NEW MEXICO OIL CONSERVATION DIVISION

SPECIAL EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JULY 9-10, 2002 Time 8:15 A.M.

NAME	REPRESENTING	LOCATION
Steve Hayden	NM OCD	Aztec
Bill Hawkins	BP	Denver
Ralph Hawks	Williams	Tulsa
Rusty Riese	BP	Houston
Chris Clarkson	BR	Farmington
Vu Dinh	BP	HOUSTON
Joe Stewart	Calpine	Denver
Paul Thompson	Walsh Engineering	Farmington ✓
Tom DeLong	XTO	Farmington
Jim Ball	Phillips	Farmington
J.C. Ridens	Cordillera Energy	Denver
James Strickler	Burlington	Farmington
Bill Speer	Speerex Ltd.	FMN
Steve Speer	" "	Roswell
Jim Fassett	U.S. Geo. Surv.	Santa Fe, N.M.
Chris Severns	Markwest Operating Co.	Aztec

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Hearing Date JULY 9-10, 2002 **Time** 8:15 **A.M.**

NAME	REPRESENTING	LOCATION
Steve Jones	Phillips Petroleum	Farmington
Rhonda Gaffers	Questa Engineering	Golden, CO
John Dean	Dugan Production	Farmington NM
Bill Hoppe	Robert L Bayless	Farmington
Steve Speer	Speer Ltd	Roswell
Kurt Fagrelius	Dugan	Farmington
Patsy Clugston	Phillips Petroleum	
Tom Schmid	ChevronTexaco	Houston
Ken Jackson	ChevronTexaco	Houston
David Meinert	CT	Houston
Jennifer Goldner	Oil & Gas Acct Report	Chicago
Steven Thibodeaux	Burlington	Farmington
Josh Cooper	Phillips	Farmington
Steve Cone	self	Farmington
Mike McGowen	BR	FARMINGTON
James Bruce	—	Santa Fe

Hearing 7/9 + 10/02
case # 12888

Eddie Pippin	CR	Farmington
John Roe	Dugan Prod.	Farmington
DAVID POAGE	Dugan Prod.	"
Jeff Balmer	BR	Farmington
SCOTT HALL	MILLER LAW	SANTA FE
Don DUHRKOPF	BP	Houston
BILL CARR	HOLLAND & HART LLP	SANTA FE
LARRY VAN RYAN	McElvain O&G	Denver
SCOTT B. DAVES	MarkWest Res	DENVER
KEVIN STOWE	MARKWEST RES.	DENVER

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING: APPLICATION OF THE FRUITLAND COALBED METHANE STUDY COMMITTEE FOR POOL ABOLISHMENT AND EXPANSION AND TO AMEND RULE 4 AND 7 OF THE SPECIAL RULES AND REGULATIONS FOR THE BASIN-FRUITLAND COAL GAS POOL FOR PURPOSES OF AMENDING WELL DENSITY REQUIREMENTS FOR COALBED METHANE WELLS, RIO ARRIBA, SAN JUAN, MCKINLEY AND SANDOVAL COUNTIES, NEW MEXICO	CASE NO. 12,888

02 JUL 30

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING (Volume I, Tuesday, July 9th, 2002)

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

July 9th-10th, 2002

Farmington, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Tuesday, July 9th, 2002, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

July 9th, 2002 (Volume I)
Examiner Hearing
CASE NO. 12,888

(Continued...)

BP AMERICA, INC., WITNESSES:

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E X H I B I T S

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* * *

APPEARANCES

FOR THE DIVISION:

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By: W. THOMAS KELLAHIN

FOR PHILLIPS PETROLEUM COMPANY:

MILLER, STRATVERT and TORGERSON, P.A.
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Santa Fe, New Mexico 87501
By: J. SCOTT HALL

FOR BP AMERICA, INC.; WILLIAMS PRODUCTION COMPANY; and CHEVRON-TEXACO:

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(Continued...)

A P P E A R A N C E S (Continued)

FOR DUGAN PRODUCTION CORPORATION:

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Farmington, NM 87401
By: JOHN DEAN

FOR SAN JUAN COAL COMPANY and
TEXAKOMA OIL AND GAS CORPORATION:

JAMES G. BRUCE, Attorney at Law
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Santa Fe, New Mexico 87504

* * *

ALSO PRESENT:

FRANK T. CHAVEZ
District Supervisor
Aztec District Office (District 3)
NMOCD

* * *

WHEREUPON, the following proceedings were had at 9:00 a.m.:

EXAMINER STOGNER: At this time I'll call the hearing to order. Please note the docket number, 20-02, and we're here in Farmington, New Mexico, at the Farmington Civic Center. And at this time I will call Case --

(Off the record)

EXAMINER STOGNER: We get a little informal in Santa Fe, and I apologize about that. Since we're here at a new place and there's a lot of new people, I'm Michael Stogner. I'm the appointed Hearing Examiner for today's case. I am an engineer, petroleum engineer, by training, been working with the State for 20 years.

To my left is David Brooks, my legal counsel.

And we've got Steve Brenner, he's the court reporter. This is a formal type of setting, so everything that is said today will be recorded and a transcript will be provided?

Anything else?

MR. BROOKS: I think that's all.

EXAMINER STOGNER: Some of the local people, Frank Chavez with the Aztec office of the OCD, I'm sure most of you know him.

What I will do is call the hearing to order, and I'll ask for appearances. Those of you that have legal counsel know the drill on this. And then if there's anybody else that would like to enter an appearance at this time, we'll kind of play that by ear and have you introduce yourself at that time.

The way that things will work today when I call the case to order and we start presenting testimony -- or taking testimony, I should say -- the committee in which the Application has been filed, they will present the technical evidence. And I'm assuming that's going to probably take all day today. And then we'll continue on into tomorrow for other matters, or hear other testimony that might be available out there.

Anything else?

MR. BROOKS: Yeah, let me just add that the Committee will, as the Examiner stated, make the first presentation. There are several groups that have filed entries of appearance previous to this proceeding, some of them other industry parties, and then some non-industry parties have filed entry of appearance.

As I understand the Examiner's intention, following the Committee's technical presentation, then the other industry parties will be given an opportunity to make technical presentations also, and then the non-industry parties that have filed entries of appearance will be given an opportunity to make statements or presentations, and then any members of the public who would like -- if there is time tomorrow, then any members of the public who would just like to say anything will be given an opportunity to do so as time permits, after all the people who have entered their appearances in this proceeding have been given an opportunity; is that correct, Mr. Stogner?

EXAMINER STOGNER: That is correct.

MR. BROOKS: Okay, go ahead.

EXAMINER STOGNER: At this time I'm going to call Case Number 12,888, which is the Application of the Fruitland Coalbed Methane Study Committee, better known as the Committee, for pool abolishment and expansion and to amend Rules 4 and 7 of the Special Rules and Regulations of the Basin-Fruitland Coal Gas Pool for purposes of amending well density requirements for coalbed methane wells, in Rio Arriba, San Juan, McKinley and Sandoval Counties, New Mexico.

At this time I'll call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin. I'm appearing today on behalf of Burlington Resources Oil and Gas Company, LP.

MR. HALL: Mr. Examiner, my name is Scott Hall. I'm with the Miller Stratvert Torgerson law firm in Santa Fe, representing Phillips Petroleum Company, and I have one witness this morning.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe office of the law firm Holland and Hart, L.L.P. We represent BP America, Inc., for whom I have three witnesses. We also represent Williams Production Company and Chevron-Texaco.

MR. DEAN: Mr. Examiner, my name is John Dean. I practice here in Farmington and I'm the representative here today for Dugan Production.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe. I'm here today representing San Juan Coal Company and am also entering an appearance on behalf of Texakoma Oil and Gas Corporation. I have no witnesses.

EXAMINER STOGNER: Other appearances?

Okay, is there anyone in the audience that plans to make a statement when the opportunity arises? Please stand and identify yourself at this time.

Now, I did have a statement by Ms. Tweeti Blancett and a Dr. Brooks Taylor and Mr. Bill Humphries. And Ms. Tweeti Blancett was here earlier today, and I understand they're scheduled to make a statement, or request to make a statement for tomorrow.

Okay, with that, Mr. Kellahin, how do you foresee the technical evidence being presented today?

MR. KELLAHIN: Mr. Stogner, as an accommodation to the Committee, I've agreed to present the first portion of the Committee work. We would commence with Mr. Hayden, who's the Chairman of the Study Committee.

We'll follow his presentation by Burlington's technical report to you on the results of their five pilot projects in what we call the underpressured portion of the pool. That would conclude my presentation at that point.

Mr. Carr will present Amoco, and then followed by that Mr. Hall will present Phillips' position.

The Committee, as I understand it, supports the increased density for the entire pool, whether it's in the overpressured fairway or in the lower-pressured low producing area. But within the fairway there is a division in the Committee as to how to handle that, whether it's simply a blanket infill drilling, as you do with the underpressured area, or whether there's an additional component, that component being a notice obligation and a special process which files with the District and could evolve into additional hearings for infill wells in the fairway.

Mr. Hall and Mr. Carr will present that argument for your discussion and their data on the fairway in the overpressured area.

Burlington's presentation will address the underpressured low-productivity area.

And at the end of that, we will have presented the Committee work product to you.

And with your permission, we'd like to have our witnesses sworn.

EXAMINER STOGNER: Okay, before we swear in the witnesses, is there any need for opening statements at this time?

Okay, you have how many witnesses?

MR. KELLAHIN: Including Mr. Hayden, there's three.

EXAMINER STOGNER: Mr. Dean, do you have witnesses?

MR. DEAN: Whether we have a witness or not will depend on what happens.

EXAMINER STOGNER: Okay. And Mr. Bruce, you have no witnesses; is that correct?

MR. BRUCE: I have no witnesses.

EXAMINER STOGNER: So at this time I think I have seven witnesses to stand and be sworn at this time?

MR. KELLAHIN: Mr. Stogner, I understand Mr. Fassett, Jim Fassett, is to make a presentation immediately following Mr. Hayden to give you a general geologic view of the pool.

In addition, I have Mr. Strickler here, who is responsible for the notification in the hearing, and we'll present him at the end of the presentation.

EXAMINER STOGNER: Okay, so now we're up to nine; is that correct?

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: I call nine of those parties to stand up at this time. And Mr. Dean, if you do present a witness please remind me to swear them in. Thank you.

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: Mr. Hayden.

Mr. Stogner, the presentation by the various members of the Committee has been reduced to a Power Point presentation. You're going to get the Phillips exhibits, the Amoco exhibits and the Burlington exhibits, plus Mr. Hayden's conclusions, in the Power Point presentation.

We're also going to hand out to you the hard copy books that include that information.

In addition, the hard copy books include some additional supporting documentation so that, should you desire to get into the further technical details of any of the aspects of the Committee work, we'll have subchapters in these books that you can go to and talk with the various experts about what those mean.

Our goal this morning is to give you an executive summary, if you will, so that you can see the issues, see the conclusions and see how they got to their conclusions.

And then at that point you're certainly free to ask them additional questions, which the exhibit book does support.

So the exhibit book we're going to start with, first witness is Mr. Hayden.

STEVEN HAYDEN,

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. Hayden, for the record, sir, would you please state your name and occupation?

A. I'm Steve Hayden, I'm the District Geologist for NMOCD here in Aztec.

Q. How long have you been in that position?

A. Two years.

Q. As part of your responsibilities for the Division, have you assumed the chairmanship of what we call the Coal Study Committee?

A. Yes, sir.

Q. And when did you start that?

A. Well, at the time I started work the Committee was already in operation. The first meeting that I attended was May 4th of 2000.

Q. The exhibit book will contain a tabulation of the various dates of meetings?

A. Yes, sir, I've got a...

Q. Let's do that now. If you'll turn to the Power Point presentation, we can look in the hard copy of the exhibit book, and if you turn to Tab 2, the first display begins your summary of the various Committee meetings?

A. Yes.

Q. Have you gone back and looked at the Division records and the Committee records from the inception of the Committee process?

A. Yes. Well, actually, this Committee was formed in the late 1980s to study the coalbed methane with the Fruitland Coal --

Q. Who formed that Committee?

A. Ernie Busch, who was my predecessor at NMOCD at Aztec.

Q. And how was the Committee formed?

A. It was formed by representatives of various operators within the Basin.

Q. Do the records reflect whether Mr. Busch invited any operator in the Fruitland Coal Pool to participate on that Committee?

A. Not on the original -- I don't have that much...

Q. Was an opportunity afforded to any operator in the pool to participate in that Committee?

A. All I can speak to is, since I've been here I've kept all the operators informed.

Q. All right. Since you have taken over responsibility as chairman, have you afforded that opportunity to all of the operators?

A. Yes.

Q. Can you identify for us the various operators that have participated in the Committee process? Is there a way to find those in this book?

A. Not in the hearing book, but the participation has been...

Q. Do your notes reflect that you Have the ability to identify the participants?

A. Yes, I have --

Q. Let's do that after the hearing, Mr. Hayden.

A. Okay.

Q. If you'll provide Mr. Stogner with a list of the companies that actively participated in that process --

A. Well, the main active participants have been -- well, of course, Burlington, BP, Phillips, Williams, Devon, Dugan, Merrion -- I'm sure I'm leaving some out, but --

Q. All right, and so you don't omit someone, let's have you make a list and submit it to --

A. Yes, I will.

Q. Let's turn past the various dates that the Committee worked, and let's move towards where the

Committee was when it filed the Application to amend the pool rules.

If we look at the hearing book, behind Exhibit Tab Number 1 is a copy of the Application, is it not?

A. Yes.

Q. That Application contains the final committee draft and recommendations on the rule changes, correct?

A. Yes.

Q. Can you start our presentation with an overview of the entire pool so we can see where it is located? Do you have a slide that will do that?

A. Well, this is a slide that will serve two purposes. One is to show the pool that's basically defined by the outcrop extent of the Basin-Fruitland Coal -- or the Fruitland Coal formation within the San Juan Basin.

Q. Is this the study area, then, for --

A. This is --

Q. -- determining --

A. -- the study area --

Q. -- to what extent the pools have changed?

A. This line is the state boundary.

Q. Okay.

A. Our study area is south of the state boundary.

Q. Did your involvement on behalf of the Division involve you reaching any geologic conclusions?

A. I was -- it was more to facilitate a -- conclusions reached by the industry people in their look at the infill question.

Q. So your testimony this morning is to report on the Committee work --

A. Yes.

Q. -- and you're not here to express geologic conclusions about any of these maps?

A. No, I'm here to express the Committee's attitude, basically -- or the Committee's conclusions, basically.

Q. Well, let's do that. If we start with this map, what is it showing us?

A. Okay, this map is showing BTU content of the gas which reflects the chemistry of the gas. And what this does is, it shows us that there's a very marked demarcation between the chemical characteristics of the gas along this line right in here.

North of this line is -- and south of this part here -- is what we call the fairway or the high-production area of the pool.

Q. That dark blue or the purple-blue area --

A. The dark blue and the white, yes.

Q. -- is what we'll call the fairway?

A. The fairway.

Q. Okay.

A. The fairway is, as you'll note if you look at the column on the side here that lists BTU content, is characterized by BTU ratings in the neighborhood of about 910 -- or 900, let's say -- whereas as you come across the line to the south we jump immediately up into the range of 1100 to 1200 BTUs.

Q. Does this map currently show the extent of this information for the entire pool area? Is this the whole pool.

A. Yes.

Q. Okay.

A. This map, by the way, and the following two, were both generated by Brent Hale of Williams for the Committee, and they're based on public information, stuff published by both NMOCD and by the COGCC.

Q. What does the current Rules allow for a spacing unit size in the pool?

A. Okay, the current Rules state that a spacing unit is 320 acres, which will consist of any contiguous quarter sections of a governmental half section, and wells may be drilled only in the northeast and southwest quarters of any governmental section.

Q. Did the Committee come to any conclusion about what to do concerning well density in the pool?

A. What we're recommending is to allow an infill well in the other quarter section, opposing the one that has been drilled, or will be drilled, to allow two wells per 320.

Q. And would that apply to the entire pool area?

A. Well, in this the Committee has some difference of opinion, and so what we're presenting is a proposal to infill or to permit infill outside of the fairway, which is -- Let me go to the next slide, and I'll show you.

Q. Don't do that just yet.

A. Oh, okay.

Q. In terms of the question, the Committee is unanimous on infill drilling the entire pool?

A. Yes.

Q. When you get to the fairway, there's a difference of what to do --

A. Right.

Q. -- with the notice procedures?

A. Right, we want to have -- or we're proposing to have an administrative procedure for infilling within the fairway.

Q. All right, we'll come back to that in a second.

A. Yes.

Q. So all the work done by the technical people got to the same conclusion concerning density?

A. Outside the fairway, yes.

Q. And inside the fairway there was to be four wells in a section, right?
A. In special circumstances, yes, when they go through the administrative procedure.
Q. Okay. Can you identify the area that will distinguish this fairway or overpressured area?
A. I can show you in the next slide.
Q. Let's do that.
A. This is a slide showing normalized daily rates at the highest average daily rate. And what we picked here was a line that excluded areas with wells producing more than 2 million cubic feet per day.
Q. All right, let's talk about this. You're looking at a daily rate map?
A. Right.
Q. And the color code tells me what?
A. The color code shows rate.
Q. The more intense or the darker the color --
A. The darker the colors --
Q. -- as you move into the red is a higher rate?
A. Red is the highest rate here.
Q. Okay.
A. The blue line is the line we imposed on this to define the fairway for this purpose.
Q. Okay. Who prepared this map?

A. This is also from Brent Hale at Williams, and the following one too.

Q. To the best of your knowledge, is it accurate in locating the producing rate of all the current coal wells in the pool?

A. Based on the production figures supplied by the operators, yes.

Q. Do you have some numbers to tell us how many coal wells are in the pool? Do you know that?

A. Yeah, there's -- Well, depending on which database I look at, there's somewhere in the neighborhood of 3300 to 3500.

Q. Have you subdivided that population between existing wells in the underpressured area versus the fairway?

A. Yes, there's about 2500 wells outside the fairway.

Q. In terms of scribing this line, did the Committee technical people discuss and share data about how to configure --

A. Yes.

Q. -- this shape and size?

A. Yes, we had a --

Q. Okay, and this line --

A. -- a meeting --

Q. -- when we look at that line, if we're inside the interior of that enclosure on the blue, it's wells that will produce on a daily rate of 2 million or more a day?

A. Not necessarily. This is mainly to include the highest rate areas. There are areas within this, you'll note, some areas of lighter color within the fairway that produce less. The fairway is not a homogeneous reservoir.

That's the reason we're recommending the administrative procedure to allow infill, is that there are areas within it that will support the 160-acre infill. Other areas, there are wells that are arguably producing at least 320.

Q. All right, let's talk about -- So that our nomenclature is consistent, I'm going to refer to the high-pressure area, the high-productivity area, as the fairway.

A. Yes.

Q. Is that a correct way to characterize the area inside the blue line, by --

A. Yes, I think so --

Q. -- calling it fairway?

A. -- I like the term fairway better than high-pressure at this point, because the pressures have dropped a lot within the fairway.

Q. When you go back and look at the pool Rules, they're using the phrase over-pressured area and an underpressured area.

A. Well, I think that's a reflection of the original conditions of the reservoir, and those have changed somewhat.

Q. And that's what I want to focus on now is what's happened.

So if we find this map and we look at what we now call the non-fairway portion of the pool --

A. Yes.

Q. -- within the green, was well density discussed and studied by the Committee?

A. Yes, it was.

Q. And how was that accomplished?

A. Well, the main thing that we'll discuss today is the pilot test by Burlington in which they covered -- I'm sorry, excuse me, hit the wrong button -- they covered an area all the way along the south side of the fairway and out in -- with one well out in here, with five wells that looked at infill.

Q. All right.

A. We also have an engineering study by BP that looked at an area up in here, the Carracas Canyon area.

EXAMINER STOGNER: Mr. Hayden, I'm going to stop you right here at this point. On your presentation, we are transcribing it. And I know that you're presenting this to a lot of people here today, but I'm going to ask you to refrain from pointing and saying "here" and "here" and "here" --

THE WITNESS: Oh.

EXAMINER STOGNER: -- and for the sake of the transcript describe what you're pointing at, so a person that could be reading the transcript and looking at the map later -- It's a little hard to do, but you'll get used to it.

Q. (By Mr. Kellahin) All right, let's start over so we're not confused here.

A. Okay.

Q. Mr. Hayden, were all of Burlington's five pilot areas outside of the fairway?

A. Yes, sir, they were.

Q. And there will be some slides that specifically show where they're located?

A. Yes.

Q. Was Burlington's work product shared with the Committee?

A. Yes.

Q. What did the Committee come to as a final conclusion for well density outside the fairway?

A. Outside the fairway we're completely unanimous in backing infill. I don't know of anyone opposed to it.

There's no evidence that suggests it's not justified.

Q. All right. Now, let's talk about inside the fairway. Inside the fairway there are two ways the Committee approached handling increased density wells in the fairway. One approach is to make the Rules in the fairway exactly the same as wells outside the fairway?

A. Yes.

Q. There would be no special notice administrative process, right?

A. Yes.

Q. And the companies that espouse that position would then have the opportunity to select increased densities infill --

A. Yes, sir.

Q. All right. The Committee resolved the fairway insofar as increased density by creating a subdivision in the Rule whereby if you wanted an increased density well in the fairway, you would file an application that was subject to notice to the offsets. And if that notice generated an objection from an offset interest owner, it could then cause a hearing to be held over the necessity of the infill well?

A. Yes.

Q. Was that what happened?

A. Yes.

Q. When we look at how the Committee drafted the proposed Rule, can we find the Committee work product attached to the Application itself behind Exhibit Tab Number 1?

A. Yes.

Q. Okay. So when we look at the fairway, everybody agrees that you need more wells in the fairway. The question is whether there's additional notice involved in achieving those wells?

A. Everybody agrees that at least certain areas of the fairway will stand more wells, yes.

Q. Describe for Mr. Stogner in a summary fashion how this administrative process, if he agrees to utilize it, would function.

A. If would basically be an application process much like the standard applications to drill. It would be filed with the District, but there would be notification to offset operators.

Q. Let's talk about that. If I'm an operator and I file an APD with the District Office in Aztec --

A. Yes.

Q. -- for an infill well, increased density well in the fairway, then I have an additional notice obligation?

A. Yes.

Q. Who do I notify? Is it around the 320, or it around just the portion that has the infill well?

A. It's around the portion that has the infill well; but effectively, since we'll still have 320-acre GPUs, it's notifying -- each of those offsets to that quarter will be part of a 320-acre block.

So it's around the infill, yes, to answer your question.

Q. All right. So if I have an infill well that's to be at a standard well location, it's standard because I can now be off-pattern, and as long as I'm 660 from the side boundary --

A. Yes.

Q. -- I'm standard, except I have a notice obligation now to my direct offsets as to that infill well, whether it gets drilled or not?

A. Yes.

Q. Okay. Has the Committee discussed what category of owners adjacent to that 160-acre tract are entitled to notice? Are you going to notify royalty owners?

A. No, it's operators.

Q. All right. When I look at the offsetting operators, let's assume I'm Burlington in the fairway, and I am my own offsetting operator. What happens with the notice, anything?

A. Well, I assume that you already know and you don't need notice.

Q. All right. If I am an offsetting operator, other than Burlington for this example, than Burlington would send notice to that other operator?

A. Right.

Q. Is the Rule structured so that notification would have to be made to anyone other than an operator?

A. I don't believe so, no.

Q. You don't have to notify working interest owners, that kind of thing?

A. I don't think so, no.

Q. Did the Committee draw any distinction between notifying offsetting operators outside of a federal unit?

A. No.

Q. Did you make any distinction between notifying the operators within a federal unit?

A. No.

Q. Okay. If I'm Burlington -- let's assume, to make it easy, I'm outside of a unit and I'm adjacent to Phillips and Amoco. I would send them notice?

A. Yes.

Q. What does the Rule contemplate happening for a notice period? How long do I send them the notice?

A. I believe that's a 20-day period from the --

Q. Within that 20-day period, they can then file an objection with the District?

A. Yes.

Q. What then is supposed to happen under this proposed Rule?

A. Then we send it to hearing in Santa Fe.

Q. And what will be the topic of the hearing?

A. The justification for having the well and whether or not it impinges on the correlative rights of the offset operators.

Q. That was the Committee recommendation?

A. Yes.

Q. The Committee did not get to a conclusion where there should not be infill drilling in the fairway?

A. No.

Q. We're going to have infill drilling in some fashion in the fairway?

A. That's my understanding, yes.

Q. That's where the Committee ended up?

A. That's where the Committee ended up, yes.

Q. And if we look at the Application, then, we can see the Committee proposed language on how to accomplish notice within the fairway?

A. Yes.

Q. Let's look at your next slide.

A. This is the same line, you'll notice the blue line again, defining the high-rate areas of the fairway. And it's superimposed on cumulative production maps, and the cumulative production starts at -- well, the contour interval is one-half BCF.

So you can see that there's quite a bit of heterogeneity within the fairway itself on cumulative production, and you can also see that there's a pretty good fit of our rate line compared to cumulative production.

Q. Why did the Committee choose 2 million a day as the line upon which to scribe this boundary?

A. We had evidence presented in at least one case by BP that showed that 2 million a day and less was only draining about 200 acres.

Q. And what did you do on the other side of the line? That was the purpose of the line, then?

A. Yeah, it was to -- things that -- The continuous amount of the pool that tended to be higher rate than that, we included within the line. And where it tended to -- the rates tended to run lower, we excluded from the --

Q. Let me make sure I understand. If we take 2 million a day based upon rate, daily rate alone --

A. Right.

Q. -- then there was agreement by the Committee that everything outside of that area justified increased density --

A. Yes.
Q. -- with not special notice?
A. Right.
Q. All right. Within this area, then, there was a difference about whether there's additional notice or not?
A. Yes.
Q. And the Committee could not unanimously decide on what to do with that issue?
A. Right.
Q. Okay, let's turn to the next display.
A. Okay, this is -- Bear with me a minute, I'll get through the text here. This is -- Do you want me to just go ahead and explain it or --
Q. Yeah. It's a little difficult to see, but go ahead. I think the hard copies in the exhibit book are easier to see, but what are you showing us?
A. Okay, this basically is, again, a map of the Fruitland Coal Pool within New Mexico. The area that's white here is the fairway. The colored area is the rest of the pool.
And what this shows -- and it's hard to see on this slide -- is existing wells within Pictured Cliffs pools outside the fairway. The Pictured Cliffs is the next formation below the Fruitland Coal.
There are 5723 Pictured Cliffs wells existing

outside the fairway. 4900 of those are more than 1320 feet from the nearest Fruitland Coal well. Of those, it's a good bet that there's enough that are actually within a separate quarter section to supply many targets for recompletion for infill to lessen the surface disturbance and incidentally lower costs to the producers.

Q. In the non-fairway tracts --

A. These are -- this is non-fairway, yes.

Q. -- when you look at the opportunity for accessing the coal gas in non-fairway tracts --

A. Yes.

Q. -- the Committee has suggested what as the way to exercise that opportunity?

A. Well, it's just -- a very easy way to exercise that opportunity is to use existing wellbores to recomplete and downhole commingle and then thus avoid having to drill new wells, having more surface disturbance and also lowering cost --

Q. Well, also there's an economic consequence --

A. Economic consequences are the driving force, of course.

Q. Did the Committee do anything more with that topic?

A. No.

Q. Did you go through economic analysis of what a new coal well would cost in relation to other options of --

A. Not as a function of the Committee. That would be, you know, an initiative of the individual operators in their own areas.

Q. So this was just a recognition of the opportunity to use --

A. Yes.

Q. -- Pictured Cliff wells?

A. Yeah, and this is only Pictured Cliffs. There's also two or three small pools over in this area. I might note that Farmington on this map is right here, Bloomfield here, Aztec here.

EXAMINER STOGNER: I'm sorry, I wasn't watching. Where's "here"?

THE WITNESS: Oh, I'm sorry --

EXAMINER STOGNER: But it's clearly marked on the --

THE WITNESS: -- I said "here" again. But yes, it's clearly marked on the map.

To the west and to the south of Farmington there's also three fairly major pools that are Fruitland Sand and Pictured Cliffs that also offer the same opportunity. There's somewhere in the neighborhood of 6000 Mesaverde wells also in the Basin, some of which overlap the non-fairway areas of the Fruitland Coal. So we're presented with a lot of opportunities for infill based on recompletion versus new wells.

In the fairway itself we probably won't have this opportunity because the completions are generally open-hole, as opposed to through the pipe. So in this case we won't see this.

Q. (By Mr. Kellahin) Mr. Hayden, are you familiar with that portion of the Application that attempts to conform the Fruitland Rules to be consistent with what the Division has found to be the applicable Dakota Rules within a federal unit?

A. Yes.

Q. Let's talk about that.

A. Okay.

Q. I want to look at that portion of the Application that deals with changing the coal Rules to make them like what occurs in a federal exploratory unit in the Dakota. What's the change?

A. The change is that interior to the federal units the setbacks will be changed to be ten feet from the section boundaries and the quarter-section boundaries.

Q. How is that a change from the current coal Rules?

A. Well, the current coal Rules are 660 feet from the outside boundaries of the half-section GPU.

Q. So we shrink the interior boundaries within the

GPU so you can be ten foot off an interior line?

A. Yes.

Q. Was there unanimous agreement by the Committee to do that?

A. As far as I know, yes.

Q. Anything else that's changed?

A. Okay, the particulars of this are, the outside boundaries of the federal units, each will still have a 660-foot buffer zone. Then any nonparticipating acreage within the federal units will have the 660-foot buffer zone, both --

Q. -- Let's do it again --

A. -- interior to them --

Q. -- so we don't lose track. I'm going to be inside a federal unit.

A. Inside the federal unit.

Q. And I am adjacent to a participating area in the coal, but my well is going to encroach on a drill block that is not fully committed to the PA?

A. Okay, the noncommitted acreage also will have a 660-foot setback.

Q. Okay.

A. Noncommitted and nonparticipating, both.

Q. And if I am approaching a GPU that's got those characteristics, if I want to be closer than 660 --

A. Then you need a --

Q. I've got to get notice --

A. -- nonstandard location permit.

Q. I've got to get an NSL permit?

A. Right.

Q. Anything else about the Rule?

A. I believe that covers it.

Q. Okay. So the difference, then, is to conform this to what happens in the Dakota?

A. The same spacing as the Dakota and what's been applied for in the Mesaverde.

Q. Okay, so that everybody's got the same set of Rules --

A. Right.

Q. -- for these various formations?

A. Yes.

Q. Any opposition by the Committee to do those things?

A. Not that I'm aware of.

Q. This is your last display, is it not, Mr. --

A. Yes.

Q. -- Hayden?

MR. KELLAHIN: With your permission, Mr. Stogner, we would move the introduction of what Mr. Hayden has identified as Exhibits 1 through 2, and that will complete his presentation.

EXAMINER STOGNER: Any objection?

MR. CARR: No objection.

EXAMINER STOGNER: Exhibits 1 and 2 will be admitted into evidence at this time.

Mr. Hall?

MR. HALL: No questions, Mr. Examiner.

EXAMINER STOGNER: Mr. Carr?

MR. CARR: Just a couple.

EXAMINATION

BY MR. CARR:

Q. Mr. Hayden, when we look at the fairway or the area that has been described as the high-productivity area, you talked about the notice requirements that the Committee discussed if you're proposing an infill well within this area?

A. Yes.

Q. And you indicated in your testimony that if you were proposing a well interior in a federal unit, that the notice requirement would be to the operator, which means there would really be only notice to yourself?

A. Yes.

Q. And are you aware that approximately 70 percent of this fairway is located within federal units?

A. Yes.

Q. And so except for the exterior notification, when you talk about notice you're really talking about a notice requirement for about 30 percent of the fairway area?

A. Yes, and the -- for the blocks around the outside of the federal units, yes.

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

EXAMINER STOGNER: Mr. Bruce, Mr. Dean?

MR. BROOKS: My turn?

EXAMINER STOGNER: Yes.

MR. BROOKS: Very good.

EXAMINATION

BY MR. BROOKS:

Q. Mr. Hayden, I believe you've reviewed the background of the Committee, but I just wanted to explore this a little bit with you.

The formation of the Committee was a portion of -- a function of your responsibilities -- the formation and the direction of the Committee, or the chairmanship of the Committee, was a function of your responsibilities as an employee of the Oil Conservation Division --

A. Yes.

Q. -- correct?

However, were you the only Oil Conservation Division person on the Committee, or --

A. Yes.

Q. -- was there anyone -- Okay.

The rest of the people on the Committee were operators, correct?

A. There were also some BLM participants.

Q. Okay. There were not any people other than operators and the government people, though?

A. No.

Q. Okay. Now, what was the mission of the Committee? What did you set out to do?

A. We set out to test whether infill drilling was appropriate within the Basin-Fruitland Coal Pool.

Q. Now, to clarify the reasons for that a little bit more, because there are a lot of people here who are not very knowledgeable in this area, I suspect, in any underground formation in which you find oil or, in this case, gas, would it not be an accurate statement that it is physically impossible, no matter how you produce the gas or how many wells you drill to produce 100 percent of the gas in the reservoir?

A. That's probably a safe --

Q. Okay.

A. -- assumption.

Q. If you drill too few wells, then you will not produce all of the gas, because some of the gas won't make it to the wellbore, correct?

A. Correct.

Q. And if you drill too many wells, you will reduce the formation pressure which causes the gas to come to the surface, and therefore you'll probably produce less gas than you might some other way; is that not a correct generalization?

A. That's probably true, yes.

Q. So the purpose, then, of studying these things is to determine as best you can what is the optimum number of wells to be drilled in a pool in order to produce the maximum amount of gas that's down there, to make it available to the market; is that correct?

A. Yes.

Q. Okay. And you began your review -- Well, let me ask you one other thing, then.

The Oil Conservation Division -- our middle name, you might say, is Conservation. And so are we very concerned about figuring out how to shepherd New Mexico's resources in such a manner as to make the maximum amount available to the public?

A. Yes.

Q. And that's one of our statutory functions --

A. Yes, it is.

Q. -- as a Division, correct?

A. Yes.

Q. And so that's one of the reasons why you were asked as district geologist for the Oil Conservation Division to form a Committee to study this matter; is that correct?

A. Yes, it was.

Q. And at present, the Rules governing the Fruitland Coal Pool permit one well for every 320 acres, that is -- for each 320 acres, that is, two wells in each square mile of the --

A. Right.

Q. -- pool?

And the proposal that you are now advancing to the Division Hearing Officer, to the Division Director through the Hearing Officer, is that that be increased to permit a maximum of four wells in each section --

A. Yes.

Q. -- square mile?

And do you believe that the Committee's study indicates that that increase in number of wells will result in more gas being produced more efficiently than the present density?

A. Yes, I do.

Q. Now, you -- one thing I want to clarify about your exhibit, if you'll go back to the one that's entitled "2 MMCF per day line on rate map", and the reddish area on there is what we're calling the fairway --

A. Yes.

Q. -- correct?

Now, you pointed out on one of the other maps where Farmington was, and you don't have the rivers marked on here, so it's harder to see. Can you give us an idea --

A. The --

Q. -- where Farmington is in relation --

A. Yeah, the --

Q. -- to the fairway?

A. -- San Juan River comes down through here, and Farmington is roughly in this area here --

Q. Okay, and you're point to the --

A. -- Aztec and Bloomfield.

Q. Okay. Farmington, then, is south and west --

A. South and west of the --

Q. -- of the fairway --

A. -- fairway --

Q. -- down in the area of the -- the white area, but not outside where it's surrounded by green?

A. Right.

Q. And Aztec is closer to the fairway, correct?

A. Yes.

Q. Now, where is the New Mexico-Colorado boundary on this map?

A. Notice where the blue line is truncated there. That's the boundary with Colorado.

Q. And how far south does this map go? About where would you be if you were way down at the south end of this map?

A. McKinley County, probably south of Cuba --

Q. Okay.

A. -- southwest.

Q. And where is the southeast end of the fairway? Is there some landmark you can --

A. Yeah, this --

Q. -- locate that by?

A. Well, I can tell you in a township sense easier than any -- otherwise. This is 29 and 6, Township 29 North, 6 West; 30 North, 5 West.

Q. Now, we could look that up on a map, of course, but I was wondering if there was some landmark you could point out that would be meaningful to people who might not be familiar with the legal surveys?

A. The San Juan-Rio Arriba County line runs right through here and then up the river.

Q. Okay, very good. I think you've done a good job of getting us located.

Now, let me go to your exhibit that is entitled "Pictured Cliffs Locations available for Fruitland Coal

Recompletions". Now, this map is a little hard to see, but just to clarify what the significance of it is, there are dots that appear to be black on my copy. I'm not sure what color you'd characterize them on the exhibit that is on display, but those are existing wells?

A. Yes.

Q. And to clarify a little bit what's involved here, what is the Pictured Cliffs?

A. The Pictured Cliffs is a sandstone that represents the shoreline of the Cretaceous inland sea that was seaward of the Fruitland Coal, which represents the swamp behind the beach.

Q. So that the --

A. It's underneath --

Q. -- Pictured Cliffs is found at a greater depth when you drill down --

A. Yes --

Q. -- in the Fruitland Coal?

A. -- it's the next thing down from the Fruitland Coal.

Q. Now, the Pictured Cliffs also produces gas, correct?

A. Yes.

Q. And the OCD has previously authorized the drilling of four wells per square mile within the Pictured

Cliffs --
A. Yes.
Q. -- correct?
So there are a lot of wells out there that penetrate the Pictured Cliffs that do not produce from the Fruitland Coal, correct?
A. Yes, sir, that was the point of what I was --
Q. Now, there are a couple of other formations that underlie a part of this area at greater depth, correct?
A. Yes.
Q. And those would be the Mesaverde and the Dakota?
A. Yes, sir.
Q. And there are a number of wells out there that are producing from those formations also, correct?
A. Yes.
Q. Now, what is the spacing in those formations?
A. The Mesaverde and the Dakota have 320-acre GPUs that allow three infill wells to the original, so there's four wells per 320 and eight per section.
Q. Yeah, so -- Eight per section?
A. Yes.
Q. Yeah, okay. So they are also in a greater density --
A. Yes.
Q. -- than the Fruitland Coal? There are more wells

per section?

And the bottom line of all that is that there are a large number of wells out there that go through the Fruitland Coal, the drill hole goes all the way through the Fruitland Coal formation, but at present they are not open so that they produce in the Fruitland Coal?

A. Yes, that's correct.

Q. And many of those wells, not all of them, could be perforated in the Fruitland Coal so that they would produce from the Fruitland, correct?

A. Many of them would be candidates for that, yes.

Q. And I understood what you say to be -- what you testified, to say that because of the way in which those wells are -- I don't want to say the way in which those wells are drilled, but because of the way the pipe is set or not in the hole, that's more true outside the fairway than it would be in the fairway?

A. Yes, sir, most of the Fruitland Coal wells within the fairway are produced open-hole at the bottom. They don't have casing clear to bottom. They're produced open-hole, often by cavitation. And to have a deeper production necessitates having pipe across the Fruitland Coal, so that would eliminate those as possibilities within the fairway.

Q. Now, it's a lot less expensive for an operator who wants to complete a well in the Fruitland Coal to do so by perforating the pipe in an existing well where the well is configured in such a way as to make that possible, than it is drilling a new well, other things equal, correct?

A. Yes.

Q. So it's a reasonable assumption that where that is possible the operators will be more likely to use an existing well versus drilling a new well?

A. That's my assumption, yes.

Q. Now, there's nothing in the proposed Rule that requires them to do one way or the other?

A. No.

Q. At present, if they want to -- if the operators want to complete a well in two formations, and they want to do so by allowing the gas to come up the same pipe, which technically we call downhole commingling, they have to file an application with the OCD to do that, correct?

A. Yes.

Q. Now, those are very frequently granted, are they not?

A. Yes.

Q. So there's really no great obstacle to the operators' doing that if the well is technically capable of doing it?

A. No, there's no major obstacle.

Q. Okay. Based on your study of these wells, do you have a guess -- and normally we don't take guesses in legal proceedings, but I don't see any way you could have anything more accurate than that, and this is something that may be interesting to some people here. Do you have a guess as to what percentage of the new wells that we're authorizing might actually turn out to be through existing wellbores?

A. I don't.

Q. Do you think --

A. About all I can do is present what they -- you know, the raw figures for --

Q. Given the figures that you've looked at, do you think it might be as high as 50 percent?

A. I would hope so, but I can't --

Q. Yeah, I understand, that's why I said a guess. Okay.

Now, your function in forming this Committee and coming before us here today is merely to recommend what the Committee study tends to indicate to you, correct?

A. Yes.

Q. And the final decision on this issue will be made by the Director of the OCD in Santa Fe after she has an opportunity to review the transcript of this proceeding and the recommendations of Mr. Stogner, correct?

A. Yes.

MR. BROOKS: Thank you, I think that concludes my questions.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Hayden, one thing that I'd like to cover a little bit while you have this map up, there's the Cedar Hill-Fruitland Basal Coal Pool.

A. Ah, yes.

Q. Could you give us an indication on the map that you have up where it is located and --

A. Let's see --

Q. -- that's north of Aztec; is that --

A. Right in here, yes.

Q. And that's north of Aztec?

A. Yes, north of Aztec, just south of the state line.

Q. How big of a pool is that, and what is the current Rules or limitations in that pool?

A. Currently its spacing is the same as the Fruitland Coal. It's nine or ten sections, I believe.

Q. And in fact, this is the pool in which the whole Basinwide Fruitland Coal got its start or its --

A. Yes.

Q. -- beginnings?

And to incorporate this into the current pool, is that more of an administrative type of a situation?

A. It's just an administrative convenience, yes.

Q. Is that pool in the fairway or not?

A. The southernmost part of it isn't, the rest of it is at this point.

Q. I want to make sure I'm clear. I've got one more question. This is the situation in which we're in the fairway, an operator wants to recomplete an infill well, they notify the offset operator -- in this case it's somebody else -- and that party objects. What will be the topic of the hearing again?

A. The justification for having the well and also the -- I would assume, the correlative rights issues that the person objected on, which would involve basically drainage data, whether they felt they were being encroached on.

Q. Now, the justification for having the well, that would entail what, drainage of the new well, the infill well, and --

A. I assume so, yes.

Q. -- how it would affect the offset? Is that what you're saying?

A. I assume so, yes.

Q. Are you proposing some sort of a sunset clause on this particular limitation in the -- or the Committee, I should say, when I say you -- the Committee, were they suggesting a sunset clause on this particular portion of the Rule?

A. One effect of this Rule would be to allow for a lot of study of the infill possibilities within the fairway, and what we recommended was to revisit this in a year to see what the engineering data within the fairway showed us, because our studies basically didn't include inside the fairway, within New Mexico, so...

Q. So this justification for this additional well would be limited to that area within that fairway and also within the general area of the spacing unit, and not necessarily revisiting today's proceedings, I would assume?

A. Yes, I would assume, yes.

EXAMINER STOGNER: Any other questions of Mr. Hayden?

MR. BROOKS: Well, I had one follow-up on what you were asking, Mr. Examiner.

FURTHER EXAMINATION

BY MR. BROOKS:

Q. Looking at the proposed rule, what it says about the hearing -- and I'm reading from the Application that's Exhibit 1 in the exhibit book -- it says, "In the event an objection is timely received, or upon the District Supervisor's own initiative, the application shall be set for a hearing before a Division Examiner."

And that would appear to mean that the hearing is on the application for a permit to drill, which suggests, although it doesn't spell that out in detail, it suggests to me that the concept is that the operator who proposes to drill a well will have the burden of proof at that hearing to sustain the propriety of his Application on the grounds of conservation and the protection of correlative rights. Is that the concept the way it's intended?

A. I would assume both parties would have a burden of --

Q. Well, in the sense that both parties have a burden at any hearing, and if one party makes their burden of proof and the other one, if they have something else to present, they have to show him, but the operator is going to have to come in and demonstrate a need for that well once there is an objection to it --

A. I would assume so, yes.

Q. -- it's not a situation where the operator can come in and say, Here's my application, you show there's something wrong with it? It's not a hearing on the objections, it's a hearing on the application --

A. Yes.

Q. -- the way the rule is presently drafted?

Okay, thank you.

EXAMINER STOGNER: No other questions, you may be excused.

Well, it looks like we've got some competition, so I'm going to ask everybody to speak loud whenever you do speak. These are not microphones. What these are are for the recorder and for the transcriber. I apologize about that, just wanted to remind everybody to speak loud.

MR. HAYDEN: If I might, I'd like to introduce the next speaker.

EXAMINER STOGNER: Okay.

MR. HAYDEN: Jim Fassett is a geologist retired from the USGS. He's been studying the Fruitland Coal for 70 or 80 years, I believe, actually, since at least 1970 when his first publications occurred on it. And he has a presentation put together from a professional paper that the USGS issued what, last -- year before last?

MR. FASSETT: 2000.

MR. HAYDEN: In 2000, yes. And he is going to present the USGS view of the Fruitland Coal as it exists at present. So...

EXAMINER STOGNER: Come forward, introduce yourself, take a seat, and again speak loud.

Do you also have slides along with your presentation?

MR. FASSETT: Yes, I do. Shall I begin or --

EXAMINER STOGNER: Yes, what -- I'm assuming this is the format, you're going to give us a little presentation today.

Is the presentation that you have along with the slides, is it included in the book that was given to me earlier?

MR. FASSETT: I don't think it is, but it can be. The presentation I'm going to give is a Power Point presentation, and I can give a copy of that CD to Steve Hayden, and he can make copies to provide to you.

(Off the record)

EXAMINER STOGNER: I am going to ask you to provide that CD, because it needs to be in the exhibit book for review at a later time.

MR. FASSETT: I might add that every slide that you will see here today has been published in some form. I've modified publications of mine to make them more suitable for a slide presentation.

MR. BROOKS: Right. What we need is probably -- I think what we need is hard copies --

MR. FASSETT: Yeah.

MR. BROOKS: -- of each of the slides, the reason being that, as I explained in my examination of the last witness, the Director of the OCD will be reviewing the transcript of these proceedings, and she will need to look at things that were displayed here, or will need to have that opportunity if she desires to look at anything that was displayed here.

MR. FASSETT: I understand, and I think Mr. Hayden can print these slides out quite easily and make them a part of the record.

MR. BROOKS: Okay, we understand that you will undertake to see that that gets done.

MR. FASSETT: Yeah, I will do that.

MR. BROOKS: Thank you very much.

JAMES E. FASSETT,

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

DIRECT TESTIMONY

MR. FASSETT: The title of my -- Well, first of all, as Steve said, I retired from the US Geological Survey in the year 2000, the end of June, after having worked for the US Geological Survey for about 40 years, and much of that work was focused on the San Juan Basin and the Fruitland Coal beds within the San Juan Basin.

I am currently affiliated with the US Geological Survey as a scientist emeritus, which means I'm a volunteer, basically, but I still do work for the US Geological Survey. I'm also a consulting geologist in addition to doing that work.

The title of the talk is "Distribution of Fruitland Formation Coalbeds in Space and Time", and I think the time part is quite important, as you will see as I get into my presentation.

I think we all tend to think of the world mostly in three dimensions. However, most geologists, or any good geologist, has to think of the fourth dimension as well, constantly, and that is time, because all of the rocks that we see in the rock record were deposited, for the most part, millions -- many hundreds of millions of years ago, and any sequence of rocks was deposited through a period of time. So I think it's important to emphasize that.

As Steve mentioned, most everything that you will see in my presentation was published as a chapter in USGS Professional Paper 1625B, and that's published only on a CD-ROM. And I might add that if anyone wants a copy of that publication I can provide that to them.

The study that I made of the San Juan Basin, which is which is shown within the Colorado plateau area, was part of the US Geological Survey's National Coal Assessment, a project that is still ongoing, but the Colorado plateau part is finished. That study took approximately five years and includes several other coal basins that are shown in the Colorado plateau area.

Several questions have been asked about where things are relative to geographic locations in the Basin. I have prepared this index map that shows the Colorado-New Mexico state line and the Utah-Arizona state line.

The green band is the Fruitland formation outcrop, which encircles almost the entire San Juan Basin. You can see the Jicarilla Apache Indian Reservation here, the Southern Ute Indian Reservation just north of the state line, to the west the Navajo Reservation.

And I have to add that's the traditional boundary that's been added to with the Navajo Irrigation Indian Project, and it now extends out into the area. So there's a fair amount of Indian land within the Basin. This area down here is the Bisti De-Na-Zin Wilderness Area. And then I've shown Chaco National Monument and Mesaverde Park up here for reference.

The major rivers you can see in the Basin, San Juan and the Pine and the Animas. And the location of Farmington, Bloomfield, Aztec, Cuba are shown for reference, and Ignacio, Colorado.

To emphasize the time aspect of the deposition of Fruitland Coals in the Basin I am showing this illustration. It's a chrono-stratigraphic cross-section that is designed on a datum down in the Lewis Shale, the Huerfanito bentonite bed, and that marker is clearly visible on most geophysical logs throughout the San Juan

Basin, and it makes a very convenient and also valuable reference line to which other stratigraphic geologic units can be related.

The units I'm going to talk about in this presentation are the Lewis shale formation, which was deposited in the Ocean; the Pictured Cliffs sandstone, which Steve has already referred to, which is a regressive shore-based sandstone -- in other words, a sandstone that was deposited as the sea regressed out of the San Juan Basin, and I'll show you a better diagram depicting that in a moment. And then overlying the Pictured Cliffs is the Fruitland formation and the Kirtland formation. And the Fruitland, of course, is the formation that contains the coalbeds that we're discussing today.

I'm not going to spend a lot of time on the details of these ages that are represented here, and one over here. By the way, this cross-section runs from the Hunter Wash area near Bisti in the southwest, up to Chimney Rock in the northeast part of the Basin.

What these ages represent are radiometric dates of volcanic ash beds that have been altered, and those ash beds can be dated quite precisely using a method called the argon-argon dating method. And what we see here is that the age of the Huerfanito bentonite bed, which has been dated over here near Regina is 75.76 million years old, and progressively younger dates going up, and then the youngest date, just beneath the Ojo Alamo sandstone up in the Kirtland shale, is 73.04 million years.

So the difference is approximately 2 1/2 million years, which is the time it took for the Pictured Cliffs sandstone to regress from the southwest part of the Basin to the northeast part.

Over on the east side in the Lewis shale we were able to date an ash bed there as well, which pretty well fits this sequence.

The point of this slide is to show that the Pictured Cliffs and the overlying Fruitland Coals become progressively younger northeastward across the Basin. And I want to emphasize that, because when we look at a map or a cross-section showing Fruitland Coals that lie on top of the Pictured Cliffs, I want you to keep in mind that those coals are much older in the southwest part of the Basin than in the northeast, and there is absolutely no possibility that these coals down here could be correlative with coals up in the northeast part of the Basin.

This is what the continent of North America looked like back in about 72 million years ago. There was a western shoreline of the western interior seaway that extended from the Gulf of Mexico, and this map doesn't go that far north, but it went up to the Arctic Ocean. The east boundary of that seaway is shown here. You can see it was quite a considerably large-extent seaway at that time.

The San Juan Basin is shown here, with the shoreline at 76 million years ago, and the shoreline at 73 million years ago. And you can see what's interesting is the shoreline had a northwest orientation, pretty much entirely during the time that the seaway was regressing across this area.

If we look at the progression of the shoreline, remember the sea would have been here at 75.56 million years ago. About a million years later the shoreline was there, and behind that shoreline it would have been deposited shore-face Fruitland Coals, and then progressively younger shorelines up until 73.37 million years ago. And again we see that that trend has maintained a northwest orientation throughout that time.

This is a diagrammatic cross-section, and it's an attempt to portray the coal swamp environment in which Fruitland-formation coalbeds were deposited. Here is the Lewis seaway to the northeast, Pictured Cliffs sandstone being deposited at the shoreline, and just behind the Pictured Cliffs is a band of coal swamps.

Rivers flowed to the sea from the southwest to the northeast, and they had to flow through the coal swamp area, thus dividing up individual -- what we have today as individual coalbeds into pods of coal that were not continuous along the back shore of the shoreline.

So you can see these swamps -- this is a snapshot in time of where coalbeds were being deposited, and a hundred years later any one of these rivers could have migrated. This one, for example, could have migrated into this coal swamp and totally stopped the coal or peat production in that area, whereas this one, this coal swamp, could have expanded and coal could have continued to form. So it was a very erratic, sporadic process in which these coalbeds were formed.

I've showed you a stratigraphic cross-section which was hung on a datum, which is a cartoon; it's a construct in order to show relationships.

In order to show the true present-day structure of the Basin, geologists construct structure contour maps showing the structure of a geologic basin, and the depth increases going from southwest to northeast, and we're going to look at this cross-section in a minute to show you what the structure of the Basin looks like in profile.

I've put the fairway on here, since it's a matter of discussion. The fairway as I've drawn it is based on a map that I got from Brent Hale with Williams, and this map depicts the fairway as defined on the basis of a million cubic feet per day versus two million, which is what Steve

Hayden showed on his map. There isn't too much difference, actually, in the outline of the Basin.

If we look at that structural profile, then, along that line of section, we can see that the dip into the Basin from the southeast is quite gentle, it's less than one degree, .8 degrees. The Basin floor flattens out here. There's a structural nose in this area, which is up near Ignacio, Colorado, and then a relatively steep-dipping flank of the Basin to the north.

This upper cross-section has a vertical exaggeration of 24 times. Down below I've shown a one-to-one cross-section or profile to show the true attitude of these rocks. You simply can't show the relationships in a one-to-one profile, as you can see. So this vertical exaggeration is required to show that.

This is a typical bulk density log for Fruitland Coals in the San Juan Basin. The Pictured Cliffs sandstone-Fruitland formation contact is shown here. As you can see, the depth goes from 1250 to 1050, about 200 feet.

This is typical of the Fruitland in that the coalbeds are almost always concentrated in the lowermost part of the Fruitland. In some areas it goes -- the coals will go up as high as 300 feet up above the Pictured Cliffs, but normally, this is quite typical.

This line here is the 1.75 grams per cubic centimeter density line. To put that in simple terms, that just represents coal that contains about 50 percent ash. And coal is defined as a layer of organic material that contains less than 50-percent ash. So I have used a cutoff of 1.75 grams per cubic centimeter.

I've shown the line for 1.3 grams per cubic centimeter. That represents pure coal with no ash. And you can see that none of these coals quite reach that. This one gets pretty close, this one actually gets over there, part of the coalbed. And the ash content of Fruitland Coal throughout the Basin averages 28 to 30 percent.

The cumulative coal or the net coal in this particular well, you can see I've shown the thickness on the right side and added them up down below, and there's 37 feet of net Fruitland Coal in this particular well.

The reason I'm taking some time to explain this is that the next map I'm going to show will be a net coal isopach map for the whole Basin, and each of the control points on that map will include all of the coal beds in each of the control points.

Here is that net coal isopach map. This map shows the thickness of Fruitland Coals throughout the entire San Juan Basin. The thicknesses in this area are quite thin.

This pattern, the colors don't show up as well as I had hoped on this slide projector, but this pattern here represents coal that is 20 feet or less in thickness, the white is 20 to 40 feet thick. This kind of brown color is 40 to 80 feet thick. And up here along the northwest rim of the Basin, mostly in Colorado, the net Fruitland Coal reaches a thickness of about 100 feet. In one well I'll show you in another illustration, there's 102 feet of coal.

But keep in mind that these thicknesses are represented by multiple coal beds at each control point.

To construct this map, I used about four density logs per township, as evenly distributed as I could, to draw the map. And again, the fairway is shown, and these are areas of wells that produce over a million a day. And as you can see, there are some spots of those outside the fairway proper.

Okay, we're next going to look at this stratigraphic cross-section that follows that line.

This stratigraphic cross-section shows -- as I showed before on the earlier illustration, it's hung on the Huerfanito Bentonite bed as a datum. It shows the stratigraphic rise of the Pictured Cliffs sandstone across the Basin, and it shows the geometry of the Fruitland Coal beds.

And at any given well point on here there are multiple coals, but they're almost always different coals. For example, there are two coals in that well log, and there are three in this one, and none of those correlate.

I've shown the fairway area on here for reference, and it's quite interesting. The northern boundary of the fairway coincides fairly well with the stratigraphic rise in the Pictured Cliffs. You can see the thick Fruitland Coals here that are not continuous. That space and time is occupied by the Pictured Cliffs there.

This line represents a reversal in the earth's paleomagnetic field. And the reason I show that is because it represents a time line, and we have dated that quite precisely at 73.5 million years ago. And what's of interest is that that time line parallels the Huerfanito marker bed absolutely.

The southern boundary of the fairway is much more interesting geologically, and puzzling. It's quite sharp, as we have seen in my previous depiction and in Steve Hayden's depiction. But interestingly enough, there are coal beds that seem to correlate across the southern boundary of the fairway in this small area.

But the major point of this slide show is to show the distribution, as my title indicated, of Fruitland Coal beds through time. As I said before, these coalbeds down here are about two and a half million years older than the coalbeds up here in the northeast part of the Basin.

Keep in mind, now, when we're looking at a cross-section, that the shoreline trend was running at right angles to this cross-section. And so these coalbeds, as we look along the shoreline trend, would be also broken up as separate pods of coal, separated by the river systems that were cutting through the environment of deposition of the coals.

Okay, this is a blow-up of the northern part of that cross-section, so you can see a little better detail in the distribution of coals. And basically what we see is that individual coalbeds are extremely discontinuous. This is a very nice, thick coalbed, but it comes out into the Pictured Cliffs to the northeast, and it doesn't extend into this well. And this is typical.

Occasionally, we will find correlations over five or six miles, possible, but that's relatively rare in the Basin. The norm is more like this where coalbeds are really quite discontinuous.

This is a much larger scale -- in other words, the wells are much closer together -- cross-section. I actually drew this for a study of the coalbed methane gas seeps up south of Durango, Colorado, to show the geometry of the coalbeds up there, and it's from a previous publication on those gas seeps. But these wells are on the average of about a mile to a mile and a half apart. They're quite close together.

This area here is near Carbon Junction where the Animas River cuts through the outcrop of the Fruitland formation near the north rim of the Basin, and you can see this coalbed is relatively continuous for two or three or four miles. These coalbeds are very limited in their extent, and a large coalbed here, and then this myriad of thin coalbeds in the upper part of the Fruitland that -- many of which have no continuity beyond a single well in which they were found.

So the conclusion of my presentation is that Fruitland Coal beds are discontinuous almost everywhere in the San Juan Basin.

And that concludes my presentation. I'll just put this slide up, it gives my name and address and -- e-mail address and street address, in case anyone might want copies of the professional paper that this work was taken from.

And as I said, if you contact me, give me a card or whatever. I'll be happy to send you a copy of that publication.

And that concludes my talk.

EXAMINER STOGNER: Thank you, Mr. Fassett.

Again, Mr. Hayden, I'll need a hard copy of the slides that were presented today for the reporter here, and also I'll accept a CD-ROM of the presentation, and if you'll get with him on that.

MR. HAYDEN: Yeah, I have the CD-ROMs.

(Off the record)

EXAMINER STOGNER: Mr. Kellahin, do you have any questions of Mr. Fassett?

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. A few points of clarification.

Mr. Fassett, did you make this presentation to the Coal Study Committee that Mr. Hayden was chairing?

A. I made a similar presentation. I added a couple of slides just to make a little more coherent presentation for today.

Q. Am I correct in understanding that based upon your presentation we have vertical separations of the coals?

A. Yes, that's correct.

Q. Within the fairway and outside of the fairway there is a vertical separation?

A. Yes, that vertical separation and the coalbeds becoming younger in time toward the northeast extends through the fairway as well as outside the fairway.

Q. And in a horizontal extent there is discontinuity between individual coal seams or members?

A. For the most part, that's correct. As I said, it's extremely unusual when coalbeds can be correlated for any great distance, beyond a couple of miles or so.

Q. When we have that type of geologic environment, the current rules for the pool allow two wells to a section?

A. Yes.

Q. Do you have a geologic opinion about whether that is enough wells per section?

A. It's not really a -- okay, I guess it is a geologic -- I'm not a petroleum engineer. This is what I'm trying to say.

Q. I'm not suggesting that you answer it in an engineering context --

A. Right.

Q. -- but geologically, if I'm trying to access multi-layers that are discontinuous, do I need more wellbores than I now have?

A. I would say so, yes.

Q. Is that true of the fairway coals as well as the non-fairway coals?

A. Yes, there's no difference in the continuity of the coals in the fairway or outside the fairway.

MR. KELLAHIN: Thank you, sir.

EXAMINER STOGNER: Mr. Hall?

MR. HALL: We have no questions, Mr. Examiner.

EXAMINER STOGNER: Mr. Carr?

MR. CARR: No questions.

EXAMINER STOGNER: Mr. Bruce, Mr. Dean?

MR. DEAN: I don't have any questions.

EXAMINATION

BY MR. BROOKS:

Q. Okay, I just had one. You are not appearing -- Although you do consulting work still for the United States Geological Survey, you're not appearing here as a representative of the United States Geological Survey; is that correct?

A. Not formally, I guess you would say, although when I worked for the US Geological Survey I made similar presentations as an expert geologic witness.

Q. But being here and making this presentation here is not a function of your duties with the United States Geological survey?

A. Well, it is in part. You know, I'm a public servant and so, you know, the US Geological Survey, of course, encourages us to provide basic scientific evidence in any forum that's requested, so -- The US Geological Survey did not tell me to come here today.

Q. That was really what I wanted to clarify.

And were you instructed by any federal agency that they took a position in this case and wanted you to appear on their behalf?

A. Oh, definitely not.

Q. Very good.

EXAMINER STOGNER: Okay. With that, Mr. Fassett, you may be excused.

At this time let's take a ten-minute recess.

(Thereupon, a recess was taken at 10:40 a.m.)

(The following proceedings had at 11:30 a.m.)

EXAMINER STOGNER: This hearing will come to order.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Stogner.

We'd like to present Mr. Steve Thibodeaux. Mr. Thibodeaux is a petroleum geologist with Burlington.

STEVEN M. THIBODEAUX,

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. Thibodeaux, you've been sworn in as a witness this morning?

A. Yes, I have.

Q. On prior occasions, have you testified before the Division?

A. Yes, I have.

Q. In what capacity?

A. As a geologist for the coal team primarily.

Q. In what case did you testify?

A. I testified in the original pilot infill well approval case last May.

Q. In addition to testifying in the pilot infill project case, have you continued to be involved as a geologist on behalf of your company in the study of that project?

A. Yes, I have.

Q. You've continued to participate on the pilot project?

A. Yes, I have.

Q. Have you participated with the Industry-Division Study Committee?

A. Yes, I have.

Q. And based upon that work, do you now have conclusions and geologic opinions about what to do concerning the density of wells in what we characterize as the non-fairway?

A. I do.

MR. KELLAHIN: We tender Mr. Thibodeaux as an expert geologist.

EXAMINER STOGNER: Any objections?

MR. CARR: No objection.

MR. HALL: No objections.

EXAMINER STOGNER: Mr. Thibodeaux is so qualified.

Mr. Thibodeaux, if you will project a little bit louder.

THE WITNESS: No problem.

EXAMINER STOGNER: Lean into the microphone so everybody can hear you.

Is he hard to hear at this point?

FROM THE FLOOR: Yes.

EXAMINER STOGNER: Be aware of that.

THE WITNESS: I'll speak up.

MR. KELLAHIN: Your microphone is not as loud as this one.

THE WITNESS: I'll just talk real loud.

EXAMINER STOGNER: Okay, please do.

Q. (By Mr. Kellahin) Mr. Thibodeaux, before we look at your presentation, let's go back to May of last year when you requested the Division, through Mr. Stogner, to allow for the five pilot project areas in the underpressured non-fairway coals. What was to be the purpose of that study?

A. The primary purpose of that study was to determine whether or not we were getting communication through the various layers on existing 320-acre spacing wells and whether or not 160-acre spacing wells would be tapping new reserves geologically.

Q. Why was it necessary to have five pilot project areas in addition to the known data about those areas?

A. Two reasons, really. The reason we had five was that we wanted to capture as much geologic diversity as we could across the area, just so that we could properly characterize the underpressured portion of the field.

And secondly, the kind of data that we were collecting in our pilot wells did not exist prior to our pilot program. And specifically, we're talking about layer pressure and geologic data.

Q. Has that data been obtained at this point?

A. Yes, it has.

Q. Are you satisfied that you have enough geologic data from which to derive reasonable geologic conclusions?

A. Yes, we do.

Q. Let's get to the conclusions. What is the end result of all your study and all your science? What are you going to tell us?

A. The end result is that we believe that 160-acre infill development wells are justified.

Q. Let's turn to your presentation. Let's go to the summary slide.

You've taken your conclusions of more wells and subdivided that into topics or areas for us to review that support your ultimate conclusion. Let's look at those subdivisions. Summarize for us each of those.

A. Sure. The first part would be a general geological overview of the Basin and how this ties to our pilot areas and underpressured area of the coal. Some of the parts are similar to what we've seen earlier by Mr. Fassett, and some of them are slightly different.

First, we'd like to point out that structure has a minimal impact in an underpressured area. We're dealing in a relatively noncomplex area structurally, so that it has very little impact on production characteristics of the coal.

We were able to identify internally to Burlington nine coal packages that we identified and mapped throughout the entire Basin.

I know that earlier we heard from Mr. Fassett that some of these coals were noncorrelatable across very short distances. We've elected to lump several coal members into a single package of which we were able to map and identify across the whole Basin, so it's a slightly different approach.

The major coal packages were correlatable, and we did when we mapped these things were able to identify what we've seen as modern-day analogs of the same peat deposition that occurred during Fruitland time.

Q. Am I correct in remembering that Mr. Fassett's mapping was based upon a well density of two wells per township?

A. He had four wells per township.

Q. Four wells per township.

A. And we opted to go for about two wells per section.

Q. Okay. Based upon that increased use of additional data, you can still subdivide the coals like Mr. Fassett did?

A. Absolutely.

Q. Do you find that those coal packages are unconnected one from another vertically?

A. Their connections differ from place to place. But yes, they are discrete vertical packages of coal.

Q. And to what extent can you correlate these packages of coal intervals across the Basin?

A. Throughout the entire time that coal was being deposited we're able to correlate those coals across the Basin, those coal packages.

Q. And you've done that?

A. Yes, I have.

Q. Okay. What's the next summary?

A. Finally is that within the coal packages, each coal package is made up of individual coal beds, and there are many discontinuities in those coal beds and then in the packages themselves as they were disrupted by fluvial systems, as Mr. Fassett showed earlier.

Q. Do you agree with his geologic conclusion that you cannot separate out the fairway from the non-fairway tracts and have a significant geologic difference, discontinuity in vertical separations?

A. Yes, you have discontinuity in vertical separation in both the fairway and underpressured coals, non-fairway coals.

Q. Can you give us -- and perhaps we'll use one of the maps in a minute to give us the illustration of how the areas might be different, using different factors and what those factors are?

A. Certainly. The next map, the second overlay we'll be able to discuss that.

Q. All right, please continue.

A. The first display I have actually is a structural map. This is a map on the Pictured Cliffs sandstone which we've discussed earlier, which lies directly below the Fruitland Coal. It's a hundred-foot contour subsea structure.

And what it shows is that on this map in red, along the top border, is a Fruitland Coal outcrop. The dark red line in the middle is Burlington's interpretation of the original overpressured and underpressured part of the coal.

The five squares are the five 16-section pilot areas within each of which we drilled our pilot well: The Davis up there in 31 and 10 -- 31 and 12, excuse me; the Turner Federal in 30 and 10; the San Juan 28-and-6 pilot well in 28-and-6; the 28-and-5 pilot well in 28-and-5; and finally the Huerfano well down at 27-and-10.

As you can see, our five pilot wells are all outside of the original overpressured boundary, and they're all on this gently dipping Chaco slope without a lot of structural influence.

Overlaid on top of this, I've put a rate map, a daily rate map from July of 2001. And the basic explanation is that all the colors in blue are less than 500 million a day, 500 MCF a day, 500,000 cubic feet a day. The green colors are from 500,000 to a million, and red is a million a day and greater.

And you can see that all five of our pilot wells are in the areas where we have relatively low production compared to the fairway.

Some of the differences that Mr. Kellahin had asked me about earlier are not quite evident on this map, but the coals within the overpressured boundary are of higher range, they generally have higher CO_2 percentages of gas, they have more cumulative water and more cumulative gas production and more gas in place.

Q. How did we turn up with the label overpressure/ underpressure? Where did that come from?

A. Actually, what we're talking about is a normal pressure gradient of fresh water, which is about .433 p.s.i. per foot of depth. And so basically the coals inside the overpressured envelope -- the original overpressured envelope, I should say -- had a pressure gradient greater than .433 p.s.i. per foot, and outside there was less.

Q. Do you have a type log, Mr. Thibodeaux, so we can see how you as a geologist have vertically separated these coal packages?

A. Certainly. My next display is a type log. This is where we started internally. Our original segregation of the coal package is identification up in 32-11 in Colorado. We'll start on the bottom.

The Pictured Cliffs sandstone is directly below the bottom coals. The next three coals in sequence from bottom to top are Brown 3, Brown 2 and Brown 1. These are commonly known as the Basin coals throughout the Basin. That's separated just on top of that by a tonstein or one of the volcanic ash layers that Mr. Fassett referred to earlier. This tonstein is prevalent throughout the entire Basin; it's used as a correlation marker.

Above that we have the Green 3, Green 2, Green 1, P2 and P1 coals. These coals are commonly referred to as the middle sequence of coals in this Basin. Also within this sequence is another tonstein, the T2, which we found to be prevalent and recognizable throughout a large portion of the Basin.

And then finally above that are the Blue coals. You'll notice the Blue coals show two discrete coals. In some places they are very thick, in some places they are very thin. They are a grouping of a number of different coalbeds, as are basically each of these packages that we've identified.

Q. Do you have a schematic that would show how this cross-section is distributed across the Basin?

A. Sure, my next display is a schematic of the coals as we've labeled them.

As you can see, the Pictured Cliffs directly below the basal sequence of coals right in the middle of the schematic, more or less, is on the New Mexico-Colorado border. You can see as we go southwest in the updip direction or the landward deposition side, our basal coals are all present. They begin to pinch out to the northeast as a Pictured Cliffs sandstone.

We had a minor transgressive event when the Pictured Cliffs came back in and pinched out a number of the middle coals.

And then finally as we get older in the section, or younger in the section and up, we can see that coals are beginning to form that follow the Pictured Cliffs transgression all the way out of the Basin and are more prevalent in Colorado than in New Mexico.

Q. When we get to the isopachs that you have prepared of the coal, are they lumped together in groups, or do you have individual isopachs in the Basin that cover all these subdivisions?

A. We've identified the nine major packages that we have isolated in isopachs separately as a coal package unto itself, and those are the -- these coals on the left-hand side of the schematic from Blue all the way down to Brown 3.

Primarily we did not include the one labeled Y for yellow and the one labeled O for orange because those are more prevalent in Colorado than they are in New Mexico. They're considerably younger and had very little influence over the primary production we're interested in, in New

Mexico.

Q. Let me see if I understand your methodology. You have constructed individual isopachs for each of these nine coal packages?

A. Yes, I have.

Q. And what then did you do with each of the nine?

A. Each of the nine isopachs we've studied independently for density characteristics, gas-content characteristics. We looked at potential differences in isotherms, the way they were grouped together, so that we would have a better understanding of the coal, the Fruitland formation as a whole.

We found that we were probably more accurate in our gas-in-place mapping and our characterization of the reservoir when we looked at each group individually and added the groups up totally to look at the Fruitland Coal as a whole.

Q. As part of Burlington's team, are you working with reservoir engineers to study the coal?

A. Yes, I am.

Q. In order for the reservoir engineer to do his volumetric calculations of the original gas in place, how do you aid him as a geologist to make that calculation?

A. We use some data from our pilot wells that Chris developed in relationship -- Chris is my reservoir engineer; he'll be appearing after me -- our relationship between density of the coal and gas content of the coal, and we did that by layer for each of the layers.

We would then take those relationships and I would supply Chris with the actual density measurements on those coals from all the control points that we had, as well as the individual thicknesses of each one of those wells. And then we added all of that up together to make one total original gas in place using all of the beds combined.

Q. So when we get to it, we're going to see the individual isopachs, and then we're going to see a map that sums those isopachs so that he now knows the total thickness on which to run his calculations for gas in place?

A. Actually, we ran gas-in-place calculations for each of the individual beds and then summed them all up together into one.

Q. Okay. Before we get to that point, have you examined further the structure and the arrangement of these coal layers?

A. Sure, we've looked at that in great detail, especially in the 16-section areas around each of our pilot wells.

Q. Well, let's start doing some of that now. Let's turn to the display that shows the area and identifies the pilot projects.

Give us a second and help us get oriented as to what we're seeing.

A. Sure, you bet. This is a locator map. It just shows where I have regional strike and a dip cross-section. My strike cross-section runs from 32 North, 13 West, to the southeast down to 26 North and 4 West. My dip cross-section runs from the southwest in 27 North, 13, up to the northeast of 13 North and 8 West.

My strike section runs primarily through most of my pilot areas.

I have Farmington located up here. Let's see, that would be about 29-13, in the northeast corner of 29-13.

And then I have my five pilot areas, and I'll give you a description of each one of those in more detail later. But basically the Davis pilot area was in 31-and-12, the Turner Federal in 30-and-10, the 28-and-5 in 28-and-5, the 28-and-6 lives in 28-and-6, and the Huerfano in 27-and-10, in the next -- Colorado border.

Q. What's the purpose of the strike-orientation cross-section?

A. As a general rule, the coals are a little bit more correlatable in the strike sense, as Mr. Fassett implied earlier.

As the shoreline moved to the northeast, some coals were forming, and then as the shoreline moved again a different batch of coals formed. And so what we have is, along the strike section most of the coals are developed, and along the dip section we see the coals starting to lap onto each other as they get progressively younger.

Q. Do you have copies of these cross-sections?

A. Yes, they're my next two exhibits.

Q. Let's look at those.

A. First, we'll look at the Fruitland strike section. Again, the things I really want to point out on this are that these my nine coal packages that we've identified across the Basin. I was able to successfully correlate these across this entire strike section.

Q. What you're identifying are the horizontal lines on the display?

A. Yes, I have nine horizontal color-coded lines for each one of the coals. It's a little bit hard to read, I'm sorry about that, but the scale prevented me from making them any larger.

And so we're able to successfully correlate these across. We have the use of the red dashed line in the middle as the T2 tonstein, an excellent marker, and along the bottom we have the T1 tonstein, also an excellent stratigraphic marker. And the datum for this cross-section was the base of the basal coals, the PC lies directly below it.

Q. What are the principal geologic conclusions from looking at this strike section?

A. Principally that we're able to correlate the coal packages themselves across a very large area.

And secondly what I would like to point out is that these coal packages associate with each other differently. If we'll notice, across the well on the far left of this cross-section, you can see that these coal packages right here have split apart, and the next well to the right by maybe 50 feet. The top coal is now associated with some coals above it. The lower coal is now associated with coals below it.

This association of coals is very characteristic of what we see across the Basin where sometimes you can lump two or three packages together as one, and then in another well you have to lump several different packages together as a completely different layer.

Q. Let's look at the cross-section that demonstrates the other orientation.

A. This is the dip cross-section, which runs from the southwest to the northeast.

And as you can see where we started in the southwest, we only have representation of the three basal coals, or the three oldest. We do have the tonstein, the T1 and the T2 tonstein present, which we used for markers.

And as we go farther to the northeast and follow the steady retreat of the Cretaceous shoreline, we begin to develop all the rest of the packages that we have been able to map across the Basin.

And again, you can see these coals associated with each other in different groupings, depending on where you are in the Basin.

Q. Can you give us an illustration of the geologic setting or depositional environment that causes this to occur?

A. Sure, my next slide will show a particular map that we developed that I enjoy. This is called the T1 subcrop map.

Basically, T1 is the tonstein. And the little type log in the bottom left of this slide with the red line right through it, that is the volcanic ash marker that lies just above the basal coal section.

Now, that represents an instantaneous moment in time. What we've done is, we've taken that ash bed and mapped what it was lying on at the time it was deposited. If it was lying on a coal, we labeled that brown on our map. If it was on a clastic such as a shale or a sandstone, we colored it yellow. If it was absent completely from the section, we assumed it was washed away by water and colored that blue.

And then we further interpreted to where our land sediments turned into marine deposits, based on the wireline log responses and developed our shoreline.

And what we have in essence is, if we had taken a plane and flown over the Fruitland Coal 75 million years ago and mapped or taken a picture of what it looked like just prior to the volcano blowing up, this is what we would have seen. We would have seen this nice little shoreline transected by all these rivers feeding the Cretaceous sea, and then in between these rivers the swamps and floodplains and things that were developing vegetation with coal plains on them.

And we further -- I took this and I rotated it about 90 degrees, so the shoreline is actually rotated northwest-southeast, so that it would coincide with a picture I have of a modern peat-forming environment in Indonesia, the Mahakam delta.

And other than the shoreline differences where we have a straight shoreline and a lobate shoreline, you can see remarkable similarities between what we've mapped in our geologic depositional setting to the left in the Fruitland, and what's going on currently in the Mahakam delta in Indonesia. We can see the same river systems bisecting these different coal-forming areas or peat-forming areas.

And one other thing I'd like to point out is that if this was buried and several million years from now it turned into a coal forest, we see that this same coal near the shoreline, this is made up of different plant material than the coal made up in here, than the coal made up in these hardwood forests up here.

And so the same coal would have different characteristics or qualities, basically, of ash content and vitrinite reflectance than -- depending on where it was in this depositional setting. And we've used this to our advantage in trying to understand the variances in coal quality throughout the Basin.

Q. Let's turn to the next slide.

A. And finally, this is just one cross-section. We do have a cross-section for each of the pilot areas. We only felt it was necessary to show one to illustrate our point.

This is a strike section from the northwest corner of the Davis area to the southeast corner. It starts in 32 North and 12 West, runs through the Davis well in Section 12, 31-and-12, and then ends up in northeast 17, 31-11, in the southeast.

And mainly what we wanted to show is, this is how we grouped our coals for this individual well -- they change from every well -- is that we had the P2 and G1 coals grouped into one layer, the G2 coal as a second layer, the G3 and B1 as a third, and finally that lower B1 and the other -- B2 and B3 coals is the 4th layer.

And you can see that even in this relatively short cross-section of only a few miles, the changing character of these coals. In particular, I'd like to point out the basal coal in southeast, or on the right, which is very thick and well developed.

And as we move to the northwest or to the left of this slide, we'll see this coal thin and split. Although these are the same coal packages, all formed during pretty much the same time, we see some fairly remarkable discontinuities and changes in the character of these coals.

And this was typical of all the infill areas that we looked at.

Q. From a geologic perspective, how would you go about deciding the density of your wells in a section to access multi layers of coal that had this type of discontinuity associated with it? How do you find what to do with your wells and what density do you try to achieve?

A. Actually, we went through every wireline log we could find in every section and looked for wells where we had a good wireline data, basically good row B and good gamma-ray data, which is identify coals from non-coal formations. And so if we found two per section, we figured that we had a good enough control.

Sometimes we had three and four per section, where we had some doubts about the quality of our wireline data. Some sections we had no data at all of good wireline quality. So basically the data itself dictated how much we could actually get per section.

Q. When we look at the Davis infill area strike section, are the conclusions here applicable to the other four pilot areas?

A. Absolutely.

Q. Do we see a vertical discontinuity of these different layers?

A. We see vertical discontinuities, differences in the vertical grouping and separation between these layers, as well as lateral discontinuities and differences in the lateral continuities of each of the coalbeds.

Q. Have you sampled enough different combinations in the non-fairway coals to give you illustrations of the different variables available?

A. We believe we have sampled a wide variety of geological combinations, of both lateral and vertical heterogeneity in these coals, and we believe that that is directly transferable to the vast majority of the underpressured area.

Q. All right, sir, let's turn to Exhibit Tab 5 and let's look at the summaries that you have for each of the five pilot areas.

A. Sure. What we'll do is, we'll talk about the five pilot areas and how they relate to the packages that we've been able to map, and how that relates to original gas in place.

One of the things that we wanted to do was, we tried to get good representation of all the major coal packages, and we want to locate these in areas of high, medium and low production areas.

In other words, if we had the same coals in all of our wells, we wanted some wells that had those same coals that didn't produce very much, some that produced a pretty good amount of gas, and some that some that produced a -- prolific for basically underpressured coals. We picked those locations accordingly. Each well within those locations had a unique grouping of those coal packages as they float around in the section.

And then finally, we used the data from all those individual layers, as we discussed earlier, to develop what was the end result of this, was original-gas-in-place map, so that Chris could begin using the data that he got from our pilot infill wells to extrapolate that throughout the rest of the Basin to determine the effectiveness of 320- versus 160-acre wells.

Q. Can you now go through the various building blocks to get us to the conclusion map that shows us the gas-in-place --

A. Sure.

Q. -- calculation? Let's do that.

A. This slide is basically what we've already talked about. This is the location, the actual physical location, of the five pilot wells. Around each of those we drew a 16-section area which we studied in great detail. And then Chris used that data, geological data and other data, to input into the simulations and models.

This is a cumulative production map. You can see a similar map from Mr. Hayden earlier. The colors are a little bit different. Basically, the blue are -- anything in blue, the wells have accumulated less than .5 BCF. The greens are half a B to a B. Red is 1 to 7 B's, and yellow is greater than 7 BCF cumulative production to date.

Again, on all these slides I'll have the five pilot areas marked. I've located Farmington again for your reference. And the blue outline is the outline for the 90 or so townships that we were able to acquire digital wireline data on and map. And so that blue outline is basically the basis of all the data for the maps that you'll be seeing next.

All these are similar, all the maps I'm going to show you are similar in design. They're all isopach thickness of the nine coal layers or coal packages that we mapped across the Basin. They're all in the same contour interval of 5 feet. On the left of each one of these maps you'll see a type log, and circled in a red box will be the coal layer that this isopach map represents.

The New Mexico-Colorado state line is in there for reference, as well as the five 16-section pilot areas that we looked at in detail.

The first one -- We'll start with the oldest coals and work our way up.

The first is a Brown 3 thickness isopach. At this point in time, the shoreline -- and I can't describe this without reference -- was out here. And I know that "out here" doesn't translate well. The shoreline was several dozen miles, basically, past the thickness of these coals. These coals hadn't developed vegetative cover yet, the land was too new. And so this is the very earliest, first formation of Fruitland Coals we've seen in the Basin.

Brown 2, the next coal up, we can see a nice stable shoreline here during Brown 2 formation. We had --

This again represents multiple coal- -- individual coalbeds that were formed during Brown 2 time. And we can see that we had a nice stable shoreline and a very stable depositional environment. We had good representation of this coal throughout most of the Basin, or these coal packages, and all five of our pilot infill wells are represented with a Brown 2 coal.

We'll move up to the last of the basal coals, the Brown 1. We can see again the shoreline orientation has not changed, it has prograded just a little bit farther to the northeast. The thin white spots are actually development of new fluvial systems that are now bisecting these coal pods.

What I'd like to point out in this slide in particular is that although these coal packages are correlatable throughout the entire Basin, individual coal beds and within the package itself, there exist significant discontinuities. There's a thin running right through the Davis area, there's another thin running just northwest of the Turner Federal area where river systems were bisecting these coal-forming swamps that we see in the darker brown where we had not very much disruption.

Now, we'll jump above the T1 tonstein and get to the first of the middle coals, what are commonly called middle coals, or the Green 3. Again, we can see the same thing, the shoreline orientation is the same, it maybe has moved a couple miles farther to the northeast. We see down in the southeast portion of this, the 28-and-6 and 28-and-5 areas, we had a good stable development of vegetative cover that turned into coal. In the northwest these coals probably had not quite as stable of an environment; we never did develop a very thick amount of those up there.

We'll move further up the section to the Green 2 coal, and one thing in particular I'd like to point out was that little fluvial system that was developing earlier has now become a pretty major river system that has cut this coal pod completely in half. We also see down just north and right through the 28-and-6 area, another little river system begin to develop. But this system pretty much disrupted any plant or vegetative development for all of Green 2 time.

We'll move up to the final of the G coals, the Green 1 thickness isopach. Again, primarily what I'd like to point out is, the shoreline has remained relatively stable in this position. We can still see the influence of the river system in the northwest and the river system in the southeast that has bisected this coal, and we see numerous isolation points between these individual coal pads in the lateral sense.

We're now moving up into the upper middle coals, so this is P2. This is a very well developed coal that's easily recognizable. It's made up of two or three beds that can be correlated off and on throughout most of the Basin. But even during this point of very stable peat deposition we can see this river system was still quite active in here, and basically preventing the deposition of any peat or coal formation later in time.

Finally, the last of the upper middle coals will be the P1 coal thickness. One thing I'd like to point out, the shoreline has prograded quite a few miles now to the northeast, the river system that was so prominent throughout there, through many of the coals that we looked at earlier is now almost gone. We can see the traces of some other river systems winding their way through this, as we had intermittent fluvial systems develop and then move. And now what we can begin to see in the southwest of this map, in the lower left hand corner, is dry land encroaching behind the coal-forming swamps that formed up close to the Cretaceous sea line.

And finally -- and this is the last coal package we'll look at, an isopach by itself -- these are the Blue coals. These are made up of a number of individual coal beds that were too difficult to break into individual packages. We lumped a large group of them together. At this point in time what I'd like to point out is that the shore line has migrated certainly outside of my mapped area, and probably outside the Basin at this point in that we see a lot of dry land encroaching where we had no more swamp development updip and to the landward side of this map. Even in this map, although we don't have the prominent fluvial systems that we had earlier, we can see the thins that run and bisect this coal from one end to the other, from the land side all the way to the sea where we had intermittent fluvial development.

So if you add all those up together, all those layers together, what we have is a total thickness isopach.

And one thing I'd like to point out on the isopach is that you can see the prominent thin that we discussed earlier. That is a direct result of that fluvial system that was active for so much of the time, that many of the coal packages we've identified were deposited and laid down.

We can see, if we use our imagination, a nice delta formation right here. This was a fairly stable delta platform where the coals were developed. It looks very much like the Mahakam delta we looked at earlier. It shows us that we we're probably on the right track as far as interpreting the depositional environment for these coals.

And we can also see the line right -- that runs from the northwest to the southeast and bisects the

Colorado border. This is the place where the Pictured Cliffs shoreline had stalled for quite some time, allowing for these nice swamp developments updip and landward.

So we take all that information and all the data from all those isopach'd layers and density-versus-gas-content relationships that Chris developed using data from our pilot wells, and we're able to finally come up with a Fruitland Coal original-gas-in-place map.

The colors are fairly easy. The blue is 0 to 5 BCF per 320-acre spacing, the greens are 5 to 10 BCF, and the reds are greater than 10 BCF per 320-acre spacing.

Now, this is primarily influenced by several factors. One, thickness of the coal, of course. Two, depth and/or pressure of the coal. The higher the pressure, the higher storage capacity that these coals have. And finally by rank. The higher rank of the coal, the greater ability that coal had to both generate and store gas later in time.

And so the overpressured battery that we see in red also fairly closely parallels a jump in rank or the coalification of the coal from about .78 vitrinite reflectance on greater. So therefore we can see very evidently and clearly that the coals in the fairway area that we discussed earlier have a much higher gas content.

The coals in the 28-and-6 and 28-and-5 area show a fairly good gas content, primarily because there was very good development. We looked at that stable peak forming platform earlier. And also this is the deepest part of the Basin, so they have more pressure and more thickness of the coals there, and therefore they have a higher original gas in place.

As we move updip to the Huerfano area the coals are thinning, they're a lot shallower, and therefore our gas-in-place numbers are starting to decrease.

So finally, I have a conclusion slide, and this is quick.

There are significant discontinuities in the major coal packages. The major coal packages, each and every one, had discontinuities, primarily because of fluvial systems that disrupted peat formation.

The coal quality displays vertical and lateral heterogeneity. In other words, if it was near a river and that river flooded periodically, it dumped a lot of stuff into that peat, which then turned into what we call ash in the coals.

The coals that are farther away from those rivers or farther away from the shore had less disruption of the plants that were growing there, that turned into peat, that turned into coal. And these are generally a little cleaner, so there's a lot of that going on.

And because of all the heterogeneity of all these individual coalbeds and the packages, it is my belief that infill drilling will add additional reserves that currently aren't being tapped on the current 320-acre spacing.

And that concludes my presentation.

MR. KELLAHIN: Mr. Examiner, we move the introduction of Mr. Thibodeaux's Exhibits behind Tabs 4 and 5.

EXAMINER STOGNER: Any objections?

MR. CARR: No objection.

MR. HALL: No objection.

EXAMINER STOGNER: Exhibits 4 and 5 will be admitted into evidence at this time. Thank you, Mr. Kellahin.

Mr. Hall?

EXAMINATION

BY MR. HALL:

Q. Mr. Thibodeaux, briefly, do you participate in the preparation of Burlington's drilling programs on a regular basis?

A. Yes, I do.

Q. Do you know if Burlington is preparing a new drilling program for the Fruitland Coal in New Mexico?

A. We're currently in our 2003 budget process right now.

Q. And at this point is it known how many locations in the Fruitland Coal that Burlington proposes to drill?

A. That number hasn't been set yet. We haven't submitted our budget, but we have a rough idea.

Q. And what is that?

A. Around 150 wells, I'm pretty sure.

MR. HALL: All right, thank you.

EXAMINER STOGNER: Mr. Hall.

Mr. Carr?

MR. CARR: No questions.

EXAMINER STOGNER: Mr. Bruce, Mr. Dean?

MR. DEAN: I have no questions.

EXAMINATION

BY EXAMINER STOGNER:

Q. In referring to the cross-sections and the depiction of the different deltas over time, there's a substantial distance between the lower Green and that upper Green. Let me see, I'm not using the right terminology. Let me switch over here to -- If you had the G3 and the G2, there's a substantial thickness there. What was this made of, and what happened at that depositional time?

A. Well, primarily the reason that we picked G3 is -- G3 instead of another brown, is because of that tonstein that separates the G3 from the brown coals. And it was just a matter of schematics, Mr. Examiner. We could as easily have lumped that in with the basal because it's most often associated with the basal section.

In between that time what you have was a series of -- a period of time where primarily clastic deposition was going on. There wasn't a lot vegetative matter, or if there was, it wasn't being preserved as peat so that it could later form into coal.

Q. So there wasn't a change in sea level at that time?

A. There was one, and it occurs -- it was a relatively -- a fairly major transgressive event, and it occurred right after G3 time.

If you look on the schematic cross-section, which was about the third slide I showed, I believe, you can see that orange tongue of upper Pictured Cliffs sandstone coming in from the right. It lies right on top of the G3 coal. And basically what happened was, that didn't extend much farther south than, say, 29 North, give or take. But that disrupted the coal-forming environment quite considerably.

Q. What happened to the disturbance between the top of the P1 to the bottom of the lower Blue coal?

A. That was basically, in my opinion, at least, it looked to me like after P1 the shoreline made a major regressive move. For quite a number of years it was stalled, more or less, in about a 15- or 20-mile-wide belt where it moved back and forth within that 20 miles but did not -- there's a period of time when the transgression -- or regression, the retreat of the Cretaceous sea -- it stalled for out quite a number of time, and then after P1 deposition it looks like it just took off again to the northeast.

And if you remember between the P1 shoreline, the Blue shoreline had already moved all the way out of the Basin at that point in time.

Q. Mr. Thibodeaux, were you involved in the hearing in which the five infill areas were chosen at the time by Burlington?

A. Yes, sir, I was.

EXAMINER STOGNER: And that was in August of 2000; is that correct, Mr. Kellahin?

MR. KELLAHIN: I thought it was May --

THE WITNESS: I believe it was May --

MR. KELLAHIN: -- of last year.

THE WITNESS: -- of last year.

EXAMINER STOGNER: May. Okay, because I want to make administrative notice. Was that Order Number R-11,639?

MR. KELLAHIN: Yes, sir. Here's a copy of that order.

EXAMINER STOGNER: Okay, I'll take administrative notice of Case Number 12,651, which resulted in the issuance of Order Number R-11,639.

Q. (By Examiner Stogner) My question is, were you expecting to find what you found, that you're presenting today, or any surprises? What were you expecting at the time?

A. We already mapped these same nine layers -- actually, we had mapped eleven of them -- for an area that didn't quite extend -- it barely extended past the fairway coals. And so we picked up another 60 or 70 townships of digital data and began mapping that.

So I had already had a pretty good idea of what the geometry of these coals were and the depositional environment. There were not a lot of surprises. Actually, the new data we tacked onto the southwest to cover the underpressured portion of the field fit very nicely with the data we have previously mapped to the north and northeast.

Some of the only surprises that we may have seen were the high degree of noncommunication between these 320-acre wells. As we had stated in the original hearing for the pilot infill, when Chris Clarkson had originally simulated the 28-and-6 area, we were doing single-well pressures. And most of the wells in the 28-and-6 area showed more or less the same bottomhole pressure when all the zones are open.

And then when we finally had the opportunity to test these things by layer, what surprised us was that there was such a variation in degree of communication between these various layers.

And that was maybe the only real eye-opener for me, was the high degree of noncommunication some of these layers had on existing wellpads.

EXAMINER STOGNER: I don't have any other questions of Mr. Thibodeaux.

Any other questions?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: You may be excused. Thank you, Mr. Thibodeaux.

THE WITNESS: Thanks.

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Mr. Stogner, Mr. Clarkson's testimony exceeds an hour. You may want an early lunch. We're 15 minutes short of noon. If we start his presentation it will extend through the next hour or so.

(Off the record)

EXAMINER STOGNER: We'll recess for lunch at this time and reconvene at one o'clock.

(Thereupon, noon recess was taken at 11:48 a.m.)

(The following proceedings had at 1:15 p.m.)

EXAMINER STOGNER: Before we get started here, off the record.

(Off the record)

EXAMINER STOGNER: -- and this was filed by Mr. Jim Bruce for San Juan Coal Company. Is there any discussion with the legal --

MR. KELLAHIN: Mr. Stogner, I represent Richardson Operating Company. We were the Applicant in that case. It was heard by you last November. An order was issued recently. And at the prehearing conference last Tuesday, we discussed this topic with the coal company and you present.

We're opposed to Mr. Bruce's motion.

At that prehearing conference I asked that the Richardson property, which also includes about 1600 acres that Dugan controls, I asked that that area remain included in this hearing now, because the Richardson property is only part of the dispute with the coal company. Mr. Bruce's filing shows an outline, and he's outlined in green the rest of the coal property.

So the dispute with the coal company is more property than is involved with Richardson. We ask that that be included in the case today, and you decided to exclude it. That matter is currently before the Commission on the *de novo* appeal.

Having excluded the acreage, it makes not sense to now encumber this record with a transcript for a case that involves acreage that you've already excluded, so I see no point in doing this, unless you want to change your mind and put the Richardson acreage back into this hearing, and I'd be delighted with that change.

MR. BROOKS: Mr. Kellahin, for purposes of clarification on the exhibit you just showed, what is the acreage that was the subject matter of the severance order that we entered? I remember asking several questions of you and of other counsel that were there about this issue --

MR. KELLAHIN: Mr. Brooks, if you look at Mr. Bruce's exhibit --

MR. BROOKS: Yes, sir.

MR. KELLAHIN: -- the area outlined in yellow is the acreage approved for infill drilling for Richardson.

MR. BROOKS: Right.

MR. KELLAHIN: Within that area Mr. Dugan controls about 1800 acres. It's not specific to operator, it's not specific to the well. That area has been excluded, and it includes areas that are controlled by Dugan.

MR. BROOKS: Right.

MR. KELLAHIN: In addition, outside of the yellow, in the green area, there are other leases held by Dugan and others that now have not been excluded.

MR. BROOKS: So the --

MR. KELLAHIN: Does that answer --

MR. BROOKS: -- green -- the area that is within the green outline but not within the yellow outline is still within this proceeding --

MR. KELLAHIN: Right.

MR. BROOKS: -- pursuant to our severance order? That was our understanding.

MR. KELLAHIN: Right.

MR. BROOKS: Okay, thank you.

EXAMINER STOGNER: Mr. Dean?

MR. DEAN: My name is John Dean, I represent Dugan Production. And I guess our position is that we recognize that in the other case we have some acreage that's bound by that case and we don't dispute that, but we have other acreage surrounding that co-exists with coal leases, and our understanding from Mr. Bruce is, there's going to be no request that any Dugan land be excluded from this hearing, other than what's in the Richardson case. As long as that's true, we don't have any objection to that being put in the record.

But if they're going to ask that the Dugan land be excluded, then we object to the Richardson record being put in this case, which we did not appear at by our own choice, but we did not appear at that hearing. We do recognize that we're bound in that case, our acreage that's inside the acreage that's described in that application.

But it's been represented to me by Mr. Bruce that there be no request from San Juan Coal to exclude any Dugan land from the change in the Fruitland Coal rules, if there is one. And as long as that's the case, we don't object to the record being put in.

But we don't understand why it needs to be put in here, because the land that it refers to is excluded from this hearing, which is part of our land. So we don't understand why it needs to be in there.

MR. BROOKS: I believe that their motion, which you have read, does not ask for any specific relief, other than to place this evidence in the record.

MR. DEAN: No. But one would wonder what the purpose of having that record in this case would be.

MR. BROOKS: Okay.

(Off the record)

EXAMINER STOGNER: Thank you, gentlemen. At this time, I'm going to approve the motion and incorporate the record in Case Number 12,734, into this matter at this time.

So with that, Mr. Kellahin?

Can I get somebody to close the doors in the back? Thank you.

MR. KELLAHIN: We're going to start on Mr. Chris Clarkson's presentation. Mr. Clarkson is a reservoir engineer with Burlington, and his responsibilities for his company involve the engineering aspects in the non-fairway coal.

CHRIS CLARKSON,

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. Clarkson, for the record, sir, would you please state your name and occupation?

A. My name is Chris Clarkson. I'm a reservoir engineer with Burlington Resources on the Fruitland Coal Team.

Q. You're going to have to speak up or pull that closer to you, sounds like it's on.

A. Is that better?

Q. Yes, sir, you're soft-spoken, so you're going to have to talk into that.

You reside here in Farmington?

A. Yes, I do.

Q. Have you been one of Burlington's representatives, technical representatives, that has participated on the Committee work for the pool?

A. Yes, I have.

Q. What has been the extent of your involvement?

A. My involvement has been to determine the reservoir-engineering data, the need for infill drilling in the underpressured envelope.

Q. Have you testified before the Division on prior occasions?

A. No, I have not.

Q. Summarize for us your education. When and where did you get your degrees?

A. I obtained a bachelor's of applied science and master's of applied science and a doctorate at the University of British Columbia in the years 1992, 1994 and 1998.

Q. Summarize for us your employment.

A. I've been employed with Burlington Resources for the last four years in the capacity as a reservoir engineer, specializing in coal, Fruitland Coal.

Q. As part of that specialization, do you utilize any of the disciplines or skills associated with reservoir simulation?

A. Yes, I have.

Q. Summarize for us what it is that you do with that aspect of engineering.

A. We have utilized reservoir simulation to determine the appropriateness of infill drilling in portions of the Fruitland Coal as well as projecting estimated recoveries for the existing spaced wells.

Q. If I were to call Burlington here in Farmington and ask for the simulation expert for the coal in the underpressured area, who would I talk to?

A. That would be me.

Q. Have you participated, then, on behalf of Burlington with the study of the engineering aspects for the five pilot projects in the non-fairway properties?

A. Yes, I have.

Q. What has been that involvement?

A. My involvement has been to perform the -- or to oversee the reservoir testing of those five infill pilot wells, as well as perform reservoir simulation of the pilot wells, and immediate offset wells to those pilot wells.

Q. What position did Burlington take concerning the Committee work product that now is before Mr. Stogner as an Application for a rule change?

A. Burlington Resources supports the Committee's Application.

Q. As part of that Committee process, what portion of the presentation did Burlington commit to present to Mr. Stogner?

A. Burlington Resources has committed to present information on the underpressured portion of the Fruitland Coal Pool.

Q. Have you had sufficient data in order to study that area and reach engineering conclusions?

A. Yes, we do.

Q. And have you reached those conclusions?

A. Yes, we have.

Q. Are we about to see a presentation that includes those conclusions?

A. Yes, sir.

MR. KELLAHIN: We tender Mr. Clarkson as an expert reservoir engineer.

EXAMINER STOGNER: Any objection?

MR. HALL: No objection.

EXAMINER STOGNER: Mr. Clarkson, on your educational, is that a bachelor of science in engineering?

THE WITNESS: Oh, I'm sorry, it's applied science or engineering, yes, sir.

EXAMINER STOGNER: And you got your PhD at British Columbia in what discipline?

THE WITNESS: Geological engineering.

EXAMINER STOGNER: Dr. Clarkson is so qualified.

Q. (By Mr. Kellahin) Let's turn to your first slide, Mr. Clarkson, and let's start with a summary so that Mr. Stogner has an outline of where you're going with your presentation.

A. Yes, sir, I will begin with a brief outline of the subject matter that I will talk about today.

I will start with a summary which includes the four key conclusions that we have obtained from the infill pilot study that Burlington Resources has implemented, along with a recommendation regarding the need for increased density in the underpressured envelope.

I will then present a series of exhibits that support those key conclusions.

The next topic will be an overview of the pilot well testing program, followed by a discussion of the well testing simulation and economic results. Specifically, we will talk about three of the pilot wells that we drilled, the Huerfano Unit 258S, the Davis 505S, and the San Juan 28-and-6, 418S. I will go into detail only with the Huerfano Unit well to illustrate the types of testing and reservoir simulation that we performed in the infill pilot study. I will then summarize the results of the Davis 505S and the San Juan 28-and-6 Unit 418S.

The next subject will be -- I'm trying to understand the transfer of pilot well results to the underpressured envelope. I will demonstrate that we can take the pilot well results and extrapolate those to the rest of the underpressured envelope.

And finally, I will finish up with some conclusions regarding the study.

Q. You have performed simulation studies of three of the five pilot areas?

A. Yes, sir.

Q. What happened to the other two?

A. The three pilot wells -- or pilot areas that we did simulate represented the range in testing that we had obtained for the underpressured envelope. The two wells that were left out of the study or the simulation work were the Turner Federal 210S and the San Juan 28-and-5 201S. The purpose of leaving those out was that we believe them to be analogous to the Davis 505S in terms of depletion characteristics and the performance of the offset producing wells, so we chose to model only the Davis 505S.

Q. Let's turn to your summaries. When we do all the work and get to the conclusion, let's talk about the conclusions now.

A. The four main conclusions that we have obtained as a result of the infill pilot study was that current well density in the underpressured portion of the pool results in inadequate recovery. Stated differently, we expect a relatively low recovery of the in-place resource in the underpressured envelope.

The second conclusion is that pilot wells demonstrate inadequate drainage in some or all of the coal layers as inferred from data, measured pressure data, that we obtained at those infill pilot wells.

The third conclusion is that additional completions -- in this case, one per spacing unit -- will result in additional recovery of reserves.

And lastly, the final conclusion is that pilot well results are transferable to the rest of the underpressured envelope.

Q. Let's turn to the locator map that shows the Division the location of these pilot areas in relation to other markers.

A. Sure. This is a locator map that shows the location of the five infill pilot wells that the NMOCD granted us approval to drill last year. The wells are located here. This is the Davis 505S, the Turner Federal 210S, the Huerfano Unit 258S, the San Juan 28-and-6 418S, and the San Juan 28-and-5 201S.

Other prominent markers on this map include the City of Farmington, which is located here, the Cities of Aztec and Bloomfield. The Colorado-New Mexico border is located here.

Q. Let's turn to the next display. Are you working with a geologist on this project?

A. Yes, I am.

Q. And who is the geologist?

A. Mr. Steve Thibodeaux.

Q. Mr. Thibodeaux testified this morning that his work product resulted in the preparation for your further use of a Fruitland original-gas-in-place map?

A. Yes, sir.

Q. We're now looking at a map that shows us recovery factors?

A. Yes.

Q. Before we get to the recovery factor, do you have to start with a gas-in-place map?

A. Yes, you do, a geologic model needs to be constructed in order that an original gas-in-place map be created. Mr. Thibodeaux has created such a geologic model.

Once that is completed, the use of additional adsorption isotherm data or gas-content data is used in the calculation of an original-gas-in-place map.

Q. In your engineering opinion, was Mr. Thibodeaux's work suitable for your use?

A. Yes, sir.

Q. And were you able to create a map that showed the original gas in place for the entire pool?

A. Yes, we did.

Q. And that was one of the last displays Mr. Thibodeaux showed?

A. Yes, sir.

Q. All right. Now, let's look at this one. Your work was focused on the non-fairway coals?

A. That is correct.

Q. And so what we see is a result of that work summarized on this map?

A. Yes, sir.

Q. Why is the white area or the fairway excluded from this presentation?

A. At this point in time, Burlington Resources does not have sufficient data at their disposal to create an accurate recovery-factor map for the fairway.

Q. Let's go back and talk about what the data is, and what the engineering methodology is, that distinguishes the fairway analysis from what you have available to work with in the non-fairway properties.

A. The two components, the key components that are required for the generation of a recovery-factor map are an estimation of the estimated ultimate recovery of the wells, as well as an original-gas-in-place calculation for a 320-acre-spaced location.

The fairway differs from the underpressured envelope in that historically Burlington Resources has used material balance methods to calculate the estimated ultimate recovery in the fairway. Because of the lack of pressure data that we have available to us, we simply cannot generate estimated ultimate recovery maps for the entire overpressured fairway.

In addition to that, original-gas-in-place maps for the fairway have not typically been used by Burlington Resources as an estimate -- or as a tool for estimating the ultimate recoveries. We are currently in the process of generating those original-gas-in-place maps and have not completed that study at this point in time.

Q. The engineering study that Burlington has ongoing in the fairway --

A. Yes.

Q. -- is done by an engineer other than you?

A. That is correct. We have a staff reservoir engineer dedicated to that task.

Q. Are Burlington's conclusions, engineering conclusions, about the fairway any different than Amoco's engineering conclusions brought to the Committee?

A. No, they are not.

Q. You agree that there's additional opportunity for infill wells in the fairway?

A. Yes, we do.

Q. Describe for me now what engineering data you have available to you to calculate estimated ultimate recoveries from the non-fairway properties, and then by subtraction of gas in place get you to the remaining gas to be recovered.

A. The underpressured envelope has -- basically, we have access to well production data throughout the underpressured interval. Conventional decline-curve analysis is appropriate for the estimation of estimated ultimate recoveries in the nonprolific or the underpressured portion of the pool.

We have calculated estimated ultimate recoveries using those techniques for a well population of approximately 1270 wells in the underpressured envelope, hence we feel that we have a very good representation of the underpressured envelope in terms of estimated ultimate recovery.

Q. Are you aware, Mr. Clarkson, that the Division has determined by their pool orders that conventional decline-curve analysis cannot be used as an engineering tool to determine estimated ultimate recoveries in the fairway?

A. Yes, I am aware of that.

Q. And at this point you continue to develop with other engineers the pressure data to look at opportunities for drilling additional wells in the fairway?

A. That's correct.

Q. All right. Let's look at, then, your work product in the nonfairway properties.

A. All right.

Q. What have you concluded?

A. Before we leave this map, I would like to point out a couple of additional points.

The five infill-well locations are spotted on this map with red squares. One of the reasons that we have chosen the infill-well locations we have is that they represent the range in expected recovery that we would see in the underpressured envelope.

For example, the Davis 505S, Turner Federal 218S and the 28-and-5 wells are located in areas where we expect the range of recovery factors to be between zero and 20 percent of the original gas in place. The San Juan 28-and-6-Unit location is spotted in an area where we expect the recovery factors to range from 20 to 40 percent. And finally, the Huerfano unit pilot is spotted in a more prolific area where we expect the offsetting producing wells to recover between 40 and 70 percent of the original gas in place. Hence, we believe we have represented the range of recoveries that one would see in the underpressured envelope.

Q. All right, sir. What have you concluded?

A. Our first conclusion is that current density results in inadequate recovery. What we are showing here is a pie chart that demonstrates the recovery of original gas in place with the current well spacing for a population of approximately 1270 wells, assuming a 320-acre drainage volume.

The estimated recovery of original gas in place for this well population is only 18 percent, which means that approximately 82 percent of the resource is left in place. The specific numbers associated with this pie chart is that the original gas in place for this population of wells is approximately 5 TCF, and the estimated ultimate recovery for this population of wells is approximately .9 TCF. So this slide demonstrates the current density results in inadequate recovery.

The next series of slides that I will present illustrate conclusion number two, which is that pilot wells demonstrate inadequate drainage in some or all of the coal layers. I will show a series of bar charts that show the layer pressure data that we were able to collect for the five infill pilot locations. I will start with the Davis 505S.

The red bars represent the original pressures estimated at the infill location prior to any coal depletion in this particular area.

The blue bars represent actual measured pressures at the infill location upon the completion of drilling of the infill well.

For this particular case, it should be noted that very little pressure differential exists from initial pressure to the current pressures, which illustrates to us that very little depletion has occurred at this particular location.

I also will point out that the top pressure and the middle -- pardon me, the top measured pressure and the third measured pressure were still building when we pulled the gauges out of the hole, meaning that those pressures will probably build up to greater than what is represented here.

Q. Prior to the pilot project study, did you have this layered pressure data to work with?

A. No, sir, we did not, we only had single-layer pressures at our disposal for some areas.

Q. Please continue.

A. The next slide shows the three measured pressures or the three layer pressures for the San Juan 28-and-5 Unit 201S. The red bars again represent the original pressures estimated at this location. The blue bars represent the current measured pressures at this location.

It is important to note that the original pressures estimated for this area are somewhat smaller than the actual measured pressures, and the reason for this is that those pressures, initial pressures, are estimated from the original pressures from offset producing wells, and there are some cases where the pressures of the offset producing wells may not have built up to their full pressure. This is a very low-permeability area, and it takes a substantial period of time for pressures to build up. Hence the discrepancy between the original pressures and the current pressures.

However, in this example it is clear that the current pressures are illustrative of very little depletion at this particular location.

The next slide shows the four-layer pressures for the Turner Federal 210 S, again the original pressures being red, current pressures being blue.

This well in this area, we have the same situation as the San Juan 28-and-5 Unit in that our estimated original pressures are somewhat lower than the current measured pressures.

Also, I will point out that in the top zone we were not able to get a good pressure. Our first pressure built up to about 52 p.s.i. We re-perforated this zone and still got the same pressure. So this is somewhat of an anomalous point.

The rest of the pressures built up to similar to the original pressures in the well.

The next slide illustrates the layer pressures associated with the San Juan 28-and-6 Unit 418S. In this particular case is an example of significant differential depletion between layers.

The top zone, as you'll notice, the pressure built up to very close to what the original pressure was calculated to be, whereas the three bottom zones showed a substantial amount of depletion. This indicates that there appears to be inadequate drainage in at least one of the coal layers, whereas the other three coal layers appear to be depleting.

Our final example is from the Huerfano Unit 258S well. This example is similar to the 28-and-6 in that the top layer pressure appears to show very little depletion, whereas the middle pressure shows a substantial amount of depletion from original pressure. The third pressure, we were unable to obtain a reasonable pressure estimate on this zone.

Q. You've got some layered pressure data for all five pilot wells now?

A. Yes, we do.

Q. And having looked at that engineering data, what does it tell you about well density?

A. This data supports increased density in the underpressured envelope in that some, if not -- or many coal layers show very little or no depletion at the infill locations.

Q. What's the next part?

A. This next slide supports our conclusion number three, which is that additional completions result in additional recovery. What we have shown here is a bar chart that shows the recovery of original gas in place for the three modeled pilot areas. The red portion of the bar represents the recovery of original gas in place for the current spacing. The blue portion of the bar represents the incremental recovery we would expect for infill drilling.

For example, with the Huerfano Unit 258S, we expect the parent wells or the currently spaced wells to recover approximately 57 percent of the original gas in place. The infill wells will increase that recovery to approximately 65 percent of original gas in place. This represents a 15-percent increase in recovery for this area.

Q. In the absence of the infill well, then, you would not get this additional 15 percent?

A. That is correct.

Q. So the 15 percent in the Huerfano study represents additional recovery from the pool that you would not otherwise achieve?

A. That is correct.

Q. Okay. What happens in the 28-and-6 Unit?

A. In the 28-and-6 area, we expect somewhat more incremental recovery. The 28-and-6 unit parent wells are projected to recover approximately 29 percent of the original gas in place, whereas infill drilling should increase that recovery up to approximately 40 percent of original gas in place. This represents a 37-percent increase in recovery in this particular area.

The Davis area, being the least prolific in terms of the performance of the offset producing wells, shows the most incremental recovery of the three areas, or the most relative increase in recovery.

The Davis 505 S area shows that the parent wells would recover approximately 16 percent of the original gas in place, whereas infill wells will increase that recovery to 28 percent of original gas in place, hence a 68-percent increase in recovery for this particular area.

Q. For the five pilot areas, you are now persuaded as an engineer that the infill well is going to result in the recovery of additional gas?

A. That is correct.

Q. How did you address the issue of determining whether those recoveries from the five pilot project areas are representative of the range of opportunity for the rest of the fairway -- the rest of the properties outside the fairway?

A. We will cover that with the next exhibit. What we have plotted here is the increase in recovery factor due to infill development as a function of the parent well recovery factor. And what we have spotted on this chart are the estimated increase in recovery factors for the three pilot areas that we modeled.

How one uses a graph of this sort is to estimate the recovery due to the parent wells, extrapolate up to the curve and then extrapolate over to the Y axis. That will tell you the percentage increase in recovery that one would expect associated with the infill wells.

Q. Let me see if I understand how this works. Where on this curve or line do you plot the results of the other two pilots that are not shown on this curve?

A. The other two pilots would be more similar to the Davis area, in that the parent well recoveries are in the same range of parent well recoveries, and hence we would expect similar types of increase in recovery due to infill drilling.

Q. Let me have you explain how to make the curve work. Let's assume I have a parent well.

A. Uh-huh.

Q. I can determine its recovery factor in a conventional way with decline-curve analysis?

A. That is correct.

Q. I can do that? And let's say I can determine, based upon the original-gas-in-place map, that my parent well's recovery is going to be 40 percent.

A. That is correct.

Q. I'll start at the 40-percent line.

A. Okay.

Q. And I read up to the red line where they intersect.

A. That is correct.

Q. Now, I go over to the left margin and I can know now what portion of my cumulative production from the two wells now will represent the incremental increase in recovery because of infill?

A. That is correct, the increase in recovery factor that one would expect with infill is read off of the left axis, the Y axis, if you will.

Q. And if I'm in an area that looks like the Davis example, what happens with the results of my infill effort?

A. We would expect, if one extrapolates over to the curve, recoveries in the range of, say, 60 to 80 percent, incremental recoveries -- recovery-factor increases of 60 to 80 percent, in that area.

Q. And if I'm down in Huerfano where a part of that area is the darker red, where I'm achieving better recovery with the parent well, is there still an opportunity for incremental recovery with the infill well?

A. There is still opportunity for incremental recovery, yes.

Q. And what is that on this display?

A. With the Huerfano it would be approximately 15-percent increase.

Q. Let's go back and fill in the pieces. You've given us your conclusions. Let's go back through the pieces of the study so Mr. Stogner can look at the engineering data and the details of how you modeled the reservoir and how you got to your conclusions.

Let's talk about the test program.

A. I will now overview the pilot -- well, pardon me, the pilot-well testing program, we have drilled, Burlington Resources has drilled five pilot wells in geologically diverse areas of the underpressured envelope as outlined by Mr. Thibodeaux earlier. We also chose these pilot wells to represent the range in production performance and estimated ultimate recovery for the offsetting producing wells.

We as part of this program collected coal cuttings from the infill well locations for up to five coal layers. These coal cuttings were then tested for coal quality -- in other words, the inorganic/organic content of the coals -- using a procedure referred to as proximate analysis.

We also performed adsorption isotherm testing on those coal-cutting samples from the wells in order that we may determine the gas content of those individual coal horizons. We then used those gas-content data to calculate original gas in place for the coal layers at the infill locations.

We then ran open-hole logs over the coal intervals for the purposes of estimating coal density, which was coupled with the gas-content results to determine the original gas in place per layer.

We then collected multiple pressures, layer pressures at the infill locations, in this case up to four pressures at the infill location. Upon completion of drilling of the well we perforated and isolated individual coal zones so that we may determine what their current pressure is. We used that pressure data to determine the degree of coal-layer depletion at the infill locations.

The final step was to fracture-stimulate the infill wells using techniques very similar to the offset producing wells, and we produced the wells for a period of up to 180 days. And the purpose of that was to compare the production performance of the infill wells with the offset producing wells, as well as for data that would be input -- or would be modeled in a reservoir-modeling approach.

Q. Let me take you to the end of the book, and look at Exhibit Tab 15 for a moment. If you turn to 15, flip past the cover sheet and you're going to get into a pilot area for the Davis study?

A. That's correct, yes.

Q. And you have these plats or maps for each of the simulated model areas?

A. Yes, we do.

Q. So if Examiner Stogner wants to see the configuration and well locations, it's in the exhibit book?

A. That is correct.

Q. All right, you now have your test program described for us, Mr. Clarkson. Let's move beyond Exhibit Tab 7 and go to 8. Let's have you talk about your pilot simulation economic results.

A. I will now summarize the pilot well testing/ simulation/economic results.

Burlington Resources drilled five pilot wells. We tested these wells, stimulated them and produced them. All five pilot wells, as we showed earlier, contained some coal layers with little depletion as inferred from pressure data.

As we also stated earlier, only three of the pilot areas were modeled: the Huerfano, the Davis and the San Juan 28-and-6 Unit. The reason why the San Juan 28-and-5 and Turner Federal was left out of the modeling effort is that they are believed to be analogous to the Davis in that they demonstrate a lack of depletion and poor production performance of the offset producing wells.

Q. Let's start with the Huerfano Unit, that pilot study in the Huerfano with that well. We're going to go through that one from start to finish, and then you can summarize what happens with the others.

A. Yes, sir.

Q. Yeah, let's go through the steps, then. Let's talk about the summary for the Huerfano, and then we'll talk about the parts.

A. For the Huerfano Unit 258S, sufficient data was collected to evaluate the pilot area for infill. In other words, sufficient pressure, gas content and production data were acquired for the purposes of evaluating this area for infill.

For reference, the original gas in place on a 320-acre basis is 3.3 BCF for the Huerfano area, which represents the lowest gas in place of the three areas that we modeled.

Three layer pressures were collected, and as we showed in an earlier slide the top layer here shows little depletion. The middle layer shows a substantial amount of depletion. And the bottom coal layer pressure, we were unable to obtain a reasonable pressure for that zone.

A successful history match was obtained using a numerical simulator of the infill well layer pressures and the flowing pressures for eight offset producing wells.

We then built a scaled-up model in order to perform sensitivities for 160-acre infill and in order to determine the incremental reserves associated with 160-acre infill in this area. Those stimulation results show that there is an increase in reserves for this pilot area.

The final summary bullet point here is that the infill recompletes are economic in this particular area, although this is the least economic area compared to the other two pilot areas that we studied.

I will now show a location map that shows the location of the Huerfano Unit 258S pilot well, with respect to the offset producing wells. The infill test well -- the pilot test well, is located approximately in the center of the area that we studied or modeled. The offset producing wells are shown with purple diamonds and triangles, and they represent existing producing coalbed methane wells.

I will also point out that the simulation area that we modeled corresponds to this rectangle, showing that we modeled not only the infill well but the eight offset producing wells in the area.

Q. Why did you choose a simulation grid boundary of this size?

A. We chose a model of this size to represent the variability that we see in the production performance of the offset producing wells. We also wanted to try and eliminate boundary effects that are often associated with a smaller simulation model.

Q. And did you do that here?

A. Yes, we did.

Q. Please continue.

A. I will now describe to you in fair detail the steps that were used in the reservoir simulation procedure. I will use the example of the Huerfano Unit 258S, although we used the same procedures for the other two pilot areas that we modeled.

The first step was the incorporation of pilot well and offset well test data into the reservoir simulation. We obtained open-hole logs from the infill well location that was used to complete a pilot area geologic model, which Mr. Thibodeaux was responsible for. This geologic model is 16 sections in extent and includes coal layer thicknesses and bulk densities that were ultimately incorporated into the simulation model.

The next step was to take the adsorption isotherm data that we had collected and the coal density information that we had obtained to develop a correlation between isotherm parameters and coal density. The purpose of this was to calculate original gas in place by layer at each of the infill well locations.

The third step was to collect multi-layer pressures, which were then used as a parameter in the history-matching effort. In other words, we history-matched the multi-layer pressures at the infill well location. We also used the pilot well production data as a parameter to history-match in the simulation.

Lastly, we used pilot well offset data in the form of type-curve analysis to generate permeability and skin-factor estimates for the offset producing wells. The importance of this is that we used these estimates to constrain the permeabilities that we ultimately used in the simulation model.

Q. You've set up the simulation to match known production and to match known pressure points.

A. Actually, we used the simulation to match pressures at the infill well location and flowing pressures of the offset producing wells. The simulation model was actually driven with historical gas rate; that was an input into the simulator.

Q. At this point, then, you tried to run the model, the computer model, to match known history points?
A. Yes.
Q. And the known data you're matching is the pressure data and the production --
A. Yes.
Q. -- of the study area?
A. The pressure data -- the flowing pressure data, and in the multi-well simulation, which we'll get into in a minute, we matched the flowing pressures of the wells and the infill pilot pressures.
The first step, however, was to use single-well models and input the type-curve derived permeability and skin estimates to obtain a production match of the offset producing wells.
So sorry, there's two --
Q. Is this methodology consistent with conventional engineering modeling of a reservoir by simulation?
A. Yes, it is.
Q. In order to make the match, are there any reservoir parameters that you adjust in order to make the simulation perform like the existing data shows it should perform?
A. Yes, in the multi-well simulation that we will show here shortly, the permeability by layer was adjusted

to match the flowing pressures and the pressures at the infill well location.

Q. Are you satisfied that your adjustments of the permeability stayed within reasonable ranges of engineering expectations for wells like this?

A. Yes, we are.

Q. What's the range of permeability you're using?

A. In the case of the Huerfano area, the permeabilities by layer range from approximately .6 millidarcies to approximately 52 millidarcies. The composite perm, which is obtained by basically summing up the permeabilities for those four layers, is 14 1/2 millidarcies, which is consistent with the type-curve results that we obtained from offset producing wells.

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

A. This next display shows that once we input type-curve-estimated permeability and skin information into a single well model, we are able to reproduce the production performance of that well.

This is a specific example of the Huerfano Unit 255, whereby we used a single-well model which predicts the gas rate as a function of time, gas rate being in MCF a day, as a function of time.

The blue dots represent the production performance, the actual data for the well. The red line represents the predicted production performance for this well, using the type-curve-derived permeability and skin numbers.

This is a validation of the permeability and skin numbers that were derived from type-curve analysis.

Q. Once you've calibrated your model and you can simulate known history, then you're able to use that simulation to forecast what would happen in the future for that well?

A. That is correct.

Q. And when we look at this display, once we get to the right of the circles, we're now forecasting what will happen to this production as we move through time?

A. That is correct.

Q. Go ahead.

A. The next step in the history -- or pardon me, in this reservoir simulation procedure, was to history-match pilot offset wells, in this case a multi-well simulation using Eclipse numerical reservoir simulator.

I will now talk about some of the specifics of the model.

The model parameters included a model grid that was a 47 by 57 by 3, in other words, a model grid that had three vertical layers of an average grid block size of approximately 200 by 200. The model area in the case of the Huerfano area was 2561 acres, which incorporated the eight offset producing wells plus the infill well in the simulation.

It's important to note that each of the vertical grid blocks in the simulator correspond to the coal layer pressures that were measured at the infill location, so that the model reflects the data that was actually collected.

The next step in the multi-well reservoir simulation included the input of reservoir parameters. In this case, the coal layer original-gas-in-place numbers were calculated from an isotherm-versus-coal-density relationship that we were able to obtain from pilot-well-adsorption-isotherm data. We then assumed a relationship between coal-layer permeability and coal density to obtain a permeability estimate for each of the coal layers, using the average density for that layer.

The permeability in coal is assumed to be a function of the coal density in that typically the lowest-density coals are the most highly fractured and hence the most permeable. So we assumed a relationship between those two parameters.

The other reservoir properties that were used in the model included data from core data and literature values.

Q. Does Burlington maintain a library of isotherms in the coal?

A. Yes, we do.

Q. Of that population, how did you select the appropriate isotherm that's applicable to this well?

A. We actually collected isotherm data from each of the individual coal wells or infill wells by layer. We then used that data from all the pilot wells and created a correlation between the isotherm parameters and density of the coal, which was then used in the calculation of original gas in place for each of the pilot areas, and in fact the entire underpressured coal envelope.

Q. What do you use an isotherm for? What's the point?

A. An adsorption isotherm is a measure of the gas content, is a measure of pressure for coal. If one knows the initial pressure and the isotherm parameters, one can calculate the gas content for a particular coal under initial conditions.

Q. Do you have an example of an isotherm on the next page?

A. This is actually an example of the correlation between an adsorption isotherm parameter and the coal density that was used for the pilot well modeling.

What this is is a plot of the Langmuir volume, which is an adsorption isotherm parameter, which is a function of coal density of the coal. The Langmuir volume is one of the two parameters that are used in the Langmuir equation, which is commonly used to correlate experimental adsorption isotherm data.

How this is used is, if one knows the average density of a particular coal, one extrapolates up to the curve and then over to the left-hand axis to obtain an estimate of the Langmuir volume. That is then input into the adsorption isotherm equation, and combined with pressure will give you a gas-content estimate for this particular coal.

Q. How do you construct the red line?

A. That is simply a linear correlation to the data, a single -- using a correlation.

Q. Now, what do you do with this information?

A. This information is used to calculate the gas content by layer in the coal. The gas contents are then coupled with coal-density and thickness information to calculate an original gas in place for each of the layers in the coal.

Q. All right. What happens next?

A. The next step or the next slide here shows how the history match was achieved for the multi-well simulation. The simulation was driven by historical monthly gas rates, and as I mentioned earlier, the flowing pressures of the offset producing wells and the pressures at the pilot infill well location were predicted with the simulation model. In this case, we assumed single-phase flow, in that there's a lack of historical water production in this particular area.

The permeability-versus-coal-density relationship was adjusted to match the pressures at the infill location as well as the flowing pressures of the offset producing wells. It's important to note, however, that the composite permeabilities that were derived from this estimate were constrained to be within the range that one observes for the offset producing wells.

There was also some adjustment in skin factor in order to achieve a flowing bottomhole pressure match.

This next slide illustrates the relationship between permeability and coal density that was used in the Huerfano area to achieve the history match that I discussed earlier.

The top layer permeability, as I mentioned earlier, is approximately .6 millidarcies and this is consistent with the fact that this top layer is the least-depleted layer at this location.

The middle layer is a 24-millidarcy layer, and the bottom coal layer is 52 millidarcies. The composite layer, as I mentioned earlier, is 14 1/2 millidarcies, which is consistent with the offset producing wells in the area.

I will now show you the two parameters that were history-matched in this simulation model, the first being the multi-layer pressures that were observed at the infill well location.

What I've shown here is, the red bars represent the original pressures at the infill location, prior to offset well production. The dark blue bar represents the actual measured pressure at the infill location, upon completion of the drilling of that well. The light blue bar represents the simulated pressure at this infill location at the end of history match, and one can observe that we have obtained a fairly good match to those pressures. The bottom zone, as I mentioned earlier, we were unable to obtain a reasonable pressure for that zone.

The one other data point that we have on here is the green bar which represents the post-fracture-stimulation dip in pressure that was taken just prior to first delivery of this particular well.

Some additional data that I've put in the slide for reference includes the total layer thickness associated with each of the pressure zones that were measured in this well. I note that the top zone is the thickest layer at 27 feet thick, the bottom two zones are somewhat smaller or thinner zones, representing nine feet and six feet thickness.

I've also shown the original gas in place calculated for each of those layers. This is a model average original gas in place on a 320-acre basis. The top zone, of course, being the thickest, has the most original gas in place, whereas the bottom two zones have substantially less original gas in place.

I have also shown the remaining gas in place associated with each of those layers, and as I mentioned earlier, the top zone appears to be the least depleted, whereas the bottom two zones do show some depletion.

The second history match parameter in the simulation model included the flowing bottomhole pressures for the eight offset producing wells to the pilot infill well.

This is an example, again, using the Huerfano Unit 255, which shows the flowing bottomhole pressure as a function of time. The blue dots represent the actual flowing pressures at this infill location, or -- or pardon me, this offset producing well location. The red line represents the simulator-predicted flowing bottomhole pressure. This demonstrates that there's a reasonable match of the simulator to actual data and that the permeability or composite permeabilities that we used in the simulator are reasonable.

The next step in the simulation procedure was to use the model that we used to history-match the offset producing wells to predict what the well production would be for the infill well location, and this was done for the Huerfano area.

In this case, we drove the simulator using scheduled flowing pressure, which was estimated from the measured casing pressure of the well. In this case also, the skin factor was adjusted to be consistent with the range of the offset producing wells.

I will now show a plot that shows the history match of the infill well production data. This plot shows the gas rate in MCF a day as a function in time for the Huerfano Unit 258S infill location. The blue dots represent actual production data for this well. The red line represents the simulator-predicted production rates for this infill location. And as you can see, it is a very good match.

The next and final step in the simulation modeling procedure was to build larger scale models, in this case 16 sections in area, to forecast infill well, incremental and accelerated reserves. The purpose of building a larger scale model was to reduce any battery effects that may be associated with a smaller model, as well as to represent the parent and infill locations on a regular spacing.

The model grid in this case is a 40-by-40-by-3, again, three vertical layers in the simulation model, consistent with the history-match model. The model area, as I mentioned earlier, is 16 sections so that there were 32 parent wells and 32 infill wells that were simulated using a regular pattern.

The reservoir parameters that were used in the scaled-up model are identical to those that were used in the history-match model. Coal layer thickness, permeability and all other properties were set equal to the history match model.

The forecasting of the parent and infill wells was achieved using the following procedure. The scale-up model started basically at the end of the history match of the offset producing well such that the initial pressures in the model were the same as the pressures achieved at the end of the history match.

The parent wells were then forecast, assuming that no infill development occurred, were forecast out to the year 2033. Infill wells were scheduled during a separate run in the year 2003, and then forecast out to the year 2033, again forecast out for a 30-year time-frame.

The simulation in this case was driven by flowing bottomhole pressure, and it's important to note that the flowing bottomhole pressure profile for all the wells in the model were identical.

I will now show the increased density recovery profile for the Huerfano unit area for the years 2003 to 2033. This plot will require a little bit of explanation.

The left-hand axis represents the cumulative gas production, the right-hand axis represents an incremental gas production. The bottom three curves in this plot, the red, blue and green curves, represent the cumulative gas production over that 30-year time frame for three different scenarios, which I will now describe.

The blue curve represents the cumulative production over a 30-year period for a single parent well, assuming no offset infill development.

The green curve represents the same parent well, but subject to offset infill development. In other words, we would expect some reduction in cumulative production of the parent well due to the presence of the infill well.

The difference between these two curves represents the accelerated reserves component associated with the infill well. In other words, the difference in cumulative production between the parent with no infill and the parent with infill -- the volume difference here represents gas that would have been recovered by the 320-acre-spaced well, had no infill well been drilled.

The red curve, on the other hand, represents the cumulative production from two wells, the parent plus the infill well. The difference between the red curve and the blue curve represents the incremental gas production associated with infill development. And as one can see, there's an approximate 50-50 split between incremental gas and accelerated gas associated with infill development.

The last curve, the purple curve, which is read off of the right axis, represents the incremental reserves profile associated with a single infill well, such that after 30 years the infill well would be expected to cum approximately 270 million.

We will contrast this particular slide with the Davis and the 28-and-6 areas, which show a substantially more relative incremental gas production.

Q. You have each of these type of displays for the other areas modeled?

A. Yes, we do.

Q. Let's stay on this for a second, make sure we can read it. If you start with the top purple curve --

A. Yes.

Q. -- I'm going to read the conclusions off the right axis or right margin?

A. That is correct.

Q. And if all I want to know is the additional gas to be attributed in the Huerfano area as a result of having two wells instead of one --

A. Yes, that is correct.

Q. -- that volume of gas is going to be what?

A. That incremental gas volume associated with infill drilling is 270 million, approximately.

Q. All right. If I want to look at what a single well by itself in the spacing unit would do, I'm going to look at the blue line?

A. Yes, that is correct.

Q. And to see a single well by itself as to how it will recover, I'm going to read off the left margin?

A. That is correct.

Q. I'll go over there and find what that single well will do?

A. Yes.

Q. And you recognize that when you have two wells there's going to be some overlap where those two wells are affecting each other?

A. Yes, that's correct.

Q. And so the parent well is going to be affected -- or that gas is going to be accelerated to a certain percentage?

A. Yes, that is correct.
Q. And how do I find that percentage on this display?
A. The difference between the blue curve, which represents the parent well with no infill, and the green curve, which represents the parent well with offset infill development, would be the accelerated-reserves component.
Q. And then I can read that off of the left scale?
A. That is correct.
Q. And if I want to know what the infill well is going to do, I'm going to read the red line?
A. Yes, the red line represents the total of the infill and the parent cumulative production over that --
Q. All right, so the 160 red line is the cumulative total of the two?
A. Yes.
Q. And I would read that one now off of the left axis?
A. That is correct.
Q. All right, let's look at the next slide.
A. The next slide is an illustration of the projected infill well performance for the Huerfano area. It simply is a plot of gas rate as a function of time over that 30-year time frame for a single infill well.
Notice the initial rates are projected to be just

over 200 MCF a day, declining to approximately -- just below 20 MCF a day over that 30-year period.

Q. Next slide. This is one of your conclusion slides, and it's where we started a while ago. This now shows us in these three model areas the portion of additional gas to be recovered as a result of infill drilling?

A. That is correct. This is a reproduction of a slide that we showed earlier, showing the Huerfano Unit area and the other two mottled areas and the relative increase in recovery that one would expect with infill drilling in the Huerfano area relative to the other two areas.

We note that relatively smaller percentage of incremental reserves would be yielded in the Huerfano compared to the 28-6 and the Davis areas.

Q. Mr. Hayden this morning reported to Mr. Stogner that the Committee's expectation is that they could take existing wellbores, such as Pictured Cliffs wells, and recomplete those to add coal gas production from the coal seam?

A. Yes.

Q. Do you have a series of displays where you studied that to see if it's economic --

A. Yes.

Q. -- to improve the recovery from the gas pool by recompletion?

A. Yes, we do.

Q. Let's look at that.

A. The next slide shows that infill recompletes -- in other words, if we were to recomplete an existing wellbore to the Fruitland Coal and produce the Fruitland Coal, that this recomplete would be economic in the Huerfano area.

The after-tax present value calculation for this particular area is around $13,000, discounted at 10-percent rate. This represents the poorest economics of the three areas, which we will show here in a few minutes.

The primary economic assumptions that went into this economic modeling included a gas price at $3.25 per MMBTU. This is a NYMEX average gas price for the month of June, 2002.

The operating cost assumed for this particular area was about $1000 per well per month. The capital costs were around $200,000, which include the perforation and stimulation of the coal zone within the existing wellbore.

And finally, the gross- and net-revenue interests are 100 and 84 percent respectively, which represents an average that one sees for the pilot wells that we modeled.

And what's important here is that these represent incremental economics whereby we calculated a cash flow for a 320-acre-spaced case and subtracted that from a 160-acre case to determine the incremental net present value associated with that case.

Q. Have you satisfied yourself as an engineer that there's additional gas to be recovered by an infill program?

A. Yes, we have, or I have.

Q. And the economics here are attributed to the recompletion of the Pictured Cliffs well?

A. Yes.

Q. And the $200,000 is the cost attributable to recompletion in the coal seam?

A. That is correct.

Q. And it's economic to capture that additional gas, in your opinion, using these parameters?

A. Yes, it is.

Q. Are all these within reasonable engineering expectations for the industry to apply to their own properties?

A. We believe so.

Q. Let's look at the summary now for the others, starting with the Davis. What are your conclusions about the Davis study?

A. Unlike the Huerfano area, we will not go into the simulation detail that I showed earlier, but I simply will summarize the key points associated with this area.

These points are that sufficient data was collected to evaluate the pilot area for infill development. Sufficient pressure, gas-content and production were collected for that purpose.

For reference, the original gas in place for that area is approximately 4.3 BCF for 320-acre area, which is actually higher than the Huerfano area, in part due to the higher pressures, initial pressures, that one sees in this particular area.

Four layer pressures were collected. All coal layers, as we showed earlier, show very little depletion.

A five-layer, dual-porosity simulation model was used in a history-matching effort, and we were able to successfully history-match the infill well layer pressures as well as the offset four producing well flowing pressures.

The scaled-up model again was used to calculate incremental reserves associated with 160-acre spacing, and we found that in this case incremental reserves were yielded.

Finally, infill recompletes are economic in this area as well, and in fact are somewhat better than the economics that I showed for the Huerfano area.

I will now show a representation of the increased density profile as a function of time for the Davis area, and I will not reiterate the meaning of each of these curves, other than to note that the incremental recovery associated with the Davis area is much larger than what we expected for the Huerfano area.

Incremental volume percent in this case is 81 percent, and the accelerated reserves component is only 19 percent.

Also note that the single infill well would yield a recovery of just under 500 million in incremental reserves over that 30-year period.

So contrast this with the Huerfano area, we see that there's much more incremental reserves that could be had in this area.

Q. That again is your summary slide we talked about earlier?

A. Yes.

Q. Let's look to the results of the 28-and-6 pilot.

A. With the 28-and-6 area, again, summarizing, sufficient data were collected to evaluate this area as well. The original gas-in-place estimate is somewhat larger than the other two areas at 5.6 BCF per 320-acre.

Four layer pressures were collected, the top layer showing very little depletion as we illustrated earlier, whereas the other three layers did show some depletion.

A 13-layer dual-porosity simulation model was used in this case, because the heterogeneity at this particular location was greater than our ability to measure it with pressure data, so we needed a more complex model to accurately history-match the infill well pressures.

We were able to obtain a successful history match of the infill well layer pressures and the flowing pressures of four outside producing wells.

The scaled-up modeling showed that incremental reserves would be yielded with the 160-acre program.

And finally in this case, infill recompletes are also economic. In fact, this represents the best of the three areas in terms of net present value associated with infill recompletes.

Q. The total volume expected for the incremental production as a result of infill drilling in this area is what?

A. For a single infill well, the incremental reserves are estimated to be approximately 600 million in reserves.

Q. And then again we're back to your summary slide on this area?

A. Yes, the final slide shows a bar chart that shows the incremental volumes of the 28-and-6 area relative to the other two areas, and one can see that the incremental reserves are in between the Davis and the Huerfano area in terms of percentage increase in recovery.

Q. If you'll turn to Tab 9, and let's go to the conclusions, because each of these previous three we talked about in your introduction. We talked about your method for taking the pilot study results and transferring it to the underpressured area?

A. Right.

Q. We've done that. Let's talk about your conclusions.

A. Okay.

Q. Let's go back and have you summarize your conclusions, which is the last page behind Exhibit Tab 9.

A. The four main conclusions that were obtained as a result of this infill pilot study is that current well density in the underpressured portion of the pool results in inadequate recovery. The pilot wells demonstrate that inadequate drainage occurs in some or all of the coal layers as represented by measured pressure data. Additional completions result in additional recovery in all cases that we modeled and studied. And finally, the pilot-well results are transferable to the rest of the underpressured envelope.

Q. Were the exhibits prepared under Exhibit Tab 6 through 9 plus the additional information behind 15 compiled under your supervision and direction?

A. That is correct.

Q. And that represents your work product?

A. That is right.

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

We would move the introduction of his Exhibits 6 through 9, plus 15.

EXAMINER STOGNER: Any objections?

MR. HALL: No objection.

EXAMINER STOGNER: Exhibits 6 through 9 will be admitted into evidence at this time.

Mr. Hall?

EXAMINATION

BY MR. HALL:

Q. Mr. Clarkson, let me make sure we understand the purpose for which your testimony is being offered here today.

As I understand it, your study was limited to the pilot project areas, and then you attempt to demonstrate the applicability of that study to the underpressurized area?

A. That is correct.

Q. Burlington is not recommending that your testimony be used to establish a basis for infill rules for the high-productivity area, is it?

A. This study was limited to the underpressured envelope, and the results herein are applicable to the underpressured envelope. However, Burlington supports BP's testimony, which will be shown later, and the results therein regarding the high-productivity fairway.

Q. And what is it that prevents you from applying your methodology and your analysis and your results to the high-productivity area? What data is missing?

A. We at this point in time do not have all the -- we don't feel at this point that we have enough data in the form of multi-layer pressures and reservoir simulation to comfortably extrapolate these results to the high-productivity fairway.

Q. Do you believe it would be prudent to gather additional data like that before pool rules are adopted for the high-productivity area?

A. Burlington Resources supports BP's testimony in that BP has collected the types of data that we believe allow us to make a judgment as to the applicability of the infill within the high-productivity fairway.

Q. Except for the pressure data you mentioned?

A. They do have somewhere some pressure data.

Q. But is it sufficient in your view?

A. We believe the results that they have demonstrated are sufficient to apply their results to the fairway.

Q. The 150-well Fruitland drilling program that Mr. Thibodeaux testified to earlier this morning, of those 150 locations, how many of those will be in the underpressured area?

A. The vast majority of those are actually estimated to be in the high-productivity fairway.

Q. All right. Of those locations, what percentage will be infill locations?

A. I'm not sure at this time what that percentage is.

Q. Is it a high percentage?

A. It's relatively lower percentage of underpressured wells compared to overpressured wells.

Q. In your economic analysis for the infill in the underpressured envelope area, why did you limit that analysis to just recompletions?

A. We have in fact run economics for stand-alone new drills as well. We simply showed recomplete economics because Burlington Resources will try and develop the infill program economically in the underpressured envelope, and we will in all cases look for areas where we can perform recompletes as opposed to stand-alone new drills, simply because there's some additional capital cost, as well as other issues associated with infill drilling.

So we showed recomplete economics to show that we would pursue those opportunities where they exist.

Q. Did you also do recomplete economics on recompletion targets within the high-productivity area?

A. I did not.

Q. Okay. Do you know that there are a number of recomplete targets in the high-productivity area for Burlington?

A. There are -- as Mr. Hayden testified earlier, I don't believe there's as many opportunities for recompletes in the fairway as in the underpressured envelope, simply because of the way that we complete the overpressured wells.

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

EXAMINER STOGNER: Mr. Carr, before I call you, I did fail to take into notice Exhibit Number 15, so I'll -- That has been offered and accepted.

So Mr. Carr?

MR. CARR: I have no questions of Dr. Clarkson.

EXAMINER STOGNER: Let the record show that I believe Mr. Jim Bruce and Mr. Dean are no longer here.

EXAMINATION

BY EXAMINER STOGNER:

Q. I want to refer to your recovery profile from 2003 to 2033, and I believe the one you used was the Huerfano area; is that correct?

A. Yes, sir.

Q. Okay, I want to make sure that I'm reading this correctly. Okay, the blue line is the current well within the spacing unit; is that correct?

A. That is correct.

Q. And the green line would be the infill well without the original well producing?

A. Actually, the green line represents the parent well production performance in the presence of infill well development.

MR. KELLAHIN: Mr. Clarkson, would you take a moment and find that slide so the audience --

THE WITNESS: Oh, I'm sorry.

MR. KELLAHIN: -- can see what you're talking about?

Q. (By Examiner Stogner) Okay, my question was, the blue line, that represents the current well?

A. That's correct.

Q. And the green line represents the new infill well?

A. It represents the same parent well, but with offset infill well performance. In other words, you have one existing well in the 320, and that represents -- the cumulative profile associated with that would be the blue curve, and then the green curve would be that same single well but with offset infill well development.

Q. Okay, that's where I was getting confused then.

Now, the red line would represent the infill well just in that spacing unit?

A. It would represent the two wells, the infill plus parent well.

Q. Okay. Now, I remember in your testimony there was something mentioned about the water production.

A. Yes, sir.

Q. But that was absent from the Davis area; is that correct?

A. All three areas that we modeled showed a relative lack of historical water production.

Q. Was this taken into account whenever the pilot areas were chosen, of the historical water production? I'm taking it, it's low anyway in those areas.

A. Yes, it is. For the most part, although this isn't true for the entire underpressured envelope, a lot of the wells appear to be relatively dry in that they don't produce a great deal of water. And so the pilot wells were in areas where the reservoir is relatively dry.

Q. Did you see any effect on what little water production was there from the original well versus the infill well?

A. There's a potential for whatever water production data -- or pardon me, the parent well may have produced some historical water production and hence it may have impacted the performance initially of those wells, but there does not appear to be any impact of water production performance on the infill location.

EXAMINER STOGNER: I have no other questions of this witness.

MR. BROOKS: I have nothing.

EXAMINER STOGNER: No follow-up, you may be excused.

MR. KELLAHIN: That concludes our presentation on behalf of Burlington.

EXAMINER STOGNER: Okay, let's take a 10-minute recess. And which one will go next?

MR. CARR: BP will go next, our witness will be Rusty Riese.

EXAMINER STOGNER: Okay, why don't you turn your microphones off at this time?

(Thereupon, a recess was taken at 2:40 p.m.)

(The following proceedings had at 3:00 p.m.)

EXAMINER STOGNER: Okay, we'll go back on the record at this point.

Let's see, Mr. Kellahin, you've finished up Burlington?

MR. KELLAHIN: We've concluded.

EXAMINER STOGNER: Okay, Mr. Carr?

MR. CARR: May it please the Examiner, at this time we call Rusty Riese, BP America, Inc.'s, geological witness.

<u>RUSTY RIESE</u>,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?
A. My name is Rusty Riese.
Q. Spell your last name.
A. R-i-e-s-e.
Q. Where do you reside?
A. I reside in Katy, Texas.
Q. And by whom are you employed?
A. I'm employed by BP America.
Q. What is your position with BP America?
A. My job title is consulting geologist.
Q. Have you previously testified before the New

Mexico Oil Conservation Division?

A. I have not.

Q. Could you briefly summarize your educational background for the Examiner?

A. My educational background is a bachelor's of science in geology from New Mexico Tech in 1973, a master's and a PhD, both in geology, from the University of New Mexico, in 1977 and 1980 respectively.

Q. Since graduation, for whom have you worked?

A. Since graduation I have worked for the New Mexico Bureau of Mines and Mineral Resources, Gulf Minerals, Anaconda, various divisions of Atlantic Richfield, Vastar, when Atlantic Richfield spun Vastar off, and now, because of acquisitions, I'm with BP.

Q. Mr. Riese, did you actually testify in the Colorado case where infill development was approved in the year 2000?

A. Yes, I did.

Q. And are you familiar with the Application filed in this case on behalf of the Fruitland Coalbed Methane Study Committee?

A. Yes, I am familiar with it.

Q. Are you familiar with the Basin-Fruitland Coal Gas Pool?

A. Yes, I am.

Q. Have you made a geological study of this reservoir?

A. Yes, I have.

Q. And are you prepared to share the results of that work with Mr. Stogner?

A. Yes, please.

Q. Has your study involved properties on both sides of the New Mexico and Colorado state line?

A. Yes, it has.

MR. CARR: We tender Mr. Riese as an expert witness in petroleum geology.

EXAMINER STOGNER: Mr. Riese, when you said on both sides of the state line, are you talking on the San Juan Basin?

THE WITNESS: Yes.

EXAMINER STOGNER: Inclusive or --

THE WITNESS: Colorado portion of the Basin and the New Mexico portion of the Basin.

EXAMINER STOGNER: Okay, and not the Raton Basin?

THE WITNESS: I have also worked in the Raton Basin, but I was referring just to San Juan.

EXAMINER STOGNER: Okay, you said you were at New Mexico Tech --

THE WITNESS: Yes.

EXAMINER STOGNER: -- in 1973?

THE WITNESS: Yes.

EXAMINER STOGNER: Do you know Mr. Roy Johnson?

THE WITNESS: Intimately.

EXAMINER STOGNER: Okay, are there any objections?

MR. HALL: No objection.

MR. CARR: We would request that you do not hold that against Mr. Riese.

THE WITNESS: Please.

MR. CARR: And we've tendered him as an expert in petroleum geology.

EXAMINER STOGNER: So accepted.

Q. (By Mr. Carr) Would you initially summarize what it is that BP seeks in this case?

A. BP's aggregate testimony this afternoon is intended to provide support of amendment to Rule 7 to authorize infill drilling of up to two wells within a standard 320-acre gas spacing and proration unit by increasing the well density from the current one well per 320-acre unit to two wells per 320-acre unit, or 160-acre infill development.

We also wish to provide additional testimonial support for a poolwide 160-acre infill development. We hope to oppose effectively proposals for separate rules and procedures for the low-productivity area and the high-productivity area as they have been discussed today.

And we wish to enter this aggregate testimony in support of the recommendation of the Study Committee to determinate the Cedar Hill Basin-Fruitland Coal Gas Pool and the concomitant expansion of the Basin-Fruitland Coal Gas Pool.

My specific contribution to those efforts will be to briefly try to demonstrate the correlations between the New Mexico portion of the Basin and the Colorado portion of the Basin, thereby demonstrating that the engineering data which will follow mine is appropriately applied across the state line, irrespective of where the data were gathered, and thereby help you see what kind of case studies we have available for the high-pressure/high-productivity area that Burlington did not have the data to speak to.

I will also be specifically speaking to elaboration of some of the discontinuities, via illustration, that the previous speakers, specifically Jim Fassett and Steve Thibodeaux, referred to.

Q. Have you prepared certain exhibits for presentation here today?

A. Yes, I have.

Q. And are those contained behind Tab 10 in the exhibit book?

A. Yes, they are.

Q. Let's go to the first of those exhibits, a location map, and I would ask you to review the information on that exhibit for Mr. Stogner.

A. The map that's before you in the book and on the screen is a map of the northern portion of the total Basin. The state line between Colorado and New Mexico is shown in green. The dark political boundaries are township and section lines. The beige-and yellow-curvilinear feature that sketches itself through the northwestern piece of the map area and then swings out through the northeastern portion of the map area is the Fruitland-Pictured Cliff outcrop.

The red lines that trace themselves across this map are our interpretation, my interpretation, of the magnetic features that are present in the basement.

Typically, a geologist interprets variations in magnetic field as indications of fault offsets, and my intention in showing this particular map is to indicate that the basement architecture of this basin does not change from the New Mexico portions up into the Colorado portions. And it's this basement architecture which was established longer than 300 million years ago which establishes the locations of the various Pictured Cliffs beaches and Fruitland swamps through the late Cretaceous time.

I reinforce that point by having several other features on this map.

To the southwest are some lavender or pale purple marks and lines which show linears in the high-productivity areas of the Pictured Cliffs. So those are Pictured Cliffs sandstone trends. And we typically interpret those areas with high Pictured Cliffs productivity, high gas rates, high cums are in the heart of beach complexes. And as you can see, there's a strong correlation between the locations of those high-productivity areas and the underlying basement fractures and subtle faults which we think created the accommodation space for them to be deposited in.

Further to the north and east are a series of blue lines with dates on them, and those correspond to the beach lines and dates that Jim Fassett testified to earlier, and those are in fact his lines from his 2000 publication in Professional Paper 1625. And what you should see there again is the strong correlation of those paleo-beach lines as he interpreted them in and about the Fruitland with the underlying basement features.

Q. Go down to your isopach map, which is the second exhibit behind Tab 10.

A. The succeeding map is an isopach, it's a gross isopach. It's much cruder, with apologies to Mr. Fassett, than the material that Steve Thibodeaux provided during his testimony.

I provide this only as a brief revisit to the fact that the depositional systems of the Fruitland consistently carried themselves from New Mexico into Colorado as the beaches retreated during the late Cretaceous out to the north.

We also are using this map to show where we're going to place a cross-section line, and you can see the trace of that cross-section line in red through the central portion of that map area.

Q. Let's go to the cross-section and review that for Mr. Stogner.

A. The cross-section is on the following page. And as with the previous witnesses, I have to apologize for the difficulty in reading its scale, so I'll try to make it as simple for you as I can.

This is a southwest-to-northeast section that was initially constructed using every well, so two wells per section.

We then extracted alternate wells in an effort to condense it so that we could get it to one page and present it to you here in this format.

The yellow shading that you see on the individual well traces is intended to indicate the presence of sand. The lowermost yellows, which are accentuated by a gray-blue highlighting between them are intended to be the Pictured Cliffs.

On the extreme right hand of the section on the northeast end you can see that there are two of those intervals. Those are intended to represent the primary main Pictured Cliffs body, as well as that upper secondary body that is commonly referred to in the industry as the Pictured Cliffs tongue.

In red are the various coal intervals, and the coal intervals here are lithostratigraphic intervals that were interpreted in the same manner that you heard Mr. Fassett discuss earlier. We used a 1.75-grams-per-cubic-centimeter cutoff.

The pale greens and blues that are scattered through the upper section are simply silts and mudstones. The point that we want to make with this particular exhibit is that the discontinuity that one can perceive in the total Fruitland section, the total section that carries little red blips in it to the southwest, is very similar in character to what you see to the northeast in Colorado.

We also want to make the point that while we don't necessarily correlate coal packages as extensively as Mr. Thibodeaux has described, neither do we see them to be quite as stratigraphically or depositionally discontinuous as what Jim Fassett was speaking to.

Our position is that there are discontinuities in the coal such as both of those people described to you earlier. We simply see them at slightly different scales. This is a way of illustrating that and illustrating the offlap that each of those previous witnesses spoke to.

The discontinuities that are within those coals are specifically the discontinuities to which I want to speak, because both of those witnesses brought those features up. But other than speaking to the one channel that Mr. Thibodeaux described in the northeastern portion of the study area, there really wasn't much other reference made to the specifics of what they might look like, and that's the direction I would like to go.

So if I ask you to go to the next exhibit, what you will see will be a vegetation map of the Okeefenokee swamp.

Now, Mr. Thibodeaux offered -- and let me say as I move into this series of comments, I don't disagree with anything that Steve said regarding vegetation and variations in vegetation type and how those vegetation types will influence the kind of coals that are deposited.

He, however, only described in his Mahakam delta example about three, four, five different kinds of vegetation types.

This particular map in the Okeefenokee swamp, which is a back-barrier-swamp environment similar to what we think big pieces of the Fruitland were deposited in, documents that there are perhaps two dozen different kinds of vegetation types, each indicated by a change in color.

And the point that I need to make with you and want to leave with you is that swamp environments such as the Mahakam delta or the Okeefenokee swamp are very dynamic environments, and you're not going to get the same tree type growing in the same geographic location for two or three million years at a time.

So as you picture the way the Fruitland developed, you have to allow in your imagination, if you will, that this map re-sorts itself every time we get another millimeter of deposition, and that through the course of Fruitland Coal deposition we probably replicated this type of map area by scrambling the colors hundreds of times, and those variations are what give us the variations in the vertical stratigraphy. Those variations are how we get lateral variability in the Fruitland.

And as well, what's wandering through this particular swamp is the Suwannee River, which is this feature right here. There's the Suwannee River, working its way back up through here. We also see places where it has either allowed the coals to be scoured out underneath it, or where coal has abandoned the channel and coals have draped themselves across the top of it.

And it's illustrations of those kinds of discontinuities that I'm hoping to move to with my next series of illustrations.

Q. Let's go to the photographs, let's go to the first one, entitled "Channel Truncation of Coals".

A. The exhibit before you is a photograph taken of the highwall at the San Juan Mine, which is just east of Farmington here, and what it shows is a coal sequence right here, which I think probably shows up better in the hard copies, and which is completely scoured out at that point by this channel.

This white rock is a fluvial system, this coal has been scoured. The one underneath it carries all the way across, and was not scoured.

These are the kinds of reservoir discontinuities that might cause us to lose 30, 40, 50 or 60 percent of our producing section within a very short distance from a wellbore, and they're also the kinds of discontinuities that we are completely unable to map in the subsurface with data at the scale that they're acquired in the oil and gas industry.

Moving on to the next illustration, what I would like you to see here is some of those hundreds of repetitions in migrations in the vegetation through time.

This is also a photo graph in the highwall of the San Juan Mine, and I'd like you to see two things in this figure.

First, I would like you to look at the whole texture of this highwall and see that there are variations in the way the rock is weathering, the way it is crumbling and failing in the highwall. There are pieces that are very resistant right here, there are pieces that are less resistant here, there are pieces with variable levels of resistance here. And I've indicated sequentially the middle of the section, the lower third or so, and then very close to the top with those three points.

EXAMINER STOGNER: Okay, if I may --

THE WITNESS: Yes, sir.

EXAMINER STOGNER: -- I think what you're saying -- I want to make sure that this gets in the record. Would you go over those areas, but describe them as you're -- instead of "here", "here" and "here", because I think this needs to be on the record.

THE WITNESS: Certainly. I'm going to move myself, for clarify, to the hard copy that I have before me, and then try to follow for the rest of the audience, if that's appropriate, as I move forward.

From just before the center of this figure there are two individual coalbeds that are perhaps a foot or so thick each. One is here, and one is there.

Q. (By Mr. Carr) Okay, where is "here" and "there"?

A. Right smack in the middle of the section.

Q. Running across it?

A. Running laterally, left to right. All of the bedding here is shown horizontally.

And what should be seen, as one looks at either of these two beds and moves either to the left or to the right, is that the character in the way that bed erodes changes: The amount of structural cleating and fracturing that is restricted to the bed either increases or decreases as one moves left to right across the figure, staying within the confines of that bed. What that speaks to is variations in the kinds of coal macerals which form the bed and the kinds of vegetation that were there initially.

At a finer scale, if one looks just underneath those two thick, one-foot-thick beds in the center of the section, one will see a beige clastic layer. This is one of the ashfalls such as Mr. Thibodeaux described in his earlier testimony. It's in the middle of the photograph, runs left to right across its whole extent, and this is a time marker.

Immediately under that are some coals that are much more finely bedded. Those coals, in turn, represent -- in the foot or so of thickness that they show, represent differences in vegetation type that are beyond what the earlier beds described show. My point in all of this is that as one looks at vertical variations in the stratigraphy, one should expect to see those same variations laterally. That's a fundamental principal in stratigraphy called Walther's principle.

And so the kinds of discontinuities that Mr. Thibodeaux was alluding to in his testimony at the Mahakam delta and that I'm trying to illustrate with the Okeefenokee swamp metaphor and that I'm trying to show you here in the Fruitland proper are all things that should be taking place on a scale of anywhere from 80 to 160 to 320 acres. That's the size of the individual color blobs that one sees in the Okeefenokee swamp metaphor, and we're very confident that that's a good example for a Fruitland-type swamp, because we get many of the same trace fossils in the Fruitland as we see in current species in that swamp.

So the current -- the present being the key to the past, we think that we've got a pretty good handle on how rapidly the vegetation can change and how small our reservoir performance units or drainage areas can therefore be on a bed-by-bed basis.

Now, this so far has spoken only to stratigraphic variations. The kinds of variations and reservoir performance unit truncations that have not been spoken to and which I feel very strongly need to be illustrated are shown in the next couple of figures.

Q. Go to the next photos and review the faulting that you see there.

A. And again, I will -- because of clarity issues on the screen versus the hard copy, for the purposes of you, the Examiner, I will go through the hard copy and then revert back with pointer for the purpose -- for assistance to the audience.

What one should see in the lowermost portion of this highwall -- This is a highwall photograph of the Navajo Mine highwalled that at the time I took this photograph was approximately a mile and a half long. So we would have had three 320-standard-spacing-unit wells represented in this highwall, one at each end and one in the middle.

Near the very base of the highwall is a coal bed that is probably not visible to the audience but which is about four feet thick. In the very center of the photograph one can see that it has been offset by a fault and that the right-hand side is downthrown relative to the left-hand side. One can also see in the hard-copy illustrations that that offset is approximately -- the fault offset is approximately equal to the thickness of the bed, or about four feet.

If one traces the fault upsection to the left, one lands at the next coalbed, which is in the southeastern portion of the northwest quadrant of the photograph, and one can see that the fault is still there but that the amount of offset has significantly diminished.

Moving up the fault a little bit further, we come to coalbed number three, which is a very, very thin bed and which now shows only a fold. And if we move vertically up the wall from there to coalbed number four, we can see that there is neither a fault nor a fold.

The fault that I've just described to you is what we describe as a lystric normal fault. You can see from the illustration that it has a curved, concave upward profile, and that as you approach the floor of the mine it will become asymptotic or tangential to the bed.

Lystric faults such as this are growth faults, they occurred during sedimentation, and that's how one explains the change in throw from its lower reach to its upper reach. As sediments were accumulating on the right-hand side of the picture, they were pushing and settling faster than the sediments on the left-hand side of the picture, and we were creating structural discontinuities at the time of sedimentation.

Now, the significance of that in terms of the data that we acquire is that there is no database that we are capable of generating in either the seismic, the petrophysical or the geologic world that can find that sort of thing in the subsurface unless we drill through it specifically or unless we are in very close proximity to it and can see it in pressure-transient testing.

If we were to construct geologic maps on these individual beds, coalbeds, the one through four that I've already enumerated for you, what one would see would be a very, very smooth structural slope as one moved all the way across this highwall from one end to the other. So we can't even see these things with very, very detailed mapping.

EXAMINER STOGNER: Before you go on, let's go back to -- you used a terminology that I'm not familiar with, and that's the lystric fault. Do you want to spell that?

THE WITNESS: Lystric is spelled variously, l-y-s-t-r-i-c or l-i-s-t-r-i-c. Those faults are most commonly found in passive continental margins, in deltaic settings where there is a tremendous amount of sedimentation taking place. So they occur, for example, in the Niger delta, in the Amazon delta, in the Mississippi delta. They can have throws of tens of thousands of feet.

And as they develop, one of the features that is unique to their downthrown side is that they develop an anticlinal flexure. As the downthrown side continues to subside and slide down that fault, what will happen is that rock further from the fault stays high.

And so if you look at coalbed number two, numbering from the bottom up, and you start at the fault and move to the right, you can see that structurally you're moving updip just a little bit and then back down again. Those features are called rollover anticlines.

And I bring that to your attention because those are the dominant -- or have been the dominant oil and gas exploratory targets in big pieces of the offshore Gulf of Mexico for many years. So this kind of fault structure and its genesis have been very well studied and documented. It's not something that I'm making up, in other words.

EXAMINER STOGNER: You do know Roy.

(Laughter)

Q. (By Mr. Carr) All right, let's go to the next photograph.

A. As I described just a moment ago, those faults become parallel to bedding, and at some point in there, their distal reaches, as they continue to slide, we have to have a material balance in the rock that's being moved. You can't just slide it forever.

And so what we see again in the Gulf of Mexico, and what we see here, is that at some point out downstructural dip whose distance is determined by the thickness of the section and the competency of the rock, that fault will start climbing section again. And as it does, what it will create will be a series of features that look like thrust faults.

And so in the central left portion of this figure what you will see is that there are two coalbeds in very close proximity to one another, one a quarter of the way up through the photograph, another about a third of the way up through the photograph. The upper of those two has a very much broken top surface. Those are the places where these little faults are coming off the lystric and are creating above that in this next thin little coal bed, a whole series of fault-propagation folds.

All of these faults that are shown in the upper of the lower two beds -- so the one that's about a third of the way up -- all of those would constitute reservoir continuities sufficient to stop lateral flow of hydrocarbons, and these cannot be mapped. These are soft-sediment features, these occurred during sedimentation.

And then finally, there's one last figure which shows one more fault, and this is the last of the exhibits that I have prepared to show you. This particular fault you will see -- I'm moving from the lower right to the upper left -- there's a clear discontinuity in the rock bedding across it.

What I would draw to your attention is that the offset at the lowermost contact of the coal and the offset at the uppermost contact of the lower coal package are approximately the same, that the offset on that thin little single, couple-inch-thick stringer that's in the upthrown side on the left of the photograph, and its counterpart on the downthrown side on the right-hand side of the photograph are about the same displacement as what we saw at the bottom. What this suggests is that this fault occurred after sedimentation, it is not lystric.

However, if one continues up the fault we can see that as you move across it and look at offsets on succeeding beds, that offset diminishes. And so this appears to be a fault that has some post-depositional movement on it, some syn-depositional movement on it, and may actually even be spinning off a little lystric piece right in through here, and that's what that little curve and drag may be related to. These are again features that we cannot see and are probably as young as Oligocene in age.

And those are the last of the exhibits that I have prepared from my studies.

Q. What conclusions can you draw from this geologic work in the Basin-Fruitland Coal?

A. Well, the primary conclusions that I have drawn are these: First, that the rock on the New Mexico portion of the Basin is very much like the rock on the Colorado portion of the Basin, and that's consistent with the testimony that's been offered by both the Burlington people and Mr. Fassett.

The second conclusion that I draw is that there are any number of reservoir discontinuities that can simply not be mapped, that can be very effective in terms of occluding permeability along bedding, prohibiting drainage of the reservoirs, and that the frequency with which they occur in the mine highwalls where I have investigated them would suggest to me that 320-acre spacing is nowhere near sufficient for adequate drainage of the resource present here.

I would also conclude from the work that I have done that the rock, because it is similar on both sides -- all portions of the Basin -- should exhibit similar engineering characteristics, and I have been trying to thereby set the stage for the engineering testimony that Mr. Dinh is going to offer following my discussions.

Q. You agree with Mr. Fassett that there is substantial discontinuity throughout this reservoir?

A. Absolutely, there is.

Q. And do you see any difference between the area -- the fairway and the remainder of the reservoir?

A. My studies do not show any difference in the scale of discontinuities or their presence or absence from the high-productivity area into any other portion of the Basin.

Q. From your geologic study can you conclude that infill drilling is warranted throughout this pool and reservoir?

A. Yes, I do conclude that infill drilling is warranted.

Q. Were BP America exhibits, the nine exhibits behind Tab 10, prepared by you or compiled at your direction?

A. Yes, they were.

Q. Can you testify as to their accuracy?

A. They are as accurate as I am able to make them.

MR. CARR: Mr. Stogner, at this time we'd move the admission into evidence of the BP America, Inc., exhibits behind Tab 10. There are nine of them.

EXAMINER STOGNER: The nine exhibits behind Tab Number 10, or Exhibit 10 in this matter, if there's no objection --

MR. HALL: No objection.

EXAMINER STOGNER: -- will be accepted.

MR. CARR: That concludes my direct examination of this witness.

EXAMINER STOGNER: Thank you, Mr. Carr.
Mr. Kellahin?
MR. KELLAHIN: No questions.
EXAMINER STOGNER: Mr. Hall?
MR. HALL: Thank you, Mr. Hall.

EXAMINATION

BY MR. HALL:
Q. Mr. Riese, of the evidence you've presented to Mr. Stogner today, you have a cross-section across Mr. Fassett's isopach that runs from Cedar Hill area up to Ignacio, correct? And then you also have your photographic stratigraphy of the San Juan Mine, and that's -- What would you say? Ten miles northwest of the City of Farmington? Is that about right?
A. Ten miles northwest is probably a good guess, and this section, I think, is actually somewhat further west than Cedar Hill.
Q. Okay. And your other photographs are from the Navajo Mine area, and that's just about due west of Farmington another ten miles; is that right?
A. Yes, those two mines are within two or three miles of one another, and they straddle the highway straight west of town, Navajo to the south, San Juan to the north.
Q. You're presenting no evidence today that might

indicate to us or the Hearing Examiner what the conditions might be within the high-productivity area, are you?

A. I have shown you no specific data other than the cross-section which goes from within that high-productivity up into a lower-productivity area to the north and shown that the stratigraphic character is very similar, the level of discontinuity in the coals as we map it with well logs is very similar.

Q. Is it your testimony, then, that the truncation you've shown in your photographs and the discontinuities that are evident in the photograph also occur within the center of the high-productivity area?

A. They should occur in the center of the high-productivity area and throughout the rest of the Fruitland subcrop.

Q. Of any areas within the Basin-Fruitland Coal Pool, isn't it the case that there's likely to be more continuity of these coal features within the high-productivity area than anywhere else?

A. No, I don't see that we can make that argument.

Q. Okay. In your capacity with BP, have you been involved in planning BP's drilling program for the Fruitland Coal Pool?

A. I have been involved in past programs. I have not been involved in any of the programs forward looking for this year or next year.

Q. Okay, so you wouldn't know, then, what BP's drilling programs are looking forward then?

A. The only drilling program that I have awareness of is the Colorado infill drilling, and the anticipation there is that we will continue drilling approximately 50 wells a year for the next years.

MR. HALL: All right, nothing further, Mr. Examiner.

EXAMINER STOGNER: Any redirect?

MR. CARR: No redirect.

EXAMINATION

BY EXAMINER STOGNER:

Q. When I look at your photos, what kind of vertical --

A. -- scale?

Q. -- scale am I looking at, yes?

A. Yeah, I apologize for not having a scale here, but I'll point out in my defense that the miners don't let us get up to the highwall because they're afraid it's going to fall on us.

Having said that, if I move you through each of these and give you something specific to each one of them for scale, that might be the easiest way to do things.

In the first of the photographs, which is --

let's see if I can get myself backwards -- which is this one -- Am I in the right place?

MR. CARR: What is "this one"?

THE WITNESS: This one is the first of the photographs which is BP Exhibit Number 5 [*sic*] --

Q. (By Examiner Stogner) And it's entitled "Channel truncation..."

A. "Channel truncation of coals". And the coal which is -- I'm sorry, which is truncated right here, which is more clearly viewed in your hard copy, is actually two little beds that are each about a foot and a half thick. So a total coal interval there of about three feet. So there's a scale mark for the first -- for BP Exhibit Number 5.

If I move to the next one, BP Exhibit Number 6, I spent quite a bit of time talking to you about those two prominent beds that are approximately in the center of the interval, in the center of the photograph, and we discussed their lateral variability at some length. Each of those is approximately one foot thick.

If I move to BP Exhibit Number 7, which is the one -- "Syndepositional faulting in the Fruitland...at Navajo Mine", with the sunshine in our eyes, and I move to the lowermost bed, which is in the shadow on the projection screen, but which is clearly visible in your hard copies, that lowermost bed is approximately five feet thick.

And if I move to BP Exhibit Number 8, where we show syndepositional faulting in the thrusting features, the bed which shows the thrusting and the discontinuity on the left-hand side of the photograph is about two feet thick, just the distorted piece from -- there's a -- if one can see that this whole coal section is separated by a clastic interfinger, so if I just refer to the rock from that clastic interfinger up, we're looking at approximately two feet.

And in the very last photograph, BP Exhibit Number 9, the lowermost coal on the upthrown side, right smack in the middle of the photograph, left to right and about a third of the way up from the bottom, that coal is about a foot thick.

Is that adequate for scaling?

Q. Yes, I appreciate that.

Back to the photos again, now the photos in which you have, what would they correlate -- to which of the red sections in your cross-section? Would they be the lower, the upper or --

A. Oh, my. That's very difficult to say, because I have not tried to correlate from the Basin back up into the mines, so I don't think I can answer your question.

Q. But that coal is productive deeper on as you go to the north and east from the coal area past Farmington toward Durango, this is a gas-producing coal seam or --

A. Oh, yes, as one moves north and east from the areas of the mines and you drop into the axis of the Basin and then come back up again, all of the coals that are present in the wellbores that my heritage companies, Vastar, have completed and drilled through are productive.

I would hasten to add for further amplification on that, that at one point Vastar undertook a recompletion program that involved sidetracking to try and capture reserves that were in some of these coals that were only a foot or two thick, and we found that the results were certainly warranted economically and that we could get very good rates out of some very thin coals if they had the proper low density/high-vitrinite contents.

So I guess I'm trying to summarize the answer to what you probably intended as a simpler question than what I'm turning it into by saying that even though these look quite thin, and even if they stayed thin into the Basin, they would still be things that we would target.

EXAMINER STOGNER: Any other questions?

You may be excused.

THE WITNESS: Thank you.

EXAMINER STOGNER: Mr. Carr and Mr. Kellahin, are you going to maybe present another exhibit in the form of an airline ticket so we can go Okeefenokee or perhaps the other delta?

(Laughter)

MR. KELLAHIN: Mr. Carr said he'll take us all.

MR. CARR: Only if Mr. Kellahin stays behind.

(Laughter)

EXAMINER STOGNER: We can discuss that later.

MR. BROOKS: I once presided over a trial of a case that involved title to a hotel in Acapulco, and I tried to persuade counsel that we needed an *in-camera* inspection of that hotel, but they wouldn't accept the idea.

EXAMINER STOGNER: Now, you know where I go the idea from.

Mr. Carr?

MR. CARR: May it please the Examiner, at this time we'd call Vu Dinh, V-u D-i-n-h.

VU DINH,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. My name is Vu, spelled V-u, last name is Dinh, D-i-n-h.

EXAMINER STOGNER: If you could move that microphone up closer to you, that would be good.

Q. (By Mr. Carr) And where do you reside?

A. I reside in Katy, Texas.

Q. By whom are you employed?

A. I'm currently employed by BP America, Inc.

Q. And what is your position with BP America?

A. I am currently employed as a principal reservoir engineer.

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

A. No.

Q. Would you review your educational background for Mr. Stogner?

A. I graduated in 1984 with a bachelor in petroleum engineering from Colorado school of mines. I got my master of science in petroleum engineering from the University of Texas at Austin in 1993.

Q. And since graduation, for whom have you worked?

A. I've been employed as a petroleum engineer for the last 18 years by ARCO, Vastar and right now BP.

Q. Did you actually testify in the proceeding in the year 2000, which resulted in the adoption of the infill order in the State of Colorado?

A. Yes, I was the engineering expert witness in that hearing.

Q. Are you familiar with the Application that's been filed in this case on behalf of the Fruitland Coalbed Methane Study Committee?

A. Yes.

Q. And are you familiar with the Basin Fruitland Coal Gas Pool?

A. Yes.

Q. Have you made an engineering study of the Fruitland Coal?

A. Yes.

Q. And has your study included work on both sides of the New Mexico-Colorado border in the San Juan Basin, in the Basin-Fruitland Coal Pool?

A. Yes.

Q. Are you prepared to share the results of that work with the Examiner?

A. Yes.

MR. CARR: We tender Mr. Dinh as an expert witness in reservoir engineering.

EXAMINER STOGNER: Any objection?

MR. HALL: No objection.

EXAMINER STOGNER: Mr. Dinh is so qualified.

Q. (By Mr. Carr) Now, Mr. Dinh, you studied the Carracas Canyon area, which we've previously discussed in this hearing; is that correct?

A. That is correct.

Q. And so what we're going to do with your presentation is, we're going to start there, we're going to review that work and the methodologies you used to study that underpressured or normal, slightly underpressured portion of the San Juan Basin. That's where we start, correct?

A. That's correct.

Q. And then we're going to move your presentation to an overview of the results of infill drilling in Colorado?

A. Yes.

Q. And then we're going to narrow that and look at a couple of particular study areas on the New Mexico-Colorado border?

A. Yes.

Q. And then finally we're going to look at particular well pairs and study the benefits of and impact of infill drilling; is that right?

A. That's correct.

Q. All right, let's go to the Carracas Canyon study area. Let's go to your first slide -- they're behind Exhibit Tab or Exhibit Book Tab 11 -- and I'd ask you to first identify what this is and then review the information on this exhibit for Mr. Stogner.

A. Yes, this is the contour map of the highest gas rate for the San Juan Basin, which clearly shows the high-rate fairway area, and those high rates are contoured and colored.

Also on this map are the federal units for reference, and they are outlined in yellow.

There are also five small squares, and those would be the Burlington infill pilot area that has been discussed previously. The large block toward the right-hand side is the Carracas Canyon area where I'm going to discuss the results. And then also I'd like to point out that, like you have mentioned, I'm going to discuss the high -- overpressure/high-productivity area adjacent to the state line in Colorado.

Q. Now, when you studied the Carracas Canyon unit area, what were you trying to do?

A. I was trying to determine the feasibility of getting an additional well in the existing 320-acre spacing unit.

Q. All right, let's go to the next plat, the daily gas-production information.

A. This exhibit is the bubble map of the daily gas production, and the size of the bubble represents the gas rate. For example, the largest bubble you see off toward the east side, that bubble represents a million cubic feet a day.

One thing that you can notice is that there is clearly shown -- this map here or this exhibit clearly shows the variation in well performance across the study area. In particular, only 13 out of the 81 active wells are producing more than 100,000 cubic feet per day, and most of the prolific wells are located on the east side of the study area.

Q. Now, this looks at current rate?

A. That is correct.

Q. Let's go now to the next exhibit, and let's look at well performance over time in this area.

A. Whereas the previous area shows the well performance at a specific point in time, this exhibit --

Q. This exhibit --

A. -- right, this exhibit is a contour map of the cumulative production which shows the well performance over time. It's important to note that only 18 out of the 81 active wells have produced more than 500 million cubic feet of gas.

Most of the production in the Carracas Canyon area is located on the east side of the study area, as highlighted by the darker contour lines.

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

A. Okay. This is the isopach map which shows the coal-thickness distribution throughout the study area. The average net coal thickness for the Carracas Canyon averages about 22 feet, and it ranges from the thickest over on the west side of about 36 feet, to as low as 14 feet toward the east.

It's important to recall from the previous two exhibits that the highest rate and also the highest cumulative production is actually located over on the east side of the study area, where the coals are actually thinner than it is on the west side. The thicker coals are actually the low-productivity area.

Q. So when you look at this area you're not finding a correlation between well performance and thickness of the coal?

A. No, this exhibit really shows that the well performance is strongly influenced by permeability and not by coal thickness or any other gas storage parameter.

Q. All right. Let's now go to the pressure-gradient information on the next exhibit.

A. This exhibit shows the pressure-gradient history for all the wells in the Carracas Canyon area, and it's plotted over time, as you can see, that line connecting all those different dots.

Based on the initial gradient of -- average gradient of about .42 p.s.i. per foot here, obtained during the 1989-to-1990 drilling program, the Fruitland Coal in Carracas Canyon appears to be slightly underpressured and, except for a few prolific wells, would show significant pressure decline, as you can see on the graph where the pressure gradient decreases significantly toward the bottom right of the plot.

Most of the wells experience only slight pressure depletion after about ten years of production, and that point is illustrated by the relatively flat slope of the different lines.

Another interesting point on this plot is that, if you notice on the right-hand side, right about the year 2000, there are about seven open-square box symbols. Those are the pressure gradients for the seven newly drilled wells, and those wells encountered at or pretty close to the original reservoir pressure. What these data proves is that there's a lack of sufficient recovery from the existing wells in the Carracas Canyon area.

Q. Okay. Now let's go to the next exhibit and let's look at the material-balance calculation.

A. I'm going to spend some time explaining this plot. What this plot shows, this is a material-balance plot, and it shows the relationship between the cumulative gas production plotted on the X axis, versus a modified reservoir pressure plotted on the right Y axis.

The plot -- It's pretty simple. What it's saying is that as gas is produced the reservoir pressure is modified by -- the Langmuir pressure would decrease linearly.

The benefit of using this plot is that you can determine the gas in place by extrapolating the trend to zero pressure. For example, for this particular well, the original gas in place would be about 7.8 BCF of gas reserves, right here, as you can read off from the X axis.

Now, if you know the gas in place you can calculate the apparent drainage area by using the net coal thickness and also the gas content, you can back-calculate what the drainage area is.

For this area we used 21 feet of net coal and 509 cubic feet per ton of average gas content. That would give you an apparent drainage area of 382 acres.

Q. This is one of the best wells in the area?

A. This is the best well, that is correct.

Q. And you had the kind of data that you need for this well to fully analyze it; is that correct?

A. Yes. Yeah, another important thing to notice is that, if you look at the straight-line relationship here, what that indicates is that the drainage -- is that at any point in the life of the well, the original gas in place, and therefore the drainage area, stay the same at 382 acres.

Also on this plot, I also show the actual gas rate, and those are the small dots below the dark line. You can also extrapolate the gas rate, and you can see that without rate-extrapolation both methods show that we're looking at the same ultimate recovery.

The problem with using the gas-rate trend is that it is strongly affected by operating conditions. For example, you see it curves here, where during the same period of time the material-balance plot is straight.

So that's the benefit of using material balance, is that the drainage area or the gas in place or ultimate recovery is not affected by operating conditions.

However, there is a problem in that material balance does require accurate and frequent pressure measurement, which we don't always have for all wells.

Q. Let's go to your next exhibit. Would you identify and explain that?

A. Okay. As I have mentioned, in the Carracas Canyon area there's only a few wells, seven to be exact, that have sufficient pressure data to do the detailed material-balance calculation.

Since both the drainage area and the cumulative production as a function of rate are both strongly influenced by permeability, we can establish a good correlation between the parent drainage area and the cumulative production, as shown in this exhibit here.

And then what we can do is, we can use this correlation to determine the drainage area of all wells in the study area, as shown in the next exhibit.

Q. Okay, let's go there, and I ask you to review that.

A. This exhibit shows the apparent drainage for all wells in the study area determined either by material balance, or by the correlation if there's not sufficient pressure data. And the bubbles are a true-scale representation of the actual drainage area.

What this exhibit shows is that there are only three wells that have apparent drainage area greater than 160 acres. Most of the wells have drainage areas of 160 acres or less. This exhibit conclusively shows that an existing well in the existing 320-acre spacing unit is necessary to increase gas recovery and prevent waste.

Q. So what you've done is, you've developed this methodology, or employed this methodology, to establish that in this area, this slightly underpressured area, infill development is not only warranted but needed?

A. That is correct.

Q. All right. Now, I'd like for you to shift the focus of your presentation and talk generally about the experience on the Colorado side of the line where infill drilling has been approved.

A. Since the actual infill results from Colorado are applicable to New Mexico, I'd like to show the impact of the actual infill drilling in relationship to the existing production.

There are several things to point out on this particular exhibit.

The lower line, in orange, shows the infill well count. And currently we're at about 300 infill wells.

The next line up, the purple line, that shows the existing or parents wells.

This blue-shaded area, that's the production from the existing wells. And then the green incremental-rate area, that's the infill response.

To describe the history real quick, there was limited downspacing started in 1997, as shown in the lower curve here, there's about four wells started by Vastar. Large-scale drilling, infill drilling, occurs in 1998, with the approval of the Mesa Mountain, and then in 2000 with the approval of the fieldwide downspacing by the COGCC.

It's important to note that in 1998 when infill drilling just gets started, the existing production from the parent well has already peaked and already started declining. Infill drilling in Colorado has maintained the

Colorado coalbed methane production to over a billion cubic feet a day, and currently it's contributing about 25 percent of the total production.

Q. Let's move to the next exhibit, and I'd ask you to use this to review for Mr. Stogner the Colorado study areas and then focus on the areas in the New Mexico border that we're going to go into in detail.

A. This exhibit shows the different study area where extensive data was presented at the COGCC hearing in the year 2000. Of all the different study areas, really the two most important study areas are the Mesa Mountain area and also the high-pressure/high-productivity area adjacent to the state line. The data from those areas would be applicable to today's hearing.

Q. And where is the state line?

A. The state line is --

Q. Southern border?

A. The southern border of the exhibit, yes.

Q. Okay. Now, the data that you've collected here extends not only in the under produced area but -- or in the -- not only from the low-productivity area, but into the high-productivity area; is that correct?

A. Yes, the data presented to the COGCC includes both overpressured area and a little bit of the underpressured area. All the data I'm going to discuss from now on actually just concentrate on the overpressured area adjacent to the state line.

Q. Okay, let's go to Exhibit Number 20. I'd like you to identify that and then explain what this shows.

A. This is Exhibit Number 11, and what it shows is the relationship between the rate, plotted on the X axis, versus the apparent drainage area, plotted on the Y axis.

Q. And Mr. Dinh, what we've got is, we've got Exhibit 20 behind Tab 11, correct?

A. That is correct, yes.

Q. And what we've got here is, we're showing a correlation -- State that again for me?

A. Okay, this shows the relationship between the average daily rate and the apparent drainage area as calculated from material balance, similar to what I have shown in the Carracas Canyon area.

And the reason why I cross-plotted the two is that, in general, the larger drainage area correlates with higher rates, since both are strongly influenced by permeability.

And one thing to -- It was kind of surprising to find out that when you look at the wells in the range of 3 million to 5 million cubic feet a day -- those are highly prolific wells -- about 50 percent of those wells actually have apparent drainage areas less than 320 acres.

The other interesting thing to notice is that wells producing from 2 million to 3 million cubic feet a day are actually draining significantly less than 320 acres.

Q. Now, this data from 1999, that's from the Vastar area immediately north of the New Mexico-Colorado state line?

A. That is correct.

Q. In 1999, that is about at the time production in that area peaked; is that correct?

A. That is correct.

Q. If we look at this, the information you have here, the correlation you've been able to draw between drainage area and rate would be applicable in New Mexico as well as Colorado?

A. That is correct, the Fruitland Coal doesn't care about political boundaries.

Q. All right, and if we look at this, what kind of an average daily rate would you estimate is needed if, in fact, you're going to drain 320 acres?

A. Based on the data we have gathered here, I would conclude that you're probably looking at greater than 5 million to drain.

Q. You pointed out a few moments ago that wells at a 2 million daily producing rate would drain approximately how many acres?

A. Based on this data here you can say for sure they would be draining less than 320, and I would conclude that the average -- if you average out this area here, you're probably looking at about 240 acres.

Q. Now, you know that the boundary between the high-productivity area and the low-productivity area that has come out of the Study Committee was drawn based on a producing rate of 2 million a day, that was the basis for that boundary?

A. That's correct.

Q. If the purpose of that boundary is to separate high-productivity wells from low-productivity wells, can you see any technical basis for using a 2 million daily rate as the basis for that?

A. Based on this data here, what I see is, all the wells from 2 million are producing less than 320s. I see absolutely no technical basis why that line would be chosen.

Q. What you've done here is, you've correlated rate and drainage area?

A. Yes.

Q. And why are you using rate and drainage area? Why is that the data you're using?

A. Okay, like I mentioned before, it's unusual to obtain sufficient pressure data to do the actual material-balance calculation for every well. So the best thing that you can do is try to correlate the desired result, which is drainage area, with something that's easily obtainable, which is rate.

Now, the reason why I choose rate is that rate is strongly influenced by permeability, and drainage area is also strongly influenced by permeability. So by cross-plotting the two, you do get a sample relationship that you can use.

Q. And you get a reliable relationship that you can use?

A. That is correct, yes.

Q. Could you correlate drainage area with other factors?

A. You could correlate --

Q. Could you correlate --

A. Besides -- Well, you can try to correlate to other parameters such as net coal thickness or Langmuir or gas content. But as I have shown before in the Carracas Canyon, where you have the thinnest coal is actually, in that particular example, where you have the highest performance.

So net coal thickness or gas content is a poor indicator of what the drainage area is going to be, in my opinion.

Q. And would you consider that kind of a correlation reliable?

A. No, it would be a shot in the dark.

Q. Let's go to the next exhibit, it's Exhibit 21, It's the New Mexico-Colorado border Fruitland Coal infill results behind Tab 11.

A. Okay.

Q. What does this show us?

A. This shows the actual infill result for the 21 sections adjacent to the New Mexico state line. And the lower curve shows the rate contribution from the 28 infill wells. The red line, the top curve, shows the production from the 36 parent wells.

One thing to notice, that the initial rate from the infill wells are pretty close. They're about 80 percent of the current rate of the parent well. Yet there is no apparent interference effect that you can see on the parent rate. Both the parent rates and the infill rates are continuing to incline. This would indicate that most if not all the infill rates are incremental recovery, not rate acceleration. And I do have some additional data to back up that statement.

Q. Are you ready to go to the next exhibit?

A. Yes.

Q. Let's go there and review that for Mr. Stogner.

A. This is -- It's a lot more obvious that the infill rates are incremental recovery when we examine the actual pressure data obtained from the infill wells. What's shown on here is a list of wells and what the pressure -- the infill pressure compared to the pressure at the same time for the parent well.

Most of the infill well initial pressures were at or near the original reservoir pressure, which in this area is about 1550 p.s.i.

On average, the infill initial pressure is at least 500 p.s.i. greater than the average pressure of the parent well. This large pressure differential between the infill and the parent well indicates that significant gas reserves would be unrecovered without infill wells.

Q. And these would be incremental reserves?

A. Yes, based on the pressure data here I would conclude that the rate on the infill wells are incremental reserves.

Q. All right, what is the next exhibit, the bubble map, it looks like?

A. Yes, this is a map showing both the actual drainage area, plotted as yellow circles -- and those yellow circles would be true to scale -- and also the rate contour. Anything that's not colored, the contour is less than a million cubic feet a day.

What you can notice is that in the low-permeability area -- and when I say low-permeability what I'm talking about is in this area here, the permeability -- the effective permeability is about .1 millidarcy or less.

Q. And describe that for us on the exhibit.

A. It is on the -- It's all the small circles on the right-hand side.

Q. All right.

A. Those wells are located in the low-perm area, which is .1 millidarcy or less. Those wells are making a million cubic feet a day or less, by the fact that there is hardly any colored contour, as you can see. And those wells typically have drainage area -- those circles are plotted to scale -- of less than 160 acres.

Conversely, if you go into -- this is the fairway area right here, overpressure, high productivity, fairway area -- in this area here, the effective permeability can be as high as 100 millidarcies.

These prolific fairway wells -- and I'm talking about all the big circles on the left-hand side of the exhibits -- those prolific wells, those were making over 5 million a day in the magenta color there. Those wells typically drain 320 acres.

It's important to note that the big permeability contrast from the east side, or from the right-hand side of the exhibit to the left, you're looking at a change of three orders of magnitude from .1 millidarcies to 100 millidarcies. That's why the rates in the drainage area are strongly influenced by permeability and not any other parameters.

Q. Now, you have reviewed for Mr. Stogner your study of the Carracas Canyon area.

A. Yes.

Q. And we've looked generally at the results of infill development in Colorado, and now we have done a more focused look at the Vastar and the Mesa Mountain area?

A. Yes.

Q. Now, on this map, on the New Mexico-Colorado border are a couple of well pairs that we're now going to focus in on and look at in terms of how individual wells are performing in an infill kind of a situation; is that correct?

A. Yeah, that is correct. I'm going to focus my discussion on two sections adjacent to the New Mexico line. The section would be in the high-pressure, high-productivity area both in Colorado and New Mexico, and that would be Section Number 20 and 21.

Q. Okay, let's go to the next exhibit in the exhibit book. Start with Section 21, and I'd ask you to review the information on this exhibit. When we're looking at this material-balance plot, are we basically going to be employing the same kind of methodology that we used when we were looking at Carracas Canyon?

A. Yes, this is exactly the same method used in Carracas Canyon.

Q. Okay, let's go to this plot, and I'd ask you to review the information on this exhibit for the Examiner.

A. This is the material-balance plot for Well South Ute 21-2, located in Section 21, 32 North, 9 West.

Q. And this is an infill well?

A. Yes, this is the infill well in that section. Similar to what's been shown in Carracas Canyon, once again, you have cumulative gas production plot on the X axis. There is a reservoir pressure, modified reservoir pressure term, P/Z plot on the left Y axis, and also rate plotted on the right-hand Y axis.

Similar to -- Let me back up. This infill well was drilled in March of 1999, and its initial pressure was 970 p.s.i. Based on the P/Z or material-balance extrapolation here, this well would have an ultimate recovery of about 3 BCF, and if you extrapolate out to the original gas in place and back-calculate what the apparent drainage area is, this well has an apparent drainage area of 79 acres.

Q. Okay.

A. Now, most of the expected ultimate recovery of about 3 BCF here would be classified as incremental recovery, and that's the reason why I can say that those are purely incremental recovery when we examine the next slide.

Q. Okay, let's go to that slide. And this is a plot on the parent well?

A. Yes, this is the plot of the parent well, Southern Ute 21-6, located in Section 21 of 32 North, 9 West. This is the parent well to the previous well, which is the 21-2.

In March of 1999, at the same time when the 21-2 was drilled, we obtained an average reservoir pressure for this well, and it was 414 p.s.i., which is 556 p.s.i. less than the initial pressure of the infill well. That is a very large pressure differential for a prolific well. This well here, the peak rate was over 5 million cubic feet a day, but yet when you drill the infill well, the initial pressure was actually 556 p.s.i. higher than what this well was at.

There's the reason why such a large pressure differential exists, because when you look at the drainage area calculated from material balance, this well's drainage area is only 260 acres. That is, for us, surprising for a well that has produced more than 500 cubic feet a day, highly prolific, highly productive.

Another interesting point is, remember or recall that the infill well was drilled in March of 1999. When you look at the P/Z trend, you see there is no deviation at all from the line. There is no change in slope before or after the infill well was drilled.

What does it mean when you say there's no change in slope? That means that this well, the drainage area or the gas in place remained the same at 260 acres before and after the infill well was drilled. The infill well actually has no impact at all on this well. Therefore, the logical conclusion is that the gas produced from the infill well is purely incremental recovery, not rate acceleration.

Once again, keep in mind that this is an over-5-million-cubic-feet-a-day well, very prolific.

Q. So what we have is, we have a high-rate well that, based on the earlier correlations, should have drained 320 acres?

A. Yes.

Q. It's in the high-productivity area?

A. Yes.

Q. And there is still substantial benefit from the infill development of the dedicated spacing unit?

A. Yes, without the infill well there's

approximately 3 BCF of gas that the parent well would not access.

Q. All right, let's go to the next pair of material-balance plots, and I'd ask you to explain to Mr. Stogner what these show.

A. Similar to what's happening in Section 21, this is Section 20, and I'm going through the same process again. Once again, Section 21 and 20 are just right at the New Mexico border.

This is the material-balance plot for the well Southern Ute -- I'm sorry, need to switch -- material-balance plot for the well Southern Ute 20-6, located in Section 20, 32 North, 9 West.

This well was drilled in December of 1999. Based on the pressure-depletion performance, I can calculate a drainage area of approximately 110 acres.

Once again, when you extrapolate the pressure performance trend, this well is expected to recover approximately 3 1/2 BCF of incremental gas. Now, once again, it's incremental gas, because when you look at the next exhibit --

Q. Let's do that.

A. -- this is the material-balance plot for the parent well of the previous well. This is well South Ute 20-5, located in Section 20, 32 North, 9 West.

Once again, this is a high-rate well. You can look at the rate. This is over 3-million-cubic-feet-a-day well, and from material balance we can calculate an apparent drainage area of 280 acres.

What's important to note is that once again, when the infill well was drilled in December of 1999, the latest pressure we obtained here is May of 2002. You see no deviation from the linear trend at all on the parent well. What it means is, the drainage area for this well remained the same before and after the infill well was drilled.

So you have to reach the same conclusion, is that the recovery from the infill well is incremental recovery.

Q. Let's go now to the next exhibit, Vastar's IBF infill reserves versus offset gas rate.

A. This exhibit shows a correlation between the incremental infill recovery, the after incremental infill recovery, versus the offset parent well. Now, despite the scatter of the data, we can make the following observation concerning the infill drilling impact.

We can expect about 1.5 BCF of incremental gas recovery if the parent well is making a million or less. For rates between 2 million and 3 million we can conservatively estimate that the expected infill recovery is about 2 1/2 BCF. For rates from 3 million to 5 million cubic feet a day, we can expect about 3 BCF of incremental recovery.

However, if you recall from the scatter plot, there's only about 50 percent probability that a well in this rate range from 3 million to 5 million would require an infill well. If you'll recall, only 50 percent of the wells in the rate from 3 million to 5 million would have drainage of less than 320 acres and therefore would require an infill well.

Q. All right, let's go to the last exhibit behind Tab 11, and I'd ask you to review that.

Q. Before we move on to the next exhibit, I also want to make another point, is that for a rate greater than 5 million, we expect no incremental recovery because we expect those wells that produce more than 5 million a day should drain their respective 320 acres --

Q. Right.

A. -- and therefore an infill well would be unnecessary.

Q. And you wouldn't propose one then?

A. Absolutely not.

Q. Okay, now let's go to the last exhibit, the summary sheet.

A. Based on the Colorado infill results, we can make an estimate of what impact infill drilling would have for the overpressured area in New Mexico. What is shown on this exhibit is the number of wells located in the following rate contour.

For example, from within the overpressured area there's approximately 411 wells making a million cubic feet a day or less.

As I mentioned before, when you apply the Colorado results for wells making a million or less, you expect about 1 1/2 BCF of incremental recovery. So when you sum up, there's a -- when you look at just the overpressured area in New Mexico, there's approximately 817 infill opportunities, and that would represent an incremental recovery of about more than 1.5 trillion cubic feet of gas.

Q. And this is from the high-productivity area?

A. No, 1.5 trillion cubic feet of gas would be for the overpressured area. If you want to concentrate on the high-productivity area, which would be wells making from 2 million cubic feet a day to 5 million, the impact incremental recover would be about 500 billion cubic feet of gas.

Q. What conclusions can you reach from your reservoir engineering study of the Basin Fruitland Coal, focusing on high-productivity area?

A. Based on the data that I have presented, I offer the following conclusions concerning infill drilling in the overpressured area.

Infill drilling is necessary in the overpressured area to recover an additional 1 1/2 trillion cubic feet of gas that would not be accessible with existing wells.

Also, another conclusion would be that there are significant incremental reserves in the high-productivity area that are also not accessible with the current existing wells.

Q. Mr. Dinh, do you think that additional pilot work is needed in the high-productivity area to confirm the conclusions that you've just reached, or do you believe the data you have to work with is sufficient to establish these conclusions?

A. I believe that we have sufficient actual infill results from Colorado that additional pilots or studies are unnecessary.

Q. Are the exhibits behind Tab 11 in the exhibit book, being what would be BP Exhibits 10 through 29, prepared by you or compiled at your direction?

A. Yes.

Q. Can you testify as to their accuracy?

A. Yes.

MR. CARR: Mr. Stogner, at this time I move the admission into evidence of the BP America, Inc., exhibits behind Tab 11.

EXAMINER STOGNER: Any objections?

MR. HALL: No objection.

MR. CARR: And that concludes my direct of Mr. Dinh.

EXAMINER STOGNER: BP Amoco's exhibits behind Tab Number 11 are hereby admitted into evidence.

Mr. Kellahin, your witness.

MR. KELLAHIN: No questions.

EXAMINER STOGNER: Mr. Hall?

EXAMINATION

BY MR. HALL:

Q. Mr. Vinh [*sic*], I believe you were present here earlier this morning for Dr. Clarkson's testimony. He explained how he took his methodology and data derived from the Burlington pilot project areas and applied those to the underpressure envelope area, correct?

A. Yes.

Q. And I believe you were also present when he testified, in effect, that he was reluctant to apply that same methodology to the high-productivity area because there was insufficient data, and I believe I understood him to say that really the data that was missing, didn't have sufficient data, was pressure data?

A. Yes.

Q. Now, you tried to overcome that in part by your material-balance calculations, and you've taken the pressure data you have for your Vastar area wells north of the border; is that correct?

A. That is correct.

Q. And you believe you can apply that data and that methodology to the high-productivity area in New Mexico?

A. Yes, based on the testimony this morning from Burlington and also from Dr. Riese, both have testified that there is no difference in the coal characteristics in Colorado or New Mexico in the overpressured area.

Q. But you testified just a minute ago that to do a correct material-balance calculation it requires frequent and accurate pressure measurement?

A. Yes.

Q. And that's what you don't have from the high-productivity area?

A. Not in New Mexico. However, I do have them in Colorado, and those data have been presented.

Q. Could we look at your material-balance exhibits briefly, please, sir? It's Exhibits 24 and the sequence after that.

A. Which ones are you looking at?

Q. Well, let's begin with 24. That's the Southern Ute 21-2, is your first one.

A. This one, 21-2?

Q. Yes, sir. Thank you. I want to make sure I understand what your point is here. For the wells where you have a material-balance plot you show a parent well and an infill well, and you show what appears to me to be a widely variable drainage area for the parent and the infill. Is that accurate to say?

A. Yes.

Q. What does that tell us about applying material balance to the high-productivity area, then? Are we also likely to see as much variability in the drainage radii south of the border?

A. Yes, like I have testified, these are high-productivity wells, so I would expect to see the same kind of performance in the New Mexico side.

Q. So you would have some proration units in the high-productivity area south of the border where one well could drain 320 acres, and you might have other areas where two wells would be better suited to drain 320 acres; is that accurate to say?

A. Yes, based on the Colorado data I would expect that in the overpressured area, high-productivity area in New Mexico, you would have wells similar to Colorado where the well may be producing 5 million cubic feet a day of rate, but yet the drainage area would be less than 320 acres.

Q. After you did your material-balance plots for those four wells, did you attempt to model over a larger area into New Mexico at all?

A. No, I have data for only these wells in Colorado. I believe that Phillips operates two wells offsetting Section 20, so I believe your conclusion, if I'm not mistaken, is that you don't see any interference effect, either from this particular infill well.

Q. Well, do you believe that gas content is a poor indicator for determining the drainage radius?

A. That's based upon the data I gathered in Carracas Canyon, like I have mentioned. When you look at all the gas content, you have -- I calculated a mean or average gas content of 509 cubic feet per ton. When you look at the standard deviation, you look at those samples, it has a standard deviation of only 27, which means that approximately 83 percent or so of all the gas-content measurement is plus or minus 27 cubic feet per ton from the 509 cubic feet.

So when you try to correlate something with a number that doesn't vary a lot, you don't get a very meaningful relationship, especially when you consider another parameter such as permeability that can change three orders or magnitude, from .1 millidarcy to 100 millidarcies. That is a much stronger indicator of what the well performance is going to be.

It doesn't matter what the coal thickness or the gas content is; if there is no permeability, there's no rate, there's no drainage area.

Q. Would you refer to your Exhibit 18, please? That's your Colorado historical production. I'll ask you one question about that. At the point where the infill wells started to come on line and it looks like the parent wells began their decline --

A. Are you talking about right here, this period in 1998?

Q. That's about right, yes. And is that an indication to you of some communication?

A. It is difficult to tell from a rate -- purely rate data whether interference occurs or not. One thing I can say for sure is that as the infill production ramps up, you don't see a change in the decline of the existing well. That is only -- That's one indication that there is no adverse effect from the infill well.

To be sure, you need to go to a more detailed examination using material balance like I have shown here in Section 20 or 21.

Q. You need that pressure data again to do that?

A. That's correct.

Q. If we look at your Exhibit 18 a little more closely, it seems to show where you're still in the tail end of the incline phase for the parent wells. You're also in a parallel incline phase for the infill wells.

A. Okay, are you talking about this period, early 1997, perhaps?

Q. That's about right, 1997 through 1999, it looks like there was a peak there for the infill wells. Do you agree with me that there is a parallel incline at that period of time?

A. Well, you also need to look at the well count down here. At the same time when that infill rate is inclining, the well count is also inclining; whereas during the same period, the well count for the parent wells stays constant. So I'm not sure if you can make that kind of statement.

Q. Well, if we follow through with that argument and look at what appears to be an apparent decline phase in the period July, 2000, to the end of the chart, again, don't you agree with me that you could say that there is a parallel decline going on between the infill and the parent wells?

A. Once again, you get -- yes, you can say that there's an apparent parallel here, but there could be many explanations for that. Once again, like I have testified before, rates are highly dependent on operating conditions.

What you could see, a situation here is, you might be running out of infrastructure, capacity.

Q. And you can't preclude the possibility of communication between the parent and infill wells, can you?

A. You cannot say with absolute certainty that there's no interference, that is correct. But you can also say with higher probability that most of the infill wells are incremental recovery based on other data, other pressure data obtained.

Realize that we do obtain reservoir pressure for all infill wells in Colorado, and those pressures have been higher than what we expected, meaning they're coming in at or near original reservoir pressure. That's why -- Most if not all of these infill productions here are incremental recovery, based on pressure data.

Q. In your Colorado wells, did you have any pressure-transient analysis done at all?

A. Yes, all of them have pressure-transient analysis.

Q. And what did that show?

A. What does that show?

Q. Did you see any indication of communication or interference?

A. No, as I've pointed out from the two examples in Section 20 and 21, those are all pressures obtained from pressure transient analysis, and you see absolutely no interference from the material-balance plot.

Q. Let's look at your Exhibit 20, please.

A. Exhibit 20.

Q. It's drainage area versus rate. Can you tell us again why a 1999 average daily rate was selected?

A. This is the same data that was presented at the COGCC hearing.

Q. Oh, I see. Can you say whether the preponderance of these wells were still in their incline phase in 1999?

A. It depends. If you look at the highly prolific wells, over 6-million-a-day range, those wells would be declining. If you look at wells, say, producing in the range of 200 to 300 MCF a day, those wells might still be inclining.

Regardless of whether they're inclining or declining, all these wells were drilled at approximately the same time period from 1989 to 1992, so their respective rate is an indication of what the effective permeability at that time is. Low-rate wells mean lower permeability.

Q. Let's look at Exhibit 23, it's drainage area versus highest rate, your bubble chart. Let me make sure I understand what this exhibit is intended to reflect. Can you use this analysis here and apply it to the high productivity are in New Mexico? Are you likely to see the

same type of results, in your view?
A. I would expect to see the same results because most of the data you're looking at is within 3000 feet of the New Mexico state line, and there is no difference in coal characteristics across the political boundary.
Q. But if you look at the size of the area depicted on the exhibit, it seems to show a lot of variability, the review area, anyway?
A. That is correct. That would be in line with what has been testified today, that the Fruitland Coal reservoir is a very complex reservoir. And the scatter in the data and the different sizes bear that fact out.
Q. All right, so you're likely to see this same variability on the New Mexico side of the border, in your view?
A. Absolutely.
Q. Mr. Vinh, have you been involved in the formulation of BP's drilling program for the Fruitland Coal?
A. Only on the Colorado side.
Q. Would you know what BP's plans are for drilling the Fruitland Coal in New Mexico?
A. BP currently does not have a plan for -- I'm sorry, a specific plan for drilling in New Mexico. If you're talking about an actual schedule, we don't.

We do intend to infill in New Mexico, but as a specific number of wells or timing, we do not have one at this point.

Q. Is there a range of wells you can tell us about in New Mexico?

A. I'm sorry, can you repeat the question?

Q. Well, you said you couldn't identify a specific number of Fruitland Coal wells in New Mexico. Is there a range that's being discussed in-company?

A. I would surmise that, based on the number of operated wells, we're probably looking at over 150 infill opportunities, is my guess.

Q. Do most of those opportunities occur in the high-productivity area?

A. Yes.

MR. HALL: Nothing further, Mr. Examiner.

EXAMINER STOGNER: Redirect?

MR. CARR: Just a couple of questions.

FURTHER EXAMINATION

BY MR. CARR:

Q. Mr. Dinh, in determining drainage areas, was it your testimony that permeability is the parameter that most affects drainage?

A. Yes, permeability in my opinion is the most important parameter.

Q. And you compare rate to drainage area because rate is also influenced by permeability; is that right?
A. That is correct.
Q. And when you go into these high-productivity areas, what you are calculating is an apparent drainage area; isn't that right?
A. That is correct.
Q. And what you're dealing with is a layered reservoir where you may have multiple intervals that are contributing to those drainage figures; isn't that right?
A. Absolutely.
Q. And so when you go back and infill in those areas, there is always the potential to pick up substantial incremental reserves in those other layers within the Fruitland Coal?
A. That is correct.
Q. If we look at your Colorado historical map, we can look at that again, and we look at the blue area, that is the production from the parent well; is that correct?
A. That is correct.
Q. And most of that was really from the high-productivity area in Colorado, is that not true?
A. That is true, even though this plot shows the total production from La Plata County, the high-productivity area would have a significant percentage in

the total production.

Q. And when we look at the green line, that is the infill contribution, is it not?

A. That is correct.

Q. And isn't the bulk of that from a low-productivity area?

A. That is correct.

Q. So there isn't a relationship between the curves of those two wells?

A. That is correct.

MR. CARR: That's all.

EXAMINER STOGNER: Any other questions?

MR. HALL: Briefly, Mr. Examiner.

FURTHER EXAMINATION

BY MR. HALL:

Q. If you could refer to your Exhibit 22, Mr. Vinh, it's the Vastar infill and parent-well initial pressure.

Looking at your infill pressures on this exhibit, Mr. Vinh, is it accurate to say that none of them were near virgin pressures?

A. There is this one particular example right here, Well 13-3. The initial pressure for the infill well is 1549, and that's approximately what the original reservoir pressure is.

Q. Overall, what are the original virgin reservoir pressures you would have expected to encounter in this area? I think -- I believe I heard you testify earlier it was in the neighborhood of 1500; is that right?

A. Yes. What you're looking at is, you're looking over two townships here. So the original reservoir pressure would vary.

It depends on the depth, but over -- in this area here, the average is about 1550 p.s.i.

Q. Okay. So because you have some variance from original virgin reservoir pressures in the infill wells from the parent wells, is that some indication of communication?

A. Yes, there is -- The fact that the infill well does not encounter original reservoir pressure, yes, the conclusion would be that there has been some depletion. But at the same time, when you look at the pressure differential between the infill well and the parent well you also have to conclude that without the infill well, the parent well would never recover the gas that is located at the infill location.

Q. Mr. Vinh, if you'd refer back to your Exhibit 21, it's the border Fruitland Coal infill results.

A. Okay, let me see. That one?

Q. Yes, sir.

A. Okay.

Q. I thought I heard you just testify that the permeability would be a great indicator for drainage area. And if you'd look at that chart, if you're still showing gas rates are still on the incline, how can you determine a drainage area at that point if there's still an incline ongoing?

A. Yes, if you look at the material-balance plot, I say for that one, gas rate is inclining during this period here, but from the material-balance plot you're looking at the same drainage area.

There is no deviation, there is no deviation, there is no change in material-balance relationship, whether the gas rate is inclining or declining.

Q. For the record, you're referring to Exhibit 25, which is your plot for the Southern Ute 21-6?

A. Yes, that is correct.

Q. Isn't it true to say that when your rate is increasing, as shown on your plot, that your permeability is increasing?

A. Yes, there are several factors, but increasing effective permeability is one -- is an important factor, that is correct.

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

EXAMINER STOGNER: Any redirect?

MR. CARR: No, sir.

EXAMINATION

BY EXAMINER STOGNER:

Q. I'm going to refer to Exhibit Number 28. This is the infill reserves versus the offset gas rate.

A. This particular one?

Q. Yes, that particular one. You had mentioned, if I remember, in your testimony that no incremental recovery would be obtained for those wells that had the -- anywhere from 3000- to 5000-MCF-per-day rate; is that correct?

A. I'm sorry, can you repeat the question, please?

Q. Okay. In your testimony I understood -- and you referred to the three wells on the right --

A. Yes.

Q. -- the high-productive wells, that no incremental recovery would be obtained off of those spacing units?

A. No, what I said is, for wells that have offset rate greater than 5 million cubic feet a day I don't expect any incremental recovery from those, because if you recall, back in this scatter-plot exhibit, which has the title "Drainage Area Versus Daily Rate", I'm basing that conclusion on the fact that when you look at wells that have a rate greater than 5 million, they tend to have a drainage area around 320 acres. And if they are draining 320 acres, there would be absolutely no need for any additional well, you would not get any incremental recovery.

However, for a well from 3 to 5 million I have testified that about 50 percent of those actually have drainage area less than 320 acres, and those wells would require an additional infill well to prevent waste.

Q. What percentage of the wells would fall into that category of having 320? I'm referring to the exhibit that you have up there now, drainage area versus average daily rate, 1999.

A. What percentage of the wells greater than 5 million a day?

Q. Yes.

A. I would at this point say that the probability is probably 90-percent-plus that those wells would have a drainage area of 320 acres. You can see that from this exhibit, which is entitled "Drainage Area Versus Highest Rate".

You do see in some areas -- For example, this magenta contour boundary right here, those are greater than 5 million, 6 million. There are a few wells in here that the drainage area is actually less than 320 acres. So it's not an absolute number, Mr. Examiner. That's why right now I'm putting the probability at about 90 percent.

Q. What kind of a rate would I see with an infill in that spacing unit that has a parent well that's a high producer, that has a high drainage area?

A. Based on the actual infill result that we have obtained, if you infill a well in, say, in an area where the rate is about 2 million a day or less, your infill well will typically come in at about 85 percent of what the parent well is. And that's shown in one of the exhibits, the infill exhibit. That plot right there ["Colorado-New Mexico Border Fruitland Coal Infill Results"]. When you look at the average rate from the parent well, that's about 1.6 million. The average rate from the infill well is about 1.4 million. So you're looking at a ratio of about 85 percent.

Our experience in Colorado has shown that when you infill a well in the high-productivity area, say 3 to 5 million or 4 million plus, your infill well typically came in at 50 to 60 percent of what the parent well is doing. And you can see that from the data I presented for Section 20 and 21.

EXAMINER STOGNER: No other questions of Mr. Dinh.

Are there any other questions of this witness?

MR. CARR: No, sir.

MR. HALL: No, sir.

EXAMINER STOGNER: You may be excused.

THE WITNESS: Thank you.

EXAMINER STOGNER: You've got another witness today?

MR. CARR: I have another witness. I don't know if you want him today or not.

EXAMINER STOGNER: I should say BP has another witness?

MR. CARR: Yes, sir.

EXAMINER STOGNER: What's the time on this witness?

MR. CARR: He has four exhibits and 15 or 20 minutes. It's your pleasure.

EXAMINER STOGNER: Mr. Hall, how much time for your witness?

MR. HALL: Eighteen exhibits at, I'm saying, an hour on direct.

EXAMINER STOGNER: Okay. I'd like to go ahead and at least hear the BP, and then afterwards we can make a determination of where we want to go.

Let's go ahead and take about a five-minute recess at this time.

(Thereupon, a recess was taken at 4:46 p.m.)

(The following proceedings had at 5:15 p.m.)

EXAMINER STOGNER: This hearing will come to order.

I believe you have something at this time, Mr.

Kellahin?

MR. KELLAHIN: Thank you, Mr. Stogner. During the recess --

EXAMINER STOGNER: Let's see, why don't you turn on a microphone and -- so everybody can --

MR. KELLAHIN: During the recess, Mr. Stogner, I became aware that some of Phillips' exhibits for their presentation have been modified. They're different than the ones in the book.

And with Mr. Hall's agreement, we'd like to suggest that we stop the hearing process now, for today, and that we come back in the morning. And that will give us a chance to look at the modifications in the Phillips presentation so that we'll have some opportunities to see if we agree or disagree with the changes that may be proposed in their presentation and any changes that may be made concerning the Application that was presented to you.

EXAMINER STOGNER: Mr. Hall?

MR. HALL: Yes, we'll agree to do that. We have exhibits available for all the parties of record and the Division.

Rather than to say that they're modifications, they're additions to our previous exhibits, and we've also numbered them for ease of reference, and I would propose that we simply substitute copies we have here for what's contained in the notebooks now, and everybody can look at those tonight.

EXAMINER STOGNER: Mr. Hall -- I mean, Mr. --

MR. CARR: Mr. Catanach -- I mean, Mr. Stogner.

EXAMINER STOGNER: -- Carr?

MR. CARR: We would have no objection to recessing at this time. We'd appreciate the opportunity to review the exhibits.

EXAMINER STOGNER: Now, are you proposing to make the changes, additions, amendments, whatever you want to call them, all the --

MR. HALL: I would call them additions.

EXAMINER STOGNER: -- changes, whatever you might call them, to all the books that you have passed out today?

MR. HALL: We can do that.

EXAMINER STOGNER: Okay. Well, with that, then, we'll take a recess for overnight, and we'll meet back here or start at 8:15 in the morning.

With that, then, we stand adjourned.

(Thereupon, evening recess was taken at 5:17 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 12888, heard by me on July 9 + 10, 2002

_______________, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL July ~~23rd~~, 2002.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF THE FRUITLAND COALBED METHANE STUDY COMMITTEE FOR POOL ABOLISHMENT AND EXPANSION AND TO AMEND RULE 4 AND 7 OF THE SPECIAL RULES AND REGULATIONS FOR THE BASIN-FRUITLAND COAL GAS POOL FOR PURPOSES OF AMENDING WELL DENSITY REQUIREMENTS FOR COALBED METHANE WELLS, RIO ARRIBA, SAN JUAN, MCKINLEY AND SANDOVAL COUNTIES, NEW MEXICO

CASE NO. 12,888

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING (Volume II, Wednesday, July 10th, 2002)

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

July 9th-10th, 2002

Farmington, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Wednesday, July 10th, 2002, at the New Mexico Energy, Minerals and Natural Resources Department, 1220 South Saint Francis Drive, Room 102, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

July 10th, 2002 (Volume II)
Examiner Hearing
CASE NO. 12,888

(Continued...)

UNSWORN AND SWORN STATEMENTS BY MEMBERS OF THE PUBLIC:

CLOSING ARGUMENTS:

* * *

CUMULATIVE INDEX OF EXHIBITS

Burlington/BP	Identified	Admitted
Exhibit 1	19	40
Exhibit 2	17	40
Exhibit 3	-	
Exhibit 4	78	104
Exhibit 5	95	104
Exhibit 6	118	163
Exhibit 7	-	163
Exhibit 8	136	163
Exhibit 9	162	163
Exhibit 10	174	192
Exhibit 11	202	228
Exhibit 12 (30-33)	257	270
Exhibit 13	-	-
Exhibit 14	-	-
Exhibit 15	136	166

* * *

Phillips	Identified	Admitted
Exhibit 1	300	337
Exhibit 2	303	337
Exhibit 3	304	337
Exhibit 4	305	337
Exhibit 5	306	337
Exhibit 6	307	337
Exhibit 7	307	337
Exhibit 8	308	337
Exhibit 9	310	337
Exhibit 10	311	337
Exhibit 11	313	337
Exhibit 12	315	337

(Continued...)

CUMULATIVE INDEX OF EXHIBITS (Continued)

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* * *

ALSO PRESENT:

FRANK T. CHAVEZ
District Supervisor
Aztec District Office (District 3)
NMOCD

* * *

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

EXAMINER STOGNER: This hearing will come to order for the matter of Case Number 12,888. This is the Farmington Coalbed Methane Study Committee's Application. Please note today's date, July the 10th. We're in Farmington, New Mexico, day two.

I believe last night we rested because there was a -- something occurred. So who wants to get started this morning to address this issue? Anybody?

MR. CARR: Mr. Stogner, we received Phillips' exhibits, we have looked at them, and we're ready to proceed this morning with our direct presentation. We have concluded with two of our witnesses. We're now prepared to start our presentation of Mr. Hawkins' testimony.

EXAMINER STOGNER: Just a reminder, if you'll turn your microphones on. I know this one is on. Is yours on, Mr. Carr?

MR. CARR: I'll see if I can get some engineering help here.

EXAMINER STOGNER: There we go. And for the witness and anybody talking, please speak up, close to the microphones so everybody can hear.

If there's nothing further, then Mr. Carr, please get started.

MR. CARR: Mr. Stogner, our first witness is Bill Hawkins, a regulatory engineer. The record should reflect that he was sworn yesterday and remains under oath.

BILL HAWKINS,

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

DIRECT EXAMINATION

BY MR. CARR:

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

A. Bill Hawkins.

Q. Mr. Hawkins, where do you reside?

A. I reside in Golden, Colorado.

Q. By whom are you employed?

A. BP America, Inc.

Q. And what is your position with BP America, Inc.?

A. I'm a petroleum engineer, employed to handle our regulatory affairs in the San Juan Basin.

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

A. Yes, I have.

Q. At the time of that testimony, were your credentials as an expert in petroleum engineering accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Application filed in this case on behalf of the Fruitland Coalbed Methane Study Committee?

A. I am.

Q. You participated in that hearing, or that process, did you not?

A. Yes, I did.

Q. Are you familiar with the recommendations of that Committee for infill drilling in the Basin-Fruitland Coal Gas Pool?

A. Yes, I am.

MR. CARR: May it please the Examiner, we tender Mr. Hawkins as an expert petroleum engineer.

EXAMINER STOGNER: Any objections?

MR. HALL: No objection.

EXAMINER STOGNER: Mr. Hawkins is so qualified.

Q. (By Mr. Carr) Initially, Mr. Hawkins, yesterday during Mr. Hayden's presentation he made reference to the line surrounding the high-productivity area, and that the line being based on a 2-million-per-day producing rate was advanced by BP. Do you recall that testimony?

A. Yes, I do.

Q. What is BP's position on the need for a line separating out a portion of the Basin-Fruitland Coal for the purpose of implementation of infill drilling?

A. BP's position is, we don't believe a line separating the high-productivity area from the underpressured area is needed. In fact, I've made that statement a number of times to the Committee. We've tried to work with the Committee in coming to some recommendations that would be potentially workable, but we've made it very clear for a number of meetings that we didn't believe this line was needed.

Q. You were present for Vu Dinh's testimony yesterday?

A. Yes.

Q. And you recall that he testified that a line based on a 2-million-per-day rate would not separate wells that drained their spacing unit from those that did not?

A. Yes.

Q. Do you concur with his testimony that there is no technical basis for this line?

A. I do.

Q. Let's go to what has been marked as BP Exhibit Number 30 -- it's actually the first exhibit behind Tab 12 in the exhibit book -- and I'd ask you to first identify that exhibit and then review the information on this exhibit for Mr. Stogner.

A. All right, this is a map of highest average daily rate for each of the wells that's in the high-productivity area and the wells around that in Colorado and New Mexico.

And it's contoured in colors: Everything producing with the highest average of less than a million a day is in white, and then as you move towards this high-productivity area, from 1 million to 2 million a day is in blue, in light yellow if from 2 million a day to 3 million a day, in the gold color 3 to 4 million, the pink color 4 to 5 million a day, and then the purplish color is all the wells that were producing in excess of 5 million a day.

Q. And how many of those areas do you have where you find concentrations of wells that produce in excess of 5 million a day?

A. Well, I counted about 12 small islands, and some are larger than others, but they're -- you know, due to the heterogeneity in this reservoir you can see that once you get into this high-productivity area, that it would be very difficult to try to draw a line that would separate the good wells from the bad wells, so to speak.

And in fact, I've looked at the line that's -- the 2-million-a-day line that's being recommended is on the map in green, and I've counted the wells inside and out to take a look at, you know, what's the distribution.

And what I find is that there are about a hundred wells that are outside of that boundary that are actually producing greater than 2 million a day. There are wells that we would have tried to separate out that the Committee would say maybe shouldn't be drilled or need some additional notice, but they're actually in the non-notice area. And I've also counted the wells inside, and there are about 75 wells inside that boundary that produce less than 2 million a day, and so those are the kind of wells that absolutely need to be infill drilled to get incremental recovery.

Q. By using this line as a starting point, we have at the starting point 175 wells on the wrong side of the line?

A. That's what I would say, yes.

Q. Do you believe that using a line of this nature is actually workable from a regulatory point of view?

A. I really don't. In fact, I've looked at it, I know we've presented data from our Colorado infill to the Committee that showed incremental recovery at rates with wells up to 5 million a day, and we showed that to the Examiner yesterday, and if you tried to draw a line around the wells that were making 5 million a day you'd have 12 different circles out there trying to isolate small areas.

So I think that any line that you would try to draw out here would have some significant problems and would be very difficult to administer, it would be very difficult to separate the wells that need infill drilling from those that maybe don't.

Q. When you're looking at wells that produce 5 million a day, you're actually looking at the total producing rate from that well; is that correct?

A. Say that again?

Q. When you say 5 million a day, that's the total production rate from the well --

A. Yes.

Q. -- is that correct?

A. That's correct.

Q. And that doesn't take into account the layered nature of the reservoir or the individual zones from which that production might come?

A. No, it doesn't.

Q. Let's go to what has been marked as BP America, Inc., Exhibit 31, the second document behind Tab 12, and I'd ask you to identify and review this.

A. This is a chart showing the distribution of the wells that inside that high-productivity area, just a little more elaboration on trying to point out what types of wells are actually inside the boundary.

And if we look at the wells that are making less than 2 million a day, there's just about 20 percent of those wells making less than 2 million a day inside the boundary.

And as we move up, I know we again have pointed out that we've seen incremental recovery at wells that produce up to 5 million a day. 66 percent of the wells inside that boundary are producing at rates -- that the highest rate the well ever made was 5 million a day or less.

So we believe there's a significant percentage of wells in the high-productivity area that could benefit from infill drilling.

Q. And would produce incremental reserves, not just be rate-accelerated?

A. Yes.

Q. All right, let's move now, and I'd like to start discussing with you the notice issue, and I'd like you to refer to the next exhibit. It's entitled "Proposed Boundary and Units". If you'd refer to this exhibit, and initially could you review BP's view of the notice requirements as explained yesterday by Mr. Hayden?

A. The notice provisions described by Mr. Hayden were discussed at the Committee for a number of times and basically said that the operator that's proposing to drill a well would file an administrative application with the District, and also notify the operators in the adjoining quarter sections. If there were no objections, then the District would grant that application.

If there was --

Q. Let's put the map up.

A. If there were objections from the owners in the adjacent quarter section, then the matter would be set for hearing.

And I think there's a couple of questions there. One is, whose burden of proof is it for that well to be drilled? If there had been no objection, the District would have presumed that the well needed to be drilled and would have approved it.

But the problem that we see is that inside the boundary about 70 percent of the area is overlain by federal units, and the ownership and the way notice would be handled inside those federal units would be significantly different than the way it would be handled in the individual drillblock areas.

Now, on this map, the individual drillblocks are in the white area, and the federal units are cross-hached in various shadings.

And if you were in the federal units and the operator had to notify himself, you know, there's basically no provision for notification over almost 70 percent of this area. And what this really does is, it tends to create -- it's got a different method of handling notice for -- depending on the type of ownership that you've got in your lease, if it's a unitized area or a nonunitized area.

Q. If you're required under the Committee notice provision, if you're required to give notice, you would first need to be within the high-productivity area as defined, correct?

A. That's correct.

Q. And we've already discussed the problems with that boundary?

A. That's correct.

Q. And if the notice was to be anyone other than yourself, you'd really need to be outside the unit, or at least not on the edge of one of those units?

A. That's correct.

Q. If you filed an application in one of these competitive areas, the areas that are not in the unit but are within the boundary --

A. Right.

Q. -- who would actually decide whether or not you were able to go forward with the well?

A. Well, the problem there again is with notice to the owners, or the operator in the adjacent quarter section, is that it puts the operator in the adjoining quarter section in more of a controlling position. They may actually start to decide whether or not you get to drill your well or not. And the problem that we have with that is that there are different motives inside this area for the adjacent quarter-section operator versus the operator that's planning to drill the well.

Q. If you're the operator, you want to drill a well?

A. That's correct, and --

Q. If you're an offset --

A. -- you're trying to drill a well --

Q. And if you're an offset, you might want to not drill a well?

A. If you're an offset, you may just be trying to prevent that well being drilled and prevent it from being -- potentially interfering with one of your wells.

Q. In your opinion, does this create an unfair situation for those operators with lands in the competitive area within the high-productivity area?

A. Well, I think it puts a -- definitely a higher burden on those operators, and it gives the offset operator an opportunity to maybe try to prevent wells from being drilled that should be drilled, and that can cause waste. And it violates the correlative rights of the owners that want to drill the well, and it prevents them from having the opportunity to get their share of the production from the pool.

Q. Did you review the exhibits that were produced by

Phillips yesterday afternoon?

A. Yes, I did.

Q. And you area aware that they have modified the notice requirement, or at least they have proposed an alternative notice requirement within units?

A. Yes.

Q. And what is that, basically, as you understand it?

A. Well, as I understand it, instead of notifying the adjacent operator, if that operator is the same as the one proposing to drill a well, they would notify the working interest owners in that adjoining quarter section.

And the concerns I have with that are, particularly if you're in a federal unit, most of the federal units have operating agreements that provide for some type of majority to decide whether wells should be drilled. What this provision would allow is for an owner, a single owner, any owner, depending on -- you know, even a minority interest owner, to try to throw that well into the Commission in a hearing and object to it, and try to circumvent the operating agreements that have already -- were in place and allow a majority to decide if the wells should be drilled or not.

Q. In your opinion, is there adequate information to now make a determination on the need for infill development within the high-productivity area?

A. Yes, there is, and I say that because we've looked at testimony from our geologists, from all three experts, indicating that there's significant discontinuity in both the underpressured and overpressured area. They really don't see any difference geologically from those areas. And we've also looked at engineering testimony and actual experience that BP has in infilling wells in Colorado, showing that incremental recovery from the high-productivity area can be achieved.

Q. Are additional pilot projects needed within the high-productivity area?

A. You know, in my opinion they're not. And we did talk about this at the Committee. When BP presented the evidence that we have on infill drilling in Colorado and showed incremental reserves coming from wells as high as 5 million a day, parent well rates, there was discussion on, you know, do we have more examples? And we said yes, we can provide more examples.

And then there was discussion of, you know, do we need to have pilot wells in New Mexico? And basically concluded that the information that we would get from those pilot wells would be no different than the information that we're already providing from the infill wells in Colorado.

And so I don't think there would be any new information that would help us in this decision any more than we have today.

Q. Do you believe a pilot program would result in anything more than just additional delay in getting this issue finally resolved?

A. That's exactly what I believe.

Q. In Phillips' exhibits, Exhibit Number 9, if you'd go to that one, in the materials we got yesterday, and it's entitled "High Productivity Area Analysis", the third point reads, "Pressure data analyzed show significant uniformity over a very large portion of the high productivity area." Do you see that?

A. Yes, I do.

Q. And what is your understanding and the result of your work concerning the uniformity of pressures in this area?

A. Well, we've looked at some layer pressure data from wells inside the high-productivity area and actually showed this work to the Committee. And the information that we have showed that the pressures actually ranged from about 100 pounds up to 900 pounds in the different layers inside the high-productivity area.

And to me, that's consistent with what our understanding of the geology is, that there's areas in the high-productivity area where infill drilling is going to be needed to recover reserves that these wells right now are not going to get.

Q. To the extent there may be uniformity, when you look at composite data, when you take that to the individual layers, you're not finding that; is that what you're saying?

A. Yes.

Q. Let's go to what has been marked BP America, Inc., Exhibit 33, and I'd ask you to summarize the conclusions you and BP have reached on your work in this area?

A. Well, I've got several points to make -- put this up -- and the first point is that there is significant incremental recovery potential for infill wells throughout the pool, and that would include the underpressured portion of the pool that Burlington testified to and the overpressured portion of the pool that our engineer, Vu Dinh, testified to. And it also includes the high-productivity area. I think we pointed out there is on the area of 500 BCF of incremental reserves potential in that high-productivity area for infill drilling.

The second point I would make is that the high-productivity area boundary and the special notice procedures are not justified in this instance. For one thing, the special notice procedures create a difference in how notice would be handled between federal units and individual drillblocks. They create an unfair advantage inside the federal drillblocks where a large portion of the federal drillblock could be infill drilled with actually no notice at all, as long as they're more than a half a mile from the boundary of the federal unit.

Inside the individual drillblocks, notice would be provided to offset operators who might have different motives to prevent wells from being drilled that actually need to be drilled, and we view that as a potential for violating correlative rights to get opportunity to get your fair share of reserves out of the pool, and it can cause waste.

So we don't believe that the area or the procedures are justified.

And BP has made this comment -- this recommendation to the Committee a number of times. I think there was kind of an evolving nature in the Committee as we presented more and information from our Colorado infill that the high-productivity area boundary and special notice procedures are really not needed, that we need to infill this pool on a poolwide basis with a single set of rules, and we recommend the NMOCD approve that with a single optional infill well poolwide rule.

Q. Were BP America Exhibits 30 through 33 prepared by you?

A. Yes.

MR. CARR: At this time, Mr. Examiner, we would move the admission into evidence of Exhibits 30 through 33, those being the four documents behind Tab 12 in the exhibit book.

EXAMINER STOGNER: Any objections?

MR. HALL: No objection.

EXAMINER STOGNER: Exhibits 30 through 33 will be admitted into evidence at this time.

MR. CARR: And that concludes my direct examination of Mr. Hawkins.

EXAMINER STOGNER: Thank you.

Mr. Hall?

EXAMINATION

BY MR. HALL:

Q. Mr. Hawkins, I believe I heard you testify that in your opinion there's a significant amount of heterogeneity within the reservoir, and I assume you're talking poolwide, not just the high-productivity area.

A. (Nods)

Q. You need to answer verbally for the record, please.

A. Yes.

Q. But within the high-productivity area does that heterogeneity also exist, in your opinion?

A. Yes, it does.

Q. And so is it safe to say that there are areas within the high-productivity area that are suitable for infill drilling and others that are not suitable for infill drilling?

A. I think that's right, I think we would expect there may be places where wells are not needed. But we also believe that there are significant areas where infill wells will be needed.

Q. I want to clear up one thing with you. If you could refer to your Exhibit 31, the high-productivity area distribution, make sure I'm reading this correctly. As I understand it, this exhibit shows that less than 20 percent of the wells in this area are making less than 2 million a day; is that right?

A. That's right, it shows just under 20 percent are making -- This is the wells inside the high-productivity area.

EXAMINER STOGNER: Mr. Hawkins, could you flip that up on the screen so that others can follow this?

THE WITNESS: Yes.

EXAMINER STOGNER: Thank you.

Q. (By Mr. Hall) Now, could you refer to Mr. Vu Dinh's Exhibit 29, his gas rates? It looks like this.

A. Okay, I have it.

Q. Looking at it quickly here -- great deal -- degree of accuracy -- if I understand his exhibit and his testimony yesterday, it looks like approximately 60 percent of the wells are making less than 2 million a day in this same area; is that right?

A. That's correct.

Q. Why are you two disagreeing, being from the same team?

A. Well, I think what we've got a misunderstanding over is the nomenclature. Vu Dinh's exhibit is showing the wells in the overpressured area. That would include the high-productivity area and those wells north or outside of that area. So most of the wells outside of that area are making less than 2 million a day.

I think I testified there were about 75 or 100 wells outside of the area that were actually making more than 2 million a day, though.

Q. Okay. Talk to you briefly about your participation in the Fruitland Coalbed Committee deliberations. Is it accurate to say that BP's position on identifying the location of the boundary line is not in accord with the majority of the Committee participants?

A. I don't know that I could say that. I think we all had different ideas about what we should do with the line, and I think that the different companies' positions on that line tended to evolve over time during the Committee.

Q. So is it also accurate to say that BP's position on the location of the line changed?

A. I would say that when we first started looking at this, we all thought we needed a line. And then as we began to get more information and show results of our Colorado infill, we began, probably a year ago, making the statement that we didn't need to have a line out there. And we had several meetings following that where we talked about where should we put a line. We participated in that because we thought if the Committee is going to have a line, we want to be part of the discussion where that ends up.

But we made it clear in all of those meetings that we didn't believe a line was necessary.

Q. At what point didn't BP agree with the Committee that there ought to be a line?

A. When we first started looking at the results of our work in Colorado and bringing that to the Committee -- and I don't have the exact date of when that would be, but we've had several meetings after that point.

I remember standing up in front of the group and making a presentation that said, you know, BP doesn't believe that a line is necessary, and went through some of the information from the scatter plot that showed, you know, wells all the way up to 5 million a day were potentially not draining 320 acres.

Q. Let me ask it again. Isn't it true that at one time BP agreed to the Committee's definition of the line?

A. I think we made it clear to the Committee that we did not believe that a line was necessary. However, if the Committee was going to recommend a line, we were going to be part of that discussion. We were not going to just ignore it.

Q. Okay, and if I were to shorten your answer, that answer would be yes?

A. I don't know if I could say yes to what -- I mean, you have to say that question again, then.

Q. Did BP agree to the Committee's definition of the line?

A. We did agree to the definition of the line.

Q. Okay. I want to ask you about your view on the -- Let me back up a minute.

At any point during the Committee's deliberations, did you inform the Committee of BP's drilling plans after this proceeding?

A. No.

Q. Do you have direct knowledge of BP's drilling program for 2003, for the Fruitland Coal Pool?

A. I do not.

Q. Yesterday, Mr. Vu Dinh testified, I believe, that BP planned on drilling 130 new wells in the high-productivity area in 2003. Do you have any reason to disagree with that?

A. Yeah, I would disagree with that. I don't think we have that many wells in the high-productivity area that we operate.

Q. I'm talking about infill locations.

A. Right.

Q. You don't think you have that many --

A. I don't think -- I think that's an overstatement. I think we maybe have 130 wells that we operate in the vicinity of this high-productivity area, some inside the boundary, some outside. I don't believe that our plan would be to try to drill 130 wells in one year. We're drilling in Colorado 50 wells a year, so I would anticipate at most something more on that order.

Q. For the New Mexico side of the border?

A. Yeah, maybe -- yeah, probably less, because we have less opportunities in New Mexico than we have in Colorado.

Q. I started to ask you about the proposed notice provision in the Rule, and I understand the thrust of your testimony is, it seems to impose a significant burden on the operator proposing an infill well and would provide the offset operator with undue advantage, it would interfere with BP's drilling programs.

Tell us who the primary operator is that offsets BP's drilling blocks in New Mexico in this pool.

A. In the individual drillblock area it's primarily Burlington Resources and BP.

Q. All right. And Burlington is in favor of the infill drilling as well, correct?

A. That's correct.

Q. Are you familiar with the Division's notice requirements for unorthodox well locations --

A. Yes.

Q. -- the Rule 1207?

Is the notice provision promoted by the Committee any more burdensome than that?

A. Well, I think the notice provision is not as burdensome as the NSL, but we're talking about kind of apples and oranges when you're talking about an NSL getting too close to the boundary of the spacing unit, versus an optional infill well.

Q. I understand. But in terms of procedures, actual legwork to get it done, it's no more burdensome? It's probably less burdensome than --

A. Well, it's not the burden on the operator to get the notice. I think it's the motive that the offset operator has to prevent some well to be drilled.

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

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Hawkins, yesterday Mr. Hayden presented a tabulation of the various committee dates and meetings and a short summary of some of this discussion. When did you first commence participation in the Committee on behalf of Amoco?

A. Well, I've been to, as far as I can recall, every meeting that we've had. I maybe have missed one meeting but, you know, I've been there from the start.

Q. All right. As part of that Committee discussion, did Amoco provide the Committee technical people with data that they had available not only from the fairway but in the nonfairway lands?

A. Yes.

Q. When I describe "fairway", I am meaning the area described in the Application as the one that is potentially to require additional notice --

A. Correct, right.

Q. Within the fairway there are some units. The 30-and-6 Unit, I understand, is totally within the fairway?
A. I think you're right.
Q. Amoco has an interest in that unit, does it not?
A. Yes.
Q. The unit contains a unit agreement and a unit operating agreement, does it not?
A. Yes.
Q. And if the coal pool participation area is of significant size, then within that participating area you will have 320-acre spacing units that exist, GPUs?
A. Correct.
Q. Under the current rule you get one well in a GPU, right?
A. That's right.
Q. This proposal would allow an optional second well in the GPU?
A. Correct.
Q. And it would occur in the opposite 160 from the parent well?
A. Right.
Q. The Committee discussions and the Committee recommendation for a rule did not deal with notifying working interest owners offsetting the spacing unit within the participating area?

A. That's correct.

Q. There's a contractual solution concerning what happens with that wellbore?

A. That's right, and that's the same thing that I pointed out a while ago, that inside a fairway unit there are operating agreements that provide for, typically, the majority of the owners to decide where the wells are needed and whether they should be drilled.

And depending on what the notice provision might be, one is that maybe really no notice is actually given, because it's the operator giving notice to himself.

Q. And there's a reason for that, is there not? Doesn't the contractual solution provide protection of correlative rights?

A. Well, it's designed to do that, that's correct.

Q. Let's see how that would work. If in a PA, I have an interest in that PA in a drillblock in there, and I want to drill an infill well in that drillblock, immediately adjacent to that drillblock, still within the PA, if there's an offsetting infill well at a standard location, I'm going to share that production?

A. That's correct.

Q. I'm going to share in the cost and I'm going to share in the proceeds or the results of that effort, right?

A. That's correct.

Q. Under the example that Phillips has provided, let me ask you about that. The Committee has discussed the fairway, has discussed how to configure and decide where that boundary is, they've utilized a daily rate, the parties discussed the negotiated -- and as an accommodation, or a collaboration, got to the 2-million-and-greater boundary as the line for the fairway?
A. That's correct.
Q. The Committee also said that within the fairway they would recognize that properties adjacent to a federal unit in which it's obvious that the owner is being encroached upon by the infill well are going to be different, by percentage or by identity, that those people were entitled to notice to their operator to see if there should be an infill well?
A. That's correct.
Q. Was yesterday afternoon the first time you saw from Phillips their proposal to modify that notice requirement and now require notice to working interest owners within the participating area of a federally approved unit?
A. That's right. In fact, the Committee never discussed that. It's the first time we've seen it.
Q. Have you looked at the Phillips exhibits?
A. Yes.

Q. They tabulate some conclusions based upon selected drainage areas for certain wells in the fairway, true?

A. Yes.

Q. Do you have an approximation of how many coal gas wells are in that fairway?

A. There's on the order of 400 to 450 wells in there.

Q. When the Committee was addressing what to do with that well population, did Phillips provide you any technical data at the Committee process to show you where their 85 sample wells were located?

A. Phillips never presented any technical information at any of the Committee meetings, and so --

Q. Did they show you --

A. -- this is the first time we've seen this.

Q. Did they show you what they used for gas in place?

A. No.

Q. Did they show you any spreadsheet or calculation for the data used to get gas in place?

A. No.

Q. Don't you need gas in place to run an engineering calculation to give you a drainage solution?

A. You need to show us something, and this is the one problem that we have, is that we tried to show the Committee, over a number of meetings, reservoir studies, data that we've collected from our infill programs in Colorado; Burlington participated in the technical discussions and showed what they had found in their pilot areas; and Phillips never presented any technical information to the Committee for discussion. We've never seen any of this work before.

Q. In order to work a drainage calculation, not only do you have to have an assumption about gas in place --

A. Yes.

Q. -- you also have to have an estimated EUR, do you not?

A. Correct.

Q. You have to forecast what you think this well will ultimately produce?

A. Correct.

Q. Did they submit to you in the fairway any calculations, whether they were decline curve analysis, any of those?

A. No, we never saw any calculations.

Q. Did you get pressure data from Phillips by which you independently could perform a material-balance curve?

A. We didn't get any pressure data.

Q. Is there enough pressure data provided by

Phillips so that you could do a P/Z curve --
A. No.
Q. -- plotted over time?
A. No.
Q. Did they tell you how they got to an estimated ultimate recovery for any of the wells?
A. No.
Q. Did they submit any geologic data for you?
A. No.
Q. Let's go back to the unit example. You've got a participating area in the unit, you have a parent well, and you have the interest owners in the opposite 160 who, by contract are the same owners as the parent well. Does the Committee notice provide notice to the owners in that spacing unit in the opposite 160 from the infill well?
A. In a federal unit, we say the operator would provide notice to the operator, and in that effect no notice is really given at all inside the unit.
Q. Let's take your GPU and pull it out of the unit.
A. Okay.
Q. It's out of the unit. When you look at the GPU, the notice provision as accepted by the Committee as to the location of the infill well. Not the footage, but the fact that it's to exist in the 160-acre portion --
A. Right.

Q. -- notice is to what offsetting operators?
A. To the adjoining operators in the adjoining quarter sections.
Q. Is there any notice provided to the working interest owners in the other 160 that's in that GPU?
A. No.
Q. When we look at the rules for an unorthodox well location, if these are standard wells anywhere in the pool, the NSL rules don't require an application for an infill well?
A. I'm sorry, you'd have to --
Q. All right, if you're dealing with an infill well in the Coal --
A. Okay.
Q. -- if that's approved --
A. Right.
Q. -- then that well can be drilled in the unit if it's at a standard location within that 160?
A. Yes.
Q. All right. If it's closer than 660, it would trigger some additional notice requirements; is that right?
A. It would trigger the NSL requirements, yeah.
Q. Let's look at the effect of the Phillips proposal.
A. Okay.

Q. We're inside the unit, we're inside a participating area. We're totally surrounded by existing GPUs, and in the middle of that population is a GPU that has a parent well, and the interest owners, one interest owner in a unit, can propose the infill well?

A. I think any owner in a federal unit can propose a well, and must have some type of a majority approval with -- depending on the unit agreement.

Q. That percentage may vary, but --

A. Right.

Q. -- in all circumstances out there it's at least a majority?

A. That's what I would say, yes.

Q. Okay. If there's a one-percent owner who disagrees with a contractual solution to protect correlative rights, disagrees about the drilling of the infill well in the fairway, that one-percent owner can blackball the drilling of the infill well by protesting and go to hearing?

A. Yeah, with the Phillips notice procedures that would give that one-percent owner an opportunity to try to circumvent the unit operating agreement and throw it into the Commission.

Q. What are we going to do at the hearing? What kind of evidence are we going to use to determine whether now that well should be drilled? What are we going to tell Mr. Stogner when we start doing all these? What's the criteria, what's going to be the burden of proof, what's going to be the --

A. Well, I don't know that that's totally been decided yet. I mean, we think we're going to show what we think needs to be showed to justify the well.

Q. Did the Committee ever address any of those type of issues about what happens in terms of a protest and how it should be configured in terms of the presentation of data and what that data is?

A. No.

MR. KELLAHIN: Thank you, Mr. Examiner.

EXAMINER STOGNER: Any redirect?

MR. CARR: No redirect.

EXAMINER STOGNER: Any other questions?

MR. BROOKS: I'd like to ask some -- Well, let Frank go ahead.

EXAMINER STOGNER: Okay, Mr. Chavez?

EXAMINATION

BY MR. CHAVEZ:

Q. Mr. Hawkins, if I heard you correctly, you said that there are perhaps some areas within the area outlined in the Committee recommendation where a second well was not necessary in a 320; is that right?

A. Yes, I would anticipate there may be areas where wells are not needed.

Q. How would that be determined?

A. You know, I think the operator is going to have to take a look at all of the available information for that spacing unit and make a judgment whether they believe a well is needed to recover their reserves under their spacing unit or not.

Q. Was the Committee's recommendation of that boundary area an attempt to -- or let me put it this way: Did they use criteria that an operator might use to determine whether a well is not necessary in order to create that boundary?

A. Well, I think the first thing the Committee looked at was, what information did we have in terms of wells draining 320 acres or not? And we have information from our Colorado infill that shows some wells draining more than 320 and some wells draining less than 320.

And you know, it indicates to me that, you know, we chose -- the Committee basically chose a 2-million-a-day line, and we had plenty of evidence showing wells that were making more than that, that were not draining 320 acres, that would need an infill well.

So I think the Committee attempted to use some information, but I think the inherent problem is that you can't draw a single boundary that works very well around this high-productivity area.

Q. Given that there are differences within the high-productivity area, how would BP take the opportunity to perhaps try to prevent the drilling of an unnecessary well that might offset their acreage? How would BP respond to that?

A. Well, I think we would have to take a look at what is our well doing, and do we need to have an additional well in our spacing unit? We would probably take a look at, you know, what information do we have on a well offsetting us?

Q. Would the drilling of an unnecessary well be determined to be wasteful within this area?

A. Well, the one thing I would say is, I think if you drilled an unnecessary well it would not necessarily reduce the amount of gas that would ultimately be recovered. It might be wasteful for the operator that decided to spend the money on it. I don't think it would adversely affect the other operators in the pool.

Q. But if the existing well is already draining the 320 or more, wouldn't a second well cause drainage from offset acreage?

A. I don't know that it would. It's going to be drilled into an area that's already being depleted, it may not get very much recovery. So I don't know that it would actually have any adverse impact on the offsets.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: Redirect?

MR. CARR: One question, a couple.

REDIRECT EXAMINATION

BY MR. CARR:

Q. Mr. Hawkins, when we talk about waste, if you're drilling in the high-productivity area and you drill a well, you're really not going to know what you are going to encounter in terms of the various coal layers until you drill that well; isn't that correct?

A. I think ultimately that's right, that --

Q. And if you don't drill that well, you won't know if there are reserves there that can be produced; isn't that right?

A. I believe that's correct.

Q. And if you drill a well and encounter incremental reserves, those are reserves that without that well will be left in the ground?

A. That's correct.

Q. And if you don't capture those incremental reserves, that is waste, is it not?

A. Yes, it is.

MR. CARR: Thank you.

EXAMINER STOGNER: Mr. Brooks?

EXAMINATION

BY MR. BROOKS:

Q. Yes, just to make sure I'm clear on what the various proposals are, first off, my understanding of the Committee proposal was that within the high-productivity area, any operator desiring to drill an optional infill well on a spacing unit in which there was already a Fruitland Coal well would be required to give notice to all offset operators; is that correct?

A. That's correct.

Q. Only to operators?

A. That's correct.

Q. And then the operators would have an opportunity to object and so forth.

Now, wherein does Phillips' proposal differ from that?

A. Their proposal is that if you are the same operator in the adjoining spacing unit, that you then provide notice to all the working interest owners, and --

Q. In the offsetting unit?

A. In the offsetting spacing unit or offsetting --

Q. -- spacing unit --

A. -- spacing unit, or offsetting -- yeah, I think it's offsetting spacing unit.

Q. Okay. And in either proposal is there any distinction between units within a federal exploratory unit and spacing units not within a federal exploratory unit?

A. Yeah, there's no distinction.

Q. Okay. Based on that graph up there, if I understand it, each of those bars is a cumulative percentage. That is to say, the first one represents the percentage of wells that are under 1000 MCF per day; the second bar, while it's labeled 1000 to 2000, the percentage that you read off there is actually the percentage that are under 2000 --

A. That's correct.

Q. -- barrels per day?

A. That's correct.

Q. Now, Mr. Vu Dinh testified yesterday that by and large -- and I understand there's always the possibility of individual exceptions -- but as I understood his testimony, as a general proposition he believed that wells that produced over 5000 MCF per day would drain 320 acres or more; is that your understanding?

A. Well, I think that is what he maybe testified to. We haven't seen evidence for wells over 5 million a day, so we would -- I think his testimony was, he assumed that there would be no incremental recovery.

Q. Okay, I understood him to be a little more definite than that and to give an opinion that he thought that that would be the case, but the record will speak for itself.

In any event, if you look at that chart up there and you look at the fifth bar where it is the 4000 to 5000 MCF per day, that indicates that about two-thirds of the wells within the high-productivity area are 5 million a day or less, correct?

A. That's correct.

Q. Which leaves about a third of those wells that are over 5 million dollars --

A. That's correct.

Q. -- 5 million MCF per day?

That would indicate, would it not, that there are a substantial number of wells, if we accept the $5-million-a-day [*sic*] cutoff, that there are a substantial number of locations where an infill well is not needed within the high-productivity area, correct?

A. Well, I guess I'm looking at it like the glass is two-thirds full instead of one-third empty.

Q. Yeah, okay. Well, I've been accused of being the glass-half-empty person, so...

Okay. Now, in a highly competitive area, if there is a situation where an offset well does not need to be drilled but your offset operator -- you're operator of a unit, you don't believe that an offset well -- that a second offset -- that a second off infill well should be drilled in that unit, but the operator of the adjacent spacing unit drills a second offset well, is there not an incentive, then, for you as the operator to drill a protection well, even though you might not otherwise drill an infill well in that spacing unit?

A. Well, I think you could say there's an incentive. The operator is definitely going to take a look at that. But you know, I think there's a number of things you try to determine, and that might one be, if the first well wasn't really needed, it might not produce very well because it was drilled into a depleted area, so it might not be much of a threat.

Q. However, if you were -- if you had a unit where you had a highly productive well that was draining 320, it's entirely possible that the offset operator might see that as a situation where by drilling an additional well on his unit, that he could cut in on the sweet spot and get some of that high productivity away from you; isn't that possible?

A. I guess -- This is the issue that I see, is that different owners inside this area are going to have different motives for development and for not wanting someone to drill or wanting to drill their own.

Q. Okay. Well, I think the Examiner will understand the incentive structure as well as anybody, but I have one further question.

Were you here -- one further line of questions -- Were you here yesterday when Mr. Hayden testified?

A. Yes.

Q. And you may recall that I asked him some questions about the statement in the proposed rule that the hearing would be on the Application, correct?

A. Correct.

Q. Okay. Now, if we were to phrase it that the hearing would be on the objections and perhaps add any other necessary language to make it clear that the party objecting to the proposed infill well had the burden of proof, if that were the decision that we made, would that address some of your criticisms of the proposed rule?

A. Well, I think it would clarify what would be expected at the hearing, but I don't think it would change my criticisms.

Q. Would it possibly -- by virtue of the fact that it would focus the Division's attention on the matter, would it possibly address the concern that you have that objections would be filed for improper reasons? That is, to prevent the drilling of a well, rather than to -- because there's a valid objection?

A. I would agree, it would probably reduce the number of frivolous objections.

MR. BROOKS: Okay, I think that's all.

MR. KELLAHIN: Mr. Stogner, may I follow up on --

EXAMINER STOGNER: Mr. Kellahin?

FURTHER EXAMINATION

BY MR. KELLAHIN:

Q. Let me take the example where you're in the federal unit, you're in the participating area, you're in an existing drillblock, and you're going to drill the infill well. The infill well is proposed. If that well is successful and totally surrounded by a PA, all parties, even those adjacent to that well, share in production from the infill well?

A. That's correct.

Q. And if they collectively decide that there's no more wells needed, you stop drilling?

A. Correct.

Q. Because all parties share in all that production, regardless of where the well is?

A. I think that's the advantage of being in a federal unit, is that you've got -- the ownership over a large area is all common, and so there is very little potential to violate correlative rights inside a federal unit and --

Q. Let's talk about the --

A. -- and there's a method for the majority of the ownership to determine what should be done.

Q. Let's talk about the burden of proof. If it's shifted to the opponent, to the objecting party, you as the applicant are still going to have to go through the study and science and preparation of exhibits, witnesses and time and effort to come oppose the objection?

A. You're absolutely right. And in fact, putting that objection in is likely to delay the drilling of that well for maybe as much as a year, because you can go to a couple of hearings on the matter.

MR. KELLAHIN: No further questions.

EXAMINER STOGNER: No questions, you may be excused.

MR. CARR: Mr. Stogner, that concludes BP America's direct presentation.

EXAMINER STOGNER: What's the length of your presentation, Mr. Hall?

MR. HALL: Estimated one hour. All we have to do is load in a CD, and we're ready to go.

EXAMINER STOGNER: Okay, let's take a five-minute recess.

(Thereupon, a recess was taken at 9:20 a.m.)

(The following proceedings had at 9:30 a.m.)

EXAMINER STOGNER: This hearing will come to order. Again for the record, I'm Michael Stogner, appointed Hearing Examiner.

We've had a special request, and Mr. Van Ryan, if you'll identify yourself.

MR. VAN RYAN: My name is Larry Van Ryan, and I'm with McElvain Oil and Gas, interest owner in a number of these units that have been talked about in the fairway area here.

And I wanted to make a statement that I see there's potential in here for not protecting offset rights, and I guess I don't know the answer to this, but I want to bring this up.

It's always been said in here we're going to notify the offset operator. Is there an operator on all the offset acreage? And I have to ask this of Amoco, Burlington, those people that know.

It looked to me when we saw the plot that Bill presented just a little while ago, there are some areas in there where there are not offset Fruitland Coal wells. If that's the case, there may not be an operator. So who do you notify?

I think that the suggestion the Committee came up with needs to be amended to say in those cases you need to notify the working interest owners. And it's very similar to the nonstandard location rules and the rest of those rules that address that. But I think that you can't just say operator as they have done and protect everybody's right.

And that's the statement I wanted to make on that.

EXAMINER STOGNER: Thank you, Mr. Van Ryan.

MR. VAN RYAN: Thank you.

EXAMINER STOGNER: Mr. Hall?

MR. HALL: Mr. Examiner, at this time we would call Mr. Steve Jones to the stand, and I would note for the record Mr. Jones was previously sworn.

STEVE JONES,

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

DIRECT EXAMINATION

BY MR. HALL:

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

A. Steve Jones.

Q. And where do you live and by whom are you employed?

A. I live in Farmington, New Mexico, and I'm employed by Phillips Petroleum Company.

Q. What do you do for Phillips?

A. I'm a reservoir engineering specialist.

Q. And I understand you have not previously testified before the Division or one of its Examiners and had your credentials established as a matter of record; is that correct?

A. That's correct.

Q. Would you give the Hearing Examiner a brief summary of your educational background and work experience?

A. I have a bachelor's and master's degree from the University of Wyoming in petroleum engineering. I've worked for Phillips Petroleum Company for about 16 years. The last six or so years I've been working in the San Juan Basin.

Q. All right. And are you familiar with the Application that's been filed in this case?

A. Yes, I am.

Q. And are you also familiar with the Basin-Fruitland Coal Gas Pool and the Cedar Hills-Fruitland Coal Gas Pool and their respective pool rules?

A. Yes, I am.

Q. Did you also participate in the deliberations of the Fruitland Coalbed Methane Study Committee?

A. Yes, I did.

MR. HALL: At this point, Mr. Examiner, we would offer Mr. Jones as a qualified expert petroleum engineer.

EXAMINER STOGNER: Any objections?

MR. CARR: No objection.

EXAMINER STOGNER: So qualified.

Q. (By Mr. Hall) Mr. Jones, have you prepared a number of exhibits and slides in connection with your testimony today?

A. Yes.

Q. All right, let's look at those, please, sir. Let's go to what's been marked as Exhibit 1. Would you explain that to the Examiner?

A. This first slide shows Phillips' participation in the units. The red cross-hached areas shown on the plat shows where Phillips operates federal units, and the green cross-hached area shows where Phillips has some degree of interest in a unit operated by another company. It also shows the line that the Committee agreed upon as the fairway boundary, and it shows our property in relation to that.

We've put together some summary slides of analysis we've done on three different areas. One area was north of the high-productivity area, or what we're calling fairway, and the second analysis was in the high-productivity area, and the last area was in the underpressured area.

Phillips operates primarily -- our underpressured area is primarily located in the 29-5 and 29-6 federal units.

Q. Are you finished with Exhibit 1?

A. Yes, I am.

Q. Let me ask you something about this exhibit. I understood you testified that this was the boundary line established by the Committee; is that correct?

A. That's correct.

Q. I want to talk to you about the Committee's deliberations, briefly. There's been a suggestion here this morning that given Phillips' participation in the Committee through its duration that Phillips hasn't necessarily been forthcoming with technical evidence. I wonder if you would recount for the Examiner and the audience really what happened throughout the Committee's deliberations on this issue? What was Phillips' role in all that?

A. The Committee originally got together to study the area outside the fairway, wherever that fairway was to be decided upon. It was recognized by most operators that infill drilling was warranted outside the fairway.

Phillips, as you can see on this slide, is primarily interested in our fairway acreage, and we wanted to be a part of that Committee to show -- or to represent our interest toward that end.

Q. There has been a complaint -- We've heard Mr. Van

Ryan testify about the notice issue. Phillips recently proposed a modification to the Committee's notice proposal, very minor modification, and can you explain to us why that change was made so late in the game here?

A. That change and the other change that was proposed for additional infill study areas in the fairway, Phillips learned as recently as last week that operators were planning significant numbers of wells within the fairway. And as Mr. Hayden testified yesterday, it had always been Phillips' understanding that operators were going to take a rational approach to the fairway and a limited number of wells would be drilled, and then we would revisit this issue a year or so down the road.

As we learned last week and yesterday, in yesterday's testimony, there could be as many as 300 wells drilled next year in the fairway. And if there's only 450 wells in the fairway before any study has been done, the fairway is going to be drilled. And that's what Phillips is concerned about.

And that's why we put together our testimony at a late stage.

Q. And approximately 300 well that we understand are now being planned by BP and Burlington, those plans weren't revealed to the Committee, were they?

A. It was always Phillips' understanding that -- as

I mentioned, that a rational approach was going to be taken to the fairway, as it was to the underpressured area.

Had we continued to believe that and not known about the additional wells that were going to be drilled, we probably, very possibly, wouldn't be here today.

Q. All right. And those 300 wells are just from two operators. We don't know what the other operators are planning out there, do we?

A. No, we don't.

Q. All right, let's get back to your slides. If we could refer to slide 2, Exhibit 2, please, sir, explain that.

A. As I mentioned, our underpressured acreage is in 29-5 and 29-6. We don't have a lot of acreage in here, but what we can say about this area, we would suggest it is analogous to what Dr. Clarkson yesterday described in his Davis Pilot Area. These wells are drastically different in productivity, compared to the fairway.

And as you can see on the first dot point, the 27 wells that we operate in this area to date have only cum'd about a quarter of a BCF per well.

Also, estimating their ultimate recovery from these wells -- and we used decline-curve analysis to determine this ultimate recovery -- the average from these same 27 wells is only .4 of a BCF.

The last dot point -- and as you will see in later slides, Phillips did some material-balance estimates on wells. We took the wells that had available pressure information in the underpressured area in our operations here and determined an estimated drainage area. I present two different calculations here for comparison purposes.

As you'll see in the later slides, the Langmuir isotherm that we agreed -- or that we used in the drainage-area calculation was 500 standard cubic feet per ton. And as Dr. Clarkson reported yesterday, in the underpressured area a more appropriate number is going to be more like half that number.

And so the point of that really is that the drainage area for these wells tends to be much less than 320 acres.

And so in summary for our underpressured area work, the main point is that we're in total agreement with Burlington's presentation.

Q. All right, let's talk about the area north of the high-productivity line. If you would refer to your Exhibit Number 3, please, sir.

A. This slide gives a summary of some of the conclusions that Phillips came to in our analysis of wells north of the high-productivity line.

The first dot point, Phillips did several single and multi-well, multi-layer models. In those models we saw incremental recovery that was as high as 15 percent. In general, it was between 5 and 15 percent for these wells.

The modeling primarily was done in the northern 32-8 area. One benefit we feel is that infill drilling in this area will help accelerate the dewatering, and that will have a beneficial effect on economics for those wells.

The second dot point, Phillips operates two wells that are right on the Colorado border, on the New Mexico side, that are right across the border from the Colorado infill wells that Mr. Dinh presented yesterday in his Mesa Mountain study area.

We did a similar type of analysis as he did, and our analysis also showed that there was no significant interference on those wells from the infill well.

The third point, we extended this same material-balance analysis to a total of 45 wells that are north of the fairway line. Most of the drainage areas that we calculated were between 160 and 320 acres.

And the last conclusion is that Phillips is supporting infill drilling in this area.

Q. All right, let's look at your study of the Colorado infill wells. Let's refer to Exhibit 4.

A. This slide shows where the wells are located that Phillips operates, as indicated on the slide in Section 7 and Section 8. The infill drill well that Vastar drilled is also indicated in Section 21 in Colorado.

Again, Phillips performs some pressure-transient analysis and P/Z* analysis, and we showed no interference from the infill well after 40 months of production.

One thing I need to point out about this area is that on the New Mexico side from Section 7 and eastward, all those wells except for one have been drilled since 1998. The eastward and again south on the New Mexico side is generally a fairly undeveloped area with wells that are fairly new. The wells that are existing there have very low productivity. And the point of that is that these wells -- or this area in the reservoir is at a very early stage in its life cycle as a coalbed methane well.

On the Colorado side, as Mr. Dinh testified also, as you extend eastward, the productivity is dropping rapidly. Many of the wells right across the border here have exhibited or are exhibiting inclining production, which is also an indication of the reservoir being at a very early stage in its life cycle.

Q. All right, let's refer to Exhibit 5.

A. The next analysis we took on these same wells was to try to determine an appropriate drainage area. One thing that's -- after you determine gas in place using material-balance estimates, you have to use a gas-content number in order to calculate that drainage area.

This slide and the next one show the importance of needing a good gas content to use in this calculation. As the slide shows, in a range of 410 standard cubic feet per ton to 840 standard cubic feet per ton you can calculate a drainage area of 320 or 160.

The next slide shows a similar range of 309 to 636 standard cubic feet per ton.

The importance of this again is that, depending on what number you use, you could come to two totally different conclusions. One conclusion would tell you you needed an infill well, and the other would tell you you didn't.

So the next step Phillips took --

Q. Just a minute, you've just been referring to Exhibit Number 6; is that correct?

A. Right, 6.

Q. For the record. Go ahead, I'm sorry.

A. The next step -- if I can get this thing to move -- the next step Phillips took is, we took Langmuir-volume data from 81 coal samples that were taken throughout the Basin, and we created a distribution that is meant to approximate a typical coal interval. The average, as the slide shows, was 506 standard cubic feet per ton. This is the value, or 500 is the value that was used in this analysis that we had done.

And I believe I heard Mr. Dinh testify yesterday that he used a similar-type number.

That value seems to be in agreement with wells we've looked at on a smaller well-by-well scale.

Q. The wells for these 81 samples were derived from or located where, primarily?

A. Throughout the San Juan Basin, in the fairway.

Q. In the fairway, all right.

A. If you back up again to these slides, you can see that using 500 standard cubic feet gives you on the 8 Number 1 about a 202-acre drainage area?

Q. Again, you're referring to Exhibits 6 and 5, for the record?

A. Correct. And on Exhibit 5 for the Well 7 Number 1, 500 standard cubic feet per ton gives you about a 265-acre drainage area. Again, I believe those values are fairly consistent with what BP calculated on their parent wells that they presented yesterday.

Phillips next took this a step farther, and analyzed a total of 45 wells, referring to the next slide, slide 8, where we did material-balance estimates of gas in place and then calculated a drainage area for these 45 wells.

What the average shows, as the slide is showing, the average is 333 acres. For the sake of argument we threw out the wells that were draining greater than 640 acres. That still showed a fairly high drainage area. The average was 294.

What this implies is that in a given section you may have one well that's draining much more than 320 acres, and the other well draining much less. But the average together is still draining the 320 acres.

The problem with that in this distribution is that you can see on the two bars on the left, which represent the wells that are draining less than 320 acres, they make up 69 percent of the distribution. That 69 percent, the average drainage radius for those wells was 239 acres.

That suggests to Phillips that there are significant areas outside the fairway that would warrant infill drilling. There's also less of a chance that competitive issues are going to interfere. That, coupled with the modeling results, led us to believe that we should infill drill this area.

Q. The area you're talking about, your study area for Exhibit 8, is north of the high-productivity area?

A. That's right, and I should mention a caveat about that. This data was fairly close to the fairway, in general less than a township north of the northern border.

And as you move farther and farther out to the north, away from this area, you could apply this analysis less reliably.

Q. Let's refer to Exhibit 9. What does that show?

A. Exhibit 9 moves into the summary points that we concluded from our high-productivity analysis.

As the first dot point mentions, on average the wells were found to be draining at least 320 acres.

The second dot point mentions that there's a significant distribution of wells with a drainage area that fell between 160 and 320 acres. And by significant what I mean is that, as you'll see in a minute, the distribution for wells with drainage areas less than 320 acres was about 36 percent.

The third point mentions that we did some pressure data, or we used some pressure data to show that there was a significant area across the high-productivity area that had a fairly uniform pressure.

The fourth point is, in selected areas within the high-productivity are, infill drilling may be warranted. That goes back to the comment about that there is a distribution of wells that are draining less than 320 acres. The problem is, as you'll see in a minute, it's less likely that those lower-drainage-area wells are not being offset by the high-drainage-area wells that are draining more than 320 acres.

The last point mentions that there's a notification process. That notification process was put in place to allow operators the ability to address situations where infill wells were not warranted.

The next slide --

Q. Let me ask you about this. Overall, what is Phillips' position with respect to drilling in the high-productivity area?

A. As I'll describe, Phillips' position in the high-productivity area is that we do not believe that the case has been proven that infill drilling is warranted in the high-productivity area. We will present data that will show -- that will question that conclusion and suggest that more study needs to be done before infill drilling is done on a large basis within the high-productivity area.

Q. Let's look at Exhibit 10. What does that show?

A. Exhibit 10 shows the distribution of 85 wells that we looked at throughout the fairway. The first thing to note is that the average for all these wells were -- average drainage area was 389 acres, which is well in excess of 320 acres. Even if for some reason you decided to throw out, again, the wells draining more than 640, you're still getting a drainage area of 353 acres.

A significant point about this distribution is that there's a reversal between it and the last one I showed you for wells north of the high-productivity area. In that previous slide it showed that greater than 60 percent of the wells were draining less than 320 acres. In this slide it's showing that 64 percent of the wells are draining more than 320 acres. In fact, the average for those wells greater than 320 acres is 481 acres. That's proof of the competitive environment that the fairway is in.

Still, however, as I mentioned, there are still 36 percent of the wells that are less than 320 acres. What that means is that statistically it's possible that there are areas within the fairway that will require infill drilling. But as this distribution also shows, the probability is much less likely that those lower-drainage area wells are not going to be offset by the high-drainage-area wells.

Q. If you would refer to -- if you have a set of the BP exhibits in front of you?

A. No, I don't.

Q. Mr. Jones, if you would refer to BP's Exhibit 20, Mr. Vu Dinh talked about yesterday, what is your view of his conclusions with respect to that exhibit? Is he correct?

A. Well, in applying this to Fairway in New Mexico, in comparison the first thing I would have to do is throw out all the data less than 2 million a day, because that's what the line was that established the fairway.

Looking at the data greater than 2 million a day and just eyeballing it, it looks like the proportion of the wells that are draining more than 320 acres looks to be in the -- maybe the 20- to 30-percent range.

This slide that I've showed you shows that the wells draining over 320 acres makes up more than 60 percent. So this is significantly different than what Mr. Dinh showed in Colorado.

So what I would suggest, that there is some differences across the political boundary, at least in some areas.

Q. All right, look at Exhibit 11, please.

A. This slide is again taken from some material-balance work that we did similar to the drainage-area calculations that we made. We used a distribution or a population of about 200 wells to produce a pressure contour map.

There's some definite holes in this data. As the slide is pointing out, along the southern boundary there's limited amount of data, to the northeast there's also limited amount of data in the Rosa Unit, the Allison Unit, the northern part of the Northeast Blanco Unit, and then to the northwest where it's white we did not have any data, although we strongly suspect that this trend would continue.

The point of the slide is that the lighter-colored green here shows a very large area where pressure has equalized. What that means is that in the plus or minus 12 years that we've produced this Basin, pressure has dropped from about 1650 pounds down to less than 300 pounds. In fact, in some of this area pressure has been recorded less than 100 pounds.

What this reflects is the high-permeability nature of the fairway. Even though there is a significant amount of reserves left at low pressures, this indicates that there's a very competitive environment in the fairway.

One thing I should point out in rebuttal to the comment made about this, this data was provided -- was available to any interest owner in these federal units that wanted it. The data came from Phillips, it came from Northeast Blanco Unit, from Devon, and it came from Burlington. Phillips -- this data in general is a pressure that will record, in general, the most productive, most prolific low-pressure layer.

And so it is a true statement that there are layers that will show pressures higher than this. But what this indicates is that there is at least one layer or layers that are in communication across a very large boundary.

Q. Look at Exhibit 12. Explain that, please, sir.

A. The next slide is data that was provided to the Committee, specifically to Mr. Hayden. This is from four Devon-operated pressure-observation wells. These wells are all in locations where one might drill an infill location.

The last data point, as you can see, is in early 2000. If you project that data into early 2002, you can see that data is showing a pressure that is very similar to what was shown on the previous slide. The one exception is the red curve, Number 211, which does not follow that trend. But the fact that the data is going flat there for the last few data points leads me to think that there may be problems with that data.

Q. This tends to substantiate your previous exhibit, that there's a pretty rapid equilibration of pressures --

A. Yes, it does.

Q. -- in the area?

Let's look at Exhibit 13, please.

A. The next slide is a plat, and it's not totally to scale, but it shows the general outline of the 30-and-5 unit that Phillips operates. We think that this area, in the northern part of it anyway, is very similar to Vastar's or BP's Mesa Mountain area. All the red wells are wells that have been drilled since 1998.

There's an area to the east and to the north that either is underdeveloped, or the wells that are existing there are very low in productivity. At the same time, those wells are fairly close to the fairway, which is indicated here, which is where the Committee -- Uh-oh. You should change your battery.

EXAMINER STOGNER: Do we need to take a recess?

MR. HALL: Apparently someone's battery is running out. It may be on the pointer.

EXAMINER STOGNER: Okay. Well, just for the record's sake, let's take a five-minute recess and get this problem situated.

(Thereupon, a recess was taken at 10:00 a.m.)

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

EXAMINER STOGNER: Hearing will come to order. Thank you, Mr. Hall, I'll turn it back over to you.

Q. (By Mr. Hall) Mr. Jones we were discussing Exhibit 13. Why don't we resume with that?

A. I'd just like to point out for the record that that was cruel and unusual punishment to prolong this for me here.

(Laughter)

EXAMINER STOGNER: So noted.

THE WITNESS: Backing up here, this is a slide of the 30-and-5 Unit that Phillips operates, and as I was saying, we believe that this area in the northern part of the unit, indicated by all the wells in red, is similar to BP's Mesa Mountain area.

All these wells in red were drilled since 1998. There's also -- there's an area to the east and to the north that is either underdeveloped, or the wells that are there are very low productivities. This area, this location in the reservoir, is early in its life cycle of a typical CBM production phase.

The wells are also fairly close to the fairway, indicated by these lighter-colored blue or green, whatever color that is, that is the area outlined by the Committee as the fairway.

If I was to back up just for a minute to the pressure slide, you can kind of see where the pressure data is in relationship to the 30-5 Unit.

Q. (By Mr. Hall) For the record, that's in the southeastern portion of the fairway?

A. Correct. It's not advancing here.

One more, please. Thank you.

Some points that I want to make about this slide, we've chosen two wells, the 264 and the 219R. They're indicated with arrows. What I want to show is what might happen in an infill drilling situation for productions in different phases of their life cycle.

The next slide, Number 14 -- Point at that. Okay, I'll figure it out.

The first thing to note is, the pressure in this well was initially about 1400 pounds. The original reservoir pressure in this area, as I mentioned earlier, was about 1650 pounds. So that indicates that this well had some amount of drainage before the well was drilled.

If you back up to the plat slide, you'll note that all those red wells around there were recently drilled. The 237 is a very poorly productive well. The 219 is such a poorly productive well that it was redrilled. The 218 is a mediocre well -- or a medium-producing well, 1 to 2 million. The 215 was a well that has exhibited a typical early-phase CBM production profile of inclining production.

What this tells me is, we've had some drainage on that well -- or in that location. Where did the drainage come from? If you calculate drainage area on the 215 or 218, the 237, all the wells around it, none of them would show you a drainage area greater than 320 acres. So how did that well get drained?

The answer is, I believe, that there are layers or layers that haven't been identified that are being drained far away in the fairway down to the south and west.

What this tells me concerning the analysis that we've used and that BP used is that the drainage-area analysis may not be appropriate for the fairway because of layering effects that have not been fully studied.

Q. If I could get you to refer to BP's Exhibit 22, that was the Vastar exhibit that Mr. Dinh testified to. If I might, Mr. Examiner...

Do you recall Mr. Dinh's testimony with respect to the initial pressures for the parent and infill wells?

A. Yes, I do.

Q. What do you have to say about that?

A. Again, I would suggest that this area is very similar to the area that I'm pointing out in the northern 30-and-5 Unit. Again, in the 264, it also showed some fairly high reservoir pressures.

But what's significant to note is, it's not virgin pressure. Nor is it virgin pressure on the Vastar wells. That indicates that there's some amount of drainage. And again, the Vastar wells are very similar to ours in that they're adjacent to an underdeveloped area which has a reservoir that's very early in its life cycle.

Going back to Exhibit 14, the other points to note, again, on the gas production, it exhibits the inclining production that is typified of this area.

The third thing to note is how fast the

bottomhole pressure is dropping. Again, this area already exhibited pressure communication. What's happening in this reservoir and in this well is that it's trying to equalize down to that low-pressure area to the southwest, and within a matter of a few short years, it will do just that. My supposition is that if Phillips were to drill infill wells in this area, we would see results very similar to what BP showed.

The question that I also have to ask is that, knowing that this pressure communication in at least some layers did exist, or does exist, and that the reservoir is inclining in productivity, do I need to drill wells there? Did Vastar need to drill the wells they drilled?

Q. That's the question for operators, as well as the Division here today.

A. Going to the next slide is the 30-and-5 219R. This well is about a mile closer to the fairway.

Q. For the record, you're referring to Exhibit 15?

A. Correct, correct.

Q. Go ahead.

A. This well only has one pressure data point, but it's at about 500 pounds. So the pressure has dropped considerably in this well, and again it is much closer to the fairway.

In wells in this area, as opposed to the area in the 264, the 264 has exhibited some dewatering effects, and so water production in that area is less than what you would expect in virgin territory, but it's still in the 50-to-100-barrels-a-day range.

In this type of reservoir, water production has gotten to about as low as it will ever get, about a barrel a day of water. Wells that are drilled in this type of reservoir have already gone through the productivity-enhancement phase that a CBM well sees. And when we drill a well in this area, on average you're going to expect it to come on line at or near where the offsets are producing, and they will start declining immediately.

This kind of reservoir response is nothing like what BP presented. This kind of response is what you're going to see in the fairway, because in the fairway you have much less pressure, even much less pressure than this well is showing.

Q. So infill-well drill of these areas, they're going to come on at peak production; is that what you're saying?

A. Phillips over the years has done a lot of modeling that suggests that wells will come on, on average -- you're always going to have some lateral changes in the reservoir that are going to give you different production responses, but on average you should expect the well to come on near where the wells around it are at.

So I guess the next point I would make is that in the fairway production has been on decline for quite a while. The fairway in New Mexico peaked in 1995 or 1996 and has since gone on decline. If I were to back up six or eight years and drill wells in the fairway, we would see similar kind of responses than what BP presented.

But we have the benefit of that six or eight years, and we know that the pressure differences that they reported, and we would have seen they're gone. And so you've got to ask yourself again, were those wells necessary? Are they necessary?

The fact that there's pressure communication in these wells means that there is some effect on surrounding wells.

Q. Is it appropriate in a high-perm reservoir such as this to take the production you observe from an infill well alone, a stand-alone well, to justify it economically in terms of recoverability?

A. No, it's not. If you take a well, again going back to my rates here, if an operator drills a well in the fairway and they get a well coming on line that's at or near where the offsets are, they're going to get a pretty good rate. The temptation is to take that one well and determine the economic benefit from that one well, or maybe that well and its offset parent well.

The fact that this data is shown, especially on the 264, you have to look at a large enough section of the reservoir to see what kind of effect you're going to have on the offset production. And looking at that well alone in a high-permeability, highly competitive reservoir is a critical mistake. You must look at a large enough area to see what the effect is going to be on the surrounding wells. That has not been done by Phillips, it has not been done by anybody on the Committee.

Q. So it deserves further study and --

A. It deserves further study.

Q. Let's refer to slide 16, Exhibit 16, please, sir.

A. This slide is concerning the notification process that was established for the fairway area. The intent of this notification process was to simplify what the current rules were. The current rules in the pool state that every well must go to a hearing in order to justify infill drilling. The Committee agreed that we wanted to simplify the process, and so that was the intent.

As has been pointed out, there's a problem with that notification process that in the center of a federal unit, for example, when the operator is proposing a well, the only person he's notifying is himself. And as BP pointed out, there's an inherent unfairness in that toward drillblock owners.

Phillips tried to come up with a solution that would address that issue, and we took language from the -- as has been pointed out -- from the unorthodox well procedures, and the one sentence that we added is indicated here, that "In the event the operator of the proposed optional infill well is also the operator of an existing adjoining GPU, then a copy of the APD shall be sent to all working interest owners in that GPU."

Q. Okay, the location of that text within the Committee's notification proposal was shown on Exhibit 16-A; is that right?

A. That's correct. We do not believe this is much of a burden. Again, this is a much simpler process than what the operators face under the current ruling -- under the current process, where everything has to go to a hearing.

As has been pointed out also, in these federal units, most of the operators have interest in these federal units. And so if they want the opportunity to protest a well, this gives them that chance.

Q. And so what's contemplated here is that when an operator proposes an infill well, submits his APD, he attaches a verification, as is currently provided for under the existing proposal, indicating that he's notified offset operators, or where an offset operator is the same as the applicant --

A. Correct.

Q. -- the working interest owners in that offsetting GPU?

A. Right.

Q. And that would trigger some sort of mechanism for those interest owners to at least be cognizant of an infill well proposal?

A. Correct.

Q. Now -- Of course, Phillips would be obliged to follow this same rule for the units it operates, correct?

A. Absolutely.

Q. Why does Phillips want this?

A. Why does Phillips want the notification process?

Q. Yes.

A. We feel, as I've already pointed out, that it's a solution that we agreed with the Committee, would simplify the current procedures.

It also -- as been pointed out, in a federal unit there's an operating agreement where we find out about these things in that process. The problem is, in the real world a working interest owner may find out too late to have any kind of an effect on this process. And if the working interest owner wanted to protest the notification process through the balloting procedure may not give adequate notice?

Q. So Phillips is the operator of one of the federal township units in the Basin?

A. We are operators of the 29-5, 29-6, the 30-and-5, the 31-6, the 32-7 and the 32-8 federal units.

Q. And Phillips owns nonoperating working interest in other federal township units?

A. Correct.

Q. And so you're familiar with, in general, the terms and provisions under those federal unit agreements and unit operating agreements, and they all provide for annual plans of development?

A. Correct.

Q. And they also have some sort of mechanism for the balloting of AFEs where working interest owners, nonoperators, get to vote on certain procedures, certain well proposals, et cetera, where expenditures are contemplated over a certain amount. Why isn't that adequate protection for a nonoperator?

A. It goes back to the economic-waste issue that has been brought up already. If a working interest owner believes that it is destroying value to drill an infill well, his only opportunity currently is to use that process and use his percentage ownership in that well to try to vote against it.

We would like to see that each working interest owner have the opportunity to object to a well that they believed was destroying value.

Q. Is it possible that a unit operator could file his APD with the OCD and get approval before a plan of development is circulated or an AFE ballot is circulated?

A. It's very possible that that would happen before the working interest owners would see the AFE.

Q. And if that nonoperating working interest owner weren't notified of that process, his opportunity to really object would be lost?

A. That's correct.

Q. Why isn't Phillips proposing that unleased mineral interests be notified as required under the NSL procedural rules?

A. It's very unlikely that in the fairway that there are no unleased tracts, and so that situation is very unlikely to come up.

Q. All right. The fairway is all leased up, is what you're saying?

A. Right.

Q. Let's look at Exhibit 17. Would you explain that to us?

A. Phillips believes there are some problems with unconstrained fairway drilling.

And again, before I go any farther, I want to point out that this is the reason why Phillips is here in the first place, because we didn't feel that the Committee's process was going to allow wholesale drilling of the fairway, but we were going to look at it with rational methodology on a small scale and revisit the issue and then decide whether it was really necessary.

And in fact, as has already been testified, operators are planning on wholesale drilling of the fairway, before any significant study has been done in the fairway to prove that it is even warranted. This is why we're here.

The first thing that I point out is that the fairway is a highly competitive reservoir. As we pointed out, there's very high perm in the reservoir. And in fact, the fairway is known throughout the world as one of the most -- or the most prolific reservoir -- or coalbed methane reservoir in the world.

There's a domino effect. Let me give you an example on that, let me pick no Burlington for a minute.

Burlington operates the Allison Unit which is in and out of what is defined as the fairway. Phillips operates the 32-7 Unit, which is right next to the Allison Unit. We have no interest in the Allison Unit, so as a working interest owner we're not going to find out about any infill wells that are going to happen in the Allison Unit.

Let's say Burlington decides they want to drill every infill location that they have there. They know that Phillips might protest if they drill on the boundary, so they drill every other well, except on the boundary. I don't have to do any modeling in that area -- and we haven't done any modeling in that area, but I don't have to do any modeling. Williams Production Company operates the Rosa Unit, Devon operates the NEBU Unit. None of us are going to need a model to tell us to know that we need to get to drilling.

And once we get to drilling, the race is going to be on. Once everybody starts drilling, the fairway is going to be drilled up in a matter of a few years. We can already -- You may think I'm being a little wild with that statement, but the fact is it's already begun, and you've heard it.

As a prudent operator on these properties that we operate, it is our obligation to protect reserves. And once we see this happening, we will have no choice but to start to drill wells. And once that starts, like I said, the race is going to be on, everybody's going to be wanting to drill the wells as fast as they can, and there's going to be little or no study on whether these wells were really needed or to do any kind of study to see what the appropriate completion method is. It's just going to happen like that, and it's going to be over.

If you refer back to my slide where Phillips showed a distribution of wells within the fairway, we showed that more than 60 percent of the wells were already draining 320 acres. Phillips operates about 250 wells in the fairway. That means that if we were forced to drill 250 wells, 160 of those wells are not going to be necessary. That's economic waste.

Q. At the same time you say we're off to the races on drilling, you're necessarily going to know when you have to get out there and drill to protect your own reserves, just as a prudent operator?

A. The moment we see operators drilling in large numbers -- it doesn't matter if they're more than a section away from us -- we will have to start drilling to protect our reserves.

Q. And this is not entirely operators' discretion, is it? Under your federal unit agreements and unit operating agreements, you have an express contractual obligation to protect against drainage, don't you?

A. That is correct. We feel that that is a correlative-rights issue too, and there's other points to make there. If there's, in a race, small interest owners and operators that have a significant number of wells that they're required to drill, they won't be able to keep up with the large operators. They just don't have the infrastructure, the resources, to keep up.

And also -- and this has already been brought up too, but in the fairway there's going to be high-perm areas, or I should say higher-perm areas, of wells that are draining more than 320 acres. It's inherently unfair to allow those wells to drill extra wells. That means if they're draining more than their share now, they're going to be draining even more.

The bottom line in this whole thing is that unconstrained drilling in the fairway is unhealthy for everybody. There hasn't been enough study to suggest that infill drilling in the fairway is required. We may end up coming to that conclusion, but it is not appropriate for right now.

Phillips has proposed that we limit the drilling in the fairway. Each operator can drill a limited number of pilot wells, we can analyze the data, we can look at the layering effects, we can do the big models that show what kind of effect infill wells are going to have on wells far away from where they're drilled. We can do all that science that needs to be done. The fairway has a huge amount or reserves, and there's a huge potential for abuse in this if infill wells are allowed to be drilled in a wholesale manner like this.

As has been pointed out, there's, you know, 2500 locations outside the fairway. There's 2500 locations that could be infill-drilled. Let the operators concentrate on that area and give us time to study the fairway. There's no reason to be in a hurry on the fairway.

Q. Let me ask you, Phillips is a large operator, so I think you can appreciate some of the motivations of the larger operators that can marshal the resources to undertake these high-volume, large number of drilling programs to do so.

Isn't it accurate to say that one motivation is that by scheduling a large number of wells in a short period of time allows an operator to realize efficiencies just through economies of scale just in time scheduling? You reduce your overall drilling cost.

A. That's correct.

Q. Is it safe to say that that is often a primary motivation for undertaking a large drilling program?

A. That is one of the motivations, yes.

Q. Get back to -- just so the record is clear on this, what the Committee's approach was to this whole process. How did they approach it originally?

A. Again, when Phillips entered into this Committee, our main concern was with the fairway. We recognize at the same time that the nonfairway coals really did need infill drilling, and we have no argument with that whatsoever.

But we also recognize that the fairway didn't need infill drilling. And it may, as I said, come out in the end that there are places in the fairway that do require infill drilling. But that study has not been done.

Q. Is it accurate to say that the Committee was in agreement that there ought to be pretty much wide-open infill drilling in the lower-productivity area?

A. It was never my understanding that anybody was planning that. And again, as I testified earlier, had Phillips believed that people were going to take a rational approach to developing the fairway, we would probably not be here today. But it was only very recently that we found out that people were planning as many wells as they're talking about.

The ironic thing about this whole process is that when this race starts, everybody's going to forget about the nonfairway coals, because everybody's going to be concentrating all their resources on drilling the fairway. And that wasn't the purpose of the Committee to start with.

Q. If I understand what you're saying, the Committee agreed that additional data and study was needed on the high-productivity area, that's why they delineated the boundary for it in the first place, and we've come back to that, wouldn't we?

A. It's fair to say that certain operators didn't believe that there was -- additional study was warranted. But it's also fair to say that there was a number of operators that were concerned that the fairway needed to be outlined. And everybody, including those operators who didn't want to see the boundary, agreed on a boundary.

Q. All right. Now, under the proposal for poolwide infill development as BP would have it, is there a greater likelihood that the drilling of unnecessary wells would result?

A. I believe that there is greater likelihood, because it doesn't give people within a federal unit the opportunity to protest a well.

Q. And would there be a significant number of those unnecessary wells resulting?

A. We already know that there will be significant numbers, because you heard yesterday that if there's 450 wells in the fairway, 300 of them could get drilled next year, just from two operators.

Q. And that increase -- but the likelihood of waste result in increase?

A. Correct.

Q. And is there likelihood that correlative rights would be adversely affected?

A. I believe so.

Q. In your opinion, given the data analyses that are available now, would the Phillips proposal best serve the interests of conservation, result in protection of correlative rights and prevention of waste?

A. I believe so.

Q. Let's look briefly at your last slide, Exhibit 18, if you'd like to summarize for us, Mr. Jones.

A. In summary, Phillips believes that infill drilling is required in the underpressured area. Our data has shown that there's a significant difference between the reservoir inside and outside the high-productivity area. The line is needed, it was agreed to by everybody on the Committee and should be used.

Our data showed the wells sampled in the high-productivity area, 64 percent of those wells had a drainage area of 481 acres. Stated another way, 64 percent of the wells had a drainage area greater than 320 acres.

In the wells sampled north of the high-productivity line, 69 percent of those wells had an average drainage radius less than 320 acres or, on average, 239 acres.

The notification process is meant to address the issues where people believe infill wells in the high-productivity area are not warranted. We don't believe that those are burdensome to anyone, and they're very reasonable requests.

The last dot point, Phillips has presented the only testimony of New Mexico fairway data, and in the high-productivity area in New Mexico that data suggests that the current spacing is adequate.

There may be places in the fairway where we will finally decide that infill drilling is warranted, but that study has not been done.

The solutions we've given, I think, are reasonable. I would venture to say that Burlington has done a quality job on their work in the underpressured area. The Carracas Canyon work that BP did, also good work.

All I'm asking is that the Committee give us time to set the same standard for the fairway.

Q. Were Exhibits 1 through 18 prepared by you?

A. Yes, they were.

MR. HALL: At this time, Mr. Examiner, we would move the admission of Exhibits 1 through 18.

That concludes our direct of this witness.

EXAMINER STOGNER: Any objections?

MR. CARR: No objection.

EXAMINER STOGNER: Exhibits 1 through 18 will be admitted into evidence at this time.

Thank you, Mr. Hall.

Mr. Kellahin?

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Jones, would you turn to slide 3, please?

A. Slide 3?

A. Yes, sir.

EXAMINER STOGNER: Excuse me, Mr. Carr, would you slip that microphone down to Mr. Kellahin, if you would?

I'm sorry, which exhibit were you going to turn to?

Q. (By Mr. Kellahin) Mr. Jones, we're looking at slide 3 of the Phillips presentation. Can you put that up on the screen for us?

A. Oh, yes.

Q. Mr. Jones, you have concluded your presentation this morning by a statement that the fairway -- Let me make sure that I'm clear with you about what I mean with the fairway term: I'm talking about that entire area that's scribed inside of the 2-million-a-day producing rate?

A. Correct.

Q. I'm going to call that the fairway.

A. Okay.

Q. Everything else is nonfairway. Within the fairway, you say that there's a need for additional study, data and analysis of that fairway, right?
A. Correct.
Q. And you talk about the well density for those studies; isn't that the point of those studies, is to ultimately decide well density in the fairway?
A. If -- Yes, that's correct.
Q. Read for me the last bullet point on Exhibit 3. What does that say?
A. "Phillips supports infill drilling in this area."
Q. That is in the fairway, is it not?
A. No, it's not.
Q. All right, let's look at the area north. Turn to Exhibit 3.
A. This is -- Where do you want to be?
Q. I'm sorry, Exhibit 4. When we look at the area north of the fairway, this is your argument about additional wells north of the fairway?
A. Correct.
Q. All right. And you've given us an example of Well 7, which is a parent well?
A. Correct.
Q. And the legend shows that some 40 months earlier, the Number 2 well in Section 21 was drilled, it's at an

infill location. Am I reading that right?
A. The legend says that the infill well was brought on line in early 1999.
Q. But the arrow points to the Number 2, that's the infill well?
A. Correct.
Q. All right. When you look at the parent well, it was in competition with the infill well, apparently, for some 40 months, right?
A. The analysis that I showed and BP showed both suggest that they weren't in competition.
Q. Because there was no interference?
A. Because there was no interference, and the drainage area, if you believe that data, is less than 320 acres.
Q. Do you recall the average daily producing rate for last year for the parent Number 7 well?
A. It was greater than 2 million a day, most likely.
Q. Yeah, it was almost 2 1/2 million a day.
A. Okay.
Q. And it produced at that rate without being affected by the infill well?
A. That's correct.
Q. Do you have other examples whereby you're attempted to compare a parent well with another well that

would be at an infill location in the fairway, now?

A. No, I do not.

Q. Let me see if there's an opportunity to do that. If you look at the current spacing rules and take a section --

A. Okay.

Q. -- in a section you're entitled to put a coal well either in the northeast quarter or the southwest quarter, and if you follow that pattern and go up diagonally, either to the northeast or southwest, the adjoining section would have a parent well that would be an offset to another well in the adjoining section. Do you see what I'm saying?

A. I think so.

Q. All right. For example, let's look at Section 13 to the south and west of the 7.

A. Okay.

Q. The parent well is in the northeast of 13, do you see that?

A. Correct.

Q. Under the current rules, the Number 7 well could be a parent well, but it's in the same relationship if that well had been an infill well?

A. I don't know what the distances are, but I'll grant your point.

Q. Yeah, the geometry of the well-spacing patterns, based upon existing spacing, creates the opportunity to examine parent wells that are arranged by the diagonal relationship of those wells.

A. Okay.

Q. Do you see that?

A. Yes, I understand.

Q. How many wells are in the fairway, coal wells?

A. If I've heard right, 450 or 700, somewhere in that range.

Q. I only recall 456, but somewhere around 450?

A. Okay.

Q. Have you looked at any of those wells to see if they're configured and paired so that you could do some interference studies to see if they were affecting each other?

A. No, I have not, and no one else has either.

Q. I want to go to the slide that shows the 75 wells on Exhibit 11 -- I'm sorry, 10, Exhibit 10. Would you put that on the screen for us?

There are 450-plus coal wells in the fairway, and you demonstrate a conclusion based upon looking at 85?

A. Yes.

Q. Do you have a map or tabulation that will show me where these 85 wells are?

A. No, I don't. I could have asked the same thing from the BP's argument, which is the same sort of analysis.

Q. Well, it's my turn to ask you questions, Mr. Jones, and I'm asking you, do you have --

A. No, I do not have a map --

Q. -- a map that shows you where they are?

A. I do not have a map.

Q. Can you prepare such a map?

A. Sure, I can prepare such a map. I can tell you in general where all these wells are at right now.

Q. I prefer to see it on the map, Mr. Jones.

A. Okay.

MR. KELLAHIN: Mr. Examiner, may we ask that the witness prepare such a map and have it submitted to us after hearing so that we can see where the 85 wells are in relationship to other wells in the fairway? I think it's useful to see how they're dispersed.

MR. HALL: And I would ask the same of BP's witnesses, Mr. Examiner, if we must.

MR. CARR: Mr. Stogner, we've already provided a map of the study area. We'll be able to point that out to Mr. Hall in our exhibit book.

MR. HALL: The wells identified --

EXAMINER STOGNER: Would this map be sufficient, Mr. Kellahin, that BP has already prepared?

MR. KELLAHIN: No, sir, I'm interested in what Mr. Jones selected as his 85, and I'm not sure Mr. Carr can identify those for me.

MR. CARR: I can identify the BP wells and will do so. But I can't identify these 85, I don't know where they are.

EXAMINER STOGNER: Could you provide a supplement map, Mr. Hall --

MR. HALL: We'll do that.

EXAMINER STOGNER: -- for Exhibit Number 10?

MR. HALL: We can do that.

EXAMINER STOGNER: I take that as a yes, and we'll determine when you can get that a later time. I'll go ahead and allow you to cross-examine.

Q. (By Mr. Kellahin) Mr. Jones, when we look at 85 wells, what was your engineering criteria that you used for selecting those 85?

A. We chose wells that had pressure data.

Q. Is that the only criteria on which they were chosen?

A. Pretty much, yes.

Q. When I choose a well based on pressure, what is my criteria for choice of the type of reservoir pressure data I need?

A. I'm not sure --

Q. What kind of reservoir data are you looking for in terms of pressure for the wells selected?

A. The point of finding wells with pressure data is so you can do the material-balance analysis to determine what gas in place is for the individual well.

Q. For your drainage calculation in the fairway, you did not use decline-curve analysis to get you to an estimated gas recovery --

A. No, we did not.

Q. You tried to use material balance?

A. That's correct.

Q. And when you take the P/Z plot for your pressure and create your line, you're going to need more than one pressure point?

A. That is absolutely correct.

Q. Is there a minimum criteria that you used after obtaining a first pressure point so that you can draw your curve?

A. Well, in general you need at least two points, but the more, the better.

Q. So for purposes of this study, can we assume that all 85 of these wells had two pressure points?

A. Correct.

Q. The first pressure point is derived how? Is that a measured bottomhole pressure point?

A. Yes, they're all measured bottomhole points.

Q. Are you taking surface pressures and extrapolating then to a bottomhole pressure?

A. No, they're pressures as I described earlier in my pressure map. They're typically dip-in pressure points that are reflecting, most likely, the lowest-pressure, highest-productivity layer. So it's one pressure that is reflecting the total open wellbore.

Q. And of the pressure points you've used, are they all the same type of pressure data?

A. If I'm following your question, yes, they are.

Q. You're not taking surface pressures --

A. No, we are not taking surface pressures.

Q. -- and trying to subtract or calculate what they would be at reservoir pressure?

A. No, we're not.

Q. All right. Is all that pressure data for the wells in this population available publicly?

A. It was available to Phillips, because in many of the cases where we were the operator of the unit we gathered the data. Some of the data came from Burlington, some of the data came from Devon.

Q. Is that data pressure available to you today?

A. Yes.

Q. Do you have it with you?

A. No, I do not have it with me.

Q. Could you prepare that data in a form that we could submit it as an exhibit for this hearing so that we can look at that pressure data?

A. Sure.

MR. KELLAHIN: We would ask that that happen, Mr. Examiner.

MR. HALL: Mr. Examiner, my only concern is that at some point we need to close the record on this hearing. I'm not sure what Mr. Kellahin contemplates here by --

MR. KELLAHIN: Well, I'll tell you. I don't contemplate closing the record based upon this summary plot that discloses none of the data, none of the methodology or how you got here. That's what I want to find out.

THE WITNESS: We would like to see the same stuff reciprocated.

MR. KELLAHIN: I'm not advancing the argument that this well population --

THE WITNESS: But you are advancing --

EXAMINER STOGNER: Order. You're under cross-examination, Mr. Jones.

Okay, let's get this question here.

MR. KELLAHIN: My request at this point is to have the pressure data provided by Phillips for these 85 wells.

EXAMINER STOGNER: Okay, Mr. Hall, do you see a problem with that?

MR. HALL: We do not. Again, I'd still like some clarification on what it is Mr. Kellahin contemplates. Are we going to reconvene and continue these hearings an additional day, or are we simply going to provide the data?

EXAMINER STOGNER: You just want the data?

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: In a supplemental -- another supplement to Exhibit Number 10, the 85 wells?

MR. KELLAHIN: Right.

EXAMINER STOGNER: Okay, and what exactly will this information show that you want?

MR. KELLAHIN: It's going to show me the pressure data for each of the pressure points that Mr. Jones used on his material-balance curve where he constructs his P/Z plot. I want to be able to see that data and to replicate it with my own engineer, to see if we come to the same conclusion. He's chosen not to give us the data now, and I'd like to look at it.

EXAMINER STOGNER: I don't see that as an unreasonable request, Mr. Hall.

MR. HALL: We will do that, we understand Burlington and BP will reciprocate.

EXAMINER STOGNER: Continue with your

questioning.

MR. KELLAHIN: All right, sir.

Q. (By Mr. Kellahin) Mr. Jones, when we look at the drainage calculation, did you make a separate drainage calculation for each of the 85 wells?

A. Yes, we did.

Q. And when you have summed those results, you have arranged them in the categories that you have on this display within these groupings?

A. Correct.

Q. All right. When we look at the wells in the second column on the right, that's the range of 160 to 320, and within that population of wells it looks to be about 27 or 28 wells?

A. Yes.

Q. Somewhere right in there? Do you have a table with you that will show us each individual drainage-area calculation for each of those 25 wells?

A. I don't have one with me, but I'd be glad to give it to you.

MR. KELLAHIN: All right, sir, we would appreciate having that supplied, Mr. Stogner.

EXAMINER STOGNER: How many other requests are you going to be making?

MR. KELLAHIN: Well, I want to be able to duplicate his drainage calculation, because they've chosen not to give us samples of how to do that, and I want to test the integrity of this conclusion. I assume this hearing won't stop here necessarily, Mr. Stogner.

MR. HALL: Mr. Examiner, let me make a point that when these -- Phillips' exhibits were tendered for admission into evidence, we received no objection from Mr. Kellahin.

It's the nature of expert testimony that an expert may rely on outside underlying data. It's not necessary for him to provide all of that underlying data at the hearing. I would argue to you that because these exhibits came in without objection, it's really an untimely request now to try and seek the underlying data.

EXAMINER STOGNER: Mr. Hall has a point, Mr. Kellahin.

MR. KELLAHIN: I don't have any objections to the document, but I am entitled under Rule 705 of the Rules of Evidence in New Mexico to cross-examine this expert on his conclusions. He's made a conclusion with this display, and I'm entitled to test how he got there. And it frustrates my ability to cross-examine him if he doesn't have the supporting documents here to talk about. I'm entitled to that --

MR. HALL: I disagree with the characterization of the Rule. If there is any such entitlement, it was waived.

EXAMINER STOGNER: Okay, we've already agreed to a supplemental map and some pressure data. What more are you going to ask for?

MR. KELLAHIN: What I'm looking for is, I want the individual work sheets that show the drainage calculation for each of these wells in this display. I want to be able to look at the drainage calculation. I want to se what factors he used and whether they were correct.

MR. HALL: In other words, Mr. Examiner, he wants to do discovery after the fact. I just think that's really improper under the Division's rules.

MR. KELLAHIN: We don't have discovery in New Mexico in this hearing.

EXAMINER STOGNER: The fact that the Applicant in this case is the Committee, assuming the Committee is working together to some degree, and I'm going to -- hopefully --

MR. HALL: We will provide --

EXAMINER STOGNER: -- all this information was submitted, is submitted, for the Committee to review, and that's the impression that I got because of the way the Application came through as a Committee, and not as one operator. It was all operators within the area.

So with that spirit in mind, when I asked that you provide this information not to just Mr. Kellahin but to the Committee, so input can be provided for all parties of the Committee. I'm assuming Phillips was part of that Committee, was it not?

MR. HALL: Yes, Mr. Examiner. We will provide the information that's been requested so far with respect to Exhibit 10 this morning. We understand that we're going to close the record on this hearing at some point.

EXAMINER STOGNER: It will be closed at some point.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

Q. (By Mr. Kellahin) Mr. Jones, when you conduct a drainage calculation, you need to have two basic conclusions to reach your drainage calculation. You need to have calculated or estimated the original gas in place; is that not true?

A. That's correct.

Q. All right. You either have to make an assumption about the fitness of the reservoirs in the engineering calculation, or you have to rely on some geologist to analyze to give you what you think is a reliable thickness component for the calculation?

A. That's correct.

Q. Did Phillips provide to you or to the Committee any geologic study on gas in place in the fairway?

A. As I stated already, we determined gas in place for these 85 wells using pressure data.

Q. All right, let's look at the components to determine gas in place. You're going to have to make an assumption, or you're going to have to decide per well on the gas-content component of the calculation, right?

A. We did not do that. What we used is the average of 500 that I showed on Exhibit 7.

Q. You used the Langmuir volume?

A. Right.

Q. The 500 volume?

A. Right.

Q. And you applied that to all 85 wells?

A. Correct.

Q. If the Langmuir volume is too small, then correspondingly the calculation will lead you to a drainage area that's too large?

A. Correct.

Q. Did you use any other methodology to try to derive at what is an appropriate Langmuir volume for each of the 85 wells, other than the display you showed us?

A. No.

Q. What did you use for the density component of the calculation?

A. 1.5.

Q. And for the drainage calculations you have to assume an area. What area did you assume for the calculation?

A. No, the way that the equation works is, from a material-balance estimate using the P/Z data, you calculate a gas in place. With that, you're back-calculating an area from that volume. And what you need to calculate that, you primarily need, as you mentioned, you need your net pay and you need some gas content. Those are the two things you need.

Q. As you run through the calculation, you can back-calculate 320s or 160s or whatever that spacing pattern is applicable?

A. You have to make -- we have to make an assumption -- or we made the assumption that on each one of these 85 wells, that the 500 standard cubic feet per ton was the appropriate value, and then we calculated whatever drainage area the well showed for whatever gas content we had found.

Q. All right, let's talk about the net thickness number.

A. Okay.

Q. You have to build the container to contain the gas to make the calculation. What assumptions did you make about the container being calculated?

A. It's not necessary to make an assumption like that. I'm not following what you're --

Q. All right, what assumption of thickness did you use and how did you get there?

A. We assumed data that was available that Phillips has gathered over the years on net pay for a given well.

Q. So each of the 85 wells --

A. -- has a net pay.

Q. -- will have a net pay directly attributable to that well?

A. That's correct.

Q. Are you summing up the various coal layers in order to get that --

A. Yes --

Q. -- number?

A. -- that's correct.

Q. Do you make any assumptions or adjustments in your calculation to account for the discontinuity, the lateral discontinuity of the coal?

A. No.

Q. You're going to assume that if you calculate 320 acres, that that thickness you've chosen is uniform in distribution within the calculated area?

A. That's the only thing we can assume.

Q. All right. And if we look at the drainage calculation for each of the 85, then we're going to see how you input those values and got to the conclusion for each well that is now redistributed on Exhibit Number 10?

A. Correct.

MR. KELLAHIN: That's all I'm asking for, Mr. Stogner.

Q. (By Mr. Kellahin) Let's turn to the pressure map, Exhibit 11. Identify for me the significance of the color-coding.

A. The color-coding is -- Let's see if I can read it here. The very light color is pressures less than 300 pounds. The next darker color is less than 600 pounds, and then the darkest green is wells greater than 900 pounds.

Q. Greater than --

A. Excuse me, I think I said that wrong. The lightest color is -- it shows an area of wells that had pressures less than 300. The next is from 300 to 600, 600 to 900, and then the darkest color is greater than 900.

Q. I believe I correctly understood you when you told us that this pressure map was the lowest pressure on the well?

A. Correct. And the reason why I say that is because I know that there are layering effects in the fairway, and typically what you find when you gather this kind of data is, the lowest pressure is going to reflect your most productive low-pressure zone.

Q. So I want to make sure that you don't disagree with Mr. Thibodeaux that the coals in here are layered?

A. Oh, definitely not.

Q. And that as a result of their pilot study wells you can get different coal textures per layer?

A. Yes, in fact, we've -- Phillips has gathered data, Burlington has gathered data that they've reported to the Committee, showing that differential depletion exists in the fairway.

And what I mean by differential depletion is that there are layers that are at different pressures. And the significant thing about that, though, is that they show significant depletion in every layer.

Q. Have you attempted to analyze the pressure data in such a way that you could ascribe to a certain layer the pressure? There's no way to do that, is there?

A. Could you --

Q. Can you take the pressure --

A. Uh-huh.

Q. -- and define or determine to what layer of the multi-layer pool to attribute the pressure to?

A. All we've gathered in that respect is probably a half a dozen wells that I know of that we gathered layer pressure data in selected places. That's all that's been done toward that end.

Q. If you'll turn to Exhibit 9 for me, it says on the first bullet conclusion, On average wells are draining 320 in the fairway?

A. Correct.

Q. What is the supporting data that goes to this bullet point?

A. The supporting data would be the statistical analysis right there.

Q. All right, so Exhibit 10 is your support for the first bullet?

A. As you see on that, the slide shows the average is showing to be 389 acres.

Q. Is your presentation showing any other supporting data for that bullet point, other than Exhibit 10?

A. No.

Q. Let's go to the second bullet point on Exhibit 9. There's a significant distribution of wells with drainage areas falling between 160 and 320. How do we see where they are distributed? Do you have a map that will do that?

A. Going to this slide 10 again, you will see that the second bar shows the 160-to-320 distribution of wells that we found drainage areas in that area or range.

Q. All right, in the map that you're going to provide, then, you'll show us how they've been dispersed across --

A. The map that we'll provide will show you all the wells and how we calculated that, yeah.

Q. The next bullet point has to do with the pressure analysis, and we saw that in relation to the pressure map. I've lost track of the number here, Mr. Jones.

A. Number 11.

Q. Eleven is the pressure map. And if I'm looking for support in your testimony for that bullet point, Number 11 is the one to look for?

A. Correct.

Q. Let's go to the fourth bullet point on Exhibit 9, "...selected areas within the high productivity area, infill drilling may be warranted."

What is the criteria you have used to decide that there selected areas in the fairway where infill drilling is warranted?

A. The possibil- -- the statistical analysis, again, on this slide 10. The statistics show that it's possible that there are areas that are draining less than 320 acres.

Q. You have not attempted, then, to take a map and try to configure a map of the --

A. No.

Q. -- fairway --
A. No, we have not --
Q. -- and show us where they might be located?
A. No, we have not done that.
Q. Let's talk about what happens with the Phillips proposal.
A. Okay.
Q. I think we can realize -- have that discussion if you'll go to either -- Exhibit 1 is probably a fine one to look at. Exhibit 1 now, I want to concentrate your attention in the fairway and look at the 30-and-6 Unit.
A. Okay.
Q. It's a federal unit, it's operated by Burlington, if I understand correctly, and Phillips has an interest in that unit. Are you aware of that?
A. I'm aware of that.
Q. Do you know what percentage interest you have?
A. We have about a 23-1/2-percent working interest.
Q. Without this rule being imposed on notice to the working interest owners, let me give you a situation, and you tell me what happens. If I'm the operator in that, and I decide I want to drill the infill well, and I send you an AFE, then your option is to either participate in the well or to contractually go nonconsent, that's what happens, isn't it?

A. Okay.
Q. Isn't it?
A. Yes.
Q. By introducing Phillips' 24, 23 percent, if the remaining 70 percent decide they want the well, they can drill the infill well under that arrangement?
A. That's correct.
Q. The impact or the effect of your proposal, if adopted by Mr. Stogner, would allow Phillips with a 25- or 24-percent interest, then, to file an objection to the infill well and require that case to go to hearing, if you chose to be that aggressive?
A. We would -- It's likely that if Burlington proposed huge numbers of wells in the 30-and-6 unit, we would protest, because we don't think it has been proven that it's warranted.
If they were to propose one or two or three or some small number of wells, we would probably participate, eagerly participate.
Q. Let me ask you Mr. Hall's question. Next year in the fairway, how many wells does Phillips propose to either drill or participate in, in the fairway?
A. Zero.
Q. None?
A. Participate -- be will participate in -- if

Burlington proposes 100 wells and we have interest in those wells, we will participate. But from Phillips' operations, wells inside the fairway that we are planning to drill, there are zero.

Q. Have you set aside a budget item for next year to spend on participation in coal wells that are nonoperated in these units?

A. We have set aside budget money. Part of the problem in that area is, we don't know what to set, because we don't know if people are going to, like I said, take a reasonable approach to this and find out whether these wells are necessary, which is one number, or if they're going to drill every well that's there, which is another number.

Q. For budgeting purposes, per well, what assumption have you made as to the costs of that well to recomplete, for example, a PC well?

A. Are you saying that in the fairway they're going to recomplete PC wells?

Q. Let's assume that's the case.

A. Well, I would have to object to that, because I don't think that's going to happen.

Q. All right. If it's a new drill or the addition of another formation, then you're looking at the cost of a new well in the fairway --

A. Correct.

Q. -- or coal?

A. Correct.

Q. Are there no recompletion candidates in the fairway?

A. It's unlikely that in the fairway operators are going to use existing wellbores to recomplete, and the reason why that was presented yesterday, there's a significant difference in the gas, that the -- the fairway has high CO_2, so gas-gatherers are, in general, going to want you to keep that gas separate. And so commingling wells is probably not going to happen too often, if at all, in the fairway.

Q. Can you identify the fairway by any other reasonable geologic or engineering criteria other than taking the assumption of a certain daily rate and scribing that area to set aside as the fairway?

A. There is actually some very good data that Burlington presented to the Committee that showed that where -- there was some very good technical data that showed where the southern boundary should be. That data was pretty much ignored, and what ended up happening is, people just -- we all bent a little bit and agreed on the 2-million-a-day line.

Q. Well, the Committee work, then, was a collaboration --

A. It was a collaboration.

Q. -- by you and other companies to make a decision on what to scribe for an area for the fairway?

A. To scribe for an area of the fairway that we wanted to keep separate, that's correct.

Q. But apart from that separation, you're willing to have infill drilling occur? Let's come back to it later.

A. Yeah, I'm not sure I'm following your question.

Q. Let's come back to it later.

If you're exposed to having to participate in nonoperated wells --

A. Right.

Q. -- in 30-and-6 --

A. Right.

Q. -- I assume you have a way to analyze what your potential cost is per well?

A. That will be -- if Burlington proposes 50 wells in the 30-and-6 Unit, for example, they're telling us what it's going to cost.

Q. Can't you determine for yourself for next year --

A. Can I determine what a well cost is?

Q. Well, let me see if I -- Can't you determine for Phillips how much money to set aside next year to devote to additional wells in the fairway?

A. Sure, if I know what the number is.

Q. Well, if you don't know the number, you at least know what one would cost you?

A. Sure.

Q. Have you tried to take that by a multiplier to see how much money you're comfortable in spending and reduce that to how many wells that you could participate before you're forced to go nonconsent and have the operator carry your interest?

A. We've not done the data, or done that analysis, because, as I've stated in my testimony, the work has not been done -- other than looking at a well on its own, the work has not been done to see what the effect is on a huge area. That needs to be done before true economics can be rune.

Q. So Phillips has not forecast for budget purposes next a budget item to devote to paying for coal wells in the fairway?

A. No, that's not a true statement either. We have set aside a number, okay, that --

Q. What's the number?

A. $2 million --

Q. All right.

A. -- is what the number --

Q. And when it's spent, it's gone and that's it?

A. When it's spent, then we'll have to look, and if we need more money we'll have to get more money.

Q. All right. Who at Phillips developed the idea of the additional notice to the working interest owners in the unit?

A. That was something that came together between my lawyer and myself, and we tried to come up with some means to address BP's objection that they had to that notification problem.

Q. When did you come up with that strategy?

A. Last week.

Q. What time last week?

A. I don't recall.

Q. Was it before or after Friday?

A. It was before Friday.

Q. Before Friday. On Friday your company filed a prehearing statement with the Division that does not disclose this, but before then you knew about it?

A. Yes, we knew --

Q. How much more in front of Friday did you have when you knew you were going to do this?

A. It was sometime during last week, and if it wasn't in the -- I don't recall what the prehearing statement said, but I think it did say that we were going to propose different rules.

Q. So the first opportunity for the members of the Committee to see your proposal in writing was yesterday afternoon at about 4:30?

A. Correct.

Q. Mr. Jones, as an expert -- Are you an expert in reservoir simulation?

A. I've spent a fair amount of time doing reservoir simulation, yes.

Q. Is that one of the things you regularly do for your company here in Farmington?

A. I have in the past. At my current job, no, I'm not doing that.

Q. How long have you been at your current job?

A. Six years.

Q. All right. During that period of time have you done any simulation work in the Coal Pool?

A. Yes, I have.

Q. Okay, where?

A. Primarily in the 32-8 and 32-9 areas. Also, we have -- Phillips has a model that covers the 30-and-6, 31-6, 30-and-5, portions of the 29-6 and 29-5.

Q. So you have reservoir-simulation models within the fairway?

A. Yes, we do.

Q. Have you made those available to the Committee so that they could look at those?

A. The simulation that I was speaking about specifically right there is out of date, and it's not in -- it's not ready to be put before anyone. Work needs to be done on it before I would be willing to do that.

Q. What kind of work is required, Mr. Jones?

A. Any model that you would put together -- This is a pre-existing model that my predecessors worked on and I worked on, but it hasn't been updated with actual production data over the last several years. And basically what that means is, it needs to be re-history-matched to make sure that it is properly reflecting the reservoir behavior.

Q. To construct those reservoir simulations, did you use a geologic model to input into the simulation?

A. Yes.

Q. Did you make that model available to the Committee?

A. As I said, that model is not in a state that it's useful at this time.

Q. Let's assume that Phillips is given an opportunity to make the choice on an AFE, makes the choice to oppose the infill well. We're in a federal unit, we're in a participating area --

A. Okay.

Q. -- and your rule is adopted, and Mr. Stogner, now, is about to have an objection filed.

A. Okay.

Q. File it with the District, it's set for hearing. What is going to be the evidence that you would expect to be submitted to the Division on which to make a decision on whether the infill well is necessary for that case?

A. The primary thing that needs to be analyzed is the infill well's effect on a larger area. As I said, you can't look at just one well or two wells and make a decision on what that infill well's effect is going to be. Because it's a highly competitive reservoir, you need to look at a large enough area so that you can see the impacts on everybody around you.

Q. Can you engage in that study without drilling the infill wells?

A. I would say that you could do it without infill wells, but to make a better model, additional infill wells would be used to gather more layer data -- or layer pressure data.

I think in the fairway there's enough geological work that's been done on mapping. As Steve Thibodeaux talked about yesterday, typically people -- they map packages of coal, and I think that's good enough for what we need. But what needs to be analyzed is the layer pressure or the differential-depletion effects that are going on. We could --

Q. -- do that without the infill well?

A. We -- It is possible that you could drill an infill well, and you could find a layer or layers that are at very high pressure, and that is an argument for infill drilling. But it's not the whole equation. You've got to look at that in part, and then the modeling together, to see what -- You can't ignore those low-pressure, high-perm areas.

Q. Do you envision that in order to get an infill well approved under your notice process that you would have to precede that with an application for a pilot well so you'd have an infill data point that gave you the layer pressure, you then subscribe an area that's influenced by that data, prove your point, and then you can infill within that area of study --

A. That might be appropriate, that may be an appropriate way to look at it.

Q. So every time he hears one of these objections, we're going to have to precede it with an infill well and a data study to identify a portion of the fairway for which we can have more wells?

A. That's not really what Phillips is trying to say.

Q. What are you trying to say?

A. What we're trying to say is, again, if somebody proposes an infill well, if they're doing it to gather this data, that's what we think needs to be done, and these studies need to be done.

What we would object to is if somebody comes into one of these units and just starts drilling every location that's available before this work has been done.

Q. All right, so we can plan to have Phillips object any time an infill well is proposed or --

A. No, that's not a true statement.

Q. Sure, it is.

A. No, it isn't.

Q. What's wrong with it?

A. What I just said is, if somebody's proposing an infill well and it's an infill well or a few infill wells, we would likely participate and want to see that well drilled.

Q. How many is too many?

A. I don't know, 20. It depends on how small of an area that they're putting the wells in.

Q. Twenty in what kind of area? Twenty in the 30-and-6 Unit?

A. I don't know, I haven't considered that question. I'd be just speaking off the top of my head.

MR. KELLAHIN: I have no further questions.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

Mr. Carr?

EXAMINATION

BY MR. CARR:

Q. Mr. Jones, I think I'd like to start by just trying to clarify what it is Phillips is seeking in this proceeding.

A. Okay.

Q. Do you oppose infill drilling in the fairway?

A. We oppose blanket drilling throughout the fairway before it is proved that it's needed everywhere.

Q. So Mr. Hayden's statement that the Committee was in concurrence that we should infill drill with a notice provision isn't correct, Phillips doesn't support infill drilling in the fairway; is that correct?

A. We do not support blanket infill drilling, that's correct.

Q. All right. Now, as to the notice provisions that you're proposing, as of last week we were looking at notice provisions that would impose, in fact, additional notice obligations just on the nonunitized areas in the fairway, correct? And around the periphery of some of the units? That's what we were looking at --

A. Could you state that again? I'm not sure --

Q. When we came to Farmington this weekend, I thought we were looking at a notice proposal that would require operators to give notice in the white areas within the fairway, basically, but that, in fact, there wouldn't be notice requirements within the federal unit?

A. Essentially that's correct, since you're only notifying yourself, right.

Q. And you now come up with a different proposal on notice?

A. We added that one sentence onto the proposal that would address BP's arguments.

Q. That's what Mr. Hawkins called a minor modification, correct?

A. I would say that is a minor modification.

Q. The result of the minor modification is that if I'm the operator of one of these federal units, before I can drill a well I would really have to get your approval; isn't that right?

A. If I was a working interest owner, that's correct.

Q. You're a working interest owner in the units that are shaded in this map, are you not?

A. Shaded in green, that's correct.

Q. Okay. And in one of those if I wanted to drill a well, I'd have to get your approval for it?

A. That's correct.

Q. Now, your relationship as working interest owner in that unit is governed by certain contracts and documents, correct?

A. That's correct.

Q. You're a party to a unit agreement?

A. That's correct.

Q. That unit agreement defines how wells should be proposed and drilled, does it not?

A. That's correct.

Q. Now, you expressed an interest in performing those agreements as they relate to drainage and other considerations. Are you also interested in performing under those agreements in accordance with the terms that define how wells would be proposed and drilled?

A. You kind of lost me toward the end there, but --

MR. HALL: Do you understand the question? You want him to repeat it?

THE WITNESS: I --

Q. (By Mr. Carr) What you're seeking with this notice provision changes or modifies how I now, if I were the unit operator, could propose and go forward with a well; isn't that right?

A. It modifies for the purpose of -- there was an inherent weakness in the current notification process in that unit operators got away with drilling some wells, the drillblock wells had an additional burden. That's the only reason why we put that in there, so --

Q. And they --

A. -- that would give them the opportunity to protest if they wanted to.

Q. And that agreement that gave the operator the right to do these things is an agreement that Phillips signed off?

A. Phillips -- Again, I mentioned this before, Phillips had gone along with that proposal, and we were going along with everything to the point we believed that people were going to take a rational approach to the fairway.

Q. My question was, you've signed a unit agreement --

MR. HALL: Let him finish his answer.

MR. CARR: Well, I'd like him to answer the questions that I ask, or we'll be here through the weekend.

MR. HALL: Finish your answer.

THE WITNESS: The answer is that Phillips believed that people weren't going to drill wholesale drilling throughout the fairway. And we only found that out last week, and that's why we had to -- we felt we needed to propose restrictions on drilling in the fairway, because we thought -- we believed that was the original intent of the Committee.

Q. (By Mr. Carr) Mr. Jones, I asked you if Phillips had signed a unit agreement.

A. Yes, we have signed a unit agreement.

Q. And is what you're proposing going to change the way the operator could drill wells under that unit agreement?

A. It could potentially, yes.

Q. Now, we'd all agree that the costs of this development, the actual out-of-pocket cost to either recomplete or drill, is a factor; isn't that right?

A. That's correct.

Q. In the Fruitland Coal, has Phillips even drilled its remaining 320-acre spacing unit?

A. In the fairway?

Q. In the fairway?

A. Yes, we have.

Q. Have you drilled them throughout the Basin-Fruitland Coal Pool?

A. There are probably about a half a dozen wells near the Colorado border that have not yet been drilled.

Q. Did you indicate in your testimony that you would participate in whatever wells were drilled in these units? Was that your testimony?

A. We would probably participate. But again, we haven't done the analysis to decide that.

Q. And so at this time that's something that you're probably not in a position to comment on, correct?

A. Not really. But we feel that the point we were trying to make is that we would be drawn into that because we'd feel like we have to participate in it to protect our reserves, to protect our value, and drilling those wells could destroy that value.

Q. You've asked everyone, or your counsel has, how many wells they plan to drill. If the proposal that Phillips is advancing is adopted, wouldn't it be fair to say that there would be protests to a number of those wells?

A. Only to the extent -- from Phillips' -- I can only speak for Phillips, but from Phillips' standpoint, like I've said, to the degree that people are blanket-drilling in the fairway, yes, we would protest.

Q. Now, you've participated in the Committee, and I'm not going to go over everything Mr. Kellahin covered, but you did participate in the Committee process; isn't that correct?

A. That's correct.

Q. And the proposals that you have submitted here today and for which Mr. Kellahin is seeking additional data, those really were not reviewed by the Committee --

A. No, they were --
Q. -- is that fair to say?
A. That's a fair statement.
Q. And when you were in the Committee process, BP shared its work on Carracas Canyon and other things; isn't that right?
A. That's correct.
Q. And there was an opportunity to request additional data, and exchange data in the Committee process?
A. That's correct.
Q. What we have, really, here is, your proposal has come along after the Committee has done its work; isn't that fair to say?
A. Yes.
Q. And the exchange of data and the things that we're having to go through today are really things that, if this had been advanced, could have been handled at the Committee level and discussed it there?
A. Had Phillips known the truth of everything in the past, we would have been advancing these arguments sooner.
Q. Was anyone not telling you the truth? Is that your statement?
A. Yes, that is my statement. As I've stated already, Phillips was under the impression that people were

going to drill selected wells within the fairway, okay? So we never had any inkling to know that people were planning on drilling essentially every well within the fairway.

Q. And so now we have a new proposal that we're addressing here instead of in the Committee process?

A. That's correct.

Q. If I go to your Exhibit Number 9, your high-productivity area analysis, you've stated that in the high-productivity area on an average a well could drain at least 320 acres; do you see that?

A. Correct.

Q. Is this a composite drainage number that you're working with, or have you tried to break it down by layer?

A. By layer?

Q. Uh-huh.

A. No, this -- Again, this reflects, that pressure data reflects, every layer. So what that means is, on a layer pressure -- if you take layer pressures into effect, what that means is that there are certain layers that are probably draining much more than what I've indicated here, and there's others that are probably draining much less.

Q. So we've got a composite number, we haven't segregated that?

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

Q. And again, when we talk about the pressure data that has been analyzed point three to show significant uniformity, we're again looking at composite structure --

A. That's correct.

Q. -- is that right?

The last point here says, "Notification process helps to address situations where wells may not be appropriate." I'd like for you just to tell me what you consider to be an inappropriate well.

A. That's depending on the operator. It could be -- You know, what I've pointed out is, Phillips doesn't want to see wholesale drilling in a unit. Somebody else might, for whatever reason, decide that that well across from them gives the operator an unfair advantage, the well is going to drain more than 320 acres, whatever reason. There can be cases where -- we've all heard -- BP has testified that there are places within the fairway that may not need infill drilling, and that's what I'm talking about.

Q. And so you would think that if an operator makes a decision to drill a well, by which they think they can produce, commercially produce, additional reserves, that the offset ought to be able to object and stop that?

A. If the offset operator believes that those additional reserves are going to come at his expense, yes.

Q. If there are recoverable reserves under a spacing unit, do you believe an operator ought to be able to drill an infill well to access those reserves?

A. Yes, but -- I'm not sure I'm following that question either.

Q. I'm trying to see -- Under our statute, operators are afforded an opportunity to produce the reserves under their acreage.

A. Correct.

Q. And if I'm an operator and believe I need a well to do that, and I'm in one of these areas offsetting Phillips, you still would have a right to object?

A. I would.

Q. And that could take this to a hearing?

A. It could possibly, yes.

Q. And then if the Division didn't let me go forward with the well, then my opportunity to develop that acreage would be lost, would it not?

A. Correct.

Q. Let's go back to Exhibit Number 4. If I understand your testimony, you have been calling for pilot information that would reflect how the wells in the fairway would perform; is that correct?

A. Pilot information with the appropriate data and modeling that shows the effects of infill wells on a large area.

Q. So if we looked at the two wells that you pointed

out, particularly the Number 7 well, the --
A. Section 7.
Q. -- Section 7 well, in that well you indicate you've seen no interference from the Colorado infill well?
A. That's correct.
Q. You're aware that in Section 21, that is the example that Mr. Dinh presented showing the parent and the infill well --
A. Correct.
Q. -- on that tract.
A. Correct.
Q. That's the tract that showed the original well that produced in excess of 5 million a day, that was its producing rate. It showed that the infill well, when it came on, did not affect the parent well. Do you recall that?
A. Yes.
Q. And that the reserves that were being produced by the infill were, in fact, incremental reserves; do you recall that testimony?
A. Yes, I recall that testimony.
Q. Isn't that the kind of pilot that you'd be looking for?
A. I don't think that this area -- As I pointed out in my testimony, I don't think this area is an apples-to-

apples comparison with the fairway.

Q. And so being on the property adjoining the fairway, it still isn't reflective of the fairway?

A. This area is -- As I pointed out, much of the area from Section 7 all the way east, all those are new wells. Those -- Phillips' wells, they came on line very close to when that infill well came on line. So maybe we wouldn't see any interference because of that.

Q. How long would that take?

A. What's that?

Q. How many years would we have to wait to see, to satisfy you?

A. Well, I'm satisfied on those wells. I'm not sure what you're asking.

Q. I mean, when we look at this pilot information, are you talking about studies that could take a number of years to get a reliable read, or are you looking at things that would be conducted in a short period of time?

A. I think the models that are large enough are going to take some time. I don't think it's going to take a number of years, but it could take one or two years.

Q. Now, in terms of the kind of modeling and data collection that's been done, you're not satisfied with what's been done?

A. No, I'm not.

Q. And you think more ought to be done?
A. Yes, I am.
Q. So now if we are to go forward with additional development of pilot data, again we would need to come to you and get your okay on that, just like we would if we were going to offset you with a well?
A. That's the process we go through, yes.
Q. Yeah, and we could have raised that during this study process, could we not, while the Committee was here?
A. Phillips repeatedly brought up our concerns in the Committee process concerning the fairway. That has never been a secret.
Q. Did you share any data?
A. No, we did not.
Q. Did yo make a proposal, for the fairway --
A. To the extent that we excluded the fairway with the line, yes, we did.
Q. As to that line, is it your understanding that BP agreed to that line?
A. Yes, it is.
Q. And they said that this was the line they were going to support in the hearing?
A. No, I won't say that, but I will say that they agreed to the line. They agreed to the placement of the line.

Q. If there was a line, if there was a line --

A. If there was a line, that's where they thought it should be, correct.

Q. If we take a look at Exhibit 10, I may need some help with this because I don't understand it very well. Yeah. Again, what you've shown across the bottom, I believe, are drainage areas, some of them as great as 980 acres; is that right?

A. That's correct.

Q. Are you suggesting that there are wells in individual coal seams that would drain 980 acres?

A. It's possible.

Q. If I had a well that drained 980 acres and you were my offset and wanted to offset it to compete for those reserves, I guess when you proposed the well I could object, couldn't I?

A. Yes, you could.

Q. And I could tie it up in hearing, couldn't I?

A. Yes, you could.

Q. And I could drain the heck out of the property while we do this, couldn't I?

A. It's the reverse that I'm concerned about.

Q. But this is also a way what you're proposing could be used; isn't that right?

A. That's true.

Q. Are you aware that in some recent cases like that it's taken over two years to get a result?

A. Again, I just have to go back to the statement that if the additional study is done in the fairway and if it is shown that infill drilling is warranted, then Phillips' argument will go away totally.

Q. When I look at this bar graph, it says you've come up with an average drainage area of 389 acres.

A. Uh-huh.

Q. And that was using what gas content?

A. 500 standard cubic feet per ton.

Q. How do you justify a 389-acre drainage area when you've got 320-acre spacing? I just don't -- I may not be --

A. Some wells are more productive than others, and maybe drilling -- you know, it's not perfect, you can't force a well to drain 320 acres. It's going to drain what it drains.

Q. Could it also be that you're using the wrong gas content?

A. Yes, it could be.

Q. I mean, if you used a 650 gas content it would perhaps bring these more in line with 320-acre spacing; isn't that right?

A. That's correct.

Q. Did you make any attempt to correlate drainage area with producing rate?

A. I don't think that in a fairway competitive area that's an appropriate means to be looking at as a means to justify infill wells.

Q. You would agree that rate is related to permeability?

A. I would.

Q. And permeability would probably be one of the best indicators of what wells can drain?

A. That point is correct. The point that you're missing is the competitive nature and the effect that that well could have on other wells around it.

MR. CARR: And I think that's all I have. Thank you.

EXAMINER STOGNER: I assume you have redirect?

MR. HALL: A little.

Mr. Examiner, Mr. Chavez has some questions before I start redirect.

EXAMINER STOGNER: What do you anticipate your redirect will take?

MR. HALL: It will be fairly short, 15 minutes.

EXAMINER STOGNER: That's not fairly short.

(Laughter)

MR. HALL: Short then.

EXAMINER STOGNER: Mr. Chavez, do you have something?

MR. CHAVEZ Yes, four or five questions.

EXAMINER STOGNER: Okay. Well, I'm going to allow Mr. --

MR. HALL: -- Hall.

EXAMINER STOGNER: -- yeah, I know.

(Laughter)

EXAMINER STOGNER: I'm going to allow you to redirect at this time.

EXAMINATION

BY MR. HALL:

Q. Mr. Jones, both Mr. Kellahin and Mr. Carr have asked you a number of questions about your selection of a value for a Langmuir volume and the methodology you've used to calculate the drainage areas you've shown on your exhibits. Let me ask you this: Is the methodology you've utilized a methodology that is commonly accepted and relied upon by operators in the San Juan Basin?

A. Yes, it was used by us and apparently by BP also?

Q. And it's accepted as a reliable methodology in the industry?

A. Yes, it is.

Q. With respect to the issue of notice, Mr. Carr asked you a number of questions about what happens within the federal township units. But I don't think he addressed the situation where as a unit participant and your acreage you're concerned about is at the unit boundary and it's the operator of an adjacent unit or an adjacent drilling block, where you don't get notice, because the operator of that proposed infill location in the adjacent unit is also the operator of the federal township you're in. Did he address that with you?

A. No.

Q. And that's what the Phillips notice provision would overcome, it would overcome the self-notification problem that's inherent in the proposed rule?

A. Correct.

Q. Now, you were also asked about the protections under the typical unit agreements and unit operating agreements in the Basin and the process that a working interest owner, a nonoperator, would go through to evaluate whether or not he would go consent or nonconsent in an infill well proposal. Do you recall that questioning?

A. Right.

Q. How about well proposals within a unit participating area? In fact, isn't it the case within participating areas, there is no nonconsent provision that's applicable, is there?

A. Yes, I think that's right.

Q. And so it's not the case where a minority interest owner, 1 percent -- or perhaps 23 percent, as is the case in the 30-6 Unit -- could prevent the drilling of that infill well in the PA?

A. Right, in the 30-and-6 unit pretty much every well is a PA well.

MR. HALL: Okay. Nothing further, Mr. Examiner.

EXAMINER STOGNER: Mr. Chavez?

EXAMINATION

BY MR. CHAVEZ:

Q. Mr. Jones, in your Exhibit Number 10 am I correct that you said that there were pressures for only 85 wells that were available, and you used them all?

A. We chose 85 wells that had enough pressure data that we could do this analysis.

Q. Okay. And one of the interesting things to me, sounds like you're asking for more data about pressures, more data about layer information. At what point would you say you had enough data that perhaps these provisions could be eased, that you're proposing?

A. The main thing, I think, that needs to happen is, a significant model area that shows the effect of wells over a greater distance than just your offset well, because this fairway is so highly competitive and there are layers that do affect wells over a greater distance than just one section away.

Q. In a sense, then, you're looking at a study that perhaps the Committee could do, based on information that might be required very shortly with new infill drilling?

A. The only problem with that is that Phillips doesn't want to see all the infill drilling done before the study is done.

Q. Do you have some proposals as to exactly what data would have to be captured and how it would be captured that then could be used by the Committee to perhaps modify the Rules?

A. I think you need to select an area within the fairway that represents the biggest portion of the fairway that you can, and then decide on the model size, and then collect enough layer pressure data within that model area that will give you reliable results when you do the history match, and then project your results.

Q. And what is Phillips willing to do to that end, say participate on the Committee?

A. We will participate on the Committee. As far as what we're willing to do, I'm not in a position to say that.

Q. The question came up with the unit agreement, but is my understanding correct that the way you interpret the unit agreement does not necessarily address the conservation issues for development of the Fruitland Coal Pool in this particular area?

A. The pool -- I'm not sure I follow your question.

Q. The unit agreement has been brought up as an issue, notification and what Phillips has -- and everybody who participates in the unit, has signed off on.

Is it my understanding from what your testimony is that the unit agreement, the way it's been signed by Phillips, does not adequately address conservation issues surrounding -- and correlative-rights issues, surrounding specifically the Fruitland Coal development in this small area?

A. Yeah, that would be a fair statement.

Q. Okay. And just as a matter of clarification for our purposes here, the Application from the Committee specifically addressed drilling for infill wells. Would Phillips oppose any wording that had more like drilling or recompletion or production, to give a more generalized approval process, rather than just specifically drilling for new completions?

And also on -- as far as the general Application, I think the way it was worded it said approve the drilling of an infill well, but testimony has shown that recompletions are also possible?

A. I don't think that recompletions are much of a possibility in the fairway. I think they're very unlikely, in fact.

Q. But outside of the fairway area, the Application or the Rule should address drilling or recompletion, not just drilling, shouldn't it?

A. Yeah, I think that's a fair statement.

Q. Okay. And even though in your opinion there's less likelihood of a recompletion in the fairway area, would you be opposed to the way you worded your proposed changes to include recompletion -- notice of intention to recomplete, not just new drilling?

A. No, I would have no objection to that.

MR. CHAVEZ: Okay, that's all I have.

MR. BROOKS: Okay, I've got a couple questions here. I'll be very brief. Lawyers always say that, but I will be.

EXAMINATION

BY MR. BROOKS:

Q. On the -- Looking at Phillips' Exhibit 1, can you put that up on the --

A. Yeah.

Q. Okay. The numbers in the whited portions of the hached area, those are the designations of federal exploratory units, correct?

A. That's correct.

Q. Can you tell us -- And the red bold line is the boundary of the high-productivity area as contemplated --

A. Yes, it was drawn on there. It may be slightly off in places, but the intent is that it's the boundary proposed.

Q. Okay. Can you tell us who is the operator of the 30-6 Unit?

A. Burlington operates that.

Q. And these letters NEBU, is that designation of the unit?

A. That's the Northeast Blanco Unit, and --

Q. And who is the operator?

A. -- operated by Devon.

Q. Okay. And who is the operator of the 32-9 Unit?

A. That's Burlington.

Q. Now, the white area in here in which Phillips does not own any interest, do you know if a significant part of that is also an exploratory unit?

A. No, it's generally drillblock acreage.

Q. Okay, so there aren't any exploratory units --

A. The area up here is drillblock acreage, and where I'm pointing to is in the 31-8, 31-9.

Up here in this area, which would be 31-7 and 31-6, the Allison Unit up there.

And then down in this area that covers the --

what's that, 31-6, that's -- the Rosa Unit is in there.

Q. And who is the operator of the Allison Unit?

A. The Rosa Unit is operated by Williams, and the Allison Unit is operated by Burlington.

Q. Okay. What about the area up in the far left-hand corner of the map in 32-10?

A. That's primarily drillblock acreage -- Well, that is drillblock acreage.

MR. BROOKS: Okay, I think that's all my questions.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Jones, in concerning such a situation in where an offset is notified, and the Division then gets involved in some sort of a settlement dispute brought before it, I'm trying to visualize where the Division would stand in an instance such as this and what the objection would be and perhaps what some of the solutions would be. That would be allow the drilling of the infill well if there's an objection; would that be one?

A. Right.

Q. Deny the infill well.

A. (Nods)

Q. Is that a yes?

A. Yes, yes.

Q. Okay, would there be another solution?
A. Well, another solution would be to allow it to happen on a limited basis, to allow what I've suggested data be gathered and the analysis to be done. Then the objections could maybe go away.
Q. Okay. Now, when you say limited, limited the number of these exceptions?
A. Correct.
Q. Okay, how about limiting the production?
A. I'm not sure how that would work.
Q. Oh, well, let's see. How about prorationing?
A. Okay.
Q. Would that be a way?
A. That would be a way.
Q. And that could be addressed in a situation such as this that would help everybody, the operator and the offsets, as opposed to limiting this -- or this wholesale drilling that you mentioned earlier?
A. (Nods)
Q. Is that a yes?
A. Yes, that is yes.
EXAMINER STOGNER: Are there any other questions of Mr. Jones?
With that, you may be excused.
And we stand in recess until after lunch, about

five after one.

(Thereupon, a recess was taken at 11:55 a.m.)

(The following proceedings had at 1:15 p.m.)

EXAMINER STOGNER: This hearing will come to order.

Let's see, I believe we had just finished up with Phillips; is that correct?

MR. HALL: Some brief questions of Mr. Jones, I think we can wrap it up in two minutes.

EXAMINER STOGNER: Okay, Mr. Jones?

EXAMINATION

BY MR. HALL:

Q. Mr. Jones, I want to make sure that the Division and the Examiner is clear about what it is Phillips is recommending here today. Could you summarize that for us briefly?

A. Basically, Phillips is recommending that infill drilling be approved outside the fairway, that inside the fairway additional study be done to justify that infill drilling is warranted there, and should that not be approved, then the additional notification process, or the revised notification process be approved.

MR. HALL: Thank you. That's all, Mr. Examiner.

EXAMINER STOGNER: Any questions?

You may be excused.

Is there any further presentations from Mr. Kellahin or Carr?

MR. CARR: No, sir.

MR. KELLAHIN: Yes, Mr. Stogner.

EXAMINER STOGNER: Other than closing? I'll have closing -- closing will be later.

MR. KELLAHIN: Some housekeeping chores for you. They have to do with the fact that Burlington had separately docketed with the Division a request to conform the Fruitland wells, the rules in the Fruitland Pool, so that they are consistent with how the Division has recently handled --

EXAMINER STOGNER: Excuse me for a second. Mr. Carr, could you hand him the microphone, please?

MR. KELLAHIN: Mr. Stogner, before the pool-rule case was filed, Burlington previously had filed a request to conform the Fruitland Coal Pool rules to those portions of the Dakota Pool that dealt with notification within federal units and to change the well-location requirements, so that as you look at the Dakota, the Pictured Cliff -- I'm sorry, the Dakota, the Mesaverde and the coal, you have the same kinds of rules.

That separate case was filed as 12,856. It's on the docket for tomorrow at the Examiner Hearing.

All of the proposals that we have made in that case have been duplicated and repeated in the Application that was filed on behalf of the Committee for this case.

So I suggest to you that you may dismiss Case 12,856 when it is called tomorrow and rely upon the presentation made at this hearing, which included Mr. Hayden's summary that the Committee concluded that you could make those changes to conform the coal to the Dakota.

There is a display that helps illustrate that point. It was behind Exhibit Tab 3. It's the kind of display we gave you in the Dakota case, and it shows you an illustration of the notification required when the unorthodox well location moves towards a drillblock that is uncommitted or partially committed.

The only other point to present to you is that if you'll allow us, we will submit by affidavit Burlington's notice for this case. Burlington assumed the responsibility in sending out the notice for hearing. We've done that. The return receipts and the parties notified are behind Exhibit Tab Number 1, and if you'll allow me, I will submit an affidavit that would then avoid us having to call a witness to attest to the notification.

And with those housekeeping chores, we have concluded our presentation.

EXAMINER STOGNER: What time frame are you looking at, Mr. Kellahin?

MR. KELLAHIN: I'm sorry?
EXAMINER STOGNER: What time frame to get this --
MR. KELLAHIN: Oh, in the next few days, as soon as I can get home and do it.
EXAMINER STOGNER: Okay.
MR. KELLAHIN: Certainly by Friday.
EXAMINER STOGNER: And this brings up to -- I understand you're going to provide -- I'm sorry, Phillips is going to provide some additional information, and by what dates? And I'm sure you're going to want some sort of time to respond; is that correct?
MR. KELLAHIN: Yes, sir.
MR. HALL: Information is available now. What we'd like to do so that the record can be closed on this, if Mr. Kellahin would like to take these, print out hard copies, and if he'd like to continue with his examination of Mr. Jones on these, now is a good time to do that.
MR. KELLAHIN: My point, Mr. Stogner, is, I want the data behind Mr. Jones' testimony. I don't propose to ask any more questions. You could close the hearing, as far as I'm concerned, after the conclusion of today's presentation.
EXAMINER STOGNER: Thank you, that's what I would like to see, that information provided with Mr. Kellahin having an opportunity to write any kind of responses. And

we'll keep the record open just for those additional comments and what you're going to present to him, and his comment period and then the notification. I want to keep the record open for those three items.

MR. HALL: And I have an opportunity to respond to Mr. Kellahin's --

EXAMINER STOGNER: Four. So what kind of a time frame?

MR. HALL: One week after he gets his response in.

EXAMINER STOGNER: Okay.

MR. KELLAHIN: We can do it within the next week.

EXAMINER STOGNER: Okay, I'm going to say keep the record open for two weeks, and if additional time is needed for one of you, then you can request it at that time.

MR. HALL: Yes. And I had understood, Mr. Examiner, that BP and Burlington were going to reciprocate and provide us with similar data.

EXAMINER STOGNER: I didn't hear that, but --

MR. KELLAHIN: I didn't hear it either, sir.

MR. BROOKS: I heard Mr. Hall mention that he wanted it. I didn't hear anybody say they agreed to it, and I didn't hear the Examiner order it, so I guess that's where we are at this point. Mr. Hall wants it. It hasn't been either agreed to or ruled upon.

MR. KELLAHIN: My position, Mr. Stogner, is that we have shared all our data with the Committee, and we're looking for that portion of the data Phillips did not share with the Committee. And I think it ought to be shared not only with us but with the rest of the Committee.

MR. HALL: Well, I think the testimony has been otherwise, and that's why we asked for the data. We didn't have this data in the committee process.

MR. BROOKS: Is there any --

MR. HALL: -- that's fair.

MR. BROOKS: Can you specify what backup data it is that has been raised at the proceeding that you have not been furnished?

MR. HALL: We're looking for the pressure data that supported Mr. Dinh's testimony. Net pay and the well identifiers as well, in his study areas. I think if we can get that reasonably soon, we can keep within the two-week time frame.

MR. CARR: Mr. Stogner, Mr. Dinh says that the data that he used is in the exhibits, and I'll be happy to meet with Mr. Hall, point that out, and then I believe we can work that out between ourselves, because Mr. Dinh assures me that what he has relied on and based it on is in the material.

MR. HALL: I'm told it is not in the exhibits, in the materials. Specifically, no, we don't have net-pay data. I think we still need the pressure data. We do not know the well identifiers under the pressure data.

EXAMINER STOGNER: I think what we're going to do is move on, and we will recess, finish this up, recess and have you guys figure out what is needed.

MR. CARR: I'd be happy to do that, and we'll report to you.

EXAMINER STOGNER: Okay.

MR. BROOKS: I have one housekeeping matter.

As you are doubtless aware from the Dakota hearing, Counsel, there exists a memorandum of understanding between the New Mexico Oil Conservation Division and the United States Bureau of Land Management with respect to lands within Indian reservations or other Indian lands. And under the memorandum of understanding we must submit to them a proposed order, and then they make the final decision as to whether they like what we propose or not.

So in order -- and we need to submit the record with that order. For that reason, first I want to clarify. I know that portions of the Basin-Fruitland Coal are within the Jicarilla Apache Reservation. The one I need to be concerned about, though, because it's a different BLM office is the Ute Mountain Ute. Is there any of this that's within the Ute Mountain Ute?

MR. CARR: No.

MR. HAYDEN: No, sir.

MR. BROOKS: Okay, good. So in that case, what I was going to say is not particularly relevant because I have, I think, a complete set of the exhibits that were offered in evidence. I will need an extra set of any supplemental materials, so I would appreciate your furnishing any supplemental materials that are going to be offered as evidence in triplicate, one for the court reporter for the official record, one for the Examiner, and one for the Bureau of Land Management.

I think that concludes my observations.

EXAMINER STOGNER: Okay, at this time -- I have received a request, prehearing statement, and at this time I'm going to call and allow -- is there a Dr. Brooks Taylor, Bill Humphries and/or Tweetie Blancett at this time, to come forward? I don't care which order, whatever you would like.

Please state your name, your affiliation, and will you have any presentations to make?

DR. BROOKS TAYLOR: Well, I have a written copy of my comments.

My name is Dr. Brooks Taylor, I am here

representing the San Juan Citizens' Alliance.

MR. BROOKS: Let me interrupt at this point. You are free to make a statement either sworn or unsworn. Our rules specifically say that unsworn testimony can be labeled as such and included in the record. If, however, you're going to state facts to which you wish to testify as a person with personal knowledge, then you probably should be sworn. So I leave it up to you whether you want to be sworn or not.

DR. TAYLOR: I'm not sure I'm clear on the distinction there. I have no problem one way or the other.

MR. BROOKS: Okay, well, you are permitted to make an unsworn statement so I will let you go ahead, and if any of the attorneys feels like you should be sworn, then they may raise that.

Go ahead.

DR. TAYLOR: I appreciate the opportunity to comment before the Oil Conservation Division, Mr. Examiner.

My background is in preventive medicine and public health. My intent this afternoon is to highlight only a single, although important, environmental impact of the proposed increased density of coalbed methane wells in four northern counties of the state.

The impact that I draw your attention to is a rather more visible one than many of the obvious disturbances of surface ecology, human surroundings and wildlife habitat, and that is the predictable deleterious effect on air quality of the region.

My remarks will be limited to the impact of deteriorating ozone levels in the Four Corners, and I refer primarily to the summary document of the New Mexico Air Quality Bureau, published earlier this year in April.

My presence here is to promote prevention, and particularly the prevention of acute asthmatic attacks, pneumonia, bronchitis, presenting in our emergency rooms, prevention of the impairment of human health and longevity.

Now, the complex atmospheric chemistry of ozone is beyond the scope of my remarks. Suffice it to say that the Air Quality Board documents the near non-attainment status of air quality, specifically ozone, in the Farmington area, that increased ozone levels correlate with identifiable cases of respiratory disease, and that non-attainment will incur restrictions upon these communities by both the US EPA and the state agency.

In that document, the Air Quality Board estimates that one-third of the regional contribution to the formation of ozone comes from the oil and gas industry. There is no doubt that increasing methane gas exploitation and industrialization will increase these numbers.

The point is that we are about to breach the federal air quality standards for ozone and that we're better placed to prevent that happening than to allow it to happen and then try to correct it.

In brief, the Environmental Committee of the San Juan Citizens' Alliance, the Oil and Gas Task Force, proposes these specific actions on the part of the Oil Conservation Division:

First, that prior to any development an accurate estimate of the impact of increased coalbed methane activity on future ozone levels be calculated.

Secondly, that the Division consult with the New Mexico Air Quality Board regarding its recommendations on future development.

Third, that the Division consider a policy to authorize new well development only in replacement of dated or inactively productive wells in the region.

And fourth, that in the event of any authorized further coalbed methane development, only the strictest air-pollution-control guidelines be adopted and implemented.

And I would like to conclude with a paraphrase from that document from the Air Control Board. In response to non-attainment, communities and elected officials would be presented with the opportunity or the scenario to come up with a plan to correct the situation, and I paraphrase:

What does the local community want to do? Since EPA and state standards haven't quite been exceeded yet, the problem could be ignored for awhile. That might make the eventual solution more painful, but it's our choice. A lot depends on you. What future do you want for San Juan County and for the San Juan Basin?

Thank you.

MR. BROOKS: If you would like for us to take administrative of that document that you referred to, you'll need to give a citation so it can be included, so the reference can be included in the record.

DR. TAYLOR: I'll be glad to add that at the bottom of my notes.

MR. BROOKS: Okay, could you read that into the record?

DR. TAYLOR: This document is actually on the Air Quality Bureau website. It's called Four Corners Region Ozone, published April 23rd, 2002. The contact is Sandra Ely at the Air Quality Bureau, and -- Is that sufficient citation?

MR. BROOKS: That should be sufficient, thank you.

EXAMINER STOGNER: Dr. Brooks.

Ms. Blancett, or Bill Humphries?

We'll call a five-minute recess and let you get this set up. Okay, we stand in recess.

(Thereupon, a recess was taken at 1:32 p.m.)

(The following proceedings had at 1:45 p.m.)

EXAMINER STOGNER: Okay, let's go back on the record. This hearing will come to order.

Let's see, I've asked Ms. Blanchett -- Blancett; is that correct? -- she's going to be sworn a this time.

(Thereupon, Ms. Blancett was sworn.)

<u>TWEETIE BLANCETT</u>,

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

DIRECT TESTIMONY

MS. BLANCETT: Thank you very much for the opportunity to make a presentation.

I'm Tweetie Blancett. My husband's family has been in this valley for now parts of three centuries, and I'm going to give you a short explanation of what our concerns are.

And the first thing I would like to tell you is, we have no objections whatsoever at all to any of the testimony that was presented the last day and a half. Our objections have nothing to with what -- any of your numbers or any of your analysis.

Our concerns are primarily with the surface and the impact that drilling has on the surface.

This is the original Blancett homestead that's still occupied by the Blancett family. We've been here, like I said, my grandson is the eighth generation, and we've run cattle on the same mountains running all the way to Colorado for parts of three centuries. We're one of 17 New Mexico families that have continuous homestead on record in the same family.

This is the Blancetts up at the top in the 1880s, that's the Blancetts in the 1950s, and this is our current Blancetts.

The Blancetts' problems are primarily with El Paso, Burlington and some of the other producers. Our issues are surface issues, as I said, and the 32-9 is completely encompassed in our ranch. That is the Burlington operating unit that primarily covers both the range land and -- which is federal and state -- and the private land.

This, I think, is a real good idea. It tells you what San Juan County road system looks like, with the county roads, the state roads and the federal roads. And it's pretty clearcut. We're a large county, we're the third largest in the state, geographically.

This is the county with the oil and gas roads in it. It doesn't take anyone with any ability at all to determine that the surface impacts as a result of the oil and gas industries doing their job is going to have an impact on other stakeholders.

If you take the thousands and thousands of acres, I've extrapolated this out and just used some basic numbers. If one site utilizes three acres, if one road utilizes three acres and if one pipeline utilizes three acres, that's nine acres times 35,000 wells.

The 35,000 wells, you can take it or leave it on that. I got that number from Bob Gallagher. So it may be less, it may be more, but I can't seem to get a good number. I certainly won't stand and say that's all there is or that that's too many. If you have a better number, I'd love to have it.

That impacts about 315,000 acres.

The pipelines utilize a lot more than three acres, many of the roads do, because unfortunately in our area with our geographic location, you can't always go straight from one well location to another, there's a huge canyon in between.

Burlington and El Paso have the majority of production in our 75 sections. This road -- and I apologize, it's not very clear. You can see the road, but you can't see the damage on the outside. This road was closed in 2001 because of a pipeline exposure and the traffic that was impacted as a result of it.

This is on our private land. It was closed in 2000 and it's still closed, and we intend to keep it closed. There's an alternate route that was provided by BLM that the industry is using at present.

Here's some more roads. It gives you an example of total -- almost total lack of maintenance, and they've dragged them off of the right-of-ways, because the roads were so bad they were impassable. Unfortunately, we do not have impassable-road problems as a result of moisture this year. It's so dry that none of these problems are existing right now.

Throughout the permit, we have a lack of reseeding. Again, El Paso is our primary pipeline company in our area, although we do have Williams, Enron and Burlington pipelines. But the majority of the piplelines are owned by El Paso, and the re-seeding has been less than satisfactory. They haven't even followed the existing regulations.

On one side of the road, even though it's green, there's no re-seeding. Noxious weeds. The other side of the road is a re-seeded are. And this pipeline was very well done, and Phillips you did that.

If I'm going to point fingers at people who didn't do so well, I would tell you that if all our right of ways looked like the one on the right, you're not going to hear anything from us.

The road that goes to this well location is also a Phillips well. And again, if every one of our wells looked like that well, we wouldn't fuss.

Now, to be real fair, Phillips has some other wells that we aren't as happy with. But this is what we're looking for.

This is what a majority of the pipelines look like. This is the main pipeline corridor, so there's eight pipelines in this area. And it hasn't been re-seeded, it hasn't been maintained, and the majority of the pipeline from -- in Hart Canyon all the way to the state line looks like this.

This is a saltwater spill, and it came from a Burlington transportation line. It sterilizes the ground. This year they went in and pulled some of the soil and are starting reclamation. With no moisture, we don't know if it took.

This is a saltwater spill that ran for more than four months and then migrated to another well. Again, this was one of those things that -- There was something wrong with the pump, and it just wasn't taken care of in a timely manner. If you'll notice, if you can notice, all around this there's cattle tracks, and cattle were drinking this water.

This is an example of oil by-products that we have throughout our entire 75 sections through lack of good stewardship.

This is a pit that's open to wildlife. The fence, even though it's up, it is not probably -- it's certainly enough for the deer and the elk. And with no reinforcement across the top part, it probably is accessible to cattle too.

Contaminants that are in these pits are deadly. I have autopsy reports that we lost cattle from this pit. The pit was not fenced properly, it was not handled properly and it wasn't closed properly.

We don't think that this is just a Blancett problem. This is our forest land permit that we have up on the middle fork of the Piedra, and it looks pretty good. Unfortunately, this year if you looked at it, it doesn't look quite this good. They had a drought up there too.

We believe there's contaminants everywhere in San Juan County. We're very concerned about this, and we have talked to Burlington, we have talked to El Paso. They are aware of our concerns. Part of those concerns are being addressed and part of them aren't.

We feel like that this is not just a Burlington-El Paso-Phillips problem. In northwestern New Mexico we've been considered a sacrifice zone. When you turn out as much product as we do from San Juan County, things get lost in the shuffle. When you have 35,000 wells that need to be maintained, things fall through the crack, and they've been falling through the crack for quite a while.

We think Enron is a case study, and they speak for themselves, that we have seen with corporate America and the oil and gas industry an unheard of, untold amount of greed, and I believe that our President addressed us yesterday. It's not just oil and gas, it's across the nation, in all corporate America.

We also have concerns about air and water. We have aligned ourselves with a group out of Denver who's going to help us do some analysis in this area, because many of you in the industry, I'm sure, are quite aware that there's very little science about the pollution and the surface-damage problems that we have in San Juan County, very little science. Possibly a superfund site cleanup. Let's hope not.

In conclusion, basically we want to say that, very simply, $2.4 billion -- that's $2.4 billion -- was taken out of San Juan County last year. The year before it was $1.9 billion. That's a lot of money to be sending to Washington, to our state governments and to corporate America and have the surface damage problems that we have in San Juan County. And you will find that most of us feel like it's time to clean up the mess.

There's some good operators out there, there's some good wells out there, but there are a whole lot more that do not meet the basic environmental standards and compliance standards.

And we're not talking about wells, guys, that were drilled in the Forties and the Fifties, we're talking about wells that were drilled yesterday, and the day before, and last year. We're talking about new wells that we have problems with.

And we have made those available to Phillips, to Burlington, to Amoco, we have sent these people a list of the wells on our ranch that we have problems with. They're not all old wells.

And I guess what we want to say is -- and I want this to be part of the record, that our family believes very strongly in your rights to exercise your lease. We are not questioning your right to exercise your lease, and we would be the first ones to stand up with you, to say you have that right.

But we also say that you have rights and responsibilities to the environment that you are not meeting as an industry. And we are requesting that you work with BLM, OCD and the other stakeholders in meeting those requirements.

In conclusion, I would like to say three things.

Number one, that we have an RMP that's coming out very shortly, that has been produced for the Farmington field office. What you should know about this RMP is that it also encompasses the Albuquerque field office. This RMP has need for many comments and many concerns to be stressed.

We would request that the industry, and particularly the OCD hearing board, to please postpone decisions on increased spacings until we can analyze fully the impacts that we have as part of this RMP. That's the first thing.

I think it's exactly what Phillips was trying to say in a smaller sense, that until you have good science and you know what is occurring on the surface and the impacts to the surface, it is not a reasonable and prudent thing for people to make additional drillings when I have shown you what the surface impacts are.

I am not the only rancher/stakeholder that has problems in this area.

And the third thing that I would like to encourage is that we continue to try to work together. We are coming from different perspectives, we have different goals and we have different directions. But that does not mean that we can't work for the good of all.

Thank you. Thank you, Mr. Chairman.

EXAMINER STOGNER: We're going to call a five-minute recess at this time.

(Thereupon, a recess was taken at 1:54 p.m.)

(The following proceedings had at 2:03 p.m.)

EXAMINER STOGNER: This hearing will come to Order.

Do we have another person to testify?

Let's see, do you want to go through the rigamarole with him about the --

MR. BROOKS: Yes.

EXAMINER STOGNER: -- swearing in?

MR. BROOKS: Under our Rules, if a person is offering testimony, it states that testimony should be taken under oath. However, the Rule also states that unsworn statements will be identified and such and included in the record.

I'm not sure what that means, exactly, but for people who are not specifically being called as witnesses but are offering statements, I leave it to them to decide whether their statements are testimonial in nature and whether they want to be sworn, or whether they prefer to make an unsworn statement.

MR. BILL HUMPHRIES: You may swear me in if you'd like.

EXAMINER STOGNER: Please stand.

(Thereupon, Mr. Humphries was sworn.)

BILL HUMPHRIES,

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

DIRECT TESTIMONY

BY MR. HUMPHRIES: My name is Bill Humphries. I am past president of the New Mexico Cattle Growers' Association and a working committee member representing New Mexico Cattle Growers' Association, who represents ranchers across the State of New Mexico and private land owners, some who own surface and some who own surface and minerals both.

This is a resolution from the New Mexico Cattle Growers' Association I'd like to read into the record, and I'd be happy to answer questions if there are any.

Be it resolved New Mexico Cattle Growers' Association requests that the New Mexico Oil Conservation Division include Private Property owners, both surface and mineral, in all hearings and Considerations of subsurface unit spacing changes; and that the New Mexico Cattle Growers' Association requests that the New Mexico OCD hold all unit spacing and re-spacing hearings in the community where the proposed changes will occur and that surface owners and surface damage comments and testimony be included in the record and become part of the facts and evidence used to determine the decision.

That was passed June 29th at Tucumcari, New Mexico, at the quarterly meeting.

The point that I would like to make as a subsequent follow-up here is that cumulative impacts now, across a large area of New Mexico, both the San Juan Basin and the Permian Basin, have surface impacts that have heretofore not been considered or at least considered completely, and we think it's absolutely necessary.

I live in the San Juan Basin, I live in Rio Arriba County, ranch there, have for 40 years, and I can tell you that the impacts now are at a point where the surface damages and the contributing effects of roads, pipelines, wellpads and the adjacent impacts from those are now starting to be at a level where we're all concerned.

And I heard Mrs. Blancett mention that we would like to continue to work closely with the industry, with the lessees that are operating on private surface and with other interests, to make sure that we continue to do both, manage the surface well and produce energy in a way that is beneficial to both the surface and America.

So it's not an adversarial thing, but it is a role that we intend to take much more aggressively than we have in the past.

EXAMINER STOGNER: Any questions for Mr. Humphries?

Thank you, Mr. Humphries. Did you provide us a copy --

MR. HUMPHRIES: I will leave a copy of the resolution with you.

EXAMINER STOGNER: That concludes the formal -- when I say formal, we had a prehearing statement from the last three people that you've heard speak.

Now I'm going to open it up to the public comment, for anybody who would like to come forward for any reason in this matter, now's the time to be heard. And I welcome anybody to come up. Just come up, sit in this blue chair, identify yourself, your name, your residence, where you live, any affiliation that you're here for, and make your statement.

Thank you.

MR. MULLINS: Thank you. My name is Tom Mullins, I'm the engineering manager for a small independent production company called Synergy Operating, based here in Farmington, New Mexico. I am also a registered professional engineer in the State of New Mexico in petroleum engineering and have worked for several of the companies that have testified here today. I've also participated in several of the meetings on the Subcommittee put together for the recommendation for infill development.

And I just had a few comments and a few things that I observed during the hearing process that I wanted to point out.

As an independent operator, and a small independent operator that is outside of the prolific production area, our main concern is in the underpressured or nonprolific coal production area, which is the primary focus of the Subcommittee that was put together.

I agree and wholeheartedly support the infill development in the Fruitland Coal in the underpressured area.

With regard to the overpressured or prolific area -- we've used several different terms defining that -- I currently believe there's some additional information that needs to be analyzed, and most likely the Subcommittee needs to get together and come back before the Division with a united recommendation.

A few of the points that were presented by BP's testimony that I did want to point out that were not mentioned earlier relate to a couple of the exhibits that they have, and I would need a copy of those exhibits to reference as I point those out.

MR. BROOKS: Mr. Chavez is pointing out that your statement may be of a testimonial nature, and perhaps you might want to be sworn. Did you hear my explanation to Mr. Humphries?

MR. MULLINS: Yes, and I would agree with that.

MR. BROOKS: Okay, very good.

(Thereupon, Mr. Mullins was sworn.)

TOM MULLINS,

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

DIRECT TESTIMONY

BY MR. MULLINS: I want to make sure that I get the exhibit numbers correct in this book.

A couple of points that I just wanted to mention regarding the exhibits. This would be Exhibit Number 18 of BP entitled "Colorado Historical Production of Fruitland Coal Wells." It is the production graph indicating the --

EXAMINER STOGNER: What tab is that behind?

MR. MULLINS: I'm sorry?

EXAMINER STOGNER: The tab?

MR. HALL: It's Tab 13, Mr. Examiner.

MR. MULLINS: I'm sorry, I don't have tabs.

MR. BROOKS: Yeah, it's not in that copy.

MR. CARR: It's Tab 11.

MR. HALL: Tab 11?

MR. MULLINS: It's Tab 11.

EXAMINER STOGNER: Tab 11. Tab 11, BP's Exhibit Number 18.

MR. MULLINS: Regarding this, first of all I'd like to state that all of the companies that participated in the Committee, including the folks that testified here today, have done very good engineering work.

A couple of points that I want to mention in relation to some of the plots for the record.

The dark, I guess, purple line that indicates the number of wells drilled between 1985 and 1995, which tends to flatten out in 1994 and then has a slight decrease, if you'll notice the production from the parent wells, even though the well count is flat, that the production continues to increase over time during that -- for the next four years, until the -- excuse me, next three years, until some of the pilot infill development occurs.

Some of the testimony presented today relates to well production at a certain point in time and then interpreting it to a reserve or drainage area. And I just wanted to point out that production on coal wells, as evidenced in the testimony, does increase as it relates to time.

Exhibit Number 16 and Exhibit Number -- excuse me, that's my number. Under the same tab, which would be Tab Number 11, Exhibit Number 24 and Exhibit Number 25, both of these exhibits relate to a modified material-balance methodology for Fruitland Coal reserve numbers.

And a number that's listed on Exhibit Number 24 is the infill pressure of the well that was drilled, it appears, in March of 1999, and that's referenced on that plot at 970 p.s.i.

On Exhibit Number 25, which is the parent well in that same section, no initial pressure is listed on the plot, but I believe the testimony was given that that is approximately 1500 pounds.

The evidence that I see is that there is a pressure reduction between the point in time that the original well was drilled and that the infill well was drilled, as evidenced in BP's testimony, and that to me indicates some communication between the two wells and the area associated with that.

Exhibit Number 26 and Exhibit Number 27 is another example of the material-balance plots indicated by BP. Exhibit Number 26 evidences a December, 1999, pressure of 530 p.s.i. The parent well, which is on Exhibit Number 27, again does not indicate the pressure on this plot, but I believe it is in that neighborhood of 1500 p.s.i. It again shows evidence of pressure communication in the

Fruitland reservoir between those two points.

There was some testimony given earlier that concerned me, that there was no communication or drainage effects, as evidenced by those two wells, and I felt it was appropriate that the data that was submitted does reflect that there is pressure communication between the two wells, as evidenced by the data submitted.

A couple of other points that I thought that were critical to the discussion that should be entered into the record.

There were five initial pilot areas in the underpressured area that Burlington put together, and Chris Clarkson did a very good job modeling those areas. The detail was presented on three of those particular areas; two of the areas, the detail was not fully presented, but it was indicated that the information was similar with regard to the infill determination.

An item that was not mentioned in either of the presentations, other than briefly in Burlington's information, was water production that's associated with the drainage determination on these wells. From a material-balance standpoint, the drainage of the entire reservoir, the water production needs to be considered in the drainage of this area.

Burlington did testify that in the underpressured area that the pilots were in that the water production was marginal and not, you know, of concern in the analysis, and that validated their model for the single-phase reserve model that they use.

With regard to the Colorado data area and the Carracas Canyon Unit area, the water production is a factor, and that may be a reason why the cumulative recoveries, as presented in BP's information, were not a straight-line relationship between coal thickness and gas or the circle representations on their plots.

So I do think that water production is a concern. It's obviously a concern from the testimony that we heard from Ms. Blancett about some of the spills that may occur in the development of oil and gas production.

I do believe that water production in some of the underpressured areas is significant, and the testimony on the pilot areas, there was not enough water production to be looked at.

A significant difference between the Colorado infill area and the overpressured or prolific area on the New Mexico side of the border has been the completion methodology. The cased and fractured stimulation styles which are primarily dominant in the Colorado area are also dominant in the underpressured Fruitland Coal area of the San Juan Basin. I do feel that that methodology has been proven by industry to be applicable to the underpressured infill development area.

We've had some discussion here today about the overpressured or prolific area and whether wells would be developed through recompletions or through new drilling, and one of the reasons that we're focusing on the new drilling area is because of the completion style, which would primarily be my estimation -- I don't have Burlington's budget and I don't have BP's budget and I don't have Phillips' budget, but the primary completion method that's been proven in that overpressured area is open-hole cavity completions, and that's where the statements about how many new wells versus recompletions comes into consideration.

I thought it appropriate to, I guess, focus from a small independent operator's standpoint, where we are not in the prolific producing area, we will be pursuing development of the Fruitland Coal through recompletion opportunities. In every instance, the economics are driving us in that direction, but in the overpressured envelope we are talking about new drilling.

I'd like to, I guess, finalize my statement. I do think all of the parties have done very good engineering work. There is some sort of outside pressure for obtaining this order in a timely fashion, because we have large dollar amounts, full budgets in place, and how many wells we're going to drill from the various companies.

But from a small independent producer's standpoint, we feel that adoption of the infill development on the underpressured Fruitland Coal area is appropriate and that the information that's been presented is adequate, and it justifies the allowance for infill development at this time.

We do feel that the -- I feel that the overpressured area may require industry to gather together again and consolidate some of the information that they do have. There was discussion on whether -- do we need to do some pilot infill development in the overpressured area? There was also some testimony regarding the well placement, that the wells are -- in certain instances, achieve the same result of being an infill development well on timing.

My personal feeling is that, given the pressure-observation wells that many of the major oil and gas producers have in the Fruitland Coal, and the timely development of the existing wells, that there should be a significant body of information to quickly bring before the Division any answers or additional information in the overpressured envelope area, to answer any questions that may come up.

I want to finally thank the Division for coming to Farmington, and it's not often that we have the opportunity without the additional travel expenses to attend the hearing and offer our testimony, and I thank the Division for that opportunity.

And given that I've offered some statements, you know, I will sit in case any of the attorneys would like to cross-examine me.

EXAMINER STOGNER: Any questions?

MR. KELLAHIN: No.

EXAMINER STOGNER: Just for the record, Mr. Mullins, you have testified as an engineer before the Oil Conservation Division in prior cases?

MR. MULLINS: Yes, I have.

EXAMINER STOGNER: Thank you. That was just for the record.

You may be excused.

Anybody else, please?

MS. REESE: I'm grateful for this opportunity to have to share my concerns with the closer spacing thing that has come up.

I am Janet Reese from Bloomfield, New Mexico. I'm a long-time citizen of this area. I want to share with you all why I consider myself a stakeholder in this process.

First of all, I can empathize with the ranchers, with Tweetie and the Cattle Growers' Association people, because I grew up on a small ranch in northwestern Colorado where also there has been some drilling, although not to the extent we've experienced here.

I consider myself a stakeholder too, because I'm an amateur naturalist with my primary interest being in the bird fauna of our area and throughout the State. The area impacted here would be the piñon/juniper and sage, primarily, I think, although we also have some areas, some small pockets of Douglas fir and ponderosa.

As far as affiliations, I am a member of the Sierra Club and of the Native Plant Society. But I am not speaking for either one of those groups today, I am speaking my personal concerns.

Which brings me to a very personal level about clean air, and that is, my husband has recently been diagnosed with asthma, and I have a grandson who is a prematurely born baby who will be highly at risk for respiratory infections, and so I am concerned about the clean air, not only for my personal interest but for all of you.

The downsizing from 320 to 160 acres is pretty phenomenal, I think, when you consider Tweetie's map of the oil/gas roads that we just looked at recently.

As for air quality, we have been told that we are nearing noncompliance in this county. Dust contributes to this problem, and certainly dust is produced from these roads.

Another problem is the compressors. Noise is a part of that problem. And even though we're a rural area, I think it's something to consider and something that the BLM is probably obligated to think about in regard to this downsizing in area.

In my reading and preparation for today I also read in Colorado about methane seeps and hydrogen sulfide gas at the surface. All of these things are air-quality concerns, and I hope we keep these in mind as we look at permitting these new wells.

The roads too are a problem, and I was interested in the last hearing I attended to hear one of the oil/gas people say that it's a county problem, that it really wasn't their problem.

I cannot disagree that the introduction of noxious weeds is a problem for all of us and something for which we're all responsible. But I think it's pretty commonly acknowledged that these noxious weeds come to an area via the roads. And if you don't believe me, look around you, go out and so some driving and see where the weeds are.

Another concern of mine is the water factor. And

I have read, and the man who was just speaking to us talked about the potential of significant production of water in some areas.

This isn't clean water, as I understand it, it's going to be salty water. There's a question of what we're going to do with this. Is it going to be injected again into the ground, or is it going to be put on the surface, is it going to be put into pits? What's going to happen to that?

Another question, where does this all come from? What does it mean for our aquifers, and what does it mean about going into our aquifers. What are these pits going to do to livestock? And we heard a little bit of that from Tweetie's presentation earlier. What's it going to mean to wildlife?

And again, guys, I am not opposed to the drilling out there. I use natural gas too. I realize that I am a part of the situation. But I think it's time for everyone to look at doing this stuff responsibly, to hear some of us instead of just calling us environmentalists and tree-huggers and the insulting things, to try to find common solutions to our problems.

The question of closer spacing is of concern to me too because the piñon/juniper and sage bird-obligates -- these are the birds that are totally found in those areas

-- I think that's something that we probably don't know enough about.

And I found on the Internet when I was searching that the Colorado BLM has given a fairly high priority to needing research and data in these areas that we don't everything, we don't know what this habitat fragmentation is doing, and I think it's time we need to find out.

One of their concerns is avian population dynamics. We need to look at the piñon/juniper, we need to look at the sage communities.

An area that appears to be almost totally neglected in this -- and I have yet to look at the last environmental impact statement, so it may be addressed there -- is the amphibian and invertebrate populations. And this particular BLM cite says that these are poorly understood. I suspect that that might be a problem for us too.

I would like to ask the industry to seriously consider our concerns about air quality, water quality and what's happening out there. Recreation is certainly a part of what goes on in the public lands.

And so I ask for you to consider these things when you're looking at the smaller spacing and encourage you not to just totally make profit your bottom line.

Thank you for your time.

EXAMINER STOGNER: Thank you.

Anybody else?

MR. RALSTON: Can you run the sworn testimony thing by me?

MR. BROOKS: Okay, very good. I was going to ask you if you had heard what I said previously.

Under the rules of the Oil Conservation Division, if you -- it states that testimony offered before the Division will be under oath. It also states that relevant unsworn statements will be recorded as such and made a part of the record. That may not be an exact quote, but it's close.

As I said to another witness, I'm not sure what that means, and I'm the Division's attorney. But I leave it to you as to whether you want to make your statement under oath or whether you want to make a relevant unsworn statement.

MR. RALSTON: And who decides if it's relevant?

MR. BROOKS: I believe the Examiner does, and I think his policy is, basically, this afternoon you can say anything you want to.

EXAMINER STOGNER: That's my policy today.

MR. RALSTON: Well, I'll go under oath. It's probably not that important.

(Thereupon, Mr. Ralston was sworn.)

ALAN RALSTON,

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

DIRECT TESTIMONY

BY MR. RALSTON: My name is Allen Ralston, I work for San Juan Systems Alliance out of Durango, Colorado, on oil and gas issues, and we actually have two groups, one here in New Mexico and the one in Durango, nonprofit groups interested in all kinds environmental issues.

I've worked in the Powder River Basin in Montana for two or three years before I came down here, so I'm sort of familiar with oil and gas production methods. I'm not an expert, however.

I just wanted to raise a couple concerns. I know it may not be in the narrow purview of your rules to consider these, but I think the time is ripe to start thinking outside the box here a little bit.

I think most people, or some people, are aware that in July of 2000, or the summer of 2000, there was an internal review of the BLM's Compliance Division here in the Farmington Field Office. It's a fairly thick document pointing out all the things that are wrong with their compliance. They have not been doing a good job.

In this district there's one inspector for 1500 wells. Nationwide in BLM there's one inspector for every

350 wells. So we think that's one reason that the transgressions that Tweetie pointed out are happening, because the BLM has not been able to do compliance.

And I guess my point here is that we would like this board to carefully consider this Application for downspacing in light of BLM's shortcomings in compliance. I think it's reasonable to move more slowly, and I think Phillips made a very good case for that. There's not enough evidence in part of the Fruitland formation to downspace. I think -- That's my conclusion, that sounds reasonable, and I think that deserves serious consideration.

And I also think that due to the air-quality concerns that Dr. Taylor illuminated, that the board -- I'm not a lawyer, but I think that as a reasonable human being that this board has some kind of implied duty or obligation to consider the approaching non-attainment status of ground-level ozone when you're talking about well spacing and things like that.

I'm an ex-capitalist businessman, so I understand the profit motive, I fully understand why the companies want to get the gas out of the ground as fast as possible. They have shareholders to answer to and accountants to answer to about profit guidelines and things like that.

But I think that we're at a point in this whole

Basin that we have to consider other things besides narrow technical issues or profit and loss. I think, you know, we're approaching a point in our society as evidenced, you know, by events of the recent past weeks of accountants not doing their job, things like that.

I think we're putting too much emphasis on just the money thing, and I don't think that's an idealistic viewpoint, but I just think that we have to consider the quality of life that we want here, and I don't think that we can look at -- the BLM can do their little narrow job, you guys do yours. I think we all have to work together with the oil companies and all the other stakeholders to solve these problems.

And we're not opposed to any -- taking gas out of the ground. In fact, I own mineral rights on land in Montana, so I'd be happy to have some gas company develop those rights, or those minerals.

But I do feel that we need to cooperate and that the industry has to -- and I think they're getting the message here, that we have to raise the operating standards that we go by. I think people are demanding that, and I think it can be done.

So in closing I would reiterate Tweetie's point that this board or this Division take your time on deciding the downspacing and maybe wait until the resource management plan for the Farmington field office is finalized.

That's all I have to say.

EXAMINER STOGNER: Thank you, Mr. Ralston.

MR. RALSTON: Thank you.

EXAMINER STOGNER: Please come forward, anybody else?

MR. CARR: Mr. Stogner, there is a statement from Williams Production Company. Would this be the time for a representative of that company to make a statement?

EXAMINER STOGNER: I think so.

MR. CARR: Mr. Hawks?

MR. BROOKS: Presumably you have heard my explanation to the other people that have gotten up here. Do you wish to be sworn?

MR. HAWKS: I'm just reading in a statement.

MR. BROOKS: Okay, very good.

MR. HAWKS: My name is Ralph Hawks, I'm a geologist with Williams Production Company in Tulsa, Oklahoma.

Williams is in support of the infill drilling Applications that have been stated here. We also are in support of the adoption of amendments which will result in one set of rules applicable to all operators who desire to develop the interests, wherever located within the reservoir.

We have a -- I'll leave with you a copy of the completed statement.

That's all I have. Thank you.

EXAMINER STOGNER: Thank you, if you'll leave that up here.

Ladies and gentlemen, anybody else? This is a rarity. I've only got out of town -- Santa Fe, I should say -- this is my third time to have hearings in other places besides Santa Fe. But with your participation in this, and I've heard a request -- a couple of requests and some appreciation for us being here.

Once you get up here and say anything in front of the record, it might make you feel better, and I welcome that.

(Laughter)

EXAMINER STOGNER: Don't be scared, come on up if you want to, because the next phase I'm going to have to go into the closing arguments by the attorneys at this point, so I'm trying to prolong this.

(Laughter)

EXAMINER STOGNER: Well, at this point I'll open it up for the closing arguments.

At this time, Mr. Dean, I'll allow you to go first.

MR. DEAN: Thank you. Mr. Examiner, briefly my name is John Dean and I've entered my appearance on behalf of Dugan Production Corporation, an independent producer here in the Basin.

We support the Application of the Committee as it pertains to the low-productivity area. We don't have any acreage in the high-productivity area. We wish we did, but we don't.

We have participated in the Committee since its inception more than a decade ago, and in the first hearing that created the Fruitland Pool Rules, the Dugan Group, as it was referred to, advocated 160-acre spacing.

We didn't really have the evidence, the Committee felt, at that time to get that through. But it was something that we were thinking about 12 years ago. So we heartily endorse that now in the low-productivity area.

Our purpose in appearing was to make sure that there was no attempt to exclude any of Dugan's lands in a separate issue, which has been resolved, I think. There have been no requests to exclude Dugan land from the effect of any amendment that's adopted by you, and we do not advocate that.

We think the Rule should be applied throughout the low-productivity area, and we basically just ask that you do that, and we do support the Committee Application.

And I thank you.

EXAMINER STOGNER: Who would like to go first, as far as the presenting attorneys?

MR. KELLAHIN: I'm not here to argue with you, Mr. Stogner, so perhaps I could go next.

EXAMINER STOGNER: Okay.

MR. KELLAHIN: And Mr. Carr and --

EXAMINER STOGNER: Make sure -- Is that on the record? Okay.

(Laughter)

MR. KELLAHIN: I'm here on behalf of Burlington Resources. We're here to express to you our support not only of the Committee process but of the Committee recommendations.

I've represented Burlington in the coal gas for, I guess, 20 years now, or 15 or more. We were involved in the original pool rule cases that were presented before the Division, and we started off years ago with the Fruitland wells up in the Cedar Hills.

Amoco at that time had interference-study tests to demonstrate that at least within that study area there was the need to be careful about your well density. Dugan and others presented a different point of view urging that in other areas there was need for a higher density.

So for some 15 or more years, if you look at those old orders, you will see that the Commission has always recognized that infill drilling of the coal was an inevitable probability. You have recently dealt with that yourself in the Richardson application under current rules to create a special area for infill drilling over by the coal mine. It's an evolving process where everyone recognizes that the spacing in the pool needs adjustment by increasing the density.

The committee process is one that consistently works for the Division. I've led a number of those committees. We recently did one on the Mesaverde. You had the Mesaverde infill hearings. So when you go back to the committee process, it's a great way to get industry operators collectively together to talk about how to manage this resource in an effective and efficient way.

That was done in this case. It started many years ago when the Division took the initiative of having one of the personnel in Aztec poll the operators. When we sent out the notice a few weeks ago, there were 45 or 49 operators. Consistently, the Committee has met and allowed anyone that wanted to participate, to bring technical data and to share that data. Some come, some go, some continue to stay and participate. From the inception, Burlington has done that.

As a result of that committee effort, they've analyzed thousands of wells, and they have brought to you a concise recommendation. A committee process is a process of collaboration. You may come in with an initial agenda, you may be agreeable to some changes, you may be persuaded to change your own position by information you see from others. And the end result is, there's a give and take about what to do. The give and take, the result, is a committee recommendation to you that Burlington supports.

When you start with a huge pool and you start categorizing the rate at which these wells produce, the technical people that are involved in this process that know the geology and the engineering started drawing some contour lines so they could identify for you an area within which wells will produce in excess of 2 million a day. We, for simplicity, characterize that as the fairway.

You've had a number of geologic presentations. All those presentations show you not only in the nonfairway tract but in the fairway tracts, that coal is layered, the layers are discontinuous, individual layers are discontinuous, the lateral inconsistency is incredible. You can't separate out the fairway based upon the geologic characteristics in the pool.

You had all the geologic presentations made to you. Phillips, who's an active operator in the Basin, has not chosen to present to you geology in this hearing. I can only presume that they agree with the rest of us that the geology is as we described.

So when you look about how to treat the fairway, the major dilemma is, do the operators agree among themselves that the pool needs to have increased density? All the filings demonstrate that the Committee is unanimous on increasing the density for the entire pool. You're not faced with a request to exclude the fairway.

Amoco consistently has always said, Let's not make a distinction, let's make the rules the same in the fairway and the nonfairway. It's no surprise that Mr. Hawkins is telling you that again today. And if Phillips or anyone else objected to how that was to be done, there was plenty of opportunity to present technical data to build a case, to build a consensus or advance an argument, to exclude the fairway.

Nobody did that. The Committee as a whole decided the geology spoke for itself. We're dealing with the same container, it has substantially the same characteristics when you look at what these wells will do. And so no one ever sought to exclude it.

Amoco perhaps has learned something from the Mesaverde case. That is a case that you heard, you may remember, similar approach. The engineers and geologists developed these amazing maps where they had shown rates of drainage and productivity. They had these pods of high recoveries, and they were scattered and dispersed in the pool.

Amoco's solution in that case was, let's carve those out, collectively expose them to a hybrid pool rule under which Amoco or anybody else could object, and we can decide what happens with infill drilling in these pockets of high productivity.

The Division in its wisdom said, What are you asking me to do? Are you asking me to take individual pockets, expose them to complicated technical hearings, to drive a solution in the pool that's different than what I am persuaded exists for the whole pool? The Division said, No, it's too complicated. We'll let you as operators decide how you want to put your infill wells and how close they are among a certain population. They rejected Amoco's argument, which Phillips now advances, that you need a hybrid rule.

I've looked at the Rules. I can't find another pool in New Mexico that is layered in such a way that a certain portion of that pool is subject to some special notice provisions that trigger hearings to deal with well density. They're just not there.

So when you find that all the parties are unanimous on the geology then you address, do we make them different or do we make them the same?

We've spoken on behalf of the Committee because we think the committee process is substantially more important to you than what individual companies would seek to ask you to do. When you look at the Committee's solution, we have suggested -- and as Mr. Hayden has told you, we are agreeable to deleting the Cedar Hills Pool. There's no reason to continue that pool, and we can make it one pool here.

The Committee was in agreement that within the fairway there was an opportunity for a correlative-rights issue. No one has presented a waste issue in the fairway.

The issue was correlative rights, and the Committee addressed the opportunity for that violation of correlative rights in their request. They showed you that if an operator was encroaching upon a non-operated spacing unit, it's likely to have different ownership, different parties affected, and there should be an opportunity in the fairway for those parties to have notice and objection. It was not considered at that time necessary to apply that rule as an implement or an additional requirement of the unit.

The units are a contractual solution among the parties affected by that contract on sharing their cost and correlative-rights responsibilities, and there's no reason in a participating area that whoever the operator is or the majority of the interest owners who decide to drill an infill well need to have the permission and consent of 100 percent.

Phillips' proposal lets a 1-percent owner checkmate or blackball an infill well within the fairway. In doing so, it triggers complicated hearing problems.

The shifting of the burden of proof is no solution. The burden ought to be on the opponent, because the presumption is, you need it, everybody says you need the well.

If the burden is on the opponent it doesn't solve the problem, because the Applicant has to go through the same expensive technical defense of his application. It doesn't solve the issue.

But when you look at the correlative rights in the unit, why is that fair? Because if the infill well is surrounded by unit tracts that are participating, those interest owners are the same interest owners as in the infill well. They're all sharing in the same source of supply. Correlative-rights issue disappears.

If everybody collectively feels that there's a need for the infill wells, we think the committee approach is a nice solution. We ask and urge that you adopt that as a solution in this case. We support you doing so. We think the record is entirely void of any reason not to grab the infill well in the nonfairway properties, that the data and the information is extensive, and there's no opposition to that.

Within the fairway, if you choose to adopt the Phillips-proposed additional notification, it will run havoc through the fairway. And I would prefer that you just make the rules the same for the entire pool, and we'll deal with that as operators and interest owners spending the money to produce the resource. We still would like you to support and approve the Committee recommendation.

Thank you, Mr. Stogner.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

Mr. Carr?

MR. CARR: May it please the Examiner, as you know, I'm here for BP America, Inc. We support infill drilling.

We believe infill drilling should be approved poolwide under one set of rules, and we believe -- BP America, Inc., believes that you should enter an order adopting infill drilling on a poolwide basis, that it should be one set of rules for all portions of the pool.

And we believe the work of the Study Committee and the evidence presented in this case justifies that order. We have a fairly lengthy record, but when you look at this record, Mr. Stogner, I'm convinced you'll find that you're looking at a reservoir, and it has been established that it is a complex reservoir with substantial discontinuity in the producing coals well to well, that it is a multi-layered reservoir, and to properly and efficiently and effectively access these reserves, infill wells must be drilled, and they must be drilled everywhere.

You know, you hear often, oh, well, there's a lack of evidence to support this. In my experience, you hear that in two cases: one where there's no evidence -- that's not the case here -- or one where it's a convenient argument if you don't want the result that you see may be coming.

But the geological evidence in this case is clear, it goes one direction, and the picture of the reservoir is one that warrants additional development.

You can talk about need for pilot projects and for models. I'm of the opinion, listening to this proceeding, that you could model every square inch of the reservoir, and there would still be something someone thinks you should wait on until we can look at it again.

But the evidence we have shown you through our modeling is that you have high-productivity wells -- the well that we showed you yesterday that produced at a rate of in excess of 5 million a day during the peak of its producing life -- that an infill well was drilled on that spacing unit, and the infill well did not affect the performance of the parent well.

We didn't say there wasn't a pressure differential. We said that when you look at the material-balance calculations, the infill well did not affect the performance of the parent well and that the infill well in a very high-productivity area was recovering substantial additional, incremental reserves. And that prevents waste, for without those wells those reserves would be left in the ground, they would be lost, they would be wasted.

In a nutshell, that's what this case shows, and that's what it shows as to the fairway as well as to the low-productivity area. And it's a result that has been developed by a Committee that has worked for two years, and I think it's supported by the evidence here today.

It's an interesting case. We seem to be, on one side, presenting to you what we've done for two years, and yet we have one individual who we thought was doing it with us, who's decided to take a contrary position, instead of presenting data and letting it be mulled and worked through the Committee process, wants to do it here, I submit, after the fact, with you.

And everything they have said doesn't challenge the composition, the physical make-up of this reservoir or the data we have shown you on how wells perform.

There are a number of things I would suspect you'd gather that we don't like.

We're opposed to the line around the high-productivity area. And it needs to be understood that at one point BP did say if there's a line, this is the line. But people are either misunderstanding or trying to misunderstand that.

It's a little bit like a situation where if Mr. Kellahin found he was to be executed he would say, I'd prefer electrocution to hanging, and everybody else would later say, well, Mr. Kellahin has decided he'd like to be electrocuted. That's not what we have here.

(Laughter)

MR. KELLAHIN: Or you could talk me to death.

(Laughter)

MR. CARR: We have never said -- we have not said we want the line. We have said, if we have to have a line this is it. But I would submit to you the line is arbitrary. It's arbitrary, it's based on a producing rate of 2 million a day. That drains maybe 200 acres. We're trying to sort out wells that drain their spacing units, 320.

And so if you adopt that line I think we start with a flawed premise, a premise where we already know 175 wells to start with are on the wrong side of the line.

We don't like the notice provision. We think, one, it's also arbitrary because only those inside the arbitrary line have to give or get notice. And we think the only reason for it, really, is to prevent someone from drilling offsetting you so you don't have to go ahead and develop your acreage.

It sounds to me like what we could have in almost every other pool in New Mexico. Instead of having correlative rights being defined as an opportunity to produce what is under your acreage, we can rewrite the statute and say, you can produce if your neighbor doesn't think it's going to interfere with what they may be draining from your acreage. It runs right in the face of correlative rights.

Correlative rights in New Mexico doesn't guarantee you an MCF of gas or a barrel of oil, it guarantees you an opportunity to produce what's under your land. And you could model every square inch, virtually, of the San Juan Basin, and you'd have to do that before you would know a well at a particular location would intersect a new layer in the coal that could produce commercial reserves.

And so we can model forever and someday give up, I guess.

But you know, you take -- you avail yourself of an opportunity to produce your reserves in various ways. You can drill a well -- that's what we'd like to do -- or you can commit your interest to a unit and arrange through a contractual arrangement for the wells to be drilled and the property to be developed. Both of those are ways to avail yourself of your correlative rights.

And yet it seems to me that Phillips stands before you having selected option two, but now, without really saying why, wanting it out so that inside a unit that they don't operate if someone wants to propose a well under the unit provisions, well, they have another way to avoid the relationship that's established.

And I appreciate Mr. Chavez's concern that those agreements may not be always consistent with regulatory or conservation principles, but we're talking about federal units and federal unit agreements here.

I think there's one thing I do need to correct. There's sort of a hysteria, I think, being spread about how many wells are going to be rapidly drilled to the fairway. When you look at the transcript, we didn't say we were going to drill 150 infill wells, we said that's how many we operated in the area around the high-productivity. We're not going out on a reckless drilling plan. We don't know how many we're going to drill, it depends on what happens here. It will be responsible and it won't be secret, and it won't be drilled and other operators notified after the fact.

You know, we've talked about, gosh, we do need additional information. And you know, it sounds great. But what comes from this? I mean, instead of just saying, well, gosh, it would be easy, let's just kick out this area and study it some more, what are we going to have at the end of that?

Well, we know we're going to have delay, and I want to talk to you a little bit about the delay. You know, your jurisdiction -- and we've tried to bring to you a case based on prevention of waste and protection of correlative rights, and I often run in and remind you that you're a creature of statute and your powers are defined and limited by the Oil and Gas Act. And we had a hearing here today where, other than just those issues, we've heard from landowners and other individuals.

And as I've been thinking about that it strikes me that it's not only correct but it's important to do that, because your jurisdiction isn't just narrow, compartmentalized into narrow, specific areas, but you have a broader responsibility.

It also occurred to me that while I was being, I thought, characterized as one of the guys over and over again, that there's a lot of misunderstanding both ways in this situation where at one moment I thought I was being branded with an Enron brand and chasing profit. It's a lot more complicated what we do.

I mean, maintaining a reserve level in this pool is important if we're going to have the overall resources to go out and drill additional wells and continue to have the infrastructure to get it developed in a timely way. And the delay isn't just leaving it in the ground, the delay can interfere with how it's ultimately produced or if it's ultimately produced.

And so there are lots of things here, and I think it was important to call people in and to talk about it.

But you know, when we -- the delay that can come from a study period can be harmful. And then you need to weigh that against, what are you going to get out of a study? I can't imagine that a year from now you would know anything about the reservoir, other than it's a very discontinuous, fragmented, multi-layered reservoir where additional wells are going to produce reserves that otherwise would be wasted. I can't imagine you'd have anything but that.

I can't imagine that you would go out and after studying this for a year or two years you would find yourself in a situation where you wouldn't know what we know today, that there are some areas where you need wells, some areas where you don't need wells. Operators have to make those determinations based on economic and reservoir considerations and go out and try and with all their science and all their ability and try and properly develop these reserves. You a year from today won't know more than you know today.

We're asking you on the record that's been made here, we're asking you on the work that has been put together by all of us who fully participated in the Committee process and come forward with a recommendation, we're asking you to prevent waste by approving drilling that will let us access these reserves.

We're asking you to protect correlative rights by giving us an opportunity to go out and do that, and we're asking you to do that without regulatory burdens, arbitrary boundaries and additional studies that really are meaningless and in the final analysis arbitrary.

EXAMINER STOGNER: Thank you, Mr. Carr. Also I'm going to deny your request concerning Mr. Kellahin. I'd rather see him hanged.

(Laughter)

MR. CARR: And I would pull the lever.

EXAMINER STOGNER: Mr. Hall?

MR. HALL: Mr. Examiner, on behalf of Phillips,

Phillips' position in this proceeding has been crystal-clear throughout the last two days, and I would submit to you that -- Mr. Carr took my batteries. It shows "on". I'm sorry.

(Off the record)

MR. HALL: Mr. Examiner, Phillips' position has been absolutely clear throughout the course of these proceedings, and I would submit to you that Phillips' position has been in accord with the preponderance of the evidence that's been presented to you over the last two days.

What Phillips proposes is quite simple. Phillips proposes that you adopt a rule providing for infill development in the low-productivity area.

Phillips also proposes that you take a more measured approach to development in the high-productivity area. Prudence dictates that that area be studied further before final rules are adopted for its development, because this is the last, best chance for the development of this pool, and we ought to do it right.

Alternatively, if there is to be infill development in the infill area -- the high-productivity area, rather -- we ought to provide for some safeguards by way of notification so that minority working interest owners, whether they be a Phillips Petroleum, a Dugan

Production or the numerous smaller working interest owners, individuals, some of whom can't -- were unable to appear before you here today, have some way to get together and look at what's being proposed, perhaps take the opportunity to negotiate with the Applicant if not go to hearing and work it out there. There ought to be additional scrutiny if we are to have infill development within the high-productivity area.

Mr. Examiner, I think it was apparent on the face of the Application that was filed in this case that the Committee's work was not complete. You look at it, there's alternative relief requested on there, and you have to wonder why.

If we've learned over the last few days, divergence among the Committee participants, again, only recently. And you have to again ask why, and when did that divergence begin? And it's been learned through testimony that not all of the Committee participants were forthcoming with what their plans for development were in the high-productivity.

Some of the testimony that was established, we're looking at at least 150 wells to be drilled by Burlington. One of the BP witnesses said probably 130 wells. It's unclear whether all of that or some of that is within the high-productivity area. I'm not sure I understand Mr.

Carr's response to that issue. We ought to clarify that.

But the very fact that there is a proposal for scores of wells, hundreds of wells upcoming in the near future, what sounds like, in the year 2003, that dictates prudence on all of our parts, and the Division. And that's why I say the Committee's work is not done.

I think it's a prudent thing to refer the matter back to the Committee. The Committee participants ought to be made to confer, establish an appropriate pilot project area and obtain additional data, study it, and then come back to you with a more concrete recommendation. It appears to me that otherwise the Application in this case was premature, and I think the evidence has borne that out.

One thing that is very clear, Mr. Kellahin mentioned that most of the testimony was focused on violation of correlative rights. That is not true.

I think it has been unequivocally established that there is a tremendous potential for waste here. We think it is irrefutably established that we are looking at not only the likelihood but the probability that unnecessary wells will be drilled in the high-productivity area. That contravenes your statutory duties under the Oil and Gas Act. Drilling of unnecessary wells must be prevented.

Unnecessary wells is the equivalent of waste.

And I would remind you, Mr. Examiner, that of all of the duties the Division has under its various statutes, the New Mexico Supreme Court has instructed all of us that the prevention of waste is paramount. You must bear that duty in mind before all others before you act.

For that reason, Mr. Examiner, that's why I think it's perhaps unfair for the Committee Application to have gone forward in the fashion it has, to ask you to sort out the dissonance among the Committee members. What you ought to do is approve infill drilling in the low-productivity area, refer the matter back to the Committee for further study. We can come back and do this again with a more concrete proposal that more people agree on.

Mr. Examiner, one final housekeeping matter. We were requested by Mr. Kellahin to provide certain pressure data information. I want the record to reflect that we have done that here today.

We'd also ask BP to provide pressure data and well identification number to support their Exhibit 20, and they have committed to provide that us today.

But that's all I have, Mr. Examiner. Thank you very much.

EXAMINER STOGNER: Thank you, and that addresses the issue that I was going to recess.

MR. CARR: Yes, sir. We have the information, we'll quickly provide it. Mr. Hall identified exactly what it was, and we do have that.

EXAMINER STOGNER: I'm going to keep the record open in this matter for two weeks. If additional information is needed or additional time is needed to address your concerns after you review it and the other party gets a chance to rebut, then you can request it.

Also, I'd like to request a rough draft order --

MR. CARR: Yes, sir.

EXAMINER STOGNER: -- within that two-week period. I'm sorry, how about a week subsequent to the -- reviewing all of the --

MR. CARR: We can --

EXAMINER STOGNER: -- information subsequent --

MR. CARR: -- which would be about three weeks from now.

EXAMINER STOGNER: Yes.

MR. CARR: Yes, sir.

EXAMINER STOGNER: If additional time is needed, then you can request that.

Anything further in this matter?

MR. CARR: Mr. Stogner, could I ask that we be given two weeks after the transcript is finished in this case to provide orders?

EXAMINER STOGNER: Okay, the request has been made for two weeks after the transcripts are issued to provide a rough-draft order. I concur. Thank you for reminding me of that.

I appreciate the Aztec office's work on getting this facility for us. Again, I appreciate being here. Thank you all for showing up and staying here.

And we'll be continuing this road show tomorrow in Aztec with our regularly schedule hearings, since all the parties that regularly put on hearings, the attorneys and myself, Mr. Brooks, the reporter, will be in this area, we decided we'll go ahead and have the regularly scheduled hearing in Aztec, and we're going to be in the City Council chambers there. So if you didn't get your belly full of this in the last two days --

(Laughter)

EXAMINER STOGNER: With that, I stand adjourned. The record will be kept open pending the information.

(Thereupon, these proceedings were concluded at 3:10 p.m.)

* * *

I do hereby certify
a complete record
the Examiner hearing of Case No. 12888
heard by me on July 9 and 10, 2002
, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL July 25th, 2002.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002