



SEP 16 1996

ORIGINAL

1 BEFORE THE OIL AND GAS CONSERVATION COMMISSION
2 OF THE STATE OF COLORADO

3
4 IN THE MATTER OF THE PROMULGATION) CAUSE NO. 112
AND ESTABLISHMENT OF FIELD RULES TO) Docket 9-7-3
5 GOVERN OPERATIONS IN THE IGNACIO-)
6 BLANCO FIELD, LA PLATA COUNTY,)
COLORADO)

7 PURSUANT TO NOTICE to all parties in
8 interest, the above-entitled matter came duly on for
9 hearing at the offices of the Colorado Oil and Gas
10 Conservation Commission, Room 801, 1120 Lincoln
11 Street, Denver, Colorado 80203, on Thursday,
12 September 5, 1996.

13 BEFORE:

14 CHAIRMAN ALLAN HEINLE
15 COMMISSIONER LOGAN MACMILLAN
16 COMMISSIONER CAROLINE BLACKWELL
17 COMMISSIONER BRUCE JOHNSON
18 COMMISSIONER CLAUDIA REBNE
19 COMMISSIONER MIKE MATHESON
20 Richard Griebeling, Director
21 Lori Coulter, Assistant Attorney General
22 Patricia Beaver, Manager of Commissioner
23 Affairs
24 Michael J. Wozniak representing Cedar
Ridge, LLC
25 Carleton L. Ekberg representing
Burlington Resources Oil & Gas Company

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1 P R O C E E D I N G S

2 CHAIRMAN HEINLE: Let's go on the
3 record. I think we will skip with the roll call
4 this morning. Let the record reflect that all
5 commissioners except Commissioner Williams are
6 present, and my understanding is that Commissioner
7 Williams will not be present today. And I think we
8 have at least one commissioner that will be leaving
9 at -- Commissioner Blackwell -- eleven o'clock.

10 COMMISSIONER BLACKWELL: Yes.

11 CHAIRMAN HEINLE: Are there any others
12 that have to leave before noon? Okay. Very good.
13 Mr. Wozniak.

14 MR. WOZNIAK: Mike Wozniak for Cedar
15 Ridge, for the record.

16 Yesterday we had gotten through the
17 first part of our presentation from Mr. Logan as a
18 land witness and from Mr. Matthews on some geologic
19 issues and Mr. Baughman on the gas seep issues.

20 The commission has found the bubble map
21 that they were talking about yesterday. What we
22 would suggest and like to do -- we haven't had a
23 chance to go back and look at it -- but to present
24 that and talk about it perhaps when we get in
25 Mr. Logan's presentation when he has his bubble map,

1 and we can sort of go through it then. If that
2 would be acceptable to Director Griebeling that might
3 be the time to do it, and then perhaps have Mr. Bell
4 discuss what that map shows and have Mr. Logan
5 comment on it.

6 One housecleaning measure from yesterday
7 was -- we usually wait until the end of this, but
8 since we have a break I would like at this point to
9 move to admit the land exhibits that Mr. Logan had
10 testified to which were Exhibits A through C,
11 geologic exhibits which were Exhibits D through K,
12 and the tribal gas seep map which was Exhibit
13 Number 2.

14 CHAIRMAN HEINLE: Director Griebeling.

15 DIRECTOR GRIEBLING: I would like to
16 accommodate you, but Mr. Bell will be in another
17 meeting on water rights with respect to oil and gas
18 and that starts at nine . . . if he could just
19 review this. It was prepared by the Southern Ute
20 Tribe and I believe discussed at the last oil and
21 gas meeting.

22 MR. WOZNIAK: That would be fine. I
23 wasn't aware that Mr. Bell had a conflict. Could we
24 do that motion first?

25 CHAIRMAN HEINLE: Mr. Ekberg.

1 MR. EKBERG: No objections.

2 CHAIRMAN HEINLE: Okay. Then accepted.
3 Go ahead, Mr. Bell.

4 MR. BELL: My name is Morris Bell. I am
5 an engineer on the oil and gas commission staff.
6 This map was put together by Dick Baughman with the
7 Southern Ute Indian Tribe and it is a bubble map of
8 cum water collection for Fruitland Coal wells in the
9 Ignacio-Blanco Field. The bigger the blue bubble,
10 the more cum water that well has produced.

11 A couple of things to point out on this
12 map, the outcrop is indicated by this area through
13 here throughout, the Ignacio-Blanco Field. This is
14 a boundary between Colorado and New Mexico. Durango
15 is about right here (indicating). Some of the
16 things that we talked about yesterday, the Pine
17 River area, is right here --

18 CHAIRMAN HEINLE: Mr. Bell, you might
19 try to refer to township and ranges, otherwise it
20 won't get on the record.

21 DIRECTOR GRIEBLING: He might also
22 indicate that that map is dated August 22, '96.

23 MR. BELL: The area of the two
24 applications concerning today, those wells are
25 located at 32-11, Section 5, Section 7, and those

1 well locations are indicated by the green dots. A
2 couple of other things I guess to point out more
3 generally for the whole outcrop, the commission and
4 some of the other operators went together and were
5 investigating some of the seeps in the outcrop
6 area.

7 Some operators put together and
8 contracted Geo-seis to look for, identify, and
9 characterize gas seeps in the Fruitland Coal north
10 of the Southern Ute lands. Seeps were found in the
11 carbon junction area right here, in the junction
12 between the Fruitland Coal and Animas River and also
13 in the junction between the Fruitland Coal outcrop
14 and the Verde River, and then also a large seep in
15 the Texas Creek and Pine River junction with
16 Fruitland Coal in this area right here
17 (indicating).

18 I think the tribe has identified seeps
19 that are located on this map by the red dash lines
20 through here, and those dash lines are located at
21 32-11 and 32-12.

22 One thing I wanted to point out, there
23 does seem to be some correlation between high water
24 production wells and seeps in the near area. You
25 can see the high water production wells here in 33,

1 and 11 is offset of the seep in Fruitland Coal.

2 There are two high water production
3 wells in Section 12 and 34-10 and they offset a seep
4 in the Animas River valley where it crosses
5 Fruitland Coal. There was one place where that
6 correlation doesn't hold true and that would be the
7 junction of the Florida River basin, the Florida
8 River and the Fruitland outcrop which is located
9 between 35 and 9, and 35 and 8, and there doesn't
10 seem to be any really high water producing wells
11 south of that outcrop.

12 In the outcrop area around Pine River
13 and also in Texas Creek there are a lot of higher
14 producing -- higher water production wells in that
15 area, and there have been seeps identified in the
16 Pine River, like we talked about yesterday, and also
17 in the Texas Creek area where it cuts through the
18 Fruitland outcrop, and you can see a large swath of
19 higher producing wells in that area.

20 I guess that is -- kind of the
21 information that I would like to point out on this
22 map.

23 CHAIRMAN HEINLE: Mr. Bell, when you say
24 higher producing water wells, I assume you are
25 talking about cumulative water production.

1 MR. BELL: Yes. This map that Dick has
2 put together is a cum water production map.

3 CHAIRMAN HEINLE: What then becomes your
4 definition of a high cumulative?

5 MR. BELL: I guess what we are looking
6 at is the relative size of the blue dots on this
7 map. The bigger the dot, the more cum water that
8 that well has produced; the smaller the dot, the
9 less water is produced. So we are looking at
10 relative numbers in each area. The bigger dots in
11 the area indicate more water production for wells,
12 and the smaller dots indicate less cum water
13 production for wells in that area.

14 CHAIRMAN HEINLE: Would that generally
15 be in excess of 100,000 barrels of water or 200,000
16 barrels of water?

17 MR. BELL: This dot size here is for
18 almost one-half million barrels. That is the well
19 that is located in Section 21 of 33-11 west. That
20 gives you an idea about what the --

21 CHAIRMAN HEINLE: That is what I was
22 after. One-half million barrels is a significant
23 quantity.

24 DIRECTOR GRIEBLING: But how does that
25 compare to water production if the two wells are

1 immediately offsetting the application wells? Maybe
2 you could refer to those locations.

3 MR. BELL: For the Southern Ute 5-5,
4 which is located in Section 5, 32 north, 11 west,
5 that well is located in the northeast quarter of
6 Section 5. The cum water production is
7 approximately 64,000 barrels. The other well in
8 Section 5, which is located in the southwest quarter
9 of 32 north and 11 west, has produced about 12,000
10 barrels. So water production for those two wells is
11 relatively small.

12 CHAIRMAN HEINLE: I assume that wouldn't
13 be a timing issue, that those wells have been in
14 production for a while.

15 MR. BELL: I think those wells have been
16 in production for a while. Dick prepared a water
17 production rate map that is similar to this map, and
18 it takes the highest water production rate for a
19 month for I believe 1995, and that map looks very
20 similar to this map when you look at the relative
21 size of water production.

22 CHAIRMAN HEINLE: Okay.

23 DIRECTOR GRIEBLING: Could you also
24 refer to the well in Section 7?

25 MR. BELL: Two existing -- the Fruitland

1 Coal well is producing in Section 7, which is
2 located in the northeast quarter of Section 7, 32
3 north and 11 west, and has cumed about 79,000
4 barrels. We placed the dot for the cum for the
5 other well in Section 7.

6 There is another well in the southwest
7 quarter of Section 8 which is an offset of the
8 proposed well in Section 7. That is the Southern
9 Ute 32-11, 8-2. That is located in the southwest
10 quarter of Section 8, 32 north, 11 west, and that
11 cum water production is 31,000 barrels.

12 CHAIRMAN HEINLE: Any questions from the
13 commissioners? Any questions, Mr. Wozniak?

14 MR. WOZNIAK: No, sir.

15 CHAIRMAN HEINLE: Mr. Ekberg, any
16 questions?

17 MR. EKBERG: No, sir.

18 CHAIRMAN HEINLE: Thank you.

19 MR. WOZNIAK: May I proceed?

20 CHAIRMAN HEINLE: Yes.

21 MR. WOZNIAK: You were deep in thought.

22 CHAIRMAN HEINLE: Don't confuse that
23 with thought.

24 COMMISSIONER MATHESON: Staring at a
25 piece of paper.

1 TERRY LOGAN,
2 having been previously sworn, testified further as
3 follows:

4 EXAMINATION

5 BY MR. WOZNIAK:

6 Q If I can remind you, Mr. Logan, you are
7 still under oath from yesterday.

8 Just to sort of commence your
9 engineering testimony, let's direct your attention
10 to Exhibit L in your packets and ask you if you can
11 identify what is shown on that exhibit?

12 A I'm Terry Logan with Cedar Ridge, for
13 the record.

14 Exhibit L is a Production Location Map
15 that shows the 2-5 proposed infill well. That is in
16 the northwest quarter of Section 5. What this map
17 shows is the offset Emerald Gas operated coal gas
18 wells with the most recent daily gas production in
19 million cubic feet of gas.

20 Q What is the most recent date for unit
21 production?

22 A The data on this map is as of July 1,
23 1996.

24 Q Thank you.

25 A It also shows the cumulative gas

1 production in billion cubic feet of gas as of that
2 same day.

3 Q If we can direct your attention for a
4 second to Section 32, we see four Fruitland Coal gas
5 wells located in that section. Were those the wells
6 that you mentioned yesterday that the Bureau of Land
7 Management had approved the two infills?

8 A Yes. That's correct.

9 Q All right. And your proposed location
10 is the 2-5 well?

11 A Yes. The 2-5 well in the northwest
12 quarter of Section 5 -- and also on this map we can
13 see the cumulative gas production, particularly in
14 Section 32, which has the two infill wells which
15 were approved by the BLM several years ago.

16 These wells have been on production for
17 approximately four years as our wells have been on
18 approximately the same amount of time. I think the
19 most striking thing to notice here is the difference
20 in the cum gas volumes that have been produced. For
21 example, the south half of Section 32, which has two
22 wells in it, has produced almost 11 billion cubic
23 feet of gas in the past four years as compared to
24 the north half of Section 5 where we have produced
25 approximately a third of that, 3.4 Bcf of gas.

1 Q That shaded area is the Cedar Ridge
2 acreage?

3 A That's correct. The shaded area in
4 Sections 5, 6, and 7 is the Cedar Ridge operated
5 acreage.

6 Q That is cumulative production just from
7 the Fruitland Coal formation?

8 A All of these wells identified are
9 Fruitland Coal gas wells with the exception of the
10 proposed 2-5 location which is the Mesaverde well.

11 Q Looking over to Section 6, in the
12 southwest quarter, the observation well, what does
13 that reference?

14 A The observation well is a Fruitland Coal
15 gas well that has been reconfigured over a year ago
16 as a pressure monitoring well with a down-hole
17 pressure transducer to continuously monitor the
18 pressure in the coals.

19 The purpose of that well is to look at
20 the effect, if any, of down-dip production, gas or
21 water or a combination of both, upon the pressure in
22 that well and more importantly the outcrop gas
23 seep.

24 One thing that is not shown on this map
25 is the outcrop which is located on the western side

1 of this map.

2 Q Then that observation well would have
3 been the well that was identified on Exhibit 2 which
4 was Mr. Baughman's map from yesterday as the Cedar
5 Ridge Southern Ute 4-6?

6 A That's correct.

7 Q Let's turn to the next exhibit which is
8 Exhibit M in the booklet and ask you if you can
9 describe what is shown on that exhibit?

10 A Exhibit M is a graph of production,
11 monthly gas production along the vertical axis and
12 time in years along the horizontal axis.

13 What it compares is the production in
14 the south half of Section 32, which is operated by
15 Emerald, as compared to the production from the
16 north half of Section 5, which is operated by Cedar
17 Ridge.

18 As you can see on this graph, the timing
19 of the wells is about the same when they both came
20 on, within a few months, six months or so for each.
21 Also see that over a period of approximately three
22 and a half years, four years, that the south half of
23 Section 32 has produced approximately three times
24 the volume of gas on a monthly basis than the north
25 half of Section 5.

1 Our belief is that the reservoir quality
2 in that area is very similar to each, based on well
3 tests that were done, history matching from
4 reservoir engineering. So we have very similar
5 reservoir conditions. Geologic conditions are very
6 similar, as shown by previous testimony yesterday
7 with the cross sections, that the coals are
8 laterally continuous.

9 We believe that the difference of the
10 discrepancy here is that simply there are two straws
11 in the reservoir versus one straw in the reservoir;
12 two straws in the south half of Section 32, one
13 straw in the reservoir in the north half of
14 Section 5.

15 Q All that Exhibit M does is show that on
16 the graph.

17 A Yes. It is just a monthly composite
18 production.

19 Q Let's look at your next exhibit which is
20 Exhibit N.

21 A Can I show the larger scale on this?

22 Q Sure.

23 A All of these are in your booklet that I
24 will be talking about from up here. This is
25 Exhibit N in your booklet.

1 What it is, it shows the Fruitland Coal
2 outcrop here on the western side of the map. One of
3 these is a section or square mile, also the outline
4 of the Cedar Ridge operated coal gas acreage and
5 offset acreage around.

6 What is contoured on this map is best
7 month 1996. What that means is looking at the
8 production on a daily basis of what the well was
9 capable of producing during 1996. It may not all be
10 in the same month, but what it does show is
11 reservoir potential.

12 Q Best month for each well is shown on
13 there?

14 A Correct. Similar to what Baughman has
15 shown and that Mr. Morris was talking about earlier,
16 looking at best month for water production; this is
17 a best month gas production for '96.

18 The purpose is to show what the wells
19 are capable of producing. This is actual production
20 data. The most striking thing to notice is that
21 there is a very high prolific area in Section 32.
22 In some of the areas it is best month of
23 approximately 11.4 million cubic feet of gas a day.

24 Also note on this map there are four
25 wells in Section 32 versus two wells in Section 5.

1 It also shows that as you move south, as you move
2 south in the basin the reservoir quality is poor.
3 That is an important point to make, particularly
4 when we talk about the second application as we move
5 down to the 1-7. Did you get excited about that?

6 So as we move south here we can see
7 based on real data, production data, that the
8 reservoir quality gets poor as we move south. That
9 is the primary point from this exhibit.

10 Q Would the difference in the production
11 on a best month basis be tied to your operating
12 conditions in Section 5 versus the operating
13 conditions in Section 33?

14 A In part it can, yes. Operating
15 conditions out here now are fairly similar. Those
16 operating conditions primarily have to do with
17 compression, how low you are able to draw the
18 reservoir down starting at the well head. In part
19 it could be due to operations, but not this
20 significantly.

21 Q All right. Exhibit O, which is your
22 next exhibit in your packet, if you could direct
23 your attention to that and tell the commission what
24 you have shown in that exhibit.

25 A Exhibit O is a graph of cumulative gas

1 along the vertical axis and the time along the
2 horizontal axis, again comparing the south half of
3 Section 32 to the north half of Section 5; not only
4 is the daily production or the monthly production
5 three times as much, the cumulative gas off of the
6 south half of Section 32 during the same period of
7 time has been approximately three times greater than
8 the north half of Section 5. The numbers here, 10.9
9 Bcf recovery as of July 1 versus 3.4 Bcf recovery
10 for the north half of Section 5.

11 Q Let's move on to Exhibit P and ask if
12 you can discuss what is shown on that exhibit?

13 A I also have another big graph of that.
14 This is Exhibit P and that is also in your book.

15 What this is -- remember the previous
16 one was daily gas production best month 1996. This
17 is cumulative gas as of July 1st, 1996.

18 You see a lot of similar shapes. And
19 what it shows is as the colors get redder on these
20 graphs, it is more gas recovery; for instance, these
21 very red dots is approximately 6 Bcf and this one --
22 I think that is 8 Bcf.

23 Q Those are around which wells?

24 A That is on the southwest quarter of 32
25 and the northeast quarter of Section 32.

1 This graph also shows a couple of
2 things: tremendous volumes of gas removed from
3 Section 32, poor reservoir quality as you move
4 south. And this orientation, if we look on a more
5 regional basis, is consistent.

6 The coal gas fairway in the San Juan
7 Basin runs approximately northwest/southeast all the
8 way across the basin, 20, 30 miles long and several
9 miles wide. So this orientation is consistent with
10 what is seen all the way across the basin.

11 And as you move south out of the coal
12 gas fairway, the reservoir quality changes very
13 abruptly and very quickly; sometimes from one
14 location to the next within a half mile.

15 Q Okay. So those two exhibits basically
16 are different pictures of the same data except one
17 is cumulative?

18 A Not of the same data. This is daily gas
19 production; this is cumulative gas production.

20 Q Then you prepared bubble maps to
21 describe the same kinds of information on Q
22 and R?

23 A Yes. Oftentimes we like to look at
24 bubble maps. It depends on what you are used to
25 looking at. This is Exhibit Q which is this same

1 data just put on a bubble map.

2 What a bubble map is -- as Mr. Morris
3 Bell showed earlier -- the size of the bubble is
4 relative to the volume of water, volume of gas that
5 has been removed.

6 This shows the Fruitland outcrop on the
7 west side. The outline of the Cedar Ridge operated
8 acreage has also the proposed location, 2-5 and the
9 1-7. It also has the number associated with the
10 bubble of the volume of gas of all the wells in the
11 area.

12 I might point out if there is a
13 discrepancy when we talk about future maps, bubble
14 maps -- there is a discrepancy between some of the
15 numbers that Mr. Morris [sic] presented and what I
16 am presenting. It has to do with the time of the
17 data. Since we are the operator we have the most
18 current data. The stuff he has is probably six
19 months old due to the reporting lag, so there would
20 be a little difference in the numbers. These are
21 the most current.

22 Q So if I understand correctly then, in
23 Section 32 the large circles represent a larger
24 volume of production?

25 A Yes. The other thing I would like to

1 point out on this map are the large circles. These
2 are the two infill wells that are approved by the
3 BLM. All the infill wells are identified and
4 labeled on this map. It may be difficult to read in
5 your handout there, but they are there.

6 Q So the infill wells are approved not
7 only in 32 but also in 29?

8 A Yes. There are several infill wells in
9 this, Emerald's pilot infill project.

10 Q Identify the 2-5 well that the
11 application concerns.

12 A 2-5 is located in the northwest quarter
13 of Section 5 between the 5-5, the Cedar Ridge
14 operated 5-5, and the Cedar Ridge operated 3-6, and
15 the Cedar Ridge operated 6-5, surrounded on all
16 three sides by Cedar Ridge and to the north by
17 Emerald Gas operated.

18 Q Did you prepare a bubble map with
19 respect to water production?

20 A Yes, I did.

21 Q That would be Exhibit R?

22 A Exhibit R.

23 Q Could you identify the error that was on
24 there that you mentioned to me last night? There
25 was a mistake in one picture.

1 A This is Exhibit R, which is cumulative
2 water production as of July 1st, 1996. Some of the
3 numbers on here are a little bit different than what
4 Mr. Morris reported, and the reason is that this is
5 the most recent data. His stuff is still correct,
6 but ours is more recent.

7 One data bust on here that we found is
8 the 4-13. That is in your booklet identified as
9 885. It should be 665.

10 Q 665 what?

11 A Excuse me. 665,000 barrels of water.
12 This map shows the outcrop along the west, the blue
13 outline of Cedar Ridge acreage, and the cum water
14 production.

15 Q Where are the monitoring wells?

16 A The monitoring wells now are along the
17 outcrop. Emerald has converted these wells to
18 pressure monitoring wells.

19 Q Can you identify those wells?

20 A Those would be in Section 31, 31-3,
21 31-4, and they have several more up along the
22 outcrop.

23 Q Farther to the south?

24 A Also Cedar Ridge operates the 4-6
25 monitoring well which is located here, the 5-13

1 which is located in the northwest quarter -- excuse
2 me, the northeast quarter of Section 13.

3 One of the significant things to see
4 about this is that where some of the gas seeps are
5 seen are associated with larger fluid withdrawal.
6 Referring back to Morris' map here, we don't -- the
7 tribe has not identified any gas seeps down in this
8 area. Primarily it is up along here and along Soda
9 Buttes immediately adjacent to where we have a
10 pressure monitoring well.

11 One of the interesting things about this
12 pressure monitoring well is that this pressure in
13 this well has remained hydrostatically pressured,
14 meaning that we haven't seen any drawdown in
15 pressure with all the fluid and gas removal. And
16 that is another piece of evidence as Dick Baughman
17 pointed out yesterday, that there appears to be a
18 barrier parallel to the outcrop that is seen by this
19 pressuring monitoring well and this pressure
20 monitoring well, and that these are normally
21 pressured when you have significant withdrawals down
22 dip.

23 Q Those were the 4-6 and 5-13?

24 A 4-6 and 5-13; that's correct.

25 Q Mr. Logan, you prepared an exhibit that

1 isn't in your booklet that I would like to pass
2 around which is a best month '96 daily water
3 production. The reason that I think we didn't pass
4 it around is that I didn't realize it would be much
5 of an issue, but if you could describe that as we
6 are circulating it.

7 A I know this is hard to see. This is
8 Exhibit R.

9 Q R prime is what I called it.

10 A What this is is best month 1996 water
11 production on a daily basis. What it shows is that
12 as you get closer to the outcrop there is greater
13 volumes of water.

14 It appears to be -- based on production
15 data -- a different production regime in this area
16 close to the outcrop versus the down dip.

17 You can see it if you plotted -- which
18 we have done and the tribe has done -- gas water
19 ratios. You can see it on this map, just visually,
20 lots of water bubbles, large water bubbles on this
21 bubble map and small gas, so there is a high water
22 to gas ratio in that regime.

23 As you move across this barrier, it
24 flips. There is a different production regime. You
25 have smaller water bubbles and larger gas bubbles, a

1 much higher gas/water ratio, which is further
2 evidence of a barrier between here.

3 In my opinion as a reservoir engineer,
4 the thing that I like to look at is actual
5 pressure. There is a pressure difference between
6 here and down dip, and we see that. I will show
7 that on one of the next exhibits.

8 Q Let's move on to Exhibit T which is a
9 graph that has numerous columns, charts,
10 information. Could you please describe what you
11 have attempted to represent there?

12 A Exhibit S and T are tables of data for
13 -- it is a little busy, but what it is is gas
14 production on a monthly basis and a daily basis for
15 Cedar Ridge, all the Cedar Ridge operated coal gas
16 wells in the area, all the Emerald Gas operated
17 wells in the area, and all the Red Willow coal gas
18 operated wells in the area immediately adjacent to
19 our application area.

20 A couple of interesting things that I
21 would like to point out on this table is you can see
22 the date of first production in the first column and
23 the years that the wells have been in production so
24 you can get a sense of the -- some of the data is
25 not normalized to -- back to zero where they are all

1 on the same production start date, but most of the
2 wells are the three- to four-year-old type wells.

3 Exhibit S is gas production, and Exhibit
4 T is water production. It also has cumulative gas
5 production in barrels, cumulative gas production in
6 Mcf, and cumulative water production in barrels on
7 both of those. All of the bubble maps and all of
8 the maps we presented are based upon this data.
9 This is what we used -- so you can check our maps.

10 Q This has not only all of the Cedar Ridge
11 wells in this area, but all of the Emerald wells
12 that are in the northern area as well as the Red
13 Willow wells to the south; is that right?

14 A That's correct.

15 Q There is a lot of data on there, and I
16 don't think we need to go through it. This is, as I
17 understand it, what you used in order to prepare
18 both the bubble maps and the other production maps
19 that you have shown?

20 A That's correct.

21 Q For gas and for water?

22 A That's correct.

23 Q All right. Have you conducted any
24 pressure studies in this area?

25 A Yes. We conducted pressure surveys in

1 all of our coal gas wells. Emerald has provided
2 data that they collected, current pressure data in a
3 number of their wells, and Red Willow has also
4 collected down-hole pressure data in their wells.

5 Q Let's direct your attention to Exhibit U
6 in your packet which deals with pressure and ask if
7 you can describe that?

8 A Exhibit U, which is in your packet, is a
9 current reservoir pressure gradient map in the
10 Fruitland Coal. What this shows again, the
11 Fruitland outcrop on the west, the outline of the
12 Cedar Ridge operated acreage.

13 What this also shows is psi per foot of
14 the current reservoir pressure of the coal. It also
15 identifies each of the wells. The yellow area shows
16 where pressure has been depleted the most from the
17 original reservoir pressure.

18 Q What is the original reservoir pressure
19 on average?

20 A The original reservoir pressure as
21 measured by the Gas Research Institute in the 32-1
22 well which is located in the southeast quarter of
23 Section 32 and the 5-7 well which is located in the
24 northeast quarter of Section 7 and the 32-1 in the
25 southeast quarter was approximately 0.5 psi per

1 foot. It was over pressure. It was the initial
2 reservoir conditions.

3 Q What is it now?

4 A The most current reservoir pressure is
5 approximately 0.18 psi per foot. In the 5-7 well,
6 which is located in the northeast quarter of
7 Section 7, the initial reservoir pressure there was
8 approximately 0.45 psi per foot, again slightly over
9 pressure, and its current down-hole reservoir
10 pressure has a gradient 0.34 psi per foot.

11 Q So the yellow area, what does that
12 reflect?

13 A What the yellow area reflects is an area
14 where the reservoir pressure has been depleted
15 through fluid with removal of gas and water
16 production.

17 The other thing that this map shows,
18 which I would like to point out, is the pressures of
19 the 4-6 well, the monitor well in the southwest
20 quarter of Section 6, which is currently
21 approximately 0.42 psi per foot, essentially still
22 normally pressured, which again is evidence that
23 there appears to be some sort of a barrier between
24 the pressure monitoring wells and the down dip
25 production, and also the 5-13 well which is located

1 in the northeast quarter of Section 13 which is
2 0.466 psi per foot over pressure.

3 The only other point to make is all of
4 these are measured data that were obtained in July
5 of this year.

6 Q Then where the 2-5 well proposed
7 recompletion is located, what would you estimate the
8 pressure to be at the bottom of the hole?

9 A Somewhere between 0.2 psi and 0.19 psi,
10 about one half to one third of the original
11 reservoir pressure.

12 Q Then if I could direct your attention to
13 the next exhibit, Exhibit V, which then graphically
14 depicts some of the data you have just been talking
15 about with respect to pressure gradients, would you
16 please describe what is shown on this exhibit.

17 A Exhibit V is a table of data, gas
18 in-place, water in-place, current and initial
19 reservoir pressure gradients.

20 What this shows is the gas in-place per
21 320 acres, and what I would like to direct your
22 attention to is the first well, the 5-5 well.

23 Q Where is that located?

24 A The 5-5 well is located in the northeast
25 quarter of Section 5 near to our proposed location,

1 gas in-place of approximately 21 billion cubic feet
2 of gas. All the gas in-place for each one of these
3 wells was calculated using the same technique and
4 the same method so everything was identical.

5 The completed gas in-place, you will
6 notice there is a difference between that. That has
7 to do with -- one of the questions that Commissioner
8 MacMillan was asking yesterday, Where are the coals
9 perforated? Which seams are open? Not all of the
10 coal is open in each well.

11 Fortunately the 5-5, all of the coals
12 are. Other wells, like the 3-6 well, are not open
13 in all the coals. We will remedy that here soon.
14 Cumulative Gas production as of July 1, and then the
15 next column is Recovery, percent of recovery in the
16 gas in-place.

17 The next thing to look at is the initial
18 reservoir pressure which is in the columns on the
19 right as compared to the current pressure gradient.
20 The point to make here is that on the 5-5, we
21 recovered approximately 16 percent of the gas
22 in-place and the reservoir pressure has been
23 depleted approximately 62 percent, as compared to
24 the south half of Section 32 which has two wells in
25 it, where it has between 40 to 50 percent of the gas



1 in-place recovery with the same type of pressure
2 reduction between 50 and 60 percent. There is a
3 discrepancy there. There has been so much more
4 recovery on the south half of 32 than the north half
5 of Section 5 with the same removal of gas.

6 Q Do you see that discrepancy or anomaly
7 in the other wells that are listed in other
8 locations?

9 A No, we don't. I would again present
10 this same table when we talk about our next
11 application, the 1-7. We don't see that discrepancy
12 with the other wells, not only our wells but the Red
13 Willow operated wells in Section 8 and 18 which are
14 depicted here as the WF. The WF stands for Walker
15 Flats. Those are Red Willow operated wells.

16 Q So what does that tell you when you see
17 the recovery percentage being low but the pressure
18 reduction being high in the north half of Section 5?

19 A It tells us that we are not recovering
20 all of the gas that we were entitled to there, and
21 that is one of the points of this application, that
22 we believe we need this well for production of our
23 rights.

24 Q When you look at the two Valencia Canyon
25 wells in the south half of Section 32 with their

1 recovery percentages and the similar pressure
2 reduction, what does that tell you?

3 A Say that again.

4 Q When you look at the two Valencia Canyon
5 wells in the south half of Section 32 and you
6 compare their recovery percentage with their
7 pressure reduction, what does that tell you about
8 how efficient and what those wells are draining?

9 A It tells me that there is a discrepancy
10 between their wells and our wells when we have
11 similar reservoir conditions.

12 Q The notes at the bottom of the page, are
13 those explanatory notes as to how your table was put
14 together?

15 A Exactly. They provide a basis for where
16 all the numbers came from so that if you wanted to
17 you go through and check the numbers you would come
18 up with hopefully the same numbers.

19 Q So based upon this, you think there is
20 an effect on your correlative rights from the two
21 wells in the south half of Section 32 to the north
22 half of Section 5?

23 A Yes, we do.

24 Q Have you done any checking or looking at
25 the drainage orientation in this portion of the

1 reservoir?

2 A Yes, we have; not particularly the
3 drainage orientation, but the orientation of the
4 maximum permeability direction. The maximum
5 permeability direction in this area is approximately
6 north/south and that is based upon the orientation
7 of the coal that has been obtained in this area from
8 the two wells.

9 The orientation of the face cleat or the
10 main fracture within the coal is essentially
11 north/south. It might be skewed one way or the
12 other, but it is basically north/south, and it is
13 believed that the permeability anisotropy between
14 the face cleat and the butt cleats are four to one,
15 meaning that you have an ellipse that is four times
16 longer than it is wide.

17 Q Which wells were those cleats and coals
18 reviewed in?

19 A The two wells are the Valencia Canyon,
20 32-1, which is in the southeast quarter of Section
21 32 which is publicly available data obtained from
22 the Gas Research Institute, and the 5-7 well which
23 is in the northeast quarter of Section 7, again
24 publicly available data provided by the Gas Research
25 Institute.

1 Q Have you reviewed the economic
2 conditions of drilling or doing this recompletion?

3 A Yes, we have.

4 Q Let's move on to the economic issues
5 then and direct your attention to Exhibit W and ask
6 if you can identify these assumptions that you have
7 made?

8 A Exhibit W is a bullet listing of the
9 economic assumptions that we used to look at that
10 make economic sense for an infill well.

11 The economic assumptions, what we looked
12 at was the base production, how much gas would we be
13 producing from three existing wells. We did not
14 only look at just the 320-acre-space unit, but we
15 looked at a larger area. In this case we looked at
16 the 5-5 well. I would like to point them out on the
17 map, if I could.

18 The 5-5 well which is located in the
19 northeast quarter of Section 5, the 6-5 well which
20 is the southwest quarter of Section 5, and the 3-6
21 well which is located in the northeast quarter of
22 Section 6, and that encompasses 960 acres.

23 So what we did was look at this entire
24 section plus this half section. What we looked at
25 was what is the base production going to be from

1 these three wells and compared that to what is the
2 base production going to be incrementally with an
3 addition of a fourth well.

4 So what we are looking at is three wells
5 per 960 acres versus four wells per 960 acres. We
6 also looked at some of the information that was used
7 in the reservoir simulation which was GRI published
8 data, the Gas Research Institute published data, all
9 the reservoir parameters, its porosity,
10 permeability, et cetera.

11 We used a permeability of approximately
12 50 md. To give you an idea of where that stands,
13 whether that is good or bad, in coal reservoirs that
14 is very good, good permeability.

15 We also used an abandonment pressure of
16 100 psia in the coal, and what the reservoir
17 simulation projected was an incremental peak rate of
18 4 million cubic feet of gas a day incrementally,
19 above what the base would be. We also cranked into
20 the economic assumptions what our actual operating
21 costs are out there.

22 We have been operating in there several
23 years. We know what our costs are and they are
24 listed here, approximately \$2,400 per well per
25 month. Gas transportation costs per our

1 transportation agreements of 31 cents for MMBtu,
2 compression costs of 8 cents, water disposal of 12
3 cents per barrel. Lease shrinkage, that is
4 basically the volume of gas that you lose either for
5 fuel or whatever other reasons, you lose about seven
6 and a half percent.

7 The heating value of this coal gas is
8 approximately 890, and that is why I try not to use
9 the term coalbed methane because it is not coalbed
10 methane. It is coal gas.

11 Ad valorem, four and a half percent.
12 That is typically what we have been paying a few
13 years. Tribal severance, state severance, and
14 conservation, and probably the most important thing
15 is gas prices, I kept them constant at \$1.30 for
16 MMBtu. I hope those are conservative. I also kept
17 them flat and didn't escalate them. Again, I'm real
18 conservative on that. Right now we are at about
19 \$1.50, -55. I believe that these are very
20 conservative economics.

21 Q Based upon your economic assumptions,
22 did you then prepare the incremental value graph
23 identified as Exhibit X?

24 A Exhibit X is a minimum. I would like to
25 point out that these are the minimum incremental

1 values based upon \$1.30 gas price without
2 escalation. What this shows is along the vertical
3 axis the value in thousands of dollars and gas
4 recovery in millions of cubic feet of gas.

5 Along the horizontal axis is time
6 starting in 1996 where there is a zero. There are
7 three graphs: one is incremental gas, the second
8 one tax credits, and the third one is simply cash
9 flow discounted at ten percent not including tax
10 credits.

11 As you can see, what this does is
12 accelerate gas production in the next ten years
13 approximately, increases the tax credits that are
14 recovered, the value of the tax credits by
15 approximately \$1.4 million, and just on a straight
16 cash basis it increases the value by approximately
17 \$268,835.

18 Q That is a discounted value?

19 A That is discounted at ten percent at
20 flat gas prices.

21 Q And the tax credits expire at the end of
22 2002?

23 A Tax credits expire at the end of 2002.
24 The graph shows a flat line going out. That was
25 only to make the graph a little easier to read; that

1 is not saying we will continue to get tax credits
2 beyond that point.

3 Q Your next chart is Minimum Incremental
4 Value which is Exhibit Y.

5 A Exhibit Y has a lot more information on
6 it. It is a minimum incremental value at \$1.30 gas
7 price without escalation. What this has on it are
8 four components: the value to the working interest
9 owner, the value to the state, the value to La Plata
10 County, and the value to the mineral owners, in this
11 case the Southern Ute Indian Tribe.

12 The top one we see has a couple of
13 interesting things: 1) the gas in-place stays the
14 same. We are not changing that. The ultimate
15 recovery, because the permeability is so good in
16 there, we do not see any incremental recovery in
17 gas. We accelerate the volume that is recovered.
18 The life of the well is short and approximately five
19 years.

20 The cash flow -- we have already seen
21 this number on the previous exhibit -- roughly
22 \$269,000 of cash, \$1.4 million in credits.

23 Moving down to the state severance taxes
24 and conservation tax, the incremental value to the
25 State of Colorado, discounted again at ten percent,

1 is approximately \$31,000. The county ad valorem
2 taxes is \$45,000, again discounted at ten percent;
3 and the value to the mineral owner for their
4 severance taxes, \$63,000; their royalty cash flow,
5 69,000; and their tax credit monetization is
6 approximately 297,000 and brings the total to
7 429,000.

8 If you added all of these up, the
9 incremental value of the proposed 2-5 well increases
10 the total to everyone approximately \$2,187,000.

11 Q So it would be your conclusion that this
12 recompletion proposal is an economic proposal
13 regardless of the fact that little, if any,
14 additional reserves are recovered?

15 A That's correct.

16 Q A couple other small things. I know
17 that part of our requirement is to produce a
18 wellbore diagram, and I see that you have one
19 labeled as Exhibit G. Can briefly describe what is
20 shown on that exhibit?

21 A Exhibit Z --

22 Q I'm sorry, Exhibit Z. Excuse me.

23 A Exhibit Z is a wellbore diagram that
24 shows current perforations in the uneconomic
25 Mesaverde well and also has the proposed technique

1 that we will use to recomplete the Fruitland Coal by
2 perforating and fracture stimulating both the
3 intermediate and basal coal seam separately, similar
4 to how most of the wells are completed up there.

5 Q There was a question yesterday about the
6 cement position. Could you please describe it?

7 A Yes. I have reviewed the cement bond
8 logs on both the 2-5 and the 1-7, which we will talk
9 about later. There is good 100 percent bond to
10 surface on both of those. And if they are not in
11 your files, the cement bond logs, we'll get the bond
12 logs to you.

13 COMMISSIONER MATHESON: Is that the
14 surface casing?

15 THE WITNESS: Not the surface casing.

16 COMMISSIONER MATHESON: What about the
17 production surface casing?

18 THE WITNESS: Excuse me -- all the way
19 up past the surface casing.

20 COMMISSIONER MATHESON: As it exists
21 right now?

22 THE WITNESS: As of the time when the
23 bond log was run which was run in 1988.

24 BY MR. WOZNIAK:

25 Q The final couple of exhibits that you

1 have in your packet are 1A, 1B, and 1C. Exhibit 1A
2 is a letter from the tribe which deals with the
3 economics of current wellbore. Would you please
4 describe these exhibits.

5 A Yes. Exhibit 1A is a letter from the
6 Southern Ute Indian Tribe, the operator of this
7 Mesaverde well. One thing to note is the date of
8 August 1, 1995. This process started with reviewing
9 with the tribe and the BLM over a year ago.

10 What this shows is that this Mesaverde
11 well is currently making about 18 Mcf per day. It
12 has recovered approximately 90,000 Mmcf, and it is
13 uneconomic to operate. And the supporting document,
14 Exhibit 1A, is the letter from the tribe.

15 Exhibit 1B is the gas production decline
16 curve.

17 Exhibit 1C is information provided by
18 Red Willow Operating Company of their lease
19 operating statements that show that this is
20 uneconomic to operate.

21 Q So this well would be plugged and
22 abandoned and the wellbore would be wasted if the
23 recompletion is not permitted; is that right?

24 A That's correct. It is uneconomical.
25 The wellbore would be wasted. What we propose to do

1 is plug off and seal off the Mesaverde and move
2 uphole to the Fruitland.

3 Q So in that formation there would be no
4 commingling? It will be plugged and abandoned?

5 A Correct.

6 Q I think I asked you before, but in your
7 opinion would this recompletion protect Cedar
8 Ridge's correlative rights?

9 A Yes. I believe it is needed to protect
10 our correlative rights.

11 Q Why is that?

12 A Because of the discrepancy in the
13 production in the south half of Section 32 as
14 compared to the production in the north half of 5
15 and the amount of pressure reduction associated with
16 that.

17 Q You mentioned that this has been pending
18 for over a year. When would Cedar Ridge conduct the
19 closure and recompletion?

20 A As soon as possible.

21 Q If I understand correctly, the
22 application does accelerate the tribe's and the
23 state's ad valorem and severance taxes; is that
24 right?

25 A That's correct. Approximately 30- to

1 \$40,000 per month of incremental value.

2 Q Do you have any concern, Mr. Logan, that
3 this application could reduce the quantity of gas
4 that is ultimately recovered in Section 5?

5 A No. It potentially could increase it.

6 Q In your view does this application
7 promote the economic and efficient development of
8 this reservoir?

9 A Yes, it does.

10 Q Next I direct your attention to a letter
11 from the Bureau of Land Management addressed to you
12 and listed as Exhibit 3 in your booklet and ask if
13 you can identify that letter?

14 A Yes. This is a letter that Cedar Ridge
15 received from the BLM of the Durango, Colorado
16 office dated April 25, 1996. The important part of
17 this is the third paragraph which we are encouraged
18 -- as a matter of fact recommended by the BLM --
19 that we pursue diligent development based on
20 160-acre spacing, and they encouraged us to contact
21 Colorado Oil and Gas Conservation Commission and
22 request spacing for the above wells, which we have.

23 Q This letter also references the fact
24 that an Emerald well had been shut-in at the time;
25 is that right?

1 A That's correct. One of the Emerald --
2 in fact, I think two of the Emerald infill wells
3 have been shut-in in Section 32 after they produced
4 approximately five and a half Bcf each.

5 Q To your knowledge is that shut-in order
6 on appeal right now?

7 A Yes. That is on appeal. I'm not sure
8 what the status of that appeal is, but we believe
9 that that well will not be shut-in indefinitely.

10 Q I also understand that Emerald, the
11 owner to the north, has been preparing a study of
12 the reservoir for some time now. Is that your
13 understanding?

14 A Emerald is in the process of conducting
15 full-field simulation -- full-field reservoir
16 simulation tying it to the geology in the area, yes,
17 they are.

18 Q Based upon whatever results that come
19 out of that study, do you believe that those could
20 change any of the conclusions you testified about
21 today?

22 A No. I think there are two results that
23 could come out of that study: 1) the result could
24 be that there is drainage, and therefore our well is
25 necessary to protect our correlative rights; or the

1 results could be that there is no drainage, and in
2 that case 160-acre spacing would be appropriate. So
3 either result of their study supports the 2-5 well.

4 Q I believe that the protestants are
5 concerned about a presidential issue that could be
6 established by your right to recomplete this well.
7 Do you have any comment on that?

8 A This is not presidential. This is a
9 single well application specific to this well. We
10 are not the first. There are several others.
11 Emerald was the first; and as you know Vastar has
12 three approved recompletions approximately twelve
13 miles to the east of us.

14 Q Were the exhibits we talked about
15 prepared all under your direction and control?

16 A Yes, they were.

17 MR. WOZNIAK: Request that they be
18 recognized and admitted, and that concludes our
19 discussion with Mr. Logan.

20 CHAIRMAN HEINLE: Mr. Ekberg, any
21 objections?

22 MR. EKBERG: No objections.

23 CHAIRMAN HEINLE: Mr. Ekberg, do you
24 have questions of the witness?

25 MR. EKBERG: Yes, we do. Carleton

1 Ekberg appearing on behalf of Burlington Resources
2 Oil & Gas. Let me take a moment to get organized so
3 I can refer to the proper exhibits.

4 EXAMINATION

5 BY MR. EKBERG:

6 Q Mr. Logan, you have testified that the
7 two infill wells up in Section 32 are currently
8 shut-in?

9 A That's correct.

10 Q Is it your understanding that they have
11 been appealed?

12 A That's correct.

13 Q Did you also say that you believed that
14 they wouldn't be shut-in indefinitely?

15 A That's right.

16 Q Do you have any basis for that belief?
17 Do you have a way to understand what will happen in
18 the appeal that the rest of us don't?

19 A No.

20 Q So it is just your opinion, but not a
21 conclusion?

22 A Just an opinion.

23 Q Maybe a hope. You stated that you
24 believe that the north half of Section 5 is being
25 drained by the infill wells in Section 32, and that

1 this well is necessary to protect your correlative
2 rights. Is another alternative that if the infill
3 wells are shut-in indefinitely, will that result in
4 any way to protect your correlative rights?

5 A We lose 30- to \$40,000 a month in
6 incremental value by not being allowed to recomplete
7 the 2-5 well.

8 Q But my question was, would that take
9 care of the correlative rights problem?

10 A No, we don't believe that because we
11 think that they have already recovered the
12 significant volumes of gas that we need to make up
13 that we won't be able to make up without the well in
14 an economic fashion.

15 Q The economic assumptions that you have
16 made are shown on your Exhibit W and also on
17 Exhibit Y. Those are based on a projected
18 incremental peak gas rate for a million a day; is
19 that correct?

20 A Yes.

21 Q Is that incremental peak gas rate an
22 estimation by you?

23 A It is an estimation based on reservoir
24 simulation.

25 Q So it could be less? You don't know?

1 A It could be more.

2 Q It could be more; it could be less. But
3 if it is less, would the economics be less?

4 A Yes.

5 Q You have testified that the 2-5 well in
6 the Mesaverde formation is currently an uneconomic
7 well.

8 A Yes.

9 Q Is that based upon Exhibit 1C that is
10 attached to a letter from the tribe which is
11 Exhibit 1A?

12 A Yes.

13 Q Were those figures based upon the price
14 of gas on April 30, 1955 or during the period shown
15 there?

16 A Exhibit 1C is based upon information
17 provided by Red Willow, the operator.

18 Q If you look at the net revenue in that
19 well, there are a couple negative months, but there
20 are other months that are positive more so than
21 others. Are those uneconomic months?

22 A According to Red Willow it is
23 uneconomic.

24 Q If the price of gas has doubled what it
25 was then, I assume the revenues would be similarly

1 increased?

2 A Not if the production drops in half.

3 Q But if the price of gas would have been
4 higher, that well would have been more economic at
5 that time during this period?

6 A If gas prices go up, you make more
7 money.

8 Q Your Exhibit X, does that effectively
9 show acceleration of production but not an
10 incremental increase in production?

11 A Yes, it does. Yep.

12 Q If there were any increase in production
13 from Section 5, would that be from other wells or
14 other locations adjacent to Section 5?

15 A It could be from additional recovery of
16 the gas in-place.

17 Q But your values here are based upon the
18 fact that there will not be incremental increases,
19 that the gas that you will recover out of the four
20 wells that you have in question will be
21 substantially the same as what would be recovered
22 from the three over a longer period of time?

23 A That's correct; over 960 acres.

24 Q The 960 acres that you set up basically
25 talk about drainage from the west. What will happen

1 to the spacing unit in the east half of 5 if you
2 drill that well in Section 2 and the pressure is
3 decreased?

4 A Say that question again, please.

5 Q If you are able to complete the well in
6 2-5 as a Fruitland Coal well in the west half of
7 Section 5, what will happen in the east half of
8 Section 5? You hadn't included that in your
9 calculations.

10 A Would you believe that there will not be
11 much impact because the orientation of the maximum
12 permeability is north/south which that pressure
13 graph, Exhibit -- whichever exhibit that is -- also
14 shows that the preferred direction of the flow of
15 gas is north/south, not east/west, in the area where
16 you have higher permeability as up in the northern
17 part.

18 Q You have demonstrated some substantial
19 differences in production rates for wells. Can this
20 have a difference as a result of the type of
21 completion it is, the cased and frac'd as opposed to
22 open-hole?

23 A To some extent, yes, but not this
24 magnitude.

25 Q Do you have an opinion as to which would

1 be most effective of the two types in terms of
2 production from the coalbed reservoir?

3 A Where?

4 Q I guess I would like to ask if in your
5 experience there is one more effective than another,
6 as a general rule?

7 A I need to ask where, though? It depends
8 upon the reservoir conditions.

9 Q What about the 5-5?

10 A 5-5, the most effective completion is an
11 open-hole cavity.

12 MR. EKBERG: May I take a moment,
13 please?

14 CHAIRMAN HEINLE: Go ahead.

15 MR. EKBERG: I don't have any more
16 questions at this time.

17 CHAIRMAN HEINLE: It's probably time for
18 a break, but before we break I would like to get a
19 sense of perhaps the number of questions that the
20 commissioners have.

21 COMMISSIONER REBNE: Maybe a couple.

22 COMMISSIONER MATHESON: A couple of
23 short ones.

24 CHAIRMAN HEINLE: Let's take a break.
25 Let's take a ten-minute break until five after ten.

1 (Whereupon, a recess was taken.)

2 CHAIRMAN HEINLE: Why don't we go ahead
3 and start up. I believe where we are at is
4 questions from the commissioners. Are there any
5 questions from the commissioners? Commissioner
6 Johnson.

7 COMMISSIONER JOHNSON: Is there any
8 reason why -- I'm sure there is a reason. Would you
9 explain why you don't want to commingle between
10 formation?

11 THE WITNESS: Between the Mesaverde and
12 the Fruitland Coal?

13 COMMISSIONER JOHNSON: Yes.

14 THE WITNESS: I'm not sure what the
15 pressure is, the reservoir pressure is in the
16 Mesaverde. Secondly, it makes it more difficult to
17 allocate tax credits if you have to determine what
18 the volume of gas is coming from the Mesaverde.
19 Thirdly, operationally it makes it more difficult.
20 We want to focus just on the Fruitland Coal.
21 Fourthly, we don't own the Mesaverde minerals. We
22 have to do some sort of an agreement with Red
23 Willow. They operate that well and have the
24 Mesaverde minerals there, so it would be commingling
25 two different mineral owners. The difficulty in

1 doing that -- and the volume of gas that is so
2 insignificant. There are now 18 Mccfd, but that is
3 the primary reason.

4 CHAIRMAN HEINLE: Commissioner Rebne.

5 COMMISSIONER REBNE: I have questions
6 about completion in the wells, and I think we may
7 have gone over some of this in prior questions. But
8 the two wells in the south half of 32, could you
9 tell us how they were completed in each of the coal
10 zones?

11 THE WITNESS: Yes, I can. On the 32-1
12 well, which is in the southeast quarter of Section
13 32 -- and it was also on cross sections that is in
14 your booklet there. The upper coal seam -- excuse
15 me, the intermediate coal seam was hydraulically
16 fracture stimulated, and the basal coal seam is
17 open-hole cavity completed. And in the 32-3, I
18 believe that that well is fracture stimulated.

19 COMMISSIONER REBNE: Both zones?

20 THE WITNESS: To the best of my
21 knowledge. Now, I haven't reviewed the completion
22 of that well in detail, Emerald.

23 COMMISSIONER REBNE: And the 5-5 --

24 THE WITNESS: The 5-5 well is operated
25 by Cedar Ridge, and that is all open-hole cavity

1 completed.

2 COMMISSIONER REBNE: In this smaller
3 area, the south half of 32, north half of 5, what in
4 your opinion reaches -- what is the best completion
5 practice?

6 THE WITNESS: 5-5 is definitely the
7 right completion technique using an open-hole cavity
8 completion. As you move towards the outcrop and as
9 you move to where the holes are shallower and there
10 is lower permeability, the hydraulic fracture
11 stimulation appears to be the best. This is an area
12 that I believe is quite unique.

13 We have some wells that are doing almost
14 as good that were hydraulically fracture stimulated
15 as compared to wells that were open-hole cavity
16 completed. And there is a whole ream of information
17 as to why that is, and there is a number of very
18 thick documents that have been put out by the Gas
19 Research Institute that explain when, why, and where
20 you want to use open-hole cavity versus hydraulic
21 fracture stimulation.

22 In my opinion the 5-5 open-hole cavity
23 completion is correct; however, as you move south
24 hydraulic fracture stimulation is the most
25 appropriate. And the reason that we proposed the

1 hydraulic fracture stimulation for the 2-5 is
2 because it is mechanically impossible for the
3 open-hole cavity completed with the size of the
4 casing. I would love to be given the chance to
5 complete that well open-hole cavity completed, but
6 it is too small diameter casing. It is
7 four-and-a-half-inch casing, and we physically
8 cannot do it in that size safely.

9 COMMISSIONER REBNE: This may be a tough
10 question. In your opinion, given an area that has
11 the same reservoir properties, what extent would a
12 completion impact or different completion practices
13 impact or affect the producibility?

14 THE WITNESS: A lot. If you have an
15 area that has the same reservoir conditions like
16 this, typically what happens -- and it has been
17 documented in a lot of areas -- is that hydraulic
18 fracture stimulation can damage the coal reservoir.

19 The chemicals that are used,
20 particularly in a cross-link gel or even a gelled
21 water are absorbed into the coal. The coals swell,
22 and when the coals swell what happens is the cleats
23 get smaller and permeability is really a function of
24 the aperture cubed of that cleat.

25 So if you have swelling of the coal, the

1 aperture gets smaller and the permeability goes
2 down. That is typically one of the damage
3 mechanisms using hydraulic fracture stimulation
4 versus an open-hole cavity completion.

5 Open-hole cavity does not cause damage.
6 It removes any damage that may have been caused
7 during drilling operations.

8 And so if we have the same reservoir
9 conditions using different completion techniques,
10 one is damaging and the other is not.

11 COMMISSIONER REBNE: Can you give me a
12 feel for the magnitude of the producibility
13 variations --

14 THE WITNESS: Maybe not in this area,
15 but there has been documented results in the
16 northeast Blanco unit operated by Devon. The
17 northeast Blanco unit is down in New Mexico, San
18 Juan Basin, where they looked at hydraulic fracture
19 stimulation versus open-hole cavity and there is a
20 ten-to-one relationship between production. A lot
21 of the operators, Amoco, Meridian, probably have
22 seen similar results in the fairway. Outside of the
23 fairway they don't see that difference, but where
24 you have good reservoir permeability and the
25 reservoir conditions are appropriate -- that is why

1 I had to ask the question where do you want me to
2 respond to the question? Is it outside of the
3 basin? Hydraulic fracturing is probably the best.
4 Within the fairway, within the San Juan Basin,
5 open-hole cavity is the best. It is really
6 reservoir specific and site specific.

7 COMMISSIONER REBNE: I might have other
8 questions later.

9 CHAIRMAN HEINLE: Any other questions
10 from the commissioners? Commissioner MacMillan.

11 COMMISSIONER MACMILLAN: Following along
12 the same lines, Mr. Logan, do you think that the
13 result of the completion techniques used for those
14 wells in Section 32 is more responsible for the
15 drawdown and the cumulative production from those
16 wells than any other factor? I'm baiting you a
17 little bit. I don't mean to be baiting you, but I
18 reviewed these geologic maps, and I haven't seen if
19 the opponents to this request are going to have
20 different interpretations than what GRI had. There
21 isn't a dramatic difference between them.

22 Obviously we have data that isn't on
23 these maps in your presentation nor do we have the
24 locations of the additional wells since these
25 reports were completed, so maybe there is something

1 I'm not picking up here.

2 Along the same lines as Commissioner
3 Rebne, are these completion techniques as opposed
4 to --

5 THE WITNESS: No, they are not. The
6 reason is, remember the 5-5 well, which I'm
7 comparing, is open-hole cavity completed, the most
8 effective technique as is the Emerald 32-1 in the
9 basal coal seam.

10 The 3-6 well in the northeast quarter of
11 Section 36 is hydraulically fracture stimulated
12 similar to how the intermediate coal seam is in the
13 32-1.

14 So the completion technique here I don't
15 believe is the reason for the large discrepancy in
16 the volume of gas that has been recovered versus the
17 north half of Section 5.

18 COMMISSIONER MACMILLAN: What might be
19 those reasons then?

20 THE WITNESS: The difference?

21 COMMISSIONER MACMILLAN: Yes.

22 THE WITNESS: Primarily because there
23 are two pressure sinks within the reservoir in
24 Section 32 drawing the reservoir down, producing
25 gas, versus just one well in the north of

1 Section 5.

2 COMMISSIONER MACMILLAN: There wasn't
3 that pressure sink originally?

4 THE WITNESS: No.

5 COMMISSIONER MACMILLAN: It was
6 created?

7 THE WITNESS: Correct. The original
8 reservoir pressure out there was over pressured,
9 approximately 0.5 psi per foot based upon measured
10 data in the 32-1.

11 COMMISSIONER MACMILLAN: And the other
12 data point I think you had was northeast of 7?

13 THE WITNESS: 5-7, which was about
14 0.45.

15 COMMISSIONER MACMILLAN: Okay. May I
16 continue on?

17 CHAIRMAN HEINLE: Go ahead.

18 COMMISSIONER MACMILLAN: I don't think
19 this is a question specifically for Mr. Logan, but
20 if my memory serves me correctly I think he was
21 involved.

22 Can you explain a little bit more about
23 your exhibit -- whatever it is, the letter from the
24 BLM -- talking about the spacing of the wells
25 located directly north of your proposed well,

1 specifically those wells in Sections 31, 32, and
2 even further north; in other words, the Emerald
3 wells?

4 CHAIRMAN HEINLE: Let me interject.
5 Perhaps if you had a specific question that you had
6 for him rather than about the letter in general.
7 I'm not sure he knows what to focus on.

8 COMMISSIONER MACMILLAN: Okay. In
9 paragraph 3, the first sentence reads, "The original
10 objective of the Valencia Canyon pilot was to
11 develop untapped reserves, identify and study key
12 reservoir parameters, and determine the economic
13 viability of development on 160 acre spacing."

14 The 160-acre spacing is what I'm after
15 in its proximity to your requested recompletion.

16 THE WITNESS: Okay.

17 COMMISSIONER MACMILLAN: So that is a
18 statement then. The question is, what was the
19 involvement of the BLM -- how did the BLM approve
20 160-acre spacing, and was the oil and gas commission
21 of this state involved in them?

22 THE WITNESS: For Emerald? For
23 Emerald's application?

24 COMMISSIONER MACMILLAN: I don't think
25 it was Emerald's at the time.



1 THE WITNESS: You are talking about
2 Bowen/Edwards?

3 COMMISSIONER MACMILLAN: That's
4 correct.

5 THE WITNESS: You are asking about how
6 did Emerald -- Bowen/Edwards -- what was the process
7 that they went through?

8 COMMISSIONER MACMILLAN: Right. How did
9 BLM get this 160-acre spacing, and what was the
10 involvement of the Colorado Oil and Gas Commission?

11 CHAIRMAN HEINLE: Let me interject.
12 Commissioner MacMillan, you probably have a better
13 handle on that than anyone else.

14 COMMISSIONER MACMILLAN: Actually I
15 don't. That is the reason I'm asking the question.

16 CHAIRMAN HEINLE: Or the director might
17 be able to handle it, or we can dig it out of the
18 file. I'm not sure the witness is perhaps the
19 appropriate one to answer, but I will let him
20 respond.

21 COMMISSIONER MACMILLAN: Mr. Wozniak may
22 be, and this may be the point in time where we ask
23 the proponents of this to review it.

24 The reason I asked the question with the
25 preface that this may not be the witness but

1 certainly decide to present it -- obviously we have
2 some wells here that by your presentation have --
3 and certainly part of your testimony is those wells
4 may have drained reserves within your north half of
5 Section 5.

6 One of the reasons that you are asking
7 for this well to be completed in the Fruitland zone
8 is to capture what you can now, but it looks like
9 you have already lost plenty. So I'm interested in
10 the history that developed.

11 MR. WOZNIAK: I can try to address that
12 -- and Mr. Logan did testify in the hearing of
13 1992.

14 My recollection from reviewing the
15 transcript is that Bowen/Edwards requested this
16 commission to permit the two infill wells -- perhaps
17 it was three, I can't recall -- in Section 32. The
18 commission decided against that application.

19 Pursuant to the memorandum of
20 understanding the BLM then made the decision -- as
21 it is required to do under that agreement and in
22 consultation with the tribe -- and approved those
23 infill locations.

24 Part of the requirement that was placed
25 upon Bowen/Edwards was to provide data and studies

1 to the Bureau of Land Management so that they could
2 review this whole area and determine the effect and
3 determine the spacing. That is one of the studies
4 that, as I understand it from Mr. Logan's testimony,
5 is still going on. It has not been totally
6 completed on the reservoir simulation.

7 These applications that we have in front
8 of us today, at least this one specifically, was
9 reviewed with the Bureau of Land Management, as I
10 said in my opening statement. And as part of filing
11 this a year and a half ago, the BLM rereviewed where
12 they were in the Emerald applications; in effect,
13 concurred by telling Cedar Ridge to file with this
14 commission now because they viewed -- the way I read
15 this -- there could be some correlative rights
16 issues here.

17 We don't necessarily adopt their
18 statement that the economic viability -- that
19 everything that has to be done on 160 acres, but
20 that is an implication that one can draw from this.

21 But they suggested to us that Cedar
22 Ridge pursue diligent development based upon
23 160-acre spacing; in essence, we were directed to
24 file this application. I believe that Director
25 Griebeling was correct yesterday in that this was not

1 approved by the commission.

2 To my knowledge the three Vastar wells
3 that were approved by this commission in January and
4 February of 1996 for infill drilling, which are in
5 sections not very close to this, in fact in 32-8 --
6 I believe I have this in here somewhere -- those
7 were the only three that I'm aware of that the
8 commission has approved.

9 COMMISSIONER MATHESON: Different
10 circumstances.

11 MR. WOZNIAK: The finding, of course, is
12 that the second well was necessary and the
13 commission orders in 112, 119, 120, and 121 are that
14 the second well was necessary to adequately drain
15 the 320 acres.

16 COMMISSIONER MACMILLAN: The letter that
17 we have from the Southern Ute Indian Tribe dated
18 August 1, '95 is essentially from their perspective
19 setting this process in motion through the BLM, is
20 that correct, asking the BLM for approval
21 specifically for this first request that you have,
22 the 2-5 recomplete; is that right?

23 THE WITNESS: That's correct.

24 MR. WOZNIAK: That's correct.

25 COMMISSIONER MACMILLAN: Any idea how

1 much gas was produced from August 1, 1995 through
2 your last known production?

3 THE WITNESS: From this well?

4 COMMISSIONER MACMILLAN: Yes.

5 THE WITNESS: Very little --

6 COMMISSIONER MACMILLAN: I'm sorry, from
7 the wells in Section 32.

8 THE WITNESS: We can look at Exhibits T
9 and S and see what we have done in the last six
10 months.

11 COMMISSIONER MACMILLAN: That is part of
12 the record? Good. That is all you need -- or that
13 is all I need. You don't need it all. I need it.

14 THE WITNESS: I may have to take my
15 shoes off to count this high.

16 COMMISSIONER MACMILLAN: Don't worry
17 about it, Mr. Logan. It is there.

18 You mentioned that there is publicly
19 available data from the Gas Research Institute,
20 reports on -- I may not have gotten this correct --
21 clarification of the core analyses from wells in the
22 area that supported your estimates of permeability
23 and orientation of the cleat structure.

24 THE WITNESS: Yes.

25 COMMISSIONER MACMILLAN: Could you give

1 a reference for those?

2 MR. WOZNIAK: We have copies. We didn't
3 have them marked, et cetera, so they weren't put
4 out, but there are copies if anybody would like to
5 look at them. Why don't you identify the report.

6 THE WITNESS: One of the references is
7 the GRI report 93/0440 entitled Topical Report
8 Cooperative Research Project, Amax Oil & Gas Inc.,
9 Southern Ute, 5-7 well, San Juan Basin, southwestern
10 Colorado.

11 COMMISSIONER MACMILLAN: Very good.

12 THE WITNESS: That has the Rose
13 diagrams. If you want to see this, I can --

14 COMMISSIONER MACMILLAN: Sure.

15 THE WITNESS: -- pass those out to
16 everyone.

17 COMMISSIONER MACMILLAN: Do you recall
18 if this is the same exhibit that might have been
19 presented at the request by Bowen/Edwards?

20 THE WITNESS: Yes.

21 COMMISSIONER MACMILLAN: It is the same
22 person.

23 THE WITNESS: Not exactly the same
24 exhibit. But, yes, the same data, the same Rose
25 diagram. I don't think we had two of them on the

1 same sheet of paper.

2 COMMISSIONER MACMILLAN: Okay. Good.
3 Again, I'm covering questions now for the applicant
4 that I didn't ask yesterday, but this may be more
5 appropriate for the geologist. Exhibit D. Do you
6 have a reference from which Texas Bureau of Economic
7 Geology Report that came from?

8 THE WITNESS: Yes. It is in the same
9 booklet, Mr. Commissioner.

10 COMMISSIONER MACMILLAN: That's okay.

11 THE WITNESS: It's not the same one.

12 COMMISSIONER MACMILLAN: So it actually
13 is a GRI report?

14 THE WITNESS: Yes, it is.

15 COMMISSIONER MACMILLAN: But this is
16 from a map that was previously published by the
17 Texas Bureau?

18 THE WITNESS: Yes, all the maps,
19 including all the isopach maps. The only change
20 that was made, where it says Amax Oil & Gas --
21 rather than confuse you I put Cedar Ridge in there.
22 That is the only change -- from the same document.
23 I think these are free. They might cost 5 or \$6,
24 but I think they are free.

25 COMMISSIONER MACMILLAN: That is all for

1 now, Mr. Chairman. I will come back, if I may.

2 CHAIRMAN HEINLE: Commissioner
3 Matheson.

4 COMMISSIONER MATHESON: We will probably
5 come back to the findings and issues related to the
6 Bowen/Edwards case later. I have some concerns
7 about what the commission found at that time too,
8 pretty similar to what Mr. MacMillan started with.

9 But for right now, Mr. Logan, on the
10 monitor wells, the 4-6, 5-13, how long have you been
11 monitoring the pressure in those wells?

12 THE WITNESS: On the 4-6 monitoring
13 well, which is located in the southwest quarter of
14 Section 6, we put a pressure transducer -- I think
15 September 14 of 1995, so a year.

16 COMMISSIONER MATHESON: It has been
17 stable through that whole period?

18 THE WITNESS: It took about four months
19 for the pressure to stabilize -- and that indicated
20 it is fairly low permeability where there was some
21 cross flow occurring, and then it has remained rock
22 solid for six months. We have seen minor
23 fluctuations. There might be as much as 1 or 2 psi
24 pressure drop in the past since January of 1996, in
25 the past -- what is that, nine months? It is still

1 normally pressured though, 0.42 psi per foot.

2 COMMISSIONER MATHESON: And the 5-13?

3 THE WITNESS: The 5-13 has been shut-in
4 since -- it has been shut-in since July of 1994
5 without any production, and we started monitoring
6 pressure in that about three months ago. There has
7 been no production from it for two and a half
8 years.

9 COMMISSIONER MATHESON: The pressure in
10 that well has remained stable in that three-month
11 period?

12 THE WITNESS: Yes, it has. And it is
13 over pressured about 0.46 psi, 0.48 psi.

14 COMMISSIONER MATHESON: Thank you. The
15 two Emerald infill wells in Section 32 that were
16 shut-in, how long has that shut-in been in place?

17 THE WITNESS: I think they were shut-in
18 the first part of April. It might have been April
19 1st of 1996.

20 COMMISSIONER MATHESON: Going back to
21 Commissioner MacMillan's questions concerning
22 completion techniques, I guess I'm going to be more
23 direct about it.

24 Is it possible that basically the
25 quality of your completions in Section 5 are not as

1 good as those in Section 32 and that is why you are
2 not seeing recovery efficiency?

3 THE WITNESS: It is possible. Yes, it
4 is possible. We don't believe that because we have
5 used the same technique and the same basic
6 procedures. But, yes, anything is possible.

7 It also could be due to operations,
8 compression. We don't believe that the magnitude
9 based upon what we have monitored in our own wells
10 looked -- we have different completion techniques on
11 our own wells and monitored those and also looked at
12 varying operating conditions on our wells, mainly
13 compression. We don't see that large of a
14 discrepancy between wells that we believe have
15 similar reservoir characteristics due to
16 completion.

17 COMMISSIONER MATHESON: I certainly
18 accept anything is possible. But through your
19 work-over activities have you seen any problems with
20 caving or scaling or things like that that would
21 lead you to believe that you have a problem
22 down-hole with your completion?

23 THE WITNESS: No. As a matter of fact,
24 what we have done recently is we have been running
25 production logs, down-hole, very accurate production

1 logs to look and see if we are getting production
2 from both coal seams. We have two coal seams: a
3 basic coal seam and an intermediate.

4 Part of my concern is are we getting
5 production equally from both of them recognizing
6 that each coal seam has different reservoir
7 properties. The intermediate coal seam in the upper
8 part of the area here (indicating) has higher
9 permeability, has the better reservoir than the
10 basal coal seam. That is based on well tests. We
11 know that. That is in the 5-7 well and the Valencia
12 Canyon 32-1 well where reservoir tests have been
13 performed in both of them.

14 Production logs run in the 3-6 well
15 located in the northeast quarter of Section 6,
16 offsetting our proposed area, the production log in
17 that one where we had hydraulically fracture
18 stimulated both coal seams, we are getting equal
19 production out of each seam which is indicating we
20 are getting -- both were effectively completed.

21 In our 6-5 well we were producing 80
22 percent of the gas out of the intermediate coal seam
23 and 20 percent out of the basal partly because the
24 reservoir conditions were poor in the basal coal
25 seam, so the reservoir here is extremely complex.

1 And, yes, it is possible our completions
2 are not as effective as Emerald's. I don't believe
3 that that is the reason for the big red bubbles in
4 32 and ours. I believe it is because they have two
5 straws in the reservoir versus our one straw.

6 COMMISSIONER MATHESON: Have you had any
7 access to the details of completion, work-overs,
8 efficiency perhaps of the completions in the inflow
9 wells at Emerald, Section 32?

10 THE WITNESS: We are involved with
11 Emerald on gas seep studies, and it has been a very
12 cooperative relationship. I think that data has
13 been provided to BLM and the Colorado Oil and Gas
14 Commission as well.

15 COMMISSIONER MATHESON: I guess what I'm
16 getting at, have you seen information that would
17 make you think that there are problems or super
18 duper wonderful successes with their completion
19 techniques in Section 32?

20 THE WITNESS: I don't see any big thing
21 that they have done significantly different than
22 what we have done on our acreage. It is not, Oh,
23 there is the key. They have done A, B, and C and
24 therefore no wonder they are so much better. No, I
25 have not seen that.

1 COMMISSIONER MATHESON: Okay. That's
2 good. Thank you.

3 CHAIRMAN HEINLE: Do you have any other
4 questions?

5 COMMISSIONER MATHESON: Not at this
6 time, not of this witness.

7 CHAIRMAN HEINLE: Any other questions
8 from the commissioners? Commissioner MacMillan.

9 COMMISSIONER MACMILLAN: I want to go
10 back, Mr. Logan, to some comments you made about the
11 water production and inferences to testimony that
12 was given -- to testimony given yesterday by
13 Mr. Baughman. In fact, I sketched it on my map. It
14 is important for me.

15 I have indicated on my map a pin line
16 that goes from the south end of Section 31 of 33
17 north, 11 west, north to the northern border of
18 Section 20 of the same township, and just east of
19 the water monitoring wells I have indicated what I
20 call the perm barrier, but it is cut off both on the
21 north -- again, on the north end of Section 20 and
22 on the south cut off in the north end of Section 6.

23 Do you recall that Mr. Baughman may have
24 said that south of Section 6 he had theories, but
25 those weren't yet confirmed?

1 THE WITNESS: Yes.

2 COMMISSIONER MACMILLAN: So you have a
3 different theory which would indicate that that perm
4 barrier may exist further to the south? Obviously
5 your testimony doesn't have to be the same as Mr.
6 Baughman's.

7 THE WITNESS: Actually, I think we have
8 the same opinion. I think what Mr. Baughman was
9 talking about yesterday is that these perm barriers
10 were purged at this point due to a fracture
11 stimulation. They could pick up and continue on on
12 the other side of these things, but these were areas
13 where there was a perm barrier going along the
14 outcrop -- and here (indicating) is an area where
15 someone has come through the fault that now ties
16 into these actual gaps, geographic gaps in the basin
17 that the barrier does continue on.

18 The industry, the Southern Ute Tribe,
19 the BLM, we work pretty closely in this area
20 studying this gas seep, and we are quite concerned
21 about it as well as an operator.

22 I don't believe we are saying anything
23 different than what Dick Baughman was saying. He
24 believes there was something continuing on down here
25 (indicating). We don't see gas seepage down in here

1 (indicating).

2 Something different geologically may be
3 occurring based upon the USGS outcrop map. As you
4 see, something different happens here (indicating).
5 That is why this pressure monitoring well is placed
6 here, and that is why there is a pretty extensive
7 monitor program here (indicating) to detect early on
8 if gas seepage becomes a problem.

9 I guess the answer to your question, I
10 don't think we are saying two different things. He
11 has theories on is it a fault? Is it a permeability
12 barrier? There is different water chemistry,
13 different gas/water ratios, different production
14 regimes in this area.

15 The reason his efforts have been focused
16 in this area is probably because of this gas seep at
17 Valencia Canyon gap, which has been something that
18 everyone has focused their attention on, and we have
19 not seen significant problems down here.

20 So our efforts -- when I say "our," it
21 is the industry team, BLM, the tribe -- have been
22 focusing here because that is where we are seeing
23 the gas seep.

24 COMMISSIONER MACMILLAN: Let me be
25 direct. The gas seep to the south of the area that

1 Dick had suggested was a perm barrier indicating
2 down-basin stuff to a significant number of
3 monitoring wells, five wells to the north.

4 MR. EKBERG: We can't see where you are.

5 MS. COULTER: Let the record reflect the
6 discussion is occurring in reference to Exhibit 2.

7 COMMISSIONER MACMILLAN: The applicant's
8 Exhibit 2. Right.

9 There is a gap between the monitoring
10 well located in Section 31, the south half of
11 Section 31, and the south end of Section 6. An
12 up-dip of that is a gas seep already known in
13 existence.

14 You have demonstrated successfully to me
15 that there are significant changes that can go on in
16 a small aerial extent, not necessarily based on
17 thickness of geology or thickness of coal seams in
18 either the middle interval or the lower coal.

19 I'm wondering why, if, in fact, we allow
20 this well to be recompleted in the Fruitland, that
21 we also wouldn't want to have this well converted to
22 a monitoring well for pressure information gathered
23 on a regular basis, that is, for a currently
24 producing well in the northeast of Section 6 -- or a
25 separate monitoring well being drilled in the north

1 half of Section 6 west of the currently producing
2 well -- to be able to monitor the activity of your
3 proposed recompletion?

4 THE WITNESS: I guess it is really a
5 question of how close do you really need monitoring
6 wells to look at the impact of what I call an
7 interior well here, which we have production between
8 us and the monitoring well.

9 Again, I think the orientation is going
10 to be primarily north/south where the majority of
11 the impact will be in this direction, not east/west
12 -- will be north/south versus east/west.

13 MR. EKBERG: Mr. Logan, we still can't
14 see.

15 THE WITNESS: My response is that the
16 orientation is north/south, and that this 3-6 well
17 we don't believe is going to be impacted by the 2-5
18 well because it is west and in the orientation of
19 the lowest permeability direction, the butt cleat
20 direction. That is why I don't believe -- then the
21 other one is how close do you really need monitoring
22 wells to look at the impact of offset production?

23 The problem would be if there is, in
24 fact, a fault that runs from the northwest quarter
25 of Section 6, how far does it go? What side would

1 you put a monitoring well on?

2 There is some evidence and some belief
3 that there might be a fault there, and it might be a
4 separate compartment. It is still in the theory
5 stage. It is something we are looking at.

6 I think the gas seep issue, one of the
7 main things on that related to our 2-5 proposal, is
8 that there is an existing monitoring program in
9 place. We not only monitor this well for pressure,
10 but there is a number of soil vent tubes. We
11 monitor the gas seepage in the creek or the artesian
12 flow in the creek and we haven't seen any
13 significant changes.

14 There is a program in place that if
15 there is changes, then the Southern Ute Indian Tribe
16 and the industry -- we are in a position that we can
17 react to those changes very quickly rather than
18 starting after the fact in some of the other areas
19 in the basin.

20 COMMISSIONER MACMILLAN: So the answer
21 would be that you think sufficient monitoring
22 activities are already in place to be able to
23 monitor whatever impact, what you think is very
24 slight, for your proposed location? The impact is
25 small in your interpretation, but there are

1 sufficient means in place now, already, to be able
2 to monitor that on a regular basis?

3 THE WITNESS: That's correct.

4 COMMISSIONER MACMILLAN: Thanks.

5 THE WITNESS: This is your exhibit.

6 CHAIRMAN HEINLE: Commissioner
7 Blackwell.

8 COMMISSIONER BLACKWELL: One question
9 for Mr. Logan.

10 With regard to Exhibits Q and R, you
11 pointed out in a comparison of these exhibits,
12 looking just east of the Fruitland outcrop, Sections
13 30 and 31, that Exhibit Q showed a low cumulative
14 gas was in that same area; Exhibit R showed a high
15 cumulative water, and then moving further east in
16 Sections 20 and 32 we see the opposite.

17 You postulated that based on that there
18 was a barrier separating those two areas and
19 something very different going on there
20 geologically.

21 I don't really see that same trend
22 continuing into Section 6. I'm wondering what do
23 you base the continuation of this barrier on? Is it
24 strictly on the monitoring wells that are in the
25 area, or how do you project that?

1 THE WITNESS: A couple points: first,
2 we do not have as many outcrop wells. Notice the
3 proximity of the wells in Section 30 and 31 to the
4 outcrop. There are no wells that close to the
5 outcrop that we have in Section 6 or 7 or 12 as you
6 follow down. That is the first thing. There are no
7 data points there to show that continuous trend.

8 Secondly, what I pointed out was that I
9 don't think geologically there is a main change
10 there. I think there might be something about the
11 reservoir that changed, some sort of barrier.

12 There is different water chemistry, as
13 Dick Baughman pointed out yesterday, close to the
14 outcrop versus the down dip.

15 There is a different pressure regime
16 close to the outcrop versus the down dip, and based
17 upon that evidence there is some sort of barrier.
18 And, again, it is still something that the Southern
19 Ute Tribe has some ideas on.

20 What is the physical nature of that
21 barrier? No one knows. Is it a fault? We don't
22 know. But there is something different between the
23 outcrop, a couple wells. And the reason you don't
24 see it dramatically shown here is we don't have
25 wells that close to the outcrop. But we do have the

1 4-6 observation well down in the southwest quarter
2 of Section 6 which, in my opinion, the pressure is
3 much more telling than production because the
4 pressure is a whole different pressure regime than
5 what you see across the barrier to the east. Does
6 that answer your question?

7 COMMISSIONER BLACKWELL: Yes, it does.
8 I recognize there are no data points in Section 6
9 close to the Fruitland outcrop. But even looking at
10 the well in the northeast quarter of Section 6, it
11 seems to me that when you jump from Section 31, 32,
12 and into Sections 5 and 6 southward, that there is a
13 change going on there as well. And with that well
14 in the northeast quarter of Section 6, I'm not
15 seeing the contrast in the production.

16 THE WITNESS: Part of that is due to the
17 age of that 3-6. The 3-6 is one of the older wells,
18 as you can see on Exhibits S and T, I think. If you
19 look at the date relative to the other wells, the
20 data is skewed a little bit because that has been in
21 production a couple of years longer, the bubbles are
22 going to be a little bigger.

23 The 3-6 well is one of the oldest wells
24 in the field. It is 5.7 years. It has been in
25 production -- as compared to the wells in Section 30

1 that you are looking at -- three years, about two
2 and a half to three years more production, and that
3 is part of the reason that it looks a little off
4 there.

5 COMMISSIONER BLACKWELL: I guess my
6 concern is I'm not seeing as much evidence of the
7 barrier extending down, and so therefore I was
8 wondering if perhaps the additional monitoring that
9 Commissioner MacMillan proposed would be something
10 advisable?

11 THE WITNESS: That 4-6 monitor well --
12 that is to me the biggest piece of evidence there.
13 It is better than the production data because it is
14 a definite different pressure regime than what is
15 down dip.

16 How far does that seep out? Remember,
17 the orientation is north/south. So we are seeing
18 effects more north/south in the orientation that you
19 are proposing -- we are talking about another
20 observation well -- that is the direction that this
21 well is seen, more along the outcrop, because the
22 orientation is north/south versus east/west because
23 the maximum permeability direction is oriented in
24 that direction, north/south.

25 So it is seen out there a lot farther

1 north than it would east/west.

2 COMMISSIONER BLACKWELL: I understand.

3 CHAIRMAN HEINLE: Let me interject
4 something here. It is almost eleven o'clock. We
5 are going to break from 12 to 1:30.

6 We still have Burlington's case to
7 hear. We have deliberations on this well to go
8 through, and we have another hearing, another cause
9 to take up, the second well. They are handled
10 separately. I want everybody to keep that in mind
11 in terms of where we are headed today.

12 It looks like it is going to take all
13 day. I certainly don't think it is a good idea to
14 take it to tomorrow. What I am saying is, we are
15 going to be done at five o'clock one way or the
16 other. If that means later on in the day I have to
17 cut off questions, I will do that. Commissioner
18 Matheson.

19 COMMISSIONER MATHESON: I would like to
20 work on this figure they passed out, the orientation
21 of maximum permeability.

22 CHAIRMAN HEINLE: Could you speak up a
23 little bit?

24 THE WITNESS: Is there an extra one of
25 those, the Rose diagram?

1 MR. EKBERG: We also don't have a copy.

2 COMMISSIONER MATHESON: I guess what I'm
3 seeing, as you say, to the north in Section 32 the
4 permeability trend is more or less north/south. But
5 as we move south into Section 7 there is evidence in
6 the Southern Ute 5-7 that that trend basically
7 becomes more north/south east/west. We have more or
8 less equal permeability going -- no, I'm reading
9 this thing wrong. Would you explain it to me?

10 THE WITNESS: What this Rose diagram
11 shows is that the Valencia Canyon 32-1 -- remember,
12 that is only three data points on a
13 one-and-a-half-foot piece of coal where we have six
14 to seven feet of coal. Is that representative of
15 the whole reservoir? That is a little shaky. What
16 that shows is the number of readings. This isn't a
17 permeability measurement. This is a number of
18 readings that you have measured the orientation of
19 those cracks in that direction.

20 So, for example, looking at the 5-7
21 well, this is based upon 27 feet of coal, 219 data
22 points. And the graph, the Rose diagram, the way
23 that works is that there is 25 data points, 32 data
24 points, and 36 data points -- if you can read the
25 small numbers. That is how many readings were made

1 where they had seen an orientation north/south.

2 East/west is the number of readings that
3 were made on the butt cleats. The cleats that are
4 oriented 90 degrees to the face cleats -- it has
5 nothing to do with the permeability. It has been
6 shown through reservoir tests in other areas that
7 the face cleats are the ones that are open and have
8 the maximum orientation and permeability, and the
9 butt cleats is a less-defined and developed set of
10 natural fractures in the coal.

11 COMMISSIONER MATHESON: So basically
12 there is no evidence in the record that you are
13 aware of -- or the literature -- that there is a
14 change in the permeability as you move to the south,
15 whether it becomes a greater east/west component or
16 anything along those lines at all?

17 I guess what I'm concerned with here is
18 essentially if this well is permanent as an infill
19 well -- we are looking at your Exhibit U, pressure
20 completion -- that if we get a greater east/west
21 component as we go south are we only going to be
22 concerned with a bubble, so to speak, that expands
23 east/west in the south towards the outcrop in the
24 general direction of the Meridian Ute 32-11, or is
25 this north/south trend that you are showing here

1 basically uniform throughout this area? Do you
2 understand what I'm asking?

3 THE WITNESS: I understand what you are
4 saying. I believe it is fairly uniform in this
5 particular area. There can be some rotation in
6 other parts of the basin.

7 I'm trying to think of some published
8 data that I could reference where they are talking
9 about face cleat orientations --

10 COMMISSIONER MATHESON: -- or increased
11 permeability in the butt cleats as we move south.

12 THE WITNESS: Not that I know of.
13 Typically the face cleats is on the open set of
14 fractures, the primary set of fractures. The butt
15 cleats are a less defined set of fractures that are
16 closed.

17 CHAIRMAN HEINLE: Need to take a break
18 while you add new paper? This portion is off the
19 record.

20 (Discussion off the record.)

21 CHAIRMAN HEINLE: All right. Let's go
22 back on the record. Are there any other questions
23 from the commissioners?

24 COMMISSIONER MATHESON: Mr. Logan, have
25 you completed your response?

1 THE WITNESS: Yes. I can't recall of
2 any published data that talks about the orientation
3 of the maximum permeability. There is a lot of
4 published data that does look at the orientation of
5 fractures and cleats in this area that are
6 consistent with what we have presented here today.

7 COMMISSIONER MATHESON: Thank you. That
8 is all I have.

9 CHAIRMAN HEINLE: Any other questions?

10 One quick one, Exhibit M, the gas
11 production curve for the south half of 32 shows a
12 big drop in January 1996 or thereabouts. Is that
13 mechanical? Do you know?

14 THE WITNESS: I think that was near the
15 time when one of the infill wells was shut-in.

16 CHAIRMAN HEINLE: Thank you. Any other
17 questions?

18 DIRECTOR GRIEBLING: I didn't recall
19 from the testimony or from review of the exhibits
20 that there was a statement as to what standard cubic
21 feet per ton was utilized on gas in-place.

22 THE WITNESS: It varies. On Exhibit V,
23 the notes on the bottom, we calculated the gas
24 in-place on a foot-by-foot basis based upon the
25 density log.

1 DIRECTOR GRIEBLING: I understand how
2 you picked net pay, but I wasn't sure what you did
3 for standard cubic feet per ton.

4 THE WITNESS: It varies by well to
5 well. Based upon actual absorption tests --

6 DIRECTOR GRIEBLING: That was the
7 question I had. The other one is with respect to
8 Exhibit Y. The first six rows in Exhibit Y, those
9 all apply to working interest owners -- as I
10 understand the diagram. Is that correct?

11 THE WITNESS: That is correct.

12 DIRECTOR GRIEBLING: Under the
13 incremental column, you could total the 269 and the
14 1413 and get 1682. That would be like the bottom
15 line, incremental impact to working interest
16 owners. Would that be the total of those numbers?

17 THE WITNESS: That is correct.

18 DIRECTOR GRIEBLING: That is all I
19 really need to point out there.

20 Then with respect to Exhibit 1C, the
21 lease operating statement, those basically indicated
22 that at least -- during certain months the wells
23 were uneconomic some time ago. It is my
24 understanding that those wells are considered to be
25 uneconomic today. Is that what you understand the

1 case to be as well?

2 THE WITNESS: That's correct.

3 DIRECTOR GRIEBLING: I realize that the
4 Southern Ute Tribe has their E & P manager here, Bob
5 Zahradnik. If there is any misunderstanding on
6 that, I'm sure he can testify later on.

7 Very quickly I want to refer to the
8 pressure barrier, the pressure gradient map and make
9 sure that I understand -- that is Exhibit U -- that
10 I understand correctly in Section 6 there are three
11 pressure data points shown on the map, and the two
12 that I'm interested in are the 4-6 and the 1-6. As
13 I understand it, the map indicates that 4-6 shows a
14 gradient of 0.449 psi per foot; 1-6 shows 0.250 psi
15 per foot.

16 Those two data points would show the
17 greatest difference in pressure gradient and hence
18 could infer the strongest evidence for separation
19 and existence of some sort of barrier of any two
20 points on the map, as I read the map; is that
21 correct?

22 THE WITNESS: That's correct.

23 DIRECTOR GRIEBLING: So from a pressure
24 data standpoint, that data, at least in the southern
25 part of Section 6, is the strongest evidence that

1 there is a barrier of any two points.

2 THE WITNESS: That's correct.

3 DIRECTOR GRIEBLING: Those are all the
4 questions I have.

5 CHAIRMAN HEINLE: Any other questions?
6 All right. The witness may be excused. Did you
7 have any redirect?

8 MR. EKBERG: No, thank you.

9 MR. WOZNIAK: We would like to call
10 Mr. Zahradnik to testify as our next witness.

11 BOB ZAHRADNIK,
12 having been previously sworn, testified as follows:

13 EXAMINATION

14 BY MR. WOZNIAK:

15 Q Please state your name and business
16 address and spell your name.

17 A My name is Bob Zahradnik. I work in
18 Ignacio, Colorado. Do you want me to spell that?
19 Z-a-h-r-a-d-n-i-k.

20 Q Mr. Zahardnik, I think most of the
21 people here know you, but by whom are you employed?

22 A I am employed by the Southern Ute Indian
23 Tribe as an exploration production manager in their
24 energy division.

25 Q Do you also hold that capacity at Red



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1 Willow?

2 A Yes. I am also manager of Red Willow
3 Production Company.

4 Q Is that entity owned by the Southern Ute
5 Indian Tribe?

6 A It is the Southern Ute Indian Tribe
7 doing business as Red Willow Production Company.

8 Q Is Red Willow the operator of the well
9 at issue as well as the 1-7 we will hear later
10 today?

11 A Yes.

12 Q So you are here on behalf of not only
13 the tribe but also Red Willow and Pinon; is that
14 correct?

15 A Yes.

16 Q We just heard some discussion about the
17 economic nature of the wells as they currently
18 produce. Does the tribe have a position or does Red
19 Willow have a position as to the economic nature of
20 the current Mesaverde production?

21 A We don't feel that 18 Mcf a day which
22 generates revenues of about 24, 25, \$26 per day
23 gross revenues is an economic well. It is marginal,
24 at best.

25 Q From the date that the letter was

1 written -- and that is one of the exhibits that you
2 wrote, Exhibit 1A, which was August 1, '95 -- to the
3 present date, has the production changed
4 significantly?

5 A It has declined as line pressures have
6 increased.

7 Q The second area I would like to get into
8 is directing your attention to Exhibit B -- that was
9 testified about earlier.

10 Could you identify, at least underneath
11 the Cedar Ridge acreage, which is where the 2-5 is
12 in Section 5 and also in the 1-7 area, what the
13 tribe's mineral and surface ownership position is?

14 A The tribe owns all the minerals and all
15 the surface acreage in those spacing units.

16 Q With respect to the yellow area, which
17 is shaded on the maps, including parts of Section
18 18, 17, and I believe 8, it shows Pinon and Red
19 Willow involved there. Could you please describe
20 your tribe's working interest ownership in that
21 area?

22 A Generally through that area the tribe is
23 half owner of a joint venture which has two-thirds
24 of the working interest. Pinon operations is a
25 joint venture between the tribe and Stevens, Inc.

1 out of Little Rock, and we have a 50/50 joint
2 venture which owns two-thirds of the working
3 interest.

4 CHAIRMAN HEINLE: Mr. Zahardnik, I think
5 the court reporter -- when you turn away towards the
6 map -- has a hard time hearing. Either try to speak
7 up or direct the answer more this way.

8 BY MR. WOZNIAK:

9 Q So basically the tribe owns two-thirds
10 of the working interest in the yellow shaded area?

11 A That's correct.

12 Q Has the tribe prepared a position with
13 respect to the two applications before us today?

14 A Yes. The tribe supports these two
15 applications.

16 CHAIRMAN HEINLE: Mr. Ekberg.

17 MR. EKBERG: Are we on both of them
18 right now, or just --

19 MR. WOZNIAK: I asked if the letter
20 applied to both.

21 BY MR. WOZNIAK:

22 Q I am going to direct your attention to
23 Exhibit 4, which is a letter from the Southern Ute
24 Indian Tribe dated September 4, 1996 to the Oil and
25 Gas Conservation Commission and ask if you can

1 identify the letter?

2 A The question is, can I identify the
3 letter?

4 Q Yes.

5 A It is a letter from Leonard Burch to the
6 commissioners of the oil and gas commission.

7 Q Who is Leonard Burch?

8 A He is the chairman of the Southern Ute
9 Indian Tribe.

10 Q Basically can you provide the reasons
11 set forth in the letter and on your own behalf as to
12 why the tribe supports the Southern Ute 2-5
13 application?

14 A We believe it will capture additional
15 reserves, accelerate reserves in an economically
16 beneficial manner. It will provide the operator and
17 the tribe with valuable reservoir data, produce
18 negligible surface impacts, and have little or no
19 impact on outcrop seepage.

20 Q Has Cedar Ridge worked with you over the
21 past year, year and a half, to bring these
22 applications to present status?

23 A Yes. Cedar Ridge approached the tribe
24 and the BLM, consistent with the way the MOU has to
25 work between the tribe and the BLM and the oil and

1 gas commission, to find out what the tribe's
2 position was some time ago.

3 Q Have you worked with the BLM and Cedar
4 Ridge in cooperating and putting these applications
5 together?

6 A Yes.

7 Q Another issue has come up by some of the
8 intervenors, and perhaps not as much as by the
9 protestant, that they were concerned that this is a
10 large-scale attempt at downspacing within the
11 Fruitland Coal formation. Does the tribe have a
12 position on that issue?

13 A Yes. The tribe has never advocated
14 field-wide downspacing. The tribal counsel has
15 never advocated full-scale downspacing. The energy
16 division of the tribe has never proposed to the
17 tribal counsel that we advocate a full-scale
18 downspacing. What we do when a specific application
19 makes sense, we do support that.

20 Q It is the tribe's position that this
21 application does make sense?

22 A Yes.

23 MR. WOZNIAK: I believe that is all the
24 questions I have for this witness.

25 BY MR. WOZNIAK:

1 Q Was this exhibit prepared under your
2 direction and control along with the Southern Ute
3 Indian tribal counsel?

4 A Yes.

5 MR. WOZNIAK: That is all the questions
6 we have.

7 CHAIRMAN HEINLE: Mr. Ekberg.

8 EXAMINATION

9 BY MR. EKBERG:

10 Q Do you have any data that will suggest
11 you will capture additional reserves and accelerate
12 reserves that hasn't been presented already?

13 A Nothing that hasn't been presented
14 already.

15 MR. EKBERG: Thank you.

16 CHAIRMAN HEINLE: Questions from the
17 commissioners? Redirect?

18 MR. WOZNIAK: At this point I would move
19 for the admission of the engineering exhibits from
20 Mr. Logan and also Mr. Zahradnik's letter. And with
21 that we would have no more presentations subject to
22 a closing statement.

23 CHAIRMAN HEINLE: Any objections?

24 MR. EKBERG: No objections.

25 CHAIRMAN HEINLE: Okay. They are

1 admitted.

2 Mr. Ekberg, you are on. I will do the
3 same thing, if you have all your witnesses here, I
4 will be happy to swear them all in at once to save
5 some time.

6 MR. EKBERG: We will have three
7 witnesses.

8 Mr. Chairman, I'm representing
9 Burlington Resources Oil & Gas Company. My name is
10 Carleton Ekberg. We will have three witnesses
11 today: Mr. John Zent, landman for the company. He
12 has already made a dramatic entrance into this room;
13 Mr. Steven Thibodeaux, a geologist from Burlington
14 Resources; Mr. Jack Kean, a reservoir engineer for
15 Burlington Resources.

16 CHAIRMAN HEINLE: I need to swear them
17 in.

18 (Whereupon, witnesses were sworn
19 altogether by the chairman.)

20 CHAIRMAN HEINLE: When you come forward
21 to testify, please state your name and address for
22 the record and spell your name.

23 MR. EKBERG: The first witness we would
24 like to call -- before we start, I would like to
25 point out that we will try to expedite our testimony

1 as much as we can. A lot of what we have is
2 consistent with what has already been presented; of
3 course there will be some variations in our
4 interpretations in areas.

5 CHAIRMAN HEINLE: I appreciate that, but
6 take the time you need to present your case, and we
7 will work on our end on the questions.

8 MR. EKBERG: The first witness is John
9 Zent.

10 JOHN ZENT,
11 having been previously sworn, testified as follows:

12 EXAMINATION

13 BY MR. EKBERG:

14 Q For the record, state your name and your
15 address.

16 A My name is John F. Zent, Z like Zebra,
17 e-n-t, Z-e-n-t. My address is 3535 East 30th
18 Street, Farmington, New Mexico 87401. That is
19 Burlington Resources' business address.

20 Q Can you state your employer and your
21 current position?

22 A My employer is Burlington Resources Oil
23 & Gas Company, and I'm employed as a divisional
24 landman in Farmington where I have been employed
25 since 1990.

1 Q Have you prepared a resume, a current
2 resume for presentation for the commission?

3 A I have prepared a resume for the
4 commission to review.

5 Q It is in the package. Can you describe
6 your educational background?

7 A I received a BA in sociology from Baylor
8 University in 1975, and I went to work in the oil
9 and gas business with a drilling contractor upon
10 graduation.

11 In January 1978 I took my first job as
12 petroleum landman with Phillips Petroleum Company
13 here in Denver where I worked until 1979.

14 I was subsequently employed by Adobe Oil
15 & Gas, and in July 1979 I went to work for Southland
16 Royalty Company in Denver. Southland was acquired
17 by Burlington Northern in 1986, so I have
18 essentially been with Burlington Resources now since
19 my employment with Southland in 1979.

20 During that time I have worked all the
21 major basins in the Rocky Mountains and particularly
22 I have been involved in the San Juan Basin since
23 1986 when I went to work for Southland Royalty.

24 Q Can you describe your professional
25 affiliations?

1 A I am a member of the American
2 Association of Professional Landmen since 1978, and
3 I am also a certified professional landman through
4 tests and experience since 1986. I am currently
5 serving as president of the Four Corners Association
6 of Professional Landmen in Farmington.

7 MR. EKBERG: I ask the commission to
8 accept Mr. Zent as a witness qualified to testify on
9 land matters.

10 CHAIRMAN HEINLE: Any questions from the
11 commissioners? So accepted.

12 BY MR. EKBERG:

13 Q Mr. Zent, have you prepared any exhibits
14 which identify the land position of the area in
15 question and any additional acreage that was not
16 shown on the applicant's maps?

17 A Yes, I have. I have prepared two
18 exhibits for review by the commission this morning
19 regarding the applicant's cause before us today,
20 numbered Exhibit 1 and Exhibit 2 in your packet.

21 Let me first of all address Exhibit 1
22 and tell you what is included on that exhibit and
23 what is omitted from that exhibit.

24 Exhibit 1 is a land plat of township 32
25 north, range 11 west. That is the entire township.

1 I have shown Burlington's leasehold position in
2 yellow on the map.

3 In addition, we have some additional
4 leaseholds east of what is shown in yellow that we
5 chose not to put on the map because it is not
6 directly affected by this application, but we do
7 have additional acreage in the eastern part of the
8 township.

9 Exhibit 1 also shows the legal drilling
10 units and spacing units for the well of the
11 application being the Southern Ute 2-5 well located
12 in the northwest quarter of Section 5, 32 north,
13 range 11 west. That is shown on my map with a large
14 red triangle which will represent the location that
15 is proposed for the recompletion of the Fruitland
16 Coal.

17 I have shown in the additional red
18 outlines the drilling and spacing units in the
19 sections offsetting the application. So we have a
20 stand-up drilling and spacing unit in the west half
21 of Section 4, two stand-up drilling and spacing
22 units in Section 5. I have not shown the spacing
23 units for Section 6. And then I have shown the two
24 stand-up spacing units for Section 7, the two
25 stand-up spacing units for Section 8, and the

1 stand-up spacing unit for the west half of Section
2 9. Those are the drilling and spacing units that
3 are most directly affected by the application.

4 In addition, Exhibit 1 shows in the
5 orange shading the legal drilling and spacing unit
6 approved by the Colorado Oil and Gas Conservation
7 Commission for Fruitland Coal wells in the
8 Ignacio-Blanco-Fruitland Coal pool.

9 That order, number 60, I believe,
10 provides for a legal drilling window in the
11 northeast and the southwest quarters of each of the
12 sections with a setback of 130 feet from the
13 interior quarter section lines and 990 feet from the
14 exterior lines, and those drilling windows are shown
15 for Section 5, the next section of this application
16 in Section 7, the section of the subsequent
17 application, and they would be the same for every
18 Fruitland Coal well in this township.

19 Exhibit 1 also shows all the Fruitland
20 Coal wells that would be drilled and completed in
21 this township, and they are represented by the small
22 triangles throughout the township. If you will
23 notice, the entire township is completely developed
24 as to Fruitland Coal based on the current spacing
25 regulations.

1 Q Mr. Zent, you have shown two stand-up
2 spacing units in Section 8. Is there some confusion
3 about the spacing, the designation in Section 8?

4 A Yes, there is.

5 Q If so, can you describe that?

6 A As you recall from the testimony
7 yesterday, the applicant showed that Section 8 had
8 laid out spacing units and indicated that Burlington
9 Resources or Meridian would have an interest in the
10 Southern Ute 8-2 well located in the southwest
11 quarter of Section 8 by virtue of our 80 acres in
12 the southeast quarter. That well was drilled and
13 completed in 1990 or 1991 -- I don't recall the
14 exact date -- by McKenzie Methane. McKenzie, in
15 fact, proposed a well to Meridian with a south half
16 dedication at that point in time.

17 When Meridian received the well
18 proposal, we wrote a letter back to McKenzie
19 advising that we were not interested in
20 participating in a well in the south half, but if we
21 could locate a well in a legal location in the
22 northeast quarter Meridian would be inclined to
23 participate in the drilling of what is shown in the
24 map as the 8-1 well.

25 Through time we heard nothing further

1 from McKenzie Methane about their proposed drilling
2 activity in Section 8, and in fact had no knowledge
3 that McKenzie had in fact drilled and completed both
4 the 8-1 and 8-2 well without Meridian's election or
5 joinder. We have not signed a joint operating
6 agreement, a communitization agreement, or an APD
7 for either of those wells.

8 Section 8 has gone through a rather
9 tumultuous time as a result of the McKenzie Methane
10 situation and their bankruptcy. I believe the wells
11 are currently operated by Red Willow and they may be
12 the fourth operator of the well.

13 My most recent communication with Red
14 Willow's landman as well as Kukui's landman was that
15 they felt Section 8 would eventually be spaced on
16 stand-up units. That is what I have shown, stand-up
17 units on this Exhibit 1 which conflicts with the
18 exhibit we saw yesterday.

19 In all honesty, I'm not sure that a
20 decision has been made by the operator in that
21 regard, but I know there are documents of record
22 that indicate that the wells were originally drilled
23 and spaced on lay-down units. Current indications
24 are that they will wind up being stand-up units.

25 If in fact they become stand-up units,

1 Meridian-Burlington is a corner offset interest
2 owner to the Southern Ute 2-5 well that has the west
3 half Section 5 spacing unit.

4 Q What does Exhibit 2 show?

5 MR. EKBERG: Incidentally, for the
6 commissioners' benefit, a lot of these exhibits will
7 be common to both hearings today and we have shown
8 both docket numbers on there. Where it will be
9 applicable only to one, we will show only that
10 docket number.

11 THE WITNESS: Exhibit 2 is a land plat
12 of township 32 north, range 11 west, and it has in
13 common with Exhibit 1 all the Fruitland Coal wells
14 shown with the triangles on the exhibit. Meridian's
15 leasehold interest is shown in yellow again.

16 On this exhibit I have also indicated
17 and shown the various ownership of minerals within
18 the western portion of township 32 north, range 11
19 west.

20 The minerals held by the Southern Ute
21 Indian Tribe are indicated on the plat with a red
22 diagonal -- northeast to southwest diagonal hatch
23 and the oil and gas minerals held by fee owners are
24 shown on this plat with a blue diagonal line that
25 goes from the northwest to the southeast.

1 If you look at Exhibit 2 in conjunction
2 with Exhibit 1, you will see that the drilling and
3 spacing unit for the applicant's well, Southern Ute
4 2-5 is in fact 100 percent tribal minerals; however,
5 if you look at the adjacent drilling and spacing
6 units, namely the west half of Section 4, you will
7 see that that is not 100 percent Southern Ute Tribe
8 minerals, but that there are fee minerals involved
9 as well as tribal minerals. And then the two
10 drilling and spacing units in Section 8, whether
11 they be stand-up units or lay-down units, also
12 contain a combination of both tribal and fee
13 minerals.

14 BY MR. EKBERG:

15 Q I'm not sure, but did you mention the
16 east half of Section 5?

17 A No, I did not. The east half of Section
18 5 is also a situation where fee and tribal minerals
19 are different and varies from the applicant's
20 drilling and spacing unit.

21 I might point something out on my
22 Exhibit 2. When you look at the Meridian leasehold
23 in yellow, the tribal mineral crosshatch did not
24 come through readily in Section 4 and Section 9, and
25 down into Sections 16 and 15 you can just barely see

1 the red crosshatch. That is tribal minerals.

2 Down in Sections 20 and 21 towards the
3 southern portion you can also faintly see some blue
4 lines that did not come through.

5 In addition, when you look at the row of
6 Sections 3, 10, 15, and 22 there is no crosshatch on
7 those sections. Those four sections are in fact 100
8 percent tribal minerals.

9 So if I had completed this plat, it
10 would have been crosshatched with a red diagonal
11 northeast to the southwest. That particular row of
12 sections or column of sections is the first column
13 of sections in this township where you have
14 continuous Southern Ute tribal minerals without any
15 intervening fee minerals affecting the drillblocks.
16 You might want to note that on Exhibit Number 2.

17 Q Were these exhibits prepared by you and
18 under your direction and control?

19 A Yes, they were.

20 MR. EKBERG: I ask that these be
21 admitted into evidence.

22 CHAIRMAN HEINLE: Any objections?

23 MR. WOZNIAK: Subject to
24 cross-examination, no.

25 CHAIRMAN HEINLE: Okay.

1 MR. EKBERG: No further questions of
2 this witness.

3 CHAIRMAN HEINLE: Mr. Wozniak.

4 EXAMINATION

5 BY MR. WOZNIAK:

6 Q Mr. Zent, I apologize for being behind
7 you, so it is hard to do this. When I look at your
8 exhibit here -- and you are correct, there is some
9 misunderstanding with respect to Section 8 and the
10 spacing units. With respect to the 8-2 and the 8-1
11 well, which well was drilled first?

12 A I do not know.

13 Q And you also mentioned some data, and
14 I'm not sure which data that was that reflected that
15 there was a lay-down spacing unit established for
16 the 8-2.

17 A The data that I have seen was the
18 McKenzie Methane's original proposal to Meridian
19 that included an APD and a joint operating agreement
20 which were not executed by Meridian. And I believe
21 the APD filed with the BLM also indicated a lay-down
22 unit. But again, there has been no communitization
23 agreement at this point in time.

24 Q So I understand in the upshot of what
25 you are saying, did Meridian participate in the 8-2

1 well?

2 A No, we did not.

3 Q So revenues are not derived from that
4 and you are not expecting any?

5 A Not currently.

6 Q With respect to the 8-1 well, if I
7 understand your testimony, you didn't participate in
8 that because it would be drilled without your
9 knowledge?

10 A That is correct.

11 Q You didn't pay the costs and are not
12 participating in the revenues?

13 A Not presently.

14 Q Who is Murchison Atlantic Quintana that
15 you list as owners apparently in 8-2?

16 A This plat is an old map, Murchison and
17 Atlantic -- Atlantic became Arco, Atlantic Richfield
18 -- and those were some of the original lessees
19 under the oil and gas leases issued in this
20 township. It has not been updated because
21 Burlington internally likes to keep track of the
22 original lessees, to the best of our ability.

23 Q So what is the date of the data that we
24 are looking at?

25 A The yellow data is current data.

1 Q Yellow is current, but the owners are
2 not current?

3 A The owners are not current. They are
4 dated. It may be from the early sixties or it may
5 be from the seventies, depending on when that data
6 was first put together.

7 MR. WOZNIAK: I have no further
8 questions.

9 CHAIRMAN HEINLE: Any questions from the
10 commissioners? Commissioner Johnson.

11 COMMISSIONER JOHNSON: If it is not
12 current data, does that mean that the current data
13 would be different than the data as represented as
14 historic data?

15 THE WITNESS: That is correct. The
16 current lessees would be different that what may be
17 represented on this map as far as some of the land
18 in Sections 18 and 19.

19 COMMISSIONER JOHNSON: What about
20 ownership, fee ownership?

21 THE WITNESS: Fee ownership is current
22 on Exhibit 2.

23 CHAIRMAN HEINLE: Just to clarify a
24 point for me in regard to the situation in
25 Section 8, the spacing of it, if the spacing units

1 remain as lay-down units and that doesn't change --

2 THE WITNESS: Does it change?

3 CHAIRMAN HEINLE: No, if it doesn't
4 change. As I understand it, at least what you
5 originally reviewed indicated that it was a lay-down
6 spacing unit on the 8-2 well.

7 THE WITNESS: Yes, sir.

8 CHAIRMAN HEINLE: If that were not to
9 change in any way, Meridian-Burlington Northern, as
10 they originally objected the location of that well
11 would elect not to be in that well?

12 THE WITNESS: I don't know what our
13 election would be today. I have had communication
14 with several of the operators over the last six
15 years in this regard, and our current understanding,
16 albeit verbal, is that given a -- if the operator
17 were to provide Meridian with an actual well cost
18 estimate and a production rate, we would elect to
19 participate or not consent.

20 CHAIRMAN HEINLE: Let me cut to the
21 issue. At some point in time -- at least it is your
22 opinion -- Meridian still has the right to elect to
23 be either in the 8-2 or the 8-1, depending
24 ultimately on what happens with the spacing units.

25 THE WITNESS: That's correct.

1 CHAIRMAN HEINLE: That right comes
2 through the fact that that hasn't been resolved yet,
3 that you haven't been forced-pooled, the spacing
4 hasn't been set?

5 THE WITNESS: That is correct. And it
6 has been difficult for Meridian to initiate any
7 action on either the 8-1 or the 8-2 not knowing for
8 sure which well the operator is going to put us into
9 by virtue of standing up the drilling spacing units
10 or lying them down.

11 CHAIRMAN HEINLE: So it has not been
12 resolved yet?

13 THE WITNESS: That is correct.

14 CHAIRMAN HEINLE: Commissioner
15 MacMillan.

16 COMMISSIONER MACMILLAN: I was under the
17 impression that you had indicated that order 60, or
18 some such order as that, had established the spacing
19 units to be stand-ups. Did I misunderstand?

20 THE WITNESS: I may have misspoken.
21 Order 60 established stand-up or lay-down units and
22 the particular setbacks and legal drilling windows
23 as they are indicated on the map in orange.

24 Order 60 established 320-acre drilling
25 and spacing units of either stand-up or lay-down

1 orientation of the operator's choosing, but it still
2 provided that the legal drilling window would be
3 this setback in the northeast or the southwest
4 quarter with 990 setback from the exterior lines,
5 130 setback from the interior lines.

6 COMMISSIONER MACMILLAN: Thank you.

7 CHAIRMAN HEINLE: Any other questions
8 from the commissioners? Any redirect?

9 MR. EKBERG: No.

10 CHAIRMAN HEINLE: Thank you.

11 DIRECTOR GRIEBLING: Can I ask a quick
12 question?

13 CHAIRMAN HEINLE: When I say
14 "commissioner," assume you are in that group even
15 though you are not.

16 DIRECTOR GRIEBLING: I want to clarify
17 on Exhibit 2, in Section 8, the east half of
18 Section 8 excluding the southeast quarter, it's your
19 representation that the mineral interests in that
20 240 acres is not owned by the Southern Ute Tribe?

21 THE WITNESS: That is correct.

22 DIRECTOR GRIEBLING: Do you know who
23 does own it?

24 THE WITNESS: I do not know. I know
25 that the original lessee was an individual named

1 Riddle, but I do not know who the current mineral
2 owners are.

3 DIRECTOR GRIEBLING: Is it possible that
4 it has been acquired by the Southern Ute Tribe?

5 THE WITNESS: I have not been able to
6 confirm that. The last data I had from the tribe
7 which shows their mineral owner and intervening fee
8 ownership shows that this is fee ownership.

9 DIRECTOR GRIEBLING: It is my
10 understanding that the mineral owners within the
11 section determine whether the Fruitland units are
12 stand-up or lay-down. Do you have a different
13 understanding of that?

14 THE WITNESS: It is my understanding
15 that the operators choose, not the mineral owners,
16 but the operators, the lessees of the oil and gas
17 leases choose that.

18 DIRECTOR GRIEBLING: Within the terms of
19 the operating agreement if one exists?

20 THE WITNESS: That is correct.

21 CHAIRMAN HEINLE: Any other questions?

22 Thank you.

23 MR. EKBERG: I would like to call the
24 second witness.

25 STEVEN M. THIBODEAUX,

1 having been previously sworn, testified as follows:

2 EXAMINATION

3 BY MR. EKBERG:

4 Q Would you please state your name,
5 business address, and current occupation.

6 A My name is Steve Thibodeaux. My
7 business address is 3535 East 30th Street,
8 Farmington, New Mexico 87401, Burlington Resources.
9 I'm currently employed as senior geologist.

10 Q Have you prepared a current resume?

11 A Yes, I have.

12 Q Is this the one included in the package
13 for the commissioners right now?

14 A Yes, it is.

15 Q Can you describe your educational
16 background and then your work history focusing to
17 the extent you can on working with the Fruitland
18 Coal commission?

19 A Sure. I graduated in 1981 with a
20 Bachelor of Science degree in geology from
21 Steven F. Austin State University.

22 From 1981 to 1986 I worked in the field
23 mainly as a well site consultant and mudlogger for a
24 number of different companies in most of the Rocky
25 Mountain basins.

1 In 1986 to 1992 I worked primarily for
2 Rocky Mountain GeoEngineering as a well site
3 consultant and mudlogger unit supervisor. During
4 that period from '88 to '91 I focused on Fruitland
5 Coal development in the San Juan Basin.

6 I sat personally on over 100 wells
7 drilled in the Fruitland Coal for both Unocal,
8 Texaco, and Meridian Oil.

9 In 1992 I was a contract in-house
10 geologist for Unocal responsible for all various
11 formations including the Fruitland Coal for the San
12 Juan Basin.

13 In 1993 I was hired by Meridian Oil, now
14 Burlington Resources, as a geologist responsible for
15 all formations in the northwest part of the basin.
16 I have well over 100 prolific Fruitland Coal wells
17 in the fairway.

18 From December of '95 to the present I am
19 one of two senior geologists on the team for
20 Burlington Resources dedicated to understanding and
21 developing Fruitland Coal wells in the basin.

22 Q Have you testified before this
23 commission?

24 A No, I have not.

25 Q Have you testified before the New Mexico

1 commission?

2 A I have not testified. I have been
3 there, but I have not been called to testify.

4 MR. EKBERG: We would like to ask that
5 Mr. Thibodeaux be admitted as an expert witness in
6 geology matters.

7 CHAIRMAN HEINLE: Any questions?
8 Commissioner MacMillan.

9 COMMISSIONER MACMILLAN: Why are you not
10 a certified professional geologist?

11 THE WITNESS: I actually have the
12 applications in my office, but I am a horrible
13 procrastinator for turning those things in.

14 COMMISSIONER MACMILLAN: But you are
15 working on them?

16 THE WITNESS: Yes, I am.

17 COMMISSIONER MACMILLAN: From any one of
18 those three entities that certify geologists?

19 THE WITNESS: I have been encouraged by
20 my peers to join that group.

21 COMMISSIONER MACMILLAN: Thank you.

22 THE WITNESS: You are welcome.

23 CHAIRMAN HEINLE: I was waiting for that
24 question. Any other questions? So accepted.

25 BY MR. EKBERG:

1 Q Mr. Thibodeaux, do you have an opinion
2 as to the lateral continuity of coals in the area --
3 not only in the areas shown in the applicant's
4 exhibits, but also to the east in this particular
5 township?

6 A Yes, I do.

7 Q Have you prepared any exhibits, and, if
8 so, would you describe your conclusion based on
9 those exhibits.

10 A Yes, I have. My opinion is that the
11 coals are remarkably continuous and connected
12 throughout the township of 32 north, 11 west.

13 This may surprise the commission, but
14 our geologic interpretations on both sides of this
15 issue are almost identical. We have very little
16 differences, except maybe what we called them. Once
17 again, the coals may be called different names. But
18 as far as continuity of these coals across this
19 entire township, we believe they are remarkably
20 continuous.

21 I do have several exhibits I would like
22 to show. In the interest of saving time -- and you
23 have seen most of this -- I would like to preface
24 this by saying that all I have done is I have looked
25 at well over 100 wellbores in the entire township.

1 I picked these tops myself and generated these maps
2 myself and the cross sections. I have taken the
3 smaller area that Cedar Ridge has shown to you
4 earlier, geological exhibits, and expanded it out to
5 show continuity throughout the entire township.

6 I would like to start with Exhibit
7 Number 3A. We also have Exhibit 3B. Exhibit 3A is
8 Southern Ute, number 2-5, in the northwest of
9 Section 5, and the 3B is Southern Ute 1-7 in the
10 southeast of Section 7. All of our geological
11 exhibits after that are the same for both docket
12 cases, so if you are lucky you will only have to
13 hear me once.

14 For the type log on Exhibit 3A, Southern
15 Ute 2-5, in general terms I would like to show you
16 that I have a middle coal package and a lower coal
17 package as opposed to an intermediate -- I call them
18 middle and basal, basically the same thing.

19 I have used almost the same set of
20 criteria for identifying these coal seams as have
21 the applicants in this case.

22 I would like to start with the middle
23 coal package. I prefer to call them packages. Each
24 one of these coal packages is not an individual coal
25 seam. They are made up of a number of smaller

1 seams.

2 I have divided the middle coal package
3 into four basic seams. Each one of those can be
4 subdivided, and I have numbered the individual
5 smaller coal beds.

6 For datum, this cross section up here is
7 my strike cross section. It is a little bit
8 different than Mr. Matthews' strike cross section
9 from yesterday. His was based on structural strike
10 or basically parallel to the current dip of the
11 basin. Mine is depositional strike.

12 It starts up in the northwest in Section
13 6 with the 4-6 well and ends at the southeast, Ute
14 number 15 and 21. That orientation is basically
15 laid out along the orientation of the shoreline
16 where these coals were first deposited, so it is
17 just a matter of schematics.

18 Q Can you give the legal description?

19 A The prime wells in the Ute 15 are
20 located in the southeast of 21 and also 32-11. So
21 my cross sections are oriented along a depositional
22 strike from the northwest to the southeast. I used
23 as a datum the base of the intermediate coals or the
24 middle coals.

25 This coal has a distinctive gamma-ray



1 signature that you can track throughout the entire
2 township. It is unique and it makes an excellent
3 marker.

4 These stratigraphic cross sections, in
5 essence, what they do is take out the effect of
6 present-day structural dip. This was more or less
7 what these coals looked like at the time of
8 deposition. It has a pretty flat surface just like
9 the coastal plains of Texas or someplace down south
10 like that.

11 I show that not only can you track very
12 easily based on the unique gamma-ray signatures and
13 density signatures and some markers, there is an
14 interpretative tonstein above the coal that I have
15 called M-4, the lower of the four coals that make up
16 this middle section. The hot gamma-ray spike, that
17 is an instantaneous moment in geologic time where
18 volcanic ashes lay down, as was described by
19 Mr. Matthews yesterday.

20 If you can track all the way across
21 there is significant shale break dividing pretty
22 much the middle coals in two distinct parts. You
23 can track that. These geologic markers are very
24 distinct, and they make the correlations relatively
25 easy.

1 So not only can you relatively easily
2 correlate this entire section all the way across,
3 but you can correlate individual coal beds within it
4 to show that these coal beds are remarkably
5 continuous across this entire area.

6 When we get down to the basal coal, I
7 have at the top of my basal coal another tonstein,
8 known as T-1 in the township north of this. I have
9 used the same terminology as much as possible when I
10 have seen it before. These coals can be tracked all
11 the way across. Once again, it has a unique
12 gamma-ray signature bonded on the top by T-1, the
13 tonstein.

14 Occasionally you can see -- all of you
15 have these, by the way. This is the only colored
16 one I have with me. You can also see this little
17 coal that comes and goes on top of the basal coal.
18 For your information I have included that coal in my
19 basal coal isopach because it looks to be a
20 relatively clean coal, a good density signature. I
21 believe it would contribute to production, and
22 therefore I have included that.

23 I have not included these lower coals.
24 These are, in general, much less continuous. They
25 are harder to track. They are slightly siltier and

1 not quite as clean. And in order to be consistent,
2 I have kept this interval -- as you see on the type
3 log exhibit -- for the basal coal package in the
4 brackets. That is the only interval I have actually
5 measured for basal coal in this isopach.

6 By the way, if you have any questions
7 you can interrupt me at any point in time rather
8 than asking at the end. It makes things go a little
9 bit better.

10 I would also like to point out, before I
11 take this one down, you will notice there are a
12 number of different little coal seams both above
13 this and sometimes in between. We don't believe
14 that they contribute significantly to production.
15 They are highly discontinuous.

16 Like I said, I have looked at hundreds
17 of wells in the immediate area and well over 100 in
18 this township alone and they are extremely hard to
19 track, rarely dominated. As a rule they are very
20 silty, poorly cleated. Although some wellbores may
21 encounter them and others may not, we don't believe
22 that they can contribute significant amounts to the
23 productions; so therefore, we pretty much ignored
24 them in our basic isopachs.

25 This is our dip cross section. This is

1 also more or less as close as I could make it down
2 to -- it is going in the dip direction for a
3 depositional dip which would be in reality a little
4 bit to the northeast.

5 I have run this cross section pretty
6 much east/west, very similar to Mr. Matthews' cross
7 section, except I have run it across an entire
8 township. The primary reason I did this -- I've run
9 this through the 1-7 well. You will notice on the
10 strike and the dip cross sections I have not run
11 either one through the 2-5.

12 This cross section I felt was important
13 because it ties together the continuity of the
14 coals. There are some very important data points
15 that we have at Burlington Resources. We have good
16 data access. But we will also be operating --
17 including the Ute number 17 in the southeast of 9 --
18 the POW number 1 in the northwest, Section 11, and
19 the POW number 2 in the northwest of 13.

20 So I ran this from the next docket case,
21 the 1-7, all the way across and connected all the
22 wells where we do have significant data that we will
23 be able to present later from Burlington Resources.

24 The 2-5 does not appear in my cross
25 sections, but I have in my type log identified all

1 the same major coal seams in all the other wells
2 that I have in my cross sections.

3 This cross section, once again, I have
4 done the same thing. I have used the same gamma-ray
5 signatures all the way across. It, once again,
6 displays remarkable continuity of all these major
7 coal beds, not only the major coal beds but the
8 small members of each coal seam that makes up these
9 big packages of the intermediate and the small. It
10 shows the same, discontinuity and very difficult
11 correlation.

12 We tried to correlate some of the
13 smaller coal beds, both above and below. It shows
14 the same small coal beds below that come and go.
15 They are relatively discontinuous.

16 One interesting feature is that this
17 wavy line in the Southern Ute 2-10 which is located
18 in Section 10 and 32-11, this tonstein does not
19 exist on top of this coal because of this sandstone
20 that came in on a channel system in the area that
21 actually washed that tonstein off the top of the
22 coal. The peat is very erosion resistant -- like
23 running water in a sponge. It is not going to take
24 the coal or the peat out, but it would take that
25 layer of the tonstein right out. We do show far to

1 the east -- by the time we get to POW number 2,
2 which is the northwest --

3 Q Excuse me, Mr. Thibodeaux. Would you
4 define what you mean by POW?

5 A A POW is a pressure observation well.
6 We have two for each in this township. There are
7 pressure observation wells in the Fruitland Coal
8 formation that have been encased and perforated in
9 the major coal seams. It does show a split in the
10 N-2 coal, or the second coal down in this sequence,
11 and that that is also due to a channel evulsion into
12 the area.

13 All I would like to emphasize one last
14 time about these cross sections is that they show
15 for a very large area remarkable continuity for
16 coals, especially for the Fruitland Coal fairway of
17 which all these wells are located.

18 I have seen places in this fairway where
19 in less than a quarter of a mile away you can hardly
20 track the coals, and I find that these coals are
21 extremely continuous. It made the generation of all
22 the maps relatively easy because the markers -- the
23 signature gamma-ray markers are so unique that the
24 correlations were not in question.

25 Next I would like to refer to Exhibits

1 Numbers 6 through 8, structure maps. These maps
2 show -- I will start one at a time, and I will hold
3 them up so you can see what I'm talking about.

4 All these maps have the cross sections
5 marked on them. They show, in essence, the exact
6 same thing that Mr. Matthews showed, that we have a
7 relatively flat dip in the major part of the basin.

8 To the east as we approach the flexure
9 we get to about a 9-degree dip up to about a
10 14-degree dip as we approach the hogback monocline.

11 First Exhibit, Number 6, was a map on
12 the datum that I have used in all my cross sections
13 which is basically just a base of the intermediate
14 coal.

15 I have also made a structure map on the
16 tonstein, T-1, which represents a good geologic
17 incident of time. We know that it was a deposit on
18 top of a very flat surface of coastal peaks and
19 marshes that made these coals. It also shows the
20 same vertical dip into the heart of the basin to the
21 east gradually getting steeper as we approach the
22 hogback monocline.

23 And, finally, as a cross check on these
24 two structure maps, I also mapped a structure map on
25 top of the picture cliff sandstone. That sandstone

1 you can see in the type log envelope on all my cross
2 sections is the first clean sand below the lowest
3 coal. It is a shoreline sandstone that was
4 deposited as the cretaceous seas gradually receded
5 to the northeast.

6 The reason I mapped the PC and all these
7 intervals is I was looking structurally for anything
8 that might indicate faulting in the area, and I have
9 seen no evidence of major faulting or offset of my
10 structural data on these maps to indicate that there
11 is any significant or major faulting in the area.

12 Q PC, you mean picture cliffs?

13 A Picture cliffs sandstone.

14 COMMISSIONER MACMILLAN: May I ask a
15 question, Mr. Thibodeaux, since you said it might
16 come in handily?

17 THE WITNESS: Yes, sir.

18 COMMISSIONER MACMILLAN: On the
19 structure map on the top of the PC, specifically in
20 the southern half of Section 6, the southern half of
21 Section 5, the wobbles and the contours that you see
22 there, the prominent nose is directed toward the
23 east, right?

24 THE WITNESS: Yes, sir.

25 COMMISSIONER MACMILLAN: Then as you go

1 to the well control in the southwest of 5, you see a
2 wobble to the west. I presume these are all
3 computer contoured and not modified by you after the
4 algorithm to produce the structure map on any of
5 these horizons?

6 THE WITNESS: That is correct.

7 COMMISSIONER MACMILLAN: You don't think
8 that is significant?

9 THE WITNESS: I believe that these
10 wobbles that you mentioned in the southeast of 6 and
11 southwest of 7 going to the east are a result of the
12 computer algorithms at -- we use a landmark system
13 called Z-map, and Z-map has a regular algorithm that
14 attributes the same weight to any map data at a
15 given distance from that one data point. It doesn't
16 take into account geological variances. It looks
17 equal distance out and attributes any data in the
18 same way regardless of geologic matters.

19 These two wobbles right here are
20 occurring because there is no data west of that
21 point. So these lines, they want to bend out and
22 flatten out in this direction because there is no
23 data controlling -- if I had another data point here
24 and another data point here and another data point
25 here, those lines would in effect be parallel to the

1 outcrop. And I believe that because these have gone
2 this way it bends -- the algorithm takes these data
3 and reflects it back in the other direction, so it
4 is really a data control matter.

5 COMMISSIONER MACMILLAN: Thanks.

6 THE WITNESS: You are welcome.

7 My next exhibits are Exhibits Numbers 9
8 and 10. These are, once again, like Mr. Matthews'
9 exhibits. These are isopach maps. Exhibit Number 9
10 is an isopach map of the middle or intermediate coal
11 interval. I had mapped this interval on any number
12 of contour intervals.

13 I found that to reduce the noise and
14 simplify things a great deal it helped to map this
15 on a 5-foot contour interval -- just as you guys as
16 a commission had noticed yesterday afternoon that if
17 this would have been mapped on a 5-foot interval it
18 showed very little variation throughout the
19 intermediate coal. Indeed, this is exactly what we
20 have. We have a slight thinning to the east. But
21 overall, for an entire township, there is very
22 little thickness variation for the entire middle
23 coal interval.

24 Exactly like the middle coal, Exhibit
25 Number 10 is an isopach or a thickness map of the

1 basic coal interval, also contoured on a 5-foot
2 contour interval, and it shows the same thing. It
3 shows that overall, for an entire township, there is
4 very little variation in the total thickness of this
5 coal.

6 It does get thinner to the east, a
7 little thicker to the west. That little 2- and
8 3-foot coal that comes and goes on top of that basal
9 interval does make a significant difference when you
10 are looking at a coal interval that are only 15 or
11 20 feet thick, tops. So even at a 5-foot interval,
12 it does show some variation. But overall, this
13 thickness is remarkably consistent throughout this
14 entire township.

15 Once again, I would like to point out
16 that in the over 100 wells that I have looked at in
17 this township, I have used the type logs and the
18 cross sections to make all these picks and all my
19 picks were very consistent.

20 We also have as additional exhibits
21 Exhibits 11 and 12. I really won't be talking about
22 those. One of those is a gross thickness between
23 the basal and the middle coal intervals. I
24 basically mapped the thickness that this interval
25 was. That is Exhibit Number 11.

1 Exhibit Number 12 is the net sandstone
2 that exists in between here. And just as
3 Mr. Matthews pointed out, this thickening and
4 thinning, this interval right here (indicating), is
5 attributable to how much sand was deposited there by
6 fluvial systems. When it is thicker -- you can see,
7 if you look at those two exhibits right next to each
8 other, the contour intervals look very, very
9 similar. So when you have a thick interval in
10 between those coals, you also, not surprisingly,
11 have a relatively thick seam as well.

12 COMMISSIONER MACMILLAN: And the
13 difference between the gross interval and the net
14 sandstone is how you determine net sandstone. Can
15 you give me the parameters for that?

16 THE WITNESS: Yes, I can. On all of
17 these oil logs that I have looked at I took this
18 shale baseline -- and basically the hottest shale
19 that I could find -- and I also took the cleanest
20 sandstone that I could find, the gamma-ray
21 increments with the cleanest sand -- and to be
22 consistent I took 50 percent of that. Let's say my
23 shale interval was 160 API units and my gamma ray
24 was 80, then I took half of that, and anything
25 cleaner than that I called a sandstone. That varies

1 from log to log because some of them were hotter and
2 some of them were cleaner, and I figured if I use 50
3 percent in these that meant that I would as least
4 have some consistency.

5 COMMISSIONER MACMILLAN: Thanks.

6 THE WITNESS: I really don't have much
7 else in the way of exhibits. I will be happy to
8 answer any questions you may have. My main point is
9 that these coals -- not only are the gross intervals
10 extremely continuous, but even the individual small
11 coal beds that make up these gross intervals can be
12 tracked across a very large area.

13 CHAIRMAN HEINLE: Do you have any other
14 questions?

15 BY MR. EKBERG:

16 Q Were these exhibits prepared by you and
17 under your direction and control?

18 A Yes, they were.

19 MR. EKBERG: I would like to move that
20 they be admitted into evidence.

21 CHAIRMAN HEINLE: Mr. Wozniak, do you
22 have any objections?

23 MR. WOZNIAK: I have a couple questions.

24 CHAIRMAN HEINLE: But in regard to the
25 exhibits?

1 MR. WOZNIAK: No, I don't.

2 CHAIRMAN HEINLE: Fine. They are
3 admitted. Go ahead with your questions.

4 EXAMINATION

5 BY MR. WOZNIAK:

6 Q If I understand correctly, much of what
7 we heard yesterday and what you have said -- to me,
8 as a layman -- sounds like they are pretty
9 identical.

10 A They are almost identical.

11 Q If I understand correctly, we can't tell
12 reservoir quality from these maps; is that correct?

13 A No. This shows coal continuity of the
14 individual seams. It has no relevance to reservoir
15 quality.

16 Q I think your first statement about how
17 broad the continuous coals were was through the
18 entire township. Is that what I understood?

19 A Yes, it was.

20 Q Does that go into ranges 9 and 8 and
21 keep going, or did you limit this to township --
22 whatever we are in right here.

23 A I have looked extensively at township 33
24 north, 11 west, just north of this, where you have
25 referred to a number of Emerald wells. And for the

1 southern half of that township, yes, they do. And
2 then things do alter somewhat as you go farther
3 north in that township, but for a certain amount of
4 that township the same coal beds can be used and
5 they have been used by Emerald to correlate their
6 wells.

7 Q But this wouldn't go over the acreage
8 where the infill wells were drilled in 32-9, 32-8?

9 A As we go farther east in that direction,
10 things alter considerably because we are stepping
11 out and we have a lot of interfingering play between
12 the Fruitland coals and the PC sandstone below it.

13 MR. WOZNIAK: That is all the questions.

14 CHAIRMAN HEINLE: We are going to take
15 break now before we jump into commissioner
16 questions. Commissioner Matheson needs to make a
17 phone call. Let's take a ten-minute break.

18 (Whereupon, a recess was taken.)

19 CHAIRMAN HEINLE: Why don't we go ahead
20 and get started.

21 COMMISSIONER MACMILLAN: Mr. Chairman,
22 if I can start -- I know Mike is coming and he had
23 some questions. Do you have any information that
24 you are going to present at all on cleats?

25 THE WITNESS: No, I do not.

1 COMMISSIONER MACMILLAN: Thanks.

2 CHAIRMAN HEINLE: Any other questions
3 from the commissioners? Mr. Wozniak, any
4 questions?

5 MR. WOZNIAK: No, sir.

6 CHAIRMAN HEINLE: Any redirect?

7 MR. EKBERG: No, sir.

8 CHAIRMAN HEINLE: The witness is
9 excused. There may be additional questions later
10 from Commissioner Matheson. He is not here right
11 now. We are moving forward.

12 MR. EKBERG: The next witness is Jack
13 Kean.

14 JACK V. KEAN,
15 having been previously sworn, testified as follows:

16 EXAMINATION

17 BY MR. EKBERG:

18 Q Can you state your name and address,
19 your employer and occupation for the record?

20 A My name is Jack Kean. My employer is
21 Burlington Resources and I'm a reservoir engineer.
22 The address of my work address is 3535 Thirtieth
23 Street, and that's Farmington, New Mexico 87401.

24 Q Have you prepared a current resume?

25 A Yes, I have.

1 Q Is that the one that has been presented
2 to the commission as part of its package?

3 A It is.

4 Q Can you describe your educational
5 background and employment history focusing on your
6 experience in the Fruitland Coal area?

7 A I received a Bachelor's of Science
8 degree in petroleum engineering from Mississippi
9 State University in 1991.

10 I started work for Exxon Company USA as
11 a production engineer. I was initially responsible
12 for gulf coast fields, and then I went to work as a
13 reservoir engineer for about a year and I was
14 responsible for primarily developing the cotton
15 valley in east Texas.

16 I started work for Burlington Resources
17 in 1994 as a reservoir engineer. Initially I was
18 responsible for over a thousand wells in all
19 productive formations in the northwest part of New
20 Mexico and also southwest Colorado.

21 About a year ago I began to focus on the
22 Fruitland Coal and in particular the prolific
23 Fruitland Coal, and I am also on the same team as
24 Mr. Thibodeaux that is charged with better
25 understanding of the Fruitland Coal and also better

1 developing it.

2 Q Are you a member of any professional
3 societies?

4 A I am a member of the Society of
5 Petroleum Engineers.

6 Q Have you testified before at this
7 commission?

8 A No, sir.

9 MR. WOZNIAK: We ask that our witness be
10 accepted as an expert witness for engineering
11 matters.

12 CHAIRMAN HEINLE: Any questions by the
13 commissioners? So accepted.

14 BY MR. EKBERG:

15 Q Mr. Thibodeaux, have you prepared any
16 exhibits --

17 A Kean.

18 Q I'm sorry. Mr. Kean, have you prepared
19 any exhibits which describe the reservoir flow
20 behavior of the Fruitland Coal, Fruitland formation
21 in this area?

22 A Yes. I have prepared exhibits which
23 indicate that the Fruitland Coal is laterally
24 continuous and in pressure communication.

25 Q Can you go through those exhibits and

1 describe what your conclusions are from those
2 exhibits?

3 A Yes, I can. As I mentioned, the
4 Fruitland Coal is continuous in this area, and the
5 exhibits that we will look at will demonstrate that
6 the 320-acre spacing is appropriate. In addition,
7 we will talk about why drainage has and will occur
8 on an east/west plain.

9 Most of the exhibits that I have are
10 centered around bottom-hole pressure data. That is
11 actual measured data. It is not interpreted or
12 subjective.

13 Burlington Resources, back in 1994, set
14 out to prove or disprove 320-acre spacing in this
15 32-11 area of southwest Colorado. What Burlington
16 Resources did was drill two pressure observation
17 wells; the Ute 32-11, POW number 2, which is located
18 32 north, 32-11, Section 13; and also the Ute 32-11,
19 POW number 1, which is located 32-11, Section 12.

20 Now, if you will refer to Exhibit 14 --
21 for the record the POW number 1 is in 32-11, Section
22 11. Now, if you will refer to Exhibit Number 14, we
23 have spotted each POW well on a map showing all the
24 wells in the area. The 32-11, POW number 2, is in
25 green as you see in Section 13, and we have also

1 highlighted the four offset producers around it.
2 And also the POW number 1, which was also drilled on
3 160-acre spacing, labeled in red, and the 320-acre
4 offsets are also highlighted in red.

5 Now, as I mentioned, the purpose of
6 these two wells were to demonstrate the
7 appropriateness or not appropriateness of 320-acre
8 spacing. The idea was when we drilled these wells
9 in 1994 if we encounter initial reservoir pressure,
10 then obviously the reservoir wasn't being depleted
11 and denser spacing was called for. However, if we
12 drilled these wells and found that the initial
13 pressure was less than the virgin pressure, that
14 would indicate that the reservoir is being drawn
15 down by the wells that are presently on 320-acre
16 spacing.

17 So if I could direct your attention to
18 Exhibit Number 15. Exhibit Number 15 demonstrates
19 both the geologic continuity of the coal in this
20 area and also the appropriateness of 320-acre
21 spacing.

22 What I have done is I have plotted in
23 red the actual measured bottom-hole pressure in the
24 Ute 32-11, POW number 2. And you will notice on the
25 right-hand side the label is psi, so in January of

1 1995 the pressure was about 900 psi.

2 Q Excuse me. Have either of these POW
3 wells produced?

4 A Neither POW well has ever produced in
5 its lifetime, and the wells were drilled in the
6 fourth quarter of 1994, and we began measuring data
7 in January 1995, and so we are showing the full set
8 of data that we have on this particular well.

9 Now, also in blue, I have plotted the
10 combined production of the four offset wells that we
11 saw on Exhibit Number 14. As you can see, back in
12 January of 1995 the combined production was over 15
13 million a day.

14 A couple of things that we can notice
15 from this particular plot, the first measurement
16 that we took on this well was considerably less than
17 virgin pressure. Virgin pressure in this area was
18 about 1,400 psi, and in January of 1995 when we
19 drilled this well -- remember, we didn't produce
20 from it -- we observed a pressure of about 900 psi,
21 so already the reservoir had been drawn down about
22 500 psi.

23 As you can see, the pressure has dropped
24 as a function of time and as a function of offset
25 production. Right now in this particular well on

1 this 160-acre location the reservoir pressure is
2 dropping about four-tenths of a psi per day. That
3 is about 140 psi per year, and the reason that
4 pressure is dropping is because of offset production
5 from the 320 locations.

6 Now, if I could, let's go ahead and move
7 on -- if you don't have any questions. Let's move
8 to exhibit number -- we have another exhibit right
9 behind Exhibit Number 15 which lists the offset
10 wells to this POW that I showed the plot of, and it
11 also lists the June 1996 bottom-hole pressures.

12 We measured those bottom-hole pressures
13 by shutting in the wells for three days. We had a
14 system shutdown so all the wells in the area were
15 shut-in, and we went in with an Amerada pressure
16 bomb. We actually recorded the bottom-hole
17 pressure.

18 As you can see, those pressures that we
19 encountered in these producing wells is consistent
20 with the pressure that we observed in the
21 observation well during the same time period.

22 Let's go ahead and move on to
23 Exhibit 16. Once again we see the same plot, and
24 once again it illustrates the appropriateness of
25 320-acre spacing. This is a plot of the Ute 32-11,

1 POW number 1. Once again, in red, we see the
2 declining reservoir pressure in this POW well as
3 labeled on the right-hand side, and we also see the
4 combined production of the four offsets to this POW
5 well that is labeled in blue, and you can see that
6 production rate over on the left-hand side.

7 Once again, when this well was drilled
8 or when we first began observing data in January
9 1995, we had substantially less pressure than the
10 original reservoir pressure of 1400 psi. So once
11 again we have another pressure observation well
12 which demonstrates that 320-acre locations are
13 indeed draining this particular 160-acre location.

14 In the next exhibit you will see, once
15 again, it lists the offset producers and the
16 bottom-hole pressure that we measured using an
17 Amerada pressure gauge in June 1996, and once again
18 you see that they do compare favorably to the
19 bottom-hole pressure we see in the POW 1.

20 I would like to point out that the Ute
21 32-11, number 103, you see that we measured a low --
22 a bottom-hole pressure of 555 pounds. Part of the
23 reason for that is we use a three-day shut-in time
24 before we measure the pressure, and depending on the
25 drawdown three days may not allow the pressure to

1 fully build up.

2 In the case of the 103, this well was
3 really drawn down and really produced, pulled hard
4 prior to the shut-in period; therefore, its pressure
5 had not fully built up at the end of three days.

6 Now, you might ask -- the pressure
7 observation wells that we have looked at are two or
8 three miles away from Section 5 where the applicant
9 is proposing a recomplete. We have a third pressure
10 observation well that is within a mile of the
11 applicant's recomplete.

12 If you will refer to Exhibit Number 17,
13 this will be an exhibit that illustrates using a POW
14 well that 320-acre spacing is appropriate.

15 The Ute number 17 -- and Mr. Thibodeaux
16 referred to it on his cross section -- is located in
17 32 north, 11 west, Section 9, and based on
18 Mr. Thibodeaux's cross section the area is
19 continuous. The pressure data confirms that.

20 The Ute 17 was first delivered in 1989.
21 That well produced continuously until the second
22 quarter of 1995 at which time this well was
23 shut-in. It was redrilled as the Ute 17 R. One of
24 the reasons that this well was shut-in and redrilled
25 was because this well was originally cased and

1 frac'd. The Ute 17 R was redrilled as an open-hole
2 location and of course cavitated upon initial
3 completion.

4 If the coal is indeed continuous in this
5 area and if indeed 320-acre spacing is appropriate,
6 then we should see a change in pressure due to
7 offset withdrawal. If, however, the coal is not
8 continuous or 320-acre spacing is not appropriate,
9 we would expect to see no change in bottom-hole
10 pressure.

11 On Exhibit 17 there are five columns.
12 What we did on this particular well was in March of
13 1996 we shut-in the well for three days, along with
14 other wells in the area. We had a system shutdown
15 at that time. We went in with the Amerada pressure
16 bomb to 2,600 feet and recorded a pressure of 634
17 psig. Now remember, this well had not produced for
18 about a year before and it has not produced since.

19 We went back in July and went to 2,600
20 feet and recorded a bottom-hole pressure of 593
21 psi. What has happened on this 160-acre location
22 that has not produced is the reservoir pressure
23 decreased by 41 psi in about 120 days. The reason
24 for that decreased pressure was, of course, due to
25 the offset production coming from 320-acre

1 locations.

2 Now, we have seen three specific
3 examples of pressure observation wells. We have
4 seen three examples of 160-acre infill locations,
5 and in each of those three examples the pressure
6 data substantiates that the reservoir is being drawn
7 down by producing wells on 320-acre locations.

8 Based on the continuity that we see
9 geologically, based on all of this pressure data
10 that we have, there is every reason to believe that
11 the same is occurring in Section 5, that the coal is
12 continuous and that the properties are similar in
13 Section 5.

14 Now, if we could go ahead and step back
15 and look at Exhibit Number 18. Do you have that in
16 front of you? Okay. Exhibit 18 -- I know it came
17 out a little fuzzy, but I will try to describe it
18 for you -- is a gradient map. A gradient map, of
19 course, as we have already heard testimony, is
20 pressure divided by depth, and this gradient map
21 indicates a consistent drawdown in this 32-11 area.
22 The pressures that we have are based on June 1996.
23 That is when we obtained all these pressures.

24 Now, you see there is blue. That
25 indicates a lower bottom-hole pressure. Can you see

1 this blue on your graph? It is down here in the
2 southern sections. The pink indicates slightly
3 higher reservoir pressure. The range on the
4 pressure gradients is about 0.18 psi per foot to
5 about 0.23 psi per foot. And once again these
6 measurements were all taken with an Amerada pressure
7 bomb during a system-wide shutdown with a three-day
8 shut-in period prior to obtaining the measure.

9 To give you a little better idea of what
10 some of these gradients are -- in Section 1, for
11 example, in the very northeast quarter section, that
12 is the Ute 32-11, number 101, there is a pressure
13 gradient of 0.22 psi per foot.

14 If we move over to 32-11, Section 9,
15 which is just to the southeast of the applicant's
16 proposed recomplete, the Ute 32-11, 901, which is in
17 the southwest quarter section, has a pressure
18 gradient of 0.23 psi per foot.

19 I would like to point out that we only
20 mapped the 12 sections that we had access to
21 pressure data. We did not at the time have access
22 to pressure data in area 5, and so that is why we
23 did not include it on our map.

24 There are a couple of conclusions that
25 we can withdraw from this particular map. Based on

1 the current spacing there is adequate drawdown
2 across the reservoir. There is very limited
3 variation in these pressure grades, which means they
4 are drawing down the reservoir consistently, and
5 that the reservoir does have sufficient conductivity
6 to be completed on 320-acre spacing.

7 Now, this is a very important point I
8 want to bring up at this time. If the rate of
9 withdrawal is increased by a recomplete in Section
10 5, that will cause a pressure sink in Section 5 that
11 will cause gas to migrate from adjacent sections
12 that have higher pressure gradients.

13 So, in effect, I agree with Mr. Logan's
14 testimony that two straws in Section 32 have drawn
15 down the pressure in Section 5. The point that I'm
16 making is three straws in Section 5 will indeed
17 cause a pressure sink and will indeed cause gas to
18 migrate from Section 4 into Section 5. That was
19 brought up earlier on, that the face cleat direction
20 runs north/south and that the butt cleat direction
21 runs east/west.

22 Drainage is more than just permeability
23 orientation. Drainage is both pressure gradient or
24 a pressure sink and a permeability issue. If the
25 butt cleats have permeability, which they do, and if

1 there is a pressure sink in Section 5, gas will
2 migrate from a higher pressure gradient to a lower
3 pressure gradient. Did that make sense? Okay.

4 Let's go ahead and move on. If I can
5 refer your attention to Exhibit Number 19. So far
6 we have been talking primarily about reservoir
7 pressures and conductivity. What we are going to
8 talk about in Exhibit 19 is that conductivity
9 actually increases in the Fruitland Coal with time.
10 This is a plot of the Ute 32-11, number 901, and it
11 is located in section -- in 32 north, 11 west,
12 Section 9.

13 Let me describe this graph to you. In
14 blue you see 32-11, number 901; that is its
15 production since January of 1995. That is the
16 production in gas, and that is labeled over on the
17 left-hand axis. In red I plotted the performance
18 coefficient C. As you can see it increases as a
19 function of time, and it is labeled over on the
20 right-hand side of the axis.

21 If I could, let me explain to you not
22 only what C means, the performance coefficient, but
23 how we calculated it. The performance coefficient
24 C rolls into account a number of variables such as
25 permeability, conductivity, and the skin factor.

1 The back pressure equation, which is a
2 very common industry-accepted equation -- and I
3 promise I won't derive anything -- gas flow equals
4 the performance coefficient C times reservoir
5 pressure squared minus bottom-hole flowing pressure
6 squared, and all this is raised to the end power.

7 I'm going to attempt to draw a well
8 sketch, so you may have to use your imagination
9 somewhat on this. If we have an open-hole
10 completion, much as we do on this area -- we have a
11 casing, we have an open hole. Burlington Resources
12 typically runs a production string tubing typically
13 to within a couple of joints of bottom.

14 We also have telemetry for all of our
15 prolific coal wells, and we use the telemetry data
16 which actually measures the gas flow rate coming out
17 of the well -- we measure that about every three to
18 four minutes, is how often we poll the telemetry.

19 We measure the flow rate coming out of
20 the tubing, but we also measure the casing pressure
21 at the surface. So what we do because flow rate is
22 just going up the tubing, we can take this pressure
23 right here, use the gas gradient to convert it to a
24 bottom-hole flowing pressure, and so we come up with
25 this variable in the equation, and of course we



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1 measure Q at the surface so we now know this right
2 here.

3 At the reservoir we assume N equals 1
4 and N equals 1 is valid for wells that are in pseudo
5 steady-state flow, so we now know this right here.

6 As you have seen we routinely go out and
7 take bottom-hole pressure measurements. We actually
8 run into the well after it has been shut-in for
9 three days and obtain a reservoir pressure at the
10 end of the tubing. So we now know this right here.
11 So all we have to do is solve for the performance
12 coefficient C. It is very straightforward. There
13 is no interpretation to it. Did that make sense?
14 Okay.

15 As I mentioned, the performance
16 coefficient C rolls into account a number of
17 variables. It is really just a measure of the
18 deliverability of a well. The higher the C value
19 the more prolific the well, and the C value is also
20 proportional to the permeability of the well. It is
21 proportional to the skin factor of a well, and it is
22 also proportional to, among other things, the
23 completed age of a well.

24 Now, obviously this is a very
25 straightforward measurement of the deliverability of

1 a well. If I go in and try to calculate the
2 permeability, I'm going to have to make a number of
3 assumptions in order to come up with a number. By
4 using this method right here (indicating), the
5 number of assumptions I make are very limited, and
6 yet I get a very good indicator of the productivity
7 of the well.

8 What I want to leave you with from this
9 particular graph -- we have already demonstrated
10 that 320-acre spacing is appropriate. This graph
11 indicates that the permeability and the
12 deliverability of these wells, these Fruitland Coal
13 wells, increases with time. So if 320-acre spacing
14 is appropriate now, how much more is it going to be
15 appropriate in the years to come?

16 Q Let me summarize your testimony then,
17 with a couple of questions. Do you have an opinion
18 as to whether 320-acre spacing is appropriate
19 spacing for this pool?

20 A Very clearly the preponderance of
21 pressure data very clearly indicates that 320-acre
22 spacing will effectively drain the reservoir.

23 Q Do you have an opinion as to whether the
24 testimony you have given with respect to your plans
25 to the east of Section 5 also applies to the spacing

1 unit which is the subject of this application?

2 A The conclusions that I have stated do
3 indeed, in my opinion, apply to Section 5 because
4 the coal is geologically continuous. There is no
5 evidence that there is anything in Section 5 to make
6 it different than Section 4, and because the wells
7 in Section 5 are prolific they behave in a similar
8 manner to the wells in Section 4 and other wells
9 that I have talked about.

10 So, yes, I do conclude that 320-acre
11 spacing does, indeed, apply to Section 5.

12 Q Do you have an opinion as to whether
13 your correlative rights on offsetting spacing units
14 may be affected if the 2-5 were as recompleted as a
15 Fruitland Coal well?

16 A Yes, I do. As I mentioned before, three
17 straws are in Section 5 and only two in Section 4.
18 Section 4's correlative rights will be affected due
19 to the creation of a pressure sink because of the
20 increased rate of withdrawal.

21 Q Have you prepared any exhibits which
22 relate to the economics of the additional
23 recompletion of 2-5 and also as to what would be
24 required if an offset well were required in
25 Section 4?

1 A Yes, I have.

2 Q Can you describe what those exhibits
3 show?

4 A Yes. In order to fully assess the
5 economic impact of a recomplete in Section 5, we
6 must also assess the impact of a potential new drill
7 in Section 4 in order to protect correlative
8 rights.

9 If you will refer to Exhibit Number 20A,
10 what I will demonstrate is that Burlington Resources
11 will lose a significant amount of income if forced
12 to drill a well in Section 4.

13 Now, just like Mr. Logan in earlier
14 testimony, these economics are based on
15 acceleration, not incremental recovery because we
16 have clearly demonstrated that the reservoir is
17 being appropriately drained.

18 I use a base gas price of about \$1.25
19 per Mcf, and that is for comparison purposes, and a
20 BTU factor of 0.95, and that is -- as you can see on
21 the bottom -- how we came up with the gas price
22 stream.

23 I also use 100 percent working and 87.5
24 percent net on all wells, and I did look -- if you
25 will look in the column that is labeled Recomplete,

1 Section 5, you will see the well count equals
2 three. The economics are based on not only the two
3 existing wells, but also the additional recomplete.

4 I did the same thing for Section 4, and
5 you can see that section is labeled New Drill,
6 Section 4. Once again there are three wells. The
7 existing two wells, 401 and 402, plus a possible new
8 drill.

9 If we go down to the next row, the
10 required investment, if Burlington Resources were to
11 complete the 2-5, it is about \$118,000, and that
12 would include a single-stage sand frac. Pretty
13 straightforward.

14 The new drill, however, if Burlington
15 Resources were to go out and drill that tomorrow
16 would cost about \$415,000, and that cost includes
17 all of the facilities. It also includes
18 approximately twenty days of cavitation during the
19 initial completion. So, therefore, the total
20 investment between the two sections is over
21 \$500,000.

22 The initial uplift which I base on the
23 offset two six is about 1.5 million a day comes out
24 of the 2-5; once again, that is pure acceleration.

25 For a new drill, because it is open-hole

1 completion, we would expect that it would have a
2 higher initial delivery than a well that is cased
3 and frac'd, put in about 2 million a day, initial
4 uplift.

5 The net present value at a ten percent
6 discount rate for the three wells in Section
7 Number 5 is about \$27,000, but I did not include the
8 effects that will be gained due to tax credits. I
9 did not include that because I did not -- at the
10 time I estimated these numbers, I didn't understand
11 Cedar Ridge's position on the tax credits. So they
12 will, indeed, receive benefits from tax credits.
13 That is in stark contrast to Burlington Resources.

14 By adding the new drill which will
15 produce gas that would have been produced from the
16 401 and 402, we will lose tax credits because this
17 new drill doesn't qualify for Section 29.

18 As a result the net present value is
19 over a half million dollars' loss because of the
20 addition of a new drill in Section 4 and because of
21 a loss of tax credits.

22 Q Excuse me. You lose the tax credits
23 because the well is presently producing -- can you
24 explain why?

25 A Yes. There are no incremental reserves,

1 so anything we produce out of the new drill is going
2 to take away gas that would have been recovered by
3 the existing wells which do qualify for tax
4 credits.

5 Q The new one does not?

6 A The new well does not qualify for tax
7 credits.

8 Q Thank you.

9 A Okay. Let's go ahead and move on to the
10 next row. I have also listed the profit to
11 investment ratio, and that very simply is the net
12 present value discounted, divided by the
13 investment. I have also listed the discounted
14 payouts.

15 The acceleration for Cedar Ridge will
16 pay out in under a year; however, there is no payout
17 for Burlington Resources. The additional well will
18 never pay out because of the loss of tax credits and
19 because of the cost of drilling the well to
20 accelerate reserves that we would otherwise recover
21 with existing wells.

22 I have also included -- the last row is
23 Reserve Adds. The 2-5 is economic by Burlington
24 Resources' standards, and in our estimation we would
25 lose about \$100 million by abandoning this well

1 right now. That would be gas that would never be
2 recovered because we couldn't go out and drill
3 another well. It wouldn't be economic to drill it
4 for the \$100 million, so that is why I have listed a
5 reserve loss in the Mesaverde formation because the
6 2-5 is still economic by Burlington Resources'
7 standards.

8 Q So then to summarize your testimony, if
9 your correlative rights were affected in Section 4,
10 would it be economic for you to drill a new well in
11 Section 4?

12 A It would not be economic to drill a new
13 well in Section 4.

14 MR. EKBERG: Those are my questions for
15 now.

16 CHAIRMAN HEINLE: Do you want to admit
17 your exhibits?

18 BY MR. EKBERG:

19 Q Were these exhibits prepared by you or
20 under your direction and control?

21 A Yes, sir, they were.

22 MR. EKBERG: I propose they be admitted
23 into evidence.

24 CHAIRMAN HEINLE: Any objection?

25 MR. WOZNIAK: No objection.

1 CHAIRMAN HEINLE: Mr. Wozniak, would you
2 care to ask questions?

3 MR. WOZNIAK: Sure would.

4 CHAIRMAN HEINLE: I suspected.

5 THE WITNESS: Do you think you can step
6 forward so I can respond to the commission and my
7 voice be heard?

8 MR. WOZNIAK: Mr. Kean, you project very
9 well.

10 EXAMINATION

11 BY MR. WOZNIAK:

12 Q I guess my first question is -- I would
13 guess from your testimony that you don't believe or
14 Meridian doesn't believe that Cedar Ridge ought to
15 be able to protect its correlative rights in
16 Section 5.

17 MR. EKBERG: I think I will object to
18 that. That requires a legal conclusion by him.

19 MR. WOZNIAK: He testified that he
20 doesn't think the recompletion ought to proceed, and
21 I would like to know if he thinks Cedar Ridge ought
22 to be able to protect its correlative rights in
23 Section 32.

24 MR. EKBERG: To testify that they
25 shouldn't be allowed to proceed or to testify the

1 spacing is appropriate?

2 MR. WOZNIAK: I'm asking him.

3 CHAIRMAN HEINLE: I think as long as the
4 question is directed to technical aspects of
5 protection of the correlative rights, it is probably
6 appropriate.

7 If you get into any interpretation of
8 the statute or whatever, that clearly would be out
9 of his realm of expertise. Maybe you can direct a
10 couple of specific questions to him and we can
11 proceed.

12 BY MR. WOZNIAK:

13 Q Do you believe that there is any
14 interference or drainage from Section 32 production
15 into the north half of Section 5?

16 A Although I have not reviewed any
17 pressure data prior to this meeting, I believe that
18 certainly is possible.

19 Q Based upon the pressure data that you
20 did see this morning, specifically in Exhibit U,
21 which if you recall was the pressure gradient map,
22 did you agree with Mr. Logan's conclusions that
23 there could be interference from Section 32 into
24 Section 5?

25 A I would agree based on what I have seen

1 today that two straws in the south part of
2 Section 32 withdrawing high rates of gas will --
3 could cause a pressure sink which may affect that
4 particular acreage's position.

5 Q I think you testified pretty clearly
6 that Meridian supports 320-acre spacing in this
7 area. Would that be fair?

8 A Yes, sir.

9 Q I'm sure you are aware that in early
10 1993 Meridian proposed to drill an infill well in
11 the northwest quarter of Section 4, township 32
12 north, range 11 west, correct?

13 A You mentioned in 1993?

14 Q Yes.

15 A That was prior to my beginning work with
16 Meridian in 1994.

17 Q So you weren't aware that you proposed
18 that offset into the well?

19 A I was not aware of that.

20 Q Were you aware that you proposed to the
21 tribe to drill in the southwest quarter of Section
22 28 of 33-11 as another infill well?

23 A Could you repeat the location?

24 Q Sure. The first one was Section 4,
25 northwest quarter, township 32 north, range 11

1 west. So is that the direct offset that I believe
2 you are talking about now that you were saying was
3 uneconomical?

4 A Yes.

5 Q Okay. You were not aware you proposed
6 to drill that infill?

7 A No, sir.

8 MR. EKBERG: I think some of these
9 questions might be better answered by Mr. Zent.

10 CHAIRMAN HEINLE: I think he is
11 answering he is unaware of them. He is not
12 answering the question, and we can go back again.

13 MR. WOZNIAK: The only reason was --
14 that the testimony was, as I understood it, that
15 that well would be uneconomic. Since he is unaware
16 of it, I can't ask follow-up questions about what
17 has changed.

18 BY MR. WOZNIAK:

19 Q The same question then, the same time
20 period for the southwest quarter of Section 28 in
21 33-11. Were you aware that Meridian proposed that
22 infill well?

23 A I don't know that I have a map in front
24 of me that gives that particular location.

25 Q Then the final proposal, were you aware

1 of whether Meridian proposed that in the southwest
2 quarter of Section 33, again in 33-11?

3 A Once again, I don't have a map in front
4 of me to look at to figure out where that location
5 is.

6 Q All right. So to your knowledge you are
7 not aware of those proposals?

8 A I don't recall.

9 Q Mr. Kean, I have to admit that just like
10 Mr. Ekberg I have seen these for the first time and
11 I don't understand all of your exhibits, but I will
12 try to ask you a couple of questions -- if I can
13 direct your attention back to Exhibit 14.

14 I'm trying to understand your POW number
15 2 which you testified was the pressure observation
16 well in Section 13. Can you find that exhibit for
17 me?

18 A Yes, sir.

19 Q First of all, I think you said that
20 these were two or three miles from Section 5. Is
21 that accurate? I can't find Section 5 on this map.
22 It seems like it might be a little farther than
23 that.

24 A Section 5 would be adjacent to
25 Section 4.

1 Q So how far then is this pressure
2 observation well?

3 A It is two sections away.

4 Q Two sections from Section 13 to
5 Section 5?

6 A Oh. I was speaking to the POW number 1
7 in Section 11.

8 Q Okay. Could you answer the distance
9 question with respect to the POW number 2 from
10 Section 5?

11 A That would be over three sections away.

12 Q I notice that you have four wells, in
13 essence, surrounding the pressure observation well
14 in number 2; is that correct? Did I read that
15 right?

16 A Those are four wells on 320-acre spacing
17 which are currently producing.

18 Q Those are currently producing wells?

19 A Yes, sir.

20 Q Can you tell which of these wells has a
21 more direct effect on the pressure reduction or
22 which wells have any effect and which wells don't?

23 A No, sir, I cannot.

24 Q You made a quick reference -- I know we
25 didn't have additional coals or cleating, but I

1 think I understood you to say that you did review
2 some butt cleats and made a comment about
3 permeability in relation to those.

4 A I did address permeability.

5 Q Do you think that the permeability of
6 the butt cleats is the same as the face cleats?

7 A No, I do not.

8 Q Then what does that suggest to you with
9 respect to a drainage pattern since those are not
10 the same?

11 A It is possible -- and of course anything
12 that I say about drainage patterns is purely -- I'm
13 surmising. It is likely that there is an elliptical
14 drainage pattern that would exist in the direction
15 of the face cleat, however, because the butt cleats
16 do indeed have permeability that pattern could
17 potentially be altered by an infill location.

18 Q If you could look quickly at your
19 economic exhibit, sir.

20 A Yes, sir.

21 Q I believe it is Exhibit 20A. If I
22 understand the AFIT -- is that after income tax? Is
23 that what that references?

24 A After federal income tax.

25 Q Did you run this exhibit on a pre-tax

1 basis at all?

2 A The economics, the economic package that
3 we used does list both the pre-tax and the
4 after-tax.

5 Q So that is in here somewhere?

6 A I did not include the before federal
7 income-tax data in the exhibit because Burlington
8 Resources as an operator makes all of its investment
9 decisions on an after-federal-income-tax basis.

10 Q Oh, I see. The column that is
11 recomplete, Section 5, is as though Burlington owned
12 Section 5 and you were going to recomplete it? I'm
13 trying to understand what that means.

14 A The cost estimate would be if Burlington
15 were to recomplete it, and I used 100 percent
16 working and 87.5 percent net and used the same water
17 disposal costs that Burlington would incur.

18 Q Thank you. Then I notice towards the
19 bottom of this Exhibit 20A it references a loss in
20 reserves due to -- in your view, I guess -- that it
21 is a premature abandonment in the Mesaverde
22 formation. So as an 18-Mcf-per-day well, is that an
23 economic well to Burlington?

24 A That is an economic well to Burlington.
25 There are a number of wells that we operate that

1 produce less than 20 or 30 Mcf a day.

2 Q So I guess if I understand your pressure
3 testimony, that you don't have a disagreement with
4 Mr. Logan's pressure gradient, Exhibit U; is that
5 correct?

6 A Could I have a copy of Exhibit U to
7 refer to?

8 Q Sure.

9 A Can you restate your question?

10 Q Do you have a disagreement with respect
11 to Mr. Logan's interpretation with respect to that
12 exhibit?

13 A Are you asking if I agree with the
14 interpretation or the actual data that is listed --

15 Q Let's start with the data that is
16 listed.

17 A That appears to be fine. I have no
18 other knowledge of reservoir pressures in those
19 areas.

20 Q Did you do any studies in Section 5
21 itself?

22 A Other than estimating gas in-place and
23 estimating remaining reserves so that I could
24 generate economics, I did not.

25 MR. WOZNIAK: I think that is all the

1 questions we have.

2 CHAIRMAN HEINLE: Why don't we take a
3 break. Rich, do we have something we need to do an
4 executive session on?

5 DIRECTOR GRIEBLING: A couple of issues
6 regarding --

7 CHAIRMAN HEINLE: Maybe what we can do
8 is go into executive session. I think some of our
9 food is here. We can go ahead and take care of that
10 and come back out, and we can resume this matter
11 with questions from the commissioners.

12 Rich, do you have any idea about how
13 much time we might need for the executive session?

14 DIRECTOR GRIEBLING: I would estimate it
15 could be completed as quickly as twenty minutes.

16 CHAIRMAN HEINLE: I will ask for a
17 motion to go with the executive session. Why don't
18 we take a thirty-minute break, and perhaps some of
19 you can grab a quick sandwich, and then we can come
20 back and resume. Off the record at one ten.

21 Commissioner MacMillan moved it. It was
22 seconded by Commissioner Rebne. All in favor
23 respond by saying aye.

24 Opposed. Thank you.

25 (Whereupon, a lunch break was taken from

1 1:10 to 1:55 P.M.)

2 CHAIRMAN HEINLE: Back on the record. I
3 have a quorum. Let's get started. I think where we
4 were at was the point of asking the questions of the
5 witness I think among the commissioners.

6 Are there any questions the
7 commissioners have of this witness? Commissioner
8 MacMillan.

9 COMMISSIONER MACMILLAN: Having had an
10 opportunity to respond to Mr. Wozniak's question
11 about pressure gradients and me looking at both
12 maps, I believe there is a significant correlation
13 of the data you presented but nothing west of that,
14 and the data presented by the applicant which is
15 west of you but nothing east.

16 Would you agree with that assessment,
17 that that data seems to be compatible -- again, I
18 know you haven't had a chance to look at it anymore
19 than I have had a chance to look at it. But you
20 wouldn't suggest that there is anything from the
21 data that you presented versus what they presented
22 on the current pressure gradient from the producing
23 horizons that would lead you to believe that there
24 is a discrepancy between that data, would you?

25 THE WITNESS: So the question is do I

1 think there is potential for a discrepancy between
2 the gradient data -- you are asking whether or not I
3 think that there is a discrepancy between the
4 gradient data previously presented and the gradient
5 data that I just referred to?

6 COMMISSIONER MACMILLAN: That's
7 correct.

8 THE WITNESS: Once again, there doesn't
9 appear to be any significant discrepancy between the
10 data on a very casual basis, just looking at it at
11 face value.

12 COMMISSIONER MACMILLAN: Do you recall
13 the -- here it is, your Exhibit 18.

14 THE WITNESS: Yes, sir.

15 COMMISSIONER MACMILLAN: In fact, you
16 have a contour line of 0.23 that exists in Sections
17 4 and 9 that could very easily correspond to the
18 yellow -- in the applicant's Exhibit Number U, the
19 area that is highlighted in yellow also is a
20 pressure gradient of -- actually it turns out to be
21 0.225, I believe, if you actually look at it, look
22 at the title, but that data is consistent, is it
23 not?

24 THE WITNESS: Yes, the data does appear
25 to be consistent. For the record, I know on your

1 copy it didn't print out. It is 0.22 gradient right
2 here.

3 COMMISSIONER MACMILLAN: Thank you. The
4 area that I'm referring to, that is 0.22 psi per
5 foot is in Section 4 and Section 9.

6 CHAIRMAN HEINLE: Questions from the
7 other commissioners? Commissioner Matheson.

8 COMMISSIONER MATHESON: I would like to
9 go back to the preferential permeability question.
10 Looking at your data from the pressure observation
11 wells, it would seem to me that if you were looking
12 at -- trying to determine if there is an elliptical
13 shape going on there, the higher pressures would
14 indicate it is not draining as well, the lower
15 pressures would indicate a higher permeability and
16 that is the direction of the preferred
17 permeability. Am I interpreting that correctly? Do
18 you see anything like that in here?

19 THE WITNESS: The conclusion that I can
20 draw -- I really can't. As Mr. Wozniak asked me --
21 on the POW well, because we have offset production
22 in four different directions, I really can't draw
23 any conclusions regarding any preferential
24 drainage.

25 COMMISSIONER MATHESON: Okay.

1 THE WITNESS: Did I address your
2 question?

3 COMMISSIONER MATHESON: I guess I'm
4 trying -- you did the work on the pressure
5 observation wells, and from the bottom-hole
6 pressures and what you saw in the pressure
7 observation wells can you come up with any theories
8 concerning preferential permeability conclusions?

9 THE WITNESS: I cannot come up with any
10 theories of preferential permeability based on the
11 pressure data from the observation well.

12 COMMISSIONER MATHESON: Either in terms
13 of uniformity or nonuniformity?

14 THE WITNESS: All I can state is that
15 offset production from four wells is drawing down
16 the pressure in the POW well. I can't quantify if
17 more of the drawdown is coming from one area or one
18 direction or another.

19 COMMISSIONER MATHESON: Thank you.

20 CHAIRMAN HEINLE: Other questions?
21 Director Griebeling.

22 DIRECTOR GRIEBLING: Mr. Kean, you
23 testified as to the potential economics of the new
24 drill in the recompletion well. Do you recall what
25 monthly expenses you used in your evaluation for

1 producing those wells?

2 THE WITNESS: Yes, sir, I do. For water
3 disposal cost I used \$1.65 per barrel, and that is
4 what Burlington Resources pays to dispose of its
5 barrel -- of its water production in adjacent
6 sections. Because the recomplete is an existing
7 wellbore, I did not use any kind of overhead-type
8 numbers; however, for the new drill I did use an
9 indirect cost of \$390 per month which is common for
10 what Burlington Resources uses for all of its
11 economic evaluations, and I also used a direct cost,
12 which I can't remember off the top of my head, but
13 once again it is common to the area and that was for
14 the new drill.

15 DIRECTOR GRIEBLING: Can you give me a
16 ballpark direct cost, plus or minus \$100?

17 THE WITNESS: The number in this area
18 that we typically use is between 2- and \$300 per
19 month. I can't find it here in my stack of papers,
20 but that is what it is in that particular area.

21 DIRECTOR GRIEBLING: Okay. What about a
22 Mesaverde well in that area? Would those indirect
23 and direct costs be in the same ballpark?

24 THE WITNESS: The indirect costs are
25 exactly the same. The direct costs for a Mesaverde

1 well would typically be lower.

2 DIRECTOR GRIEBLING: How about kind of a
3 range for the Mesaverde well?

4 THE WITNESS: A range -- once again I
5 don't have that data in front of me, but it would
6 typically be between 100 and \$200.

7 DIRECTOR GRIEBLING: So say it is 150
8 right in the middle, plus the 390, that is 540,
9 right? You have testified that 18 Mcf for a
10 Mesaverde well would be economic. And if you
11 applied the price assumptions, to the extent that I
12 understand them, and those sorts of economic --
13 those sorts of costs, I'm not sure I can calculate
14 how 18 Mcf for a Mesaverde well could be --

15 THE WITNESS: Typically, as a ballpark,
16 we use a number of 10 to 15 Mcf a day as the
17 economic limit for a Mesaverde well, and that number
18 varies by formulary because obviously there are
19 different expenses encountered.

20 DIRECTOR GRIEBLING: It is my
21 understanding that the operator of the wells that
22 are the subject of these applications has indicated
23 that they will be plugging in and abandoning those
24 wells as uneconomic Mesaverde wells if the
25 applications are approved.

1 Do you think it is reasonable, looking
2 at rates in this general range, to consider those as
3 uneconomic, at least for some operators, even if
4 Burlington is capable of producing them economically
5 at 18 Mcf?

6 THE WITNESS: I don't have a good feel
7 for what Cedar Ridge's economic costs are.

8 DIRECTOR GRIEBLING: Thanks.

9 CHAIRMAN HEINLE: Commissioner
10 MacMillan.

11 COMMISSIONER MACMILLAN: One other
12 thing, turn to your Exhibit 20A, Mr. Kean.

13 THE WITNESS: Yes, sir.

14 COMMISSIONER MACMILLAN: The same line
15 that Mr. Wozniak asked about, which was the loss in
16 revenues due to premature abandonment in the
17 Southern Ute 2-5, Burlington Resources doesn't have
18 any interest in that well, do they?

19 THE WITNESS: That is correct.

20 COMMISSIONER MACMILLAN: Okay. Thanks.

21 CHAIRMAN HEINLE: I have one question.
22 If you could refer to Exhibit 1 -- it is just the
23 one that I have in front of me, the land plat.

24 MR. EKBERG: Would you like to get
25 Mr. Zent to testify --

1 CHAIRMAN HEINLE: I'm just using it as a
2 locational device. I'm not going to ask Mr. Kean
3 any questions about the map, per se.

4 In focusing on Sections 4 and 5, I
5 understand one of your concerns from your analysis
6 is that if the additional recompleteness was approved,
7 it would require Burlington Northern to drill
8 another well in the northwest quarter of Section 4
9 to protect their correlative rights and that the
10 economics of such a venture, of such a well, would
11 be negative, that it would end up costing Burlington
12 Northern money; is that correct?

13 THE WITNESS: If we were compelled to
14 drill a well to protect correlative rights, it would
15 have a negative impact.

16 CHAIRMAN HEINLE: As I understand it,
17 though, there is another spacing unit that would be
18 between the recompleteness and the west half of
19 Section 4 which is the well that Burlington Northern
20 has an interest in, correct?

21 THE WITNESS: Yes, sir.

22 CHAIRMAN HEINLE: Based on your analysis
23 that 320 acres appear to be the appropriate drainage
24 area, would that buffer-spacing unit provide you
25 with comfort that your reserves would not be drained

1 and you would have to drill another well?

2 THE WITNESS: No, sir. The presence of
3 a spacing unit between the recomplete and between
4 the west sections of Section 4 probably would not
5 provide a buffer zone because what will likely
6 happen is all of Section 5 will act as a pressure
7 sink. The withdrawal from that section will greatly
8 increase which will tend to cause gas to migrate
9 from Section 4 to Section 5. Did that address your
10 question?

11 CHAIRMAN HEINLE: I understand your
12 answer to the question, yes.

13 THE WITNESS: Okay.

14 CHAIRMAN HEINLE: Any other questions?
15 Any redirect?

16 MR. EKBERG: No, sir. I may want to
17 rebuttal, but no redirect.

18 CHAIRMAN HEINLE: Thank you. You may
19 leave the table. Do you have any other witnesses?

20 MR. EKBERG: I would like to ask John
21 Zent to come up and address one additional issue as
22 a landman.

23 JOHN ZENT,
24 having been previously sworn, further testified as
25 follows:

1 FURTHER EXAMINATION

2 BY MR. EKBERG:

3 Q Mr. Zent, if you remember you are still
4 under oath.

5 A Yes, sir.

6 Q If Meridian were to drill another well
7 in Section 4 -- if they felt it necessary to protect
8 correlative rights -- can you describe the surface
9 impact of what that new well would do?10 A I can in general terms. Unfortunately,
11 Burlington has no available Mesaverde well for
12 recompletion at our disposal in the northwest
13 quarter of Section 4 as the applicant has in the
14 northwest quarter of Section 5. So a recompletion
15 and use of a current location pad is unavailable.16 Meridian's typical procedure when filing
17 an APD to drill the new Fruitland Coal wells is to
18 build a location, a permanent location approximately
19 3.6 acres in size, and that upon completion of the
20 drilling and completion of operations that location
21 is then reduced to about one and a half acres, and
22 that is with any Fruitland Coal well we drill. It
23 seems like a lot of acreage, but for safety and
24 environmental concerns as you cavitate these wells
25 and blow gas and coal fines out during the

1 cavitation process, it does take a considerable size
2 location, even for relatively small locations.

3 In addition, we would be permitting
4 about a quarter of a mile of gas pipeline right of
5 way and equal distance water pipeline right of way
6 and an access road, so specifically to the northwest
7 quarter there would be some surface impact.

8 MR. EKBERG: No further questions.

9 CHAIRMAN HEINLE: Mr. Wozniak, any
10 questions?

11 MR. WOZNIAK: No questions.

12 CHAIRMAN HEINLE: Questions from the
13 commissioners? All right.

14 MR. EKBERG: We have presented our case
15 in chief, sir.

16 CHAIRMAN HEINLE: Thank you. I guess we
17 are at the point of closing arguments, reclosing
18 arguments.

19 MR. WOZNIAK: No rebuttal witnesses. I
20 did have a closing statement to make.

21 MR. EKBERG: I would like to have
22 Mr. Zent address one other issue, if I could.

23 CHAIRMAN HEINLE: Sure. Go ahead.
24 Assuming there are no other witnesses, then we will
25 go into closing.

1 BY MR. EKBERG:

2 Q Mr. Wozniak asked Mr. Kean about some
3 wells that Mr. Wozniak suggested were proposed. Can
4 you tell us exactly what happened with respect to
5 those wells?

6 A As I recall, Mr. Wozniak's question
7 regarded whether or not Meridian had proposed a
8 Fruitland Coal location in the northwest quarter of
9 Section 4 I believe in 1994 and also a well -- an
10 additional well in the southwest quarter of Section
11 28, 33 north, 11 west, and the southwest quarter of
12 33, 33 north, 11 west. Mr. Kean was unable to
13 answer that question because he didn't have any
14 firsthand knowledge.

15 I do have some firsthand knowledge about
16 those situations in particular, and let me address
17 what Meridian did do. Meridian did initiate a
18 filing of an APD with the Bureau of Land Management
19 in staking the locations, at least a location in 33
20 and a location in 28 of 33 north, 11 west. I don't
21 recall if we actually staked the location of the
22 northwest quarter of Section 4. We may have, but I
23 don't recall.

24 The question is is whether or not that
25 actually constitutes a proposal. Meridian's



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1 procedure on an annual basis is to initiate an APD
2 process and permitting processes on many wells that
3 are never actually proposed either to our management
4 or to our partners.

5 In this particular case, those wells we
6 did initiate the APD process, and we did stake two
7 of the three that I know of. We never sought
8 internal budget approval for those wells. And on
9 the well in Section 4 where we have a partner, Cedar
10 Ridge, we never proposed that well to our partner.
11 We never got internal approval. So, no, we did not
12 propose those wells under our definition of
13 proposing wells. We did initiate permitting. Those
14 permits died of natural death; a common occurrence
15 at Meridian.

16 MR. EKBERG: No further questions.

17 CHAIRMAN HEINLE: Mr. Wozniak.

18 MR. WOZNIAK: No, nothing.

19 CHAIRMAN HEINLE: Tempted? But no,
20 right?

21 MR. WOZNIAK: Yes. It would take too
22 long.

23 CHAIRMAN HEINLE: Any questions from the
24 commissioners? Thank you.

25 Now, I think we can move into closing

1 arguments, and keep in mind I think Commissioner
2 MacMillan needs to leave around 3:15. If the
3 closing arguments are brief, hopefully it will give
4 the commission sufficient time to deliberate and
5 maybe resolve at least this first matter before
6 Commissioner MacMillan needs to leave.

7 MR. WOZNIAK: May I proceed,
8 Mr. Chairman?

9 CHAIRMAN HEINLE: Yes.

10 MR. WOZNIAK: Thank you very much.

11 As I started out this application, I was
12 hoping and expecting the evidence would try to cover
13 six major areas and we believe that in large part it
14 has.

15 We think that the testimony has
16 supported the fact that it is likely that there is
17 drainage from current wells in Section 32 into
18 Section 5 where Cedar Ridge proposes to do the
19 recompletion. We think this was supported by the
20 cumulative gas testimony on those exhibits and also
21 the pressure data.

22 The pressure data that Meridian supplied
23 and the data that Cedar Ridge supplied seems to
24 coincide as Commissioner MacMillan mentioned, and we
25 think that both of those do two things taken

1 together, plus the contiguousness -- if that is the
2 right word -- of the coal seams leads to the
3 reasonable conclusion that there has been a
4 significant gas migration from Section 5 into
5 Section 32.

6 There are two wells in the south half of
7 32. And Cedar Ridge is simply asking this
8 commission -- albeit belatedly now that another year
9 and a half has passed since they have been trying to
10 get these wells drilled -- to the tune of
11 approximately thirty- or some-thousand dollars a
12 month that the tribe and operator has been affected
13 -- to go ahead and recomplete to protect the
14 correlative rights.

15 I think that Meridian's testimony was
16 consistent with the fact that it was likely or at
17 least conceivable and plausible that that drainage
18 was occurring.

19 I would also point out to you that the
20 party towards whom the well was being moved, which
21 is Emerald, where this well would be closest to,
22 didn't protest, and I think that that is important.

23 So the first issue-- and I think it is
24 the first and foremost issue -- and frankly under
25 our own gas commission statutes, that is one of your

1 chief duties -- to protect the correlative rights of
2 individual owners of the pool. So we think we
3 satisfied that test, and that alone probably would
4 justify, in our opinion, moving forward and granting
5 us the right to do this.

6 The second issue is the waste issue. We
7 think that this application allows us to use an
8 existing wellbore that the operator, Red Willow, has
9 stated is uneconomic and they will abandon it, so at
10 least this would allow that to happen so that would
11 prevent that waste of a wellbore.

12 Under 346102, subparagraph 13, our
13 definition of waste is very broad in Colorado. One
14 of the grounds that you need to look at as to
15 preventing waste is protection of correlative
16 rights. The fact that you don't protect these
17 correlative rights can certainly be waste.

18 Another issue as a part of waste is that
19 this application would ensure collection of the ad
20 valorem and tribal severance taxes, and on a net
21 present value basis those are accelerated and those
22 are real dollars that are beneficial to the state,
23 county, and the tribe.

24 The third point was the economic and
25 efficient development of the reservoir. I think it

1 was abundantly clear from our exhibits that this is
2 an economic venture. It is more than \$2 million of
3 benefit to the mineral owner and to Cedar Ridge by
4 proceeding with this application. Those are very
5 conservative numbers, and we do believe that it is
6 likely that there will be additional incremental
7 reserves, although we ran all the exhibits as though
8 there wasn't just to see if it was still economic
9 and it was, so we feel that the current wells are
10 uneconomic and this would be an economic venture.

11 As to efficient development of the
12 reservoir, people can argue about what efficiency
13 means, but we think accelerating all the benefits to
14 all the parties and yielding in excess of \$2 million
15 is an efficient and economic recovery.

16 The fourth item was whether this
17 application was consistent with the public health,
18 safety, and welfare, which you know is one of the
19 issues you must consider. We feel that this is a
20 remote area as opposed to Pine River. There are no
21 people living within miles and miles. We think Dick
22 Baughman, who is the foremost expert on the gas seep
23 for the tribe, has been studying this since 1989 and
24 almost full time since 1993, and he testified very
25 clearly that he doesn't believe that granting this

1 infill application or the second application -- I
2 know that is not in front of us -- will cause
3 increased damage or increased gas seep.

4 And secondarily, even to the extent it
5 would cause or could cause some problem, the
6 existence of the eight pressure monitoring wells,
7 over 140 tubes that are there that are monitored by
8 the BLM, the tribe, and the various companies that
9 are there, we feel gives the instantaneous access to
10 a problem if it should arise.

11 Also there is going to be minimal
12 surface impacts because of the existence of the
13 roads, pipelines, and everything set up, so that
14 from a public safety and health point of view we
15 don't see any problem.

16 The fifth issue that I mentioned when we
17 started and I think we have shown is that the tribe
18 is in support of this. The tribe is the mineral
19 owner, the surface owner, and frankly is also the
20 most affected adjacent working interest owner and
21 they are in favor of this; I think not just because
22 they are involved in this, but based upon our
23 technical presentation. We gave the same
24 presentation to the tribe previously and they
25 supported it.

1 Similarly from Chairman Burch's letter,
2 I think it is abundantly clear that the tribe
3 doesn't support a drastic downspacing at this time.

4 I believe Burlington stated repeatedly,
5 and I think rightfully, that they don't support
6 anything less than 320 acres, and on a general basis
7 I think Cedar Ridge agrees with that; however, we
8 are sort of dealt with the cards that we have now
9 and there are two adjacent wells, and they are
10 draining this section and we have to deal with that
11 somehow.

12 The tribe also, I think, very clearly
13 stated that they will consider proposals for infill
14 wells on a case-by-case basis, and we would like you
15 to look at this on a case-by-case basis just as they
16 are.

17 Finally, we think that under 346116, the
18 drilling unit section, there are three tests that
19 you can look at in establishing the proper unit in
20 this case. It is still 320 acres, but there is
21 going to be two wells in there if we are allowed to
22 complete this well. The first is assisting in
23 preventing waste; the second one is avoiding
24 unnecessary drilling of unnecessary wells -- this
25 doesn't deal with any drilling; and the third is the

1 protection of correlative rights. I think if you
2 look at all of those in balance, we think
3 correlative rights should win out and we should be
4 able to do this with this well.

5 Finally, one last issue is the Rule 3 of
6 order 11260, which is the operative order here, does
7 state that exception locations can be approved as
8 long as you have the adjacent owner's -- towards
9 whom you are moving -- approval. We didn't have any
10 rejections or concerns from Emerald, and that is the
11 party whom we are moving towards.

12 We heard a lot of testimony about the
13 possibility that some correlative rights from
14 Meridian in Section 4 could be affected. Our view
15 of that is there is already a spacing unit with an
16 existing well that has been producing for quite some
17 time that is a lot closer than this recompletion
18 is. So while we did hear some theories from the
19 engineers for Meridian that possibly there could be
20 some effect, we think that the effect is fairly
21 minimal.

22 Also on the economic issue -- just a
23 couple of rebuttal points -- using \$1.65 per barrel
24 for disposal costs versus Cedar Ridge's actual 12
25 cents, in and of itself excuse that in Exhibit 20A

1 from the protestants.

2 The other thing that we looked at
3 extensively was the impact of the tribe. Cedar
4 Ridge has a very strong partnership with the tribe,
5 and the economics and the benefits to the tribe are
6 of paramount concern and one that I know BLM is
7 required to address.

8 So for all of those reasons we believe
9 that the statutory standards -- whether this is
10 treated as an exception location or as an infill
11 well -- have been satisfied, and we would request
12 that you grant Cedar Ridge's application.

13 CHAIRMAN HEINLE: Thank you,
14 Mr. Wozniak. Mr. Ekberg.

15 MR. EKBERG: I will be similarly brief.
16 We are actually here today to discuss the
17 downspacing of the west half of Section 5; whether
18 you call it an exception location or an infill well,
19 the result is that there are two wells and one
20 spacing unit. There is existing spacing, and that
21 means the commission has made a determination that
22 one well will efficiently and economically drain the
23 west half of 5 as a 320-acre drilling and spacing
24 unit.

25 We believe the burden of proof is on the

1 applicant to show that that is not true. We don't
2 believe they have met this burden. We didn't hear
3 any statements until the closing statement as to
4 what they thought the spacing should be. So we
5 don't think that they have met the burden of proof
6 to show that one well is not smaller than can be
7 efficiently and economically drained -- that one
8 well is not smaller than will efficiently and
9 economically drain 320 acres.

10 The applicant suggested the evidence
11 shows that recompletion is necessary to protect
12 their correlative rights is basically the foundation
13 of their application, and the correlative rights
14 violation resulted in drilling of a well up in the
15 southwest quarter of Section 32 -- actually the
16 wells that were permitted by the Bureau of Land
17 Management after this commission had a hearing and
18 after this commission determined that those wells
19 should not be drilled.

20 So BLM's determination was inconsistent
21 with the determination of this commission, and I
22 think that what that shows is that the determination
23 of this commission in 1992 was correct with respect
24 to the proper spacing.

25 We believe that our testimony from

1 measured data with respect to pressure and
2 conductivity of the coals establishes that one well
3 will, in fact, drain 320 acres, and given these
4 factors we think that the spacing is appropriate.

5 The applicant has requested you to
6 protect his correlative rights, and unlike -- and
7 Mr. Wozniak questioned one of the witnesses as to
8 whether we were trying to prevent that. Not
9 necessarily.

10 There are two issues which have to be
11 discussed here: first, the wells which are causing
12 it, the drainage, are presently shut-in. There is
13 no correlative rights issue arising right now from
14 the infill wells. Nobody can predict how long that
15 will be. An appeal has been filed, but right now
16 there is presently no correlative rights issue.

17 Second, the applicant assumes that the
18 issue of correlative rights will stop with the west
19 half of Section 5, but we don't believe this to be
20 the case. If a second well is permitted in the west
21 half of Section 5, then Section 5 will have three
22 straws. We believe the testimony will show that
23 those straws will start drawing down pressure and
24 that they will create a sink which will affect the
25 correlative rights in the surrounding spacing

1 units.

2 The tribe has made a commitment that
3 they will treat these things one well at a time, but
4 as the evidence has shown there are the fee owners
5 which become affected as you start to move from the
6 east to the south. The tribe cannot make a
7 commitment to those people. They have a right to
8 protect their correlative rights as well.

9 Back in 1992 one of the concerns was
10 that this would be the first of several wells. I
11 think the concern then has proven to be true now.
12 Wells that were permitted by the BLM were the first
13 set of wells in a domino effect which we don't know
14 where it will stop. Approving this well would be
15 the second set. Where would they stop?

16 Furthermore, although the 2-5 well would
17 be completed on an existing well pad, and the
18 applicants have testified the impact may be minimal,
19 that may not be true with respect to other wells.

20 In summary we think the current BLM
21 order is protecting their correlative rights, and
22 the need for them to drill a well in the west half
23 of Section 5 at this time is not apparent.

24 The applicant has also stressed the
25 economics of drilling a well for them. They say,

1 basically, that the second well has two advantages:
2 1) that it will accelerate the rate of recovery, 2)
3 it also allows them to take advantage of Section 29
4 tax credits.

5 We don't think their testimony showed
6 that acceleration of the rate of recovery will
7 result in additional recovery. So a second well
8 recompleted or in another circumstance drilled would
9 be the drilling of an unnecessary well.

10 We also think that reserves may be left
11 in place. There is obviously a difference between
12 Cedar Ridge and Meridian as to what a commercial
13 well is, but Meridian's position is that the
14 reserves that are in the Mesaverde right now will be
15 left in place.

16 In Section 29, tax credits, not all
17 parties would be able to take advantage of Section
18 29 tax credits. As Burlington Resources has shown,
19 if they are required to drill an additional well or
20 a new well they will not be able to take advantage
21 of the tax credits, and that can be an economically
22 devastating factor.

23 What the commission is obligated to do
24 is to establish drilling units of uniform size and
25 shape for the efficient and economic development of

1 the pool as a whole. What the applicant is
2 suggesting is that you look at the economics of the
3 companies and that you look at the tax credit issues
4 which affect the economics but do not affect the
5 uniform development of the pool as a whole.

6 I think if the commission starts
7 granting exceptions based upon the economics of
8 companies and tax credits in this area, you will get
9 into a pattern of development which is haphazard.
10 What will you do if another company comes and cannot
11 take advantage of the tax credits and they have the
12 kind of economics that Burlington Resources showed?
13 So we don't think that an additional well here will
14 necessarily result in the efficient and economic
15 development of the pool.

16 And finally, as Mr. Wozniak suggested,
17 it is the obligation of this commission to protect
18 the public health, safety, and welfare. We don't
19 know exactly what will happen to the gas seeps. The
20 tribe has presented testimony that they believe that
21 the impacts will be minimal, but they also testified
22 that they do not know -- we do not know -- and that
23 possibility will affect the public health and
24 welfare. That concludes my remarks.

25 CHAIRMAN HEINLE: Mr. Wozniak, do you

1 have any closing rebuttal?

2 MR. WOZNIAK: The only closing rebuttal
3 is that the remaining part of the statute that
4 Mr. Ekberg read from in 346102 defines correlative
5 rights and what it says is, ". . . subject further
6 to the enforcement and protection of the co-equal
7 correlative rights of the owners and producers of
8 the common source of oil and gas so that each common
9 owner and producer may obtain a just and equitable
10 share of production therefrom."

11 All that Cedar Ridge is asking is that
12 it be entitled to recover its just and equitable
13 share of the production from the north half of
14 Section 5. That is all we have.

15 CHAIRMAN HEINLE: Lori, do you have
16 anything you want to add before we go into
17 deliberations?

18 MS. COULTER: A question directed to the
19 representative from BLM as to whether or not you
20 would like to place a statement on the record as to
21 your concurrence or nonconcurrence of Cedar Ridge's
22 application?

23 MS. THOMPSON: I thought we discussed we
24 would do that after.

25 MS. COULTER: I think the impression I

1 got from you was that you would concur or not concur
2 with Commissioner Warner.

3 CHAIRMAN HEINLE: I think you need to
4 speak up for the reporter.

5 MS. COULTER: The MOU with BLM allows
6 you to make a statement with respect to whether or
7 not you concur with Cedar Ridge's application. So
8 far all we have on the record in this proceeding is
9 a letter from the BLM which requested Cedar Ridge to
10 initiate this application. And I don't know -- you
11 have the option. I'm just supposed to allow it at
12 this point because the MOU does provide for that.

13 CHAIRMAN HEINLE: Excuse me. Could you
14 identify yourself for the record.

15 MS. THOMPSON: I'm Sherry Thompson. I
16 think we would prefer to wait until afterwards.

17 MS. COULTER: Okay.

18 CHAIRMAN HEINLE: All right. I guess
19 that closes the record. We certainly as
20 commissioners can ask questions of the witnesses and
21 so forth. We won't be needing any more testimony at
22 this point.

23 What I would suggest we do, since we
24 have about forty minutes before Commissioner
25 MacMillan needs to leave, is perhaps we can take

1 twenty minutes, until about five to three, and ask
2 questions, deliberate somewhat amongst ourselves.
3 And after that point what I would suggest we do is
4 that I go around the table to each one of the
5 commissioners to see where they are at and perhaps
6 whether there is -- just to see where we are at to
7 try to bring closure to it.

8 So I guess I will start with -- just
9 open it up to any questions or deliberations that
10 the commissioners might have. Commissioner
11 Matheson.

12 COMMISSIONER MATHESON: Ms. Coulter, are
13 there any other -- for Cedar Ridge, they are
14 claiming that their correlative rights are basically
15 violated by the infill drilling in Section 32. Are
16 there other remedies for them to solve that
17 correlative rights violation other than drilling
18 another well, an allocation, or something along
19 those lines?

20 MS. COULTER: If they could bring an
21 application before the commission alleging that
22 their correlative rights have been violated, I think
23 there are a couple of avenues that would restrict
24 production of those wells which they believe might
25 be causing the violation, and another avenue would

1 be forced pooling.

2 COMMISSIONER MATHESON: What about for
3 any past violation, essentially that the production
4 has more or less robbed them, if that could be
5 shown?

6 MS. COULTER: I don't think we have the
7 ability to reward damages for the past violation.

8 COMMISSIONER MATHESON: Could they in
9 civil court?

10 MS. COULTER: I believe so.

11 COMMISSIONER MATHESON: Patricia, I
12 guess I would like to get a little bit more
13 information on the findings and the order that was
14 put together for the Bowen/Edwards case for the
15 pilot project and what the commission found last
16 time.

17 MS. BEAVER: I will pass out a copy of
18 that order --

19 DIRECTOR GRIEBLING: Can I ask a
20 clarifying question on the previous --

21 CHAIRMAN HEINLE: Yes.

22 DIRECTOR GRIEBLING: If those other
23 options exist, it is my understanding that it would
24 result in economic waste still because they would
25 preclude the recovery of -- in a timely manner -- of

1 reserves and in this case also tax credits. I just
2 point that out, that I'm not sure I understand
3 without some sort of damage settlement how that
4 aspect of the problem could be cured.

5 COMMISSIONER MATHESON: If that is the
6 case, then why not recomplete every Mesaverde well
7 in the Ignacio-Blanco Field so that they could pump
8 on until the tax credits are gone?

9 DIRECTOR GRIEBLING: I don't think that
10 is the plan. I think here there is a drilling
11 rights issue because there is the offset drainage,
12 and the purpose of these is to handle that drainage
13 and the correlative rights issue. I don't know of
14 another alternative that would do the same thing if
15 the application is requested.

16 CHAIRMAN HEINLE: I see the economics as
17 somewhat of a secondary issue. We have a situation
18 where some wells were drilled north of the section
19 that originally was brought before this commission.
20 They denied the request. Approval was obtained from
21 the BLM. Those wells were drilled, and now Cedar
22 Ridge is concerned because of drainage. And I think
23 the data that they have presented clearly
24 demonstrates, as has Burlington Northern's, it is
25 highly probable that drainage is occurring across

1 that unit boundary.

2 COMMISSIONER MATHESON: Sure. I agree
3 with that.

4 CHAIRMAN HEINLE: So it is really an
5 issue of --

6 COMMISSIONER MATHESON: I was wondering
7 if there were other remedies other than correlative
8 -- how those remedies can be drafted, what venue
9 they might be brought to, with or without inclusion
10 of the tax credits, won or lost, is probably for the
11 attorneys to decide. I was wondering if there were
12 other ways of handling this?

13 CHAIRMAN HEINLE: Let me follow up the
14 question to that issue of if this commission were to
15 impose rate restrictions on those wells, under our
16 MOU would those be necessarily honored or need to be
17 honored? It sounds like the BLM has a certain
18 amount of authority in this area, and even if we
19 imposed a rate restriction could they, in effect,
20 override that rate restriction and say not only
21 bring these wells back on line but let's get after
22 it?

23 COMMISSIONER MATHESON: They did it the
24 last time.

25 MS. COULTER: I believe that is

1 correct. Under the MOU they have the right to
2 request that we modify or rescind our order. And
3 outside of the MOU, yes, they have the go ahead.

4 CHAIRMAN HEINLE: That is what I
5 thought, but I just wanted to get some
6 clarification.

7 MS. COULTER: I would like to say for
8 the record before we get too far into the
9 Bowen/Edwards' order that this order was entered in
10 '92, and the evidence presented at that hearing was
11 most likely very different from what was presented
12 today. I'm not sure because I wasn't there, but
13 that could be one thing you might want to consider
14 when looking at the order as a precedent for this
15 case.

16 CHAIRMAN HEINLE: From what I
17 understand, it is a different issue to a certain
18 degree. We are not here trying to determine whether
19 drainage has occurred across that 320-acre unit. I
20 think both the applicant and intervenor agree that
21 it is occurring. That is not the issue. I think
22 that was more of the issue in perhaps the
23 Bowen/Edwards', whether if you drilled the second
24 well in there whether you would recover additional
25 reserves. I don't think that's the issue here.

1 It's purely one of correlative rights because you
2 have these wells to the north that had been
3 producing or shut-in now, and what do we do about
4 this particular location? So I see these as
5 somewhat different issues.

6 COMMISSIONER MATHESON: One
7 precipitating the other.

8 CHAIRMAN HEINLE: Commissioner
9 MacMillan.

10 COMMISSIONER MACMILLAN: I have a
11 question on clarification. My understanding was
12 from the testimony presented by the applicant that
13 there are two wells in Section 32 that have been
14 shut-in. But I also understand, if I am reading
15 their maps correctly, and I want both the applicants
16 protesting to agree -- confirm or deny -- that there
17 is still a well producing in the southern half of
18 Section 32.

19 MR. WOZNIAK: That's correct.

20 MR. EKBERG: That's correct. And it is
21 at a legal location, the southeast quarter.

22 COMMISSIONER MACMILLAN: Legal to whom?

23 MR. EKBERG: Okay.

24 COMMISSIONER MACMILLAN: To me that is
25 significant because of the proximity in that well's

1 continued production.

2 I believe that we did want to add
3 drainage, Allan, but I don't think there is any
4 disagreement. The questions that Commissioner
5 Matheson brought up about potential corrective
6 action to me are what I view as corrective action
7 and to me are pretty important, and the applicant
8 has suggested that they will try and correct it on
9 their own. And obviously the protestant here
10 believes that additional corrective action is going
11 to require their corrective action for whatever
12 corrective action we might take here, and so it may
13 snowball -- at least that is what the protestant
14 would like us to believe.

15 I would like to get some better -- or
16 maybe alternative suggestions, not only from the
17 attorney general but from the director and
18 individual commissioners who may have some
19 experience in this area on corrective action that
20 may be available to the applicant and the producer
21 to the north, Emerald.

22 For example, I think the attorney
23 general suggested that there may be some things as
24 far as pooling goes, but I don't know clearly what
25 our rules may do in application to gas that has

1 already been produced. I will say "now" only
2 because I'm afraid that we may not get back around
3 to it -- I'm real concerned about how we intervene
4 with production restrictions. I don't like that
5 method personally. I think it requires way too much
6 reporting and monitoring by a whole host of parties,
7 always back to us, always back to the staff to look
8 at problems with allocation and all that other
9 stuff. But that is a personal prejudice of mine,
10 probably from lack of knowledge, and so to me that
11 is the big question.

12 But I also want to pose another question
13 as we deliberate. And again, if I am not here to be
14 a part of it -- to me this case has brought up in my
15 own mind some real need for much better coordination
16 and cooperation between this commission and the BLM,
17 particularly in areas where this commission has made
18 a determination; the BLM has found differently. But
19 we are not in sink on how quickly we are responding
20 to things.

21 And for the production to continue, as
22 the paperwork gets filed with the various entities
23 -- I calculated it here somewhere. But in my
24 estimation there has been approximately two- to
25 four-tenths of a Bcf of gas produced from the time

1 that the original letter was written from the
2 mineral interest owners to the BLM and the BLM's
3 response then suggesting that this venue be used to
4 take the matter up, and that only enhanced or
5 exacerbated the problem. So that is another thing.

6 Outside of the determination right here,
7 I think it points out that we need to spend a little
8 more time and look more closely to the areas that
9 have allowed an additional well per spacing unit and
10 keep closer tabs of that.

11 Having said that, do you want me to go
12 on or --

13 CHAIRMAN HEINLE: Go ahead. I will go
14 to Commissioner Rebne afterwards.

15 COMMISSIONER MACMILLAN: I do think
16 corrective action is necessary, and to me we have
17 two opportunities for doing them: 1) is to go along
18 with the applicant to allow them to drill a well and
19 essentially continue production and get what they
20 can out of it. And they have demonstrated, I think,
21 without too much rebuttal from the protestant, that
22 they can do that and they can do it economically.
23 Whether it is rate recovery or not, it is a viable
24 thing for them to do.

25 Additional reserves to be recovered, no,

1 they haven't demonstrated that and the protestant
2 has agreed that there isn't going to be any
3 additional reserves recovered.

4 I'm not opposed to rate-recovery
5 systems. The thing that I am concerned about is the
6 snowballing effect of it, and clearly the protestant
7 is concerned about that also, and that is what they
8 have brought up.

9 So being a simple geologist I start
10 looking at where the wells are located. It appears
11 to me that in the case of the proposed 2-5 to be
12 recompleted into the Fruitland formation, there is a
13 well, the 5-5, which is quite close to that well --
14 Commissioner Heinle, you were the one that brought
15 up the distance of a spacing unit between the
16 proposed recompletion and lands that are owned and
17 operated by Meridian -- but there also is a
18 producing well between their two in very close
19 proximity that requested recompletion.

20 As I recall, when this commission looked
21 at the Bowen/Edwards application, there was at least
22 one commissioner that looked very closely at the
23 proposed infield development wells to try to make
24 sure that there were offsetting wells currently
25 producing adjacent to the wells that Bowen/Edwards

1 had requested. That particular commissioner felt
2 that that was an important thing to do so that if
3 people were going to suck hard on those wells there
4 was something in close proximity on either side of
5 the lease line that allowed one-on-one competition
6 as opposed to a diagonal offset to be able to pull
7 on those things. And again, I'm going back to
8 simple geometries of things.

9 In this particular case, the proposed
10 recompletion does have a well intervening before it
11 gets over to Burlington Resources' interest in
12 Section 4, which is where they suggested that they
13 may need to drill a well in the northwest quarter to
14 protect their correlative rights. I don't
15 necessarily see it that way, I guess, is what I'm
16 saying.

17 I also would point out that -- although
18 we haven't talked about it -- the same geometric
19 arguments may be applicable to the case that you
20 hear after this.

21 I'm interested in the comments of the
22 other commissioners, I guess, before I give kind of
23 my final analysis, but I think you see where I may
24 be going.

25 CHAIRMAN HEINLE: I do. Commissioner

1 Rebne.

2 COMMISSIONER REBNE: Before I begin, I
3 guess -- to the BLM, maybe this question is best
4 directed. But the two wells that are currently
5 shut-in in Section 32, what wells are those?

6 MS. THOMPSON: This is Sherry Thompson.
7 I believe it is the 32-3 and the 32-4. Thank you.

8 COMMISSIONER REBNE: I believe that the
9 evidence that they have shown is that the
10 correlative rights have been affected, and other
11 commissioners, I think, have indicated the same
12 thing. I believe we need to suggest some remedy for
13 that.

14 My concern is that in following through
15 with the proposed recompletion of the 2-5 is that it
16 appears -- the technical data has indicated that
17 there is this, perhaps, expanding pressure sink hole
18 phenomenon that has huge implications.

19 If we try to correct the correlative
20 rights that have been affected perhaps in Section 5
21 by the recompletion, you begin to affect other areas
22 and we jeopardize the correlative rights of the
23 other owners. So I'm not supportive of remedying
24 the problem with a recompletion and would like to
25 pursue other avenues.

1 I guess the other big implications that
2 the recompletion might have that have been pointed
3 out are the economic effects, that it favors those
4 operators that can recomplete versus due to infill
5 drilling to protect their correlative rights, and
6 those are huge economic factors. And if we go down
7 that avenue, I think we influence the economics and
8 the efficiency of how future reserves are
9 recovered.

10 So I would like to consider other
11 remedies and would like to hear what the other
12 commissioners have to say about the impact to the
13 correlative rights issue and how we might remedy
14 that.

15 CHAIRMAN HEINLE: Commissioner Johnson.

16 COMMISSIONER JOHNSON: Since I'm not the
17 technical person as my two former colleagues there,
18 commissioners, what I think I understand -- it is
19 clear in my mind that the correlative rights issue
20 is definitely the issue here. It is also equally
21 clear to me that the infill wells or the offset
22 wells, or whatever you want to label them, were
23 unnecessary to begin with, but that doesn't make any
24 difference. They are there and they have been
25 producing and -- I don't know that at this time that

1 we have before us an opportunity to do something
2 different than the application; therefore, I feel
3 that in order to protect their correlative rights we
4 must go forward with it.

5 CHAIRMAN HEINLE: I agree with you,
6 Commissioner Johnson. I see a correlative rights
7 issue here, and I fully support the recompletion.
8 I'm less concerned about the snowball effect. Keep
9 in mind that the pressures have already been drawn
10 down in the area to perhaps 600 pounds. What causes
11 migration of gases is a large delta P, and you are
12 already starting at a fairly low pressure. So that
13 the probability of a great migration of gas from
14 Section 4 to Section 5 I see as minimal, and it
15 would take some period of time to occur, and you
16 already have a well in between there to help prevent
17 that. I'm not concerned at all about a snowball
18 effect due to creating a pressure sink hole there.

19 I see each one of these applications as
20 a unique application. This one is unique in the
21 fact that it has an existing wellbore that could be
22 used. It is unique in the fact that the applicant
23 offsets the proposed location and that none of the
24 directly offsetting owners have protested it, and
25 because of that I think it is a perfect situation



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1 for using the existing wellbore to help protect
2 correlative rights. That doesn't apply everywhere,
3 and that is the type of test I would apply because
4 this is clearly a correlative rights issue and not a
5 drainage issue.

6 And just so everybody knows where I'm
7 at, that's where I'm at. I don't see a whole lot of
8 other opportunities. I don't think rate
9 restrictions are the way to go. I'm not even sure
10 if we imposed rate restrictions whether they would
11 be honored anyway. Unitization, then you get into
12 the arguments of unitization parameters, and one of
13 the parameters that people always seem to use is
14 historical production or cumulative production.

15 If you had drainage you are already
16 putting somebody at a disadvantage because some of
17 their gas is going into the calculation of the
18 ownership of the unit. So off the top of my head I
19 don't see that unitization would work.

20 Unless there is another remedy available
21 to the commission, I don't see that we have much
22 choice if we all agree that it is a correlative
23 rights issue, but then we have to approve the
24 recompletion.

25 Commissioner Matheson.

1 COMMISSIONER MATHESON: These are great
2 wells and everybody knows that and has for a long
3 time, especially with the tax credits, and this is
4 the spot of La Plata County; if you have one of
5 these, you are going to make money.

6 If this area were compartmented, which
7 we have clearly seen that it is not, I think
8 accelerating production to maximize your revenues as
9 the tax credits expire is a great idea, but it is
10 not. Okay? That is, I think, the basic problem
11 here.

12 Back in '92 this commission decided that
13 320-acre spacing was appropriate for draining the
14 field. BLM overrode that decision. I think they
15 made a good decision from the standpoint of revenues
16 for the tribe; they made a bad decision as far as
17 dealing with the reservoir itself. We are here
18 today, basically, dealing with the outcome of the
19 that problem of correlative rights issue.

20 I understand where the applicant is
21 coming from in this thing. They feel like they have
22 been wronged. Back in '92, maybe, Emerald if they
23 wanted to do a pilot project -- excuse me,
24 Bowen/Edwards, if they wanted to do a pilot project
25 should have put in pressure observation wells versus

1 production wells to see how the reservoir would
2 respond to production on a 320-acre spacing unit,
3 but that is all behind us. Because this is not a
4 compartmented area, I do not want to see this thing
5 snowballing again -- a couple of years from now,
6 Burlington or some other owner in the area coming to
7 us with applications, Oh, our correlative rights
8 have been damaged. We want to put in more
9 wells . . . and so it goes. Certainly, at that
10 point, it would be a waste.

11 I think Burlington has pointed out to us
12 today that drilling wells today without the tax
13 credit is certainly a waste.

14 So basically where I'm at, I think the
15 decision of the commission in '92 was the right
16 one. I don't want to put another bad decision on
17 top of the one that happened previously.

18 I think that if the applicant is looking
19 for a remedy, this commission may not be able to
20 help them out; BLM may not be able to help out other
21 than seeing those wells in Section 32 shut-in, and
22 they may have to go to civil court with calculations
23 as to how much gas they believe they lost by that
24 drainage.

25 Now, are we going to leave reserves in

1 place, lose them forever so to speak, because we
2 don't allow this extra well? I don't think so. We
3 have had clear testimony today that 320-acre spacing
4 will get all the gas out in time. So that's where I
5 am; deny the application.

6 CHAIRMAN HEINLE: Director Griebeling.

7 DIRECTOR GRIEBLING: I would like to
8 make a couple of comments. I think the Assistant
9 Attorney General at the time made a very important
10 point when she indicated that a lot has occurred
11 since this commission dealt in 1992 with the initial
12 application and hindsight is always 2020.

13 From my understanding of our statute,
14 346116, the commission has been charged to establish
15 drilling units and otherwise regulate in a manner
16 that ensures that the pool as a whole will be
17 efficiently and economically developed.

18 It would appear that in hindsight the
19 two wells that were eventually drilled and probably
20 produced three years, less than four years, anyway,
21 one of them made 8 Bcf and one of them made
22 5.8 Bcf, regardless of tax credits or anything
23 else.

24 In view of the costs that are associated
25 with wells of this depth, it kind of goes without

1 saying that that was economic and that that
2 contributed to the pool as a whole being efficiently
3 and economically drained. As I say, in hindsight it
4 is real easy to make that point.

5 I think if I understand that charge
6 right, it is important for you to consider that
7 economic development of a pool may involve the
8 drilling of additional wells.

9 The other charge is correlative rights,
10 and I think you have discussed that extensively.
11 But I don't know that you can deal with one and not
12 consider the other; as you have in many areas you
13 have a charge of balancing different
14 responsibilities.

15 I wanted to point out that I think it
16 really doesn't go without saying that those two
17 wells were economic and that is good. I think that
18 is what the commission is supposed to be doing.
19 Here you have a situation where the wells have been
20 economic, and now the commission has to deal with
21 the correlative rights issues. I wanted to comment
22 about those.

23 CHAIRMAN HEINLE: Go ahead.

24 MS. COULTER: To add to that, I think if
25 Meridian is able to prove the correlation with the

1 production for this well as affecting their
2 correlative rights, it is not a right to come back
3 to the commission under 346117 and request
4 restriction of production or allocation -- do they
5 have the right to just say we want to drill another
6 well, so you might not see the snowball effect. You
7 might see pursuits of other legal remedies.

8 COMMISSIONER MATHESON: We can't do that
9 in this instance.

10 MS. COULTER: You have that option if
11 you feel that the evidence is strong enough with
12 respect to protecting correlative rights, although
13 the applicants and the protestant or the intervenor
14 haven't really indicated any other alternatives
15 other than application for that. And granted, it is
16 a little difficult to proceed with limiting
17 production or the allocation. We haven't received
18 any evidence of that.

19 CHAIRMAN HEINLE: Let me interrupt
20 again. I think Commissioner MacMillan is going to
21 be leaving in a few minutes. I would like to try to
22 bring this thing to closure, if we can. I had set a
23 goal of about five to three and we are already after
24 three.

25 I don't know if we are at a point --

1 whether somebody is willing to fashion a motion or
2 what, but I think the thing that concerns me a
3 little bit is if Commissioner MacMillan leaves we
4 are down to four commissioners. And for the
5 application to be approved all four would need --

6 MS. COULTER: Just a majority of the
7 quorum that is here.

8 CHAIRMAN HEINLE: Just a majority of the
9 quorum that is here? Okay. Thank you for
10 correcting me. I would still like to give
11 Commissioner MacMillan the opportunity to vote on
12 it. He has been, either from a distance or upclose,
13 involved in the matters for some time, and I don't
14 want to lose his experience or expertise on the
15 matter, if I can prevent it.

16 So Commissioner Rebne, Commissioner
17 Johnson, Commissioner MacMillan, is there anything
18 you want to add at this point? Have you heard
19 anything from the responses that you want to expound
20 or clarify your positions? Any ideas?

21 COMMISSIONER MACMILLAN: Not
22 well-formulated, unfortunately. I think that if we
23 reject the applicant's request here, we need to
24 fashion it with something that is going to -- well,
25 we can reject it outright. And then from what the

1 attorney general had suggested to us, one of the
2 avenues for remedy for them is to come back and ask
3 for some type of pooling arrangement for wells that
4 would include wells in Section 5 of 32-11, and wells
5 in Section 32 of 33-11. We force that. To me
6 that's one of the only fair ways that we can do
7 this.

8 I'm not sure I have heard any of the
9 comments from the other commissioners that would
10 suggest that there hasn't been some impact from the
11 production in Section 32 that has affected the
12 ability to recover reserves that could have been in
13 place in Section 5. So if we don't allow them to
14 recomplete this well and even that score, if you
15 will, I think we can either deny it, let them come
16 back and seek a whole new motion in front of us, or
17 we can try to craft it now.

18 CHAIRMAN HEINLE: If I could respond to
19 that. The concern I have with any type of pooling
20 or unitization, if it is done on a surface-acreage
21 allocation, number one, it is going to be unfair if
22 there has been drainage.

23 Secondly, if you try to do it on the
24 basis of calculating what the drainage is, I'm not
25 sure you are going to be able to quantify that.

1 That brings up the second issue.

2 And then the third issue is we have had
3 several different types of mineral owners involved
4 here, and I'm not sure how that jurisdiction all
5 works out, whether we have the ability to force a
6 pooling for unitization. I'm not sure we have the
7 ability to do that.

8 So I'm just saying -- it's an
9 alternative, but I'm not sure it is a practical
10 alternative given the set of circumstances that we
11 have been dealt. That's my concern.

12 COMMISSIONER MACMILLAN: For the same
13 reasons, Commissioner Heinle, that is one of the
14 reasons that I really don't at all like production
15 restrictions or allocations.

16 CHAIRMAN HEINLE: I concur with you on
17 that, too. Commissioner Matheson.

18 COMMISSIONER MATHESON: None of this is
19 satisfactory. Going with other remedies is not
20 going to be fun or easy. I just think that the risk
21 of this additional well -- the testimony that has
22 been here -- that the problem will grow.

23 If there were any signs of
24 compartmentalization at all, if there were any
25 indication that a compartmental problem wouldn't

1 grow, at least in my mind, then I would say, Yeah,
2 drill the well. I'm not saying deny the application
3 and never come back.

4 If we had had some suggestions here for
5 some other remedies, I would be more than happy to
6 listen to them. I think remedies need to occur.
7 And it is clear in my mind that the correlative
8 rights have been violated. But if this is not the
9 right decision, it will come back and get us.

10 CHAIRMAN HEINLE: Do you not draw any
11 comfort from the fact based on the data presented
12 that the pressure is already down quite a bit and
13 that whatever delta P is going to be created here,
14 if one is created, poses a significantly less
15 problem than if we were dealing with original
16 reservoir pressures?

17 COMMISSIONER MATHESON: That is true.
18 Although I must admit I'm not a petroleum engineer
19 and can't really answer that question as best as you
20 can, perhaps, but in my mind, I just see a bunch of
21 people out here sucking on these wells like crazy to
22 make up for what everybody else is doing and it can
23 snowball. It has snowballed. That is why we are
24 here today.

25 DIRECTOR GRIEBLING: May I make a

1 comment?

2 CHAIRMAN HEINLE: Go ahead.

3 DIRECTOR GRIEBLING: It has been four
4 years since the commission dealt with the Section 32
5 application. And certainly within a year after
6 those wells were drilled it was probably fairly
7 obvious that they would be high-rate producing
8 wells, at the very least.

9 It seems like if this were going to
10 snowball there would have been applications all over
11 the place already and we would have received them,
12 and the motivation for those would have been to
13 recomplete before the tax credits expired. We
14 haven't seen many applications. I think we have
15 seen one with three wells. And I think the unique
16 thing about this is that there has been a
17 correlative rights violation in the drainage, and
18 that is what is motivating this application. I
19 wanted to make that point.

20 The other point that I would like to
21 make is that there is a letter in this one
22 application from the BLM advising the applicant to
23 come to the commission. That is a reality. That
24 letter is there.

25 I guess we haven't heard from the BLM,

1 and I would be speculating, but I think the fact
2 that that letter is there should be taken into
3 account.

4 COMMISSIONER JOHNSON: I'm ready to try
5 on the motion.

6 CHAIRMAN HEINLE: Have at it.

7 COMMISSIONER JOHNSON: I move that we
8 allow the applicant to recomplete the Ute number 2-5
9 well for production from the Fruitland Coal seams as
10 an additional well for the 320-acre drilling and
11 spacing unit.

12 CHAIRMAN HEINLE: Is there a second to
13 that motion?

14 COMMISSIONER MACMILLAN: Second.

15 CHAIRMAN HEINLE: Any discussion of the
16 motion? All in favor respond by saying aye.
17 Oppose.

18 COMMISSIONER REBNE: Aye.

19 CHAIRMAN HEINLE: Motion fails --

20 COMMISSIONER MATHESON: Passes.

21 CHAIRMAN HEINLE: It's been a long two
22 and a half days.

23 COMMISSIONER MACMILLAN: I saw some
24 people jumping there, Mr. Chairman.

25 CHAIRMAN HEINLE: I always keep thinking

1 of seven, a group of seven, but the attorney general
2 was right.

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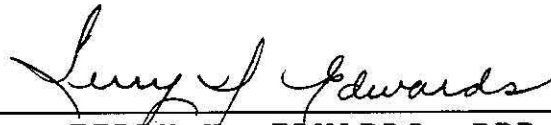
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1
2 CERTIFICATE

3
4 I, TERRY H. EDWARDS, RPR, do hereby
5 certify that I reported the foregoing proceedings in
6 the first instance, and that later the same was
7 reduced to typewritten form under my direct
8 supervision and control; I further certify that the
9 foregoing is a true and complete transcription of my
10 stenographic notes then and there taken.

11
12 Dated September 16, 1996

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15
16 
17 TERRY H. EDWARDS, RPR

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