NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 9854

IN THE MATTER OF:

In the matter of Case 9854 being reopened pursuant to the provisions of Division Order No. R-9131-A/R-5353-K.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

April 2, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

ROBERT G. STOVALL, ESQ.
General Counsel
State Land Office Building
Santa Fe, New Mexico 87504

FOR THE APPLICANT:

LOSEE, CARSON, HAAS & CARROLL, P.A.
Post Office Drawer 239
Artesia, New Mexico 88211-0239
BY: **ERNEST L. CARROLL, ESQ.**

FOR THE PROTESTANT:

CAMPBELL, CARR, BERGE & SHERIDAN, P.A.
Post Office Box 2208
Santa Fe, New Mexico 87504-2208
BY: **WILLIAM F. CARR, ESQ.**

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EXAMINER CATANACH: At this time we'll call Case 9854.

MR. STOVALL: In the matter of the Case 9854 being reopened pursuant to the provisions of Division Order No. R-9131-A/R-5353-K, which order reclassified the Diablo-Fusselman Pool in Chaves County, New Mexico, as an associated pool with special rules and regulations, et cetera, et cetera.

This case is being reopened to allow interested parties to appear and show cause why the Diablo-Fusselman Associated Pool should not be reclassified as either a gas pool or oil pool.

EXAMINER CATANACH: Are there appearances in this case?

MR. CARROLL: Yes, Mr. Catanach. I'm Ernest Carroll of the Artesia law firm of Losee, Carson, Haas & Carroll, and I'm here on behalf of Yates Petroleum Corporation, and I do have one witness.

EXAMINER CATANACH: Other appearances?

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm, Campbell, Carr, Berge & Sheridan. I represent Hanson Operating Company, Inc. Hanson

is the successor operator of certain wells in this pool to Stevens Operating Corporation.

And we're appearing here today in support of the testimony that is going to be presented by Yates and asking -- joining them and asking that the temporary rules be made permanent.

MR. STOVALL: The Division is not appearing or presenting witnesses.

EXAMINER CATANACH: Thank you. There are no other appearances? Will you please swear in the witness.

MR. CARROLL: May I proceed, Mr. Examiner?

EXAMINER CATANACH: You may.

DAVID F. BONEAU

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. CARROLL:

Q. Would you, please, state your full name for the record and occupation.

A. My name is David Francis Boneau. I work as reservoir engineering supervisor for Yates Petroleum in Artesia, New Mexico.

Q. Mr. Boneau, you have had occasion to testify on Yates Petroleum's behalf as a reservoir engineer before this Division, have you not?

A. Yes, sir.

Q. And you've had your credentials accepted?

A. Yes, sir.

MR. CARROLL: Mr. Catanach, I would tender Mr. Boneau as an expert in the field of reservoir engineering.

EXAMINER CATANACH: He is so qualified.

Q. (BY MR. CARROLL) Mr. Boneau, would you, please, briefly state the purpose of Yates' appearance today in this particular cause.

A. Yes. I'd like to make clear what Yates is seeking: Yates, in concurrence with Hanson Operating, who is the other operator in this pool, seeks to have the temporary pool rules set out in order 9131-A made permanent.

Order 9131-A and the related order, 5353-K, classified the Diablo-Fusselman Pool as an associated pool with 80-acre oil proration units and 160-acre gas proration units. The oil allowable is 222 barrels of oil per day with a

limiting gas-oil ratio of 6500. The effective gas allowable is 1.44 million cubic feet per day for an 80-acre oil well and twice that, 2.88 million cubic feet per day, for a 160-acre gas well.

Order 9131-A also requires that wells be located at least 330 feet from any quarter-quarter section line. Yates is asking that these requirements of order 9131-A be retained on a permanent basis. We're talking about the associated pool, the 80-acre oil wells, the 160-acre gas wells, the GOR of 6500, the oil allowable of 222 barrels of oil per day for 80 acres and the well location requirements.

I'd like to continue by summarizing that the evidence that we're going to present, Finding 7 in Order 9131-A says that, and this is a quote, "The pool consists of an excessively thick and distinct gas cap with no oil saturation in a thin oil column, and finally, a very active water-drive mechanism underneath," end of quote.

That is still an accurate description of the pool. Yates discovered the Diablo-Fusselman in 1988, but Don Stevens first realized that there is an oil egg in 1989. Since

that time our goal has been to produce the oil economically if possible. To that end, we've sought to maintain the position of the gas-oil contact so that the oil does not get lost into the gas cap. This part we've done successfully. The other goals we haven't met as great as we'd like. But this part we have done successfully.

Our other goals were to reduce the coning of water into the oil wells and to study whether gas reinjection and/or horizontal wells could increase the economic recovery of oil. You'll see that water coning has been delayed a little but not really stopped.

You'll also see that gas reinjection is just plain a bad idea that loses lots of money since the gas cap is already so big. And you also see, I think, briefly that horizontal wells are too expensive, too risky, and really too late. Thus the options have been reviewed with the conclusion that no major improvements are possible beyond the present situation and the present rules.

Q. Mr. Boneau, you have prepared certain exhibits to help illustrate the items that you have just informed the Examiner about; is that

correct?

A. Yes, I have three short exhibits.

Q. Would you starting with Exhibit No. 1 identify the exhibit for the record and then explain what that exhibit shows or depicts?

A. Exhibit 1 is a map showing the wells in the Diablo-Fusselman Pool. The pool is surrounded by faults. Actually, there's a fault in the north that separates the Pathfinder AFT No. 6 Well and also the No. 13 from the main part of the pool.

Yates operates the wells in Section 21. The Pathfinder No. 9 is a gas well, and it is -- has a proration unit that is the southwest quarter of Section 21. The No. 6 gas well is shut-in since it is on the same proration unit as the No. 9. The Yates' Pathfinder 10, 11, and 12 Wells have proration units which are lay-down 80s up the east side of Section 21.

Hanson operates the three wells in Section 28 in the proration unit for their gas well number -- McBride State No. 1 is the northwest quarter of Section 28. And then there are two oil wells, No. 2 and No. 3, have proration units which are lay-down 80s in the

northeast quarter of Section 28.

Q. Is there anything else that you need to discuss with the Examiner concerning Exhibit 1?

A. That reviews his memory on where those wells are located.

Q. All right. If you'd turn, then, to Exhibit 2 and identify for the record what this exhibit is and then explain the significance.

A. Exhibit No. 2 is a listing of all the wells in the Diablo-Fusselman Pool along with their detailed location, who operates them, their spud date, completion date, initial potential, and cumulative production, and their present status. I do not intend to go through all ten of the wells.

But the discovery well is No. 4 on the list, the Pathfinder AFT State No. 3. It was completed in December of 1988. The McBride State No. 1 was the first well in Section 28. It was completed in November of 1989, about a year later, and it's the one that discovered that there was a small oil egg to the pool.

The other two wells I wanted to point out briefly were -- No. 5 on the list is the Pathfinder AFT No. 6. And it is located north of

the fault that separates it from the main pool. And you may note as well, off to the right, it has produced very much water. So it's produced some oil and a lot of water. It's down-dip across the fault from the main pool.

And No. 10 on the list is another attempt up in that same area, the AFT State No. 13 that Yates drilled, which really was drilled into the fault and is now used as a saltwater disposal well. So we're circulating a lot of water disposed in 13, reproduced in 6, et cetera, which is not really a part of the real action in the main part of the pool.

Q. Anything else you'd like to call to the Examiner's attention with respect to Exhibit 2?

A. No, sir.

Q. All right. Would you turn to Exhibit No. 3, then, and identify what it is and explain the significance?

A. Exhibit No. 3 is a listing of all the monthly production from all the wells in the Diablo-Fusselman Pool. The third page has a pool total, which sums up the individual well performance.

The cumulative production from the pool

has been about 354,000 barrels of oil, about 3 Bcf of gas, and 1-1/2 million barrels of oil, 1-1/2 million barrels of water. About half that water has come from that No. 6 well that's outside the main reservoir.

Hanson is now producing 235 barrels of oil a day, about a million of gas, and just over 2500 barrels of water per day. Yates' production is relatively similar, 250 barrels of oil a day, 4.3 million gas per day, and about 2500 barrels of water per day.

Q. Do you have any other issues that you'd like to bring up with respect to Exhibit No. 3, Mr. Boneau?

A. Exhibit No. 3, I think, gives a pretty good idea of the production history, and the numbers I've stated cover that fairly well in summary.

Q. All right. Then, Mr. Boneau, would you briefly then review the history and summarize how that is applicable to and supports Yates' application that the special pool rules and the designation of this field as an associated pool be continued or made permanent?

A. I'm sure the Examiner realizes that

there's a history to this field, he's been somewhat involved in. In December of 1988 the Pathfinder No. 3 was drilled by Yates, the discovery well. And it was completed as a gas well with perforations in the upper part of the Fusselman Reservoir.

The second significant item is in November of 1989, Stevens, Don Stevens, drilled the McBride State No. 1 and perforated somewhat lower and found that there was oil and gas in this pool. And that's when it was realized that the pool is a great big gas cap with a thin oil zone and an underlying water drive.

In February of 1990 the Commission held the first hearing on this pool, and at that time Yates and Stevens had very different ideas of what we should do with the pool. At that time Yates asked that the allowable be set at 142 barrels of oil per day with a 2,000 GOR, which were the standard statewide rules, while Stevens asked for 600 barrels of oil per day and 10,000 GOR.

The resulting order, 9131, without any A on it, set a GOR of 6500 with 160-acres spacing, and that's how the pool was operated for

a few months.

Then in May of 1990, there was a second hearing. And at that time Yates and Stevens asked for the same thing basically, and that was 80-acre spacing with 222 barrels of oil per day and a 6500 GOR. And the request also included a mechanism whereby administrative approval of horizontal wells could be granted.

The resulting order there, 9131-A, which is the current order, denied the administrative approval for the horizontal wells and it set up the associated pool on a temporary basis. And I've listed those rules, and those are the rules we're seeking to be made permanent.

The case was scheduled to be reopened in August of 1991. And that was delayed by the death of Don Stevens and postponed for six months until now. So that's a brief summary of how we got to where we are.

Where I think we are is I'd like to relate to those goals that I set out in my opening words. Our first goal was to maintain the gas-oil contact so that oil did not get lost up into the gas cap. And we have done

calculations on where the gas-oil contact was and where it is now, and it has moved less than one foot.

So the gas-oil -- we, by producing gas and oil together, we have maintained that gas-oil contact at, within engineering accuracies, the same place. And I'd submit that continuation of the present rules will continue to maintain that gas-oil contact. So what we're doing has been effective there.

We've had only partial success in controlling the coning of water. Our two ideas for controlling the coning of water were to produce the wells slowly at relatively low rates. And the second idea was to drill on the edge of the fields where there is better permeability and porosity in the oil egg.

The first idea was a little bit shot down by Order 9131 which encouraged high production rates. But there have been -- the wells drilled on the east side of the field have all been drilled with the idea of hitting that big porosity zone in the oil egg rather than in the gas leg.

The Hanson McBride No. 2 has been the

most successful oil well. It hit the, what the orders call, the big porosity right in the middle of the oil zone. And it's produced 111,000 barrels of oil. And the current rate -- 111,000 barrels of oil is very good. The current rate is 120 barrels of oil per day and 361 barrels of water per day. So while quite a lot of oil has been produced and coning has been delayed, obviously now water is coming into that well.

The other McBride well, the No. 3, and the Yates' Pathfinders 10, 11, and 12, up the east side of the field, have been what I call less successful at hitting the best part of the field in the oil. They've come close, and they've produced some oil and some water as shown in that Exhibit 3.

The poorest Yates' well has really done the best at stopping the coning of water. The Pathfinder No. 12, from the numbers that we looked at, has produced at a pretty current rate -- a pretty constant rate of 50 to 70 barrels of oil per day with relatively little water.

The "cums" for the well are 24,000 barrels of oil and 6,000 barrels of water. And

the current rate, there is 50 barrels of oil and 30 barrels of water per day. So that well has been produced at relatively low rates basically because that's all it would produce. The water coning has been delayed, but the oil "cums" are unimpressive. So it will be a slow process, but maybe that -- maybe that idea made some sense, but it's pretty much been passed by by events.

In terms of gas reinjection, Yates spent some money with scientific software in Denver to do a two-dimensional computer simulation to look at gas reinjection. And we documented very extensively that what happens was that you doubled your cost by producing this gas, paying money to reinject it, et cetera, and the oil increased only by about 10 to 15 percent over what we're getting as it is.

What happens clearly is that the gas cap that's there is so big that the reinjected gas adds almost nothing to the gas drive. Anyway, we feel that we've looked at that issue real close, and it's a clear loser.

In May of 1990, at the second of the hearings, Don Stevens had planned a horizontal well and he wanted to get approval of it, and he

actually got approval. And the horizontal well was designed to be in the northwest of Section 28. His idea was to drill west out of the McBride No. 1 wellbore.

The resulting order did allow that well to be drilled, but he did not drill it. And I think he came to the same kind of conclusion as Yates. Yates did calculations at that time that showed if we would drill a horizontal well, we could get twice the reserves but the well would cost at least twice as much. We really hoped it would show that the costs would be twice as much and we'd get five times the reserves. That's what we were really looking for, but the oil egg is just narrow enough that it didn't look like it would work.

So we -- at the time we sat back and waited for Mr. Stevens to drill his well. And I think he came to the -- he never did do it because it was not exciting to him either. Oil prices are still poor and the field is fairly well along in its life, and nobody is going to drill a horizontal well now.

So we see that as something we really would have liked to have tried or like to have

been able to justify, but the conditions in the reservoir and the economic conditions just never allowed it. It's really -- it's not going to happen now, so let's just leave the rules like they are.

We feel we have spent money on studies and found that there are no clear winners. The numbers for the pool are -- we think that there are about 2 million barrels of oil in place and 8 Bcf or maybe a little more of gas. To date we recovered 350,000 barrels of oil and about 3 Bcf of gas.

My estimates are the total recovery will be 500,000 barrels of oil and with the chance for maybe 600,000 barrels of oil and 6.5, or somewhat more, Bcf of gas. So we're looking for 25 percent or maybe 30 percent of the oil in place and over 80, 85, 90 percent of the gas to be recovered.

Yates cannot justify drilling more wells in preparation for this hearing. I went over possible locations with our geologist and our management, and we're not going to drill any. I'm sure the Hansons -- I don't want to speak for Hanson. I feel sure they cannot

justify drilling any more wells.

The best approach now is to continue producing with the current rules, and that's what I'm here to ask you to allow is that we make the temporary rules in 9131-A to be the permanent rules.

Q. Mr. Boneau, therefore in summation, do you feel that Yates' request to make permanent these special rules is in the interest of conservation and would protect correlative rights and the prevention of waste?

A. Yes, that's my feeling.

MR. CARROLL: Mr. Examiner, I would move admission of Yates' Exhibit 1, 2, and 3. And I would have no further questions of Mr. Boneau at this time.

EXAMINER CATANACH: Exhibits 1, 2, and 3 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Boneau, the original 9131, what oil allowable did that order contain?

A. I try not to remember all this stuff. It's been a very painful experience. But my memory is that the oil allowable was 444 barrels

per day, twice the 222 that's standard for an 80-acre spacing. That's my memory. I have not looked that up in the last day or two, so it's -- not real sure. But it was a big number like that. It was in the 4-, 5-, 600-barrel range.

Q. Is it your opinion that some of the events that have taken place in terms of oil allowables and gas allowables have effectively reduced the ultimate recovery from this pool?

A. Since you ask, my opinion clearly is that 9131 was a mistake and that events have shown that what Yates asked for at that hearing would have been wiser than what's granted. That's my opinion. I sure don't want to reargue all that, but that is my opinion, yes.

Q. The oil wells in the pool are currently not even making allowable, are they? Or are there any wells capable of making the oil allowable?

A. No, there are no wells that can make 222 barrels of oil per day.

Q. Do the gas wells make their allowable pretty easy?

A. The Yates' gas well makes its allowable pretty easy. The McBride gas well, operated by

Hanson, has a lot of water coning into it along with oil, and it's not making anywhere near its allowable. But the Pathfinder No. 9, which is the Yates' gas well that is producing in that quarter-quarter section, is making its allowable with essentially no water production.

Q. Have the gas allowables had a detrimental effect on ultimate recovery?

A. A minor one. I mean, I don't want to say no, but I don't want to say that they're a big part of the problem. But most of the problem is just that the oil allowable is set too high and water was coned in too early.

Q. Mr. Boneau, have you made any kind of study to look at whether or not the spacing is justified in -- the 80-acre oil spacing is justified and the 160-acre gas spacing is justified?

A. Surely we have looked at that. I don't want to get hung up on whether I've done a study on that. But the current spacing is fine because it's -- you see from the wells on the map that the reservoir doesn't exist on the edges, and so the 80-acre spacing units on the oil wells are really draining 50, 60 acres and they're doing

that fine.

The gas wells are really draining 100 acres and they're doing that fine. There just isn't reservoir on the edges, and so the proration units cover some nonproductive acreage, they just plain do.

Q. So it is safe to say that the oil wells are effectively draining greater than 40 acres; is that safe to say?

A. Yes, they're draining oil from that 40 acres, from the 40 acres that they're on, and that's the majority of the oil in the pool. They're just draining a lot of water too.

Q. (BY MR. STOVALL) The question is, Mr. Boneau, are they draining more than the 40 acres they're on? Are they reaching out a little bit into -- other than the fact there's no oil out on the edges?

A. Yes, the oil wells are draining the oil in their spacing units as effectively as would be drained if you had two wells on that spacing unit, yes.

Q. (BY EXAMINER CATANACH) It's your opinion you don't think any more wells are going to be drilled in here?

A. No. That's clearly my opinion. I thought that Yates would drill a well west of the Pathfinder No. 9. And when we started thinking about, talking about this hearing about a month ago, my original thought was that we were going to ask for some special rules so that we could get an oil well to the west of No. 9.

And as I alluded to, I went over that with our geologist in the area and the other engineers and to some extent with management, and they were unanimous in that that was a bad idea. Boneau's idea was lousy and nixed by the rest of the company. So we can keep the rules the way they are.

Q. (BY MR. STOVALL) What you're saying, you didn't like them then, but you don't want to change them now; is that what you mean?

A. No. I clearly --

Q. (BY MR. STOVALL) Those are my words not yours, Mr. Boneau.

A. They don't want to change them now. There's nothing to be gained by changing them now. The reservoir is producing like it is. There's nothing better to do with it. It's able to produce the way it is under the present

rules. I just don't see any reason to change the present rules.

MR. CARROLL: If it ain't broke, don't fix it.

EXAMINER CATANACH: That's what Dan Nutter used to say.

MR. STOVALL: That's good enough authority for me. Let's call this one to a close and move right along.

EXAMINER CATANACH: I believe that's all I have.

MR. CARROLL: That's all we have, Mr. Examiner.

MR. CARR: Mr. Catanach, very briefly, Hanson Operating Company, as I indicated earlier, supports Yates in the request to make these rules permanent. We believe that the evidence from the prior hearings, particularly in August of 1990, coupled with the presentation made by Mr. Boneau here today, give you a sound basis for granting an order making the rules permanent, and we ask you to do that.

EXAMINER CATANACH: Thank you, Mr. Carr.

There being nothing further, Case 9854

will be taken under advisement.

[And the proceedings were concluded.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9854, heard by me on April 2 1992.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; 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 April 10, 1992.

Debbie Vestal

DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3