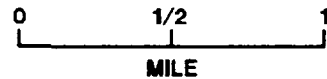


- DRINKARD PRODUCER
- ⊙ DIRECTIONALLY DRILLED DRINKARD PRODUCER
- ⊙ PROPOSED DRINKARD INJECTOR
- PROPOSED CONVERSION TO INJECTION
- ⊙ SHUT-IN/ABANDONED DRINKARD PRODUCER
- ⊙ DRINKARD DRY HOLE
- - - PROJECT AREA
- ⑤ LEASE NUMBER



MARATHON OIL COMPANY
MID-CONTINENT REGION

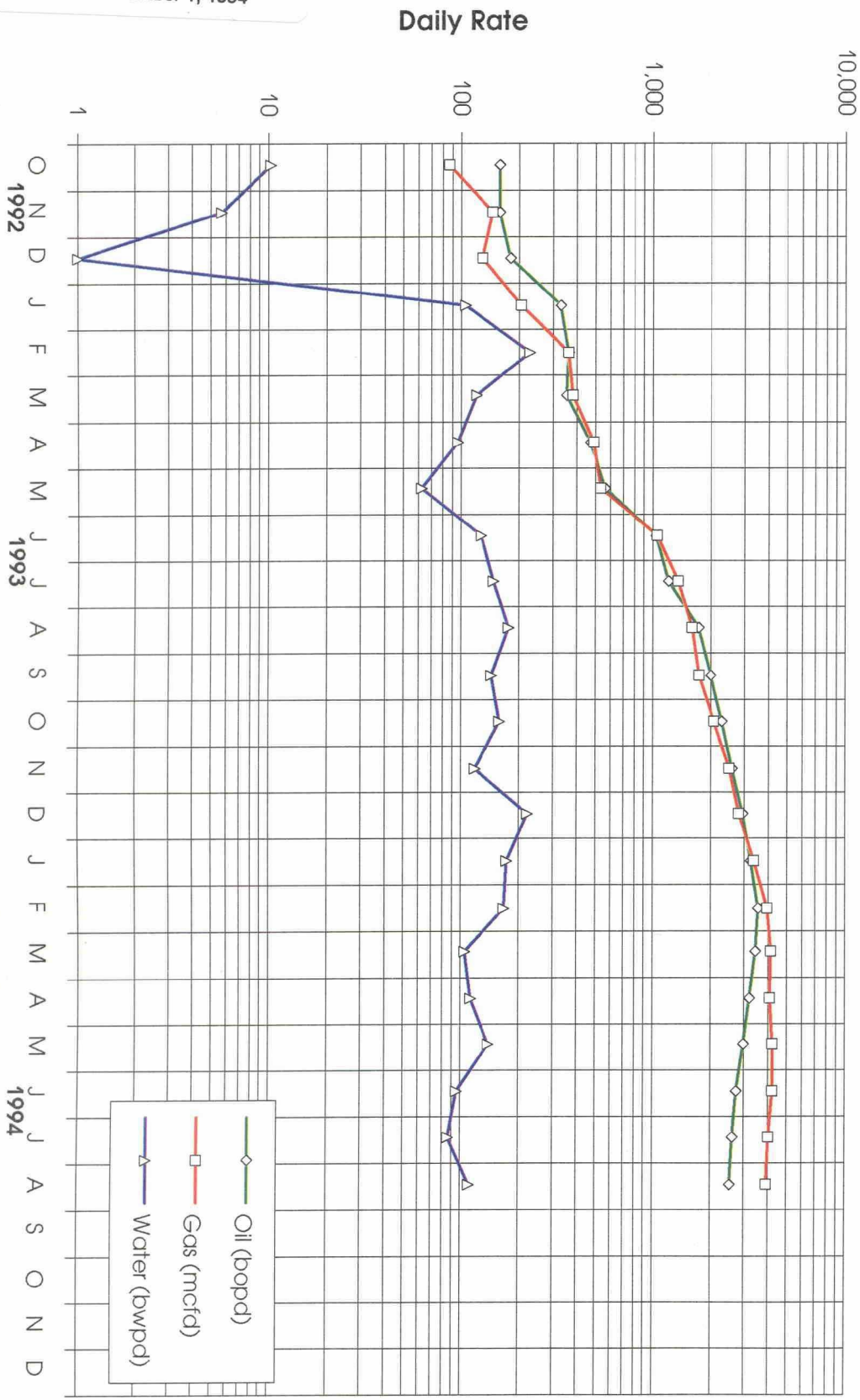
VACUUM (DRINKARD) FIELD
LEA COUNTY, NEW MEXICO
**VACUUM DRINKARD COOPERATIVE
PRESSURE MAINTENANCE PROJECT**

PROJECT AREA PLAT

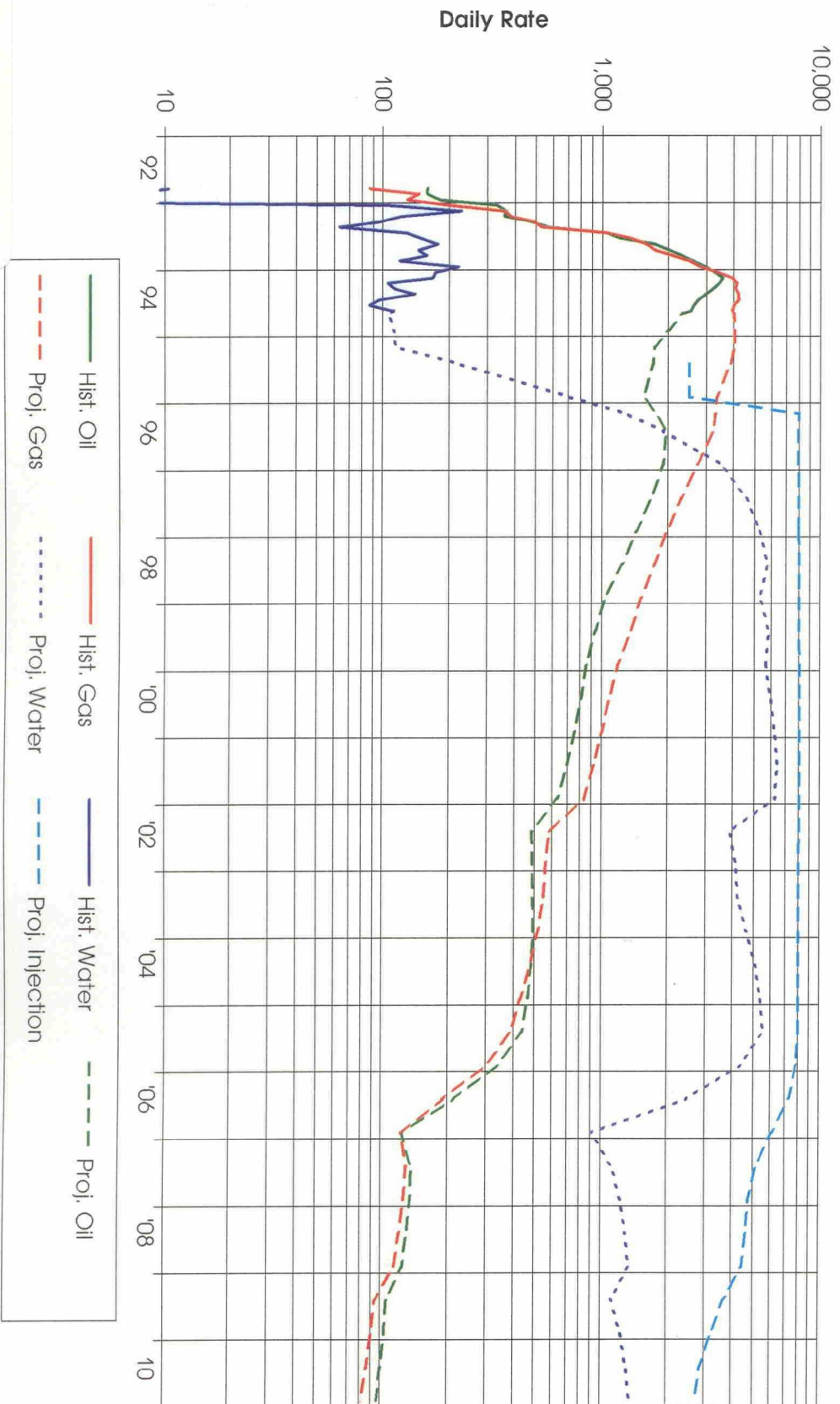
OCTOBER 1994

Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152 Exhibit No.
Submitted by : Marathon Oil Company
Hearing Date: December 1, 1994

Vacuum Drinkard Cooperative Pressure Maintenance Project

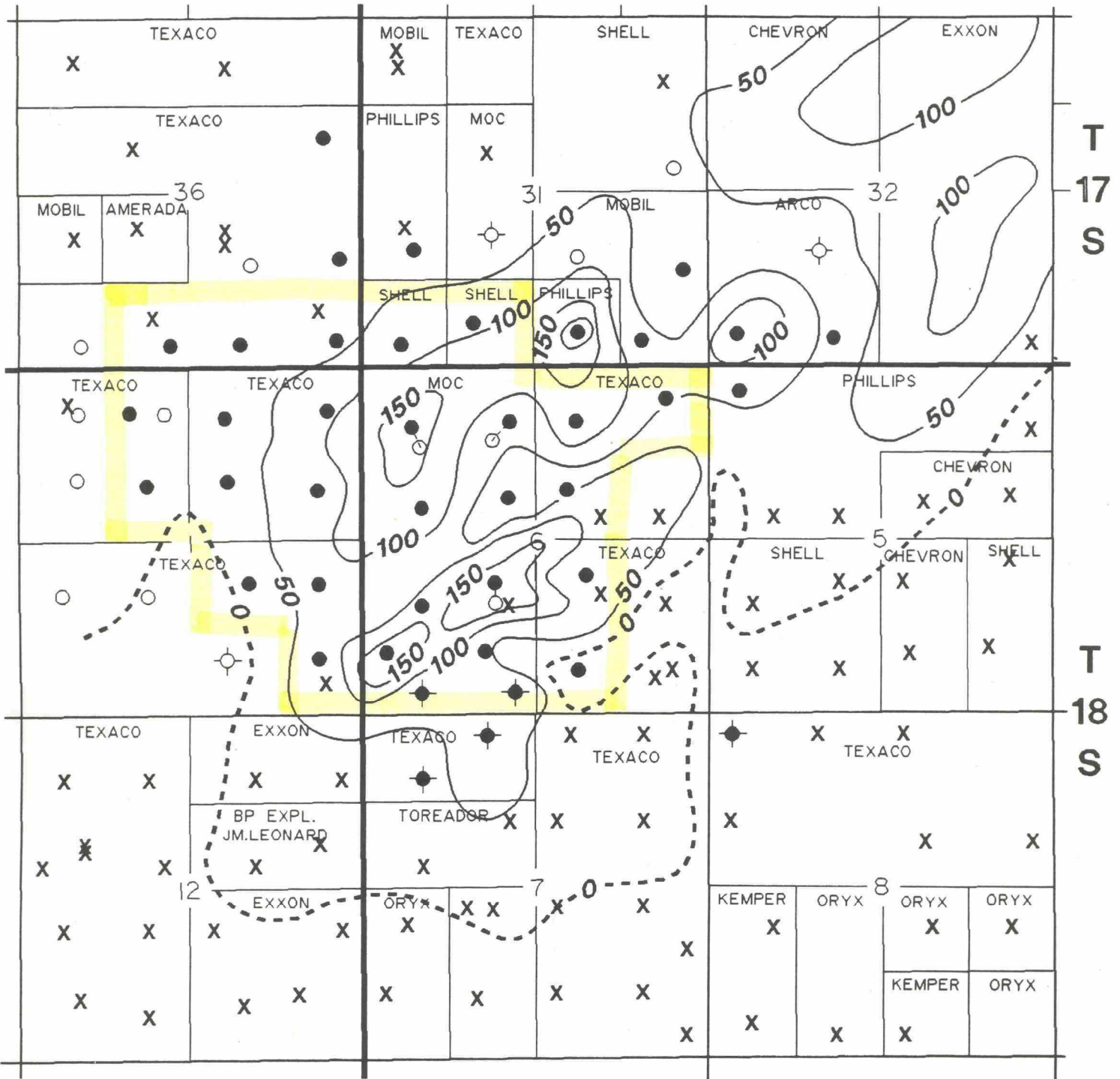


Vacuum Drinkard Cooperative Pressure Maintenance Project



R 34 E

R 35 E



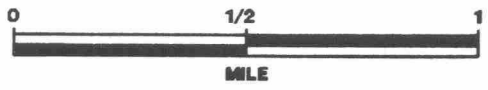
T 17 S

T 18 S

X = PENETRATION

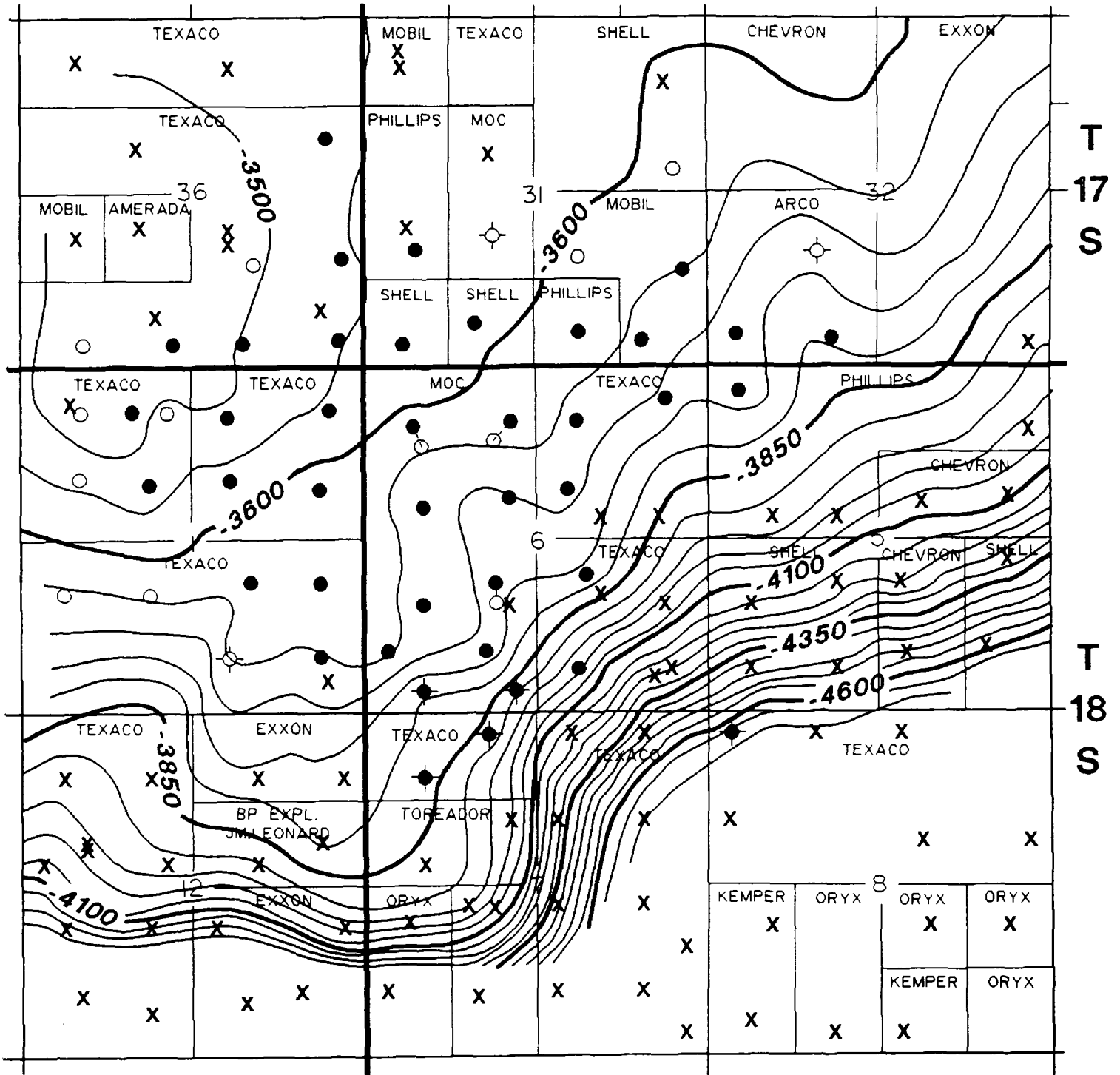
BEFORE THE
 OIL CONSERVATION DIVISION
 SANTA FE, NEW MEXICO
 MARATHON OIL CO. EXHIBIT NO. 4
 CASE NO. III52
 DECEMBER 1, 1994

MARATHON OIL COMPANY	MID-CONTINENT REGION
VACUUM FIELD	
WARN STATE A/C 2 LEASE	
LEA COUNTY, NEW MEXICO	
NET Ø ≥ 3%	
ISOPACH MAP	
DRINKARD ZONES 2-4	
C.I. 50'	
ORIGINAL SCALE: 1" = 2000'	DATE: 12/94
AUTHOR: K. MILLER	REVISED:
DRAFTED BY:	PROJECT:
	FILE LOC: VACUUM-SFE EXPL.



R 34 E

R 35 E

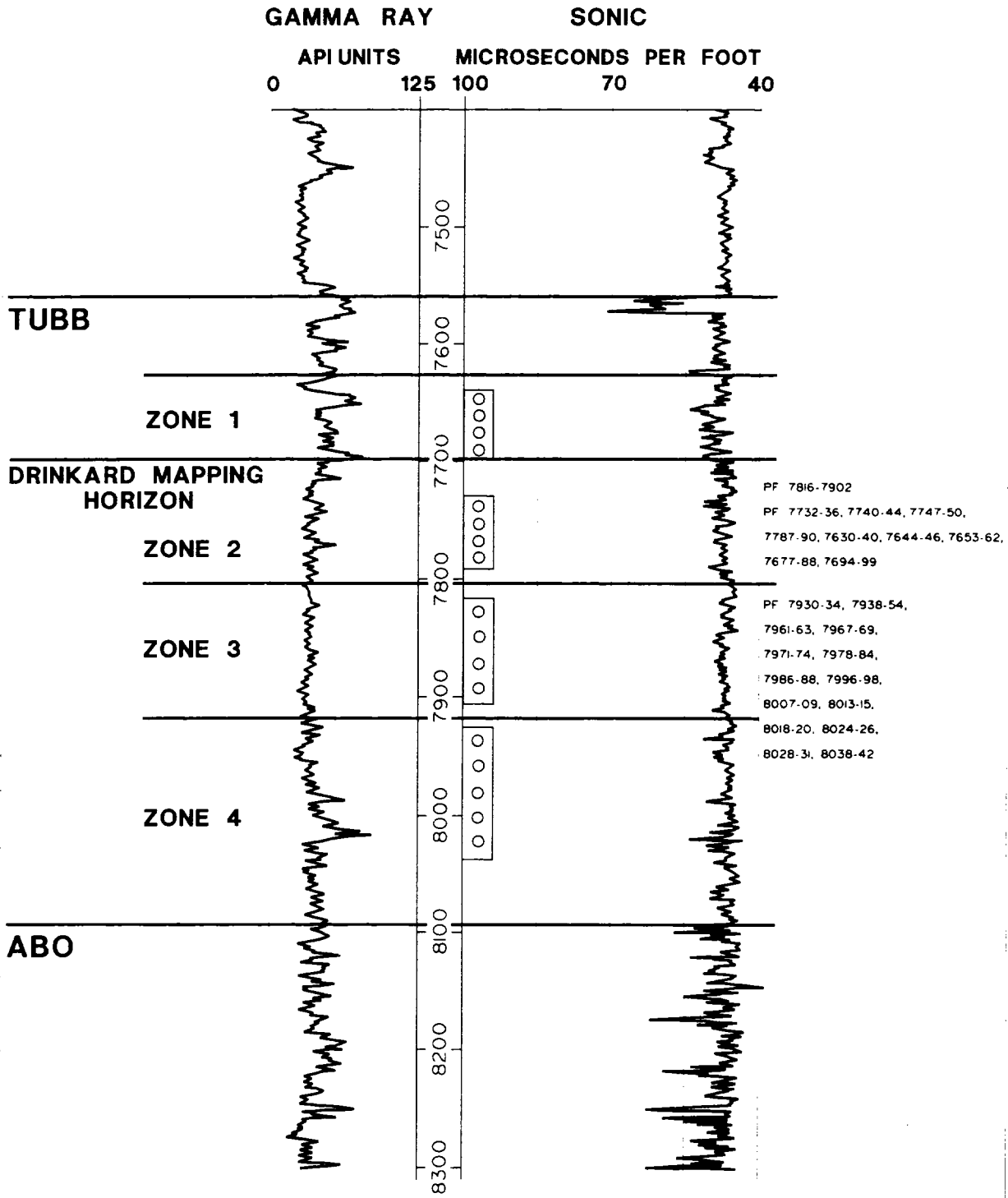


X = PENETRATION

BEFORE THE
 OIL CONSERVATION DIVISION
 SANTA FE, NEW MEXICO
 MARATHON OIL CO. EXHIBIT NO. 5
 CASE NO. 11152
 DECEMBER 1, 1994

MARATHON OIL COMPANY		MID-CONTINENT REGION	
VACUUM FIELD			
WARN STATE A/C 2 LEASE			
LEA COUNTY, NEW MEXICO			
STRUCTURE MAP			
DRINKARD MARKER			
(T/DRINKARD ZONE 2)			
C.I. 50'			
ORIGINAL SCALE: 1" = 2000'	DATE: 12/94		
AUTHOR: K. MILLER	REVISED:		
DRAFTED BY:	PROJECT:		
		FILE LOC: VACUUM-A/C 2 EXPL.	





MARATHON OIL COMPANY
WARN STATE ACCOUNT 2 #1
NW SW 6-T18S-R35E
LEA COUNTY, NEW MEXICO
KB 3991'

BEFORE THE
OIL CONSERVATION DIVISION
SANTA FE, NEW MEXICO
MARATHON OIL CO. EXHIBIT NO. 6
CASE NO. 11152
DECEMBER 1, 1994

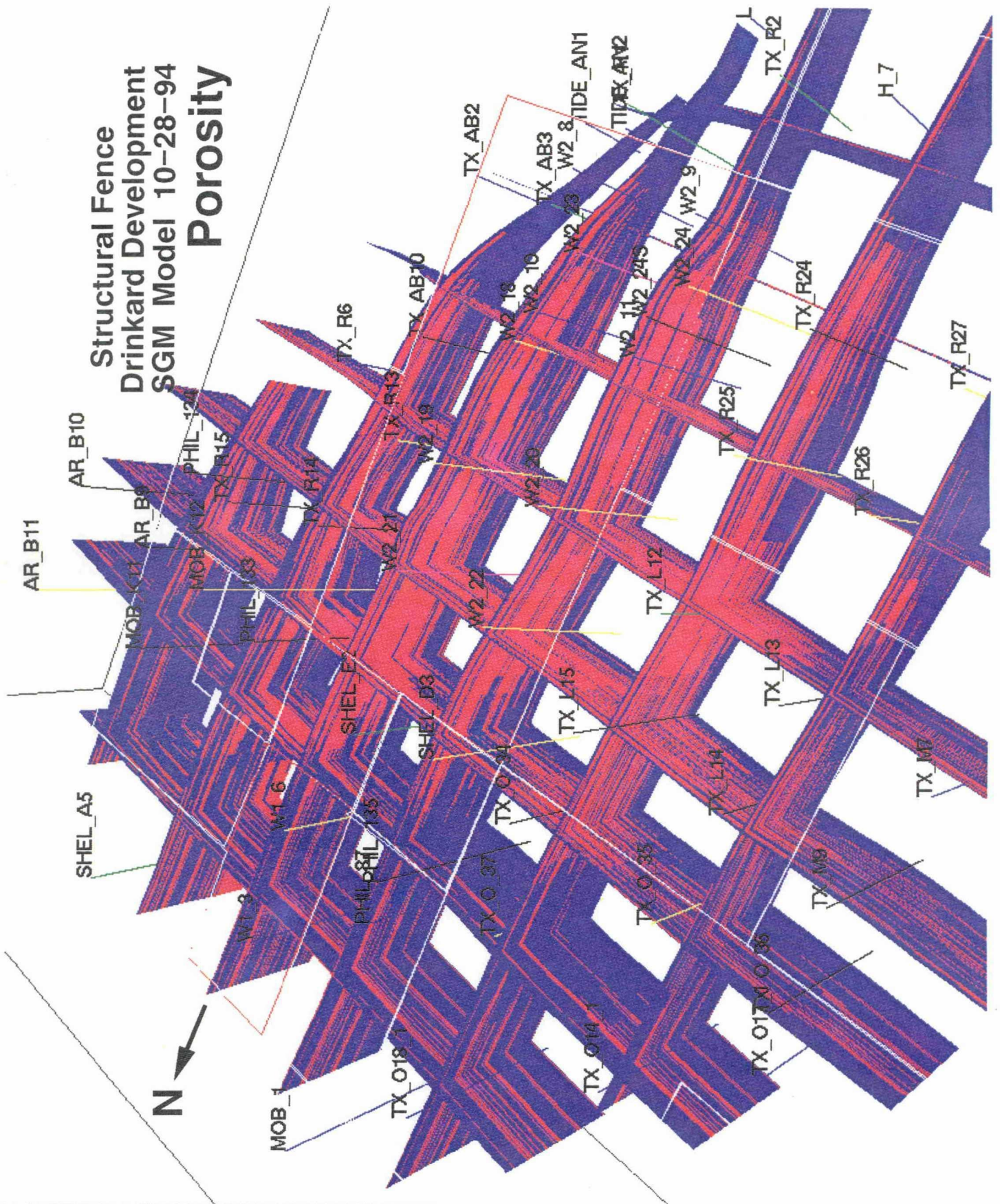
Drinkard Development SGM Model 10-28-94

Cross Section Location



Before the Oil Conservation Division
 Santa Fe, New Mexico
 Case No. 11152
 Exhibit No.
 Submitted by Marathon Oil Company
 Dec. 1, 1994

Structural Fence Drinkard Development SGM Model 10-28-94 Porosity



Before the Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152
Exhibit No. 70
Submitted by Marathon Oil Company
Dec. 1, 1994

0.0200
0.0000

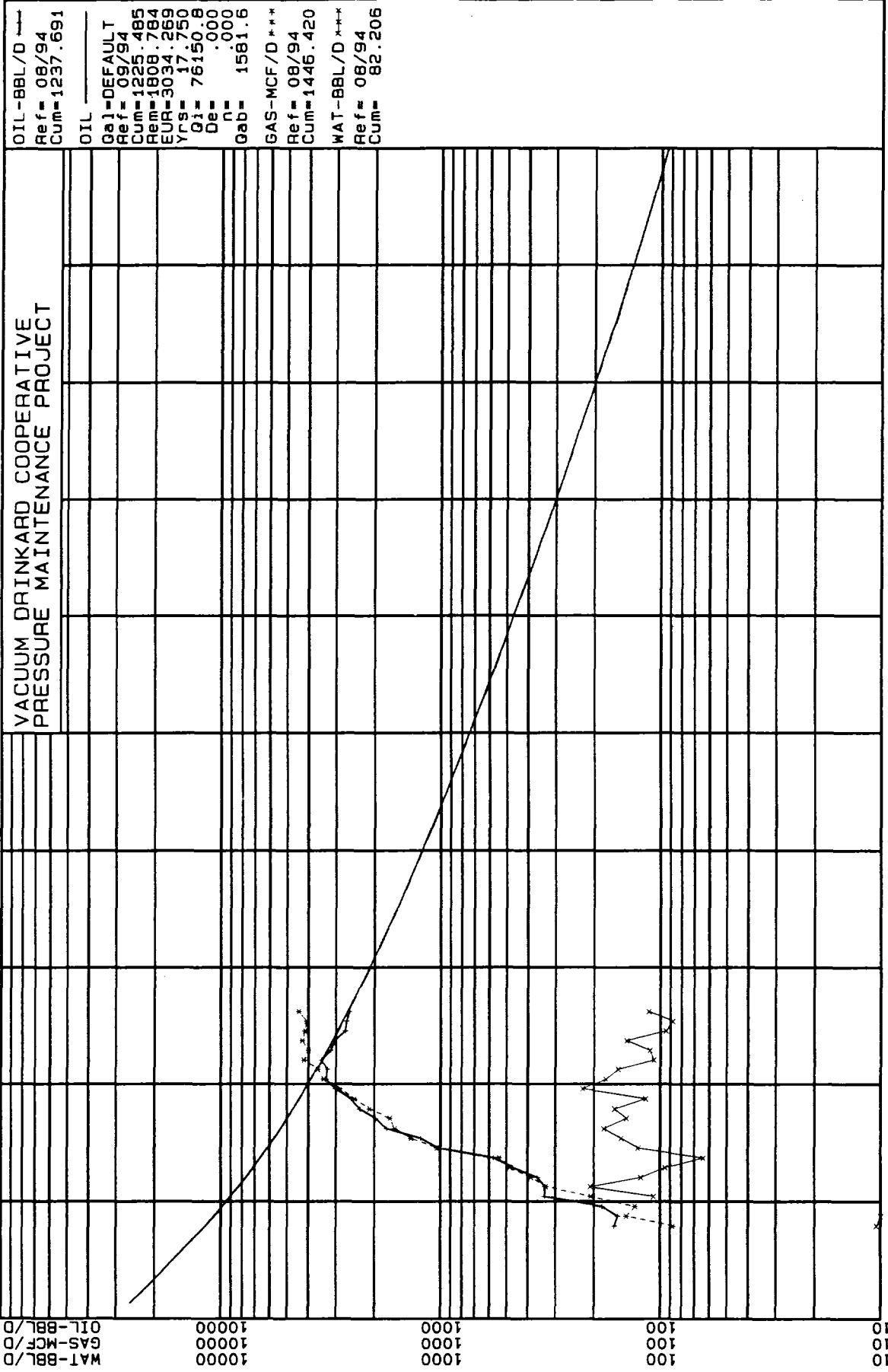
Vacuum Drinkard Pool

Background

Discovered:	January, 1962
Current Status:	37 Active Producers 5 SI or Abandoned Wells
Current Production (8/94): (Project Area)	2,536 BOPD 3,915 MCFD
Discovery Pressure (10/92):	2,927 PSIA @ -3,717' ss
Bubble Point Pressure:	2,350 PSIA
Solution GOR:	750 SCF/STB
Porosity:	2 - 8 % 4 % Average
Drive Mechanism:	Solution Gas
Original Oil in Place: (Project Area)	21,520 MSTBO
Primary Recovery: (Decline Curve Analysis)	3,034 MSTBO
% OOIP	14.1 %

Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152
Marathon Oil Company Exhibit No. 11
December 1, 1994

VACUUM DRINKARD COOPERATIVE
PRESSURE MAINTENANCE PROJECT



OIL -BBL/D ---
Ref= 08/94
Cum=1237.691

OIL ---
Qa1=DEFAULT
Ref= 09/94
Cum=1225.485
Rem=1808.784
EUR=3034.269
Yrs= 17.750
Q1= 76150.8
De= .000
n= .000
Qab= 1581.6

GAS-MCF/D ***
Ref= 08/94
Cum=1446.420

WAT-BBL/D ***
Ref= 08/94
Cum= 82.206

Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152 Exhibit No. / Z
Submitted by : Marathon Oil Company
Hearing Date: December 1, 1994

Black Oil Simulator

Purpose: Evaluate Primary and Secondary Oil Recovery

Size: 50 X 44 X 21 layers
Grid blocks 267' X 267'

Input Data: Thickness
Porosity
PVT Data
Oil-Water Relative Permeability
Capillary Pressure Data
Initial Pressure
Current and Proposed Well Locations

Match Parameters: Oil and Gas Rates
Producing Bottom Hole Pressures
History Matched Through 8/94

Tuning Parameters: Permeability
Gas - Oil Relative Permeability

Results:

Primary Recovery: 3,197 MSTBO

% OOIP: 14.9 %

* 5.4% Difference From Decline Curve Analysis

Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152
Marathon Oil Company Exhibit No. 13
December 1, 1994

Secondary Recovery

Evaluated several scenarios ranging from injection in isolated leases to full field development with in-fill injectors.

Selected "Lease Line" Arrangement:

- Economics (Low cost/bbl, Good rate of return)
- Little loss of production due to conversions
- Protect correlative rights
- Provide pressure support in the heart of the reservoir

Timing: Start injection 4/1/95 with two injectors

Add four additional lease line injectors and two conversions
1/1/96

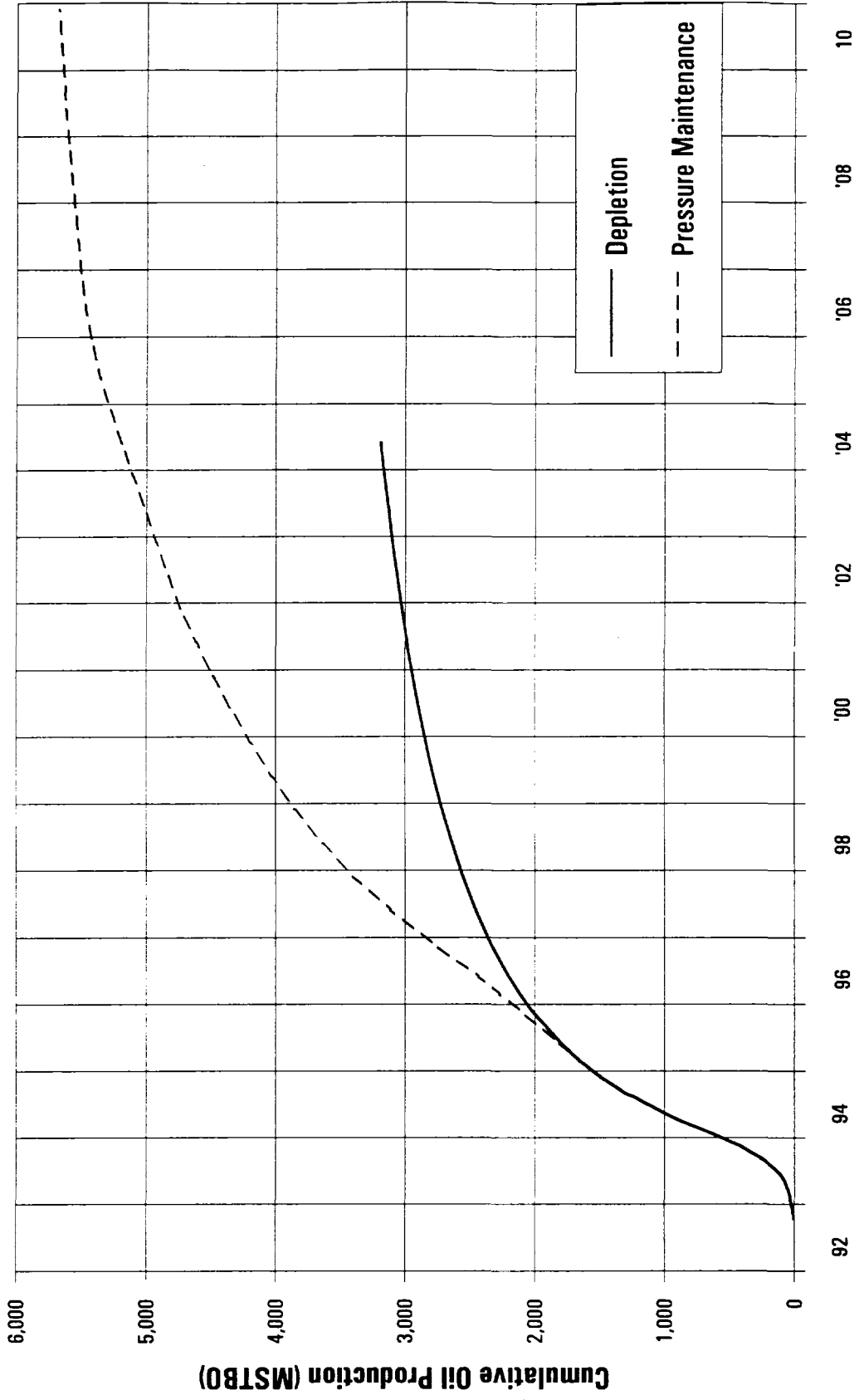
Results:

Ultimate Recovery:	5,678 MSTBO
% OOIP	26.4 %

Incremental Recovery:	2,481 MSTBO
Secondary/Primary Ratio	77.6 %

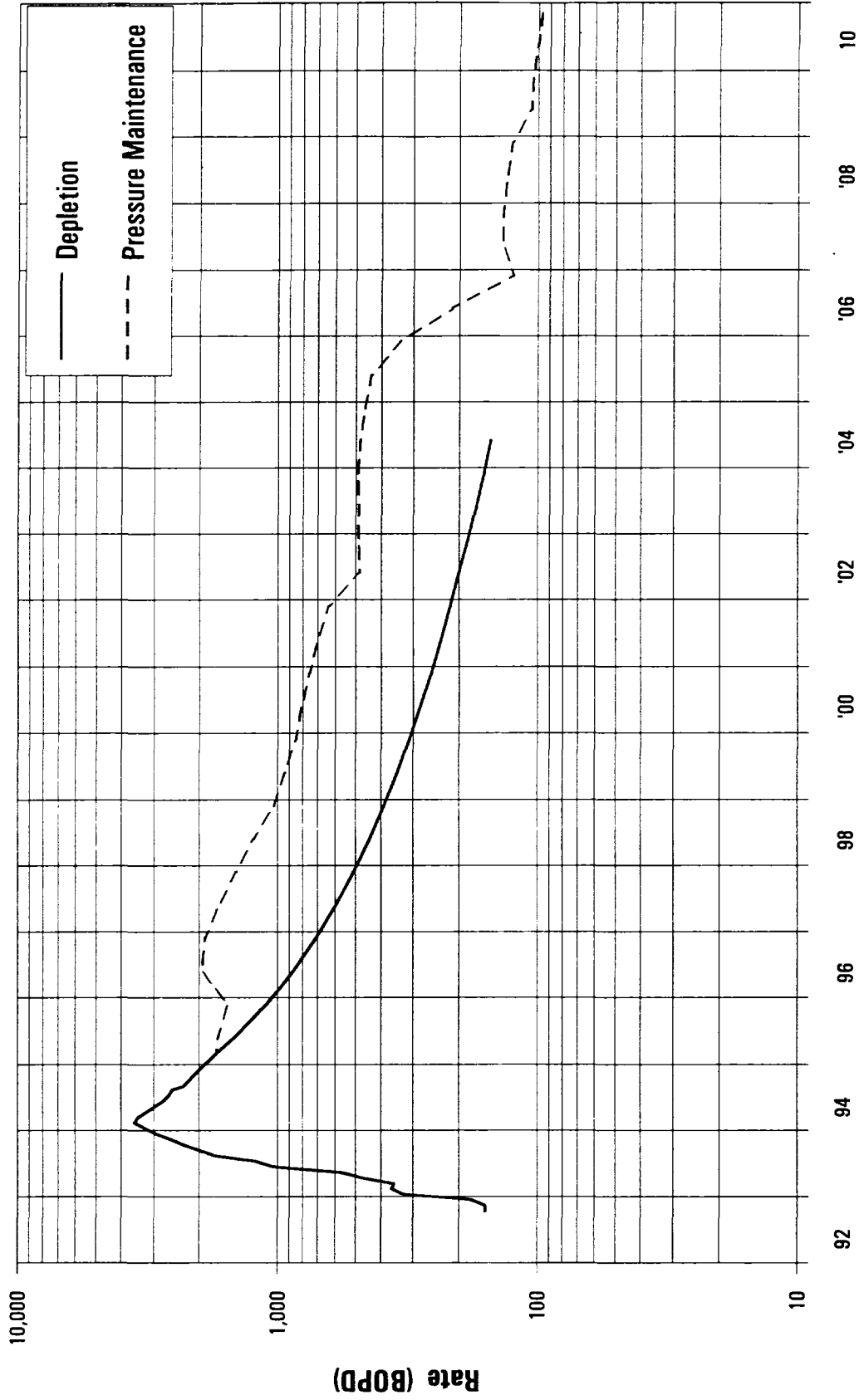
Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152
Marathon Oil Company Exhibit No. 14
December 1, 1994

Vacuum Drinkard Cooperative Pressure Maintenance Project Cumulative Oil Production vs Time



Before The
 Oil Conservation Division
 Santa Fe, New Mexico
 Case No. 11152 Exhibit No. 15
 Submitted by : Marathon Oil Company
 Hearing Date: December 1, 1994

Vacuum Drinkard Cooperative Pressure Maintenance Project Oil Rate vs Time



Before The
 Oil Conservation Division
 Santa Fe, New Mexico
 Case No. 11152 Exhibit No. 16
 Submitted by : Marathon Oil Company
 Hearing Date: December 1, 1994

Timing

"Why Implement a Pressure Maintenance Project Now?"

GOR has Increased from 1,000 SCF/STB in 1/94 to 1,550 SCF/STB 8/94

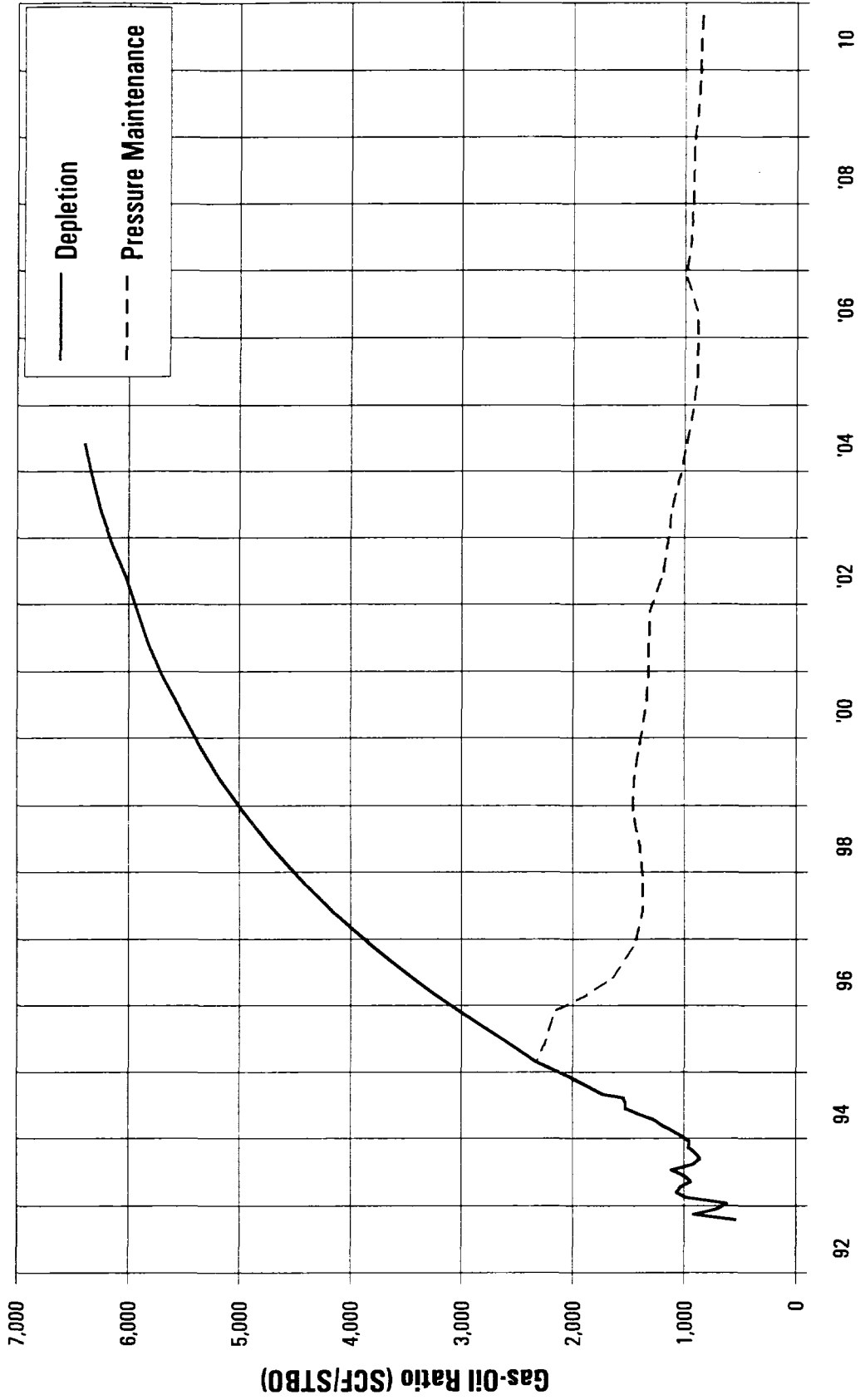
Current Pressure Estimated to be 1,950 PSIA

Solution Gas Drive Reservoir - No Natural Support

**Ran sensitivity cases varying start date, lost 5% of incremental benefit
for every six month delay in project startup**

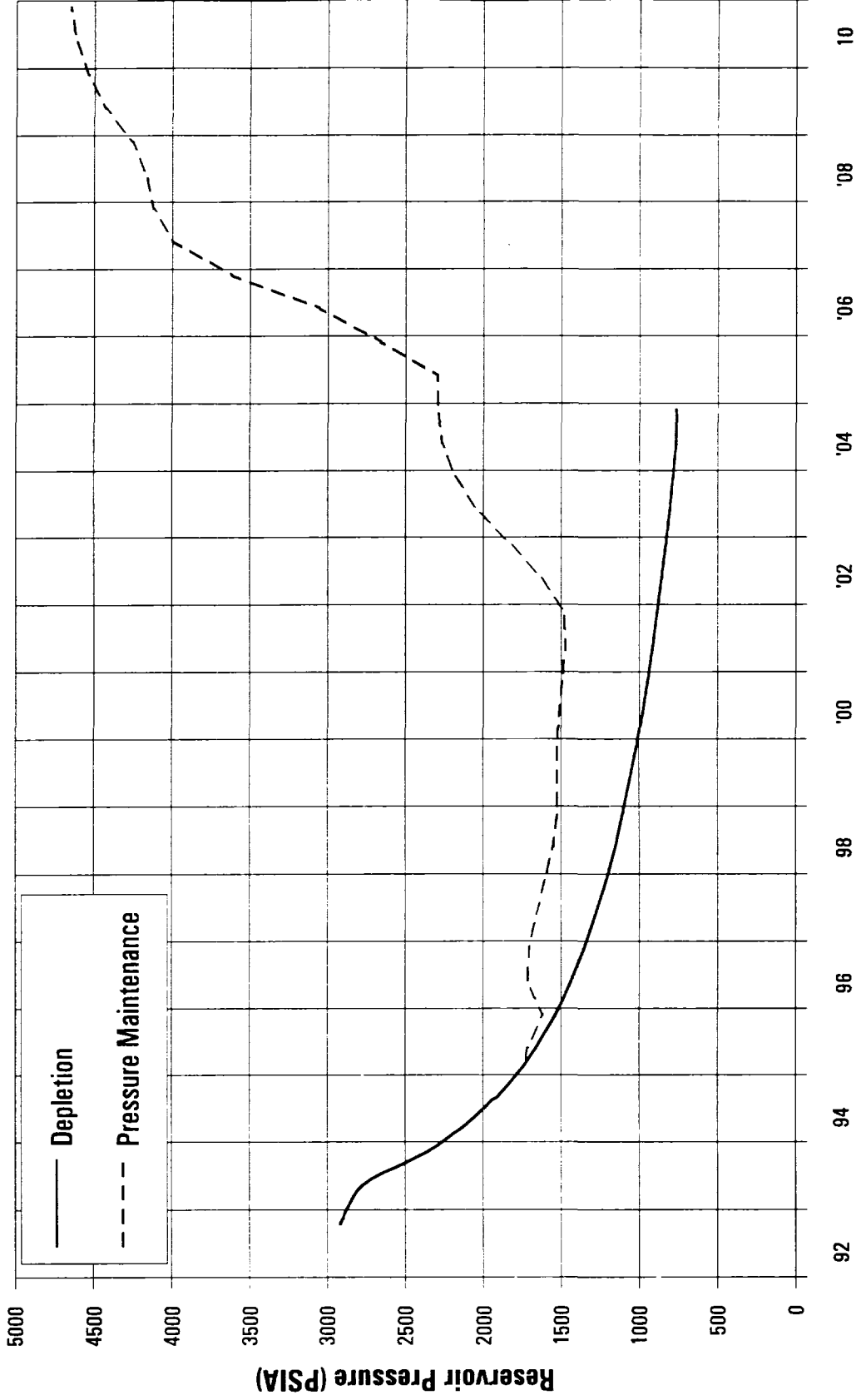
**Before The
Oil Conservation Division
Santa Fe, New Mexico
Case No. 11152
Marathon Oil Company Exhibit No. 17
December 1, 1994**

Vacuum Drinkard Cooperative Pressure Maintenance Project Gas-Oil Ratio vs Time



Before The
 Oil Conservation Division
 Santa Fe, New Mexico
 Case No. 11152 Exhibit No. 18
 Submitted by : Marathon Oil Company
 Hearing Date: December 1, 1994

Vacuum Drinkard Cooperative Pressure Maintenance Project Reservoir Pressure vs Time



Before The
 Oil Conservation Division
 Santa Fe, New Mexico
 Case No. 11152 Exhibit No. 17
 Submitted by : Marathon Oil Company
 Hearing Date: December 1, 1994

APPLICATION FOR RECOVERED OIL TAX RATE

VACUUM DRINKARD COOPERATIVE PRESSURE MAINTENANCE PROJECT

A. OPERATOR'S NAMES AND ADDRESSES

Texaco Exploration and Production Inc.
P. O. Box 3109
Midland, TX 79702

Marathon Oil Company
P. O. Box 552
Midland, TX 79702

Shell Western E&P, Inc.
P. O. Box 576
Houston, TX 77001

B. DESCRIPTION OF THE PROJECT AREA

1. Plat - See Attached.

2. Description of Project Area

SE/4 SW/4, S/2 SE/4 Section 36, T-17-S, R-34-E
E/2 NW/4, NE/4, N/2 SE/4, SE/4 SE/4 Section 1, T-18-S, R-34-E
SW/4 SW/4, SE/4 SW/4, [REDACTED] Section 31, T-17-S, R-35-E
W/2, N/2 NE/4, SW/4 NE/4, W/2 SE/4 Section 6, T-18-S, R-35-E

3. Total Acres - 1,069.18 ac

4. Name of Pool and Formation
Vacuum (Drinkard) - Drinkard and Tubb Formations

C. STATUS OF OPERATIONS

The project is in a non-unitized area. Producing wells will continue to be operated by the operators of each respective lease. Injection wells will be owned and operated by the operator of the lease the well is located on.

1. N/A

2. N/A

3. Listing of leases in project

<u>NUMBER</u>	<u>LEASE NAME</u>	<u>LESSOR</u>	<u>LESSEE</u>	<u>ACREAGE</u>
1	New Mexico "L" State	State of New Mexico	Texaco Exploration & Production, Inc.	160.9 AC
2	New Mexico "R" State NCT-3	State of New Mexico	Texaco Exploration & Production, Inc.	320 AC (*120 AC)
3	State "D"	State of New Mexico	Shell Western E&P, Inc.	37.42 AC
4	State "E"	State of New Mexico	Shell Western E&P, Inc.	40 AC
5	Warn State A/C 2	State of New Mexico	Marathon Oil Company	310.16 AC
6	New Mexico "R" State NCT-1	State of New Mexico	Texaco Exploration & Production, Inc.	160 AC (*120 AC)
7	New Mexico "AB" State	State of New Mexico	Texaco Exploration & Production, Inc.	160 AC (*80 AC)
8	New Mexico "O" State	State of New Mexico	Texaco Exploration & Production, Inc.	400 AC (*120 AC)
9	New Mexico "M" State	State of New Mexico	Texaco Exploraiton & Production, Inc.	161.58 AC (*80.7 AC)

*Acreage included in project area

D. METHOD OF RECOVERY

1. Injection Fluids - Water
2. Not Approved.
3. Form C-108 filed with the NMOCD November 8, 1994.

E. DESCRIPTION OF PROJECT

1. Producing Wells

<u>LEASE</u>	<u>WELL</u>	<u>UNIT</u>	<u>SECTION</u>	<u>TOWNSHIP</u>	<u>RANGE</u>
New Mexico State	12	H	1	18S	34E
New Mexico State	13	G	1	18S	34E
New Mexico State	14	B	1	18S	34E
New Mexico State	15	A	1	18S	34E
New Mexico "R" State NCT-3	24	P	1	18S	34E
New Mexico "R" State NCT-3	25	I	1	18S	34E
New Mexico "R" State NCT-3	26	J	1	18S	34E
State D	3	M	31	17S	35E
State E	2	N	31	17S	35E
Warn State A/C 2	11	L	6	18S	35E
Warn State A/C 2	18	K	6	18S	35E
Warn State A/C 2	19	F	6	18S	35E
Warn State A/C 2	20	E	6	18S	35E
Warn State A/C 2	21	C	6	18S	35E
Warn State A/C 2	22	D	6	18S	35E
Warn State A/C 2	23	N	6	18S	35E
Warn State A/C 2	24	M	6	18S	35E
New Mexico "R" State NCT-1	13	G	6	18S	35E
New Mexico "R" State NCT-1	14	B	6	18S	35E
New Mexico "R" State NCT-1	15	A	6	18S	35E
New Mexico "AB" State	3	O	6	18S	35E
New Mexico "AB" State	10	J	6	18S	35E
New Mexico "O" State	34	P	36	17S	34E

E. DESCRIPTION OF PROJECT
(Continued)

<u>LEASE</u>	<u>WELL</u>	<u>UNIT</u>	<u>SECTION</u>	<u>TOWNSHIP</u>	<u>RANGE</u>
New Mexico "O" State	35	O	36	17S	34E
New Mexico "O" State	36	N	36	17S	34E
New Mexico "M" State	7	F	1	18S	34E
New Mexico "M" State	9	C	1	18S	34E

2. Injection Wells

<u>LEASE</u>	<u>WELL</u>	<u>UNIT</u>	<u>SECTION</u>	<u>TOWNSHIP</u>	<u>RANGE</u>
New Mexico "L" State	16	A	1	18S	34E
New Mexico "L" State	17	H	1	18S	34E
New Mexico "R" State NCT-3	28	P	1	18S	35E
Warn State A/C 2	25	C	6	18S	35E
New Mexico "R" State NCT-1	16	G	6	18S	35E
New Mexico "R" State NCT-1	17	G	6	18S	35E
New Mexico "O" State	36	N	36	17S	34E
New Mexico "R" State NCT-3	26	J	1	18S	34E

3. Capital Cost of Additional Facilities: \$400,000
4. Total Project Cost: \$2,860,000 *(drilling to injection wells)*
5. Estimated Total Value of Additional Production: \$37,200,000
6. Estimated Start of Injection: April 1, 1995
7. Type of fluid and injection volumes: A total of 38.4 MMBBLS of water will be injected over the 16 year life of the project.
8. N/A

F. PRODUCTION DATA - SEE ATTACHED