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 FOR THE ESTABLISHMENT OF A DOWNHOLE COMMINGLING REFERENCE CASE PURSUANT TO DIVISION RULE 303.E AND THE ADOPTION OF SPECIAL ADMINISTRATIVE RULES THEREFOR, SAN JUAN COUNTY, NEW MEXICO

CASE NO. 11,601

ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

August 22nd, 1996

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, August 22nd, 1996, 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

August 22nd, 1996
Examiner Hearing
CASE NO. 11,601

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E X H I B I T S

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A P P E A R A N C E S

FOR THE DIVISION:

RAND L. CARROLL
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Legal Counsel to the Division
2040 South Pacheco
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FOR THE APPLICANT:

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

ALSO PRESENT:

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

* * *

WHEREUPON, the following proceedings were had at 8:28 a.m.:

EXAMINER CATANACH: At this time we'll call Case 11,601.

MR. CARROLL: Application of Burlington Resources Oil and Gas Company for the establishment of a downhole commingling reference case pursuant to Division Rule 303.E and the adoption of special administrative rules therefor, San Juan County, New Mexico.

EXAMINER CATANACH: Are there appearances in this case?

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

EXAMINER CATANACH: Any additional appearances?

Will the witnesses please stand and be sworn in?

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: Mr. Examiner, Burlington seeks the approval of a reference case with regards to commingling activities in what is known as the 32 and 9 unit. It's a very large unit that's operated by Burlington. It consists of production from the Dakota, the Mesaverde and the

Pictured Cliff Pools.

The testimony will be that the only one of the three pools that is an economic stand-alone opportunity is the Mesaverde.

What we're asking you to do is establish a reference case for commingling within the unit, so that we may do the following: that when we file individual downhole commingling applications for existing wells or new drills in the unit, that we might reference this particular transcript and order to satisfy the economic criteria, which is, the Pictured Cliff and the Dakota are both marginal formations and can be commingled without the establishment of individual economics for those reservoirs.

In addition, we believe that you can be satisfied that as with the Basinwide reference case we just described, that you can use this case to satisfy yourself that the pressure requirements for the Mesaverde and the Pictured Cliff should not be of concern to you.

In addition, we are going to provide you with two proposed allocation formulas, which we will use within the unit. One is a percentage allocation based upon tests, and the other one is a conventional allocation formula where we have established a decline based upon existing production and can develop a ratio for allocation on that purposes.

Probably the most important aspect of the case is

the fact that there are divided interests within the participating areas in the unit, such that each time we have to file a downhole commingling application. As it currently stands, Mr. Alexander has to send in excess of 220 notifications to interest owners by certified mail, return receipt.

We think that is a substantial burden, and so what we have requested is that this case satisfies notification to all those interest owners.

He has provided notification to all of those individuals and entities in this case. He has sent them a copy of the Application and the notice letter, and to the best of his knowledge and mine there have been no objections to having this case stand as notification for any subsequent commingling applications within the unit area.

That does not relieve us of the responsibility to notify offsetting operators in the event we have a commingling application around the boundary, and we have offsetting operators that are required to be noticed.

That is a substantial point in this case, is the notification issue.

With that introduction, then, if you will permit me, I will call and present Mr. Alan Alexander.

EXAMINER CATANACH: You may proceed.

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, would you please state your name and occupation?

A. Yes, my name is Alan Alexander. I'm currently employed with Burlington Resources Oil and Gas Company in their Farmington, New Mexico, office as a senior staff -- a senior land advisor with that company.

Q. Mr. Alexander, on prior occasions have you qualified as an expert in petroleum land management before the Oil Conservation Division?

A. Yes, sir, I have.

Q. As part of your duties with regards to this particular Application, are you familiar with the San Juan 32 and 9 unit that we're discussing here today?

A. Yes, sir.

Q. In addition, as part of your duties, have you researched Meridian/Burlington files to determine all of the owners that share in production with regards to any well producing within this unit?

A. Yes, sir, I have, and without mentioning the offset operators involved the list currently stands at 205

internal owners of royalties, overrides, burdens of other kinds, and working interest owners.

Q. Summarize for us what Burlington is seeking to accomplish with this Application, Mr. Alexander.

A. We would like to set a reference case for future development of the three particular reservoirs, being the Blanco-Mesaverde, the Blanco-PC and the Basin-Dakota, whereby we can commingle these formations in various combinations without having to notify the 200-plus internal owners in the unit.

We will, of course, still notify an offset operator if we are on the boundaries of the unit.

And we are asking that the Commission grant us summary administrative approval when filing these future applications, that both the Dakota and the Pictured Cliffs reservoirs are deemed marginal reservoirs, and to satisfy that criteria, and also that there would not be future needs to discuss or submit data for pressure information insofar as the Mesaverde and the Pictured Cliffs formation are concerned.

We will continue to monitor any kind of commingling application for the Dakota with the other reservoirs to see if we are in compliance with the Rule 303 pressure limitations.

Q. Were you part of the industry group that studied,

analyzed and presented technical information to the Commission where Rule 303 was modified earlier this year?

A. Yes, sir, I was.

Q. And are you part of the technical team for Burlington that is responsible for the San Juan 32 and 9 unit?

A. Yes, sir, I am.

MR. KELLAHIN: We tender Mr. Alexander as an expert witness.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Let me have you summarize for us what's contained in the exhibit book so that we see how it's organized, Mr. Alexander.

A. Yes, behind the Exhibit Tab Number 1, we have provided the Division with our Application. Attached to that Application are various exhibits that set forth the acreage in the unit and the owners that we intend to contact.

Behind Exhibit Tab Number 2 is a list of the 205 internal owners in the San Juan 32 and 9 unit.

Behind Exhibit Tab Number 3, we have provided a reference map of the entire San Juan 32 and 9 unit. This map includes all of the wells that are presently developed in the unit. It shows the unit outline, and it also gives lease outlines to represent the various tracts that are in

the unit.

Q. Give us a short explanation as to why there's such an odd shape to the boundary of the unit.

A. The 32 and 9 unit contains language that provided for an automatic elimination of certain acreage at the end of the development, the primary development period for the unit, and all acreage that was not then under production had to be automatically eliminated from the unit back in the -- it was probably the later Sixties. I'd have to look for the automatic elimination date.

But in any regard, that is why the unit was contracted back, and it is fairly broken up today as a result of that automatic elimination of certain acreage that was nonproducing as of that date.

Q. When was this unit first formed? Do you remember the approximate year?

A. It was in the early part of 1960, I believe, in January of 1960.

Q. All right, sir, what's behind Exhibits 4, 5, 6, 7 and 8?

A. I did want to mention that although this Application does not talk about the Fruitland Coal formation, as you might see on this map, and you might be curious about it, is that we do have substantial Fruitland Coal production in this unit, but however it's not the

subject of this hearing. I just wanted to bring it to your attention.

Behind Exhibit Tab Number 4, we are providing a geologic evidence that will be testified to by Mr. Christiansen, both structure and isopach maps to discuss the geologic merits of the unit and how they would affect, if any, the commingling of these reservoirs.

Behind Exhibit Tab Number 5, we have provided maps that show existing Pictured Cliffs and Dakota penetrations, and also you will see that there is a cross-section line on each of those maps, and we have provided cross-sections that Mr. Christiansen will talk about also with regard to the commingling in this unit.

Behind Exhibit Tab Number 6 is the Dakota penetrations, current production, and cross-section.

Behind Exhibit Tab Number 7, we would like to discuss the economic criteria for commingling the Pictured Cliffs, Mesaverde and Dakota formations in some detail.

And then behind Exhibit Tab Number 7 [*sic*], we have presented two of the most commonly used allocation methods that we have used to date in the 32 and the 9 unit, and elsewhere.

Q. Let me show you what is marked as Burlington Exhibit 9, Mr. Alexander, and ask you to identify this exhibit.

A. Exhibit Number 9 is an affidavit or certificate of mailing, and attached to that certificate of mailing are copies of the green cards, the certified return receipt that we mail to each of the parties that are on the notice list behind Exhibit Tab Number 2.

Q. Is that your certificate and affidavit?

A. Yes, sir, it is.

Q. Do you have knowledge as to whether or not you actually mailed these notifications to all of these parties shown in the Application at least 20 days prior to the hearing?

A. Yes, sir, we did.

MR. KELLAHIN: Mr. Examiner, we need to verify the exact date of mailing, but Mr. Alexander assures me it was more than 20 days prior to the hearing, and I'll give that to you after the hearing.

Q. (By Mr. Kellahin) From your perspective, Mr. Alexander, summarize for us what in your opinion is the benefit of the granting of this Application.

A. It will relieve significant administrative burdens, particularly with Burlington and I believe also with the Division, in that we would -- due to the fact that we are dealing with various combinations of ownership in the 32 and 9 unit, we will be dealing with drill-block interest, and we'll be dealing with participating-area

interests for both the -- for all three of the formations in the Dakota, the Mesaverde and the Pictured Cliffs.

Currently we have participating areas in one degree or another for the Mesaverde and the Pictured Cliffs. We do not have a participating area established for the Dakota formation at the present time.

Due to the fact that we'll be dealing with various combinations of ownership, it is extremely administratively burdensome to notify approximately 205 people each time we would like to commingle one of these wells.

The unit agreement and the unit operating agreement adequately provide for the protection of correlative rights for these parties, and they will do so. And therefore, we believe that it is not necessary to notify all the internal ownership of the 32 and 9 unit.

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

We move the introduction of his Exhibits 1, 2 and Exhibit 9.

EXAMINER CATANACH: Exhibits 1, 2 and 9 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Alexander, there is a -- this was mostly a

Mesaverde-developed unit; is that correct?

A. Yes, sir, until more recently. There is significant Fruitland Coal development. If you'll refer to Exhibit Number 3 in that map, you'll see that the Fruitland Coal is symbolized by the green triangle, and we do have commercial development in the Fruitland Coal in this unit and have drilled quite a few wells.

The PC and the -- the Pictured Cliffs and the Dakota formation are not well developed, for reasons that we will explain to you later.

Q. Is the PC participating area -- is it very big, or --

A. No, sir, it's very small, and it's centered down in the very southwest corner of the unit.

Q. So you've drilled very few PC wells?

A. There are probably -- oh, I forget the exact number -- 30-some-odd Pictured Cliff wells.

I do have a map, if you would like to see it, of the current Pictured Cliff participating area that I brought with me.

MR. KELLAHIN: Mr. Alexander, if you'll refer to Exhibit 1 and look at the first page of the Application, look down to the first numbered paragraph and it will give you the well count per pool within the unit.

THE WITNESS: Yes, sir, I might read that in that

the unit currently includes two Basin-Dakota completions, approximately 128 Blanco-Mesaverde completions, and approximately 32 Blanco-Pictured Cliff completions. Now, those may not be all stand-alone wellbores. They have been completed in some duals and some commingles, but they are completions.

Q. (By Examiner Catanach) Do you anticipate there being a PA established for the Dakota?

A. We have not encountered any commercial production for the Dakota yet. I think not, as it turns out, and the reason that I say that is that we hoped to do some development in the Dakota with the aid of the commingling orders. However, the rules for the unit agreement and unit operating agreement provide that if we do a completion of that type, we actually have to apply new drill-well cost against that completion to deem it commercial, and they probably will not withstand that kind of cost associated with them, even though they might be an economic venture if we were able to commingle the wells.

So to answer your question, we probably won't have a Dakota participating area developed but we will hopefully have some economic Dakota completions in the future.

Q. You said you felt like the unit operating agreement and the unit agreement adequately protect the

correlative rights of these interest owners. Can you expand on that, Mr. Alexander?

A. Yes, sir, they have mechanisms in those agreements that provide for the sharing of revenues, basically through two means.

One is that the well could be developed and if it's declared noncommercial, it would continue to be produced on a drill-block basis, and all the proceeds would be distributed on that drill-block basis.

However, if we do obtain production that is good enough to withstand the commerciality determination, then we create participating areas, as we already have done with the Mesaverde and the PC. And those will expand to include any commercial production, and all of the parties will share on a tract participation basis in that production.

So I believe that the agreement does provide for protection of correlative rights in that manner.

Q. Have you ever had an interest owner object to a downhole commingling application?

A. In the 32 and 9 unit in particular, or in the Basin in general?

Q. In the Basin in general?

A. No, sir, I don't believe -- I know we haven't in the 32 and 9 unit. I do not believe that we have had an objection to the commingling in all the cases I've dealt

with in the Basin.

Q. We've established this procedure for Meridian in other units, have we not, the notification?

A. Yes, sir, we have. One in particular is the Huerfano unit that we have established that. We also established a procedure up in our Allison unit for commingling.

EXAMINER CATANACH: Okay, I have nothing further.

Do you have anything?

EXAMINATION

BY MR. CARROLL:

Q. Mr. Alexander, I see in Exhibit 2 that only the Mesaverde owners are listed?

A. That was a column that we pulled. The ownership for the -- the Mesaverde participating area is fully developed, and so we were able to extract the overrides, royalties and other burdens from our Division order section, because they're constant for both the other formations, and that's where that pull originated from, was from the Mesaverde Division orders.

And then of course we have our Exhibit B that we have the ownership of all the working interest owners for all of the formations.

Now, the ownership for the working interest in the formations does vary, but we did pick up all of the

working interest owners in all of the formations.

But that's the reason you see that heading up there. That's a computer pull from our Division order section, and that's where that heading came from.

MR. CARROLL: That's all I have.

EXAMINER CATANACH: I think that's all we have of the witness.

MR. KELLAHIN: Mr. Examiner, our next witness is Glen Christiansen. He spells his last name ending with s-e-n. Mr. Christiansen is a petroleum geologist and he resides in Farmington.

GLEN E. CHRISTIANSEN,

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 state your name and occupation?

A. My name is Glen Christiansen, and I'm a geologist for Burlington Resources Oil and Gas.

Q. Summarize for us your education, sir.

A. I received my bachelor's of science in geology from Oklahoma State University in 1991, and I received my master's degree in geology from the University of Wyoming in May of this year.

Q. You're currently employed with Burlington in Farmington as a petroleum geologist?

A. Yes, I am.

Q. Describe for us what your responsibilities are as a geologist for the San Juan 32 and 9 unit area.

A. I'm the geologist for the Area 45 team, which encompasses the northwest portion of the San Juan Basin, which includes the 32-9 unit.

Q. As part of your responsibilities for this area, which includes this unit, have you made yourself knowledgeable and familiar with regards to the geology of the Dakota, Mesaverde and Pictured Cliff formations and reservoirs?

A. Yes, I have.

Q. As part of your study, do you now have geologic opinions with regards to the ability to further develop the unit on a downhole commingled fashion?

A. Yes, I have.

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

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Let me have you turn, sir, to the Exhibit Tab 4. I want to ask you about the structural component of all three pools within the boundaries of the 32 and 9 unit. Have you examined the structural features

with regards to those three pools within the unit?

A. Yes, I have.

Q. Do you find a structural component to the reservoir whereby wells positioned on structure will have a different rate of productivity, based upon their structural position?

A. No, we haven't.

Q. Let's look at this exhibit and have you summarize for me what you see about the structure.

A. The structure map you see is a subsea structure, contoured on the Huerfanito bentonite which lies between the Pictured Cliffs and Mesaverde formation. It's fairly indicative of what you see in structure, both at the Pictured Cliffs level, Mesaverde level and Dakota level. It shows really pretty -- no anomalous features.

Q. So if you as a geologist are looking for well locations for any of those three pools within the unit boundary, using structure is not going to be helpful to you?

A. Not in this area, no.

Q. All right. Let's turn to the next display, again, still in Exhibit Tab 4, and have you identify for me what the next display is.

A. This map is a contour map showing the thickness of the Pictured Cliffs interval from the top of the

Pictured Cliffs to the base.

Q. All right. Describe for me the significance of the color shading.

A. The yellows are generally the thinner zones, whereas, where you get to the orange and reds are the thicks.

Q. This is a gross isopach of the Pictured Cliff reservoir?

A. Yes, it is.

Q. Give us a general range of the minimum and the maximum gross thicknesses.

A. Generally in the area of the 32-9 unit, it ranges from approximately 110 feet to 190 feet at the max.

Q. I know we're going to see a well-location map in a moment, but as we look at this display, show us generally where the Pictured Cliff development has occurred within the unit.

A. Generally, the development has occurred in the southwestern portion of the 32-9 unit, generally in the areas of the thicker zones there.

Q. All right, sir. Let's turn now to Exhibit Tab 5 and look at the first display after that exhibit tab. What are we seeing here?

A. This is a unit map showing the present-day Pictured Cliffs completions. The green dots represent the

1996-budgeted wells, and the red dots show 1997-budgeted wells.

Q. The wells budgeted for 1996, with the green dots, are any of those wells other than proposed downhole-commingling wells?

A. No, they're not.

Q. So these are all commingle prospects?

A. Yes, they are.

Q. And for the 1997 budget, are those also proposed commingled wells?

A. Yes, they are.

Q. Do you have any proposed stand-alone well for either year in any reservoir?

A. We do not in the Pictured Cliffs or Dakota.

Q. Okay. As a geologist, what do you foresee for us as the opportunities for further development of the Pictured Cliff reservoir within this unit? How are we going to do it?

A. We have seen from some of our previous completions in the 32-9 unit that to make these projects fly economically, we are going to have to commingle them with, generally, the Mesaverde.

Q. Have you drilled and completed any of the budgeted 1996 wells that are shown with the green dots?

A. Yes, we have.

Q. Can you identify for me where they might be?

A. The San Juan 32-9 Number 37A lies in the southeast --

(Power outage occurred in the hearing room. A recess was taken at 8:55 a.m.)

(The following proceedings had at 9:15 a.m.)

Q. (By Mr. Kellahin) Mr. Christiansen, before the break you and I were discussing the Exhibit 5. It's the first display behind that tab, and I was asking you to locate for us the two downhole commingled wells that were drilled under the 1996 schedule, and you were identifying those for us. Please continue.

A. Yes, the first one was the 32-9 Number 37A, which is in the southeast quarter of Section 32, 32 and 9. It's indicated by the green dot there.

And the other one is the 37 -- or 32-9 Number 47A, and it is in the northwest quarter section of Section 4, 31-9.

Q. Those were new drills as commingled wells?

A. Yes, they were, Mesaverde and PC.

Q. Mesaverde and PC in both of those?

A. Yes, sir.

Q. Do you recall what kind of rates you're getting on those wells?

A. We expect approximately 150 out of the PC and

approximately 800, I think, 700, out of the Mesaverde.

Q. As to the other wells, are they all to be new drills or recompletions, or some combination of both?

A. The remaining will be recompletions in existing Mesaverde wellbores.

Q. Okay. As we look at the distribution of PC wells on Exhibit 5, this first display, describe for us geologically why there has not been further PC development as we move from the southwest portion of the unit where we have PC wells, up towards the northeast portion.

A. Thus far, the wells to the north -- in the northern half of the 32-9 unit have been extremely marginal. One example would be the 32-9 Number 119 that we drilled last year as a stand-alone Pictured Cliffs well, and it is essentially a dryhole.

Q. Geologically, do you have enough information to determine a conclusion as to whether, in your opinion, subsequent development in the Pictured Cliff is in fact going to be marginal production?

A. We believe the remaining locations for the Pictured Cliffs in the 32-9 will be marginal.

Q. When we look down in the better portion of the Pictured Cliff development within the unit area, this portion down in the southwest where we have a number of PC wells, what's the general vintage of those wells?

A. 1980 to early 1990s.

Q. Has there been substantial gas production out of the Pictured Cliff at this point?

A. Several of the wells have produced good amounts.

Q. Do you see any opportunity for further Pictured Cliff wells down in the better-developed area, such that you would encounter Pictured Cliff production that would be other than marginal?

A. Generally, all the available locations have been drilled.

Q. All right, sir. And any further development in there is likely to be subject to pressure depletion anyway?

A. Yes.

Q. So when we look throughout the unit, then, it's your geologic conclusion that there's no more Pictured Cliff development that can be developed, other than in a commingled fashion with some other formation?

A. Yes.

Q. Let's take a quick look at the cross-section, which is the next insert behind Exhibit Tab Number 5. If you'll fold yours out for a moment. All right, give us a quick geologic summary of what we're seeing when we look at the cross-section.

A. Okay, we are going from roughly southeast to the northwest, right to left, beginning with the San Juan 32-9

Number 106, which is a commercial Pictured Cliffs well, going up to the San Juan 32-9 Number 119 in the northwest, which was the one I mentioned earlier. It was essentially a dryhole. And as you can see, we indicated where we had cored the main reservoir body of the PC in that well.

The Pictured Cliffs generally thickens to the northwest, along this section line.

Q. Where is the 32 and 9 unit in relation to the Basin? Where are we? Up in the north?

A. We are just south of the Colorado border, right along probably the structural axis of the Basin.

Q. All right, sir, let's turn to the next exhibit tab and focus your attention on the other marginal pool in the unit, and it's your conclusion that the Dakota is the other marginal pool?

A. Yes, it is.

Q. Describe for us what we're seeing when we look at Exhibit 6.

A. Essentially you're seeing that there is relatively no Dakota development in the 32-9 unit, and what wells have been completed have been noncommercial. Most recently, the 32-9 Number 113 and the 32-9 Number 114 were drilled by Amoco and had no production from the Dakota.

Q. Apart from the fact that there are few Dakota penetrations, you do have good geologic information with

regards to the Dakota Pool within the unit, don't you?

A. Using what wells are within the 32-9 unit and offsetting wells around the unit, we do have a fair log.

Q. In terms of reservoir deposition and distribution, is the distribution of the Dakota similar to that of the Pictured Cliff and/or Mesaverde Pools, or can you draw any kind of analogy between those other pools?

A. The Dakota is generally divided up into two units, the upper Dakota, which is generally more marine-dominated, a little more continuous unit, it's generally -- The best reservoir in the producing area is to the south and southwest. And then the lower Dakota is generally thought to be nonmarine, much more discontinuous and interbedded with gas- and water-saturated sands.

Q. Okay, let's look at the cross-section so we can see what you've just described.

A. This section is running essentially from the southwestern portion of the unit up through the middle of it into Colorado. And what we see is the upper marine units of the Graneros. Two wells tongue in the marine Dakota, show a drastic thinning as well as shaling out.

Q. When we look for Dakota wells in the Basin that are the highly productive Dakota wells, they would be in the marine portion --

A. Yes, the --

Q. -- of the pool?

A. -- the main reservoirs of the Dakota lie in the upper Dakota, the Paguate-Cubero, and the two wells in the Graneros.

Q. And unfortunately, you do not have that opportunity in the unit area?

A. Those reservoirs are absent in the 32-9 unit.

Q. Geologically, then, how do you propose that the Dakota will ever be further tested within the unit boundaries?

A. The real unknown in this -- in the Dakota, is the nonmarine portion. It's very hard to interpret where the gas-charged sands will lie, versus the water sands, and therefore it makes it a very risky project.

Q. It's too risky to support a stand-alone Dakota attempt in the unit anywhere?

A. Yes.

Q. And so to penetrate the Dakota, you're going to have to package that with the Pictured Cliff or the Mesaverde?

A. Yes.

Q. And that package has got to be on a commingled basis?

A. Exactly.

Q. You've excluded the Mesaverde geologic analysis

for what reason, sir?

A. It is the main producer in the 32-9 unit, and therefore we believe it's the -- an economic one.

Q. So it's going to be an economic one?

A. Yes.

Q. From a geologic perspective, Mr. Christiansen, summarize for us your conclusions as to why you would like the Examiner to grant this Application.

A. We would like for you to grant this proposal for several reasons.

The Pictured Cliffs, in the area of existing completions, are likely to be depleted because of the production. And in the areas to the north where we see fewer completions, we expect that the reservoir characteristics are those that -- they have very little permeability, and from -- Our core data shows that, and we expect the reservoir in that area to be marginal.

The Dakota, from what little data we do have, shows that that is also quite marginal.

Q. Your geologic conclusion, then, about the best opportunity for Burlington to further develop those resources is in what fashion, sir?

A. To commingle the Pictured Cliffs generally with the Mesaverde, as well as the Dakota, and the Dakota with the Mesaverde as well.

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

We move the introduction of his geologic displays found behind Exhibits Tabs 4, 5 and 6.

EXAMINER CATANACH: Exhibits 4, 5 and 6 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Christiansen, the Mesaverde, is it fully developed in the unit?

A. It is developed in the majority of the unit. Towards the northeast portion, we are on 320s in that area.

Q. So do you anticipate much infill Mesaverde drilling going on?

A. Burlington Resources is currently looking at PUD development, and those that will attain our economic hurdles will be drilled.

Q. So the majority of the commingling situations you're talking about are with existing Mesaverde wells?

A. Yes, for the most part.

Q. Are you going to do anything with any of the existing PC wells?

A. We have nothing planned at this time.

Q. So is it your opinion that most of the commingling situations will occur in the southwest portion

of the unit? Is that a fair statement?

A. Yes, from -- we are -- I would say we're generally stepping out of the known production in the PC where it starts to become marginal, and so we'll be playing along that trend at this time.

Q. And initially, you think that for the most part it's going to be Mesaverde-PC situations, as opposed to Mesaverde-Dakota?

A. Yes.

Q. Where will the -- Where do you anticipate the Dakota commingling to occur?

A. From just what mapping I've done, it appears that probably the western portion probably shows the best opportunity for Dakota. We have, I guess, a better percentage of producing Dakota wells in that general direction.

Q. What is the factor that's controlling the PC production? Is it the thickness of the reservoir?

A. We believe that thickness does not control the production. We believe those ones in the southwest of the unit are dominated by natural fracturing. And we also look at the Mesaverde in that area, and it produces anomalously in that area as well.

Therefore, the conclusion is that we've got some natural fractured reservoirs throughout the section in that

area, whereas to the north and northeast we see dominance -- or production controlled by the matrix permeability.

Q. The thickness in the PC, does it change in the unit?

A. As you can see from that one isopach in Exhibit 4, it does change. You know, we're talking about 70 feet, probably, across the unit, something like that. That's a gross isopach.

Q. So the PC wells that you're going to commingle, you feel like you're stepping out from the -- from where you had the good PC production initially in the unit?

A. Uh-huh.

Q. So you're stepping out into an area that might be marginal --

A. Exactly.

Q. -- based upon getting away from the natural fracturing?

A. (Nods)

Q. And did you say you would -- you had drilled -- let's see, a couple of wells, commingled wells in this area --

A. Yes.

Q. -- in 1996?

MR. KELLAHIN: Mr. Examiner, it's these two, this one and that one.

EXAMINER CATANACH: Okay.

Q. (By Examiner Catanach) And you said -- The rates in the PC that you encountered?

A. Approximately 150 MCF a day is attributed to the PC.

Q. In both wells?

A. Yes.

Q. Those were new wells?

A. Yes, that was based off of pitot gauges, and then generally we see approximately 50 percent of down-the-line production.

Q. And you also completed those in the Mesaverde?

A. Yes, we did.

Q. Okay, 700, 800 MCF a day in the Mesaverde?

A. I believe that's the amount. Mary Ellen will probably be better able to answer that.

Q. Okay. On your PC cross-section, you've got rates at the bottom of those wells. Were those initial rates in those wells?

A. Those are cum, cumulative production.

Q. Oh, cumulative rate, okay.

A. Yes.

Q. Got you.

How many candidates for commingling do you think you're going to have in the unit? Is it -- Can you say?

A. I guess it would be tough to say. We would probably have to evaluate how -- this year's and next year's program we're going to do before I would say that. It would be limited, probably, to a couple sections around the existing proposed locations.

EXAMINER CATANACH: I believe that's all I have of this witness.

MARY ELLEN LUTEY,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name and occupation?

A. My name is Mary Ellen Lutey, and I'm a production engineer for Burlington Resources.

Q. Ms. Lutey, would you summarize for us your education?

A. I received my bachelor's of science degree in petroleum engineering from Montana Tech in May of 1994.

Q. And summarize for us your employment experience as a petroleum engineer.

A. I've been working for Burlington, which was previously Meridian Oil, for approximately two years now as a production engineer in the Area-45 team, which is the northwest region of the Basin.

Q. Does your area of responsibility as a production engineer include the San Juan 32 and 9 unit?

A. Yes.

Q. And as part of your responsibility, have you examined the production and reservoir-engineering aspects of the Dakota, the Mesaverde and the Pictured Cliff wells that you operate in that unit?

A. Yes.

Q. Based upon that analysis, do you have certain engineering conclusions and recommendations about how to further develop that unit?

A. Yes.

MR. KELLAHIN: We tender Ms. Lutey as an expert production engineer.

EXAMINER CATANACH: She is so qualified.

Q. (By Mr. Kellahin) As part of your study, have you made an analysis of whether or not the Pictured Cliff Pool is a marginal pool in terms of how to develop it with either commingled wellbores, a dual completion or a single completion?

A. Yes.

Q. Based upon that study, what is your conclusion about the Pictured Cliff Pool?

A. The Pictured Cliff tends to be marginal in this area, and commingling would be the best economical way of

completing those wells.

Q. Okay. When you look at the opportunity for Mesaverde production, that Mesaverde production, as I understand it, is the one pool that continues to be economic and supports the other two; is that true?

A. Yes.

Q. When you look at the Dakota, do you have or have you ever had a Dakota well that was economic in the unit?

A. No, sir.

Q. Your study of the information on the Dakota, does it cause you to conclude that that reservoir will continue to be a marginal pool within the unit?

A. Yes.

Q. Let's turn to see how you analyzed and came to those conclusions.

If you'll turn to the exhibit book with me, let's look at Exhibit Tab 7 and focus first of all on the Pictured Cliff Pool. One of the things that we talk about in commingling is the available pressure information. Let's start at that point and have you describe what you've shown me in your summary. Under Pictured Cliff, you say original shut-in pressure. In fact, what are you meaning when you say that?

A. It's the shut-in pressure that -- the first shut-in pressure that was available when we started producing

gas.

Q. And that was a pressure available to you after there had been pressure depletion in the Pictured Cliff reservoir from production outside the unit?

A. Yes.

Q. Currently, what kind of pressure do you see in your Pictured Cliff wells, on average?

A. The average is about 350.

Q. All right. One of the items of concern for the Division when they process the commingled applications is whether or not there is a pressure differential among the commingled reservoirs, such that there would be a higher-pressured reservoir that would damage the container of the lowest-pressured reservoir. You understand that concept?

A. Yes.

Q. Would Pictured Cliff pressures be so high that the Division would concern itself about PC pressures in the unit when it comes to commingling?

A. No.

Q. The only reservoir that might have pressure to be of concern would be the Dakota, I guess?

A. Yes.

Q. You've also used pressure to help you extrapolate what you think a PC well's remaining gas recovery would be if you drilled that reservoir?

A. Yes.

Q. How did you do that?

A. As you can see on the Exhibit 7, on page 1, using material balance method.

Q. Okay. What have you concluded, then, is your average in MCFs, your average remaining recoverable gas per PC attempt? What number did you get?

A. 700 million cubic feet.

Q. Okay. Can we use that number later when you show us your economic plots to see where a typical PC well will fall on the economic curves?

A. Yes.

Q. All right, let's turn to that and do that. If you'll turn the exhibit tab, let's take the next step, which is looking at the cost component. You've given us a recoverable gas number. Describe for us how you got your cost component of the economic analysis.

A. This page is a summary of the costs that -- the average costs that we've seen to date for capital expenses for a single well completion, a dual well completion, and also commingled wells.

Q. When we look at these numbers, have they been compiled so that these are the direct costs attributable only to the Pictured Cliff?

A. Yes.

Q. So in a commingled well or a dual well, there are other expenses as to other formations, but you have taken those out and we now see only the representative costs directly attributable to the Pictured Cliff?

A. Yes.

Q. The costs attributable to the Pictured Cliff for a single completion total what? What have you got for it? $400,000?

A. Yes.

Q. And for a dual case is what?

A. $236,000.

Q. And for the commingled cases?

A. $186,000.

Q. All right. Let's turn over and look at the next display, which is the economic curves, okay? Help us set up the display. What's on the vertical axis?

A. Along the Y axis is the EUR, and along the X axis is the initial rate. And you can see the three different lines. The line shown in blue is for a single well completion as a new drill, and the green line shows a dual well completion as a new drill, and the pink line shows a commingled well completion.

Q. All right. We'll explain to the Examiner in a minute how you constructed and the criteria used to construct the curves, but let's give him the example of Mr.

Christiansen's well that you've recently completed as a single PC well. It had a rate of about 150 a day, and if we use your EUR of 700, where is that going to put us on the curves?

A. It shows that if you go up on the X axis and along the Y axis, that that's going to put us under all of these curves, which is an indication that even as a commingle, that the well that we specifically talked about is not economical.

Q. All right. If I'm on the X axis and I go to just less than 200 as a daily rate and go up the scale and get the EUR, then I'm still below the commingled economic baseline?

A. Yes.

Q. Do you see an opportunity for commingling of the Pictured Cliff in the unit that would put you -- I guess you have to be above the green line, right? The green line is your base case for dual completion?

A. Correct. So for in between the pink and the green, then, commingling would be the only viable option for economics.

Q. So everything below the green line, your only option is commingling. And if you're below the pink line, then even commingling is suspect?

A. Yes.

Q. How were you able to justify the economics, then, for the well? Is it supported by the Mesaverde? Is that how you do this?

A. Yes, and also the -- One of the things that we've talked about, as Glen already mentioned, will be -- some of these will be recompletions in existing Mesaverde wells and that will again lower the curves to make the project more economical.

Q. Okay, we're looking at a curve then, for a new drill --

A. Yes.

Q. -- as a commingled well?

A. Yes.

Q. And your opportunity for a recompletion lets you save some money and therefore reduces the EUR and the rate so that you can make it work?

A. Yes.

Q. Mr. Scott Daves, in the Basinwide reference case, constructed a similar economic analysis using methodology like this, did he not?

A. Yes, he did.

Q. Describe for us what parameters are different between your analysis and what Mr. Daves did.

A. The biggest change from when Mr. Daves presented is the greater return. Our economic indicator rate of

return has increased, and this was a result of Burlington's company strategy has increased to 20 percent, and when Scott completed it, it was done at 15-percent rate of return.

Q. All right. Scott's economic rate of return started at 15 percent. You're no longer allowed to use that; it's 20 percent?

A. Correct.

Q. In addition, the pricing index escalator, if you will, he's escalating his costs over a time that was more optimistic than the escalator you used?

A. Correct.

Q. And then his initial pricing start was a little bit higher than your price start, right?

A. Yes.

Q. So your opportunity for commingling is even more pessimistic than his; is that not true?

A. Yes, that's correct.

Q. When we get to the Dakota case, you've not bothered to put together an economic analysis. That's simply because you know as a matter of fact that the Dakota is, in all probability, not going to be economic?

A. That's right.

Q. Summarize your conclusion, then, about the economics and the commingling opportunity in the unit.

A. In summary, in the 32-8 unit, we don't feel that -- or we feel that commingling is the only viable alternative to complete the wells that we've talked about.

Q. Let's turn to the topic of the allocation formulas. If you look at the next tab and look at the displays behind Exhibit Tab Number 8, you're proposing to the Examiner the option for you to utilize either one of two allocation formulas; is that not true?

A. Yes.

Q. Describe for us the formulas you're proposing.

A. The two main formulas that we're proposing are, first of all, one would be based on the historical production. In the case of a recompletion where we have existing Mesaverde production, we can use that decline analysis and use our allocation formula based off the past historical production.

And the second alternative would be to use the actual gauges that we obtained during the workover or completion process and use the percentage allocation on that.

Q. And both of these allocation formulas are commonly used in the Basin for commingling production in these wellbores?

A. Yes.

Q. In your opinion, either one of these allocations

is fair and reasonable and accurate?

A. Yes.

Q. Can you identify for the Examiner any of the wells that have received commingling approval and give him a reference as to those order numbers? Do you have that information?

A. Yes, the 32-9 Number 37A, I believe, is Commingle DHC-1275, and the 32-9 Number 47A is 1276 Commingle Order.

Q. In your opinion, will approval of your Application for a reference case provide an opportunity to reduce the economic burden with regards to the filing of those applications and at the same time prevent waste and protect the correlative rights of the owners entitled to a share in that production?

A. Yes.

MR. KELLAHIN: That concludes my examination of Ms. Lutey.

We move the introduction of her Exhibits 7 and 8.

EXAMINER CATANACH: Exhibits 7 and 8 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Ms. Lutey, how did you determine the original bottomhole pressures in the Pictured Cliffs formations?

A. The original that's stated on page 1 --

Q. Right.

A. -- under Exhibit 7, those were determined from actual shut-in wellhead pressures when the well was first brought on line or started producing.

Q. And was this an average number from all of the PC-completed wells in the unit?

A. Yes.

Q. How about the current number? How did you get that?

A. That information was available through also shut-in pressures. The most -- When I say current, that's the most recent data that we have, and it again is an average of the Pictured Cliffs data that we have.

Q. And you've got about -- Is it 32 PC wells existing?

A. Yes.

Q. So you're saying you took the average of all those wells?

A. That we had the pressure information on, yes.

Q. Do you know how many those were?

A. I think it was 18.

Q. For both the current and the original? Or just --

A. Yes.

Q. Okay. So you think that's pretty representative?

A. Yes.

Q. So if I understand right, you're estimating that -- for a new PC completion, you're estimating 700 million cubic feet to be recovered from that well?

A. Yes.

Q. Okay. The initial PC rate, you had a couple of wells that you said, I think, that were 150 a day, initial rate?

A. Yes.

Q. Do you anticipate that being representative of the new completions in the PC?

A. I think so. They were both completed less than a mile apart, and they both had similar rates.

Q. Do you recall what some of the other PC initial rates were in the better portion, in the southwest portion there? Were they higher than that?

A. Yes, in the southwest portion they were. Some of those rates were as high as probably 500, 600 MCF a day.

Q. Bottom line is, you just don't think that you drill a stand-alone PC well in the unit?

A. Correct. The last well that we did drill as a stand-alone PC well was the 32-9 Number 119, which was a dryhole, and that was completed in 1995.

Q. Okay. On the allocation formulas, now, the first one you want to base on historical production, I guess.

I'm not sure I understand that completely. If you've got an existing Mesaverde well that's got some historical production, you want to be able to use that number?

A. Yes.

Q. And what number for the new PC? Just the current rate, or -- I'm not sure I understand.

A. The additional rate that we found after we added the PC completion.

Q. The other allocation method is where you actually measure both production streams at the time you commingle the well?

A. Yes, and the example there is with the 32-9 Unit Number 47A, which is the well that we completed in 1996 and have obtained approval.

Q. Would you test the PC formation for any length of time?

A. Yes, we usually will test it and ensure that it's stabilized. And then once we have a stabilized rate, we pull the bridge plug that's separating the Pictured cliffs from the Mesaverde and then obtain the final rate, final gauge.

Q. How long do you think it takes to get a stabilized rate?

A. Probably 12 hours.

EXAMINER CATANACH: Do you have anything?

MR. CHAVEZ: Yeah, I have some questions if you don't mind. Frank Chavez, I'm the District Supervisor in Aztec.

EXAMINATION

BY MR. CHAVEZ:

Q. Are any of the Mesaverde wells producing at such a rate that they may have at some time their production restricted by proration?

A. Not that I'm aware of.

Q. Okay. On your commingling -- on your allocation formula that used the pitot gauges, would the process include, for your wells for which you're adding, say, currently Mesaverde producer and adding a Pictured Cliffs formation, would you retest the Mesaverde at the same time or prior to commingling? Is that what your process would be --

A. Yes --

Q. -- to obtain that volume?

A. -- we always obtain a gauge on the Mesaverde also.

Q. Have you explored the possibility of using the remaining recoverable reserves as a method of allocation, versus production testing?

A. No. We feel that --

MR. CHAVEZ: That's all I have.

EXAMINER CATANACH: Anything?

MR. CARROLL: No.

EXAMINER CATANACH: Okay, this witness may be excused.

MR. KELLAHIN: All right, sir. That's all we have to present, Mr. Examiner.

EXAMINER CATANACH: Okay. Mr. Kellahin, I'd appreciate a rough order in this case as well.

MR. KELLAHIN: Yes, sir, I'd be happy to do that.

EXAMINER CATANACH: And there being nothing further in this case, Case 11,601 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:56 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11601, heard by me on August 22 1996.

David R. Catanach, 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 August 24th, 1996.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998