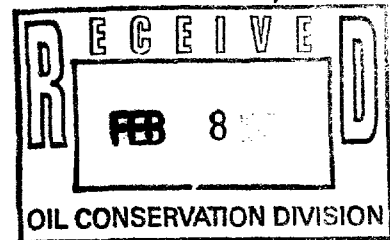


STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING)
CALLED BY THE OIL CONSERVATION)
DIVISION FOR THE PURPOSE OF)
CONSIDERING:)
APPLICATION OF TEXACO EXPLORATION)
AND PRODUCTION, INC.)

CASE NO. 11,188



ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

February 2nd, 1995

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, February 2nd, 1995, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, before Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

STEVEN T. BRENNER, CCR
(505) 989-9317

I N D E X

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 Examiner Hearing
 CASE NO. 11,188

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* * *

A P P E A R A N C E S

FOR THE DIVISION:

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By: WILLIAM F. CARR

* * *

1 WHEREUPON, the following proceedings were had at
2 9:24 a.m.:

3 EXAMINER CATANACH: At this time we'll call Case
4 11,188.

5 MR. CARROLL: Application of Texaco Exploration
6 and Production, Inc., for certification of a positive
7 production response pursuant to the "New Mexico Enhanced
8 Oil Recovery Act", Lea County, New Mexico.

9 EXAMINER CATANACH: Are there appearances in this
10 case?

11 MR. CARR: May it please the Examiner, my name is
12 William F. Carr with the Santa Fe law firm Campbell, Carr,
13 Berge and Sheridan.

14 I represent Texaco Exploration and Production,
15 Inc., and I have one witness.

16 EXAMINER CATANACH: Additional appearances?

17 MR. BRUCE: Mr. Examiner, Jim Bruce from the
18 Hinkle law firm in Santa Fe, representing Mewbourne Oil
19 Company.

20 Mewbourne is an interested observer of these
21 proceedings, interested in seeing how the Division will
22 process certain requests. It owns and operates waterflood
23 units in the state, and it has no obligation in this
24 matter.

25 (Off the record)

1 EXAMINER CATANACH: Okay, Mr. Carr.

2 MR. CARR: At this time, Mr. Catanach, we would
3 call Kevin Hickey.

4 EXAMINER CATANACH: I'm sorry, will the witness
5 please stand to be sworn in?

6 (Thereupon, the witness was sworn.)

7 KEVIN HICKEY,
8 the witness herein, after having been first duly sworn upon
9 his oath, was examined and testified as follows:

10 DIRECT EXAMINATION

11 BY MR. CARR.:

12 Q. Will you state your name for the record, please?

13 A. Kevin Hickey.

14 Q. Where do you reside?

15 A. Midland, Texas.

16 Q. By whom are you employed?

17 A. Texaco, Incorporated.

18 Q. And what is your current position with Texaco?

19 A. I'm a reservoir engineer.

20 Q. Mr. Hickey, have you previously testified before
21 this Division and had your credentials as a petroleum
22 engineer accepted and made a matter of record?

23 A. Yes.

24 Q. And are you familiar with the Vacuum Glorieta
25 West Unit and Texaco's enhanced oil recovery efforts in

1 this unit?

2 A. Yes.

3 Q. Are you familiar with the current production
4 characteristics of the wells in the unit area?

5 A. Yes.

6 MR. CARR: Are the witness's qualifications
7 acceptable?

8 EXAMINER CATANACH: Yes, they are.

9 Q. (By Mr. Carr) Mr. Hickey, could you briefly
10 state what Texaco seeks with this Application?

11 A. Texaco is seeking certification of a positive
12 production response in the Vacuum Glorieta West Unit.

13 Q. When was the Vacuum Glorieta West Unit approved
14 as an enhanced oil recovery project?

15 A. In Texaco's Exhibit Number 1, by Order Number
16 R-9714, it was approved September 3rd, 1992.

17 Q. Could you identify what has been marked as Texaco
18 Exhibit Number 2?

19 A. This is the OCD project certification dated
20 September -- or, I'm sorry, December 8th, 1992.

21 Q. Now, that's when the project was actually
22 approved under the Enhanced Oil Recovery Act.

23 Texaco received a positive production response on
24 or about what date?

25 A. Starting January 1st, 1994.

1 Q. When did Texaco actually apply for certification
2 of this positive production response?

3 A. November 4th, 1994, by way of a letter. It was
4 then set for hearing because it was the first application
5 of its kind.

6 Q. Let's go to what has been marked for
7 identification as Texaco Exhibit Number 3. Could you
8 identify this, please?

9 A. Exhibit Number 3 is a plat showing the unit
10 outline. It shows all the wells that are currently in the
11 unit.

12 The small triangles indicate the injection wells.

13 The solid dots indicate the production wells,
14 producing wells.

15 The triangles surrounded by light blue circles
16 are wells that were -- injection wells that were drilled in
17 1992.

18 The triangles surrounded by the darker blue
19 circles are the wells that were drilled in 1993.

20 There are also five wells surrounded by green
21 circles that were replacement wells that were either
22 drilled or deepened into the unit in 1994.

23 The recovery technique here employed is a 40-acre
24 fivespot-pattern waterflood.

25 Q. When Texaco appeared before the Division with

1 this project, basically what were you proposing to do?

2 A. The field was originally developed from about
3 1960 on, it was under primary depletion solution gas drive
4 by drilling, infill drilling with injection wells. The
5 idea was to repressurize the reservoir and to form a flood
6 front and recover secondary oil.

7 Q. At that time you were estimating that you would
8 have to incur approximately how much in capital expenditure
9 to implement this enhanced oil recovery project?

10 A. In the original exhibit over, I think, the life
11 of the project, they're estimating somewhere in about the
12 neighborhood of \$33 million, and to date we estimate we've
13 probably spent somewhere in the neighborhood of \$27 to \$30
14 million.

15 Q. And Texaco at that time was committing to drill
16 the injection wells that are shown on this exhibit; is that
17 right?

18 A. That is correct.

19 Q. And has Texaco at this time drilled all the
20 injection wells that it represented would be drilled in its
21 1992 Application?

22 A. That is correct. Actually, there were -- I think
23 there were a few wells that were slated to be drilled as
24 lease-line wells when the Vacuum Glorieta East Unit became
25 operable, but we have not drilled those as of yet.

1 Q. Let's go to Texaco Exhibit Number 4. Could you
2 identify that for the Examiner?

3 A. Exhibit Number 4 is a -- just a listing of all
4 the wells in the unit, with the current well number, the
5 API number, the type or status of the well, and the
6 completion date.

7 Currently there are -- There were 71 oil wells,
8 one of which is now plugged and abandoned. Thirteen wells
9 are currently shut in, and 57 are active producers.
10 There's also 54 water injection wells.

11 Q. Attached to the Application filed in November of
12 this year [sic] was a similar table; is that right?

13 A. That is correct.

14 Q. You have revised all exhibits attached to that
15 original application as necessary, so the information
16 you're presenting here today is current?

17 A. That is correct. The -- We just basically
18 updated the production curves and some of the well status.

19 Q. Could you advise the Examiner when injection of
20 water actually commenced in the unit area?

21 A. Water injection commenced into the original wells
22 that were drilled in 1992, in December, about -- at or
23 about December 23rd of 1992.

24 The project was then expanded several times in
25 June of 1993, again in September -- I'm sorry, in August of

1 1993, and then again finally in September of 1993.

2 Q. By September of 1993, were virtually all
3 injection wells actually injecting into the reservoir?

4 A. That is correct, with the exception of Well
5 Number 1, which in the original C-108 was the one well that
6 was to be converted. That well was converted in 1994.

7 Q. Is it fair to say that following injection you
8 saw a response to the injection almost immediately in the
9 immediate offsetting wells?

10 A. We have seen some type -- we saw some type of
11 response in terms of -- We saw increases in water cut and
12 we also saw, as expected in a waterflood situation where
13 you've undergone severe primary depletion, the gas
14 production started to drop off.

15 As you repressurized the reservoir, gas is being
16 driven into -- back into solution.

17 To date we have injected approximately about 17
18 million barrels of water.

19 Q. Let's go now to Texaco Exhibit Number 5. Would
20 you identify that?

21 A. Exhibit 5 is a production curve of the entire
22 unit, going back to 1990, which was prior to actual
23 unitization.

24 The green curve shows the oil production, the red
25 curve shows gas production, the dark blue curve shows the

1 water injection rate, and the purple curve shows the
2 water -- producing water rate.

3 As we noted on the curve, the effective date of
4 the unit was in September of 1992. The injection actually
5 began in December of 1992.

6 What we notice is, from the production decline
7 curve on the oil, that the curve starts to begin picking up
8 -- or changing, actually changing the decline into an
9 actual increase at or about the beginning of January of
10 1994, and has since increased since then.

11 Q. Prior to that time, the curve does start to
12 flatten, doesn't it?

13 A. It does start to flatten out about mid-1993. You
14 can kind of see -- It had stabilized at a rate, and we
15 actually start to see an increase in the beginning of 1994.

16 Notice also on the curve that we also see the gas
17 production begin to sharply decline. It was approximately
18 about a 2000 GOR about that time, about the time the
19 injection started, and has dropped off to less than 1000,
20 approximately about 600 GOR, which is consistent with
21 waterflood operations.

22 Also at the time that the injection started, we
23 begin to see an increase in water production. Water had
24 been maintained -- was about 2000 barrels a day prior to
25 the flood and has now kicked up to about 12,000 barrels a

1 day.

2 As I said earlier, we really start to see an
3 actual increase in oil production above the -- or a change
4 in the decline. Mid-1993 you see a flattening out, and
5 then starting to see an increase in the beginning of 1994.

6 Q. Now, what you're showing here is a response to
7 this enhanced oil recovery project on a unit basis; is that
8 right?

9 A. That is correct.

10 Q. How do you account for production and pay taxes
11 on that?

12 A. It is all paid on a unit basis.

13 Q. Now, when we look at this, are you -- did you
14 actually see a positive production response throughout the
15 unit in January of 1994?

16 A. Yes, we did. Most of the wells had shown some
17 increases in fluid from the wells to the north, in the
18 northwest corner, like Wells Number 2 and 3, all the way
19 down to Well Number 118, which is in that southeast leg of
20 the unit.

21 But predominantly we see the response on the
22 structurally high portion of the unit, which is in the
23 center, southwest section.

24 Q. So what you're saying is, you actually -- you saw
25 a response in early 1994 in the extreme northwestern

1 portion of the unit and the extreme southeastern portion of
2 the unit, as well as the most pronounced response in the
3 structurally high portion of the unit?

4 A. That is correct.

5 Q. Could you identify Texaco Exhibit Number 6,
6 please?

7 A. Exhibit Number 6 is the actual tabulated
8 production data going back from -- five years from January
9 of 1990 through December of 1994.

10 It is the oil, gas and water production, as well
11 as the water injection volumes.

12 We can see that the oil production begins picking
13 up in January of 1994, through currently, over what it was
14 last year.

15 Q. Okay. Is Texaco Exhibit Number 7 a copy of the
16 original application filed in this case in November of
17 1994?

18 A. That is correct. It was updated for -- Certain
19 aspects of it have been updated for this hearing.

20 Q. Texaco requests that the Division certify this
21 positive production response in its Vacuum Glorieta Unit?

22 A. That is -- Yes.

23 Q. And does Texaco request that pursuant to the
24 rules and procedures for qualifying enhanced oil recovery
25 projects and certifying these positive production

1 requests -- or responses -- does Texaco request that the
2 Division notify the Secretary of the Department of Taxation
3 and Revenue of the positive production response effective
4 January 1, 1994?

5 A. Yes.

6 Q. Were Exhibits 1 through 7 either prepared by you
7 or compiled at your direction?

8 A. Yes.

9 MR. CARR: At this time, Mr. Catanach, we move
10 the admission of Texaco Exhibits 1 through 7.

11 EXAMINER CATANACH: Exhibits 1 through 7 will be
12 admitted as evidence.

13 MR. CARR: And that concludes my direct
14 examination of this witness.

15 EXAMINATION

16 BY EXAMINER CATANACH:

17 Q. Mr. Hickey, I just would like to go over some
18 numbers again with you that I want to make sure that I've
19 got right here.

20 I believe you said that you originally estimated
21 a \$33 million capital expenditure and you have spent to
22 date approximately \$27 million?

23 A. That number is about right. What I'm referring
24 to is in the original exhibit that was presented in the
25 original hearing for Case 10,515. There was -- Exhibit

1 Number 20 was the unitization and waterflood development
2 plan.

3 And pages -- I have to look. There's a section
4 entitled "Investment Schedule", and it listed out
5 approximately how much money would be spent by year.

6 Now, this schedule hasn't been exactly held to
7 because I think the unitization was anticipated to start
8 prior, in July. But the numbers are approximately right.

9 We've probably spent to date probably in the
10 neighborhood of about \$27 to \$30 million. I don't know the
11 exact number --

12 Q. Okay.

13 A. -- offhand.

14 But we have drilled all the injection wells that
15 we were required -- or supposed to have drilled at the --
16 installed the injection facilities, as we had stated in the
17 original application.

18 Q. Which was my next question. You said except for
19 lease-line injection wells?

20 A. Right, there was about, I think, about six lease-
21 line wells that were eventually going to be drilled further
22 down the line.

23 And then in the original order, I believe it said
24 that these wells would not be drilled until there was an
25 actual lease-line agreement between the Vacuum Glorieta

1 East Unit and the Vacuum Glorieta West Unit. And I believe
2 the Vacuum Glorieta East Unit only received their
3 certification -- or their unitization late last year, and
4 they have not, as far as I know, have not started any of
5 their injection work.

6 I think they may have drilled a few wells, but I
7 don't think they've started injection yet. That is
8 operated by Phillips.

9 Q. The lease-line injection wells is not really a
10 critical point, because -- Well, have you seen response on
11 the edge wells of the unit?

12 A. Several of those edge wells are not currently on
13 production as of yet.

14 What we've done is taken our time in putting some
15 of the wells that were off production prior to unitization
16 and putting them back on, so that a couple of those wells
17 have just gone on here in the last year.

18 And basically we're waiting for that area,
19 because it is -- had less pay, to see if we can start
20 seeing some additional response or seeing what the --
21 measuring what the response was before we put those wells
22 on.

23 In addition, those wells for -- I believe some of
24 them were mechanically -- they were slimholes, basically
25 2 7/8 tubing set as casing, and they're -- we're just

1 basically waiting to put those back on. They were kind of
2 lower-priority wells.

3 Q. Some of the edge wells that have been producing,
4 have you seen some response in those wells?

5 A. Yes, I think -- As I mentioned, 118 was one.
6 Some of those wells we've put back on. Well Number 70 was
7 one we recently had drilled. Yeah, we have seen some
8 response in those.

9 In some cases we've seen some water encroachment
10 prematurely, and that's the reason why we're kind of taking
11 this more slowly than maybe what we had originally thought.

12 Q. Okay. My understanding is that there are a total
13 of 71 producing wells in the unit?

14 A. There's a total of 71, I said, as of the date.

15 One of those was actually plugged out; it was a
16 Number -- which was a Vacuum Glorieta West Unit Number 12.

17 The story behind it, it was a demand location.
18 As required by the unit agreement, each previous operator
19 would have to supply a well per 40-acre spacing. That well
20 was a Mobil well. And Mobil, when they attempted their
21 completion into the Glorieta, they were unable to shut
22 water flow off in the -- from the San Andres and had to
23 plug the well. So we're evaluating whether or not to
24 redrill them.

25 I believe it was Burgess State Number 36, was the

1 actual -- the previous name for it, but I may not be a
2 hundred percent correct on that.

3 Q. Okay. Now -- So that leaves a total of 70,
4 right?

5 A. Right, that would leave 70 wells that are --

6 Q. Okay.

7 A. -- capable of being produced.

8 They're still looking at some -- Like I said, I
9 think there's 13 that we're looking to put back on
10 production.

11 Q. Okay, that's out of the 71, there's still 13 out
12 of those 71 that are shut in?

13 A. Right.

14 Q. And you have drilled 54 water injection wells?

15 A. Fifty-three, I believe, with one well converted.

16 Q. Okay. You mentioned an injection -- one
17 injection well that was not injecting? 101?

18 A. Well Number 1 was the one --

19 Q. Well Number 1.

20 A. -- that was converted. That was only converted
21 this year -- or, I'm sorry, 1994.

22 Q. Is that well currently injecting?

23 A. Yes, it is.

24 Q. So you currently have 54 injection wells, all
25 actively injecting?

1 A. That is correct, or else -- At times we have
2 taken some wells off line and put them back on, maybe, to
3 monitor where our production response has been or so we can
4 determine if there's any permeability trends that we think
5 may be contributing to some water breakthrough.

6 But all wells at one time or another are usually
7 on injection.

8 Q. 17 million barrels of water, cumulative, injected
9 to date?

10 A. That is correct.

11 Q. Current GOR of the unit, 600 to 1?

12 A. I believe that's approximately right.

13 Q. Okay. Increase in water production from pre-
14 flood of 2000 barrels per day to 12,000 barrels a day
15 current?

16 A. That's about correct.

17 Q. Okay. Mr. Hickey, did you look at these on a
18 well-by-well basis for your examination --

19 A. Yes, I did.

20 Q. -- for a response?

21 A. We have looked at them, yes, as a -- yes, to see
22 what areas on a well-to-well basis, yes.

23 As I said earlier, it's -- all the wells have
24 shown -- almost all the wells, I would say, have shown some
25 type of fluid increase. Where we have seen the majority of

1 the response has probably been in the central portion of
2 the unit.

3 Q. Not all wells have exhibited an increase in oil
4 production?

5 A. That is correct. Some of the wells did have an
6 actual -- when the water hit them prematurely, we did see
7 some declines in oil production, and we're working to
8 correct that.

9 Q. How do you estimate that production curve will
10 keep going from now on? Do you anticipate that it's going
11 to go up some more, or do you see that leveling off at the
12 current time?

13 A. Currently what we're projecting is that -- We
14 know we've got some problem with water breakthrough. The
15 original forecast, I think, predicted production increase
16 to somewhere in the neighborhood of about 3000 to 4000
17 barrels a day.

18 For the time being, we've kind of suspended
19 lifting some of our -- putting some of the additional
20 wells, the shut-in wells on or doing equipment upgrades to
21 lift more fluid until we kind of get a better handle on our
22 water breakthrough problem.

23 When -- we hope to do, is to -- when we correct
24 that, that the production increase will then continue to go
25 up.

1 Q. Is there some steps you can take as a unit
2 operator to correct that water breakthrough problem?

3 A. Yes, we are. Our research group is looking at
4 various water-shutoff or water-control techniques, and we
5 will probably come up with some type of a scenario or
6 recommendation shortly.

7 EXAMINER CATANACH: Okay. Mr. Bruce, did you
8 have any questions you would like to --

9 MR. BRUCE: No questions of the witness.

10 EXAMINER CATANACH: Okay, I believe that's all I
11 have, Mr. Carr.

12 MR. CARR: We have no further questions of Mr.
13 Hickey.

14 EXAMINER CATANACH: Would you mind preparing a
15 draft order on this?

16 MR. CARR: Be happy to.

17 EXAMINER CATANACH: Okay.

18 MR. CARR: Mr. Catanach, do you want an order in
19 the format of a hearing order, or do you want a
20 certification like we've used when we certify projects?

21 EXAMINER CATANACH: A certification to tax and
22 revenue, are you talking about?

23 MR. CARR: Yes, yes.

24 EXAMINER CATANACH: Both, actually.

25 MR. CARR: Okay.

1 EXAMINER CATANACH: Okay, is there anything
2 further?

3 There being nothing further, Case 11,188 will be
4 taken under advisement.

5 (Thereupon, these proceedings were concluded at
6 9:50 a.m.)

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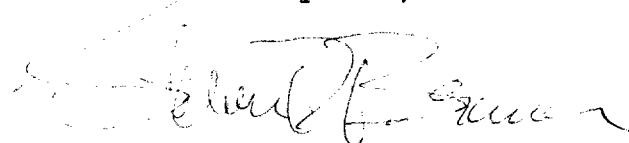
CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter
 and Notary Public, HEREBY CERTIFY that the foregoing
 transcript of proceedings before the Oil Conservation
 Division was reported by me; that I transcribed my notes;
 and that the foregoing is a true and accurate record of the
 proceedings.

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 February 8th, 1995.



STEVEN T. BRENNER
 CCR No. 7

My commission expires: October 14, 1998

I do hereby certify that the foregoing is
 a complete record of the proceedings in
 the Examiner hearing of Case No. 11188
 heard by me on February 2 1995

 , Examiner
 Oil Conservation Division