

MANZANO OIL CORPORATION
 P.O. Box 2107 Roswell, NM 88202 (505) 623-1996

M.O.C.
VEST STATE #1 AREA
LAND PLAT
Devonian v. Bough

BEFORE THE
 OIL CONSERVATION DIVISION
 Santa Fe, New Mexico

Case No. 11504 Exhibit No. 1

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

R. Mean

COMPANY: Manzano Oil Corporation

WELL: 'SV' Vest State #1

FIELD: Wildcat - Devonian

COUNTY: Chaves STATE: New Mexico

LithoDensity
Compensated Neutron
Gamma Ray
Schlumberger

330 FSL and 1550 FWL Elev.: KB 3871 F

GL 3856 F

DF 3870 F

150 F above Perm Datum

Group's Level

Kelly Bushing

4444 Bushing

AP Seal No

35-005-21-38

SECTION 16

TOWNSHIP 14S

RANGE 30E

FINAL PRINT

2858 F

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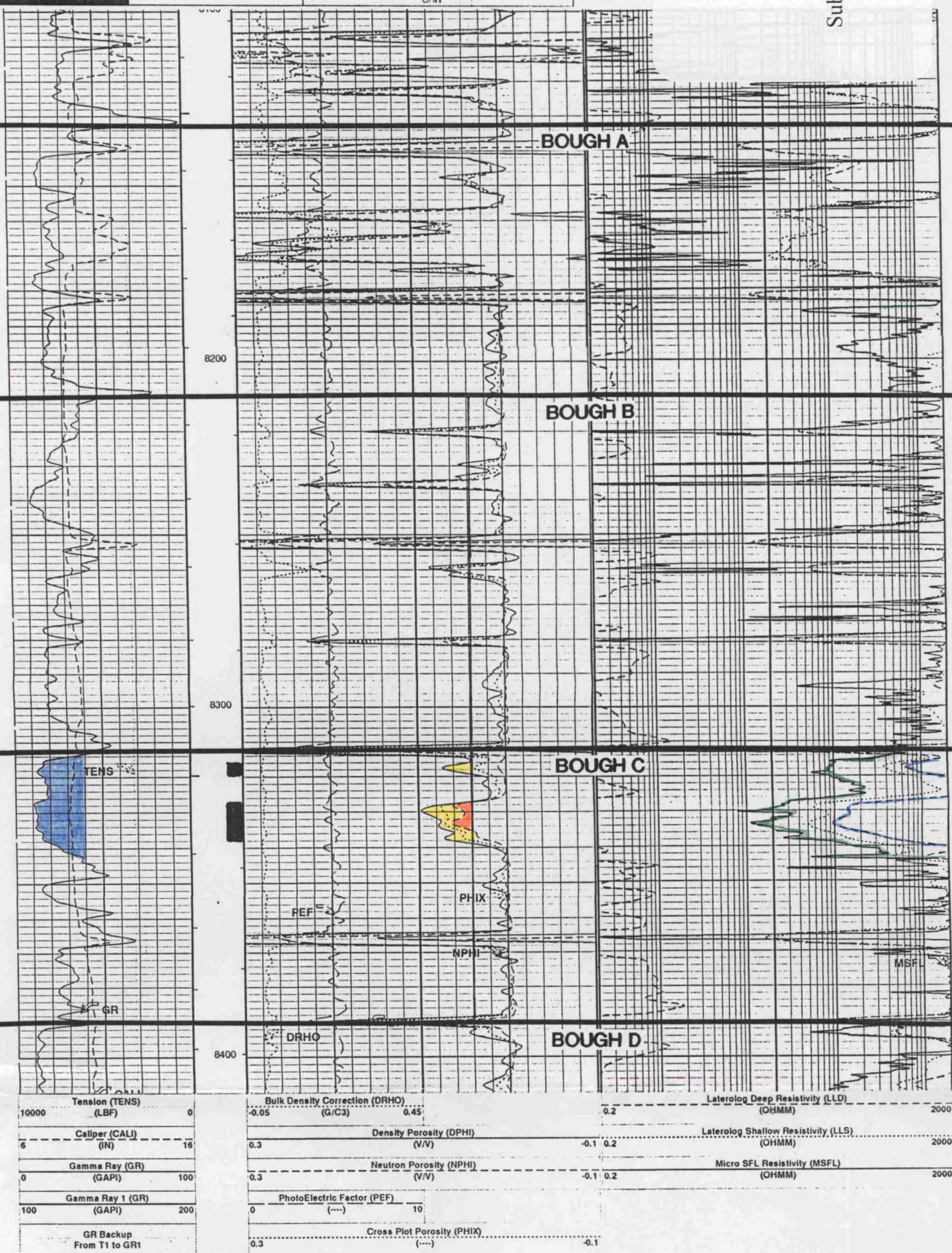
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Perf (8316-19, 27-38): Bough C
Acidized w/500 gal 15% NEFE
IPF @ 900~~0~~FTP (9/64" ch) 152 BO + 150 MCFG + 0 BWPD
Completion Date: 1/15/96

LARGE FORMAT
EXHIBIT HAS
BEEN REMOVED
AND IS LOCATED
IN THE NEXT FILE

PRODUCING PENN/WFC (BOUGH) FIELDS

FIELD	SPACING	CUM MBO	SPACING			TOTAL
			40	80	160	
ALLISON:PENN-LEA	80	10,038		1		
ALLISON:PENN-ROOSEVELT	80	16,693		1		
BAGLEY:PENN	40	556	1			
BAGLEY:PERMO PENN, NORTH	80	41,654		1		
BAR-U:PENN	160	373			1	
BAUM:UPPER PENN	160	10,278			1	
BOUGH:PERMO PENN	40	992	1			
CERCA:UPPER PENN	160	481			1	
CUERNO LARGO:PENN	40	587	1			
FOUR LAKES:PENN	80	1,431		1		
GLADIOLA:PENN, SOUTHWEST	80	156		1		
HIGH PLAINS:PERMO PENN	160	679			1	
HIGHTOWER:LOWER PENN, EAST	80	217		1		
HIGHTOWER:UPPER PENN, EAST	80	942		1		
INBE:PERMO PENN	80	1,882		1		
LAZY J:PENN	40	2,974	1			
MESCALERO:PERMO PENN	40	464	1			
MILNESAND:PENN, WEST	40	210	1			
NONOMBRE:UPPER PENN	160	496			1	
RANGER LAKE:BOUGH	80	107		1		
RANGER LAKE:PENN	80	734		1		
SAUNDERS:PERMO PENN, EAST	160	2,568			1	
SAUNDERS:PERMO UPPER PENN	40	25,430	1			
TOBAC:PENN	80	4,790		1		
TRES PAPALOTES:PENN	160	1,291			1	
TRES PAPALOTES:PENN, WEST	160	954			1	
TULK:PENN	160	1,531			1	
TULK:WOLFCAMP	40	1,684	1			
VADA:PENN	160	10,773			1	
TOTAL			8	11	10	29
% OF TOTAL			28%	38%	34%	100%

**BEFORE THE
OIL CONSERVATION DIVISION**
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 4

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 5

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

MANZANO OIL CORPORATION

P.O. Box 2107 Roswell, NM 88202

(505) 623-1996

CUERNO LARGO AREA

Lea County, New Mexico

Structure: Top of Bough "D"



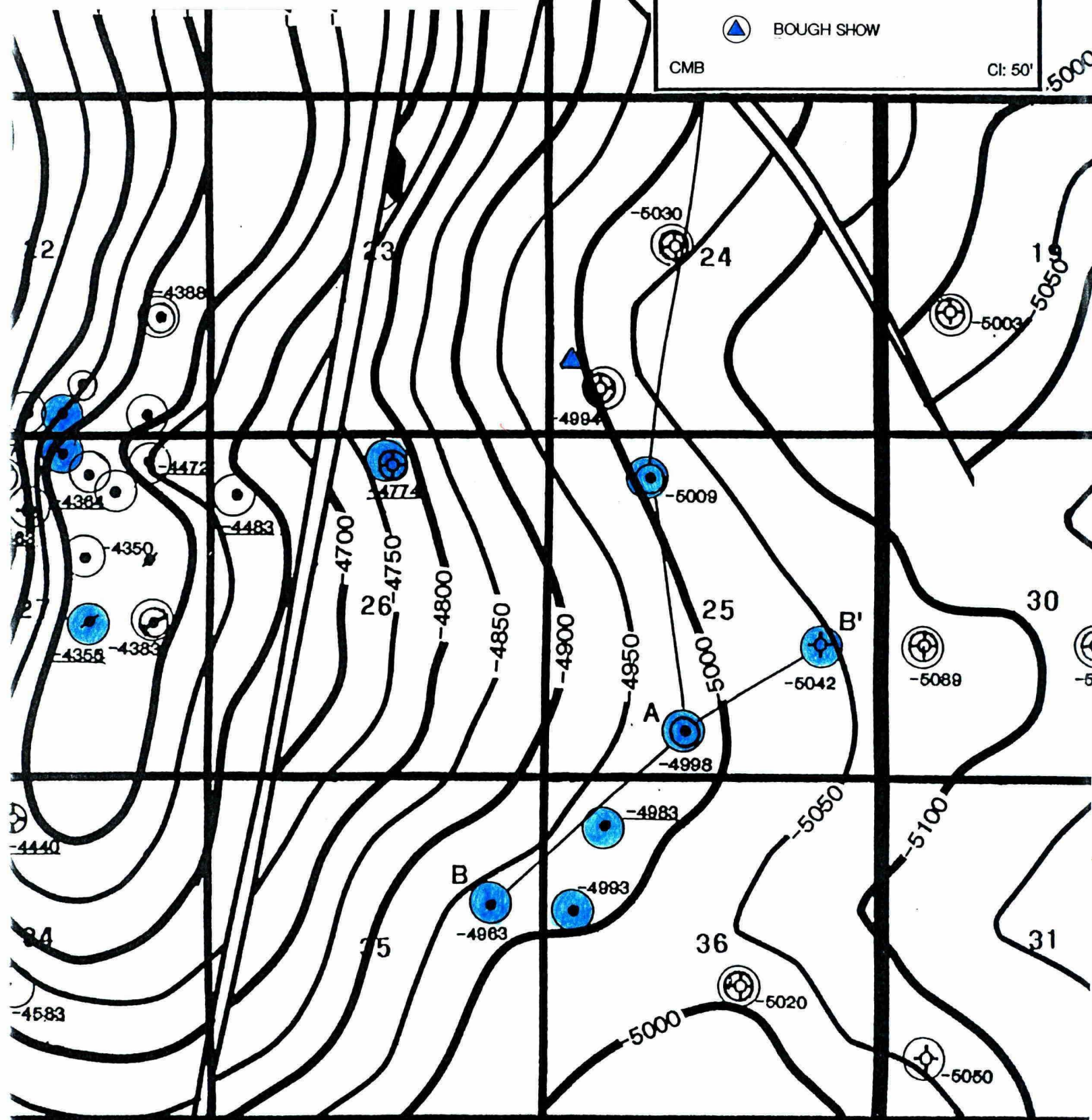
BOUGH PRODUCTION



BOUGH SHOW

CMB

CI: 50'



BEFORE THE

OIL CONSERVATION DIVISION

NEW MEXICO DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES

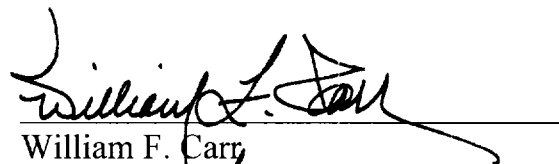
IN THE MATTER OF THE APPLICATION
OF MANZANO OIL CORPORATION
FOR POOL CREATION AND
SPECIAL POOL RULES,
CHAVES COUNTY, NEW MEXICO.

CASE NO. 11504

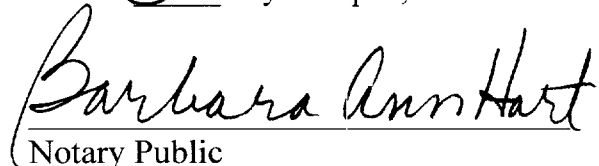
AFFIDAVIT

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

William F. Carr, authorized representative of Manzano Oil Corporation, the Applicant herein, being first duly sworn, upon oath, states that in accordance with the notice provisions of Rule 1207 of the New Mexico Oil Conservation Division the Applicant has attempted to find the correct addresses of all interested persons entitled to receive notice of this application and that notice has been given at the addresses shown on Exhibit "A" attached hereto as provided in Rule 1207.


William F. Carr

SUBSCRIBED AND SWORN to before me this 3rd day of April, 1996.


Notary Public

My Commission Expires:

March 28, 2000

EXHIBIT A

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Amoco Production Company
Regulatory Affairs
Post Office Box 3092
Houston, TX 77253
Attn: Jerry West

Julian Ard
4808 Westridge
Fort Worth, TX 76116

**BEFORE THE
OIL CONSERVATION DIVISION**
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 6

**AFFIDAVIT,
Page 2**

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

CAMPBELL, CARR & BERGE, P.A.
LAWYERS

MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
MARK F. SHERIDAN

MICHAEL H. FELDEWERT
TANNIS L. FOX
TANYA M. TRUJILLO
PAUL R. OWEN

JACK M. CAMPBELL
OF COUNSEL

JEFFERSON PLACE
SUITE 111C NORTH GUADALUPE
POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87504-2208
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

March 12, 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Re: Application of Manzano Oil Corporation for Pool Creation and Special Pool Rules, Chaves County, New Mexico

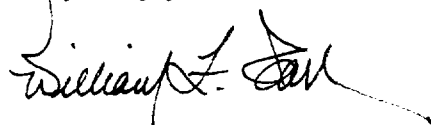
Gentlemen:

This letter is to advise you that Manzano Oil Corporation has filed the enclosed application with the New Mexico Oil Conservation Division seeking an order creating a new pool for production from the Bough "C" formation and promulgating Special Rules and Regulations for the new pool to be located in portions of Section 16, Township 14 South, Range 30 East, N.M.P.M., Chaves County, New Mexico providing for 80-acre spacing or proration units and special well location requirements.

This application has been set for hearing before a Division Examiner on April 4, 1996. You are not required to attend this hearing, but as an owner of an interest that may be affected by this application, you may appear at the hearing and present testimony. Failure to appear at that time and become a party of record will preclude you from challenging the matter at a later date.

Parties appearing in cases have been requested by the Division (Memorandum 2-90) to file a Prehearing Statement substantially in the form prescribed by the Division. Prehearing statements should be filed by 4:00 o'clock p.m. on the Friday before a scheduled hearing.

Very truly yours,



WILLIAM F. CARR
ATTORNEY FOR MANZANO OIL CORPORATION
WFC:mlh
Enc.

Is your **RETURN ADDRESS** completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- 1. ☐ Addressee's Address
 - 2. ☐ Restricted Delivery
- Consult postmaster for fee.

3. Article Addressed to:

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

4a. Article Number

P326 931 968

4b. Service Type

- ☐ Registered ☐ Certified
- ☐ Express Mail ☐ Insured
- ☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

MAR 14 1996

8. Addressee's Address (Only if requested and fee is paid)

Received By **GRIGGS**

6. Signature (Addressee or Agent)

[Signature]

PS Form 3811, December 1994

Domestic Return Receipt

Thank you for using Return Receipt Service.

P 326 931 968

US Postal Service

Receipt for Certified Mail

Yates Petroleum Corporation
105 South Fourth Street
Artesia, New Mexico 88210

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	March 12, 1996

PS Form 3800, April 1995

CAMPBELL, CARR & BERGE, P.A.
LAWYERS

MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
MARK F. SHERIDAN

MICHAEL H. FELDEWERT
TANNIS L. FOX
TANYA M. TRUJILLO
PAUL R. OWEN

JACK M. CAMPBELL
OF COUNSEL

JEFFERSON PLACE
SUITE 1 - 110 NORTH GUADALUPE
POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87504-2208
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

March 12, 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Amoco Production Company
Regulatory Affairs
Post Office Box 3092
Houston, TX 77253
Attn: Jerry West

Re: Application of Manzano Oil Corporation for Pool Creation and Special Pool
Rules, Chaves County, New Mexico

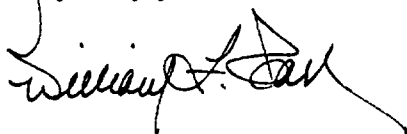
Dear Mr. West:

This letter is to advise you that Manzano Oil Corporation has filed the enclosed application with the New Mexico Oil Conservation Division seeking an order creating a new pool for production from the Bough "C" formation and promulgating Special Rules and Regulations for the new pool to be located in portions of Section 16, Township 14 South, Range 30 East, N.M.P.M., Chaves County, New Mexico providing for 80-acre spacing or proration units and special well location requirements.

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Very truly yours,



WILLIAM F. CARR
ATTORNEY FOR MANZANO OIL CORPORATION
WFC:mlh
Enc.

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I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
 2. ☐ Restricted Delivery
- Consult postmaster for fee.

3. Article Addressed to:

Amoco Production Company
Post Office Box 3092
Houston, TX 77253
Attn: Jerry West

4a. Article Number

3326931969

4b. Service Type

- ☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery

MAR 15 1996

5. Received By: (Print Name)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)

X Marshall Martin

PS Form 3811, December 1994

Domestic Return Receipt

Thank you for using Return Receipt Service

P 326 931 969

US Postal Service

Receipt for Certified Mail

Amoco Production Company
Post Office Box 3092
Houston, TX 77253
Attn: Jerry West

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	March 12, 1996

PS Form 3800, April 1995

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LAWYERS

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JEFFERSON PLACE
SUITE 1110 NORTH GUADALUPE
POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87504-2208
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

March 12, 1996

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Julian Ard
4808 Westridge
Fort Worth, TX 76116

Re: Application of Manzano Oil Corporation for Pool Creation and Special Pool
Rules, Chaves County, New Mexico

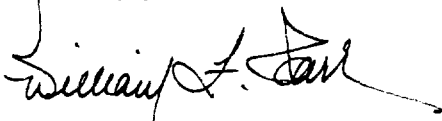
Dear Mr. Ard:

This letter is to advise you that Manzano Oil Corporation has filed the enclosed application with the New Mexico Oil Conservation Division seeking an order creating a new pool for production from the Bough "C" formation and promulgating Special Rules and Regulations for the new pool to be located in portions of Section 16, Township 14 South, Range 30 East, N.M.P.M., Chaves County, New Mexico providing for 80-acre spacing or proration units and special well location requirements.

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Very truly yours,



WILLIAM F. CARR
ATTORNEY FOR MANZANO OIL CORPORATION
WFC:mlh
Enc.

P 326 931 970

US Postal Service
Receipt for Certified Mail

Julian Ard
4808 Westridge
Fort Worth, TX 76116

Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date <i>March 12, 1996</i>	

PS Form 3800, April 1995

Is your **RETURN ADDRESS** completed on the reverse side?

SENDER: ■ Complete items 1 and/or 2 for additional services. ■ Complete items 3, 4a, and 4b. ■ Print your name and address on the reverse of this form so that we can return this card to you. ■ Attach this form to the front of the mailpiece, or on the back if space does not permit. ■ Write "Return Receipt Requested" on the mailpiece below the article number. ■ The Return Receipt will show to whom the article was delivered and the date delivered.		I also wish to receive the following services (for an extra fee): 1. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
3. Article Addressed to: Julian Ard 4808 Westridge Fort Worth, TX 76116		4a. Article Number P326931970	
5. Received By: (Print Name) <i>Julian Ard</i>		4b. Service Type <input type="checkbox"/> Registered <input checked="" type="checkbox"/> Certified <input type="checkbox"/> Express Mail <input type="checkbox"/> Insured <input type="checkbox"/> Return Receipt for Merchandise <input type="checkbox"/> COD	
6. Signature: (Addressee or Agent) <i>Julian Ard</i>		7. Date of Delivery 3-16-96	
8. Addressee's Address (Only if requested and fee is paid)		Domestic Return Receipt	

PS Form 3811, December 1994

Thank you for using Return Receipt Service.

"SV" VEST STATE #1
Section 16, Township 14 South, Range 30 East
Chaves County, New Mexico

<u>DATE</u>	<u>BOPD</u>	<u>MCFGPD</u>
2/27/96	162	282
2/28/96	126	276
2/29/96	184	257
3/01/96	152	271
3/02/96	178	271
3/03/96	124	271
3/04/96	188	267
3/05/96	<u>162</u>	<u>267</u>
Total	<u>1276</u>	<u>2162</u>

$$\text{AVG GOR} = \frac{2162000}{1276} = 1694 \text{ cu.ft./bbl}$$

Gas Gravity = 0.7

Oil API Gravity = 45.5° at 60° F

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 7

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

"SV" VEST STATE #1
Section 16, Township 14 South, Range 30 East
Chaves County, New Mexico

ESTIMATION OF FORMATION VOLUME FACTOR, FVF

$$\text{FVF} = \frac{\text{Wt. of 1 bbl oil + wt. gas in solution}}{(5.6) (144) \text{ dP/dh}}$$

Where dP/dh = pressure gradient, psi/ft. as determined from bottomhole pressure surveys at or near the oil pay.

$$\text{Wt of one barrel of 45.5° API oil} = (6.672 \text{ lbs/gal}) (42)$$

$$\text{Wt.} = 280.2 \text{ lbs.}$$

Wt. of gas in solution

$$\frac{(1694 \text{ ft}^3/\text{bbl}) (0.7 \text{ sp. Gr}) (28.96 \text{ lbs/1b-mole})}{379 \text{ ft}^3 / 1\text{b-mole}} = 90.6 \text{ lbs.}$$

$$\text{dP/dh} = 0.286 \text{ psi/ft. @ 8000' (Pressure Survey of 2/20/96)}$$

$$\text{FVF} = \frac{280.2 + 90.6}{(5.6) (144) (.286)} = 1.6$$

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 8

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

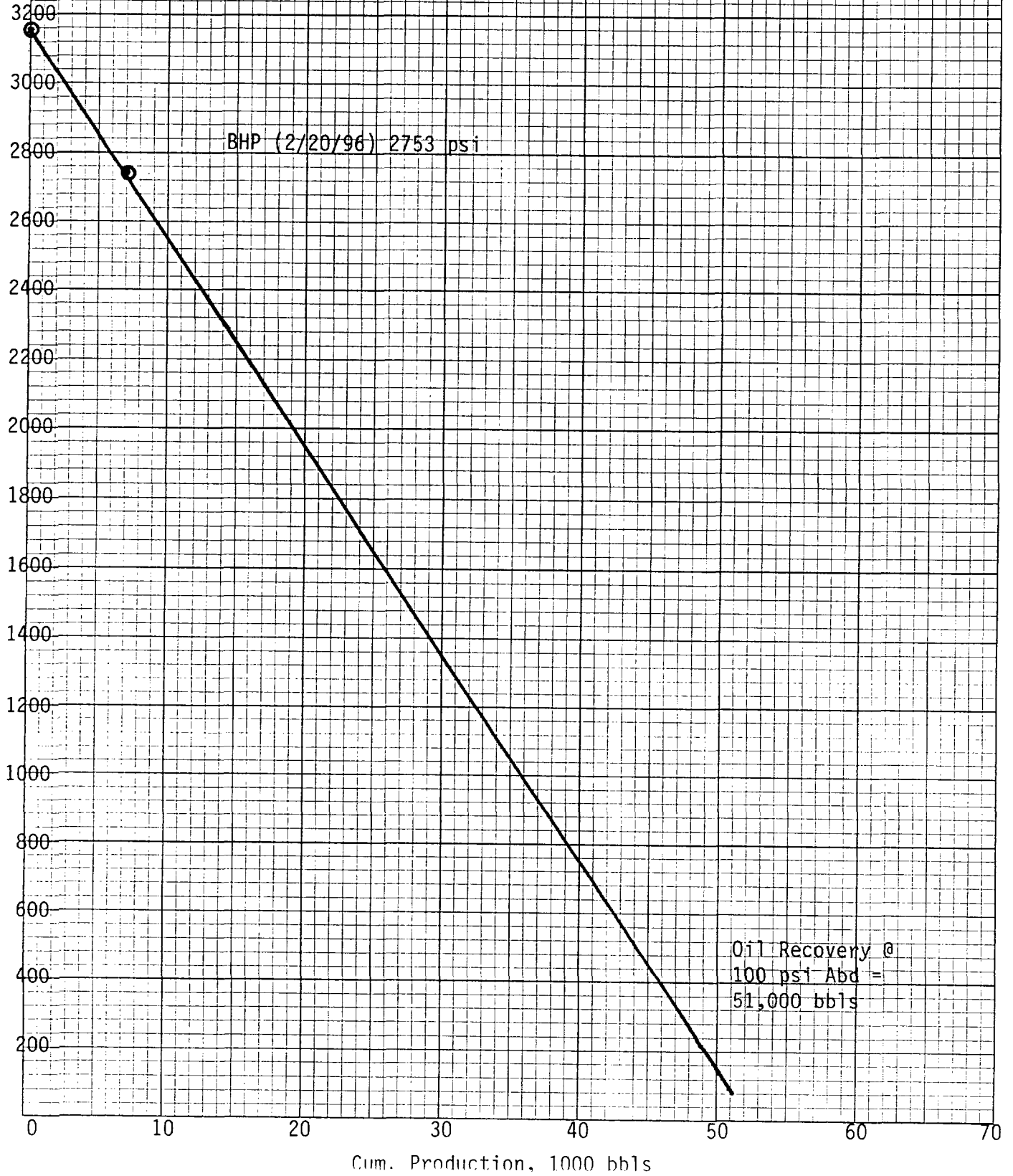
Bottom Hole Pressure, psi

"SV" Vest State No. 1
Sec 16, T14S, R30E
Chaves County, New Mexico

Original Pressure = 3161 psi

BHP (2/20/96) 2753 psi

Oil Recovery @
100 psi Abd =
51,000 bbls



**BEFORE THE
OIL CONSERVATION DIVISION**
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 9

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

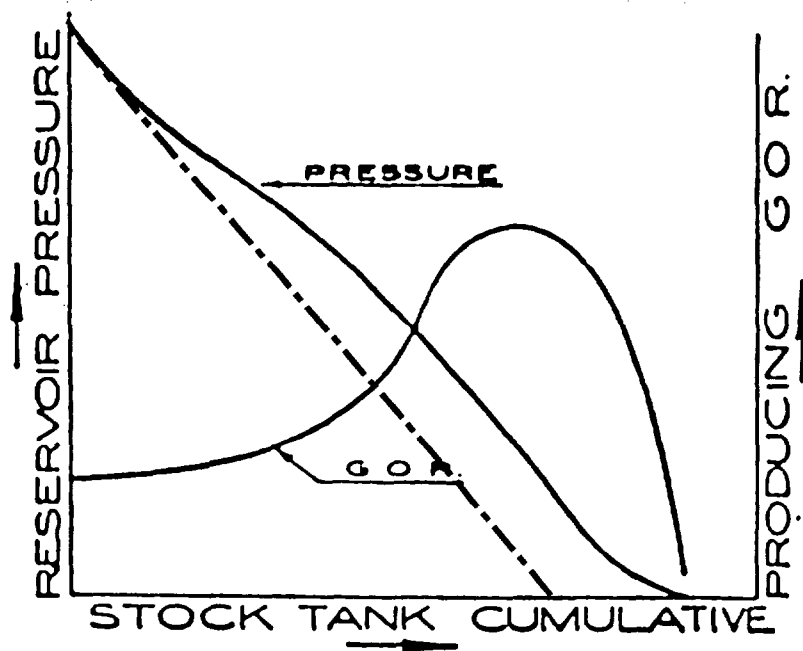


FIG. 161. Typical performance curves
for an internal-gas-drive reservoir.

From "Fundamentals of Reservoir Engineering"
by John C. Calhoun, Jr., Page 263.

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 10

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

**BEFORE THE
OIL CONSERVATION DIVISION**
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 11

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996

From
"Oil Reservoir
Engineering"
by Sylvain J. Pinson
Page 534.

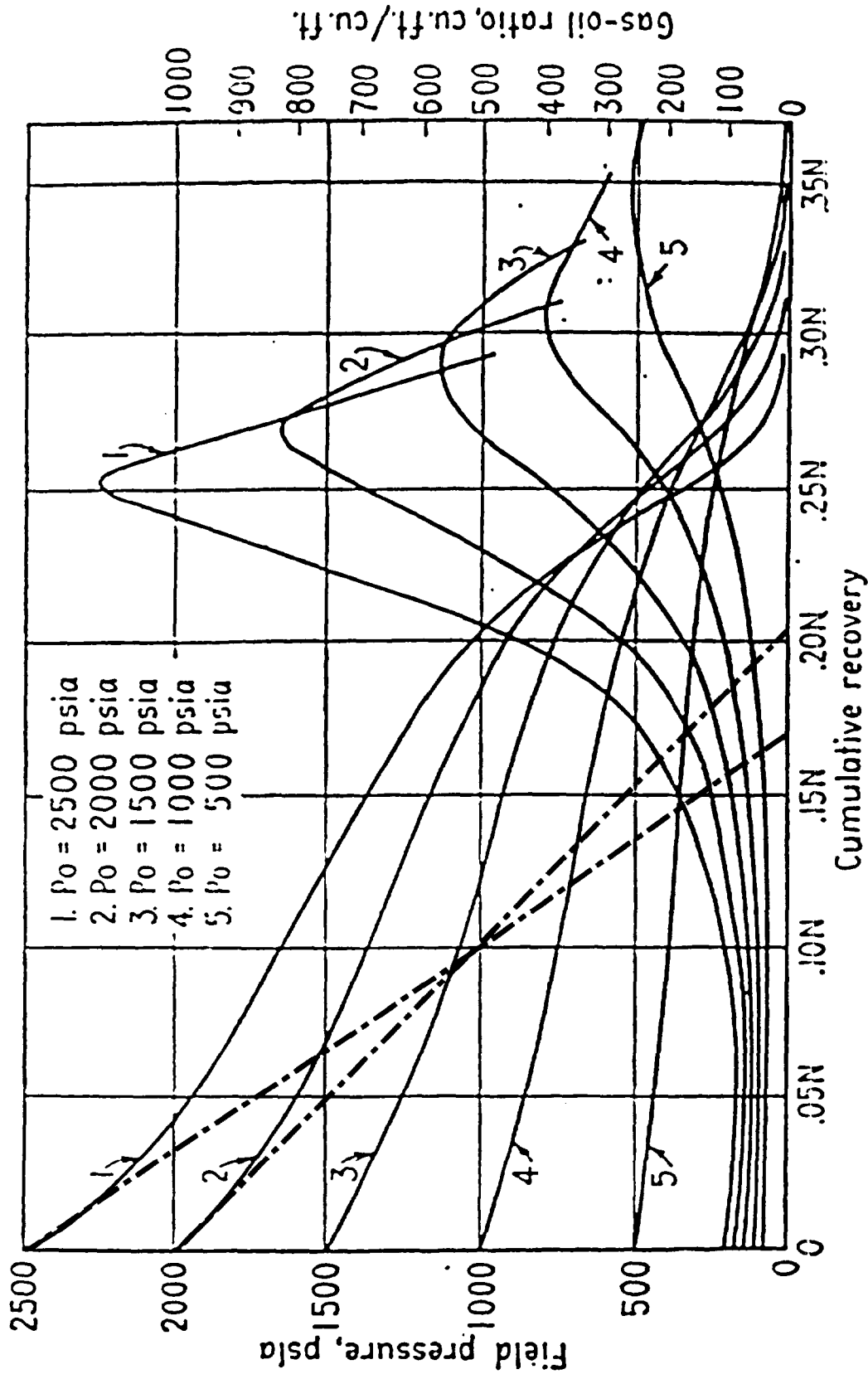


Fig. 10-26a. Theoretical reservoir performance at various initial pressures by 'Turner' method; abandonment pressure 14.7 psia.

"SV" VEST STATE #1
Section 16, Township 14 South, Range 30 East
Chaves County, New Mexico

Areal Drainage w/20% Primary Recovery

Orig Oil in Place, N = $\frac{\text{Primary Recovery, Bbls}}{\text{Recovery Factor}}$

$$N = \frac{51,000 \text{ BO}}{0.2} = 255,000 \text{ bbls}$$

$$\text{Areal Drainage, A} = \frac{(N) (FVF)}{(7758 \frac{\text{bbl}}{\text{Ac-ft}}) (\text{pay, ft}) (\text{porosity}) (1-S_w)}$$

$$A = \frac{(255,000 \text{ bbls}) (1.6)}{(7758) (10) (.064) (1 - 0.32)}$$

Areal Drainage = 121 Acres

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 12

Submitted by: Manzano Oil Corporation

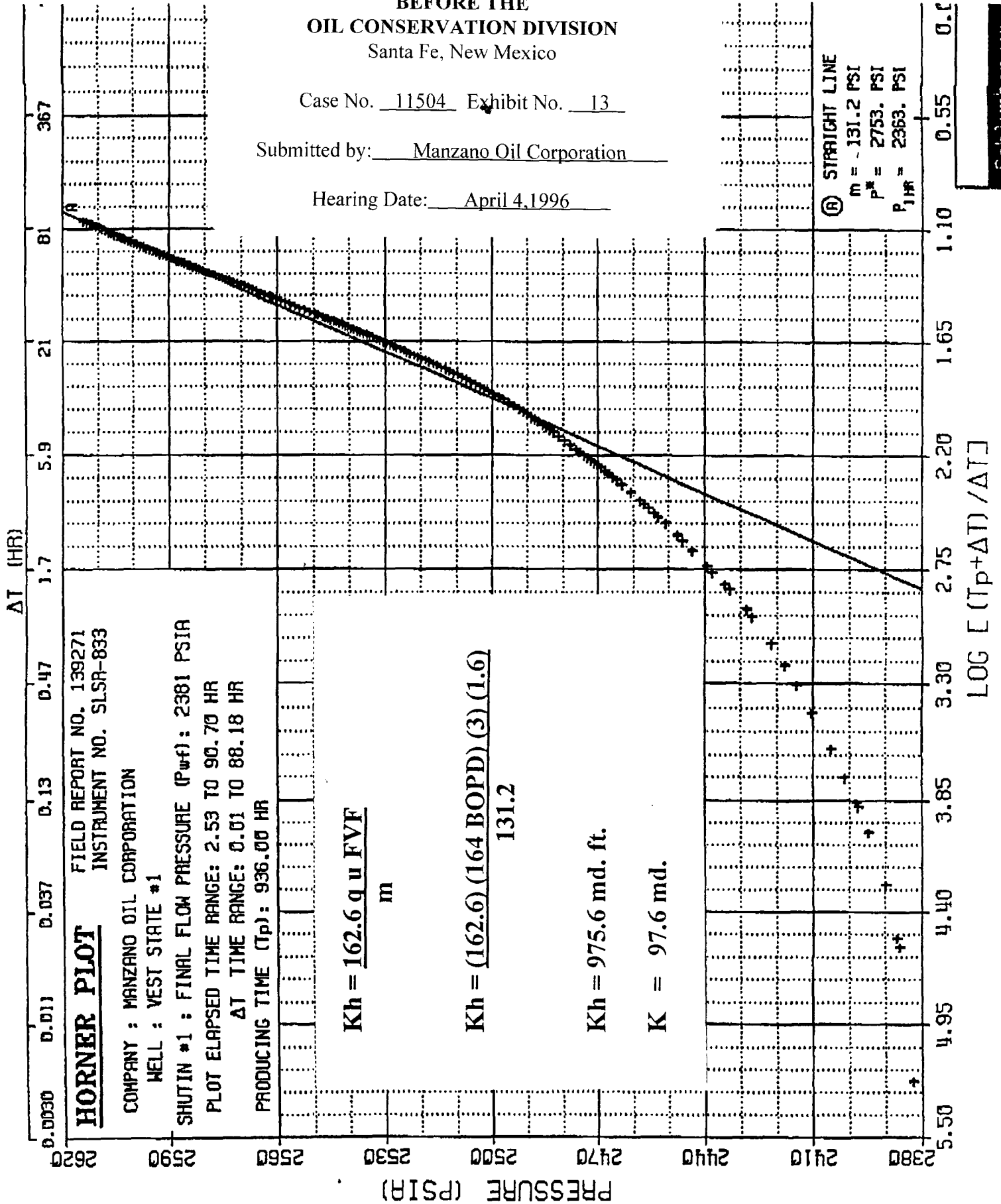
Hearing Date: April 4, 1996

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 13

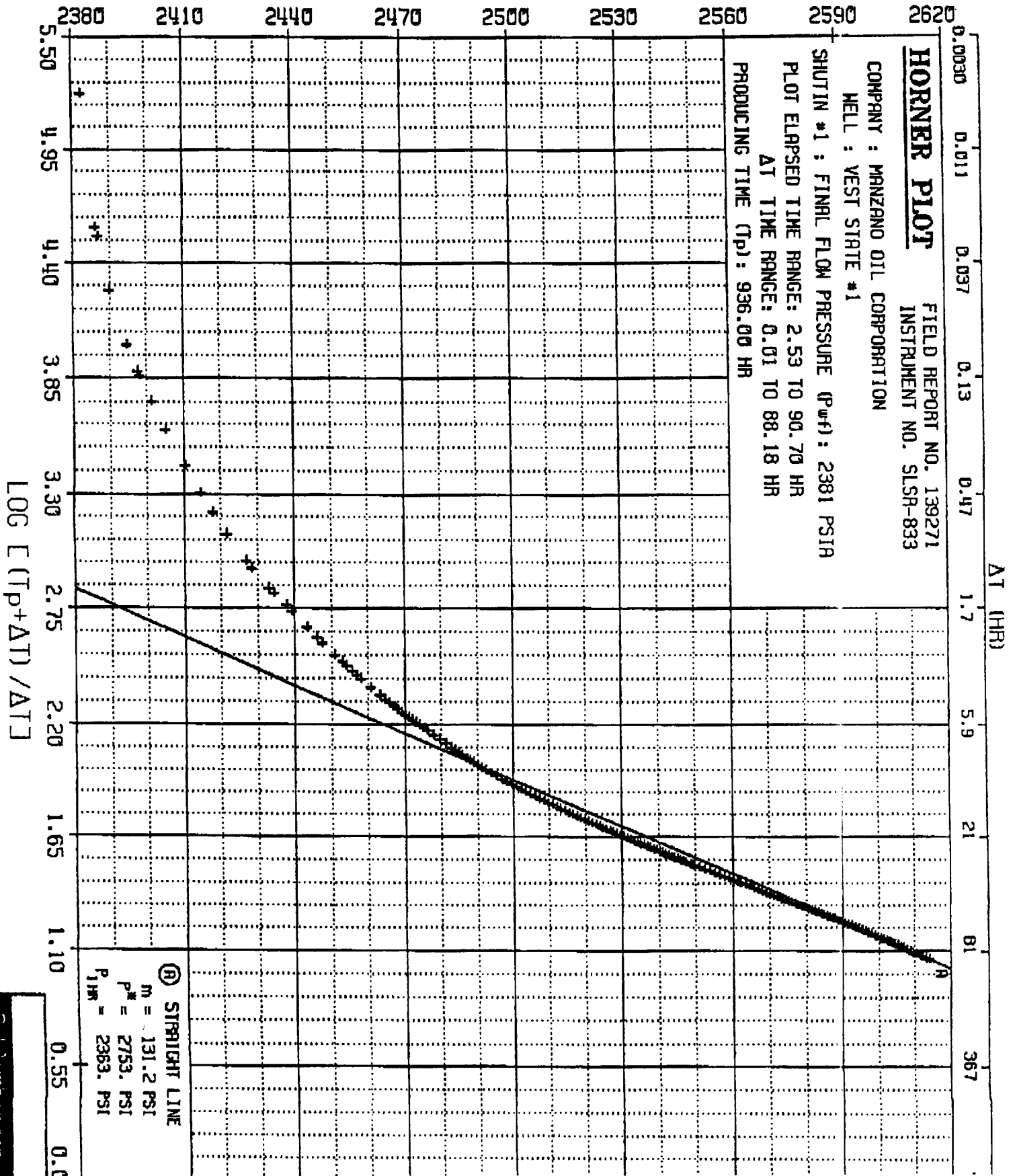
Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996



Schlumberger

PRESSURE (PSIA)



Pressure and Production History
Bough C Interval
Cuerno Largo Penn Field
Township 10 South, Range 32 East
Lea County, New Mexico

	Bottom Hole Pressure, psi <u>Date Taken</u>	Cum Oil Prod, Bbls <u>2-1-96</u>
Shell - MS State #1 NW/4NE/4 Section 26	3226 psi August 1965	P&A
Tom Brown - SWB State #1 SE/4SW/4 Section 25	3002 psi July 1971	300,000 +
Manzano Cox State #1 NW/4NW/4 Section 36	1838 psi November 1984	89,800
Manzano Yates State #1 SE/4NE/4 Section 35	1930 psi September 1990	44,100
Manzano Shell State #1 * NW/4NE/4 Section 26	1090 psi February 1996	New Well
Manzano Sidewinder #1 SW/4NW/4 Section 36	None Taken ** January 1991	63,900
Manzano Diamondback #1 NE/4NW/4 Section 25	None Taken ** April 1992	78,800
Manzano Tenneco State #1 NE/4SE/4 Section 25	None Taken ** August 1992	23,900
	TOTAL	600,500

* Twin to Shell - MS State #1

** Date of First Production

BEFORE THE
OIL CONSERVATION DIVISION
Santa Fe, New Mexico

Case No. 11504 Exhibit No. 14

Submitted by: Manzano Oil Corporation

Hearing Date: April 4, 1996