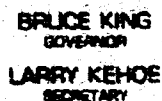


CASE NO.

7466

---

APPLICATION,  
TRANSCRIPTS,  
SMALL EXHIBITS,  
ETC.



POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
505/227-2434

March 25, 1982

Mr. Thomas Kellahin  
Kellahin & Kellahin  
Attorneys at Law  
Post Office Box 1769  
Santa Fe, New Mexico

Re: CASE NO. 7466  
ORDER NO. H-6906-A

Applicant:

Conoco Inc.

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Yours very truly,

JOE D. RAMEY  
Director

JDR/fd

Copy of order also sent to:

|             |   |
|-------------|---|
| Hobbs OCD   | x |
| Artesia OCD | x |
| Aztec OCD   |   |

Other

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

CASE NO. 7466  
Order No. R-6906-A

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

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-6906, dated February 15, 1982, does not correctly state the intended order of the Division,

IT IS THEREFORE ORDERED:

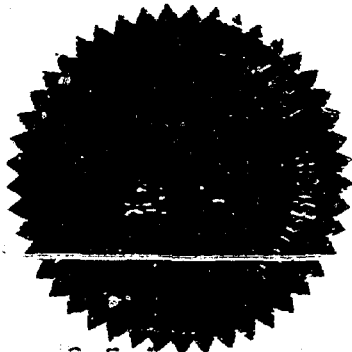
(1) That the list of Conoco's injection wells as found in Order (1) on page 2 of Order No. R-6906 is hereby corrected to read in its entirety as follows:

"CONOCO INC.

Warren Unit Well No. 13, Unit O, Section 34  
Warren Unit Well No. 14, Unit M, Section 34  
Warren Unit Well No. 17, Unit I, Section 33  
Warren Unit Well No. 20, Unit E, Section 34  
Warren Unit Well No. 16, Unit O, Section 33  
Warren Unit Well No. 75, Unit K, Section 34  
Warren Unit Well No. 90, Unit G, Section 33  
Hawk 8-3 Well No. 15, Unit B, Section 3"

(2) That this order shall be effective nunc pro tunc as of February 15, 1982.

DONE at Santa Fe, New Mexico, on this 24th day of March, 1982.



STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

*Joe D. Ramey*  
JOE D. RAMEY  
Director

SEAL  
Pd/

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
STATE LAND OFFICE BLDG.  
SANTA FE, NEW MEXICO

20 January 1982

EXAMINER HEARING

IN THE MATTER OF:

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

CASE  
7466

BEFORE: Richard L. Stamets

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation  
Division:

W. Perry Pearce, Esq.  
Legal Counsel to the Division  
State Land Office Bldg.  
Santa Fe, New Mexico 87501

For the Applicant:

W. Thomas Kellahin, Esq.  
KELLAHIN & KELLAHIN  
500 Don Gaspar  
Santa Fe, New Mexico 87501

## I N D E X

## JERRY HOOVER

|                                    |    |
|------------------------------------|----|
| Direct Examination by Mr. Kellahin | 4  |
| Cross Examination by Mr. Stamets   | 18 |

## E X H I B I T S

|                                      |   |
|--------------------------------------|---|
| Applicant Exhibit One, Map           | 5 |
| Applicant Exhibit Two, Receipts      | 7 |
| Applicant Exhibit Three, Form C-108  | 7 |
| Applicant Exhibit Four, Data Sheet   | 7 |
| Applicant Exhibit Five, Data Sheet   | 7 |
| Applicant Exhibit Six, Data Sheet    | 7 |
| Applicant Exhibit Seven, Data Sheet  | 7 |
| Applicant Exhibit Eight, Data Sheet  | 7 |
| Applicant Exhibit Nine, Data Sheet   | 7 |
| Applicant Exhibit Ten, Data Sheet    | 7 |
| Applicant Exhibit Eleven, Data Sheet | 7 |
| Applicant Exhibit Twelve, Data Sheet | 7 |

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

E X H I B I T S

|                                             |    |
|---------------------------------------------|----|
| Applicant Exhibit Thirteen, Tabulation      | 9  |
| Applicant Exhibit Fourteen, Water Analysis  | 14 |
| Applicant Exhibit Fifteen, Water Analysis   | 14 |
| Applicant Exhibit Sixteen, Water Analysis   | 14 |
| Applicant Exhibit Seventeen, Water Analysis | 14 |
| Applicant Exhibit Eighteen, Water Analysis  | 14 |
| Applicant Exhibit Nineteen, Water Analysis  | 15 |
| Applicant Exhibit Twenty, Log               | 16 |
| Applicant Exhibit Twenty-one, Log           | 16 |
| Applicant Exhibit Twenty-two, Log           | 16 |
| Applicant Exhibit Twenty-three, Log         | 16 |
| Applicant Exhibit Twenty-four, Log          | 16 |
| Applicant Exhibit Twenty-five, Log          | 16 |
| Applicant Exhibit Twenty-six, Log           | 16 |
| Applicant Exhibit Twenty-seven, Log         | 16 |
| Applicant Exhibit Twenty-eight, Log         | 16 |
| Applicant Exhibit Twenty-nine, Letter       | 17 |

1  
2 MR. STAMETS: The hearing will please  
3 come to order.

4 We'll call at this time Case 7466.

5 MR. PEARCE: Application of Conoco, Inc.,  
6 for a waterflood project, Lea County, New Mexico.

7 MR. KELLAHIN: If the Examiner please,  
8 I'm Tom Kellahin of Santa Fe, appearing on behalf of the  
9 Applicant, and I have one witness.

10  
11 (Witness sworn.)

12  
13 JERRY HOOVER  
14 being called as a witness and being duly sworn upon his oath,  
15 testified as follows, to-wit:

16  
17 DIRECT EXAMINATION

18 BY MR. KELLAHIN:

19 Q Mr. Hoover, for the record would you  
20 please state your name and occupation?

21 A Jerry Hoover. I'm employed by Conoco  
22 as a reservoir engineer.

23 Q Mr. Hoover, have you previously testi-  
24 fied before the Oil Conservation Division as a petroleum  
25 engineer?

1

2

A. Yes, I have.

3

Q. And have your qualifications been ac-

4

cepted and made a matter of record?

5

A. Yes, they have.

6

Q. Mr. Hoover, pursuant to your employment

7

as a petroleum engineer, have you made a study of the fact

8

surrounding this particular application?

9

A. Yes, I have.

10

MR. KELLAHIN: We tender Mr. Hoover as

11

an expert petroleum engineer.

12

MR. STAMETS: He is considered qualified.

13

Q. Mr. Hoover, let me direct your attention

14

to what we've marked as Conoco Exhibit Number One and have

15

you identify that plat for us and specifically the proposed

16

waterflood area of operation.

17

A. All right. Exhibit One is an ownership

18

and completion map of the area of our application. We're

19

proposing a cooperative waterflood project including the

20

southernmost part of our Warren Unit and the Northernmost

21

part of our Hawk B-3 Leases and Southland Royalty's State

22

Lease.

23

Q. A waterflood project for what formation?

24

A. This is in the Blinbry formation.

25

The hatched line outlining the boundary of the proposed flood

1  
2 area, as shown in Sections 33 and 34 of Township 20 South,  
3 Range 38 East, and of Sections 2 and 3 of Township 21 South,  
4 Range 37 East, and included within this project area are  
5 the Warren Unit wells No. 80, 19, 20, 76, 17, 18, 75, 16, 15,  
6 14, 12, 13; Hawk B-3 Lease Wells No. 16, 15, 14, 18, and 19;  
7 Southland Royalty's State Wells 6, 7, 8, and 9.

8 Q Of the wells identified in this area,  
9 Mr. Hoover, how many of them are proposed injector wells?

10 A There are nine proposed injectors in  
11 this project.

12 Q Are these injector wells to be new  
13 wells or are they the conversion of old producing wells?

14 A They will be conversions of old wells.  
15 No drilling is planned at this time.

16 Q All right, sir. In your opinion, Mr.  
17 Hoover, is the Blinebry formation outlined by the proposed  
18 area ready for a waterflood project?

19 A Yes, it is. Most of these wells were  
20 drilled in the 1950's. Production is averaging about five  
21 barrels a day in the wells in this area.

22 Q In preparing the application for the  
23 Division, Mr. Hoover, have you notified all of the surface  
24 owners of areas where wells are to be converted for injection  
25 and offset operators within the half mile radius of investi-

1  
2 gation?

3 A Yes, we have. And Exhibit Two are  
4 copies of the certified mail receipts sent to these parties.

5 A What type of acreage do you have in-  
6 cluded in the flood area, Mr. Hoover, in terms of whether  
7 it's fee, or Federal, or State acreage?

8 A The Warren Unit acreage and the Hawk-3  
9 lease are federal acreage, Southland Royalty's State Lease  
10 is, of course, State acreage.

11 Q All right, sir, let me direct your  
12 attention to Exhibit Number Three and have you identify that.

13 A Exhibit Three is a copy of the Form  
14 C-108 required by the NMOCD governing this type of applica-  
15 tion. The exhibits and data included with this application  
16 will be discussed by later testimony.

17 Q All right, sir. All right, sir, let me  
18 direct your attention now to what you have prepared as  
19 Conoco Exhibits Four through Twelve, and would you generally  
20 describe what those exhibits are?

21 A Exhibits Four through Twelve are in-  
22 jection well data sheets. This is the Form that's provided  
23 by the NMOCD for this purpose, and includes a schematic for  
24 each of the injection wells proposed for the project, with  
25 other data called for by the form involving the completion

1  
2 of the wells.

3 Q Are all of the nine proposed injector  
4 wells anticipated that you will complete them in the same  
5 fashion?

6 A That's correct.

7 Q Let's take one of them for an example,  
8 then, Mr. Hoover, and run through the types of information  
9 you included on the form.

10 A All right, looking at the first one,  
11 Exhibit Four, Warren Unit Well No. 80, we'll remove the pro-  
12 ducing equipment that is currently in the well and go back  
13 in with 2-3/8ths plastic-coated tubing and a Baker Model AD  
14 packer. Most of these are set -- packers will be set at  
15 approximately 5650 to 5700, and the completion will be some-  
16 what standard and similar for all the wells.

17 Q While we're reviewing the schematics,  
18 Mr. Hoover, would you tell us something concerning the source  
19 of the proposed water to be used in these injection wells?

20 A The water that we propose using for this  
21 project is the same water that we're currently using in our  
22 Warren McKee Waterflood, which is about three miles to the  
23 northwest.

24 It's city sewage effluent water which  
25 has brine added to it. We'll be drawing our water from the

1  
2 same tanks. In fact, we'll be pumping it from the McKee  
3 Station through a transfer line down to a header in the area  
4 of this project.

5 Q Would you generally describe for us  
6 what you anticipate in terms of volumes of barrels of water  
7 per day per injection well?

8 A We're anticipating initial injection  
9 rates of approximately 800 barrels per day per well. We're  
10 looking -- think we're looking at about 400 barrel a day  
11 average for the life of the project.

12 Q All right, sir, leaving the schematics  
13 now, if you'll turn to Exhibit Number Thirteen and identify  
14 that for us.

15 A Exhibit Thirteen is a 7-page exhibit  
16 showing the well data for all wells within the area of review,  
17 that half mile radius, that penetrate the proposed injection  
18 zone.

19 Q This is a tabulation of that well in-  
20 formation pursuant to the Rules and Regulations of the Divi-  
21 sion?

22 A That's correct.

23 Q And did you personally make this tabu-  
24 lation?

25 A Yes, I did.

1  
2 Q Now, within the half mile radius of  
3 investigation, Mr. Hoover, looking at Exhibit Number One, I  
4 note that there are at least two well symbols that indicate  
5 there are some plugged and abandoned wells within the half  
6 mile radius. Would you identify and explain what those are?

7 A Yes. In the northeast quarter of the  
8 northeast part of Section 33 you'll note a plugged well, and  
9 just above that in Section 28. Both of these were only com-  
10 pleted and drilled down to the Queen formation, which is  
11 above the Blinebry.

12 Q All right, sir. Within the half mile  
13 radius of investigation, Mr. Hoover, did you find any plugged  
14 and abandoned wells that had penetrated to or through the  
15 Blinebry formation?

16 A No, I did not.

17 Q Now with regards to Exhibit Number  
18 Thirteen, Mr. Hoover, have you made a determination and  
19 reached an expert opinion with regards to the adequacy of the  
20 cement jobs in each of these wells, so that the disposal of  
21 water into the disposal for the injection formation will not  
22 migrate out of that formation through any of these wellbores  
23 or wells?

24 A In examining the records of these well-  
25 bores we did not locate any problems.

1  
2 Q Now, while we have Exhibit Number One  
3 before us, would you identify for us what, if any, sources of  
4 fresh water within the area of the investigation?

5 A There is one fresh water well within a  
6 mile and a half of the nearest injector, and it's in the  
7 upper part of Section 10 right at the bottom of the map.

8 Q Is that well spotted on this exhibit?

9 A No, the well is not spotted on this  
10 exhibit.

11 Q Would you identify where it is?

12 A All right. If you will look in the  
13 northwest of the northwest quarter of Section 10, the fresh  
14 water well is located about 200 yards northeast of Well No.  
15 10 there in that quarter section.

16 See the Hawk B-10 Well No. 10?

17 Q You said the northwest of the northwest.

18 A I'm sorry, that's northeast of the  
19 northwest.

20 Q All right, sir.

21 A Thank you. Very close to the section  
22 line.

23 Q From what formation or source does that  
24 fresh water well produce?

25 A This well produces from the Ogallala

1 formation, which has a base at about 200 feet.

2 Q In your opinion, Mr. Hoover, will the  
3 proposed waterflood project of Conoco's pose any type of  
4 hazard or risk to fresh water sources in the area?  
5

6 A No, I don't believe it will.

7 Q Let me ask you some questions with re-  
8 gards to the types of injection pressures you anticipate  
9 being required for the project, Mr. Hoover.

10 Will your waterflood project use in-  
11 jection of water under gravity or under a pressure system?

12 A We will inject under pressure.

13 Q And would you describe for us generally  
14 what that pressure will be?

15 A The surface pressure required to frac-  
16 ture the Blinbry formation in this area ranges between 2300  
17 and 2500 psi.

18 Q How do you know that?

19 A Wells 75 and 76, which -- in the Warren  
20 Unit, which are within the project area, were completed in  
21 1979 and observing the treatment pressures in these wells  
22 we observed that this range of pressures was required in  
23 order to fracture the formation.

24 MR. STAMETS: What was the -- what  
25 were those pressures again, please?

1  
2 A Specifically in No. 75, Well 75, the  
3 pressure was 2470 psi.

4 And Well No. 76 we observed 2300 psi.

5 Q And what kind of pressure test was that,  
6 Mr. Hoover?

7 A This was the instantaneous shut-in pres-  
8 sure following the fracture treatment.

9 Q In your opinion is that a reliable pres-  
10 sure test from which to determine the fracture of the forma-  
11 tion?

12 A I feel that it is in this area.

13 Q All right, sir.

14 A And we're anticipating limiting, in  
15 light of these figures, our injection pressure to 2000  
16 pounds.

17 Q Will the 2000 pounds of pressure at the  
18 surface for injection exceed the Division guidelines of .2  
19 of a percent per foot of depth?

20 A Yes, that will exceed the previous  
21 gauge of .2.

22 Q In your opinion will the pressure limit-  
23 ation of 2000 pounds at the surface be sufficient enough to  
24 insure that the formation above and below the Blinbry will  
25 not be fractured?

1  
2 A. Yes, I believe it will.

3 Now, I might note that this a higher  
4 pressure than we -- we put in our application, but in looking  
5 at these completions, we felt like this would keep us well  
6 under the fracture pressure of the formation.

7 Q Prior to the commencement of injection,  
8 Mr. Hoover, will you test the injection wells to determine  
9 the integrity of the casing, tubing, and packer?

10 A Yes, we will.

11 Q And how will these wells be equipped so  
12 that you can monitor the injection pressure and the annular  
13 pressure?

14 A They will be equipped so that we can  
15 record tubing injection pressure and the annular pressure,  
16 and also that we may -- we can take rates and volumes, which  
17 will be -- can be determined at the wellhead and will be  
18 recorded.

19 Q Mr. Hoover, let me refer you now to  
20 your exhibits that we've marked as Exhibits Fourteen through  
21 Eighteen, and would you generally describe for us what those  
22 exhibits are?

23 A Yes. These exhibits are water analyses  
24 of water that will be involved in this project.

25 Exhibit Fourteen is an analysis of

1  
2 Blinebry formation water.

3 Exhibit Fifteen is an analysis of the  
4 sewage effluent water that will be -- we'll be buying from  
5 the city, and since we're using the water that goes to our  
6 Warren McKee Flood, which includes also brine added to it,  
7 the Exhibit Sixteen shows an analysis of the sewage effluent  
8 plus the brine.

9 Then Exhibit Seventeen is a 50/50 mix-  
10 ture of the Warren Blinebry formation water and just the  
11 sewage effluent from the city.

12 Eighteen, then, is a mixture of the  
13 Warren Blinebry water and the sewage effluent plus brine.

14 Q Based upon your studies of the water  
15 analyses from the various waters in the area, Mr. Hoover, do  
16 you have an opinion with regards to the compatibility of the  
17 produced water and the water, if any, found in the formation?

18 A These analyses showed no problems in  
19 combining the waters.

20 Q All right, sir, let's go on to Exhibit  
21 Number Nineteen and have you identify that one.

22 A Exhibit Number Nineteen is a water ana-  
23 lysis of the fresh water well which we previously identified.

24 Q And this is cemented pursuant to the  
25 requirements of the Division?

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A That's correct.

Q Who is the owner or operator of that water well?

A The owner of this well is Alice McCasland, who owns the surface area.

Q All right, sir, let me direct your attention to Exhibits Twenty through Twenty-eight, and have you identify those for us.

A Exhibits Twenty through Twenty-eight are copies of well logs for each of the proposed injection wells in this project area, showing the productive zones of the Blinebry formation in this area.

Q Would you describe for us, Mr. Hoover, the geology in the Blinebry formation?

A The Blinebry formation is the upper member of the Yeso Group in the Leonardian series in the Permian system.

There are five major cycles of deposition in the Blinebry; only the upper three are productive in this area of the Blinebry Pool.

These zones are separated by very tight, resistive formations.

We're looking at a net pay of approximately 45 feet in these upper three zones and the deepest

1  
2 production in this area is about 6100 feet.

3 Q Will your waterflood project, Mr. Hoover,  
4 at this time do you anticipate using any stimulation program  
5 for the waterflood project?

6 A We have no stimulation program planned  
7 at this time.

8 Q All right, sir. I direct your attention  
9 to Exhibit Number Twenty-nine and have you identify that.

10 A Exhibit Twenty-nine is a letter from  
11 Southland Royalty asking that their State Well No. 6 be in-  
12 cluded as an injector in this project.

13 Our lease line operating agreement is  
14 currently in the process of being drawn up.

15 Q Mr. Hoover, do you have any recommenda-  
16 tions to the Examiner with regards to whether or not you  
17 would like to have an administrative procedure established  
18 for the expansion or contraction of the waterflood project?

19 A We would like to request approval for  
20 administrative approval for expansion of the project in the  
21 future.

22 Q Do you have any recommendation, Mr.  
23 Hoover, to the Examiner with regards to the addition of ad-  
24 ditional producers or injectors at orthodox or unorthodox  
25 locations by some administrative process?

1  
2 A We don't anticipate any infill drilling,  
3 if that's what you're referring to.

4 Q Yes, sir.

5 A We feel like the spacing of the develop-  
6 ment at this time will probably be adequate for the project.

7 Q Were exhibits, except for the letter,  
8 Exhibit Twenty-nine, were Exhibits One through Twenty-eight  
9 prepared by you or compiled under your direction and super-  
10 vision?

11 A Yes, they were.

12 Q And in your opinion, Mr. Hoover, will  
13 approval of this application be in the best interests of  
14 conservation, the prevention of waste, and the protection of  
15 correlative rights?

16 A Yes, we believe it will.

17 MR. KELLAHIN: That concludes our ex-  
18 amination of Mr. Hoover. We move the introduction of Ex-  
19 hibits One through Twenty-nine.

20 MR. STAMETS: These exhibits will be  
21 admitted.

22  
23 CROSS EXAMINATION

24 BY MR. STAMETS:

25 Q Mr. Hoover, I would assume the intention

1  
2 of both Conoco and Southland is to operate their properties  
3 separately, with Southland operating their injection wells  
4 and reporting injection and production volumes.

5 A We are investigating the possibility of  
6 perhaps making an agreement with them whereby we will operate  
7 the well, but the agreement as yet has not been drawn up.

8 Q Okay, and Conoco has basically two leases  
9 involved in this operation and Southland has one, is that  
10 correct?

11 A That's correct.

12 Q Now, there was some discussion of an  
13 approval process of an expansion of the project. I'm not  
14 certain that that is needed with the way the Division Rules  
15 and Regulations are written now. It would seem as though once  
16 this project is approved for the Warren Unit and the Hawk B  
17 Leases that you would be able to drill additional injection  
18 wells on those --

19 A On those leases.

20 Q -- basic leases and expand the project  
21 without any special finding.

22 A We had originally talked with Shell  
23 about joining us, cooperating with us Taylor Lease just to  
24 the south of the project area, and they declined at this  
25 time. They had a couple of wells still making a pretty good

1  
2 rate, and there is a possibility that in time as theirs de-  
3 cline, they may want to join us, still cooperatively.

4 And this is where we were anticipating  
5 possible expansion.

6 Q Mr. Hoover, do you have any information  
7 with you on the gravity of the fluids used in fracturing  
8 treatments on these two wells and on the gravity you expect  
9 the average injection fluid to be?

10 A I'm not real positive. I could quote  
11 some but I really ought to check that before --

12 MR. KELLAHIN: May we supply it to you?

13 MR. STAMETS: Yes, you certainly may.

14 MR. KELLAHIN: Subsequent to the hearing.

15 Q Would Conoco be adverse to a requirement  
16 in -- in any order resulting from this hearing, which would  
17 require notice to our Hobbs Office, District Office, when  
18 the injection pressure on any well exceeded our rule of  
19 thumb .2 of a pound per foot of depth, and allowing the Dis-  
20 trict Supervisor to make a determination at that time whether  
21 he would like to see a step-rate test on any such well?

22 A I don't see any problem with that.

23 Q Okay. Now, I would like to look at the  
24 series of exhibits, Exhibit Number Thirteen.

25 It would appear as though, from earlier

exhibits, that the injection interval would run roughly from 5800 feet down to 6000 feet.

A. That's correct.

Q. And that would be the interval we would be concerned with as far as protection and as far as the possibility of fluid movement up hole.

A. Yes.

Q. Now you show top of cement on a number of these wells. In fact, you show a top of cement on all of them. Were these tops all calculated tops? How did you determine these?

A. Most of them were recorded in the NMOCD records. There were a few, seven or eight, no more than that, that were calculated tops.

Q. And you say they were recorded in the Division's records. Did they show in the records whether they were calculated or determined by survey?

A. Most of them were recorded by survey. If they were calculated, we did not see anything to indicate that.

Q. Okay. To your knowledge was Conoco the operator of these wells when they were drilled?

A. That's correct.

Q. And it's Conoco's operating procedure

1

2

to run temperature surveys when casing is run and cemented?

3

A That is normal procedure.

4

Q Okay. Now, I'd like to look at page

5

two of that exhibit, the top well, the Hawk B-3 No. 16, and

6

okay, I believe we can go on from that one. That one seems

7

to be all right.

8

The next one would be on page five and

9

there about half way down is the Taylor Glenn Well No. 2,

10

and there we see 5-1/2 inch casing set at 6665 with the top

11

of cement 6620. It would appear as though in that well the

12

injection interval may be open.

13

A That looks suspiciously like a typo-

14

graphical error. We'll check that out and get you the in-

15

formation.

16

Q Well, that certainly doesn't look like

17

a whole lot of fill for 600 sacks.

18

A No.

19

Q If you can find some additional informa-

20

tion on that later, we will appreciate it.

21

Next page, the bottom two wells belong-

22

ing to Southland Royalty, I believe -- I think the first one

23

of those is all right. The second one is all right.

24

I just hurriedly checked these as I

25

was running through and I --

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

A Those are liners, I'm sure.

Q -- was apparently conservative.

Is the system that you will be using for water injection, would that be considered a closed system?

A This refers to the use of open pits or backflowing, is that correct, or --

Q Well, no, what it refers to is whether or not the fluids are kept in tanks where they will be subject the entry of air or the potential for corrosion, and oxygen corrosion.

A In other words, a closed system would have a gas blanket on it.

Q Yes. Or let me, let me ask a question. Do you plan to treat this water for -- to take out any entrained oxygen?

A Yes, it is treated for oxygen.

Q Okay.

A It sure is.

Q Since the water comes from a sewage treatment plant, you can't very well have a closed system?

A Right. I don't believe it would be closed, which is what, I think, we indicated on our application.

Q Will you be doing anything to any of

1  
2 these wells in the way of stimulation program, the injection  
3 wells?

4 A No, not on those that are just being  
5 converted as they now stand. I believe there's one well that  
6 has an additional zone to be opened and it will be fractured,  
7 but not the existing producing zones now.

8 Q Okay.

9 MR. STAMETS: Are there any other ques-  
10 tions of the witness?

11 MR. KELLAHIN: No, sir.

12 MR. STAMETS: He may be excused.

13 Anything further in this case?

14 The case will be taken under advisement.

15  
16 (Hearing concluded.)  
17  
18  
19  
20  
21  
22  
23  
24  
25

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division 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.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete and correct transcript of the proceedings in the hearing of Case No. 1466, heard at 1-20 1962.  
Richard L. Smith, Examiner  
 Oil Conservation Division

SALLY W. BOYD, C.S.R.

RL 1 Box 193-B  
 Santa Fe, New Mexico 87501  
 Phone (505) 455-7409



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR  
LARRY KEHOE  
SECRETARY

POST OFFICE BOX 2086  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-2434

February 13, 1982

Mr. Thomas Kellahin  
Kellahin & Kellahin  
Attorneys at Law  
Post Office Box 1769  
Santa Fe, New Mexico

Re: CASE NO. 7466  
ORDER NO. 0 4007

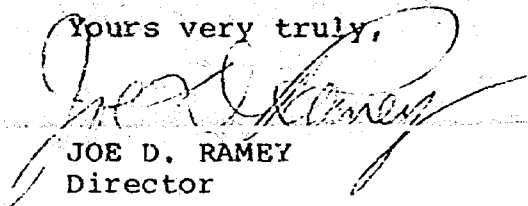
Applicant:

Conoco Inc.

Dear Sir:

Enclosed herewith are two copies of the above-referenced  
Division order recently entered in the subject case.

Yours very truly,

  
JOE D. RAMEY  
Director

JDR/fd

Copy of order also sent to:

Hobbs OCD x  
Artesia OCD x  
Aztec OCD       

Other

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE NO. 7466  
Order No. R-6906

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

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on January 20, 1982, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 15th day of February, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Conoco Inc., seeks authority for it and Southland Royalty Company to each institute a cooperative waterflood project in the Blinebry Oil and Gas Pool by the injection of water into the Blinebry formation through nine injection wells located on Conoco's Warren Unit and Hawk B-3 Leases and Southland's State Lease in Sections 33 and 34 of, Township 21 South, Range 38 East, and Sections 2 and 3 of Township 21 South, Range 37 East, NNPM, Lea County, New Mexico.

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

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

-2-

Case No. 7466  
Order No. R-6906

(5) That the operators 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.

(6) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 2000 psi, provided that the supervisor of the Division's district office at Hobbs should be notified of any injection pressure above 1000 psi in any well and should have the opportunity to require a step-rate test to be conducted on such well.

(7) That the subject application should be approved and the cooperative 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 applicants, Conoco Inc. and Southland Royalty Company are hereby authorized to each institute a cooperative waterflood project in the Blinbry Oil and Gas Pool by the injection of water into the Blinbry formation through nine injection wells located on Conoco's Warren Unit and Hawk B-3 Leases and Southland's State Lease in Sections 33 and 34 of Township 20 South, Range 38 East, and Sections 2 and 3 of Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, as follows:

CONOCO INC.

Warren Unit Well No. 13, Unit O, Section 34  
Warren Unit Well No. 14, Unit M, Section 34  
Warren Unit Well No. 17, Unit I, Section 33  
Warren Unit Well No. 20, Unit E, Section 34  
Warren Unit Well No. 66, Unit O, Section 33  
Warren Unit Well No. 75, Unit L, Section 34  
Warren Unit Well No. 80, Unit G, Section 33  
Hawk B-3 Well No. 15, Unit B, Section 3

SOUTHLAND ROYALTY COMPANY

State Well No. 6, Unit D, Section 2

(2) That injection into each of said wells shall 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

-3-

Case No. 7466

Order No. R-6906

loaded with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(3) That the operator 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, or the leakage of water or oil from any plugged and abandoned well within the project area and shall take such timely steps as may be necessary or required to correct such failure or leakage.

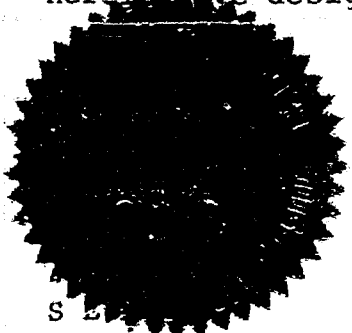
(4) That the injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 2000 psi, provided that the supervisor of the Division's district office at Hobbs shall be notified of any injection pressure above 1000 psi in any well and may require a step-rate test to be conducted on such well.

(5) That the subject cooperative waterflood project is hereby designated the Conoco-Southland Blinbry Cooperative Waterflood Project and shall be governed by the provisions of Rules 701, 702, 703, 704, 705, and 706 of the Division Rules and Regulations.

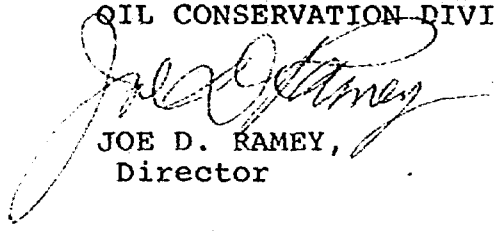
(6) That monthly progress reports of the cooperative waterflood project herein authorized shall be submitted to the Division in accordance with Rules 706 and 1115 of the Division Rules and Regulations.

(7) 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 DIVISION

  
JOE D. RAMEY,  
Director

S E

Production Department  
Hobbs Division  
Western Hemisphere Petroleum Division

Conoco

Conoco Inc.  
P.O. Box 400  
1001 North Tenth  
Hobbs, NM 88240  
(505) 393-4141

FEB 03 1982

CONSERVATION DIVISION  
SANTA FE

February 1, 1982

New Mexico Oil Conservation Division  
P.O. Box 2088  
Santa Fe, New Mexico 87501

Attention Mr. R. L. Stamets

Dear Dick:

Case No. 7466, Examiner Hearing - January 22, 1981

During the Examiner Hearing for our request to initiate a waterflood project on our Warren Unit and other leases, Mr. Hoover testified concerning the pressure required to fracture the Blinbry Formation in recently completed wells in the project area. Since he was not sure, you requested that the information be furnished at a later date.

In researching our files to determine the type of treatment used and from the design of such treatment, we furnish the following information:

Specific Gravity of Frac Fluid = 1.02 (sand frac)  
Specific Gravity of Water to be Injected = 1.04

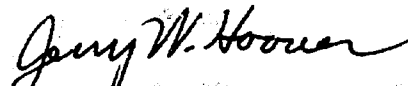
We do not believe the difference would be of any significance in the pressure required to fracture the Blinbry Formation.

If you need additional information, I would appreciate your calling.

Very truly yours,

  
H. A. Ingram

Conservation Coordinator



Gerry W. Hoover  
Reservoir Engineer

HAI:rej

Form 3811, Jan. 1979  
RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.  
☐ Show to whom, date and address of delivery.  
☐ RESTRICTED DELIVERY  
☐ Show to whom and date delivered.  
☐ RESTRICTED DELIVERY.  
☐ Show to whom, date, and address of delivery.  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Bureau of Land Management  
 P.O. Box 1778  
 Carlsbad, NM 88220

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 419761  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 SARAH BACHMAN

4. DATE OF DELIVERY: DEC 28 1981  
 POSTMARK: 28 1981

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS: [Signature]

☆ GPO : 1979-238-848

Form 3811, Jan. 1979  
RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.  
☐ Show to whom, date and address of delivery.  
☐ RESTRICTED DELIVERY  
☐ Show to whom and date delivered.  
☐ RESTRICTED DELIVERY.  
☐ Show to whom, date, and address of delivery.  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Morris Anturel  
 Box 2010  
 Hobbs NM 88240

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 419762  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 Dai Jones

4. DATE OF DELIVERY: [Signature]  
 POSTMARK: DEC 28 1981

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS: [Signature]

☆ GPO : 1979-238-848

Form 3811, Jan. 1979  
RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.  
☐ Show to whom, date and address of delivery.  
☐ RESTRICTED DELIVERY  
☐ Show to whom and date delivered.  
☐ RESTRICTED DELIVERY.  
☐ Show to whom, date, and address of delivery.  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Exxon Company  
 P.O. Box 1600  
 Midland, TX 79701

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 419763  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 Edward Whitlock

4. DATE OF DELIVERY: 12-28-81  
 POSTMARK: DEC 28 1981

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS: [Signature]

☆ GPO : 1979-238-848

Form 3811, Jan. 1979  
RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.  
☐ Show to whom, date and address of delivery.  
☐ RESTRICTED DELIVERY  
☐ Show to whom and date delivered.  
☐ RESTRICTED DELIVERY.  
☐ Show to whom, date, and address of delivery.  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Elk Oil Company  
 Box 310  
 Roswell, NM 88201

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 419764  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 [Signature]

4. DATE OF DELIVERY: 12/28/81  
 POSTMARK: DEC 28 1981

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS: [Signature]

☆ GPO : 1979-238-848

BEFORE EXAMINER STAMETS  
 OIL CONSERVATION DIVISION  
 EXHIBIT NO. 2  
 CASE NO. 7466  
 Submitted by Conoco Inc.  
 Hearing Date 1-22-82

PS Form 3811, Jan. 1979

**SENDER:** Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.\$ \_\_\_\_

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
*John Hendrix*  
*525 Midland Town*  
*Midland, TX 79701*

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 \_\_\_\_\_ *419758* \_\_\_\_\_  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE *[Signature]* ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY POSTMARK  
*DEC 24 1981* *1981*

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆ GPO : 1979-288-048

PS Form 3811, Jan. 1979

**SENDER:** Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.\$ \_\_\_\_

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
*Gulf Oil*  
*P.O. Drawer 1150*  
*Midland, TX 79702*

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 \_\_\_\_\_ *419765* \_\_\_\_\_  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE *[Signature]* ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY POSTMARK  
*12-28-81* *DEC 28 1981*

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆ GPO : 1979-288-048

PS Form 3811, Jan. 1979

**SENDER:** Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.\$ \_\_\_\_

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
*NM Commissioner of Public Lands*  
*Box 1148*  
*Santa Fe, NM 87501*

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 \_\_\_\_\_ *419759* \_\_\_\_\_  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE *[Signature]* ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY POSTMARK  
*DEC 28 1981* *1981*

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆ GPO : 1979-288-048

PS Form 3811, Jan. 1979

**SENDER:** Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.\$ \_\_\_\_

(CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
*Dallas McCasland*  
*P.O. Box 206*  
*Lurice, NM 88231*

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. CERTIFIED NO. INSURED NO.  
 \_\_\_\_\_ *419760* \_\_\_\_\_  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE *[Signature]* ☐ Addressee ☐ Authorized agent

4. DATE OF DELIVERY POSTMARK  
*DEC 28 1981* *DEC 28 1981*

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE: CLERK'S INITIALS

RETURN RECEIPT, REGISTERED, INSURED AND CERTIFIED MAIL

☆ GPO : 1979-288-048

Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.....  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Shell Oil Company  
 P.O. Box 991  
 Houston, TX 77001

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. | CERTIFIED NO. | INSURED NO.  
 | 419767 | |  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 [Signature]

4. DATE OF DELIVERY: [Signature]

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

☆ GPO : 1979 288-648

Form 3811, Jan. 1979

SENDER: Complete items 1, 2, and 3.  
Add your address in the "RETURN TO" space on reverse.

1. The following service is requested (check one.)  
☒ Show to whom and date delivered.....  
☐ Show to whom, date and address of delivery.....  
☐ RESTRICTED DELIVERY  
 Show to whom and date delivered.....  
☐ RESTRICTED DELIVERY.  
 Show to whom, date, and address of delivery.....  
 (CONSULT POSTMASTER FOR FEES)

2. ARTICLE ADDRESSED TO:  
 Southland Roughly  
 1000 Ft Worth Club Tower  
 Ft. Worth, TX 76102

3. ARTICLE DESCRIPTION:  
 REGISTERED NO. | CERTIFIED NO. | INSURED NO.  
 | 419767 | |  
 (Always obtain signature of addressee or agent)

I have received the article described above.  
 SIGNATURE ☐ Addressee ☐ Authorized agent  
 [Signature]

4. DATE OF DELIVERY: 23 DEC 1991

5. ADDRESS (Complete only if requested)

6. UNABLE TO DELIVER BECAUSE:

CLERK'S INITIALS

☆ GPO : 1979 288-648

## APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☒ Secondary Recovery ☐ Pressure Maintenance ☐ Disposal ☐ Storage  
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: Conoco, Inc.  
Address: P. O. Box 460, 726 E. Michigan, Hobbs, New Mexico 88240  
Contact party: Mark Mosely, Division Manager Phone: 505 393-4141
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? ☐ yes ☒ no  
If yes, give the Division order number authorizing the project \_\_\_\_\_.
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- \* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed; treated water to remove O<sub>2</sub>
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \* VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any. no
- \* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- \* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification
- I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- Name: Hugh Ingram Title: Conservation Coordinator  
Signature: [Signature] Date: 12-22-81
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal. \_\_\_\_\_

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate Division district office.

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 3

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

## III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

## XIV. PROOF OF NOTICE

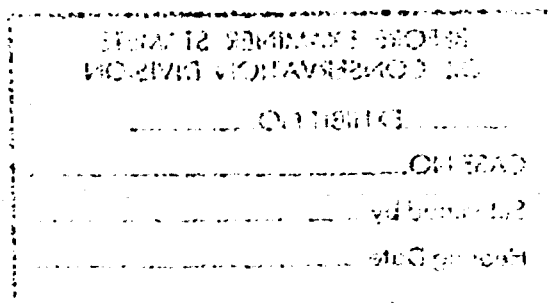
All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2068, Santa Fe, New Mexico 87501 within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.



## INJECTION WELL DATA SHEET

| OPERATOR     | WELL NO. | FOOTAGE LOCATION      | SECTION           | DESCRIPT | RANGE |
|--------------|----------|-----------------------|-------------------|----------|-------|
| CONOCO, INC. | 80       | 1980' FNL & 1980' FEL | WARREN UNIT<br>33 | 20S      | 38E   |

## Schematic

## Tubular Data

2-3/8" tubing

8-5/8" @ 1480'

Packer @ 5700'

Perforated  
5815'  
to  
6043'

5 1/2" @ 6170'

## Surface Casing

Size 8-5/8" Cemented with 790 sx.IOC SURFACE feet determined by CIRCULATIONHole size 12 1/2"

## Intermediate Casing

Size NONE" Cemented with \_\_\_\_\_ sx.

IOC \_\_\_\_\_ feet determined by \_\_\_\_\_

Hole size \_\_\_\_\_

## Long string

Size 5 1/2" Cemented with 2010 sx.IOC SURFACE feet determined by CIRCULATIONHole size 7-7/8"Total depth 6173'

## Injection interval

5815 feet to 6043 feet  
(perforated or open-hole, indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a  
(material)  
BAKER MODEL AD-1 packer at 5700 feet  
(brand and model)  
(or describe any other casing-tubing seal).

## Other Data

- Name of the injection formation BLINEBRY
- Name of field or Pool (if applicable) BLINEBRY OIL AND GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled? OIL AND GAS PRODUCTION.
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)  
NO
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.  
NONE

BEFORE EXAMINER STAMETS  
U.S. CONSERVATION DIVISION

EXHIBIT NO. 4

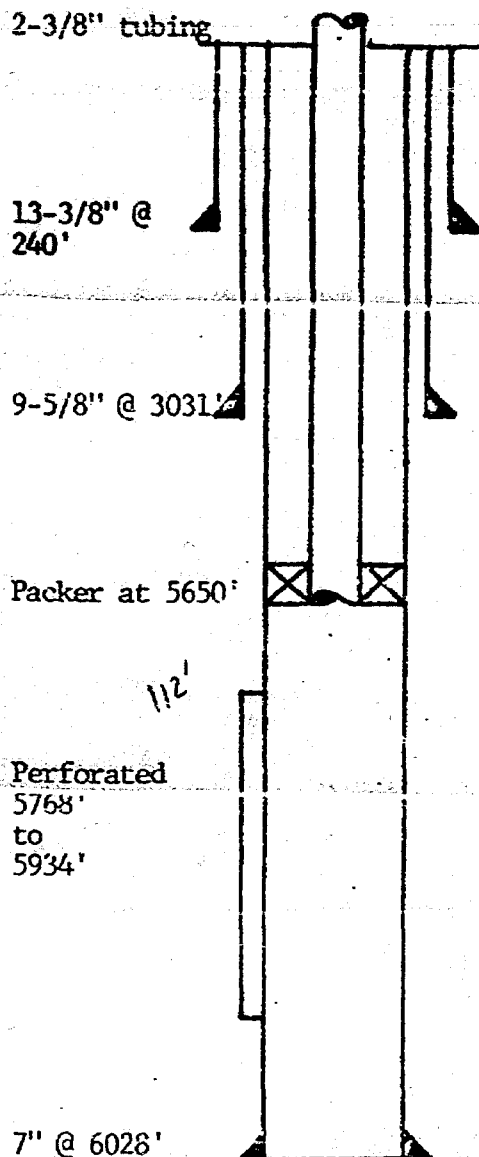
CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

## INJECTION WELL DATA SHEET

|              |                      |             |          |       |
|--------------|----------------------|-------------|----------|-------|
| OPERATOR     |                      | LEASE       |          |       |
| CONOCO, INC. |                      | WARREN UNIT |          |       |
| WELL NO.     | FOOTAGE LOCATION     | SECTION     | TOWNSHIP | RANGE |
| 20           | 1980' FNL & 660' FWL | 34          | 20S      | 38E   |

SchematicTubular DataSurface CasingSize 13-3/8 " Cemented with 265 sx.TOC SURFACE feet determined by CIRCULATIONHole size 17 1/2Intermediate CasingSize 9-5/8 " Cemented with 1238 sx.TOC 800 feet determined by TEMP SURVEYHole size 12 1/2Long stringSize 7 " Cemented with 504 sx.TOC 2400 feet determined by TEMP SURVEYHole size 8-3/4Total depth 6030'Injection interval5768 feet to 5934 feet  
(perforated or open hole, indicate which)Tubing size 2-3/8" lined with PLASTIC set in a  
(material)BAKER MODEL AD-1 packer at 5650 feet  
(brand and model)

(or describe any other casing-tubing seal).

Other Data

- Name of the injection formation BLINEBRY
- Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled? \_\_\_\_\_

OIL AND GAS PRODUCTION

- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) \_\_\_\_\_

NO

- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area. \_\_\_\_\_

NONE

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 5

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

CONOCO INC.

WARREN UNIT

17

1980' FSL &amp; 660' FEL

33

20S

38E

## Schematic

## Lubricator Data

2-3/8" tubing

10-3/4"  
@ 289'

7-5/8" @ 3049'

Packer @ 5700'

100'

Perforated  
5800'  
to  
6030'

5 1/2" @ 6011'

## Surface Casing

Size 10-3/4"

Cemented with 250

100 SURFACE

feet determined by CIRCULATION

Hole size 12 1/4"

## Intermediate Casing

Size 7-5/8"

Cemented with 1045

100 800

feet determined by TEMP SURVEY

Hole size 9-7/8"

## Liner string

Size 5 1/2"

Cemented with 730

100 SURFACE

feet determined by CIRCULATION

Hole size 6-3/4"

Total depth 6012

## Injection interval

5800 feet to 6030' feet  
(perforated ~~as per hole~~ indicate which)NOTE: ON CONVERSION, THIS WELL WILL BE DEEPEINED TO A  
TD OF 6050' AND PERFORATED 5986'-6030'

Tubing size 2-3/8" lined with PLASTIC set in a

(material)

BAKER MODEL AD-1

(brand and model)

packer at 5700 feet

(or describe any other casing tubing seal).

## Other Data

1. Name of the injection formation BLINEBRY

2. Name of field or pool (if applicable) BLINEBRY OIL &amp; GAS POOL

3. Is this a new well drilled for injection? ☒ Yes ☒ No

If no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) 6586)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (Boyle) in this area.

NONE

EXHIBIT 6

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 6

CASE NO. 7466

Submitted by Comoco Inc.

Hearing Date 1-22-82

|                                 |                                                      |                      |                        |                     |
|---------------------------------|------------------------------------------------------|----------------------|------------------------|---------------------|
| OPERATOR<br><b>CONOCO, INC.</b> | LEASE<br><b>WARREN UNIT</b>                          |                      |                        |                     |
| WELL NO.<br><b>75</b>           | PORTAGE LOCATION<br><b>1980' FSL &amp; 1980' FWL</b> | SECTION<br><b>34</b> | TOWNSHIP<br><b>20S</b> | RANGE<br><b>38E</b> |

## Schematic

## Tabular Data

2-3/8" tubing

8-5/8" @ 1500'

Packer @ 5700'

112'

Perforated  
5812'  
to  
6023'

5 1/2" @ 6130'

## Surface Casing

Size 8-5/8 " Cemented with 730 "sx.IOC SURFACE feet determined by CIRCULATIONHole size 12 1/2

## Intermediate Casing

Size NONE " Cemented with        "sx.IOC        feet determined by       Hole size       

## Long string

Size 5 1/2 " Cemented with 577 "sx.IOC SURFACE feet determined by CIRCULATIONHole size 7-7/8Total depth 6130'

## Injection interval

5812 feet to 6023 feet  
(perforated or ~~open hole~~, indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a  
(material)  
BAKER MODEL AD-1 packer at 5700 feet  
(brand and model)  
(or describe any other casing-tubing seal).

## Other Data

- Name of the injection formation BLINEBRY
- Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled?

## OIL AND GAS PRODUCTION

- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 7

CASE NO. 7166

Submitted by Conoco Inc.

Hearing Date 1-22-82

CONOCO INC.

WARREN UNIT

16

660' FSL &amp; 1980' FEL

33

20S

38E

Schematic

Logular Data

2-3/8" tubing

10-3/4" @  
274'7-5/8" @  
3049'

Packer @ 5650'

124'

Perforated  
5778'  
to  
6008'

5 1/2" @ 6049'

## Surface Casing

Size 10-3/4" Cemented with 250 EX.  
 100 SURFACE feet determined by CIRCULATION  
 Hole size 12 1/2

## Intermediate Casing

Size 7-5/8" Cemented with 1111 EX.  
 100 250 feet determined by TEMP SURVEY  
 Hole size 9-7/8

## Long string

Size 5 1/2 Cemented with 541 EX.  
 100 SURFACE feet determined by CIRCULATION  
 Hole size 6-3/4

Total depth 6050'

## Injection interval

5778 feet to 6008 feet  
 (perforated or open hole, indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a

BAKER MODEL AD-1

(brand and model)

packer at 5650 feet

(or describe any other casing-tubing seal).

## Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or pool (if applicable) BLINEBRY OIL AND GAS POOL
3. Is this a new well drilled for injection? ☒ Yes ☒ No  
 if no, for what purpose was the well originally drilled?

## OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 8

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

COMPANY

FIELD

CONOCO INC.

WARREN UNIT

WELL NO.

COURSE LOCATION

SECTION

TOWNSHIP

RANGE

14

660' FSL &amp; 660' FWL

34

20S

38E

## Schematic

## Logular Data

2-3/8" tubing

10-3/4" @  
256'

7-5/8" @ 3051'

Packer @ 5650'

Perforated  
5778'  
to  
6006'

5 1/2" @ 6019'

## Surface Casing

Size 10-3/4" Cemented with 250 sv.

TUC SURFACE feet determined by CIRCULATION

Hole size 12 1/2"

## Intermediate Casing

Size 7-5/8" Cemented with 1150 sv.

TUC 1290 feet determined by TEMP SURVEY

Hole size 9-7/8"

## Long string

Size 5 1/2" Cemented with 336 sv.

TUC 3350 feet determined by TEMP SURVEY

Hole size 6-3/4"

Total depth 6020'

## Injection interval

5778 feet to 6006 feet  
(perforated ~~or not~~ indicate which)

Tubing size 2-3/8" lined with PLASTIC (material) set in a

BAKER MODEL AD-1

(brand and model)

packer at 5650 feet

(or describe any other casing-tubing seal).

## Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
3. Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled? OIL AND GAS PRODUCTION
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used).  
NO
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.  
NONE

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 9

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

CONOCO INC.

WARREN UNIT

13

660' FSL &amp; 1980' FEL

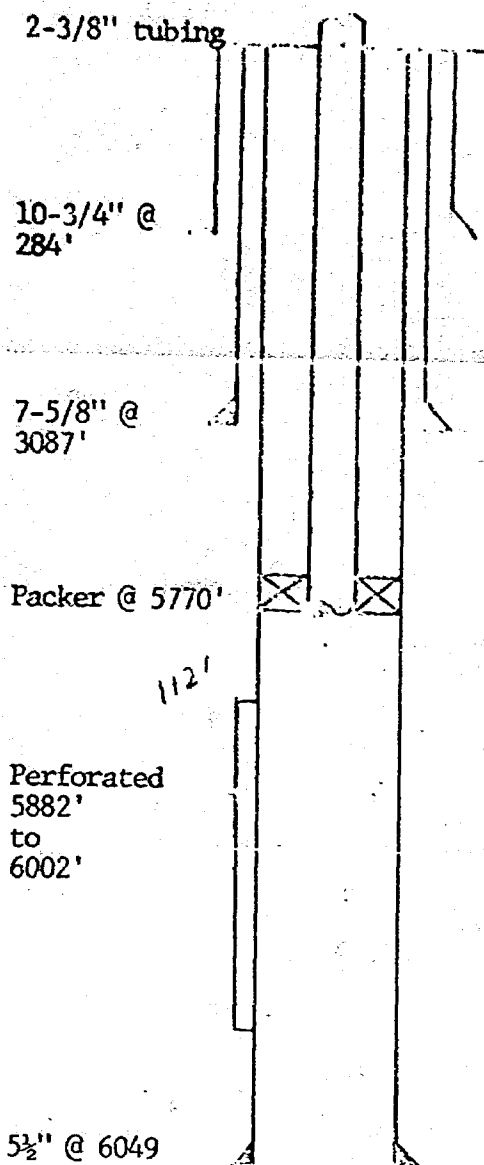
34

20S

38E

Schematic

Log Data



## Surface casing

Size 10-3/4 " Cemented with 250 sy.  
 TOC SURFACE feet determined by CIRCULATION

Hole size 12 1/2

## Intermediate casing

Size 7-5/8 " Cemented with 1255 sy.  
 TOC 30 feet determined by TEMP SURVEY

Hole size 9-7/8

## Long string

Size 5 1/2 " Cemented with 466 sy.  
 TOC 3355 feet determined by TEMP SURVEY

Hole size 6-3/4Total depth 6050'

## Injection interval

5882 feet to 6002 feet  
 (perforated ~~or open hole~~ indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a  
 (material)

BAKER MODEL AD-1 packer at 5770 feet  
 (brand and model)

(or describe any other casing-tubing seal).

## Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or Pool (if applicable) BLINEBRY OIL & GAS POOL
3. Is this a new well drilled for injection? ☐ Yes ☒ No  
 If no, for what purpose was the well originally drilled?

## OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 10

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

CONOCO INC.

HAWK B-3

WELL NO.

LOCATION

SECTION

TOWNSHIP

RANGE

15

660' FNL &amp; 1980' FEL

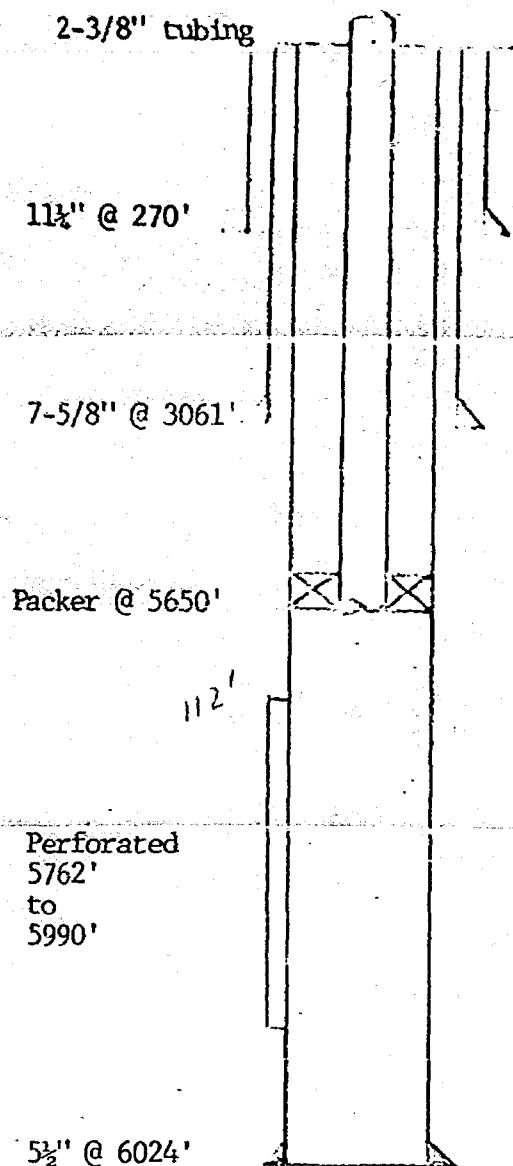
3

21S

37E

## Schematic

## Factual Data



## Surface Casing

Size 11-1/2 " Cemented with 375 ex.TOC SURFACE feet determined by CIRCULATIONHole size 17 1/2"

## Intermediate Casing

Size 7-5/8 " Cemented with 920 ex.TOC 1515 feet determined by TEMP SURVEYHole size 9-7/8"

## Long string

Size 5 1/2 " Cemented with 389 ex.TOC 3190 feet determined by TEMP SURVEYHole size 6-3/4"Total depth 6025'

## Injection interval

5762 feet to 5990 feet  
(perforated or open hole; indicate which)Tubing size 2-3/8" lined with PLASTIC set in a

(material)

BAKER MODEL AD-1packer at 5650 feet

(brand and model)

(or describe any other casing-tubing seal).

## Other Data

1. Name of the injection formation BLINEBRY2. Name of field or pool (if applicable) BLINEBRY OIL AND GAS POOL3. Is this a new well drilled for injection? ☐ Yes ☒ No

if no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION4. Has the well ever been perforated in any other zone(s)? YES all even perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used). 2500' 1980' 1980'NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (points) in this area.

NONE

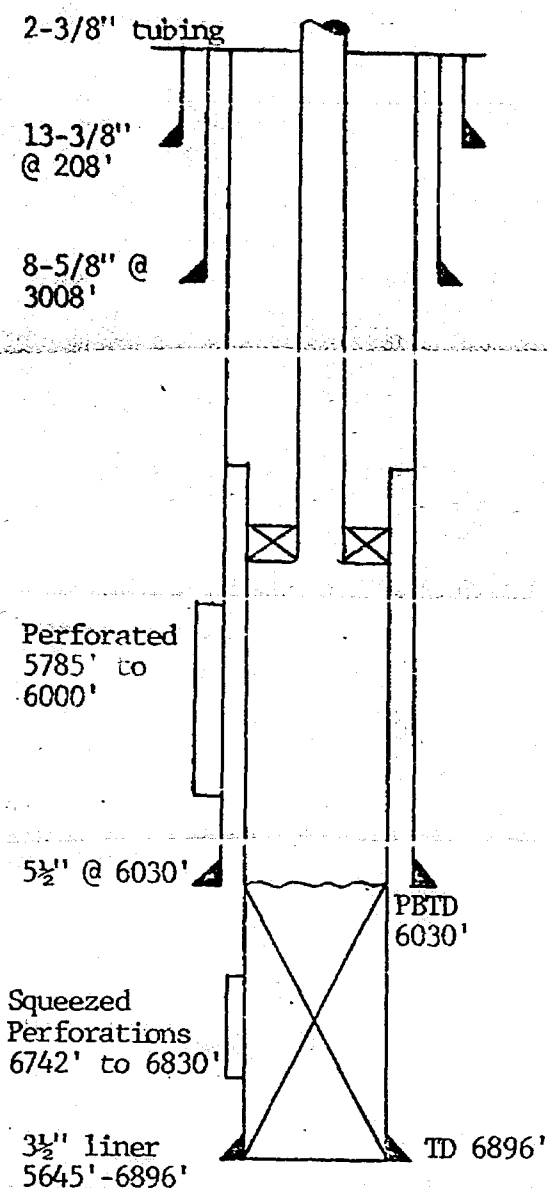
BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 11  
CASE NO. 7466  
Submitted by Conoco Inc.  
Hearing Date 1-22-82

| OPERATOR          |                     | LEASE   |          |       |
|-------------------|---------------------|---------|----------|-------|
| SOUTHLAND ROYALTY |                     | STATE   |          |       |
| WELL NO.          | FOOTAGE LOCATION    | SECTION | TOWNSHIP | RANGE |
| 6                 | 906' FNL & 660' FWL | 2       | 21S      | 37E   |

## Schematic

## Tubular Data



## Surface Casing

Size 13-3/8 " Cemented with 240 sx.TOC SURFACE feet determined by CIRCULATIONHole size 17 1/2"

## Intermediate Casing

Size 8-5/8 " Cemented with 1750 sx.TOC SURFACE feet determined by CIRCULATIONHole size 11"

## Long string

Size 5 1/2 " Cemented with 250 sx.TOC 4780 feet determined by TEMP SURVEYHole size 7-7/8"Total depth 6030' (original)

## Injection interval

5785 feet to 6000 feet  
(perforated or open hole, indicate which)

## LINER- HOLE DEEPEMED AND LINER SET FOR RECOMPLETION TO DRINKARD.

Size 3 1/2 " Cemented with 100 SX.TOC 5645 feet determined by CIRCULATIONHole Size 4-3/4Total Depth 6896'

NOTE: ON CONVERSION, THIS WELL WILL BE PLUGGED BACK TO 6030' AND REPERFORATED FROM 5785'-6000'.

Tubing size 2-3/8" lined with PLASTIC set in a  
(material)  
BAKER MODEL AD-1 packer at 5650 feet  
(brand and model)

(or describe any other casing-tubing seal).

## Other Data

- Name of the injection formation BLINEBRY
- Name of field or Pool (if applicable) BLINEBRY OIL AND GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION

- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used).

YES, DRINKARD FORMATION: PERFORATED 6742'-6830' & CURRENTLY PRODUCING 1.5 BOPD  
AND 10 MCFGPD FROM THE DRINKARD (7-81)

- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

DRINKARD: TOP OF PAY AT 6742'

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 12  
CASE NO. 7466  
Submitted by Conoco Inc.  
Hearing Date 1-22-82

WELLS WHICH PENETRATE THE PROPOSED INJECTION ZONE

| COMPANY, WELL AND LOCATION                   | TYPE WELL | DATE DRILLED | T.D.  | CONSTRUCTION             |                     |                    |                            | INTERVAL                                          | RECORD OF TREATMENTS |                         |
|----------------------------------------------|-----------|--------------|-------|--------------------------|---------------------|--------------------|----------------------------|---------------------------------------------------|----------------------|-------------------------|
|                                              |           |              |       | SIZE CSG.                | DEPTH               | NO. SX CEMENT USED | TOP OF CEMENT              |                                                   | ACIDIZE NO. GALLONS  | SAND PRAC NO. LBS. SAND |
| CONOCO INC.<br>Hawk B-3 No. 2<br>O-3-21S-37E | 0         | 1-53         | 8114' | 13 3/8<br>9 5/8<br>7     | 250<br>3133<br>8113 | 250<br>1370<br>940 | Surface<br>Surface<br>2950 | 7795-8090 (Sqzd)<br><br>5796-6079                 | 1250<br><br>2000     | 12,000<br><br>10,000    |
| Hawk B-3 No. 3<br>P-3-21S-37E                | 0         | 1-52         | 8010' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8009 | 250<br>1045<br>573 | Surface<br>585<br>Surface  | 7677-7843                                         | 500                  | -                       |
| Hawk B-3 No. 5<br>R-3-21S-37E                | 0         | 3-52         | 8025' | 10 3/4<br>7 5/8<br>5 1/2 | 274<br>3147<br>8024 | 225<br>1150<br>625 | Surface<br>650<br>3200     | 7700-7856 (Sqzd)<br><br>5646-5997                 | 500<br><br>7000      | 12,000<br><br>72,400    |
| Hawk B-3 No. 8<br>P-3-21S-37E                | 0         | 6-51         | 8191' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8187 | 250<br>1210<br>650 | Surface<br>975<br>3115     | 8062-8172 (Sqzd)<br>6360-6420 (Sqzd)<br>6265-6337 | 9500<br>1000<br>1000 | -<br>6,000<br>6,000     |
| Hawk B-3 No. 10<br>O-3-21S-37E               | 0         | 10-52        | 8302' | 13 3/8<br>9 5/8<br>7     | 269<br>3149<br>8301 | 260<br>1408<br>940 | Surface<br>600<br>3125     | 8166-8260 (Sqzd)<br><br>6660-6760                 | 12000<br><br>7000    | 10,000<br><br>20,000    |
| Hawk B-3 No. 12<br>R-3-21S-37E               | 0         | 3-50         | 6747' | 13 3/8<br>9 5/8<br>7     | 199<br>2969<br>6746 | 250<br>1525<br>875 | Surface<br>725<br>3000     | 6625-6689<br><br>5670-5860                        | 1000<br><br>4000     | -<br><br>-              |
| Hawk B-3 No. 14<br>A-3-21S-37E               | 0         | 12-54        | 6020' | 10 3/4<br>7 5/8<br>5 1/2 | 290<br>3038<br>6019 | 300<br>1150<br>310 | Surface<br>650<br>3650     | 5758-84<br>5826-76<br>5960-82                     | 1000<br>1000<br>1000 | 6,000<br>6,000<br>6,000 |
| Hawk B-3 No. 15<br>B-3-21S-37E               | 0         | 11-55        | 6025' | 11 3/4<br>7 5/8<br>5 1/2 | 270<br>3061<br>6024 | 375<br>920<br>389  | Surface<br>1515<br>3190    | 5762-5990                                         | 3000                 | 18,000                  |

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 13

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

| COMPANY, WELL AND LOCATION         | TYPE WELL | DATE DRILLED | T.D. | CONSTRUCTION                  |                                  |                         |                                 | RECORD OF TREATMENTS                              |                        |                            |  |
|------------------------------------|-----------|--------------|------|-------------------------------|----------------------------------|-------------------------|---------------------------------|---------------------------------------------------|------------------------|----------------------------|--|
|                                    |           |              |      | SIZE CSG.                     | DEPTH                            | NO. SX. CEMENT USED     | TOP OF CEMENT                   | INTERVAL                                          | NO. GALLONS ACIDIZED   | SAND FRAC NO. LBS. SAND    |  |
| Hawk B-3 No. 16<br>C-3-21S-37E     | 0         | 11-56        | 6410 | 10 3/4<br>7 5/8<br>5 1/2<br>4 | 265<br>3049<br>6479<br>3237-6920 | 265<br>903<br>503<br>34 | Surface<br>1740<br>2903<br>6234 | 5770-5886 (Sqzd)<br>6343-6406 (Sqzd)<br>6697-6741 | 2000<br>2000<br>1250   | 12,000<br>10,000<br>40,000 |  |
| Hawk B-3 No. 17<br>D-3-21S-37E     | 0         | 4-57         | 6010 | 10 3/4<br>7 5/8<br>5 1/2      | 259<br>3154<br>6010              | 253<br>1503<br>353      | Surface<br>1525<br>3025         | 5750-5966                                         | 4000                   | 21,000                     |  |
| Hawk B-3 No. 18<br>G-3-21S-37E     | 0         | 4-57         | 5913 | 10 3/4<br>7 5/8<br>5 1/2      | 268<br>3119<br>5974              | 253<br>1153<br>403      | Surface<br>1150<br>400          | 5700-5925<br>5754-5941 (Sqzd)<br>5824-5956        | 250<br>3000<br>2000    | -<br>12,000<br>40,000      |  |
| Hawk B-3 No. 19<br>H-3-21S-37E     | 0         | 5-58         | 6830 | 13 3/8<br>9 5/8<br>7          | 211<br>3029<br>6829              | 253<br>1213<br>770      | Surface<br>820<br>3038          | 5753-5980<br>6338-6428 (Sqzd)<br>6610-6782 (Sqzd) | 2000<br>2500<br>15,500 | 15,000<br>10,000<br>-      |  |
| Hawk B-3 No. 20<br>P-3-21S-37E     | 0         | 11-49        | 6782 | 13 3/8<br>9 5/8<br>7          | 222<br>2819<br>6781              | 250<br>650<br>675       | Surface<br>875<br>3272          | 5783-6042<br>6642-6708 (Sqzd)                     | 3000<br>2000           | 18,000<br>-                |  |
| Hawk B-3 No. 22<br>L-3-21S-37E     | 0         | 11-62        | 6800 | 9 5/8<br>7                    | 1310<br>6800                     | 625<br>650              | Surface<br>2200                 | 5607-6039<br>6149-6471 (Sqzd)<br>6526-6686 (Sqzd) | 4000<br>1500<br>13,500 | 47,500<br>20,000<br>13,000 |  |
| Hawk B-3 No. 23<br>A-4-21S-37E     | 0         | 6-57         | 5950 | 10 3/4<br>7 5/8<br>5 1/2      | 270<br>3149<br>5950              | 250<br>1150<br>400      | Surface<br>1425<br>3100         | 5758-5902                                         | 2000                   | 11,250                     |  |
| Hawk B-3 No. 24<br>G-3-21S-37E     | 0         | 4-80         | 6875 | 8 5/8<br>5 1/2                | 1395<br>6875                     | 674<br>2782             | Surface<br>Surface              | 6541-6782                                         | 21,672                 | -                          |  |
| Warren Unit No. 12<br>N-34-20S-38E | 0         | 9-54         | 6198 | 10 3/4<br>7 5/8<br>5 1/2      | 252<br>3049<br>6197              | 250<br>1120<br>415      | Surface<br>600<br>2885          | 5814-6160                                         | 10,000                 | 18,000                     |  |
| Warren Unit No. 13<br>O-34-20S-38E | 0         | 10-54        | 6050 | 10 3/4<br>7 5/8<br>5 1/2      | 284<br>3087<br>6049              | 250<br>1255<br>466      | Surface<br>30<br>3355           | 5882-6002                                         | 2000                   | 8,000                      |  |

| COMPANY, WELL AND LOCATION         | TYPE DATE | T. D. | CONSTRUCTION             |                     |                    |                               | RECORD OF TREATMENTS                |                      |                          |
|------------------------------------|-----------|-------|--------------------------|---------------------|--------------------|-------------------------------|-------------------------------------|----------------------|--------------------------|
|                                    |           |       | SIZE CSC.                | DEPTH               | NO. SX. CEMENT USE | TOP OF CEMENT                 | INTERVAL                            | ACIDIZED NO. GALLONS | SAND FRAC. NO. LBS. SAND |
| Warren Unit No. 14<br>M-34-20S-38E | 0 12-54   | 6620  | 10 3/4<br>7 5/8<br>5 1/2 | 256<br>3051<br>6019 | 250<br>1150<br>330 | Surface<br>1290<br>3350       | 5778-6006                           | 2000                 | 10,000                   |
| Warren Unit No. 15<br>P-33-20S-38E | 0 2-55    | 6050  | 10 3/4<br>7 5/8<br>5 1/2 | 249<br>3049<br>6048 | 250<br>1150<br>680 | Surface<br>Surface<br>Surface | 5780-6014 (Sqzd)<br>5806-6010       | 1500<br>2000         | 10,000<br>21,000         |
| Warren Unit No. 16<br>O-33-20S-38E | 0 3-55    | 6050  | 10 3/4<br>7 5/8<br>5 1/2 | 274<br>3049<br>6049 | 250<br>1111<br>541 | Surface<br>250<br>Surface     | 5778-6006                           | 1500                 | 28,000                   |
| Warren Unit No. 17<br>I-33-20S-38E | 0 6-55    | 6012  | 10 3/4<br>7 5/8<br>5 1/2 | 289<br>3049<br>6011 | 250<br>1045<br>730 | Surface<br>800<br>Surface     | 5800-5968                           | 2000                 | -                        |
| Warren Unit No. 18<br>L-34-20S-38E | 0 9-55    | 6018  | 13 3/8<br>9 5/8<br>7     | 263<br>3049<br>6007 | 250<br>954<br>540  | Surface<br>1450<br>2890       | 5796-5999                           | 3000                 | 18,000                   |
| Warren Unit No. 19<br>H-33-20S-38E | 0 10-55   | 5912  | 13 3/8<br>9 5/8<br>7     | 286<br>3048<br>5984 | 250<br>1225<br>511 | Surface<br>750<br>2935        | 5784-5942                           | 7000                 | 18,000                   |
| Warren Unit No. 20<br>E-34-20S-38E | 0 11-55   | 6010  | 13 3/8<br>9 5/8<br>7     | 240<br>3031<br>6028 | 265<br>1238<br>504 | Surface<br>800<br>2400        | 5768-5934                           | 3000                 | -                        |
| Warren Unit No. 21<br>B-33-20S-38E | 0 11-56   | 6710  | 13 3/8<br>9 5/8<br>7     | 274<br>3049<br>6699 | 300<br>1500<br>400 | Surface<br>1225<br>4825       | 5816-5952                           | 2000                 | 2,000                    |
| Warren Unit No. 26<br>M-27-20S-38E | 0 4-58    | 6810  | 13 3/8<br>9 5/8<br>7     | 257<br>3132<br>6679 | 300<br>2000<br>240 | Surface<br>900<br>4200        | 5786-6202<br>6345-6586<br>6679-6800 | 3900<br>-<br>10000   | -<br>-<br>-              |

| Page 4                                |           |              | CONSTRUCTION |                          |                          |                     | RECORD OF TREATMENTS          |                               |                      |                         |
|---------------------------------------|-----------|--------------|--------------|--------------------------|--------------------------|---------------------|-------------------------------|-------------------------------|----------------------|-------------------------|
| COMPANY, WELL AND LOCATION            | TYPE WELL | DATE DRILLED | T.D.         | SIZE CSG.                | DEPTH                    | NO. SX. CEMENT USED | TOP OF CEMENT                 | INTERVAL                      | ACIDIZED NO. GALLONS | SAND FRAC NO. LBS. SAND |
| Warren Unit No. 34<br>C-34-20S-38E    | 0         | 8-75         | 6975         | 9 5/8<br>7               | 1470<br>6975             | 600<br>1225         | Surface<br>2425               | 5815-79<br>6538-6625          | -<br>-               | -                       |
| Warren Unit No. 38<br>F-34-20S-38E    | 0         | 12-75        | 7045         | 9 5/8<br>7               | 1500<br>7040             | 600<br>900          | Surface<br>2500               | 5805-92<br>6504-6663 (Sqzd)   | 1350<br>1800         | 40,000<br>40,000        |
| Warren Unit No. 75<br>K-34-20S-38E    | 0         | 8-79         | 6130         | 8 5/8<br>5 1/2           | 1500<br>6130             | 730<br>577          | Surface<br>Surface            | 5612-6023<br>5734-73 (Sqzd)   | 4800<br>-            | 35,000<br>-             |
| Warren Unit No. 76<br>J-33-20S-38E    | 0         | 6-79         | 6150         | 8 5/8<br>5 1/2           | 1425<br>6150             | 700<br>1693         | Surface<br>Surface            | 5815-6080                     | 5000                 | 132,000                 |
| Warren Unit No. 80<br>C-33-20S-38E    | 0         | 6-80         | 6173         | 8 5/8<br>5 1/2           | 1480<br>6170             | 790<br>2010         | Surface<br>Surface            | 5815-6043                     | 2100                 | 146,000                 |
| Warren Unit No. 84<br>C-33-20S-38E    | 0         | 10-81        | 6170         | 8 5/8<br>5 1/2           | 1447<br>6170             | 700<br>1100         | Surface<br>3800               | 5792-6078                     | 1500                 | 111,000                 |
| GULF OIL CORPORATION                  |           |              |              |                          |                          |                     |                               |                               |                      |                         |
| Harry Leonard F No. 10<br>C-2-21S-37E | 0         | 5-54         | 5950         | 13 3/8<br>8 5/8<br>5 1/2 | 375<br>3024<br>5844      | 425<br>1550<br>560  | Surface<br>317<br>3100        | 5844-5950                     | 7000                 | 80,000                  |
| SHELL OIL COMPANY                     |           |              |              |                          |                          |                     |                               |                               |                      |                         |
| Livingston No. 8<br>N-3-21S-37E       | 0         | 9-52         | 8030         | 13 3/8<br>8 5/8<br>5 1/2 | 215<br>3153<br>4336-7000 | 250<br>1600<br>810  | Surface<br>Surface<br>4330    | 6500-6686<br>5655-5854        | 19,600<br>18,000     | 63,000<br>20,000        |
| State Sec. 2 No. 2<br>L-2-21S-37E     | 0         | 10-49        | 6760         | 13 3/8<br>8 5/8<br>5 1/2 | 224<br>2936<br>6660      | 300<br>2000<br>600  | Surface<br>Surface<br>Surface | 6660-6760<br>6592-6639        | 1500<br>2000         | -<br>23,392             |
| State Sec. 2 No. 8<br>L-2-21S-37E     | 0         | 11-51        | 8156         | 13 3/8<br>8 5/8<br>5 1/2 | 219<br>3149<br>2969-8018 | 250<br>2000<br>875  | Surface<br>Surface<br>Surface | 5691-5945<br>8018-8156 (Sqzd) | 9000<br>1000         | 49,700<br>-             |

|                                    |           |              |      | CONSTRUCTION             |                          |                    |                            | RECORD OF TREATMENTS                       |                        |                         |  |
|------------------------------------|-----------|--------------|------|--------------------------|--------------------------|--------------------|----------------------------|--------------------------------------------|------------------------|-------------------------|--|
| COMPANY, WELL AND LOCATION         | WELL TYPE | DATE DRILLED | T.D. | SIZE                     | DEPTH                    | NO. SX CEMENT USED | TOP OF CEMENT              | INTERVAL                                   | NO. GALLONS ACIDIZE    | NO. LBS. SAND SAND FRAC |  |
|                                    |           |              |      | CSC.                     |                          |                    |                            |                                            |                        |                         |  |
| State Sec. 2 No. 11<br>L-2-21S-37E | 0         | 1-52         | 8015 | 13 3/8<br>8 5/8<br>5 1/2 | 211<br>3140<br>2926-8014 | 250<br>2000<br>850 | Surface<br>Surface<br>2400 | 6408-6562<br><br>7698-7850 (Sqzd)          | 2000<br><br>-          | 15,000<br><br>-         |  |
| State Sec. 2 No. 15<br>K-2-21S-37E | 0         | 6-52         | 8147 | 13 3/8<br>8 5/8<br>5 1/2 | 728<br>3148<br>2950-8010 | 250<br>1600<br>870 | Surface<br>Surface<br>2900 | 8010-8147 (Sqzd)<br>7048-7255<br>6381-6500 | 5500<br>29,700<br>6800 | -<br>8,500<br>25,000    |  |
| State Sec. 2 No. 17<br>K-2-21S-37E | 0         | 7-54         | 5952 | 13 3/8<br>8 5/8<br>5 1/2 | 250<br>3126<br>5816      | 250<br>1500<br>100 | Surface<br>Surface<br>5101 | 5721-5952                                  | 15,500                 | 70,000                  |  |
| Taylor Glenn No. 1<br>K-3-21S-37E  | 0         | 9-47         | 8590 | 13 3/8<br>8 5/8<br>5 1/2 | 301<br>3879<br>8060      | 250<br>3000<br>675 | Surface<br>Surface<br>2915 | 5649-5850<br>6491-6730                     | 17,600<br>10,700       | 25,000<br>43,000        |  |
| Taylor Glenn No. 2<br>I-3-21S-37E  | 0         | 2-50         | 6780 | 13 3/8<br>8 5/8<br>5 1/2 | 222<br>2920<br>6665      | 300<br>2200<br>600 | Surface<br>Surface<br>6620 | 6147-6435<br>6574-6780                     | 1250<br>5800           | 85,000<br>40,000        |  |
| Taylor Glenn No. 3<br>I-3-21S-37E  | 0         | 11-51        | 8224 | 13 3/8<br>8 5/8<br>5 1/2 | 219<br>3150<br>2960-8102 | 250<br>2000<br>800 | Surface<br>Surface<br>2960 | 5800-6045<br>8102-8224                     | 22,000<br>1500         | 29,000<br>-             |  |
| Taylor Glenn No. 4<br>I-3-21S-37E  | 0         | 5-52         | 8119 | 13 3/8<br>8 5/8<br>5 1/2 | 200<br>3147<br>2999-8115 | 250<br>2200<br>875 | Surface<br>Surface<br>2990 | 7804-8082                                  | 2000                   | 48,000                  |  |
| Taylor Glenn No. 5<br>J-3-21S-37E  | 0         | 10-52        | 8361 | 13 3/8<br>8 5/8<br>5 1/2 | 225<br>3147<br>2965-8355 | 250<br>2200<br>850 | Surface<br>Surface<br>2900 | 6583-6809<br>7905-75<br>8042-8291 (Sqzd)   | 13,000<br>1000<br>1000 | 57,000<br>30,000<br>-   |  |
| Taylor Glenn No. 6<br>J-3-21S-37E  | 0         | 7-52         | 6707 | 13 3/8<br>8 5/8<br>5 1/2 | 225<br>3147<br>2920-6660 | 250<br>2000<br>600 | Surface<br>Surface<br>2900 | 5663-6093<br>6660-6707                     | 9000<br>6000           | 55,500<br>-             |  |

| COMPANY, WELL AND LOCATION         | TYPE WELL | DRILLED | T.D. | CONSTRUCTION                      |                                  |                           |                                    | RECORD OF TREATMENTS                              |                        |                         |
|------------------------------------|-----------|---------|------|-----------------------------------|----------------------------------|---------------------------|------------------------------------|---------------------------------------------------|------------------------|-------------------------|
|                                    |           |         |      | SIZE CSG.                         | DEPTH                            | NO. SX CEMENT USED        | TOP OF CEMENT                      | INTERVAL                                          | NO. GALLONS ACIDIZED   | NO. LBS. SAND SAND FRAC |
| Taylor Glenn No. 7<br>H-4-21S-37E  | 0         | 9-56    | 5935 | 13 3/8<br>8 5/8<br>5 1/2          | 306<br>3150<br>5935              | 350<br>1400<br>150        | Surface<br>Surface<br>4961         | 5682-5862                                         | 10,700                 | 90,000                  |
| Taylor Glenn No. 8<br>E-3-21S-37E  | 0         | 11-56   | 5930 | 13 3/8<br>8 5/8<br>5 1/2          | 307<br>3150<br>5810              | 300<br>1200<br>200        | Surface<br>Surface<br>4512         | 5638-5930                                         | 4600                   | 20,000                  |
| Taylor Glenn No. 9<br>F-3-21S-37E  | 0         | 1-63    | 6000 | 7 5/8<br>4 1/2                    | 272<br>6000                      | 275<br>375                | Surface<br>Surface                 | 5655-5933                                         | 14,750                 | 58,500                  |
| Taylor Glenn No. 10<br>F-3-21S-37E | 0         | 2-75    | 6805 | 8 5/8<br>5 1/2                    | 1361<br>6805                     | 600<br>1025               | Surface<br>3300                    | 6182-6394<br>6574-6758                            | 2100<br>6300           | 49,000<br>49,000        |
| Taylor Glenn No. 11<br>E-3-21S-37E | 0         | 9-75    | 6870 | 8 5/8<br>5 1/2                    | 1380<br>6870                     | 400<br>860                | Surface<br>Surface                 | 6575-6752                                         | 9000                   | 42,000                  |
| SOUTHLAND ROYALTY                  |           |         |      |                                   |                                  |                           |                                    |                                                   |                        |                         |
| State No. 2<br>E-2-21S-37E         | 0         | 8-51    | 8620 | 13 3/8<br>9 5/8<br>5 1/2          | 171<br>3004<br>8519              | 165<br>1600<br>550        | Surface<br>Surface<br>4255         | 6525-6795<br>6627-7562 (Sqzd)                     | 20,700<br>-            | -                       |
| State No. 5<br>F-2-21S-37E         | 0         | 2-53    | 6850 | 13 3/8<br>8 5/8<br>5 1/2<br>3 1/2 | 200<br>3015<br>5980<br>5955-6850 | 225<br>1625<br>225<br>75  | Surface<br>Surface<br>4715<br>5955 | 5375-5439 (Sqzd)<br>5805-5945 (Sqzd)<br>6746-6832 | 3000<br>10,000<br>6000 | -<br>-<br>25,000        |
| State No. 6<br>D-2-21S-37E         | 0         | 3-54    | 6030 | 13 3/3<br>8 5/8<br>5 1/2<br>3 1/2 | 208<br>3008<br>6030<br>5645-6896 | 240<br>1750<br>250<br>100 | Surface<br>Surface<br>4780<br>5645 | 5785-6000 (Sqzd)<br>6742-6830                     | 6000<br>6500           | -<br>97,000             |

| COMPANY, WELL AND LOCATION | WELL TYPE | DRILLED | I.D. | CONSTRUCTION                      |                                  |                           | INTERVAL                        | RECORD OF TREATMENTS |                         |
|----------------------------|-----------|---------|------|-----------------------------------|----------------------------------|---------------------------|---------------------------------|----------------------|-------------------------|
|                            |           |         |      | SIZE CSC.                         | DEPTH                            | NO. SX CEMENT USED        | TOP OF CEMENT                   | ACIDIZED NO. GALLONS | SAND FRAC NO. LBS. SAND |
| State No. 7<br>C-2-21S-37E | 0         | 6-54    | 6061 | 13 3/8<br>8 5/8<br>5 1/2<br>3 1/2 | 215<br>3030<br>6030<br>5708-6945 | 250<br>1500<br>225<br>100 | Surface<br>2100<br>4930<br>5708 | 15,000<br>6,000      | 55,000                  |
| State No. 8<br>E-2-21S-37E | 0         | 1-56    | 3010 | 13 3/8<br>8 5/8<br>5 1/2          | 218<br>3092<br>6010              | 200<br>2200<br>200        | Surface<br>Surface<br>4200      | 8,000                | 130,000                 |
| State No. 9<br>F-2-21S-37E | G         | 7-62    | 5780 | 13 3/8<br>4 1/2                   | 329<br>5682                      | 325<br>570                | Surface<br>2560                 | 13,000               | 14,500                  |

UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO  
DATE : 11-02-81  
FIELD LEASE/WELL : WARREN BLINERY  
SAMPLING POINT :  
DATE SAMPLED : 10-29-81

SPECIFIC GRAVITY = 1.091  
TOTAL DISSOLVED SOLIDS = 135176  
PH = 7.25

|                  |            | ME/L    | MG/L   |
|------------------|------------|---------|--------|
| CATIONS          |            |         |        |
| CALCIUM          | (CA)+2     | 306.    | 6145.  |
| MAGNESIUM        | (MG)+2     | 173.    | 2107.  |
| SODIUM           | (NA).CALC. | 1871.   | 43022. |
| ANIONS           |            |         |        |
| BICARBONATE      | (HCO3)-1   | 3.6     | 219.   |
| CARBONATE        | (CO3)-2    | 0       | 0      |
| HYDROXIDE        | (OH)-1     | 0       | 0      |
| SULFATE          | (SO4)-2    | 35.3    | 1200   |
| CHLORIDES        | (CL)-1     | 2312.   | 81981. |
| DISSOLVED GASES  |            |         |        |
| CARBON DIOXIDE   | (CO2)      | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)      | 0       | 0      |
| OXYGEN           | (O2)       | NOT RUN | 0.17.0 |
| IRON(TOTAL)      | (FE)       |         | 5.6    |
| BARIUM           | (BA)+2     | NOT RUN |        |
| STRONTIUM        | (SR)+2     | NOT RUN |        |

SCALING INDEX

TEMP

CARBONATE INDEX  
CALCIUM CARBONATE SCALING  
  
SULFATE INDEX  
CALCIUM SULFATE SCALING

30C  
56F  
.919  
LIKELY  
  
-.07  
UNLIKELY

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 14

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

## UNICAM INTERNATIONAL

401 NORTH LEECH

P O BOX 1499

MOORE, NEW MEXICO 86240

COMPANY : CONOCO  
 DATE : 11-3-81  
 FIELD LEASEWELL : SEWAGE EFFLUENT  
 SAMPLING POINT :  
 DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1  
 TOTAL DISSOLVED SOLIDS = 1055  
 PH = 7.39

|                  |             | ME/L    | MG/L |
|------------------|-------------|---------|------|
| CATIONS          |             |         |      |
| CALCIUM          | (CA)+2      | 5       | 100  |
| MAGNESIUM        | (MG)+2      |         |      |
| SODIUM           | (NA), CALC. | 9.8     | 225  |
| ANIONS           |             |         |      |
| BICARBONATE      | (HCO3)-1    | 5       | 305  |
| CARBONATE        | (CO3)-2     | 0       | 0    |
| HYDROXIDE        | (OH)-1      | 0       | 0    |
| SULFATE          | (SO4)-2     | 2.3     | 112  |
| CHLORIDES        | (CL)-1      | 8.4     | 299  |
| DISSOLVED GASES  |             |         |      |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |      |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0    |
| OXYGEN           | (O2)        | NOT RUN |      |
| IRON(TOTAL)      | (FE)        |         | 2.6  |
| BARIUM           | (BA)+2      | NOT RUN |      |
| STRONTIUM        | (SR)+2      | NOT RUN |      |

## SCALING INDEX

## TEMP

|                           |          |
|---------------------------|----------|
|                           | 30C      |
|                           | 86F      |
| CARBONATE INDEX           | 1.57     |
| CALCIUM CARBONATE SCALING | LIKELY   |
| SULFATE INDEX             | -6.9     |
| CALCIUM SULFATE SCALING   | UNLIKELY |

BEFORE EXAMINER STAMETS  
 OIL CONSERVATION DIVISION

EXHIBIT NO. 15

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

## QUICKEM INTERNATIONAL

201 NORTH LEECH

P.O. BOX 1177

MOBES, NEW MEXICO 88240

COMPANY : CONOCO  
 DATE : 11-3-81  
 FIELD, LEASEWELL : SEWAGE EFFLUENT PLUS BRINE  
 SAMPLING POINT:  
 DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.029  
 TOTAL DISSOLVED SOLIDS = 43350  
 PH = 6.95

|                  |             | ME/L    | MG/L   |
|------------------|-------------|---------|--------|
| CATIONS          |             |         |        |
| CALCIUM          | (CA)+2      | 150.    | 3072.  |
| MAGNESIUM        | (MG)+2      | 33.3    | 103.   |
| SODIUM           | (NA), CALC. | 564.    | 12969. |
| ANIONS           |             |         |        |
| BICARBONATE      | (HCO3)-1    | 4.9     | 298.   |
| CARBONATE        | (CO3)-2     | 0       | 0      |
| HYDROXIDE        | (OH)-1      | 0       | 0      |
| SULFATE          | (SO4)-2     | 12.7    | 610    |
| CHLORIDES        | (CL)-1      | 733.    | 28974. |
| DISSOLVED GASES  |             |         |        |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0      |
| OXYGEN           | (O2)        | NOT RUN |        |
| IRON(TOTAL)      | (FE)        |         | 33     |
| BARIUM           | (BA)+2      | NOT RUN |        |
| STRONTIUM        | (SR)+2      | NOT RUN |        |

## SCALING INDEX

## TEMP

CARBONATE INDEX  
 CALCIUM CARBONATE SCALING

30C  
 86F  
 1.281  
 LIKELY

SULFATE INDEX  
 CALCIUM SULFATE SCALING

-1.8  
 UNLIKELY

BEFORE EXAMINER STAMETS  
 OIL CONSERVATION DIVISION

EXHIBIT NO. 16CASE NO. 7466Submitted by Conoco Inc.Hearing Date 1-22-82

UNICHEM INTERNATIONAL

601 NORTH LEECH

P O BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO

DATE : 11-2-81

FIELD: LEASEWELL : 50% WARREN BLINEBRY 50% SEWAGE EFFLUENT

SAMPLING POINT:

DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.06

TOTAL DISSOLVED SOLIDS = 89401

PH = 7.22

|                  |             | ME/L    | KG/L   |
|------------------|-------------|---------|--------|
| CATIONS          |             |         |        |
| CALCIUM          | (CA)+2      | 130     | 2605.  |
| MAGNESIUM        | (MG)+2      | 210     | 2552.  |
| SODIUM           | (NA), CALC. | 1236    | 25270. |
| ANIONS           |             |         |        |
| BICARBONATE      | (HCO3)-1    | 2       | 132.   |
| CARBONATE        | (CO3)-2     | 0       | 0      |
| HYDROXIDE        | (OH)-1      | 0       | 0      |
| SULFATE          | (SO4)-2     | 17.5    | 843.   |
| CHLORIDES        | (CL)-1      | 1551    | 54987. |
| DISSOLVED GASES  |             |         |        |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0      |
| OXYGEN           | (O2)        | NOT RUN |        |
| IRON(TOTAL)      | (FE)        |         | 4.7    |
| BARIUM           | (BA)+2      | NOT RUN |        |
| STRONTIUM        | (SR)+2      | NOT RUN |        |

SCALING INDEX

TEMP

30C

86F

.071

LIKELY

CARBONATE INDEX

CALCIUM CARBONATE SCALING

SULFATE INDEX

CALCIUM SULFATE SCALING

-2.4

UNLIKELY

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 17

CASE NO. 7466

Submitted by Conoco Inc

Hearing Date 1-22-82

UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

MORRIS, NEW MEXICO 88240

COMPANY : CONOCO

DATE : 11-3-81

FIELD : LEASEWELL : 50% WARREN GLINEERY 50% SEWAGE EFFLUENT PLUS BRINE

SAMPLING POINT:

DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.072

TOTAL DISSOLVED SOLIDS = 107045

PH = 7.2

|                  |            | ME/L    | MG/L   |
|------------------|------------|---------|--------|
| CATIONS          |            |         |        |
| CALCIUM          | (CA)+2     | 133.    | 2672   |
| MAGNESIUM        | (MG)+2     | 193.    | 2350.  |
| SODIUM           | (NA).CALC. | 1539.   | 35389. |
| ANIONS           |            |         |        |
| BICARBONATE      | (HCO3)-1   | 4.9     | 298.   |
| CARBONATE        | (CO3)-2    | 0       | 0      |
| HYDROXIDE        | (OH)-1     | 0       | 0      |
| SULFATE          | (SO4)-2    | 28.1    | 1350   |
| CHLORIDES        | (CL)-1     | 1833    | 64985. |
| DISSOLVED GASES  |            |         |        |
| CARBON DIOXIDE   | (CO2)      | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)      | 0       | 0      |
| OXYGEN           | (O2)       | NOT RUN |        |
| IRON(TOTAL)      | (FE)       |         | 65     |
| BARIUM           | (BA)+2     | NOT RUN |        |
| STRONTIUM        | (SR)+2     | NOT RUN |        |

SCALING INDEX

TEMP

CARBONATE INDEX  
CALCIUM CARBONATE SCALING

30C  
86F  
510  
LIKELY

SULFATE INDEX  
CALCIUM SULFATE SCALING

-1.3  
UNLIKELY

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 18

CASE NO. 71166

Submitted by Conoco Inc.

Hearing Date 1-22-82

## UNICHEM INTERNATIONAL

401 NORTH LEECH

P O BOX 1499

MOBBS, NEW MEXICO 88240

COMPANY : CONOCO

DATE : 11-02-81

FIELD LEASE & WELL : *Continental* WATER SALES FRESH WATER Well

SAMPLING POINT

DATE SAMPLED : 10-29-81

*Dallas MacGallin*

SPECIFIC GRAVITY = 1.001

TOTAL DISSOLVED SOLIDS = 2120

PH = 6.95

|                  |             | ME/L    | MG/L |
|------------------|-------------|---------|------|
| CATIONS          |             |         |      |
| CALCIUM          | (CA)+2      | 11.8    | 236. |
| MAGNESIUM        | (MG)+2      | 16.1    | 196. |
| SODIUM           | (NA), CALC. | 7.8     | 181. |
| ANIONS           |             |         |      |
| BICARBONATE      | (HCO3)-1    | 4.7     | 186. |
| CARBONATE        | (CO3)-2     | 0       | 0    |
| HYDROXIDE        | (OH)-1      | 0       | 0    |
| SULFATE          | (SO4)-2     | 9.0     | 433. |
| CHLORIDES        | (CL)-1      | 22.1    | 783. |
| DISSOLVED GASES  |             |         |      |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |      |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0    |
| OXYGEN           | (O2)        | NOT RUN |      |
| IRON (TOTAL)     | (FE)        |         | .7   |
| BARIUM           | (BA)+2      | NOT RUN |      |
| STRONTIUM        | (SR)+2      | NOT RUN |      |

## SCALING INDEX

## TEMP

CARBONATE INDEX

CALCIUM CARBONATE SCALING

SULFATE INDEX

CALCIUM SULFATE SCALING

30C

86F

.486

LIKELY

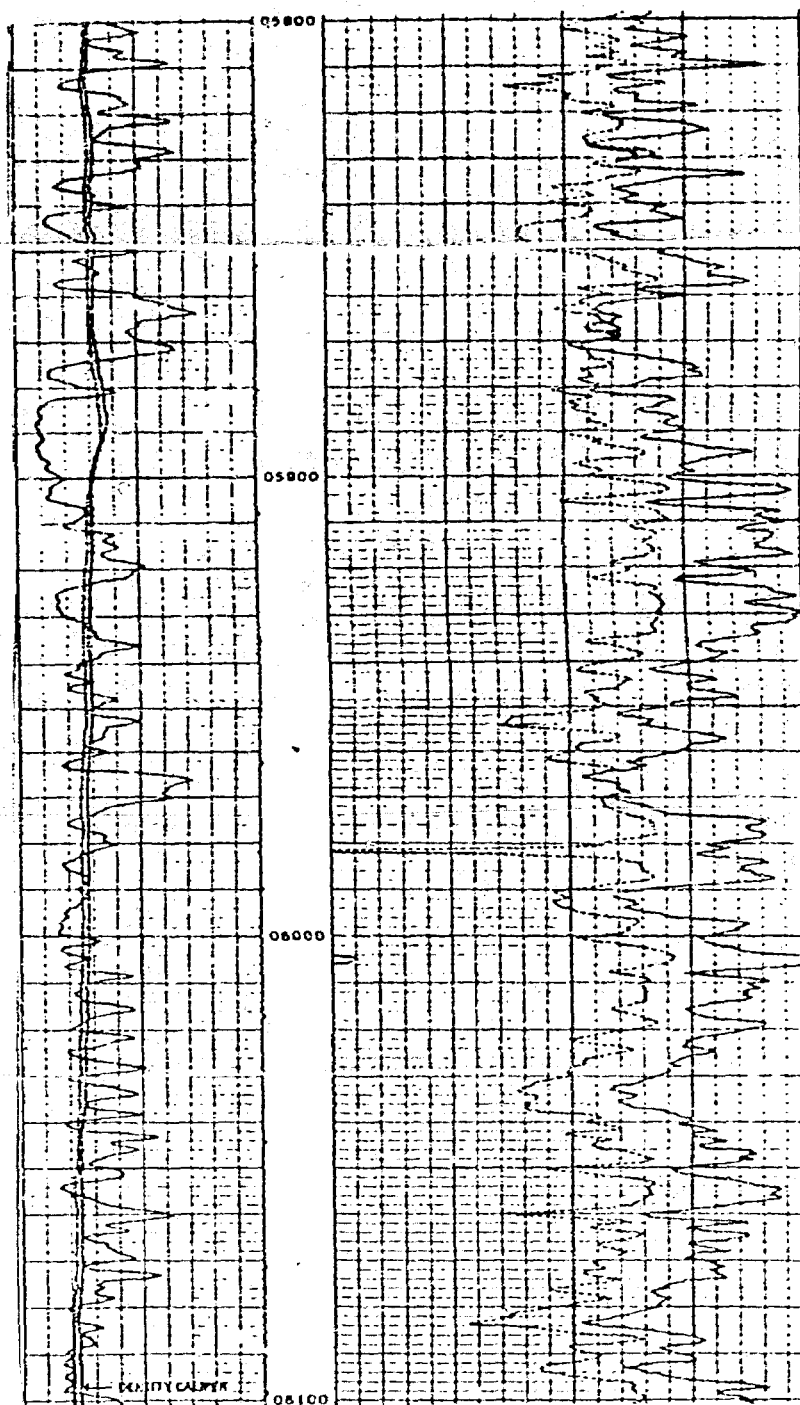
-1.0

UNLIKELY

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISIONEXHIBIT NO. 19CASE NO. 7466Submitted by Conoco Inc.Hearing Date 1-22-82

EXHIBIT 19

|                                                                                                                                                                                       |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| COMPANY <u>CONOCO OIL COMPANY, LTD.</u><br>WELL <u>W-111111</u> NO. <u>80</u><br>FIELD <u>...</u><br>COUNTRY <u>USA</u> STATE <u>TEXAS</u><br>LOCATION <u>1200' ECL. 4 1300' ECL.</u> |  |
| 33 10-5 10-6                                                                                                                                                                          |  |

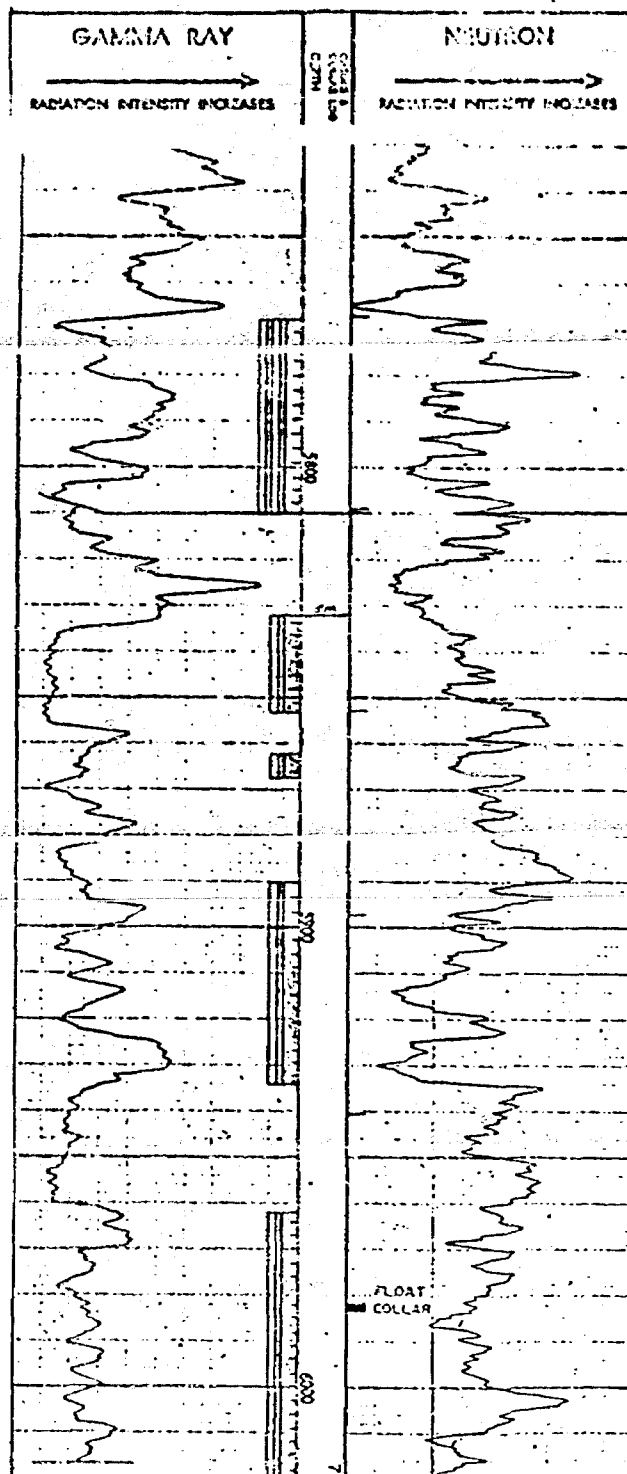


|                                                      |  |
|------------------------------------------------------|--|
| BEFORE EXAMINER STAMETS<br>OIL CONSERVATION DIVISION |  |
| EXHIBIT NO. <u>20</u>                                |  |
| CASE NO. <u>7466</u>                                 |  |
| Submitted by <u>Conoco &amp; Inc.</u>                |  |
| Hearing Date <u>1-22-82</u>                          |  |



RADIOACTIVITY LOG  
WELCH OIL SERVICES, Inc.

|                  |                          |                           |           |
|------------------|--------------------------|---------------------------|-----------|
| LOGGING SERVICE  | COMPANY                  | CONTRACT NO.              | DATE      |
|                  | WELL                     | NO.                       |           |
|                  | FIELD                    |                           |           |
|                  | COUNTY                   | STATE                     |           |
|                  | LOCATION                 |                           |           |
|                  | X, Y - 20 - 8 R - 33 - 8 |                           |           |
| LOG MEAS. FROM   |                          | 31" CONE BEADER ROAD FROM | DATE 1954 |
| CIRC. MEAS. FROM |                          |                           | DAY       |
| TERM. DATUM      |                          | PRADY HEAD PLASTER        | May 1954  |



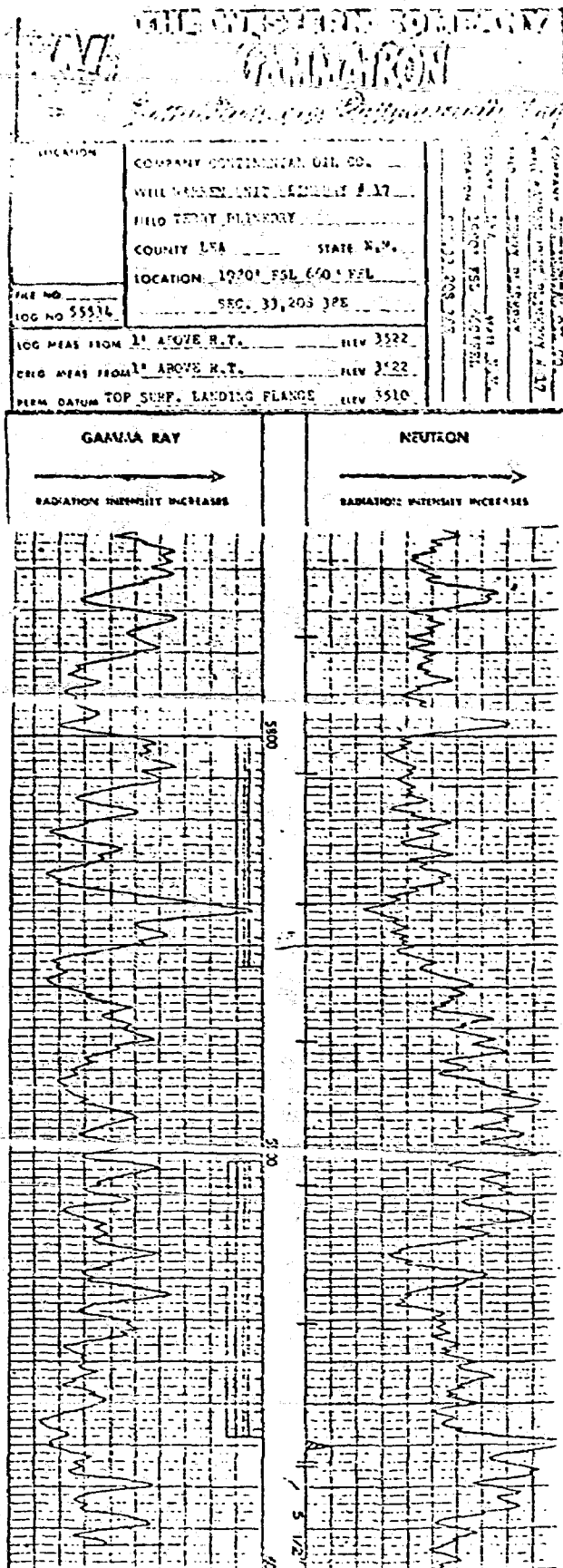
BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 21

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82



BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

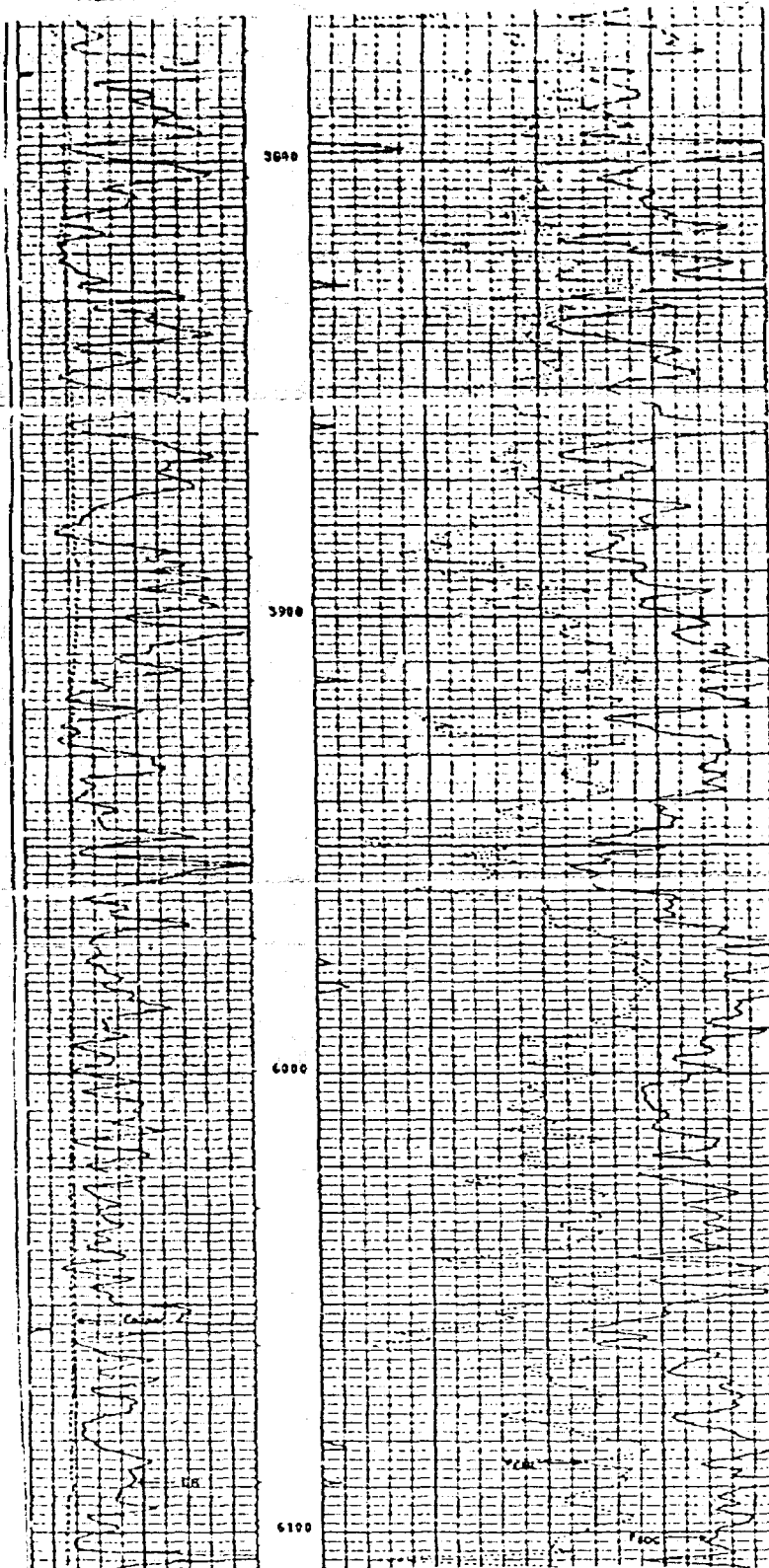
EXHIBIT NO. 22

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

|                                                                                                                                                                                                                   |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| COMPANY <u>CONOCO INC.</u><br>WELL <u>CONOCO UNIT 275</u><br>FIELD <u>NEW MEXICO FIELD UNIT</u><br>COUNTY <u>TEA</u> STATE <u>NEW MEXICO</u><br>1000 LSC & 1000 LSC<br>1000 LSC & 1000 LSC<br>1000 LSC & 1000 LSC |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|



BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

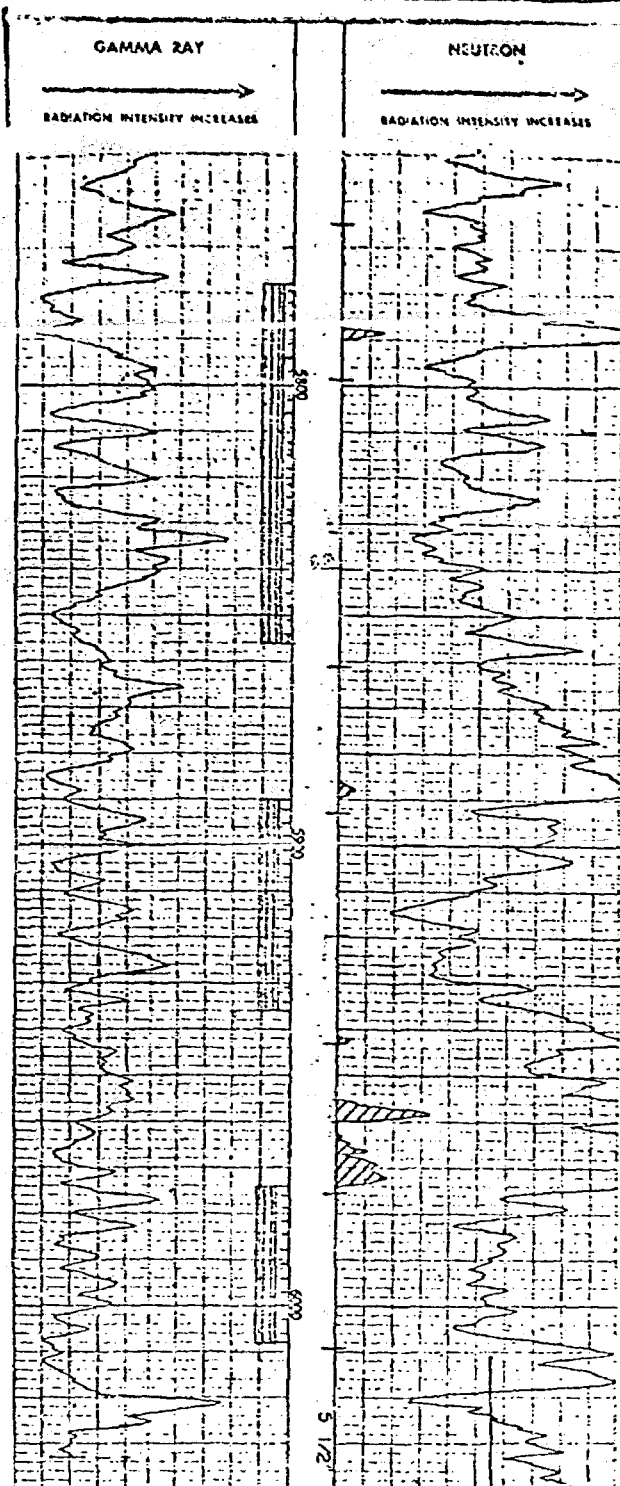
EXHIBIT NO. 23

CASE NO. 2466

Submitted by Conoco Inc.

Hearing Date 1-22-82

| THE WESTERN COMPANY |                                      |
|---------------------|--------------------------------------|
| GAMMA RAY           |                                      |
| LOCATION            | COMPANY: CONTINENTAL OIL COMPANY     |
|                     | WELL: FARMER UNIT DEWATER 215        |
|                     | FIELD: TERRY BLINDBY                 |
|                     | COUNTY: LEA STATE: N.M.              |
|                     | LOCATION: 660' ECL 1240' ECL SEC. 33 |
| FILE NO.            | 20-32                                |
| LOG NO. 45132       |                                      |
| LOG MEAS FROM       | 1' ABOVE R.B. 2228                   |
| LOG MEAS FROM       | 1' ABOVE R.B. 2228                   |
| PEEL DATUM          | 5 1/2' LANDING FLANGE MEV            |

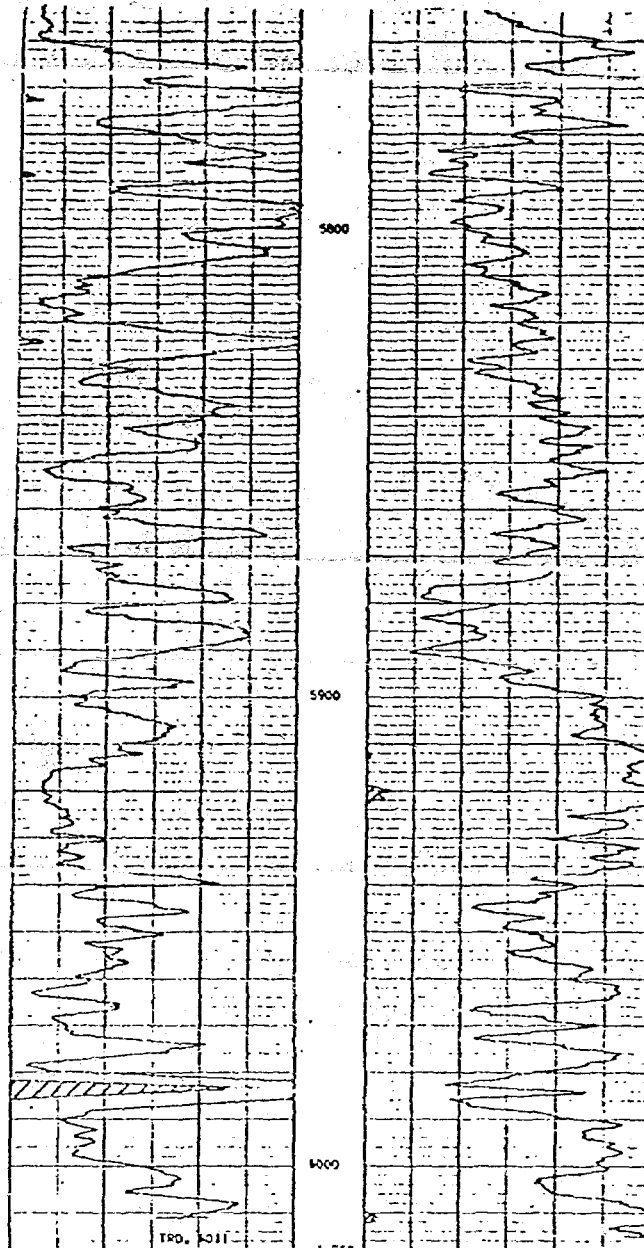


BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 24  
CASE NO. 7466  
Submitted by Conoco Inc.  
Hearing Date 1-22-82

PERFORMING OILS ATLAS CORP.  
**SIMULATED RADIOLOGICAL LOG**  
NATURAL GAS RESERVATION

|                                               |                                                                    |                 |
|-----------------------------------------------|--------------------------------------------------------------------|-----------------|
| LOCATION<br>8801 F.2.<br>1201 F.2.<br>SEC. 34 | COUNTRY<br>CONTINENTAL OIL COMPANY<br>WPA<br>#14<br>TERRY K. MERRY | DATE<br>1-22-82 |
| TIME<br>1:00 PM                               | WELL<br>1-22-82                                                    | WELL<br>1-22-82 |
| LOG NO.<br>3517                               | LOG NO.<br>3517                                                    | LOG NO.<br>3517 |
| LOG NO.<br>3517                               | LOG NO.<br>3517                                                    | LOG NO.<br>3517 |



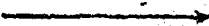
BEFORE EXAMINER STAMETS  
 OIL CONSERVATION DIVISION

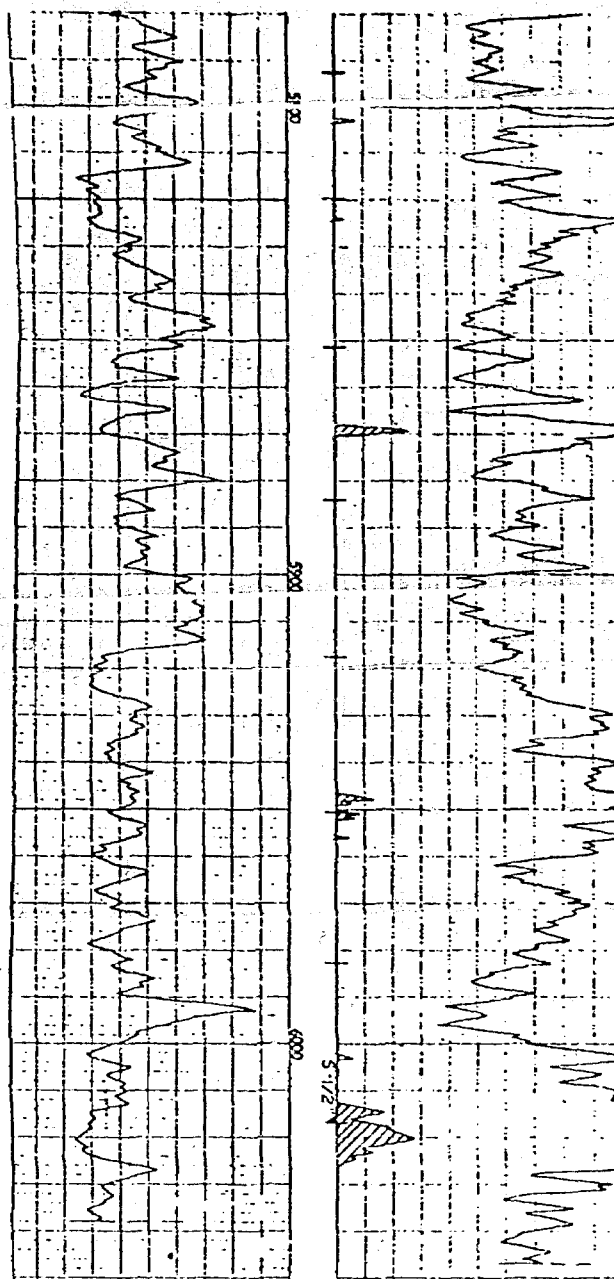
EXHIBIT NO. 25

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

|                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>W. V. GILBERTSON COMPANY</b><br><b>GAMMA-RAY</b><br><i>Scintillation Counter</i>                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                 |
| LOCATION                                                                                                                                                                                                                                                                                        | COMPANY: NATIONAL OIL COMPANY<br>WELL: LARSEN UNIT #13<br>FIELD: TRINITY-PLATY<br>COUNTY: LSA STATE: OK<br>LOCATION: 1940 ETL 560 ETL 570 3A<br>LOG NO: 115661 20-38<br>LOG MEAS FROM: KELLY DUSHING elev 3530<br>ORIG MEAS FROM: KELLY DUSHING elev 3530<br>PERM DATUM: GROUND LEVEL elev 3519 |
| COMPANY: NATIONAL OIL COMPANY<br>WELL: LARSEN UNIT #13<br>FIELD: TRINITY-PLATY<br>COUNTY: LSA STATE: OK<br>LOCATION: 1940 ETL 560 ETL 570 3A<br>LOG NO: 115661 20-38<br>LOG MEAS FROM: KELLY DUSHING elev 3530<br>ORIG MEAS FROM: KELLY DUSHING elev 3530<br>PERM DATUM: GROUND LEVEL elev 3519 |                                                                                                                                                                                                                                                                                                 |
| GAMMA RAY<br><br>RADIATION INTENSITY INCREASES                                                                                                                                                                 | NEUTRON<br><br>RADIATION INTENSITY INCREASES                                                                                                                                                                  |



BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 26

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

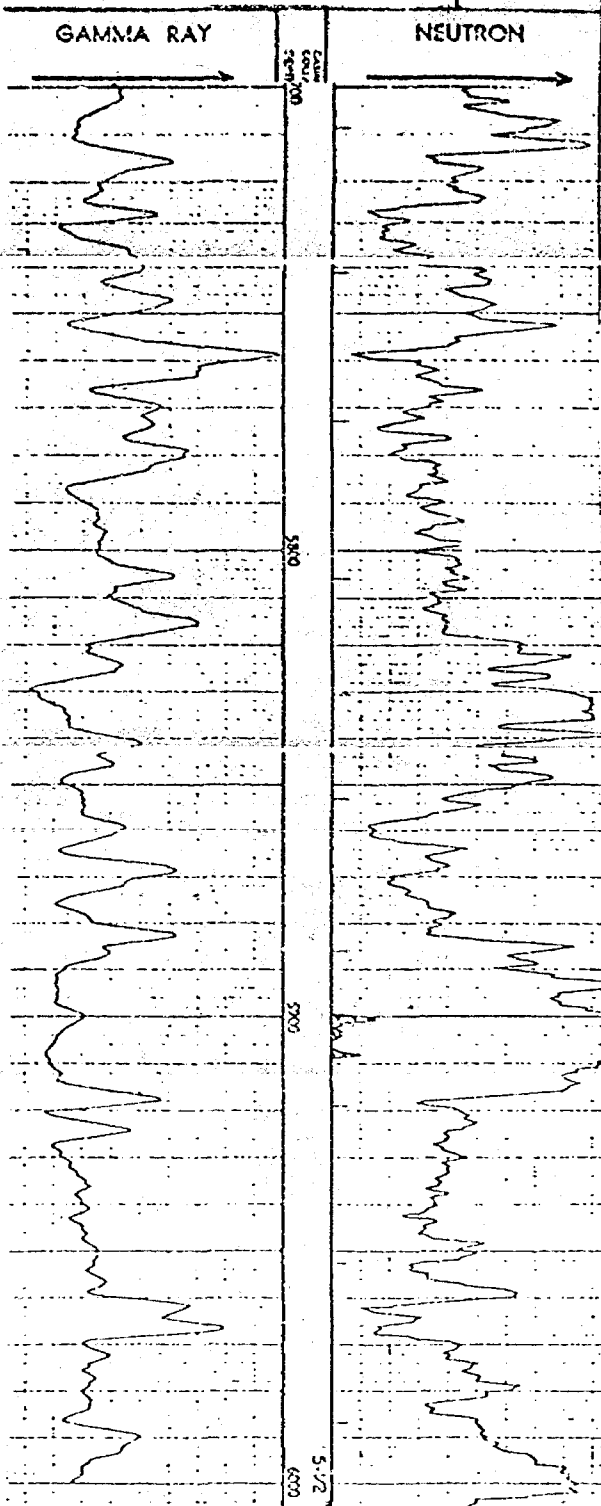


# RADIOACTIVITY LOG WELLEX JET SERVICES, Inc.

FILE NO.

Location of Well  
 COMPANY WELLEX JET SERVICES, Inc.  
 WELL W-337 15  
 FIELD 1. N. W. DEWITT  
 COUNTY LA STATE TEXAS  
 LOCATION 600' 102 & 32.0' 112 OF  
100' 3 21-5 37-5

LOG MEAS FROM 11' 100' 7 5/8" CAS. PLUG MEAS. 102  
 ORIG MEAS FROM 11' 100' 7 5/8" CAS. PLUG MEAS. 102  
 MEAS. DATUM 7 5/8" CAS. PLUG MEAS. 102



BEFORE EXAMINER STAMETS  
 OIL CONSERVATION DIVISION

EXHIBIT NO. 27

CASE NO. 7466

Submitted by Conoco Inc.

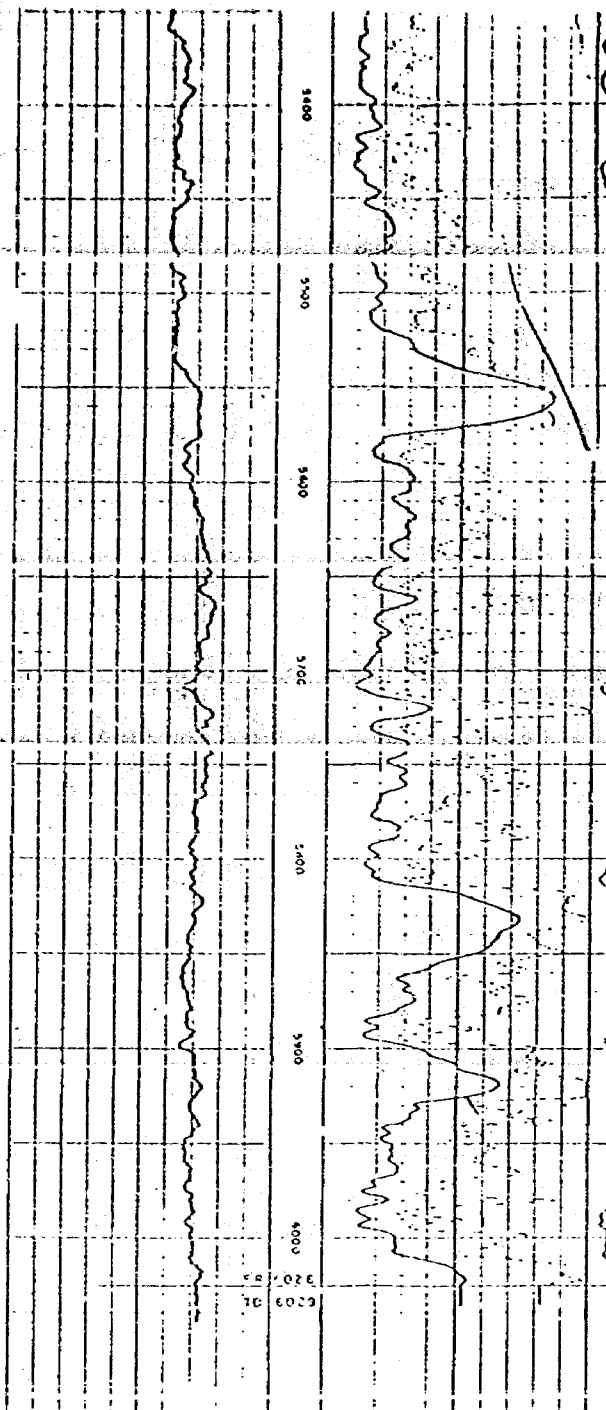
Hearing Date 1-22-82

NEW MEXICO OIL CONSERVATION DIVISION

*Chartwell 2149*

|                                                                                                                                                       |                                    |                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------|
| COUNTY <u>LEA</u><br>FIELD <u>TERRA-BLINEERT</u><br>LOCATION <u>SEC. 2-215-37E</u><br>WELL <u>STATE # 6</u><br>COMPANY <u>Astec Oil &amp; Gas Co.</u> | COMPANY <u>ASTEC OIL &amp; GAS</u> | Location of Well<br><u>906' F NL</u><br><u>640' F NL</u><br><u>SEC. 2-215-37E</u> |
|                                                                                                                                                       | WELL <u>STATE # 6</u>              |                                                                                   |
|                                                                                                                                                       | FIELD <u>TERRA-BLINEERT</u>        | ES<br>(NL)                                                                        |
|                                                                                                                                                       | LOCATION <u>SEC. 2-215-37E</u>     |                                                                                   |
|                                                                                                                                                       | COUNTY <u>LEA</u>                  | Elevation D.F. <u>3509</u><br>R.B.<br>M.O.L.<br>FILMING No.                       |
| STATE <u>NEW MEXICO</u>                                                                                                                               |                                    |                                                                                   |

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| SPONTANEOUS POTENTIAL<br>millivolts | RESISTIVITY<br>ohms. m <sup>2</sup> /m |
|-------------------------------------|----------------------------------------|



BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 28

CASE NO. 7466

Submitted by Conoco Inc.

Hearing Date 1-22-82

EXHIBIT 28

CONOCO, INC.  
P. O. Box 460  
Robbs, N. M. 88240

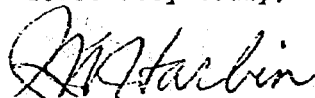
Attention: Mr. M. K. Mosley

Re: Application for approval to  
initiate a waterflood project.  
Warren Unit Area  
Lea County, N. M.

Gentlemen:

Southland Royalty Company is familiar with Conoco's  
Case No. 7466 on NMOCD Examiner Docket No. 3-82, scheduled  
for January 20, 1982. We support your application and hereby  
authorize the NMOCD to include Southland's State Well #6,  
located in Unit D, Section 2, T-21-S, R-37-E, Lea County,  
NM in their authorization of this project.

Yours very truly,



K. W. Harbin  
District Production Manager

KWH/ga

1100 WALL TOWERS WEST (915) 682-8641 MIDLAND, TEXAS 79701

BEFORE EXAMINER STAMETS  
OIL CONSERVATION DIVISION

EXHIBIT NO. 29

CASE NO. 7466

Submitted by Conoco Inc

Hearing Date 1-22-82

Dockets Nos. 4-82 and 5-82 are tentatively set for February 3 and February 17, 1982. Applications for hearing must be filed at least 22 days in advance of hearing date.

**DOCKET: EXAMINER HEARING - WEDNESDAY - JANUARY 20, 1982**

**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. Stasets, Examiner, or Daniel S. Nutter, Alternate Examiner:

**ALLOWABLE:** (1) Consideration of the allowable production of gas for February, 1982, from fifteen prorated pools in Lea, Eddy, and Chaves Counties, New Mexico.

(2) Consideration of the allowable production of gas for February, 1982, from four prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico.

**CASE 7462:** Application of Marathon Oil Company for downhole comingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the downhole comingling of the Drinkard and Blinebry production in the wellbore of its C. J. Saunders Well No. 3, located in Unit C of Section 1, Township 22 South, Range 36 East.

**CASE 7463:** Application of Texaco Inc. for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for the dual completion of its C. H. Weir "A" Well No. 12 located in Unit G of Section 12, Township 20 South, Range 37 East, to produce oil from the Skaggs-Drinkard and an undesignated Abo pool.

**CASE 7464:** Application of Exxon Corporation for two unorthodox oil well locations, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval for two unorthodox oil well locations in Section 4, Township 19 South, Range 35 East, Scharrh-Ross Spring Pool, as follows: State DD Well No. 1 to be drilled in the center of the SE/4 SW/4 and State DD Well No. 3 to be drilled in the center of the NW/4 NE/4. Pool rules require wells to be drilled in the NE/4 or SW/4 of a quarter section.

**CASE 7465:** Application of Superior Oil Company for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 1980 feet from the South line and 860 feet from the East line of Section 26, Township 24 South, Range 29 East, Wolfcamp-Pennsylvanian formations, the S/4 of said Section 26 to be dedicated to the well.

**CASE 7466:** Application of Conoco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority for it and Southland Royalty Company to each institute a cooperative waterflood project in the Blinebry Oil and Gas Pool by the injection of water into the Blinebry formation through nine injection wells located on Conoco's Warren Unit and Hawk B-3 Leases and Southland's State Lease in Sections 33 and 34 of Township 20 South, Range 38 East, and Sections 2 and 3 of Township 21 South, Range 37 East.

**CASE 7072:** In the matter of Case No. 7072 being reopened on the motion of the Oil Conservation Division and pursuant to the provisions of Order No. R-6554 which order promulgated temporary special rules and regulations for the North Peterson-Pennsylvanian Pool in Roosevelt County, New Mexico, including a provision for 80-acre spacing units. Operators in said pool may appear and show cause why said pool should not be developed on 40-acre proration units.

**CASE 7460:** (Continued from January 6, 1982, Examiner Hearing)

Application of Northwest Pipeline Corporation for 13 non-standard gas proration units, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for 13 non-standard Pictured Cliffs gas proration units ranging in size from 142.39 acres to 176.77 acres and each comprised of various contiguous lots or tracts in Sections 4, 5, 6, 7, and 18 of Township 31 North, Range 7 West. Said proration units result from corrections in the survey lines on the North and West sides of Township 31 North, Range 7 West and overlap seven non-standard Mesaverde proration units previously approved by Order No. R-1066.

EXAMINER HEARING - WEDNESDAY - JANUARY 20, 1982

CASE 7467: Application of Inexco Oil Company for pool creation, special pool rules, and a discovery allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks creation of a new Strawn oil pool for its Lottie York Well No. 1 located in Unit P of Section 14, Township 17 South, Range 37 East, and the promulgation of special rules therefor, including a provision for 80-acre spacing. Applicant further seeks the assignment of 57,150 barrels of oil discovery allowable to said well.

CASE 7459: (Continued from January 6, 1982, Examiner Hearing)

Application of Red Mountain Associates for the Amendment of Order No. R-6538, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-6538, which authorized applicant to conduct waterflood operations in the Chaco Nash-Mesa Verde Oil Pool. Applicant seeks approval for the injection of water through various other wells than those originally approved, seeks deletion of the requirement for pressure in injection wells, and seeks an increase in the previously authorized 68-pound limitation on injection pressure.

CASE 7410: (Continued from January 6, 1982, Examiner Hearing)

Application of B.O.A. Oil & Gas Company for two unorthodox oil well locations, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks approval for the unorthodox location of a well to be drilled 2035 feet from the South line and 2455 feet from the East line and one to be drilled 2455 feet from the North line and 1944 feet from the East line, both in Section 31, Township 31 North, Range 15 West, Verde-Gallup Oil Pool, the NW/4 SE/4 and SW/4 NE/4, respectively, of said Section 31 to be dedicated to said wells.

CASE 7451: (Continued from January 6, 1982, Examiner Hearing)

Application of Yates Petroleum Corporation for compulsory pooling, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests down through the Abo formation underlying the SE/4 of Section 11, Township 6 South, Range 25 East, 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 7453: (Continued from January 6, 1982, Examiner Hearing)

Application of T. D. Skelton for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Devonian and Mississippian formations underlying the NE/4 NW/4 of Section 7, Township 12 South, Range 38 East, to be dedicated to the re-entry of an old well at a standard location thereon. Also to be considered will be the cost of re-entering 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 re-entry of said well.

CASE 7457: (Continued from January 6, 1982, Examiner Hearing)

Application of E. T. Ross for nine non-standard gas proration units, Harding County, New Mexico. Applicant, in the above-styled cause, seeks approval for nine 40-acre non-standard gas proration units in the Bravo Dome Carbon Dioxide Area. In Township 19 North, Range 30 East: Section 12, the NW/4 NW/4 and NE/4 NW/4; Section 14, the NW/4 NE/4, SW/4 NE/4, and SE/4 NE/4. In Township 20 North, Range 30 East: Section 11, the NE/4 SW/4, SW/4 SE/4, SE/4 SW/4, and NW/4 SE/4.

CASE 7468: In the matter of the hearing called by the Oil Conservation Division on its own motion for an order creating and extending certain pools in Chaves, Eddy, and Lea Counties, New Mexico.

(a) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Paddock production and designated as the East Monument-Paddock Pool. The discovery well is Morris R. Antweil State SX Well No. 1 located in Unit J of Section 36, Township 19 South, Range 37 East, NMPM. Said pool would comprise:

TOWNSHIP 19 SOUTH, RANGE 37 EAST, NMPM  
Section 36: SE/4

(b) CREATE a new pool in Eddy County, New Mexico, classified as a gas pool for Morrow production and designated as the Ross Draw-Morrow Gas Pool. The discovery well is Florida Exploration Company Ross Draw Unit Well No. 10 located in Unit E of Section 27, Township 26 South, Range 30 East, NMPM. Said pool would comprise:

TOWNSHIP 26 SOUTH, RANGE 30 EAST, NMPM  
Section 27: N/2

EXAMINER HEARING - WEDNESDAY - JANUARY 20, 1982

(c) CREATE a new Pool in Lea County, New Mexico, classified as an oil pool for Morrow production and designated as the Sowell-Morrow Pool. The discovery well is Santa Fe Energy Company State NM2 Well No. 1 located in Unit M of Section 2, Township 15 South, Range 32 East, NMPM. Said pool would comprise:

TOWNSHIP 15 SOUTH, RANGE 32 EAST, NMPM  
Section 2: SW/4

(d) EXTEND the Angell Ranch-Atoka-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 27 EAST, NMPM  
Section 12: All  
Section 13: W/2

(e) EXTEND the Antelope Ridge-Atoka Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 34 EAST, NMPM  
Section 27: N/2  
Section 28: E/2

(f) EXTEND the Atoka-Yeso Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 26 EAST, NMPM  
Section 23: S/2 S/2  
Section 26: W/2 NW/4

(g) EXTEND the Bunker Hill-Penrose Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM  
Section 14: SW/4 SE/4

(h) EXTEND the Burton Flat-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 27 EAST, NMPM  
Section 25: W/2  
Section 26: S/2

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM  
Section 17: N/2

TOWNSHIP 21 SOUTH, RANGE 27 EAST, NMPM  
Section 14: S/2  
Section 23: W/2

(i) EXTEND the Cinta Roja-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 24 SOUTH, RANGE 35 EAST, NMPM  
Section 8: All

(j) EXTEND the South Culebra Bluff-Atoka Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 23 SOUTH, RANGE 28 EAST, NMPM  
Section 36: W/2

(k) EXTEND the South Empire-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 17 SOUTH, RANGE 29 EAST, NMPM  
Section 7: S/2

(l) EXTEND the Gem-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM  
Section 30: E/2  
Section 32: S/2

PAGE 4

EXAMINER HEARING - WEDNESDAY - JANUARY 20, 1982

- (m) EXTEND the Hat Mesa-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 32 EAST, NMPM  
Section 12: E/2

TOWNSHIP 21 SOUTH, RANGE 33 EAST, NMPM  
Section 7: W/2

- (n) EXTEND the Herradura Bend-Delaware Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM  
Section 29: E/2 SE/4

- (o) EXTEND the Southwest Indian Flats-Morrow Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 22 SOUTH, RANGE 28 EAST, NMPM  
Section 10: E/2

- (p) EXTEND the Leo-Queen-Grayburg Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 18 SOUTH, RANGE 30 EAST, NMPM  
Section 23: N/2 NE/4

- (q) EXTEND the West Lynch-Morrow Gas Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 34 EAST, NMPM  
Section 32: N/2  
Section 33: NW/4

- (r) EXTEND the North San Simon-Yates Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 21 SOUTH, RANGE 35 EAST, NMPM  
Section 33: E/2 NW/4

- (s) EXTEND the South Saunders-Permian Pennsylvanian Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 15 SOUTH, RANGE 32 EAST, NMPM  
Section 25: N/2

- (t) EXTEND the Scharb-Bone Spring Pool in Lea County, New Mexico, to include therein:

TOWNSHIP 19 SOUTH, RANGE 35 EAST, NMPM  
Section 9: NW/4

- (u) EXTEND the Tom-Tom-San Andres Pool in Chaves County, New Mexico, to include therein:

TOWNSHIP 8 SOUTH, RANGE 31 EAST, NMPM  
Section 8: S/2 NW/4 and SW/4

- (v) EXTEND the Winchester-Atoka Gas Pool in Eddy County, New Mexico, to include therein:

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM  
Section 3: W/2



Mark K. Mosley  
Division Manager  
Production Department  
Hobbs Division  
North American Production

Conoco Inc.  
P.O. Box 460  
726 E. Michigan  
Hobbs, NM 88240  
(505) 393-4141

December 22, 1981

New Mexico Oil Conservation Division  
Department of Energy and Minerals  
P.O. Box 2088  
Santa Fe, New Mexico 87501

*Case 7466*

Attention Mr. Dan Nutter

Gentlemen:

Application for Approval to Initiate a Waterflood Project, Sections 33 and 34, T-20S, R-38E, and Sections 2 and 3, T-21S, R-37E, Lea County, New Mexico

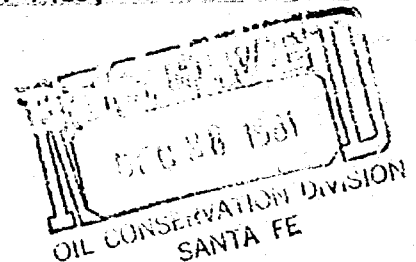
Attached are three (3) copies of the subject Application. Please schedule this case on the Examiner Docket January 20, 1982, if possible. Copies of the Application are being sent by certified mail to all offset operators within one-half mile of the proposed injection wells and to land owners where the proposed injection wells are located.

This letter also confirms our verbal request that Case No. 7423, scheduled for hearing on December 16, 1981, be dismissed.

Very truly yours,

*MK Mosley*

HAI:rej  
CC + enc:  
(See Attached List)



NHOCB

December 22, 1981

Copies to:

V. T. Lyon - Production - Houston

Tom Kellahin

P.O. Box 1769

Santa Fe, NM 87501

Southland Royalty

1000 Fort Worth Club Tower

Fort Worth, TX 76102

Shell Oil Company

P.O. Box 991

Houston, TX 77001

Gulf Oil

P.O. Drawer 1150

Midland, TX 79702

Elk Oil Company

Box 310

Roswell, NM 88201

Exxon Company

P.O. Box 1600

Midland, TX 79701

Morris Antweil

Box 2010

Hobbs, NM 88240

Bureau of Land Management

P.O. Box 1778

Carlsbad, NM 88220

Dallas McCasland

P.O. Box 206

Eunice, NM 88231

John Hendrix

525 Midland Tower

Midland, TX 79701

New Mexico Commissioner of Public Lands

Box 1148

Santa Fe, New Mexico 87501

Attention Ray Graham

BEFORE THE OIL CONSERVATION DIVISION  
ENERGY AND MINERALS DEPARTMENT  
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF  
CONOCO INC. FOR APPROVAL TO INITIATE  
A WATERFLOOD PROJECT, BLINEBRY FORMATION  
IN SECTIONS 33 AND 34, T-20S, R-38E AND  
SECTIONS 2 AND 3, T-21S, R-37E, LEA COUNTY  
NEW MEXICO

A P P L I C A T I O N

Applicant, CONOCO INC., respectfully requests authority to institute a waterflood project in the Blinebry Oil and Gas Pool by injection of water into the Blinebry Formation through nine (9) injection wells located on leases operated by Conoco Inc. and Southland Royalty Company, as described below, and in support thereof will show:

1. Applicant is operator and co-owner of the Warren Unit, the following portion of which will contain the subject secondary recovery project: S/2 NE/4 and SE/4 of Section 33; S/2 NW/4, SW/4 and SW/4 SE/4 of Section 34, T-20S, R-38E, Lea County, New Mexico.
2. Applicant is operator and co-owner of the Hawk B-3 Lease consisting of the N/2 NW/4 and NE/4 of Section 3, T-21S, R-37E, Lea County, New Mexico.
3. Southland Royalty Company is operator of the NW/4 of Section 2, T-21S, R-37E, Lea County, New Mexico.
4. Conoco Inc. and Southland Royalty Company will enter into a lease agreement for the conduct of a waterflood project covering the above described lands.
5. That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.
6. That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

Application  
Initiate WF - Blinebry Formation  
December 22, 1981

7. That the granting of this application will not impair the correlative rights of any party.

WHEREFORE, applicant respectfully requests that this application be set for hearing before the Division's duly appointed examiner, and upon hearing, an order be entered authorizing the initiation of the waterflood project as described above.

Respectfully submitted,

CONOCO INC.

By



M. K. Mosley

Division Manager of Production  
HOBBS, New Mexico

HAI:rej  
12-22-81

**III. WELL DATA**

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; location by Section, Township, and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and name of the next higher and next lower oil or gas zone in the area of the well, if any.

**XIV. PROOF OF NOTICE**

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) the intended purpose of the injection well; with the exact location of single wells or the section, township, and range location of multiple wells;
- (3) the formation name and depth with expected maximum injection rates and pressures; and
- (4) a notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, P. O. Box 2088, Santa Fe, New Mexico 87501 within 15 days.

**NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.**

---

**NOTICE:** Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

## APPLICATION FOR AUTHORIZATION TO INJECT

- I. Purpose: ☒ Secondary Recovery ☐ Pressure Maintenance ☐ Disposal ☐ Storage  
Application qualifies for administrative approval? ☐ yes ☒ no
- II. Operator: Conoco, Inc.  
Address: P. O. Box 460, 726 E. Michigan, Hobbs, New Mexico 88240  
Contact party: Mark Mosely, Division Manager Phone: 505 393-4141
- III. Well data: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? ☐ yes ☒ no  
If yes, give the Division order number authorizing the project \_\_\_\_\_.
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- \* VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.
- VII. Attach data on the proposed operation, including:
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \* VIII. Attach appropriate geological data on the injection zone including appropriate lithologic detail, geological name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such source known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \* X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division they need not be resubmitted.)
- \* XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground source of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification
- I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.
- Name: Hugh Ingram Title: Conservation Coordinator  
Signature: [Signature] Date: 12-22-81
- \* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be duplicated and resubmitted. Please show the date and circumstance of the earlier submittal.

ATTACHMENT TO APPLICATION FOR AUTHORIZATION TO INJECT

III. Well Data: Attached as Exhibits Nos. 1-9.

IV. This is not an expansion of an existing project.

V. Attached as Exhibit No. 10.

VI. Attached as Exhibit No. 11.

VII. 1. Average Injection Rate: 400 BWPD per well  
Maximum Injection Rate: 800 BWPD per well  
Total Volume: 2,000,000 BW per well

2. Open System.

3. Average Surface Injection Pressure: 1000 psi  
Maximum Surface Injection Pressure: 1200 psi

4. Source: City of Hobbs - Treated Sewage Effluent.  
The following water analyses are attached as Exhibits Nos. 12-16:

Analyses:

- a. Blinbry produced water
- b. Sewage effluent
- c. Sewage effluent plus brine
- d. 50% Blinbry produced water and 50% sewage effluent
- e. 50% Blinbry produced water and 50% sewage effluent plus brine.

Compatibility: Analyses (d) and (e) indicated no compatibility problems with the mixing of injection and produced waters.

VIII. The Blinbry is the middle member of the Yeso Formation in the Leonardian series and Permian System. Five major cycles of deposition occurred in the Blinbry resulting in five potentially productive zones, separated by highly resistive beds. Only the upper three zones, contained in a 300-foot gross interval, are productive in the project area from an average of 46 feet of net pay. Net pay in this area is found at a maximum depth of 6100 feet. The porous zones are composed primarily of a fine granular to fine crystalline, tan to brown, silty dolomite with numerous small anhydritic inclusions and shale partings. These zones are characterized by inter-crystalline porosity with low permeability.

The Ogallala (Quaternary Aquifer) is the only fresh water aquifer overlying the proposed injection zone. The base of the Ogallala is estimated to be at 200' in this area.

Attachments  
Page 2

- IX. No stimulation program is proposed at this time.
- X. Log sections of the nine proposed injection wells showing the Blinebry Formation are attached as Exhibits Nos. 17-25.
- XI. The only producing fresh water well in this area is the Continental Water Sales Fresh Water Well, located in the NW, NE, Section 10, T21S, R37E. A water analysis from this well is attached as Exhibit No. 26.
- XII. Not applicable.

## INJECTION WELL DATA SHEET

| OPERATOR     |                       | LEASE       |          |       |
|--------------|-----------------------|-------------|----------|-------|
| CONOCO, INC. |                       | WARREN UNIT |          |       |
| WELL NO.     | FOOTAGE LOCATION      | SECTION     | TOWNSHIP | RANGE |
| 80           | 1980' FNL & 1980' FEL | 33          | 20S      | 38E   |

## Schematic

## Tabular Data

2-3/8" tubing

8-5/8" @ 1480'

Packer @ 5700'

Perforated  
5815'  
to  
6043'

5 1/2" @ 6170'

## Surface Casing

Size 8-5/8 " Cemented with 790 sx.TOC SURFACE feet determined by CIRCULATIONHole size 12 1/2

## Intermediate Casing

Size NONE " Cemented with \_\_\_\_\_ sx.

TOC \_\_\_\_\_ feet determined by \_\_\_\_\_

Hole size \_\_\_\_\_

## Deep Casing

Size 5 1/2 " Cemented with 2010 sx.TOC SURFACE feet determined by CIRCULATIONHole size 7-7/8"Total depth 6173'

## Injection interval

5815 feet to 6043 feet  
(perforated or open-hole, indicate which)Tubing size 2-3/8" lined with PLASTIC set in a  
(material)

BAKER MODEL AD-1

(brand and model)

packer at 5700 feet

(or describe any other casing-tubing seal).

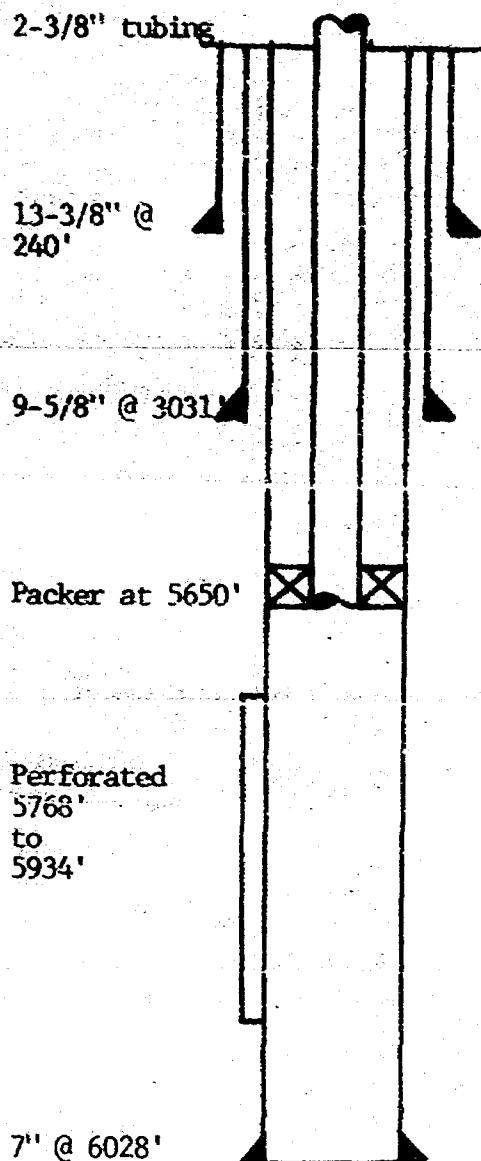
## Other Data

- Name of the injection formation BLINEBRY
- Name of field or Pool (if applicable) BLINEBRY OIL AND GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled? OIL AND GAS PRODUCTION.
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)  
NO
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.  
NONE

|              |                      |         |          |       |
|--------------|----------------------|---------|----------|-------|
| OPERATOR     | CLASS                |         |          |       |
| CONOCO, INC. | WARREN UNIT          |         |          |       |
| WELL NO.     | FOOTAGE LOCATION     | SECTION | TOWNSHIP | RANGE |
| 20           | 1980' FNL & 660' FNL | 34      | 20S      | 38E   |

# Schematic

# Tabular Data



## Surface Casing

Size 13-3/8 " Cemented with 265 sx.  
 TOC SURFACE feet determined by CIRCULATION  
 Hole size 17 1/2

## Intermediate Casing

Size 9-5/8 " Cemented with 1238 sx.  
 TOC 800 feet determined by TEMP SURVEY  
 Hole size 12 1/2

## Long string

Size 7 " Cemented with 504 sx.  
 TOC 2400 feet determined by TEMP SURVEY  
 Hole size 8-3/4  
 Total depth 6030'

## Injection interval

5768 feet to 5934 feet  
 (perforated or ~~open hole~~, indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a  
 (material)  
 BAKER MODEL AD-1 packer at 5650 feet  
 (brand and model)

(or describe any other casing-tubing seal).

## Other Data

- Name of the injection formation BLINEBRY
- Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
 If no, for what purpose was the well originally drilled? \_\_\_\_\_

## OIL AND GAS PRODUCTION

- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used) \_\_\_\_\_  
NO

- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

OPERATOR

LEASE

CONOCO INC.

WARREN UNIT

WELL NO.

FOOTAGE LOCATION

SECTION

TOWNSHIP

RANGE

17

1980' FSL & 660' FEL

33

20S

38E

Schematic

Tabular Data

2-3/8" tubing

10-3/4"  
@ 289'

7-5/8" @ 3049'

Packer @ 5700'

Perforated  
5800'  
to  
6030'

5 1/2" @ 6011'

Surface Casing

Size 10-3/4" Cemented with 250' ss.

100' SURFACE feet determined by CIRCULATION

Hole size 12 1/2"

Intermediate Casing

Size 7-5/8" Cemented with 1045' ss.

100' 800' feet determined by TEMP SURVEY

Hole size 9-7/8"

Long string

Size 5 1/2" Cemented with 730' ss.

100' SURFACE feet determined by CIRCULATION

Hole size 6-3/4"

Total depth 6012'

Injection Interval

5800' feet to 6030' feet  
(perforated ~~or open hole~~ indicate which)

NOTE: ON CONVERSION, THIS WELL WILL BE DEEPEMED TO A TD OF 6050' AND PERFORATED 5986'-6030'.

Tubing size 2-3/8" lined with PLASTIC (material) set in a

BAKER MODEL AD-1  
(brand and model)

packer at 5700' feet

(or describe any other casing tubing seal).

Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
3. Is this a new well drilled for injection? / / Yes /X/ No  
If no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

## INJECTION WELL DATA SHEET

|              |                       |             |          |       |
|--------------|-----------------------|-------------|----------|-------|
| OPERATOR     |                       | LEASE       |          |       |
| CONOCO, INC. |                       | WARREN UNIT |          |       |
| WELL NO.     | FOOTAGE LOCATION      | SECTION     | TOWNSHIP | RANGE |
| 75           | 1980' FSL & 1980' FWL | 34          | 20S      | 38E   |

SchematicTubular Data

2-3/8" tubing

8-5/8" @ 1500'

Packer @ 5700'

Perforated  
5812'  
to  
6023'

5 1/2" @ 6130'

Surface CasingSize 8-5/8 " Cemented with 730 sx.TOC SURFACE feet determined by CIRCULATIONHole size 12 1/2Intermediate CasingSize NONE " Cemented with        sx.TOC        feet determined by       Hole size       Long stringSize 3 1/2 " Cemented with 577 sx.TOC SURFACE feet determined by CIRCULATIONHole size 7-7/8Total depth 6130'Injection interval5812 feet to 6023 feet  
(perforated or ~~open hole~~, indicate which)Tubing size 2-3/8" lined with PLASTIC set in a  
(material)BAKER MODEL AD-1 packer at 5700 feet  
(brand and model)

(or describe any other casing-tubing seal).

Other Data1. Name of the injection formation BLINEBRY2. Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL3. Is this a new well drilled for injection? ☐ Yes ☒ NoIf no, for what purpose was the well originally drilled?       OIL AND GAS PRODUCTION4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)       NO5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.       NONE

OPERATOR

LEASE

CONOCO INC.

WARREN UNIT

WELL NO.

TOWNSHIP LOCATION

SECTION

TOWNSHIP

RANGE

16

660' FSL &amp; 1980' FEL

33

20S

38E

Schematic

Tabular Data

2-3/8" tubing

10-3/4" @  
274'7-5/8" @  
304.0'

Packer @ 5650'

Perforated  
5778'  
to  
6008'

5 1/2" @ 6049'

Surface Casing

Size 10-3/4" Cemented with 250 ex.

100 SURFACE feet determined by CIRCULATION

Hole size 12 1/2

Intermediate Casing

Size 7-5/8" Cemented with 1111 ex.

100 250 feet determined by TEMP SURVEY

Hole size 9-7/8

Long string

Size 5 1/2" Cemented with 541 ex.

100 SURFACE feet determined by CIRCULATION

Hole size 6-3/4

Total depth 6050'

Injection interval

5778 feet to 6008 feet  
(perforated or open hole, indicate which)

Tubing size 2-3/8" lined with PLASTIC (material) set in a

BAKER MODEL AD-1

(brand and model)

packer at 5650 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation BLINEBRY
2. Name of Field or Pool (if applicable) BLINEBRY OIL AND GAS POOL
3. Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

OPERATOR

CONOCO INC.

LEASE

WARREN UNIT

WELL NO.

WELLFACE LOCATION

SECTION

TOWNSHIP

RANGE

14

660' FSL. & 660' FWL

34

20S

38E

Schematic

Tabular Data

2-3/8" tubing

10-3/4" @  
256'

7-5/8" @ 3051'

Packer @ 5650'

Perforated  
5778'  
to  
6006'

5 1/2" @ 6019'

Surface Casing

Size 10-3/4" Cemented with 250

IOC SURFACE feet determined by CIRCULATION

Hole size 12 1/2

Intermediate Casing

Size 7-5/8" Cemented with 1150

IOC 1290 feet determined by TEMP SURVEY

Hole size 9-7/8

Long string

Size 3 1/2" Cemented with 336

IOC 3350 feet determined by TEMP SURVEY

Hole size 6-3/4

Total depth 6020'

Injection interval

5778 feet to 6006 feet

(perforated or open hole indicate which)

Tubing size 2-3/8" lined with PLASTIC set in a

BAKER MODEL AD-1

(if land model)

packer at 5650 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
3. Is this a new well drilled for injection? ☒ Yes ☒ No  
If no, for what purpose was the well originally drilled?  
OIL AND GAS PRODUCTION
4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)  
NO
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.  
NONE

OPERATOR

LEASE

CONOCO INC.

WARREN UNIT

WELL NO.

LOCATION LOCATION

SECTION

TOWNSHIP

RANGE

13

660' FSL & 1980' FEL

34

20S

38E

General

Tabular Data

2-3/8" tubing

10-3/4" @  
284'

7-5/8" @  
3037'

Packer @ 5770'

Perforated  
5882'  
to  
6002'

5 1/2" @ 6049

Surface Casing

Size 10-3/4" Cemented with 250 lb.

100 SURFACE feet determined by CIRCULATION

Hole size 12 1/4"

Intermediate Casing

Size 7-5/8" Cemented with 1255 lb.

100 30 feet determined by TEMP SURVEY

Hole size 9-7/8"

Long string

Size 5 1/2" Cemented with 466 lb.

100 3355 feet determined by TEMP SURVEY

Hole size 6-3/4"

Total depth 6050'

Injection interval

5882 feet to 6002 feet  
(perforated or open hole indicate which)

Tubing size 2-3/8" lined with PLASTIC (material) set in a

BAKER MODEL AD-1 (brand and model) packer at 5770 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation BLINEBRY
2. Name of field or pool (if applicable) BLINEBRY OIL & GAS POOL
3. Is this a new well drilled for injection? ☐ Yes ☒ No  
If no, for what purpose was the well originally drilled?

#### OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

OPERATOR

LEASE

CONOCO INC.

HAWK B-3

WELL NO.

FOOTAGE LOCATION

SECTION

TOWNSHIP

RANGE

15

660' FNL & 1980' FEL

3

21S

37E

Geologic

Tabular Data

Surface Casing

Size 11- $\frac{1}{2}$ " Cemented with 375

100 SURFACE feet determined by CIRCULATION

Hole size 17 $\frac{1}{2}$ "

Intermediate casing

Size 7-5/8" Cemented with 920

100 1515 feet determined by TEMP SURVEY

Hole size 9-7/8"

Long string

Size 5 $\frac{1}{2}$ " Cemented with 389

100 3190 feet determined by TEMP SURVEY

Hole size 6-3/4"

Total depth 6025'

Injection interval

5762 feet to 5990 feet  
(perforated or open hole, indicate which)

2-3/8" tubing

11 $\frac{1}{2}$ " @ 270'

7-5/8" @ 3061'

Packer @ 5650'

Perforated  
5762'  
to  
5990'

5 $\frac{1}{2}$ " @ 6024'

Tubing size 2-3/8" lined with PLASTIC set in a

BAKER MODEL AD-1

(brand and model)

(material)

packer at 5650 feet

(or describe any other casing-tubing seal).

Other Data

1. Name of the injection formation BLINEBRY

2. Name of field or Pool (if applicable) BLINEBRY OIL AND GAS POOL

3. Is this a new well drilled for injection? ☐ Yes ☒ No

If no, for what purpose was the well originally drilled?

OIL AND GAS PRODUCTION

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)

NO

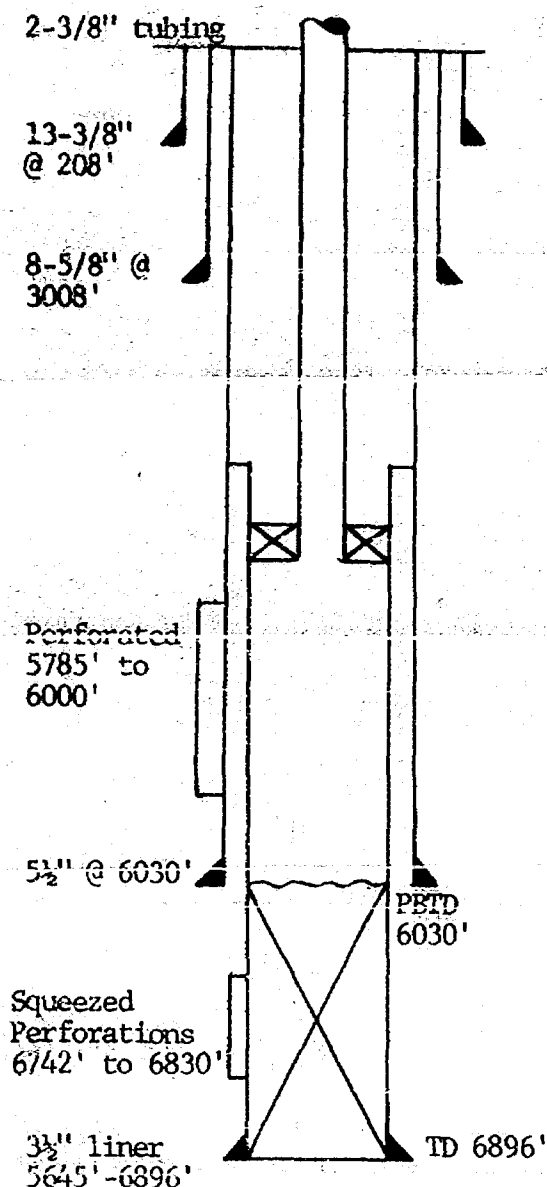
5. Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.

NONE

| OPERATOR          |                     | LEASE   |          |       |
|-------------------|---------------------|---------|----------|-------|
| SOUTHLAND ROYALTY |                     | STATE   |          |       |
| WELL NO.          | FOUNTAIN LOCATION   | SECTION | TOWNSHIP | RANGE |
| 6                 | 906' FNL & 660' FWL | 2       | 21S      | 37E   |

## Schematic

## Tubular Data



## Surface Casing

Size 13-3/8 " Cemented with 240 sx.  
 TOC SURFACE feet determined by CIRCULATION  
 Hole size 1 7/8"

## Intermediate Casing

Size 8-5/8 " Cemented with 1750 sx.  
 TOC SURFACE feet determined by CIRCULATION  
 Hole size 11"

## Long string

Size 5 1/2 " Cemented with 250 sx.  
 TOC 4780 feet determined by TEMP SURVEY  
 Hole size 7-7/8"  
 Total depth 6030' (original)

## Injection interval

5785 feet to 6000 feet  
 (perforated or ~~open hole~~ indicate which)

## LINER- HOLE DEEPENED AND LINER SET FOR RECOMPLETION TO DRINKARD.

Size 3 1/2 " Cemented with 100 sx.  
 TOC 5645 feet determined by CIRCULATION  
 Hole Size 4-3/4  
 Total Depth 6896'

NOTE: ON CONVERSION, THIS WELL WILL BE PLUGGED BACK TO 6030' AND REPERFORATED FROM 5785'-6000'.

Tubing size 2-3/8" lined with PLASTIC set in a  
 (material)  
BAKER MODEL AD-1 packer at 5650 feet  
 (brand and model)  
 (or describe any other casing-tubing seal).

## Other Data

- Name of the injection formation BLINEBRY
- Name of field or Pool (if applicable) BLINEBRY OIL AND GAS POOL
- Is this a new well drilled for injection? ☐ Yes ☒ No  
 If no, for what purpose was the well originally drilled? OIL AND GAS PRODUCTION
- Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail (sacks of cement or bridge plug(s) used)  
YES, DRINKARD FORMATION: PERFORATED 6742'-6830' & CURRENTLY PRODUCING 1.5 BOPD AND 10 MCF/GPD FROM THE DRINKARD (7-81)
- Give the depth to and name of any overlying and/or underlying oil or gas zones (pools) in this area.  
DRINKARD: TOP OF PAY AT 6742'

WELLS WHICH PENETRATE THE PROPOSED INJECTION ZONE

| COMPANY, WELL AND LOCATION     | TYPE WELL | DATE DRILLED | T.D.  | CONSTRUCTION             |                     |                    |                            | INTERVAL                                          | RECORD OF TREATMENTS |                         |  |
|--------------------------------|-----------|--------------|-------|--------------------------|---------------------|--------------------|----------------------------|---------------------------------------------------|----------------------|-------------------------|--|
|                                |           |              |       | SIZE CSG.                | DEPTH               | NO. CEMENT USED    | SX TOP OF CEMENT           |                                                   | ACIDIZE NO. GALLONS  | SAND FRAC NO. LBS SAND  |  |
| CONOCO INC.                    |           |              |       |                          |                     |                    |                            |                                                   |                      |                         |  |
| Hawk B-3 No. 2<br>O-3-21S-37E  | 0         | 1-53         | 8114' | 13 3/8<br>9 5/8<br>7     | 250<br>3133<br>8113 | 250<br>1370<br>940 | Surface<br>Surface<br>2950 | 7795-8090 (Sqzd)<br><br>5796-6079                 | 1250<br><br>2000     | 12,000<br><br>10,000    |  |
| Hawk B-3 No. 3<br>P-3-21S-37E  | 0         | 1-52         | 8010' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8009 | 250<br>1045<br>573 | Surface<br>585<br>Surface  | 7677-7848<br><br>                                 | 500<br><br>          | -                       |  |
| Hawk B-3 No. 5<br>R-3-21S-37E  | 0         | 3-52         | 8025' | 10 3/4<br>7 5/8<br>5 1/2 | 274<br>3147<br>8024 | 225<br>1150<br>625 | Surface<br>650<br>3200     | 7700-7856 (Sqzd)<br><br>5646-5997                 | 500<br><br>7000      | 12,000<br><br>72,400    |  |
| Hawk B-3 No. 8<br>P-3-21S-37E  | 0         | 6-51         | 8191' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8187 | 250<br>1210<br>530 | Surface<br>975<br>3115     | 8062-8172 (Sqzd)<br>6360-6420 (Sqzd)<br>6265-6337 | 9500<br>1000<br>1600 | -<br>6,000<br>6,000     |  |
| Hawk B-3 No. 10<br>O-3-21S-37E | 0         | 10-52        | 8302' | 13 3/8<br>9 5/8<br>7     | 269<br>3149<br>8301 | 260<br>1408<br>340 | Surface<br>600<br>3125     | 8166-8260 (Sqzd)<br><br>6660-6760                 | 12000<br><br>7000    | 10,000<br><br>70,000    |  |
| Hawk B-3 No. 12<br>R-3-21S-37E | 0         | 3-50         | 6747' | 13 3/8<br>9 5/8<br>7     | 199<br>2969<br>6746 | 250<br>1525<br>875 | Surface<br>725<br>3000     | 6625-6689<br><br>5670-5860                        | 1000<br><br>4000     | -<br><br>-              |  |
| Hawk B-3 No. 14<br>A-3-21S-37E | 0         | 12-54        | 6020' | 10 3/4<br>7 5/8<br>5 1/2 | 290<br>3038<br>6019 | 300<br>1550<br>110 | Surface<br>650<br>3650     | 5758-84<br>5826-76<br>5960-82                     | 1000<br>1000<br>1000 | 6,000<br>6,000<br>6,000 |  |
| Hawk B-3 No. 15<br>B-3-21S-37E | 0         | 11-55        | 6025' | 11 3/4<br>7 5/8<br>5 1/2 | 270<br>3061<br>6024 | 375<br>920<br>389  | Surface<br>1515<br>3190    | 5762-5990<br><br>                                 | 3000<br><br>         | 18,000                  |  |

WELLS WHICH PENETRATE THE PROPOSED INJECTION ZONE

| COMPANY, WELL AND LOCATION                   | WELL TYPE | DATE DRILLED | T.D.  | CONSTRUCTION             |                     |                     |                            | RECORD OF TREATMENTS                              |                                        |
|----------------------------------------------|-----------|--------------|-------|--------------------------|---------------------|---------------------|----------------------------|---------------------------------------------------|----------------------------------------|
|                                              |           |              |       | SIZE CSC.                | DEPTH               | NO. SY. CEMENT USED | TOP OF CEMENT              | ACIDIZE NO. GALLONS                               | SAND FRAC NO. LBS SAND                 |
| CONOCO INC.<br>Hawk B-3 No. 2<br>O-3-21S-37E | 0         | 1-53         | 8114' | 13 3/8<br>9 5/8<br>7     | 250<br>3133<br>8113 | 250<br>1370<br>940  | Surface<br>Surface<br>2950 | 7795-8090 (Sqzd)<br>5796-6079                     | 1250<br>2000<br>0,000                  |
| Hawk B-3 No. 3<br>P-3-21S-37E                | 0         | 1-52         | 8010' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8009 | 250<br>1045<br>573  | Surface<br>585<br>Surface  | 7677-7848                                         | 500<br>-<br>-                          |
| Hawk B-3 No. 5<br>R-3-21S-37E                | 0         | 3-52         | 8025' | 10 3/4<br>7 5/8<br>5 1/2 | 274<br>3147<br>8024 | 225<br>1150<br>625  | Surface<br>650<br>3200     | 7700-7856 (Sqzd)<br>5646-5997                     | 500<br>7000<br>12,000<br>72,400        |
| Hawk B-3 No. 8<br>P-3-21S-37E                | 0         | 6-51         | 8191' | 10 3/4<br>7 5/8<br>5 1/2 | 265<br>3149<br>8187 | 250<br>1210<br>650  | Surface<br>975<br>3115     | 8062-8172 (Sqzd)<br>6360-6420 (Sqzd)<br>6265-6337 | 9500<br>1000<br>1000<br>5,000          |
| Hawk B-3 No. 10<br>O-3-21S-37E               | 0         | 10-52        | 8302' | 13 3/3<br>9 5/3<br>7     | 269<br>3149<br>8301 | 260<br>1408<br>940  | Surface<br>600<br>3125     | 8156-8260 (Sqzd)<br>6660-6760                     | 12000<br>7000<br>20,000                |
| Hawk B-3 No. 12<br>R-3-21S-37E               | 0         | 3-50         | 6747' | 13 3/8<br>9 5/8<br>7     | 199<br>2969<br>6746 | 250<br>1525<br>875  | Surface<br>725<br>3000     | 6625-6689<br>5670-5860                            | 1000<br>4000<br>-                      |
| Hawk B-3 No. 14<br>A-3-21S-37E               | 0         | 12-54        | 6020' | 10 3/4<br>7 5/8<br>5 1/2 | 290<br>3038<br>6019 | 300<br>1150<br>310  | Surface<br>650<br>3650     | 5758-84<br>5826-76<br>5960-82                     | 1000<br>1000<br>1000<br>6,000<br>6,000 |
| Hawk B-3 No. 15<br>3-3-21S-37E               | 0         | 11-55        | 6025' | 11 3/4<br>7 5/8<br>5 1/2 | 270<br>3061<br>6024 | 375<br>920<br>389   | Surface<br>1515<br>3190    | 5762-5990                                         | 3000<br>16,000                         |

| COMPANY, WELL AND LOCATION         | TYPE WELL | DATE DRILLED | T.D. | CONSTRUCTION                  |                                  |                         |                                 | RECORD OF TREATMENTS                              |                        |                            |
|------------------------------------|-----------|--------------|------|-------------------------------|----------------------------------|-------------------------|---------------------------------|---------------------------------------------------|------------------------|----------------------------|
|                                    |           |              |      | SIZE CSG.                     | DEPTH                            | NO. SX. CEMENT USED     | TOP OF CEMENT                   | INTERVAL                                          | NO. GALLONS ACIDIZED   | SAND FRAC NO. LBS. SAND    |
| Hawk B-3 No. 16<br>C-3-21S-37E     | 0         | 11-56        | 6480 | 10 3/4<br>7 5/8<br>5 1/2<br>4 | 265<br>3049<br>6479<br>6237-6920 | 265<br>900<br>500<br>34 | Surface<br>1740<br>2903<br>6234 | 5770-5886 (Sqzd)<br>6343-6406 (Sqzd)<br>6697-6741 | 2000<br>2000<br>1250   | 12,000<br>10,000<br>40,000 |
| Hawk B-3 No. 17<br>D-3-21S-37E     | 0         | 4-57         | 6010 | 10 3/4<br>7 5/8<br>5 1/2      | 259<br>3154<br>6010              | 250<br>1500<br>350      | Surface<br>1525<br>3025         | 5750-5966                                         | 4000                   | 21,000                     |
| Hawk B-3 No. 18<br>C-3-21S-37E     | 0         | 4-57         | 5973 | 10 3/4<br>7 5/8<br>5 1/2      | 268<br>3119<br>5974              | 250<br>1150<br>400      | Surface<br>1150<br>400          | 5700-5925<br>5754-5941 (Sqzd)<br>5824-5956        | 250<br>3000<br>2000    | -<br>12,000<br>40,000      |
| Hawk B-3 No. 19<br>H-3-21S-37E     | 0         | 5-58         | 6830 | 13 3/8<br>9 5/8<br>7          | 211<br>3024<br>6824              | 250<br>1210<br>770      | Surface<br>820<br>3038          | 5753-5980<br>6338-6428 (Sqzd)<br>6610-6782 (Sqzd) | 2000<br>2500<br>15,500 | 15,000<br>10,000<br>-      |
| Hawk B-3 No. 20<br>P-3-21S-37E     | 0         | 11-45        | 6782 | 13 3/8<br>9 5/8<br>7          | 222<br>2814<br>6781              | 250<br>650<br>675       | Surface<br>875<br>3272          | 5783-6042<br>6642-6708 (Sqzd)                     | 3000<br>2000           | 18,000<br>-                |
| Hawk B-3 No. 22<br>L-3-21S-37E     | 0         | 11-62        | 6800 | 9 5/8<br>7                    | 1310<br>6800                     | 625<br>650              | Surface<br>2200                 | 5607-6039<br>6149-6471 (Sqzd)<br>6526-6636 (Sqzd) | 4000<br>1500<br>13,500 | 47,500<br>20,000<br>13,000 |
| Hawk B-3 No. 23<br>A-4-21S-37E     | 0         | 6-57         | 5950 | 10 3/4<br>7 5/8<br>5 1/2      | 270<br>3149<br>5950              | 250<br>1150<br>400      | Surface<br>1425<br>3100         | 5758-5902                                         | 2000                   | 11,250                     |
| Hawk B-3 No. 24<br>G-3-21S-37E     | 0         | 4-80         | 6875 | 8 5/8<br>5 1/2                | 1391<br>6875                     | 674<br>2782             | Surface<br>Surface              | 6541-6782                                         | 21,672                 | -                          |
| Warren Unit No. 12<br>N-34-20S-38E | 0         | 9-54         | 6198 | 10 3/4<br>7 5/8<br>5 1/2      | 251<br>3041<br>6197              | 250<br>1120<br>415      | Surface<br>600<br>2885          | 5814-6160                                         | 10,000                 | 18,000                     |
| Warren Unit No. 13<br>O-34-20S-38E | 0         | 10-54        | 6050 | 10 3/4<br>7 5/8<br>5 1/2      | 284<br>3087<br>6045              | 250<br>1255<br>466      | Surface<br>30<br>3355           | 5882-6002                                         | 2000                   | 8,000                      |

|                                    |                        |      | CONSTRUCTION             |                     |                    |                               | RECORD OF TREATMENTS                |                      |                        |
|------------------------------------|------------------------|------|--------------------------|---------------------|--------------------|-------------------------------|-------------------------------------|----------------------|------------------------|
| COMPANY, WELL AND LOCATION         | TYPE DATE WELL DRILLED | T.D. | SIZE C/S.                | DEPTH               | NO. SX.            | TOP                           | INTERVAL                            | ACIDIZED NO. GALLONS | SAND FRAC NO. LBS SAND |
|                                    |                        |      |                          |                     | CEMENT USED        | OF CEMENT                     |                                     |                      |                        |
| Warren Unit No. 14<br>M-34-20S-38E | 0 12-54                | 6020 | 10 3/4<br>7 5/8<br>5 1/2 | 256<br>3051<br>6019 | 250<br>1150<br>336 | Surface<br>1290<br>3350       | 5778-6006                           | 2000                 | 10,000                 |
| Warren Unit No. 15<br>P-33-20S-38E | 0 2-55                 | 6050 | 10 3/4<br>7 5/8<br>5 1/2 | 249<br>3049<br>6048 | 250<br>1150<br>680 | Surface<br>Surface<br>Surface | 5780-6014 (Sqzd)<br>5806-6010       | 1500<br>2000         | 10,000<br>21,000       |
| Warren Unit No. 16<br>O-33-20S-38E | 0 3-55                 | 6050 | 10 3/4<br>7 5/8<br>5 1/2 | 274<br>3049<br>6049 | 250<br>1111<br>341 | Surface<br>250<br>Surface     | 5778-6006                           | 1500                 | 28,000                 |
| Warren Unit No. 17<br>I-33-20S-38E | 0 6-55                 | 6012 | 10 3/4<br>7 5/8<br>5 1/2 | 289<br>3049<br>6011 | 250<br>1045<br>730 | Surface<br>800<br>Surface     | 5800-5968                           | 2000                 | -                      |
| Warren Unit No. 18<br>I-34-20S-38E | 0 9-55                 | 6008 | 13 3/8<br>9 5/8<br>7     | 263<br>3049<br>6007 | 750<br>954<br>540  | Surface<br>1450<br>2890       | 5796-5999                           | 3000                 | 18,000                 |
| Warren Unit No. 19<br>H-33-20S-38E | 0 10-55                | 5992 | 13 3/8<br>9 5/8<br>7     | 286<br>3048<br>5984 | 750<br>1125<br>111 | Surface<br>750<br>2935        | 5784-5942                           | 7000                 | 18,000                 |
| Warren Unit No. 20<br>F-34-20S-38E | 0 11-55                | 6030 | 13 3/8<br>9 5/8<br>7     | 240<br>3031<br>6028 | 765<br>1138<br>504 | Surface<br>800<br>2400        | 5768-5934                           | 3000                 | -                      |
| Warren Unit No. 21<br>E-33-20S-38E | 0 11-56                | 5700 | 13 3/8<br>9 5/8<br>7     | 274<br>3049<br>6699 | 700<br>1500<br>400 | Surface<br>1225<br>4825       | 5316-5952                           | 2000                 | 2,000                  |
| Warren Unit No. 26<br>M-27-20S-38E | 0 4-58                 | 5800 | 13 3/8<br>9 5/8<br>7     | 257<br>3132<br>6679 | 700<br>2000<br>240 | Surface<br>900<br>4200        | 5786-6202<br>6345-6586<br>6679-6800 | 3900<br>10000        | -<br>-                 |

| COMPANY, WELL AND LOCATION            | TYPE | DATE<br>WELL DRILLED | T.D. | CONSTRUCTION             |                          |                           |                               |                               | RECORD OF TREATMENTS    |                      |      |
|---------------------------------------|------|----------------------|------|--------------------------|--------------------------|---------------------------|-------------------------------|-------------------------------|-------------------------|----------------------|------|
|                                       |      |                      |      | SIZE<br>CSG.             | DEPTH                    | NO. SX.<br>CEMENT<br>USED | TOP<br>OF<br>CEMENT           | INTERVAL                      | ACIDIZED<br>NO. GALLONS | SAND<br>NO. LBS SAND | FRAC |
| Warren Unit No. 34<br>C-34-20S-38E    | 0    | 8-75                 | 6975 | 9 5/8<br>7               | 1470<br>6975             | 600<br>1225               | Surface<br>2425               | 5815-79<br>6538-6625          | -<br>-                  | -<br>-               | -    |
| Warren Unit No. 38<br>F-34-20S-38E    | 0    | 12-75                | 7045 | 9 5/8<br>7               | 1500<br>7040             | 600<br>900                | Surface<br>2500               | 5805-92<br>6504-6663 (Sqzd)   | 1350<br>1800            | 40,000<br>40,000     |      |
| Warren Unit No. 75<br>K-34-20S-38E    | 0    | 8-75                 | 6130 | 8 5/8<br>5 1/2           | 1500<br>6130             | 730<br>577                | Surface<br>Surface            | 5812-6023<br>5734-73 (Sqzd)   | 4800<br>-               | 35,000<br>-          |      |
| Warren Unit No. 76<br>J-33-20S-38E    | 0    | 6-79                 | 6150 | 8 5/8<br>5 1/2           | 1425<br>6150             | 700<br>1693               | Surface<br>Surface            | 5815-6080                     | 5000                    | 132,000              |      |
| Warren Unit No. 80<br>G-33-20S-38E    | 0    | 6-80                 | 6173 | 8 5/8<br>5 1/2           | 1480<br>6170             | 790<br>2010               | Surface<br>Surface            | 5815-6043                     | 2100                    | 148,000              |      |
| Warren Unit No. 84<br>C-33-20S-38E    | 0    | 10-81                | 6170 | 8 5/8<br>5 1/2           | 1447<br>6170             | 700<br>1100               | Surface<br>3800               | 5792-6078                     | 1500                    | 111,000              |      |
| <u>GULF OIL CORPORATION</u>           |      |                      |      |                          |                          |                           |                               |                               |                         |                      |      |
| Harry Leonard F No. 10<br>G-2-21S-37E | 0    | 5-54                 | 5950 | 13 3/8<br>8 5/8<br>5 1/2 | 375<br>3024<br>5844      | 425<br>1550<br>560        | Surface<br>317<br>3100        | 5844-5950                     | 7000                    | 30,000               |      |
| <u>SHELL OIL COMPANY</u>              |      |                      |      |                          |                          |                           |                               |                               |                         |                      |      |
| Livingston No. 8<br>N-3-21S-37E       | 0    | 9-52                 | 8030 | 13 3/8<br>8 5/8<br>5 1/2 | 215<br>3153<br>4336-7000 | 250<br>1600<br>810        | Surface<br>Surface<br>4330    | 6500-6686<br>5655-5854        | 19,600<br>18,000        | 43,000<br>70,000     |      |
| State Sec. 2 No. 2<br>L-2-21S-37E     | 0    | 10-49                | 6760 | 13 3/8<br>8 5/8<br>5 1/2 | 224<br>2936<br>6660      | 300<br>2000<br>600        | Surface<br>Surface<br>Surface | 6660-6760<br>6592-6639        | 1500<br>2000            | -<br>73,392          |      |
| State Sec. 2 No. 8<br>L-2-21S-37E     | 0    | 11-51                | 8156 | 13 3/8<br>8 5/8<br>5 1/2 | 219<br>3149<br>2969-8018 | 250<br>2000<br>875        | Surface<br>Surface<br>Surface | 5691-5945<br>8018-8156 (Sqzd) | 9000<br>1000            | 49,700<br>-          |      |

| COMPANY, WELL AND LOCATION          |   |       |      | TYPE WELL |           | DATE DRILLED |         | I.D.             |        | CONSTRUCTION |  |             |  | RECORD OF TREATMENT |  |             |  |               |  |
|-------------------------------------|---|-------|------|-----------|-----------|--------------|---------|------------------|--------|--------------|--|-------------|--|---------------------|--|-------------|--|---------------|--|
|                                     |   |       |      |           |           |              |         |                  |        | SIZE         |  | NO. SX      |  | TOP                 |  | ACIDIZE     |  | SAND FRAC.    |  |
|                                     |   |       |      |           |           |              |         |                  |        | CSC.         |  | CEMENT USED |  | OF CEMENT           |  | NO. GALLONS |  | NO. LBS. SAND |  |
|                                     |   |       |      |           |           |              |         |                  |        | DEPTH        |  |             |  |                     |  | INTERVAL    |  |               |  |
| State Sec. 2 No. 11<br>L- 2-21S-37E | 0 | 1-52  | 8015 | 13 3/8    | 211       | 250          | Surface | 6408-6562        | 2000   | 15,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3140      | 2030         | Surface |                  |        |              |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2926-8014 | 850          | 2400    | 7698-7850 (Sqzd) | -      | -            |  |             |  |                     |  |             |  |               |  |
| State Sec. 2 No. 15<br>K- 2-21S-37E | 0 | 6-52  | 8147 | 13 3/8    | 728       | 250          | Surface | 8010-8147 (Sqzd) | 5500   | -            |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3148      | 1600         | Surface | 7048-7255        | 29,700 | 8,500        |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2950-8010 | 870          | 2900    | 6381-6500        | 6800   | 25,000       |  |             |  |                     |  |             |  |               |  |
| State Sec. 2 No. 17<br>K- 2-21S-37E | 0 | 7-54  | 8952 | 13 3/8    | 250       | 250          | Surface | 5721-5952        | 15,500 | 70,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3126      | 1500         | Surface |                  |        |              |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 5816      | 100          | 5101    |                  |        |              |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 1<br>K- 3-21S-37E  | 0 | 9-47  | 8590 | 13 3/8    | 301       | 250          | Surface | 5649-5850        | 17,600 | 25,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3879      | 3000         | Surface | 6491-6730        | 10,700 | 43,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 8060      | 675          | 2915    |                  |        |              |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 2<br>I- 3-21S-37E  | 0 | 2-50  | 8780 | 13 3/8    | 222       | 300          | Surface | 6147-6436        | 1250   | 85,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 2920      | 2200         | Surface | 6574-6780        | 5800   | 40,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 6665      | 600          | 6620    |                  |        |              |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 3<br>I- 3-21S-37E  | 0 | 11-51 | 8224 | 13 3/8    | 219       | 250          | Surface | 5800-6045        | 12,000 | 29,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3150      | 2000         | Surface | 8102-8224        | 1500   | -            |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2960-8102 | 800          | 2960    |                  |        |              |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 4<br>I- 3-21S-37E  | 0 | 5-52  | 8119 | 13 3/8    | 200       | 250          | Surface | 7804-8082        | 2000   | 48,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3147      | 2200         | Surface |                  |        |              |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2999-8115 | 875          | 2990    |                  |        |              |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 5<br>J- 3-21S-37E  | 0 | 10-52 | 8361 | 13 3/8    | 225       | 250          | Surface | 6583-6809        | 15,000 | 57,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3147      | 2200         | Surface | 7905-75          | 1000   | 10,000       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2965-8355 | 850          | 2900    | 8042-8291 (Sqzd) | 1000   | -            |  |             |  |                     |  |             |  |               |  |
| Taylor Glenn No. 6<br>J- 3-21S-37E  | 0 | 7-52  | 8707 | 13 3/8    | 225       | 250          | Surface | 5663-6093        | 9000   | 35,500       |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 8 5/8     | 3147      | 2000         | Surface | 6660-6707        | 6000   | -            |  |             |  |                     |  |             |  |               |  |
|                                     |   |       |      | 5 1/2     | 2920-6660 | 600          | 2900    |                  |        |              |  |             |  |                     |  |             |  |               |  |

| COMPANY, WELL AND LOCATION         | TYPE WELL | DEILLED | T.D. | CONSTRUCTION                      |                                  |                           |                                    | RECORD OF TREATMENTS                              |                                  |
|------------------------------------|-----------|---------|------|-----------------------------------|----------------------------------|---------------------------|------------------------------------|---------------------------------------------------|----------------------------------|
|                                    |           |         |      | SIZE CSG.                         | DEPTH                            | NO. SX CEMENT USED        | TOP OF CEMENT                      | ACIDIZED NO. GALLONS                              | SAND FRAC NO. LBS. SAND          |
| Taylor Glenn No. 7<br>H-4-21S-37E  | 0         | 9-56    | 5935 | 13 3/8<br>8 5/8<br>5 1/2          | 306<br>3150<br>5935              | 350<br>1400<br>150        | Surface<br>Surface<br>4961         | 5682-5862                                         | 10,700<br>90,000                 |
| Taylor Glenn No. 8<br>E-3-21S-37E  | 0         | 11-56   | 5930 | 13 3/8<br>8 5/8<br>5 1/2          | 307<br>3150<br>5810              | 300<br>1200<br>200        | Surface<br>Surface<br>4512         | 5638-5930                                         | 4600<br>20,000                   |
| Taylor Glenn No. 9<br>F-3-21S-37E  | 0         | 1-63    | 6000 | 7 5/8<br>4 1/2                    | 272<br>6000                      | 275<br>375                | Surface<br>Surface                 | 5655-5933                                         | 14,750<br>58,500                 |
| Taylor Glenn No. 10<br>F-3-21S-37E | 0         | 2-75    | 6805 | 8 5/8<br>5 1/2                    | 1361<br>6805                     | 600<br>1025               | Surface<br>3300                    | 6182-6394<br>6574-6758                            | 2100<br>6300<br>49,000           |
| Taylor Glenn No. 11<br>E-3-21S-37E | 0         | 9-75    | 6870 | 8 5/8<br>5 1/2                    | 1380<br>6870                     | 400<br>860                | Surface<br>Surface                 | 6575-6752                                         | 9000<br>42,000                   |
| <u>SOUTHLAND ROYALTY</u>           |           |         |      |                                   |                                  |                           |                                    |                                                   |                                  |
| State No. 2<br>E-2-21S-37E         | 0         | 8-51    | 8620 | 13 3/8<br>9 5/8<br>5 1/2          | 171<br>3004<br>8519              | 165<br>1600<br>550        | Surface<br>Surface<br>4255         | 6525-6795<br>6627-7562 (Sqzd)                     | 20,700<br>-<br>-                 |
| State No. 5<br>F-2-21S-37E         | 0         | 2-53    | 6850 | 13 3/8<br>8 5/8<br>5 1/2<br>3 1/2 | 200<br>3015<br>5980<br>5955-6850 | 225<br>1625<br>225<br>75  | Surface<br>Surface<br>4715<br>5955 | 5375-5439 (Sqzd)<br>5805-5945 (Sqzd)<br>6746-6832 | 3000<br>10,000<br>6000<br>25,000 |
| State No. 6<br>D-2-21S-37E         | 0         | 3-54    | 6030 | 13 3/3<br>8 5/8<br>5 1/2<br>3 1/2 | 208<br>3008<br>6030<br>5645-6896 | 240<br>1750<br>250<br>100 | Surface<br>Surface<br>4780<br>5645 | 5785-6000 (Sqzd)<br>6742-6830                     | 6000<br>6500<br>97,000           |

| COMPANY, WELL AND LOCATION  | TYPE WELL | SIZE DRILLED | I.D. | CONSTRUCTION                      |                                  |                           | INTERVAL                        | RECORD OF TREATMENTS |                         |
|-----------------------------|-----------|--------------|------|-----------------------------------|----------------------------------|---------------------------|---------------------------------|----------------------|-------------------------|
|                             |           |              |      | SIZE CSG.                         | DEPTH                            | N.O. SX CEMENT USED       | TOP OF CEMENT                   | ACIDIZED NO. GALLONS | SAND FRAC NO. LBS. SAND |
| State No. 7<br>C- 2-21S-37E | 0         | 6-54         | 3061 | 13 3/8<br>3 5/8<br>5 1/2<br>3 1/2 | 215<br>3030<br>6030<br>5708-6945 | 250<br>1600<br>225<br>100 | Surface<br>2100<br>4930<br>5708 | 5790-5962<br>6,000   | 55,000                  |
| State No. 8<br>E- 2-21S-37E | 0         | 1-56         | 3010 | 13 3/8<br>3 5/8<br>5 1/2          | 218<br>3092<br>6010              | 200<br>2200<br>200        | Surface<br>Surface<br>4200      | 5878-5988            | 130,000                 |
| State No. 9<br>F- 2-21S-37E | 0         | 7-62         | 5780 | 13 3/8<br>4 1/2                   | 329<br>5682                      | 325<br>570                | Surface<br>2560                 | 5682-5780            | 14,500                  |

UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO  
DATE : 11-02-81  
FIELD LEASE & WELL : WARREN BLINEBRY  
SAMPLING POINT :  
DATE SAMPLED : 10-29-81

SPECIFIC GRAVITY = 1.071  
TOTAL DISSOLVED SOLIDS = 135176  
PH = 7.25

|                  |             | ME/L    | MG/L   |
|------------------|-------------|---------|--------|
| CATIONS          |             |         |        |
| CALCIUM          | (CA)+2      | 306.    | 6145.  |
| MAGNESIUM        | (MG)+2      | 173.    | 2107.  |
| SODIUM           | (NA), CALC. | 1871.   | 43022. |
| ANIONS           |             |         |        |
| BICARBONATE      | (HCO3)-1    | 3.6     | 219.   |
| CARBONATE        | (CO3)-2     | 0       | 0      |
| HYDROXIDE        | (OH)-1      | 0       | 0      |
| SULFATE          | (SO4)-2     | 35.3    | 1700   |
| CHLORIDES        | (CL)-1      | 2312.   | 81981. |
| DISSOLVED GASES  |             |         |        |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)       | 0.1     | 0.17.0 |
| OXYGEN           | (O2)        | NOT RUN |        |
| IRON (TOTAL)     | (FE)        |         | 5.6    |
| BARIUM           | (BA)+2      | NOT RUN |        |
| STRONTIUM        | (SR)+2      | NOT RUN |        |

|                           |          |
|---------------------------|----------|
| SCALING INDEX             | TEMP     |
|                           | 30C      |
|                           | 86F      |
| CARBONATE INDEX           | 919      |
| CALCIUM CARBONATE SCALING | LIKELY   |
| SULFATE INDEX             | 1.07     |
| CALCIUM SULFATE SCALING   | UNLIKELY |

UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

HOBBS, NEW MEXICO 86240

COMPANY : CONOCO  
DATE : 11-3-81  
FIELD LEASE & WELL : SEWAGE EFFLUENT  
SAMPLING POINT:  
DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1  
TOTAL DISSOLVED SOLIDS = 1055  
PH = 7.39

|                  |             | MG/L    | MG/L |
|------------------|-------------|---------|------|
| CATIONS          |             |         |      |
| CALCIUM          | (CA)+2      | 5       | 100. |
| MAGNESIUM        | (MG)+2      | 1       | 12.1 |
| SODIUM           | (NA), CALC. | 9.8     | 225. |
| ANIONS           |             |         |      |
| BICARBONATE      | (HCO3)-1    | 5       | 500. |
| CARBONATE        | (CO3)-2     | 0       | 0    |
| HYDROXIDE        | (OH)-1      | 0       | 0    |
| SULFATE          | (SO4)-2     | 2.3     | 112. |
| CHLORIDES        | (CL)-1      | 8.4     | 299. |
| DISSOLVED GASES  |             |         |      |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |      |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0    |
| OXYGEN           | (O2)        | NOT RUN |      |
| IRON(TOTAL)      | (FE)        |         | 2.6  |
| BARIUM           | (BA)+2      | NOT RUN |      |
| STRONTIUM        | (SR)+2      | NOT RUN |      |

|                           |          |
|---------------------------|----------|
| SCALING INDEX             | TEMP     |
|                           | 30C      |
|                           | 86F      |
| CARBONATE INDEX           | 1.57     |
| CALCIUM CARBONATE SCALING | LIKELY   |
| SULFATE INDEX             | -6.9     |
| CALCIUM SULFATE SCALING   | UNLIKELY |

UNICHEM INTERNATIONAL

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO  
DATE : 11-3-81  
FIELD LEASES WELL : SEWAGE EFFLUENT PLUS BRINE  
SAMPLING POINT :  
DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.029  
TOTAL DISSOLVED SOLIDS = 43350  
PH = 6.95

|                  |             | ME/L    | MG/L  |
|------------------|-------------|---------|-------|
| CATIONS          |             |         |       |
| CALCIUM          | (CA)+2      | 13.3    | 3072  |
| MAGNESIUM        | (MG)+2      | 33.3    | 405   |
| SODIUM           | (NA), CALC. | 564     | 12969 |
| ANIONS           |             |         |       |
| BICARBONATE      | (HCO3)-1    | 4.9     | 298   |
| CARBONATE        | (CO3)-2     | 0       | 0     |
| HYDROXIDE        | (OH)-1      | 0       | 0     |
| SULFATE          | (SO4)-2     | 12.7    | 610   |
| CHLORIDES        | (CL)-1      | 730     | 20794 |
| DISSOLVED GASES  |             |         |       |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |       |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0     |
| OXYGEN           | (O2)        | NOT RUN |       |
| IRON(TOTAL)      | (FE)        |         | .33   |
| BARIUM           | (BA)+2      | NOT RUN |       |
| STRONTIUM        | (SR)+2      | NOT RUN |       |

SCALING INDEX

TEMP

|                           |          |
|---------------------------|----------|
|                           | 30C      |
|                           | 86F      |
| CARBONATE INDEX           | .281     |
| CALCIUM CARBONATE SCALING | LIKELY   |
| SULFATE INDEX             | -1.6     |
| CALCIUM SULFATE SCALING   | UNLIKELY |

UNICHEM INTERNATIONAL

601 NORTH LEECH

P O BOX 1499

HOBBS, NEW MEXICO 88240

COMPANY : CONOCO

DATE : 11-3-81

FIELD LEASEWELL : 50% WARREN ELINEBRY 50% SEWAGE EFFLUENT

SAMPLING POINT:

DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.06

TOTAL DISSOLVED SOLIDS = 89401

PH = 7.22

|                  |             | ME/L    | MG/L   |
|------------------|-------------|---------|--------|
| CATIONS          |             |         |        |
| CALCIUM          | (CA)+2      | 130     | 2605.  |
| MAGNESIUM        | (MG)+2      | 210     | 2552.  |
| SODIUM           | (NA), CALC. | 1230    | 28290. |
| ANIONS           |             |         |        |
| BICARBONATE      | (HCO3)-1    | 2       | 132.   |
| CARBONATE        | (CO3)-2     | 0       | 0      |
| HYDROXIDE        | (OH)-1      | 0       | 0      |
| SULFATE          | (SO4)-2     | 17.5    | 843.   |
| CHLORIDES        | (CL)-1      | 1551    | 54987. |
| DISSOLVED GASES  |             |         |        |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |        |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0      |
| OXYGEN           | (O2)        | NOT RUN |        |
| IRON(TOTAL)      | (FE)        |         | 4.7    |
| BARIUM           | (BA)+2      | NOT RUN |        |
| STRONTIUM        | (SR)+2      | NOT RUN |        |

SCALING INDEX

TEMP

30C

86F

.071

LIKELY

CARBONATE INDEX

CALCIUM CARBONATE SCALING

SULFATE INDEX

CALCIUM SULFATE SCALING

-2.4

UNLIKELY

## UNICHEM INTERNATIONAL

601 NORTH LEECH

P.O. BOX 1499

HORBS, NEW MEXICO 88240

COMPANY : CONOCO

DATE : 11-3-81

FIELD LEASE &amp; WELL : 50% WARREN BLINDERY 50% SEWAGE EFFLUENT PLUS BRINT

SAMPLING POINT :

DATE SAMPLED : 11-2-81

SPECIFIC GRAVITY = 1.072

TOTAL DISSOLVED SOLIDS = 107045

PH = 7.2

ME/L

MG/L

## CATIONS

|           |            | ME/L  | MG/L   |
|-----------|------------|-------|--------|
| CALCIUM   | (CA)+2     | 133.  | 2672   |
| MAGNESIUM | (MG)+2     | 193.  | 2350.  |
| SODIUM    | (NA).CALC. | 1539. | 35389. |

## ANIONS

|             |          | ME/L | MG/L   |
|-------------|----------|------|--------|
| BICARBONATE | (HCO3)-1 | 4.9  | 298.   |
| CARBONATE   | (CO3)-2  | 0    | 0      |
| HYDROXIDE   | (OH)-1   | 0    | 0      |
| SULFATE     | (SO4)-2  | 28.  | 1350   |
| CHLORIDES   | (CL)-1   | 1833 | 64985. |

## DISSOLVED GASES

| CARBON DIOXIDE   | (CO2) | NOT RUN |   |
|------------------|-------|---------|---|
| HYDROGEN SULFIDE | (H2S) | 0       | 0 |
| OXYGEN           | (O2)  | NOT RUN |   |

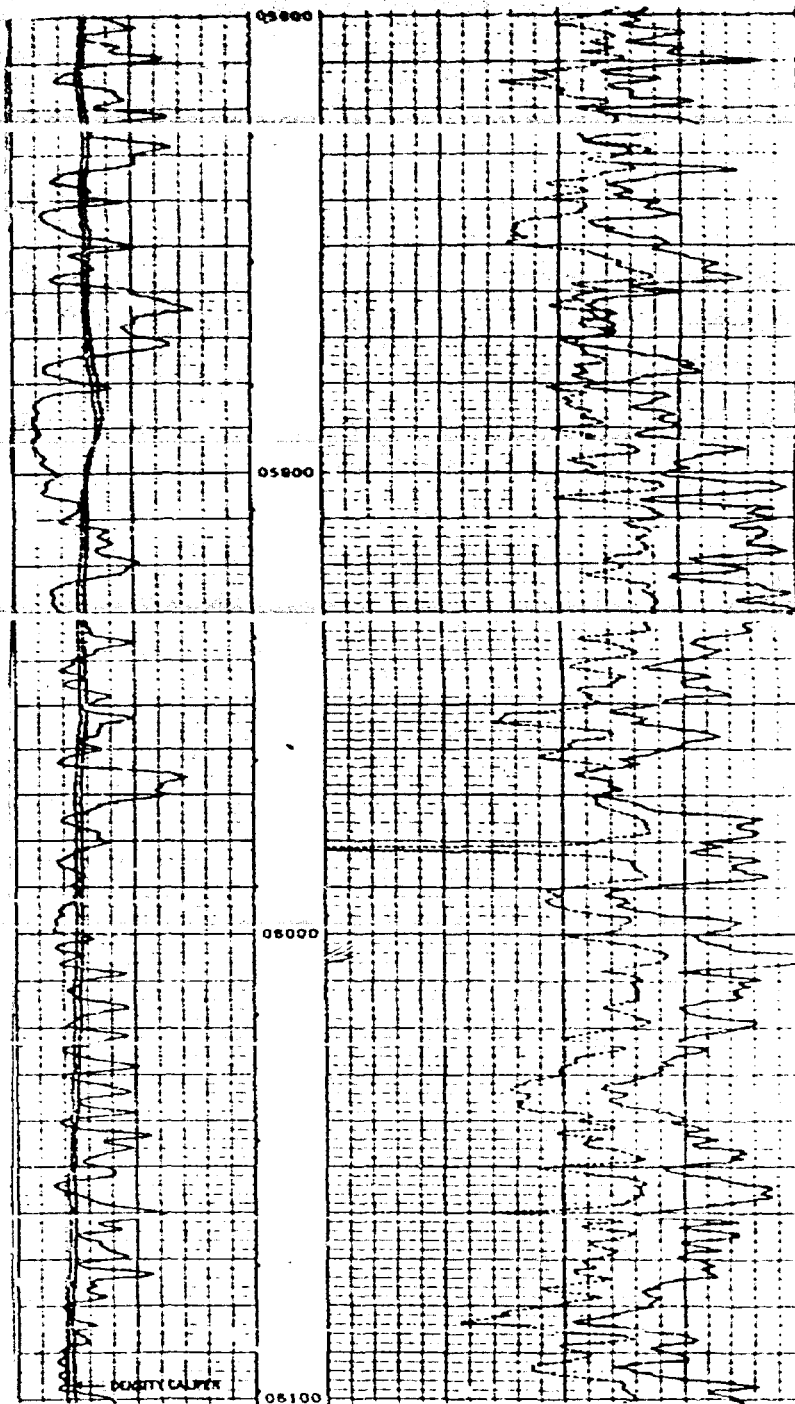
| IRON(TOTAL) | (FE)   |         | .65 |
|-------------|--------|---------|-----|
| BARIUM      | (BA)+2 | NOT RUN |     |
| STRONTIUM   | (SR)+2 | NOT RUN |     |

## SCALING INDEX

## TEMP

| CARBONATE INDEX           | 30C      |
|---------------------------|----------|
| CALCIUM CARBONATE SCALING | 86F      |
|                           | 510      |
|                           | LIKELY   |
| SULFATE INDEX             | -1.3     |
| CALCIUM SULFATE SCALING   | UNLIKELY |

|                                                                                                                                                                                                                             |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| COMPANY: <b>CONOCO OIL CORPORATION</b><br>WELL: <b>WELLEN UNIT 10</b> <b>80</b><br>FIELD: <b>WELLEN</b><br>COUNTY: <b>LEA</b> STATE: <b>NEW MEXICO</b><br>LOCATION: <b>1360' FNL &amp; 1370' TEL</b><br>DEPTH: <b>1370'</b> |  |
| 33 20.5 20.5 20.5                                                                                                                                                                                                           |  |



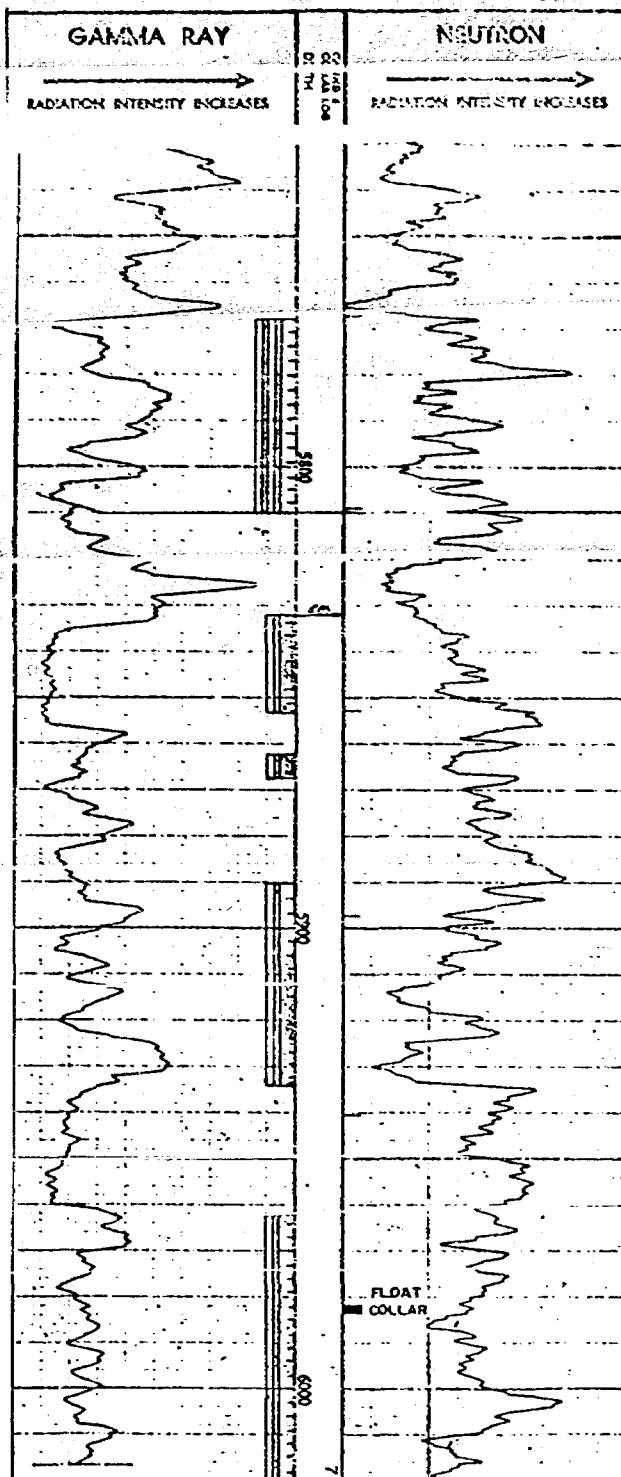


# RADIOACTIVITY LOG WELEX JET SERVICES, Inc.

LOGGED BY: J. H. WELLS, JR. DATE: 10/1/54

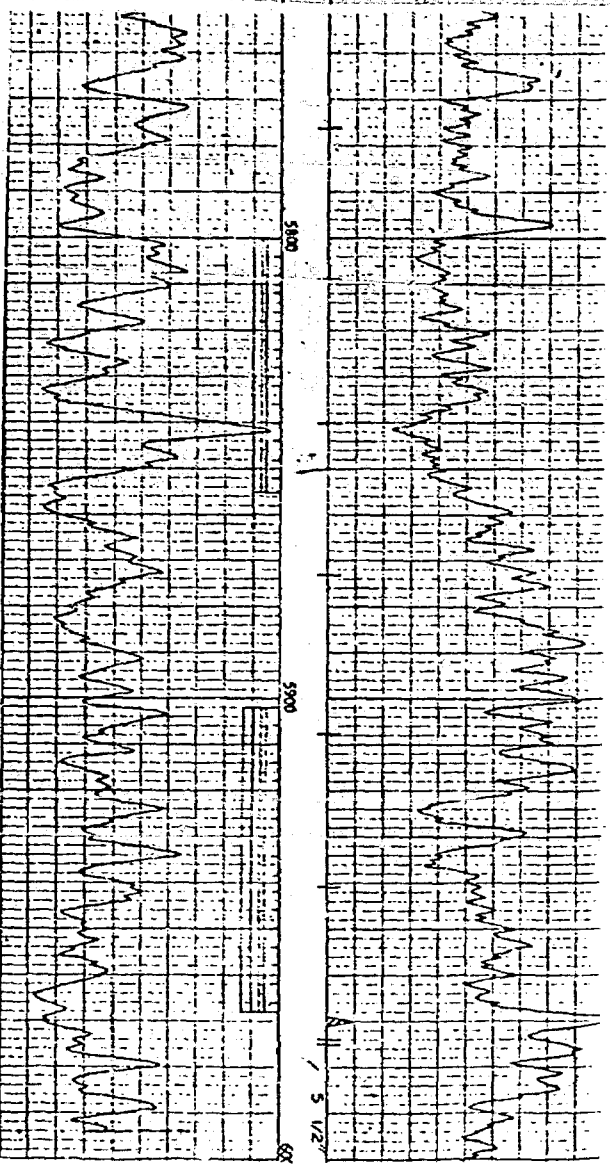
|                  |          |                              |            |       |
|------------------|----------|------------------------------|------------|-------|
| Location of Well | COMPANY  | CONTINENTAL OIL COMPANY      |            |       |
|                  | WELL     | MUSKIE UNIT BLINDING NO. 20  |            |       |
|                  | FIELD    | TERRY BLINDING               |            |       |
|                  | COUNTY   | LEA                          | STATE      | N. J. |
|                  | LOCATION | 1930' FUL & 650' FUL OF FUL  |            |       |
| LOG MEAS. FROM   |          | 11' ABOVE BRADEN HEAD PLANGE | REV. 3533' |       |
| DRILL MEAS. FROM |          |                              | REV.       |       |
| PERM. DATUM      |          | BRADEN HEAD PLANGE           | REV. 3519' |       |

COMPANY: CONTINENTAL OIL COMPANY  
WELL: MUSKIE UNIT BLINDING NO. 20  
FIELD: TERRY BLINDING  
COUNTY: LEA  
STATE: N. J.  
LOCATION: 1930' FUL & 650' FUL OF FUL  
LOG MEAS. FROM: 11' ABOVE BRADEN HEAD PLANGE  
DRILL MEAS. FROM:   
PERM. DATUM: BRADEN HEAD PLANGE

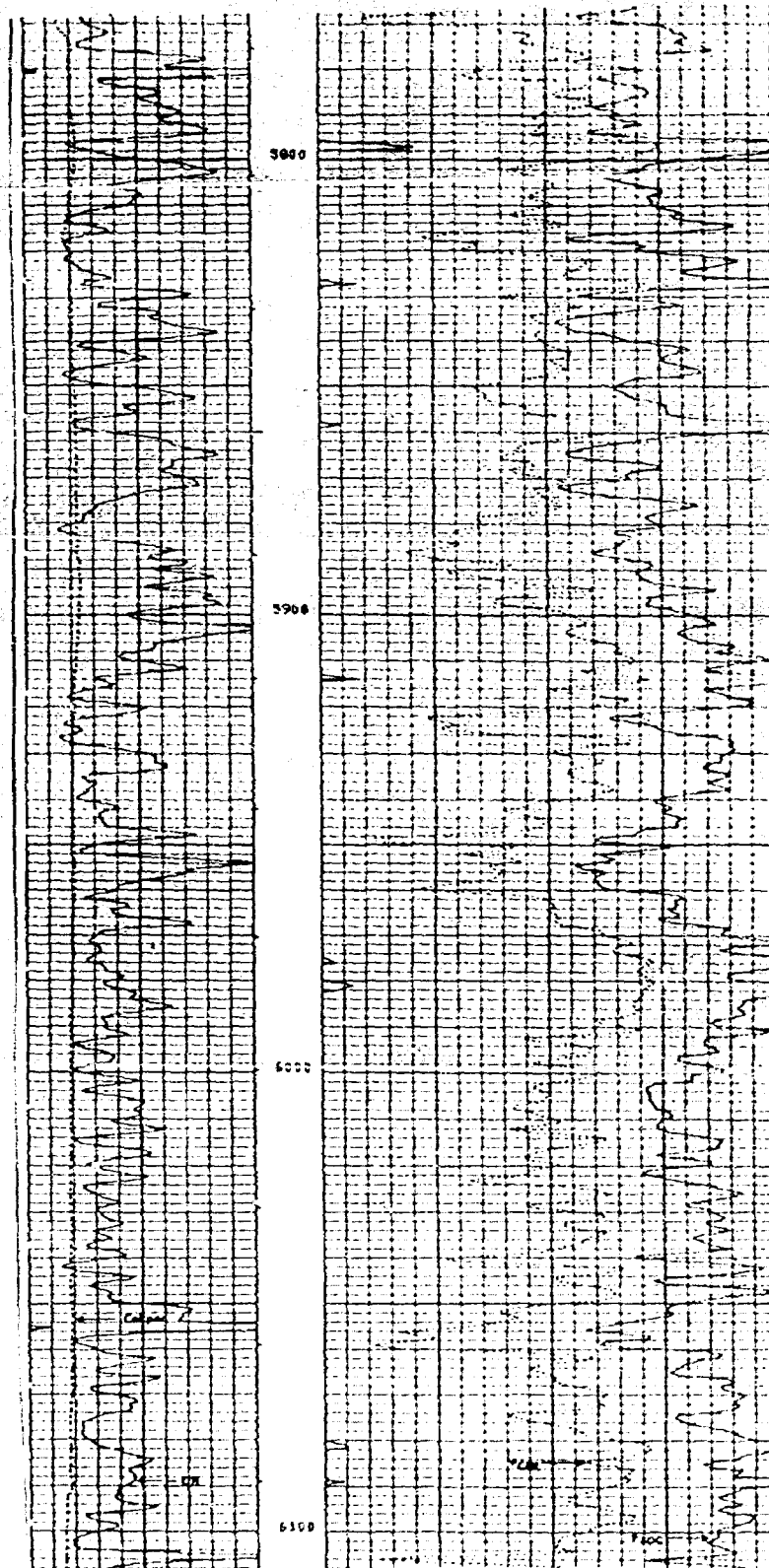


# THE WESTERN COMPANY **GAMMA-RAY** *Simultaneous with Radioactivity Log*

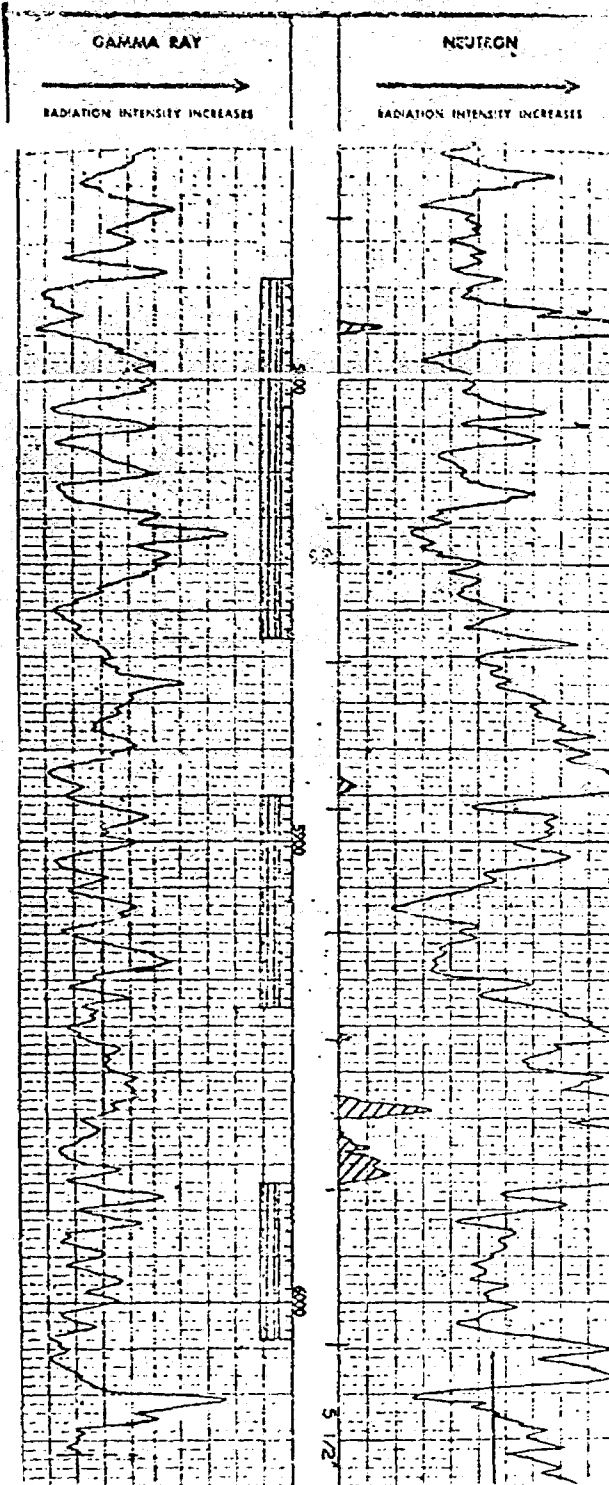
|                                     |                                                                                                                                                                        |                                                                                                                                                                        |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LOCATION                            | COMPANY CONTINENTAL OIL CO.<br>WELL WARDEN UNIT ELEMENT # 37<br>FIELD TERRY PLAIN, N.Y.<br>COUNTY: LEA STATE: N.Y.<br>LOCATION: 1020' FSL 660' FFL<br>SEC. 33, 203 32E | COMPANY CONTINENTAL OIL CO.<br>WELL WARDEN UNIT ELEMENT # 37<br>FIELD TERRY PLAIN, N.Y.<br>COUNTY: LEA STATE: N.Y.<br>LOCATION: 1020' FSL 660' FFL<br>SEC. 33, 203 32E |
| WELL NO. 55534                      | LOG NO. 55534                                                                                                                                                          |                                                                                                                                                                        |
| LOG MEAS FROM 1' ABOVE R.T.         | ELEV 3522                                                                                                                                                              |                                                                                                                                                                        |
| DRILL MEAS FROM 1' ABOVE R.T.       | ELEV 3522                                                                                                                                                              |                                                                                                                                                                        |
| PERM DATUM TOP SURF. LANDING FLANGE | ELEV 3510                                                                                                                                                              |                                                                                                                                                                        |



|                                                                                                                                                                      |  |                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|
| COMPANY: CONTINENTAL OIL COMPANY<br>WELL: WARREN UNIT #75<br>FIELD: NEW MEXICO FIELD UNIT<br>COUNTY: LRA STATE: NEW MEXICO<br>1920' ESL & 1920' J.M.<br>34 20-S 38-E |  | 1920' ESL & 1920' J.M.<br>34 20-S 38-E |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------|



|                                                                                         |                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>THE WESTERN COMPANY</b><br><b>GAMMA-RAY</b><br><i>Electric and Radioactivity Log</i> |                                                                                                                                                                                                                                                                                                    |
| LOCATION<br><br>FILE NO.<br>LOG NO. 45538                                               | COMPANY: CENTINENTAL OIL COMPANY<br>WELL: WASHEN UNIT BLINERBY #15<br>FIELD: TERRY BLINERBY<br>COUNTY: LEA STATE: N.M.<br>LOCATION: 660' FSL 1970' FSL SEC. 31<br>20-36<br>LOG MEAS FROM: 1' ABOVE P.B. REV. 3508<br>ORIG. MEAS FROM: 1' ABOVE P.B. REV.<br>PERM. DATUM: 5 1/2 LANDING FLANGE REV. |
|                                                                                         | COMPANY: CENTINENTAL OIL COMPANY<br>WELL: WASHEN UNIT BLINERBY #15<br>FIELD: TERRY BLINERBY<br>COUNTY: LEA STATE: N.M.<br>LOCATION: 660' FSL 1970' FSL SEC. 31<br>20-36                                                                                                                            |

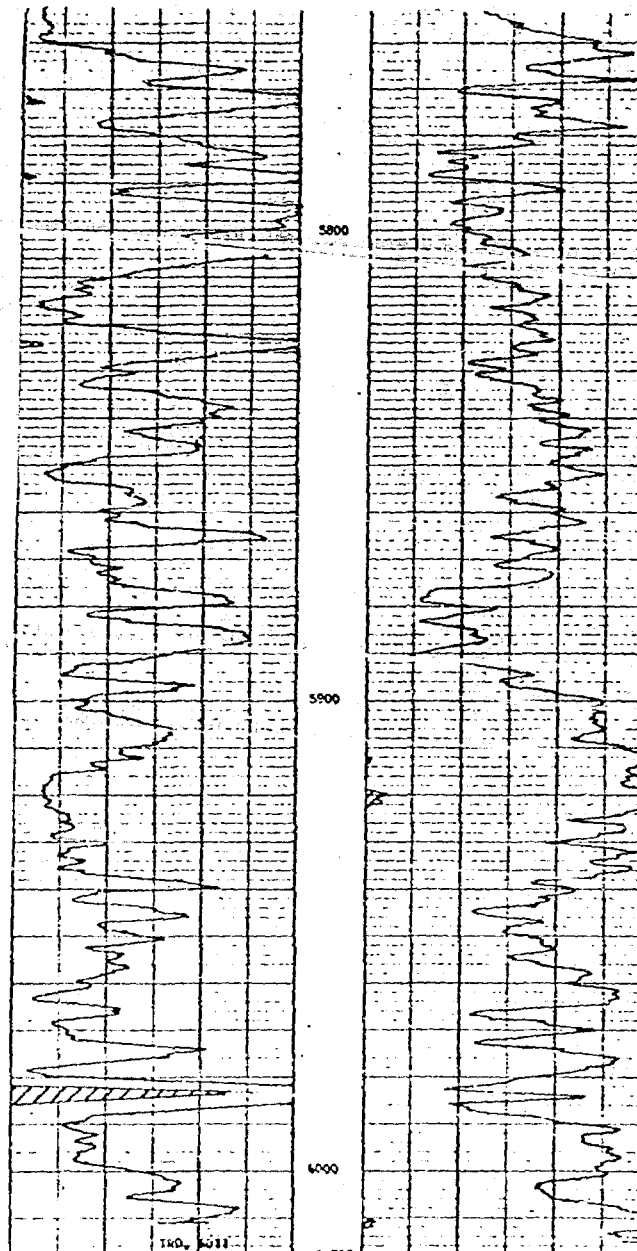


PERFORATING GUNS ATLAS CORP.  
**SIMULTANEOUS RADIATION LOG**  
NATURAL GAMMA RADIATION      INDUCED NEUTRON RADIATION

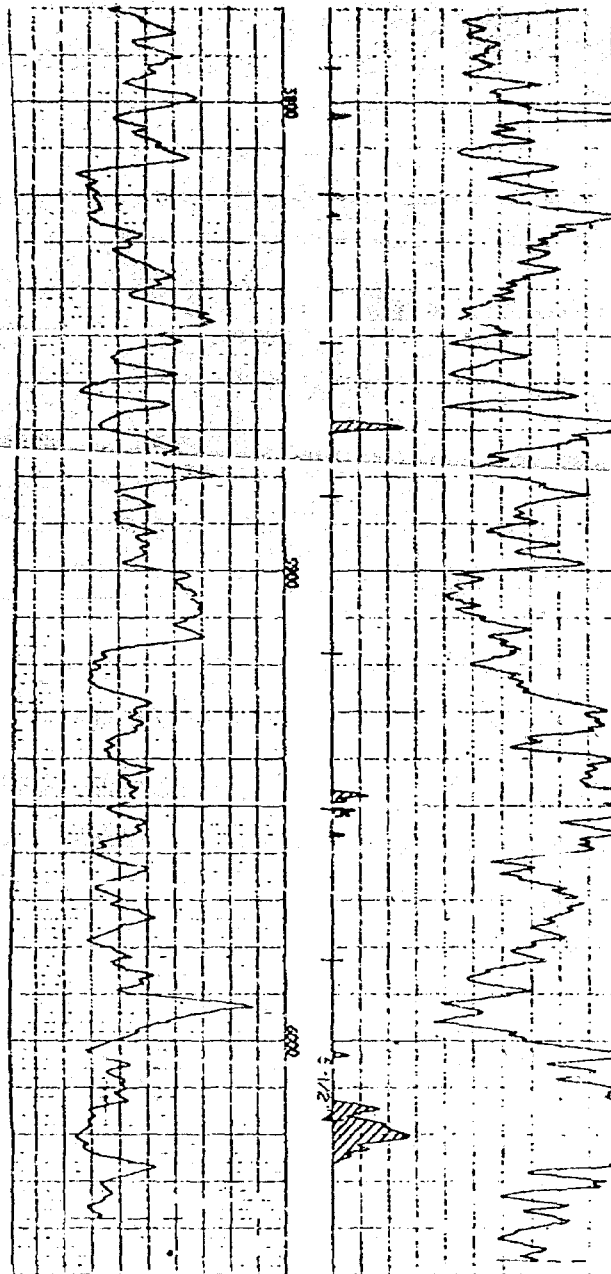
|                                          |                                    |                       |                           |
|------------------------------------------|------------------------------------|-----------------------|---------------------------|
| LOCATION<br>6601 F2<br>6601 F2           | COUNTRY<br>CONTINENTAL OIL COMPANY | WELL<br>ACQUINITE #14 | LOG NO.<br>TERRY R. KERRY |
| DATE<br>JAN 25 1962                      | COUNTY<br>LEA                      | STATE<br>FLA          | WELL NO.<br>6601 F2       |
| LOG NO.<br>6601 F2                       | ACTING<br>34                       | FOUNDRY<br>J. S.      | NAME<br>J. S.             |
| LOG NUMBER FROM<br>17 ABOVE ROTARY TABLE | DEPTH<br>3512                      | RADIATION             |                           |
| DRILLING HEAD-LOG FROM<br>SAME           | RADIATION                          |                       |                           |

LOG NUMBER  
6601 F2  
DATE  
JAN 25 1962  
WELL NO.  
6601 F2  
WELL NAME  
ACQUINITE #14  
COUNTRY  
CONTINENTAL OIL CO.  
COUNTY  
LEA  
STATE  
FLA

GAMMA RAY      DEPTH      INDUCED NEUTRON



| THE WESTERN COMPANY           |                |                               |       |
|-------------------------------|----------------|-------------------------------|-------|
| GAMMA RAY                     |                |                               |       |
| Saturated Radioactivity Log   |                |                               |       |
| LOCATION                      | COMPANY        | CONTINENTAL OIL COMPANY       | WELL  |
|                               | WELL           | 213                           |       |
|                               | FIELD          | TERBY-BLINBY                  |       |
|                               | COUNTY         | LEA                           | STATE |
|                               | LOCATION       | 1280' TEL 660' PSI 550' 31    |       |
| FILE NO.                      | LOG NO.        | 20-38                         |       |
| LOG MEAS FROM                 | KELLY STOPPING | FEET                          | 3330  |
| CRIG MEAS FROM                | KELLY STOPPING | FEET                          | 3330  |
| FEET DATUM                    | GROUND LEVEL   | FEET                          | 3319  |
| GAMMA RAY                     |                | NEUTRON                       |       |
| RADIATION INTENSITY INCREASES |                | RADIATION INTENSITY INCREASES |       |





# RADIOACTIVITY LOG WELEX JET SERVICES, Inc.

FILE NO.

Location of Well

COMPANY CONTINENTAL OIL COMPANY

WELL MARK D-3 / 15

FIELD LEBRY-BLECHERY

COUNTY LEB

STATE TEXAS

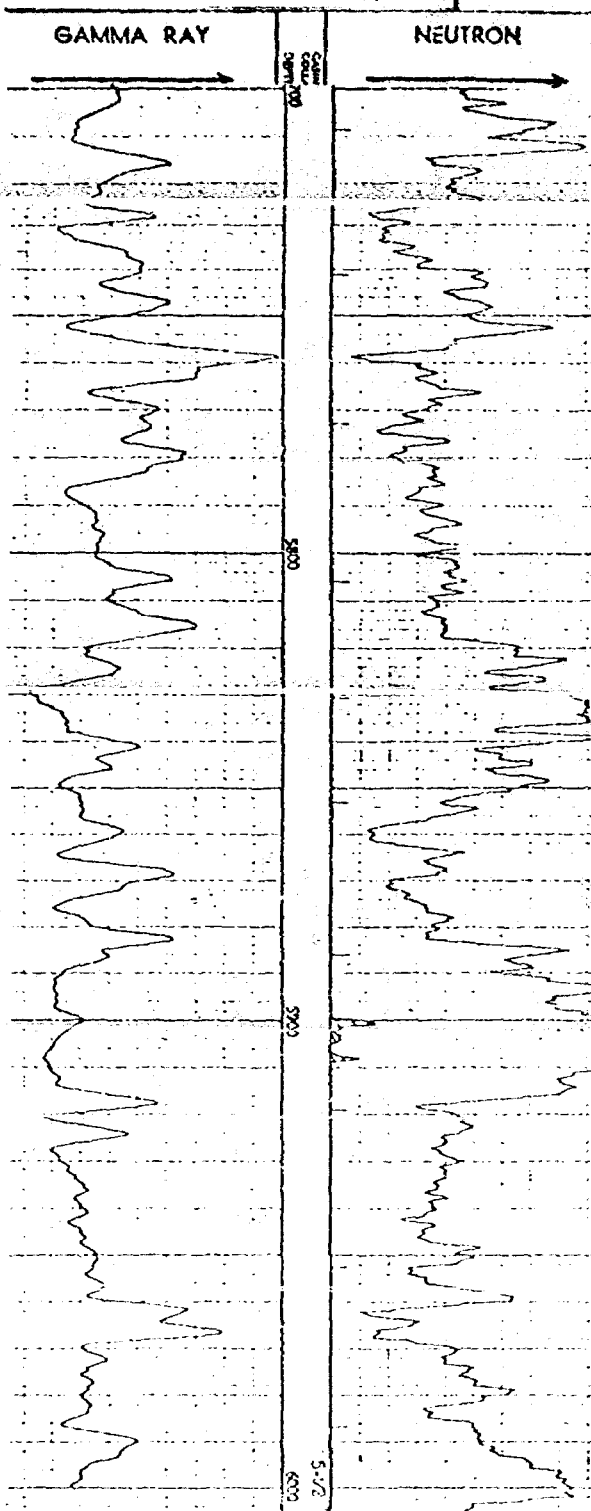
LOCATION 6401 FIE & 19401 FIE OF

SEC. 3 29-0 37-0

LOG MEAS FROM 11" ADV. 7 5/8" CG. FLANGE ELEV. 3002

ORIG. MEAS FROM 11" ADV. 7 5/8" CG. FLANGE ELEV. 3002

MEAS. DATUM 7 5/8" CG. 1" FLANGE ELEV. 3021

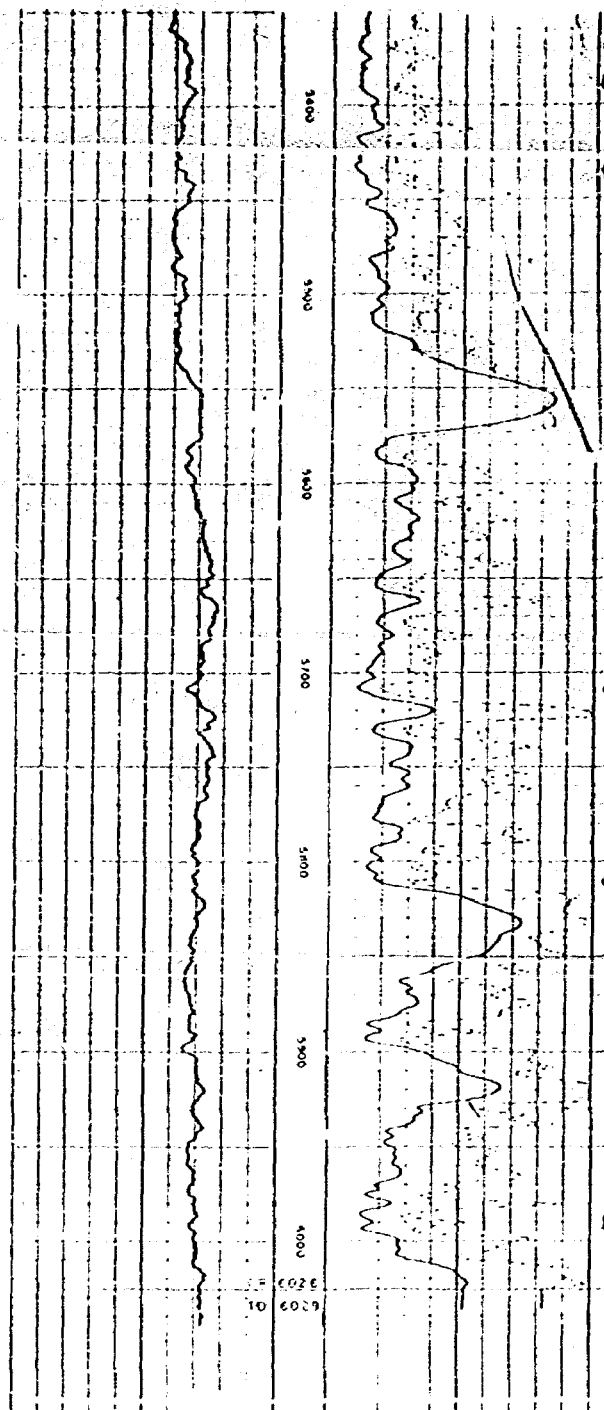


SOUTHWESTERN OIL SERVING CORPORATION

*Electrical Log*

|                                                                                                                             |                                                                                                                                                                                         |                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| COUNTY <u>Lee</u><br>FIELD <u>TERRY-PLINERRY</u><br>LOCATION <u>State # 6</u><br>WELL <u>Company Aztec Oil &amp; Gas Co</u> | COMPANY <u>AZTEC OIL &amp; GAS</u><br>COMPANY<br>WELL <u>STATE # 6</u><br>FIELD <u>TERRY-PLINERRY</u><br>LOCATION <u>SEC. 2-215-37E</u><br>COUNTY <u>LEA</u><br>STATE <u>NEW MEXICO</u> | Location of Well<br><u>906' 1 ML</u><br><u>660' 1 ML</u><br><u>Sec. 2-215-37E</u><br><br><u>ES</u><br><u>(ML)</u><br>Elevation <u>DP. 3599</u><br><u>FB.</u><br><u>WGL.</u><br>PRING No. _____ |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                     |               |                                        |
|-------------------------------------|---------------|----------------------------------------|
| SPONTANEOUS-POTENTIAL<br>millivolts | DEPTH<br>feet | RESISTIVITY<br>ohms. m <sup>2</sup> /m |
|-------------------------------------|---------------|----------------------------------------|



UNICHEM INTERNATIONAL

401 NORTH LEECH

P.O. BOX 1499

HOEBBS, NEW MEXICO 88340

COMPANY : CONOCO

DATE : 11-02-81

FIELD, LEASE & WELL : *Continental* WATER SALES FRESH WATER *Well*

SAMPLING POINT :

DATE SAMPLED : 10-29-81

SPECIFIC GRAVITY = 1.001

TOTAL DISSOLVED SOLIDS = 2120

PH = 6.95

|                  |             | MG/L    | MG/L |
|------------------|-------------|---------|------|
| CATIONS          |             |         |      |
| CALCIUM          | (CA)+2      | 11.8    | 236. |
| MAGNESIUM        | (MG)+2      | 16.2    | 196. |
| SODIUM           | (NA), CALC. | 7.8     | 181. |
| ANIONS           |             |         |      |
| BICARBONATE      | (HCO3)-1    | 4.7     | 286. |
| CARBONATE        | (CO3)-2     | 0       | 0    |
| HYDROXIDE        | (OH)-1      | 0       | 0    |
| SULFATE          | (SO4)-2     | 9.0     | 435. |
| CHLORIDES        | (CL)-1      | 22.1    | 783. |
| DISSOLVED GASES  |             |         |      |
| CARBON DIOXIDE   | (CO2)       | NOT RUN |      |
| HYDROGEN SULFIDE | (H2S)       | 0       | 0    |
| OXYGEN           | (O2)        | NOT RUN |      |
| IRON(TOTAL)      | (FE)        |         | .7   |
| BARIUM           | (BA)+2      | NOT RUN |      |
| STRONTIUM        | (SR)+2      | NOT RUN |      |

SCALING INDEX

TEMP

30C

86F

486

LIKELY

CARBONATE INDEX

CALCIUM CARBONATE SCALING

SULFATE INDEX

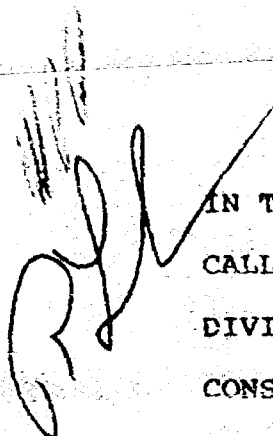
CALCIUM SULFATE SCALING

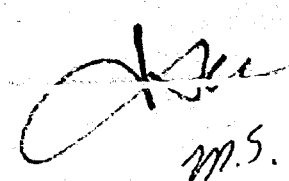
-1.0

UNLIKELY

HERBIE  
206

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

  
m.s. CASE NO. 7466

Order No. R-2906

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

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on January 20,  
1982, at Santa Fe, New Mexico, before Examiner Richard L.  
Stamets.

NOW, on this \_\_\_\_\_ day of January, 1982, the Division  
Director, having considered the testimony, the record, and the  
recommendations of the Examiner, and being fully advised in the  
premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Conoco Inc., seeks authority for it and Southland Royalty Company to each institute a cooperative waterflood project in the Blinebry Oil and Gas Pool by the injection of water into the Blinebry formation through nine injection wells located on Conoco's Warren Unit and Hawk B-3 Leases and Southland's State Lease in Sections 33 and 34 of, <sup>and Sections 2 and 3 of T. 21-S. R. 37-E,</sup> Township 21 South, Range 38 East, NMPM, Lea County, New Mexico.

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

(4) That the proposed <sup>cooperative</sup> waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the operators 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.

(6) That the injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 2000 psi, ~~but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.~~

*provided that the supervisor of the Division's district office at Hobbs should be notified of any injection pressure <sup>increase</sup> above 1000 psi in any well <sup>should have</sup> and ~~for~~ the opportunity to require a step-rate test to be conducted on such well.*

(7) <sup>cooperative</sup> 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 applicants, Conoco Inc. and Southland Royalty Company are hereby authorized to each institute a cooperative waterflood project in the Blinebry Oil and Gas Pool by the injection of water into the Blinebry formation through nine injection wells located on Conoco's Warren Unit and Hawk B-3 Leases and Southland's State Lease in Sections 33 and 34 of Township 20 South, Range 38 East, and Sections 2 and 3 of Township 21 South, Range 37 East, NMPM, Lea County, New Mexico, as follows:

|             |                        |        |               |   |              |                 |
|-------------|------------------------|--------|---------------|---|--------------|-----------------|
| Conoco Inc. | <del>Warren Unit</del> |        |               |   |              |                 |
| Warren Unit | Well No 13             | Unit D | Section 34    |   |              |                 |
| "           | "                      | "      | 14            | " | M            | " 34            |
| "           | "                      | "      | 17            | " | I            | " 33            |
| "           | "                      | "      | <del>66</del> | " | <del>Q</del> | " <del>33</del> |
| "           | "                      | "      | 20            | " | E            | " 34            |
| "           | "                      | "      | 66            | " | O            | " 33            |
| "           | "                      | "      | 75            | " | L            | " 34            |
| "           | "                      | "      | 80            | " | G            | " 33            |
| Hawk B-3    |                        |        | 15            |   | B            | " 3             |

See Under

Southland Royalty Company  
State Well No 6 Unit D Section 2

(4) That the injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 2000 psi

*provided that the supervisor of the Division's district office at Hobbs shall be notified*

*of any injection pressure ~~increase~~ above 1000 psi in any well ~~which may~~ and ~~the opportunity to require a~~ step-rate test to be conducted on such well.*

*See under*  
Rules 701, 702, and ~~703~~ of the Division Rules

*Chas. H. Mc...  
all these Rules*  
(6) 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. *706*

*cooperative*  
(7) 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 DIVISION

JOE D. RAMEY,

Director

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

CASE NO. 7466  
Order No. R-6906-A

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

NUNC PRO TUNC ORDER

BY THE DIVISION:

It appearing to the Division that Order No. R-6906, dated  
February 15, 1982, does not correctly state the intended order of  
the Division.

IT IS THEREFORE ORDERED:

- (1) That the list of Conoco's injection wells, <sup>as</sup> found in Order  
(1) on page 2 of Order No. R-6906 ~~shall be~~ is hereby corrected to  
read in its entirety as follows:

"CONOCO INC.

Warren Unit Well No. 13, Unit O, Section 34  
Warren Unit Well No. 14, Unit M, Section 34  
Warren Unit Well No. 17, Unit I, Section 33  
Warren Unit Well No. 20, Unit E, Section 34  
Warren Unit Well No. 16, Unit O, Section 33  
Warren Unit Well No. 75, Unit K, Section 34  
Warren Unit Well No. 80, Unit G, Section 33  
Hawk B-3 Well No. 15, Unit B, Section 3"

- (2) That this order shall be effective nunc pro tunc as of  
February 15, 1982.

DONE at Santa Fe, New Mexico, on this \_\_\_\_\_ day of  
March, 1982.

PAGE 745; HENCO OIL COMPANY FOR POOL  
OPERATION, SPECIAL POOL RULES, AND A  
DISCOVERY ALLOWABLE, LEA COUNTY, NEW  
MEXICO

DOCKET MARK

PAGE 1/8/82