

CASE NO.

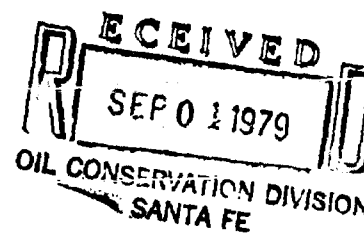
63/3

APPLICATION,
TRANSCRIPTS,
SMALL EXHIBITS,

ETC.

DALPORT OIL CORPORATION
3471 FIRST NATIONAL BANK BLDG.
DALLAS, TEXAS 75202

August 30, 1979



Maralo, Inc.
P. O. Box 832
Midland, Texas 79702

RE: Maralo Jalmat Yates Unit
Jalmat Pool
Lea County, New Mexico

Gentlemen:

Dalport Oil Corporation is the Operator of one or more wells offsetting the captioned unit.

Reference is made to the New Mexico Oil Conservation Commission Case 6313, Order R-5816, entered September 26, 1978.

As an offset Operator, you are advised that Dalport Oil Corporation objects to drilling the proposed ten injection wells in Sections 12 and 13, Township 25 South, Range 36 East, and in Section 18, Township 25 South, Range 37 East, N.M.P.M., and does not consent to a lease line agreement. In our opinion such unorthodox locations would result in violation of the correlative rights of Dalport Oil Corporation, and would further result in waste of hydrocarbons underlying the Dalport acreage.

Respectfully submitted,

DALPORT OIL CORPORATION

By

W. L. Todd
W. L. Todd, Jr. - President

cc: New Mexico Oil Conservation Commission ✓
(Richard Stamets)

cc: Conrad E. Coffield, Esq.

cc: S. B. Christy IV, Esq.

cc: Bill Seltzer

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

November 27, 1979

Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield
& Hensley
Attorneys at Law
P. O. Box 3580
Midland, Texas 79702

Re: Maralo Inc.
Jalmat Yates Unit
Lea County, New Mexico
Case 6313, Order R-5816

Dear Mr. Coffield:

Your letter of November 16, 1979, with a lease line agreement from Reserve Oil, Inc., an offset operator to the subject project, has been received.

Based upon this agreement Maralo may commence injection into Unit Well No. 18, providing that all other requirements of Division Order R-5816 are met within the time provided.

Yours very truly,

JOE D. RAMEY
Director

JDR/RLS/fd

cc: Jerry Sexton

C
O
P
Y

LAW OFFICES

HINKLE, COX, EATON, COFFIELD & HENSLEY

1000 FIRST NATIONAL BANK TOWER

POST OFFICE BOX 3580

MIDLAND, TEXAS 79702

(915) 683-4691

OF COUNSEL

CLARENCE E. HINKLE

W. E. BONDURANT, JR. (1914-1973)

ROSWELL, NEW MEXICO OFFICE

600 HINKLE BUILDING

(505) 622-6510

ONLY ATTYS. COFFIELD, MARTIN, BOZARTH,
BOHANNON, FOSTER, ALLEN, ALLEN & BURFORD
LICENSED IN TEXAS

LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
STUART D. SHANOR
C. D. MARTIN
PAUL J. KELLY, JR.
JAMES H. BOZARTH

DOUGLAS L. LUNSFORD
PAUL M. BOHANNON
J. DOUGLAS FOSTER
K. DOUGLAS PERRIN
C. RAY ALLEN
JACQUELINE W. ALLEN
T. CALDER EZZELL, JR.
WILLIAM B. BURFORD
JOHN S. NELSON
RICHARD E. OLSON

November 16, 1979

Mr. Richard Stamets
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

OIL CONSERVATION DIVISION
SANTA FE

Re: Jalmat Yates Unit
Lea County, New Mexico

Dear Dick:

Transmitted herewith you will find a reproduced copy of a Line Agreement between Maralo and Reserve Oil, Inc., relative to Unit Wells No. 11 and No. 18 for the Jalmat Yates Unit as shown on the plat attached to that Line Agreement.

In line with authority recently requested and granted by the Director for the Oil Conservation Division relative to other wells involved with the Jalmat Yates Unit, we now respectfully request the Oil Conservation Division's permission to proceed with the drilling of Well No. 18.

With respect to Wells No. 5, 10 and 11, no agreement has yet been reached with Dalport which is the Operator of the acreage immediately offsetting these last three remaining wells. As soon as we have any additional word in this regard, we will advise you of the situation with respect to Dalport.

If additional information or data is needed in order for the Division to make the determination sought and the permission granted to proceed with the drilling of the No. 18 well, please let me known as soon as possible.

Thank you.

Very truly yours,

HINKLE, COX, EATON,
COFFIELD & HENSLEY

Conrad E. Coffield

CEC:cl
Enclosures

October 29, 1979

Reserve Oil, Inc.
312 HBF Building
Midland, Texas 79701

Re: Maralo, Inc. Jalmat Yates Unit
Lea County, New Mexico
Water Injection Wells

Gentlemen:

Reserve Oil, Inc. is the operator of the South Langlie Jal Unit and Maralo, Inc. is the operator of the Maralo Jalmat Yates Unit both located in Lea County, New Mexico.

Each of the parties hereto desires to cooperate in the waterflooding of their formations of the respective units and it is agreed among the parties hereto that Maralo, Inc. shall at their sole cost and expense drill, complete and inject water into their #11 and #18 line wells as shown on the plat attached hereto and made a part hereof, in and to the Yates formation and in and to the SEVEN RIVERS-QUEEN formation at the intervals of 3390 to 3460 feet as indicated on the Maralo Jalmat Yates Unit well #20 located 1250 FNL & 70 FWL of Section 18, T25S-R37E, Lea County, New Mexico by the Density Neutron Log run on 9-4-79. A copy of the log section is attached hereto.

And in addition thereto Maralo, Inc. further agrees at their sole cost and expense, at their convenience to run a survey once a year into the above wells in order to determine that water is being injected in and to the SEVEN RIVERS-QUEEN formation as above indicated.

Reserve Oil, Inc. agrees, at their sole cost and expense to continue the injection of water into the SEVEN RIVERS-QUEEN formation of their South Langlie Jal Unit, Lea County, New Mexico.

It is further agreed that each party hereto shall carry on waterflood operations in the manner herein provided, until the property it operates no longer derives any reasonable benefit from same. It is the intention of the parties hereto that nothing herein contained shall be construed to require either party hereto to continue to operate any water input well if such operation is no longer economically profitable to it.

If the foregoing correctly sets forth our understanding of our agreement to cooperate and to protect the respective units and formations, please signify your acceptance in the space provided below.

Yours very truly,

MARALO, INC.

By *Bill Lowery*

ACCEPTED AND AGREED TO THIS

8TH DAY OF Nov., 1979.

RESERVE OIL, INC.

By *E. M. Johnson*

MARALO

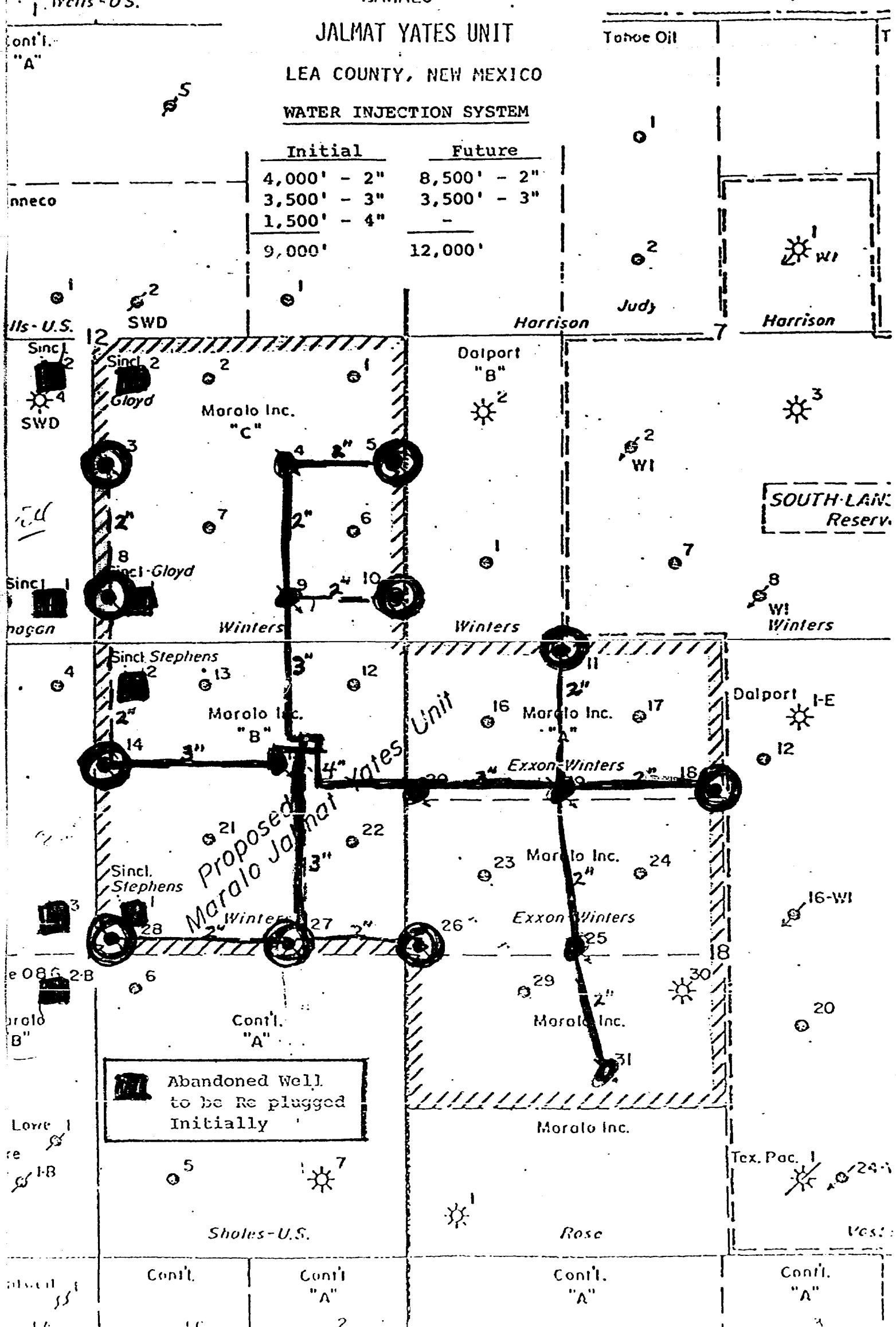
Wells - U.S.

U.S

LEA COUNTY, NEW MEXICO

WATER INJECTION SYSTEM

<u>Initial</u>	<u>Future</u>
4,000' - 2"	8,500' - 2"
3,500' - 3"	3,500' - 3"
1,500' - 4"	-
<u>9,000'</u>	<u>12,000'</u>





Station	Ground Level	Elev. 3155.05'
Instrument Datum	K. B. - 11	Elev. K.B. 3166.05'
Point Measured From	Fl. Above Perm. Datum	D.F. 3165.05'
Point Measured From	Kelly Bushing	G.L. 3155.05'



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR
LARRY KENOE
SECRETARY

November 6, 1979

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

Mr. Conrad E. Coffield
Hinkle, Cox, Eaton, Coffield
& Hensley
Attorneys at Law
P. O. Box 3590
Midland, Texas 79702

Re: Maralo Inc.
Jalmat Yates Unit
Lea County, New Mexico
Case 6313, Order R-5816

Dear Mr. Coffield:

Your letter of November 2, 1979, with waivers from West-side offset operators to the subject project has been received.

Based upon these waivers Maralo may commence injection into Unit Wells Nos. 3, 8, 14, 26, 27, and 28 providing that all other requirements of Division Order R-5816 are met within the time provided.

Yours very truly,

JOE D. RAMEY
Director

JDR/RLS/fd

cc: Jerry Sexton

LAW OFFICES

HINKLE, COX, EATON, COFFIELD & HENSLEY

1000 FIRST NATIONAL BANK TOWER

POST OFFICE BOX 3580

MIDLAND, TEXAS 79702

(915) 683-4691

OF COUNSEL

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PAUL M. BOHANNON
J. DOUGLAS FOSTER
K. DOUGLAS PERRIN
C. RAY ALLEN
JACQUELINE W. ALLEN
T. CALDER EZZELL, JR.
WILLIAM B. BURFORD
JOHN S. NELSON
RICHARD E. OLSON

November 2, 1979

Case 6313

Mr. Richard Stamets
Oil Conservation Division
Post Office Box 2088
Santa Fe, New Mexico 87501

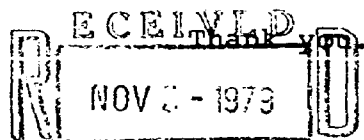
Re: Jalmat Yates Unit, Lea
County, New Mexico

Dear Dick:

Transmitted herewith you will find reproduced copies of Waivers from Atlantic and Conoco in connection with line wells on the West side of the Jalmat Yates Unit.

These enclosed Waivers have been obtained by Maralo, as Operator of the Unit, in line with the provisions of Order No. R-5816 approving the Unit with certain conditions relating to the drilling of line wells. The conditions included the provision that Maralo was to obtain lease line agreements or waivers from the offsetting operators. As matters now stand, Maralo is still in negotiations with the operators offsetting the Jalmat Yates Unit to the East. However, Maralo would like to proceed with the drilling of the line wells on the West side of the Unit as soon as is reasonably practicable. Accordingly, the enclosed Waivers are submitted, and we respectfully request the Oil Conservation Division's permission to proceed with the drilling of the line wells on the West side of the Unit.

If additional information or data is needed in order for the Division to make the determination sought and the permission granted to proceed with the drilling of the well, please let me know as soon as possible.



OIL CONSERVATION DIVISION
SANTA FE

Very truly yours,

HINKLE, COX, EATON,
COFFIELD & HENSLEY

Conrad E. Coffield
Conrad E. Coffield

CEC:rh
Enclosures

BILL SELTZER
514 PETROLEUM BUILDING
MIDLAND, TEXAS 79701

August 28, 1979

Mr. John R. Kemp
Continental Oil Co.
Box 460
Hobbs, New Mexico 88240

RE: Maralo Inc. Jalmat Yates Unit
Lea County, New Mexico

Dear Mr. Kemp

We have requested you to join us in a lease line agreement for the wells shown on the attached plat.

We desire to commence operations immediately toward the drilling of injection wells on the lease line and we request that you consent to and waive any objections to Maralo Inc. drilling the lease line wells as proposed.

Your earliest consideration will be appreciated.

Sincerely

Bill Seltzer
Bill Seltzer

The undersigned hereby consents to and waives any objections to Maralo Inc drilling the line wells in the Maralo Inc Jalmat Yates Unit as shown on the attached plat.

Consent to this 15th day of October, 1979.

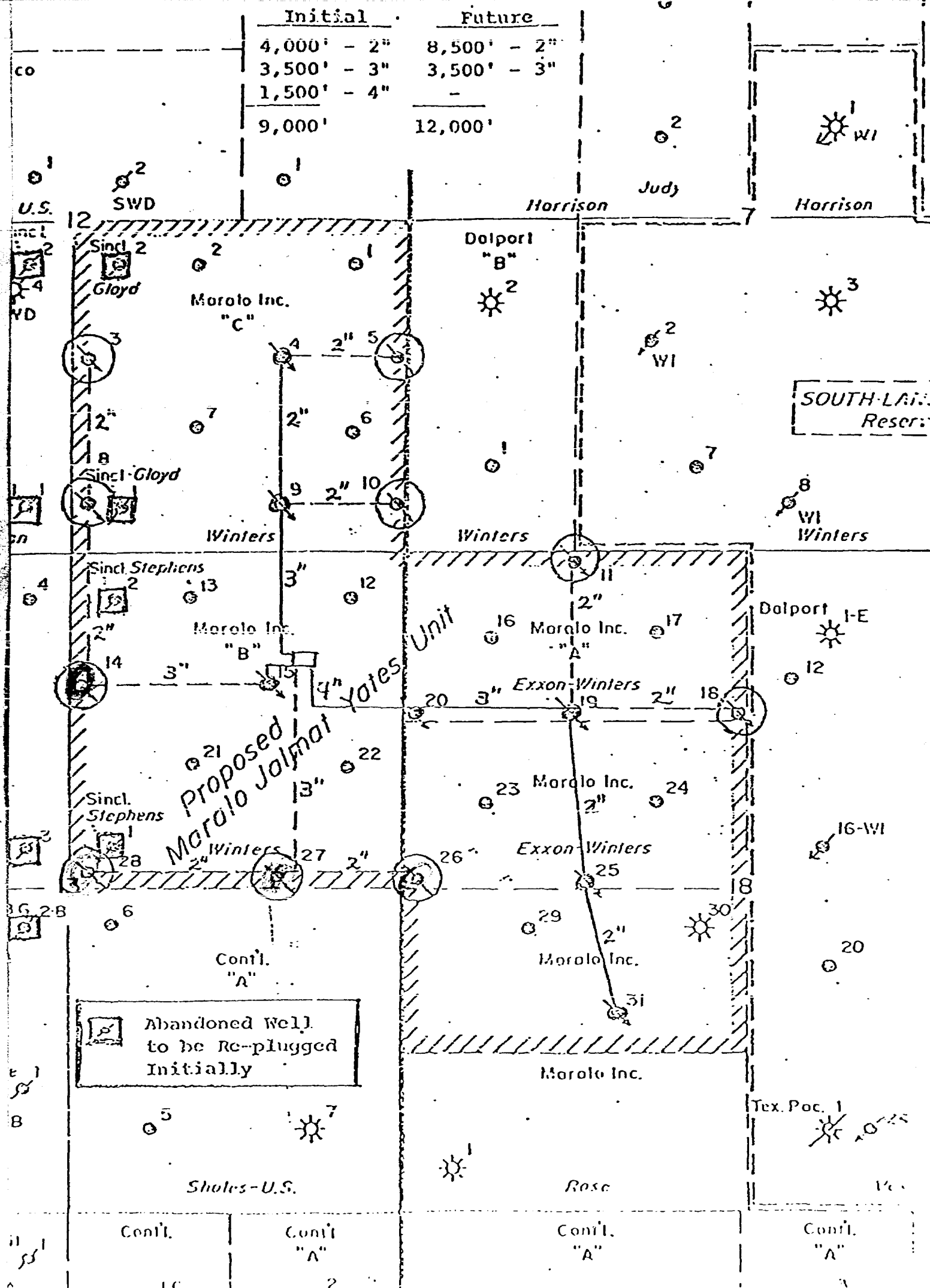
~~Continental Oil Company~~ CONOCO INC.

By *L. P. Thompson*
L. P. Thompson

RECEIVED
NOV 7 - 1979
OIL CONSERVATION DIVISION
SANTA FE

WATER INJECTION SYSTEM

<u>Initial</u>	<u>Future</u>
4,000' - 2"	8,500' - 2"
3,500' - 3"	3,500' - 3"
1,500' - 4"	-
<u>9,000'</u>	<u>12,000'</u>



BILL SELTZER
514 PETROLEUM BUILDING
MIDLAND, TEXAS 79701

August 28, 1979

RECEIVED
AUG 29 1979

ATLANTIC RICHFIELD COMPANY
LAND DEPT.

Mr. Curt Krehbiel
Atlantic Richfield Company
Midland, Texas

Re: Maralo Jalmat Yates Unit, Lea Co. N.M.

Dear Mr. Krehbiel

We have requested you to join us in a lease line agreement for the wells shown on the attached plat.

We desire to commence operations immediately toward the drilling of injection wells on the lease line and we request that you consent to and waive any objections to Maralo Inc. drilling the lease line wells as proposed.

Your earliest reply will be appreciated.

Sincerely

Bill Seltzer
Bill Seltzer

The undersigned hereby consents and waives any objections to Maralo Inc drilling the line wells in the Maralo Inc. Jalmat Yates Unit as shown on the attached plat.

Consented to this 5 day of Sept 1979

Atlantic Richfield Company

By *J. L. Lueders*

RECEIVED
NOV 5 - 1979
OIL CONSERVATION DIVISION
SANTA FE

Wells - U.S.

MARALO

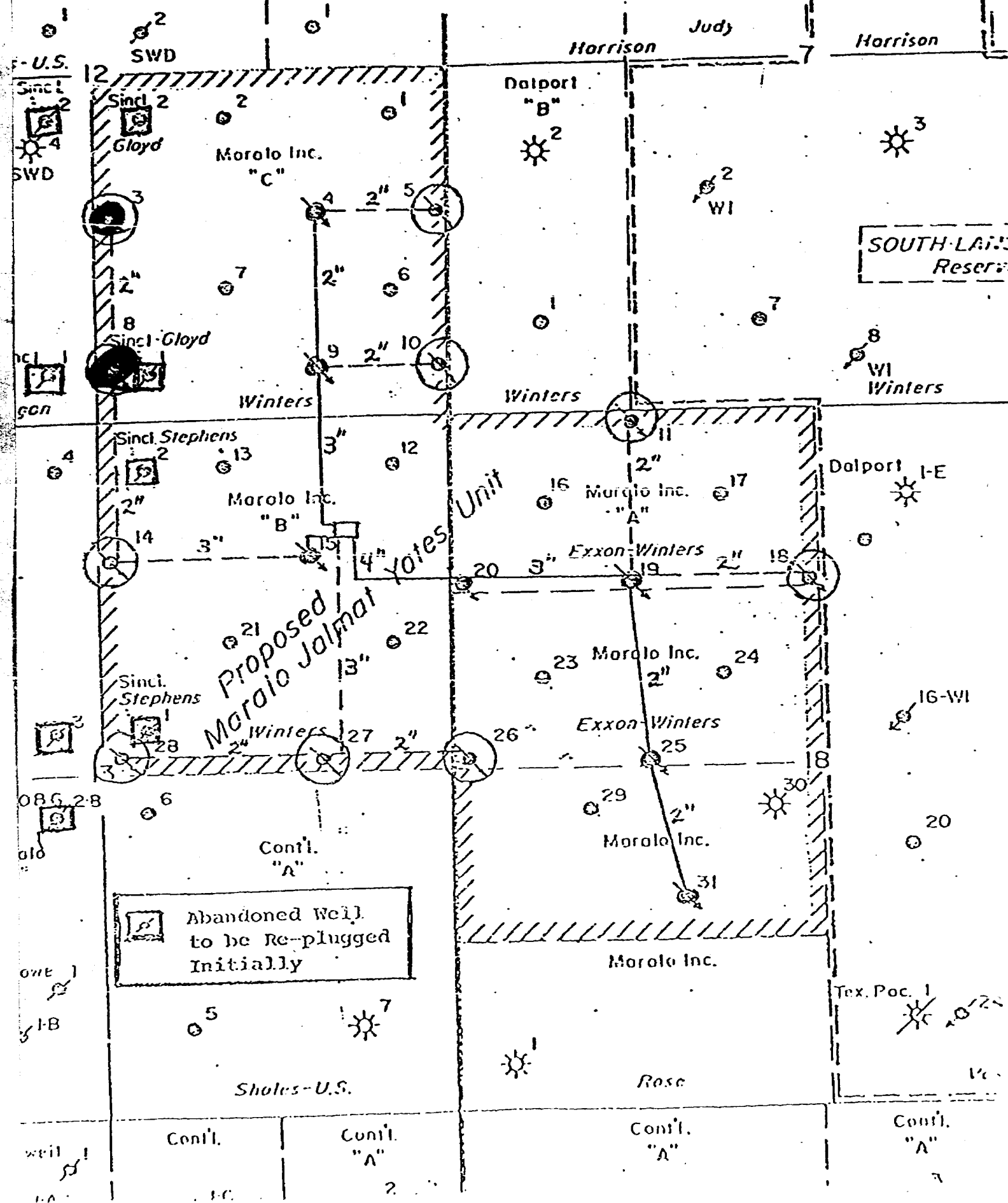
U.S.

JALMAT YATES UNIT

LEA COUNTY, NEW MEXICO

WATER INJECTION SYSTEM

Initial	Future
4,000' - 2"	8,500' - 2"
3,500' - 3"	3,500' - 3"
1,500' - 4"	-
9,000'	12,000'



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 5313
Order No. R-5816

APPLICATION OF MARALO, INC.
FOR A WATERFLOOD PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 11, 1978, at Santa Fe, New Mexico, before the Commission.

NOW, on this 26th day of September, 1978, the Commission, a quorum being present, having considered the testimony, 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, Maralo, Inc., seeks authority to institute a waterflood project on its Maralo Jalmat Yates Unit, Jalmat Pool, by the injection of water into the Yates formation through 7 injection wells to be drilled at unorthodox locations in Section 12 and 13, Township 25 South, Range 36 East, NMPM, and in Section 18, Township 25 South, Range 37 East, NMPM Lea County, New Mexico.

(3) That after obtaining lease line agreements with offset operators the applicant further seeks authority to inject water into the Yates formation through an additional 10 injection wells to be drilled at unorthodox locations in Sections 12 and 13, Township 25 South, Range 36 East and in Section 18, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico.

(4) That the majority of the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

-2-

Case No. 6313
Order No. R-5816

(5) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(6) That the evidence presented indicates that the following wells in Township 25 South, Range 36 East, NMPM, are in close proximity to the 7 injection wells for said project, and may not be adequately plugged and abandoned so as to cause water injected into the Yates formation to be contained in said formation:

<u>OPERATOR</u>	<u>LEASE NAME</u>	<u>WELL NO.</u>	<u>UNIT LETTER</u>	<u>SECTION</u>
Atlantic (Sinclair)	Gloyd	2	J	12
Atlantic (Sinclair)	W F Hanagan	2	K	12
Atlantic (Sinclair)	W F Hanagan	1	N	12
Atlantic (Sinclair)	Gloyd	1	O	12
Atlantic (Sinclair)	Stephens A	2	B	13
Continental	Sholes B-13	3	F	13
Atlantic (Sinclair)	Stephens A	1	G	13
Cities Service (Empire Oil & Gas)	Lindley B	2	K	13

(7) That the wells described in Finding No. (6) above could serve as avenues of water migration from the Yates zone to other zones or to the surface.

(8) That to prevent such migration of water from the Yates zone, the wells described in Finding No. (6) above, should be re-entered and plugged in a manner prescribed by the supervisor of the Hobbs District Office of the Oil Conservation Division of the New Mexico Energy and Minerals Department, hereinafter referred to as the "Division."

(9) That the wells within the project should be equipped to facilitate periodic testing of the annular space between strings of casings.

(10) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(11) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Maralo, Inc., is hereby authorized to institute a waterflood project on its Maralo Jalmat Yates Unit, Jalmat Pool, by the injection of water into the Yates formation through the following-described wells to be drilled at unorthodox locations in Sections 12 and 13, Township 25 South, Range 36 East, NMPM, and in Section 18, Township 25 South, Range 37 East, NMPM, Lea County, New Mexico:

UNIT WELL

<u>NO.</u>	<u>LOCATION</u>
4	1575' FSL and 1050' FEL, Sec. 12, T-25-S, R-36-E
9	400' FSL and 1000' FEL, Sec. 12, T-25-S, R-36-E
15	1050' FNL and 1100' FEL, Sec. 13, T-25-S, R-36-E
19	1300' FNL and 1350' FWL, Sec. 18, T-25-S, R-37-E
20	1250' FNL and 70' FWL, Sec. 18, T-25-S, R-37-E
25	2500' FNL and 1550' FWL, Sec. 18, T-25-S, R-37-E
31	1650' FSL and 1700' FWL, Sec. 18, T-25-S, R-37-E

(2) That upon a proper showing that lease line agreements have been obtained with offset operators, the applicant shall be authorized to drill the following 10 injection wells at unorthodox locations:

UNIT WELL

<u>NO.</u>	<u>LOCATION</u>
3	1550' FSL and 2500' FEL, Sec. 12, T-25-S, R-36-E
5	1550' FSL and 70' FEL, Sec. 12, T-25-S, R-36-E
8	350' FSL and 2500' FEL, Sec. 12, T-25-S, R-36-E
10	400' FSL and 50' FEL, Sec. 12, T-25-S, R-36-E
11	50' FNL and 1350' FWL, Sec. 18, T-25-S, R-37-E
14	1100' FNL and 2530' FEL, Sec. 13, T-25-S, R-36-E
18	1300' FNL and 2580' FWL, Sec. 18, T-25-S, R-37-E
26	2600' FNL and 50' FWL, Sec. 18, T-25-S, R-37-E
27	2550' FNL and 1100' FEL, Sec. 13, T-25-S, R-36-E
28	2540' FNL and 2530' FEL, Sec. 13, T-25-S, R-36-E

(3) That injection into each of said wells should be through internally coated tubing, set in a packer which shall be located as near as practicable to the uppermost perforation; that the casing-tubing annulus of each injection well shall be tested for leaks, be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device, and that the injection wells or system shall be equipped in such a manner as to limit wellhead injection pressure to no more than 600 psi.

Case No. 6313
Order No. R-5816

(4) That the Division Director may administratively authorize a pressure limitation in excess of 600 psi upon a showing by the operator that such higher pressure will not result in fracturing of the confining strata.

(5) That the wells within the project area shall be equipped with risers or in another acceptable manner such as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(6) That within 3 months after initiation of injection within the project, the following wells, all in Township 25 South, Range 36 East, NMPM, shall be re-entered and plugged in a manner prescribed by the supervisor of the Division's District Office at Hobbs:

<u>OPERATOR</u>	<u>LEASE NAME</u>	<u>WELL NO.</u>	<u>UNIT LETTER</u>	<u>SECTION</u>
Atlantic (Sinclair)	Gloyd	2	J	12
Atlantic (Sinclair)	W F Hanagan	2	K	12
Atlantic (Sinclair)	W F Hanagan	1	N	12
Atlantic (Sinclair)	Gloyd	1	O	12
Atlantic (Sinclair)	Stephens A	2	B	13
Continental	Sholes B-13	3	F	13
Atlantic (Sinclair)	Stephens A	1	G	13
Cities Service (Empire Oil & Gas)	Lindley B	2	K	13

(7) That the Unit operator shall notify the Division's Hobbs district office of the date and time of operations required by Order No. (6) of this Order so that the Division may at its option witness such operations.

(8) That the operator of the project, or of any affected nearby property, shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from around any producing well, the leakage of water or oil from any plugged and abandoned well within the project area or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(9) That the subject waterflood project is hereby designated the Maralo Jalmat Yates Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Division Rules and Regulations.

-5-

Case No. 6313
Order No. R-5816

(10) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules 704 and 1115 of the Division Rules and Regulations.

(11) 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 COMMISSION

PHIL R. LUCERO, Chairman



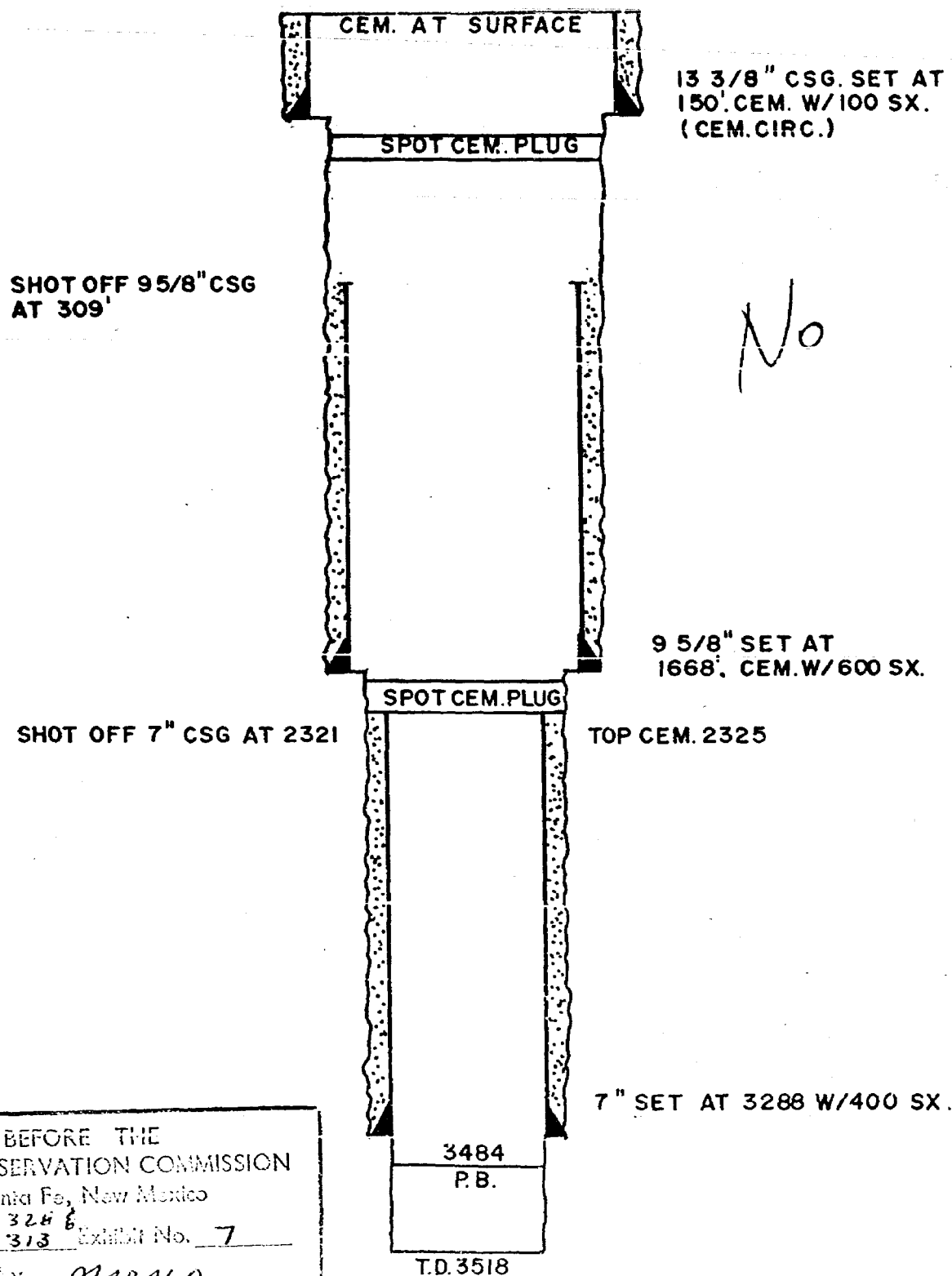

EMERY C. ARNOLD, Member


JOE D. RAMEY, Member & Secretary

S E A L

dr/

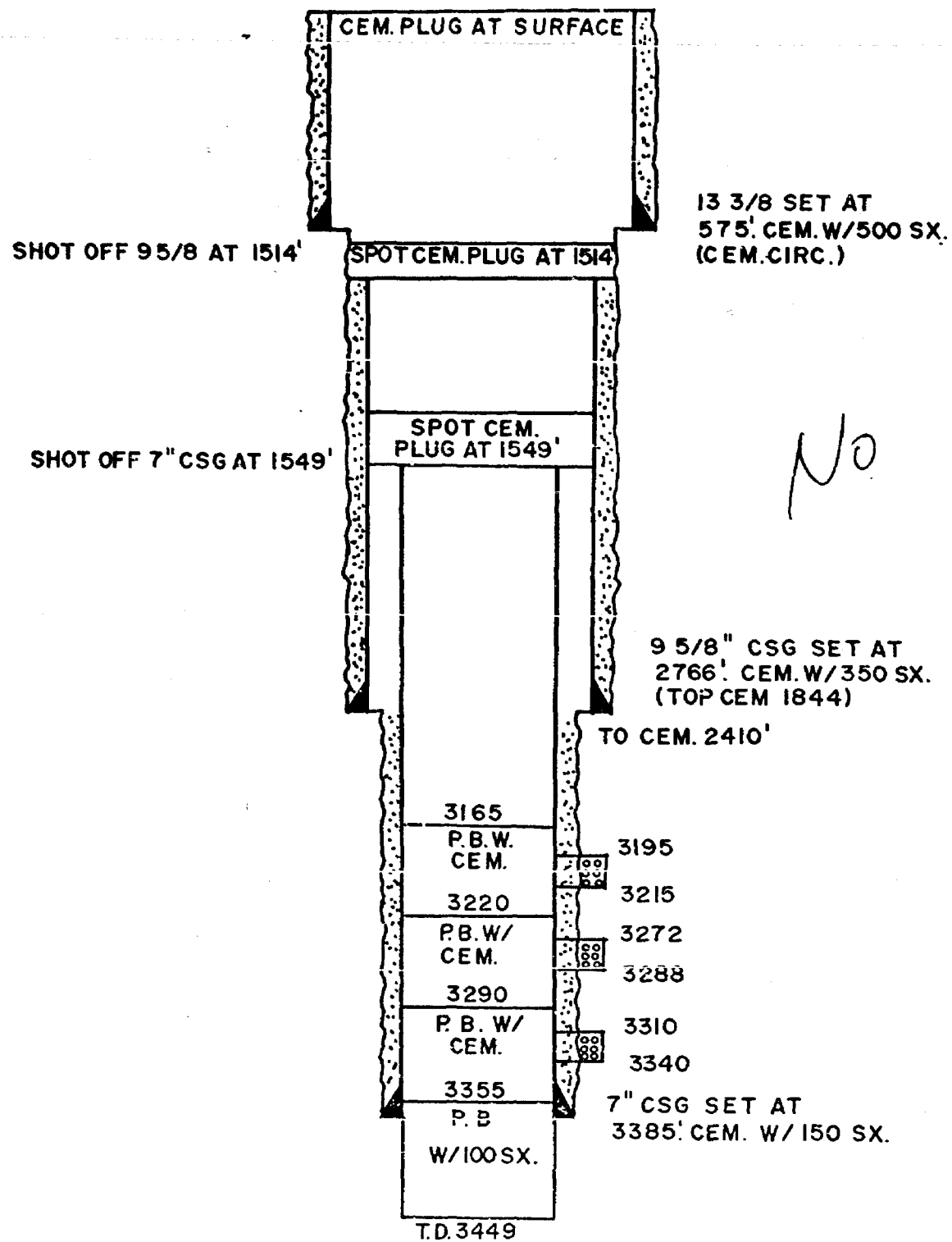
CONTINENTAL WELL A NO. 5
660' FNL & 1980' FEL
SECTION 12 T-25-S, R-36-E
(UNIT B)



BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 63248 Exhibit No. 7
Submitted by MARALCO
Hearing Date 9-11-78

A

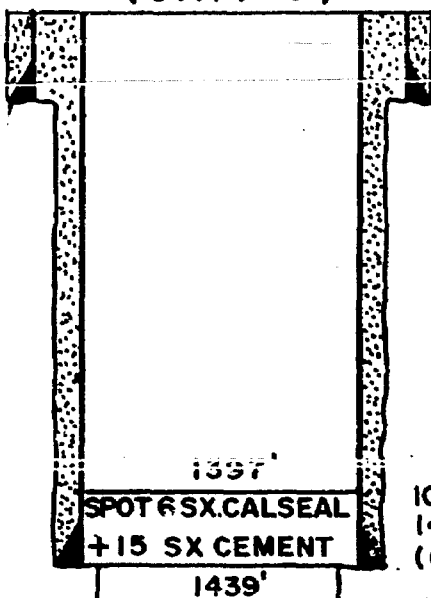
CONTINENTAL WELLS NO. 4
 990' FNL & 1680' FWL
 SECTION 12 T-25-S, R-36-E
 (UNIT C)



No

ATLANTIC (SINCLAIR REPOLLO)
 GLOYD NO. 2
 2310' FSL & 2310' FEL
 SECTION 12 T-25-S, R-36-E
 (UNIT J)

5 SX AT SURFACE



15 1/2" 70# CSG. SET AT
 78', CEM. W/100 SX.
 (CEM. CIRC.)

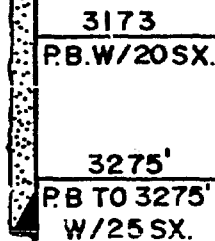
10 3/4" 45# CSG. SET AT
 1439', CEM. W/700 SX
 (CEM. CALC. TO CIRC. UNABLE
 TO PULL ANY 10 3/4")

Need Plug

SHOT OFF 7" CSG AT 2218'

TOP CEM. 2237

DV TOOL AT 2860'



3185

3205

7" 26# CSG. SET AT
 3291', CEM. W/500 SX.
 (300 AT SHOE 200 SX. AT 2860)

T.D. 3325'

c

ATLANTIC (SINCLAIR REPOLO)
W.F. HANAGAN NO. 2
2310' FSL & 2310' FWL
SECTION 12 T-25-S, R-36-E
(UNIT K)

5 SX AT SURFACE

15 1/2" 70* CSG. SET AT
52', CEM. W/ 100 SX
(CEM. CIRC.)

SHOT OFF 10 3/4" AT 150'

Need Plugs

1370'

SPOT 15 SX PLUG
AT 1400'

1400'

10 3/4" 45* CSG. SET AT
1450', CEM. W/ 600 SX
(CEMENT CALCULATES TO
CIRC. HOWEVER SHOT OFF
AT 150'.)

SHOT OFF 7" CSG AT 2190'

TOP CEM. CALC. 2154

2900'

SPOT 55 SX
PLUG

3135

3182

3155

P.B. TO 3182
W/ 25 SX

3200

3230

3263

P.B. TO 3263
W/ CEM.

7" 26* CSG. SET AT
332', CEMENTED W/ 375' SX.
(TOP CEM. CALC. 2154)

T.D. 3347

D

ATLANTIC (SINCLAIR REPOLO)
W.F. HANAGAN NO. 1
330' FSL & 2310' FWL
SECTION 12 T-25-S, R-36-E
UNIT N

5 SX. AT SURFACE

15 1/2" 70* CSG SET AT
54' CEM. W/ 50 SX.
(CEMENT CIRC.)

SHOT OFF 10 3/4" CSG.
AT 87'

1320'
SPOT 15 SX
PLUG
1350

10 3/4" 45* CSG. SET AT
1398' CEM. W/ 700 SX.
(CEMENT CALCULATES TO CIRC.)
(HOWEVER SHOT OFF AT 87')

Need plug

SHOT OFF 7" CSG. AT 2547'

DV TOOL AT 2722

3076

P.B. W/
20 SX.

3139

3176

P.B. TO 3176
W/ 15 SX.

3150

3224

3244

3260

P.B. TO 3260
W/ 50 SX

7" 24* CSG SET AT
3275' CEM. W/ 375 SX.
(225 SX. AT SHOE AND
150 SX AT 2722)

T.D. 3332

ATLANTIC (SINCLAIR REPOLLO)
 GLOYD NO. 1
 330' FSL & 2310' FEL
 SECTION 12 T-25-S, R-36-E
 (UNIT 0)

5 SX. AT SURFACE

SHOT OFF 10 3/4" AT 60'

15 1/2" 70* CSG. SET AT
 68', CEM. W/ 50 SX
 (CEM. CIRC.)

970'
 SPOT 15 SX. PLUG
 AT 1000'
 1000'

Need plug
 10 3/4 45* CSG. SET AT
 1392' CEM. W/ 700 SX.
 (CALCULATIONS INDICATE
 CEM. SHOULD CIRC. HOWEVER
 SHOT OFF AT 60'.)

SHOT OFF 7" CSG AT 2450'

3008'
 P.B. W/ 25 SX
 3133
 P.B. TO 3133
 W/ 30 SX.
 3251
 P.B. TO 3251
 W/ 25 SX.

3038
 3125
 3251

7" 26* CSG. SET AT
 3296', CEM. W/ 375 SX.
 (TOP CEM. CALC. 2127' HOWEVER
 SHOT OFF AT 2450')

T.D. 3332

F

ATLANTIC (SINCLAIR REPOLLO)
 STEPHENS A. NO. 2
 330' FNL & 2310' FEL
 SECTION 13 T-25-S R-36-E
 (UNIT B)

5 SXS AT SURFACE

TOP CEMENT 112' (C)

SHOT OFF 10 3/4" CSG AT 460'

15 1/2" 70* CSG. SET AT 472' CEMENTED W/250 SX. (CALC. TOP CEMENT 112')

1320

SPOT 15 SX PLUG AT 1350

1350

10 3/4" 45* CSG SET AT 1360' CEMENTED W/475 SX. (CEMENT CALCULATES TO CIRC.) HOWEVER SHOT OF AT 460'

SHOT OFF 7" CSG AT 2407

Need plug

TOP CEM. 2491 (CALC.)

2931

SPOT 65 SX PLUG

3015 - 3290

TOP LINER AT 3212' 7" 26* CSG. SET AT 3270' CEM. W/250 SX.

3320

P.B W/ CEM.

3345 5" LINE AT 3448' (236) CEMENT. W/32 SX. 3355

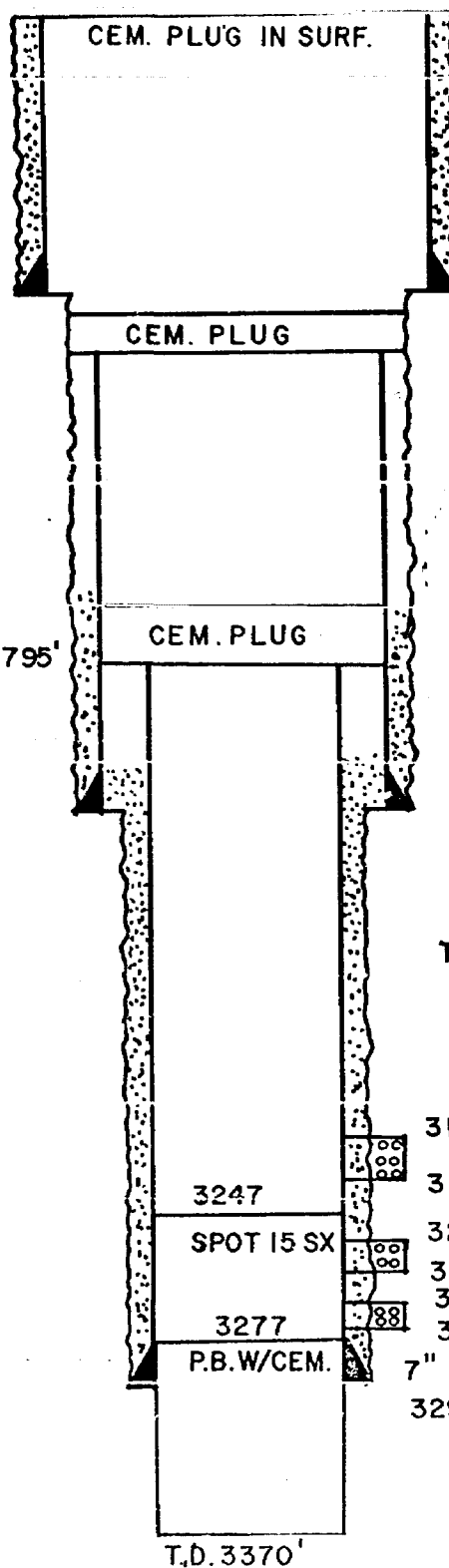
T.D. 3476'

CONTINENTAL SHOLES B-13 NO.1
 1980' FNL & 660' FWL
 SECTION 13 T-25-S, R-36-E
 (UNIT E)

~~Yes~~ No

SHOT OF 9 5/8" CSG
 AT 529

SHOT OF 7" CSG AT 1795'



12 1/2" SET AT
 505' CEM. W/430 SX.
 (CEM. CIRC.)

9 5/8" SET AT
 2844' CEM. W/450 SX
 (TOP CEM. 1695')

TOP CEM. 2479'

3140

3155

3261'

3264'

3274'

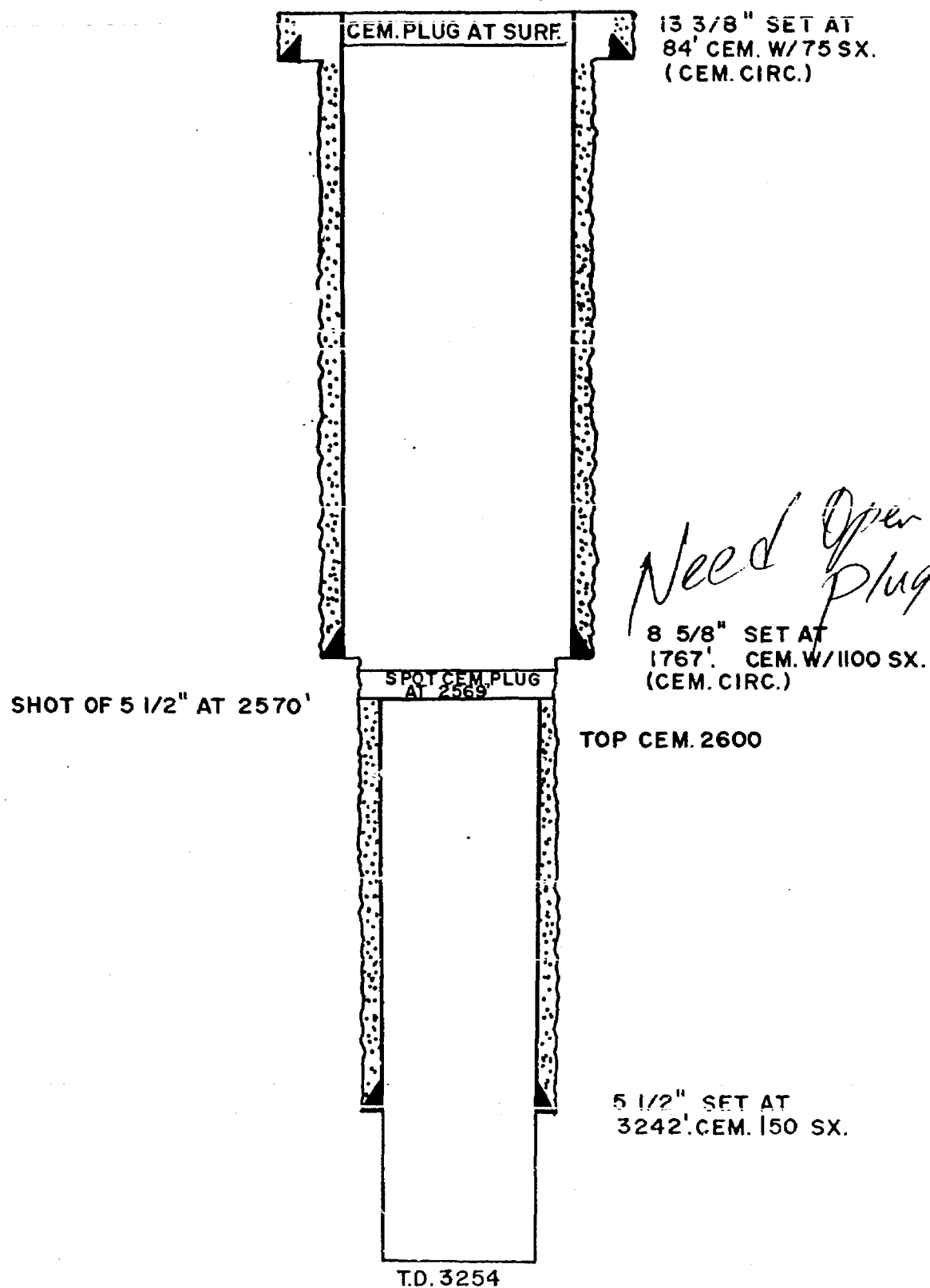
3277'

7" SET AT
 3292' CEM. W/125 SX.

T.D. 3370'

H

CONTINENTAL SHOLES B-13 NO. 3
2310' FNL & 2310' FWL
SECTION 13 T-25-S, R-36-E
(UNIT F)



I

ATLANTIC (SINCLAIR REPOLLO)
 STEPHENS A. NO. 1
 2310' FNL & 2310' FEL
 SECTION 13 T-25-S, R-36-E
 (UNIT 0)

SHOT OFF 10 3/4" AT 20'
 10 SX PLUG AT 20'
 5 SX AT SURFACE

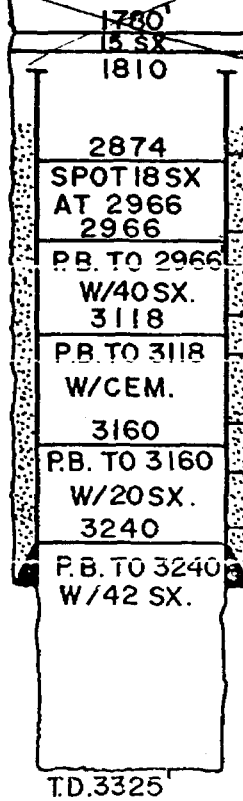
TOP CEM. 64' (CALC.)

15 1/2 70# CSG. SET AT
 467' CEM. W/280 SX.
 (TOP CEM. CALC. 64')

10 3/4" 40# CSG SET AT
 1363' CEM. W/600 SX
 (SHOULD HAVE CIRCULATED)

Need plugs

SHOT OFF 7" CSG AT 1822'



TOP OF CEMENT 2324' (CALC.)

2874	2870
SPOT 18 SX	2950
AT 2966	2985
2966	3045
P.B. TO 2966	3130
W/40 SX.	3155
3118	3165
P.B. TO 3118	3233
W/CEM.	
3160	
P.B. TO 3160	
W/20 SX.	
3240	
P.B. TO 3240	
W/42 SX.	

TD.3325'

J

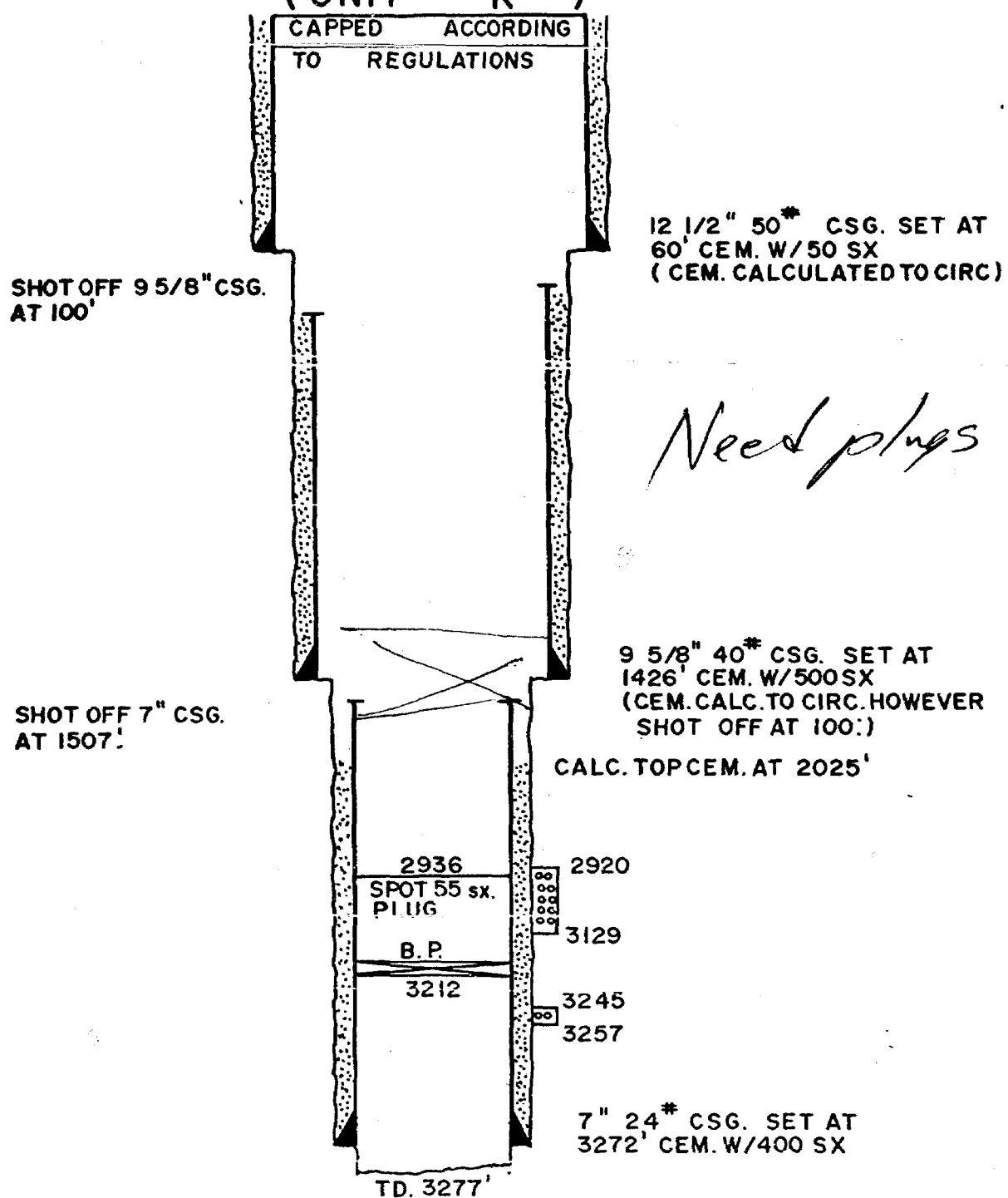
CITIES SERVICE (EMPIRE OIL & GAS)

LIDLEY B. NO. 2

2310 FSL & 2310' FWL

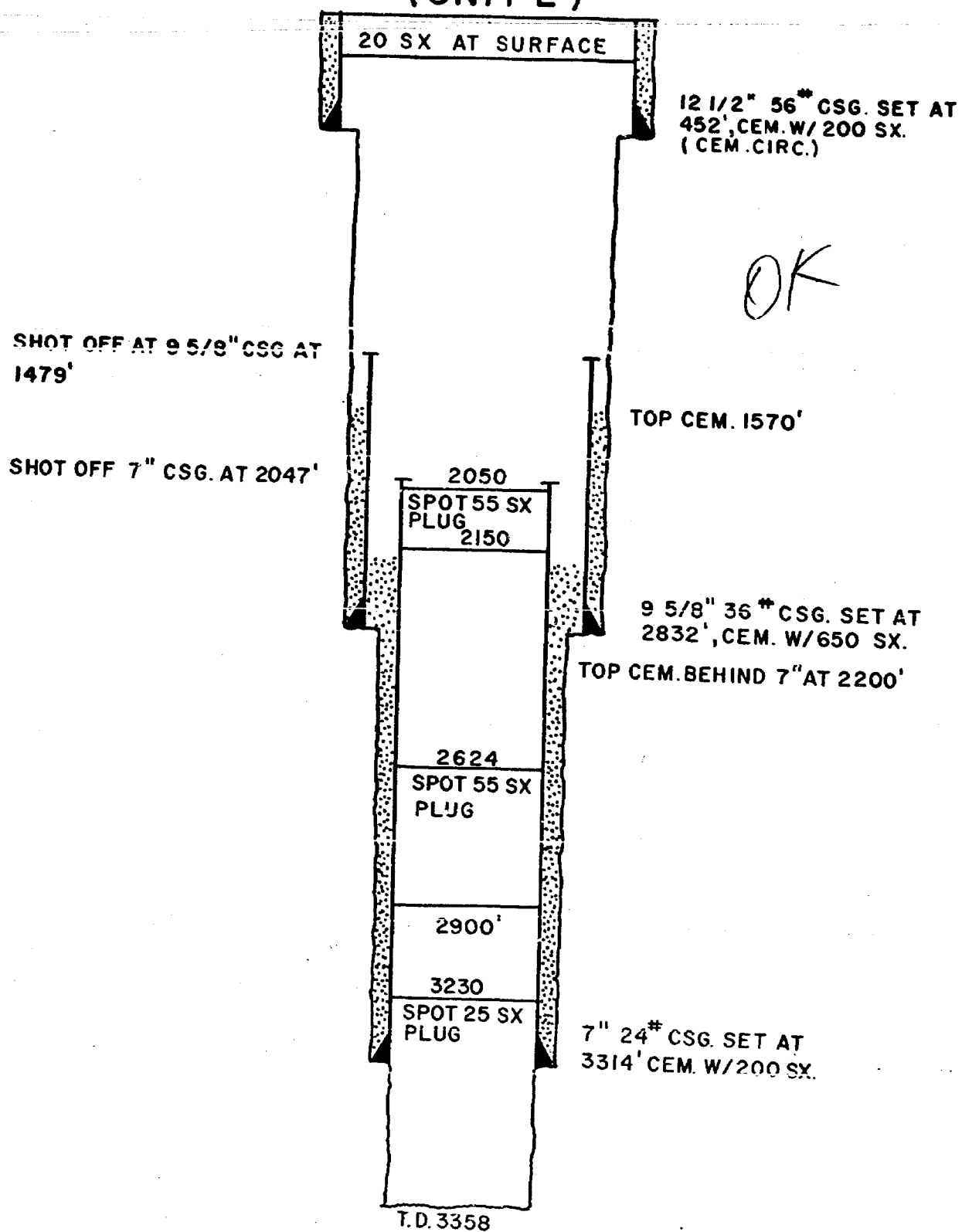
SECTION 13 T-25-S R-36-E

(UNIT K)

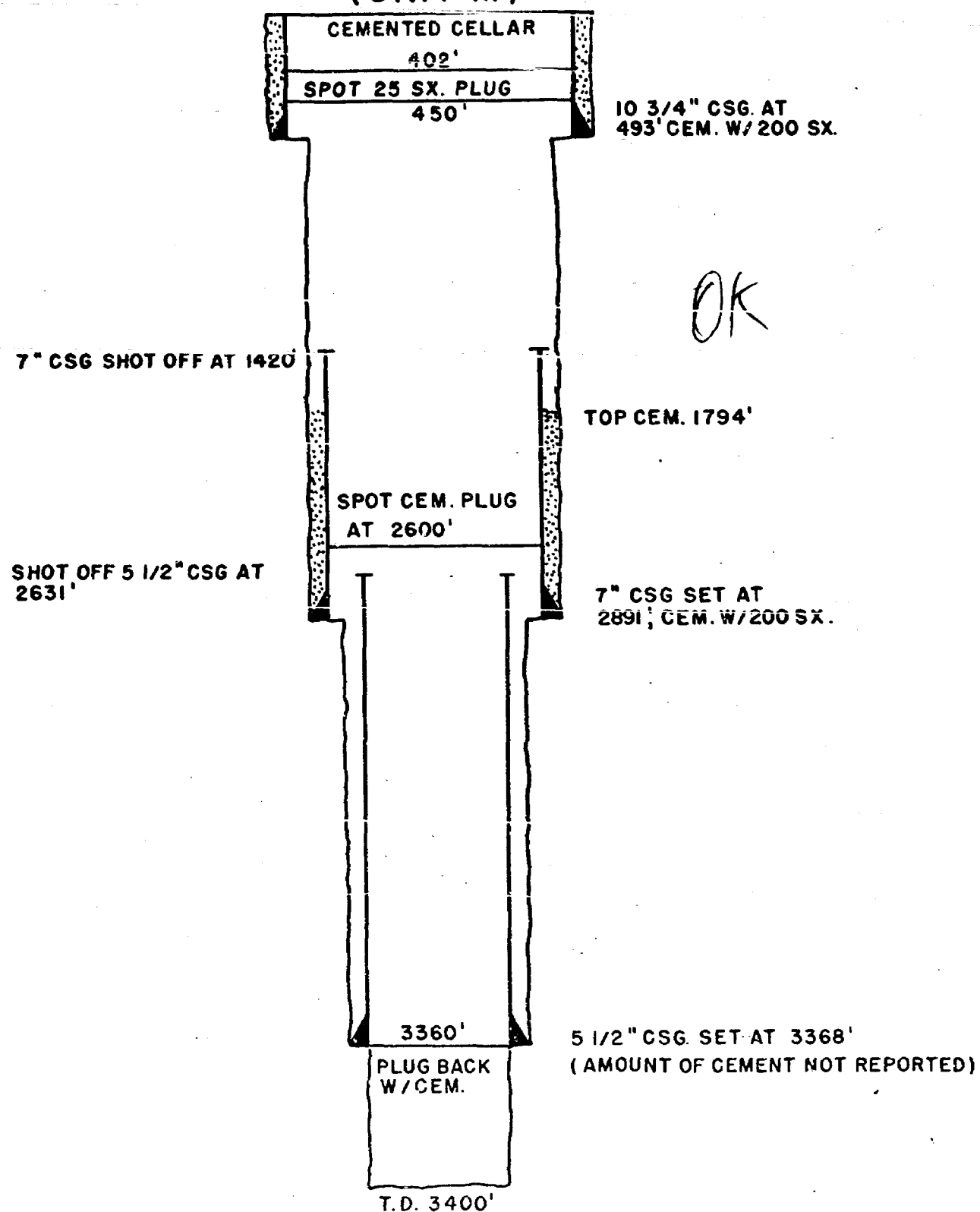


K

EXXON-W.M. LINDLEY A. NO. 3
1980' FSL & 660' FWL
SECTION 13 T-25-S R-36-E
(UNIT L)

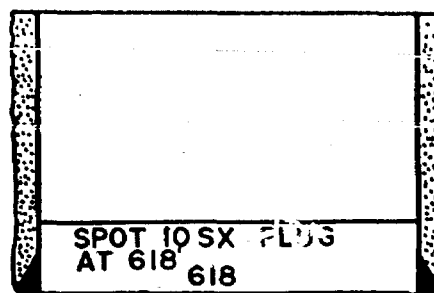


EXXON W.M. LINDLEY A NO. 2
660' FSL & 660' FWL
SECTION 13 T-25-S R-36-E
(UNIT M)



MARALO W.M. LINDLE B. NO. 1
 990' FSL & 2310' FWL
 SECTION 13 T-25-S R-36-E
 (UNIT N)

CELLAR FILLED
 W/CEMENT



10 3/4" 32* CSG SET AT
 618', CEM. W/250 SX.
 (CEM. CIRC.)

OK

CUT OF 5 1/2" CSG AT 1269'

1200
 SPOT 20sx PLUG
 1260

TOP CEMENT 1285', BY
 TEM SURVEY.

3038
 SPOT 20
 SX. AT
 BOTTOM
 OF HOLE

TOP LINER AT 3074

5 1/2" 15.5* CSG. SET AT
 3128', CEM. W/365 SX

3269

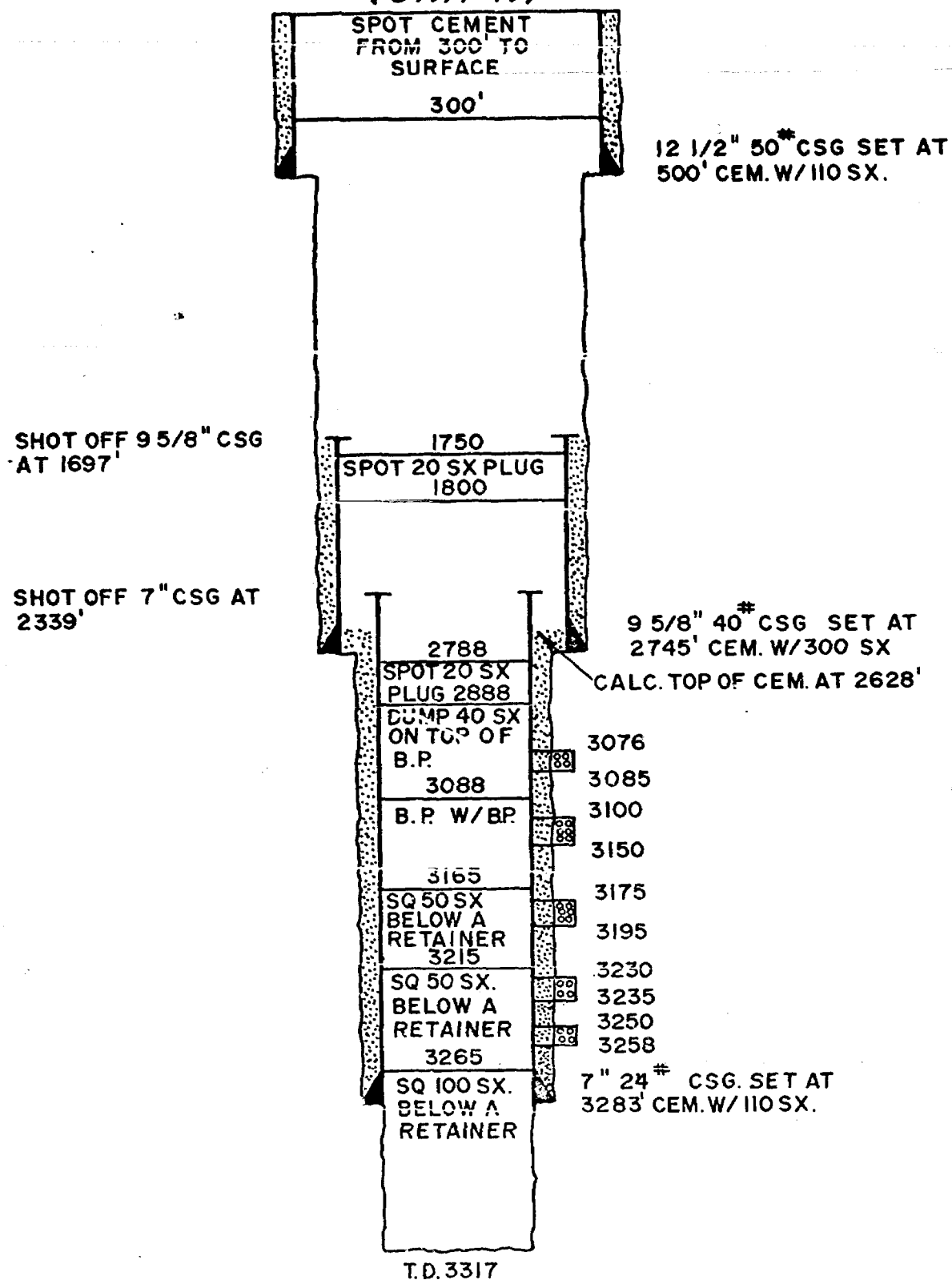
3275

4" 13* LINER SET AT
 3300', (226') CEM. W/50 SX

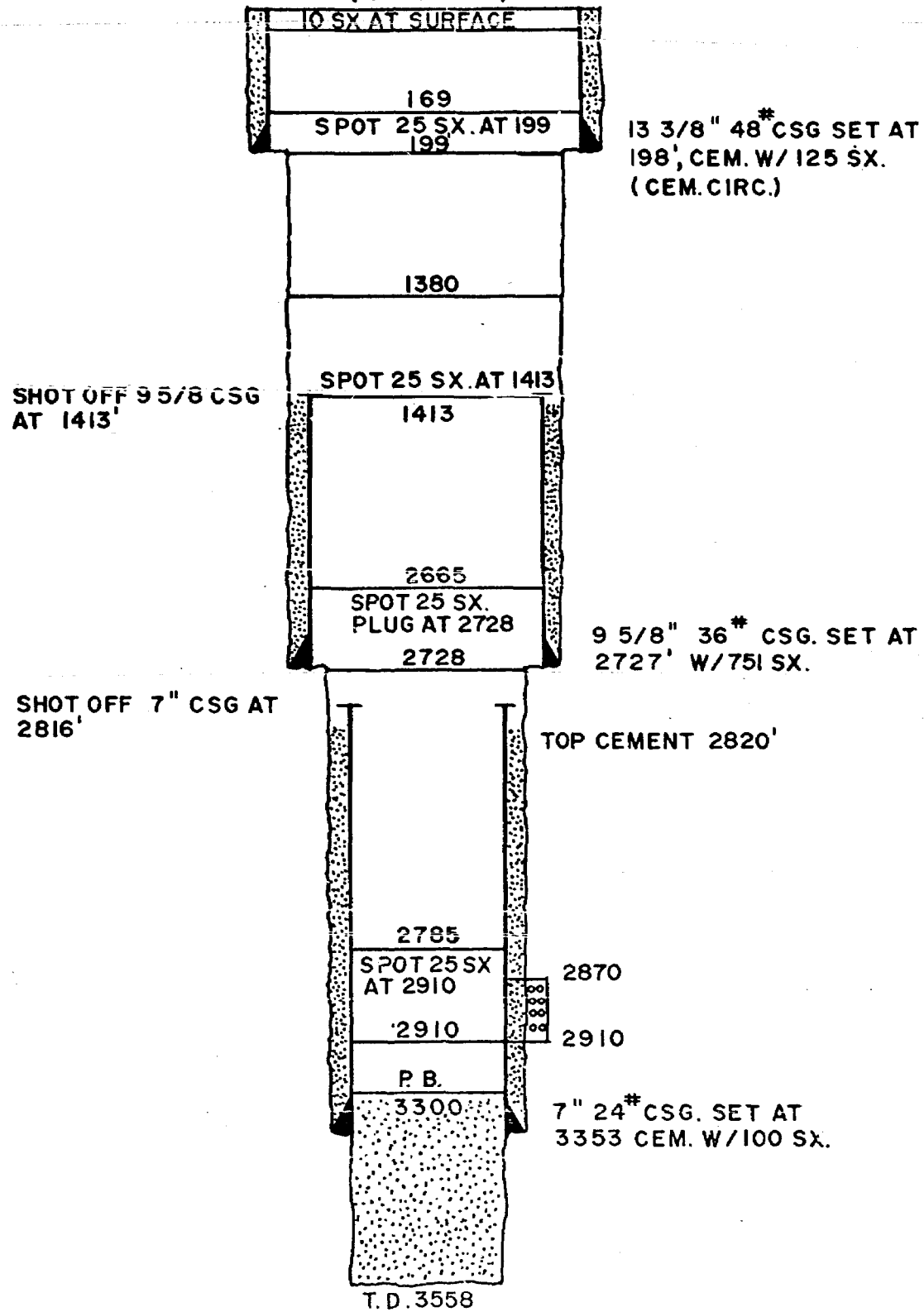
T.D. 3300

N

CITIES SERVICE (EMPIRE OIL & GAS)
 LINDLEY B. NO. 1
 660' FSL & 1980' FWL
 SECTION 13 T-25-S R-36-E
 (UNIT N)

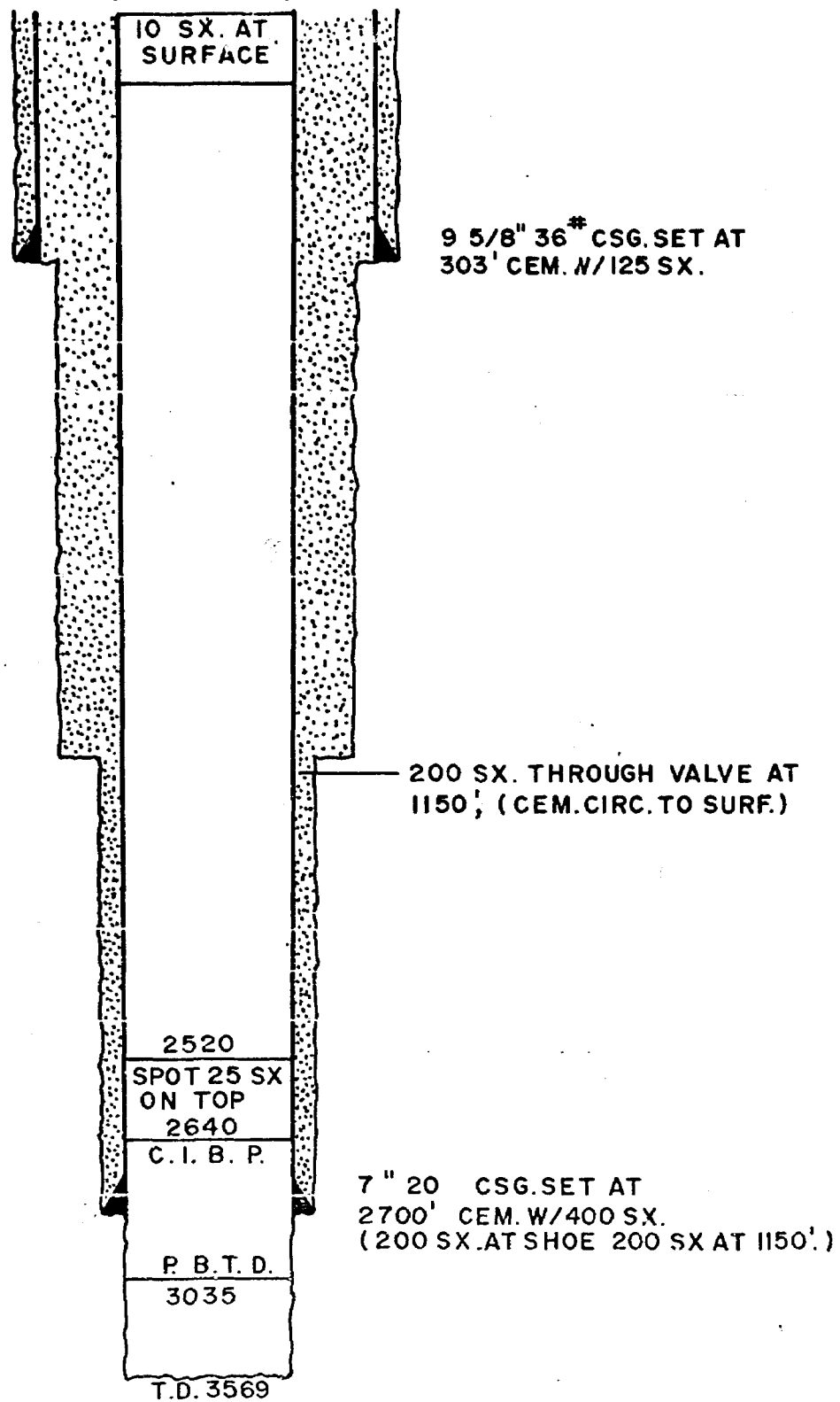


ATLANTIC-WM.HARRISON NO.1
 660' FNL & 660' FWL
 SECTION 7 T-25-S R-37-E
 (UNIT D)



P

TEXAS PACIFIC GUTMAN 18 NO. 1
 660' FSL & 1980' FEL
 SECTION 18 T-25-S, R-37-E
 (UNIT 0)



Q

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION
State Land Office Building
Santa Fe, New Mexico
11 September 1978

COMMISSION HEARING

IN THE MATTER OF:

Application of Maralo, Inc., for
statutory unitization, Lea
County, New Mexico.

CASE
6328

and

Application of Maralo, Inc., for a
waterflood project, Lea County,
New Mexico.

CASE
6313

BEFORE: Commissioner Joe Ramey
Commissioner Emery Arnold

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Commission: Lynn Teschendorf, Esq.
Legal Counsel for the Commission
State Land Office Bldg.
Santa Fe, New Mexico 87501

For Maralo, Inc.: Conrad Coffield, Esq.
HINKLE, COX, EATON, COFFIELD &
HENSLEY
Midland, Texas

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I N D E X

CHARLES LOVE

Direct Examintion by Mr. Coffield	3
Cross Examination by Mr. Ramey	23

BILL SELTZER

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1 MR. RAMEY: Okay, the hearing will come to
2 order.

3 Ask for appearances.

4 MR. COFFIELD: Conrad Coffield with the law
5 firm of Hinkle, Cox, Eaton, Coffield and Hensley, ap-
6 pearing on behalf of Maralo, Inc.

7 I will have two witnesses but I'd like to
8 have three people sworn in case there are some questions.

9 MR. RAMEY: Will you please stand and be
10 sworn.

11 (Witnesses sworn.)

12
13 CHARLES LOVE

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

16
17 DIRECT EXAMINATION

18 BY MR. COFFIELD:

19 Q State your name, your residence, and occupa-
20 tion, and what is your position relative to Maralo, Inc.?

21 A My name is Charles Love. I live in Midland,
22 Texas, and I am a consultant petroleum engineer, and I
23 have been retained by Maralo, Inc. to analyze and prepare
24 certain data for presentation before the OCD.

25 Q Have you previously testified as a petroleum

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1 engineer before the Oil Conservation Division?

2 A Yes, sir, I have.

3 Q And are you familiar with Maralo's application
4 in these cases?

5 A Yes, sir, I am.

6 Q Further, are you familiar with the area in-
7 volved in these applications and with the Jalmat pool?

8 A Yes, sir.

9 MR. COFFIELD: Are the witness' qualifications
10 acceptable?

11 MR. RAMEY: The Commission is acquainted with
12 Mr. Love and consider him qualified.

13 Q (Mr. Coffield continuing.) Mr. Love, what
14 is Maralo seeking to accomplish in these cases?

15 A Maralo is seeking statutory unitization for
16 an additional recovery project in a portion of the Jalmat
17 Field by the injection of water into various wells that
18 are located in Township 25 South, Range 36 East, and 37
19 East.

20 Q Do you have certain exhibits?

21 A Yes, sir, I have prepared exhibits for pre-
22 sentation.

23 Q Please refer to what has been marked as Ex-
24 hibit One and I ask you to explain what this represents.

25 A All right. Exhibit One is an area plat or

1 map that shows the location of the proposed unit, plus
2 the location of the injection well, and all other wells
3 that are located within a two-mile radius of the proposed
4 unit.

5 Q Are all of the lands involved in these ap-
6 plications privately owned or fee lands?

7 A Yes, sir.

8 Q From what horizons have the various wells
9 within this two-mile radius produced?

10 A Most of the wells are producing from the
11 Yates, Seven Rivers, and Queen, and this portion is in the
12 Jalmat Pool. There are some that are classified in the
13 Langlie-Mattix Pool, but most are producing from the Yates,
14 Seven Rivers, and Queen Formations.

15 Q Mr. Love, describe the location of our pro-
16 posed waterflood project, give the total number of wells,
17 and the total acreage involved.

18 A There are fourteen wells located within the
19 proposed unit area; thirteen oil wells and one gas well.
20 The proposed unit area includes the southeast quarter of
21 Section 12, the northeast quarter of Section 13, all of
22 these located in Township 25 South, Range 36 East; then
23 the northeast quarter of Section 18 and the north half of
24 the southwest quarter of Section 18, located in Township
25 25 South, Range 37 East. There are 560 acres in the pro-

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1 posed unit.

2 Q Mr. Love, are there any other water projects
3 in this general area?

4 A Yes, Reserve operates a unit immediately to
5 the east of this area. It is their South Langlie Jal Unit.
6 And Union of Texas operates the Langlie Jal Unit, and it
7 is located approximately a half a mile to the north and
8 east of our proposed unit area.

9 Q Mr. Love, have there been any border or line
10 agreements negotiated and entered into as to these other
11 operations in the area?

12 A No, sir. Initially we are asking for approval
13 to drill seven injection wells that are shown on our Ex-
14 hibit One, and they are color coded red. These wells are
15 located within the proposed unit area.

16 However, there are plans to begin negotiations
17 with offset operators around this proposed unit area and
18 if the negotiations are successful, then we propose to
19 ask for approval to drill ten additional wells, which are
20 color coded in green; however, we're planning initially,
21 and asking initially just for the seven injection wells
22 as shown in the wells in red on our Exhibit One.

23 Q Mr. Love, please refer to what has been marked
24 as Exhibit Two and identify this exhibit and explain what
25 it represents.

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1 A All right. Exhibit Two is a portion of a well
2 log of the Humble Winters "A" No. 2, that is located with-
3 in the unit area, and it is a typical log of a well in
4 the unit area, and on this we have shown what our proposed
5 unitized interval is.

6 Q With reference to this exhibit, Two, go ahead
7 and give some more details with respect to the reservoir
8 to which the water will be injected.

9 A All right. We propose to unitize the inter-
10 val from the top of the Yates, and on this log it's at
11 2848 feet, to 100 feet below the base of the Queen. Now,
12 the base of the Queen is estimated at -- to come in at
13 3680 feet. This well, the total depth of this well is
14 only 3400 feet. This base of the Queen was determined
15 from preparation of a cross section with other wells in
16 the area.

17 However, we are asking initially, or our
18 injection will be initially into the Yates Formation and
19 production in the Yates Formation is found in four sand-
20 stone intervals separated by an anhydritic dolomite sec-
21 tion, and from looking at logs in the area, or in this
22 unit, the productive interval appears to be continuous
23 across the proposed unit area.

24 Q Okay. Mr. Love, go on to Exhibit 3-a and 3-b
25 and please identify these exhibits.

1 A Exhibit 3-a is a secondary recovery study,
2 dated December the 9th of 1976, that was prepared by the
3 firm of T. Scott Hickman.

4 Exhibit 3-b is a supplemental study, or a
5 supplement to the secondary study, and it is dated June
6 13th, 1977. It is also prepared by T. Scott Hickman.

7 Both of these relate to the area covered by
8 the application involved in these cases and show the
9 feasibility of the proposed project.

10 Q Okay, Mr. Love, there are some slight dif-
11 ferences in the area covered by this study in Exhibits
12 3-a and 3-b. Would you please explain just what this
13 difference is?

14 A Yes. The study, if you'll look at the maps
15 and figures in the report, the study area included more
16 acreage than what we're proposing to unitize. The study
17 area included the southeast of the northeast of Section 12,
18 one well, 40 acres, and the study area included the south
19 half of the southwest quarter of Section 18, and there's
20 one well there and 80 acres.

21 Q Do you feel there's any difference here of
22 any consequence with respect to the conclusions which may be
23 drawn from this particular study?

24 A No, sir, I do not. I do not think that it
25 will make any difference.

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1 Q Okay, as covered by this report shown in
2 these exhibits, 3-a and 3-b, please explain briefly the
3 general procedures or plan of operation which Maralo pro-
4 poses and point out any differences in the procedures
5 which Maralo proposes which may be different from those
6 contemplated in the Hickman study.

7 A Well, actually, the secondary recovery study
8 offered two proposals, a conversion proposal or a drill
9 proposal. Maralo has decided to go with the drilled wells
10 and the study, the report, recommended that this well
11 located in the southeast of the northeast of Section 12
12 would be converted to an injection well, but it would be
13 totally as a back-up well, and I don't think that it would
14 make any difference.

15 Q What -- what reasons do you feel the drilled
16 approach is better than the -- for what reasons do you
17 feel the drilled well approach is better than the con-
18 version well approach, Mr. Love?

19 A Well, I think the study points out that the
20 economics are favorable by the drill plan, even though the
21 investment initially is greater, but there is a better
22 cash flow resulting from it due to the lessening of the
23 life of the project.

24 And also I think that you will have better
25 control over the injection fluid by having cased completions.

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1 new wells, new cement, than you would if you would convert
2 some older wells. I think you would be able to have better
3 control over the injection and sweep efficiency in the
4 waterflood.

5 Q All right, Mr. Love, with respect to the
6 general situation relative to production here in this area
7 and the matters which are reflected in the unit agreement
8 and unit operating agreement, copies of which have been
9 submitted, the unit agreement and unit operating agreement
10 for the proposed unit is stated in a two-page formula with
11 Phase One to go into effect from the effective date of the
12 unit until 7:00 a. m. on the first day of the month after
13 the cumulative production of oil following 7:00 a. m.,
14 October 1, 1976 totals 39,000 barrels, and thereafter
15 Phase Two is to apply.

16 Would you please tell us now where we are re-
17 lative to the application of Phase One and Phase Two?

18 A We would be unitizing. The formula -- the
19 Phase Two formula would be in effect from 10-1-76 to
20 1-1-78, the first of this year there were 39,196 barrels
21 of oil produced, so we would be in Phase Two.

22 Q All right. What information do you have, Mr.
23 Love, with respect to porosity, permeability, and so forth,
24 within the unit area?

25 A As pointed out in the study the cores were

1 available from two wells within the study area. They
2 indicate an average porosity of 15-1/2 percent and an average
3 permeability of 24 milledarces.

4 A gas/oil contact was picked at 300 feet above
5 sea level. There are no oil/water contact which has been
6 established in the area, and the initial bottom hole pressure
7 was 1400 psi.

8 Q Mr. Love, please briefly review the primary
9 performance for these wells within this proposed unit area.

10 A Well, as I said earlier, on our Exhibit One
11 there are fourteen wells currently within the unit. There
12 are twelve active oil wells, one well temporarily abandoned,
13 and there is one gas well.

14 The twelve active oil wells produced 31,129
15 barrels of oil during the year of 1977, and 89,014 Mcf of
16 gas. This represents an average production rate of the
17 wells within the unit of 7 barrels a day and an average GOR
18 of 2859 cubic feet per barrel.

19 The cumulated oil production to January 1, 1978
20 was 1,274,890 barrels, or that gives an average per well
21 recovery of 98,000 barrels.

22 The Yates gas well in the unit produced 9,558
23 Mcf during 1977 for an average daily rate of 26 Mcf.

24 The cumulative production to January 1, 1978
25 has been 1,458,904 Mcf.

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1 You can refer to our Exhibit 3-a, I think it's
2 interesting to note, beginning with -- that is our secondary
3 recovery report -- and beginning with the figure five in
4 the unit is the decline curves for the leases within the
5 unit, and I think that the decline curves show a typical
6 decline for all leases except the Winters "c", which if you
7 will turn to figure eight, there is the decline curve for
8 the Winters "C". You will note that its normal decline
9 was interrupted by a steep production increase in January,
10 1975. It reached 2,521 barrels per month in September of
11 1975 and in March, 1978 it produced 2,750 barrels for the
12 month, and in JULY of 1978 the production was 2,461 barrels.

13 So it would indicate that this lease is re-
14 ceiving some benefit for some waterflood response, and we
15 feel like that it is coming from the two salt water disposal
16 wells located to the north and west of our proposed unit
17 area, the one on the Tenneco lease, their Wells No. 2, the
18 Arco Well No. 4, and these on our Exhibit One are noted as
19 SWD wells.

20 So I think that this is -- gives pretty good
21 evidence that this area is capable of a waterflood response.
22 And it is estimated as of the first of this year, 1-1-78,
23 that there are only 108,450 barrels of oil to be recovered
24 from existing operations.

25 Q Mr. Love, please outline for the Commission the

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1 plans to recover additional oil by waterflood in this pro-
2 ject.

3 A If you'll refer back to our Exhibit One, our
4 map, initially injection will be into the seven wells that
5 are shown in red on the exhibit.

6 The wells, we're planning to drill those to
7 sufficient depth to penetrate the Empire Queen section;
8 however, initially injection will be confined into the
9 Yates interval.

10 We plan to set 8-5/8ths inch surface casing
11 at approximately 400 feet, with sufficient cement to cir-
12 culate to the surface; then 4-1/2 inch long string casing
13 will be set at the total depth and cemented with sufficient
14 cement to circulate back to the surface.

15 We plan to drill the additional injection
16 wells, those shown in green, upon successful negotiations
17 with our offset operators.

18 The study prepared by the Hickman firm indi-
19 cates that the area under consideration should yield an
20 additional 1,086,000 barrels of oil, and this would result
21 in a future net revenue of \$11,792,000.

22 Q Over what period of time?

23 A With this plan that we're using it would be
24 over a fifteen year life.

25 Q Okay, Mr. Love, refer to what's been marked

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1 as Exhibit Four, and I ask you to identify this and explain
2 what it represents.

3 A Exhibit Four is a schematic diagram of a typi-
4 cal injection well that we plan to drill.

5 Q Will these wells which will be drilled and
6 completed in accordance with the plans represented on this
7 schematic, confine the injected water to the producing
8 horizon?

9 A Yes, sir.

10 Q Will you be using plastic coating in the
11 injection wells?

12 A Yes, sir. As I pointed out earlier, that we
13 intend to set our surface -- and these volumes that I have
14 on there are approximate, but I did talk with some cementing
15 people, but there will be sufficient cement on our surface,
16 we're estimating something around 200 sacks that will be
17 circulated. I've shown here the approximate depth that we
18 will want to drill these wells to penetrate the Queen and
19 the 4-1/2 inch string will be cemented with sufficient
20 cement to circulate, and I've shown where our initial
21 injection interval will be approximately from 2900 feet to
22 3050 feet, or in the Yates Zone.

23 MS. TESCHENDORF: May I interrupt you, Mr.
24 Love?

25 A Yes, ma'am.

1 MS. TESCHENDORF: I missed the figure before
2 you were talking about additional barrels of oil to be re-
3 covered and just before that you said approximately how
4 many barrels could be obtained simply by the primary re-
5 covery method.

6 A 108,450 barrels.

7 MS. TESCHENDORF: Thank you.

8 Q (Mr. Coffield continuing.) Refer to what's
9 been marked as Exhibits 5-a and 5-b and identify these
10 exhibits and explain what they represent.

11 A Exhibit 5-a is a plat showing the location of
12 all wells within the Jalmat Yates Unit, both proposed in-
13 jection wells and producing wells, with the wells numbered
14 with the new unit well numbers from 1 to 31; and Exhibit 5
15 is a list -- 5-b is a list of the unit wells and the loca-
16 tion of each, and we ask at this time that the Division
17 designate the unit wells in this fashion.

18 Q Are these wells actually staked at these loca-
19 tions?

20 A The seventeen wells are all staked and the
21 ones that we show to be drilled and give the footages, are
22 staked location footages, and have been surveyed.

23 Q Okay. You may have already said this, but
24 how many producing wells are there proposed?

25 A There will be fourteen producing wells in the

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1 unit.

2 Q And how many injection?

3 A Seventeen injection wells.

4 Q But initially?

5 A Initially there will be seven injection wells
6 to be drilled with the subsequent drilling of the ten addi-
7 tional wells. We at this time, too, would ask for authority
8 for the drilling of the initial seven wells and with the
9 entry of the order approving this unit, and we also request
10 authority for the drilling of the additional ten wells ad-
11 ministratively without a formal hearing at a later date.

12 Q Mr. Love, referring -- excuse me.

13 A If I may just add --

14 Q Certainly.

15 A -- one thing? Initially what we're asking to
16 drill will be Unit Well No. 4 -- what I'm referring to now
17 is my Exhibit 5-b, what we call as Unit Well No. 4, the
18 well to be drilled at 1575 from the south and 1050 feet
19 from the east line of Section 12; Unit Well No. 9, Unit
20 Well No. 15, Unit Well No. 19, Unit Well No. 20, Unit Well
21 No. 25, and Unit Well No. 31.

22 Q Mr. Love, refer to what has been marked as
23 Exhibit Six and explain what this exhibit represents.

24 A Exhibit Six is a reduced, and it's reduced
25 to one-half scale of our Exhibit One, what we're showing,

1 this is an old area and I'm showing the radius of one-half
2 mile around each of the proposed injection wells. The red
3 line outside of the unit encompasses an area of a radius
4 of one-half mile from our injection wells in red and the
5 green line encompasses the radius of one-half mile from
6 the wells that are color coded in green.

7 Q Mr. Love, refer to what has been marked as
8 Exhibit Seven, with pages lettered a through q. Please
9 identify this exhibit.

10 A These are schematics of all plugged and aban-
11 doned wells within a half mile radius of the unit, and it
12 shows the size and location of the plug to such extent as
13 the information was available to me.

14 Q Do you actually have more schematics as far
15 as wells are concerned than is strictly necessary under the
16 rules here?

17 A I -- when I prepared these -- these, there
18 are seventeen of these schematics, I took an area a half
19 a mile from the boundary of the unit. As I said, the red
20 line is the wells that are included in the half mile radius
21 of our initial injection well, would include our Exhibit
22 7-c, 7-d, 7-e, 7-f, 7-g, 7-i, 7-j, and 7-k.

23 Q Mr. Love, why are you submitting these for
24 the Division's consideration?

25 A Well --

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1 Q Excuse me, are you through with this subject?

2 A Well, within the green outline, the half mile
3 of our wells that will be proposed to drill later, you have
4 to refer to schematics 7-h, 7-l, 7-n, and 7-o.

5 Q So the ones that you have just now given are
6 strictly the only ones that fall within the one-half mile
7 radius; anything in excess of that, is this correct --

8 A Right.

9 Q -- are simply extra?

10 A Right.

11 Q All right, Mr. Love, for what purpose are
12 these schematics being submitted?

13 A To show the Division the status of various
14 wells within the area so that possible problems can be
15 considered.

16 Q Okay, will you refer to what's been marked
17 Exhibits 8-a through 8-e, and of course I'm going to ask
18 you to identify these and explain what they represent.

19 A These are tabular summaries of all wells within
20 a half mile, again, radius of our proposed unit, showing
21 the casing strings, the setting depths, the sacks of cement,
22 cement tops, total depth, producing intervals, and well
23 identification and location.

24 These are given to you by sections. The first
25 would be in Section 12 and I've started in Section 12 and

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1 again I'm going -- I went one-half mile from the unit
2 boundary. I started with the well that would be located
3 in production unit A and tabulated those wells through the
4 section and ending with the well that would be located in
5 production unit B.

6 Q And the wells that are marked with asterisks
7 in the --

8 A The wells that are marked with asterisks are
9 wells that are within the proposed unit area.

10 Q Again, the purpose for the submission of these
11 is --

12 A Again to advise the Division of the status of
13 all wells in the general area for your consideration of
14 any possible problems.

15 Q Mr. Love, what quantities of water do you an-
16 ticipate to be injected for the purpose of this proposed
17 waterflood?

18 A The -- it is anticipated that the water volume
19 will be between 300 and 500 barrels per day per injection
20 well.

21 Q 300 to 500?

22 A 300 to 500.

23 Q Per day?

24 A Per day per injection well.

25 Q What do you anticipate will be the source of

1 the supply of the water to be injected?

2 A. We have not determined one source of supply.
3 There are three possible sources. There are produced water
4 taken from some Maralo leases that are in the area. There
5 is a possibility that we'll purchase water from the Getty
6 water system, or there's produced water from various leases
7 in the area that are operated by other companies.

8 Q And you say there is one fourth possible, which
9 is --

10 A. There is a fourth possibility that they could--
11 we could develop the Santa Rosa as a water source.

12 Q Mr. Love, please refer to what has been marked
13 as Exhibit Nine and I ask you to identify this exhibit and
14 state what it represents.

15 A. Well, Exhibit Nine is the water analysis
16 showing the analysis of the three sources of water. That
17 from the Maralo leases, these leases -- this Humble State
18 lease is about two miles south of this proposed unit area.
19 Then there's an analysis from the Getty Water System, and
20 also from produced water that was obtained from the Sid
21 Lanier lease, which is a lease in the unit area -- I mean
22 near the unit area under consideration.

23 Q These three sources are actually available,
24 is that correct?

25 A. Yes.

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1 Q Now what has been -- what's the conclusion
2 with respect to the water analysis here?

3 A I think the water -- we were unable to get a
4 water analysis from the produced wells within the area
5 because they're not making any water, but I think that from
6 other operations in the area that these three sources of
7 water will be compatible and that we won't have any prob-
8 lems.

9 Q Mr. Love, what injection pressure do you pro-
10 pose in this project?

11 A Initially -- the injection facilities will be
12 designed for 1500 pounds, psi.

13 Q Okay, Mr. Love, is Maralo aware of the pressure
14 limitations imposed by Rule 377, I believe it is?

15 A Yes, sir, that's the 2/10ths of a psi.

16 Q And would Maralo be willing to comply with that
17 requirement, at least initially?

18 A Initially we would like to ask that if we need
19 to exceed the -- that would be approximately -- for reser-
20 voirs of 3000 beet that would be approximately 600 psi.
21 We would like to be able to take step rate tests at a later
22 date to see if we could get a pressure above that 600 psi.

23 Q Mr. Love, what equipment does Maralo have or
24 propose to obtain for this project?

25 A Well, I haven't made any equipment design, but

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1 they will install all new equipment. Like I say, I don't
2 have any specific size or anything like that, other than,
3 probably a triplex pump, but it will be new equipment.

4 Q Are all of the producing wells within the
5 proposed Jalmat Yates Unit within the stripper category?

6 A Yes, sir.

7 Q Have you made an estimate of the additional
8 oil which is to be expected to be recovered by virtue of
9 this proposed waterflood?

10 A 1,086,000 barrels of oil.

11 Q Are you requesting a project allowable for
12 this waterflood?

13 A Yes, sir.

14 Q Have all of the offset owners been contacted
15 in connection with this proposed project?

16 A Yes, sir.

17 Q Insofar as you know has there been any ob-
18 jection by any of the offset owners to this proposed pro-
19 ject?

20 A No, not to my knowledge.

21 Q Mr. Love, were the Exhibits to which you have
22 referred and which we've discussed here either prepared
23 by you or under your supervision?

24 A Yes, all were prepared by me or under my super-
25 vision with the exception, now, of Exhibits 3-a and 3-b.

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1 These were prepared by the firm of -- the Hickman firm,
2 but now I have reviewed these exhibits and I agree with them
3 fully in their matters and their conclusions and their
4 matters set out in their -- both their studies.

5 Q Mr. Love, in your opinion do you believe that
6 the approval of the applications in these cases will re-
7 sult in prevention of waste, protection of correlative
8 rights, and the promotion of conservation?

9 A Yes, sir, I do.

10 MR. COFFIELD: I move the admission of the
11 exhibits tendered to the Commission.

12 MR. RAMEY: Exhibits One through Nine will
13 be admitted.

14 MR. COFFIELD: I have no further questions at
15 this time of this witness.

16 CROSS EXAMINATION

17 BY MR. RAMEY:

18 Q Okay, Mr. Love, I have two questions.
19 You're asking for seven injection wells at
20 this time?
21

22 A Yes, sir.

23 Q And these are at nonstandard locations, I
24 assume, or --

25 A Well --

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1 Q --- some of them are and some of them aren't?
2 A Some of them are and some of them aren't.
3 Q These are all within the unit boundary?
4 A They are all within the unit, though, right.
5 Q And not -- not close to the edge of the unit
6 boundary. They're all relatively inside the unit.

7 And then you would like, I assume, some ad-
8 ministrative procedure for approving additional injection
9 wells --

10 A Yes, upon --

11 Q -- that would be on the outer edges?

12 A Yes, sir.

13 Q The remainder of the wells would be on the
14 outer edges.

15 A After successful negotiations with these --

16 Q Now, your average -- you show your average
17 production per well is around 7 barrels?

18 A Yes, sir.

19 Q That includes the wells that have response
20 from injection up in the --

21 A Yes, sir.

22 Q I guess that's the northwest portion of the
23 unit?

24 A Right, it's on the Winters "C", is where we're
25 experiencing the response. The production from the unit

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1 area, well, it actually averages 7.5 barrels of oil per day.
2 Now you take out the Winters "C" lease production and the
3 remaining four leases in there, the average production is
4 1.6 barrels of oil per day.

5 Q Okay, so the production from the Winters "C"
6 actually raises your per well average to almost -- or almost
7 six barrels a day?

8 A That's right.

9 Q So the remainder of the wells, then, are in
10 extremely --

11 A Extreme.

12 Q -- marginal condition.

13 A Marginal, yes, sir.

14 Q Mr. Love, do you have any figure for cost of
15 development of this waterflood?

16 A Yes, sir.

17 Q How much you're going to have to spend to --

18 A \$1,830,000.

19 Q That's your development cost for --

20 A That includes funds for the drilling of the
21 seventeen injection wells, the development of a water supply,
22 installation of the injection plant, and injection lines,
23 centralization of the tank battery, and installation of
24 well test facilities, and also there's some money included
25 in this \$1,830,000 to clean out and possibly deepen some

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1 existing producing wells as we drill these wells with new
2 logs and things like that, and pick up additional informa-
3 tion, we may want to do some work on our existing wells
4 within the unit.

5 Q Did you allocate any money for perhaps re-
6 entering and plugging or replugging some of these wells
7 that are on the unit and offset the unit?

8 A This \$1,830,000 does not include any funds for
9 that.

10 Q I need a figure for -- for the total cost of
11 I guess operating and developing a waterflood over the life
12 of the project.

13 A All right. Our capital investment is \$1,830,000.
14 You need an operating expense.

15 MR. COFFIELD: Is it a summary, really, of the
16 economics that you're looking for?

17 MR. RAMEY: I want, yes, I want a summary.

18 MR. COFFIELD: Page two of the -- of 3-a.

19 MS. TESCHENDORF: We have to be sure that the
20 costs are going to be less than the extra revenues derived
21 from the oil recovery.

22 MR. COFFIELD: If I may, I think page two of
23 Exhibit 3-a, the December study.

24 A All right. The operating cost, including ad
25 valorem and taxes over the life of the project is \$2,630,000.

1 Actually, this is the computer printout of
2 Table Five, which is the drill plan in the 3-b.

3 It's not included in that Table Seven, the
4 operating costs, as such. They give you a future net after
5 expenses and taxes of \$13,622,000, taking away this
6 \$1,830,000 capital investment, then that would give you a
7 future undiscounted profit of \$11,792,000. The operating
8 expenses over the life of the project are \$2,630,000.

9 MS. TESCHENDORF: Does that include your
10 capital investment?

11 A No, no, the capital investment -- that's just
12 operating expenses.

13 Q (Mr. Ramey continuing.) But I notice on page
14 one of Exhibit 3-a they estimated an investment of \$910,000.
15 They missed that a little bit.

16 A Well, sir, what you have to look at their --
17 this Exhibit Three more as a feasibility study of that area
18 there. And that particular investment was they had not
19 considered drilling the seventeen wells, so at that time
20 they were looking more at conversion rather than the
21 drilling, and in our 3-b exhibit, Table Four, will include --
22 if you'll look in that computer printout you will see a
23 column capital cost, and that is their \$910,000, but that
24 is a conversion, looking at conversion -- converting some
25 of the old oil wells in the area. The economics are favor-

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1 able, too, even though the investment is greater by having
2 to drill the wells, the discounted cash flow is greater
3 using this drill plan which we're proposing to use.

4 Q Okay, so your total cost of equipping and
5 operating this flood would be the \$1,830,000 plus the
6 \$2,630,000.

7 A Right.

8 Q And then your total revenue will be the
9 \$11,792,000.

10 A \$11,792,000; I rounded it off. The computer
11 shows \$373, but --

12 Q So your net -- your net gain will be somewhere
13 in the area of \$7,300,000.

14 A Yes, sir.

15 Q All right.

16 MR. ARNOLD: Did you mention what the cumulative
17 prior production was on that area?

18 A I believe I did. I don't -- \$1, -- now the
19 cumulative primary, \$1,380,000.

20 MR. ARNOLD: It's going to be a little better
21 than one to one, then.

22 A No, sir, \$1,383,000. They figured 82 percent
23 of their primary recovery. See, we're only estimating
24 1,086,000 barrels. See, we happen to have almost 1.4 million
25 cumulative production. And it may approach 100 percent

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1 of primary, I don't know.

2 Q And then you would like to have written in
3 the order permission to increase your injection pressure if
4 after step rate tests that you could --

5 A Yes.

6 Q -- show that you can --

7 A Well, if it's necessary. In visiting with
8 Reserve, they're putting 500 barrels a day on the average
9 in their unit over here at less than 600 pounds. This --
10 we may not need to, but if we do need to, we would like to
11 be able to run the step rate tests, then.

12 Q And then we could -- you would request the
13 Commission -- or the Division to increase the pressure --

14 A Yes, sir.

15 Q -- at some rate less than fracture pressure.

16 A Yes, sir.

17 MR. RAMEY: Any other questions of the witness?

18 The witness may be excused.

19
20 BILL SELTZER

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. COFFIELD:

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1 Q Please state your name, residence, and occupa-
2 tion, and what is your position relative to Maralo?

3 A Bill Seltzer. I'm a resident of Midland,
4 Texas. I'm an independent land man and I have been employed
5 by Maralo to prepare the unit agreement, unit operating
6 agreement, ratification, take care of the negotiations and
7 consummation of all the instruments for the proposed Maralo
8 Jalmat Yates Pool.

9 Q And are you familiar with the application of
10 Maralo for the approval of this unit?

11 A Yes.

12 Q Have you previously testified before the Oil
13 Conservation Division as a land man and were your qualifi-
14 cations made a matter of record and acceptable to the Divi-
15 sion?

16 A Yes.

17 MR. COFFIELD: Is the witness considered
18 qualified in this case?

19 MR. RAMEY: Yes, he is.

20 Q (Mr. Coffield continuing.) Are all the lands
21 involved in this unit either privately owned or fee lands?
22

23 A Yes, they're privately owned lands.

24 Q Is Maralo, Inc. designated as the operator
25 under the terms of this unit agreement?

 A Yes.

1 Q All right, Mr. Seltzer, on Exhibit B to the
2 unit agreement there is a correction which needs to be made
3 on a well location. Would you please explain that to the
4 Commission?

5 A Under the unit agreement under Exhibit B right
6 below Tract Number Five, right there in the corner it shows
7 No. 4, it looks like a dry hole when in fact that is an
8 abandoned well; it was never drilled. An abandoned location,
9 it's just an error on preparing this tract.

10 MR. RAMEY: Now which tract?

11 A Tract Five, which is that Maggie Rose tract.
12 Right below that you'll see Number 4 there, which is an
13 abandoned location.

14 Q All right, Mr. Seltzer, what formation is
15 unitized under this?

16 A On page one of the unit agreement it is
17 provided that the unitized formation shall be all forma-
18 tions or zones extending from the top of the Yates formation
19 down to 100 feet below the base of the Queen formation un-
20 derlying the unitized land; said interval having heretofore
21 been found to occur in the Maralo, Inc. Humble Winters "A"
22 Lease Well No. 2, originally drilled by Humble Oil and
23 Refining Company as their E. C. Winters "C" Well No. 2,
24 located 660 from the north line and 1980 from the west
25 line of Section 18, Township 25 South, Range 37 East, Lea

1 County, New Mexico, at an indicated depth of 2,848 feet
2 to 100 feet below the base of the Queen formation, as indi-
3 cated on the hereinafter described log. The base of the
4 Queen formation is estimated to occur 280 feet below the
5 total drilled depth of 3,400 feet as recorded in the
6 Perforating Guns Atlas Corporation Simultaneous Radiation
7 Log, dated January 19, 1954, said log being measured from
8 one foot above a rotary table elevation of 3,137 feet above
9 sea level.

10 Q Mr. Seltzer, right here in reference to Exhibit
11 One, if you need to look at it, you will find reference
12 on Exhibit One to the Exxon Winters and the Exxon Winters
13 "A". Is this what we're talking about when we're saying
14 the Humble?

15 A Yes.

16 Q Okay. Does the unit agreement specifically
17 provide that the primary purpose of the unit is to conduct
18 secondary recovery project?

19 A Yes. Under Article 4.2, beginning at page
20 six of the unit agreement, indicates that secondary re-
21 covery operations shall be engaged in to the end that the
22 quantity of unitized substances ultimately recoverable
23 may be increased and waste prevented.

24 Q Do the unit agreement and unit operating agree-
25 ment provide for a participation formula?

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1 A Yes. Article 5, beginning at page seven of
2 the unit agreement provides that the respective tracts
3 shown on Exhibit A, attached to the unit agreement, are to
4 participate in accordance with the percentage set forth in
5 Exhibit A during Phase One and Phase Two of the project.

6 Ownership and allocation of interest as among
7 the various working interest owners in the various tracts
8 is reflected on Exhibit C to the unit operating agreement.

9 Q Mr. Seltzer, have you contacted all of the
10 working interest owners within this unit area relative to
11 commitment of their interests to the unit agreement and the
12 unit operating agreement?

13 A Yes, I have contacted all the working interest
14 owners and all have agreed to join in.

15 Q Have you contacted all the royalty interest
16 owners with respect to commitment of their interests to
17 this unit agreement?

18 A Yes, I have contacted all the royalty interest
19 owners and all have agreed to join in the unit except But-
20 tram Texhoma Company in Tract Number Five and the First
21 National Bank of Denver for the account of J. M. Richardson
22 Lyeth, Junior, and Munro Longyear Lyeth, jointly, in the
23 other four tracts. That's Tracts One through Four.

24 Q Okay.

25 A Those are the only two royalty owners who have

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1 not joined the unit.

2 Q Mr. Seltzer, what conditions have the working
3 interest owners specified in the unit agreement and unit
4 operating agreement relative to the royalty to be com-
5 mitted to the unit?

6 A Under Article 9, commencing at page 12 of
7 the unit agreement, specified matters for the qualification of
8 tracts. It is specified in Article 9.1.1 that the unit
9 area is to be composed of tracts listed in Exhibit A of
10 the unit agreement which qualify by virtue of the working
11 interest owners owning 100 percent of the working interest
12 having become parties to the agreement and as to the
13 royalty owners owning 85 percent or more of the royalty
14 interest have become parties to this agreement.

15 MS. TESCHENDORF: Excuse me, Mr. Seltzer,
16 in connection with that, those two royalty interests you
17 said have not agreed --

18 A Yes.

19 MS. TESCHENDORF: -- then their interest is
20 fifteen percent of the royalty.

21 A Only one. Under Tract One, Two, Three, and
22 Four that particular party -- I'll come to it in an ex-
23 hibit in a minute.

24 MS. TESCHENDORF: Okay.

25 MR. COFFIELD: Do you have any more?

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1 MS. TESCHENDORF: Not now, thank you.

2 Q (Mr. Coffield continuing.) Have all tracts
3 listed on Exhibit A voluntarily qualified in this fashion?

4 A No, all have not so qualified, except Tract
5 Five, and that tract, Tract Five, only 83.29 percent of
6 the royalty interest owners have become parties to the
7 agreement.

8 Q Have you obtained what is in effect a modi-
9 fication from the working interest owners to the unit
10 agreement relative to this eighty-five percent requirement
11 for Tract Five?

12 A Yes, I have obtained consent from all the
13 working interest owners under Tract Five to be included
14 in the -- let's see, all the working interest owners that
15 Tract Five be included in the unit, notwithstanding the
16 fact that they only have eighty-three point twenty-nine
17 percent of the royalty in this tract is committed. As to
18 the remainder of the royalty in Tract Five, and the re-
19 mainder of the royalty interests in Tract One through
20 Four, inclusive, we seek statutory unitization for these
21 interests.

22 Q Mr. Seltzer, I hand you what's been marked --
23 will you make reference here to what's been marked as
24 Exhibit 10-a through 10-f, and ask you to identify these
25 exhibits.

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1 A 10-a is a list of royalty owners who have
2 interests in Tract One. All the royalty interest owners
3 listed thereon have committed their interests to the unit,
4 except the First National Bank of Denver for the account
5 of J. M. Richardson Lyeth, Junior, and Munro Longyear
6 Lyeth, jointly.

7 Exhibit b is -- 10-b, is a list of the royalty
8 interest owners in Tract Two, which with the same 40 as
9 Tract One not committed. All other interest owners are
10 committed in Tract Two.

11 10-c is a list of the royalty interest owners
12 in Tract Three. Again, all interest owners have committed
13 their royalty interests to the unit, except for the same
14 parties as listed in Tract One.

15 10-d is a list of the royalty owners -- in-
16 terest owners, for Tract Four, with again all the interest
17 owners having committed their interests to the unit, ex-
18 cept for the same party as listed in Tract One.

19 10-e is a list of the royalty interest owners
20 in Tract Five. All the royalty interest owners have com-
21 mitted their interests to the unit, except Buttram Texhoma
22 Company.

23 Q Okay, we have one more exhibit, Mr. Seltzer,
24 that's 10-f. Would you explain that one?

25 A 10-f is a list of the royalty interest owners

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1 for a tract committed to the unit, showing that one Tract
2 Five, which you asked me about at an 83.29 percent. There
3 is only one royalty owner uncommitted as to each of the
4 above tracts.

5 A total of 92.93 percent of the royalty has
6 been committed to the entire unit by ratification agree-
7 ment.

8 Q Do you believe there's any possibility that
9 you will obtain a voluntary commitment --

10 A No.

11 Q -- of the remaining outstanding royalty in-
12 terest owners?

13 A No, the response which I have had indicate
14 there's no possibility of obtaining such ratification.

15 Q Were Exhibits 10-a to 10-f, inclusive, pre-
16 pared by you or under your supervision?

17 A Yes.

18 Q Is it your opinion that the statutory uniti-
19 zation sought by Maralo will be in the interests of con-
20 servation, prevention of waste, and protection of correla-
21 tive rights?

22 A Yes.

23 MR. COFFIELD: I move the admission of Exhibits
24 10-a through 10-f, inclusive.

25 MR. RAMEY: Exhibits 10-a through 10-f will

1 be admitted.

2 MR. COFFIELD: And I have no further questions
3 of Mr. Seltzer at this time.

4 MR. RAMEY: Did you desire to submit the unit
5 agreement and the unit operating agreement?

6 MR. COFFIELD: Yes, yes, sir.

7 A We didn't put an exhibit on it.

8 MR. COFFIELD: We didn't mark them as exhibits.

9 MR. RAMEY: Do you want to call those Eleven
10 and Twelve?

11 MR. COFFIELD: I move the admission of Exhibits
12 Eleven and Twelve.

13 MR. RAMEY: The unit agreement is Eleven and
14 the operating agreement is Twelve.

15 MR. COFFIELD: Do you desire the ratifications
16 as well, a copy of all ratifications?

17 A They're attached to the operating agreement.

18 MS. TESCHENDORF: If they're part of it, then
19 that's all right.

20 MR. RAMEY: Do you have some questions, Ms.
21 Teschendorf?

22 MS. TESCHENDORF: Yes.

23
24 CROSS EXAMINATION

25 BY MS. TESCHENDORF:

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1 Q What efforts have you made to secure voluntary
2 commitment of these unleased royalties, uncommitted royalties?

3 A I sent each royalty owner, by certified mail,
4 a copy of the unit agreement and requested -- with a resume
5 showing them what our proposed unit will be and what we
6 expect it to do under this secondary recovery, and requested
7 each one of them to voluntarily execute the ratifications
8 and joint agreement.

9 All did, except these two right here. Now,
10 I expect, possibly, that that one from the Denver bank
11 might come in, but it has been over a year.

12 Q Have you had responses?

13 A Yeah, and can't get any answer.

14 Q They have not responded to your communications?

15 A I have talked with their lawyer but I just
16 don't get any answer.

17 MR. COFFIELD: Just a minute, may I ask, Mr.
18 Seltzer, I think there was one of the royalty interest
19 owners, though, that indicated they wouldn't sign anything
20 at all --

21 A Yeah.

22 MR. COFFIELD: -- is that correct?

23 A That one, under Tract Five, the Buttram Tex-
24 homa, they indicated they wouldn't sign regardless.

25 MR. COFFIELD: So it's the other one that

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CERTIFIED SHORTHAND REPORTER
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Santa Fe, New Mexico 87501

1 you're saying is a possibility?

2 A There's a possibility, but --

3 MR. COFFIELD: Of response.

4 A There's a possibility, but we have those
5 tracts qualified, One through Four. And the Tract Five is
6 qualified by the inclusion of the -- all the working interest
7 owners in the unit and in that tract requesting that they
8 be included.

9 MR. COFFIELD: Mr. Seltzer, we've two kinds
10 of qualification here. We've got the qualification which
11 is necessary with respect to the terms of the unit agree-
12 ment and unit operating agreement, and otherwise we want
13 to force the interests in by virtue of this proceeding,
14 so --

15 A That's correct.

16 MR. COFFIELD: -- they're not qualified in
17 that sense.

18 Q (Ms. Teschendorf continuing.) My only other
19 question is kind of a large question. It has to do with
20 statute number 65-14-7, that I'm sure Mr. Coffield's
21 familiar with.

22 It has a number of provisions that should be
23 included in the unit agreement that the Commission has to
24 include in their order.

25 If you can point out to me where these provi-

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1 sions are in the unit agreement, you know, --

2 MR. COFFIELD: That is a large question.

3 Q -- the Commission can adopt the agreement, if

4 it so chooses. We need to know that some provision has

5 been made. Do you have a copy of the statute?

6 MR. COFFIELD: We have it here, 65-14 --

7 MS. TESCHENDORF: 7.

8 (There followed a discussion off

9 the record.)

10 MR. COFFIELD: You say we're all right on A,

11 B, and C?

12 MS. TESCHENDORF: I believe so, yes.

13 MR. COFFIELD: Okay. D would be under the

14 unit operating agreement Ten, Article Ten.

15 MS. TESCHENDORF: Okay.

16 MR. SELTZER: E, the unit agreement, Article

17 Eleven.

18 F, the unit operating agreement, Article

19 Eleven.

20 G, unit operating agreement, Six.

21 H, the unit operating agreement, Article Four.

22 I, under unit agreement, Article Seventeen.

23 J, under unit agreement, Article Four.

24 MS. TESCHENDORF: Thank you very much.

25 MR. RAMEY: Any other questions of the wit-

1 ness? He may be excused.

2 MR. RAMEY: Do you have anything further, Mr.
3 Coffield?

4 MR. COFFIELD: Nothing further.

5 MR. RAMEY: Then the Commission will take the
6 case under advisement.

7 (Hearing concluded.)
8
9
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REPORTER'S CERTIFICATE

I, SALLY WALTON BOYD, a Court Reporter, DO HEREBY CERTIFY that the foregoing and attached 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, knowledge, and skill, from my notes taken at the time of the hearing.

Sally W. Boyd, C.S.R.

SALLY WALTON BOYD
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MARALO
 HUMBLE - WINTERS "A" NO. 2
 (ORIG. HOR - E. C. WINTERS NO. 2)

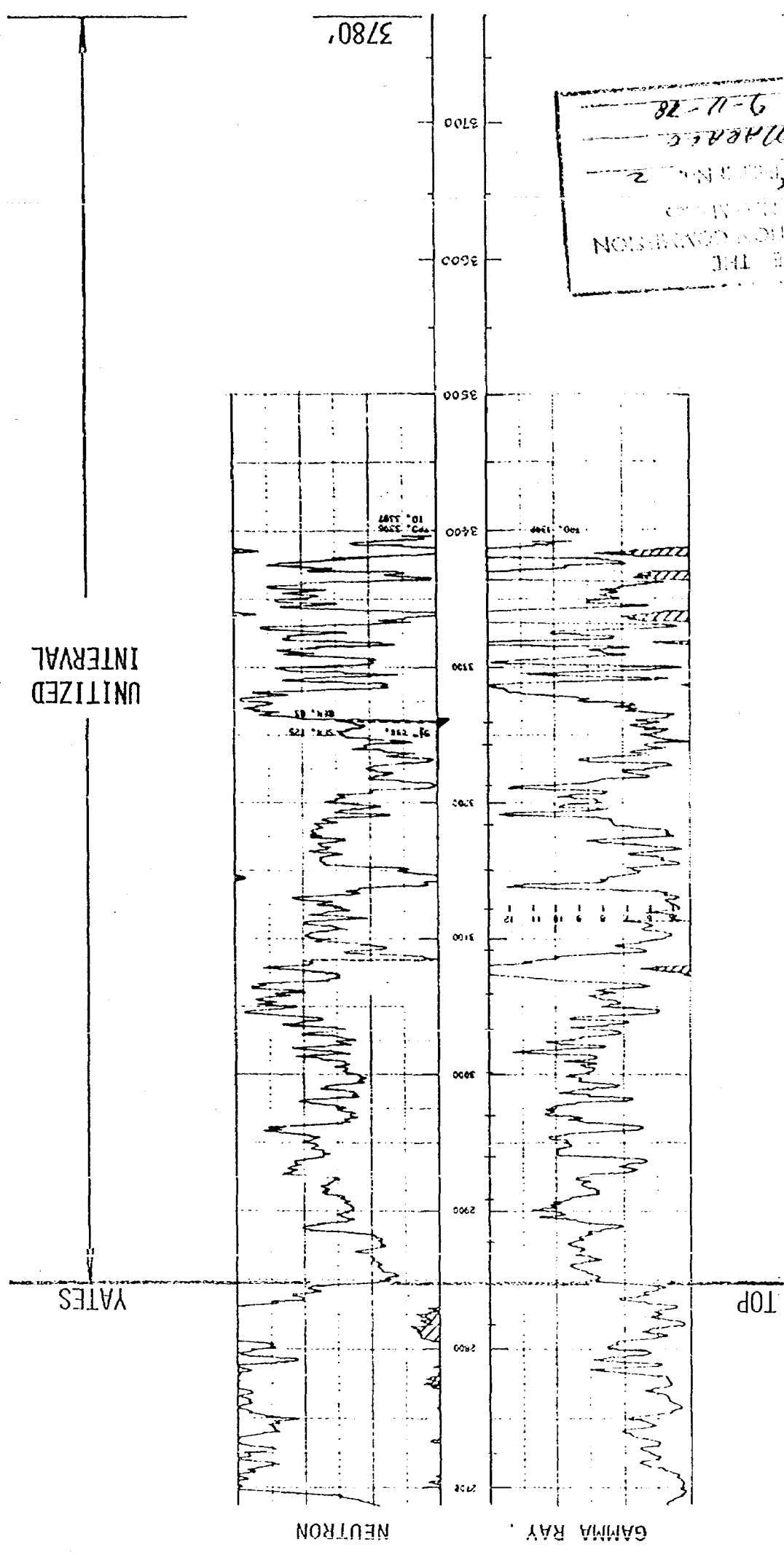


EXHIBIT THE
 OIL CONSTRUCTION COMMISSION
 Case No. 6328, Sub. No. 2
 Submitted by MARALO
 Hearing Date 9-11-78

T. SCOTT HICKMAN
CONSULTING ENGINEER
416 BUILDING OF THE SOUTHWEST
MIDLAND, TEXAS 79701

915-683-4391

December 9, 1976

Maralo, Inc.
Box 832
Midland, Texas 79701

Attention: Mr. Jack Semon

BEFORE THE OIL CONSERVATION COMMISSION Santa Fe, New Mexico	
Case No. <u>63282</u>	Exhibit No. <u>3A</u>
Submitted by <u>Maralo</u>	
Hearing Date <u>9/11/78</u>	

Re: Secondary Recovery Study
Proposed Maralo Jalmat Yates Unit
Lea County, New Mexico

Gentlemen:

As you requested, we have completed and furnish herewith a secondary recovery study for a portion of the Jalmat Yates field. The study concludes that a water flood operation will increase future recovery and profit as summarized below:

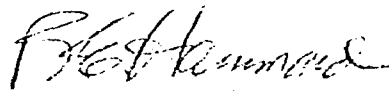
Effective Date	January 1, 1977
Net Reserves - bbls oil	735,109
- Mcf gas	154,633
Net W.I. Profit, Undiscounted	\$9,979,282
Discounted @ 8.5%	4,781,746
Return on Investment	11.0
Rate of Return	37%
Payout	4.2 yrs

These economics are before consideration of Federal Income Tax.

The unitization of royalty and working interests is recommended for the most practical flood operation, and some typical parameters for consideration are included in the report. It was assumed that unit negotiations and signatures can be concluded by late 1977 and water injection commence in early 1978. A water flood plan using both drilled and converted input wells is recommended, and the flood investment is estimated at \$910,000. This estimate is based on typical costs for various components of the plan and not on a detailed design and cost analysis.

We appreciate the opportunity to conduct this study for Maralo, Inc. and return to you the earlier reports and data furnished from your files.

Yours very truly,


R. E. Hammond

REH/kez

LIST OF FIGURES AND TABLES
Secondary Recovery Study
Proposed Maralo Jalmat Yates Unit

- Figure
1. Map of Study Area
 2. Type Log of Yates Sand
 3. Structure Map, Top of Yates
 4. Cumulative Oil Recovery Map for Yates wells
 5. Primary oil production and GOR trends, Humble Winters lease
 6. Primary oil production and GOR trends, Humble Winters "A" lease
 7. Primary oil production and GOR trends, Winters "B" lease
 8. Primary oil production and GOR trends, Winters "C" lease
 9. Primary oil production and GOR trends, Maggie Rose lease
 10. Primary oil production and GOR trends, Proposed Unit
 11. Secondary Oil Production and GOR Trends, Proposed Unit
 12. Proposed Water Flood Plan for Unit

- Table
1. Estimated Water Flood Investment
 2. Typical Parameters for Participation
 3. Working Interest Ownership by Leases
 4. Cash Flow Projection, Current Operations
 5. Cash Flow Projection, Water Flood Operation

CONCLUSIONS

1. A water flood operation in the study area should recover some 850,000 gross barrels additional oil over current operations.
2. Unitizing the six affected leases is recommended for a practical flood operation.
3. A unitized flood will require an estimated investment of \$910,000 and will return to the working interest owners nearly \$10 million undiscounted profit before Federal Income Tax with a 4.2 year payout and 37% rate of return.

SUMMARY OF RESERVES AND ECONOMICS
OPERATIONS AFTER JANUARY 1, 1977

	<u>EXISTING OPERATIONS</u>	<u>WATER FLOOD OPERATIONS</u>	<u>INCREASE DUE TO FLOOD</u>
Gross Reserves			
Oil, BBL	139,658	989,490	849,832
Gas, MCF	776,438	955,200	178,762
<u>Net Reserves to WI</u>			
Oil, BBL	120,802	855,911	735,109
Gas, MCF	671,622	826,255	154,633
Future Revenue to WI			
After Expenses and Severance Tax	\$1,484,412	\$12,373,694	\$10,889,282
Capital Investment	0	\$ 910,000	\$ 910,000
Future Profit to WI			
(Before Federal Income Tax)			
Undiscounted	\$1,484,412	\$11,463,694	\$ 9,979,282
Discounted @ 8.5%	1,283,569	6,065,315	4,781,746
Profit/Investment Ratio		12.6	11.0
Payout		2.0 yrs.	4.2 yrs.
Rate of Return		45%	37%

SECONDARY RECOVERY STUDY
PROPOSED MARALO JALMAT YATES UNIT
Sections 12 & 13-25S-36E and Section 18-25S-37E
Lea County, New Mexico

Introduction

The purpose of this secondary recovery study is to develop estimated reserves and economics under water flood operation. Earlier reports indicating feasibility of water flooding the properties were reviewed, and production data and other factors which might be considered as a basis for unitization were updated. The proposed unit area (Fig. 1) includes 6 leases with 16 wells drilled between 1948 and 1951. Production is from the Yates sand at an average subsurface depth of 3,000 feet.

Geology

The Jalmat Field is located on the eastern side of the Delaware Basin on the west flank of the Central Basin platform. The field is over 30 miles long and 3 to 5 miles wide, trending in a slightly northwest to southeast direction. Regional dip is to the west into the Delaware Basin. Production is primarily from the Yates and Seven Rivers formations of Permian Age. The Yates ranges from 200 to 300 feet in thickness, and the Seven Rivers from 400 to 600 feet thick.

The study area is located in the southern part of the Jalmat Field near the western edge, about 1 mile northwest of Jal, New Mexico. The Yates formation here is about 200 feet thick with the oil productive section being in the upper 125 feet. Fig. 2 shows a typical log of the Yates sand. Production is found in four sandstone intervals separated by anhydritic dolomite sections. The productive intervals appear to be continuous across the study area.

Four Seven Rivers wells were completed in the study area during the 1930's and later plugged. No geologic data are available on these wells.

Yates structure in the study area (Fig. 3) is relatively flat and bounded by higher areas to the north, south and east. These higher areas have increasing gas saturation in the Yates sands. These sands tend to thin toward the west and to diminish in quality.

Reservoir Properties

Cores from 2 wells in the study area indicate an average 15.5% porosity and 24 md. permeability. An original gas-oil contact was picked at 300 feet above sea level, and no oil-water contact was established. Initial bottom hole pressure was reported as 1,400 psi. Since logs are not available for some wells,

it was considered impractical to construct an isopach map of productive sand or to calculate a reliable volume of original oil in place.

Primary Performance

The 12 active (14 total) oil wells in the proposed unit area produced 23,376 bbls of oil and 144,535 Mcf casinghead gas during the 12 months ended October 1, 1976. This represents an average production rate of 5 barrels per day per well with an average gas-oil ratio of 6,183 cu. ft. per bbl. Accumulated oil production to October 1, 1976 was 1,283,584 bbls for an average of 91,685 bbls per well. Cumulative oil production for the Yates wells is given by Figure 4, which shows highest recoveries near the central part of the proposed unit. The 2 Yates gas wells produced 16,663 Mcf (average of 23 Mcf per day per well) during the year ended October 1, 1976 and had accumulated 2,747,009 Mcf by that date.

Curves projecting primary oil production and gas-oil ratio trends for five of the six leases in the proposed unit area are shown in Figs. 5 to 9 inclusive. No curve was prepared for the Wells lease as its Yates well was temporarily abandoned in 1972 after accumulating 48,341 bbls. Fig. 10 shows total oil production and gas-oil ratio for the proposed unit area based on a summation of the individual lease curves.

The production curves show typical decline trends for all leases except the Winters "C" lease where the normal decline was interrupted by a steep production increase in January, 1975 which reached 2,521 BPM by September, 1976. This trend reflects a typical water flood response and indicates that the Winters "C" lease is receiving benefit from some accidental water flooding, possibly from the salt water disposal well northwest of the Winters "C" #4 since this well and the Wells #1 both have been temporarily abandoned because of high water production.

In order to estimate a true primary production performance for the area, an adjusted primary oil curve was constructed for the Winters "C" lease. Based on this projection, the lease had recovered an estimated 19,254 bbls of secondary oil by October 1, 1976. This gives an adjusted primary cumulative oil production to October 1, 1976 for the unit area of 1,264,330 bbls. Future adjusted primary is estimated to be 38,862 bbls of oil and 663,471 Mcf of casing-head gas giving a unit total estimated ultimate primary oil recovery of 1,303,192 bbls.

Projecting the future performance of the accidental flood is hazardous since the extraneous source of water may become plugged or may channel through a permeable streak to water out producing wells. For purposes of this study, it was assumed that the Winters "C" Lease production would continue to increase to a maximum of 3,000 bbls per month and hold steady for two years before decline. This gives future unit production under existing operations of 149,522 bbls of oil and an ultimate increase of 129,914 bbls over the adjusted primary due to the existing accidental flooding.

Future production from the 2 gas wells is estimated at 114,500 Mcf based on the gas well production curve for the Maggie Rose lease.

Secondary Recovery

Since the reservoir data was not adequate for a volumetric determination of oil in place, any attempt to calculate secondary reserves would not be reliable. Numerous water flood projects have been initiated in the Jalmat Field, and some of these have been in operation for 6-12 years. The results experienced by the more mature projects should give a dependable indication of what might be expected from the proposed unit. A study was made of five projects considered to be most representative of conditions similar to those in the proposed unit area. Three of these projects involve only Yates sand where the wells had been cased, perforated and fractured. Ultimate secondary reserves are estimated at about 40% of ultimate primary for one project and about 100% for each of the other projects. The remaining two projects studied involve Yates and Seven Rivers formations with most completions being open hole. Here the secondary reserves ranged from 50% to 80% of ultimate primary.

Yates completions in the proposed unit area are mainly open hole, so flood control may be less precise than if the various sand lenses were open through perforations. On the other hand, flood efficiency with only Yates sand in the proposed unit may be somewhat better than if other formations were also included in the open hole. Considering these factors, a secondary recovery of 75% of ultimate primary was assigned to the proposed unit, assuming the flood plan adopted gives good coverage over the productive area.

Fig. 11 gives an oil production rate projection for the proposed unit under water flood operation that will result in a 979,746 bbl increase over adjusted primary recovery. This forecast is based on the flood pattern set out in Fig. 12 which involves initial conversion of five wells to injection service and drilling five new input wells. First injection was assumed to occur early in 1978. It is suggested that conversion of Winters "C" #3 and Winters "B" #4 be delayed until after flood reserves to the west and southwest of these wells had been recovered. The proposed injection pattern is consistent with the Reserve Oil & Gas Company's South Langlie Jal Unit pattern on the east boundary of the proposed unit. While the Reserve unit is currently injecting mainly into the Seven Rivers formation, it was assumed that Reserve would cooperate with the proposed unit in flooding Yates sand along the common boundary. Likewise, it was assumed that Dalport would cooperate by converting its Winters #1 well to injection. If Conoco chose to cooperate along the west and southwest boundaries of the proposed unit, the number of injection wells to be drilled could be reduced. The proposed injection plan would flood approximately 465 acres out of 680 acres for the total unit area.

The injection wells to be drilled would each flood from 20 to 30 acres within the proposed unit area that would otherwise not be effected by water injection. Primary recoveries in this part of the study area, as reflected in

Fig. 4, average about 60,000 barrels per well or 1,500 barrels per acre. Secondary recovery should average at least 1,000 barrels per acre or a minimum of 20,000 barrels per injection well. For an investment of \$60,000 and operating expenses of \$50,000 over an eight year life, each proposed injector would return a profit of at least \$115,000 before Federal income tax. Drilling of the most northerly proposed injector could be deferred until adequate production testing at Wells #1 and Winters "C" #4 demonstrated that the accidental flood had not moved out most of the recoverable oil nor watered out the reservoir in this area.

Investment

The investment to install the proposed injection project is estimated at \$910,000 as detailed in Table 1. Injection water should be available for purchase from Skelly who operate a water system about six miles south of the unit area. The cost estimate is based on laying a line to the Skelly system and purchasing relatively fresh water at a cost of about 5¢ per barrel. An alternative would be to drill water supply wells to the Santa Rosa or to the San Andres formations, but the water quality would be inferior and would probably increase water treating and equipment corrosion problems. There is also a possibility that water might be purchased from the Reserve unit to the east or from other units located six to eight miles north if any of them had a surplus water supply situation.

The injection plant would be capable of delivering about 2,500 barrels per day at 1,500 psi. Input wells should be capable of accepting 300 to 500 barrels per day initially and 200 to 300 barrels per day after injection pressures build up, based on experience at other floods. The injection system lines to be installed would be cement lined and externally coated to minimize corrosion problems and would be buried to protect from freezing or interfering with farming activities.

The estimated investment also includes funds to construct a central tank battery and to provide for individual well testing so that performance of the flood can be monitored. In addition to drilling and converting injectors, two temporarily abandoned wells are scheduled to be returned to production. After flood response becomes evident, the other producing wells would be cleaned out and possibly some wells deepened to achieve full benefit from the water injection.

Unitization

The flood plan contemplates unitization of both royalty and working interests in the area to protect equities and to permit maximum operating flexibility and efficiency. The edge properties of Dalport and Conoco are not included in the proposed unit because these operators are reported to have previously so requested.

Table 2 lists typical parameters frequently used for equity allocation. Table 3 lists the reported working interest owners and their individual in-

terests in each lease. Since the future adjusted primary oil production is small relative to the expected future oil production with water flooding, an equitable single phase formula for unit participation appears to be practical. It is recommended that a 550 foot interval beginning at the top of the Yates be unitized so that some wells can be deepened into the Seven Rivers if necessary to take full advantage of injection at the adjacent Reserve project.

Economics

Cash flow projections for continued current operations and for water flood operation after January 1, 1977 are shown in Tables 4 and 5, respectively. Current operation includes some anticipated further favorable response on the Winters "C" lease from the accidental flood, as previously described. Incremental economics of the flood operation are shown in the Summary of Reserves and Economics table at the beginning of this report. The estimated flood investment of \$910,000 would yield an undiscounted profit before Federal income tax to the working interest owners of nearly \$10 million with a 4.2 year payout and a 37% rate of return.

The economic calculations assume that the current stripper oil price of \$13.51 per barrel increases 7% per year until it reaches \$20 per barrel, then remains constant. The current monthly operating expense of \$350 per well (estimated \$425 per well with water injection) was escalated about 6% per year until future well abandonments begin to reduce total costs. Gas price was held constant at the existing values of 63¢ per Mcf for casinghead gas and 77¢ per Mcf for gas well gas. A total wellhead tax rate of 7.0% was used.

HUMBLE WINTERS "A" NO. 1
SEC. 18, TWP 25S-RNG 37 E

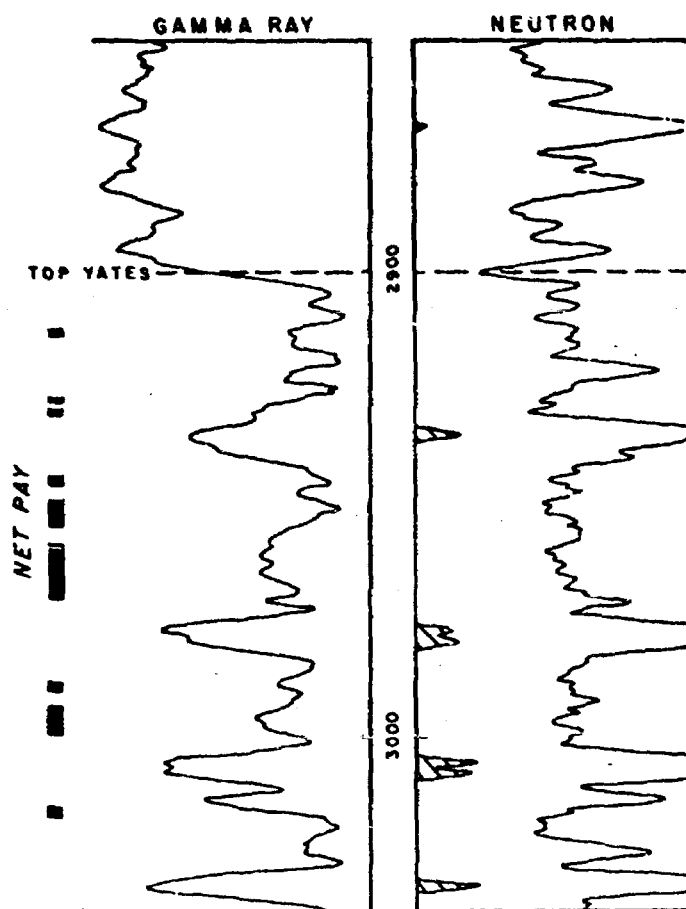
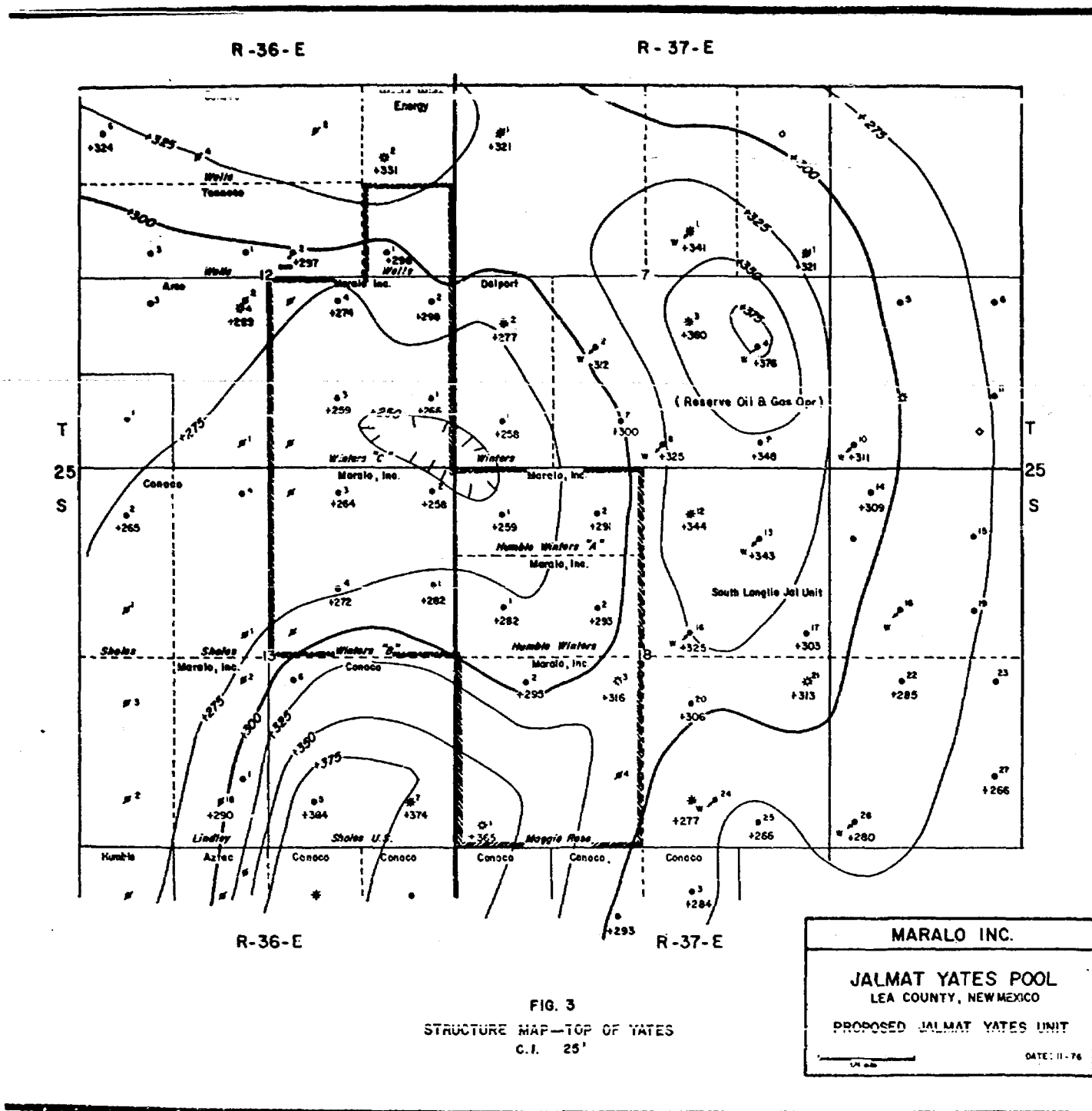
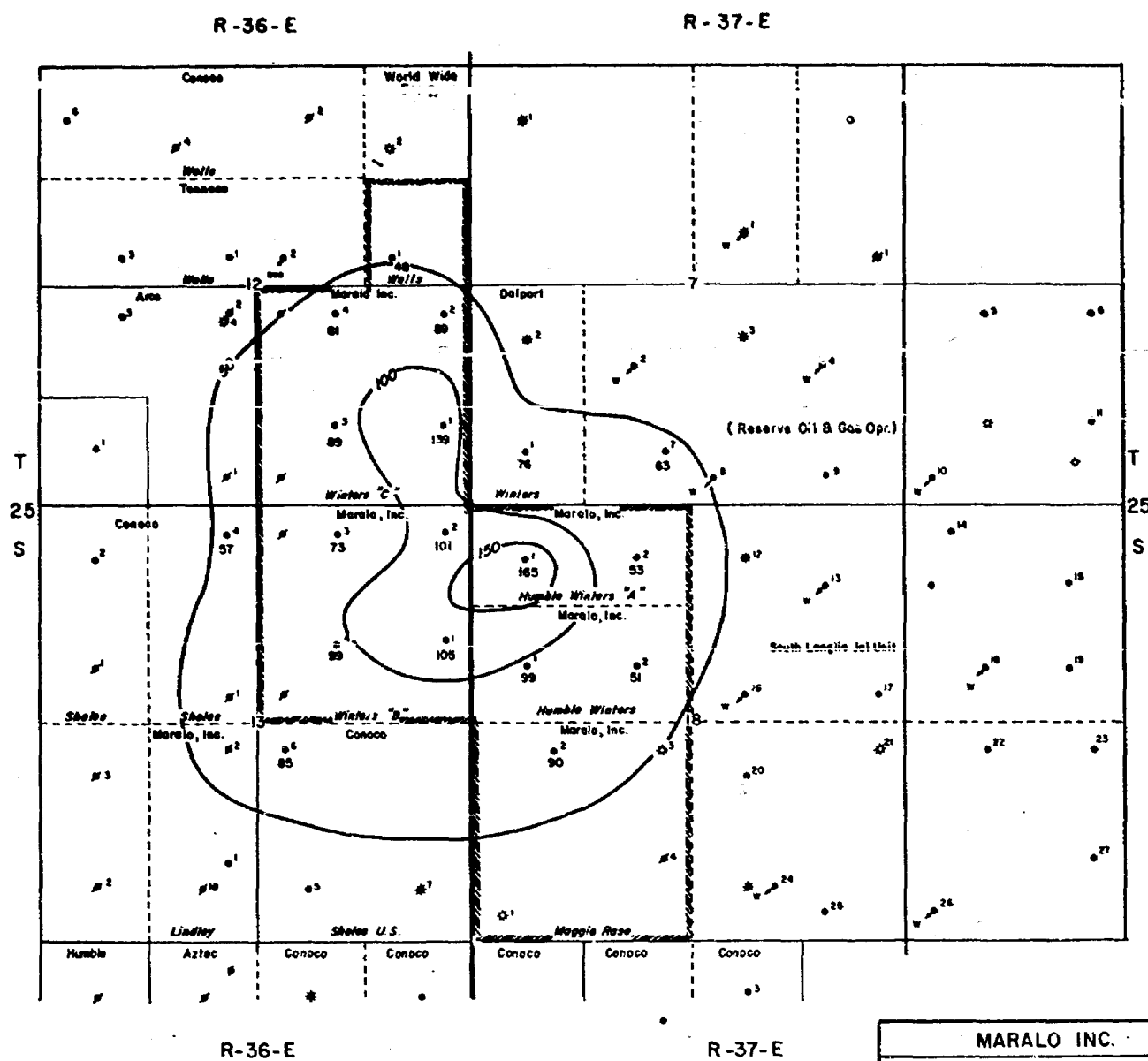


FIGURE 2
TYPE LOG
JALMAT POOL
LEA COUNTY, NEW MEXICO

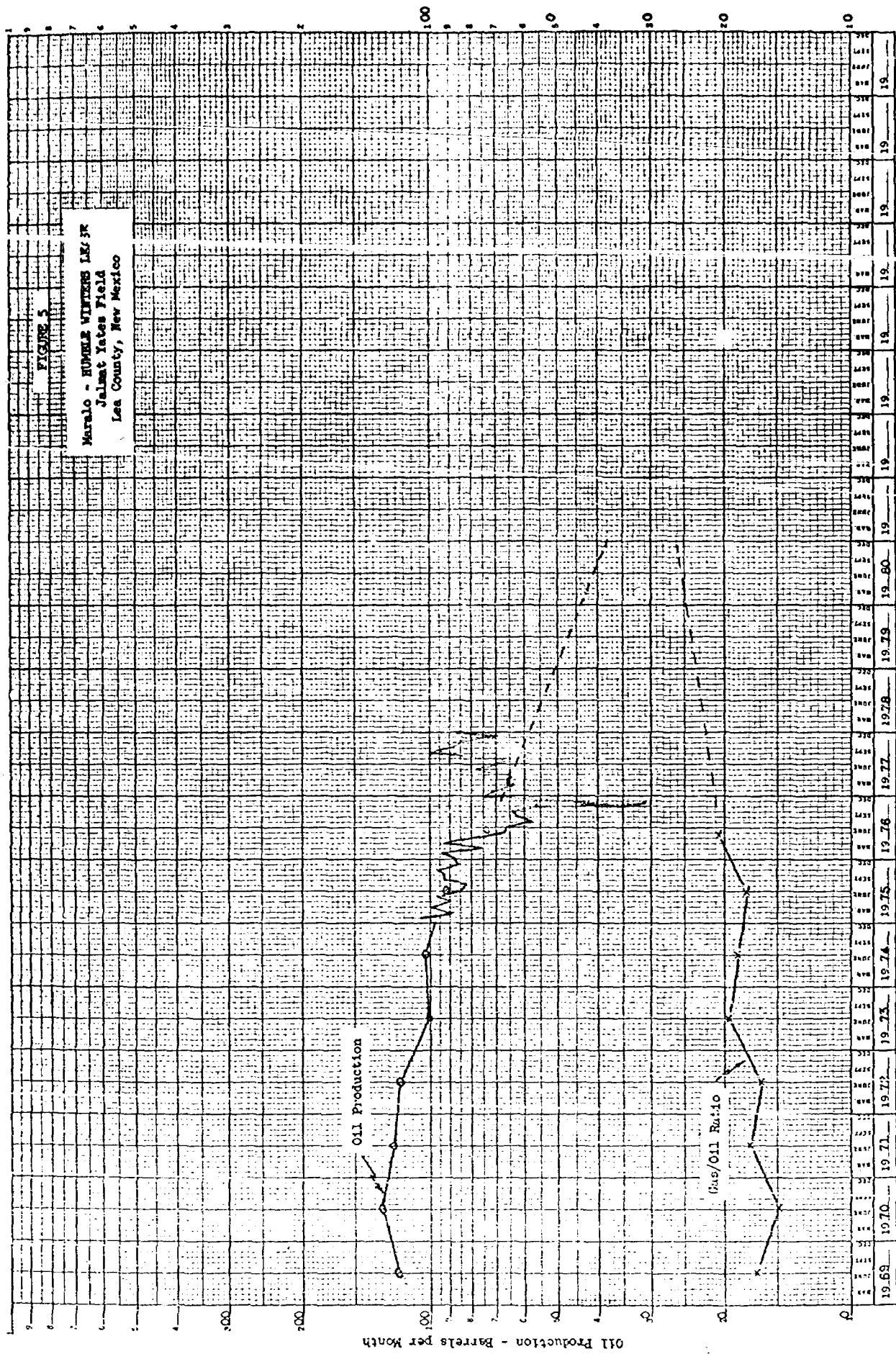


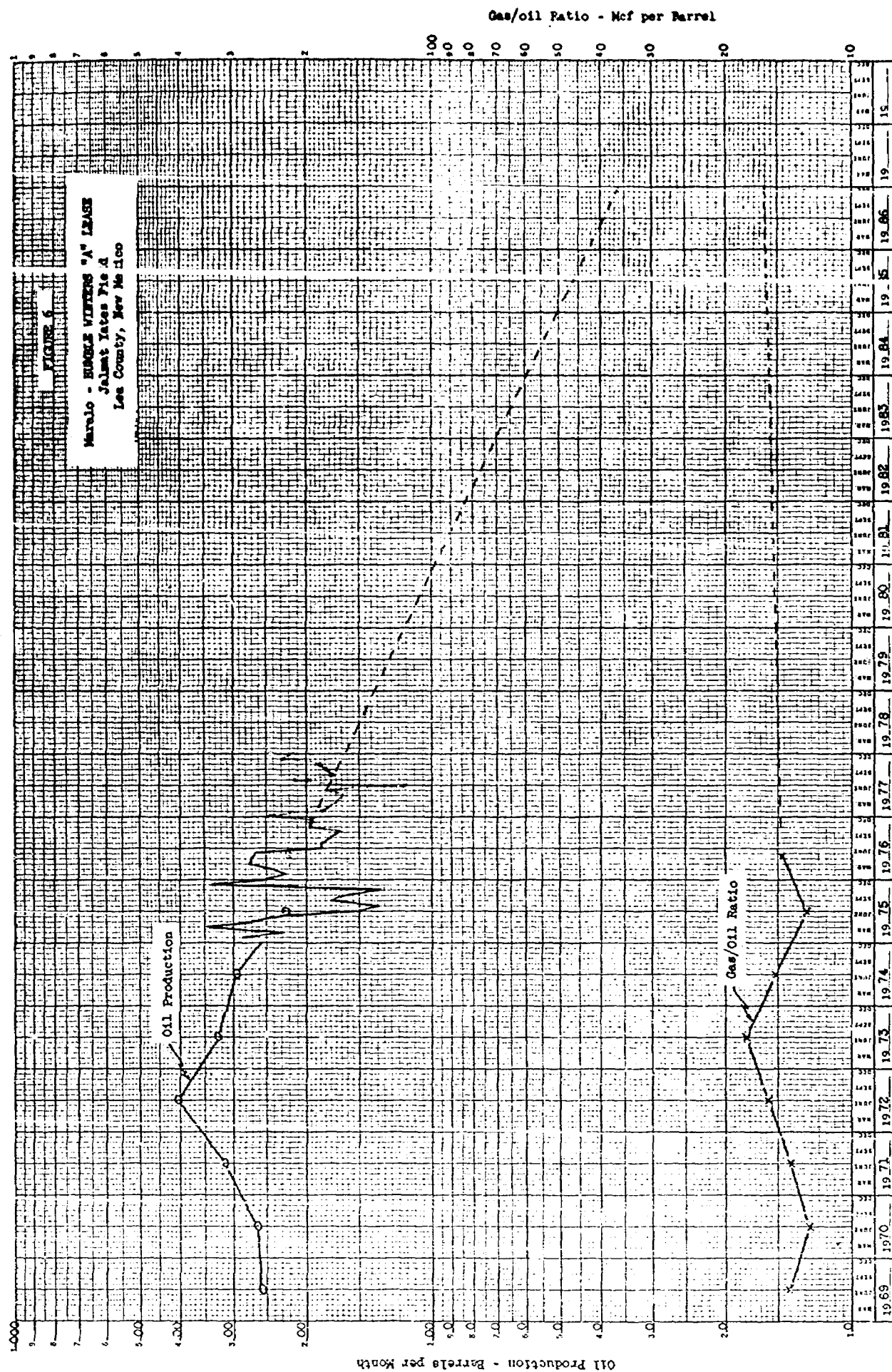


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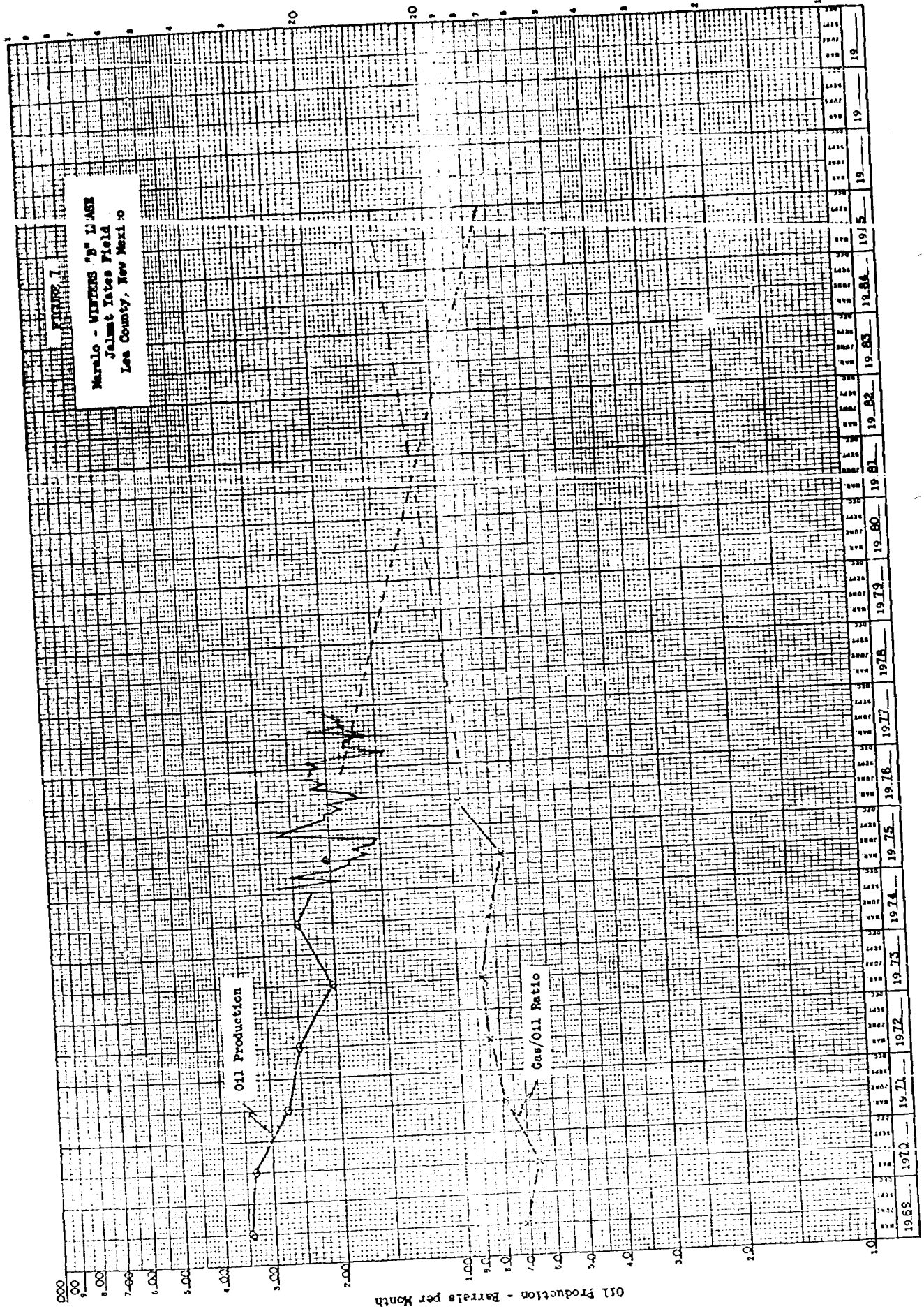
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FIG. 4
CUMULATIVE OIL PRODUCTION FOR YATES WELLS
M BBLs PER WELL TO OCT. 1, 1976

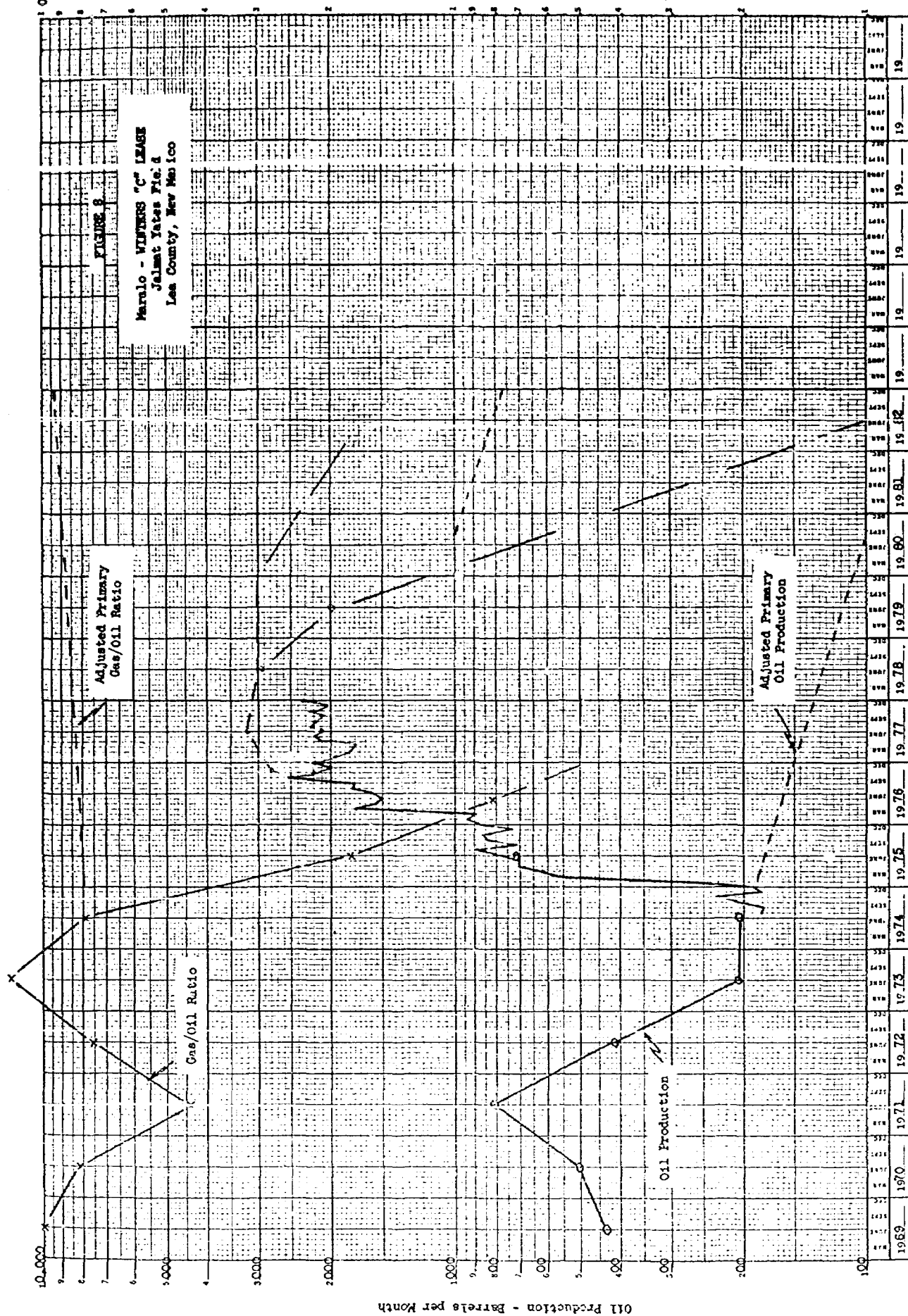


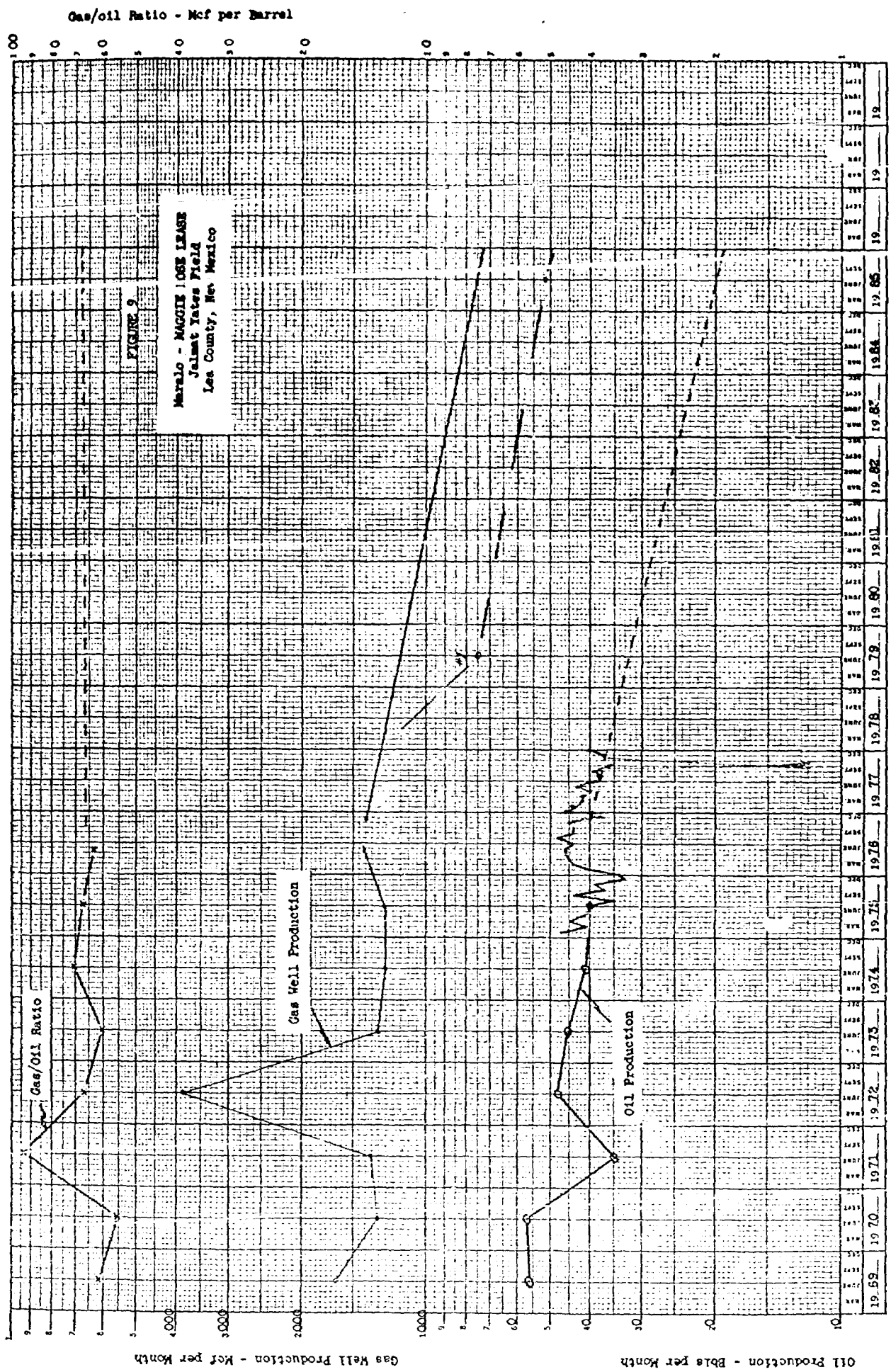


Gas/oil Ratio - Mcf per Barrel



Gas/oil Ratio - Mcf per Barrel





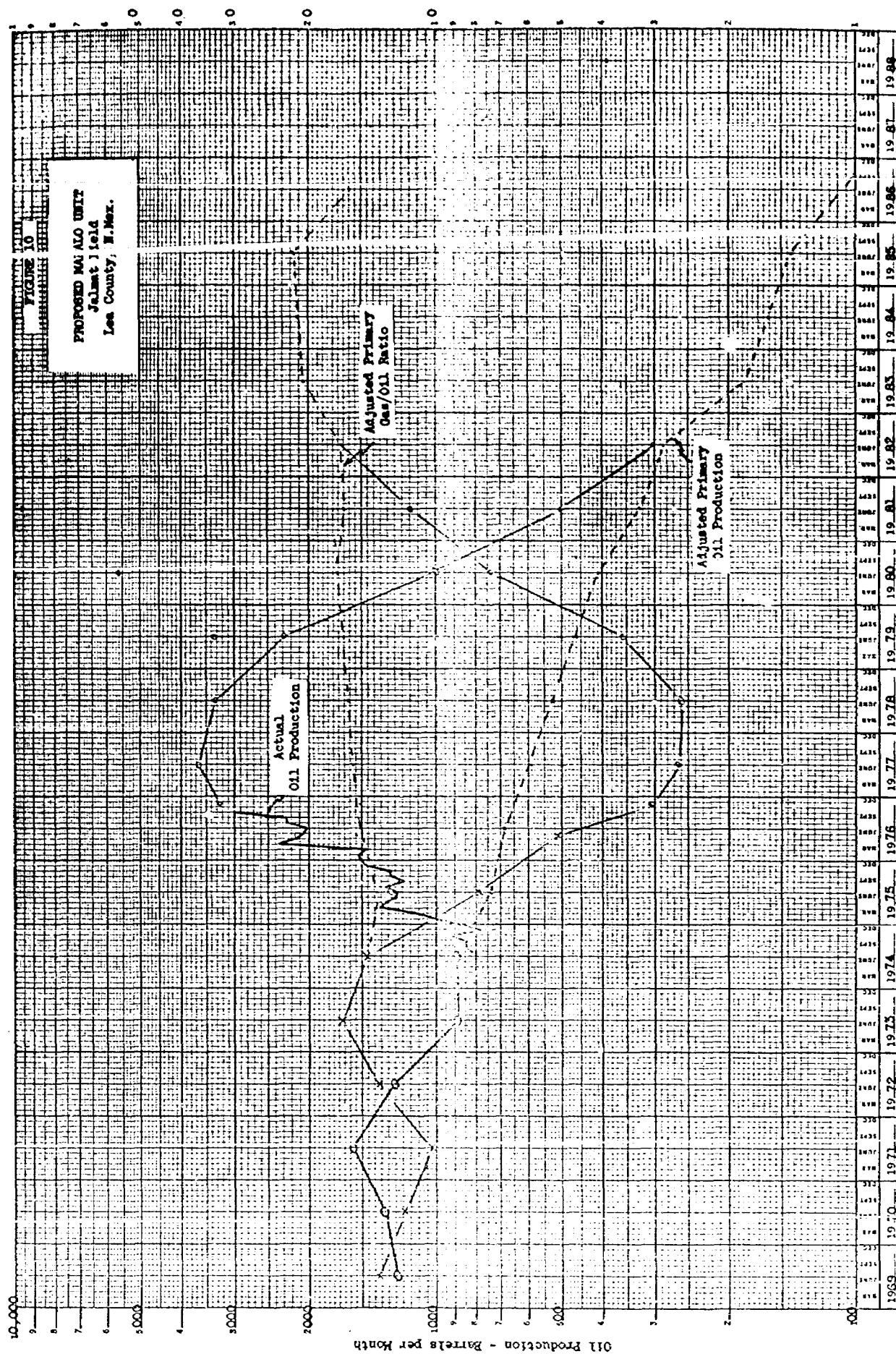
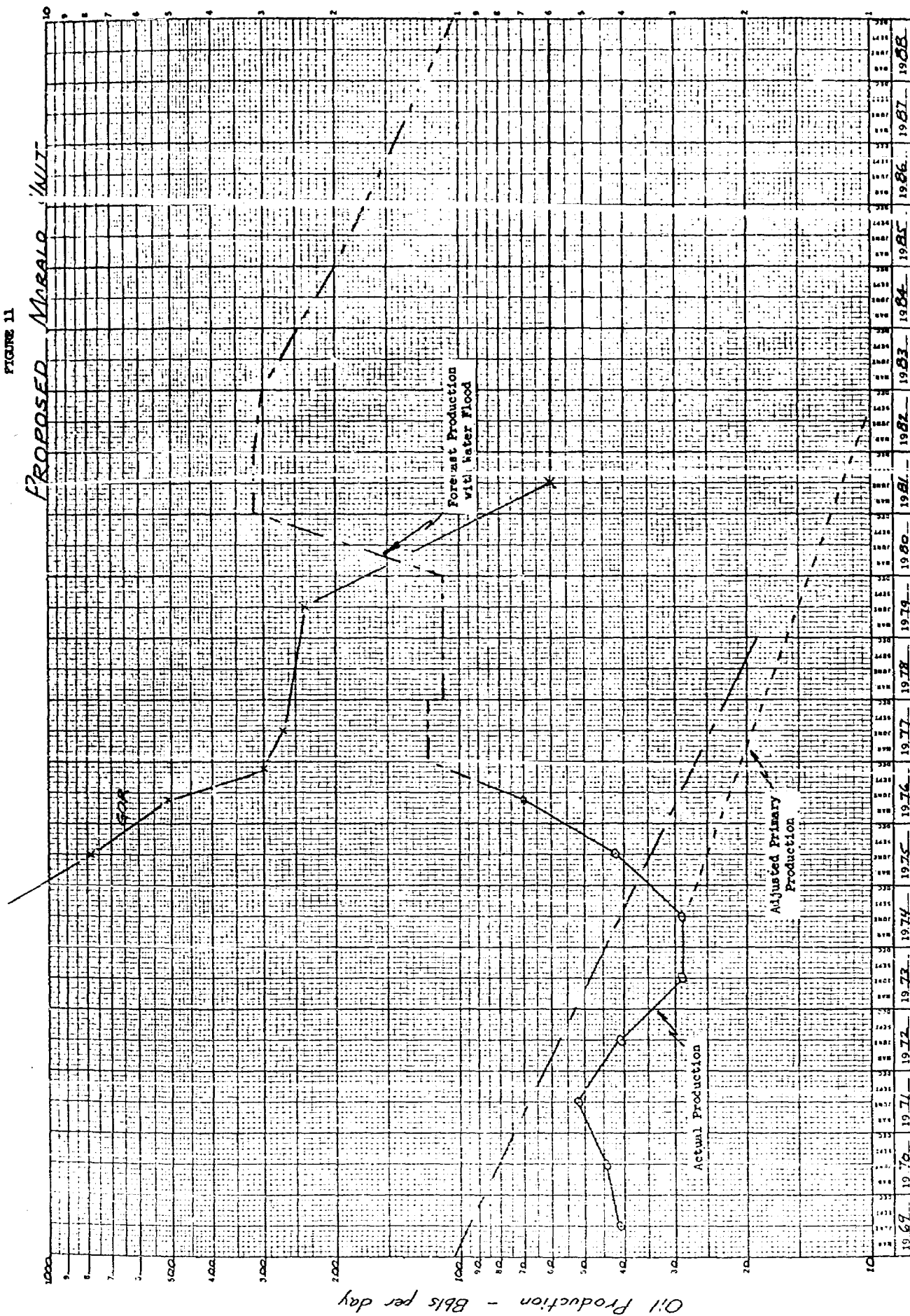


FIGURE 11

PROPOSED MURRAY UNIT



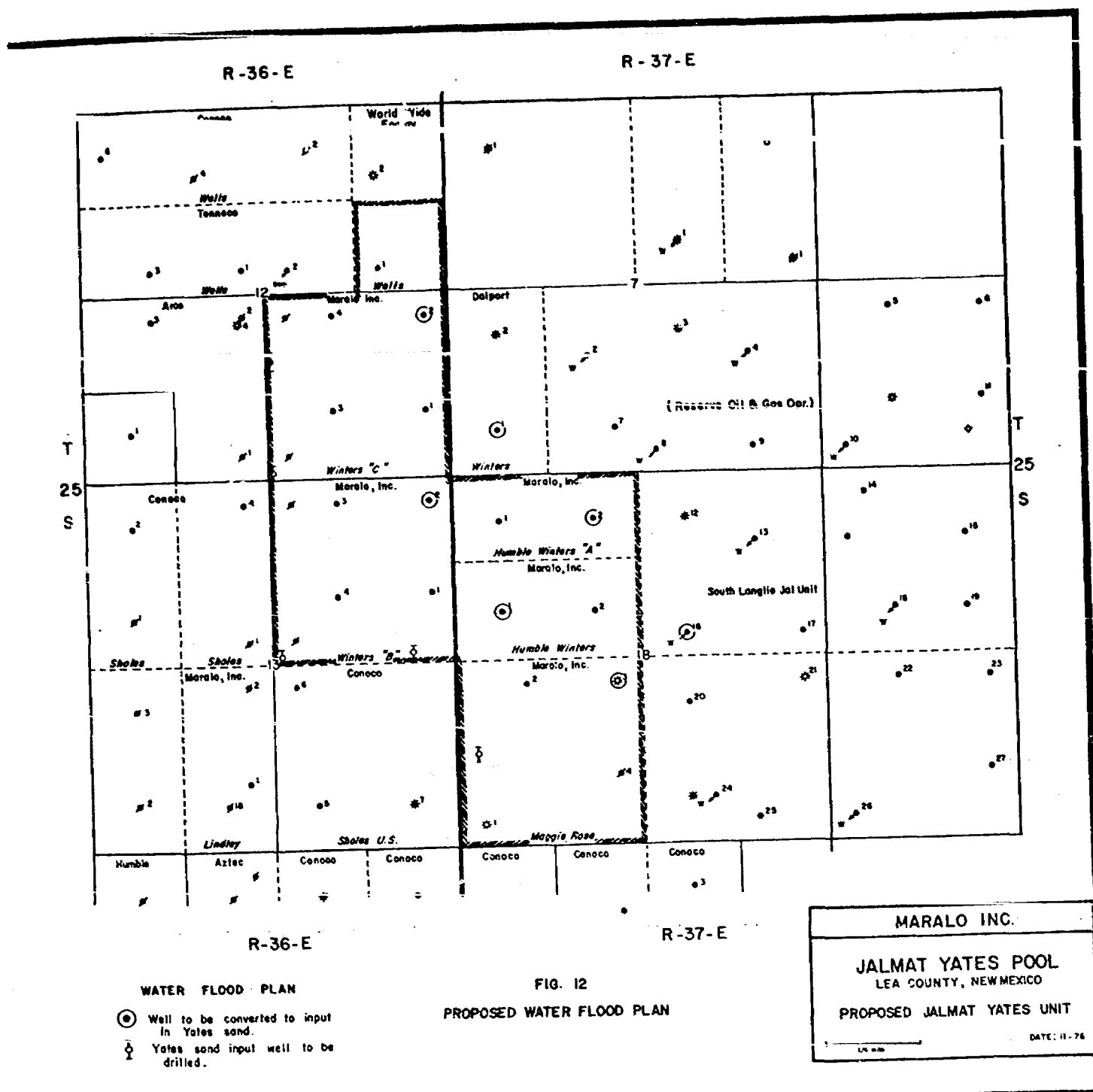


TABLE 1

ESTIMATED WATER FLOOD INVESTMENT
PROPOSED MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

Develop Water Supply	\$200,000
Install Injection Plant	80,000
Install Injection Lines (20,000 Feet)	90,000
Install Central Tank Battery And Connect Producing Wells	50,000
Return 2 TA Wells To Production	10,000
Convert 5 Wells To Injection	70,000
Drill 5 New Injection Wells	300,000
Clean Out And Possibly Deepen 7 Producing Wells	30,000
Miscellaneous (10%)	80,000
	<hr/>
TOTAL	<u>\$910,000</u>

TABLE 2

TYPICAL PARAMETERS FOR PARTICIPATION
PROPOSED MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

	HUMBLE WINTERS	HUMBLE WINTERS "A"	WINTERS "B"	WINTERS "C"	MAGGIE ROSE	WELLS #1	TOTAL
1. ACRES IN LEASE	80	80	160	160	160	40	680
Percent	11.765	11.765	23.53	23.53	23.53	5.88	100.00
2. USEABLE WELLS	2	2	4	4	3	1	16
Percent	12.50	12.50	25.00	25.00	18.75	6.25	100.00
3. CURRENT OIL PRODUCTION (YEAR ENDED 10-1-76)	933	2,713	2,471	16,752	507	0	23,376
Percent	3.99	11.61	10.57	71.66	2.17	0	100.00
4. CURRENT GAS PRODUCTION (YEAR ENDED 10-1-76)	18,895	37,696	22,414	15,620	49,910	0	144,535
Percent	13.07	26.08	15.51	10.81	34.53	0	100.00
5. CURRENT EQUIVALENT OIL PRODUCTION (YEAR ENDED 10-1-76) *	1,833	4,508	3,538	17,496	3,070	0	30,415
Percent	6.02	14.81	11.62	57.47	10.08	0	100.00
6. ADJUSTED CURRENT EQUIVALENT OIL PRODUCTION (YEAR ENDED 10-1-76) *	1,833	4,508	3,538	2,715	3,070	0	15,664
Percent	11.70	28.78	22.59	17.33	19.60	0	100.00
7. CUMULATIVE OIL PRODUCTION TO 10-1-76	150,392	218,429	378,614	398,081	89,727	48,341	1,283,584
Percent	11.71	17.02	29.50	31.01	6.99	3.77	100.00
8. ADJUSTED CUMULATIVE OIL PRODUCTION TO 10-1-76	150,392	218,429	378,614	378,827	89,727	48,341	1,264,330
Percent	11.89	17.28	29.95	29.96	7.10	3.82	100.00
9. FUTURE ADJUSTED PRIMARY OIL PRODUCTION	2,667	11,277	13,428	8,340	3,150	0	38,862
Percent	6.86	29.02	34.55	21.46	8.11	0	100.00
10. FUTURE ADJUSTED EQUIVALENT OIL PRODUCTION *	5,599	19,446	20,457	11,788	19,951	0	77,241
Percent	7.25	25.18	26.48	15.26	25.83	0	100.00
11. ADJUSTED ULTIMATE PRIMARY OIL PRODUCTION	153,059	229,706	392,042	387,167	92,877	48,341	1,303,192
Percent	11.74	17.63	30.08	29.71	7.13	3.71	100.00
12. FUTURE PRIMARY PLUS SECONDARY RESERVES **	120,393	191,726	314,489	282,909	89,609	36,256	1,035,382
Percent	11.63	18.52	30.37	27.32	8.66	3.50	100.00

* Considers 21 MCF casinghead gas and 17 MCF gas well gas equivalent to 1 BBL oil.

** No. 10 plus 75% No. 11 (less 19,254 BBLs).

TABLE 3

WORKING INTEREST OWNERSHIP
PROPOSED MAPALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

	HUMBLE WINTERS	HUMBLE WINTERS "A"	WINTERS "B"	WINTERS "C"	MAGGIE ROSE	WELLS #1
Maralo, Inc.	.323852	.318643	.3554688	.3554687	.43750	0
Erma Lowe	.323852	.318643	.3554687	.3554688	.43750	0
R. DeChicchis Estate T. J. Brown, Executor	.036622	.047040	.1015625	.1015625	.12500	0
Cities Service Oil Co.	.062500	.062500	.0625000	.0625000	0	0
Fluor Oil & Gas Corp.	.062500	.062500	.0625000	.0625000	0	0
Mobil Oil Corp.	.062500	.062500	.0625000	.0625000	0	0
R. S. Brennand, Jr.	.128174	.128174	0	0	0	0
World Wide Energy Corp.	0	0	0	0	0	1.000
TOTAL W. I.	1.000000	1.000000	1.0000000	1.0000000	1.00000	1.000
TOTAL NET TO W. I.	.380127	.876221	.8677560	.8716620	.80665	.875 est.

TABLE 3

WORKING INTEREST OWNERSHIP
 PROPOSED MARALO JALMAT YATES UNIT
 LEA COUNTY, NEW MEXICO

	<u>HUMBLE WINTERS</u>	<u>HUMBLE WINTERS "A"</u>	<u>WINTERS "B"</u>	<u>WINTERS "C"</u>	<u>MAGGIE ROSE</u>	<u>WELLS #1</u>
Maralo, Inc.	.323852	.318643	.3554688	.3554687	.43750	0
Erma Lowe	.323852	.318643	.3554687	.3554688	.43750	0
R. DeChiochis Estate T. J. Brown, Executor	.036622	.047040	.1015625	.1015625	.12500	0
Cities Service Oil Co.	.062500	.062500	.0625000	.0625000	0	0
Fluor Oil & Gas Corp.	.062500	.062500	.0625000	.0625000	0	0
Mobil Oil Corp.	.062500	.062500	.0625000	.0625000	0	0
R. S. Brennand, Jr.	.128174	.128174	0	0	0	0
World Wide Energy Corp.	0	0	0	0	0	1.000
 TOTAL W. I.	 1.000000	 1.000000	 1.0000000	 1.0000000	 1.00000	 1.000
TOTAL NET TO W. I.	.880127	.876221	.8677560	.8716620	.80665	.875 est.

02 DEC 76 14:22:01
MARALO, INC.
MIDLAND, TEXAS

CURRENT OPERATIONS
CASH FLOW PROJECTION

TABLE 4

JALMAT WATERFLOOD EVAL.

SUMMARY

RESERVES AND ECONOMICS
AS OF JAN 01, 1977

AVERAGE OIL PRICE = 14.745 AVERAGE GAS PRICE = .650

YR BEGINS JAN 01	GROSS PRODUCTION		NET PRODUCTION		REVENUE AFTER SEV TAX	OPERATING COSTS AND AD VAL TAX	CAPITAL COSTS	FUTURE NET REVENUE	CUMULATIVE NET REVENUE	CUM DISC NET REV AT 8.500 PCT
	OIL BBL	GAS MCF	OIL BBL	GAS MCF						
1977	43800	133100	37887	115132	549510	63000	0	486510	486510	466336
1978	40140	121299	34721	104924	514898	67000	0	447898	934408	860795
1979	28152	115192	24351	99642	398953	71000	0	327953	1262361	1126164
1980	12072	102474	10442	88640	208947	75000	0	133947	1396308	1225747
1981	5990	80734	5181	69835	124852	70000	0	54852	1451160	1263215
1982	3660	71062	3166	61469	91280	65000	0	26280	1477440	1279708
1983	2190	55336	1894	47866	63784	60000	0	3764	1481224	1281070
1984	1938	50662	1676	43823	57948	55000	0	2948	1484172	1283452
1985	1716	46579	1489	40291	52240	52000	0	240	1484412	1283569
1986	0	0	0	0	0	0	0	0	1484412	1283569
1987	0	0	0	0	0	0	0	0	1484412	1283569
1988	0	0	0	0	0	0	0	0	1484412	1283569
1989	0	0	0	0	0	0	0	0	1484412	1283569
1990	0	0	0	0	0	0	0	0	1484412	1283569
1991	0	0	0	0	0	0	0	0	1484412	1283569
1992	0	0	0	0	0	0	0	0	1484412	1283569
1993	0	0	0	0	0	0	0	0	1484412	1283569
1994	0	0	0	0	0	0	0	0	1484412	1283569
1995	0	0	0	0	0	0	0	0	1484412	1283569
1996	0	0	0	0	0	0	0	0	1484412	1283569
SUB TOTAL	139658	776438	120802	671622	2062412	578000	0	1484412	1484412	1283569
REMAINING	0	0	0	0	0	0	0	0	1484412	1283569
TOTAL	139658	776438	120802	671622	2062412	578000	0	1484412	1484412	1283569
PRIOR CUM	0	0								
ULTIMATE	139658	776438								
CUMULATIVE DISCOUNTED NET REVENUE AT										
7.000 PER CENT										1315811
10.000 PER CENT										1252548
12.000 PER CENT										1212987
15.000 PER CENT										1157225

T SCOTT HICKMAN
CONSULTING ENGINEER
MIDLAND, TEXAS

02 DEC 76 14:22:01
MARALO, INC.
MIDLAND, TEXAS

PROPOSED YATES UNIT
CASH FLOW PROJECTION
FOR WATERFLOOD OPER.

TABLE 5

JALMAT WATERFLOOD EVAL.

SUMMARY

RESERVES AND ECONOMICS
AS OF JAN 01, 1977

AVERAGE OIL PRICE = 18.442 AVERAGE GAS PRICE = .642

YR BEGINS JAN 01	GROSS PRODUCTION		NET PRODUCTION		REVENUE AFTER SEV TAX	OPERATING COSTS AND AD VAL TAX	CAPITAL COSTS	FUTURE NET REVENUE	CUMULATIVE NET REVENUE	CUM DISC NET REV AT 8.500 PCT
	OIL BBL	GAS MCF	OIL BBL	GAS MCF						
1977	43800	133100	37867	115132	549510	63000	0	486510	486510	466336
1978	40150	113300	34730	98005	510732	84000	0	426732	913242	842155
1979	40150	105400	34730	91171	537919	123000	0	414919	1328161	1177893
1980	67520	89500	58405	77418	916311	130000	0	786311	2114472	1762477
1981	115000	76900	99475	66519	1625361	136000	0	1487361	3601833	2778455
1982	111000	74100	96015	64097	1675875	142000	0	1533875	5135708	3741116
1983	98500	66100	85203	57177	1589078	145000	0	1444078	6579786	4573817
1984	88300	54300	75460	47402	1320463	148000	0	1172463	7752249	5194990
1985	66400	46000	57436	39790	1092321	143000	0	949321	8701570	5657096
1986	55600	34000	48959	29410	927868	138000	0	789868	9491438	6010359
1987	47810	28700	41356	24826	783760	136000	0	647760	10139198	6276538
1988	40880	24500	35361	21193	670135	134000	0	536135	10675333	6478956
1989	34670	20800	29590	17992	568348	132000	0	436348	11111681	6630320
1990	29200	17500	25258	15138	478668	130000	0	348668	11460349	6741446
1991	24820	14900	21469	12889	406880	130000	0	276880	11737229	6822525
1992	20800	12500	17992	10813	340986	128000	0	212986	11950215	6879829
1993	17520	10500	15155	9083	287200	128000	0	159200	12109415	6919183
1994	14960	9000	12940	7785	245252	126000	0	119252	12228667	6946268
1995	12410	7400	10735	6401	203414	126000	0	77414	12306081	6962423
1996	10580	6300	9152	5450	173415	125000	0	48415	12354496	6971706
SUB TOTAL	973070	945300	841708	817691	14903496	2549000	0	12354496	12354496	6971706
REMAINING	16420	9900	14203	8564	269198	250000	0	19198	12373694	6975315
TOTAL	989490	955200	855911	826255	15172694	2799000	0	12373694	12373694	6975315
PRIOR CUM	1293448	0								
ULTIMATE	2282938	955200								
CUMULATIVE DISCOUNTED NET REVENUE AT										
7.000 PER CENT										7660007
10.000 PER CENT										6370443
12.000 PER CENT										5669512
15.000 PER CENT										4800959

I SCOTT HICKMAN
CONSULTING ENGINEER
MIDLAND, TEXAS

T. SCOTT HICKMAN
CONSULTING ENGINEER
416 BUILDING OF THE SOUTHWEST
MIDLAND, TEXAS 79701

915-683-4391

June 13, 1977

Maralo, Inc.
P. O. Box 832
Midland, TX 79702

Attention: Mr. Jack Semon

Gentlemen:

Re: Proposed Water Flood Unit
Jalmat Yates Field
Lea County, New Mexico

At your request we have made additional studies concerning the captioned proposed unit. The purpose of this supplement to our initial report dated December 9, 1976 was:

1. To analyze primary oil recovery on a per-acre basis and secondary oil recovery on a per-acre flooded basis.
2. To investigate the economics of a 40-acre 5-spot pattern using drilled injection wells.
3. To investigate the economics of alternate sources of water for flooding.

Oil Recoveries

Table 1 shows primary oil recoveries to January 1, 1977 by lease with the per-acre recoveries being based on 40 productive acres per well. The revised unit area (excluding the south half of the Maggie Rose Lease) has 14 oil wells (560 acres) with average recovery of 2261 barrels per acre. The total Yates reservoir, including five other wells known to have Yates production, has 760 acres and 2081 barrels per acre average recovery.

Table 2 shows ultimate primary recovery from the proposed unit will be 1,303,200 barrels or 2,327 barrels per acre. This table also shows secondary recoveries of 2,103 barrels per acre flooded for the conversion plan (Fig. 1) and 2,150 barrels per acre flooded for the drill plan (Fig. 2). The conversion plan is the same as proposed in our

BEFORE THE OIL CONSERVATION COMMISSION	
Case No. <u>63-8</u> Exhibit No. <u>3B</u>	
Submitted by <u>Maralo</u>	
Hearing Date <u>9/11/78</u>	

December 1976 report except that cooperative injection by Dalport has been eliminated. Secondary recovery by this plan is estimated at 75% of ultimate primary based on comparison with results from other floods in the general area. Secondary recovery by the drill plan is estimated at 10% more than by the conversion plan, or 82% of ultimate primary, because of the improved flood efficiency. The closer and more uniform well spacing with this plan will give better pattern efficiency, and the greater number of drilled inputs will give better completions with improved injection efficiency. The precise benefits of this better efficiency cannot be calculated, but the 10% improvement over the conversion plan is considered to be reasonable and could be conservative.

Table 3 compares the two plans as to number of wells, acres flooded, and water injection rates and volumes.

Economics

Table 2 also gives a summary of estimated water flood costs for the conversion and drill plans. Investment for the drill plan is about double that for the conversion plan, but operating expense is less because of the reduced life of 15 years as compared to 22 years. Fig. 3 shows a forecast of future oil production rates with the two plans. The total investment plus operating cost increased \$751,000 for the drill plan which is \$8.94 per incremental net barrel gained over the conversion plan.

Tables 4 and 5 give cash flow projections for the two plans using oil price increases of 7% per year to a maximum of \$20 per barrel and operating cost escalation of 6% per year. Gas price was held constant at the present 63¢ per MCF, and a 7% severance tax rate was used. Table 6 gives a cash flow projection on the same basis for continued operations.

Table 7 gives a comparison of reserves and economics for existing operations, for waterflood operations with the conversion and drill plans, and the increases due to flooding. Total increased profit is \$321,000 greater with the drill plan, and the 8-1/2% discounted profit is \$743,000 greater because of the reduced operating life.

Water Supply

Table 8 presents a cost comparison of three possible sources of injection water for the proposed unit. First is to lay six miles of 3" line to the Skelly system as outlined in the December 1976 report for a 2500 BPD supply. A 4" line would be required to deliver 5000 BPD for the drill plan. It was assumed that this supply of relatively fresh

water would cost the unit 5¢ per barrel at source plus 1¢ per barrel power cost for pumping to the injection plant site.

The second alternative is to lay a 2-1/2 mile line to a Union Texas lease north of the proposed unit and to purchase from Union Texas their presently inactive four-mile line to the Jal Water System. It was assumed that this latter line is 4" size and might be purchased for salvage value. This fresh water supply is reported to be available for 4¢ per barrel plus the estimated 1¢ per barrel pumping cost.

The third possible water source is to lay a three mile line to three Maralo leases south of the proposed unit which now produce 1500 BPD water and to drill Santa Rosa water source wells on the unit for the additional injection requirements over 1500 BPD. It was assumed that the Maralo-produced water could be delivered to the unit for the 1¢ per barrel pumping cost, and that the Santa Rosa water could be lifted and treated for 4¢ per barrel. The 600-foot depth Santa Rosa wells would cost an estimated \$35,000 each to drill and equip, and they would deliver an estimated sustained rate of 500 BPD each. Thus two source wells would be needed for a total unit supply of 2500 BPD and seven wells would be needed for the 5000 BPD supply.

The totals of investment plus operating cost in Table 8 indicate that the third alternative discussed above would be the most attractive, but this must be considered a preliminary analysis with several assumptions needing further refinement. The potential volume and quality of water from the Santa Rosa wells could be less than estimated, based on reports of testing about 20 miles north of the proposed unit. Drilling and operation of additional source wells could increase the cost of this water supply substantially.

Conclusions

The main conclusions of these further analyses can be summarized as follows:

1. Ultimate primary recovery from the proposed unit area is 2327 barrels per acre, and secondary recovery is estimated to range from 2103 to 2150 barrels per acre flooded, depending upon the flood plan adopted.
2. Either of the flood plans will yield a total profit improvement of about \$10 million over existing operations. The drill plan has \$321,000 more profit, but the conversion plan has more attractive profit-to-investment ratio.

Maralo, Inc.
June 13, 1977
Page 4

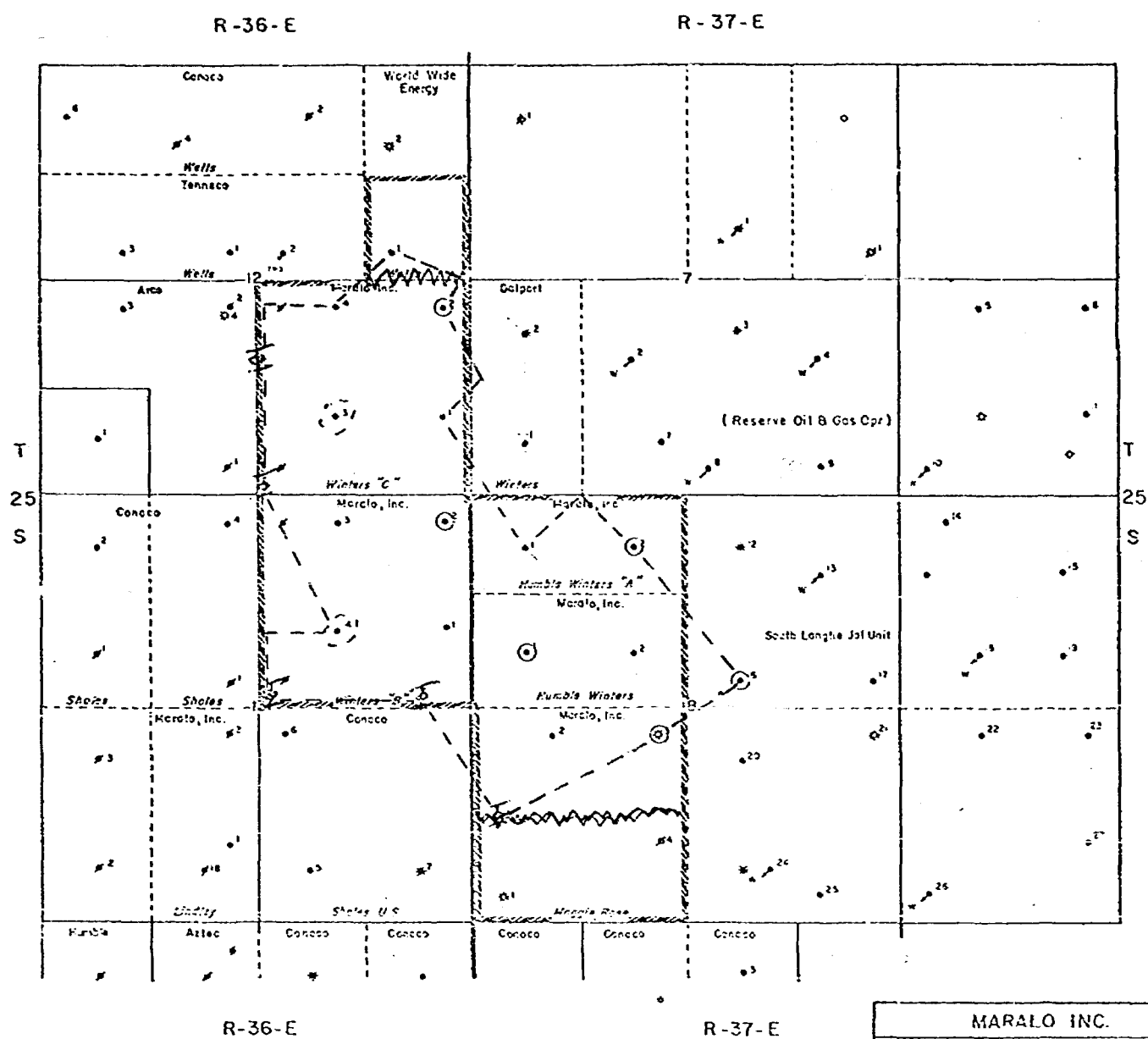
3. Substantial economic benefit may be possible by using available produced water and Santa Rosa wells as a combination source of injection water. Further investigation of alternate source costs is recommended before a final decision is made, and the unit should consider drilling and testing one Santa Rosa well as part of this investigation.

We are pleased to have the opportunity to conduct this study for Maralo, and will be happy to discuss these analyses with you.

Yours very truly,


R. E. Hammond

sm
Attachments



WATER FLOOD PLAN

⊙ Well to be converted to input (5)
in Yates sand

⊙ Yates sand input well to be (5)
drilled.

⊙ Future conversion (2)
to input

FIG. 1

PROPOSED WATER FLOOD PLAN

(excl. Dalport)

CONVERSION PLAN

MARALO INC.

JALMAT YATES POOL
LEA COUNTY, NEW MEXICO

PROPOSED JALMAT YATES UNIT

DATE 11-76

--- Outline of area
Flooded to Unit (465 ac.)

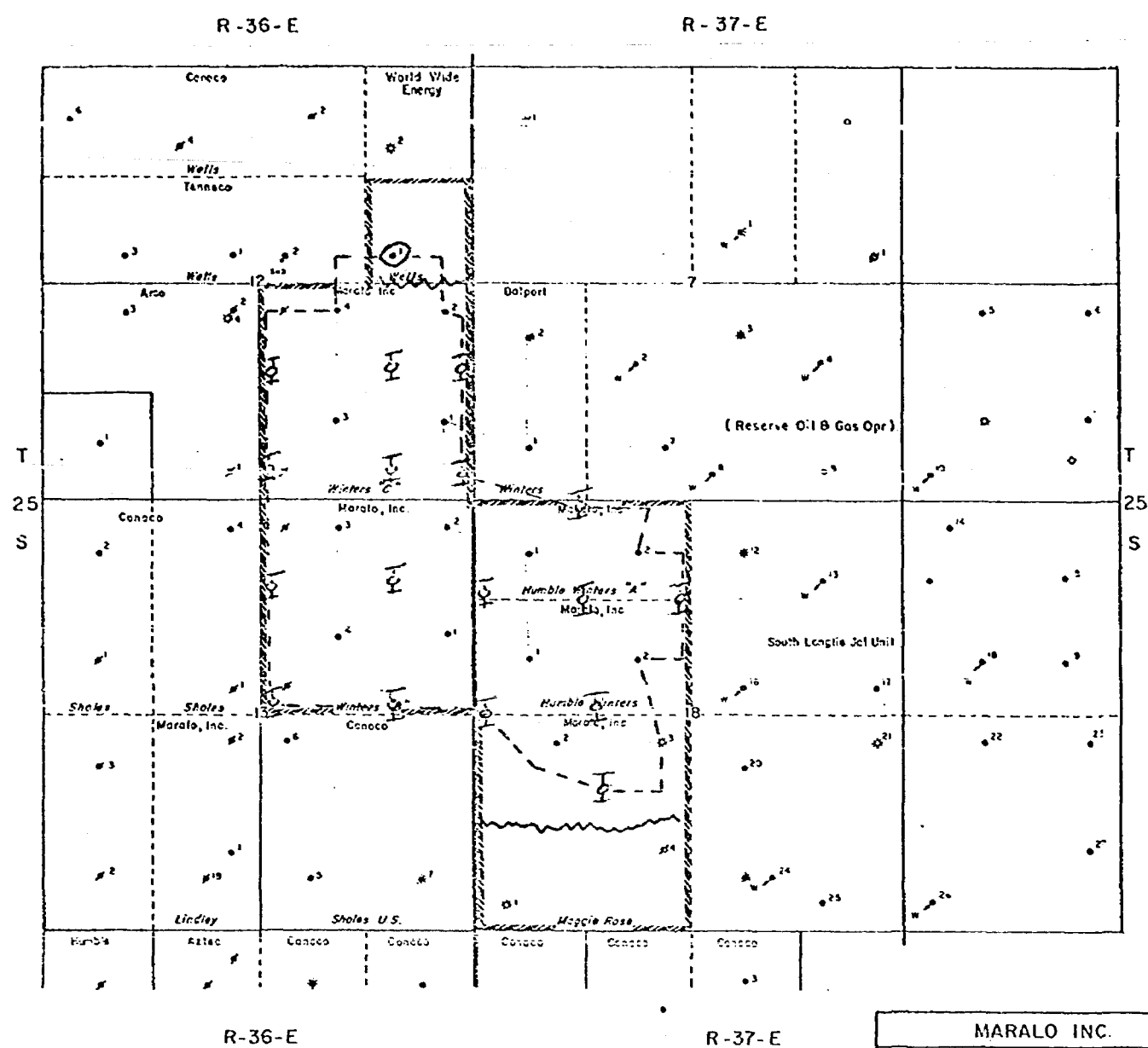


FIG. 2

MAP OF PROPOSED UNIT AREA
DRILL WATER FLOOD PLAN

MARALO INC.
JALMAT YATES POOL
LEA COUNTY, NEW MEXICO
PROPOSED JALMAT YATES UNIT
DATE 11-76

- ① Well to be converted to input (1)
- - - Input well to be drilled (17)
- - - Outline of Unit area flooded (500 ac.)

OIL PRODUCTION - BPD

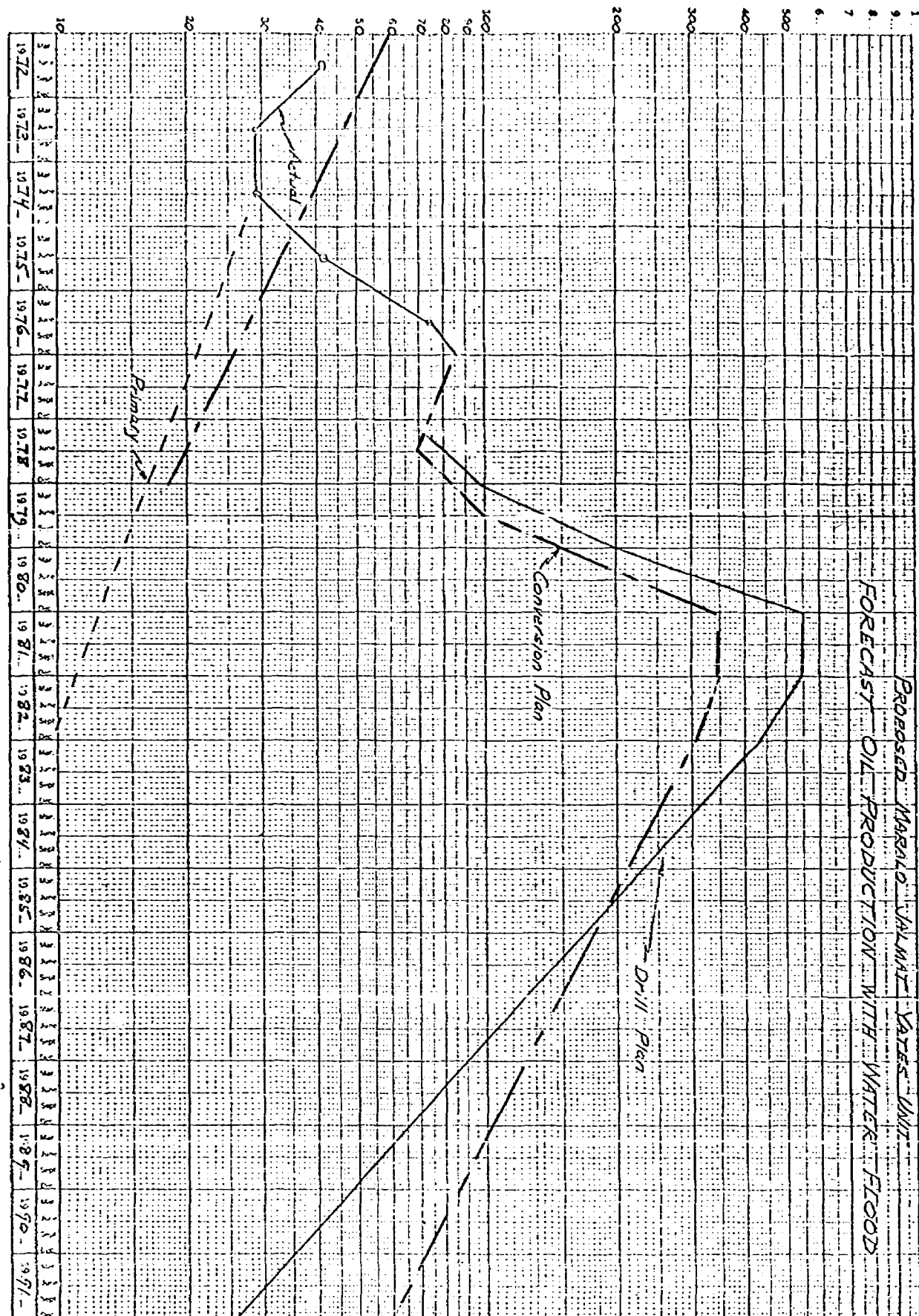


FIG. 3

TABLE 1

COMPARISON OF LEASE PRIMARY RECOVERIES
 PROPOSED MARALO JALMAT YATES UNIT
 LEA COUNTY, NEW MEXICO

<u>Lease</u>	<u>1-1-77 Cumulative Primary Oil Production (Barrels)</u>	<u>Acres</u>	<u>Barrels per Acre</u>
Humble-Winters	150,552	80	1,882
Humble-Winters "A"	219,070	80	2,738
Winters "B"	379,282	160	2,370
Winters "C"	379,283*	160	2,370
Maggie Rose	89,856	40	2,246
Maralo Total (13 wells)	1,218,043	520	2,342
Average prod. per well	93,696		
WECO-Wells #1	48,341	40	1,208
Proposed Unit (14 wells)	1,266,384	560	2,261
Average per well	90,456		
Dalport-Winters "B", 2 wells	96,005	80	1,200
Conoco-Sholes 4B	57,718	40	1,443
Conoco-Sholes 6A	85,389	40	2,135
Reserve-Winters 7	76,354	40	1,909
Total (5 wells)	315,466	200	1,577
Yates Sand Total (19 wells)	1,581,850	760	2,081
Average per well	83,255		

*Winters "C" actual cumulative production of 404,550 barrels includes 25,267 barrels attributed to the accidental flood which has affected this lease since January 1975.

TABLE 2

ESTIMATED OIL RECOVERIES AND WATER FLOODING COSTS
PROPOSED MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

Primary Recovery

Cumulative unit oil production to 1-1-77, BBL	1,291,650
Est. future production with existing operations, BBL	139,650
Ultimate recovery with existing operations, BBL	1,431,300
Est. recovery from accidental flood, BBL	128,100
Ultimate Primary Recovery, BBL	1,303,200
per well (14)	93,086
per acre (560)	2,327

Secondary Recovery

	<u>Conversion Plan</u>	<u>Drill Plan</u>
Est. future prod. with WF, BBL	989,500	1,086,600
Ultimate recovery with WF, BBL	2,281,100	2,378,200
Increase over existing operations	849,800	946,900
Increase over Ult. Primary, BBL	977,900	1,075,000
Percent Ultimate Recovery	75	82
Est. unit acres flooded	465	500
Average water flood recovery per acre	2,103	2,150

Est. Water Flood Costs

Investment	\$ 910,000	\$1,830,000
Operating expense after 1-1-77	2,799,000	2,630,000
Total	\$3,709,000	\$4,460,000
Total cost per WI net BBL	\$ 4.33	\$ 4.75
Increased total cost with Drill Plan		\$ 751,000
Increased WI net BBL recovered		83,991
Cost per increased net BBL		\$ 8.94

TABLE 3

ESTIMATED ACRES TO BE FLOODED ON EACH LEASE
 PROPOSED MARALO JALMAT YATES UNIT
 LEA COUNTY, NEW MEXICO

	<u>Conversion Plan</u>	<u>Drill Plan</u>
Number of converted inputs	5	1
Number of Drilled inputs	<u>5</u>	<u>17</u>
Total inputs	10	18
Number of producing wells	10	14
<u>Acres Flooded</u>		
Wells	5	8
Winters "C"	145	150
Winters "B"	140	160
Humble-Winters "A"	55	71
Humble-Winters	80	71
Maggie Rose	<u>40</u>	<u>40</u>
Total	465	500
<u>Est. Water Injection Rates</u>		
Initial, BPD	2,500	5,000
After fill-up, BPD	1,800	3,000
Est. life of flood, Years	22	15
Est. total injection, BBL	14,500,000	16,000,000

MIDLAND, TX.

LEA CO., N. M.
PAGE 1

CONVERSION PLAN

Table 4

JALMAT WATERFLOOD EVAL.

AS OF JAN 1, 1977

INCOME INTEREST = 0.865000 GAS PRICE = 0.6300

YEAR ENDS DEC 31	GROSS PRODUCTION		NET PRODUCTION		REVENUE AFTER SEV TAX	OPERATING COSTS AND AD VAL TAX	CAPITAL COSTS	FUTURE NET REVENUE	CUMULATIVE NET REVENUE	CUM. DISC. NET REV. AT 8.500 PCT
1977	29200	84300	25258	73352	360091	63000	0	297091	297091	234772
1978	25500	66100	22057	57176	320073	84000	910000	-473927	-376836	-303750
1979	36500	85800	31572	74217	482390	123000	0	359390	-17446	-17942
1980	78500	94200	67902	81483	1057767	130000	0	927767	910321	671813
1981	123000	73800	106395	63837	1730771	138000	0	1592771	2503092	1759803
1982	118600	71100	102589	61501	1783123	142000	0	1641123	4144215	2789783
1983	100400	60200	86846	52073	1613025	145000	0	1468025	5612240	3636302
1984	83900	50300	72573	43509	1375359	148000	0	1227359	6839599	4286568
1985	71200	42700	61588	36935	1167178	143000	0	1024178	7863777	4785120
1986	58400	35000	50516	30275	957335	138000	0	819335	8683112	5151568
1987	49500	29600	42644	25604	808189	136000	0	672189	9355301	5422790
1988	40200	24100	34773	20846	658992	134000	0	524992	9880293	5626005
1989	34300	20600	29669	17819	562293	132000	0	430293	10310586	5725272
1990	28500	17100	24652	14791	467202	130000	0	332202	10647788	5882746
1991	23700	14200	20500	12283	388506	130000	0	258506	10906294	5958447
1992	19700	11800	17040	10207	322933	128000	0	194933	11101227	6010495
1993	16800	10100	14532	8736	275414	128000	0	147414	11248641	6047337
1994	14200	8500	12283	7353	232772	126000	0	106772	11355413	6071588
1995	11700	7000	10120	6055	191789	126000	0	65789	11421202	6085317
1996	10200	6100	8823	5277	167200	125000	0	42200	11463402	6093408
SUB TOTAL	973800	813100	842332	703329	14922402	2549000	910000	11463402	11463402	6093408
REMAINING	15700	9400	13581	8131	257362	250000	0	7362	11470764	6094781
TOTAL	989500	822500	855913	711460	15179764	2799000	910000	11470764	11470764	6094781
PRIOR CUM	1291650	0								
ULTIMATE	2281150	822500								
CUMULATIVE DISCOUNTED NET REVENUE AT 10.000 PER CENT										5493587
15.000 PER CENT										5941281
25.000 PER CENT										7147616
40.000 PER CENT										955146

T. SCOTT HICKMAN, P.E.
CONSULTING ENGINEER
MIDLAND, TX.

06/07/77 11.08.11
MARALO, INC.
MIDLAND, TX.

PROPOSED YATES UNIT
JALMAT (YATES)
LEA CO., N.M.
PAGE 2

WATERFLOOD OPERATIONS
DRILL PLAN

Table 5

JALMAT WATERFLOOD EVAL.

RESERVES AND ECONOMICS
AS OF JAN 1, 1977

EXPENSE INTEREST = 1.000000 OIL PRICE = 13.5000 DISC RATE = 8.500 PCT
INCOME INTEREST = 0.865000 GAS PRICE = 0.6300

YEAR ENDS DEC 31	GROSS PRODUCTION		NET PRODUCTION		REVENUE AFTER SEV TAX	OPERATING COSTS AND AD VAL TAX	CAPITAL COSTS	FUTURE NET REVENUE	CUMULATIVE NET REVENUE	CUM DISC NET REV AT 8.500 PCT
	OIL PBL	GAS MCF	OIL PBL	GAS MCF						
1977	29200	84800	25258	73352	360091	63000	0	297091	297091	284772
1978	32800	77000	28372	66605	407636	90000	1830000	-1512364	-1215273	-1047155
1979	58400	116800	50516	101032	761445	165000	0	596445	-618828	-564530
1980	126700	139400	109595	120581	1700843	175000	0	1525843	907015	559868
1981	197100	118300	170491	102329	2773476	190000	0	2583476	3490491	2334589
1982	175200	105100	151548	90911	2634125	200000	0	2434125	5924616	3862262
1983	135000	81000	116775	70065	2168934	210000	0	1958934	7883550	4991858
1984	98600	59200	85289	51208	1616378	212000	0	1404378	9287928	5735910
1985	71200	42700	61588	36935	1167178	202000	0	965178	10253106	6205742
1986	51100	30700	44201	26555	837707	198000	0	639707	10892813	5491851
1987	38300	23000	33129	19895	627865	195000	0	432865	11325678	6669728
1988	27400	16400	23701	14186	449151	190000	0	259151	11584829	6767572
1989	20100	12100	17386	10466	329521	183000	0	146521	11731350	6818399
1990	14600	8800	12629	7612	239359	180000	0	59359	11790709	6837318
1991	10900	6500	9426	5623	178664	177000	0	1664	11792373	6837805
1992	0	0	0	0	0	0	0	0	11792373	6837805
1993	0	0	0	0	0	0	0	0	11792373	6837805
1994	0	0	0	0	0	0	0	0	11792373	6837805
1995	0	0	0	0	0	0	0	0	11792373	6837805
1996	0	0	0	0	0	0	0	0	11792373	6837805
SUB TOTAL	1086600	921800	939906	797355	16252373	2630000	1830000	11792373	11792373	6837805
REMAINING	0	0	0	0	0	0	0	0	11792373	6837805
TOTAL	1086600	921800	939906	797355	16252373	2630000	1830000	11792373	11792373	6837805
PRIOR CUM	1291650	0								
ULTIMATE	2378250	921800								
CUMULATIVE DISCOUNTED NET REVENUE AT										
10.000 PER CENT										6225819
15.000 PER CENT										4573601
25.000 PER CENT										2501539
40.000 PER CENT										1018803

T. SCOTT HICKMAN, P.E.
CONSULTING ENGINEER
MIDLAND, TX.

PARALO, INC.
MIDLAND, TX.

PROPOSED YATES UNIT
JALMAT (YATES)
LEA CO., N. M.
PAGE 1

CURRENT OPERATIONS

Table 6

JALMAY WATERFLOOD EVAL.

RESERVES AND ECONOMICS
AS OF JAN 1, 1977

EXPENSE	INTEREST =	1.000000	OIL PRICE =	13.5000	DISC RATE =	8.500 PCT	WELLS =	15.00
INCOME	INTEREST =	0.865000	GAS PRICE =	0.6300			ACRES =	600.00

YEAR ENDS DEC 31	GROSS PRODUCTION		NET PRODUCTION		REVENUE AFTER SEV TAX	OPERATING COSTS AND AD VAL TAX	CAPITAL COSTS	FUTURE NET REVENUE	CUMULATIVE NET REVENUE	CUM DISC NET REV. AT 8.500 PCT
	OIL BBL	GAS MCF	OIL BBL	GAS MCF						
1977	29200	84800	25258	73352	360091	63000	0	297091	297091	284772
1978	25500	90200	22057	78023	332287	66000	0	266287	563378	519289
1979	23000	97400	19895	84251	325934	70000	0	255934	819312	726383
1980	21000	99300	18165	85894	320524	74000	0	246524	1065836	909663
1981	18000	94200	15570	81683	295551	69000	0	226551	1292387	1064415
1982	12000	69600	10380	60204	212045	64000	0	148045	1440432	1157329
1983	6000	45600	5190	39444	117683	59000	0	58683	1499115	1191168
1984	3000	39000	2595	33735	68032	54000	0	14032	1513147	1198602
1985	2000	38400	1730	33216	51639	51000	0	639	1513786	1198913
1986	0	0	0	0	0	0	0	0	1513786	1198913
1987	0	0	0	0	0	0	0	0	1513786	1198913
1988	0	0	0	0	0	0	0	0	1513786	1198913
1989	0	0	0	0	0	0	0	0	1513786	1198913
1990	0	0	0	0	0	0	0	0	1513786	1198913
1991	0	0	0	0	0	0	0	0	1513786	1198913
1992	0	0	0	0	0	0	0	0	1513786	1198913
1993	0	0	0	0	0	0	0	0	1513786	1198913
1994	0	0	0	0	0	0	0	0	1513786	1198913
1995	0	0	0	0	0	0	0	0	1513786	1198913
1996	0	0	0	0	0	0	0	0	1513786	1198913
SUB TOTAL	139700	658500	120840	569602	2083786	570000	0	1513786	1513786	1198913
REMAINING	0	0	0	0	0	0	0	0	1513786	1198913
TOTAL	139700	658500	120840	569602	2083786	570000	0	1513786	1513786	1198913
PRIOR CUM	1291650	0								
ULTIMATE	1431350	658500			CUMULATIVE DISCOUNTED NET REVENUE AT 10.000 PER CENT					1153481
					15.000 PER CENT					1019388
					25.000 PER CENT					814203
					40.000 PER CENT					610378

T. SCOTT HICKMAN, P. E.
CONSULTING ENGINEER
MIDLAND, TX.

TABLE 7

SUMMARY OF RESERVES AND ECONOMICS
OPERATIONS AFTER JAN. 1, 1977
PROPOSED MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

	Existing Operations	Water Flood Operations		Increase Due To Flood	
		Conversion Plan	Drill Plan	Conversion Plan	Drill Plan
Gross Reserves					
Oil, BBL	139,000	989,000	1,086,000	850,000	947,000
Gas, MCF	658,000	822,000	922,000	164,000	264,000
Net Reserves to WI					
Oil, BBL	121,000	856,000	940,000	735,000	819,000
Gas, MCF	570,000	711,000	797,000	141,000	227,000
Future Revenue to WI After Expenses and Severance Tax	\$1,514,000	\$12,381,000	\$13,622,000	\$10,867,000	\$12,108,000
Capital Investment	0	\$ 910,000	\$ 1,830,000	\$ 910,000	\$ 1,830,000
Future Profit to WI Before Federal Income Tax					
Undiscounted	\$1,514,000	\$11,471,000	\$11,792,000	\$ 9,957,000	\$10,278,000
Discounted @ 8-1/2%	1,199,000	6,095,000	6,838,000	4,896,000	5,639,000
Profit/Investment Ratio		12.6	6.4	10.9	5.6
Rate of Return, Percent		60	55	47	46
Payout, Years		2.3	2.6	3.1	3.1

TABLE 8

WATER SUPPLY COST COMPARISON
PROPOSED MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

	<u>2500 BPD</u>	<u>5000 BPD</u>
<u>Investment</u>		
6-mile Line to Skelly System	\$200,000	\$275,000
2-1/2 mile Line to Union Texas plus buy 4-mile line to Jal Water System	115,000	150,000
3-mile Line to Maralo leases plus Santa Rosa water wells	155,000	330,000
<u>Operating Expense</u>		
Skelly - 6¢ per BBL (incl. 1¢ power)	\$700,000	\$710,000
Jal - 5¢ per BBL (incl. 1¢ power)	590,000	600,000
Maralo - 1500 BPD @ 1¢ per BBL, Remainder @ 4¢ per BBL	210,000	280,000
<u>Total Water Cost</u>		
Skelly	\$900,000	\$985,000
Jal	705,000	750,000
Maralo	365,000	610,000

RATIFICATION OF AGREEMENTS ENTITLED
"UNIT AGREEMENT" AND "UNIT OPERATING AGREEMENT"
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned owner (whether one or more) of royalty interests hereby acknowledge receipt of a true copy of the "Unit Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Agreement, and the undersigned owner (whether one or more) of working interests hereby acknowledges receipt of a true copy of said Unit Agreement and a true copy of the "Unit Operating Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Operating Agreement; and

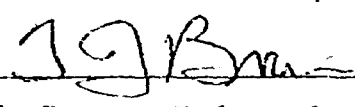
WHEREAS, Exhibits "A" and "B", attached to said Unit Agreement, identify the tracts which may become a part of the Maralo Jalmat Yates Unit Area as initially constituted, depending upon whether such tracts qualify for inclusion therein as provided in said agreement; and

WHEREAS, the undersigned represents that it is a Royalty Owner or Working Interest Owner, or both, as defined in said Unit Agreement, in one or more of the Tracts identified by said Exhibits.

NOW, THEREFORE, the undersigned owner of royalty interests only desires to and does hereby ratify and confirm said Unit Agreement and the undersigned owner of working interest only or the owner of both working interests and royalty interests desires to and does hereby ratify and confirm said Unit Agreement and said Unit Operating Agreement, with respect to all of its interest in all of the Tracts identified by said Exhibits.

IN WITNESS WHEREOF, each of the undersigned parties has executed this instrument on the date set forth below opposite its signature.

DATED: 1-24-78

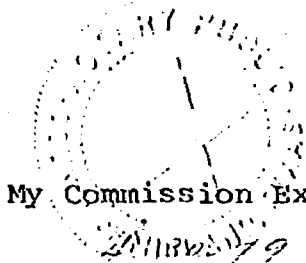


T. J. Brown, Independent Executor,
Estate of R. DeChicchis

(INDIVIDUAL)

STATE OF TEXAS)
COUNTY OF MIDLAND) ss

The foregoing instrument was acknowledged before me this
21st day of January, 1977, by T. J. Brown, Executor.



Butler J. Toland
Notary Public in and for
Midland County, Texas

My Commission Expires:
11/18/79

(JOINT)

STATE OF)
COUNTY OF) ss

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
and _____, his wife.

Notary Public in and for
_____ County, _____

My Commission Expires:

(CORPORATE)

STATE OF)
COUNTY OF) ss.

The foregoing instrument was acknowledged before me this
_____ day of _____, 1977, by _____
of _____,
a corporation, on behalf of said corporation.

Notary Public in and for
_____ County, _____

My Commission Expires:

(PARTNERSHIP)

STATE OF)
COUNTY OF) ss.

The foregoing instrument was acknowledged before me this
_____ day of _____, 1977, by _____
partner(s) on behalf of _____, partnership.

Notary Public

RATIFICATION OF AGREEMENTS ENTITLED
"UNIT AGREEMENT" AND "UNIT OPERATING AGREEMENT"
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned owner (whether one or more) of royalty interests hereby acknowledge receipt of a true copy of the "Unit Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Agreement, and the undersigned owner (whether one or more) of working interests hereby acknowledges receipt of a true copy of said Unit Agreement and a true copy of the "Unit Operating Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Operating Agreement; and

WHEREAS, Exhibits "A" and "B", attached to said Unit Agreement, identify the tracts which may become a part of the Maralo Jalmat Yates Unit Area as initially constituted, depending upon whether such tracts qualify for inclusion therein as provided in said agreement; and

WHEREAS, the undersigned represents that it is a Royalty Owner or Working Interest Owner, or both, as defined in said Unit Agreement, in one or more of the Tracts identified by said Exhibits.

NOW, THEREFORE, the undersigned owner of royalty interests only desires to and does hereby ratify and confirm said Unit Agreement and the undersigned owner of working interest only or the owner of both working interests and royalty interests desires to and does hereby ratify and confirm said Unit Agreement and said Unit Operating Agreement, with respect to all of its interest in all of the Tracts identified by said Exhibits.

IN WITNESS WHEREOF, each of the undersigned parties has executed this instrument on the date set forth below opposite its signature.

DATED: January 5, 1978

FLUOR OIL AND GAS CORPORATION

By: Leroy Esterak

Leroy Esterak, Vice President

ATTEST: J. Amilor

By: _____

Assistant Secretary



(INDIVIDUAL)

STATE OF)
COUNTY OF) ss

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____.

Notary Public in and for
County, _____

My Commission Expires:

(JOINT)

STATE OF)
COUNTY OF) ss

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
and _____, his wife.

Notary Public in and for
County, _____

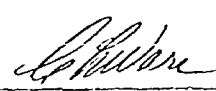
My Commission Expires:

(CORPORATE)

STATE OF TEXAS)
COUNTY OF MIDLAND) ss.

The foregoing instrument was acknowledged before me this
5th day of January, 1978, by Leroy Esterak
Vice President of Fluor Oil and Gas Corporation,
a corporation, on behalf of said corporation.

C.L. Ware


Notary Public in and for
Midland County, Texas

My Commission Expires: 5-31-79

(PARTNERSHIP)

STATE OF)
COUNTY OF) ss.

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
partner(s) on behalf of _____, partnership.

Notary Public

RATIFICATION OF AGREEMENTS ENTITLED
"UNIT AGREEMENT" AND "UNIT OPERATING AGREEMENT"
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned owner (whether one or more) of royalty interests hereby acknowledge receipt of a true copy of the "Unit Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Agreement, and the undersigned owner (whether one or more) of working interests hereby acknowledges receipt of a true copy of said Unit Agreement and a true copy of the "Unit Operating Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Operating Agreement; and

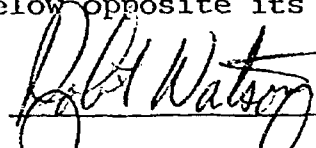

WHEREAS, Exhibits "A" and "B", attached to said Unit Agreement, identify the tracts which may become a part of the Maralo Jalmat Yates Unit Area as initially constituted, depending upon whether such tracts qualify for inclusion therein as provided in said agreement; and

WHEREAS, the undersigned represents that it is a Royalty Owner or Working Interest Owner, or both, as defined in said Unit Agreement, in one or more of the Tracts identified by said Exhibits.

NOW, THEREFORE, the undersigned owner of royalty interests only desires to and does hereby ratify and confirm said Unit Agreement and the undersigned owner of working interest only or the owner of both working interests and royalty interests desires to and does hereby ratify and confirm said Unit Agreement and said Unit Operating Agreement, with respect to all of its interest in all of the Tracts identified by said Exhibits.

IN WITNESS WHEREOF, each of the undersigned parties has executed this instrument on the date set forth below opposite its signature.

DATED: January 9, 1978

Robert Watson

Dawson George

INDEPENDENT EXECUTORS OF THE ESTATE OF
R. S. BRENNAND, JR., DECEASED

(INDIVIDUAL)

STATE OF TEXAS)
) ss
COUNTY OF MIDLAND)

The foregoing instrument was acknowledged before me this
9th day of January, 1978, by Robert Watson and Dawson George,
Independent Executors of the Estate of R. S. Brennand, Jr., Deceased.

Betty Alice Lawrie
Notary Public in and for
Midland County, Texas

My Commission Expires:

November 30, 1978

(JOINT)

STATE OF)
) ss
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
and _____, his wife.

Notary Public in and for
County, _____

My Commission Expires:

(CORPORATE)

STATE OF)
) ss.
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
of _____,
a corporation, on behalf of said corporation.

Notary Public in and for
County, _____

My Commission Expires:

(PARTNERSHIP)

STATE OF)
) ss.
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
partner(s) on behalf of _____, partnership.

RATIFICATION OF AGREEMENTS ENTITLED
"UNIT AGREEMENT" AND "UNIT OPERATING AGREEMENT"
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned owner (whether one or more) of royalty interests hereby acknowledge receipt of a true copy of the "Unit Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Agreement, and the undersigned owner (whether one or more) of working interests hereby acknowledges receipt of a true copy of said Unit Agreement and a true copy of the "Unit Operating Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Operating Agreement; and

WHEREAS, Exhibits "A" and "B", attached to said Unit Agreement, identify the tracts which may become a part of the Maralo Jalmat Yates Unit Area as initially constituted, depending upon whether such tracts qualify for inclusion therein as provided in said agreement; and

WHEREAS, the undersigned represents that it is a Royalty Owner or Working Interest Owner, or both, as defined in said Unit Agreement, in one or more of the Tracts identified by said Exhibits.

NOW, THEREFORE, the undersigned owner of royalty interests only desires to and does hereby ratify and confirm said Unit Agreement and the undersigned owner of working interest only or the owner of both working interests and royalty interests desires to and does hereby ratify and confirm said Unit Agreement and said Unit Operating Agreement, with respect to all of its interest in all of the Tracts identified by said Exhibits.

IN WITNESS WHEREOF, each of the undersigned parties has executed this instrument on the date set forth below opposite its signature.

DATED: January 26, 1978

Mobil Oil Corporation

P E Harrison

ATTORNEY-IN-FACT

(INDIVIDUAL)

STATE OF)
) ss
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____

Notary Public in and for
County, _____

My Commission Expires: _____

(JOINT)

STATE OF)
) ss
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
and _____, his wife.

Notary Public in and for
County, _____

My Commission Expires: _____

(CORPORATE)

STATE OF TEXAS)
) ss.
COUNTY OF HARRIS)

The foregoing instrument was acknowledged before me this
26th day of January, 1978, by P. E. Harrison,
Attorney-in-Fact of MOBIL OIL CORPORATION,
a corporation, on behalf of said corporation.



My Commission Expires: _____

June 7, 1979

Doti H. Jones

Notary Public in and for
Harris County, Texas
DOTI H. JONES
Notary Public in and for Harris County, Texas
My Commission Expires _____

(PARTNERSHIP)

STATE OF)
) ss.
COUNTY OF)

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____,
partner(s) on behalf of _____, partnership.

RATIFICATION OF AGREEMENTS ENTITLED
"UNIT AGREEMENT" AND "UNIT OPERATING AGREEMENT"
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, the undersigned owner (whether one or more) of royalty interests hereby acknowledge receipt of a true copy of the "Unit Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Agreement, and the undersigned owner (whether one or more) of working interests hereby acknowledges receipt of a true copy of said Unit Agreement and a true copy of the "Unit Operating Agreement, Maralo Jalmat Yates Unit Area, Lea County, New Mexico", dated October 17th, 1977, hereinafter referred to as the Unit Operating Agreement; and

WHEREAS, Exhibits "A" and "B", attached to said Unit Agreement, identify the tracts which may become a part of the Maralo Jalmat Yates Unit Area as initially constituted, depending upon whether such tracts qualify for inclusion therein as provided in said agreement; and

WHEREAS, the undersigned represents that it is a Royalty Owner or Working Interest Owner, or both, as defined in said Unit Agreement, in one or more of the Tracts identified by said Exhibits.

NOW, THEREFORE, the undersigned owner of royalty interests only desires to and does hereby ratify and confirm said Unit Agreement and the undersigned owner of working interest only or the owner of both working interests and royalty interests desires to and does hereby ratify and confirm said Unit Agreement and said Unit Operating Agreement, with respect to all of its interest in all of the Tracts identified by said Exhibits.

IN WITNESS WHEREOF, each of the undersigned parties has executed this instrument on the date set forth below opposite its signature.

DATED: February 6, 1978

Cities Service Company



Vice-President, Energy Resources Group

(INDIVIDUAL)

STATE OF)
COUNTY OF) ss

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____.

Notary Public in and for
County, _____

My Commission Expires:

(JOINT)

STATE OF)
COUNTY OF) ss

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
and _____, his wife.

Notary Public in and for
County, _____

My Commission Expires:

(CORPORATE)

STATE OF OKLAHOMA)
COUNTY OF TULSA) ss.

The foregoing instrument was acknowledged before me this
6th day of February, 1978, by David A. Hentschel,
Vice President, Energy Resources Group of Cities Service Company,
a corporation, on behalf of said corporation.



David A. Hentschel
Notary Public in and for
Tulsa County, Oklahoma

My Commission Expires:

March 8, 1978

(PARTNERSHIP)

STATE OF)
COUNTY OF) ss.

The foregoing instrument was acknowledged before me this
day of _____, 1977, by _____
partner(s) on behalf of _____, partnership.

Notary Public

UNIT AGREEMENT

MARALO JALMAT YATES UNIT

LEA COUNTY, NEW MEXICO

#11

UNIT AGREEMENT
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

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UNIT AGREEMENT
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 17th day of October, 1977, by the parties who have signed the original of this instrument, a counterpart thereof, or other instrument agreeing to be bound by the provisions hereto;

WITNESSETH:

WHEREAS, in the interest of the public welfare and to promote conservation and increase the ultimate recovery of oil, gas, and associated minerals from the Jalmat (Oil) Field in Lea County, State of New Mexico, and to protect the rights of the owners of interests therein, it is deemed necessary and desirable to enter into this agreement to unitize the Oil and Gas Rights in and to the Unitized Formation in order to conduct a secondary recovery, pressure maintenance, or other recovery program as herein provided;

NOW, THEREFORE, in consideration of the premises and of the mutual agreements herein contained, it is agreed as follows:

ARTICLE 1

DEFINITIONS

As used in this agreement the terms herein contained shall have the following meaning:

1.1 UNIT AREA means the lands described by Tracts in Exhibit A and shown on Exhibit B as to which this agreement becomes effective or to which it may be extended as herein provided.

1.2 UNITIZED FORMATION means all formations or zones extending from the top of the Yates Formation down to one hundred (100) feet below the base of the Queen Formation underlying the Unitized Land; said interval having been heretofore found to occur in the Maralo, Inc. Humble-Winters "A" lease, well #2; originally drilled by Humble Oil and Refining Company as their E. C. Winters "C", well #2 (located 660' FNL and 1980' FWL of Section 18, Township 25 South, Range 37 East, Lea County, New Mexico) at an indicated depth of from 2848' to one hundred (100) feet below the base of the Queen Formation as indicated on the hereinafter described log. The base of said Queen Formation is

estimated to occur two hundred eighty (280) feet below the total drilled depth of 3400 feet as recorded on the Perforating Guns Atlas Corporation's Simultaneous Radiation Log dated January 19, 1954, said log being measured from one (1) foot above a rotary table elevation of 3137 feet above sea level.

1.3 UNITIZED SUBSTANCES means all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate, and all associated and constituent liquid or liquefiable hydrocarbons within or produced from the Unitized Formation.

1.4 WORKING INTEREST means an interest in Unitized Substances by virtue of a lease, operating agreement, fee title, or otherwise, including a carried interest, which interest is chargeable with and obligated to pay or bear, either in cash or out of production or otherwise, all or a portion of the cost of drilling, developing, producing, and operating the Unitized Formation. Any interest in Unitized Substances which is a Working Interest as of the date the owner thereof executes or ratifies this agreement shall thereafter be treated as a Working Interest for all purposes of this agreement.

1.5 ROYALTY INTEREST means a right to or interest in any portion of the Unitized Substances or proceeds thereof other than a Working Interest.

1.6 ROYALTY OWNER means a party hereto who owns a Royalty Interest.

1.7 WORKING INTEREST OWNER means a party hereto who owns a Working Interest. The owner of oil and gas rights that are free of lease or other instrument conveying the Working Interest to another shall be regarded as a Working Interest Owner to the extent of seven-eighths (7/8) of his interest in Unitized Substances, and as a Royalty Owner with respect to his remaining one-eighth (1/8) interest therein.

1.8 TRACT means each parcel of land described as such and given a Tract number in Exhibit A.

1.9 UNIT OPERATING AGREEMENT means the agreement entitled "Unit Operating Agreement, MARALO JALMAT YATES UNIT, Lea County, New Mexico" of the same effective date as the effective date of this agreement, and which is entered into by Working Interest Owners.

1.10 UNIT OPERATOR means the Working Interest Owner designated by Working Interest Owners under the Unit Operating Agreement to develop and operate the Unitized Formation, acting as operator and not as a Working Interest Owner.

1.11 TRACT PARTICIPATION means the percentage shown on Exhibit A for allocating Unitized Substances to a Tract during Phase I and Phase II under this agreement.

1.12 UNIT PARTICIPATION of each Working Interest Owner means the sum of the percentages obtained by multiplying the Working Interest of such Working Interest Owner in each Tract by the Tract Participation of such Tract in applicable Phase I and Phase II.

1.13 OUTSIDE SUBSTANCES means all substances obtained from any source other than the Unitized Formation and which are injected into the Unitized Formation.

1.14 OIL AND GAS RIGHTS means the right to explore, develop, and operate lands within the Unit Area for the production of Unitized Substances, or to share in the production so obtained or the proceeds thereof.

1.15 UNIT OPERATIONS means all operations conducted by Working Interest Owners or Unit Operator pursuant to this agreement and the Unit Operating Agreement for or on account of the development and operation of the Unitized Formation for the production of Unitized Substances.

1.16 UNIT EQUIPMENT means all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for the joint account for use in Unit Operations.

1.17 UNIT EXPENSE means all cost, expense, or indebtedness incurred by Working Interest Owners or Unit Operator pursuant to this agreement and the Unit Operating Agreement for or on account of Unit Operations.

1.18 Unless the context otherwise clearly indicates, words used in the singular include the plural, the plural include the singular, and the neuter gender include the masculine and the feminine.

ARTICLE 2

EXHIBITS

2.1 EXHIBITS. The following exhibits which are attached hereto are incorporated herein by reference:

2.1.1 EXHIBIT A, which is a schedule that describes each Tract in the Unit Area and shows its Tract Participation under Phase I and Phase II.

2.1.2 EXHIBIT B, which is a map that shows the boundary lines of the Unit Area and the Tracts therein.

2.2 REFERENCE TO EXHIBITS. When reference herein is made to an exhibit, the reference is to the Exhibit as originally attached or, if revised, to the latest revision.

2.3 EXHIBITS CONSIDERED CORRECT. An exhibit shall be considered to be correct until revised as herein provided.

2.4 CORRECTING ERRORS. The shapes and descriptions of the respective Tracts have been established by using the best information available. If it subsequently appears that any Tract, because of diverse royalty or working interest ownership on the effective date hereof, should be divided into more than one Tract, or that any mechanical miscalculation has been made, Unit Operator, with the approval of Working Interest Owners, may correct the mistake by revising the exhibits to conform to the facts. The revision shall not include any reevaluation of engineering or geological interpretations used in determining Tract Participation. Each such revision of an exhibit shall be effective at 7:00 a.m. on the first day of the calendar month next following the filing for record of the revised exhibit or on such other date as may be determined by Working Interest Owners and set forth in the revised exhibit.

2.5 FILING REVISED EXHIBITS. If an exhibit is revised pursuant to this agreement, Unit Operator shall certify and file the revised exhibit for record in Lea County, New Mexico.

ARTICLE 3

CREATION AND EFFECT OF UNIT

3.1 OIL AND GAS RIGHTS UNITIZED. Subject to the provisions of this agreement, all Oil and Gas Rights of Royalty Owners in and to

the lands described in Exhibit A, and all Oil and Gas Rights of Working Interest Owners in and to said lands, are hereby unitized insofar as the respective Oil and Gas Rights pertain to the Unitized Formation, so that operations may be conducted as if the Unitized Formation had been included in a single lease executed by all Royalty Owners, as lessors, in favor of all Working Interest Owners, as lessees, and as if the lease had been subject to all of the provisions of this agreement.

3.2 PERSONAL PROPERTY EXCEPTED. Working Interest Owners have each individually heretofore placed in or on their wells and in or on lands affected by this agreement, various items of personal property which are lease and well equipment, as to all of which Working Interest Owners have the right, as provided in their respective leases, to remove such property from the premises and all of which installations were made with the intention and understanding that all of the same would be and remain personal property and that no part thereof would be or become a part of the realty. Working Interest Owners except from the terms and provisions of this agreement, and hereby sever from said lands, for all purposes, all such lease and well equipment which may be or may hereafter become located in or on the lands or in the wells on the lands affected hereby. To conform their respective investments in such equipment, Working Interest Owners have made a separate agreement with each other with respect thereto.

3.3 AMENDMENT OF LEASES AND OTHER AGREEMENT. The provisions of the various leases, agreements, division and transfer orders, or other instruments covering the respective Tracts or the production therefrom are amended to the extent necessary to make them conform to the provisions of this agreement, but otherwise shall remain in effect. Notwithstanding anything to the contrary herein, it is expressly agreed that this Unit Agreement shall not limit, restrict, or modify or be construed to limit, restrict, or modify, the expressed or implied covenants in the oil and gas leases and assignments of oil and gas leases contributed to the unit created hereby, except insofar as the same may be applicable to the Unitized Formation.

3.4 CONTINUATION OF LEASES AND TERM ROYALTIES. Operations, including drilling operations, conducted with respect to the Unitized

Formation on any part of the Unit Area, or production from any part of the Unitized Formation, except for the purpose of determining payments to Royalty Owners, shall be considered as operations upon or production from each Tract, and such operations or production shall continue in effect each lease or term royalty interest as to all lands covered thereby just as if such operations had been conducted and a well had been drilled on and was producing from each Tract.

3.5 TITLES UNAFFECTED BY UNITIZATION. Nothing herein shall be construed to result in the transfer of title to the Oil and Gas Rights by any party hereto to any other party or to Unit Operator. The intention is to provide for the cooperative development and operation of the Tracts and for the sharing of Unitized Substances as herein provided.

3.6 INJECTION RIGHTS. Royalty Owners hereby grant unto Working Interest Owners the right to inject into the Unitized Formation any substances in whatever amounts Working Interest Owners deem expedient for Unit Operations, together with the right to drill, use and maintain injection wells on the Unit Area and to use for injection purposes any producing, non-producing or abandoned wells or dry holes for such purposes.

3.7 DEVELOPMENT OBLIGATION. Nothing herein shall relieve Working Interest Owners from the obligation to develop reasonably as a whole the lands and leases committed hereto.

ARTICLE 4

PLAN OF OPERATIONS

4.1 UNIT OPERATOR. Working Interest Owners are, as of the effective date of this agreement, entering into the Unit Operating Agreement, designating MARALO, INC. as Unit Operator. Unit Operator shall have the exclusive right to conduct Unit Operations. The operations shall conform to the provisions of this agreement, and the Unit Operating Agreement. If there is any conflict between such agreements, this agreement shall govern.

4.2 OPERATING METHODS. To the end that the quantity of Unitized Substances ultimately recoverable may be increased and waste prevented, Working Interest Owners shall, with diligence and in

accordance with good engineering and production practices, engage in the secondary recovery operation in the Unitized Formation.

4.3 CHANGE OF OPERATING METHODS. Nothing herein shall prevent Working Interest Owners from discontinuing or changing in whole or in part any method of operation which, in their opinion, is no longer in accord with good engineering or production practices. Other methods of operation may be conducted or changes may be made by Working Interest Owners from time to time if determined by them to be feasible, necessary, or desirable to increase the ultimate recovery of Unitized Substances.

ARTICLE 5

TRACT PARTICIPATION

5.1 TRACT PARTICIPATION. Beginning at 7:00 a.m. on the effective date hereof the Tract Participation of each Tract shall be as shown on Exhibit A and shall be determined from the following formula:

PHASE I

Total Tract Participation Percentage equals 100%.

$$\frac{A + B}{C + D}$$

Where: A equals seventy-five (75) percent of the quantity of oil production plus the equivalent oil volume of gas production produced from the Unitized Formation underlying each such tract by primary recovery operations from 7:00 a.m. 10-1-75 to 7:00 a.m. 10-1-76.

Where: B equals twenty-five (25) percent of the estimated quantity of remaining primary oil production plus the equivalent oil volume of estimated remaining primary gas production produced from the Unitized Formation underlying each such tract by primary recovery operations.

Where: C equals the summation of seventy-five (75) percent of the quantity of oil production plus the equivalent oil volume of gas production produced from Unitized Formation underlying all such tracts by primary recovery operations from 7:00 a.m. 10-1-75 to 7:00 a.m. 10-1-76.

Where: D equals twenty-five (25) percent of the estimated quantity of remaining primary oil production plus the equivalent oil volume of estimated remaining primary gas production produced from the Unitized Formation underlying all such tracts

by primary recovery operations.

For purposes of Phase I formula the equivalent oil volume of gas considers 21 MCF casinghead gas and 17 MCF gas well gas as being equivalent to one (1) bbl oil.

PHASE II

Total Tract Participation Percentage equals 100%.

$$\frac{E}{F}$$

Where: E equals the estimated quantity of oil ultimately recoverable from the Unitized Formation underlying each such tract by primary recovery operations.

Where: F equals the summation of estimated quantity of oil ultimately recoverable from the Unitized Formation underlying all such tracts by primary recovery operations.

Phase II shall become effective on the first day of the month following the month in which 39,000 bbls of oil have been produced after 10-1-76 from the Unitized Formation.

5.1.1 PERIODS OF APPLICABILITY. Phase I Tract Participation shall be applicable from the effective date until 7:00 a.m. on the first day of the month after the time the cumulative production of oil, from and after 7:00 a.m. on 10-1-76, from the subsurface interval used in the definition of Unitized Formation, through wells on the Tracts shown on the original Exhibit A, totals 39,000 barrels. Thereafter, Phase II Tract Participation shall be applicable.

5.2 RELATIVE TRACT PARTICIPATIONS. If the Unit Area is enlarged or reduced, the revised Tract Participations of the Tracts remaining in the Unit Area and which were within the Unit Area prior to the enlargement or reduction shall remain in the same ratio one to another.

ARTICLE 6

ALLOCATION OF UNITIZED SUBSTANCES

6.1 ALLOCATION TO TRACTS. All Unitized Substances produced and saved shall be allocated to the several Tracts in accordance with the respective Tract Participations effective during the period that

the Unitized Substances were produced. The amount of Unitized Substances allocated to each Tract, regardless of whether it is more or less than the actual production of Unitized Substances from the well or wells, if any, on such Tract, shall be deemed for all purposes to have been produced from such Tract.

6.2 DISTRIBUTION WITHIN TRACTS. The Unitized Substances allocated to each Tract shall be distributed among, or accounted for, to the parties entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions as they would have participated and shared in the production from such Tract, or in the proceeds thereof, had this agreement not been entered into, and with the same legal effect. If any Oil and Gas Rights in a Tract are now or hereafter become divided and owned in severalty as to different parts of the Tract, the owners of the divided interests, in the absence of an agreement providing for a different division, shall share in the Unitized Substances allocated to the Tract, or in the proceeds thereof, in proportion to the surface acreage of their respective parts of the Tract.

6.3 TAKING UNITIZED SUBSTANCES IN KIND. The Unitized Substances allocated to each Tract shall be delivered in kind to the respective parties entitled thereto by virtue of the ownership of Oil and Gas Rights therein or by purchase from such owners. Such parties shall have the right to construct, maintain, and operate within the Unit Area all necessary facilities for that purpose, provided that they are so constructed, maintained, and operated as not to interfere with Unit Operations. Any extra expenditures incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the receiving party. If a Royalty Owner has the right to take in kind a share of Unitized Substances and fails to do so, the Working Interest Owner whose Working Interest is subject to such Royalty Interest shall be entitled to take in kind such share of the Unitized Substances.

6.4 FAILURE TO TAKE IN KIND. If any party fails to take in kind or separately dispose of its share of Unitized Substances, Unit Operator shall have the right, but not the obligation, for the time being and subject to revocation at will by the party owning the share, to purchase for its own account, or sell to others, such at not less than the market price prevailing in the area and not less than the price Unit Operator receives for its share of Unitized Substances; provided that, all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year. The proceeds of the Unitized Substances so disposed of by Unit Operator shall be paid to a payee who shall distribute such proceeds to the parties entitled thereto, such payee being the Working Interest Owners of each affected Tract or a party designated by such Working Interest Owners under an agreement between such party and such Working Interest Owners. Notwithstanding the foregoing, Unit Operator shall not make a sale into Interstate Commerce of any other party's share of gas production without first giving such other party sixty (60) days' notice of such intended sale.

6.5 RESPONSIBILITY FOR ROYALTY SETTLEMENTS. Any party receiving in kind or separately disposing of all or part of the Unitized Substances allocated to any Tract or receiving the proceeds therefrom shall be responsible for the payment thereof to the persons entitled thereto, and shall indemnify all parties hereto, including Unit Operator, against any liability for all royalties, overriding royalties, production payments, and all other payments chargeable against or payable out of such Unitized Substances or the proceeds therefrom.

6.6 ROYALTY ON OUTSIDE SUBSTANCES. If any Outside Substance consisting of natural gases is injected into the Unitized Formation, the Working Interest Owners shall be entitled to the royalty-free recovery of such substances out of seventy-five percent (75%) of the first day of any such like substances contained in Unitized Substances subsequently produced and sold or used for any purpose other than operations hereunder. If extraneous gas-liquid products (LPG) are injected for purposes of increasing ultimate oil recovery, the Working

Interest Owners shall be entitled to the royalty-free recovery of these extraneous products out of seventy-five percent (75%) of the first of such like products recovered in a gasoline plant or other facility wherein gas-liquid products may be recovered and sold or used for any purpose other than operations hereunder. When gas from more than one unit is processed in a common gasoline plant or other common facility, the Working Interest Owners shall be entitled to the royalty-free recovery of extraneous gas-liquid products out of seventy-five percent (75%) of the first of such like products allocated to the Unit and sold or used for any purpose other than operations hereunder.

ARTICLE 7

PRODUCTION AS OF THE EFFECTIVE DATE

7.1 OIL IN LEASE TANKS. Unit Operator shall gauge all lease and other tanks within the Unit Area to ascertain the amount of merchantable oil produced from the Unitized Formation in such tanks, above the pipeline connections, as of 7:00 a.m. on the effective date hereof. The oil that is a part of the prior allowable of the wells from which it was produced shall remain the property of the parties entitled thereto the same as if the Unit had not been formed. Any such oil not promptly removed may be sold by the Unit Operator for the account of the parties entitled thereto, subject to the payment of all royalties, overriding royalties, production payments, and all other payments under the provisions of the applicable lease or other contracts. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after effective date hereof.

7.2 OVERPRODUCTION. If, as of the effective date hereof, any Tract is overproduced with respect to the allowable of the wells on that Tract and the amount of overproduction has been sold or otherwise disposed of, such overproduction shall be regarded as a part of the Unitized Substances produced after the effective date hereof and shall be charged to such Tract as having been delivered to the parties entitled to Unitized Substances allocated to such Tract.

ARTICLE 8

USE OR LOSS OF UNITIZED SUBSTANCES

8.1 USE OF UNITIZED SUBSTANCES. Working Interest Owners may use as much of the Unitized Substances as they deem necessary for Unit Operations, including but not limited to the injection thereof into the Unitized Formation.

8.2 ROYALTY PAYMENTS. No royalty, overriding royalty, production, or other payments shall be payable upon, or with respect to, Unitized Substances used or consumed in Unit Operations, or which otherwise may be lost or consumed in the production, handling, treating, transportation, or storing of Unitized Substances.

ARTICLE 9

TRACTS TO BE INCLUDED IN UNIT

9.1 QUALIFICATION OF TRACTS. On and after the effective date hereof and until the enlargement or reduction thereof, the Unit Area shall be composed of the Tracts listed in Exhibit A that corner or have a common boundary (Tracts separated only by a public highway or a railroad right-of-way shall be considered to have a common boundary), and that otherwise qualify as follows:

9.1.1 Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this agreement and as to which Royalty Owners owning eighty-five percent (85%) or more of the Royalty Interest have become parties to this agreement.

9.1.2 Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this agreement, and as to which Royalty Owners owning less than eighty-five percent (85%) of the Royalty Interest have become parties to this agreement, and as to which (a) all Working Interest Owners in such Tract have joined in a request for the inclusion of such Tract in the Unit Area, and as to which (b) Working Interest Owners having a sixty-five percent (65%) or more of the combined voting interest in all Tracts that meet the requirements of

Section 9.1.1 have voted in favor of the inclusion of such Tract. For the purpose of this Section 9.1.2, the voting interest of a Working Interest Owner shall be equal to the ratio that its Phase II Unit Participation attributable to Tracts that qualify under Section 9.1.1 bears to the total Phase II Unit Participation of all Working Interest Owners attributable to all Tracts that qualify under Section 9.1.1.

9.1.3 Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest have become parties to this agreement, regardless of the percentage of Royalty Interest therein that is committed thereto, and as to which (a) the Working Interest Owner who operates the Tract and all of the other Working Interest Owners in such Tract who have become parties to this agreement have joined in a request for inclusion of such Tract in the Unit Area, and have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners in the Unit Area, their successors and assigns, against all claims and demands that may be made by the owners of Working Interest in such Tract who are not parties to the agreement and which arise out of the inclusion of the Tract in the Unit Area; and as to which (b) sixty-five percent (65%) of the combined voting interest of the Working Interest Owners in all Tracts that meet the requirements of Section 9.1.1 and 9.1.2 have voted in favor of the inclusion of such Tract and to accept the indemnity agreement. For the purposes of this Section 9.1.3, the voting interest of each Working Interest Owner shall be equal to the ratio that its Phase II Unit Participation attributable to Tracts that qualify under Sections 9.1.1 and 9.1.2 bears to the total Phase II Unit Participation of all Working Interest Owners attributable to all Tracts that qualify under Sections 9.1.1 and 9.1.2. Upon the inclusion of such a Tract in the Unit Area, the Unit Participation that would have been attributed to the nonsubscribing owners of the Working Interest in such

Tract, had they become parties to this agreement and the Unit Operating Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements, in proportion to their respective Working Interests in the Tract.

9.2 SUBSEQUENT COMMITMENT OF INTEREST TO UNIT. After the effective date of this agreement, the commitment of any interest in any Tract within the Unit Area shall be upon such terms as may be negotiated by Working Interest Owners and the owner of such interest.

9.3 REVISION OF EXHIBITS. If any of the Tracts described in original Exhibit A fail to qualify for inclusion in the Unit Area, Unit Operator shall recompute, using the original basis of computation, the Tract Participation of each of the qualifying tracts, and shall revise Exhibits A and B accordingly. The revised exhibits shall be effective as of the effective date hereof.

ARTICLE 10

TITLES

10.1 REMOVAL OF TRACT FROM UNIT AREA. If a Tract ceases to have sufficient Working Interest Owners or Royalty Owners committed to this agreement to meet the conditions of Article 9 because of failure of title of any party hereto, such Tract shall be removed from the Unit Area effective as of the first day of the calendar month in which the failure of title is finally determined; however, the Tract shall not be removed from the Unit Area if, within ninety (90) days of the date of final determination of the failure of title, the Tract requalifies under a Section of Article 9.

10.2 REVISION OF EXHIBITS. If a Tract is removed from the Unit Area because of the failure of title, Unit Operator, subject to Section 5.2, shall recompute the Tract Participation of each of the Tracts remaining in the Unit Area and shall revise Exhibits A and B accordingly. The revised exhibits shall be effective as of the first day of the calendar month in which such failure of title is finally determined.

10.3 WORKING INTEREST TITLES. If title to a Working Interest fails, the rights and obligations of Working Interest Owners by reason of the failure of title shall be governed by the Unit Operating Agreement.

10.4 ROYALTY OWNER TITLES. If title to a Royalty Interest fails, but the Tract to which it relates is not removed from the Unit Area, the party whose title failed shall not be entitled to share hereunder with respect to such interest.

10.5 PRODUCTION WHERE TITLE IS IN DISPUTE. If the title or right of any party claiming the right to receive in kind all of any portion of the Unitized Substances allocated to a Tract is in dispute, Unit Operator at the discretion of Working Interest Owners shall either:

- (a) require that the party to whom such Unitized Substances are delivered or to whom the proceeds thereof are paid, furnish security for the proper accounting therefor to the rightful owner if the title or right of such party fails in whole or in part, or
- (b) withhold and market the portion of Unitized Substances with respect to which title or right is in dispute, and impound the proceeds thereof until such time as the title or right thereto is established by a final judgment of a court of competent jurisdiction or otherwise to the satisfaction of Working Interest Owners, whereupon the proceeds so impounded shall be paid without interest to the party rightfully entitled thereto.

10.6 PAYMENT OF TAXES TO PROTECT TITLE. The owners of (1) the surface rights to lands within the Unit Area, (2) the severed mineral or Royalty Interests in the lands, and (3) the improvements located on the lands not utilized for Unit Operations, shall individually be responsible for the rendition and assessment for ad valorem tax purposes of all such property, and for the payment of such taxes, except as otherwise provided in any contract or agreement between such owners and a Working Interest Owner. If any ad valorem taxes are not paid by such Owner responsible therefor when due, Unit Operator may, with approval of Working Interest Owners, at any time prior to tax sale, or expiration of period of redemption after tax sale, pay the same, redeem such property, and discharge such tax liens as may arise through

nonpayment. Any such payment shall be treated as an item of Unit Expense. Unit Operator, shall if possible, withhold from any proceeds derived from the sale of Unitized Substances otherwise due to any delinquent taxpayer or taxpayers an amount sufficient to defray the costs of such payment or redemption, such withholding to be credited to the joint account. Such withholding shall be without prejudice to any other remedy, either at law or in equity, which may be available for exercise by the Unit Operator or by the Working Interest Owners

ARTICLE 11

EASEMENTS OF USE OF SURFACE

11.1 GRANT OF EASEMENTS. The parties hereto, to the extent of their rights and interests, hereby grant to Working Interest Owners the right to use as much of the surface of the land within the Unit Area as may reasonably be necessary for Unit Operations; provided that, nothing herein shall be construed as leasing or otherwise conveying to Working Interest Owners a site for a water, gas injection, processing or other plant, or camp site.

11.2 USE OF WATER. Working Interest Owners shall have free use of water from the Unit Area for Unit Operations, except water from any well, lake, pond, or irrigation ditch of a Royalty Owner.

11.3 SURFACE DAMAGES. Working Interest Owners shall pay the owner for damages to growing crops, timber, fences, improvement, and structures on the Unit Area that result from Unit Operations in accordance with and as specified in the leases subject to this agreement.

ARTICLE 12

ENLARGEMENTS OF UNIT AREA

12.1 ENLARGEMENTS OF UNIT AREA. The Unit Area may be enlarged to include acreage reasonably proved to be productive, upon such terms as may be determined by Working Interest Owners, including but not limited to, the following:

12.1.1 The acreage shall qualify under a Section of Article 9.

12.1.2 The participation to be allocated to the acreage shall be reasonable, fair, and based on all available information.

12.1.3 There shall be no retroactive allocation or adjustment of Unit Expense or of interests in the Unitized

Substances, produced or proceeds thereof; however, this limitation shall not prevent an adjustment of investment by reason of the enlargement.

12.2 DETERMINATION OF TRACT PARTICIPATION. Unit Operator, subject to Section 5.2, shall determine the Tract Participation of each Tract within the Unit Area as enlarged, and shall revise Exhibits A and B accordingly.

12.3 EFFECTIVE DATE. The effective date of any enlargement of the Unit Area shall be 7:00 a.m. on the first day of the calendar month following compliance with conditions for enlargement as specified by Working Interest Owners, approval of the enlargement by the appropriate governmental authority, if required, and the filing for record of revised Exhibits A and B in the records of Lea County, New Mexico.

ARTICLE 13

CHANGE OF TITLE

13.1 COVENANT RUNNING WITH THE LAND. This agreement shall extend to, be binding upon, and inure to the benefit of, the respective heirs, devisees, legal representatives, successors, and assigns of the parties hereto, and shall constitute a covenant running with the lands, leases, and interests covered hereby.

13.2 NOTICE OF TRANSFER. Any conveyance of all or any part of any interest owned by any party hereto with respect to any Tract shall be made expressly subject to this agreement. No change of title shall be binding on the Unit Operator, or upon any party hereto other than the party so transferring, until the first day of the calendar month next succeeding the date of receipt by Unit Operator of a photocopy or a certified copy of the recorded instrument evidencing such change in ownership.

13.3 WAIVER OF RIGHTS TO PARTITION. Each party hereto covenants that, during the existence of this agreement, it will not resort to any action to partition the Unit Area or the Unit Equipment, and to that extent waives the benefits of all laws authorizing such partition.

ARTICLE 14

RELATIONSHIP OF PARTIES

14.1 NO PARTNERSHIP. The duties, obligations, and liabilities of the parties hereto are intended to be several and not joint or collective. This agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation, or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

14.2 NO SHARING OF MARKET. This agreement is not intended to provide, and shall not be construed to provide, directly or indirectly, for any cooperative refining, joint sale, or marketing of Unitized Substances.

14.3 ROYALTY OWNERS FREE OF COSTS. This agreement is not intended to impose, and shall not be construed to impose, upon any Royalty Owner any obligation to pay for Unit Expense unless such Royalty Owner is otherwise so obligated.

14.4 INFORMATION TO ROYALTY OWNERS. Each Royalty Owner, upon written request therefor, shall be entitled to all information in possession of Unit Operator to which such Royalty Owner is entitled by an existing agreement with any Working Interest Owner.

ARTICLE 15

LAWS AND REGULATIONS

15.1 LAWS AND REGULATIONS. This agreement shall be subject to the conservation laws of the State of New Mexico; to the valid rules, regulations, and orders of the New Mexico Oil Conservation Commission; and to all other applicable federal, state, and municipal laws, rules, regulations and orders.

ARTICLE 16

FORCE MAJEURE

16.1 FORCE MAJEURE. All obligations imposed by this agreement on each party, except for the payment of money, shall be suspended while compliance is prevented, in whole or in part, by a strike, fire,

war, civil disturbance, act of God; by federal, state, or municipal laws; by any rule, regulation or order of a governmental agency, by inability to secure materials; or by any other cause or causes beyond reasonable control of the party. No party shall be required against its will to adjust or settle any labor dispute. The party claiming force majeure shall give prompt notice thereof to all Working Interest Owners. Neither this agreement nor any lease or other instrument subject hereto shall be terminated by reason of suspension of Unit Operations due to any one or more of the causes set forth in this Article.

ARTICLE 17

EFFECTIVE DATE

17.1 EFFECTIVE DATE. This agreement shall become binding upon each party as of the date such party signs the instrument by which it becomes a party hereto, and, unless sooner terminated as provided in Section 17.2, shall become effective as to qualified Tracts at the time and date as determined by the Working Interest Owners in all the qualified Tracts, and set forth in a certificate filed for record by Unit Operators in Lea County, New Mexico. The certificate shall also recite the percentage of the Unit Area represented by the Tracts qualified under Article 9, the book and page in which a counterpart of this agreement has been recorded. The certificate shall not be filed until after the following requirements have been met:

17.1.1 Tracts comprising eighty percent (80%) or more of the Unit Area as shown on the original Exhibit B have qualified under the provisions of Article 9.

17.1.2 At least one counterpart of this agreement has been filed for record by Unit Operator in Lea County, New Mexico.

17.1.3 This agreement has been approved by the New Mexico Oil Conservation Commission.

17.2 IPSO FACTO TERMINATION. If the requirements of Section 17.1 are not accomplished on or before January 1, 1979, this agreement shall ipso facto terminate on that date (hereinafter called "termination date") and thereafter be of no further effect, unless prior thereto Working Interest Owners owning a combined Phase II Unit Participation

of at least seventy-five percent (75%) have become parties to this agreement, and at least seventy percent (70%) of the combined voting interest of such signatory parties have decided to extend the termination date for a period not to exceed six (6) months. If the termination date is so extended and the requirements of Section 17.1 are not accomplished on or before the extended termination date, this agreement shall ipso facto terminate on the extended termination date and thereafter be of no further effect. For the purpose of this section, Unit Participation shall be as shown on the original Exhibit C attached to the Unit Operating Agreement.

ARTICLE 18

TERM

18.1 TERM. The term of this agreement shall be for the time that Unitized Substances are produced in paying quantities and as long thereafter as Unit Operations are conducted without a cessation of more than ninety (90) consecutive days, unless sooner terminated by Working Interest Owners in the manner herein provided.

18.2 TERMINATION BY WORKING INTEREST OWNERS. This agreement may be terminated by Working Interest Owners having a combined Phase II Unit Participation of at least ninety percent (90%) whenever such Working Interest Owners determine that Unit Operations are no longer profitable or feasible and Unit Operator shall file an affidavit stating such fact and the date thereof in the records of Lea County, New Mexico.

18.3 EFFECT OF TERMINATION. Upon termination of this agreement, the further development and operation of the Unitized Formation as a unit shall be abandoned, Unit Operations shall cease, and thereafter the parties shall be governed by the provisions of the leases and other instruments affecting the separate Tracts.

18.4 SALVAGING EQUIPMENT UPON TERMINATION. If not otherwise granted by the leases or other instruments affecting each Tract unitized under this agreement, Royalty Owners hereby grant Working Interest Owners a period of six (6) months after the date of termination of this agreement within which to salvage and remove Unit Equipment.

ARTICLE 19

BORDER AGREEMENTS

19.1 The Unit Operator upon the concurrence of at least three Working Interest Owners owning at least seventy-five percent (75%) of Unit Participation which is in effect at the time the vote is taken may enter into a border-protection agreement or agreements with the Working Interest Owners of lands adjacent to the committed Tracts with respect to the operations in the border area for the maximum ultimate recovery, conservation purposes and proper protection of the parties and interests.

ARTICLE 20

EXECUTION

20.1 ORIGINAL, COUNTERPART, OR OTHER INSTRUMENT. A person may become a party to this agreement by signing the original of this instrument, a counterpart thereof, or other instrument agreeing to be bound by the provisions hereof. The signing of any such instrument shall have the same effect as if all the parties had signed the same instrument.

20.2 JOINDER IN DUAL CAPACITY. Execution as herein provided by any party as either a Working Interest Owner or a Royalty Owner shall commit all interests that may be owned or controlled by such party.

ARTICLE 21

GENERAL

21.1 AMENDMENTS AFFECTING WORKING INTEREST OWNERS. Amendments hereto relating wholly to Working Interest Owners may be made if signed by all Working Interest Owners.

21.2 ACTION BY WORKING INTEREST OWNERS. Any action or approval required by Working Interest Owners hereunder shall be in accordance with the provisions of the Unit Operating Agreement.

21.3 LIEN OF UNIT OPERATOR. Unit Operator shall have a lien upon the interests of Working Interest Owners in the Unit Area to the extent provided in the Unit Operating Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the dates opposite their respective signatures.

WORKING INTEREST OWNERS

ATTEST:

MARALO, INC.

John T. Hall
Secretary

Mary Ralph Lowe
Mary Ralph Lowe, President

November 25, 1977
Date

Erma Lowe
Erma Lowe

December 10, 1977
Date

ATTEST:

CITIES SERVICE OIL COMPANY

ATTEST:

FLUOR OIL AND GAS CORPORATION

Date

ATTEST:

MOBIL OIL CORPORATION

Date

Date

T. J. Brown, Independent
Executor of the Estate of
R. DeChicchis, Deceased

Date

Dawson George, Independent
Executor of the Estate of R. S.
Brennand, Jr., Deceased

Date

Robert Watson, Independent
Executor of the Estate of
R. S. Brennand, Jr., Deceased

Date

STATE OF Texas)
) ss.
COUNTY OF Blanco)

The foregoing instrument was acknowledged before me this
25th day of November, 1977, by Mary Ralph Lowe
President of MARALO, INC., a corporation, on behalf of
said corporation.

[Signature]
Notary Public in and for
Blanco County, Texas.

My Commission Expires:

October 31, 1978

STATE OF Texas)
) ss.
COUNTY OF Blanco)

The foregoing instrument was acknowledged before me this
10th day of December, 1977, by ERMA LOWE.

[Signature]
Notary Public in and for
Blanco County, Texas.

My Commission Expires:

October 31, 1978

EXHIBIT "A"
 ATTACHED TO UNIT AGREEMENT
 MARALO JALMAT YATES UNIT
 LEA COUNTY, NEW MEXICO

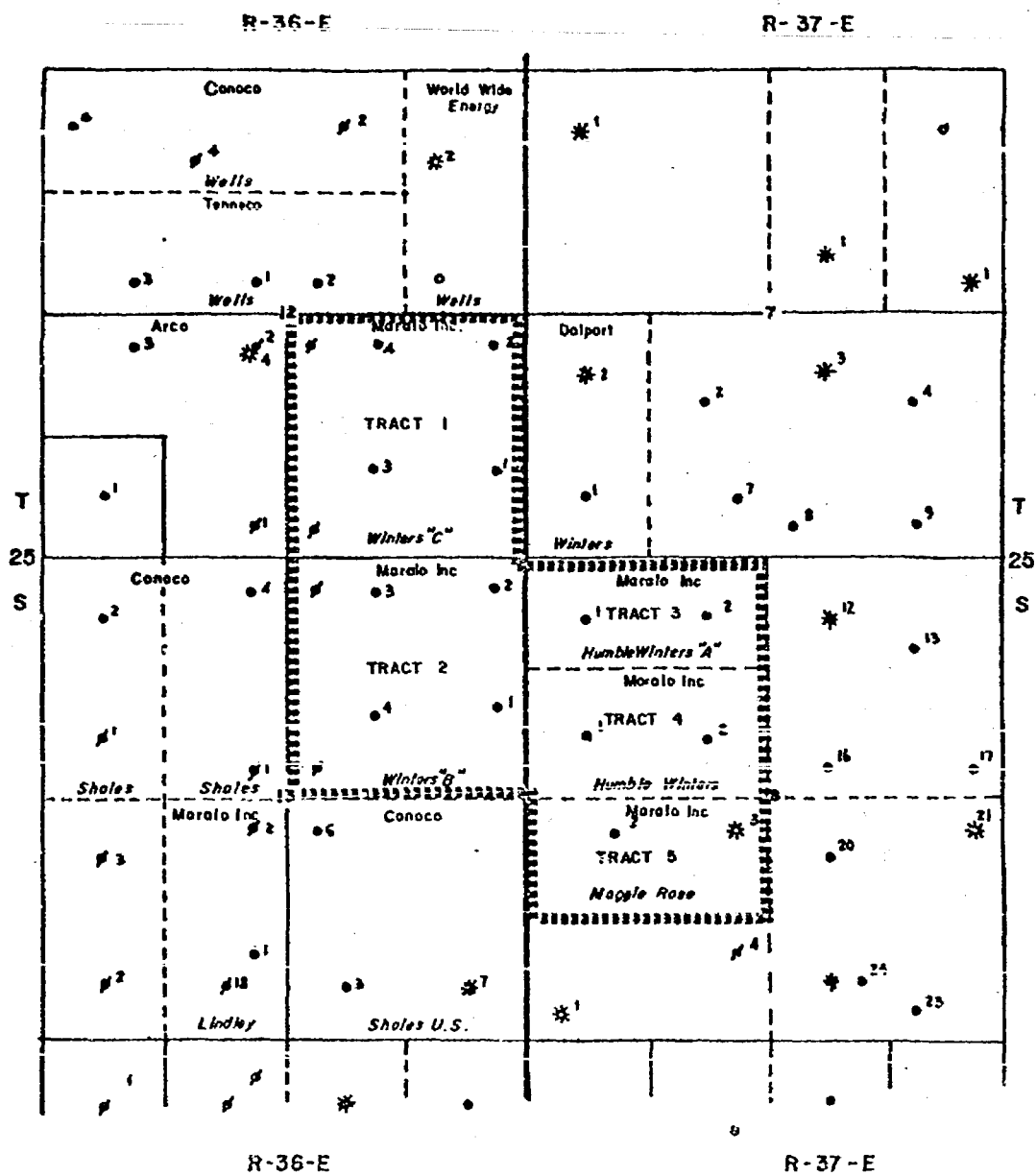
TRACT NO.	TRACT NAME	LAND DESCRIPTION	ACRES	TRACT PARTICIPATION (PERCENT)	
				PHASE I	PHASE II
<u>MARALO, INC. Operated Leases</u>					
1	Winter C	SE/4 Section 12, T-25-S, R-36-E	160.00	47.93126	30.85362
2	Winters B	NE/4 Section 13, T-25-S, R-36-E	160.00	15.89876	31.24212
3	Fumble-Winters	N/2 of NW/4 Section 18, T-25-S, R-37-E	80.00	17.98455	18.30544
4	Fumble-Winters	S/2 of NW/4 Section 18, T-25-S, R-37-E	80.00	6.52017	12.19738
5	Maggie Rose	N/2 of SW/4 Section 18, T-25-S, R-37-E	<u>80.00</u> 560.00	<u>11.66526</u> 100.00000	<u>7.40144</u> 100.00000

EXHIBIT "B"

Attached to Unit Agreement

Maralo Jalmat Yates Unit

Lea Co., N. M.



----- UNIT BOUNDARY

MARALO INC.
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

UNIT OPERATING AGREEMENT

MARALO JALMAT YATES UNIT

LEA COUNTY, NEW MEXICO

#12

UNIT OPERATING AGREEMENT
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

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UNIT OPERATING AGREEMENT

MARALO JALMAT YATES UNIT
Lea County, New Mexico

THIS AGREEMENT, entered into as of the 17th day of October, 1977, by the parties who have signed the original of this instrument, a counterpart thereof, or other instrument agreeing to be bound by the provisions hereof;

WITNESSETH:

WHEREAS, the parties hereto as Working Interest Owners have executed, as of the date hereof, an agreement entitled, "Unit Agreement, Maralo Jalmat Yates Unit, Lea County, New Mexico", herein referred to as "Unit Agreement", which, among other things, provides for a separate agreement to be entered into by Working Interest Owners to provide for the development and operation of the Unit Area as therein defined;

NOW, THEREFORE, in consideration of the mutual agreements herein set forth, it is agreed as follows:

ARTICLE 1

CONFIRMATION OF UNIT AGREEMENT

1.1 CONFIRMATION OF UNIT AGREEMENT. The Unit Agreement is hereby confirmed and by reference made a part of this agreement. The definitions in the Unit Agreement are adopted for all purposes of this agreement. If there is any conflict between the Unit Agreement and this agreement, the Unit Agreement shall govern.

ARTICLE 2

EXHIBITS

2.1 EXHIBITS. The following exhibits are incorporated herein by reference:

2.1.1 EXHIBITS A AND B of the Unit Agreement.

2.1.2 EXHIBIT C, attached hereto, which is a schedule showing the Working Interest of each Working Interest Owner in each Tract, the percentage of total Unit Participation attributable to each such interest, and the total Unit Participation of each Working Interest Owner. Phase I and Phase II Unit Participations shall be applicable for the respective periods of time provided in Section 5.1.1

of the Unit Agreement except where a different phase Tract Participation, Unit Participation or voting interest is herein stated. Exhibit C, or a revision thereof, shall not be conclusive as to the information therein, except it may be used as showing the Unit Participations of the Working Interest Owners for purposes of this agreement until shown to be in error or is revised as herein authorized.

2.1.3 EXHIBIT D, attached hereto, which is the Accounting Procedure applicable to Unit Operations. If there is any conflict between this agreement and Exhibit D, this agreement shall govern.

2.1.4 EXHIBIT E, attached hereto, which contains insurance provisions applicable to Unit Operations.

2.2 REVISION OF EXHIBITS. Whenever Exhibits A and B are revised, Exhibit C shall be revised accordingly and be effective as of the same date. Unit Operator shall also revise Exhibit C from time to time as required to conform to changes in ownership of which Unit Operator has been notified as provided in the Unit Agreement.

ARTICLE 3

SUPERVISION OF OPERATIONS BY WORKING INTEREST OWNERS

3.1 OVERALL SUPERVISION. Working Interest Owners shall exercise overall supervision and control of all matters pertaining to Unit Operations pursuant to this agreement and the Unit Agreement. In the exercise of such authority, each Working Interest Owner shall act solely in its own behalf in the capacity of an individual owner and not on behalf of the owners as an entirety.

3.2 SPECIFIC AUTHORITIES AND DUTIES. The matters with respect to which the Working Interest Owners shall decide and take action shall include, but not be limited to, the following:

3.2.1 METHOD OF OPERATION. The method of operation, including any type of pressure maintenance, secondary recovery, or other recovery program to be employed.

3.2.2 DRILLING OF WELLS. The drilling of any well whether for production of Unitized Substances, for use as an injection well, or for other purposes.

3.2.3 WELL RECOMPLETIONS AND CHANGE OF STATUS. The recompletion, abandonment, or change of status of any well in the Unit Area, or the use of any well for injection or other purposes, except for well servicing or stimulation work on the existing completion interval not exceeding Unit Operator's authority for single expenditures.

3.2.4 EXPENDITURES. The making of any single expenditure in excess of Fifteen Thousand Dollars (\$15,000.00); provided that, approval by Working Interest Owners of the drilling, reworking, deepening, or plugging back of any well shall include approval of all necessary expenditures required therefor, and for completing, testing, and equipping the same, including necessary flow lines, separators, and lease tankage.

3.2.5 DISPOSITION OF UNIT EQUIPMENT. The selling or otherwise disposing of any major item of surplus Unit Equipment, if the current list price of new equipment similar thereto is Five Thousand Dollars (\$5,000.00) or more.

3.2.6 APPEARANCE BEFORE A COURT OR REGULATORY AGENCY. The designating of a representative to appear before any court or regulatory agency in matters pertaining to Unit Operations; provided that, such designation shall not prevent any Working Interest Owner from appearing in person or from designating another representative in its own behalf.

3.2.7 AUDITS. The auditing of the accounts of Unit Operator pertaining to Unit Operations hereunder; provided that, the audits shall

- (a) not be conducted more than once a year except upon the resignation or removal of Unit Operator,

- (b) be made at the expense of all Working Interest Owners other than the Working Interest Owner designated as Unit Operator,

- (c) be made upon not less than thirty (30) days' written notice to Unit Operator, and

- (d) be conducted in accordance with the Accounting Procedure, Exhibit D, attached hereto.

3.2.8 INVENTORIES. The taking of periodic inventories under the terms of Exhibit D.

3.2.9 TECHNICAL SERVICES. The authorizing of charges to the joint account for services by consultants or Unit Operator's technical personnel not covered by the overhead charges provided by Exhibit D.

3.2.10 ASSIGNMENTS TO COMMITTEES. The appointment of committees to study any problems in connection with Unit Operations.

3.2.11 The removal of Unit Operator and the selection of a successor.

3.2.12 The enlargement of the Unit Area.

3.2.13 The adjustment and readjustment of investments.

3.2.14 The termination of the Unit Agreement.

ARTICLE 4

MANNER OF EXERCISING SUPERVISION

4.1 DESIGNATION OF REPRESENTATIVES. Each Working Interest Owner shall in writing inform Unit Operator of the names and addresses of the representative and alternate who are authorized to represent and bind such Working Interest Owner with respect to Unit Operations. The representative or alternate may be changed from time to time by written notice to Unit Operator.

4.2 MEETINGS. All meetings of Working Interest Owners shall be called by Unit Operator upon its own motion or at the request of one or more Working Interest Owners having a total Unit Participation of not less than Three Percent (3%). No meeting shall be called on less than fourteen (14) days' advance written notice, with agenda for the meeting attached. Working Interest Owners who attend the meeting shall not be prevented from amending items included in the agenda or from deciding the amended item or other items presented at the meeting. The representatives of Unit Operator shall be chairman of each meeting.

4.3 VOTING PROCEDURE. Working Interest Owners shall decide all matters coming before them as follows:

4.3.1 VOTING INTEREST. Each Working Interest Owner shall have a voting interest equal to its Unit Participation

based upon the Phase in effect at the time of voting.

4.3.2 VOTE REQUIRED. Except as may otherwise be provided herein or in the Unit Agreement, Working Interest Owners shall act upon and determine all matters coming before them by the affirmative vote of three or more Working Interest Owners having a total of 75 percent (75%) or more of the total voting interest in the unit; provided that if any one Working Interest Owner has a voting interest of more than thirty-five percent (35%), its negative vote or failure to vote shall not defeat the matter being voted on if such matter is supported by a majority of the voting interest unless such Working Interest Owner is supported by the vote of one or more other Working Interest Owners having a total voting interest of at least three percent (3%), and such resulting vote shall be binding on all parties.

4.3.3 VOTE AT MEETING BY NONATTENDING WORKING INTEREST OWNER. Any Working Interest Owner who is not represented at a meeting may vote on any agenda item by letter or telegram addressed to the representative of the Unit Operator if its vote is received prior to the vote on the item, provided such nonattending Working Interest Owner's vote shall not be counted in the vote taken on any item that was amended or altered at the meeting.

4.3.4 POLL VOTES. Working Interest Owners may vote on and decide, by letter or telegram, any matter submitted in writing to Working Interest Owners. If a meeting is not requested, as provided in Section 4.2, within seven (7) days after the written proposal is sent to Working Interest Owners, the vote taken by letter or telegram shall become final. Unit Operator will give prompt notice of the results of the voting to all Working Interest Owners.

ARTICLE 5

INDIVIDUAL RIGHTS OF WORKING INTEREST OWNERS

5.1 RESERVATION OF RIGHTS. Working Interest Owners severally reserve to themselves all their rights, except as otherwise provided in this agreement and the Unit Agreement.

5.2 SPECIFIC RIGHTS. Each Working Interest Owner shall have, among others, the following specific rights:

5.2.1 ACCESS TO UNIT AREA. Access to the Unit Area at such Working Interest Owner's own risk at all reasonable times to inspect Unit Operations, all wells, and the records and data pertaining thereto.

5.2.2 REPORTS. The right to receive from Unit Operator, upon written request, copies of all reports to any governmental agency, reports of crude oil runs and stocks, inventory reports, and all other information pertaining to Unit Operations. The cost of gathering and furnishing information not ordinarily furnished by Unit Operator to all Working Interest Owners shall be charged to the Working Interest Owner who requests the information.

ARTICLE 6

UNIT OPERATOR

6.1 INITIAL UNIT OPERATOR. MARALO, INC. is hereby designated as Unit Operator.

6.2 RESIGNATION OR REMOVAL. "Unit Operator may resign at any time. Working Interest Owners may remove Unit Operator at any time by the affirmative vote of at least 75% of the voting interest remaining after excluding the voting interest of the Unit Operator. A Unit Operator that resigns or is removed shall not be released from its obligations hereunder for a period of three (3) months after the resignation or discharge, unless a successor Unit Operator has taken over unit operations prior to the expiration of such period."

6.3 SELECTION OF SUCCESSOR. "Upon resignation or removal of a Unit Operator, a successor Unit Operator shall be selected by Working Interest Owners. If the Unit Operator that is removed votes only to succeed itself, the successor Unit Operator may be selected by the affirmative vote of at least 75% of the voting interest remaining after excluding the voting interest of the Unit Operator that was removed."

ARTICLE 7

AUTHORITIES AND DUTIES OF UNIT OPERATOR

7.1 EXCLUSIVE RIGHT TO OPERATE UNIT. Subject to the provisions of this agreement and to instructions from Working Interest Owners, Unit Operator shall have the exclusive right and be obligated to conduct Unit Operations.

7.2 WORKMANLIKE CONDUCT. Unit Operator shall conduct Unit Operations in a good and workmanlike manner as would a prudent operator under the same or similar circumstances. Unit Operator shall freely consult with Working Interest Owners and keep them informed of all matters which Unit Operator, in the exercise of its best judgment, considers important. Unit Operator shall not be liable to Working Interest Owners for damages, unless such damages result from its gross negligence or willful misconduct.

7.3 LIENS AND ENCUMBRANCES. Unit Operator shall endeavor to keep the lands and leases in the Unit Area free from all liens and encumbrances occasioned by Unit Operations, except the lien of Unit Operator granted hereunder.

7.4 EMPLOYEES. The number of employees used by Unit Operator in conducting Unit Operations, their selection, hours of labor, and compensation shall be determined by Unit Operator. Such employees shall be the employees of Unit Operator.

7.5 RECORDS. Unit Operator shall keep correct books, accounts, and records of Unit Operations.

7.6 REPORTS TO WORKING INTEREST OWNERS. Unit Operator shall furnish to Working Interest Owners monthly reports of Unit Operations as prescribed by the Working Interest Owners.

7.7 REPORTS TO GOVERNMENTAL AUTHORITIES. Unit Operator shall make all reports to governmental authorities that it has the duty to make as Unit Operator.

7.8 ENGINEERING AND GEOLOGICAL INFORMATION. Unit Operator shall furnish to a Working Interest Owner, upon written request, a copy of the log and other engineering and geological data pertaining to wells drilled for unit Operations.

7.9 EXPENDITURES. Unit Operator is authorized to make single expenditures not in excess of Fifteen Thousand Dollars (\$15,000.00) without prior approval of Working Interest Owners. If an emergency occurs, Unit Operator may immediately make or incur such expenditures as in its opinion are required to deal with the emergency. Unit Operator shall report to Working Interest Owners, as promptly as possible, the nature of the emergency and the action taken.

7.10 WELLS DRILLED BY UNIT OPERATOR. All wells drilled by Unit Operator shall be at the usual rates and under usual conditions prevailing in the area. Unit Operator may employ its own tools and equipment under terms and conditions approved by Working Interest Owners.

ARTICLE 8

TAXES

8.1 AD VALOREM TAXES. Beginning with the first of the calendar year after the effective date hereof, Unit Operator after consulting with Working Interest Owners, shall make and file for ad valorem tax purposes all necessary renditions and returns with the proper taxing authorities of governmental subdivisions covering all property of each Working Interest Owner within the Unit Area and used in connection with the development and operation of the Unit Area. Any Working Interest Owner dissatisfied with any proposed rendition or assessment of its interest in property shall have the right, at its own expense, to protest and resist the same. All such ad valorem taxes due and payable on account of real and personal property of each Working Interest Owner located within the Unit Area and used in connection with Unit operations shall be paid by the Unit Operator for the joint account in the same manner as other costs and expenses of Unit Operations; provided that, if the interest of a Working Interest Owner is subject to a separately assessed overriding royalty interest, production payment, or other interest in excess of a 1/8 royalty, such Working Interest Owner shall be given credit for the reduction in taxes paid resulting therefrom.

8.2 OTHER TAXES. Each Working Interest Owner shall pay or cause to be paid all production, severance, gathering, and other taxes imposed upon or in respect of the production or handling of its share of Unitized Substances.

ARTICLE 9

INSURANCE

9.1 INSURANCE. Unit Operator, with respect to Unit Operations, shall do the following:

9.1.1 Comply with the Workmen's Compensation Law of the State of New Mexico.

9.1.2 Carry Employer's Liability and other insurance as required by the laws of the State of New Mexico.

9.1.3 Carry other insurance as set forth in Exhibit E.

ARTICLE 10

ADJUSTMENT OF INVESTMENTS

10.1 PERSONAL PROPERTY TAKEN OVER. Upon the Effective Date hereof, Working Interest Owners shall deliver to Unit Operator the following:

10.1.1 WELLS. All wells completed in the Unitized Formation.

10.1.2 WELL AND LEASE EQUIPMENT. The casing and tubing in each such well, the wellhead connections, thereon, and all other lease and operating equipment that is used in the operation of such wells.

10.1.3 RECORDS. A copy of all production and well records that pertain to such wells.

10.2 INVENTORY AND EVALUATION OF PERSONAL PROPERTY. Working Interest Owners shall at Unit Expense, as of the effective date hereof, or as soon thereafter as feasible, inventory and evaluate in accordance with the provisions of Exhibit D the personal property taken over under Section 10.1.2, except that casing shall be given no value. No meeting for such inventory and evaluation shall be called on less than fourteen (14) days advance written notice. Such inventories shall include and be limited to those items of equipment indicated to be controllable in the COPAS Bulletin No. 6, Material Classification Manual - 1967, and other items as agreed upon by the Working Interest Owners may be included on the inventories in order to insure a more equitable adjustment of investments. All other non-controllable items of lease and well equipment installed within the Unit Area that are required in Unit

Operations, although excluded from the inventories, shall nevertheless be taken over by the Unit Operator. Immediately following completion of such inventory, the material and equipment taken over under Section 10.1.2 shall be priced in accordance with the provisions of Section IV, Paragraph 2 of Exhibit D, Accounting Procedure, or at an appraised value as determined by the Working Interest Owners, which pricing shall be performed under the supervision of, by the personnel of, and in the offices of the Unit Operator, with other Working Interest Owners furnishing such additional pricing help as may be available and necessary.

10.3 INVESTMENT ADJUSTMENT. Upon approval by Working Interest Owners of the inventory and evaluation, each Working Interest Owner shall be credited with the value of its interest in all personal property taken over under Section 10.1.2, and shall be charged with an amount equal to that obtained by multiplying the total value of all personal property taken over under Section 10.1.2 by such Working Interest Owner's Phase II Unit Participation. If the charge against any Working Interest Owner is greater than the amount credited to such Working Interest Owner, the resulting net charge shall be an item of Unit Expense chargeable against such Working Interest Owner. If the credit to any Working Interest Owner is greater than the amount charged against such Working Interest Owner, the resulting net credit shall be paid to such Working Interest Owner by Unit Operator out of funds received by it in settlement of the net charges described above.

10.4 GENERAL FACILITIES. The acquisition of warehouses, warehouse stocks, lease houses, camps, facility systems, and office building necessary for Unit Operations shall be by negotiation by the owners thereof and Unit Operator, subject to the approval of Working Interest Owners. There shall be no adjustment for lease roads or appurtenances thereto.

10.5 OWNERSHIP OF PERSONAL PROPERTY AND FACILITIES. Each Working Interest Owner, individually, shall by virtue hereof own an undivided interest, equal to its Phase II Unit Participation, in all personal property and facilities taken over or otherwise acquired by Unit Operator pursuant to this agreement.

ARTICLE 11

UNIT EXPENSE

11.1 BASIS OF CHARGES TO WORKING INTEREST OWNERS. Unit Operator initially shall pay and discharge all costs and expenses incurred in the development and operation of the Unit Area. All investments in accountable equipment, Outside Substances, drilling, development, installation of facilities and costs incident to such installing or construction and all other costs other than current operating expenses shall be charged to and owned by each Working Interest Owner in proportion to its Phase II Unit Participation. Current operating expenses and overhead will be charged to each Working Interest Owner in proportion to such Working Interest Owner's Percentage of Participation in effect at the time. For purposes of this provision, current operating expenses shall include only those expenditures which are incurred in the day-to-day operations of the unit. Working Interest Owners shall reimburse Unit Operator for all such costs and expenses, and all charges, credit and accounting for costs and expenses shall be in accordance with Exhibit D.

11.2 BUDGETS. Before or as soon as practical after the effective date hereof, Unit Operator shall prepare a budget of estimated Unit Expense for the remainder of the calendar year, and, on or before the first day of each August thereafter, shall prepare such a budget for the ensuing calendar year. Such budget shall set forth the estimated Unit Expense by quarterly periods. Budgets shall be estimates only, and shall be adjusted or corrected by Working Interest Owners and Unit Operator whenever an adjustment or correction is proper. A copy of each budget and adjusted budget shall promptly be furnished to each Working Interest Owner.

11.3 ADVANCE BILLINGS. Unit Operator shall have the right to require Working Interest Owners to advance their respective share of estimated Unit Expense by submitting to Working Interest Owners, on or before the 15th day of any month, an itemized estimate thereof for the succeeding month, with a request for payment in advance. Within fifteen (15) days thereafter, each Working Interest Owner shall pay to Unit Operator its share of such estimate. Adjustments between estimated and actual Unit Expense shall be made by Unit Operator at the close of each calendar month, and the accounts of Working Interest

Owners shall be adjusted accordingly.

11.4 COMMINGLING OF FUNDS. Funds received by Unit Operator under this agreement need not be segregated or maintained by it as a separate fund, but may be commingled with its own funds.

11.5 LIEN OF UNIT OPERATOR. Each Working Interest Owner grants to Unit Operator a lien upon its Oil and Gas Rights, except royalty interests, in each Tract, its share of Unitized Substances when produced, and its interest in all Unit Equipment as security for payment of its share of Unit Expense, together with interest thereon at the rate of twelve percent (12%) per annum. Unit Operator shall have the right to bring suit to enforce collection of such indebtedness with or without seeking foreclosure of the lien. In addition, upon default by any Working Interest Owner in the payment of its share of Unit Expense, Unit Operator shall have the right to collect from the purchaser the proceeds from the sale of such Working Interest Owner's share of Unitized Substances until the amount owed by such Working Interest Owner, plus interest as aforesaid, has been paid. Each purchaser shall be entitled to rely upon Unit Operator's written statement concerning the amount of any default.

11.6 UNPAID UNIT EXPENSE. If any Working Interest Owner fails to pay its share of Unit Expense within sixty (60) days after rendition of a statement therefor by Unit Operator, each Working Interest Owner agrees, upon request by Unit Operator, to pay its proportionate part of the unpaid share of Unit Expense of the defaulting Working Interest Owner. The Working Interest Owners that pay the share of Unit Expense of a defaulting Working Interest Owner shall be reimbursed by the Unit Operator for the amounts so paid, plus any interest collected thereon, upon receipt by Unit Operator of any past due amount collected from the defaulting Working Interest Owner. Any Working Interest Owner so paying a defaulting Working Interest Owner's share of Unit Expenses shall be subrogated to the lien and rights herein granted Unit Operator.

11.7 UNCOMMITTED ROYALTY. Should an owner of a Royalty Interest in any Tract fail to become a party to the Unit Agreement, and, as a result thereof, the actual Royalty Interest payments with respect to such Tract are more or less than the Royalty Interest payments computed on the basis of the Unitized Substances that are allocated

to such Tract under the Unit Agreement, the difference shall be borne by or inure to the benefit of Working Interest Owners, in proportion to their respective Unit Participations at the time the unitized substances were produced; however, the difference to be borne by or inure to the benefit of Working Interest Owners shall not exceed an amount computed on the basis of one-eighth (1/8) of the difference between the Unitized Substances allocated to the Tract and the Unitized Substance produced from the Tract. Such adjustments shall be made by charges and credits to the joint account.

11.8 CARVED-OUT INTEREST. In the event any Working Interest Owner shall, after executing this agreement, create any overriding royalty, production payment, net profits, or carried interest, or any other interest out of its Working Interest then subject to this agreement, such carved-out interest shall be subject to the terms and provisions of this agreement, specifically including, but without limitation, Section 11.5 hereof, entitled "Lien of Unit Operator". In the event the Working Interest Owner creating such carved-out interest (a) fails to pay any costs or expenses chargeable to such Working Interest Owner under this agreement and the production of Unitized Substance accruing to the credit of such Working Interest Owner is insufficient for that purpose, or (b) withdraws from this agreement under the terms and provisions of Article 17 hereof, the carved-out interest shall be chargeable with a pro rata portion of all costs and expenses incurred hereunder, the same as though such carved-out interest were a Working Interest and Unit Operator shall have the right to enforce against such carved-out interest the lien and all other rights granted in said Section 11.5 for the purpose of collecting the costs and expenses chargeable to said carved-out interest.

ARTICLE 12

NON-UNITIZED FORMATIONS

12.1 RIGHT TO OPERATE. Any Working Interest Owner that now has or hereafter acquires the right to drill for and produce oil, gas, or other minerals, from a formation underlying the unit area other than the Unitized Formation, shall have the right to do so notwithstanding this agreement or the Unit Agreement. In exercising the right, however,

the Working Interest Owner shall exercise reasonable precaution to prevent unreasonable interference with Unit Operations. No Working Interest Owner shall produce Unitized Substances through any well drilled or operated by it. If any Working Interest Owner drills any well into or through the Unitized Formation, the Unitized Formation shall be protected in a manner satisfactory to Working Interest Owners so that the production of Unitized Substances will not be affected adversely.

ARTICLE 13

TITLES

13.1 WARRANTY AND INDEMNITY. Each Working Interest Owner represents and warrants that it is the owner of the respective working interests set forth opposite its name in Exhibit C, and hereby agrees to indemnify and hold harmless the other Working Interest Owners from any loss due to failure, in whole or in part, of its title to any such interest, except failure of title arising because of Unit Operations; provided that, such indemnity shall be limited to an amount equal to the net value that has been received from the sale or receipt of Unitized Substances attributed to the interest as to which title failed. Each failure of title will be deemed to be effective, insofar as this agreement is concerned, as of the first day of the calendar month in which such failure is finally determined, and there shall be no retroactive adjustment of Unit Expense, or retroactive allocation of Unitized Substances or the proceeds therefrom, as a result of title failure.

13.2 FAILURE BECAUSE OF UNIT OPERATIONS. The failure of title to any Working Interest in any Tract by reason of Unit Operations, including non-production from such Tract, shall not change the Unit Participation of the Working Interest Owner whose title failed in relation to the Unit Participations of the other Working Interest Owners at the time of title failure.

ARTICLE 14

LIABILITY, CLAIMS, AND SUITS

14.1 INDIVIDUAL LIABILITY. The duties, obligations, and liabilities of Working Interest Owners shall be several and not joint or collective; and nothing herein contained shall ever be construed as

creating a partnership of any kind, joint venture, association, or trust among Working Interest Owners.

14.2 SETTLEMENTS. Unit Operator may settle any single damage claim or suit involving Unit Operations but not involving an expenditure in excess of Four Thousand Dollars (\$4,000.00) provided that the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above specified amount, Working Interest Owners shall assume and take over the further handling of the claim or suit unless such authority is expressly delegated to Unit Operator. All costs and expense of handling, settling, or otherwise discharging such claim or suit shall be an item of Unit Expense. If a claim is made against any Working Interest Owner or if any Working Interest Owner is sued on account of any matter arising from Unit Operations and over which such Working Interest Owner individually has no control because of the rights given Working Interest Owners and Unit Operator by this agreement and the Unit Agreement, the Working Interest Owner shall immediately notify the Unit Operator, and the claim or suit shall be treated as any other claim or suit involving Unit Operations.

ARTICLE 15

INTERNAL REVENUE PROVISION

15.1 INTERNAL REVENUE PROVISION. Notwithstanding any provisions herein, that the rights and liabilities of the parties hereunder are several and not joint or collective, or that this agreement and the operations hereunder shall not constitute a partnership, if for Federal income tax purposes this agreement and the operations hereunder are regarded as a partnership, then each of the parties hereto hereby elects to be excluded from the application of all of the provisions of Sub-Chapter K, Chapter 1, Subtitle A of the Internal Revenue Code of 1954, as permitted and authorized by Section 761 of the said Code and the regulation promulgated thereunder. Operator is hereby authorized and directed to execute on behalf of each of the parties hereto such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, state-

ments and data required by Federal Regulations 1.761.1(a). Should there be any requirement that each party hereto further evidence this election each party hereto agrees to execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. Each party hereto further agrees not to give any notices or take any other action inconsistent with the election made hereby. If any present or future income tax laws of the state or states in which the property covered by this agreement is located, or any future income tax law of the United States, contain, or shall hereafter contain, provisions similar to those contained in Sub-Chapter K, Chapter 1, Subtitle A of the Internal Revenue Code of 1954, under which an election similar to that provided by Section 761 of said Sub-Chapter K is permitted, each of the parties hereto hereby makes such election or agrees to make such election as may be permitted by such laws. In making this election each of the parties hereto hereby states that the income derived by him from the operations under this agreement can be adequately determined without the computation of partnership taxable income.

ARTICLE 16

NOTICES

16.1 NOTICES. All notices required hereunder shall be in writing and shall be deemed to have been properly served when sent by mail or telegram to the address of the representative of each Working Interest Owner as furnished to Unit Operator in accordance with Article 4.

ARTICLE 17

WITHDRAWAL OF WORKING INTEREST OWNER

17.1 WITHDRAWAL. A Working Interest Owner may withdraw from this agreement by transferring, without warranty of title, either expressed or implied, to the other Working Interest Owners who do not desire to withdraw, all its Oil and Gas Rights together with its interest in all Unit Equipment and in all wells used in Unit Operations. Such transfer shall not relieve said Working Interest Owner from any obligation or liability incurred prior to the date of the delivery of the transfer, which delivery may be made to Unit Operator as Agent for the transferees. The interest transferred shall be owned by the transferees in proportion to their respective Unit Participations. The transferees, in proportion

19.2 TERM. This agreement shall continue in effect so long as the Unit Agreement remains in effect, and thereafter until (a) all unit wells have been abandoned and plugged or turned over to Working Interest Owners in accordance with Article 20, (b) all Unit Equipment and real property acquired for the joint account have been disposed of by Unit Operator in accordance with instructions of Working Interest Owners, and (c) there has been a final accounting.

ARTICLE 20

ABANDONMENT OF OPERATIONS

20.1 TERMINATION. Upon termination of the Unit Agreement, the following will occur:

20.1.1 OIL AND GAS RIGHTS. Oil and Gas Rights in and to each separate Tract shall no longer be affected by this agreement, and thereafter the parties shall be governed by the terms and provisions of the leases, contracts, and other instruments affecting the separate Tracts.

20.1.2 RIGHT TO OPERATE. Working Interest Owners of any Tract that desire to take over and continue to operate wells located thereon may do so by paying Unit Operator, for credit to the joint account, the net salvage value of the casing and the equipment in and on the wells taken over as determined by Working Interest Owners, and by agreeing to plug properly each well in compliance with applicable laws and regulations at such time as it is abandoned.

20.1.3 SALVAGING WELLS. Unit Operator shall salvage as much of the casing and equipment in or on wells not taken over by Working Interest Owners of separate Tracts as can economically and reasonably be salvaged, and shall cause the wells to be plugged and abandoned in compliance with applicable laws and regulations.

20.1.4 COST OF SALVAGING. Working Interest Owners shall share the cost of salvaging, liquidation or other distribution of assets and properties used in Unit Operation in

proportion to their respective Unit Participations then in effect in which such salvaging, liquidation or other distribution occurs.

ARTICLE 21

EXECUTION

21.1 ORIGINAL COUNTERPART, OR OTHER INSTRUMENT. A party may become a party to this agreement by signing the original of this instrument, a counterpart thereof, or other instrument agreeing to be bound by the provisions hereof. The signing of any such instrument shall have the same effect as if all the parties had signed the same instrument.

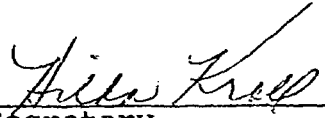
ARTICLE 22

SUCCESSORS AND ASSIGNS

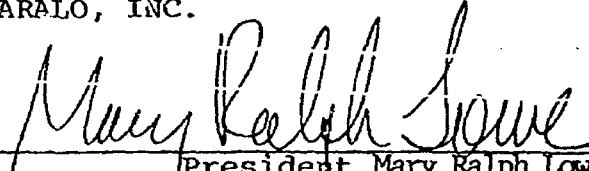
22.1 SUCCESSORS AND ASSIGNS. The provisions hereof shall be covenants running with the lands, leases, and interests covered hereby, and shall be binding upon and inure to the benefit of the respective heirs, devisees, legal representatives, successors, and assigns of the parties hereto.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the dates opposite their respective signatures.

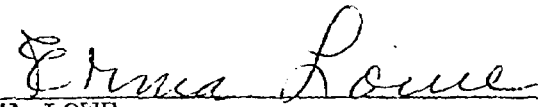
ATTEST:


~~President~~ Secretary

MARALO, INC.


President, Mary Ralph Lowe

November 25, 1977
Date


ERMA LOWE

December 10, 1977
Date

STATE OF Texas)
) ss.
COUNTY OF Blanco)

The foregoing instrument was acknowledged before me this 25th
day of November, 1977, by Mary Ralph Lowe, President
of MARALO, INC., a corporation,
on behalf of said corporation..

Patsy Haley
Notary Public in and for
Blanco County, Texas.

My Commission Expires:

October 31, 1978

STATE OF Texas)
) ss.
COUNTY OF Blanco)

The foregoing instrument was acknowledged before me this 10th
day of December, 1977, by ERMA LOWE.

Patsy Haley
Notary Public in and for
Blanco County, Texas.

My Commission Expires:

October 31, 1978

EXHIBIT "C"
ATTACHED TO UNIT OPERATING AGREEMENT
MARALO TALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

UNIT PARTICIPATION

TRACT NO.	TRACT NAME	WORKING INTEREST OWNER	WORKING INTEREST IN TRACTS (PERCENT)		UNIT WORKING INTEREST (BY TRACT) (PERCENT)	
					PHASE I	PHASE II
1	Winter "C"	MARALO, INC. Erma Lowe R. DeChicchi's Estate Cities Service Oil Co. Fluor Oil and Gas Corporation Mobil Oil Corporation	35.54687 35.54688 10.15625 6.25000 6.25000 6.25000	<u>100.00000</u>	17.03806 17.03807 4.86803 2.99570 2.99570 2.99570	10.96750 10.96753 3.13357 1.92835 1.92835 1.92835
2	Winters "B"	MARALO, INC. Erma Lowe R. DeChicchi's Estate Cities Service Oil Co. Fluor Oil and Gas Corporation Mobil Oil Corporation	35.54688 35.54687 10.15625 6.25000 6.25000 6.25000	<u>100.00000</u>	5.65152 5.65151 1.61472 .99367 .99367 .99367	11.10560 11.10560 3.17303 1.95263 1.95263 1.95263
3	Winters "A"	MARALO, INC. Erma Lowe R. DeChicchi's Estate Cities Service Oil Co. Fluor Oil and Gas Corporation Mobil Oil Corporation Estate of R. S. Brennand, Jr.	31.86430 31.86430 4.70400 6.25000 6.25000 6.25000 12.81740	<u>100.00000</u>	5.73065 5.73065 .84600 1.12403 1.12403 1.12403 2.30516	5.83290 5.83290 .86109 1.14409 1.14409 1.14409 2.34628
					<u>17.98435</u>	<u>18.30544</u>

EXHIBIT "C" (Continued)

TRACT NO.	TRACT NAME	WORKING INTEREST OWNER	WORKING INTEREST IN TRACTS (PERCENT)		UNIT WORKING INTEREST (BY TRACT) (PERCENT)	
			PHASE I	PHASE II		
4	Humble-Winters	MARALO, INC. Erma Lowe R. DeChicchi's Estate Cities Service Co. Fluor Oil and Gas Corporation Mobil Oil Corporation Estate of R. S. Brennand, Jr.	32.38520 32.38520 3.66220 6.25000 6.25000 6.25000 12.81740 100.00000	2.11157 2.11157 .23878 .40751 .40751 .40751 .83572 6.52017	3.95014 3.95014 .44669 .76234 .76234 .76234 1.56339 12.19738	
5	Magie Rose	MARALO, INC. Erma Lowe R. DeChicchi's Estate	43.75000 43.75000 12.50000 100.00000	5.10355 5.10355 1.45816 11.66526	3.23813 3.23813 .92518 7.40144	
TOTAL			100.00000	100.00000	100.00000	

EXHIBIT "C"
ATTACHED TO UNIT OPERATING AGREEMENT
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

SUMMARY			
WORKING INTEREST OWNER	TRACT NO.	UNIT PARTICIPATION (PERCENT)	
		PHASE I	PHASE II
MARALO, INC.	1	17.03806	10.96750
	2	5.65152	11.10560
	3	5.73065	5.83290
	4	2.11157	3.95014
	5	5.10355	3.23813
		<u>35.63535</u>	<u>35.09427</u>
Erma Lowe	1	17.03807	10.96750
	2	5.65151	11.10560
	3	5.73065	5.83290
	4	2.11157	3.95014
	5	5.10355	3.23813
		<u>35.63535</u>	<u>35.09427</u>
R. DeChicchis Estate	1	4.86803	3.13357
	2	1.61472	3.17303
	3	.84600	.86109
	4	.23878	.44669
	5	1.45816	.92518
		<u>9.02569</u>	<u>8.53956</u>
Cities Service Oil Co.	1	2.99570	1.92835
	2	.99367	1.95263
	3	1.12403	1.14409
	4	.40751	.76234
		<u>5.52091</u>	<u>5.78741</u>
Fluor Oil and Gas Corporation	1	2.99570	1.92835
	2	.99367	1.95263
	3	1.12403	1.14409
	4	.40751	.76234
		<u>5.52091</u>	<u>5.78741</u>
Mobil Oil Corporation	1	2.99570	1.92835
	2	.99367	1.95263
	3	1.12403	1.14409
	4	.40751	.76234
		<u>5.52091</u>	<u>5.78741</u>
Estate of R. S. Brennand, Jr.	3	2.30516	2.34628
	4	.83572	1.56339
		<u>3.14088</u>	<u>3.90967</u>
	TOTAL	<u>100.00000</u>	<u>100.00000</u>

COPAS

EXHIBIT "D"

Attached to and made a part of Unit Operating Agreement
MARALO JALMAT YATES UNIT, Lea County, New Mexico

ACCOUNTING PROCEDURE JOINT OPERATIONS

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Material" shall mean personal property, equipment or supplies acquired or held for use on the Joint Property.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies of North America.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits, summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

Each Non-Operator shall pay its proportion of all bills within fifteen (15) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the rate of twelve percent (12%) per annum or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts.

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement to which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators shall be controlling on all Non-Operators.

II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. Rentals and Royalties

Lease rentals and royalties paid by Operator for the Joint Operations.

2. Labor

A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.

(2) Salaries of First Level Supervisors in the field.

(3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the Overhead rates.

B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II. Such costs under this Paragraph 2B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 2A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II.

D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II.

3. Employee Benefits

Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II shall be Operator's actual cost not to exceed twenty per cent (20%).

4. Material

Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

5. Transportation

Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store, recognized barge terminal, or railway receiving point where like material is normally available, unless agreed to by the Parties.

B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store, recognized barge terminal, or railway receiving point unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.

C. In the application of Subparagraphs A and B above, there shall be no equalization of actual gross trucking cost of \$200 or less excluding accessorial charges.

6. Services

The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 9 of Section II and Paragraph 1. ii of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the Overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

7. Equipment and Facilities Furnished by Operator

A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on investment not to exceed eight per cent (8%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.

B. In lieu of charges in Paragraph 7A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

8. Damages and Losses to Joint Property

All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

9. Legal Expense

Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgments and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

10. Taxes

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties.

11. Insurance

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Workmen's Compensation and/or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

12. Other Expenditures

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III, and which is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD**1. Overhead - Drilling and Producing Operations**

- i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

- (X) Fixed Rate Basis, Paragraph 1A, or
() Percentage Basis, Paragraph 1B.

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 2A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the Overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

- ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property shall (X) shall not () be covered by the Overhead rates.

A. Overhead - Fixed Rate Basis

- (1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate \$ 1,000.00

Producing Well Rate \$ 150.00

- (2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

- [1] Charges for onshore drilling wells shall begin on the date the well is spudded and terminate on the date the drilling or completion rig is released, whichever is later, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.
- [2] Charges for offshore drilling wells shall begin on the date when drilling or completion equipment arrives on location and terminate on the date the drilling or completion equipment moves off location or rig is released, whichever occurs first, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.
- [3] Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig, commence through date of rig release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive days.

(b) Producing Well Rates

- [1] An active well either produced or injected into for any portion of the month shall be considered as a one-well charge for the entire month.
 - [2] Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.
 - [3] An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.
 - [4] A one-well charge may be made for the month in which plugging and abandonment operations are completed on any well.
 - [5] All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.
- (3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Fields Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B. Overhead - Percentage Basis

(1) Operator shall charge the Joint Account at the following rates:

(a) Development

_____ Percent (%) of the cost of Development of the Joint Property exclusive of costs provided under Paragraph 9 of Section II and all salvage credits.

(b) Operating

_____ Percent (%) of the cost of Operating the Joint Property exclusive of costs provided under Paragraphs 1 and 9 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:

For the purpose of determining charges on a percentage basis under Paragraph 1B of this Section III, development shall include all costs in connection with drilling, redrilling, deepening or any remedial operations on any or all wells involving the use of drilling crew and equipment; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as Operating.

2. Overhead - Major Construction

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for Overhead based on the following rates for any Major Construction project in excess of \$ 25,000.00 :

- A. 5 % of total costs if such costs are more than \$ 25,000.00 but less than \$500,000.00; plus
 B. 5 % of total costs in excess of \$500,000.00 but less than \$1,000,000; plus
 C. 3 % of total costs in excess of \$1,000,000.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells shall be excluded.

3. Amendment of Rates

The Overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties. The authority of Operator to dispose of idle or surplus material shall be revocable at the will of the Non-Operator.

1. Purchases

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reason, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. Transfers and Dispositions

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following bases exclusive of cash discounts:

A. New Material (Condition A)

- (1) Tubular goods, except line pipe, shall be priced at the current new price in effect on date of movement on a maximum carload or barge load weight basis, regardless of quantity transferred, equalized to the lowest published price f.o.b. railway receiving point or recognized barge terminal nearest the Joint Property where such Material is normally available.
- (2) Line Pipe
 - (a) Movement of less than 30,000 pounds shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property where such Material is normally available.
 - (b) Movement of 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph 2A (1) of this Section IV.
- (3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store or f.o.b. railway receiving point nearest the Joint Property where such Material is normally available.

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

- (1) Material moved to the Joint Property
 - (a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV.
- (2) Material moved from the Joint Property
 - (a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as new Material, or

- (b) at sixty-five percent (65%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as good used Material at seventy-five percent (75%) of current new price.

The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material (Condition C and D)

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph 2A of this Section IV. The cost of reconditioning shall be charged to the receiving property, provided Condition C value plus cost of reconditioning does not exceed Condition B value.

(2) Condition D

All other Material, including junk, shall be priced at a value commensurate with its use or at prevailing prices. Material no longer suitable for its original purpose but usable for some other purpose, shall be priced on a basis comparable with that of items normally used for such other purpose. Operator may dispose of Condition D Material under procedures normally utilized by the Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

- (1) Loading and unloading costs may be charged to the Joint Account at the rate of fifteen cents (15¢) per hundred weight on all tubular goods movements, in lieu of loading and unloading costs sustained, when actual hauling cost of such tubular goods are equalized under provisions of Paragraph 5 of Section II.
- (2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. Premium Prices

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. Warranty of Material Furnished by Operator

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. Periodic Inventories, Notice and Representation

At reasonable intervals, Inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. Reconciliation and Adjustment of Inventories

Reconciliation of a physical inventory with the Joint Account shall be made, and a list of overages and shortages shall be furnished to the Non-Operators within six months following the taking of the inventory. Inventory adjustments shall be made by Operator with the Joint Account for overages and shortages, but Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. Special Inventories

Special Inventories may be taken whenever there is any sale or change of interest in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory.

4. Expense of Conducting Periodic Inventories

The expense of conducting periodic Inventories shall not be charged to the Joint Account unless agreed to by the Parties.

EXHIBIT "E"
ATTACHED TO UNIT OPERATING AGREEMENT
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

INSURANCE PROVISIONS

Unit Operator, during the term of the Unit Operating Agreement, shall carry insurance for the benefit and at the expense of the parties hereto as follows:

- (1) Employers Liability Insurance with limit of not less than \$100,000.00 per employee.
- (2) Public Liability and Property Damage Insurance with limits of not less than \$100,000.00 for injuries to or death of one person and \$300,000.00 for injuries or deaths in one accident, and \$100,000.00 for property damage in one accident
- (3) Automobile Public Liability and Property Damage Insurance with limits of not less than \$100,000.00 for injuries to or death of one person and \$300,000.00 for injuries or deaths in one accident and \$100,000.00 for property damage in one accident

Except as authorized by Article 9 and by this Exhibit "E", Unit Operator shall not make any charge to the joint account for insurance premiums. Losses not covered by Unit Operator's insurance (or by insurance required by this Unit Operating Agreement to be carried for the benefit and at the expense of the parties hereto) shall be charged to the joint account.

Case 6313

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

APPLICATION FOR MARALO, INC.,
FOR SALT WATER INJECTION FOR
SECONDARY RECOVERY WITH JALMAT
YATES UNIT, LEA COUNTY, NEW MEXICO

APPLICATION

Maralo, Inc., hereby makes application for approval of
injection of salt water for secondary recovery project in
Lea County, New Mexico and states:

1. Area affected by the order sought is sometimes known
as the Jalmat Yates Unit Area, all of which is located in
Lea County, New Mexico and the same is described as follows:

Township 25 South, Range 36 East, N.M.P.M.

Section 12: SE $\frac{1}{4}$
Section 13: NE $\frac{1}{4}$

Township 25 South, Range 37 East, N.M.P.M.

Section 18: NW $\frac{1}{4}$, N $\frac{1}{2}$ SW $\frac{1}{4}$

containing 560 acres, more or less.

2. Applicant seeks to inject produced salt water into
injection wells which are to be located in the legal
subdivisions set forth as follows:

Township 25 South, Range 36 East, N.M.P.M.

Section 12: 1. NE $\frac{1}{4}$ SE $\frac{1}{4}$
2. NE $\frac{1}{4}$ SE $\frac{1}{4}$
3. SW $\frac{1}{4}$ SE $\frac{1}{4}$
4. SE $\frac{1}{4}$ SE $\frac{1}{4}$
5. SE $\frac{1}{4}$ SE $\frac{1}{4}$
6. SW $\frac{1}{4}$ SE $\frac{1}{4}$

Section 13: 7. NE $\frac{1}{4}$ NE $\frac{1}{4}$
8. NW $\frac{1}{4}$ NE $\frac{1}{4}$
9. SE $\frac{1}{4}$ NE $\frac{1}{4}$
10. SW $\frac{1}{4}$ NE $\frac{1}{4}$

Township 25 South, Range 37 East, N.M.P.M.

Section 18: 11. NW $\frac{1}{4}$ NW $\frac{1}{4}$
12. NE $\frac{1}{4}$ NW $\frac{1}{4}$
13. NW $\frac{1}{4}$ NW $\frac{1}{4}$
14. NW $\frac{1}{4}$ NW $\frac{1}{4}$
15. SE $\frac{1}{4}$ NW $\frac{1}{4}$
16. SW $\frac{1}{4}$ NW $\frac{1}{4}$
17. NE $\frac{1}{4}$ SW $\frac{1}{4}$

3. Applicant seeks to inject produced salt water into
the above described wells as an essential part of a water

flood project for the Jalmat Yates Unit Area in sufficient quantities and under sufficient pressure to stimulate production of oil from other wells in the area inasmuch as said other wells have reached an advance state of depletion and are regarded as what is commonly referred to as "stripper" wells.

4. Approval of the water flood project sought hereby will be in the interest of conservation, the prevention of waste and the protection of correlative rights.

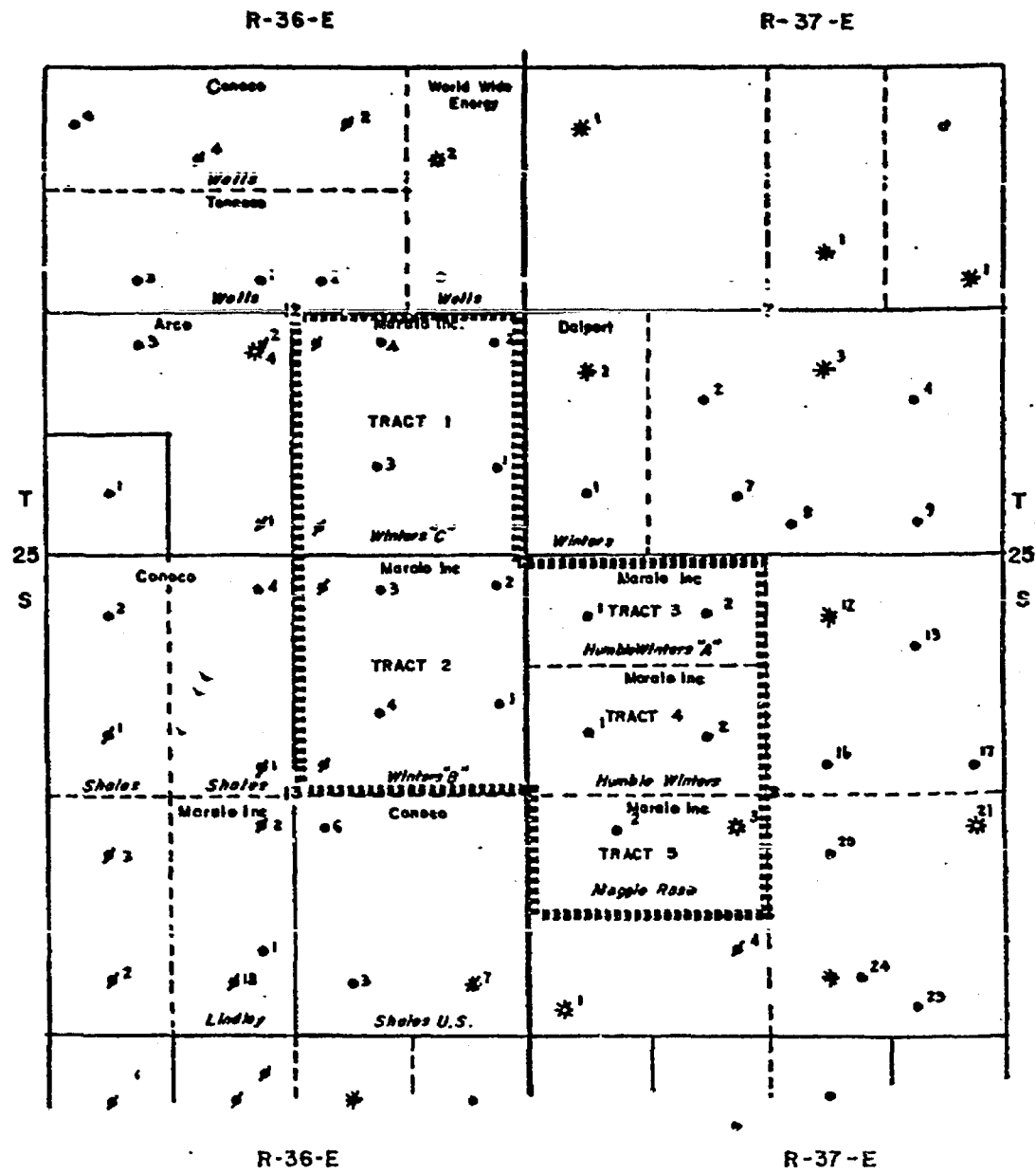
Wherefor, application respectfully requests the setting of this matter for a hearing before all three members of the Oil Conservation Division at the earliest available date.

Dated this 14th day of August, 1978.

HINKLE, COX, EATON, COFFIELD & HENSLEY

By: Conrad E. Coffield
Conrad E. Coffield
Post Office Box 73580
Midland, Texas 79702
Attorneys for Maralo, Inc.

Attached to Unit Agreement
 Maralo Jalmat Yates Unit
 Lea Co., N. M.



----- UNIT BOUNDARY

MARALO INC.
MARALO JALMAT YATES UNIT
LEA COUNTY, NEW MEXICO

Dockets Nos. 31-78 and 32-78 are tentatively set for hearing on September 27 and October 11, 1978. Applications for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - MONDAY - SEPTEMBER 11, 1978

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

CASE 6289: (Continued from August 23, 1978, Commission Hearing)

Application of Bill Taylor for enforcement and amendment of Order No. R-5332, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks a determination of well costs, an accounting of expenditures and costs withheld from production, and the amendment of Order No. R-5332 to remove the present operator of the pooled proration unit comprising the N/2 of Section 13, Township 22 South, Range 26 East, South Carlsbad Field, Eddy County, New Mexico, and designate another operator for said unit.

CASE 6146: (DE NOVO)

Application of Jerome P. McHugh for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Tapacito-Gallup and Basin-Dakota production within the wellbore of his Jicarilla Well No. 5 located in Unit D of Section 29, Township 26 North, Range 4 West, Rio Arriba County, New Mexico.

Upon application of Jerome P. McHugh this case will be heard De Novo pursuant to the provisions of Rule 1220.

CASE 6328: Application of Maralo, Inc., for statutory unitization, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order unitizing, for the purpose of secondary recovery, all mineral interests in the Jalmat Yates Unit underlying the following described lands in Township 25 South, Range 36 East:

Section 12: SE/4
Section 13: NE/4

and the following described lands in Township 25 South, Range 37 East:

Section 18: NW/4 and N/2 SW/4

all in Lea County, New Mexico.

The unitized interval would be all formations or zones extending from the top of the Yates formation down to 100 feet below the base of the Queen formation in the Humble-Winters "A" Well No. 2 located in Unit C of Section 18, Township 25 South, Range 37 East.

Among the matters to be considered at the hearing will be the necessity of unit operations; the designation of a unit operator; the determination of the horizontal and vertical limits of the unit area; the determination of a fair, reasonable, and equitable allocation of production and costs of production, including capital investment, to each of the various tracts in the unit area; the determination of credits and charges to be made among the various owners in the unit area for their investment in wells and equipment; and such other matters as may be necessary and appropriate for carrying on efficient unit operations, including, but not necessarily limited to, unit voting procedures, selection, removal, or substitution of unit operator, and time of commencement and termination of unit operations.

CASE 6313: Application of Maralo, Inc., for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project on its Jalmat Yates Unit Area, Lea County, New Mexico, by the injection of water into various wells located in Township 25 South, Ranges 36 and 37 East.

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 13, 1978

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

The following cases will be heard before Richard L. Stamets, Examiner, or Daniel S. Nutter, Alternate Examiner:

- ALLOWABLE: (1) Consideration of the allowable production of gas for October, 1978, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.
- (2) Consideration of the allowable production of gas for October, 1978, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.
- CASE 6314: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Overland Drilling & Exploration, Ltd., Ohio Casualty Insurance Company, and all other interested parties to appear and show cause why the Lowe State Well No. 1 located in Unit E of Section 15, Township 19 South, Range 29 East, Eddy County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.
- CASE 6315: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Hugh L. Johnston, Sr., General Insurance Co. of America, and all other interested parties to appear and show cause why the Continental State Well No. 5 located in Unit C of Section 30, Township 17 South, Range 29 East, Eddy County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.
- CASE 6316: In the matter of the hearing called by the Oil Conservation Division on its own motion to permit Cortez Corporation, Aetna Casualty & Surety Company, and all other interested parties to appear and show cause why the Fair Well No. 1 located in Unit D of Section 24, Township 18 South, Range 26 East, Eddy County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.
- CASE 6290: (Continued from August 16, 1978, Examiner Hearing)
- In the matter of the hearing called by the Oil Conservation Division on its own motion to permit R. A. Crane, Jr., Great American Insurance Co., and all other interested parties to appear and show cause why the Donella Well No. 1 located in Unit P of Section 3, Township 29 North, Range 15 West, San Juan County, New Mexico, should not be plugged and abandoned in accordance with a Division-approved plugging program.
- CASE 6307: (Continued from August 30, 1978, Examiner Hearing)
- Application of Exxon Corporation for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Drinkard and Wantz-Abo production in the wellbore of its F. F. Hardison B Well No. 10, located in Unit A of Section 34, Township 21 South, Range 37 East, Lea County, New Mexico. (This case will be dismissed.)
- CASE 6317: Application of Harvey E. Yates Company for an unorthodox gas well location and a non-standard proration unit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 301.75-acre non-standard gas proration unit comprising the N/2 of Section 18, Township 18 South, Range 29 East, Eddy County, New Mexico, to be dedicated to a well to be drilled 1980 feet from the North line and 660 feet from the East line of said Section 18 to test the Morrow formation.
- CASE 6318: Application of Coquina Oil Corporation for an increase in casinghead gas allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 303-C-4 to increase the casinghead gas allowable for its Vivian Well No. 1, located in Unit F of Section 30, Township 22 South, Range 38 East, Lea County, New Mexico, the Drinkard and Granite Wash zones in said well being commingled pursuant to Order No. DHC-255 and subject to the GOR limit for the Wantz-Granite Wash Pool.
- CASE 6319: Application of Belco Petroleum Corporation for an unorthodox well location and compulsory pooling, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp formation underlying the N/2 of Section 31, Township 21 South, Range 27 East, Eddy County, New Mexico, to be dedicated to its Mollie Com Well No. 1 located at an unorthodox location 1100 feet from the North line and 1575 feet from the East line of said section. Also to be considered will be the cost of recompleting said well 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 well and a charge for risk involved in drilling said well.

CASE 6320: Application of Texas Oil & Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Coquina Federal Com. Well No. 1 to be drilled 660 feet from the North line and 1980 feet from the West line of Section 32, Township 18 South, Range 27 East, to test the Morrow formation, the W/2 of said Section 32 to be dedicated to the well.

CASE 6321: Application of Texas Oil & Gas Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its Shugart State Com. Well No. 1 to be drilled 660 feet from the South line and 1980 feet from the West line of Section 16, Township 18 South, Range 31 East, Eddy County, New Mexico, to test the Wolfcamp and Pennsylvanian formations, the W/2 of said Section 16 to be dedicated to the well.

CASE 6283: (Continued from August 2, 1978, Examiner Hearing)

Application of Texas Oil & Gas Corporation for a non-standard proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for a 320-acre non-standard gas proration unit comprising the W/2 of Section 16, Township 20 South, Range 36 East, North Osudo-Morrow Gas Pool, Lea County, New Mexico, to be dedicated to a well to be drilled at a standard location thereon.

CASE 6322: Application of Yates Petroleum Corporation for pool contraction, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-391 to contract the horizontal limits of the Empire-Pennsylvanian Gas Pool to the following:

All of Sections 28 and 29, Township 17 South, Range 28 East

In the alternative, applicant seeks to limit the special pool rules for said pool to the present horizontal limits of the pool.

CASE 6323: Application of Yates Petroleum Corporation for compulsory pooling and an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Wolfcamp and Pennsylvanian formations underlying the W/2 of Section 23, Township 17 South, Range 28 East, Empire-Pennsylvanian Gas Pool, Eddy County, New Mexico, to be dedicated to its Lucas Store JZ Well No. 1 located at an unorthodox location 1980 feet from the North line and 860 feet from the West line of said section. Also to be considered will be the cost of completing said well 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 well and a charge for risk involved in drilling said well.

CASE 6324: Application of Yates Petroleum Corporation for downhole commingling or pool creation, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole commingling of Wolfcamp and Upper Penn gas production in the wellbore of its Box Canyon CJ Fed. Well No. 1 located in Unit J of Section 13, Township 21 South, Range 21 East, Eddy County, New Mexico. In the alternative, applicant seeks the creation of a new Permo-Penn gas pool for said well.

CASE 6325: Application of Amoco Production Company for unorthodox locations and directional drilling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox locations of the following South Hobbs Unit wells located in Township 19 South, Range 38 East, Hobbs Pool, Lea County, New Mexico:

Well No. 120 located 1272 feet from the North line and 1420 feet from the West line of Section 5;
Well No. 121 located 1450 feet from the North line and 150 feet from the East line of Section 4;
Well No. 123 located 2390 feet from the North line and 150 feet from the East line of Section 6;
Well No. 124 located 1925 feet from the South line and 2380 feet from the East line of Section 4;
Well No. 126 located 1295 feet from the South line and 1365 feet from the East line of Section 10;
Well No. 122 located 1726 feet from the North line and 167 feet from the East line of Section 4;
and Well No. 125 located 2016 feet from the North line and 763 feet from the West line of Section 3.

Applicant further seeks authority to directionally drill Wells Nos. 122 and 125 to bottomhole locations in the extreme southeast corners of Unit H of Section 4 and Unit E of Section 3, respectively.

CASE 6326: Application of Energy Reserves Group, Inc., for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle South Blanco-Pictured Cliffs and Otero-Chacra production in the wellbore of its Jicarilla 35 Well No. 3, located in Unit B of Section 2, Township 24 North, Range 5 West, Rio Arriba County, New Mexico.

CASE 6327: Application of O. H. Berry for an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of its J. L. Isabell Well No. 5-Y located 340 feet from the North line and 330 feet from the East line of Section 15, Township 24 South, Range 36 East, Santa Rosa formation, Lea County, New Mexico, the NE/4 of said Section 15 to be dedicated to the well.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 6313
Order No. R-5816

APPLICATION OF MARALO, INC.
FOR A WATERFLOOD PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on SEPTEMBER 11,
1978, at Santa Fe, New Mexico, before the Commission.

NOW, on this day of September, 1978, the Commis-
sion, a quorum being present, having considered the testimony,
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, Maralo, Inc., seeks
authority to institute a waterflood project on its Maralo Ismat Yates
Unit, Ismat Pool, by the injection of water into
the Yates formation through 7 injection wells in Sections 12
and 13, Township 25 South, Range 36 East,
NMPM, Lea County, New Mexico.
and in Section 18, Township 25 South, Range 37 East, NMPM, to be drilled at
unorthodox locations

after obtaining lease line agreements
with offset operators
(3) That the applicant further seeks
authority to inject water into the Yates
formation through an additional 10
injection wells to be drilled at unorthodox
locations in Sections 12 and 13, Township
25 South, Range 36 East and in Section
18, Township 25 South, Range 37 East, NMPM,
Lea County, New Mexico.

(see under)

OPERATOR	LEASE NAME	WELL NO.	Unit Letter	Section
Atlantic (Sinclair)	Gloyd	2	J	12
"	" W F Hanagan	2	K	12
"	" "	1	N	12
"	" Gloyd	1	O	12
"	" Stephens A	2	B	13
Continental	Sholes B-13	3	F	13
Atlantic (Sinclair)	Stephens A	1	G	13
Cities Service (Exxon Oil & Gas)	Lindley B	2	K	13

7 (P) That ~~the annular space between the casing and hole in~~ the wells described in Finding No. (6) above could serve as an avenue of water migration from the ~~Yates~~ zone to other zones or to the surface.

should be re-entered

plugged in a manner prescribed by the Supervisor of the Hobbs District Office of the Oil Conservation Division of the New Mexico Energy and Minerals Department, herein after referred to as Division.

8 (P) That to prevent such migration of water from the ~~Yates zone~~, cement bond logs should be run on the wells described in Finding No. (6) above, and any such well not adequately cemented across and above the ~~Yates~~ zone in such a manner as to ensure the presence of cement should be recemented throughout the ~~Yates~~ formation and a minimum of 500 feet above the top thereof.

9 (P) That the wells within the project should be equipped to facilitate periodic testing of the annular space between strings of casings.

10 (P) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

Division

11 (P) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, ~~Marato, Inc.~~ *Marato, Inc.*, is hereby authorized to institute a waterflood project on its ~~Yates~~ Unit, ~~Yates~~ Pool, by the injection of water into the ~~Yates~~ formation through the following-described wells in Sections ~~12~~ and ~~13~~, ~~Lea County, New Mexico~~ *Lea County, New Mexico* in Section 18, Township 25 South, Range 37 East, NMPH, Lea County, New Mexico.

Marato, Inc.
to be drilled at unorthodox locations

Unit Well No
4

Location
1575' FSL & ~~1050'~~ 1050' FEL
Sec. 12, T25S, R36E

9

400' FSL & 1000' FEL
Sec 12, T25S, R36E

15

1050' FNL & 1100' FEL
Sec 13, T25S, R36E

19

1300' FNL & 1350' FWL
Sec 18, T25S, R37E

20

1250' FNL & 70' FWL
Sec 18, T25S, R37E

25

2500' FNL & 1550' FWL
Sec 18, T25S, R37E

31

1650' FSL & 1700' FWL
Sec 18, T25S, R37E

ORDERED (Leave line)

(2) That upon ^{proper} showing that lease line agreements have been obtained with offset operators, the applicant shall be authorized to drill the following 10 injection wells at unorthodox locations:

Unit Well No.

Location

3

1560' FSL & 2500' FEL
Sec. 12, T25S, R36E

5

1560' FSL & 70' FEL
Sec 12, T25S, R36E

8

350' FSL & 2500' FEL
Sec 12, T25S, R36E

10

400' FSL & ⁵⁰~~100~~' FEL
Sec 12, T25S, R36E

11

50' FNL & 1350' FWL
Sec 18, T25S, R37E

14

1100' FNL & 2530' FEL
Sec 13, T25S, R36E

18

1300' FNL & 2580' FWL
Sec 18, T25S, R37E

26

2600' FNL + 50' FWL
Sec 18, T25S, R37E

27

2550' FNL + 1100' FEL
Sec 13, T25S, R36E

28

2540' FNL + 2530' FEL
Sec 13, T25S, R36E

Case No. 111
Order No. R-111

OPERATOR LEASE	WELL NO.	LOCATION
<u>Shell Oil Company</u>		
Andrews	2	990' FNL & 1980' FWL, Sec. 14
Sarkeys	1	660' FSL & 660' FWL, Sec. 23
Sarkeys	2	1980' FSL & 1980' FWL, Sec. 23
Smith	1	1980' FNL & 1980' FEL, Sec. 14
<u>Continental Oil Company</u>		
Lockhart B-12	6	330' FNL & 1980' FWL, Sec. 12
Lockhart B-12	9	1980' FNL & 2310' FEL, Sec. 12
Lockhart B-13-A	4	1980' FSL & 1980' FWL, Sec. 13
Lockhart B-13-A	6	1980' FNL & 1980' FEL, Sec. 13
<u>Shell Oil Company</u>		
Chesher	1	1980' FSL & 1980' FWL, Sec. 12
Chesher	2	660' FSL & 660' FWL, Sec. 12
Fields	1	660' FSL & 2310' FEL, Sec. 12
<u>Summit Energy, Inc.</u>		
Gulf Bunin	2	660' FNL & 1650' FWL, Sec. 13

3 (2) That injection into each of said wells should be through internally coated tubing, set in a packer which shall be located as near as practicable to the uppermost perforation; that the casing-tubing annulus of each injection well shall be tested for leaks, be loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device, and that the injection wells or system shall be equipped in such a manner as to limit wellhead injection pressure to no more than 600 psi.

4 (1) That the ~~Secretary~~ ^{Division Director} of the Commission may administratively authorize a pressure limitation in excess of 600 psi upon a showing by the operator that such higher pressure will not result in fracturing of the confining strata.

5 (1) That the wells within the project area shall be equipped with risers or in another acceptable manner such as to facilitate the periodic testing of the bradenhead for pressure or fluid production.

(5) That before the Shell Oil Company Fields Well No. 1 in Unit O of Section 12, Shell Oil Company Smith Well No. 1 in Unit G of Section 14, and Atlantic Richfield Company Sarkeys Well No. 3 in Unit I of Section 23, all in Township 21 South,

Range 37 East, may be converted to injection, the operator shall cause cement bond logs to be run on each of said wells and shall further cause any such well found to be inadequately cemented across and above the Blinbry zone to be recemented in such a manner as to ensure the presence of cement throughout the Blinbry formation and a minimum of 500 feet above the top thereof.

60 (4) That within 3 months after initiation of injection within the project, the operators of the following wells, all in Township 225 South, Range 37 East, NMPM, shall cause cement bond logs to be run in the wells and shall further cause any such well found to be inadequately cemented across and above the Blinbry zone to be recemented in such a manner as to ensure the presence of cement throughout the Blinbry formation and a minimum of 500 feet above the top thereof:

OPERATOR	LEASE NAME	WELL NO.	Unit better	Section
Atlantic (Sinclair)	Gloyd	2	J	12
" "	W.F. Hanagan	2	K	12
" "	"	1	N	12
" "	Gloyd	1	O	12
" "	Stephens A	2	B	13
Continental Sholes	B-13	3	F	13
Atlantic (Sinclair)	Stephens A	1	G	13
Cities Service (Expro Oil & Gas)	Lindley B	2	K	13

water or oil from any plugged and abandoned well within the project area or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

9 (4) That the subject waterflood project is hereby designated the W.F. Hanagan Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

10 (4) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in Division

Range 37 East, may be converted to injection, the operator shall cause cement bond logs to be run on each of said wells and shall further cause any such well found to be inadequately cemented across and above the Blinberry zone to be recemented in such a manner as to ensure the presence of cement throughout the Blinberry formation and a minimum of 500 feet above the top thereof.

be re-entered
and plugged in
a manner
prescribed
by the Supervisor
of the Division
District Office

3
60 (9) That within 3 months after initiation of injection within the project, the operators of the following wells, all in Township 235 South, Range 37 East, NMPM, shall cause cement bond logs to be run in the wells and shall further cause any such well found to be inadequately cemented across and above the Blinberry zone to be recemented in such a manner as to ensure the presence of cement throughout the Blinberry formation and a minimum of 500 feet above the top thereof:

OPERATOR	LEASE NAME	WELL NO.	UNIT	SECTION
Imperial American Management Company	Bunin	3V	A	13
Tenneco Oil Company	Elliott Federal	1	T	13
Continental Oil Co.	Hawk "B-3"	1	Q	3
Continental Oil Co.	Hawk "B-3"	1	X	3
Exxon Co.	State "V"	6	J	10
Aztec Oil & Gas Co.	Dauron	3	A	10
Gulf Oil Corporation	Eubank	8	G	22

S-T-R

7 (1) (7) That the ^{Unit}operator shall notify the ~~Commission's~~ Division, Hobbs district office of the date and time of operations required by Order No. 6) ~~and~~ of this Order so that the ~~Commission~~ Division may at its option witness such operations.

8 (1) (8) That the operator of the project, or of any affected nearby property, shall immediately notify the supervisor of the ~~Commission's~~ Hobbs district office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from around any producing well, the leakage of water or oil from any plugged and abandoned well within the project area or any other evidence of fluid migration from the injection zone, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

9 (1) (9) That the subject waterflood project is hereby designated the ~~that~~ ^{Unit} ~~Maristo Tolmat Yates~~ Unit Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the ~~Commission~~ Division Rules and Regulations.

10 (1) (10) That monthly progress reports of the waterflood project herein authorized shall be submitted to the ~~Commission~~ Division

accordance with Rules 704 and 1115 of the ^{Division}~~Commission~~ Rules and Regulations.

(16) ~~(12)~~ That jurisdiction of this cause is retained for the entry of such further orders as the ^{Division}~~Commission~~ may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

PHIL R. LUCERO, Chairman


EMERY C. ARNOLD, Member


JOE D. RAMEY, Member & Secretary

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