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 NOS. 11,297 11,298 (Consolidated)
APPLICATIONS OF EXXON CORPORATION	)	

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

Volume II

June 30th, 1995

Hobbs, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday and Friday, June 29th and 30th, 1995, at Hobbs City Hall, Commission Hearing Room, 300 North Turner, Hobbs, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7, State of New Mexico.

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I N D E X (Volume II)

June 30th, 1995
Examiner Hearing
CASE NOS. 11,297 and 11,298 (Consolidated)

(Continued...)

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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 40 (aerial)	258	270 (photo)
Exhibit 41 (xsection)	261	270 (Eddy FV State #3 & others)
Exhibit 42 (N/S xsection)	266	270 (" ")

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Premier Oil and Gas	Identified	Admitted
Exhibit 1	184	207
Exhibit 2	190	207
Exhibit 3	197	207
Exhibit 4	200	207
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Exhibit 5	203	207
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Exhibit 10	274	284

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* * *

WHEREUPON, the following proceedings were had at 8:15 a.m.:

EXAMINER STOGNER: This hearing will come to order, consolidated Cases 11,297 and 11,298.

At this time I believe we're ready to start with you, Mr. Kellahin, Premier Oil.

MR. KELLAHIN: Thank you, Mr. Examiner. We're ready to proceed.

Call at this time our first witness, Mr. Jerry Harrington. Mr. Harrington is a consulting geologist. He resides in Roswell, New Mexico.

EXAMINER STOGNER: May I remind all the witness here today that they have been previously sworn yesterday and remain under oath today in the proceedings.

MR. KELLAHIN: Thank you, Mr. Examiner.

GERALD E. HARRINGTON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Harrington, for the record, sir, would you please state your name and occupation?

A. My name is Gerald E. Harrington. I'm a geological consultant.

Q. Where do you reside, sir?

A. My residence is Roswell, New Mexico.

Q. Would you summarize for us your education and employment experience?

A. I received a bachelor of science degree in petroleum geology from the University of Oklahoma in 1953. Following two years of military service, I was employed by the Old Pacific Northwest Pipeline in the San Juan Basin and worked the southern and mid-Rockies for a number of years and in 1963 moved to Roswell and have worked in the Roswell area for various independent operators, as well as Atlantic Richfield for a short period of time, and have been a consultant since 1973.

Q. As part of your current consulting duties as a professional geologist, are you currently employed by Premier Oil and Gas, Inc.?

A. Yes, I am.

Q. As part of that employment, have you made an independent geologic investigation, particularly of the Delaware formation, insofar as it affects the Premier property, which is the subject of this hearing and is identified as Tract 6 within the proposed statutory unit?

A. Yes, I have.

Q. And as part of that study, have you now come to certain geologic conclusions with regards to that property?

A. Yes, I have.

MR. KELLAHIN: Mr. Examiner, we tender Mr. Harrington as an expert petroleum geologist.

EXAMINER STOGNER: Are there any objections?

I take that as a no, so Mr. Harrington is so qualified.

Q. (By Mr. Kellahin) Mr. Harrington, give us a sense of how you went about the work that you're about to present here, in terms of initiating a study. What were you asked to do?

A. I was asked by Premier Oil and Gas to evaluate the potential for the Delaware Mountain Group on the acreage that they owned in Section 25 of Township 20 South, Range 27 East.

Q. At the time that you were asked to commence that study, were you provided a copy of the geologic interpretation conducted and presented by Exxon today?

A. Not initially.

Q. Initially, when you were asked to perform a geologic evaluation for Premier, were you given any set of parameters, limitations or any kind of conditions on any conclusions that you might form?

A. The specific request from Dr. Jones was that I make an independent evaluation of the potential for the Delaware on the Premier oil and gas acreage.

Q. All right, sir. Describe for us the method you

used. How did you go about this?

A. I utilized the materials available from the Roswell Energy Library comprising logs, scout tickets, production information, et cetera, and attempted to use that data to compile my study and construct cross-sections, to determine the limits of the Upper Cherry Canyon and the Brushy Basin reservoir.

Q. Let's focus on the Upper Cherry Canyon reservoir.

A. That was the primary objective.

Q. All right. Let's focus on that for our discussion here this morning.

How did you as a geologist make geologic decisions in order to determine what in your opinion was the limits of that reservoir, insofar as it affected the Premier tracts?

A. I utilized the logs that were available and correlations that were made by myself, and based in part on previous experience with the Delaware Mountain Group and the general area.

Q. And were you able to satisfy yourself that you could make appropriate correlations between these logs, map the reservoir and come to geologic conclusions?

A. Yes.

Q. And what was your conclusion?

A. My conclusion was that there -- that I -- after

constructing the cross-sections, that there was a difference, after subsequently receiving copies of the technical reports, there was a discrepancy between what I had picked as the intervals for the Cherry Canyon, compared to what Exxon had compared and compiled in the technical report.

Q. All right. The difference is not a difference in what you're using for markers, it's where you put those markers?

A. That's correct.

Q. The nomenclature that Exxon has used in the presentation yesterday, that's the convention down here, is it not?

A. It's not the exact terminology that I've used in the past, but it is acceptable.

Q. All right. And so when we begin to talk about the base of the Goat Seep Reef, the Upper Cherry Canyon top, this Upper Cherry Canyon middle and then the Cherry Canyon Upper base, those are all going to be terms that are well known to you and other geologists in this area?

A. Yes.

Q. Are there identifiable indications on these various logs by which you're able to correlate those various markers from well to well?

A. Yes, I've utilized in my studies primarily a

pattern analysis for the curves presented on open-hole or wireline logs.

Q. As a result of your study, then, you subsequently reviewed the Exxon geologic information?

A. Yes.

Q. And you were aware at that point, then, there's a difference between the Exxon interpretation and your interpretation, insofar as it affects the Premier tracts?

A. That's correct.

Q. Summarize for us your recollection of what Exxon has determined to be the net pay thickness in the Upper Cherry Canyon reservoir insofar as it affects the FV3 well.

A. In the Exxon technical report, they attributed -- I'm going to have to refer to another exhibit.

Q. Perhaps I can refresh your memory. I believe it's 55 feet.

A. Yes, I believe that was correct. And the correlations that I have made have indicated to me, to my satisfaction, that the base of the Cherry Canyon pick was incorrect and that it in effect added a significant thickness to the Cherry Canyon reservoir.

Q. As a result of your calculation, an additional net feet of 82 feet of net pay should be added to this well?

A. That's correct.

Q. When you take that information, then, were you able to construct a thickness map, an isopach of some configuration with regards to the Upper Cherry Canyon reservoir?

A. After receiving the technical report, I attempted then -- or not only attempted but did construct an isopach of the same interval that was shown on an isopach presented in the technical report.

Q. After preparation of the isopach, did you prepare any other geologic maps?

A. Yes, there was one other map which I constructed that indicated the net hydrocarbon porosity thickness.

Q. Did you work in association with Paul White, a reservoir engineer, in determining the appropriate values by which to construct the hydrocarbon pore volume map that you're about to show us?

A. Yes.

Q. Let's go to the first display, then, and have you identify for us where -- And let's start with the FV well on Exhibit Number 1. It's on the board there.

Let's start with the FV3 well, identify the markers, and then demonstrate to us the difference in that log as to your conclusions and the Exxon interpretation.

A. As shown on the cross-section A-A', the section runs from the Antwell Mesa Macho well, an offset to the

north of the Premier acreage, southward through the FV1 well. Next well in line is the FV2, and the fourth well from the north is the FV3 well, and then subsequently, on to the Yates Citadel ZG Number 1, which is an offset to the south.

Q. All right. Let's start with the second well from the right, then, the FV3, and starting at the top down, indicate to us what's happening with these different markers and how you've identified them with the color code.

A. On the cross-section, the datums that I have picked are identified in black, and the datums that were utilized in the technical report are indicated by the red dashed lines for the base of the Goat Seep Reef or the top of the Cherry Canyon member of the Delaware Mountain. Subsequent -- Moving on down the section --

Q. Well, stop there for a moment, Mr. Harrington.

A. Okay.

Q. Is there any material difference between your interpretation and Exxon's with regards to where to put that top insofar as it's interpreted on the FV well log?

A. Yes, a slight difference in the matter of essentially 20 -- well, about 18 or 19 feet. My pick is about 19 feet higher than what Exxon had picked.

Q. Show us what has indicated to you on that log where you have found the Upper Cherry Canyon top to be.

A. I essentially used the gamma-ray increase in peak that shows -- which I can't see from here. That gamma-ray -- increase in gamma-ray radiation indicated at a depth of 2483, and the top that was utilized by Exxon in their technical report is at 2503.

Q. All right, that's in the FV1?

A. No, this is the -- I beg your pardon, you're correct.

Q. Yeah. And so as we move over to the FV3, looking at the second log from the right, is there a material difference between you and Exxon in where both of you are picking the Upper Cherry Canyon top?

A. No.

Q. As we move down, then, to the next marker point, show us what's picked then.

A. The next marker that is selected and used in the technical report is the Upper Cherry Canyon Downlap section, and the pick that Exxon has made is at 25- -- I believe it's -88.

Q. And it would be the red line --

A. That's correct.

Q. -- just below -- just above the numbers "2600" on the exhibit?

A. That's correct.

Q. All right. That does not agree with your pick of

the Upper Cherry Canyon Downlap, does it?

A. No, it does not.

Q. You pick it higher, don't you?

A. That's correct.

Q. Show us where you put it.

A. The correlation that I have made puts the top of the Upper Cherry Canyon Downlap section at a point -- Let's see, 2546.

Since this is on a two-inch-per-hundred-foot scale, I used the 2-1/2-inch for -- or 5-1/2-inch for the tops and the -- but for display purposes used this scale. And the top that I picked, as I say, is at 2546.

Q. What caused you to make the pick of that marker point at that location? What was the number? 25- -- What?

A. 2546.

Q. At 2546 what do you see on that log that caused you as an expert geologist to put that marker at that point?

A. Once again, utilizing the character, the profile of the curve presented on the log, the gamma-ray as well as the porosity curves and density-neutron.

Q. If you put it at 2546, you must have concluded that Exxon's wrong by putting it lower?

A. Yes.

Q. What's occurring at the point where they have put

that marker?

A. They have apparently selected a radioactivity peak as opposed to a change in character, general change in character of the curve.

Q. And you would disagree with that?

A. Yes.

Q. All right, let's go down to the next marker point. What's that?

A. The next marker is the Upper Cherry Canyon middle, as identified in the technical report.

Q. All right. Is there any material difference of opinion between you and Exxon as to where to put that marker point in this well log?

A. No.

Q. All right. What's the next marker point?

A. The next marker point is the Upper Cherry Canyon base.

Q. All right. Where do you put the Upper Cherry Canyon base?

A. The base pick that I've made, based on log character analysis, is 2852.

Q. What caused you to put that marker point at 2852?

A. The consistency of the curves over the interval that was examined.

Q. What curves are you looking at to form the

opinion of consistency?

A. All the curves, the -- including the caliper, the gamma-ray, the neutron and the density curves.

Q. Exxon's placed that marker point substantially higher on the log of this well than you have?

A. That's correct.

Q. Where have they put it?

A. They put it at a depth of 27- -- I believe it's 2769.

Q. What do you see at the log at that point, where Exxon placed that marker?

A. A radioactive -- an increase in radioactivity on gamma ray.

Q. Would you have used that information from the log to indicate that marker point?

A. Only insofar as it is a part of the log character comparison that I have made.

Q. As to Exxon's pick, though, do you disagree with their pick?

A. Yes.

Q. And what's wrong with their pick?

A. Their pick is inconsistent with the correlations with additional logs in the area.

Q. Let's look, then, at that correlation. Now that you've set the framework for the difference, show us how

your interpretation fits with the other logs in the area.

A. For all intents and purposes, the interval from the middle Cherry Canyon to the Upper Cherry Canyon base is consistent to the north from the FV3 well.

But when you go to the south and you include the FV3 and the Yates Citadel ZG 1, I find a substantial difference between the interval that Exxon has demonstrated in their technical report and what I have concluded.

Q. In your opinion, are your log picks for the FV3 well consistent, then, with correlating markers of those correlative intervals in the other wells on the cross-section?

A. Yes.

Q. All right, sir, let's go to the next display.

In reviewing the Exxon geologic data submitted to you for review, were you able to find a cross-section that they had prepared that put the FV3 well in the same cross-section with the offsetting well to the east, the MW4?

A. No.

Q. Did you construct your own cross-section, then, with those two wells?

A. Yes.

Q. Is that what we're looking at when we see Number 2, Exhibit 2?

A. Exhibit 2, cross-section B-B'.

Q. Summarize for us what you've done.

A. Essentially what I've done with this cross-section is to indicate the curve pattern analysis that I've utilized to arrive at the conclusion that I have in the Upper Cherry Canyon.

Q. Why is that a method utilized by you as a geologist?

A. I find that it's more consistent with regional patterns of the development in the Cherry Canyon, in the general area.

Q. When you talk about a log curve analysis or comparison, what are you saying?

A. I'm saying we're looking for similarities in curve character between wells, between the logs of the well.

Q. And how does that help you?

A. And that helps me to identify specific units within a given formation.

Q. A specific unit of a reservoir in one log ought to have the same curve or character in an adjoining log, if they are correlative?

A. Similar. Not necessarily identical, because of changes in lithology.

Q. And that's where you're supposed to apply your expertise as a geologist?

A. Yes.

Q. Is this the kind of thing you regularly do on a routine basis?

A. Yes.

Q. Are these hard markers to find?

A. Not particularly.

Q. Was this a difficult correlation?

A. No.

Q. Is this such a sophisticated, tedious task that you and others would have substantial disagreement on how to do it?

A. No, I wouldn't think so, no.

Q. Okay. Describe for us what you see, then, when you correlate the FV3 back to the WM4 in terms of this log curve comparison.

A. Essentially, there are two differences, one of which is the Upper Cherry Canyon Downlap pick, and then also the base of the Cherry Canyon pick.

Q. Again, your points here are in black, and the Exxon interpretation are the red dashed lines?

A. That's correct.

Q. All right. Show us what you see.

A. Essentially, the change in character is indicated -- the Downlap interval to be of significantly -- but not consequentially, but significantly different from what was

picked by Exxon.

But the significance does show up primarily in the base of the Cherry Canyon pick, whereby I have concluded that there is an additional gross interval of 84 feet that was not included in the interval that was reported in the technical report. Of that 84 feet, we've determined that we have potential for a net 82 feet of potential pay in the Upper Cherry Canyon.

Q. To get the net, you're using the same 10-percent porosity cutoff value that Exxon used?

A. We used the same parameters used by Exxon in their preparation of the technical report.

Q. All right. Have you color-coded Exhibit Number 2 so that we could see your interpretation of these log curve comparisons?

A. Yes, I have.

Q. My copy is not marked like yours, Jerry. Did you do that to the other copies?

A. Yes.

MR. KELLAHIN: Mr. Examiner, is yours coded?

EXAMINER STOGNER: Yes, it is.

Q. (By Mr. Kellahin) All right, sir.

Take us through the color code, then, and show us, Mr. Harrington, what it is about these two logs that gives you this conclusion about the similarity.

A. The interval that was demonstrated on the cross-sections included a marker, which is rather prevalent and predominant throughout the analog field area.

Working upward from that, I then identify specific characters and attempt to relate them to what I have determined for the FV3, to see if we have a similarity in log character in the WM4 offset to the east, and have carried this analysis -- this particular procedure -- on upward to the Upper Cherry Canyon base, and then in addition, working with the intervals above, utilizing the same curve pattern analysis, have determined that my picks for these intervals that I have shown that are the four, and my pick for the Cherry Canyon marker, five specific tops that I have utilized in this cross-section.

Q. All right. Take us from the bottom and show us the color code and show us why you believe those curves can be correlated in that fashion.

A. I don't think there's any question about the correlation, starting with the Cherry Canyon marker where it is -- the log character is so similar that there's no doubt, no question.

Q. Let's move up to the next interval, then.

A. Then next interval shows an increase in porosity as determined by the density log and the neutron log, and the gamma ray is not as conclusive for that particular

interval, as far as similarity in character. But in the -- The similarity is again rather obvious between the logs of the two wells.

Q. All right, sir.

A. Then moving on up to a section which includes a carbonate development and a decrease in general porosity development, as indicated by both the density curve and the neutron curve, and projecting it across, and come up with a similar character, as shown on the WM4 log.

And this particular method of correlation is carried out through -- on up the section. And the color code indicates where we have markers. For instance -- The color has no particular significance, other than to identify a change in log character.

Q. All right. Let's go to the first area of difference, this Upper Cherry Canyon base marker, where Exxon's got it higher than you have.

A. Yes.

Q. Show us how your marker is consistent with the log curve analysis and to what extent, if any, the Exxon is inconsistent with that.

A. In the interval from the Upper Cherry Canyon middle to the Upper Cherry Canyon base there are three or four identifiable character changes that are fairly readily correlated between the two wells and that the pick that

Exxon has made for the WM4, with which I agree, when attempting to identify the log character in the FV3 well, I find that the intervals and the key points of correlation are not consistent.

Q. When we go up to the Upper Cherry Canyon Downlap, let's look at the WM4 well, find that point where it appears that you and Exxon are in approximate agreement for the WM4 as to that point. What do you see on that log curve that puts that marker at that point on the WM4 log?

A. The change in character of the gamma ray, along with the curved character of the caliper. Their pick is based at the base of a massive carbonate -- I call it massive carbonate -- interval, which is consistent with general picks in the area.

Q. As we move, then, over to the FV3 well, what happens to your pick and their pick in relation to the log curve comparison to the control well, which is the WM4?

A. Well, once again, utilizing the character change or character of the curves and relying predominantly on the gamma ray, we indicate the carbonate interval that I feel is more consistent with the picks that were made in the WM4.

Q. Having looked at the method by which Exxon has placed the net thickness value in the FV3 well, have they done anything now that you've looked at their data to cause

you to change your opinion about your own conclusions?

A. No.

Q. All right, sir. Let's go to the next display.

Again, on the far left side of this cross-section, Exhibit 3, you've got the FV3 well?

A. That's correct.

Q. What have you done here?

A. The attempt here is to indicate the correlation between the FV3 and two field wells, the EP -- the Yates Stonewall EP7, the middle log, and the Stonewall EP6.

Q. All right. These are the two Yates wells that are in that north part of their section that adjoins the Premier property?

A. That's correct.

Q. And why did you want to do that?

A. I wanted to satisfy myself that what differences I had encountered were still consistent with what we find in the northern part of the field, because of the extent of the Premier acreage in -- the northern part of the Premier acreage.

Q. All right. What's the method here, then? Are you attempting to take your interpretation of this reservoir location in the FV3 well and see if your interpretation fits with what you see in the two Yates wells up in the north portion?

A. That's correct.

Q. And if they don't fit, what's -- what are you going to do?

A. Well, I have concluded that the FV3 pick for the base of the Cherry Canyon is invalid, insofar as Exxon has picked it in the FV3 well.

Q. All right. So this is important to you, then, to decide which interpretation, either yours or Exxon, makes sense to you?

A. That's correct.

Q. All right, sir, show us what you did.

A. Essentially the same thing. The tops that I have picked are shown in black. The tops that Exxon indicates in their technical report are shown in red.

And the essential change is that in the FV3 the Exxon pick attributes substantially less than what they do in the EP7 and the EP6, both.

Q. All right. When you get over to the EP7, which is the center log, it appears that you and Exxon are in pretty good agreement as to where to pick these various markers?

A. That's correct.

Q. Yet when we move over to the west, to the Premier FV3, their interpretation of the reservoir narrows and yours doesn't?

A. Considerably, yes.

Q. When you go to the east into the Yates well, the -- on the far right, it's the Yates EP6 -- you see additional reservoir in the Yates well that Exxon has not credited Yates with?

A. In essence, only a minor amount of increase, which would amount to about 15 feet.

Q. Okay. Having made this comparison, what's your opinion as a geologist with regards to the correctness of your conclusions?

A. Based on the previous activity and involvement with the Cherry Canyon reservoir and other fields in the area, I've concluded that the interval that was picked by Exxon is anomalous, as far as the FV3 is concerned, in that it's not consistent with a fan pattern of development for the Upper Cherry Canyon in the area of the Avalon field.

Q. We heard from the geologist yesterday that that was one of his criteria by which he was picking reservoir values in the Upper Cherry Canyon.

A. In my opinion, it's somewhat inconsistent to say that there is a -- that extreme a thinning on the flank of this particular fan development when we're looking at a series of lenticular deposits during the course of deposition in the Cherry Canyon interval.

Q. In your opinion, is Exxon's effort to satisfy

this regional characterization of the Delaware and the Upper Cherry Canyon satisfied, then, with their interpretation?

A. I'm not satisfied with their interpretation. That is why I've concluded that they have not attributed a sufficient interval to the interval between the Upper Cherry Canyon middle, top and the base of the Upper Cherry Canyon.

Q. All right. Based upon your conclusions at this point, then, what did you decide to do?

A. Then I decided I had better go ahead and, utilizing the data that I had concluded, based on the log evaluation and log comparison, to take that data and construct an isopach of the thickness of the same interval that was reported in the technical report, which was the Upper Cherry Canyon Downlap through -- or to the base of the Upper Cherry Canyon.

Q. And did you to that?

A. Yes, I did.

Q. And do you have a map that shows that?

A. Yes, that's Exhibit Number 4.

Q. All right, sir, let's turn to that. You're welcome to return to your seat there, Jerry. I think the rest of these displays are pretty small.

All right, describe for us how you prepared

Exhibit Number 4, the Upper Cherry Canyon isopach.

A. Essentially what I did was take the data that I had concluded from the log evaluation for the FV3 and the Yates Citadel ZG1 wells and change the gross thickness figures from what was presented on Exxon's -- in the technical report of Exxon's as their Map Number 7, which I have labeled Exhibit Number 4A --

Q. All right, so --

A. -- and --

Q. -- we're going to look at their Map 7 and your Map 4?

A. Yes. Their maps, isopach of the same interval.

Q. And your Exhibit 4A is simply a reproduction of their Map 7?

A. That's correct.

Q. All right. Let's look at them side by side now.

If you'll start with your map, you've had a chance to look at the Exxon map, and you have recontoured the isopach, and are we dealing with a gross or a net isopach?

A. This is a gross thickness of the interval from the Upper Cherry Canyon Downlap to the base of the Upper Cherry Canyon.

Q. All right. Describe for us the method you've utilized to recontour the map to integrate them into the

Premier tracts, what you believe to be an acknowledgement of the correct thickness as identified for the FV3 well.

A. Essentially what I have done is just recontoured the area primarily surrounding the FV3, but also to the north, and feel that it is a more consistent presentation of the depositional environment in which this interval has occurred, and where we have a series of sand-lens developments that are deposited subsequently, indicating to me that there is a general trend of thickness that would be more consistent with a fan-type development, or fan-type accumulation, than what is presented on the Exxon technical report map, Number 7.

Q. Were you able to take the adjustments in values, then, for the FV3 well? It appears that there's an adjustment in the FV1 --

A. Yes.

Q. -- contour those in on a gross thickness map, and be consistent with and honor the other data?

A. Yes, the only data that was changed, actually, was the data for the FV3 and the Yates Citadel ZG1.

Q. Is your interpretation, in your opinion, consistent with how you would expect to see a Delaware reservoir distributed?

A. Yes.

Q. Once you had made the gross map, then, and you

are satisfied that it is accurate, what then did you do?

A. The next step that -- Well, actually if I may go back to the initial stages of preparing this isopach map, I made a determination that two of the wells that are presented on the Exxon technical report are incorrectly located on their map.

In support of that, I went to the Oil Conservation Division office in Artesia and have obtained the C-101s, the Application for Permit to Drill, to determine the accurate location of those wells, which are the wells located in the -- correctly located in the southeast quarter of the southwest quarter of Section 19.

Q. Exhibit 5, then, represents the Division reported forms as to the location of the Yates SP State 1 and 2 wells?

A. EP.

Q. I'm sorry, the EP 1 and 2.

A. That's correct.

Q. What difference does that make?

A. Well, it necessarily affects every map that was prepared in the technical report by changing the location of the contours.

Q. And so what does that mean?

A. That means that their map is incorrect, their -- All of their maps with contours are incorrect.

Q. Did you incorporate the correct well location, then, in your map, when you did your contouring for the gross isopach, Exhibit 4?

A. Yes, I did.

Q. Having made those adjustments, then, what then did you do?

A. That has led me to contour the thickness map in the manner in which it's presented in Exhibit 4.

Q. All right. Then as part of your methodology as a geologist, do you attempt to take the gross thickness and reduce it to a net value?

A. Yes, we do, as far as attempting to determine a net reservoir.

Q. All right. Then you can take that information and prepare a hydrocarbon pore volume map, can you not?

A. That was the step -- next step that I took in order -- because there's a change in what I had determined as a potential net pay for the FV3 and the Citadel ZG1, and in so doing, calculated the hydrocarbon porosity thickness for both of those wells and then subsequently prepared the hydrocarbon porosity thickness map, as identified as Exhibit 6.

Q. All right, let's turn to Exhibit 6, then.

When we look at your Exhibit 6, that can be compared to the Exxon Map 20, where they're mapping a

hydrocarbon pore volume distribution on this Upper Cherry Canyon reservoir?

A. That's correct.

Q. Do you have a copy of their map?

A. Yes, I do. You don't?

Q. I have it out of the book. You've got one?

A. Yes, sir.

Q. All right, sir. Show us what happens, then, in your interpretation of the distribution of the hydrocarbon pore volume map insofar as it affects the area in and around the Premier tracts.

A. Essentially, we -- Based on the calculations using the identical parameters that were used by Exxon in preparation of their map, applying that to and then subsequently recontouring based on these values that I placed on these two wells, the FV3 and the Citadel ZG1, I have concluded that -- and contoured the map as presented, which, in my opinion, is more consistent again with what you would anticipate in a fan-type development in the Delaware Mountain Group, particularly in this instance, the Upper Cherry Canyon.

Q. As a result of your correction of the thickness values for the FV3 well and the FV1, are there now hydrocarbon pore volume values that should be credited to the Premier tract that's identified as Unit Tract 6?

A. That's correct.

Q. And from that interpretation, then, you can conclude what about the presence of potential primary oil production within Tract 6?

A. I would say it was substantially greater than what has been attributed to it in the way of primary oil, inasmuch as the data presented by the technical -- in the technical report has taken into consideration only that hydrocarbon that has been previously produced from the interval in the Upper Cherry Canyon.

Q. In addition to changing the values on original oil in place for Tract 6, would it change any of the values with regards to any workover potential for that tract?

A. Substantially.

Q. The Exxon proposal provides no value to this tract for either of those items, does it?

A. No, it does not.

Q. In addition, would it also change the value under the calculation by Exxon of what the potential is for a CO_2 tertiary oil share?

A. Yes, it would.

Q. And if your geologic conclusions were integrated through the Exxon computer, you could make the appropriate changes to give relative value to Tract 6 under your geologic conclusions?

A. Yes.

Q. Summarize for us your opinions, Mr. Harrington.

A. Essentially, my conclusion is that the values attributed to the Premier acreage in the technical report are substantially less than what I have determined to be the values for the hydrocarbon potential of the Premier Oil and Gas Inc., acreage.

Q. In your opinion, would it be fair and appropriate for the Division to adopt a statutory unitization concept based upon the Exxon geologic interpretation?

A. No.

MR. KELLAHIN: That concludes my examination of Mr. Harrington.

We move the introduction of his Exhibits 1 through 6.

EXAMINER STOGNER: Are there any objections?

Exhibits 1 through 6 will be admitted into evidence at this time.

Mr. Bruce, your witness.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Harrington, when were you first employed by Premier to examine the Avalon-Delaware geology?

A. It was about the middle of March.

Q. 1995?

A. Yes, that's correct.

Q. And apparently you concentrated on the Upper Cherry Canyon geology?

A. That was the concentration. However, I did make some additional cross-sections which are not presented into evidence, but initial studies for the Brushy Canyon also, and found no particular discrepancies between the conclusions as presented in the technical report and those that I came up with.

Q. From the date of your employment, I presume you didn't attend any meetings of working interest owners at which geology was discussed?

A. That's a correct presumption.

Q. Now, other than the well logs and the production info that you mentioned, what other data did you use to make your exam of the Upper Cherry Canyon?

A. Other data would be the scouting information from the records that are housed at the Roswell Energy Library, some subsequent conversations with Mr. Paul White.

Q. And that's it?

A. That's correct.

Q. You didn't examine any cores?

A. No, I did not.

Q. Did you examine the existing Delaware completions?

A. Only insofar as they were presented in the scouting reports from the scout tickets of the Roswell Energy Library.

Q. Did you examine any mud logs?

A. There were none available from the -- to me from the Roswell Energy Library.

Q. Did you look at the logs from wells in Section 31?

A. Yes, I did. As a matter of fact, another preliminary -- in the preliminary part of the study, constructed a cross-section from the Exxon C3 well to the C1 well, to the WM4, to the FV3.

Q. Now, on your Exhibit 1 and --

A. Do you want me to take the others down?

Q. Yeah, if you could. It might help us all. Thank you.

Now, I think you indicated in the FV3 well on the Upper Cherry Canyon Downlap, there's a difference between your pick and Exxon's pick of about 42 feet or roughly 40 feet?

A. Yes, that's correct.

Q. Now, does changing the Upper Cherry Canyon Downlap surface, changing that alone in the FV3 well, change the net thickness for that well?

A. In this instance it does change, yes.

Q. It does?

A. However, in the preparation of the isopach map of that gross interval from the Upper Cherry Canyon Downlap through the Cherry Canyon base, I did not include that difference in thickness.

Q. Why not?

A. Primarily because it did not appear to affect the character of the potential Cherry Canyon productive interval.

Q. Is it tight?

A. It's a carbonate, low porosity and no indications of hydrocarbon.

Q. Okay. So that wouldn't have any effect on what is really productive in the Upper Cherry --

A. No.

Q. -- Canyon interval?

Is it common for Delaware formation components like the Upper Cherry or the Brushy to have significant thickness variations?

A. Yes, laterally.

Q. Laterally.

Now, in looking at these wells, were any of these wells, to your knowledge, significantly deviated from the vertical?

A. I did not look to that particular aspect.

Q. Okay. From what you've seen, there's no indication that they were deviated?

A. Not to my knowledge, not based on the logs that I had available to me. And also based on the character of the caliper, it would indicate that you have a relatively true hole.

Q. Just one final question, Mr. Harrington. If you'd refer to your Exhibits 6 and 6A --

A. Yes, I have them.

Q. -- if you look at these two maps, really, the contour lines you use are -- except when you get in the area of the FV3 well and the ZG1 well -- are pretty similar, almost identical to Exxon's contour lines?

A. Yes, I used the same data.

Q. Okay. So the only difference is over there, right on Premier's acreage?

A. And the Yates acreage to the south, and somewhat -- Well, yes, that additionally would be the Premier acreage on the northern part of the 160 acres that's been included in the unit outline.

MR. BRUCE: That's it, Mr. Examiner.

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Carr?

MR. CARR: I have no questions.

EXAMINER STOGNER: Mr. Kellahin, any redirect?

MR. KELLAHIN: Yes, sir.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Harrington, if you'll go back to your Exhibit Number 3, the three-well cross-section, the far right log is the Yates -- it's the EP6 well, it's the well in the northeast-northwest of 30?

A. We're still on B-B'?

Q. No, sir, you're on Exhibit 3. It's the three-well cross-section.

A. Three, I'm sorry.

Q. Yeah, you've got it there.

A. Yeah.

Q. It's the far right. I'm sorry, the far right log, that is that Yates EP Number 6 well. Do you see that?

A. That's correct.

Q. All right. On the base map and on the Exxon presentation, the EP6 well is identified as the 40-acre Tract 1113. Do you see that?

A. Yes.

Q. All right. When we're looking at the reservoir in that well, from the Upper Cherry Canyon top down to the Upper Cherry Canyon base, the Exxon Exhibit Number 10, Part I, shows a value for that well on Exhibit E-6 -- I'll show it to you.

If you read across on Tract 1113, they're going to come up with a net thickness value, and I'm going to show it to you.

See what the report shows for net thickness in that Yates well, the 99.56 feet?

A. Yes.

Q. Do you see that?

A. Yes.

Q. Would you go to the log on that EP6 well and find me 99 feet of net thickness?

A. I don't believe I can do that.

Q. Why can't you do that?

A. I don't feel that there is that -- based on my evaluation of the logs, that there isn't that much of a total net porosity thickness in that interval.

Q. Well, show us how you would count and determine net porosity thickness on that well.

A. It's somewhat difficult to do it just from the log itself because of the nature, the character of the calculations for the porosity determinations. But based on the evaluation of the curve through that interval in the EP6, I cannot attribute the 99.56 net feet of net thickness of porosity.

Q. All right. If you were counting up net thickness for the log on that well, would a range between 30 and 35

feet be more accurate?

A. That's somewhat pessimistic, but I would -- If I recall the figures that I arrived at, it would be in the vicinity of 40 to 42.

Q. Forty to 42, of net porosity thickness that should have been put in the book for that well?

A. Yes.

Q. As result of crediting that well with 99 feet instead of 42 feet, what happened?

A. That would substantially increase the reserves attributable to that in the EP6.

Q. It looks like a mistake, then?

A. It does to me, yes, sir.

MR. KELLAHIN: No further questions.

EXAMINER STOGNER: Mr. Kellahin.

Mr. Bruce?

MR. BRUCE: I have one thing, Mr. Examiner.

RECROSS-EXAMINATION

BY MR. BRUCE:

Q. On the FV3 well, you show this additional -- I think you said it was about an extra 80 feet?

A. Eighty-four feet.

Q. Eighty-four feet.

A. Gross.

Q. At the Upper Cherry Canyon base.

Has that interval ever been tested on Premier's acreage?

A. To my knowledge, it was neither drill stem tested, nor has it been perforated.

Q. Do you know why not?

A. No, I certainly don't.

MR. BRUCE: Thank you, Mr. Harrington.

EXAMINER STOGNER: Mr. Kellahin, a point of reference.

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: When you were referring back in the booklet to 99 feet, I couldn't find that.

Which page was that? I thought you said E-6.

MR. KELLAHIN: Yes, sir, it's in Exhibit E-6, behind the E section, E-6, and then it's this one right here.

(Off the record)

EXAMINER STOGNER: I have no questions of this witness at this time, myself.

You may continue.

MR. KELLAHIN: At this time we call Mr. Paul White.

EXAMINER STOGNER: Are we going to be using these cross-sections?

MR. KELLAHIN: No, sir.

PAUL G. WHITE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Paul, are you all set?

A. Yes.

Q. Mr. White, for the record would you please state your name and occupation?

A. My name is Paul G. White. I live in Artesia, New Mexico, and I'm presently the owner of Blanco Engineering, Incorporated.

Q. You also hold a professional engineering degree, do you not, sir?

A. Yes, sir, I do.

Q. On prior occasions have you qualified and testified before this agency as an expert in matters of petroleum engineering?

A. Yes, sir, and the Texas Railroad Commission, Kansas Corporation Commission and Oklahoma Corporation Commission.

Q. Do you now act as a consultant for operators, including Ken Jones as the operator of Premier Oil and Gas, Inc.?

A. Yes, sir, I do.

Q. And with his assistance and on his behalf, did you look at and review the Exxon technical report, which is identified as Exhibit 10, introduced yesterday in the hearing?

A. Yes, sir, I have.

Q. And have you attended some of the meetings and discussions with Exxon personnel concerning the Premier interest in this property in the unit?

A. Yes, sir.

Q. In addition, have you conducted your own investigation with regards to the issue of the log correlation, insofar as the interpretation between Exxon and Premier is concerned, for the FV3 well?

A. Yes, I have.

Q. And based upon all that work, do you now have certain opinions and conclusions as an expert?

A. Yes, I do.

MR. KELLAHIN: We tender Mr. White as an expert petroleum engineer.

EXAMINER STOGNER: Are there any objections? There being none, Mr. White is so qualified.

Q. (By Mr. Kellahin) Mr. White, let's turn to the first topic. It's Exhibit Number 7 for Premier. It's a two-well cross-section. I think it's labeled B-B'. Do you have that in front of you, sir?

A. Yes, sir, I do.

Q. Summarize for us your understanding of the dispute between Exxon and Premier insofar as it affects this well.

A. If I might precede my remarks or my testimony a bit, I originally was retained by Mr. Jones, owner of Premier Oil and Gas, to take a look at the Exxon technical report, and I went to a meeting in March of 1993 -- I believe it was in March -- and we met with Exxon personnel and discussed some of the issues in the proposed unit.

The -- In the meeting, I came out of the meeting, although there was not a popular -- I mean a formal vote taken, in all probability I told Premier, Mr. Jones, that he would be left out of the unit.

Subsequent to that --

Q. Well, how did you reach that conclusion?

A. The discussion at the end of the meeting was one of that, generally, the atmosphere generally was that Exxon and the other operators would not mind if Premier stayed out.

Q. This is in April of 1994, I think, if you look --

A. Yes, sir, I believe that's right.

Q. All right. During that sequence, then, in April of 1994, you were going to these meetings, and you came away with the conclusion that Premier was to be excluded?

A. Yes, sir, that's correct.

Q. Upon what basis?

A. Just on the general atmosphere in the meeting. The -- I had already decided from the technical report that Premier's equity, that Premier's position, they -- The Exxon report had given Premier some equity, only in the CO_2 tertiary part of this unit, and I had studied the report enough to tell that that was a -- The CO_2 portion of it was a completely clinical report, it was clinical, it was not something which was based on everyday theoretical operation, operation that's going to take place, period.

So I -- From this discussion in the meeting, I did in fact inform Mr. Jones that I felt like the outcome would be that Premier would be left out of the unit.

Q. All right, sir. That did not occur?

A. No, sir, it did not.

And after that did not happen, Mr. Jones contacted me and asked me to see what I thought about the equities, about the log correlations, and just generally give him an idea as to how I felt, since I had been in on a lot of unitizations and parameters and equities and all of the rest of the stuff, to give him an idea of what I felt about the report, as to accuracy.

Q. What did you tell him?

A. I told him that I would take a look at the --

mainly the log correlation, because I had already spotted some things in the report that concerned me as to the correlation of the Exxon/Yates wells over to the Premier wells, especially the Upper Cherry Canyon.

What I did to corroborate this, independent of any instructions from anyone, I took the WM4, the offset well to the Premier FV3, and at the risk of over-simplification I disregarded the tops and bases of the Cherry Canyon and picked out, I believe there's five -- yes, five -- very obvious correlative points that I could tie in and correlate the WM4 well with the FV3 well.

Q. You're doing this based upon your own experience and knowledge?

A. Yes, sir, that's right, independent of anything -- of anything else. Independent of even the reservoir that we're studying, independent of that.

But I took the logs and correlated them in the vicinity of the Upper Cherry Canyon, and from my correlation I concluded that there were five major characteristics on the log profile, on the gamma ray, that we could specifically identify and accurately correlate. And like I said, maybe oversimplification, but I believe it basically ties everything together.

Q. What two wells are on the B-B' cross-section, Exhibit 7?

A. The Premier FV3 well and the Yates Petroleum Corporation well, the WM4, which is an east offset to the FV3.

Q. How does your conclusion about the correlation compare to Mr. Harrington's work?

A. After I correlated these major five points -- and I can give you those if you would like. Those major five characteristics mainly were shale breaks on the gamma ray, the lithology.

And after I did this correlation, I then could see that it corroborated Mr. Harrington's work, especially on the base of the Upper Cherry Canyon.

Q. Did you do anything else with your cross-section to further verify your opinion about the conclusion of the correlation?

A. No, sir, I did not. After I did the five points I did do this: I called in two log experts from different companies and did not tell them anything, that this was a unit, that this had a technical report involved or anything. I just gave them the logs and I said, You boys get a cup of coffee and sit over there on that couch and correlate these logs for me.

MR. BRUCE: Mr. Examiner, I think I'm going to object even before he gets to the answer. He's testifying about what another expert is saying. That's a classic

hearsay. It's not admissible.

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Rule 701 of the Rules of Evidence for the State of New Mexico allow an expert such as Mr. White to incorporate the testimony, conclusions and work product of other experts.

It's permitted here. We've been doing it for two days now. It's certainly appropriate for him to talk about what other experts have done in terms of log correlation. It's a well-established exception to the hearsay. It's permitted by expert witnesses.

(Off the record)

EXAMINER STOGNER: I would agree with Mr. Bruce in this case, Mr. Kellahin. The other experts are not here, so I would like to keep it to the exhibit at hand, Exhibit Number 7. So if we can identify on that, with your expertise, Mr. White -- Mr. Kellahin, if you'll key the question towards that.

Q. (By Mr. Kellahin) Based upon the results of the log correlation in your work, did you present your work to Mr. Harrington?

A. Yes, after I finished my correlation with these five major points of lithology that I could tie together, and I felt like it uncomplicated the situation, I presented these to Mr. Harrington, and my correlation was identical

to Mr. Harrington's.

Q. All right. There was nothing in his work product that you examined that caused you to change your own conclusions about this issue?

A. No, sir, there was not.

Q. In looking at the technical report, the Exxon Exhibit 10, there's lots of information in it, and I don't propose to cover all these issues with you, Mr. White.

But I would like to ask you whether or not you had an opportunity to examine how the study report handles the concept of the waterflood target oil. Let's take that for a moment. Identify what we're talking about, and then see how that fits into the system.

A. The technical report handles the waterflood target oil by wells, tracts, and I don't have that exhibit in front of me but the target oil is listed -- waterflood target oil is listed for each tract in each well in the unit perimeter.

Q. Mr. White, we talked about the Exhibit E-6 a while ago with Mr. Harrington. I'm going to show you the exhibit book from Exxon, and I've turned to the exhibit that says Exhibit E-6.

If you go through that spreadsheet in E-6, there's going to be a value assigned to each of these tracts for a waterflood target oil potential, is there not?

I forgot the vocabulary, but there is a volume of recoverable oil --

A. Yes, sir.

Q. -- that's attributed to that incremental portion of total recovery that's going to be responding to waterflooding?

A. Yes, sir, and as that is tabulated, it is separate from CO_2 and primary.

Q. All right. When you look at the unit agreement and the subsequent conclusions, you get to the Premier tracts, and they receive no value for the incremental oil attributed to waterflood, do they?

A. No, sir, they receive no value. If we could move to Exhibit 8, I could spot some waterflood target oil on Exhibit 8.

Q. All right, sir. What I'm looking for is, you have taken -- You've taken Exhibit E-6 --

A. Yes, sir.

Q. -- taken that information out of that spreadsheet, and you have put it on Exhibit Number 8?

A. Yes, sir, the Exhibit 8 when it comes into play here has numbers on it taken from the technical report.

Q. Let's look at Exhibit 8.

A. Exhibit 8?

Q. What have you done?

A. There again, it's a possibly simplification, but I took the waterflood target oil as attributed to the different wells and tracts by the Exxon technical report and spotted those on the base map, the Avalon-Delaware field base map, and this concerned me.

I looked at it from a standpoint of Premier's equity at the same time I was looking at this, and when I saw the target oil for waterflood reserves as exhibited on the Exhibit 8, in the Premier acreage over there on the west side, starting at the top, 480, 630 -- 63 -- these are thousands of barrels -- and I looked at those target numbers and then I could not find any equity for waterflood reserves given to Premier.

Q. Now, you're only working with their technical report, and this doesn't include anything that Harrington has done in terms of the geologic interpretation he's got?

A. No, sir, it does not.

Q. You're working strictly with their geologic assumptions and their technical report?

A. Yes, sir, from the Exxon report.

So I told Premier, I said, It looks like that Yates and Exxon want to use your tract for injection purposes and to recover reserves between the Premier tract and their tracts, without giving you any equity at all, and you can't have both.

You either have to have some equity or you have to be left out of the unit. Exxon and Yates can't have both pieces of pie by giving you waterflood target oil and then denying equity in the waterflood reserve.

Q. Well, start in the southeast corner of the unit, and when you take the values out of their spreadsheet and put it down as this waterflood target oil per tract, what does this show you?

A. Well, it shows me that in the southeast portion there's some waterflood target oil that probably is not even economically recoverable in the waterflood. And yet those particular tracts in that area received equity.

Q. So what happens when you move over to the Premier tracts on the northwest side of the unit?

A. Well, there again, I see a couple million barrels of -- approximately -- of waterflood target oil, which would be in the secondary phase of the operation. And when I see that many barrels in the report that Exxon prepared and then I look at the equity that Exxon -- that Premier received, which was all attributable to CO_2, nothing to waterflood, nothing to secondary, I can't take that together, I can't --

Q. When you look at the spreadsheet can you figure out how it suddenly disappeared from the equity?

A. No, sir, I cannot tell you that, and I have --

from the -- You see, from the geological interpretations that we've done earlier, that Mr. Harrington has done, that I've done, when we take the geological interpretations, we see the gross interval change in our opinion, and that's our conclusion, it should change, we think we're accurate.

Now, then, that just goes down further and changes net. When you change net, then you have an inaccuracy or misconception in the calculation of equity. So it all runs down into that point.

And then when we see the waterflood target oil as posted by Exxon in Exhibit E-6 -- yeah -- then I can't come up with why the Premier tract is not credited with the proper equity.

Q. Let's turn to another topic. Did you examine the issue of how the oil attributed to workover -- We had Dr. Boneau yesterday tell us the workover potential value was credited to the waterflood incremental oil.

A. Yes, sir.

Q. When you look at G-19 in the exhibit, Exxon Exhibit 10 -- there's the spreadsheet there -- the workover target oil is factored into the participation values for the waterflood?

A. Yes, it is involved in the parameter -- that is, one of the three parameters that is figured into the equity.

Q. As a reservoir engineer, when you look at the offsetting Yates tracts to the west and look at the Premier tracts, does this make sense to you in terms of workover potential and how this credit is applied?

A. Most of the reservoirs I've worked with, and worked with unit -- on subcommittees, generally subcommittees and so on, when we establish parameters -- most of them have never included, to my knowledge, workover reserves.

Because if you see in the Exhibit G-19 266,000 barrels of workover reserves, if I was the administration and that hadn't been developed, explored, I think I'd get rid of somebody, because this 266,000 barrels of workover oil setting in a well out there, and knowing that unitization is going to take place, I think I would have been working it over. Of course, they did. Now, I think Mr. Boneau testified that it's nowhere near going to reach that value of 266,000 barrels.

Then he testified that they don't want to change the report. Well, how come you have 266,000 barrels attributed from workover oil? The engineer for Yates Petroleum testifies that this isn't going to do this, but he doesn't want to revamp the report. Well, how can you do that? I guess I'm asking the question, but I'm leaving it open.

Q. What were your ultimate conclusions to -- and recommendations to Mr. Jones with regards to the unit?

A. This is what I recommended. I told Mr. Jones that with the technical report as it stands and the equity only in CO_2 reserves -- which is to me honestly quite clinical at this time, there's nothing that says that's going to even happen -- and with that being his contribution to this unit, I would request the Examiner, respectfully request, that I be allowed to remain out of the unit completely, or, secondly, that we have some kind of re-evaluation by Exxon that has the facilities to do this -- I know they do -- to re-examine this and re-establish equities, which takes into consideration the fact that there's less workover target oil on some of the Exxon/Yates tracts, there's some on the Premier tract, and certainly there's some waterflood secondary oil to be recovered on the Premier tract.

Now, those two things is what I recommended to Mr. Jones.

Q. In your opinion, should the Division approve the statutory unitization as proposed by Exxon?

A. Pardon me?

Q. In your opinion, should the Division approve the statutory unitization as proposed by Exxon?

A. No. Statutory unitization -- as Mr. Stogner

knows, better than I do -- it has a purpose and a good one, it has a definite purpose. It saves a lot of people from riding the wagon, so to speak, without putting up the money. It's saved a lot of reserves, it's saved waste, it's protected correlative rights in many cases.

But the tailgate on statutory pooling is still the -- It has to be equitable for all the people involved inside of the perimeter of the unit.

I think that if Exxon owned Premier's tracts, or Yates, and saw those target oil -- waterflood target figures, I think they would not want to be credited with one percent, and I think they probably would move over further west, if it were their tract, and include more acreage.

Q. At this point, does Tract 6 the Premier tract, receive relative value for its potential contribution to the unit in terms of remaining primary potential, waterflood potential and CO_2 potential?

A. No, no, no.

MR. KELLAHIN: That concludes my examination of Mr. White.

We move the introduction of his Exhibits 7 and 8.

EXAMINER STOGNER: Exhibit 7 and 8 will be admitted into evidence.

Mr. Bruce, your witness.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Your Exhibit 7, Mr. White, when did you prepare that correlation?

A. I prepared this correlation -- It was after the June meeting in Midland with Exxon. That meeting, I know. It was sometime --

Q. June, 1994?

A. Yes, uh-huh. Yes.

Q. So you prepared that well in advance of anything that Mr. Harrington did?

A. Yes, sir, I had this prepared probably -- I'm going to say I had this prepared along in January, February of 1995.

Q. Have you ever made a calculation of how much primary reserves remain on Tract 6, the 160-acre Premier tract?

A. No, sir, I have not.

Q. You haven't. Have you calculated waterflood reserves on that?

A. No, sir.

Q. Did you ever inform Mr. Jones that the only way to really prove up his acreage was to develop it by drilling a well or recompleting a well?

A. Yes, sir.

Q. When?

A. I have put it this way, that it would be nice if this had been the -- you know, if the primary production had been developed. Mr. Jones has some real, concrete and very, very serious comments to make about that, though.

There's a situation that exists that's different from Exxon or Yates on development, and I did inform Mr. Jones that it would have been better -- I'll put it that way -- had we developed the primary reserves on this tract.

Q. Okay, but when did you recommend this to him?

A. Probably two or three different times, driving down the road. Who knows? I don't know what day.

Q. 1993?

A. I -- Yeah, yeah, probably sometime in 1993. I wouldn't -- I don't have any idea.

Q. So you -- Since you've never calculated reserves, you've never done pay-out calculations for a well on Tract 6 either?

A. No, sir, I haven't.

Q. Do you know the current status of the FV3 well?

A. Yes, sir.

Q. What is it?

A. It's temporarily abandoned.

Q. When was the date of last production?

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

one.

Q. Okay. Now, if workover reserves do exist on the Premier tract, why haven't they made some attempt to go after that?

A. Well, there again, I think that that will be explained better by another witness. I don't know.

Q. Now, on your Exhibit 8, the waterflood target oil -- Now, you have examined the technical report, right?

A. Yes, sir.

Q. Are you aware that the waterflood target oil does not include history matching?

A. Does not include what?

Q. History matching.

A. No.

Q. You're not aware of that?

A. No.

Q. So you're not aware that these figures were calibrated with actual production?

A. No, sir.

Q. Another thing on this map, of course, there's no planned waterflood injectors over on the Premier tract either, is there?

A. I don't know.

MR. BRUCE: Just a minute, Mr. Examiner.

Nothing further.

EXAMINER STOGNER: Mr. Bruce.

Mr. Carr?

EXAMINATION

BY MR. CARR:

Q. Mr. White, just a brief question.

I understood your testimony to be that you in your experience considered it inappropriate to include in one of these equity formulas reserves that had not been developed; was that your testimony?

A. Would you repeat that, Mr. Carr?

Q. I understood you to say that you, in your experience, felt it was inappropriate to include in one of these equity calculations or formulas reserves that had not been developed; was that your testimony?

A. Yes, that's right, workover reserves. I just made this statement that I had not run into that kind of situation.

Q. And what you're here asking today is that credits be given to the Premier tract for reserves that they have never even tested?

A. Yes, that's right.

MR. CARR: Thank you.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Kellahin, any more redirect?

MR. KELLAHIN: Yes, sir.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. There's a difference, is there not, Mr. White, between workover reserves and remaining primary recoverable oil to be credited to a tract?

A. Well, they could be lumped together, they could be separated. It would depend on the situation and the reservoir. It would depend on what had been developed and what hadn't been developed.

Q. So when we talk about how Exxon has approached this in terms of methodology, the workover potential has been added into the waterflood component of oil recovery?

A. Yes, sir.

Q. And that remaining primary oil is going to be identified in a different way?

A. Yes, sir.

MR. KELLAHIN: No further questions.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

Mr. Bruce, anything further for this witness?

MR. BRUCE: No, sir.

EXAMINER STOGNER: Does anybody else have anything further for Mr. White?

You may be excused at this time.

Let's take a 20-minute recess.

(Thereupon, a recess was taken at 9:55 a.m.)

(The following proceedings had at 10:17 a.m.)

EXAMINER STOGNER: Hearing will come to order.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner. Call at this time Mr. Ken Jones.

KENNETH C. JONES,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Jones, would you please state your name and where you reside?

A. Kenneth C. Jones, in Dallas, Texas.

Q. Mr. Jones, what is your involvement with the company known as Premier Oil and Gas, Inc.?

A. I'm the owner and probably what you would term as head of operations, since it's kind of a mom-and-pop operation.

Q. That was a company that your dad and mom had when your dad was alive?

A. In association with me.

Q. Okay. What's your educational background?

A. I have a chemistry degree from Baylor University and also a Doctor of Dental Surgery degree from Baylor College of Dentistry in Dallas.

Q. In addition to handling your family's oil and gas operations under Premier, you're a practicing dentist?

A. Correct.

Q. How did you go about analyzing and reviewing what we've been talking about for a day and a half, the Exxon technical report, this August of 1992 report? Did you read it?

A. A number of times.

Q. As a practical oil and gas operator, what is your background and ability to understand for your own information a report like this?

A. I've been around the oil and gas business since probably I was a junior or senior in high school, when Dad would have logs spread across the table and he'd read the investigating stuff, so it's been a kind of a hands-on type of operation. I haven't really had any formal education; I've read books in the oil and gas -- Schlumberger, log books, those kinds of things -- and taught myself.

Q. What kind of operation did your dad have under Premier? What was he doing?

A. It's a small oil and gas company. We operated a waterflood and various little wells around the area, in Eddy County and -- I think we have one well in Lea County.

Q. When you got the technical report, you spent time reviewing it and reading it?

A. Correct, a lot.

Q. Describe for us the kinds of things that you saw in the report and what kind of reaction you had to those items that were important to you.

A. Well, initially I was a little flabbergasted at the amount of reserves in the report. I had no idea that CO_2 could do quite what it was going to do, and I was -- I was excited about what the report was going to lead to.

I spent many hours looking at logs, correlating logs out in the area, justifying their picks, following their methodology in terms of oil in place, looking at their economics, evaluating their economics in trying to get a sense of, is this really feasible? That's pretty much it.

Q. As you studied the report, trying to see how it was put together to make sense of the methodology and the analysis, did you come across, in your review, any items that simply were mistakes?

A. Yes I did.

Q. I don't want to spend the rest of the morning looking at those issues, but can you give us an illustration of the kinds of things that you found that have caused you concern?

A. Well, there was a problem in the Brushy Canyon on the FV1.

Q. Let's use that as an example, just to illustrate it.

A. Okay.

Q. When you go to the Brushy Canyon on the FV1, somewhere in this book -- I think it's in the log picks -- there's a section that will pick a log and you'll get a value for the Brushy Canyon, right?

A. Correct.

Q. All right. Where would we find that in the book?

A. That's in Appendix C-1. It's about the -- Let's see. The third page. The FV1 is listed up at the back of the third page, at the top.

Q. You're in Exhibit C-1?

A. Correct.

Q. The book is organized so you have --

A. Well, it's in the appendix section, Appendix C-1. It says "Tops File" on it. And the third page, on the back of the third page, lists the correlative points for the FV1.

Q. All right, give us the example. What did they have?

A. We've got a small problem here in that they've got an LC and an LC pick, 3597 and 3627, and if you can for instance just look down at the CE well, that should be an LC and an LM pick. So what they list as 3627 should really

be LM.

Q. All right.

A. The significance of that is that when you go back to their cross-sectional maps and you go to cross-sectional number 2 --

Q. Let's do that, let's take the map book, turn to cross-sectional 2. The FV1 is the first well on the left?

A. Correct.

Q. All right.

A. And the computer goes in and it draws the LCH top at the LM level, and it actually picks up this 3627 as the top, and it's very easily seen that, as listed in the report, the LC top is at 3597. So there's a difference of 30 feet there.

Q. And the FV1, then, comes up short by 32 feet?

A. Correct, when you subtract what their LM value is down to the base of the Brushy Canyon, that's 185 feet. And if you take that value and go to Map 4 --

Q. All right, let's see how it got transformed, then, when we go to Map 4.

A. You'll see that they have listed the FV1 as 185 gross feet.

Q. And what should that value be?

A. 215 feet.

Q. The log value, then, from part of the report says

215?

A. Correct.

Q. And yet when it gets transposed to Map 4, it now only has 185 feet?

A. Correct.

Q. As you place the 200-foot contour, then, the 200-foot contour is east of that well, and in fact it should be west of the well?

A. Correct. And all these contours are computer-generated, so all the contours are going to change from that point.

Now, to substantiate that this is actually an error in their volumetrics, if you go to E-6, Exhibit E-6, and it's the fourth page from the back of E-6, the FV1 is actually -- the location, 1309. It will be the fourth well listed down at the top.

Q. Okay, what does that show you?

A. That shows me that on this location they're going to drill a producer when it gets to -- CO_2 of whenever -- another 330 feet closer to the east section line, or it will be 660 off of the east section line between Yates and us. They have listed that that location is going to have 212 gross feet of interval.

Now, when you follow the trend, the FV1, instead of being listed at 185, should be listed at 215. And if

you follow the computer generation and look over to the EP5, which they have correct, it's 283 feet.

All of those contour lines are incorrect, and they need to be redone. And this will substantially change oil in place also.

Q. In addition to your own review of the book, did you hire consultants to aid you in the process?

A. Yes, I did.

Q. What conclusions have you come to on behalf of your company?

A. The conclusions I have come to is, we have run into a problem in terms of how this equity is being driven, and the conclusions are based upon the extra credit on the E-6, the EP6.

This miscalculation, lack of waterflood reserves, there's a question of lack of primary reserves -- And because of this formula which was generated between Yates and Exxon and which was not any way driven by us, we feel like we're in an unequitable position.

Q. When Exxon was first proposing the formation of the working interest unit back in 1991, were you, your mom or dad included or invited to be included in that process?

A. Well, apparently they had a May meeting in 1991, which we had no notification for, which was, I guess, a subcommittee meeting or something to allow Exxon to

generate this technical report.

Q. Mr. Boneau referred yesterday to an OCD GOR case in which he made a presentation for Yates, asking for an increase in the gas-oil ratio.

A. Correct.

Q. And your dad was alive at that time and appeared and made statements to the Division with regards to what his intentions were for his property?

A. Correct.

Q. Are you familiar with that?

A. Yes, I am.

Q. Why don't you give us your point of view in the chronology with regards to what has happened to yours and your family's interest in this tract?

A. This whole situation with nondevelopment is not in any way Premier's fault, not in any way Yates' fault, not in any way Exxon's fault; it is a matter of circumstances which were generated out of history. There's not any fault that belies anybody at this point.

The lease, the FV lease, was purchased in July of 1990, and it was purchased with in mind the Bone Springs formation and the Delaware formation. Those were our two major targets when we purchased the lease from Chevron.

Yates requested in the Brushy Canyon an increase of GOR for the Brushy Canyon, and we opposed it saying that

it was going to relieve reservoir pressure too quickly.

And that's basically the circumstances behind that GOR case.

Q. How does that fit in with the first knowledge you had that Exxon was attempting to put your tract in a waterflood unit?

A. We first knew about the potential unitization from notice from Exxon in September of 1994 -- not 1994, September of 1991.

The sequence of events comes about that the purchase of the lease was in July of 1990. From that we had two gas wells, one in the Pennsylvanian formation, one in the Atoka formation, which were connected to El Paso Natural Gas, which had extremely high line pressure. We were unable to produce those wells into that line pressure.

El Paso canceled -- The contract for the gas was cancelable in December, and El Paso canceled it.

In November we entered into negotiations with GPM, which had a low-pressure gas line in the area. Those negotiations continued on into about February of 1991, and in February of 1991 we came to agreement. In March of 1991, they laid the new lines over to the two gas wells, and approximately April 1st is when we began production into those lines.

A very unusual circumstance came about in June of

1991. In June of 1991, we received notification from the State of New Mexico that they were taking the lease from us. We had no idea why. It was a very unusual move.

We notified our attorneys in Artesia, Carson and Haas. They went back in and researched the information, sent a letter to the State giving them the evidence that we were in good faith in operating on the lease, and we were -- we had established production at that point in time.

The lease -- The State reviewed that notification and sent us back -- they reinstated us in August of 1991, at that point in time.

Q. At this point, with the lease reinstated and ready for you to have the opportunity, then, to further explore, develop on a leasehold basis your property, why did that not go forward?

A. Well, it was July of 1991, and in September of 1991, we received notification from Exxon of a possible unit -- or they were going to have a technical report for this unit, they were going to have a meeting in November of 1991. In October of 1991 is when my father was diagnosed with brain cancer.

Q. Under the time line that Exxon originally proposed for the waterflood project, what was their time line for implementation of the project?

A. They were going to have it implemented by June of

1992. So there was no chance or no -- We were pretty disturbed by these facts. At that point in time, we really hadn't seen the technical report. We were on the phone a couple times -- I was not on the phone a couple times, my father was on the phone a couple of times with Exxon, trying to find out some information about this possible unitization.

Q. Were you and your dad willing to go forward with your own extraction of hydrocarbons from the Delaware in the face of the Exxon effort to unitize your property?

A. Not with the potential unitization there. There's not any -- You can't go back in and get payout on your wells if unitization is right upon you.

Q. Unitization discussions commenced, then, in late 1991?

A. Yes, we were unable to attend the meeting. He had had brain surgery and was going through radiation treatments at that time, and I was back in at a new practice in Dallas, so I was unable to attend.

But we were sent the technical report in the mail, which is the mystery technical report which nobody seems to know about.

Q. As the process proceeded, then, with regards to Premier's interest in the unit, what position did you take with regards to inclusion of Premier's tract in the unit?

A. Well, once again, I started going through the technical report and reviewing facts and trying to establish some attempt of what's possible equity in the unit.

I had asked Exxon what the equity formula was going to be or what they were going to propose. I was kind of flabbergasted at the extent of the report. I was a novice at it, so I did not -- I was quite taken back.

Exxon would not reveal what the equity formula was. They said they would save that until everybody had an operating -- until they had an operating meeting.

The reserves report which -- They did give me one clue. They did say it's going to be heavily based upon reserves. And at that time the only reserve report that I -- Well, there was not one in this report, which broke it tract by tract. But in August of 1992, when the new technical report came out, they did have a tract-by-tract reserve breakdown.

And so I basically looked at those numbers and said, Well, whatever. So we'll see where the equity formula is going to come from.

Q. As things finally evolved by May and June of 1994, what was your position and what was Exxon's position concerning the Premier tract?

A. In April -- Let me say this: In April of 1994,

at that operation meeting, is when Exxon revealed their equity formula, and I found it rather disturbing that they would break it down into a primary and a secondary and a tertiary reserve.

The initial pre-voting formulas that came out were based upon land, were based upon barrels of oil per day, were based upon cum oil, and now we were dealing with a whole different element. It was not one that was similar to what was initially published.

Q. When you had these discussions, with whom were you talking, with Exxon?

A. At that time it was -- Let me say that in 1994 it was with Mr. Mayhew.

Q. And what was your understanding of his responsibilities for Exxon for this project?

A. He was the project manager.

Q. Take us forward in point of time where you were requesting the deletion of your tracts.

A. I didn't request deletion of the tracts until after I saw the equity formula and I felt like it was unfair to us.

I did have hopes of Yates going back and reviewing the geology that -- at that time that Paul White and I had had. We had a meeting in May of 1994. Yates did not -- They did not care for the geology, I guess. I don't

know what words to use.

At that meeting I said, Then take me out, there's no equity there for me, there's nothing -- At that time we were dealing with a two-phase formula, which was zero-percent equity for me at the start, and I was having to contribute my tracts for nothing at all, and it was just not being equitable. It was not a fair situation.

I did not have time to do this primary, I did not have time to go in and test secondary.

I had written letters to Mr. Long in the past, saying, If you guys have got this kind of workover reserves, then fine, let's just let things be, you go do your workover, recover your capital from that, allow me to be alone and do my own.

Q. What if any conversations did you and Mr. Mayhew have about deleting the Premier tracts from the unit?

A. In the April meeting he said he would not statutorily unitize, he would not go after Premier's tracts in statutory unitization.

Q. And this was when?

A. This was actually in April of 1994, at that operational meeting.

Q. Summarize for the Division Examiner your position in this matter.

A. My position is, one of two things needs to

happen:

We either need to be deleted from the unit because of these errors which are substantial to our property. And since Exxon and Yates have come to agreement, then perhaps they should just cut us out, go about their unit and do their business.

Or, we need to go back and recorrect these errors. We need to correct the geological errors, we need to correct reserves on the EP6, we need to correct contour lines, we need to give waterflood reserves to this property. And at that point in time, when they run the stuff through the computer, then let's sit down and get to an equity formula.

MR. KELLAHIN: Thank you, Mr. Examiner, that concludes my examination of Mr. Jones.

EXAMINER STOGNER: Are you offering Mr. Jones for cross-examination?

MR. KELLAHIN: Certainly.

EXAMINER STOGNER: Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Jones, what acreage does the FV lease cover?

A. The FV lease covers 480 acres within our -- within the Section 25.

Q. All within Section 25?

A. Yes, sir.

Q. Has Premier ever drilled any well on that acreage?

A. No, we have not, not to this time. We have attempted several recompletions in the FV1, but we have not drilled anywhere else.

Q. Okay. In the FV1 only?

A. Correct, at this time.

Q. What zones?

A. We did a recompletion in the Penn and a major try in the first Bone Springs sand.

Q. Not in the Delaware?

A. We have not gotten to the Delaware yet. I'm actually saving that well for a potential water disposal in the future.

Q. Have you or -- Have you ever employed an engineer to calculate primary or secondary reserves under -- in the Delaware, under what we've referred to as Tract 6?

A. No, we have not. We have done some handwritten numbers, but we have not -- I would not go into court with them.

Q. Have you ever attempted to get financing for a well on Tract 6, to drill a new well?

A. I don't know why I would need financing. Are you implying that --

Q. I don't know what -- I mean, I don't know -- Would you finance it out of your own cash flow?

A. Generally.

Q. If Tract 6 is left out of the unit, do you have any future plans to get reserves, to be a waterflood or a CO_2 flood?

A. Yes, we do.

Q. What are those?

A. Well, the consultants have looked at this, and they see potential back over to the FV2.

For instance, in the FV2 -- This was not something we knew before we bought the lease, but the FV2 had a substantial blowout in the Delaware -- it's in the Lower Brushy Canyon -- probably one that's bigger than any of the Exxon wells.

Q. And you haven't attempted to recomplete that?

A. No, we have not, because we have another Bone Springs that may be substantial in the area.

Q. Now, did Exxon ever give you an opportunity to present your geology to Exxon and to the other working interest owners?

A. Yes, they did.

Q. On more than one occasion?

A. We met with Exxon, Paul White met with Exxon -- It was in 1993, I'm not real familiar with the month. It

seems like it was spring or in the summertime. And we met with Tom Kane and Dave Cantrell and with Larry Long at that meeting. There was no other operational people at that meeting.

Q. Have any other working interest owners within the proposed unit supported your geology?

A. We have not gone to anybody else except for in the May meeting when Yates was there.

Q. Did Yates agree with your geology?

A. D'Nese Fly did not agree with the geology.

Q. Have you looked at the unit agreement? Have you read it?

A. Yes, I have.

Q. Now, does that participation formula, the equity formula, offer value to remaining primary for developed oils?

A. Are you talking about on our tracts?

Q. On any tract.

A. Additional --

Q. If you drilled a well and you had remaining primary, would you be given credit for that remaining primary?

A. Not in the technical report; there would have to be a change. I'm not following your --

Q. If you drilled a well and completed it in the

Delaware and it was productive --

A. Correct.

Q. -- under the participation formula, would you be given credit?

A. Yes, I would.

Q. And does the unit agreement, or the unit agreement and unit operating agreement, provide for investment equalization that assigns value to previous investments before the institution of the unit?

A. It does, but it's one that I don't agree with.

Q. But nonetheless, if you had developed your acreage, you would be given an investment equalization for a new well that you bring into the unit?

A. Correct. But that was not of any knowledge prior to May of -- I mean the April, 1994, meeting.

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

EXAMINER STOGNER: Mr. Carr?

EXAMINATION

BY MR. CARR:

Q. Dr. Jones, it's my understanding that Premier acquired its interest in the property involved in this case in 1990; is that right?

A. Yes, sir.

Q. And since 1990, how many wells has Premier drilled anywhere?

A. We have not drilled any wells since 1990.

Q. Now, in 1991, that was the time you first learned of the efforts to unitize the Avalon-Delaware; is that correct?

A. In September of 1991.

Q. And at that time, you were excited about the possibility of what could happen on these properties with CO_2 injection; was that your testimony?

A. When I received this technical report in the spring of 1992, yes, sir, I was excited about that.

Q. And then you received data in August of 1992 from Exxon, and if I understood your testimony, at that time you were concerned about the credit that was being given to the Premier tracts?

A. No, sir, not at that time, I was not concerned, because I was looking at the total reserves of -- versus -- and this was coming from -- the only little clues I was getting from Exxon in terms of what the equity formula was going to be, but I was looking at total reserves of our tract contributed to the unit.

Q. When you learned about the equity formula, that was in April of 1994?

A. Yes, sir.

Q. And at that time you were concerned about the values assigned to the Premier property?

A. Definitely.

Q. But not the --

A. And the geological pick, excuse me.

Q. You weren't happy with these figures?

A. No, sir, because they were not -- I was getting a zero-percent equity, and I was having to contribute acreage at that time.

Q. And you were unhappy with that, were you not?

A. Extremely.

Q. And wouldn't the way to disprove these figures have been to go out and done something on the F3 [*sic*] well?

A. We were still in the process of this unitization, and you still have got to be able to -- It's an economic issue. You've got to be able to get your capital back out.

Q. Wouldn't you have, if you had done something on the F3 -- FV3 well -- have additional data that you could have taken to Exxon to use, to try and get them to change the value assigned to these tracts?

A. I don't think they would have listened to me.

Q. But you didn't attempt to even acquire the data, did you?

A. At that point in time I had already taken myself out of the unit.

Q. And you haven't attempted to acquire the data

since that time, have you?

A. I still -- That's why we're here in court today, sir.

Q. And you --

A. And they're still trying statutory unitization.

Q. My question is, have you done anything since April, 1994, to acquire additional information, technical data, on the FV3?

A. No, sir.

MR. CARR: Thank you.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Kellahin, any redirect?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Are there any other questions of Dr. Jones?

You may be excused, Dr. Jones.

Mr. Kellahin?

MR. KELLAHIN: That concludes my presentation.

EXAMINER STOGNER: I believe at the beginning there were -- I'm sorry, Mr. Bruce, are there -- Would you wish to recall another witness at this time?

MR. BRUCE: I have one witness I'd like to recall. Probably have about 10, 15 minutes of questions for him.

EXAMINER STOGNER: Okay, you may recall your

witness at this time.

MR. BRUCE: We recall Mr. Cantrell, who's been previously qualified.

DAVID L. CANTRELL,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Mr. Cantrell, were you present listening to the testimony of Mr. Harrington?

A. Yes, I was.

Q. And did you hear him talk about Exxon having incorrectly located wells on all of its maps?

A. Yes, I did.

Q. Would you refer to Exxon Exhibit 40, what we have marked as Exxon Exhibit 40, and identify that for the Examiner?

A. Okay, Exhibit 40 is a portion of an aerial photograph taken of the proposed unit area.

Q. And this map shows the extreme northwest corner of the unit area?

A. That's correct.

Q. The small part?

A. That's correct. In fact, if you look in the technical report, in either the map section or Volume I or

Volume II, if you'll look at Map Number 1, it's a base map of the Pool, and what we're actually zeroing in on here, on the small photograph, is that sort of northern portion of the field.

Q. And Exhibit 40 that we've handed out is actually just a portion of Exhibit 40 which we have up on the board here?

A. That's correct.

Q. And Exhibit 40 up on the board shows the outline of the entire unit area with all the wells in this aerial photo?

A. That's correct.

Q. So what we're dealing with is the extreme northwest portion of the unit?

A. That's correct.

Q. Okay. What does that show with respect to the location of the Yates wells just outside the unit in Section 19, I believe, southwest quarter?

A. Okay, if you'll take a look at the wells in the lower part of the photograph, they're identified -- Well, the middle well is 1111, which, if you'll refer to the base map, is the EP7. Below that, the 1311, which is the EP5. And then just to the right of that is the 1313, the EP8.

The wells above the EP7, the 1111, include the two wells Mr. Harrington referred to earlier, the EP2 and

the EP3.

As he pointed out, the permitted locations for these wells is to the right of where we've shown them. It's to the east of where we've shown them.

Q. The permitted location for those two Yates wells is actually in the southeast quarter of the southwest quarter of Section --

A. That's correct.

Q. And where is the actual location?

A. Well, the actual location is as we've shown in our maps; it's in the southwest of the southwest. And this aerial photo just sort of dramatizes to you that location. You can clearly see the well pad for those two wells on there.

Q. So Exxon in all of its reports, in all of the technical data, was using the correct well location?

A. This survey constituted the basis for the mapping that we did, and it's certified by a professional engineer, signed and stamped there on the bottom.

Q. So anything about Exxon's maps being incorrect because of incorrect well locations is hogwash?

A. That's correct.

Q. So apparently Mr. Harrington is the one who used incorrect well locations?

A. That's correct.

Q. And Mr. Cantrell, for this next exhibit if you feel more comfortable standing and pointing, perhaps you can do that, because you have about eight or nine different colors here.

First, just identify what this cross-section --

A. Okay, this is a cross-section in the area of the Eddy State -- Eddy FV State Number 3 well, which we've been spending so much time discussing this morning.

It also shows some nearby wells in the area, and then moves out into more sort of the heart of the field where most of the production has occurred in this field, in wells that have correlations upon which we all apparently agree.

Q. And your map does start down in the Brushy Canyon and go up to the Upper Cherry Canyon?

A. That's correct.

Q. Now, if I can, the line of interest, I believe, is this black line showing the base of the Upper Cherry Canyon?

A. Yes, if I could --

Q. Why don't you go to the board --

A. -- just point out a couple of --

Q. -- and point out where you disagree with Mr. Harrington on the FV3. And using your markers here, would you explain why you disagree?

A. Okay. Just, if I could, first, preface this in a few words of description of our methodology.

We -- As I stated yesterday, we started out looking at a regional stratigraphic framework, which we then tied in, using core data, extensive core data in Section 31, and the logs in the center of the field, as I said, where the production occurs, and then we worked outward from the center of the field.

And let me just describe this section to you, this cross-section to you, if I could, to orient you to what we're looking at here.

This cross-section covers a vertical interval from just below the base of the Upper Brushy Canyon reservoir and goes all the way to just above the base of the Goat Seep Reef.

And to orient you to the surfaces that are key here, the top of the Lower Cherry Canyon/Upper Brushy Canyon reservoir here is this dark brown line at the bottom. And you can see that, again, the structure here -- we're moving offstructure as we go to the west here. And then above that there's the base of the Upper Cherry Canyon reservoir here, and then the other surfaces we discussed earlier.

What I'd like to call your attention to are some additional markers that I've correlated across -- or in

between these two points.

Q. Before you do that, maybe, with your pen, could you just write down or maybe mark roughly with a dashed line the base of the Upper Cherry Canyon reservoir that Mr. Harrington used on that map, so -- just for reference purposes?

A. Basically, Mr. Harrington would like to come from this point here, the base. He agrees with us in the W4, I believe, and --

MR. KELLAHIN: Can you give us a color code, Mr. Cantrell?

THE WITNESS: It's a black line.

MR. KELLAHIN: All right, sir. And what log are you pointing to?

THE WITNESS: The W4.

MR. KELLAHIN: I'm with you.

THE WITNESS: And what he would like to do is correlate the point in the W4 to this point that's colored orange in the FV3. In other words, he would like to bring that down.

Okay. Another quick comment in terms of prefacing this to describe our methodology. We were looking -- What I've colored on here are characteristic log signatures, fairly similarly to what Mr. Harrington has done, but we've also spent significant time -- or our

methodology utilized not just individual log picks, but the overall stacking patterns that you see.

In other words, we're looking at this whole package, certain of these beds grouped together. So you look at the overall package, look at the overall stacking sequence, to help you define what's really correlative from well to well.

So just to walk through this, starting from the base of -- starting from the top of the Lower Cherry Canyon and working up, we first off correlate a group of high-resistivity, low-porosity section here together, and you can see how we're thickening as you correlate that across the section from west to east, we thicken from the low structural points, along the plates of the structure, we thicken in those low structural areas and thin as you get up on the crest of the structure.

And you see that same pattern as you move up.

The next package here has some gamma character to it, and actually we've put a correlation marker here at a point at which -- an interval where we would consider probably to be a carbonate. It occurs as a low gamma marker, high-resistivity package. And you can follow that pretty clearly across that. I've colored that purple on this cross-section. Again, you can see this same sort of flattening of the sediment surface, moving from this

structure that we noticed down here, we're starting to flatten as we move up.

Moving on up, again, looking at the packaging here, you see this interval of high gamma radioactivity, and finally capped by high resistivity as you move across. Again, significant flattening.

Q. (By Mr. Bruce) That's the yellow line?

A. That's the yellow line.

Above that you have a very clean -- or what appears to be a very clean section, on the basis of the gamma-ray log, and this package is very consistent as you go all the way across there, that overall package there.

We've -- Within that, above the yellow, we've correlated another marker there that we've colored orange, and you can see how that correlates across.

And that leads you right up, then, into the correlation that we've indicated for the base of the Upper Cherry Canyon.

Q. The black line?

A. The black line, correct.

And you can see how in most wells, this base of the Upper Cherry Canyon is denoted with a very high gamma marker. You can see that here and here --

Q. Okay. The C5 well?

A. I'm sorry, correct. You can actually see that to

some extent in the FV3, but you can certainly see it in the C5, the C17 and the C3.

Q. And that's right at the base of the black line, the thicker black marker?

A. That's correct.

Above that also, I guess another point of our methodology is, we correlate from the bottom up, but we also use correlation horizons above it to sort of correlate down.

And you can see a very characteristic little triplet here which I've colored as -- on the porosity log I've colored it as a pink, yellow and green sort of certain character. And you can see how that little characteristic character extends from the FV3 to the C5, the W4 and so forth, all the way across the section. And that --

Q. That's in every well?

A. That's correct, that's very distinctive. And again, it argues for this pick that we've indicated.

One last point here. We've pointed out how this high gamma marker occurs at the base of the Upper Cherry Canyon pick. You notice in this W4 well, that gamma marker is actually missing. The point here is that because we're using this methodology, this idea of looking at stacking patterns to drive our correlation style, the fact that that one gamma marker happens to be missing here because of

erosion or truncation or whatever, doesn't really take away from the correlation -- validity of the correlation for that horizon.

Okay, if you'll look at the next exhibit...

Q. And that's Exhibit 42, Mr. Cantrell?

A. Okay, thank you.

Q. This is a similar exhibition, isn't it?

A. That's exactly right. Again, it's a cross-section that examines wells in the area around the FV3.

Q. More of a north-south cross-section?

A. More of a north-south, more of a dip-oriented cross-section, if you will.

And it shows the same correlation markers, the same sort of patterns that we were discussing previously. Again, starting from the top of the Lower Cherry Canyon at the base, moving up through these -- the brown markers, the purple marker. Again, very distinctive, very characteristic log pattern, very distinctive stacking style here.

And you can see again the flattening as you move up from the brown correlation line through the purple, through the yellow and so forth.

At the yellow marker you see that you're at the base of this very nice thick -- what appears to be a clean sand on the basis of the gamma ray. You can see how that

very characteristic thick, clean sand carries from well to well, really very easily.

And again, we basically have no disagreement, I think, with Mr. Middleton over in this part of the field, over in --

Q. Mr. Harrington --

A. I'm sorry, thank you. -- over in the center part of the field. It's these correlations on the west side of the field that -- And again, looking above the base of the Cherry Canyon, of the Upper Cherry Canyon reservoir, you can see this same sort of triplet that we discussed earlier.

Q. The Pink-yellow-green triplet?

A. Exactly.

Q. And that shows up not only in the FV3, but in the ZG1 immediately to the south?

A. Exactly. The ZG1 -- We keep referring to it. It is -- As you can see, looking at the log patterns here, it's a very analogous well to the FV3.

They annotated on this cross-section the intervals that have been completed, and you can see this open box on the right-hand side of the depth track in the ZG1. This is actually the interval that they've completed. We've already discussed what the production numbers have been from that well. As I said, we estimate an ultimate

recovery from this interval of the ZG1 to be on the order of 6000 barrels of oil.

Q. In your opinion, are Premier's geological picks for the base of the Upper Cherry Canyon in the FV3 reasonable?

A. I don't think so. Again, as we pointed out, what they would like to do is, bring this base of the Upper Cherry Canyon, the black line inside the C10, they would like to bring -- Can you see? I'm sorry.

MR. JONES: That's okay.

THE WITNESS: They would like to bring that down and correlate that line with the red line -- the orange line.

Q. (By Mr. Bruce) And that would give them a substantial amount of additional reservoir?

A. It would give them a significant additional amount of net thickness.

MR. BRUCE: Thank you, Mr. Cantrell.

I pass the witness, Mr. Examiner.

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Carr, would you like to cross-examine?

MR. CARR: No, I would not. Thank you.

EXAMINER STOGNER: Let's take a five-minute recess at this time.

MR. KELLAHIN: We're ready to go, Mr. Examiner.

EXAMINER STOGNER: Are you? Okay. Well, we'll cancel that, then, if you're ready to --

MR. KELLAHIN: I think my preference, Mr. Examiner, is, I'll leave cross-examination of Mr. Cantrell, and I'll simply call a rebuttal witness.

EXAMINER STOGNER: So if there's no questions of the witness -- although I do have -- I do need to bring this on the record, on Exhibit Number 40.

Q. (By Mr. Bruce) Oh, I would like to move the admission of Exhibits 40 through -- Excuse me, were Exhibits 41 and 42 made by you?

A. Or under my supervision.

Q. Or under your supervision?

A. Yes.

Q. And is Exhibit 40 compiled from company records?

A. Yes.

Q. I would move the admission of Exxon Exhibits 40 through 42, Mr. Examiner.

EXAMINER STOGNER: Are there any objections?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Exhibits 40, 41 and 42 will be admitted into evidence at this time.

Okay, I won't ask questions.

There will be a letter out to the District Supervisor in Artesia, come Monday, concerning the location

of these two wells and the authenticity of the C-101 and the C-102, and that is -- Anyway, that's all that will be said about this at this time.

You may be excused.

MR. BRUCE: I have no further rebuttal.

MR. KELLAHIN: Mr. Carr? Your turn?

MR. CARR: I have nothing.

MR. KELLAHIN: Mr. Examiner, at this time I'd like to call Mr. Stu Hanson.

EXAMINER STOGNER: Mr. Hanson has been sworn, has he not?

MR. KELLAHIN: Yes, sir, he has.

STUART D. HANSON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Hanson, for the record, sir, would you please state your name and occupation?

A. Stuart D. Hanson, consulting geologist.

Q. Mr. Hanson, on prior occasions have you testified as an expert petroleum geologist before the Oil Conservation Division?

A. Yes, sir, I have.

Q. And have you been retained as a consulting

geologist by Mr. Jones on behalf of his company to make a geologic investigation in this case?

A. Yes, I have.

Q. Were you present yesterday and today for Mr. Cantrell's geologic presentation on behalf of Exxon?

A. Yes, I was.

Q. Have you made an independent geologic investigation with regards to the VF3 [*sic*] well?

A. Yes, I have.

Q. And based upon that investigation, have you reached certain geologic conclusions?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Hanson as an expert petroleum geologist.

EXAMINER STOGNER: Are there any objections? There being none, so qualified.

Q. (By Mr. Kellahin) Mr. Hanson, I'm going to ask you, sir, to frame the issue as you see it as an expert with regards to the topic of the VF3 [*sic*] well. What's the issue as you see it?

A. The question specifically deals with the Upper Cherry Canyon reservoir potential of the borehole, how much section is to be attributed to that section based on correlation.

There are some questions involving its prior

productive history, but primarily the question is, can any workover potential or primary reserves be attributed to the well, and is there any waterflood potential in that section with regards to the well?

Q. With regards to your work, what conclusions and opinions did you reach on that topic?

A. I independently correlated the wells, specifically the FV3 and the east offsets, including the WM4.

It is my opinion that Mr. Harrington's and Mr. White's correlations are essentially correct. I have a little additional corroboration for that correlation.

Q. How do your correlations and conclusions compare to that of Mr. Cantrell's?

A. I see an extra 84 feet of gross interval in that Upper Cherry Canyon section that he attributes to a lower unit.

Q. Describe for us the method you've utilized to reach the conclusion you've just given.

A. I attempted to use every bit of evidence that would allow a correlation to be made that was available, and that included wireline well log curves made available to me and drilling time as recorded by an unmanned hotwire gas detector with a penetration rate.

Q. How did you utilize the gas detector?

A. There were two pieces -- Well, first off, I plotted up the five-foot interval drilling time across the zone in question. And the reason for using that interval was so it could be correlated with the two-inch-to-the-100-foot scale with on the logs on the cross-section, for instance, cross-section B-B'.

Q. This gas detector data, is that derived in connection with mud-logging?

A. It is an unmanned mud-logger of a type, yes.

Q. Okay. Describe what you did to correlate the gas detector or the mud log with the other well logs.

A. Okay, first I prepared a drilling time plot, as I mentioned, which is our Exhibit Number 10.

Q. All right, let's look at that. Describe for us what you did.

A. The penetration rate recorder on the gas detector takes off each foot as it is penetrated. Every time they get to a connection, they mark the connection off the tally sheet, drill-pipe tally sheet, onto the gas recorder, so that you have reference points from connection to connection.

You count backward, forwards, between the two. The graph paper that it's recorded on is divided up into 15-minute intervals. I used a scale to break that down so that I could read the time per five-foot interval. That

was then plotted on this graph paper in Exhibit Number 10.

Q. You identified the gas detector as being unmanned for a portion of its run?

A. That's the way I understand it, yes, sir.

Q. All right. What did you do to resolve that potential issue?

A. Well, there was, in the area of the drilling break associated with the zone we were looking at in the Upper Cherry Canyon and the FV3, an untested zone. There was a gas show. The question is, of course, where does that gas show come from?

The normal procedure is to have an established lag time from that depth to the surface, because that's how long the drilling time, as recorded on the penetration-rate graph, is going to be, as cut. In other words, no lag. Any samples, including gas samples, from that zone must be circulated up through the mud system to the surface. That period of time that it takes to get from TD, where the bit is when it cuts that section to the surface, is the lag that has to be plotted into -- that has to be corrected for in order to correlate any gas shows with any specific point in the drilling time.

Q. And what correction did you make for lag time?

A. Based on the information that was provided me by Mr. White, who had contacted the drilling contractor,

determined what type of mud-pump system was being used, what the pump pressure was and what the strokes per minute were, he had calculated a 15-minute lag time from that depth, which is a little above 2800 feet, to the surface.

Q. What else, then, do you do?

A. I corrected the gas show for that period of time, 15 minutes down.

Q. Are there any other corrections that you have to make?

A. Only if there is a connection being made in that interval, which there wasn't.

Q. All right. Now, what did you do?

A. Then that allows you to say that that show came from this correlative part of the drilling time log, which represents the depth as drilled.

I correlated the drilling time also to the wireline logs and determined that the wireline logs were recording approximately seven feet deep to drill pipe measure.

Q. Once you've done that and verified the ability to make the correlation and in fact have made the correlation, what does it show you?

A. The gas show on the hotwire in question correlated to the middle to bottom of the drilling break in question, which, from drill pipe measure, went from 2774 or

-5 to about 2780.

Q. All right. Once you make that correlation, then, what's the next process in the evaluation?

A. Well, what other information I had available to me was some Core Lab sidewall core analyses. Now, these were percussion cores. They're shot from a gun into the wall of the bore.

Q. So how do you use that information?

A. Well, that's where we get back to the seven-foot difference between the wireline, because those core points are usually the last run on the wireline survey, and the core points are picked off of the previously recorded wireline logs. Therefore, we can very safely say that they, as far as correlating to the drill pipe, must be corrected back up seven feet in order to be able to correlate to the drilling time log.

There were two samples that would have been recorded in the interval of the drilling break in question. Both of them were determined to be too fractured for analysis, which is consistent with porous, not very well cemented Delaware sands. Recovery of those type sands, especially from percussion cores, is frequently very difficult.

They did, however, show the highest total gas readings of any of the samples recovered during that

sidewall coring operation, which I believe to be significant.

Q. Why is that significant?

A. Because it correlates with the gas show and the hotwire.

Q. All right. What do you do next? How do you integrate that information with what has occurred in any of the adjoining wells?

A. Based on my previous correlation, especially to the WM4 well, which that zone -- As I correlated, this zone in question correlated to a zone in the WM4 well. That zone had been perforated and treated in combination with several other zones and made a productive well from that interval.

Q. What's the ultimate conclusion?

A. Well, when added to the fact that water saturation calculations in the FV3 well for that zone suggested the zone could be productive, and the analysis -- or -- and the gas shows from the Core Lab, and the gas show from the hotwire, and the fact that it is not significantly structurally low to the correlative section of WM4, and to the level of porosity in the zone, I think there's a significant chance of recovery of hydrocarbons from that zone. I think it has been inadequately tested.

Q. When looking at Mr. Harrington's geologic

opinions with regards to this issue and contrasting them to Mr. Cantrell, how would you resolve the problem?

A. As I mentioned earlier, I independently arrived at a correlation which essentially agrees with Mr. Harrington's. I believe that this zone correlates specifically with the zone in the WM4, which at least puts Mr. Cantrell's correlation in question with respect to that one small sand package, small but significant.

If you correlate that zone with the one in the WM4, it becomes very, very difficult for me to see a correlation that would put the base of the Lower Cherry Canyon as high as Mr. Cantrell has it.

I also have a problem with -- Let me put it this way: As far as the basic -- I understand Exxon's arguments, as far as going from the regional. There are some other things that need to be considered, though, when you're correlating in the Delaware.

First off, their description of the Brushy Canyon is essentially correct, and I thought very complete. You do have a low-stand deposit there, and it was deposited in deeper water. It exhibits lower depositional energies from the density currents feeding the clastic sediments, especially the sand clastic sediments.

As you come up to the Upper Cherry Canyon, there was a eustatic sea-level change. We're dealing with

shallower waters. Evidence for this would be -- There's some evidence of scour which would indicate higher energy levels of the density currents, which would be consistent with shallower water.

They mention bioturbation, which would be consistent with shallower water. They didn't -- I don't recall reading about anything about rip-up clasts, but I saw some evidence in some of their photographs of potential rip-up clasts in some of the cores, which would suggest shallower water and higher levels of energy in the density currents.

One of the things that -- What this means is that the low-stand deposit, the Brushy Canyon, would form a fairly uniform mound, and it would form a sedimentary structure which would add a structural component to subsequent deposition of the Upper Cherry Canyon.

Since the Upper Cherry Canyon is dealing with -- in shallower water, the density currents could be expected to be more energetic. One of the aspects of density currents is that the level of energy of the specific current, the specific event -- and these are not continuous events, they are unique, isolated -- some people even say catastrophic. I don't really like using that term, but they are not a constant source of sediments, is what it really boils down to.

If they are energetic enough, they do not deposit, they erode and scour. At the point to where the energy levels drop to below a certain speed -- and this is an unvectored function, it is a speed -- the coarser fractions of the clastics begin to drop out of the density current and they're deposited sediments. The coarser the sediments, the more the porosity, subsequent to diagenesis, and these have not apparently been subject to very much diagenesis. The higher porosity, the better the reservoir quality. Also, the tougher it is to recover sidewall core samples out of it.

There's one other factor that brings to mind, especially since these are isolated events, shall we say. Each density current kind of has a little life of its own. As they come down, as will all bottom-controlled currents like density currents, previous deposition has an effect on what happens to that package of sediment. Like I said, they can scour or they can deposit as a function of speed and the coarseness of the sediment that they carry. But in this case the coarseness -- or the range of sediments in the density currents is quite uniform. What that means is that it kind of precludes a layer-cake approach to correlation.

Q. Then comment directly on his rebuttal Exhibits -- I think they were 41 and 42.

A. Yes.

Q. He's got a layer-cake concept here.

A. As you work from the bottom, that's fine. But when you get into the more energetic sections of the Cherry Canyon, you have a definite problem here, because if you cannot identify scour -- and as they pointed out earlier, sometimes that's difficult because if you look at the map, really, you are dealing with point sources of information. You actually really need to look at it in three dimensions, because that point source is a long stream of data in the borehole, and you need to analyze it stereotaxically.

Q. Mr. Cantrell correctly analyzed the reservoir with his rebuttal exhibits when we deal with the Upper Cherry Canyon?

A. I still think that their correlation is broken, and I believe that --

Q. How is their correlation broken?

A. I believe that there's an extra 84 feet in the bottom of the Upper Cherry Canyon.

Q. When we look at how the -- Mr. Cantrell's interpretation is displayed within the concept of a reservoir distribution for the Upper Cherry Canyon, what's your comment on that? Is it consistent with the shape that you would see for this type of reservoir?

A. Oh, okay. First off, I don't like thickening

over the tops of structures, and in one of the cross-sections I saw a little bit of that in what I would consider to be an anomalous place; whereas our correlations, the ones independently made by Mr. White and Mr. Harrington and myself, show a little bit of thickening coming off of the structure, which I would suspect.

Also, especially with reference to -- I believe it would have -- Mr. Harrington's Exhibit 6A, the hydrocarbon-foot map. Because of the diminished section from the correlation made by Exxon in the Upper Cherry Canyon, there was an anomalous decrease in what I would consider hydrocarbon porosity feet in the area under -- acreage 6, block 6.

They were speaking of Delaware reservoirs regionally. Well, Delaware reservoirs are very much like their schematics which they had in their stratigraphy section. They tend to be quite uniform. If you have enough detail, you should see a little bit of knurling to the north as you get close to whatever -- the submarine canyon that provided the avenue of sediment source.

But in general, they tend to be very smooth in the exterior lines, because -- Well, in the low-stand stuff, they're very evenly distributed.

In the more energetic deposition of the shallower water deposition of the Cherry Canyon, they tend to average

themselves.

So you end up with a smooth -- The general outline of the features -- case in point, East Shugart; case in point, Parkway -- tends to be very uniform. And that particular map left a hole in the left side, on the west side, that I found quite unusual.

Q. Is Mr. Cantrell's map --

A. Yes --

Q. -- of the upper Cherry Canyon --

A. -- and then if you add the 84 feet, net 82 feet, and run through the exact same calculations by Exxon's own parameters using the dual water model, using their shale correction from the gamma-ray index and all the rest, you still -- you come up with the database that Jerry contoured, and you end up with a map that looks what I -- more like what I think a Delaware field should look like.

Q. And that's Mr. Harrington's map?

A. Yes, which would be, I believe, Exhibit 6.

MR. KELLAHIN: Yes, sir.

That concludes my examination of Mr. Hanson.

We move the introduction of Premier Exhibit 10.

EXAMINER STOGNER: Are there any objections?

Exhibit Number 10 will be admitted into evidence.

Thank you, Mr. Kellahin.

Mr. Bruce, your witness.

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Hanson, does the fact that these small samples are broken increase the gas release, versus an unbroken sample?

A. That depends on why they're broken. And the problem is, is in Core Labs' notation, because many times they can't -- they don't have a sample that they can analyze adequately or put down the same description, too broken to analyze.

Q. Okay, so you can't tell?

A. No.

Q. Now, the FV3 well, who drilled that?

A. Gulf.

Q. Did they test this interval in question, this extra 84 feet?

A. No, not that I'm aware of.

Q. Did Gulf test this well in more than one interval?

A. Testing in what way?

Q. Did they complete it in --

A. Oh, you're talking about perforation -- or production testing?

Q. Yes.

A. I don't believe so, not that I'm aware of. Just

the one upper zone that they recovered the 5100 barrels out of.

Q. Okay. Did they -- After they initially perforated, did they go back and add any perforations in the Upper Cherry?

A. I have no information about them doing any of that.

Q. Okay. But they never went back in and tested this interval?

A. Not that I'm aware of.

Q. And to the best of your knowledge, Premier hasn't tested that interval either?

A. They have not.

MR. BRUCE: I don't have anything further, Mr. Examiner.

EXAMINER STOGNER: Mr. Carr?

EXAMINATION

BY MR. CARR:

Q. Mr. Hanson, you prepared Exhibit 10, did you not?

A. Yes, sir.

Q. And when did you do that?

A. Wednesday.

Q. June of 1995?

A. Yes, sir.

Q. Do you happen to know when the Eddy FV State

Number 3 well was drilled, what year?

A. I believe it was completed in 1984.

Q. In preparing this exhibit, you took data available on the well; that's correct, is it not?

A. Yes, sir.

Q. And then you needed some additional information, so to get that information you contacted Mr. White and you generated other calculations that you integrated into --

A. He had previously figured the lag time.

Q. You also had to contact the drilling company, did you not?

A. He did.

Q. And made inquiry about what would happen when the well was actually drilled?

A. He made it to get the physical parameters of the drilling operation in order to estimate a lifetime.

Q. So you're relying on data that the drilling company gave you about an effort they've undertaken --

A. They gave Mr. White.

Q. What we have here, in fact, is an exhibit that shows that, drilling at this depth, rock was encountered that was actually easier to drill; isn't that what this shows?

A. Yes, sir.

Q. Isn't this what's known as a drilling break?

A. Yes, sir.

Q. And in your experience, you are aware of drilling breaks that are not hydrocarbon-productive; isn't that --

A. Yes, sir.

Q. Accordingly, when we look at this, this is showing that we have easier-to-drill rock, but it doesn't tell you whether it's hydrocarbon-productive?

A. No, sir, it merely -- The shows suggest that the potential is there.

Q. And it was your testimony that it was -- this zone was inadequately tested; isn't that correct?

A. Yes, sir.

Q. Wouldn't you think ten years is an adequate period of time to run that test?

A. I can't be responsible for other people's operations.

MR. CARR: That's all I have.

EXAMINER STOGNER: Redirect?

MR. KELLAHIN: Yes, sir.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. When you take this drilling-break event in the FV3, then you compare it over to the WM4 where you have a gas show; is that what happened?

A. Yes, sir.

Q. And so the methodology is to find an event in the FV3 that corresponds to an event in the WM4 where there is a gas show, and to then conclude that there's gas present at that correlative interval in the FV3?

A. Well, we have gas established in the WM4, we have an indication -- We have two significant shows of gas in that correlative zone in the FV3, one off of the sidewall cores and one off of the hotwire.

So when you -- being able to correlate those two suggests that there is the potential presence of hydrocarbon in there.

There is also, of course, log analysis, which suggests that the water saturations are well within what would be normally considered a productive range for Delaware.

And as far as correcting those water saturations based on production, I have a problem with that. Schlumberger, in 1984, especially with the lithodensity tool and neutron tool in question for porosities, ran a pretty good operation. They run calibration prior to the wireline survey, they run calibration subsequent to the wireline survey to check the continuity of the tools during their logging operation. They had quite a bit of experience using that suite of tools at the time and a lot of reason to believe their measurements were accurate. And

I have just as much reason to believe it is -- is that.

To make a significant, and I mean substantial, shift in a calculated water saturation, based on a production history in a Delaware well, where many things can affect the production, including everything from mud systems, drilling operations, cement job, perforating techniques, treatment techniques, levels of treatment, first the acid job, then the frac job and the rest of this stuff, considering the frac-height potential in the Delaware -- it's a very easy formation to get out of zone in -- there's all kinds of things that can ruin the production history of a well.

In other words, I do not consider all production in Delaware wells to be indicative of ideal primary production.

There's a lot of Delaware wells that have been screwed up.

Q. In your experience, are there Delaware wells where a major operator will drill those wells, and years later someone else come back and make them productive again?

A. Frequently.

MR. KELLAHIN: No further questions.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

Mr. Bruce?

RECROSS-EXAMINATION

BY MR. BRUCE:

Q. That brings up something. You mentioned the WM4, Mr. Hanson. Is this interval you're talking about productive in any offsetting well?

A. I believe it is. Not specific, I've only worked in that immediate area on this particular project.

Q. Would you advise Mr. Jones to re-enter this well?

A. If the economics justify it.

Q. And you haven't done any economics?

A. No, sir.

Q. Which well is specifically productive?

A. The WM4, it is one of the zones perforated. They were treated and -- all together.

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

EXAMINER STOGNER: Thank you, Mr. Bruce.

Mr. Carr?

MR. CARR: I have nothing further, Mr. Stogner.

EXAMINER STOGNER: Any other questions of this witness?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: With that, you may be excused.

Let's take a ten-minute recess.

(Thereupon, a recess was taken at 11:37 a.m.)

(The following proceedings had at 11:46 a.m.)

EXAMINER STOGNER: This hearing will come to order.

That's all for the direct testimony and rebuttal. I believe we're -- time for any additional comments from some people who would like to make additional comments at this time.

I believe at the beginning of the hearing, Mr. Bruce, you said that there were some individuals here that would like to --

MR. BRUCE: Yeah, there are some folks here from Unit Petroleum and MWJ, and I believe they have a brief statement each of them would like to make.

EXAMINER STOGNER: Are you ready for those statements? You may come forward, up to the podium, and address who you are, who you're with, who you're representing, place of residence and anything you have to say.

MR. HEALD: My name is Ed Heald. I'm a petroleum geologist for Unit Petroleum out of Tulsa, and we are a little over 4.5 percent working interest owner in the field.

I've done a fairly extensive study of the field, and we basically agree with Exxon's geology, and we are of the opinion they've done an excellent job in defining and mapping the field. They've used very detailed and thorough

work, and we certainly believe that we've been treated fairly and that the proposed participation formula is equitable.

EXAMINER STOGNER: Thank you, sir.

Next speaker?

MR. HODGE: My name is Bob Hodge. I'm a landman for MWJ Producing Company, and we've been involved in this from pretty much the beginning of the formation of the unit.

We have two marginally productive wells in the southwest four that if they weren't going to be included in the unit -- The unit would greatly benefit us, so we're pleased to be involved in it and think that Exxon's basically done a good job of it.

Thank you.

EXAMINER STOGNER: Anybody else at this time?

Is there any need, or do you wish to make any closing arguments at this time, Yates, on behalf of Yates?

MR. CARR: I'm prepared to make an argument, Mr. Stogner.

EXAMINER STOGNER: And Mr. Kellahin, Mr. Bruce -- Okay.

MR. KELLAHIN: The practice, Mr. Examiner, is for the Applicant to go last, to have the last say, and I certainly don't mind going first.

EXAMINER STOGNER: Why don't you go first, then?

MR. KELLAHIN: Mr. Examiner, we appreciate the opportunity to appear before you, and if there are things that I don't say to you, it's simply that I've forgotten, and we will want to have an opportunity to submit to you a proposed order where I can sit back and reflect upon the technical information that was provided to you. And so if I overlook an item, it's simply because that was my error and not an error of my client or any of his experts.

We've heard a lot of technical information, and I think perhaps the service I can perform to you at this point is to give you the legal aspects of what you're limited and required to do under the Statutory Unitization Act and under the New Mexico Oil and Gas Act.

Let's deal with the concept of waste. The fundamental concept that you as a regulator need to address is the waste issue.

I don't see a waste issue for you, Mr. Examiner. When you look at Exxon Exhibit Number 39, it gives you a clear and concise picture of the waterflood project area planned. You saw the basic premise of what they're trying to do. It's a waterflood operation in the Delaware, and what they've done is something very unusual.

In this particular instance, they have put a ring of 40-acre tracts around the waterflood. I find it highly

unusual, it's peculiar, but that's what they've done. They've used my client's tract as a buffer for their operation.

Dr. Boneau talked about the potential waste of hydrocarbons if they didn't take the Premier tract into play. But look at the map; that's not what it shows.

Under their plan of operation for the waterflood project, if you'll look where they put the last oil producers, it's set within the Yates tract, and then east of that is an injection. There's going to be a volume of oil under that Yates tract that is simply going to go unrecovered.

In addition, there is the Premier tract, which has no injection wells and no producing wells and no opportunity to recover waterflood reserves.

If the concept is to have a unit, as Dr. Boneau says, that entirely encompasses the reservoir, why do you have a unit plan of operation that stops a row short of producers and injectors? Shouldn't the plan be one where we have producers on the outer boundary, which will put producers on the Premier tract, injectors along the common lease line with Premier and Yates, and recover for Yates primary oil production and waterflood reserves that are not going to be recovered under this plan? You don't have to be a scientist to see that that's not going to happen.

I don't think it's a waste issue, because if you delete the Premier tracts there's nothing that precludes Ken Jones and his mom and his interest owners from developing a common interest with a CO_2 project. Exxon has concluded his tracts have no value, absolutely no value until it comes to CO_2, and if in the event that ever occurs, there's a way to either expand this project or to have a cooperative project. It is not fair and appropriate to take his tracts from him.

When you look at the concept of correlative rights, and Mr. Carr and Mr. Bruce and I are accustomed to talking to you about correlative rights, but until a couple of weeks ago I had not carefully read in a number of years exactly what correlative rights is. And to paraphrase the Act, it is not only the opportunity to recover your remaining share of recoverable hydrocarbons, but it is the statutory obligation of the Division to see that you recover your proportionate share of those recoverable hydrocarbons.

In this instance, if you buy off on the Exxon plan, they give us nothing for remaining primary oil. Their formula is such that we get nothing for the incremental waterflood oil.

I have a serious problem with the weight of the book, and I think it's weighting everyone down. There's

apparently an incredible reluctance to change the technical book.

But look what happens. When Paul White goes through the book, he finds that there are waterflood reserves in the spreadsheets that put waterflood value on the Premier tract, and yet under this system we get no credit for it.

They are bringing us into this unit prematurely. It's speculative, it's not even a science project to say that CO_2 is feasible for this project area.

We asked all their technical people. You can read the book. It's not imminent, it is not even listed as probable. It's perhaps. We shouldn't be forced to commit our tracts to a "perhaps" project. There are ways to do this later. It's premature to do this now.

If you insist that you need to have the whole reservoir within the statutory unit, let's put the whole reservoir in it and let's give proper value to the Premier tracts.

When you look at the Statutory Unitization Act, it talks about the relative value. I invite you to read that very carefully. It talks about the obligation that each tract within the unit must have a positive benefit from the unit. Each tract in turn must make a positive contribution to the unit. That concept is one of fairness

and equity.

I've given you three experts this morning, all of which have concluded that this plan is unfair and unequitable to Premier.

If you decide in your judgment that we need to be in this unit, we ask that you require the Applicant to re-examine the parameters used to value the Premier tracts. Therein lies your expertise, Mr. Examiner. You need to take the issue of the log analysis, determine whether or not you agree with my experts that in fact there's 82 feet of net pay that is not credited to the FV3 well. We're absolutely convinced that that's necessary. If they don't want to give us credit for that value, then leave us out.

One topic that was discussed today is the sequence. The sequence was that Mr. Jones and his dad and his mom had this property, and as a matter of happenstance and circumstance it has not been further explored in the Delaware. That's no excuse for them to take his interest without fair compensation.

Look at the sequence. In the fall of 1991 Exxon, big Exxon, is talking to little Premier, saying, We're going to waterflood this area, we're going to put you in the unit. I think that would stop any development plan, any operational plan, and you focus your intentions on this plan for unitization. I think it's reasonable and

legitimate to say that if there is a lack of development, it's simply because of the activities of Exxon. They started this project years ago, and here we are now, still trying to see what they're going to do.

I think Mr. Jones summed it up best. He looked through the technical book as a layman, he's found that he's uncomfortable with the mistakes, with the flaws that he sees in the book. A number of those mistakes are substantial, they're unrebutted, unexplained by Exxon, they've made a material change in how that reservoir is to be shaped, their own information is inconsistent with their own conclusions.

It's wrong to adopt statutory unitization, simply because they argue we've spent all this time and effort on it. It's not fair, it's not appropriate. We would ask to be excluded.

We're going to present you a draft order that would accomplish that, and we will give to you appropriate technical findings by which you can agree with us that we are not receiving relative value, and the easiest solution is to exclude this tract.

Thank you.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

Mr. Carr?

MR. CARR: May it please the Examiner, this is an

important case. It's an important case because it is really the prototype for a number of Delaware units that, if this Application is approved, will be brought forward, additional recovery will be obtained through this process.

As we look at the first unit, there is no dispute that Exxon is the proper party, not only to form this unit, but to operate the unit. They're proper now because they have both the financial and technical resources to make that project go. And they're going to be particularly important and clearly are the party who should go forward with this effort when we move to a CO_2 phase.

Their witnesses have told you that on a stand-alone basis, this unit itself can justify the cost of bringing a line of this carbon dioxide into the area. And when that occurs, other units, other Delaware units and their operators and their owners, will benefit.

If the Application is approved, it is clear that there will be tremendous benefits, tremendous benefits to Exxon and Yates, and on the record before you we submit the benefits are tremendous that will accrue to Premier. They will start immediately receiving compensation for a tract which has for many years produced nothing at all.

If the Application is denied, I think you can see from Dr. Boneau's testimony yesterday, there may be no project at all. New rounds of negotiations would have to

commence, agreements might never be reached, and if agreements could be reached and if ultimately a unit could be put together, that development and that unitization could be delayed for many years.

And so we're before you here today with an application springing from the Statutory Unitization Act. That Act, in and of itself, is only appropriate where parties do not agree. And when you have that situation, it is incumbent upon all the parties to come before you and present evidence, evidence that establishes whether or not the allocation formula in the unit agreement is just, reasonable and equitable, among other things.

We submit to you that Exxon and Yates have shown you that the allocation formula they are proposing in this particular unit agreement is just that: just, reasonable and equitable.

But when a case comes to you, you have got to decide the case based on the traditional basis for OCD jurisdiction; you've got to decide it on waste issues and on correlative-rights issues.

Mr. Kellahin says, one, waste is the fundamental issue you must address, but he simply doesn't see it here. Well, I would remind you that as you weigh the waste issue, you must look at what is in this record.

When you look at the record on waste, you have

one thing, and that's Dr. Boneau's testimony that if this acreage is not included, as we go through the life of this unit as many as 2 million barrels of oil could be left in the ground, they could be wasted.

That is the evidence in this case on waste, and it falls only one direction, in favor of Exxon, in favor of those who are attempting to put this unit together.

We then go to the correlative-rights issue. Mr. Kellahin has, after many years, read the definition of correlative rights. But it's important to know that that definition is couched in terms that say you must protect correlative rights as far as it is practicable for you to do so.

You don't go, and you are not required, to go back and allocate each and every MCF, each and every barrel to the exact tract from which it's produced, because that is not practicable.

What you're asked to do is look at the evidence available to you, and you must determine if this allocation formula is fair, is it reasonable, is it equitable?

And when you get to that determination, you have to look at what the geologists bring before you. And as we often see in these cases, we have as many interpretations, almost, as we have geologists. But it's clear that Exxon's presentation is supported by Yates and others. And it is

also clear that the geology presented by Premier is inconsistent with that developed by Exxon over many years.

If we look at the Premier geology, we see that Mr. Harrington believes in the FV3 well. There's an additional zone, a lower zone in the Upper Cherry Canyon that ought to be included. Dr. Jones, who admits he's a novice in this area, agrees. Let's look at that.

Gulf drilled and completed the well in 1984. They produced an upper zone in the Upper Cherry Canyon. They got 90 percent water.

And while Premier wants to come in here now and add a lower zone, they have no test, no test information, nothing that would suggest that that is hydrocarbon-productive. They have nothing that would show that this acreage is not wet.

Now, there's no dispute that when we -- Exxon, Yates, the working interest owners -- looked at this potential unit, they found no primary contribution from the Premier tract, they found no secondary contribution from the Premier tract.

But there's been one thing in this case that's been mistaken, and it is that that tract, the Premier tract, has no value. That's incorrect.

The tract is valuable. It will be valuable in the life of the unit, it will result in an additional two

million barrels of oil being recovered. And because of that, Premier has been given one percent of unit production in the primary and secondary phases. And because of the negotiations between Yates and Exxon, they will be able to come into this unit, and they should immediately be receiving a positive cash flow, because of the negotiations between Exxon and other working interest owners in the unit.

We submit to you that the formula that allows them to come in on that basis is fair, it is reasonable, and it is equitable.

Premier, however, comes before you and, according to Mr. White's testimony, would like credit for reserves that have not been developed. And he himself, in his own testimony, has stated that that approach is inappropriate.

What we have here, Mr. Stogner, is a situation where Premier has simply not developed data, information they could have developed during the last five years, on the FV3 well.

And because we don't have test information on this zone they now speculate may be productive, because we don't have that data, perhaps you feel like you may have to decide the case in the dark, if you don't have information that could enable you to evaluate that zone.

Well, I will tell you that because of their

speculation, because they're speculating something may be there, that is not an argument that should defeat this unit. What it is, in fact, is a failure on their part to meet their burden of proof.

And when you look at the record and you look at the hard evidence before you -- Even Mr. Hanson, their last geological witness, admits, Additional testing is needed, I can't control the operations of others.

The fact of the matter is, they have failed to show you why that acreage should be given a value other than zero in the primary and secondary base. They did not meet their burden of proof.

The record before you is clear: Waste will be prevented, two million barrels of additional oil will be recovered.

The record is clear that unitization is a proper conservation tool, and in this situation it allocates production in a fair and reasonable fashion to Yates, to Premier and to Exxon.

And based on this record, and the standards that you are required by the Oil and Gas Act to apply to the evidence before you, we submit you have but one option, one decision that you can make, and that is, you must approve the Application of Exxon in each of these cases.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Bruce?

MR. BRUCE: Thank you, Mr. Examiner.

I second what Mr. Carr said. As a result, I won't go into as much detail on the geology. I'd only say that I believe that Exxon has presented the only reasonable geologic interpretation, and that interpretation forms the basis for the unit participation. Everyone in this room, all of the other working interest owners, invariably believes the Exxon work is outstanding, everyone but Premier. I think those other working interest owners are correct.

As to fairness, the participation formula in the unit agreement, we believe, provides a fair and equitable tract-by-tract participation and allocates those substances fairly.

Over 97.5 percent of the working interest owners have voluntarily approved the unit, including some of the smaller interest owners, including MWJ who owns a fringe tract. These owners all agree with the technical data prepared by Exxon and with the unitization formula.

Over 95 percent of the royalty interest owners have approved the unit, including the Bureau of Land Management and the Commissioner of Public lands.

If you wade through these documents, Mr. Examiner, you'll see that by acreage, the Commissioner of

Public Lands has 54 percent of the land in the unit. Their actual participation in the royalty is only 45 percent. They think it is fair, nonetheless. They've looked at everything; they think it's fair. These figures alone are a large indicator of fairness.

You know, there's an old saying that the value of real estate is based on location, location and location. The value of Premier's tract, from what they've shown us, is based on speculation, speculation, speculation.

They claim they want to develop their acreage on a leasehold basis. However, there's no other working interest owner in this area who believes Premier's reserve claims. And based on the life of development, I don't think Premier believes them either.

Premier has spent, apparently, substantial money over the last two years hiring engineers, geologists, Tom. So they've done quite a job of putting the value of its tract on paper, but not where it counts.

They haven't drilled, they haven't recompleted. And frankly, we believe its contention should be dismissed out of hand.

Apparently it's Exxon's fault for not drilling a well in Tract 6. But as Mr. Jones said, that well, that lease, the FV lease, covers 480 acres. They've never drilled a well on that lease, never. It's not Exxon's

fault that they can't drill a well.

I'd second what Mr. Carr said about Premier's tract. They claim it has no value. That's incorrect. Premier starts off immediately with a one-percent working interest in this matter, despite having no primary and no secondary reserves. There are no waterflood injectors for this tract, therefore no secondary reserves. They haven't bothered to go out and prove the primary on this tract, the speculative primary.

We think they will have immediate, positive cash flow, as Mr. Carr said.

Once again, leaving Tract 6 out of the unit will adversely affect the Commissioner of Public Lands. The State Land Office is currently receiving no income out of Tract 6, no return on its assets, because Premier hasn't developed that tract. Deleting Tract 6 from the unit will only ensure that that situation continues.

Mr. Kellahin called this unitization "peculiar". I call it "different", I'd agree with that. That's because this is, as Dave Boneau said, one of the first Delaware floods, maybe the first, in New Mexico. It will certainly be the first CO_2 flood. There aren't -- It would also be an example of a Delaware waterflood in this area. It is important for this area.

The aim of statutory unitization is to increase

recoverable reserves, and there's no doubt from the evidence presented that this Application will do that.

Deleting Premier's tract from the unit will cause waste when CO_2 flooding commences, because the tertiary reserves under that tract will not be recovered. So you have to look at that tract.

But Dave Boneau also said, It doesn't only affect the tertiary reserves under Premier's tract; Yates alone, under its tract, will lose a couple million barrels of tertiary reserves. So it has a direct effect on a number of people in the proposed unit.

We think, and we concur with Mr. Carr's statement, that the OCD should go ahead and approve this unit. The OCD, ever since I've been around, has always encouraged unitization and should continue to do so by approving these Applications.

Thank you.

EXAMINER STOGNER: Thank you.

Mr. Bruce, Mr. Carr, Mr. Kellahin -- I'm sure Mr. Bruce and Mr. Carr can collaborate -- I'd like a rough draft order on these positions. I'll let you gentlemen determine the date, what's appropriate. Just provide me a rough draft order in both cases in that matter.

MR. BRUCE: Would you like it on a disc, Mr. Examiner?

EXAMINER STOGNER: Yeah, I would, and not on the new WordPerfect. I'm not that far advanced yet. 6.1 won't go on my 5-point-whatever it is.

MR. BRUCE: Okay.

EXAMINER STOGNER: If there's nothing further in Cases 11,297 and 11,298, then this matter will be taken under advisement, and hearing adjourned, and we'll give Mr. LeMay feedback on having the hearings down in Hobbs. I personally like this room.

Thank you.

(Thereupon, these proceedings were concluded at 12:13 p.m.)

* * *

that portion of those proceedings so designated

I do hereby certify that the foregoing is a complete record of ~~the proceedings~~ in the Examiner hearing of Case Nos. 11297/11298 heard by me on 29 June 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, Volume II, 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 July 14th, 1995.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998