STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:	)	CASE NO. 11,358
APPLICATION OF NEARBURG EXPLORATION COMPANY/NEARBURG PRODUCING COMPANY	)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

ORIGINAL

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

September 7th, 1995

Santa Fe, New Mexico

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

* * *

I N D E X

September 7th, 1995
Examiner Hearing
CASE NO. 11,358

YATES WITNESSES:

* * *

E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	13	42
Exhibit 2	14	42
Exhibit 3	14	42
Exhibit 4	16	42
Exhibit 5	19	42
Exhibit 6	22	42
Exhibit 7	23	42
Exhibit 8	24	42
Exhibit 9	44	102
Exhibit 10	44	102
Exhibit 11	45	102
Exhibit 12	47	102
Exhibit 13	48	102
Exhibit 14	64	102
Exhibit 15	69	102
Exhibit 16	70	102
Exhibit 17	73	102
Exhibit 18	74	102

* * *

Anadarko Petroleum Company

	Identified	Admitted
Exhibit 1	104	116
Exhibit 2A	105	116
Exhibit 2B	105	116
Exhibit 3	106	116
Exhibit 4	106	116
Exhibit 5A	111	116
Exhibit 5B	111	116
Exhibit 6A	115	116
Exhibit 6B	115	116

* * *

E X H I B I T S (Continued)

Yates Petroleum Corporation

	Identified	Admitted
Exhibit 1	129	147
Exhibit 2	130	147
Exhibit 3	130	147
Exhibit 4	134	147
Exhibit 5	137	147
Exhibit 6	142	147
Exhibit 7	142	147
Exhibit 8	144	147
Exhibit 9	158	176
Exhibit 10	160	176
Exhibit 11	162	176
Exhibit 12	164	176
Exhibit 13	165	176
Exhibit 14	166	176
Exhibit 15	168	176
Exhibit 16	169	176
Exhibit 17	171	176

* * *

A P P E A R A N C E S

FOR THE DIVISION:

RAND L. CARROLL
Attorney at Law
Legal Counsel to the Division
2040 South Pacheco
Santa Fe, New Mexico 87505

FOR THE APPLICANT:

TURNER & DAVIS, P.C.
400 West Illinois, Suite 1400
P.O. Box 2796
Midland, Texas 79702-2796
By: J. RANDY TURNER

FOR YATES PETROLEUM CORPORATION:

LOSEE, CARSON, HAAS & CARROLL, P.A.
300 American Home Building
Post Office Drawer 239
Artesia, New Mexico 88211-0239
By: ERNEST L. CARROLL

FOR ANADARKO PETROLEUM CORPORATION:

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

* * *

WHEREUPON, the following proceedings were had at 10:36 a.m.:

EXAMINER STOGNER: At this time I will call Case Number 11,358.

MR. CARROLL: Application of Nearburg Exploration Company/Nearburg Producing Company to terminate injection operations into two certain disposal wells by rescinding Division Administrative Order SWD-336 and Division Order Number R-7637, Eddy County, New Mexico.

EXAMINER STOGNER: At this time I'll call for appearances.

MR. CARROLL: Mr. Examiner, I'm Ernest Carroll of the Artesia law firm of Losee, Carson, Haas and Carroll, and I'm here today representing Yates Petroleum.

We will have three witnesses, and we are appearing in opposition to the Application of Nearburg Petroleum.

MR. TURNER: Mr. Examiner, my name is Randy Turner, attorney with the Turner and Davis law firm out of Midland, Texas.

I'm here today representing Nearburg Exploration Company in the Application that is being heard today. I will have three witnesses.

MR. ERNEST CARROLL: Mr. Examiner, we've lost Mr. Bruce. He is also going to -- His witness went to find

him.

EXAMINER STOGNER: Okay, at that, we'll go off the record and terminate this until we go find him.

(Off the record)

EXAMINER STOGNER: Returning back to record, any other appearances?

MR. BRUCE: Mr. Examiner, Jim Bruce from the Hinkle law firm in Santa Fe, representing Anadarko Petroleum Corporation, and I have one witness.

EXAMINER STOGNER: How many witnesses do you have, Mr. Carroll?

MR. ERNEST CARROLL: Three.

EXAMINER STOGNER: Are there any other appearances?

Okay, I've got seven witnesses. I'd like them to all stand at this time to be sworn.

(Thereupon, the witnesses were sworn.)

EXAMINER STOGNER: Okay, Mr. Turner, since you're the Applicant, is there any need at this time for opening statements?

MR. TURNER: I'd like to make an opening statement.

EXAMINER STOGNER: Mr. Turner?

MR. TURNER: Mr. Hearing Examiner, give you a brief history of the cases that we are here to discuss, two

prior cases that were heard before the Commission.

First, in 1984 the Commission entered its Order Number R-7637 in Case Number 8234, authorizing Anadarko Production Company to drill its Dagger Draw Number 1 saltwater disposal well at an unorthodox location 1495 feet from the north line, 225 feet from the west line of Section 22, Township 19 South, Range 25 East, in Eddy County, New Mexico.

This order authorized Anadarko to dispose of produced water into the Cisco/Canyon formation at perforated intervals between 7800 and 8040 feet.

The Application of Anadarko in 1984 for such disposal was opposed at that time by Chama Production Company, which is a predecessor entity to Nearburg Exploration Company, who is the Applicant in these proceedings today.

Nearburg opposed Anadarko's application in 1984 on the grounds that the proposed disposal would damage commercial production from the Cisco/Canyon formation.

Yates Petroleum Corporation operates its Osage Number 1 saltwater disposal well, which is situated in the southwest quarter, northeast quarter, of Section 21, Township 19 South, Range 25 East, Eddy County, New Mexico, in the adjoining quarter section to the Anadarko saltwater disposal well.

Today, Nearburg will demonstrate that the Cisco/Canyon formation in the area surrounding the Anadarko saltwater disposal well and the Yates saltwater disposal well has been and is capable of commercial production, but that the disposal of saltwater into the formation has caused loss of production from this formation, and the continued disposal of saltwater will cause further damage to the production which otherwise could be had from this formation.

Now, granted each of these saltwater disposal wells is operated under valid permits or orders from this Commission. However, the Commission is directed by state statute, *New Mexico Statues Annotated*, 70-2-12 B 4, to prevent damage to productive formations by the encroachment of water. And it is Nearburg's position today that the productive formation, being the Cisco/Canyon formation, is being damaged by the continued injection of water into these two saltwater disposal wells.

EXAMINER STOGNER: Thank you, Mr. Turner.

Mr. Carroll, would you like to make an opening statement at this time?

MR. ERNEST CARROLL: Mr. Examiner, I think I would rather wait and possibly make a closing statement. I don't think that I could add anything that would help at this time in the matter.

EXAMINER STOGNER: Thank you.

Mr. Bruce?

MR. BRUCE: I think I'll wait until closing also.

EXAMINER STOGNER: Okay. With that, Mr. Turner, you may proceed.

MR. TURNER: I'd first like to call Mr. Bob Shelton.

ROBERT G. SHELTON,

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

DIRECT EXAMINATION

BY MR. TURNER:

Q. Mr. Shelton, would you please state your name for the record, please?

A. Bob Shelton.

Q. And your residence?

A. Midland, Texas.

Q. And by whom are you employed?

A. I'm a consulting landman for Nearburg Exploration Company.

Q. And how long have you been so employed?

A. I've been with Nearburg since 1989.

Q. And have you had occasion to testify before the Oil Conservation Division previously?

A. Yes, I have.

Q. And have your qualifications as an expert landman previously been accepted?

A. Yes, they have.

MR. TURNER: I tender Mr. Bob Shelton as an expert in land manners.

EXAMINER STOGNER: Are there any objections?

MR. ERNEST CARROLL: We have no objections. However, we have not been furnished a copy of the exhibits that he's going to testify from, so --

EXAMINER STOGNER: Do you have two additional ones?

THE WITNESS: Yeah, we have a bunch of them.

MR. TURNER: Just trying to gain every advantage here.

MR. ERNEST CARROLL: Thank you.

EXAMINER STOGNER: Again, I'll ask if there's any objections.

MR. ERNEST CARROLL: No, sir.

MR. BRUCE: No.

EXAMINER STOGNER: Mr. Shelton is so qualified.

Mr. Turner?

Q. (By Mr. Turner) Mr. Shelton, have you in connection with the hearing today prepared certain exhibits?

A. Yes, I have.

Q. Okay, could you tell me which exhibits that you have prepared?

A. I've prepared Exhibits -- I believe 1 through 8.

Q. You have those exhibits before you?

A. Yes, that's correct. Yes, I do.

Q. Okay, let's look first at your Exhibit Number 1. Could you describe what that exhibit depicts?

A. Exhibit Number 1 is simply a locator map of the area. It depicts the general location of most of the Dagger Draw North field, which you can see, starting in Section 31 in the south -- in the west -- or the left corner of the plat, it shows wells spotted throughout the west -- or the left half of the map. It shows the location of the Yates Osage saltwater disposal well and the Anadarko Osage saltwater disposal well.

Q. Okay. In looking at this exhibit, it appears, if I'm reading this map correctly, then, that the Anadarko Osage well is located in the northwest quarter of Section 22?

A. The Anadarko well is in the southwest of the northwest of 22, and the Yates Osage well is located in the southwest of the northeast of 22 -- of 21, excuse me.

Q. Okay. Now, if you would, let's look at your Exhibit Number 2 and explain what is depicted by this exhibit.

A. Exhibit Number 2 shows the boundaries, in red, of the pool, Dagger Draw North-Upper Pennsylvanian Pool, effective August, 1985, at or about the time the first saltwater disposal permit was issued for the Anadarko saltwater disposal well. And it also shows in green the area of the current pool boundaries, as of July, 1995.

And the only thing I'd like to note on that is the location of the Anadarko well is -- at the time, 1985, it was located outside the boundary of the pool. The Osage well was located inside the boundaries of the pool.

Q. Okay. And the boundaries of the pools as they existed at these various dates were the actual pools as established by the OCD; is that correct?

A. Yes, these pool boundaries have been taken directly off the records. The North Dagger Draw field is approved by the OCD.

Q. All right. Now, let's go to your Exhibit Number 3. Could you explain what Exhibit Number 3 is?

A. Exhibit Number 3 is the Order by the Commission for injection of saltwater, for a saltwater disposal well of Anadarko Petroleum Company, for the Anadarko Production Company Osage well, Order R-7639. It was issued by the Division on the 23rd day of August, 1984. And under paragraph 7 on the last page, the jurisdiction in the case is retained by the Commission for further orders and

applications.

Q. And in the course of your involvement as a landman with Nearburg, have you become familiar with the proceedings that took place under this Case Number 8234?

A. Yes, I am. The case was called, Nearburg objected, we wrote a letter to Anadarko saying we objected. We tried to work it out voluntarily for them not to inject into this well because we felt like the injection of this would hurt future production in the Cisco/Canyon reservoir.

We were unable to come to a voluntary agreement. We opposed them at the Examiner Hearing level. The order was granted as you see. The order was taken to the *de novo* level.

We also objected through the *de novo* process, and ultimately they were granted permission to inject into the perforations you see in paragraph 2 of the order.

Q. And what was the basis of the objections that Nearburg made at the time these proceedings took place?

A. We felt like that the Cisco/Canyon in this area -- which we had leasehold in this area, we owned oil and gas leases on all of Section 22. We were, at that current time, exploring for oil and gas in this section, and we believed that production was obtainable from the Cisco/Canyon formation in this section, as we still do today.

Q. Okay, and you say that you held leasehold in this Section 22 where this disposal well was located back in 1984?

A. That's correct.

Q. And --

A. And so at that time we were given notice of the hearing, and that was our standing for objection.

Q. Okay. And does Nearburg continue to own the leasehold interest in Section 22?

A. Yes, we do, in the northwest quarter we have a well located there now. We also have a substantial leasehold in all the remaining portions of Section 22 and 21.

Q. Let's look now at your Exhibit Number 4. Could you please describe what that exhibit is?

A. Exhibit 4 is an order for the injection of saltwater into the Yates Petroleum Corporation well in Unit G of Section 21. That, again, is the approved order.

Nearburg did not object to this, we did not have leasehold in 1988 when this was granted. At that time we were not given notice of the hearing, and we had no standing to object. We were not given notice and did not have leasehold in the adjoining 40 acres to Unit G at that time, which was the requirement for notice.

Q. Okay. Let's look at this order, Mr. Shelton, if

you would, and could you tell me briefly what the order authorizes?

A. The order authorizes injection into the Cisco/Canyon formation at approximate depths of 7672 feet to 7813, through 2-7/8-inch plastic-lined tubing, with a packer set at 7600 feet.

Q. Okay. Now, you state that at the time that Order SWD-336, which is your Exhibit 4, was entered -- That was in 1988; is that correct?

A. February 16th, 1988, yes, sir.

Q. At that time Nearburg had no leasehold interest in Section 21?

A. That's my understanding. At that time we did not own any leasehold in the northeast quarter, which would have been the -- or directly offsetting 40-acre tracts, which would have required notice.

Q. Okay. And to your knowledge, was the well that was the subject of Order SWD-336 actually completed as a saltwater disposal well?

A. Yes, it was. It was a re-entry, I believe, by Yates, and they converted it to a disposal well under this order.

Q. Okay. And is that well being used today as a disposal well?

A. Yes, it's my understanding it is.

Q. Okay. And that's one of the wells that Nearburg is complaining of --

A. That's correct.

Q. -- in these proceedings; is that correct?

A. Right.

Q. Now, the basis of Nearburg's complaint regarding the Yates disposal well in Section 21 is what?

A. We again believe, like we do in the Anadarko well, that continued injection through perforations located in the Cisco/Canyon formation will damage ultimate recoveries from the field and from offsetting locations in Section 21.

Q. Okay. Now, you stated previously that Nearburg had no leasehold in Section 21 at the time that this order for the Yates was entered. Has that situation changed today?

A. Yes, it has. We own a substantial amount of leasehold in the northeast quarter of Section 21, which would be the spacing unit for wells, which are imminently to be drilled in the northeast quarter.

There is a well, the Yates Petroleum Corporation Ross 14 Com well, which was the subject of a previous pooling, which is now scheduled to be commenced by September 14th, 1995, of this year, by next Tuesday [*sic*]. So there is another oil and gas well to be drilled on a

directly offsetting 40-acre tract to this disposal well within the next week, which Yates will operate.

Q. Let's look at your Exhibit Number 5. Could you explain that exhibit?

A. Exhibit 5 is -- what we -- when we first realized -- Of course, we realized from the beginning that there was a problem, but we felt like when we drilled our Ross Ranch 22 Number 2 well, we needed to take some action to get the Anadarko and the -- the Anadarko well shut in primarily, first, because of the continued injection into it and its proximity to the Ross Ranch 22 Number 2 well.

We asked and requested a meeting with Mr. Tim Gum, the District Manager at the Artesia office. We had a meeting with Mr. Gum on November 8th, and we asked him at that time to take action to have the Anadarko well shut in.

We at that time invited Yates Petroleum Corporation, who was present at the meeting, and Anadarko Petroleum, who was present at that meeting, and we had the meeting, we presented our evidence in support of shutting in these wells to Mr. Gum.

Mr. Gum's response was that we didn't have a well yet, which we didn't. We'd drilled it, we'd cased it, but we had not completed the well yet. Mr. Gum suggested that we complete the well and, if it completed as a productive oil and gas well, that we then write him a letter and let

him know, with a completion report, and then he would take it -- then he would make a decision on what to do.

This letter is in response to that request by Mr. Gum. We completed the well, as you can see by the attached C-104. This is the completion report. It was forwarded with this letter to Mr. Gum on December 15th, 1994. At that time, again, we -- the well was -- It says in the letter, The well was tested on December 1st, 1994, at a rate of 67 barrels of oil a day and 4624 barrels of water, 364 MCF of gas."

At that time we asked Mr. Gum to cease the injection into the Anadarko well, because we had completed a commercial producer offsetting it. And this letter indicates our desire to have the well shut in and our continued efforts, beginning at that time, November 8th, to have the well shut in.

Q. Now, that well that was completed in December of 1994 is your Ross Ranch 22 Number 2 well; is that correct?

A. That is correct.

Q. And it's located approximately what distance from the Anadarko disposal well?

A. It is a location of 660 from the west line and 1980 from the north line of Section 22. It falls about 600 feet southeast of the Anadarko disposal well.

Q. And it is producing from what formation?

A. It produces from the Cisco/Canyon formation.

Q. And that is the same formation into which water is being injected in the Anadarko well?

A. That is correct.

Q. Based upon your experience with Nearburg in this general area and the wells in the surrounding area, what -- how would you rate your Ross Ranch 22 Number 2 well in relation to the wells in the area?

A. It is always -- Since the beginning of the well, it has performed with a very high water cut, and it is not a typical well field.

Q. Okay. Isn't it true that the wells in this field typically have a high water cut?

A. Yes, as you would compare it to other known producing fields not in the Dagger Draw or not in the Cisco/Canyon, that is correct.

Q. But would you say that the water cut from this well is higher than what you would normally find in this area from Cisco/Canyon wells?

A. Yes, it's substantially higher.

Q. And the quantity of oil, how would you rate it?

A. It's not as great a quantity as what we would like to see, nor is the gas.

Q. Is it lower than what you have experienced in the wells that have been drilled in this immediate area?

A. Yes, it is.

Q. Let's look at your Exhibit 6. Would you explain what Exhibit 6 is?

A. Exhibit 6, we also -- You know, after we had the meeting with Tim Gum, we also wrote Anadarko and Yates a letter -- our law firm, Jackson and Walker out of Dallas, Texas, wrote Anadarko and Yates, asked them to voluntarily cease injection.

This is the response of Anadarko Petroleum. They declined to cease injection. They state that their well is being operated under an approved order, which of course it was.

They also say that they're -- "As a resolution to this dispute Nearburg is encouraged to purchase the Dagger Draw SWD Number 1 well in the July 12th, 1995, Oil and Gas Clearinghouse Auction." Evidently, they decided they were going to sell this well, they were notifying us here that they were going to sell the well, and encouraged that we buy the well instead of pursuing having the well shut in. But this was their response to our voluntary request, once again, to have the well shut in.

Q. Going back to your Exhibit 5, the letter that you wrote to Mr. Tim Gum at the OCD in Artesia, what was the response to this letter?

A. I got no written response from Mr. Gum. I

believe the only communication following this letter was Mr. Gum, as I understand it, called our district office in Hobbs, New Mexico, and told one of our representatives there, Scott Kimbrough, that he would not require him to shut the well in, and we would have to take it to Santa Fe.

Q. Okay, and that's why you're here today?

A. That is correct.

Q. After your letter to Anadarko of May 5th, your Exhibit 6, was there any further communication between Nearburg and Anadarko regarding attempts to resolve the concerns that Nearburg had?

A. Well, the only other communications we had with Anadarko was during the meeting of November 8th, and we discussed, you know, a lot of things about -- with Mr. Gum and with Anadarko -- concerning whether or not actual damage had occurred and was continuing to occur because of the disposal well.

One of the things we proposed at that time, and seemed acceptable at the meeting, was some type of joint cooperation to determine whether or not there was any damage going on, and I believe Tim McDonald, our engineer, will address that.

There was no communication after the date of the receipt of this letter from Anadarko.

Q. Moving to your Exhibit Number 7, could you tell

us what this exhibit is?

A. This is an exhibit from Mr. Peace from Panhandle Royalty. He's a working interest owner with us, Yates, all the other -- I mean, they have mineral interests and working interests in several wells and locations out in the Dagger Draw field.

The letter is a request to the Division to have the Anadarko and the Yates wells shut in. They support our position and they believe that damage may have occurred and could continue to occur if in fact these wells are allowed to continue to be injected into.

Q. Okay, and your Exhibit Number 8?

A. Our Exhibit Number 8 is a letter, the same manner, from Mr. James T. Jennings, who is also a working interest owner and a leasehold owner -- I mean a mineral interest owner in the area. He participates with us in several wells, also with Yates Petroleum. He's also requesting the Division to shut these wells in.

Q. You previously testified that Nearburg has leasehold positions in all of Section 21 and most of Section 22; is that correct?

A. All of 21 and all of 22.

Q. What effect has the existence of these saltwater disposal wells had on Nearburg's plans to develop your leasehold interests in this area?

A. Well, it certainly -- You know, we felt like it was prudent to develop this area. We still feel like this area is productive of oil and gas. It's held back our continuing effort to drill wells out here because we've had to be very cautious.

As presented in testimony earlier, before the Commission, even Yates has been very cautious about drilling wells in this area because of all the water disposed out here, and it may ultimately cause wells not to be drilled, or certainly not at the same rate that it would have been otherwise.

MR. TURNER: I have no further questions on direct.

EXAMINER STOGNER: Thank you, Mr. Turner.

Mr. Carroll?

CROSS-EXAMINATION

BY MR. ERNEST CARROLL:

Q. Mr. Shelton, first turning to your Exhibit Number 2, you have shown the pool boundary as of two dates. With respect to the first date of August of 1985, at that point in time the well that Yates operates as the Osage Number 1 saltwater disposal well, it was a well that was producing from the Canyon, was it not?

A. As an oil and gas well, I understand. It was not at that time a saltwater disposal well, that is correct.

Q. All right. So sometime in between these two time periods, the Osage well was --

A. -- converted.

Q. -- converted?

A. Right.

Q. All right.

A. That is correct.

Q. Now, at the time that the Osage well -- Let's say back in August of 1985, the Osage well that was then operated by Anadarko, that was the farthestmost -- or the farthest extension or producing well in the Canyon formation at that time; is that correct?

A. As representative of this map, I believe that's correct. I have not worked the geology in the area, but I think you're correct.

Q. And you're also aware that the Anadarko well was considered a very poor producer at that time because the water cut in that well was right around 49 to 1?

A. As many wells were during that time. I don't believe any submersible-pump technology was used, and I think it's just -- I think that it was considered a poor well because it wasn't production tested in the manner they are today.

Q. All right. So -- Now, with respect to producers that are east of the Osage well, there are no Canyon

producers east of there, are there, at this present time, today's date?

A. Yes, there is the Ross Ranch 22 Number 2 well, and then there's the Fairchild 24 Number 4 well -- 24 Number 1 well, which is located two miles east in the northwest quarter of Section 24 of 19-25.

Q. All right. With respect to the well in Section -- excuse me, the Ross Ranch well in Section 22 --

A. Yes.

Q. -- the oil-water ratio in that is very high, is it not?

A. That is correct.

Q. With respect to your Fairchild 24 well, what is the oil-water ratio in that well at the present time?

A. I don't know. I'd have to -- Tim McDonald would have to tell you. I'm not sure that I can give you that correctly.

Q. When was that drilled, do you know?

A. Six months ago, I believe, would be a good estimate.

Q. Is it currently on line and producing?

A. Yes, it is.

Q. And so it has about six months' worth of production?

A. Yes, it does, that's correct.

Q. Now, there is a well in Section 23 -- it's called the B&B -- is there not, that Yates --

A. That's correct.

Q. -- excuse me, that Nearburg operates as a Morrow well; is that correct?

A. It's the B&B Number 1 well. It's located in the east half of Section 22, and it is currently perforated in the Cisco/Canyon.

Q. That well was perforated in the Cisco/Canyon over ten years ago, was it not?

A. Initially it was, yes, and then we went back and did some more work on it within the last two years.

Q. Is that well producing from the Cisco/Canyon at this time?

A. No, we believe it is productive in the Cisco/Canyon formation, and it is not now producing.

Q. So that well has been open in the Cisco/Canyon for at least ten years?

A. That's correct.

Q. And yet at this time Nearburg has been unable to make that a producer; is that correct?

A. The reason is because it has 4-1/2-inch casing in it, and you can't run the submersible pumps in it, and -- you know, we just -- we haven't been able to make it a producer, we believe, because of that -- because of the

occurrence of that situation.

Q. The well, though, was tested back when it was first drilled, and Nearburg made a determination that it would not be a commercial Canyon producer though, back some ten years ago?

A. The well is TA'd at this time, and we have never determined that it will not be a Cisco/Canyon producer. We still believe it will be a Cisco/Canyon producer.

Q. But you have no objective, demonstrative evidence to that effect?

A. That is correct.

Q. And you haven't gathered it in the past ten years?

A. That is correct.

Q. Now, there is a well to the south that was also tested. There's a Boyd -- I'm not sure of the name -- in Section 27; is that correct?

A. That was the South Boyd Number 1 well that Nearburg operated. Again, that well was drilled some time ago. It was completed in the Morrow formation.

We again believe -- Well, we know that the Cisco/Canyon formation is productive. We attempted -- It has 4-1/2-inch casing in it also. The well was opened in the Cisco/Canyon formation and was not made productive because of the conditions of the 4-1/2-inch casing, we

believe, and now we've drilled two other wells in that same proration unit, and both of them are excellent wells.

Q. Now, what proration unit is that? It's --

A. The proration unit --

Q. I've forgotten -- I'm not sure that we've correctly identified the quarter section and section here, and I --

A. Yeah, on Exhibit 2 you'll see, in the northwest quarter of 22, you'll see a gas well symbol. That's the South Boyd Number 1 well. Now.

Q. Is that 22 or 27?

A. Excuse me, I said -- It's 27, I'm sorry. I may have said 22.

Q. All right.

A. In 27 it's located in the southeast of the northwest quarter.

Subsequent to that date, and just recently, Nearburg has now drilled a South Boyd Number 3 and the South Boyd Number 6, located in the northwest of the northwest and the southwest of the northwest. Both wells are completed in the Cisco/Canyon formation and are excellent producers.

Q. Now, let me get those -- Those two wells are where, now, if you would?

A. The South Boyd Number 3 well is in the southwest

of the northwest.

Q. Southwest of the northwest. So that would be in the --

A. It's 660 --

Q. -- 40 -- it would have been -- Okay, it's just directly due west of the earlier Boyd well, correct?

A. Right.

Q. Now, where is the other one?

A. It would be 660 from the north and west.

Q. 660 from --

A. I'm sorry, it's 990 from the north, 660 from the west.

Q. Okay. So it would be just north, then, of the Number 3?

A. North and west.

Q. North and west. And it's also in Section 27?

A. Yes.

Q. All right. Now, when were these wells completed?

A. Well, the South Boyd Number 6 well, which is the one in the northwest quarter, was completed within the last two weeks.

Q. All right. And you say that's a good well. What kind of production data do you have on that?

A. Again, I'll have to defer that to Tim McDonald. I don't know. I know it's a --

Q. So you don't have any information which supports your statement that it's a good producer; you just have been told that?

A. Well, I know that I've seen drilling reports that show very substantial quantities of oil.

Q. All right. So what you're talking about, have you had anything more than a drill stem test in that well at this point?

A. Yes, we have it on production, it's on line.

Q. It's actually on line?

A. On line, on production, both oil and gas.

Q. Approximately how long? Two weeks?

A. Yeah, a week, two weeks.

Q. The well, then, south of that, how long has that been drilled?

A. Three months. It's been on production.

Q. And it's on production?

A. Yes.

Q. Do you know what the production rate on that well is?

A. Again, it's very substantial. I don't know what it is.

Q. Do you know what the oil-water ratios of either of those two wells are?

A. I do not.

Q. Now --

A. Also, I might point out that we are drilling another well right now in which Yates is a participant and a working interest partner, in the southwest quarter of Section 22, which is a direct south offset to the Ross Ranch 22 Number 2 well, and a south offset to the Anadarko disposal well.

Q. What is the percentage of ownership of Yates in that well that you've just told us about?

A. Fourteen, 15 percent, I think. They just recently, within the last week, acquired the interest of Tierra Oil Company, so they've been attempting to build their interest in that prospect.

Q. Their interest originally was a little over two percent; is that correct? In fact, that's what their interest in the Ross Ranch 22 is?

A. In the Ross Ranch 22, that's correct. I think it's 2.34 percent or something. I don't know if that's -- I don't remember Yates -- And then they've got a lot of, you know, the Abo, MYCO and Yates Drilling, and all of them, I think, have a little more than that, but it's not substantial.

Q. Your Exhibit Number 4, the order granting the saltwater disposal well to Yates Petroleum, now, this well -- This was done what date?

A. February 16th, 1988.

Q. All right. Now, you testified that on February 16th, 1988, Nearburg had no position in that northeast quarter of Section 21; is that correct?

A. Well, I say that because we got no notification, and I'm assuming that under the OCD Rules, Yates would have given us notification had we had a leasehold interest within the required quarter-mile areas in a radius around the borehole.

And so I know we didn't get notice, our acreage, our leasehold position at that time. I was not with Nearburg, and I can't really testify to that. I know we didn't get notice.

Q. You haven't, then, gone on and checked to see exactly when Nearburg acquired that interest?

A. No, I have not.

Q. Mr. Nearburg -- Mr. Shelton, weren't you working for Nearburg when that interest was acquired?

A. It's possible. I started in September of 1989, and it is possible, and I know for a fact that while a lot of that interest was acquired I was with Nearburg, that's correct.

Q. Now, what is the acreage position of Nearburg in that quarter section now?

A. I believe -- To the best of my recollection, I

believe we have 46 percent.

Q. So since this well has become a saltwater disposal, you have acquired almost 50 percent of the working interest rights in that proration unit?

A. That's correct.

Q. Can you tell me why Nearburg would make such a substantial investment, knowing that it was acquiring acreage between two active saltwater disposal wells?

A. Well, we believe, as we did, and as exhibited by our hearing, we believe that area is productive of oil and gas, assuming that it hadn't been affected by the saltwater disposal.

Q. But apparently Nearburg made the decision to ignore the possible effect of damage by the saltwater wells and acquire this acreage position?

A. I don't think we ignored it at all. I believe, just like the testimony that Brent May gave a couple of weeks ago, we all had some concern. But we believe it was worth acquiring acreage. At the time, acreage was relatively -- very inexpensive, and we were not putting ourselves in a position of extreme risk by doing so.

Q. I see. Now, also with respect to the hearing that you just talked about, Yates and Nearburg had two competing applications for force pooling in that northeast quarter of Section 21, the proration unit in which the

Yates Osage well is located; isn't that correct?

A. Yes, sir, that is.

Q. Yates advocated a well site location that would have been due north of the Osage, in the northwest of the northeast; is that correct?

A. That is correct.

Q. And Nearburg advocated a location in the northeast of the northeast; is that correct?

A. Yes, sir, that's correct.

Q. The location of Nearburg, the one it advocated a few weeks ago, would have been closer -- it would have been almost in a position to be affected by both of the saltwater disposal wells, where the Yates well would -- would, by location, only be in a position to be affected by the one disposal well; isn't that true?

A. Well, I don't know that that's true. I mean, I -- nobody -- I can't tell you what the effect of those disposal wells have been. In closer proximity, yes. Effectwise, I don't think I can testify to that. However, I will say that we felt like our well would have been higher structurally, and we felt like our location was the preferred location.

Q. Now, when the Ross Ranch 22 was drilled -- It's how many feet from the Osage well?

A. Six hundred feet.

Q. Six hundred feet?

A. Right.

EXAMINER STOGNER: Mr. Carroll --

MR. ERNEST CARROLL: Yes?

EXAMINER STOGNER: -- a lot of these questions you're asking are a lot like drainage, and I'd like for you to probably hold off and ask the engineer that. I'd like for this thing to move on a little bit quicker than what we've got started, which I was under the impression that we could get that going today. But if we keep at this rate, we're not going to be out of here in time.

MR. ERNEST CARROLL: Well, I wondered why Mr. Turner asked so many questions and Mr. Shelton offered so many opinions about these kinds of matters in his direct, and since they offered the opinions and got them in the record that's why I'm asking these questions.

I was kind of wondering where the expertise come, and as we're finding out, there certainly isn't a whole lot of expertise.

EXAMINER STOGNER: Then we can move on, then, I think.

Q. (By Mr. Ernest Carroll) Again, the spacing of the two wells is just 660 feet; is that correct?

A. Right, between the Ross Ranch and the Anadarko disposal well.

Q. At the time that the well was located, you knew that the -- Nearburg was aware that the Anadarko Osage well was a saltwater disposal well; isn't that correct?

A. That's correct.

Q. At that time, that it was -- the decision by Nearburg was made to drill the Ross Ranch 22, Nearburg also had the same position that it holds right now, in the southwest quarter of Section 22; isn't that correct?

A. Yes, I believe that's correct.

Q. If you turn to your Exhibit Number 5, this is your letter of December 5th, 1994, isn't it?

A. Yes, sir.

Q. Isn't that correct?

A. Yes, sir --

Q. I notice --

A. -- that --

Q. Excuse me, I didn't mean to overspeak you.

In your second paragraph, second sentence, it says, "As evidenced at our meeting, NPC and Yates Petroleum believe the continued injection of salt water by Anadarko into a known productive formation puts at risk..." and you go on.

A. Yeah.

Q. My question is, who authorized you to make that statement on behalf of Yates Petroleum Corporation?

A. At the time that we had the meeting, Yates showed up with us, we were only talking about the Anadarko well, we were not discussing the Yates well at that time. By their presence at the meeting, we felt like they were in support of having this well shut in.

Q. You were informed, and the statement was made by Mr. Brent May at that meeting, that Yates' position was that they would take no position with respect to the Anadarko well; isn't that true?

A. That may have -- I don't remember that, but that may have been true.

Q. And in fact, shortly thereafter, the law firm of Mr. Carr's was contacted to prepare a petition much like the one we're now hearing which included Yates Petroleum as an applicant, and you were informed and were asked to take Yates Petroleum's name off of that application; isn't that correct?

A. That was the time that we realized that Yates was not going to support us in the shutting in of the Anadarko well, was when we tried to file a joint motion, and we were told that there would be no joint motion.

Q. Mr. Shelton, you made a number of statements and testified at length there at the end of your direct that the Ross Ranch 22 was not a typical well in the field. Do you have any special expertise or training or knowledge

which allows you to arrive -- or reach that opinion?

A. No.

MR. ERNEST CARROLL: I pass the witness.

EXAMINER STOGNER: Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Shelton after -- I think there was a November 8th, 1994, meeting with Mr. Gum at the OCD's Artesia office?

A. Correct.

Q. After that meeting, did you or anyone at Nearburg contact Anadarko or Yates to arrange to work out a cooperative testing program?

A. Well, this will be brought up later, but yes, we went out to the well several days later, and Tim will bring this up in his testimony, but we went out to the well to try to look, see what the injection pressures were, to see what was going on and to contact their people.

And in fact, they had -- Since that period of time, since the November 8th meeting, they had welded caps over all their gauges and chained them down and locked them. So we couldn't see the well, we couldn't look at it. We had no -- And we've got some exhibits of that which we'll bring out. But --

EXAMINER STOGNER: Do you have the exhibits, sir?

THE WITNESS: Yeah, they're Tim's --

EXAMINER STOGNER: Do you have the exhibits?

THE WITNESS: No, sir, I'm sorry, I don't.

EXAMINER STOGNER: Then why don't we refer any of that to that particular witness?

Mr. Bruce, do you have any other questions?

MR. BRUCE: Just one, Mr. Examiner.

EXAMINER STOGNER: Then keep in them in line with regards to he's a landman.

MR. BRUCE: Well, that's -- I was just asking if anyone had contacted anyone at --

THE WITNESS: No, sir, we did not.

Q. (By Mr. Bruce) You did not.

And one final question. Regarding the Yates SWD-336 order, do you -- does your review of Nearburg's files reveal an approximate date when Nearburg learned of that order?

A. I have not gone and researched that. And no, I do not know the answer to that.

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

EXAMINER STOGNER: Mr. Turner, any redirect?

MR. TURNER: No.

EXAMINER STOGNER: Okay, you may be excused.

As far as I'm concerned, you've cut into your lunch hour.

Let's go off the record for a minute.

(Off the record)

EXAMINER STOGNER: At this time I'm going to call a lunch break of 45 minutes. We'll reconvene here at 12:15.

(Thereupon, a recess was taken at 11:30 a.m.)

(The following proceedings had at 12:15 p.m.)

EXAMINER STOGNER: This hearing will come to order.

Mr. Turner?

MR. TURNER: Yes, Mr. Hearing Examiner, I -- At the conclusion this morning's session I failed to ask for the admission of Exhibits 1 through 8, so I'd like to do so at this time.

EXAMINER STOGNER: Are there any objections?

MR. ERNEST CARROLL: None.

EXAMINER STOGNER: Exhibits 1 through 8 will be admitted into evidence.

MR. TURNER: And I'd next call Mr. Tim McDonald.

TIM McDONALD,

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

DIRECT EXAMINATION

BY MR. TURNER:

Q. Mr. McDonald, would you please state your full

name for the record?

A. My name is Tim McDonald.

Q. And where are you employed?

A. Nearburg Producing Company in Dallas, Texas.

Q. How long have you been so employed?

A. Since 1985.

Q. Okay. And what is your job description with Nearburg?

A. I'm a petroleum engineer.

Q. And have you previously testified before the Oil Conservation Division?

A. Yes, I have.

Q. And have your qualifications as an expert in petroleum engineering been previously accepted?

A. Yes, they were.

MR. TURNER: I tender Mr. McDonald as an expert in petroleum engineering.

EXAMINER STOGNER: Are there any objections?

MR. ERNEST CARROLL: No sir.

EXAMINER STOGNER: Mr. McDonald is so qualified.

Q. (By Mr. Turner) Mr. McDonald, have you prepared exhibits in connection with the testimony that you're about to give in these proceedings?

A. Yes, I have.

Q. Okay, could you tell me which exhibits you have

prepared or were prepared at your direction?

A. Exhibits 9, 10, 11, 12 and 13.

Q. Okay. Mr. McDonald, let's first look at your Exhibit Number 9. Could you describe Exhibit Number 9 and tell us what it depicts?

A. It's simply a monthly plot of the data that we were able to get from the OCD recording the pressures and volumes of water that was injected into the Anadarko Dagger Draw SWD Number 1, showing --

Q. Would you -- Go ahead, excuse me.

A. I was just going to say, our records show that through April of 1995 they had injected over 2 million barrels in that well.

Q. Okay. Could you just kind of walk through the exhibit fairly briefly and give us some examples of what information is depicted at certain points?

A. It's simply a graph showing -- The blue squares are the barrels per month, and red diamonds are the reported pressure, injection pressure into the well that are filed monthly with the OCD.

Q. All right. Let's next look at your Exhibit Number 10. Could you describe this exhibit for us?

A. It's the same type of exhibit for the Yates Osage SWD Number 1. Again, the blue squares are the barrels and the diamonds are the pressure.

It shows -- The records that we received shows that they had injected about 6.5 million barrels as of 5-1-95.

It also shows that some time ago that they basically had ceased injection into that well. They just -- A couple months in 1995, they injected some minimal volumes.

Q. Okay. And approximately when did that occur?

A. Which?

Q. The cessation of injection.

A. November of 1993.

Q. Okay, and since that time, approximately how much water has been injected?

A. From the records I was able to receive, it looked like just March of 1995 and April of 1995, they injected 850 barrels and 800 barrels, respectively.

Q. Okay. Next, look at your Exhibit Number 11. Could you describe that exhibit for us?

A. It's a production curve of the Nearburg Ross Ranch 22 Number 2 well from inception when it went on line in November of 1994 through July's production. It shows -- The top curve, the W's are the water production, the stars are the oil production, and the gas is the dashed line.

Q. Okay. Mr. McDonald, are you familiar with the -- Strike that.

Approximately how many wells does Nearburg own an interest in, in the Dagger Draw area?

A. I don't have a number of wells we own an interest in. We operate somewhere between 20 and 30. We have an interest in several Yates wells.

Q. What proportion of your time as you're employed with Nearburg is spent in connection with the Dagger Draw area?

A. I don't have an exact percentage. Recently, quite a bit of it.

Q. And how long have you been working in the Dagger Draw area?

A. Since Nearburg started being active in that area, which I believe was in the late 1980s.

Q. In the course of your employment with Nearburg, then, have you had occasion to become familiar with the Dagger Draw production, the formation from which the production is obtained?

A. Yes, I have.

Q. In looking at your Exhibit Number 11, then, could you give us some comparison from the experience that you've had with other wells in the Dagger Draw area, with the production results that are reflected for your Ross Ranch 22 Number 2?

A. I'd consider it a poor well. The oil rates have

always been relatively low, and the water rates have been high. It's been on production since November of 1994, and it's only cum'd 8000 barrels of oil.

Q. Do you have an opinion as to what could cause this well to be a poor well in relation to the other wells in the Dagger Draw area that you are familiar with?

A. It's my opinion that it's quite possible it could have been affected by the injection from the two disposal wells.

Q. Okay, and what's the basis of your opinion?

A. Mainly just the production history, the performance of the well versus the performance of other wells in the field.

Q. Let's look at your Exhibit Number 12. Could you describe that for us, please?

A. Yes, what I was trying to show here, or what I'm showing here, is that we had some tests reported to us from Anadarko when they initially completed their disposal well, showing that the well flowed for a one-day period at about 19-percent oil cut, it appeared from their reports.

And initially on -- And that was prior to stimulation, they perforated and got that flow. Now, we complete the wells differently where we perforate them and we do our acid job before we do any swab testing. In fact, a lot of times we do minimal swab testing and put them on

line with a submersible pump.

But three of the first wells we drilled in the area we did perforate and swab test prior to acidizing. And what this shows is that two of the three were testing, after they were swabbed down, at about 20-percent oil cut, and the third one we really didn't see any oil cut. But after acidizing and putting them on sub pump, they've all had nice cums. They've been very good wells in the field.

Q. Okay, so how would you then compare the three wells that are listed in the bottom half of this exhibit to the Anadarko well?

A. Based on the initial testing, they appear to be similar, or at least they indicate that the Anadarko well may possibly have been productive in that interval.

Q. And you base your opinion on what?

A. On the oil cut and the rates that were flowed out of the Anadarko well.

Q. Okay. Let's now look at your Exhibit Number 13. Could you tell us what these pictures are of?

A. Yeah, we called a meeting at the OCD office in Artesia on November 11th -- on November 8th of 1994 where we sat down with the Anadarko people and the Yates people and discussed -- we were getting ready to put our Ross Ranch well on production, and we discussed our concerns that it could have adverse effects from the Anadarko well

continuing to dispose in the Cisco/Canyon and at direct offset location.

So we discussed the possibility of monitoring the pressures in their well once we put ours on and trying to determine jointly and cooperatively if we thought we had a problem with the injection well.

And upon leaving that meeting, in the very near future, this is what they did: They welded caps on all the pressure gauges and chained them up and locked them so that we would not be able to observe any of their pressure readings on their injection well or volumes.

Q. Could you tell us who was present at that meeting?

A. There were representatives from Anadarko, Yates, Nearburg, and the OCD. The exact people, I believe that from Yates Brent May was there and Dr. Boneau, and from Anadarko their engineer I believe that's here today was there, and from Nearburg myself and Bob Shelton and Jerry Elger and Scott Kimbrough, and Tim Gum was there from the OCD. And I believe there was somebody else from the OCD. There were also a couple of the Anadarko field representatives, were there also.

Q. When that meeting concluded, did you have any impression as to whether or not the parties concerned were going to try to work together to try to resolve whether or

not disposal wells created a problem for future development?

A. That was my impression, that we were going to make a cooperative effort to first see if we had a problem here with the injection well, to decide if we needed to pursue it further.

Q. And since that meeting, has your opinion changed regarding the prospects of doing that?

A. Substantially. Once we went out to the well and found that -- you know, where we could no longer report the pressures or volumes, and we basically had no cooperation from Anadarko. We didn't attempt any once we saw this. We thought it was pretty clear that they were not interested in working with us on it.

Q. Mr. McDonald, are you familiar with the options that are available in the Dagger Draw area for the disposal of saltwater disposal?

A. I believe so.

Q. Okay. You're obviously aware of the two wells that we're talking about today, the Yates disposal well in Section 21 and the Anadarko well in Section 22. Other than those two wells are there other options available for the disposal of saltwater in this area?

A. Yes, Nearburg has two Devonian disposal wells in the system that we use to dispose of our water, Yates has

an extensive system where they dispose of in Cisco/Canyon and Devonian wells and also, I believe, through their water injection project in South Dagger Draw, and I believe Conoco also has a couple of disposal wells.

Q. So that in your opinion, if these two wells were shut in and no longer used for saltwater disposal, there would be suitable alternative means of disposal for operators in the area who needed to dispose of produced water?

A. Both Yates and Nearburg both have lines very close to this well, yes, these wells.

MR. TURNER: I have no further questions on direct.

EXAMINER STOGNER: Thank you.

Mr. Carroll, your witness.

CROSS-EXAMINATION

BY MR. ERNEST CARROLL:

Q. Mr. McDonald, with respect to the Ross Ranch Number 22, I believe you stated that that well to date has produced about 8000 barrels of oil; is that correct?

A. That's correct.

Q. Do you recall how many barrels of oil was produced by the Yates Osage well when it was being operated, I guess, by Anadarko?

A. I don't. I believe it was 15,000 to 20,000

barrels, is my best recollection.

Q. Over the life -- its life of several years; is that correct?

A. However long it produced, yes.

Q. So -- And how long has the Ross Ranch been on --

A. Since November of 1994.

Q. September?

A. November.

Q. November? Okay. So in a period of about ten months, the Ross Ranch has produced approximately half the amount of barrels of oil that the Osage well produced over several years?

A. That's correct, with the Ross Ranch well being on submersible pump and the Osage well being on beam pump.

Q. You offered an opinion, and I'm just not -- I want to make sure that I heard everything correctly -- that it was quite possible that the Ross Ranch 22 could be affected by the Anadarko well. Do you feel -- Do you have an opinion as to whether or not the Ross Ranch 22 is affected by the water that has been injected in the Yates Osage?

A. I feel that's also possible.

Q. Possible. On what basis do you form that opinion?

A. The performance of the Ross Ranch well to date

and the proximity of the well to the two disposal wells.

Q. Do you have any demonstrative evidence by which you could demonstrate whether or not interference would be coming from one well or the other?

A. No, it's a very complicated reservoir, and we continue to study that. We've been through some past hearings, we're trying to run some better logging techniques to try to get a better representative picture of the reservoir, and hopefully as some wells are drilled in this area it will be much clearer whether it is or is not -- whether they have or have not definitely been affected.

Q. The Ross Ranch 22 is producing in the upper interval, is it not, or perforated in the upper interval of the Canyon, the Cisco/Canyon?

A. That's correct.

Q. Have you run any tests to determine -- Well, let me ask you this question first of all: Did the Ross Ranch -- Was it drilled through the Canyon interval, the total interval?

A. I believe it was.

Q. Has Nearburg performed any tests to determine whether or not the cementing job that was done, was done whereby it would cut off the lower interval of the -- stop communication between the lower interval as opposed to the upper intervals of the Canyon?

A. We ran a bond log in the well, and it appeared to be isolated.

Q. Okay. When did you run the bond log, Mr. McDonald? Do you recall?

A. When we were completing the well, on initial completion.

Q. What -- Was that the only thing that you did to determine that, was just you run a cement bond log?

A. Yes, sir.

Q. I believe -- At least I thought I understood you to say that -- when Mr. Turner asked you what supported this opinion about it could possibly be affected, you said that -- I think you used language, it was -- that when you compare the Ross Ranch to other wells. Was that -- Did I understand you correctly?

A. That's correct.

Q. All right. What other wells are you directly comparing the production of the Ross Ranch to for the basis of this opinion?

A. Wells in that general area of those sections. I think Mr. Elger, our geologist, has an exhibit that will show a clear comparison of the wells he looked at.

Q. Okay. Have you, then -- What I'm trying to get, have you done any independent study of other wells to help form the basis of your opinion, or are you just relying on

what Mr. Elger has told you?

A. No, we monitor the production. We have an interest in a majority of the wells in that general area, and we monitor the production daily on them.

Q. Well, specifically what was your comparisons and with particular -- What wells? I would like to be able to examine what your analysis was and how you arrived at this conclusion that, one, the Ross Ranch was a comparable well and, two, what kind of production -- What were you really comparing? I don't know.

A. I think we'll show geologically why it's a comparable well. Productionwise, I was mainly comparing it based on water-oil ratio and the low initial oil rate.

Q. Okay, water-oil ratio. What water-oil ratios were you finding in the other wells?

A. Less than what were in the Ross Ranch.

Q. So you weren't really saying the Ross Ranch compared to these other wells; you're saying that the Ross Ranch differed from the other wells, and that's the basis of your opinion, then?

A. That's basically correct.

Q. Okay. How far away is the closest good producing Canyon well that you were using in this analysis, this comparison analysis that you were doing?

A. I believe it would be the Yates Cutter well.

Q. The Yates Cutter?

A. I believe.

Q. Okay, and where would that be, Mr. McDonald?

A. I don't have a -- Do you have a land map I can look at?

Q. Here's the land plat, my copy.

EXAMINER STOGNER: Are you referring to Exhibit Number 1?

MR. ERNEST CARROLL: I am referring to Exhibit Number 1, yes, sir.

EXAMINER STOGNER: Okay. Can you answer his question from that exhibit, Mr. McDonald?

THE WITNESS: Possibly, if I can read it. I know it's in -- I believe it's in the southwest -- southeast quarter of Section 21.

MR. ERNEST CARROLL: All right.

EXAMINER STOGNER: That was the southeast quarter of 21?

THE WITNESS: Yes, sir.

Q. (By Mr. Ernest Carroll) Is that a key well, in your mind?

A. I believe it is. I think we'll show later geologically that it's structurally a key well, and have an exhibit to show that and also the production history from it.

Q. Mr. McDonald, in the Application that was filed on behalf of Nearburg, there's a statement that -- Let me get it so I'm quoting it correctly.

Okay, it will be -- I'm going to read, for the record to reflect, read from paragraph number 9 on page 3 of the Application, and it says that a typical well in this area of the pool is capable of producing oil in paying quantities from the Cisco/Canyon formation at an estimated initial water-oil ratio of 2.33 to 1.

My question to you, Mr. McDonald, were you responsible in coming up with that number? Was that your responsibility?

A. I don't really recall.

Q. Do you have any idea where Nearburg come up with the number 2.33 to 1?

A. We had looked at the field, you know, the Dagger Draw North field, as a whole and found about a 2.4 average water-oil ratio.

Q. All right, what -- When you say an average ratio, what were the guidelines that you used for averaging?

A. I believe that's just a numerical average.

Q. All right, so you just took every producing well in the --

A. Not necessarily come up with that number. When I used the 2.4 number, when we did some studies, that's how

we came across that.

Q. Well, do you know how the 2.3 to 1 was arrived at?

A. I don't recall.

Q. You don't recall?

A. I don't recall.

Q. Well, is anyone going to be able to testify from Nearburg to establish how that was arrived at?

A. I really don't know.

Q. When you arrived at your 2.4, did you include every well that was drilled, or did you include just wells that were denoted as producers?

A. I believe we included every well that was actually produced at that time.

Q. Okay. Are there any wells out there that have not been actually produced but drilled, that were left out? Do you recall?

A. I don't recall.

MR. ERNEST CARROLL: I pass the witness, Mr. Examiner.

EXAMINER STOGNER: Thank you, Mr. Carroll.

Mr. Bruce, your witness.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. McDonald, did Nearburg's field people ever

ask Anadarko's field people if injection behavior had changed in Anadarko's well?

A. Not that I'm aware of.

Q. And I just wanted to clarify that after that November 8, 1994, meeting you never contacted APC to ask for any information or to talk about cooperative testing?

A. I didn't. I'm not aware of anybody else.

Q. Okay. You didn't -- never picked up the phone and dialed the number?

A. No. Like I said, once we saw the plates welded over the pressure gauges, we thought we had our answer.

Q. What is -- A couple of wells were mentioned by Mr. Shelton, the South Boyd Number 1 and the B&B Number 1. Do you know what the cumulative production figures are from each of those wells in both the Morrow and in the Cisco/Canyon?

A. No, I don't have those numbers. They were just tested in the Cisco/Canyon, so the cums are not very large.

Q. Were they economic in the Morrow?

A. In the Morrow? At one point I believe they were.

Q. Both wells?

A. As far as I remember, yes. They were on before I came to work for Nearburg, but they were -- I believe they both produced at economic rates at some point in their producing lives.

Q. Did the wells pay out?

A. I don't know that.

Q. Referring to your Exhibit 12, now, these wells that you mention down in the bottom half of the page are in Section 31; is that correct?

A. That's correct.

Q. How far away are they from the Yates and Anadarko saltwater disposal wells?

A. Oh, they're probably two miles.

Q. Looking at the map, it looks like at least two miles, two to two and a half?

A. Probably, correct.

Q. Now, in this general area, Section 31, have you had poor swab tests and the wells did turn out to be poor wells?

A. In 31?

Q. Or in that area, anywhere in the Dagger Draw field.

A. Yeah, we had a well, the Voster Fee in 31, that was a poor swab test and was a poor well.

Q. Just one?

A. One that I recall, yes.

Q. Okay. All the others paid out --

A. All the others we didn't ever swab. These are the only three.

What we did on the other ones, we'd perforate them and then acidize them and run the sub pumps, generally not spend a lot of time swabbing them.

Q. Have you had uneconomic wells in the Dagger Draw?

A. Yes.

Q. How many?

A. Oh, maybe five, four or five.

Q. One final question, then. On these wells that you mentioned, do you have figures for cumulative water production from these wells, these three wells you mentioned?

A. I didn't put that on there. We can provide those to you, but we do have them, yes.

MR. BRUCE: If I could make a request, Mr. Examiner, we would like that data, if not now after the hearing.

EXAMINER STOGNER: Okay, what was the request again?

MR. BRUCE: On Exhibit 12, we would like the cumulative water production from each of these Dagger Draw 31 wells.

EXAMINER STOGNER: To be added to the cumulative oil and cumulative gas?

MR. BRUCE: Yes, sir.

EXAMINER STOGNER: Is that a reasonable request

that you can get that information, Mr. Turner?

MR. TURNER: Yes.

EXAMINER STOGNER: Okay.

MR. BRUCE: I have nothing further, Mr. Examiner.

EXAMINER STOGNER: Any redirect, Mr. Turner?

MR. TURNER: No.

EXAMINATION

BY EXAMINER STOGNER:

Q. Just for -- One question on Exhibit Number 13. When were these pictures taken again?

A. These pictures were taken recently, just in the past three weeks, probably. But the activity was done shortly after the meeting. I don't recall if it was the next day or the next week, but it was probably within a week after our November meeting.

Q. Did you take these pictures?

A. I did not.

Our field foreman -- Our production foreman in Dagger Draw took them.

EXAMINER STOGNER: That top picture had some standing water on it. I guess it must have rained recently.

No questions of Mr. McDonald.

He may be excused.

MR. TURNER: Next call Jerry Elger.

JERRY B. ELGER,

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

DIRECT EXAMINATION

BY MR. TURNER:

Q. Mr. Elger, would you please state your full name for the record?

A. Jerry Elger.

Q. And Mr. Elger, where are you employed?

A. I'm employed by Nearburg Producing Company in Midland, Texas, as a petroleum geologist.

Q. How long have you been so employed?

A. Approximately seven years, with Nearburg.

Q. Okay. Have you previously testified before the Oil Conservation Division?

A. Yes, I have.

Q. And have your credentials as an expert in petroleum geology previously been accepted?

A. Yes, they have.

MR. TURNER: I tender Mr. Elger as an expert in petroleum geology.

EXAMINER STOGNER: Any objection?

MR. BRUCE: No, sir.

MR. ERNEST CARROLL: No.

EXAMINER STOGNER: Mr. Elger is so qualified.

Q. (By Mr. Turner) Mr. Elger, have you prepared any exhibits for this hearing here today?

A. Yes, I have.

Q. Could you identify those exhibits for us, please?

A. I believe they've been numbered Exhibits Number 14 through 18.

Q. Okay, were the exhibits prepared by you or by someone at your direction?

A. Yes, they were.

Q. Okay. Mr. Elger, have you as a petroleum geologist for Nearburg spent a considerable amount of time in the Dagger Draw area?

A. Yes, I have.

Q. Okay. How many years have you worked in the Dagger Draw area?

A. Approximately six years.

Q. And how many wells have you as a geologist with Nearburg been involved in drilling in the Dagger Draw area?

A. Both operated and non-operated, probably on the order of 40 to 50.

Q. Okay. Let's look first at your Exhibit Number 14, and could you identify that exhibit for us?

A. Yes, this is a portion of the Dagger Draw-Upper Penn-Cisco/Canyon Pool, across 19 South, 25 East, or a portion of that township and range.

The left-hand map is dated August, 1984, and that map shows the density of both Canyon producers, which are shaded in orange, and Atoka-Morrow gas producers or lower Pennsylvanian producers shaded in yellow across the area where the -- the subject area, where the two saltwater disposal wells occur.

This map -- The date on this map coincides with the date of Anadarko's hearing for their application to drill the well in the northwest quarter of Section 22. And again, the orange wells are, at that time period, the Canyon producers.

This is also the time -- The well control that existed at the time where Nearburg opposed that application on the basis of subsurface evidence which indicated the potential for hydrocarbons in the dolomite reservoir across this area.

The map on the right is dated -- basically it's a present-day map. It shows what has occurred since the time of that Anadarko application, the hearing application.

The density, again, of Canyon producers shaded in orange -- and I think I took a rough count at one time, and there's approximately -- there's over 100 additional wells that have been drilled in this portion of 19 South, 25 East, in terms of Cisco/Canyon producers alone.

The green-shaded symbols represent those wells

which are either currently drilling or have been proposed or will probably be drilled in the short-term future. They've been basically permitted locations.

You can see how the North Dagger Draw Pool, as Nearburg had predicted in 1984, would expand out into this -- across this area, where the permitted SWD that Nearburg opposed in the northwest quarter of Section 22 was drilled.

Q. As a geologist that is active in the Dagger Draw area, have you had occasion to go back and review the development over the last ten years in this area and compare the information that is now available with the information that was available in 1984, when the Anadarko saltwater disposal well was drilled?

A. Yes, I have, and my conclusion is that there was -- Nearburg had a definite case that the -- based on the structure of the top of the dolomite that existed with the old Morrow well control, and the former producers or existing producers in 1984, there was reason to -- or cause to suspect that a saltwater disposal well situated at Anadarko's proposed location would indeed affect the hydrocarbon portion of the Canyon reservoir.

Q. So there was nothing in your review and what you've learned over the years that in 1984 would have foreclosed the development in Dagger Draw as it's taken

place over the last ten years?

A. Yes, that's correct. And in fact, after the well was drilled, the Anadarko well was drilled, and the reports were submitted to the OCD, the engineering information that the well had flowed oil and water from the existing disposal perforated intervals, that was all the more evidence that -- to us, and that was the reason that we contested that case in the *de novo* hearing, that there could, indeed, be the potential for damage to the hydrocarbon-bearing portion of the reservoir.

Q. In further looking at your Exhibit Number 14, in the green-shaded portions, those indicate permitted locations. Are those permitted locations in which Nearburg has an interest?

A. No, not -- Some are and some aren't. And I apologize, because almost on a daily basis there's additional wells that are permitted out here, that this well, even though this map was constructed three or four weeks ago, it's already that far behind, and there's been a number of additional wells that could be spotted on here -- in Section 15, for instance -- that have been permitted to drill.

Q. Let me ask you this: What -- In looking at your Exhibit 14, in the orange-shaded areas, can you identify which are the most recently drilled and completed wells,

say within the last nine months or so, during 1995?

A. Most of the orange wells in the north half of Section 16, the well that's 1980 from the south and west of 16, the well that's 660 from north and west of 21, most of the wells -- the three wells starting from the southeast corner of Section 21, the next three wells back to the west, the wells in the north half of 28, are very close to that, probably, time frame. Wells in the west half of Section 27 are in that time fame.

Those have all been drilled within the last six to seven months, something, probably, on that order, or since -- As Mr. Shelton explained, the well that shows as a green dot in the northwest-northwest of 27 should now be shaded orange; it's currently a producer.

Q. Okay. And do you recall the name of that well?

A. That's the South Boyd 27 Number 6.

Q. Okay, and what do you know about that well?

A. The initial production testing of that well, which it's a very, very, very new well, indicated that it was indeed a productive well, and appeared to be -- the total oil, gas and water amounts that I saw reported indicated that it was a commercial well.

Q. So based upon the recent activity in this area, the wells that have been drilled, is it your opinion, then, that there is justification for continued drilling in this

area?

A. Yes, in certain areas, yes.

Q. Okay. Let's next look at your Exhibit Number 15. Could you identify Exhibit Number 15 for us?

A. Exhibit Number 15 is a structure map developed on the top of the dolomite reservoir rock across an expanded portion of 19 South, 25 East, including the area with the subject disposal wells.

Again, the color symbolism is basically the same as the previous map. The Canyon wells have been shaded orange, Atoka-Morrow-Pennsylvanian gas wells have been shaded yellow, and wells that have been recompleted to the Canyon, completion attempts, have been shaded half yellow, half orange, and the disposal wells have been shaded with a blue color.

What this map shows -- and again, it's a structure map developed on the top of the dolomite reservoir -- is that with the well control that exists right now, there's a very pronounced structural nose that occurs directly from the southwest toward the northeast across -- diagonally across Section 21, catching the northwest quarter of Section 22. Both of the disposal wells are situated on that structural nose.

That structural nose would have a tendency in general -- Where there's other structures or structural

noses or anticlines associated with the Cisco/Canyon in this particular area, you typically have an enhanced -- an area where you have enhanced production.

There's an area just to the south of this map in Section 28 where there's a very strong structural component in a portion of Section 28 where the wells -- and across a portion of Section 29, where there's some tremendous wells, and again those are associated with a structural element.

The two disposal wells in 21 and 22, again, are situated on this structural nose.

Q. Okay, let's next look at your Exhibit Number 16.

A. Exhibit Number 16 is a cross-section that's also displayed in conjunction with the structure map, top-of-dolomite structure map.

And that well in -- This cross-section is a structural cross-section which incorporates a well that was drilled by Yates Petroleum in the north half of Section 16. It ties both of the disposal wells, it ties the Nearburg Ross Ranch 22 Number 2 well, and then it ties a well that was drilled -- one of the easternmost wells in the field, 660 from the southeast of Section 21, the Yates Cutter well.

What I've done on this display is highlight in red, in the gamma-ray column, and shade in orange in the porosity column that portion of the Cisco/Canyon dolomite

reservoir rock which has -- basically brackets the producing intervals in each of the three producers that are displayed on this cross-section.

Starting with the well on the left, the Yates Aparejo APA State Com Number 3 in the north half of 16 perforated the intervals that you see between -- down to a subsea of minus 4350, which has been highlighted on this display. That well, based on the potential of 607 oil and 711 water and over half a million a day cubic feet of gas, is very suggestive that this well is a very good producer in the Canyon.

The other two wells on the right-hand side of the cross-section, starting on the far right, the Yates Cutter APC Number 1, again, that well was perforated opposite the intervals shaded in red and colored in orange down to a subsea of 4324. That well is also a very strong, good producer. It IP'd for 379 barrels of oil a day, 736 barrels of water per day.

The Nearburg well drilled -- second from the right, the Ross Ranch 22, Number 2, was perforated opposite the dolomite reservoir rock that, again, you see shaded in red and orange, down to a subsea of minus 4286. That's a very, very poor well, and I don't -- Other than the reservoir having been damaged or swept by some outside source of water, I can't explain why that is not a good

commercial well.

The two wells in the center of the cross-section in which the perforations have been shaded blue in the gamma-ray column and the dolomite porosity have been shaded blue, are the two disposal wells, and the gross disposal intervals have been shaded the blue color.

What you see first of all in the Yates Osage well is that it appears that most of where the water has been disposed of in that well -- and the volume is at the base of the log, 6.5 million barrels -- has gone into what should be productive dolomite reservoir. And I believe that's -- when Yates recognized that, they immediately curtailed their disposal or -- cut back or curtailed their disposal of water into those injection perforations. I don't know exactly the timing of when they did that. I'm sure their witnesses can probably testify to that.

The Anadarko well, the top perforation in which water is being disposed of in the Anadarko well is at a subsea depth of minus 4325.

I point out again that the Yates Aparejo well, at A on the cross-section, is producing from dolomite which is down to a subsea interval of minus 4350, some 25 feet below where the upper part of the perforations are in the Anadarko well.

I don't really know where the oil-water contact

is for the east side of this Dagger Draw field. I do suspect very strongly, based on where new wells are being drilled and completed, that that depth has got to be somewhere below 4350 subsea, thereby putting a good portion of the upper perforations in the Anadarko well within oil column, and that's very consistent with the fact that when Anadarko perforated their -- the Canyon dolomite, they experienced a flow of oil and water. It indicates to me that the portion of their perforations were across a portion of the productive hydrocarbon reservoir.

I've expanded on this a little bit. First of all, I'd like to introduce Exhibit Number 17, which is a little bit -- the bottom part of which shows oil, water and gas rates out of the Yates Cutter APC well, located in the southeast quarter of Section 21, and you'll see oil rates on June 9th through June 14th which are in excess of a thousand barrels of oil a day.

Again, that well was perforated to a subsea depth of minus 4324, within one foot of the subsea depth of the top perforation in the Anadarko disposal well.

I don't think the area where the Cutter well was drilled has experienced any kind of a -- damage, if you will, from the disposal of water in the Canyon.

But as you move in a direction closer to or proximal to that disposal well, then I think you run the

risk of having wells that are not as good as this Cutter well, all the way down to wells that are like the Nearburg Ross Ranch 22 Number 2, which are basically noncommercial, because they move too much -- volume of water is too -- is so large.

Q. Let's next look at your Exhibit Number 18. Would you please describe that exhibit and tell us what it depicts?

A. Exhibit Number 18, again, is a display of basically all of the wells that have been drilled and completed to date in the Cisco/Canyon dolomite reservoir rock, in and around the two disposal wells.

And what I've done on this display is show the gross -- the top perf to the bottom -- the subsea of the top perforation, all the way down to the subsea of the bottom perforation, and have defined that as the gross producing interval. And I've numbered those from 1 through 18 and tried to start on the north end of the mapped area, all the way down to the -- and extend to the south end of the mapped area.

The coloring inside of each one of these producing intervals has been shaded either uncolored or green or orange. What each one of those represents, the uncolored is that area of the perforations which are above any disposal zones, either in the northwest quarter of --

northeast of 21 or the northwest of 22. The green-shaded areas indicate those areas where hydrocarbons are being produced from dolomite reservoir, which is subsea equivalent to the -- where water has been injected into the Canyon reservoir, in the Yates Osage well, in the northeast of 21.

Wells Number 5 and 7 have orange-shading at the bottom, and that area is consistent with subsea interval where the effects of both disposal wells, both the Yates Osage and the Anadarko Osage wells, could have effective perforations or the equivalent perforations.

And I would point out also that Well Number 5 is the one that's displayed on the cross-section and appears to be an excellent producer, thereby suggesting again that the oil-water contact or hydrocarbon-bearing portion of the dolomite reservoir extends to some subsea well below minus 4350.

With the -- Again, this display also shows, again, the proposed locations in and around these two disposal wells. And as you can see, there's a number of locations that are available to drill where the -- that are either proposed or in some -- or drilling, that extends to the north and east of the two disposal wells, and what that indicates to me is that the oil-water -- the economic limits of production from the dolomite will extend

somewhere to the east of the -- both of these disposal wells, and eventually the whole area of the disposal wells will be completely surrounded with producers.

How good those producers are, I really don't know. We've drilled the well Number 12, our Ross Ranch 22 Number 2, which again is displayed on this comparison, as Well Number 12, was perforated from subsea 4173 to minus 4286. And if you'll notice, that's within the range of most of the other producers that are displayed on this exhibit, and yet it's a very poor well because of the high water cut.

Q. Based upon these exhibits and the work that you've done in reviewing the productive wells and the injection wells out there, is it your opinion that the disposal into these two disposal wells is likely to impede or impair the production of hydrocarbons in this area?

A. Yes, it is.

Q. And what do you base that opinion on?

A. I base it on, number one, I believe it's a direct correlation to the very poor production history of the Ross Ranch 22-2, and just the fact that -- the amount of water that's been introduced into both of these wells, the fact that the log character of the disposal wells themselves, which in the case of the Anadarko saltwater disposal well we're looking at an entire Canyon interval, which is

dolomite.

There doesn't seem to be any barriers or boundaries in a vertical sense in either that well or the Nearburg Ross Ranch 22 Number 2 well, in terms of shale breaks or limestone breaks or any of those type of nonreservoir things, to suggest that water has not migrated into even the upper portion of the Canyon from the lower portion in the Anadarko well.

And the fact that those two wells, those two injector wells, exist on a structural nose, as again the structure map, Exhibit Number 15, indicates, where one should be experiencing enhanced production and really doesn't seem to be -- doesn't really seem to be there, although the majority of the nose has really not been tested yet with a dense drilling program.

But all those ingredients are very suggestive that there's a direct correlation between the water that's been put into this reservoir and the lack of oil that we see out of other wells.

MR. TURNER: Thank you, I have no further questions on direct.

EXAMINER STOGNER: Thank you, Mr. Turner.

Mr. Carroll, your witness.

Mr. Carroll, what exhibits are you going to be referring to?

MR. ERNEST CARROLL: I'm going to start and do them chronologically, and I can't tell you -- I'm going to start with 14, Mr. Examiner.

EXAMINER STOGNER: I just wondered how I needed to stack mine.

CROSS-EXAMINATION

BY MR. ERNEST CARROLL:

Q. You have before you Exhibit 14, Mr. Elger?

A. Yes, I do.

Q. Let me ask you a few questions here. First of all, let's look at Section 27 and let's look at that well that's in the northwest of the northwest, the furthestmost well. I believe this is a new well that Nearburg has just recently completed; is that correct?

A. Yes, it is.

Q. You made statements that this was a commercial well. What is the information upon which you make that basis?

A. I think I said it was an apparent commercial well --

Q. Okay.

A. -- and that's just based on the early production testing. We have run a submersible pump in there, and the amount of oil and gas that you see being moved in a 24-hour period is consistent with what we consider to be commercial

rates.

Q. Well, what is that amount of oil then? How much oil, how much water, how much gas is being moved?

A. I've only seen a day or two. I mean, it was almost immediate, and I believe we only had that well on the pump for a day, one to two days prior to this hearing, and I've seen rates in excess of 500 barrels of oil per day.

Q. How much water?

A. I believe the rates were on the order of 2000 barrels of water, somewhere on the order of 2000 barrels of water.

Q. Okay.

A. And I believe 1.4 million cubic feet of gas.

Q. On the basis of those reports, the -- And let me ask you this question: Did you hear me when I read the paragraph -- I think it was 9 -- from the Application of Nearburg which stated --

A. Yes.

Q. -- that the average well was 2.33 to 1. Were you responsible for the calculation of that number?

A. No, I wasn't.

Q. Okay. At least at this point in time, this South Boyd well in Section 27, would be in excess of that 2.3-to-1 ratio?

A. I believe it would, yes.

Q. Let's drop back down to Section 31, if you will. Does Nearburg operate the entire section, the four proration units?

A. I believe they do, yes.

Q. Okay. Now, there are a number of what I -- There are apparently two dryholes. There's one in the southeast of the northeast. Let's talk about that. Is that in fact a dryhole that Nearburg drilled?

A. Yes, it is.

Q. Okay. Was that a Canyon -- Was it tested in the Canyon?

A. The Canyon was the objective of the well, yes.

Q. And that well has then been P-and-A'd; is that correct?

A. P-and-A'd or TA'd. It's not producing.

Q. Okay. Going then to the list, there's -- it's an uncolored location, but is that a drill location or what?

A. Those are permitted locations, and they should be colored green, I apologize.

Q. Okay. Now, the next one to the west, is that also a permitted location?

A. Yes, I believe it is.

Q. And then the one to the south?

A. I believe it is.

Q. Okay. Then we get back to another dryhole symbol?

A. Right.

Q. Was that another well that Nearburg drilled?

A. Yes.

Q. Was it also targeted for the Canyon?

A. Yes.

Q. Can you tell me, was there oil found in the test of each one of these?

A. The well in the southeast quarter, there was oil but it was not commercial.

Q. Okay. What about the other dryhole? Was it the same --

A. The other well basically had a problem with reservoir rock. There really was not any dolomite developed within the oil -- within what we considered to be the oil portion of the Canyon to be productive. By the time we got to the developed reservoir rock in the lower part of the Canyon, there were no hydrocarbon shows to indicate that there would be hydrocarbons present.

Q. There were no shows, hydrocarbon shows; is that what you said?

A. Not in the basal part of the dolomite, no.

Q. Okay. What about in any other part of the dolomite?

A. Well, there was in the upper part, but the porosities were so poor. We did some coring in that well and we cored a good portion of the zone. And based on the results of that coring and the results of the logging, indicated that we did not want to run pipe at this time.

And Conoco, which was a partner in that well, and Yates, which was a partner in that well, agreed with that decision.

Q. All right. Well, let's move back to the dryhole in the southeast quarter. What was the reason that you attribute to that not being a productive well?

A. The lack of dolomite being developed in the upper portion of the Canyon. Basically, the upper two-thirds of the Canyon in that well consisted of limestone, nonreservoir limestone, and shale.

Q. All right.

A. And by the time we encountered dolomite in the Canyon, it was in the lower one-third portion of the Canyon bank system itself, and again there was -- We attempted a completion on that well.

There were some mechanical problems with that well early on in terms of we had already run our seven-inch string of casing to the upper part of the -- set it in the very, very top of the Canyon prior to drilling into the Canyon, because we had a gas zone, a shallow gas zone, that

was high-pressure low volume, that was giving us trouble. We didn't want to drill into the Canyon, encounter a vug or something whereby we would lose circulation and have the upper zone come at us.

Q. What was the water-oil ratio on that well?

A. It was very low, because the dolomite was very low, developed very low within the section.

Q. Did you have good fluid recovery, though, there was a lot of --

A. Pretty good, yes, I believe it was very good.

Q. Mr. Turner asked you a question as you were talking about this exhibit that's -- He basically said, have you reviewed the development info, then, being the August, 1984, time period, as I understood it, and then the August, 1995.

You rendered an opinion that Nearburg had a definite case back in the August of 1984 time period. My question -- and I was just trying to set up that time -- what info were you talking about? I'd like to know what you were basing -- what were you using in test- -- to arrive at this opinion?

A. Well, on this August date of 1984, I was not yet employed with Nearburg. There was a geologist by the name of Lou Mazzulo who did the initial geology for Nearburg Producing across this particular area, and he testified at

both the hearing and the subsequent *de novo* hearings for Nearburg, and it was on the basis of the cross-sections and structure maps that he had developed and I reviewed, in conjunction with those hearings, that I felt -- I agreed with what he had interpreted at that time in terms of the potential for hydrocarbons across this area.

Q. Then can you tell me what additional information do you have today that was different or not available to Mr. Mazzulo?

A. Over a hundred and some wells, as points of control.

Q. Are you saying that you have a hundred points of control in Section 21 and Section 22?

A. No, but across this entire area where you have access to the geology and across -- You know, obviously the mapping today is much more detailed, it's much more accurate than the mapping was back in 1984, and that's just a consequence of all these wells, all of this control.

Q. Then correct me. As I seem to understand your testimony, you are saying that when you look at all of the wells in this Dagger Draw field, that you should be able to take the sum total of those wells and that any well drilled in Section 22 should be close to or almost identical to any other well drilled in the Dagger Draw field?

A. No, what I'm saying is that we used the existing

well control to define the limits of the productive reservoir and exploit it appropriately, and that's -- You know, that's what's being done out here.

Q. Well, apparently down in Section 31, these two dryholes pretty well mark the productive limits of this reservoir. You've --

A. They do in that area.

Q. -- reached that?

A. Yeah, they do in that area, sure.

Q. Okay. Now, is it not possible that the Yates Osage saltwater disposal well, the Anadarko saltwater disposal well and your well in the northeast quarter of Section 22 all show that the productive limit -- that that area that is through there is not a productive area, that it's the limit, we've reached the limit in that area?

A. I don't know that that's the implication that can be drawn. I think there's areas -- As you're aware from other testimony and other hearings, Nearburg has conducted 3-D seismic out in this particular area, which I believe covers all of Section 22, so that we have access to other information besides just the well control in this area to tell us what areas might be structurally consistent with the production of hydrocarbons.

And the incorporation of that data into my Exhibit Number 15, although I don't have individual shot

points and all of that sort of thing displayed on here, there is more than just the well control that goes into the construction of this display.

Q. You have not presented any exhibit that tries to incorporate seismic information?

A. No, I have not, that's correct.

Q. Now, Mr. Elger, you have reviewed Mr. Mazzulo's testimony, have you not?

A. For the most part, I have, yes.

Q. And you are aware that he testified that stratigraphy and structure both played a role in this field, did it not?

A. It does and it doesn't. There's portions of the field where the stratigraphy does play a role, and there's portions where structure is more the controlling factor.

Q. What key factor tells you that stratigraphy doesn't play a role in the areas of our concern?

A. What -- Can you rephrase your question?

Q. Well, basically -- I was trying to explore your answer. You told me that in some areas structure controls, some areas stratigraphy controls. As I see your testimony, one of the key points that you want to deal with here is structure, and I was -- I assume that stratigraphy plays no part.

A. In this particular area, that's probably valid,

yes.

Q. All right, why? What tells you -- What demonstrative evidence, objective evidence, tells you that stratigraphy is not important out here?

A. There's a producer that Nearburg drilled in Section 24, 19 South, 25 East, that Yates was a participant in. That well encountered the top of the dolomite reservoir at extremely low value. I don't have it as one of these displays here, but it was well below 4350 subsea, was the top of the dolomite. I don't -- That well was our Fairchild 24 Number 1.

Stratigraphy played a tremendous role in the trapping of hydrocarbons in the dolomite reservoir in that particular well. It does really not back over here in Section 21.

I've had the opportunity to review and, although they haven't been introduced as evidence, Brent May's structure map across this same area. And when he introduces his structure map during his testimony, you'll see that his structure, which is an expanded version of my Exhibit Number 15, extends down across Section 28 and across Section 29, and on the top of that nose which extends into Section 21 and which the two disposal wells are located is a series of very, very good Canyon producers.

Q. Now, Mr. Elger, please, Section 24 that you were just talking about, we're talking about the section that would be to the immediate east of Section 22 and 21, approximately two miles?

A. Right, east of 23.

Q. On your Exhibits 14, we don't have 23, and that's why I was -- and I was just trying to tie your testimony into Exhibit 14 and where you are talking; isn't that correct, then?

A. Uh-huh.

Q. It would be two miles farther to the east of --

A. That's right.

Q. -- the area depicted on that exhibit?

A. That's right.

Q. Now, you made a statement, and I'm turning now to your Exhibit 15, that the Cutter well, you did not feel, had been damaged at this point in time by the --

A. Doesn't appear to be.

Q. -- the saltwater disposal?

A. Huh-uh.

Q. Okay, looking at Exhibit 16, isn't the Cutter the southeastmost well in Section 21 that has the depiction "new well"?

A. Yes.

Q. All right. Now, structurally, the Cutter is

downdip -- correct me if I'm reading this wrong -- from both the Anadarko disposal well and the Yates Osage disposal well?

A. That's correct, on the top of the reservoir it is.

Q. The last -- really the last thing that I wanted to visit with you is -- and if you would clarify for me, is really the purpose of the question.

You were formulating your basic opinion, and I thought I picked up a statement of you had three reasons and I got two, basically the poor production history of the Ross Ranch 22 and the fact that the saltwater disposal wells exist on this structural nose. Was there a -- Did I get everything, or was there something that I've left out? And I just want to make sure I have -- so that we know what your --

A. That and the perforated interval, the subsea of the perforated intervals, that -- in the dolomite reservoir where water is being disposed, is opposite what I believe is a proven oil column. Obviously, the Yates Osage well is. But a portion of the perforations in the Anadarko well are as well.

Q. Okay. And you say that these perforated intervals are proven oil --

A. That's correct.

Q. Oil what? I didn't --

A. Oil-bearing dolomite reservoir.

MR. ERNEST CARROLL: Okay, oil-bearing dolomite. I just didn't want to get...

That's all I have, Mr. Examiner.

EXAMINER STOGNER: Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. First, on your Exhibit 15, I just want to clarify something, Mr. Elger.

EXAMINER STOGNER: Did you say Number 15?

MR. BRUCE: Exhibit 15, Mr. Examiner.

Q. (By Mr. Bruce) In your production map, the well in the southwest quarter of the southeast quarter of Section 21, is that a relatively new well, or is it a poor well?

A. Southeast --

Q. Southwest quarter of the southeast quarter. The figures by the well are 6137.

A. That's a fairly new well, but I don't believe it's a real strong. It's a fairly poor well, actually.

Q. Okay, whose well is that?

A. Yates Petroleum is the operator, Nearburg has an interest.

Q. And that well you just mentioned offsets the -- I

don't know the name of it. The Aparejo? Is that the --

A. No, the Cutter.

Q. The Cutter, excuse me, which you think may be a very good well?

A. It appears to be a good well.

Q. Do you think, looking -- Moving over to Section 22, there's a well in the southeast quarter of the northeast quarter. Do you feel that well has been affected by the saltwater disposal operations?

A. I don't think it's been adequately tested in the Canyon, to answer that question.

Q. Moving on to your Exhibit 16, looking at Nearburg's Ross Ranch 22 Number 2 and then the Anadarko well, why didn't Nearburg perforate in the lower Cisco/Canyon?

A. Basically, there was -- we wanted to establish production from that wellbore, and at the time that we completed that well, we perforated opposite where we had the strongest hydrocarbon shows on our mud log. And just from -- we wanted to shoot those -- that area where we had the most -- the best -- better looking shows.

Q. So you used -- the best shows were in the -- not -- Let me ask you this: In the Canyon, you separate the Canyon into zones, like upper and lower, or internally?

A. Yes, we do.

Q. Okay. And as far as you can see, the best production is in the upper Canyon?

A. That's correct.

Q. And the Anadarko perforations and injection are in the lower Canyon?

A. Lower to middle, yes.

Q. Do you have any evidence of any communication between the lower Canyon and the upper Canyon?

A. We would like very much to learn that, but --

Q. You can't say there's any communication?

A. No. All we can look at is the character of the porosity as displayed on each one of these log sections, and there are no identifiable porosity barriers that we see that exist from the upper to the lower.

Q. Getting back to this lower zone, I think you -- in answer to one of Mr. Carroll's questions, you said that down in the southeast quarter of Section 31 the only dolomite present was in the lower Cisco/Canyon, and that was not commercial, was it?

A. No, that's correct.

Q. And then finally, moving on to your Exhibit 18. Now, virtually all of the production that you have shown here is in the upper Canyon, isn't it?

A. That's correct.

Q. And except for a couple of these orange marks,

it's all above the injection interval into which Anadarko is injecting; is that correct?

A. That is correct.

Q. And if you look at wells 8 through 18, those are all in Section 21 and 22; is that correct? Excuse me, 8 through 16 are in 21 and 22.

A. That's correct.

Q. So the nearest -- Now, when you show these, what you have marked Wells Number 5 and 7 -- those are in Section 16 -- do you have any evidence that these lower perforations are producing oil? Could they be producing all water?

A. I do not have any evidence that they're producing. But I -- again -- Since one well, the well that's perforated to minus 4350, is such an apparent good producer and that -- we're talking about based on the potential almost a one-to-one oil-water ratio, that we're looking at a typical Canyon scenario, typical Canyon-type completion. Or in fact, it may be even better than typical in terms of that water-oil ratio. And yet that well is perforated to minus 4350, which suggests that there's not a lot of water coming in from --

Q. But you don't have any evidence -- Well, apparently, if you go back to your Exhibit 17, there is one perforation, one group of perforations, way down at the

bottom, at minus 4350, and then you go up quite a ways and you have the other perforations?

A. Yes.

Q. And it is possible that the lower perforations are producing all water?

A. It's possible, but not probable.

Q. But you don't know, correct?

A. Yes.

MR. BRUCE: Nothing further, Mr. Examiner.

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Turner, any redirect?

MR. TURNER: Yes, just a couple of questions.

REDIRECT EXAMINATION

BY MR. TURNER:

Q. Mr. Elger, you were asked, I believe, by Mr. Bruce about whether or not you had any evidence as to communication between the upper and lower zones. You don't see any evidence that there's -- Or let me just ask you the question: Did you see evidence that there is in fact separation?

A. No, I do not. Just the appearance of the logs is all we have -- the appearance of the logs and the production history of the Ross Ranch 22-2 are all we have to go on right now, and what they tell me is that there's a very strong likelihood that the water Nearburg is moving

out of their perforations in red on their well in Exhibit 16 may very well be coming from, all or a portion of, from what Anadarko is putting in the upper part of their perforations in -- their top set of perforations in their disposal well.

Very, very possible, but I don't have any engineering data to substantiate that.

Q. In your professional opinion, do you think there is a likelihood that that is in fact occurring?

A. Yes.

Q. That Nearburg is actually producing water from its Ross Ranch 22 well that is being injected into the Anadarko well?

A. Yes.

Q. And is that the reason that you're seeking the Commission's help in shutting that well in?

A. It certainly is. That and the preventative -- preventive damage, future damage, in that area, wells that will be proposed and drilled in the future.

MR. TURNER: No further questions.

EXAMINER STOGNER: Thank you, Mr. Turner.

Any other cross-examination?

MR. ERNEST CARROLL: No, I don't.

EXAMINER STOGNER: I've got a couple of questions.

EXAMINATION

BY EXAMINER STOGNER:

Q. On Exhibit Number 16, the Ross Ranch 22 Well Number 2, look at the upper portion of that log, the topmost perforation and the long, long perforated interval. There seems to be what appear would be a plug or something. What is that?

A. You're correct. In order for us to test that very upper set of perforations, we set a bridge plug in there, separating that very upper set of perforations from perforations below that.

Q. Okay, is that bridge plug still there?

A. I believe it still is there.

Q. So all the production that's recorded is just out of this topmost perforated interval?

A. Well, the production that's recorded -- The cumulative production recorded at the bottom of the log of 1000 oil and 98 million gas are from a combination of both.

Q. When was that bridge plug put in? You may refer to your engineer on that one.

MR. McDONALD: January?

THE WITNESS: Eight or ten months ago, something like that. That would be a guess.

Q. (By Examiner Stogner) You mentioned -- and I want to make this so I have the terminology right. You

mentioned something about the lower one-third bank system.

A. Well, the whole Canyon carbonate complex here I refer to as the Canyon bank, and that has been identified on the cross-section, the top of the Canyon bank has been labeled up where you go from shales and sands into the carbonates, and then the base of that bank system has also been identified on this Exhibit 16, and that's where you go back into an alternating shale and lime sequence.

And you pretty much are -- The normal section within the bank complex is for it either to be limestone or dolomite or one or the other or both.

Q. Now, when you talk about the lower one-third bank system --

A. Yes.

Q. -- are you saying --

A. -- I'm just --

Q. -- the lower portion of the limestone, or are you talking about --

A. No, I'm talking about --

Q. -- cutting it up in thirds?

A. I'm talking about if you would take -- The overall thickness of this complex in this North Dagger Draw-Penn Pool really does not vary in thickness very much. And when I say the lower third, I'm talking about the lower third, if you would just look at the bottom third of that

bank complex, and that's what I refer to as the bottom third of the bank.

Q. So with that terminology, when I go to Exhibit Number 18, most of the producing interval -- let's forget about Well Number 10 and 11 right now, talk about the producing interval -- it's definitely got to include the uppermost third. Does that include some of the middle third?

A. Yes, it does.

Q. Okay. How about any portion of the lower third?

A. No, I don't believe any of them are to the lower third.

Q. Okay. Now, then, I go to the Osage well -- I'm sorry, the Anadarko Osage well. That takes in definitely the lower one third. Does it take in some of the middle one-third?

A. To be real honest, it kind of looks like the middle half.

Q. Okay. Middle half, okay. By your terminology.

A. Yeah, the lower half, the lower half of the Canyon bank.

Q. And I guess looking at the Yates Osage well, that would probably take in the upper --

A. The upper half.

Q. I'm going to let you say it. What would it take?

A. I would say the upper half.

Q. Okay. Is the lower one-third capable of any production in this pool?

A. Yes, it is.

Q. It is?

A. But it's not anywhere on any of the maps that I have as displays.

As you move to the west -- You know, the entire Canyon bank system is a kind of a -- in a general sense, there's a west-to-east or northwest-to-southeast dip component to it. And when you move way over into 19 South, 24 East, back to the west of the township, the lower -- you eventually move all of the dolomite section up into the hydrocarbon column.

Q. Well, how about --

A. And in fact, the upper third of the Canyon bank complex becomes nonproductive limestone section over there.

Q. Okay. Let's just stay with -- Okay, I'm going to use Exhibit Number 14. Sections -- The wells in Sections 18, 19, 30 and 31, are any of those producing from that lower one-third?

A. I don't believe they are.

Q. So I'd have to go back further west?

A. Yeah, you have to go farther west than that.

Q. Okay. Has the lower one-third in 18, 19, 30 or

31 been tested?

A. Maybe in the west half of those sections, it starts to become hydrocarbon -- high enough so that it contains hydrocarbons. But I don't think it is in the east half of those sections.

Q. Okay. Now, that's what I was leading up to. And I don't want to put words in your mouth, but is the lower one-third capable of production, oil production, to the east of Sections 18, 19, 30 and 31?

A. To the east of it?

Q. Yes.

A. Not that I'm aware of.

Q. Okay. Has any of those wells been tested in that lower one third?

A. There have been a number of these old Morrow wells, when they drilled through the bank complex, this Canyon bank complex, that ran very long drill stem tests across almost the entire carbonate length of -- thickness of the Canyon bank themselves, and have had mixed recoveries, you know, oil, water -- a lot of water but some hydrocarbons. I can't recall exactly. It seems like one of the Morrow wells in Section 28 may have tested in -- ran a very long drill stem test across all of the Canyon, a big portion of the Canyon, and been one of those wells.

Q. Now, going back to Exhibit Number 16, just the

Anadarko well, are all the perforated intervals -- are you advocating that all the lower or -- I'm sorry, all the perforated intervals in that Anadarko well are contributing to the watering out of strong production in this area?

A. I don't have an answer as to how the lower set of perforations -- Like I say, below 7900 would be affecting the upper part of the dolomite. But I think the group of perforations from -- between 7800 and 7865 or whatever that upper set of three perforations is there, I believe there's a strong likelihood that those water -- whatever water is going into that set of perforations is very likely moving through dolomite reservoir rock that either was or is hydrocarbon-bearing.

EXAMINER STOGNER: Okay. Are there any other questions of this witness?

MR. ERNEST CARROLL: I don't think so.

EXAMINER STOGNER: You may be excused.

Mr. Turner, do you have anything to present at this time?

MR. TURNER: No.

EXAMINER STOGNER: Okay. With that, let's take a ten-minute recess and then Yates or -- We'll let Anadarko and Yates decide --

MR. ERNEST CARROLL: Anadarko will go first.

EXAMINER STOGNER: Okay. Let's take a ten-minute

recess.

(Thereupon, a recess was taken at 1:45 p.m.)

(The following proceedings had at 2:08 p.m.)

EXAMINER STOGNER: Hearing will come to order.

Mr. Bruce?

MR. TURNER: Mr. Examiner --

EXAMINER STOGNER: Oh, I'm sorry, Mr. Turner?

MR. TURNER: -- I have one matter. At the close of my case I had not asked for the admission of Exhibits 9 through 18. I'd like to do so at this time.

EXAMINER STOGNER: I'm sure glad you're catching them.

Any objections?

MR. ERNEST CARROLL: No.

EXAMINER STOGNER: Exhibits 9 through 18 will be admitted into evidence.

Mr. Bruce?

MR. BRUCE: One witness, Mr. Examiner, Mark Sundland.

W. MARK SUNDLAND,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Sundland, would you please state your name,

full name, and city of residence?

A. William Mark Sundland, Houston, Texas.

Q. Who do you work for and in what capacity?

A. I work for Anadarko Petroleum Corporation as a staff reservoir engineer in Houston.

Q. In Houston? Have you previously testified before the Division as an engineer?

A. No, I have not.

Q. Would you briefly summarize your education and employment background?

A. I've got a BS in petroleum engineering from Texas A&M University. I've got 13 years of drilling, production and reservoir-engineering experience with Chevron USA, Santa Fe Energy Resources and Anadarko Petroleum.

Q. How long have you been with Anadarko?

A. One year. Prior to that I was -- For two years I worked for Santa Fe Energy Resources as their division engineer, solely responsible for production and reservoir engineering activities in southeast New Mexico.

Q. And does your current area of responsibility include southeast New Mexico in this particular case?

A. That's correct. I've recently relocated from Midland, Texas. I worked there five years, and recently transferred from a production engineering role in Midland to a reservoir engineering role in Houston. But I have

been involved in this case now for approximately one year.

Q. And have you reviewed all of Anadarko's files on this particular well?

A. Yes --

Q. And --

A. -- to the extent that they have files, yes.

Q. Are you a professional engineer in any state?

A. That's correct, I'm a registered engineer by exam in Colorado.

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

EXAMINER STOGNER: Mr. Sundland is so qualified.

Q. (By Mr. Bruce) Mr. Sundland, let's start off with your Exhibit 1. Could you just identify what that exhibit is?

A. Exhibit 1 is a chronology of events going back to June 6th, 1983, in regards to this case. The first two pages I removed -- or I found in Anadarko's files, and then the second two pages I prepared myself to update the chronology. It just serves as a date-by-date chronology of all events relating to this case.

MR. BRUCE: Mr. Examiner, in the interest of saving a little bit of time, if I can summarize some of this, it does concern matters on the record.

EXAMINER STOGNER: Feel free.

MR. BRUCE: As you can see going down this, on June 6th Anadarko filed a C-108 to re-enter the B&B Well Number 1 which was previously discussed by a couple of Nearburg's witnesses. They wanted to complete it as a saltwater disposal well in the lower Cisco/Canyon.

Chama Petroleum, which, as Mr. Turner said, is Nearburg's predecessor, filed an application to pool and re-enter the same wellbore to test the Morrow and the Cisco/Canyon.

This application was heard by the Division, and as a result, Order Number R-7326, was issued, allowing Chama to re-enter this well, so long as certain completion requirements were done so that the B&B Number 1 well would be usable for saltwater disposal if Chama was unsuccessful. That order is submitted as Exhibit 2A.

I think applications for rehearing were filed maybe perhaps by Chama and perhaps also by Anadarko, that resulted in Order R-7326-B, which is submitted as Exhibit 2B.

As a result of that order, Chama tendered an AFE to Anadarko, who owned an interest in that well. Anadarko went nonconsent. That well was drilled. I believe the testimony is that it was completed in the Morrow and in the Cisco/Canyon, and we'll get into that a little bit later.

Because the opportunity for a saltwater disposal

well was foreclosed at that location, Anadarko then on May 25, 1984, filed a C-108 to drill the Dagger Draw SWD Well Number 1, which Nearburg refers to as the Anadarko Osage SWD Number 1. Again, this is for the lower Cisco/Canyon.

This application was heard, and as a result, Order Number R-7637 was issued by the Division. I think the critical findings are in paragraphs 3, 4 and 5 of that order. Basically, Anadarko desired to dispose of saltwater in the -- what they called the "C" and "D" zones, which are the lower portion of the Cisco/Canyon. Finding 4, there's no commercial oil or gas production in those zones, and finding 5, the "C" and "D" zones are separated from the upper zones by impermeable, nonporous dolomite shales.

Later on, Chama filed an application to rescind R-7637. That was heard in Case 8739. The order of the Commission at that point affirmed the prior order, and I think the key findings are 4, 5 and 6, in particular finding 5: Anadarko presented substantial evidence demonstrating that the lower zones of the Cisco/Canyon are not capable of commercial production. Furthermore, the continued use of the disposal well will not impair correlative rights.

In that case, one thing I want to point out is that Nearburg Exhibit 12 states that when the Dagger Draw SWD Number 1 well was completed, that it flowed 60 barrels

of oil and 260 barrels of water. In Case 8739 evidence was presented that, yes, there was some oil, but it was 33 barrels of oil and 282 barrels of water. I just want to get that clear for the record.

Subsequently there has been no further effort to rescind these orders until this Application was filed, which was done in June or July of this year.

Finally, and Mr. Sundland will discuss the reason for this, Anadarko has continued to inject water into its well. The actual cumulative injection is approximately 3.7 million barrels, not the 2 million barrels that Nearburg put on its documents. And I'll get Mr. Sundland to explain that.

And Order Number R-8139 in the last case is marked as Exhibit 4.

Q. (By Mr. Bruce) Mr. Sundland, just a couple extra items on this --

EXAMINER STOGNER: If I may interject, Mr. Bruce, I've been looking at these Commission orders --

MR. BRUCE: Uh-huh.

EXAMINER STOGNER: -- and the terminology. We need to get a little something -- at least put something on the record.

In the orders that you referred to, actually they were issued by the Commission, the Commission being in

those days made up of Joe Ramey, the Division Director, because there was a Division. But I have no record that any of these cases ever went *de novo*. In fact, in those days it was sometimes the common practice whenever a case was very, say, opposed --

MR. BRUCE: Yes.

EXAMINER STOGNER: -- then they would go to the Commission hearing outright. And all of these refer to the Commission. I just wanted to bring that on the record. That may or may not --

MR. BRUCE: Yeah, I made a mistake. I had thought the first one, R-7637, had been in front of the Division, but I believe you're right. They are both in front of the Commission, I suppose, as you said, because even I was around back then, and --

EXAMINER STOGNER: And I was too, and --

MR. BRUCE: -- and I know the hearing examiners were doing these, so I -- apparently because of the dispute they were sent directly to the Commission.

EXAMINER STOGNER: And none of this is touching any memories, and that's why, because it went to the Commission, and this is --

MR. BRUCE: Correct.

EXAMINER STOGNER: So this is the first time I've ever been involved with it, even though I was around then.

Okay, with that I'll turn it back over to you.

MR. BRUCE: Fortunately, it's the first time I've been involved in it too.

EXAMINER STOGNER: Well, we're both -- Never mind, go ahead.

Q. (By Mr. Bruce) Mr. Sundland, just a couple extra things. What did the notes reflect? And I'd refer you to page 2 of the chronology with respect to the initial case on the Dagger Draw SWD Number 1, as far as what Nearburg's aim was in this matter.

A. I will refer to July 30th, 1984. I'll read: "Through counsel, Chama offered to drop their objection if Anadarko would guarantee them 2000 barrels water per day disposal capacity at 25 cents per barrel."

The next day, Anadarko offered to dispose of their water as capacity was available, and they would do it at 25 cents a barrel. Chama declined and said they needed a guaranteed volume. That seemed to contradict their concern about impairment of correlative rights.

Q. Okay. Now, let's move to the more recent date, move forward ten years. At the bottom of page 3 of your chronology, could you explain what happened when Nearburg first contacted Anadarko's engineers in Midland?

A. Yeah, the previous engineer before I became responsible for their New Mexico engineering duties was

George Buehler. He was contacted on October 6th of 1994 by Mr. Kimbrough and Shelton, I believe. They advised him that Nearburg had spudded the Ross Ranch 22 Number 1, 651 feet from our disposal well. They advised him that they were seeking to have an informal meeting in Artesia, seeking to have Tim Gum force us to shut in our well.

At that meeting they also made an offer to take Anadarko's water for 25 cents a barrel into their Devonian saltwater disposal system. Anadarko operates the SWD well as a commercial disposal site and injects roughly 1400 barrels of water a day, of which over 50 percent of that is third-party water, and -- So he documented that meeting and referred it to me, because I had -- I was actually responsible for that area and not -- Yeah.

Q. Okay. And then let's clear up the amounts injected. I believe it's Nearburg Exhibit 9, which showed a chart of injection amounts; is that correct?

A. No, that's not correct, and that is --

Q. And why?

A. That is due to a clerical error on the part of Anadarko historically. Back in the late 1980s, in 1989, we started taking third-party water from Texaco. All of Texaco's North Dagger Draw wells feed into our system.

The clerical error was that the clerk in Loco Hills continued to report to the State on the saltwater

disposal report form, just the Anadarko-operated water disposal. She didn't think to add in that additional third-party water. And that mistake was corrected, and that's the big jump you see on Exhibit 9. You know, we stand corrected on that, but we just wanted to make sure that that was clarified for the record, what the correct volumes were.

Q. And what about the injection pressure?

A. Yeah, the injection pressure that we report to the State has not changed over the years. It certainly has not changed since Nearburg put on the Ross Ranch 22 Number 2. Our injection pressure is very steady at 850 p.s.i. Our permitted injection pressure is 1560 p.s.i.

I believe that our reported injection pressure is a matter of public record. There's certainly no intent to try to hide anything from Nearburg in this matter. In fact, they've got the public record there. So I think that's -- We certainly don't have any trouble injecting water well below frac area in this well, and it's been a good disposal well.

Q. And is the correct figure through the end of August, 1995, of barrels of water injected approximately 3.7 million?

A. That is correct.

Q. Mr. Sundland, let's move on to your Exhibits 5A

and 5B. These are some exhibits regarding Nearburg's Ross Ranch 22 Number 2 well and your Dagger Draw -- Anadarko's Dagger Draw SWD Number 1 well. What do these exhibits show?

A. Because this is -- I was trying to come up with some sort of tangible evidence that would indicate that I don't believe there is indication that their Ross Ranch 22 Number 2 has been flooded out by injection water.

When we drilled the Dagger Draw SWD Number 1, we ran a conventional logging suite on that, being normal porosity log and also a dual lateral log. Just using -- And the method that was used in the prior hearings in this case, one of the things that was testified to by Anadarko was to use Archie's equation just to come up with some water saturation numbers to try to indicate what might be productive and what might not.

Using those same assumptions, meaning I'm using the same R_w that was used in the past, using the same net-pay cutoff of 4-percent porosity that was used in the past, just trying to be consistent with prior testimony, I looked at the -- our well, which was drilled in 1984, and at that time no water had been injected, and just went by foot by foot in the zone in question, which is the that upper "A" zone, to see what is the average calculated water saturation foot by foot, using Archie's equation. I come

up with an average of approximately 33 percent.

Ten years later, Nearburg runs the same Schlumberger log suite in their well, and I would expect that if significant flooding out of oil in their -- at their location, you would expect significantly higher water saturation calculations on the -- from the dual lateral log.

I used the exact same assumptions, using the 4-percent porosity cutoff and a standard Archie's equation with m and n equal to 2 and in doing so came up with average water saturation of around 37.7 percent. The numbers obviously aren't identical, but they obviously aren't exactly the same wellbore. If you look at the two wells side by side, the gamma ray --

Q. Second pages --

A. Pardon?

Q. The second pages of those exhibits?

A. Correct, the second page of those exhibits.

The gamma-ray trace correlate very well from one log to the other. The porosity doesn't correlate quite as well, so -- but that fits the -- I believe, my understanding of the Cisco/Canyon pay development. It's very random.

But the whole point here is, I'm not trying to represent these numbers as quantitative values because, you

know, within the accuracy of this kind of calculation, I mean it's -- but I was trying to show qualitatively that for -- If you look at their well, I would expect that if their "A" zone had been significantly watered out by injected water, that they should be seeing some sort of saturation significantly higher than 30s. One would see in a watered-out waterflood that you would see water saturations closer to 1 minus residual oil. I don't think that's unreasonable to assume that that could get up around -- in this case, around 70 percent.

So we're not seeing a quantum leap in water saturation in their "A" zone.

Q. So you don't think the difference between 33 percent and 38 percent is significant?

A. Not significant in this case, no.

Q. And that really -- If Nearburg's assertions are correct, let's call them that, are correct, these water saturations in the Ross Ranch 22 Number 2 should be around 70 percent?

A. I think that's reasonable to assume that that would be the case.

Q. Now, has your injection well performance changed at all since the completion of the Nearburg Ross Ranch 22 Number 2?

A. Our injection well performance has not changed at

all, in terms of rate and pressure.

Q. Now, some reference has been made to the South Boyd Number 1 and the B&B Number 1 wells. Could you refer to Exhibits 6A and 6B and identify those for the Examiner and tell what they show?

A. Yes, I went into the public record, which is Petroleum Information, Production Data, and pulled up the reported Cisco/Canyon completions data, production data, in the B&B Number 1 and the South Boyd Number 1. Both indicate production tests more or less in 1992, both indicate what I would consider noncommercial cumulative water-oil ratio.

For instance, the B&B water-oil ratio is 117. The South Boyd water-oil ratio is 57.5. I don't know the exact details of their testing in this matter, but I would submit that particularly in the South Boyd, that having produced 5000 oil and 319,000 barrels of water is a significant test of that zone. But for the record -- I thought we ought to get that in the record.

Q. In your opinion, should Nearburg's Application be denied?

A. Yes, I believe it should be denied.

Q. And the denial would be in the interests of conservation and the prevention of waste?

A. Yes.

Q. And were Exhibits 1 through 6B prepared by you or compiled from company records?

A. That is correct.

MR. BRUCE: Mr. Examiner, at this time I would move the admission of Anadarko Exhibits 1 through 6B.

EXAMINER STOGNER: Are there any objections?

Exhibits 1, 2A, 2B, 3, 4, 5A, 5B, 6A and 6B will all be admitted into evidence at this time.

MR. BRUCE: And I pass the witness.

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Turner, your witness.

CROSS-EXAMINATION

BY MR. TURNER:

Q. Mr. Sundland, you testified that the -- in 1989, that Anadarko started taking third-party water into this Anadarko disposal well; is that correct?

A. That's correct.

Q. Whose water are you taking?

A. The majority of the third-party water comes from Texaco. There are -- Some other small occasional third-party water comes into our system. But by and large it is Texaco, from the Cisco/Canyon, North Dagger Draw lease, that they have.

Q. Okay. And what portion of the water that is currently being injected into your well is third-party

water?

A. Roughly 50 percent, a little over 50 percent. We operate one Cisco/Canyon well, the Bradshaw Number 2. It makes approximately 650 barrels a day. Currently we're injecting between 1300 and 1400 barrels a day, so the balance of that injection water is third-party water.

Q. Okay. I refer you to Exhibit 6, which was previously tendered by Nearburg.

MR. BRUCE: Nearburg?

Q. (By Mr. Turner) Nearburg Exhibit 6, which is a letter dated May 5th, 1995, from Mr. Brad Miller, Anadarko's division production engineer, to Jackson and Walker, attorneys for Nearburg, in response to a letter dated April 27th, 1995, from Nearburg and from Walker to Anadarko.

A. Right.

Q. The second paragraph of that letter, would you read that?

A. I'd be happy to.

"As a resolution to this dispute Nearburg is encouraged to purchase the Dagger Draw SWD No. 1 in the July 12, 1995 Oil and Gas Clearinghouse Auction. Contact Mike Goode in Anadarko's Houston office...to receive a copy of the auction package."

Q. Okay. Your testimony is that currently you --

Anadarko operates one well in this area which is receiving water produced from that well into the disposal well?

A. Correct.

Q. And you also testified that you believe that it was in the best interest of protecting correlative rights that Nearburg's application for you to cease disposing in this well should be denied in order to protect the correlative rights, I guess in favor of Anadarko.

If Anadarko is not interested in owning this well anymore, could you tell me what correlative rights it is that need to be protected for Anadarko?

A. Currently we operate and own the Bradshaw Number 2, and operating our own disposal well tends to reduce our operating costs for that well. And that has been testified to in the past, that by producing low-cost disposal you tend to increase the life of producing wells in that area. And that's -- That was the original reason why a saltwater disposal permit was permitted in the first place.

Q. But according to this letter, you either have planned to sell this well or maybe have already sold it. I don't know what the status is. Could you tell me, has this well been sold?

A. No, we have not sold the well yet.

Q. But is it still Anadarko's plan to sell this at some clearinghouse auction?

A. At the current time, it is in a -- it is going to be put into a day room. But I would also submit that the purchaser of the well would purchase both wells and that they would also benefit the same way that Anadarko would benefit from that.

Q. But this well --

A. So whether it's Anadarko's -- to Anadarko's benefit or another party's benefit, who purchases it from us, it would benefit them just as it would us.

Q. But for Anadarko's plans in this area, you really have no -- What you're indicating to me is that you have no future plans to operate both your productive well and your disposal well?

A. It is my understanding that Anadarko management intends to rationalize their assets in southeast New Mexico, and that may involve selling their assets in the Dagger Draw area. I think I can speak for Anadarko management in that sense, because I'm reasonably confident that that is their intention.

Q. But in particular, as that philosophy might pertain to this area, it definitely pertains to the disposal well that we're talking about here today, and as you've indicated also, the plan is to dispose of the -- your productive well? So --

A. Correct, as a package.

Q. So neither of these wells have long-term significance to Anadarko's operations?

A. That is correct. However, these have a significant value to Anadarko in a sale, so it is in our interest to keep these orders in force.

Q. Now, you testified about the water testing that you did for saturation purposes between the Nearburg well and your disposal well.

A. Uh-huh.

Q. And you'll have to excuse me, I'm not a highly technically trained person, so I'm trying to understand a little bit more about the basis of the tests that you've conducted. But as I understand it, you are trying to compare the water saturation of the zones that you're injecting into with the water saturation of the productive zones of --

A. No, that is absolutely incorrect.

Q. Okay. Well, like I said, you have to excuse me. Maybe you could explain it to me so that I could understand it.

A. Okay. We are injecting into the "C" and "D" -- what Anadarko has referred to, and has referred to for ten years, as the "C" and "D" zones of the Cisco/Canyon dolomite.

These calculations pertain only to the "A" zone.

Nearburg has testified that they are very concerned about the correlative rights in the "A" zone. So these do not represent any calculations in any pay below the -- what we would consider the "A" zone. So these are only comparing the "A" zone in our disposal well and the "A" zone in the Ross Ranch Number 2 well.

Now, understand that it has been long standing Anadarko's position, and it's been found by the Commission that our injection into the "C" and "D" zones does not impair the correlative rights in the "A" zone because the zones are separated by impermeable strata.

Q. And how do you know this?

A. That has been the testimony of --

Q. No, I'm not asking about other people's testimony; I'm talking about --

A. I can look at the log.

Q. How can you sit here today and testify that that is in fact the case? What can you point to, to demonstrate that that is the case? I'm just looking for some --

A. Okay --

Q. -- demonstrative evidence that indicates that.

A. -- I can say as a trained engineer who can read porosity logs that there is a significant interval of zero porosity, dense rock, between our injection perforations and the correlative perforations in the "A" zone. And so I

can say that, based on my own analysis of the logs. But I'm also just referring to what's been found by the Commission, not once but twice in the past.

Q. Do you have those logs that you can --

A. Yes, I do.

Q. Okay. Are they --

A. The logs are on all of the cross-sections. I've got separate copies of the log.

Q. Are you referring to the attachments to your Exhibits 5A and 5B?

A. No, I did not -- You know, for the purposes of this exhibit I was only trying to show the "A" zone. I knew that we would have several cross-sections at the hearing, both prepared by Yates and Nearburg, that would show the entire interval.

So the low-porosity section in question is -- just starts at the very bottom of this sheet here, but we can see that in any of the cross-sections.

I might refer some of this line of questioning to Brent May. I believe he's prepared to discuss this, you know, as an expert geologic witness also.

I might also cite testimony in the past that referred to prior studies of the area and that sort of thing. So I'm basing that on both knowledge and belief.

Q. I'd like to refer you to Nearburg's Exhibit

Number 16, and maybe that will help since that's --

A. Sure.

Q. -- an exhibit that maybe you could point to that demonstrates your conclusion in this regard, in particular, to the portion of the exhibit for the Anadarko disposal well.

A. I will refer you to the -- roughly the interval starting at 7806, on up, and the crossplot porosity of those two will follow what would essentially be close to zero porosity. And this is the type of log signature that is referred to in the prior testimony.

Anadarko expert geologic witness in 1984 referred to the Roswell Geological Society Symposium of the North Dagger Draw field, written by Robert E. Murphy in August of 1976, and they quote, "Tight trap, stratigraphic, porosity and dolomite sealed by nonporous limestones." I think that's a recognized geologic phenomenon in this area.

Q. Do you see any limestone in the area between -- in the "A" to the point where your perforations begin?

A. Limestone or dolomite or shale in this case seem to be -- it's a matter of semantics. I wouldn't say, looking at the -- Is there a PE curve on here? I don't believe there is. Yeah, there is.

I would say that that is a matter of semantics, and I would like to refer that, again, to Mr. May.

Q. So can you state that there is no fracture porosity from the review of this log?

A. I don't see evidence of a fracture porosity. But again, I would like to refer that to Mr. May.

Q. Okay. Well -- And I don't have any problem with talking with Mr. May about this, but since you expressed the opinion about it I really am trying to get a better understanding of the basis of your opinion.

A. I base a lot of my opinion on what I find in the findings, which -- so I see that, I see -- you know, and I read that, I verify it with my own analysis and I say, yes, that appears correct.

Q. Do you know -- In your opinion, where is the oil-water contact line in the Dagger Draw area that we're talking about here?

A. I don't have an opinion on that, although I'm not sure anyone can say that.

Q. Do you think that it would be above or below the perforations in your disposal well?

A. Again, I don't have a specific opinion about a specific oil-water contact in the North Dagger Draw field. The evidence that we have seen in the past and still see is that Anadarko made their decision for this disposal well, based on performance in the area, and with that performance they made a decision to drill that well with the well

control that they had.

Q. So it is possible, then, that your disposal could be migrating into producing zones?

A. I would disagree. Let's clarify producing zones and commercially producing zones.

Q. Okay, is it commercially --

A. It has always been our intention that a zone that has 99-percent water -- water productive, while that may contain some oil -- So can you say that that is above the oil-water contact? I would say that we are not perforated above any zone here that would have commercially producible reserves. So there is -- I believe that's referred to as an economic oil-water contact.

Q. If you don't know where the oil-water contact is and you can't point to anything on the logs of your well to show that there is no penetration, I guess I do not understand how you come to that conclusion.

A. State that again, I'm sorry.

Q. How do you come to that conclusion if you cannot tell us where the oil-water contact line is? And if you cannot demonstrate to us on the logs of your own well that there is no penetration from your injections into these upper zone, how can you state that you're not injecting into a commercially productive zone?

A. Again, this is a matter of record, over the last

ten years, eleven years, that the "C" and "D" zones in this area are not commercially productive -- *commercially productive* -- of oil and gas.

So the issue of the exact location of an oil-water contact -- I don't -- Again, I don't know that anyone can state that a distinct subsea depth is an absolute oil-water contact in the North Dagger Draw field, but that the "C" and "D" zones have never been shown to be commercially productive of oil and gas in this portion of the North Dagger Draw field.

Q. Looking at that -- at the same exhibit that you have before you, the Aparejo State Com Number 3 -- it's in the left-hand column -- based upon your experience in this area, what zone is indicated to be productive in this well?

A. The exhibit portrays the zone to be down to minus 4350.

Q. Is that the upper zone or the lower zone or -- "A", "B", "C", "D" -- ?

A. I did not correlate this map. I will not -- I don't have an opinion. However, I think we heard testimony that did not state conclusively that perforations at minus 4350 were productive of oil. There is no discrete test of that particular zone.

MR. TURNER: I have no further questions.

EXAMINER STOGNER: Thank you, Mr. Turner.

Mr. Carroll?

MR. ERNEST CARROLL: I have no questions, Mr. Examiner.

EXAMINER STOGNER: Any other redirect, Mr. Bruce?

MR. BRUCE: Just one quick one, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. BRUCE:

Q. The Aparejo well that was just mentioned, do you have any idea how far away that is from the Dagger Draw SWD Number 1 well?

A. That -- Should be a map on here. That would be spot A. It looks to be approximately one and a half miles north of our well.

MR. BRUCE: Thanks. Nothing further, Mr. Examiner.

EXAMINER STOGNER: Thank you, Mr. Bruce.

No further questions of this witness? You may be excused.

Do you have anything else to present, Mr. Bruce?

MR. BRUCE: I have nothing further, Mr. Examiner.

EXAMINER STOGNER: Mr. Carroll?

MR. ERNEST CARROLL: I call Brent May to the stand.

May I proceed, Mr. Examiner?

EXAMINER STOGNER: Oh, yes, please, Mr. Carroll.

BRENT MAY,

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

DIRECT EXAMINATION

BY MR. ERNEST CARROLL:

Q. Would you please state your name, place of residence and occupation?

A. My name is Brent May. I live in Artesia, New Mexico. I'm a geologist with Yates Petroleum.

Q. Mr. May, are you familiar with the matters contained in this Application that has been filed by Nearburg that the Examiner is presently hearing?

A. Yes, I am.

Q. Are you -- With Yates Petroleum, your duties, do they include the area of responsibility of this area of concern that this Application is dealing with?

A. Yes, I do.

Q. Mr. May, have you had your credentials as a petroleum geologist accepted?

A. Yes, I have.

MR. ERNEST CARROLL: Mr. Examiner, I would tender Mr. May as an expert in the field of petroleum geology.

EXAMINER STOGNER: Are there any objections?

Mr. May is so qualified.

Q. (By Mr. Ernest Carroll) Mr. May, you've prepared

certain exhibits, have you not, for presentation?

A. Yes, I have.

Q. First of all, would you turn to Exhibit 1? And if you would identify that for the record and then explain its significance for the case.

A. This is basically an ownership map of the area in dispute in North Dagger Draw of 19 South, 25 East. It shows nine sections, and each section is divided up into four 160 proration units.

You notice some coloring of the corners. I might just briefly add what that is. Yates Petroleum is signified in the upper right-hand corner. If the corner is colored, they are designated the operator. And also the number in the corner is the percentage that they own.

I believe Nearburg's designation is in the lower left-hand corner, and again, if that corner is colored that signifies operatorship of Nearburg.

Q. Mr. May, with respect to the northeast quarter of Section 21, the proration unit in which the Osage saltwater disposal well operated by Yates falls, we see in the upper right-hand quarter, which is green, a number 48. Does that signify that Yates Petroleum is, one, operator, because of the color, and, two, that it has 48 percent of the ownership of the working interest?

A. That is correct.

Q. And in the lower left-hand, 46, that shows or signifies that Nearburg has 46 percent?

A. That is correct, and then the number in the upper right-hand [*sic*] corner, the 6 signifies Conoco's interest in that 160.

Also I might point out that also the black well spots are, again, operated by Yates, the purple operated by Nearburg, blue operated by Conoco, and yellow means all others, all other operators.

Q. Anything else that you would like to point out with respect to Exhibit Number 1?

A. I believe that's all.

Q. Would you turn to your Exhibit Number 2 and again identify this for the record, and then if you would discuss its significance to Yates' case?

A. I'd like to discuss Exhibit 2 and 3 together.

Q. All right. If you would identify both for the record, though, so that it's clear as to what each exhibit is.

A. Both Exhibits 2 and 3 show -- explain why Yates and Anadarko have operated these SWDs within Dagger Draw, to try and give a history of why these SWDs were put into Dagger Draw.

Looking specifically at Exhibit 2, it shows the producing wells within North and South Dagger Draws, as of

February of 1989. I picked February of 1989 because that's when Yates Petroleum converted the Osage into an SWD.

The two heavy black lines show the extent of the Canyon dolomite. They're the zero dolomite lines.

The green circle denotes location of the Osage SWD, and the purple circle shows the location of Anadarko's Dagger Draw SWD location.

All the red dots within those black lines within the dolomite zero line are Dagger Draw-Upper Penn producers. There are some gas-well spots in there too, and most of them are Morrow wells.

Any wells outside of the two black lines do not produce from the North Dagger Draw-Upper Penn Pool.

Exhibit 3 is just the same as Exhibit 2, except it shows the present-day situation, and you can see the vast difference in the amount of wells in North and South Dagger Draws.

As I stated before, the main purpose of these exhibits is to explain why Yates and Anadarko have disposed water into the Canyon dolomite, when production is now in the area of those SWDs.

Again, in February of 1989, looking at Exhibit 2, there's very few Canyon producers in the localized area around the two SWDs. The dramatic development of the Canyon dolomite began approximately in 1989 in North and

South Dagger Draws, but it started mostly in South Dagger and the southern portion of North Dagger Draw. And then that development proceeded into North Dagger Draw and is currently extending to the northeast.

The Yates Osage SWD was converted at a time when very little was known about Dagger Draw, you look at the amount of wells in 1989, and there's very few. We had a small amount of knowledge about Dagger Draw. In fact, the Osage, before Yates took it over, Anadarko operated it and produced oil and water out of the Canyon dolomite. They produced approximately 15,000 barrels of oil and a little over half a million barrels of water.

Q. Mr. May, let me ask you one question. Anadarko was not the first operator of that well, was it?

A. No and I can discuss that -- I've got a cross-section showing the Osage, and I can go further into that in the cross-section. But no, I believe Coquina originally drilled that well.

Q. To your knowledge, did Coquina try to test the Canyon?

A. They ran a DST but never ran pipe. They plugged the well.

Q. All right. So at the present time, then, Yates is the third operator of this particular well?

A. Yes, that's what I understand, yes.

Q. I just wanted to make that clear. I'm sorry, if you would continue on with your discussion.

A. Okay. I just wanted to state that in February of 1989, both the Yates Osage SWD and the Anadarko Dagger Draw SWD were structurally downdip of the existing production shown on Exhibit 2. This fact, along with the high water cut from Anadarko's production out of the Osage, led to the assumption that the area was structurally too low to produce and thus would be a good area to dispose produced water.

Approximately in the fall of 1993 when production got within a mile of the Yates Osage, Yates curtailed their disposal into the Yates Osage SWD.

Q. Is it Yates' position at this time to abandon this as a saltwater disposal well, Mr. May?

A. No, it is not.

Q. What is Yates' official position, if you know?

A. We stand that we have a good SWD permit issued from the OCD, and we want to keep it.

Q. We may be getting ahead of it, but just so that we know and the Examiner knows where you're going, is it Yates' official position that the Canyon in this area -- Is it the position of Yates that the Canyon in this area is not being harmed by disposal of water?

A. We have seen no data to support that.

Q. To support the fact that harm is occurring?

A. Yes, we have seen no data to support that.

Q. All right. If you would continue on. Again I apologize.

A. I think that's it for Exhibits 2 and 3.

Q. All right. The next, Exhibit 4, if you would identify it for the record and then explain its significance.

A. This is a structural cross-section, A-A', in the North Dagger Draw area. It covers the -- most of the Canyon or what the State officially calls the Upper Penn section. Note that there's a location map in the lower right-hand corner showing the trace on this cross-section.

Again, as I said, it is a structural cross-section. The datum is a minus 4000 subsea. The top of the Canyon limestone is marked, along with the top of the Canyon dolomite and the base of the Canyon dolomite. And the top and bottom of the Canyon dolomite, which is the reservoir out here, is shaded in purple to highlight Canyon dolomite.

Q. This is basically an east-west cross-section; isn't that correct?

A. Basically, yes.

Q. And you will have another cross-section which travels the north-south?

A. I'll have a different cross-section.

Q. Different cross-section, all right.

A. Just starting from the left-hand side, starting with the Conoco Jenny Com Number 1 in Section 17 of 19 South, 25 East, this is a Canyon producer, out of the Canyon dolomite. Again, Conoco is the operator.

And below each well I have put down the water-oil ratios, and those are based on cumulative production.

The water-oil ratio for this Jenny Number 1 is 37.3, and that is in -- that is about two miles -- well, a little over two miles away from the SWDs.

The next well in the cross-section, the Yates Petroleum Ross "EG" Federal Number 6 in Section 20 of 19 South, 25 East, again is a Canyon producer, and the water-oil ratio is 5.0 on it, so it's better.

The next well is the Yates Petroleum Corp. Ross "EG" Federal Com Number 10, again in Section 20 of 19 South, 25 East, again a Canyon producer, water-oil ratio of 20.5.

I might just add that I am working from the northwest over towards the SWDs.

The next well is the Yates Petroleum Hooper "AMP" Number 2 in Section 21 of 19 South, 25 East. This is on the west side of Section 21. It's again a Canyon producer and has a water-oil ratio of 3.4.

Then we come to the Yates Petroleum Osage SWD Number 1, Section 21. This well was originally drilled by Coquina and plugged in 1973. Anadarko re-entered in 1982 and perforated the Canyon Dolomite and did produce it and made -- again, as I stated before, it made around 15,000 barrels of oil and over a half a million barrels of water.

In February of 1989 Yates converted it to an SWD and opened up some more perforations, which are shown. Water-oil ratio is calculated from Anadarko's production at 36.4.

The next well is Anadarko's Dagger Draw SWD Number 1, and this well was never completed in the Canyon dolomite. It's always been an SWD.

The next well is the Nearburg Ross Ranch 22 Number 2 in Section 22 of 19 South, 25 East, again showing its perforations. It's the Canyon producer, and it's the one that Nearburg has talked about earlier in this hearing. Its water-oil ratio is around a 68.5.

And the last well in the cross-section is the Nearburg B&B Number 1 in Section 22 of 19 South, 25 East, and a Canyon dolomite completion was attempted in this well. I think there was only about a month of production, if that's correct, but the water-oil ratio in it was 116.9. I believe it's not currently producing, if that's correct.

With that -- and I want to stick with this

Exhibit Number 4, but I'd like to go ahead and introduce Exhibit Number 5 and discuss the two together.

Q. What is Exhibit 5?

A. Exhibit 5 is a structure map on the top of the Canyon dolomite in this area. The trace of the cross-section is shown, the structural cross-section, A-A'. Contour interval is 50 foot with 100-foot intervals being denoted by the colors. The Osage and the Anadarko SWD are designated on the map. You can see there's a general northeast-plunging, northeast-northwest anticline through the area.

What I want to show with these two exhibits is that structure does not tell you what your water-oil ratio is going to be out in Dagger Draw. You just can't draw any conclusions on your oil-water ratios from the structure. You look at the -- from the cross-section, the varying oil-water ratios through here, and when you look at the trace of the cross-section on the structure map, the Conoco Jenny Com Number 1 is a fairly high well, structurally high well, with a fairly high water-oil ratio.

You go downdip to the Ross Number 6, and it has a much better water-oil ratio. You go back upstructure to the Number 10, the Ross Number 10, and it has a poor water-oil ratio. Then going over to the Hooper, you're going back downstructure, and it has a better water-oil ratio.

You head over to the Osage, it has a poor one, and it's almost on the crest of this nose, structural nose. And then you go on over to the Ross Ranch 22 Number 2 and the B&B Number 1, and they have very poor water-oil ratios.

So what I want to show is that structure does not tell you a thing about water-oil ratios out in Dagger Draw. You can drill a good well with a good water-oil ratio and offset it and make a high water-oil ratio, and structure is not dependent on it.

Q. Mr. May, with respect to that, there has been some reference, at least in the Application filed by Nearburg, that you should be able to take the average of these wells drilled out here and predict from that average what kind of well the Ross Ranch should have been. Do you hold with that kind of an analysis?

A. No, I do not. Based on structure, you cannot predict a water-oil cut on any well in Dagger Draw.

Q. All right. And --

A. Also, I'd just like to comment on a statement that Mr. Elger made, that he felt like the only reason the Ross Ranch 22 Number 2 had a high water-oil cut was because of interference from the SWDs. That may be a possibility, but there are other possibilities. The other possibilities are that the formation at that location just has a high water-oil cut.

Another thing, that engineering can get into, but there's been times where Yates has perforated in the Canyon dolomite and things didn't go quite right, and we channeled down too low and got into the, quote, what I call the big water.

And so there's more than one explanation for why the Ross Ranch 22 Number 2 has a high water-oil cut.

Q. Mr. May, in looking at your cross-section on Exhibit Number 4, there appears to be, because of the way you've drawn the Canyon dolomite, there's a possibility of some fingering. Is that true in this area?

A. That does occur in places, yes, it does, and the Ross Ranch Federal Com Number 10 shows that.

Q. Okay. How could that affect and what -- This fingering of the productive zones in this dolomite, what role would that play? How could it affect whether or not you've got a productive well or not?

A. The fingering can act as a stratigraphic trap sometimes. Sometimes.

Q. All right. Could that be part of the reason that sometimes you get some very good wells, say, for even the Cutter well?

A. That would be a partial reason for why you had a good well versus a bad well. That would be one of the many reasons why.

Q. All right. Anything else that you would like to explain or bring to the attention of the Examiner with your Exhibits 4 and 5?

A. I would just like to point out that I took the trace of this cross-section through 22, 21, 20 and up through 17. Yates' experience in 20 -- and we operate, I believe, all of 20, and that has been an area where this type of thing has definitely happened. You can drill a good well, offset it in 40 acres, come structurally high, and it's a much higher water cut than the good well further downdip.

So there's -- I'm not saying that all of Dagger Draw is like that, but there is spots like that, you know. It looks like Section 20 is one and possibly Section 21, 22, parts of those could be too, because you go down in Section 29 and 28 and most of those wells are very good wells. But you do run into areas of these pockets where you just can't predict what your water-oil ratio will be. Section 17 is another area like that too.

Q. Are you ready, then, to move to your Exhibit Number 6?

A. I think I'd like to say one more thing about Exhibit 5 --

Q. All right.

A. -- and that's in reference to why Nearburg

drilled their Ross Ranch 22 Number 2 in the location they did.

If an operator is worried about possible effects from an SWD, why do you offset an SWD? And -- Especially when I understand that they operate all of Section 22. Yes, you want to place your well in the best geologic position, which would put that over on the west side of Section 22, but there were other locations they could have drilled that geologically would have worked out and been further away from the SWD, if they're worried about SWD problems.

But they didn't do that. They snuggled up against Anadarko's SWD, and I don't understand why they did that unless they're wanting to take this to a lawsuit and win damages against Anadarko and Yates, against possible locations in the area.

Q. Mr. May, there was an opinion offered that the Osage, the Yates Osage in the southwest of the northeast -- it was offered by Nearburg that this well could very well have been a commercial well. Do you hold with that possibility?

A. With Anadarko producing it the way they did and making half a million barrels of water at it -- Let me put it this way: There's a possibility, but taking that data I would say the possibility is small.

Q. Anything else?

A. That would be it for these two.

Q. All right, turn to the next exhibit, Exhibit 6.

A. Yes, Exhibit 6.

Q. Would you again identify this exhibit for the record?

A. This is a stratigraphic cross-section, B-B', going from North to South Dagger Draw into Indian Basin and into the Indian Basin Associated Pool, which I loosely call East Indian Basin. And if I could go ahead and introduce Exhibit 7, because that shows the trace of this cross-section.

Q. All right. What is -- Is that the only thing Exhibit 7 is, is a trace of the cross-section?

A. No, there's a little more to it than that.

Q. All right.

A. It's a little similar to Exhibits 2 and 3. Like I said, it does have the trace of the cross-section on it. It shows, again, like Exhibits 2 and 3, the zero dolomite line, which are the black lines. And like I said, it does extend from North Dagger Draw all the way into Indian Basin, into what I call the East Indian Basin area.

Shown are all the wells up in the north, Dagger Draw, all the oil wells, also showing all the Canyon dolomite gas producers in Indian Basin, and over into the

Indian Basin Associated Pool, over to the east of Indian Basin, showing the oil and gas wells producing out of the Canyon dolomite.

With that, think I'll go back to the cross-section, Exhibit 6. As I stated before, this is a stratigraphic cross-section, and it's hung on the top of the Canyon, be it whether dolomite or lime. The top of the lime is shown, along with the top of the Canyon dolomite and the base of the dolomite. Again, the top and bottom of the Canyon dolomites are highlighted in purple.

Perforations are shown in all these wells. All these wells do produce out of the Canyon dolomite.

Again, starting from the left and going all the way to the right, it starts with the Yates Osage SWD Number 1 in Section 21, 19 South, 25 East. That is the disposal well in North Dagger Draw. That's the important well on the left.

And I won't go through every well, I'm just trying to show that the Canyon dolomite is continuous all the way from North Dagger Draw and South Dagger Draw into Indian Basin and into the Indian Basin Associated Pool. The cross-section shows that, along with Exhibit Number 7.

Over on the right-hand side of Exhibit 6, the cross-section, is the Nearburg MH Federal Number 1 in Section 1 of 22 South, 24 East. That is a disposal well

into the Canyon dolomite. It is in the same Canyon dolomite that produces in all of those pools, and they are disposing water into the Canyon dolomite.

The next well just to the left of that is the Nearburg Big Walt 2 State Number 2, in Section 2 of 24 South, 24 East. That well produces from the Canyon dolomite.

So in other words, Nearburg is doing the same thing in the Indian Basin Associated Pool that Yates and Anadarko are doing up in North Dagger Draw. Nearburg is before the Commission today asking to rescind the SWD permits of Yates and Anadarko, when they're doing the same thing in Indian Basin.

Q. Anything else that you'd like to tell the Examiner on the basis of Exhibit 6 and 7?

A. I think that should do it.

Q. Your next exhibit is Exhibit 8.

A. Oh, yes, Exhibit 8 is just showing the sundry notice of Nearburg's SWD in the Indian Basin Associated Pool, in Section 1 of 22 South, 24 East.

Q. Mr. May, there's been some testimony rendered by Nearburg's experts that -- and it deals with the oil-water contact point, and apparently there's some real significance given to the location of this. Do you -- Having heard this testimony, do you agree or disagree with

the way it's been portrayed in the testimony before the Examiner?

A. In Dagger Draw in the Canyon dolomite, there is not a true, distinct oil-water contact. It's not anything you can put your finger on. It can be gradational in most of the areas.

Also, it changes structurally in different areas of the field. So sometimes it -- you can put your -- because all these wells in the Dagger Draw produced oil and water, all producers make a lot of water. You finally get to the point where you get out of the oil and into the water.

But it's a -- sometimes a gray zone, you can't put your finger on it. You can sometimes feel like that you have a range of where you think it's at, and sometimes your bottom perf, you're afraid to go below that. But you don't know, sometimes, how low you really can go.

And I'd just like to say there is not a true oil-water contact in Dagger Draw, not in the true sense of the word, where you can pick out a footage on a log and say that's the oil-water contact. That does not work in Dagger Draw.

Q. Mr. May, do you have an opinion as to whether or not Nearburg has demonstrated geologically that the Ross Ranch 22 should have been a commercial producer based on

the evidence presented?

A. No, I don't believe Nearburg has shown any data to support that the area around the SWD should have been commercial production.

Yes, they could have been productive. And yes, maybe the SWDs may be affecting. But also they could be just at the high water-oil ratios, that's what the formation is going to give up. There could also be completion problems. There's more than one answer to this problem.

Q. Do you have an opinion as to whether or not Nearburg, on the basis of the evidence presented today, has shown from a geologic standpoint any actual damage from the injection of saltwater from the Yates Osage well?

A. No, I don't think they have.

Q. Do you have an opinion with respect to whether or not the granting of this Application by Nearburg -- how that would affect Yates' correlative rights and -- First of all, with respect to correlative rights?

A. If it was granted, I believe it would infringe upon Yates' correlative rights.

Q. All right. Do you feel that the granting of Nearburg's Application would prevent waste or be in the interests of preventing waste?

A. No, I don't.

Q. Mr. May, with respect to your testimony, are there any issues that I have failed to ask you, or is there -- that you wish to testify about?

A. I think that's all.

MR. ERNEST CARROLL: Mr. Examiner, I would move at this time admission of Yates Exhibits 1 through 8.

EXAMINER STOGNER: Exhibits 1 through 8 will be admitted into evidence at this time.

MR. ERNEST CARROLL: And I would pass the witness.

EXAMINER STOGNER: Mr. Turner?

CROSS-EXAMINATION

BY MR. TURNER:

Q. Mr. May, you stated that Yates operated the Yates disposal well from approximately 1989 to 1993 rather continuously?

A. That's what I understand, yes.

Q. And that in -- sometime in 1993 Yates curtailed its injection into its disposal well; is that correct?

A. That's correct.

Q. And why did that curtailment take place?

A. As I stated before, the production was marching in North Dagger Draw to the northeast. It got within about a mile of the Osage. And yes, Yates did have some concerns that there could be possible problems with the SWD. We did

not know. So, being conservative, we decided to curtail the injection.

Q. Okay. Would you -- Those concerns were based upon what considerations?

A. The only thing they were based on is that production was moving towards an SWD, and that's the only data we had. We had not data proving that there's problems from the SWD, but we were being conservative.

Q. If you were certain that no damage was being done by injection into your disposal well, since that's the one that you control, you would have made no change in your disposal practices into that well?

A. If we knew absolutely that there was no problem, yes. I might add, though, that we have been slowly drilling wells closer to the SWD, and the closest wells, many of them right now are very good, and we will continue to drill even closer to the SWD.

I am in no way implying that Yates says that there is a problem with the SWD. Being a prudent operator, we recognize the possibility, but we also recognize the other possibilities that could be affecting the Ross Ranch 22 Number 2.

Q. But you do at least recognize that there is -- the potential exists that damage to this productive formation could have taken place and could continue to take

place?

A. Only a possibility, and there is no data to support that, that I've seen so far.

Q. But yet Yates was at least concerned enough about it to more or less cease injecting into this well in 1993?

A. We were concerned about the possibility.

Q. You testified that you had some question in your mind about the reasoning behind Nearburg's decision to drill its Ross 22-2 well so close to the Anadarko well. What gave rise to this concern about why they drilled that well at that location?

A. Again, like I stated earlier in my testimony, if you're an operator and you're concerned about possible effects from an SWD, why do you offset an SWD when you have other locations to drill?

A. If you were in a position of making the decision on where to drill wells in this area, given the existence of these two saltwater disposal wells, would your decision to some extent be motivated by proximity to these disposal wells?

A. Some of it would, yes. And we're doing that right now because we are currently drilling wells around the SWDs and we are currently marching towards them with production. We're not going to jump out with a huge stepout and offset one unless there's a specific reason to.

And not geologic, but maybe landwise. But we are going to march 40 by 40 towards the SWDs.

Q. In the preceding proceedings that took place regarding the establishment of these two saltwater disposal wells, there was some thought and maybe some testimony that this formation was not commercially productive in this area. Would you, based upon what you know now, agree or disagree with that thought?

A. As of now?

Q. As of now.

A. As of now, I do not know. That's why we're taking -- that's why we're stepping out 40 at a time and drilling wells in this area.

But also as I stated, the closer you get to the SWDs, yes, there's -- you could be concerned about possible problems. But you -- Like I also showed, we're concerned about the high water-oil cuts, and so we'll be taking this conservative step one at a time.

As I showed through Section 20 and 21, there's a possibility of making a good well and offsetting a poor well. But we feel like that there could be still productive reserves around in the area, that -- because the SWDs may have not affected the offsets.

Q. In that regard, would your concern as an operator in this area be limited to just the proximity of wells that

you might want to drill to the saltwater disposal wells?

A. Not just on that one fact, no. As I stated, there's a problem with the sporadic water-oil ratios in the other area, so you have to be concerned about that. You always have to be concerned about losing part of your pay. That can always happen in Dagger Draw, because the Canyon dolomite is formed through a diagenetic process, and it's very hard to predict that. So there's many factors involved in it.

Q. At this time, does Yates have plans to drill additional wells in this area?

A. Sure.

Q. Where are those wells -- Where would those locations be at this time?

A. I believe many of my exhibits and Mr. Elger's have shown locations. We have locations all through Section 21, many locations in Section 16, like I said, and that's because we believe that there's a possibility there is no problem from the SWDs and that we possibly could get up next to the SWDs and make productive wells.

Q. But in making these decisions to go forward and drill additional wells, you do have a concern that there could be some possible damage to this producing --

A. A prudent operator would.

Q. Do you have concerns about -- Given the fact that

Yates, as a prudent operator and to be safe, as you put it, made the decision in 1993 to curtail injection into your saltwater disposal well, but Anadarko is continuing to dispose into its well, do you have concerns about what impact that the water injected into the Anadarko well might have on future wells that you might want to drill in Section 21?

A. It's the same thing, that there's always that small possibility that there could be a problem from it. But there's also a possibility that there's not, and that's not the only controlling factor of whether you have a good well or not in the area.

Q. You testified also about the Nearburg disposal well in the -- Is it the Indian Basin area?

A. I believe it's in the Indian Basin Associated Pool, but east of the old Indian Basin field, in Township 22 South, 24 East, yes.

Q. Approximately how far is that from the disposal wells that we're talking about today?

A. That is several miles to the south, but it is in the same Canyon dolomite, and it produces all the way down there.

Q. Are there any differences in the production, the type of production that exists down in the area of the Nearburg saltwater disposal well?

A. Some of the wells are a little more gassy, and some of the water cuts are a little bit higher, but there's still oil, water and gas production -- in the Indian Basin Associated Pool. And they're all out of the Canyon dolomite.

Q. Does that result -- Is there possibly a different drive mechanism in the Indian Basin area than there is in the area that we're talking about?

A. I couldn't answer that. That's a good question at this point.

Q. Do you know anything about the shows or lack of shows of hydrocarbons in the Nearburg saltwater disposal well?

A. I believe Nearburg -- if I remember correctly -- It seems like they tested it, but I can't tell you exactly what they got. But evidently it was not very good, because they didn't turn it into a Canyon producer; they converted it to an SWD.

Q. But in any event, it would not be your testimony that you would be concerned about any effects from disposal in the Nearburg saltwater disposal well on any production in the area of the two saltwater disposal wells that we're here about today?

A. As far as the Nearburg disposal well at Indian Basin?

Q. Right.

A. Concerned about production -- concerned about effects from it around surrounding production? Yates did not contest Nearburg's SWD permit, and we have never asked them to stop disposing water into it.

Q. And if you had such a concern, you would probably be here at the Commission doing the same thing that Nearburg --

A. I'm sure we they would have heard something if we did.

MR. TURNER: No further questions.

EXAMINER STOGNER: Mr. Bruce, any questions?

MR. BRUCE: Yes, just one.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. May, there's been some discussion of vertical communication between the upper and lower Canyon. Do you have any opinion on that?

A. If the specific zone that Mr. Sundland was talking about -- If I understand right, looking at the cross-section, understand that's the correct one I was looking at, that does appear to be a very tight dolomite, it appears like it could be a barrier.

Q. Kind of in the middle of the Canyon and the Anadarko well?

A. Yes, sir.

MR. BRUCE: Thank you.

EXAMINER STOGNER: Any other questions of this witness?

MR. ERNEST CARROLL: No.

EXAMINER STOGNER: You may be excused.

Let's take a ten-minute recess.

MR. ERNEST CARROLL: Mr. Examiner --

EXAMINER STOGNER: Yes?

MR. ERNEST CARROLL: -- I had planned to call a land witness. I don't think that there's any need for it unless you have a specific land question. I offer Kathy Porter that ability, and if you do not have a question, then we have finished our presentation before --

EXAMINER STOGNER: Oh, I'm sorry, I thought you had three witnesses.

MR. ERNEST CARROLL: Well, I did have three -- This is my -- Oh, excuse me, I haven't put my second witness on. But I want to tell you -- I'm getting in a hurry. But I don't plan on putting on all three witnesses. I want you to know that. So that I really just have one more witness to complete my presentation.

EXAMINER STOGNER: Okay, let's take a short ten-minute recess.

(Thereupon, a recess was taken at 3:35 p.m.)

(The following proceedings had at 3:45 p.m.)

EXAMINER STOGNER: Hearing will come to order.

Mr. Carroll?

MR. ERNEST CARROLL: Thank you, Mr. Examiner.

EXAMINER STOGNER: Oh, in answer to your question before we went on break, I don't see there's a necessity for a landman, unless you do.

MR. ERNEST CARROLL: I don't, and if you have nothing, then that will be quite fine. We will dispense with calling a land person.

EXAMINER STOGNER: Okay.

ROBERT S. FANT,

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

DIRECT EXAMINATION

BY MR. ERNEST CARROLL:

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

A. My name is Robert Fant. I live in Artesia, New Mexico. I'm a petroleum reservoir engineer for Yates Petroleum Corporation.

Q. Mr. Fant, as part of your duties have you become involved with the Dagger Draw area of southeastern New Mexico?

A. Absolutely.

Q. And are you familiar with the Application now pending before this Examiner, filed by Nearburg Exploration Company?

A. Yes, sir, I am.

Q. And have you had your -- had an opportunity to testify before the Division and have your credentials accepted as an expert in the field of petroleum engineering?

A. Yes, sir, I have.

MR. ERNEST CARROLL: Mr. Examiner, I would tender Mr. Fant as an expert in the field of petroleum engineering.

EXAMINER STOGNER: Are there any objections? Mr. Fant is so qualified.

Q. (By Mr. Ernest Carroll) Mr. Fant, you have prepared certain exhibits for presentation today, have you not?

A. Yes, sir, I have.

Q. Why don't we begin with your first exhibits? I think you've got three or four that should be looked at in unison; is that correct?

A. Well, I've got three maps here that we can look at in sequence, and I think we can just take them one at a time and then --

Q. They're Exhibits 9, 10 and 11?

A. Yes, sir, they sure are.

Q. If you would start with 9, then, and be sure and describe for the record what each exhibit is and then discuss its significance.

A. Okay. Exhibit Number 9 is a map plat of the -- centered at Section 21, Township 19 South, 25 East, and the eight surrounding sections.

The particular data that we're looking at here on this map plat is the producing wells in the Cisco/Canyon as of roughly February, 1989. That's when Yates Petroleum commenced injection in the Osage Number 1.

On this map there are presented near -- just above and to the right of each well a number, some in black, some in red, and that number represents the water-oil ratio for that well, and it's the water-oil ratio in the second month of production.

I used the second month of production because I wanted a value that was apples and apples for each well. Most of the water-oil ratio data that's been presented here today has been related to cumulative water-oil ratios. I'm going to present some statistical data, and because of that statistical data I wanted to be sure I was making essentially the same measurement on each well, so I took the second month of production to do that.

I resist using the first month of production as

my analysis point, simply because oftentimes the first month of production is only a partial month, and the first month of production oftentimes has oil that was produced on the completion, but it doesn't include the water that was produced during the completion. So I was concerned about the validity of the first month of production to be representative of how the well produced.

So again, I used the second month of production. That's what that water-oil ratio value -- Some of those values are in black, some are in red.

The particular breakover point, changing from black to red, is a 40 water-oil ratio. The reason I chose that number is because that is a water-oil ratio at which -- well, when your water-oil ratio is below 40, you can afford to lift the fluid and pay the 25-cent-per-barrel disposal charge. When the water-oil ratio is above 40, you cannot afford to do that, based upon lifting and disposal costs. That's the reason for the breakover.

And this particular map is primarily presented to show that the nearest production to the Osage Number 1, when it was placed on, the nearest economic production, was over here in Section 17. There's four wells up there, and they're about -- you know, over a mile away, about a mile and a quarter away, you know, just a long way -- quite a distance away. I think it's almost exactly one and a

quarter miles to those wells.

Now, there are some colors on this map. The color is indicative of the operatorship. The green proration units are operated by Yates Petroleum Corporation, the blue are operated by Conoco, the magenta or kind of purplish color are operated by Nearburg, and the yellow are operated by other entities. And I think this correlates fairly well with Exhibit Number 1 in terms of the operatorship.

Now, I just wanted to -- on this one I wanted to present -- This is what was there when the Osage Number 1 was put in. That's basically all I have on that one.

If we want to move to Exhibit Number 10, this is the same basic map, same area, around the time frame of September, 1994. As you can see, there's been significant development in the western half of this map up to this point, and there's been a little bit more development over in the eastern half.

But you'll note, I do -- The reason I picked this particular time frame is, this is about a month before Nearburg spudded the Ross Ranch 22 Number 2 in Section 22, and I do have a location picked for that well.

The interesting thing to note on this one is that the three -- if you go to the -- If you're centering your look on the Ross Ranch 22 Number 2, if you go to the west,

you come across the Osage Number 1, which in its second month of production had a 49-to-1 water-oil ratio. If you go to the east of the Ross Ranch 22 Number 2, you run into the B&B Number 1, which had a 117 water-oil ratio. If you go south, you go to the South Boyd 27 Number 1, which had a water-oil ratio of 99. And that is in parentheses because the only data I had available to me was the initial potential of that well, and so I wanted to specify that that's not -- that's kind of a separate point, and it's based on the initial potential.

But the three offsets to that well are extremely high water-oil ratio wells at the time that well was drilled.

Q. Let me ask you one question, Mr. Fant.

A. Sure.

Q. These are -- The water-oil ratios that you're looking at are just for the second month of production; is that correct?

A. Just the second month of production.

Q. Is it true that as these wells are produced, that water-oil ratio goes up?

A. In many instances it goes up, in some instances it might even go down. But going down is not a common occurrence. Most of the time it will go up slightly. I just wanted to stick with the second month strictly to be

consistent among all wells.

Q. Okay. So that if we looked at some of these wells on another exhibit which showed the cumulative water-oil ratio, you would have a different number, would you not?

A. It will be slightly different from the cumulative number. And that -- Yeah.

Q. I just wanted to make sure that was correct.

A. Yeah, I definitely -- Yeah, that is a valid point.

Now, if we move on to Exhibit Number 11, it's the same basic kind of map for August of 1995.

Now, I want to point out at this point, right now, that there are, I guess, two wells down in the northwest quarter of 27 that Nearburg has recently drilled that I did not have data that I was privy to. So -- I didn't have those on there. I didn't even know they were completed. So that's not there.

But the majority of the wells on this particular map are operated by Yates Petroleum, and I did have the data on that. And this was just an attempt to bring people up to date on what the water-oil ratios are like.

Mr. May indicated that in Section 20 we see some varying water-oil ratios, and I'd like to just point out the southwest quarter of Section 20. There's four wells in

the southwest quarter of Section 20, and we have water-oil ratios ranging from a low of 1.7 to a high of 13. You know, so within that one little bitty 160-acre proration unit there's significant variance, or variability, in the water-oil ratio.

Section 28, they also mentioned that there was this structural feature down in Section 28 -- this was mentioned by, I believe, Mr. Elger -- and that those wells produced at a much lower water-oil ratio than other areas. And that's true in some of those wells, they do.

But if you'll notice, the four wells surrounding the 28 right there in the middle, you've got them ranging from 0.51 to 7.2. Again, a tremendous variance of the water-oil ratios in that area. You know, so -- You know, that's basically what I'm trying to present here, you know, is this is what's happening now and that there are places where we have good wells directly offsetting poor wells. And that's about all I want to say --

Q. In your opinion, Mr. Fant, is there any validity to the assertion that you should be able to take the average of all these wells in the North Dagger Draw field and predict with any kind of reliability what the Ross Ranch 22 would have been?

A. Absolutely not, and I have some later exhibits that will demonstrate that, I hope, very well.

Q. All right. Is there anything else that you would like to discuss with respect to these first three exhibits?

A. No, just that they are the water-oil ratio in the second month of production, and they will differ slightly.

Q. All right. If you would turn to your Exhibit Number 12, would you describe what that is for the record and its significance?

A. Okay, Exhibit Number 12 is a plot of the water-oil ratio -- Excuse me, not the water-oil ratio, the water cut. Previously I've been talking about water-oil ratio, the ratio of water divided by oil. In this particular plot I'm looking at the percentage of oil cut, okay?

The X axis is the percentage of oil that we -- and most of this data comes from Yates Petroleum, because we quite frankly operate most of the wells in this area. We look at the -- On the X axis, the percentage of oil cut during swabbing or flowing, during the initial completion of the well, versus, on the Y axis, the percentage of oil in the second month of production.

And the reason I present this is, statements were made -- or -- and -- you know, not specifically, but there was inferences that a low oil cut in the initial -- on the swab tests relates to a high oil cut on production. And, you know, I mean this data is all over this plot. It's -- there's -- The data basically specifically says that

conclusion can't be drawn, there is no correlation here. And so that basic conclusion is not a valid conclusion. And that's basically all this is designed to present.

There's two red dots on here that happen to be two data points from Nearburg wells.

Q. Anything else on Exhibit 12?

A. Nothing.

Q. Would you turn to and identify Exhibit 13?

A. Okay, Exhibit 13 is -- I sat down and said, what -- If damage were to occur, what would have to be proven to support a case for damage? And I came up with basically three points that needed to be proven by the Applicant, that I felt needed to be proven.

Number one, you must reasonably demonstrate the cement and casing are sound. The cement must be proven to be isolated in the completion interval from potential water-bearing strata, both below and above. I don't believe any data has been presented to -- They talked about a bond log. Bond logs are very subjective, and I don't believe any data has been presented to show that.

Secondly, it must be reasonably proven that the completion attempt did not establish -- that they did not establish communication "behind the pipe", or behind the cement, with a water-bearing zone. They have not presented any data on that.

And third, and probably -- You know, if you could even remotely prove the first two, you've got to prove the third, which is, I believe, the crux of my argument coming up. You must reasonably demonstrate that you can predict what kind of water-oil ratio the Ross Ranch 22 Number 2 should have produced at, based upon some measured value in that well. And it's got to be a measured value that's unaffected by any possible water injection.

And two examples of this would be like structure or thickness of the dolomite. I mean, the structure of the dolomite is not going to change based upon how much water is injected or anything like that.

And in fact, that's what they have attempted to tie their case to, is that the water-oil ratio that they think the Ross Ranch 22 Number 2 should have been able to produce at is a function of structure. They have tied that to that, and I've got some evidence to dispute that, and I think it's very strong evidence.

So basically, these are the three points that they must prove in order to have a case, and I don't believe they've proven any of them, and I will come back and summarize again on that in just a few minutes.

Q. All right. Exhibit 14, then, if you'd turn to it?

A. Okay, Exhibit 14 is a plot to show the comparison

of -- Exhibit 14 is a plot to show the comparison of what the water-oil ratio is in the well versus structure. Again, this is the water-oil ratio in the second month of production, just like I've been presenting in all of my data. Again, every well basically has a second month of production.

Now, they have -- Nearburg has claimed that the water-oil ratio is related to structure. These data points are for all wells in Township 19 South, 25 East. And again, they're coded by -- The color codes are by operator, and there's a code along the bottom showing which operators are which color.

The thing to note here is, I do have a correlation line through it. I mean, you can take any data set and you can develop a correlation on it. The question is, how good is that correlation?

The measure of how good that correlation is, is a number called the R-squared value. I don't want to go too deeply into the statistics, but it's just a coefficient. Zero is no correlation at all and one is a perfect correlation.

This one has a 0.051 correlation coefficient, which is extremely low. Somebody might say, Well, you've drawn a correlation; how bad is that? And that was the question I had: How bad is that correlation? I mean, or

how random is that correlation?

And if I could refer to Exhibit Number 15 along with it, Exhibit Number 15 is the same basic kind of plot, only this plot is generated with purely random numbers. I just went into a spreadsheet and had it generate random numbers for oil production and water production and take the ratio of those two and give me random numbers for depth between minus 4000 and minus 4250. This is the plot, this is the correlation it gives, and its R-squared value or its correlation coefficient is .0189.

The important thing here is, those correlation coefficients are about the same. This data -- When you're trying to correlate water-oil ratio to structure, it's random function. That's just all there is to it. It's just a random function. You cannot predict water-oil ratio on the basis of structure. There is no -- The data says that you cannot do that.

So attempting to do that on a -- Attempting to do that is a violation of the statistics of this stuff; it just doesn't hold true. It violates what we know to be true about the statistics here. And, you know, that's basically what I wanted to show there, is that there is no correlation between structural depth and water-oil ratio.

Q. Mr. Fant, paragraph 9 of the Application that was filed by Nearburg states that a typical well in this area

of the pool is capable of producing oil in paying quantities from the Cisco/Canyon formations at an estimated initial water-oil ratio of 2.33 to 1. Do you believe that there is any validity or truth to that statement?

A. I don't believe there's a typical well out there. I don't think there's such a thing as a typical well in Dagger Draw. I think that is a false statement.

Q. The two exhibits you've just been discussing illustrate that, do they not?

A. They illustrate that, and the two that I have remaining also illustrate that.

Q. All right.

A. Exhibit Number 16 is a sheet with some typing on it and a little table at the bottom, and it's entitled "Statistics". And I don't wish to get into a theoretical discussion of statistics here, but it is important to look at what this -- what we can glean from this data, this water-oil ratio data, what information -- We know that it's random in terms of the correlation between structure and water-oil ratio. But what do we know about water-oil ratios in there? What can we predict in this area?

And first of all, we need to find out what kind of average we need to be looking for here. I don't know how Nearburg determined their average water-oil ratio for Dagger Draw. They have testified that they didn't --

they -- you know, nobody has testified exactly as to how it was done.

But the first thing you've got to look for is a value called the median value of the water-oil ratio, and that's just simply the value where half the wells have a higher water-oil ratio and half the wells have a lower ratio. The median value for this Dagger Draw data is 2.1, a water-oil ratio of 2.1.

Now, if you're going to use a linear average that I think Mr. McDonald purported was used, to predict the average -- If the linear average and median values are close together, you can use the linear average.

Okay, the linear average of the water-oil ratio data for Township 19 South, 25 East, is a water-oil ratio of 7.8. Obviously, 2.1 and 7.8 are not real close together. So I don't believe you can use a linear average on the data.

I think you must use a logarithmic average, because when you look at the logarithmic average of the water-oil ratio data, it's 2.3. And 2.1 and 2.3 are pretty close together.

Now, again, I come out with an average water-oil ratio of 2.3, which is the value they purported in their Application, and I happen to agree with that. I don't know how they arrived at it. They have not presented testimony

as to how that was done.

But along with knowing what the logarithmic average is, we've got to look at the standard deviation. And this -- I have a paragraph on this page that's outlined -- it's in bold, and it's outlined in black, and I consider this to be a very important set of comments, and I want to just read that.

"These statistics..." that I've just presented to you "...do not provide us with an estimate of the value we should expect when we drill only one well. These statistics do however provide us with the ability to predict the probability of encountering certain ranges of water-oil ratios in any well that is drilled (provided that the data is normally distributed)." Okay, and "The following table shows the ranges of water-oil ratios that can reasonably be expected to be encountered in this township."

I said this data has to be normally distributed. If you look at Exhibit Number 17, Exhibit Number 17 is a plot of something in statistics called the cumulative distribution function, and basically the blue line is a theoretical normal distribution. And if the actual data, which is the green data, falls close to that line then you have a normal distribution and you can make some inferences from that data, we can make some predictions from that data

of what should happen.

This data, as far as a natural data set, falls closer to a normal distribution than anything I've ever seen. It is a very good normal distribution. This includes values, data points on the -- In this water-oil ratio data are included data points on the Osage Number 1, the Ross Ranch 22 Number 2 and also the B&B Number 1. I consider the tests on those to be valid water-oil ratio tests.

Exhibit 17 illustrates that the water-oil ratio data is normally distributed. So we can make some estimates of -- If we drilled a hundred wells in this township -- which, incidentally, we have -- it can tell us what kind of ranges we should be seeing. What is the maximum water-oil ratios that should be encountered out here? I mean, statistically, what should be the ranges we see? And the bottom table on Exhibit Number 16 is that.

It's interesting, they talk about 2.3. If you take the range 2.2 to 2.4, the probability of encountering a well, of drilling a well and it being in that range, is 2 percent, really low. So this -- You know, calling that a typical well -- And in fact, we should only have roughly two wells in the township that are in that range.

Well, you look over on the right side, actual wells in township, there's actually three wells in the

township that are in that range. So I mean, it fits real close, considering we're dealing in integer numbers.

These other ranges -- these other -- you know, between 1.5 and 4, all these other water-oil ratio ranges are presented to show that the data lives up to its normal distribution very well.

It says we should have -- If we look at the water-oil ratio range between 40 and 100, it says there's a two-percent probability and we should have two wells in that range. Well, we have three.

I mean, statistically -- The data says that the water-oil ratio we see in the Ross Ranch 22 Number 2 is going to happen out here. When we've drilled enough wells out here -- and we've drilled 111 wells in this township, or there's 111 valid completion data points. There's actually been more wells than that, just not all of them have been completed in the Canyon. I only took Canyon completions. It says we should have that, that should happen.

So what's happened here from a statistical standpoint is, they've got a well with a high water-oil ratio directly in between two wells with high water-oil ratios. You'd expect it to have a high water-oil ratio. And then they got a high water-oil ratio. And now they're claiming that it's damage from something else. And the

water-oil ratio -- and I want to back up.

The water-oil ratio seen in the Osage Number 1 was prior to any injection. So, you know, it's a valid data point.

It took half a million barrels of fluid out of that well. And so it's -- This particular well, I'm not happy that it's where it is, but statistically it's going to happen if you drill enough wells out here.

And, you know -- You know, that's basically the crux of my case.

But I just wanted to come back to Number 13. They presented no data to show that the casing and the cement was sound. They presented no data about communication, no data about communication behind the pipe. And there is absolutely no correlation between any measurable parameter on the Ross Ranch 22 Number 2 and water-oil ratio. So -- You know, there's just been no proof. There's no data out there to show that there's been any damage.

Q. Mr. Fant, Mr. Elger rendered an opinion that he was of the conclusion that there were no other reasons, other than damage from the injection of saltwater into this Canyon zone for -- to explain why the Ross Ranch 22 had the oil-water ratio. Do you agree with that opinion?

A. No, sir, I do not. There's a myriad of

explanations for that.

Q. Do you have an opinion as to whether or not the Ross Ranch 22, based from your studies of the engineering data available, as to whether or not that well should have been a commercially productive well?

A. On the Ross Ranch?

Q. On the Ross Ranch 22.

A. The data I have said that the probability was that it would not be a commercial well.

Q. With respect to the Yates Osage well, you've reviewed that -- the data from that well and the data that comes from all three operators, Coquina, Anadarko and Yates; is that correct?

A. Yes, sir, I have.

Q. Do you have an opinion as to whether or not that well could have been a commercially productive well?

A. I believe the data evidences the fact that that well was not and is not a commercial producing well. It was a commercial failure.

Q. From an engineering standpoint, have you seen any evidence of damage to the reservoir that was caused or contributed to by either the Yates Osage well or the Anadarko saltwater disposal well?

A. I see no evidence whatsoever.

Q. Do you have an opinion as to whether the granting

of Nearburg's Application would promote the prevention of waste and the protection of correlative rights?

A. No, it's not going to promote the prevention of waste. There is nothing in those two particular tracts that is commercial, that those wells are on.

And as far as correlative rights, if the Application were granted it would violate ours and Anadarko's correlative rights.

Q. Mr. Fant, is there any other statements that you would like to make relative to your Exhibits 9 through 17?

A. Not at this point, no.

Q. Are there any comments that you would like to make with respect to any of the exhibits that Anadarko -- excuse me, that Nearburg presented?

A. I don't believe so.

MR. ERNEST CARROLL: Mr. Examiner, at this time I would move admission of Exhibits 9 through 13.

EXAMINER STOGNER: Exhibits 9 through --

THE WITNESS: Seventeen.

MR. ERNEST CARROLL: Seventeen, excuse me.

EXAMINER STOGNER: Exhibits 9 through 17 will be admitted into evidence.

MR. ERNEST CARROLL: I would pass the witness, then, at this time.

EXAMINER STOGNER: Mr. Turner?

CROSS-EXAMINATION

BY MR. TURNER:

Q. Mr. Fant, you in one of your exhibits enumerated three things that in your opinion we were obligated to prove to make our case here today. It's your Exhibit Number 13. I'm just curious as to what you're relying on to determine what our burden of proof is here today.

A. Quite simply, you're the Applicant, and I'm the -- I'm in opposition to it. In order to put together a good case, you must look at it from the other side. And --

Q. I'm talking about what statutory authority, what rule of the Commission that you relied on in coming to these conclusions?

A. I come to these conclusions -- These are engineering conclusions that -- from an engineering standpoint, and I apologize if that wasn't brought forth, but these are the conclusions from an engineering standpoint, how would you prove this from an engineering standpoint?

Q. You also stated very emphatically that it was your opinion that there was no damage that was occurring from the injection into these two wells; is that correct?

A. I believe my statement was, there's no data to show any damage.

Q. Well, I believe you also said that there was --

these two tracts of land where these two saltwater disposal wells are situated were not commercially productive tracts, there were no hydrocarbons to be damaged.

A. My statement is that those two tracts are noncommercial.

Q. Would it be a fair statement to say that perhaps the management of Yates does not share as strong an opinion as you regarding the lack of damage that could occur out there, given the fact that they more or less ceased injecting into the Yates disposal well in 1993?

A. No, I don't believe that's a fair statement. We ceased injection. We are at this point waiting, and we see no damage at this point --

Q. Well, if no damage was occurring --

A. -- and the tract --

Q. -- then, why take the step of ceasing to inject?

A. We are a prudent operator, quite simply.

Q. Thank you. You also testified that there were a myriad of explanations that could determine why the Nearburg Ross Ranch 22 Number 2 well was not as successful as other wells in this area. Could one of those possible explanations be that they were in fact being flooded by injection from the Anadarko well?

A. There's a possibility, but there's no data to support that. There is always a -- There's a possibility

that anything could happen, but there is no data to support that.

Q. Your statement that there's no data to support it, that there's -- What data can you point to, to evidence that damage is not occurring?

A. Well, first of all, I'm not obligated to prove that damage is not occurring, I don't believe. But --

Q. Just answer the question, please.

A. The data -- I just can find no data to support damage. Everything -- What's happening in that well is a result of drilling a well between two high-water-cut wells. This particular area of the reservoir is proven to be productive of the majority of water, a very high water cut. That's what the area produces, and that's the data.

Q. Your -- I believe it was your testimony that the results out here were very random and that actually if that was the case, if you drilled a well between two high-water-cut wells, that might not necessarily be the case, you might not end up with a high-water-cut well?

A. We're dealing in statistics here. First of all -- It's something I tried to make clear, and I guess I didn't make it clear enough. I never made a statement in terms of randomness, just random in terms of areal drilling. I specifically -- the randomness is specifically a function -- or, my random statement is, it's random with

relation to structure, it's random with relation to structure.

Now, areally, yes, I expect -- and the statistics will bear it out, that you expect to drill a well somewhat similar to the offset wells. Now, it's not going to be perfect, but you expect it.

But you look in this one and you've got -- your offset wells are a 49 and a 117 water-oil ratio. Statistically, that's what you should get, something between those, and you've got a 50-something in between them. I mean, statistically this well came in where it should have, based upon the offset data at the time.

Q. If that is in fact the case, it appears that -- from some of the other exhibits that have been introduced here, that there have been several wells proposed by Yates in the east half of Section 22, so statistically should those be failures also?

A. No, we have more data at this point, but there is risk associated with them. That's why we have not jumped out there and drilled them immediately. There is risk associated with each one of those locations.

When you drill a well, as an oil company does, you inherently take the risk that it will not be commercial. We weigh those risks when we drill a well. We're willing to take those risks.

We were willing to take the risk that the Ross Ranch 22 Number 2 might have been commercial. It might have been. It had a chance. There is a -- There's a statistical chance that it could have been productive. But it wasn't, and that's the facts of the matter. It was not productive, it is not productive.

Q. And in your opinion, why is it not productive?

A. Because there is water in the upper portion of the Canyon dolomite that was there ever since anybody was drilling in the Canyon.

Q. So that same situation could exist in the wells to the east that have been proposed by Yates?

A. Absolutely. In fact, it did happen in the Osage Number 1, based upon the evidence of the historical production.

Q. In your opinion, where does the water go that's been injected into these two wells?

A. It goes into the Canyon formation.

Q. Which is the same formation from which the producing wells produce?

A. Yes.

MR. TURNER: No further questions.

EXAMINER STOGNER: Okay, Mr. Turner.

Mr. Bruce?

MR. BRUCE: No questions.

EXAMINER STOGNER: Any redirect?

MR. ERNEST CARROLL: None.

EXAMINER STOGNER: Mr. Rand Carroll?

MR. RAND CARROLL: None.

EXAMINER STOGNER: I have no other questions either.

MR. TURNER: Mr. Stogner, could I briefly call Mr. Tim McDonald for a short rebuttal?

EXAMINER STOGNER: Can he do it from there if he speaks up?

MR. McDONALD: That will be fine.

MR. TURNER: Sure.

EXAMINER STOGNER: You'll have to speak up, now.

MR. McDONALD: All right.

TIM McDONALD,

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

MR. McDONALD: I guess basically my first concern is on the Anadarko log analysis where he tried to show separation between the zones. We have testified before that we're running more sophisticated logs out there now where we're actually seeing fractures and vugs in areas where on conventional open-hole logs you show zero porosity.

I also understand that Yates is planning to run

those same type of logs on their next few wells, versus Schlumberger. So they must have some belief in them.

So don't think that we can just look at a conventional log where the PE indicates dolomite throughout the entire section and make any assumption that the zones are separated whatsoever. There's just nothing -- the data is not there to make that assumption.

Also, another indication that we have some kind of enhanced porosity or fracture system in that well, if we just had four-percent porosity or whatever it calculates off the conventional logs, I really think it would be hard to move 4000 to 5000 barrels of fluid out of there every day. I think there's a lot of evidence for fractures and/or vugs or a combination of both, and where they'll stop and when they'll start, we can't determine from the logs that we have now.

Also, on the log-analysis end of it, if you have a high -- if you have a fracture system or a vug fracture system where you have high permeability, you would expect the water that's injected to follow that path of least resistance or higher permeability.

So in effect, if you are flooding out that area, your conventional logs see a small portion of the wellbore. I think your density log may see an inch and your neutron log may see 12 percent or whatever. So in a fracture

vugular reservoir, conventional logs don't see -- they just see the matrix porosity, basically.

So matrix porosity may very well be similar to what it was -- in the Anadarko well -- to what the Ross Ranch well is now, whereas the porosity that's made up of the vugs and the fracture may very well be flooded out. And that, I believe, is the reason why the log calculations are very similar between the Ross Ranch and the Anadarko saltwater disposal well.

My final point is, on the water-oil ratio case, you know, the South Boyd Number 1 and the B&B Number 1 were both Morrow wells. Four-and-a-half-inch casing was run, DV tools were not run, so there's always some question of the competency of the cement around the Cisco/Canyon.

We weren't able to run large enough submersible pumps to ever pull the pressure down whatsoever, so we probably only saw -- Our idea of the submersible pumps, you have to pull the pressure down enough before you start getting contribution from the matrix porosity as well as the fracture and vugular porosity, and we never got to a point where we saw that. So I think the water-oil ratios there are -- averaging those into any kind of statistical study is introducing a lot of error into the study.

And also one other thing on the Anadarko Osage well: It was pumped with a beam pump, and obviously it was

never pulled down. So the same thing applies there. I don't believe that you can compare water-oil ratios in wells that are produced differently, i.e., beam pump or small submersible pumps, with wells that are being pulled very hard and the pressure being pulled down with large submersible pumps.

That's it.

EXAMINER STOGNER: Thank you, sir.

Are we ready for closing arguments, gentlemen? Okay, I will allow Mr. Bruce to go first and then Mr. Carroll and then Mr. Turner.

Mr. Bruce?

MR. BRUCE: Mr. Examiner, as has been shown on all these exhibits, Nearburg's Ross Ranch 22 Number 2 well was completed in the upper Canyon. Anadarko's well is injecting into the lower Canyon, where Nearburg pretty much admits that there is no productive capability.

Furthermore, despite the speculation here, the only evidence is that the lower Canyon zone into which Anadarko is injecting is separated from the upper zone by an impermeable barrier. Nearburg cannot prove otherwise. The expert opinion set forth today and in the prior cases involving Anadarko's well refute the idea of vertical communication, and the Commission has accepted this as a prerequisite for saltwater disposal into the lower Canyon

zone.

Further, Nearburg presented no data to show commercial production in the lower Canyon. And in fact, Anadarko has asserted -- ten years ago, eight years ago, and today -- that this zone was not commercially productive and that, furthermore, not only the lower zone was not productive but the upper zone was not productive. Events have borne out Anadarko's contentions.

To accept Nearburg's unsupported opinion is to completely refute the findings in the prior Commission orders with no evidence to back it up.

Anadarko has operated its well as a prudent operator and stands by its past and present arguments that have been accepted by the Commission previously.

In short, Anadarko's calculations, Yates' evidence showed no effect whatsoever on Nearburg's well from any of the injection operations. Plain and simple, Nearburg has not come close to meeting its burden of proof in this case. There is simply no evidence that Anadarko's and Yates' saltwater disposal wells have had any effect whatsoever on Nearburg's well. All Nearburg has is speculation. And as a result, the Application should be denied.

I'd like to mention one final thing. Back in Case 8234, back in 1984, in the closing argument Anadarko's

attorney said, I think there's one way to resolve this kind of case. If Chama -- Nearburg's predecessor -- believes what they say here, let them go out and drill an oil well in the Cisco/Canyon, and let's give them some time to do it. If they don't want to do it, then they're not willing to stand behind their testimony. We believe that a disposal well in this location is appropriate. However, if there's any doubt, give them the first chance to drill it. Let them drill a well there, and after they drill a dryhole, we'll buy it from them and make a disposal well out of it.

This statement is as true today as it was then. That acreage was just not prospective in the Canyon, and because it is not, Nearburg is looking for someone to blame when they should really be blaming themselves for drilling a well in a poor location.

Thank you.

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Carroll?

MR. ERNEST CARROLL: In an effort to be brief, I think I would want to adopt all the statements that Mr. Bruce has made because I think they're very, very true.

The big issue here is burden of proof. An applicant has the burden of something more than saying, gee, there may be a possibility that something could happen

out there. I mean, it's been -- I mean, a cow could jump over the moon, but that doesn't mean it's going to make it true. And that's all we've had.

And what's even more remarkable about this case, this is not the first time that we've been subjected to this, it's not the second time that we've been subjected to it, but it is the third time.

And I think the evidence and the statements that were made in rebuttal really characterize it, because what he was really saying, when you look at it, was that we might have been able to show, wait a minute, you called the hearing, you filed the application, you made certain statements in that application, you should be held to showing that.

And there is a distinction here between Yates' application and Anadarko's. At least the Ross Ranch 22 is right next door. The Yates well is not right next door.

The only two things that they had going are stated in their testimony and in this Application, one, structure controls out here, we've been watered out. And yet the Cutter well is downstructure from it, and it's one of the best wells. That theory just doesn't hold water. And frankly, the reason it holds water is, structure is not the only key out here.

And this structural argument is based on this

theoretical concoction which we can't even find out in today's hearing who is responsible for it. It's in their Application that the Ross Ranch should have produced 2.31 because it should have been a typical well.

We're right on the fringe of this -- the end of this pool. We may have found the end of it. We have already found three wells that surround the Ross Ranch 22, which are nonproductive. We may very well have done it, and that's what the evidence shows.

But this average, as Mr. Fant has developed, it has no validity. And apparently they must not believe it, because they couldn't even tell us how the number was arrived at and certainly presented no evidence to support it.

Therefore, without a doubt today, Nearburg has failed in its burden of proof, has failed to prove any reason for this Commission to act, because they have failed to show that, one, they even had a productive well and, two, that there's ever been any damage.

EXAMINER STOGNER: Thank you, Mr. Carroll.

Mr. Turner?

MR. TURNER: I think to a large extent the issue in this case does boil down to two things: Number one, the responsibility of the Oil Conservation Division to protect the parties before you here today, protect correlative

rights; and who has the burden of proof and what that burden of proof is to demonstrate that some kind of -- type protective measures are needed.

In my opening statement I referred the Commission to statutory authority under which we based our case, *New Mexico Statues Annotated*, Section 70-2-12 B 4, which directs the Oil Conservation Division to grant authority to grant protection from the drowning out by water of any stratum, or any part thereof, which is capable of producing oil or gas in paying quantities, or to prevent the premature and irregular encroachment of water of any kind in commercially productive zones.

Granted, from our evidence today, we cannot -- could not sit here and tell the Commission with absolute certainty whether or not water encroachment from either of these disposal wells in fact has taken place.

Circumstances have changed a great deal during the ten-year period that has elapsed since the original proceedings were conducted. There are a lot of commercially productive wells in the area currently, there are many more wells that have been proposed and locations staked to drill additional wells. We may be at the end of -- edge of this field; then again, we may not. Ten years ago, we thought that this area was not commercially productive from this formation. Ten years later, we find

that it is.

I think that what the Division has to do in reaching a decision here is to weigh the various rights, the correlative rights, of each of the parties. I think that in the evidence that came out today it was demonstrated that Yates, one of the parties for whom we seek relief for shutting in their well, recognized by their own actions that there may be some damage from injection into their own wellbore, and they ceased injecting into that wellbore.

Anadarko, the other party complained of, really doesn't have any further interest in this area. By their own correspondence they indicate that they would like to sell this well, want to sell the well that they are producing in this area as well, and they want to get out of this area. They really don't have much in the way of rights that need to be protected.

Yates has already taken steps to protect themselves against possible damage by curtailing the injection into their wellbore. I think that because neither party has not been able to say with certainty where that water is going and what damage might be occurring, I think the thing that guides us the most is the action of the parties, what commonsense actions of reasonably prudent operators. I think there may be a problem here. We should

back off, take a look at it before we go any further, before any more damage takes place.

Therefore, we think that we're entitled to the relief that we've asked you for.

EXAMINER STOGNER: Thank you, Mr. Turner.

I feel I'm going to have to take administrative notice of Case File 7925, 8234 and 8739. Those were the previous orders issued by the Commission, and they were presented or shown as exhibits printed by Anadarko today.

Also, I'd like to request from both parties -- or all three parties, depends on how Anadarko and Yates wants to handle it -- rough-draft orders in this instance. I'll leave it up to you on the time frame.

With that, if there's nothing further in Case Number 11,358, then this matter will be taken under advisement.

(Thereupon, these proceedings were concluded at 4:45 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the examiner hearing of Case No. 11358, heard by me on September 1995.

, 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 September 16th, 1995.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998