STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:		
APPLICATION OF MEWBOURNE OIL COMPANY FOR AN UNORTHODOX GAS WELL LOCATION AND NONSTANDARD GAS PRORATION UNIT, EDDY COUNTY, NEW MEXICO	CASE NOS.	11,723
APPLICATION OF FASKEN OIL AND RANCH, LTD. FOR A NONSTANDARD GAS PRORATION AND SPACING UNIT AND TWO ALTERNATE UNORTHODOX GAS WELL LOCATIONS, EDDY COUNTY, NEW MEXICO		11,755
APPLICATION OF TEXACO EXPLORATION AND PRODUCTION, INC., FOR CLARIFICATION OR, IN THE ALTERNATIVE, AN EXCEPTION TO THE SPECIAL POOL RULES AND REGULATIONS FOR THE CATCLAW DRAW-MORROW GAS POOL, EDDY COUNTY, NEW MEXICO		11,868
		(Consolidated)

REPORTER'S TRANSCRIPT OF PROCEEDINGS (Volume I)
COMMISSION HEARING

ORIGINAL

BEFORE: WILLIAM J. LEMAY, CHAIRMAN
WILLIAM WEISS, COMMISSIONER
JAMI BAILEY, COMMISSIONER

October 30, 1997
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission, WILLIAM J. LEMAY, Chairman, on Thursday, October 30th, 1997 (Volume I), at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

STEVEN T. BRENNER, CCR
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I N D E X

October 30th, 1997
Commission Hearing (Volume I)
CASE NOS. 11,723, 11,755 and 11,868 (Consolidated)

(Continued...)

FASKEN WITNESSES:

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E X H I B I T S

Mewbourne	Identified	Admitted
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Exhibit 2	33	39
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Fasken	Identified	Admitted
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E X H I B I T S (Continued)

Fasken	Identified	Admitted
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Additional submissions by Fasken, not offered or admitted, from Examiner Hearing, April 3-4, 1997 (Case 11,723):

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A P P E A R A N C E S

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* * *

WHEREUPON, the following proceedings were had at 9:03 a.m.:

CHAIRMAN LEMAY: Good morning, this is the Oil Conservation Commission here, special meeting here in late October. My name is Bill LeMay, Chairman of the Commission. To my left is Commissioner Bill Weiss, to my right Commissioner Jami Bailey representing the Commissioner of Public Lands, State of New Mexico. Welcome.

I think we'll start with a little business. Do I hear a motion for approval of the minutes for the previous meeting?

COMMISSIONER WEISS: Yeah, I motion that we approve the minutes of the previous meeting.

CHAIRMAN LEMAY: Second?

COMMISSIONER BAILEY: Second.

CHAIRMAN LEMAY: Thank you. So moved and seconded. The minutes of the previous meeting will be approved.

* * *

CHAIRMAN LEMAY: We will now call Case Number 11,723, which is the Application of Mewbourne Oil for an unorthodox gas well location and nonstandard gas proration unit, and Case Number 11,755, Application of Fasken Oil and Ranch, Ltd., for a nonstandard gas proration and spacing

unit.

Is there a motion to consolidate these two cases?

MR. BRUCE: Yes, Mr. Chairman, Jim Bruce representing Mewbourne Oil Company. I move that those two cases be consolidated, and I think with Mr. Carr's permission --

MR. CARR: Yes.

MR. BRUCE: -- there's a third case on the docket also to be consolidated.

CHAIRMAN LEMAY: I was going to ask Mr. Carr if they want that consolidated with it.

MR. CARR: Yes, we do.

CHAIRMAN LEMAY: Case Number 11,868, which is the Application of Texaco Exploration and Production for clarification or, in the alternative, an exception to the special pool rules and regulations in the Catclaw Draw field.

So we will consolidate all three of those cases, and I shall now call for appearances in these cases.

MR. BRUCE: Mr. Chairman, in all three cases, Jim Bruce of Santa Fe, representing Mewbourne Oil Company together with Michael F. Shepard, general counsel of Mewbourne Oil Company.

CHAIRMAN LEMAY: Thank you. Mr. Shepard.

Yes, sir, Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, members of the Commission, my name is Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin. I'm appearing on behalf of Fasken Oil and Ranch and Fasken Land and Minerals. They're both limited partnerships. They are the parties Applicants in Case 11,755.

CHAIRMAN LEMAY: Thank you, Mr. Kellahin.

Mr. Carr?

MR. CARR: May it please the Commission, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan. We represent Texaco Exploration and Production, Inc., in this matter.

The record also shows an entry of appearance which we filed for Penwell Energy, Inc., the west offset to the Fasken location.

Neither Texaco nor Penwell will be presenting testimony in opposition to the Fasken location.

I do have two witnesses.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

How many witnesses, Mr. Kellahin?

MR. KELLAHIN: I have three witnesses to be sworn, Mr. Chairman.

CHAIRMAN LEMAY: Thank you. Mr. Bruce?

MR. BRUCE: I have three witnesses, possibly four. I will swear in four.

CHAIRMAN LEMAY: Any other appearances in the case?

If not, will those witnesses that will be giving testimony please stand and raise your right hand?

(Thereupon, the witnesses were sworn.)

CHAIRMAN LEMAY: I think before we get into it, we have to deal with this -- lemonade, I call it, or *limine* proposal. I have to admit, the first time we've ever seen that. And if you want to explain what that's all about, Mr. Kellahin? I know as far as dealing with the operating agreement I know you were wanting to not have that as any type of testimony in here, and we want to hear why we shouldn't or what you'd like us Commissioners to do.

MR. KELLAHIN: I'd be happy to present my motion.

CHAIRMAN LEMAY: We did give a preliminary ruling on this. The reason why -- I mean, I denied the motion, but the reason why I wanted you to present this is because it's something new for the Commission. I'd like to have something on the record, what is all about, I guess, in terms of future presentations.

MR. KELLAHIN: I'd be happy to explain it.

CHAIRMAN LEMAY: Thank you.

Well, first of all, what is it? I mean, generally it's a motion, isn't it?

MR. KELLAHIN: Yes, sir, I'm going to tell you.

CHAIRMAN LEMAY: Okay.

MR. KELLAHIN: Let me give you a little bit of background of what this is about.

This little map here is going to be our Exhibit 1, and it's a production map. It will be color-coded when you see Exhibit 1, to present it by our witnesses.

We are looking at an area in which the principal objective of the wells down here in 12, 13, 11 and 14 has been gas production out of the Catclaw Draw Oil and Gas Pool.

You will remember that that gas pool was a prorated gas pool. The history of that pool is complicated and involved. It was prorated on 640-acre gas spacing. Wells were to be located 1650 from the side boundaries of the section.

In about 1980 Tenneco came before the Division with a technical presentation to demonstrate the necessity for additional wells in the spacing unit. Their strategy was to ask the Division to downspace the pool.

The Division approved the downspacing to 320 gas spacing and adopted side boundary setbacks for wells, which was the convention at that time, being 660 from the side, 1980 from the end.

Just about the time that order was dry, Tenneco realized, when they talked to their land people, that they

had made a mistake. The downspacing cost created the potential that wells previously -- leases previously dedicated to those spacing units would be terminated, because they were no longer dedicated to a producing spacing unit.

So they came back in and asked the Division to vacate that rule. The concept was still the necessity for additional wells. However, in order to overcome the inherent problems anytime you downspace a pool, they adopted infill wells. And so when you look at the Catclaw Draw Rules, you'll find that we still have 1650 setbacks, and we have the option to drill a second well in the spacing unit.

You may remember that while the pool is still technically prorated, the Division has suspended prorationing, production is no longer reported, and wells produce at capacity.

We're going to be talking in Section 12 with the Texaco wells. There's two of them. The Levers 1, which is the southern well, and -- Levers, the Levers 2 is the northern well.

The Levers well is 2448 feet from the common boundary between the two sections. Section 1 is an irregular size section. It contains more than 640 acres. The center third of that section is now held by the Bureau

of Land Management because the lease has expired. And when we talk about the old Fasken well in the center third of the section, that well was drilled at a time at which this lease was subject to the operating agreement.

There are two things going on here, there are two disputes.

One is a contractual dispute over operations in the south half of Section 1. That dispute is based upon a contractual interpretation of an operating agreement that dates from 1970. Under that agreement there is a dispute between Fasken and Mewbourne about operations, about multiple well proposals, about priority of well proposals. All those matters are being litigated in a district court in the State of Texas.

What Mewbourne proposes is to place their well, which we call the Mewbourne location, 660 from the boundary with Texaco and 2310 from the east boundary.

Fasken has a different idea. Their proposal is for a well 750 from the west line and 2080 feet from the south line. The Fasken location does not encroach on Texaco, and Texaco has no objection.

The Fasken location does encroach upon Section 2, which is operated by Penwell. Penwell has signed a waiver. There is no objection to the Fasken location. Texaco objects to the Mewbourne location.

The motion *in limine* is simply to exclude from discussion today evidence and argument about the contractual dispute.

CHAIRMAN LEMAY: Okay, I'll just interrupt you for a minute. The reason I wanted you to go into that is because we had some discussion within the district -- within our Division here, that my fellow Commissioners did not have an opportunity to be involved in. So by denying the motion, I wanted them to know what the motion was about and to have it explained to them, and also to have it on the record so that we can refer to this if it comes up again.

Thank you, Mr. Kellahin. Continue. I just wanted to reiterate the reason for it.

MR. KELLAHIN: The motion *in limine* is simply nothing more than a motion to exclude. It is done in district court proceedings, it's an understood process in district court, and it's to expedite the process to deal with relevant issues before that particular court.

In this instance my argument is, the relevant issues for you are engineering and geologic issues with regards to the well locations. You can make those decisions independent of and exclusive of the dispute in litigation over the contract in terms of who drills how many wells where.

That's --

CHAIRMAN LEMAY: Okay, well, I wanted that presentation, and I appreciate that.

Is there confusion with that? Are we --

(Off the record)

CHAIRMAN LEMAY: Mr. Bruce, did you want to respond to that?

MR. BRUCE: Well, I had a brief opening argument, a statement that kind of addresses that.

CHAIRMAN LEMAY: Do you? Okay. So you have a chance to certainly bring it into your opening argument and --

MR. BRUCE: Yes, sir.

CHAIRMAN LEMAY: -- is it all right with you if we go on with the arguments now -- or with the opening statements, I should say?

MR. BRUCE: Sure.

CHAIRMAN LEMAY: I appreciate that. I appreciate your indulgence while we educated my fellow Commissioners here on what was going on with that.

MR. BRUCE: Mr. Chairman, members of the Commission, I think this is an interesting case. It involves some issues not commonly before the Division, although in thinking about that, I think your recent cases have involved many issues which you commonly haven't seen

before, so many it's no different from what you've faced over the last year or two.

As Mr. Kellahin said, this case involves the Catclaw Draw-Morrow Gas Pool, which is spaced on 640 acres, with wells no closer than 1650 feet to the outer boundaries of the section. This 640-acre spacing is not based on drainage. The Division has previously held that wells in this pool only drain 320 acres.

As Mr. Kellahin said, the 640-acre spacing was actually reinstituted. It was 640-acre spacing, it was downspaced, and then it was respaced to 640 acres, merely to prevent the loss of leases of the working interest owners in this area.

Now, the applications by both Fasken and Mewbourne involve nonstandard well units. This is an irregular -- It's about a 900-acre section. The nonstandard unit is necessitated because the middle third of this section is unleased federal land. It's under, I believe, a falcon study. There is no time line for even putting it up for bid. And therefore whoever drills a well in this section needs a nonstandard proration unit. We believe that's a minor issue.

The second issue involves the two well proposals by Mewbourne and Fasken. This matter does not involve competing compulsory pooling applications where the

Commission grants one and denies the other. In this case there's an operating agreement. That agreement provides that once a well proposal is made, a time line is started to implement the drilling of that well. The operating agreement states that after the 30-day election period ends, the consenting parties shall actually commence work on the proposed operation and complete it with due diligence.

Mewbourne was the first party to propose a well to the interest owners under the operating agreement, and as a result, the parties must proceed to drill that well. And that is the well in which I believe Fasken elected to participate.

Mewbourne fails to see how a party who agreed to participate in a well under a JOA can now object to that well.

Now, in regard to the dispute between Mewbourne and Fasken, there is a difference in geology, but we don't think that's the determining factor as between those two parties. Mewbourne, the largest interest owner in the proposed well, with the most at risk, has a vested interest in proposing a good geologic location. That only makes sense.

However, if an interest owner under the operating agreement doesn't agree with Mewbourne's geology, its

option is to go nonconsent under the JOA, not to come to the Division or the Commission and fight approval of that well, as Fasken has done.

Now, regarding the unorthodox locations, because this is a nonstandard unit and because of the pool rules, every well in the proposed unit is nonstandard; there's no way you can be 1650 feet from the outer boundaries anywhere within this well unit.

The unorthodox locations are of concern because of Texaco's objection. Mewbourne will present evidence that, based on geology, its location is necessary to develop the unit and to protect the correlative rights of these section-line interest owners.

In addition, based on drainage, based on the fact that Texaco's well in the north half of Section 12 was drilled without permission, has already drilled -- I should say, has already produced 2.2 BCF of gas, which we believe is illegally produced, and because of the well development patterns within this pool, no penalty should be assessed on Mewbourne's unorthodox location. At this time, because of drainage of Section 1, granting Mewbourne's Application without penalty only puts it on an equal footing with other wells in the pool.

We are asking the Commission to approve the Mewbourne location and either deny the Fasken Application

at this time, or approve it with the stipulation that Mewbourne's well has a right to be drilled first. The fact of the matter is, both the Fasken and Mewbourne wells can't be drilled and produced without a simultaneous dedication order, and no one has requested that in this case.

If the Commission approves the Fasken well location and denies the Mewbourne location, then you're treating this like competing pooling cases, rather than as wells proposed under an operating agreement. Such a decision will give any interest owner under a JOA an absolute veto power over any well proposal by simply proposing a second well. We don't think that's contemplated by the operating agreement and should not be condoned by the Commission.

As I said in my motion in response to the -- my response to the motion *in limine*, the Commission has the power to receive evidence and determine whether an applicant owns minerals or has the right to drill in the subject unit.

We believe that at this time Fasken does not have the right to drill a well and that the only consideration which should be made by the Commission is the propriety of Mewbourne's proposal.

We ask you to hear the evidence and grant Mewbourne's Application.

Thank you.

CHAIRMAN LEMAY: Thank you, Mr. Bruce.

Mr. Kellahin?

MR. KELLAHIN: Mr. Chairman.

Mr. Bruce is giving you legal opinions with regards to the contractual dispute, over which we disagree with him. These are matters that should not occupy your attention.

Mewbourne concedes that Fasken has an interest in the spacing unit. We concede they have an interest in the spacing unit. We both have the right to advance our Applications before this agency. We believe that's all you need to know, and that's sufficient to let both parties go forward.

This is not a new issue before the Division. We debated these same issues before Mr. Stogner and Mr. Carroll. He agreed with me and disagreed with Mr. Bruce. We presented our case, he denied the Mewbourne location, approved the Fasken location, and we're here today to ask you to affirm the Examiner's order in that case.

There was a procedural dispute back in April. The Fasken Application was filed under their operating company, Fasken Oil and Ranch, Limited. It's not unlike what Nearburg does, Nearburg Producing, versus Nearburg Exploration, or others.

Mr. Bruce objected to that. He said that the operating company did not have the ownership interest in the spacing unit.

I filed a motion to join the ownership company, which was Fasken -- is Fasken Land and Minerals. That motion was granted. We have corrected any kind of procedural glitch that might be perceived with regards to the identity of our companies. Both companies are before you today. We have an interest and a right to proceed.

The dispute involves well locations. That dispute as to the priority of drilling the wells, the well proposals and that contractual interpretation is now being litigated and adjudicated in a district court in Texas.

We're asking you to look at our location. And in doing so, we're going to show you the geologic interpretation we have. Our location is unopposed. Our preference for our location is to access not only the Morrow but to also have an opportunity to test for Cisco gas production. That opportunity does not exist at the Mewbourne location. Mewbourne concedes they do have that opportunity.

Part of the technical case is going to involve a difference of geologic opinion about the depositional environment in the Morrow. You will have that issue to consider.

You will also have the issue of seismic interpretation. We have a geophysicist to discuss with you some faults of significance. These faults are substantial. There is a substantial fault that isolates the Mewbourne location from the Texaco well. Their notion is, they want to get closer to the Texaco property. The problem with their location is, they're on the downthrown side of the fault. They will not be able to compete with the Texaco Levers 2 well.

We believe our location is on the correct side of the fault, and we are in the same fault block with the Texaco well. You'll have that evidence presented, and you'll have that issue to resolve.

We have engineering evidence to present to you to justify what we think are the recoverable gas reserves under the various geologic scenarios. We believe that we have a valid and legitimate reason to have you approve our location and to affirm what the Division Examiner did.

As part of that presentation, we will show you what we think are the adverse consequences of the Mewbourne location, and in doing so, then, you'll have our information upon which to decide how to resolve the Texaco opposition to the Mewbourne location.

You have lots of options. As I told Examiner Stogner, you have multiple options. Technically, you could

deny them both. You could approve them both. You can approve one and deny another. You could put a penalty on one and not another. The shopping list is significant. It's within your jurisdiction to do those things.

It is not within your jurisdiction to adjudicate and worry about the interpretation of contracts. You're absolutely precluded from doing so. And to engage in that discussion and to have Mr. Bruce present his landman to give you legal conclusions and his opinions about that contract is a waste of your time and is not within your responsibilities.

I suggest to you that we move ahead and look at the geologic and engineering evidence and let you decide those issues that are within your jurisdiction.

Thank you.

CHAIRMAN LEMAY: Mr. Carr?

MR. CARR: Mr. Chairman, members of the Commission, from Texaco's perspective there are really three parts to this case.

The first part is the dispute between Mewbourne and Fasken under their operating agreement, and that is not our dispute, and we do not intend to be involved in that portion of the case.

The second part of the case as we see it relates to Mewbourne's proposed unorthodox well location. And our

concern is simply that they are proposing a well too close to Texaco-operated acreage.

You see, we operate Section 12, the south offset to their proposed unorthodox location. It's a standard unit. And on that unit we have drilled two wells. Instead of being 1650 feet back from the south line of that tract, they propose to drill 660 feet from our lease line, and we object.

When we developed the acreage in Section 12, we honored the setbacks. And we believe this is, in fact, a case that is overridden with drainage issues. You have one operator who is over 2000 feet from the common line, and the offset wants to locate 660 feet from that line. And we believe, in fact, they will be draining reserves from us.

The evidence is going to show that Mewbourne proposed their location for one reason, one reason alone, and that is, they wanted to be as close as possible to the offsetting Texaco property. They've admitted that in the papers they filed in their Midland litigation. It's a classic case of closeology. And after they decided to drill on top of us, they have gone out and tried to build a technical case to support their decision that was not based on technical reasons at all.

But we do know that they're 60-percent too close to us. We do know that the Levers Number 2 well, the

offsetting well on the Texaco tract, will drain a large area. We do know that they hope to get a comparable well and, if so, they will be competing for reserves.

And what we also know is, wells in this pool decline at very rapid rates. They decline at a rate as much as 70 percent during the first year. And they have recommended that if there is a penalty it be based on calculated absolute open flow.

And when you have a well that is declining at 70 percent a year and you have a 60-percent penalty -- which they say is too heavy, which is only one of the factors we're going to ask you to consider -- but when you have a well declining at 70 percent a year and a penalty of 15 percent or what we feel -- 80 percent, you've got to really determine where you hit the point that the penalty is meaningful to all.

And we're going to ask you to impose a penalty on that location, and a penalty that will be at such a level that it actually offsets the advantage they're gaining on us.

The last part of the case involves clarification of Division rules.

Texaco came to the hearing last April, they felt their correlative rights were being impaired, and they sought help from this Division. They asked you to do what

statute tells you to do, and that is, impose a penalty to offset the advantage they were gaining on us.

And the result was, one, that the Mewbourne location was denied. But we were also called in and advised that, as you now interpreted the rules, we had too many wells on this spacing unit; although everyone else in the pool has been able to develop with two wells per spacing unit, we now had too many wells, and we were asked to shut in one of those wells until we were able to get an exception from the, at least interpretation of the moment, the then-current pool rules.

And we've done that. We've shut in the Levers Number 1, and we are losing revenue to the tune of $1000 a day. The evidence will show that that is the extent to which we're being penalized for coming here and trying to protect our correlative rights.

We're going to show you that this pool was, as Mr. Kellahin indicated, prorated back in 1974 and that there were various changes in the spacing. It has a long history, like many of the older pools in southeastern New Mexico.

But then in 1995 the Division decided to suspend prorationing. When we were told we had to shut in the well it was because this is, and I quote the Division, now a technically prorated pool, not a prorated pool. And in a

technically prorated pool, memos that were written by the Director in the late 1980s applied to operators differently in a technically prorated pool than they do in a prorated pool.

You see, all we did was drill a well consistent with the rules under an approved APD from the BLM, and we found that when we came in here we were told that we had to shut in a well and come back and seek an exception to pool rules. And when you've worked through the pool rules you'll find it's pretty hard to figure out what exactly is meant and how technically prorated pools differ from prorated pools. So what we have is a situation in which we're asking for clarification.

We're asking for clarification not because you initially told us to seek clarification; you told us to come in and get an exception. And then we had discussions with Division staff about, what was the effect of suspending prorationing? Did you intend to change not just the allowable situation but all the other -- or a number of other rules and policies related to the development of now technically prorated pools.

And it was suggested maybe we ought to seek an exception, and we're seeking that, or, in the alternative, we ought to seek clarification of the rules, because if you clarify the rules you won't be potentially creating

problems in the other pools in which you've suspended prorationing.

So we're here today, we're going to ask you for permission to return the Levers Number 1 to production, we're going to ask you to clarify the rules, and if the clarification means we need an exception, we're going to ask for that too. And that's going to be the focus of our part of the case. We will, however, fully participate in the full proceeding.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

I'd like just a minute here to discuss something with Counsel and with my fellow Commissioners. Let's take about a five-minute break.

(Thereupon, a recess was taken at 9:31 a.m.)

(The following proceedings had at 9:41 a.m.)

CHAIRMAN LEMAY: Okay, you sure bring some interesting cases before us, gentlemen.

Number one, interest owners have a right to bring cases before us; they always have. And in this case, each party has an interest. We're talking about the issue of Mewbourne and Fasken in competing locations, so those two Applications are certainly something we've seen before.

In terms of interpreting operating agreements, we've gone on the record historically as not interpreting operating agreements. We understand that they're --

They're a critical in this, but this is not our jurisdiction. We will assume that that is going to be a separate forum and that any arguments you bring as to who has a right under the operating agreement will not have any weight with us, because that will be decided elsewhere.

So we will be looking at geologic reasons for the different locations. I think the interest each party has in the sections, those kind of land issues are important. We've always considered interest a factor in competing force-pooling applications.

But we will look at this, rather than trying to decide between a joint operating agreement right, versus competing force-pooling application rights. That's not what we're here to do. You have to decide that issue here first before you can bring anything to us, because otherwise we don't have a -- otherwise we have to send you all home and say two days later -- two years later, or whenever the litigation is through and we have a court decision, bring your cases before us.

I would say that, given my operating experience, that would be a stupid thing for all interest owners to do, because we turn on the Texaco well, and they could just keep draining it for two years and you're still arguing amongst yourselves who has the rights under your operating agreement to protect all your lands in that section.

So as a practical matter, we will look at whatever evidence you bring in terms of, not joint operating agreement rights or legal interpretation, but in terms of what we normally consider in a joint -- in competing force-pooling applications. And we will look at drainage, we will look at geology, we will look at interest owners' rights, because you're here, you have rights before us, and we'll look at the situation that Texaco mentioned.

So with that, we shall continue.

MR. BRUCE: One thing I will ask the Commission to do is simply accept the operating agreement into evidence, without any testimony.

CHAIRMAN LEMAY: We'd be happy to -- Unless there's objection.

MR. KELLAHIN: May I visit with Mr. Bruce for just a second?

CHAIRMAN LEMAY: Sure.

(Off the record)

CHAIRMAN LEMAY: In terms of that motion to accept the operating agreement into the record, was there any objection to that?

MR. KELLAHIN: Yes, I object to it.

CHAIRMAN LEMAY: Well, your objection is overruled. I think --

MR. KELLAHIN: I figured that much, Mr. Chairman.

CHAIRMAN LEMAY: I think there are factors in the operating agreement we've always considered, not necessarily these parties' rights, but certainly other aspects of it have merit on our decisions concerning competing force-pooling applications.

So the operating agreement will be accepted into the record.

Mr. Bruce?

STEVE COBB,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. Steve Cobb, Midland, Texas.

Q. And who do you work for and in what capacity?

A. Mewbourne Oil Company, district landman.

Q. Have you previously testified before the Division or the Commission as a petroleum landman?

A. Yes, I have.

Q. And were your credentials as an expert petroleum landman accepted as a matter of record?

A. They were.

Q. And are you familiar with the land matters

involved in this case?

A. Yes, I am.

CHAIRMAN LEMAY: Could I just -- One thing I forgot to mention, and I don't want to interrupt -- sorry, Mr. Cobb, but I -- there was another thing we decided here too so there wouldn't be any dispute, that if you get into the names of Fasken Land, Fasken Oil, we will consider that as the same entity. We've done that in the Nearburg cases, and that won't be a dispute, the fact that you have two different entities here that will be -- they will be treated as one, as far as the purposes of this case goes.

Excuse the interruption, I wanted to get that out.

You may continue, Mr. Bruce.

Q. (By Mr. Bruce) Mr. Cobb, what does Mewbourne seek in this case?

A. We seek the approval of a nonstandard Morrow well unit, comprised of the south one third of Section 1, 21 South, 25 East, Eddy County, New Mexico, containing 297.88 acres. We also would like approval of our unorthodox well location, to be located 660 from the south line and 2310 from the east line of Section 1.

Q. What is Exhibit 1?

A. Exhibit 1 is my land plat which outlines our proposed unit and our well location, and I've highlighted

in yellow the offsetting interest owners, and/or operators.

Q. Or unleased mineral interest owners?

A. Correct.

Q. Now, again, why can't you form a standard well unit in this section?

A. I've been advised by the BLM that the middle one-third of this section is subject to an environmental study which I believe involves a falcon or some type of wildlife study.

Q. Because it's unleased it can't be made part of this well unit; is that correct?

A. Correct.

Q. Now, what is Exhibit 2?

A. Exhibit 2 is the ownership by tract, and I've summarized the 297.88-acre ownership at the bottom of this.

Q. Who is the largest interest owner in the well?

A. Mewbourne Oil Company.

Q. And what is its interest?

A. 43.29 percent.

Q. And did you have these interests determined by a title opinion?

A. I did.

Q. Now, the ICA, Unocal and Chevron interests are listed as committed to Mewbourne. How was that accomplished?

A. We secured a farmout from ICA Energy and purchased the interest of Unocal and Chevron.

Q. And when was the ICA farmout obtained?

A. November of 1996.

Q. And Fasken Land and Minerals, Ltd., is the owner of record of an interest in this well unit?

A. That's correct.

Q. Is Exhibit 3 a copy of the operating agreement we've been discussing, Mr. Cobb?

A. It is.

Q. Okay. And this operating agreement, the operator was originally David Fasken, I believe?

A. Correct.

Q. Okay. I your review of the land files, have you seen any documentation that Fasken Land or Fasken Oil was ever elected operator?

A. I have not.

Q. And the operating agreement does allow a nonoperator to propose a well, does it not?

A. Yes, it does.

Q. Now, when did Mewbourne first start looking at drilling a well in Section 1?

A. The latter part of 1996.

Q. And it was at that time that you first obtained a farmout?

A. From ICA, correct.

Q. And then you subsequently purchased the interests of Unocal and Chevron?

A. That's correct.

Q. Now, did Mewbourne propose a well under the JOA?

A. Yes, we did.

Q. And is Exhibit 4 your proposal letter?

A. I don't have Exhibit 4.

Q. Yeah, I'll give you -- Is Exhibit 4 your proposal letter --

A. Yes.

Q. -- to Fasken?

A. Yes, it is.

Q. And were similar letters sent to the other working interest owners?

A. They were.

Q. What was the result of those letters?

A. Everyone has elected to participate in our proposed location --

Q. Except --

A. -- except for a small interest, 1.4-percent interest declared to Mayer and Haynie, which they elected to go nonconsent.

Q. Okay. Now, when did Fasken's election period expire on Mewbourne's well proposal?

MR. KELLAHIN: Objection, Mr. Chairman. We're getting into interpretation of the operating agreement and the issue in litigation concerning the priority of well proposals and the competing proposals. These opinions expressed, or about to be expressed by Mr. Cobb, are legal opinions, and we are disputing these matters, and so that's my objection.

CHAIRMAN LEMAY: I'm going to overrule on the basis that we can accept testimony concerning the operating agreement.

What I think is clear is, we will not render any kind of a judgment concerning who has a right to drill. There are elements in the operating agreement, depending on where you're going with this, Counselor, that certainly affect our decisions, but --

MR. BRUCE: This will be very, very brief.

CHAIRMAN LEMAY: -- as long as it's understood that our deliberations will not include who has the right to drill, I think that other discussion is open game.

MR. KELLAHIN: To clarify my objection, the document speaks for itself, and this witness should not be allowed to make his interpretation.

CHAIRMAN LEMAY: Well, Mr. Kellahin, Let's see where he's going with it.

MR. KELLAHIN: Yes, sir.

CHAIRMAN LEMAY: Continue.

Q. (By Mr. Bruce) Mr. Cobb, when did Fasken's election period expire under your Exhibit 4 letter to them?

A. February 20th.

Q. Was that extended?

A. Yes, we extended till February 26th.

Q. At Fasken's request?

A. That's correct.

Q. What is Exhibit 5?

A. Exhibit 5 is a letter from Fasken Oil and Ranch electing to participate in our proposed well.

Q. Okay. Looking at the second page of that letter, other than electing to participate, what else did it do?

A. Paragraph two, Fasken says at the second line from the bottom of paragraph two, Fasken intends to oppose the Mewbourne location.

Q. Even though they elected to participate?

A. That's correct.

Q. What else did this letter do besides electing to participate in the Mewbourne well?

A. It also proposed Fasken's well to us.

Q. So this also contains the proposal for the Fasken well that's the subject of Case 11,755 today?

A. That's correct.

Q. And Mewbourne commenced this Application to get

its well proposal approved; is that correct?

A. That's correct.

Q. Has Mewbourne elected to participate in Fasken's well?

A. No, we have not.

Q. And what is Exhibit 6?

A. Exhibit 6 is our letter to Fasken, wherein we refused to participate in their proposed well.

Q. Finally, Mr. Cobb, were the offset operators or mineral interest owners notified of this hearing?

A. Yes, they were.

Q. And is Exhibit 7 my affidavit of notice with the notice letters?

A. Yes, it is.

Q. Were Exhibits 1 through 7 prepared by you or under your supervision or compiled from company business records?

A. They were.

Q. In your opinion, is the granting of Mewbourne's Application and denial of Fasken's Application in the interests of conservation and the prevention of waste?

MR. KELLAHIN: Objection to the question, Mr. Chairman. He's asking this landman geologic and engineering questions concerning waste and conservation issues.

It's beyond this witness's expertise.

CHAIRMAN LEMAY: Well, we'll hear it and decide ourselves, thank you. You're overruled.

THE WITNESS: It is.

MR. BRUCE: Mr. Chairman, I'd move the admission of Mewbourne Exhibits 1 through 7.

MR. KELLAHIN: Mr. Chairman, we object to the introduction of Exhibits 3 through 7.

CHAIRMAN LEMAY: Objection so noted and overruled. Those exhibits will be entered into the record.

Are you through, Mr. Bruce?

MR. BRUCE: I'm through with Mr. Cobb.

CHAIRMAN LEMAY: Mr. Kellahin?

MR. KELLAHIN: Just a moment, sir.

No questions, Mr. Chairman.

CHAIRMAN LEMAY: Mr. Carr?

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Cobb, you are Mewbourne's landman on this project, are you not?

A. That's correct.

Q. As such are you familiar with each of the Applications that have been --

A. Yes, I am.

Q. And have you been involved in discussions at

Mewbourne concerning the position that Mewbourne would take on each of the Applications that are before the Commission today?

A. No, I have not sat through them.

Q. You are aware, are you not, that Texaco is seeking authority from the Division to produce two wells in Section 12?

A. Yes, I am.

Q. Is Mewbourne opposing that Application?

A. I don't have -- I was not involved in that -- in those discussions.

Q. You do not know whether you're opposing that Application or not?

A. I was not involved in those discussions.

Q. In your role as a landman, are you required to understand the rules of the Division?

A. Yes, I am.

Q. Do you understand that the rules for this pool provide for 640-acre spacing; is that correct?

A. That's correct.

Q. And they also provide for a setback from the outer boundary of the tract of 1650 feet; is that right?

A. That's correct.

Q. Are you the person to ask about the meaning of the rules for technically prorated pools as opposed to

prorated pools?

A. No, I am not.

Q. You started acquiring additional interests. You acquired the -- is it TCA interest in --

A. IC- --

Q. ICA, in November of last year?

A. That's correct.

Q. And subsequent to that time you've acquired the Unocal and Chevron interest?

A. That's correct.

Q. Prior to the acquisition of the ICA interest, how much of the interest did Mewbourne have in this?

A. None.

Q. They had none at that time?

A. Right.

Q. So the first interest was the ICA?

A. That's correct.

Q. And that was acquired in November?

A. That's correct.

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

CHAIRMAN LEMAY: Thank you.

Commissioner Bailey?

COMMISSIONER BAILEY: I have no questions.

CHAIRMAN LEMAY: Commissioner Weiss?

COMMISSIONER WEISS: No questions.

CHAIRMAN LEMAY: Just a couple for clarification, Mr. Cobb, as a follow-up.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. You say Mewbourne had no interest in that proration unit prior to acquiring ICA and Chevron's interest --

A. Correct.

Q. -- a year ago?

And that gives them current -- How about Unocal? They acquired Unocal's --

A. We acquired Unocal's also, yes, sir.

Q. Purchase or farmout?

A. Unocal was purchased.

Q. So that gives you 43 percent of the proration unit?

A. That actually is -- That assumes that everybody takes their proportionate share of that 1.47 --

Q. The Haynie-Mayer nonconsent --

A. -- nonconsent interest, which I've been advised that everybody would.

But without that we would have roughly, you know, 43 percent. It's just a minute decimal change.

CHAIRMAN LEMAY: Okay, that's the only question I had. Thank you. You may be excused.

KEITH WILLIAMS,

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

DIRECT EXAMINATION

BY MR. BRUCE:

Q. Would you please state your name for the record?

A. My name is Keith William. I live in Midland, Texas.

Q. By whom are you employed and in what capacity?

A. I'm a geologist for Mewbourne Oil Company.

Q. Have you previously testified before the Commission as a petroleum geologist?

A. I've testified many times before the OCD. This is the first time before the Commissioners.

Q. Would you please outline briefly your educational and employment background?

A. I have a BS in geology I received in 1980 from Texas Tech University. I've been employed as a petroleum geologist for 17 years, about 16 of that with Texaco in Midland, and the rest with Mewbourne.

Q. And have you pretty much worked the Permian Basin, eastern New Mexico, west Texas?

A. Yes.

Q. Are you familiar with the geologic matters involved in this Application?

A. Yes, sir.

Q. Now, in what pool will Mewbourne's well be located?

A. All of Section 1 is dedicated to the Catclaw Draw-Morrow Pool for the field rules.

Q. Now, you said you worked about 16 -- how many years for Texaco?

A. Sixteen and a half, roughly.

Q. And the last year or so with Mewbourne Oil?

A. Yes, sir.

Q. When you were employed by Texaco, was this pool, Catclaw Draw Pool, in your area of responsibility?

A. Yes, and during 1990-91, I worked most all of the Eddy County properties.

Q. Okay. And have you prepared certain geologic exhibits with respect to this pool?

A. I have.

MR. BRUCE: Mr. Chairman, I'd tender Mr. Williams as an expert petroleum geologist.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (By Mr. Bruce) Mr. Williams, what is Exhibit 8?

A. Exhibit 8 is a small plat of the entire Catclaw Draw Pool. The wells in yellow are wells that were dedicated to the pool. The wells that have arrows pointing

to them are wells that do not fit the field rules.

Q. In other words, those wells are at unorthodox locations?

A. Yes, sir.

Q. Okay.

A. They do not fit the 1650 setback rules.

Q. Would you please move on to your Exhibit 9 and identify that for the Commission and discuss the development history of the Catclaw Draw-Morrow Pool?

A. Exhibit 9 is a chronology of the different orders and critical dates that have been issued in the course of developing the pool. The initial well was drilled in Section 11 in 1965, the discovery well.

In June of 1971, the NMOCD created the Catclaw Draw-Morrow Pool, and it first determined 640-acre gas proration units with 1650-foot setbacks from the outer boundaries.

And in 1973 the Division just extended those pool rules.

And in January of 1974 an order, R-4704, found that there were two different gas purchasers in the pool, being Southern Union and Llano Pipeline, and this was causing violation of correlative rights by different nominations of these two pipeline companies. And at that time there were just 11 wells in the pool, and the capacity

of those 11 wells was about double that of the market gas demand at that time.

So subsequent to that hearing, Order R-1670 prorated Catclaw Draw to protect against these uneven pipeline takes.

And then in January of 1980, Order R-4157-C supported technical testimony that the Morrow sand continuity within the field would only support an average well draining between 280 and 353 acres, and additional wells were needed to recover gas that wasn't going to be recovered by those existing wells. So that order downspaced gas proration units to 320 acres and changed the well setbacks to statewide 660 from the side and 1980 from the end boundaries, more of a typical Morrow development proration unit.

And then in August of 1981, the D order rescinded the C order due to downspacing would have resulted in loss of lease from those former communitized leases.

Q. Mr. Williams, it wasn't based on any drainage factors; it was merely loss of leases?

A. Correct, it was not based on any technical testimony in terms of the Morrow reservoirs. But it's -- that loss of lease would impact correlative rights so that it returned it to 640 acres, and it provided for a second well within that 640-acre proration unit. And during this

period between 1980 and 1982, about seven new wells were completed in the pool.

Then in March of 1995, gas prorationing was suspended in this pool.

And then October of 1995, Texaco drilled and subsequently completed in January of 1996 their second well on their lease.

Q. How many active producers are there in this pool?

A. Currently there are 16 out of the total of 30 that have been dedicated to the pool.

Q. What percentage of total pool production is produced by the Texaco Levers Number 2 well?

A. For the first three months of this year that one well has accounted for over 40 percent of the total pool production.

Q. So the one well out of 16 accounts for 40 percent of production?

A. Of current rate production, yes, sir.

Q. Looking back at your Exhibit 8, have two wells generally been drilled per section?

A. They have.

Q. And what, approximately half of them are at unorthodox locations?

A. Yes, sir, about roughly half.

Q. Okay. Were any of these unorthodox-location

wells assessed a penalty on production?

A. We only found one case in which a well was assessed a penalty, and that's in Section 18 on the -- about the middle right-hand side of the plat, in the very southwest quarter of Section 18, and that well was really unorthodox by any Morrow proration unit standards. And it was basically assessed a penalty on productive acres of 200 out of 320-acre.

Q. Now, because of the nonstandard well unit, can there be orthodox well locations in Section 1?

A. Given that the available for lease is only less than 300 acres, 1650 setbacks will be unorthodox at any location on that lease. It will be unorthodox even from the south line, it will be unorthodox to the north line. So no, sir.

Q. Now, let's discuss the Morrow geology in this area. Would you please refer to your Exhibit 10, identify that for the Commission and go through that map by map.

A. Exhibit 10 is a montage of four different Morrow maps. The map in the upper left-hand corner is a structure map. It shows three major or key faults that control production in the pool.

This map only covers the north part -- the very north part of Catclaw Draw-Morrow. There's -- Much of the field is to the south.

But basically, you see a regional northeast-to-southwest-trending fault that separates the red producers, being the Morrow producers in the area, from the Cisco/Canyon producers northwest of that fault that were essentially dry or noncommercial in the Morrow formation. It shows pretty much dip to the east and into the Basin, things getting structurally lower to the east.

The next upper map is the lowermost zone in the area. It is the -- historically the big gas-producing zone at the bottom of the Morrow section. And being a prorated field, a lot of the wells were in this zone for the longest amount of time, and therefore pressure depletion is likely to be very high in this zone. We map 10 to 15 foot of it at the Mewbourne location and don't show any to the northwest.

Q. So at the Fasken location there wouldn't be any lower Morrow sand?

A. No, sir. The bottom left-hand map is kind of our key objective. This is the middle Morrow green sand. The wells highlighted in red are the wells that have produced and are producing out of this zone. The cums there are -- the best we can tell, engineeringwise, are attributed just to this zone.

To the south in 11 you have a 2.6 BCF produced.

In the south of 12, 1.5.

The new Texaco well in the north half of 12 has made about 2.2 BCF out of that middle Morrow zone.

And the old Fasken well to the north produced from 1972 to 1991 and only made 322 million feet from the middle Morrow -- or -- yeah, 322 million cubic feet from the middle Morrow.

We have a thick mapped at a northeast-southwest trend across the Mewbourne location that is our key zone.

The last map, in the bottom right-hand corner, is the upper Morrow zone. It is the last in the series of Morrow sands.

Most of the wells to the south in the field were completed in this zone in 1990 and 1991. So it is likely there would be decent pressure left in this upper zone, and it's considered an objective.

Q. Now, overall is the entire south half of Section 1 prospective in the Morrow?

A. It is.

Q. Looking at the middle Morrow, your key zone from a geological standpoint, is it wise to be moving quite a ways north toward the abandoned -- plugged and abandoned Fasken well?

A. When you look at the well in Section 2 and the south part of Section 2, it is a very -- It's not a very clean zone. It was tested, not productive, gave up a

marginal amount of gas.

And these in general are very narrow fairways, and we just don't map it as being that wide to go all the way over to the Fasken location.

Q. But -- So you don't want to be too far to the west because of that well in the southeast quarter of Section 2; is that correct?

A. Yes, sir.

Q. And the well in the middle third, if you will, of Section 1 was a very poor producer, was it not?

A. Yes, sir. It was a noncommercial well.

Q. So from a geologic standpoint, you'd want to stay away from those two wells?

A. Yes, sir.

Q. What is Exhibit 11?

A. Exhibit 11 is a publication from -- that was published in the *American Association of Petroleum Geologists Bulletin* in July of 1985 that talks about trends and producing characteristics of lower and middle Morrow sandstones in, specifically, Eddy County, New Mexico.

I've highlighted under the abstract a sentence that supports the trend of our mapping in the middle Morrow in this reservoir, which states that these sandstones are a series of marine beaches and bars that are deposited in a northeast-trending -- along a northeast-trending shoreline.

Q. And your mapping of the middle Morrow conforms with this industry standard?

A. Yes, sir, it does.

The second page speaks to characteristics of middle and lower Morrow sandstone production, and it states that, "Gas production in the middle Morrow sands is related not to structure but to porosity development. Areas with approximately 10 or more net feet of effective porosity should be productive. Producing wells in both lower and middle...sandstones have porosities generally ranging between 8 and 14 percent." And this is the key point: "In contrast to lower Morrow sandstones, water production rarely occurs from...middle Morrow sands."

Q. Okay. Looking at your Exhibit 10, of these wells you have in the middle Morrow, do you know of any water production or water problems with those wells?

A. No, sir. In researching the whole field, I've found no Morrow -- no middle Morrow water production.

Q. Okay. Now, what about the lower Morrow? You've got a location more or less in the center of the south half of Section 1. Where is water production with respect to your proposed well location?

A. On the --

Q. And maybe look at the structure maps to discuss this.

A. Okay, on the upper two maps water was tested in the lower Morrow in the well in Section 7, southwest quarter of Section 7, at a subsea elevation of 7263, and that pretty well holds for fieldwide gas-water contact in the lower Morrow at about 7260.

Q. So --

A. We -- Our structural position is at least 160, 260 feet above that point.

Q. So you don't see water as a problem with your well at the lower Morrow zone?

A. No, sir.

Q. Based on these maps, in your opinion is Mewbourne's location the best location in Section 1 for a Morrow well?

A. It is.

Q. Finally, Mr. Williams, what is Exhibit 12?

A. Exhibit 12 is a two-well cross-section that goes from the left, being the south, to the right, being the north. It goes from the new Texaco completion to the old David Fasken completion on the north end, and it shows pretty much -- It's a stratigraphic cross-section, hung on the top of the lower Morrow.

The green sand correlation, which is our main objective, shows to have two members in the new Texaco well and two members in the old Fasken, David Fasken, well that

was noncommercial. The centerline there is our proposed location.

Q. Are these the key wells in this area?

A. They are.

Q. Now, your map also contains a production map. What has been production from Section 1, as opposed to the offsetting section?

A. In the upper right-hand corner of the cross-section is a production map. There are a series of small crosses. In the upper left-hand corner is the potential of the well. Next to that is the date the well was completed. Below that is the abandonment date or the current rate for a period of time. And then to the left on the bottom is the cum.

This map was made for our original hearing back in April. The only well that's really changed is the new Texaco well, and it has produced about 2.2 BCF to date and still produces about 4 million a day.

Q. Has it been producing 4 million at a steady pace over the last 18 months?

A. It has.

Q. Without decline?

A. Yes, sir. So it basically shows that north of Section 12 in the Morrow formation there are no commercial completions.

The well information on the well in Section 2, the northwest quarter, is for the Cisco. So that was a Morrow dry hole.

Q. The well in the far north of Section 2 is a Cisco completion?

A. Yes, that pertains to the -- that production information pertains to the Cisco in that case. The rest is Morrow.

Q. So again, there has been no commercial Morrow completion to the north of the Texaco Levers Well Number 2; is that correct?

A. That is correct.

Q. Mr. Williams, were Exhibits 8 through 12 prepared by you or under your supervision or compiled from company business records?

A. They were.

Q. In your opinion, is the granting of Mewbourne's Application in the interest of conservation, the prevention of waste and the protection of correlative rights?

A. Yes, sir, it is.

MR. BRUCE: Mr. Chairman, I'd move the admission of Mewbourne's Exhibits 8 through 12.

CHAIRMAN LEMAY: Without objection, Exhibits 8 through 12 will be admitted into the record.

Mr. Kellahin?

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Williams, if you'll leave your cross-section out, please, sir, and fold it so that you have the Levers 2 well, which is the well at the A location, is it still your geologic strategy to find a location that accounts for both thickness and structure?

A. Yes, sir, it is.

Q. In some areas structure is not significant for you as a geologist, but it is so here; is that not true?

A. I believe Section -- I believe that Exhibit 11 shows that in the middle Morrow reservoir, which is the main objective, structure is not that critical.

In the lower Morrow reservoir structure is critical, because it has a definable gas-water contact.

Q. Okay. Let's start with the lowest interval, the brown sand. And when we look on the Levers 2 well, you have an area identified on the display as brown sand?

A. Yes, sir.

Q. Does that correspond to the interval that you put on your lower Morrow brown sand gross isopach?

A. Yes, sir.

Q. When we look at the lower Morrow brown sand and also look at your top of lower Morrow structure, am I correct in understanding there's a structural component to

this brown sand?

A. There is, on a fieldwide basis there is, yes, sir.

Q. When we look at your structure map, what is the lowest known producing gas?

A. From the lower Morrow?

Q. Yes, sir.

A. 7260.

Q. 7260?

A. Yes, sir.

Q. Okay. What is the highest known water produced in the lower Morrow sand?

A. That would be about the same. That would be the gas-water contact, 7260.

Q. You've determined that gas-water contact by looking at the well in Section 7, in the southwest quarter?

A. Yes, sir, and farther south. Wells in 18, 23 and 25 on the -- fieldwide.

Q. Now, on the Levers 2 well on the cross-section, was that zone tested by Texaco?

A. The brown sand?

Q. Yes, sir.

A. Yes, sir, I show perforations across that interval.

Q. Yes, sir, with what result?

A. Gas production.

Q. Do you know what volume?

A. It's probably on the scout ticket. I know overall the well has produced 4 million a day with the green and the brown sand open, so --

Q. There's no separate volume associated with the brown sand?

A. I think --

Q. It was produced in connection with the green; is that not true?

A. I think there is, but I think that's our engineering testimony.

Q. Do you remember Uhl's testimony, Texaco's geologist, back at the April hearing, where he said that his well did not have this brown sand?

A. I do not remember that, no, sir. My correlations are my correlations.

Q. On this correlation, then, am I correct in understanding that you get 16 feet of gross sand?

A. Yes, sir.

Q. You have not attempted to present a net-pay isopach for the brown sand?

A. In the case of the brown sand, it's such a prolific -- such a prolific zone historically that that gross sand is fairly good as a net number as well. It's a

really nice, developed zone.

Q. Okay.

A. But no, for geometry and for mapping all these, I've just mapped the gross sand.

Q. All right. And if I remember correctly, this brown gross sand map you contend is your second-best target?

A. Oh, second or third. It's probably about equal to the upper Morrow "A".

Q. Do you remember your testimony in April where you told me that this sand was your second-best sand?

A. Well, it's okay. It's second to third. There's probably a real close race between second and third. I think without the green sand and without the new pressure information and rate information, nobody would care about drilling additional wells out here.

Q. If we go up the Levers 2 wellbore, there's an orange sand. I don't find an orange sand map.

A. No, sir, I've mapped all the sands and I've only picked out those that I think are pertinent to the Mewbourne location and the Fasken location.

Q. So you did not prepare an orange sand isopach map?

A. I have one. I did not prepare multiple copies, no, sir.

Q. Did the Levers 2 well produce out of the orange sand?

A. Yes, sir, as did the Levers 1.

Q. What volume of gas was produced out of the orange sand?

A. Well, the Levers Number 2, again, that's engineering testimony as to what's separated out here. I think they have subsequent pressure information from the lower zones that differentiates from the upper zone.

Q. Mr. Williams, if you'll stay with my question, sir, we can get through this a little quicker. All I asked you was what volume of gas had produced out of the orange sand?

A. That's our engineering testimony.

Q. So you don't know?

A. No, sir.

Q. And you didn't present an orange sand map?

A. No, sir.

Q. When I look at the brown sand map, then, that's the map you present to us that is within the interval we call the lower Morrow?

A. Yes, sir.

Q. Would you turn to your Exhibit Number 11 with me, please? And let's look at your lower Morrow brown sand, and then let's read the second paragraph of Exhibit 11.

It says, "The lower Morrow sand..." it gives you an interval "...are interpreted to be a prograding fluvial-deltaic sequence of channels and point bars with a northwest source. They trend toward the southeast, generally normal to the Morrowan paleoslope."

Is not your brown sand map oriented inconsistent with the conclusion reached in this paragraph in Exhibit 11?

A. It's north, northeast, northwest, yes, sir, it's a little bit different. But it -- In general, it's from the north, yes, sir.

Q. When we go up to the green sand in the Levers 2 well, there's two sets of perforations within the green sand interval. Do you see that?

A. Yes, sir.

Q. You have chosen to lump those sand lenses collectively as a green sand package for isopach purposes, have you not?

A. I have.

Q. Let's look at the green sand map. Am I correct in understanding that you believe the middle Morrow is not affected by a water risk associated with that sand?

A. Yes, sir, that's right.

Q. When I look at your green sand map, it was your testimony before that that was your best prospect; is that

still your testimony?

A. Yes, sir.

Q. Am I correct in understanding that your conclusion about the green sand is that you need somewhere between 13 and 15 feet of net green sand to have a commercial location?

A. Yes, sir.

Q. And that was your testimony back in April, and that is still your testimony?

A. Yes, sir, based on the wells in this field it's somewhere between 13 to 15 feet, that's right.

Q. Your green sand map back in April used a 50-API-unit cutoff, and you had an 8-percent porosity cutoff?

A. Yes, sir.

Q. Did you continue to use those values when you made the green map for today's presentation?

A. Yes, the values are the same.

Q. When we look at the green sand map, down below where you have cut off, the contours continue in the sections to the south, do they not, Mr. Williams?

A. Yes, sir.

Q. And there is a well in Section 14 to the south. It's the Hallwood Petroleum Catclaw Draw? You can see that?

A. Yes, sir.

Q. It's not included --
A. It's just --
Q. -- in your map?
A. It's just off this short map, yes, sir.
Q. Had you extended that map, would it have been included within that sand package?
A. I believe so, yes.
Q. And how about the well in the northwest of Section 13, this other --
A. Yes, sir.
Q. -- Morrow well?
A. I believe so, yes, sir.
Q. How about the well in the southeast of 14?
A. Are you -- You're asking if they had green sand in them?
Q. Yes, sir, if you finished off your contour --
A. Yes, sir, they do have green sand.
Q. And if you finished off the contouring and showed us the rest of the display, those wells would have been within that presentation?
A. Yes, in general this northeast trend continues southward through the field.
Q. Mr. Williams, I show you what I have distributed as Mewbourne's Exhibit 9, which is your geologic montage that you sponsored and testified from back in April.

A. Yes, sir.

Q. In the April map, when we look at the green sand, the Mewbourne location is approximately -- well, I guess it's exactly 660 from the common boundary with Texaco?

A. Yes, sir.

Q. Under this interpretation, that wellbore could have been moved farther north and still be within the 25-foot contour line under this interpretation?

A. Yes, sir, it could have.

Q. And using your criteria of a successful green-sand Morrow well having at least 13 to 15 feet of net pay, in fact, you could have moved the wellbore under this interpretation back to a standard 1650 location from the southern boundary and still satisfied that criteria?

A. Well, there's a lot of other testimony that says we really couldn't move it --

Q. I understand. What I'm -- my purpose --

A. -- but this map was made and it shows the trend going farther north than the current map. And the reason that has changed --

Q. Mr. Williams, that's not my question, sir. You're not responsive to my question.

MR. BRUCE: Let him answer the question, Mr. Chairman.

MR. KELLAHIN: No, sir, that's not the question

asked.

Q. (By Mr. Kellahin) My question, sir, is, in relation to the southern boundary of the spacing unit, if you take that and move that location back to 1650, anywhere along that line you're going to have points under the April interpretation that satisfies the criteria of between 15 and 13 feet of net pay; is that not true?

A. Based on the old interpretation, and solely based on this map and not anything else, that is correct.

Q. Okay. The data points on the April map in terms of log information, was all the log information available to you in April of 1997? Is that not true?

A. Yes, sir.

Q. And since then till now, there have been no new wells drilled within the area shown on the green sand map display? Is that not true?

A. That's correct.

Q. When we look at the green sand map for today's hearing, we now find that the Fasken location has less net sand than 10 feet on the new interpretation, right?

A. Yes, sir.

Q. On the old interpretation you had approximately 13 feet at the Fasken location; is that not true?

A. Yes, sir.

Q. Under the new interpretation, if you wanted

between 15 and 13 net feet of green sand, under this interpretation you could still move back to a standard location in the spacing unit, could you not, sir?

A. There is not a standard location in the spacing unit.

Q. From the south boundary of the spacing unit, moving back 1650 feet, that would put it standard as to that boundary, would it not, sir?

A. Yes, it would.

Q. And under this interpretation you would have an opportunity to place a well that distance from the southern boundary and still meet the criteria of 13 to 15 net feet of green sand; is that not true?

A. Yes, but there are other considerations.

Q. When we go to the structure map, the structure map remains unchanged; is that not true?

A. That is correct.

Q. You're mapping the top of the lower Morrow structure --

A. Yes, sir.

Q. -- right? I'm looking at the interpretation of a fault, and of the two shown I want to focus your attention on the fault that you have placed that runs just northwest of the Fasken location. It has an orientation that is northeast-southwest. Do you see that one?

A. Yes, sir.

Q. I'm not asking you about the one that runs north and south through Sections 3 and 10, all right?

A. Right.

Q. When we look at that fault, am I correct in understanding that your control was based upon what you saw in the log information from the wells in the southwest of 11 and the southeast of 10?

A. From all the wells, yes, sir.

Q. From those two wells there is a displacement when you map the structure for the top of the lower Morrow; is that not true?

A. Well, that is not the only well. I see displacement from the well in 2 to the well in 11.

Q. Yes, sir, we'll get to that in a minute.

A. Okay.

Q. Let's start with the control down in the southeast of 11 and the southwest of -- sorry.

A. Yes.

Q. -- southwest of 11 and southeast of 10. Do you see those two wells?

A. Yes, sir.

Q. All right. What is the difference in the top of the Morrow structure between those two wells?

A. It's about 200 feet.

Q. Okay. Is that the placement of the lower Morrow reservoir at that point?

A. That is the displacement of the top of the lower Morrow structure marker.

Q. Okay. And as you take structure and interpret it into the sand maps, would this be a sufficient enough displacement to have separated the lower Morrow in this particular area?

A. Yes, sir, it is.

Q. Is it sufficient of displacement to have separated the middle Morrow?

A. Well, the combination of two faults are sufficient to do that. You have the northeast-southwest fault, and then you have the bounding fault on the west side of the field, which is north-south. And those pretty much break off brown sand production and what forms the trap for the majority of the gas produced at Catclaw Draw.

Q. And it will also separate out the green sand?

A. Green sand is found productive just across several faults in the field.

Q. That's not my question, though. The question is, in the green sand, if I'm on the downthrown side of that fault, my green sand production is going to be separated from the green sand production that's on the upthrown side of that fault?

A. Yes, it wouldn't be a common source of supply, that's correct.

Q. And that's true for the upper Morrow as well?

A. Yes.

Q. Okay. Now, as we project this line to the northeast, what's your next control point that tells you it's going in that direction?

A. Along this northeast-southwest-striking fault?

Q. Yes, sir.

A. The well in Section 2, in the south half of 2, south one-third of 2.

Q. Can you tell by that information what the distance of separation, the magnitude of throw, if you will, between the upthrown and downthrown side of the fault is?

A. I have it mapped at about a hundred and fifty feet, a hundred and -- just less than 150 feet from the contours.

Q. And what contour line am I looking at to get that displacement?

A. Well, you're -- Say the 7000-foot contour line in Section 11, and then meeting up with the -- across the fault with the 7150 contour line in Section 2. So it's just -- as mapped at that point, just less than 150 feet.

Q. Can you tell me what the displacement of the

fault is in Section 1 when we get to the minus-7200 contour line?

A. It's right at 100 feet.

Q. What have you used to control the orientation of that northeast-southwest fault?

A. Pretty much just regional mapping and experience. There are numerous northeast-southwest-striking faults. Many of them appear to have lateral movement as well as vertical movement on them. So basically it's well control and the fact that it fits with the regional geology.

Q. You've constructed the interpretation of the fault based upon regional trends and subsurface geology?

A. Yes, sir.

Q. You did not utilize any 3-D or 2-D seismic in this interpretation?

A. No.

Q. Have you satisfied yourself that the northeast-southwest-trending fault is west of the Fasken location?

A. It is real close to that fault by my map. I don't have anything to say it's really east or west of that fault. It could well be on the other side of that fault.

Q. But this is your best interpretation, and you show the fault to the west of that well location?

A. I do.

Q. Now, the upper Morrow sand, this is the one with

the least potential of the three sands that you've mapped, if I correctly understood you?

A. It runs a close second or third to the -- yes.

Q. Okay. Is the upper Morrow "A" and -- It has not been perforated in the Levers 2 well at this point; is that not true?

A. To the best of my knowledge, it has not.

Q. And when you look at this map, this is still the same interpretation as you had back in April, is it not?

A. It is.

Q. In Section 2 in the southeast quarter, what's that? The Conoco Levers well?

A. Yes, sir.

Q. That Conoco Levers well, you give it 21 feet of net "A" sand; is that not true?

A. Yes, sir.

Q. And did you continue to use the 7-percent porosity cutoff?

A. I believe that's correct.

Q. When I look at that well, then, with that cutoff, you've got 21 feet of net pay in the Conoco Levers well, true?

A. Yes, sir.

Q. And did it produce gas out of that interval?

A. It did not produce. It tested gas, and that's

why it's a half circle instead of a full circle. It essentially had a show in that zone. Never produced out of it.

Q. Was there any initial potential on that well?

A. It had an initial potential.

Q. That initial potential was 2.9 million a day, was it not?

A. I believe that's true.

Q. When we look at your structure map, am I correct in understanding that you're low to the Levers 2 well, the Texaco Levers 2 well, you're low to that of about approximately 50 feet?

A. Yes, sir, less -- probably less than 50 feet, right at 50 feet.

Q. When you looked at the Conoco Levers well in the southeast of 22, do you have an opinion as to why that well has not produced?

A. My evaluation of that is that it is across the downthrown side of the northeast-southwest-striking fault which separates it from Catclaw Draw Pool, and therefore it was -- it had a burp but did not produce.

Q. Other than being on the downthrown side of the Catclaw Draw fault line, is there any other geologic explanation that you have for the fact that the well did not produce out of the Upper Morrow "A" sand?

A. No, sir.

MR. KELLAHIN: Thank you, Mr. Chairman. I have no further questions.

CHAIRMAN LEMAY: Thank you. Mr. Carr?

MR. CARR: Mr. Chairman, with your permission I'd like to move to a table.

MR. KELLAHIN: Mr. Carr, you're --

MR. CARR: I'm dropping everything on the floor --

CHAIRMAN LEMAY: Do you want to take a break?

MR. KELLAHIN: We'll give Mr. Carr --

CHAIRMAN LEMAY: Let's take about a ten-minute break while Mr. Carr moves to the table.

(Thereupon, a recess was taken at 10:44 a.m.)

(The following proceedings had at 10:53 a.m.)

CHAIRMAN LEMAY: Okay, now that we have Mr. Carr in a comfortable seat, prominent, we can begin with his cross-examination of the witness.

MR. CARR: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Williams, you have actually worked the area that's the subject of this hearing for some time, have you not?

A. I have.

Q. Prior to your employment by Mewbourne, you worked for Texaco; is that correct?

A. I did.

Q. And while with Texaco, you actually mapped the sand that we're talking about here today; is that right?

A. In 1990 and 1991 I did, yes, sir.

Q. So seven years ago you were working on this area?

A. Yes, sir.

Q. You left Texaco in August of 1996; is that correct?

A. Yes, sir.

Q. And at that time you went to work for Mewbourne?

A. Yes, sir.

Q. And you, when you went to work for Mewbourne, were aware that the Levers Number 2 well was a very good well in Section 12; isn't that right?

A. I think I was aware they drilled the well. I had not seen any production.

Q. You recommended, in fact, did you not, that this was a good prospect for Mewbourne to look into?

A. Among many locations I recommended, yes.

Q. And then after you recommended the location, Mr. Cobb went out and acquired the interest in Section 1 that he's previously testified to?

A. Yes, sir.

Q. Now, in your work as a geologist, you have become familiar with the rules which govern the development of the Catclaw Draw Pool; isn't that right?

A. Yes, sir.

Q. And you would agree with me that they provide for 640-acre spacing at this time?

A. Yes, sir.

Q. And they require 1650-foot setbacks from the outer boundary of the dedicated acreage; is that correct?

A. They have.

Q. You reviewed the history of the development of these rules and indicated that at one time the pool rules were -- provided for 320-acre spacing, and that after that spacing was changed to 640 with at that time authorization for an infill; is that correct?

A. Yes.

Q. When they changed back to 640-acre spacing and authorized infills, they didn't change the requirements or the setbacks from the outer boundary of the spacing unit, did they?

A. No, sir.

Q. At all times since we moved from 320 spacing back to 640-acre spacing, the rules have provided for setbacks of 1650 feet from the outer boundary of the tract; that's correct, is it not?

A. (Nods)

Q. Is that correct?

A. That is correct, although half the wells in the pool are drilled closer than that.

Q. And we will get to that in a minute.

A. Okay.

Q. Now, the Levers Number 2, the well that Texaco operates in the northern part of Section 12, that is at a standard setback, is it not?

A. Yes, sir.

Q. And the nearest setback that would be standard on your tract, at least standard from the south line, would require that you move that well back to 1650 feet; isn't that correct?

A. Yes, sir.

Q. Were you actually involved in the selection of this particular location?

A. Yes, sir.

Q. In fact, the intent of this location is to drill the well as close as possible to the offsetting Texaco well; isn't that correct?

A. No closer than 660, no, sir -- yes, sir.

Q. It is your intent to drill the well as close as possible to the offsetting Texaco tract?

A. Our intent is to protect our correlative rights,

yes, sir.

Q. Are you aware that a lawsuit has been filed between Mewbourne and Fasken involving the development of this acreage?

A. I am.

Q. And are you the geologist who was involved in that decision process to bring this suit?

A. No, sir.

Q. Have you seen the complaint that was filed in this case?

A. Yes, I believe I have.

Q. Paragraph 6 of that complaint provides, and I quote, "to take advantage of this proven and prolific formation, Mewbourne proposed drilling a well to the Morrow formation as close to the south line of the operating unit as possible." Is that a correct statement?

A. Yes, sir.

Q. So the objective is to get as close as possible to the offsetting Texaco acreage to the south?

A. Yes, sir.

Q. If we go and look at the rules a little further, you are aware that prorationing was suspended in March of 1995; is that correct?

A. Yes, sir.

Q. Are you aware that the Division, in the order

that was entered following the April hearing, referenced the Catclaw Draw Pool as a pool that is a technically prorated pool?

A. Yes, sir.

Q. Do you understand the difference between a prorated pool and a technically prorated pool?

A. My understanding of that difference is the difference in where gas purchasers and nominations have set demands for prorated pools and for fields that are technically prorated where that -- where wells are pretty much produced at capacity.

Q. Do you understand how whether a pool is prorated or technically prorated, how that would impact the -- Do you understand what the one-well rule is?

A. Yes, sir.

Q. And do you understand the relationship between a prorated pool and a technically prorated pool --

A. Yes, sir.

Q. -- as they relate to the one-well rule?

A. Yes, sir.

Q. And is it your understanding of these rules that when a pool becomes technically prorated, all rules or policies that relate to prorationing would no longer apply?

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

Q. Am I pushing you into an area you don't know --

A. A little bit far.

Q. All right. When we look at your geological work on the Catclaw Draw-Morrow, I think you indicated to Mr. Kellahin you had not integrated seismic into your work; is that correct?

A. That's correct.

Q. If we look at your Exhibit Number 10, in developing these isopach maps you relied strictly on well control?

A. Yes, sir.

Q. If we compare your Exhibit 10 today with Exhibit 9 from the April hearing -- Mr. Kellahin brought that out a few minutes ago --

A. Yes, sir.

Q. -- I'd like for you to look with me for a minute at your mapping the Morrow green sand.

A. Yes, sir.

Q. If we look at the map you presented in April, the date on it is 3-4-97.

A. Yes, sir.

Q. This map was developed using strictly well control; is that correct?

A. It was.

Q. Did you use more than the four well spots that are shaded showing pay in this zone?

A. Again, I've mapped the entire field, but for purposes of hearing I have restricted just this area, yes, that's --

Q. And this is your interpretation as of that date?

A. It is.

Q. And is it fair to say that with the data available to you, this was at that time the most accurate map you could draw of this zone?

A. Yes, sir.

Q. Now, if we go to the map you're presenting today and we look at the Morrow green sand, is this the best interpretation you can make today with the data available to you?

A. It is.

Q. Has there been any additional well control since you prepared your map in March?

A. No additional well control.

Q. What additional data have you obtained that has enabled you to change your mapping of this reservoir?

A. Prior to our March -- or our April hearing, Texaco was unwilling to release pressure data that has really allowed us to make these pods more volumetrically realistic in terms of how big this reservoir is. So essentially the difference in the two maps is utilizing new pressure data from Texaco.

Q. And so what you've done is, you've integrated some engineering work based on pressure information into this map.

A. That was unavailable at the time.

Q. And that pressure information is data on the Levers Number 2 well in the north half of Section 12; isn't that correct?

A. On the new well, yes, sir.

Q. And so isn't it fair to say that what you've done is actually adjust your map to take into account production from our well, instead of just mapping the extent of the reservoir as you see it as a geologist?

A. Well, we attempted an integrated approach, geologically and engineering, and we attempted to map the extent of the reservoir with the well control and with the newest pressure information, and this is our current view.

Q. Okay, and that's your current view based on new pressure data from the Levers well, which you then have used to modify your interpretation based on well control?

A. Yes, sir.

Q. And the pressure data that you've integrated shows what the Levers well will produce; isn't that right?

A. It is integrated with our engineering testimony that shows an ultimate for this zone from all the wells.

Q. If we look at your green sand map, the one you're

presenting today, you have expanded the reservoir on an east-west axis, have you not?

A. East-west?

Q. It's a thicker deposit on an east-west axis than you previously mapped?

A. Yeah, I don't really see that. I see the 15-foot contour, which is kind of critical, cutting the same part of the proration unit it does in that map, so -- I mean, it may appear wider because it's shorter, it's not as long to the north. But I don't believe it is.

Q. If we look at your current map and we look at your proposed location, and we also look at the Levers Number 2 well, from a geologic point of view, with those two -- there's nothing that would prevent those two wells from competing with one another for reserves, is there?

A. Not based on my work, no, not at this time.

Q. Now --

A. There may be, but --

Q. But you -- Can you see as a geologist --

A. I'm sorry?

Q. Can you see anything as a geologist that would prevent those two wells from competing for the same reserves in the northern part of Section 12?

A. Well, in our last hearing Fasken presented seismic that shows a fault that puts Mewbourne on the

downthrown side of the fault that might be interpreted to separate sources of gas production.

Q. And do you accept the positioning of that fault as presented by Fasken?

A. We haven't really been allowed to see enough of the data. We accept the position based on that one line.

Q. And so is it your testimony that there is a fault in there that separates the two wells?

A. Just based on Fasken's testimony in the April 4th --

Q. I'm asking you for your testimony. Is it your opinion that there is a fault that separates those two wells?

A. Mewbourne doesn't really control the data to see that support, so this is Mewbourne's interpretation, based on what I have.

Q. And based on your interpretation, can you see anything that would prevent a well at your proposed location from competing with the Levers Number 2 for reserves in this green sand?

A. No, sir, I don't. That's why we're attempting to protect our correlative rights.

Q. If I look at your map, the brown sand, and I look at Exhibit Number 11, I believe in Number 11 it indicates that what we have is a northeast-trending ancient shore

land in the middle Morrow sandstones in this area; is that right?

A. Are you -- Brown or green?

Q. I'm talking about -- Excuse me --

A. You said brown?

Q. Yes, sir.

A. Okay.

Q. Is that applicable, that we should expect a northeast-trending shoreline in the area?

A. In the lower Morrow?

Q. Brown sand, yes.

A. The lower Morrow is a series of distributed area channels, and it's pretty much nonmarine, and it can vary from northwest to north to northeast. In this local area I show a northeast striking.

Q. Is this based on any regional mapping, or just on mapping in this particular area?

A. It's regional in this area.

Q. And if you have a northeast-trending shore through here, wouldn't you expect these fluvial sands to be perpendicular to that shoreline?

A. This is not a shoreline deposit. Again, this is a deltaic-type --

Q. All right.

A. -- braided-stream-type --

Q. And so you're orienting the brown sand basically in this northeast-southwest-trending fashion, as opposed to the northwest-southeast trend?

A. Yes, sir.

Q. And you're basing that on regional mapping?

A. I am.

Q. Okay. When we look at the brown sand, we look at your cross-section, are you aware that when Texaco drilled the Levers well, that the brown sand was, in their opinion, not present?

A. Again, we may be talking differences in nomenclature, but I correlate the lowestmost lower Morrow sand to be the brown, and it produced a large part of the 6.5 BCF produced in the Levers Number 1 in the south half of 12. And when you correlate that well to the north well, they have that basal brown sand.

Q. You were advised last spring by Texaco that they saw no gas show in the brown sand in this well; isn't that right?

A. They perforated it.

Q. And they saw no gas show. They did tell you that, didn't they?

A. The data I have says the well -- the zone is open.

Q. Did they not talk to you about this and tell you

that they found no brown sand in the well?

A. Again, I don't remember any discussion with Texaco on brown sand.

Q. You don't remember them saying that they didn't see it in the mudlogging?

A. No, sir, I don't.

Q. You didn't see it on --

A. I'm sorry, I --

Q. -- the neutron log? Okay.

A. Again, it's not a key objective as far as -- It is a sand that we believe will be in a location drilled on the east half of this gas proration unit and not likely in the west half. But it's likely to have suffered fairly significant fieldwide depletion.

Q. And that just happens when you develop a field, correct? The zones get depleted?

A. Yes, since 1972 that zone has been producing.

Q. And it's up to the operators in tracts to drill wells to produce their share; isn't that correct?

A. That is correct.

Q. And there's nothing wrong with somebody drilling and producing their reserves in an offset and letting that depletion occur, correct?

A. Correct.

Q. Now, when you work with the Morrow and -- You

have worked with the Morrow for how many years, Mr. Williams?

A. On and off for about 17 years.

Q. It's fair to say it's a complex formation, is it not?

A. It is very complex.

Q. And when we look at your proposed location, we're really not going to now the thickness of, say, the green sand until you actually drill a well there; isn't that fair to say?

A. That is most likely correct, yes, sir.

Q. And if we drill a well there, we may discover that your interpretation in March is confirmed; isn't that possible?

A. It may be.

Q. Now, you're not going to know the porosity at that location until you actually drill a well there; isn't that also correct?

A. That's correct.

Q. And it's your -- It's possible that you could drill a well there that is comparable to the Levers Number 2. Fair to say?

A. That's possible.

Q. You could even drill a better well if you get lucky, correct?

A. Possibly.

Q. And if you're able to drill a well that's comparable or better it would, in fact, then -- could be competing with the Levers Number 2 for the reserves in that portion of the Catclaw Draw-Morrow Pool, could it not?

A. Well, at this point of pressure depletion from the Levers Number 2 well, I'm not sure that we could likely drill a better well. That well has made a significant amount of gas and, as our engineering testimony has shown, has drawn down the reservoir pressure fairly significantly.

So to compete with that well is going to be rather tough if -- certainly if something isn't done fairly quickly.

Q. You could drill a well, though, that would encounter comparable reservoir, correct?

A. Yes.

Q. And geologically, they then would -- we would have two wells competing for the reserves in that area at today's pressure?

A. Yes, at today's pressure.

Q. Bottom line is, though, we're not really going to know what we have here until you actually drill a well in the south half of Section 1; isn't that fair to say?

A. That's in all cases, yes, sir.

Q. Before that, we're working with geologic

interpretations?

A. That's right, that's correct.

MR. CARR: That's all I have.

CHAIRMAN LEMAY: Thank you, Mr. Carr.

Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Well, all my questions were answered, except I did miss the gas-water contact.

A. Okay. Again, the only zone that I think critical is -- for the gas-water contact, is the lower Morrow, and from the wells that I've found in the field -- and I believe there were three of them, of which this Number 7 well is one of them -- there's a gas contact at approximately 7260 subsea.

MR. BRUCE: You mean the well in Section 7?

THE WITNESS: Seven, southwest quarter of 7. The TW on the isopach on the top right-hand refers to the "tested wet", and it's at a subsea of 7263.

COMMISSIONER BAILEY: That's all I have.

CHAIRMAN LEMAY: Commissioner Weiss?

EXAMINATION

BY COMMISSIONER WEISS:

Q. How do you draw the contours on your exhibits?

A. Well, on the structure map, pretty much pick the

tops, incorporate -- try to incorporate a lot of the shows and a lot of the production, and really separate things with faults to make it all make sense.

Q. So they're drawn by hand?

A. Oh, yes, sir. Yes, sir, they're by hand.

Q. Yeah, I didn't understand. So you're looking at --

A. Yes, they are all interpreted and contoured by hand.

Q. And then the next -- You mentioned you had some pressure information to support your placement of the faults, and then you said it was integrated into the green sand. How did you do that?

A. Well, our engineer, working with our engineer.

Q. He'll explain that?

A. Yes, sir, with the reserves and the drainage areas.

COMMISSIONER WEISS: That's the only questions I had. Thank you.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. Mr. Williams, was it your recommendation to locate this well 660?

A. Yes, sir, it is. It was.

Q. Why didn't you pick 330?

A. Well, I really, I guess, didn't -- I just work the Morrow, and typically statewide rules are 660 and 1980. When you look at the field on a fieldwide basis, yes, the field rules have been 640 acres. But it's effectively developed on 320 acres, and that is a 320-acre setback, 660 and 1980.

Q. So 330 would give you -- Assuming just geologic testimony, assessing risk --

A. Uh-huh.

Q. -- 330 is a lower risk than 660 would be if you had a fieldwide rule that said you could drill 330?

A. Possibly, yes, sir.

Q. Or how about 990?

A. Possibly, yes, sir. That could be -- Again, with the uncertainties, that could be fine.

Q. Assuming relative risk in proximity to the south line --

A. Yes.

Q. -- is it your geological testimony that the further you go north from the south line, the higher the risk becomes?

A. Yes, sir, it is.

Q. Is there a cutoff of which going north you would not recommend drilling the well?

A. It's likely at that 990 point, 660 to 990,

somewhere in there. I mean, there are other considerations as far as topography and such out here, and this location stakes out relatively well. Going north, I believe there's a draw in there.

Q. But assuming you could -- you drilled the draw, or assuming topography was not a factor, just assessing geologic risk, would you recommend your client drill a 990 location?

A. Without a penalty, absolutely, yes, sir.

Q. How would you assess a 990 location without a penalty, compared to a 660 location with a penalty?

A. Well, I guess it just depends on what the penalty was. But ultimately, the data is not good enough to discern that much difference in location. There's not that -- You know, it's all subsurface control and trends, and it's -- 330 feet of difference is a margin of change.

CHAIRMAN LEMAY: That's the only question I had.

Any additional questions of the witness.

MR. BRUCE: I had some follow-up questions.

CHAIRMAN LEMAY: Mr. Bruce?

FURTHER EXAMINATION

BY MR. BRUCE:

Q. Mr. Williams, looking at your Exhibit 10, the lower Morrow isopach, you've trended that northeast-southwest, correct?

A. Yes, sir.

Q. Mr. Kellahin asked you a question about why you didn't trend it northwest like the article you submitted as Exhibit 11 says. Looking at this map, I notice the Fasken well in Unit P of Section 1 is zero feet in this sand, the well in the southeast quarter of Section 3 -- Section 2, is zero feet. The well in the southwest quarter of Section 11 is zero feet in the sand.

Could you drill this in a northwest trend and still honor the well data up there?

A. I don't believe so. There are -- The brown sand is such a prolific zone. There's virtually no brown production northwest of this field for quite a ways, and I think that has to do with the trend of the reservoir, as well, with the faults that separate this major field. Catclaw has produced over 108 BCF. It is a major Morrow field, and that's essentially why it was prorated. And going north, there's virtually no commercial Morrow production for quite a ways.

Q. Okay. Now, looking at -- Well, what was your Exhibit 9 at the original hearing, the one Mr. Kellahin handed to you?

A. Uh-huh.

Q. In looking at your middle Morrow map, now, this interpretation -- When you made this, you did not have any

data from the Texaco Levers Number 2 well in Section 12, did you?

A. Just the log and scout-ticket information.

Q. Now, even under this interpretation, if you moved the well to the north, would you increase the risk in the lower Morrow and the upper Morrow?

A. Yes, it appears from those isopachs you would increase the risk a little bit.

Q. Okay.

A. Especially the lower Morrow. I guess you might get to a feather edge, possibly. It's hard to say.

Q. And even under this interpretation, would you want to be very close to that Fasken well in Unit P of Section 1?

A. No, sir, that well is a -- was pretty much a noncommercial producer. It produced from 1972 to 1992 and only made 300 million cubic feet. And we think the zone is there; the permeability is really lacking in that well as a result.

Q. So even if you moved north and you might have 20 feet of net sand, you could have permeability and porosity problems?

A. Yes, sir.

Q. Looking at this, immediately to the south of the Fasken well in Unit P, Unit Q, did Texaco at one time own

that lease on that Unit Q of Section 1?

A. Yes, sir, back in, I believe, 1991, Texaco owned the acreage in Section 1 that was subsequently dropped.

Q. They sold that acreage?

A. They sold that, yes, sir.

Q. And one final thing. You stated that you've mapped -- You've mapped pretty much the whole pool, not what's just on this Exhibit 10; is that correct?

A. Yes, sir.

Q. And I think you said there is substantial well control in the area?

A. There is.

Q. And you were asked questions about seismic. What's the quality of seismic in the Morrow, generally?

A. In these areas it's pretty questionable. There's a lot of topography, and some of it -- some of the uses of it is somewhat -- The majority of the sands are too thin to see seismically. In places it helps with faults, and that's about it. It's tough -- It's a tough sell with the seismic. Even 3-D seismic, major companies have drilled a lot of wells, and success rates, from discussions with people working those things, it's questionable if they're doing any better than just regular Morrow exploration without 3-D.

Q. Was this pool developed based on 3-D seismic?

A. Yes, this pool --

Q. Was *this* pool developed based on 3-D seismic?

A. Oh, no, sir, this pool was developed in 1972, primarily off of subsurface control.

MR. BRUCE: Okay. Thank you, Mr. Chairman. I have nothing further at this time.

FURTHER EXAMINATION

BY CHAIRMAN LEMAY:

Q. I have one quick question. Maybe I was misunderstanding you. Do you think, or did you state that because this field was so prolific, it was prorated?

A. Yes, sir, given gas prices and market demand at the time, from my research in the orders, it appears that there were two purchasers in here. Everybody had essentially one well, and the only way to keep correlative rights was to prorate it and give everybody an allowable.

Q. Are you familiar with our concept of rateable takes --

A. Yes, sir. Yes, sir.

Q. -- and generally to divide up a reservoir where there's limited market demand, proration is necessary with limited purchasers in the field, not necessarily the prolific --

A. Right, well --

Q. -- nature of the field?

A. -- when I said that I mean relative to gas market --

Q. Yeah.

A. -- at that time.

CHAIRMAN LEMAY: Thank you. I just wanted to clarify some of that testimony.

Any other questions of the witness? If not, he may be excused.

We can probably have another witness here.

MR. BRUCE: One more witness.

CHAIRMAN LEMAY: Is someone going to submit a -- Any of your exhibits a topo map of the area?

MR. BRUCE: We can probably get one if we don't have one now.

CHAIRMAN LEMAY: It would be nice to have one in the record.

MR. BRUCE: We'll get one, Mr. Chairman.

CHAIRMAN LEMAY: Thank you.

Before we start, Tom, was it your -- wanting to introduce that previous map into the record, the one from the Examiner's hearing?

MR. KELLAHIN: Perhaps it would be a convenient time to do that while we're housekeeping. If it doesn't confuse the record, I'd simply refer to it by the Division exhibit number, as opposed to having to re-number it.

CHAIRMAN LEMAY: Again, with housecleaning, was it your intention to admit into the record the transcript and the exhibits of the previous hearing?

MR. KELLAHIN: No, sir, I think this case can stand alone.

CHAIRMAN LEMAY: Okay. Well then, do you want to call that whatever -- it stands alone if we don't refer to the other case, carry it separate.

MR. KELLAHIN: I would suggest we refer to it the way it's identified, as the Mewbourne Exhibit Number 9 to the Division Examiner Hearing.

CHAIRMAN LEMAY: Will that work? Okay. Let the record show that particular exhibit is referenced.

MR. BRUCE: Are you ready?

CHAIRMAN LEMAY: Yes. You may continue, Mr. Bruce.

BRYAN M. MONTGOMERY,

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

DIRECT EXAMINATION

BY MR. BRUCE:

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

A. My name is Bryan Michael Montgomery, and I live in Tyler, Texas.

Q. Who do you work for?

A. I work for Mewbourne Oil Company.

Q. And what is your job there?

A. My job is manager of reservoir engineering and economics.

Q. Have you previously testified before the Division or the Commission as a reservoir engineer?

A. Yes, I have.

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

A. Yes, they were.

Q. And are you familiar with the engineering matters and the reservoir matters involved in the competing Applications today?

A. Very much so.

MR. BRUCE: Mr. Chairman, I'd tender Mr. Montgomery as an expert reservoir engineer.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (By Mr. Bruce) Mr. Montgomery, what materials have you studied on this prospect?

A. Well, this prospect was first brought to me through our management by Keith Williams, and I worked with him initially as a loose team, and we tried to develop a review of the prospect on its merits on drilling a Morrow

test in Section 1. And so I'm very much familiar with it, have worked on it for quite some time.

This, by the way, is an exciting and excellent prospect that we thought we had in our company quite some time ago, and here we are today.

Q. Now, when you studied this, have you gotten any recent data which you've incorporated into your study since the last hearing?

A. Yes, originally we had all the public data, well logs and scout tickets and production data. The new well that I call 12F, the north half of Section 12, the Levers Number 2 well, was a well that was producing at a constant rate, 4 million a day, and had done so since inception at 4 of 1996.

What we needed was the pressure decline on that well. Something has to be declining in a volumetric reservoir to calculate reserves, and so we have since the last hearing obtained several pieces of data. The most important to me, I suppose, is pressure data and other data on the well at 12F.

Q. Okay. Now, what general statements can you make about drainage in the Catclaw Draw-Morrow Pool?

A. Well, it's my opinion that in this pool there are different Morrow sections that produce, the lower Morrow, the middle Morrow and the upper Morrow. And as was stated

before, the lower Morrow has predominantly produced, in the early years, the wells that have then been infill drilled to the lower Morrow and recompleted on up to the middle Morrow and now the upper Morrow, and that this formation, this group of Morrow reservoirs, are discontinuous stringers to some degree.

To some degree they have some lateral continuity but many times they do not, as evidenced by, I think, some exhibits we're going to show that you find high pressure a short distance away from a well that has produced quite an amount of gas, that doesn't fit that they're in any strong communication.

So in general, it's a field of Morrow production, prolific production, that is varied in areal extent, permeability and producing characteristics, et cetera. There's some complexity to this group of reservoirs.

Q. And you stated that the key well in this immediate area is the Texaco Levers Number 2 well in Unit F of Section 12?

A. Yes, this is the well that has given us all the interest for this prospect. Before this well was drilled, there were two other wells to the north in this field -- well, one other in the field -- but two others that were tested, that were very poor. Nobody had any had any idea or any hope, that I can see, to drill in Section 1 until

this well, this prolific well in Section 12 was drilled. So certainly this is a key well.

Q. Development in this pool had been dormant since what? The early 1980s?

A. That's correct. And then in 1996 the Texaco well was drilled, completed.

Q. Okay. Let's start off with your first exhibit, Exhibit 13. Just very briefly, what is it?

A. This exhibit is just an AFE, a cost that we expect to incur to drill and complete this well. It's approximately $750,000 to a depth of 10,700 feet at our proposed location to encounter the Morrow sands.

It's basically, to me, a non-issue right now, but we do want to show that it's very expensive to drill this well and that you need to minimize your dryhole risk when you're spending three-quarters of a million dollars. You need to choose your best location. You certainly don't want to drill multiple holes to find Morrow reserves.

Q. Okay. What is Exhibit 14?

A. Exhibit 14 is a two-page exhibit, and it represents a summary and analysis of the new data that I talked about with the Levers Number 2 well.

The Levers Number 2 well, which I call 12F a lot, as you can see, maybe, on the second page there's a table of pressures and dates and cumulative productions, and on

the first page is a plot of those in a material balance expression, which is what we call a P/Z plot.

This plot is used to determine the original gas in place felt by this wellbore, these perforations, and also potentially recoverable gas and what type of drive mechanism exists and some other things.

But in general, and specifically, I suppose, what I want to point out are a few things.

First of all, if you look at the second page you see that the well is perforated 10,236 to 10,272, which is what we talk about as the middle Morrow. There are also perforations in the lower Morrow, but there is a valve that has been set to keep that from producing until a certain pressure is reached at the bottom hole, which I believe is still not reached at this time.

So to back up a little bit, this well was perforated in the lower Morrow. In fact, it was DST'd in the lower Morrow, and showed significant depletion but good productivity.

So when I talk about 12F, I'm really limiting myself to the middle Morrow. This is where the big reserves are. This is where the big pressure is, this is where the big rates are, this is where the bulk of the drainage will come from.

So as we go through this table real quickly --

Yes, this is middle Morrow green sand data, strictly middle Morrow green sand data. We have the initial pressure of 3686. You can see, "Measured SIBHP", shut-in bottomhole pressure. That was the initial pressure of this well that was completed and had very good flow characteristics, very high permeability.

We've seen subsequent buildup data on this well from Texaco also that shows 5 to 10 millidarcy of rock, which is very good productivity characteristics for gas.

And what I'd like to make sure we realize is that this 3686 initial pressure is a very slight reduction from the original pressure of all the other Morrow production out here. In other words, this well was only slightly impacted by other middle Morrow production. Very insignificant impact.

So I think we've found a new compartment here, a new drainage compartment, which supports the idea that this field needs to be on 320s. The stringers do exist.

As you go through the rest of these pressures they're not that important, except for the fact that if you plot them versus -- or divide by Z, which is a compressibility factor, and plot them versus cumulative production, you can see a trend that is exemplified in volumetric reservoirs to show the original gas in place after you do some calculations.

And the plot on the first page shows that result. If you look back on the first page, now, with me, you see these four points on this plot. The initial point was the January, 1996, initial date. The second point is the second date, 8 of 1996. Then the last two points.

And let me say, the 8 of 1996 point is a state shut-in test that we have recently found out that the pressure data in New Mexico is not being keyed in the system, and so I've gathered that.

But the last two points, 12 of 1996 and 1 of 1997, are from the operator's own records. What we have done is got all the gauge records from Texaco. I've got the flowing tubing pressure and rate for every day since inception.

And let me say a little about that. The flowing tubing pressure came on near 2500 pounds in this well where the shut-in pressure was 2900 pounds at the surface. Very small drawdown, very big rates.

The rates then remained constant for 18 months, and the flowing tubing pressure dropped from approximately 2500 pounds to a current of 900 pounds, where the line pressure is close to 800 pounds, 600 pounds, something like that. So this well is going to experience some production-rate decline in the near future.

There is a limited amount of gas that this well

is feeling, and what I'm trying to show on this first page is, it's about 6 BCF. My number for original gas in place that you'll see in other exhibits is 5.75 million cubic feet, which would simply be the intersection of that line projected down to zero pressure.

You won't recover all the way to zero pressure, and I've estimated about 5.5 BCF recoverable gas for this well. And that does match well with the flowing tubing pressure declines and everything else I see with the surrounding wells.

Q. It's a heck of a well?

A. It's a great well, and it -- It's a 6-BCF well that we think actually spills over into our section, a significant portion of that 6 BCF.

Q. Well, let's discuss that. Would you move on to your Exhibit 15, identify that for the Commission, and why don't you go through it pretty slow because --

A. This --

Q. -- there's quite a bit of data to look at.

A. This is the bulk of my reservoir engineering work in this area, and it has been supplemented by this new data on the well at 12F that we had previously very little information on the ultimate reserves of this well.

What I've done is used Keith Williams' geologic net isopach, and superimpose volumetric compartments, if

you will, of drainage areas that I feel exist right now, in a pattern that goes along the trend of the net pay, it is elliptical like I believe the deposits are being deposited, and that are based on constant thicknesses, relative to what the well's encountering and what Steve's -- I mean Keith's net isopach thicknesses show.

So what I'd like to do is go through these wells, and I won't dwell too much on the new well in 12F because I've already discussed it. But I'd like to talk about these other three wells and, in particular, maybe one more well that's not on my table below or with a red circle, and that's the well in Section 2.

Q. Okay, Mr. Montgomery --

A. Yes.

Q. -- before you do that, you know, you've driven all these drainage circles -- they're not circles; they're more ellipses. In your opinion, would drainage be radial in this reservoir?

A. Not but for the very first few time increments. Eventually it would become elliptical as the deposits are.

Q. It would follow the shape of the deposit --

A. That's correct.

Q. -- the shape of the deposition?

A. That's correct.

Q. Okay.

A. That's consistent with the field development, the drilling we see, the mapping we see and all -- I think all the maps we see, whether they trend north, south, east, west, they're typically elongated.

Q. Okay, go ahead.

A. First of all, let's look at -- And I'll call the well 1P. That's the top well up there with the red circle around that has a little "10" underneath it, and that results in the 10 feet of pay that goes along with Keith's net map. And I've used 10 feet as an average thickness for the drainage area of calculation for that well.

Upon reviewing the scout ticket data and well files from Fasken, it's my understanding that that well had good producing characteristics initially, produced at high rates and in the first month was at a billion a day but declined rapidly and, in my opinion, is due to a small areal extent of the sand reservoir. It made 322 million, it was drilled in 1972. Initial pressure was 4322 pounds, and that calculates to 54 acres drainage area.

What I'm trying to show is, there's just no reason to go toward that well when trying to drill for more reserves with response -- other data like the well at 12F.

Secondly, I think I want to talk about the well at 2R, which is the one that's not colored and not in the table. I apologize for that, but I know we've talked about

this well already at this hearing, and so I'd like to say what I know about this well.

This well is in the south half of Section 2. It has a little "6" underneath it, and that's the middle Morrow thickness that our geologist attributes to this well. I've reviewed the scout tickets and the completion history of this well. I may have to refer to my notes, because several zones were tested.

But I'd like to say that, bottom line, what I believe is this well also, is of limited areal extent, such that they actually tested all Morrow zones, lower, middle and, I believe, upper, and squeezed the perforations with cement and moved on to a Cisco attempt. Now, there's a big Cisco field just a mile or so to the northwest here.

But I think what they saw, from the scout ticket data that I have, is that this was poorer than the well in 1P, the well testing. They did not get a big Catclaw Draw-Morrow well, by any means, or they would have been in that zone.

They tried the lower Morrow, orange. They acidized it, they frac'd it, they got 670 MCF a day with only 100 pounds flowing tubing pressure. They frac'd it again. They put a bridge plug.

They tried the middle Morrow, a stray sand. It's not the sand represented here. Got 1.8 million a day out

of that sand at 600 pounds, but then reperf'd it. Don't say why, but I believe it depleted rather rapidly. Acidized it.

Then went back and reperf'd the lower Morrow, then tried to produce one up the tubing, one up the casing. This is all in the same month now. Then they frac'd the lower Morrow, potentially with the middle Morrow. No test reported.

And then they finally showed perforations in what we consider a correlative middle Morrow green interval, but only at 800 MCF a day, with 100 pounds flowing tubing pressure, but subsequently squeezed those perforations off. I believe when they drilled this well and tested these Morrow zones they found them to be noncommercial, period.

They then moved up the hole to the Cisco, which tested extremely wet.

The final result of this well was an injection well for Cisco production. It's very productive in the Cisco, makes a lot of water. So they may use it as a disposal well from the Spring field, which produced about 15 million barrels of water with a lot of gas, and they stuck 6 million barrels of water from that field into this wellbore in the Cisco.

But back to the Morrow, it's just a complete zero. We don't want to move that way either, and before we

had the data on -- the new data on 12F, what we had was these poor wells to the north and this good well to the south. And we can talk about how far south do you want to go, but yes, we did want to stay south to help compete for what we thought was drainage that was occurring in Section 1.

The last two wells that I want to talk about here on this exhibit are, first, 12N, and that's the southerly Levers Number 1 well in Section 12. It was initially completed in both the lower Morrow and the middle Morrow, at initial pressure of 4300 pounds, 4350 estimated, in 1973, with what I believe to be 13 feet of pay in the middle Morrow.

Now, it was commingled with the lower Morrow all those years, and so I did my best to split out the total production which, to date, has cum'd approximately 5 BCF. Incidentally, this is the well that's now shut in by Texaco because of simultaneous-dedication problems.

But I decided from log analysis that I could attribute of the 5.1 BCF approximately 1.5 BCF in the middle Morrow and subsequently calculated 135 acres drainage and drew in my drainage area. Those two wells, 1P and 12N, were 1970s wells, as was 2R.

Then we moved into the first infill wave, or really the only infill wave until this new well. And I

want to show that 11P was completed in 1981 in the middle Morrow only, 15 feet of pay.

But look at the pressure: 4170 pounds. Very little depletion, sort of like we talked about at 12F, showing again that 320-acre development is reasonable. These do have compartmentalization problems, and getting the complete amount of gas out of the Morrow, you simply cannot drill one well per 640. You also may have to drill too close to a lease line.

Well, that well has produced 2.6 BCF, still producing. It's my estimate that it may ultimately recover 3.6 BCF. And the drainage area is shown at 306 acres.

Now, to finish up the new Texaco well, what I've done is taken the data from the previous exhibit, this 5.5 BCF of ultimate recovery, and said, well, the well has 26 feet of perforated interval, but it overlaps contouring that goes from 25 to 15. So I used 20 feet average, and calculated a 320-acre drainage.

When I orient that ellipse like I think it really is, it produces from the north. If it was producing from the south, those other wells would have been much better wells; they would have had some of this 6 BCF. Remember, the initial pressure in this well was only slightly depleted. The production is coming from Section 12 for certain, but also, if it has more area than 12 can support,

it's coming from the north, which we believe Section 1.

So in a nutshell, this is a reservoir engineering history matching of the geology, the pressure and the production to try to depict these compartments that we believe exist in the middle Morrow, which is really the primary zone of interest at this point. This is the competitive zone, this is the one we're being drained in.

As I said before, this well has produced 2.2 BCF out of the 6 BCF. If we don't get started pretty quick, there's going to be less and less to split. If we get a severe penalty, we're not going to originally -- we're not going to get what was under our section.

So that sort of sums it up.

Q. Okay. Now, looking at this kind of summary, Mr. Montgomery, looking at the Levers Number 2 well, it's not going to drain from too far north because you've got that very poor Fasken well in Unit P of Section 1; is that correct?

A. That's correct. You have to think of stopping it in that direction.

Q. Okay. And to the northwest, there's just no reservoir much over to the west of Section 12, is there?

A. They start -- Our geologic interpretation, these trend to the northeast, so you wouldn't want to go northwest, and we see the well at 2R that is so poor.

Q. And so finally you're not going to drain from the south or southwest; there's already very good wells in those directions, aren't there?

A. Well, that's correct. And one of them is -- They're both still producing. The other one is shut in temporarily, I suppose.

Q. So primarily production from the Levers Number 2 is going to come from the north, including Section 1?

A. That's correct.

Q. And in your opinion, do you need to drill in Section 1 to recover Section 1's fair share of reserves in the middle Morrow?

A. We do, and we need to do it quick.

Q. Well, let's move on to your final exhibit, Exhibit 16, and discuss reserves under Section 1.

A. 16 is best looked at by keeping both 15 and 16 out because Exhibit 16 is a -- what I call a volumetric gas allocation estimate.

And really what I'm trying to do here is, I'm trying to take the total amount of reserves, this 5.75 BCF in place that I think overlaps both sections, and using the larger volume you see in Section 12 and the smaller volume in Section 1, find out what that percentage is, find out what was originally in place, find out how much it's produced, where do we stand, what has happened with this

illegal production that has gone on in Section 12 that has kept us from competing for the reserves that were originally there?

At the beginning of the table -- At the top of the exhibit you see a table and at the bottom you see some of my conclusions. The table shows first productive acres. This is simply Section 12 planimeters 320 [*sic*] approximate acres, Section 1 100, to give the total 320 that I showed on the previous exhibit.

Using constant thickness, this means that 69 percent, 220 over 320, of the gas was originally in Section 12, and 31 -- approximately 31 percent in Section 1.

When you multiply those percentages you get to line 3 and you multiply the total in-place gas, 5.75 BCF. You see there at the end, total. You get the numbers, 3950 and 1800, representing the million of cubic feet that were originally in place under these two sections at the beginning --

Q. And that's the date that Levers Number 2 was completed?

A. That's correct, that's at the date that the Levers Number 2 was completed at that slightly reduced pressure.

So the last line shows, well, what do we think is there now? Well, we know 2.2 BCF has been produced,

approximately. When you subtract that from the 5750, you see the total number, 3550 is now remaining. Again, you just use the percentages of the 69 and the 31 percent, and you see now that we only have a little over 1 BCF remaining under our section. They have 2.4 BCF. This is my interpretation of what I think this volume compartment looks like.

And the pressure, if you were to shut these wells in -- this is a high-perm well; this well is going to equalize quite quickly over 320 acres -- you'd see this is a good representation, using my analysis, of the amount of gas in place in total and allocated.

What does that tell us? When I get down to the bottom, I see -- I made a note, "Well at 12F has produced 2200 million cubic feet between 1/13/96 and 10/1/97".

Well, we now find out this has been produced illegally. If this has been produced without simultaneous dedication, a hearing where the owners in Section 1 can respond effectively to protecting their correlative rights, then there's been some wrong done, there's been some drainage occur. Now, there's no doubt the drainage occurred. The question is, has there maybe been some wrong done? And we think so.

So if you look at the first conclusion, "Section 1 has been drained an estimated 690 million cubic feet".

That's simply the 1800 that was originally there, minus the 1110 that we say is there now at this pressure. So 700 million cubic feet has already been produced and sold to the profit of Texaco from Mewbourne -- or the owners of Section 1, excuse me -- because of this illegal production.

Now, Section 12 has remaining reserves -- not currently, but if you look at from original, you see my parenthetical, Section 12 has remaining reserves (from original) of 1.75 BCF.

And the way I come up with that is to say from original they have 3950. They got to sell the whole 2200. Therefore, if we were just to go back from original, they should only be allocated 1750 left of the remaining to get to the full 6 BCF or so.

Accordingly, Section 1, the same calculation. Section 1 has from original the same 1800. We had original 1800, we haven't got to produce any. So 1750 and 1800, if you add those together, you do get what I show as the total remaining.

And note that those are fairly equal. They're not equal, they weren't meant to come out equal. But certainly if we drill a well, we think no penalty should be assessed, because we think we need to compete equally to gain back the disadvantage we had from improper hearing, simultaneous dedication, improper production from Texaco

from this well. They shut in the wrong well, I'll tell you that. We're still getting drained.

And anyway -- so it -- This is a table that sets up an argument from the previous exhibit of just what gas is where now, and how was it produced up till now.

Q. Now, if a well was not drilled in Section 1, will Section 1 continue to be drained by the Levers Number 2?

A. It's being drained as we speak. We need to drill a well -- that's the only way -- or to shut the Texaco well in right now.

Q. And if a Morrow well is not drilled soon in Section 1, might the well become uneconomic due to drainage?

A. That's correct, you see my analysis as 1.1 BCF. We're at a critical point. Would we drill a $750,000 well for 1.1 BCF? I think we're still ready to do that. But if this moves on and we continue to get drained and we have to rely on others that are very risky other zones, this prospect begins to lose its luster.

Q. Mr. Montgomery, were Exhibits 13 through 16 prepared by you or under your supervision?

A. They were.

Q. In your opinion, is the granting of Mewbourne's Application in the interest of conservation and the prevention of waste?

A. It is, and correlative rights.

MR. BRUCE: Mr. Chairman, I'd move the admission of Mewbourne Exhibits 13 through 16 at this time.

CHAIRMAN LEMAY: Without objection Exhibits 13 through 16 will be admitted into the record.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Chairman.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Montgomery, would you turn with me to your Exhibit 15, please?

A. Okay.

Q. These red football-shaped drainage patterns, about four of them on the display?

A. That's correct.

Q. When I look at the drainage football that contains the Levers 2 and the proposed Mewbourne location, you have made assumptions about the thickness in order to come up with a volumetric calculation?

A. The volumetric, I didn't have to use a thickness, but I used a thickness to come up with the area.

Q. All right. And the assumption made for the red football is a uniform 20 feet of thickness for the drainage area?

A. That's correct.

Q. If we were to put this in a shape, we'd have to decide what shape to put it in. You've built a container, now, that has how much gas?

A. Originally, when the Levers Number 2 was completed, this container held 5.75 BCF.

Q. Okay. Now, that container had already been partially depleted by the Levers 1 well, had it not?

A. It's my opinion that some middle Morrow production -- more likely from, not the Levers Number 1, but from the well at 11P -- had some slight, very slight, 20 percent or less, pressure-depletion effect upon the Levers Number 2. But yes, there was some.

Q. All right. Have you calculated what you think is the remaining recoverable gas in the Levers 2 football?

A. Yes, I have.

Q. And what is that number?

A. That is shown on Exhibit 16 to be 3.55 BCF, as of 10-1-97.

Q. I'm looking at Exhibit 16 --

A. Do you see the 10-1-97 gas-in-place total?

Q. Yes, sir.

A. 3.55 BCF --

Q. All right.

A. -- because of the current pressure, and the 2.2 BCF that's been produced from my original 5.75. So excuse

me, that would be original gas in place. There would be some recovery factor. It's quite high with this permeability, that it may be as high as 95 percent. So it would be very close to that number and slightly less.

Q. Well, we won't worry about that.

A. Okay.

Q. When you're deciding what shape the drainage football takes, you've chosen to estimate a shape that's inconsistent with Mr. Williams' geologic map, which is underneath the red football; is that not true?

A. That's incorrect.

Q. All right, sir. Tell me how you're going to get a 20-foot drainage radius in a net thickness map which has less than 20 feet.

A. The net thickness map that is shown has some significant area with 25 feet, significant area with 20 feet, significant area with 15 feet. And when I do the best I can -- there's no absolute -- I decided to use 20 feet, not 26 feet, not 10 feet, but 20 feet for the area for this particular drainage compartment.

Q. Did you think that you could planimeter each of those drainage contours or contours on the isopach and to know with more certainty what the remaining gas in place was and how it was distributed?

A. Well, I did planimeter those contours, and there

was too much gas in place.

Q. Based upon the P/Z plot for the Levers 2, if you made that plot, you've got too much gas in Mr. Williams' container?

A. Yes. Not to a great degree, but too much gas. And the map -- the contours that he provided --

Q. Yes, sir.

A. -- were in response to some of my work, to show that there was as much area as we originally thought.

Q. Let's take the revised map that he's given you, that net pay in the green sand. What's the gas in place if you planimeter his isopach?

A. I don't have that with me.

Q. How much different is it than the gas in place you've calculated using your P/Z methodology?

A. I don't remember exactly, but let me remind you, we see separation, strong separation, between 11P and 12N and 12F. So just using his map would be, in a sense, erroneous. They're not connected quite this way. It's better to start growing outward with reservoir pods to perform the calculations that I'm called to perform, to further refine a net-pay map into a compartment-type map.

Q. All right. You've used your discipline to give us what you think is recoverable gas, you have a volume, and you have no idea of the shape until you talk to Mr.

Williams?

A. He helps me quite a bit with the trend the thicknesses, the log interpretation, the deposition, which does help me with the shape, yes.

Q. And that's what the geologist does, he --

A. Right --

Q. -- gives you a shape?

A. -- very important. That's correct.

Q. And your red football here is not consistent with Mr. Williams' shape of that reservoir?

A. I disagree, completely.

Q. All right. Let's look at the football in the southeast of 11. What is the assumption of the thickness of that drainage football? Is that 20 feet again?

A. No. That one, if you could see in the table --

Q. Yes, sir.

A. -- every well except for 12F -- I thought I brought this out in my direct -- I went ahead and used the average thickness that you see in the table. So that well is 15 feet.

Q. All right. So we're using 15 feet for the --

A. For the 11P drainage.

Q. -- for the 11P well?

A. Right.

Q. And the shape of a football, when we move to the

southwest quarter, has made an assumption of a drainage area five feet greater than his isopach shows?

A. Well, you're trading off the thicker in the northwest with the thinner in the south- -- I mean, northeast and southwest. Yes, I had to in use some interpretive license on top of his trend to come out with some constant thickness that represented the weighting of the pluses and the minuses.

Q. All right. Let me show your Exhibit 11 from the Examiner hearing, Mr. Montgomery.

A. Okay.

Q. When we compare your Exhibit 15 to your former Exhibit 11, the wells are in a different order on the display so you have to make sure you're looking at the right well, but it looks to me like you have not changed the net-pay thickness between the first work and this work?

A. That's correct.

Q. Dates, no question. Pressure, you've changed some pressures?

A. That's correct.

Q. Look at the Levers 2. You had estimated 4100 pounds, and we didn't have pressure till you got it from Texaco, and you got 3685?

A. That's correct.

Q. And you think that's a good number?

A. Yes, I do.

Q. Okay. Now, that number shows some depletion of the green sand reservoir, does it not?

A. It does.

Q. You would expect that if it had not been depleted, it would be up in that 4400 range, 4300 maybe?

A. I believe in 1972 it would have been in that range, and subsequent to that the pressure has depleted to 3700 pounds or so.

Q. All right. And to what do you attribute the depletion of that Levers 2 well?

A. Production from other wells in the middle Morrow green sand.

Q. When we go to the Levers 1 -- which is what, 12N? --

A. Okay.

Q. -- 12N, you didn't have an initial pressure. Where did you get the pressure for today's work?

A. I got that through discovery of Fasken files, based on well files from the NMOCD in Artesia, based on a commingled estimate of 4350, and even now it's an estimate, I believe.

Q. And that's what the "e" means? "e" means estimate?

A. Right, yes. Yeah, but it's a -- but I do have a

better number.

Q. All right. And 4350 is your better number?

A. Yes, and that's consistent with the original pressure out there.

Q. All right. 1P, now 1P is which well?

A. 1P is located in Section 1, unit designation P, which is the old Fasken well up in Section 1.

Q. All right. That was --

A. That was the well --

Q. -- 1972?

A. Right.

Q. You were using 4000 as an initial pressure. Where did the 4000 number come from?

A. That was based on scout ticket data estimating static tubing pressures down to bottomhole with some engineering calculations, the old number was.

Q. So why did you drop it 700 pounds for the new data?

A. The new data was dropped from 45- --

Q. From 4000 --

A. -- from 4000. And it went up 300 pounds, it didn't drop 700.

Q. I'm sorry, I said it wrong.

A. It went up to 4300 because I have also gotten data, extensive data, from that well, from the operator,

through discovery. I've got pressure buildup tests, I've got bottomhole data. I know a lot more about that well now than I did at the first hearing.

Q. All right. When we look at 11P, that well over there, in the original presentation you had 4500 pounds. Now 11P is down to 4170.

A. That's correct. Again, I have new data.

Q. That's information that was available prior to the last hearing, was it not?

A. That may have been and I may not have obtained it upon my own efforts. I did subsequently. Yes, the well was drilled way back in 1981. I think you could have had that data as early as 1981, and I did not get that data and should have.

Q. All right. For the 11P well, now, we've got 4170 for a bottomhole pressure. You've got an estimated EUR of 1.5 BCF, right, on today's work?

A. No -- 11P? Which well now?

Q. Well, I've lost track here.

A. Yeah, it's hard.

Q. 11P.

A. 11P.

Q. 11P is 4170?

A. Right.

Q. And you've got a drainage -- I mean, I'm sorry,

you've got an EUR of 3.6 BCF?

A. That's correct.

Q. Okay. In the work back in March, with a higher pressure you had an EUR of only 1.2 BCF?

A. That's correct.

Q. Where did you get the extra gas?

A. Okay, that was obtained with additional information. And what I found out there is, this is a Devon well that has been completed in the middle Morrow green sand the whole time.

After looking at the decline curves, before the first hearing, I saw an abrupt shutdown and abrupt production increase around 1990. After talking with our geologist, we assumed this was the upper Morrow being recompleted, and that assumption was wrong. I subsequently found out that the well was shut in because of proration. It was ten times overproduced. It's a strong well.

And what had happened was, all they did was get back in balance and then they did a little acid job, and it went back to just middle Morrow production. So again, it's my fault that the earlier exhibit was inaccurate. And I obtained new information that I believe now is correct.

Q. All right. On the new work, what have you used for your porosity number?

A. Eleven-percent throughout all wells.

Q. Eleven-percent porosity throughout all wells?
A. I believe that's correct, yes.
Q. Mr. Williams was using 7-percent porosity.
A. He was doing something completely different --
Q. All right.
A. -- from what I was doing.
Q. What did you use for water saturation?
A. Twenty percent.
Q. And what about temperature?
A. The bottomhole temperature here, I believe, is 150 degrees. I'd have to look at my notes, but I think that we would all agree on temperature. No, it's 175, I'm sorry.
Q. All right.
A. 175.
Q. What did you use for an abandonment pressure?
A. Typically, the good wells, a well with good perm will abandon at 500 pounds, I think, by looking at combining decline curves with P/Z data and projecting those out. Unfortunately, very poor wells may have some other different number, but 500 is a good estimate.
Q. How many data points did you have on the P/Z plot for the Levers 2 well?
A. It's on the previous exhibit. I believe four?
Q. I think there were four.

A. Yeah, it had the initial tests where they perforated that zone, and calculated open flow was 10 million, 9.8 million a day, I think, shut-in tubing pressure 2900 pounds, very little depletion effect from all the other production.

The well did have a bottomhole buildup run at that time -- I've gained that knowledge -- showing high permeability with respect to gas. It built up in 12 hours to its bottomhole pressure.

Subsequent shut-ins were -- one-day shut ins, one by the State, two by the operator, were 24 hours, and I believe completely built up, shut-in tubing pressures that I then estimated bottomhole pressure with and a straight line formed which gave me confidence.

Q. That buildup on the Levers 2 well was not run for a long enough period to get you to a boundary, did it?

A. To get me to a boundary?

Q. Yeah. That pressure buildup will show you a distance of radius of investigation, if you will?

A. That's correct, I looked -- Looking at that buildup, what we saw was, there are diagnostic plots that you can form that help you show permeability, the type of geologic model, which include inner near wellbore, like the skin effects --

Q. And the permeability was 5 --

A. -- permeability and outer -- It was anywhere between 5 and 12 millidarcies. There are two zones open there, and we probably were measuring one of each of the zones.

Q. A little skin damage, right?

A. Slight skin damage. No effect of any boundary condition up to, you know, 72 hours' worth of data --

Q. Well, what my point is --

A. -- which may very well be in 1000, 1500 feet.

Q. Yeah, my point is, that wasn't run long enough to get you a radius of investigation of more than maybe 1000 feet?

A. Maybe a little more, yeah, depending on -- There are a lot of assumptions, but yes, several hundreds of feet.

Q. Okay. Now, when we look at that P/Z plot, that's going to give us 5.5 BCF EUR for that well, by that analysis?

A. Right, that's correct.

Q. Okay. That's going to be a minimum number, is it not?

A. That's my best estimate, and I have a high confidence in that estimate.

Q. As a minimum?

A. No, no, not a minimum. I mean, things could

happen, anything could happen to that wellbore. You know, you could have a casing leak and it could be down tomorrow. But my best estimate is 5.5 BCF.

Q. All right. Have you seen P/Z plots that will have a rate of decline different than this straight-line decline that you've projected?

A. Oh, yes, tight wells will do that quite often. So -- but this --

Q. This time they built a curve and they flatten out a little bit, and you might get a little higher EUR than the P/Z plot would show you now?

A. For a completely different well you can. This well, I feel like there's almost no chance of that.

Q. So the remaining gas in place that Texaco and Mewbourne's location would compete for is 3.5 BCF?

A. That's my analysis, yes, sir.

Q. Okay. What --

A. In the middle Morrow green.

Q. Yes, sir. In the middle Morrow green, what portion of the 3.5 BCF is still in place over the south half of 1?

A. That, in my table shows 1.11 BCF.

Q. 1.11 BCF. That's just about enough gas at today's price to pay for the well one time, right?

A. Well, at today's price I think we can do a little

better. But it is getting to a critical point -- and I think I made that clear -- where it's getting to a point where there's maybe not going to be enough gas to drill for if we don't resolve this quickly.

Q. So your remaining share at this point is only 1.1 BCF of gas?

A. I don't believe so. I believe there was illegal production, and that we should be able to compete equally with Texaco, which would give us 1.75 BCF, much more economic well, and get us back to what we would have had prior to the illegal production.

Q. But for that illegal production argument, that would be past production, and as we look at today's term of gas in place, we only have 3.5?

A. Total to share, right, between the two.

Q. Now, as these wells compete for the remaining gas, there's going to be an area in which they create what I call a no-flow boundary?

A. That's correct, if they're in the same tank like I have depicted here -- it's my analysis that they are -- there will be a no-flow barrier.

Q. And based upon what we seek here, is it fair to assume that no-flow boundary is going to be an equal distance between the two well locations?

A. Yes, with the constant-thickness theory, but you

have to assume constant permeability, several other things. But you could make the case, assuming all that, they would be equally productive and it would meet halfway in between.

Q. And those assumptions of uniform thickness are all the assumptions that you made to give you this football?

A. That's correct.

Q. Okay. The Levers well is 2448 from the common line, right?

A. I believe that might be right. That sounds right.

Q. And you're going to be 660 north of the line?

A. A slanted line, but that's correct.

Q. Well, you know, it's off just a little bit. The footage is a little bit different.

A. Yeah, you could draw the triangle, it would be a little different.

Q. All right.

A. But you're right, that's a good approximation.

Q. 3100 feet apart --

A. Okay.

Q. -- give or take?

And if that no-flow boundary is halfway distance, that's 1544?

A. Between thirty-one hundred and thirty -- halfway

between 3100, 1500. 1550, okay.

Q. And let's take 660 setback, is what you have.

A. Right.

Q. Subtract that from the 1544 --

A. Right.

Q. -- and you're going to get about 890 feet of encroachment into the Texaco spacing unit by the --

A. The overlap?

Q. Yeah, the overlap?

A. I follow that argument, but --

Q. That's what happens, right?

A. Not necessarily. It depends how much reserve is behind the 660 line. You see, if all you do is say two plus three equals six, you're using the right numbers and the wrong equation.

What happens is, if it's productive above 660 but too risky to drill for up there, when you do the volumetric calculation of encroachment, you can't just use 660 divided by 1650 to figure out the encroachment penalty. You just don't --

Q. I'm not worried about the penalty. I'm worried about the distance of overlap in which your wellbore is taking gas from the container.

A. Yes, the number distance is correct. The overlap is the 800 or so feet.

Q. Now, the Levers 1 well, the 11P well --

A. 12N?

Q. I'm sorry, 12N well, the production data is not exclusive to the green sand; is that not true?

A. That's correct, it's commingled --

Q. It's commingled with the lower Morrow?

A. That's correct.

Q. How did you make the allocation between the green sand and the lower Morrow to come up with your EUR that's specific as to the green sand?

A. I took the DST data --

Q. Yes, sir.

A. -- and the log data, well log, porosity thickness, and used my engineering judgment to find that that 30 percent or so would be a reasonable split between the total production splitting out between the lower Morrow and middle Morrow.

Q. Well, did you do it on a net-pay-thickness basis?

A. Partially.

Q. So how many total feet did you have to allocate between the lower Morrow --

A. I'd have to get my log -- the log out. If you'd like to go through that, that would be fine.

Q. But part of that allocation is a division of net pay between the two sands?

A. Yes. Yes --

Q. What else did you do to factor in any other parameters to make the allocation?

A. The DST information was important, to see what the lower Morrow DST'd all by itself --

Q. To get rate?

A. Excuse me, to get the lower Morrow DST'd all by itself, I believe is what happened, and the total calculated open flow, if you will, of all zones to see that it was significant that the middle Morrow did contribute. And then --

Q. That gives you a rate?

A. Yes, it's sort of a rate and a log analysis, combination.

Q. Okay, what else did you use?

A. I did use in general the total concept of what's going on in the field, that they're both productive. You see 12F is a very good well in the middle Morrow, 11P is a good well in the middle Morrow, 1P is not so good. You see lower Morrow production. So some subjective, just in general, field knowledge, I'm sure, came into play.

Q. Of the other three wells remaining on the display, did any others require allocation?

A. No. At one time I thought 11P did, and that's why there's a difference from the first exhibit, but now I

know it was producing solely from the middle Morrow green.

MR. KELLAHIN: Thank you, Mr. Chairman.

CHAIRMAN LEMAY: Mr. Carr?

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Montgomery, the primary concern here today is the "B" sand or the green sand; is that not correct?

A. It is what Mewbourne calls the middle Morrow green sand, which is a couple members in the 12F well, two little layers, that's correct.

Q. Okay.

A. Green sand.

Q. And in proposing your well location, you are attempting to locate that well as close to the Texaco property as possible; isn't that correct?

A. I think that's overstating it. To be as close, we would be one foot. What we wanted to be was away from the poor production to the north and closer to the good production to the south. So yes, you have -- A component of that is true.

Q. And you picked this location before you did any of the volumetric work that you've been reviewing here today; isn't that right?

A. That's correct. We picked a range of locations, and this is the one we ended up with.

Q. And so the work you've done today has been to support that location that you picked, in fact, before you had this data?

A. The work that I've done since then has been to find out what the heck we know about this new data. We've tried to work out with Fasken and Texaco, even though they didn't participate, alternate locations.

But after I got this new data, it gave me a quantitative confirmation of the qualitative idea that the north up there is just too risky. You've got poor wells, you don't want to be up there.

Now, how far south do you go below 1650? That's the rub. That's what we're here today to talk about.

Q. And we really are not going to know what the best location would be until somebody drills a well up in the south half of 1?

A. That's correct.

Q. Okay. When I look at your Exhibit Number 15, this is the heart of your volumetric work; is it not?

A. That's correct.

Q. And initially we start with the container, we look at the size of the container, your geology; isn't that correct?

A. Initially we look at the geology, you mean?

Q. Yes.

A. The overall net mapping?

Q. Yes.

A. That's correct.

Q. And so when you start your work you first go to the area, and you're relying on the geologic mapping as a starting point?

A. It's a history matching of the geology, that's correct, that's the starting point.

Q. And we look at the mapping that's been done here, and we see that the way it is mapped is, it pulls slightly to the east of the Fasken location in the south half of Section 1, correct?

A. The trend, yes, is more northeasterly, and so it is east of the Fasken location, the heart of the trend.

Q. If we go west of there into Section 2 and we look at the Number 6 well --

A. Yes.

Q. -- have you seen the initial test information in the green sand on that well?

A. Yes, I think I went through that just a little while ago.

Q. And didn't you see initially on the test 800 MCF?

A. With a very low flowing tubing pressure, they --

Q. About a hundred pounds?

A. -- immediately squeezed it, that's right.

Q. Now, doesn't that tell you that you're on the edge of the reservoir? You're not in it, but you're close?

A. No, I think what that tells you is, you have something that has very limited drainage and producing capabilities. It's up to question just why, but it's -- So you couldn't just make that statement that you made. But that would be one interpretation, that it's on the western edge of a general trend, and it's poor over there.

Q. And it's possible that the mapping as it is shown on this exhibit going off to the northeast might, in fact, be in a more north-south orientation?

A. I don't think so.

Q. When we drill a well we might discover, in fact, that it is more that way; isn't that correct?

A. You drill one well, you still won't know.

Q. But you will have more information; isn't that fair to say?

A. You will have a lot of information right there where you drill that one well, wherever that may be, and it may influence your trend.

Q. But you'll have information right at that well, and from that well it's going to be difficult to generalize from that particular data point; is that what you're talking about?

A. No, it's not ever difficult to generalize; that's

what we're called to do. But it does give you one more point. And my point is, it doesn't answer all the questions. But it does give you one more point.

Q. But it will give you additional information?

A. Absolutely.

Q. And it will tell you what the porosity is in the south half of Section 1 at that location, correct?

A. At that location.

Q. And it will show you what the thickness is; isn't that correct?

A. At that location.

Q. And it will show you the producing capability of a well at that location in the south half of Section 1?

A. Sure, that's right.

Q. And you don't know those today?

A. That's correct.

Q. And what you're working with, as we look at this one pod, the pod that includes -- or this drainage area that includes the Levers 2 and your proposed location, what we're looking at is data that's drawn, by and large, from one point, the Levers 2?

A. No, I would disagree with that. It's incorporating all the geology, and it's incorporating the pressure and production data from that one well, and there is a hard waiting to that.

But also you're looking at the other production and pressure data, to see if -- If these things overlapped, I'd be doing something wrong, if these things didn't fit the whole picture. So there is a strong weighting toward that well, I will agree, but there's much more that goes into this map.

Q. But that is your primary data point; is that not true?

A. We -- We're going to hear lots of theories about geology, seismic, faulting. We put extreme amount of weight in this reservoir-engineering data. We weight this heavily. We think that it will dominate some of the other data. It might persuade us to have other conclusions. So yes, we quite heavily weigh the data from the 12F well.

Q. But we're still stuck with just a lot of theories on what is actually happening in the south of that section?

A. Certainly, everybody has to make their own analysis.

Q. Okay. Now, when we look at the boundary that you have drawn for this drainage area around the Levers Number 2, is that red circle the area that includes 320 acres?

A. Yes, approximately so.

Q. And when we look at this map, isn't it fair to say that the Levers 2 and the well that would be drilled at the location you're -- they're going to be competing for

those reserves in that --

A. Based on my analysis, they very well -- If we get to drill, you know, near our location somewhere there.

Q. Now, you have used an average thickness in the area of 20 feet or 22 feet. Which was it?

A. Twenty.

Q. Twenty feet?

A. For this pod, that's correct, for this area.

Q. And you have used that, really, based on the geologic interpretation --

A. That's correct.

Q. -- and the one data point on the Levers Number 2?

A. Yeah, and all the data points to geology. I've tried to overlay this area in an iterative fashion. Twenty feet seemed to be the right average area if I had to pick a constant thickness.

Q. And again, we're just best guess until we get a well up in the south half of Section 1?

A. Right, you might change your idea of the isopach, certainly.

Q. Now, when you made your best guess on the area that was going to be drained by the well in the southeast of Section 11, that red circle is what you believe is the area that that well will drain?

A. That's my most likely representation of 306 acres

at 15 feet, fitting the 3.6 BCF I think that may recover.

Q. And that well appears to be draining some distance off to the west from the actual wellbore; is that -- That's right, is it not?

A. Off to the west?

Q. Yes, as we --

A. Yeah, right --

Q. -- move into the --

A. -- because of the general geologic trend, I tried to lay that -- I basically have a clear football that I move around and try to find how this all works. Yes, it does go a little west.

Q. And when you moved the clear football around the Levers Number 2, you didn't pull it very far to the west, did you?

A. No, we had a control point that didn't turn west. The geology precluded me from saying the most probable representation is to continue northeast toward a producer of some -- you know, very poor capability but of some moderate capability.

Q. And that's based on your just general northeast orientation of the geologic information?

A. Right, it just wouldn't look right to turn that thing 180 degrees, or even to even tweak it a little. I just don't have any data that shows I shouldn't just

maintain that general direction. And that's what we've always said, from when we first looked at the prospect.

Q. When I look at your map and I look at the 320-acre circle that includes the Levers Number 2 in your location --

A. Yes.

Q. -- that's the 320 acres that if I look down at the bottom that the Levers Number 2 is going to -- That's the drainage area for that well, right?

A. In the middle Morrow green sand, that's my analysis.

Q. And when we look at this circle, you are not factoring in any additional production or any new reserves that might be added by a well that you're going to drill in the south of 1?

A. That's correct. This would be if there were no incremental reserves recovered by having two wells instead of one. With a high permeability reservoir it's likely there's not. It could be just sharing.

There's always the chance that with two wells you'll do two things. One, drain a larger area than the first well. We just can't show that there's any proof to that now. And two, abandon at a lower pressure than one well would do.

So, you know, there are some -- there's always

some fuzzy line there when you talk about the final numbers. But it's my best analysis that the two wells, I'm afraid, will share reserves and have very little significant incremental reserves --

Q. So you're not seeing --

A. -- in the middle Morrow.

Q. -- any incremental reserves? We're not going to know that again until we drill the well?

A. Right. Part of the reason is, you see these other wells being drilled and produced, and all of a sudden a new well shows up with very good pressure. There was some pressure, but it was insignificant. So I'm afraid that what we're trying to do is just recover our correlative rights in the same zone and share reserves.

Q. When we look at the way you've drawn the drainage area for the Levers Number 1, it does go basically due north of the well and into Section -- for the Levers Number 2, I'm sorry. The drainage area for the Levers Number 2, when you map that, you take it generally north into the south half of Section 1?

A. Oh, yes, yes.

Q. And one of the reasons you do that is because the Levers Number 1 in the south half of this section, you've already got an area that's being drained in the green sand by that, correct?

A. Let me clarify that. If there were strong connection between those two wells, I believe the Levers Number 1 would have been a much better middle-Morrow producer and you would have found much lower reservoir pressure in the Levers Number 2. So I show some separation between those, if that answers your question.

Q. You talked about allocating production between the B and the C zones in that Levers Number 1 to do this mapping.

A. I don't believe I follow that question.

Q. Well, both zones, the B and the C, were open in the Levers Number 1?

A. Oh, okay, Texaco's terminology is B, middle Morrow; C, lower Morrow. I'm sorry.

Q. And you're talking about --

A. I see.

Q. -- green and orange?

A. Yeah, or middle Morrow, lower Morrow.

Q. Okay.

A. Okay. Yes, we allocated that. I allocated it.

Q. And when you did that, you allocated 1.5, plus or minus, BCF to the green; is that correct?

A. That's correct.

Q. That's about a third of the total production --

A. That's correct.

Q. -- isn't that right?

A. Uh-huh.

Q. You've looked at the pressure drawdown in the middle and the lower zones, have you not?

A. In which well?

Q. In the Levers Number 2 and the Levers Number 1.

A. I've looked at a lot of pressure data in the Levers Number 2. In the Levers Number 1 I have information with respect to some DSTs, some total combined completion, calculated open flow, let's say, and then at subsequent shut-in, if that answers your question. I have looked at a lot of pressure data.

Q. When we look at the pressure drawdown that has been experienced in the lower or the orange sand, between the Levers 1 and the Levers 2 --

A. Okay, I think I follow that.

Q. Okay. -- How much pressure drawdown did you actually see? Approximately 3000 pounds?

A. Yes. I think, to expound on that, what happened was, back in 1972, the initial pressure in the lower Morrow, in the southerly well, the Levers Number 1, 12N, was near 4300 pounds.

In the Levers Number 2, when they drilled it -- and it's a middle Morrow prolific producer -- they also DST'd the lower Morrow, which I believe orange plus a

little tip of brown, maybe, was included. And what they found was, there was only 1370 pounds of bottomhole pressure. Severe depletion compared to slight depletion that we've been talking about before in the middle Morrow.

So the lower Morrow has been in good communication with another well. This well probably -- 12N being the one that it would be in communication with. And that's why you saw no gas shows. It was depleted. You're not going to get a gas show. When you drill through a depleted zone, there's just not going to be a gas show.

Q. And my question was, when you look at the pressure drawdown in the orange sand, you see about a 3000-pound drawdown, do you not?

A. That would work out about right.

Q. And when we look at the pressure drawdown in the green or the middle Morrow, we see it's something in the neighborhood of 800 pounds; isn't that right?

A. I think it's 600, something like that.

Q. Okay.

A. 600 pounds.

Q. So when we have a 600-pound drawdown in one zone and a 3000-pound drawdown in the other, isn't it hard to allocate a third of the production to the green zone? You've only had a 600-pound drawdown.

A. No, because that 600 pounds, in another well

that's not very well connected -- I believe that in the lower Morrow and the middle Morrow, due to commingling of those two zones in 12N, the pressures are equal. The pressure is about 400 or 500 pounds in that -- in both zones.

So you have the green sand in 12N at 400 or 500 pounds, and the new well at 3700 pounds. Very poor communication there.

Q. If you have overallocated production to the green, the middle or the B zone, in fact, you'd have a smaller drainage around that well, correct?

A. If I had -- If I attribute more reserves to the --

Q. To the orange, to the lower.

A. -- to the orange, I would make this, the green, smaller, because I have only so much total to work with.

Q. And that, in effect, could allow the drainage area around the Levers Number 1 to extend farther to the south; isn't that right?

A. Well, except the problem is 11P, the dominant production, the 3.6 BCF of middle Morrow green, is not coming from 12N to the due south. Notice it's coming from the southwest. This is our southwest-northeast trend. That's the one that bucks the southern boundary, more so than 12N --

Q. And that is --

A. -- on my little football at 12N.

Q. All right. And that is if that trend is as drawn?

A. Right, exactly.

Q. When we look at the contour to the western edge of the area drained by the Levers Number 2, why did you pull it in where you did and not extend it out farther to the west, toward the end of the reservoir?

A. Are you talking about my 20-foot constant drainage area --

Q. Yes.

A. -- contour --

Q. Yes, yes.

A. -- on the western edge --

Q. Yes.

A. -- of that pod? That position was in -- It was congruent with this trend, southwest to northeast, and with the general thinning of the reservoir, and so it just naturally had that end point there at the west end point.

Q. Mr. Kellahin talked with you a few minutes ago about no-flow boundaries --

A. Yes.

Q. -- and if I understand the testimony, your testimony, you did agree with Mr. Kellahin that with a well

660 from the common boundary in Section 1, where you're proposing, and an offsetting well over 2448 from the common boundary in the section south of there, that if you get a comparable well you'll have a no-flow boundary that extends substantially on to Section 12. Was that your testimony?

A. No.

Q. Okay. Well then, let me ask you some questions.

A. Okay.

Q. Let's suppose that there are two wells being drilled -- that there are going to be two wells in this pod that you've indicated on Exhibit 15, both of them 1650 from the common boundary, all right?

A. Okay.

Q. And let's suppose that when you drill the well north of the boundary you get reservoir that is comparable to the reservoir at the well 1650 feet south of the boundary.

A. I understand.

Q. in that circumstance, where would you anticipate the no-flow boundary to be?

A. Making a few more assumptions, everything else being equal, it would be right on the boundary line, halfway between the two wells.

Q. All right. And then if we take one of those wells and we move it 60 percent closer, the north well 60

percent closer to the line, we go 660 like you're proposing, and again we assume that you drill a well and you get comparable reservoir at both locations, that no-flow boundary would still be midway between the wells, would it not?

A. Exactly, under the same assumptions.

Q. And it would extend, then, farther on to -- It would extend on to, in this case, Section 12?

A. Right, it would overlap. There's nothing keeping us from draining that way, because we think Texaco has been draining our way illegally all these months.

Q. Well, now, we're going to talk about this illegal stuff in a minute, but if you'd answer the question we will get lunch sometime --

A. Okay.

Q. -- before four o'clock.

Basically we are looking at a situation where if you get comparable reservoir and you've moved 60 percent closer, the no-flow boundary's going to be on our acreage, correct?

A. It's going to overlap on to the southern acreage, yes, in this instance.

Q. And we're not going to know what you get until you drill the well; isn't that fair to say?

A. Yes.

Q. Okay. And so what we have is a situation where until we drill, we really aren't going to be able to evaluate what your well can do. Fair to say?

A. That's correct.

Q. And without any real data on the well, don't we have to, in terms of evaluating the advantage, look at things like footage encroachment on your neighbor? Isn't that --

A. Oh, I think footage encroachment is important, yes.

Q. What about the number of acres that are available to a well? Is that a valid kind of assumption when you don't have a well?

A. Yeah, areal extensive -- right, 320 acre, both wells seem to be draining, you know, approximately 320 acre, even though the shapes I show don't cover the full 320 acre.

Q. Mr. Montgomery, when you testified a few minutes ago -- and correct me if I'm wrong. I thought you said you would anticipate that the bulk of the drainage from your well, to be north of it. Is that what you said?

A. No, what I anticipate is that -- following, maybe, your line of questioning, that there will be some no-flow boundary between the two wells. Until we drill it, we don't know. We could hit the big, thick sand and have

all the volume under our section, and I could be wrong.

But I believe, using this interpretation, that there's volume behind our well. And you can't discount that volume in any penalty calculation. Maybe I was getting ahead of myself.

Q. The volume behind your well being north of your well, is that what you --

A. Right. Not that it would dominate but that it would important and that would be the Section 1 gas; that should go to Section 1.

Q. And if when you drill a well at that location you find, in fact, it's -- the new data tends to extend the well farther to the north and perhaps the northwest, any additional reserves up to the north and northwest would, again, be behind your well, right?

A. That's correct.

Q. They'd be available to you, and you alone, right?

A. If no other well was drilled, right. They would probably not go around and produce --

Q. Okay.

A. -- to the south.

Q. And if I understood Mr. Cobb's testimony, there are -- the middle portion of this section can't be leased by anyone else right now because of federal regulations, correct?

A. That's my understanding also.

Q. And so if there are wells, reserves behind your well in that direction, nobody else is going to drill a well, correct?

A. Well, I doubt that.

Q. Okay --

A. I won't make that -- It's the same royalty --

Q. Okay.

A. -- and I won't -- I can't conjecture who might drill up there, when the lease might come available.

Q. If there isn't any drilling up there and there are reserves, they are available to your well, not to anything south of it?

A. If we're connected to that, certainly.

Q. Okay. If I recall your testimony from April, you basically stated that you thought north was bad and south was good. Do you remember --

A. Yes, I --

Q. -- that comment?

A. Yes, I made that comment.

Q. And we talked about, at that time, the drainage in this area not really being radial drainage. I think you've agreed that it's probably elliptical.

A. It's elongated. Elliptical is a good shape, I think.

Q. And If we have a well location, and you would agree with me based on this mapping and your drainage estimates, that the better part of the reservoir is toward the Texaco tract?

A. That's what it looks like here, yes, that's a strong well.

Q. And wouldn't you agree with me that a well at that location is going to tend to drain from the better portions of the reservoir more than from the poorer portions of the reservoir to the north?

A. No. You know, I've made the assumption it's equal reservoir quality. What it tells you is that of the 6 BCF you have, the bulk was in Section 12. What that tells you is, how much further north can you go? You just can't get to 1650. There's not enough in that 6 BCF number to get you past a choke point, that somewhere you say, There's just too much risk, the reservoir doesn't prove to go there.

So there's significant reserves in Section 12, and you see I've given it two-thirds/one-third or 70-30-type split with this approach.

Q. Basically, though, the problem is that you can't be a standard setback; isn't that right? From the -- or 1650 feet from the south line, based on your interpretation?

A. Yes, it's my recommendation that we do not drill a 1650 setback, that it's very possible you'll be outside this main objective, and you'll drill a well similar to the well they drilled at 1P and be sorely disappointed and not protect correlative rights and do all the owners in Section 1 a great disservice.

And yes, I very much concur that 1650 would -- I don't think we should drill that location.

Q. And so as you move from that 1650 toward the south line --

A. Okay.

Q. -- not knowing what your well may be when you drill it --

A. Right.

Q. -- we continue to run the possibility of the no-flow boundary extending into Section 12?

A. But once you get in this reservoir, the further south you go, the further that overlap is, that's correct.

Q. Now, you have talked -- You're familiar with the rules that govern the development of this area, are you not?

A. To some degree, yes, I am.

Q. And you are familiar with what is meant by correlative rights --

A. Yes, I am.

Q. -- are you not?

And you know that it means the opportunity to produce reserves, not that you're guaranteed any volume from the reservoir?

A. Yes, you've read that to me once, I think.

Q. In April, I think I did.

A. Yes --

Q. And --

A. -- I remember.

Q. And so what we're talking about here is Mewbourne's opportunity, or the owners in the south half of 1, their opportunity, to produce reserves from this reservoir, correct?

A. I'll yield to your expertise on that. I think I would agree with you. I'm not a --

Q. And that's what you're trying to do, right --

A. Absolutely.

Q. -- drill a well?

Now, you understand that the definition of correlative rights says that you are entitled to produce your fair share of the reserves in the pool?

A. I remember that clause.

Q. And are you aware that it also says the fair share is the percentage of the reserves under your tract compared to the reserves in the pool as whole?

A. Yeah, you're pushing my recollection now, but I follow your line, I would yield to your expertise on that.

Q. Now, when you come in to avail yourself of an opportunity to produce your share of the reserves in the pool, you're not trying to produce your neighbor's reserves, correct? You're trying to get what's under your tract?

A. That's correct, in general.

Q. In general?

A. Yes.

Q. And so to the extent that by moving a well you're actually taking reserves from the neighboring property, that would give you an advantage if you were able to do that; isn't that fair to say?

A. The further south you move to that line, I believe I've said already once before, answered that question, yes, you'd have a better advantage.

You know, the problem is, I don't know if I agree that this case is like the other cases where we were given our fair right by proper notification of the section -- The owners of Section 1 didn't have a good chance, an equal chance, a fair chance to compete with the reserves in their section.

Q. And why is that? You didn't have notice of the Texaco well?

A. What -- the reason I -- You know, I'm not an expert on this, but the reason I see is that during proration the Commission can set up rules and acreage factors, and you can drill these increased density and help protect correlative rights.

When proration ends, the simultaneous-dedication factor kicks in. And I'm sure I won't say this right but in my way of thinking, that is now the mechanism to help protect correlative rights. That mechanism was denied the owners of Section 1. The result illegal production is a damage and a drainage to the owners of Section 1, and that -- the Commission should take that into account in this hearing, to try to help right that wrong.

Q. Now, when the Levers well was -- Number 2, was drilled --

A. All right.

Q. -- first of all, Mewbourne didn't own anything in the offsetting acreage, correct?

A. That's correct.

Q. And you knew the Levers well had been drilled when you decided to go forward and acquire interest in this acreage; isn't that right?

A. That's correct.

Q. Because you were trying to get close to that well; isn't that right?

A. That may not be the right way to put it, but we were trying to offset it, that's correct.

Q. All right. And so, now we have a situation where you're sitting here, you're declaring that the production from that well has been illegal; is that -- and that is your testimony --

A. That's my --

Q. -- right?

A. Yeah, that's --

Q. All right.

A. -- my take on it.

Q. Now, when we look at the rules for this pool, you know the pool is prorated?

A. That's correct.

Q. You know that -- Do you know that the prorationing rules were recodified back in the late 18- -- late 1980s by and Order R-8170?

A. That number strikes a bell, but I don't have a recollection of what was said there.

Q. Are you aware that at that time they dropped out of the special pool rules authority for a second well on a spacing unit?

A. No, I can't remember exactly the language. If you could read it to me maybe I could remember it.

Q. Are you aware that after that provision fell out

of the rules, other operators drilled second wells on spacing units?

A. I'm beginning to remember now what -- the history you're talking about, the early 1980s.

Q. Yeah.

A. Right.

Q. Are you attempting to render an opinion on whether or not any of that production would be illegal or not, by other operators?

A. Well, it seems to me that there were statewide rules at that point, and they were 320. You didn't have to have simultaneous dedication. They were still being prorated accordingly, I suppose. The new distance to the lines were now 660 in one direction --

Q. Just a minute. Now --

A. -- so there was no reason to penalize.

Q. -- has there at any time been a rule, since, say, 1980 -- we -- you know, since we readopted 640 for the pool and the --

A. Okay.

Q. Has there been any time during that period when 320-acre spacing was authorized for this pool?

A. I don't think so.

Q. Was there any time during that period when there was a closer setoff than 1650 feet to the outer boundary of

your tract authorized for this pool?

A. I don't have any knowledge of it.

Q. And when the prorationing rules dropped out any provision for a second well on the spacing unit --

A. Any provision?

Q. When they were silent --

A. Okay.

Q. -- the rules at one point in time became silent on authorization for a second well, in your opinion -- do you know, was there anything that would justify somebody drilling a second well on the unit after that date?

A. I'm not sure I follow your exact question, but let me answer it this way. This history of the field had been, up to that point, on 320s effectively, even though the field rules had gone back and forth.

I believe operators would have attempted to continue to drill on 320, but using mechanisms like simultaneous dedication to obtain that or try to change the field rules back, or -- and I just don't know the history, but I think that 320-acre development would still have been something that people would agree has happened in the past and that there are means to accomplish that, like the Levers Number 2 well, you know, should have followed. They just didn't do it.

Q. Through all of this history, though, you're aware

of nothing that ever would have authorized a well closer than 1650 feet to the outer boundary, correct?

A. I don't remember any ruling -- seeing any ruling that ever authorized that, that's correct.

Q. And you're aware --

A. I haven't studied it.

Q. You're aware that prorationing was suspended in this pool back in 1995.

A. Vaguely, in the Nineties, yes.

Q. Are you -- Did you read the order that was entered following the hearing in the spring of this year?

A. The order for this --

Q. From the Division.

A. Yes, yes, I did.

Q. And are you aware that they refer to the Catclaw Draw-Morrow pool as a, quote, unquote, technically prorated pool?

A. Yes.

Q. Do you have any independent knowledge of what is meant by the term "technically prorated"?

A. No, I do not.

Q. Do you know how that relates to "prorated"?

A. No, I do not.

Q. Are you aware of the one-well rule?

A. I don't think so.

Q. So what are you basing your conclusion on, that the production from this well is illegal?

A. Well, again, it's maybe my take, and it seems that the mechanism prior to this change that has been explained to me by our legal counsel, that proration would help protect correlative rights, but then when it went to this new -- I think, you know, Mr. Stogner is the one you need to ask, I suppose, but this new method, then simultaneous dedication would be the mechanism to help protect correlative rights, to be the right way to get that extra 320, that second well, however you want to call it.

And that just wasn't done, and that -- Maybe I jumped to conclusions, but that tells me that there was no notice given. You're impeding the owners of Section 1 from doing their job to protect their correlative rights. It just seems that is unfair, and that the rules were not followed. But I'm not an expert.

Q. When you say -- I just want -- You've reached that conclusion. I'm just trying to explore your understanding.

A. Okay.

Q. And when you said that prior to the change you could have two wells and after that change you couldn't, you needed to simultaneously dedicate, what change are you talking about? Wasn't this --

A. Maybe I misspoke or you misunderstood. Let me go over that again.

When it's a 640 field, you need simultaneous dedication to get a second well drilled on your --

Q. And has that always been the case?

A. No, there was a time --

Q. And my question is -- You've talked about a change. What changed that? Do you know?

A. The change was, when proration was lifted -- when proration was lifted, the mechanism, in my opinion, the mechanism for helping protect correlative rights, which is help prorating -- You know, you'd split, everybody would have a factor. You'd be able to -- This well is making 40 percent of the total field now. Under proration it wouldn't be doing that.

So we're not in that field, so we need a simultaneous-dedication hearing to discuss these things, to alert these offset operators.

Q. When you say when prorationing was lifted --

A. Uh-huh.

Q. -- does that mean when it was suspended?

A. I think so.

Q. Has it been lifted in a technically prorated pool, do you know?

A. You're getting beyond what I really probably

know.

Q. Aren't these the kinds of questions that we should leave to the Division to --

A. Absolutely.

Q. And shouldn't we let the OCD decide, or the Commission decide, if production is illegal or not?

A. After giving all the facts and opinions of ourselves, they certainly will make that decision, I'm sure.

Q. And they're the ones who will be able to decide if, in fact, someone has acted illegally; isn't that right?

A. Yes, sir.

Q. And that's not something one operator -- a decision one operator gets to make about the --

A. No, it's just my opinion.

Q. Okay. And at this point in time you're proposing a well on a tract where you have less than 320 acres; isn't that right?

A. That's correct, an irregular section.

Q. And you're opposing two wells on a 640-acre section; isn't that right?

A. I'm not here to -- We are opposing the fact that the Texaco well needed to get simultaneous dedication, they either need to shut in -- We'd like the Commission to look at that.

But what we do think is that all we have the ability to get is the 320 acres. So we'd like for them to also look at our position and say, Well, we can't get 640, and yet we're being drained. Help us, protect correlative rights.

Q. And when Texaco came in and said, They're drilling 660 from our lease line, the no-flow boundary is going to be on our acreage, that's the kind of question, again, we bring to the Commission, correct?

A. Sure, we should show all our different ideas on how that affects each of the two parties, and they need to rule on that too.

Q. And they'll finally decide whether or not anything illegal has happened out here or not, right?

A. Absolutely.

MR. CARR: That's all I have.

CHAIRMAN LEMAY: Commissioner Bailey?

COMMISSIONER BAILEY: I don't have any questions.

CHAIRMAN LEMAY: Commissioner Weiss?

COMMISSIONER WEISS: Yeah, I have a couple.

EXAMINATION

BY COMMISSIONER WEISS:

Q. I'm not clear on the chronology of the Levers 2 and 1, when one was shut in after one was drilled and why.

A. Okay.

Q. And -- Go ahead with that.

A. Okay, I probably should have -- I'll get these dates as close as I can.

The Levers Number 1 was drilled in the early 1970s and produced up until -- a month ago, maybe? Two months ago? Whenever it was shut in by Texaco after the Commission order. So very recently that well was shut in.

But what had happened is, that whole time it had been commingled in the lower Morrow and middle Morrow and was still making -- I think they said they're losing $1000 a day, so it was still making a lot of gas out of those two zones to some degree.

The Levers Number 2 was completed --

Q. It was shut in two months ago?

A. Yes, just very recently, after Mr. Stogner's order. I think two months ago, I think. Is it -- You might be able to ask someone else too. The Texaco guys will know for sure. I just know it's very recently been shut in.

Q. Okay. So Number 2 was put on --

A. In April of 1996, 18 months ago or so. The well was completed in January and put on production in April and has produced basically 4 million a day, constant, for those 18, 19 months.

Q. And it produces only from the middle Morrow?

A. Right. What has happened is, they've perforated both the middle Morrow and the lower Morrow, but after knowing that DST in the lower Morrow was only 1370 pounds and their flowing tubing pressure was 2500, they knew the lower Morrow wasn't even producing. But it was quite prolific, 10 million a day.

So I think subsequently they went in and put a valve that would allow -- not allow gas to cross-flow back into that lower-pressured lower Morrow, and they've been in the middle Morrow ever since, to the best of my knowledge.

Q. Do you know what happened to the Number 2 when they shut in the Number 1, the rate and pressure?

A. No, I haven't got that. The data I was able to get is up through September of 1997, and it showed a general flowing tubing pressure decline of 50 pounds a months in those few months before that. No abrupt -- no -- Maybe it happened after that, I'm not sure. So I have no knowledge of any interference.

Q. And who brought the fact that -- Who brought to whose attention in order to get Number 1 shut in?

A. I don't know. I think Mr. Stogner had more to do with that than anybody.

Q. Okay.

A. But I don't know. Maybe I'm putting words in someone's mouth.

Q. And then on this issue of commingling, I listened to your testimony. Is it fair to say that that's subjective?

A. The split in the commingling?

Q. The allocation.

A. Absolutely, that had to be my best analysis. And as you know, when you commingle zones it's not a simple thing to figure out what's flowing out of what. But I looked at the other wells, what looked prolific, what logs looked good.

What I had, actually -- I'll just go through it real quickly -- was a DST in the lower Morrow orange flowed 3.4 million a day with a very small drawdown. Its flowing pressures were 3800 pounds, and remember, initial pressure is 4300.

They DST'd what I think is the lower Morrow brown, 7.2 million a day, with a little more of a drawdown, 3000 pounds.

Then they just perforated the middle Morrow green. They didn't DST it to help me allocate. But the total calculated on flow for the two good, strong zones plus this one was 29 million a day.

And so based on that, and based on just looking at the thicknesses and the porosities and the offsetting production, I did some work, some calculations, some

subjective -- yes, 30 percent of the lower Morrow -- there's two zones -- would be -- the middle Morrow would be 30 percent and the lower Morrow 70 percent.

So out of the 5.1 B that that well has produced, I gave it a cumulative of 1500 million in the middle Morrow.

Q. And on your ellipse surrounding the --

A. Yes.

Q. -- well, where you used 20 feet --

A. Yes, sir.

Q. -- what would that look like with 26 feet?

A. It would be smaller by that ratio, because it was a constant thickness. Twenty over 26, 80 percent. It would be 80-percent smaller if you just shrunk it down. We don't see any control points higher than 26 --

Q. Does that take your location out of --

A. No, it would still be slightly in the Section 1. Or maybe not slightly. You know, it's only 80-percent smaller. It would be hard to picture. It doesn't -- In an ellipse it doesn't take much to get a small percent. It looks like it's not hardly different at all, and it's quite a bit less. So it would still be significantly overlapping Section 1.

MR. BRUCE: Twenty percent smaller, Mr. Montgomery?

THE WITNESS: Is that -- I didn't have my calculator handy.

Q. (By Commissioner Weiss) -- use that backwards, but --

A. Oh, I'm sorry.

Q. -- but then the other three other wells, by the same token, if you reduced their thickness 20 percent, they would be larger?

A. Accordingly, yes, sir.

Q. You would have no -- You would have an overlap on those, I guess?

A. Right. And then -- Right.

COMMISSIONER WEISS: Okay, we can't see that, so...

No, those are the questions I had. Thank you.

THE WITNESS: Okay, thank you.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. What would you guess the 12F, for a September bottomhole pressure, would be today? About 2500 pounds?

A. Yes, sir, very good. The P/Z plot would be the one to use --

Q. And it keeps extrapolating --

A. Okay, then I -- I would yield to that.

Q. So assuming that's 2500 pounds today, did I hear

you say early on in your testimony you were excited about this prospect?

A. I was when I first saw it, extremely excited. This was a strong prospect.

New production in a prolific field that extends it further north than people thought, we've worked hard and we're very excited about it. I have worn weary over the months.

Q. Yeah, I was wondering about getting over a $750,000 --

A. I --

Q. -- investment for a BCF of gas.

A. I -- As I said, I'm very concerned about that now. I think that if we -- You know, I wish we could have worked things out quicker. Between ourselves and at the Commission, both, it has drug on, and it is -- They are draining our section as we speak, I think.

Q. Well, I just want to ask you something --

A. Yes.

Q. -- off the record, kind of. Not off the record; it's on the record. But Mr. Montgomery, are you --

A. Yes, sir.

Q. -- a gambling man at all?

A. Certainly.

Q. Do you ever gamble?

A. Certainly.

Q. Do you ever figure odds?

A. Yes.

Q. Okay. Let's change the paradigm here in your Exhibit Number 15 a minute --

A. Okay.

Q. -- on a couple assumptions. Do you think every one of these wells, when they were drilled, were kind of looking for that same reservoir, that green middle sand reservoir, and --

A. As one objective.

Q. As the main objective?

A. No, not the --

Q. No?

A. -- main objective. In the Seventies the lower Morrow was --

Q. Lower --

A. -- certainly the main objective.

Q. Okay.

A. Yeah. And it was prolific.

Q. And it was prolific. So what happens is, you end up -- What I'm looking at is four wells that have produced some gas from the green sand.

A. Yes, quite a bit, actually.

Q. Do you think -- What are the odds? I mean, with

each one of these wells --

A. Uh-huh.

Q. -- try and follow me on this because maybe my reasoning is wrong.

A. Uh-huh.

Q. Each one of these wells, when it's drilled, either uncovered a kind of a compartmentalized reservoir or an imperfectly communicated reservoir with the other wells, because we're coming in with bottomhole pressure that's higher than we would anticipate?

A. That's exactly my conclusion.

Q. Why would you think, with the record being four out of four, that when you drilled the fifth well you would finally connect with a reservoir that you could predict the pressure on, you would not get a compartmentalized reservoir here too?

A. There's --

Q. Doesn't that defy the odds, historical odds in the field?

A. Well, that's a good point. What we at Mewbourne like to pursue are lower risk Morrow development, lower risk meaning if we can see that a well looks like it's producing outside its section and there's enough reserves, if you can get in that other section and make an economic well, to go in and compete with the same reserves, we like

that if it's a good prospect.

There's certainly -- Four out of four, there's certainly good odds that you might -- that I'm wrong. There could be another good, big compartment, or nothing, up there.

But it's our strategy as a company to say, If there's enough reserves, you know, why not get in there and do development geology and exploration or exploitation, instead of a higher risk exploration type of play?

And so when we saw this we said, There's just too much gas, that's a strong well, that's got to be in Section 1, let's go look at some acreage. And as we further got the data recently, we now have a quantitative way to say, even though we're getting there to 1 BCF that -- you know, that even in this one zone there's a much lower risk. We like that. We think our location is extremely superior to any other location, based on risk. We do that with all the data.

And so I hope that answers your question. I see your point on the odds.

Q. Well, if I'm a gambling man --

A. You could be wrong, that's right.

Q. -- and I look at four times we get one thing, expect to drill the next one and connect, I'd say that's about a 20- --

A. Right.

Q. -- percent risk of -- historical of finding what I want --

A. That --

Q. -- one out of five, rather than --

A. Right. But what we'd like to do is change those odds by doing some scientific work that says, We think -- we're not sure -- that we can increase those odds. And yes, get in the same pod, and we've got to, you know, work with the rules, and there are a lot of other things you have to do. We're not drilling wildcats in this company, we're trying to find our niche as a lower risk development.

Q. They look like they're kind of wildcats to me, cover the --

A. We're at the north end of a very good field that we are very concerned about dryhole. We -- I agree with you, there are some serious risks. We just think it's much lower to our location than at 1650 or certainly at 20- -- whatever the Fasken location, 2000 feet. You're really pushing on -- of the data you know. Why stare at the data you know and -- that help you lower risk, and fly in the face of that and not use that to your advantage?

But there is some risk that we'd find no sand at all in between compartments, or a new compartment that would fit in there, be a small compartment or something.

Q. It's Curtis's money, he can put it where he wants.

A. Right, right. Yeah, this is what he -- He's excited about this. He's not so much anymore, I'll tell you that.

CHAIRMAN LEMAY: Okay, that's the only question I had.

THE WITNESS: Okay.

CHAIRMAN LEMAY: Is there anything else of the witness?

If not, let's break and come back from lunch --

MR. BRUCE: Mr. Chairman --

CHAIRMAN LEMAY: Yes.

MR. BRUCE: -- one housekeeping matter. I do have a topographic map, and if I could just submit that into the evidence --

CHAIRMAN LEMAY: You bet.

MR. BRUCE: -- as Mewbourne Exhibit 17.

CHAIRMAN LEMAY: Without objection, we'll have that in the record.

Did we have this Exhibit 11 introduced? Did we have --

THE WITNESS: That was, again, from the previous testimony, the tables I had made previously, that he showed to me. He didn't enter --

CHAIRMAN LEMAY: Want to just reference it, then?

THE WITNESS: That's Fasken's idea. I don't care to reference it. I think I have better data now.

CHAIRMAN LEMAY: Okay, better data. It's up to you.

Let's break and come back at -- Do you all eat quick? Do it at 1:30?

MR. CARR: What time is it?

CHAIRMAN LEMAY: Have you got time to eat? Huh? No? How about 1:45? I'm just looking for consensus. Let's do it at 1:45, we'll be back. Give you a chance to get downtown real quick.

(Thereupon, a recess was taken at 12:58 p.m.)

(The following proceedings had at 1:53 p.m.)

CHAIRMAN LEMAY: We shall continue with the presentation of Fasken. Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Chairman.

Mr. Chairman, my first witness is Dexter Harmon. Mr. Harmon is a petroleum geologist.

DEXTER HARMON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please state your

name and occupation?

A. My name is Dexter Harmon. I'm the exploration manager for Fasken Oil and Ranch, Limited.

Q. And where do you reside, sir?

A. Midland, Texas.

Q. Your degree is in petroleum geology?

A. Yes.

Q. And have you on prior occasions testified as an expert in petroleum geology before the Oil Conservation Division?

A. Yes.

Q. And you were the witness that testified on behalf of Fasken before Examiner Stogner when he heard this case back on April 3rd and 4th of this year?

A. Yes.

MR. KELLAHIN: Mr. Chairman, I tender Mr. Harmon as an expert petroleum geologist.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (By Mr. Kellahin) Mr. Harmon, have you made a geologic study of this particular area?

A. Yes, I have.

Q. As part of that study have you made a comparison of what we've called the Fasken-proposed location versus the Mewbourne-proposed location?

A. Yes, I have.

Q. In addition, have you compared those two locations to the geology available in the immediate vicinity?

A. Yes.

Q. Has that geologic work included the Levers 1 and 2 wells operated by Texaco?

A. Yes, it has.

Q. Have you had access to and have you utilized the same type of geologic data that Mr. Williams had access to?

A. Yes, I've used the same data Mr. Williams had, plus we had some 3-D seismic in the area we also utilized.

Q. In addition to the log data available to all the geologists, you've used seismic data?

A. Correct.

Q. Describe for me the kinds of seismic data that you used.

A. We used a three-dimensional seismic survey that was about seven square miles in extent.

Q. That seismic data was the property of Matador Petroleum Corporation?

A. It is.

Q. In fact, it still is their property?

A. It is.

Q. You've had an arrangement with Matador by which

you and Mr. Lou Lint, our consulting geophysicist, had access to that information?

A. That's right.

Q. Was that information, to the best of your knowledge -- Was Mewbourne afforded an opportunity to have access to the same information you had access to?

A. Matador has always had that seismic for sale, and they could buy it at any time.

Q. All right. Your location is obviously different than the Mewbourne location?

A. Yes, it is.

Q. Can you summarize for me what the significance is of the seismic data insofar as you're comparing the Mewbourne location to the Fasken location?

A. The 3-D seismic data shows a major north-south Morrow cutting fault separating the Fasken and Texaco wells, the Fasken location and the Texaco wells, from the Mewbourne location.

Mewbourne's location is on the downthrown side of that fault, and we don't feel like any Morrow sands will communicate or drain across that fault, because it's a significant throw on it.

Q. Is there -- When you compare the Texaco location to the Mewbourne location, is there any structural component by which you can make a comparison based upon

structure?

A. Yes, we've made a structure map.

Q. And what is your conclusion about the structural advantage or disadvantage of the two proposed locations in relation to the Texaco well?

A. We think the Mewbourne location is at a structural disadvantage in the Morrow because both the upper and the lower Morrow sands become wet in lower structural positions, and the Mewbourne location is on the downthrown of this fault -- side of this fault, and it's much lower.

Q. When we look at the way you have analyzed the different portions of the Morrow, how have you generally subdivided the Morrow?

A. We also subdivide it into three different depositional packages, the lower Morrow being the channel sands that trend in a north to northwest, south to southeast trend. They have good permeability for the most part, tend to drain long distances, become wet in downdip positions, and we feel they're more productive and have more potential farther away from areas older wells have drained.

Q. When we begin to look at the middle Morrow, is the middle Morrow -- does it have the same depositional environment as the lower Morrow?

A. The middle Morrow is a marine-influence sand trends that trend more east northeast to west southwest. They range from very good to very poor permeability. They really don't correlate very well in the north-south direction for very far.

And just from the Texaco Levers 1 and 2 wells, you can see they don't communicate very well in a north-south direction, because the 1 was pulled down to 450 pounds bottomhole pressure, and when they drilled the Number 2 it was almost virgin.

Q. When we --

A. That's just a half-mile distance in a north-south direction.

Q. When you move up into the upper Morrow, is that the same depositional environment, then, as the middle Morrow?

A. Testimony from the last hearing from Texaco was that they did some sidewall cores out of the upper Morrow, and they felt it was a channel sand and it had the same depositional strike as the lower Morrows.

And that's basically how Keith Williams with Mewbourne has mapped it, and I agree with that. There's probably some sort of a channel sand with the same type depositional strike.

Q. When we look at your structure map and your

isopach maps of the various Morrow opportunities in the south half of Section 1, are you able to conclude that you can develop the south half of Section 1 without encroaching on the Texaco spacing unit?

A. Yes, and that's what we propose to do.

Q. In addition to the Morrow opportunity, do you see any other opportunity for deep gas production in any other formation?

A. We think the Cisco has productive potential at the Fasken location because our 3-D seismic shows us that we have a time structure there, with four-way closure. We have an isochron thin from the third Bone Springs sand down to the top of the Cisco, which shows us there's a bump there. And we also have an isochron thick from the top of the Cisco down to the middle Morrow shale, another marker that we -- So it shows a thick. And that's all -- That all goes together to show the Cisco potential.

Q. Have you made your geologic study in association with Mr. Lou Lint, a consulting geophysicist?

A. Yes.

Q. As part of that work, have you been able to integrate into your structure map conclusions concerning about the location and magnitude of throw of various faults in this area?

A. Yes, we have.

Q. When we look at the way you've subdivided the Morrow, have you used the same isopach'd intervals as Mr. Williams used?

A. He doesn't correlate the sands the same way that I do.

Q. So when we present your isopachs, the Commission needs to be aware that your correlation markers are going to be different than what Mr. Williams used; is that true?

A. That's true.

Q. Exhibit 1, Mr. Harmon, would you identify it? It's a production map, I believe. Take a moment and identify that for us.

A. Exhibit 1 is a production map in the area that identifies all the wells by the operator and the well name and number. And then the legend shows you which field each well is put in, and then next to the well in red is the cumulative gas, oil, and how many years it's been. And then the second line is the current status of the well, whether it's plugged or what it's producing.

So you can get a quick look at what zones produced out of each well and how much and what field they were --

Q. Let's set that aside as a map to help us locate the wells as you begin to describe them, and let me have you turn to the next display. It's identified as a top of

lower Morrow, and it's a structure map, is it not?

A. Yes, this is our structure map of the top of the lower Morrow. This is the same structural pick that Mr. Williams picked on his structure map.

And what you can see on this map is, in the blue outlined area, inside that box, is where the 3-D seismic was shot, and all the structure inside that box, it comes from the 3-D seismic interpretation.

And then the structural ticks and contour lines outside of the blue box are strictly a geologic interpretation.

Q. All right. Let me show you Mr. Williams' montage, his Exhibit 9. It has his structure map on it. With the integration of the seismic data and when we look at the structural position of the Mewbourne location, are you finding the proposed Mewbourne location at the same structural position as Mr. Williams forecasts it to be?

A. Mewbourne location on his map is at almost minus 7100, be it 7080 or -85, something like that.

Q. And where do you find it?

A. We find it about minus 7150.

Q. When you look at the Texaco Levers 2 well, are you in agreement or disagreement about the structural position of that well?

A. We have them the same, essentially. There's two

foot different. It's probably KB versus derrick bore or something.

Q. And finally the Fasken location on structure, as Mr. Williams compares it to your location?

A. Mr. Williams, it looks like he has our location at minus 7050, and we also have it at minus 7050.

Q. The way the lines are contoured on your structure map, is there a structural advantage to your location in relation to the Mewbourne location?

A. Yes, on our map that we've got from the 3-D seismic, we will be a hundred foot high structurally to the Mewbourne location, and they will be on the other side of a major fault.

Q. Just to the west of the Mewbourne location, following the minus 7100 contour line, there's a dark S-shaped, curved line. To the west it says "U", to the east it says "D". I'm going to identify that as fault line one so we can keep them straight.

A. Okay.

COMMISSIONER WEISS: That's the top half of the blue area?

MR. KELLAHIN: No, sir, it's down at the Fasken location.

THE WITNESS: This little S-shaped thing, kind of in the center of the blue area.

Q. (By Mr. Kellahin) Do you have an opinion as to what the magnitude of throw is along that fault?

A. I think the maximum throw is about 150 feet, but the average throw is about 100.

Q. Is that sufficient displacement of a fault to separate the Mewbourne location and the various Morrow sand channels or sand depositions from those Morrow sands being produced at the Texaco well location?

A. Yes, I think it is.

Q. How do you compare the Fasken location, then, based upon this fault, fault line one, in relation to the Texaco Levers 1 well?

A. To the Levers Number 1?

Q. Yes, sir. You're on the same side of the fault, aren't you?

A. Yes, we are.

Q. And as to the Levers 2?

A. We're on the same side of the fault.

Q. Does the location and position of this fault have any significance to you when you're making decisions about what your preference is for a well location when you have a choice between Fasken and Mewbourne?

A. Yes, we would rather be on the upthrown side of a fault and be high, because the upper Morrow sands and the lower Morrow sands get wet in lower structural positions.

Q. Do you have an approximation of what you believe to be the gas-water content in this area?

A. I don't have a single gas-water contact.

Q. All right, sir. When we look at the next fault I want to direct your attention to, it's the one I discussed with Mr. Williams, and it's the one that goes from the northeast corner to the southwest corner of Section 11. Do you see that one?

A. Yes.

Q. Let's mark that fault line 2, okay? Describe for me why you have concluded this fault to be where it is.

A. We get that directly from the 3-D seismic survey. It's real apparent on the survey where these faults are.

Q. Are you able to integrate or validate the seismic information with any subsurface geology?

A. Yes, it matches the subsurface geology as far as where the wells come in and the tops and whatnot.

Q. Can you approximate for us the magnitude of throw along that fault?

A. It varies quite a bit, but in most places it's over 100 foot.

Q. When we look at that fault, do you have an opinion as to whether or not that fault would extend northward in such a way to separate out the Fasken location from the Levers 2 well?

A. We followed the fault on the 3-D seismic and it's dying out in that direction, and we think it does die out.

Q. Are there any other faults -- You've shown other faults on the display. Are any of those others of significance in terms of the Commission making a decision about these well locations they're addressing today?

A. No.

Q. Okay. Let's turn to your cross-section, Exhibit Number 3.

Mr. Harmon, I'm also going to give you a copy of Mr. Williams' cross-section, and I'm going to fold it in such a way that you have access to the Levers Number 2 well. Do you have those before you, Mr. Harmon?

A. Yes, I do.

Q. Let's go through that display that Mr. Williams presented, and your display, so that we can make a comparison of the isopach'd intervals, because the two of you occasionally have used a color code for these intervals, and the color code doesn't match consistently between the two geologists.

Let's start at the base of the Levers 2 well and look at what Mr. Williams identifies as the brown sand. Did you map what he has called the brown sand?

A. I did map a brown sand.

Q. Is it the same brown sand that Mr. Williams

mapped?

A. No, it's not.

Q. Why the difference? What's the explanation?

A. At the last hearing, Texaco testified that they had no brown sand in this well, and so I did not give the well any brown sand.

Q. When we look at your isopach of the brown sand, then, we're looking at a different isopach'd interval than what Mr. Williams showed?

A. Yes.

Q. Going vertically, you have on your display an orange interval in the lower Morrow, and you have identified that as the orange sand?

A. Yes, I have.

Q. How does that compare to what Mr. Williams did?

A. We both called that sand the orange sand in that particular wellbore.

Q. Okay. Once we move above the orange sand, then, we're moving out of the lower Morrow?

A. That's correct.

Q. As we go into the middle Morrow, what is the next interval that you isopach'd, and how have you identified it?

A. The next interval that I isopach'd, I call the middle Morrow purple sand. You can see it colored in

purple. Mr. Williams did not isopach that particular sand.

Q. When we look at Mr. Williams' green sand, he's packaged two of the sands together which you have isopached separately; is that correct?

A. That's correct.

Q. And how are you identifying those two sand intervals by color?

A. The green sand is the upper sand interval, and the blue sand is the one just below it.

Q. And finally, if we leave the middle Morrow, we move up into the upper Morrow?

A. Right.

Q. Mr. Williams has identified a Morrow "A" sand?

A. Yes, and I've got a little bit of yellow color on mine.

Q. All right. Is there a difference in the vertical interval correlated and mapped on the sand maps?

A. No.

Q. Yours is the yellow map and his is the Morrow "A" sand map?

A. I did not provide a yellow sand map.

Q. All right, why did you not do so?

A. I just didn't provide one. I wasn't sure what the environment of deposition was. But at the last hearing Texaco said they took sidewall cores from that, and that it

was a fluvial channel sandstone and that they felt like it went in the same direction as the lower Morrow sands, and I agree with that.

Q. Let's talk about this depositional environment, Mr. Harmon. If you will, in combination, refer to what's marked as Exhibit 4, which is a technical paper and Exhibit 5, which is a display that's been enlarged out of that technical paper. Do you have those?

A. Yes, I do. Exhibit 4 was a paper that was published in the Southwest Section of *AAPG Transactions* from their convention in 1984, and it's titled Lower Morrow -- excuse me, "Lower Pennsylvanian Reservoirs of the Parkway-Empire South Field Area, Eddy County, New Mexico." And then the bigger map display is just a map out of this paper.

Q. Is Figure 3 taken out of the paper, which is the third page back of the paper?

A. Right.

Q. All right. Let's use the blow-up of Figure 3 from the paper and have you take us through your conclusions about the depositional environment of the lower, the middle and the upper Morrow.

A. Okay. According to the paper, where it says "Morrow Stratigraphy" and it's highlighted on the front page, Morrow sedimentation consists "of limestones,

sandstones, shales and siltstones. These sediments can be divided in three correlatable units. The lower Morrow consists of fluvial-deltaic sequences of sandstones and shales which rest unconformably on the Mississippian. The middle Morrow consists of primarily marine sandstones and shales with" minor amounts "of interbedded limestone. The middle Morrow unit is defined in this paper as occurring from the base of a" distinctive "shale, called the Morrow shale, to the top of the Morrow clastics."

When you look at the map that they provide in this paper, the lower Morrow channels are colored in orange here, or -- and these are fairways. And you can see that they have a general trend from the northwest to the southeast.

And then you look at the bottom of the map, and what I've got colored green is the middle Morrow sediments. And after these channels were deposited in that direction, we had a marine transgression in this area, and these middle Morrow sands moved up and covered the lower Morrow channel. And you can see that the depositional direction of the middle Morrow marine sediments during the time of the transgression are perpendicular to the channel.

That's the basic point I wanted to make.

Q. What happens in the upper Morrow?

A. The upper Morrow, if it's a channel sand like

Texaco says, and I believe it is, it would be the same source area, in the same direction as the lower Morrows.

Q. Okay, let's go back to Mr. Williams' montage now, his Exhibit -- What is it, 10? Help me out, Mr. Harmon. You have my copy of that exhibit. What's the number?

A. Exhibit 9. This is from the first hearing.

MR. KELLAHIN: Yeah, we want the one for today. So I think it was Exhibit 11; isn't that right, Jim? 10, all right.

COMMISSIONER WEISS: What are you talking about, this one?

MR. KELLAHIN: Yes, sir, Exhibit 10.

Q. (By Mr. Kellahin) All right. Let's look at his lower Morrow brown sand, which is the sand that he maps in the lower Morrow. Is that interpretation consistent with or in disagreement to the technical paper you just described?

A. It's at a 90-degree angle to the technical paper --

Q. Yes, sir.

A. -- turned 90 degrees to that.

Q. It's inconsistent, then?

A. Yes.

Q. Following the April hearing, Mr. Harmon, you had additional opinions and information from Mr. Williams and

from Mr. Uhl, the Texaco geologist. Did you and Mr. Lint then go back and re-examine all of your data and all of your conclusions?

A. Yes, we did.

Q. As a result of that re-examination of all your data, did you alter the structure map that you presented as Exhibit Number 2 in any way?

A. Yes, sir, there are a few alterations. They don't occur in fault 1 and 2.

Q. There's no change to fault 1 and 2?

A. Right, but --

Q. After re-examining all that information, including the 3-D seismic and the 2-D seismic, you made no alterations in fault lines one and two?

A. That's right.

Q. All right. The others were adjusted in some way?

A. A little bit.

Q. Anything of significance with regards to how those were readjusted in terms of the decision to be made by the Commission here today?

A. No, I don't think so.

Q. Let's start working through your sand maps. We're going to start with the lowest interval, again using our color code, and the cross-section 3, which has the Levers 2 well on it. Let's start with the lowest sand map

that you have, and it's -- you call it the brown sand.

Without explaining all the details on the map, give us a general conclusion about the relationship of the Fasken location to the Mewbourne location.

A. We see the brown channels trending as you see them, and we think the Mewbourne location will hit a brown channel, and the -- The Fasken location will hit a brown channel, and the Mewbourne location will miss this sand and also be on the downthrown side of the fault.

Q. Let's leave Exhibit 6 and go to the next map up, which is Exhibit 7, and it's the zone that you have called the orange sand producer. We'll take a minute and let everybody unfold their display, and we'll move up to that sand.

Is there an opportunity, in your opinion, to produce this sand in the south half of 1?

A. Yes.

Q. Is there -- Setting aside for a moment the structural fault issue, is there a material difference between the Mewbourne and the Fasken location concerning this sand?

A. I give them both thickness credit and 20 feet.

Q. The decision to be made with regards to the two locations concerning this sand package is controlled by other information?

A. Yes.

Q. And what is that?

A. Structural information.

Q. In the presence of the fault?

A. Right.

Q. All right. Let's go up to the next sand package. It's the purple one. And now we have left the lower Morrow and we're moving into the middle Morrow. This is one if the sands that Mr, Williams did not map; is that not true?

A. That's right.

Q. Now, you're displaying here a different depositional environment than the lower Morrow deposition; is that not true?

A. Yes, these are marine-influenced sands, and we project, you know, from the literature and our work through the years that they will be perpendicular to the Morrow channels.

Q. Okay, the -- Rank or evaluate the two locations with regards to the purple sand.

A. On my map it looks like the Mewbourne location has a better shot at getting the purple sand than the Fasken location. The purple sand produces in a trend south of there, and it's pretty good production and really hasn't been established in this sandbar up here. But we would hope that it would be productive.

Q. Now, let's go to the lower of the two sands that were packaged together by Mr. Williams and look first at the blue sand. That's going to be Exhibit Number 9. On the color code, why have you colored certain of these wells blue?

A. The blue indicates that the well produced out of that sand. It was perforated and produced out of that sand.

Q. Again, you have a different interpretation than Mr. Williams concerning the depositional environment for this sand?

A. Yes, I believe it's a marine-influenced sand, and it trends more east northeast direction.

Q. The original Fasken 1 well, which was discussed earlier today -- It's in Unit Letter P. And because of the irregular-size Section 1, it appears north of the subject spacing unit. Do you see that one?

A. Yes.

Q. Okay, you have -- You've got a net map here, so you have nine feet of net and ten feet of gross?

A. This is a gross sand isopach.

Q. I'm sorry, I misread your map.

Identify for us the geologic components or data here that you used to reach your conclusion about how to map this interval.

A. Well, I looked at each of the wells in this area and correlated them and picked the net and the gross numbers off the logs and used the published data to isopach them.

Q. When you compare the two locations, independent of the fault, is there an advantage to one location over the other?

A. On this map, the Fasken location is predicted to hit a middle Morrow blue sand, whereas the Mewbourne location is not.

Q. There's a well in Section 2 which is -- That's the Conoco Levers well?

A. Yes.

Q. Which sand intervals in that well have influenced your decision about the location of the Fasken well in proximity to that Conoco well?

A. Well, I've looked at all the sands in that well, and this blue sand was not tested in that well.

Q. Let's go and look at the green map, then, which is Exhibit 10, and have you identify and describe this display and the conclusions in relation to the two proposed locations.

A. The green map is mapped along the same trend as the blue and the purple. It goes from the east northeast to a west southwest direction.

The old Fasken well had nine foot of net porosity over 12 foot of gross, so project that Fasken Number 2 location would hit about 10 foot of net sand.

And I also see that sand in the Continental Levers Number 2 well in Section 2, and it was not tested in that wellbore.

Q. Does your review of the data for the Conoco Levers well indicate to you why they failed to test this zone?

A. When you calculate the water saturation in the green zone you come up with about 40 percent, and I guess they just thought it was wet. And they had tried what I call a middle Morrow purple striped sand, which is about 25 foot below the purple sand. I haven't mapped it either. They didn't get good results from that test, and I guess they just thought that wouldn't be any better.

Q. What if any effect does that have on your proposed location?

A. We don't feel the middle Morrow sands are wet, and we think that gives us some good potential.

Q. When we compare Mr. Williams' combination of those two sands which he calls the green sand and look at your green and blue sand maps, there is a substantial difference in the interpretation, is there not?

A. Yes, there is.

Q. You've had an opportunity to hear Mr. Williams testify on this subject twice now. Has he persuaded you to change your mind about your conclusions?

A. No, he has not.

Q. Based upon all this information in the Morrow, Mr. Harmon, summarize for us your geologic conclusions concerning the opportunity that you believe is afforded Fasken at its location, versus the one being advanced by Mewbourne at their proposed location.

A. We believe the Fasken location will be in a structurally superior spot, being on the upthrown side of a major fault. This is important in the upper Morrow sand that gets wet in low structural positions, and it's also important for the same reason in the lower Morrow sand.

We also feel like we can access the middle Morrow green and middle Morrow blue sands, which weren't tested in the Continental Levers Number 2 well and did produce in the first Fasken well that was drilled back in 1970 in Section 1.

Q. Have you proposed this well to the other interest owners in this spacing unit?

A. Yes, we have.

Q. And with the exception of Mewbourne, have the other interest owners proposed to participate in the Fasken well?

A. I think that's true for the most part. I'm not sure about that small interest.

Q. In addition to the Morrow, is there yet another reservoir that provides an opportunity at your location?

A. Yes, we feel like we have a good shot at the Cisco.

Q. Let's look at your Cisco cross-section. It's cross-section 11. It probably is not necessary to unfold any more of them than the one I'm about to do now.

Your line of cross-section is what, sir? You're going which direction?

A. Let me just grab a --

Q. Have you got a locator? Can you see that far away?

A. Yeah, I can. It starts up in -- It starts up in Section 3, in the northeast corner, goes to the northwest corner of Section 2, down to the southwest corner of Section 2, in the Continental well, through the Fasken location, over to the Fasken Number 1 well in Section 1.

Q. If you're using conventional log data, trying to find Cisco in this area, are you going to be able to identify any type of feature that might contain gas that could be produced out of the Cisco?

A. I don't feel like you could.

Q. What is the exploration strategy, then, for the

Cisco, and what kind of trap do you think you're trying to find?

A. Well, the exploration strategy is to use the 3-D seismic to identify Cisco reefing that has closure. And at our location we think we see about 60 foot of closure in the Cisco, in four directions. So a closed high and about 90 acres big.

Q. What does that information afford you the opportunity to do at your location that does not exist at the Mewbourne location?

A. Access the Cisco potential under Section 1.

Q. Have both Penwell to the west and Texaco to the south waived any objection about the unorthodox location of the Fasken well?

A. Yes, they have.

Q. Would you be able to access the Cisco in this exploration effort if you were required to be 1650 from the western boundary?

A. We really need to be exactly where we put our well to access the Cisco.

Q. The Morrow in this area constitutes a substantial geologic risk, does it not?

A. It does.

Q. And the Cisco also provides that same substantial risk, does it not?

Q. Looking first at your Cisco/Canyon, how far is it to the nearest commercial producer from Fasken's proposed

A. It does.

Q. What do you hope to achieve by having both those risks packaged together in one wellbore attempt?

A. We think we're reducing our risk by stacking potential pay zones.

Q. Do you ask the Commission to approve the Fasken Application and to do so without any penalty?

A. Yes, we do.

MR. KELLAHIN: That concludes my examination of Mr. Harmon. We move the introduction of his Exhibits 1 through 11.

CHAIRMAN LEMAY: Without objection, Exhibits 1 through 11 will be admitted into the record.

Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Mr. Harmon, what do you see as the main Morrow pay zone in the south half of Section 1?

A. What is the main Morrow pay zone? I think we will hit all three Morrow objectives, the upper, middle and lower Morrows.

Q. You don't weight one as better than the other?

A. I think they've all got a lot of potential.

Q. Looking first at your Cisco/Canyon, how far is it to the nearest commercial producer from Fasken's proposed

location?

A. On the cross-section, the well in the northwest quarter of Section 2 looks like it cum'd 9 BCF out of the Cisco, so that would be a commercial Cisco at a --

Q. About a mile and a quarter, plus, away?

A. It looks like something like that.

Q. Is your Cisco/Canyon a stand-alone prospect? Would you drill merely to go to the Cisco?

A. No, we feel like that's too risky.

Q. Has Fasken calculated the Cisco reserves?

A. Yes, we have.

Q. And what are they?

A. Our engineer will go into that with you, but I think he's going to say 3.8 BCF.

Q. Is that risked or unrisked?

A. It's just calculated.

Q. And you wouldn't drill for 3.8 BCF alone?

A. We'd like to reduce our risk as much as possible and stack these pays and --

Q. You just told me that the Cisco/Canyon is not a stand-alone prospect, yet you say you have 3.8 BCF.

A. That's what we've calculated if the Cisco is there like we think it might be. That's what the potential is.

Q. And what are the risks -- What is the risk that

it won't be there?

A. The risks, as I understand them, is, all these Cisco fields out here have a time structure high on them, but not all the time structure highs are Cisco fields. So there's a little bit of risk there.

Q. What type of percentage has Fasken put on getting 3.8 BCF of Cisco reserves?

A. What kind of percentage?

Q. Yeah. I mean, do you think it's a one-in-four chance, a three-in-four chance?

A. I think it's about a one-in-ten chance.

Q. A one-in-ten?

Mr. Harmon, let's go through your isopachs, starting -- Let's make sure I've got them in order here. 6, 7, 8, 9 and 10, I believe, are all of them. And starting with Exhibit 6.

A. Which one is that?

Q. The brown sand.

A. Okay.

Q. We'll start at the bottom and move up. Is there -- First, looking overall at the Morrow, north of Section 12 is there a commercial Morrow completion?

A. Not on this map.

Q. In any Morrow zone, I'm talking about. So on this map --

A. Do you want to go to the production map?

Q. -- there is no Morrow completion in any zone?

A. All the production is on this Exhibit 1.

Q. Okay, so there is no commercial Morrow production north of Section 12 where the Texaco wells are on this map.

Looking at -- a little bit to the north of Section 1, in Section 36, you have a lower Morrow brown well there with 40 feet of sand. Why was that one dry?

A. It was either tight or wet.

Q. Okay. Same thing over in Section 34. Apparently the well in the southwest quarter of Section 34 has 36 feet, and that was noncommercial?

A. That well has got a lot of porosity in it, and the lower part of the sand is wet, and they just perf'd the very top of it, and that well cum'd .7 of a BCF in two years, and it was plugged in 1979.

Q. Let's move on to your Exhibit 7, the orange sand. In just looking at Section 1 and 12, how do you resolve the amount of orange sand to the north of Section 12 with lack of production?

A. It doesn't have any porosity greater than 8 percent --

Q. So as you're --

A. -- the Fasken well in Section 1.

Q. So as you're moving north from the Texaco Levers

Number 2, you're losing porosity?

A. You do at that location.

Q. So the further north you move, the less porosity you have in this sand?

A. You see six over eight feet of -- six feet of porosity over eight feet, up in Section 34 in the east half, some porosity up there.

Q. And the Levers Number 2 well, what was the pressure in that well in this zone? Do you know?

A. Texaco testified that they drill-stem tested that well, and it flowed 2 million a day on a drill stem test. And I just heard Brian said the pressure was 1370. Now, I thought they said 1350, and when I first talked to them they said 1300, so it's in that range.

Q. Are you worried about depletion of the pressure to the north of that zone?

A. I think as you move north, you move away from the depletion.

Q. Well, if there's this much reservoir, miles and miles of it to the north, wouldn't that help sustain the pressure?

A. You'd have more pressure as you move north.

Q. Well, shouldn't that show up in the Levers Number 2, the northernmost producer in this pool?

A. The Levers Number 1's pressure is 450 pounds.

And then as you move north to the Number 2, you're up to 1300. So I would suspect as you move even further north, you have more pressure.

Q. Has Fasken done any volumetric calculations to prove that?

A. Go ahead and ask the engineer.

Q. The next one, Exhibit 8, the purple sand. A simple question. I mean, you have it east-west here. Isn't that contrary to the trend you show on your Exhibit 5?

A. No, I think it parallels it pretty well.

Q. Is that east-west or is that northeast-southwest?

A. Which one is Exhibit 5?

Q. Exhibit 5, your blow up from the article --

A. Okay.

Q. -- that states that the middle Morrow trend is -- or the lower Morrow trend is northwest-southeast, middle Morrow trend is northeast-southwest. How come this is just straight east-west?

A. It's pretty much east-west.

Q. Why?

A. That's how the sand is mapped out.

Q. So everything doesn't accord with this map; is that correct? Exhibit 5?

A. I think this is pretty close, yeah.

Q. So sometimes there's a little reversal of direction on some of these sands, as far as their depositional trend?

A. You mean is it perfect? No, I wouldn't say it's perfect.

Q. Okay, it might waver a little bit?

A. Sure.

Q. Finally, let's go to your Exhibits 9 and 10 together. I believe they're both the -- the two middle Morrow maps.

Looking at Fasken's proposed location on either map, why does Fasken want to drill in a noncommercial trend in the middle Morrow?

A. We think we'll access middle Morrow sands there, and we think they do have potential.

Q. Based on the Fasken well in Section 1?

A. Partly on that. It's got both sands in that well.

Q. Why was that well a poor producer?

A. Well, that's a good question, and I think it's mostly a permeability thing.

Q. Well, based on what you've got here, looking at the blue map, you know, there's really very little difference in sand thickness between the Fasken well in Section 1 and the Texaco Levers Number 2 in Section 12.

What accounts for that?

A. Why don't you say that again?

Q. Well, look at your blue map. You've got nine feet of sand in the Fasken well in Section 1 and 10 feet in the Levers Number 2 well in Section 12.

A. Okay.

Q. What -- Roughly the same values. Why the big difference in productivity?

A. It's probably -- I'd have to speculate, but the -- You know, the Fasken well was drilled by Monsanto back in 1970, and that was 27 years ago, and I think we've learned a lot about the Morrow and how to produce it in that amount of time, and...

These middle Morrow sands have a lot of chloride clay in them. That well was acidized, and acid is not the best thing to put on a middle Morrow sand. That chloride clay tends to plug up your permeability. And I think we've got a lot better completion techniques these days, and I think that probably would have been a better well today than it was back in 1970.

Q. Looking at your sand maps, overall, one question comes to mind. Other than the purple sand, you basically show that Mewbourne's Morrow location has no Morrow sand. Why did Fasken elect to participate in the well?

A. If you don't elect to participate, you're out of

the well.

Q. What's that again?

A. If you don't elect to participate, then you're not in the well. And we wanted to participate in the drilling of a Morrow well out here.

Q. Based on your maps, there's very little chance of getting anything. Why throw the money away?

A. We don't feel like we'd be throwing money away.

Q. So Mewbourne's location isn't as poor as you map it in the Morrow?

A. We think they have potential there. I haven't mapped all the sands in the Morrow, and they're --

Q. All right, Mr. Harmon, when did you first start looking at the Morrow in this area?

A. In January.

Q. After Fasken received Mewbourne's proposal letter?

A. Yes.

Q. Now, looking at your Exhibit 2, Mr. Harmon, the structure map, first, do you think structure is critical in the middle Morrow?

A. No, we don't think the middle Morrow sands are wet.

Q. In looking at -- and I forget how Mr. Kellahin referred to it. He might have referred to it as fault line

number 1, I think, the S-shaped one in the middle of the map; is that correct?

A. Yes.

Q. Do you think that fault will separate the Mewbourne location from the Levers Number 2 location in Section 12?

A. Yes, I do.

Q. In your opinion, would that mean that any effect of the Mewbourne well would be -- on the Levers Number 2 well, would be minimal?

A. Say again?

Q. Would that severely reduce any effect of the Mewbourne location on the Levers Number 2 well?

A. As far as drainage? Yes.

Q. Would it also mean that these Morrow wells are draining significantly less acreage, perhaps, than 320 acres?

A. I don't know about that, but maybe different acreage than you guys have been circling on your maps.

Q. Do you consider that S-shaped curve a major fault line?

A. Yes, it's got significant throw to it.

Q. Why? What moves it into major, in your mind?

A. When you get up to 100, 150 foot of throw on a fault that -- I would consider it major.

Q. Okay. But it stars and ends. I presume it's not all 100 feet, all the way along this fault line; is that correct?

A. That's correct.

Q. How -- You know, where would it be 100 feet, where would it be 50 feet and where would it be 25 feet?

A. I'll just leave that to Lou Lint. He can go into that with you. He's got estimates of that.

Q. Was your location picked solely by you?

A. No, it was in conjunction with --

Q. -- Mr. Lint?

A. Yes.

Q. Does Fasken have any reserve estimates on the various Morrow sands?

A. Yes, and you can go into that with our engineer.

Q. With the engineer?

Finally, back to the Cisco, you talked about -- How many feet of closure in the Cisco?

A. Sixty feet.

Q. Is that 60 feet a maximum?

A. Yes.

Q. Okay. And what is the minimum closure?

A. Why don't you ask Lou? He did that work.

Q. The last thing is the -- Looking at the Cisco again, the Continental Levers Number 2 in the southeast

quarter of Section 2, that was a disposal well; is that correct?

A. That's right.

Q. Why would Fasken want to drill so close to that well?

A. We're going to be updip and we've got a closure that we feel like has some gas in it. It would be kind of nice to have a disposal well close by too, that we could put water in it.

Q. What? About 6 million barrels were injected into that well?

A. Yeah, and we get some water in our well, we'll put some more in there.

Q. Is that well owned by Penwell?

A. I think it is.

Q. Did Fasken trade any data with Penwell?

A. Trade data?

Q. Trade data? For -- Penwell waived objection to your location; is that correct?

A. Yes, they did.

Q. Did Fasken or Matador provide any seismic data to Penwell in exchange?

A. We let Penwell look at our Cisco interpretation. We did not give them any data.

MR. BRUCE: I pass the witness, Mr. Chairman.

CHAIRMAN LEMAY: Mr. Carr?

MR. CARR: I have no questions.

CHAIRMAN LEMAY: Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Exhibit 2 that shows the fault lines at the top of the lower Morrow, do those fault lines extend up into the middle and upper Morrow?

A. Yes, they go all the way up into the Strawn formation.

Q. Okay. Should I see some impact of those fault lines on your isopachs for the middle and upper?

A. No, they were post-depositional faults. It happened after the deposition of the Morrow.

Q. It's been intriguing me all along, and I've been trying to find this answer, to the exclusion of some other topics.

A. Mr. Lint will address that, but on the -- Well, I'll just let him address that. But we don't see any isopach differences on each side of them, and they go way up into the Strawn. So they're much later than the Morrow.

Q. Did you see deltaic influence in your lower Morrow interpretation as the Mewbourne geologist testified?

A. Yes, those are channel sands.

COMMISSIONER BAILEY: Okay. That's all I have.

CHAIRMAN LEMAY: Commissioner Weiss?

EXAMINATION

BY COMMISSIONER WEISS:

Q. Maybe somebody else will answer this, but how do I judge the goodness of your seismic maps here?

A. Our geophysicist will go into it.

COMMISSIONER WEISS: Thank you. That's the only question I had.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. You have line 70, line 84. Your interpretation is based on those two lines, basically?

A. No, this is 3-D seismic. It covers the entire area, and these are just some displays that we pulled out of the 3-D, and he'll show them to you.

So those are lines out of the -- kind of the entire volume. 3-D seismic has a point every 110 foot inside this blue box, and we've got four lines on here, one north-south going through the Fasken location, and an east-west one going through there, so you can see the rollover in all directions on the Cisco. And we'll show you line 70 that goes through the Mewbourne location, and it will clearly show you that fault that we've been talking about, separates Mewbourne from Texaco and Fasken.

And then we've got another line called "ARB

line". You can see it over here to the southwest of the display. And we brought that to show you that major fault over there, and everyone agrees that fault's there. And when you compare it with this one over here, you'll be comfortable with that fault being there.

Q. I guess this -- I don't have the benefit of the seismic. I could take that northeast-southwest-trending fault, fault line 2, that you brought over there, bring that just to the -- or splitting the Fasken/Mewbourne locations, and following your fault trace on line 70, I wouldn't need that other fault.

A. Say that again?

Q. Well, what you're showing, as I understand it, is the -- Your location would be on the upthrown side of the fault, structurally higher.

A. Yes, sir.

Q. Fasken's higher than Mewbourne. You have this fault down here, this fault, trace line 2, dying out before it reaches the relationship of those other two wells, and you put in another fault in close proximity to what looks like the Mewbourne location.

In the absence of that could you not, for an interpretation, erase your fault line 1 and extend fault line 2 through that -- or just to the west of the Mewbourne-proposed location, thus giving you the same

relationship of Fasken upthrown, Mewbourne downthrown?

A. No. You know, we have a data point every 110 foot, and so when you look at line 70, you know, you'll see the fault right there, and you can follow it across, and you won't pick up the other fault, fault number two. And then we have a north-south display we'll show you that neither fault is on.

So if they connected, it would be on that line, and it's not there.

Q. Okay. Obviously I don't have the data. I'm just looking at --

A. Well, we're going to present that.

Q. Yeah, okay, good, I'll --

A. We'll present that.

Q. Is it fair to characterize, maybe, your location as a kind of a wildcat, the way you presented it, in terms of risk and objectives, than the other location, higher risk, maybe higher potential?

A. You could consider it that.

Q. Would you consider it that?

A. Yes.

CHAIRMAN LEMAY: Okay, that's all I have.

Additional questions?

You may be excused.

COMMISSIONER WEISS: Are we done with these

exhibits?

MR. KELLAHIN: Everything except the structure map. It's got fault lines. If you'll save that one --

CHAIRMAN LEMAY: Okay.

MR. KELLAHIN: -- we'll go into that some more.

CHAIRMAN LEMAY: What do you have, a geologist, a geophysicist, an engineer, and no landman?

MR. KELLAHIN: (Nods)

CHAIRMAN LEMAY: Okay. Might ask some land questions here, just to get some information.

LOUIS LINT,

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. Lint, for the record, sir, would you please state your name and occupation?

A. My name is Louis Lint. I'm a geophysical consultant.

Q. Mr. Lint, did you testify before the Division Examiner in this case?

A. Yes, I did.

Q. You are a consultant to Fasken in this matter?

A. That's right.

Q. As part of your work as a consulting

geophysicist, do you provide consulting information to companies like Fasken?

A. That's right.

Q. When and where did you obtain you degree?

A. I have two separate BS degrees. I have a BS in geology and a BS in geophysics from the University of Kansas, 1978.

Q. Summarize for us your employment experience as a geophysicist.

A. I have 19 years as a practicing geophysicist. I've worked for major oil companies, large independents, very small independents, and presently am consulting on my own.

Q. In order to come to your geophysical conclusions concerning the subject matter here, did you have available to you 3-D seismic data?

A. Yes, I did.

Q. In addition to that data, did you also have two-dimensional seismic data?

A. Yes, I did.

Q. In addition to that, you had the conventional log information that all the other geologists had?

A. That's right.

Q. Were you able to utilize the seismic data, or was it of such a quality that it was not usable?

A. It was a very good quality for the area.

MR. KELLAHIN: We tender Mr. Lint as an expert geophysicist.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (By Mr. Kellahin) Mr. Lint, let's take Exhibit 12 and have you give us a quick review of how the data is generated, how it's stored and how you're able to retrieve and use it to pull these trace lines, or any other combination of trace lines that you desire to examine.

A. Exhibit 12 is a close-in reference map of the area in question. You can see the north part of Section 12 and the south half of Section 1.

I'd like to refer to Exhibit 2 as we're talking about this. This is a 1-to-1000 close-in shot of the area inside the blue on Exhibit 2. The blue outline in Exhibit 2 is the limits of the entire 3-D survey. I made Exhibit 12 focus in with more clarity on the area in question.

3-D data, when you acquire 3-D data, you are basically -- You are very familiar with the old 2-D display lines. Two-dimensional data is a line of data underneath where you shot your line. 3-D data, you're looking in three dimensions. Not only are you collecting data in this direction, you're collecting it in a very large number of locations.

Inside this blue area, I have approximately 12,000 data points, separate, discreet data points derived from the 3-D. Every 110-foot square I have a data point in here. That was the way the 3-D was designed.

Q. By the fact I have those discreet 110-foot bin spacings, is the technical term, I can connect those dots in any fashion I want to produce 2-D-appearing seismic displays.

Q. Subsequent to the last hearing, did you and Mr. Harmon go back and re-examine the seismic information insofar as it is involved with any of these fault lines?

A. Yes, we did.

Q. And as a result of reworking, re-examination and re-evaluation of all that data, did you make any adjustments or change to what I've called fault line 1?

A. No, I did not.

Q. With regards to fault line 2?

A. No, I did not.

Q. The changes were made to the other three fault lines?

A. That's correct.

Q. Are there any changes made to any of those that would materially affect your opinions or conclusions from last hearing?

A. No.

Q. And any of your opinions and conclusions for today's hearing?

A. No.

Q. Let's start with the Cisco. Let's go back and have you tell me how you are exploring for a Cisco opportunity here using 3-D seismic data.

A. Exhibit 13 illustrates the methodology I used for my Cisco seismic interpretation. I used three separate approaches to confirm the presence of a Cisco reef buildup.

I made a time structure on top of the reflector I identified as the Cisco reef. That would represent your blue horizon here. And basically, you just pick the times off your seismic data and make a map similar to a subsurface map, only it's a time map.

The second criteria, the third Bone Springs sand is another seismic reflector that's reliable to carry across the area. I make an isochron -- in effect, a geophysical isopach -- between that Bone Springs sand and the top of the Cisco. I should see thinning between that sand and the reef whenever I cross the top of a reef.

Then as a third check I made an isochron from the top of the Cisco to the top of my lower Morrow marker. If I'm actually crossing reefal buildups I should see some thickening there. So I map that isochron thickening also.

Q. Let's leave the illustration in front of us so we

can follow your presentation, and let's look at the Exhibit 14, which is a depiction of the blue line on the illustration, and it shows top of Cisco.

A. That's correct.

Q. Let's look at 14, and before you reach your conclusions give us an understanding of our perspective and how to read the color code.

A. First, Exhibit 14 is the same scale and area as Exhibit 12. The dashed line you see and the heavy black lines show you the 320-acre unit in question, and the color bars are equal-time contours from the actual time mapping of the top-of-Cisco event, with the red colors being the highest points and the blue colors being the lowest points on the map.

Q. When you're looking for a Cisco opportunity, what is the seismic data allowing you to see?

A. With the frequencies and the velocities we have here, the resolution of the data here is roughly about 60 feet.

Q. You're attempting to identify a structure? You're looking at the top of the Cisco?

A. That's correct.

Q. And as you move through your data, you can see that from the surface to the top of the Cisco is a lesser distance at the Fasken location --

A. That's correct.

Q. -- than it is at the Mewbourne location?

A. That's correct.

Q. How do we see that depicted in the color code?

A. The red color is a time of about .942 seconds. The Mewbourne location is down at around one-point -- something below one second. The exact number is written on here.

Q. Okay. With the time structure map, now, you can see the change in the top of the Cisco structure?

A. That's correct.

Q. The next thing to look is to find a marker so that you can judge the relative distance in the top of the Cisco feature to some control point?

A. That's right.

Q. Let's look at Exhibit 15 and have you describe for us how you do that.

A. Well, after I had established a four-way time closure for mapping straight time, then I went through and picked the third Bone Springs sand seismic event and compared it down to this Cisco map that I previously made. I have observed an isochron thinning between those intervals at the same location, which adds credence to the fact that we do have a Cisco reef buildup due to the thinning of the sand over the top.

Q. With the top-of-Cisco time structure map by itself -- What can you do with that?

A. I've done quite a bit of regional work in the Cisco out here. There are three very prolific Cisco fields in the immediate area. All three fields I've had a chance to look at. All three exhibit 10 to 15 milliseconds of time closure over the top of them.

So every Cisco field, proven Cisco field, has a time high over it. But every time high out here does not necessarily have a Cisco-producing field under it.

Q. Okay.

A. So I used separate -- these other methodologies to convince myself more that there is the possibility of a Cisco reef buildup.

Q. Once you have the time structure map on the top of the Cisco, then, and look at the isochron on the third Bone Springs sand, what does that let you do?

A. When I see that thinning, that adds some credence to the fact that there is actually a Cisco high under here.

Q. Okay. When we look at the third display, it's another isochron, and you're looking at the top of the lower Morrow?

A. Correct.

Q. Describe for me why you do this and what it means.

A. The Cisco reef has some significant thickening when you climb on the shelf, and it changes very rapidly through this area. I was looking for some verification that I actually have reefal buildup, some kind of thickening within the Cisco unit.

Since I've already picked the lower Morrow, I use that as my base, isochron between the top of the Cisco, exceptionally thick areas should show areas where I have the potential to have a Cisco buildup. And on this map of Exhibit 16 the dark purple and dark blue areas represent areas of thick isochron interval, therefore again trying to confirm the presence of a Cisco reef.

Q. Is this the first application of -- first attempt to drill a well under this Application in this study area?

A. In this particular 3-D area?

Q. Yes, in this 3-D area.

A. That's right, that's correct.

Q. Have you come to any conclusions concerning the size and the shape of the Cisco structure feature?

A. Yes, I have. As I mentioned, I've done quite a bit of regional work on the Cisco out here. The known producing fields have very low relief, but very prolific. The time structures and time isochrons that I see at this location are very similar to the ones I have seen at the other three producing fields.

Q. Let's look at that comparison, Mr. Lint. If you'll turn to Exhibit 17, would you identify and describe what we're looking at here?

A. This is a top-of-Cisco map that compiles all the 3-D data available, which is shown in that small blue outline, a 2-D line that I had access to that cuts diagonally northwest to southeast through the entire area, and the subsurface control outside of those two spots. And all of it was utilized to compile this map.

Q. Okay. When we look at the opportunity to determine the size and the shape of the Cisco structure to be accessed at the Fasken location, describe for us what that size and shape would be.

A. At the Fasken location I see a confirmed 10-millisecond closure over about 90 acres. Ten milliseconds would translate to roughly 75 feet, but I know there was only a 60-foot oil -- or a gas column that springs. I decided that 60 feet was an acceptable number to run on the Fasken well location.

Q. Okay. Applying your knowledge and expertise, can you identify for us any potential issues or concern about the seismic data and how you have resolved those concerns?

A. I think some of the displays will speak for themselves. When they get that, you can see the quality of the data out here.

I have done velocity analysis to see which things can be velocity-induced, and I am comfortable with all the maps that I have produced.

Q. Okay. Let's turn back to Exhibit Number 2, which is our structure map that's got the faults on it. Let's start with fault line number 2. Have you reconfirmed to your satisfaction the orientation, the magnitude of throw and the terminus of both ends of the fault?

A. Yes, I have.

Q. Let's look to see how you've made that study. If we'll start with the next exhibit, it's Exhibit 19. It's the ARB-line. Do you have that before you?

A. Yes, I do.

Q. This line runs perpendicular to the fault?

A. that is correct. It is shown in that location in the red line on Exhibit 2.

Q. So when I look at Exhibit 19 and I look down on the left vertical scale, there's some codes there. Bone Springs, Cisco, what else?

A. Lower Morrow and Mississippian lime.

Q. All right. Let's start with the Bone Springs. How is that color-coded?

A. The orange color represents the third Bone Springs sand interval.

Q. The Cisco?

A. The blue peak represents the Cisco interface.

Q. And what does the yellow indicate?

A. The yellow, with the red line on top of that, is the lower Morrow section, the base of that lower Morrow shale that everyone correlates against.

Q. Okay. When we look at ARB-line, it's got a certain trace and line code on the top so that when you look at this display you can find your position on Exhibit Number 2, can you not?

A. Yes, if we had the line and trace numbers around the edges we could, yes.

Q. All right, sir. But you've done that independently and --

A. Yes.

Q. Okay. What is the purpose of the red vertical line, then, on the bottom of Exhibit 19?

A. That shows the fault that's been identified in the southwest corner of the area.

Q. Describe for us that fault.

A. It appears to be a post-Morrow fault, breaks through the entire Morrow-Mississippian section, has about 200 feet of throw -- that's estimated from a little over 20 milliseconds of throw I see here on that location.

Q. Okay. As we move along the fault going to the northeast, can you tell us what happens to the fault?

A. The throw begins to die as we go to the northeast.

Q. Let's look at seismic line 70, which is your Exhibit Number 20. Again, you've used the same color code?

A. That's correct.

Q. On the bottom of the display, you've shown two vertical lines at this point, and then between those lines is a vertical line?

A. That's correct.

Q. Describe for us what we're seeing.

A. This is an east-west line pulled out of the 3-D data set, as I was speaking. I've just simply connected the dots in a straight line at the location shown on this index map.

This line runs east-west directly through the proposed Mewbourne location, which is shown by the green line. It shows the presence of another fault I've identified, a post-Morrow fault, that is down to the east, with the Mewbourne well on the east side of that fault. I see no other significant faults going west from there.

The southwest corner fault, number 2 fault, if it was present within seismic resolution, it would project into that line.

Q. Okay. Let's move over to fault line 1, which is the one just west of the Mewbourne location. You have

found it on line 70, but that's not the only -- that's not the exclusive data point to determine the length and the location of that fault; is that right?

A. No, it is not. I base -- In fact, what I have is, every 110 foot I have one of these profiles. So in essence I have 160 lines that look like this, that run parallel 110 foot apart, through the whole data sheet.

Q. Okay. Is there any reason that the fault appears to follow the minus-71-foot contour line on the structure map? Or is that simply a coincidence?

A. I'm going to have to have you rephrase that.

Q. Yes, sir. It has a shape to it, and the shape appears to follow the contour line of the minus-71-foot --

A. No, that is just where the fault trace -- the fault trace is found on each seismic line --

Q. Okay.

A. -- in the data set.

Q. When you look at that fault, the fault line 1, what's the maximum displacement of the fault?

A. The maximum displacement is at the Mewbourne location and slightly south of there. And again, it's pushing 20 mils of throw, and I would equate that 250 feet.

Q. As we move south from the Mewbourne location following that fault line, does it continue to maintain that magnitude of throw?

A. Toward the southern end of the black line it starts to lose that throw and ends up dying fairly rapidly toward the end.

Q. And how do you know that?

A. As I walk through these profiles every 110 feet I can see this fault healing itself, and eventually I get to a point south of here where I see no evidence of faulting.

Q. Can you apply your expertise and come up with a rate of diminishing displacement over a certain lateral distance?

A. I believe I can. I can measure -- Within the resolution of the data I can tell from 150 feet down to 50 feet how much distance it's taken for that fault to die.

Then to go below the resolution of the seismic, I simply project that predictable rate, and that would translate to about -- to go from the 50 feet -- Then these black lines probably represent where the fault has 50 feet of throw, where they terminate. To see past that, I will predict it on the observed rate of decline I've seen on the throw. And to lose that remaining 50 feet of throw, it's going to take me just under another 1000 feet of linear distance.

Q. Let's use Exhibit 20, now, to move over to fault line 2. I'm going to use the same exhibit that you're on. That's a line that's projected east-west, and it's at the

approximate end point, the northeast end point, of fault 2.

A. That's correct.

Q. Do you see fault 2 on line 70?

A. Just a very slight indication, and that would tell me that, as I have terminated it just short of that, that we're looking at something less than 50 feet of throw there.

Q. The Chairman was suggesting to Mr. Harmon it might be possible to connect fault line 2 on the north with the other line up there in Section 2 and make some kind of connection.

A. If that was true, we would be able to see that fault on this display, and on the roughly 20 lines -- or 20 to 30 lines I would have between those faults. I see no evidence of those faults connecting.

Q. Okay. When we look at the data and the resolution falls below 60 feet, then you have to apply your experience and expertise to determine how far the fault then extends beyond the point at which you can see it with the data?

A. That would be correct.

Q. Does this fault line 2 display a similar lessening of fault displacement?

A. It does, similar to the south end of number 1. So roughly within 1000 feet of the end of that line, you're

at zero throw.

Q. Is there any reasonable probability under your analysis that fault line 2 would isolate out the Fasken location from the feature in which the Texaco Levers 2 well is being produced?

A. In my opinion of this data, I would say the Fasken well is not separated from the Texaco well.

Q. In your opinion, then, the Fasken location is in the same fault block, if you will, with the Levers 2 well?

A. I believe so.

Q. Let's look at Exhibit 21, which is seismic line 80. This is the one that runs north and south, and it runs right through the Fasken location?

A. That's correct.

Q. What's the purpose of showing us this line?

A. This line has two purposes. The first purpose was to show the north-south time rollover the Cisco event. You can see there's a very prominent north-south rollover. It also illustrates how quickly the Cisco shelf builds into the reef.

The second --

Q. You're looking in the blue-shaded interval?

A. Yes, sir, at the blue interval.

Q. And what are you seeing that you're describing to us?

A. The north-south rollover, the rollover of that seismic event to show time closure on the top of the Cisco reef, with the very steep dip toward the front, which we know is the geologic model out here for the Cisco shelf edge.

Q. Okay.

A. And then the second thing this line helps to show is running north-south directly through the Fasken location, like it does, if the number 2 fault was to come through with any significant throw, it should be obvious on this line. And I see no indications of that fault on this line.

Q. And you're looking at the point of the display where we have the vertical green line?

A. That's correct.

Q. And that's the Fasken location projected on this display?

A. That's correct.

Q. To the left of the green line are two vertical red lines. What are those?

A. Those are some pre-Morrow faulting. In this case, the faults do not break through the lower Morrow section and just break the Mississippian, as opposed to the post-Morrow faulting we see on this map.

Q. You've shown us a fourth illustration, and it is

line 84. It's marked as Fasken Exhibit 22. Let's turn your attention to that line. This runs through the Fasken location, and it's running east-west?

A. That's correct.

Q. What's the point, and what's the purpose of the illustration?

A. The main purpose of this line is to show the east-west time rollover at the Cisco for the Fasken location, which -- At the top of the blue you can see the obvious time rollover at the Fasken location.

It also, again, helps to illustrate the faults not continuing across. Again, if the number 2 fault went on past the east of the Fasken location, I would expect to see some obvious break here. I don't. And if the number 1 fault continued with some significant throw to the north, I would expect to see it on this line, and I do not see that one either.

Q. When we look at fault line 2, there's some subsurface geology that Mr. Harmon and Mr. Williams have looked at that convinces them that there is, in fact, a significant fault at fault line 2?

A. That's correct.

Q. And you have used your information to confirm that fault?

A. That's correct.

Q. With that verification by the subsurface geology for that fault line, it gives you a certain character and depiction of the fault line on your 3-D seismic data, does it not?

Q. Is that a signature such that you can look to see if that signature is repeated elsewhere in your database?

A. Yes, it is.

Q. And how do you make the comparison between fault line 1 and fault line 2 with that type of methodology?

A. I have some blown-up displays of the seismic lines you have. The two large-scale exhibits you see are basically the same blown-up displays of some exhibits you already have.

The line on the right is Exhibit 19. Now, the only difference between the blown-up exhibit you see and the one in your hands is, I have taken that one and just reversed it, so that we're looking at it from the different direction. I did that so that both vaults are now facing the same direction.

As you can see on the exhibit on your right there, Exhibit 19, that is the proven fault, the fault that everyone seems to accept, based on the subsurface control. You can see the yellow and green intervals are definitely broken, with up being to your left. And you'll notice highlighted in the hot pink color there, various events

that are associated with faulting.

The one above, you see some significant drape in that one high reflector I've highlighted. And then you see some random events which are diffraction artifacts due to a process we use to collapse a physical phenomenon known as diffractions. It requires knowing accurate velocities to correct those completely. They are a very indicative signature for fault traces.

If you move over to the display on the left, that is a duplicate of line 70, Exhibit Number 20 in your package. The fault in question is where the highlighting is again. The Mewbourne location is that faint green line. You see the exact same character that I see at the undisputed fault.

With those two looking so similar, with the diffraction artifacts I see in there, I see no reason to dispute the validity of that fault, and for all practical purposes they're identical.

Q. Summarize for us your conclusions, Mr. Lint.

A. In the process of analyzing the 3-D data here, on the Cisco horizon I see a 10-millisecond time closure on top of the Cisco reef at the Fasken locations. That is the only four-way time closure on the unit in question. All the known Cisco fields have a similar signature.

As to the Morrow, I see a reliably mappable

interface in the lower Morrow to make a structure map, which has located several post-Morrow faults that will affect the questions we have here today.

MR. KELLAHIN: Thank you, Mr. Lint.

Mr. Chairman, we move the introduction of Mr. Lint's Exhibits 12 through 22.

CHAIRMAN LEMAY: Without objection, those exhibits will be entered into the record.

Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. Are these faults you show, are they always sealing faults?

A. I would expect a fault with those kind of throws to be sealing. I have not done any specific analysis of fault-sealing in the Morrow.

Q. Could the lower Morrow connect to the middle Morrow?

A. If the juxtaposition is absolutely correct. We're talking about sands that are 20 to 30 feet thick. If they happen to line up exactly, maybe.

Q. Some of these faults are pretty short. Could there be drainage around the ends of the faults?

A. The sand would have to go around the edge of the fault.

Q. Now, which map was used to determine the size of the vertical closure?

A. For the Cisco?

Q. Yes, yes.

A. Which map?

Q. Which exhibit?

A. Exhibit -- Well, a combination of Exhibits 14, 15 and 16. But those exhibits were derived from -- partly by Exhibits 19 through 22.

Q. What -- I mean, what -- I believe you said, or maybe Mr. Harmon said, that you expect a 90-acre area?

A. That is the 10-millisecond closing contour.

Q. Where do you -- Can you show me where that is on the map?

A. It extends slightly off the map to the northwest, out of the area in question.

Q. I'm to --

A. When you look at Exhibit 17, it exhibits the entire closure, as derived from the 3-D and the 2-D and the subsurface.

Q. Is Exhibit --

A. This is a piece of that. This is just a southeast segment of the entire closure.

Q. Is Exhibit 17 -- I mean, is this a seismic map, or --

A. That is derived from --

Q. -- is this a structure map?

A. Yes, that is a seismic-derived structure map, smoothed considerably to take out all the little bitty wrinkles.

Q. And what is the maximum height here again?

A. I feel the realistic maximum height is probably 75 feet.

Q. And what range of error do you have in that?

A. Considering the velocity problems I could have out here, considerable. I think there is a Wolfcamp high-speed carbonate that can develop in here. This may be a false time structure. That's what makes the Cisco such a high-risk prospect. We're looking for 50 to 75 feet of closure. It wouldn't take much to make that go away.

Q. You could have a range of error here of what? Sixty to 90 feet?

A. That's correct.

Q. There's often significant Wolfcamp velocity problems between the third Bone Spring and the top of the Cisco?

A. I wouldn't call it significant from the standpoint of -- You're adding 200 feet of extra Wolfcamp. That would make a 5-millisecond pull-up, as opposed to a section without that. Five milliseconds is roughly 35

feet.

Q. So that would cut the closure in half?

A. It could.

Q. Okay. So you're looking at a 75-foot map with a 70-foot range of error?

A. That is correct. That is what makes the Cisco high risk. But there are no fields without time highs that have been established at present. The only place you could possibly have a cisco would be where you do have a time high.

Q. I'm looking at Exhibit 17. Is this based on 2-D or 3-D seismic?

A. The outline marked "3-D outline" -- There's a box on there; it may or may not be highlighted blue on your exhibit. Inside that is derived from the 3-D data.

There's also a diagonal straight line you'll see. That is derived from 2-D data that I have examined. The rest is derived from subsurface.

Q. Well, I mean, can you fabricate a northwest-southeast 3-D line?

A. I could, that would parallel that 2-D line exactly.

Q. Have you?

A. Yes, I've made hundreds of ARB lines through here.

Q. Do you have that with you?

A. No, I do not.

Q. Wouldn't that be the critical line to show the separation between your hypothetical seismic event at the Fasken location and the Springs pool?

A. It would be off of the area in starting and starting to release proprietary data, or proprietary information.

Q. So you're not going to show that line today?

A. No.

Q. Now, referring to your Exhibit 22, how did you identify the Cisco seismic event that's mapped on Exhibit 22?

A. On Exhibit 2, you'll notice some of the wells have triangles around them. Those are wells where I took sonic logs and converted them to synthetic seismographs, which is a standard geophysical method to identify events on a seismic data set, correlated directly to a sonic log in a well.

And I had -- As you can see, I had three synthetics directly within the 3-D shoot and several near the edges. All tied the data quite well.

Q. I'm just looking at this. I mean, you could just -- To my untrained eye you could say that this seismic event just continues, looks like a pretty thick line

heading -- just continuing to trend upward from your --

A. If you did not have access to the other 10,000 data points to the northwest of it, yes. But I do, and that cannot be -- It would be a bust in your correlation, something we all take care of when we analyze 3-D data.

Q. Well, do you have any immediate well control to the west to verify this purported Cisco/Canyon seismic event?

A. You mean west outside of the 3-D shoot?

Q. You don't have a sonic log on that well in the southeast quarter of Section 2, do you?

A. I have identified it -- Maybe some methodology here is in order. Since I have the three triangle spots as synthetics within the 3-D data cell, from those I identify, tied to sonic logs where I know exactly what even I'm mapping, I get a seismic signature. That is laid on here and looked for a best-fit match. Those three synthetics, at the points they tie the 3-D data set, tie very, very well on those three parts.

From those three starting points, I then interpret the whole data set. And in order to stay on the same reflectors, this is the interpretation, and these are just panels that are drawn out of that, yes. If you have only -- If this was just a 2-D line, you would make a misinterpretation. This is a good example to show the

value of 3-D seismic.

Q. Is there a chance that your proposed location is connected to the Springs field to the northwest?

A. Very good chance that that time closure could go away, and it could be just a nose coming off the Springs.

Q. Okay.

A. But we do know we have a strong nose identified coming down from Springs. Any pimple on that should be productive.

Q. And the Springs field is updip from this location?

A. Yes, it is.

Q. And if there is no closure, then the gas would migrate updip to the Springs pool and already been produced?

A. Yes, just like it does.

Q. Your maps, your exhibits, are in time. What type of velocity function are you using to convert the time values to?

A. At every well-control point -- Now, seismic is measured in time. You see seconds on the side of my displays. Logs are measured in depth; you see feet. The connection between feet to seconds is feet per second; that's velocity.

A standard geophysical technique -- At every well

point I know the subsurface point. I also know the time point. I can calculate a very accurate velocity point for any particular horizon at that well tie point. For the rest of the data -- I know the time values for the rest of the data. So I contour a velocity gradient, simply as I would contour any other surface map.

I then take that and extrapolate it through every time data point within the 3-D. I multiply velocity by time, I get feet. That gives me a subsurface control point at each one of these 12,000 points, which I then contour as Exhibit 17.

Q. And in the Cisco/Canyon, what are you using to convert time values to feet, just roughly?

A. It's roughly a little -- Two-way time is about 16,000 feet per second. It's about 8000 half-velocity time.

Q. Now, there is a small amount of time closure at this Fasken location, is there not?

A. There is a closure within the closure at the Fasken location, yes, a smaller closure within a larger closure.

Q. But with these small figures we're talking about, it could eliminate the structural closure at the Fasken location?

A. Excuse me?

Q. If velocity changes, could velocity changes eliminate --

A. Oh, yes. That is our problem. That's what makes this Cisco high risk. That's why it cannot stand alone as a primary objective.

Q. Does 3-D seismic work in finding -- Well, let's look at your Exhibit 17 again, this, I guess, potential structure map. What you're showing here is a little event, kind of a satellite to a major field?

A. That's correct.

Q. Does 3-D seismic work in finding these low-relief satellite features around major fields?

A. Are you talking about just Cisco fields or --

Q. Cisco.

A. -- exploration in general?

Q. Cisco.

A. As far as I know, I'm one of the first ones to try Cisco exploration with 3-D, and as far as I know, to my personal knowledge, there's only been two 3-Ds done looking for Cisco.

Q. So you're saying it hasn't been successful yet?

A. Not yet.

Q. Do you agree with Mr. Harmon that this prospect is too risky to drill solely as a Cisco/Canyon?

A. Yes, and I would back him on that. Yes, I back

him on that.

Q. Now, when you get down to this, this is your interpretation of the seismic, right?

A. That's correct.

Q. Could two geophysicists looking at this data come up with two different results?

A. Yes, they could, just like two geologists.

Q. There's no guarantee on results, is there?

A. Never on wildcatting in the oil business.

Q. Do you agree this is a wildcat prospect?

A. For the Cisco, yes.

Q. Have you looked at the Morrow at all?

A. I mapped the lower Morrow shale for a structural component. That's the only extent I have evaluated Morrow, identified faults and structure.

Q. Can you see the Morrow sand seismically? Is it difficult?

A. Not in this area, you cannot see individual sands. And I did not even try to do individual sands. We solely used the seismic as a structural tool for Morrow analysis.

Q. Now, this seismic was acquired or shot by, or on behalf of, Matador; is that correct?

A. That's correct.

Q. Matador Petroleum?

A. That's correct.

Q. And when was that?

A. In August of 1994.

Q. Why didn't they develop this prospect?

A. I was an employee of Matador at that time. I designed this shoot, I supervised this shoot and interpreted it for them. We were not pursuing Morrow. The Texaco well had not been drilled at that time. We were approaching this as a pure Cisco prospect.

And because I thought it was too high a risk, I recommended that they not drill a Cisco wildcat here, just for Cisco. It did not meet the internal risk criteria of Matador.

Q. In the surrounding township or two, has Matador or other operators drilled any Cisco wells based on this seismic?

A. I've shot another 3-D when I was with Matador, in conjunction with this 3-D. They were shot within months of each other, or within weeks of each other.

Q. Where was that? North, south, east, west?

A. It would have been the next township northeast.

Q. Northeast. What was -- Was a well drilled based on that seismic?

A. Yes, it was.

Q. What was the result of that well?

A. That well was plugged and abandoned. However, it did confirm structure, it did encounter noncommercial shows of gas, it was also an alternative location, not the preferred location, and it did support we should have drilled where we thought in the first place.

Q. And you didn't drill a second location?

A. Due to land and legal and political problems, not to do with science.

Q. Do you know of any other 90-acre Cisco pools in this immediate area?

A. I know of a 200-acre pool seven miles southwest of us, the McKittrick Hills field, which has one well that's made 15 BCF of gas out of 53 feet of column over 200 acres. That would be the smallest one I know of to date.

MR. BRUCE: Mr. Chairman, I pass the witness.

CHAIRMAN LEMAY: Thank you.

Mr. Carr?

MR. CARR: No questions.

CHAIRMAN LEMAY: Redirect?

MR. KELLAHIN: Yes, sir, two points.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Lint, I'm not sure it's clear -- It's certainly not clear to me. You take Exhibit 17 and I'll give you my red pen, and would you show me the Cisco

feature that you think contributes to the size and the shape of the Cisco opportunity?

COMMISSIONER WEISS: Put it on this one too, would you?

MR. KELLAHIN: Yes, sir, I'd be happy to.

CHAIRMAN LEMAY: Minus 4800?

THE WITNESS: Actually, I was being conservative. I took the minus 4750. I do feel there's some risk as to how much true northwest dip we have.

Q. (By Mr. Kellahin) I'll give you a copy of Mr. Williams' montage and have you look at the structure map. Looking at fault line number 2, Mr. Lint, Mr. Williams has projected a fault here that, when it's down in the control point in the southwest corner of Section 11, has more than 200 feet of displacement.

As you follow his structure map and follow his fault line 2 to the northeast, it continues to maintain under his interpretation a fault displacement of more than 100 feet as you move to the northeast.

When you look at your 3-D seismic data, can you confirm or reject his opinion with regards to both the location and the magnitude of throw of fault line 2?

A. In Section 11, the orientation is close, the throws are close in the very far southwest end. Seismic shows the throw rapidly dying. He's showing 100 foot of

throw north of the Fasken location. The data does not support a fault going that far.

MR. KELLAHIN: That concludes my redirect, Mr. Chairman.

CHAIRMAN LEMAY: Thank you.

Commissioner Bailey?

EXAMINATION

BY COMMISSIONER BAILEY:

Q. In 2-D seismic often the gas effect can be seen?

A. I have not had any success using gas effect in the Permian Basin. The velocities in the carbonate rocks are not as conducive to that as they are in the Gulf Coast examples where you'll see that more often. They have a nice sand-shale sequence down there with more predictability, so they can see that effect there. And there are other basins in the world where it does work, but not with much effect out here.

Q. No formations in the Permian Basin?

A. Not that I have had any experience with.

COMMISSIONER BAILEY: That's all.

CHAIRMAN LEMAY: Commissioner Weiss?

EXAMINATION

BY COMMISSIONER WEISS:

Q. Man, you went awful fast for this old man, I'll tell you what. A couple of questions, though.

I can't see on Exhibits 14, 15 and 16 this red circle.

A. These exhibits are a segment out of Section 17. The very southwest -- or northwest corner of 14 is at about the section line of Section 1 out of Exhibit 17. The closure you see on the Cisco extends off of this map area. In effect, the closure actually ends just outside the data set here.

Q. That's not here?

A. No, that's just the northwest edge of your red outline.

Q. Ah.

A. These are different scales. This is 1 to 3000, this is 1 to 1000.

CHAIRMAN LEMAY: Mr. Lint, let me ask you to take Exhibit 14 and my red pen and define --

THE WITNESS: There's a hint on Exhibit 14 of where this 5 millisecond closure comes across. I will connect it. And I will also connect what is the true, final closing contour.

MR. KELLAHIN: Commissioner Weiss, I've had him project on Exhibit 14 -- you're welcome to keep his copy -- what he sees as the Cisco.

Q. (By Commissioner Weiss) Okay, now, that's it?

A. That's it.

Q. Okay, that helped a lot.

Now, on these areal views, can you identify on the Morrow shale a fault?

A. Yes, I can. In effect, Exhibit 2 is traced from one of these brightly colored displays to represent the structure. Yes, that structure inside the blue outline of Exhibit 2 is taken directly from one of these where I just traced every hundred-foot contour.

Q. I can't see it. How --

A. These are all Cisco-related. None of the color displays should be linked to the Morrow.

Q. Shouldn't I see it on the Morrow shale?

A. No, you should not. They are all Cisco. I identified no faults that go up into the Cisco.

Q. And then I wasn't paying attention when you said the Texaco well, the Levers 2, is in the same block as which well?

A. The Fasken location does not appear to be fault-separated from the Texaco locations. The Mewbourne location does.

Q. And then -- And how come you deal in time, rather than making the conversion, which would be, certainly, clearer to me?

A. Yes, I do have the depth conversion, but at this different scale in order to incorporate my known producing

field. In the Cisco, because of the high risk of this particular horizon -- and I will rely on comparing what known fields look like.

The three known fields, I've had an opportunity to look at one with 3-D/2-D, and the other two I've had the opportunity to use 2-D on those. They exhibited the same amount of time rollover.

Considering the risk factor involved, we thought since we have a similar time structure as known producing fields, that was sufficient work to establish the validity of --

Q. When you mix the transform, that adds to the risk?

A. It adds to the risk because we do have a subsurface closure, yes.

Q. And then I --

A. All of the northwest dip could go away that we have represented on this smaller map.

Q. It could, if the time conversion --

A. Yes, it could.

Q. Some of your squiggles on here are black and some of them are open. Those to the left appear open, and those to the right appear black, or blue, whatever that is. What's that mean?

A. Is that on the seismic?

Q. Yeah.

A. Yes.

Q. Anyplace on --

A. All seismic data will look like there's 2-D or 3-D, and seismic is basically a wave going down. Every time it hits a velocity change, i.e., rock change, some of that energy will go back up to the surface.

By convention -- And there are geophones at the surface that record the reliability of that data. So every time it hits something and goes back up, I know what it looked like when it went down, I know what it looks like when it comes back up. I catch it, and I put it on a piece of paper.

Each one of the black peaks, by convention, just so everybody was doing this the same -- and it was established, you know, in the 1950s that this would be the convention. That was called normal polarity. When I hit, I'm going through slow rocks, and I hit a fast rock, and I come back up. By convention, those would be colored black as peaks. A trough will be when I go from a fast rock to a slow rock and come back out. And that was just a convention that was established back in the history of geophysics so we wouldn't be mixing apples and oranges all the time.

Q. And that's where the density gas enters into it,

huh?

A. That's where some of the questions -- yes, where you can address the gas issues.

Q. And to the left would be --

A. Actually, it would be changing of the amplitude of either the peak or the trough themselves, not necessarily the relationship of the peak to trough.

But if you have a bright -- You've all heard of bright spots in the Gulf of Mexico. That -- A bright spot is a peak coming across on a known sand zone. When it fills up with gas, there is a significant change in the velocity of that sand from here where it's wet to here where it has gas. Well, that is a larger contrast. And when those waves hit a bed and come back up, the magnitude of the difference between the rock above and the rock below gives you an amplitude character. The more contrast, the brighter the amplitude.

So you will see a peak come across, and all of a sudden it will get very bright and very black on these gas zones in the Gulf of Mexico. And those were identified as bright spots.

Q. Okay. So the black is gas that --

A. Yes, yes.

COMMISSIONER WEISS: Thank you. That's all the questions I have.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. Mr. Lint, what's the reason for Exhibit -- Is it 18, I guess, I have, or...

A. We did not address that initially. I touched on it. That is the McKittrick Hills Cisco field that was referenced to, and Exhibit 18 is a subsurface map to confirm the prolific nature of these Cisco fields.

The well inside that 4000-foot contour, the minus 3960 well -- and proven by well control, I didn't even try to use seismic to bias this. I took the known well control around here. You establish that there's only a 53-foot gas column on that, with about 200 -- a little more than 200 acres of closure, and it's made over 15 BCF -- almost 16 BCF of gas, and it's still making almost 2.5 million cubic feet of gas a day today, and over 1000 barrels of water. The Cisco does move a lot of water.

Q. I thought that was your production on that. So you've got the Springs field in that and -- didn't -- something to the north, didn't Enfield drill something up there --

A. Yes, the McMillan --

Q. -- at the north end of the lake that had similar characteristics?

A. Yes, that's the third field that I've been

referring to that I did the study on. It's the McMillan field.

Q. McMillan field.

A. Yeah, and it has six or seven wells in it, and it was a Bob Enfield did discover that one.

Q. And that's similar to this?

A. Very similar to the Springs. It's a similar size, similar closure. But I have not studied it in as detail [*sic*] as I did Springs and McKittrick Hills.

Q. Are these on 320s, these -- is this --

A. I can't answer that question, I'm not --

Q. Not sure either.

A. I'm not sure on that.

Q. It looks like one well will drain them, though.

A. Properly positioned, I think one well would drain one of these.

Q. Is that the reason why -- is it -- Who's your east offset over there on 2 again? Acreage ownership? Does Matador own that in 2? No. Penwell?

MR. KELLAHIN: Oh, the west offset, that's --

CHAIRMAN LEMAY: Or --

MR. KELLAHIN: -- Penwell.

CHAIRMAN LEMAY: -- Penwell.

Q. (By Chairman LeMay) The reason why they didn't object to crowding it, because you could get a Cisco well,

they got themselves a location too on the seismic?

A. It's also why we don't take the exhibits considerably northwest. No sense doing other people's interpretation for them.

CHAIRMAN LEMAY: That's very interesting. I appreciate the information.

No more questions.

Let's take a break.

You've got one more, you've got an engineer, Tom?

MR. KELLAHIN: Yes, sir.

CHAIRMAN LEMAY: Want to start him after we get back?

MR. KELLAHIN: Yes, sir. Yeah, I think we can probably finish.

CHAIRMAN LEMAY: Well, we'll see.

For those of you -- We're going to continue tomorrow, obviously. We'll do it in the Secretary's conference room. This is going to be a Hallowe'en party in here.

MR. CARR: Unlike today.

CHAIRMAN LEMAY: Given this spooky stuff and the nature of these things, I don't know. Don't confuse them.

(Thereupon, a recess was taken at 4:15 p.m.)

(The following proceedings had at 4:28 p.m.)

CHAIRMAN LEMAY: Okay, you may continue. Mr.

Kellahin?

MR. KELLAHIN: Thank you, Mr. Chairman. My last witness is Mr. Carl Brown. Mr. Brown is a petroleum engineer.

CARL BROWN,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. For the record sir, would you please state your name and occupation?

A. My name is Carl Brown. I work as a petroleum engineer.

Q. Carl, you're going to have to speak up. That microphone won't help you at all. It's for the court reporter.

A. Sorry.

Q. Mr. Brown on prior occasions you've testified before the Division as a petroleum engineer, have you not?

A. Yes, I have.

Q. You reside in Midland, Texas?

A. I do.

Q. As part of your engineering work for Fasken, have you prepared engineering calculations concerning the gas in place using Mr. Harmon's geologic interpretation for this

particular area?

A. Yes, I have.

Q. Let's go through some of that information. Have you satisfied yourself that you have the necessary data to determine what, in your opinion, is the estimated ultimate recovery for the Levers Number 2 well?

A. Yes, I have.

Q. And you have used standard engineering methodology and practices to come up with volumetric calculations concerning the area of review, have you not?

A. Yes, I have.

MR. KELLAHIN: Mr. Chairman, we tender Mr. Brown as an expert petroleum engineer.

CHAIRMAN LEMAY: His qualifications are acceptable.

Q. (By Mr. Kellahin) Let's look at what is marked as Exhibit 23, Mr. Brown, and have you identify what we are looking at.

A. This is an exhibit of the pressure data provided to me from Mewbourne, and it is the Texaco information, and it is for the Texaco E.J. Levers Number 2 well. I've noted there, it says 12k. That should be 12F. That's the only correction on that.

Q. You're using the same pressure data that Mr. Montgomery used in his calculations; is that not true?

A. That's correct.

Q. All right, let's turn to the plot of that data. If you'll turn to the next page, it is not numbered; it is stapled together as part of Exhibit 23, and it is, in fact, the second page. Describe for us what you're showing us.

A. This is a plot of the bottomhole pressure over Z factor versus cumulative production, and Mr. Montgomery's interpretation and I agree that about 5.7 BCF of gas is in place from this particular data, and that ultimate recovery on that at 500 p.s.i. abandonment pressure is about 5.0.

Q. I believe Mr. Montgomery had 5.5, if I'm not mistaken, EUR, in the Levers 2?

A. I think he took it to 250-pound abandonment, but we're very simil- --

Q. If he stopped at 500 pounds, then, your estimate for total recovered gas for the Levers 2 is 5 BCF?

A. That's correct.

Q. Now that is a test based upon pressure of the middle Morrow, the green sand in the package, if you will?

A. That's correct. As we -- As the testimony has shown this, this pressure data is just for the middle Morrow zone, which Mewbourne calls the green sand, Fasken calls the green plus blue sand.

Q. And we are able to get pressure data on that perforated interval, separate and apart from the lower

perforations in the lower Morrow in that wellbore?

A. That's correct, because of a bridge plug with a valve in place to separate the lower Morrow in this Levers Number 2 from the middle Morrow.

Q. All right. Were you able to take your engineering skills and the reservoir data available to you to determine whether or not you could validate volumetrically the size and shape of the green and blue sand packages that Mr. Harmon had presented to the Commission earlier?

A. Yes, I have.

Q. To what degree of agreement do you have?

A. That agrees very closely, within ten percent or so.

Q. All right, let's see how you did that. If you'll turn to the next display, it's a portion of Mr. Harmon's green sand map, and you have identified in a green shading a certain portion of that sand package?

A. Yes, what I've shown here is the four wells that are colored in green that have produced from the green sand. And this is -- The extent of the green color would be the total reservoir volume that the four wells are producing from.

Q. You have inferred Mr. Lint's fault within Section 1, have you not?

A. Yes, the --

Q. And you have --

A. -- S-shaped fault, number -- what we've referred to as Number 1.

Q. And you have found a point on the structure map in which you believe you would not get contribution to the area being developed by these four wells east of that line?

A. That's correct.

Q. Okay. We turn to the next display, you're looking at the Morrow blue sand interval that Mr. Harmon mapped?

A. Yes, this shows the total reservoir volume of the blue sand, and it's -- the three wells that are perforated and have produced in the blue sand are colored in blue there.

Q. Okay. When taken together, we have characterized those as the middle Morrow?

A. Yes, that's correct.

Q. All right. If you'll turn to the next summary display, describe for us what you have concluded to be the ultimate gas production for each of the four wells, starting with the Levers Federal 1.

A. Okay, the Levers -- in the little table there, the Levers Federal Number 1 -- the well had accumulated a total of 6.5 BCF. That's the middle Morrow plus the lower

Morrow together.

It's commingled, and it was commingled as a production, so I used a net pay as the split, 14 feet of net pay in the middle Morrow, compared to 30 feet of the total. That gives me an estimated middle Morrow production -- or ultimate cumulative out of the middle Morrow of 3.0 BCF for the Federal -- Levers Federal Number 1.

And then the Levers Federal Number 2, of course, we've established 5.0 BCF from the middle Morrow.

The Pure Federal Number 2, which is Section 11, Unit P, I have made an estimate of 1.1 BCF of middle Morrow production.

And the well in Section 14, Unit B, 0.8 BCF.

Which totals 9.8 BCF of ultimate recoverable production from the four wells in the green plus the blue, the middle Morrow sands.

Q. How did you establish an EUR for the wells other than the Levers Federal 2? By decline curve, or P/Z, or how did you do it?

A. Well, other than the -- Well, the Levers Number 1, of course, is plugged back, the middle Morrow and the lower Morrow are below a bridge plug, so the 6.5 is actual.

Q. All right.

A. The Pure Federal Number 2, Mr. Montgomery mentioned he had thought the "A" zone, or the Morrow "A"

zone, was perforated in that, and the middle Morrow was not producing any longer, and that's what I thought also.

However, the well may be producing from a portion of the middle Morrow zone.

Q. All right. So you made the same assumption he did?

A. Yes.

Q. The next well, please?

A. And the -- it's producing -- the 2.1 BCF is its estimated ultimate.

Q. Okay. When you sum all those EURs together, what number do you get?

A. 9.8.

Q. Will that fit within the container that Mr. Harmon built for you in the middle Morrow?

A. Yes, I looked at the area, planimetered the area, and calculated a total recoverable volume in the area of 10.9 BCF.

Q. That's the sum of the blue and green map, will give you volumetrically 10.9?

A. That's correct?

Q. All right. What's your conclusion?

A. And my conclusion, of course, would be that the reservoir volume in the middle Morrow is sufficient to contain the estimated production from the four wells in

that total reservoir.

Q. Let me turn your attention to the volumetrics on the Cisco portion of the case. Okay, identify for us, Mr. Brown, what Exhibit 24 is.

A. Exhibit 24 is a table of the Cisco field analogies that I've looked at to calculate Cisco reserve potential.

Q. Your strategy here is to use conventional engineering methodology calculations to come up with gas in place per acre foot?

A. That's correct.

Q. All right. And how do you do that?

A. Well, we have an estimated ultimate production for each field. Mr. Lint, his areal extents, as was testified before, used his map for areal extent and closure. And then we calculated a volume inside that area enclosure, and that was reported here as acre-feet.

You divide your ultimate recovery by the number of acre-feet, and you get 1000 or MCF-per-acre-foot number. And applying that to the Fasken location of 90 acres area and 60 foot of closure, we calculate a 3.8 BCF potential.

Q. So you could take Mr. Lint's Cisco structure and use this methodology to estimate that if that feature is there and has the size and the shape he's estimated for you, it could contain 3.8 BCF of gas?

A. That's correct.

Q. Summarize for us what you see as an engineer to be the opportunity for your company if it's allowed to drill the well at its proposed location, versus the corresponding opportunity of the Mewbourne location.

A. Well, the Mewbourne location does not afford an opportunity to test the Cisco zone. The Cisco potential is substantial, and we would like to reduce our risk by stacking the pay, so to speak, and have a Morrow potential as well as the Cisco potential.

MR. KELLAHIN: Mr. Chairman, that concludes my examination of Mr. Brown.

We move the introduction of his Exhibits 23 and 24.

CHAIRMAN LEMAY: Without objection, Exhibits 23 and 24 will be admitted into the record.

Mr. Bruce?

CROSS-EXAMINATION

BY MR. BRUCE:

Q. When did you first start looking at this, Mr. Brown?

A. Sometime in January, 1997.

Q. And when did you do these specific calculations on Exhibit 23?

A. These were done in the last month.

Q. Did you have any input on picking the -- Fasken's proposed well location?

A. No.

Q. Looking at -- Well, let's start with the third page of your Exhibit 23.

A. Okay.

Q. That's the middle Morrow green sand. From what you're saying, if a well is drilled at Mewbourne's proposed location, it won't compete with the Levers Number 2 for reserves; is that correct?

A. That's correct, as far as the eastern boundary of the -- or northeastern boundary of that green sand body. It's bounded by that fault.

Q. And Fasken's proposed location won't compete with the Texaco Levers Number 2 well, will it?

A. In that particular zone? Well, there's not a zero contour between the green sand where -- the green color shaded area and the north Fasken zone.

Q. There is not zero line?

A. No, this is the green sand map, isopach, from Mr. Harmon's --

Q. Well, then why do you have the green sand coloring stop at -- what is that? -- the five foot line?

A. It's a convenient place to locate it there. It could spill over a little further. But since we're only

talking about a five-foot contour, it may not go very far.

Q. Do you see five feet as being productive?

A. Potentially.

Q. Now, have you calculated the drainage areas of any of these wells in the green or the blue sand?

A. Well, it would be difficult to tie down the areas that each one drained. It's more correct to look at the whole sandbody and see how much is produced, how much -- and whether the sandbody can contain all the gas that could be produced from that. Very difficult to find the no-flow boundaries, if you will, between the wells.

Q. Have you seen any evidence of no-flow boundaries between the wells?

A. I wouldn't say no-flow boundaries, no. There's, of course, some pressure difference.

Q. Looking at your green sand map, are these wells in communication?

A. Some. Some are better in communication than others.

Q. So looking at the Levers Number 1, you estimate that that will recover 3 BCF from the green sand?

A. Yes, that was my -- the green and blue, combined.

Q. Did your estimated recoveries go down with the completion of the Number 2 well?

A. I'm sorry? What was the question?

Q. What is the effect of completing the Number 2 well on the reserves of the Number 1 well?

A. It would have competed a little bit. There was obviously some pressure depletion. The Number 2 well in the upper sand had 3686 p.s.i. bottomhole pressure, where the field or the zone originally contained 4400 p.s.i.

Q. But don't you anticipate that most of -- looking at this green area, most of it would have been drained by the Levers Number 1 in the well in Unit P of Section 11 and the well in the northeast quarter of Section 14?

A. Not according to how I estimated the production split between the middle Morrow and the lower zone, which I used a net pay split.

Q. You're going to have to speak up, Mr. Brown, I'm having a tough time hearing you from over here.

A. I'm sorry. The question was again -- ?

Q. Let's start over. How would -- You're attributing, once again to the Levers Number 1, 3 BCF; to the Pure Federal Number 2 you attribute 1.1 BCF. Did you take that from Mr. Montgomery's original exhibit?

A. No, I did not. I had originally thought the Pure Federal Number 2 was plugged back and completed now in the middle -- Morrow "A" zone, so that the 2.5 BCF was middle and lower zones together. But it's not. It's evident- -- obviously -- There's a green zone produced in the Pure

Federal Number 2, and there's also a -- what Dexter would call a purple zone.

So still the split between the green zone, middle Morrow, and the total production is less than its total, so I came up with a 1.1.

Q. Have you done any volumetric calculations on these wells?

A. Other than just that -- just what I've got right here, no.

Q. If the Pure Federal Number 2 is going to recover 3.5 BCF, would that change your conclusions?

A. The -- Mr. Montgomery's testimony was that the well could ultimately recover 3.6 BCF, and if indeed it is still producing from the green zone, I would concur that it would add from 2.5 to 3.6 BCF, total.

I still have a -- eight feet of green zone compared to the 19 feet of total, and I've got -- 46 percent of that is attributable to the middle Morrow. And so add another 1 BCF, I'm still adding -- I'll only add another half a BCF to my middle Morrow zone calculation here.

Q. Has the Pure Federal Number 2 ever produced out of the lower Morrow?

A. I don't believe it has the sand, no, it didn't produce out of the lower.

Q. Okay. So it's primarily a middle Morrow producer?

A. It's a green sand middle Morrow producer, plus the purple zone, and we have not called the purple zone middle Morrow here. So the green plus blue --

Q. Okay, well, let's --

A. The green plus blue zone is --

Q. So you said it hasn't produced --

A. -- the middle Morrow.

Q. -- out of the middle -- it hasn't produced out of the lower Morrow?

A. That's right.

Q. Okay. Then turn to the final page of your Exhibit 23. Looking at the Pure Federal, you have your middle Morrow estimated ultimate production at 1.1 BCF, yet you have middle plus lower Morrow estimated ultimate production at 2.5 BCF.

A. That's correct, because there's eight feet of green zone perforations, and there's 11 feet of purple zone. That's a total of 19 feet.

Q. You just told me it didn't produce out of the lower Morrow.

A. I'm sorry, the purple zone, nomenclaturewise, has not been called middle Morrow, and it hasn't been called lower Morrow, and we have not talked about it, other than

the isopachs that Mr. Harmon presented.

Q. On the Cisco Canyon, do you -- your Exhibit 24, is that for the -- your reserves, or potential reserves, is that for this entire 90-acre area that you're looking at? Or is it only for the portion of that that's on the south half of Section 1?

A. No, that's the entire 90 acres.

Q. Okay. And I think Mr. harmon said that there was maybe a 10-percent chance of getting this. Do you agree with that figure?

A. That's -- I don't disagree with it. That's reasonable.

Q. Well, getting back to my last question, Mr. Harmon maps the purple sand as a middle Morrow sand, so I'm still confused about your estimated ultimate recoveries on the Pure Fed Number 2.

A. Okay. As far as I can tell, the green zone or green sand that Mewbourne's called the middle Morrow does not include the purple, and the green and blue that we've called the middle Morrow, that we're talking about on this volume, comparing apples to apples, I believe I have to exclude the purple sand.

Q. Have you calculated any estimated reserves in the Morrow at the Fasken location?

A. I've attempted that. If you looked at every

horizon, the potential in every horizon at some drainage area up to 320 acres, it could be substantial if every zone had gas in it.

Q. From an engineering standpoint, do you have any idea why the other middle Morrow green sands mapped on Mr. Harmon's map are poor producers, the Fasken Avalon well in Unit P of Section 1 and the well in the southeast quarter of Section 2?

A. No, other than just permeability differences, variations in the --

Q. Okay.

A. -- in the area.

Q. So couldn't you expect -- You've got a well placed midway between those two poorer wells. Couldn't you expect something similar at Fasken's location?

A. Well, for every horizon there could be gas present, or it could be too tight to produce. But there are so many -- up to six or seven horizons, that it's a worthwhile target for the Morrow, even at our Fasken location.

Q. One final thing. If your well is drilled, how do you intend to produce those?

A. From which zone?

Q. Are you going to -- If you hit the Cisco, would you first produce the Cisco? Would you complete --

A. If the Morrow is productive and the Cisco is productive, of course, we would have to produce the Morrow first. The Cisco would have water associated with it. If the Cisco was 3.8 or better potential, it could be twinned. I don't know if we'd produce it concurrently or not, but not together in the same wellbore.

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

CHAIRMAN LEMAY: Okay. Commissioner Bailey? I'm sorry, I didn't -- I was going to ask if --

MR. CARR: I have no questions.

CHAIRMAN LEMAY: -- Mr. Carr had any questions. I didn't mean to cut him off. We don't want to do that, no, I agree.

EXAMINATION

BY COMMISSIONER BAILEY:

Q. Your green sand map indicates the fault lines through 12 connect up northeast of Levers Number 2.

A. Okay, the north-south S-shaped line is what we've been calling fault 1. And the other line is simply a contour line extending on down to the zero sand isopach line.

The fault line ends there on the seismic. It may extend or it may not. If it doesn't extend further south, the gas can come around the end there. So I thought it was reasonable to -- I just moved to a -- like a minus-7200-

foot contour, and that's what that line to the south and east is.

Q. Run that by me again, please. The extension to the S-shaped fault line is a contour line based on what?

A. It's the minus-7200-foot contour line.

Q. But it's not showing anywhere else on this map?

A. No, it does -- Whatever exhibit that was, Number 2, I believe. Somewhere to the east the drainage would end, and that would be a convenient contour line to estimate the west -- eastern boundary of that drainage area as we go south of the fault, where the fault ends.

Q. Okay, and that also holds true for your blue sand map on the next page?

A. That's correct.

COMMISSIONER BAILEY: That's all I have.

CHAIRMAN LEMAY: Commissioner Weiss?

EXAMINATION

BY COMMISSIONER WEISS:

Q. There's no green zone production to the right of your boundaries there, is there?

A. That's correct. In fact, that well in Section 7 is the well that had the gas-oil -- gas-water contact at minus 7263. So that would be a western -- eastern boundary, of course, at that level.

COMMISSIONER WEISS: I have no other questions.

Thank you.

EXAMINATION

BY CHAIRMAN LEMAY:

Q. You're showing the faults -- You're honoring the seismic faults as boundary limits to the gas accumulation; is that correct?

A. Yes, to the eastern boundary. Yes, the eastern boundary of the --

Q. And then --

A. -- northeastern boundary.

Q. -- both your exhibits, I guess, fail to -- I'll use the word "honor", not in any derogatory sense, but the Monsanto well in Section 1, which is a green sand producer, it's not colored in on your green sand map, but you kind of show that as almost a separate accumulation and a different sandbar?

A. Yes, according to the seismic -- or the geological interpretation, it is a marine -- not a channel sand, so it doesn't necessarily have to be connected to this southern green reservoir.

Q. No, it doesn't, but what relationship do you show engineeringwise for that well to your proposed location, or to the Fasken proposed location?

A. That would be a -- Well, it's on a strike, almost, with the green sand and the blue sand. It was a

poor or marginal produced, cum'd .3 BCF. And so it would be hoped that the permeability may improve as you go to the west, where our location is.

Q. It's another wildcat for the green sand, is it?

A. Well, there -- it's -- There's six or seven zones, and I don't believe every one will hit, but I think it's a good chance that one, two or more, and that we'll have a commercial Morrow zone at our -- or producer at our location.

CHAIRMAN LEMAY: That's all I have.

Additional questions? Okay, you may be excused. Thank you, appreciate your testimony.

Reconvene tomorrow -- Is that all you have, Tom, or --

MR. KELLAHIN: I'm going to introduce Exhibit 25, which is our notice of hearing that completes the presentation. And with that, that concludes our direct case, Mr. Chairman.

CHAIRMAN LEMAY: Okay, thank you.

We can convene tomorrow at 8:30 in the Secretary's conference room, where we can -- If you want to leave stuff here and take it over tomorrow, you can do it, or do it now, whatever you prefer. Do you all know where the Secretary's conference is, up in the front of the building? It's this floor. I can take you on back there

if you want to see it.

COMMISSIONER WEISS: 8:30?

CHAIRMAN LEMAY: Either way, you can get there either way. 8:30 tomorrow? It will take a little bit of arrangement of the stuff there, maybe, to accommodate you all in one form or fashion. You may be kind of sitting around the room, but we'll accommodate you.

(Thereupon, evening recess was taken at 5:00 p.m.)

* * *

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Commission (Volume I) 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 November 7th, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998