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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
IN THE MATTER OF THE HEARING)
CALLED BY THE OIL CONSERVATION)
DIVISION FOR THE PURPOSE OF)
CONSIDERING:) CASE NOS. 10915,
10916, 10917
APPLICATION OF CONOCO, INC.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: Michael E. Stogner, Hearing Examiner
Jim Morrow, Hearing Examiner

February 17, 1994

Santa Fe, New Mexico

This matter came on for hearing before the
Oil Conservation Division on February 17, 1994, at
Morgan Hall, State Land Office Building, 310 Old
Santa Fe Trail, Santa Fe, New Mexico, before Deborah
O'Bine, RPR, Certified Court Reporter No. 63, for the
State of New Mexico.

ORIGINAL

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I N D E X

February 17, 1994
 Examiner Hearing
 CASE NO. 10915, 10916, 10917

PAGE

APPEARANCES

3

CONOCO'S WITNESS:

Reed Meek

Examination by Mr. Kellahin

5

Examination by Examiner Stogner

19

Billy Goodwin

Examination by Mr. Kellahin

24

Examination by Examiner Stogner

30

REPORTER'S CERTIFICATE

34

E X H I B I T S

ID ADMTD

Exhibit 1
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 Exhibit 15

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CUMBRE COURT REPORTING

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A P P E A R A N C E S

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FOR THE APPLICANT: KELLAHIN AND KELLAHIN
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Santa Fe, New Mexico
BY: W. THOMAS KELLAHIN, ESQ.

FOR AMOCO
PRODUCTION COMPANY: CAMPBELL, CARR, BERGE &
SHERIDAN, P.A.
P.O. Box 2208
Santa Fe, New Mexico 87504
BY: WILLIAM F. CARR, ESQ.

1 EXAMINER STOGNER: Hearing will come to
2 order. Call next case, No. 10915.

3 MR. STOVALL: Application of Conoco, Inc.,
4 for a high angle/horizontal directional drilling
5 pilot project, special operating rules therefor, and
6 an unorthodox producing interval, San Juan County,
7 New Mexico.

8 EXAMINER STOGNER: Call for appearances.

9 MR. KELLAHIN: Mr. Examiner, I'm Tom
10 Kellahin of the Santa Fe law firm of Kellahin and
11 Kellahin, appearing on behalf of the applicant. I
12 have two witnesses in this case.

13 We would request permission to consolidate
14 our presentation with the next two Conoco cases which
15 deal with the same topic.

16 EXAMINER STOGNER: Are there any other
17 appearances in this case or the two additional ones?

18 MR. CARR: May it please the Examiner, my
19 name is William F. Carr with the Santa Fe law firm of
20 Campbell, Carr, Berge & Sheridan. I would like to
21 enter an appearance in these cases on behalf of Amoco
22 Production Company. I do not intend to call a
23 witness.

24 EXAMINER STOGNER: Any other appearances
25 on this case or the next two? At this time I'll call

1 Cases 10916 and 10917.

2 MR. STOVALL: And each of them has the
3 same title as the case which has been called.

4 EXAMINER STOGNER: At this time, I will
5 consolidate all three cases for testimony purposes.

6 (Witnesses sworn.)

7 EXAMINER STOGNER: Mr. Kellahin?

8 MR. KELLAHIN: Thank you, Mr. Examiner. I
9 have two witnesses. Mr. Reed Meek is a geologist.
10 He's our first witness. Mr. Billy Goodwin is a
11 petroleum engineer. He's going to discuss the
12 details of the drilling and completion of the wells.

13 We're proposing to take the exhibit book
14 for the first case, it's 10915, for the Hughes B-16R,
15 go through that as a sample, if you will, and then
16 have Mr. Meek describe for us if there's any material
17 differences when we address the second two cases and
18 present it in that fashion, Mr. Examiner.

19 REED MEEK,
20 the witness herein, after having been first duly
21 sworn upon his oath, was examined and testified as
22 follows:

23 EXAMINATION

24 BY MR. KELLAHIN:

25 Q. Mr. Meek, for the record, would you please

1 state your name and occupation.

2 A. My name is Reed Meek. I'm a geologist
3 with Conoco, Inc., in Midland, Texas.

4 Q. Mr. Meek, on prior occasions have you
5 testified before the Division as a petroleum
6 geologist?

7 A. Yes, I have.

8 Q. Pursuant to your employment as a
9 geologist, have you made a study of the geologic
10 factors concerning these three applications by your
11 company?

12 A. Yes, I have.

13 Q. You reside in Midland, Texas, do you, sir?

14 A. Yes.

15 MR. KELLAHIN: We tender Mr. Meek as an
16 expert petroleum geologist.

17 EXAMINER STOGNER: Mr. Meek is so
18 qualified.

19 Q. (BY MR. KELLAHIN) Before we look at the
20 specifics of each of the individual cases, perhaps we
21 could turn to the exhibit book that's marked 10915.
22 Let's find the color display, which is Exhibit No.
23 4. It's the one that shows the overpressured,
24 underpressured area. Are you with me?

25 A. Yes.

1 Q. Describe for us what is the basis
2 geologically for proposing as a pilot project an
3 effort by your company to undertake the task of three
4 horizontal wells in a certain portion of the Basin
5 that has historically been developed with the
6 vertical coal wells. What's the plan, and what's the
7 reason?

8 A. The reason for drilling the horizontal
9 wells in this portion of the Fruitland field is that
10 the coal permeability and reservoir properties are
11 poor. The typical vertical well that is drilled in
12 this area produces at a very low rate, and we don't
13 feel like we're able to recover a significant portion
14 of the reserves that are in place.

15 This is opposed to wells shown on the map,
16 if you look at the wells in the areas colored in
17 bright red, these are high rate, very high
18 permeability coal wells that produce at very high
19 rates. And we're looking at a much lower
20 permeability, tighter portion of the reservoir where
21 we want to do this pilot project in.

22 Q. Does that rate have anything to do with
23 whether the well is located in what is described as
24 the overpressured versus the underpressured low
25 permeability coal?

1 A. Yes. The overpressured, high permeability
2 coal is the area where the well performance is much
3 better. Typical wells in this area are flowing at
4 rates of several million cubic feet per day.

5 Q. In the overpressured, high perm area?

6 A. Right.

7 Q. For the area that is characteristic of
8 these three wells, what kind of rates are you seeing
9 for the vertical wells?

10 A. The typical well is producing at less than
11 100 Mcf per day.

12 Q. What's the source of the data by which
13 Exhibit 4 was generated?

14 A. This is production history data that's
15 gotten from the State of New Mexico.

16 Q. Is the mapping and your interpretation of
17 the overpressured area consistent with the industry
18 knowledge and the published literature on the
19 overpressured versus underpressured area?

20 A. Yes, it is.

21 Q. So when we look at each individual well
22 site, are you satisfied as a geologist that we are in
23 fact in an underpressured, low permeability coal?

24 A. Yes, without a question.

25 Q. The vintage of the vertical wells in each

1 of these three areas, how old are these wells?

2 A. These wells were drilled in 1989 and 1990.

3 Q. Are we in an area where there is any issue
4 with regards to water production in the coal?

5 A. No, there is no water production reported
6 from any of the wells in this immediate area.

7 Q. For these three areas, it's not a
8 circumstance where the vertical wells have had to
9 dewater the coal before they see substantial gas
10 production?

11 A. That's correct.

12 Q. Describe for us the reasons you're
13 proposing these pilot projects. Why are you seeking
14 horizontal wells or the application of that
15 technology to try to recover gas out of the coal?

16 A. We know that there is a significant amount
17 of gas in place in the reservoir. We've got
18 measurements that show that that's the case. We know
19 that the coal is well-developed, is very thick in
20 this area, but the vertical wells that we've drilled
21 simply haven't been able to access those reserves.
22 So this is an experimental technique to try to get a
23 better flow rate out of the proration units in
24 question.

25 Q. In each exhibit package do you have

1 adsorption isotherms by which to measure the gas
2 content of the coal in these areas?

3 A. Yes, I do.

4 Q. Describe for the examiner the basis for
5 each of those. Why do they apply to each of their
6 areas?

7 A. Shall we turn to those exhibits?

8 Q. Yes, sir, let's do that. Exhibit 6?

9 A. The adsorption isotherm is a laboratory
10 measurement that is made to estimate the capability
11 of coal to hold gas. On the vertical axis is shown
12 the gas content, and on the horizontal axis is the
13 pressure.

14 As the pressure is increased, the coal is
15 capable of adsorbing additional methane. For the
16 specific case of the Hughes B well that we're
17 discussing, the reservoir pressure in this area is
18 about 800 pounds. And so in order to interpret the
19 amount of gas in place, using this adsorption
20 isotherm, we would go vertically from the 800 pounds
21 and intersect the curve at approximately 300 standard
22 cubic feet per ton.

23 So this is just a way of giving us some
24 idea of what volume of gas there is in the coal
25 reservoir.

1 Q. Why have you chosen this particular
2 isotherm as being applicable to this particular
3 spacing unit?

4 A. This particular isotherm is located just
5 -- I believe it's two miles away from the proposed
6 location. It's the closest measurement that we had
7 in the area.

8 One of the other wells that we're
9 proposing, the Federal Com No. 8R is in a different
10 location. We've used a different isotherm in that
11 package, but this same isotherm is used with the
12 Wilch well, which is the third proposed location.

13 Q. As a geologist, have you reached any
14 conclusions or opinions as to the direction at which
15 you want to take the horizontal portion of each of
16 these wells within their respective spacing units?

17 A. Yes. One of the primary goals of drilling
18 the horizontal well is to intersect the natural
19 fracture system that is present in the coal system.
20 We call this the cleat system. If you'll turn to
21 Exhibit No. 8, I've got a diagram here that shows the
22 orientation of the face cleat direction.

23 We believe that the face cleats are
24 oriented to the northeast, about 30 degrees east of
25 north. And so the intent is to drill roughly

1 perpendicular to this face cleat direction in order
2 to intersect as many of those cleats as possible
3 within the proration unit.

4 Q. On Exhibit 8, the diagonal lines running
5 northeast to southwest within the spacing unit and
6 only within the spacing unit, that represents your
7 opinion about the face cleat orientation?

8 A. That's correct.

9 Q. And the plan then is to proceed either
10 north or south in the respective wells to maximize
11 the opportunity to intersect as many of the face
12 cleats as you can?

13 A. That's right.

14 Q. In each instance, there is already an
15 existing vertical well, is there not?

16 A. Yes, that's correct.

17 Q. What's your plan for the vertical well in
18 the spacing unit?

19 A. We intend to shut the existing vertical
20 wells in and produce only the horizontal well.

21 Q. The vertical well then could be utilized
22 as an observation well or for other data-gathering
23 purposes?

24 A. That's right.

25 Q. But would not be produced concurrently

1 with the horizontal well?

2 A. Correct.

3 Q. What portion of the coals are you
4 attempting to exploit in each of these cases, Mr.
5 Meek?

6 A. In the case of the Hughes B-16R and the
7 Wilch No. 12R, our target is the basal coal seam.
8 That's best illustrated by looking at Exhibit No. 10,
9 which is a type log. The type log shows the basal
10 coal seam to be about 30 feet thick in this area.
11 And it's our intention to drill our horizontal
12 lateral leg within this 30-foot coal interval at the
13 base of the Fruitland.

14 Q. The Welch A-12R well in Case 10916 is also
15 the basal coal seam? That's its objective?

16 A. That's correct.

17 Q. And the FC Federal Com 8R is a middle
18 coal?

19 A. That's right. And the Federal Com 8R in
20 this area, the basal coal seam is not particularly
21 well developed.

22 Q. Let's show the examiner that difference,
23 if you'll turn to the exhibit book for Case 10917,
24 turn to Exhibit 10, describe the type log.

25 A. The type log in this exhibit shows the

1 Pictured Cliffs formation to be at about 3,200 feet
2 measured depth. Typically, the basal coal seam will
3 sit right on top or very close to the top of the
4 Pictured Cliffs sandstone.

5 In this case, there is just a very thin
6 coal stringer present. And so we're choosing to go
7 up and do our horizontal lateral leg in the middle
8 coal seam, which is approximately 100 feet above the
9 top of the Pictured Cliff sandstone.

10 Q. All right, sir. Let's go back to Exhibit
11 Book 10915 and start with the first exhibit. In this
12 case, as well as the other two cases, do you have a
13 similar exhibit that shows the proposed surface
14 location and the drilling producing window for the
15 spacing unit within this pool?

16 A. Yes, we do.

17 Q. The setback, if you will, for the drilling
18 producing window is 790 from each of the boundaries
19 of the spacing unit?

20 A. Right.

21 Q. And that's consistent with the Division
22 practice concerning the high angled/horizontal wells?

23 A. Right.

24 Q. Exhibit 2, identify and describe that
25 Exhibit for us.

1 A. This is a nine-section plat which
2 illustrates the proposed location in the center of
3 the plat with all the offsetting Fruitland Coal wells
4 that are in existence, showing also their operator
5 and well name.

6 Q. Do we have sufficient vertical wells in
7 the coal in this area to demonstrate to you that the
8 vertical wells have not been very successful?

9 A. Yes, there certainly is.

10 Q. And to demonstrate specifically the
11 productivity of those wells, have you tabulated for
12 the examiner on Exhibit 3?

13 A. Right. On Exhibit 3 is a spreadsheet
14 tabulation, showing the cumulative production to date
15 and also the current average daily production rate
16 from these wells.

17 Q. Give us a general sense of how the
18 vertical wells have been drilled and completed.

19 A. All of these wells have been drilled to
20 the top of the Pictured Cliffs sandstone. Casing has
21 been set, perforated, and then fracture stimulation,
22 using various different frac fluids but always with
23 some sand proppant to hold the fractures open.

24 Q. In each of these areas, do we have
25 adjoining spacing units that either have one, and in

1 most cases, two offsetting vertical coal wells?

2 A. That is generally correct. There are a
3 few sections where no coal wells have been drilled.
4 For example, in the Hughes B-16 case, the Section 30
5 offsetting to the southwest has not been developed.

6 Q. We've discussed Exhibit 4. Turn to
7 Exhibit 5. What's Exhibit 5?

8 A. Exhibit 5 is an isopach map showing the
9 thickness of, in this case, the basal coal seam, and
10 just simply to illustrate that the coal is well-
11 developed. There's about 30 feet of coal at the
12 location we're proposing to drill.

13 Q. In your opinion, is there sufficient coal
14 thickness as you've mapped it that you have a
15 reasonable opportunity to have a successful
16 horizontal completion of the coal?

17 A. Yes.

18 Q. It's not so thin or erratic that you ought
19 not to apply this technology in this area?

20 A. That's right. The drilling people that
21 have experience drilling horizontal wells are quite
22 confident that they can get into this 30-foot coal
23 seam and remain within that seam.

24 Q. We've discussed Exhibit 7. You might want
25 to make a reference to -- we've discussed Exhibit 6.

1 Would you like to turn to Exhibit 7 and make a
2 reference to that illustration?

3 A. Yes. Exhibit 7 is a diagram that is there
4 to illustrate some of the unique characteristics of
5 the coal reservoir as compared to a conventional
6 sandstone gas reservoir.

7 The main points are that there is a
8 natural fracture system known as the cleat system,
9 which provides a permeability conduit for the methane
10 to exit from the coal reservoir.

11 And then along the lower portion of the
12 exhibit there is a sequence of three figures that
13 illustrates the processes that need to take place for
14 methane to be produced from coal. Initially, the
15 methane needs to be desorbed from the surfaces within
16 the coal matrix. It then diffuses through this
17 matrix until it gets into the fracture system or the
18 cleat system.

19 And so I think that this is just to
20 strengthen the point that a horizontal well will give
21 us a greater access to more of the cleat system, and
22 therefore a greater access to the inherent
23 permeability in the reservoir.

24 Q. We've discussed Exhibit 8 about your
25 opinion of the orientation of the face cleats. Let's

1 turn to the structure map, which is Exhibit 9.

2 A. This is a structure map on the top of the
3 Pictured Cliff sandstone. The structural
4 configuration of the Fruitland in this area is quite
5 simple. It's just a very gently dipping, nearly
6 horizontal bed. It dips at about 20 to 30 feet per
7 mile to the northeast.

8 Q. The structure is not of such a great
9 significance that it will be a complication to those
10 trying to drill the horizontal well?

11 A. We don't anticipate any major problems.
12 It's simply a matter of drilling slightly uphill,
13 climbing about 20 feet over the length of the
14 lateral.

15 Q. The last exhibit in each of the packages
16 is the notification to offset operators. Apart from
17 Amoco's interest in your project, have you received
18 any other inquiries from any of the operators
19 notified?

20 A. No, we have not.

21 MR. KELLAHIN: Mr. Examiner, that
22 concludes my presentation of Mr. Meek. In each
23 instance, we move the introduction of his Exhibits 1
24 through 10.

25 EXAMINER STOGNER: Exhibits 1 through 10

1 will be admitted into evidence.

2 EXAMINATION

3 BY EXAMINER STOGNER:

4 Q. Of course, with the exception of the
5 proposed FC Fed Com No. 8, the other two are in the
6 same township and are separated by, what, four miles?

7 A. That's right.

8 Q. What exhibit was the adsorption curve?

9 MR. KELLAHIN: It should be 6 in each of
10 the packages, Mr. Examiner.

11 Q. (BY EXAMINER STOGNER) Is this the same
12 curve for each well?

13 A. It's the same curve for the two wells in
14 the Township 29 North, Range 8 West. That would be
15 the Wilch well and the Hughes B well.

16 There is a different isotherm included in
17 the Fed Com well, just simply because it's located
18 within the same township.

19 Q. So the Hughes B-20 that was put in Exhibit
20 6 for both cases, 916 and 915?

21 A. That's right.

22 Q. What is the difference between those two
23 and the Van Hook A-1 which is designated Exhibit 6 in
24 917? Is there any significant difference?

25 A. I don't believe there's any significant

1 difference. It's simply two different samples from
2 two different wells that were run, and they had a
3 very similar isotherm profile. It looks like the Van
4 Hook had just perhaps a slightly lower gas content or
5 capability of holding gas than the Hughes B-20.

6 Q. That formula, V equals -- you have a
7 formula under the dry ash free?

8 A. Right.

9 Q. Equivalent moisture, 1.93 percent?

10 A. That's, yes, equilibrium moisture.

11 Q. That is the volume content? That would
12 represent the number on the vertical axis? I'm
13 trying to figure out exactly what that formula is.

14 A. How that formula works?

15 Q. Yes.

16 A. The constant, the 509, is derived from
17 that equation. And so if you wanted to get the
18 vertical value, you would just plug your pressure
19 values into the equation, and that's where you'd be
20 on the curve.

21 Q. And P, being pressure in both instances,
22 would be the same in that same formula?

23 A. That's right.

24 Q. And then you have another constant, it
25 looks like, there's an 822 as opposed to 701 in the

1 others?

2 A. Right.

3 Q. When you refer to Exhibit No. 8 in all
4 instances that shows your cleating, the small
5 parallel lines, would it be advantageous to hit these
6 at a 90-degree, or is it a little bit off because of
7 the orientation of the proration unit?

8 A. Well, the real goal is to try to intersect
9 as many of those cleats as possible. So with the
10 orientation of the proration unit, that can best be
11 accomplished by drilling slightly orthogonal to those
12 rather than perpendicular to them, drilling at a
13 slight angle to them.

14 Q. So the most advantageous would be hit them
15 directly at 90 degrees, barring all the other
16 government and political factors?

17 A. Yes.

18 Q. Purely technical at this point?

19 A. If indeed these face cleats are the cleats
20 that are open, that would be the case.

21 Q. If I understand the goal here in Exhibit
22 No. 10 in each instance is to run a horizontal along
23 the middle portion or the base of those little
24 seams. What's the goal here?

25 A. Actually, we intend to try to stay near

1 the top of the seam that we're targeting, primarily
2 because we're concerned about the coal sloughing into
3 the well and giving us problems with our drilling
4 equipment, and we feel like the overlying shales are
5 going to form a stable roof rock over our horizontal
6 lateral leg, so it will give us a little bit better
7 stability within the horizontal hole.

8 Q. Is this -- I know that it's not Conoco's
9 first venture in horizontal drilling in New Mexico.
10 Is this the first time for Conoco in the coal?

11 A. We have made one previous application,
12 approximately six months ago. That well has not been
13 drilled yet. We plan to drill that well within the
14 next few months.

15 Q. So as far as any past technical evidence,
16 you don't have any accumulated at this point?

17 A. No, we don't.

18 Q. I want to go back to Exhibit No. 4. You
19 show that overpressured high and the underpressured
20 low permeability line in the coal. What is the
21 reason for that? Is there any geographical reason
22 that that line is there? Is there a barrier of some
23 type that formed?

24 A. There is a fair amount of debate among the
25 different scientists that have studied this

1 phenomena. One of the theories is that it's related
2 to the maturation of the coal; that at some point
3 when the coal is going through its maturation
4 process, it reaches a temperature where many dramatic
5 physical changes can take place; that, in fact, it is
6 the onset of the gas generation, the thermogenic
7 generation within the coal. And so that this
8 particular thermal event creates a very different
9 reservoir property, including the overpressured,
10 higher-gas content, higher-permeability coal.

11 And that's corroborated by, if you look at
12 the maturation mapping, using the vitrinite
13 reflectance data, that line is very close to parallel
14 with the maturation contours.

15 The other theory is that there is some
16 other type of permeability barrier there, perhaps
17 some kind of fault or other permeability barrier that
18 separates the northern portion of the reservoir,
19 which is overpressured, from the southern reservoir,
20 which is underpressured.

21 EXAMINER STOGNER: Any other questions of
22 this witness at this time?

23 MR. KELLAHIN: No, sir.

24 EXAMINER STOGNER: Mr. Carr left the
25 room. So he may be excused. Mr. Kellahin?

1 MR. KELLAHIN: Thank you. Call at this
2 time Mr. Billy Goodwin.

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

7 EXAMINATION

8 BY MR. KELLAHIN:

9 Q. Mr. Goodwin, do you have before you a set
10 of each of the exhibit books?

11 A. Yes, sir, I do.

12 Q. If you would turn, sir, to Exhibit 11 in
13 the first exhibit book, it's the one for Case 10915,
14 we'll start at that point.

15 For the record, would you please state
16 your name and occupation.

17 A. My name is Billy Goodwin, and I'm a
18 drilling engineer in the Midland Division for Conoco.

19 Q. Summarize for us your educational and
20 employment experience, Mr. Goodwin.

21 A. Okay. I have a Bachelor of Science Degree
22 from Oklahoma State University in petroleum
23 engineering technology.

24 Q. In what year did you obtain that?

25 A. 1984.

1 Q. All right. Summarize for us your
2 employment.

3 A. Okay. I worked for a logging company for
4 the first year out of school, running cement bond
5 logs in Oklahoma. And then I went to work for Conoco
6 offshore out of the New Orleans Division for four
7 years in production.

8 I then moved to Houston, Texas, and worked
9 as an engineer for two years, traveling around to
10 different areas, Oklahoma, New Mexico, Texas, and
11 offshore out of New Orleans, working in the drilling
12 department.

13 I then moved to the Midland Division where
14 I spent the last two years working mainly in the
15 field as a drilling foreman, and I recently just
16 moved to the office as a drilling engineer once
17 again.

18 MR. KELLAHIN: We tender Mr. Goodwin as an
19 expert drilling engineer.

20 EXAMINER STOGNER: Mr. Goodwin is so
21 qualified.

22 Q. (BY MR. KELLAHIN) Mr. Goodwin, let's turn
23 to Exhibit 11. Tell us how you're going to do this.
24 Start at the surface, and tell us what happens.

25 A. This diagram on Exhibit 11 is a composite

1 diagram of our well plan outline. And what we intend
2 to do is spud a 17-1/2 inch hole, drill to 250 feet,
3 set 13-3/8 inch casing, cement that casing back to
4 surface.

5 Q. Is there any importance attached to 250
6 feet?

7 A. Yes. We picked that point to protect the
8 fresh water sands, and we will cement it back to
9 surface.

10 Q. What then do you do?

11 A. Then we'll drill out through the 13-3/8
12 inch casing and drill an 11-inch hole down to a
13 kick-off point, which varies through the three wells
14 slightly.

15 Q. Describe for us how you determine the
16 approximate kick-off point for each of the wells.

17 A. What we did was get with the geologists
18 and reservoir engineers, and they gave us the target
19 at the top of the basal seam or the middle seam where
20 they wanted to end up. And from that point, we
21 backed out 12 degrees per 100 foot. And that gave us
22 our kick-off point for each of the three wells.

23 Q. The top of the formation or reservoir is
24 identified by use of the logging information
25 available in the spacing unit?

1 A. Yes.

2 Q. You get to the kick-off point. You start
3 building angle to 12 degrees per 100. Then what
4 happens?

5 A. From the kick-off point on, we'll be using
6 an MWD, then a motor, and we'll build our angle 12
7 degrees per 100 foot to our terminal angle, which
8 varies in the three wells slightly, just under or
9 just over 90 degrees. We'll reach this at our target
10 zone.

11 At that point, we'll run 8-5/8 casing, and
12 we'll cement that casing back to surface.

13 Q. What's the reason to do that?

14 A. We want to have a good cement all the way
15 back to surface so we don't have any kind of problems
16 with our tools or --

17 Q. Will it afford you the opportunity to
18 isolate production, if successful, out of the coal
19 gas from any other formation including the saltwater
20 sands?

21 A. Yes, it will be isolated all the way back
22 to surface.

23 Q. How are you going to know where you are?

24 A. From the surface down to the kick-off
25 point, we'll run single-shot surveys, and from this

1 we'll be able to come up with our azimuth and our
2 drift. At that point, we'll tie in that information
3 with the MWD. And from the point of the kickoff down
4 to the end of the build and on out through the
5 lateral section, we'll have an MWD in the hole. At
6 each connection, we'll run a survey so we'll know
7 where we are all the way from the surface on down to
8 the end of the lateral.

9 Q. Describe for us how you're going to drill
10 the lateral.

11 A. We'll drill the lateral section with an
12 air mist system, and we'll use a motor and a
13 steerable system. We plan to drill it at the top
14 section, orient our tool face up, and stay at the top
15 section of that seam and drill it out to the
16 bottomhole, final measured depth in each case.

17 Q. The end of the lateral or the end point of
18 the well is projected to be the 790 offset distance
19 from the spacing unit?

20 A. Yes. In each case, we'll be stopping
21 short of the setback.

22 Q. So that would be the maximum potential
23 distance or length of the lateral?

24 A. Right.

25 Q. What do you do to set the well up for

1 completion and production?

2 A. The well is going to be completed open
3 hole. We won't be running any kind of slotted
4 liner. There won't be any kind of stimulation.
5 We'll simply run tubing inside the hole down inside
6 the 8-5/8's. That will be our completion.

7 Q. Are each of three to be done in a similar
8 way?

9 A. Yes.

10 Q. Is there any material difference in the
11 three other than determining where the kick-off point
12 is?

13 A. Not other than the kick-off point or the
14 end of the build or the distances.

15 Q. Let's turn to Exhibit 12. Identify that
16 for us.

17 A. Exhibit 12 is a top view of the horizontal
18 plan. It shows the surface location. It shows the
19 end of the build where we enter the formation, and it
20 shows the lateral section, and the end point thereof.

21 Q. All right, sir. And Exhibit 13?

22 A. Exhibit 13 is a view of the vertical
23 section. It shows the top of the hole down to the
24 kick-off point, the end of build, and the lateral
25 section.

1 Q. And then finally Exhibit 14?

2 A. Exhibit 14 is a proposed well plan
3 outline. It has the information that we gathered up
4 to form the composite on Exhibit 11 and the pertinent
5 information that needs to be looked at on location
6 while drilling the well.

7 Q. And you have prepared comparable exhibits
8 for the other two cases?

9 A. Yes.

10 MR. KELLAHIN: Mr. Examiner, that
11 concludes my examination of Mr. Goodwin. We move the
12 introduction of his Exhibits 11 through 14 in each
13 case.

14 EXAMINER STOGNER: 11 through 14 will be
15 admitted into evidence.

16 EXAMINATION

17 BY EXAMINER STOGNER:

18 Q. What hole size are you going to be coming
19 out from under that intermediate string?

20 A. It's going to be 7-7/8's inch.

21 Q. Once this well is completed, where is the
22 tubing going to be set?

23 A. The tubing will be set down inside the
24 8-5/8 inch casing string, approximately 100 foot up
25 from the end of the build.

1 Q. So nothing will protrude out in the open
2 hole interval?

3 A. No.

4 Q. Will there be any stimulation
5 requirements?

6 A. No, sir, there will not.

7 Q. How come you can't use the wells that are
8 already out there? Are they completed different that
9 you can't cut a window and --

10 A. These wells were drilled with fluid, and
11 that could have caused some damage right there in the
12 immediate formation and could cause us some -- well,
13 it wouldn't really cause us problems if we came up
14 the hole and kicked off, but these holes are shallow
15 enough that we feel like we can afford to spend a
16 slight amount more money to go ahead and drill a
17 whole new well from surface.

18 Q. What kind of time frame are you looking at
19 to TD?

20 A. Our best guess is approximately 14 to 17
21 days. We don't have the experience -- when drilling
22 our first one, you had to have a real good handle on
23 that, but that's what we're approximating.

24 Q. Have you drilled a horizontal hole or been
25 on one?

1 A. Yes, I have. I've been on two horizontal
2 holes in Texas out east of San Antonio.

3 Q. Was that a sandstone or a limestone?

4 A. Yes, the limestone.

5 Q. Was it a short radius, long radius?

6 A. It was a medium radius.

7 Q. What would you classify this one as?

8 A. Medium radius.

9 Q. How far a horizontal extent did you get on
10 that one?

11 A. I wasn't on the wells from start to
12 finish. I only spent a short time on each well. At
13 the time I was out on each of the wells, we were just
14 over 1,000 feet in extent.

15 Q. Did you use that air mist lateral steering
16 tool?

17 A. No. This will be something new for us.

18 Q. Just out of curiosity, whose tools are you
19 going to be using? It doesn't make a difference. I
20 was just kind of curious.

21 A. We have a confidentiality agreement with
22 our equipment on that.

23 EXAMINER STOGNER: With that, I'll let
24 that go then. It's not important in this matter so
25 I'll stop there.

1 I don't have any other questions of Mr.
2 Goodwin.

3 MR. KELLAHIN: That concludes our
4 presentation, Mr. Examiner.

5 EXAMINER STOGNER: The only thing I might
6 add, if you have to go out with the Commission on a
7 horizontal well -- prior to that I was drilling
8 horizontal wells -- but I wouldn't mind being invited
9 out there. I'll just leave that out in the open like
10 that.

11 MR. KELLAHIN: If the weather is good,
12 we'll all go take a look.

13 EXAMINER STOGNER: I'll take you up on
14 that, Mr. Kellahin. Let's plan on doing that.

15 MR. KELLAHIN: Point of reference, we did
16 one of these back in August. It was the well that we
17 referred to a while ago. Here's a copy of that
18 order. It was case 10778.

19 EXAMINER STOGNER: Thank you, Mr.
20 Kellahin. With that I'll take Cases 10915, 10916 and
21 10917 under advisement.

22
23
24
25

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)

) ss.

COUNTY OF SANTA FE)

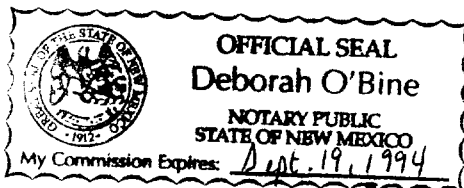
I, Deborah O'Bine, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that I caused my notes to be transcribed under my personal supervision, and that the foregoing transcript is a true and accurate record of the proceedings of said hearing.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL, February 28, 1994.

Deborah O'Bine

DEBORAH O'BINE
CCR No. 63



I do hereby certify that the foregoing is a complete record of the proceedings at the Examiner hearing of Case No. 10915-10916, heard by me on 17 February 1994. 10917
W. H. [Signature], Examiner
Cid Conservation Division

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