



MURPHY OPERATING CORPORATION

ROSWELL PETROLEUM BUILDING
ROSWELL, NEW MEXICO 88201

MAILING ADDRESS
P. O. DRAWER 2648

TELEPHONE
505 623-7210

January 7, 1985

Ms. Sue Umshler
Mr. Robert Kent
Unit Agreement - MS430
Bureau of Land Management
505 Marquette, Suite 815, N.W.
Albuquerque, New Mexico 87102

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

Mr. Ray Graham
Mr. Pete Martinez
State of New Mexico
Commissioner of Public Lands
Oil and Gas Division
Post Office Box 1148
Santa Fe, New Mexico 87504-1148

Ms. Melba Carpenter
Oil Conservation Division
Post Office Box 1980
Hobbs, New Mexico 88240

Re: Plan of Operations for 1984-1985
Todd Lower San Andres Unit
Roosevelt, County, New Mexico

Gentlemen:

Pursuant to the provisions of Section 11 of the Unit Agreement, Murphy Operating Corporation, operator of the Todd Lower San Andres Unit Area, Roosevelt County, New Mexico, respectfully submits for your consideration and approval this plan of operation for the secondary recovery of oil by waterflood on the subject unitized land.

I. Modifications of 1983 Plan of Operation (copy attached).

The 1983 Plan of Operation proposed the initiation of a 320-acre pilot injection program during the second half of 1983. This plan included the conversion from producing to injection of Wells #31-03, 32-03, 31-09, and the drilling of injection Well #30-09. In addition, the plan included the drilling of two producing wells, Well #29-13 and Well #30-15. The drilling of these three wells (29-13, 30-09 and 30-15) was commenced in late November and December of 1983. The wells were completed by mid-January of 1984. In an effort to more effectively drain the respective drilling units, all of the new wells were produced until it became necessary to convert them to injection.

A satisfactory water source was developed by the drilling of two water supply wells in the SW $\frac{1}{4}$ of Section 26, T7S-R36E. The water wells tested between 90-110 GPM for an approximate combined capacity of 6000-7000 BWPD to provide ample water for the project even at the full flood development stage. Two (2) 3" polyurethane pipelines connect the water wells to the injection plant located in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 31, T7S, R36E.

Pursuant to a request from Amoco Production Company's Engineering Department, and after approval by all the signatory parties to the Unit Agreement and the Unit Operating Agreement, and after lengthy discussions with the unit's independent engineering consulting firm, Stephens Engineering, the decision was made to add the five (5) wells (marked in red on the attached plan) to the original four (4) injection wells (marked in blue) for the current injection pattern. This nine (9) well pattern is more compatible with the ultimate injection pattern than our original four (4) well pattern and will allow Murphy Operating Corporation and Stephens Engineering to monitor the flow patterns and flood characteristic in a more efficient manner. Also, this new pattern should shorten significantly the flood response time and more efficiently drain the pilot waterflood area.

Injection began on October 9, 1984 and has continued essentially uninterrupted. Currently, well head pressures are minimal and flood response is not anticipated to occur until May or possibly as late as June of 1985.

II. Proposed Plan of Operation for 1984-1985:

- A. Murphy Operating Corporation proposes to continue injection as previously discussed above and to monitor all injection and producing wells. This monitoring process includes semi-monthly well tests on producing Well #'s 30-16, 31-02, 31-08, and 32-04, monthly to bi-monthly production tests on all other producing wells located within unit and daily rate and pressure checks on all injection wells.

III. Further Development:

- A. When a flood response is realized, Murphy Operating Corporation will propose the immediate drilling of the following wells at legal locations in T7S,R36E, Roosevelt County, New Mexico:

	<u>LOCATION</u>	<u>PROPOSED WELL STATUS</u>
1.	Unit Letter L Section 29	Producer
2.	Unit Letter G Section 30	Injector
3.	Unit Letter H Section 30	Producer
4.	Unit Letter K Section 30	Injector
5.	Unit Letter N Section 30	Producer
6.	Unit Letter D Section 31	Producer
7.	Unit Letter F Section 31	Producer
8.	Unit Letter A Section 32	Injector
9.	Unit Letter K Section 32	Injector

Depending on the time of flood response, the drilling of the above listed wells will begin in the 3rd or 4th Quarter of 1985.

- B. At approximately the same time as the commencement of drilling operations, the following wells (all located in T7S,R36E, Roosevelt County, New Mexico) will be converted to injection service:

<u>WELL NUMBER</u>	<u>LOCATION</u>
1. 30-13	Unit Letter M Section 29
2. 31-05	Unit Letter E Section 31
3. 31-11	Unit Letter K Section 31
4. 32-07	Unit Letter G Section 32

IV. Modifications:

- A. This plan of operation may be modified or supplemented during the year with your approval to meet changed conditions or to protect the interest of all parties to the Unit Agreement.

We would greatly appreciate your assistance in expediting the approval of our Plan of Operation. Should you have any questions or comments please contact the undersigned.

Sincerely,

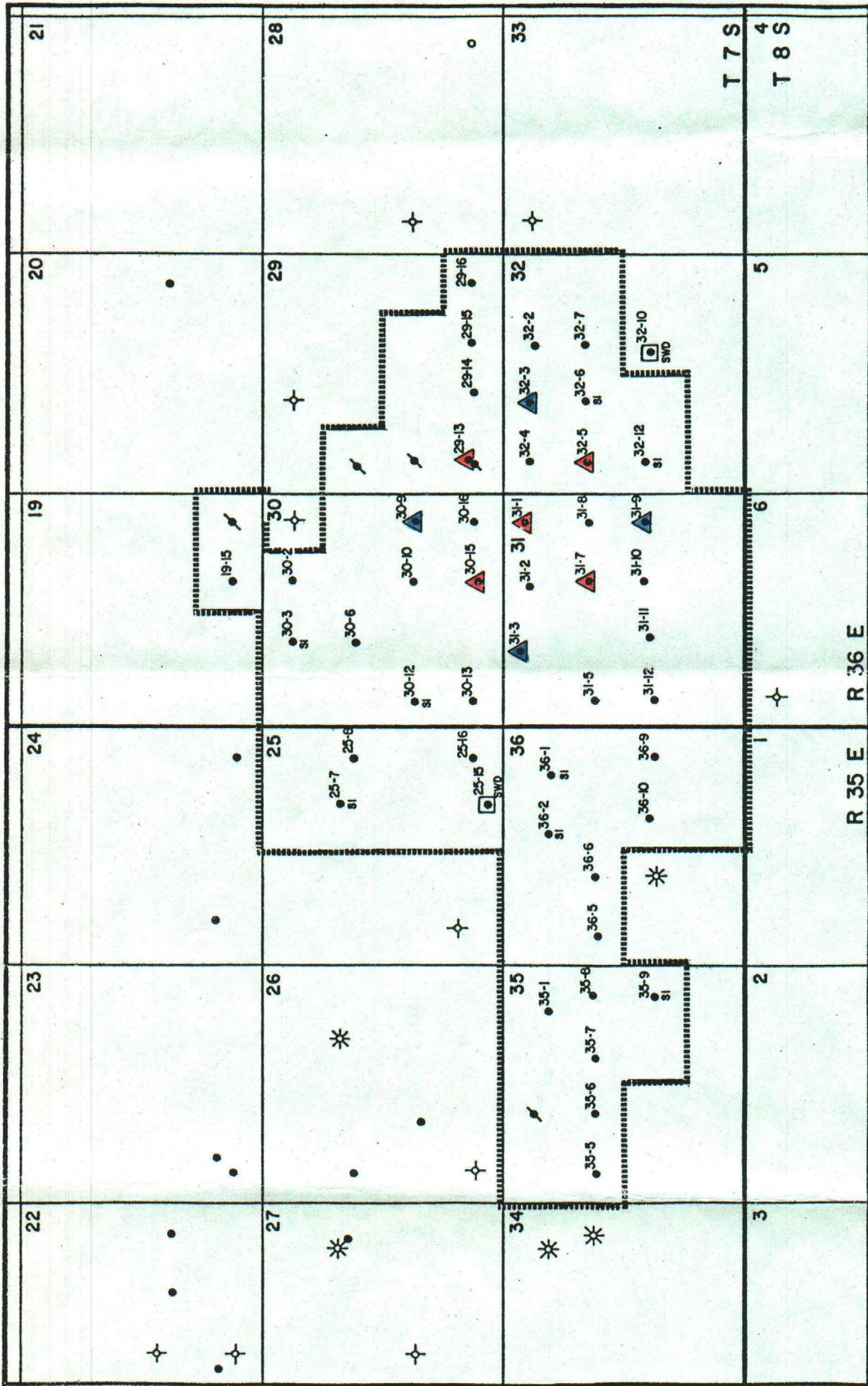
MURPHY OPERATING CORPORATION

Mark B. Murphy
Vice President

MBM/bjf

Enclosures: 1983 Plan of Operation

Correspondence from Stephens Engineering dated January 22, 1985



MURPHY OPERATING CORPORATION
 TODD LOWER SAN ANDRES UNIT
 ROOSEVELT COUNTY, NEW MEXICO

- LEGEND—
- PRODUCING WELL
 - * GAS WELL
 - ▲ WATER INJECTION WELL
 - ✕ PLUGGED & ABANDONED
 - DRY HOLE
 - LOCATION



T 7 S
 T 8 S

R 35 E R 36 E

5

6

2

3

21

20

19

24

23

22

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29

30

25

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32

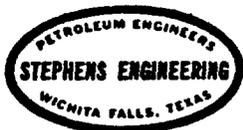
31

36

35

34

TELEPHONE - 817-723-2166



POST OFFICE BOX-2249

WICHITA FALLS, TEXAS
76307

January 22, 1985

Murphy Operating Corporation
Roswell Petroleum Building
P. O. Drawer 2648
Roswell, New Mexico 88201

Re: Secondary Reserves Calculation
Todd Lower San Andres Unit
Roosevelt County, New Mexico

Dear Mark:

As per your request from letter dated January 4, 1985, included herewith is a production versus time graph from January, 1965 through December, 1984, and a production versus time graph showing oil, gas and water from January, 1973 through December, 1984. Secondary reserve calculations were based on volumetrics using an average net pay from the new gamma ray-neutron logs and porosities, water saturations, and formation volume factors from previous reservoir studies. The conclusion from these volumetric reserve calculations showed that each one of the infill wells drilled as a producer would produce an ultimate primary reserve of approximately 21,000 barrels of oil each. Secondary reserves for each of these infill producing wells was calculated to be 42,500 barrels of oil; therefore, ultimate recovery for all 40 acre spacing infill producing wells will be 63,500 barrels of oil. The additional reserves attributable to each of the new injection wells should be 42,500 barrels of oil each.

If you have any questions concerning these reserve calculations, please do not hesitate to contact me.

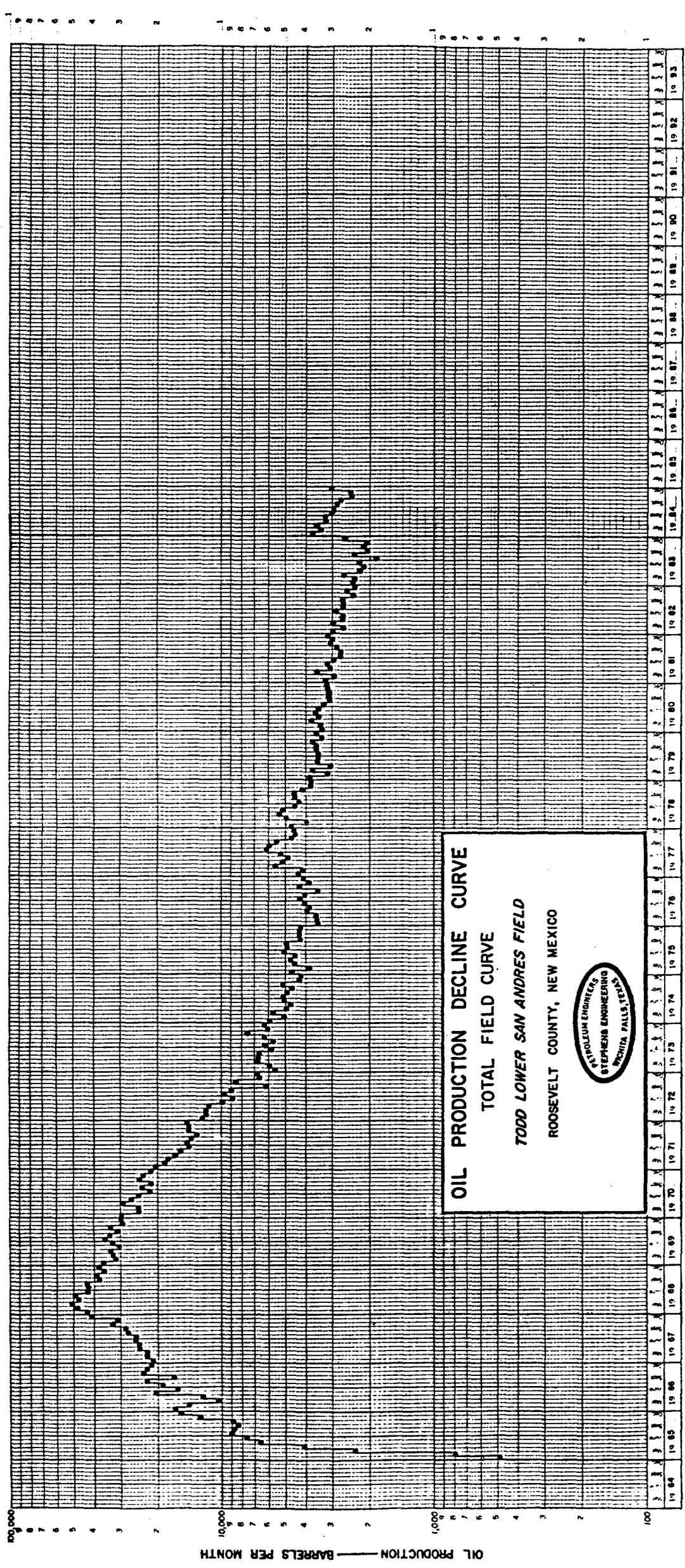
Sincerely,

STEPHENS ENGINEERING

A handwritten signature in cursive script, appearing to read "DeWayne Travelstead".

DeWayne Travelstead

DT/dk



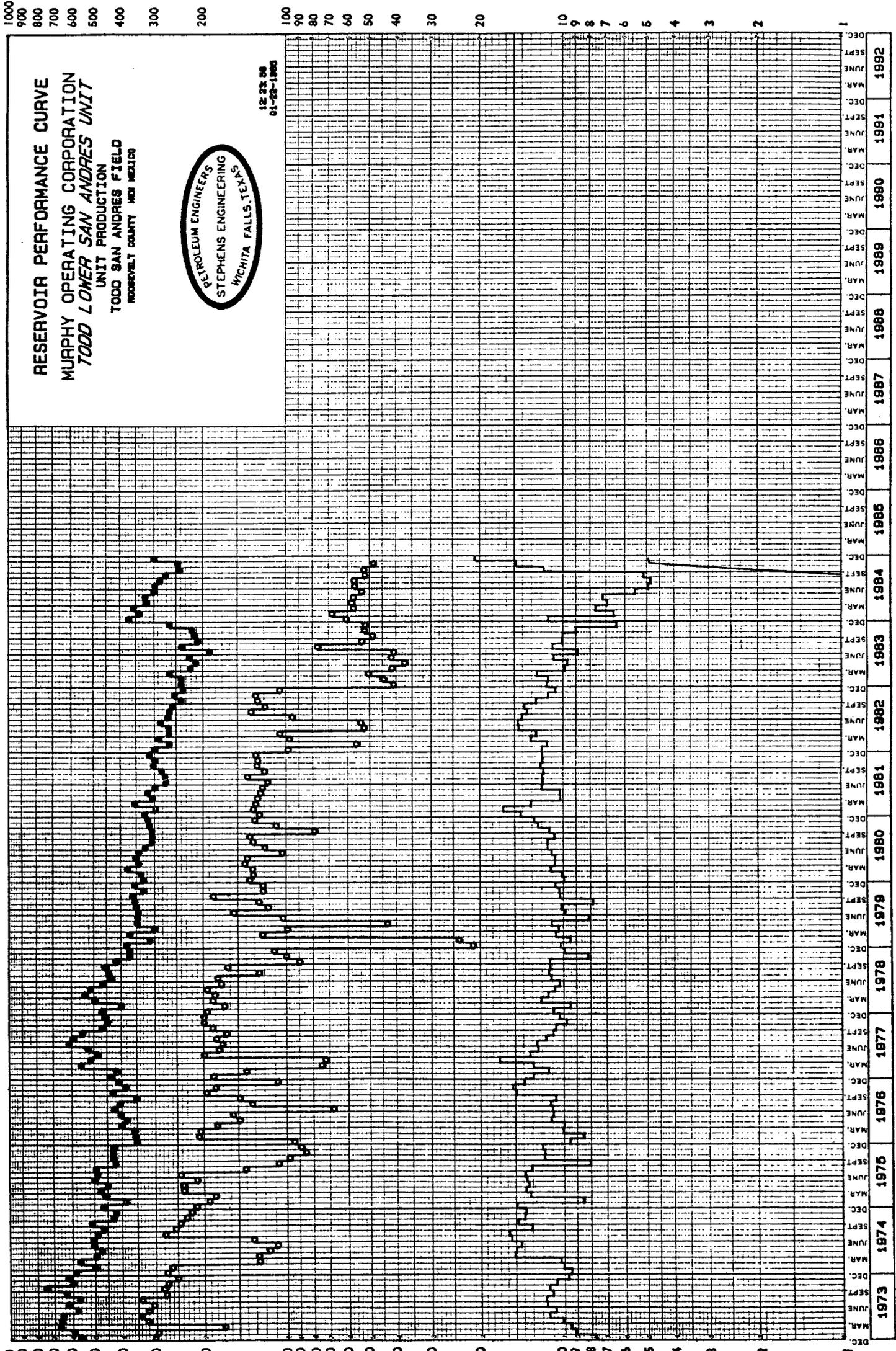
OIL PRODUCTION DECLINE CURVE
TOTAL FIELD CURVE
TODD LOWER SAN ANDRES FIELD
 ROOSEVELT COUNTY, NEW MEXICO



OIL PRODUCTION — BARRELS PER MONTH

1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
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— BARRELS OF WATER PRODUCED PER MONTH (x 1000)
 A BARRELS OF WATER INJECTED PER MONTH (x 10000)





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Re: Todd Lower San Andres Unit
Roosevelt County, New Mexico

Gentlemen:

Murphy Operating Corporation, as operator for the Todd Lower San Andres Unit Area, Roosevelt County, New Mexico, pursuant to the provisions of Section 11 of the Unit Agreement, respectfully submits for your consideration and approval this plan of operation for the secondary recovery of oil by waterflood on the subject unitized land.

I. Proposed Plan of Operation for 1983

We propose the initiation of a 320-acre pilot injection program during the second half of 1983. This plan which is set out on the attached map ("Supplemental Waterflood Survey, Todd Lower San Andres Field") includes:

1. Development of a satisfactory water source.
2. Construction of necessary production and injection facilities.
3. Drilling of three wells at the following approximate locations in T-7-S, R-36-E (marked in red):
 - (a) 1980' FSL & 660' FEL Sec. 30 as injector
 - (b) 660' FSL & 1980' FEL Sec. 30 as producer
 - (c) 660' FSL & 700' FWL Sec. 29 as producer
4. Conversion of the following wells to injection service (marked in blue):
 - (a) Murphy Operating Corporation - Hobbs "R" No. 1
 - (b) Murphy Operating Corporation - Atlantic-Smith State No. 2
 - (c) Murphy Operating Corporation - Gates State No. 2

II. Further Development

Additional development will be proposed as dictated by results of the pilot.

III. Modifications

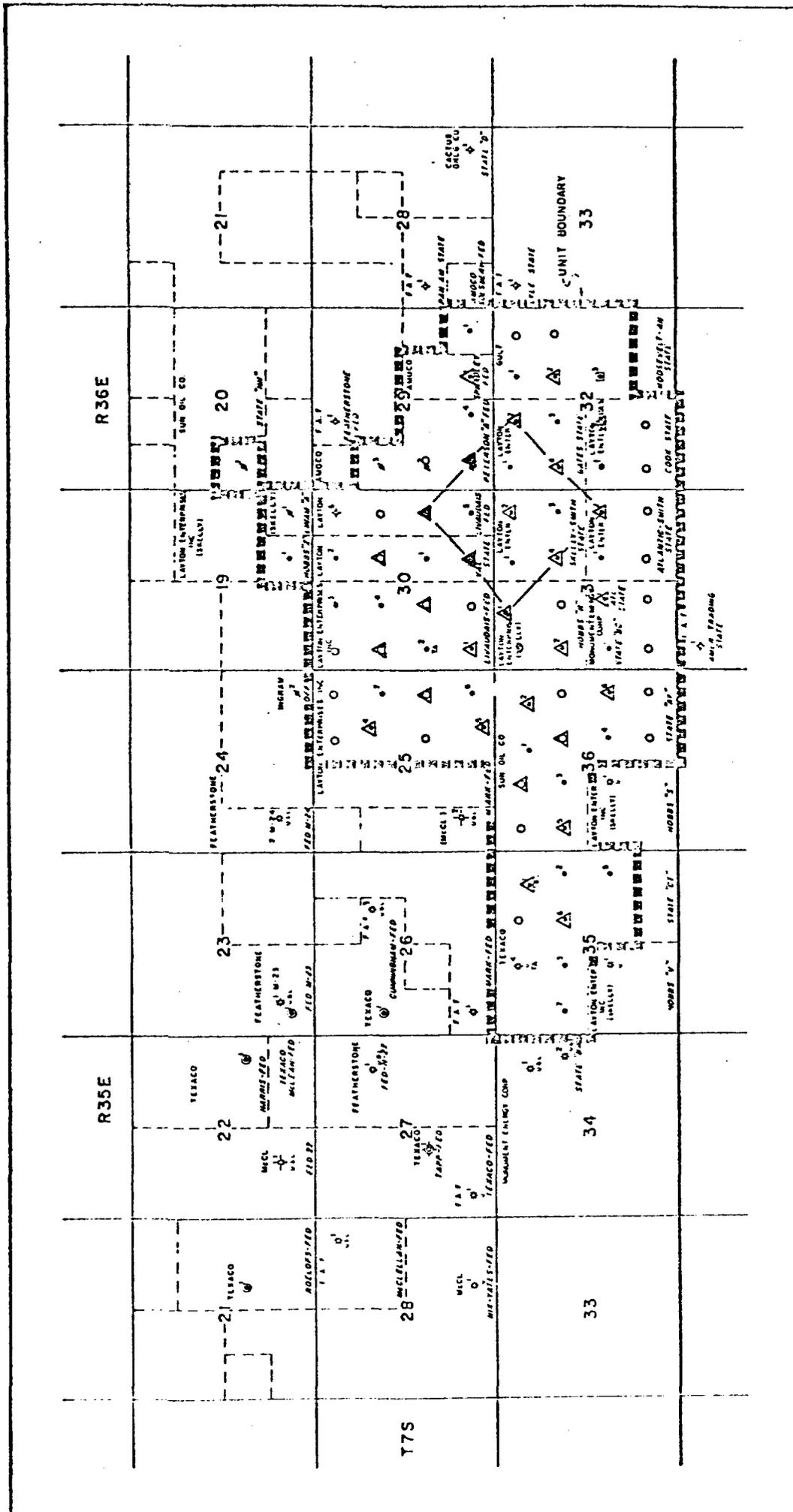
This plan of operation may be modified or supplemented during the year with your approval to meet changed conditions or to protect the interest of all parties to the Unit Agreement.

We would greatly appreciate your assistance in expediting the approval of our Plan of Operation. Should you have any questions or comments, please contact the undersigned.

Very truly yours,

MURPHY OPERATING CORPORATION

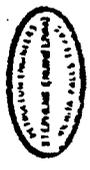
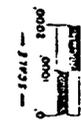
A. J. Murphy
President



- LEGEND**
- LOWER SAN ANDRÉS OIL WELL
 - S SAN ANDRÉS GAS WELL
 - W WOLF CAMP COMPLETION
 - P PLUGGED & ABANDONED
 - D DRY HOLE
 - PROPOSED INJECTION WELL
 - S&D WELL
 - NOTE: SUBSCRIPT S DENOTES UPPER SAN ANDRÉS COMPLETION
 - MUDMUD UNIT BOUNDARY

SUPPLEMENTAL WATERFLOOD SURVEY
 TODD LOWER SAN ANDRES FIELD
 HOUSEVELT COUNTY, NEW MEXICO

- Proposed Drilling Wells
- △ Proposed Drilling Wells



Attachment 1

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
SANTA FE - NEW MEXICO

The State of New Mexico by its Oil Conservation Division hereby gives notice pursuant to law and Rules and Regulations of said Division promulgated thereunder of the following public hearing to be held at 8:00 A.M. on JULY 2, 1985, at the Oil Conservation Division Conference Room, State Land Office Building, Santa Fe, New Mexico, before Gilbert P. Quintana, Examiner, or Michael E. Stogner, Alternate Examiner, both duly appointed for said hearing as provided by law.

STATE OF NEW MEXICO TO:

All named parties and persons
having any right, title, interest
or claim in the following cases
and notice to the public.

(NOTE: All land descriptions herein refer to the New Mexico Principal Meridian whether or not so stated.)

CASE 7955: (This Case will be dismissed)

Application of Bliss Petroleum, Inc. for
the rescission of Order No. R-2789,
Lea County, New Mexico.

Applicant, in the above-styled cause, seeks the rescission of Order No. R-2789, which approved the South Penrose Skelly Unit.

CASE 8635:

Application of Energy Reserves Group, Inc.
for salt water disposal, Roosevelt County,
New Mexico.

Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Fusselman formation in the perforated interval from 8150 feet to 8220 feet in its McClellan Well No. 1 located 2000 feet from the South line and 1900 feet from the West line of Section 10, Township 6 South, Range 33 East.

CASE 8636:

Application of Benson-Montin-Greer
Drilling Corp. for compulsory pooling
and an unorthodox well location, Rio
Arriba County, New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Mancos formation underlying all of Section 29, Township 25 North, Range 1 West, which is a standard 640-acre oil proration and spacing unit in the West Puerto Chiquito-Mancos Oil Pool only, to be dedicated to a well to be drilled at an unorthodox oil well location 393 feet from the North line and 2367 feet from the East line of said Section 29. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 8637:

Application of Southland Royalty Company
for compulsory pooling, Rio Arriba County,
New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the top of the Mancos formation to the base of the Dakota formation underlying the N/2 of Section 25, Township 25 North, Range 2 West, to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 8638:

Application of Doyle Hartman for compulsory pooling and a non-standard gas proration unit, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests from the surface to the base of the Jalmat Gas Pool underlying the SE/4 of Section 36, Township 23 South, Range 36 East, forming a 160-acre non-standard gas proration unit to be dedicated to a well to be drilled at a standard location thereon. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 8639:

Application of Zia Energy, Inc. for an unorthodox gas well location and simultaneous dedication, Lea County, New Mexico.

Applicant, in the above-styled cause, seeks approval for the simultaneous dedication on a previously approved 280-acre proration and spacing unit comprising the SW/4, the E/2 NW/4, and the SW/4 NW/4 of Section 20, Township 22 South, Range 36 East, Jalmat Gas Pool, of its existing Cities Federal Wells Nos. 1 and 2 located in Units L and M, respectively, and of the Penroc Oil Corporation CSO-Federal Well No. 2, to be recompleted to the Jalmat Gas Pool, located 1650 feet from the North line and 2310 feet from the West line of said Section 20, which is an unorthodox gas well location for the Jalmat Gas Pool.

CASE 8640:

Application of Caulkins Oil Company
for compulsory pooling, downhole commingling,
and dual completion, Rio Arriba County,
New Mexico.

Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Basin-Dakota and Blanco-Mesaverde Pools underlying the N/2 of Section 20, Township 26 North, Range 6 West, forming a standard 320-acre gas spacing and proration unit in both zones, and in the Pictured Cliffs and Chacra formations underlying the NE/4 of said Section 20, forming a standard 160-acre gas spacing and proration unit in both of these zones, to be dedicated to a well to be drilled at a standard location thereon. Applicant further seeks approval to dually complete said well in such a manner that Blanco-Mesaverde and Basin-Dakota production would be commingled separately and the aforesaid intervals dually completed with commingled Pictured Cliffs and Chacra production and both commingled zones produced through parallel strings of tubing. Also to be considered will be the cost of drilling and completing said well and the allocation of the cost thereof as well as actual operating costs and charges for supervision, designation of applicant as operator of the well and a charge for risk involved in drilling said well.

CASE 8641:

Application of Blanco Engineering, Inc.
for salt water disposal, Eddy County,
New Mexico.

Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Atoka Glorieta Yeso formation in the perforated interval from 2961 feet to 3665 feet in its Williams Well No. 9 located 1980 feet from the North line and 1650 feet from the East line (Unit G) of Section 25, Township 18 South, Range 26 East.

CASE 8642:

Application of Gulf Oil Corporation
for an unorthodox oil well location,
Lea County, New Mexico.

Applicant, in the above-styled cause, seeks approval of an unorthodox oil well location 2640 feet from the North line and 660 feet from the West line (Unit E) of Section 2, Township 16 South, Range 32 East, North Anderson Ranch-Wolfcamp Pool, Lots Nos. 4 and 5 of said Section 2 to be dedicated to the well.

GIVEN Under the Seal of the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 14th day of June, 1985.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

R. L. Stamets / m.s.

R. L. STAMETS
Director

S E A L