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 BURLINGTON RESOURCES OIL AND GAS COMPANY TO INCREASE THE VERTICAL LIMITS, PROVIDE FOR NOTICE REQUIREMENTS, ESTABLISH ADMINISTRATIVE PROCEDURES, AMEND SPECIAL POOL RULE 2(b) AND ADOPT NEW SPECIAL POOL RULES 2(c) AND 3 FOR THE BLANCO-MESAVERDE GAS POOL FOR PURPOSES OF INCREASING WELL DENSITY AND CHANGING WELL LOCATION REQUIREMENTS FOR MESAVERDE WELLS, RIO ARRIBA AND SAN JUAN COUNTIES, NEW MEXICO	CASE NO. 12,069

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

October 29th, 1998

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, MICHAEL E. STOGNER, Hearing Examiner, on Thursday, October 29th, 1998, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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I N D E X

October 29th, 1998
Examiner Hearing
CASE NO. 12,069

(Continued...)

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E X H I B I T S

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AMOCO EXHIBIT

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Additional submissions by attendees: 279-285

* * *

A P P E A R A N C E S

FOR THE DIVISION:

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

FOR THE APPLICANT:

KELLAHIN & KELLAHIN
117 N. Guadalupe
P.O. Box 2265
Santa Fe, New Mexico 87504-2265
By: W. THOMAS KELLAHIN

FOR DEVON ENERGY CORPORATION (NEVADA):

JAMES G. BRUCE, Attorney at Law
612 Old Santa Fe Trail, Suite B
Santa Fe, New Mexico 87501
P.O. Box 1056
Santa Fe, New Mexico 87504

FOR INDEPENDENT PETROLEUM ASSOCIATION OF NEW MEXICO, CINCO GENERAL PARTNERSHIP, TURNER PRODUCTION COMPANY, SCHULTZ MANAGEMENT COMPANY and HENRIETTA SCHULTZ, TRUSTEE:

GALLEGOS LAW FIRM
460 St. Michael's Drive, #300
Santa Fe, New Mexico 87505
By: J.E. GALLEGOS

(Continued...)

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

FOR AMOCO PRODUCTION COMPANY:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

ALSO PRESENT:

MARK W. ASHLEY
NMOCD Petroleum Geologist
2040 South Pacheco
Santa Fe, New Mexico 87505

FRANK T. CHAVEZ
District Supervisor
Aztec office, NMOCD

LEE OTTENI
District Manager
Bureau of Land Management
Farmington District Office

DUANE SPENCER
Bureau of Land Management
Farmington District Office

* * *

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

EXAMINER STOGNER: This hearing will come to order, Docket Number 30-98. This is a Special Examiner Hearing. Please note today's date, Thursday, October the 29th. I'm Michael Stogner, appointed Hearing Examiner for today's cases.

At this time I'm going to call Case Number 12,069.

MR. CARROLL: Application of Burlington Resources Oil and Gas Company to increase the vertical limits, provide for notice requirements, establish administrative procedures, amend special Pool Rule 2(b) and adopt new special Pool Rules 2(c) and 3 for the Blanco-Mesaverde Gas Pool for purposes of increasing well density and changing well location requirements for Mesaverde wells, Rio Arriba and San Juan Counties, New Mexico.

EXAMINER STOGNER: Before I call for appearances, we'll need to set some ground rules.

At this point, the testimony that we're going to be taking today will only be subject to what our jurisdiction is, and that is the subsurface geology in this instance. So if there's any testimony on surface, that belongs in another jurisdiction and not here.

I'm going to call for appearances first, and those that have representation by attorneys will state that. We will save any comments from the general public or interest owners that have traveled great distances for the end of today's docket. So you will have the chance to say your piece --

FROM THE FLOOR: Louder.

FROM THE FLOOR: We can't hear.

EXAMINER STOGNER: Do I need to go back over and start all over again?

FROM THE FLOOR: Please.

EXAMINER STOGNER: Some ground rules for today's case. We're only going to take testimony on what our jurisdiction is here, and that's the subsurface geology. So we will restrict it to that.

I'm going to call for appearances, and those people that are here with legal representation will so state.

Now, I'll save toward the end of the docket for any comments from the general public, should they wish to make any statement. At that time they can do so. If need be, I will limit those comments to two minutes, if I need to.

Are there any questions on that aspect so far? Mr. Counselor, do you have anything to add?

MR. CARROLL: Not at this time. We will take testimony from the public, but please be aware that our jurisdiction is subsurface, and we will hear your statements regarding the surface use due to this change in pool rules.

And that's all I have.

EXAMINER STOGNER: Okay, with that I'm going to call for appearances at this time.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin and Kellahin, appearing on behalf of the Applicant Burlington Resources Oil and Gas Company. I have four witnesses to be sworn.

MR. BRUCE: Mr. Examiner, Jim Bruce of Santa Fe representing Devon Energy Corporation (Nevada). I do not have any witnesses.

MR. GALLEGOS: Mr. Examiner, Gene Gallegos of Santa Fe. I'm representing Independent Producers Association of New Mexico, Cinco General Partnership, Turner Production Company, Schultz Management Company and Henrietta Schultz, Trustee. IPAA and Cinco will have one witness.

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan. We represent Amoco Production Company in this matter, and I will call one witness.

EXAMINER STOGNER: Other appearances?

Mr. Hall, did you file a --

MR. HALL: No appearance.

EXAMINER STOGNER: No appearance.

Is there anybody going to be making a statement in today's hearing? Please stand up and identify yourself.

MR. SPENCER: Bureau of Land Management, Farmington District Office. The presenter will be Lee Otteni, District Manager.

EXAMINER STOGNER: Are there going to be any other statements? Any other parties going to be making statements?

Okay, with that, Mr. Kellahin, Mr. Carr, Mr. Bruce, Mr. Gallegos, is there any need for opening statements in this case at this time?

MR. GALLEGOS: No, Mr. Examiner.

MR. CARR: No, sir, Amoco has no opening statement.

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner, we'd like to have our witnesses sworn at this time.

EXAMINER STOGNER: Okay, I'm going to need all witnesses.

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: Mr. Stogner, with your permission I would like to suggest an organization for the presentation by Burlington this morning. There are so many people in the audience that want to hear this presentation that I do not have separate exhibit books for everybody that's here.

With your permission, we would like to duplicate the exhibit book by demonstrating on the overhead projector the various slides that are also in the exhibit book. With your permission, may we do that?

EXAMINER STOGNER: Is there going to be an overhead for each exhibit?

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: Is that what your plan is?

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: And that will go along with what you have in this booklet?

MR. KELLAHIN: As you see the overhead, you and the other representatives at the table can follow along with a hard copy of that display, and so you'll have that. But I don't have enough displays for everybody in the room, and they can follow on the projector, if that's acceptable to you.

EXAMINER STOGNER: Okay, we can try that. I don't know if it's going to be loud and distractive. I would like to caution and remind the people that are doing presentations to make sure that you don't refer to a map as "that" particular line or "this". It goes on a transcript, and we're going to need descriptions.

So we'll try it, Mr. Kellahin, at this time and see how it's going to work.

MR. KELLAHIN: Let me explain to you how the exhibit book is organized. It's divided as Burlington usually makes its presentation, such that you'll find exhibit tabs, and they are numbered. And as we introduce a new topic, we will go to an exhibit tab. And then behind that exhibit tab, so the record is clear as we do that process, we will identify each of the illustrations, displays or documents behind an exhibit.

Our order of presentation this morning, Mr. Examiner, is to have an initial, introductory presentation by Mr. Brent Smolik. Mr. Smolik is the reservoir manager for the Mesaverde resources of Burlington in Farmington, and he and I will lead you through an overview of what has been a two-and-a-half-year study of the Mesaverde Pool.

It is comprehensive, complicated and involved. And our task is to try to be as concise and as clear as we can in summarizing for you what we think are the technical issues involved in the subsurface management of this resource.

And you will recognize the complexity very quickly when you remember that we're dealing with a resource that has approximately 5000 wells and involves over a million surface acres.

The presentation with Mr. Smolik will be focused on the historical involvement of the pool, and then we'll place emphasis on the fundamental issue of whether or not it's appropriate to increase the well density in the gas proration units. We'll refer to them as the GPUs.

Currently, as you know, the well density is two wells per GPU. It will be our recommendation, and we will address the topic of asking the Division to increase well density by two more wells.

In addition, we will present to you our proposed rules, and we will talk to you in detail, then, about the various components of the proposed rule.

The next presenter is Mr. Bill Babcock, and Mr. Babcock is a reservoir geologist. Mr. Babcock has been involved in this process for almost two and a half years. He has presented the geology on the three pilot projects involved in the pool at all three hearings, and he's here to present the geologic information for your consideration.

The third presenter is Mr. Sean Woolverton, and Mr. Woolverton is a reservoir engineer. And he is going to give you the engineering components of the subsurface. We're going to talk with Mr. Woolverton about the calculation and determination of gas in place, we're going to look at pressure data, we're going to look at estimated ultimate recoveries, we're going to look at pool drainage, and we're going to look at the economic consequence of drilling these additional wells.

Burlington's ultimate conclusion is that for an overwhelming majority of the pool, some 91 percent of this resource will benefit by increasing well density. In those instances where additional wells are drilled, it will be demonstrated to you that we are capturing additional new reserves.

The final presenter is Mr. Alan Alexander. He's a land manager expert with Burlington. We'll talk about the notifications that were sent. More than 3500 notifications were sent out to interested parties in the San Juan Basin about this case.

We'll go through a short summary of the various industry meetings we've had, the public forums we've had, to talk about this various topic, and that will include, then, in summary, a review again of the proposed rule changes.

That, with your permission, Mr. Stogner, is our plan of presentation this morning.

EXAMINER STOGNER: Thank you, Mr. Kellahin. You may proceed.

MR. KELLAHIN: Mr. Smolik?

BRENT SMOLIK,

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

A. Brent Smolik. I'm the engineering manager for Burlington Resources in the San Juan Division.

Q. And where do you reside, sir?

A. In Farmington, New Mexico.

Q. Give us a short summary of your education.

A. I have a BS in petroleum from Texas A&M.

Q. In what year, sir?

A. 1983.

Q. Summarize for us what it is that you do for Burlington.

A. My responsibility is largely the capital program implementation in the conventional horizons in the San Juan Basin, in the PC, Mesaverde, Dakota, as well as the Fruitland Coal formation.

Q. Concerning the topic of the Blanco-Mesaverde Pool and how Burlington managed that resource, are you the engineering manager responsible for that activity?

A. That's correct.

Q. How long have you been involved in that process?
A. About two and a half years now.
Q. As a result of Burlington's interest and involvement in the Blanco-Mesaverde Pool, has Burlington conducted a study, a reservoir study, to determine if the current well density of two wells per GPU is still appropriate for the pool?
A. Yes, the study that -- It's actually a series of studies over the last -- a little over three years in total. But the main objective of those studies was to determine if the current well density of two wells per GPU is still appropriate for the pool.
Q. And what has Burlington concluded?
A. We've concluded that based on that poolwide study, that a very small portion of the pool, only about 9 percent, is going to be adequately drained on the current well spacing. Or to say it another way, about 91 percent of the entire pool is currently draining less than 160 acres per well.
We feel that given the opportunity to drill additional -- two additional optional infill wells per GPU will allow a significant amount of incremental recovery from the pool.
Q. Under the current rules, has Burlington estimated the volume of gas that is going to be recovered out of the

pool?

A. Yes, it's our estimate that on the current well -- the existing well spacing, only 44 percent of the original gas in place in the entire pool is going to be recovered.

The additional drilling, in our estimate, will allow for an additional five- to ten-percent recovery beyond the 44 percent. Or, to turn that into reserve terms, that's almost approximately a 1.5 TCF to almost 3 TCF of additional reserves will be recovered.

Q. Turning the question around the other way, do you have an opinion as to the percentage of the pool for which the current well density is inadequate?

A. Right, it would be the opposite, the 91 percent of the pool, or a large portion of the pool, is currently draining less than 160 acres and will not adequately drain the pool.

Q. What in your opinion accounts for the reasons for those conclusions and opinions?

A. Fundamentally, the largest, the most significant reasons why we're here today is because the Mesaverde is an extremely tight, low-permeability conventional reservoir. Largely has low EURs per well, low recoveries per well, low producing rates per well, and in many cases the wells are marginally economic.

Sort of the overriding, compelling evidence is, if when we look at the pressure history, or the pressure-depletion history in the pool, at the current well spacing and the current withdrawal rates, the pressure drops annually are very, very low through a large portion of the pool. And so it's pretty -- As an overview, it's pretty apparent from the very low pressure drops that we're not adequately develop- -- draining the pool today.

Q. Mr. Smolik, let's have you summarize for us what individuals have been involved in the study process that has helped you assimilate and reach this conclusion.

A. I'm sorry, Burlington individuals?

Q. Yes, sir.

A. We've had a number of individuals because of the time period of the study. The original reservoir engineering was performed by Robin Hesketh, and he presented it to the pilots -- or one of the first pilot, I'm sorry.

We've had Sean Woolverton, who's here to testify today, will -- has picked up the study after Mr. Hesketh.

Bill Babcock is a geologist who's been involved in the process from the start, from the geological standpoint.

And we've involved a number of third-party consulting organizations, both geological, petrophysical and on the reservoir simulation side over the course of the study.

Q. Do the conclusions and opinions you have expressed and are about to continue to express represent the conclusions of Burlington and you personally as a reservoir engineer?

A. Yes, they do.

MR. KELLAHIN: We tender Mr. Smolik as an expert engineer.

EXAMINER STOGNER: Mr. Smolik is so qualified.

MR. KELLAHIN: If you'll turn, Mr. Examiner, to the exhibit book, and if you'll look at Exhibit Tab Number 5, behind Exhibit Tab Number 5, you should -- the first thing you'll see there is a two-page project time line, followed by a locator map. And with your permission, we're going to start at that point in the exhibit book, and Mr. Smolik and I are going to go through the time line for this particular resource.

Q. (By Mr. Kellahin) If you'll start, Mr. Smolik, with the 1950s, let's have a short summary of what has been the plan for the management of this resource in terms of the Division's rules and regulations.

A. Okay. The initial part, obviously, will be largely reviewed for the group, but the field -- the pool was originally spaced on 320 acres in the 1950s, and then an order was approved to infill to 160, or one optional infill well was approved to effectively create the 160-acre density in the 1970s. And since that time, the industry has largely been going about developing the pool on 160s, really up until this year. There's still active 160-acre development going on today.

Q. Let me ask, back in the 1970s, what was the technical reason for the adoption of the first infill well for the existing spacing units?

A. The fundamental technical reason was that the one well per 320-acre GPU was not adequately developing the reservoir. There was reserves that would not be recovered or, therefore, waste.

Q. Is there a characteristic of the reservoir that causes that to occur?

A. I'm not following.

Q. Is there a permeability issue involved in the 1970s to lead you to the conclusion of additional wells?

A. The same permeability that exists today. The reservoir is a tight gas, low-permeability, naturally fractured reservoir.

Q. All right. And you -- since drilling -- since the 1970s, that continues to be the cumulative conclusion of all the technical people, that you're still dealing with a tight reservoir?

A. Absolutely.

Q. What is the next event of significance in the time line?

A. In 1977, the pool rules were modified to essentially segregate vertically and horizontally that area that's commonly referred to in industry as the Chacra line. South and west of the pool, has a different vertical limit than it is north and east of that Chacra line in the pool.

Then after that, like I say, development basically continued up until today even. But in the mid-1990s, around 1994, Burlington recognized that the current spacing of two wells per GPU was not adequate, and we initiated a four-township study to try to determine if additional wells were justifiable.

Q. Let's talk about the 1994 study. Did that study involve the analysis of pressure data in the pool?

A. Yes. Mr. Examiner, we went in and looked at all of the pressure data that was available from the 1950s, or the parent well, the 320-spaced wells, and compared that to pressure data that was recovered over time from the 160-acre density wells, and looked at how much pressure drop, calculated how much pressure drop, on average, was observed per year. And we did that across the entirety of the pool, and that was the initial bit of data that told us that a very little pressure drop was occurring in parts of the pool, or what we inferred from that at the time was that parts of the pool were not being adequately drained on the existing well spacing.

Q. Can you give the Examiner a sense of the range of pressure drop per year between the parent well and its comparison to the infill well?

A. Yes, and we'll later on in the testimony show you a very detailed map of all this, but as an overview the range is from about a high of 30 p.s.i. per year to the very low end of about 5 p.s.i. per year.

And I think it's important to contrast that a little bit. The 5-p.s.i.-per-year number -- a large portion, you'll see from the map, is in the 5- to 10-p.s.i.-per-year-number range of the pool. If you contrast that to a prolific reservoir like the Fruitland Coal, there are currently areas in the Fruitland Coal today that are depleting at a rate of almost half a p.s.i. per day, to try to give you some sense.

It's a dramatically different type of reservoir that we're dealing with here than the Fruitland Coal or any other prolific-type reservoir. The pressure drops are very, very low, on an annual basis.

Q. What then -- With this information, then, what did Burlington conclude at this point in the process?

A. The conclusions largely were that there was a need to carry the study further, to be able to detail what additional reserves and what economics would be associated with drilling it to a lesser density.

Q. What then did you do?

A. We embarked on about a two-and-a-half year study at that time, when we acquired 1700 feet of whole core and analyzed that core. We did a significant amount of well testing, we did a significant amount of log and petrophysical-type analysis, to get to a point where we were confident in gas-in-place calculations, and then we did reservoir simulation of a number of areas to try to predict the impact of infill drilling or additional infill drilling on the recoveries from the pool.

You might go to that next slide, David.

MR. KELLAHIN: The next page on Exhibit Tab 6 is the next portion of the time line, Mr. Stogner, and it deals with the topic of the three pilot projects.

Q. (By Mr. Kellahin) Mr. Smolik, would you lead us through the summary of the three pilot projects?

A. Yeah, the Commission approved in January of 1997 to test the concepts that we had identified in the fieldwide study in the 29 and 7 Unit, which is the entirety in that unit of the 29-7 township, and basically we had identified a four-section area that looked like a good candidate to test the infill concept. We had reservoir --

done a -- performed a reservoir simulation of that four-section area, and the Commission approved the drilling of it.

We implemented that through the course of 1997 and acquired production and pressure data on those wells that we could use to calibrate the model, calibrate the reservoir simulation.

Subsequent to that, the Commission approved two additional pilot areas in January of 1998, those being the 27 and 5 pilot and the area that we refer to as the drillblock, which is an area just north and east of Aztec, the town of Aztec.

Likewise, we went into those areas, drilled and completed the wells that were approved in pilot programs, gathered the production and pressure data. We'll take you through all of that in detail here shortly.

But the summary of what we found there was that the pressure and production data compared very favorably to what we had predicted with the reservoir simulation. The EURs that we calculated pre-pilot drilling looked like they were fairly accurate based on the simulation. And we think that -- we'll show data to show you that we're going to probably average about a B to a B and a half, 1.5 BCF, per well that we drill in those areas will be new reserves that we recover.

Q. Have you and the other technical experts with Burlington estimated what is the available resource in the Mesaverde Pool and what portion of this resource might be recovered if the Division allows the operators the opportunity to drill two more wells in existing gas proration units?

A. On a Basinwide sense or --

Q. Yes, sir --

A. -- a per well?

Q. -- on a Basinwide sense.

A. David, if you'd go to Exhibit Tab 12. And Mr. Examiner, Exhibit Tab 12 is -- I'm sorry for jumping around, but we intended to use this later as well. Exhibit Tab 12, the first page.

This pie diagram represents Burlington's calculated gas in place of 28.5 TCF for the entirety of the pool. We estimate, based on the existing well density, that only about 44 percent, or only 44 percent, or 12.5 TCF of that resource, will be recovered.

Now, we're not suggesting that we're going to recover the entirety of the remaining resource, but we think that based on the simulation work and based on the reservoir study, that 5- to 10-percent incremental recovery is very achievable, and that's still a significant amount of reserves. Five to 10 percent would represent -- The exact numbers are 1.43 TCF to 2.85 TCF of additional recovery for all owners in the pool.

Q. Let me have you give us a summary, Mr. Smolik, of -- At this point in time you've got the results of the three pilot projects, you have conducted a resimulation of the -- 27 and 5, is it?

A. 29 and 7.

Q. 29 and 7 pilot project has been recalibrated and simulated again. You now have those three areas in which you have definitive results.

How do you make the transition from that data set to the ultimate conclusions that it's appropriate to make a pool-rule change for the whole pool?

A. The way that we propose to do that, and we'll show you later in testimony, is that we developed a great deal of confidence in our ability to simulate the Mesaverde, which is not an insignificant hurdle. That was a significant hurdle to get over, but we'll demonstrate that we think we're able to do that with some -- with a high level of confidence.

It's fortunate that the 29 and 7 pilot area, which coincidentally is the one that has the most production and pressure data, is in an area that currently drains somewhere between 60 and 160 acres per well. If you look across that pilot today, there's drainage of existing wells and existing well density that range from 60 to 160 acres per well.

Q. Let's take a moment, Mr. Smolik, and turn everybody's attention to the locator map, which is behind Exhibit Tab 5. It is the display that you're looking at currently. Let's take a moment, Mr. Smolik, and identify the approximate location of the 29-7 pilot project.

A. Okay, just real quickly, what you're looking at is a locator map of the entirety of the San Juan Basin. The stippled area around the outside is the -- The stippled area is the outcrop of the Pictured Cliffs formation. Shown on the map in pink is the outline of the Mesaverde -- Blanco-Mesaverde Pool. Also shown is the town of Farmington, Aztec and Bloomfield on there, just to orient everyone in the room.

The three pilot areas that we've implemented is the 27-5 in the southeast part of the Basin, 29-7 in the central part of the Basin, and again the drillblock area near Aztec.

The 29 and 7 -- and you'll see this on additional displays -- that pilot is located in an area that's the -- what we refer to as a moderately natural fractured area, and it's representative of a large portion of the Basin. The drainage areas ranging from 60 to 160 acres are representative of a large portion of the Basin.

So I think we're going to be able to demonstrate to you through the course of the day why that simulation in that area is particularly useful for us to be able to make the tie from the three pilot areas to the entirety of the Basin. And we'll show in those pilot areas that 57 percent of the production that comes from the new wells, the new optional infill wells, based on the simulation, will be new reserves, okay, even though there's existing wells in the area that drain up to 160 acres.

So I think it will be a straightforward tie from that pilot, as well as the other two pilots, to the entirety of the Basin, entirety of the pool.

Q. When you look at the example of the 29 and 7 Unit, that study area included a variety of well population which demonstrated a range of drainage ability, did it not?

A. Yes.

Q. You have taken that and other information and forecasted that common occurrence throughout the Basin where we have incidences of gas proration units where two wells are an appropriate density --

A. (Nods)

Q. -- and you have other areas where it is not.

Will we show displays that make a clear distinction as to those areas which are, in your opinion, currently being developed on the existing density?

A. Yes, we'll take you through a -- Mr. Examiner, we'll take you through a detailed map that it's our interpretation or our conclusions about what the Basin is currently draining on existing well density, and I think the areas that appear to be adequately developed today will be obvious from that display, in that discussion.

Q. Let's talk about the proposed rule changes, then, based upon the study. If the Examiner chooses to do so, to treat the -- those existing gas proration units in which the current density is adequate, do you have a proposal for him how to craft the rules so we address the fact that 9 percent of the pool is currently developed appropriately under existing spacing?

A. Yes, what we'll propose or have proposed is that for the 91 percent of the Basin, that additional -- two additional optional infill wells are justifiable, those would be treated very similar to today's process on the existing optional 160 -- first optional infill well, where they would simply go through the normal APD approval process.

For those wells that are -- For those wells that would be inside of the areas that appear to be adequately developed on the current well density, what we've proposed is that there would be one procedural step added where there would be simple notice given to all immediate offset operators around the proposed well's GPU. And then those operators would have the ability to oppose that well drilling, and, if opposed, have the opportunity to come to hearing before the OCD and make their technical case as to why they thought it was inappropriate to drill that well at that location.

If unopposed by any of the offset operators, it would be no additional burden on the Commission, either at the District or Division Office, and the well would be approved through the normal APD process.

Q. That suggested procedure is to address the fact that 9 percent of the GPUs may have an appropriate density, and adding additional wells to that GPU might have some impact on offsetting correlative rights in terms of gas withdrawals; is that not true?

A. That's correct. The issue that has been raised from others of our partners and other working interest owners in the Basin is that how are you going to account for those areas that appear to be adequately -- adequate well density today? And the way -- This is the way we've proposed to give them the ability to protect their correlative rights in those areas where the current density may be adequate.

Q. As to the remaining 91 percent of the pool, do you propose that any additional notification to offset operators be required?

A. No, we're not, Mr. Examiner. I think the technical evidence is compelling enough that two optional infill wells are justifiable, and all those areas outside of the remaining -- or all those areas in the 91 percent of the pool that we'll identify through the course of the day, and we don't think -- Burlington does not think that any notice to offset operators would be necessary, and in fact it would even slow the process or impede the process.

Q. Your proposal, then, is -- for that 91 percent of the pool, is to follow the conventional APD process, have the pool rules changed for that substantial portion of the pool, and not be required to address additional density on a well-by-well basis?

A. That's correct. The logic that we're following there is that the existing pool rules allow operators to drill one additional optional well per GPU, and there's no notice involved with that. And that process has worked very well since the rule was changed in the 1970s and is, in fact, going on today. Wells are being drilled today without notice in those situations.

So we think the additional optional infill wells that we're proposing, the two additional optional infill wells, that development should take place in that same logical following, the way the 160: Let the economics and the decisions of the operators and owners in the pool decide that pace of development.

Q. The Division's Aztec Office asked Burlington to address another issue, which was the suggestion that you investigate increasing the vertical limits of the pool to include more of the Lewis shale. Were you asked to do that?

A. Yes, we were asked to do that, and we did review that through -- follow up on that request.

Q. And part of the presentation this morning, then, will address Burlington's suggested increase in the pool limits?

A. That's correct.

Q. Summarize that for us.

A. What we've done, there is increased activity in the pool where certain operators are adding or considering adding additional perforations and completions in the Lewis shale interval that's included in the Mesaverde Pool. That historically has been limited vertically. The top of that limit has been -- by rule, has been limited to the Huerfanito bentonite marker. No completions to date have been added above the Huerfanito bentonite marker, but there is that possibility for operators to choose to do that.

So when we looked at it, we looked at it across the entirety of the pool, looked at that interval from the base of the PC to the Huerfanito bentonite marker, and we've concluded that 300 feet above that marker could be added, and we'd recommend that it is added to the vertical limits of the Mesaverde Pool and be included in the Mesaverde Pool, and that opportunity would then be created for people to add those completions.

Q. One of the other items on the agenda this morning is the proposal by Burlington that the 790-foot outer-boundary setback be altered to 660 feet and that the internal 130-foot setback be reduced to 10 feet. What is the summary of the basis for that request?

A. The most significant item there is that it allows for wells to be placed -- it allows some flexibility for wells to be placed, for the two optional infill wells to be placed where operators can optimally drain the reservoir.

It's a logical following that if the pool is spaced on 160 acres, effectively, or 320 with two -- with one optional infill well, that if you allow the opportunity to increase that density, that that standoff spacing would be decreased. And that's the primary reason, is that it allows the flexibility of the operator to place the wells to optimally drain the reservoir.

Q. Let's visualize that concept for a moment. Under the current well locations and densities there is established in the pool a particular relationship among those existing wells where they're draining a certain shape, and a pressure depletion occurs. By relaxing the rules, will it create an opportunity to drill between infill wells and original wells to capture additional new reserves?

A. Yes, it will. And again, we'll show an exhibit -- Alan Alexander will testify with an exhibit that very clearly demonstrates all this. But a significant amount of freedom will be created internally between wells, because of the 130 standoff reduced from the interior lines to 10, and as well as the 790 to 660, additional flexibility will be created.

So the idea would be that you could optimally space interior wells, infill wells, away from existing wells, with the largest drilling window possible.

Q. By doing a rule change to relax the setbacks, then it should reduce the volume of well-by-well unorthodox-location exceptions that you would have to process; is that not true?

A. That's very true. It's very logical that with an increased drilling window, that we should reduce some of the nonstandard location pressure that we've seen in the last few years.

Q. Let's talk about what scope of activity will be generated by Burlington that is impacted by the rule changes.

A. Based on -- We've gone through following the study and tried to identify all of the -- Mr. Examiner, all of the opportunities that we see out there that would be competitive for funding in our company, and we see about 300 to 500 potential wells that could easily be drilled in the next five-year time period, in what we call the strategic planning time period. That's the Burlington impact, 300 to 500 wells.

We've reviewed the Basin in a number of different ways. You can look at production or you can look at well counts, and Burlington winds up being about 50 percent, 48 to 50-plus percent, of either production in a given year or wells that are being operated or wells drilled in the 1990s. A number of different ways, we wound up being about half.

So that would translate to an industry activity level, in our opinion, of around 600 to 1000 wells in the next five- to six-year period.

Q. Let's forecast that on the 1999 schedule for Burlington, and approximate for us what you believe to be your Mesaverde program for next year.

A. The -- Depending on successfully getting a pool-rule change, but the activity level that we see in 1999 would be in the 50-well range for wells spaced less than the current well density.

Q. You've identified this resource that requires additional wells in your collective opinions, and under the current rules, in order to drill those additional wells, you're going to have to seek well-by-well exceptions in order to do that work; is that not true?

A. That's true, either pilot-by-pilot-type exceptions or well-by-well-type exceptions.

Q. And at this point, what degree of confidence do you have as an engineer that it's appropriate to change the rules in order to allow that activity to occur on a pool basis, rather than on an individual well-by-well basis?

A. I think the evidence will be pretty compelling today, and we'll try to make it clear as we go through, that the -- 91 percent or a large portion of the pool, technically, is supported -- we can technically support drilling of up to four wells per GPU today.

So it wouldn't be logical to use that same poolwide data set that convinces you to drill wells, or that would suggest to drill wells to a higher density and then use that same data set on a case-by-case-by-case basis. It makes a lot more sense, it's a lot more logical to attempt to change the pool rules than attack it piecemeal.

Q. Do you have an opinion as to whether the change in the pool rules as proposed by Burlington affords an opportunity for the industry and the Division to prevent waste of the resource?

A. Absolutely. The current well density, in our opinion, will recover well less than half of the resource. And the opportunity to drill those additional infill wells will allow the industry to recover a significant amount of reserves, again, up to 3 TCF as a 10-percent increase in recovery factor that would otherwise not be recovered from the existing well density.

Q. In your opinion, may this rule be changed in order to recover additional net reserves from this resource in a way that will not impair correlative rights?

A. Yes, it's Burlington's opinion that you have to go back to the nature of the reservoir we're dealing with. Again, extremely low permeability, extremely tight reservoir, with very, very low pressure drops on an annual basis.

And if you start with that understanding, then it makes the correlative rights problem a little bit easier to manage, because although operators have to respond in some cases, or will respond in some cases, it's not something they have to do the next day or the next week like you'd expect in the Fruitland Coal or a prolific reservoir, Mr. Examiner. They're going to have some time to think about that. If you think about a 5-p.s.i.-per-year pressure drop, they're not going to have respond the next day. They've got a period of time to plan their business and respond.

So it's not a highly competitive, very prolific, high-permeability reservoir that lends itself to a lot of correlative-rights issues.

Q. If I'm an offset operator not engaged in the increased density plan at that particular time, will I be afforded an opportunity to make a decision about whether or not I drill my well based upon knowing what the drilling operator has done with his well?

A. Absolutely. We're not recommending that all wells have to be drilled or any wells have to be drilled. It's entirely optional, again, just like the existing 160-acre infill program is completely optional, at the operator's discretion.

They'll have the ability to choose or not to choose to drill their own wells. If they look across the lease line and they see that an operator has success, they'll have the opportunity to drill their own well, to also recover additional reserves.

Q. For some 91 percent of the pool, the drainage areas are less than 160 acres, going all the way down to 40 acres per well, are they not?

A. That's correct. And again, we'll show that in a detailed exhibit.

Q. So the potential consequence of the increased drilling activity, while it affords an opportunity to increase net reserves, does not impose an unfair correlative-rights issue to an offset operator in terms of drainage?

A. That's Burlington's opinion. It will not pose a correlative-rights issue.

MR. KELLAHIN: Mr. Examiner, that concludes our summary overview with Mr. Smolik.

With your permission, we would move the introduction of Burlington Exhibit 5 at this time.

EXAMINER STOGNER: Burlington Exhibit Number 5 will be admitted into evidence at this time.

Mr. Bruce, do you have any questions? I guess Mr. Bruce has left.

Okay, Mr. Carr, do you have any questions of this witness?

MR. CARR: A couple, Mr. Stogner.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Smolik, when I look at the Application filed in this case, the Application indicates that there is an increase in the current top vertical limit of the pool to include that interval from the Huerfanito bentonite marker up to 400 feet above the marker. Is Burlington changing its request now to only go up to 300 feet above that marker?

A. Yes, sir. Mr. Examiner, at the time that we received the request from the OCD and we filed our Application, we were largely through but not completely through with the study to determine what the interval thickness is between the base of the PC and the top of the -- or the base of the PC and the Huerfanito bentonite marker.

Since completing that -- and Bill Babcock will show you a detailed exhibit -- it looks like there is an area at the southwest part of the pool where the 400-foot thickness would get very close, dangerously close, to the base of the PC.

So that's the reason for changing the recommendation to 300 feet. But we'll review that in much more detail.

Q. If I understand your -- Burlington's recommendation, what you're recommending is that there really will be two sets of rules applicable in the pool, one set within the special qualifying area and one for the remainder of the reservoir; is that right?

A. I'd really prefer to say that there's just one set of rules with a procedural difference for a small set of the reserv- -- a small portion of the pool.

Q. Within that small set of the pool, those are what you call special qualifying areas?

A. Correct.

Q. Under current rules, if you want to put a second well on those spacing units you can just file an APD and do it, could you not?

A. Yes.

Q. And now if your recommendation is adopted, within the qualifying area, would you have to give notice if you were proposing a second well on that unit?

A. No, there's -- It's not our intent to change the -- anything in regards to the existing rules for the first optional infill well.

Q. So this rule would only apply for a second optional infill or a third well within the qualifying area?

A. That's correct, a second optional or a third optional infill well, or the third or fourth well in the GPU.

Q. Because we have -- I'm just trying to be sure I understand this.

In the qualifying area, if you want to put a third well you give notice; in the rest of the reservoir, you're authorized -- in fact, under your recommendation, you have blanket approval to go forward?

A. That's our recommendation, Mr. Examiner.

Q. And so the qualifying areas are those areas in which you've identified where a third well might be required, but not a fourth well?

A. In the qualifying areas, the evidence that we'll show is that the existing wells appear to be adequate to drain the reservoir. But in our recommendation, we don't propose to lock anyone out of -- any operators out of those areas.

So if they propose to drill a third well, the only procedural step that would be added would be to notice the offset operators. If they're unopposed, then they just do the normal APD process.

Q. And under your proposal, if they wanted to put a fourth well in there they'd give notice and go through the same process?

A. Likewise --

Q. That's all.

A. -- likewise.

So there really is one set of rules changed, is, there's some -- with a little procedural difference in terms of what do you in those areas that appear to be adequately developed based on our study.

Q. One more question, just to be sure I understand.

Your notice recommendation, does that include all offsets, diagonal as well as direct? Is that what you're asking?

A. Yes, all offset operators. It's the direct offset operators, as well as the diagonal offset operators.

Q. And that would be all the way around the spacing unit?

A. Yeah, just to fully circle the proration unit, the gas proration unit.

MR. CARR: Thank you.

EXAMINER STOGNER: Mr. Gallegos.

MR. GALLEGOS: No questions.

EXAMINER STOGNER: Mr. Chavez, our District Office Supervisor in Aztec, do you have any questions at this time?

MR. CHAVEZ: Yes, just a couple.

EXAMINATION

BY MR. CHAVEZ:

Q. Mr. Smolik, did you review the data from the previous Basin hearing in the Mesaverde?

A. I'm sorry?

Q. Did you review any of the data or testimony from the previous Mesaverde spacing?

A. Yes, sir.

Q. What has changed since that hearing, or what information have you gathered since that hearing that would say, leave more density? What is different from that last hearing?

A. The data is really largely the same from that prior hearing. In testimony there, we testified that there was incremental reserves that would be recovered up to four wells per GPU.

The data that we acquired from the three pilot areas largely confirmed what we had predicted going into those pilot areas.

Q. I'm sorry, I was trying to refer to the hearings in 1974.

A. Oh, 1974, I'm sorry, I thought you meant the pilot hearings.

Q. No, sir.

A. I apologize.

Q. Did you review the data or any of the testimony from the 1974 hearings for infill spacing?

A. I personally did not review that data back from the hearing. I reviewed the order and the results and have practiced under it, but I didn't review the hearing data.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: Thank you, Mr. Chavez.

Does any representative from the BLM, Bureau of Land Management, have any questions of this witness?

MR. SPENCER: No.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Chavez asked you about anybody reviewing the previous case or cases back in 1974. Did somebody with Burlington review that testimony?

A. Absolutely, sir. I just -- I didn't want to represent that I had reviewed that I had reviewed all that in great detail.

Q. But somebody else did?

A. Yes, sir.

Q. Is this well -- I mean, is this pool currently prorated?

A. It is currently prorated, but all of the wells, in my understanding, are in the marginal-well category.

Q. And what does that mean?

A. Effectively what that means is that there is no actual proration that takes place on the wells or any curtailment that takes place on the wells, because they're all marginal and because all producers have the ability to move and market their gas.

Q. Is there any implementation that was applicable to this pool under the proration scheme of years ago, still applicable now, such as deliverability tests or anything?

A. We're not currently required to test any of the wells.

Q. How about new wells?

A. We are testing the normal seven-day shut-in data and production-testing all the commingled wells.

Q. Okay, the commingled wells. How about new wells?

A. No, sir, I'm not aware of a requirement to production-test the new wells for proration purposes.

Q. Why was this -- Since you have done some study and are giving us an overview, let's talk about gas prorationing. Why was this pool prorated at one time?

A. The prorationing period of time preceded when I was in the division, so I'm basing everything I have on what I'm told or what I understand about --

Q. I'm sorry, I thought you did a study on this, and that's what your presentation was today, the historical outlook on this pool.

A. The historical is just in terms of the spacing.

Q. Oh, just the reservoir?

A. Yes, sir.

Q. Okay. Will there be somebody talking about that later on?

A. The need for prorationing or --

Q. Or why it was prorated, why there's no additional need now, and what changes?

A. I can speak to the need now, and we can have others speak to the historical --

Q. Okay, then let's talk about what you know about gas prorationing.

A. My understanding today is that because all of the wells are in the marginal category, that we are not -- that the pool is effectively not being prorated today. The rules still exist, we still have the ability. Given that we have a gas-constrained environment, at some time in the future, or the producers are not able to get their gas to market for whatever reason and are at a competitive disadvantage because of that, then we have the ability to go back to being a prorated pool, because the rules are still in place.

Q. Are wells prorated or proration units prorated?

A. Proration units.

Q. Okay. So -- Is the statement true that -- Now, you said that there was no wells that are -- all wells are marginal. Are all proration units in this pool marginal?

A. That's not a term I'm familiar with, but I would assume that all wells -- all proration units are marginal by definition if the wells are --

Q. Okay.

A. -- and under the proration rules.

Q. Now, under the proposed rule changes that Burlington is seeking at this time, would that mechanism still be out there in case a proration unit with four wells, for some unseen reason, the offset operators feel that gas prorationing will help offset any correlative-rights issues, would that mechanism still be there?

A. Yes, it's my understanding that we have not proposed any changes to the prorationing rules.

Q. Okay. Just one brief little question here and I'll be through with you.

A. Yes, sir.

Q. The proposed rule changes mentions about the initial well and up to three infill wells. How about if a fourth infill well or a fifth well is desired? What -- It's quiet on that. What do you propose, or what do you foresee happen?

A. Well, we -- You're actually right, Mr. Examiner. It is quiet on that, because we didn't propose. But there are clearly areas based on our study that are draining very, very low areas right now, as low as 40 acres, parts of the pool.

And there probably, in Burlington's opinion, will be a need for incremental drilling in those wells in some days in the future, but we don't have any data to be able to support that. We don't have any justification to be able to argue that before you. And so our recommendation that we can support is two additional wells per GPU.

And it's our opinion -- we're just speculating now, but sometime in the future, someone will be back before you asking for permission to drill additional wells beyond the four wells per GPU.

Q. How about if somebody wants to do it after these rules are initiated, if they are initiated? How about if somebody wants to put a fifth well in? What's the procedure?

A. My thought would be that it would be very similar to the procedure that we've gone through recently with you, either come to you and get pilotwide exception to test the concept, or specific well-by-well exception to be able to add those.

But I would suggest to you, sir, that that period of time will be quite a ways out in the future before a lot of wells are drilled up four GPU. I think the logical process will be, the first well will be drilled, in those cases where it's not, the second option, then the third option, and then there will be at some point enough data to compel someone to want to come back to you for, then, the fifth optional infill well.

Q. Okay, so you think --

A. We haven't precluded anyone from doing that, though, sir.

Q. Okay, with the rules that you're proposing now, do you think something should be mentioned in there about up to three additional infill wells, any more than that would have to go to hearing? Would that be an acceptable suggestion?

A. That would be perfectly acceptable to Burlington, yes, Mr. Examiner.

EXAMINER STOGNER: Okay. Mr. Kellahin, do you have any other redirect of this witness?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: You may be excused.

THE WITNESS: Thank you.

EXAMINER STOGNER: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner. Call Mr. Bill Babcock at this time.

Mr. Examiner, Mr. Babcock's testimony will involve Exhibit Tabs 6 through 10.

BILL BABCOCK,

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

A. My name is Bill Babcock. I'm a geologist with Burlington Resources.

Q. And where do you reside, sir?

A. In Farmington, New Mexico.

Q. On prior occasions have you qualified as an expert in petroleum geology before the Division?

A. Yes, I have, on three prior occasions.

Q. Those prior occasions involve the three pilot projects in the Mesaverde reservoir that were discussed by Mr. Smolik?

A. Yes, they were.

Q. Have you continued your involvement as a geologic participant on the Burlington's technical committee to study the Mesaverde reservoir, including recommendations concerning well density and well locations?

A. Yes, I have.

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

EXAMINER STOGNER: Mr. Babcock is so qualified.

Q. (By Mr. Kellahin) Mr. Babcock, the microphone in front of you is only for the court reporter; it will not amplify your voice. It is sometimes difficult to hear in this room, so you'll have to speak up, if you please.

A. I will do that.

Q. All right. You've told us you're part of the Burlington technical team to examine the opportunity realized from increasing the well density in the Blanco-Mesaverde Pool; is that not true, sir?

A. That is true.
Q. For what period of time have you been involved?
A. I've been evaluating the Mesaverde Reservoirs for about 40 years. I began studying it in the 1994 initial small study area.
Q. What were your responsibilities as a participant on this technical team to study the Mesaverde?
A. My responsibilities were to try and understand and to also quantify the geologic parameters associated with this reservoir, to gather the data to properly evaluate the reservoir as far as its -- in particular, towards its drainage characteristics.
Q. In 1994, the reservoir engineers have assembled pressure data, have they not?
A. Yes, they did.
Q. And that pressure data demonstrated what to you, sir?
A. That there were some dramatic changes across the pool as far as how efficiently the reservoir was being drained. As Brent alluded to, even in relatively small areas we saw differences in pressure drop per year ranging from 30 to less than 5 in some cases.
Q. Let's turn to Exhibit Tab Number 6 and look at the first display behind that exhibit tab. Before we talk about the conclusions, help us understand how to read the

information shown on this illustration.

A. This exhibit is a summary of the three pilot areas that we drilled on less than 160-acre density.

The first one, the red bar, is showing the original pressures which were found by the wells drilled in the 1950s.

And the blue bar represents the downhole pressures found when we drilled the wells in the past two years in each of the pilot areas.

And then the hachured bar represents a possible average abandonment pressure of the reservoirs.

Q. Let's look at the first bar then. If you'll look at the San Juan 29 and 7 --

A. Yes.

Q. -- the original pressure data was 1955?

A. Approximately, yes, sir.

Q. And after some 40 years or four decades of production, you have a pressure drop of about 250 pounds?

A. That is correct.

Q. Translate that into a p.s.i. drop per for me.

A. That represents a pressure drop per year of 5.8 p.s.i. over a 40-year period.

Q. When we translate that into a geologic study, is there geologic conclusions and opinions that you can provide us that explain that very low pressure drop per year between the parent well and the infill well?

A. Yes, the Mesaverde as a whole, as Brent alluded to, is very tight reservoir. The matrix values are extremely low permeabilities.

And then we have naturally fractures in the reservoir which increase the permeability significantly, but they're still at very low permeabilities, especially when compared to a reservoir such as the Fruitland Coal. So that those low permeabilities don't allow the gas to come out very quickly, and that is the reason for the low pressure drop per year. It's a thick reservoir and it just takes a long time to get the gas out, and so the pressure is being depleted very slowly.

Q. Let me have you give us a general geologic summary to update our recollections about the Mesaverde Pool. The Mesaverde Pool is a gross interval that is subdivided into at least three major intervals, is it not?

A. That is correct.

Q. You have the Cliff House, the Menefee and the Point Lookout?

A. Yes, sir.

Q. All right, give us a general summary of the pool, then.

A. The -- From the bottom up, the base of the Mesaverde, the lowermost unit is the Point Lookout formation, and this is a marginal marine sandstone. It was deposited in a regressive manner where the beach -- It was primarily a beach deposit, and the sandstones deposited on the beach were moving out into the Mancos shale seaways at that time. It's a fairly continuous but also very tight reservoir.

Up above that is the Menefee formation. The Menefee is an extremely heterogeneous formation. It's primarily composed of fluvial-deltaic sediments which were deposited on a delta system, so that we have individual channels of -- not of very great size, but a large number of channels. And the Menefee formation is not very continuous from well to well. Quite often you find virgin pressures in the Menefee, 1200 to 1400 pounds.

Above that is the Cliff House formation. The Cliff House was deposited when the seas came back in and flooded over the Menefee delta, and once again we had the deposition and preservation of beach sandstones, and also we got a significant number of distributary channel sandstones preserved in the Cliff House which we were able to identify in core and occasionally in outcrop.

And all of these formations have very similar matrix reservoir parameters, meaning porosity and permeabilities of just the matrix portion of the system.

Q. When we look at the event of low pressure drop per year between a parent and an infill well, when we deal with the subdivision of the pool, is there a common characteristic of all these intervals that you can attribute a geologic explanation to that low pressure drop?

A. All of the intervals are very low permeability. There is a varying degree of connectivity between those reservoirs, but they're all extremely low permeabilities.

Q. As a result of your study, are you able to conclude geologically that it is necessary to increase the pool well density for the pool?

A. Yes, that is definitely my conclusion, that we need to increase the pool well density.

Q. And what would be accomplished geologically if that's allowed?

A. I'm not sure if I understand the question.

Q. If you have a low-permeability tight reservoir and you have these various zones that are heterogeneous, is it geologically suitable to expect that a single well in 160 acres is adequately going to develop that resource?

A. The answer is that at 160 acres it is very difficult to connect sands from well to well in many cases. In some cases they are connected. So that by drilling additional wells at a closer spacing, we will access new sands that were not accessed in the previous -- in the other wells, the lesser dense wells.

So that the Mesaverde -- and I didn't mention it -- is really composed of -- we talked about three formations, but it's actually composed of multiple individual sandstones, each formation, depending on which one -- the Menefee is often ten to twenty different sandstones, the Cliff House is four to five different sandstones, and the Point Lookout is two to four different sandstones. So we're looking at a very heterogeneous system.

So in order to access all of these different sandstones and be sure that we're getting all the gas out, by increasing the density you can clearly access sands that may not be touched by the previous wells.

Q. Let me address a topic with you, Mr. Babcock, a geologic issue. When we get to those displays that show where drainage is occurring adequately under current spacing -- the 9 percent of the pool area, if you will -- is there a geologic conclusion associated with that fact?

A. Yes, there is.

Q. And what is that explanation?

A. The explanation is that in those areas where we're draining significantly larger drainage areas, we have an increased density of natural fractures in those areas, so therefore the permeability of the Mesaverde as a system is greatly increased, and therefore your drainage areas are also greatly increased.

So it is the density of natural fractures that is controlling the drainage areas within the Mesaverde.

Q. As part of the presentation and study, have you and the reservoir engineers identified those specific areas where you have increased density of the natural fractures that have allowed these wells to drain larger areas in certain instances?

A. Yes, we have, we've used several different methodologies to identify those, and we will be going through those.

Q. All right. Let's turn to the next display in Exhibit Tab 6, after the pressure data, and have you identify and describe the next slide.

A. This slide is a resultant from simulation in each of the three pilot areas. This is a reservoir flow simulation, and this -- We initially chose these pilot areas to sample a wide range of reservoir parameters. And after the simulation our original conclusions, based on some of our Basinwide mapping, turned out to be correct.

But what we see on this is that in the San Juan 29-7 Unit, which is -- as Brent had said, draining from 60 up to 160 acres within this four-section pilot that we simulated, we are recovering -- of the gas that comes out of the new wells that we will drill, 50-percent of the reserves, 50 percent of that gas will be new reserves that wouldn't have been recovered by the existing wells.

When you go to the drillblock simulation area, that number increases to 76 percent of the new reserves.

And then to the San Juan 27-5 area, that number goes up to 86 percent. And that's a function of the permeability, which I'll show you in a moment.

Now, I should also point out that in the drillblock area we chose the area purposely along the Cliff House water-line trend, where you begin producing some water in the Cliff House. But we had determined that the water was only present in the uppermost sandstone of the Cliff House, and we felt we could go in and complete the Cliff House and recover that gas in there. And that's how we simulated it. So the simulation was for the Point Lookout, the Menefee and the lower sands in the Cliff House.

When we went in and drilled the initial well in the pilot, we saw the upper sand was wet, and we tried to stimulate that, and we weren't able to successfully stimulate it without the frac growing up into that uppermost sand. We put some tracers in the well to try and determine that, and as expected we produced water. So we squeezed off those perforations.

And so the results from that simulation or from the drilling of those wells is not going to compare well to the simulation because of that. The actual wells were only completed in the Point Lookout and Menefee, while we simulated the Point Lookout, Menefee and lower Cliff House. I just wanted to point that out while we're on this slide and talking about these simulations.

But we did get simulations and production and pressure history that are adequate to define it on the lower and upper ends of our range of reservoir parameters that we wanted to simulate.

Q. Did the results of the three pilot project study areas confirm your geologic opinion that there was a necessity to increase well density by adding two more wells to a GPU?

A. Absolutely.

Q. Let's turn to the next slide, which is captioned "Average System Permeability". Identify and describe this display.

A. This is output from the simulators, once again, showing the reason for the higher reserve components as we go from the 29-7 to the San Juan 27-5 pilot.

As you can see in the San Juan 29-7 Unit pilot, our average system permeability was .25 millidarcies, decreasing down to .05 millidarcies in the San Juan 27-5 simulation area.

Now, this is system permeability, which is a combination of the matrix permeability, which is what we see in the core data, and the natural fractures, which impact the well's performance.

Q. Let's have you continue through this exhibit set, and identify and describe the locator map for the 29 and 7.

A. Okay. This is a map of the San Juan 29-7 Unit. The red area on the upper right-hand corner, the red dashed line, outlines our simulation area. All of the wells within that red outline were included in the simulation. The red dots within that outline were the eight optional infill wells that we drilled after receiving the approvals for that.

At this time I'd also like to point out the green cross-section line which goes from the southwest up to the northeast portion of the unit. That is a cross-section which I'll be showing in a later exhibit.

MR. KELLAHIN: For your reference, Mr. Examiner, we have included behind Exhibit Tab Number 3 the three Division orders that were entered approving the three pilot projects, and each of them detailed some geologic conclusions and opinions. Those are arrived at based upon the testimony of Mr. Babcock in other proceedings.

EXAMINER STOGNER: Which tab was that?

MR. KELLAHIN: Tab Number 3, Mr. Examiner. The first order I have is R-10,720. And then if you flip it to the third page of that order, beginning at finding (11), there begins a series of subsets of geologic conclusions.

Q. (By Mr. Kellahin) Just for the record, Mr. Babcock, you still hold to those conclusions set forth in the order?

A. Yes, I do.

Q. Nothing that has occurred since those orders were issued, based upon your study of the pilot project, has caused you to change any of those conclusions?

A. No, it has not.

EXAMINER STOGNER: At this time, Mr. Kellahin, I'll take administrative notice of those three cases and orders --

MR. KELLAHIN: Thank you, Mr. Examiner.

EXAMINER STOGNER: -- behind Tab Number 3.

And while we're on the topic, I'll take administrative notice of original Order Number 799 that set 320-acre spacing in this pool; Order Number R-1672 which approved infill drilling; and then that was changed by 8170, I believe, was the next series of proration rules; and our last one now is Order Number R-10,987. That way we'll get that procedure out of the way.

Thank you, Mr. Kellahin.

Q. (By Mr. Kellahin) Let's continue through this exhibit set and look at the slide that shows cumulative production. We're still dealing with the 29 and 7 Unit.

A. Yes.

Q. Summarize these quickly for us, and let's just continue through the Exhibit 6. Go ahead.

A. This slide represents a pre-drill and a post-drill simulation of production out to the year 2040. We originally simulated the area to try and predict what we would find. And then after drilling the wells and producing them for approximately a year, we went back to recalibrate our simulation, just to see if anything had changed.

And this is -- The red line shown on this graph is our post-drill simulation. The blue line is our pre-drill simulation. And the shape has changed a small amount, but at the end of the year 2040 the difference in cumulative production between the two simulations is 1 BCF out of a total of over 70 BCF. So we're very happy with the quality of the match.

Q. All right, let me make sure it's clear that the post-drilling simulation -- This is after the Division has given you the pilot project order. You've drilled the increased density wells, and now you're remodeling the simulation area using four wells per GPU.

A. That is correct, we used the year's production and achieved a history match on 40-plus years' production of the original wells, and the year's production of the eight new wells which we drilled.

Q. All right. So you've got a history match on the existing wells using production?

A. Yes, we do.

Q. Did you match pressure?

A. Yes.

Q. Let's turn to the next slide and look at the pressure match.

A. The next slide is a plot, just a simple bar chart, showing the predicted -- And this is from our original simulation, our pre-drill simulation. The blue represents the predicted pressures in the unit of 991 pounds, and the red are the actual average pressures that we found in the eight infill wells of 1014 pounds. This is an extremely good match. We're very pleased to see this kind of match.

Q. Okay, let's turn, then, to the next slide and look at the cumulative production plot.

A. This is showing the post-drill simulation cumulative production plot of the actual production time period, the production that we've matched on the new wells. And you can see that once again, the blue is the simulation, the red line is the actual production. And we history-matched that period of -- I believe it was 270 days of production.

Q. And again, you're testing the reliability of the computer simulation to match actual data points?

A. That is correct.

Q. And what's the character of the match here?

A. I'm very pleased with the character of this match.

Q. All right, let's turn to the daily production plot, which is the next slide. Describe for us what's occurring here and what's the development.

A. This is the actual production of all of the wells within the simulation area from before we drilled the wells to approximately a year's production history after we've drilled the wells.

The blue line represents the original wells, 25 wells, which were located in that area, and they're -- We refer to that as the base production. Those are the wells on 160-acre spacing.

The red line represents those 25 wells plus the additional eight wells that we drilled in that area.

And what you can see on this is that when we brought the eight new wells on, initially we had a large jump in production, and then it declined very steeply and leveled off. And this is a normal pattern for these types of naturally fractured reservoirs.

The important point in my mind is that in -- very light on there you see a line on -- matching the production, the decline of the blue, the 25 base wells. And the decline is continued at about 5.25 percent over the nearly three years that this represents, and that is fairly typical for a Mesaverde well in the San Juan Basin.

The 33 wells, you can see that it seems to have leveled off at an incremental production of about 2 million a day increased production for that area. And we aren't seeing an increase in decline for the base wells, so we feel that this is pretty clear evidence that we are developing new reserves in this area.

Q. This is the verification data that goes back and helps you support the ultimate conclusions shown in the second display behind Exhibit Tab Number 6, where you quantify the relationship between the new reserves that that portion that represents acceleration?

A. This gives us a high degree of confidence that those bar charts are accurate.

Q. So for this particular simulation in the 29 and 7 unit, the increased drilling density allows you the opportunity to capture 57 percent of that production as new reserves?

A. That is correct.

Q. Let's turn to the next summary of the results of the pilot projects, the 27 and 5. Let's take a quick review of the results of that study.

A. This locator map is an overall map of the 27 and 5 unit. Once again, the red outline shown on there is our simulation area. The red dots in there represent the increased-density wells that were drilled in this past year.

The --

Q. Again, you're simulating this study area, and you're going through the same types of data matching?

A. Yes, we simulated this pre-drill. We did not do a post-drill simulation of this pilot area. The 29-7, we had a longer production history, we were very happy with the results from that simulation, pre-look versus post-look, and therefore we didn't feel it was necessary to simulate the 27-5, especially considering that the 29-7 is the one that had the higher drainage areas.

Q. Let me ask you this about the 27-5, then: Did you see any data in that pilot area to cause you to change any of your conclusions about that pilot area?

A. Absolutely not.

Q. Did you see any information as a result of the pilot in 27-5 that caused you concerns about your conclusions in the 29-7?

A. No, definitely not.

Q. All right. Continue through the slide presentation, then, for the 27-5.

A. This first slide is a bar chart showing the pressure match in the 27-5. Once again, the blue is the simulation, the red is the actual.

This match isn't quite as good as the 29-7, but the variation is still only 13 percent, so we're very happy to be able to match it that accurately in this kind of a complicated reservoir.

So we found very high pressures. The red bar represents bottomhole pressures of 970 pounds after 40 years of production.

The next --

Q. Go ahead, the next slide?

A. The next slide is a cumulative production plot. Once again, the blue line is the simulated production, and the red line is the actual production. And as you can see, our cumulative actual production is above our simulation production. But once again -- But they are fairly close.

The next plot is another production decline showing in blue the base wells -- in this case it's 16 wells in this area -- and the red representing 21 wells. There were five of the wells which have been on line for this time period. And we are in the early stages, but it looks very similar to the 29-7 area, so once again we're comfortable.

We saw a large amount of initial uplift which will decline and then level off.

Q. Let's turn now to the drillblock pilot area, and would you give Examiner Stogner a short summary of that pilot project area?

A. This is the pilot area where I mentioned earlier, where we did not complete the Cliff House. So I'm not going to be talking about our pre-drill and post-drill simulation matches. But we did get some valuable production data from this.

This initial display is a map of the pilot area, and this was -- These four sections were all that were approved for that initial pilot study. The original wells are shown in dark color, the black, and then the infill wells are once again -- or the increased-density wells are shown in red once again.

The next slide shows the production in that area. The 12 original wells are shown in blue, and in this area we had six wells that were brought on line in this area and have a production history. You see an initial increase in production.

And I should point out at this time that the ramp-up in production of both the base volumes and the total volumes is a function of some workover work that was done in some of the base wells in that area. But we see the same characteristics where we had the initial steep incline in production, a steep decline which has then since leveled off at an incremental production of about 2 million a day from the six increased density wells.

And in this case our base production is actually higher than when we started, primarily a function of the workover activity in the area.

Q. Summarize, then, for us what you have concluded about the three study areas, and let's look at what would be the area where you see the greatest drainage occurring. That's what? The 29-7?

A. Yes.

Q. The 29-7 pilot area is where you had wells that -- some of which demonstrated the ability to drain larger areas?

A. Yes.

Q. Even in that study area, you have concluded that the 57 to 60 percent of the production from the new increased-density wells is attributable to new reserves?

A. That is correct.

Q. And so as we move into the 27 and 5 and the drillblock areas, which are characteristic of wells that drain smaller areas, you can still demonstrate new reserves?

A. Yes, I feel extremely confident, yes.

Q. And that demonstration of new reserve potential is greater in those areas?

A. Yes, it is.

Q. They go from 76 percent all the way up to 86 percent?

A. Yes, sir.

Q. The major geologic component that explains the range of difference in drainage is attributable to natural fracturing?

A. Yes, it is.

Q. Let's turn to that topic and look at your core and permeability data, and let's start with the type log so that Mr. Examiner can refresh his recollection about how this pool is subdivided. If you'll turn to Exhibit Tab 7, let's have you give us a quick review on this type log of the subdivision of the pool.

A. This is a log from the San Juan 29-7 Unit. It is well -- the Number 102A, which is a well that we took about 240 feet of core in this well. It's within the pilot area, or right on the edge of the pilot area, excuse me.

Starting from the top, we see that the proposed top of the Mesaverde that's located 300 feet above the Huerfanito bentonite -- and I'll be showing some more exhibits regarding that proposed top -- the Huerfanito bentonite as shown on the log which is the current top of the Mesaverde is a bentonite marker which is seen throughout the Basin.

As we move down, we get into the upper Cliff House and then into the massive Cliff House formation. As I described those earlier, they're geologic characteristics. But what you can notice here is that we are not dealing with a single massive sandstone. We are dealing with numerous sandstones, some significantly thicker than others.

Below the Cliff House is the Menefee formation. This is the fluvial deltaic system, which is composed of numerous small, relatively thin sandstones.

And then below that is the Point Lookout formation, which is dominantly composed of one or two thicker sandstones, with some thinner sandstones down below.

On the far right-hand side of that, the density neutron crossover effect is shaded in red, as indicative of which are the cleanest sandstones in this log.

The next display is a summation of approximately 1600 data samples. This is from eight wells which we cored in the last three years across the San Juan Basin, and we chose those wells to sample areas from the very lowest production all the way up to extremely highly productive wells that are very intensely natural fractured.

What we found is very little difference in porosity across the Basin. The Cliff House, Menefee and Point Lookout averaged 8.3 and 8.4 percent porosity over those 1600 samples.

If we look at -- Oh, and also I should point out, this is only looking at those sand samples which had greater than five percent porosity, which would be a cutoff someone might use in something like the Mesaverde, a porosity cutoff.

Q. Let me see if I can't put this process in focus. What you're doing is going through and checking off the various geologic parameters and assimilating this data so that you can address a number of the geologic issues that then are utilized by the reservoir engineers to look at drainage areas, to calculate estimated ultimate recoveries, and to forecast the economics concerning the increased drilling activity?

A. That is correct, we feel it's very important to tie hard data points, which is core data, in the Basin.

Q. As you specifically identify and quantity the various geologic components of this heterogeneous reservoir, are you comfortable that you're equipped with enough data points to give you an accurate way to calculate gas in place?

A. Yes. As I mentioned, we cored eight different locations at a wide variety of production performance across the Basin, so that we ensured that we would see all the potential rock types across the Basin and record several hundred feet in each well.

Q. And as we look at the various components of the geologic study, you can begin to see those components that are attributable to the effective drainage of wells in the reservoir?

A. Yes, what we found was that the core porosity and permeability did not vary as you would predict based on the production performance of the wells in the area. So the matrix parameters are not what is driving the production of the Mesaverde.

Q. So if we're looking for a uniform set of rules for a million-acre pool, we can draw comfort that porosity changes are not going to be a reason to create different rules for different portions of the pool?

A. That is correct.

Q. Okay. Let's look at the core permeability.

A. This is the core permeability from the same data set, and once again, this is using the five-percent porosity cutoff.

The average permeability -- and these are at bench conditions of the various formations, so these are at -- Bench conditions mean that you're testing the porosity -- or the permeability, at a pressure of about 250 pounds. And we see that permeability at bench conditions ranges from .14 to .15 to .10 millidarcies in the Cliff House, Menefee and Point Lookout.

Now, when you put those rocks at reservoir pressures -- and we did that in the laboratory on 36 samples -- we found that the actual permeability that we would expect to see within the reservoir is significantly lower than that.

So that the matrix permeability in the reservoir is shown by the red bars. And in the Cliff House it's .06 millidarcies, in the Menefee .06, and in the Point Lookout .04 millidarcies. And that is the matrix permeability that we would see in the reservoir of the Mesaverde.

Q. Do we have a sufficient range of low permeability throughout the Mesaverde reservoir so that the matrix permeability is not going to be a geologic reason to decide well density upon?

A. That is correct, yes, I'm very comfortable with that.

Q. And at this range of low permeability, it is no surprise to you to find that 91 percent of the pool needs two wells added to a GPU in order to drain those reserves?

A. I think based on this permeability data, that would be the expected result.

Q. Let's go and have you give us this illustration on the Menefee cross-section on the 29-7. I think that's on a larger display too. There is a foldout in the exhibit package --

A. Picture -- David.

MR. KELLAHIN: Yeah, just turn it for the crowd to see it. Turn it that way, David, and put it back over here.

Q. (By Mr. Kellahin) Give us a quick summary of what we're seeing here, Mr. Babcock.

A. This first display -- These next two displays are actually to look at the variability that I described in the Menefee formation, and I wanted to try and quantify that somewhat.

This first display is an example from the Lee Ranch Coal Mine near Grants, New Mexico. It is an open pit coal mine within the Menefee. I apologize for the quality of the picture, but what we are looking at is the highwall they've mined the coal on. The black stripe at the bottom of the unit is the coal seam that they are mining. From there to the skyline is composed of sandstone, siltstone and shale.

The scale is such that from the base of the coal seam on the bottom right-hand portion of the picture to the skyline is about 90 feet. We can see a dragline on the far left-hand side of the picture, and that dragline is about 3000 feet away, and it's -- It's gigantic, but...

Looking -- What I've done here is highlighted the sandstones. I've encircled the sandstones on this picture to show the heterogeneity we see in the sandstone. Now, there is one fairly continuous sandstone deposit just above the coal seam, and then it abruptly truncates about 1000, 1500 feet down the highwall. You also see scattered in there several smaller sands that do not go near as far.

I should also point out that I took two trips down to this coal mine about three months apart, and this long -- what looks to be a very continuous sandstone, was not present on my first trip out there. We weren't able to see it. So what we appear to be seeing in that long, continuous sandstone is a channel that has turned parallel to the highwall at that point.

So what we see from outcrops and coal mines is that the Menefee is very discontinuous. So you might drill a well, for instance, in this pod shown on the right side of the picture, and one in the pod shown on the left side of the picture, or even between those, and the only way to access those reserves in those pods are to drill right into it.

So in 160 acres we would have a well up by the dragline and then a well over here somewhere on the right-hand side, and we would be missing sands in between.

Also note that this is only 90 feet of the Menefee, and it is not the most sand-rich portion of the unit.

Q. Let's give a second illustration of this point, Mr. Babcock, if you'll turn to the last display in Exhibit Set 7, let's look at the cross-section again. Summarize this for us.

A. This is a cross-section line which was shown in the locator map of the 29-7 unit. It progresses from the southwest to the northeast portion of the unit and crosses through the pilot area.

What I've done is shown the top of the Menefee in black -- it is labeled on the left-hand side -- and also the top of Point Lookout, which is also labeled on the left-hand side of the cross-section. And this is one possible interpretation of the discontinuity of the sands in that area.

As you can see, there is a lot of sand in the Menefee, but it appears to be very discontinuous. It should be pointed out that this is an interpretation. Another geologist would very likely come up with a slightly different interpretation, but I can't imagine a geologist being able to connect all these sands across the unit, especially somebody who's visited the outcrop and the coal mines and seen the depositional environments that these are deposited in.

Q. Is this characteristic of the Menefee throughout the Mesaverde Pool?

A. Absolutely.

Q. Let's turn to a new chapter, Mr. Babcock. Let's turn to Exhibit Tab Number 15, and let's talk about the gas-in-place calculation.

MR. KELLAHIN: Mr. Stogner, now would be a good time to take a break if you desire to take one.

EXAMINER STOGNER: I agree with you. At this time let's take a 20-minute recess. Reconvene here at 10:25.

MR. KELLAHIN: Thank you, sir.

(Thereupon, a recess was taken at 10:05 a.m.)

(The following proceedings had at 10:25 a.m.)

EXAMINER STOGNER: Hearing will come to order.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Stogner. If you'll turn your attention to the Exhibit Tab 8, I'm going to ask Mr. Babcock about the original-gas-in-place map that you're looking at, which is the first sheet. I'm going to ask him to validate that map, show you the methodology, show his conclusions and the supporting documentation that goes into the validity of this map.

Let's start at that point, Mr. Babcock. Let's take a moment and, without interpreting the display, let's look at this first display, which is captioned Mesaverde original gas in place, and tell us how to read the map.

A. This is a contour map of a large amount of data which is the calculated original gas in the Mesaverde Pool. The black outline outside of the colors are the boundaries of the Mesaverde Pool. The red horizontal line at the top is the Colorado-New Mexico border.

This is contours which are color-coded by the value of gas in place, with the units being in million cubic feet per acre.

The color bar is shown down in the left -- bottom left-hand portion of the map. And the color bar ranges from 10 up to 70 million cubic feet per acre. And you can see the colors, just in a standard contouring method. The majority of the map, though, ranges from about 20 up to 45 million cubic feet per acre, with a few exceptions on either side of that.

Q. Let's talk about your impressions and conclusions on the map, and let's start about the spacing and pattern and shape of the contours as they demonstrate the position of the gas in place in the reservoir.

A. What we see is that the thickest -- the most gas in place in the reservoir, is shown in the northwest portion of the reservoir. That is the red to orange numbers. That ranges from 30 generally only up to about 45 million cubic feet per acre.

It decreases consistently and gradually down to the southeast portion of the map, down to around 20 million cubic feet per acre.

The changes across this map happen in a fairly continuous and gradual fashion. Keep in mind that the squares shown on this map represent townships of six miles on a side. So this whole map -- The pool outline covers a million acres, so this is a very large area.

So what we see is that in general, we see very gradual and consistent changes decreasing from the northwest down to the southeast.

Q. Let's set the stage for the significance of this map, and let's talk about the first significance. Once you have an accurate gas-in-place map, what then can you and the reservoir engineers do to determine what is going to be the gas produced from the reservoir in terms of an ultimate volume?

A. When you have the gas in place, it is a tool to allow you of potentially the amount of gas that you could recover in reservoir -- the maximum amount of gas that you could recover.

Now, also I should make the point that this gas in place was calculated using a saturation cutoff of 55 percent, so that this isn't the total gas in place in the reservoir, but this is, in our estimation, the total moveable gas in place in the reservoir.

Q. When we have this first building block, and then the reservoir engineers, with their methodology, estimate the estimated ultimate recovery of the reservoir, then you'll have two pieces, one to subtract from the other, to show you what is still the remaining resource to be exploited?

A. That is correct. This gas in place gives you half the picture to give at the bar chart that Brent showed earlier of the total resource in the Basin.

Q. So when we look at that resource pie chart that Mr. Smolik sponsored earlier and see -- What exhibit was that? The pie chart was Exhibit 12.

When you see Exhibit 12 and you see the resource is divided between a 44-percent recovery and a remaining resource of 56 percent, we can put a number on those percentages by looking at the gas-in-place map?

A. That is correct. Would you like me to address those numbers?

Q. Yes.

A. What we found was that across the Basin, you can take this data and integrate it using a computer system, and what we found was that across the Basin we had -- I believe the number was 28.5 trillion cubic feet that is potentially available for recovery in the Basin of moveable gas. Now, whether all of that can be economically recovered is a question, but certainly a piece of that can be recovered.

Q. What is your confidence about the accuracy of the map?

A. I have a fairly high confidence in the accuracy of the map. This is about two years of work. It involved a lot of core data. We hired consultants from a variety of disciplines to help us out in the analysis. We spent a lot of money digitizing logs, coring wells to verify the accuracy of our interpretations.

I've presented the methodologies used here at three different technical forums: the Four Corners Oil and Gas Conference, at the Four Corners Geological Society, and then as an invited speaker at the 1997 SPE annual convention in Denver, on geologic characterization of tight sands. And in all of those forums I've gotten -- I got buy-in from the peers as to the validity of this map, or of the techniques that were used.

Q. Let's move beyond the map and look at the second display behind Exhibit Tab 8 and have you give us a summary of the steps that you went through, in a general way, to get the gas-in-place map.

A. Okay. I'd like to start from a little more general perspective first of all. In analyzing gas in place in a tight reservoir such as this, tight reservoir with a significant amount of shale in it, we felt it was critical to first tie to a hard data point. The logs are not an absolute measure; they're an indicator of what we see in the reservoir.

So our first step was to tie our logs back to the core data. And that gives you the reservoir matrix parameters.

The second step was to determine how the fractures are impacting the reservoir and the volume in place, the volume of gas in place in the reservoir, or an interpretation of that based on the logs.

So with that in mind, the way we went around determining the gas in place, in really five major steps -- keep in mind, this took about two years -- we first gathered 1720 feet of core from -- actually it's eight wells, distributed in both high- and low-EUR areas. This chart says nine wells, and we actually only used for eight wells. I apologize for...

And listed there is a table showing the well names -- There are nine wells. Yeah. I keep discounting the Morris Com 100, because that was a Cliff House well in the Cliff House water line.

But we digitized approximately 2000 wells scattered across the Basin, with approximately one to two wells per section in the developed -- fully developed portion of the Basin. Those wells all had gamma-ray induction and density logs, so that means that we only used logs that were -- wells that were logged post-1968, when those tools became readily available. And those three logs were the most widely available data set, so we felt it important to use those.

Then we determined the best-fit log analysis algorithm to match our core values. And as I said, we had core data scattered across the Basin, so we used a slightly different algorithm in different portions of the Basin, based on the core. The algorithms did not change that significantly. We used both Core Lab and Geoquest to help us with this log-to-core match, so we would have a firm tie of our logs to some hard data set. Now, as I said, this just tells us what we see in the matrix of the rock.

The next step was to identify the fracture component of the reservoir, and once you've done that you can determine the original gas in place.

So the first step was to use the log analysis algorithms on the 2000 logs to get to the matrix parameters. At that point you can use Pickett plots. And comparing those Pickett plots back with data from cores, you can determine the fracture component of the reservoir. And I have a few displays coming up where I can show this in a little bit more detail.

And also it's important to note that the Menefee is an extremely difficult formation to do log analysis in, to do the naturally fractured log analysis in, so that because of that I did not take the fractures into account in the Menefee, so that the Menefee gas in place was a conservative number, just because of the uncertainty associated with it.

We then, over those 2000 wells, we calculated the original gas in place at one-half-foot intervals, which was the interval spacing of the data set that we had, and then we summed that up for each zone and each well, and then we made prepared contour maps of that data.

I'd like to step through an example of we went through this log analysis. I'm focusing in here, since the Cliff House, Menefee and Point Lookout have different -- slightly different reservoir parameters, different shale types, we wanted to -- Each of those was analyzed separately, in all of the wells. So I'm going to focus here on an example from the San Juan 32-9 Unit. The well is the Number 7A in the Cliff House, and we cored -- we have core data on this well.

The first step was to tie our logs back to the core data. And what we find is that the density logs traditionally overestimate the porosity in the Basin. As shown on this crossplot, the thin black line would be the ideal case where your log data -- log-interpreted porosity, shown on the Y axis as Dphi, compared to the core porosity shown on the X axis -- so that in a perfect case, you would see things lining up along the thin black line.

What we actually see by just using density porosity is the best-fit line shown in green. In the upper, higher porosity values, we significantly overestimate the porosity using the logs, so we knew that that wasn't the proper way to go, or we're going to get too much gas in the reservoir.

So then we went to try a density neutron crossplot. We had neutron logs on a few wells in the Basin -- certainly not 2000 -- and the density neutron crossplot significantly underestimates the porosity compared to core.

So with the help of Core Lab and Geoquest, they developed some algorithms to match the core data. And this next display shows the algorithms for the core in that particular core, the 32-9 Number 7A. And we modified some of the parameters to come up with the next crossplot, which shows where our best fit to the log-interpreted empirical match is a fairly good fit to the core porosity, particularly in the upper porosity units, the 5 to 10 percent, which is where most of our gas in place is located. So we're very happy with this fit.

So now we've characterized the matrix portion of the reservoir. This next display shows how the core data shown as the red dots on the right -- If we look at the far right-hand scale there, you see the red dots being the core data.

The blue line represents the density calculated porosity.

And the green line represents the algorithm-derived porosity with our new best-fit match.

And you can see where we're significantly underestimating porosity from the blue line.

So we feel we've got a pretty good match. It ties to our core data very well, especially in the pay sands that we're most interested in.

The next step is to determine the fracture component of the reservoir to get at the actual gas in place. Fractures can impact the reservoir in two fashions.

One is, they can increase the porosity, although this is a very small amount.

The other is that the reduce the resistivity in the reservoir, and therefore you would overestimate your water saturation in a naturally fractured reservoir.

So we wanted to take that into account. And the way to do that is a method developed by Roberto Aguilera in the 1960s, and it's been used all over the world, and -- with some success. And what I've shown here is an example of how that works, how we use that in the reservoir. This is a somewhat traditional Pickett plot of the same data from the 32-9 Number 7A Cliff House, and we've color-coded the Pickett plot by saturation values.

And what a Pickett plot does is, the lines of equal saturation value on a crossplot of porosity versus resistivity will give you the slope of that line is the cementation exponent of the rock that you're looking at.

So you can see we've got fairly nice fits. I color-coded it to aid in the interpretation of this.

If we go to the next one, the next plot is -- it's a tornado chart from Roberto Aguilera's book describing this methodology, and we actually put the equations in with spreadsheet to calculate it more precisely, but this is a diagrammatic example.

So for instance if from our core data we find that our m value, which is the cementation exponent in the log analysis -- if we have a core-derived m of 2.0, which is fairly common in the Mesaverde, based on our core, and then we have a system m calculated from the Pickett plots of, for instance, 1.8, which is shown on the Y axis, we can go across to the porosity of the reservoir. And in this case, say, it's 10 percent. You can determine what the actual partitioning coefficient, what the percent of natural fractures in the reservoir, is.

So that the example of a matrix m of 2.0, a system m of 1.8 and a porosity of 10 percent, we would see the percentage of fractures in the reservoir as a function of total porosity is about 6 percent. That doesn't mean we have 6 percent additional porosity. What it means is that in 10-percent rock, matrix porosity, the fractures would give us another .6 percent porosity over the whole interval.

So that's a very small portion. But by using that system m of 1.8 in your log analysis, it will reduce the water saturation.

Now, if we go to the next plot, this is a diagram showing the impact that using the naturally fractured analysis techniques can have on the gas in place which you determine in the reservoir from log analysis. This is a plot which is once again, looking at the actual data from the 32-9 Number 7A in the Cliff House, a conventional log analysis where we tied the logs back to the core data will give you a gas in place shown on the Y axis of 1 BCF, the origin, if we assume a cementation exponent of 2.

But when you go into the reservoir, if from your Pickett plot analysis you find that your actual cementation exponent is 1.9, which yields a partitioning coefficient of .03, your actual gas in place that you would find in the reservoir would be 1.3 BCF.

If you go even higher, a much higher fracture component of a cementation exponent of M, which corresponds to a partitioning coefficient of .08, you would get 1.7 BCF in the reservoir.

And what we found to go in all through the Mesaverde reservoir is that the vast majority of the reservoir, the partitioning coefficient is in the lower end of this range, .02 to .05, but that it still has a significant impact on your gas-in-place calculations.

Q. Let's go back and pull out the first summary sheet for the gas-in-place map -- it's Exhibit Tab 8 -- and I want you to set it aside, and let's make a comparison, then, to Exhibit Tab 9, which is the Mesaverde p.s.i.-per-year-drop map.

A. Okay.

Q. If you'll take a moment and identify the pressure-drop map behind Exhibit Tab 9.

A. This map is labeled the Mesaverde p.s.i.-per-year drop. This was calculated by taking the initial shut-in pressure of the parent wells drilled in the 1950s, subtracting from that the initial shut-in pressure of the first infill well drilled in the 1970s. That gives you a pressure drop at that 160-acre location.

You then divide that by the number of years between the drilling of the wells, and that gives you an estimate of the pressure drop over that time frame, of the yearly pressure drop over that time frame.

What we see in this map is that there are changes that are rather dramatic and abrupt. The scale ranges from 5 to 35 p.s.i. per year, but the changes occur very dramatically.

And also it's important to note, while looking at the original-gas-in-place map, that the character of those two maps is very different. The original-gas-in-place map has nice evenly changing contours, whereas the p.s.i.-per-year map, the contours change rather dramatically and abruptly.

In a conventional matrix-driven reservoir you would expect that a pressure-drop map and an EUR map would resemble the gas-in-place map, and in this case we aren't seeing a resemblance between these maps.

Q. All right. I want to refer to four maps, two of which we've seen and two more we're about to see with Mr. Woolverton's presentation. They are the gas-in-place map;

the p.s.i.-per-year-drop map; the estimated-ultimate-recovery map, which we'll see shortly; and then the drainage map, which we'll also see shortly.

When we look at all four of those maps, we're going to find one of those maps that doesn't mimic the other three. Which map does not?

A. Very clearly, the original gas-in-place map does not mimic at all the other three maps.

Q. And why does it not?

A. Because the other three maps are controlled by the drainage areas in the reservoir, which in turn is controlled by the natural fracturing in the reservoir. The gas-in-place, although the natural fracturing impacts it, the overall shape of the map is most clearly defined by the height of the reservoir, the thickness of the sands in place. So it represents large-scale depositional environments, whereas the drainage of the pool is more of a function of the natural fracturing.

Q. So when we look at the gas-in-place map, we're looking at the opportunity for additional net reserves, and when we look at the p.s.i. map, we're beginning to see how we've actually produced that resource?

A. That is correct. On the p.s.i.-per-year map, the areas in green are areas where we seem to be draining the reservoir fairly efficiently, whereas on the other end of the scale the areas in orange are not draining the reservoir very efficiently, we're not lowering that reservoir pressure.

Q. Let's turn to the next topic, and that deals with the discussion and proposal to change the vertical limits of the pool. If you'll start with Exhibit Tab 10, let's address what the issue is and talk about what you propose as a solution.

A. The issue is that we were approached by the OCD in Aztec to look at raising the vertical limits of the Mesaverde Pool, the reason for that being that there's starting to be a lot of activity of operators completing in the Lewis interval, which continues all the way up to the base of the Pictured Cliffs. But because of the top of the Mesaverde being the Huerfanito bentonite currently, that is where is the completions in the Lewis are stopping.

So it was felt that there may be some gas left in the reservoir above that Huerfanito bentonite that could be recovered if the top of the Mesaverde was adjusted.

Q. Let's put this in context with the first display on Exhibit Tab 10. It shows a depiction of what is characterized the Chacra line. Now, the Chacra line was a regulatory modification of the pool rules back in -- what was it, 1977? -- where there is subdivided in the pool a change of vertical limits between what resources in the

Mesaverde Pool depending upon where you are in relation to this line --

A. That's --

Q. -- so we already have a rule that subdivides the pool in some fashion?

A. Yes.

Q. Describe for us how it's subdivided.

A. Well, south of the Chacra line, to the southwest of the Chacra line, the top of the Mesaverde is defined as, I believe, 750 feet below the Huerfanito bentonite.

To the north and northeast of that Chacra line, which is shown on the map as the heavy black line running northwest to southeast, the jagged heavy black line, to the north of that, the top of the Mesaverde Pool is defined as the Huerfanito bentonite, which is a volcanic ash marker that goes across the Basin.

Q. Okay. The proposed change is what, now, on each side of that line?

A. The proposed change is to not make any change to the south of the Chacra line. That would remain exactly as it is right now.

But to the northeast of the Chacra line, we propose to change the upper limit of the Mesaverde to 300 feet above the Huerfanito bentonite.

Q. And that would do what, sir?

A. That would open up an additional 300 feet of potential reservoir and completion opportunities and recovery of gas that would not otherwise be recovered in the Lewis interval, which is above that Huerfanito bentonite. And also it would not impact the Pictured Cliffs up above, which is the next pool as you move up in the section.

Q. What is the scale on this display?

A. The scale -- This is a map of the structure on the Huerfanito bentonite, so the scale is getting structurally deeper in the blue areas and structurally shallower in the red areas.

Q. If you wanted to increase the top of the Mesaverde Pool so it was contiguous with the bottom of the Pictured Cliff, you have a 400-foot change? Am I not understanding?

A. No, the thickness between the -- Maybe I should ask you to repeat the question.

Q. All right, we've got a no-man's zone right now?

A. Yes.

Q. The bottom of the Pictured Cliff is not the top of the Mesaverde. We've got this interval of Lewis shale, if you --

A. Yes.

Q. -- whatever it is.

A. Yes.

Q. All right. How far do we have to go to make them contiguous?

A. The base of the Pictured Cliffs and the isopach -- the thickness between the base of the Pictured Cliffs and the Huerfanito bentonite varies across the Basin, from 400 feet in the southeastern portion of the Basin to 600 to 700 feet in the northernmost portion of the Basin.

Q. All right. My question is, within the area of the pool affected by the change, the maximum distance you could go in increasing the top of the Mesaverde before you intrude on the base of the Pictured Cliff is 400 feet?

A. That is correct.

Q. And you have an illustration on the second --

A. Yes.

Q. -- page of Exhibit 10 that shows us in a color-coded illustration a map of the difference between the current top of the Mesaverde and the current base of the Pictured Cliff?

A. That is correct. This is a thickness map, an isopach map, of the base of the Pictured Cliffs to the Huerfanito bentonite. And the thickest interval is the pink at the very top, green, and getting thinner as you get to the blue colors.

What we see is that in the southeasternmost portion, right along the Chacra line, the 400-foot contour parallels that Chacra line. So that would be the maximum thickness before you are in the lowest PC sands.

Q. Okay. Burlington has requested a change of adding 300 feet to the top of the Mesaverde?

A. That is correct.

Q. And it would still be a margin, then, of 100 feet or greater before you get to the base of the Pictured Cliff?

A. That is correct.

Q. All right. Do you have any objection if that is modified, as Amoco has suggested, by an additional 50 feet?

A. No, I do not.

Q. All right. We can still keep the equity separated in the two pools, even if you add another feet to the change?

A. In my opinion you certainly can --

Q. All right.

A. -- yes.

Q. Let's go to the next display after that one and have you identify and describe this display.

A. We should probably refer back to the map which shows the cross-section lines. The next three displays are actually cross-sections, and their locations are shown on the map. They are labeled NMOCD Strike, NMOCD Dip and

NMOCD Dip2, which represents the long one; it is a strike line across the depositional and structural strike of the Basin, and the other two running to the southwest-northeast are the dip lines, which show the major changes in the reservoir.

The first display is the NMOCD dip line which runs across the Chacra line, and it is indicated on this cross-section. Notice the bars on the right-hand side of the cross-section, with the black bar being the current vertical limits of the Mesaverde and the red bar being the proposed vertical limits of the Mesaverde.

And also on the cross-section, a red horizontal line is proposed to show the current limits.

As we can see on the left-hand side of this, we have indicated the position of the Chacra line. And to the right of that, in the base of the Pictured Cliffs, is the next correlation marker above that horizontal red line. So we are well below the Pictured Cliffs in this cross-section.

But if we go to the next cross-section, NMOCD Dip2 -- and this cross-section is the reason why we wanted to go to 300 feet -- on the left-hand portion of this, where we are right up next to the Chacra line, at this point where the horizontal red line is, is approximately 150 feet below the base of the Pictured Cliffs. So we wanted to leave some margin of error, so we left that significantly larger interval. You can see that it thickens dramatically to the northeast.

The next cross-section is a strike line which shows fairly consistent thicknesses across the Basin, so we don't see anything real dramatic happening in this strike line, as would be expected along the depositional strike of the system.

Q. All right. In summary, Mr. Babcock, let's go back to your two ultimate conclusions. The first, your ultimate conclusion about the accuracy and reliability of the original-gas-in-place map, which is behind Exhibit Tab Number 8, what is your opinion and conclusion?

A. I'm very happy with that map. I think we've put a great effort into it, hired some of the best consultants available, gathered a lot of data, and I think it's an accurate depiction of the gas in place in the reservoir.

Q. When we look at the second ultimate conclusion and look at the p.s.i.-per-drop [*sic*] map behind Exhibit Tab 9 -- it's the first illustration -- is there any doubt in your mind as a geologist that the production in the pool is controlled by the natural fracturing?

A. No, there's no doubt in my mind. Numerous lines of evidence point in that direction.

Q. Summarize for us the conclusions from the p.s.i.

map in terms of the reservoir explanation geologically that shows this depiction of pressure drop.

A. In the areas of green shown on the pressure-drop map, we you have a significantly increased density of natural fractures, which in turn significantly increases the drainage areas that you see and the pressure drop that you see at offset locations.

In the areas of orange to yellow we see less natural fracturing, and therefore we see smaller drainage areas, lower system reservoir permeabilities.

Q. And when we see Mr. Woolverton's reservoir-engineering-conclusion maps, his estimated-ultimate-recovery and his drainage maps, they are going to mimic the pattern of the p.s.i.-drop map --

A. Yes --

Q. -- are they not?

A. -- they are.

Q. And the explanation for that consistency is attributable to natural fracturing?

A. Yes, it is, absolutely.

Q. And when we block out an area that represents 9 percent of the pool where current well density is sufficient, to what do we attribute those areas?

A. Those areas are where we have the highest density of natural fractures, and therefore the highest drainage areas in the pool.

MR. KELLAHIN: That concludes my examination of Mr. Babcock, Mr. Stogner.

We move the introduction of his Exhibits 5 through 10.

EXAMINER STOGNER: Exhibits 5 through 10 will be admitted into evidence at this time.

Mr. Carr, your witness.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Babcock, if I understand Burlington's presentation, you've defined some special qualifying area within the reservoir where you believe current wells are adequately draining that area; is that right?

A. That is correct.

Q. And that is -- You've been able to identify those areas because you see a high pressure drop in those areas; is that right?

A. No, not actually. We use the more precise method to identify those areas, and Sean will talk a little bit more about it, but it was determining the drainage areas of the individual wells. So we looked at our gas-in-place map, compared to the actual individual well performance in those areas to determine those boundaries.

Q. So based on that, if I look at your pressure drop, are you telling me that the high-drainage areas don't necessarily correlate with the areas shaded in green as the areas where you're seeing the higher pressure drop?

A. They will certainly correlate, but keep in mind that the pressure-drop map is a less precise tool than the drainage-area map. The drainage-area map we have four data points per section, whereas the pressure-drop map we have at most two data points per section, and often we have less than that because of bad pressure data.

Q. So in fact, when you put all your data together, you may be seeing larger drainage areas in portions of the reservoir where you're not seeing the high pressure drop; is that what you're telling me?

A. I'm not sure -- Please repeat the question.

Q. Are you seeing -- Are you finding large drainage areas in any of the areas shaded on your pressure-drop map as being red or orange, or are we finding a correlation between these -- the green shaded areas and your special qualifying area?

A. We definitely find a very strong correlation. Of course, there are going to be exceptions. There may be areas in the Basin where we don't have pressure data, where we didn't have an infill well, and you might have had a very good parent well, so therefore you wouldn't even have a pressure-drop data point there. I can't point to any specifically, so -- But overall, it would be a very good correlation.

Q. Based on your geologic study of the reservoir, is it fair to say that when we look at the 91 percent of the reservoir that isn't in the special qualifying area, that you are seeing a fairly consistent pressure drop throughout that area?

A. No, we see variations in pressure drop throughout the pool.

Q. Do you see variations in drainage areas throughout that 91 percent of the reservoir?

A. Oh, absolutely. As Brent alluded to, in the 29-7 pilot area we see -- in a four-section area we see variations in drainage ranging from 60 to 160 acres.

Q. And when I look at that area, are there additional areas where perhaps the current wells are effectively draining the reserves?

A. Are there --

Q. -- wells on --

A. Within the 91 percent of --

Q. Yes, are there areas within which two wells per 320-acre spacing unit could be draining those reserves?

A. There may be very localized areas, but what we've found in the 29-7 area was that even though we had one well in there which was draining close to 160 acres, all of our simulation, production and post-production-simulation calibration still indicates that that area is suitable for drilling two wells per GPU and still recovers significant reserves. So -- Okay.

Q. Would you agree with me that when we look at the Mesaverde in this area, we're looking at a fairly complex reservoir?

A. Yes.

Q. And isn't it fair to say that if different geologists were looking over this data and accurately honoring it, they could come up with varying interpretations?

A. You could certainly come up with significantly varying interpretations when you're looking at the cross-sections. That's a very subjective interpretation. Gas in place might vary by small amounts. I feel we've taken a pretty conservative approach.

But the pressure and production data, I don't think there would be very much difference of opinion on that.

Q. When we look at your geologic interpretation of the reservoir, is it fair to say that it is your geologic interpretation that was the principal tool utilized to define the special qualifying areas?

A. Yes, to a certain extent, because as -- my geologic interpretation had defined the gas in place. But the special qualifying areas were based on the drainage-area map, which also took into account the estimated ultimate recoveries from the decline-curve analysis, which once again Sean will go into more detail on, in a moment.

MR. CARR: That's all, thank you.

EXAMINER STOGNER: Okay, Mr. Carr.

Mr. Gallegos?

EXAMINATION

BY MR. GALLEGOS:

Q. Mr. Babcock, let's, if we might, get a little clarification of these vertical limits. The Application of Burlington does not affect the Chacra line division; is that correct?

A. That is correct.

Q. So just from one side of that line to the other, then, the definition of the Mesaverde Pool changes 1050 feet or 1000 feet, if you accept the 50-foot interval with Amoco?

A. Yes, that's in contrast to it changing 750 feet now --

Q. So --

A. -- yes.

Q. -- one side of the line is 750 feet below the Huerfanito bentonite marker and the other side is 250 or 300?

A. Above.

Q. Above.

A. That is correct, as we are proposing.

Q. Okay. And then if you accept -- Is the fact that you accept the additional 50 feet that Amoco proposes from that line at the southwest, what you might call the southwest of the area on the other side of the Chacra line, you're gong to have at least 150 feet of interval before reaching the Pictured Cliffs? In other words, interval between what would be the new top of the Mesaverde and the bottom of the Pictured Cliffs?

A. As we are proposing with our 300-foot proposal, at the very minimum, right at the Chacra line, there would be a 100-foot interval between the top of the Mesaverde and the base of the Pictured Cliffs.

Q. Or 150 feet if you accept that?

A. Or -- I believe it goes to 50 feet, because they're proposing extending it to 350 feet.

Q. Oh, I thought Amoco was proposing to reduce --

MR. CARR: Maybe I can clarify this. The Application proposed a 400-foot extension. Amoco felt that was too much and it should be less. We proposed 350 but we would prefer 300, and they have stated here today, and we would agree with.

MR. GALLEGOS: Oh. Okay, well, that helps with the confusion. I had misunderstood that you were -- Amoco proposed increasing the margin, but that's not the case.

THE WITNESS: No.

Q. (By Mr. Gallegos) So the minimum interval would be 100 feet between what would be the new top of the Mesaverde and the Pictured Cliff?

A. That's correct.

Q. And do you see any stress barrier in that 100 feet?

A. Well, there is -- We're in a silt-shale interval, and I guess I have to refer to work that other people have done back in our office. We've completed a lot of wells in the -- below the Huerfanito bentonite, and they've put a lot of tracers in those fracs to look at how high these fracs grow. I believe that's what you're alluding to.

And what they've found is that our frac-height growth up in that portion of the Mesaverde tends to be very small, on the order of tens of feet, 10 to 20 feet.

I don't have that data here, but that's what I've been told by people who've run 10 to 15 of those in that interval.

Q. Turning to another subject, the 27-5 pilot project, I think your data was based on five wells, but there were actually eight wells?

A. That's correct.

Q. What are you learning from the other three?

A. The other three wells are coming on line very similar to the first five. We're very pleased from those. They don't change our interpretations at all. It wasn't that we didn't want to show that data; it was that those wells were not completed until recently, those three wells.

So we had five wells on for a significant period of time, and that's the data that we wanted to show at this hearing, rather than showing data from wells which have only been on for a few weeks to a month.

MR. GALLEGOS: That's all of my questions. Thank you.

EXAMINER STOGNER: Mr. Gallegos.

Mr. Chavez?

EXAMINATION

BY MR. CHAVEZ:

Q. Mr. Babcock, when you were looking at the vertical-limits issue, there is a difference between the vertical limits of the Mesaverde formation proper and the Blanco-Mesaverde Pool as such; isn't that correct?

A. If I -- reiterate -- Do you mean by Mesaverde proper the formation --

Q. Yes.

A. -- the G- -- Yes, yes, there is.

Q. Okay, so the Blanco-Mesaverde Pool includes a portion of the Lewis shale, the Mesaverde formation as you described, plus anything else that's within the 500-foot limit below the top of the Point Lookout, which may include some Mancos sands in portions; is that correct?

A. That is correct.

Q. In all of your data work that you did, did you include all of those perforations? And when you talk about Point Lookout, are you including also those upper Mancos sands?

A. The way we did our log analysis, we took a conservative approach and just looked at the conventional sands in the Mesaverde. Even though we're getting gas out of things up in the Lewis, which my log-analysis methods wouldn't have put any gas in place in those intervals. So...

And also in the upper Mancos, lower Point Lookout interval, there are some thin-bedded sands down there which wouldn't have added to the gas in place from my maps, so that -- And the reason we did that, we wanted to take sort of an at-least look at the gas in place.

Q. So Burlington does complete in those portions of the formation?

A. Yes, we do. Sometimes we do, most of the times we do, yes.

Q. When you were looking at your pressure-drop map, did you consider the types of completions or operating practices that were used on those wells that might contribute to differences in production, the pressure drop?

A. We did, we discussed that at great length because, of course, that's a concern. But the advantage of this technique, at least in our opinion, was that most of the wells completed initially were completed with a fairly inefficient completion technique, and pretty much all of them were completed with the same technique, open-hole nitro fracs, a few of the later ones were completed with sand-oil fracs.

So we felt that all of the original completion techniques which led to the original pressure drops were all sort of on equal footing.

We also felt that there are going to be localized places where you have inefficient completions, but that in looking over such a large area we had, I believe it was 1200 and some points to make up our map, that those irregularities would be evened out over the pool.

Q. Initially you thought they might be a significant contribution to the differences?

A. No, we didn't, but we did discuss that because we recognized that that would be a concern. So we discussed it and tried to evaluate that on that -- as I've discussed.

Q. So you had to, in a sense, presume that they were pretty much uniform, given the type of completion?

A. Yes, we did make that assumption.

Q. I may have missed it, but it's hard for me to follow whether or not you drew the assumption that there were permeability differences or natural fracturing that was evidenced by pressure drops, or whether or not you looked at natural fracturing and then the pressure-drop differences affirmed what you had found out about the natural fracturing.

A. No, actually it's very difficult in a reservoir such as the Mesaverde to identify specifically natural fractures, an area with natural fractures because of the nature of the way we drill the wells. We can't use the modern imaging tools to go in and physically see natural fractures and things of that nature.

So to help us define where the natural fracturing was most intense, we used the direct indicators such as pressure drop and gas in place.

Now, having said that, we did see -- Wherever we took cores, we saw natural fractures. And clearly in the cores the density of natural fractures that we saw tied very well to the productivity of the formation.

The best area we cored, which was the Howell well, most of the core came up as rubble, it was so intensely naturally fractured.

So we saw evidence like that, but that was in localized areas.

Q. That was in how many cores?

A. Nine cores.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: Representation of the BLM, do you have any questions?

DUANE SPENCER: I have one question.

EXAMINATION

BY MR. SPENCER:

Q. You said that based on the results of the pilot area, that 57 to 86 percent was new gas in your special qualifying areas, because they're highly fractured. Would that mean you could expect an additional well to result in zero new gas?

A. I don't think we would see zero new gas in the special qualifying areas. And I'm not a reservoir engineer, but if you get more straws into a reservoir, you can ultimately reduce the abandonment pressure of that reservoir. So you are going to see some new reserves.

And also, as I've shown, the heterogeneity of the Menefee will quite probably deliver some new reserves, in those highly naturally fractured areas. But it is my interpretation that the new reserves in those areas are going to be very minimal.

EXAMINATION

BY EXAMINER STOGNER:

Q. Let me go to Exhibit Number 6, first page. The original pressures that you're showing here, were those bottomhole pressures, reservoir pressures? Was it an average of wells out there in that area? Where did these numbers originate?

A. Those pressures were from the original initial shut-in pressures taken before the wells are first delivered.

Q. And how many wells are representative of each of these bars?

A. Those would correspond to the number of wells within the simulation area. If I could refer to the production slides, in the 29-7, that's going to represent 25 wells; in the drillblock it is going to represent 12 wells; and then in the San Juan 27-5 unit it would represent 16 wells.

Q. And the same question for the blue bars or your current pressures. Is that pressures of all those wells, even the new ones, or --

A. No, no. That represents sort of the same data point, except it was a bottomhole pressure. We put a pressure bomb into the eight -- into the new wells that we drilled, after completing the well but before first delivering the well, right before first delivering the well. They had been shut in from the point of completion until the pipeline got there. We dropped a bottomhole pressure gauge in there and measured those pressures. And those are an average of all the wells.

Q. This is basically the reservoir pressure in those areas, is what you're representing here?

A. That is correct.

Q. Okay. Now, you're showing 300 p.s.i. as being the -- what? Abandonment pressure?

A. That's a possible abandonment pressure.

Q. Okay, how did you come up with that figure?

A. That one is just sort of based on looking at the abandonment percentage, and we recognize that we aren't going to be able to lower a tight reservoir like this, on average, down to 50 pounds or something like that.

In simulation, in the 29-7, I believe that the estimated abandonment pressure was 300 pounds. So we just used those. That bar was merely on here for a sort of a graphical representation to demonstrate how far we have to go. The actual abandonment pressures may be slightly lower or slightly higher than that number.

Q. Do you know how much that abandonment pressure has changed with your company over the years, from the time the initial infill started back in -- what? 1976? 1975?

A. Yes, I suspect it has changed considerably. I know in the six years I've been in the San Juan Division, when I first arrived out there, one of the assumptions was that we would use a 150-pound abandonment pressure. So we've raised that considerably since then, once again trying to take a -- at least look at it. We strongly feel that we can get it to near this level.

Q. Okay, I'm going to refer now to your cumulative production. This is that San Juan 29-7 Unit infill pilot plat of cumulative production versus time. Yeah, it's that one there that's being shown on the screen now. You've got me real confused on that. Could you go over this one and tell me what the different lines represent?

A. Yes, sir. When we came -- Let me back up a moment, if I could. When we came to hearing to get the approval to drill the wells in this pilot area, we had done a reservoir simulation of the four-section area at that time, and we had -- we presented that blue line to justify our proposal. That's what the blue line is. It's a result of the simulation pre-drilling of the wells.

We then went in, drilled eight wells and produced those wells for -- I believe it was nine to ten months, and went back to the simulator again and recalibrated our simulation to see how, based on this new data -- we got eight new data points and brand-new production, new pressures -- how that modified, changed, our simulation. Would we get a different answer? And that is shown as the red line.

So -- And the conclusion was that, you know, some of the very small details change, the shape of the curve was a little bit different, but ultimately the amount of gas that's going to come out of the reservoir doesn't change very much, and also the amount of new reserves which will come out of the reservoir does not change very much.

Q. Okay, so that was the -- The blue was the predicted curve that you presented back whenever this San Juan 29 and 7 Unit infill pilot project first came to hearing, or your predictions at that time?

A. That is correct.

Q. And you've essentially -- with the new information. So there's about three years, I guess, from 1995 -- no, what, about one or two years' actual depiction?

A. It's about -- a little shy of a year --

Q. Okay.

A. -- of actual data.

Q. That makes a lot more sense.

A. So once again it is a simulation.

Q. That makes a lot more sense.

A. Yeah, my apologies for not making that clear the first time.

EXAMINATION

BY MR. ASHLEY:

Q. Mr. Babcock, the first exhibit in Section 6, you have the original pressures, the current pressures and the abandonment pressures. The discrepancy between the original shut-in pressures and the current pressures, why is there a difference there? Is that because -- Has it been lowered because of the infill that you did in these other pilot areas?

A. The reason the pressure has dropped from the original wells in the 1950s to the wells we've drilled recently is that the original wells -- There are some sands, particularly in the Cliff House and Menefee, that are continuous, and they are able to -- their drainage areas are able to reach out to these 160-acre locations, so that we are seeing lowered pressures.

Also, it's important to note that the reservoir pressures that we see are generally a function of the lowest-pressured, highest-permeability sand layer in the reservoir. So...

And that's why, when we talk about these pilot areas and our estimated amount of new reserves, we're referring to them as a percentage of the total wells' production, so that there is -- Some of the production coming from the new wells could have been produced from the original 160-acre wells, but it's a small percentage of that.

And that's why we see these lowered pressures. They're a function of the lowest-pressure zone, highest-permeability zone in the reservoir.

Q. So if you continue to infill this infill project, is there going to be any kind of negative impact, do you think, from these new wells lowering, affecting the pressure? You say they -- because of the natural fractures you -- in a sense, the infill wells can increase permeability?

A. Well, we aren't really increasing the permeability. What we're doing is, we're putting additional straws in there to access gas that we couldn't get at, at the current spacing. So we are going to see the pressure continuing down over time, as you would -- This is a depletion-drive reservoir, so -- and we want to see those pressures go down, which indicates that we are getting the gas out.

And I'm not sure if I understand the question, but these pressure drops we're seeing, it's -- You know, we've seen, for instance, in the 29-7 Unit, a 240-pound pressure drop over some 40 years, which works out to about 5.8 p.s.i. per year.

It's important to note that that pressure drop is not a linear function. It's a function of the amount of gas that's coming out.

So we know that the gas that's coming out of any wellbore declines with time. Therefore, the amount of pressure that's depleted in the reservoir -- the pressure rate of depletion is also declining with time.

Did I answer your question?

Q. Yeah. Is that rate of depletion going to increase, though, as you infill with these wells, other wells?

A. I would expect that it would as you get more straws in the reservoir, yes.

MR. ASHLEY: Okay.

FURTHER EXAMINATION

BY EXAMINER STOGNER:

Q. When you were taking these pressures off of these infill wells, what kind of bottomhole pressures were you seeing in the old wells after a shut-in of, say, 24 hours or longer?

A. I don't know that we went in and calculated those bottomhole pressures on those wells. I don't -- We did not go in to calculate the bottomhole pressures on the older wells. I can address it in a different direction, if I may.

Q. Sure.

A. What we've seen from the seven-day shut-in pressures that used to be done on a semi-annual basis, and also what we saw in some pressure-interference testing that we did, is that it takes a very long time for these wells to build up to anywheres near original reservoir pressures.

So that I would anticipate that if we were to shut in a well for a few days and measure the bottomhole pressure, we would find lower -- significantly lower pressures than this.

If we were to shut in one of those old wells for two years, we would probably find pressures approaching this.

Q. Well, that's why I asked the question, seeing what might have been the difference, if there was known differences.

A. Yeah.

Q. Did you utilize some of the old data between your pilot projects and today? There's been a lot of reservoir studies out in that area years ago. Some of the old core analyses. Was any of that data utilized?

A. What we found -- Yeah, there was thousands of feet of core that was taken previously.

The problem with that core data -- and I wanted to use it, and we spent a significant amount of money trying to figure out a way to use it -- is that they calculated porosity differently.

When they took those cores, most of it was in the 1950s, and the methodology -- and I'm -- I can't recall what the method was called, but it's a different methodology than they use now to determine porosity in the reservoir.

And we had a core lab take core plugs side by side in the cores and do one core plug using the methodology that they used in the 1950s to determine porosity, and the other core plug using the methodology that we use in the 1990s, to see if we could use that old data.

And we found a fairly wide divergence from -- between the two methods, and it wasn't necessarily predictable. You know, it changed whenever the porosity changed.

So we were not able to come up with a way to apply that old data to the new data.

Having said that, we did use some of the other data that was gathered in -- the older data, and I believe some of that was presented in the earlier hearings.

There was a pressure-observation well which has been active in the Basin for 30 years, the Strat Test Number -- I believe it was Number 1. And so we used that data to help us with that.

There was some long-term shut-in data; we used that to help us in our interpretations.

I apologize for not -- I don't have any displays to show that data or any -- in a -- I'm not able to recall any quantification of that, except in a general sense, that it seemed to confirm what we see now.

Q. That's why I -- more I was asking the question, have you looked at it? There was mountainous amounts of data processed over the years --

A. Yes.

Q. -- back in the old tight-gas-formation hearings and --

A. Yeah, it was a shame that we aren't able to utilize all of that porosity and permeability and saturation data, but we felt the accuracy of it wasn't comparable to what we can do now.

EXAMINER STOGNER: Mr. Kellahin, do you have any redirect?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: You may be excused.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, we'll call at this time Burlington's reservoir engineer, Sean Woolverton. Mr. Woolverton will address his testimony to Exhibit Tabs 11 through 15.

SEAN WOOLVERTON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please state your name and occupation?

A. Sean Woolverton. I work for Burlington Resources as a reservoir engineer.

Q. And where do you reside, sir?

A. In Farmington, New Mexico.

Q. You testified as the reservoir engineer in two of the three pilot project cases, did you not?

A. No, that is incorrect, I did not.

Q. Oh, you were not involved in the pilot project case. My apology.

Since your participation in this project, you have reviewed the pilot project studies, have you not?

A. Yes, I have.

Q. And your task here is to present the accumulated conclusions of you and various engineers concerning the reservoir-engineering aspects of this case?

A. That is correct.

Q. The opinions you're about to express are those of your own, and they are consistent with those opinions expressed by former engineers testifying before the Division in the pilot cases?

A. Yes, sir.

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

EXAMINER STOGNER: Mr. Woolverton, what exhibits are you going to be testifying on again?

THE WITNESS: Exhibits 11 through 15.

EXAMINER STOGNER: 15. Mr. Woolverton is so qualified.

Q. (By Mr. Kellahin) Let's turn to Exhibit Tab 11, Mr. Woolverton. Would you identify and describe this display for us?

A. This exhibit is a map showing the estimated ultimate recoveries for the Blanco-Mesaverde Pool at the current well density. The map was derived by analyzing over 4000 wells in the pool using decline-curve analysis.

Q. This is a summary conclusion map, then, of the estimated ultimate recoveries?

A. Correct.

Q. It is prepared independent of Mr. Babcock's geology?

A. That is correct.

Q. So when we look at this plat, what engineering tools did you use to derive the estimated ultimate recoveries of the wells?

A. Again, the tool used to derive the estimated ultimate recoveries for over 4000 wells was decline-curve analysis. Keep in mind that the wells that were analyzed, in many instances we had over 40 years' production on over half the wells, those wells being drilled in the 1950s. In the infill wells, we have over 20 years of production history.

So the decline-curve analysis is an accurate tool to estimate recoveries of the wells used to generate this map.

Q. How is this map relevant and useful for our discussion today?

A. This map is necessary. Once you do have the gas-in-place map, you know how much volume you have in the ground, this tool allows us to estimate how much gas will be recovered at current well density. So this is the second piece of the pie chart that has been shown previously.

Q. What conclusions will you ultimately draw in relationship to this exhibit concerning well density?

A. This exhibit shows that at current well density 12.5 TCF will be recovered from the Blanco-Mesaverde Pool. That's a recovery of 44 percent.

Q. And when we compare that to the gas-in-place map, we know that there's still a substantial portion of the gas in place that's available for potential recovery?

A. That is correct.

Q. Okay. Let's turn to look at the recovery factors that you have used in the pool. If you'll turn to Exhibit Tab 12, again we're back to the pie chart that Mr. Smolik talked about earlier this morning. This is, again, the same illustration, and let's go past that point and have you look at the next display for us.

A. Okay.

Q. What's the purpose of this illustration, the next one?

A. This is a display of recovery factors, and the coloring scheme is similar to the previous exhibit, that shows recoveries in three different areas in the Blanco-Mesaverde Pool. What I've done is looked at three areas with what we feel are different degrees of fracturing: the 27-5 Unit, which is characterized as a low-fractured area; the 29-7, characterized as a moderate-fractured area; and then the 32-10 area, characterized as a high-fractured area.

I'd like to point out that the 32-10 area is within a special qualifying area.

What we do see from the exhibit is that recovery factors change significantly from the low-fractured area to the high-fractured area. We find that in the 27-5 unit, recovery factors are estimated to be at 32 percent, at current well density. In the high fractured area, at current well density, an estimated recovery of 91 percent has been made.

Q. Do you agree with Mr. Smolik's conclusion that there is an opportunity by increasing well density to two more per GPU, to recover from the Mesaverde reservoir an additional 1.5 to 3 trillion cubic feet of gas?

A. Yes, I do.

Q. Let's turn to the next display. If you'll turn to Exhibit Number 13, let's look at that first display. This is the drainage-area map that we've talked about earlier?

A. Yes, this is the drainage-area map that we've alluded to earlier, and it is a map for the Blanco-Mesaverde Pool.

Q. Let's look at the areas outlined in red on this display. What are they intended to depict?

A. The areas outlined by the red lines, defined as special qualifying areas, are areas of large contiguous or consecutive areas that are experiencing drainage areas of 160 acres.

Q. Burlington's proposal is to associate those areas with an additional procedural requirement of notification to the offsets --

A. That is correct.

Q. -- before an application for an increased-density well is approved.

Outside that area, there are some isolated -- Well, let me go back.

Within the special qualifying area, the red outlines, there's a color associated with those areas. What is that color?

A. That color is black. And black, again, depicts drainage areas from wells experiencing 160 acres of drainage.

Q. Okay. When we look at the percentage of the pool in the color-coded at the bottom of the legend, that accounts for about 9 percent of the pool, does it not?

A. That is correct.

Q. Okay. When we look at the black areas that are isolated and scattered outside of the special qualifying area, what is the reason those black areas exist?

A. Those areas are a result of localized fracturing that was probably encountered in the drilling and production of the wells located outside the special qualifying areas. So those are small localized phenomena of local fracturing that probably has increased the recovery in those areas.

Q. Are those black areas outside the special qualifying area associated with one, two and three wells, for the most part?

A. Can you explain your question?

Q. Yes, sir. When we look at the black area outside the special qualifying area, how many wells make up the population that causes those black dots to occur?

A. Oh, yeah, it's a fairly small well count, anywhere from probably one to three or four wells.

Q. Okay. Do you see any reason to put each of these black areas within a special qualifying area?

A. I do not. As you can see, they're scattered throughout the pool, and to do so, from an administrative standpoint, would be very cumbersome.

Q. When we look at all the colors other than black, are we associating that with areas which, in your opinion, justify the drilling of two more wells per gas proration unit?

A. Yes, I do.

Q. Let's go back and have you describe, then, how this drainage map is constructed.

A. This drainage map is constructed simply by taking the gas-in-place map, which is in MMCF per acre -- and again that was created through extensive volumetric detailed analysis -- taking that data and dividing it into the EUR map, which was developed through the decline-curve analysis of over 4000 wells. So it's a simple mathematical process of dividing those two values out for each existing well location.

Q. When we take those two maps, original gas in place and the drainage map, and compare them, then we can have a visual illustration of how effective we are in depleting the reservoir under the current two-well-per-GPU procedure?

A. That's correct, this reflects current well density drainage areas.

Q. Okay. Let's set this aside for a moment and turn to a different topic. Let's start Exhibit Tab 14 and talk about the analysis that you have participated in, and give us the summaries so that we can understand your ultimate conclusion about the opportunity to drill two more wells per GPU, and do so in a way that you're increasing ultimate recovery, in other words, gaining net reserves.

A. I've taken part in the evaluation of the simulation forecasts that had been done for the pilot areas that were drilled. In analyzing those forecasts, I've looked at new reserve components, which we've shown in previous exhibits, and we show that from those simulations the new reserve component in the pilot areas will range from 57 to 86 percent.

Q. All right. So using the simulation, we can begin to have the simulator answer some questions for us?

A. That is correct.

Q. One of the answers we can get is whether or not there is going to be new gas reserves recovered per well and how much per well? You're able to do that?

A. Correct. The simulator allows us to model the interaction of the additional wells that will be drilled in the GPU with the existing wells in the GPU. So we can model, once we have a simulation, a flow simulation, built, what the current wells will recover, and then can compare that with what the additional wells will recover, and the interaction between those two wells, two types of wells.

Q. Let's have you examine with the use of the simulator whether or not the increased-density wells can be drilled economically.

A. Yes, I have, and this is the first exhibit behind Exhibit Tab Number 14. And what this exhibit is, is an evaluation of additional wells per GPU and the incremental present value those additional wells will realize. This is a one-section model, using the simulation data in the 27-5, 29-7 unit area, and represents 80-acre spacing within those GPUs.

Q. Can you use this model to then define for you that component that represents actual new reserves and take the volume of only the actual new reserves, put a cost factor associated with acquiring it, and figure out what happens?

A. Yes, this exhibit represents an economic analysis of the new reserve component only. It does not take into account the economic impact of the accelerated reserves that will be realized in the new wells. So it takes into account, for example, in 29-7, the 57-percent new reserve component only.

I've also listed on the slide the assumptions used in deriving these economic forecasts. A gas price of $1.45 per MMBTU, flat, was used. An investment of $345,000, which is a typical investment for a Mesaverde new drill. And then a monthly LOE charge of $700.

Q. If we were to look at this display and it were to show us it's not economic to do this activity with increased density, how would these plots be depicted?

A. You would actually see a negative net present value realized if the economics were negative.

Q. All right, show us what this tells you. The distinction between the red and the blue line, what does this mean?

A. The red line, again, is a representation of the economic forecast for the 27-5 Unit. The 27-5 Unit shows incremental net present value at two wells per GPU, as does the 29-7 Unit show incremental net present value at two wells per GPU.

The variance between the two lines represents the fact that I've taken into account the flowstreams associated with the new streams only. So if you can recall, in the 29-7 Unit, we saw only 57 percent of the new flowstreams associated with new reserves, whereas in the 27-5 we saw 86 percent of the flowstream associated with new reserves.

Q. For each of these two pilot areas, then, you can demonstrate to your satisfaction that adding two more wells per GPU can be done so profitably?

A. That is correct.

Q. Let's turn to the next illustration and have you identify and describe this display.

A. This bar chart is a simulation analysis of the 29-7 Unit pilot. What's represented on the chart is a reserve recovery forecast for the current well density in the pilot, that being 25 wells.

If no additional wellbores are drilled in that pilot area, we will recover 88 BCF of gas.

If two additional wells per GPU are drilled in the pilot, we will recover 105 BCF of gas.

And when we look at the bar chart on the far right we see a green bar, a yellow bar and an orange bar.

The green bar is a representation of the base-case wells. We see that the base-case wells will ultimately produce only 75 BCF at two additional wells per GPU. That is that 13 BCF from those wells will be produced by the new increased-density wells, whereas 17 BCF of the 105 BCF will be new reserves realized.

This is a four-section model, so 16 additional wells will be drilled in the model, so we look at 17 BCF of new reserves associated with those 16 wells. That gives you an average of about 1 BCF per well.

Q. Let's go back to the drainage map and find the 29 and 7 Unit area. Do you see the 29 and 7 Unit area for the drainage map?

A. Yes, I do.

Q. And you're looking in the four-section pilot area which was up in the northeast corner of that township?

A. Right there.

Q. All right. When you find that area, how many different color codes are associated with the simulation area within the unit?

A. We see that drainage is, at current well density range in the pilot area, anywhere from 60 acres up to 160 acres.

Q. All right, so on the color code, then, you had all the drainage variations except for the blue area?

A. That is correct, and there is actually a little slight -- There is one well in there that's draining in the blue.

Q. All right. So we have an example that was simulated in the reservoir of all the ranges of possible drainage areas?

A. That is correct.

Q. And within that area of simulation you have found that by adding two wells in a GPU you can get 17 BCF additional new reserves from that effort?

A. Correct. So again, that area, we see a range of drainage areas from existing wells going from 60 up to 160 acres, and when we look at the simulation in the calibrated model for the pilot we see that 57 percent of the new reserves of the additional two wells per GPU will be associated with new gas.

Q. If you simply change the rule and provide for one additional well in a GPU, the illustration here on this display shows new reserve opportunity of 8 BCF in the model?

A. Correct. So again, approximately -- That would be eight wells for this model, so new reserves of about 1 BCF per well. So if we were only to develop this pilot area with one additional well per GPU, we'd actually be seeing waste in the form of reserves left behind.

Q. My question for you, when you look at the new reserves add-on for one well per GPU, compared to two wells per GPU, is the 17 number -- does that include the eight from the first well, or is this 17 in additional?

A. No, that includes the eight.

Q. All right. So we have a differential here of nine additional new cubic feet of -- billion cubic feet of gas attributable to the second well in the gas proration unit?

A. Correct.

Q. What does that tell you?

A. That to effectively drain the GPU, two additional wells are required.

Q. And it appears to be required in all areas except those that have significant black areas associated with it on the drainage map?

A. If we can infer from the 29-7 Unit pilot, which has a representation of drainage areas that we find across the Basin, we can say that, yes, in the areas outside of the special qualifying areas, that being 91 percent of the pool, two additional wells per GPU are required.

Q. All right. Within the simulation area, again, we have a drainage range of 60 to 160 acres, right?

A. (Nods)

Q. And that is, in your opinion, comparable to the range of drainage differences you're seeing in the balance of the pool?

A. Correct.

Q. Let's turn now to the next display, have you identify and describe this display.

A. This display is similar to the exhibit that was just previously shown for the 29-7 Unit, however this is for the 27 and 5 Unit pilot. Again, it's for a four-section simulation, and again the color codes are similar to the 29-7 exhibit.

Q. All right. Let's find on the drainage map the 27 and 5 Unit. We're going to find an entire township on the color code that has a virtual absence of black drainage areas. There's a small one down in the southwest quarter.

A. Correct.

Q. But within this area we have a range of drainages?

A. Correct, we have a range of drainages from 40 up to 120 acres.

Q. Within the area simulated for 27 and 5, what are the ranges of color code or drainage areas within the simulation?

A. Those were anywhere from 40 to 120 acres.

Q. Okay. This is an area that is not as productive in terms of estimated ultimate recovery as the 29 and 7

Unit?

A. That is correct.

Q. Have you demonstrated to your satisfaction that it still justifies the opportunity for two additional wells in the GPU?

A. Yes, I have.

Q. Describe for us how you reach that conclusion.

A. Referring back to the exhibit showing the 27-5 Unit pilot simulation, we again see that the base case wells, the existing wells in the pilot, will recover 37 BCF.

The addition of two wells per GPU will increase the recovery from that four-section pilot to 55 BCF.

Now, the difference we see from this exhibit to the exhibit in 29-7 is that a larger percentage of the reserves associated with the new wells are new reserves, and as we've alluded to in the past, for this area, 86 percent of the flowstream is new reserves.

Q. Take us in a summary, then, Mr. Woolverton, from your knowledge and involvement and experience with the details of the pilot projects, and help us make a transition to the entire pool in terms of what you're proposing to do for increased density.

A. Based off the analysis that I've worked on, I find that 91 percent of the pool can be -- will realize increased reserve recovery by the addition of two wells per GPU.

Q. Outside the special qualifying areas, is it your recommendation that the Division create the opportunity for two additional increased density wells in a gas proration unit and then leave it up to the operator and interest owners as to when and how and where the drill those wells?

A. That is my recommendation.

Q. Let's shift to another topic. If you'll look at Exhibit Tab 15, let's finish the rest of the simulation picture that Mr. Babcock commenced in his presentation. This chapter is focusing on what the simulation can do in terms of forecasting accurately the economics, am I correct in understanding?

A. That is correct. The use of the simulator was twofold, to allow us to forecast economics, but also to allow us to understand the interaction of the existing wells with the new wells that would be drilled in the gas proration unit.

Q. All right, let me go back and ask you a question about that. When we have the model history-matched and calibrated, it now gives you a tool to forecast the performance of the new infill wells or the increased-density wells, does it not?

A. That is correct, once we've established confidence in the model through a detailed geologic model being built and a history match achieved on the historical pressure data, we are then able to use the simulator to forecast the drilling of additional wells in the gas proration unit.

Q. All right. Let's go through the summary of the steps in the modeling, and then we'll come back and show the different things you can ask the model to forecast for you.

A. You bet.

Q. Let's look at the slide that shows the steps in the simulation.

A. And this is just a summarized overview of the steps that we took to develop what we believe is a very rigorous model.

Keep in mind, and Bill has testified, that the Mesaverde is a complex reservoir. In order to fully understand the reservoir, we developed a detailed geologic model. So that was the first step. That consisted of the use of open-hole logs and core data in the simulation area. That core data and log data was used to build a rigorous geologic model for the pilot area.

And once that geologic model was built, we then went to the flow simulator to match the historical pressure data in the pilot area, based off the existing wells.

We also had a POW well in the pilot area, specifically in the 29-7 pilot area, that we were able to match static pressures for the three layers in the Mesaverde. So that's the second step.

Once we do calibrate the model through history matching, we are then able to use the model in the forecast mode and predict the flow streams that will be realized both out of existing wells and the new wells that will be drilled in the area.

Q. We presented to Examiner Catanach in the pilot case presentations a summary of the various methods and steps in the simulation. For purposes of this record and for this Examiner, let's take a moment and run through the steps, because you're applying a different geologic methodology than is usually seen in the more simple simulations, are you not?

A. Correct.

Q. Let's turn to the next display and have you identify and describe what you're talking about when you introduce the topic of a variogram. What is that?

A. A variogram is a means that allows us to develop a mathematical model, using known data, to help us predict the reservoir variability that is observed or that can be forecasted between the existing wells or between the known data points.

Q. This slide simply illustrates that issue and helps you explain how you account for the variability in known data points?

A. Correct.

Q. How do you account for the variability between known data points?

A. That's the use of the next slide --

Q. Let's look at that.

A. -- which incorporates in the variogram, and what is shown here is a geostatistical model which, as you mentioned, is a rigorous methodology to accurately characterize your reservoir. And in the Mesaverde where we have significant heterogeneity, this model comes into play.

So this is a cross-section model of porosity for the three layers. It consists of a 464-vertical grid -- so that's a data point every two foot -- and then a surface grid of 50 by 50.

Q. Let me see if I understand what you're doing. You're taking a reservoir simulation in which, instead of putting in homogeneous data points and having the computer in a simplistic way average out all those data points, you now have a way to account for the variability, and the computer, then, through the simulation, does it in a nonaveraging or a nonsmoothing way, in a layman's expression of terms?

A. That's what the geostatistical modeling allows you to do.

Q. So we now have a geostatistical model that can forecast and account for the high degree of variability in the reservoir?

A. Correct.

Q. Okay. Let's look at the next slide. One of the issues we talk about in reservoir simulation is the various grid sizes and how you've programmed the grid system into the simulation. What have you done here?

A. This is the grid system from the reservoir simulator, the flow simulator. You can see that the grid is on a 15-degree northeast orientation. The grid cells average an approximate size of 330 foot. All 25 existing wells in the four-section pilot that we've shown in the previous maps are captured within this grid.

Q. So you have a grid system, each cell of which is small enough to take into account the proposed increased density wells wherever you position them in the model?

A. Correct.

Q. Okay, let's turn to the next slide. What does this show?

A. The next two slides, or two exhibits, are examples of upscaling of the geological model to allow for the input of the geological model into the reservoir simulator. So it's simply taking -- going from a vertical grid size of 464 to a vertical grid size of 818.

Q. This is a three-dimensional model. We can see this in multiple directions?

A. Yes, you can.

Q. Okay. Let's turn to the next display and talk about the history match of performance.

A. Again, once the geological model is built, we then calibrate the reservoir simulator by matching historical pressure data.

Again, keep in mind that this reservoir has seen several instances of development. We have the wells that were developed in the 1950s, the wells developed in the 1970s and the wells that were developed in 1997, the 80-acre wells.

This is an example of one of the 1950-vintage wells where we've gone back and achieved a history match on shut-in pressures observed every two years.

Q. And you're going to do this with multiple wells; this --

A. Yes.

Q. -- is just an illustration of one of them?

A. And we've found -- And we were successful in matching, which increases our confidence in the model, matching not only 1950 wells but 1970 wells and 1998 or

1997 wells.

Q. You're taking actual bottomhole pressure or surface pressures calculated to bottomhole conditions --

A. Correct.

Q. -- and matching that data.

All right, let's look at the next display.

A. As I had mentioned, another source of data that we used to help us calibrate our model was the data from the 29-7 Unit, Number 300 POW, which was drilled inside the 29-7 Unit pilot area. We were able to history match the pressures observed in the three layers of the Mesaverde, that being the Cliff House, Menefee and Point Lookout.

Q. Are you getting pressure matches on actual data that are accurate to a sufficient degree to give you confidence that the forecasts are going to be accurate and reliable?

A. Yes, we are.

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

A. Finally, the last display I have for Exhibit Tab Number 15 is two examples of recent wells drilled in the production matches of those wells. We talked that we had a pre-drill simulation match, and then after acquiring nine months of production data, we went back and calibrated our model with the new data acquired from the eight new wells in the pilot. This is a match of two of those wells' production, and you can see it's a good, strong match.

Q. In fact, in the 29 and 7 model, you matched the data on the old wells and the new wells?

A. Correct.

Q. You matched all the well data?

A. Correct.

Q. Having satisfied yourself that the simulation in the 29 and 7 is accurately calibrated and history matching, then you've used it to forecast the conclusions you have given Examiner Stogner earlier?

A. Yes.

Q. And that conclusion is that two additional wells per GPU are going to result in additional new reserves as you've quantified them?

A. Correct.

Q. Okay. Let's turn to your comments and opinions concerning modifications of the rules to give Burlington and other operators the opportunity to engage in the increased drilling effort.

A. Okay.

Q. Let's look at the concept of having an opportunity for two new wells per GPU in the entire pool. Are you comfortable with that?

A. Yes, I am. We've performed a very detailed analysis over the last several years, and based off that detailed analysis I'm confident that two additional wells per GPU are required in the bulk of the Blanco-Mesaverde Pool.

Q. Burlington has suggested that there should be a procedural distinction between wells drilled in a special qualifying area and those wells drilled outside of that area. Do you understand that?

A. Yes, sir.

Q. What is the reason for depicting a special qualifying area and applying an additional notice requirement exclusive to those areas?

A. Again, the areas inside the special qualifying areas from several different data sets, we find that the drainage areas are probably near 160 acres, so that would lead us to believe that the current well density is efficiently draining the reserves in those areas.

So additional wells in those areas, we will realize a small incremental new reserve component. However, a large percentage of it will be solely acceleration.

Q. If the Division chooses to recognize that drainage difference in the pool, then this method would be one where offset operators would have an opportunity for notice and objection and a hearing to determine to what extent those wells are drilled and where?

A. Correct.

Q. Is that a procedure that you see to be necessary for the balance of the pool?

A. No, I do not believe it's necessary for the balance of the pool.

Q. And why not, sir?

A. The balance of the pool, as shown through several different data sets, is a tight-gas, low-permeability reservoir, and we're seeing very low drainage areas below what the current well density is.

Q. So if I'm in an area not in a special qualifying area, and I choose to afford myself the opportunity for an increased density well, and I do that, and if you're the offset operator, how do you respond to that activity I engage in if I don't give you notice of it?

A. Again keep in mind the tight nature of these reservoirs. In many instances it may be valuable to look and see what the offset operator's doing. Your lease will probably -- will not be affected for a long time frame, based on the tight nature of the reservoir, so you'll actually have an opportunity to look at the performance of the offset well, see how it is doing and make a decision on if you would like to drill your well or if you would like to forego that opportunity.

Q. If the role is reversed and it is Burlington in a position to have acreage in an area where another operator is drilling increased-density wells, can you learn of that activity in the ordinary course of your business, without being sent a specific notice by that operator that he started that activity?

A. Yes, we continually look at the areas -- or the activity in our assigned geographic areas, to see new wells that have come into the area and to see the performance of those new wells.

Q. Do you see any opportunity for a violation of correlative rights in those areas outside of the special qualifying area, if notice is not provided and no objection opportunity is given?

A. No, I do not.

Q. If the Division decides to use a special qualifying procedure and an objection is registered, the proposed rules include some paragraphs on some items that you consider relevant to resolving that dispute.

Let's take a moment and find in our book the proposed rule changes, and let's talk about those. If you look behind Exhibit Tab 2, let's turn to page 2 of the proposed rule change. And there is, in a change of font -- Do you see it here, under paragraph 5 --

A. Yes.

Q. -- in the middle of the page? It says, "In the event the Division desires to adopt criteria for approval of..." these increased density wells, or if they establish one of these special qualifying areas and there is an objection.

Let's go through your suggestions about what is relevant and what ought to be examined in resolving that issue. Summarize for us what you're suggesting should be a procedure.

A. I've suggested three different tools that we've used to evaluate the performance of wells in an area. The first tool, of course, is the -- sub (a), is the pressure drop observed in the area. As we've seen through trend correlations from the drainage map and the p.s.i.-per-yer map, we find that areas with high pressure drop per year reflect areas that have high drainage areas, or areas where current well density may be sufficient. So that is one tool that I would recommend be considered to evaluate any disputes within special qualifying areas.

Second tool is volumetric estimates of drainage areas.

And then finally the third tool, which is a more rigorous tool, but we've shown the value of it, is reservoir simulation.

Q. Let's look at the volumetric tool in association with your Mesaverde drainage map. Is this not the result of a volumetric analysis?

A. That is a volumetric analysis, a detailed volumetric analysis.

Q. Evolved over the course of many months by numerous engineers to get us to this point on the map?

A. Correct. Actually, not many months but several years.

Q. Okay. To what degree are you and Burlington confident that the Division can rely upon your Mesaverde drainage map to identify and depict those areas in which the current well density is adequate?

A. I place high confidence in this map, and it's used to depict the special qualifying areas and then the areas outside the special qualifying areas.

Q. Are you aware of any other company or operator that has gone to this level of effort to attempt to provide the Division with this kind of information?

A. I have not seen or shared a conversation with operators that have done this detailed a work.

Q. So when we look at the possibility, if the Division decides to do so, of a special procedure for those areas that are being adequately drained, in your opinion we have accurately identified those areas?

A. I believe so.

Q. Summarize for us, Mr. Woolverton, your comments and opinions concerning Burlington's proposed setback change. We have proposed to the Division and to the other operators that the new wells in the pool, including whatever may be drilled, increased density or infill, that the setbacks be changed. You're aware of that?

A. Correct.

Q. What do you see as the benefit of that rule change?

A. I can probably best characterize that or describe that by referring to a previous exhibit to start of with.

Q. Okay.

A. That's behind Exhibit Tab 6 --

Q. Okay.

A. -- and it is the drillblock pilot area. It's a good example of decreased offset --

Q. All right, let's find that. It is the second to last display behind Exhibit Tab 6, right?

A. Correct.

Q. Okay. Now, when we look at this drillblock plot area, there are wells located to the intersections of these sections that are closer than a 660 setoff, are they not?

A. Correct, these are nonstandard locations.

Q. All right. But as an illustration, describe your point.

A. This map serves well as an illustration purpose.

You can see the black wells are the existing 320- and 160-spaced wells. You can see by the nature of the current setbacks, those wells are forced into similar drainage patterns. You can see that they're located directly north-south of each other, and that's the drainage pattern that we feel occurs in the Mesaverde.

By relaxing the setback rules, it will allow us to get off that current drainage pattern that the current rules have established and more efficiently drain the reservoir.

As you can see in Section 1, the 1C is now located in between the 1 and the 3A. So we're actually able to more efficiently drain the reservoir with these relaxed setbacks.

Q. Okay. Let's turn to another illustration of the limitations of the setbacks. If you'll turn to Exhibit Tab 2, which contains the proposed rule change, and if you'll look at the last illustration before you get to Exhibit Tab 3 -- Do you have that illustration?

A. Yes, I have it.

Q. Okay. Under the current setback rules, the area depicted in blue represents your drilling windows?

A. Those are the current drilling windows, defined by the current setback rules.

Q. And if you need to be outside those windows, you have to go for a well-by-well exception as to location?

A. Correct.

Q. By relaxing both the interior and the exterior window dimensions, show us what you get.

A. This exhibit shows you the increased surface availability to place new wells that will be realized by the relaxation of the setback rules.

Currently for each quarter section we have available to us 29 acres to drill new wells. We'll increase that fourfold by relaxing the current setback rules. And the bulk of that comes from the relaxation of the interior line, interior quarter-quarter section lines.

Q. By changing the setbacks, do you see any opportunity to impair correlative rights?

A. I do not.

Q. Not in this reservoir?

A. Not in this tight, low-permeability reservoir.

MR. KELLAHIN: Mr. Examiner, that concludes my presentation of Mr. Woolverton's testimony.

We move the introduction of his Exhibits 13 through 15.

EXAMINER STOGNER: Exhibits --

THE WITNESS: Actually, it was 11 through 15.

MR. KELLAHIN: I'm sorry, I've misspoken. It's 11 through 15.

EXAMINER STOGNER: 11 through 15 will be admitted into evidence at this time.

Mr. Carr, your witness.

MR. CARR: No questions.

EXAMINER STOGNER: Mr. Gallegos?

MR. GALLEGOS: No questions.

EXAMINER STOGNER: Mr. Chavez?

MR. CHAVEZ: Yes.

EXAMINATION

BY MR. CHAVEZ:

Q. Mr. Woolverton, if an operator chose to drill an original and an infill well both on the same quarter, before he drilled any other wells in that 320, would that create a problem with the development of that 320?

A. Can you further elaborate on your question?

Q. Well, does it really matter in what order the four wells are drilled on the 320?

A. So you're saying, the parent well being drilled first, is it necessary to drill the 160 or the second -- the first infill well, prior to the drilling of the third or fourth infill well?

Q. That's correct.

A. I don't see that being an issue outside of the special qualifying areas. Inside the special qualifying areas, it would probably be better to drill the offset --

if a third infill well is to be drilled, to have the second infill well drilled first -- or the first infill well drilled first. Any of that make sense?

(Laughter)

Q. (By Mr. Chavez) Well, your proposal is, I think, that the first infill well be drilled in the opposite quarter from the original well.

A. Correct.

Q. But should an operator conclude that actually the order of drilling should be with the two wells in one of the quarters, to determine whether they might then want to drill further in the other quarter, would that create an issue, as far as you're concerned, in the development?

A. I don't believe that will create an issue.

Q. Has Burlington identified any areas within your proposed special areas where they would oppose higher density drilling at this time?

A. We would have to look at those areas on a well-by-well basis. But for -- It's my belief that throughout those special qualifying areas, that additional wells are not required.

Q. In your review of the drilling, did you find any Mesaverde drill tracts where only one well would have been sufficient to drain the 320?

A. I didn't go through and look for that specifically. We didn't really evaluate the areas of high drainage to -- with the simulator to determine. So I guess no, I haven't.

Q. So conceivably there could be infill wells out there that may be unnecessary that exist at this time?

A. The first infill wells? In a high-perm area, that theoretically could exist.

Q. And yet there's no provision at this time for special notification for infill in those types of areas or areas where that might apply?

A. No, there is not.

Q. I didn't understand how you as an offset differentiated how you would treat a well that was drilled in one of your special areas versus outside of the special area. It sounded to me like basically you do the same thing, you would look to see what the production was, how the wells were spotted and how they had performed, before you would take any action. Is that pretty much correct, what Burlington would do?

A. No, in those areas having higher permeability we would perform an analysis prior to the offset well being drilled, if we felt that correlative rights could become an issue for our lease, we would protest the drilling of that well.

Q. Aren't there other methods available for you to protect your rights, such as requesting that the offset tract be reclassified as nonmarginal? Have you considered that as a possible way to protect your correlative rights?

A. I haven't considered that method.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: Thank you, Mr. Chavez.

Representative of the BLM, any questions?

MR. SPENCER: I have one question.

EXAMINATION

BY MR. SPENCER:

Q. Exhibit 14, the first slide, did you do any analysis on any additional wells per gas proration unit beyond the two additional ones?

A. No, we did not.

EXAMINATION

BY EXAMINER STOGNER:

Q. Exhibit Number 13, this was the map that you had the different colors of areas. Now, there was a few of the areas where the black shading does appear but are outside the special qualifying areas. How did those areas get there? What is that depicting? What are we looking at?

A. Those are single-well or two- or three-well areas that are draining 160 acres. In some instances you find localized natural fracturing that enhances the drainage of wells, but as you can see, it's on very localized areas.

And you find it consistently throughout the pool, but they're small occurrences.

Q. Are they appearing there because of well completions, perhaps? Fracturing techniques, horizontal drilling? I'm trying to figure out why those would be left out and the others are in some sort of a special qualifying area.

A. I wish we could make all our wells like that because of -- as a result of completion techniques. Unfortunately, I believe that those areas are a result of improved reservoir quality that we've encountered.

The reason why they were left out of the special qualifying areas is, when you look at the location of those wells, there's probably -- I haven't counted these up, but 20 to 25 instances of those occurring, scattered throughout the pilot area.

So to capture those -- and I believe that those are really localized phenomena -- that it would be very cumbersome from an administrative standpoint to capture all those within the special qualifying areas.

So I look to capture the special qualifying areas in areas of large contiguous areas of better reservoir quality, or reservoirs where higher drainage areas are being realized.

Q. Going on to page 2 on Exhibit Number 14, this is your year 2040 cumulative production prediction on infill wells. Okay, now, when I look at that, when I look at the base, those would be your essential one and two wells in the proration unit, would that not?

A. That's correct. And for the 29-7 that consists of 25 wells.

Q. Okay.

A. One well is currently plugged and abandoned, so it's 24.

Q. By drilling two additional wells, now, you have shown that 88 figure to go down to 75. I'm assuming that's overlapping drainage?

A. That is correct.

Q. Let me see if I can ask this question properly. What is the minimum amount of acreage needed for a well to be -- a stand-alone well in the Blanco-Mesaverde, to be economic?

A. I can't give a definite number. As you get towards the outlying areas of the pool, you are going to find areas that a stand-alone Mesaverde well would not be economic, and I really can't provide a definite acre number. I wish I could be able to say if it's 40 acres, don't drill underneath that.

But you're going to see different production profiles come out of those areas, so I can't give you a definite number.

Q. Okay. Skipping over to Exhibit Number 15, especially your history-match performance, Well Number 37 --

A. Okay.

Q. -- that's a well that goes back to 1955, and again, what are the black line and the green lines?

A. Okay, the green line is a history match of the shut-in tubing pressures that were observed bi-annually. So shutting in those wells every other year for a ten- to seven-day shut-in pressure, those are represented by the green circles.

We then obtained a history match of those green circles through the use of the simulator, and that's defined by the green line.

The black line is simply a conversion of the green line from surface conditions to bottomhole conditions.

And we were able to obtain a similar-type history match on all the existing wells in the area.

Q. Did you do any kind of a -- like a drainage map per well in those wells that you're showing your Mesaverde drainage, those wells that were draining 160 acres, what your effective area of drainage -- Did you do anything such as that?

A. Yes.

Q. Okay. And what was -- In those black areas, what was the effective -- or what is the average effective area or radius of drainage for those wells?

A. Theoretically, if I looked at it on a one-well basis, you could see drainage areas in excess of 160 acres. But when I look at it, at the current well spacing, no-flow boundaries are going to be set up by the pattern of drilling that are in those areas. So throughout those areas, effectively, most of the wells average 160 acres of drainage.

Q. And then, of course, as you go down into those blue areas, that effective radius gets smaller; is that correct?

A. Correct.

Q. In those areas where you had your black shading, whether they be inside or outside that area, in your discussions with other operators, especially if somebody drilled to a standard 790 and now you're moving in on somebody at 660, was there any discussion about that, your no-flow boundary being offset a little bit?

A. We did have discussions with other operators on the setbacks, and we didn't differentiate between the special qualifying areas, either being in it or outside from it.

But from those discussions we had originally discussed a 330-foot setback to more effectively drain the reservoir. We came to an agreement amongst several of the operators that the 660-foot setback would be a better setback for the pool as a whole.

Q. Okay, so there was no adversity to that 790 versus 660; is that what you're telling me?

A. No.

Q. Okay. Now, in going into the proposed rule changes, I'm looking at this special qualifying area, so if somebody wants to put a second or third infill well in that, so now they go through this additional notification procedure, and there is an objection. Then what happens? After -- At a hearing, what should we be looking at, what's the questions that are going to be asked, what are going to be the problems?

A. That was the attempt of Section Number 5, to give tools that Burlington would look at to make an estimate on whether a third well in the GPU would be necessary or not.

Q. I'm hearing you say a yes or no on that, as far as what the decision from the Division would be, yes you can drill or no you can't.

A. You would have to take into account the reservoir data presented on either side. I haven't tried to put in there exact values to say if the pressure drop was greater than 15, no, you couldn't, or if it was less than 15, yes, you can. That is going to be up to the decision of the Division. Those are just tools that I would recommend be considered in evaluating any disagreement of additional wells inside the special qualifying areas.

Q. I'm having a hard time why those should be distinguished differently in the first place.

A. Within the special qualifying areas, the reservoir quality is such that correlative rights can be impacted by a third well being drilled within a GPU. The reservoir quality in those areas is better than the reservoir quality outside those areas. So that's the reason for the definition of the special qualifying areas.

Q. Well, it appears to me nobody's here to object to it in the first place. I'm still having a hard time with why that should even be treated any different. Of course, I haven't heard all the testimony today, but was there some objections, was this a concoction made up to maybe get everybody's approval on it, or did you have some other discussions, or were there some operators out there that were violently opposed to this unless you put that in there?

A. Yes to all your questions.

Q. Okay.

A. There was discussion with other operators. Some felt that special qualifying areas may not be necessary, some felt that they were necessary. So there wasn't agreement across the industry for the necessity of those special qualifying areas.

Q. Now, you talk in there about this special qualifying area when an APD is filed I'm assuming that if you want to recomplete a well that's already drilled through that zone, that that would be treated the same?

A. Yes. Notification in a recompletion instance would be necessary to the offset.

Q. Okay. Now, that well density, the first infill well drilled on the GPU, essentially would be drilled anywhere. The second one, it starts here, like it has been for -- time beginning back when the infill was approved, that the second well be drilled in the opposite quarter section; is that correct?

A. Correct.

Q. Okay. Well, how about if you want to bunch all three of the -- all three wells, or all four wells, in the same quarter section? What -- should there be -- Are you trying to get away from that? Are you trying to say that you can only have two wells in each quarter section?

A. That's the way the rule has been written, or that the proposed rule has been written.

Q. Well, is that what you want?

A. I would recommend that that would probably be a more efficient development of the reservoir.

Q. So if somebody wanted to drill the second infill in the same quarter section, then what would be your recommendation? So what you would have is essentially four wells in a proration unit, three of them in the same quarter section --

A. I would recommend that we have two wells in each of the quarter sections.

Q. Well, I know you're recommending that, but I see -- are you -- I see unorthodox locations all the time, so I know that this is not going to occur.

(Laughter)

THE WITNESS: In some instances, there's going to be probably surface constraints, and those instances may lead to the drilling of the first infill well in the same quarter section as the first well. So I would handle those on an exception-by-exception basis.

Q. (By Examiner Stogner) Okay, how would the exception be handled?

A. As an NSL.

Q. A nonstandard location.

A. Nonstandard location.

Q. Okay, how was the map prepared on Section 13 -- I mean on Tab Number 13? How was this map prepared? What was looked at?

A. The drainage area map?

Q. Yes.

A. Really, it's a simple map to put together once you have the gas in place estimated and once you have the estimated ultimate recoveries of the current wells estimated.

Q. Okay, now, what -- Did you look at the production off of every single well in the San Juan Basin?

A. We looked at -- In the San Juan we looked at about 5500 wells and performed decline-curve analyses on those 5500 wells.

Q. Okay, there's 55- -- I mean -- Let me make sure I get this straight. 5500 wells. Now, how many wells are there in the Blanco-Mesaverde; do you know?

A. That's approximately 4300 wells.

Q. Overall there's approximately 4300 wells?

A. In the Blanco-Mesaverde.

Q. In the Blanco-Mesaverde. And how many wells did you look at?

A. 4300.

Q. Okay, so you looked at all of the wells in the Blanco-Mesaverde?

A. Yes.

Q. Okay.

A. Burlington has an interest in -- I'm trying to think back, that number. Approximately 2200, 2300 wells.

Q. Uh-huh.

A. Those wells we have, and we evaluated those on a yearly basis, the reserves associated with those wells in the forecast associated with those wells. So what we had to do is go out and analyze another 2000 wells within the pool to develop our EUR map.

Q. Okay. So how far back did you look at the production data?

A. We imported in and looked at the production data for each well from day one, with the exception of wells drilled prior to 1970. We didn't have production data prior to 1970, so the data was available 1970 to when the analysis was made.

With the decline-curve analysis, we honored the decline trend that was being observed in each of the individual wells.

Q. So you feel pretty confident on the accuracy of this map, based on that data?

A. Yeah, I think we have to feel confident in the EUR map and the gas-in-place map, and I think we've done a real rigorous study for those two maps, and so I'm highly confident in those two maps. And so that leads me to believe that this map is accurate also.

Q. I'm really trying to go back here and get this special qualifying area, I'm having a little difficulty on that one, so -- I thought I can get you on the accuracy of the map, but I can't on that one.

A. I think this is some of the most detailed work for a pool this size that's probably been done.

Q. Yes, it does appear to be very well on that aspect of it.

If this special qualifying area was adopted, should there be a time limit on it?

A. I don't believe so. I think that the reservoir characterization that we've made in this analysis isn't going to change, so I would see that those areas should withstand overtime.

Q. Let's say I'm in this qualifying area as an operator and I have to notify you, because I want to drill a second or a third infill well. Would you object, if they're standard?

A. I would look -- You know, again, I'd have to perform an individual well analysis, but with the data I have available to me right now, I would say yes, I would object.

Q. You would object.

A. Now, within the special qualifying areas, there may be an instance where the reservoir isn't of as high a quality, but I don't that you're going to see that very often.

Q. What would you object to? Your correlative rights being violated?

A. I believe an additional well inside that area, the purpose of that additional well would cause waste in that the majority of the reserves being produced from that well would be -- the reserves wouldn't be unique, they wouldn't be new reserves. They would simply be an acceleration of reserves from existing wells.

So if the new well being drilled in the special qualifying areas was offsetting my existing well, that's where I believe my correlative rights would be infringed upon. So in order to protect that well I'd have to drill an infill well. And I don't believe that would be economic to do.

Q. But I feel it would be economically feasible. Would I be harming -- I mean, you've already suggested that there wouldn't be any waste occurring; you'd just have additional -- the same amount of reserves produced at a faster time.

A. Well, the waste would be in the form of economics. I believe that we spend the money to drill unnecessary wellbores, that we would still recover those reserves with the existing wellbores, and so that's where the waste comes from.

So we're not wasting reserves, you're right that we'd be getting the same amount of reserves out, but instead of doing it with two wells, we're doing it with four wells.

Q. Well, what would be different than adding an additional infill well and drilling a horizontal well? Under horizontal wells, under your proposed rule changes, I wouldn't have to notify anybody.

A. I guess I lost --

Q. So what would be the difference between me drilling a -- say the first infill well and drilling horizontal across my proration unit, as opposed to me wanting to put in a third or a second infill well?

A. I think I follow you, that your horizontal well's going to contact additional reservoir, that your two vertical wells would contact.

Q. Well, maybe, maybe not.

A. Well, what we've found is that -- We've tested that concept, that we haven't seen that take place, that a horizontal wellbore generally sees typical recoveries as a vertical wellbore.

Q. So if I wanted to put a horizontal wellbore in this special area, I wouldn't have to notify anybody, but if I wanted to drill a second infill I would. I don't see the difference.

A. If the horizontal well was the first infill?

Q. Yeah.

A. Well, you don't have to notify currently if the first --

Q. That's what I'm getting at.

A. -- infill is a horizontal or a direct -- or a vertical. And that's because in these areas we don't see 320-acre drainage from the vertical wells, so two wells per GPU, I believe, are necessary in the SQAs.

Q. The SQAs.

A. The special qualifying areas. So that's why notification on the first infill would not be required, be it a vertical or a directional well.

Q. I'm just not seeing the difference between -- I already have two wells there and I want to recomplete with a horizontal. I don't have to notify anybody in one of these special qualifying areas. If I wanted to drill a third vertical well, I'd have to notify somebody. I'm not seeing the connection.

A. The third well, be it directional, vertical or a recompletion, I would recommend, if it's in the special qualifying area, that notification be made. But if it's the second well in the special qualifying area, I don't see that.

And in large part, in the special qualifying area, the area has been developed on two wells per GPU. So there's probably few instances where you're going to find only one existing well on a GPU within the special qualifying areas.

Q. You have something potentially simple, and that's what we've been -- we, the Division, have been getting hit with several -- for quite some time now, about our rules are too cumbersome. And here you are coming along with something more cumbersome. And I guarantee you, you won't get blamed on it, the Division will, on having some cumbersome rules and regulations that the operators have to comply with. It's just not making much sense.

Well, if I -- I'll tell you what, if I took this out would you have an objection. Would you all come in and go *de novo*?

MR. KELLAHIN: Mr. Examiner, I must tell you, the special qualifying area is my invention and not Mr. Woolverton's, and at an appropriate time in the hearing I'm happy to explain the reasons we have suggested this special qualifying area as a solution to some concerns by the operators.

I think I can represent to you that what we're here for is to increase the well density in the pool and that the special qualifying area should not be an implement to cause that not to happen.

So we're here to advance the special qualifying area as an alternative solution for you to address some concerns of certain operators. If you choose not to approve it, then that doesn't mean we're going to ask for a further hearing in this matter.

EXAMINER STOGNER: What I'm getting at, Mr. Kellahin, there's already -- and Mr. Chavez has already brought this up -- there's already a mechanism out there in this pool that has been prorated before, that if a second or third well comes in, and maybe that proration unit needs to be handled as a nonmarginal.

MR. KELLAHIN: And that is one of the appropriate tools that you have to address that issue, if you choose not to address it within the context of the pool rules.

This was intended to give you the opportunity to consider whether or not certain areas in the pool, where the data represented that adequate drainage was occurring, to make a distinction, because if additional wells were drilled in those qualifying areas the argument is that you're doing it to accelerate rate, and you'll have some adverse effect on the offsets in terms of drainage.

The concession is, your two existing wells are adequate, and yet you want more wells. And so the opportunity here for an objection looked like a possible solution to that issue.

You've raised an issue about horizontal drilling. I quite frankly didn't think of that. I think it's a way around this particular pool rule. I have not addressed that. And it would be an opportunity for someone to use horizontal drilling as an exception to the rule.

What we were suggesting here is a well density of not more than two wells per 160, a well density of one per 80, and the mechanics of how we did that were my responsibilities and not Mr. Woolverton's, that's all.

EXAMINER STOGNER: Quite frankly, at this point what I've already seen, or it appears to be that you want to be able to drill additional wells all around the pool but except in an area that's -- that Burlington has designated a sweet area for themselves, and that they would object to anybody else around them. That's what it's appearing.

MR. KELLAHIN: Yes, sir. The appearance is incorrect, Mr. Examiner. The study was done blind of surface ownership or where wells were operated or anything like that. It was neutral as to who owned what and where.

EXAMINER STOGNER: Okay. Is there any other redirect of this witness?

MR. KELLAHIN: There's one question I'd like to clarify.

FURTHER EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Stogner asked you about the minimum number of acres required for a Mesaverde well. Within the context of the simulation, you have simulated down to a density of one well per 80, have you not?

A. Correct.

Q. So you know at least down to that density it is economic to have one well per 80; is that not true?

A. That is correct.

Q. You have not modeled it below that number to see if you can support it economically with a density of less than 80, right?

A. No.

Q. Okay. So for purposes of your study, then, we can satisfy Mr. Stogner's question to the extent that we know in the pool that the two-well additional per GPU is appropriate?

A. Correct.

Q. And the only concern is, there is an opportunity for him to recognize a difference for those areas that have significant black shading, and he may choose, if he decides to do so, to handle them with a procedural difference?

A. Correct.

MR. KELLAHIN: Okay. I have nothing else, Mr.

Examiner.

EXAMINER STOGNER: Okay, you may be excused.

Okay, it's one o'clock. Let's take an hour-and-fifteen-minute lunch recess, and we'll reconvene at 2:15.

(Thereupon, a recess was taken at 1:00 p.m.)

(The following proceedings had at 2:15 p.m.)

EXAMINER STOGNER: This hearing will come to order.

Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

Our next witness is Mr. Alan Alexander, Mr. Stogner.

ALAN ALEXANDER,

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

A. Yes, my name is Alan Alexander. I'm currently employed with Burlington Resources as a senior land advisor in their Farmington, New Mexico, office.

Q. On prior occasions, have you qualified as an expert in petroleum land matters before the Division?

A. Yes, sir, I have.

Q. Your responsibility in this case was to provide notice to the parties that might be affected by this Application?

A. That's correct.

Q. In addition, you were one of the participants on Burlington's team to contact other operators and interest owners and make presentations concerning this topic and the proposal concerning rule changes?

A. Yes, sir, that's correct.

MR. KELLAHIN: We tender Mr. Alexander as an expert witness.

EXAMINER STOGNER: Mr. Alexander is so qualified.

MR. KELLAHIN: Mr. Alexander is going to sponsor the documents in Exhibit Tab 1 through 4, and then he will sponsor the letters that are behind Exhibit Tab Number 16. The final document book he will sponsor is marked Burlington Exhibit 17. It's in a separate binder. I apologize for only having one copy. It is the notice documentation, and I will give it to you shortly, Mr. Examiner.

Q. (By Mr. Kellahin) Let's deal with Exhibit 1, Mr. Alexander. Let's turn to the information that was placed in the enclosure that was sent out for notification purposes. What did you send?

A. What we sent out in our notification packet was a

-- and we sent it out certified return mail -- was our notice of the hearing for this case this morning, to ask for special rules to infill the Blanco-Mesaverde Pool and other administrative areas.

Q. That was a letter dated September 28th, over my signature?

A. Yes, sir, that's correct.

Q. That letter contained an error as to the date of hearing, did it not?

A. Yes, sir.

Q. Did you enclose an attachment in the mailing to indicate a correction on the hearing date?

A. Yes, sir, I did. We corrected the notification to indicate that the hearing day was Thursday, October the 29th, at 8:15 a.m.

Q. Were these notices placed in the mail in compliance with the Division notice rules, such that they were in the mail, certified mail, return receipt, at least 20 days prior to the hearing?

A. Yes, sir, they were.

Q. Included in that mailing was what other documentation?

A. Included in that mailing was a copy of our Application, and the Application also made reference to two exhibits.

Q. And those exhibits were what, sir?

A. The first exhibit was our proposed -- or is our proposed rule changes for the Blanco-Mesaverde Pool.

Q. And Exhibit 2 is what?

A. And Exhibit 2 -- and I'm sorry, I didn't include Exhibit 3. But Exhibit is a landplat showing the outlines of the special qualifying areas that we had proposed for a rule change. And Exhibit 3 is a land description by section, township and range of those areas within the special qualifying areas.

Q. Let me direct your attention to what I will mark as Burlington Exhibit 17 and ask if you can identify that exhibit book.

A. Yes, sir, this exhibit book contains a listing, a spreadsheet listing, of the owners that we sent the certified mailings to.

Q. That tabulation of information concerning notifications was done under your direction and supervision?

A. Yes, sir, it was.

Q. Describe for us how you went about compiling a list for notice purposes.

A. Since the notice requirement may, in fact, be that we are obligated to notify all owners in the pool, which would include royalties and overrides, production payments, working interest owners, that was a physical impossibility for us to do. We couldn't go into the county records and pull that much data out of them.

So we thought the next best thing that we could do and try to notify as many people as we could is, we pulled all of the records from our Division Order files on all of the people that we had on pay for the Blanco-Mesaverde Pool, and I also asked and got the cooperation of Amoco Production Company and Conoco, Inc., and they furnished me with a listing of all of their owners that they had on pay for the Blanco-Mesaverde Pool. This resulted in a mail-out list something in excess of 3500 people.

Q. Did that list include, to the best of your knowledge, all of the operators of wells in the Blanco-Mesaverde Pool?

A. Yes, sir, certainly the bigger operators, I believe that it covers all of those people.

Q. Can you testify according to the contents of the book without looking at the book itself?

A. Yes, sir.

MR. KELLAHIN: Mr. Examiner, here's Exhibit 17, which is the notification book.

Q. (By Mr. Kellahin) Once you have tabulated the parties to receive notice and the mailing was sent out, does the Exhibit 17 include a documentation of the return receipt certificate numbers as to that mailing?

A. Yes, sir, it's current as of the first of this week.

Q. Describe for us how you made that tabulation, then.

A. Well, we built a spreadsheet, and as we -- We initially entered all of the certified mailing numbers as they went out, and then as they have come back we also have a column on there indicating that they have been -- that they were returned.

Q. And you have in your possession at your office in Farmington the actual green card showing delivery of the notifications?

A. Yes, sir, we do.

Q. And this document is a summary of that procedure and process?

A. That's correct.

Q. All right. Is there anything else contained in that Exhibit 17, other than those notification lists?

A. No, sir, that's what's contained in there.

Q. To the best of your knowledge, is it accurate and correct?

A. Yes, sir, to the best of my knowledge, and we did rely upon the notification addresses and lists that we did get from Amoco and Conoco, which we very much appreciated.

Q. Let's turn to the exhibit book, the main exhibit book, if you will, Mr. Alexander. The book is organized so that behind Exhibit Tab Number 1, which has the Application and the notice letter, Exhibit 2 is the proposed rule change, Exhibit 3 are the three pilot project Division Orders approving those pilot projects --

A. Yes, sir.

Q. -- and then let's start with Tab 4. Let me have you summarize for us the efforts that Burlington has gone through in order to place this issue out among the operators and interest owners of the San Juan Basin concerning Burlington's position concerning increasing well density, adjustment to footage locations, and the other components of the Application.

What was the first event?

A. My involvement in trying to get people -- the notice out to people and information out to people, really started, oh, approximately in 1996, where we had a working interest owner for the San Juan 29 and 7 Unit interest owners, and we had a meeting with those folks to outline the processes that we were going through to evaluate the reservoir and, more particularly, the fact that we wanted to implement a pilot project in that federal unit.

Q. When we look at the documentation behind Exhibit

Tab 4, the verification of these various meetings is in reverse order. The oldest documents are at the end of the exhibit tab?

A. Yes, sir, substantially. I noticed that one of them was out of place in there, but that was my original intention, to go from the most current to the earliest.

Q. All right, let's talk about the first meeting that was called to inform the operators about the project. There's a Four Corners Oil and Gas Conference in March of 1996?

A. Yes, sir.

Q. Summarize what occurred there.

A. We presented our findings and our procedures at that Four Corners Oil and Gas Conference in March of 1996, and Mr. Babcock was the principal speaker at that convention.

Q. Thereafter, there were other meetings of various groups. Lead us through the chronology, if you will.

A. Yes, we continued -- From that point, we continued meeting with the industry. We also -- We called an industry meeting for the Basin operators in 1996. I may not go through this exactly chronologically. We also called operators' meetings for the other two pilot areas, one being the San Juan 27 and 5 Unit, and one being what we refer to as our drillblock area, up around 30 North, 11

West.

We also made presentations to the Independent Producers Association of New Mexico. We made a presentation at their annual meeting concerning our ideas and plans and the progress that we had made thus far.

We also had another Four Corners Oil and Gas Conference presentation by Mr. Babcock in 1998.

We cooperated with the New Mexico Oil Conservation Division, more particularly with the Aztec Office, and called an operators' meeting for the pool. And that also involved other entities, other regulatory entities that might have been interested. And that was in September of 1998, we had a meeting with those folks.

Q. By September of 1998, that meeting that was sponsored by the Aztec Office of the Division, was there specific discussion about the proposed rules?

A. Yes, sir, there was.

Q. So at that time a proposed set of rules had been disseminated and circulated, and it was the topic of discussion at that meeting?

A. That's correct.

Q. Okay. Have you before and since got general comments and responses from the industry concerning the issues raised by this Application?

A. Yes, we have. Most of those were conversations, and it occurred at the meetings. We had a few follow-up letters, but most of them were conversations at the particular meetings about the proposed rules.

Q. One of the suggestions or proposals that you have submitted to the Examiner is the concept of a special qualifying area. Mr. Stogner raised some issues before the lunch break about that concept and how it might work and how it might function and what was involved.

Did that idea of a special qualifying area originate with Burlington?

A. No, sir, it didn't.

Q. How was it raised, and how was this proposal created?

A. Well, we had quite a few comments on the areas that we perceived as having high drainage, and there were comments on both sides of the issues. We had comments from some of our working interest owners that they didn't think that we should be drilling any additional wells in those areas. Then we had comments clear on the other side, through the entire spectrum, to the effect that, well, we shouldn't have any restrictions on drilling wells in those areas.

So we had a full range of comments dealing with these high-drainage areas. And really, based upon all of those comments, we thought we would offer a middle-ground solution that might accommodate most of the needs and most of the comments that we had received.

Q. As part of the Division District-sponsored meeting, was the concept of a special qualifying area, as proposed in the rule, discussed at that meeting?

A. Yes, sir, it was.

Q. What was the range of negative and positive response to that topic?

A. Again, there was a full range of response on there, all the way from no drilling in those areas to no restrictions on drilling in those areas.

Q. When we look at the distribution of drainage areas on the drainage map, does it have any relationship to where Burlington has wells or property interests or anything else with regards to this reservoir?

A. No, sir, I was careful not to inquire into that. I do not know what acreage we own in that area, nor do I know what other folks own in that area. I didn't really want to know the answer to that, because I thought it was appropriate to base that strictly upon the geoscientists' and reservoir engineers' work that they had done. So I did avoid that issue.

Q. So you did not supply the technical staff with that kind of information as they compiled their conclusions concerning the drainage areas?

A. No, sir, I did not.

Q. The discussion about the density of the wells, was there a range of discussion and conversation concerning the proposal to increase well density so that there are potentially four wells in a gas proration unit?

A. Yes, there was.

Q. And how was that received?

A. Again, we had varying comments, but I would say largely it was well received, and by far the majority comments were that they thought we were correct in our analysis, that we did need to infill the pool, and that two additional wells in a gas proration unit was probably the right answer.

Q. Was it clear and was it understood in the presentation that Burlington's concept was to place wells so that the density under this change would be no greater than two wells in a quarter section?

A. Yes, sir, I think we've been consistent in our opinion on that approach.

Q. Now, there are GPUs in the San Juan Basin where there currently are more than two wells?

A. That's correct.

Q. There occurrences where that has happened?

A. Yes, sir.

Q. Within the Application context, Burlington has requested the Division simply grandfather any GPU that may currently have a third well in it.

A. Yes, sir.

Q. Is that your proposal?

A. That is our proposal.

Q. And why would you suggest doing that?

A. Well, I don't believe we need to revisit any of those issues about where those wells originated, but we do believe that we need to go on from this point, and since we're recommending infilling the reservoir, it seems appropriate to go ahead and bring those wells in under the new rules.

Q. Your suggestion, then, is, if there is an approved APD at this point for a third well, that by some action in this order those approvals would be grandfathered into the rule change?

A. That's correct.

Q. Apart from those circumstances, you're asking a rule change to increase the density for what reason, sir, from a land-management standpoint?

A. Well, I believe we would like to clarify that position, that very position. We see from our technical analysis that we believe that additional two wells is the right answer in a majority of the pool, and we believe that we ought to follow these rules in the future and limit the number of wells to two wells in a quarter section, which would give you the ability to drill four wells in the gas proration unit.

Q. As a landman with Burlington, how do you interpret the current rules in terms of well density? What's the maximum number of wells you can drill?

A. I interpret the current rules to be two wells per gas proration unit.

Q. And that's without regard to what may be provided in the prorationing system rules?

A. That's correct.

Q. Your belief is that you're specifically limited to the two wells?

A. Yes, sir.

Q. Was there any discussion about the requirement to have each of these increased density wells, regardless of where located in the pool, subject to some notification requirement?

A. The only notification requirement that we were asking for would be a notification requirement in the special qualifying areas, if somebody wanted to increase the density in those areas.

Outside of that -- those areas, we're recommending that no notice be given to increasing the densities in those gas proration units.

Q. When you look at a land perspective and the separation of the Mesaverde Pool from the Pictured Cliff, what's your opinion about changing the top vertical limit in the Mesaverde Pool, as proposed earlier today, to increase that distance?

A. I believe that's needed. We have been doing some work in the Lewis shale, and we filed permits to perforate intervals in the Lewis shale.

And there appears to be, from the work that we've done, there is reserves above the Huerfanito bentonite marker north of the Chacra line that could be recovered, and we don't believe that that recovery could be done on an individual well-by-well basis, probably not even by dual completions. The approach probably to be used would be to commingle that if we had to do it outside of the Blanco-Mesaverde Pool.

So we believe that it makes good sense to go ahead and raise the vertical limit and have that classified officially as part of the Blanco-Mesaverde Pool so we can go ahead and get those reserves.

Q. When you look at that from a landman's perspective, does it create any kind of difficulties that you're aware of in terms of ownership of that interval that's being changed into the pool boundary?

A. Not that I'm aware of. Now, I wouldn't say absolutely that rights haven't been severed such that somebody may own Lewis rights. I did not find any in our system, so that possibility could occur but I think it's very minimal. And so I don't think it will create any ownership or correlative-rights to go ahead and include that interval with the Blanco-Mesaverde Pool.

Q. The last topic, Mr. Alexander, is to look behind Exhibit Tab Number 16 and have you authenticate for us that you have included copies of correspondence that you have received from two companies. One is El Paso Field Services, and the other is Williams Companies.

A. Yes, sir.

Q. Without reading the contents of those letters, they were to address what topic and issue, Mr. Alexander?

A. At several of the meetings, the issue -- it's a valid issue -- the issue was raised that there was concern about the ability to take gas out of the Basin when we started an increased-density program, that we would have sufficient capacity to do that.

We and others have had meetings with the transporters, and it's our understanding from those talks that they feel like that is not a problem, that they've adequately addressed it in the past, up to the current time, and they will continue to address any of those problems that arise in the future. Therefore, we thought it probably was appropriate to go ahead and include their letters of evidence of that situation.

Q. Should the Examiner desire to review that topic, then, your suggestion is that the details behind Exhibit Tab 16 would provide him a basis of knowledge on that issue?

A. Yes, sir.

MR. KELLAHIN: Mr. Examiner, that concludes my examination of Mr. Alexander.

With your permission, we move the introduction of the balance of our exhibits, which I believe at this time are Exhibits 1 to 4, 16 and 17.

EXAMINER STOGNER: Exhibits 1 through 4, 16 and 17; is that correct? --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- will be admitted into evidence at this time.

Thank you, Mr. Kellahin.

MR. KELLAHIN: Thank you, sir.

EXAMINER STOGNER: Mr. Carr, your witness.

MR. CARR: I have no questions.

EXAMINER STOGNER: Mr. Gallegos?

MR. GALLEGOS: No questions.

EXAMINER STOGNER: Mr. Chavez?

MR. CHAVEZ: No.

EXAMINER STOGNER: Representative of the BLM?

MR. SPENCER: No.

EXAMINATION

BY EXAMINER STOGNER:

Q. Referring to Exhibit Number 16 -- that's El Paso Field Services and Williams -- again, they -- you included their comments mostly as a purchaser or a transporter of gas out of this area; is that --

A. Yes, sir, that's correct.

Q. How many transporters are there in the San Juan Basin, particularly into the Blanco-Mesaverde Pool, roughly?

A. Mr. Examiner, I couldn't answer that question. Maybe we have another witness that could answer that for you. I'm not real sure.

Q. I thought you --

A. I know that these two entities are by far the larger transporters, and they felt with them addressing -- and we feel with them addressing the problem, we should not have any future take problems out of the Basin, for any long period of time anyway.

Q. Now, you may not know how many were out there or are out there as far as transporters. Do you know if Burlington gave all of them the opportunity to respond to your proposal, or to this proposal for the Blanco-

Mesaverde?

A. Yes, sir, I believe we did.

EXAMINER STOGNER: Okay. Are you sure you don't have any more questions, Mr. Kellahin, of this witness?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Because I don't. All right, you may be excused.

Would you like to bring another witness up or recall any of your previous ones?

MR. KELLAHIN: No, sir. They're available for questions if you have them at this point of any of the early witnesses. I do have an additional expert available if you desire to get into the details of the reservoir simulation. He's available. He has not been called. If that's a topic of interest to you. All the rest of them are still here and present, if you have any questions that we have failed to address.

EXAMINER STOGNER: I'll take that under consideration. I guess at this time -- Let's see, Mr. Carr, you had a witness. And Mr. Gallegos, did you have a witness?

MR. GALLEGOS: Yes, sir.

EXAMINER STOGNER: Procedurally, do either one of you have a preference of who goes first?

MR. GALLEGOS: Maybe we could have a couple minutes just to shuffle around here.

EXAMINER STOGNER: Please do. With that, I will get a drink of water, then. So we're off the record.

(Thereupon, a recess was taken at 2:40 p.m.)

(The following proceedings had at 2:45 p.m.)

EXAMINER STOGNER: This hearing will come to order.

Gentlemen, who would like to start?

MR. CARR: May it please the Examiner, at this time Amoco would like to call Pam Staley.

PAMELA W. STALEY,

the witness herein, after having been first duly sworn upon her 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 Pamela Staley.

Q. Where do you reside?

A. I reside in Denver, Colorado.

Q. By whom are you employed?

A. Amoco Production Company.

Q. And what is your current position with Amoco?

A. I'm the regulatory affairs engineer for Colorado and New Mexico.

Q. Have you previously testified before the New

Mexico Oil Conservation Division?

A. Yes, I have.

Q. At the time of that prior testimony, were your credentials as both a petroleum engineer and a geologist accepted and made a matter of record?

A. Yes, they were.

Q. Are you familiar with the Blanco-Mesaverde Gas Pool?

A. Yes, I am.

Q. Are you familiar with Burlington's Application for special pool rules and other changes in the rules which govern this pool?

A. Yes, I've reviewed it.

Q. Are you familiar with the status of current rules for the pool?

A. Yes, I am.

Q. And are you familiar with Amoco properties in this reservoir?

A. Yes, I am.

MR. CARR: Are the witness's qualifications acceptable?

EXAMINER STOGNER: They are.

Q. (By Mr. Carr) Ms. Staley, has Amoco participated in meetings with representatives of Burlington and others concerning the need for additional development in the

Blanco-Mesaverde Gas Pool?

A. Yes. In fact, we've met several times with Burlington, listened to their Application and, in fact, as Mr. Alexander stated, we provided a pool notice list to them to assist in doing the notice for this Application.

Q. Does Amoco support the drilling of additional wells on spacing and proration units in the Blanco-Mesaverde Gas Pool?

A. Yes, Amoco does support Burlington's proposal for drilling additional wells in this pool. We feel that there are areas that do need some additional wells on an optional basis.

Q. Have you prepared exhibits for presentation in this hearing?

A. Yes, I have.

Q. And are those what has been marked Amoco Exhibit Number 1?

A. Yes, sir.

Q. Would you refer to that and turn to the second page of that exhibit and briefly summarize for the Examiner Amoco's concern?

A. First of all, I just want to reiterate that Amoco does support this pool change for additional wells. We do believe that there exists across the pool areas that on an optional basis would benefit from additional wells.

We do not, however, support the special qualifying areas. We feel that they are unworkable, we feel they are confusing, and we feel that the boundaries that have been set in those cases are arbitrary at best.

Rather, we support no specific qualifying areas in the pool and simple notice all across the pool for a limited period of time.

We feel that with the amount of data that we have at this point in the pool, that we would be well served by notifying our offset operators to avoid future correlative-rights issues.

We also support some simplification of language of the proposed rules by Burlington. In fact, we support some language that was provided to us by Mr. Frank Chavez, which we think very much simplifies how we would go about looking at these rules in the pool change.

We also support grandfathering of permitted wells. As Mr. Alexander stated earlier, there are wells out here that have already been third wells and fourth wells, and we'd like to see those grandfathered into the pool.

Q. Now, Ms. Staley, if we look at this exhibit, the next entry is a recommendation for a 350-foot vertical pool extension?

A. Yes, in that case we heard Burlington's testimony this morning for 300 foot, and we would go along with that and support that, for the same concerns that they have stated.

Q. In fact, the 350-foot figure was simply Amoco's proposal to back off of what we thought was originally a 400-foot extension of the vertical interval; is that right?

A. That's correct.

Q. You have recommended that notice be provided for all offset operators in the pool when an additional third or fourth well is drilled. How are you limiting that request for additional notice?

A. Not to the entire pool. To be clear, we want to notice in the surrounding spacing units to the pool, and we want to limit that to a period of up to two years if this pool change is agreed upon.

Q. And would you recommend that the notice portion of an order which is entered, if, in fact, the notice requirements are adopted -- that that portion of the order be the only part that's subject to later review?

A. Yes.

Q. You have indicated that -- in the first page or second page of this exhibit, that Amoco opposes special qualifying areas.

The next page of this exhibit outlines Amoco's concerns, but I think what I'd like you to do is refer to

Burlington Exhibit 13 that was offered earlier this morning, and if you would refer to Exhibit 13, using this exhibit, and just explain the problems you see with the current proposals for special qualifying areas.

A. We've been concerned about the qualifying areas for some time, and we have expressed that to Burlington.

We think that this particular exhibit is an excellent example of just how confusing this process could be. As you can see, there are particular spacing units that might be one spacing unit away from two qualifying areas and not included. We think that's a difficult thing to work with.

Specifically, one example would be in Township 30 North, 7 West, which is right in the middle of probably the blackest area there of increased density. And if you look at that, at the top of that in Section 3, or what appears to be Section 3, there's a blue area that would indicate that you would need to notify people offset to you if you were looking to have increased density in that particular section.

That particular section is colored blue, which they have indicated would be 40-acre spacing, would be needed. I don't really see the need to particularly have that in the qualifying area.

Just as confusing --

Q. So that would be 40-acre drainage?
A. Pardon me, 40-acre drainage.
Q. All right. Go to what is Section 6 in 30 North, 7 West.
A. Yes. In Section 6 of that same township, that would be listed as a black area or a greater than 160-acre drainage. That, by some reason, is not included in the special qualifying area.
So I think that's a very good example of two locations that look like they might even need to be reversed. I think you see that across this map, and it's very confusing to me as someone going in and trying to do some increased density, as to where I would have to notice people, and I just think it's a very confusing thing to go through.
Q. Does Amoco recommend that no special qualifying areas result from this hearing?
A. We do.
Q. If qualifying areas are approved, does Amoco concur in the criteria that was discussed this morning for the approval of additional wells in the qualifying area?
A. We do not agree with that, just because again, as there are many geological interpretations out here and many methods used to approve wells, we also feel that there's many engineering ways to look at approval for wells. We

would not want to be limited to those two methods as the sole means of gaining approval for increased density. And adopting a very specific rule on that or specific guidelines, I think, becomes difficult.

Q. Now, let's look at the notice issue for a minute and go to the page in Exhibit 1 entitled "Simple Notice". Would you review for Mr. Stogner what it is that Amoco is recommending in regard to notice for third and fourth wells drilled on gas units in this pool?

A. Yes, this is very similar to the notice that we use in other areas of our rules. Basically what we are asking is that when you go to do any type of infilling, that being past the first infill well, that you would do notice to all the offset operators for that spacing unit.

We would have that notice include the intent to drill either a third well or a fourth well on the spacing unit. We would look at basically a return-receipt policy as we have right now, mailing, and then self-certify that notice to the NMOCD. After the 20 days have passed, if there were no protests, we would ask that that application be approved.

Q. Is the next page in this exhibit just an illustration or a cartoon that shows an example of how notice would be provided if Amoco's recommendation is approved?

A. Yes, it is. And again, this doesn't differ greatly from what Burlington had proposed. However, we would like to see the notice be for all of the spacing units surrounding, rather than just for the quarter section that you're proposing the infill well for.

Q. Could you just generally summarize why it is that in this reservoir, on a temporary basis, Amoco believes that offsets should be notified if a third or fourth well is drilled on a spacing unit?

A. I think probably the best way to characterize that is just a proceeding with caution. We've looked at a lot of Burlington's information this morning. There's -- We see large reason for -- and agree with the reason for drilling many more wells out here, perhaps.

I think we're all kind of unsure as to what areas might need two wells, what areas might need one well, what area might need no wells, and we seem to have difficulty agreeing upon that.

Therefore, the reason for the notice that we would see in an interim period would really be to flush out those areas where we might have issues. And there may be correlative-rights issues that come up, and there may not be.

It would be our position that if we're not seeing any problems and we're having a fair amount of drilling going on out here, that perhaps we could revisit that earlier than two years and dispel with that notice.

Q. Let's go to the next page in Exhibit 1, entitled "Simplify Language". Would you review that for Mr. Stogner?

A. Yes, this -- I received a note from Frank Chavez a month or so ago after seeing Burlington's proposal for language, and Frank had come up, I thought, with a very simple way to describe the first well and the second well. That would be under the 2(b), the Rule Number (1) and (2), in parentheses.

Basically, you would say that "No well should be located closer than 660 feet to the outer boundaries of the gas proration unit nor closer than 10 feet to any quarter-quarter section line or subdivision inner boundary."

And then the second one would go further to say that "No more than 2 wells within a quarter section can be produced at one time."

So what that does is reduce it down to the fact that you can have two in one quarter section and two in the other quarter section, and what the setbacks are. And I thought it was a vast simplification to some of the language that we had seen proposed.

Q. Is the remaining language on that page Amoco language, or is it Burlington language with Amoco's suggestions?

A. Yes, it's kind of a combination of the two. The first item there is where we would be talking about the notice that we would like to have across the pool for the limited period of time, just talking about the simple notice as I just described that.

Item number 2 would be describing who an adjacent operator is. Again, I took that from Burlington's language only to describe that as all the way around the spacing unit rather than offset to the quarter section.

The third item there, and fourth items, are pretty much verbatim from Burlington's proposal. Should the NMOCD want to have that approved, certainly, by the Division's District Supervisor, we're fully in favor of that. And if the District Supervisor chooses to send that recommendation up, even if there is no opposition to the application, we would agree with that as well.

Q. How many third wells on spacing units has Amoco drilled in this pool?

A. We have not drilled any wells to date. However, we have by recompletion 14 wells out there currently that are third wells in the spacing unit. And we have ten wells which we have permitted to this date.

Q. When you say "permitted" do you mean approved applications for permits to drill?

A. We have approved applications for permits to drill on four wells, and we have another six which have received nonstandard location approvals through the Santa Fe Division.

Q. And you would concur that existing wells should be grandfathered?

A. Yes, we do.

Q. And you would request that that grandfathering extend both to those wells on which APDs have been approved or an administrative order has been entered?

A. That's correct.

Q. The next page in your exhibit addresses the vertical limit increase, and that is a matter that we are now in agreement with the Burlington proposal on; is that correct?

A. That's correct.

Q. So we can skip that.

What is the -- Would you just identify the last two pages in Amoco Exhibit 1?

A. Yes, the last two pages are really the proposal that Amoco would have for the writing of the rule. This incorporates the information that we've just described, and there would be one addendum to that in the second paragraph, which would change the vertical limit from 350, which was our original proposal, to 300 foot.

Q. Ms. Staley, if the Application of Burlington is approved with the changes that you have recommended, in your opinion, will the order serve the best interests of conservation, the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Was Amoco Exhibit Number 1 prepared by you?

A. Yes, it was.

MR. CARR: Mr. Stogner, at this time we would move the admission into evidence of Amoco Exhibit Number 1.

EXAMINER STOGNER: Exhibit Number 1 will be admitted into evidence.

MR. CARR: And that concludes my direct examination of Ms. Staley.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Kellahin, your witness.

MR. KELLAHIN: Thank you, Mr. Examiner.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Ms. Staley, let's examine the current rules.

A. Yes.

Q. Under Rule 2(b) of the Blanco-Mesaverde Pool rules, you're allowed an initial well, are you not?

A. Yes, you are.

Q. And a standard GPU is 320 acres --

A. Yes.
Q. -- correct?
And you get an optional second well classified as an infill well, provided it is drilled in the GPU in the opposite 160 that does not contain the original well?
A. That's correct.
Q. That's the rule, right?
A. Yes, sir.
Q. Okay. How did Amoco go about following any procedures to get your APDs approved for a third well when the pool rules don't provide for a third well?
A. That has been a standard procedure that we have seen for a few years here through the Division, to approve those on a nonstandard-location basis, with notice to offset operators.
Q. So how are those processed by you? Are they done through the District Office in Aztec, or are they processed through the Santa Fe Office?
A. They've been processed through the Santa Fe Office, and where there's an APD obviously that's been processed through the Aztec Office.
Q. And the proposal that you're making is that those third-well GPUs, that may now have approved APDs for those wells, would simply be grandfathered into this rule change?
A. As well as the ones that have been permitted

through Santa Fe for nonstandard location inclusion and noticed.

Q. Is it Amoco's position that if the well density is increased as Burlington proposes so that we would have a well density of not more than two wells in 160 acres, within that gas proration unit, that that would be the maximum number, barring some special application and processing of that application for a fifth well?

A. I'm sorry, would you repeat the question?

Q. Yes. When we look at the rule change, when the rule change, as you've suggested that language, is there a limitation as to the total number of wells in the spacing unit?

A. I have not included one, no.

Q. By reading the simple English, can we conclude that the maximum number is four wells?

A. Yes, I think you can.

Q. And can we conclude that it is certainly your intention to have a well density of no more than two wells in 160 acres?

A. Yes, and I think you can conclude that from the language that Mr. Chavez supplied.

Q. Prior to this afternoon, have you circulated to Burlington or anyone else these proposed rule changes?

A. No.

A. Why did you wait until today to circulate the specific language of these rule changes?

A. We've discussed every point, I think, on here with Burlington prior to this.

Q. When we look at this last two pages, there is a suggested language on allocation and granting of allowables. Do you see that?

A. Yes.

Q. I'm not aware of anything yet in the record of this case to support any kind of discussion about how to apportion allowables in a GPU. Did I miss something?

A. Perhaps you did.

Q. All right.

A. That is just a writing of the rule as it stands under the current -- It is verbatim the same rule that is in our current Mesaverde Pool rule. There is no change or no intended change.

Q. All right, you're lifting this out of that portion of 8170, the proration rules?

A. Yes, sir -- No, I'm lifting it out of the actual Mesaverde Pool rule.

Q. All right. What's the purpose of putting it in here again, if there is no change?

A. I actually started typing through it, and as you can see toward the end of it I decided not to complete typing the entire rule and started saying there was no change.

Q. Okay.

A. No intent there for any --

Q. I apologize, I misunderstood. I thought you were proposing a rule change to the allocation and allowable system that's currently in the rule.

A. That is not why I put that in there, no.

Q. All right. When we look at the Burlington drainage map, Exhibit Number 13, you were concerned about the special qualifying areas because in some of the qualifying areas you found an example of some blue shading?

A. I would say in several I did, yes.

Q. And that blue shading represents low drainage areas of, say, 40 acres or less, right? That's your understanding, isn't it?

A. Yes.

Q. And if there is a blue area within the special qualifying area, it was your testimony that no notice is required; is that not true?

A. No, I believe it was my testimony, if I -- I may have misspoken, that I believe that there was notice required. What I did not understand is why that would be included and yet a high-draining area would not be included, was the point I was trying to make.

Q. Isn't it also your point that if it's a blue area within the special qualifying area, contrary to Burlington's proposal, there should be no notice, in fact?

A. The point I was trying to make was that there's a lot of inconsistency in how those areas were put together. It's not just the black spacing units, but in fact it contains a real variety of types of drainage, and therefore it seems to me very confusing to try to figure out why you would notice on one and why you would not notice on the other, which is why I propose to notice on its entirety across the pool, because we have those variations, frankly, going on everywhere in the pool by their map.

Q. You would agree with me, would you not, that if you are in a blue area, the current data demonstrates -- the uncontested data demonstrates that is in an extremely low drainage area, right?

A. Yes, we're not challenging Burlington's data here. We are challenging the special qualifying areas.

Q. But you're suggesting that despite drainage substantially less than 80 acres should require notification to offset?

A. I'm require- -- What I'm pointing out is that by the data it becomes very confusing to use these qualifying areas, because there seems to be no real pattern to how they were chosen.

Q. And your choice, then, is to expand the notice that Burlington has proposed be limited to special qualifying areas and take that notice to every individual well in the entire pool?

A. That's absolutely right. And the reason for that is because I think we still have very few third-well, fourth-well data points. You all have demonstrated that you have three pilot areas. We've testified to the fact that we have 14 wells out there existing. To me that does not seem like a lot of data points for pressure and rate information to determine if we've got it right yet or not.

That's why we're proposing the two-year or less notice, so that offset operators will have an opportunity to challenge. Under the rule that you're proposing, they would not have that opportunity to challenge anywhere in this pool, other than in the special qualifying areas.

Q. Do you have any technical data to present today on any of these topics?

A. I am relying upon the data that's presented to us by Burlington, which we've met on several times.

Q. When we look at the opportunity for notice in a blue area, what is to be accomplished if I send you notice?

A. Well, let's say I get into a blue area and I drill a well that doesn't look like a blue area. That would be my concern. I mean, I'm all for simulation, I'm an engineer, I've done it. But I guess -- I think most engineers in this room would tell you that even though we've got a lot of wells out here, I don't think any of us can avoid being surprised now and then.

Q. Within this two-year period, this temporary period for notification --

A. Or less than that.

Q. Well, the proposal is two years. Are you --

A. Up to two years, is what the proposal is.

Q. So what's the number?

A. If you feel you're ready to bring it back and change that rule, then you have that right to do that, is the way we proposed it. I just didn't want to make it set that it is hard and fast two years.

Q. I'm misunderstanding. You're suggesting two years?

A. No, I'm suggesting up to two years, to the point that let's say we go out and you drill several wells and you feel confident, we've seen enough across the Basin to suggest that there's been no problem with notice, you've not been challenged on a well; then I think it would be within any operator, such as your, rights, to come back before this Commission and ask that that be removed.

Q. Do you see the dilemma that you're creating, that you're supporting the concept of two additional wells, the

application, you're supporting --
A. I'm supporting --
Q. -- two increased density wells, aren't you?
A. -- increased density, not two.
Q. Yes, ma'am. The --
A. I -- What I said was, there is room across this Basin for zero, one or two, I believe was what I testified.
Q. I understand. When we write the rule, though, we're going to write it for everybody, and the maximum number, then, would be four wells per GPU, correct?
A. That's correct.
Q. You're supporting that concept?
A. I'm supporting a maximum, yes.
Q. All right. And yet you want to control on a well-by-well basis whether the third or fourth well is drilled?
A. I want the opportunity for myself and other operators to challenge that if we feel it's technically incorrect.
Q. In order to have this two-year period, then, it s going to, in your opinion, provide additional technical data for a database?
A. Yes, I think it will, and I --
Q. How many wells is Amoco going to drill in the next two years?

A. We have a plan for 75 wells.

Q. Seventy-five wells in the next two years. Do you believe that that's going to provide additional data that would be substantially different than the 5000-well data set that was presented earlier today by Burlington?

A. I'm not sure I know the answer to that until I do some of the wells. It may take us 10 wells, it may take us the 50 wells that Burlington is going to drill, it may take us the wells that other people are going to drill out here.

Q. Do you support the concept of reducing the well setbacks from 790 to 660 and reducing the interior setbacks from 130 to 10 feet?

A. Yes, we feel giving additional room in the spacing unit is important because, as you know, it's very difficult out here to find surface locations because of the topography. So I think it's very appropriate to relax those setbacks.

Q. Okay, so there's no difference of opinion between you and Burlington about that topic?

A. No, I don't believe I stated that there was.

Q. All right. We're in agreement about the necessity to provide the opportunity for two additional wells, but your procedural difference is to extend the notice to all wells in the pool?

A. And I think "opportunity" is the correct word, because I don't think it's a hard and fast rule that this is an optional rule, unless I misunderstood it. It will be at the option of the operator to drill additional well or two wells out there, and I think there may be some cases where two wells are not necessary.

Q. When we look at the drainage map and see that 91 percent of the pool is an area that Burlington testified justified two more wells, do you have evidence to present today to the contrary?

A. I think the drainage map in itself is evidence to that fact, that there are areas that are clearly draining 160 or more. There are areas -- by their own exhibits.

Q. Did I miss something on this exhibit? If you'll add up the percentages, there's only 9 percent of the pool in which there is a well in a 160 that's adequate? Is that not true? Is that what this shows?

A. That's what this represented, that's correct.

Q. How do you deal, from a regulatory point of view, with the concept that you have part of your pool that is being adequately developed under current rules, and yet you're suggesting that we should drill more wells in those areas?

A. I'm not suggesting we should drill more wells in those areas. I'm suggesting that the boxes that you have drawn include a real variety of wells, a real variety of spacing units, if you would. And I think that's continuous across this pool. There's very few areas where you could color it and go for any length of distance and say that that's consistent. That's the reason for my challenge.

Q. So your solution, then, is to extend those boxes and make them the entire pool?

A. For -- On a temporary basis, that's correct. It's just simpler, it's cleaner.

Q. By having a notice and objection procedure, then there could be an objection filed. What happens next, under your proposal?

A. Well, I would hope, as I had explained to Burlington earlier in our discussions, that the first thing would be to call the operator in to discuss the technical ramifications of drilling that well. And hopefully we could explain to one another the justification for doing that and keep it out of this hearing process.

Q. If that fails, what happens then?

A. If that fails, it probably will go to hearing if an agreement cannot be reached.

Q. And what are the issues to be addressed at a hearing if that occurs?

A. I think those would bear themselves upon the data that came up during those discussions.

Q. It would be driven by a concern over drainage, would it not?

A. Potentially so. It could -- I would think that would be the consideration, but there could be other --

Q. That's the defining issue, is it not?

A. Yes.

Q. How do you define correlative rights?

A. The ability to take -- basically to take your fair share from the pool.

Q. And if you're not being drained by that infill well, then your correlative rights are not being impaired?

A. That's correct.

Q. What we create, though, is an opportunity for a well-by-well extension of the drilling density of the pool by your proposal, do we not?

A. That's correct, and if we see that happening, then I would suggest that there's a problem with the pool rule change.

Q. By having a notice and an objection period -- By having a notice and an objection procedure, Ms. Staley, is Amoco attempting to create a pool rule which allows Amoco to use that rule to limit offset competition?

A. No.

Q. What would you use it for, then?

A. To protect our correlative rights.

Q. What will you learn in a hearing that you

couldn't satisfy yourself without the hearing?
A. I'm not anticipating a great deal of hearings.
Q. If Burlington should drill one of these increased-density wells, then a hearing provides you no solution other than an opportunity to drill your own well, does it not?
A. No, it provides me the opportunity to perhaps stop another well that should not be drilled from being drilled.
Q. So on a site-by-site basis, we're going to make a decision about whether that operator drills an increased-density well, based upon your objection, anywhere in the pool?
A. Potentially so, yes.
Q. Your increased-density wells, have they been confined to a particular area?
A. No, they have not.
Q. The ones that you have drilled, are they confined to a particular area?
A. We have not drilled any.
Q. All right, the third-well things that we're talking about have been wells that are permitted but not yet drilled?
A. They've all been increased -- Pardon me, they've all been recompletion candidates.

Q. So you do have some recompletion wells which are now third wells in a GPU?

A. Yes, we do.

Q. Okay. Have you studied the effects of those third wells on those GPUs?

A. We don't have enough data to do that yet.

Q. You mentioned earlier in your direct testimony that -- I think, and I don't want to misunderstand, that there are examples in pool rules for a notice procedure like you're proposing?

A. Yes.

Q. Give me an example of a pool rule that has --

A. I'm sorry, I misspoke. They're not in pool rules but in the statewide rules.

Q. All right. So I'm correct in recalling that there is not a pool in New Mexico in which the density has been approved, for which you must file notice and have an opportunity for objection to drill those approved wells?

A. Not that I'm aware of. However, I have not reviewed every pool rule in this state.

Q. You're suggesting, though, that if the Division approve the density increase that Burlington has suggested, that additional notice should be sent?

A. What I was speaking to was that the notice that we would be giving would be a notice consistent with what we've done for other types of applications, administrative and otherwise, in the pool, or in the statewide --

Q. All right, that's the one that deals with the 20-day notice --

A. Yes, sir.

Q. -- and the fact that you have a chance to object?

How would you propose to deal with the black areas that demonstrate the capacity for a single well to produce that spacing unit under current density?

A. How would I propose to deal with them from what aspect?

Q. From the standpoint of a pool-rule change that increases the density above the level necessary for those black areas?

A. I've stated how I would deal with it.

Q. On an individual, case-by-case basis?

A. That's correct, if those were brought forward.

Q. All right. And if the area scribed by Burlington is not exclusively contained by the black area, you find fault with that?

A. I think I would do what your former witness said, which is, I would do a well-by-well review. I would not rely upon this map, which is one of the problems with this map. I don't think it's specific enough to make the delineations that you're making. Therefore, I would rely upon a well-by-well analysis.

Q. When you look at the pressure depletion in the reservoir, have you done any of that?

A. Not personally, no.

Q. Okay. Do you agree with the general technical conclusions by the Burlington witnesses concerning the characterization of this reservoir?

A. In general, I accept that concept, yes.

Q. In specific, as to the low permeability?

A. Yes.

MR. KELLAHIN: Okay. Thank you, Mr. Examiner.

EXAMINER STOGNER: Mr. Kellahin.

Mr. Gallegos?

MR. GALLEGOS: Yes.

EXAMINATION

BY MR. GALLEGOS:

Q. Ms. Staley, let's first turn within your Exhibit Number 1 to the sheets that are headed "Amoco Proposed Rule". It addresses the vertical limits. The proposed rules.

A. I'm sorry.

Q. Okay. So there will be no confusion later, the bold content in the first paragraph that says "350 feet" should be changed to "300 feet"?

A. Yes, I believe I testified to that fact at the end and said that would be the one change to this particular exhibit that I would make, based on the testimony I had heard from Burlington this morning.

Q. Okay. And in your opinion, do you think that a 100-foot separation between the -- what would be the new top of the Mesaverde and the base of the Pictured Cliff would be sufficient separation to safeguard against fracture height growth into the Pictured Cliffs?

A. That makes us even more comfortable than what we had recommended, yes.

Q. Okay. Now, what I want to do is ask you to turn to the sheet that is entitled "Simplify Language" so we can understand Amoco's ideas about how its proposed rule would operate if it were to be adopted. This would be Rule 2(b), Well Location. Do you have that?

A. Yes.

Q. All right. Let's start out with your subparagraph (2). It reads, "No more than 2 wells located within a quarter section can be produced at one time."

So do you contemplate, for example, that there might be three or four wells on a quarter section, but that, let's say, for one month two would be shut in and two would be produced? Is that the idea?

A. No, the idea is that we would have two wells at a maximum on that quarter section.

Q. Okay, so it's not just a matter of only two can be produced; what you really contemplate is, only two wells could be located on the quarter section?

A. The one situation that I can see that as being different is if we had a well that was temporarily abandoned in a Mesaverde completion. So we might actually have more wellbores available to the Mesaverde there that we might not be using because of, say, a poor fracture stimulation or something like that. But I can envision that that situation might come up where you actually had three wellbores into the Mesaverde. I think that's highly unlikely, but I could see that.

Q. Well, the literal reading of the words does not limit the number of wells on the quarter section, does it, Ms. Staley?

A. No, it does not.

Q. So you -- Under this wording, and maybe not Amoco but some other producer might have three wells and just simply alternate the production and only produce two at a time?

A. Possibly so. I think it was envisioned in the context that I spoke to you about, where there might be another wellbore in the Mesaverde out there, but you could only produce two of those.

Q. All right. But the intention -- your intention in drafting this would be that there would only be two wells, under ordinary circumstances?

A. Yes.

Q. All right. Now, let's go to the next provision. You called for a notice to be sent to -- sent by any operator proposing what would be the third well on the 320 or the fourth well, and this would not be in the form of an application as such?

A. No, it would be as a notice.

Q. And what would it contain, other than a plat that you describe here?

A. As I described it a little bit earlier, slightly, in the simple notice description that I had, which I would want that notice to specifically state that you were drilling either a third well or a fourth well and where that well would be located by plat, and also show all the rest of the Mesaverde wells in that particular spacing unit.

Q. So what we refer to here as a notice, would simply -- basically would be just a plat?

A. A plat and a statement of whether, again, it was a third well or a fourth well, or perhaps a third and fourth well being noticed at the same time.

Q. Now, if the -- paragraph -- or Roman Numeral III [*sic*] of this same subparagraph says, The Division Director [*sic*] may approve the increased density application, so that's a different kind of document than what would be sent to the offset operators?

A. No, I would not envision that as being different. It would be an application, typically by letter form, indicating that you were going to drill an additional well, the plat as to where you were going to drill that well, and the other existing Mesaverde wells in that.

So no, it would not be different than what you would send operators.

Q. Oh, so the operator would send out to offset operators what paragraph number 3 refers to as an application --

A. Yes.

Q. -- not just a notice with a plat?

A. Well, perhaps it's semantics, but what I would envision being contained in that would be where it's going to be located, what number well it's going to be, and the relationship to the other Mesaverde wells in that particular spacing unit in question.

Q. So basically it is an application, and that's the word you used in paragraph number 3?

A. Right, but I didn't want it to relate that it was more than that. So it would be the same to the Division as it would be to operators.

Q. But under paragraph 1, the notice, by your wording, could be less than what is called for and what you say the application would contain. Is that what we're to understand?

A. I guess it's been my practice, but yes, perhaps it could be taken by other operators to be that. Perhaps we should clarify that.

Q. Okay. Now, you -- If the Division District Supervisor is called upon to approve what you've characterized as an application, I assume that would be filed at the same time that you send the notice out? The rule doesn't call for that, but --

A. Well, if you'll recall --

Q. -- your rule.

A. -- that was not my proposal to put forth the information. That was mentioned by Burlington this morning. My real intent for notice is to give that offset operator the opportunity to know that a well is being drilled offset to them, and from that they're probably going to need to ask additional questions or make their own determination, which they can do as well.

Q. Who is "they"? The --

A. The offset operator.

Q. Well, I'm just trying to get your vision of how your idea of the rule would work.

A. Right.
Q. So there would be an application filed with the District Supervisor?
A. The application would be what I had, yes, and what I had just described to you.
Q. Okay. And then the District Supervisor obviously can't act on it for at least 20 days, or at least 20 days after you send the notice, correct?
A. That's correct.
Q. And then what would you expect to be the time period after that? Would you expect there would be some delay for a supervisor to consider the application?
A. Well, right now, I would say applications of that type are running about 25 days through the current Division. I don't know if that would be -- You know, this is a little bit of a change because we typically run those sorts of things through the Santa Fe office at this point.
Q. You're not talking about doing -- not for the second well? The second well, now, just requires an APD, doesn't it?
A. What I'm describing is the process I've used for those wells so far that I have applied for, that Mr. Kellahin alluded to earlier.
Q. The third well.
A. Recompletions, the third wells.

Q. Third well.

A. Those have been running on nonstandard-location applications, and correct me if I'm wrong, but I think around 25 days, perhaps even less than that, door to door. And I would envision that the Division Supervisor would be that time, but that's really up to them. I can't really tell you what that timing would be. It varies with the number of applications they receive.

Q. But if the pool rules now, Mesaverde or any pool allow for an additional well to be drilled, just by the term of the pool rules, you simply file an APD?

A. That's correct, for the --

Q. That's it.

A. And that's what we're still proposing for the first infill well.

Q. Right. But now we would have a pool rule that says you can have a third and fourth well, but the process for permission to drill it is not the APD but whether the requirements that you're setting forth here --

A. You're understanding me --

Q. -- would be accepted?

A. You're understanding me correctly.

Q. All right. Now, whatever is filed -- and let's call it an application, and something is sent to the offset operators. Paragraph number 4 then says, "In the event an objection is timely received..." I assume that would be within the 20 days. Correct? The offset would file something within 20 days?

A. Right, if you refer -- And this is what you're getting at, correct me if I'm wrong.

Q. Paragraph number 4.

A. If you get back to paragraph number 1, you'll note in there that my notice to offset operators, as well as to the District Supervisor, will state that -- advise those parties that they have 20 days to respond and where they need to respond, so they'll know who they need to talk to and what time they need to talk to them within.

Q. Well, who do they object to? Santa Fe or the District Supervisor?

A. Well, at this point we're recommending the Division's District Supervisor, but as I stated earlier in my testimony, Amoco would be open to either process that the Division prefers. But the notice that we would be sending out would specifically state who that would need to go back to, as it does now.

Q. Okay, but the rule doesn't state that?

A. The rule, I think, does state that. In fact, if you look at the second -- under number 1, if you look at the second sentence there it says, "Such notice shall include language advising that those parties have 20 days..." and "those parties" meaning the operators --

Q. Okay.

A. -- that we have sent this to -- "...from the receipt to file with the Division's District Supervisor a written objection to the increased density application."

Q. Okay, I stand corrected. It would be the District Supervisor who would receive the objection?

A. Right, and I guess the point I was trying to make with you is if the NMOCD decides that that should be still held at the Santa Fe level, then we would replace that language with it being sent to the director of the -- or whomever they would designate up here to --

Q. Well, let's try and deal with the rule the way you've written it.

A. That's just fine.

Q. In the event an objection is timely received, then -- at that point the paperwork is all out at the District Office in Aztec -- then that application will be set for an Examiner Hearing here in Santa Fe?

A. Yes.

Q. All right. So then the application notice and so forth is supposed to come to Santa Fe for a hearing, and then set on the docket, the hearing, the whole process.

A. That's correct.

Q. All right. Now, under paragraph 4, this occurs

"In the event an objection is timely received or upon the initiative of the District Supervisor..."

A. Yes.

Q. What standard is the District Supervisor to follow, to decide whether the application will be granted or not?

I don't see anything here that directs the District Supervisor as to what standard is to be applied.

A. And I really don't want to limit that Supervisor or the Division as to what they can approve or not approve. If for any reason he or she is uncomfortable with that, perhaps in discussions or what have you with the company, I would leave it to their discretion to set it for hearing, as they now have in most matters the discretion to hear cases.

Q. So if the District Supervisor gets up with a bad cold that day and doesn't feel any good, he just says, I'm disapproving the application --

A. That's cor- -- No, he won't say that. He will say, I am going to forward this to Santa Fe and have it set for hearing.

Q. All right. But I mean there is no standard, other than some objective [*sic*] standard of --

A. Well, I would certainly challenge --

Q. -- however he feels?

A. -- Mr. Chavez on what his reasoning for that was, but if it was just a cold I suppose I wouldn't have any basis to say that wasn't a proper reason.

Q. That's my point. You can't challenge anybody if you don't have any standard in the rule that's to be followed?

A. Not till I get to Santa Fe, and then I've got to make my case in Santa Fe as to why I want that increased-density well.

Q. So if the mood strikes him, every application could be denied and sent to Santa Fe for Examiner Hearing --

A. I would think --

Q. -- under your rule, under your wording of that rule?

A. I would think at that point we'd be back in Santa Fe talking about a change to the notice for this pool rule.

Q. So maybe your suggested language could use some additional --

A. My point was, I did not want to limit Mr. Chavez or the other District Supervisor, who it would be, at that point, or the Division, as to what they could approve or disapprove. I think they still should have that unerring right to bring things to hearing.

MR. GALLEGOS: That's all. Thank you.

EXAMINER STOGNER: Thank you, Mr. Gallegos.

Mr. Chavez, do you have any questions? Do you feel all right? Do you have a cold?

(Laughter)

MR. CHAVEZ: I don't know.

EXAMINATION

BY MR. CHAVEZ:

Q. Ms. Staley, on the issues of the wording of your number-one notice, if the operator is wanting to drill the first infill well in the same quarter as the original well, not in the opposite quarter, would this notice still be required?

A. The first infill well being --

Q. There's already one well on the 320, but instead of drilling the infill in the opposite quarter they'd want to drill in the same quarter to the original --

A. Yes.

Q. -- does your application require that?

A. Yes.

Q. How soon after an application or a permit to drill that offsets an Amoco well, how soon does Amoco know about that, currently?

A. It depends on -- You know, it depends on a variety of things. You know, typically we'll get -- You can find a notice of staking, notice of intent to drill through the public sources, and that likely runs two weeks, three weeks behind, in my experience.

Q. So if Amoco felt that their correlative rights were being infringed upon, this drilling that's offsetting them, then they already have an opportunity through normal operations to file an application with the State or with the appropriate agency, whoever, to question that application?

A. Yes, currently I do, and my problem with this new rule as proposed by Burlington is, I don't have that opportunity. I have granted that right under this rule by allowing two wells to be drilled across the pool.

Q. I guess I wasn't clear. In any pool, including the Mesaverde, you already have options open to you in case you think that a drilling operation is infringing on the -- damaging Amoco's correlative rights, don't you?

A. Yes.

Q. Are you foreseeing -- I guess I didn't understand it. You're foreseeing an application for an increase in density as a separate type of document, or --

A. I would envision it similar to what the applications I've done thus far, and I think you get a copy of those, typically, as they come forward. Right now, they are in the form of a nonstandard location, typically, because we've been moving into the interior of the section for additional wells occasionally. And so I would envision that to be very similar to what you're seeing in those at this point.

But really, a notice to that offset person, so that they do know early on in the process that a well is being drilled offset to them.

Q. Given Burlington's proposal for a special area in that notice and your proposal for a special area, do you foresee that Amoco would do anything different if they felt their correlative rights were being infringed under any of those proposals, yours or Burlington's?

A. Anything different. No. I mean, I would still oppose on the basis that I would oppose now. We just haven't seen many of those yet, other than in the pilot areas that Burlington has done.

Q. Would there be any problem if instead of creating a separate document, in order to ease the OCD's burden -- Since your proposed rule does not require notification to the OCD about increased-density application, would there be any problem if there was just a statement on the APD itself that said offset operators have been notified of this application, in some wording --

A. No, I would not have a problem with that.

Q. And that way there wouldn't be a separate application required, would there?

A. No, that would be fine. I do not want to get into the practice of necessarily sending an APD to every offset operator. Again, that's, again, paper.

I know early on, we discussed that with Burlington, and my concern there was that on the people that want to challenge you, they will call you and ask you the questions that need to be asked about that well, rather than just sending out volumes of paper. So I thought a simple notice was appropriate.

But I think that would be a good solution to perhaps the paper problem we're creating for you.

Q. Okay. You testified about you were just filling in the regular rules of -- proration rules on the last few pages of your exhibit. But one of them is interesting in that the -- for proration purposes, it says the deliverability of two wells will be used.

Now, if there are four wells within a GPU and it's classified as nonmarginal, what criteria would you recommend the OCD use to choose which two wells' deliverability tests might be used in calculating the allowable?

A. Well, I think as in current practice, that's been left up to -- or actually we've used the two highest ones. And I'm stating that by virtue of the fact of the third-well recompletions that we have done.

And I know from our standpoint we've always gone in and looked at deliverability and used the ones with the two highest deliverabilities. So I would propose that as a practice.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: Thank you, Mr. Chavez.

BLM representative? Do you have any questions?

EXAMINATION

BY MR. SPENCER:

Q. Just for clarification, how many of your 14 third wells fall within the Burlington-designated special qualifying areas?

A. I don't believe any of them did.

Q. Did you gather complete pressure data, et cetera, on all of those?

A. We've -- from the standpoint -- What do you mean by "complete pressure data"? We didn't run bombs on any wells --

Q. As far as notification --

A. -- but we collect surface pressure anytime there's a shut-in or anything of that type.

Q. As far as notification goes, it wouldn't serve any purpose inside any of the unit areas since it would be all owned by one operator; is that correct?

A. That's correct.

Q. Okay.

A. Except if it encroached upon the exterior of that --

MR. SPENCER: Thank you.

EXAMINER STOGNER: Thank you.

EXAMINATION

BY EXAMINER STOGNER:

Q. Okay. You were recommending that within two years, that the pool rules be revisited. What portion of those rules do you propose to be revisited? And once we get this thing going, if it does get approved, how can we undrill the infill wells that have already been drilled? I --

A. The only --

Q. Could you specify a little bit for me in this?

A. You bet, Mr. Examiner. What we stated was, in our direct testimony, was that we would revisit only that portion of the rule related to notice.

That would be the only part that we're asking for revisit on. And that would be prior to -- anytime prior to two years.

Q. Anytime prior to two years. What would be the minimum time?

A. I don't know that I've thought about a minimum time, because I think that will depend on the amount of drilling that's been done, the amount of challenges that we've seen, perhaps, and I think it's -- I don't know yet.

Q. Would today be too soon?

(Laughter)

THE WITNESS: Are you revisiting this, Mr. Examiner?

(Laughter)

THE WITNESS: Would today be soon? I don't know of any additional data that's been provided since I stated that, that would change my mind.

Q. (By Examiner Stogner) Okay, going back to this simplified language, down there to Rule 2(b) (2) 3, "The Division's District Supervisor may approve the increased density..." I don't mean to beat a dead horse, but let's say that it's on federal land and it's a recompletion. When would that 20-day time period start for Mr. Chavez?

A. If it's on federal -- The way I do it currently, I guess, is the way I would describe that, but if it's on federal land, I look for approvals through both agencies. So Mr. Chavez's time of approval dovetails with the BLM or other agencies, Indian agencies' time.

So I guess what I'm saying is, if I have the 20-day approval through Mr. Chavez, I may also -- I may have a 30-day time through the BLM. I've got to wait until I get both of those approvals to go forward.

Q. Okay. I'm trying to get this straight in my mind here. It's on federal land, let's say it's up near the Navajo Reservoir, so you've got Bureau of Reclamation to contend with. So it's a recompletion.

And let's say it's unorthodox. On that I have another 20-day period because you've got to go through me for the unorthodox location.

A. Maybe I've got the same 20-day period because I did it all at once.

Q. Well, maybe --

A. If I --

Q. Maybe -- maybe --

A. -- mistook it that you were 20 days, rather than 25, I will amend that, Mr. Stogner, so...

But I could do those concurrently, was my point.

Q. Well, you see, sometimes simplicity does get confusing.

A. If we can make it simpler, I'm for it.

Q. By getting rid of notification altogether?

A. I'm opposed to getting rid of notification altogether.

MR. CARR: Okay, I just wanted to confirm what you just said to me.

Is there any redirect, Mr. Carr?

MR. CARR: No, there is not.

EXAMINER STOGNER: Mr. Chavez?

FURTHER EXAMINATION

BY MR. CHAVEZ:

Q. Ms. Staley, rather than a complete revisiting, would you be opposed to a sunset provision within an order that would say that the portion of that rule would expire at a certain time, unless there was an interest or some operator wanted to present the case to extend it?

A. Yes, I would.

MR. CHAVEZ: Okay.

EXAMINER STOGNER: Mr. Carr?

MR. CARR: I have no redirect.

EXAMINER STOGNER: I'm sorry, you have what?

MR. CARR: I have no redirect, sir.

EXAMINER STOGNER: Okay, redirect, okay, thank you.

You may be excused.

EXAMINER STOGNER: Mr. Gallegos, do you have some --

MR. GALLEGOS: We call -- I have no further questions, no.

EXAMINER STOGNER: But it's your witness now, I believe.

MR. GALLEGOS: Yes, we call Frank Gorham, III.

FRANK D. GORHAM, III,

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

DIRECT EXAMINATION

BY MR. GALLEGOS:

Q. Would you state your name, please?

A. Frank D. Gorham, III.

Q. Where do you live, Mr. Gorham?

A. Albuquerque, New Mexico.

Q. What is your present occupation or profession?

A. I am -- I guess I'm testifying with two hats today. I'm managing partner of Cinco General Partnership, and I'm also the current president of the Independent Petroleum Association of New Mexico.

Q. Okay. Would you advise the Examiner a little bit about your education and oil and gas industry experience prior to the present time?

A. Yes, sir. By education I'm an attorney. I worked approximately 15 years for Phillips and a predecessor, Ammon Oil. During that time period I had various jobs. I was tax manager, I was manager of the land department, manager of acquisitions. I was manager of our joint-venture exploration program we had, which was our basically domestic exploration program. And my final job at Phillips, I was production manager.

Q. And when did you leave Phillips Petroleum

Company?

A. Approximately 1992, when I joined our family business.

Q. What is the business, generally, of Cinco Partnership?

A. We are predominantly a nonoperated working interest owner in the San Juan Basin. We do have some minor production in southeast New Mexico. We -- I want to stress nonoperated. We do operate one well. We have an interest in about 1400 wells, in a variety of units that Burlington and Phillips operates.

Q. Okay. Are a significant number of those interests affected by this Application?

A. Every single interest we have in the San Juan Basin is affected by this Application.

Q. All right. Now, since you're here in two capacities, would you explain for the record what the Independent Producers Association is and what its membership consists of?

A. Yes, sir. Independent Petroleum Association of New Mexico -- I'll call it IPANM -- has approximately 118 members. We're principally located in New Mexico. Of our total membership, about 48 of our members are in the San Juan Basin.

Prior to this hearing, I polled our San Juan

Basin board members, and I received -- All 12 of them voted, and I'll get into that in a second, but it was 11 to 1 conceptually in favor of the Burlington Application.

Q. Okay. And are you personally, Mr. Gorham, familiar with the Application, what is being sought here today --

A. Yes, sir.

Q. -- in this proceeding by Burlington?

A. Yes, sir.

Q. Have you also been in the hearing room so that you've heard the proposals and testimony of Amoco?

A. Yes, sir, I have.

Q. Okay. And before today, did you have an opportunity to learn of the nature and the basis for the pool change rules for the Blanco-Mesaverde Pool proposed by Burlington?

A. Yes, sir, I was invited to two meetings that Burlington held, industrywide meetings in the San Juan Basin. I've had numerous conversations with Brent Smolik and his people at Burlington about this, because it was such an important issue to the San Juan Basin producers. I asked Burlington and Mr. Smolik to come testify at our annual meeting of the Independent Petroleum Association, which he did. So as a small producer, I'm very familiar with this Application.

Q. All right. Now, because you are here appearing essentially in two roles, one for your own company and one for the IPAA, I'd like for you in your testimony to differentiate --

A. Yes, sir.

Q. -- between the position of those two if, in fact, their positions differ on certain of the factors in this Application.

A. Yes, sir.

Q. Would you do that, please?

Just generally, as a general proposition, are you appearing for both those entities in support of the proposal of Burlington?

A. Yes, sir, both our association and my company are strongly in favor of this Application.

Q. All right. I would like for you to address what the position is of either your company or the association or both, if that be the case, regarding the special qualifying areas.

A. Let me give a little history from my perspective.

EXAMINER STOGNER: Before we do, may I interject? Let me -- Okay, you're here representing the Independent Petroleum Association and also Cinco?

THE WITNESS: Cinco General Partnership, yes, sir.

EXAMINER STOGNER: Okay. What's your association with -- is it Cuesta Production Company? C-u-e-s-t-a?

THE WITNESS: Cuesta has basically been transferred to Cinco, sir.

EXAMINER STOGNER: Okay, I got that, and I refer to page 17 on Burlington Exhibit 17.

THE WITNESS: In 1993, the working interest portion of Cuesta was transferred to Cinco.

EXAMINER STOGNER: Okay. With that, I'm sorry I intervened.

THE WITNESS: No problem.

Let me start from the Cinco standpoint.

We have an interest in the 27-5 Unit. We participated in meetings involving that pilot, we participated with several private meetings with Burlington personnel on the result of that.

And it was our understanding that the purpose of the three pilots was to very clearly demonstrate that the permeability in the Basin was such that the current spacing rules would not suffice to adequately drain.

In our 27-5 Unit, we have a small interest, five percent. It's big for us but small for most people. It's very clear based on the bottomhole pressure data that we got, based on the production rates, that there's no question in our mind that but for the adoption of a rule similar to this, we as a small nonoperator will never have the ability to develop those reserves.

It is our reservoir engineer's opinion -- and if I compare it with Burlington's -- that we will be realizing anywhere between 70 and 86 percent of all new infill wells drilled in the area which we have an interest will be new incremental reserves.

And I can't tell you how important this rule is. If you don't adopt this rule those wells won't be drilled. We don't have the ability to go in and individually propose those; we're a nonoperator.

When I was at Phillips and we had wells that came in at 300 and 400 a day in the Gulf Coast, we got fired or plugged them. In the San Juan Basin, a lot of people can make money on those.

And this proposal -- We have interest in the 27-4, 27-5, 28-6, 30-6, 31-6 and 32-8. Every one of those units would benefit from this.

And more importantly, about half of the proven undeveloped reserves that I have potentially to drill would be left in the ground but for this rule. This is an extremely important rule for us.

My counsel asked me the question about -- let's call them these administrative areas. I remember when Burlington first had their meeting. I believe, in all fairness to Burlington, the purpose of their attempt to draw these administrative areas was to address the problem that they perceived that somebody in the OCD would be opposed to wells that were primarily income acceleration, as opposed to incremental reserves.

I also think it was imperative to Burlington -- and I personally strongly support this -- that it was imperative that we did not get into a notice quagmire. I am extremely opposed -- and I'll get into that in a second -- to the Amoco proposal on notice, and conversely support the Burlington one, because if we have a notice requirement somebody will object for reasons, I believe, other than drainage, and then my reserves will not be developed.

Q. (By Mr. Gallegos) What is your position in regard to carving out these special qualifying areas and requiring notice just in those various areas?

A. Let me twist it a little bit. If you're worried -- Let me back up. I think the studies have conclusively proved that you cannot drain with the current spacing. So if you cannot drain, why do we have to have notice? I believe the reasons they picked these administrative areas is, there was an argument that you could drain so you could have notice.

If I have a choice between having the

administrative areas reinstated versus having Basinwide notice, I'd go with administrative areas.

Q. But do you support the Application of Burlington with the exception of the --

A. Yes, sir.

Q. -- portion of that Application --

A. Yes, sir, I do.

Q. -- that calls for the --

A. Yes, sir.

Q. -- SQAs, as we're --

A. I'm afraid that the SQAs will be interpreted as arbitrary, and there are some special circumstances that one person gets a poor shake, and it would be better if we didn't have them.

Q. Is there anything else regarding this Application or the implementation of the increased density in the Mesaverde Pool that you want to address, either in behalf of the Association or your company?

A. I want to switch hats now, Mr. Stogner, and I know -- This is probably the most important issue to our Association, and it's not something that Burlington is causing, but we are very worried that if this proposal is adopted, two major concerns will hit us, as little guys.

The number-one problem that we see is the impact of higher line pressure, the impact on marginal wells. I think it's a very clear fact that most little guys have the higher percentage of marginal wells. We are concerned that if this proposal goes through, the overall line pressure will increase, an a higher percentage of our wells will be shut in, curtailed or whatever.

We have met with Williams, we have met with El Paso, and they have assured us that they have made these arrangements with the operators. The problem is, a lot of small producers have a hard time of the trust-me theory with the gatherers.

The gatherers are claiming, because of confidentiality provisions, they cannot share with us how they are going to address the lowering of line pressure. I know it is not within your official purview, but if you want to address the concerns of the small producers, we need the gatherers to tell us openly where they're going to lower the line pressure, where they're going to put compressors, and assure us that our wells will not be adversely affected.

I have several members in our Association that will not directly benefit from this, because they do not have the infill Mesaverde capability. But conversely, they could be hurt if the line pressure went up and all they had were Pictured Cliff or Dakota wells, and they were marginal, and all of a sudden those wells were shut in. We could certainly use some help from that standpoint.

An example of the problem that we have with the gatherers is, just recently El Paso announced a global compression program which sounded very good. They then sent out bills to people, we're now going to charge you six extra cents for that global compression. We feel that is grossly unfair. The small operators or small producers did not agree to that. We're seeing an increase in our gathering rates when, in fact, some of our members may not benefit directly from infill drilling.

I think the second point that my Association members asked me to address is the administrative problem. As drafted, we were concerned, as the Burlington proposal was drafted, we were concerned that the paperwork burden at the BLM and at the OCD would be such that there would be an increase in the average turn-around time for getting wells permitted, would increase.

If we had the fear with the Burlington proposal, I can't tell you how much we have a fear of the Amoco proposal with the notice.

The only way I would support the Amoco proposal would be to adopt your comment, Mr. Stogner, in that we went for a two-year notice, but you decided after one hour it was long enough and we withdrew it.

(Laughter)

THE WITNESS: You know, it's -- Let me address why that's so important to -- Let's talk about a nonoperator.

I get a great benefit from Burlington when they notify me of an annual drilling budget and when they send me AFEs. I can plan on my expenditures. If I have to borrow money, I can go borrow money.

Right now, when Burlington sends me a plan of development or when Phillips sends me a plan of development, I can pretty well count within a nine-month period that money will be spent.

What am I supposed to do when Burlington sends me an application and it says at the bottom, Oh, by the way, anybody can object, and we don't know when this well could be drilled? How am I supposed to plan for my capital requirements when I can't control when the well is going to be drilled?

I can tell you from personal experience at the two companies I've worked with, big companies sometimes have capital allocation problems, and they may decide that they want to spend all their money overseas and don't want to spend it in the San Juan Basin. So what do they do? They just start objecting to every well.

What does that happen? It has to go on the docket, and all of a sudden wells that were supposed to be drilled in 1999 get drilled in the year 2000. It's a game that some of the big companies can play that would adversely impact companies like myself.

MR. GALLEGOS: I have no further questions.

EXAMINER STOGNER: Mr. Gallegos.

Mr. Kellahin?

MR. KELLAHIN: No questions.

EXAMINER STOGNER: Mr. Carr?

EXAMINATION

BY MR. CARR:

Q. Mr. Gorham, just to be sure I understood your testimony, did you testify that most of your acreage was located within federal units?

A. Yes, sir.

Q. And were you here when the BLM representative asked Ms. Staley if the notice problem would probably not come into play in the federal unit?

A. Yes, sir.

Q. And you understand in that situation, in fact, the offset operator would probably be the operator of the tract?

A. My comments were addressed more to my members.

Q. Is it fair to say that -- so I understand your testimony -- that your members would not want notice if an unnecessary well was being drilled on a tract adjoining theirs that might trigger a demand for an additional well by them on their tract?

A. I have a problem answering that question for my Association, because I gave them the Burlington proposal and did not give them the Amoco proposal.

Q. Do you personally operate wells in the Basin?

A. Yes, sir.

Q. If someone was proposing an unnecessary well, offsetting you, that might trigger a demand for a well that you would consider unnecessary on your tract, would you want notice of that?

A. It's amazing. I'm a company that's a nonoperator, and I have 11 people, and I have yet to have any offset well adjacent to my acreage that I didn't find out about it through public information sources, not notice from operators. I personally would not need notice from offset operators. I'd find out about that myself.

Q. Would you want to have a right to object if somebody was proposing an unnecessary well offsetting you?

A. No, sir, because what's the definition of "unnecessary"?

Q. Would you want to have any say if, in fact, it might trigger a well on your tract, when you feel like you're fully developed?

A. Our family has been in the Basin since the

Seventies, and we really haven't had that many demand notices. So I'm not worried about that problem.

Q. And you're not speaking for your members on that issue?

A. Yes, sir, I'm sorry.

MR. CARR: That's all I have.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Chavez?

EXAMINATION

BY MR. CHAVEZ:

Q. Yes, Mr. Gorham. Do you consider rising line pressures due to new wells coming on line a correlative-rights issue?

A. I guess it could cause that, yes, sir.

Q. Isn't it more of a production problem, though? Aren't new wells coming on line all the time in the San Juan Basin?

A. Not to the extent that we might see with this program.

Q. Do you know how many infill wells are being planned at this time by any operator, including partners in the units?

A. From Burlington, yes, sir, I do. They're very good about giving me that plan.

Q. Is that significantly different from what you might expect as activity for new wells being drilled in the Basin?

A. Could be, yes, sir. I think, to go further on that, all we're asking is that gatherers sit down with the smaller producers and say, Here's what we're going to do with the line pressure, so you will not be adversely impacted. Absent that, we're worried that we could be.

MR. CHAVEZ: Thank you.

EXAMINER STOGNER: BLM representative?

MR. SPENCER: No questions.

MR. CARROLL: I have one question.

EXAMINATION

BY MR. CARROLL:

Q. Mr. Gorham, I don't know if you're referring to a poll of a portion of your IPA membership or your partners in Cinco, but you said the vote was 11 to 1 in favor of Burlington's application? I'm interested in the one that was opposed and what their concerns were.

A. Without mentioning this individual's name, he's very well respected. He doesn't believe that it's necessary to drill additional Mesaverde wells. If you look at where his acreage is located, however, I would agree with him.

MR. CARROLL: That's all I have.

FURTHER EXAMINATION

BY MR. GALLEGOS:

Q. Was the 11-to-1 reference the board of the IPA- --

A. The board of our Association --

Q. Not your company?

A. -- I'm sorry.

MR. GALLEGOS: Okay.

EXAMINER STOGNER: Any other questions? Any redirect?

MR. GALLEGOS: No, thank you.

EXAMINER STOGNER: I do not have any other questions of this witness, any questions of this witness.

MR. GALLEGOS: Mr. Examiner, I'd like to just state the position of Turner Production Company, Schultz Management Company and Henrietta Schultz, Trustee, and that is that those parties are in support of the Application, as proposed by Burlington, with the exception of the creation of the special qualifying areas. Otherwise, they're in support of the Application but request that portion of the Application be denied.

And that completes our presentation.

EXAMINER STOGNER: Thank you.

Mr. Kellahin, I do have one question for one of your witnesses --

MR. KELLAHIN: Yes, sir.

EXAMINER STOGNER: -- whoever is the best one to ask about a minor issue on the offset distances. Either that would be Mr. Alexander or --

MR. KELLAHIN: We have some displays, Mr. Examiner, that illustrate those offset differences.

EXAMINER STOGNER: I'll tell you what, let me ask the question to you, and then you direct the one up here.

Okay, you're proposing 660-foot off the outer boundary of the proration unit and a 10-foot internal quarter-quarter section offset. This being the Blanco-Mesaverde, there are some instances where -- a lot of instances where the Pictured Cliffs up above, which is spaced on 160, and also up higher than that is the Fruitland Coal, and should the instance where you would be 10 foot off of a proration-unit line in either one of these, what would the impact be on that particular production, and are you aware that more than likely that application for recompletion up in one of the higher zones would be denied?

And hopefully they would have thought about that prior to drilling 10 foot from a quarter-section line. That would be only internal to the Blanco-Mesaverde but, in turn, could be 10 foot from a proration unit line.

MR. KELLAHIN: Let me recall Brent Smolik and let him address that issue. He's the manager for that resource.

BRENT SMOLIK (Recalled),

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

EXAMINATION

BY MR. STOGNER:

Q. Hopefully you heard my question and you understand it.

A. Yes, I did, Mr. Examiner. We have discussed that and we are aware of the tradeoff that we'd be making there. Hopefully, if we ever did have those recompletion needs or opportunities that don't -- where we don't have existing PC or Fruitland Coal wells today, we would be able to use the existing Mesaverde wells, as opposed to the infill wells, for that. It's a lot more likely that the old wells and the old completions, old wellbores, would be the more likely recompletion candidates than the new wells with the modern completions on them.

So we are aware of the tradeoff that we're -- the sacrifice that we're making there to gain larger flexibility with a bigger drilling window, versus using those wellbores to recomplete to shallower pools.

EXAMINER STOGNER: I just needed to bring that up, because that could be a real possibility.

You may be excused.

THE WITNESS: Thank you, sir.

EXAMINER STOGNER: Do you have any cause to re-examine any of your witnesses?

MR. KELLAHIN: No, sir, I do not.

EXAMINER STOGNER: Okay. Mr. Carr?

MR. CARR: No. I do have a very brief statement.

EXAMINER STOGNER: Okay. The way we're going to do this is, the attorneys that presented witnesses today, I'm going to let them have a chance with their closing statements.

I'm going to take, then, a short recess, and then we're going into essentially a public forum. A lot of people that stayed here -- and it's hot -- I'm going to let you have an opportunity to address anything. It will be essentially a public forum. I want you to, however, keep your statements short, no longer than two or three minutes. That's all I ask.

So with, Mr. Gallegos, I'll let you or Mr. Carr -- you all can fight over it if you wish, who would like to start with the closing statements, and then Mr. Kellahin can finish up.

MR. GALLEGOS: Well, Mr. Examiner Stogner, thank you. I'll just take a few minutes.

I think that the evidence that has been presented here today by Burlington absolutely establishes the justification for increased density in the Blanco-Mesaverde Pool. I believe that the increase in the vertical definition of that pool is prudent and based on sound geological information, and the parties I represent basically support that Application and urge that it be granted.

We think that the manner in which there has been an attempt to construct or design the special qualifying areas reflects sort of a tortured but well-intentioned effort to carve out certain regions.

But if one simply looks at the map itself -- and you'll see within the boundaries of these proposed areas, blue next to black -- it says to you that from a technical standpoint there has got to be a great deal of question as to what, really, is the drainage situation, and from an administrative standpoint, I think it would be a nightmare to try and deal with the question of whether a party should be permitted to drill a third or fourth well in that area or not. And for that reason, we urge that that portion of the Application be excluded and that just on a blanket basis, that the entire defined area be approved for the increased density.

We also submit to you that the proposal advanced by Amoco to require notice application and some sort of a very vague approach to dealing with objections, either by offset operators or by the notion of the District Supervisor, is unworkable, will cause -- call for unwarranted delays, and will really serve to frustrate the very purpose of this Application, which is to promptly develop additional reserves, drill wells, develop reserves, and recover those resources.

Thank you.

EXAMINER STOGNER: Thank you, Mr. Gallegos.

Mr. Carr?

MR. CARR: May it please the Examiner, I want one thing, and Amoco wants one thing, to be very clear: By appearing here today we are in no way challenging the very good job that Burlington has done, taking a complicated issue and developing an excellent technical case. We support a rule change that will permit additional wells being drilled on the gas spacing and proration units in the Blanco-Mesaverde Gas Pool. We also support a 300-foot vertical extension of the pool.

But as you know, we oppose special qualifying areas. We think they're confusing, we believe they will create more problems than, in fact, they will solve.

If we look at what is being sought with the qualifying area on one side of the line, we really have a rule that, unless there's notice and a hearing, no additional wells are needed. And on the other side of the line, two wells are permitted. It doesn't even really match the reservoir, because we're not talking about just no new wells and two new wells. There are some areas where one new well may be required.

And so we're sort of developing a black-and-white decision, carving out an area, and we have a black-and-white rule in an area that is really not black and white at all, but quite gray, or multi-colored. And it just simply won't work. We think it's confusing, we think it's unnecessary and will tremendously complicate administration of this reservoir.

We support one set of rules for the entire pool. It is a complex reservoir, but the data that we have -- and there is a substantial volume of it, but we cannot say we can fully appreciate the impact this rule change may have on correlative rights as we move into a greater density within the reservoir -- well density within the reservoir.

And so for that reason, we recommend for a temporary period of time that notice be given to all offset operators when an operator is proposing a third or a fourth well on the unit.

The rules that were proposed are vague. They're vague like the existing Oil Conservation Division rules. They give the agency discretion to determine when a case needs to be set, and they give you substantial latitude, which we suggest you need.

We think abandoning the idea of notice just because someone might abuse it misses the point. We think at this point in time to assure that there aren't correlative-rights problems out there that you can't anticipate -- to assure that those aren't there, a notice period for a reasonable period of time -- not one hour, perhaps not two years, but for a reasonable time period that will be fleshed out as the pool is developed is appropriate, it's consistent with your duty to protect correlative rights and should be adopted.

With the changes we've recommended to the Burlington proposal, we want to urge you to enter an order authorizing additional development on the gas-spacing units in the Blanco-Mesaverde Gas Pool.

EXAMINER STOGNER: Thank you, Mr. Carr.

Mr. Kellahin?

MR. KELLAHIN: Mr. Examiner, on a personal level, I am absolutely delighted with Amoco's suggestion that we should have notice opportunities for objection on a well-by-well case in this pool. My mouth waters to think of the opportunity to bring to you within the next five years potentially some 411 cases where I can, on an hourly basis, discuss each one of those with you individually, one at a time. I have a young man in college, and he's expensive, and I could use the money.

(Laughter)

MR. KELLAHIN: When you look at the data, it absolutely is astonishing that Amoco, on one hand, is going to pretend they support the technical case, which is unopposed, that we need to increase the density of wells in this pool to allow for two more, and yet, on the other hand, drive a dagger through the very heart of this case by suggesting that we should have notice and objection opportunities for every one of these wells.

It makes absolutely no sense to do this on a well-by-well case. It is something -- It's nothing more than what Amoco is doing now, and that is, on a case-by-case basis they ask you for an exception.

We can keep the rule the way it is now, ignore two and a half years' of reservoir study, millions of dollars' worth effort that have gone into this presentation to justify the increased density. We can ignore all that and stay right where we are now and file these one at a time.

My suggestion to you, sir, that it is overwhelming, absolutely compelling, absolutely unopposed that we increase the density for the wells in this pool uniformly for all the spacing units to provide that opportunity.

The one stumbling block is what to do, if anything, about those areas in this heterogeneous pool, which are demonstrated to be appropriately drained by existing well spacing. You can look at the drainage map, and you can decide that is such a small population of wells, it is to be expected that that would occur in isolated instances. It is reasonable and probable that you could decide that it does not matter. And for the benefit of an overwhelming majority of the pool, some 91 percent of that resource will benefit, then, by changing the rule and increasing the density.

We have given you an option, if you desire to use it, of one possible way, complicated or otherwise, to make a distinction, should you choose to do so, to take those black areas where we have data to show us current density is adequate, and define them as special qualifying areas and deal with them as they were described.

But we're not ready to bleed and die over those special qualifying areas. It is simply an opportunity in our presentation for you to recognize that they're there and make a choice about what to do.

One of the choices is to create a special procedural category and treat them differently. If you choose not to do so, I do not think that's a mistake. But we wanted to show you that this is not a homogeneous reservoir; it is different.

The difference lies in the fact that the current rules are no longer appropriate. We must have, and we need, a general rule change for everybody. And once you play the field where everybody has that opportunity for increased density, it's appropriate, as you've done in other resources, to let the operators and the interest owners decide how they'll spend their money for that resource.

It's absolutely uncontested that the evidence demonstrates that the second, third and fourth well in these gas proration units are going to get you new reserves that you would not otherwise recover.

I see nothing else for you to do, sir, but to grant this Application and deal with the special qualifying areas as you choose to. The implication of additional notice requirements is nonsense. Either we grant the Application and go forward with these wells, or we'll continue to do it in the process that's established now.

Thank you for your attention today.

EXAMINER STOGNER: Thank you, Mr. Kellahin.

You three gentlemen, I would like a rough draft, proposed order and rules with a certain time period. Fifteen days, I'd like for you to have that to me.

With that, I'm going to take a five-minute recess. And I just was reminded by Mr. Carroll that the BLM is present. I want to let them have an opportunity before we have the public, open process which I want to have in this particular matter, to say their piece. So at this time I'm going to take a five-minute recess, we'll hear from the BLM and open it up.

(Thereupon, a recess was taken at 4:20 p.m.)

(The following proceedings had at 4:30 p.m.)

EXAMINER STOGNER: This hearing will come to order. At this time, BLM, please state your name, what office you're affiliated with.

MR. OTTENI: My name is Lee Otteni, I'm with the Bureau of Land Management. I'm the field officer in Farmington, New Mexico.

EXAMINER STOGNER: Do you want to speak up for the audience, please? That's not a microphone, that's just --

MR. OTTENI: Oh, it's not a microphone. I'm sorry, I thought it was -- I was wired.

I would like to make a brief statement in behalf of the Bureau of Land Management and raise some concerns that not only the BLM but other agencies have on the proposed action.

The Bureau of Land Management has jurisdiction and makes decisions in the setting of oil and gas well spacings and environmental health on public lands and lands that are held in trust by the United States for tribes and for individual members of these tribes.

The BLM also recognizes that New Mexico OCD has regulatory authority over spacing, human health and environment on certain lands within New Mexico.

Because oil and gas operators occur on intermixed private, state trusts, federal and Indian lands, it is important that both our agencies provide all interested parties with clear policy, procedures consistent with our respective regulations.

Over the years in New Mexico, our agency has established a good working relationship which serves both our agency needs, and the needs of the industry. The result of this relationship has been BLM accepting and utilizing spacing regulations set by OCD on federal lands.

I want to thank OCD for the opportunity to use your hearing process for the purpose of BLM adding to the administrative record our position and for receiving recommendations from all interested parties on the matters related to the spacing of the Mesaverde formation.

Through this combined effort, we share common objectives in avoiding duplication of effort, providing operators with familiar and effective methods of obtaining orders in a timely manner, and being responsible to all the needs of the public that we serve.

Today industry has provided OCD and BLM with technical information for the reservoir supporting their request for the changing and spacing, and I believe they have done an excellent job with this technical information.

To me, representing the BLM, this is -- I'd like to classify it as a phase-one process of government agencies managing the mineral resources in an environmentally sound manner.

If the spacing change is, in fact, a reality in the near future, the next phase, phase two in this process, is to provide the land management agencies with technical information pertinent to the disturbance of the surface resource.

As an approving agency, we have the responsibility for completing the environmental review process and establishing the terms and conditions under which the proposed action will be approved. This phase should identify the probable and potential environmental impacts associated with the proposal and methods of mitigating these impacts.

There are a number of concerns expressed by both state and federal-agency resource experts and other interested publics which need to be addressed by the operators prior to phase three. Some of these concerns are:

The BLM conducted an EIS on the Fruitland formation in 1988. Ten years later, we now know that we underestimated the number of wells. We estimated 800, we had 2000 drilled. We underestimated the need for new and extensive pipelines, which was a significant impact to the surface resource. And the piecemeal approach of the companies' drilling programs prevented the Bureau from a thorough analysis of cumulative effects.

The approval of Mesaverde-infilled APDs will require all lease holders to provide requested information to the land-management agencies, so the cumulative impacts can be assessed.

The number of existing wells and the associated surface disturbances need to be considered as part of the cumulative impact of the Mesaverde infill proposal to the environment. When you combine all the formations -- the Mesaverde, the Fruitland, the Dakota, any others -- we have a significant impact to many of the resources that we are charged to serve.

Another concern is the increased sedimentation and salinity loading to perennial watercourses as more roads, wellpads and pipelines are built. Transportation planning for the 40-township area will be a requirement. Systematic planning and maintenance of roads and rights of ways will be a necessary part of the development process.

The significance of the roads and well density to the welfare of wildlife populations and the habitat fragmentation will also need to be addressed.

The days of easy avoidance of cultural sites is probably over in many areas of the Basin. Excavation will be the only reasonable alternative to protect against unnecessary surface disturbance.

There may be a need for engineering studies for structural -- for the structures managed by the Bureau of Reclamation around Navajo Lake and in the canals.

Finally, new wellpad roads and rights of ways will be a conduit for invasive weeds to invade weed-free areas of the Basin. Maintenance of weed-free facilities and roads will probably be required in perpetuity by the operators.

Acquiring this information and the cooperation of leaseholders in the Mesaverde formation will be the basis for the approving officer's determination as to whether approval of the proposed activity will or will not constitute a major federal action significantly affecting the quality of human environment.

Several weeks ago, the BLM's Resource Advisory Council, which is chaired by a representative of the Lieutenant Governor's Office, passed a resolution that I would like to submit as part of the record today. In that recommendation, the counsel who was appointed by the Secretary of the Interior provides advice to the Bureau of Land Management on land-management resource issues. They are supportive of the Mesaverde being developed, so there is no waste, but they are very concerned about the cumulative impacts to the surface and the users of the land, other than the operators.

With that, I'll conclude my statement, and thank you so much for this opportunity.

EXAMINER STOGNER: This letter that you're referring to, is that the October 28th letter that you handed to me earlier?

MR. OTTENI: Yes, sir, it is.

EXAMINER STOGNER: Okay, this will be made part of the record in this matter. Thank you, sir.

MR. OTTENI: Thank you.

EXAMINER STOGNER: Before I open it up, Mr. Carroll, I think you've got a couple of things?

MR. CARROLL: The Division has received a number of correspondence from various parties, almost all in support of Burlington's Application. There were a couple in opposition. Only one of these pieces of correspondence asked that their letter be read into the record, and this correspondence is from Williams Production Company, from

Darrell L. Gillen, Manager of Leasehold Operations. It's fairly short, so I will read it:

Williams supports Burlington's Application to increase vertical limits and increase well density in the Blanco-Mesaverde Pool, Case Number 12,069. Williams' analysis of the San Juan 29-7 pilot project indicates that new or incremental reserves will be recovered with a third infill well per 320-acre drillblock.

In addition, our analysis indicates that significant new reserves and deliverability and a significant number of commercial infill wells in the Blanco-Mesaverde Gas Pool will be created if the referenced application is approved. These new reserves and additional deliverability will help offset the declines that are occurring Basinwide and are necessary to prevent waste to the reserves.

Williams would like to thank the NMOCD Examiners for the opportunity to participate in this hearing by having this statement read and entered into the record.

EXAMINER STOGNER: This, along with all the other correspondence, will be made part of the record.

At this time we'll do something a little different. This will be essentially an open discussion period. And what I'd like to do is start on this side of the room, and we'll work in. I want everybody that wants to, to come forward, if you would. These are not microphones; they're merely a way for our court reporter to be able to make the record straight, and that's what we'd like to do.

So I'm going to start with this side, I'm going to go around, and then we'll work the rows. If you'd like please come forward, have a seat here. Keep it short. First of all, state your name, your city of residence.

Why don't you have a seat here, if you would?

MS. BLANCETT: Have a seat?

EXAMINER STOGNER: Yes.

MS. BLANCETT: Then my back will be --

EXAMINER STOGNER: Yes, because we need to make the record clear --

MS. BLANCETT : Okay.

EXAMINER STOGNER: -- in this matter, and that's why it's important that we face the court reporter, and speak -- make it loud so everybody else can hear you.

MS. BLANCETT: Okay, I'm Tweeti Blancett. I'm from Aztec, New Mexico. I represent Blancett Ranches and Blancett Trust.

Our property includes about a hundred sections of federal, state and private land that will be impacted by this decision on the 80-acre spacing.

We do not oppose this ruling. What we do want to present to you is two areas under the New Mexico Statute.

The first one is 70-2-2, and it concerns the drainage. And our question there is that industry, in just the hundred sections that we have stewardship over, hasn't drilled all the available spacings that are now designated, and we're wondering why you're considering additional spacings, where there's so many that are undrilled.

I've included some maps that kind of give you a little bit of an idea on that, as well as some production records.

The second point that we would make is, under New Mexico 70-2-12, and item number 7, we would ask you to consider that you have enumeration of powers under this article. And it gives you the opportunity to require wells to be drilled and operated and produced in a manner such as to prevent injury to neighboring leases or property.

What we would also comment on this is, since there is no definition as to leases or properties, we're assuming that that includes all leases and permits such as what we have, as well as our adjacent lands.

We feel like that we have been in this Basin, our family, for over a hundred years. We have stewardship of this land for over a hundred years. We have never had problems with the oil and gas industry in the past. We think that the reason that sometimes we are having problems now is because the face of the industry has changed in our area in the last ten years. That industry change is reflected in the fact, instead of dealing with one or two companies, as we used to deal with, we are now dealing with multiple companies, and no one seems to take the responsibility for carrying through on reclamation, reseeding, reservoirs, drainage, roads and all the things that happen to surface.

It is our feeling that this 80-acre spacing has brought together several ideas which are going to be very productive for surface owners, agencies and industry. And we're hoping with what we've presented here that Burlington will take the lead in what we have presented in the form of starting working together, agencies, industry and surface owners and users, in a manner that we can reclaim and re-establish some of the things that are very important to the environment, to wildlife, to grazing, to industry and to the agencies.

And with that, I will conclude. And thank you very much, Mr. Examiner, for your time and the opportunity to present.

EXAMINER STOGNER: Thank you, Ms. Blancett.

MS. BLANCETT: Thank you.

EXAMINER STOGNER: The document you gave me will be made part of the record in Case 12,069.

Starting along that wall, any others along this wall? Please come forward. Again, state your name, your city of residence.

MR. SPEER: I'm Steve Speer, and I'm general partner of Speerex Limited Partnership, Roswell, New Mexico.

We have a small working interest, nonoperating working interest ownership in several wells in the San Juan Basin. We agree with the need for infill drilling, such as being proposed.

But one thing which kind of glares to us as we hear the proceedings here is the -- we hear about the 57 percent of new reserves discovered, but where our concern lies in the other 43 percent that's going to be produced out of this well, which necessarily is going to be coming from the existing wellbores on the gas proration unit, and our concern is with the correlative rights of that gas. The gas is basically going to be hijacked out of existing wellbores.

And if you have nonoperating working interest partners who are being proposed for -- or have new APDs submitted to them, if they -- based on their economic situation, say, their inability to market in similar manner that the operating partner markets and their economics are different, they may desire to not participate in the well, which is going to be a major problem as far as nonconsent provisions, because they're going to be losing gas to the new wellbore, which they had otherwise basically paid for and proven -- as proven, developed reserves.

So we would just like to see -- make sure that that's a concern to the Commission when they make this ruling, as far as nonconsent provisions.

That's it.

EXAMINER STOGNER: Thank you, Mr. Speer.

Okay, along that wall, anybody else?

Okay, starting on that back wall, anybody back there?

Okay, along this wall, okay.

How about the next to the back row, anybody back there? Would you like to come forward and make a statement?

Okay, how about the third row from the back?

Fourth row?

We're making our way back up. Sir, are you -- Anybody here in the first two rows?

Okay, come forward, again, state your name, your city of residence, affiliation if you'd like.

MR. ADAMS: Sir, my name is Paul Adams. I'm from Farmington, New Mexico, and I represent eight members of the Sanchez family who have wells in the Blanco-Mesaverde Gas Pool. There are some eight wells.

No one member has received -- All of the members have an equal share of these royalties, and no one member has ever received the same amount of money as their share in the royalties. Three times, they wrote to various companies -- Burlington, primarily -- and asked for some review of this. And one response was that they were going to order a certain directive to look into the matter. That was the last we heard, or they heard.

So we filed an objection and challenged the standing of Burlington to make this Application on the basis of a New Mexico statue involving royalty distribution.

So we are not against Burlington. We would like to see the enterprise continue, but we would like to see -- The members would like to see the proper royalty compensations.

I have a document here that lists their names and their meter numbers. Some of the wells don't have names. And some of them may have been closed down. But we have no way of finding what's true.

So I'd like to leave a copy of this with you for the record, and I'll give a copy to Burlington if it's all right with you.

EXAMINER STOGNER: Thank you, Mr. Adams. This paper that you handed me will be made part of the record in 12,069. Is there anybody else?

MR. KELLAHIN: Mr. Examiner, in response to this gentleman's comment, earlier today Mr. John Zent has introduced himself. Mr. Zent is a land representative from Burlington. Mr. Zent has given his business card to all the Sanchezes that are here, and Mr. Zent will be their contact to address these concerns.

EXAMINER STOGNER: Mr. Zent, you may put me down as cc. to any correspondence that you have; feel free to do that.

Okay, is there anybody else that would like to make a statement? I know it's a little bit hard sometimes to come, but you've been here all day and now is an opportunity to.

Okay, I thank you for the participants that did.

And Burlington, I like the way you did the overheads today. That way everybody had a chance to see what I was looking at. I think that was a very good idea.

With that, Case 12,069 will now be taken under advisement. The record, however, will be left open for the three -- up to three rough-draft orders from the three participants here today.

So with that, this hearing is adjourned. Thank you again.

(Thereupon, these proceedings were concluded at 4:46 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. ______, heard by me on ______________ 19____.

______________________, 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 November 6th, 1998.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 2002