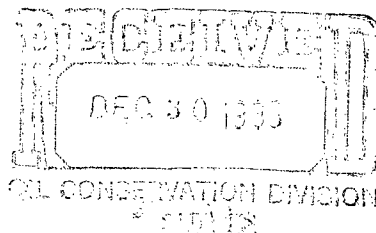


EXXON COMPANY, U.S.A.

POST OFFICE BOX 1600 • MIDLAND, TEXAS 79702-1600

PRODUCTION DEPARTMENT
SOUTHWEST/ROCKY MOUNTAIN DIVISION

J.K. LYTLE
SENIOR TECHNICAL ADVISOR
REGULATORY AFFAIRS



December 23, 1985

Downhole Commingling Request
N.M. "V" State #3
Lea County, New Mexico

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

ATTENTION: Mr. David Catanach

Gentlemen:

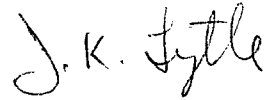
Exxon respectfully requests NMOCD approval to downhole commingle the Blinebry and Drinkard formations in the N.M. "V" State #3. Permission to dually complete this well was authorized by administrative order MC-1404. If permission to downhole commingle is received, this well will be placed on sucker rod pump to effectively lift formation fluids from the wellbore resulting in increased flow rates, and increase ultimate recovery from these two oil zones.

The Blinebry quit flowing in 1978 and the Drinkard quit flowing in 1980. Both zones have 2000-4000' of fluid on the formation face. Downhole commingling will enable Exxon to place the well on sucker rod pump to remove the formation fluids 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 would be economical to re-enter the squeezed zone in the future due to the low potential. Downhole commingling is being requested to prevent this waste.

The Blinebry and Drinkard 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 cursive script that reads "J. K. Lytle".

J. K. Lytle

JKL:djc
Attachments

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

ATTACHMENT 1

N. M. "V" State #3 - 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. 6500' is the depth of the bottom perforation in the Drinkard formation.
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 BWPB. 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 #3 - 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 Company, USA
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. 3, 660' FSL, 1980' FEL, Section 10, T-21-S, R-37-E, Lea County, New Mexico. Pools to be commingled: Blinebry and Drinkard. Authorization to dually complete-Order No. MC-1404.

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:

Measured BHP - Drinkard 895 psig. Estimated BHP - Blinebry 934 psig, based on measured BHP's in the N. M. "V" State #'s 7 and 8, direct offsets. Common datum - mid perms of Blinebry (5755').

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 Drinkard gas 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:

$$\begin{aligned} \text{Blinebry Pool: Oil Allocation} &= \left[\frac{5e^{-(0.3054)t}}{19e^{-(0.3842)t}} + 1 \right]^{-1} = 0.6334 \\ \text{Gas Allocation} &= \left[\frac{73e^{-(0.1613)t}}{430e^{-(0.3624)t}} + 1 \right]^{-1} = 0.4409 \end{aligned}$$

Where t = time between January 1, 1976 and January 1, 1986 = 10 years

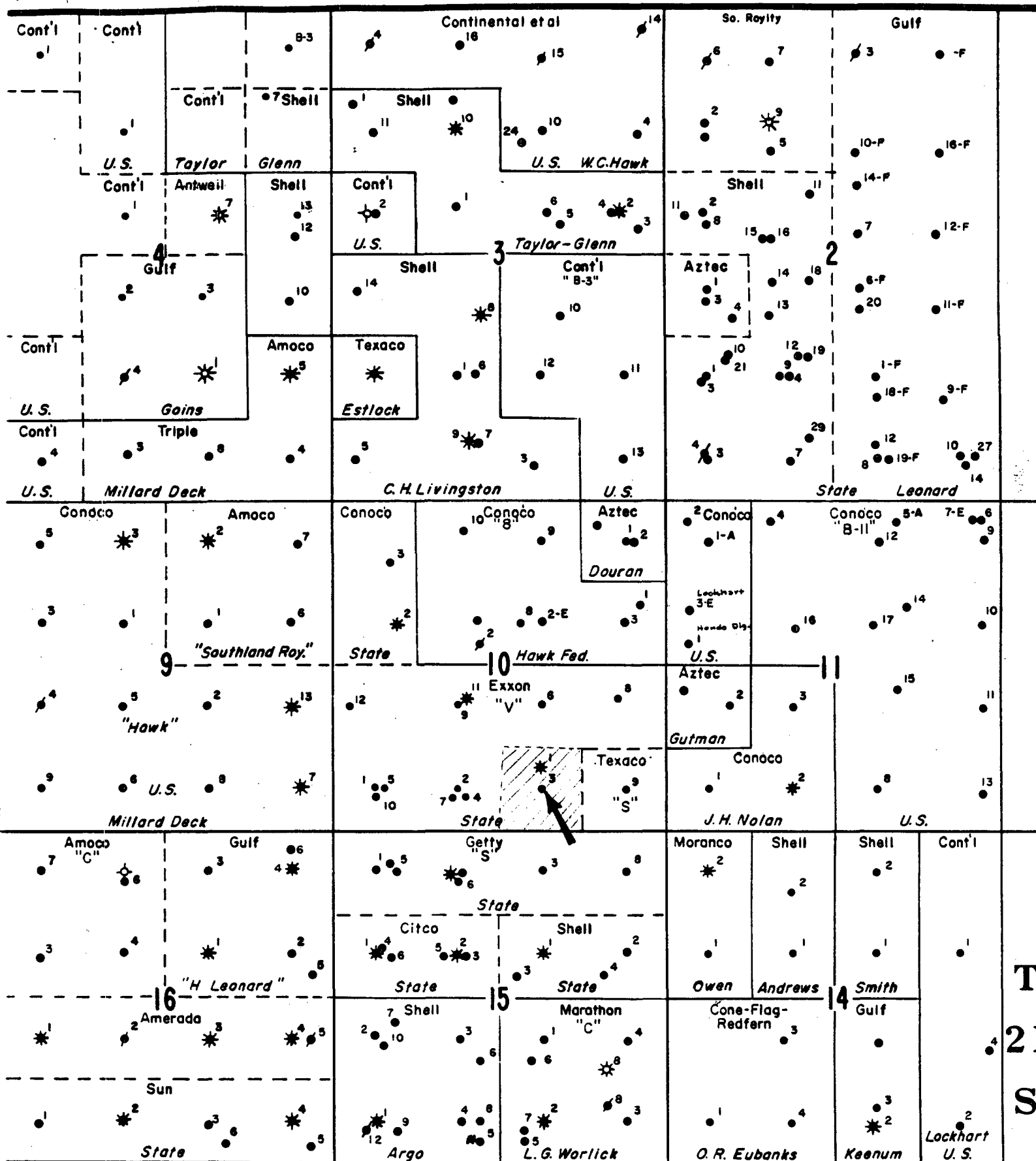
Drinkard Pool: Oil Allocation = 1 - Blinebry Oil Allocation = 0.3666
Gas Allocation = 1 - Blinebry Gas Allocation = 0.5591

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 #3

T
21
S

INDIVIDUAL WELL TEST REPORT

DO NOT WRITE IN SHADED AREAS -
DIVISION OFFICE USE ONLY

DATE

8-31-85

LEASE

TYPE TEST

G.O.R.

FIELD

N.M. "V" STATE

WELL NO.

3

SCHED. DAY ALLOW.

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

ARTIFICIAL LIFT (CHECK ONE)

PRIME MOVER (CHECK ONE)

☐ CENT.☐ ROD☐ PLUNGER☐ HYD.☐ KOBE☐ OTHER☐ GAS ENG.☐ ELEC.☐ OTHER

FORS TAG INFORMATION

WELL NO.	ZONE	SUB BATT.	COMPLETION NUMBER	TEST DATE	ELAPSED TEST TIME		DAYS OFF PROD.	LENGTH OF STROKE	STROKES PER MINUTE	PUMP SIZE INCHES	TIME PUMPED DURING TEST
					HRS	MIN					
26	11	10	1314	8/31/85	26	27	36	39	44	48	52
27	11	9	1315	8/31/85	26	27	36	39	44	48	52
28	11	8	1316	8/31/85	26	27	36	39	44	48	52
29	11	7	1317	8/31/85	26	27	36	39	44	48	52
30	11	6	1318	8/31/85	26	27	36	39	44	48	52

OIL OR GAS WELL PRODUCTION

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 WELL HEAD PRESSURE
26	32	33	44	47	51	55	60	65	70	75
27	32	33	44	47	51	55	60	65	70	75
28	32	33	44	47	51	55	60	65	70	75
29	32	33	44	47	51	55	60	65	70	75
30	32	33	44	47	51	55	60	65	70	75

OUTPUT GAS OR GAS WELL DATA

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

LINE SIZE	PLATE SIZE	SPRING SIZE	DIFF. RANGE	AVG. RED. (DIFF)	AVG. BLUE (STAT)	OUTPUT GAS VOLUME (MCF)	GAS GRAV.	TUBING PRESSURE	BEGINNING CASING PRESSURE	ENDING CASING PRESSURE	TRAP PRESSURE	SHUT-IN WELL HEAD PRESSURE
26	30	34	38	42	44	46	51	55	60	65	70	75
27	30	34	38	42	44	46	51	55	60	65	70	75
28	30	34	38	42	44	46	51	55	60	65	70	75
29	30	34	38	42	44	46	51	55	60	65	70	75
30	30	34	38	42	44	46	51	55	60	65	70	75

GAS TOO WEAK
TO MEASURE

INPUT GAS

ENTER EITHER ITEM 54 THRU 59 OR ITEM 60

INTERMITTER TIME	INTERMITTER INTERVAL	INPUT LINE PRESSURE	CHOKES SIZE	LINE SIZE	PLATE SIZE	SPRING SIZE	DIFF. RANGE	AVG. RED. (DIFF)	AVG. BLUE (STAT)	GAS LIFT VOLUME (MCF)	CONTROL TOTAL
26	30	34	38	42	46	51	55	60	62	64	69
27	30	34	38	42	46	51	55	60	62	64	69
28	30	34	38	42	46	51	55	60	62	64	69
29	30	34	38	42	46	51	55	60	62	64	69
30	30	34	38	42	46	51	55	60	62	64	69

FOR DISTRICT USE ONLY

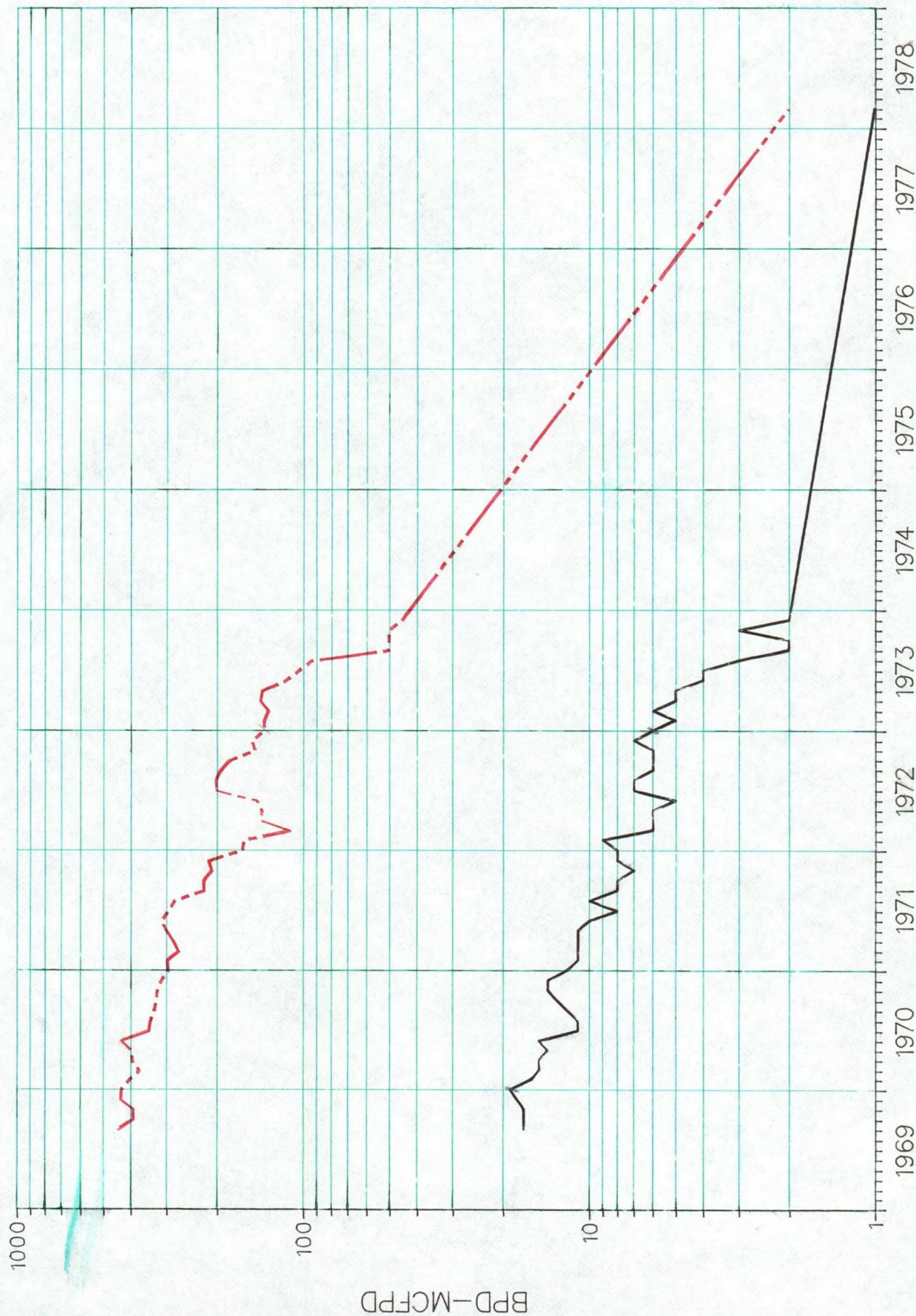
1. Shut string to water	10. Production test	19. Suspected non-representative test
2. Shut string to gas	11. Production test	20. Suspected non-representative test
3. Well flow and shut	12. Production test	
4. Shut string to water	13. Production test	
5. Shut string to gas	14. Production test	
6. Shut string to water	15. Production test	
7. Shut string to gas	16. Production test	
8. Shut string to water	17. Production test	
9. Shut string to gas	18. Production test	

ARTIFICIAL LIFT		PRIME MOVER	
1. Centrifugal	1. Gas Engine	1. Centrifugal	1. Gas Engine
2. Flood Pump	2. Gas Engine	2. Flood Pump	2. Gas Engine
3. Plunger	3. Gas Engine	3. Plunger	3. Gas Engine
4. Hydraulic	4. Gas Engine	4. Hydraulic	4. Gas Engine
5. Other	5. Gas Engine	5. Other	5. Gas Engine

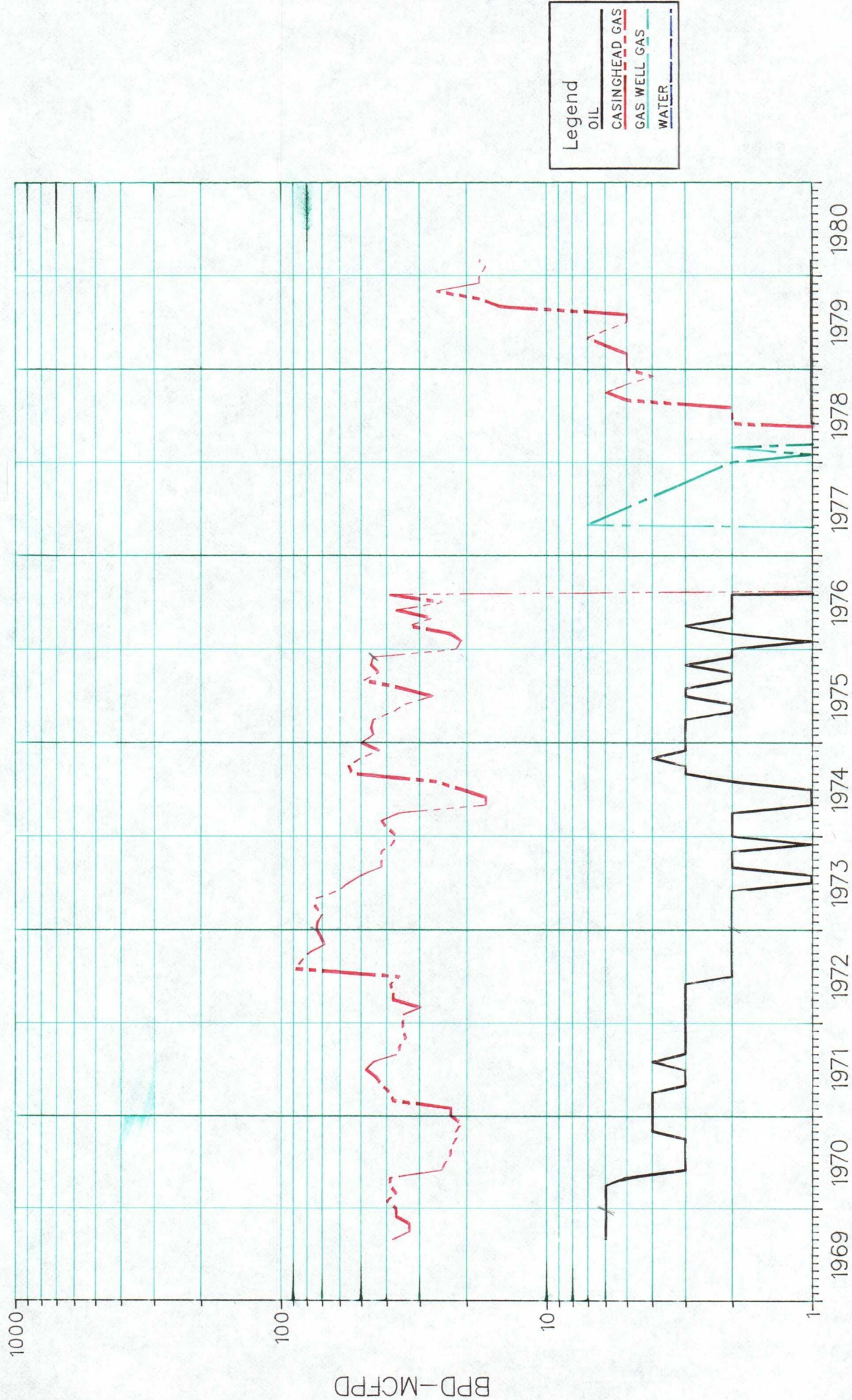
SIGNATURE

Ed Keller

V STATE #3 Blinebry



V STATE #3 Drinkard



JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

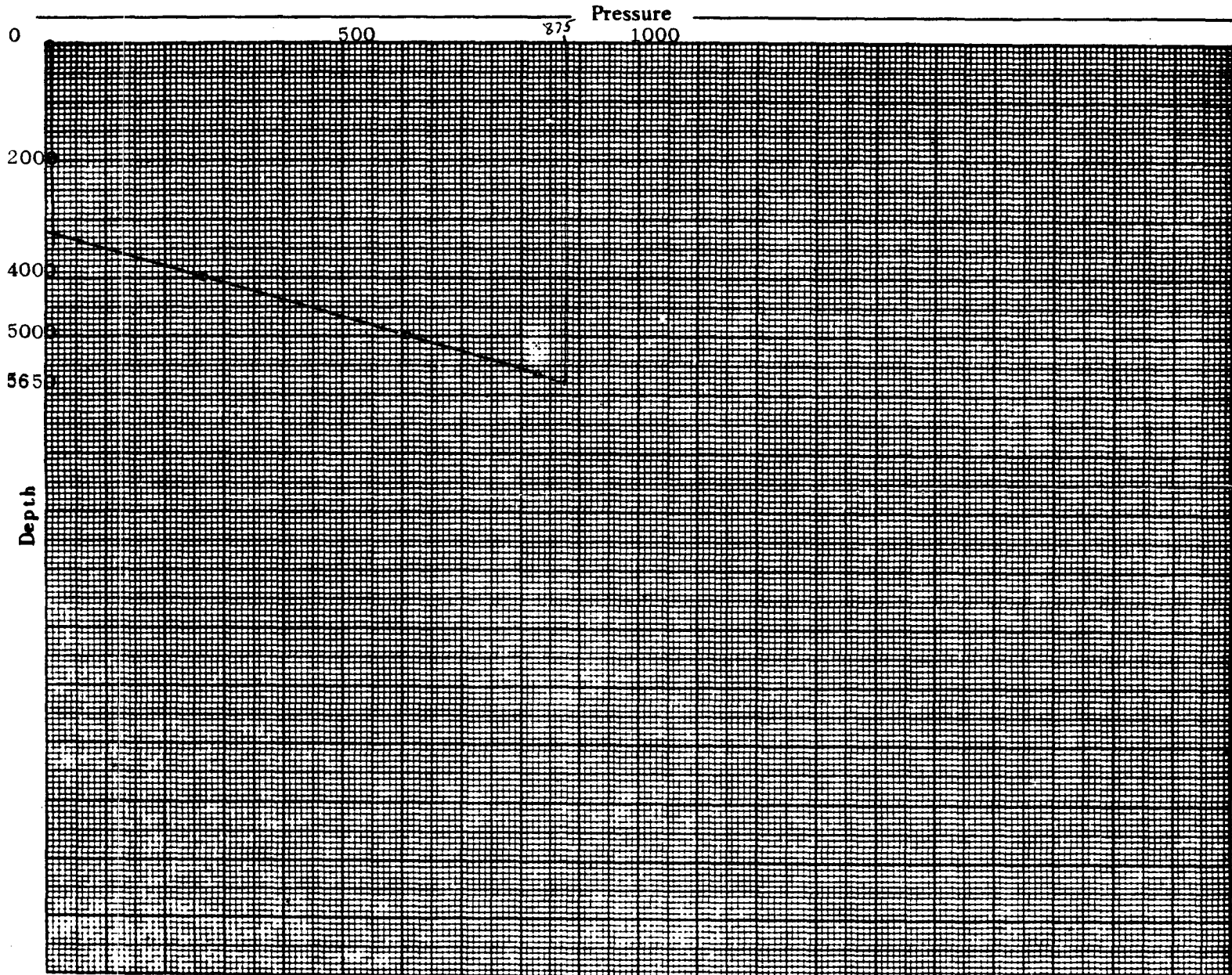
BOTTOM HOLE PRESSURE RECORD

OPERATOR Exxon Company USA
 FIELD B-D-T
 FORMATION Blaine
 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

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 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

OPERATOR Exxon Company USA
 FIELD B-D-T
 FORMATION Blinebry
 LEASE New Mexico State V WELL No. 8
 COUNTY Lea STATE New Mexico
 DATE 8/14/85 TIME 9:00 AM
 Status Shut in
 Test Depth 5770'
 Time S. I. 7 days Last test date -
 Tub Pres. 0 BHP last test -
 Cas. Pres. Dual BHP change -
 Elev. - Fluid top 2892'
 Datum - Water top None
 Temp. @ - Run by JSI #13
 Cal. No. 42254 Chart No. 5

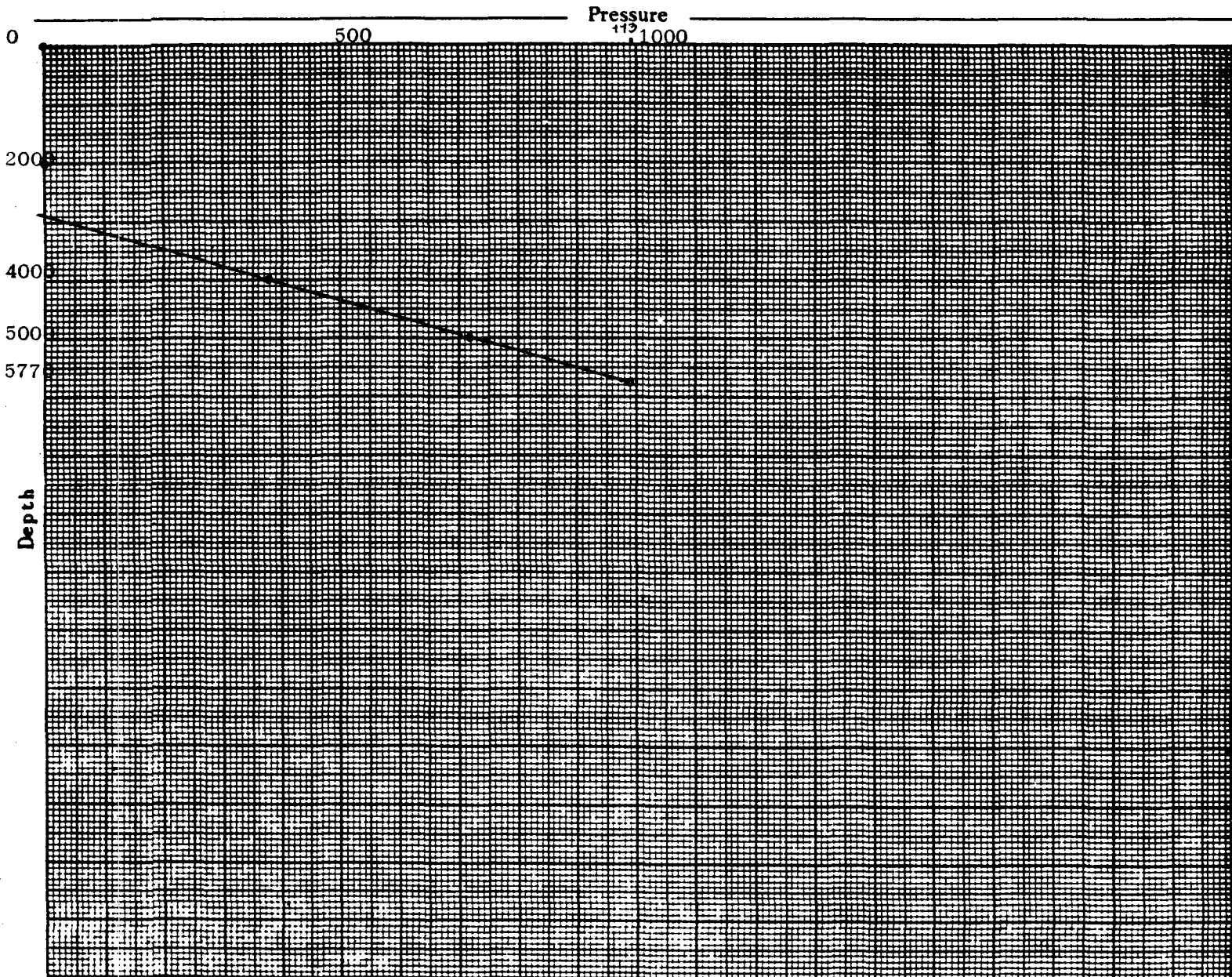
BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	0	-
2000	0	-
4000	378	.189
5000	719	.341
5770 +	987	.348
5786	<u>993</u> * **	(.348)

+ HIT OBSTRUCTION

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS



JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

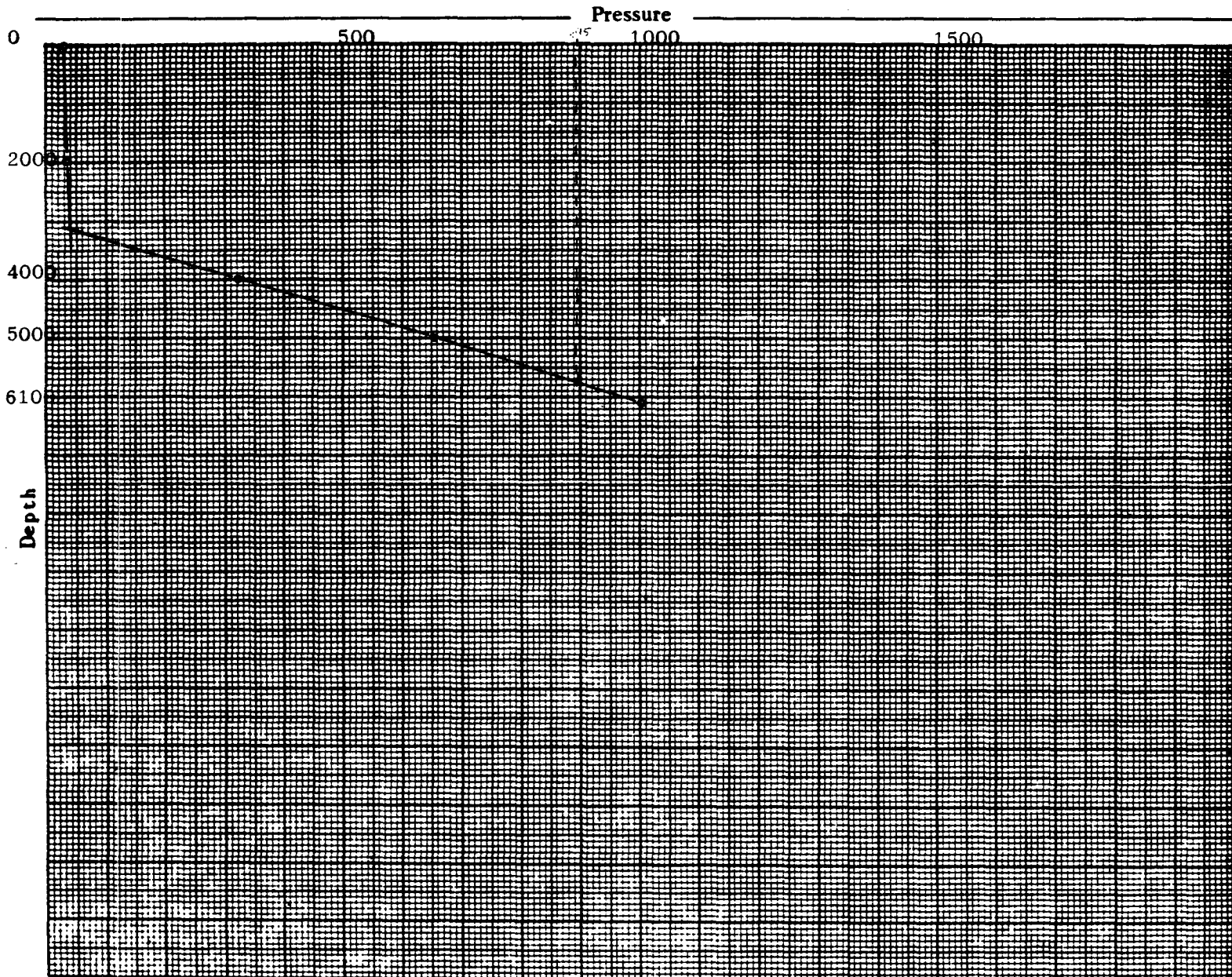
BOTTOM HOLE PRESSURE RECORD

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



**NEW-TEX
LAB**

PHONE 505/393-3581

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

ANALYSIS CERTIFICATE

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

ANALYSIS NUMBER: 7809
DATE OF RUN: 8 12 85
DATE SECURED: 8 12 85

SAMPLE IDENT: "V" STATE #3 - BLINEBRY ZONE
SAMPLING PRESS: 16 PSIG SAMPLING TEMP: 93 DEG F

REMARKS: WELL SHUT IN INDEFINITE TIME; DRINKARD
REMARKS: ZONE - NO GAS
REMARKS: H2S - NONE DETECTED

***** GAS ANALYSIS *****

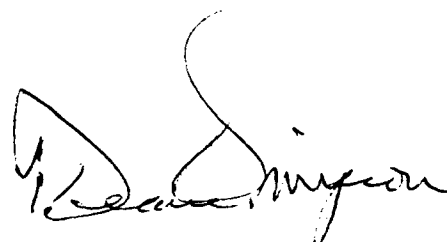
	MOLE PERCENT	GAL/ MCF
NITROGEN	2.393	
CARBON DIOXIDE	0.091	
METHANE	67.214	
ETHANE	13.090	3.491
PROPANE	10.355	2.842
ISO-BUTANE	1.176	0.384
NORMAL BUTANE	3.511	1.104
ISO-PENTANE	0.588	0.216
NORMAL PENTANE	0.743	0.269
HEXANES	0.839	0.344
TOTAL	100.000	8.650

PROPANE GPM:	2.84	BUTANES GPM:	1.49
ETHANE GPM:	3.49	PENTANES PLUS GPM:	0.83

SPECIFIC GRAV (CALC): 0.8435
MOLE WEIGHT: 24.43

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
	14.696	1393	1418
	14.650	1389	1414
	14.730	1397	1422
	14.735	1397	1422

DEANE SIMPSON



**NEW-TEX
LAB**

PHONE 505/393-3561

P. O. BOX 1161

611 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 *****

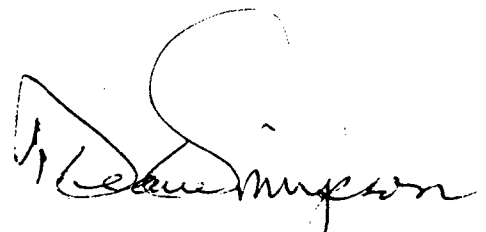
	MOLE PERCENT	GAL/ MCF
NITROGEN	1.030	
CARBON DIOXIDE	0.069	
METHANE	85.818	
ETHANE	8.500	2.267
PROPANE	2.949	0.810
ISO-BUTANE	0.264	0.086
NORMAL BUTANE	0.745	0.234
ISO-PENTANE	0.138	0.051
NORMAL PENTANE	0.176	0.064
HEXANES	0.311	0.128
TOTAL	100.000	3.640

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 Commingling¹

New Mexico "V" State #3

Before Down Hole Commingling

	<u>BPD Oil Volume</u>	<u>Oil Price</u>	<u>MCF/Day Gas Volume</u>	<u>Gas Price</u>	<u>Daily Oil and Gas Value</u>
Elinbry	0	N/A	0	N/A	0
Drinkard	0	N/A	0	N/A	0
					<u>\$0</u>

After Down Hole Commingling

	<u>BPD Oil Volume</u>	<u>Oil Price</u>	<u>MCF/Day Gas Volume</u>	<u>Gas² Price</u>	<u>Daily Oil And Gas Value</u>	<u>Difference in Daily Value</u>
	50	27.86	400	.84	<u>1729.00</u>	
					<u>\$1729.00</u>	<u>\$1729.00</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:

$$\text{Decline Rates (1)} \quad q = q_i e^{-a_n t}$$

$$(2) \quad a_n = \frac{\ln (q_i/q)}{t}$$

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

$$\begin{aligned} q_i &= 19 \text{ BOPD} \\ q &= 6 \text{ BOPD} \\ t &= 3 \text{ years} \end{aligned}$$

$$a_n = \frac{\ln (19/6)}{3}$$

$$a_n \text{ (Blinebry)} = 0.3842/\text{yr}$$

Drinkard Zone

$$\begin{aligned} q_i &= 5 \text{ BOPD} \\ q &= 2 \text{ BOPD} \\ t &= 3 \text{ years} \end{aligned}$$

$$a_n = \frac{\ln (5/2)}{3}$$

$$a_n \text{ (Drinkard)} = 0.3054/\text{yr}$$

Actual Allocations:

x_b = Blinebry Allocation, fraction.

x_d = Drinkard Allocation, fraction.

q_b = Blinebry rate, BOPD.

q_d = Drinkard rate, BOPD.

q_{bi} = Blinebry initial rate, BOPD.

q_{di} = Drinkard initial rate, BOPD.

$$x_b = \frac{q_b}{q_d + q_b}$$

Substituting eq. (1)

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

$$q_{bi} = 19 \text{ BOPD}$$

$$a_n \text{ (Blinebry)} = 0.3842/\text{yr.}$$

$$q_{di} = 5 \text{ BOPD}$$

$$a_n \text{ (Drinkard)} = 0.3054/\text{yr.}$$

$$x_b = \left[\frac{5e^{-(0.3054)t}}{19e^{-(0.3842)t}} + 1 \right]^{-1}$$

$$x_d = 1 - x_b$$

Where t = time between January, 1976 and current date, years.

Allocation Of Gas Production To Each Zone

Decline rate computations:

Blinebry Zone

$$\begin{aligned}q_i &= 430 \text{ kcf/Day} \\q &= 145 \text{ kcf/Day} \\t &= 3 \text{ years}\end{aligned}$$

$$\begin{aligned}a_n &= \frac{\ln (430/145)}{3} \\a_n \text{ (Blinebry)} &= 0.3624/\text{yr.}\end{aligned}$$

Drinkard Zone

$$\begin{aligned}q_i &= 73 \text{ kcf/Day} \\q &= 45 \text{ kcf/Day} \\t &= 3 \text{ years}\end{aligned}$$

$$\begin{aligned}a_n &= \frac{\ln (73/45)}{3} \\a_n \text{ (Drinkard)} &= 0.1613/\text{yr.}\end{aligned}$$

Actual Allocation:

$$\begin{aligned}q_{bi} &= 430 \text{ kCF/Day} \\a_n \text{ (Blinebry)} &= 0.3624/\text{yr.}\end{aligned}$$

$$\begin{aligned}q_{di} &= 73 \text{ kCF/Day} \\a_n &= 0.1613/\text{yr.}\end{aligned}$$

$$\begin{aligned}x_b &= \left[\frac{q_{di} e^{-a_d t}}{q_{bi} e^{-a_b t}} + 1 \right]^{-1} \\x_b &= \left[\frac{73 e^{-(0.1613)t}}{430 e^{-(0.3624)t}} + 1 \right]^{-1} \\x_d &= 1 - x_b\end{aligned}$$

Where t = time between January 1, 1976 and current date, years.

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

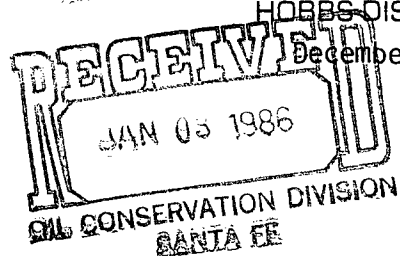
Chevron U.S.A., Inc.
Attn: J. C. Prindle
P. O. Box 670
Hobbs, New Mexico 88240

Amoco
P. O. Box 3092
Houston, Texas 77253



TONEY ANAYA
GOVERNOR

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE



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 #3-0	10-21-37
Operator	Lease & Well No.	Unit S-T-R

and my recommendations are as follows:

I disagree with decline curves.---J.S.

Yours very truly,

Jerry Sexton
Supervisor, District 1

/mc