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 DEVON ENERGY CORPORATION (NEVADA) FOR WATERFLOOD EXPANSION AND AUTHORIZATION TO INJECT, EDDY COUNTY, NEW MEXICO

CASE NO. 11,694

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.

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I N D E X

January 23rd, 1997
Examiner Hearing
CASE NO. 11,694

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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	5	10
Exhibit 2	5	10
Exhibit 3	5	10
Exhibit 4	5	10
Exhibit 5	10	10

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A P P E A R A N C E S

FOR THE APPLICANT:

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

* * *

WHEREUPON, the following proceedings were had at 1:32 p.m.:

EXAMINER CATANACH: At this time I'll call the hearing back to order, and I'll call Case 11,694, which is the Application of Devon Energy Corporation (Nevada) for waterflood expansion and authorization to inject, Eddy County, New Mexico.

Call for appearances.

MR. BRUCE: Mr. Examiner, Jim Bruce from the Hinkle law firm in Santa Fe, representing the Applicant.

I have two -- excuse me, one witness to be sworn.

EXAMINER CATANACH: Okay, will the witness please stand to be sworn?

(Thereupon, the witness was sworn.)

DICK MORROW,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name and city of residence for the record?

A. My name is Dick Morrow. I live in Edmond, Oklahoma.

Q. What is your occupation and who are you employed by?

A. I'm a reservoir engineer, employed by Devon Energy Corporation.

Q. Have you previously testified before the Division?

A. Yes, I have.

Q. And were your credentials as an expert reservoir engineer accepted as a matter of record?

A. Yes.

Q. And are you familiar with the engineering matters related to this Application?

A. Yes, I am.

MR. BRUCE: Mr. Examiner, I would tender Mr. Morrow as an expert reservoir engineer.

EXAMINER CATANACH: Mr. Morrow is so qualified.

Q. (By Mr. Bruce) Mr. Morrow, briefly what is it that Devon seeks in this Application?

A. Devon seeks authority to inject water into the Grayburg-Jackson Pool for waterflood purposes through four wells within its Keel "B" and West "B" leases, located in Sections 3, 5, 6 and 10, Township 17 South, Range 31 East.

Q. Okay. Why don't you refer to your -- Let's take your exhibits, maybe 1, 2 and 4 together, and if you could identify those for the Examiner and comment upon their contents.

A. What I'd like to do is briefly introduce those

three sets of exhibits and then go back in detail and talk about each area specifically.

Exhibit 1 is a map of the area showing our four proposed conversions by the large red dots. I've also shown a half-mile circle around the three dry holes in question, our proposed monitor wells with green circles and other nearby injection wells with blue triangles.

Exhibit 2, there's actually three pages to this, 2A and 2B and 2C. These are wellbore diagrams of the plugged and abandoned wells. Each diagram shows the wellbore condition at the time the well was drilled. There are no records at either the OCD or the BLM as to how the wells were plugged.

And finally, just introducing Exhibit Number 4, this is data on the various injection wells in the vicinity of the old plugged wells, and I've shown operators, current status of the wells, and cumulative injection to date.

Q. Maybe before you go into more detail, let's just take care of a bookkeeping matter, then, Mr. Morrow.

Exhibits 3A and 3B are a copy of Waterflood Expansion Orders 687 and 690. It was those orders that approved injection wells but required Devon to go in and properly plug the Grier Number 1, the West "A" 3 and the Repollo 1 before injection operations were commenced in these four wells marked in red?

A. That's correct.

Q. Okay. Why don't you go on back, then, and describe the situation and what Devon requests?

A. Okay, if we start in the northwest, around the Grier Number 1, this well was drilled and abandoned in 1940 by Everts Drilling Company. Within a half-mile radius around there, there is one injection well, the Grier Number 6, which has a current injection rate of about 50 barrels a day at 2250 p.s.i., as I've shown on Exhibit Number 4. Just outside the circle to the north is the Grier Number 7, which is currently shut in.

If you refer back to Exhibit 4 again, each of these wells has injected about 2 million barrels of water with seemingly no adverse effects in the area.

Devon's nearest injection wells are the Keel "B" 31 and Keel "B" 36, which are just outside of the half-mile circle to the south there. These wells are recent conversions, just having converted to injection in September of 1996.

If we're allowed to convert the Keel "B" 34 and Keel "B" 37 to injection, we would still have essentially two rows of producing wells between the water injection and the Grier Number 1 dry hole. This would allow us the opportunity to monitor the waterflood and the pressure response and, by keeping these producing wells pumped off,

prevent any pressure buildup around the Grier Number 1.

I'd like to point out that the Keel "B" 49, shown by the open circle, has not been drilled yet, because we could not justify that economically on primary reserves alone. However, if we are able to expand our waterflood up into this area, we can justify it on secondary reserves, and we will drill that well.

If you look at the other two areas to the east, around the West "A" Number 3 and then to the southeast around the Repollo Number 1, some of the specifics in each of those areas are different -- the exact location of the wells, injection rates and cumulative injection -- but they all have two things in common:

One, there are both active and inactive injection wells in the vicinity of these dry holes, which have injected considerable amounts of water with no seemingly adverse effects.

And two, there is two producing wells between our proposed conversion and the dry holes, which we would use as monitor wells.

So I don't intend to go into detail on the two other areas, other than to point out the similarities.

Q. Okay. Now, if these injection wells, these four injection wells, cannot be converted, what is the estimated loss of reserves?

A. We estimate secondary reserves of 80,000 to 100,000 barrels per injection well in this area. So for the four wells, the total reserves we would lose would be between 300,000 and 400,000 barrels.

I might also point out that these areas are similar to the area around the Keel "B" 28, which is in the southeast quarter of Section Number 8. We had a hearing on this last July, and we were allowed to convert certain wells within the half-mile radius, as long as we maintained several monitor wells between the injection well and the problem well.

Q. Do you think these situations are equivalent to the Keel "B" 28 situation, with respect to intervening monitoring wells?

A. Yes, I think they're very similar. In all three instances, as I said, we would have at least two rows of producing wells between the injection and the dry holes.

Q. Okay. Now, what about simply re-entering these three wells listed on Exhibit 2 and trying to plug and abandon them?

A. Well, as I said, we have no plugging data on these wells, so we really would be going in blind with no idea what we could find. We've estimated that if we encounter no problems whatsoever, it would cost us about $50,000 each to re-enter and re-plug those wells. If we

run into any problems, the cost could be significantly greater.

If you recall from our July hearing, Arco spent almost a month and several hundred thousand dollars trying to plug the Keel "B" 28 and never were successful.

Q. In fact, it appears that in the Keel "B" 28 it made the situation worse?

A. It could have. And that could be the situation here. There's a possibility that these dry holes are mechanically sound now, but by re-entering them we could actually do more harm than good.

Q. What are the sources of fresh water in this area?

A. There are really no sources of fresh water in this area that we could find. We checked with the State Engineer's Office. The nearest wells that were drilled for fresh water are to the south of this map, in Section 22 and 34 of 17 South, 31 East. The nearest water that we know of is about ten miles to the northeast in the Caprock.

Q. Now, Exhibit 1 also identifies the offset operators to these three wells that the OCD required to be plugged, does it not?

A. Yes, it does.

Q. And was notice of this Application given to those offsets?

A. Yes, I believe that is Exhibit Number 5 in the

packet.

Q. And that's simply my affidavit of the mailing of the Application to these offsets; is that correct?

A. Yes.

Q. Okay. Mr. Morrow, in your opinion is the granting of Devon's Application in the interests of conservation and the prevention of waste?

A. Yes, it is.

Q. And were Exhibits 1 through 5 prepared by you, under your direction or compiled from Devon's business records?

A. Yes, they were.

MR. BRUCE: Mr. Examiner, at this time I would move the admission of Devon Exhibits 1 through 5.

EXAMINER CATANACH: Devon Exhibits 1 through 5 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Morrow, what kind of examination did you -- have you caused to happen in looking for the plugging records of these wells?

A. We contacted both the OCD and the BLM to check their records. We also checked the records that we had, that we acquired when we purchased these properties. We could find nothing.

Q. Did the BLM or OCD have a record of the wells being drilled?

A. Yes, they did.

Q. They just did not have any plugging records?

A. That's correct. We found in public records, like PI scout tickets, we found the exact locations of the wells and how they were drilled. That's how we compiled these wellbore schematics. But there are no records as to how they were plugged.

Q. Do you recall who the operators were?

A. The operator of the Grier Number 1 was Everts Drilling. I think some of this data is shown on Exhibit 2. The West "A" 3, I am not sure who drilled that one. And the Repollo Number 1 was drilled by Repollo Oil.

Q. Okay, the Repollo Number 1 you're referring to, is that the J.L. Keel "B" Number 1?

A. Yes. There's some confusion as to what the actual well name is on that. In the records it's referred to both as the Keel "B" Number 1 and the Repollo Number 1. But in all instances we could find, the same location is referenced. So it's just a matter of name; there's no question as to where the well is.

Q. Now, were these -- To your knowledge, were these wells drilled and were dry and abandoned at the time they were drilled?

A. Yes, sir, they were.

Q. They were not produced for any length of time?

A. No. I believe in the heading on each of the wellbore schematics there shows a spud date and a completion date, and they're all within -- It looks like anywhere from three to six months.

Q. To your knowledge, of the practices that might have occurred during this time period, do you have an opinion as to whether these wells were actually plugged and the records just aren't available?

Or do you think they were actually not plugged at all?

A. I couldn't answer that. Historically, I don't know what the plugging practices were at that time.

Q. Have you examined any of the records available at this office of the OCD?

A. I don't know which office was contacted for plugging records.

Q. I know we do have some old scout tickets that may not have been accessed by Devon, that may contain some information that you're looking for.

You testified that -- Is it Xeric that has that active injection well in Section 31?

A. Yes, sir, the Grier Number 6.

Q. And that has -- Did you say that has cumulatively

injected --

A. -- about 2 million barrels, as shown on Exhibit Number 4 there.

Q. Do you know how long that well has been operating, by any chance?

A. Not right offhand, I do not.

Q. Have you actually inspected the -- gone out in the field and inspected these wells or looked at these wells, these P-and-A'd wells?

A. The P-and-A'd wells? I personally have not. I don't know if anybody from our company has.

Q. I'm wondering if there's even -- if you can even find the locations.

With regards to the West "A" Number 3, I notice that you've got -- is it two producing wells, the Number 31 and the Number 15? Are those both producing wells?

A. Yes, they are.

Q. And those are producing from the same interval --

A. Yes.

Q. -- the Grayburg-Jackson Pool?

A. Grayburg-Jackson Pool.

Q. And those, as far as you know, will continue to operate as producing wells?

A. Yes.

Q. With regards to the Repollo, you've got two there

also, the 68 and 31?

A. Yes, they are current producers, and they will remain producing wells.

Q. And those were completed in the same interval that you're injecting into?

A. Yes.

Q. Okay. I can't recall the specifics of the last case we heard, but I seem to recall that if we had a producing well in between the injection well and the problem well, that we let you go ahead and inject into it?

A. Yes, sir, we did.

Q. Okay. It doesn't seem to be the case in the Grier that you've got a producing well, a direct line between the two. Do you want to comment on that?

A. Well, it's true that they're not really a direct line between our proposed wells and the Grier Number 1. However, as I said, we do essentially have two rows of producing wells, which should provide enough pressure sink so that we don't see the injection pressure get up to the Grier Number 1.

I think we'll have sufficient withdrawals there to prevent any fluid migration northward.

Q. And do you seek authorization to inject into these wells at the same pressure that you are in the remainder of the flood?

A. Yes, sir.

Q. Which is approximately what?

A. I don't know what our original application is. Probably 2100 to 2300 pounds.

I don't know specifically.

MR. BRUCE: Mr. Examiner, I believe the Order 10,663 states that they're currently injecting at about 2000 to 2100 pounds, and that was involving the Keel "B" 28 well.

Q. (By Examiner Catanach) Have you actually commenced injection into that well that we approved previously?

A. Yes. I think the three wells that were approved -- If you look in the southeast quarter of Section 8, the Keel "B" 76 -- well, it's actually in the northeast quarter, but it's right almost in the middle of the section there --

Q. Uh-huh.

A. -- Keel "B" 76, we have begun injection in that.

And there's the Keel "B" 92, and then the Keel "B" 57, down to the southeast, which will be our monitor wells.

EXAMINER CATANACH: Okay. I think that's all we have, Mr. Bruce.

MR. BRUCE: I have nothing further in this

matter.

EXAMINER CATANACH: Okay, there being nothing further in this case, Case 11,694 will be taken under advisement.

(Thereupon, these proceedings were concluded at 1:53 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11694, heard by me on October 25 1997.

, Examiner
Oil Conservation Division

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 27th, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998