

CASE 6822: MESA PETROLEUM CO. FOR A GAS
WELL CLASSIFICATION AND UNORTHODOX LOCA- /
TION, LEA COUNTY, NEW MEXICO

CONTINUE TO
OCTOBER 29

Cond 10
9/17

CASE Number

6822

Application

Transcripts.

Small Exhibits

ETC.



POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

April 14, 1981

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

Re: CASE NO. 6822
ORDER NO. R-6293-B-1

Applicant:

~~OCB (Hesa Petroleum Company)~~

Dear Sir:

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

Yours very truly,

JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 6822
Order No. R-6293-B-1

APPLICATION OF MESA PETROLEUM
COMPANY FOR A GAS WELL CLASSI-
FICATION AND UNORTHODOX LOCATION,
LEA COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-6293-B
dated April 7, 1981, does not correctly state the intended
order of the Division,

IT IS THEREFORE ORDERED:

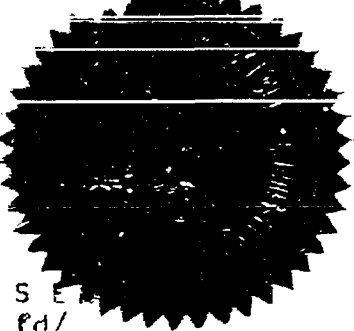
(1) That Order No. 1 of Division Order No. R-6293-B
is hereby corrected to read in its entirety as follows:

"(1) That effective April 1, 1981, Rule 4 of the
Special Rules and Regulations for the West Double X-
Wolfcamp Gas Pool, as promulgated by Division Order No.
R-6293, is hereby amended to read in its entirety as
follows:

'RULE 4. A gas well on a standard unit in the West
Double X-Wolfcamp Gas Pool shall be permitted to produce
no more than 500 MCF of gas per day at standard surface
conditions. This shall be known as the daily allowable.'"

(2) That this order shall be effective nunc pro tunc
as of April 7, 1981.

DONE at Santa Fe, New Mexico, on this 13th day of
April, 1981.



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

S E
Pd/



BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

April 9, 1981

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

Re: CASE NO. 6922
ORDER NO. R-6293-B

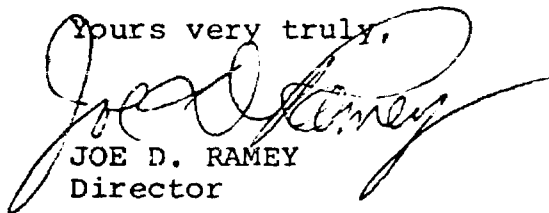
Applicant:

~~OCD (Mesa Petroleum Company)~~

Dear Sir:

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

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD _____
Artesia OCD _____
Aztec OCD _____

Other _____

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6822
Order No. R-6293-B

APPLICATION OF MESA PETROLEUM
COMPANY FOR A GAS WELL CLASSIFICATION
AND UNORIHODOX LOCATION, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 29, 1980, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 7th day of April, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That on application of Mesa Petroleum Company, Case No. 6822 originally came on for hearing on February 27, 1980, whereupon Orders Nos. R-6293 and R-6293-A were entered, creating the West Double X-Wolfcamp Gas Pool and promulgating temporary special rules therefor, including a limitation on production and prescribing that the case be reopened after the well(s) in the pool had been connected to a pipeline and additional information regarding the reservoir characteristics became available.

(3) That pursuant to said orders, the case was reopened and additional data presented by the original applicant, Mesa Petroleum Company.

(4) That the data presently available appears to confirm the original belief that the West Double X-Wolfcamp Gas Pool is in fact producing from a retrograde gas condensate reservoir.

-2-

Case No. 6822

Order No. R-6293-B

(5) That analysis of a recombined fluid sample from the reservoir indicates a retrograde dew point pressure of 4540 psig.

(6) That to achieve maximum production from the reservoir, production levels should continue to be restricted, but the removal of the previously imposed wellhead flowing pressure will not impair ultimate recovery.

(7) That production from each well in the pool should be limited to a reasonable amount, and 500 MCF per day per well is such a reasonable amount.

(8) That Rule 4 of the Special Rules and Regulations for the West Double X-Wolfcamp Gas Pool should be amended to read in its entirety as follows:

"Rule 4. A gas well on a standard unit in the West Double X-Wolfcamp Gas Pool shall be permitted to produce no more than 500 MCF of gas per day at standard surface conditions. This shall be known as the daily allowable."

(9) That an order embodying the above findings will not impair correlative rights and will not cause but will prevent waste and should be approved.

IT IS THEREFORE ORDERED:

(1) That Rule 4 of the Special Rules and Regulations for the West Double X-Wolfcamp Gas Pool, as promulgated by Division Order No. R-6293, is hereby amended to read in its entirety as follows:

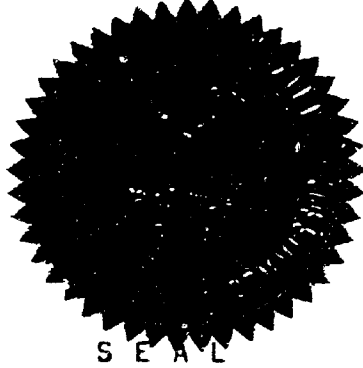
"Rule 4. A gas well on a standard unit in the West Double X-Wolfcamp Gas Pool shall be permitted to produce no more than 500 MCF of gas per day at standard surface conditions. This shall be known as the daily allowable."

(2) That subject to the above amendment, the Rules and Regulations for the West Double X-Wolfcamp Gas Pool, as promulgated by Order No. R-6293, shall remain in full force and effect until further order of the Division.

(3) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

-3-
Case No. 6022
Order No. R-6293-B

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

fd/

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Atoka Amoco
A * 1-Federal "H"
T.D. 15,807

LOC.
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BEFORE EXAMINER STAFF
OIL CONSERVATION DIVISION

MESA EXHIBIT NO. 1

CASE NO. 6822

4

Mesa Pet.
5-1-81
L-5470

Superior
2-1-86
LG-3380

3

Yates Pet.
10-1-82
LG-725

2

Getty
O
T.D. 16,200

Mesa Pet.
5-1-81
L-5470

A *
1-Jog
T.D. 15,557

Mesa Pet.
2-1-86
LG-3379

Mesa Pet.
4-21-80
L-4399

State

State

9

Yates Pet.
10-1-82
LG-725

10

Richardson Oil
2-1-61 (2)
063798

11

US

Mesa Pet.
10-1-86
LG-3822

Mesa Pet.
6-27-80

State

L.M. Stevens &
B.J. Holland

16

15

BEFORE EXAMINER STAFF
OIL CONSERVATION DIVISION
EXHIBIT NO. 1

CASE NO. 6822

Submitted by MESA

Hearing Date 2-27-80



MESA
PETROLEUM
PERMIAN BASIN

Land Plot
DELAWARE

Delaware
Mesa Oil
Lea County, N.M.

BY: _____
DATE: 1-28-80

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Reservoir Fluid Study

for

MESA PETROLEUM COMPANY

Jog State Com. No. 1 Well
Undesignated Field
Lea County, New Mexico

CORE LABORATORIES, INC.



September 29, 1980

P. L. Moses

Manager
Reservoir Fluid Analysis

Mesa Petroleum Company
Suite 1000, Vaughn Bldg.
400 W. Texas Ave.
Midland, TX 79701

Attention: Mr. Michael T. Houston

Subject: Reservoir Fluid Study
Jog State Com. No. 1 Well
Undesignated Field
Lea County, New Mexico
Our File Number: RFL 80663

Gentlemen:

Separator gas and liquid samples were collected from the subject well on September 5, 1980 and were delivered to our laboratory in Dallas for analysis. The producing gas-liquid ratio was reasonably stable from September 4 through September 6 at 3477 standard cubic feet of gas per barrel of stock tank liquid. The flowing bottom hole pressure was reported to be 7174 psig, and the average tubing pressure was 3678 psig during the test. The original reservoir pressure and temperature at the mid-point of the perforations were reported to be 10608 psig and 201°F., respectively.

In the laboratory, the separator gas to separator liquid ratio was determined to be 2540 standard cubic feet per barrel at 100°F. The separator gas and liquid compositions were measured, and the well stream composition was calculated on the basis of the producing gas-liquid ratio. These compositions are shown on page two.

Separator gas and liquid were physically recombined in the producing ratio, and the resulting mixture was examined in a visual cell at the reservoir temperature of 201°F. The fluid system was found to be a very rich gas condensate, having a retrograde dew point pressure of 4540 psig. The pressure-volume relations of the fluid including deviation factor data above the dew point are shown on pages three and five. Due to pressure limitations of the visual cell, the values above 7500 psig were obtained by extrapolation.

Retrograde liquid build-up immediately below the dew point was extremely rapid, which indicates that the reservoir fluid system is near critical. A constant-volume depletion test was performed, during which the maximum retrograde liquid observed was 44 percent of the hydrocarbon pore volume. The retrograde liquid data are presented on pages four and six.

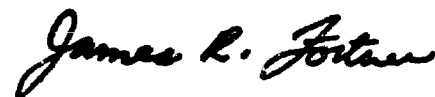
Mesa Petroleum Company
Jog State Com. No. 1 Well

Page Two

As you requested, the laboratory study has been temporarily discontinued. It is recommended that a complete constant-volume depletion test should be performed due to the very rich nature of the reservoir fluid. Please do not hesitate to call on us if you have any questions or comments concerning the study to date, or if you wish to continue the analysis.

Very truly yours,

CORE LABORATORIES, INC.



James R. Fortner
Assistant Manager
Reservoir Fluid Analysis

JRF:JB:bt
7 cc: Addressee

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 1 of 6

File RFL 80663

Company Mesa Petroleum Company Date Sampled September 5, 1980
Well Jog State Com. No. 1 County Lea
Field Undesignated State New Mexico

FORMATION CHARACTERISTICS

Formation Name	Wolfcamp
Date First Well Completed	November 30, 1979
Original Reservoir Pressure	10608 PSIG @ 13356 Ft.
Original Produced Gas-Liquid Ratio	3854 SCF/Bbl
Production Rate	218 Bbls/Day
Separator Pressure and Temperature	425 PSIG 60 °F.
Liquid Gravity at 60°F.	54.7 °API
Datum	9729 Ft. Subsea

WELL CHARACTERISTICS

Elevation	3651 KB	Ft.
Total Depth	14985 (PB)	Ft.
Producing Interval	13348-13364	Ft.
Tubing Size and Depth	2-3/8 In. to 13300	Ft.
Open Flow Potential	1.148	MMSCF/Day
Last Reservoir Pressure	10608 PSIG @ 13356	Ft.
Date	February 24, 1980	
Reservoir Temperature*	199 °F. @ 13200	Ft.
Status of Well	Shut in	
Pressure Gauge	Amerada	

SAMPLING CONDITIONS

Flowing Tubing Pressure	3678	PSIG
Flowing Bottom Hole Pressure	7174	PSIG
Primary Separator Pressure	760	PSIG
Primary Separator Temperature	100	°F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		°F.
Field Stock Tank Liquid Gravity	50.2	°API @ 60°F.
Primary Separator Gas Production Rate	167.3	MSCF/Day
Pressure Base	15.025	PSIA
Temperature Base	60	°F.
Compressibility Factor (F _{pv})	1.072	
Gas Gravity (Laboratory)	0.693	
Gas Gravity Factor (F _g)	0.9305	
Stock Tank Liquid Production Rate @ 83°F.	48.12	Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio	3477	SCF/Bbl
or	287.6	Bbls/MMSCF
Sampled by	Teffeller, Inc.	

REMARKS:

*Temperature at 13356 Ft. = 201°F.

These analyses, opinions or interpretations are based on observations and material supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgement of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 2 of 6

File RFL 80663

Well Jog State Con. No. 1

HYDROCARBON ANALYSES OF SEPARATOR PRODUCTS AND CALCULATED WELL STREAM

<u>Component</u>	<u>Separator Liquid</u>	<u>Separator Gas</u>		<u>Well Stream</u>	
	<u>Mol Percent</u>	<u>Mol Percent</u>	<u>GPM</u>	<u>Mol Percent</u>	<u>GPM</u>
Hydrogen Sulfide	0.00	0.00		0.00	
Carbon Dioxide	0.06	0.11		0.10	
Nitrogen	0.06	1.10		0.83	
Methane	16.90	80.89		64.21	
Ethane	10.06	11.44	3.119	11.08	3.021
Propane	9.91	4.21	1.182	5.70	1.600
iso-Butane	2.55	0.55	0.183	1.07	0.357
n-Butane	6.53	1.04	0.334	2.47	0.794
iso-Pentane	2.23	0.22	0.082	0.74	0.276
n-Pentane	3.72	0.23	0.085	1.14	0.421
Hexanes	4.58	0.12	0.050	1.28	0.537
Heptanes plus	43.40	0.09	0.045	11.38	7.952
	<u>100.00</u>	<u>100.00</u>	<u>5.080</u>	<u>100.00</u>	<u>14.958</u>

Properties of Heptanes plus

API gravity @ 60°F.	<u>45.1</u>		
Specific gravity @ 60/60°F.	<u>0.8004</u>		<u>0.800</u>
Molecular weight	<u>173</u>	<u>100</u>	<u>173</u>

Calculated separator gas gravity (air=1.000) = 0.693
Calculated gross heating value for separator gas = 1233 BTU
per cubic foot of dry gas @ 15.025 psia and 60°F.

Primary separator gas collected @ 760 psig and 100 °F.
Primary separator liquid collected @ 760 psig and 100 °F.

Primary separator gas/separator liquid ratio	<u>2540</u>	SCF/Bbl @ 100°F.
Primary separator liquid/stock tank liquid ratio	<u>1.369</u>	Bbls @ 100°F./Bbl
Primary separator gas/well stream ratio	<u>739.23</u>	MSCF/MMSCF
Stock tank liquid/well stream ratio	<u>212.6</u>	Bbls/MMSCF

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 3 of 6

File RFL 80663

Well Jog State Com. No. 1

PRESSURE-VOLUME RELATIONS AT 201 °F.

Pressure PSIG	Relative Volume(1)	Deviation Factor Z
11000	0.8372	2.092
10608	0.8416	2.028
10000	0.8487	1.928
9000	0.8635	1.764
8000	0.8809	1.600
7500	0.8914	1.518
7000	0.9034	1.436
6500	0.9171	1.354
6000	0.9322	1.271
5500	0.9502	1.188
5000	0.9723	1.105
4700	0.9889	1.057
4540 Dew Point Pressure	1.0000	1.032
4500	1.0031	
4450	1.0073	
4350	1.0162	
4200	1.0314	
4000	1.0534	
3700	1.0948	
3200	1.1913	
2700	1.3463	
2200	1.6019	
1800	1.9319	
1500	2.3284	
1200	2.9232	
1000	3.5206	
900	3.9682	

(1) Relative Volume: V/V_{sat} is barrels at indicated pressure per barrel at saturation pressure.

Data above 7500 psig is extrapolated.

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 4 of 6

File RFL 80663

Well Jog State Com. No. 1

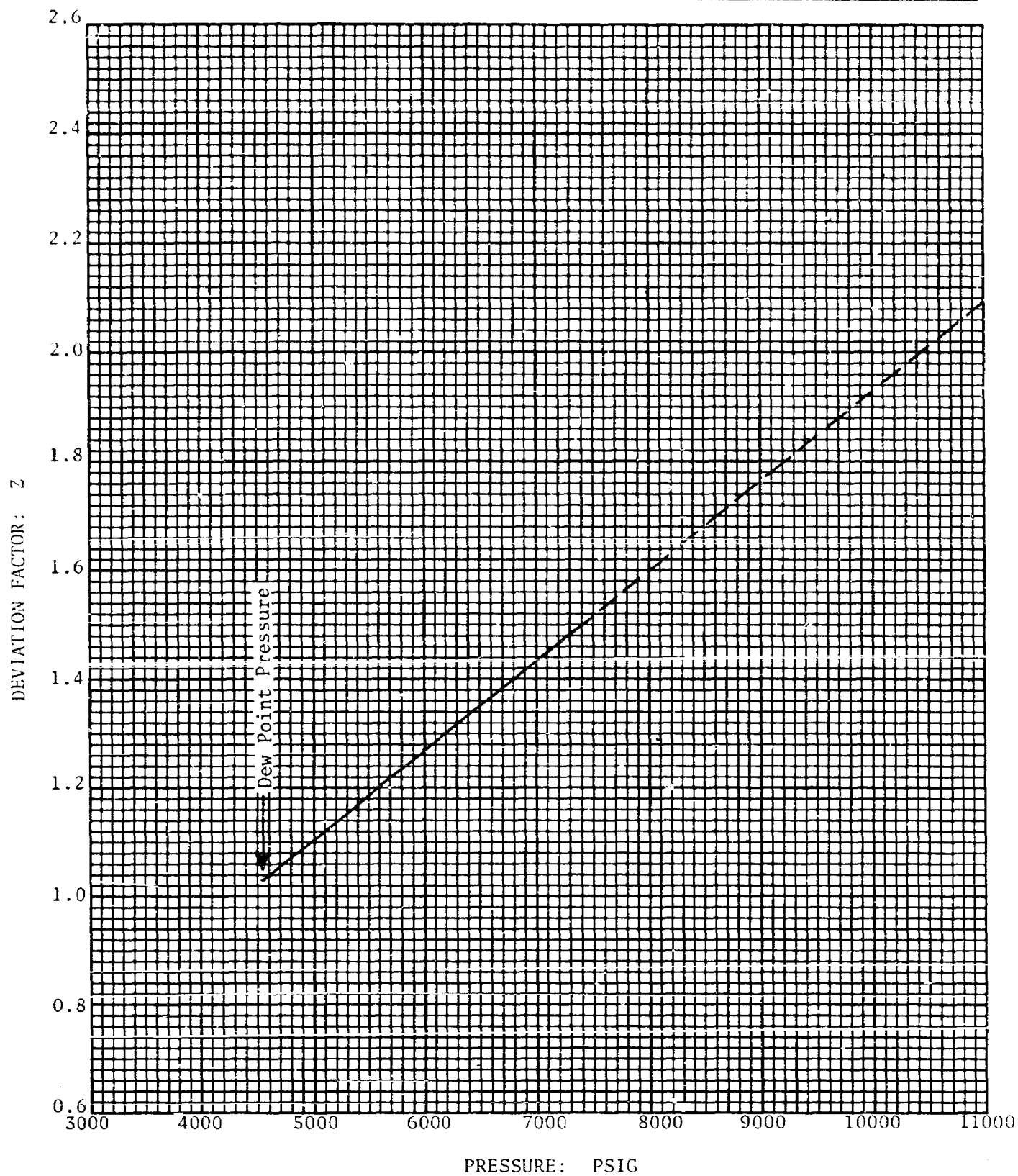
RETROGRADE LIQUID AT 201 °F.

<u>Pressure,</u> <u>PSIG</u>	<u>Retrograde Liquid</u> <u>Percent of Hydrocarbon</u> <u>Pore Volume</u>
4540 Dew Point Pressure	0.0
4500	38.0
4450	40.1
4350	41.2
4200	42.2
4000	43.5
3900 First Depletion Level	44.0
3200	43.8
2500	42.0
1800	39.1
1200	36.1
700	33.2
0	26.9

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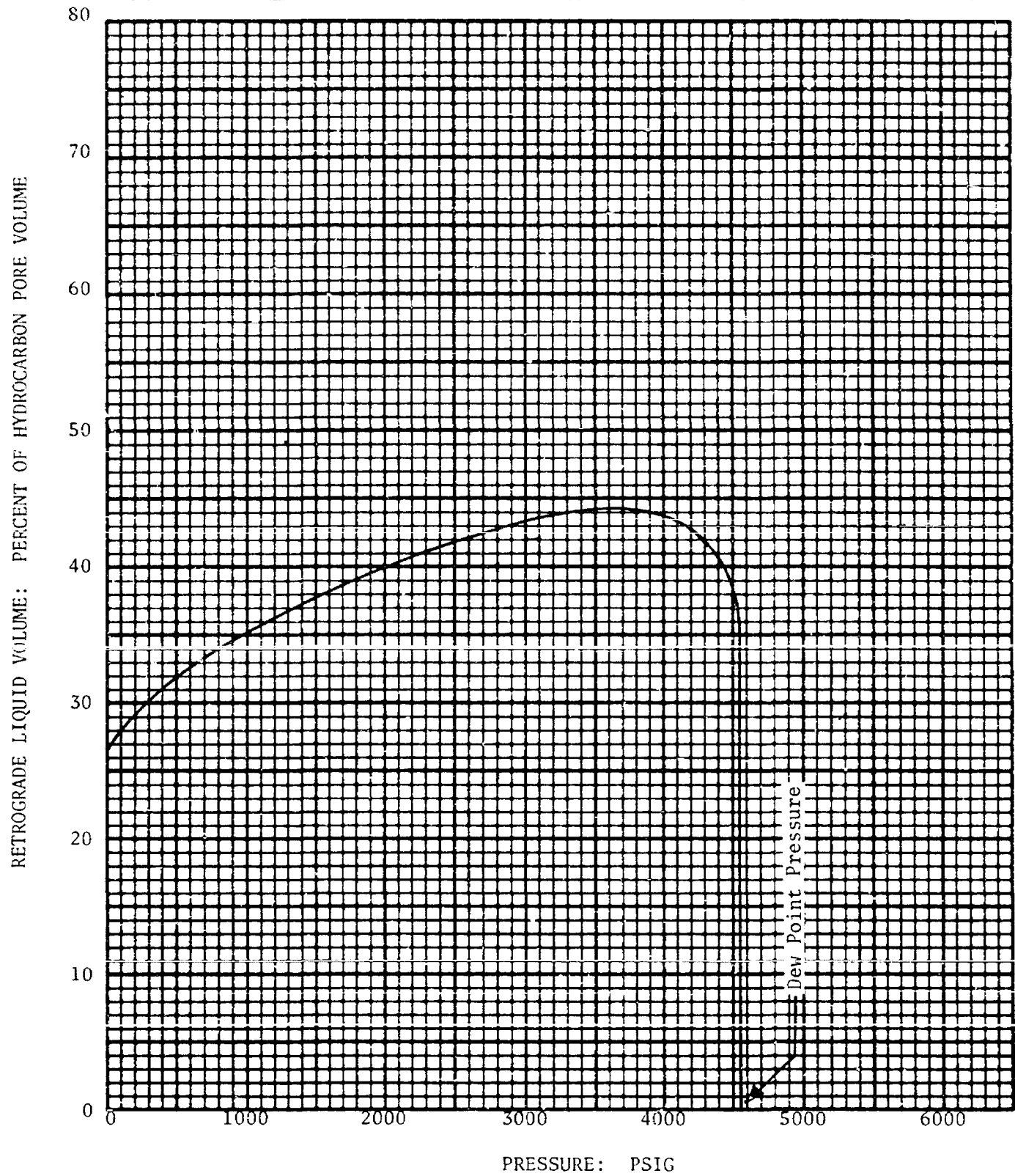
DEVIATION FACTOR AT 201°F.

Company	MESA PETROLEUM COMPANY	Formation	WOLFCAMP
Well	JOG STATE COM. NO. 1	County	LEA
Field	UNDESIGNATED	State	NEW MEXICO



RETROGRADE LIQUID VOLUME AT 201°F.

Company	MESA PETROLEUM COMPANY	Formation	WOLF CAMP
Well	JOG STATE COM. NO. 1	County	LEA
Field	UNDESIGNATED	State	NEW MEXICO



MESA PETROLEUM CO.

JOG STATE NO. 1
WOLFCAMP FORMATION
SECTION 2, T24S, R33E
LEA COUNTY, NEW MEXICO

I. PRESSURE DATA

DATE	2-24-80	9-29-80
SITP	7,265 PSIG	5550 PSIG
BHP	10,563 PSIG	8960 PSIG

II. PRODUCTION DATA

CUMULATIVE PRODUCTION (OCTOBER 1, 1980): 18.5 M²CF + 4,823 BC

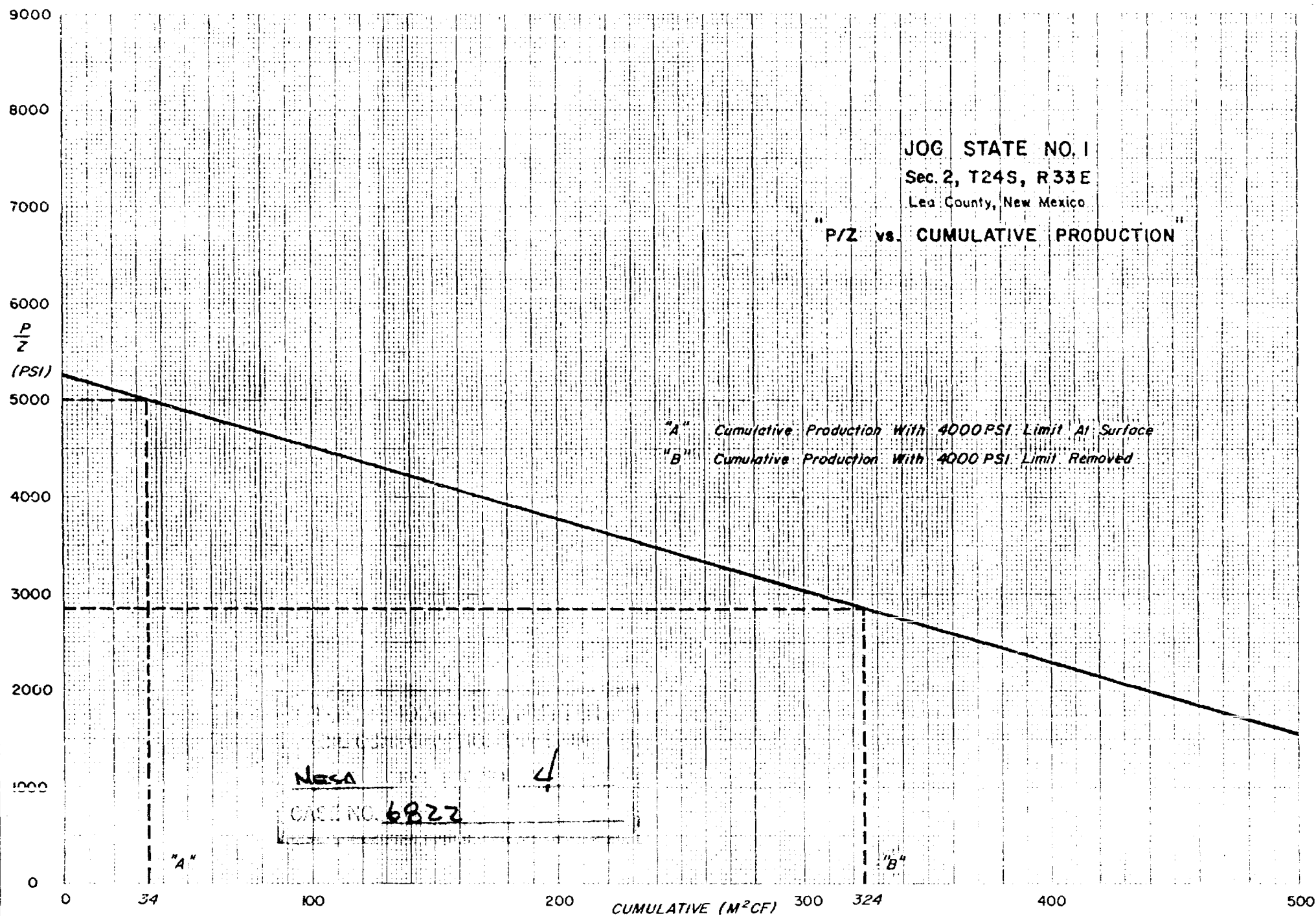
III. RECOVERABLE RESERVES

A. 4000 PSI SURFACE PRESSURE LIMITATION:	34 M ² CF + 8,900 BC
B. NO SURFACE PRESSURE LIMITATION:	324 M ² CF + 20,000 BC
C. DIFFERENCE DUE TO NO PRESSURE LIMITATION:	290 M ² CF + 11,100 BC

7265
5550
1715

10563
8960
1603

DEFORM EXAMINER NUMBER
OIL CONSERVATION DIVISION
MESA LOBBY NO. 3
CASE NO. 6822



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Attn: Amoco
A * Federal "H"
T.D. 15,807

LOC
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MESA

CASE NO. 6822

4

Mesa Pet.
5-1-81
L-5470

Superior
2-1-86
LG-3380

3

Yates Pet.
10-1-82
LG-725

2

Getty
O

T.D. 16,200

Mesa Pet.
5-1-81
L-5470

A' *
I-Jog
T.D. 15,557

Mesa Pet.
2-1-86
LG-3379

Mesa Pet.
4-21-80
L-4399

State

State

9

Yates Pet.
10-1-82
LG-725

10

Richardson Oil
2-1-61 (2)
063798

11

US

Mesa Pet.
10-1-86
LG-3822

Mesa Pet.
6-27-80

State

L.M. Stevens &
B.J. Holland

16

15

BEFORE EXAMINER STAFFETS
OIL CONSERVATION DIVISION

CASE NO. 6822

SUBMITTED BY MESA

HEARING DATE 2-27-80



MESA
PETROLEUM
PERMIAN BASIN

Land Plot
DELAWARE

Delaware
Mesa Op
Lea County, N

BY:
DATE: 1-28-80

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Reservoir Fluid Study
for
MESA PETROLEUM COMPANY

Jog State Com. No. 1 Well
Undesignated Field
Lea County, New Mexico

CORE LABORATORIES, INC.

September 29, 1980



Mesa Petroleum Company
Suite 1000, Vaughn Bldg.
400 W. Texas Ave.
Midland, TX 79701

P. L. Moses
Manager
Reservoir Engineering

Attention: Mr. Michael T. Houston

Subject: Reservoir Fluid Study
Jog State Com. No. 1 Well
Undesignated Field
Lea County, New Mexico
Our File Number: RFL 80663

Gentlemen:

Separator gas and liquid samples were collected from the subject well on September 5, 1980 and were delivered to our laboratory in Dallas for analysis. The producing gas-liquid ratio was reasonably stable from September 4 through September 6 at 3477 standard cubic feet of gas per barrel of stock tank liquid. The flowing bottom hole pressure was reported to be 7174 psig, and the average tubing pressure was 3678 psig during the test. The original reservoir pressure and temperature at the mid-point of the perforations were reported to be 10608 psig and 201°F., respectively.

In the laboratory, the separator gas to separator liquid ratio was determined to be 2540 standard cubic feet per barrel at 100°F. The separator gas and liquid compositions were measured, and the well stream composition was calculated on the basis of the producing gas-liquid ratio. These compositions are shown on page two.

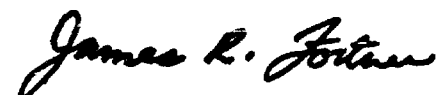
Separator gas and liquid were physically recombined in the producing ratio, and the resulting mixture was examined in a visual cell at the reservoir temperature of 201°F. The fluid system was found to be a very rich gas condensate, having a retrograde dew point pressure of 4540 psig. The pressure-volume relations of the fluid including deviation factor data above the dew point are shown on pages three and five. Due to pressure limitations of the visual cell, the values above 7500 psig were obtained by extrapolation.

Retrograde liquid build-up immediately below the dew point was extremely rapid, which indicates that the reservoir fluid system is near critical. A constant-volume depletion test was performed, during which the maximum retrograde liquid observed was 44 percent of the hydrocarbon pore volume. The retrograde liquid data are presented on pages four and six.

As you requested, the laboratory study has been temporarily discontinued. It is recommended that a complete constant-volume depletion test should be performed due to the very rich nature of the reservoir fluid. Please do not hesitate to call on us if you have any questions or comments concerning the study to date, or if you wish to continue the analysis.

Very truly yours,

CORE LABORATORIES, INC.



James R. Fortner
Assistant Manager
Reservoir Fluid Analysis

JRF:JB:bt
7 cc: Addressee

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 1 of 6

File RFL 80663

Company Mesa Petroleum Company Date Sampled September 5, 1980
Well Jog State Com. No. 1 County Lea
Field Undesignated State New Mexico

FORMATION CHARACTERISTICS

Formation Name	Wolfcamp
Date First Well Completed	November 30, 1979
Original Reservoir Pressure	10608 PSIG @ 13356 Ft.
Original Produced Gas-Liquid Ratio	3854 SCF/Bbl
Production Rate	218 Bbls/Day
Separator Pressure and Temperature	425 PSIG 60 °F.
Liquid Gravity at 60°F.	54.7 °API
Datum	9729 Ft. Subsea

WELL CHARACTERISTICS

Elevation	3651 KB	Ft.
Total Depth	14985 (PB)	Ft.
Producing Interval	13348-13364	Ft.
Tubing Size and Depth	2-3/8 In. to 13300	Ft.
Open Flow Potential	1.148	MMSCF/Day
Last Reservoir Pressure	10608 PSIG @ 13356	Ft.
Date	February 24, 1980	
Reservoir Temperature*	199 °F. @ 13200	Ft.
Status of Well	Shut in	
Pressure Gauge	Amerada	

SAMPLING CONDITIONS

Flowing Tubing Pressure	3678	PSIG
Flowing Bottom Hole Pressure	7174	PSIG
Primary Separator Pressure	760	PSIG
Primary Separator Temperature	100	°F.
Secondary Separator Pressure		PSIG
Secondary Separator Temperature		°F.
Field Stock Tank Liquid Gravity	50.2	°API @ 60°F.
Primary Separator Gas Production Rate	167.3	MSCF/Day
Pressure Base	15.025	PSIA
Temperature Base	60	°F.
Compressibility Factor (F _{pv})	1.072	
Gas Gravity (Laboratory)	0.693	
Gas Gravity Factor (F _g)	0.9305	
Stock Tank Liquid Production Rate @ 83°F.	48.12	Bbls/Day
Primary Separator Gas/Stock Tank Liquid Ratio	3477	SCF/Bbl
or	287.6	Bbls/MMSCF
Sampled by	Teffellier, Inc.	

REMARKS:

*Temperature at 13356 Ft. = 201°F.

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 2 of 6

File RFL 80663

Well Jog State Com. No. 1

HYDROCARBON ANALYSES OF SEPARATOR PRODUCTS AND CALCULATED WELL STREAM

<u>Component</u>	<u>Separator Liquid</u>	<u>Separator Gas</u>		<u>Well Stream</u>	
	<u>Mol Percent</u>	<u>Mol Percent</u>	<u>GPM</u>	<u>Mol Percent</u>	<u>GPM</u>
Hydrogen Sulfide	0.00	0.00		0.00	
Carbon Dioxide	0.06	0.11		0.10	
Nitrogen	0.06	1.10		0.83	
Methane	16.90	80.89		64.21	
Ethane	10.06	11.44	3.119	11.08	3.021
Propane	9.91	4.21	1.182	5.70	1.600
iso-Butane	2.55	0.55	0.183	1.07	0.357
n-Butane	6.53	1.04	0.334	2.47	0.794
iso-Pentane	2.23	0.22	0.082	0.74	0.276
n-Pentane	3.72	0.23	0.085	1.14	0.421
Hexanes	4.58	0.12	0.050	1.28	0.537
Heptanes plus	43.40	0.09	0.045	11.38	7.952
	<u>100.00</u>	<u>100.00</u>	<u>5.080</u>	<u>100.00</u>	<u>14.958</u>

Properties of Heptanes plus

API gravity @ 60°F.	<u>45.1</u>	
Specific gravity @ 60/60°F.	<u>0.8004</u>	<u>0.800</u>
Molecular weight	<u>173</u>	<u>173</u>

Calculated separator gas gravity (air=1.000) = 0.693
Calculated gross heating value for separator gas = 1233 BTU
per cubic foot of dry gas @ 15.025 psia and 60°F.

Primary separator gas collected @ 760 psig and 100 °F.
Primary separator liquid collected @ 760 psig and 100 °F.

Primary separator gas/separator liquid ratio	<u>2540</u>	SCF/Bbl @ 100°F.
Primary separator liquid/stock tank liquid ratio	<u>1.369</u>	Bbls @ 100°F./Bbl
Primary separator gas/well stream ratio	<u>739.23</u>	MSCF/MMSCF
Stock tank liquid/well stream ratio	<u>212.6</u>	Bbls/MMSCF

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

Page 3 of 6

File RFL 80663

Well Jog State Com. No. 1

PRESSURE-VOLUME RELATIONS AT 201 °F.

Pressure PSIG	Relative Volume(1)	Deviation Factor Z
11000	0.8372	2.092
10608	0.8416	2.028
10000	0.8487	1.928
9000	0.8635	1.764
8000	0.8809	1.600
7500	0.8914	1.518
7000	0.9034	1.436
6500	0.9171	1.354
6000	0.9322	1.271
5500	0.9502	1.188
5000	0.9723	1.105
4700	0.9889	1.057
4540 Dew Point Pressure	1.0000	1.032
4500	1.0031	
4450	1.0073	
4350	1.0162	
4200	1.0314	
4000	1.0534	
3700	1.0948	
3200	1.1913	
2700	1.3463	
2200	1.6019	
1800	1.9319	
1500	2.3284	
1200	2.9232	
1000	3.5206	
900	3.9682	

(1) Relative Volume: V/V_{sat} is barrels at indicated pressure per barrel at saturation pressure.

Data above 7500 psig is extrapolated.

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CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75247

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File RFL 80663

Well Jog State Com. No. 1

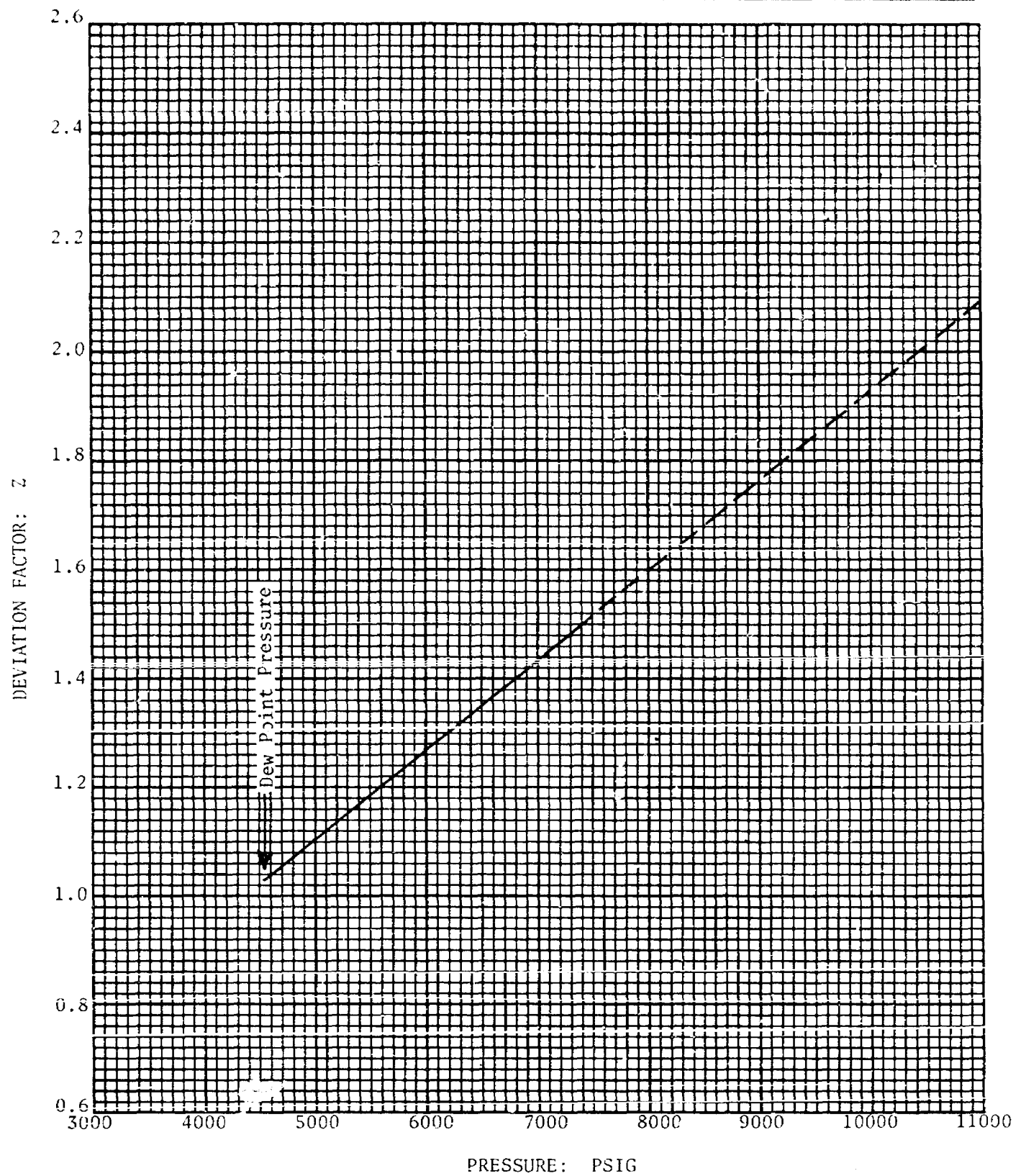
RETROGRADE LIQUID AT 201 °F.

<u>Pressure,</u> <u>PSIG</u>	<u>Retrograde Liquid</u> <u>Percent of Hydrocarbon</u> <u>Pore Volume</u>
4540 Dew Point Pressure	0.0
4500	38.0
4450	40.1
4350	41.2
4200	42.2
4000	43.5
3900 First Depletion Level	44.0
3200	43.8
2500	42.0
1800	39.1
1200	36.1
700	33.2
0	26.9

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DEVIATION FACTOR AT 201°F.

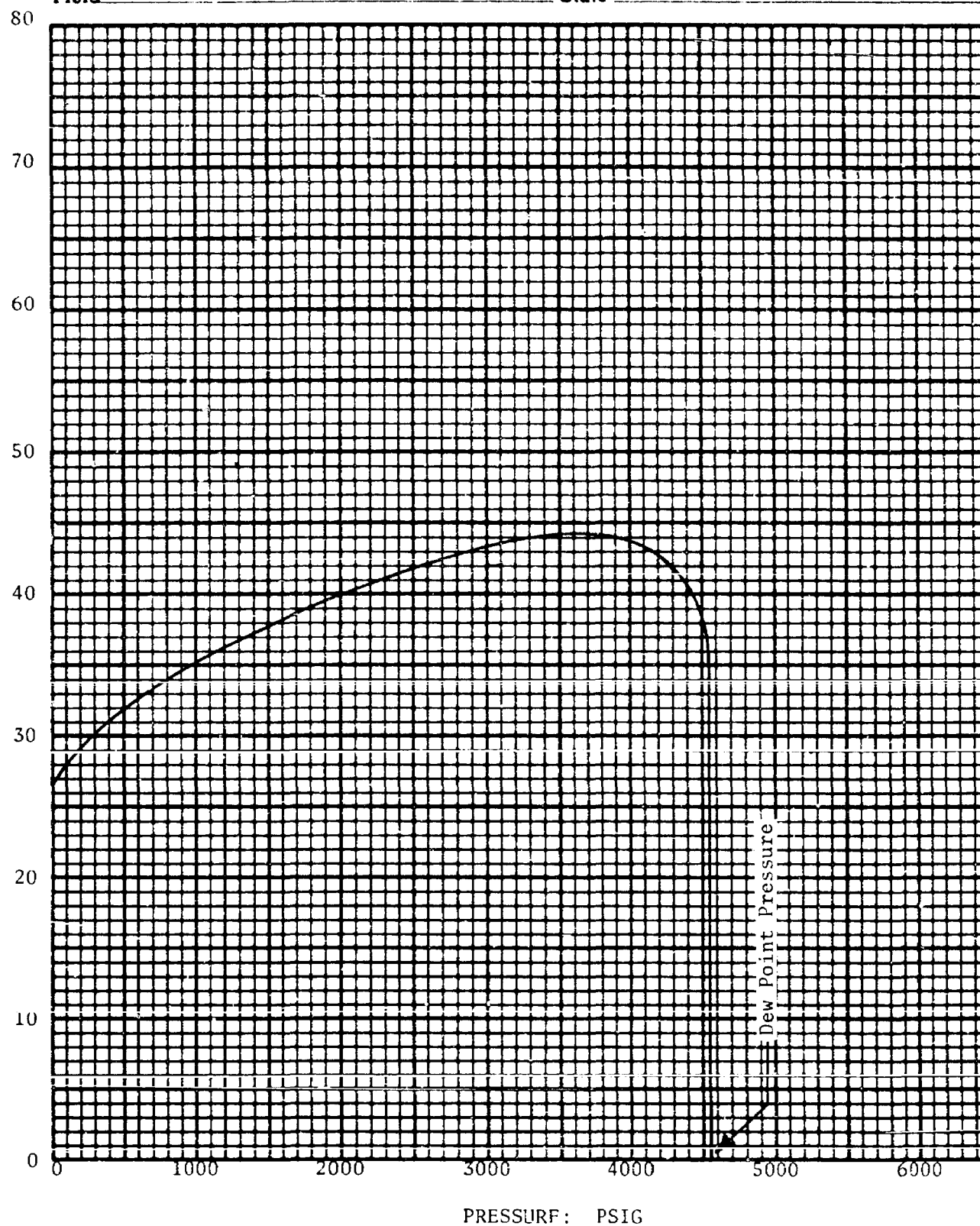
Company	MESA PETROLEUM COMPANY	Formation	WOLFCAMP
Well	JOG STATE COM. NO. 1	County	LEA
Field	UNDESIGNATED	State	NEW MEXICO



RETROGRADE LIQUID VOLUME AT 201°F.

Company	MESA PETROLEUM COMPANY	Formation	WOLECAMP
Well	JOG STATE COM. NO. 1	County	LEA
Field	UNDESIGNATED	State	NEW MEXICO

RETROGRADE LIQUID VOLUME: PERCENT OF HYDROCARBON PORE VOLUME



*Obanned
6/26/80*

MESA PETROLEUM CO.

JOG STATE NO. 1
WOLFCAMP FORMATION
SECTION 2, T24S, R33E
LEA COUNTY, NEW MEXICO

I. PRESSURE DATA

DATE	2-24-80	9-29-80
SITP	7,265 PSIG	5550 PSIG
BHP	10,563 PSIG	8960 PSIG

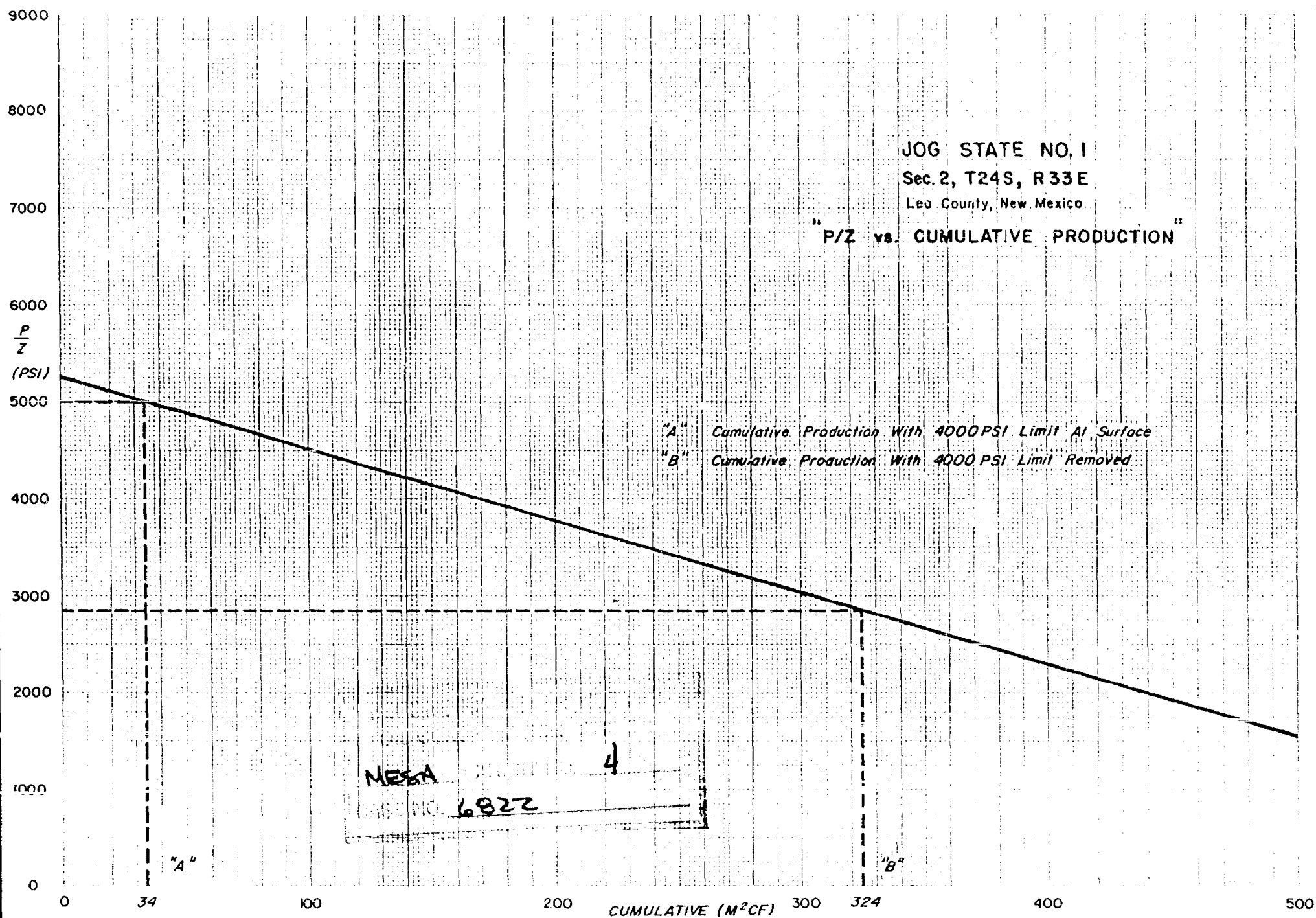
II. PRODUCTION DATA

CUMULATIVE PRODUCTION (OCTOBER 1, 1980): 18.5 M²CF + 4,823 BC

III. RECOVERABLE RESERVES

A. 4000 PSI SURFACE PRESSURE LIMITATION:	34 M ² CF + 8,900 BC
B. NO SURFACE PRESSURE LIMITATION:	324 M ² CF + 20,000 BC
C. DIFFERENCE DUE TO NO PRESSURE LIMITATION:	290 M ² CF + 11,100 BC

DEPT. OF MINES & METALS	
OIL & GAS DIVISION	
MESA	EXHIBIT NO. 3
CASE NO.	4822



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
29 October 1980

EXAMINER HEARING

IN THE MATTER OF:

Case 6822 being reopened pursuant to) CASE
the provisions of Order No. R-6293.) 6822

BEFORE: Daniel S. Wutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

W. Perry Pearce, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

William F. Carr, Esq.
CAMPBELL & BLACK P. A.
Jefferson Place
Santa Fe, New Mexico 87501

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KENNETH SMITH

Direct Examination by Mr. Carr

Cross examination by Mr. Nutter

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EXHIBITS

Mesa Exhibit One, Plat

Mesa Exhibit Two, Analysis

Mesa Exhibit Three, Data

Mesa Exhibit Four, Graph

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MR. TUTTLE: Call Case Number 6822.

MR. BEARCH: In the matter of Case 6822
being reopened pursuant to provisions of Order R-6293.

MR. CARR: May it please the Examiner, I
am William F. Carr, Campbell and Black, P. A., Santa Fe, ap-
pearing on behalf of the applicant.

I have one witness.

(Witness sworn.)

KENNETH SMITH

being called as a witness and having been duly sworn upon his
oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. CARR:

Q Would you state your full name and
place of residence?

A My name is Kenneth Smith and I live in
Midland, Texas.

Q By whom are you employed and in what
capacity?

A I'm a reservoir engineer for Mesa Petro-
leum.

Q Was Mesa Petroleum the applicant in Case 68222?

A Yes, it was.

Q Have you previously testified before this Commission, had your credentials accepted and made a matter of record?

A No, sir.

Q Will you briefly summarize your educational background and your work experience?

A I graduated from Texas Tech University in '76 with a BS in petroleum engineering.

I worked four years for ARCO Oil and Gas as reservoir engineer and 2-1/2 months for Mesa.

Q Are you familiar with the application in this case and the subject area?

A Yes, sir.

MR. CARR: Are the witness' qualifications acceptable as a reservoir engineer?

MR. NUTTER: Yes, I didn't get the name, though.

A Kenneth Smith.

MR. NUTTER: Thank you.

Q Mr. Smith, will you summarize briefly the events which led up to this hearing?

1
2 A Initially, Mesa drilled this well to
3 the Morrow and it proved nonproductive in the Morrow. They
4 recompleted up-hole in the Wolfcamp.
5

6 Q This is the Jog State No. 1 Well?

7 A Jog State No. 1.

8 When they recompleted in the Wolfcamp
9 they needed a hearing to get -- try to get it classified as
10 a gas well, and 320-acre spacing.
11

12 Okay, during this hearing they deter-
13 mined that they needed three months production before they
14 could answer all the questions, and with that, they needed to
15 answer whether it was a gas or oil reservoir, and two, what
16 the optimum production rate was.

17 Q And so the order that was entered in the
18 prior case directed Mesa to come back and present data on
19 both of those points.
20

21 A Yes, sir.

22 Q Will you please refer to what has been
23 marked for identification as Applicant's Exhibit Number One?

24 A Exhibit Number One is a land plat,
25 showing the Jog State No. 1 inside the Delaware Unit in
26 Section 2, Township 24 South, Range 33 East, Lea County.

27 Q Now is this the same exhibit which was
28 offered in the original case?

1

2

A. Yes, sir.

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4

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6

7

A. Yes, sir.

8

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11

MR. CARR: It isn't our intention, Mr. Nutter, to re-present all the evidence that was presented at the prior hearing, but to focus on the two matters raised in the prior case.

12

13

14

Q. What is the exact location of the Jog State No. 1 Well?

15

16

A. It's in Section 2, 1980 from the south line and 660 from the west line.

17

18

Q. And what acreage is dedicated to that well?

19

20

A. 320 acres.

21

22

Q. When was the Jog State No. 1 connected?

23

24

A. June 25th, 1980.

25

26

Q. Will you please refer to what has been marked for identification as Mesa Exhibit Number Two, and review this for Mr. Nutter?

27

28

A. Exhibit Number Two is an analysis prepared by CORE Lab from a sample that -- fluid sample that Mesa gave them, that we obtained in September of 1980.

1
2 To prepare this analysis they took the
3 sample and repressured it up to reservoir conditions and then
4 gradually lowered the pressure. And as shown on page three of
5 six, they found that there was a dewpoint at 4540.
6

7 Q Now how does that dewpoint compare to
8 the pressure limitation imposed by the prior order?

9 A The prior order had a limitation of
10 4000 psi surface pressure on this well.

11 Q In your opinion does the data from CORE
12 Lab indicate that you are in fact dealing with a retrograde
13 gas condensate reservoir?
14

15 A Yes, sir.

16 Q Will you now refer to what has been
17 marked for identification as Mesa Exhibits Three and Four and
18 review the information contained therein?

19 A Exhibit Three and Four is the pressure
20 and the recoverable reserve data from this well.

21 Exhibit Three is just tabulation of
22 Exhibit Four, which is a graph.
23

24 Q And what do these show?

25 A Category 1 on Exhibit Three shows pres-
26 sure data taken when the well was initially completed in
27 February, and when the -- back in September after three months
28 production. From this you can see about 1600 pounds drawdown.

Category 2 shows the cumulative production as of October 1st, which is 18.6 million cubic feet, and 4823 barrels of condensate.

MR. NUTTER: When was the well connected, Mr. Smith?

A. June 26th, 1930.

MR. NUTTER: Thank you.

A. Category 3 under A, is cumulative production you can expect with 4000 pound limit that was applied, and that's 34 million cubic feet, 8900 barrels of condensate.

If you remove that limitation, you can expect to recover 324 million cubic feet, and 20,000 barrels of condensate.

This is a difference of 290 million cubic feet and 11,100 barrels of condensate.

Q. Is it fair to summarize this testimony then as being that removal of the pressure limitation will in fact result in the recovery of substantially more hydrocarbons than would be recovered with the pressure limitation?

A. Yes, sir.

Q. Do you have anything further to add to your testimony?

A. No, sir.

Q. Were Applicant's -- your exhibits One

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through Four prepared by you or under your direction and supervision?

A. Yes, sir.

Q. In your opinion will granting this application be in the interest of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

MR. CARR: At this time, Mr. Examiner, we would offer Mesa Exhibits One through Four.

MR. NUTTER: Exhibits One through Four will be admitted in evidence.

MR. CARR: I have nothing further of this witness on direct.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Well, Mr. Smith, your CORE Lab data here and your summary sheet three and four, indicate that it's desirable to remove the 4000 pound minimum pressure limits on the well, but is any of this directed to show what the proper rate of withdrawal should be from the reservoir?

A. Well, just the -- under Category 1 there the 1600 pound drawdown that we've had there, it shows is very limited; that -- well, 400 Mcf per day is probably a reasonable

1
2 rate.

3 Q the 1500 Mcf a day?

4 A Well, they had -- the limitation from
5 the prior hearing was 4000 psi.

6 Q Oh, 400 Mcf.

7 A 400 Mcf a day.

8 Q What's the well capable of making?

9 A Well, absolute open flow was a little
10 over a million when it was initially completed.

11 Q And you think it's desirable to continue
12 to produce it at about 400 Mcf a day, then?

13 A Yes, sir.

14 Q But you would withdraw the -- or rescind
15 the 4000 pounds limit?

16 A Yes, sir.

17 MR. NUTTER: Are there any further ques-
18 tions of Mr. Smith? He may be excused.

19 Do you have anything further, Mr. Carr?

20 MR. CARR: Nothing further, Mr. Nutter.

21 MR. NUTTER: Does anyone have anything
22 they wish to offer in Case Number 6822?

23 We'll take the case under advisement.

24
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27
28 (Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

10/29 6822
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Examiner
Oil Conservation Division

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STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
29 October 1980

EXAMINER HEARING

IN THE MATTER OF:)
)
)
Case 6822 being reopened pursuant to) CASE
the provisions of Order No. R-6293.) 6822
)

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division:	W. Perry Pearce, Esq. Legal Counsel to the Division State Land Office Bldg. Santa Fe, New Mexico 87501
For the Applicant:	William F. Carr, Esq. CAMPBELL & BLACK P. A. Jefferson Place Santa Fe, New Mexico 87501

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I N D E X

KENNETH SMITH

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Cross examination by Mr. Nutter	9

E X H I B I T S

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MR. NUTTER: Call Case Number 6822.

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I have one witness.

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Q. Would you state your full name and
place of residence?

A. My name is Kenneth Smith and I live in
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Q. By whom are you employed and in what
capacity?

A. I'm a reservoir engineer for Mesa Petro-
leum.

1
2 Q. Was Mesa Petroleum the applicant in
3 Case 6822?

4 A. Yes, it was.

5 Q. Have you previously testified before
6 this Commission, had your credentials accepted and made a
7 matter of record?
8

9 A. No, sir.

10 Q. Will you briefly summarize your educa-
11 tional background and your work experience?

12 A. I graduated from Texas Tech University
13 in '76 with a BS in petroleum engineering.
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15 I worked four years for ARCO Oil and
16 Gas as reservoir engineer and 2-1/2 months for Mesa.

17 Q. Are you familiar with the application
18 in this case and the subject area?

19 A. Yes, sir.

20 MR. CARR: Are the witness' qualifications
21 acceptable as a reservoir engineer?
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23 MR. NUTTER: Yes, I didn't get the name,
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25 A. Kenneth Smith.

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A. Yes, sir.

Q. And this exhibit is being offered merely to orient the Examiner as to what we're talking about in this case?

A. Yes, sir.

MR. CARR: It isn't our intention, Mr. Nutter, to re-present all the evidence that was presented at the prior hearing, but to focus on the two matters raised in the prior case.

Q. What is the exact location of the Jog State No. 1 Well?

A. It's in Section 2, 1980 from the south line and 660 from the west line.

Q. And what acreage is dedicated to that well?

A. 320 acres.

Q. When was the Jog State No. 1 connected?

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8 the pressure limitation imposed by the prior order?

9 A The prior order had a limitation of
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12 Lab indicate that you are in fact dealing with a retrograde
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7 Mr. Smith?

8 A. June 26th, 1980.

9 MR. NUTTER: Thank you.

10 A. Category 3 under A, is cumulative pro-
11 duction you can expect with 4000 pound limit that was applied,
12 and that's 34 million cubic feet, 8900 barrels of condensate.

13 If you remove that limitation, you can
14 expect to recover 324 million cubic feet, and 20,000 barrels
15 of condensate.
16

17 This is a difference of 290 million
18 cubic feet and 11,100 barrels of condensate.

19 Q. Is it fair to summarize this testimony
20 then as being that removal of the pressure limitation will
21 in fact result in the recovery of substantially more hydro-
22 carbons than would be recovered with the pressure limitation?
23

24 A. Yes, sir.

25 Q. Do you have anything further to add to
26 your testimony?

27 A. No, sir.

28 Q. Were Applicant's -- your exhibits One

1
2 through Four prepared by you or under your direction and
3 supervision?

4 A. Yes, sir.

5 Q. In your opinion will granting this ap-
6 plication be in the interest of conservation, the prevention
7 of waste, and the protection of correlative rights?
8

9 A. Yes, sir.

10 MR. CARR: At this time, Mr. Examiner,
11 we would offer Mesa Exhibits One through Four.

12 MR. NUTTER: Exhibits One through Four
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14 MR. CARR: I have nothing further of
15 this witness on direct.
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18 CROSS EXAMINATION

19 BY MR. NUTTER:

20 Q. Well, Mr. Smith, your CORE Lab data here
21 and your summary sheet three and four, indicate that it's
22 desirable to remove the 4000 pound minimum pressure limits
23 on the well, but is any of this directed to show what the
24 proper rate of withdrawal should be from the reservoir?
25

26 A. Well, just the -- under Category 1 there
27 the 1600 pound drawdown that we've had there, it shows is very
28 limited; that -- well, 400 Mcf per day is probably a reasonable

1
2 rate.

3 Q The 1500 Mcf a day?

4 A Well, they had -- the limitation from
5 the prior hearing was 4000 psi.
6

7 Q Oh, 400 Mcf.

8 A 400 Mcf a day.

9 Q What's the well capable of making?

10 A Well, absolute open flow was a little
11 over a million when it was initially completed.

12 Q And you think it's desireable to continue
13 to produce it at about 400 Mcf a day, then?

14 A Yes, sir.

15 Q But you would withdraw the -- or rescind
16 the 4000 pounds limit?
17

18 A Yes, sir.

19 MR. NUTTER: Are there any further ques-
20 tions of Mr. Smith? He may be excused.

21 Do you have anything further, Mr. Carr?

22 MR. CARR: Nothing further, Mr. Nutter.

23 MR. NUTTER: Does anyone have anything
24 they wish to offer in Case Number 6822?
25

26 We'll take the case under advisement.

27
28 (Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

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10/29 6822
182
Oil Conservation Division

MINUTES AND PROCEEDINGS

STATE LAND OFFICE

27 November 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Mesa Petroleum Co. for) CASE
 an oil lease on the) 6822
 don location, Lea County, New Mexico.)

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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L. M. CARNES

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MR. STANETS: Call next case 6622.

MR. PASILLA: Application of Mesa Petroleum Company for gas well classification and unorthodox location, Lea County, New Mexico.

MR. CARR: Mr. Examiner, I'm William F. Carr, Campbell and Black, S. A., representing Mesa Petroleum Company.

I am associated today with Mr. D. Dale Gillette, attorney for Mesa Petroleum Company, who will present this case.

MR. GILLETTE: Thank you, Mr. Carr.

Mr. Examiner, we have two witnesses today, Mr. Joe Jeffers of Midland, and Mr. Les Carnes of Amarillo.

I've left two copies of our exhibits. We have five exhibits; I've provided you with copies of each of those up there.

MR. STANETS: I'd like to have both of those witnesses stand and be sworn at this time.

(Witnesses sworn.)

MR. GILLETTE: Mr. Examiner, if I may, I'd like to make just a brief opening statement.

The application today is the result of

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1 Mesa Petroleum Company drilling the No. 1 Dog State Well.
2 When we drilled this well it was originally projected for the
3 Morrow Sand at about 15,000 feet. There was no production
4 encountered and we backed up the hole about 13,000 feet,
5 13,400, and completed in the Wolfcamp.

6 Originally filed with the Commission was
7 the dedication of the west half of Section 2, Township 24
8 South, Range 33 East, dedicated to the well, when we pro-
9 jected to the Morrow.

10 As a result of this completion in the
11 Wolfcamp, and as a result of some unusual characteristics
12 of the well, we are here today wanting to present data to
13 you to show what we believe to be a retrograde condensation
14 well, and likewise dedicating the south half of that section
15 to the well.

16
17 JOSEPH JEFFERS

18 being called as a witness and having been duly sworn upon
19 his oath, testified as follows, to-wit:

20
21 DIRECT EXAMINATION

22 BY MR. GILLETTE:

23 Q Would you state your name and address
24 for the Examiner?

25 A Joseph W. Jeffers, Midland, Texas.

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1 geologist with Mesa Petroleum.

2 Q Okay, sir. And Mr. Jeffers, have you
3 previously testified before the Oil Conservation Division
4 of New Mexico as a geologist?

5 A I have.

6 Q Were your qualifications at that time
7 made a matter of record and were you accepted as an expert
8 by the Oil Conservation Division at that time?

9 A I was.

10 MR. GILLETTE: Mr. Examiner, is this
11 witness qualified?

12 MR. STAMETS: The witness is considered
13 qualified.

14 MR. GILLETTE: Thank you, sir.

15 Q Mr. Jeffers, are you familiar with the
16 application of Mesa Petroleum Company being heard today?

17 A I am.

18 Q Are you familiar with the Delaware
19 working interest Unit and the No. 1 Jog State Well, the well
20 in question in this hearing?

21 A I am.

22 Q Okay. I refer to what has been marked
23 as Mesa Petroleum Company Exhibit Number One. Would you
24 explain to the Examiner what this exhibit represents?

25 A Exhibit Number One is a map on a scale

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of 1 inch equal 2000 feet of a portion of Lea County, New Mexico, primarily covering a portion of Township 24 South, Range 33 East.

Q This in question is represented by the area outlined in the stippling, covering Sections 2, 3, 10, and 11 of Township 24, Range 33 East.

Mesa is the designated operator for this working interest unit. The unorthodox location for which we seek approval is represented by the gas symbol and well name, located 1280 from the south and 660 from the east of Section 2, Township 24 South, Range 33 East.

The two Mesa leases in the south half of the section representing 320 acres, is the proration unit requested to be dedicated to the Mesa No. 1 Jog State. There are no offset operators other than the working interest parties to the well in question. The other working interest parties in the unit concur with our action in this case.

Q All right, Mr. Jeffers, let me refer you to what has been marked as Mesa Petroleum Company Exhibit Number Two. Would you describe what this exhibit represents to the Examiner, please?

A Exhibit Two is a structural cross section designated A-A', and the line of the section is shown on the map, Exhibit Number One.

This cross section shows the thin

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1 Wolfcamp pay zone in the No. 1 Jorg State. I think if you
2 look real closely you'll be able to see the little red per-
3 forations. And the correlative zone in the Amoco No. 1
4 Federal II, two miles to the north.

5 The cross section indicated that the
6 Wolfcamp pay may have considerable areal extent on the
7 flank of the Bell Lake structure, which is a field just to
8 the east of us, and could become a primary objective zone
9 for the development on the Delaware Unit.

10 Please refer to Exhibit One again. The
11 wells on this map penetrated deep enough to test the Wolf-
12 camp pay. The wells to the east do not have a stratigraphic
13 equivalent zone because of non-deposition on the Bell Lake
14 structure.

15 The Getty well to the west in Section 4
16 is basinward and does not have a similar carbonate develop-
17 ment.

18 Q And, Mr. Jeffers, just for our clarifi-
19 cation, Amoco well that you're referring to, that's in
20 Section 26 up above on Township 23 South, Range 33 East,
21 is that correct?

22 A That's correct.

23 Q And the Getty Well you made reference to
24 is over here in Section 4, is that correct?

25 A That is correct, sir.

1 All right, sir. Mr. Jeffers, what is the
2 purpose of requesting the south half dedication to the No. 1
3 Jog State at this hearing?

4 A The purpose of the subject request is
5 to allow Mesa, et al, to hold the expiring lease in the
6 southeast quarter of Section 2, and have time to evaluate
7 by several months of production the results of the comple-
8 tion in the thin Wolfcamp pay in the No. 1 Jog State.

9 The additional purpose is to determine
10 if additional development for the Wolfcamp pay is justified
11 in the Delaware Unit.

12 As will be further shown by Mr. Carnes'
13 testimony, it will be necessary to further evaluate this
14 production data of the No. 1 Jog State, due to the character-
15 istics the well is displaying.

16 As a result of this delay, Mesa desires
17 to hold the lease covering the southeast quarter of Section
18 2 pending this evaluation. The lease expires April, 1980.

19 The original drill site and stand-up
20 320-acre unit was determined based on a Morrow objective
21 for the well; however, when the Morrow proved unproductive,
22 and the well was completed in the Wolfcamp, geologic fac-
23 tors not present in the Wolfcamp dictates further develop-
24 ment of the Wolfcamp be in a north/south direction.

25 Therefor we request a south half 320-acre

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Location for this well.

Q Mr. Jeffers, the location of the No. 1
and State, that is an orthodox location for a stand-up unit,
is it not?

A That is correct.

Q All right, sir, so by -- as a result of
us seeking to turn this on its side and make it a lay-down
unit, we have what has been created then, an unorthodox
location.

A That is correct.

Q Where it is presently located. All right,
sir.

Mr. Jeffers, did you prepare or did you
have prepared under your supervision, what has been marked
as Mesa Petroleum Company Exhibit Number One and Mesa Pet-
roleum Company Exhibit Number Two?

A I did.

Q All right, sir.

MR. GILLETTE: Mr. Examiner, I'd ask
that Mesa Petroleum Company Exhibit Number One and Exhibit
Number Two be admitted in the record of this hearing.

MR. STAMETS: These exhibits will be
admitted.

MR. GILLETTE: We have nothing further
of this witness.

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CROSS EXAMINATION

BY MR. STANETS:

Q Mr. Jeffers, did you say or indicate that another well was currently projected or being considered for the north half of Section 2?

A In the event that the situation, or the economics of it justify it, we would.

Q Now, you indicated that geological conditions made development in the north half of Section 2 the most logical second stage. What type of conditions are you referring to?

A We do not have the Wolfcamp zone present in the wells in section on the east side of the map, and it is also not present in the well to the west; however, it is projected north/south along the west side of the Bell Lake structure, based on our geologic evidence.

Q So that would be the most logical way to develop, but based on what you've seen so far?

A Yes, sir.

Q What's the thickness of the pay section there?

A We're looking at about 12 feet, I believe. In two thin zones.

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MR. STAMETS: Any other questions of this witness? He may be excused.

MR. GILLETTE: Mr. Carnes.

L. M. CARNES

being called as a witness and having been duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. GILLETTE:

Q Okay, sir, Mr. Carnes, would you state your name and your residence, and by whom you're employed?

A L. M. Carnes. I'm employed by Mesa Petroleum Co., in Amarillo, Texas.

Q And, Mr. Carnes, in what capacity are you employed by Mesa Petroleum Company?

A I'm Manager of Reservoir Engineering.

Q All right, sir. Mr. Carnes, have you previously given testimony before the Oil Conservation Division of New Mexico?

A Yes, I have.

Q And at that time were your qualifications as a petroleum reservoir engineer acceptable?

A Yes, they were.

MR. GILLETTE: Mr. Examiner, we tender

1 the witness as an expert petroleum engineer.

2 MR. STAMETS: He is considered qualified.

3 MR. GILLETTE: Thank you, sir.

4 Q Mr. Carnes, are you familiar with Mesa's
5 application in this case, Number 6822, and have you pre-
6 pared testimony and supporting exhibits for this hearing?

7 A Yes, sir.

8 Q All right, sir. I'd refer you to what
9 has been marked as Mesa Petroleum Company Exhibit Number
10 Three. Would you explain the data that's represented on
11 this particular exhibit, please, sir?

12 A Exhibit Three is a two-page exhibit
13 summarizing the completion information, fluid and flow be-
14 havior, and pressure data on Mesa's Jog State No. 1, to-
15 gether with a comparison of these key data with another
16 Wolfcamp gas well in the area.

17 First of all, the completion information
18 at the top of the page shows that we have completed Jog
19 State No. 1 in the Wolfcamp formation with perforations
20 13,348 to 13,364 feet.

21 After treatment of 3000 gallons of 15
22 percent acid the well flowed on initial potential 1121 Mcf
23 per day at 1100 psig flowing tubing pressure.

24 The calculated absolute open flow was
25 1148 Mcf per day.

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1 The fluid and flow characteristics are
2 such that the condensate had a 54.7 degree API gravity at
3 60 degrees Fahrenheit. It was straw color; had separator
4 gas gravity of .678; and based on our flow rates of gas,
5 that I'll get into in just a minute, the condensate yield
6 was 249 barrels per million cubic feet, and this is based
7 on a recent 24-hour test taken on February 25, 1980, in
8 which the average flow rate was 219 Mcf per day and during
9 which we recovered 54.6 barrels of condensate.

10 The pressure data is such that after 2-
11 weeks shut-in, we measured and observed on the surface, a
12 pressure of 7265 psig. At the same time the observed bottom
13 hole pressure was 10,563 psig at 13,356 feet.

14 Based on these pressures, we determined
15 a static gas gradient of .247 psi per foot.

16 The Jog State No. 1 has very similar flow
17 and fluid characteristics to Fairview Mills Fed No. 1,
18 which was a well drilled by Exxon in 1975, and it's located
19 in Section 14, 25 South, 34 East, Lea County, New Mexico.
20 It was completed in the Wolfcamp at a depth of 13,797 to 805
21 feet, and during a 3-hour test recovered condensate at a
22 yield of 240 barrels per million. And the characteristics
23 of this liquid recovery, very similar to Mesa's Jog State 1,
24 in that the gravity, API gravity, was 52.1 degrees. Shown
25 on this second page of my exhibit it's indicated to be 50.1,

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1 so that needs to be corrected. That was taken from a scout
2 ticket and checking your files in the Commission offices
3 this morning, I found this 32.1 degrees.

4 The shut-in tubing pressures were very
5 similar to Mesa's Jog State, around 7200 psig.

6 So that comparison indicates that the
7 two wells are very similar in producing characteristics and
8 were completed in the same geologic horizon, the Wolfcamp,
9 at very similar depths.

10 Q Now, Mr. Carnes, I direct your attention
11 to what has been marked as Mesa Petroleum Company Exhibit
12 Number Four. That is a graph representing or showing --
13 setting forth a curve. Would you explain to the Examiner
14 the -- what this graph represents?

15 A It represents our static gradient survey,
16 taken on the Jog State No. 1 Well on the 24th of February
17 of this year.

18 It's a plot of pressure at a certain
19 depth, and it simply represents the gradient of the well,
20 the slope of that line, in which you plot depth versus
21 pressure, represents a gradient in the tubing after the
22 well had been shut-in for two weeks. It's a straight line.
23 There's no change in slope, and from this we conclude there
24 is no gas/liquid contact in the well.

25 Q Mr. Carnes, if you had experienced liquid

1 in the well in the tubing as you ran this test, what might
2 you expect to see the curve of this graph
3 reflect?

4 A. Okay, the curve would deviate to the
5 right if you encounter liquid, which is heavier than the
6 gas, and would indicate a greater pressure for the same
7 depth. So it would establish another straight line that
8 would deviate to the right at a different slope.

9 Q. All right, sir. Now, directing your
10 attention to what has been marked as Mesa Petroleum Company
11 Exhibit Number Five, which is labeled a 24-hour flow test
12 of February 25th, 1980, would you describe to the Examiner
13 what this exhibit purports to show?

14 A. This exhibit shows the 2-hour time and
15 rate for 12 different intervals on a 2-hour basis, of the
16 gas rate, condensate production, and flowing tubing pressure.
17 The significance of this chart, or this table, are as
18 follows:

19 First, there was a liquid dump in the
20 separator five minutes after flow was initiated in the well,
21 and then the first two hours we recovered 5.5 barrels of
22 condensate, while the gas rate was 223 Mcf per day.

23 The key thing is that five minutes after
24 flow started, we had a dump of liquid in our separator.

25 The average producing rate during the

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1 24-hour period was 210 Mcf per day and we recovered 54.5
2 barrels of condensate.

3 At the end of the 24-hour period we were
4 flowing approximately 170 Mcf per day at a 5750 psig flowing
5 tubing pressure. The average yield during the 24-hour
6 period was 349 barrels per million.

7 Now, we had similar experience as to what
8 fluids are recovered at the surface in retrograde gas con-
9 densate reservoirs as compared to an oil or solution gas
10 drive oil reservoir, and they are as follows:

11 We have wells that have been shut-in
12 that were oil nature producing at around 12,000 feet in
13 southeast New Mexico, and establish a complete gas gradient
14 in a well under shut-in conditions. Those wells are opened
15 up to flow and you get gas for a period of four to six
16 hours before the oil surfaces.

17 So based on this comparison of solution
18 gas drive oil reservoirs producing below the bubble point
19 versus this retrograde gas condensate reservoir, we conclude
20 that we have condensate because it's in the gas itself and
21 once the pressure drops between the wellhead and the sepa-
22 rator, we experienced a liquid dropout in five minutes.

23 Q So your conclusion would be that this
24 liquid is not in fact being produced from the formation?

25 A Right.

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Q Okay, sir. Mr. Carnes, as a result of your study of these exhibits and this data, what conclusions do you draw about the No. 1 Jog State Well?

A I believe that it's producing from a rich retrograde gas condensate reservoir, the Wolfcamp, at 13,500 feet, and that it is based on the comparison with a similar well, which was classified as a gas well, that we do in fact have a retrograde gas condensate reservoir.

Q In your opinion, Mr. Carnes, would this well drain 320 acres?

A It's my opinion that it will drain 320 acres, and we want to get test data from it to confirm this.

Q In line with that, is it also your opinion that it's going to be necessary to evaluate this well to some further extent before we can adequately determine whether another well can be drilled on this acreage, or whether in fact 320 acres is even a proper spacing?

A That's correct.

Q Mr. Carnes, will the classification of the No. 1 Jog State Well as a gas well and development on 320 acres as a spacing unit, prevent waste and protect correlative rights?

A Yes, it will.

Q In your opinion will this maximize recovery of hydrocarbons from this well?

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A Yes.

MR. GILLETTE: Mr. Examiner, excuse me --

Q Mr. Carnes, were these exhibits Numbers --
Hess Petroleum Company Exhibits Numbers Three, Four, and
Five prepared by you or under your supervision?

A Yes, they were.

MR. GILLETTE: Mr. Examiner, we'd ask
that Exhibits Three, Four, and Five be admitted into the
record.

MR. STAMETS: These exhibits will be
admitted.

MR. GILLETTE: We have no further ques-
tions of Mr. Carnes.

CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Carnes, have you made any tests or
had tests made to determine the critical pressure in this
well?

A Are you referring to the dewpoint?

Q Yes.

A No, we have not as yet. We will probably
take samples and have this run to see what the dewpoint
pressure is. In the meantime, we would prefer to flow the
well at fairly high tubing pressures, in order to minimize

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1 the condensation in the reservoir around the wellbore. we'll
2 try to minimize a pressure drop around the wellbore, and the
3 pressure drop would be limited to the surface equipment,
4 such that we recover the maximum amount of condensate.

5 Q What kind of a pressure are you talking
6 about at this point?

7 A I would recommend a flow rate of approxi-
8 mately 400 Mcf per day, which I think we can achieve at a
9 flowing tubing pressure in the neighborhood of 4000 pounds,
10 somewhere between 4000 and 4500 psig.

11 Q When will you have the information on
12 the dewpoint of this well?

13 A I would just have to speculate that we
14 would have to recover a surface sample and have it recom-
15 bined. It would probably be between two and three months.
16 It's possible that we could get it sooner, but it would be --
17 the labs are awful busy these days, and you can get the
18 sample to them, but they can't run it.

19 Q Okay. Would the laboratory also be
20 looking at this to determine the most efficient flow rate
21 and flow conditions?

22 A No, sir, they would not. We'd establish
23 that from tests after the well goes onstream to the pipe-
24 line.

25 Q Okay, and how long do you estimate it

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1 would be before you had all that information put together?

2 A. Well, we're 4000 feet away from, I believe,
3 a Transwestern pipeline in the area. We've talked to them.
4 Our gas contracts department takes care of the purchase
5 agreements with the gas purchase company. They're in com-
6 munication with Transwestern. It looks like that we would
7 probably have to lay our own line, so we could probably
8 expedite hookup and initial production by doing that, and
9 we would probably proceed along that line, and I would
10 estimate it could be two to three months again on it, on
11 the first hookup.

12 Q So all of this is pending pipeline con-
13 nection, which is another two or three months down the line.

14 A. I would guess that it would be.

15 Q I'm trying to estimate what sort of a
16 time period to put in any order which might be coming out
17 from this case for requiring re-opening the case.

18 A. Well, --

19 MR. GILLETTE: What -- what could you
20 recommend possibly in terms of giving -- giving Mesa a
21 satisfactory time lead to run the testing needed and to get
22 what we've done for re-opening this case?

23 A. Well, you mean -- are we looking at 320-
24 acre spacing? I'd say -- I'd like to have at least 18 months
25 to --

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1 MR. JENNINGS: I was thinking about half
2 of that.

3 A I don't think it's interesting to note that in
4 that Fairview Mills Wolfcamp Gas Pool, temporary special
5 field rules were granted by the Commission in April of '75
6 for 660-acre spacing for a twelve-month period, and I really
7 feel that, since we're proposing 330 acres, on a temporary,
8 possibly temporary, I don't know, we might propose this on
9 a permanent basis, really, the 330-acre spacing. I'm sure
10 we have a gas reservoir.

11 But I would -- I'd say twelve to eighteen
12 months I would like to see.

13 Q SPECTATOR: We'd sure like to see
14 twelve months.

15 MR. JENNINGS: After it goes on production.

16 MR. STAMETS: Twelve to eighteen months
17 after it goes on production?

18 Well, we'll give that every consideration.

19 MR. STAMETS: Are there any other ques-
20 tions of this witness? He may be excused.

21 MR. GILLETTE: We have nothing further.

22 MR. STAMETS: The case will be taken
23 under advisement.
24
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(hearing concluded.)

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I, [redacted], do hereby certify that the foregoing transcript of hearing is the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

I do hereby certify that the foregoing is a correct record of the proceedings in the Examiner hearing of Case No. _____ heard by me on _____ 19____.

_____, Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409



BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

April 24, 1980

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Mr. D. Dale Gillette
Attorney
Mesa Petroleum Company
P. O. Box 2009
Amarillo, Texas 79189

Re: CASE NO. 6822
ORDER NO. R-6293-A

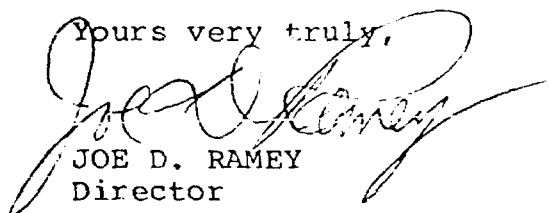
Applicant:

Mesa Petroleum Company

Dear Sir:

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

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other William F. Carr

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 6822
Order No. R-6293-A

APPLICATION OF MESA PETROLEUM CO. FOR
A GAS WELL CLASSIFICATION AND UNORTHODOX
LOCATION, LEA COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-6293, dated March 19, 1980, does not correctly state the intended order of the Division,

IT IS THEREFORE ORDERED:

(1) That Finding No. (3) should be changed to read in its entirety as follows:

"(3) That the applicant further seeks approval for the unorthodox location of said Jog State Well No. 1 in the center of Unit L of Section 2, Township 24 South, Range 33 East, the S/2 of said Section 2 to be dedicated to the well."

(2) That the description of the horizontal limits in Finding No. (4) should be changed to read as follows:

"TOWNSHIP 24 SOUTH, RANGE 33 EAST, NMPM
Section 2: S/2"

(3) That the description of the horizontal limits in Order No. (1) should be changed to read as follows:

"TOWNSHIP 24 SOUTH, RANGE 33 EAST, NMPM
Section 2: S/2"

(4) That Paragraph No. (4) under "IT IS FURTHER ORDERED" on page 6 should be changed to read in its entirety as follows:

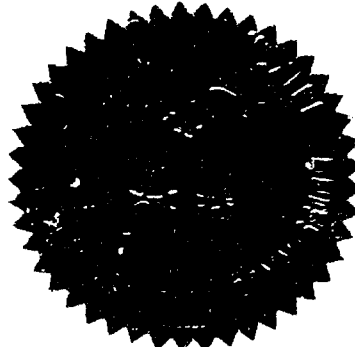
"(4) That the unorthodox gas well location of applicant's Jog State Well No. 1 in the center of Unit L of Section 2, Township 24 South, Range 33 East, West Double X-Wolfcamp Gas Pool, is hereby approved."

-2-
Case No. 6822
Order No. R-6293-A

(5) That Paragraph No. (4) on Page 6 should be designated as and the number changed to (5).

That this order shall be effective nunc pro tunc as of March 19, 1980.

DONE at Santa Fe, New Mexico, on this 24th day of April, 1980.



STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6822
Order No. R-6293

APPLICATION OF MESA PETROLEUM CO.
FOR A GAS WELL CLASSIFICATION AND
UNORTHODOX LOCATION, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on February 27, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 19th day of March, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Mesa Petroleum Co., seeks the classification of its Jog State Well No. 1 as a retrograde gas condensate well with 320-acre spacing.

(3) That the applicant further seeks approval for the unorthodox location of said Jog State Well No. 1 in the center of Unit L of Section 2, Township 24 South, Range 32 East, the S/2 of said Section 2 to be dedicated to the well.

(4) That the evidence presently available indicates that applicant's Jog State Well No. 1 has discovered a separate common source of supply which should be designated the West Double X-Wolfcamp Gas Pool; that the vertical limits of the pool should be the Wolfcamp formation, and that the horizontal

-2-

Case No. 6822
Order No. R-6293

limits of said pool should be as follows:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM
Section 32: S/2

(5) That while the evidence presented supported the applicant's claim that said West Double X-Wolfcamp Gas Pool is a retrograde condensate reservoir, such evidence was insufficient for both a permanent determination and establishment of proper rates of withdrawal from the pool.

(6) That a hearing should be scheduled within three months after the date of connection of said Jog State Well No. 1 or any other well in said West Double X-Wolfcamp Gas Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.

(7) That the first operator in said West Double X-Wolfcamp Gas Pool to obtain a gas connection should notify the Director of the Division of the date of such connection.

(8) That pending any future order in this case, withdrawals from wells completed in the subject reservoir should be limited to some reasonable amount to avert waste and prevent reservoir damage.

(9) That pending such order, a reasonable maximum rate of withdrawal from each well in the West Double X-Wolfcamp Gas Pool is 400 MCF of gas per day at the surface so long as the wellhead flowing pressure is 4000 psig or greater.

(10) That any well in the West Double X-Wolfcamp Gas Pool with a wellhead flowing pressure of less than 4000 psig should be shut in pending further order of the Division.

(11) That an order based on the above findings is in the interest of conservation, will prevent waste, will not impair but will protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That effective March 1, 1980, a new pool in Lea County, New Mexico, classified as a gas pool for Wolfcamp production, is hereby created and designated the West Double X-Wolfcamp Gas Pool, with vertical limits comprising the Wolfcamp formation and

-3-

Case No. 6622

Order No. R-6293

horizontal limits comprising the following-described area:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM
Section 32: S/2

(2) That temporary Special Rules and Regulations for the West Double X-Wolfcamp Gas Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE WEST DOUBLE X-WOLFCAMP GAS POOL

RULE 1. Each well completed or recompleted in the West Double X-Wolfcamp Gas Pool or in the Wolfcamp formation within one mile of the West Double X-Wolfcamp Gas Pool, and not nearer to nor within the limits of another designated Wolfcamp pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the West Double X-Wolfcamp Gas Pool shall be located on a standard unit containing 320 acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the United States Public Land Surveys. Exceptions to this rule are subject to the provisions of Rule 104 D II of the Division Rules and Regulations.

RULE 3. Each well shall be located no nearer than 660 feet to the nearest side boundary of the tract nor nearer than 1980 feet to the nearest end boundary of the tract. Exceptions to this rule are subject to the provisions of Rule 104 F of the Division Rules and Regulations.

RULE 4. A gas well on a standard unit in the West Double X-Wolfcamp Gas Pool shall be permitted to produce no more than 400 MCF of gas per day at standard surface conditions and at a flowing wellhead pressure of not less than 4000 psig during the effective period of these pool rules. This shall be known as the daily allowable. Any well in said pool with a flowing wellhead pressure of less than 4000 psig shall be shut in and shall remain shut in pending further order of the Division.

RULE 5. The operator of each newly completed well shall cause a gas-liquid ratio test to be taken on the well upon recovery of all load oil from the well. Any well which is shut in shall be exempted from the gas-liquid ratio test requirement so long as it remains shut in. The initial gas-liquid ratio test shall be taken in the manner prescribed by Rule 6.

RULE 6. Gas-liquid ratio tests shall be taken on all wells during the months of April and October of each year. The initial gas-liquid ratio test shall suffice as the first semi-annual test. Tests shall be 24-hour tests, being the final 24 hours of a 72-hour period during which the well shall be produced at a constant normal rate of production. Results of such tests shall be filed on Division Form C-116 on or before the 10th day of the following month. At least 72 hours prior to commencement of any such gas-liquid ratio tests, each operator shall file with the appropriate district office of the Division a test schedule for its wells specifying the time each of its wells is to be tested. Copies of the test schedule shall also be furnished to all offset operators.

Special tests shall also be taken at the request of the Division Director and may also be taken at the option of the operator. Such special tests shall be taken in accordance with the procedures outlined hereinabove, including notification to the Division and offset operators.

RULE 7. An initial shut-in pressure test shall be taken on each gas well and shall be reported to the Division on Form C-125.

RULE 8. Any well completed after the effective date of these rules shall receive an allowable only upon receipt by the appropriate Division district office of Division Forms C-104 and C-116, properly executed. The District Supervisor of the Division's district office is hereby authorized to assign a temporary gas allowable to wells connected to a gas transportation facility during the recovery of load oil, which allowable shall not exceed the amounts set forth in Rule 4 of these rules.

RULE 9. The West Double X-Wolfcamp Gas Pool gas proration period shall be the proration month which shall begin at 7 a.m. on the first day of the month and shall end at 7 a.m. on the first day of the next succeeding month.

RULE 10. (a) Any gas well which has an underproduced status at the end of any gas proration period, shall carry such underproduction into subsequent periods.

(b) Underproduction in excess of three times the current monthly allowable shall not be carried forward but shall be cancelled. For the purpose of these rules, the monthly allowable shall be the daily allowable times the number of days in the month.

(c) Overproduction during any month shall be applied to a well's cumulative underproduction, if any, calculated in accordance with Paragraphs (a) and (b) above.

RULE 11. Any gas well which has an overproduced status at the end of any gas proration period shall carry such overproduction into subsequent periods. If at any time a well is overproduced an amount exceeding three times its current monthly allowable, it shall be shut in during that month and each succeeding month until the well is overproduced less than three times its current monthly allowable.

RULE 12. The allowable assigned to a well during any one month in excess of the production for the same month shall be applied against the overproduction carried into such period in determining the amount of overproduction, if any, which has not been compensated for.

RULE 13. The Division may allow overproduction to be compensated for at a lesser rate than would be the case if the well were completely shut in upon a showing after notice and hearing that complete shut in of the well would result in material damage to the well or reservoir.

RULE 14. The monthly gas production from each gas well shall be metered separately and the gas production therefrom shall be reported to the Division on Form C-115 so as to reach the Division on or before the 24th day of the month next succeeding the month in which the gas was produced. The operator shall show on such report what disposition has been made of the produced gas.

RULE 15. Each purchaser or taker of gas shall submit a report to the Division so as to reach the Division on or before the 15th day of the month next succeeding the month in which the gas was purchased or taken. Such report shall be filed on Form C-111 with the wells being listed in the same order as they are listed on the appropriate proration schedule.

RULE 16. Failure to comply with any provision of these rules shall result in the immediate cancellation of allowable assigned to the affected well. No further allowable shall be assigned until all rules and regulations have been complied with. The Division Director shall notify the operator of the well and purchaser in writing of the date of allowable cancellation and the reason therefor.

-6-

Case No. 6822
Order No. R-6293

RULE 17. All transporters or users of gas shall file gas well connection notices with the Division as soon as possible after the date of connection.

IT IS FURTHER ORDERED:

(1) That the first operator in said West Double X-Wolfcamp Gas Pool to obtain a gas connection shall notify the Director of the Division of the date of such connection.

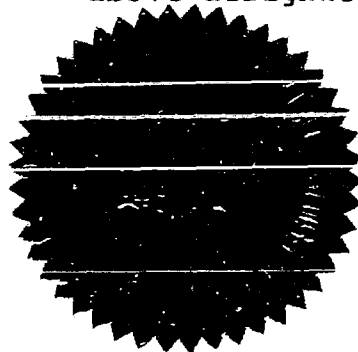
(2) That the Division shall schedule a hearing within three months after the date of connection of said Jog State Well No. 1 or any other well in said West Double X-Wolfcamp Gas Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.

(3) That, pursuant to Paragraph A. of Section 70-2-18, NMSA 1978, existing wells in the West Double X-Wolfcamp Gas Pool shall have dedicated thereto 320 acres, in accordance with the foregoing pool rules or, pursuant to Paragraph C. of said Section 70-2-18, existing wells may have non-standard spacing or proration units established by the Division and dedicated thereto.

Failure to file new Forms C-102 with the Division dedicating 320 acres to a well or to obtain a non-standard unit approved by the Division within 60 days from the date of this order shall subject the well to cancellation of allowable.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



S E A L
fd/

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Joe D. Ramey
JOE D. RAMEY
Director

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
1 October 1980

EXAMINER HEARING

IN THE MATTER OF:

Case 6822 being reopened pursuant
to the provisions of Order No.
R-6293.

CASE
6822

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

SALLY W. BOYD, C.S.R.
Rt. 1 Box 191-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 MR. NUTTER: Call next Case Number 6822.

2 MR. PADILLA: In the matter of Case 6822
3 being reopened pursuant to the provisions of Order No. R-6293,
4 which order created the West Double X-Wolfcamp Gas Pool as a
5 retrograde gas condensate pool and set special production
6 limitations therein.

7 MR. NUTTER: At request of applicant Case
8 Number 6822 will be continued to the Examiner Hearing scheduled
9 to be held at this same place at 9:00 o'clock a. m. October
10 29th, 1980.

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12 (Hearing concluded.)
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SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

Sally W. Boyd C.S.R.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I do hereby certify that the foregoing is
a correct and true copy of the transcript
of the hearing held on 10/1 6822
80
[Signature], Examiner,
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
1 October 1980

EXAMINER HEARING

IN THE MATTER OF:

Case 6822 being reopened pursuant
to the provisions of Order No.
R-6293.

CASE
6822

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

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... of Case 6822
... of Case 6293,
... as a
... production
...

... At request of applicant Case
Number 6822 will be continued to the further Hearing scheduled
to be held at this office on at 9:00 o'clock a. m. October
28th, 1960.

(Hearing concluded.)

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I do hereby certify that the foregoing is
a true and correct copy of the original
filed in the office of the Secretary of the
Oil Conservation Division on 10/1/68
at 8:00 PM.
Sally W. Boyd, C.S.R.
Secretary

CASE 7074: Application of Enserch Exploration, Inc. for pool creation, an unorthodox gas well location, and non-standard proration unit, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Fusselman gas pool for its J. G. O'Brien Well No. 2 located at an unorthodox location 660 feet from the South and West lines of Section 30, Township 7 South, Range 29 East, to be dedicated to a 308.96-acre non-standard unit comprising the W/2 of said Section 30.

CASE 6822: (Continued from October 1, 1980, Examiner Hearing)

In the matter of Case 6822 being reopened pursuant to the provisions of Order No. R-6293 which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein. Operator(s) may appear and present evidence to establish the true nature of the reservoir and proper rates of withdrawal therefrom.

CASE 6648: (Continued from October 1, 1980, Examiner Hearing)

In the matter of Case 6648 being reopened pursuant to the provisions of Order No. R-6124 which order promulgated temporary special rules and regulations for the North Caprock-Mississippian Pool in Lea County, New Mexico, including a provision for 160-acre spacing and a 4000 to one gas-oil ratio limitation. Operators in said pool may appear and show cause why the pool should not be developed on 40-acre spacing with a 2000 to one GOR.

CASE 7045: (Continued from October 15, 1980, Examiner Hearing)

Application of Texas Oil & Gas Corp. for downhole commingling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Atoka and Upper Morrow production in the wellbore of its Superior Federal Com. Well No. 1 located in Unit C of Section 8, Township 20 South, Range 29 East.

CASE 7024: (Continued from October 15, 1980, Examiner Hearing)

Application of Southland Royalty Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 of Section 35, Township 18 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7038: (Continued from October 15, 1980, Examiner Hearing)

Application of Natura Energy Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the NE/4 NE/4 of Section 6, Township 19 South, Range 39 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

Docket No. 35-80

DOCKET: COMMISSION HEARING - FRIDAY - OCTOBER 31, 1980

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 7075: Application of Benson-Montin-Greer Drilling Corporation for the amendment of pool rules, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of the Special Rules and Regulations for the West Puerto Chiquito-Mancos Oil Pool as promulgated by Order No. R-2565-B and amended by Order No. R-6469, to require that the locations of wells in said pool be at least 1650 feet from the outer boundary of the spacing and proration unit, and that the drilling of wells be controlled so as to allow no more than a 330 foot horizontal deviation from the surface location. Further, that the location of wells on certain specified non-standard proration units approved by Order No. R-6469 should be no closer than 660 feet to the outer boundary of the non-standard unit nor closer than 330 feet to a quarter section line or 10 feet to a quarter-quarter section line. Said specified non-standard units are the two 640-acre units in Township 24 North, Range 1 West; the two 480-acre units in Township 24 North, Range 1 East; the four 640-acre units in Township 26 North, Range 1 West; the 640-acre unit in Township 26 North, Range 1 East; and the two 640-acre units, the three 600-acre units, and the 400-acre unit, all in Township 27 North, Range 1 West. Applicant further seeks an administrative procedure whereby unorthodox locations could be approved upon receipt of written waivers from all offsetting operators being "crowded" by the unorthodox location.

SEP 27 1980
U.S. DEPARTMENT OF ENERGY
NEW MEXICO



September 26, 1980

Mr. Joe D. Ramey, Director
Oil Conservation Division
New Mexico Department
of Energy and Minerals
P. O. Box 2088
Santa Fe NM 87501

Dear Mr. Ramey:

Subject: Case No. 6822 in the matter of Case
6822 being reopened pursuant to the
provisions of Order No. R-6293 which
order created the West Double X-Wolfcamp
Gas Pool as a retrograde gas condensate
pool and set special production limi-
tations therein

This will confirm my telephone conversation with Mr. Richard
L. Stamets on September 26, 1980 in which Mr. Stamets, pursuant to
my request, granted a continuance of the captioned hearing which is
now to be held on October 29, 1980.

Your cooperation in this matter is greatly appreciated.

Yours very truly,

A handwritten signature in cursive script that reads 'Thomas H. Hawkins'.
Thomas H. Hawkins

kjs

c.c. Mr. William F. Carr
Campbell and Black, P.A.
P. O. Box 2208
Santa Fe, New Mexico 87501

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
17 September 1980

EXAMINER HEARING

IN THE MATTER OF:)
)
)
Case 6822 being reopened pursuant) CASE
to the provisions of Order No.) 6822
R-6293, which order created the)
West Double X-Wolfcamp Gas Pool)
as a retrograde gas condensate)
pool . . .)

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation	Ernest L. Padilla, Esq.
Division:	Legal Counsel to the Division
	State Land Office Bldg.
	Santa Fe, New Mexico 87501

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

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MR. STAMETS: We'll call next Case 6822.

MR. PADILLA: In the matter of Case 6822 being reopened pursuant to the provisions of Order No. R-6293, which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein.

MR. STAMETS: At the request of the applicant this case will be continued to the October 1st Examiner Hearing.

(Hearing concluded.)

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

Sally W. Boyd C.S.R.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

Ex. 100-6822-1780
9-17
Richard L. Stant, Examiner
Oil Conservation Division

NEW MEXICO
 ENERGY AND MINERALS DEPARTMENT
 OIL CONSERVATION DIVISION
 STATE LAND OFFICE BLDG.
 SANTA FE, NEW MEXICO
 17 September 1989

EXAMINER HEARING

IN THE MATTER OF:

Case 6522 being reopened pursuant to the provisions of Order No. K-6522, which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool . . .

CASE
 6822

BEFORE: Richard L. Stanets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
 Division:

Ernest L. Padilla, Esq.
 Legal Counsel to the Division
 State Land Office Bldg.
 Santa Fe, New Mexico 87501

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
 Santa Fe, New Mexico 87501
 Phone (505) 451-7409

MR. STANTON: I'll call next Case 6822.

MR. PABLO: In the matter of Case 6812 being reopened pursuant to the provisions of Order No. R-6293, which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein.

MR. STANTON: At the request of the applicant this case will be continued to the October 1st Examiner Hearing.

(Hearing concluded.)

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 191-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I do hereby certify that the foregoing is
a true and correct copy of the transcript
of the hearing held on _____ 19____.
_____, Examiner,
Oil Conservation Division

CASE 6996: (Continued from September 3, 1980, Examiner Hearing)

Application of John E. Schalk for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Blanco Mesaverde Pool underlying the NE/4 of Section 8, Township 25 North, Range 3 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7034: Application of Merrion & Bayless for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of South Blanco-Pictured Cliffs and Otero-Chacra production in the wellbore of its Atlantic Well No. 1 located in Unit O of Section 32, Township 26 North, Range 6 West.

CASE 7035: Application of Merrion & Bayless for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Gallegos-Gallup and Basin-Dakota production in the wellbore of its Delhi Taylor Well No. 1 located in Unit M of Section 4, Township 26 North, Range 11 West.

CASE 7036: Application of J. Gregory Merrion for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pictured Cliffs formation underlying the SE/4 of Section 34, Township 25 North, Range 6 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7037: Application of Mesa Petroleum Co. for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Chacra and Mesaverde production in the wellbore of its State Com AF Well No. 28 located in Unit I of Section 36, Township 29 North, Range 10 West.

CASE 7020: (Continued from September 3, 1980, Examiner Hearing)

Application of Mesa Petroleum Co. for pool creation, special pool rules and an oil discovery allowable, Rio Arriba and San Juan Counties, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Gallup oil pool for its South Blanco Federal Well No. 1-6 located in Unit A of Section 6, Township 23 North, Range 7 West, and special rules therefor, including a provision for 80-acre spacing units. Applicant further seeks a discovery allowable for the aforesaid well.

CASE 6822: (Continued from September 17, 1980, Examiner Hearing)

In the matter of Case 6822 being reopened pursuant to the provisions of Order No. R-6293 which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein. Operator(s) may appear and present evidence to establish the true nature of the reservoir and proper rates of withdrawal therefrom.

CASE 7038: Application of Natura Energy Corporation for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the San Andres formation underlying the NE/4 NE/4 of Section 6, Township 19 South, Range 39 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7039: Application of Red Mountain & Associates for a waterflood project, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Chaco Wash-Mesaverde Oil Pool by the injection of water into the Chaco Wash Sand formation through eight wells at various orthodox and unorthodox locations in Section 28 of Township 20 North, Range 9 West.

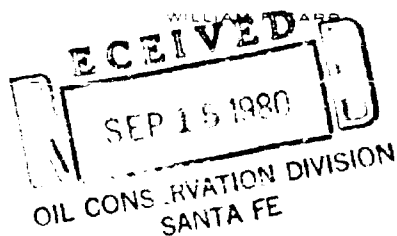
CASE 7040: Application of Beico Petroleum Corporation for reclassification or a new gas pool and a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the reclassification of the Wilson Strawn Pool as a gas pool or, in the alternative, the creation of a new gas pool for its State 12 Well No. 1 located in Unit G of Section 12, Township 21 South, Range 34 East; applicant further seeks approval of a standard gas proration unit for said well comprising the E/2 of said Section 12, or in the alternative, a non-standard unit comprising the NE/4, N/2 SE/4 and SE/4 SE/4 of said Section 12.

CAMPBELL AND BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR

POST OFFICE BOX 220A
JEFFERSON PLACE
SANTA FE, NEW MEXICO 87501
TELEPHONE (505) 988-4421



September 11, 1980

Mr. Joe D. Ramey,
Director
Oil Conservation Division
New Mexico Department of
Energy and Minerals
Post Office Box 2088
Santa Fe, NM 87501

Re: Case 6822: In the matter of Case 6822 being
reopened pursuant to the provisions of Order
No. R-6293 which Order created the West XX
Wolfcamp Gas Pool as a retrograde gas condensate
pool and set special production limitations
therein.

Dear Mr. Ramey:

Mesa Petroleum Company, applicant in Case 6822, requests
that the above-referenced hearing scheduled for September 17,
1980, be continued to the examiner hearing to be held on
October 1, 1980.

Your attention to this request is appreciated.

Very truly yours,

A handwritten signature in cursive script, appearing to read "William F. Carr".

William F. Carr

WFC:dls
cc: D.Dale Gillette

CASE 7020: Application of Mesa Petroleum Co. for pool creation, special pool rules and an oil discovery allowable, Rio Arriba and San Juan Counties, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Gallup oil pool for its South Blanco Federal Well No. 1-6 located in Unit A of Section 6, Township 23 North, Range 1 West, and special rules therefor, including a provision for 80-acre spacing units. Applicant further seeks a discovery allowable for the aforesaid well.

CASE 6822: (Reopened and Readvertised)

In the matter of Case 6822 being reopened pursuant to the provisions of Order No. R-6293 which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein. Operator(s) may appear and present evidence to establish the true nature of the reservoir and proper rates of withdrawal therefrom.

CASE 6996: (Continued from August 20, 1980, Examiner Hearing)

Application of John E. Schalk for compulsory pooling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Blanco Mesaverde Pool underlying the NE/4 of Section 6, Township 25 North, Range 3 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

Docket No. 28-80

DOCKET: COMMISSION HEARING - THURSDAY - SEPTEMBER 4, 1980

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 6889: (DE NOVO)

Application of Belco Petroleum Corporation for directional drilling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill a well, the surface location of which is 1980 feet from the North line and 920 feet from the West line of Section 36, Township 22 South, Range 30 East, in such a manner as to bottom it at an unorthodox location within 100 feet of a point 1320 feet from the North line and 2640 feet from the West line of said Section 36 in the Morrow formation, the N/2 of said Section 36 to be dedicated to the well.

Upon application of Duval Corporation this case will be heard De Novo pursuant to the provisions of Rule 1220.

Evidence and testimony or arguments in this hearing shall be limited to the issue of whether Duval Corporation has standing to object to the application of Belco Petroleum Corporation.

Mesa

R6293-17

Sept 17-20

Sept 17-20
Set for
Sept 3

I believe I believe this triggers
some action under R-6293-17. If
it does we need to schedule it and
let Mesa and/or its attorney know. Dick

CASE 7011: (Continued from August 20, 1980, Examiner Hearing)

Application of Amoco Production Company for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Fruitland and Blanco-Pictured Cliffs production in the wellbores of the following six wells: Elliott "C" No. 1, SE/4 of Section 9, Township 30 North, Range 9 West; Elliott "B" No. 8, NE/4 of Section 10; "A" Nos. 3 and 2, NE/4 and NW/4, Section 11; "D" No. 7, SW/4 of Section 11; and "E" No. 1, NW/4 of Section 14, all in Township 29 North, Range 9 West.

CASE 7019: (Continued from September 3, 1980, Examiner Hearing)

Application of Amoco Production Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the W/2 of Section 30, Township 23 South, Range 25 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 6991: (Continued from September 3, 1980, Examiner Hearing)

Application of Amoco Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in a 100 foot perforated interval between 4400 feet and 4800 feet in its South Hobbs Unit Well No. 103 in Unit B of Section 15, Township 19 South, Range 38 East, Hobbs Grayburg-San Andres Pool.

CASE 7024: Application of Southland Royalty Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the E/2 of Section 35, Township 18 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7025: Application of Southland Royalty Company for compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Pennsylvanian formation underlying the W/2 of Section 35, Township 18 South, Range 29 East, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well, and a charge for risk involved in drilling said well.

CASE 7005: (Continued from August 20, 1980, Examiner Hearing)

Application of Sol West III for an NGPA determination, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a new onshore reservoir determination in the Morrow formation for his Turkey Track-Morrow Sand Well No. 1 in Unit I of Section 26, Township 18 South, Range 28 East.

CASE 6822: (Continued from September 3, 1980, Examiner Hearing)

In the matter of Case 6822 being reopened pursuant to the provisions of Order No. R-6293 which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein. Operator(s) may appear and present evidence to establish the true nature of the reservoir and proper rates of withdrawal therefrom.

CASE 7026: Application of Bass Enterprises Production Company for pool creation, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Bone Spring oil pool for its Big Eddy Unit Well No. 60 located in Unit J of Section 20, Township 21 South, Range 28 East, and the promulgation of special rules therefor including a gas-oil ratio limitation of 10,000 to one.

CASE 7027: Application of W. A. Moncrief, Jr. for an NGPA determination, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a new onshore reservoir determination in the Morrow formation for his Marathon State Com. Well No. 1 in Unit J of Section 11, Township 24 South, Range 24 East.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
3 September 1980

EXAMINER HEARING

IN THE MATTER OF:

Case 6822 being reopened pursuant to)
the provisions of Order Number R-6293,) CASE
which order created the West Double X-) 6822
Wolfcamp Gas Pool as a retrograde gas)
condensate pool and set special pro-)
duction limitations therein.)

BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation	Ernest L. Padilla, Esq.
Division:	Legal Counsel to the Division
	State Land Office Bldg.
	Santa Fe, New Mexico 87501

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 MR. NUTTER: Call next Case Number 6822.

2 MR. PADILLA: In the matter of Case 6822
3 being reopened pursuant to the provisions of Order Number
4 R-6293, which order created the West Double X-Wolfcamp Gas
5 Pool as a retrograde gas condensate pool and set special pro-
6 duction limitations therein. Operator(s) may appear and
7 present evidence to establish the true nature of the reser-
8 voir and proper rates of withdrawal therefrom.

9 MR. NUTTER: Applicant has requested
10 continuance.

11 Case Number 6822 will be continued to
12 the Examiner Hearing scheduled to be held at this same place
13 at 9:00 o'clock a. m. September 17th, 1980.

14
15 (Hearing concluded.)
16
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SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 453-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

Sally W. Boyd C.S.R.

I do hereby certify that the foregoing is
a correct and true transcript of the hearing in
the case of 6822
dated 9/3 1980
[Signature], Examiner
Oil Conservation Division

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

STATE OF NEW MEXICO
 ENERGY AND MINERALS DEPARTMENT
 OIL CONSERVATION DIVISION
 STATE LAND OFFICE BLDG.
 SANTA FE, NEW MEXICO
 3 September 1980

EXAMINER HEARING

 IN THE MATTER OF:)
)
)

Case 6822 being reopened pursuant to)
 the provisions of Order Number R-6293,)
 which order created the West Double X-)
 Wolfcamp Gas Pool as a retrograde gas)
 condensate pool and set special pro-)
 duction limitations therein.)
)

CASE
 6822

 BEFORE: Daniel S. Nutter

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
 Division:

Ernest L. Padilla, Esq.
 Legal Counsel to the Division
 State Land Office Bldg.
 Santa Fe, New Mexico 87501

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
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 Phone (505) 455-7499

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MR. HUTCHER: Call next Case Number 6822.

MR. PADILLA: In the matter of Case 6822 being reopened pursuant to the provisions of Order Number R-6293, which order created the West Double X-Wolfcamp Gas Pool as a retrograde gas condensate pool and set special production limitations therein. Operator(s) may appear and present evidence to establish the true nature of the reservoir and proper rates of withdrawal therefrom.

MR. HUTCHER: Applicant has requested continuance.

Case Number 6822 will be continued to the Examiner Hearing scheduled to be held at this same place at 9:00 o'clock a. m. September 17th, 1980.

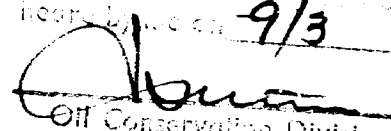
(Hearing concluded.)

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREPY CERTIFY that
the foregoing Transcript of Hearing before the Oil Conserva-
tion Division was reported by me; that the said transcript
is a full, true, and correct record of the hearing, prepared
by me to the best of my ability.

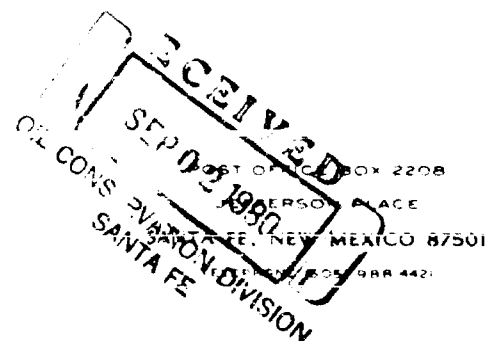
SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I hereby certify that the foregoing is
a true and correct copy of the transcript
of the hearing held on 9/3 at 6822
1280.
, Examiner
Oil Conservation Division

CAMPBELL AND BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR



August 28, 1980

Mr. Joe D. Ramey, Director
Oil Conservation Division
New Mexico Department
of Energy and Minerals
Post Office Box 2088
Santa Fe, NM 87501

Re: Case 6822: In the matter of Case 6822 being
reopened pursuant to the provisions of Order No.
R-6293 which order created the West Double
X-Wolfcamp Gas Pool as a retrograde gas condensate
pool and set special production limitations
therein.

Dear Mr. Ramey:

Mesa Petroleum Company, applicant in Case 6822,
requests that the above-referenced hearing scheduled
for September 3, 1980, be continued to the examiner
hearing to be held on September 17, 1980.

Your attention to this request is appreciated.

Very truly yours,


William F. Carr

WFC:arf

cc Mr. D. Dale Gillette



BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

April 17, 1980

Mr. D. Dale Gillette
Attorney
Mesa Petroleum Company
P. O. Box 2009
Amarillo, Texas 79189

Re: CASE NO. 6822
ORDER NO. R-6293-A

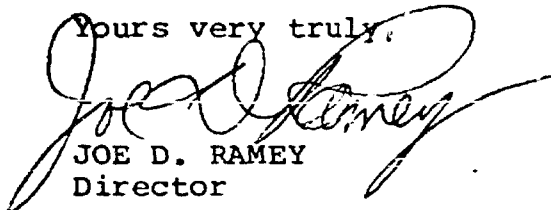
Applicant:

Mesa Petroleum Company

Dear Sir:

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

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other William F. Carr



BRUCE KING
GOVERNOR
LARRY KEHOE
SECRETARY

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

March 24, 1980

Mr. D. Dale Gillette
Attorney
Mesa Petroleum Company
P. O. Box 2009
Amarillo, Texas 79189

Re: CASE NO. 6822
ORDER NO. R-6293

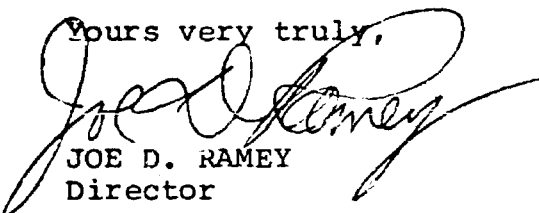
Applicant:

Mesa Petroleum Company

Dear Sir:

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

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other William F. Carr

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
27 February 1980

EXAMINER HEARING

IN THE MATTER OF:

Application of Mesa Petroleum Co. for) CASE
a gas well classification and unortho-) 6822
dox location, Lea County, New Mexico.)

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation
Division:

Ernest L. Padilla, Esq.
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant:

William F. Carr, Esq.
CAMPBELL & BLACK P. A.
P. O. Box 2208
Santa Fe, New Mexico 87501

D. Dale Gillette, Esq.
MESA PETROLEUM COMPANY
P. O. Box 2009
Amarillo, Texas 79189

SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

I N D E X

JOSEPH JEFFERS

Direct Examination by Mr. Gillette 4

Cross Examination by Mr. Stamets 10

L. M. CARNES

Direct Examination by Mr. Gillette 11

Cross Examination by Mr. Stamets 18

E X H I B I T S

Applicant Exhibit One, Map 5

Applicant Exhibit Two, Cross Section 6

Applicant Exhibit Three, Document 12

Applicant Exhibit Four, Graph 14

Applicant Exhibit Five, 24-hour Flow Test 15

SALLY W. BOYD, C.S.R.

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SALLY W. BOYD, C.S.R.

Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 MR. STAMETS: Call next Case 6822.

2 MR. PADILLA: Application of Mesa Pet-
3 roleum Company for gas well classification and unorthodox
4 location, Lea County, New Mexico.

5 MR. CARR: Mr. Examiner, I'm William F.
6 Carr, Campbell and Black, P. A., representing Mesa Petro-
7 leum Company.

8 I am associated today with Mr. D. Dale
9 Gillette, attorney for Mesa Petroleum Company, who will
10 present this case.

11 MR. GILLETTE: Thank you, Mr. Carr.

12 Mr. Examiner, we have two witnesses to-
13 day, Mr. Joe Jeffers of Midland, and Mr. Les Carnes of
14 Amarillo.

15 I've left two copies of our exhibits.
16 We have five exhibits; I've provided you with copies of each
17 of those up there.

18 MR. STAMETS: I'd like to have both of
19 those witnesses stand and be sworn at this time.

20
21 (Witnesses sworn.)

22
23 MR. GILLETTE: Mr. Examiner, if I may,
24 I'd like to make just a brief opening statement.

25 The application today is the result of

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 mesa Petroleum Company Drilling the No. 1 Jog State Well.
2 When we drilled this well it was originally projected for the
3 Morrow Sand at about 15,000 feet. There was no production
4 encountered and we backed up the hole about 13,000 feet,
5 13,400, and completed in the Wolfcamp.

6 Originally filed with the Commission was
7 the dedication of the west half of Section 2, Township 24
8 South, Range 33 East, dedicated to the well, when we pro-
9 jected to the Morrow.

10 As a result of this completion in the
11 Wolfcamp, and as a result of some unusual characteristics
12 of the well, we are here today wanting to present data to
13 you to show what we believe to be a retrograde condensation
14 well, and likewise dedicating the south half of that section
15 to the well.

16
17 JOSEPH JEFFERS

18 being called as a witness and having been duly sworn upon
19 his oath, testified as follows, to-wit:

20
21 DIRECT EXAMINATION

22 BY MR. GILLETTE:

23 Q. Would you state your name and address
24 for the Examiner?

25 A. Joseph W. Jeffers, Midland, Texas.

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 Geologist with Mesa Petroleum.

2 Q Okay, sir. And Mr. Jeffers, have you
3 previously testified before the Oil Conservation Division
4 of New Mexico as a geologist?

5 A I have.

6 Q Were your qualifications at that time
7 made a matter of record and were you accepted as an expert
8 by the Oil Conservation Division at that time?

9 A I was.

10 MR. GILLETTE: Mr. Examiner, is this
11 witness qualified?

12 MR. STAMETS: The witness is considered
13 qualified.

14 MR. GILLETTE: Thank you, sir.

15 Q Mr. Jeffers, are you familiar with the
16 application of Mesa Petroleum Company being heard today?

17 A I am.

18 Q Are you familiar with the Delaware
19 working interest Unit and the No. 1 Jog State Well, the well
20 in question in this hearing?

21 A I am.

22 Q Okay. I refer to what has been marked
23 as Mesa Petroleum Company Exhibit Number One. Would you
24 explain to the Examiner what this exhibit represents?

25 A Exhibit Number One is a map on a scale

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 of 1 inch equal 2000 feet of a portion of Lea County, New
2 Mexico, primarily covering a portion of Township 24 South,
3 Range 33 East.

4 The Delaware Unit in question is repre-
5 sented by the area outlined in the stippling, covering
6 Sections 2, 3, 10, and 11 of Township 24, Range 33 East.

7 Mesa is the designated operator for this
8 working interest unit. The unorthodox location for which
9 we seek approval is represented by the gas symbol and well
10 name, located 1980 from the south and 660 from the east
11 of Section 2, Township 24 South, Range 33 East.

12 The two Mesa leases in the south half
13 of the section representing 320 acres, is the proration
14 unit requested to be dedicated to the Mesa No. 1 Jog State.
15 There are no offset operators other than the working interest
16 parties to the well in question. The other working interest
17 parties in the unit concur with our action in this case.

18 Q All right, Mr. Jeffers, let me refer you
19 to what has been marked as Mesa Petroleum Company Exhibit
20 Number Two. Would you describe what this exhibit represents
21 to the Examiner, please?

22 A Exhibit Two is a structural cross section
23 designated A-A', and the line of the section is shown on
24 the map, Exhibit Number One.

25 This cross section shows the thin

SALLY W. BOYD, C.S.R.
Rt. 1 Box 193-B
Santa Fe, New Mexico 87501
Phone (505) 455-7409

1 Wolfcamp pay zone in the No. 1 Jog State. I think if you
2 look real closely you'll be able to see the little red per-
3 forations. And the correlative zone in the Amoco No. 1
4 Federal H, two miles to the north.

5 The cross section indicated that the
6 Wolfcamp pay may have considerable areal extent on the
7 flank of the Bell Lake structure, which is a field just to
8 the east of us, and could become a primary objective zone
9 for the development on the Delaware Unit.

10 Please refer to Exhibit One again. The
11 wells on this map penetrated deep enough to test the Wolf-
12 camp pay. The wells to the east do not have a stratigraphic
13 equivalent zone because of non-deposition on the Bell Lake
14 structure.

15 The Getty well to the west in Section 4
16 is basinward and does not have a similar carbonate develop-
17 ment.

18 Q And, Mr. Jeffers, just for our clarifi-
19 cation, Amoco well that you're referring to, that's in
20 Section 26 up above on Township 23 South, Range 33 East,
21 is that correct?

22 A That's correct.

23 Q And the Getty Well you made reference to
24 is over here in Section 4, is that correct?

25 A That is correct, sir.

1 Q All right, sir. Mr. Jeffers, what is the
2 purpose of requesting the south half dedication to the No. 1
3 Jog State at this hearing?

4 A The purpose of the subject request is
5 to allow Mesa, et al, to hold the expiring lease in the
6 southeast quarter of Section 2, and have time to evaluate
7 by several months of production the results of the comple-
8 tion in the thin Wolfcamp pay in the No. 1 Jog State.

9 The additional purpose is to determine
10 if additional development for the Wolfcamp pay is justified
11 in the Delaware Unit.

12 As will be further shown by Mr. Carnes'
13 testimony, it will be necessary to further evaluate this
14 production data of the No. 1 Jog State, due to the character-
15 istics the well is displaying.

16 As a result of this delay, Mesa desires
17 to hold the lease covering the southeast quarter of Section
18 2 pending this evaluation. The lease expires April, 1980.

19 The original drill site and stand-up
20 320-acre unit was determined based on a Morrow objective
21 for the well; however, when the Morrow proved unproductive,
22 and the well was completed in the Wolfcamp, geologic fac-
23 tors not present in the Wolfcamp dictates further develop-
24 ment of the Wolfcamp be in a north/south direction.

25 Therefor we request a south half 320-acre

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1 dedication for this well.

2 Q Mr. Jeffers, the location of the No. 1

3 Jog State, that is an orthodox location for a stand-up unit,

4 is it not?

5 A That is correct.

6 Q All right, sir, so by -- as a result of

7 us seeking to turn this on its side and make it a lay-down

8 unit, we have what has been created then, an unorthodox

9 location.

10 A That is correct.

11 Q Where it is presently located. All right,

12 sir.

13 Mr. Jeffers, did you prepare or did you

14 have prepared under your supervision, what has been marked

15 as Mesa Petroleum Company Exhibit Number One and Mesa Pet-

16 roleum Company Exhibit Number Two?

17 A I did.

18 Q All right, sir.

19 MR. GILLETTE: Mr. Examiner, I'd ask

20 that Mesa Petroleum Company Exhibit Number One and Exhibit

21 Number Two be admitted in the record of this hearing.

22 MR. STAMETS: These exhibits will be

23 admitted.

24 MR. GILLETTE: We have nothing further

25 of this witness.

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CROSS EXAMINATION

BY MR. STAMETS:

Q Mr. Jeffers, did you say or indicate that another well was currently projected or being considered for the north half of Section 2?

A In the event that the situation, or the economics of it justify it, we would.

Q Now, you indicated that geological conditions made development in the north half of Section 2 the most logical second stage. What type of conditions are you referring to?

A We do not have the Wolfcamp zone present in the wells in section on the east side of the map, and it is also not present in the well to the west; however, it is projected north/south along the west side of the Bell Lake structure, based on our geologic evidence.

Q So that would be the most logical way to develop, but based on what you've seen so far?

A Yes, sir.

Q What's the thickness of the pay section there?

A We're looking at about 12 feet, I believe. In two thin zones.

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1 MR. STAMETS. Any other questions of this
2 witness? He may be excused.
3 MR. GILLETTE: Mr. Carnes.
4
5 L. M. CARNES
6 being called as a witness and having been duly sworn upon
7 his oath, testified as follows, to-wit:
8
9 DIRECT EXAMINATION
10 BY MR. GILLETTE:
11 Q Okay, sir, Mr. Carnes, would you state
12 your name and your residence, and by whom you're employed?
13 A L. M. Carnes. I'm employed by Mesa Pet-
14 roleum Co., in Amarillo, Texas.
15 Q And, Mr. Carnes, in what capacity are
16 you employed by Mesa Petroleum Company?
17 A I'm Manager of Reservoir Engineering.
18 Q All right, sir. Mr. Carnes, have you
19 previously given testimony before the Oil Conservation
20 Division of New Mexico?
21 A Yes, I have.
22 Q And at that time were your qualifications
23 as a petroleum reservoir engineer acceptable?
24 A Yes, they were.
25 MR. GILLETTE: Mr. Examiner, we tender

1 the witness as an expert petroleum engineer.

2 MR. STAMETS: He is considered qualified.

3 MR. GILLETTE: Thank you, sir.

4 Q Mr. Carnes, are you familiar with Mesa's
5 application in this case, Number 6822, and have you pre-
6 pared testimony and supporting exhibits for this hearing?

7 A Yes, sir.

8 Q All right, sir. I'd refer you to what
9 has been marked as Mesa Petroleum Company Exhibit Number
10 Three. Would you explain the data that's represented on
11 this particular exhibit, please, sir?

12 A Exhibit Three is a two-page exhibit
13 summarizing the completion information, fluid and flow be-
14 havior, and pressure data on Mesa's Jog State No. 1, to-
15 gether with a comparison of these key data with another
16 Wolfcamp gas well in the area.

17 First of all, the completion information
18 at the top of the page shows that we have completed Jog
19 State No. 1 in the Wolfcamp formation with perforations
20 13,348 to 13,364 feet.

21 After treatment of 3000 gallons of 15
22 percent acid the well flowed on initial potential 1121 Mcf
23 per day at 1100 psig flowing tubing pressure.

24 The calculated absolute open flow was
25 1148 Mcf per day.

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1 The fluid and flow characteristics are
2 such that the condensate had a 54.7 degree API gravity at
3 60 degrees Fahrenheit. It was straw color; had separator
4 gas gravity of .978; and based on our flow rates of gas,
5 that I'll get into in just a minute, the condensate yield
6 was 249 barrels per million cubic feet, and this is based
7 on a recent 24-hour test taken on February 25, 1980, in
8 which the average flow rate was 219 Mcf per day and during
9 which we recovered 54.6 barrels of condensate.

10 The pressure data is such that after 2-
11 weeks shut-in, we measured and observed on the surface, a
12 pressure of 7265 psig. At the same time the observed bottom
13 hole pressure was 10,563 psig at 13,356 feet.

14 Based on these pressures, we determined
15 a static gas gradient of .247 psi per foot.

16 The Jog State No. 1 has very similar flow
17 and fluid characteristics to Fairview Mills Fed No. 1,
18 which was a well drilled by Exxon in 1975, and it's located
19 in Section 14, 25 South, 34 East, Lea County, New Mexico.
20 It was completed in the Wolfcamp at a depth of 13,797 to 805
21 feet, and during a 3-hour test recovered condensate at a
22 yield of 240 barrels per million. And the characteristics
23 of this liquid recovery, very similar to Mesa's Jog State 1,
24 in that the gravity, API gravity, was 52.1 degrees. Shown
25 on this second page of my exhibit it's indicated to be 50.1,

1 so that needs to be corrected. That was taken from a scout
2 ticket and checking your files in the Commission offices
3 this morning, I found this 52.1 degrees.

4 The shut in tubing pressures were very
5 similar to Mesa's Jog State, around 7200 psig.

6 So that comparison indicates that the
7 two wells are very similar in producing characteristics and
8 were completed in the same geologic horizon, the Wolfcamp,
9 at very similar depths.

10 Q Now, Mr. Carnes, I direct your attention
11 to what has been marked as Mesa Petroleum Company Exhibit
12 Number Four. That is a graph representing or showing --
13 setting forth a curve. Would you explain to the Examiner
14 the -- what this graph represents?

15 A It represents our static gradient survey,
16 taken on the Jog State No. 1 Well on the 24th of February
17 of this year.

18 It's a plot of pressure at a certain
19 depth, and it simply represents the gradient of the well,
20 the slope of that line, in which you plot depth versus
21 pressure, represents a gradient in the tubing after the
22 well had been shut-in for two weeks. It's a straight line.
23 There's no change in slope, and from this we conclude there
24 is no gas/liquid contact in the well.

25 Q Mr. Carnes, if you had experienced liquid

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1 in the -- in the tubing as you ran this test, what might
2 you -- what might you expect to see the curve of this graph
3 reflect?

4 A. Okay, the curve would deviate to the
5 right if you encounter liquid, which is heavier than the
6 gas, and would indicate a greater pressure for the same
7 depth. So it would establish another straight line that
8 would deviate to the right at a different slope.

9 Q. All right, sir. Now, directing your
10 attention to what has been marked as Mesa Petroleum Company
11 Exhibit Number Five, which is labeled a 24-hour flow test
12 of February 25th, 1980, would you describe to the Examiner
13 what this exhibit purports to show?

14 A. This exhibit shows the 2-hour time and
15 rate for 12 different intervals on a 2-hour basis, of the
16 gas rate, condensate production, and flowing tubing pressure.
17 The significance of this chart, or this table, are as
18 follows:

19 First, there was a liquid dump in the
20 separator five minutes after flow was initiated in the well,
21 and then the first two hours we recovered 5.5 barrels of
22 condensate, while the gas rate was 223 Mcf per day.

23 The key thing is that five minutes after
24 flow started, we had a dump of liquid in our separator.

25 The average producing rate during the

1 24-hour period was 210 Mcf per day and we recovered 54.6
2 barrels of condensate.

3 At the end of the 24-hour period we were
4 flowing approximately 170 Mcf per day at a 5750 psig flowing
5 tubing pressure. The average yield during the 24-hour
6 period was 249 barrels per million.

7 Now, we had similar experience as to what
8 fluids are recovered at the surface in retrograde gas con-
9 densate reservoirs as compared to an oil or solution gas
10 drive oil reservoir, and they are as follows:

11 We have wells that have been shut-in
12 that were oil nature producing at around 12,000 feet in
13 southeast New Mexico, and establish a complete gas gradient
14 in a well under shut-in conditions. Those wells are opened
15 up to flow and you get gas for a period of four to six
16 hours before the oil surfaces.

17 So based on this comparison of solution
18 gas drive oil reservoirs producing below the bubble point
19 versus this retrograde gas condensate reservoir, we conclude
20 that we have condensate because it's in the gas itself and
21 once the pressure drops between the wellhead and the sepa-
22 rator, we experienced a liquid dropout in five minutes.

23 Q So your conclusion would be that this
24 liquid is not in fact being produced from the formation?

25 A Right.

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1 Q Okay, sir. Mr. Carnes, as a result of
2 your study of these exhibits and this data, what conclusions
3 do you draw about the No. 1 Jog State Well?

4 A I believe that it's producing from a
5 rich retrograde gas condensate reservoir, the Wolfcamp, at
6 13,500 feet, and that it -- based on the comparison with
7 a similar well, which was classified as a gas well, that we
8 do in fact have a retrograde gas condensate reservoir.

9 Q In your opinion, Mr. Carnes, would this
10 well drain 320 acres?

11 A It's my opinion that it will drain 320
12 acres, and we want to get test data from it to confirm this.

13 Q In line with that, is it also your opinion
14 that it's going to be necessary to evaluate this well to
15 some further extent before we can adequately determine
16 whether another well can be drilled on this acreage, or
17 whether in fact 320 acres is even a proper spacing?

18 A That's correct.

19 Q Mr. Carnes, will the classification of
20 the No. 1 Jog State Well as a gas well and development on
21 320 acres as a spacing unit, prevent waste and protect
22 correlative rights?

23 A Yes, it will.

24 Q In your opinion will this maximize re-
25 covery of hydrocarbons from this well?

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A. Yes.

MR. GILLETTE: Mr. Examiner, excuse me --

Q. Mr. Carnes, were these exhibits Numbers --
Mesa Petroleum Company Exhibits Numbers Three, Four, and
Five prepared by you or under your supervision?

A. Yes, they were.

MR. GILLETTE: Mr. Examiner, we'd ask
that Exhibits Three, Four, and Five be admitted into the
record.

MR. STAMETS: These exhibits will be
admitted.

MR. GILLETTE: We have no further ques-
tions of Mr. Carnes.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Carnes, have you made any tests or
had tests made to determine the critical pressure in this
well?

A. Are you referring to the dewpoint?

Q. Yes.

A. No, we have not as yet. We will probably
take samples and have this run to see what the dewpoint
pressure is. In the meantime, we would prefer to flow the
well at fairly high tubing pressures, in order to minimize

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1 the condensation in the reservoir around the wellbore. We'll
2 try to minimize a pressure drop around the wellbore, and the
3 pressure drop would be limited to the surface equipment,
4 such that we recover the maximum amount of condensate.

5 Q. What kind of a pressure are you talking
6 about at this point?

7 A. I would recommend a flow rate of approxi-
8 mately 400 Mcf per day, which I think we can achieve at a
9 flowing tubing pressure in the neighborhood of 4000 pounds,
10 somewhere between 4000 and 4500 psig.

11 Q. When will you have the information on
12 the dewpoint of this well?

13 A. I would just have to speculate that we
14 would have to recover a surface sample and have it recom-
15 bined. It would probably be between two and three months.
16 It's possible that we could get it sooner, but it would be --
17 the labs are awful busy these days, and you can get the
18 sample to them, but they can't run it.

19 Q. Okay. Would the laboratory also be
20 looking at this to determine the most efficient flow rate
21 and flow conditions?

22 A. No, sir, they would not. We'd establish
23 that from tests after the well goes onstream to the pipe-
24 line.

25 Q. Okay, and how long do you estimate it

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1 would be before you have that information put together?

2 A. We are some 4000 feet away from, I believe,
3 a Transwestern pipeline in the area. We've talked to them.
4 Our gas contracts department takes care of the purchase
5 agreements with the gas purchase company. They're in com-
6 munication with Transwestern. It looks like that we would
7 probably have to lay our own line, so we could probably
8 expedite hookup and initial production by doing that, and
9 we would probably proceed along that line, and I would
10 estimate it could be two to three months again on it, on
11 the first hookup.

12 Q. So all of this is pending pipeline con-
13 nection, which is another two or three months down the line.

14 A. I would guess that it would be.

15 Q. I'm trying to estimate what sort of a
16 time period to put in any order which might be coming out
17 from this case for requiring re-opening the case.

18 A. Well, --

19 MR. GILLETTE: What -- what could you
20 recommend possibly in terms of giving -- giving Mesa a
21 satisfactory time lead to run the testing needed and to get
22 what we've done for re-opening this case?

23 A. Well, you mean -- are we looking at 320-
24 acre spacing? I'd say -- I'd like to have at least 18 months
25 to --

1 MR. STAMETS: I was thinking about half
2 of that much.

3 A. I see. It's interesting to note that in
4 that Fairview Mills Wolfcamp Gas Pool, temporary special
5 field rules were granted by the Commission in April of '75
6 for 640-acre spacing for a twelve month period, and I really
7 feel that, since we're proposing 320 acres, on a temporary,
8 possibly temporary, I don't know, we might propose this on
9 a permanent basis, really, the 320-acre spacing. I'm sure
10 we have a gas reservoir.

11 But I would -- I'd say twelve to eighteen
12 months I would like to see.

13 A SPECTATOR: We'd sure like to see
14 twelve months.

15 MR. JEFFERS: After it goes on production.

16 MR. STAMETS: Twelve to eighteen months
17 after it goes on production?

18 Well, we'll give that every consideration.

19 MR. STAMETS: Are there any other ques-
20 tions of this witness? He may be excused.

21 MR. GILLETTE: We have nothing further.

22 MR. STAMETS: The case will be taken
23 under advisement.
24
25

(hearing concluded.)

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REPORTER'S CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

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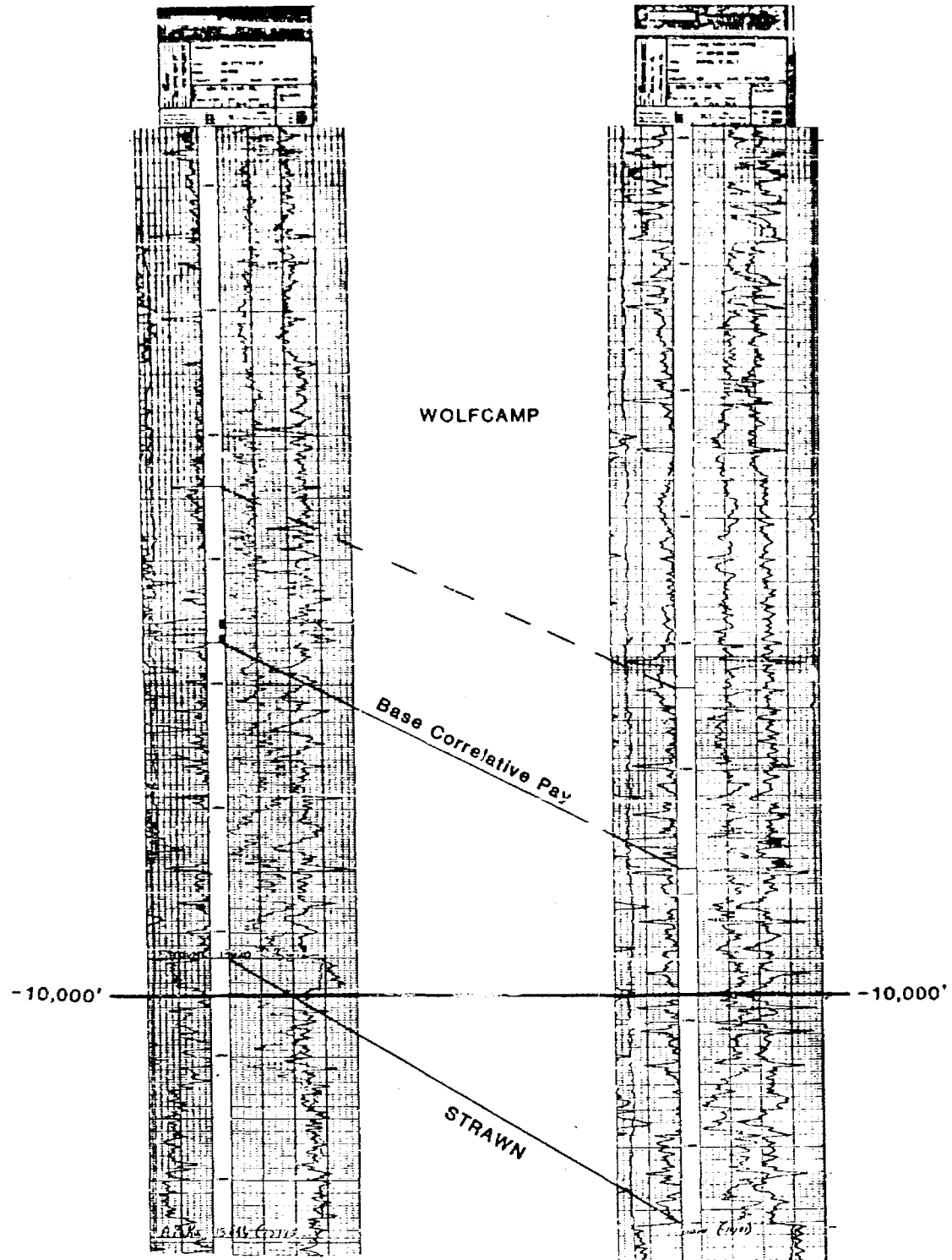
I do hereby certify that the foregoing is a complete record of the proceedings in the examiner hearing of Case No. 6823 heard by me on 3-27 1980.
Richard P. Thomas, Examiner
Oil Conservation Division

A'
SOUTH

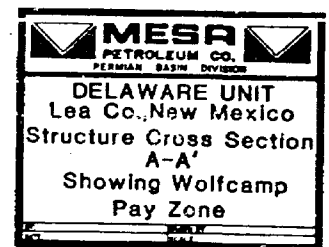
Mesa Pet.Co.
Jog State-1

Amoco
Federal H-1

A
NORTH



6822
MESA
2,700 ft



MESA PETROLEUM CO.
 JOG STATE NO. 1
 WOLFCAMP FORMATION
 SECTION 2-T24S-R33E
 LEA COUNTY, NEW MEXICO

DATE	2-24-80
TIME	10:00
BY	MESA PETRO CO.
HOURLY RATE	2,275 SC

I. COMPLETION INFORMATION

Initial Potential Date:	February 1, 1980
Formation:	Wolfcamp
Perforated Interval:	13,348'-13,354' and 13,360'-13,364'
Treatment:	Acidized with 3000 gal. 15% DS-30 and 600 to 1000 SCF/STB nitrogen in 7 stages
Potential Test:	SITP 7405 psig, 1121 MCFPD at 1100 psig FTP. CAOF 1,148 MCFPD

II. FLUID AND FLOW CHARACTERISTICS

Condensate Gravity:	54.7° API @ 60° F.
Condensate Description:	Straw color
Separator Gas Gravity:	0.678
Condensate Yield:	249 Bbls./MMSCF
Flow 219 MCFPD, 54.6 BCPD, @ 5800 psig FTP with condensate yield of 249 Bbls./MMCF on 2-25-80.	

III. PRESSURE DATA AND RESERVOIR DESCRIPTION

Date:	2-24-80
Observed BHP:	10,563 psig @ 13,356'
Observed SITP:	7,265 psig
Static Gradient:	.247 psi/ft.
Porosity:	3%
Permeability:	Unknown
Net Pay:	8 feet

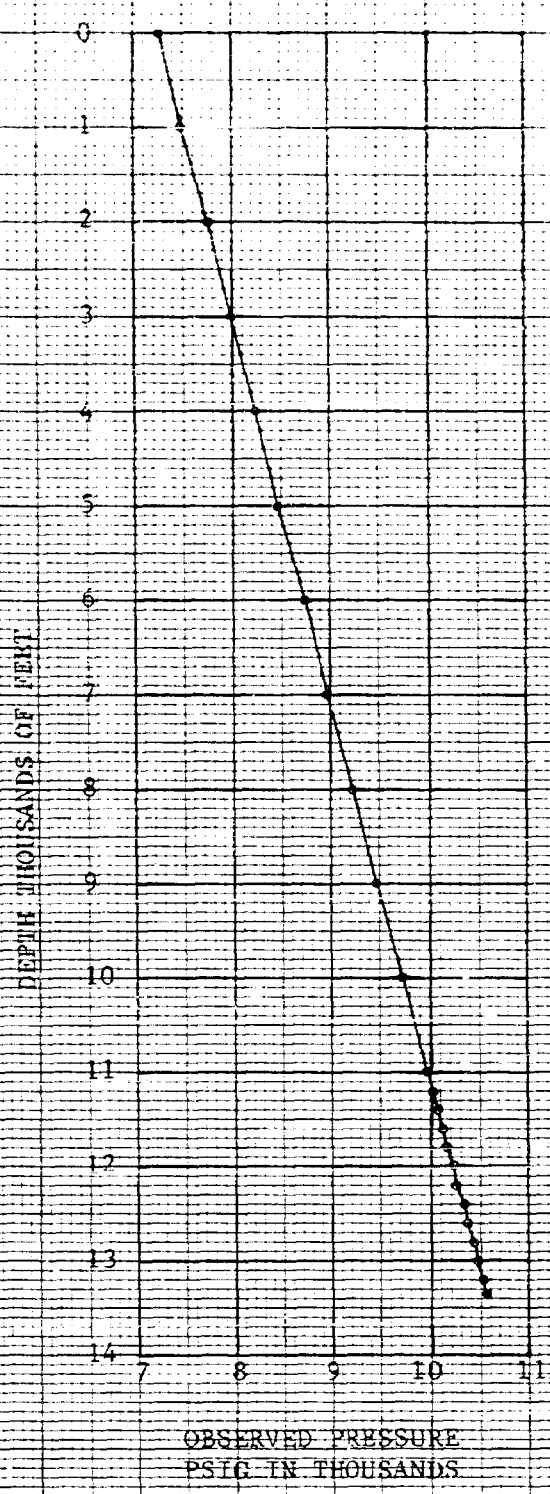
IV. ANALOGY WITH ANOTHER WOLFCAMP GAS WELL

	Jog State No. 1	Fairview Mills Fed. No. 1
Field	Undesignated Wolfcamp	Fairview Mills Wolfcamp
Location	2-24S-33E	14-25S-34E
Date Compl.	2-80	4-75
Perforations (ft.)	13,348-364	13,797-805
Flow Data		
Gas (MCF/D)	219	3,600*
Cond. (B/D)	55	864*
Yield (Bbls./MMCF)	249	240
FTP (psig)	5,953	2,420
SITP (psig)	7,265	7,177
Gas Gravity	.678	.702
Condensate Gravity ($^{\circ}$ API)	54.6	50.1 52.1

*Daily rates during a three-hour test.

LMC/kdm
2-26-80

MESA PETROLEUM CO.
 JOG STATE NO. 1
 WOLFCAMP FORMATION
 STATIC PRESSURE GRADIENT SURVEY OF 2/24/80



RECORDED BY: J. J. JENSEN
 DATE: 2-27-80
 WOLFCAMP FORMATION
 JOG STATE NO. 1
 MESA PETROLEUM CO.

MESA PETROLEUM CO.
JOG STATE NO. 1 WOLFCAMP ZONE
24-HOUR FLOW TEST OF 2-25-80

ELAPSED TIME (Hrs.)	GAS RATE (MCFPD)	COND. PROD. (Bbls.)	FTP (psig)	REMARKS
2	223	5.5	6200	First separator liquid dump in 5 minutes after initial flow,
4	253	3.4	6167	
6	254	3.2	6136	
8	246	4.0	5950	
10	246	5.5	5920	
12	239	5.2	5875	
14	210	5.0	5810	
16	220	5.3	5775	
18	219	5.0	5730	
20	184	4.3	5767	
22	167	4.2	5757	
<u>24</u>	<u>166</u>	<u>4.0</u>	<u>5750</u>	Average yield 249 Bbls./MMCF
TOTALS 24	219*	54.6	5953*	

*Average for 24-hour period.

APW:td
2-26-80

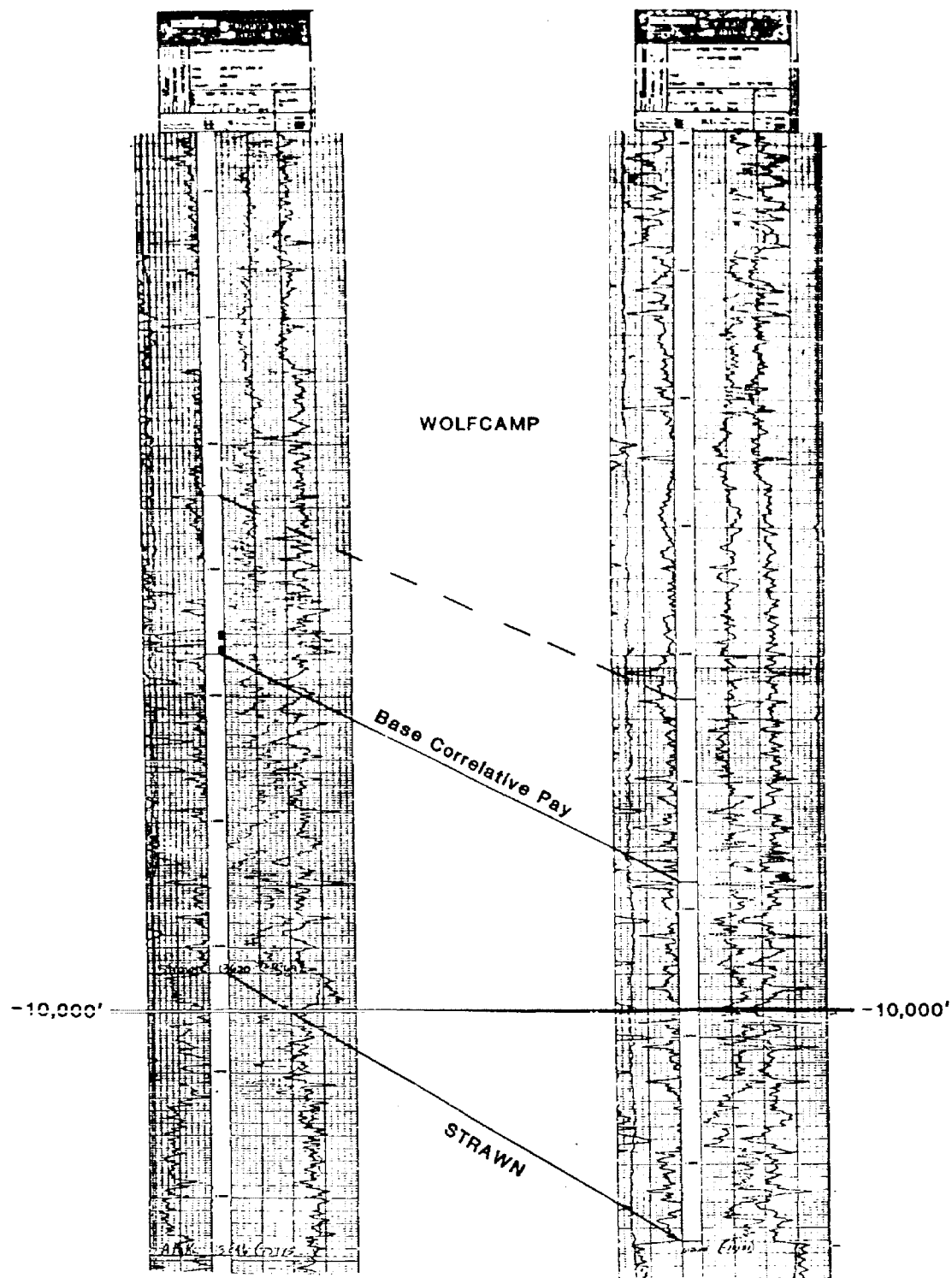
BEFORE EXAMINER STAMETS OIL CONSERVATION DIVISION EXHIBIT NO. <u>5</u> CASE NO. <u>6822</u> Submitted by <u>MESA</u> Hearing Date <u>2-27-80</u>

A'
SOUTH

Mesa Pet.Co.
Jog State-1

Amoco
Federal "H"-1

A
NORTH



RECORD	6822
DATE	2
TIME	MESA
BY	27-24

MESA
PETROLEUM CO.
PERMANENT BASIN DIVISION
DELAWARE UNIT
Lea Co., New Mexico
Structure Cross Section
A-A'
Showing Wolfcamp
Pay Zone

MESA PETROLEUM CO.
 JOG STATE NO. 1
 WOLFCAMP FORMATION
 SECTION 2-T24S-R33E
LEA COUNTY, NEW MEXICO

PETROLEUM PARAMETERS	
Oil	3
Gas	6822
Water	1651
Pressure	2-27-80

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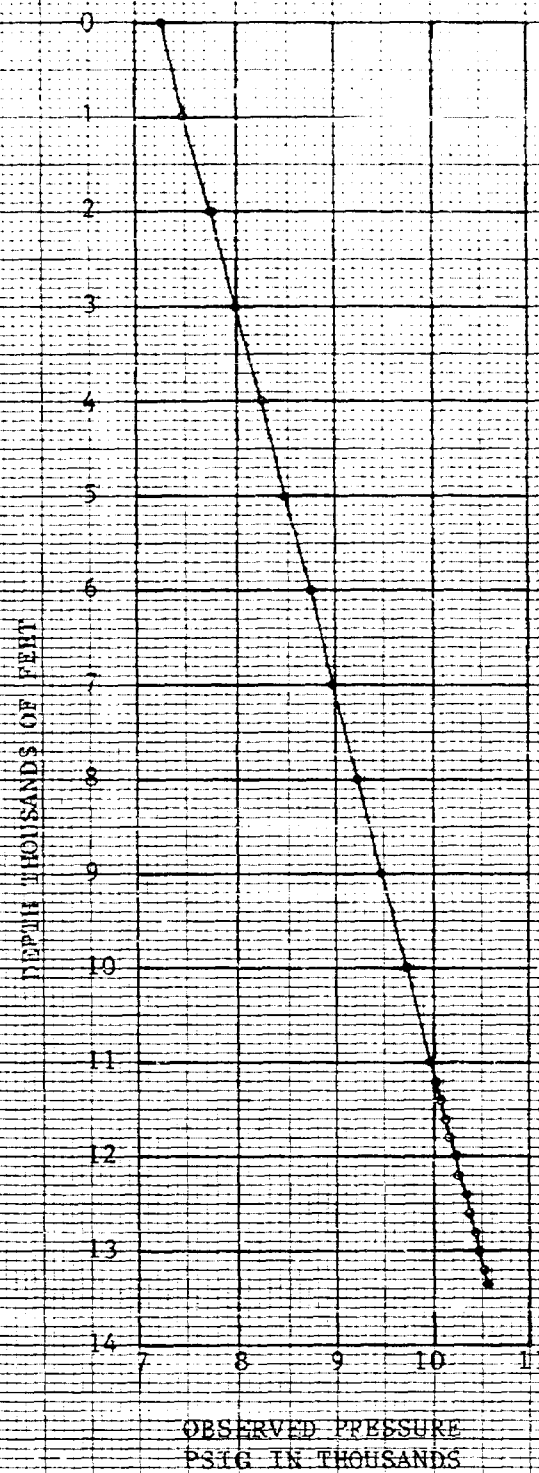
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LMC/kdm
2-26-80

MESA PETROLEUM CO.
JOG STATE NO. 1
WOLFCAMP FORMATION
STATIC PRESSURE GRADIENT SURVEY OF 2/24/80



*Indicator
170 gal liquid
bottom in well*

WELL NUMBER	WELL NAME	DATE	TIME
170	WELLS	2/27/80	
WELL DEPTH		WELL TYPE	
170		WELLS	

MESA PETROLEUM CO.
JOG STATE NO. 1 WOLFCAMP ZONE
24-HOUR FLOW TEST OF 2-25-80

ELAPSED TIME (Hrs.)	GAS RATE (MCFPD)	COND. PROD. (Bbls.)	FTP (psig)	REMARKS
2	223	5.5	6200	First separator liquid dump in 5 minutes after initial flow,
4	253	3.4	6167	
6	254	3.2	6136	
8	246	4.0	5950	
10	246	5.5	5920	
12	239	5.2	5875	
14	210	5.0	5810	
16	220	5.3	5775	
18	219	5.0	5730	
20	184	4.3	5767	
22	167	4.2	5757	
<u>24</u>	<u>166</u>	<u>4.0</u>	<u>5750</u>	Average yield 249 Bbls./MMCF
TOTALS 24	219*	54.6	5953*	

*Average for 24-hour period.

APW:td
2-26-80

BEFORE EXAMINER STAMETS	
OIL CONSERVATION DIVISION	
EXHIBIT NO. <u>5</u>	
CASE NO.	<u>6822</u>
Submitted by	<u>MESA</u>
Hearing Date	<u>2-27-80</u>

- CASE 6819: Application of V-F Petroleum, Inc. for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the McKee or Devonian formations, or both, underlying four 40-acre units, being the SE/4 SE/4, NE/4 SE/4, NW/4 SE/4, and SW/4 SE/4 of Section 21, Township 23 South, Range 37 East, North Teague Field, each to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said wells and the allocation of the cost thereof as well as actual operating costs and charges for supervision. Also to be considered will be the designation of applicant as operator of the wells and a charge for risk involved in drilling said wells.
- CASE 6373: (Reopened and Readvertised) (Continued from January 30, 1980, Examiner Hearing)
In the matter of Case 6373 being reopened pursuant to the provisions of Order No. R-5875 which order created the East High Hope-Abo Gas Pool with temporary special rules therefor providing for 320-acre spacing. All interested parties may appear and show cause why the East High Hope-Abo Gas Pool should not be developed on 160-acre spacing units.
- CASE 6820: Application of Boyd Operating Co. for a dual completion and unorthodox well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its Blakemore Federal Well No. 1 at an unorthodox Wolfcamp location in the center of Unit A of Section 20, Township 9 South, Range 26 East, to produce gas from the Wolfcamp and Abo formations.
- CASE 6821: Application of Shell Oil Company for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Blinebry and Drinkard production in the wellbore of its Andrews Well No. 1 located in Unit F of Section 14, Township 21 South, Range 37 East.
- CASE 6822: Application of Mesa Petroleum Co. for a gas well classification and unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the classification of its Jog State Well No. 1 as a retrograde gas condensate well with 320-acre spacing; applicant further seeks approval for the unorthodox location of said well in the center of Unit L of Section 2, Township 24 South, Range 32 East, the S/2 of said Section 2 to be dedicated to the well.
- CASE 6767: (Continued from February 13, 1980, Examiner Hearing)
Application of Alpha Twenty-One Production Company for two non-standard gas proration units, unorthodox well location, and approval of infill drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 40-acre non-standard proration unit comprising the NW/4 NW/4 of Section 27, Township 25 South, Range 37 East, Jalmat Gas Pool, to be dedicated to El Paso Natural Gas Company's Harrison Well No. 2, and also a 200-acre unit comprising the S/2 N/2 and NE/4 NW/4 of said Section 27 to be dedicated to a well to be drilled at an unorthodox location 1980 feet from the North line and 560 feet from the West line of Section 27. Applicant further seeks a finding that the drilling of the latter well is necessary to effectively and efficiently drain that portion of an existing proration unit which cannot be so drained by the existing well.

CAMPBELL AND BLACK, P.A.

LAWYERS

JACK M. CAMPBELL
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR
PAUL R. CALDWELL

POST OFFICE BOX 2208
JEFFERSON PLACE
SANTA FE, NEW MEXICO 87501
TELEPHONE (505) 988-4421

February 6, 1980

Mr. Joe D. Ramey
Division Director
Oil Conservation Division
New Mexico Department of Energy &
Minerals
Post Office Box 2088
Santa Fe, New Mexico 87501



Re: Application of Mesa Petroleum Company
for classification of the No. 1 Jog State
Well as a gas well and for an unorthodox
location, Lea County, New Mexico

Case 6822

Dear Mr. Ramey:

Enclosed in triplicate is the application of Mesa Petroleum Co. in the above-referenced matter. The applicant requests that this case be included on the docket for the examiner hearing scheduled to be held on February 27, 1980.

Very truly yours,

A handwritten signature in dark ink, appearing to read "William F. Carr". The signature is fluid and cursive, with a long horizontal stroke extending to the right.
William F. Carr

WFC:lr

Enclosures

cc: D. D. Dent
D. Dale Gillette

7-22-79

DIVISION

FILING

NO. 6822

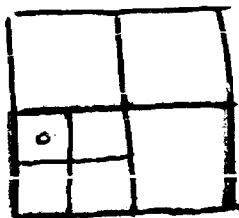
BEFORE THE
OIL CONSERVATION DIVISION
NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION
OF MESA PETROLEUM CO. FOR CLASSI-
FICATION OF THE NO. 1 JOG STATE
WELL AS A GAS WELL AND FOR AN
UNORTHODOX LOCATION, LEA COUNTY,
NEW MEXICO.

APPLICATION

Comes now, MESA PETROLEUM CO. (hereinafter referred to as Applicant), by and through its attorneys, and hereby makes application for an order classifying Applicant's No. 1 Jog State Well as a gas well, dedicating the S/2 of Section 2, Township 24 South, Range 32 East, Lea County, New Mexico to said well, and authorizing an unorthodox drilling location, and in support thereof would show the following:

1. Applicant owns oil and gas leases covering the S/2 of Section 2, Township 24 South, Range 32 East in Lea County, New Mexico. All of Sections 2, 3, 10 and 11, Township 24 South, Range 32 East, and the leases covering same, are dedicated to the Delaware Unit Operating Agreement dated March 16, 1979 between Applicant, as Operator, and various other working interest owners.
2. Heretofore, Applicant received from the Oil Conservation Division of the New Mexico Energy and Minerals Department (hereinafter referred to as the Division) a permit to drill a well at an orthodox location in the NW/4 of the SW/4, Section 2, Township 24 South, Range 32 East.



The well was projected as a gas well to the Morrow sands at a depth of 16,000 feet. At the projected depth no production was encountered and the well was recompleted at 13,400 feet in the Wolfcamp zone.

3. Applicant believes that the reservoir into which the No. 1 Jog State has been completed is a gas reservoir subject to retrograde condensation phenomenon. At the time this Application was being prepared Applicant had available results of surface testing only. The liquid condensate being produced from the well is of an amber color with a greenish tint and has tested at 54.7 API gravity. Applicant has run a pressure test in its surface separator and has concluded that the liquid phase is occurring in the separator and not being produced from the reservoir. In a gas reservoir, retrograde condensation can cause the loss of petroleum due to liquids adhering to rock particles and pooling of liquids in low pressure areas in the reservoir. Applicant believes that maximum recovery can be achieved by producing the reservoir as a gas reservoir with gas well spacing units rather than an oil reservoir, thereby allowing reservoir pressure to be more evenly controlled and sweep patterns better maintained.

4. Rule 104 of the Division's established well spacing rules provides for 320-acre spacing units for gas wells projected to the Wolfcamp formation. Applicant originally dedicated the W/2 of Section 2, Township 24 South, Range 32 East in Lea County to the No. 1 Jog State Well. The well is located 1980 feet from the South line and 660 feet

from the West line, that being an orthodox location for a "stand up" unit. Applicant intends to rededicate the S/2 of Section 2 to the well, thereby creating a "lay down" unit. As a result the well will then be located at an unorthodox location. Rededication of the S/2 of Section 2 to the No. 1 Jog State Well will allow Applicant to better develop the unit acreage. Section 3 of Township 24 South, Range 32 East will offset the unorthodox drilling location, and, as stated above, Section 3 is covered by and a part of the Delaware Unit Operating Agreement between Applicant and other working interest owners.

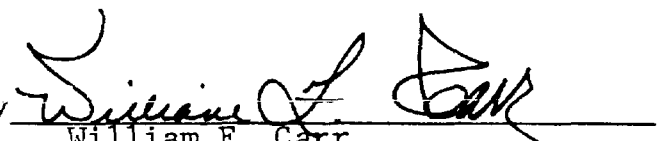
5. The granting of this Application will protect correlative rights and provide for the maximum recovery of hydrocarbons, thereby preventing waste.

WHEREFORE, premises considered, Applicant requests that the No. 1 Jog State Well be established as a gas well, the reservoir into which the No. 1 Jog State is completed be declared a gas reservoir, the S/2 of Section 2, Township 24 South, Range 32 East, Lea County, New Mexico be dedicated to the No. 1 Jog State, and an unorthodox drilling location granted, and such other and further relief to which Applicant is entitled.

Respectfully submitted,

CAMPBELL AND BLACK, P.A.

By


William F. Carr
Post Office Box 2208
Santa Fe, New Mexico 87501
Telephone: (505) 988-4421

-and-

D. D. DENT
D. DALE GILLETTE
Post Office Box 2009
Amarillo, Texas 79189

Attorneys for Applicant
Mesa Petroleum Co.

7-10-80
11:00 AM
11/10/80

BEFORE THE
OIL CONSERVATION DIVISION
NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION
OF MESA PETROLEUM CO. FOR CLASSI-
FICATION OF THE NO. 1 JOG STATE
WELL AS A GAS WELL AND FOR AN
UNORTHODOX LOCATION, LEA COUNTY,
NEW MEXICO.

No. 6822

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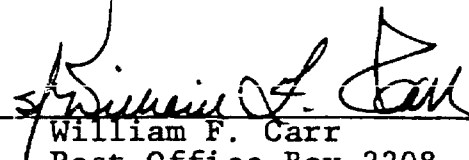
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Post Office Box 2009
Amarillo, Texas 79189

Attorneys for Applicant
Mesa Petroleum Co.

BEFORE THE
OIL CONSERVATION DIVISION
NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

IN THE MATTER OF THE APPLICATION
OF MESA PETROLEUM CO. FOR CLASSI-
FICATION OF THE NO. 1 JOG STATE
WELL AS A GAS WELL AND FOR AN
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No. 6822

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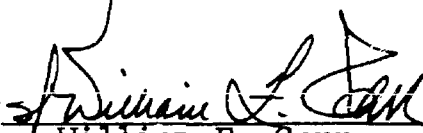
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Respectfully submitted,
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-and-

D. D. DENT
D. DALE GILLETTE
Post Office Box 2009
Amarillo, Texas 79189

Attorneys for Applicant
Mesa Petroleum Co.

ROUGH

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6822

Order No. R-6293

Applicatca of Mesa Petroleum Co. for a gas well classification and unorthodox location, Lea County,
New Mexico.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on February 27,
19 80, at Santa Fe, New Mexico, before Examiner RLS.

NOW, on this _____ day of _____, 19____, the
Division Director, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required
by law, the Division has jurisdiction of this cause and the
subject matter thereof.

(2) That the applicant, Mesa Petroleum Co.,

~~Applicant in the above cause~~, seeks the classification of its Jog State Well No.
1 as a retrograde gas condensate well with 320-acre spacing;

(3) That the

Jog State Well No 1
applicant further seeks approval for
the unorthodox location of said well in the center of Unit L of Section 2, Township 24 South, Range
32 East, the S/2 of said Section 2 to be dedicated to the well.

(4) That the evidence presently available indicates that applicant's

Jog State Well No 1

has discovered a separate common source of supply which should be designated the ~~West Double X~~ *Wolfcamp* Pool; that the vertical limits of the pool should be the Wolfcamp formation, and that the horizontal limits of said pool should be as follows:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM

Section 36: NW/4

Section 32: S/2

(5) That while the evidence presented supported the applicant's claim that said ~~West Double X~~ *Wolfcamp* Gas Pool is ~~a~~ *a* retrograde condensate reservoir, such evidence was ~~incomplete~~ *insufficient* for both a permanent determination and establishment of proper rates of withdrawal from the pool.

(6) That a hearing should be scheduled within three months after the date of connection of said *Jog State Well No 1* or any other well in ~~the~~ *said* ~~West Double X~~ *Wolfcamp* Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.

(7) That the first operator in said ~~West Double X~~ *Wolfcamp* Gas Pool to obtain a gas connection shall notify the Director of the Division of the date of such connection.

(10) That pending further order of the Division, any well in the West Double X Wolfcamp Gas Pool with a wellhead flowing pressure of less than 4000 psig shall be shut in pending further order of the Division.

(8) That pending ^{anywhere in this case} an order issuing from the aforesaid May hearing on this matter, withdrawals from wells completed in the subject reservoir should be limited to some reasonable amount to avert waste and prevent reservoir damage.

(9) ~~That~~ That pending such order, a reasonable maximum rate of withdrawal from each well in the ~~Grama Ridge~~ Wolfcamp Gas Pool is ~~1500~~ MCF of gas per day at the surface ^{so long as the wellhead flowing pressure is 4000 psig or greater.}

(11) That an order based on the above findings is in the interest of conservation, will prevent waste, will not impair but will protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That effective March 1, 1980, a new pool in Lea County, New Mexico, classified as an ^{gas} pool for Wolfcamp production, is hereby created and designated the West Double X Wolfcamp Pool, with vertical limits comprising the Wolfcamp formation and horizontal limits comprising the following-described area:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM
Section 32 5/2

West Double X (2) That temporary Special Rules and Regulations for the Wolfcamp Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS FOR THE WEST DOUBLE X WOLFCAMP POOL

Double X RULE 1. Each well completed or recompleted in the ~~Grama Ridge~~ West Double X Wolfcamp Gas Pool or in the Wolfcamp formation within one mile of the ~~Grama Ridge~~ Wolfcamp Gas Pool, and not nearer to nor within the limits of another designated Wolfcamp pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

Double X RULE 2. Each well completed or recompleted in the ~~Grama Ridge~~ West Double X Wolfcamp Gas Pool shall be located on a standard unit containing 320 acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the United States Public Land Surveys. Exceptions to this rule are subject to the provisions of Rule 104 D II of the Division Rules and Regulations.

RULE 3. Each well shall be located no nearer than 660 feet to the nearest side boundary of the tract nor nearer than 1980 feet to the nearest end boundary of the tract. Exceptions to this rule are subject to the provisions of Rule 104 F of the Division Rules and Regulations.

400 RULE 4. A gas well on a standard unit in the ~~Grama Ridge~~ West Double X Wolfcamp Gas Pool shall be permitted to produce no more than 1,500 MCF of gas per day at standard surface conditions during the effective period of these pool rules. This shall be known as the daily allowable. Any well in said pool with a flowing wellhead pressure of less than 4000 psig shall be shut in and shall remain shut in pending further order of the Division.

and at a flowing wellhead pressure of not less than 4000 psig

RULE 5. The operator of each newly completed well shall cause a gas-liquid ratio test to be taken on the well upon recovery of all load oil from the well. Any well which is shut in shall be exempted from the gas-liquid ratio test requirement so long as it remains shut in. The initial gas-liquid ratio test shall be taken in the manner prescribed by Rule 6.

RULE 6. Gas-liquid ratio tests shall be taken on all wells during the months of April and October of each year. The initial gas-liquid ratio test shall suffice as the first semi-annual test. Tests shall be 24-hour tests, being the final 24 hours of a 72-hour period during which the well shall be produced at a constant normal rate of production. Results of such tests shall be filed on Division Form C-116 on or before the 10th day of the following month. At least 72 hours prior to commencement of any such gas-liquid ratio tests, each operator shall file with the appropriate district office of the Division a test schedule for its wells specifying the time each of its wells is to be tested. Copies of the test schedule shall also be furnished to all offset operators.

Special tests shall also be taken at the request of the Division Director and may also be taken at the option of the operator. Such special tests shall be taken in accordance with the procedures outlined hereinabove, including notification to the Division and offset operators.

RULE 7. An initial shut-in pressure test shall be taken on each gas well and shall be reported to the Division on Form C-125.

RULE 8. Any well completed after the effective date of these rules shall receive an allowable only upon receipt by the appropriate Division district office of Division Forms C-104 and C-116, properly executed. The District Supervisor of the Division's district office is hereby authorized to assign a temporary gas allowable to wells connected to a gas transportation facility during the recovery of load oil, which allowable shall not exceed the amounts set forth in Rule 4 of these rules.

RULE 9. The ^{West Double X} ~~Grama Ridge~~ Wolfcamp Gas Pool gas proration period shall be the proration month which shall begin at 7 a.m. on the first day of the month and shall end at 7 a.m. on the first day of the next succeeding month.

RULE 10. (a) Any gas well which has an underproduced status at the end of any gas proration period, shall carry such underproduction into subsequent periods.

(b) Underproduction in excess of three times the current monthly allowable shall not be carried forward but shall be cancelled. For the purpose of these rules, the monthly allowable shall be the daily allowable times the number of days in the month.

(c) Overproduction during any month shall be applied to a well's cumulative underproduction, if any, calculated in accordance with Paragraphs (a) and (b) above.

RULE 11. Any gas well which has an overproduced status at the end of any gas proration period shall carry such overproduction into subsequent periods. If at any time a well is overproduced an amount exceeding three times its current monthly allowable, it shall be shut in during that month and each succeeding month until the well is overproduced less than three times its current monthly allowable.

RULE 12. The allowable assigned to a well during any one month in excess of the production for the same month shall be applied against the overproduction carried into such period in determining the amount of overproduction, if any, which has not been compensated for.

RULE 13. The Division may allow overproduction to be compensated for at a lesser rate than would be the case if the well were completely shut in upon a showing after notice and hearing that complete shut in of the well would result in material damage to the well or reservoir.

RULE 14. The monthly gas production from each gas well shall be metered separately and the gas production therefrom shall be reported to the Division on Form C-115 so as to reach the Division on or before the 24th day of the month next succeeding the month in which the gas was produced. The operator shall show on such report what disposition has been made of the produced gas.

RULE 15. Each purchaser or taker of gas shall submit a report to the Division so as to reach the Division on or before the 15th day of the month next succeeding the month in which the gas was purchased or taken. Such report shall be filed on Form C-111 with the wells being listed in the same order as they are listed on the appropriate proration schedule.

RULE 16. Failure to comply with any provision of these rules shall result in the immediate cancellation of allowable assigned to the affected well. No further allowable shall be assigned until all rules and regulations have been complied with. The Division Director shall notify the operator of the well and purchaser in writing of the date of allowable cancellation and the reason therefor.

RULE 17. All transporters or users of gas shall file gas well connection notices with the Division as soon as possible after the date of connection.

IT IS FURTHER ORDERED:

- (1) (a) That the first operator in said West Double X Wolfcamp Gas Pool to obtain a gas connection ~~shall~~ ^{shall} notify the Director of the Division of the date of such connection.
 - (2) That ~~the Division shall schedule a hearing~~ ^{a hearing should be scheduled} within three months after the date of connection of said Log State Well No. 1 or any other well in ~~the~~ ^{West} Double X Wolfcamp Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.
 - (3) That, pursuant to Paragraph A. of Section 70-2-18, NMSA 1978, existing wells in the ~~Crama Ridge~~ ^{West Double X} Wolfcamp Gas Pool shall have dedicated thereto 320 acres, in accordance with the foregoing pool rules or, pursuant to Paragraph C. of said Section 70-2-18, existing wells may have non-standard spacing or proration units established by the Division and dedicated thereto.
- Failure to file new Forms C-102 with the Division dedicating 320 acres to a well or to obtain a non-standard unit approved by the Division within 60 days from the date of this order shall subject the well to cancellation of allowable.
- (4) That this cause shall be reopened at an examiner hearing during May, 1980, to permit the operators in said pools to appear and present evidence to establish the proper rates of production for wells in the subject pool.
 - (4) (5) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DRAFT

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

fd/

CASE NO. 6822

Order No. R- 6293-A

APPLICATION OF MESA PETROLEUM CO. FOR A
GAS WELL CLASSIFICATION AND UNORTHODOX LOCATION,
LEA COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R- 6293
dated March 19, 19 80, does not correctly state the
intended order of the Division,

IT IS THEREFORE ORDERED:

(1) That Finding No. (3) should be changed to read in its
entirety as follows:

"(3) That the applicant further seeks approval for the un-
orthodox location of said Jog State Well No. 1 in the center of
Unit L of Section 2, Township 24 South, Range 33 East, the S/2
of said Section 2 to be dedicated to the well."

(2) That the description of the horizontal limits in Finding
No. (4) should be changed to read as follows:

"TOWNSHIP 24 SOUTH, RANGE 33 EAST, NMPM
Section ~~22~~ S/2"

(3) That the description of the horizontal limits in Order No.
(1) should be changed to read as follows:

"TOWNSHIP 24 SOUTH, RANGE 33 EAST, NMPM
Section ~~22~~ S/2"

(4) That Paragraph No. (4) under "IT IS FURTHER ORDERED" on Page 6 should be changed to read in its entirety as follows:

"(4) That the unorthodox gas well location of applicant's Jog State Well No. 1 in the center of Unit L of Section 2, Township 24 South, Range 33 East, West Double X-Wolfcamp Gas Pool is hereby approved."

(5) That Paragraph No. (4) on Page 6 should be designated as and the number changed to (5).

That this order shall be effective nunc pro tunc as of March 19, 1980.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6822
Order No. R-6293

APPLICATION OF MESA PETROLEUM CO.
FOR A GAS WELL CLASSIFICATION AND
UNORTHODOX LOCATION, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on February 27, 1980, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 19th day of March, 1980, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Mesa Petroleum Co., seeks the classification of its Jog State Well No. 1 as a retrograde gas condensate well with 320-acre spacing.

(3) That the applicant further seeks approval for the unorthodox location of said Jog State Well No. 1 in the center of Unit L of Section 2, Township 24 South, Range 32 East, the S/2 of said Section 2 to be dedicated to the well.

(4) That the evidence presently available indicates that applicant's Jog State Well No. 1 has discovered a separate common source of supply which should be designated the West Double X-Wolfcamp Gas Pool; that the vertical limits of the pool should be the Wolfcamp formation, and that the horizontal

limits of said pool should be as follows:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM
Section 32: S/2

(5) That while the evidence presented supported the applicant's claim that said West Double X-Wolfcamp Gas Pool is a retrograde condensate reservoir, such evidence was insufficient for both a permanent determination and establishment of proper rates of withdrawal from the pool.

(6) That a hearing should be scheduled within three months after the date of connection of said Jog State Well No. 1 or any other well in said West Double X-Wolfcamp Gas Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.

(7) That the first operator in said West Double X-Wolfcamp Gas Pool to obtain a gas connection should notify the Director of the Division of the date of such connection.

(8) That pending any future order in this case, withdrawals from wells completed in the subject reservoir should be limited to some reasonable amount to avert waste and prevent reservoir damage.

(9) That pending such order, a reasonable maximum rate of withdrawal from each well in the West Double X-Wolfcamp Gas Pool is 400 MCF of gas per day at the surface so long as the wellhead flowing pressure is 4000 psig or greater.

(10) That any well in the West Double X-Wolfcamp Gas Pool with a wellhead flowing pressure of less than 4000 psig should be shut in pending further order of the Division.

(11) That an order based on the above findings is in the interest of conservation, will prevent waste, will not impair but will protect correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That effective March 1, 1980, a new pool in Lea County, New Mexico, classified as a gas pool for Wolfcamp production, is hereby created and designated the West Double X-Wolfcamp Gas Pool, with vertical limits comprising the Wolfcamp formation and

horizontal limits comprising the following-described area:

TOWNSHIP 24 SOUTH, RANGE 32 EAST, NMPM
Section 32: S/2

(2) That temporary Special Rules and Regulations for the West Double X-Wolfcamp Gas Pool, Lea County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE WEST DOUBLE X-WOLFCAMP GAS POOL

RULE 1. Each well completed or recompleted in the West Double X-Wolfcamp Gas Pool or in the Wolfcamp formation within one mile of the West Double X-Wolfcamp Gas Pool, and not nearer to nor within the limits of another designated Wolfcamp pool, shall be spaced, drilled, operated, and prorated in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well completed or recompleted in the West Double X-Wolfcamp Gas Pool shall be located on a standard unit containing 320 acres, more or less, comprising any two contiguous quarter sections of a single governmental section, being a legal subdivision of the United States Public Land Surveys. Exceptions to this rule are subject to the provisions of Rule 104 D II of the Division Rules and Regulations.

RULE 3. Each well shall be located no nearer than 660 feet to the nearest side boundary of the tract nor nearer than 1980 feet to the nearest end boundary of the tract. Exceptions to this rule are subject to the provisions of Rule 104 F of the Division Rules and Regulations.

RULE 4. A gas well on a standard unit in the West Double X-Wolfcamp Gas Pool shall be permitted to produce no more than 400 MCF of gas per day at standard surface conditions and at a flowing wellhead pressure of not less than 4000 psig during the effective period of these pool rules. This shall be known as the daily allowable. Any well in said pool with a flowing wellhead pressure of less than 4000 psig shall be shut in and shall remain shut in pending further order of the Division.

RULE 5. The operator of each newly completed well shall cause a gas-liquid ratio test to be taken on the well upon recovery of all load oil from the well. Any well which is shut in shall be exempted from the gas-liquid ratio test requirement so long as it remains shut in. The initial gas-liquid ratio test shall be taken in the manner prescribed by Rule 6.

RULE 6. Gas-liquid ratio tests shall be taken on all wells during the months of April and October of each year. The initial gas-liquid ratio test shall suffice as the first semi-annual test. Tests shall be 24-hour tests, being the final 24 hours of a 72-hour period during which the well shall be produced at a constant normal rate of production. Results of such tests shall be filed on Division Form C-116 on or before the 10th day of the following month. At least 72 hours prior to commencement of any such gas-liquid ratio tests, each operator shall file with the appropriate district office of the Division a test schedule for its wells specifying the time each of its wells is to be tested. Copies of the test schedule shall also be furnished to all offset operators.

Special tests shall also be taken at the request of the Division Director and may also be taken at the option of the operator. Such special tests shall be taken in accordance with the procedures outlined hereinabove, including notification to the Division and offset operators.

RULE 7. An initial shut-in pressure test shall be taken on each gas well and shall be reported to the Division on Form C-125.

RULE 8. Any well completed after the effective date of these rules shall receive an allowable only upon receipt by the appropriate Division district office of Division Forms C-104 and C-116, properly executed. The District Supervisor of the Division's district office is hereby authorized to assign a temporary gas allowable to wells connected to a gas transportation facility during the recovery of load oil, which allowable shall not exceed the amounts set forth in Rule 4 of these rules.

RULE 9. The West Double X-Wolfcamp Gas Pool gas proration period shall be the proration month which shall begin at 7 a.m. on the first day of the month and shall end at 7 a.m. on the first day of the next succeeding month.

RULE 10: (a) Any gas well which has an underproduced status at the end of any gas proration period, shall carry such underproduction into subsequent periods.

(b) Underproduction in excess of three times the current monthly allowable shall not be carried forward but shall be cancelled. For the purpose of these rules, the monthly allowable shall be the daily allowable times the number of days in the month.

(c) Overproduction during any month shall be applied to a well's cumulative underproduction, if any, calculated in accordance with Paragraphs (a) and (b) above.

RULE 11. Any gas well which has an overproduced status at the end of any gas proration period shall carry such overproduction into subsequent periods. If at any time a well is overproduced an amount exceeding three times its current monthly allowable, it shall be shut in during that month and each succeeding month until the well is overproduced less than three times its current monthly allowable.

RULE 12. The allowable assigned to a well during any one month in excess of the production for the same month shall be applied against the overproduction carried into such period in determining the amount of overproduction, if any, which has not been compensated for.

RULE 13. The Division may allow overproduction to be compensated for at a lesser rate than would be the case if the well were completely shut in upon a showing after notice and hearing that complete shut in of the well would result in material damage to the well or reservoir.

RULE 14. The monthly gas production from each gas well shall be metered separately and the gas production therefrom shall be reported to the Division on Form C-115 so as to reach the Division on or before the 24th day of the month next succeeding the month in which the gas was produced. The operator shall show on such report what disposition has been made of the produced gas.

RULE 15. Each purchaser or taker of gas shall submit a report to the Division so as to reach the Division on or before the 15th day of the month next succeeding the month in which the gas was purchased or taken. Such report shall be filed on Form C-111 with the wells being listed in the same order as they are listed on the appropriate proration schedule.

RULE 16. Failure to comply with any provision of these rules shall result in the immediate cancellation of allowable assigned to the affected well. No further allowable shall be assigned until all rules and regulations have been complied with. The Division Director shall notify the operator of the well and purchaser in writing of the date of allowable cancellation and the reason therefor.

RULE 17. All transporters or users of gas shall file gas well connection notices with the Division as soon as possible after the date of connection.

IT IS FURTHER ORDERED:

(1) That the first operator in said West Double X-Wolfcamp Gas Pool to obtain a gas connection shall notify the Director of the Division of the date of such connection.

(2) That the Division shall schedule a hearing within three months after the date of connection of said Jog State Well No. 1 or any other well in said West Double X-Wolfcamp Gas Pool connected prior thereto to permit the operator(s) therein to appear and present evidence demonstrating both the nature of the reservoir and proper rates of withdrawal therefrom.

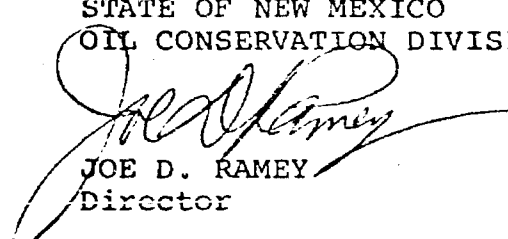
(3) That, pursuant to Paragraph A. of Section 70-2-18, NMSA 1978, existing wells in the West Double X-Wolfcamp Gas Pool shall have dedicated thereto 320 acres, in accordance with the foregoing pool rules or, pursuant to Paragraph C. of said Section 70-2-18, existing wells may have non-standard spacing or proration units established by the Division and dedicated thereto.

Failure to file new Forms C-102 with the Division dedicating 320 acres to a well or to obtain a non-standard unit approved by the Division within 60 days from the date of this order shall subject the well to cancellation of allowable.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


JOE D. RAMEY
Director

S E A L
fd/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
DIVISION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6822 ReopenedOrder No. R-6293-B

Application of Mesa Petroleum
Company for a gas well Classifi-
cation and unorthodox location,
Lea County, New Mexico

ORDER OF THE DIVISIONBY THE DIVISION:

This cause came on for hearing at 9 a.m. on October 29,
1980, at Santa Fe, New Mexico, before Examiner Daniel S. Natter.

NOW, on this _____ day of March, 1981, the
Division Director, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required
by law, the Division has jurisdiction of this cause and the
subject matter thereof.

(2) That an application of Mesa Petroleum Com-
pany, Case No. 6822 ~~was~~ originally came on
for hearing on February 27, 1980, whereupon Orders
Nos. R-6293 and R-6293-A were entered, creating
the ^{West} Double X-Wolfcamp Gas Pool and promulgating
temporary special rules therefor, including a limita-
tion on production and prescribing that the case
be reopened after the well(s) in the pool had been
connected to a pipeline and additional information
regarding the reservoir characteristics became available.

(3) That pursuant to said orders, the case was reopened and additional data presented by the original applicant, Mesa Petroleum Company.

(4) That the data presently available appears to confirm the original belief that the ^{West} Donac X-Walcamp Gas Pool is in fact producing from a retrograde gas condensate reservoir.

(5) That analysis of a recombined fluid sample from the reservoir indicates a retrograde dew point pressure of 4540 psig.

(6) That to achieve maximum production from the reservoir, production levels should ^{continue to} be restricted, but the removal of the previously imposed wellhead flowing pressure will not impair ultimate ~~net~~ recovery.

(7) That production ^{from each well in the pool} should be limited to a reasonable amount, and 500 MCF ~~per day~~ per day per well is such a reasonable amount.

(8) That Rule 4 of the Special Rules and Regulations for the West Donac X-Walcamp Gas Pool should be amended to read in its entirety as follows:

"Rule 4. A gas well ~~on the~~ a standard unit in the West Donac X-Walcamp Gas Pool shall be permitted to produce no more than 500 MCF of gas per day at standard surface conditions. This shall be known as the daily allowance."

(1) That an order embodying the above findings will not impair correlative rights and will not cause loss and will prevent waste and should be approved.

IT IS THEREFORE ORDERED:

(1) That Rule 4 of the Special Rules and Regulations for the West Danne X-Walcamp Gas Pool, as promulgated by Division Order No R-6293, is hereby amended to read in its entirety as follows:

"Rule 4. A gas well ~~on the~~ⁱⁿ a standard unit in the West Danne X-Walcamp Gas Pool shall be permitted to produce no more than 500 MCF of gas per day at standard surface conditions. This shall be known as the daily allowable."

~~(2) Jurisdiction~~

(2) That subject to the above amendment, the Rules and Regulations for the West Danne X-Walcamp Gas Pool, as promulgated by Order No. ~~R-6293~~ R-6293, shall remain in full force and effect until further order of the Division.

(3) Jurisdiction

DONE at

DRAFT

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

CASE NO. 6822

Order No. R-6293-B-1

APPLICATION OF MESA PETROLEUM COMPANY FOR
A GAS WELL CLASSIFICATION AND UNORTHODOX
LOCATION,
LEA COUNTY, NEW MEXICO.

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R- 6293-B,
dated April 7, 19 81, does not correctly state the
intended order of the Division,

IT IS THEREFORE ORDERED:

(1) That Order No. 1 of Division Order No. R-6293-B is hereby
corrected to read in its entirety as follows:

"(1) That effective April 1, 1981, Rule 4 of the Special
Rules and Regulations for the West Double X-Wolfcamp Gas Pool,
as promulgated by Division Order No. R-6293, is hereby amended
to read in its entirety as follows:

'RULE 4. A gas well on a standard unit in the West
Double X-Wolfcamp Gas Pool shall be permitted to produce no
more than 500 MCF of gas per day at standard surface con-
ditions. This shall be known as the daily allowable."

(2) That this order shall be effective nunc pro tunc as
of April 7, 1981.

DONE at Santa Fe, New Mexico, on this _____ day of April,
1981.

END OF ROLL

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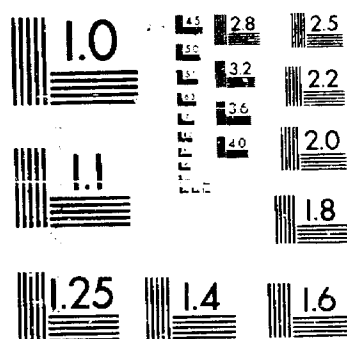
ROLL NUMBER

DOCUMENT TYPE NM OIL CONSERVATION DIVISION

DATE OF FILMING OCTOBER 3RD 1985

CAMERA OPERATOR PAUL A. WILDE

ENDING DOCUMENT Box 4 of 25 / CASE# 6822 - MESA PET. Co. (Application)
ORDER NO. 6293-G-1 4/7/1981



MICROCOPY RESOLUTION TEST CHART
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STATEMENT OF DOCUMENT CERTIFICATION

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R. David Ortiz
SUPERVISOR

STATE OF NEW MEXICO)
) SS.
COUNTY OF VALENCIA)

Sworn and Subscribed to me, A Notary Public,

This 1st day of December, 19 83

Agnes Aragon
NOTARY PUBLIC

MY COMMISSION EXPIRES: 10-2-86

CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY that the microphotographs appearing on this Roll of Film are accurate and complete reproductions of the records of the, N.M. OIL CONSERVATION DIVISION as delivered in the regular course of business for Micro Filming.

William A. Wilde
CAMERA OPERATOR

STATEMENT OF DOCUMENT CERTIFICATION

All microphotographics images of documents following this certificate are of authorized documents in the possession of this Agency. These documents are routinely microfilmed as a necessary operation in the generation of an inviolate document file.

R. David Ortiz
SUPERVISOR

STATE OF NEW MEXICO)
) SS.
COUNTY OF VALENCIA)

Sworn and Subscribed to me, A Notary Public,

This 1st day of December, 19 83

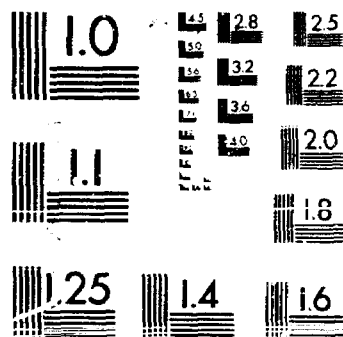
Hyman A. Rosen
NOTARY PUBLIC

MY COMMISSION EXPIRES: 10-2-86

CERTIFICATE OF AUTHENTICITY

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William A. Wilde
CAMERA OPERATOR



MICROCOPY RESOLUTION TEST CHART
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(ANSI and ISO TEST CHART No. 2)

START OF ROLL

#164B

ROLL NUMBER

DOCUMENT TYPE

NW OIL CONSERVATION DIVISION

DATE OF FILMING

OCTOBER 3RD 1985

CAMERA OPERATOR

PHIL A. WILDE

BEGINNING DOCUMENT

Box 4 of 25 / case # 6823 - Amoco Prod. Co.

CASE 6823: AMOCO PRODUCTION COMPANY FOR
640-ACRE CARBON DIOXIDE GAS WELL SPACING,
HARDING, QUAY, AND UNION COUNTIES, N.M.

Commission Hearing

Case No.

6823

Application

Transcripts

Small Exhibits

ETC

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6823
Order No. R-6325

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR 640-ACRE CARBON DIOXIDE
GAS WELL SPACING, HARDING, QUAY, AND
UNION COUNTIES, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 11, 1980, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 30th day of April, 1980, the Commission, having considered the testimony, exhibits, and the record, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Amoco Production Company, seeks approval of 640-acre carbon dioxide gas well spacing for the Tubb and older formations in Harding, Quay, and Union Counties, New Mexico.

(3) That the Commission has authority to authorize spacing and proration units being an area that can be efficiently and economically drained by one well.

(4) That the applicant did establish that communication existed between certain wells 660 feet apart.

(5) That assuming radial drainage, wells drilled on 640-acre spacing would require a radius of drainage of 2979 feet.

-2-

Case No. 6823
Order No. R-6325

(6) That the applicant presented no substantial evidence establishing that carbon dioxide gas wells in the Tubb or older formations in Harding, Quay, and Union Counties are capable of a radius of drainage of 2979 feet, or that such wells are capable of efficiently and economically draining 640-acre spacing and proration units.

(7) That the applicant presented no substantial evidence establishing any economic necessity for the 640-acre spacing and proration units requested in this case.

(8) That the development of the subject area on 640-acre spacing would probably result in the drilling of too few wells to efficiently and economically drain the area thereby causing reduced recovery and resulting in the waste of carbon dioxide gas.

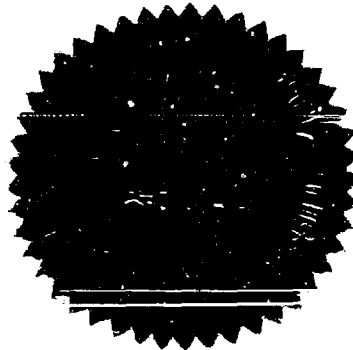
(9) That the application should be denied.

IT IS THEREFORE ORDERED:

(1) That the application of Amoco Production Company for 640-acre carbon dioxide gas well spacing in Harding, Quay, and Union Counties, New Mexico, is denied.

(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



S E A L

fd/

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Alex J. Armijo
ALEX J. ARMILJO, Member

Emery C. Arnold
EMERY C. ARNOLD, Member

Joe D. Ramey
JOE D. RAMEY, Member & Secretary

LAW OFFICES

HINKLE, COX, EATON, COFFIELD & HENSLEY

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CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
STUART D. SHANOR
C. D. MARTIN
PAUL J. KELLY, JR.
JAMES W. BOZARTH
DOUGLAS L. LUNSFORD
PAUL M. BOHANNON

EDNEST R. FINNEY, JR.
J. DOUGLAS FOSTER
K. DOUGLAS FERRIN
C. RAY ALLEN
JACQUELINE W. ALLEN
T. CALDER ETZELL, JR.
WILLIAM S. BURFORD
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RICHARD E. OLSON
PHILIP T. BREWER

600 HINKLE BUILDING

Post Office Box 10

ROSWELL, NEW MEXICO 88201

MARCH 5, 1980
OIL CONSERVATION DIVISION
SANTA FE

OF COUNSEL
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ROBERT A. STONE

W. E. BONDURANT, JR. 1914-1973

MIDLAND, TEXAS OFFICE

4000 FIRST NATIONAL BANK TOWER
(817) 683-4661

AMARILLO, TEXAS OFFICE

1701 AMERICAN NATIONAL BANK BUILDING
(806) 372-5559

LICENSED IN
TEXAS ONLY

Mr. Joe D. Ramey, Chairman
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Case No. 6823
Oil Conservation Commission
Application of Amoco Production
Company for 640 Acre Carbon Dioxide
Gas Well Spacing, Harding, Quay and
Union Counties, New Mexico

Dear Mr. Ramey:

This firm represents UGI Corporation, one of the lessees and working interest owners in the Bravo Dome Carbon Dioxide Gas Unit in Harding, Quay and Union Counties. Mr. Conrad Coffield of our Midland, Texas office will be making an appearance on behalf of UGI Corporation in connection with the above case. However, Mr. Coffield is out of the office this week and I am writing this letter on his behalf.

The above case has been scheduled for Commission Hearing on March 11, 1980. On behalf of UGI Corporation we are requesting that the hearing be postponed and that the Commission reset the hearing for a subsequent date. In the alternative, if the hearing is not postponed, then we request that the hearing be continued after receipt of such evidence as the Commission deems expedient on March 11 to a subsequent date with permission granted to UGI Corporation to present its evidence relevant to Amoco's Application for 640-acre spacing at a later hearing.

The reason for this request is to allow this firm and UGI Corporation adequate time to properly prepare exhibits and other evidentiary material to be presented. The delay in preparation was occasioned by the fact that the attorney who previously represented UGI Corporation felt obligated to withdraw from representation of UGI Corporation because of a conflict between UGI and one of its lessors whom that attorney also represented. After receiving notice of the withdrawal of that attorney, UGI retained this firm to represent them, but due to the shortness of time after having been so retained we have been unable to properly prepare the case.

A continuance for proper presentation of relevant evidence is also necessary in view of the fact that although the case was originally scheduled as an Examiner Hearing, it has now been scheduled as a Commission Hearing, thus imposing upon UGI Corporation the necessity of presenting a full and complete evidentiary case to the Commission.

For these reasons, we are filing this request for a postponement of the hearing, or in the alternative a continuance of the hearing to allow proper preparation and presentation of relevant evidentiary material by UGI Corporation.

By xerox copy of this letter, I am serving of our request upon the following:

William F. Carr
P. O. Box 2208
Santa Fe, New Mexico 87501
(Attorney for Amoco Production Company)

Richard L. C. Virtue
Box 2187
Santa Fe, New Mexico 87501
(Attorney for Bobby and JoAnn Adey)

Respectfully submitted,

HINKLE, COX, EATON, COFFIELD & HENSLEY

By 
Attorneys for UGI Corporation

LCC:er

xc: Mr. William F. Carr
Mr. Richard L. C. Virtue

Mr. Alex Armijo
Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87501

Mr. Emory Arnold
Director of Mining and Minerals
Energy and Minerals Department
State of New Mexico
Santa Fe, New Mexico 87501



Amoco Production Company

Houston Region
500 Jefferson Building
Post Office Box 3092
Houston, Texas 77001

J. R. Barnett
Regional Engineering
Manager

January 30, 1980

File: JCA-986.51NM-252

Re: Request for Hearing
Amendment of Statewide Rules
104 B and 104 C for CO₂ Development
Union, Quay, and Harding Counties
New Mexico

Case 6823

Oil Conservation Division (3)
Energy and Minerals Department
P. O. Box 2088
Santa Fe, NM 87501
Attention: Mr. Joe D. Ramey

Dear Mr. Ramey:

Amoco Production Company respectfully requests a hearing to amend Statewide Rules No. 104 B and 104 C for CO₂ Development from the Tubb or older formations in Union, Quay, and Harding Counties, New Mexico. Amoco requests the following amendments to the above captioned rules:

Rule 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding, and Quay Counties

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Mr. Joe D. Ramey
Page Two
January 30, 1980

Rule 104 C II (c)

Amend current rule to read as follows:

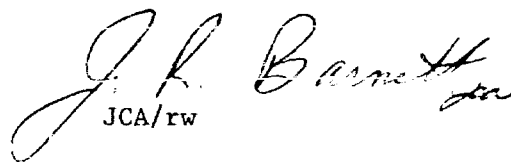
Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 C II (c) as Rule 104 C II (d) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Please place this item on the Examiner's Hearing Docket of February 27, 1980, or the next hearing docket thereafter. Any question concerning this request should be directed to Mr. Jim Allen (713/652-5497).

Yours very truly,


JCA/rw



Amoco Production Company

Houston Region
500 Jefferson Building
Post Office Box 3092
Houston, Texas 77001

J. R. Barnett
Regional Engineering
Manager

January 30, 1980

File: JCA-986.51NM-252

Re: Request for Hearing
Amendment of Statewide Rules
104 B and 104 C for CO₂ Development
Union, Quay, and Harding Counties
New Mexico

Oil Conservation Division (3)
Energy and Minerals Department
P. O. Box 2088
Santa Fe, NM 87501
Attention: Mr. Joe D. Ramey

Dear Mr. Ramey:

Amoco Production Company respectfully requests a hearing to amend Statewide Rules No. 104 B and 104 C for CO₂ Development from the Tubb or older formations in Union, Quay, and Harding Counties, New Mexico. Amoco requests the following amendments to the above captioned rules:

Rule 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding, and Quay Counties

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Mr. Joe D. Ramey
Page Two
January 30, 1980

Rule 104 C II (c)

Amend current rule to read as follows:

Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 C II (c) as Rule 104 C II (d) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Please place this item on the Examiner's Hearing Docket of February 27, 1980, or the next hearing docket thereafter. Any question concerning this request should be directed to Mr. Jim Allen (713/652-5497).

Yours very truly,


JCA/rw



Amoco Production Company

Houston Region
500 Jefferson Building
Post Office Box 3092
Houston, Texas 77001

J R Barnett
Regional Engineering
Manager

January 30, 1980

Case 6823

File: JCA-986.51NM-252

Re: Request for Hearing
Amendment of Statewide Rules
104 B and 104 C for CO₂ Development
Union, Quay, and Harding Counties
New Mexico

Oil Conservation Division (3)
Energy and Minerals Department
P. O. Box 2088
Santa Fe, NM 87501
Attention: Mr. Joe D. Ramey

Dear Mr. Ramey:

Amoco Production Company respectfully requests a hearing to amend Statewide Rules No. 104 B and 104 C for CO₂ Development from the Tubb or older formations in Union, Quay, and Harding Counties, New Mexico. Amoco requests the following amendments to the above captioned rules:

Rule 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding, and Quay Counties

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Mr. Joe D. Ramey
Page Two
January 30, 1980

Rule 104 C II (c)

Amend current rule to read as follows:

Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U. S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

Re-designate current Rule 104 C II (c) as Rule 104 C II (d) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Please place this item on the Examiner's Hearing Docket of February 27, 1980, or the next hearing docket thereafter. Any question concerning this request should be directed to Mr. Jim Allen (713/652-5497).

Yours very truly,


JCA/rw

Dockets Nos. 8-80 and 9-80 are tentatively set for March 26 and April 9, 1980. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - MARCH 11, 1980

OIL CONSERVATION COMMISSION - 9 A.M. - ROOM 205
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

CASE 6609: (DE NOVO) (Continued and Readvertised)

Application of Napeco Inc. for pool creation and special pool rules, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn oil pool for its Benson Deep Unit Well No. 1 located in Unit O of Section 33, Township 18 South, Range 30 East, and special rules therefor, including 160-acre spacing and standard well locations.

Upon application of Yates Petroleum Corporation and Napeco Inc., this case will be heard De Novo pursuant to the provisions of Rule 1220. Applicants allege this is not an "oil" pool but is a "volatile" oil pool.

CASE 6823: Application of Amoco Production Company for 640-acre carbon dioxide gas well spacing, Harding, Quay, and Union Counties, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Rule 104 of the Division Rules and Regulations to require that wildcat and development carbon dioxide gas wells projected to the Tubb or older formations in Harding, Quay, and Union Counties must be located on 640-acre spacing and proration units, and must be located no nearer than 1650 feet to the outer boundary of the tract and not nearer than 330 feet to any interior quarter-quarter section line.

DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 12, 1980

9 A.M. - OIL CONSERVATION DIVISION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or Richard L. Stameis, Alternate Examiner:

- ALLOWABLE: (1) Consideration of the allowable production of gas for April, 1980, from fifteen prorated pools in Lea, Eddy, and Chaves County, New Mexico.
- (2) Consideration of the allowable production of gas for April, 1980, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

CASE 6813: (Continued from February 27, 1980, Examiner Hearing) (This case will be dismissed.)

Application of Petroleum Development Corporation to amend Order No. R-6196, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks to amend Order No. R-6196 which authorized re-entry of a well at an unorthodox location in the Lusk-Morrow Gas Pool to be dedicated to the N/2 of Section 13, Township 19 South, Range 31 East. Applicant now seeks approval for a new revised location 750 feet from the North line and 660 feet from the West line of said Section 13.

CASE 6834: Application of Conoco Inc. for a dual completion and unorthodox well location, Lea County, New Mexico. (This case will be continued to March 26 and readvertised.)

Applicant, in the above-styled cause, seeks approval for the dual completion (conventional) of its SEMU Burger Well No. 107 at an unorthodox location 2615 feet from the South and East lines of Section 24, Township 20 South, Range 38 East, to produce oil from the Blinberry Oil and Gas and Drinkard Pools.

CASE 6824: Application of American Trading and Production Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the Talco Unit Area, comprising 4,800 acres, more or less, of State and Federal lands in Township 26 South, Range 35 East.

LAW OFFICES OF
SUTIN, THAYER & BROWNE
A PROFESSIONAL CORPORATION

PAUL G. BARDACKE	ROBERT PAMPELL
GRAHAM BROWNE	CHARLES P. PRICE III
STEPHEN CHARNAS	KEVIN V. REILLY
JAMES C. COMPTON, JR.	HENRY M. RIVERA
RICHARD M. DALY	DONALD M. SALAZAR
GERALD T. E. GONZALEZ	PHILIP R. SCHICHTEL
W. PATRICK HARMAN	RAYMOND W. SCHOWERS
JAY D. HERTZ	ALISON A. SCHULER
ROBERT G. HEYMAN	RONALD SEGEL
ALLAN J. HISEY	JONATHAN B. SUTIN
DONALD L. JONES	MICHAEL G. SUTIN
FRANKLIN JONES	NORMAN S. THAYER
MARY E. McDONALD	RICHARD L. C. VIRTUE
IRWIN S. MOISE	ROBERT J. WERNER
STEVEN K. MOISE	MARIANNE WOODARD
KESTER L. OMAN	JOHN W. ZAVITZ
LAHEL E. OMAN	

SANTA FE OFFICE
215 WASHINGTON AVENUE
POST OFFICE BOX 2187
SANTA FE, NEW MEXICO 87501
505-988-5521

ALBUQUERQUE OFFICE
FIRST PLAZA
POST OFFICE BOX 1945
ALBUQUERQUE, NEW MEXICO 87103
505-842-8200

February 22, 1980

Legal Office
Oil Conservation Division
Energy and Minerals Department
State Land Office
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Case 823

Amoco - CO2 Lease Unitization
Hearing

Ladies and Gentlemen:

Please send written notice of the date, time and location
of the hearing on the Amoco CO₂ lease unitization
application to:

Bobby and Johann Adee
315 Monroe
Clayton, New Mexico 88415

Please also send the same notice to our firm's Santa Fe
Office to the attention of Richard L. C. Virtue.

Thank you.

Very truly yours,

SUTIN, THAYER & BROWNE
A Professional Corporation

By *Laura Mason*
Laura Mason
Legal Assistant

Mailed 2/29/80

LM:je

cc: Mr. and Mrs. Bobby Adee

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 6823
ORDER NO. R-6325

APPLICATION OF AMOCO PRODUCTION
COMPANY FOR 640-ACRE CARBON
DIOXIDE GAS WELL SPACING,
HARDING, QUAY, AND UNION
COUNTIES, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This case came on for hearing at
9 a.m. on March 11, 1980, at Santa Fe,
New Mexico, before the Oil Conservation
Commission of New Mexico.

NOW, on this — day of ~~March~~ April,
1980, the Commission, having considered
the testimony, exhibits, and the record,
and being fully advised in the premises,

FINDS

(1) That due public notice having been

given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Amoco Production Company, seeks approval of 640-acre carbon dioxide gas well spacing, ^{for the Tubbs and older formations} in Harding, Quay, and Union Counties, New Mexico.

(3) That the Commission has authority to authorize spacing ^{and production units being an area} ~~that~~ that can be efficiently and economically drained by ~~one~~ ^{one} well.

(4) That ~~although~~ the applicant did establish that communication existed between ^{certain} wells 660 feet apart.

(5) That assuming radial drainage, wells drilled on 640-acre spacing would require a radius of drainage of 2979 feet.

(6) That the applicant presented no substantial evidence establishing that carbon dioxide gas wells in the Tubbs or older formations in Harding, Quay, and Union Counties are capable of a radius of drainage of 2979 feet, or that such wells are capable of efficiently and economically draining 640-acre spacing and production units.

(7) That the applicant presented no substantial evidence establishing any economic

necessity for the 640-acre spacing and proration units requested in this case.

(8) That the development of the subject area on 640-acre spacing would probably result in the drilling of too few wells to efficiently and economically drain the area thereby causing reduced recovery and resulting in the waste of carbon dioxide gas.

(9) That the application should be denied.

IT IS THEREFORE ORDERED:

(1) That the application is denied.

(2) Jurisdiction

of Amoco Production Company for
640-acre carbon dioxide gas well spacing
in Harding, Quay, and Union Counties,
New Mexico

1974 and 1979 Theoretical
Calculation of Bravo Dome Area Interference Test Results
(Based on a homogeneous and infinite system)

Basic Equation

$$\Delta P_{\text{obs well}} = \frac{70.6Q\mu B}{Kh} - E_i \left(-\frac{\phi h \mu c r^2}{.0252 Kh t} \right)$$

where Q = flow rate, mcfpd
 μ = viscosity, cp
 B = Reservoir Volume Factor, Bbl/mcf
 Kh = permeability, md-ft.
 ϕh = porosity feet, fraction
 c = Compressibility, psi^{-1}
 r = distance to observation well, ft.
 t = time, days

State FI Test

Values used for theoretical curve

μ = .0161
 B = 6.3
 Kh = 3089 - 1974 test
 = 3862 - 1979 test
 ϕh = 25
 c = 201×10^{-5}
 r = 660

Theoretical calculation results

Producing Time-Days	Calculated Pressure Change, psi	
	1974 Test	1979 Test
3	-.36	-.32
7	-1.47	-1.12
14	-2.94	-2.91
21	-3.97	-3.99
45		-6.22

LJS/cw
449/H3

BEFORE THE OIL CONSERVATION COMMISSION State of New Mexico	
Case No. <u>6823</u>	Sub No. <u>6</u>
Submitted by <u>Amoco</u>	
Hearing Date <u>3-11-80</u>	

Heimann Test

Values used for theoretical curve same as State FI except

$Kh = 2,226$ for both 1974 and 1979 test

Theoretical calculation results

Producing Time-Days	Calculated Pressure Change, psi	
	1974 Test	1979 Test
3	-.19	-.11
7	-1.27	-.75
14	-2.95	-1.55
28	-5.33	-3.19
63	-8.68	-5.26
111	-10.47	
153		-6.06

LJS/cw
449/H4

BEFORE THE	
OIL CONSERVATION COMMISSION	
STATE OF TEXAS	
Case No. <u>6823</u>	Sub No. <u>6A</u>
Operator <u>Amoco</u>	
Testing Date <u>3-11-80</u>	



Robert J. Pickens
Attorney
Houston Division
Production, U.S. & Canada

P.O. Box 8128
Houston, Texas 77001
Telephone 713-629-6600
OIL CONSERVATION DIVISION
SANTA FE

February 11, 1980

Oil Conservation Division
Energy and Minerals Department
State of New Mexico
P.O. Box 2088
Santa Fe, NM 87501

Attention: Mr. Dan S. Nutter, Chief Engineer

Dear Sir:

Pursuant to our telephone conversation of this date, Marathon Oil Company, Applicant in Case No. 6823 set for Examiner's Hearing on February 27, 1980, hereby withdraws its request for the hearing of said unorthodox well location matter on that date.

The preferred location at 660 feet from the North and East Lines of Section 30 is within a "scenic corridor" under the BLM Visual Resources Management guidelines, and therefore, an alternate location will have to be staked.

At the time the coordinates of the new location in Section 30 are determined, a new Unorthodox Well Location Hearing Application will be filed.

Yours very truly,

A handwritten signature in cursive script, reading 'Robert J. Pickens'.

ROBERT J. PICKENS

RJP/kjs

Change in Bottom Hole Pressure, psi

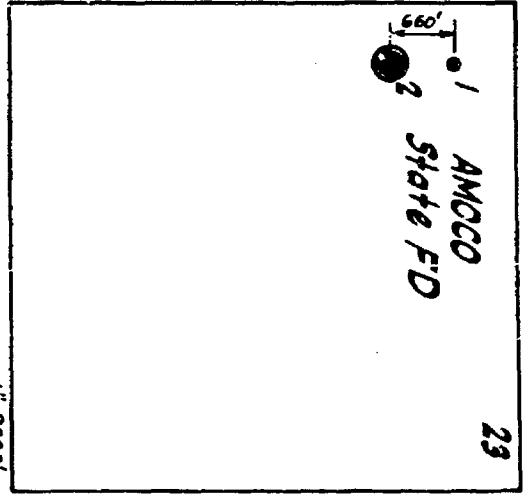
Time - Days

Change in Bottom Hole Pressure vs. Time
 State FD Observation Well
 Bravo Dome Area
 1974 Interference Test

State FD No. 2

BEFORE THE COMMISSION
 OIL CONSERVATION
 Santa Fe, New Mexico
 Case No. 6823 Exhibit 5
 Submitted by Amoco
 Hearing Date 3-11-80

T. 20 N.



• Producer
 ○ Observation Well

State FD 1974 Interference Test Data
Bravo Dome Area

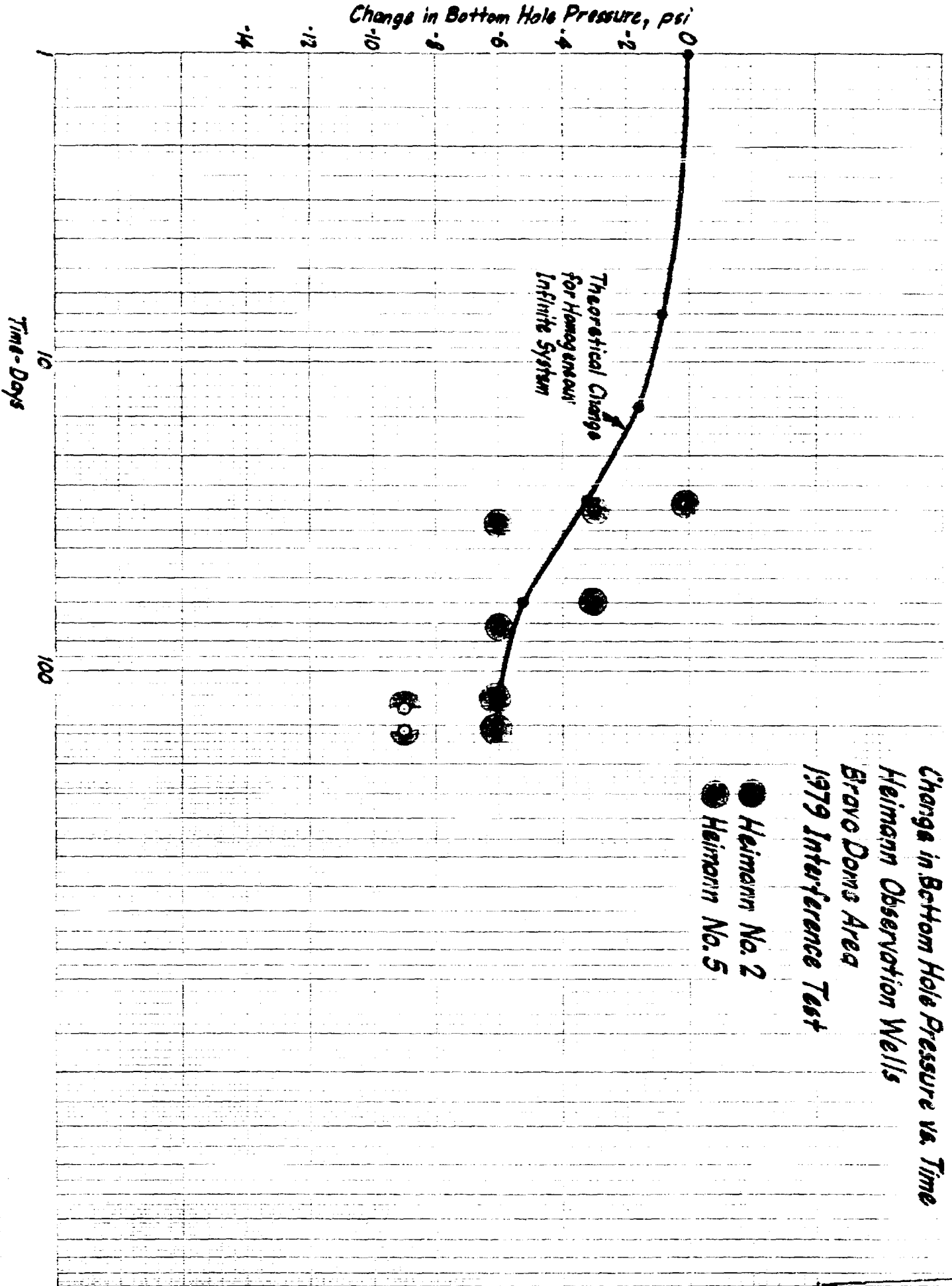
Production		Pressure Observation	
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi State FD. No. 2
0-7	1,450	0	0
7-14	965		
14-21	904		
21-28	1,139		
28-35	1,413		
35-42	1,034		
42-49	833		
49-56	850		
56-63	821		
63-70	645		
70-77	698	72	-1.5
77-84	711	79	-1.6

* Rates are questionable due to scale build-up on well tester orifice plate.

LJS/cw
449/H3

LEMORE THE OIL CONSERVATION COMMISSION Santa Fe, New Mexico	
Case No. <u>6823</u>	File No. <u>5A</u>
Submitted by <u>Amoco</u>	
Heading Date <u>3-11-80</u>	

24



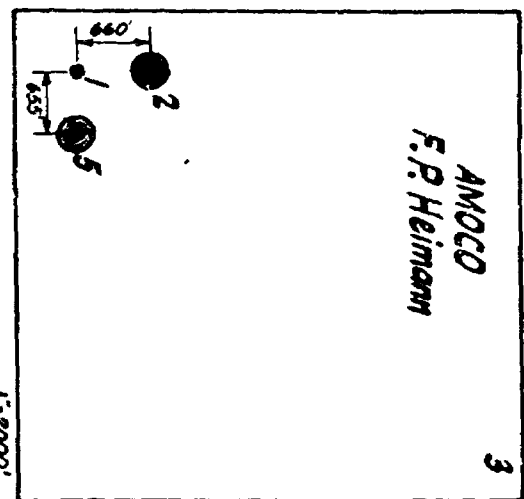
Change in Bottom Hole Pressure vs. Time
Heimann Observation Wells
Bravo Doms Area
1979 Interference Test

BEFORE THE
OIL CONSERVATION COMMISSION
State of New Mexico

Case No. 6823 - 8

Submitted by Amoco

Hearing Date 3-11-80



• Producer
⊙ Observation Well

T-19-N

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

Case No. 6823 Amoco 8A
Subscribed by Amoco
Hearing Date 3-11-80

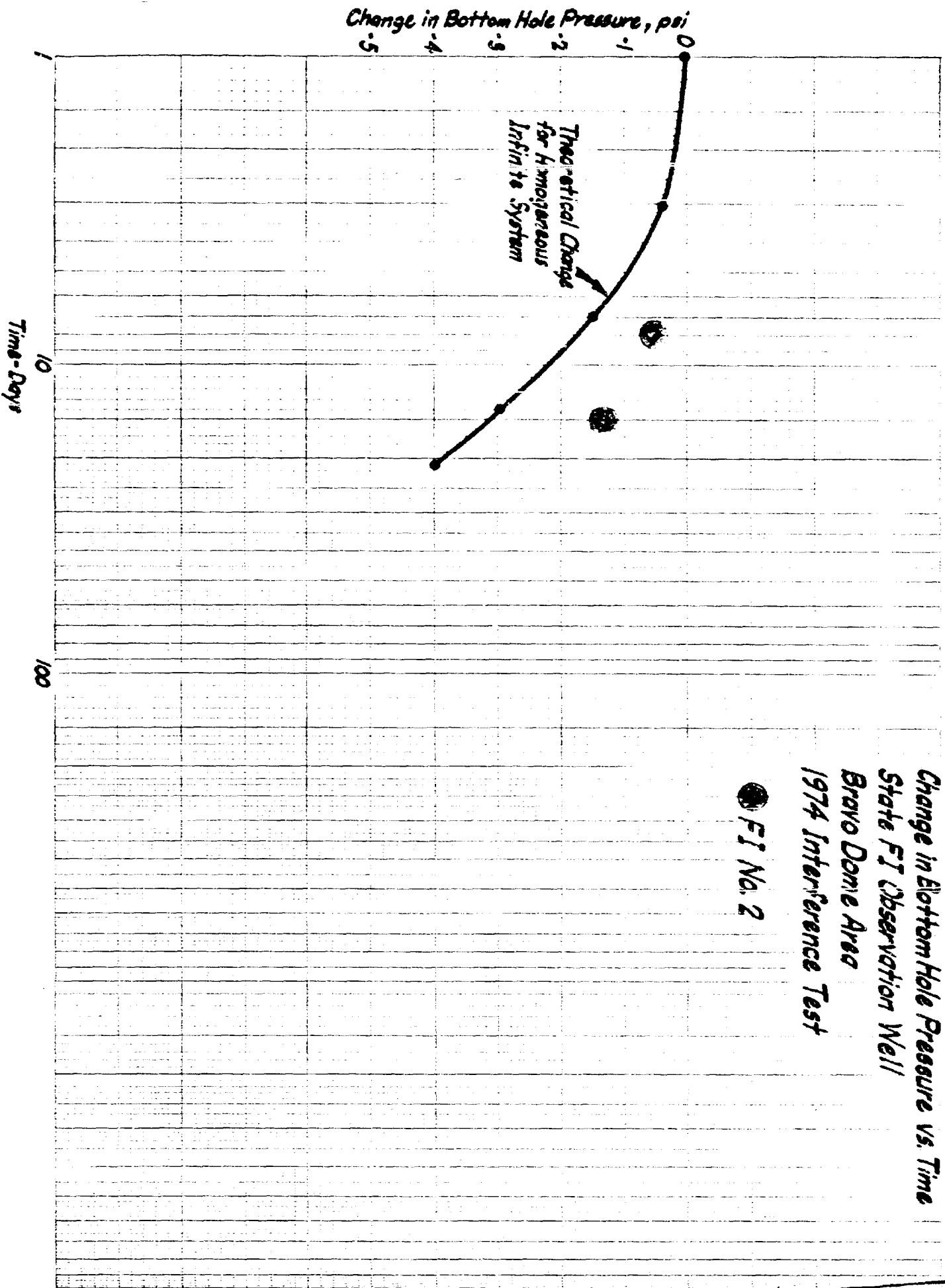
Heimann 1979 Interference Test Data
Bravo Dome Area

Production		Pressure Observation		
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi	
			Heimann No. 2	Heimann No. 5
0-7	896	0	0	0
7-14	657			
14-21	977			
21-28	1,028			
28-35	950			
35-42	938			
42-49	950			
49-56	871			
56-63	852	60	-3.0	-6.0
63-70	856			
70-77	765	72	-6.0	-6.0
77-84	723			
84-91	588			
91-98	702			
98-105	722			
105-112	744			
112-119	759			
119-126	638			
126-133	637	127		-6.0
133-140	679	134	-6.0	-9.0
140-147	722			
147-154	597			
154-158	210	156	-6.0	-9.0

LJS/cw
449/H5

Change in Bottom Hole Pressure vs. Time
 State FI Observation Well
 Bravo Dome Area
 1974 Interference Test

● FI No. 2



OIL COMPANY
 Case No. 6923
 Submitted by AMOCO
 Hearing Date 3-11-80

R-34-E

AMOCO
 State FI

36



1" = 2000'

- Producer
- ⊙ Observation Well

State FI 1974 Interference Test Data
Bravo Dome Area

Production		Pressure Observation	
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi State FI. No. 2
0-7	1,559	0	0
7-14	1,453	8	-.5
14-21	1,488	15	-1.3

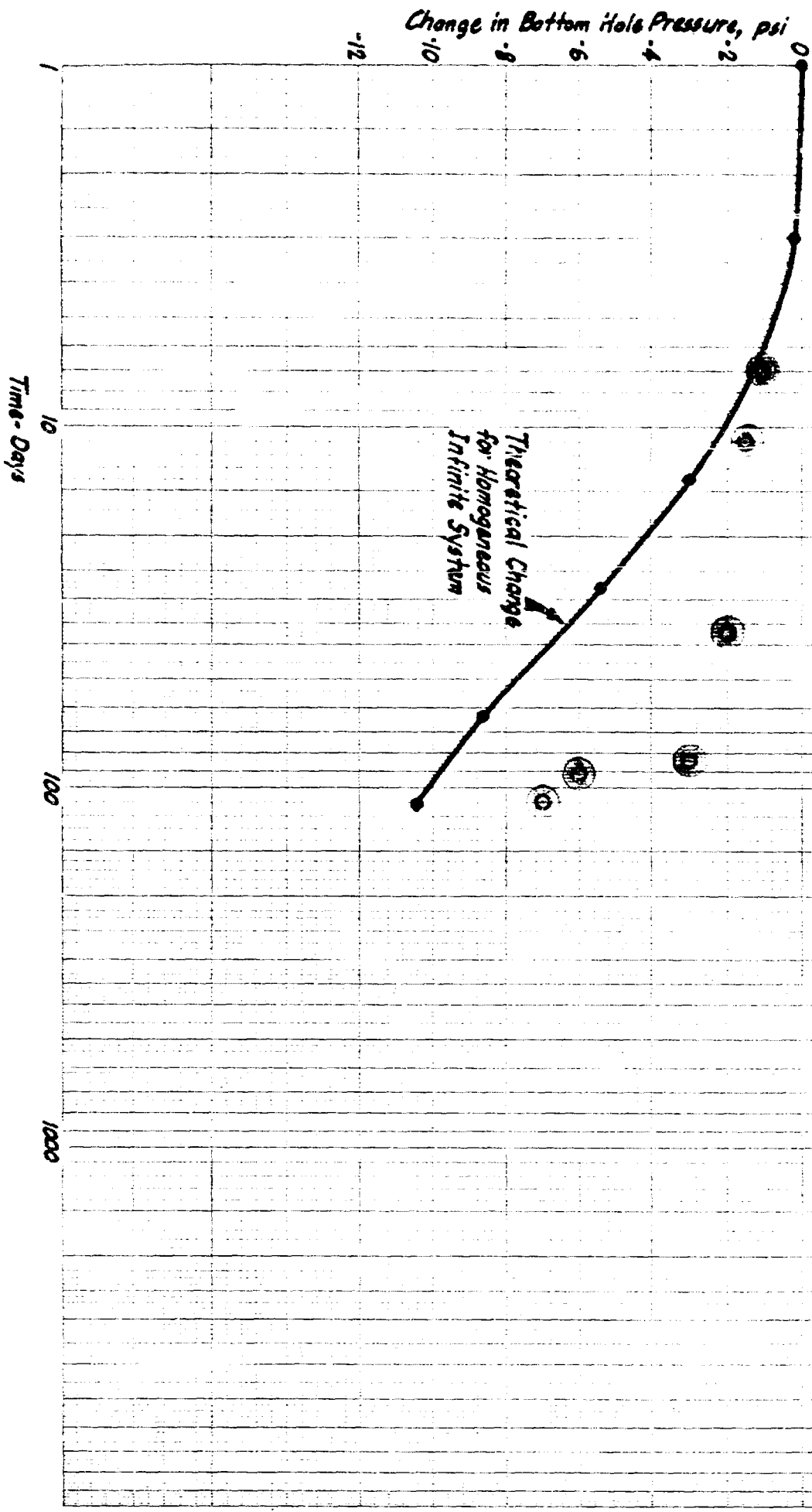
LJS/cw
449/H

BEFORE THE
OIL FIELD SERVICE COMMISSION
CITY OF OIL FIELD

Case No. 6823 9A
 Submitted by Amoco
 Hearing Date 3-11-80

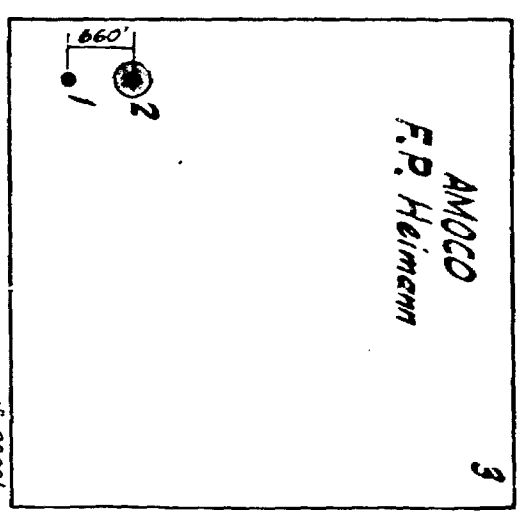
Change in Bottom Hole Pressure vs. Time
 Heimann Observation Well
 Bravo Dams Area
 1974 Interference Test

Heimann No. 2



Oil No. 6823
 Sheet No. 7
 Submitted by Amoco
 Hearing Date 3-11-80

R-33-E



- Producer
- Observation Well

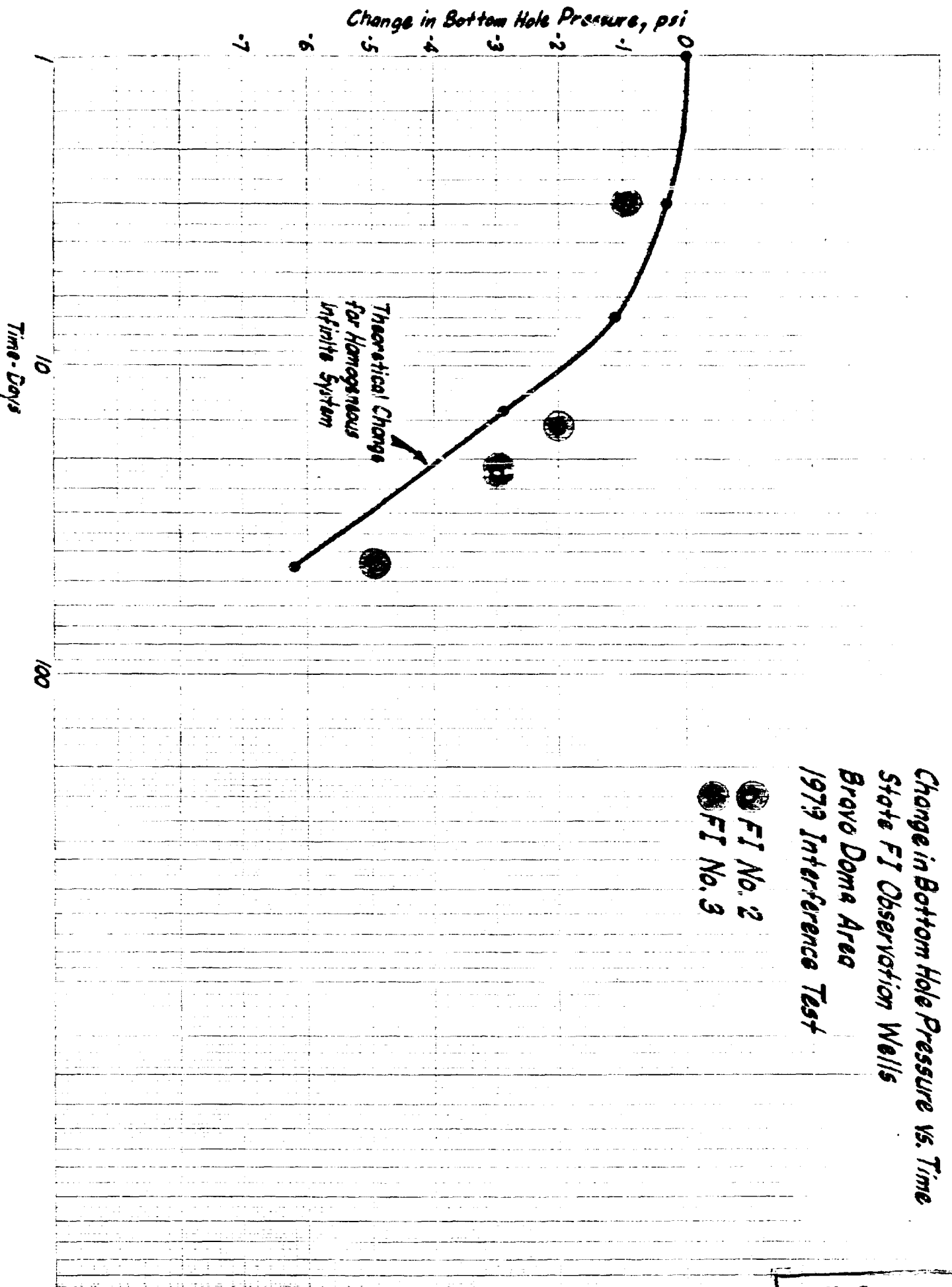
Heimann 1974 Interference Test Data
Bravo Dome Area

Production		Pressure Observation	
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi Heimann No. 2
0-7	1,494	0	0
7-14	1,519	7	-1.0
14-21	1,519	11	-1.5
21-28	1,504		
28-35	1,472		
35-42	1,410	37	-2.0
42-49	1,460		
49-56	1,519		
56-63	1,448		
63-70	1,451		
70-77	1,399		
77-84	1,395		
84-91	1,453	85	-3.0
91-98	1,410	94	-6.1
98-105	1,333		
105-111	1,279	111	-7.0

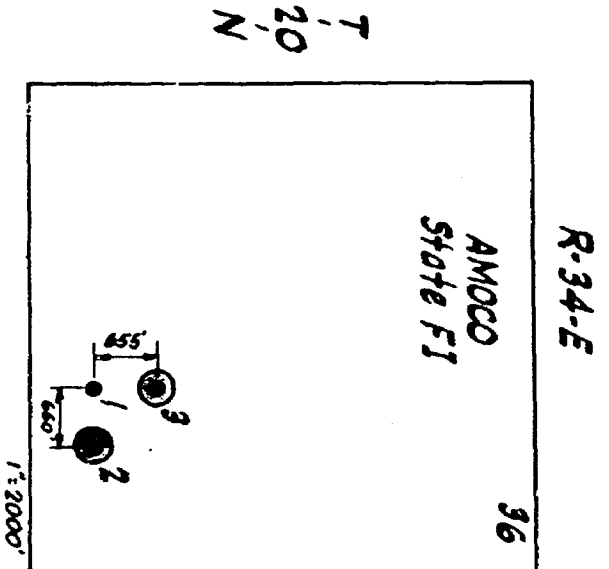
LJS/cw
447/H4

WELL NO.	6823
WELL NAME	Amoco
DATE	3-11-80
WELL TYPE	7A

Change in Bottom Hole Pressure vs. Time
 State FI Observation Wells
 Bravo Dome Area
 1979 Interference Test



THE OIL COMPANY
 Case No. 6823
 Submitted by Amoco
 Hearing Date 3-11-80



• Producer
 ○ Observation Well

State FI 1979 Interference Test Data
Bravo Dome Area

Production		Pressure Observation		
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi	
			State FI. No. 2	State FI No. 3
0-7	1,449	0	0	0
7-14	1,699	3	-1.0	-1.0
14-45	1,688	16	-2.0	-1.0
		22	-2.0	-3.0
		23	-3.0	-3.0
		40	-5.0	-5.0
		45	-5.0	-5.0

LJS/cw
449/H2

BEFORE THIS
OIL COLLECTOR'S REPORT IS
FORWARDED TO THE
Case No. 6823 File No. 10A
Submitted by Amoco
Hearing Date 3-11-80

PROPOSED AMENDMENT TO STATEWIDE RULES

104 B & 104 C

RULE 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding and Quay Counties

(a) Wildcat CO₂ Gas Wells

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

(b) Wildcat Wells Other Than CO₂ Gas Wells

In Union, Harding and Quay Counties any Wildcat well, other than a CO₂ gas well shall be located on a tract consisting of approximately 40 surface contiguous acres substantially in the form of a square which is a legal subdivision of the U.S. Public Land Surveys, or on a governmental quarter - quarter section or lot and shall be located not closer than 330 feet to any boundary of such tract.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

RULE 104 C II (c)

Amend current rule to read as follows:

Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

RULE 104 C II (d)

New Rule to read as follows:

Rule 104 C II (d) Union, Harding, and Quay Counties

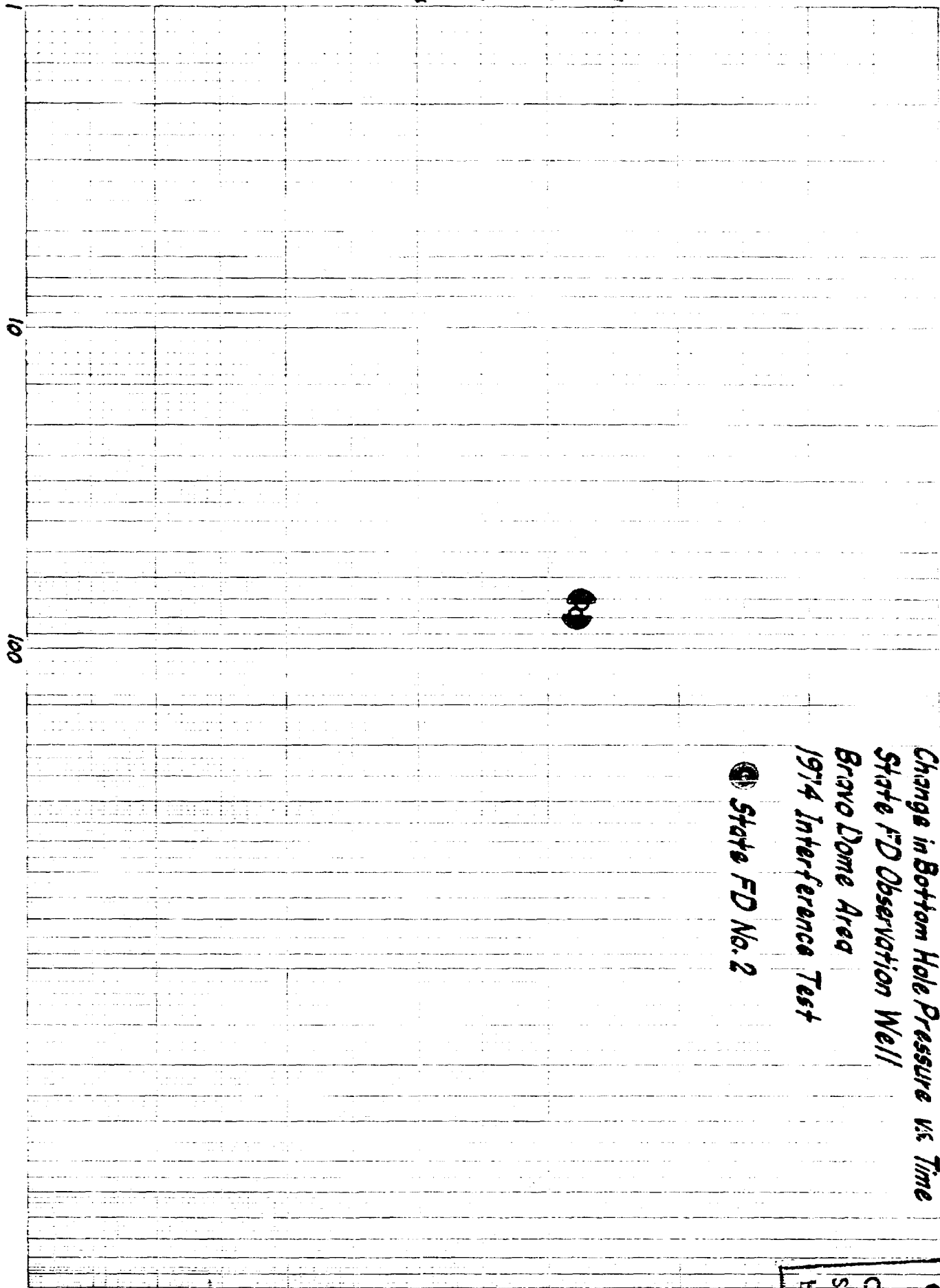
BEFORE THE	
OIL CONSERVATION COMMISSION	
Said to, B. and C.	
Case No. <u>4833</u>	Page No. <u>1</u>
Submitted by <u>Amoco</u>	
Meeting Date <u>3-11-80</u>	

Unless otherwise provided in special pool rules, each development well for a defined gas pool, other than a CO₂ gas pool, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U.S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

Re-designate current Rule 104 C II (c) as Rule 104 C II (e) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

Change in Bottom Hole Pressure, psi

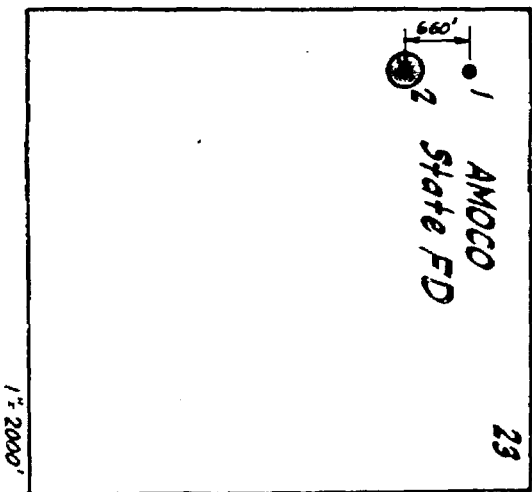
Time - Days



Change in Bottom Hole Pressure vs. Time
State FID Observation Well
Bravo Dome Area
1974 Interference Test
State FID No. 2

OIL CONSERVATION DIVISION
Case No. 1923
Submitter: Amoco
Hearing Date: 3-11-80

T. 20 N



• Producer
○ Observation Well

State FD 1974 Interference Test Data
Bravo Dome Area

Production		Pressure Observation	
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi State FD. No. 2
0-7	1,450	0	0
7-14	965		
14-21	904		
21-28	1,139		
28-35	1,413		
35-42	1,034		
42-49	833		
49-56	850		
56-63	821		
63-70	645		
70-77	698	72	-1.5
77-84	711	79	-1.6

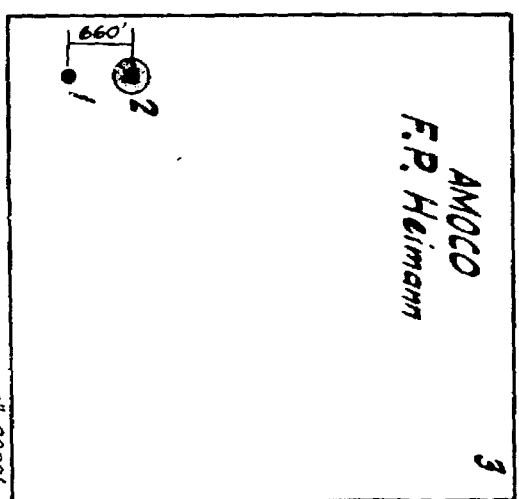
* Rates are questionable due to scale build-up on well tester orifice plate.

LJS/cw
449/H3

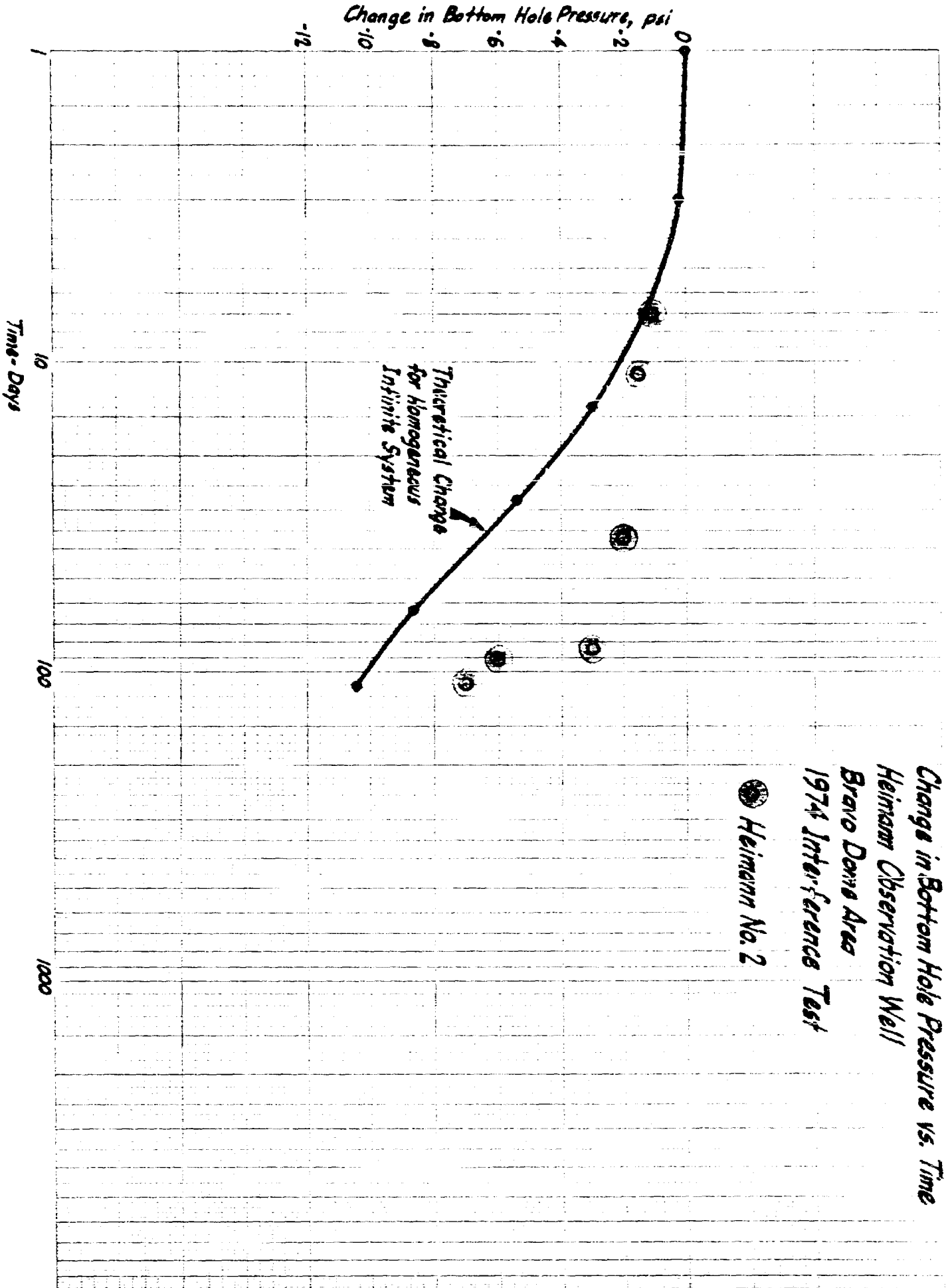
REFORM THE	
OIL CONSERVATION COMMISSION	
Santa Fe, New Mexico	
Case No. <u>6823</u>	Ref. No. <u>5A</u>
Submitted by <u>Ameco</u>	
Hearing Date <u>3-11-80</u>	

OIL COMPANY
 Case No. 6823
 Submitted by Amoco
 Headed Date 3-11-80

R-33-E



• Producer
 ○ Observation Well



Heimann 1974 Interference Test Data
Bravo Dome Area

Production		Pressure Observation	
Days Prod.	Avg. Rate mcfpd	No. of Days Since Start of Test	Change in Bottom Hole Pressure, psi Heimann No. 2
0-7	1,494	0	0
7-14	1,519	7	-1.0
14-21	1,519	11	-1.5
21-28	1,504		
28-35	1,472		
35-42	1,410	37	-2.0
42-49	1,460		
49-56	1,519		
56-63	1,448		
63-70	1,451		
70-77	1,399		
77-84	1,395		
84-91	1,453	85	-3.0
91-98	1,410	94	-6.1
98-105	1,333		
105-111	1,279	111	-7.0

LJS/cw
447/H4

DIRECTOR, THE OIL COMPANY OF THE OIL REGION SOUTH AFRICA	
Core No. 6823	7A
Sample No.	Amoco
Date	3-11-80



BRUCE KING
GOVERNOR

LARRY KEHOE
SECRETARY

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

May 2, 1980

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-2434

Mr. Guy Buell, Attorney
Amoco Production Company
P. O. Box 3092
Houston, Texas 77001

Re: CASE NO. 6823
ORDER NO. R-6325

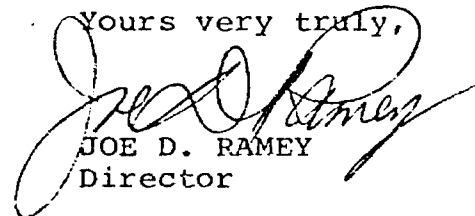
Applicant:

Amoco Production Company

Dear Sir:

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

Yours very truly,


JOE D. RAMEY
Director

JDR/fd

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other William F. Carr, Conrad Coffield, Owen Lopez, Walter Healy

PROPOSED AMENDMENT TO STATEWIDE RULES

104 B & 104 C

RULE 104 B III

Amend current rule to read as follows:

Rule 104 B III Union, Harding and Quay Counties

(a) Wildcat CO₂ Gas Wells

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

(b) Wildcat Wells Other Than CO₂ Gas Wells

In Union, Harding and Quay Counties, any Wildcat well, other than a CO₂ gas well shall be located on a tract consisting of approximately 40 surface contiguous acres substantially in the form of a square which is a legal subdivision of the U.S. Public Land Surveys, or on a governmental quarter - quarter section or lot and shall be located not closer than 330 feet to any boundary of such tract.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

RULE 104 C II (c)

Amend current rule to read as follows:

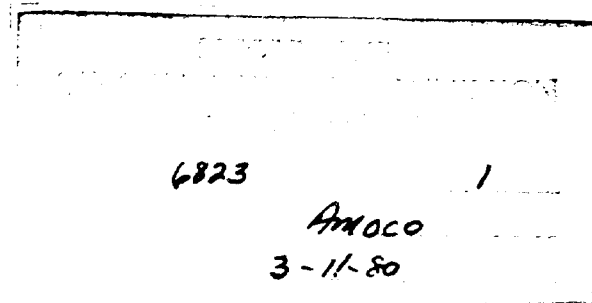
Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

RULE 104 C II (d)

New Rule to read as follows:

Rule 104 C II (d) Union, Harding, and Quay Counties



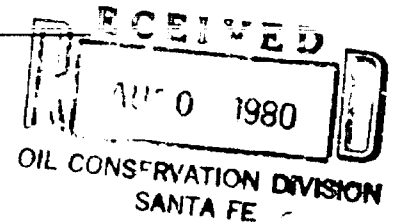
Unless otherwise provided in special pool rules, each development well for a defined gas pool, other than a CO₂ gas pool, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U.S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

Re-designate current Rule 104 C II (c) as Rule 104 C II (e) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

PROPOSED AMENDMENT TO STATEWIDE RULES

104 B & 104 C

RULE 104 B III



Amend current rule to read as follows:

Rule 104 B III Union, Harding and Quay Counties

(a) Wildcat CO₂ Gas Wells

In Union, Harding, and Quay Counties, a Wildcat well which is projected as a CO₂ well to the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in the form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

(b) Wildcat Wells Other Than CO₂ Gas Wells

In Union, Harding and Quay Counties any Wildcat well, other than a CO₂ gas well shall be located on a tract consisting of approximately 40 surface contiguous acres substantially in the form of a square which is a legal subdivision of the U.S. Public Land Surveys, or on a governmental quarter - quarter section or lot and shall be located not closer than 330 feet to any boundary of such tract.

Re-designate current Rule 104 B III as Rule 104 B IV and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

RULE 104 C II (c)

Amend current rule to read as follows:

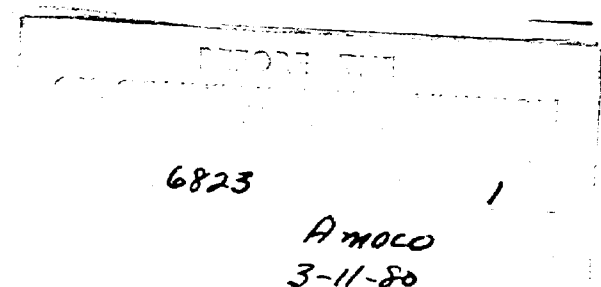
Rule 104 C II (c) Union, Harding, and Quay Counties

Unless otherwise provided in special pool rules, each development CO₂ well for a defined pool in the Tubb formation or older shall be located on a designated drilling tract consisting of 640 surface contiguous acres, more or less, substantially in a form of a square, being a legal subdivision of the U.S. Public Land Surveys being a governmental section, and shall be located not closer than 1650 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary.

RULE 104 C II (d)

New Rule to read as follows:

Rule 104 C II (d) Union, Harding, and Quay Counties



Unless otherwise provided in special pool rules, each development well for a defined gas pool, other than a CO₂ gas pool, shall be located on a designated drilling tract consisting of 160 surface contiguous acres, more or less, substantially in the form of a square which is a quarter section, being a legal subdivision of the U.S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter - quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

Re-designate current Rule 104 C II (c) as Rule 104 C II (e) and add Union, Harding, and Quay Counties to the excepted counties. No other changes to this rule.

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO
11 March 1980

COMMISSION HEARING

IN THE MATTER OF:

Application of Amoco Production Company) CASE
for 640-acre carbon dioxide gas well) 6823
spacing, Harding, Quay, and Union)
Counties, New Mexico.)

BEFORE: Commissioner Ramey
Commissioner Arnold

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Division: Ernest I. Padilla, Esq.
Legal Counsel to the Commission
State Land Office Bldg.
Santa Fe, New Mexico 87501

For Amoco Production William F. Carr, Esq.
CAMPBELL & BLACK P. A.
Post Office Box 2208
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and
GUY BUELL, ESQ.
AMOCO PRODUCTION COMPANY
Houston, Texas

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Phone (505) 455-7409

A P P E A R A N C E S

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For UGI Corporation and
AmeriGas, Inc.:

Conrad Coffield, Esq.
HUNKLE, COX, EATON, COFFIELD &
HENSLEY
P. O. Box 3580
Midland, Texas 79701
And
Walter F. M. Healy, Esq.
Vice President - Legal
UGI Corporation and AmeriGas, Inc.
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Valley Forge, Pennsylvania 19482

For HNG Fossil Fuels Co.:

Owen M. Lopez, Esq.
MONTGOMERY, ANDREWS & HANNAHS
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Santa Fe, New Mexico 87501

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I N D E X

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BRUCE I. MAY

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L. J. SANDERS, JR.

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PHILLIP F. WHEELER

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1 MR. RAMEY: Call next Case 6623.

2 MR. PADILLA: Application of Amoco Pro-
3 duction Company for 640-acre carbon dioxide gas well spacing,
4 Harding, Quay, and Union Counties, New Mexico.

5 MR. RAMEY: Ask for appearances at this
6 time.

7 MR. CARR: May it please the Commission,
8 I'm William P. Carr, Campbell and Black, P. A., Santa Fe,
9 appearing on behalf of the applicant.

10 I'm associated today with Guy Buell,
11 Attorney for Amoco Production Company, who will present
12 Amoco's case, and we are prepared to go forward with our
13 case at this time.

14 MR. RAMEY: How many witnesses do you
15 have, Mr. Buell?

16 MR. BUELL: I have three, Mr. Ramey,
17 three.

18 MR. COFFIELD: Conrad Coffield with the
19 Hinkle Law Firm of Midland, Texas, appearing on behalf of
20 Protestant AmeriGas, Inc., and its subsidiary, Swartz Car-
21 bonic Company, both of which are subsidiaries of UGI Corpor-
22 ation, and I have to present to the Commission Mr. Walter
23 Healy, Vice President - Legal, of UGI and Amerigas. He will
24 make statements and present the case on behalf of those com-
25 panies.

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1 MR. RAMEY: Okay, Mr. Coffield, thank
2 you.

3 MR. HEALY: Just for the record, I'm
4 Mr. Healy.

5 MR. RAMEY: Okay, fine, thank you.

6 MR. LOPEZ: May it please the Commission,
7 my name is Owen Lopez with the Montgomery Law Firm in Santa
8 Fe, New Mexico, appearing on behalf of Houston Pipeline Com-
9 pany and Mr. John C. Thrash, Junior, Vice President of the
10 company is here to make a statement on behalf of the com-
11 pany.

12 MR. THRASH: HNG Fossil Fuels Company.

13 MR. LOPEZ: HNG Fossil Fuels Company.
14 Please correct the record.

15 MR. RAMEY: Any other appearances?
16 Mr. Carr and Mr. Buell, you may proceed.

17 MR. BUELL: Are there any preliminary
18 matters, Mr. Commissioner?

19 MR. HEALY: Yes, I'd like to make a
20 motion before Applicant Amoco presents its case.

21 My name is Walter Healy and I'm Vice
22 President - Legal of UGI Corporation and AmeriGas.

23 AmeriGas, Swartz Carbonics and its
24 predecessors have been producing carbon dioxide from a number
25 of acres on leased lands since about 1940. During this

1 period we've drilled about twenty-five wells. This acreage
2 is located in the southwest corner of Harding County.

3 Our Attorney, Mr. Coffield, and I have
4 reviewed the geological and engineering data that we've col-
5 lected during this period with our own engineering experts.
6 Based on our review, we believe that 640-acre spacing would
7 not effectively and efficiently, and economically, drain
8 our acreage.

9 Also, we believe that the present 160-acre
10 spacing now applicable to our tracts is necessary in the
11 interest of conservation, prevention of waste, and protection
12 of correlative rights.

13 Therefor, I'd like to move that the pro-
14 posed amendment to the spacing rule be changed to exclude
15 the twelve townships in Harding County in which most of our
16 tracts are located. These townships are Townships 17, 18,
17 19, and 20 North, and Ranges 29, 30, and 31 East.

18 If the motion is granted, this would
19 effect an amendment to Amoco's application. I've discussed
20 this matter with Amoco's attorney, Mr. Guy Buell, and I
21 believe he wished to make a statement at this point.

22 Thank you.

23 MR. BUELL: If it please the Commission,
24 first I'd like to have one of my witnesses show on what will
25 be our Exhibit Number Two, the area that the motion was

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1 directed at.

2 Exhibit Two, we're getting a little ahead
3 of ourselves, but that is a map that covers the three
4 counties which were the original subject matter of the
5 hearing, Union on the north, Harding in the middle, and
6 Quay on the south. Thank you, Mr. May.

7 May it please the Commission, the area
8 that has just been identified on our Exhibit Two with a black
9 line includes all of the older CO₂ producing areas, and I
10 believe in all three of the counties. All of this acreage
11 that they have moved to delete is in Harding County.

12 In view of the fact that there has been
13 production in this area since the early '40s, I have no
14 objection to deleting that area from the scope of our
15 hearing.

16 MR. RAMEY: If -- Mr. Healy, maybe you
17 could answer this. If the Commission saw fit to grant 640-
18 acre spacing with provisions for 160-acre non-standard units,
19 wouldn't that serve the same purpose? The same as deleting
20 this area from --

21 MR. HEALY: I don't understand the non-
22 standard units. How would that work?

23 MR. RAMEY: Your wells, I assume, are
24 now developed on 160-acre spacing.

25 MR. HEALY: True, yes.

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1 MR. RAMEY: If the Commission granted
2 160-acre units to existing wells --

3 MR. HEALY: Well, I -- that wouldn't
4 completely solve our problem because we have a number of
5 tracts that we have not developed that we would like to deve-
6 lop.

7 MR. RAMEY: And also would have provi-
8 sions for 160-acre non-standard units within the area, would
9 this not serve the same purpose?

10 MR. HEALY: Well, I think it would if it
11 had the effect of allowing us to drill on each 160-acre
12 tract that we now lease. Our problem is that we have about
13 fifteen potential drilling sites on 160-acre spacing, and
14 really only three if it goes to 640, because we don't have
15 complete 640 tracts, except in those three cases.

16 MR. RAMEY: You don't have complete 640-
17 acre tracts?

18 MR. HEALY: No. We have several where
19 there are small parcels and we have -- we could force pool
20 them, but we have problems with our leases because if we
21 do that, then we violate the provisions of our leases.

22 So we're in a box, and we frankly feel
23 that the 640 spacing on our tracts is not proper. We're
24 prepared to present testimony if that's necessary, and I
25 think we can eliminate the need to go over all that material

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1 by excluding those tracts from the proposed scope of the rule
2 change.

3 We -- we have really no interest, and we
4 don't have any data on drilling in other parts of the -- of
5 the state, so that we really can't address any acreage other
6 than our own, and obviously these are the ones that we're
7 concerned about.

8 MR. RAMEY: Do you have a plat of your
9 acreage?

10 MR. HEALY: Yes.

11 MR. COFFIELD: Mr. Chairman, while they
12 are getting that plat available, point of information and
13 explanation on the non-standard 160-acre suggestion that
14 you made a few minutes ago.

15 Are you saying that the -- UGI then would
16 come in on a well-by-well basis to obtain authority to drill,
17 or would the order be such that they could drill without
18 obtaining individual authority for each of their new wells?

19 MR. RAMEY: Well, I think it's always
20 been handled by the Division on a well-by-well basis.

21 MR. COFFIELD: Requiring a hearing?

22 MR. RAMEY: Not necessarily requiring a
23 hearing unless you have objection from offset operators.

24 MR. COFFIELD: So it would -- could be
25 done administratively?

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1 MR. RAMEY: Yes. It could be administra-
2 tive procedure, I assume, without you know whereby you
3 would have to notify offset operators and then if they ob-
4 jected, why then it would go to hearing.

5 MR. COFFIELD: Mr. Chairman, would there
6 be any production penalty involved in such an exception?
7 By virtue of it being 160 acres as opposed to 640, if that
8 order is entered?

9 MR. RAMEY: I assure there would be, yes.

10 MR. COFFIELD: That would be a significant
11 detriment to my client.

12 MR. BUELL: May it please the Commission,
13 you've been addressing yourself to the fact if you do not
14 grant the motion, if the Commission does not grant the
15 motion.

16 As I understand the motion, and if you
17 grant it, this area that we've just described would be ex-
18 cluded from the purview of our proposed 640-acre drilling
19 spacing unit if the Commission should adopt that, and am I
20 correct?

21 MR. RAMEY: Yes.

22 MR. BUELL: Thank you, sir.

23 MR. RAMEY: Should be grant this, why I
24 would assume it would operate as it has been since 1940.

25 MR. BUELL: Yes, sir. That is onereason

1 we didn't object to the notion. It is an old production
2 area.

3 MR. HEALY: These blue-colored tracts
4 are the acreage that we lease from one entity, and this cross-
5 hatched acreage is acreage we lease from another entity.

6 MR. PAMTY: And what about the remaining
7 acreage in there?

8 MR. HEALY: Well, this is owned, I guess,
9 leased by a number of other parties. The white acreage is
10 leased by a number of other parties who would be participants
11 in the proposed Bravo Dome Unit.

12 MR. STAMETS: Mr. Healy --

13 MR. HEALY: The townships that we would
14 be excluding -- we'll start here and work down -- there's
15 a total of twelve. We would use the 160 spacing on these
16 tracts here.

17 MR. STAMETS: Mr. Healy, will the acreage
18 that you've colored in blue and cross-hatched on this map
19 be committed to the Bravo Dome Unit when it would get formed?

20 MR. HEALY: We haven't decided yet whether
21 to join the unit. We have a number of other problems that
22 we need to work out with Amoco to determine whether or not
23 it's an economically feasible project. Our principal con-
24 cern is transportation of the CO₂ to the Permian Basin, which
25 is the field where most of this CO₂ is proposed to be used.

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1 MR. STAMETS: If this acreage were com-
2 mitted to the unit, would it resolve your problems with
3 spacing?

4 MR. HEALY: Well --

5 MR. STAMETS: As far as acreage is con-
6 cerned?

7 MR. HEALY: -- it would, yes. Yes.
8 It would resolve the main problem that we have. I think
9 we'd still have an interest in whether or not 640 spacing is
10 appropriate and sufficient to drain the entire field. Every
11 participant would have an interest in getting the most CO₂
12 out of that unit, and I think that to the extent that 640
13 spacing doesn't do that, then participants theoretically
14 would be damaged.

15 Now, again, I don't have data on the rest
16 of the unit. All we have is data based on the well drilling
17 that we've had since 1940. So I don't want to expand the
18 scope of what I'm saying beyond our tracts.

19 But we do feel very strongly, especially
20 since we're not in the unit, that we need to protect our
21 current spacing so that we have enough wellsites so that
22 we can drain our tracts.

23 MR. NUTTER: Mr. Chairman.

24 MR. RAMEY: Yes, Mr. Nutter.

25 MR. NUTTER: It would seem to me that

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1 we're getting involved here in a dilemma that contradicts
2 the basic premise that any spacing order has got to be based
3 on.

4 If Amoco is going to base its 640 spacing
5 case on drainage and this is a common reservoir, then why
6 do we have 160-acre spacing in a portion of it and 640-acre
7 spacing in the other portion? If this area here takes 160
8 acres to drain and is a common reservoir, then why doesn't
9 Amoco's area take 160 acres to drain?

10 It looks as though it's contradictory to
11 me. Now, can you show me --

12 MR. HEALY: I'm not sure it is, you know.
13 There is a good possibility that the drainage in our tracts
14 would not be as good as in the other part. This thing is,
15 I guess, one corner of the proposed unit.

16 MR. NUTTER: Well, you've had twenty or
17 thirty years experience here with determining the effects
18 of drainage and how adequate it is in this area, and Amoco
19 has had two or three years of temporary testing of wells on
20 30-day flows to determine what their drainage is, plus a
21 lot of laboratory studies, I presume, but it looks like
22 we're -- you're getting into a basic conflict there of a
23 common reservoir being spaced on two patterns, and this has
24 created problems. For instance, the bumper zone, where the
25 two spacing areas meet, what kind of spacing is that going

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1 to be, 3207 4807

2 MR. HEALY: Well, I assume -

3 MR. NUTTER: Or 239.6?

4 MR. HEALY: Well, I assume that this would
5 be 640 spacing, as would the tracts over here.

6 MR. NUTTER: Well, what about -- what
7 about you have four wells right here in this section and
8 they have one well here? Isn't there a drainage problem
9 then and a potential violation of correlative rights where
10 you have the two spacing patterns meeting?

11 MR. BUEHL: May it please the Commission,
12 it might be helpful if I'd make a very brief opening state-
13 ment pointing out to Mr. Nutter the scope and breadth of
14 our application and the testimony we will present.

15 We are by no means prepared to show the
16 Commission that each and every CO₂ well drilled in this
17 3-county area will drain 640 acres.

18 We are not prepared to tell you that all
19 CO₂ that is found in this 3-county area will be in a common
20 pool.

21 We're all aware of the intense interest
22 of CO₂ in this 3-county area. We all know that in the im-
23 mediate future, if all predictions are right, there is going
24 to be a tremendous development program of these CO₂ reserves.

25 Our application and our recommendation to

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1 you here today is simply to provide for the initial stage of
2 development a uniform and orderly pattern that will also,
3 at the same time, with your 640-acre spacing drilling unit,
4 prove up the largest amount of reserves with the fewest wells.

5 I imagine that a lot of areas within this
6 3-county area, we're going to need more than one well for
7 640 acres, but the evidence that we'll present to you today
8 will show, one, that the Tubb and older formations, where
9 we find the majority of the CO₂ in this area, is continuous,
10 generally speaking, throughout the 3-county area.

11 The interference data that we have run,
12 while it does not conclusively prove that one well will
13 drain 640, it shows the opportunity for one well to drain
14 640 acres.

15 But the rule that we're proposing, Mr.
16 Nutter, is simply like the rule 104 you have for southeast,
17 for Wolfcamp and older. That rule doesn't contemplate that
18 every Wolfcamp well will drain 320.

19 MR. NUTTER: The finding says that it
20 will.

21 MR. BUELL: If you encounter one. I can
22 show you more Wolfcamp wells that won't drain 320 than you
23 can show me that can.

24 MR. NUTTER: Well, then maybe the finding
25 is wrong.

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1 MR. BUELL: And the same thing for the
2 Morrow.

3 MR. NUTTER: Well, maybe the finding is
4 wrong, but we would have to come up with a finding here that
5 one well will drain 640 acres in order to write an order
6 supporting 640 acres.

7 MR. BUELL: You can certainly find, based
8 on the evidence that we're going to present, that one well
9 in this 3-county area, one CO₂ well has the opportunity to
10 drain 640.

11 MR. NUTTER: Well, I've got the oppor-
12 tunity to rob a bank, too, but I'm not going to do it.

13 MR. BUELL: That's against the law, Mr.
14 Nutter, and you're a law-abiding citizen.

15 MR. NUTTER: Well, 640-acre spacing in
16 the absence of a finding that it will drain 640 acres, would
17 be contrary to statutes, too, Mr. Buell.

18 MR. BUELL: Not in my opinion, Mr. Nutter.

19 MR. NUTTER: It says the Commission must
20 find the area that can be adequately and efficiently drained
21 by one well.

22 MR. BUELL: And the rule that we're pro-
23 posing is like a rule that you have in the southeast for
24 Wolfcamp and deeper --

25 MR. NUTTER: I'm talking about the statute.

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1 I'm referring to the statute

2 MR. BUELL: I'm referring to the statute.
3 I know you follow the statute when you -- I think that rule
4 was your proposal, and it provides for special pool rules
5 where data gathered in the area show that 640 is the appro-
6 priate spacing.

7 MR. NUTTER: Well, now we're faced with
8 the dilemma with the FERC also, of infill findings, because
9 we've got the Eumont and the Jalmat where we theoretically
10 said one well will drain 640 acre spacing. Now we have
11 applicants coming in for infill drilling on 80-acre units,
12 with our saying one well won't drain 80 acres.

13 We had a finding in 1960 that one well
14 would drain 320 acres in the Dakota formation in northwest
15 New Mexico and Amoco supported that theory, and Amoco came
16 along in 1979 and supported the theory that one well would
17 not drain 320 acres in the Dakota.

18 MR. BUELL: Mr. Nutter, we're like you,
19 we do not turn our back on newly acquired data, and I'll ad-
20 mit we're not perfect, and when we find new data that proves
21 an earlier conclusion was wrong, or maybe just partly wrong,
22 we're not embarrassed to tell you so.

23 MR. NUTTER: Well --

24 MR. BUELL: But if you're contending that
25 we're going to have to prove to you today that any CO₂ well

1 drilled in Union, Harding, and Quay Counties will drain 640,
2 we're unable to do that.

3 MR. NUTTER: You're going to show us some
4 select examples of some of your test wells that will indicate
5 interference between wells half a mile apart, or something
6 like that, is that it?

7 MR. BUELL: No, no-no, no. Our inter-
8 ference test data are not that conclusive for the simple
9 reason that, one, we had to vent the gas, the CO₂, as
10 you're aware, so most of them are on a short time frame, as
11 well as not a high production rate.

12 We have obtained interference. The inter-
13 ference data that we have indicates that a well, a CO₂ well,
14 has the opportunity to drain 640.

15 MR. NUTTER: Now what do you mean by
16 opportunity, Mr. Buell?

17 MR. BUELL: At the conclusion of the test
18 we have not hit a reservoir limit. In other words, we were
19 still obtaining pressure interference.

20 Now, you understand that a pressure in-
21 terference test, when you hit the limit of drainage area,
22 your pressure just nosedives.

23 MR. NUTTER: Do you think the Commission
24 can enter an order saying that there's an opportunity that
25 one well will drain 640, therefore we ought to adopt 640

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1 for three counties?

2 MR. BUELL: Yes, sir.

3 MR. NUTTER: Well, I'd like for you to
4 point it out in the statute where it says that an opportunity
5 is all that's necessary.

6 MR. BUELL: I think under your broad rule-
7 making powers you have the authority to adopt a rule of
8 general, or in this case, countywide application, where the
9 opportunity is there.

10 MR. NUTTER: Well, how would you address
11 yourself to the problem that I mentioned, that the zone
12 where the 640-acre spacing butts up against the 160-acre
13 spacing, if this area were to be eliminated from your
14 hearing today?

15 MR. BUELL: Mr. Nutter, we'd handle this
16 in the same way that we've handled the similar problem in
17 the southeast, where we have 160 and 320 for Wolfcamp and
18 deeper wells abutting up against each other.

19 I've had a lot of experience in that area,
20 and I've yet to see correlative rights being violated.

21 MR. NUTTER: Well, I hope you're right.

22 MR. BUELL: That didn't --

23 MR. ARNOLD: Mr. Buell, could I interrupt
24 you?

25 MR. BUELL: Yes, sir.

1 MR. ARNOLD: You're not proposing that
2 you limit the number of wells to one well for 640 acres?

3 MR. BUELL: No, sir, under our proposal,
4 and the spacing of wells that we propose, you can drill four
5 wells.

6 MR. NUTTER: But he is proposing a system
7 whereby you would have to get the permission, so to speak,
8 of the offset operator before you could do that, and if the
9 offset operator does not give the permission, then you'd have
10 to go to hearing. So -- and also, he's not covering the
11 situation where you have the drainage from four wells on
12 one section butting against the drainage from one well on
13 the adjoining section.

14 MR. ARNOLD: Well, of course, the operator
15 on the adjoining section would have the opportunity to drill
16 three other wells if he wanted to, to protect himself.

17 MR. NUTTER: What about the royalty owner?
18 The royalty owner has no opportunity to drill a well.

19 MR. BUELL: The royalty owner has no
20 opportunity to drill a well anywhere, Mr. Nutter.

21 MR. NUTTER: That's correct.

22 MR. BUELL: In southeast New Mexico, --

23 MR. NUTTER: That's correct.

24 MR. BUELL: -- where we have 320 abutting
25 against 160.

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1 MR. NUTTER: And one of the facets of
2 the protection of correlative rights, it must be the consi-
3 deration of the correlative rights of the royalty owners,
4 too.

5 MR. BUELL: I'm a firm believer in con-
6 sidering the correlative rights of all owners on interest,
7 as you well know.

8 MR. NUTTER: Yes, sir.

9 MR. BUELL: And I think under the rule
10 that we're proposing, even with this exclusion, that it will
11 be able to protect the correlative rights of all interest
12 owners, just as we've done in the southeast.

13 MR. LOPEZ: Mr. Chairman, if I may add to
14 the confusion on behalf of HNG Fossil Fuels Company, I
15 haven't had the opportunity to consult with Mr. Buell prior
16 to this hearing as to the exclusion of the acreage in which
17 our client has an interest, but it is our position that we
18 own substantial acreage in Union, Harding, and Colfax
19 Counties -- Colfax not being part of this hearing -- that's
20 in the early stages of exploration and development.

21 It is our position today that we would
22 like our area of interest excluded from the application in
23 Union and Harding Counties, and would be prepared to indicate
24 a similar area on the map, because our position is that there
25 just simply isn't sufficient data at this time to show whether

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1 or not a 640-acre proration unit is indicated for the areas
2 in which we have an interest.

3 MR. BUELL: May it please the Commission,
4 I would oppose the motion of Mr. Lopez. I could agree with
5 the motion of Mr. Pealy for the simple reason that this is
6 an older producing area.

7 The area that Mr. Lopez has just described
8 is similar to all the other areas in Union, Harding, and
9 Quay.

10 MR. RAMEY: I think perhaps we should
11 proceed with the -- with the case and hear all the evidence,
12 and then perhaps the Commission can rule on these motions.

13 MR. BUELL: Whatever is the pleasure of
14 the Commission.

15 MR. ARNOLD: I would agree.

16 MR. RAMEY: That's our pleasure.

17 MR. BUELL: I want to assure the Commis-
18 sion again, if the burden of proof in your eyes is the same
19 as Mr. Nutter has placed on me, that I've got to show in
20 every nook and cranny of this 3-county area that a CO₂ well
21 will drain 640, I cannot do it. I don't believe Merlin the
22 magician could, and we contemplate that in some areas 640's
23 will not be appropriate. But again, you've heard this old
24 cliché many times, and so has Mr. Nutter, you can always
25 drill a necessary well but you can't undrill an unnecessary

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1 well, and that's all we're trying to provide.

2 I think in the public interest in this
3 3-county area, when development commences, I think it is in
4 the utmost public interest that we have an initial uniform
5 and orderly development pattern.

6 And that's what we're proposing to you
7 here today.

8 MR. RAMEY: Mr. Buell, all I can say is
9 we'll listen to your testimony and in our infinite wisdom
10 we will put out the kind of order that we believe is indi-
11 cated.

12 MR. BUELL: Mr. Ramey, I could not ask
13 for a higher degree of procedure.

14 MR. HEALY: May I just ask a question
15 about the procedure. Should we be prepared to put on a wit-
16 ness on our own behalf?

17 MR. RAMEY: Yes, sir.

18 MR. HEALY: Okay. Mr. Phillip Beeler is
19 here today and he'll testify for us.

20 I'd like to make a suggestion on the pro-
21 cedure. This is an unusual format in that we haven't had
22 a chance to look at Amoco's testimony or their documentary
23 data, and they really haven't had a chance to look at ours.
24 I think it's -- when we finish the testimony today, I'd like
25 to request a continuance of the hearing to give us time to

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1 analyze Amoco's data and give them the same right to look at
2 any evidence that we produce today, and have a later contin-
3 uance of the hearing to allow us time to cross examine their
4 witnesses and present our view of their data, and then to
5 do the same with our witness and our data.

6 MR. BUELL: May it please the Commission,
7 I'm violently opposed to any type of continuance, and I don't
8 feel that I'm the least bit handicapped in that I have not
9 seen the data that they propose to present today.

10 I'm violently opposed to continuance. I
11 think we ought to start and I think we ought to finish, and
12 I'm prepared to do that.

13 MR. RAMEY: Mr. Sealy, we will -- we'll
14 proceed with the hearing and at the end of the testimony you
15 can again make your motion and the Commission will rule on
16 it at that time.

17 MR. HEALY: All right.

18 MR. RAMEY: It is not unusual in cases
19 before the Division or the Commission that people have not
20 seen the evidence.

21 MR. HEALY: Oh, sure, I understand that.
22 It is a complex matter, though, and we'll be seeing material
23 today for the first time and I'd like to have an opportunity
24 to study it and go over it with our experts, so that we have
25 a, you know, as complete a review as possible.

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1 I understand the proceedings, I think,
2 in simpler cases, but trying to proceed with the testimony
3 of all parties and then make a decision, well, we can see
4 what evidence develops and how complex it is, and try to
5 define the issues and see where we are at the end of the
6 hearing.

7 MR. RAMEY: Okay, that would be my sug-
8 gestion.

9 MR. BUELL: May it please the Commission,
10 I hope that not everyone, like Mr Healy, is anticipating
11 a complex and complicated case and presentation.

12 Our presentation is very simple. It's
13 easily understandable. We're going to show you all a geo-
14 logical opportunity and a reservoir engineering opportunity
15 for a CO₂ well to drain a large area.

16 It's extremely simple. The only thing
17 complex about it is that it does cover a large area.

18 MR. RAMEY: I would request that all wit-
19 nesses stand at this time and be sworn.

20
21 (Witnesses sworn.)

22
23 MR. BUELL: I'd like to call first Mr.
24 Allen.
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JAMES C. ALLEN

being called as a witness and having been duly sworn upon
his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. BUELL:

Q Mr. Allen, would you state your name, by
whom you're employed, in what capacity, and at what location,
please?

A My name is James C. Allen. I'm a Senior
Petroleum Engineering Supervisor for Amoco Production Com-
pany, in Houston, Texas.

Q Mr. Allen, have you testified before this
Commission before and are your qualifications as a petroleum
engineer a matter of public record?

A Yes, sir, they are.

MR. BUELL: Are there any questions, Mr.
Ramey, with regard to Mr. Allen?

MR. RAMEY: No, we're familiar with Mr.
Allen and consider him qualified.

MR. BUELL: Mr. Ramey, our Exhibit Number
One is our proposed rule in its complete form. Of course
it has not anticipated the deletion of the area that we have
discussed so far this morning. It would be a very simple

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1 matter in the event the Commission does grant the motion to
2 exclude that acreage, to amend our Exhibit Number One to take
3 care of that.

4 Q Mr. Allen, would you briefly comment on
5 our Exhibit Number One, and very generally and broadly state
6 what we are proposing to do with the amendments we're re-
7 commending to Rule 104?

8 A Yes, sir. Exhibit Number One is Amoco's
9 proposed amendment to statewide Rules 104-B and C.

10 Our intent is no change only that rule
11 as it applies to carbon dioxide in the three areas of Union,
12 Harding, and Quay Counties.

13 Q In the Tubb or older formations?

14 A In Tubb or older formations. There is no
15 intent to change the rules in any other way.

16 Q Do you have any other general comments
17 on this? Does our rule contemplate that in some localized
18 areas or our 3-county application, that we will encounter
19 a CO₂ reservoir where a 640-acre unit will not be appropriate?

20 A Yes, sir, it does, and it provides for
21 that under Rule 104-C-2 (c), reading, "Unless otherwise
22 provided in special pool rules . . ."

23 Again, we'd use the same format that is
24 used in the general rules in the State of New Mexico for
25 special pool rules to override --

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1 Q Mr. Allen, -- excuse me, go ahead.
2 A To override the general rules
3 Q Assuming for the purpose of this question
4 that most predictions are right and that we do in the imma-
5 diate future see a tremendous development program in our
6 CO₂ area, in your opinion will the rule that we are proposing
7 provide for uniform and orderly development?
8 A Yes, sir, not only uniform and orderly
9 development, but I believe that it would add enhancement to
10 more widespread development and drilling in the area.
11 Q Do you think it would prove up a greater
12 amount of CO₂ reserves with fewer wells than would a more
13 dense spacing pattern?
14 A Yes, sir, I believe it will.
15 Q I believe I commented on this in our
16 opening discussion, let me ask you this: Under the rule as
17 proposed and reflected by Exhibit One, would it limit an
18 operator to drilling only one well to a 640-acre drilling
19 and spacing unit?
20 A No, sir, it will not.
21 Q What would be the maximum number of wells
22 that an operator could drill within the rule on a 640-acre
23 unit?
24 A Four wells could be drilled.
25 Q In your opinion would that normally -- I

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1 realize you can't contemplate every future possibility --
2 but in your opinion would that provide a mechanism for the
3 protection of correlative rights where we have 160 acre
4 development pattern abutting up against the 640-acre
5 drilling and spacing unit pattern?

6 A It would, it would serve that purpose,
7 yes.

8 Q Four into 640 is 160, isn't it?

9 A Yes.

10 Q Do you have any other questions and
11 comments -- not any questions -- any comments you would like
12 to make at this time?

13 A No, sir, I don't believe so.

14 Q You do agree with me that in the event
15 the Commission grants the motion to exclude the acreage in
16 Harding County we've discussed, that it would be very easy
17 to make an amendment to our Exhibit Number One to take care
18 of that?

19 A Yes, sir, it would be amended quite
20 easily.

21 MR. BUELL: That's all I have of Mr.
22 Allen by way of direct.

23 MR. PAMEY: Any questions of Mr. Allen?
24 Mr. Stamets.
25

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QUESTIONS BY MR. STAMETS

Q Mr. Allen, you've proposed these as amendments to the general rules and regulations of the Oil Conservation Division and Commission. Is there -- would there be any problem with establishing these as special rules and regulations, perhaps, in the same manner that we've done in I think it's the Southeast Chaves Queen Gas Area, providing for a specific area in which these would apply unless there are other special pool rules?

A Mr. Stamets, I don't -- I don't see that there would be any problem in handling that way. The only reason, I guess, that we chose it this way, was it appeared to kind of fit the general rules as they are now and still provide for development in an orderly fashion for CO₂, and we also built into it the special pool rules.

Q It would appear to me, though, that perhaps the rules and regulations are established the way they are based on a long history of development, whereas what we're looking at here is a -- is an experimental ruler, perhaps, providing for initial development, not final development in the area.

A That's true.

MR. STAMETS: That's all.

MR. RAMEY: Any other questions of Mr.

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1 Allen? Mr. Lopez?

2 MR. LOPEZ: I'd like to address my question
3 to Mr. Buell. I don't know if Mr. Allen is the witness
4 who is going to describe the area of interest where Amoco's
5 developed the CO₂ reserves. I would like to address to some
6 witness just what area Amoco has proven up reserves and what
7 areas have not been so proved.

8 MR. BUELL: Mr. Lopez, our next witness,
9 who is a geologist, will cover the extent of the Tubb and
10 older formations in our 3-county area, and if I understood
11 your concern, it would seem to me that he would be the wit-
12 ness to whom you should address your question.

13 MR. RAMEY: Any other questions?

14 MR. LOPEZ: No.

15 MR. RAMEY: Mr. Healy, did you have a
16 question?

17 MR. HEALY: Well, I think Mr. Lopez has
18 asked essentially the same question I wanted to ask, but I
19 was going to request the right to wait until Amoco finishes
20 their case and then question the witnesses at that time,
21 because I don't know what the entire case is -- consists of.

22 MR. RAMEY: Okay. We can recall Mr.
23 Allen if you so desire, Mr. Healy.

24 MR. HEALY: All right, thank you.

25 MR. RAMEY: Any other questions of the

1 witness? Mr. Stamets.

2 MR. STAMETS: Just to expand on what I've
3 asked Mr. Allen earlier, do you view this area as potentially
4 one pool or a few large pools, rather than many individual
5 small pools?

6 A Mr. Stamets, from what I've seen of the
7 geology, it's difficult for me to say that in the eastern
8 part will be the same reservoir, as we speak of it, as maybe
9 the western part. I think our witness will show that the
10 Tubb or older horizons are present, but we all know that
11 there could be faulting in this area. There also could be
12 other things.

13 MR. STAMETS: Do you look at the rules
14 that you're proposing here as being equivalent to temporary
15 special pool rules that permit development of the pool and
16 the gathering of information for determination of proper
17 permanent pool rules?

18 A Yes, sir, I do. I don't know, you know,
19 what the timing would be, say, to establish, like we nor-
20 mally do, a field rule, a temporary field rule for a period
21 of a year or two.

22 Now I'd feel the scope here is it does
23 provide a mechanism whereby additional drilling or proving
24 up of reserves can occur in a uniform manner without drilling
25 unnecessary wells but still provide a tool under the special

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1 pool rules provision for closer spacing, if it is necessary
2 and if the data does indicate it is.

3 MR. STAMETS: Thank you.

4 MR. RAMEY: But you're not requesting
5 temporary field rules?

6 A Not under this proposal, no, sir.

7 MR. BUELL: May it please the Commission
8 and Mr. Stamets, I do not look upon our application as
9 temporary special pool rules. I look on it as being com-
10 pletely analogous to the general rules for Wolfcamp or
11 deeper, or older, in southeast New Mexico.

12 It's not temporary. It's permanent, but
13 it is subject to change when data show a different pattern
14 is necessary for a localized area, just the same with Wolf-
15 camp and older in the southeast.

16 MR. STAMETS: Mr. Buell, let me ask you,
17 would Amoco prefer temporary rules as opposed to a denial?

18 MR. BUELL: That's -- that's a -- I love
19 anyway I answer it.

20 MR. NUTTER: No, you get your foot in the
21 door one way.

22 MR. BUELL: Very seldom I'm without words.

23 MR. STAMETS: Well, I think, Mr. Buell,
24 that it is important in this case, especially since you've
25 already indicated that you may have a little bit of a problem

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1 absolutely proving that every square foot of this acreage
2 can be drained on 640-acre spacing, and if you limit the
3 Commission in what it can do by your statements here, then
4 your result may not be near what you want.

5 MR. BUELL: Why do you insist in putting
6 a greater burden on me than you put on the Commission staff
7 when you adopted the southeast rule for Wolfcamp or deeper?
8 There was no way you could prove that every Wolfcamp or
9 Morrow well would drain 320, just like I can't prove that
10 every CO₂ well will drain 640?

11 MR. STAMETS: Well, that particular order
12 is not in question here, and the question still goes back
13 to the one I originally asked you. Would you accept tempo-
14 rary rules or, if that's the only other choice, a denial?

15 MR. NUTTER: Also, Mr. Buell, those or-
16 ders, first it was Pennsylvanian and then the Wolfcamp was
17 after.

18 MR. BUELL: Yes, sir.

19 MR. NUTTER: But those orders were adopted
20 and those rule changes made after the formations had been
21 on another spacing pattern for many, many years, and there
22 was just a continuous flood of applications for change of
23 the spacing pattern to the wider spacing, and evidence that
24 this formation ought to be able to drain 320. It kept
25 coming in; every month we'd have another spacing case for a

1 Pennsylvania pool. So finally, in order to eliminate having
2 all those hearings, we adopted it on an areawide basis.

3 Now, the same thing could be said here if
4 we had a pool in the north, a pool in the middle, and a pool
5 in the south, and they came in and said, well, this pool will
6 drain 640 and this will drain 640 and that will drain 640,
7 then there's more evidence to show that it ought to be area-
8 wide.

9 So that wasn't adopted frivolously or
10 without a whole lot of background information and a lot of
11 background cases. This one would be adopted without previous
12 background cases. As a matter of fact, the only case we've
13 got to date is for 160-acre spacing.

14 MR. BUELL: Yes, sir, I realize that, Mr.
15 Hutter, but what I'm attempting to do, what Amoco is attempting
16 to do, and I think it's in the public interest in New Mexico,
17 I think it's in the interest of conservation, is head off
18 these many problems you encountered in southeast New Mexico,
19 that by having too small a pattern to begin with and then
20 having to enlarge it and change it. I'm trying to antici-
21 pate that for the benefit of the working interest owners in
22 this area, the royalty owners, the State of New Mexico, as
23 well as the Conservation Division staff.

24 We're trying to anticipate a problem and
25 provide for initial uniform and orderly development.

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1 This is the first area in New Mexico in all my years of ex-
2 perience where we've had that opportunity. In southeast, it
3 was like Topsy, it just grew up, Pennsylvanian and deeper,
4 on 160, and then we realized 320 was better, and we had to
5 go through a lot of agony and a lot of change and finally
6 you had to adopt a rule of countywide application.

7 MR. WATKINS: Well, we also went through
8 the same agony in the opposite direction in the Mesaverde
9 and Dakota, didn't we?

10 MR. BUELL: Yes, sir.

11 MR. STANBIS: If -- if I might, this all
12 started out with a question that I asked some time back, and
13 I wish that Mr. Buell would answer it or decline to answer
14 it, one way or the other.

15 MR. RAMEY: Before he answers, let me
16 ask a question.

17 Wouldn't temporary 640-acre pool rules in
18 this area allow you orderly development?

19 MR. BUELL: For that temporary period of
20 time, yes, sir.

21 MR. RAMEY: And give you a chance to
22 then come in with some good concrete evidence that --

23 MR. BUELL: Yes, sir.

24 MR. RAMEY: -- one well would drain 640
25 acres?

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1 MR. BUELL: It would give us a better
2 opportunity than we have now to conclusively prove to you
3 that one CO₂ well will drain 640 acres, sir.

4 MR. BENTON: Okay, you may answer Mr.
5 Starata's question.

6 MR. BUELL: You just made me answer it
7 for him.

8 Mr. Starata, while I would urge the Com-
9 mission to adopt permanent rules, as you did in southeast,
10 I would certainly say that temporary, for a decent interval
11 of time, would be better than, to put it in your words, a
12 denial.

13 MR. STARATA: Thank you, Mr. Buell.

14
15 CROSS EXAMINATION

16 BY MR. BENTON:

17 Q Mr. Allen, if the Commission gave you
18 permanent 640-acre rules and you found areas that would not
19 be drained by one well on 640 acres, would then Amoco deve-
20 lop this acreage on something less?

21 A I would think that we would develop it
22 on the acreage which we thought was appropriate, or data
23 that was appropriate, either 320's or 160's, whatever it
24 may be, yes, sir.

25 Q But how could this Commission be assured

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1 that you would do this?

2 A Well, I think, with the 640 acre spacing,
3 that, you know, in protection of correlative rights and also
4 if we know we can't drain the 640, we needed to drill another
5 well. We could drill up to four before it is necessary to
6 adopt special pool rules, which we would ask for.

7 Q And then to --

8 A And present the data.

9 Q For this Commission to be assured of that,
10 why we would -- we would then have to make studies of the
11 CO₂ area.

12 A I'm not totally sure, sir, I understand
13 your question. I would --

14 Q It's more of a statement than a question,
15 I'm afraid.

16 What I am thinking, if we -- if we gave
17 you temporary rules, then you would at some stage of deve-
18 lopment or after development on 640 acres, you would have
19 to come back to the Commission and show that one well would
20 adequately drain 640-acre spacing, while if --

21 A Yes, sir.

22 Q -- while if we gave you permanent rules,
23 we could never be absolutely assured, unless your testimony
24 is better than Mr. Buell has indicated, that one well will
25 drain 640 acres.

1 A Yes, sir. I see what you're getting at.
2 That is true.

3 My only -- my only real reservation with
4 a temporary rule provision is that, as we all know, it may
5 be some time before the market is developed for this. I
6 don't know what the timing is, but there will be drilling
7 going on, and I don't know what would be an adequate or a
8 satisfactory period of time for temporary rules in this
9 situation.

10 Q Well, it may be some period like one
11 year after production commences.

12 A It could be, yes, sir. We would defi-
13 nitely need production before we could adequately say we can
14 or cannot drain 640 acres, in my opinion.

15 MR. BUELL: Mr. Ramey, you've put your
16 finger on one area where we've been seriously handicapped.
17 The Oil Conservation Commission has been very progressive
18 and farsighted in letting us vent CO₂ to conduct the small
19 interference tests that we have conducted, and we sincerely
20 appreciate that, but as Mr. Allen pointed out, in the absence
21 of steady production it is hard to get conclusive data. So
22 if we could have them temporary for a period of time after
23 production commences, then I'm sure we could come in with
24 hard data one way or the other.

25 And you're right, there is no way that you

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1 could be assured that Amoco would drill a well, or you could
2 be assured positively. I would say, that if you would look
3 at our past track record in New Mexico, you'll see that we're
4 not the least bit reluctant to drill a necessary well when
5 the data show us it's necessary.

6 And one pool I'm not so proud of on our
7 part is Fowler-Ellenburger, where we infill drilled where it
8 was necessary. That was the only pool in the United States
9 that was spaced geometrically perfect on 80-acre units, and
10 we've infilled almost every unit with a second well, because
11 it turned out it wasn't a water-drive reservoir as we anti-
12 cipated initially. It was a volumetric mechanism.

13 MR. ARNOLD: You mean you're glad you did
14 or you're glad you didn't drill?

15 MR. BUELL: I'm sorry we had to do it,
16 but I'm glad we did it, because we -- we recovered many, many,
17 many more barrels of Ellenburger oil than we would have with
18 one well to the 80, Mr. Arnold.

19 Everyone anticipated in both Ellenburgers,
20 that that would be a very active water-drive. It's a
21 volumetric reservoir.

22 MR. RAMEY: Well, I do want to speak to
23 you about your track record in this area, Mr. Buell, but
24 not at this hearing.

25 MR. BUELL: That has an ominous ring to

1 it but I'll be there, Mr. Ramey.

2 MR. RAMEY: All right, thank you.

3 Any other questions of Mr. Allen? He may
4 be excused.

5 MR. BUELL: May it please the Commission,
6 I'd like at this time to call Mr. May, M-A-Y.

8 BRUCE I. MAY

9 being called as a witness and having been duly sworn upon
10 his oath, testified as follows, to-wit:

12 DIRECT EXAMINATION

13 BY MR. BUELL:

14 Q Mr. May, will you state your complete
15 name, by whom you're employed, in what capacity, and at what
16 location, please?

17 A My name is Bruce I. May. I'm employed by
18 Amoco Production Company in Houston, Texas, and I'm a petro-
19 leum geologist.

20 Q Mr. May, you have never appeared before
21 this body here in New Mexico before, so would you very
22 briefly give us your educational background in the field of
23 geology?

24 A I have a Bachelor of Science degree in
25 geology from Bowling Green State University, and I have a

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1 Master of Science degree in geology from Southern Illinois
2 University.

3 Q And what have you done since graduation?
4 Has your employment as a geologist been with Amoco?

5 A Yes, it has.

6 Q In your recent experience with Amoco,
7 what area have you been assigned to and have been making
8 studies?

9 A The northeastern New Mexico area.

10 Q With particular reference to Union,
11 Harding and Quay Counties?

12 A That's correct.

13 MR. BUELL: Are there any questions as to
14 Mr. May's qualifications as a geologist with particular
15 reference to Union, Harding, and Quay Counties?

16 MR. RAMEY: No, we consider Mr. May
17 qualified.

18 Q Mr. May, let me direct your attention
19 first to what has been identified as our Exhibit Two. I
20 think it would probably be better if you get over here by
21 the map.

22 A Okay.

23 Q What is Exhibit Number Two, Mr. May?

24 A Exhibit Number Two is a map showing the
25 approximate extent of the Tubb interval, which I've defined

1 from the top of the Tubb, base of Cimarron anhydrite, to the
2 basement.

3 Q All right, sir, let me ask you this: How
4 have you highlighted the boundaries of the three counties
5 which are the subject matter of this hearing?

6 A I've outlined them in yellow.

7 Q All right, sir, I notice there are
8 several colored dots on that map. What is the significance
9 of the various colors, and I notice some of them have a
10 legend inside of the colored dot? Would you run through
11 that? It's on the map but so the record will show it.

12 A Okay. The -- every well that I examined
13 is either circled or has a triangle around it, and if that
14 well was productive from the Tubb interval, then I colored
15 it red and put a gas well symbol in that circle.

16 If that Tubb interval was not tested and
17 the Tubb never was present, I just colored that circle in
18 red.

19 If the Tubb interval was tested and was
20 nonproductive, it was colored in blue and a dry hole symbol
21 was placed in the circle.

22 Q Mr. May, in making your study of this
23 area, did you look at all data available to you from all
24 wells drilled in this area that had penetrated the Tubb or
25 gone deeper?

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1 A Yes, I did.

2 Q Do you have any idea of approximately how

3 many wells data from which you examined?

4 A I examined approximately 130 wells.

5 Q Now, you do not have each one of those

6 wells that you've looked at shown by a colored symbol, do

7 you?

8 A No, I don't.

9 Q What did you do in some areas? Did you

10 instead of putting a mass of them so it would look like

11 measles, you picked a well that you thought was representa-

12 tive of a particular area?

13 A Yes, I did. In some cases there were

14 several wells adjacent to each other and I just picked one

15 and put that as representative of that area.

16 Q Now Amoco has drilled several wells very

17 recently, as Mr. Nutter pointed out. Do you have each one

18 of those wells identified on this exhibit?

19 A Yes, I do.

20 Q Would you point out generally where those

21 wells are located?

22 A In general, they are located up in this

23 area.

24 Q Now, "this area" won't get in the tran-

25 script.

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- 1 A Okay.
- 2 Q Refer to the area of the exhibit.
- 3 A All right, along the border of Harding
- 4 and Union Counties, the central portion of Union County, and
- 5 also into a portion of Harding County.
- 6 Q Mr. May, I notice up in the northwest
- 7 corner of Exhibit Two there is a wavy line that's identified
- 8 as the approximate extent of the Tubb interval. Is my eye-
- 9 sight okay?
- 10 A Yes, sir.
- 11 Q And what does that indicate?
- 12 A Beyond, to the northwest of this line
- 13 the Tubb interval is gone; towards the southeast the Tubb in-
- 14 terval, as I find it, is present.
- 15 Q Do you have well control northwest of
- 16 your Tubb limit line where the Tubb was missing?
- 17 A Yes, I do.
- 18 Q What do you -- what is it, a pinchout or
- 19 whatever you geologists call it?
- 20 A Yes, it's a pinchout of the Tubb.
- 21 Q All right, sir, let me ask you this:
- 22 Speaking generally now of the remainder of the 3-county area
- 23 shown on Exhibit Two, by remainder I mean that southeast of
- 24 your pinchout line, did you generally find the Tubb and older
- 25 formations present?

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1 A Yes, I did.

2 Q Let me ask you this: In looking at all of
3 the well data, test data, and log data, did you run across
4 any well that had a commercial show of hydrocarbon in the
5 Tubb or older formation?

6 A No, I did not.

7 Q Based on your study of this 3-county area,
8 from a geological standpoint, do you think the opportunity
9 exists for a CO₂ well to drain a large area?

10 A Yes.

11 Q In that connection we can probably show
12 that better with your next exhibit. Do you have any other
13 comments on Exhibit Two before we move on to Three?

14 A The only comment I'd like to make is that
15 the triangles indicate where the Tubb is not present. The
16 dry hole symbol was used and was colored in blue.

17 Q Now you don't mean by your testimony that
18 although the Tubb is present throughout this 3-county area,
19 that every place you drill a well is going to be productive
20 of CO₂.

21 A Not everywhere you drill is going to be
22 productive of CO₂, correct.

23 Q All right, sir. Let's go now to your
24 Exhibit Three. That's a cross section. Is the trace of
25 this cross section shown on Exhibit Two?

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1 A Yes. The trace of the cross section is
2 from northeast to southwest and it covers Union, Harding,
3 and Quay Counties.

4 Q All right, approximately how many surface
5 miles does this cross section A-A', our Exhibit Number Three,
6 traverse?

7 A Approximately 170 miles.

8 Q All right, sir. Let's move now to that
9 Exhibit Three, and just for orientation purposes and the
10 record, why don't you name the well that is the northernmost
11 well on that section and then the southernmost well?

12 A The northernmost well is the Gulf Jolla
13 Land and Cattle Company "D", located here on the map.

14 Q By "here" you mean way up in the northern
15 portion --

16 A Way up in the northern portion, north-
17 eastern portion.

18 The southernmost well is the Amoco No. 1
19 Blackburn Farms.

20 Q And it's located down in Quay County?

21 A Correct.

22 Q All right, sir, looking at this exhibit
23 I notice there about the middle of the logs, there is a solid
24 blue line that goes completely across the breadth of the
25 cross section. What is the significance of that blue line?

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1 A That blue line is the Cimarron anhydrite,
2 which is a good stratigraphic marker throughout this 3-county
3 area.

4 Q Is it a good correlative marker to use
5 when you're mapping or preparing a cross section through this
6 area?

7 A Correct.

8 Q All right, now you said this section
9 covered 170 miles, approximately. Is it horizontally to
10 scale?

11 A Yes, it is.

12 Q All right, sir. Now another line I notice
13 that traverses the entire section is shaded in a dark brown.
14 What is the significance of that line?

15 A That is the top of the basement, within
16 this 3-county area.

17 Q When you geologists speak of a basement
18 rock, what do you mean by that, anything below that would
19 be nonproductive?

20 A Yes, it would be.

21 Q All right. Why don't you start on the
22 north and let's work our way south, and very briefly state
23 for the record what you find in the logs of these wells,
24 geologically, as we move to the southwest?

25 A Well, we have some sandstones and granite

1 wash in the upper portion of the Gulf Jolla Land and Cattle
2 Company "L".

3 We also encountered the top of a carbonate,
4 the Mississippian carbonate here. We've correlated that into
5 two wells, the Skelly Van Pelt Well, and the third one, we
6 do not have a sample log on the Western Anson No. 1 Federal,
7 and so we've dashed that correlation.

8 Q You couldn't pick the Mississippian up
9 in your third well on the section, the Western and Anson
10 No. 1 Federal?

11 A Right.

12 Q All right, and then you started running
13 into your basement rock as you move on to the south, don't
14 you?

15 A Correct. As you go south, the section
16 becomes thinner as you're coming onto an area commonly known
17 as the Bravo Dome.

18 Q All right, now do we find the Tubb and
19 older formation, starting with the Gulf well on the north
20 and running all the way 170 miles to the south?

21 A Yes.

22 Q Are any of the wells that are completed
23 in the Tubb and older shown on this exhibit?

24 A Yes. The Amoco State "EM", the Amoco
25 No. 2 Heimann.

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1 Q How have you shown or identified the com-
2 pletion intervals in all those wells that are currently com-
3 pleted in the Tubb or older?

4 A I've indicated them with circles and
5 colored the circles in red indicating where they were
6 perforated.

7 Q And this exhibit shows that over this
8 170-mile area, and admittedly, there's a lot of distance
9 between some of these wells, but you did find the Tubb and
10 older formation continuously from the north to the south?

11 A Yes.

12 Q Do you have any other comments you'd like
13 to make on Exhibit Three?

14 A No, I don't.

15 Q All right, let's move over to Exhibit
16 Four. That is cross section B-B', and you also have the
17 trace of that on Exhibit Two, do you not?

18 A Yes. The cross section goes from the
19 northwest to southeast, and in the northwest we have the
20 Amoco State "FA", and to the southeast we have the CO₂-In-
21 Action No. 1 Coats.

22 Q And on this section, as you did on Exhibit
23 Three, you show the Cimarron anhydrite as a blue line across
24 the cross section, and your basement rock in a dark brown?

25 A That's correct.

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1 Q All right. What do we notice in the
2 first well to the northwest on this section?

3 A The first well to the northwest the Tubb
4 interval is completely gone.

5 As we move toward the southeast we
6 finally pick up the Tubb interval and it increases in thick-
7 ness.

8 Q The well, the log of which you use as
9 your first well to the north, it is north and west of your
10 pinchout line on Exhibit Two.

11 A Correct.

12 Q Generally do we find the same thing here,
13 as you come across your pinchout line you start picking up
14 Tubb and older formations?

15 A That's correct.

16 Q Are any of the wells, the logs of which
17 are on this section, completed now in the Tubb or older?

18 A Yes. I've indicated those again by the
19 red circles colored in, and those are the perforation in-
20 tervals of those wells, the Amoco State No. 1 "PD"; the No.
21 2 Heimann; and the Wikkell; and also the CO₂-In-Action No. 1
22 Coats.

23 Q So looking at all three of your exhibits,
24 Mr. May, is it a fair summary of your testimony that you
25 found, generally speaking, the Tubb and older formation is

1 continuous throughout this 3-county area?

2 A Yes.

3 Q In all of your research, did you find
4 where the Tubb and older in this 3-county area were pro-
5 ductive of anything other than CO₂ gas?

6 A None of them were productive of anything
7 other than CO₂ commercially.

8 Q And no commercial hydrocarbon shows could
9 you find anywhere in this 3-county area, Tubb and older?

10 A Correct, I couldn't find any.

11 Q Do you have anything you care to add at
12 this time, Mr. May, with regard to your testimony?

13 A No, I don't.

14 MR. BUELL: May it please the Commission,
15 that concludes our direct of Mr. May, and I tender him for
16 cross examination.

17 MR. RAMEY: Any questions of Mr. May?

18 MR. HEALY: Yes. One question I'd like
19 to raise now and reserve the possibility of other questions.

20 MR. RAMEY: Mr. Healy.

21 MR. HEALY: He's demonstrated by these
22 exhibits that there is production in a number of wells in
23 the Union, Harding, and Quay Counties, and I think the issue
24 here today is whether it's more appropriate to establish
25 160-acre spacing and drilling than 640, and I don't think

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1 he's addressed that issue.

2

3

CROSS EXAMINATION

4

BY MR. HEALY:

5

Q Can you describe for us why you -- do you conclude that it's more appropriate to establish 640-acre spacing and drilling than 160, and if so, why?

6

7

8

A Okay. Looking at the rocks within the 3-county area that I have seen, most of them within Union and Harding Counties, the rocks appear to have very good quality. They are very well sorted. They have a good porosity and good permeability.

9

10

11

12

13

Q Just to get into it in a little more detail. Can you tell me how many miles apart these -- these various wells are?

14

15

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24

25

A They're to scale. I'd have to use a ruler to tell you exactly, but the spacing on the wells is to scale. It's 1 inch equals -- a half inch equals a mile.

Q And did you establish that there was any communication between those wells that are shown on this exhibit?

MR. BUELL: May it please the Commission, Mr. May is a geologist and I limited his direct to geology. The complete thrust of his testimony, which he summarized, is that all he was showing was, one, the presence

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1 of Tubb and older throughout this area; and two, the geolo-
2 gical opportunity for a well to drain a large area.

3 MR. HEALY: Well, I'd like to address
4 that question of geological opportunity. I don't understand
5 what that phrase means and I still say that I don't believe
6 that that's been established by the direct testimony on
7 these exhibits, and I'd like Mr. May to amplify his testi-
8 mony and demonstrate why he believes that there's an oppor-
9 tunity to drain 640 acres based on the well test data that
10 he's presented here today.

11 MR. BUELL: May it please the Commission,
12 he didn't testify that a well drained 640. All he testified
13 to, and I'm willing for him to answer this again on cross,
14 is that geologically there is an opportunity for a well to
15 drain a large area. He did not ever mention the words 640.

16 MR. HEALY: Well, again, let me correct
17 that.

18 MR. PAMEY: I don't know that he testified
19 to that, Mr. Buell, that, you know, geologically there was
20 an opportunity to drain a large area. I don't believe he --

21 MR. BUELL: I asked him that and he said
22 yes.

23 MR. HEALY: Well, I'd like him to explain
24 why he thinks that. I understand that he did say that, but
25 that's a conclusion and I'd like to know, based on his anal-

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1 ysis of the geological data, how he reached that conclusion.
2 I don't understand it. And again, I'm a simple easterner.
3 I'm not an expert in oil and gas and I'm just trying to
4 understand what the -- what the testimony and the drill data
5 shows, and I must confess that I am not persuaded that I
6 could even establish 160 is the proper spacing, based on the
7 direct testimony so far.

8 Well, let me ask that question.

9 MR. RAMEY: Would you like to -- why don't
10 we give Mr. May an opportunity to answer your question?

11 Would you like to expound a little more,
12 Mr. May?

13 A The data that I have seen geologically,
14 again, is the rocks are very, very good. They have good
15 permeability and a good porosity, and that's the main reason
16 that leads me to believe that it could drain a large area.

17 Q How do you determine that they have good
18 porosity?

19 A We've done --

20 Q What sort of testing?

21 A We've made measurements on over 5000 feet
22 of core and our data indicates we have an average porosity
23 of around 20 percent, and a permeability of about 42 milli-
24 darcies.

25 Q Now, let me ask you, on the Union, Harding,

1 and Quay tracts, have you established that that porosity
2 would effectively drain any particular number of acres?

3 A. No, I have not.

4 Q. On any other tracts where similar poro-
5 sity is found, have you established through production or
6 other means what the drainage, the effective drainage would
7 be?

8 A. No, I have not.

9 MR. BUELL: May it please the Commission

10 MR. HEALY: Well, again I --

11 MR. BUELL: Our next witness is going to
12 our interference test where he will discuss in detail the
13 quality of the rock from the standpoint of permeability and
14 porosity, and those questions.

15 MR. HEALY: Well, maybe I jumped the gun.

16 MR. BUELL: I'm merely suggesting it --
17 those questions might be better directed to him.

18 MR. RAMEY: Does that suit you, Mr. Healy?

19 MR. HEALY: Yes, I -- well again, I was
20 going to reserve until I heard all the testimony, but I
21 didn't understand the significance of picking these wells,
22 and I would like to pursue another line of questioning, and
23 that is the statement that they drilled a number of wells
24 and picked certain ones. Some wells were adjacent to wells
25 that they picked, and I think it's very significant what

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1 would have been found by way of any communication or inter-
2 ference or whatever the right wording would be on the drainage
3 between those adjacent wells.

4 I think the -- in my mind, and I'd like
5 to study it further, I think the exclusion of adjacent wells
6 from the testimony today really goes to the heart of the
7 whole issue, and I think that's where we ought to develop
8 some more testimony on exactly what was found or could have
9 been found from --

10 MR. BUELL: This sounds more like a closing
11 statement than a question, Mr. Commissioner.

12 MR. HEALY: No, I'm leading up to a ques-
13 tion. Let me ask Mr. May.

14 Q Why did you exclude certain wells from
15 the presentation today?

16 A Okay. Certain wells there was very poor
17 data. The logs were not in my judgment of sufficient quality.
18 Also in some wells we only had sample logs; in others we only
19 had electric logs, and what I tried to do, I tried to get
20 the most data from one well and use that well on that map.

21 Q Well, let me ask you a couple of general
22 questions. Is it possible you picked the well data that was
23 most favorable to Amoco?

24 A No, I did not.

25 Q Is it possible that if the Commission had

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1 the data, although it was incomplete or imperfect, on other
2 wells that it might have a bearing on their decision?

3 A No.

4 MR. NEAL: Okay. I have no further ques-
5 tions.

6 MR. BRYAN: May it please the Commission,
7 if it would make Mr. Healy feel better, and the Commission
8 would like to have the data on the many, many wells that are
9 in this area, we'd be happy to furnish it to the Commission.
10 All he did was pick a representative well.

11 MR. PAMEY: In other words, he picked a
12 well where he had sample data, perhaps core data, good log
13 data.

14 A Uh-huh.

15 MR. BUELL: A lot of these wells were
16 drilled a long, long time ago. As we all know, the quality
17 of the data were rather poor.

18 But no way did he use selective data to
19 show anything by this map that would benefit our application,
20 because all this map shows is the presence of Tubb or older
21 where it was tested, if it was productive. We also show the
22 dry holes, some of which are interspaced in this area, wells
23 that tested dry.

24 We're not trying to hide anything from the
25 Commission, and we admitted from the outset that not every

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1 well you would drill in this area will be a CO₂ producer.

3 CROSS EXAMINATION

4 BY MR. RAMEY:

5 Q I notice, Mr. May, between your fourth
6 and fifth wells on your cross section there are two other
7 wells which are immediately adjacent to your cross section
8 line. Do you have any reason for leaving those two out?

9 A The reason for leaving these two out?

10 Q Yes.

11 A There was -- I could have included them
12 in the cross section, but I felt that -- that these two wells
13 represented the section that was present in the "CB" and
14 the "G1".

15 Q Thank you.

16 MR. RAMEY: Mr. Nutter.

18 QUESTIONS BY MR. NUTTER:

19 Q Mr. May, looking at your Exhibit Three
20 there, the big brown hump there is Bravo Dome, right?

21 A Correct.

22 Q And on that exhibit, which covers 170
23 miles of cross section, you've got two wells on the Bravo
24 Dome that are productive of CO₂, and looking back at Exhibit
25 Two, it appears those two wells are one at the north end of

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1 the township, one at the south end of the township, so they
2 are six miles apart, approximately.

3 A Yes, sir.

4 Q Now, is the Tubb formation and older pro-
5 ductive of CO₂ off of the Bravo Dome in any well in your
6 cross section there?

7 A Productive, there have been shows of CO₂
8 in wells off the Dome; the Shelly Van Pelt Well showed 9 Mcf
9 of CO₂ from the Mississippian and it's off the Dome.

10 Q Now is the Mississippian present on the
11 Dome?

12 A No, it is not.

13 Q So as far as the Tubb formation is con-
14 cerned, it's the only formation that's on the Dome that's
15 productive, is that right?

16 A That's correct.

17 Q And on 170-mile cross section you've got
18 6 miles production shown there, and you're asking for spacing
19 for more than 170 miles, is that correct?

20 A Correct.

21 Q Thank you.

22 MR. RAMEY: Mr. Holland, you had a question.

23 MR. HOLLAND: Yes, sir.
24
25

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1 QUESTIONS BY MR. HOLLAND:

2 Q Is the Cimarron anhydrite, you've used
3 that as your datum, is it continuous throughout the area
4 pretty well and is it variable in thickness or is it --

5 A Yes, it does vary in thickness towards
6 the south, but it is a fairly good stratigraphic marker.

7 Q There seems to be some confusion among
8 operators as to your interval, your production interval.
9 Some call it Tubb; some call it Abo. Why do you call it
10 the Tubb?

11 A I called it the Tubb interval here to
12 include everything that was from the Cimarron anhydrite to
13 the basement. Some people do pick the first occurrence of
14 granite wash and red shales as the Abo.

15 I have -- didn't think it was necessary
16 to note that on the cross section, since this hearing was
17 from the top of the Tubb to the basement.

18 MR. HOLLAND: I'd like to make a small
19 request to the Commission, that we get all the information
20 that is available on these wells in the area, get as much
21 information as we can see.

22 MR. RAMEY: Are you prepared to furnish
23 that information, Mr Buell?

24 MR. BUELL: May it please the Commission,
25 we're prepared to furnish the Commission anything it desires

1 that we have in our possession, and I'm sure if we acquired
2 all this old data it's available to anybody if we can find
3 it, but we're certainly happy to furnish it to the Commission.

4 MR. RAMEY: Mr. Holland is making a study
5 of the area and I think it would be --

6 MR. BUELL: I'm not aware who Mr. Holland
7 is.

8 MR. RAMEY: Mr. Holland is a staff geolo-
9 gist with the Oil Conservation Division.

10 MR. BUELL: Would you like to see it, Mr.
11 Holland?

12 MR. HOLLAND: Oh, sure.

13 MR. BUELL: You've got it.

14 MR. HOLLAND: Okay, thank you.

15 MR. BUELL: I didn't know who he was.
16 I didn't know whether he was friend or foe.

17 MR. RAMEY: Mr. Ulvog.

18
19 QUESTIONS BY MR. ULVOG:

20 Q I'm also a geologist with the Oil Conser-
21 vation Division.

22 MR. BUELL: I know you, Mr. Ulvog.

23 Q We've been discussing the geology of this
24 area, and I'd like to ask one simple question. You have
25 looked at a great number of the wells in this area and you've

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1 studied the Tubb.

2 Q Tubb.

3 A Are you prepared to ascribe generally
4 the lithologic characteristics of what you term the Tubb?

5 A Yes. In general it's a very fine to fine
6 grain, red, arcose sandstone. Towards the base of that
7 interval we do encounter what we have called a granite wash
8 sequence, very poorly sorted, with large feldspars and
9 coarse grains, that sort of lithology.

10 Q Would you say that this applies to the
11 entire area that is represented on your map and by your
12 cross sections?

13 A It is a generalization of that. I don't
14 think I'm prepared to say that it would apply to every
15 single area within that 3-county area. In other words,
16 there may be changes. There are probably changes taking
17 place laterally away from the Bravo Dome area toward the
18 north and toward the south, and that again would require
19 quite a bit more study.

20 Q How would you explain the fact that you
21 have this formation that you call the Tubb formation existing
22 essentially the same type of topography over this area but
23 yet you have no carbon dioxide production well at some dis-
24 tance back from your approximate extent of the Tubb interval?
25

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1 At some point there you have a trap. What is it?

2 A The trap for the CO₂ within the Tubb?

3 Q That's correct.

4 A Okay, that would be the overlying

5 Cimarron anhydrite, the general dip of the Tubb interval it-

6 self. It's dipping towards the southeast. The pinchout of

7 the Tubb towards the northwest, and also there is some

8 structural control present.

9 Q Is it related to the arcose content, in

10 other words, the granite wash within the section?

11 A I'm not sure I understand.

12 Q Is the termination of production related

13 to a facies change where you have a decrease in the granite

14 wash constituency, arcose in the sands, or is it a shaling

15 out proposition?

16 A No. I have not -- not seen those kinds

17 of changes limit the production, other than the pinchout.

18 We have encountered CO₂ shows within the granite wash sec-

19 tion.

20 Q What I'm leading up to here is, are we

21 going to have numerous facies changes within this which is

22 going to result in a number of patches of production but

23 not being continuous through the area? This is what I'm

24 trying to determine. Have you decided that?

25 A No, I'm not prepared to make a statement

1 on that.

2 MR. HUNCO: That's all I have.

3 MR. RAMEY: Any other questions of Mr.
4 May?

5 MR. STAMETS: If I may, Mr. Ramey.

6 MR. RAMEY: Mr. Stamets.

7
8 QUESTIONS BY MR. STAMETS:

9 Q Mr. May, referring to your large cross
10 section, I believe that's Exhibit Number Three, do you see
11 any continuity of production intervals across this exhibit?

12 A I don't see any discontinuity and I don't
13 see any -- maybe you better define the word "continuity"
14 the way you are going to use it.

15 Q Well, can you point out a number of wells
16 that are producing carbon dioxide gas from the same interval
17 from well to well to well to well?

18 A The nature of the rocks within this Tubb
19 interval are such that you could not correlate one specific
20 sand between two different wells.

21 Q I would take it then, the answer to my
22 question is no?

23 A No.

24 Q You agree that the answer is no?

25 A Yes, I agree the answer is no.

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1 Q Now, looking again at this same exhibit,
2 as we move from either end toward the center, the section
3 gets a lot thinner as it approaches Bravo Dome, and you men-
4 tioned the Mississippian at the left end of the exhibit, and
5 I believe you indicated that when you get up on the Dome,
6 the Mississippian is no longer there.

7 A Correct.

8 Q Does the Mississippian pinchout against
9 the side of the Dome?

10 A It -- we haven't studied the Mississippian
11 enough, but there it's probably structurally controlled.
12 It's not an erosional pinchout of the Mississippian. There
13 is a lot of structure happening within the Dome, and it may
14 be down-faulted, and the Mississippian, if it was present on
15 the Bravo Dome, it had been eroded.

16 So it's not a pinchout onto the Dome, as
17 such.

18 Q Is there any continuity -- well, you've
19 said there is no continuity from one side to the other on
20 the Dome in the Mississippian. Is that correct?

21 A That is correct.

22 Q May the same thing be said of other for-
23 mations that occur in the lower sections on the left side
24 and right side of your Exhibit Number Three?

25 A Yes, that could be said for some of them.

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1 Q Okay, and these are various ages?
2 A Correct.
3 Q Now, taking this bit of information,
4 then, does it also allow you to believe that there is an
5 opportunity for limited drainage in the area?
6 A Yes, is that possibility, although I have
7 not seen evidence yet to indicate that.
8 Q Would you say that opportunity is as good
9 as the opportunity for wide drainage?

10 A Yes.
11 MR. CLEMENT: No further questions.

12 RE-CROSS EXAMINATION

13 BY MR. RASTY:

14 Q Mr. May, is the Tubb productive on the
15 extreme north end and the extreme south end of your cross
16 section?

17 A No, it is --

18 Q Exhibit Number Three?

19 A No, it is not. I might point out that
20 in originally drilling some of those wells, they were not
21 looking for CO₂, and as a result, may have ignored any gas.

22 Q Well, where exactly does it become pro-
23 ductive, in your opinion, on that cross section, just on the
24 very top where you have the two wells or --
25

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1 MR. BENTLEY: Mr. Ramsey, I believe he mis-
 2 understood your question. I believe he translated your
 3 word "productive" into the well was completed, and that was
 4 not his question, about a well being completed. He wants
 5 to know in your opinion will the Tubb be productive of CO₂
 6 from the north end to the south end.

7 A Will it be? I can't answer that, whether
 8 it's going to be productive all the way through.

9 Q Are the zones in the Tubb present on the
 10 north end and the south end that are present on the top of
 11 the Bravo Dome, where you have your two wells completed?

12 A Yes.

13 MR. BENTLEY: Mr. Ulvog?

14
 15 QUESTIONS BY MR. ULVOG:

16 Q If this is correct, that this Tubb zone
 17 that is present where it has been proven productive, if that
 18 zone is present to the south, could it be productive in the
 19 vicinity of the two Amoco wells shown at the extreme south
 20 end of your cross section?

21 A It could be. Yes, it could be.

22 MR. BENTLEY: Mr. Lopez?
 23
 24
 25

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CROSS EXAMINATION

BY MR. LOPEZ:

Q Mr. Ramey, it's not your testimony here today that your Exhibits Two, Three, and Four reflect one common, continuous, contiguous reservoir or pool, is it?

A No.

Q Would you venture to guess how many separate or distinct pools or reservoirs there might be within this 3-county area?

A I would not venture that guess.

Q Would you agree with me that it is not only conceivable but probable that the distinct and separate pools or reservoirs do exist within this 3-county area probably have different producing characteristics and sands and permeability and porosity?

A Yes, there are some differences which I've seen.

Q How would this affect your proposal that the 3-county area be placed on 640-acre spacing?

A From what I have seen, from rock data that I've examined, I have not seen anything that would indicate to me that you would have very poor rock qualities all through the area. It may be spotty, but I have not seen that.

MR. RAMEY: You've saying you have good

1 rock quality throughout?

2 Yes. From the data I have seen, the only
3 kind of rock data that I've seen has been fairly well good
4 quality rock.

5 What is Inose's purpose in expanding the
6 proration unit outside its area of interest, which I under-
7 stand to be in the Bravo Dome area?

8 MR. DUTCH: May it please the Commission,
9 that is not a proper question to address to Mr. May. If
10 he wants to address it to anyone, he ought to address it to
11 me. It has nothing to do with geology.

12 I'd be happy to answer it.

13 MR. RANNEY: Would you like to address that
14 to Mr. Buell, Mr. Lopez?

15 MR. LOPEZ: Well, I found Mr. Buell's
16 comment rather self-serving, but surely, if Mr. Buell would
17 like to respond, I'd be glad to have him answer it.

18 MR. BUELL: We're interested in the Bravo
19 Dome area. I think everyone in this room knows that we, and
20 other operators are actually trying to form a unit. CO₂
21 development in northeast New Mexico is not going to be
22 limited to the Bravo Dome Unit area. We're going to have
23 CO₂ development in all three counties and in all portions
24 of all three counties, and our recommendation here today,
25

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1 and our proposal here today, is to provide for uniform and
2 orderly development throughout the entire CO₂ area.

3 It has nothing to do with the Bravo Dome
4 Unit.

5 MR. LOPEZ: Mr. Duell, you never cease to
6 amaze me as an expert. I didn't know we were going to have
7 production in all portions of all three counties.

8 MR. DUHILL: Mr. Lopez, I think we try to
9 be as frank and as simple and as plain as anyone can be.
10 The Tubb and older formation is found throughout this entire
11 3-county area, except for the northwest quadrant of the
12 northernmost county. We'll not telling you it will be pro-
13 ductive everywhere you drill a well. We're saying, though,
14 that's it's going to be productive in most areas in these
15 three counties where you drill a well, and we want to provide
16 for a uniform and orderly initial development. It's in the
17 public interest.

18 Q On that area of question, Mr. May. Is
19 the topography in that Bravo Dome vicinity rather flat or
20 level?

21 A Towards the eastern portion of the area
22 it is fairly flat and there's not much topographic variation,
23 but there is some topographic variation towards the west.

24 Q In the farther northern end of your ex-
25

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1 libit or the southern end, is the topography much more ragged
2 or given to a greater differential?

3 A In the southern portion of the area within
4 Gray County is fairly flat.

5 Q And in the northern portion?

6 A I have not been in the northern portion.

7 Q If the topography were rough or let's say
8 more unlevel, do you think that this would affect an oper-
9 ator on 640-acre spacing with regard to the limitations for
10 development?

11 A I do not know.

12 MR. LOPES: No further questions.

13 MR. RAMEY: Mr. Holland?

14
15 QUESTIONS BY MR. HOLLAND:

16 Q Are there other formations in the area
17 that are productive of carbon dioxide?

18 A Would you please repeat?

19 Q Are there other formations in this area
20 productive of carbon dioxide?

21 A Productive?

22 Q Yes.

23 A No, but there have been shows in forma-
24 tions below, in the Mississippian, and also there have been
25 shows of CO₂ above the top of the Tubb.

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1 Q Specifically in the Santa Rosa?
2 A The Santa Rosa and the Glorieta.
3 Q Have you done any studies in these forma-
4 tions?
5 A They have done some studies but not in-
6 tensive studies.
7 Q Okay, thank you.
8 MR. RAITY: Any other questions of Mr.
9 May? He may be excused.
10 We'll have a twenty minute recess.
11
12 (Thereupon a recess was
13 taken.)
14
15 MR. RAITY: The hearing will come to
16 order. Mr. Buell, you may call your next witness.
17 MR. BUELL: May it please the Commission,
18 I'd like to call now Mr. Sanders, S-A-N-D-E-R-S; no U.
19
20 L. J. SANDERS, JR.
21 being called as a witness and having been duly sworn upon
22 his oath, testified as follows, to-wit:
23
24 DIRECT EXAMINATION
25 BY MR. BUELL:

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1 Q Mr. Sanders, would you state your complete
2 name, by whom you're employed, in what capacity, and at what
3 location, please?

4 A My name is L. J. Sanders, Junior. I'm
5 employed by Amoco Production Company in Houston. My title
6 is Staff Petroleum Engineer and Associate.

7 Q I don't believe you've testified out here
8 before the Oil Conservation Division, have you, Mr. Sanders?

9 A No, I have not.

10 Q Very briefly, relate your educational
11 background in the field of engineering.

12 A I have a BS degree from Texas Tech in
13 petroleum engineering given in 1951.

14 Q What have you done since graduation?

15 A I've worked for Amoco since that time,
16 about 28 years. The last 15 years or so I've been devoted
17 mainly to special reservoir engineering studies.

18 Q All right, sir, among the special reser-
19 voir engineering studies that have been assigned to you,
20 has the CO₂ area in the three counties in question been one
21 of your assignments?

22 A Yes, it has.

23 Q Mr. Sanders, you heard the discussions
24 and the testimony up to now, where in this entire area we
25 have, generally speaking, two real older producing areas,

1 and the rest of the G2g territory, or area, is more or less
2 virgin from the standpoint of evaluation. Is that correct?

3 A That's right.

4 Q As a reservoir engineer attempting to come
5 up with an initial uniform development pattern, what do
6 you -- what should he look at?

7 Q Well, the first thing before you have
8 any kind of performance, you've got to take the geology that
9 you know; you've got to get some idea about whether the zone
10 is continuous; you've got to have some idea about what the
11 top of the gross pay interval is and what the bottom is.
12 Then from that you can take log data and production data and
13 you can define the gross section down to some kind of a net
14 pay, and then with logs and core data you can get a porosity
15 foot value and you can get gas in place, and that's impor-
16 tant to you, as to how much gas is in place, and the de-
17 liverability, the millidarcy foot capacity of the rock needs
18 to be known to know what the deliverability is going to be.
19 And so the deliverability, the gas in place, continuity, all
20 work together to plan on development.

21 Q In other words, it is necessary to deter-
22 mine gas in place to properly and scientifically evaluate
23 a pressure interference test?

24 A Yes, it is.

25 Q All right, sir, has Amoco conducted some

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1 interference tests in our case is quite different today?

2 Q Now, did you do initial flow tests at
3 three sites? You conducted a test in 1971 at the three sites
4 and then you conducted three tests in 1972 at two of the sites.

5 A All right, sir. Generally speaking, I
6 believe with one exception, to have the authority from
7 the Conservation Division to vent the CO₂ gas, is that
8 correct?

9 A That is correct.

10 Q And one of them, in order to test equip-
11 ment and things of that nature, you re-injected the produced
12 gas back into the Sulfur and older formation.

13 A That is correct.

14 Q All right, sir. Of necessity, when
15 you're venting CO₂, and of necessity when you're going to
16 the expense of injecting or returning gas, normally a test
17 of that nature would be a very short duration.

18 A That is right, and the wells that you'll
19 use will be close spaced.

20 Q All right, sir. Let me ask you this:
21 Why would you have the wells particularly close spaced?

22 A Well, the way an observation test is
23 run, we'll have a producing well that will cause a pressure
24 disturbance, and then we'll have an observation well away
25 from that that will monitor any pressure decline, and the

1 However, any test of a wall, of course, controls
2 how quiet that you are, and it is one of the
3 factors that control the quality of the wall.

4 It is going to be a low producing rate for
5 either of about 10% of the rate of production for
6 your producing rate, and the deviation will fairly
7 close to your producing rate.

8 Q. This is true.

9 Q. All right, sir, let me ask you this be-
10 fore we go into our interference test, is there any kind of
11 a theoretical calculation you engineers can make where you
12 take data available to you from an area and grind it into
13 a formula and then come up with some kind of a theoretical
14 curve?

15 A. Yes. For years the theory available to
16 us, that we can get at easily, is for a homogeneous and
17 infinite system, and Mr. Stull reminds me that I probably
18 haven't seen any of those, but we found that those equations
19 are good to get a feel for what's going on, to establish a
20 base line, and before these tests were run, particularly
21 the '79 tests, we made calculations ahead of time as to what
22 kind of pressure response that we were going to see. And
23 we told the Commission, at least on one of those sites, that
24 we were only looking at about five pounds, and one thing
25

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1 that I should mention, you know, about the interference tests
2 to put them in the proper perspective, is that before you
3 get production, you have all these things that you do in
4 these concepts, but the proof of the pudding is what the
5 performance is, and here it looks like that we're looking
6 a good little while before we have performance in the part
7 that Amoco's concerned with, and so these interference tests,
8 then, are mini-performance tests, to get a feel ahead of
9 time, and by necessity they're low - there are going to be
10 slight pressure changes, but it's just a fact of life that
11 we've got to live with.

12 Q So as the old saying goes, the proof of
13 the pudding will be, eventually when the CO₂ market of size
14 is developed, and we have actual field performance.

15 A That is right.

16 Q All right, sir, let's go now into the
17 interference tests that Amoco has conducted. I believe you
18 said the first series was in 1974 and the latter ones in
19 1979.

20 A That is correct.

21 Q All right, one of the '74 interference
22 tests that we conducted was on our State "ED" lease. Would
23 you just take a pointer and point to Exhibit Two, you don't
24 have to describe for the record unless you want to, where
25 it is.

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1 The State "FD" site is in this location
2 in the northern, somewhat northwestern, part of our 3-county
3 area, and it's located geographically in Section 23, T. 20 North,
4 R. 31 East.

5 All right, sir. Now in connection with
6 that 1974 test, let me direct your attention with what has
7 been identified as Anoco's Exhibit Five and Five-A, it is
8 a 2-part exhibit, I give them both a number and then a letter
9 in case they get separated, they'll still be identified, and
10 all through our interference tests presentation it will be
11 in that manner. The first exhibit will be a graphical pre-
12 sentation of the data, with an insert map on the righthand
13 side so you can locate the producing and observation well,
14 and attached to the back as the A part of each exhibit, will
15 be the statistical data, the production rate for the time
16 interval, and the observed pressure decline.

17 We'll use the same format throughout.

18 So would you look at what has been identi-
19 fied now as our Exhibit Five and Five-A, and state for the
20 record what those two exhibits show?

21 Exhibit Five is a Change in Bottom Hole
22 Pressure Versus Time for the State "FD" Observation Well
23 in the Bravo Dome area in the 1974 interference test.

24 And as Mr. Buell indicated, there's an
25 inset of a section showing the producing well and the ob-

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1 observation well location on the right-hand side of the graph.
2 That is, if I had have you used on
3 the inset map to show the producing well and the observation
4 well?

5 A. Well, show the producing well with just
6 a dot and -

7 Q Conventional well symbol?

8 A. Conventional well symbol, and the obser-
9 vation well is a dot with a circle around it and we've col-
10 ored in or colored the circle on the inset, and you can see in
11 this particular test, the observation well was 660 feet
12 south of the producing well.

13 Q Were you able to make any kind of a
14 scientific conclusion from the test, '74 test, on our State
15 "FD" index?

16 A. Well, as you can see, and supported by
17 Exhibit Wiva-3, which I did not identify, which as you
18 stated, was the production and the pressure information, you
19 can see that this test was run for a total of 84 days, and
20 after 72 days we showed a 1.5 pound decline in the obser-
21 vation well.

22 And then in 79 days we had a 1.6 psi
23 change.

24 To quantatize this test you have to have
25 a producing rate, and unfortunately in this case the rates

1 were questionable due to scale build-up on the well tester
2 orifice plate.

3 Q The notes that are repeated here
4 do not make sense with the overall performance here, and so
5 I have not tried to explain this test. We did show pres-
6 sure interference, and that's about all you can show.

7 A And we're simply presenting this, in view
8 of the fact that the Commission did give us permission to
9 vent the gas and to run it, and we wanted to show you the
10 results of that test, even though in our opinion there are
11 not too many.

12 Q You didn't calculate on this '74 test on
13 the State 'ED' lease your theoretical pressure/performance
14 curve of a homogeneous and infinite reservoir, did you?

15 A No, I did not.

16 Q Have you done that on the subsequent --

17 A Yes.

18 Q -- interference data that we'll be refer-
19 ring to?

20 A Yes, I have for all of those.

21 Q In that connection, look at Exhibit Six
22 and Exhibit Six-A and state for the record what this exhibit
23 reflects.

24 A This is the 1974 and 1979 Theoretical
25 Calculation of Bravo Dome Area Interference Test Results,

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1 and it's based on a homogeneous and infinite system.

2 I've shown the basic equation there, which
3 is, if you're in this line of business or familiar with
4 that equation, --

5 Q Mr. Sanders, most anyone that would ever
6 understand it that are in this room now, understand it now,
7 so don't try to explain it so I'll understand it.

8 Just, why don't you hit what you think
9 are two of the most important -- what do you call something
10 that goes with that equation, a factor?

11 A Okay.

12 Q Is that what you call them, a factor?

13 A Yes, a factor. You can see here that
14 the pressure change is proportional to the producing rate.
15 It's inversely proportional to the permeability feet, which
16 is of course of major significance.

17 You can see here that the pressure change
18 is proportional to the producing rate. It's inversely pro-
19 portional to the Kh. And then inside this EI function you
20 see porosity foot, which is gas in place, and the R squared
21 is distance to the observation well.

22 Q All right, sir, what is in the next seg-
23 ment of your Exhibit Six?

24 A Okay. Continuing on, the State "FI"
25 test, there are the values used for the theoretical curve.

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1 And one thing that I should highlight
2 on here is that for the State "FI" the Kh values used for
3 the '74 test was 3889 and for the 1979 test it was 3862,
4 and this equates to a 26 to 32 millidarcy pay, and I think
5 that's good quality rock. In fact the core lab man that
6 analyzed these cores in Midland has been looking at old,
7 tight West Texas rock, and he said it was a real pleasure
8 to analyze some Bravo Dome rock.

9 The Ph, which is the porosity foot value
10 used here is 25 and that's equivalent on this State "FI",
11 it would be 120 feet of pay of 20.8 percent porosity.

12 Q All right, what's the next segment?

13 A Okay, the next one then shows the values
14 that was used for the Heimann test, and there we used Kh
15 of 2226 for both the '74 and '79 tests, and that's equivalent
16 to an 18 millidarcy, and the porosity foot value of
17 25 is equivalent to 123 feet of 20.3 percent porosity.

18 Q So obviously, then, our State "FI" lease
19 and our Heimann lease, H-E-I-M-A-N-N, were the two other
20 locations for our interference tests, both in 1974 and '79.

21 A That is correct.

22 Q All right, let's take the Heimann first,
23 since it's the last one on Exhibit Six-A, and let me direct
24 your attention to what has been identified as our Exhibit
25 Seven and Seven-A. Is that the interference test data on

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1 the 1974 test on the Weimann lease?

2 A Yes, it is

3 Q And again, Seven-A is the statistical
4 data, most of which is plotted on the curve.

5 A That's correct.

6 Q All right, why don't you look at the in-
7 set map and state for the record the distance between the
8 producing well and the observation well?

9 A Again, the distance there is 660 feet
10 away, and I might point out the location of this, if you'd
11 like, on our big map.

12 Again, it's in the north central part
13 but a little bit more towards the center of the north area,
14 and this location here is behind the test site. It's in
15 Section 3, T 19 North, R 33 East.

16 Q All right, sir, now looking over at the
17 graphical portion of Exhibit Seven, I notice you have a
18 solid black curve. What is that solid black curve?

19 A That is the theoretical change that
20 would be expected for homogeneous and infinite system.

21 Q That is the result of the calculation,
22 the equation of which you just went through?

23 A Yes, that is correct.

24 Q And again you have shown the -- on the
25 inset map, the producing well with a conventional well

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1 symbol and the observation well with a symbol and outer
2 blue colored.

3 A That is correct.

4 Q Now, what -- what do these blue dots over
5 on your graph, the same symbol as your observation well,
6 what does that signify?

7 A You can see that after seven days pro-
8 duction, we saw 1 psi decline in the observation well,
9 which was right on the theoretical at that point. But then
10 as time went on, we saw less and less pressure decline at
11 the observation well than what we would have predicted, and
12 at the end, at the end of the test at 111 days, we'd seen
13 a 7 pound decrease and we had predicted something like
14 about 10.4.

15 So this test was doing better than we
16 expected.

17 Q Well, what did -- did this tell you any-
18 thing when the pressures on the observation well were above
19 what you would have predicted for your homogeneous and in-
20 finite reservoir? Did that indicate anything to you?

21 A Yes, it indicated three areas of possible
22 incorrect data. One would be that the gas in place value
23 that we had used was too low, that there was really more gas
24 in place here. Another one would have been that the de-
25

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1 deliverability should have been higher, and another thing,
2 then, that we worried about later is that sometimes we have
3 directional permeability, and if you had directional perme-
4 ability with this well being north of the producer, if that
5 happened to be slow leg of the directional permeability, then
6 maybe -- maybe that would be the reason for the pressure
7 not coming on down.

8 So we had some concern here of whether
9 or not we really had enough observation wells.

10 Q What do you mean by directional permea-
11 bility? Do you mean we found in some reservoirs that per-
12 meability is oriented in such a manner that it will go in
13 one compass point direction and, in other words, be better
14 in higher permeability than another compass point direction?

15 A Well, it seems at times, just due to the
16 deposition in the various cases, that there will tend to be
17 one axis that will tend to have better permeability than
18 an axis, say, ninety degrees to that. And what you normally
19 read when you go out and just read the deliverability or
20 conductant for a well, then you read the average of those
21 two, and you don't really see that contrast in just one
22 well test.

23 Q All right, sir, let's move on to the
24 1979 test on our Heimann lease. That's been identified as
25 our Exhibit Eight and Eight-A, and looking at the inset map

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1 I notice we've added another well to No. 1 and 2. What is
2 that?

3 A Yes. We've added a second observation
4 well, Well No. 5, that was located 635 feet east of the pro-
5 ducing well.

6 Q Why did you do that?

7 A This was done so that we could monitor
8 whether or not we had directional permeability.

9 Q All right, you're still coloring the ob-
10 servation Well No. 2 with a large blue dot; new observation
11 Well No. 5 with a large red dot.

12 A That's correct.

13 Q Now your solid black curve over on your
14 graphic side, again is that your theoretical calculation?

15 A Yes, sir, theoretical change for an in-
16 finite system.

17 Q And let me make sure, I misunderstood
18 this one time, but let me make sure I understand it now.
19 This curve is calculated using the reservoir data available
20 on this area after the test is conducted and you know your
21 producing rate.

22 A Yes, that's right, and what you normally
23 do, you ask for people to conduct a test at a constant rate
24 so it simplifies the equations, but as you'll see in these,
25

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1 it was not done and has to be correction made for that.

2 Q People conducted the test and, as we
3 know, not all people are perfect.

4 A That's right.

5 Q All right, sir. Now let's look at what
6 we observed on our two observation wells. You can take
7 either two or five, the blue or the red, first, whichever
8 you'd like to, Mr. Sanders.

9 A I'd like to take the blue, but I'd like
10 to state, because it will help to explain what we have here,
11 is that for the two observation wells we used a Lyons
12 bottom hole pressure gauge that had surface recording, and
13 this bomb did not have the sensitivity that we would have
14 liked. It required a 3 psi pressure change before it would
15 register a change. And as you'll see from the data, it
16 looked like it would wait until it got to 3 pound change
17 and then it seemed like it -- the bomb tended to overreact
18 some.

19 So keep in mind when we look at the data
20 here that we've got this 3 psi lag that happens and then
21 there seems to be -- there tends to be a little bit of
22 over-travel, it seems like.

23 But let me get to Heimann No. 2.

24 Q That's the blue dot.

25 A That's the blue dot. You can see here

1 that -- see we produced about 60 days before any pressure
2 decline was noted and then we saw a 3-pound drop, and then
3 I believe it was in 72 days, then we saw another 3-pound
4 drop, and then at the end of the test we continue with that
5 3-pound drop, so that that well, the Heimann 2, then, was
6 in line with this other test.

7 Q It varied from beginning but at the end
8 it was on the theoretical curve.

9 A That's right.

10 Q All right, let's go now to No. 5, the red
11 dot.

12 A And No. 5, we went 29 days before we saw
13 pressure change. Then in the 30th day we saw a 3 psi
14 change, and then in 33 days we saw another 3-pound change.
15 So we saw a total of 6 pounds there in about 3 days and then
16 there was --

17 Q Now, before you go any further, I'm
18 going to put my hand on the exhibit which you're looking
19 at and cover everything to the right of those 3 red dots
20 that they are one right almost under the other.

21 If you were just looking at that, would
22 you think that you had reached a reservoir limit or the
23 limit of drainage of your producing well?

24 A Yes, you would.
25

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1 Q All right. Now, I'm going to take my hand
2 off of that to the right of those two dots, and what do you
3 see then with respect to the observation on Well No. 5?

4 A Then you see that as the test continues
5 from 33 days to about 121 or 122 days here, then there was
6 no further change in pressure and we came back on the -- on
7 the theoretical curve.

8 And then on the 134th day, then we saw
9 another psi change, and that's what we saw at the end of the
10 test. The test was run for 158 days. On the 156th day we
11 had -- we had a total of -- another 3-pound change for a
12 total of 9.

13 Q So it looked like that the No. 5 Well
14 towards the end of the test was getting ready to go through
15 the same maneuver it went through earlier, where the one,
16 two, three pressure points, one right under the other?

17 A That's right.

18 Q And again, on Exhibit Eight-A, is that
19 simply the statistical data giving you the days, the aver-
20 age producing rate for the days, et cetera, and the ob-
21 served pressures?

22 A Yes, it is.

23 Q All right, sir, now let's move to the
24 1974 test on our State "FI" lease. Do you want to point
25 that out on Exhibit Two?

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1 A Yes, I will. That's coming on, but still
2 again it's in the northern part of our 3-county area, and
3 it's coming on over to the eastern portion, just about
4 eight miles east of the Hainmann location in Section 36, T 20
5 North, R 34 East.

6 Q All right, sir, looking at the inset map
7 on Exhibit Nine, point out the producing well and the ob-
8 servation well.

9 A Okay, the conventional well symbol, the
10 dot, shows Well No. 1 as being the producer, and then 660
11 feet to the east is Well No. 2, which is a dot and a circle
12 around it, and that's the observation well.

13 Q A large blue dot.

14 A A large blue dot.

15 Q All right, moving over to the graphical
16 portion of Exhibit Nine, I see again you, after the con-
17 clusion of the test you calculated a theoretical pressure
18 curve for a homogeneous and infinite reservoir.

19 A Yes, that's correct.

20 Q All right, let's discuss the pressure ob-
21 servations on "FI" No. 2, our observation well.

22 A Well, let me tell you first that this test
23 was only run for 21 days and shut down due to operational
24 problems, and after 8 days we saw a half a pound of change,
25 and then at the end of 15 days we had seen a 1.3 psi change.

1 Q How were you measuring the pressures on
2 the State "FI" No. 2 observation well?

3 A Okay. These tests were we used a dead
4 weight tester at the surface.

5 Q Is it accurate in reflecting and ascer-
6 taining in a very small pressure change?

7 A Yes, it is, and we actually only used a
8 1-pound change, but it's possible to get closer than a
9 pound. And we did check these wells to make sure there was
10 no water in the hole so that we didn't get fooled by reading
11 a surface pressure and finding out that we had something
12 going on in the bottom.

13 Q Oh, to use a dead weight gauge tester
14 at the surface?

15 A Yes, sir.

16 Q All right, sir, and again on Exhibit Nine-
17 A, the statistical data reflected in this test?

18 A That is true.

19 Q All right, now let's move to the 1979
20 test on this same State "FI" lease, and looking at the in-
21 set map on Exhibit Ten, I notice again we've added another
22 observation well. Would you comment on that?

23 A Yes. I probably should go ahead and say
24 that the '74 test, you'll note again that the pressure decline
25

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1 was less than what had been predicted, and here again the
2 soul-searching was, was it too much gas in place: is it not
3 enough -- is it too much deliverability; or is it just
4 directional permeability again.

5 And so this Well No. 3 then was drilled
6 655 foot north of the regular producer and at 90 degrees to
7 Well No. 2, just to get a check on the directional perme-
8 ability.

9 Q All right, let's move over to the graphi-
10 cal portion now, remembering that the No. 2 Well was blue,
11 the No. 3 observation well is in red, and what do we find
12 from -- and again let me ask you this, what -- how did we
13 measure the pressure on the two observation wells?

14 A These are dead weight testers, tests at
15 the surface.

16 Q All right, would you comment on the pres-
17 sure observation of our two observation wells?

18 A Well, these wells looked very good with
19 the theoretical. As you can see, we -- after about three
20 days here, we had a 1-pound decrease, which was a little bit
21 below, and then later on we tended to get a little bit above
22 the theoretical curve, but you can see that we're on trend
23 pretty well, and we felt like that this test here was in
24 line -- gave some credence to our log picks here and our
25 deliverability picks, and you'll notice here that the response

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1 time on each well was about the same, so it looks like we
2 don't have the directional permeability here.

3 Q All right, sir, and again Exhibit Ten-A
4 is the statistical data from which the graphical portion
5 was prepared?

6 A That is true.

7 Q All right, now that's all the inter-
8 ference data we have, isn't it?

9 A Yes, it is.

10 Q Now, based on these data, are you in any
11 position to testify as a reservoir engineer that these data
12 show conclusively that a well will drain 640 acres?

13 A No, I cannot.

14 Q Do these data indicate to you, though,
15 as a reservoir engineer, that we have the reservoir oppor-
16 tunity for one CO₂ well to drain a large area?

17 A Yes, I believe we do.

18 Q Are these observations reflected on our
19 Exhibits Five, Seven, Eight, Nine, and Ten, to you are they
20 indicative of the quality of the reservoir rock at least in
21 the area of these interference tests?

22 A Yes, they are.

23 Q In your opinion as a reservoir engineer
24 that has looked at all kinds of reservoir rock, are you as
25

1 excited about them as the core lab man in Midland?

2 A Yes, I am, having worked West Texas most
3 of my career.

4 Q Do you feel that a CO₂ well in this
5 3-county area could have the opportunity to drain a large
6 area, as large as up to 640?

7 A Yes, sir, I do.

8 Q Do you have anything else you'd care to
9 add at this time, Mr. Sanders?

10 A No, I do not.

11 MR. BUELL: May it please the Commission,
12 that's all I have by way of direct of Mr. Sanders. I would
13 like to formally offer our Exhibits One through Ten, inclu-
14 sive, and tender Mr. Sanders for cross examination.

15 MR. RAMEY: Exhibits One through Ten will
16 be admitted.

17

18

CROSS EXAMINATION

19

BY MR. RAMEY:

20

21 Q Mr. Sanders, can you just very briefly
22 explain why you think, based on the tests you've conducted,
23 why you think that one well will have an opportunity to drain
24 640 acres?

25

A I sure can, Mr. Ramey. First, in con-
ducting these tests, I looked at cross sections -- at an

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1 east/west cross section through the "FD", the Heimann, and
2 the "FI", and I see the same Tubb zone. I looked at a cross
3 section that picked up these wells right through here, and
4 I see the same Tubb interval starting on the west side and
5 going to the east. I can't pick out every -- every little
6 zone, but I see that the gross interval is productive from
7 the west to the east. So I see a gross pay continuity.

8 I know that this, you know, with 10 to
9 30 millidarcies rock, 20 percent porosity, I know that this
10 is a good quality reservoir, and it has the opportunity
11 from just the deliverability standpoint to drain a large
12 area.

13 Let's see, what -- I guess it's mainly
14 I can see the zone, I know that the rock is -- in these
15 areas, anyway, are good quality, and those two things, then,
16 ought to let us drain a large area.

17 Q Have you got some indication from your
18 tests as to --

19 A Yes, that's the other point I should have
20 made is that with interference tests run, then we did not
21 see anything on those that took away from -- from that pos-
22 sibility. Admittedly, they didn't run as long as we'd like
23 to, and I believe that, you know, we'd gone out a good
24 little ways, but the pressure change here is so slight it's
25 hard to be positive about just how much it would drain, but

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1 at least we know that we saw pretty much a continuation of
2 an infinite system throughout these tests.

3 So they don't take away from what we
4 would have thought before we ran them, these tests.

5 Q If you had wells a mile apart, how long
6 would it take before you would detect interference, assuming
7 you would?

8 A It would take -- it would take a good
9 while, Mr. Ramey. I would just guess offhand, you know,
10 that it might take -- it could take -- it might take a year
11 I believe. before you could be positive, see enough of a
12 change to know that you had it.

13 Because, as you know, as the radius in-
14 creases, you know, then it takes longer and longer to get
15 a sample --

16 MR. RAMEY: Any other questions of the
17 witness? Mr. Nutter?

18
19 QUESTIONS BY MR. NUTTER:

20 Q Mr. Sanders, in effect what we've got
21 here are some pressure interference tests that are taken
22 on wells that are located on 10-acre spacing and conducted
23 on periods of time upwards of a hundred days and measured
24 with bombs of somewhat questionable accuracy or sensitivity,
25 is that correct?

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1 A Well, I think more sensitivity on the
2 bombs is a better description. I don't doubt that the pres-
3 sure decline that we saw is true. It's just too bad that
4 we didn't have it recorded in a little bit smaller incre-
5 ments than 3 and 6 pounds.

6 Q Well, you do in some cases. For instance,
7 the test which was run on the "FD", you're measuring that
8 after almost 100 days you had 1.5 pound pressure drop and
9 and a 1.6 pound pressure drop.

10 A That's a dead weight tester, Mr. Nutter.

11 Q That's a dead weight tester, measuring
12 the column of gas that's in the wellbore, and you said you
13 cleared the well from fluid but you don't know whether there
14 had been a slight buildup of fluid in the well while the
15 test was being run, do you?

16 A Well, I can't recall exactly the timing,
17 but I wouldn't expect there to be any fluid. I know we
18 checked it, but I don't recall just exactly when we checked
19 or how many times we checked.

20 Q Now, you didn't mention the bomb that
21 was used for running the test in 1979 on the "FI". Was
22 that --

23 A That was a dead weight tester on the
24 "FI".

25 Q Well how come all your numbers come out

1 so even then? You don't have any fractional pressure drops
2 there?

3 A Well, that's just the way it was recorded
4 in change of 1-pound.

5 Q And yet on some other wells you were able
6 to measure to a tenth of a pound.

7 A In 1974 they took, I guess, that same
8 dead weight test and reported right to a tenth of a pound,
9 which I guess there's nothing wrong with that. I understand
10 you can get little weights to read that close, but --

11 Q Well, in other words, this shows a vari-
12 ation in the sensitivity even then of the dead weight
13 tester.

14 A Well, no, no, I think this is a case of
15 how close they read it in the field.

16 Q So, as Mr. Buell mentioned awhile ago,
17 some people aren't perfect all the time and there may have
18 been a discrepancy in the accuracy of the readings by the
19 field people on these tests.

20 A Well, Dan, discrepancy may be a little
21 bit hard on them. It's, you know, the sensitivity wasn't
22 there but I don't have any reason to think that the pressure
23 changes that we saw aren't real. And as far as the dead
24 weight tester, as I understand the way a dead weight tester
25 works, is you go out and put it on the wellhead and you've

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1 got some little weights that you put on and balance this
2 thing, and you can measure down to a tenth of a pound if
3 you want to pay the price. Now, I did not, and it's probably
4 my fault that I did not specify the 1/10th pound readings
5 that we did in '74. I was silent on that, but the District
6 people just elected to read that to within the nearest
7 pound. So as far as I know, was they -- they just read to
8 the nearest pound. So it's not a case of discrepancy.
9 It's just a case of, again, it's just a case of sensitivity.

10 Q Well, again, I guess it's not too import-
11 ant because we're not talking about drainage here, we're
12 just talking about opportunity for drainage, is that correct?

13 A Well, Dan, see, as you know, the data is
14 not perfect, and we've got swings in the data like you
15 noticed on the Heimann tests, that in '74 we measured with
16 a pressure buildup test 3099. We reran that in '79 and we
17 got 3362 in those very same perforations. It's just --
18 so that when you look at this data you can't just worry
19 about every little pound. You've got to kind of look at it.

20 And did you notice on the Heimann 2 that
21 we ran the first time was away up above the curve, but yet
22 when we ran it in '79, you know, it looked about like the
23 theoretical curve, and there's no rhyme or reason, you know,
24 why it should do that. It's just part of the oil -- part
25 of the problem in the oil business of being able to get

1 everything right down like you'd like.

2

3

CROSS EXAMINATION

4

BY MR. HEALY:

5

Q May I comment on that Heilmann 2 test?

6

It looks to me as though the theoretical curve has been adjusted between Exhibit Seven and Exhibit Eight.

7

8

If you'll look at the curve on Exhibit

9

Seven --

10

A All right, Mr Healy, before you get all

11

upset, the rates -- the rates change the shape of that curve,

12

and the reason those curves are different is because the

13

rates are different.

14

Q No, I wanted to ask you about that.

15

A Okay. I mean don't --

16

Q It looked to me like the curve was not

17

the same as it had been the first time around. So that

18

would account --

19

A Well, it's in the rate. The rates, see,

20

each test reflects its own rate.

21

Q Okay. Well, I'm not sure it's accurate

22

to say that the second test showed that it was closer to

23

the theoretical curve than the first one.

24

A Well, you know, here was our first test,

25

you know, it looked like to me that all of them were running

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1 pretty well above, and the second test, on the blue dots,
2 you know, look like they were a whole lot closer to the
3 theoretical curve, and so that was the reason --

4 Q Look at the second theoretical curve and
5 it's a lot flatter than the first one.

6 A Yeah, and the reason that is, Mr. Healy,
7 if you'll notice from the raw data, you see that rate tailing
8 off at the end? We started out here at about 900 Mcf a day
9 and then it got a little bit lower and a little bit lower
10 and down to 6 or 700 there at the end, and that flattened
11 at the end is a reflection of that reduction in rate.

12 Q Okay, my point would be then on Exhibit
13 Seven. I think that is meaningless then because the theore-
14 tical curve is based on data you later adjusted, based on
15 production, so I don't think the comparison between Seven
16 and Eight is really appropriate.

17 I think we can look at Eight on the basis
18 that that represented your more complete testing data, but
19 a comparison between those two I don't think is appropriate.

20 I think that's probably Mr. Nutter's
21 question.

22
23 QUESTIONS BY MR. NUTTER:

24 Q Well, also, Mr. Sanders, the Exhibit
25 Number Eight is the exhibit where your pressure declines are

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1 the ones that were measured with the bottom -- with the
2 Lyons bottom hole bomb where you had the lag behind the
3 pressure drop and then a sudden surge and probably a drop
4 in pressure below the actual pressure, correct?

5 A That's the way it looked.

6 Q And that's why you have this thing
7 dropping down below the theoretical curve and then maybe
8 going back up above it and dropping back down below it
9 again.

10 So this -- that detracts from the accu-
11 racy of making any comparison of Exhibit Eight with any
12 other exhibit here, I think.

13 A Well, maybe I'm not --

14 Q Because it's not an accurate exhibit
15 because of that bomb lag.

16 A Well, I -- you know, to me in my opinion
17 when I looked at Heimann 2, I saw it was above. We worried
18 about this when we did it in '74, why was it above, why was
19 it above. As Mr. Healy said, if I'd go back and adjust for
20 the Kh here, the Kh increase, so that would tend to move
21 the theoretical curve up towards it all right, and then when
22 we ran the test in '79, then the Heimann 2 was more in line
23 with the theoretical.

24 The only point I was trying to make is
25 that there's going to be swing in this data.

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1 Q Well now the '74 test on the Heimann,
2 was it made with the -- with the surface?

3 A Yes, it was.

4 Q The dead weight bomb?

5 A Yes, sir.

6 Q Or dead weight tester?

7 A Uh-huh.

8 MR. NUTTER: I believe that's all, Mr.
9 Ramey. Thank you.

10 MR. RAMEY: Any other questions?

11 MR. HEALY: I have a few.

12
13 RECROSS EXAMINATION

14 BY MR. HEALY:

15 Q On Exhibit Five, that looked to be a test
16 that was run in the -- one of the twelve townships that
17 we're concerned about, where we have leased acreage. And
18 again, this may be my lack of knowledge, but it looked to me
19 as though the testing that was done there wasn't much of a
20 pressure drop, and that would seem to indicate that even
21 with the close spacing of 660 feet between the observation
22 well and the testing well, that there wasn't much communica-
23 tion between those two, and that therefor, the 640 spacing
24 wouldn't be appropriate.

25 A That's an incorrect observation. That

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1 pressure change is dependent on the rate. It's dependent
2 on the permeability of the -- feet of that well. It's de-
3 pendent on the Ph of that well, and I don't recall right
4 offhand what those values are, but on the west side I be-
5 lieve it tends to maybe gets a little bit tighter towards
6 the west and maybe a little less Ph, so that would tend to
7 make things take longer. And then neither one of us knows
8 for sure what kind of rates we're talking about here.

9 So you know, really you can't -- you can't
10 quantitize anything about this test other than the pressure
11 change.

12 Q Well, I guess my question should be then,
13 is this a significant test in terms of whether or not we
14 should go to 640 spacing, or should we disregard this one?

15 A I don't think it ought to be disregarded.
16 It shows interference. I don't know --

17 Q Well, I think the pressure drop --

18 MR. Let him finish, Mr. Healy. We'll have
19 a more orderly record.

20 MR. HEALY: Uh-huh.

21 A All I wanted to say, it just shows a pres-
22 sure -- it shows a pressure response at the well 660 feet
23 away, so there's some -- there's communication some 660 feet
24 away. That's really about all it shows, but quantitatively
25 we can't say anything about it.

1 Q Let me just follow up on that. The pres-
2 sure drop in Exhibit Five, when you compare it to the pressure
3 drops in the other exhibits, is a lot lower and it takes
4 a much longer period of time before it occurs. And can you
5 explain that, you know, what accounted for that?

6 A Well, I thought I did.

7 Q Well, maybe I didn't --

8 A See, performance is dependent on the rate
9 and the deliverability, the conductance of the rock, and the
10 gas in place, and you know, it's those factors that --

11 Q What -- what -- what rate was it produced
12 at?

13 A Well, I've got it here but I tell you, I
14 don't believe the rates, I don't make sense. Supposedly
15 this thing started out making about a million a day and
16 after 84 days it was making 711, but I just can't believe
17 those rates.

18 MR. NUTTER: Do you think they're high or
19 low?

20 A Well, Dan, I tried to take the data I
21 had to see if I could make sense, if I could back into the
22 rates, and I've forgotten now which direction, but there was
23 just nothing I could do, you know, made sense. I could go
24 one direction and it still didn't make sense. I could go
25 in another, so I just -- when I got through I just threw up

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1 my hands as far as quantitatively.

2 MR. NUTTER: Actually there's a greater
3 change in the reported rate of production on that test than
4 there was on any of the others, wasn't there?

5 A Well, that '79 Heimann test, Dan, was --
6 the rate dropped off pretty bad towards the end there on it.
7 And I think that --

8 MR. NUTTER: Right at the very end.

9 A Yeah, there are some columns there with
10 the pressure, I think, going down.

11 MR. NUTTER: Percentagewise it hasn't
12 dropped off much from the first day to the 147th day, but
13 that last day, or that last four days it's dropped off con-
14 siderably.

15 A Yes, you know, it started there around
16 oh, 896, 900, and it just kind of had a gradual decline like,
17 and then the latter part of the test we were down around
18 650, or so.

19 Q Well, now, just to wrap up the discussion
20 on Exhibit Five, I take it you have a number of questions
21 that you can't really pin down about the validity of the
22 data that you derived from that test.

23 MR. BUELL: Where are you now? Still on
24 Exhibit Five?

25 MR. HEALY: Exhibit Five, yes.

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1 A Let's see. I don't have any reason to
2 doubt the pressure change. I doubt the rate; therefore, I
3 cannot quantitize.

4 Q Uh-huh.

5 A I mean --

6 Q Okay, well, I think that's all we need,
7 then, to spend on that.

8 The other thing I wanted to explore is
9 the 660 foot spacing between an observation well and a
10 production well.

11 Why was that chosen?

12 A I did not choose it, but someone made
13 some calculations as to what would be a reasonable time, or
14 what spacing would you need for some kind of a reasonable
15 time period to flow a well, vent the gas, and they picked
16 660 feet.

17 Q Okay, how does 660 feet relate to a 640-
18 acre tract?

19 A On a circle that's 31 acres, so it's a
20 small part but this pressure response that we saw, of course
21 went on past that 31 acres, but it did not get to the 640
22 acres, did not test that far.

23 Q But you believe that based on a 31-acre
24 circle that you can extrapolate to a 640-acre tract drilling
25

1 requirement?

2 A I answered Mr. Ramey that, you know, be-
3 fore we ran the tests, the reservoir characteristics indica-
4 ted wide drainage. These tests were run. I did not see any-
5 thing to change that. I could not say how much we can drain.
6 We may can drain 1280 acres, but I didn't see anything here
7 that changed my ideas about the overall reservoir drainage
8 for this area.

9 Q Okay. Well, you did do directional
10 drilling of observation wells in order to establish whether
11 or not you were really getting uniform data on drainage from
12 the first observation well, or whether it was an aberration
13 and you in fact had directional draining.

14 Now what was the radius of the -- if you
15 had two observation wells there and they were 660, roughly,
16 feet from the producing well, what kind of an acreage radius
17 would you -- the circle you were talking about, on those?

18 A Now, if you draw a circle of the same
19 radius that goes through Well No. 2 goes through Well No. 5,
20 so if you made a complete circle, you'd have 31 acres, so --

21 Q Still talking about 31 acres.

22 A -- we're still talking about 31 acres.

23 Q Did you -- did you ever drill wells beyond
24 the 31-acre radius? In other words, did you try any wells
25 1200 feet from the --

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A. No.

Q And what --

A. I believe we have a well that may be, oh, approximately a mile or further away from the Heimann site, but it was -- it was the injection well that was used to handle this gas that was produced here and it was not used for monitoring any pressures.

Q So you couldn't really tell from that well what --

A. No.

Q -- what drilling requirements were to be established?

A. I didn't understand you there.

Q Well, what I'm trying to grope for is how you established that, when you have basically a 31-acre radius, or circle, that you're testing in, how you extrapolate that to reach a 640-acre spacing. I can see going to 80 acres or 160 acres, 320, but you know, can you go through the logical --

MR. BUELL: He's answered it three times, but answer it one more time.

A. One more time. Before these tests were run, in this area is -- I see good permeable rock, high porosity. I see good quality rock. And I see the continued

1 gross interval over the area. So that that gives the possi-
2 bility for wide drainage.

3 And these tests then were run and admit-
4 tedly they don't go as far as we'd like for them to go, but
5 I did not see anything with these tests that would say that,
6 hey, you cannot hope to get to 640's. These things have
7 already bombed out on you way earlier. But none of these
8 tests --

9 Q Well, what does that mean? What's bombed
10 out?

11 A That the test hit a boundary and pressure
12 was depleted real fast. We could have hit a boundary at 31
13 acres and we would have seen a large pressure decline.

14 Q Sure.

15 A So the interference tests still leave that
16 open. They don't say what the spacing is. It says that with
17 the concept that we've got of the reservoir, that these
18 things -- these tests say that the possibility is there for
19 wide range.

20 Q I don't understand the possibility. Don't
21 you think it would be appropriate when you're making an ap-
22 plication for 640-acre spacing to drill a well that would
23 prove that that was in fact possible? I mean you're talking
24 about possibilities and opportunities, but what I think we,
25 and the Commission, want to see is some kind of proof, and

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1 It doesn't have to be perfect. I think the testing you've
2 done is, you know, very adequate, but in my own mind, and I
3 don't know, maybe the minds of others, I just don't see the
4 extrapolation of a leak from a 31-acre circle to 640-acre
5 tracts.

6 Now, that's laying it right on the table.
7 I don't understand it, and I think it would have been appro-
8 priate for you to drill additional wells to get us a lot
9 closer to the --

10 MR. BUELL: May it please the Commission,
11 I'm sure Mr. Healy doesn't mean to, but is testifying, not
12 cross examining, and --

13 MR. HEALY: Well, but I --

14 MR. BUELL: I didn't interrupt you. Now
15 don't you interrupt me.

16 We've stated many times why these tests
17 were run in the manner they were run with the observation
18 wells located so near the producing well, and that was
19 simply because, one, we had to vent the CO₂ gas and waste
20 it, or at great expense return it to the producing formation,
21 and that's the reason they were run on the pattern and for
22 the time duration that they were run.

23 And given production, we can conduct in-
24 terference tests over a much larger area, when you are put-
25 ting the CO₂ to a beneficial use and receiving income from

1 it.

2 MR. HEALY: If I may make an observation, at
3 the point if you have the proof you should make the applica-
4 tion, in my conclusion.

5 MR. BUELL: Mr. Healy would also advise
6 someone to lock the barn door after the horse is gone. We're
7 trying to prevent that. We're trying to get a uniform and
8 and orderly development pattern now at the outset and before
9 the big development surge that all of us are anticipating is
10 going to occur in this 3-county area in the immediate future.

11 MR. RAMSEY: Mr. Lopez.

12 MR. LOPEZ: Mr. Chairman, with all due
13 respect, I'll try and not testify either like Mr. Healy or
14 Mr. Buell.

15 MR. RAMSEY: We'll appreciate that.

16

17

CROSS EXAMINATION

18

BY MR. LOPEZ:

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21

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25

Q Mr. Sanders, even assuming that I could
go along with this extrapolation of a 31-acre test site to
a 640-acre, it seems to me that the exhibits you've tendered
the Commission are within your lease area, or in about a
30 to 40 mile range, and all within the Bravo Dome Unit, as
I understand it.

I'd like you to explain to me how you can

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1 extrapolate from this fairly small area to areas 80 or 100
2 miles away involving millions of acres in that 3-county area.

3 A I wouldn't even start to do that. Mr.
4 Lopez. My testimony was strictly with the wells here. In
5 other words, if there is more rock like this in the 3-county
6 area, the opportunity is there for some wide drainage.

7 I think it's been said that doesn't all
8 have to be high quality rock and maybe there's going to be
9 different spacing. There's going to be different fields.
10 Now, I do not testify to anything other than the wells that
11 we ran the interference tests on.

12 Q But I -- if I'm to understand your appli-
13 cation here today, you're requesting the Commission to esta-
14 blish 640-acre proration units that would cover the entire
15 3-county area.

16 MR. EUELL: May it please the Commission,
17 I think that's a more appropriate question for me to answer.
18 Mr. Sanders has recited about three times what his testimony
19 was limited to, and that was the data that he had to evaluate,
20 which we have presented to you in great detail.

21 And our application is for the 3-county
22 area, Mr. Lopez.

23 MR. LOPEZ: Well, Mr. Chairman, based on
24 the evidence I've heard here today, I would suggest that the
25 application must be limited to the area in which Mr. Sanders

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1 has testified to because of failure of proof for the rest of
2 the area.

3 MR. BUELL: Were you making a motion or
4 a suggestion? I thought you said suggestion.

5 MR. LOPES: Well, perhaps it's synonymous
6 with motion, Mr. Buell.

7 MR. BUELL: If his suggestion was a motion,
8 I violently oppose it. If he's simply making a suggestion,
9 and observation, well, then Mr. Lopez is very well qualified
10 for that.

11 MR. RAMEY: I didn't take it as a motion.

12 MR. BUELL: I thought he said suggestion.

13 MR. RAMEY: Any other questions to the
14 witness? Mr. Stamets.

15 MR. STAMETS: However, this isn't to the
16 witness; this is to Mr. Buell.

17 Is this going to conclude your testimony,
18 Mr. Buell?

19 MR. BUELL: Mr. Stamets, yes, sir, that
20 concludes our direct presentation.

21 MR. STAMETS: Okay. Let me -- let me
22 ask you a question about that, then.

23 A large measure of the need for these
24 special rules, as you have stated from time to time relates
25

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1 to the development of this area that we -- that quote, we
2 all know is coming, and yet there is no testimony presented
3 to this point as to that development and what efforts, if any,
4 that might have on the area and how that would relate to the
5 proposal that you've put forth here today.

6 MR. SUELL: Mr. Stamets, I don't believe
7 there is a person in the country, in Amoco, or any of the
8 other operators in this entire area, including those that are
9 here in this room, could answer that with any degree of
10 finality.

11 We don't know. We are anticipating a
12 rapid development, a big development program. Now when it
13 will come and what form it will be, will it be in the northern
14 counties first, in the Bravo Dome area first, down in Quay
15 County, I cannot tell you that.

16 All we're trying to do is anticipate a
17 problem before it's created. After the problem is created
18 by dense spacing the wells, we all know that there's nothing
19 you can do about it. So we're trying to anticipate a problem
20 before it develops and in the interest of everyone involved,
21 the State, the operators, the royalty owners, provide a
22 method for a uniform and orderly development, yet that is
23 flexible enough that it will let us meet the conditions in
24 each highly localized area within these three counties.

25 MR. STAMETS: I don't believe we have any-

1 thing in the record. Mr. Buell, that there is going to be any
2 significant development and reasons why there would be develop-
3 ment, and what affect this development will have on all of
4 those people that you've talked about

5 MR. BUELL: Well, Mr. Stamets, admittedly
6 we haven't outlined Amoco's development program to you here
7 today. We don't know what our program is going to be because
8 we don't know whether we're going under the old, antiquated
9 160-acre spacing that now exists, or a progressive 640-acre
10 spacing to provide for uniform and orderly development and
11 a rapid determination of the largest number of CO₂ reserves.

12 Now, you grant our application, and then
13 we can plan a development program, Mr. Stamets.

14 MR. STAMETS: I was only pointing out a
15 thing that I can see as a deficiency at this point, Mr. Buell,
16 for your edification and that concludes what I had to say or
17 to question Mr. Buell on at this point.

18 MR. BUELL: Mr. Stamets, I appreciate it,
19 and you're exactly right and I've just stated why we couldn't
20 come forward with a plan of development, and I certainly
21 agree with you, yes, sir.

22 MR. RAMEY: Mr. Nutter.

23 MR. NUTTER: Well, Mr. Buell, what per-
24 centage of the total area that we're talking about here, 3
25

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1 counties, would be included in your proposed Bravo Dome Unit?
2 Do you have any idea?

3 MR. BUELL: No, Mr. Nutter, I've had very
4 little, if anything, to do with that unit. I've been around
5 the periphery of it, so to speak. By that I don't mean the
6 boundary. But I could probably find out the number of acres.

7 MR. NUTTER: Well, isn't the -- isn't the
8 unit something like a 1,300,000 acres?

9 MR. BUELL: The size of the unit is the
10 largest that I have ever heard of, Mr. Nutter, and I could
11 not agree with your in excess of a million acres.

12 MR. NUTTER: But if it were a 1,300,000,
13 that would be approximately 55 townships, and I have no idea
14 how many townships are in -- on that Exhibit Number Two
15 there, but there's far more than 55.

16 MR. BUELL: Yes, sir, I believe you were
17 pointing out during the recess the area that you thought was
18 in our unitized interest area.

19 MR. NUTTER: Well I can see Bravo Dome on
20 Exhibit Number Three, and it's not very long north and south,
21 certainly.

22 MR. BUELL: And the area that you and I
23 were estimating was the approximate area of our unit area,
24 covered a small portion, a very small portion, of the 3-county
25 area. We have acreage outside our proposed unit area. A lot

1 of operators do, and are interested in the uniform and
2 orderly development in the entire 3-county area.

3 MR. NUTTER: That's what I was going to
4 ask you, if Anaco had considerable acreage outside the
5 boundaries of this proposed unit area that they're interested
6 in here in these three counties?

7 MR. BUELL: Yes, sir, we do. Now I can't
8 give you the total number of acres. I can get that for you.

9 MR. NUTTER: The majority of your acreage
10 is included in the proposed unit, however, isn't it?

11 MR. BUELL: Mr. Nutter, I would guess
12 that it is, and that's where we concentrated our efforts to
13 form a CO₂ unit, but we do hold acreage outside the unit area
14 as do a lot of the working interest owners and operators
15 within the unit area.

16 MR. NUTTER: You'll be able to control
17 the development and the drilling of wells in the unit area,
18 presuming that you do get approval for that unit and it is
19 formed, won't you?

20 MR. BUELL: Yes, sir, I understand in
21 New Mexico normally you -- with all of the units -- all of
22 the interest owners unitized and put together, you're not
23 too concerned about the spacing. You try to operate that
24 unit in the most and best method for conservation. You're
25 not concerned about correlative rights, as such, because if

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1 you have 100 percent interest owner committed unit, you're
2 not concerned about correlative rights, because everyone is
3 being protected.

4 And this area is going to extend way
5 above to the north and way below to the south of the Bravo
6 Dome Unit area.

7 MR. NUTTER: And you don't have a map
8 here today that's been entered as an exhibit that shows
9 Aroco's acreage and the acreage that they're concerned with,
10 as far as spacing inside the unit or outside the unit?

11 MR. BUELL: No, sir, just like none of
12 our units show the outline of our proposed unit area, because
13 I look at this application completely separate and apart from
14 our effort to form a unit, and when I say our effort, there
15 is a lot of people expending an effort, not just Aroco.

16 MR. NUTTER: I see. Okay, thank you.

17 MR. RAMEY: Mr. Padilla.

18

19

CROSS EXAMINATION

20

BY MR. PADILLA:

21

Q

I have one question for Mr. Sanders.

22

23

24

Mr. Sanders, how many of your three
test sites are within the area of Mr. Healy's proposed ex-
clusion?

25

A

Let's see.

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1 Q Within the twelve townships?

2 A As I understand Mr. Healy's area is out-
3 lined in red here, right? So that would mean that only the
4 "FD" site is inside his area.

5 Q And where are the other two sites?

6 A And the other two sites, now here is the
7 Heimann, and the "FI", State "FI" on to the east.

8 Q But they're all within very close proximi-
9 mity of that area there.

10 A Well, see, these are townships, Ernest,
11 so that's like six miles -- well, no, six -- there's about
12 ten miles to the Heimann, and what would that be, maybe, is
13 that eighteen miles to the "FI"?

14 Q Well, in proportion to the whole map, I
15 suppose it would be --

16 A Yes, that's right.

17 MR. MUTTER: All of the test sites are
18 within, say, six to eight miles, or maybe nine miles, of the
19 intersection between cross sections A-A' and B-B', are they
20 not? And one is right on the cross section.

21 A Yes, sir, one is on. One would be --

22 MR. MUTTER: I mean the crossroads.

23 A It's -- looks like one is maybe eight
24 miles to the east, and then this other one, maybe ten or
25 eleven miles to the west.

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1 And Mr. Sanders, and no more than, I
2 would say, what, four miles north/south in variation?
3 A. That would be true. That's true. One,
4 two, three, three to four miles.
5 MR. RAMEY: Any other questions?
6 Let's recess the hearing for lunch, and
7 come back about 1:30.
8
9 (Thereupon the noon recess
10 was taken.)
11
12 MR. RAMEY: Mr. Healy, did you want to
13 recall any of Amoco's witnesses?
14 MR. HEALY: Oh, no, I don't believe so.
15 I think we're ready to put on our witness.
16 MR. RAMEY: All right, if you will pro-
17 ceed, then.
18 MR. COFFIELD: Mr. Chairman, I'll proceed
19 with this part of the testimony.
20 MR. RAMEY: Okay.
21 MR. COFFIELD: Mr. Chairman, if it please
22 the Commission, before we start, just as a matter of keeping
23 the record as simple as possible, you will recall that when
24 Mr. Healy and I indicated our entry of appearance for a number
25 of companies, rather than refer to all those companies every

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1 time in various contexts, for simplicity sake, because they
2 are all interrelated to UGI, we will simply use UGI as the
3 catchall term.

4

5

PHILLIP F. BEELER

6

being called as a witness and having been sworn previously
7 upon his oath, testified as follows, to-wit:

8

9

DIRECT EXAMINATION

10

BY MR. COFFIELD:

11

Q Mr. Beeler, would you please state your
12 name and address?

13

A Phillip F. Beeler, B-E-E-L-E-R, Norman,
14 Oklahoma.

15

Q And what is your occupation, Mr. Beeler?

16

A I'm a petroleum engineer.

17

Q And with whom are you employed?

18

A I am self-employed.

19

Q What is your relationship to the Protestant,

20

UGI?

21

A I am a consultant on natural gas pro-
22 duction activities.

23

Q Mr. Beeler, have you previously testified
24 before this commission or the Oil Conservation Division in
25 New Mexico as an engineer?

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1 A Yes, I have.

2 Q Were your qualifications made a matter

3 of record --

4 A Yes.

5 Q -- and accepted by the Commission?

6 A Yes, they were.

7 Q Are you familiar with the area which is

8 the subject matter of this application and also familiar with

9 Amoco's application in this particular case?

10 A Yes, I am.

11 Q Okay, Mr. Eseler, in connection with this

12 matter and your analysis of the matters to be considered,

13 have you had an opportunity to prepare exhibits to submit to

14 the Commission for their study?

15 A As to the specific items that may be of

16 most importance here, we have not had the time to put the

17 type of exhibit together that we think would be appropriate;

18 however, over the course of the last eighteen years I have

19 studied this area, made reports, and I have a lot of previous

20 production and engineering information along with me that

21 would be pertinent to this case.

22 MR. COFFIELD: Mr. Chairman, do you have

23 any other questions of this witness as far as qualifications

24 are concerned?

25 MR. RAMEY: No. He is qualified.

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1 Q All right, then. Mr. Beeler, with respect
2 and with reference to your experience and materials that
3 you've had an opportunity to study over the last fifteen
4 years, would you please review for the Commission the history
5 and experience of UGI and its companies, and your recommenda-
6 tions to the Commission?

7 A Yes, sir.

8 The company that I was first employed by
9 eighteen years ago was Carbonic Chemicals Corporation, which
10 developed the first commercial CO₂ production in this area.
11 I was an employee of Carbonic Chemicals until it was merged
12 into SEC Corporation. Since that time SEC Corporation has
13 been merged into UGI Corporation.

14 So from 1962 to 1977, a course of fifteen
15 years, I was an employee of Carbonic Chemicals and SEC Cor-
16 poration as petroleum and natural gas engineer with the
17 specific duties of observing, recommending, just generally
18 overseeing engineering aspects of production from the Mit-
19 chall Field, CO₂ field.

20 Later on Swartz Carbonic was a part of
21 the SEC operation, and Swartz Carbonic operates what is
22 known as the Libby Field; therefor, I have had an opportunity
23 to see all the records of both of the operating companies
24 and to observe production and to make recommendations and
25 just generally see all information available on these two

1 CO₂ fields that have been in lengthy production

2 If you would like, I could give you some
3 general comments as to what I have observed as to production
4 from an extended period of time in these areas that encom-
5 passes both of the productive fields.

6 Shall I go ahead and give the Commission,
7 you know, a brief rundown as to production and engineering
8 behind production?

9 MR. RAMEY: I think that might be worth-
10 while, Mr. Beeler.

11 Q In 1939 Carbonic Chemicals was formed
12 to drill CO₂ gas wells and to build a dry ice plant, and
13 this was done, and first production started in 1940. It
14 started off with two wells being produced.

15 Now, since that time a total of twenty
16 wells have been drilled in what we call the Mitchell CO₂
17 Field, and production has been continuous from 1940 through
18 this date. A tremendous amount of carbon dioxide has been
19 produced from this particular field.

20 In a nutshell, we feel that this field
21 is adequately draining about 3000 acres. As I say, over
22 twenty wells have been drilled in and around this field.
23 Not all of them were completed as producers, and from time
24 to time, some wells have been abandoned and replaced. The
25 principal reason for replacement has been a major problem

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1 of corrosion.

2 As you may know, carbon dioxide and water
3 creates carbonic acid, and it results in a fluid that is
4 corrosive. We have found other things that have influenced
5 the production from this field. Some of these things are:
6 Active water movement from not necessarily down-dip to up-dip,
7 but from one side of the field towards the middle of the
8 field. We have found that there are several distinct mem-
9 bers of what we have termed the Tubb sand, and we have found
10 that the permeability variation is considerable from one
11 end of the field to the other. We have found that over the
12 course of drilling these twenty wells there have been at
13 least four of them that did not encounter enough permeability
14 to be considered commercial producers.

15 So we have found that possibly one well
16 can effectively drain 320 acres in this field, from our
17 practical experience and forty years of production.

18 This is not a simple reservoir. We have
19 found a lot of complexities in permeability development parti-
20 cularly, as well as down-dip water and water -- extraneous
21 water movement from side to side.

22 I believe that is quick synopsis of our
23 basic experience with this particular field.

24 Now I'd like to give you another rundown
25 on a separate and distinct field, which is called the

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1 Bueyeros CO₂ Field.

2 Now, we have found that pressures are
3 distinctly different in the two fields: however, within each
4 field by itself there may be pressure gradients but you can
5 tell that it's all one reservoir. In the Bueyeros Field
6 the pressure is much lower than that found in the Mitchell
7 Field at this time; however, a great deal of CO₂ gas was
8 lost from this field in the 1940's when a well was left
9 blowing to the atmosphere for year after year, and probably
10 more gas has been lost through that blowout and venting
11 action than has been produced commercially.

12 At this time we have a very low pressure
13 there, yet today we heard testimony about two wells 660 feet
14 apart located less than two miles away from this field at
15 what would be considered an initial pressure that would be
16 expected in this area.

17 So those two wells are definitely in
18 another CO₂ field. So we feel that in our experience, that
19 there are going to be a great number of CO₂ fields at least
20 in the general vicinity that we're acquainted with.

21 Now as far as other areas outside of
22 these twelve townships that we have recommended to be ex-
23 cluded, we aren't that expert; however we've been provided
24 with some information from Amoco that gives us a little bit
25 to put some clues together as to the whole area. But we

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1 don't pretend to be experts on more than the general area
2 surrounding the two pools that we operate.

3 Another aspect of the testimony this
4 morning was information concerning what kind of a pay zone
5 Amoco has encountered; from their information they show wells
6 that have a productive capacity in millidarcy feet in a range
7 of 4, 5, 6,000 millidarcies per well.

8 We have experienced in our two pools this
9 type of situation: Generally, the 40 or 50 feet of sand will
10 be tight. Here and there you will find a foot or two of
11 medium permeability, say 30 or 40 millidarcies in a particular
12 foot.

13 So our wells have encountered less than
14 500 millidarcy per well, and we've found some that are pro-
15 bably in the range of 5 to 10 millidarcy feet of pay per well.
16 Therefor, with that kind of permeability, we find that it
17 would take an inordinately long period of time to try to pro-
18 duce a well spaced on anything but 160 acres.

19 However, another aspect of this, we feel
20 that these permeabilities that are encountered probably occur
21 in streaks or river bed type situations. It may run, you
22 know, for a mile or two or longer and maybe a width of half
23 a mile, and you know, a few feet thick.

24 So our experience has been quite a bit
25 different with respect to a situation that you would call

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1 uniform.

2 I believe that, in a nutshell, is basi-
3 cally our experience in production from this area.

4 Q I understand. Mr. Seeler, you were
5 present this morning, I believe, and heard it suggested as
6 a possible alternative to Amoco's application the way it now
7 stands, that possibly a special pool rule or temporary rule
8 approach be made. Relative to UGI's position would that sort
9 of an approach be acceptable?

10 A Well, we've been in operation here over
11 forty years and we don't think that this is a temporary
12 situation.

13 Q All right, Mr. Seeler, you also indicated
14 in your testimony just a few minutes ago, that in the first
15 field of which you spoke, that it was possible to drain 320
16 acres. In that particular field do you figure that is the
17 maximum or the average or what? Would you clarify that a
18 little bit?

19 A Okay. I feel that that probably is a
20 good average, maybe, approaching possibly a maximum, because
21 we have found parts of the area where drainage would be less
22 than 160 acres.

23 Q Nonetheless, is it your opinion that
24 160 acres would continue to be an appropriate spacing area
25 for that first field area?

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1 A I feel that it would be: however, there
2 could be consideration made to varying size units.

3 Q Okay, Mr. Beeler, in your expert opinion
4 could the granting of Amoco's application result in waste
5 and the violation of correlative rights?

6 A Well, let's take an example.

7 The Libby Field, we have four wells in
8 that field. There is a definite decline curve established
9 indicating a reservoir size of 600 acres in comparison to
10 the 3000 acres we have in the Mitchell Field.

11 We're going to find, I think, fields of
12 varying sizes. Therefore, we're going to have to have, I
13 think, a flexible spacing arrangement here.

14 Q Do you have anything else further to add
15 in this matter on this direct presentation, Mr. Beeler?

16 A I don't think I do have.

17 MR. COFFIELD: I have no more questions
18 of Mr. Beeler, on direct examination.

19 MR. RANEY: Any questions of Mr. Beeler?
20 Mr. Ulvog.

21
22 QUESTIONS BY MR. ULVOG:

23 Q I have one question. You refer to the
24 Tubb sand that's producing here in these fields.
25

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1 A That is correct, sir.

2 Q Would you say that that Tubb sand is
3 equivalent to or correlative with the Abo, as discussed by
4 Amoco people?

5 A When we first became -- or when I first
6 became involved here, the only reference to the gas-bearing
7 area below the Cimarron anhydrite was the terminology Abo,
8 with some reference to the granite wash being below the Abo.

9 When Amoco came into this area they gave
10 a different designation. So to clarify and keep it from
11 being -- not being confusing, I'll refer to what we always
12 called the Abo and what is referred to today as the Tubb.

13 Q So then it is equivalent or correlative
14 with the Tubb?

15 A Yes, sir.

16 MR. ULVOG: Thank you.

18 CROSS EXAMINATION

19 BY MR. RAMEY:

20 Q Mr. Beeler, now you have -- you have
21 approximately twenty wells in the Mitchell Field.

22 A Yes, sir, that's been drilled. About
23 ten of them or twelve of them are producing at this time.

24 Q And this is draining 3000 acres?
25

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- 1 A Yes, sir.
- 2 Q And you have four wells in the Libby.
- 3 A Those are the wells that are producing,
- 4 yes, sir. Other wells have been drilled and abandoned in that
- 5 area.
- 6 Q And this, you feel like you have about
- 7 a 600 acre --
- 8 A That is correct.
- 9 Q -- pool there?
- 10 Now do you have a -- do you have a nice
- 11 decline on the Mitchell Pool?
- 12 A Yes, sir. Both fields have a decline --
- 13 established decline.
- 14 Q Now you say the Bueyeros Field, that
- 15 there was a well that blew wild for some time.
- 16 A Yes, sir.
- 17 Q And so when this pool was developed, why
- 18 the pressures were --
- 19 A Initially, from the time they were able
- 20 to put the plant on production, the pressure was subnormal,
- 21 so to speak, to what you normally, you know, a virgin well
- 22 would find.
- 23 Q And this is for all wells that were
- 24 drilled in that particular area?
- 25

1 A Yes, sir, they all had about the same
2 starting pressure, which was much below what Amoco has
3 testified to this morning of those two wells 660 feet apart
4 approximately two miles north of this field.

5 Q Now, what's the extent of the Bueyeros?

6 A That's the 600 field.

7 Q That's the Libby?

8 A Libby. Libby Ranch Plant, we call it,
9 for the Bueyeros. It's a little town of Bueyeros just north
10 of it.

11 MR. RAMEY: Any other questions of the
12 witness? Mr. Nutter?

13
14 QUESTIONS BY MR. NUTTER:

15 Q Mr. Beeler, you mentioned the corrosive
16 character of these wells with the carbonic acid. Have you
17 had any wells which have had corrosive problems that you
18 had to take off of production prior to the time of depletion?

19 A Yes, sir.

20 Q And how many years had they been pro-
21 ducing?

22 A We still have some wells that have been
23 on production since 1940. We have had other wells that had
24 severe corrosion problems within two years.

25 Q Is that right? What seems to be the

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1 determining factor as to whether a well will last two years
2 or thirty years?

3 A Well, that's been quite a problem to us.
4 We first thought that an electrolysis that could be controlled
5 was the problem, you know, by impinging electric current on
6 the casing; however, we've not been successful in that
7 direction.

8 Q Do all of the wells make water?

9 A Most of them, yes.

10 Q And you would have to have water to add
11 to the CO₂ to make carbonic acid, wouldn't you?

12 A Yes, sir.

13 Q It would naturally be assumed that it
14 would take longer for wells on wide spacing to deplete the
15 reserves attributed to them than it would be for wells on
16 closer spacing to deplete the reserves attributed to them.
17 With this corrosive problem that seems to exist in some of
18 the wells, which would be more favorable for drainage of a
19 reservoir?

20 A Another aspect of this that I would like
21 to mention is we feel that this is somewhat rate sensitive,
22 too, the harder you pull the well, the more corrosiveness
23 we've observed.

24 Q I suppose this would be a factor of
25

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1 bringing water in, or what?

2 A Well, possibly the gas is, you know,
3 naturally the gas is saturated with water, and probably sat-
4 urated with the fresh water, which makes the most corrosive
5 material, and the faster the stream or rate of flow, against
6 the steel that's exposed, the greater the corrosion.

7 Q So in other words, if you had a given
8 market demand that you had to meet and fewer wells to do it,
9 you'd have to pull those wells harder than, wouldn't you?

10 A Yes, sir, if you used steel equipment.
11 Now there may be some other fiberglass material or corrosion
12 prevention methods that would solve this problem.

13 But it has been a problem to us in the
14 respect that we were trying to flow the thing more or less
15 like a conventional gas well.

16 Q Where does this corrosion occur, in the
17 casing in the well?

18 A Casing and tubing, yes, sir.

19 Q Have you tried using any other casing
20 than steel casing in the well?

21 A No, sir.

22 Q Have you used tubing other than steel
23 tubing?

24 A Yes, sir.

25 Q Glass tubing?

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A Yes, sir.

Q And it worked satisfactorily so far as --

A So far, yes, sir.

Q Thank you.

RECROSS EXAMINATION

BY MR. RAMEY:

Q Has your corrosion been internal or external? Or both?

A Both, both, sir.

Q Both. So if any water zones with CO₂ were exposed in the annulus, why they would be corrosive to the external part of the casing, I would assume.

A The whole depth and width of the problem hasn't been solved, as far as I'm concerned, but it is a major problem in this area.

Q Do you circulate cement on your production string of casing?

A Yes, sir, for the last at least seven or eight wells that I know of, we circulated cement, but we also had failures in that type of well, cement behind the pipe, yet a casing failure.

MR. NUTTER: Does this carbonic acid tend to work on well cement?

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1 A Well, that's a good question. You know,
2 we've never tried to dig down, so to speak, and see.

3 MR. NIMMER: You really haven't gone into
4 the chemistry or had any analyses made of these corrosive
5 problems?

6 A Not in reference to concrete.

7 MR. RAMEY: Any other questions of the
8 witness?

9 MR. BUELL: Mr. Ramey, I have some ques-
10 tions. I have two problems in asking them. One, Mr. Beeler
11 has limited his testimony to an area. A motion to exclude
12 that area, which I've supported, so I have a problem in that
13 area.

14 My second problem is that his testimony
15 has been extremely general and if I examine him in detail,
16 I'm afraid it would take the rest of the afternoon and pro-
17 bably part of tomorrow in bringing out the details behind
18 his general observation.

19 So if you would permit me, I'll try with
20 just some general questions to cover the area in which I'm
21 interested, without going into the specifics behind his
22 generalizations that he's presented to you here today.

23 MR. RAMEY: Yes, sir, Mr. Buell.
24
25

CROSS EXAMINATION

BY MR. BUELL:

Q At the outset, Mr. Deeler, what was the original reservoir pressure in the Hueyeros Pool area?

I sometimes call that the Libby area.

A Yes. The first pressure reading that I was able to obtain was in 1968 at the time that we, SEC, acquired both Carbonic Chemical and Swartz Carbonic. The record keeping prior to that time, I found very lacking.

We had a surface shut-in pressure in the field of 405 pounds at that date.

Q Do you know anything about what was in the casing, what was in the hole at the time the pressure, surface pressure, was read?

A Yes, sir, that was a well that made no water and it was verified -- we had four wells, like I say, one of them made a lot of water but the other three were relatively dry, and it was verified by the information, I think.

Q So you would suspect then that that 405 pound surface pressure in 1968 was fairly accurate for that period of time.

A Yes, sir.

Q And you have no idea whatsoever what the

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1 original or virgin pressure was in the Libby or Bueyeros
2 area?

3 A I found no records to indicate what the
4 original pressure was.

5 Q What about in the Mitchell pool or the
6 Mitchell area?

7 A We had good records from 1939. The shut-
8 in pressure, surface pressure, in two different wells was
9 -- pardon me, 595 psi.

10 Q Have you calculated that down to the com-
11 pletion depth?

12 A Yes, sir.

13 Q What would that be?

14 A Pardon me, I don't immediately have that
15 at hand what that is, but approximately 55 pounds of static
16 column, which would give you about a 660 pound bottom hole
17 pressure.

18 Q 660 pounds. All right, now I believe
19 you testified that of necessity the general observations
20 you've made, based on your years of experience in this area,
21 were limited to the particular area that has been moved for
22 exclusion from this application.

23 A That is correct.

24 Q And I believe your testimony was that in
25 certain areas, certain localities of this area, you had ob-

1 served, or in your opinion, a well had -- could drain or had
2 drained as much as 320 acres.

3 A That is correct.

4 Q I believe you also testified that based
5 on your observation of the rock quality, the pay quality,
6 such as permeability and porosity, in your area -- I'll call
7 it that, Mr. Seeler --

8 A Yes, sir.

9 Q -- to perhaps save a lot of words, in
10 your area was not of as high a quality from the standpoint
11 of permeability and porosity as you had observed on data
12 that Amoco had gathered outside of your area.

13 A That is correct.

14 Q So none of the general observations you
15 have made here today extend any further into the large CO₂
16 area in Union, Harding, and Quay than your particular area,
17 the area that has been moved for exclusion.

18 A That is correct.

19 Q So you have no opinion or feeling what-
20 soever as to a drainage area of a well outside your area of
21 experience.

22 A Well, the observation can be made, if we
23 have, let's say, roughly an average of 500 millidarcy feet,
24 and yet you're finding 600 or 6000 millidarcy feet somewhere
25 else, certainly your drainage is going to be greater, your

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1 ability to drain is going to be greater than has been ob-
2 served in these wells that are familiar with.

3 Q And you've observed a maximum in that
4 area of 320 acres.

5 A Yes sir.

6 Q In your area.

7 A Yes.

8 MR. FUELL: May it please the Commission,
9 I think that's all. Let me consult with my colleagues for just
10 a minute.

11 Q Mr. Beeler, one general question that I
12 overlooked that one of my colleagues didn't.

13 That was the reference you made to a well
14 in the Libby area, or Bueyeros area, I don't remember what
15 you said, it blew out over a period of years, or inadvertently
16 somebody just left a CO₂ zone open and it produced CO₂ to the
17 air for several years.

18 A Yes, sir, that occurred.

19 Q And then later on you all came in with
20 your development program in that area and found an extremely
21 low pressure.

22 A This was Swartz Carbonic came into this
23 area and did complete and develop the area so that a plant
24 could be put into operation.

25 Q Would that indicate to you that this

1 blowout well that -- or the well that was producing to the
2 atmosphere for several years was draining a larger area,
3 probably in excess of 320 acres?

4 A Well, sir, that is the area that we de-
5 fined the pool size as approximately 600 acres from pressure
6 decline.

7 Q And every well that you subsequently
8 drilled after this well produced to the atmosphere, had a
9 much lower pressure than you would have predicted for virgin.

10 A Yes, sir. It pretty well fell on the
11 decline curve.

12 Q So wouldn't that data show to you that
13 this well that was producing to the atmosphere was draining
14 the entire 600-acre reservoir?

15 A Yes.

16 MR. BUELL: May it please the Commission,
17 I believe that's all. Thank you, Mr. Beeler.

18 MR. PAMEY: Mr. Lopez.

19

20

CROSS EXAMINATION

21

BY MR. LOPEZ:

22

23 Q Mr. Beeler, I believe you've testified
24 or described why you found two different pressures in the
25 two different reservoirs, the Libby and the Mitchell Fields,
but I don't know whether or not you commented on whether or

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1 not the two different reservoirs have different reservoir
2 characteristics with regard to permeability and so on.

3 A In general they are fairly similar. The
4 thickness below the cinarron anhydrite to the basement is
5 similar. The number of stringers is similar. I don't think
6 I could say for sure that I could correlate the stringers
7 from one area to another.

8 Q But I believe you've also testified that
9 these two fields, even though they may be similar, are quite
10 dissimilar from the reservoir that Amoco has described in
11 the Bravo Dome.

12 A That is correct.

13 Q Do you have any opinion as to whether or
14 not there are multiple different reservoirs in the 3-county
15 area with different reservoir characteristics?

16 A I can state my own knowledge of this
17 particular small area here. There are definitely separate
18 reservoirs.

19 MR. LOPEZ: No further questions.

20 MR. RAMEY: Any other questions of the
21 witness? He may be excused.

22 Anything further, Mr. Coffield?

23 MR. COFFIELD: No, Mr. Chairman, I do
24 not.

25 MR. RAMEY: Any statements at this time?

1 Or notions, rather?

2 MR. BUELL: Mr. Ramey, I'd like to reserve
3 the right to make the last closing statement. I think I've
4 made about ten today, but I -- since I've had an unusual
5 burden of proof put on me, I would like to have the last
6 opportunity.

7 MR. RAMEY: Yes, sir, I will reserve that
8 for you, Mr. Buell.

9 MR. LOPEZ: If I may, before I make my
10 closing statement, Mr. Chairman, I'd like to have Mr. Buell
11 describe this unusual burden of proof that's been laid on
12 him.

13 MR. BUELL: If you were here, and awake,
14 during the early part of the hearing, Mr. Lopez, I think you
15 heard the unusual burden that was placed on me; that we had
16 the duty and the obligation to prove conclusively to this
17 Commission that any CO₂ well drilled anywhere in this area
18 would drain 640 acres.

19 Hercules couldn't carry that burden.

20 MR. LOPEZ: Well, I'll reserve comment,
21 Mr. Buell.

22 May it please the Commission, maybe ini-
23 tially I should not reserve comment and just go right to the
24 heart of the matter. I did hear Mr. -- I was awake long
25 enough to hear Mr. Nutter's explanation as to how he per-

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1 ceives the statutes and laws of New Mexico, and in that I
2 heartedly agree. I do believe Mr. Duell does have the burden
3 of proving to whatever extent he in his circular task could
4 as to whether or not wells in this Precinct area would be
5 capable of producing on a 640-acre proration basis.

6 It is the position of MNG Fossil Fuels
7 Company that Amoco today has failed completely in its burden
8 of proof.

9 We initially requested that our area of
10 interest, and I might briefly define that area of interest,
11 MNG Fossil Fuel Company has under lease or controls approxi-
12 mately 450,000 acres in Quay, Union, and Colfax Counties.

13 It is our position that the granting of
14 this application today is premature because we are only in
15 the very early stages of exploration and development. We
16 have no opinion as to how many reservoirs we may encounter
17 in our area of interest. We have no information to provide
18 the Commission as to what the various producing character-
19 istics might be in the various reservoirs and pools we hope
20 to encounter.

21 It is our further position that there
22 should be no amendment to the statewide rules at this time
23 because we believe that the statewide rules as they presently
24 exist will at least provide us an opportunity to produce at
25 reasonable rates. We feel that by extending the proration

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1 units to 640 acres it may well inhibit the production rate
2 of carbon dioxide in this 3-county area.

3 It is our position that and we anti-
4 cipate that when, and we believe that in the near future,
5 the market for CO₂ will certainly increase. that it is in
6 the best interests of the State and our company that we be
7 allowed to produce this at current -- at whatever rates can
8 be established under present proration rules.

9 I think Mr. Nutter's comment this morning
10 that the royalty owners certainly are afforded no protection
11 by going to 640-acre spacing is indeed correct, and bears
12 consideration.

13 It is our further -- another reason we
14 oppose the application today is that in our area of interest
15 particularly we believe that 640-acre spacing requirements
16 will inhibit the number of locations, well locations, that
17 we will be able to locate with respect to the development of
18 that acreage. I believe that it's been conclusively shown
19 that Amoco, through its own witnesses, believes that there
20 may indeed exist many different pools and reservoirs within
21 the 3-county area, and that they at this time do not have
22 any information with respect to what those producing char-
23 acteristics are. Consequently, I do feel that Amoco has
24 failed in its burden of proof and would urge the Commission
25 to retain the present spacing requirements.

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1 MR. DUNN: Thank you, Mr. Lopez.

2 Mr. Healy?

3 MR. DUNN: I think we'll leave to the
4 Commission to decide whether or not Amoco has sustained its
5 burden of proof. I think I agree that the key question is
6 whether the 640-acre spacing will efficiently, economically,
7 and effectively drain the carbon dioxide that's in the
8 3-county area.

9 I would like to renew my motion that if
10 Amoco's petition for the 640-acre spacing is granted, that
11 the twelve townships where our tracts are located be excluded
12 on the basis of the testimony from Mr. Beeler.

13 That's all I have. Thank you.

14 MR. DAMEY: Are you asking us to rule on
15 the motion?

16 MR. HEALY: Well, I'd like to have you
17 rule on it now, or you could take it under advisement.

18 MR. DAMEY: I think we'd prefer to take
19 it under advisement, and if we decide to do that, we can in-
20 corporate it into our --

21 MR. HEALY: Fine.

22 MR. BUELL: With that, may it please the
23 Commission, I renew my lack of objection, or support, if you
24 will, for the exclusion of the twelve township area that
25 we've discussed so much here today, and the reason for my

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1 lack of objection, or for my support, is due to the fact
2 that this is an older producing area. It is novel and it is
3 unique in that respect.

4 I think probably the best thing I could
5 say in support of our case is that the majority of the reasons
6 that Mr. Lopez gave for his client objecting to it, are the
7 reasons that I think it's so vitally needed, so that we can
8 have uniform and orderly development away from the older,
9 much older, producing areas.

10 I sincerely believe that the majority of
11 our problem that we've encountered here today is the lack
12 of general understanding of the source and the reason for
13 your statewide rule 104.

14 Your statewide Rule 104 has been on the
15 books since man can remember, and everyone in this room
16 knows that there was no data put on to support 160-acre gas
17 units in southeast New Mexico above the Wolfcamp to prove
18 that every gas well that would produce in southeast New
19 Mexico would effectively and efficiently drain 160 acres.
20 We all now know that for years we've had in southeast under
21 Rule 104 for Wolfcamp and older, a 320-acre drilling and
22 spacing unit. And everyone in this room who's had any ex-
23 perience with Wolfcamp and Morrow, particularly, knows that
24 not every Morrow well drilled in southeast New Mexico is
25 going to drain 320 acres. The majority of them don't even

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1 have a reservoir under their unit of 320 acres.

2 All I have tried to prove here today is
3 that, one, the Tubb and older formation is generally pro-
4 ductive of CO₂, never productive of commercial hydrocarbons,
5 and this 3-county area is extensively found -- we've given
6 you data on the rock quality where we've had it. In some
7 of the newer wells we've amassed a lot of core data, which
8 we've presented to you. We've shown that we have continuity.
9 You may not be able to correlate every zone in the Tubb or
10 older formation from one extremity to the other over 170
11 miles. We've never contended that you could. From the out-
12 set we've admitted in our opening statements, that we're not
13 saying that this 3-county area is one common source of
14 supply. We know it isn't going to be; you know it isn't
15 going to be; but we do sincerely feel that we need a spacing
16 pattern that will provide for uniform and orderly development.

17 We've discussed in depth that the rule
18 as we propose it would permit the drilling of four wells
19 on the 640-acre drilling and spacing unit, if in the opinion
20 of the operator that was necessary to efficiently and effec-
21 tively necessary to drain it. That could be done without a
22 hearing, without administrative application, or anything.

23 We've heard of HIG's extensive holdings.
24 I think it was 4 to 5000 acres. If they want to drill to the
25 160-acre density on their large acreage holdings, they can

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1 do it under our rule. If they want to preserve the integrity
2 of a 640-acre drilling and spacing unit until they acquire
3 data to see if they really need to go to 160, they can do
4 that.

5 We have flexibility under our rule, so
6 I strongly urge the Commission to adopt our recommendation
7 so that we can have uniform and orderly development.

8 If it is the will of the Commission to
9 put it on a temporary basis, certainly give us enough time
10 after a major CO₂ market has been developed and production
11 start, so that we'll have the opportunity to bring you defi-
12 nitive data. I feel sure that we can show you in some acreage
13 640 is the proper unit. In others we might have to go to
14 320 or 160, but under our rule, you can do that.

15 So I urge you to approve our application.

16 MR. RAMFY: Thank you, Mr. Buell.

17 Any other statements? Does anyone have
18 anything else to add to this hearing?

19 If not, the Commission will take the
20 case under advisement.

21

22

(Hearing concluded.)

23

24

25

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REPORTER'S CERTIFICATE

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Commission was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd C.S.R.

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CASE FILE

NO. 6824

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