

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

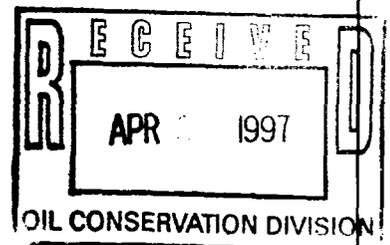
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY)
THE OIL CONSERVATION COMMISSION FOR THE)
PURPOSE OF CONSIDERING:)

CASE NO. 11,745

APPLICATION OF BURLINGTON RESOURCES OIL)
AND GAS COMPANY TO AMEND DIVISION RULES)
104.B(2)(a) AND 104.C(3)(a) AND TO ADOPT)
NEW RULES 104 (B)(2)(b) and 104.C(3)(b))
FOR THE ESTABLISHMENT OF 640-ACRE)
SPACING, INCLUDING WELL LOCATION)
REQUIREMENTS, FOR GAS PRODUCTION BELOW)
THE BASE OF THE DAKOTA FORMATION IN SAN)
JUAN, RIO ARRIBA, SANDOVAL AND MCKINLEY)
COUNTIES, NEW MEXICO)

ORIGINAL



REPORTER'S TRANSCRIPT OF PROCEEDINGS

COMMISSION HEARING

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

March 19th, 1997
Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Commission, WILLIAM J. LEMAY, Chairman, on Wednesday, March 19th, 1997, 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

March 19th, 1997
 Commission Hearing
 CASE NO. 11,745

	PAGE
EXHIBITS	3
APPEARANCES	4
OPENING STATEMENTS	
By Mr. Kellahin	6
By Mr. Carr	11
APPLICANT'S WITNESSES:	
<u>MIKE DAWSON</u> (Geologist)	
Direct Examination by Mr. Kellahin	12
Examination by Mr. Frank Chavez	32
Examination by Commissioner Weiss	34
Examination by Commissioner Bailey	37
Examination by Chairman LeMay	40
<u>CHIP LANE</u> (Engineer)	
Direct Examination by Mr. Kellahin	44
Examination by Mr. Chavez	61
Examination by Commissioner Weiss	61
Examination by Commissioner Bailey	65
Examination by Chairman LeMay	67
<u>JAMES R.J. STRICKLER</u> (Landman)	
Direct Examination by Mr. Kellahin	70
Examination by Mr. Chavez	88
Examination by Commissioner Bailey	89
Examination by Chairman LeMay	90
Examination by Commissioner Weiss	90
Further Examination by Chairman LeMay	91

(Continued...)

AMOCO WITNESS:

PAMELA W. STALEY (Engineer)

Direct Examination by Mr. Carr	95
Examination by Mr. Kellahin	109
Further Examination by Mr. Carr	119
Examination by Commissioner Weiss	119
Examination by Commissioner Bailey	121
Examination by Chairman LeMay	122
Examination by Mr. Chavez	126
Examination by Mr. Carroll	127

REPORTER'S CERTIFICATE	130
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E X H I B I T S

Applicant's	Identified	Admitted
Exhibit 1	72	88
Exhibit 2	-	88
Exhibit 3	13	32
Exhibit 4	74	88
Exhibit 5	83	88
Exhibit 6	20	32
Exhibit 7	26	32
Exhibit 8	47, 51	60
Exhibit 9A	15	32
Exhibit 9B	19	32
Exhibit 10	47	60

* * *

Amoco	Identified	Admitted
Exhibit 1	97	109
Exhibit 2	100	109
Exhibit 3	101	109
Exhibit 4	104	109

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A P P E A R A N C E S

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ALSO PRESENT:

FRANK T. CHAVEZ
District Supervisor
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* * *

1 WHEREUPON, the following proceedings were had at
2 9:57 a.m.:

3 CHAIRMAN LEMAY: I'll now call Case Number
4 11,745, which is the Application of Burlington Resources
5 Oil and Gas Company to amend Division Rules 104.B(2)(a) and
6 104.C(3)(a).

7 I'll now call for appearances in Case 11,745.

8 MR. KELLAHIN: May it please the Commission, my
9 name is Tom Kellahin. I'm with the Santa Fe law firm of
10 Kellahin and Kellahin. I'm appearing on behalf of the
11 Applicant, Burlington Resources Oil and Gas Company. I
12 have four witnesses to be sworn.

13 CHAIRMAN LEMAY: Thank you, Mr. Kellahin.

14 MR. CARR: May it please the Commission, my name
15 is William F. Carr with the Santa Fe law firm Campbell,
16 Carr, Berge and Sheridan. I represent Amoco Production
17 Company. I have one witness.

18 MR. CARROLL: May it please the Commission, my
19 name is Rand Carroll, appearing on behalf of the Oil
20 Conservation Division.

21 CHAIRMAN LEMAY: Do you have any witnesses?

22 MR. CARROLL: No.

23 CHAIRMAN LEMAY: Any other appearances?

24 Will those witnesses that will be giving
25 testimony please stand and raise your right hand?

1 (Thereupon, the witnesses were sworn.)

2 CHAIRMAN LEMAY: Mr. Kellahin?

3 MR. KELLAHIN: Thank you, Mr. Chairman. I've
4 distributed to the Commission a prehearing statement I've
5 filed on behalf of the Applicant, and there is a green
6 folder that contains our exhibit displays.

7 The larger display board here on my left are
8 enlarged copies of documents that are contained in the
9 exhibit book. For those members attending in the audience
10 I have extra copies of the exhibit books.

11 Mr. Chairman, approximately six, seven or eight
12 months ago, Burlington asked my assistance to help them
13 with their regulatory compliance requirements for deep gas
14 exploration in the San Juan Basin. They are substantially
15 involved in spending significant resources and efforts to
16 explore for and hopefully discover gas resources below the
17 base of the Dakota reservoir.

18 We're looking at a project area that is outlined
19 on the big locator map in front of the Commission. What
20 you see before you is the Pictured Cliff outcrop. I think
21 it's a nice visual locator to help you orient yourself.
22 Smaller copies are in the exhibit book. We have noted
23 Farmington, Aztec, Bloomfield. You can see the Navajo
24 Reservoir.

25 Also, it helps me, and perhaps helps you, to know

1 the location of the various units in the San Juan Basin.
2 You may remember that those units produce hydrocarbons from
3 the Dakota formations and shallower.

4 There are three pools shaded yellow in the
5 northwest corner. Those are our analogy pools. We have
6 geologic and reservoir engineering data from the
7 Pennsylvanian formation in what you may remember and what
8 we generally characterize to be the Barker Dome area. That
9 area has been developed on 640-acre gas spacing for some of
10 the deeper Pennsylvanian formations, and we have some
11 reservoir science from the Pennsylvanian within those
12 pools.

13 What Burlington has discovered is that in the
14 last 50 years there have been scattered attempts to obtain
15 commercial production out of the Pennsylvanian in the Basin
16 itself. There are a couple of dozen efforts, I think, all
17 of which have been dry holes; or, if there was any
18 production, it was very minimal, and for all practical
19 purposes there has been no commercial production.

20 The dilemma we have and the reason we're here is
21 that you'll find when you look at Rule 104, which is the
22 Division's general rule, and we often talk about 104 in
23 terms of well-location requirements, but 104 also contains
24 the spacing requirements. And when you look at 104, you
25 find that in the San Juan Basin, if you want to drill a

1 deep gas well, the statewide default rule is 160-acre gas
2 spacing.

3 The dilemma is that Burlington's scientists, and
4 I think generally agreed within the industry, that 160-acre
5 spacing is simply too small to provide the necessary
6 incentive to undertake the significant risk of drilling for
7 the deep gas wells.

8 The engineer that I will present to you knows and
9 believes that if he were to drill a well on a 160-acre gas
10 spacing, he's going to be draining his offsets. He is
11 absolutely convinced that they're going to drill and drain
12 more than 160 acres.

13 But that's what he is stuck with under the
14 current rules. You would have to drill the initial well on
15 160 acres. If you couldn't get a voluntary agreement among
16 those owners for 160 acres, then you have to force-pool
17 them.

18 Let's assume you do that. Let's assume you drill
19 your well and it's productive. You then have to come back
20 to the Division Examiners under the current rule and file
21 for new pool rules and ask for 640-acre gas spacing.

22 If you satisfy the Division and get a new pool
23 established on that spacing pattern, then you'll have to
24 come back and try to consolidate the other three 160 acres
25 in your section into the spacing unit, and you will have

1 the problem of bringing them in after the fact. They get
2 to know the results, they don't share in any of the risk,
3 and after the fact, then, you have to establish equity.
4 That is the dilemma.

5 The science is that they are developing 3-D
6 seismic information, trying to identify where in the Basin
7 that they will target areas for development. That's a
8 process that's just ongoing. We don't have recommendations
9 to you on specific locations, we're not that far along.

10 But what we want to illustrate to you this
11 morning is the fact that the current rule for 160-acre deep
12 gas spacing, which was adopted by the Commission in 1950
13 and which has remained unchanged until now, is a regulatory
14 disincentive for this exploration activity and that we are
15 unable to go forward with exploring for the deep gas unless
16 the rule is changed.

17 We'll present a geologic expert, Mr. Mike Dawson,
18 who is intimately familiar with the geology in the analogy
19 area and has done extensive geologic work throughout the
20 Basin, to show you what he thinks is the geologic setting
21 for this exploration for the deep gas.

22 After that, Mr. Chip Lane, our reservoir
23 engineer, is going to describe for you the interference he
24 sees among wells in the Barker Dome area. He's going to
25 describe for you that these deep gas attempts in the Basin

1 are going to be more than \$2 million apiece, that his
2 estimate of gas in place on 160 acres is too small a volume
3 to justify that magnitude of expense. He will conclude for
4 you that without a change in the baseline rule, we simply
5 cannot go forward.

6 We'll provide to your our land experts. James
7 Strickler will testify about his efforts to try to
8 consolidate on a voluntary basis a 640-acre working
9 interest drillblock. He has found it is impossible to do,
10 that without a rule change, he simply cannot get it
11 accomplished and that in order to have the opportunity to
12 explore for what might be significant gas reserves for the
13 State of New Mexico, we're requesting that you change the
14 rule.

15 As part of that change, we're going to describe
16 for you and discuss what we would like to see in terms of
17 well setbacks. We've got a number of displays to show you
18 what has happened in the Basin for well locations and
19 discuss with you the options for adding some flexibility in
20 where we put the wells within a section.

21 We have notified almost 200 operators in the San
22 Juan Basin. We have also sent additional notices at random
23 to working interest owners, and to the best of our
24 knowledge and belief there is no opposition to having the
25 Commission change the rule and allow deep gas to be

1 developed on 640-acre spacing.

2 At the conclusion of our presentation, we would
3 ask your permission to change the rule.

4 Thank you, Mr. Chairman.

5 CHAIRMAN LEMAY: Thank you, Mr. Kellahin.

6 Mr. Carr?

7 MR. CARR: Mr. Chairman, I will present one
8 witness for Amoco.

9 Our testimony will be that changes in the rules
10 are necessary because the current rules, in fact, are a
11 disincentive to developing the deep gas.

12 The dilemma we see, however, is that we feel at
13 this time there is inadequate data to adopt 640-acre
14 spacing basinwide, so therein we believe is the dilemma.

15 And we will present a proposal which we hope will
16 address not only the need for 640-acre spacing, at least on
17 a temporary basis, for portions of the pool, but will also
18 do it in a way where we can have adequate data to support
19 that development as to go forward with hearing in a spacing
20 unit.

21 CHAIRMAN LEMAY: Thank you, Mr. Carr.

22 Mr. Kellahin, you may proceed.

23 MR. KELLAHIN: Mr. Chairman, by way of response,
24 we are aware of Amoco's suggested change. We are opposed
25 to their change.

1 Mr. Dawson?

2 MIKE DAWSON,

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

5 DIRECT EXAMINATION

6 BY MR. KELLAHIN:

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

9 A. I'm a geologist at Burlington Resources. My name
10 is Mike Dawson. I've been in the Farmington office now for
11 about eight years.

12 Q. Mr. Dawson, on prior occasions have you made
13 geologic presentations to the Oil Conservation Division?

14 A. Yes, sir.

15 Q. And in that process, you've qualified as an
16 expert in petroleum geology?

17 A. Yes, I have.

18 Q. Summarize for me in a general way what has been
19 your experience with regards to the project at hand, which
20 is exploration for the deep gas in the San Juan Basin.

21 A. Right now, I'm the senior geoscientist on the
22 project for Burlington resources. I work in conjunction
23 with a geophysicist; a reservoir engineer, Chip Lane, who's
24 here today; and James Strickler.

25 So I've been with the team since we've begun our

1 research. That's been for about two and a half years now.

2 Q. Are the geologic displays and the interpretations
3 to be made from those displays your work product, Mr.
4 Dawson?

5 A. Yes, sir.

6 MR. KELLAHIN: We tender Mr. Dawson as an expert
7 petroleum geologist.

8 CHAIRMAN LEMAY: His qualifications are
9 acceptable.

10 Q. (By Mr. Kellahin) Let's take a moment, Mr.
11 Dawson, and have you help orient us by using the locator
12 map. I believe it's Exhibit Number 3 in the green book,
13 and there's also a large copy of it on the display board.

14 What is the significance of the orange outline
15 within the display?

16 A. As you pointed out, that's the Pictured Cliffs
17 outcrop that nicely defines what's generally accepted as
18 the San Juan Basin.

19 We use that for a couple reasons. One is that it
20 is relatively unambiguous. Anyone can find that on
21 published geologic surface maps. If you're walking out
22 there in the field you can see the Pictured Cliffs outcrop,
23 and it's a generally well known feature. So in terms of
24 defining our area of interest it's very helpful.

25 I think perhaps a better and less ambiguous

1 definition would be the Lewis outcrop, which would lie just
2 outboard and adjacent to the Pictured Cliffs outcrop. The
3 Lewis is a little less easily identified if you're walking
4 on foot around the edge of the Basin, because it's a shale
5 and it weathers a little more. But it defines our area of
6 interest a bit more accurately.

7 So in terms of a definition of our area of
8 interest and the area of interest that we're defining for
9 this Application, I would suggest the Lewis outcrop, with
10 one possible exception that we'll discuss in the next few
11 minutes.

12 Q. The current Division basinwide rule, if you will,
13 for 160-acre spacing in Rule 104 describes it to cover deep
14 gas wells drilled in McKinley, San Juan and Rio Arriba
15 County, New Mexico, does it not, Mr. Dawson?

16 A. Yes, sir.

17 Q. For purposes of making the rule change in Rule
18 104, you're proposing that it would be less than all of
19 those three counties; is that not true?

20 A. Exactly.

21 Q. And so if the Commission accepts this concept, we
22 can provide you with the proper description of the acreage
23 to include within the spacing rule, but it will generally
24 conform to the boundary as shown on Exhibit Number 3?

25 A. Yes, sir.

1 Q. All right. Let's talk about the other
2 information on the display. What is the significance of
3 the areas shaded in yellow?

4 A. Those are our analog fields. They are the
5 closest, the most proximate examples of Pennsylvanian
6 production.

7 All three fields, including Alkali Gulch Field,
8 Barker Dome and Ute Dome fields, produce from the Paradox
9 Basin formation. Within the Paradox formation there are
10 several Pennsylvanian cycles that are productive, and on an
11 exhibit that I'll show you in a few moments I've identified
12 the primary reservoirs there.

13 Part of my job today, I think, is to give you the
14 geologic perspective to support Chip Lane's argument that
15 these are appropriate reservoir analogs, and provide the
16 basis for our future exploration.

17 Q. You've defined and described the horizontal area
18 of interest. Let's have you give us a demonstration of the
19 vertical area of interest. If you'll look at Exhibit 9A in
20 the book, is there a bigger copy of 9A on the board here?

21 A. No, sir, we're just going to have to go with the
22 book.

23 There is on the back wall a framed example which
24 you may have noticed before, nicely colored one, so this is
25 essentially the same exhibit, prepared by the El Paso

1 Company years back, that we still find very useful as a
2 diagrammatic cross-section of the Basin.

3 When you look at this Basin you're looking from
4 the south, perhaps standing in the Bisti area, a cutaway of
5 the Basin. Off to the north we see the San Juan Mountains,
6 we see shaded in green the San Juan River system, and there
7 are a couple of key points that we can derive from this.

8 One is that it nicely exhibits the PC outcrop
9 line that we've shown you on our first index map, and that
10 point is where the PC, Pictured Cliffs, shaded in yellow,
11 reaches the surface, and that's the approximate line of the
12 PC outcrop.

13 Just to the west and east of that, on both sides
14 of the Basin, is the Lewis outcrop.

15 And then the next feature you see on the surface
16 is the hogback which is very well defined on the west side
17 of the Basin.

18 Q. Burlington's request is to space all gas pools
19 below the Dakota. How have we set the marker for the top
20 of the area to be spaced? How would we find that and how
21 would you describe it or characterize it as a geologist?

22 A. The top of the area, of course, would be defined
23 by the base of the Cretaceous. We'll show you a
24 stratigraphic column in just a moment to define that. But
25 on this diagram it would be the base of the yellow unit,

1 yellow representing sandstone, labeled "Dakota". It would
2 be all below that.

3 In green we see a part of that total interval,
4 the total interval from the Cretaceous to basement, that we
5 feel is the most prospective part. That's the
6 Pennsylvanian section. That's the focus of our future
7 exploration.

8 But anything -- These are wildcats. The Basin
9 has been very sparsely tested below the Cretaceous. It is
10 possible that we could encounter production anywhere from
11 the Dakota to basement.

12 Q. When we look in this interval, what is your
13 opinion about the probability of encountering oil
14 production?

15 A. Through most of the Basin, it is very improbable.
16 If you look at the cutaway here, you get a feel for most of
17 the Basin, defined from this area of PC outcrop to that
18 outcrop area, as being quite deep, and that is indeed true.

19 This gives you, I think, a fairly accurate
20 perspective of where we would -- the Pennsylvanian section
21 in particular would lie as far as the petroleum generation
22 system. It would be quite mature. We believe, based on
23 geochemical data from cuttings from the few sparse wells we
24 have in the Basin, that the level of maturity would have
25 passed through what we call the oil window generation, and

1 most of the oils generated would have been thermally
2 cracked, based on our projections of heat flow and time, so
3 that any oil generated would have probably been cracked
4 into natural gases, and more specifically it would be heavy
5 in methane.

6 There are a couple other bits of evidence. Our
7 source rock analysis of Pennsylvanian source rocks would
8 indicate that the source rocks are gas-prone, rather than
9 oil-prone.

10 And a third important bit of evidence is that in
11 the sparse well tests that we have, the tests that tested
12 the Pennsylvanian in the Basin, nearly all the shows, with
13 one exception, have been gas shows.

14 That one exception was the Tenneco Powell well,
15 which I'll locate for you in a few moments on another map.
16 It produced as much as 3000 barrels of oil and quite a bit
17 of gas before it was plugged. It was a noncommercial test.

18 All the other wells have been predominantly
19 indicative of the gas phase of hydrocarbons.

20 Q. Our request, then, is exclusively focused on gas
21 spacing and excludes oil spacing?

22 A. Yes, sir.

23 Q. All right. Do you see any need to try to define
24 the gas-spaced interval for which you're requesting 640
25 spacing, based upon a vertical depth component as we move

1 up the edges of the Basin?

2 A. No, sir, I feel that any hydrocarbons encountered
3 very probably will be gas, and the 640 spacing will be
4 appropriate, especially in the exploratory phase of our
5 work.

6 Q. All right. Let's turn to the next display. It's
7 9B. It's the display immediately following the one we've
8 just looked at. And let's take a few minutes and have you
9 describe for us the various intervals we see in the San
10 Juan Basin.

11 A. The purpose of this correlation chart, again, is
12 just to provide perspective so you can better evaluate our
13 Application. This is published in the AAPG Bulletin and a
14 widely accepted stratigraphic chart.

15 What I'd like to point out to you is the relative
16 position of the productive interval that we have today.
17 Essentially, it's the Cretaceous rocks that extend as deep
18 as approximately 7700, 7800 feet.

19 And I'd like to point out to you that below that,
20 essentially the only significant production and the only
21 production within the PC outcrop is in the Entrada, which
22 I've shaded yellow. I'll have another map again -- and
23 I'll get up and show you in a moment -- that shows that
24 that Entrada production is restricted to the south edge of
25 the Basin.

1 As I've said, the primary focus of our production
2 -- or our exploration, pardon me -- is the Pennsylvanian
3 section. I've shaded that in blue.

4 Between the base of the Cretaceous and the
5 Pennsylvanian, we don't really expect to make discoveries.
6 There could well be reservoir-quality rocks; there is
7 essentially no source rock in that interval. It would take
8 an exceptional situation with an exceptional history of
9 migration to charge those rocks with hydrocarbons, but it
10 is a possibility.

11 If you'll look at the Pennsylvanian section,
12 shaded in blue, this chart is a bit misleading because the
13 Paradox formation within the Pennsylvanian-age rocks
14 actually comprises about 50 percent of the total thickness
15 of the section.

16 And of the Pennsylvanian-aged rocks, the Paradox
17 formation is our primary target. That is the formation
18 that's productive in the three analog gas fields that we've
19 discussed.

20 Q. Mr. Dawson, let's turn to the San Juan Basin
21 index map. That's found in the exhibit book as Number 6,
22 and I think we have a larger copy of that one on the board,
23 do we not?

24 A. I'll stand up.

25 Q. Yeah, why don't you just stand right there?

1 A. A couple key features that I'd like to point out
2 on this index map --

3 MR. KELLAHIN: Just a minute, Mike, make sure
4 everybody's got a copy of it.

5 CHAIRMAN LEMAY: What exhibit?

6 COMMISSIONER WEISS: What exhibit is that?

7 MR. KELLAHIN: It's going to be Exhibit Number 6,
8 and it's in a pocket part. You'll have to take it out of
9 the sleeve.

10 Q. (By Mr. Kellahin) All right, before you discuss
11 the details, Mr. Dawson, describe for me how this was
12 prepared. What's the base map?

13 A. This base map shows the townships and ranges,
14 Colorado state line approximately in this position.

15 Q. So each square is going to be a township?

16 A. Yes, sir, each square is a township.

17 Q. And then you superimpose the same PC outcrop that
18 we saw on the prior exhibit?

19 A. Exactly.

20 Q. What then is the orange dots? What do they
21 represent?

22 A. The large orange dots are the Pennsylvanian tests
23 within the Basin. Nearly every one has drilled to the base
24 of the Pennsylvanian and provided an adequate test of that
25 section. On your maps, those are shown as red well

1 symbols.

2 Outside of the Pictured Cliffs outcrops, in an
3 area that generally we regard as outside the San Juan
4 Basin, you can see some of the productive areas. These
5 three analog fields are labeled. We also have Rattlesnake,
6 Table Mesa and -- here, all Pennsylvanian oil fields.

7 But this map is basically just to provide some
8 regional perspective and as a demonstration of the sparsity
9 of the tests. We have many thousands of square miles
10 inside that outcrop, yet we only have a couple dozen tests
11 of the section as Tom just pointed out.

12 Q. Have you determined the basis for any of these
13 deep tests? What caused them to be drilled, and
14 approximately what's the range of the period of time for
15 these Pennsylvanian tests?

16 A. The oldest tests in the Basin were in the
17 Sixties. Through time, people, operators, drilled seismic
18 anomalies. In general, those were one-line anomalies, and
19 so they may not have been located in the best of positions
20 structurally.

21 And also in general, I feel that the previous
22 operators didn't have much stratigraphic background. Our
23 understanding of seismic stratigraphy at this point is, in
24 general, much advanced over what those operators would have
25 had available.

1 3-D technology is another advance that might
2 allow us to actually image stratigraphic anomalies that
3 could be prospective.

4 One other item on this map I'd like to point out
5 is at the south end of the Basin in green, you can see the
6 distribution of the existing pre-Cretaceous production.
7 Those are all Entrada oil fields. And I think we bring
8 this up as sort of a further justification of our interest
9 in spacing only gas.

10 There are quite a number of tests of the Entrada
11 through this Basin shown as blue dryhole symbols, none of
12 which have significant shows, none of which had any oil
13 indicated at all. So we're fairly confident that in the
14 central part of the Basin, our area of interest, we're
15 dealing in the pre-Cretaceous, in the entire pre-Cretaceous
16 interval, only with gas potential.

17 Q. There's a line -- I assume it's the line of
18 cross-section you're about to describe -- also shown on
19 this display, on your Exhibit Number 6?

20 A. Yes, sir, this is a cross-section I'm about to
21 describe to you. In this cross-section my aim is to go
22 from Alkali Gulch field to Barker Dome field to Ute Dome
23 field, our three analog gas fields, and extend it into the
24 Basin and show you three deep basinal tests and just
25 generally established the degree of stratigraphic

1 similarity. I'd like to prove to you that we have, in
2 essence, very similar rocks, the same age rocks. I'll try
3 to do that with a subsurface stratigraphic cross-section.

4 Q. Apart from the line of cross-section you've
5 chosen to illustrate, have you examined the logs for those
6 wells that have logs available to you throughout the Basin
7 that are not shown on the cross-section?

8 A. Yes, sir, we've evaluated logs, including the
9 traditional geophysical wireline logs, mud logs, we've
10 looked at samples, we've looked at some of the limited core
11 available to us, we've looked at any geochemical
12 information that exists.

13 Q. When we look at your conclusions about the
14 stratigraphic relationship of the analogy pools to the
15 Basin proper, would your conclusion be different had you
16 drawn the cross-section differently?

17 A. Quite possibly, it could have been somewhat
18 different.

19 Q. In a generalized sense, though, there would not
20 be a material difference?

21 A. No. no, sir.

22 Q. It will be the same creature, regardless of how
23 you put the cross-section through the wells?

24 A. Right, absolutely. Absolutely.

25 Q. All right. Why have you chosen this particular

1 line of cross-section, then?

2 A. The three analog fields, of course, because we
3 basically only have these to go on for Pennsylvanian gas
4 production, it's the only significant Pennsylvanian gas
5 production in the region, these three deeper tests are
6 representative of the section in the central part of the
7 Basin here, so that's why those were chosen.

8 We have also constructed a grid of stratigraphic
9 sections that include every well on the map. So we've
10 incorporated what we've learned from our wireline logs and
11 from our geologic interpretation of them into our whole
12 scheme so that not only can I show a section from here to
13 here, but I can tie loops in my cross-sections, and I have
14 a fair degree of confidence in my stratigraphic
15 interpretation.

16 In essence, we try to construct a stratigraphic
17 framework, because one of the first things we wanted to do
18 is to see what part of the Basin had stratigraphy similar
19 to the areas up here that are productive, and that
20 furnishes us quite a bit of guidance.

21 For instance, as we come up on to the Chaco
22 slope, this section thins dramatically, where we go from
23 several hundred feet of Paradox formation here, we may end
24 up out toward this outcrop with only a couple hundred feet.
25 And some of the rocks that we lose, in essence, by going

1 updip in the depositional system are very important to us.
2 They're reservoir facies. They're also the source rocks.

3 So all that thinking, all that stratigraphic
4 analysis, has been incorporated into our exploration effort
5 to date.

6 Q. All right, let's turn to your cross-section.

7 COMMISSIONER WEISS: Which exhibit is that?

8 MR. KELLAHIN: It should be Number 7.

9 COMMISSIONER WEISS: 7?

10 MR. KELLAHIN: I believe so.

11 Q. (By Mr. Kellahin) All right, Mr. Dawson, if
12 you'll start with the Barker Dome area, show us how you've
13 analyzed the log on the far left, help us find the deep gas
14 in that pool that is subject to the 640 spacing, and then
15 walk us through the interpretation.

16 A. Starting on the left-hand side with our
17 northernmost well, this is a type log from Alkali Gulch
18 field in this well, and the other is a -- I have a little
19 color; I apologize for not being able to color the small
20 scale, but I guess I need bifocals to do that. I couldn't
21 see it well enough.

22 But the colors here, in general, signify
23 lithology, the blue on my cross-section here representing
24 carbonates, the green is halide or salt, the brown being
25 anhydrites.

1 And as we go to the south from Alkali Gulch to
2 Barker Dome to Ute Dome field, you'll see that we're losing
3 some of our brown and green rocks. In essence, what's
4 happening is that we're coming out of the paleo- -- the old
5 Paradox Basin, which was an evaporite basin, rapidly
6 subsiding with hydrosaline waters, so that it could
7 accumulate thick salts and anhydrites, all of which sort of
8 generally fit into the category of evaporating sediments.

9 As we approach the San Juan Basin, we get onto
10 what was, in terms of 300 million years ago, a carbonate
11 shelf. So the rocks in the Ute Dome field are probably
12 very similar to what we expect to find in the central part
13 of the San Juan Basin.

14 In our three analogous field areas, I've shown
15 with the gas symbols the primary reservoirs. And in Alkali
16 Gulch field, the primary reservoir is the Alkali Gulch
17 formation. And in both Barker Dome and Ute Dome field, the
18 primary reservoir is the lower Barker Creek.

19 And you can see that as we drop off into the
20 Basin from the Ute Dome field to the Mountain Fuel
21 Fruitland Number 1, these same zones are developed and
22 perhaps even close to reservoir quality.

23 In terms of the total interval thickness, you'll
24 see a little bit of contrast coming from the deep Basin up
25 toward Ute Dome, Barker Dome. The contrast appearing

1 between Barker Dome and Alkali Gulch field where we have a
2 thickening of the section. Most of that is accounted for
3 by the presence of these evaporitic sediments that aren't
4 nearly as thick in this direction.

5 So in terms of paleogeography, we're coming from
6 an edge of the old Paradox Basin, we're walking up onto a
7 carbonate shelf, and this shelf would have extended through
8 most of the San Juan Basin.

9 You'll notice that there's a bit more blue in
10 this part of the San Juan Basin and in this part of the San
11 Juan Basin, and as we go off toward the northeast we find
12 that the intervals of the paradox formation, which again is
13 our primary focus, have a higher ratio of clastics to
14 carbonates.

15 So we're getting more sandstones, more siltstones
16 and nonmarine shales shed off the ancestral Rocky
17 Mountains, which sat up and above this San Juan Basin, and
18 they were truly high mountains at the time, shedding the
19 coarse clastic sediments down into the Basin. As we come
20 back towards the central part of the San Juan Basin, we get
21 into more of a truly marine setting.

22 Basically, that's a sort of a thumbnail sketch of
23 our understanding of the stratigraphy. And what we hope
24 this does is establish for you the degree to which these
25 are appropriate reservoirs analogs to use in projecting

1 what we might find with successful exploration of the
2 Basin.

3 In general, I'm finding the same rocks,
4 correlatable units, similar lithologies, with the one
5 exception of having evaporites that aren't really here, and
6 they are only in the Akah member of the Paradox formation.
7 The remainder of the members seem to be fairly continuous
8 right out into the San Juan Basin.

9 Q. When we talk about well spacing for gas wells in
10 the San Juan Basin, Mr. Dawson, you have some choices as to
11 spacing unit sizes. You're requesting 640-acre spacing for
12 the deep unit gas.

13 Do you see sufficient continuity of the
14 reservoir-quality reservoirs in the Pennsylvanian to give
15 us a reasonable probability that you'll find that same
16 reservoir at various points within the section?

17 A. Yes, sir, even though our well control is
18 extremely sparse, it's not that difficult to correlate key
19 zones, key intervals, such as Barker Creek, right out into
20 the Basin and around the Basin.

21 So in that sense, we believe that 640 spacing is
22 appropriate.

23 Q. Describe for me what the method is that you're
24 exploring by which to develop a strategy to identify areas
25 where you will commit resources to actually drill a well.

1 A. Obviously, we've done what is possible using the
2 well control, the wireline logs. But with that, as far as
3 well control, it's pretty difficult to project, based just
4 on the well.

5 So our primary strategy is to use seismic data,
6 and what we've tried to do is take the 2-D seismic, the
7 traditional seismic, existing grid, and infill so that now
8 we have a rather coarse reconnaissance seismic grid
9 extending all the way through the Basin, average spacing
10 between lines being seven, eight, even as much as ten
11 miles. We've taken that and we've tried to identify lead
12 areas, areas where we see structural and stratigraphic
13 anomalies.

14 And then the next step will be to go into those
15 lead areas, try to elevate them to more of a prospect
16 status with additional seismic acquisition. So in a
17 nutshell, that's our entire strategy.

18 With the lack of well control, we're somewhat
19 constrained. We can't do some of the things we'd like with
20 the seismic data -- for instance, detailed seismic modeling
21 -- because it requires a sonic log to do that.

22 So we are trying to identify those anomalies,
23 specific anomalies that may present opportunities to drill,
24 and we're actually looking at basins worldwide for similar
25 seismic responses. So by analogy, we're trying to set up

1 drilling opportunities with that.

2 And of course, one of the things that I'd like to
3 emphasize is the cost of doing that, and I'm kind of proud
4 of our organization for stepping up and spending that
5 money. Our total investment is already well into the
6 millions of dollars to accomplish this.

7 Q. Does your company have specific plans about the
8 number of wells they propose to drill to test for deep gas
9 in the next year or so?

10 A. The plans are not very specific at this time.
11 What we realize about the play, going into it, is that it
12 probably will take as many as seven to ten wells, wildcat
13 wells, exploratory wells, to adequately test our concepts.
14 We are basically committed to drilling that number of
15 wells.

16 And as our plans are now, I think I can say with
17 confidence, we're not going to go out and drill one or two
18 dry holes and quit. We don't think -- Given our perception
19 of the probability of success of these drilling ventures,
20 we don't think that we'll have success taking that
21 approach. So in general, we're committed to drilling quite
22 a number of wells.

23 Q. The funds are available to do this project,
24 management has approved the process, and at this point the
25 stumbling block as I understand it is, the well-site

1 spacing is simply too small to justify the project?

2 A. Yes, sir, that's a major hurdle.

3 MR. KELLAHIN: That concludes my examination of
4 Mr. Dawson.

5 We move the introduction of his exhibits, which
6 are 3, 6, 7, 9A and -B.

7 CHAIRMAN LEMAY: Without objection, those
8 exhibits will be entered into the record.

9 Mr. Carr?

10 MR. CARR: I have no questions of Mr. Dawson.

11 CHAIRMAN LEMAY: Any questions from the audience?
12 Yes, Frank?

13 EXAMINATION

14 BY MR. FRANK CHAVEZ:

15 Q. Mr. Dawson, is your interest in changing the rule
16 mostly for the San Juan Basin proper as it is considered
17 right now, within San Juan County, Sandoval County?

18 A. Yes, sir, it is, and I haven't described some of
19 the other Pennsylvanian production in very much detail.

20 If you could refer to your second index map,
21 you'll see that on the west margin of the Basin I've
22 labeled the Four Corners platform. In general, with the
23 exception of the three analog fields, the production up
24 here is oil. And in general, the way we would define our
25 area of interest and the area of our application would

1 exclude all of this area. So we think we basically have
2 that covered.

3 I said up front that the Lewis Pictured Cliffs
4 outcrop nicely defines our area of interest. There's one
5 exception on the west part of the Basin here where there's
6 a hogback fault system, not necessarily mappable on the
7 surface; it doesn't break through the Cretaceous in the
8 outcrop.

9 It is mappable, it is detectable, with
10 geophysical data; you can see it on seismic lines that cut
11 across this edge of the Basin. You can see it on gravity
12 data, you see that as a gravity anomaly. A very large
13 fault, so that on this side we may have Pennsylvanian rocks
14 8000 feet across this major fault, and they're 10,000 feet.

15 So our intention is to provide a definition of
16 the area that we're proposing for 640 spacing that would
17 remove those ambiguities, and we would be very careful to
18 accept existing areas of activity that were not
19 appropriate.

20 Q. Maybe I'm misunderstanding now. What comes to my
21 mind is that in those four counties under the proposed Rule
22 104, we have areas in Rio Arriba County significantly east
23 of the Basin proper, and in McKinley County, much further
24 south, also, that have -- out of the Basin proper, which
25 have significantly -- what appear to be geologic areas that

1 may -- what you're talking about may not be applicable as
2 far as the structures you're talking about, because your
3 cross-sections don't go into those areas, and the Dakota
4 may not be very shallow or eroded.

5 And my concern is the applicability of your 640
6 proposal in those areas that are...

7 A. We don't believe that areas such as that would be
8 included within this outline, so that the area of the
9 Dakota outcrop, for instance, would lie far to the east and
10 far to the south. It would be well outside the area of the
11 PC outcrop.

12 So we have not studied those areas, they're not
13 the primary focus of our exploration, so we don't want to
14 include them in our Application.

15 MR. CHAVEZ: Thank you.

16 CHAIRMAN LEMAY: Commissioner Weiss?

17 EXAMINATION

18 BY COMMISSIONER WEISS:

19 Q. I'm just looking at your three analogous fields
20 up there. They are what? A township each, roughly, in
21 size?

22 A. Close. This one is probably seven or eight
23 square miles. Alkali Gulch is much smaller.

24 Q. Well, I guess this pertains to the spacing. And
25 I'm thinking, You'd hate to miss by -- I don't know how

1 this enters into your thinking, but I guess if you've got
2 seven, that's maybe -- and I assume something like those
3 fields, you can see in the seismic?

4 A. Features of those size, absolutely.

5 Q. Okay, so then...

6 A. Your point is a good one, though, especially in
7 carbonate exploration. The lithology tends to be much less
8 consistent and homogeneous, even than sandstones.

9 And so in carbonate exploration there are many
10 stories of people missing by a mile, a half mile, or a
11 hundred yards.

12 Q. That's what you're looking at, is carbonate,
13 right?

14 A. That's our principal focus, but we have very
15 strong secondary potential in clastics, and also in the
16 Pennsylvanian clastics. As I said, this was a mountainous
17 area, this close to the San Juan Basin during the time of
18 deposition, shedding clastics down into the San Juan Basin,
19 so that when I come up along my line of section and extend
20 into the northeast part of the Basin, I get more and more
21 sandstones interfingering with limestones.

22 Q. Let me give you a hypothetical here. Let's say
23 you've got four townships there, and Amoco has got four,
24 just off, let's say, and their information says that, by
25 God, this carbonate gas is right here, and yours says it's

1 right here. You know, a mile apart. Is that a problem?

2 Is that realistic?

3 A. That absolutely could happen.

4 Q. And then they wouldn't be able to drill or you
5 wouldn't be able to drill on perhaps the optimal area.

6 A. In general, the way we've dealt with that
7 possibility -- and at this point, of course, it's just
8 conceptual --

9 Q. Sure.

10 A. -- is thinking that with these depths and the
11 expense of this sort of deep drilling, we would never be
12 able to develop very small fields that would be real
13 subject to that.

14 For instance, in this part of the Paradox Basin
15 there are many algal mound bioherms that are maybe one or
16 two well fields. They're good wells, but we would not be
17 able to economically pursue that in our Basin. So the
18 seismic anomalies, for instance, that we're looking at now
19 as leads are in general several square miles in size.

20 And even, you know, with that, as you pointed
21 out, there's a considerable risk of missing it by just a
22 little bit.

23 Q. Do you have a technique to take the 2-D and make
24 3-D out of it?

25 A. No, sir, there's no way to do that. But you can,

1 as you may have seen, you can take the 3-D, and if it's
2 laid out as a box, you can look at a line through it in any
3 orientation you want.

4 So you can go from 3-D to 2-D, and that's
5 basically how we look at it on the screen. We can just
6 change the orientation, we can specify that.

7 But there's no way to go on the other way. So
8 the 2-D is basically, for this play, useful only as a
9 reconnaissance tool, where a lot of the risk lies.

10 And our venture is in our ability to project
11 between lines and our coarse grid. We may be trying to
12 project and map, interpolate between lines as much as ten
13 miles apart.

14 COMMISSIONER WEISS: Thank you, that's all the
15 questions I had.

16 CHAIRMAN LEMAY: Commissioner Bailey?

17 EXAMINATION

18 BY COMMISSIONER BAILEY:

19 Q. What is the spacing in Colorado?

20 A. In terms of the Alkali Gulch field, which is the
21 only one I'm familiar with, that was originally on 640, and
22 I'm going to have to defer to my land expert on that. I
23 believe it's still at that level.

24 In terms of exploration in the undeveloped areas,
25 I'll have to defer to our landman.

1 Q. I know the Colorado portion fairly well below the
2 Dakota. I'm concerned that the broad brush is being
3 painted across the entire Basin in the Morrison and the
4 Triassic. It may not be as appropriate as it could be for
5 the Pennsylvanian. I don't even see the oil production
6 from the Morrison in the Colorado portion on this map here,
7 so I'm just curious if you had criteria for locating these
8 wells.

9 A. Our belief is, on the Ignacio incline, where
10 there is some production from the Morrison, so-called, that
11 it's not really the Morrison. The way I correlated that is
12 that nearly all of that production is actually from the
13 basal Dakota, above what we call the K1 unconformity.

14 You have a thick Burro Canyon section, which is
15 Cretaceous, you have then a basal Dakota, known technically
16 as Encinal Canyon formation. That's recently been studied
17 by Dr. Don Owen out of Lamar University, and we've -- In
18 fact, we've actually gone and seen some of the outcrops in
19 the south part of the Basin. It is very exceptional in
20 terms of Cretaceous production in that it has excellent
21 matrix, porosity and permeability. The way I've worked it
22 out and the way Dr. Owen has analyzed it, it is Dakota,
23 though, and it's incorrectly called the Morrison. It's
24 actually the Jurassic.

25 Q. And also near the Chama embayment there's more

1 small productions --

2 A. Yes, ma'am.

3 Q. -- and that's definitely Morrison?

4 A. Yes, that definitely is.

5 Q. Yes.

6 A. We feel that that's well outside our area of
7 interest, and it's much shallower, so in terms of -- Part
8 of my answer, I guess, would be that we're focusing on the
9 deeper rocks that would be well within the gas window. It
10 would have moved through the oil window at maturity. We
11 don't really expect in our area of interest to find very
12 much oil. And if we do, we'll cross that bridge when we
13 come to it, as far as spacing for oil. We're really only
14 proposing that we deal with the gas.

15 Q. Which brings -- Was there a certain criteria that
16 was met for the placing of those wells that you have
17 located on this map?

18 A. Are you asking why I chose those?

19 Q. Were some eliminated, or was there some sort of
20 criteria for the location of the -- the placement of those
21 wells on this map? Or did you find every one -- Are you
22 comfortable that you found every well that penetrated below
23 the Dakota?

24 A. That is probably -- I wouldn't bet a large sum of
25 money that we've found every penetration.

1 A. Actually, it's fairly similar. In an arm-waving
2 way I can show, I think -- Well, actually I think I can
3 show you with fair accuracy where the paleo-Paradox Basin
4 is, based on the maximum extent of the evaporites. We've
5 actually looked at all of these logs through here and the
6 sample logs, so I know which wells have some evaporite, and
7 this will be based on the Akah member, and there's actually
8 three cycles incorporated in that, as I understand it.
9 Break them out and map them regionally.

10 During Akah time was the maximum extent of
11 evaporite deposition, and if you accept that as sort of the
12 definition of the Paradox paleo-Basin, that would define
13 the maximum extent of that basin, and the actual limit
14 comes right through here, weaves around through these
15 wells, comes right out through here, and extends into the
16 very northwest corner of the San Juan Basin. We're not
17 sure, due to lack of well control, how far down it comes,
18 but we don't believe it comes too far, and wraps back
19 around here.

20 So this area here would have been the paleo-
21 Paradox Basin, and it would have had stratigraphy very
22 similar to what we knew from subsurface work in drilling
23 through the years in the greater Paradox Basin, all the way
24 up into Utah.

25 This area here, on the other side of our limit of

1 evaporite deposition, would have been all a broad carbonate
2 shelf, this whole area.

3 And as I said before, this northeast portion here
4 would have clastic influx, this would have been much more
5 quiet water and more truly marine deposition with
6 limestones and hopefully dark shales to provide the source
7 rocks.

8 In terms of the present-date definition of
9 Paradox Basin, Four Corners Platform and San Juan Basin,
10 it's based a bit more on present-day structure, so that
11 when people think about the edge of the Paradox Basin,
12 they're thinking of a structure contour, perhaps, that
13 weaves around back through here, and that's what's
14 generally accepted as a present-day Paradox, where the
15 contrast between Four Corners platform and the San Juan
16 Basin is more, in general and industry thought of as this
17 hogback fault system.

18 And it's kind of interesting, but the hogback
19 fault system drops our rocks and our analog fields from
20 about 8000 feet here down to about 10,900 here.

21 So we have nearly 3000 feet of vertical
22 displacement across that fault, coming from the Ute Dome
23 field to our second type log here in the Mountain Fuel Well
24 30-14. Very considerable feature, that fault displacement
25 occurred in the Laramide time, well post the Cretaceous

1 deposition.

2 So in terms of how you define the paleogeography,
3 which is of great fascination to me, just to sort of
4 reiterate, we had the Paradox Basin here, rapidly subsiding
5 accumulating thick evaporites, and then a broad regional
6 carbonate shelf.

7 So most of our area of interest, most of our
8 exploration, will be on that carbonate shelf.

9 Q. Which accords somewhat to your Pictured Cliffs
10 outline, here? That's what it is?

11 A. Yes, sir, it does.

12 And the axis of deposition on that carbonate
13 shelf, or the place where we had the thickest total
14 interval accumulation, would run down in this direction, so
15 that the depo axis is along this line I'm tracing, and as
16 we come up along the Chaco slope we have dramatic thinning
17 of the entire interval.

18 Q. All those Charney tests there on the slope, I
19 take it, on the south side there?

20 A. Yes, sir.

21 CHAIRMAN LEMAY: That's all the questions I have.

22 Any other questions of the witness?

23 If not, he may be excused.

24 Thank you very much.

25 MR. KELLAHIN: Mr. Chairman, my next witness is

1 Mr. Chip Lane. Mr. Lane is a reservoir engineer.

2 CHIP LANE,

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

5 DIRECT EXAMINATION

6 BY MR. KELLAHIN:

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

9 A. Yes, sir, my name is Chip Lane. I'm a senior
10 staff engineer for Burlington Resources. I've been
11 employed by Burlington or one of its previous names since
12 1985 and have worked in Texas, Louisiana, Mississippi,
13 Colorado, New Mexico, Oklahoma and some different areas.

14 Q. You testified before the Examiner when we had our
15 last technical presentation on the Barker Dome/Barker Creek
16 pools, did you not, sir?

17 A. Yes, sir, I did.

18 Q. In addition, you're part of the technical team
19 with Burlington that has done the research and the study
20 for this effort for deep gas exploration in the San Juan
21 Basin?

22 A. Yes, sir, I am.

23 MR. KELLAHIN: We tender Mr. Lane as an expert
24 reservoir engineer.

25 CHAIRMAN LEMAY: His qualifications are

1 acceptable.

2 Q. (By Mr. Kellahin) Mr. Lane, let me have you
3 describe from your point of view the engineering concepts
4 that you're working with, with this project. The -- and
5 have you start off with your comparison of the analogy
6 field to what your expectations are in the San Juan Basin
7 proper area that we're seeking the wider spacing for.

8 A. Really, there's a couple of issues involved, one
9 of them being the actual drainage area that we do see up in
10 the analogy fields, and the second being an economic
11 analysis of the exploration program, and I'll go into both
12 of those.

13 When we originally decided to go out and explore
14 for deep gas in the San Juan Basin, we realized that
15 there's a number of dry holes, but there's no economic
16 production out there. So we didn't really have a source of
17 actual data in the Basin to use to determine what we think
18 the drainage area would be, so we used the analogy method.

19 We looked at the Alkali Gulch field, the Barker
20 Dome field and the Ute Dome fields for that analogous
21 information, and we'll go through that.

22 And basically what we did is, we've completed EUR
23 studies based on decline curves. We've looked at the
24 volumetric analysis for the lower Barker Creek in the
25 Barker Dome field, and we've looked at some individual

1 wells, and we'll show you an example of interference that
2 we actually do see between wells that are on 640-acre
3 spacing.

4 So I feel comfortable and confident that we can
5 and do drain 640 acres in some of these Pennsylvanian
6 members.

7 The second thing that we'll illustrate is that
8 because of the cost of the wells, the actual drilling of
9 the wells, around \$2.4 million, and the costs of
10 exploration, the high risk associated with the exploration
11 is evident by the dry holes that have been drilled out
12 there to date, and by the risk -- inherent risk in
13 development, which I think Mr. Dawson touched on with the
14 example of the two different companies wanting to drill a
15 mile apart and missing the zone. There's significant risk
16 in going out here and developing it, and we'll illustrate
17 that with an example of economics.

18 Q. Ultimately, have you concluded as an engineer
19 that it is not feasible to commence this exploration
20 activity under the current spacing for deep gas of 160
21 acres?

22 A. Yes, sir.

23 Q. In addition, have you also concluded that it is
24 no benefit to you or your company to have a spacing change
25 on a temporary change?

1 A. Yes, sir.

2 Q. That it must be a change in Rule 104 to increase
3 the size of the spacing unit, your recommendation is 640
4 acres?

5 A. Yes, sir.

6 Q. Let's go through the analysis of the analogy
7 pools, if you will. If you'll turn to the -- I believe
8 your information starts behind Exhibit Tab 10?

9 A. Yes, sir.

10 Q. And then all your displays are in sequence after
11 the tab?

12 A. Yes, sir. And we'll flip back to Exhibit Number
13 8 to see an example of interference.

14 Q. All right.

15 A. But to start on Exhibit 10, the first exhibit is
16 just a summary of the EURs, an average EUR for the
17 different fields that we use in our analogy study, and
18 these EURs are based off decline curve analysis, rate-time,
19 for all of the wells in those fields that are
20 Pennsylvanian-age wells.

21 I did not include Dakota or any shallower
22 Cretaceous wells in this analysis.

23 Q. All right. Describe for me the details of the
24 analysis, then. For each well you had an individual
25 decline curve?

1 A. For each well we have a decline curve. We
2 forecasted that decline curve out to an economic limit,
3 added the remaining reserves to the cumulative reserves,
4 and determined the ultimate recovery.

5 Also, a point to make in this is that a
6 significant number of these wells were well into their
7 productive life, and their cums are pretty large in
8 comparison to the remaining reserves, so there's a pretty
9 good confidence in the -- the EUR numbers are
10 representative of what the well will actually cum.

11 Looking at the wells -- or the fields, the Barker
12 Dome wells in the Pennsylvanian-age rocks should EUR around
13 12 BCF of gas apiece. Ute Dome is closer to 6 Bs. The
14 Alkali Gulch field up to the northeast is closer to 5.3 Bs.
15 And the total average was 7.8 Bs per well.

16 Now, this includes -- From the cross-section, Mr.
17 Dawson showed, I think it was Exhibit 7, you'll see in
18 there that there was the primary zone, which was the Alkali
19 Gulch and the lower Barker Creek, and that was the zone
20 that these fields were originally developed on, and it was
21 originally spaced on 640 acres.

22 Subsequent to that, especially in Barker Dome,
23 we've come back in the last couple years and decreased the
24 spacing on some of the upper zones, because it was evident
25 they weren't draining 640 acres.

1 Q. You did that with the benefit of having the
2 opportunity to develop on wider spacing, and then with that
3 development you had a database on which to come back later
4 and either infill or change the spacing rule?

5 A. Yes, sir.

6 Q. And that was historically what happened since the
7 Fifties in the Barker Dome area?

8 A. Yes, sir, and they had been producing it on 640-
9 acre spacing for 40 or 50 years before we came back in and
10 decreased the spacing in the upper zones.

11 Q. All right.

12 A. On the --

13 Q. Let's -- Go ahead.

14 A. On the next page, in the exhibit titled "Barker
15 Dome Field, Lower Barker Creek Zone, Volumetric Analysis",
16 we analyzed the lower Barker Creek zone in the Barker Dome
17 field, and this was the primary zone in the field that the
18 field was originally developed on.

19 What we did is, we wanted to get an idea of what
20 the drainage area was for that zone. And these wells were
21 pretty old, the logs were pretty poor on them. We don't
22 have a lot of modern logs out there. The recent
23 penetrations have been shallower, because the zones watered
24 out and there's only a couple, three producing wells in it
25 right now.

1 But what our analysis shows is that we expect to
2 recover an average of 22 Bs per well out here and have an
3 average drainage area of 785 acres.

4 Just a few things on this. You see the water --
5 In the table you'll see the water saturations and the
6 average porosity, initial pressure and abandonment
7 pressures are all the same values for each one of the
8 wells. These are estimates because of the log quality on
9 the water saturation and also on the porosity. It's pretty
10 representative from the area carbonates we see in the rest
11 of the field, in the offset fields.

12 And the initial pressure is an estimate, but it
13 falls in line with the pressure gradient we see out there
14 for the rest of the zones that we have better pressure
15 information.

16 Now, on the drainage areas they are calculated
17 from -- basically taking the EUR we get from the decline
18 curve analysis and back-calculating what the drainage area
19 would have to be using the initial pressure and abandonment
20 pressure.

21 Q. Is there any doubt in your mind, Mr. Lane, that
22 the wells you've analyzed on the display are, in fact,
23 draining more than 160 acres?

24 A. No, sir.

25 Q. They, in fact, are?

1 A. They are draining more than 160 acres.

2 Q. So what's your concern about Rule 104 that
3 requires you to start off now, with 160 acres for your deep
4 gas well in the Basin proper? What's going to happen?

5 A. Well, if we get any well that's anywhere similar
6 to these, we'll be easily draining the 160 acres, and we'll
7 be draining the offset 160-acre locations also if we're on
8 that kind of spacing.

9 Q. So then what do you have to do?

10 A. Then we have to, I guess, protect the offsets.

11 Q. You're going to have to increase the spacing size
12 somehow, are you not?

13 A. Yes.

14 Q. Or run the risk of having offset wells drilled
15 that are too close together?

16 A. Right, that will interfere with each other.

17 Q. Let's look at the next part of the analysis.

18 When you flip the page --

19 A. Could we back up and go to Exhibit 8, please?

20 Q. Sure yeah, let's do that.

21 A. One thing that I wanted to show too was that
22 Exhibit 8 -- We have a detailed map of the Barker Dome
23 field, which is to the northwest of the San Juan Basin, and
24 the two highlighted wells are the Ute 12 to the north and
25 the Ute 14 to the south, and these are both completed in

1 the lower Barker Creek zone.

2 Q. Have you examined the performance, the production
3 information from both the Well 16 and the 14?

4 A. Yes, I have, from the 12 and the 14, and the
5 decline curves for both of those wells are on the two
6 following pages. And what I want to show is that it's a
7 classic example --

8 Q. I'm sorry, I'm looking at 16, and 16 is a contour
9 line.

10 A. 16 is the section.

11 Q. I'm sorry, that's the section. The number of the
12 well is 12, and it's hard to see because it's shaded.

13 A. It's colored under the orange.

14 Q. All right, so that's Well Number 12. And you
15 have concluded that Well 12 and 14 interfere with each
16 other?

17 A. Yes, sir.

18 Q. And those wells are located in what would
19 generally be 640-acre spacing patterns, if I'm not
20 mistaken?

21 A. Yes, sir.

22 Q. All right, let's -- You've located the well for
23 us. Show us the production plots.

24 A. On the next two pages are decline curves for the
25 Ute 12 and the Ute 14. And just in generalities, the rate

1 is on the vertical axis, time is on the horizontal axis.

2 One thing I want to point out is that on the Ute
3 12, the time starts in 1989. And on the next page, the Ute
4 14, the time starts in 1970. The Ute 14 has production
5 prior to that. The Ute 12 was recompleted into the lower
6 Barker Creek in that 1989 time frame.

7 Now, if you look at the Ute 14 decline curve,
8 which is the final sheet, you'll see that in the 1989 time
9 frame, you see a change in your slope of the production,
10 and you see a pretty drastic change in that slope, and
11 you'll see that that slope doesn't -- it's not a temporary
12 or just a bobble in production. That's pretty much a
13 classic example of where you're seeing that the Ute 12 well
14 is taking gas from the Ute 14 well, and it's pretty
15 concrete evidence that we're seeing drainage or
16 interference between those two wells.

17 Q. What's your concern if you're required to drill
18 the deep gas wells in the Basin on 160 acres? Do you set
19 up this kind of problem repeatedly throughout the Basin if
20 you undertake to drill on that spacing pattern?

21 A. Yes, sir, you'll see this kind of interference.

22 Q. All right, let's turn back now to Exhibit 10 now,
23 and we're looking at the third page of Exhibit 10?

24 A. Yes, sir. What I wanted to do was, after we had
25 gone through and done the analysis on the lower Barker

1 Creek zone, we wanted to go through and use that for an
2 economic model, to determine whether it was economic for
3 Burlington or anyone else to go out and explore for these
4 reserves.

5 What I did was realize that at over \$2 million
6 well cost, we'll need significant reserves to make the
7 project economic.

8 We used the volumetric analysis from the lower
9 Barker Creek zone, and we did a couple things. First, we
10 corrected for the pressure change. We're going from around
11 9000 feet in the lower Barker Creek and Barker Dome to
12 around 13,000 feet out in the Basin, so we adjusted the
13 pressure from 4000 pounds to 6000 pounds to make that
14 adjustment. It's really 6084. But that's only an
15 estimate, but that's -- It's probably pretty realistic out
16 there in the Basin.

17 We took that information, we took the porosity
18 and water saturations, the average net thickness, came up
19 with the gas in place, and came up with eventually an EUR
20 for 640-acre spacing, 320-acre spacing and 160-acre
21 spacing.

22 And those EURs are illustrated on the far right-
23 hand side of the table as 25.71 Bs for 640-acre spacing,
24 12.86 Bs for 320-acre spacing and 6.43 Bs for 160-acre
25 spacing. We used --

1 Q. Yeah, what you've forecasted now, what your
2 forecast to be recoverable gas based upon the spacing size,
3 do you need to factor in a cost component to see if it's
4 going to be profitable?

5 A. Yes, sir. And what we did is, we took this
6 information and we used that in our economic model for
7 exploration.

8 Now, our exploration economic model is composed
9 of a few different things, and I'll go through the model.
10 One of them is the risk factor that's involved in the
11 exploratory well itself and the follow-up development
12 wells.

13 Another factor is the capital required, the cost
14 of the well itself, and the cost of the seismic and G and G
15 3-D and 2-D seismic prior to drilling any well.

16 Q. Did you apply a risk factor to any of this?

17 A. Yes, sir, we did.

18 Q. Okay.

19 A. Just to basically go through the economics, we --
20 In this specific example, we did not include the up-front
21 2-D regional or recon program that we conducted, and that
22 consisted of, I think, three hundred and -- well, over 350
23 and near 400 miles of 2-D information we shot out through
24 the Basin. And that was mainly to give us an idea if there
25 were any fields out there of a large enough size that we

1 could go out and explore for.

2 So we started the economics with the cost of the
3 3-D seismic program that we shot, and that cost is kind of
4 awkward in a sense that it's \$700,000 for the seismic, but
5 the owners of the area underneath the seismic don't
6 participate in the costs equally. So in other words,
7 Burlington paid a disproportionate share of that cost,
8 where smaller owners don't pay any of it. They kind of get
9 a free ride off of it.

10 The exploratory well would be the next item, and
11 we have assigned a 10-percent probability of success to
12 that. Just from experience in exploration, the number of
13 dry holes drilled out there in the Basin to date, we feel
14 that 10 percent is a reasonable number. It could be
15 higher, it could be lower.

16 We have done -- Before we did any work out here,
17 we had done some scoping economics and determined that we
18 couldn't go out and discover a one-well field, just because
19 the up-front costs of the seismic and the actual cost of
20 drilling the well is too high. So we've determined the
21 field size that we need to go for, and it's approximately
22 20 wells.

23 Because of the nature of carbonate exploration,
24 the fact that it's not a blanket sand, it's not good
25 everywhere, there is a substantial risk involved in

1 drilling and finding a productive well even on the
2 development wells. So we've assigned those with a 60-
3 percent chance of success, and that's pretty reasonable.
4 It's reasonable with what we've seen out on the Paradox
5 Basin.

6 The well costs associated with the drilling for
7 the Penn is almost \$2.4 million, completed well costs. We
8 estimate about 60 days to reach TD.

9 One of the problems we run into, and what drives
10 the price up so much is that we've got to set a couple of
11 intermediate strings, because we have a depleted and low
12 pressure in the Mesaverde and Dakota zones uphole. So
13 we'll have to gas-drill or air-drill through those, set
14 pipe, and then hopefully mud-drill all the way down.

15 But even doing that, we still have problems.
16 It's just that we'll be through those Cretaceous zones at
17 8000 feet, plus or minus. And then we have a significant
18 amount of open hole, which creates a problem, just being
19 exposed for such a long time to the mud. So we may have to
20 set an intermediate string of pipe right there before we
21 get to the TD. But that's one of the reasons that the
22 costs are so high.

23 When we roll all that together and run the
24 economics out, you can see the results based on the
25 spacing, what the after-tax rate of return is, and you can

1 see that it's 640-acre spacing, with the associated
2 reserves, it's around a 10-percent rate of return, down to
3 zero-percent rate of return at 160-acre spacing.

4 Q. What do you conclude, Mr. Lane, about the
5 appropriate size spacing that's necessary in order to
6 encourage this type of investment and exploration activity?

7 A. Well, the economics indicates that you need
8 around 640-acre spacing to have economic development. And
9 the reason behind that is the risk involved in drilling the
10 wells, and the primary reason is the reserves involved.

11 Q. Are you willing to recommend to your management
12 that you undertake this exploration activity under the
13 current 160-acre deep gas spacing rules?

14 A. No, sir.

15 Q. And why not?

16 A. There is just not enough reward or economic
17 incentive for us to go on with it.

18 Q. Let's turn to the last page of your display,
19 behind Exhibit Tab Number 10 and have you summarize for us
20 the major issues you see as an engineer concerning the
21 opportunity for Pennsylvanian exploration in the San Juan
22 Basin.

23 A. Yes, sir. When we looked at the Basin to develop
24 it and try to realize the value of that asset that we hold
25 and that other people also hold in the Penn, we looked

1 through the factors that have kind of stifled or restricted
2 development out there, and one of the problems or issues is
3 the high cost of drilling. Just drilling through a
4 depleted Cretaceous increases the cost just by having to
5 set more and additional and larger strings of pipe.

6 Q. If those costs are borne by the owners of a 160-
7 acre tract, how does that compare to sharing the costs
8 among the owners in a 640-acre spacing unit?

9 A. They'll end up paying quite a bit more money,
10 because there will be quite a bit more wells drilled.

11 Q. Have you been successful in efforts to try to
12 consolidate interest owners on 160 acres because of these
13 costs?

14 A. No. I don't think anyone wants to spend this
15 much money.

16 Q. On 160-acre spacing?

17 A. Yes, sir.

18 Q. Describe for us the low success rate. What are
19 you talking about?

20 A. Just -- We've seen, I think we've commented and
21 Mr. Dawson has shown that there's been in the high 20s,
22 number of dry holes drilled out here. And there's a
23 significant risk in drilling a well, especially drilling
24 for a carbonate reservoir that's not continuous and not the
25 norm that people are used to out here in their development.

1 Q. Is --

2 A. The --

3 Q. Yeah, go ahead.

4 A. The exploration costs are high. The lack of
5 wellbore control at that depth, the lack of penetrations.
6 We're talking about the high 20s, number of dry holes, and
7 a 9000-square-mile area is not significant well control.

8 The exploration cost, besides -- Because the
9 ownership is so broken up and so fractionated, it's
10 difficult to get the owners together to support the
11 exploration. So one or two companies end up bearing that
12 whole cost, which becomes a hindrance to any sort of
13 development.

14 The ownership is scattered, and there's not a
15 consolidated or a block of acres that makes it simple for
16 someone to go out there and bear the whole costs and not
17 share disproportionately in the costs of the exploration or
18 in the resultant revenue from the wells.

19 And again, the reservoir is not just a blanket
20 sand; it's pretty variable across the Basin.

21 MR. KELLAHIN: That concludes my examination of
22 Mr. Lane.

23 We move the introduction of his Exhibits 8 and
24 10.

25 CHAIRMAN LEMAY: Those exhibits will be entered

1 into the record without objection.

2 Mr. Carr?

3 MR. CARR: No questions.

4 CHAIRMAN LEMAY: Questions from the audience?

5 Mr. Chavez, yes?

6 EXAMINATION

7 BY MR. CHAVEZ:

8 Q. Mr. Lane, in areas of the surrounding San Juan
9 Basin, where the area of interest in the Pennsylvanian may
10 be quite a bit shallower, would these 640-acre spacing
11 proposed still apply there, or would the 160-acre spacing
12 perhaps still be a valid spacing for those areas?

13 A. I think outside of the Basin 160 acres would
14 still be valid. There are some fields over on the Paradox
15 side, some of the shallow oil fields, that are on tight
16 spacing or small spacing.

17 MR. CHAVEZ: Thank you.

18 CHAIRMAN LEMAY: Commissioner Weiss?

19 EXAMINATION

20 BY COMMISSIONER WEISS:

21 Q. Yes, sir, Mr. Lane, in that lower Barker Creek
22 zone that you had the example of, the interference --

23 A. Yes, sir.

24 Q. -- what's the permeability in there?

25 A. The permeability is pretty varied, and I...

1 Q. Did you calculate it based on the interference?

2 A. No, I didn't. I would imagine it's in the tens
3 of millidarcies.

4 One other point to make on the lower Barker Creek
5 zone is that the abandonment pressure of 800 pounds, that's
6 just calculated back from the line pressure out there,
7 which is around 300 pounds, and a gradient for the gas
8 column, down to TD.

9 An actuality, these -- or the lower Barker Creek
10 zone has a weak water drive component, and these wells
11 actually watered out at a pressure of 800 pounds or higher,
12 which, when you go through the map, it will show you that
13 the drainage area is actually larger than the 785, if it's
14 erred one direction.

15 Q. Okay. Well, that brings up another point. What
16 are the recovery factors that are associated with these --

17 A. It's around 80-percent. In water drive you'll
18 typically see 60- to 65-percent and a good clean --

19 Q. So on your next exhibit here, in reserve
20 estimate, the recovery factors for 640, 320 and 160 are all
21 about 80 percent of the gas in place? I don't know what
22 the original gas in place --

23 A. Yes, sir, that should be pretty close.

24 Q. So spacing has no effect on ultimate recovery,
25 essentially, is what you're saying?

1 A. "Spacing has no effect on ultimate recovery" --

2 Q. If it's going to be 80 percent of the gas in
3 place, that's it?

4 A. Eighty percent of the gas within that drainage
5 area.

6 Q. Uh-huh.

7 A. Yeah, there is an effect. If we well only drains
8 160 acres --

9 Q. Well, if you've got a well every 160 acres, do
10 you get 80 percent of the gas in place?

11 A. You get 80 percent of the 160 acres.

12 Q. Sure, and if you've got a 640-acre -- a well
13 every mile, do you still get 80 percent, do you think?

14 A. If it's draining that full 640 acres, yes.

15 Q. Well, that's the question.

16 A. I'm sorry, I'm kind of -- I miss your point.

17 Q. Well, 10 millidarcies is kind of tight --

18 A. Okay.

19 Q. -- and I don't see that draining 80 percent of
20 the gas at 640 acres. If 10 millidarcies will drain 80
21 percent of the gas at 640 acres, 10 millidarcies ought to
22 drain more than 80 percent on 160 acres; is that
23 reasonable?

24 A. Yes.

25 Q. I guess it all resolves on this permeability, and

1 if it's 10 that's one thing, and if it's 100 that's -- it
2 certainly would drain 640 acres, I think.

3 A. Yes, and it does resolve on the permeability to
4 the point that if the permeability is high enough that the
5 wells in the lower Barker Creek are draining these volumes,
6 are draining these areas, and if you had the lower Barker
7 Creek spaced on 160 acres, you would see recovery factors
8 of greater than 100 percent.

9 Q. That's advantageous, isn't it, to get more than
10 100 percent of the gas in place? It doesn't happen all the
11 time.

12 I had one other question. On the -- does
13 Burlington -- What you guys do, an exploration thing with a
14 10-percent rate of -- after-tax rate of return, is that a
15 hard sell?

16 A. Yes, it is. The economics run here are just a
17 typical area, and a lot of this is a function of the
18 ownership, the costs borne by us in the up-front seismic.
19 And what really hurts or kills the economics is that
20 Burlington and whoever is doing the exploration is paying
21 for the seismic up front.

22 The exploratory well, no one wants to participate
23 in it just because of the risk involved, so you're carrying
24 all those people, you're having to carry that cost. And on
25 the follow-up wells, you know, at 160-acre spacing who's

1 going to participate in the next well?

2 So you're just going to participate with your
3 bare minimum interest, and everybody else is essentially
4 going to reap the benefit of your expenditures on the
5 exploratory well and your expenditures on the exploration.

6 Q. Yeah, well, I think your 640-acre spacing case is
7 sound, but the -- How do you get your money back? I mean,
8 on the next well, do the guys -- Do the other people in it
9 with you have to pay the exploration costs then?

10 A. On the development wells?

11 Q. Yeah.

12 A. Well the money is gained back through
13 participation in the development wells. So --

14 Q. Yeah, you get it back later, then, assuming you
15 make a discovery?

16 A. Yes, that's right.

17 COMMISSIONER WEISS: That's my only questions.
18 Thank you.

19 CHAIRMAN LEMAY: Commissioner Bailey?

20 EXAMINATION

21 BY COMMISSIONER BAILEY:

22 Q. Is Burlington the operator of all these units
23 that we see on this map?

24 A. I don't know, but I don't think so.

25 CHAIRMAN LEMAY: Are you going to have a land --

1 MR. KELLAHIN: Yeah, we do.

2 Q. (By Commissioner Bailey) Okay. One of your big
3 points is the scattered ownership, and if these units
4 already are for all formations then I was wondering what
5 impact the units have on your estimates here.

6 A. I'm not -- I can't comment on the ownership,
7 whether it's the same or from the top to bottom.

8 Q. Right, but the impact on your estimates, if it
9 was -- scattered ownership --

10 A. The impact on the economics is similar to what
11 we're experiencing in the non-unit area in that -- you
12 know, some of the small companies are not going to want to
13 pay for the seismic costs, and they won't want to take the
14 risk on the exploratory well. And so those costs we've
15 borne by the company that does the exploration, and they'll
16 end up paying a disproportionate share when the project is
17 looked at in a whole light. It will be similar --

18 Q. I'm also --

19 A. I'm sorry.

20 Q. I'm also curious about the wells that
21 Commissioner Weiss was asking you about, the ones that you
22 chose to show the interference. What is their relationship
23 to that fracture fault system that goes through that field?

24 A. They're both --

25 Q. Are they on the same fault system, as you said?

1 A. There is a fault that runs through and separates
2 Ute Dome and Barker Dome, and both of those wells are to
3 the northwest of that fault.

4 Q. You said that you would not agree with a
5 temporary rule. What harm -- Is there any temporary rule,
6 as far as you're concerned?

7 A. Well, in a temporary rule what happens is that it
8 adds risk to the investors or to the people that want to
9 participate in the well, in that if they spend their
10 portion of \$2.4 million to go out and drill that well and
11 they know that someone can come in and drill a well right
12 next to them, they're going to get their reserves drained,
13 they're going to lose revenue and they're not going to have
14 the opportunity to recover their money back, or that
15 opportunity is at risk.

16 COMMISSIONER BAILEY: That's all I have.

17 EXAMINATION

18 BY CHAIRMAN LEMAY:

19 Q. Just a couple quick ones, Mr. Lane.

20 You laid out your economics here based on, I
21 assume, the previous witness's eight to ten wildcats. Do
22 you happen to know, these are seismic plays, are they
23 structural plays? Are you looking for reefs on the shelf
24 edge or --

25 A. They're a combination. The -- Part of the

1 problem with carbonates is that the carbonate will be
2 there, but the development of the porosity and the
3 permeability is a difficult thing to find.

4 And I'm not an expert on seismic, but there's a
5 resolution problem with the seismic, which is a function of
6 the frequency of the seismic, that you don't have enough
7 frequency to be able to define those porosities -- you
8 don't have enough frequency to define what's porosity and
9 what's not porosity. And that's also compounded by not
10 being able to accurately seismically model the carbonates
11 down in the Basin.

12 But on to your question about the play types, is
13 that at this point we're not sure. We see where we have
14 structures, and it is -- There is a structural component
15 just -- which allows the development of the porosity.

16 Now, whether the final field is a structure, I'm
17 not sure, and we're not sure about that. But we know that
18 there has to be some sort of component where you have
19 groundwater moving through in the creation of porosity,
20 permeability.

21 CHAIRMAN LEMAY: Okay. Commissioner Weiss?

22 COMMISSIONER WEISS: No, I don't have any right
23 now.

24 CHAIRMAN LEMAY: Okay, that's the only question I
25 have. Thank you very much.

1 Why don't we take just about a ten-minute break?
2 We'll come back with one more witness before lunch. You
3 have two more, Tom? One is a land presentation?

4 MR. KELLAHIN: Yes, we're just going to finish
5 with one more witness on direct. So I'll have one more
6 land witness to answer the unit questions and stuff, so 20
7 or 30 minutes' worth of testimony.

8 CHAIRMAN LEMAY: Okay, well, let's just take a
9 10-minute break. We'll come back to that, and we'll have
10 Mr. Carr after lunch, if that's okay.

11 You all don't have any airplane problems, do you,
12 going back this afternoon?

13 MR. ALEXANDER: Yes, they have a two-o'clock
14 flight to go to Midland.

15 CHAIRMAN LEMAY: They do? Do you want to stay
16 here and finish up, take lunch late? Okay, we'll do that.

17 MR. KELLAHIN: That would be our preference. Mr.
18 Carr and I have Examiner cases tomorrow, and we have
19 clients waiting for us.

20 CHAIRMAN LEMAY: We shall take ten minutes, come
21 back and finish it up, take a late lunch.

22 (Thereupon, a recess was taken at 11:12 a.m.)

23 (The following proceedings had at 11:26 a.m.)

24 CHAIRMAN LEMAY: Okay, we shall continue.

25 Mr. Kellahin?

1 MR. KELLAHIN: Thank you, Mr. Chairman. I'll
2 call my next witness, Mr. James Strickler. Mr. Strickler
3 is a landman with Burlington. He resides in Farmington.

4 JAMES R.J. STRICKLER,
5 the witness herein, after having been first duly sworn upon
6 his oath, was examined and testified as follows:

7 DIRECT EXAMINATION

8 BY MR. KELLAHIN:

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

11 A. My name is James Strickler. I'm a senior staff
12 landman for Burlington Resources.

13 Q. On prior occasions, Mr. Strickler, have you
14 testified before the Division and qualified as an expert in
15 matters of petroleum land management?

16 A. Yes, sir.

17 Q. And are you part of the Burlington team that's
18 responsible for this exploration effort in what we've
19 characterized as the deep gas wells in the San Juan Basin?

20 A. Yes, I am.

21 Q. Your challenge on the team has been to try to
22 consolidate acreage, is it not?

23 A. That's correct.

24 Q. And you've attempted to consolidate acreage on
25 existing 160-acre spacing units, have you not?

1 A. I've tried --

2 Q. And you've tried to do it on --

3 A. -- and I've failed.

4 Q. -- 640 acres, have you not?

5 A. Yes, sir.

6 MR. KELLAHIN: All right. We tender Mr.

7 Strickler as an expert petroleum landman.

8 CHAIRMAN LEMAY: His qualifications are
9 acceptable.

10 Q. (By Mr. Kellahin) Let's talk about Commissioner
11 Bailey's question with regards to the opportunity afforded
12 us by the utilization of the units within the Basin as a
13 vehicle to overcome the limitations of 160-acre spacing.

14 As one of the first questions I asked you, am I
15 correct in remembering that except for the Allison unit and
16 the Rincon unit, which are undivided, all the other units
17 in the Basin that we're aware of are divided-participation
18 units; is that not true?

19 A. That is correct.

20 Q. So what does that mean?

21 A. Well, that means that if we pick a location in
22 the 29-7 unit, for example, we will be -- the ownership of
23 that well will be on a drillblock basis.

24 Q. When you mean drillblock, you default to whatever
25 the existing spacing pattern is that the state has

1 established?

2 A. 160s, right, 160s. And if it's on a Burlington
3 100-percent tract, that would be our risk, 100 percent.

4 Q. Once you've drilled the drillblock well, the
5 initial well in that reservoir, and it's deemed to be
6 commercially profitable at a certain level, you then can
7 establish a participating area?

8 A. Yes, sir, some point in the future, yes, sir.

9 Q. All right. We have nothing like that yet for the
10 deep gas in any of the units?

11 A. There's no deep gas PAs.

12 Q. Are you aware of any of the mechanisms and
13 procedures of the units that will overcome, then, the
14 limitation of 160-acre gas spacing?

15 A. No, sir.

16 Q. Let's talk about what you and others at
17 Burlington did to disseminate information to the industry
18 that you were seeking to have the Commission modify the
19 Rule 104 for deep gas spacing. What did you do?

20 A. Please refer to Exhibit 1 of your book. It's a
21 copy of our Application. You see the cover letter dated
22 February 27th by Mr. Kellahin, and attached to the cover
23 letter is our Application that we mailed out to 315 working
24 interest owners in the San Juan Basin --

25 Q. Now, the Application includes --

1 A. -- by certified mail.

2 I'm sorry?

3 Q. The Application includes in detail the exact
4 language changes proposed by Burlington to Rule 104 with
5 regards not only to the spacing unit sizes but to changes
6 in well-location requirements?

7 A. Yes, it does.

8 Q. Among the interest owners notified, can you
9 approximate for the Commission the operators that were
10 notified?

11 A. Approximately 198 operators out of the 315.

12 Q. With the exception of Amoco's suggestion of a
13 temporary procedure, other than that, are you aware of any
14 other suggestions concerning the Application?

15 A. We have received support.

16 Q. Well, describe for me the support that you're
17 aware of.

18 A. We have received letters of support from Conoco,
19 a major player in the San Juan Basin; Phillips Petroleum,
20 another large owner in the San Juan Basin; and also three
21 large independents in the Farmington area, Bob Bayless, T.
22 Greg Merrion or Merrion Oil and Gas, and Dugan Production
23 Company. All --

24 Q. You simply received copies of letters submitted
25 to the Commission?

1 A. Yes, sir, all parties endorsed our permanent 640-
2 acre spacing Application.

3 Q. Other than Amoco's request for a temporary
4 procedure, are you aware or have you been notified of any
5 opposition to making this change?

6 A. No, sir.

7 Q. Let me have you turn to Exhibit Tab 4, and let's
8 fold out that display.

9 Mr. Strickler, I asked you to prepare for
10 illustration to the Commission an example of the kinds of
11 ownership relationships and allocations that you see and
12 have to resolve in the deep gas, and you've chosen an area
13 that we've looked at, the 39-11 area?

14 A. 31 and 11.

15 Q. 31 and 11. Where would we find this area within
16 the Basin itself?

17 A. This area is near Aztec. It's near the tri-
18 cities area of Farmington, Aztec and Bloomfield, just north
19 of Aztec.

20 Q. Let's assume that Mr. Dawson and Mr. Lane have
21 targeted this area as a likely prospect in which to drill
22 the deep gas well, and now have asked you to try to
23 consolidate the acreage.

24 Under the current rule, where you have 160 acres,
25 you would have to find a tract that is a suitable location

1 for them in which you have consolidated that interest, have
2 you not?

3 A. Correct.

4 Q. All right. Let's pick one hypothetically. When
5 we look at the color code, the yellow would represent
6 Burlington tracts in which you have somewhere between 75
7 and 100 percent?

8 A. That's correct.

9 Q. All right. Except for those that have 100
10 percent -- and they're not indicated -- in all instances of
11 160 acres, you're going to have to consolidate it with
12 someone else; is that not true?

13 A. That's right.

14 Q. And this is a common occurrence in the Basin, is
15 it not?

16 A. This is a good example, right here.

17 Q. All right. On 160 acres, if you pick one, you're
18 going to have to get an interest owner to agree with you?

19 A. Correct.

20 Q. They're going to have to pay some share of the \$2
21 million?

22 A. \$2.4 million, yes, sir.

23 Q. All right. Have you been successful in your
24 efforts to do this on 160-acre spacing?

25 A. No, sir.

1 Q. What kind of comments and concerns have been
2 expressed to you that you want to share with the
3 Commission?

4 A. Many of the companies that I deal with have
5 operations in other producing states where deep gas spacing
6 is on automatic permanent 640-acre spacing; that is what
7 they're accustomed to.

8 I have one example of a company that is excited
9 about the possibility of finding deep gas, and they're
10 interested in possibly participating with us, but on 160-
11 acre spacing, in this particular company's situation,
12 they'd be paying 25 percent of the well cost. Well, that's
13 \$600,000. They're accustomed to spreading the risk over
14 640 acres, which would give them a 6.25-percent working
15 interest and reduce their exposure to \$150,000.

16 They tell me that they're competing for budget
17 dollars. This is rank wildcat, less than 10-percent chance
18 of success. They're spending their moneys offshore, south
19 Texas, south Louisiana, Oklahoma, where they can drill
20 similar-type wells with similar-type reserves on 640-acre
21 spacing and spread the risk. So those are the type of
22 comments that I'm faced with.

23 And so that's why we're here, is to seek
24 permanent 640-acre spacing, to spread the risk. And we
25 also believe, according to Chip Lane, that one well will

1 sufficiently and adequately drain 640-acre spacing.

2 Q. Well, when you start with that assumption and
3 whatever technical information they've given you, you have
4 not been able to do this on 160-acre spacing?

5 A. That's correct.

6 Q. On that spacing you would still have occasions
7 where you would have to compulsorily pool interest owners,
8 despite your effort?

9 A. That's right.

10 Q. Is there -- Apart from sharing the cost among
11 owners on 160 acres, are there other concerns about the
12 offset competition that is generated by trying to develop
13 these prospects on 160 acres?

14 A. Absolutely. The concern that industry has is
15 drilling unnecessary wells. We're faced with the worst-
16 case scenario of drilling four wells per 640 for a total
17 cost of \$9.6 million. No one's interested in doing that.

18 So if we were -- And I'm not sure management
19 would approve this, but if management hypothetically would
20 approve drilling a wildcat well without enough acreage
21 support, that would leave us vulnerable and invite our
22 competitors to drill offset wells and cause waste in
23 drilling unnecessary wells. So that's a real concern that
24 our prospective participants have, and of course we have
25 the same concern.

1 Q. Well, let's assume that you drill on 160 acres,
2 and let's assume that early information shows that it's
3 going to drain more than 160. You're then going to have to
4 come in with special rules on some temporary basis to get
5 wider spacing, are you not?

6 A. That's right.

7 Q. And let's assume you get it temporarily for 640.
8 You're then going to have to invite those interest owners
9 in the remaining part of the section to participate in some
10 fashion; is that not true?

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

12 Q. And they get to participate based upon the
13 knowledge of the results of the well?

14 A. They've had a free ride.

15 Q. And even if they still don't elect at that point,
16 you're going to have to force pool?

17 A. Exactly right.

18 Q. Let me ask you what you have done in an effort,
19 notwithstanding 160-acre spacing, to try to at least get
20 the working interest owners in a section to work out a
21 joint operating agreement on an area basis where they
22 could, apart from spacing, agree to share the costs in a
23 section.

24 Have you been successful in doing that?

25 A. No, sir.

1 And let me just backtrack to -- This is a 17-
2 section area. This is similar in size to the Barker Creek
3 field that we've highlighted to you before. So this kind
4 of gives you a ballpark figure of what we hope the size of
5 a deep gas field will be.

6 We have anomalies and leads that cover 20 to 30
7 sections, you know, larger, but this is a good example for
8 you, and my goal as a landman -- and any land department,
9 whether it be us, Conoco, Phillips, Amoco -- is to secure
10 acreage support from every interest owner in this 17-
11 section area. That is extremely difficult to do on the
12 160-acre spacing scenario that we're faced with.

13 What we invite people to do is to want to
14 participate with us, help us spread the risk.

15 Number two is to farm out on reasonable farmout
16 terms, to support our deep, high-risk wildcat well, very
17 expensive.

18 And industry is inclined -- Industry has been
19 favorable as to our efforts, but the uncertainty of the
20 spacing affects whether or not they farm out to you on a
21 reasonable basis, because most farmouts are structured
22 where we will farm out the parties' interest in the initial
23 well and earn a portion of their acreage. Outside of the
24 initial well, they'll have the opportunity to participate
25 as to retained interests.

1 Let's say it's a 75-25 split. Well, these
2 parties want to participate with their 25-percent interest,
3 but they want to know what spacing they're going to have,
4 so they can budget and hopefully -- In other words, they'll
5 let us take the risk, but they'll give us the incentive to
6 take that risk because they'll benefit in the low-risk
7 offsets.

8 And 160-acre spacing is a deterrent to that.
9 They want to have a fixed-interest unit that they can live
10 with. It's better to err with a large unit than a small
11 unit, and they can go about their planning and budget
12 process.

13 And we're getting some good feedback. Not
14 everyone is opposed to our efforts. But these -- the
15 necessity for 640-acre permanent spacing is really critical
16 to put together 17-section exploratory areas or prospects.

17 And as you can see on your map -- Look at all the
18 wells up there. These wells -- There's 156 wells scattered
19 over this area. It's HBP acreage. These wells have been
20 producing for 40 to 45 years. These working interest
21 owners are comfortable with the Mesaverde formation and
22 Dakota formation. They're a little bit leery of deeper
23 gas, as far as taking risk. You can't blame them. I mean,
24 it is high risk.

25 So these are some of the issues that I've

1 encountered, centered around the spacing issue.

2 Q. Does it overcome these limitations if the 640
3 spacing is created under some plan where they're temporary
4 and re-examined later?

5 A. I think it will hurt us, because again, these
6 owners, these working interest owners that you see on the
7 map there, they want to be able to plan without a doubt
8 that we're on 640s in order to not shrink their investment.

9 For example, if they participated on a 640 -- and
10 like the illustration I gave you earlier, the company has
11 6.25 percent, his exposure is \$150,000.

12 If we shrink the 640-acre unit to 160s, then all
13 of a sudden his exposure goes up 25 percent, or \$600,000,
14 and that's something they don't want to do. They want to
15 know before and after, you know, what spacing they're
16 dealing with.

17 Q. Under a temporary scenario, then, he would --
18 that investor, the working interest owner in the 160 that's
19 the drillsite tract, is going to have to be willing to
20 accept the risk as to the smallest spacing pattern that's
21 ultimately --

22 A. The worst case, exactly right. They have to
23 anticipate the worst-case scenario.

24 Also, in fairness to the royalty owners, we're
25 going to have to hold all those revenues in suspense,

1 pending permanent field rules. And the working interest
2 owners that dish out \$150,000 to \$600,000 apiece, they
3 really need their revenue stream, and we're going to have
4 to put that in suspense, pending if we're going to be on
5 640s or 160s, for example, and that's a tough thing to ask.

6 Q. Burlington, then, is opposed to having 104
7 changed in some temporary fashion?

8 A. Absolutely.

9 Q. Let's turn to the information behind the plat
10 that shows the tracts in the columns, and describe for me
11 how you have tabulated the rest of this information.

12 A. We did a courthouse check utilizing independent
13 landmen to check the records on the deep ownership. We did
14 not run title opinions. This is just an example for the
15 Commission. I estimate these numbers are probably 90-
16 percent correct, based on the courthouse checks.

17 And as you can see, the diversity of ownership in
18 this particular example area. Burlington at the top has
19 26.75, Conoco has roughly 30, Amoco has 34 percent, and
20 then you have the smaller interest owners ranging from 2.95
21 percent to .37 percent.

22 The number of working interest owners in the 17-
23 section area is approximately 75 owners, quite a few. And
24 I'm working other areas that are larger than 17 sections,
25 to give you an example, that have in excess of 150 working

1 interest owners.

2 Again, it's quite a job to get everybody in
3 agreement in supporting a deep wildcat well.

4 Q. Let's turn to the next page and look at the
5 Section 16, at a specific section.

6 A. If you'll look at your land map up there, you'll
7 see that Section 16 is cut up more than most. When you see
8 the ownership breakdown, Burlington Resources 30 percent,
9 Amoco 29 percent, Total Minatome 12 percent, the Dacresa
10 Group -- that involves ten owners -- 10.6 percent, Cross
11 Timbers half a percent, and Wayne Moore with 2 percent.

12 And again this is typical of a particular
13 section. I wish we had 12 solid sections or 17 solid
14 sections, 100 percent Burlington, but that's just not the
15 case. We don't have that kind of density of ownership, and
16 I don't believe anybody does in the Basin. Everybody is
17 spread out.

18 Q. Let's change chapters and touch upon the well
19 location options for the Commission.

20 You've got a series of displays following Exhibit
21 5 that have various spacing -- well location choices based
22 upon spacing.

23 A. In addition to asking for 640-acre spacing, we're
24 asking the Commission for approval of 120-foot setbacks
25 from the section line, 120-foot setbacks from the half-

1 section line and 10-foot setbacks from the quarter-quarter
2 section line.

3 As you can see on the first page -- I apologize,
4 the map is a little busy, but what you can see in the
5 southwest quarter of the section are location windows for a
6 Mesaverde, Dakota and Fruitland Coal wells, for example.

7 Q. You're looking at these little squares?

8 A. Gray boxes.

9 Q. Gray boxes with the diagonal hach lines?

10 A. Yes, sir.

11 Q. What do those represent?

12 A. Those are the drilling windows for a Mesaverde
13 well, Dakota well and/or Fruitland Coal well, 790-foot
14 setbacks.

15 Q. The Dakota and Mesaverde are 320?

16 A. Yes, sir.

17 Q. And the PC is 160?

18 A. Right.

19 Q. But they use a 790 setback?

20 A. Yes, sir. And I might also mention that the
21 current statewide rules for deep gas is on 790-foot
22 setbacks. So what we're asking --

23 Q. Up in the San Juan Basin?

24 A. In the San Juan Basin, right.

25 Q. All right. Now, if the Commission utilizes your

1 requested 1200-foot setback from the outer boundary and
2 keeps -- and uses 120-foot setback for the half-section
3 line and then the 10-foot for the quarter-quarter line --

4 A. Yes, sir.

5 Q. -- what does that allow you to do?

6 A. That allows us to capture existing well pads,
7 based on the Dakota, Mesaverde location, PC locations. We
8 want to minimize any surface impact. I think --

9 Q. You're only going to catch one location, though,
10 out of the four, am I right?

11 A. That's right.

12 Q. Okay.

13 A. That's right. And so we felt that 1200 feet from
14 the outer section lines and the -- would allow us to use
15 existing pads.

16 And there's a lot of good reasons for that. It
17 minimizes surface disturbance. We use the existing roads
18 and pads. It minimizes geologic, archaeologic and
19 topographic problems. We minimize intrusion on the
20 population of Farmington, Aztec and Broomfield and other
21 parts of the San Juan Basin. It prevents the need to seek
22 nonstandard locations, and -- just to name a few.

23 Q. Let's turn to the next display after the first
24 one. What's being illustrated here, Mr. Strickler?

25 A. This is what we're requesting in our Application.

1 This gives you an illustration of what the 1200-foot
2 setbacks and the drill windows.

3 Q. It still keeps the wells contained in the
4 interior 40-acre tracts?

5 A. Yes, sir.

6 Q. So that we maintain the integrity of the 640
7 spacing?

8 A. Correct.

9 Q. And that's our first option, right?

10 A. That's our first option.

11 Q. All right. And the display after that?

12 A. The display after that depicts 1200-foot setbacks
13 and 120-foot setbacks from the quarter-quarter section
14 lines.

15 Q. The difference here is, instead of a 10-foot
16 quarter-quarter setback, you're using 120 feet?

17 A. Right.

18 Q. And that will show you the pattern?

19 A. That will show you the pattern. We do not
20 recommend this.

21 Q. All right. The next display after that?

22 A. The same thing, we have a 14- -- This is a little
23 different setback, 1440 setback with 130-foot setback from
24 the half section. And just to give you a point of
25 illustration, we don't recommend this one either.

1 Q. Okay, and then the final illustration?

2 A. The final illustration is the current setbacks
3 for 640-acre spacing that the Board has set out, 1650,
4 which really narrows your drilling locations, and we
5 definitely don't recommend this alternative.

6 Q. There are examples of 640-spaced gas pools, I
7 think, in --

8 A. -- southeastern.

9 Q. -- southeastern New Mexico. Indian Basin is one
10 of them, Catclaw Draw. They use a 1650-foot setback?

11 A. Correct.

12 Q. And this is simply an illustration of how that --

13 A. It's just an illustration, right.

14 Q. All right. Summarize for us, Mr. Strickler, your
15 recommendations and conclusions for the Commission
16 concerning this request.

17 A. From a land perspective, which is certainly one
18 of the most key ingredients of putting together a deep gas
19 prospect, we strongly recommend, I strongly recommend 640-
20 acre spacing on a permanent basis to allow us to put
21 together the acreage to support a deep test and to spread
22 the risk in fairness to all the participants, to protect
23 the correlative rights of the royalty owners, to establish
24 equity up front with the 640s and to minimize the surface
25 locations in this area.

1 But it comes to mind to the Dakota in Colorado where those
2 wells are on 640-acre spacing, and again they use the
3 larger spacing to develop those resources, and later
4 industry infilled those 640s for increased density to 320s.

5 I'm sure there's other methods that would -- that
6 are available as well. But that's what they did up there,
7 and I think that would certainly apply in the deep gas, in
8 the Pennsylvanian, for example, to have a 320 infill, and
9 all the owners would share and share alike. It would
10 protect all the royalty owners and the working interest
11 owners. Their interest would be fixed.

12 CHAIRMAN LEMAY: Commissioner Weiss?

13 COMMISSIONER WEISS: I was thinking along the
14 same lines, and I think you answered that very well. Thank
15 you.

16 CHAIRMAN LEMAY: Commissioner Bailey?

17 EXAMINATION

18 BY COMMISSIONER BAILEY:

19 Q. Just one question.

20 What is the Colorado spacing for the Jurassic and
21 deeper formations?

22 A. The Alkali Gulch is 640s. It's my understanding,
23 640s.

24 As far as the other pools, I'm not sure, I'm not
25 sure.

1 COMMISSIONER BAILEY: That's all I have.

2 EXAMINATION

3 BY CHAIRMAN LEMAY:

4 Q. No statewide in Colorado for deep?

5 A. I'm not sure. I'm going to have to refer that to
6 Alan Alexander. He's my regulatory expert on Colorado.
7 He'll be up next.

8 CHAIRMAN LEMAY: Commissioner Weiss?

9 EXAMINATION

10 BY COMMISSIONER WEISS:

11 Q. Yeah, I had one other question, perhaps. I know
12 there's been some exploration units put together up there.
13 Have you thought about that as a vehicle to accomplish
14 this?

15 A. Well, basically that's what we're trying to do,
16 and this is a good example. We're seeking support from
17 every interest owner, working interest owner, just as an
18 example, to support us voluntarily by way of farmout or
19 participation, and we're hopeful that once we establish
20 permanent 640-acre spacing that that will be an incentive
21 and to help us take this risk out there.

22 So we are definitely seeking voluntary means, and
23 the farmout route is the best way to go, because it
24 really -- it's -- companies like to do that generally, if
25 they don't have the budget or, you know, funds to take the

1 risk with you, and go ahead and support us by way of a
2 farmout.

3 So we are attempting to do that on a voluntary
4 basis.

5 Q. This will encompass how much acreage if you're
6 successful, your hypothetical example?

7 A. Well, again, we're chasing deep gas prospects
8 that are quite large, 17 to 30 sections. So we're hoping
9 that we can at least put together, you know, 17 sections
10 around a wildcat, knowing that the odds are that it will be
11 a dry hole, but that's why we're hoping that industry will
12 support us adequately. They should. I know Burlington
13 would.

14 But some companies have different ways of doing
15 business, and they're pretty tough to deal with. So...

16 COMMISSIONER WEISS: That's all I've got. Thank
17 you.

18 THE WITNESS: Okay.

19 CHAIRMAN LEMAY: Just a couple quick ones, Mr.
20 Strickler.

21 FURTHER EXAMINATION

22 BY CHAIRMAN LEMAY:

23 Q. You mentioned that you're trying to get farmouts.
24 I assume that typical farmouts, you're going to earn the
25 acreage in a proration unit, so there's an advantage for

1 you to get --

2 A. Exactly.

3 Q. -- all the acreage in a 640.

4 When you start getting outside that on
5 development wells, you mentioned if they had a quarter
6 interest they would participate to their quarter interest
7 or whatever interest they had.

8 A. Exactly.

9 Q. Or you would earn an undivided interest in their
10 interest?

11 A. That's correct. For example, the illustration I
12 gave you, let's say Company B has 160 acres. You would
13 earn -- Let's say Burlington would earn 75 percent of their
14 acreage, and they would retain 25 percent of their acreage,
15 and they would participate on a proportionate reduction.

16 Q. You would carry them for the 25 on the --

17 A. On the initial well --

18 Q. -- initial 640 and they would pay their way?

19 A. On the initial well we would carry them, you
20 know, give them an override. And then after a 100-percent
21 payout, for example, they would back in as to their 25-
22 percent working interest. On the offsets they would have
23 the opportunity to participate as to their retained 25-
24 percent interest. So if they had --

25 Q. What's your nonconsent provision on offsets? Is

1 that part of the farmout? Is there a --

2 A. Yes, it's -- A typical nonconsent penalty for a
3 deep, high-risk play risk like this is 400 percent. In
4 some cases it's much higher. I can give you an
5 illustration in the offshore where it's 1000 percent.

6 Q. But you're in there, you're out --

7 A. Exactly right, especially your initial well on an
8 offshore block, which is a 5000-acre block, offshore
9 Louisiana, or 5760-acre block offshore Texas, which is a
10 nine-section square, you're in or out, that's exactly
11 right.

12 Q. So the --

13 A. I wish this was the offshore, but it's not.

14 Q. We do too believe me.

15 I think that -- The infill, you would be
16 agreeable, Frank's question, to infill drill if you weren't
17 drilling -- if you weren't draining the 640?

18 A. That would make common sense, to downspace.

19 Q. Okay. That's, I think, the only questions I
20 have.

21 The question on the nonconsent provisions was, I
22 think the force pooling was mentioned. We certainly hear a
23 lot of those. It would be nice to have those settled by
24 the nonconsent provisions as an operating agreement if --

25 A. Sure.

1 Q. -- that is your current intent.

2 A. Yes, we'd like to get that voluntarily if we
3 possibly can. We don't like to force-pool. Sometimes we
4 don't have any choice.

5 Q. Right, and that's the other part. Within the
6 spacing unit themselves if you have a party that won't farm
7 out, do you have an existing agreement for nonconsent
8 provision, or do you have to come to the force pooling
9 hearing?

10 A. We'd have to research each section, but most --
11 This is an old producing area. The old operating
12 agreements are depth-specific, and they wouldn't cover the
13 deep rights. So you would have to go to force pooling.

14 You just -- You would have the Mesaverde covered
15 or the PC covered, but it wouldn't apply. If they don't
16 want to cooperate with you, they probably won't volunteer
17 to, you know, include the deep rights in the old operating
18 agreement. I'd love for them to do that, but...

19 Q. And that was my final question. Are generally
20 your shallow rights and deep rights the same, or have they
21 segregated those?

22 A. There's a lot of segregation, we're finding a lot
23 of segregation. In this particular area there's a lot of
24 consistency with the shallow and deep rights.

25 But in other areas that we've worked, it's

1 completely different. The horizons have been severed quite
2 a bit. There's also a lot of overrides and back-ins that
3 are lingering out there that really impacts our economics
4 and knocks down our net revenues and hurts our rate of
5 return. We have some more problems in that area that, you
6 know, you can't help us with.

7 CHAIRMAN LEMAY: Any other questions? If not,
8 the witness may be excused. Thank you.

9 MR. KELLAHIN: That completes our direct
10 presentation, Mr. Chairman.

11 CHAIRMAN LEMAY: Thank you, Mr. Kellahin.

12 Mr. Carr?

13 MR. CARR: Thank you, Mr. Chairman. At this time
14 we would call Pam Staley, and we have exhibits.

15 PAMELA W. STALEY,

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

18 DIRECT EXAMINATION

19 BY MR. CARR:

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

22 A. Yes, my name is Pamela Staley.

23 Q. Where do you reside?

24 A. I reside in Denver, Colorado.

25 Q. By whom are you employed?

1 A. I'm employed by Amoco Production Company.

2 Q. What is your current position with Amoco
3 Production Company?

4 A. I'm currently a petroleum engineer in the
5 regulatory affairs area.

6 Q. Ms. Staley, have you previously testified before
7 this Commission?

8 A. Yes, I have.

9 Q. At the time of that testimony were your
10 credentials as a petroleum engineer accepted and made a
11 matter of record?

12 A. Yes, sir.

13 Q. Are you familiar with the Application filed in
14 this case on behalf of Burlington Resources Oil and Gas?

15 A. Yes, I am.

16 Q. And are you prepared to comment on the proposed
17 rules for Amoco Production Company?

18 A. Yes.

19 Q. Are the witness's qualifications acceptable?

20 A. Her qualifications are acceptable.

21 Q. Ms. Staley, does Amoco support the exploration
22 for deep gas reserves in the San Juan Basin?

23 A. Yes, we do.

24 Q. Does Amoco concur with the concerns expressed by
25 Burlington about rules which are impeding the development

1 of these reserves?

2 A. Yes, we have similar concerns.

3 Q. Does Amoco concur with the recommendation that
4 the San Juan Basin be spaced on 640-acre spacing units for
5 deep gas development?

6 A. Yes, we believe that operators should be able to
7 develop these reserves on 640-acre spacing units.

8 Q. What are Amoco's concerns about basinwide 640-
9 acre development?

10 A. Our primary concern is that we just do not have
11 enough information available at this point on these
12 formations to support the 640-acre spacing for the Basin in
13 its entirety.

14 Q. Is Amoco prepared to make recommendations to the
15 Commission on how operators could be permitted to develop
16 these reserves on 640-acre spacing units, based on the
17 limited data now available on the reservoir?

18 A. Yes, we're prepared to do that.

19 Q. Have you prepared exhibits for presentation in
20 this case?

21 A. Yes.

22 Q. Let's go to what has been marked for
23 identification as Amoco Exhibit Number 1. Can you identify
24 and review that for the Commission?

25 A. Yes, Amoco is here in support, we do support the

1 exploration in the deep zones very strongly. As the second
2 largest gas producer in the state, we're a major
3 stakeholder, and we do want to see future development out
4 here.

5 We do realize that there is an economic factor in
6 the deep drilling, which makes one want to support that
7 larger spacing. It's expensive, as we've seen, it's risky,
8 and we do believe that larger spacing can actually prevent
9 unnecessary drilling and provide for orderly development.
10 But it also provides an opportunity for data collection as
11 well.

12 You know, we believe that we should space and
13 locate these wells on what we know, not what we want.
14 Specifically, we know very little about the formations that
15 are deep. I think we alluded to very few penetrations out
16 here, and to start out with such a large spacing, I think,
17 historically is not what we've done in New Mexico. We've
18 often started smaller and moved to larger spacing, as it's
19 necessary. If the data then shows that that spacing is
20 warranted, then we can space it at that time.

21 We currently just don't have enough data to
22 compel us to space such a large area, and that's really why
23 we wanted to come in and make some cautionary statements
24 today to you.

25 Q. When we look at this exhibit, the last entry is

1 that in fields that were noted in the Application, much
2 data and wells were assembled before spacing was
3 established. Basically what do you mean by that?

4 A. Well, we were looking specifically toward the
5 example fields that the Applicant brought in, and
6 specifically in Barker Creek we kind of talk about one
7 formation up there, but we actually have three additional
8 formations that have been now reduced to 320- and 160-acre
9 units, which just shows that even in the tight case we
10 really were not correct to begin with and that perhaps we
11 should have started smaller and incorporated more areas,
12 rather than going in the opposite direction.

13 Q. When we talk about Barker Creek, that's the pool
14 that we've been addressing as one of the analogous fields
15 on the north and west portion of the exhibit that's
16 displayed on the easel; is that right?

17 A. That's correct.

18 Q. That is spaced on 640 acres?

19 A. One of the formations there is spaced on 640
20 acres. In fact, the Ismay, I believe, is spaced on 160,
21 the Desert Creek on 320 and the Akah Upper Barker Creek is
22 on 320 as well.

23 Q. So there are actually four pools in the Barker
24 Creek area?

25 A. That's correct.

1 Q. Were they all initially spaced on 640 spacing?

2 A. I believe they were.

3 Q. And recently the spacing in three of those has
4 had to be reduced; is that right?

5 A. That's correct.

6 Q. And that's one of the three analogous pools
7 that's being displayed?

8 A. That's correct.

9 Q. Let's go to Exhibit Number 2. Would you identify
10 and review that?

11 A. Well, this exhibit really, I think, exemplifies
12 our concerns. We do feel it's very, very premature to
13 space such a large area on so little data. You know, I
14 think the Applicant made the point that we really don't
15 have any significant data whatsoever in the Basin proper to
16 consider.

17 I think we need to move cautiously in
18 establishing a widespread rule, and that extrapolation from
19 three pools or three fields that are actually over the hump
20 and outside the Basin, I think, is a very, very long
21 stretch into the deep Basin. While it may be the only data
22 that we have, I don't think that that tells us we need
23 different spacing; I think it tells us we need more data.

24 Q. When you talk about the analogous pools that are
25 shown on the exhibit on the easel, in fact, that exhibit is

1 very similar to the exhibit that has been marked Amoco
2 Exhibit 3; is that right?

3 A. That's correct, it's very similar.

4 Q. If we use the one that is on the easel, your
5 concern is, using the three pools shaded in yellow as the
6 basis for spacing the entire reservoir; is that what you're
7 saying?

8 A. That's correct.

9 Q. The three pools that are the analogous pools are,
10 in fact, on the Four Corners platform; isn't that right?

11 A. That's correct.

12 Q. And they're across the hogback fault system; is
13 that not correct?

14 A. That's right.

15 Q. Is that what you mean by describing the use of
16 this data as a stretch?

17 A. Yes, I think it's a very far stretch to again
18 come all the way into the Basin and do a basinwide change.
19 I think we just need to get a few more data points, using
20 the right information perhaps this time. Perhaps last time
21 we didn't space our wells -- or put our wells in the right
22 places, but we have better ways to figure out how to do
23 that now, to get more data.

24 Q. When you look at the deep formations, do you see
25 large blanket deposits, or do you agree with Mr. Lane that

1 basically you don't have large blanket sands in the area?

2 A. Well, Amoco, has actually -- We have shot 3-D
3 seismic out here in the deep Basin, as well as we are the
4 major owner in Ute Dome, on part of Ute Dome, and so we've
5 shot similar seismic over there.

6 These data sets look very different. They don't
7 show blanket accumulations in the deep Basin. We're
8 looking at more algal mounds in one area, and those show to
9 be on much smaller spacing. You know, the 3-D seismic
10 really makes the development of these much more feasible
11 than it ever was before. We can actually see them now. We
12 couldn't see them on 2-D.

13 And from what we see on our seismic, we don't
14 believe that closeology is going to hurt you. We think
15 that, you know, if someone snuggles up close to you, most
16 likely they will not be able to drill into these features.
17 Now, that doesn't mean every feature in the Basin is that
18 way, but we already see a situation similar to what
19 occurred in the Barker Creek area. We can already see that
20 on our seismic.

21 Q. Can these algal mounds be economically developed,
22 in your opinion?

23 A. Very much so. In some of the analogies in other
24 areas, not necessarily in the Paradox Basin but other algal
25 mound features can be very, very high in production, up to

1 40 to 90 BCF per well. So they can be very profitable on
2 160 or even less, but they're very small features at times.

3 Q. Have you seen more than one algal mound in 640-
4 acre spacing units?

5 A. Yes, we've seen several more than that at times.

6 Q. When you look at the deep gas formations in the
7 area of the analogous pools in, say, the Ute Dome area, how
8 do they look when you compare them to the formation as you
9 move across the Basin, based on the data that you have?

10 A. Based on the seismic we see, looking at those
11 zones, they look distinctly different. We're seeing
12 blanket-type accumulations up in the Ute Dome area.
13 They're very flat entities. We see -- When we come into
14 the deep Basin on the seismic that we have proprietarily
15 shot, we see very discrete algal mound almost pinnacles
16 that we can see.

17 So the seismic looks very different, and this is
18 one of the few looks, I'll admit, that we've got out of the
19 Basin, but it does give a good example, I think, of where
20 there's a significant difference between the data that the
21 Applicant is trying to stretch clear into the Basin.

22 Q. On the one hand, you're interested in Rule
23 changes to enable 640-acre development; that's correct, is
24 that not?

25 A. That's correct.

1 Q. On the other hand, you have concerns about
2 inadequate data to justify basinwide spacing?

3 A. Yes.

4 Q. Could you refer to Amoco Exhibit Number 4 and
5 explain to the Commission how Amoco believes that operators
6 could be permitted to develop these deep sands on 640-acre
7 spacing units and still assure there is sufficient on the
8 subject reservoirs to justify these larger units?

9 A. Yes. You know, what we're recommending here is
10 approval of what I would call an exploratory spacing order.
11 And, you know, we've tried to come here, and we do not want
12 to discourage what Burlington and others may want to do out
13 here, because we really do want to see this Basin drilled.

14 On the other hand, we're thinking perhaps some
15 type of an exploratory order where you could go in,
16 designate your prime candidate on 640 acres, you would be
17 able, then, to pool on that 640, and you would be able to
18 address your concerns of offset closeology, if you would
19 have it.

20 Once you had drilled that well and got some
21 reservoir information on it, you would need to bring that
22 data back to the Commission and show what you felt the
23 actual spacing should be, and that would get us to the
24 point where we would have what really looked like what we
25 had.

1 Now, another facet of this exploratory spacing
2 would be to designate -- and this is not something you
3 would have to do, but you could come in and designate a
4 nine-section area surrounding your first 640, you could do
5 that concurrent with the time you proposed the first well,
6 or later if you wanted to.

7 What this would do is reserve on 640-acre spacing
8 that nine-section area around you. Now, that wouldn't
9 reserve it from drilling by other parties, but what it
10 would do would be to have those parties drill it on 640-
11 acre spacing, to maintain that until enough data was
12 gathered.

13 So it would keep people from crowding up. You
14 know, if you do go out and there and get a 40-BCF well on
15 160, you don't want a lot of people crowding up to you, and
16 we understand that. What this would do is give an interim
17 period where you would be able to reserve areas of specific
18 interest to you on 640 acres for a period of time until we
19 determined what the actual spacing should be.

20 We kind of think this is a compromise, what you
21 have. We think it's a way to kind of step into what may be
22 the proper spacing out here. You know, we're at the point
23 where we don't know. We have some data that says perhaps
24 640 is not appropriate, but perhaps the Applicant feels
25 they have data to support the other. This gives them, I

1 think, an opportunity to come out, to force pool Amoco if
2 they want to, to create an area where they can set up their
3 640-acre spacing, but not an entire Basin change, which is
4 a very large stretch.

5 Q. Now, Ms. Staley, if I understand what you're
6 recommending, if Burlington wanted to develop any tract in
7 the Basin on 640 acres, they could do that by coming in and
8 proposing development on a 640-acre spacing unit,
9 exploratory spacing unit; is that right?

10 A. That is correct.

11 Q. And they would be able to force pool on that
12 basis?

13 A. Yes, they would.

14 Q. And Mr. Strickler's concerns about people taking
15 a free ride, then, would be eliminated, they would have to
16 bear their proportionate share of the risk within that 640?

17 A. That is correct. They might have the free ride
18 on the seismic, which the company might choose to do up
19 front, and I think that was part of Mr. Strickler's -- But
20 in the areas that we can control as a company, they would
21 be able to do that.

22 Q. Burlington would then be able to reserve or
23 designate a one-section buffer zone around that 640; is
24 that correct?

25 A. That's correct.

1 Q. And then within a set period of time after they
2 had been able to drill, complete and obtain data on the
3 well, they would come back and present that to the
4 Division, and at that time with data, appropriate spacing
5 rules could be adopted; is that what you're proposing?

6 A. That's correct.

7 Q. Now, there was discussion a few minutes ago about
8 what happens if you discover that, in fact, the data
9 warrants a smaller spacing unit. Would you agree that
10 infill drilling would be appropriate at that time?

11 A. Yes.

12 Q. But at that time you would then have one large
13 tract infill developed but not change the entire spacing
14 for the Basin?

15 A. That's correct.

16 Q. If the only objective was to spread risk for
17 development of oil and gas, in fact, you could develop
18 everything in New Mexico on 640-acre spacing; isn't that
19 fair to say?

20 A. Yes.

21 Q. Isn't your concern that while you go forward with
22 larger spacing units, at some reasonable time there has to
23 be technical data to support the rules?

24 A. I believe it does. And I would envision that we
25 may see many of these exploratory units out here perhaps

1 concurrently. And at some point it may be appropriate to
2 join those together and say what we're seeing is pretty
3 much the same, and that's the point to come forward and
4 space larger areas.

5 Q. And that would be based on data?

6 A. That would be based on data.

7 Q. Not on what you characterized as your wants?

8 A. That's correct.

9 Q. Would you summarize Amoco's position in this
10 case?

11 A. Amoco does not want to slow down or to adopt
12 rules that will permit the development of the Basin. We do
13 want drilling to occur out here. We're a large
14 stakeholder.

15 However, we still believe that the 640-acre
16 spacing is premature. We have very little data, as I said
17 before, and I just think we need to move very slowly.

18 Our compromise position would be the exploratory
19 spacing order where we would recommend to accommodate the
20 need for development and yet not -- to develop that with
21 the data in these rules and not change the rules before we
22 have enough information to do that.

23 Q. Are exploratory units of this nature used in any
24 other state that you're aware of?

25 A. Yes. In fact, I have taken the liberty of

1 penning most of this -- some of the language that I
2 provided earlier to Burlington from a Wyoming rule, and it
3 works very well for their deep gas there.

4 Q. Were Amoco Exhibits 1 through 4 either prepared
5 by you or compiled at your direction?

6 A. Yes, they were.

7 MR. CARR: At this time I would move the
8 admission of Amoco Exhibits 1 through 4.

9 CHAIRMAN LEMAY: Without objection, those
10 exhibits will be entered into the record.

11 MR. CARR: And that concludes my direct
12 examination of Ms. Staley.

13 CHAIRMAN LEMAY: Thank you, Mr. Carr.

14 Mr. Kellahin?

15 MR. KELLAHIN: Thank you, Mr. Chairman.

16 EXAMINATION

17 BY MR. KELLAHIN:

18 Q. Ms. Staley, let me ask you some questions about
19 the exploratory unit concept. You say your example is out
20 of Wyoming?

21 A. Yes.

22 Q. Does Wyoming utilize what New Mexico utilizes in
23 terms of managing its pools by spacing unit concepts?

24 A. They do not space first; is that what you're
25 asking?

1 Q. No, I'm just asking if they have the concept of
2 spacing units in Wyoming where you would have one well
3 dedicated to a spacing unit of a certain size.

4 A. Yes.

5 Q. Do they have 640 gas spacing for the deep gas in
6 Wyoming?

7 A. Yes, they do, once the spacing has been
8 established, yes.

9 Q. The exploratory unit concept in Wyoming, is that
10 authorized by their legislature through some statutory
11 enactment?

12 A. That I don't know, Mr. Kellahin.

13 Q. Can you, in your efforts to form a voluntary
14 exploratory unit of multiple spacing units in Wyoming, use
15 Wyoming's compulsory pooling statutes to force pool those
16 interest owners that won't commit to the exploratory unit?

17 A. No, they're not set up that way. However, they
18 do have -- They're not set up to use that as property
19 rights in Wyoming.

20 Q. You recognize in New Mexico we can't force pool
21 for exploratory units?

22 A. Yes.

23 Q. The data well problem is a classic exploration
24 problem, is it not, in terms of the fact that we have to
25 have an environment that encourages drilling the wells to

1 get the data, right?

2 A. Yes, sir.

3 Q. And you recognize that it is too risky to get the
4 data on 160-acre spacing?

5 A. I guess I would disagree with that in some
6 respects because, you know, as you shoot 3-D seismic out
7 here, you have a much better picture of this Basin, and you
8 actually will take those risk factors and reduce them
9 significantly, because you suddenly see the feature. And
10 when you suddenly see that feature, your risk -- part of
11 that risk goes way down.

12 Q. And as I understand, your hypothesis is that once
13 you or Burlington spends the dollars to get the 3-D seismic
14 analyzed, developed and understood, that you have to come
15 to the Commission, share all that data with anyone involved
16 in this hypothetical nine-section area, right? This is
17 done with notice and hearing?

18 A. Well, you have to provide the data that would
19 support your application, or you have to provide the data
20 from the actual well.

21 Q. Well, we're talking about getting temporary 640
22 spacing under your hypothesis?

23 A. No, I wouldn't necessarily say that you would
24 need to come in and expose that information.

25 Q. I read your handout that you faxed to us. I had

1 understood it meant to say that before the well is even
2 drilled you had to come to the Division and get a site-
3 specific area approved for 640 spacing on a temporary
4 basis?

5 A. Well, that's correct. I mean, you would come in
6 and designate what area you wanted, that is correct.

7 Q. And I'm going to designate that after notice and
8 hearing.

9 A. Well, you can designate that area -- I mean, we
10 did not get the basis for how you would have to designate
11 that area.

12 Q. I understand, but your example that was sent to
13 me said after notice and hearing, then the Division could
14 approve Burlington's request for a nine-section area in
15 which to explore?

16 A. Yes. And you know, I think the rule probably
17 still needs some work. The example that I sent to you, you
18 know, specifically I think Alan called me on the 25th of
19 March [sic] about this, and we're at hearing three weeks
20 later.

21 I guess perhaps this type of discussion would
22 have been better in a San Juan Basin operators' meeting.
23 It seems -- You know, I think there's conceptually
24 something that we can do here to help Burlington and others
25 drill their deep wells, but I think we both need to work

1 towards how that rule would work. And I would be the first
2 to tell you that that is a draft, and one of the reasons we
3 didn't present it today is because I think it's something
4 that we need to work with you all on.

5 Q. Have you shared that draft or this concept of a
6 temporary rule with anyone else, other than Burlington?

7 A. No, I have not. In fact, the only reason I did
8 that is because I wanted to let Mr. Alexander know that,
9 you know, we were not protesting, we wanted to work with
10 them.

11 And in fact, you know, in calling them to talk to
12 them about this, I said, you know, Here's a way that we
13 think you all can do what you want and address our concerns
14 of really taking the entire Basin to a different level of
15 spacing.

16 And so I found it a way to perhaps try and
17 accommodate everyone, to get some development drilling done
18 out here.

19 Q. Are you aware that Burlington has repeatedly
20 contacted Amoco in an effort to get Amoco to participate in
21 drilling these deep gas wells?

22 A. Yes, we've been in on ongoing negotiations on
23 this, I believe, for about two years and are still in those
24 ongoing negotiations.

25 Q. Am I correct in understanding that Amoco does not

1 have funds or plans available in which you propose to drill
2 any of these deep gas wells in the next two years?

3 A. You know, Burlington is way ahead of us in that.
4 We're just starting to take a look at our seismic features
5 and put those ideas together. So I would say you're
6 correct. Right now, we do not have any wells specifically
7 on the block to drill.

8 But as you -- I don't know if you're privy to
9 this or not, but with Burlington we have been talking about
10 some rather specific type of locations to drill. So we're
11 kind of behind Burlington in this process.

12 Q. Do you have the funds available to participate in
13 a well drilled by Burlington on 640 acres?

14 A. For the appropriate well and the appropriate
15 project, yes, I think we could make funds available.

16 Q. You wouldn't propose to do this on 160 acres,
17 would you?

18 A. Yes.

19 Q. On 160 acres? You're prepared to commit funds on
20 160 acres to have the initial well drilled?

21 A. I think that's why we're here today.

22 Q. And your hypothesis is that we should drill the
23 wells on smaller spacing and then increase the size of the
24 spacing units if we have the data to show it later?

25 A. No.

1 Q. You're aware that in the Basin Dakota we went
2 from 320s to an infill concept with 160s; that worked fine,
3 didn't it?

4 A. That worked fine.

5 Q. And it worked fine in the Mesaverde, didn't it?

6 A. Yes, and that's why we propose this possibility
7 of doing something where we could drill on the 640. We
8 haven't been approached to provide funds on a 160 yet, to
9 my knowledge.

10 Q. Well, let me understand how the 640 is supposed
11 to work. We come in here and we get temporary 640
12 spacing --

13 A. Uh-huh.

14 Q. -- and that would authorize us, then, to force
15 pool on a 640 spacing unit and drill a well?

16 A. Yes.

17 Q. Okay. What happens to the spacing unit if after
18 the fact the data demonstrates that you're only draining
19 320 acres? What happens?

20 A. Have you force pooled at this point, or have
21 you --

22 Q. I've force pooled you --

23 A. You've got everybody --

24 Q. -- for 640.

25 A. -- together? Okay.

1 Q. Yeah.

2 A. At this point, then, you're going to determine
3 what the proper spacing is.

4 Q. Let's assume it's 320.

5 A. Okay, at that point --

6 Q. What happens?

7 A. -- you have the opportunity to drill an infill
8 well. You've pooled everyone together; we all share the
9 same ownership under this 640.

10 Q. All right, so --

11 A. And now we can all decide to drill a second well
12 in our --

13 Q. All right, you're talking about an infill
14 concept. I don't have to downspace my 640s?

15 A. No.

16 Q. Okay. Are you familiar with the Gavilan-Mancos
17 spacing cases before the Commission in the Oil Pool in the
18 Mancos where we went from 40s to 320s to 640s?

19 A. No, I'm not.

20 Q. You're not aware of how complicated all that was
21 to change spacing patterns after the fact?

22 A. No.

23 Q. Tell me again, now, how this temporary concept is
24 supposed to work. How is temporary 640 spacing supposed to
25 work? Give me a hypothetical, how I do this.

1 A. You designate your well that you want to drill.

2 Q. Okay, I've done that.

3 A. All right. You come in and you try to
4 voluntarily put everyone together under the 640.

5 Q. Okay, Mr. Strickler has tried to do that, and
6 he's failed.

7 A. Okay. You force-pool everyone under the 640.

8 Q. All right. Do I get my temporary 640 after
9 notice and hearing?

10 A. Yes.

11 Q. So first of all, I have to come in --

12 A. You have to get that, I apologize.

13 Q. All right.

14 A. Yes, you have to come in and get your 640.

15 Q. I have to come in and do that, and you have an
16 opportunity to oppose the size and the shape of that area?

17 A. Yes.

18 Q. And I would have to disclose to you my
19 proprietary 3-D seismic analysis in order to justify the
20 size and the shape of the area to be spaced?

21 A. You would have to convince the Commission that
22 there is enough data there to draw on a 640, yes.

23 Q. Okay, in a public hearing process. And so those
24 parties to be pooled later get to enjoy the opportunities
25 on my bank account to know the results of my 3-D effort

1 before they make decisions about participating?

2 A. Well, that's typically how we've looked at
3 exploration in other states. I mean, we typically do have
4 to encourage people to drill with our concepts. Most of
5 the farmouts, et cetera, that I've been involved with,
6 people do bring their data to them, show it to them, and
7 you do have -- you know, you're going to lay that stuff out
8 to encourage somebody to drill the well. So I think that's
9 fairly standard procedure.

10 Q. Is there anything in the current Division General
11 Rules that is like your proposed temporary rule? This
12 would be unique, isn't it?

13 A. It would be unique. It's somewhat similar to
14 some of the work that we've done in the Coal.

15 But this is also the first time that we have
16 looked -- This Basin is rather odd from the standpoint that
17 we have not done much deep exploratory drilling out here,
18 and --

19 Q. Are you familiar with how we get the 320 Coal gas
20 spacing in the San Juan Basin?

21 A. Yes.

22 Q. Are you aware that that was done with two
23 interference tests in the Cedar Hills area that Amoco put
24 on?

25 A. Yes.

1 Q. And we spaced the entire Basin for coal gas based
2 upon two interference tests?

3 A. Yes.

4 MR. KELLAHIN: No further questions.

5 MR. CARR: I have a follow-up.

6 CHAIRMAN LEMAY: Mr. Carr?

7 FURTHER EXAMINATION

8 BY MR. CARR:

9 Q. Ms. Staley, based on the data that you have seen
10 on the San Juan Basin, do you believe at this time there is
11 technical support concerning well performance and drainage
12 to support the southeast corner of this Basin under a 640-
13 acre spacing unit?

14 A. No, there is not..

15 Q. If your temporary spacing unit concept was
16 adopted, would there be technical data to support 640-acre
17 spacing once it was established in areas of the spacing?

18 A. Yes.

19 MR. CARR: That's all I have.

20 CHAIRMAN LEMAY: Questions? Commissioner Weiss?

21 EXAMINATION

22 BY COMMISSIONER WEISS:

23 Q. If I understand it right, the yellow units up
24 there were developed on 640s, right?

25 A. Yes, sir.

1 Q. They were explored and then downsized after they
2 got the data.

3 And what I don't follow is how you get data
4 beforehand, other than with the 3-D, to propose 160s.

5 A. Well, you're going to get some permeability data,
6 some -- You're going to get a look underground when you
7 drill that well, and you can come to a much better
8 understanding through some simple testing, which you're
9 going to do on an exploratory well to determine what you've
10 got. You'll do some reservoir testing at that point, which
11 can give you a very good view of what that well should look
12 like. And I think you can know pretty quickly if you do
13 the right testing.

14 Q. And at that time you could decide. If it was
15 160s, we heard that you wouldn't develop it because there's
16 not enough size?

17 A. That's right.

18 Q. And -- But you might like 320s. So what is the
19 problem with, then, designating 320s versus the other way
20 around?

21 A. Going first and becoming smaller?

22 Q. Yeah.

23 A. I think the problem that I have is just that we
24 don't have -- I mean, we don't have enough data to really
25 say it's either way.

1 Q. Oh, yeah --

2 A. And it's not broke --

3 Q. -- it's not broke, right?

4 A. Right.

5 Q. Yeah, that's the way I see it.

6 A. I mean, it's...

7 Q. I don't see which comes first, the chicken or the
8 egg, you know, other than the 3-D, and that's a good point.

9 So it appears to me that it's a good idea to get
10 wells drilled, which you guys agree to...

11 A. Right.

12 Q. And that's the first priority?

13 A. As long as we're cautious in the way that we do
14 it, I would agree with you.

15 COMMISSIONER WEISS: That's my only comment.

16 CHAIRMAN LEMAY: Commissioner Bailey?

17 EXAMINATION

18 BY COMMISSIONER BAILEY:

19 Q. Are you proposing any kind of time limitation for
20 this temporary pool rule or any review date or volume of
21 information or --

22 A. Well, I would leave the bearing of the volume of
23 information upon the applicant to come in and make their
24 case, certainly.

25 But from a time standpoint, we figure probably

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1 around six months you should have some feel, with the
2 amount of testing you would do on the initial well, to have
3 a feel for what kind of a well you've got. And you may not
4 have a feel for your entire trend at that point, but you
5 won't until you drill other wells.

6 So we were looking at perhaps six months, which
7 you could extend if you were still testing. Let's say you
8 were doing some long-term reservoir pressure testing,
9 something like that on the well.

10 You know, routinely with exploratory wells we're
11 going to do a lot more testing than we do with development
12 wells, and that may take some time, and I would envision in
13 the rule the Commission allowing some variance there so
14 that the applicant would have the time to get their testing
15 done if they made their case.

16 But initially we're looking at about six months
17 to make that decision, somewhere, I would say, between 6
18 and 18 months to make some decisions.

19 COMMISSIONER BAILEY: That's all I have.

20 EXAMINATION

21 BY CHAIRMAN LEMAY:

22 Q. This gets kind of philosophical. We need to
23 throw it out, Ms. Staley.

24 You're talking about the evolution of spacing.

25 As I understand it, Amoco's position would be to go from

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1 small to large, Burlington wants to go from large to small.

2 You make a mistake -- The Gavilan was brought up;
3 it's an oil pool. But you make the mistake of drilling
4 wells on a small spacing. How do you correct that? You
5 can't undrill a well. You have this conglomeration of
6 wells on 160s, and we'll assume, then, information shows
7 that, as it develops, that you could actually drill 640
8 acres or 320.

9 Don't you run into a situation of waste, or is
10 your assumption that the information you'll get early will
11 be sufficient to be able to accurately space that pool?

12 A. Well, I think that's why we favor the -- that's
13 why we do favor this. That's why we favor doing the 640
14 but doing it limited areas. I think we recognize some of
15 those limitations. It's limited, some of the drilling in
16 the Basin, on 160.

17 I think it's important that we give the
18 opportunity for all the things that people want to make
19 these wells get drilled on 640. And then you avoid the
20 issue that you're talking about, you avoid that going
21 upward.

22 And so I think this is kind of an area that if we
23 are allowing it to step into the Basin, that's much better
24 than saying it all looks the same out here, it's all 640
25 spacing, it's all draining 640 acres, and starting from

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1 there.

2 I just think we just aren't there yet.

3 Q. What would prevent Amoco -- Well, soon we have
4 the basinwide 640, and then you end up with finding some
5 mounds that are two or three, maybe, on a 640. What would
6 prevent Amoco from then coming in and requesting a second
7 or a third well on the proration unit to drain these mounds
8 that weren't previously drilled?

9 A. Nothing that I'm aware of.

10 Q. Wouldn't that protect correlative rights and also
11 accomplish what your concern is, in terms of not having
12 enough information initially to go all out with the 640,
13 but the 640 doesn't really become a temporary rule in the
14 sense you can always come back in and request, in any
15 specific area or any specific field, additional wells in
16 that proration unit?

17 A. Well, I think we don't really know what the Basin
18 looks like at this point. You know, I know we've shot
19 discreet seismic traces. It sounds like Burlington has
20 shot 2-D across the Basin, but you're not seeing a lot of
21 the features on 2-D until you shoot them out in 3-D.

22 So I think at some point we will see those
23 features and we'll develop those areas, and we'll create --
24 just as we have in the entire Basin, we'll create that
25 pooling as it's appropriate.



1 But until we get a few exploratory wells in the
2 right place, I don't think we'll have any idea what we have
3 out here. And I think making a major change in the Basin
4 is just very premature.

5 Q. I guess I'm only challenging your concept of a
6 major change, the fact that if you start off with a large
7 spacing, I don't know that you're necessarily committed to
8 that, no matter what data comes in, because as data comes
9 in can't you adjust the spacing by going down? It's
10 difficult to go the other way.

11 A. Well, there's no real impetus to make you come do
12 that, necessarily.

13 Q. The hearing process is always available, isn't
14 it?

15 A. Well, I guess what I'm saying is, once you have
16 that 640 tied up, you may not want to drill that right
17 away, and you may have an area sitting there with three
18 mounds on it that you may not want to drill up, and no one
19 is going to come challenge you on it, so you're going to
20 leave those reserves in the ground for a period of time.

21 Q. Why wouldn't someone come challenge you on it?

22 A. Well, if you don't have joint ownership in
23 there --

24 Q. But you have an operating agreement --

25 A. -- or if you haven't shared --

.....

1 Q. -- and normally there is operation by less than
2 all parties -- If you wanted to drill a well on a 640,
3 you've been even -- you've been pooled or whatever, or you
4 went nonconsent or you farmed out, don't you have the
5 opportunity generally in that agreement to propose another
6 well to drill that pod that hasn't been drilled, and the
7 other operators in that 640 can then join you, farm out or
8 go nonconsent?

9 A. That's correct, yes.

10 Q. So wouldn't -- under that circumstance, you would
11 have the opportunity to develop this pod that would not --
12 that you're --

13 A. Yes, You would.

14 CHAIRMAN LEMAY: That's the only questions I
15 have.

16 Any other questions?

17 Yes, Frank?

18 MR. CHAVEZ: A couple.

19 EXAMINATION

20 BY MR. CHAVEZ:

21 Q. Pam, if Burlington's Application is approved,
22 would there be anything to prevent Amoco from perhaps
23 coming in for an exception if they have data to show that a
24 wildcat well should be spaced on 160 or 320, something
25 different than 640?

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.....

1 A. No, I think that becomes difficult at that point.
2 You know, if the operator has come in and proposed their
3 well, you're going to propose it on a different spacing.
4 But no, there is nothing to prevent that.

5 Q. Also, did I understand you correctly? I thought
6 you said something like that you thought there was still
7 room for some discussion or negotiation on an acceptable
8 exploratory spacing rule.

9 A. Right, the comment that I made was, you know,
10 this -- the period of time that we -- that Amoco became
11 aware of this as a concept to the hearing was three weeks.
12 And, you know, in looking at that time frame we were
13 looking for some way to accommodate the needs of other
14 people as well as the needs of Amoco.

15 And so I would say that kind of the rule as it
16 stands in Wyoming may not be the perfect rule for what we
17 want to do in New Mexico. And so it would be nice to have
18 some dialogue on that, involving the Commission, as well
19 as, you know, industry.

20 So I think it could still use some work.

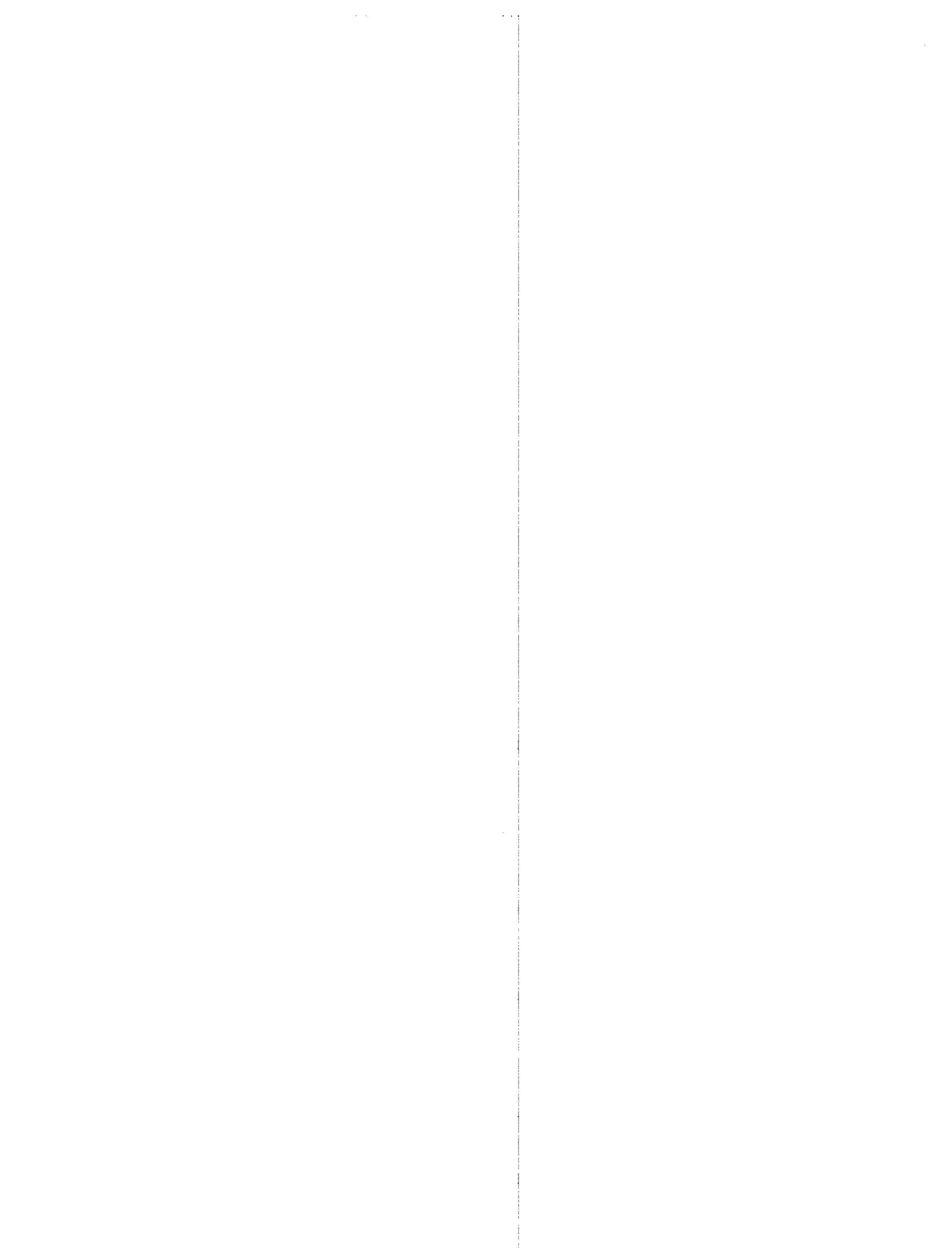
21 MR. CHAVEZ: Thank you.

22 CHAIRMAN LEMAY: Yes, Mr. Carroll?

23 EXAMINATION

24 BY MR. CARROLL:

25 Q. Pam, could you provide the Commission and



1 Division a copy of that Wyoming rule?

2 A. Yes.

3 CHAIRMAN LEMAY: Anything more of the witness?

4 She may be excused. Thank you. You're going to be running
5 close to your two o'clock.

6 THE WITNESS: I've got a 1:10.

7 CHAIRMAN LEMAY: Missed it.

8 THE WITNESS: Thank you.

9 CHAIRMAN LEMAY: Anything else in the case? Do
10 you want to sum it up?

11 MR. CARR: Do you want to sum?

12 MR. KELLAHIN: No, sir.

13 CHAIRMAN LEMAY: Do you want to leave the record
14 open for some of this information?

15 MR. KELLAHIN: We're at your --

16 CHAIRMAN LEMAY: We'd like to do it, yeah. And
17 also draft orders from each, if you would.

18 MR. CARR: I'm sorry?

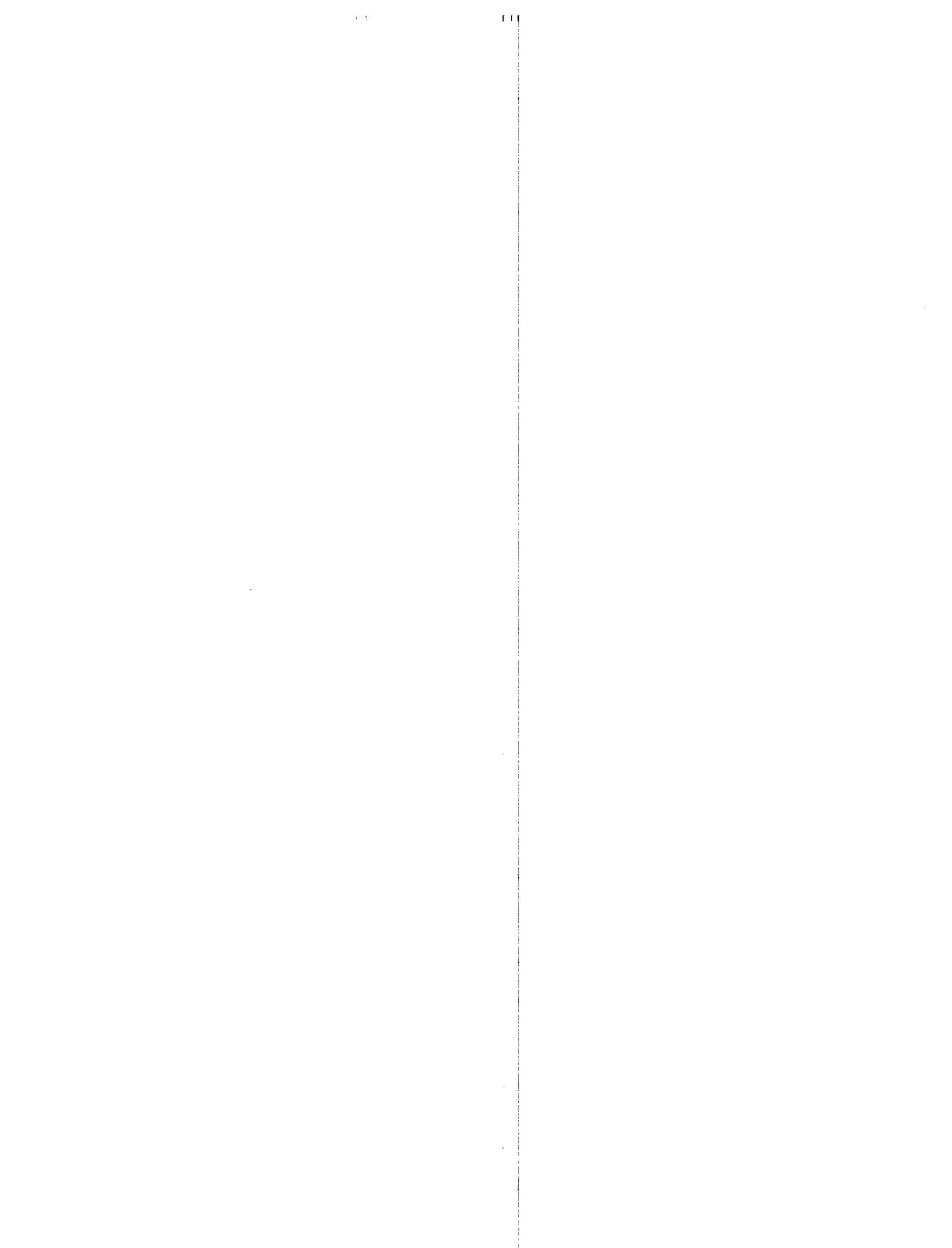
19 CHAIRMAN LEMAY: Draft orders.

20 MR. CARR: Yes, sir.

21 CHAIRMAN LEMAY: I'll leave the record open for
22 10 days. Is that enough to get the Wyoming rule, Pam?

23 THE WITNESS: Yes, sir.

24 CHAIRMAN LEMAY: Okay. Anything else in the
25 case, statements?



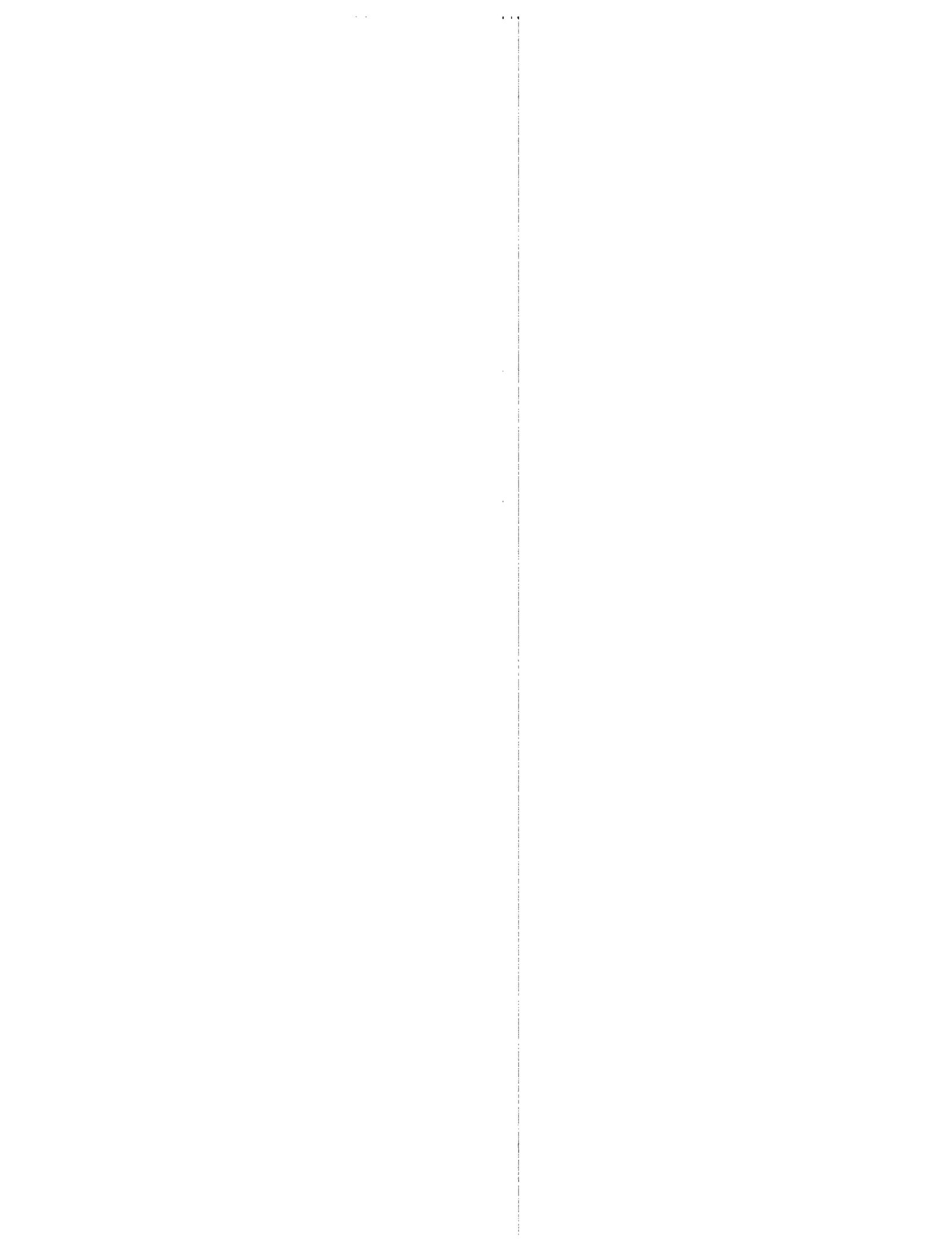
1 Let the record show there are numerous letters we
2 have received that are part of the record from a whole host
3 of companies, and they are available, certainly, for the
4 public record, generally in support of the 640-acre
5 Application.

6 Leave the order open for 10 days, draft orders by
7 the counsels. And thank you very much for your
8 participation.

9 We'll take the case under advisement.

10 (Thereupon, these proceedings were concluded at
11 12:40 p.m.)

12 * * *



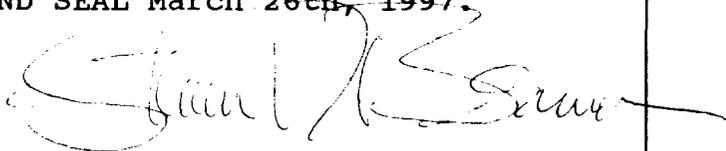
CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
 COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Commission 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 March 26th, 1997.



STEVEN T. BRENNER
 CCR No. 7

My commission expires: October 14, 1998

