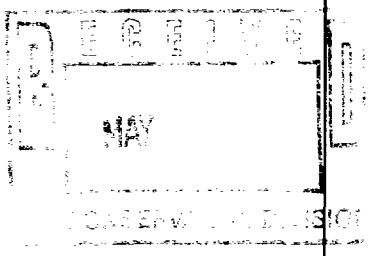
STATE OF NEW MEXICO

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 DALEN RESOURCES OIL AND GAS COMPANY

CASE NO. 11,280

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

May 4th, 1995

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, May 4th, 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.

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I N D E X

May 4th, 1995
Examiner Hearing
CASE NO. 11,280

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A P P E A R A N C E S

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* * *

WHEREUPON, the following proceedings were had at 10:00 a.m.:

EXAMINER CATANACH: Call Case 11,280, Application of Dalen Resources Oil and Gas Company for pool creation, a special gas-oil ratio, and for the assignment of a special depth bracket oil allowable, Eddy County, New Mexico.

Are there appearances in this case?

MR. HALL: Mr. Examiner, Scott Hall from the Santa Fe office of Miller, Stratvert, Torgerson and Schlenker, P.A., and we have three witnesses this morning.

EXAMINER CATANACH: Additional appearances?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing this morning on behalf of Matador Petroleum Corporation.

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

We represent Chevron USA Production Company in this matter.

I do not have a witness.

I have a statement I'd like to read at the conclusion of the presentation.

EXAMINER CATANACH: Okay. Will the witnesses -- Let me swear all the witnesses in at this time.

(Thereupon, the witnesses were sworn.)

JERRY ANDERSON,

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

DIRECT EXAMINATION

BY MR. HALL:

Q. For the record, state your name.

A. Jerry Anderson.

Q. Mr. Anderson, where do you work and in what capacity?

A. I work for Dalen Resources Oil and Gas Company, and I'm a district landman.

Q. Have you previously testified before the Division or one of its Examiners and had your credentials made a matter of record?

A. Yes, I have.

Q. And are you familiar with the Application involved in this case and the subject lands?

A. Yes, I am.

MR. HALL: Mr. Examiner, are the witness's credentials acceptable?

EXAMINER CATANACH: They are.

Q. (By Mr. Hall) Mr. Anderson, if you would, please, briefly state what Dalen is seeking by this Application.

A. We're seeking an order creating a new pool and

special pool rules pursuant to the discovery of the Murchison State 2 Number 1 well, and in the special rules we would like to include 40-acre spacing and a gas-oil ratio of 10,000 to 1 and a depth bracket allowable of 250 barrels of oil per day.

Q. And what is the proposed nomenclature for the new pool?

A. The White City-Brushy Canyon.

Q. All right. Let's look at Exhibit 1, please, and if you would identify that and review that for the Examiner.

A. This is the proposed White City field, and it's got Dalen's location of the well and the offset operators.

The offset operators are shown within a mile of the location, the unit drilling Chevron, Matador, Murchison, Texaco, and they have been notified.

Q. All right, how did you go about identifying the offset operators?

A. I had a broker examine the records in the federal -- the federal records, the state records and the courthouse records.

Q. To your knowledge, is the subject well, the Murchison State Number 2, outside the boundaries of any existing or nearby abandoned pool?

A. Yes, there's two abandoned pools shown on the

map: the PJ-Delaware and the Sulphate Draw. Those are both abandoned. And the Murchison well is outside of those boundaries.

Q. All right. Was Exhibit 1 prepared by you or at your direction?

A. Yes, it was.

MR. HALL: We'd move the admission of Exhibit 1.

EXAMINER CATANACH: Exhibit 1 will be admitted as evidence.

MR. HALL: And pass the witness.

EXAMINER CATANACH: Mr. Carr? Mr. Kellahin?

MR. KELLAHIN: No, sir, I have no questions.

MR. CARR: No.

EXAMINER CATANACH: Okay. Just a second, Mr. --

THE WITNESS: Sorry.

EXAMINATION

BY EXAMINER CATANACH:

Q. Do you know, Mr. Anderson, what area the PJ-Delaware or Sulphate Draw-Delaware Pool encompasses?

A. I believe it encompasses the northwest quarter of that 160-acre tract of Section 35.

Q. Northwest quarter?

A. Yes.

Q. How about the other one? Do you know about the other one?

A. We could not find any boundaries for that.

Q. You say that both of those pools have been abandoned. How do you know that?

A. From well records that's been --

Q. As far as you know, there's no current production in either of those pools?

A. No, sir.

Q. Okay. Now, you're seeking -- Your pool boundaries would just initially encompass the southeast quarter of the northeast quarter of Section 2; is that correct?

A. Yes.

Q. And has that well been drilled and completed at this time?

A. Yes, it has.

Q. And this map represents all the offset operators within a two-mile radius of the proposed -- or of the Murchison Number 2 well; is that correct?

A. Yes, sir.

Q. Were all these operators notified of this Application?

A. All the operators within a mile were notified.

Q. Within a mile, okay.

Is all of Section 2, is that currently leased by Murchison or Dalen?

A. It's a farmout from Murchison to Dalen of all of Section 2.

Q. So you operate all of Section 2?

A. Yes.

Q. As well as other acreage in this area?

A. We have an additional acreage in Section 35, being the south half of the south half. And we also have acreage in a farmout, Section 14 to the south.

EXAMINER CATANACH: I have nothing further, Mr. Hall. The witness may be excused.

MR. HALL: Mr. Examiner, we would call Ralph Nelson at this time.

RALPH NELSON,

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

DIRECT EXAMINATION

BY MR. HALL:

Q. For the record, if you would state your name?

A. I'm Ralph Nelson with Dalen Resources.

Q. And Mr. Nelson, where do you work and how are you employed?

A. I work with Dalen Resources in Dallas as a staff geologist.

Q. And have you previously testified before the Division and had your credentials made a matter of record?

A. Yes, I have.

MR. HALL: Mr. Examiner, are the witness's credentials acceptable?

EXAMINER CATANACH: Yes, they are.

Q. (By Mr. Hall) If you would, please, Mr. Nelson, do you know what the current spacing rules are for the PJ-Delaware Pool?

A. They are 40 acres.

Q. And the Southwest Sulphate-Delaware?

A. Forty acres.

Q. All right. Let's refer to Exhibit 2, please, and if you would explain what that's intended to demonstrate.

A. Okay. First, I'd like to go back to Exhibit 1 to show the line of cross-section in the north-south cross-section, in which I will show the PJ-Delaware well, the Murchison Number 1 well, and the Gulf -- or Chevron now -- Marquardt Number 4.

Okay, on this cross-section I want to show the horizontal and vertical separation between the three producing zones of the three fields.

Sulphate Draw-Delaware is separated by our zone in the Murchison 2 Number 1 well, vertically by about 3000 feet, horizontally by about 3500 feet.

The PJ-Delaware well, horizontally separated by 6950 feet approximately, and vertically, subseawise, by

about 320 feet.

PJ-Delaware has been abandoned, as has the Sulphate Draw well, at that Marquardt Number 4.

Q. All right, let's refer to Exhibit 3, if you would explain that to the Examiner.

A. On Exhibit 3, in the producing zone, the Brushy Canyon is marked. And locally we've used A, B and C, to differentiate the sands.

We perforated from 5133 to -66, sand-frac'd the well. Our analysis indicates that sands A and B are oil-productive sands, and sand C is a gas sand. That is further borne out by the large difference in the mud-gas readings in sands A and B versus sand C.

Furthermore, in examining the log, there's far more density neutron crossover in sand C then there is in sands A and B.

Q. For the record, Exhibit 3 is a porosity log, is it not?

A. Yes, it is.

Q. And that is for the Murchison State 2?

A. That is correct.

Q. What is the purpose of reflecting the sand at 4800 feet?

A. Well, the sand at 4800 feet is another potential sand, and it has a mud-gas reading very similar to those

oil sands A and B further down.

Q. All right. Let's refer to Exhibit 4, please. Would you identify that exhibit and explain it to the Examiner?

A. Exhibit 4 shows the southeast-plunging nose of the White City structure. Superimposed is a Brushy Canyon channel sand that comes from the northeast and is deflected by the structure back to the southeast, setting up a classic stratigraphic trap in that sand.

Q. All right. Let's look at Exhibit 5. Would you identify that exhibit and explain it to the Examiner?

A. Exhibit 5 is a -- once again, shows the southeast-plunging White City structure, with a channel originating from the northeast, coming up onto the structure and then deflecting to the southeast.

Once again, it should be noted that -- in comparing the two exhibits, that they seem to stack on top of each other.

Q. All right. Who is your offset operator to the east of the Murchison State 2?

A. Offset operator to the east is Chevron. Chevron has staked and intends to drill in July their Number 6 well, as I understand, 330 feet from our lease line, and subsequently their Number 7 and Number 8 wells.

Q. All right. If the three wells that Chevron

proposes are completed in the 4800-foot sand, is there a substantial likelihood of drainage across Dalen's lease line?

A. Yes, we believe so.

Q. And that's with the current allowable?

A. That is correct.

Q. Mr. Nelson, does the data you've reviewed establish that the reserves can be most efficiently and economically developed with wells on 40-acre spacing?

A. Yes, we believe so. We believe due to the discontinuous lenticular nature of these sands, 40 acres is the best spacing in which to maximize recovery in these sands.

Q. All right. Do you have anything further you'd wish to add with respect to Exhibits 2 through 5?

A. No, I don't.

Q. All right. Were Exhibits 2 through 5 prepared by you or at your direction?

A. Yes, they were.

MR. HALL: We would move the admission of Exhibits 2 through 5.

EXAMINER CATANACH: Exhibits 2 through 5 will be admitted as evidence.

Mr. Nelson -- Oh, I'm sorry. Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Good morning, Mr. Nelson.

A. How are you today?

Q. Fine, thank you.

If we could go to your cross-section, Mr. Nelson, Exhibit Number 2 --

A. Okay.

Q. -- when you prepared your cross-section did you look for Delaware penetrations in this area to present data for your analysis?

A. I prepared this cross-section to show the closest Delaware producers to our new well.

Q. As part of your additional work, there are a number of other penetrations within the two-mile radius, are there not, Mr. Nelson?

A. Yes, there are.

Q. Those penetrations are deep enough that they would have penetrated through the entire Delaware interval, would it not?

A. Yes, there are.

Q. Did you use that log information to draw some of these other maps?

A. Yes.

Q. Okay. When you look specifically at these three

wells, then you have pulled the well -- the first well in the south, which is the Chevron well --

A. Yes.

Q. -- and it was the closest producing Delaware well in an upper portion of the Delaware?

A. That's correct.

Q. And how would that be identified in terms of Division nomenclature? Is this Cherry Canyon or --

A. This would be Bell Canyon.

Q. This is Bell Canyon?

A. Could be considered Ramsey sand, but it's Upper Bell Canyon.

Q. It's identified in the Division books as the Sulphate Draw-Delaware Pool; did I understand that correctly?

A. It's identified from sundry notices as the Sulphate Draw-Delaware Pool.

Q. And that pool no longer has a producing well in it?

A. Not to my knowledge.

Q. You couldn't find any?

A. No.

Q. Okay. Do you know from your search whether or not the vertical limits for that pool were the entire Delaware interval?

A. I don't know the answer to that.

Q. Okay. When you look at your other well, the PJ -- It says PJ-Delaware; it's the Mesa Petroleum well --

A. Yes.

Q. -- that is no longer a producing Delaware well, is it?

A. That's correct.

Q. Your search showed it to be dedicated at one time to a pool named what, sir?

A. PJ-Delaware.

Q. PJ-Delaware?

A. Uh-huh.

Q. Do you know whether or not the entire vertical limits of the Delaware were included in that pool?

A. I do not know.

Q. For purposes of your request, are you seeking a vertical limits for your pool, just for this Lower Brushy Canyon member? Is that what you intend to do?

A. I'm not sure.

Q. I'm confusing you. The Division often will create a pool.

A. Uh-huh.

Q. The gross vertical limits of that pool are the top of the Delaware and the base of the Delaware?

A. Uh-huh.

Q. And they will include the Bell Canyon, the Cherry Canyon and all the Brushy Canyon?

A. Uh-huh.

Q. What do you propose to do?

A. We obviously want to include this Lower Brushy Canyon zone, which is in the interval that we call Basal Brushy Canyon, which is where many of the fields in southeast New Mexico and Eddy and Lea County produce from.

However, in drilling this well, we also note one -- at least one additional sand, that 4800-foot sand, that looks quite prospective.

Q. You've anticipated my next question. Let's go to the type log. I think maybe that will help me understand.

When you look at Exhibit Number 3, then, when you've looked at the entire Delaware interval, you've identified another potential Delaware zone at this 4800-foot interval. What would that be equivalent to within the Delaware? How is that identified?

A. Relative to the PJ-Delaware, not shown on Exhibit 2, that sand would be about 150 feet higher stratigraphically than the PJ-Delaware interval.

Q. How would the Division characterize the PJ-Delaware as to being in what portion of the Delaware?

A. It's in the Middle Brushy Canyon.

Q. Okay. You have an option to propose a vertical

limits for your pool that would include both the Lower Brushy Canyon and this apparently untested sand in the Upper Brushy Canyon at the 4800-foot. You know, you could ask that that be your vertical limits.

Or, I guess you could subdivide it further and ask for just this Lower Brushy Canyon.

What are you proposing to do?

A. Well, part of the reason to -- in asking for that 250-barrel-a-day special depth allowable was to enable us to perforate that 4800-foot zone because of the three offset locations staked by Chevron.

If they elect to produce in that 4800-foot zone, being 330 feet off the line, we believe that they will drain our leases.

Q. All right. And so that's what you and Mr. Scott were talking about a while ago in -- Scott Hall -- in terms of offset drainage from Chevron?

A. Yes.

Q. Your concern is if -- They appear to have that upper zone in their acreage?

A. Yes.

Q. And if they produce that, then you're going to have to open the perforations that are equivalent in that 4800-foot interval?

A. That's correct.

Q. Okay.

A. To protect our correlative rights.

Q. Yes, sir. You don't see any necessity to try to dually complete the zones where you could dual the upper from the lower and have separate allowables in each? Have you considered that?

A. We -- Actually, I believe we've considered commingling them, because they were close enough, and that would -- there wouldn't be that much of a pressure differential. And that would be the most efficient, economical way to produce them, rather than two sets of tubing or two wells side by side.

Q. Let's talk about the geologic integrity between the two potential producing zones. Do you have enough vertical distance here?

A. Yes, we have 300 feet, more or less.

Q. Geologically, is there isolation between those two intervals?

A. Yes, we believe so. We believe that the interval at 5000 feet to approximately 5080, 5090 feet, is wet and would produce water --

Q. Okay.

A. -- and therefore we do believe there's separation and isolation between the zones.

Q. Your concept as presented to the Examiner,

though, is to include this 4800-foot interval within the same pool as the Lower Brushy Canyon that's been perforated?

A. Yes.

Q. That's what you want to do?

A. Uh-huh.

Q. When you look at the Lower Brushy Canyon, you have subdivided it into an A and a B and a C?

A. Yes.

Q. The C portion is identified as being gas?

A. We believe so, yes.

Q. Was it separately tested in any way to specifically identify --

A. No, it wasn't.

Q. -- whether it's gas or oil?

A. No, it wasn't.

When we were evaluating the well, as you can see from the gamma-ray curve, it's a cleaner sand. And therefore, being a cleaner sand, on a density neutron log run on a limestone matrix, that could suggest it has more quartz in it, and therefore that may be the only reason that you get the additional crossover

From sidewall core data that we had, we really saw no difference between C sand or the A and B sand. They both -- they all three had the same oil saturations.

However, the C sand had the higher permeability, and most likely any additional gas or residual gas would have been already flushed out prior to getting those cores to the surface.

Q. There is therefore no geologic isolation between the C and the A and the B?

A. Geologically, I believe that hot streak, hot gamma-ray streak, probably does separate the zones. But when they're fractured on fracture stimulation, there's no way to separate the zones.

Q. You can no longer maintain the integrity in the reservoir --

A. That's correct.

Q. -- because you've fractured all of them together?

A. That's correct.

Q. Can you produce the oil in the A and the B without fracture stimulation?

A. No.

Q. Okay. So there's no way to minimize the GOR by staying out of the C portion of the pool, which has got all the gas in it?

A. That's what we believe, yes.

Q. Okay. What's your concept of having the gas stored at that position in the reservoir? Do you have any theory as to why it's in that position in the reservoir?

A. I'm not sure what you mean.

Q. Well, is there enough geologic integrity that the gas would not have migrated vertically and therefore be found in a more conventional arrangement where the gas is above the oil?

A. I believe that this sand, this isolated C sand, does not appear to be in the two deep Gulf wells, Marquardt Number 1 and Number 4, in Section 1. I'm not sure of the limits of the sand, and therefore I'm not -- It seems to be an isolated gas sand.

Q. Within the immediate area of your section and the adjacent sections, there's other log data that you have utilized to help you map this interval, have you not?

A. Yes.

Q. Let's look at Exhibit 5. This is your sand map, and we're looking now only at the net sand in this 4800-foot sand interval; is that what I'm seeing here?

A. Yes.

Q. And you've chosen a porosity cutoff of 14 percent?

A. That's correct.

Q. Why did you use that value?

A. That seems to be a common number used by other operators in the area, as being the cutoff to differentiate between good sand and noncommercial sand.

Q. As it applies to Delaware?

A. Yes.

Q. You have interpreted an oil-water contact on your isopach, Exhibit 5?

A. Yes.

Q. Describe for me how you reach that conclusion.

A. From log-analysis data.

Q. Did you integrate the log analysis with production data from those control wells to see if you could establish the lowest point of potential oil production?

A. Currently there's no production from this sand, so it strictly comes off an increase in the water saturation in the log analysis.

Q. What did you use to determine the western potential boundary of this sand where you have that zero contour line? You see how it's projected --

A. Yes.

Q. -- to the west?

A. Yes.

Q. How did you arrive at that interpretation?

A. Well, the well, the Number 1 Mesa Ogden State, being in Unit F of Section 2, does not have the sand in it, nor does the well located in Unit K of Section 35 have the sand in it.

Q. And as you move down to the south, into Section 11, what explains how you have positioned the zero line as you move through that section?

A. That well in Unit G of Section 11, likewise, does not have the sand in it.

Q. Describe for me the trapping mechanism that you see for the sand interval, for this 4800-foot sand interval.

A. It's a classic updip porosity pinchout trap, channel bending around a structural nose.

Q. When we look down into the Lower Brushy Canyon, which is the perforated interval --

A. Yes.

Q. -- is your interpretation the same as we project deeper into the Delaware, as you had when we were in the Upper Brushy Canyon?

A. Basically the same, with the same source of direction and deflecting off the nose, yes.

Q. Okay. You have a choice as an operator to propose a spacing pattern for this pool if the Division approves it as a discovery.

How did you come to your conclusion about 40-acre oil spacing?

A. Well, as I said previously, the discontinuous lenticular nature of these sands, we feel like 40 is the

best spacing in which to develop this field in.

As I've also stated to you, those two wells in Section 1 do not have Sand C in them, don't appear to have Sand C in them, to further support that discontinuous nature.

Q. Within the estimated boundary limits of your reservoir, what has caused you to distinguish within that reservoir shape the difference between 40- and 80-acre spacing?

A. Well, once again, as I say, I feel that the discontinuous nature of these sands would be best served with 40-acre locations to prevent waste.

Q. Yes, sir, I understand your contention. I'm trying to examine where you have found data to support that.

When you look at the three-well cross-section --

A. Yes.

Q. -- those wells are -- well, one is more than a mile apart, and the other one is approaching a mile, or at least two-thirds of a mile.

Those are your control points?

A. Yes.

Q. Within that area, then, I don't see the difference between 40 and 80 acres when I look at the cross-section.

A. Well, the equivalent intervals that you see on this cross-section, if you will look, the Marquardt well has what I would say is Sand B. It does not have Sand A in it. And it is questionable whether it has Sand C in it.

Q. All right, I'm not making myself clear, Mr. Nelson.

A. No, I --

Q. I accept the discontinuity between what you have in your producing well --

A. Uh-huh.

Q. -- and the fact that the offset well has an absence of that potential.

A. Uh-huh.

Q. That gives me at least a conceptual boundary for your pool of a mile and a half in one direction and two-thirds of a mile in another.

A. Uh-huh.

Q. Within that potential area, what tells you that you should subdivide down to 40s, as opposed to 80s?

A. I do not know where we will lose these sands, and if we were to set this pool up on 80-acre spacing we may not fully drain some of these sands.

Q. Okay. If that happens you would have the opportunity to infill drill and put a second well on an 80, would you not?

A. Perhaps you would. However, if you drilled and drained, let's say, one or two of the three sands, you would be drilling for only one sand, which may or may not be economically feasible.

Q. If you make the decision to drill on 40s and it proves later that you've drilled too high a density, then how will you resolve that dilemma?

A. Well, we feel with adding the additional sand, that we will get economic reserves, certainly on 40-acre spacings.

Q. And what you're looking at, then, is the area on Exhibit Number 4, which is this Lower Brushy Canyon, and you're looking at the area that's shaded in green as the potential reservoir limit; is that what I'm seeing?

A. Yes.

Q. And within that green area, then you want the flexibility to drill on 40-acre oil spacing in order to maximize the number of times you hit the Lower Brushy Canyon in addition to this Upper Brushy Canyon?

A. Yes.

Q. Okay. Is there any potential in your discovery well for Delaware oil production, other than in this Brushy Canyon portion of the Delaware?

A. Yes, there may be. We have not tested it to date.

Q. Okay. Have you tested anything other than this Lower Brushy Canyon interval which you've called the White City?

A. Yes, we have. We tested a zone, not shown on this log, at 5300 feet and we found it to be wet.

Q. Okay. And the 4800-foot sand has not yet been tested?

A. No, it has not.

From sidewall core analysis, mud-gas shows as well as log analysis, it indicates that it is very similar to the proposed White City Brushy Canyon.

Q. On each of your isopachs, you've also given us a structure map, have you not?

A. That's correct.

Q. What kind of initial rates did you get on your discovery well when it was tested in this Lower Brushy Canyon?

A. We had initial rates up to 254 barrels a day.

Q. With what corresponding gas rate?

MR. HALL: Mr. Examiner, we'll have another witness to testify on those matters.

Q. (By Mr. Kellahin) Well, do you know from your own information --

A. I don't --

Q. -- gas rate?

A. -- recall what that gas rate was.

Q. All right.

A. But we do have that, and it would be explained in -- I believe it's Exhibit 11.

Q. My question for you as a geologist, is there a structural explanation to whatever gas rate was achieved out of your test in this discovery well?

A. We believe that the gas rate is a result of the gas sand, the gas Sand C.

Q. All right, as opposed to having the gas located in an initial gas cap within the Lower Brushy Canyon?

A. That is correct.

Q. So there would not be a structural component to the distribution of the gas in the C interval of the Lower Brushy Canyon?

A. We don't believe so.

Q. Okay. So this is not one of those potential solution gas drive reservoirs where you either have an initial gas cap or a secondary gas cap that forms over time?

A. No, we don't believe so. We believe this would be very similar to the Herradura Bend East field, which I believe you are familiar with.

Q. Yes, sir.

A. And our engineer will put on testimony to that

effect.

Q. Okay, so as far as you're trying to characterize a creature that we've seen before, you're like the East Herradura Bend-Delaware Pool --

A. Yes.

Q. -- as best you can see?

A. Yes.

MR. KELLAHIN: Thank you, Mr. Examiner.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Nelson, I'm not sure I got a clear answer to your -- to Mr. Kellahin's question about the proposed pool vertical limits.

At this point you're not going to separate the Brushy Canyon out of the whole Delaware interval; you propose to include the entire Delaware interval within this pool?

A. I believe that we wanted to include the Brushy Canyon.

Q. Include the Brushy Canyon only or --

A. Only, only.

Q. Only the Brushy Canyon.

A. We had discussed, if subsequent zones up the hole prove to be prospective and productive, coming back to the Commission to discuss those.

Q. Now, you did mention that there were some other intervals that may be productive uphole.

A. Yes.

Q. Are they out of the Brushy Canyon?

A. Yes, they are. They are in the Cherry Canyon.

Q. Now, if you did find those to be later on productive, how would you propose to address that problem at that time?

A. Those would clearly have to be developed separately from these Brushy Canyon reservoirs because of their vertical separation of about 2000 feet.

Q. Are you suggesting that additional wells may have to be drilled to produce the Cherry Canyon?

A. Yes.

Q. Do you have a top for the Brushy Canyon in your well?

A. I don't recall what I picked that as. I just -- I don't know.

Q. Is that -- Is it something that is easily identified by --

A. It's -- Yes, it is approximately at 4500 feet, but I don't know exactly the depth.

Q. Okay, Mr. Nelson, the interval that you're producing from in your well is -- you said the B sand may be present in the Marquardt Federal well?

A. Yes.

Q. It's not potentially productive in that well?

A. I believe that it is.

Q. It is. You believe the A and the C sand may be present; is that what you said?

A. I believe that the A sand is probably not present. It is possible that one could correlate the C sand as present, but also maybe not.

In speaking with the Chevron geologists, they were unaware of the exact zones that we had perforated in. However, based on the data from an offset well in Section 2, they had surmised what the zone was.

They had no mud-log information on their wells, other than to know that they'd had a backside oil flow of 19 barrels of oil in 15 minutes, and knew that the Brushy Canyon had potential in the area.

Q. It is -- Your producing interval is not, however, present in the Mesa well to the northeast -- northwest?

A. The Mesa well in the Northwest quarter, Section 2, that's correct --

Q. No, no --

A. -- it's not.

Q. -- the well that's producing from the PJ-Delaware Pool, I'm sorry.

A. No, it is not.

Q. It is not present, okay.

Have you done any work to characterize the A and the B intervals in your well as to whether they're, say, solution gas drive or of that nature?

A. I believe that we have, and I believe Mr. Vaughn will testify to such.

Q. You don't believe that the A or B intervals have a gas cap present in those intervals?

A. We have no information to indicate that.

Q. But you believe those are predominantly oil-productive?

A. Yes.

Q. Your A interval is not perforated; is that correct?

A. No, the A interval is not perforated. And the reason why is, we felt like, as I previously said, that interval from approximately 5000 feet to 5090 feet is wet, and we felt like our fracture stimulation would communicate the A sand.

And perhaps by perforating lower we could stay out of that water zone, the bottom of which is about 5090 feet.

Q. Do you feel that with the fracture stimulation placed in the B sand that you are in communication with the A interval?

A. Yes.

Q. So you are draining that, you believe?

A. Yes. And we also believe probably we have communicated that water sand as well, as our water cut is in the 50-percent range.

Q. Besides the interval at 4800 feet, are there any other potential producing intervals in the Brushy Canyon?

A. Yes, there is one more, about 4700 feet.

Q. The interval that's being produced in the Marquardt well, is that potentially productive in your wellbore?

A. The Bell Canyon interval?

Q. Correct.

A. No, it is not. We had no mud-log mud-gas shows in that interval.

The current producing interval in that well is in the Wolfcamp, which we only have rights to the base of the Bone Spring.

Q. In your opinion, this -- your Exhibit 4 and 5 illustrate the -- probably the extents of these reservoirs in these intervals?

A. Yes, based on current information, yes.

EXAMINER CATANACH: I believe that's all I have of the witness at this time, Mr. Hall.

The witness may be excused.

MR. HALL: At this time, Mr. Examiner, we call George Vaughn.

GEORGE VAUGHN,

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

DIRECT EXAMINATION

BY MR. HALL:

Q. For the record, state your name, please.

A. George Vaughn.

Q. And how are you employed, Mr. Vaughn?

A. I'm a staff reservoir engineer for Dalen Resources in Dallas.

Q. All right. And have you previously testified before the Division and had your credentials made a matter of record?

A. Yes, I have.

MR. HALL: We'd offer Mr. Vaughn as a reservoir engineer.

EXAMINER CATANACH: Mr. Vaughn is so qualified.

Q. (By Mr. Hall) Mr. Vaughn, if you would, please, refer to Exhibit 6 and explain what that is intended to demonstrate.

A. Exhibit 6 is a summary from a fluid analysis performed by Core Laboratories on a recombination of a separator gas and oil sample taken from our discovery well,

the Murchison State 2 Number 1 after the well was stabilized over approximately ten days' production, in order to obtain a representative sample.

And this summary shows that this 45.5 API gravity oil is a black oil. It has a reservoir volume factor of 1.5, a solution gas GOR of 1051. All of these indicate a black oil, indicating that we are producing from a typical solution gas drive reservoir --

Q. Now --

A. -- oil reservoir.

Q. All right. Your solution GOR at the time of this sample, you say, is 1501. Is the production GOR at a different rate now?

A. Yes.

Q. And what is that?

A. It is currently running at about -- Well, on a stabilized flow where we were attempting to flow at about the state allowable of 107 barrels a day, it was at about 5500.

Q. All right. Did the volume factor and the solution GOR data tend to show that this is in fact a gas drive?

A. It tends to show it is a solution gas drive reservoir, yes.

Q. And does it also tend to demonstrate that the

lower sand is a gas sand?

A. It would, inasmuch as we would not expect to see the GOR in an oil reservoir, based on this fluid analysis, be that high this early.

Q. All right. Let's refer to Exhibit 7, if you would, please, sir. Identify that and explain what it's intended to reflect.

A. Exhibit 7 is the composition of the primary-stage separator gas, which, as I mentioned earlier, was taken off the separator and analyzed by Core Laboratories. And that shows that we have a heating value of 1208 BTUs and that the gas-plant yield is 5.4 gallons per MCF.

Q. All right. Is that more indicative of a gas-reservoir gas, as opposed to oil casinghead gas?

A. It's more indicative of a gas-reservoir gas.

Q. All right. Let's refer to Exhibit 8, if you would. If you would identify that, explain it to the Examiner.

A. Exhibit 8 is a comparison of several gas samples that we're aware of in South Eddy County, Brushy Canyon Oil reservoirs, obtained from oil reservoirs.

If you'll note the two samples or wells on the right-hand side of the exhibit, there's one from the East Loving field and one from the La Huerta field, both of which are Brushy Canyon oil fields.

And you'll note that the BTUs are running from 1400 to 1600 BTUs on a heating-value basis.

The plant yields are running 10.6 to 13.5 gallons per MCF, a very rich gas, which is indicative of typical oil reservoir casinghead gas.

If you'll look at -- Repeating myself, look at our sample, which is the second from the left, we, as I mentioned, had a heating value of 1208 BTUs, and our plant yields are 5.4 GPM.

As Mr. Nelson had mentioned earlier, we're aware of the East Herradura Bend field, which is also a Brushy Canyon field, in southeast Eddy County, and aware of a gas sample there that indicated that early on -- Now, this was a sample taken early in the history of that field, late 1992, had a heating value of 1167 BTUs and a very lean plant yield of 5.0, even leaner than what we're seeing in our well.

I believe that that indicates that we have a situation extremely similar to the situation that occurred in the East Herradura Bend field, whereby they also had, in their estimation, frac'd into a gas reservoir.

And in that particular situation, that gas reservoir was between two oil sands. And they did not have the zone perforated, but definitely believe they had fractured into it through their fracture stimulation of the

oil reservoirs.

Q. Do you know the GOR limitation for the East Herradura Bend field?

A. It is 10,000 to 1, as requested and granted at a hearing in late 1992.

And further, as I understand it, was reviewed six months and again a year later, and it is 10,000 to 1 to date.

Q. All right. The production in that circumstance, did that demonstrate a rapid depletion?

A. It did.

Q. Mr. Vaughn, in your opinion will production from this pool with a 10,000-to-1 GOR deplete the reservoir energy excessively or prematurely?

A. It will not deplete the oil reservoir energy prematurely, in my estimation. We will probably tend to deplete the gas reservoir, which we think is -- zone C -- which we think is of limited extent.

Q. But it will not deplete that zone excessively in your view, will it?

A. The zone C?

Q. Yes.

A. No.

Q. Let's look at Exhibit 9, if you would, please, if you'd identify that and explain what it's intended to

reflect.

A. Exhibit 9 is a -- Actually, there are four pages to that exhibit, but if you'll refer to the first page, that is a GOR-versus-cumulative plot from the Santa Fe federal lease, which is an eight-well lease in the Herradura Bend East Brushy Canyon field.

And you'll note that very early in the life of that field, and particularly the Santa Fe Federal lease, the GOR quickly went to 25,000 but then went on a rather rapid decline and, at last production data that we're aware of, was down to a 5000 GOR, very abnormal for a solution gas drive oil reservoir.

And that's -- You can see that also on the second page where you can see that gas production peaked in late 1992 at -- heavens, 250,000 per month, and went on a steady decline and is currently at about 15,000 per month, currently.

The oil production from that eight-well lease peaked at about 12,000 barrels a month in approximately December, 1992, and has been on a decline, currently is about 3000 barrels a month, which is -- The atypical thing there that you see is that, as shown on the first page, GOR declined, gas dropped -- declined, dropped rapidly, more so than the oil production. Thus, you saw a GOR decline.

Q. If you -- I'm sorry, didn't mean to interrupt.

A. I was going to go ahead and refer to the next two-pages in the --

Q. All right, well, let me just ask you pages 1 and 2 of Exhibit 9, for the Herradura --

A. Okay.

Q. -- Bend field, correct? And you believe you have a similar situation with the Murchison State well?

A. Yes, we do.

Q. All right, let's look at pages 3 and 4. What are those for?

A. Pages 3 and 4 are similar plots from a well in the Loving Brushy Canyon field, the Culebra Bluff unit Well Number 2.

And if you'll note on the GOR-versus-cumulative plot for that well, you'll note that the GOR was essentially 2000 at the early stages of production from that well.

It increased slowly and then, you can see about halfway through the plot, began to increase more rapidly, and today is at about 11,000 GOR, going from 2000 to 11,000, which is a very typical GOR increase that you expect in a solution gas drive oil reservoir, very typical.

And you can see it on the fourth page of Exhibit 9 where gas production was essentially flat through 1992-3, saw a little increase in 1994, but actually the oil

production declined so that you do see the typical GOR increase through the life of the reservoir. Very typical of an oil reservoir solution gas drive.

Q. All right. Do you know how the GOR was established for the Herradura Bend?

A. Yes, I do.

Q. And would you elaborate, please?

A. Yes. In October, 1992, the operator came before the Commission -- I believe that Case Number was Case 10,541 -- to request a 10,000 GOR for the East Herradura Bend field.

In that hearing, they stated that they -- as I mentioned earlier, that they had frac'd into a gas reservoir lying between two oil sands, which they contended was the reason for that rapid increase to 25,000 GOR in their earlier wells.

They contended that they would expect to see that gas reservoir deplete over time and the GOR literally come down. And in fact, I'll later show that that did occur.

And then we saw it, actually, in the production from the Santa Fe Federal lease where the GOR declined from -- well, 25,000 to 5000 today.

And that was the basis for their request for a 10,000 GOR, was that they had that gas reservoir actually open to the wellbore, via the fracture stimulation

treatments, contributing gas-well gas.

Q. Now, do you have that situation with the Murchison State 2? Do you believe you'll have to fracture-stimulate the oil sands in order to make a commercially successful well?

A. Yes, I do.

Q. And is it likely that the fracture will extend through to the gas zone?

A. Yes, it certainly will.

Q. What are the calculated reserves for the two oil sands?

A. Calculated reserves for the two oil sands together are 80,000 barrels of oil and 600 MMCF of gas for a 7500 well-life GOR.

Q. All right. And for the sand? Did you mention the reserves for the sand?

A. For the Sand C?

Q. Yes.

A. No, the Sand C is calculated to have 300 MMCF of gas reserves.

Q. All right. And the expected total reserves, GOR for the well?

A. Total GOR reserves are expected to be -- or total reserves GOR are expected to be 11,250, based on 80,000 barrels of oil and 900 MMCF of gas.

Q. Okay, anything further with respect to Exhibit 9?

A. No.

Q. All right, let's look at Exhibit 10, please, sir, if you would identify that and explain that, please.

A. This is an exhibit -- well, just reiterating comparative GOR performances for South Eddy County fields.

And if you'll note, the field on the left is the Loving field, which I had mentioned earlier, the South -- the Culebra Bluff --

EXAMINER CATANACH: Excuse me, sorry, Mr. Hall. Are you looking at Exhibit Number 10?

MR. HALL: Yes.

EXAMINER CATANACH: I don't seem to have one.

MR. HALL: I'll get you one.

THE WITNESS: You gentlemen have 10, I guess.

EXAMINER CATANACH: Thanks.

Q. (By Mr. Hall) I'm sorry, go ahead, Mr. Vaughn.

A. Okay. As I was saying, the field on the left is a summarization of the GOR history in the Loving field, which is the field that I had mentioned earlier with that Culebra Bluff well, showing the production in Exhibit 9 -- production and GOR history, that is.

And you'll note that that field come on line in 1990 and has about a five-year life. The cumulative GOR to date in that field is about 4500. However, the 1994

reported annual GOR now in that field is now about 11,000, a typical situation for a solution gas drive oil reservoir.

The Nash Draw field, also in south Eddy County, is a newer field, having been initially produced in 1993, has a cumulative GOR to date of about 3000, and now in 1994 had an annual GOR of about 4000, also showing a typical GOR increase situation.

Now, look at Herradura Bend East field, which is a field also mentioned and referred to the hearing in 1992, where they believe they had a gas reservoir open, and the cumulative GOR to date is about 7900.

However, if you'll look at the 1994 annual GOR, it's down to about -- back down to about 5600, indicating a very atypical GOR history situation for a solution gas drive oil reservoir, which indicates to me that a gas reservoir was in fact present. That gas reservoir has been somewhat depleted.

And by the way, they had stated in that hearing that they believe they had a somewhat elevated bottomhole pressure in the gas reservoir. We have an elevated bottomhole pressure in our well, and we do believe that that is a result of that gas reservoir.

Q. All right. Let's refer to Exhibit 11, please. Would you identify that and explain that?

EXAMINER CATANACH: I don't have one of those

either.

MR. HALL: Sorry.

THE WITNESS: How about 12?

EXAMINER CATANACH: They stop at 9.

Q. (By Mr. Hall) Go ahead, Mr. Vaughn, if you could explain that exhibit.

A. Exhibit 9 [*sic*] is the daily production history of the Murchison State 2 Number 1 well, since it was brought on production initially March 18th, through April 30th. And that gap you see there was a shut-in necessary to prevent waste until we got our gas-line connection.

As you would note early on -- Our intent in testing this well -- and the real testing occurs after we got the well back on production where we were -- had specific objectives in mind, but our objective was to determine the GOR at the statewide allowable, depth allowable rate of 107 BOPD, as it was already obvious the well was capable of a greater production rate than that.

And we found that at 107 BOPD, that the GOR seemed to be about 6500. I believe I stated earlier 5500, but it seemed to be about 6500.

We also wanted to determine the daily oil rate, at the statewide GOR limit of 2000 to 1, that we could achieve by that restriction.

And if you'll note on the two test periods of

April 26th and April 27th, on April 26th we went to an 8/64 choke, and you'll note that we produced six barrels of oil, six barrels of water and 203 MCFD, for a 34,000 GOR.

The next day we actually cracked the choke open somewhat, produced no fluid and 213 MCFD, essentially the statewide allowable of 214 MCFD, indicating that at that restricted gas allowable we could produce no fluid.

We might day in and day out actually have the well kick out some fluid, but it would appear that we might literally not be able to produce any oil at the 217 MCFD rate, which was also a point made in the East Herradura Bend hearing in 1992 that I referred to. They found the same situation when they had attempted to test their well, that they literally could not produce any fluid, oil or gas at -- Actually, I think they had a 284 MCFD rate there, in the 6000-foot range.

Our third objective was to determine the maximum reasonable allowable, or maximum reasonable oil rate, that we could produce at the Murchison State 2 Number 1 well, and we had tested earlier on at a rate of 250-plus barrels of oil a day rate, right after the frac treatment. And we intended to produce the well at the 250-barrel-a-day rate, but stopped on April 30th at 215 barrels a day, at a gas rate of 1800 MCFD, for a GOR of approximately 8500. Still had a flowing tubing pressure of 800 p.s.i. on a still

rather tight choke, 16/64-inch choke.

We have no doubt that we could have produced in excess of 250 barrels a day from the well, but we already well have exceeded, I think, our monthly gas allowable by some considerable amount. So we decided to cease testing.

But we do believe, in summary, that we established that we can easily produce 250 barrels of oil a day from the well without damaging it and that it will be impossible to produce any oil from the well at a 2000 GOR restriction.

Q. All right, let's look at Exhibit 12. Can you identify that and explain that, please, sir?

A. Okay. Exhibit 12 is a summary of some economic forecasts that were made for three different situations.

Case Number 1 was a scenario where we forecast the 2000 GOR restriction and assumed that day in and day out we could produce three barrels of oil a day, and in fact found that we would have a well payout in 72 months, or six years, finally. The well life would be 21 years, to produce the 80,000 barrels of oil and 900 MCF of gas.

Case 2 is a situation whereby we would get the 10,000-to-1 GOR allowable, be able to produce at statewide depth allowable of 107 barrels a day. In that case, we would have a payout in ten months, well life would be cut dramatically to five years, to produce the same 80,000

barrels of oil and 900 MMCF of gas.

Case 3 is a situation where we would perforate the 4800-foot sand, particularly to protect our correlative rights, so that we would be producing reserves from that sand to prevent drainage from offset operators, be able to produce 250 barrels a day at the 10,000 GOR we're requesting, and would see a well payout in seven months and still a relatively reasonable well life of seven years -- excuse me, nine years -- to produce the combined reserves of 175,000 barrels of oil and 1.2 BCF of gas.

Q. Now, in your opinion, are the 250 barrels of oil per day and the 10,000-to-1 GOR limitation reasonable and necessary to efficiently, economically develop this field?

A. They are.

Q. If the wells in this pool are produced under the statewide gas-oil-ratio limitation of 2000 to 1, is there a likelihood that the liquids cannot be efficiently produced and ultimate recoverability of reserves will be impeded?

A. I believe there is that likelihood, yes.

Q. So you're going to be leaving oil in the ground?

A. I believe that's a distinct possibility.

Q. And again, is development on 40 acres appropriate for this field?

A. It is.

Q. In your opinion, will granting Dalen's

Application be in the best interests of conservation, the prevention of waste and the protection of correlative rights?

A. It is.

Q. And were Exhibits 6 through 12 prepared by you or at your direction?

A. They were.

MR. HALL: We would move the admission of those exhibits, and that concludes our direct.

EXAMINER CATANACH: Exhibits 6 through 12 will be admitted as evidence.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Good morning, Mr. Vaughn.

A. How are you?

Q. Fine, thank you, sir.

You've made reference, Mr. Vaughn, to an 80,000-barrel-of-oil -- I guess that was a recoverable oil estimate that you have forecast?

A. Recoverable, correct.

Q. All right, sir. Describe for me the method that you used to derive that number.

A. I did use a 40-acre drainage area. I used the

porosity calculated by Mr. Johnson in the zone, the water saturation calculated, did use the original formation volume factor as determined by Core Laboratories, 1.5, and --

Q. You're using a simple volumetric calculation, are you not?

A. Absolutely, yes, sir.

Q. All right.

A. Only fifteen percent recovery in the Brushy Canyon zone, only a 12-percent recovery of oil in place in the 4800-foot zone.

Q. Okay. What did you calculate within the 40-acre tract to be the original oil in place? Do you recall?

A. I could refer to my notes and back-calculate that, but it's just 80,000 divided by .15, whatever that --

Q. Whatever that number is, okay.

So your method was to volumetrically determine the oil in place in a 40-acre tract, using the log values and other information, and then you forecasted a decline.

And you had to do that because you have yet to establish any kind of data to demonstrate a decline in your discovery well?

A. That's not quite accurate. Which -- When you're speaking of -- Are you referring to one of these cases that I --

Q. No, sir, I'm looking at the Murchison Number 1, your discovery well here that you're seeking the new pool for.

A. Yes.

Q. If I understand the initial production information, it doesn't appear that you have enough actual production from your well by which to establish a production decline and thereby go about extrapolating ultimate recovery from this well in a different method.

A. Oh, that's absolutely true.

Q. All right. The forecasted decline, then, is based upon analogy, I assume, from other Delaware wells of similar characteristics?

A. Well, I in fact did not forecast a decline because we have capability of producing in excess of 215 barrels of oil a day, which of course is double the allowable rate.

So in my -- any forecasting you might do, you must forecast a flat rate of 107 barrels a day for some period of time by analogy, and then forecast a decline to recover your forecast reserves.

Q. All right, sir, I'm not understanding. If you're recovering 80,000 barrels in the 40 acres --

A. Uh-huh.

Q. And you have picked 15-percent decline for the A

zone --

A. Oh, no, no, 15-percent recovery --

Q. Oh, I'm sorry, I misunderstood.

A. -- of oil in place.

Q. You've got --

A. 15-percent recovery of oil in place --

Q. All right.

A. -- as a recovery factor.

Q. Did you make any judgments or assessments about ultimate recovery based upon some kind of analogy of decline rates?

A. No.

Q. Not possible to do yet, is it?

A. No, it is not. Too early.

Q. When we look at Exhibit 11, this is all the production information you have available to work with from this discovery well?

A. That's correct.

Q. Are you satisfied that you have enough information at this point to determine what is the most efficient rate at which to produce the well?

A. Yes.

Q. What, in your opinion, is the most efficient rate at which this rate well likes to produce?

A. I believe that we would be comfortable producing

the well at about 200 barrels a day.

Q. Okay. When we look at the display, Exhibit 11, and we look at the hypothetical of a gas limit on a 10,000-to-1 GOR, which gives you the -- about what? 2.2 million a day or something? --

A. That's correct.

Q. -- do we have a case study where you've attempted to produce it, using the gas allowable as the control and using the volume you would achieve at 10,000-to-1 GOR? Are you with me?

A. No.

Q. All right.

A. I'm sorry. I guess I was thinking ahead and lost your --

Q. All right, let me try again.

A. Uh-huh.

Q. What I'm looking for is to test the ability of the well --

A. Uh-huh.

Q. -- to produce at a 10,000-to-1 gas-oil ratio allowable equivalent.

A. Right.

Q. So I would take the -- your requested 250 barrels of oil a day --

A. Uh-huh.

Q. -- times 10,000 to 1, and I'm going to get 2.5 million a day --

A. Right.

Q. -- as my allowable maximum?

A. Yes.

Q. Okay. Do we have an example -- And I'm looking down at the third column on your spreadsheet --

A. Right.

Q. -- Exhibit 11 --

A. Uh-huh.

Q. -- and what I'm looking for is rates that approach 2.5 million a day.

A. Right.

Q. Do we have any of those kind of creatures on display?

A. Well, the very last one is 215 barrels of oil and 1800 MCF per day, which is an 8500 GOR.

Q. That's the producing GOR?

A. That is the closest -- Say again?

Q. That would be the producing GOR?

A. Yes.

Q. Okay, I'm still not with you.

In trying to achieve the ability of this well to produce 2.5 million cubic feet of gas a day --

A. Uh-huh.

Q. -- were you ever able to produce it at that rate?

A. We may have produced it at that rate, had we continued to open the choke. But we chose to cease testing the well on April 30th.

Q. All right. So this well has more capacity to produce than is demonstrated on this last entry?

A. We believe so, yes.

Q. Okay. Do you know what its absolute capacity is at this point?

A. No, we don't.

Q. Why did you choose to stop producing it at these higher rates?

A. Well, several reasons, the main thing being that we had already overproduced our gas allowable at the 2000-to-1 restriction, and our production department was in essence raising the red flag and saying that we must stop.

Q. Did you ask to get a special test allowable or any kind of waiver for that?

A. No, we didn't.

Q. Okay. So you made a decision not to test it further?

A. That's correct.

Q. So it -- You think it will produce better than -- more than this?

A. Yes --

Q. Okay.

A. -- yes, I do.

If you'll note, the flowing tubing pressure on the 16 was still high, 800 p.s.i.

Q. What I'm looking for is some way to validate your conclusion about approving 10,000-to-1 GOR for the pool at this point, and the only test I can find at those upper gas-allowable rates is this last entry where you get 1.8 million a day.

A. Well, actually, if you will look back at April 23rd, 24th and 25th --

Q. Okay.

A. -- you'll note that we were producing at about 140 barrels of oil per day at that point --

Q. Yes, sir.

A. -- and just about -- round numbers, 1400 MCFD.

If you'll note, column 4 is the calculated GOR, and those three days ran 9550, 9700 and 9940 GOR, so we were virtually at the 10,000 limit at that 140-barrel-of-oil rate.

Q. Yes, sir, I'm still not clear with you.

The GOR maximum gas allowable for the oil well is going to be 250 times 10,000 to one?

A. Right, uh-huh.

Q. And so what I see tabulated on here is the

producing GOR --

A. That's correct.

Q. -- which is different than the gas allowable volume under the 10,000-to-1 times 250?

A. Right.

Q. Okay. When I look at gas withdrawals --

A. Yes.

Q. -- it's approximately 1.4 million a day, and that gets you a producing GOR up around 9000 to 1, okay?

A. That's correct.

Q. All right. Come up the column with me.

A. Okay.

Q. If we calculate what happens with a gas allowable of 5000 to 1 times your 250 a day --

A. Uh-huh.

Q. -- you're going to get 1.2 million a day of gas, right?

A. Correct, 1.25.

Q. All right. It appears to me that if you go to a 5000-to-1 GOR and use the 250 oil, that this well produces more efficiently because the producing GOR drops.

A. Well, we would have liked to have been able to state that that was our belief, but we didn't believe that we actually had the data to establish that.

Q. Okay. What in this display gives you an answer

to the question about a 5000-to-1 GOR times 250 barrels of oil a day? Why is that not a better choice initially for the pool than going to the 10,000-to-1?

A. Well, frankly, if you'll look at the last two days of production -- of testing, on April 29th and April 30th where we're more nearly approaching the oil rate that we'd like to be able to produce, as you pointed out earlier, we produced 1500 and 1800 MCF of gas on those successive days, which was a GOR of -- round numbers, 8000 and 8500.

So we anticipate that that may be more like the GOR we will see at around a 200-barrel-a-day rate. And we would like to be able to produce the well at the 200-barrels-of-oil-per-day rate and have the leeway to -- obviously, to be within the gas allowable that's granted, which, you know, would require 10,000.

And if I could -- I can go and elaborate as to some other reasons that we have for seeking the 10,000 and the 250-barrel-a-day rate, and maybe I should go back into that, if you would care for me to.

Q. It would help me, Mr. Vaughn, because I'm trying to look at the initial production information --

A. Uh-huh.

Q. -- and it appears that it is not quite sufficient to give us a firm engineering conclusion about the most

efficient way to produce the discovery well.

A. Well, I guess -- Let me go back and say at the onset that, to repeat myself, we think we have the same situation here as occurred in the East Herradura Bend field.

We believe that zone C is a gas reservoir, a separate gas reservoir, that it is somewhat overpressured.

We did -- By the way, I don't think I mentioned, it is on Exhibit 6.

We did obtain a 72-hour shut-in bottomhole pressure. That was 2453 p.s.i. That is a gradient of .473, which, based on my knowledge of Delaware Basin fields, is somewhat elevated. You would normally expect to see a gradient of .45 -- .445, .45, maybe.

I believe in the hearing in the case of the East Herradura Bend request for 10,000 GOR, that operator also believed that they had an elevated GOR, even though they didn't have a shut-in bottomhole pressure. They had shut-in tubing pressures that the engineer who testified back-calculated the bottomhole pressure and --

Q. Excuse me, when you look at the East Herradura Bend case, were they dealing with just one well?

A. No, at that time they had, I believe, four completed in the Santa Fe Federal lease.

Q. All right. Do you remember the time sequence,

what was occurring back in 1990, as opposed to later in 1992?

A. Well, this was 1992, and the field had only gone on production in April of 1992. First production occurred in April of 1992.

And I say that -- There may have been one isolated edge well prior to that, but --

Q. And they had -- If my memory serves me right, they had multiple wells in which to obtain information from?

A. They did, but they did not, in fact, at that point testify that they had any bottomhole pressure information, and they did not have a fluid analysis at that time, nor did they have relative permeability data at that time.

Q. Make your case for me, Mr. Vaughn, about the 10,000-to-1 versus 5000-to-1 GOR.

A. Well, let me go further and say that we expect to see the GOR in this well drop months from now, several months from now.

However, to produce at 200 barrels a day, it would appear that we're going to have a GOR of around 8500.

Now, to make a further point, as I mentioned earlier, a very central part of our request today is to enable us to recomplete the 4800-foot zone, to prevent

drainage from offset operator completions in that zone, which we anticipate will occur --

Q. May I ask you a question?

A. -- to give us some room to go to -- to produce that zone, along with the Brushy Canyon zone that we currently have open, and to be able to produce the full 250-barrel-a-day allowable, at what we will hope would be a lesser total GOR from the two zones of production.

Q. You've talked about your concern for drainage from Chevron and the offset to the east.

A. Correct.

Q. Describe for me what you have done to reach that concern.

A. Well, they're -- They have three wells staked, only 330 feet off our lease line, and they will most certainly drain us if they complete in the 4800-foot sand.

Q. Why don't you go to 80-acre spacing?

A. Well, if we go to 80-acre spacing we -- you know, we have -- as we testified earlier, we believe that we might not encounter, conceivably, the zone -- third zone.

We might not encounter even, you know, some of the A or B zone, that there is lenticularity there, that we haven't proven that 80-acre drainage is sufficient to drain -- or that wells in the Delaware will drain 80 acres.

To my knowledge, there's no precedent for 80-acre

proration units in the Delaware.

Q. I'm just curious. If you're worried about offset drainage, then one of the components of that concern is how close the wells are to each other and how densely you drill the pool?

A. Well, we're concerned about only the offset operator, the fact that he is going to be right off our lease line. Our first well is drilled rather in the center of a 40-acre tract.

Q. You haven't chosen to propose any special setbacks on well locations, other than what the statewide rule provides, then?

A. We have not.

Q. Okay. It's not possible at this time to accurately calculate drainage areas, is it?

A. No, it is not.

Q. What additional development do you plan to engage in?

A. Well, we would ultimately plan to develop our lease to its full seven-well, 40-acre density.

Actually, we don't have rights to one 40 surrounding the old deeper well there. I believe it's the Ogden State Com 2. We do not have rights there.

But at this point, we hopefully anticipate developing our seven locations. It would appear that one

of them might be somewhat risky, but that's our job.

Q. At this point, have you made any choices about meeting the offset competition that's about to occur from Chevron?

A. Yes.

Q. And how will you do that?

A. I cannot tell you if we've actually staked the wells or determined what the setback will be, but I'm sure one of the others in our group here could testify to that, but I could not tell you what that --

Q. In terms of your plans for further development of the pool, and as you see what Chevron intends to do, how long a period would it be before we would have further reservoir data and log information to more specifically define the rules for the pool?

A. I would say six months to a year, by the time we get our wells drilled, Chevron gets their wells drilled.

And Chevron has indicated a desire to join. We've already sent well information to Chevron. Mr. Nelson has already talked with their geologist. We're going to share information with Chevron.

So since they plan to drill their first well in July and we hope to be drilling soon on our next well soon, I would say within six months to a year there will be considerably more data available.

Q. What are you doing with the gas now that's being produced?

A. It's being sold.

Q. All right.

A. We did get connected on April 14th.

Q. So you can go ahead and produce your well without having to be concerned about flaring gas or venting gas, that kind of thing?

A. Oh, absolutely.

Q. So you're in a position now, if the Division should give temporary approval, to go ahead and produce your well and get more information?

A. Yes.

Q. What kind of information would you as a reservoir engineer schedule or want to see from this well in the next six months?

A. One piece of information would be some relative permeability data.

Q. And how would you get that?

A. We'd have to core a well, really need to pull a hole core to get relative-perm data.

Q. Can you extrapolate or infer permeability with any other type of engineering test?

A. Are you speaking of relative permeability?

Q. Yes, sir.

A. Not to my knowledge, not to any degree of accuracy.

Q. Well, you know, you could shut the well in, I guess, and hope for a buildup and maybe infer by that process some kind of permeability information?

A. That wouldn't give you any information as to relative permeability, the gas KGKO data.

Q. Okay. Apart from core information for permeability purposes on additional drilling, what kind of production test or pressure test or other kinds of information in that fashion could you obtain in the next six months?

A. Well, I believe the only information we will in fact have, in addition to the core data, would be production tests, because we had discussed the possibility of not perforating the C sand. I think that would be futile. There's no doubt but what we would frac to it.

So even though we might elect not to perforate it, to prevent the high GOR situation early on, I believe it would be futile and we'd probably -- we'd no doubt frac to it in order to establish the kind of oil production that we want to see from the A and B sands.

Q. How big a frac job was used in this well?

A. You know, I could not -- I can't quote that to you. But we used a consultant out of Texas A&M, I believe,

a Mr. Eley, to design that frac. We felt like we gave a state-of-the-art frac treatment to the well.

I cannot quote you the actual volumes, fluid volumes or sand weights.

Q. My point was, is there any opportunity that you see to put a smaller frac treatment into the well and thereby avoid both the water and the gas?

A. No. No, I believe that would be inappropriate. We want to put an effective treatment on the rather tight oil reservoirs here that are typical of the Delaware, in order to -- you know, we certainly enjoy this 200-barrel-a-day-plus oil rate and hope to duplicate that in our ensuing wells.

MR. KELLAHIN: All right. Thank you, Mr. Examiner.

MR. CARR: Mr. Examiner.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Vaughn, does Dalen plan to drill additional wells within the next six months?

A. Yes, we do.

Q. Chevron is recommending that any temporary rules that result from this hearing be revisited after a six-month period of time.

Do you have any objection to that?

A. Essentially no. No, we don't.

MR. CARR: That's all I have. Thank you.

EXAMINER CATANACH: Did you have something else?

MR. HALL: Briefly.

EXAMINER CATANACH: Go ahead.

REDIRECT EXAMINATION

BY MR. HALL:

Q. Mr. Vaughn, would you be comfortable producing the Brushy Canyon at or around 200 a day?

A. Yes.

Q. And the reason for your request, you need the flexibility to add the sand at 4800 to reach the 250-barrel-per-day allowable; is that correct?

A. That's correct, yes. We don't want to spend another $80,000 to recomplete and frac, and we will have to put a state-of-the art frac on the 4800-foot zone, we're convinced. I believe that would cost about $60,000.

To justify that economic expenditure, we certainly would like to have -- You know, we couldn't justify it if we were already producing at allowable in the Brushy Canyon zone.

Q. That's also borne out by the information on your Exhibit 12?

A. Yes.

Q. And stacking both of those zones, the 4800 and

the Brushy Canyon, that's what takes you up to the 10,000-to-1, correct?

A. You say takes us up to the 10,000-to-1. Well, that will get us -- I believe that we might very well be able to get to the 250-barrel-a-day allowable easily. I mean, I think we'll be capable of much more than 250 barrels a day oil rate from the two zones once we do recomplete and commingle.

However, at this point, I would think that we have a good possibility that the 4800-foot zone, by itself, will have a lower GOR, so that our combined GOR from the two zones will be somewhat under 10,000.

But we want the leeway to have 10,000 GOR; we don't want to be restricted.

MR. HALL: That's all I have, Mr. Examiner.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Vaughn, what is the reason that you would like to produce this well at 200 barrels a day? What's the basis for that number?

A. Well, the 200 barrels a day out of the Brushy Canyon alone is a rate at which we believe that there's certainly going to be no damage to the reservoir, and simply economics, cash flow. I believe that's just the prudent economic thing to do.

Q. There's no way to tell at this point what amount of gas is coming from the C zone, is contributing to production from that well from the C zone?

A. There's no way, because if you were to go in and, say, packer-test, we're convinced, as we mentioned earlier, that the fracture stimulation has essentially communicated all three zones so that, you know, packer testing would be futile, we believe.

Q. Can you at this point estimate what the potential might be from the upper sand in terms of production? Is it as good as the lower intervals?

A. You're speaking of the 4800-foot --

Q. Yes, sir.

A. Yes, actually, I've assigned more oil reserves to the 4800-foot zone than to the Brushy Canyon zone. I've assigned 95,000 barrels of oil and I believe 480 MMCF of gas -- 380, I believe.

Q. How about the interval at 4700 feet?

A. We really have not addressed that. We still believe that there's some -- You know, that's more speculative than the 4800-foot zone. We certainly think it's prospective, but I have not attempted to assign a reserve figure, oil or gas, for that zone.

Q. Do you have any idea at this point in time whether a 10,000-to-1 GOR would cause any kind of reservoir

damage to -- if the 4800-foot interval was just being produced by itself?

A. I don't believe there's any way to speculate as to that.

Q. If Chevron chooses to drill its wells and produce only the upper interval at a 10,000-to-1 GOR and a 250-barrel-a-day allowable, is there any way at this point in time to tell if that's detrimental to that interval?

A. No, I don't believe there is.

Q. Mr. Vaughn, in terms of the vertical limits of this pool, you intend or you seek to just have the Brushy Canyon interval within this pool.

Within your acreage, how would you propose to develop any upper intervals in the Delaware?

A. The Cherry Canyon --

Q. Yes, sir.

A. -- specifically?

If we were able to get a separate allowable for the Cherry Canyon, based on our calculation of reserves in the Cherry Canyon -- albeit we have no tests there, but it certainly does look productive based on log and mud-log analysis -- we believe it would be very economic to drill twin shallow wells, and that probably would be where we would be going -- on 40-acre spacing, obviously.

Q. If Chevron chooses not to, for some reason,

produce the 4800 interval and chooses just to produce the lower interval, would you still -- you would produce the lower interval at 250 barrels a day if you were able to do that?

A. Operationally, we would prefer to go ahead and complete in the 4800-foot zone, in order to begin to drain those reserves.

And as I said earlier, we have pretty much established that we would like to produce the Brushy Canyon alone at about 200 barrels a day, even though I believe there's no doubt but what it would produce in excess of 250 a day.

Therefore, we would -- You know, from an economic standpoint, cash-flow standpoint, we would certainly desire to perforate the 4800-foot zone in this well and to complete it in ensuing wells.

In order to deplete both zones concurrently, we believe that's the more economic thing to do, certainly, in the ensuing wells. It's much cheaper to go ahead and complete both zones -- not together, literally, but on the same -- at the same time, perforate them, frac them, set a sand plug, which is our particular operational policy, frac the upper -- the 4800-foot zone, then come back, wash out the sand plug, and commingle the two zones together.

We've found that to be the most efficient,

economic thing to do. We get excellent completions. Both zones would be open, we'd be draining both zones concurrently.

I believe we would be able to produce the full 250-barrel-a-day allowable at 10,000 or less GOR.

Q. So you don't intend to wait to see what Chevron does; you want to go ahead and complete that upper zone in your existing well and in your subsequent wells?

A. Yes, we would like to have that flexibility.

Q. And you feel you need the allowable to do that?

A. Yes. In other words, for us to justify an $80,000 expenditure, we would certainly have to be looking at, you know, an incremental oil rate that we could assign to that economic expenditure, to justify the economics of spending that $80,000.

Q. I believe the testimony was previously that you don't think that producing at a 10,000-to-1 GOR would cause any damage to the A and B intervals. What do you base that opinion on?

A. Well, based on our fluid analysis, we don't -- we believe that the vast predominance of the gas is coming out of the C zone, as gas-well gas, based on the fact that the fluid analysis says that we have a black oil -- we have a black oil with a formation volume factor of 1.5, and more specifically a solution GOR of 1051 to 1.

Normally you would expect to see a well produce at roughly that solution GOR, in other words, to have a separator GOR of roughly that same figure. Since we are seeing much more gas than that, we're convinced that that gas is coming from zone C.

So we don't believe that we are pulling excessive gas out of zones A and B. We believe that the oil is coming from those zones, certainly, and some solution gas, an undetermined amount, but that the majority of the gas is coming truly from a gas reservoir, zone C.

Q. It would be probably impossible to do in the existing well, but could you somehow verify the gas production from that zone in subsequent wells drilled in this area?

A. Unfortunately, I don't believe you could, because even in drilling, if you were to attempt to DST the zone, unfortunately in our case, we would have already drilled zones A and B before zone C was drilled.

So to shut down and do a DST, you would have all three sands open. So you would really be looking at, you know, the same situation that we have here with the production history.

Q. But geologically, they're not in communication with each other?

A. No, there is separation. I believe you can see

seven or eight feet of shale separation.

Q. Within the next six months, do you plan -- you plan on drilling additional wells in the pool?

A. Yes.

Q. When do you plan on recompleting to that upper zone in your existing well?

A. We haven't made specific plans since we are depending on the results of this hearing, and I couldn't -- As the reservoir engineer, I guess I couldn't speak to what -- exactly how our -- what our management would approve. But I believe it would be our particular group's recommendation that we go ahead and complete there in the near future.

Economically, as I mentioned earlier, I believe it can be justified with the 250-barrel-a-day allowable.

Q. Is the well overproduced at this point?

A. I assume it is, when you -- I know our production department was certainly concerned. That was the reason for shutting down our testing procedure at the end of April.

I think you can -- Although we had a gap from April 4th to April 14th, where we did shut in because we were waiting on our gas connection, we did have an approval for -- to test the well from the Commission, and I believe we had a certain number of days approved to test the well

and flare gas. And we tested the well until we hit against that limit, and then we did shut in those ten days until we got our gas connection.

And so I'm afraid if you were to add up the oil and then certainly add up the gas, that we would be momentarily overproduced, it would appear.

As I said, we had a flare order, or at least permission to flare and test initially.

Q. Is it conceivable, Mr. Vaughn, that the upper zone may have an interval that has a gas cap in it?

A. I don't think so, because I'm not aware of any Brushy Canyon reservoir in New Mexico where there's been a gas cap. I'm not aware of it.

Q. Do you believe it would be a detriment to any portion of this -- any producing interval in the Brushy Canyon to produce at 10,000 to 1 GOR, say, on a short-term basis, for six months to a year?

A. I do not, no.

Q. And you believe in six months we would have enough information to make a better determination of what we've got here and maybe come up with some permanent rules?

A. Yes, yes, I certainly do, because conceivably there could be a minimum of additional, I believe, six wells drilled by that time. And then of course we would have some almost eight months' production from this initial

well and quite likely will have recompleted to the 4800-foot zone.

And of course we will test that separately, by the way. We will have a -- I mentioned to you our frac procedure. That would be a procedure that we would use once we've established productivity in the 4800-foot zone on ensuing wells.

But when we recomplete at the Murchison State 2 Number 1, we would certainly test the 4800-foot zone separately to have a full understanding of its production capability, gas and oil.

Q. That upper zone doesn't have the appearance of the lower one, it doesn't seem to be segregated like the lower one? Is that your opinion or --

A. You're talking about -- when you're saying --

Q. The 4800 zone.

A. Segregated, you mean by --

Q. Politically? Is it separated like the lower one is into separate A and B and C intervals? Or can you tell?

A. Frankly, I have not looked at it that closely since we haven't completed it. I think you probably could say that, that you could -- I'm not even looking at the --

MR. HALL: Mr. Catanach, we can have the geologist elaborate on that.

EXAMINER CATANACH: Well, I'll just ask his

opinion.

THE WITNESS: As I say, Ralph could no doubt speak to this better than I.

But I think you could very easily say that there might be three, four or five separate zones in that 4800-foot interval. But I really would defer that question to Ralph.

EXAMINER CATANACH: Okay, that's fine. I don't really -- That's not a critical issue, Mr. Hall. I think I'll just settle for that.

And I have no further questions of this witness.

Is there anything further of this witness?

MR. CARR: I have a --

MR. KELLAHIN: I have a statement. Mr. Carr?

MR. CARR: I have a letter to read.

EXAMINER CATANACH: The witness may be excused.

MR. CARR: Go in any order you like.

EXAMINER CATANACH: Go ahead, Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Examiner.

Mr. Examiner, the Division has struggled with the Delaware for the best part of the last seven or eight years, and it is certainly a difficult series of formations and reservoirs to handle from a regulatory point of view.

I've been on both sides of those kind of cases on numerous occasions, and typically what we see is an

operator with a high-capacity well that wants some relief either from the oil allowable or the gas allowable, and simply provides no science upon which to base the request.

That was certainly Matador's perception when we filed our pre-hearing statement, that invariably it is too soon or premature to make decisions of this importance.

But having listened to the testimony of Mr. Vaughn and Mr. Nelson, I have great respect for the talent and effort they have put forth and the quality of the science that they've shared with you and Mr. Carr and me. We think the information is appropriate, and we applaud their success. We sympathize with the dilemma they have about how to deal with such a difficult reservoir.

We think Mr. Vaughn is exactly right when he looks for the analogy in the East Herradura Bend Pool. And if you'll look up that case, you will find that the Division did what I propose that you do in this case, and that is to award the Applicant for the success they have achieved and provide them the opportunity to continue to generate good science in a meaningful way.

The order that I referred to -- and I regret that I failed to bring it. I believe it's Order Number R-10,541. It's a November, 1990, order. The Applicant was Bird Creek Resources, and Bird Creek was joined by other operators in that pool to ask for a temporary 10,000-to-1

GOR for the pool. It did not have a corresponding oil-allowable increase, because that's not at issue.

And what they agreed to is to grant the Applicant the relief and to come back in six months with more science, to make everybody comfortable that we did not have problems that we couldn't deal with.

We would support the Applicant in its request to have this pool declared a new source of supply, that the Lower Brushy Canyon be designated as a new pool, and that the Applicant be required to return to this agency within a six-month period with some more information, and hopefully by then they'll be joined by Chevron and others to bring you more information to support making these rules permanent.

Thank you.

EXAMINER CATANACH: Thank you, Mr. Kellahin.

MR. CARR: Mr. Catanach, I have a statement from Chevron that I've been asked to include in the record.

Chevron USA Production Company, as an offset operator to the captioned well, conditionally supports Dalen Resources' Application for pool creation and special pool rules, but only for a temporary six-month period of time. Dalen's Application for an allowable of 250 barrels of oil per day with a producing GOR of

10,000 to 1 greatly exceeds New Mexico Oil Conservation Division rules for a discovery allowable. Because only one well has been produced from this new pool for a short period of time, little is known regarding the producing characteristics of the pool. Chevron holds the lease directly offsetting the discovery well to the east and plans to drill a well in July, 1995. This is the earliest possible date that Chevron can drill a well due to the lengthy federal permitting process.

Dalen's proposed GOR of 10,000 to 1 would allow gas production at a rate of 2.5 MMCF per day from the Murchison State 2 Number 1 well. Gas produced at this rate for an extended period of time could result in an accelerated loss of a substantial amount of reservoir energy and a corresponding loss of reserves if the pool proves to be a solution gas drive reservoir. A six-month temporary allowable period will allow Dalen to fully evaluate the producing characteristics of their well before extensive drainage of offsetting leases occurs. Evaluation of information from additional drilling, such as bottomhole pressures, reservoir permeability and producing characteristics should be required prior to the adoption of permanent field rules.

In order to prevent the unnecessary waste of reserves and to protect the correlative rights of offsetting operators, Chevron proposes that Dalen's Application be temporarily approved for a six-month period. At the end of said six-month period, additional reservoir data pertaining to the proposed spacing or proration units, gas-oil ratio and allowable for this new pool should be presented at a hearing to determine whether the temporary rules should be amended or made permanent.

The letter is signed by M.K. DeBerry for Chevron.

EXAMINER CATANACH: Thank you, Mr. Carr. Is that all you have?

MR. CARR: That's all I have.

EXAMINER CATANACH: Is there anything further?

MR. HALL: Mr. Catanach, I'd like to offer Exhibit 13. It's the Rule 1207 notice affidavit. But you should know, yesterday we had copy-machine problems, so this affidavit is incomplete. If I might be allowed the opportunity to supplement the record with a complete affidavit, I'll get that to you today.

EXAMINER CATANACH: That will be fine, Mr. Hall. Exhibit 13 will be admitted as evidence.

MR. HALL: Thank you.

EXAMINER CATANACH: And there being nothing

further, Case 11,280 will be taken under advisement.

This hearing is adjourned.

(Thereupon, these proceedings were concluded at 12:00 noon.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11280, heard by me on May 4 1993.

David R. Catanach, 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 May 15th, 1995.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998