



RAY B. POWELL  
COMMISSIONER

State of New Mexico  
OFFICE OF THE  
Commissioner of Public Lands

Santa

BEFORE THE  
OIL CONSERVATION DIVISION  
Santa Fe, New Mexico

September 23, 1993

Case No. 10864 Exhibit No. 7

Texaco Exploration and Production  
P. O. Box 46513  
Denver Colorado 80201-6513

Submitted by: Texaco Exploration and  
Production Inc.

Hearing Date: November 18, 1993

Attn: Mr. Ronald W. Lanning

Re: Preliminary Approval  
Rhodes Area Cooperative Lease Line Agreement  
Lea County, New Mexico

Dear Mr. Lanning:

This office is in receipt of your letter of August 31, 1993 together with supporting documentation for the proposed Rhodes Area Cooperative Lease Line Agreement. This agreement meets the general requirements of the Commissioner of Public Lands and has this date granted you preliminary approval as to form and content.

Our preliminary approval of the cooperative lease line agreement is given with the condition that the Commissioner must approve any wells drilled on lease line areas where production is shared and also approve all communitization agreements relative to these wells.

Preliminary approval shall not be construed to mean final approval of this agreement in any way and will not affect any State leases until final approval and an effective date have been given.

When submitting your agreement for final approval, please submit the following:

1. Formal application for final approval by the Commissioner setting forth any objections received to the proposed project.
2. All ratifications from the Lessees of Record and Working Interest Owners. All signatures should be acknowledged by a notary and one set must contain original signatures.
3. Order of the New Mexico Oil Conservation Division. Our approval will be conditioned upon subsequent favorable approval by the New Mexico Oil Conservation Division.
4. Approval letter from the Bureau of Land Management. Our approval will be subject to like approval by the Bureau of Land Management.

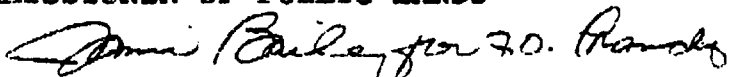
Texaco Exploration and Production Inc.  
Rhodes Area Cooperative  
September 23, 1993  
Page 2

6. A filing fee in the amount of \$150.00 Dollars.

If you have any questions, or if we may be of further help, please contact Pete Martinez at (505) 827-5791.

Very truly yours,

RAY B. POWELL, M.S., D.V.M  
COMMISSIONER OF PUBLIC LANDS

BY:   
FLOYD O. PRANDO, Director  
Oil/Gas and Minerals Division  
(505) 827-5744  
RBP/FOP/pm  
cc: Reader File  
OCD  
BLM - Mr. Gary Courley



August 3, 1993

State of New Mexico Land Office  
P. O. Box 1148  
Santa Fe, NM 87504  
Attn: Ms. Jami Bailey

Re: Rhodes Area Cooperative Lease Line Agreement

Dear Ms. Bailey:

In 1991, Texaco E. & P. Inc. completed a reservoir study and development plan for the Rhodes Yates Waterflood, located in southeastern Lea County, New Mexico. Phase 1 was implemented in 1992, and Phase 2 is scheduled for the third quarter of 1993. Included in Phase 2 is the drilling of lease line producers to effectively downspace the injection patterns. Texaco E. & P. Inc. has received approval of the Rhodes Area Cooperative Lease Line Agreements from all affected working interest owners. The attached unexecuted Rhodes Area Cooperative Lease Line Agreement is submitted for your review. The supporting data for developing the project with lease line producers is also provided at this time. The executed agreement will be forthcoming in the next few weeks.

The Rhodes Yates Waterflood is a cooperative waterflood operated by Texaco E. & P. Inc. and contains the W. H. Rhodes Federal "A" lease, W. H. Rhodes Federal "B" NCT-1 lease and Rhodes Yates Unit. Phase 2 plans include the addition of the W. H. Rhodes Federal "B" NCT-2 lease to the waterflood. State royalty interest in the four properties affected by lease line drilling is as follows:

<u>Property</u>	<u>Royalty Interest - State</u>
W. H. Rhodes Federal "A" Lease	0%
W. H. Rhodes Federal "B" NCT-1 Lease	0%
W. H. Rhodes Federal "B" NCT-2 Lease	0%
Rhodes Yates Unit **	12.5%

\*\* (520 Total Acres - 53.84615% State Acreage/  
46.15385% BLM Acreage)

The basic findings of the 1991 reservoir study indicated that the existing eighty-acre five-spot waterflood patterns were approaching depletion and incremental reserves would be wasted without infill drilling and injection pattern downspacing (Figure 1). A three phase twenty-acre infill development plan (forty-acre five-spot waterflood pattern) was developed with Phase 1 being implemented in October of 1992.

The three phase development plan is designed to be implemented in three years with each phase including twenty-acre infill development drilling, conversion of existing producers to injection and injection profile modification of existing injection wells to include the middle Yates sandstones. Phase 1 included the drilling of five twenty-acre infill wells, conversion of four producers to injection and associated workover work (Figure 2). As designed, the development plan includes the drilling of lease line producers in Phases 2 and 3. Scheduled for September, 1993,

Phase 2 includes the drilling of ten twenty-acre wells with five being lease line wells, conversion of nine producers to injection and associated workover work. In addition, Phase 2 will bring the W. H. Rhodes Federal "B" NCT-2 lease into the cooperative injection system (Figure 3). Phase 3, scheduled for late 1994, includes the drilling of nine twenty-acre infill wells with four being lease line wells, conversion of seven producers to injection and associated well work (Figure 4).

Downspacing the existing eighty-acre five-spot waterflood patterns in the Rhodes Yates Waterflood with lease line producers and without lease line producers was investigated. Clearly, the investments required to downspace without lease line wells are less than developing with lease line wells. However, developing the cooperative waterflood without lease line producers will result in an inefficient waterflood pattern and prohibit the recovery of approximately 1.6 million barrels of oil based on current estimates (0.8 MMBO - leasehold combined and 0.8 - MMBO Rhodes Yates Unit). Using an oil price of \$16.73, this loss of production from not developing with lease line wells equates to a Net Present Value loss of approximately \$7,500,000 (\$3,600,000 - leasehold combined and \$3,900,000 - Rhodes Yates Unit). A production peak of approximately 1100 BOPD and 650 BOPD is expected in early 1995 for the leasehold acreage combined and the Rhodes Yates Unit, respectively. Prior to implementing Phase 1, production on the leasehold acreage combined and Rhodes Yates Unit was approximately 90 BOPD and 50 BOPD, respectively.

Before Phase 2 can be fully implemented as designed, the Rhodes Cooperative Lease Line Agreement needs approval by all regulatory bodies. The data supports development of the project with lease line wells in order to prevent waste and recover a significant volume of additional reserves. This information is being forwarded at this time to facilitate the approval process upon submittal of an executed lease line agreement in the next few weeks. Our tentative plans are for Mr. Charles Sadler and Mr. Ron Lanning to meet with you on August 20, 1993 to deliver the executed lease line agreement.

Please contact Mr. Charles Sadler at (505) 397-0422 or Mr. Ron Lanning at (303) 793-4244 concerning any questions or additional informational requirements.

Yours very truly,

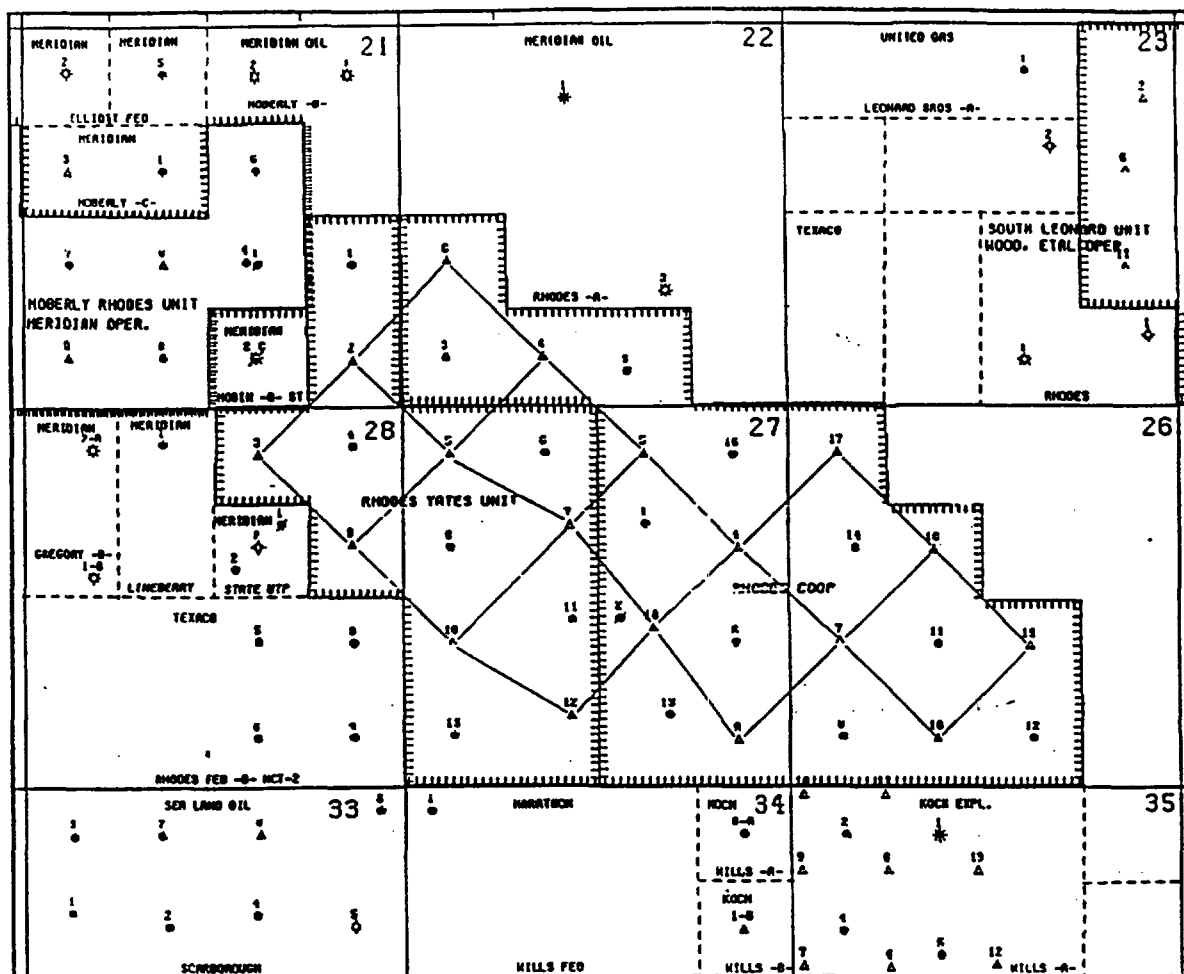
Texaco Exploration and Production Inc.

*T. L. Frazier / RSP*

Terry L. Frazier  
Area Manager

CES/

Attachments



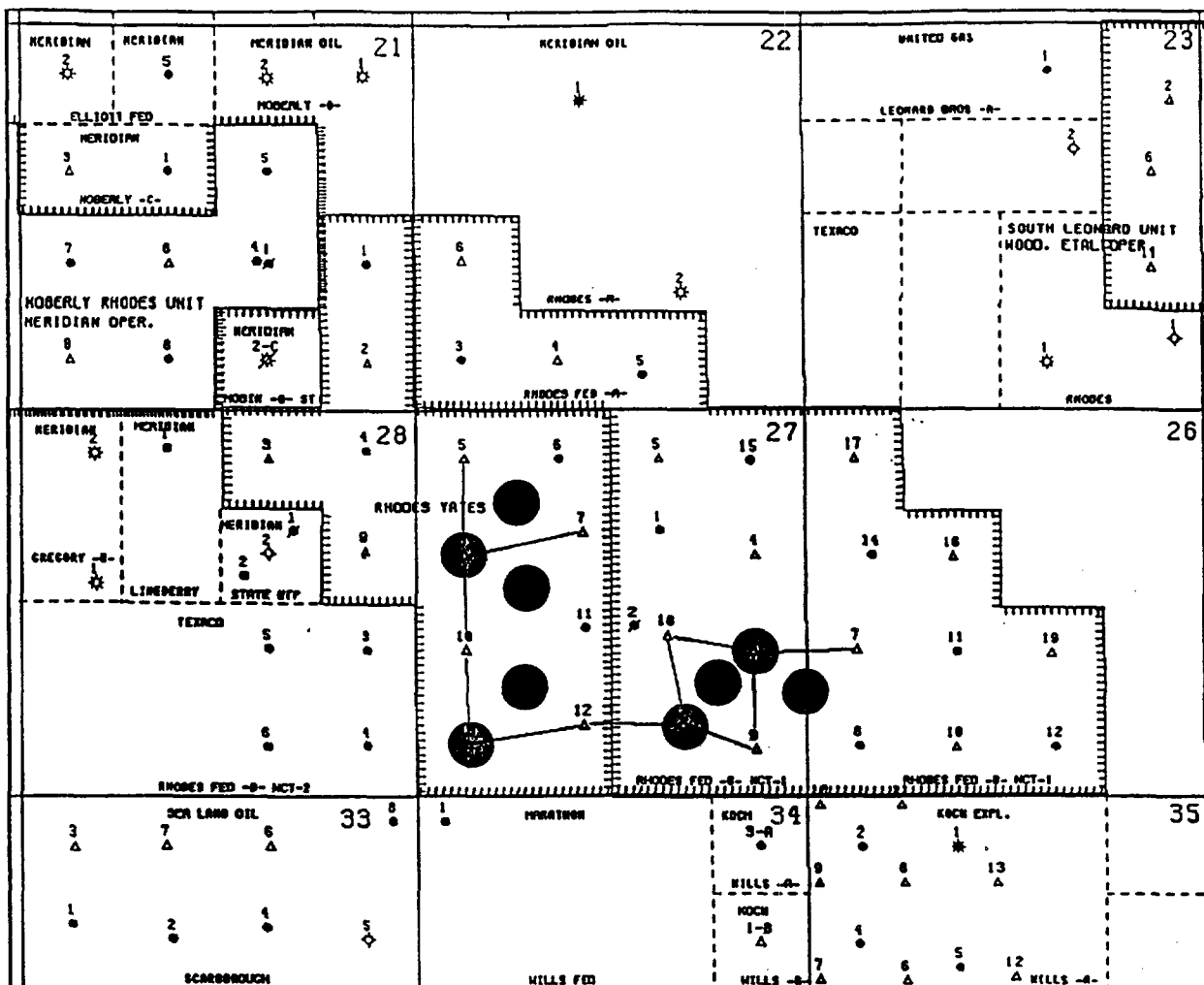
• OIL WELL  
 # P&A OIL WELL  
 ▲ INJECTOR  
 ◇ GAS WELL  
 \* AM (MS M-1)  
 \* OIL & GAS WELL  
 # P&A OIL & GAS WELL  
 ◇ HIGH  
 ○ LOCATION

⊙ YATES  
 ⊙ SEVEN RIVERS  
 ⊙ QUEEN

STATUTE MILES 0 1 2 3 4 5  
 FEET 0 1000 2000 3000 4000 5000

TEXACO INC.		U.S.A.
HOBBS	NM	
RHODES YATES WATERFLOOD		
80 ACRE 5 SPOT PATTERN		
LEA COUNTY, NEW MEXICO		
1"=1000'	C. E. SABLE	22-675-01

FIGURE 1



# PHASE 1 (1992)

- OIL WELL
- P&A OIL WELL
- △ INJECTOR
- ☆ GAS WELL
- ☆ P&A GAS WELL
- ☆ OIL & GAS WELL
- ☆ P&A OIL & GAS WELL
- ◇ O&A
- LOCATION

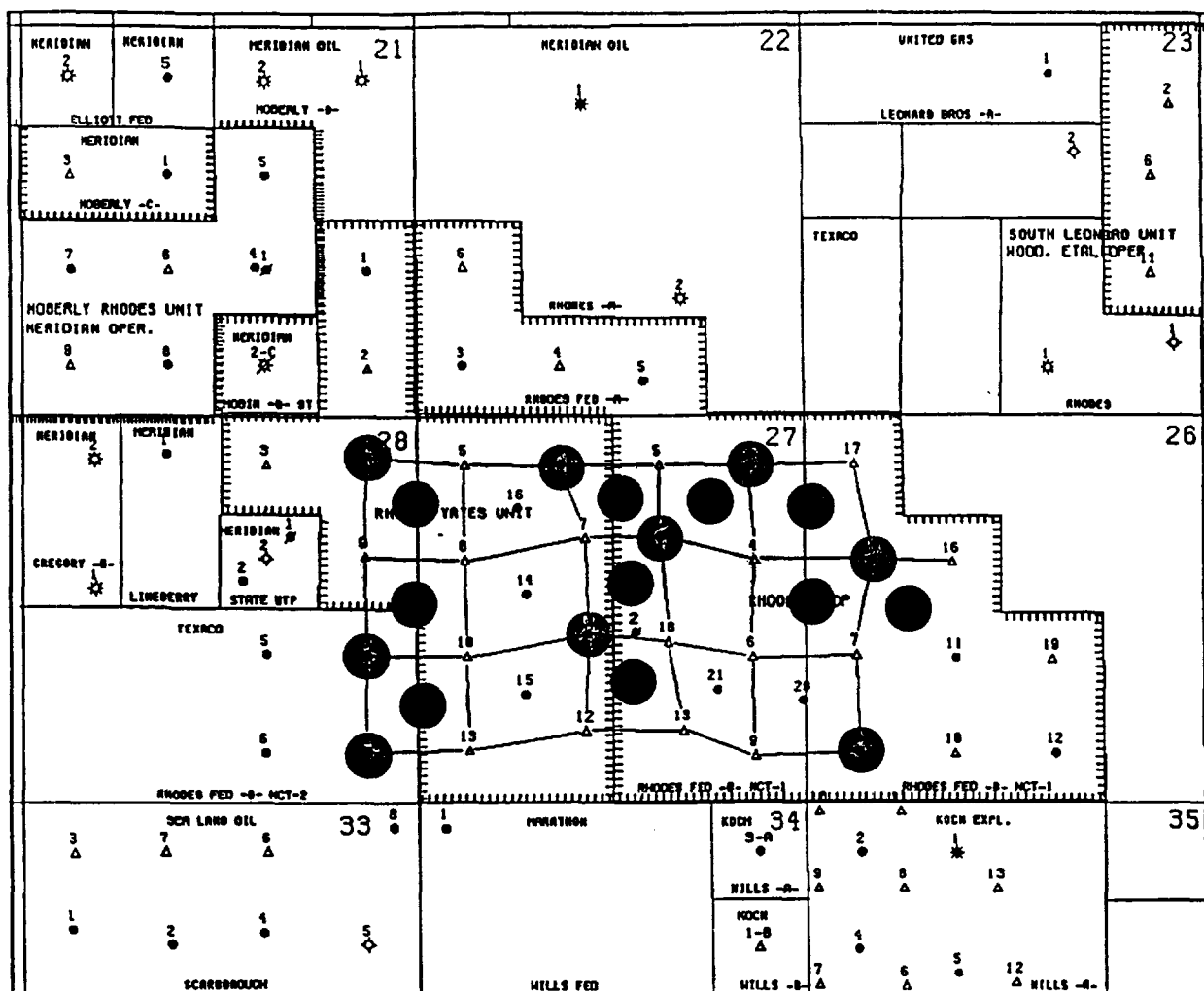
- INFILL DRLG.
- CONVERSION

INJ. MODIFICATION

STATUTE MILES 0 1 2 3 4 5  
FEET 0 1000 2000 3000 4000 5000

TEXACO INC.		U. S. A.
MOSES	AM	
RHODES YATES WATERFLOOD LEA COUNTY, NEW MEXICO		
<div style="display: flex; justify-content: space-between;"> <span>1" = 2000'</span> <span>C. E. SMITH</span> <span>20-000-01</span> </div>		

FIGURE 2



PHASE II (1993)

- OIL WELL
- P&A OIL WELL
- △ INJECTOR
- ☆ GAS WELL
- ☆ P&A GAS WELL
- ✱ OIL & GAS WELL
- ✱ P&A OIL & GAS WELL
- ◇ O&A
- LOCATION

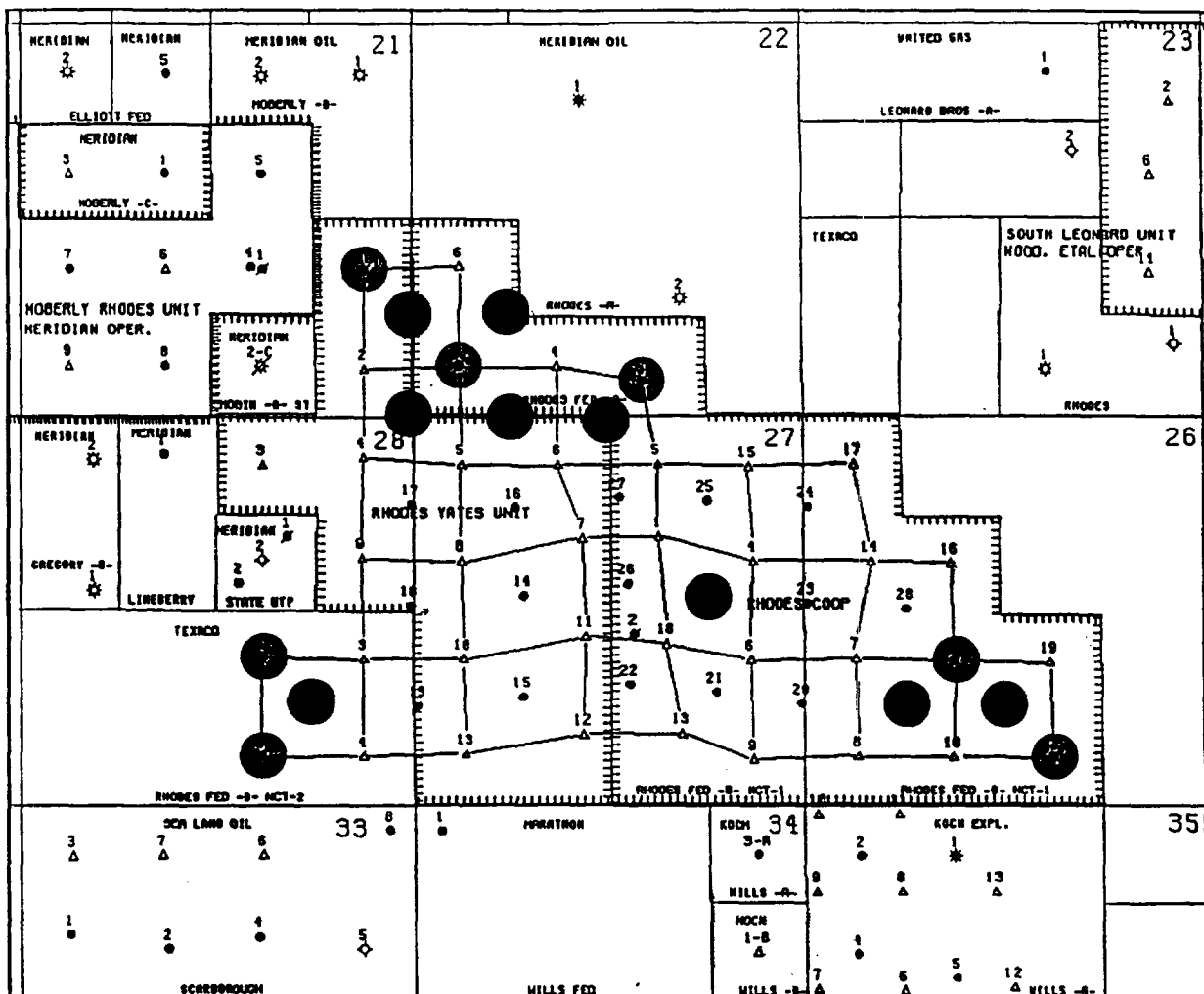
- INFILL DRILG.
- CONVERSION

INJ. MODIFICATION

STATUTE MILES 0 1 2 3 4 5  
 FEET 0 1000 2000 3000 4000

TEXACO INC.		
MOBES	RM	U. S. A.
RHODES YATES WATERFLOOD		
LEA COUNTY, NEW MEXICO		
<div style="display: flex; justify-content: space-between;"> <span>1000' (1993)</span> <span>C. E. SIOLE</span> <span>1000' (1993)</span> </div>		

FIGURE 3



PHASE III (1994)

- OIL WELL
- ✱ P&A OIL WELL
- △ INJECTOR
- ✱ GAS WELL
- ✱ P&A GAS WELL
- ✱ OIL & GAS WELL
- ✱ P&A OIL & GAS WELL
- ◇ O&A
- LOCATION

- INFILL ORLG.
- CONVERSION
- INJ. MODIFICATION

1:12000  
STATUTE MILES 0 1 2 3 4 5  
FEET 0 1000 2000 3000 4000 5000

TEXACO INC.		
HOBBS	KN	U.S.A.
RHODES YATES WATERFLOOD LEA COUNTY, NEW MEXICO		
1:12000	C. E. BRIDGER	24-000-01

FIGURE 4





Texaco Exploration and Production Inc

P O Box 46513  
Denver CO 80201-6513  
4601 DTC Boulevard  
Denver CO 80237

August 31, 1993

**NM41652 - W.H. Rhodes "A" and "B" Leases**  
**NM254790 - Rhodes Yates Unit**  
Lea County, New Mexico

Mr. Floyd O. Prando  
State of New Mexico Land Office  
P.O. Box 1148  
Santa Fe, New Mexico 87504

Dear Mr. Prando:

We had a meeting with you and your staff on August 20 regarding our plans to drill lease line wells between the W. H. Rhodes "A" and "B" Leases and the Rhodes Yates Unit. You expressed a desire to see if it might be more beneficial to the State to expand the Rhodes Yates Unit to include the W. H. Rhodes "A" and "B" Leases before granting your preliminary approval to our plan for lease line wells. We believe the following comments, figures and attachments show that the State of New Mexico will be in a better revenue position under our original plan for lease line wells.

The tract participation factors in the existing Rhodes Yates Unit were essentially based on ultimate primary production (Figure 1). Using this original method for determining tract participation in an expanded unit would not be more favorable to the State. Approximately 81% of the primary production in an expanded unit would be production from tracts where the State does not own an interest. We did not use this approach for determining tract participation in an expanded unit because it does not reflect the potential of the middle Yates sandstones.

Acre-Porosity-Height (Figure 2), which reflects the developed potential of the lower Yates as well as the additional potential of the middle Yates was used to determine tract participation factors for an expanded unit. The area for an expanded unit (Figure 3) was divided into ten tracts. Tracts 1 through 6 are the existing tracts in the Rhodes Yates Unit. Tracts 7 through 10 are those portions of the W. H. Rhodes "A" and "B" Leases which would be included in an expanded unit. The following table illustrates the participation factors for each tract in an expanded unit:

<u>Tract Number</u>	<u>Tract Participation Factor (%)</u>
1	10.995
2	4.437
3	9.156
4	2.385
5	2.265
6	3.860
7	8.247
8	12.351
9	20.284
10	<u>26.020</u>
Total:	100.000

We estimate that our development plan will result in recovery of approximately 3,700,000 barrels of oil. 592,000 would come from the existing unit, 1,500,000 from the W. H. Rhodes "A" and "B" leases, and 1,608,000 from the proposed lease line wells. This forecast of estimated reserves remaining to be recovered is based on risked statistical mean initial potentials and waterflood responses.

The tracts under which the State owns an interest (3 through 6) would have a total participation of 17.666% in an expanded unit. The net interest to the State would be 2.20825% of unit production (17.666% x 12.5% royalty) or 81,705 barrels of oil (3.7 MMBO x 2.20825%).

Your net interest under the existing Rhodes Yates Unit is 8.20240% (65.61923% tract participation x 12.5% royalty). Assuming that 50% of the production from our proposed lease line wells is allocated to the existing unit, the State would receive 4.10120% of the revenues from these wells. The net interest to the State with lease line wells would be 114,505 barrels of oil (592 MBO x 8.20240% plus 1.608 MMBO x 4.10120%).

Again, these are only estimates, but the above calculations show a definite benefit to the State for development with lease line wells versus expanding the unit.

As far as production facilities are concerned, we plan to meter wells with common royalty prior to entry into the central production facility of each lease. Individual well production will be allocated to each well based on monthly production tests. There would be four separators metering lease line production (Figure 4). One separator would be located on the W. H. Rhodes "B" Lease and would meter production from the W. H. Rhodes "B" NCT-1 Well Nos. 22, 26 and 27 lease line wells. Three separators would be located on the Rhodes Yates Unit and would meter production from the Rhodes Yates Unit Well Nos. 18 and 19, Rhodes Yates Unit Well Nos. 20, 21 and 22, and Rhodes Yates Unit Well No. 23.

We hope that this information will enable you to give us your preliminary approval for this project. If you have any questions please give me a call at (303) 793-4244. Technical questions may be directed to Charles Sadler at (505) 397-0422.

Very truly yours,

TEXACO EXPLORATION AND PRODUCTION INC.

A handwritten signature in cursive script, reading "Ronald W. Lanning".

Ronald W. Lanning  
West Region Landman

RWL:

TLF

cc: William F. Carr

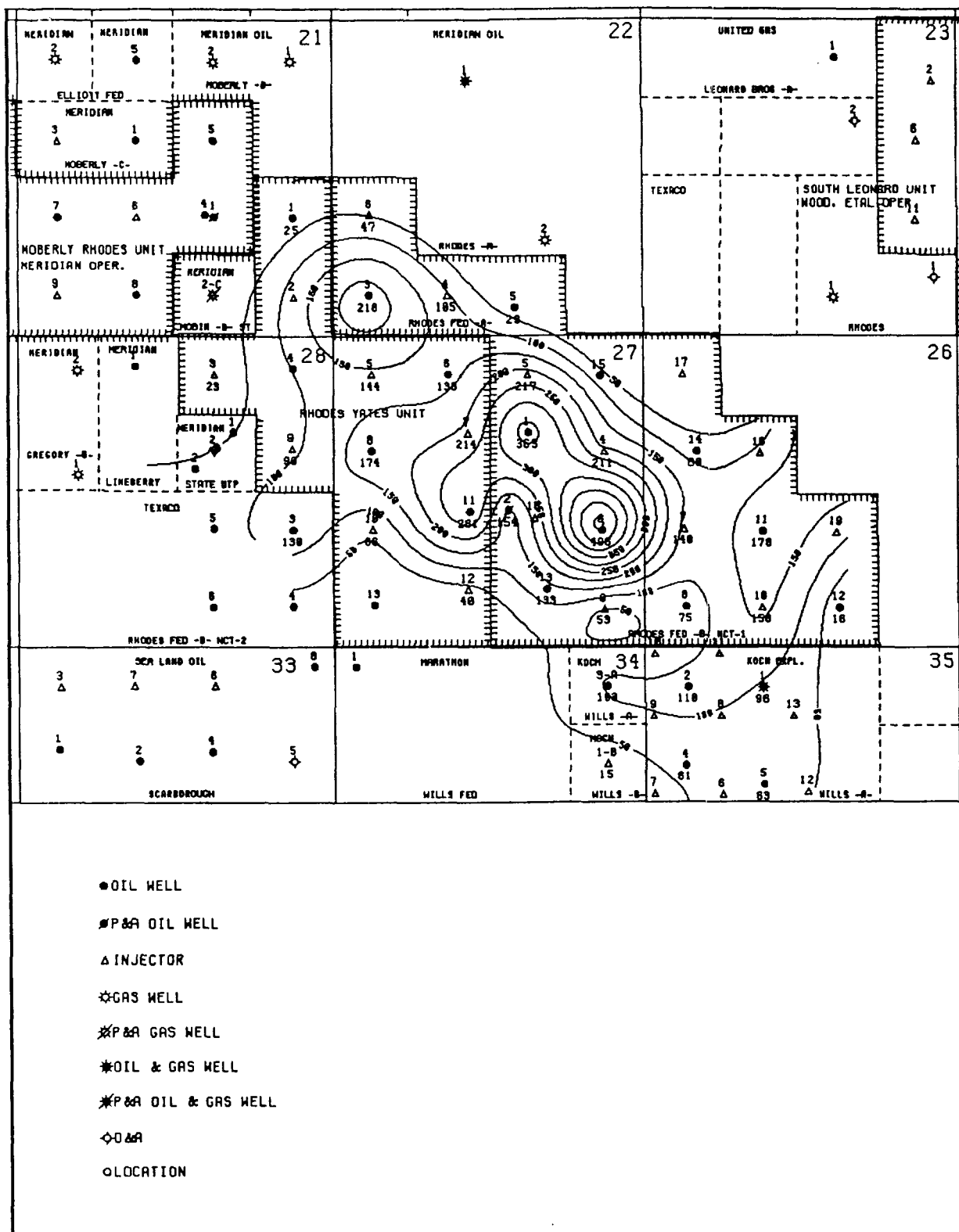
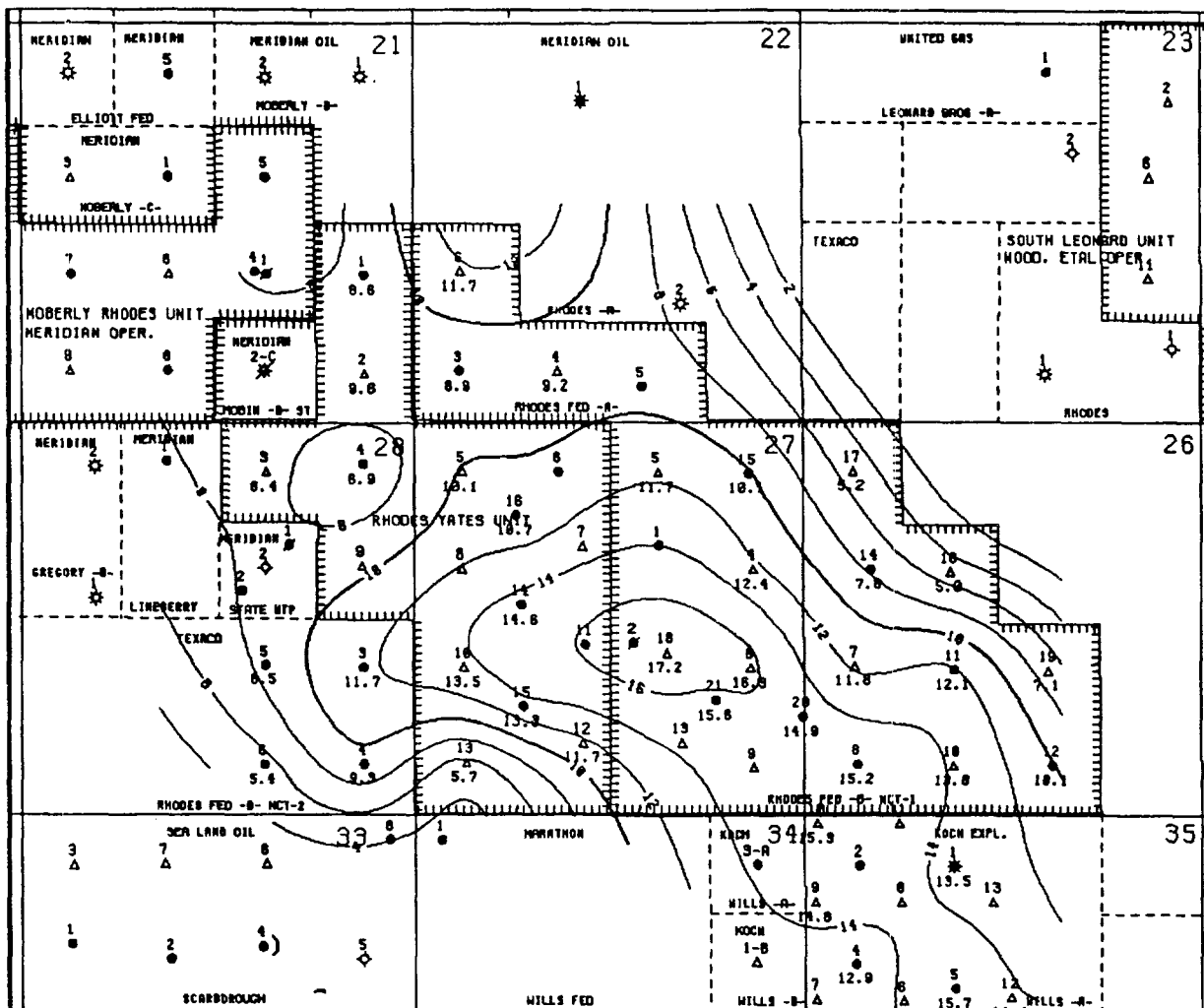


FIGURE 1

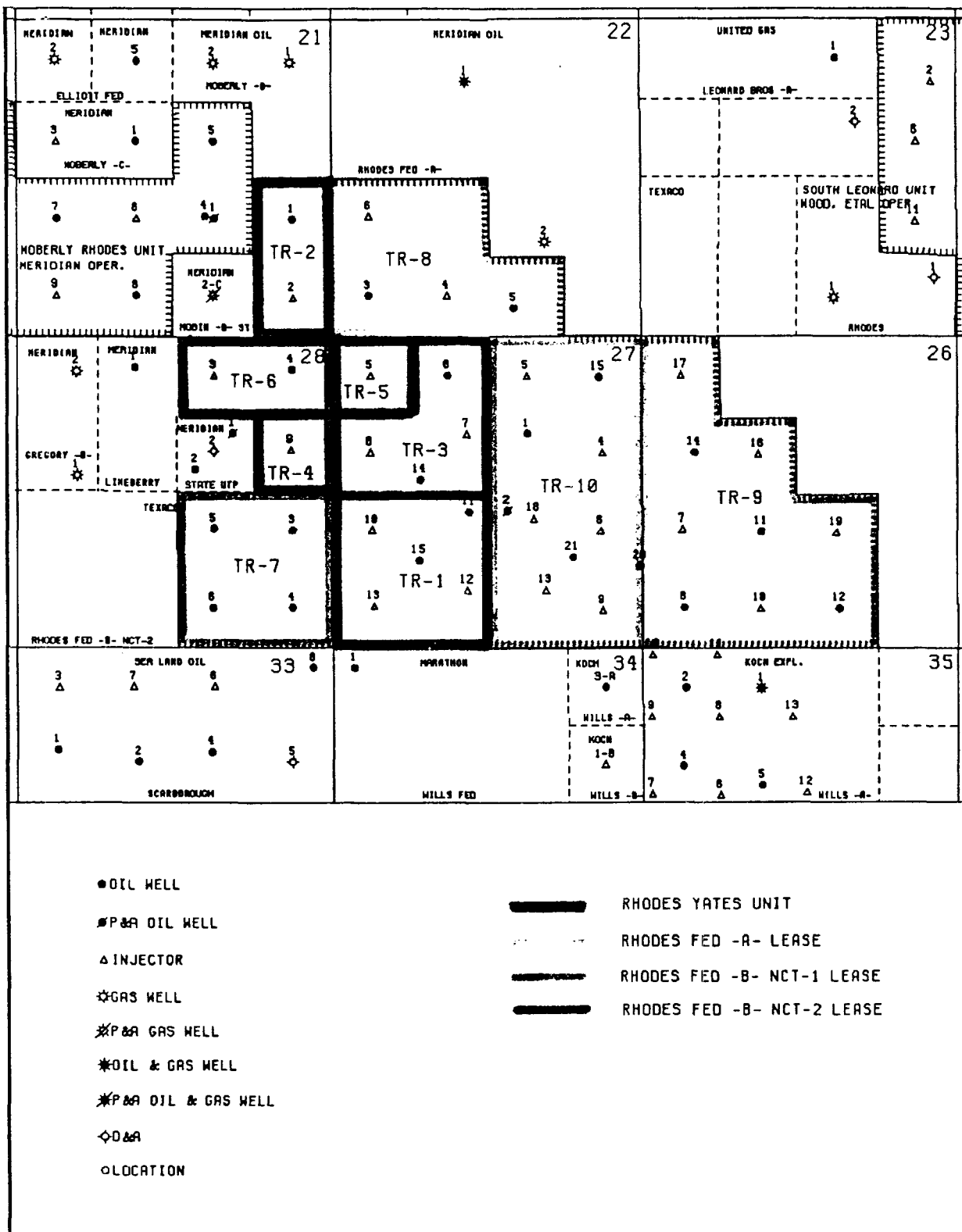


- OIL WELL
- ▲ P&A OIL WELL
- △ INJECTOR
- ☆ GAS WELL
- ✱ P&A GAS WELL
- ✱ OIL & GAS WELL
- ✱ P&A OIL & GAS WELL
- ◇ O&A
- LOCATION

STATUTE MILES 0 1 2 3 4 5  
 FEET 0 1000 2000 3000 4000 5000

TEXACO E & P INC.		
MOBBS	RM	U. S. A.
RHODES YATES WATERFLOOD ZONES 3 - 8 PHH LEA COUNTY, NEW MEXICO		
C. E. BROLER 22-AUG-60		

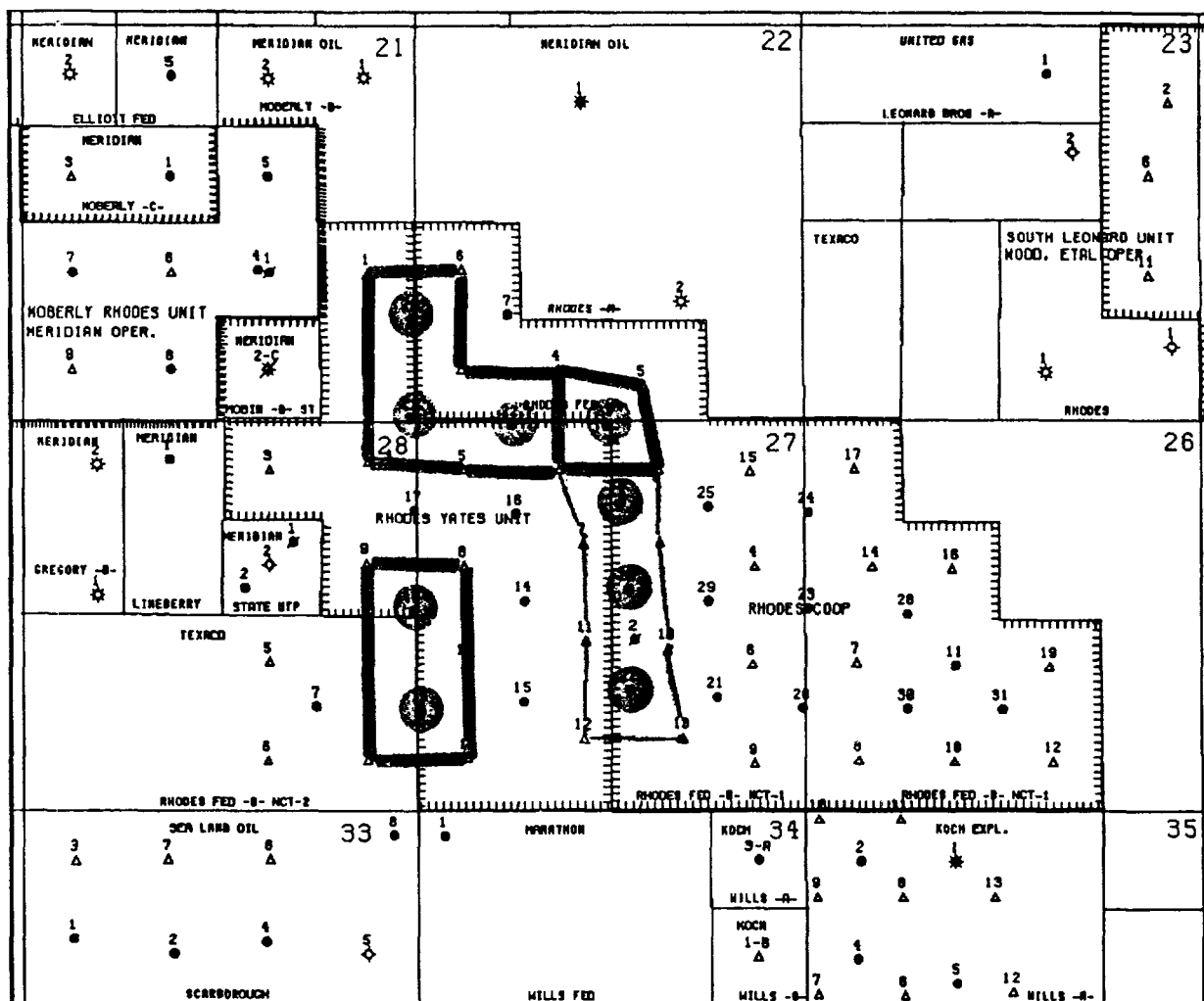
FIGURE 2



STATUTE MILES 0 1 2 3 4 5  
 FEET 0 1000 2000 3000 4000 5000

TEXACO E & P INC.		
HOBBBS	WM	U.S.A.
RHODES YATES WATERFLOOD		
LEA COUNTY, NEW MEXICO		
<div style="display: flex; justify-content: space-between;"> <span>W. C. E. BOILER</span> <span>W-24-RUG-00</span> </div>		

FIGURE 3



### PHASE III (1994)

- OIL WELL
- ▲ P&A OIL WELL
- △ INJECTOR
- ☆ GAS WELL
- ✱ P&A GAS WELL
- ✱ OIL & GAS WELL
- ✱ P&A OIL & GAS WELL
- ◇ D&A
- LOCATION



LEASE LINE PRODUCER



W. H. RHODES FED  
-B- NCT-1 LEASE

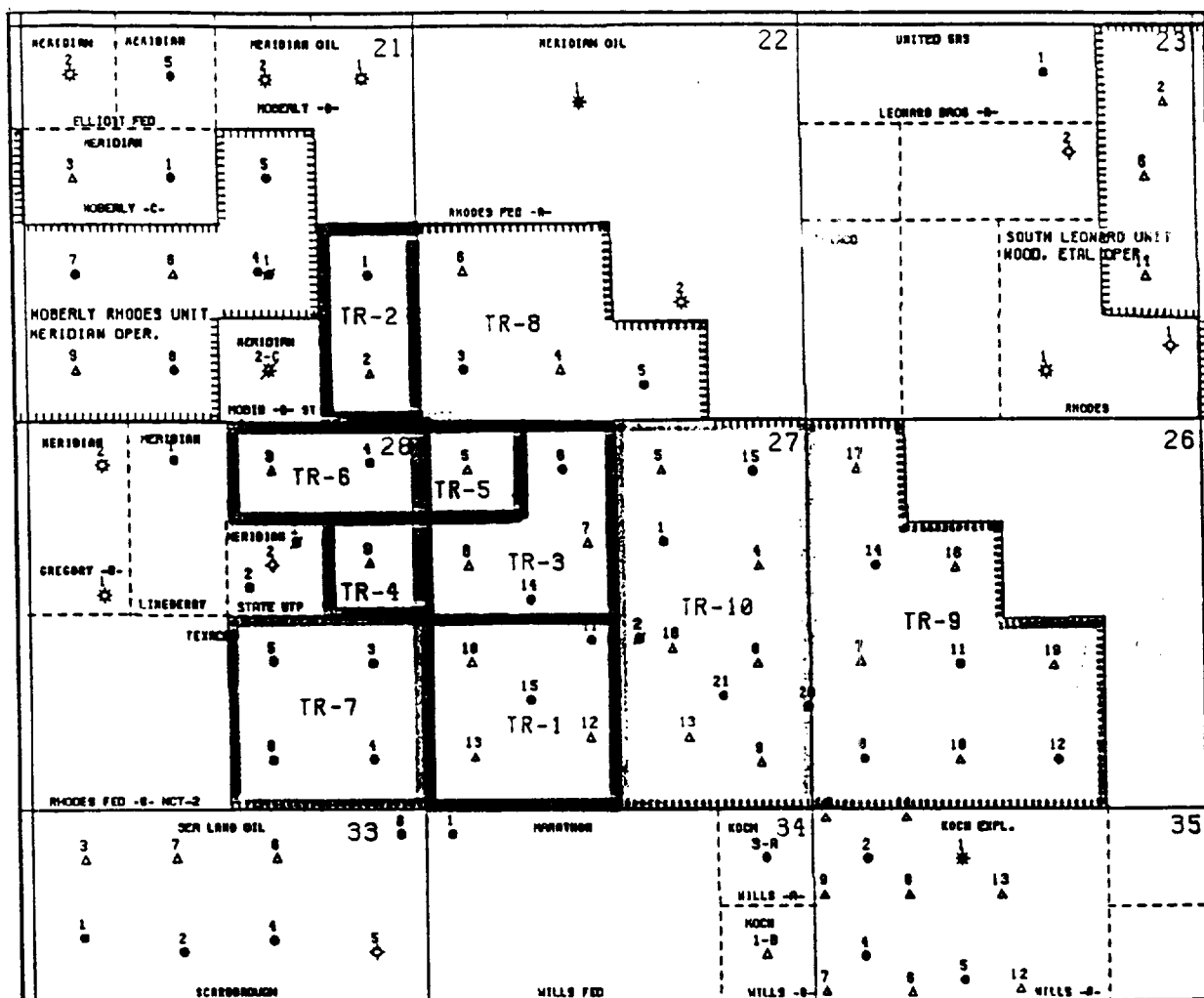


RHODES YATES UNIT

STATUTE MILES 0 1 2 3 4 5  
FEET 0 1000 2000 3000 4000 5000

TEXACO E & P INC.	
HOBBS	U.S.A.
RHODES YATES WATERFLOOD LEASE LINE PRODUCTION SEPARATORS LEA COUNTY, NEW MEXICO	
C. E. DICKER	
25-100-00	

FIGURE 4



- OIL WELL
- P&A OIL WELL
- △ INJECTOR
- ☆ GAS WELL
- ☆ P&A GAS WELL
- \* OIL & GAS WELL
- \* P&A OIL & GAS WELL
- ◇ O&A
- LOCATION

- RHODES YATES UNIT
- RHODES FED -A- LEASE
- RHODES FED -B- NCT-1 LEASE
- RHODES FED -B- NCT-2 LEASE

BEFORE THE  
OIL CONSERVATION DIVISION  
Santa Fe, New Mexico

Case No. 10864 Exhibit No. 1

Submitted by: Texaco Exploration and  
Production Inc.

Hearing Date: November 18, 1993

TEXACO E & P INC.	
HOBBES	U.S.A.
RHODES YATES WATERFLOOD	
LEA COUNTY, NEW MEXICO	
C. E. BAKER	
20-100-00	