.417           | 0.938       |
| ISO-BUTANE     | 0.381           | 0.124       |
| NORMAL BUTANE  | 0.972           | 0.306       |
| ISO-PENTANE    | 0.286           | 0.105       |
| NORMAL PENTANE | 0.329           | 0.119       |
| HEXANES        | 0.915           | 0.375       |
| TOTAL          | 100.000         | 4.147       |

|              |      |                    |      |
|--------------|------|--------------------|------|
| PROPANE GPM: | 0.94 | BUTANES GPM:       | 0.43 |
| ETHANE GPM:  | 2.18 | PENTANES PLUS GPM: | 0.60 |

SPECIFIC GRAV (CALC): 0.6853  
MOLE WEIGHT: 19.85

| HHV-BTU/CU FT | PRESSURE (PSIA) | WET  | DRY  |
|---------------|-----------------|------|------|
|               | 14.696          | 1177 | 1198 |
|               | 14.650          | 1173 | 1194 |
|               | 14.730          | 1180 | 1201 |
|               | 14.735          | 1180 | 1201 |

DEANE SIMPSON





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**ANALYSIS CERTIFICATE**

CLIENT: EXXON COMPANY USA  
ADDRESS: 1700 W BROADWAY  
CITY, STATE: ANDREWS, TX 79714

ANALYSIS NUMBER: 7808  
DATE OF RUN: 8 12 85  
DATE SECURED: 8 12 85

SAMPLE IDENT: "V" STATE #11 - TUBB GAS  
SAMPLING PRESS: 22 PSIG SAMPLING TEMP: 90 DEG F

REMARKS: WELL SHUT IN INDEFINITE TIME; TUBB GAS  
REMARKS: NO OIL FOR SAMPLE  
REMARKS: H2S - NONE DETECTED

\*\*\*\*\* GAS ANALYSIS \*\*\*\*\*

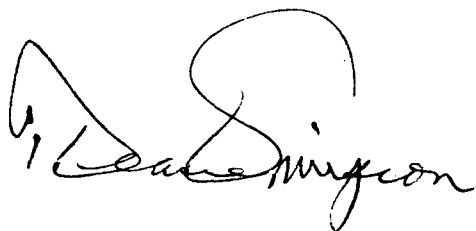
|                | MOLE<br>PERCENT | GAL/<br>MCF |
|----------------|-----------------|-------------|
| NITROGEN       | 1.032           |             |
| CARBON DIOXIDE | 0.127           |             |
| METHANE        | 82.293          |             |
| ETHANE         | 7.746           | 2.066       |
| PROPANE        | 4.012           | 1.101       |
| ISO-BUTANE     | 0.484           | 0.158       |
| NORMAL BUTANE  | 1.518           | 0.477       |
| ISO-PENTANE    | 0.482           | 0.177       |
| NORMAL PENTANE | 0.698           | 0.252       |
| HEXANES        | 1.608           | 0.660       |
| TOTAL          | 100.000         | 4.891       |

|              |      |                    |      |
|--------------|------|--------------------|------|
| PROPANE GPM: | 1.10 | BUTANES GPM:       | 0.64 |
| ETHANE GPM:  | 2.07 | PENTANES PLUS GPM: | 1.09 |

SPECIFIC GRAV (CALC): 0.7283  
MOLE WEIGHT: 21.09

| HHV-BTU/CU FT | PRESSURE (PSIA) | WET  | DRY  |
|---------------|-----------------|------|------|
|               | 14.696          | 1239 | 1261 |
|               | 14.650          | 1235 | 1257 |
|               | 14.730          | 1241 | 1263 |
|               | 14.735          | 1242 | 1264 |

DEANE SIMPSON





**NEW-TEX  
LAB**

PHONE 505/393-3561

P. O. BOX 1161

811 W. SNYDER

HOBBS, NEW MEXICO 88240

**ANALYSIS CERTIFICATE**

CLIENT: EXXON COMPNY USA  
ADDRESS: 1700 W BROADWAY  
CITY, STATE: ANDREWS, TX 79714

ANALYSIS NUMBER: 7807  
DATE OF RUN: 8 12 85  
DATE SECURED: 8 12 85

SAMPLE IDENT: "V" STATE #6 - DRINKARD ZONE  
SAMPLING PRESS: 25 PSIG SAMPLING TEMP: 93 DEG F

REMARKS: WELL SHUT IN INDEFINITE TIME; BLINEBRY  
REMARKS: ZONE - NO CONNECTION  
REMARKS: H2S - NONE DETECTED

\*\*\*\*\* GAS ANALYSIS \*\*\*\*\*

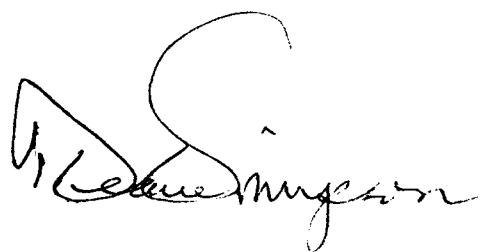
|                | MOLE<br>PERCENT | GAL/<br>MCF |
|----------------|-----------------|-------------|
| NITROGEN       | 1.030           |             |
| CARBON DIOXIDE | 0.069           |             |
| METHANE        | 85.818          |             |
| ETHANE         | 8.500           | 2.267       |
| PROPANE        | 2.949           | 0.810       |
| ISO-BUTANE     | 0.264           | 0.086       |
| NORMAL BUTANE  | 0.745           | 0.234       |
| ISO-PENTANE    | 0.138           | 0.051       |
| NORMAL PENTANE | 0.176           | 0.064       |
| HEXANES        | 0.311           | 0.128       |
| TOTAL          | 100.000         | 3.640       |

|              |      |                    |      |
|--------------|------|--------------------|------|
| PROPANE GPM: | 0.81 | BUTANES GPM:       | 0.32 |
| ETHANE GPM:  | 2.27 | PENTANES PLUS GPM: | 0.24 |

SPECIFIC GRAV (CALC): 0.6572  
MOLE WEIGHT: 19.03

|               |                 |      |      |
|---------------|-----------------|------|------|
| HHV-BTU/CU FT | PRESSURE (PSIA) | WET  | DRY  |
|               | 14.696          | 1132 | 1152 |
|               | 14.650          | 1128 | 1148 |
|               | 14.730          | 1135 | 1155 |
|               | 14.735          | 1135 | 1155 |

DEANE SIMPSON



Estimated Effects on the Value of  
Total Production from Proposed  
Down Hole Commingling<sup>1</sup>

New Mexico "V" State #11

Before Down Hole Commingling

|          | <u>BPD<br/>Oil<br/>Volume</u> | <u>Oil<br/>Price</u> | <u>MCF/Day<br/>Gas Volume</u> | <u>Gas<br/>Price</u> | <u>Daily<br/>Oil and<br/>Gas Value</u> |
|----------|-------------------------------|----------------------|-------------------------------|----------------------|----------------------------------------|
| Blinbry  | 0                             | N/A                  | 10                            | .857                 | 8.57                                   |
| Tubb     | 8.26                          | 27.86                | 23                            | 1.28                 | 259.56                                 |
| Drinkard | 0                             | N/A                  | 0                             | N/A                  | 0                                      |
|          |                               |                      |                               |                      | <u>\$268.13</u>                        |

After Down Hole Commingling

|  | <u>BPD<br/>Oil<br/>Volume</u> | <u>Oil<br/>Price</u> | <u>MCF/Day<br/>Gas Volume</u> | <u>Gas<sup>2</sup><br/>Price</u> | <u>Daily Oil<br/>And Gas<br/>Value</u> | <u>Difference in<br/>Daily Value</u> |
|--|-------------------------------|----------------------|-------------------------------|----------------------------------|----------------------------------------|--------------------------------------|
|  | 60                            | 27.86                | 500                           | .84                              | <u>2091.60</u>                         |                                      |
|  |                               |                      |                               |                                  | <u>\$2091.60</u>                       | <u>\$1823.47</u>                     |

1. Production volumes and prices based on September 1985 data
2. If gas split between two purchasers-assumed lower price prevails after commingling.

## Allocation Of Oil Production To Each Zone

Equations Used:

$$\begin{aligned} \text{Decline Rates (1)} \quad q &= q_i e^{-a_n t} \\ (2) \quad a_n &= \frac{\ln (q_i/q)}{t} \end{aligned}$$

$a_n$  = nominal decline, per yr.  
 $q_i$  = initial rate, kCF/Day  
 $q$  = later rates, kCF/Day  
 $t$  = time between rates, yrs.

Decline rate computations:

### Blinebry Zone

$$\begin{aligned} q_i &= 14 \text{ BOPD} & a_n &= \frac{\ln (14/3)}{3} \\ q &= 3 \text{ BOPD} & a_n \text{ (Blinebry)} &= 0.5135/\text{yr.} \\ t &= 3 \text{ years} \end{aligned}$$

Based on an average of N. M. "V" State Nos. 6 and 7, direct offsets

### Tubb Zone

$$\begin{aligned} q_i &= 8 \text{ BOPD} & a_n &= \frac{\ln (8/4)}{3} \\ q &= 4 \text{ BOPD} & a_n \text{ (Tubb)} &= 0.2310/\text{yr.} \\ t &= 3 \text{ years} \end{aligned}$$

### Drinkard Zone

$$\begin{aligned} q_i &= 12 \text{ BOPD} & a_n &= \frac{\ln (12/4)}{3} \\ q &= 4 \text{ kcf/Day} & a_n \text{ (Drinkard)} &= 0.3662/\text{yr.} \\ t &= 3 \text{ years} \end{aligned}$$

Based on an average of N. M. "V" State Nos. 1, 3, and 6, direct offsets.

Actual Allocation:

$x_b$  = Blinebry Allocation, fraction.  
 $x_t$  = Tubb Allocation, fraction.  
 $x_d$  = Drinkard Allocation, fraction.  
 $q_b$  = Blinebry rate, BOPD.  
 $q_t$  = Tubb rate, BOPD.  
 $q_d$  = Drinkard rate, BOPD.  
 $q_{bi}$  = Blinebry initial rate, BOPD.  
 $q_{ti}$  = Tubb initial rate, BOPD.  
 $q_{di}$  = Drinkard initial rate, BOPD

$$\begin{aligned} x_b &= \frac{q_b}{q_b + q_t + q_d} & x_t &= \frac{q_t}{q_b + q_t + q_d} & x_d &= 1 - x_b - x_t \\ \frac{1}{x_b} &= \frac{q_b + q_t + q_d}{q_b} = \frac{q_d + q_t}{q_b} + 1 \end{aligned}$$

Allocation of Oil Production to Each Zone  
Page 2

$$x_b = \left[ \frac{q_d + q_t}{q_b} + 1 \right]^{-1}$$

Substituting eq. (1)

$$x_b = \left[ \frac{q_{di}e^{-a_d t} + q_{ti}e^{-a_t t}}{q_{bi}e^{-a_t t}} + 1 \right]^{-1}$$

$$q_{bi} = 14 \text{ BOPD} \quad q_{ti} = 8 \text{ BOPD} \quad q_{di} = 12 \text{ BOPD}$$

$$a_n(\text{Blinebry}) = 0.5135/\text{yr.} \quad a_n(\text{Tubb}) = 0.2310/\text{yr} \quad a_n(\text{Drinkard}) = 0.3662/\text{yr.}$$

$$x_b = \left[ \frac{12e^{-(0.3662)t} + 8e^{-(0.2310)t}}{14e^{-(0.5135)t}} + 1 \right]^{-1}$$

Where  $t$  = time between January 1, 1974 and current date, years.

$$x_t = \left[ \frac{q_b + q_d}{q_t} + 1 \right]^{-1}$$

Substituting eq. (1)

$$x_t = \left[ \frac{q_{bi}e^{-a_b t} + q_{di}e^{-a_d t}}{q_{ti}e^{-a_t t}} + 1 \right]^{-1}$$

$$x_t = \left[ \frac{14e^{-(0.5135)t} + 12e^{-(0.3662)t}}{8e^{-(0.2310)t}} + 1 \right]^{-1}$$

Where  $t$  = time between January, 1974 and current date, years.

$$x_d = 1 - x_b - x_t$$

## Allocation of Gas Production To Each Zone

### Decline Rate Computations:

#### Blinebry Zone

$$\begin{aligned} q_i &= 300 \text{ kCF/D} \\ q &= 195 \text{ kCF/D} \\ t &= 3 \text{ years} \end{aligned}$$

$$\begin{aligned} a_n &= \frac{\ln (300/195)}{3} \\ a_n (\text{Blinebry}) &= 0.1436/\text{yr} \end{aligned}$$

#### Tubb Zone

$$\begin{aligned} q_i &= 300 \text{ kCF/Day} \\ q &= 100 \text{ kCF/Day} \\ t &= 3 \text{ years} \end{aligned}$$

$$\begin{aligned} a_n &= \frac{\ln (300/100)}{3} \\ a_n (\text{Tubb}) &= 0.3662/\text{yr} \end{aligned}$$

#### Drinkard Zone

$$\begin{aligned} q_i &= 83 \text{ kCF/D} \\ q &= 53 \text{ kCF/D} \\ t &= 3 \text{ years} \end{aligned}$$

$$\begin{aligned} a_n &= \frac{\ln (83/53)}{3} \\ a_n (\text{Drinkard}) &= 0.1495/\text{yr} \end{aligned}$$

Based on an average of N. M. "V" State Nos. 1, 3, and 6, direct offsets

### Actual Allocations:

$$\begin{aligned} q_{bi} &= 300 \text{ kCF/Day} & q_{ti} &= 300 \text{ kCF/Day} & q_{di} &= 83 \text{ kCF/Day} \\ a_n (\text{Blinebry}) &= 0.1436/\text{yr} & a_n (\text{Tubb}) &= 0.3662/\text{yr} & a_n (\text{Drinkard}) &= 0.1495/\text{yr}. \end{aligned}$$

$$\begin{aligned} x_b &= \left[ \frac{q_{di} e^{-a_d t} + q_{ti} e^{-a_t t}}{q_{bi} e^{-a_b t}} + 1 \right]^{-1} \\ x_b &= \left[ \frac{83 e^{-(0.1495)t} + 300 e^{-(0.3662)t}}{300 e^{-(0.1436)t}} + 1 \right]^{-1} \\ x_t &= \left[ \frac{q_{bi} e^{-a_b t} + q_{di} e^{-a_d t}}{q_{ti} e^{-a_t t}} + 1 \right]^{-1} \\ x_t &= \left[ \frac{300 e^{-(0.1436)t} + 83 e^{-(0.1495)t}}{300 e^{-(0.3662)t}} + 1 \right]^{-1} \end{aligned}$$

Where  $t$  = time between January, 1974 and current date, years.

$$x_d = 1 - x_b - x_t$$

OFFSET OPERATORS  
TO EXXON'S N.M. "V" STATE LEASE  
LEA COUNTY, NEW MEXICO

Conoco  
P. O. Box 1959  
Midland, Texas 79702

Aztec Energy Corp.  
1206 E. 20th St.  
Farmington, New Mexico 87401

Bravo Energy Inc.  
P. O. Box 2160  
Hobbs, New Mexico 88240

Texaco Producing Inc.  
P. O. Box 3000  
Tulsa, Oklahoma 74101

Chevron U.S.A., Inc.  
Attn: J. C. Prindle  
P. O. Box 670  
Hobbs, New Mexico 88240

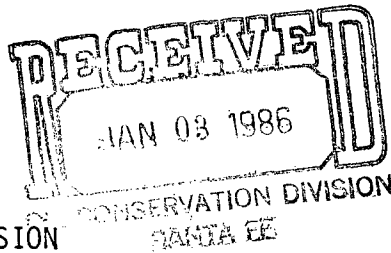
Amoco  
P. O. Box 3092  
Houston, Texas 77253



STATE OF NEW MEXICO  
**ENERGY AND MINERALS DEPARTMENT**  
OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE  
December 31, 1985

TONEY ANAYA  
GOVERNOR

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88240  
(505) 393-6161



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

RE: Proposed:

|     |               |
|-----|---------------|
| MC  | _____         |
| DHC | _____ X _____ |
| NSL | _____         |
| NSP | _____         |
| SWD | _____         |
| WFX | _____         |
| PMX | _____         |

Gentlemen:

I have examined the application for the:

|             |                          |          |
|-------------|--------------------------|----------|
| Exxon Corp. | New Mexico V State #11-K | 10-21-37 |
| Operator    | Lease & Well No. Unit    | S-T-R    |

and my recommendations are as follows:

O.K.-----J.S.

Yours very truly,

Jerry Sexton  
Supervisor, District 1

/mc