

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. 11,696

APPLICATION OF DEVON ENERGY CORPORATION)
(NEVADA) TO QUALIFY SIX WATERFLOOD)
EXPANSION PROJECTS FOR THE RECOVERED OIL)
TAX RATE PURSUANT TO THE ENHANCED OIL)
RECOVERY ACT, EDDY COUNTY, NEW MEXICO)

ORIGINAL
RECEIVED

FEB 6 1997

CONSERVATION DIVISION

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

January 23rd, 1997

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, January 23rd, 1997, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, 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

January 23rd, 1997
 Examiner Hearing
 CASE NO. 11,696

PAGE

APPLICANT'S WITNESS:

DICK MORROW (Engineer)

Direct Examination by Mr. Bruce

3

Examination by Examiner Catanach

9

REPORTER'S CERTIFICATE

16

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	3	9
Exhibit 2	4	9
Exhibit 3	5	9
Exhibit 4	5	9
Exhibit 5	5	9
Exhibit 6	5	9
Exhibit 7	5	9
Exhibit 8	5	9

* * *

A P P E A R A N C E S

FOR THE APPLICANT:

HINKLE, COX, EATON, COFFIELD & HENSLEY
 213 Montezuma
 P.O. Box 2068
 Santa Fe, New Mexico 87504-2068
 By: JAMES G. BRUCE

* * *

1 WHEREUPON, the following proceedings were had at
2 2:20 p.m.:

3 EXAMINER CATANACH: Call Case 11,696, which is
4 the Application of Devon Energy Corporation (Nevada) to
5 qualify six waterflood expansion projects for the recovered
6 oil tax rate pursuant to the Enhanced Oil Recovery Act,
7 Eddy County, New Mexico.

8 Call for appearances.

9 MR. BRUCE: Mr. Examiner, Jim Bruce from Santa
10 Fe, representing the Applicant.

11 Again, I have Mr. Dick Morrow as a witness, who
12 has previously been sworn in and qualified as an expert
13 petroleum engineer.

14 EXAMINER CATANACH: Okay, the record shall so
15 reflect.

16 DICK MORROW,
17 the witness herein, having been previously duly sworn upon
18 his oath, was examined and testified as follows:

19 DIRECT EXAMINATION

20 BY MR. BRUCE:

21 Q. Okay, Mr. Morrow, let's refer to your Exhibit 1,
22 and could you identify it for the Examiner what this map
23 shows and what we're here for today?

24 A. Devon seeks to qualify six different waterflood
25 expansion projects for the recovered oil tax rate, and I've

1 shown these six on Exhibit 1. These are all in the
2 Grayburg-Jackson Pool, Eddy County, New Mexico, and I've
3 colored each of the separate waterflood projects a
4 different color. The Keel-West, the Russell, the Turner
5 "A", Turner "B", Friess-Fren and Hudson Federal are the
6 names of the six waterflood projects.

7 Q. Okay. And now Exhibits 2A through 2F, which I've
8 just finished marking, those simply contain the orders that
9 we have that affect each of these projects, divided up by
10 project; is that correct?

11 A. Yes, they do.

12 MR. BRUCE: Mr. Examiner, one of those orders, if
13 you'll look at Exhibit 2A, the last order -- or the second
14 to the last order attached under the Keel-West waterflood
15 project, refers to WFX-687.

16 EXAMINER CATANACH: Uh-huh.

17 MR. BRUCE: That order, because of some, shall we
18 say, lack of information supplied to the Division, also
19 covers wells within the -- I believe the C.A. Russell,
20 Hudson Federal and Turner "A" waterflood projects.

21 I've made Devon aware of this, and we will try to
22 get that oversight corrected, since we think probably the
23 waterflood order should pertain to a particular waterflood
24 rather than several at a time.

25 EXAMINER CATANACH: We think so too.

1 MR. BRUCE: You had also requested previously a
2 legal description of each of these waterflood projects.
3 Exhibits 3 through 8, which Mr. Morrow will get to in a
4 minute, do contain on the first page of each application a
5 legal description of each and every project.

6 Q. (By Mr. Bruce) Okay, Mr. Morrow, once again
7 we're here because of Devon's expansions of the waterflood
8 projects. Why don't you -- Maybe rather than going into
9 great detail on Exhibits 3 through 8, would you just
10 identify what those exhibits are and take one and again
11 describe what Devon has been doing in this area to
12 substantially expand these waterflood projects.

13 A. If you look at Exhibit Number 3, again turning
14 back to like the fourth page, I have a data page like this
15 for each of the six waterflood projects, which again shows
16 number of producing and injection wells, capital costs,
17 injection volumes and dates of our waterflood expansion.

18 These properties were acquired from Alta in
19 January of 1994 by Devon, and since that time we've been
20 expanding and converting wells to water injection to
21 greatly modify the waterflood.

22 When we acquired these properties they were
23 essentially drilled on 40-acre spacing. But we did a study
24 of the area and found that waterflood response and recovery
25 was very much a factor of well density. And so we

1 undertook the project to infill drill these on 20-acre
2 spacing and convert existing producers to water injection
3 wells to form a five-spot pattern. We have been doing that
4 basically since we acquired the properties.

5 If you look at the Exhibit B there for the Keel-
6 West, when we acquired the properties in January of 1994,
7 there were only 20 active injection wells in that whole
8 area marked in green on Exhibit Number 1. By August of
9 1996 we were up to 55 injection wells and planned to
10 convert up to 128 injection wells in that project.

11 Q. Mr. Morrow, just for reference, Case 11,694
12 regarding approval of certain injection wells involved this
13 green area, the Keel-West waterflood project, did it not?

14 A. Yes, it did.

15 Q. Okay.

16 A. Again, the -- as in the case before, the
17 geographical area we're talking about has not changed, but
18 the scope of the project has been significantly expanded,
19 number one, by well density, two, by a much more efficient
20 waterflood pattern with a greater number of injection
21 wells, three, with new completion technologies, which allow
22 us to more efficiently flood the vertical section, and
23 also, four, in the Grayburg-Jackson Pool we have deepened a
24 significant number of injection wells to open up some of
25 the deeper pay that were not originally considered

1 productive when the wells were drilled.

2 So for each of the waterflood projects I've shown
3 a data page like this, which basically gives a sketch of
4 what we have done and what we anticipate we will do over
5 the next couple years.

6 Q. Now, without going into great detail, it appears
7 that although there has been a fair amount of -- although
8 not fully developed, the Keel-West project does show that
9 there has been a fair amount of development from when you
10 acquired it to date; is that correct? On the Keel-West?

11 A. Yes, there has been.

12 Q. Some of these others, if you look for them,
13 really -- the activity has just begun or has yet to
14 commence, as far as waterflood expansion goes; is that
15 correct?

16 A. Yes, up until this year most of our -- Excuse me,
17 up until late 1996, most of our activity was in the Keel-
18 West project. But in late 1996 we started moving south to
19 expand the waterflood down in the southern portion of our
20 acreage.

21 Q. And I believe there are a couple of -- several
22 administrative applications pending for waterflood
23 expansion of some of these southern projects at this time,
24 Mr. Morrow?

25 A. I believe there are, yes.

1 If you'll turn to what's called Exhibit C, which
2 shows the -- which is a production plot --

3 Q. Part of Exhibit 3 again, Mr. Morrow?

4 A. Yes. Yes, with the Keel-West waterflood, this
5 shows oil production, water injection, a number of
6 producing wells, and also a forecast of our oil production
7 for the next few years.

8 We began infill drilling in late 1994, as I've
9 indicated there, and we actually began expanding the
10 waterflood in March of 1995, which I've also indicated.
11 I've shown the production curve, the oil production curve.
12 Essentially all of that increase in production so far has
13 been due to strictly infill drilling. We are anticipating
14 significant waterflood response in the next two years.

15 Q. And again, each data sheet, which is Exhibit B to
16 Exhibits 3 through 8, does give the cost of each project
17 and what you estimate will be the net value of incremental
18 production?

19 A. Yes, I have. The total -- the properties as a
20 whole, we estimate, will recover an additional 12 million
21 barrels, with our improved waterflood operation.

22 Q. Just for information purposes, Mr. Morrow, to the
23 east and to the south of Devon's properties is the Skelly
24 unit, I believe; is that correct?

25 A. Yes, it is. In basically Sections 14, 15, 21

1 through 23 and 27 and 28 is the Wiser-operated Skelly unit.

2 Q. Do you know of any plans they have for expansion
3 of their project?

4 A. Yes, they are essentially doing the same thing we
5 are. They're infill drilling to 20 acres and converting
6 some of the old wells to form a five-spot, and we have been
7 in communication with them to come to some sort of
8 cooperative agreement along our joint lease lines.

9 Q. In your opinion, is the granting of this
10 Application regarding these six waterflood projects in the
11 interests of conservation and the prevention of waste?

12 A. Yes, it is.

13 Q. And were Exhibits 1 through 8 prepared by you or
14 under your direction?

15 A. Yes, they were.

16 MR. BRUCE: Mr. Examiner, we would move the
17 admission of Devon's Exhibits 1 through 8.

18 EXAMINER CATANACH: Exhibits 1 through 8 will be
19 admitted as evidence.

20 EXAMINATION

21 BY EXAMINER CATANACH:

22 Q. Mr. Morrow, did waterflood operations commence in
23 this whole area about the same time, by the previous
24 operator or operators?

25 A. Yes, basically waterflooding on all these

1 properties started in about 1964. And again, I believe at
2 that time it was Arco that initiated these floods. They
3 were on a much wider spacing with fewer injection wells.

4 These properties were waterflooded up until about
5 the mid 1980s, when they ceased injecting any additional
6 outside water and just started recycling produced water,
7 and that was essentially the situation when we acquired the
8 properties in 1994.

9 Q. What is Devon's progression going to be? Are you
10 going to start working your way directly south?

11 A. Essentially. As I said, we -- initially, we
12 concentrated on the northern area, the Keel and the West
13 leases. The majority of that work is done, and in December
14 of 1996, just recently, we started working our way south in
15 the Russell, the Hudson Federal and the Turner "A" area.
16 And just recently we started doing some work down in the
17 Turner "B" and the Friess-Fren. So we're just kind of
18 moving south.

19 Q. The whole area was initially developed on 40-acre
20 spacing?

21 A. Yes, it was. There were a few instances of some
22 infill drilling by previous operators, and I'm not sure of
23 the exact succession of the operatorship out here. It went
24 from Arco to Hondo to Alta in some progression, but both
25 Hondo and Alta did some infill drilling in selected areas

1 of the field, but nothing widespread, nothing total
2 fieldwide like Devon has.

3 Q. Do you know when some of this infill drilling may
4 have occurred? Was it back before you acquired the
5 property?

6 A. It appears there was some in 1988 and then also
7 in late 1990.

8 Q. So has Devon actually gone into most of this area
9 and done some additional infill drilling of producing
10 wells?

11 A. Yes, essentially all the areas except part of the
12 Turner "B" lease. That had already been, as I mentioned,
13 infilled to 20-acre spacing, but the waterflood pattern had
14 not been changed. So it was on basically what we call an
15 inverted nine-spot pattern, where you have one injection
16 well surrounded by eight producing wells, which is not a --
17 which is essentially not as efficient a pattern as a five-
18 spot.

19 So we essentially infill drilled all the areas
20 except for, as I said, part of the Turner "B" lease.

21 Q. So the Turner "B" had been infill drilled
22 previously?

23 A. Yes, most of it had.

24 Q. Was that done by Arco or a later operator?

25 A. I believe it was done by Hondo and/or Alta. I

1 don't know which one. It was the -- It was after Arco.

2 Q. Okay. And each of your exhibits kind of gives
3 the breakdown of what has occurred and what will occur?

4 A. Yes, it does.

5 Q. Okay. Can you give a date where, like say, in
6 the West, in the Keel-West, can you give a date where your
7 injection actually commenced?

8 A. Well, essentially they've been injecting since
9 1964. But as I said, they kind of just -- In the mid-1980s
10 they stopped taking outside water and just used it as a
11 water recycling project. I can't give you a date right off
12 the top of my head as to when we actually started
13 reinjecting some additional make-up water. I don't have
14 that handy.

15 Q. How big a task would it be to plot water
16 injection for these areas or these units?

17 A. We have that data; I just don't have it shown on
18 this graph.

19 Q. Okay, I'd like to get some of that from you, if I
20 could. Plot water injection, maybe not from 1964 but
21 certainly in the last --

22 MR. BRUCE: Mid-Eighties?

23 THE WITNESS: Well, I -- Let me back up. I do
24 have water-injection plots on these curves, but they only
25 start in January of 1994.

1 Q. (By Examiner Catanach) Okay, I'd like to see
2 something prior to that. Let's see, that's when you
3 acquired the --

4 A. Yes.

5 Q. -- in 1994?

6 I'd like a little history of what was being done
7 or what was being injected in these floods prior to that,
8 maybe five years, something like that.

9 And how about production plots? Do all your
10 production plots start in January of 1994 also?

11 A. No, sir, those go back further also.

12 Q. But not the ones you've submitted? I mean --

13 A. No.

14 Q. -- the ones I have start in January --

15 A. No, all the ones you have start in January of
16 1994.

17 Q. Can we also get the production plots for maybe
18 five years prior to --

19 A. Yes.

20 Q. -- when you acquired them? Okay, that probably
21 helps some.

22 A. Would you like one on each separate waterflood
23 project? Is that what you're after?

24 Q. Yeah, if that's -- Is it possible?

25 A. I think we can get that, yeah.

1 Q. Okay, that would be real helpful if we could do
2 it that way.

3 Now, you're proposing that the entire project be
4 qualified for the EOR, which essentially means that you
5 plan on developing the whole area?

6 A. Yes.

7 Q. There's not any areas that you're going to
8 exclude from infill drilling or from injection?

9 A. No, you can see on Exhibit 1, the dashed line
10 indicates our ultimate waterflood pattern, which you can
11 see covers our complete acreage out there.

12 Q. Okay. And the circles without coloring in them,
13 those are your proposed injection wells; is that right?

14 A. Is there a specific area of the map you're
15 looking at, or --

16 Q. Well --

17 A. There are some wells that have not been drilled
18 yet, specifically in the very southwest corner of the
19 Turner "B" lease, those open circles down there. Those are
20 still undergoing some arc work and have not been drilled
21 yet. There are a few other isolated instances within the
22 main body where similar occurrences have prevented us from
23 drilling up to this date, some arc work, but we intend to
24 go and drill every possible location we can.

25 EXAMINER CATANACH: Okay, I think that's all I

1 have.

2 MR. BRUCE: It's certainly all I have.

3 EXAMINER CATANACH: If I happen to need something
4 else, just -- I'll have to request that at the time.

5 MR. BRUCE: Why don't we leave the record open
6 for a couple weeks, Mr. Examiner, and then if you think of
7 something else we'll get it and submit it?

8 EXAMINER CATANACH: Okay.

9 (Off the record)

10 EXAMINER CATANACH: Okay, we'll leave the record
11 open and probably within two weeks we'll take the case
12 under advisement at that time.

13 There's nothing further?

14 MR. BRUCE: I have nothing further.

15 EXAMINER CATANACH: Okay.

16 THE WITNESS: Yeah, I should be able to get those
17 plots to you within the next week.

18 EXAMINER CATANACH: Okay, that would be great.

19 (Off the record)

20 EXAMINER CATANACH: We're done. The hearing's
21 adjourned.

22 (Thereupon, these proceedings were concluded at
23 2:44 p.m.)

24 I do hereby certify that the foregoing is
* * * a complete record of the proceedings in
the Examiner hearing of Case No. 11696,
25 heard by me on January 23, 1987.

Steven T. Brenner, Examiner
Oil Conservation Division

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

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 January 28th, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998