

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING)
CALLED BY THE OIL CONSERVATION)
DIVISION FOR THE PURPOSE OF)
CONSIDERING:) CASE NO. 10948

APPLICATION OF TEXACO EXPLORATION AND PRODUCTION

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: David Catanach, Hearing Examiner

April 14, 1994

Santa Fe, New Mexico

This matter came on for hearing before the
Oil Conservation Division on April 14, 1994, at
Morgan Hall, State Land Office Building, 310 Old
Santa Fe Trail, Santa Fe, New Mexico, before Deborah
O'Bine, RPR, Certified Court Reporter No. 63, for the
State of New Mexico.

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I N D E X

April 14, 1994
 Examiner Hearing
 CASE NO. 10948

PAGE

APPEARANCES

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TEXACO'S WITNESS:

DARLENE de ARAGAO

Examination by Mr. Carr

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Examination by Examiner Catanach

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REPORTER'S CERTIFICATE

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E X H I B I T S

ID ADMTD

Exhibit 1

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Exhibit 2

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Exhibit 3

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A P P E A R A N C E S

FOR THE DIVISION: RAND L. CARROLL, ESQ.
 General Counsel
 Oil Conservation Commission
 State Land Office Building
 310 Old Santa Fe Trail
 Santa Fe, New Mexico 87501

FOR THE APPLICANT: CAMPBELL, CARR, BERGE &
 SHERIDAN, P.A.
 P.O. Box 2208
 Santa Fe, New Mexico 87504
 BY: WILLIAM F. CARR, ESQ.

CUMBRE COURT REPORTING

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1 EXAMINER CATANACH: At this time we'll
2 call Case 10948.

3 MR. CARROLL: Application of Texaco
4 Exploration and Production Inc. for a waterflood
5 project, Lea County, New Mexico.

6 EXAMINER CATANACH: Are there appearances
7 in this case?

8 MR. CARR: May it please the examiner, my
9 name is William F. Carr with the Santa Fe law firm
10 Campbell, Carr, Berge and Sheridan. We represent
11 Texaco Exploration and Production Inc. in this
12 matter, and I have one witness.

13 EXAMINER CATANACH: Any additional
14 appearances? Will the witness please take the stand
15 and please stand to be sworn in.

16 (Witness sworn.)

17 Q. (BY MR. CARR) Will you state your name
18 for the record, please.

19 A. Darlene de Aragao.

20 Q. How do you spell your last name?

21 A. D-E A-R-A-G-A-O.

22 Q. Where do you reside?

23 A. Hobbs, New Mexico.

24 Q. By whom are you employed?

25 A. Texaco Exploration and Production.

1 Q. And what is your current position with
2 Texaco?

3 A. Production engineer.

4 Q. Miss de Aragao, have you previously
5 testified before this Division?

6 A. No.

7 Q. Could you briefly review your educational
8 background for Mr. Catanach?

9 A. I have a Bachelor of Science in petroleum
10 engineering, which I received in 1987 from New Mexico
11 Institute of Mining and Technology. I went on to
12 take graduate courses in electrical engineering at
13 New Mexico State University.

14 Q. For whom have you worked since graduation
15 from New Mexico Tech?

16 A. Texaco Exploration and Production.

17 Q. At all times?

18 A. Yes.

19 Q. And have you been in the Hobbs office all
20 of that time?

21 A. Yes.

22 Q. Are you familiar with the application
23 filed in this case?

24 A. Yes.

25 Q. And are you familiar with the efforts of

1 Texaco to waterflood the Rhodes Yates-Seven Rivers
2 Pool in the area involved in this application?

3 A. Yes.

4 MR. CARR: Mr. Catanach, we tender Darlene
5 de Aragao as an expert witness and petroleum
6 engineer.

7 EXAMINER CATANACH: Miss de Aragao is so
8 qualified.

9 Q. (BY MR. CARR) Could you briefly state
10 what Texaco seeks in this case?

11 A. We would like approval to institute a
12 waterflood project on the Rhodes "B" Federal NCT-2
13 lease, which is located in the southeast quarter of
14 Section 28, Township 26 South, Range 37 East.

15 Q. Could you refer to the set of Oil
16 Conservation Division orders marked as Exhibit No. 1
17 and briefly review the history of this application
18 and of the development of the waterflood in this area
19 for Mr. Catanach?

20 A. The waterflood project began on July 29,
21 1964, on the Rhodes Yates Oil Pool in Section 26,
22 Township 26 South, Range 37 East in Order No. R-2748,
23 and subsequently we expanded to Sections 21, 27, 28
24 of the same township and range, and copies of all
25 these orders are in Exhibit No. 1.

1 Then we sought approval to drill
2 additional wells on our Rhodes "B" NCT 2 lease, and
3 additional conversions to injections were approved on
4 two wells on the NCT-2 lease No. 3 and No. 4.

5 Q. Those were recently approved; correct?

6 A. Yes.

7 Q. And those injection wells are located on
8 the acreage which is the subject of today's hearing?

9 A. Yes.

10 Q. We're seeking now approval of
11 waterflooding on the property on which these wells
12 have previously been approved by the Division?

13 A. Yes.

14 Q. Then what happened this year that brought
15 this case to hearing?

16 A. The OCD sent a letter to Texaco on January
17 21, 1994, indicating that we were going to need to
18 establish a waterflood on the Rhodes "B" NCT-2
19 lease. On February 2, 1994, Texaco filed the C-108
20 for expansion of the Rhodes waterflood. And at that
21 time is when the OCD notified us that we needed to go
22 to hearing.

23 Q. And so what you did was file the C-108 to
24 expand existing waterfloods in the area to include
25 this 160-acre tract?

1 A. Correct.

2 Q. And initially this year this whole process
3 was started when Texaco sought authority to convert
4 or to add additional injection wells on this acreage?

5 A. Yes.

6 Q. And it was at that time that it was
7 discovered that it was outside the area of the
8 existing waterflood?

9 A. Yes.

10 Q. Let's go to Exhibit No. 2. Could you
11 identify this for Mr. Catanach?

12 A. This is an area map showing the boundaries
13 for the Rhodes Yates Unit, which is the only unitized
14 unit, and that is in Sections 21, 28, and 27. And it
15 also shows the boundary for the Rhodes Co-op, which
16 consists of the Rhodes "A" Federal and the Rhodes "B"
17 NCT-2 lease. And it also shows where we would like
18 to initiate the waterflood project for this case,
19 which is in Section 28, and it's on the Rhodes "B"
20 NCT-2 lease.

21 Q. That would be the southeast quarter of
22 that section?

23 A. Correct.

24 Q. In fact, what you have is several
25 waterflood projects that Texaco has been operating in

1 a cooperative fashion; is that right?

2 A. Yes.

3 Q. Let's go now to Exhibit No. 3. What is
4 this?

5 A. Exhibit No. 3 is the C-108 application,
6 and it has all of the locations of the subject wells,
7 and it shows a map with a half-mile radius circle of
8 all the wells from the two subject wells for this
9 case.

10 Q. If we go to the last page of that exhibit,
11 that's where in fact we find the plat; is that not
12 correct?

13 A. Yes.

14 Q. And this includes a number of wells and it
15 shows the areas of review that are not actually
16 involved in this particular application?

17 A. Right.

18 Q. We are going to be talking about the two
19 wells in the west half of the southeast quarter of
20 Section 28?

21 A. Yes.

22 Q. And this exhibit shows the areas of review
23 for each of those wells?

24 A. Yes, it does.

25 Q. And it shows the general ownership in the

1 area?

2 A. Yes, it does.

3 Q. Miss de Aragao, this is an application for
4 expansion of existing waterflood authority; correct?

5 A. Right.

6 Q. For that reason, certain well diagrammatic
7 sketches or information on certain wells is not
8 included in this particular C-108 because they have
9 previously been filed as part of a prior approval for
10 waterflooding this area?

11 A. Correct. The only diagrams in this C-108
12 are wells that had not been previously submitted in
13 past C-108's.

14 Q. What is the status of the lands in the
15 proposed project area southeast of 28?

16 A. They are owned by Tom, Evelyn Linebry and
17 operated by Texaco. They're federal minerals.

18 Q. And the present status of the two wells
19 that you're proposing to add as part of this
20 waterflood project?

21 A. They're producing oil wells.

22 Q. Let's go now to the portion of Exhibit 3,
23 pages 11 through 17, which contain data on wells in
24 the area of review. Again, this is only new wells.
25 Does this portion of the exhibit contain all

1 information on these wells required by form C-108?

2 A. Yes, it does.

3 Q. Are there any plugged and abandoned wells
4 within the areas of review?

5 A. There are none that have not been
6 submitted on past C-108's.

7 Q. What is the status of the State UTP No. 1
8 well in Section 28?

9 A. It has been P & A'd, and it was previously
10 submitted in past C-108's.

11 Q. So that's the only well that could be
12 affected?

13 A. Yes.

14 Q. Does this exhibit also contain schematic
15 drawings showing the proposed method of completing
16 the wells for injection?

17 A. Yes, it does. It shows the two injection
18 wells, and it shows that we will be putting in
19 2-3/8-inch internally plastic-coated tubing.

20 Q. Do these schematics start on page 5 of
21 this exhibit?

22 A. Yes, they do.

23 Q. Why don't we go there and you can briefly
24 review for Mr. Catanach how you are going to go ahead
25 and complete the well for injection purposes?

1 A. We will be running in with 2-3/8 inch
2 plastic-coated tubing, and it shows the depth in
3 which the packers will be set at, and the additional
4 -- presently they're open hole; so we won't be
5 adding any type of perforations at this point in
6 time.

7 Q. Will the annular space be filled with
8 fluid and equipped with appropriate gauges so the
9 pressure in that space can be tested and monitored?

10 A. Yes, it will.

11 Q. And you will, therefore, comply with
12 federal underground injection control program
13 regulations?

14 A. Yes, we will.

15 Q. Into what formation are you proposing to
16 inject?

17 A. The Yates formation.

18 Q. Approximately what is its thickness?

19 A. About 300 feet.

20 Q. And this is all in the Rhodes Yates-Seven
21 Rivers Pool?

22 A. Yes, it is.

23 Q. Are there other productive zones in the
24 immediate vicinity?

25 A. No.

1 Q. What is the source of the water that
2 Texaco will be injecting in these wells?

3 A. Produced water and make-up.

4 Q. And what will be the source of the make-up
5 water?

6 A. It will come from some fresh water wells
7 from the Santa Rosa and Ogallala formations.

8 Q. Has the State Land Office approved the use
9 of fresh water as make-up water in these floods?

10 A. Yes.

11 Q. Basically what you're doing with the two
12 wells involved in this application is just what
13 you've done with other wells that are part of this
14 cooperative waterflood?

15 A. Yes.

16 Q. What volumes are you proposing to inject?

17 A. 400 barrels of water per day and a maximum
18 of about 600 barrels.

19 Q. That's for each of the wells?

20 A. Yes.

21 Q. These are closed systems?

22 A. Yes.

23 Q. Are you going to be injecting by gravity
24 or under pressure?

25 A. Under pressure.

1 Q. What will be the pressure limits that you
2 request?

3 A. Our initial maximum pressure will be the
4 .2 psi per foot, and then after that we will do
5 separate tests to get increases in our pressure, and
6 our maximum injection pressure will be 2000.

7 Q. Is this 2000 pressure in line with the
8 pressure being used in some other wells in this
9 cooperative waterflood project area?

10 A. Yes, it is.

11 Q. Have water analyses on the injection
12 fluids been provided with previously filed C-108's?

13 A. Yes.

14 Q. And have you experienced any problem with
15 compatibility of the fluids that are being injected
16 and utilized in this waterflood?

17 A. No.

18 Q. Are there fresh water zones in the area?

19 A. Yes.

20 Q. Do you know what they are and at
21 approximately what depth they would be located?

22 A. In the Santa Rosa and the Ogallala, and
23 they are about 300 feet.

24 Q. Are there any fresh water wells within a
25 mile of either of the two wells that are the subject

1 of this application?

2 A. No.

3 Q. Have you reviewed the available
4 engineering and geologic data on this area?

5 A. Yes.

6 Q. As a result of that review, have you found
7 any evidence of fracturing or other hydrologic
8 connections between the injection zones and any
9 source of underground drinking water?

10 A. No.

11 Q. In your opinion, would approval of this
12 expansion of this waterflood result in the increased
13 recovery of hydrocarbons from the project area?

14 A. Yes.

15 Q. Has the area been so depleted in your
16 opinion that it is appropriate at this time to
17 implement secondary recovery operations?

18 A. Yes.

19 Q. Has this application been provided to all
20 leasehold operators within the areas of review and to
21 the owner of the surface of the land on which the
22 property is located?

23 A. Yes.

24 Q. Is evidence of this contained in the
25 C-108?

1 A. Yes.

2 Q. Were Exhibits 1 through 3 either prepared
3 by you or compiled under your direction?

4 A. Yes.

5 MR. CARR: At this time, Mr. Catanach, we
6 move the admission of Texaco Exhibits 1 through 3.

7 EXAMINER CATANACH: Exhibits 1 through 3
8 will be admitted as evidence.

9 MR. CARR: And that concludes my direct
10 examination of Darlene de Aragao.

11 EXAMINER CATANACH: Mr. Carr, I'm a little
12 confused. Maybe you can help me. WFX Order No. 645
13 --

14 MR. CARR: Yes, sir.

15 EXAMINER CATANACH: -- approved injection
16 into the well Nos. 3 and 4?

17 MR. CARR: Yes, sir, that's correct. And
18 that was done administratively. At that time we
19 assumed, and apparently the Division didn't either
20 catch us or also assumed that those were within the
21 project area. We then wanted to add these additional
22 two, and it was at that time it was discovered that
23 the waterflood project area had not been expanded
24 into this acreage.

25 EXAMINER CATANACH: You are now seeking

1 authorization to inject into wells Nos. 5 and 6?

2 MR. CARR: Yes, sir, and expand the
3 project area to include that acreage. And the
4 terminology, it's either expand the existing or
5 approve an additional waterflood. It will be
6 operated in a cooperative fashion with the acreage
7 included in the unit which immediately offsets the
8 tract to the east, as with other leases that surround
9 the unit.

10 EXAMINATION

11 BY EXAMINER CATANACH:

12 Q. Miss de Aragao, maybe you better elaborate
13 a little bit on how you will cooperatively operate
14 that new waterflood with the Rhodes Yates Unit.

15 A. No, it's not with the Rhodes Yates Unit.
16 It would be with the rest of the Rhodes Co-op, which
17 contains the "B" NCT-1 and the Rhodes "A."

18 Q. Okay. Cooperatively operating means what,
19 sharing storage or injection facilities?

20 A. No. Texaco actually is the operator.
21 Yes, you're correct, all these leases go to one
22 centralized battery, and they have one injection
23 station which they all operate from.

24 Q. So all of these -- these are all federal
25 leases; right?

1 A. Yes, except for on the Rhodes Yates Unit,
2 there is some state land.

3 Q. That's not involved in this case?

4 A. No.

5 Q. Is Texaco the only working interest owner?

6 A. No.

7 Q. Does the working interest ownership vary
8 between the different waterfloods?

9 A. Yes.

10 Q. Is all the production metered or otherwise
11 handled separately for each project?

12 A. Yes.

13 Q. What you're really looking at here, from
14 what I can tell, it's basically a new project because
15 you can't really expand any of the existing projects
16 because it would be noncontiguous. From your map
17 here, that's what it looks like?

18 A. Right.

19 Q. So we would probably consider that to be a
20 new project. For the wells, the 3, 4, 5, and 6, were
21 those already drilled? Were those producing wells at
22 one time?

23 A. Yes, they were. 5 and 6 are at this time
24 producing wells; 3 and 4 have been converted but are
25 not having any water injected at this time.

1 Q. Okay. What is the current producing rate
2 of the 5 and 6, do you know?

3 A. They total like 5 barrels of oil.

4 Q. This area, this southeast quarter, has
5 never been flooded?

6 A. No.

7 Q. But the Rhodes Yates Unit next to it has
8 been flooded for several years?

9 A. Yes.

10 EXAMINER CATANACH: I think it would
11 probably suffice, if the project is approved, to
12 leave intact WFX 645, leave that in place. And I
13 understand, Mr. Carr, there's also another
14 administrative order regarding a nonstandard location
15 within the waterflood. Do you know about that?

16 MR. CARR: No, I don't.

17 EXAMINER CATANACH: I think we've also
18 approved a nonstandard location, possibly for the
19 well No. 7.

20 THE WITNESS: I believe it was approved.

21 EXAMINER CATANACH: Okay. It would
22 probably be best to leave that order intact, too, if
23 we approve the project.

24 Q. Was it your testimony the surface is owned
25 by Linebry?

1 A. Yes.

2 Q. They have been notified of the
3 application?

4 A. Yes, they have.

5 EXAMINER CATANACH: I don't think I have
6 anything further, Mr. Carr.

7 MR. CARR: Mr. Catanach, that's all we
8 have in this case.

9 EXAMINER CATANACH: Okay. There being
10 nothing further, Case 10948 will be taken under
11 advisement.

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CERTIFICATE OF REPORTER

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

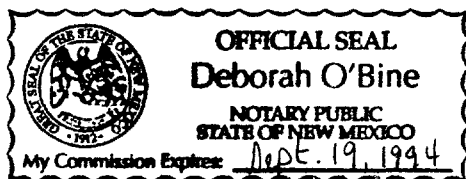
I, Deborah O'Bine, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that I caused my notes to be transcribed under my personal supervision, and that the foregoing transcript is a true and accurate record of the proceedings of said hearing.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL, May 4, 1994.

Deborah O'Bine

DEBORAH O'BINE
 CCR No. 63



I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10818, heard by me on April 14, 1994.

David Catamb, Examiner
 Oil Conservation Division