



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87504
(505) 827-5800

July 9, 1993

KELLAHIN AND KELLAHIN
Attorneys at Law
P. O. Drawer 2265
Santa Fe, New Mexico 87504

RE: CASE NOS. 10721, 10722, 10723, 10724, 10725
ORDER NO. R-9920

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject cases.

Sincerely,

A handwritten signature in cursive script that reads "Sally E. Leichtle".

Sally E. Leichtle
Administrative Secretary

cc: BLM - Farmington
Steve Keene - TRD
Donna McDonald - OCD
Aztec OCD Office

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. 10721
 10722, 10723,
 10724, 10725
 APPLICATION OF MERIDIAN OIL INC.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

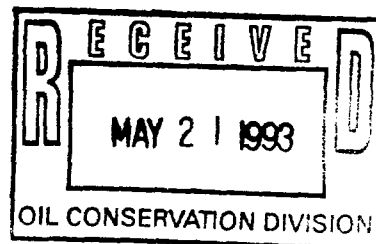
BEFORE: Michael E. Stogner, Hearing Examiner

April 22, 1993

Santa Fe, New Mexico

This matter came on for hearing before the
 Oil Conservation Division on April 22, 1993, at the
 Oil Conservation Division Conference Room, 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



I N D E X

April 22, 1993
 Examiner Hearing
 CASE NOS. 10721- 10725

	PAGE
APPEARANCES	3
MERIDIAN'S WITNESSES:	
<u>ALAN ALEXANDER</u>	
Examination by Mr. Kellahin	7
<u>SCOTT DAVES</u>	
Examination by Mr. Kellahin	30
Examination by Examiner Stogner	46
Further Examination by	
Examiner Stogner	64
<u>TOM YERSAK</u>	
Examination by Mr. Kellahin	51
Examination by Examiner Stogner	61
REPORTER'S CERTIFICATE	69

E X H I B I T S

	ID	ADM
Exhibit 1	11	61
Exhibit 2	11	61
Exhibit 3	11	61
Exhibit 4	12	61
Exhibit 5	12	61
Exhibit 6	12	61
Exhibit 7	12	61
Exhibit 8	12	61

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL, ESQ.
General Counsel
Oil Conservation Commission
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

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

CUMBRE COURT REPORTING

P.O. BOX 9262

SANTA FE, NEW MEXICO 87504-9262

(505) 984-2244

1 EXAMINER STOGNER: Hearing will come to
2 order. I'll case No. 10721.

3 MR. STOVALL: Application of Meridian Oil
4 Inc. for an unorthodox gas well location and downhole
5 commingling, San Juan County, New Mexico.

6 EXAMINER STOGNER: Call for appearances.

7 MR. KELLAHIN: Mr. Examiner, I'm Tom
8 Kellahin of the Santa Fe law firm of Kellahin and
9 Kellahin appearing on behalf of the applicant.

10 EXAMINER STOGNER: Any other appearances?

11 MR. KELLAHIN: Question of procedure, Mr.
12 Examiner. We would like to attempt to consolidate all
13 these five downhole commingling cases for a joint
14 presentation.

15 We have put on the hearing room wall a
16 locator map for you. The identified arrows show the
17 five wells that we propose to have commingling
18 approval for. I have distributed the hearing exhibit
19 books for each case, and they're before you, and then
20 on top of the exhibit books is a summary index to try
21 to give you a summary of what we're trying to
22 accomplish.

23 The spreadsheet shows the well name. The
24 pool information, in all instances, this is Basin-
25 Fruitland Coal to be commingled with Pictured Cliff.

1 There are two different Pictured Cliff pools. There's
2 either the West Kutz or the Fulcher Kutz-PC.

3 One of the other issues is the ownership.
4 We've tabulated for you those cases in which the
5 ownership is common. There are two of the cases in
6 which there will be a difference in ownership between
7 the Pictured Cliff and the Fruitland Coal, and Mr.
8 Alexander will address those differences.

9 There are four of the five cases in which
10 one or both of the pools will be nonstandard locations
11 for the well, and we'll identify those. In all
12 instances, the location is being moved for topographic
13 reasons. At least three of those cases are because
14 we're trying to move in among irrigation facilities on
15 the NAPI project.

16 The final column shows economics, and it's
17 intended to give you a summary to show you which pool
18 is considered to be subeconomic. In some instances,
19 both pools are subeconomic. In the last two cases,
20 the Fruitland Coal would be economic alone, but we
21 propose to commingle with the PC in order to produce
22 PC that might not otherwise be produced.

23 So this is our effort to give you a summary
24 of all five cases and the locator map, and my plan
25 would be to have Mr. Alexander go first to go through

1 the elements of his presentation as to each case.
2 Then we'll put on the engineering witness to show you
3 his methodology for his allocation formula, some of
4 his reasons for pursuing commingling. And then
5 finally a geological witness to give you the geology
6 and perspective for approving these.

7 They're all very similar, dealing with the
8 same two formations, but each case has a slightly
9 different twist to some of the things we need to
10 accomplish. If that's acceptable to you, we'll try to
11 do this as a commingled case with all five cases being
12 heard as a consolidated matter.

13 EXAMINER STOGNER: With that, I'll call
14 cases 722, 723, 724, 725.

15 MR. STOVALL: Okay. Case 10722,
16 application of Meridian Oil Inc. for downhole
17 commingling, San Juan County, New Mexico. Cases
18 10723, 10724, and 10725 are all the applications of
19 Meridian Oil Inc. for an unorthodox gas well location
20 and downhole commingling, San Juan, New Mexico.

21 EXAMINER STOGNER: Are there any
22 appearances in any or all of these cases other than
23 Meridian? There being none, Mr. Kellahin?

24 MR. KELLAHIN: I have three witnesses to be
25 sworn, Mr. Examiner.

1 EXAMINER STOGNER: Will the witnesses
2 please stand and be sworn.

3 (Witnesses sworn.)

4 MR. KELLAHIN: I'd like to call at this
5 time Mr. Alan Alexander.

6 One last point of reference, there are
7 prehearing statements that were filed. Each of the
8 prehearing statements has been outlined, if you will,
9 so that it would give you the context of the elements
10 of proof for each of the cases. And Mr. Alexander and
11 I had hoped that that would serve as a partial outline
12 for you to help you organize your way through the five
13 cases.

14 MR. STOVALL: I want to commend you for the
15 manner in which you are now doing prehearing
16 statements, Mr. Kellahin. They're most useful of the
17 ones we're getting. They do specify not just the
18 style of the case but really what's involved.

19 EXAMINER STOGNER: Yes, Mr. Kellahin, I
20 echo that.

21 MR. STOVALL: Mine was serious.

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

25 EXAMINATION

1 BY MR. KELLAHIN:

2 Q. For the record, Mr. Alexander, would you
3 please state your name and occupation.

4 A. My name is Alan Alexander. I'm currently
5 employed as a senior land adviser with Meridian Oil
6 Inc. in the Farmington, New Mexico, office.

7 Q. Mr. Alexander, on prior occasions have you
8 qualified as an expert petroleum landman before the
9 Division?

10 A. Yes, sir, I have.

11 Q. Pursuant to your employment in that
12 capacity, have you made a study of the land matters
13 involved in each of these five cases now before
14 Examiner Stogner?

15 A. Yes, sir, I have.

16 MR. KELLAHIN: We tender Mr. Alexander as
17 an expert petroleum landman.

18 EXAMINER STOGNER: Mr. Alexander is so
19 qualified.

20 Q. (BY MR. KELLAHIN) Let me have you go
21 first, Mr. Alexander, to the index map that we have
22 placed on the hearing room wall.

23 It is not marked as an exhibit, Mr.
24 Examiner, it's simply a point of reference for you.
25 I'll have Mr. Alexander identify for you each of the

1 well locations starred and the numbers. The numbers
2 will correspond to the spreadsheet index we gave you
3 that goes with each of the cases.

4 Let me have you start, Mr. Alexander, and
5 tell us generally where each of these wells are
6 located.

7 A. As you can see from this index map, which,
8 by the way, is the index map that we brought to the
9 Commission back on March the 10th of this year to get
10 their input, their suggestions, and their ideas on
11 this year's drilling program, the commingled drilling
12 program that we had.

13 Basically, we've got three types of
14 commingled programs of the wells this year, the
15 Fruitland Coal, Pictured Cliffs, Pictured Cliffs-
16 Mesaverde, and Mesaverde Dakota commingles. At this
17 hearing this afternoon we're dealing with those wells
18 that are stars, and they're indexed as Fruitland
19 Coal-Pictured Cliffs wells. As you can see from the
20 index map, here are the towns of Farmington,
21 Bloomfield, and Aztec. And these wells lie generally
22 south of Bloomfield anywhere from five to probably ten
23 miles south in that area.

24 I have put an arrow indicating which of
25 these wells are on the application today. Wells No.

1 and 3 which correspond with your index were in the
2 West Kutz-Pictured Cliffs Field for the PC interval.
3 Here in the Basin Fruitland-Coal Pool for Fruitland
4 Coal interval. Wells Index No. 4 and No. 5 are in the
5 Fulcher Kutz-Pictured Cliffs Field and, again, the
6 Basin Fruitland-Coal Pool.

7 These are some of the wells -- some of
8 these applications the Division has already heard, and
9 then a few of them remain yet to be heard by the
10 Division.

11 Q. That comment refers to those that are
12 located on the map with the exception then of those
13 that have the arrows?

14 A. Yes. My last comment does refer to those
15 wells.

16 Q. Let me have you return to your seat and
17 let's turn to the first case, which is the Rowley Com
18 500. It's the No. 4 well on the index, and it's case
19 10721.

20 Before we talk specifically about the
21 displays, explain to the Division how you have
22 organized the exhibit book for each of the cases, and
23 tell us where we're going to find the various
24 information within each of the books. What's found
25 behind Exhibit Tab No. 1 in all the books?

1 A. Behind Exhibit Tab No. 1 we have presented
2 you with our application to the Division requesting
3 the commingling for the particular well. And of
4 course attached to those exhibits are our offset
5 operator plats and a list of the owners and operators
6 and a land plat as applicable.

7 Behind Exhibit No. 2 in the books we have
8 included the offset operator owner plats, along with a
9 listing of the offset owner or operator. In each of
10 the cases they are indexed numerically on the plat
11 against the person or person's names. We have
12 attempted to give you a plat for the -- depending upon
13 the particular case, we have given you a plat for the
14 Fruitland Coal, an offset operator plat for the
15 Fruitland Coal and an offset operator plat for the
16 Pictured Cliffs.

17 In those cases where we have a nonstandard
18 location, we have also given you a plat for those
19 particular wells.

20 Behind Exhibit No. 3, we have provided a
21 nine section land plat showing the proposed well in
22 each case as well as the wells located in the nine
23 section area. It also shows the proposed spacing
24 units for the Fruitland Coal and the Pictured Cliffs,
25 as the case may be.

1 Behind Exhibit 4, if the well had as a part
2 of the application a request for a nonstandard
3 location, we have included a topographic plat which we
4 will use to explain why we feel that we need a
5 nonstandard location for the particular well.

6 The next exhibit, and in the case of case
7 No. 10721, behind Exhibit No. 5, we have listed the
8 formula to be used in allocating the reserves to each
9 of the formations in question.

10 Behind Exhibit No. 6, we have provided you
11 with net pay isopach maps for the Fruitland Coal,
12 following that net pay isopach maps for the Pictured
13 Cliffs formation.

14 Then behind Exhibit No. 7 we have provided
15 you a structure map on the base of the Fruitland Coal
16 Formation.

17 And behind Exhibit 8 we have provided you
18 with typical well logs and cross-sections that are in
19 the packet at the very rear of the booklets.

20 Q. As to all cases, have you had notification
21 sent pursuant to Division rules to all the offset
22 operators that might be affected by the granting of
23 this application or these applications?

24 A. Yes, sir, we have.

25 Q. And have you received any objection from

1 any offset operator to the granting of these
2 applications?

3 A. No, sir, we have not.

4 Q. As to those cases that involve a difference
5 in ownership between the two spacing units that are to
6 be commingled, have you provided an accurate list of
7 all the interest owners, royalty, overriding, and
8 working, that might be affected by that allocation?

9 A. Yes, sir, we have.

10 Q. Have you received any objection from any of
11 those parties that would share in production?

12 A. No, sir, we have not.

13 Q. Let's turn now to the Rowley Com 500 book
14 and turn to Exhibit Tab 3 and look at the plat that
15 goes with that one. What is the proposed dedication
16 of acreage for the spacing unit for the
17 Basin-Fruitland Coal?

18 A. We are proposing a west-half dedication for
19 the Basin-Fruitland Coal Field.

20 Q. The exact number of acres within that
21 spacing unit is more than 320 acres, is it not?

22 A. Yes, sir, that's correct.

23 Q. Is the additional acreage within the pool
24 rule tolerance to be a standard spacing unit for that
25 pool?

1 A. Yes, sir, it is.

2 Q. And the southwest quarter is the dedication
3 for the Pictured Cliff Pool?

4 A. Yes, sir, that's correct.

5 Q. And is that spacing unit, while not exactly
6 160 acres, within the tolerance for a standard
7 proration unit for that pool?

8 A. That is correct.

9 Q. The well location as spotted is a
10 nonstandard well location as to the Pictured Cliff
11 Pool?

12 A. Yes, sir, that is correct.

13 Q. And it will be a standard location for the
14 coal gas?

15 A. That is correct.

16 Q. Describe for me in what way this well is
17 nonstandard as to the Pictured Cliff.

18 A. The location is 305 feet from the north
19 line of the southwest quarter of Section 7, where it
20 should have been 790 feet from that north line. That
21 is the reason that it is nonstandard.

22 Q. Let's address that issue and have you turn
23 now to Exhibit 4 and describe to Examiner Stogner why
24 Meridian seeks this nonstandard location.

25 A. If you will refer to the topographic plat

1 behind Exhibit No. 4, I will explain the topographic
2 plat. First, please locate where the section
3 boundaries are. They are indicated by the dark
4 crosses indicating each of the four corners of the
5 section. You will see that this well down in the
6 southwest quarter, nearly all of the southwest quarter
7 is in the Kutz and East Kutz River bottom. There is
8 very little land that is not down in that river
9 bottom.

10 We also are encumbered by an area that
11 has been determined as wetlands by the Bureau of
12 Land Management, and we have indicated that wetlands
13 area.

14 You can see, one of the few remaining
15 places that we can locate that is not in an area where
16 they have pipelines for an existing well or is not in
17 the river bottom is up in the northwestern quadrant of
18 the southwest quarter, and it is pushed up into the
19 area where we see the topography begin to rise, and
20 that was the location --

21 MR. STOVALL: Mr. Alexander, is it
22 northwest or northeastern quarter of the quadrant?

23 THE WITNESS: It's northeastern quarter of
24 the southwest quarter.

25 MR. STOVALL: I thought I heard you say

1 it's northwest; so I just wanted to make sure the
2 record is clear on that. Thanks.

3 THE WITNESS: This was the location we were
4 able to work out with Bureau of Land Management.

5 Q. (BY MR. KELLAHIN) Have personnel from
6 Meridian made a surface inspection along with
7 personnel from the BLM and determined that the site as
8 you propose to have approved by the Division is the
9 only available site within that southwest quarter for
10 a well?

11 A. That is correct.

12 Q. When you look at the proposed Rowley 500
13 Com well as spotted on the display, look south, there
14 is a well symbol, and then a faintly written word. It
15 says "well"?

16 A. Yes, sir.

17 Q. And then it says "wetlands"?

18 A. Yes, sir.

19 Q. What does that mean?

20 A. That well symbol, the little circle that
21 you can see there is actually a water well, and that
22 water well flows continuously, and it itself has
23 created this wetlands area, and the BLM does not want
24 us in that wetlands area. And that water flows at the
25 request of the Bureau of Land Management to provide

1 provide water to that wet lands area.

2 Q. I think you and I have addressed the issues
3 for your attention on this case. Let's go to the next
4 one. It's the exhibit book for Case 10722, and that's
5 the McAdams No. 500 well. It's the fifth well on the
6 index.

7 Let me have you again turn to what is
8 Exhibit 3 in this book and identify for us the spacing
9 unit to be dedicated for each of the two pools?

10 A. The spacing unit that we propose to
11 dedicate to the Fruitland Coal is hatched in green, as
12 you will see on the plat, and it consists of the east
13 half of the section. The spacing unit for the
14 Pictured Cliffs formation is hatched in red, and it
15 consists of the northeast quarter of Section 28,
16 Township 27 North, 10 West.

17 Q. Is this proposed well at a standard well
18 location in both pools?

19 A. Yes, sir, I believe that it is.

20 Q. Is there any difference in ownership
21 between the parties entitled to share in the Pictured
22 Cliff production and the parties that would be
23 entitled to share in the 320 gas space Basin-Fruitland
24 Coal Pool?

25 A. Yes, sir, it is different between the two

1 pools.

2 Q. Describe for the examiner how that
3 difference occurs.

4 A. As you will note, you do not see any lease
5 lines in that section. That's because this is one
6 single federal lease. However, the formations have
7 been segregated historically, and they are now owned
8 differently between the northeast quarter and the
9 southeast quarter.

10 Q. Can you identify for the examiner an
11 example of how that ownership differs?

12 A. Yes, sir. We have a recent title opinion
13 that has been rendered on that. And as an example,
14 the northeast quarter, formations from the surface to
15 the base of the Pictured Cliffs formation are owned by
16 El Paso Production Company 100 percent. And for the
17 southeast quarter, those same formations are owned by
18 Amoco Production Company and Conoco, Inc., on a 50-50
19 basis.

20 Q. And that difference then will result in a
21 different ownership when you get to the commingling
22 issue of taking production from both pools in the same
23 --

24 A. Yes, sir, that is correct.

25 Q. Have you received any objection from any of

1 those parties notified that would have an interest in
2 the commingled production?

3 A. No, sir, we have not.

4 Q. I think that completes your issues in that
5 case, Mr. Alexander. Let's turn now to Case 10723.
6 It's the Whitley A No. 100 well. And if you'll turn
7 to Exhibit 3 in this case book, identify for me the
8 proposed spacing units for the Whitley A No. 100
9 well.

10 A. The proposed spacing unit for the Fruitland
11 Coal formation is again hatched in green and consists
12 of the west half of Section 17, 27 North, 11 West.
13 The spacing unit, proposed spacing unit for the
14 Pictured Cliffs formation is hatched in red and
15 consists of the southwest quarter of that section.

16 Q. Point of information. In the west half of
17 17, you've identified by well symbol the kinds of
18 wells that now exist or have existed in that spacing
19 unit?

20 A. That is correct.

21 Q. When you look at the northwest quarter,
22 what kinds of wells have already been drilled in the
23 northwest quarter?

24 A. We have wells in the northwest quarter, you
25 will currently see, as indicated by the legend, that

1 one of the symbols located probably in the northeast
2 quarter of the northwest quarter is a Pictured Cliffs
3 well. The other symbol represents a plugged and
4 abandoned well. I don't have information with me that
5 suggests the total depth that it was originally
6 drilled. However, that well has tested the Fruitland
7 Coal and the Pictured Cliffs and has since been
8 plugged in both zones.

9 Q. When you're looking in the west half then
10 for available spacing units on 160-acre PC spacing
11 that have not yet been drilled, the southwest quarter
12 then is the only spacing unit available that would
13 meet that criteria?

14 A. That is correct.

15 Q. This case involves a nonstandard well
16 location?

17 A. Yes, sir, it does.

18 Q. As to what pool?

19 A. It is nonstandard for the Pictured Cliffs
20 pool.

21 Q. Let me have you turn to the information
22 behind Exhibit Tab No. 4 and have you describe to the
23 examiner in what way this well is proposed to be
24 nonstandard.

25 A. The topographic plat that is behind Exhibit

1 No. 4, first, if you would please locate the section
2 boundaries, and again they are indicated by the heavy
3 dark crosses at each of the corners of the section.
4 The round circles represented on that plat are the
5 irrigation systems for the NAPI irrigation project.
6 The area that is hatched down in the southwest quarter
7 of that section are the surface and underground
8 facilities that service those circular irrigation
9 systems.

10 You will also see that there is an existing
11 well in the southwest quarter and a gas pipeline. You
12 will also please notice that there are roads in the
13 area that service these irrigation facilities. The
14 best that we could do in working out with the various
15 agencies involved was to locate the well between the
16 roads, between the surface and underground facilities
17 and between the circular irrigation projects.

18 Q. If you attempted to locate this well at the
19 closest standard location, you would have to move
20 about 160 feet south of its proposed location?

21 A. Yes, sir, that is correct.

22 Q. And that would place you in what portion of
23 the display?

24 A. That would put you down into the area that
25 is hatched that are the surface and underground

1 facilities.

2 Q. What agencies have you dealt with in order
3 to obtain a surface location within the spacing unit
4 in which to locate the well?

5 A. We dealt with the Navajo Tribe, the Bureau
6 of Indian Affairs, the Bureau of Land Management, and
7 the Bureau of Reclamation who has an interest in the
8 -- they do some supervision in the NAPI project.

9 Q. Is the location as you propose now to
10 Examiner Stogner one that satisfies the requirements
11 of those other agencies?

12 A. Yes, sir, that is correct.

13 Q. Let's turn now to the Rhodes C 101 well.
14 It's case 10724. And turn with me to Exhibit No. 3.
15 Identify for the examiner the information shown on
16 this display, and then we'll talk about this specific
17 well.

18 A. This nine section land plat locates the
19 well in Section 30 of Township 28 North, 11 West. As
20 you will see, the proposed well is located in an area
21 that is not committed to the Gallegos Canyon Unit.
22 You will see the unit to the north, to the south, and
23 to the east as indicated by the darker green line.

24 Q. Who operates the Gallegos Canyon Unit?

25 A. I believe that is BHP that operates the

1 Gallegos Canyon Unit.

2 Q. When you're looking at how to develop
3 Section 30 and the north half of 31, are you looking
4 at the development of interest for a single lease, or
5 are we dealing with multiple leases?

6 A. We are dealing with a single federal lease,
7 and it is common between all of Section 30 and the
8 north half of Section 31.

9 Q. The proposed location down in the southeast
10 quarter of the spacing unit for this well is
11 approximately what, 100 feet off that south line?

12 A. Yes, sir, that is correct.

13 Q. And what would a standard location be for
14 this well?

15 A. It would be 790 feet from that south line.

16 Q. And so it is nonstandard as to both pools?

17 A. Yes, sir, that is correct.

18 Q. In addition to being too close to the south
19 line, you're also too close to the east line of that
20 spacing unit?

21 A. Yes, sir, that's correct.

22 Q. Are the interests common for the west half
23 when you compare them to the east half?

24 A. Yes, sir, they are.

25 Q. And when you make that comparison to the

1 north half of 31 with the west half of 30, are the
2 interests common?

3 A. Yes, sir, they are.

4 Q. Describe for me, Mr. Alexander, why the
5 well is proposed at this unorthodox location.

6 A. If you will please refer to Exhibit No. 4,
7 we have a topographic plat. Again, the sections --
8 the corners of the section in question, Section 30,
9 are indicated by the heavier crosses. Again, in this
10 case, as in the prior case we heard, we are within the
11 boundaries of the NAPI irrigation project. You will
12 see it is quite complicated due to the roads in the
13 area, the circular irrigation projects, and the
14 related surface facilities, as well as existing oil
15 wells and pipelines.

16 Q. Let's take each item individually. And if
17 you'll look at the west half of 30, describe the
18 limitations imposed by the irrigation system on
19 possible locations for the well.

20 A. As you will note, nearly the entire
21 southwest quarter is taken up or consumed by a single
22 circular irrigation facility that is known as the 4-2A
23 facility. We were restricted to locating a well down
24 in the southeast quarter of the southwest quarter to a
25 very minuscule tract of land.

1 If you will see the circular location which
2 indicates the Rhodes C No. 101 well, we even attempted
3 to move a bit further to the north, but immediately to
4 the north you will see a well symbol that is located
5 there, and there is an existing pipeline that services
6 that well that's up in the triangular portion of land
7 immediately north to our proposed location. So with
8 the existence of the well, the pipeline, and the
9 circular irrigation project, we were unable to move
10 any further to the north.

11 Q. When you look to the north portion of the
12 circle and just beyond it but still within the
13 southwest quarter of the section, there appears to be
14 an open area adjacent to what is called the main canal
15 and slightly west of the highway. Why is it not
16 possible to locate the well within that area?

17 A. The canal falls under perhaps not the
18 jurisdiction of the Bureau of Reclamation, but they
19 are advisory to the tribe, and they have established a
20 setback, and the exact feet I don't recall off the top
21 of my head, but it is somewhere between 300 and 500
22 feet that they will not let you locate any facility to
23 that water canal. It's one of the main canals that
24 services the NAPI irrigation project. So that
25 eliminated that triangular shape of land that you will

1 see up there to the north that you might have
2 suspected that we could locate a well.

3 Q. Has Meridian exhausted all opportunities to
4 find a surface location for a well for these two pools
5 within the southwest quarter?

6 A. Yes, sir, I believe we have.

7 Q. And does the proposed location -- is that
8 the only location that you can find?

9 A. Yes, sir.

10 Q. Is the proposed location for this well one
11 that meets the criteria established by the other
12 regulatory agencies involved in deciding for you where
13 this well is located?

14 A. Yes, sir. This was the location we were
15 able to work out between all of the concerned
16 regulatory entities.

17 Q. Let's turn now, sir, to the next exhibit
18 book and look at the Rhodes C No. 102 well. And
19 that's Case 10725. If you'll turn to the display
20 shown behind Exhibit Tab No. 3. This is the same
21 display that we looked at behind Exhibit Tab No. 3 in
22 the prior case with the exception that you've now
23 spotted the proposed 102 well?

24 A. Yes, sir, that is correct.

25 Q. So we're looking at the same Sections 30

1 and the north half 31?

2 A. Yes, sir, that is correct.

3 Q. Describe for us what you propose as spacing
4 units for the two pools involved in this case.

5 A. We are proposing a north half dedication,
6 which again is hatched in green for the Fruitland Coal
7 formation, and we are also proposing a northeast
8 quarter spacing unit for the Pictured Cliffs formation
9 which is crosshatched or hatched in the red color.

10 Q. You have some lots in the far west side of
11 the 320 spacing unit that are less than 40 acres.
12 Does that fact cause your spacing unit to be
13 nonstandard in size for the coal gas?

14 A. No, sir, it does not.

15 Q. This well location is standard as to the
16 coal gas?

17 A. Yes, sir, that is correct.

18 Q. And it is nonstandard for the Pictured
19 Cliff?

20 A. That is correct.

21 Q. Let's turn to Exhibit Tab No. 4 and have
22 you describe for us the surface limitations that have
23 caused Meridian to seek the nonstandard location for
24 the PC portion of the case.

25 A. Behind Exhibit No. 4 we have our

1 topographic plat. You will please note the outlines
2 of the section which are crosshatched. You will also
3 see that this is the third well of our application
4 today that is involved in the NAPI irrigation
5 project. Virtually all of the northwest quarter and a
6 triangular piece extending down to the intersection of
7 the south and the west lines is all included in the
8 NAPI irrigation project.

9 We have indicated the surface facilities
10 for those circular irrigation projects, as well as a
11 facility that you will see in a rectangle on the other
12 side of the road which is labeled 4-3. It's a
13 facility for the project out there. We had to locate
14 the well between the topography that is on the eastern
15 side of the spacing unit in which the BLM would not
16 let us locate up on top of that rather inaccessible
17 topography, nor could we locate further to the east
18 because of the NAPI irrigation project and its related
19 facilities.

20 Q. The specific well location is 790 from the
21 north line and 1950 from the east line?

22 A. That is correct.

23 Q. That would put you 690 from the western
24 side of the 160-acre spacing unit for the northeast
25 quarter, would it not?

1 A. I believe that is correct. I didn't run
2 that calculation -- yes, that is correct.

3 Q. So you're 100 feet too close to the west
4 boundary of the spacing unit?

5 A. Yes, sir.

6 Q. And if you move 100 feet to the west,
7 you're within an area the BLM precludes you from
8 accessing because of terrain?

9 A. That is correct.

10 Q. Are there any standard locations available
11 to you that the BLM will approve in the northeast
12 quarter of the section?

13 A. No, sir. This is the only location that
14 they were agreeable to letting us use for this well.

15 Q. We have common ownership of interests in
16 both of these spacing units, do we not, Mr. Alexander?

17 A. Yes, sir, that is correct.

18 MR. KELLAHIN: That completes my questions
19 for Mr. Alexander.

20 EXAMINER STOGNER: I have no questions of
21 Mr. Alexander. All the exhibits are somewhat
22 thorough.

23 MR. KELLAHIN: Thank you. I'd like to call
24 at this time Scott Daves.

25 EXAMINER STOGNER: Will you be going

1 through the exhibits in the same manner with this
2 witness?

3 MR. KELLAHIN: I'll direct Mr. Daves'
4 attention. He's the petroleum engineer involved, and
5 he is going to spend most of his time discussing the
6 allocation formulas which will be found at the same
7 point in the exhibit books.

8 MR. STOVALL: Is it the same formula in all
9 five wells?

10 MR. KELLAHIN: I think that's right.

11 MR. STOVALL: I know in the last ones you
12 had, it's some for new drills and some for existing
13 wells. Are they all the same situation?

14 MR. DAVES: They're all the same. There's
15 subtle differences based off the geology, and that's
16 it.

17 EXAMINER STOGNER: Mr. Kellahin?

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

21 EXAMINATION

22 BY MR. KELLAHIN:

23 Q. Would you please state your name and
24 occupation.

25 A. My name is Scott Daves. I'm a reservoir

1 engineer with Meridian Oil. I've been with them
2 approximately six years.

3 Q. And you're located in Farmington, New
4 Mexico?

5 A. I'm located in Farmington.

6 Q. On prior occasions have you testified as a
7 reservoir engineer before the Division?

8 A. Yes, I have.

9 Q. In fact, you have been a previous witness
10 in some of these commingling case, have you not?

11 A. That's correct.

12 Q. Pursuant to your employment as a reservoir
13 engineer, have you made engineering studies of the
14 details of all five cases by which you then came to
15 conclusions about an allocation formula?

16 A. Yes, that's correct.

17 Q. In addition, have you been involved with
18 this project as a petroleum engineer so that you can
19 describe to the examiner why it is you're seeking to
20 have these wells commingled?

21 A. That's correct.

22 MR. KELLAHIN: We tender Mr. Daves as an
23 expert reservoir engineer.

24 EXAMINER STOGNER: Mr. Daves is so
25 qualified.

1 Q. (BY MR. KELLAHIN) Mr. Daves, let me have
2 you turn to case 10721, and let's go to Exhibit Tab 5
3 and talk about the allocation formulas.

4 A. Okay.

5 Q. The information behind Exhibit Tab No. 5
6 consists of two pages, and that is true for all the
7 cases?

8 A. That's correct.

9 Q. You've got two displays?

10 A. That's correct.

11 Q. And this represents your work as to all the
12 cases?

13 A. That's correct.

14 Q. Before we look at the specifics, describe
15 for us your methodology in arriving at an allocation
16 formula so that you could appropriately commingle
17 production between the PC and the Fruitland owners and
18 have a fair and equitable allocation.

19 A. Okay. Basically the approach that's been
20 taken in the past and that's been approached here is
21 that the Pictured Cliffs is a sandstone reservoir that
22 is far greater understood than is the Fruitland Coal
23 from the standpoint of reserves are much easier to
24 calculate. There is a pressure depletion relationship
25 there that's been established for wells in the general

1 area of each of the different areas that we're
2 allocating production. And from that data we were
3 able to establish what we felt were reasonable numbers
4 for Pictured Cliffs reserves and also a method of
5 testing the Pictured Cliffs to adequately allocate
6 from an initial point.

7 Q. Describe for us the engineering methodology
8 used to arrive at the Pictured Cliff reserves in each
9 of the cases.

10 A. There were basically two methods used. One
11 was volumetric calculations, determining thickness,
12 porosity, water saturation. And also there was a
13 material balance relationship there, determining a
14 pressure depletion relationship. And in all of the
15 cases listed, that relationship is fairly similar.

16 Q. Are you satisfied as a reservoir engineer
17 that that methodology is an appropriate and fair way
18 to determine the volume of recoverable reserves in the
19 Pictured Cliff Pool underlying that spacing unit to
20 which the well will be dedicated?

21 A. That's correct.

22 Q. Having made that conclusion or reached that
23 conclusion, how does the formula work in terms of
24 allocating production in this wellbore between the PC
25 and the Fruitland Coal?

1 A. How this formula works is it basically
2 establishes a relationship that says that the Pictured
3 Cliffs reserves are a function of the reservoir
4 pressure, the volumetrics and also the initial rate.
5 And through those relationships, you can determine an
6 initial rate, a reserve number, and a decline.

7 Q. Let's use the first book as an illustration
8 and the allocation formula that's shown behind Exhibit
9 Tab 5. We've got two displays.

10 A. Right.

11 Q. Summarize each of them for us.

12 A. What the first page basically does is
13 describe the relationship and how the equation is
14 determined. It says that the total production is
15 equal to the sum of the Fruitland Coal production and
16 the Pictured Cliff production. And then I've
17 rearranged that formula to solve for the Fruitland
18 Coal production which basically says that the total
19 production less the Pictured Cliffs production is
20 equal to the Fruitland Coal production.

21 What I've described down through here is
22 the way that we come up with a decline curve for the
23 Pictured Cliffs. And further down into that is the
24 actual allocation of reserves to the Pictured Cliffs.
25 That is where the G as a function of pressure is equal

1 to a number .84, in this case, times a pressure times
2 a recovery factor. And then I describe the recovery
3 factor there.

4 And on the second page is how we are
5 actually determining that initial rate for the
6 Pictured Cliffs, which basically it says the first
7 month Pictured Cliff rate is equal to the total
8 production for that first month times the flow test of
9 the Pictured Cliffs, and this is a ratio here, divided
10 by the total of the Pictured Cliff flow test plus the
11 Fruitland Coal flow test.

12 Q. Going back to the first page, would it be
13 appropriate, in your opinion, should the examiner
14 approve your application, to simply take this page and
15 attach it to the order as an exhibit, and would that
16 then give you enough information by which you can
17 allocate production in the well?

18 A. Yes. The one thing you would need is the
19 initial reservoir pressure and the flow test rates.

20 Q. When you look at the results of your
21 volumetric reserve calculation validated with the
22 material balance, the 0.84, that number is going to
23 change as the examiner looks at the other exhibit
24 books?

25 A. Yes, that's correct.

1 Q. Why does that change occur?

2 A. There are differences in the volumetrics,
3 and those are confirmed by evaluation of the material
4 balance for the general area of each of the cases.

5 Q. So you have specifically adjusted the
6 parameters in the formula to take into consideration
7 the unique character of the Pictured Cliff as it
8 applies to each of its spacing units?

9 A. That's correct.

10 Q. For each of the wells?

11 A. Right.

12 Q. Let's go back now and find a locator map,
13 and perhaps it's easiest to use the one behind Exhibit
14 Tab No. 3.

15 Give us your sense of reservoir engineering
16 conclusions as to why you're proposing, first of all,
17 the location of the well in this portion of the
18 section. What do you think you can achieve by putting
19 the well here?

20 A. Through the evaluation of the area, we've
21 identified that this is, first off, an open Fruitland
22 Coal drill block. There is not a Fruitland Coal well
23 in there. As we were evaluating that, the first thing
24 we would have looked at is an opportunity to
25 recomplete a well. The wells out of there are

1 productive. They're Dakota wells. And then we also
2 noticed that there are two abandoned Pictured Cliff
3 locations.

4 We identified those two wellbores as being
5 too risky to attempt to reenter; so the only option
6 that we were left with was a drill well. The location
7 itself was chosen to insure that we were in the proper
8 spacing and proper area for the Fruitland Coal
9 initially.

10 Q. On the index summary we've provided to the
11 examiner for this case, the last column shows
12 economics, and it says PC margin?

13 A. Right.

14 Q. What is the meaning of that?

15 A. What that means is basically two things.
16 One, it would be uneconomic to produce the Pictured
17 Cliffs by itself because of the productivity of the
18 Pictured Cliffs in that area. And also it would be
19 uneconomic to drill a well as a straight-up Pictured
20 Cliff well there.

21 Q. What is your recommendation to the examiner
22 concerning the best method in order to produce
23 Pictured Cliff reserves from this spacing unit that
24 might not otherwise be produced?

25 A. Commingling it with the Fruitland Coal

1 production that we will get.

2 Q. In your opinion as a reservoir engineer,
3 would it be economic to drill the Pictured Cliff as a
4 stand alone Pictured Cliff?

5 A. No.

6 Q. The only way you get it in this area is a
7 tag along with the Fruitland Coal well?

8 A. That's correct.

9 Q. Let's turn now to the next exhibit book,
10 which is 10722. It's the McAdams 500 well. And again
11 for a visual reference, let's look at the display
12 behind Exhibit No. 3. Give us your engineering
13 summaries as to why you're proposing to locate the
14 well as it's requested and why the orientation here of
15 the spacing units.

16 A. Here again, we evaluated the drill block as
17 being an open Fruitland Coal drill block. We looked
18 at the wells that were in that drill block. And as it
19 shows here, there are two Dakota wells. Both Dakota
20 wells are basically not viable candidates. There are
21 other opportunities out there. So we were left with
22 the option to either complete or recompleate the
23 McAdams two original Pictured Cliff wells. That well
24 has subsequently been determined as too risky of a
25 venture, and it would be plugged and abandoned. And

1 that left us with drilling a well. And we identified
2 that as being a standard Fruitland Coal location; so,
3 therefore, that's why it was chosen there.

4 Q. What are the economic conclusions you reach
5 about the well at this location and the dedication of
6 the two spacing units for this well?

7 A. The Pictured Cliffs itself would be
8 uneconomic to drill for and produce, and that the
9 Fruitland Coal would be economic in and of itself to
10 drill and produce.

11 Q. As concerns the allocation formula for this
12 well, have you used the same methodology and applied
13 the same allocation formula to the McAdams 500 that
14 you did for the Rowley Com 500?

15 A. That's correct.

16 Q. Let's turn now to the next exhibit book,
17 Mr. Daves, Case 10723. It's for the Whitley A No.
18 100. And to keep us oriented, if you'll look to the
19 display behind Exhibit 3, let's talk first about your
20 choices concerning where to put the PC well in the
21 section.

22 A. Right.

23 Q. What did you decide and why?

24 A. Primarily, we identified that southwest
25 quarter as an undrilled -- both an undrilled Fruitland

1 Coal location and a Pictured Cliff location.

2 Q. You already have a Fruitland Coal well in
3 the northeast quarter?

4 A. That's correct.

5 Q. So you have a west-half dedication then for
6 the remaining portion of the section for the Fruitland
7 Coal?

8 A. That's correct.

9 Q. What were your reasons for choosing the
10 Pictured Cliff in the southwest quarter?

11 A. There have been two wells drilled up in the
12 north half of that half section, and they basically
13 were what we determined as uneconomic, and they have
14 been poor tests.

15 Q. When you look at your summary sheet for the
16 cases, the last column, what's the meaning of the code
17 here when we look at subeconomic as to the PC and the
18 Fruitland Coal?

19 A. There's several parts that went into that.
20 One is that the flow rates for each of the various
21 Pictured Cliff wells in the area and also the coal
22 wells in that general area are marginal. They're not
23 strikingly -- they're not of sufficient rates that you
24 would call them straight up economic successes.

25 Q. As to both formations then in this well, it

1 would be of significant risk to attempt to complete
2 them as single stand alone wells?

3 A. That's correct.

4 Q. And you would not do that?

5 A. No.

6 Q. Let's go now to the next book. It's case
7 10724. It's the Rhodes C 101. Again looking at
8 Exhibit 3, give us your engineering conclusions as to
9 why this well is proposed where it is.

10 A. Basically, we noted that we had an
11 undrilled Fruitland Coal drill block, we had an
12 undrilled Pictured Cliff drill block, and we felt like
13 spacing -- the standard Fruitland Coal spacing would
14 be the thing that would drive us to choosing the
15 southwest quarter for this location.

16 Q. Section 30 and the north half of 31 have
17 some extremely difficult surface problems, do they
18 not?

19 A. That's correct.

20 Q. The location here is simply driven by the
21 limitations of the surface location, aren't they?

22 A. That's correct. That was the only place we
23 could spot the well inside the area.

24 Q. Let's use this display to talk about the
25 next case, which is the Rhodes 102.

1 A. Okay.

2 Q. And show the examiner what you think is
3 going to happen then with how you're going to access
4 the reservoir with wells in 30 and the north half of
5 31 within the confines of the surface limitations.
6 Give us a plan to how to exploit those reserves with
7 those kind of restrictions.

8 A. Basically, that's the only opportunity that
9 we have as far as the southwest quarter of Section
10 30. That is the only place as it stands right now,
11 given the current surface locations, that we can do
12 anything.

13 As far as the northeast of Section 31,
14 there again that was the only spot. So we're
15 basically left with the opportunity to drain these
16 reservoirs, but these are the only spots that we can
17 drain them.

18 Q. Your well location for the Rhodes C 102 is
19 going to be slightly north and east of that Dakota
20 well that's spotted in the northeast quarter of 31?

21 A. That's correct.

22 Q. What's the plan for the east half of 30?
23 That's not the subject of the case here, but what's
24 your plan?

25 A. We have a well staked and currently

1 permitted for the northeast quarter of Section 30.

2 Q. And that's a coal gas well?

3 A. Right, the Rhodes C 100.

4 Q. So the C 100 is located approximately where
5 the dry hole symbol is located?

6 A. That's correct.

7 Q. In the center of the northeast of 30?

8 A. That's correct.

9 Q. So that gives you one coal well. You get
10 down to the west half of 30 and look at the southeast
11 corner, that spacing unit, that's your Rhodes 101?

12 A. Right.

13 Q. And then you move over to the northeast
14 quarter of 31, and you get your third well?

15 A. Right. Therefore, with those three wells,
16 we should adequately be able to develop the reserves
17 that are within those three half-sections.

18 Q. What happens in the PC part of this?
19 What's your engineering choices on how to recover
20 anything that's left in the PC? Can you do that stand
21 alone vertical wells in the PC?

22 A. No.

23 Q. Give us a summary then of what the risk is
24 to Meridian as an operator for trying to produce the
25 PC and the Fruitland Coal in this area.

1 A. One of the risks that you have with the
2 Fruitland Coal is, if you'll look there, there are
3 very few Fruitland Coal locations in that general
4 area. So in that respect, it's fairly risky. There
5 have been some tests, but flow tests in and of
6 themselves don't really tell you whether an area is
7 going to be very productive or economically
8 productive.

9 Q. What's your conclusion then about the best
10 way to explore the opportunity to produce PC and
11 Fruitland Coal reserves for these two wells?

12 A. The combination of both rates and the
13 reserves should allow us some accommodation for the
14 risk that's involved. You're on the fringes of a
15 known Pictured Cliff pool. You're on a stepout,
16 complete stepout of the Fruitland Coal development in
17 that area.

18 Q. Is your allocation formula for the Rhodes C
19 101 and the 102 the same type of formula you've used
20 for the other cases?

21 A. That's correct.

22 Q. And but for fine-tuning, the material
23 balance, and the volumetric calculations for each of
24 those five wells, then the formula is the same?

25 A. Right. The fine-tuning is a relationship

1 of the reservoir and that specific spacing unit.

2 Q. And you did that in association with one of
3 the Meridian geologists to map and help you define and
4 planimeter, if you will --

5 A. Right.

6 Q. -- the size and shape of the container by
7 which you applied your engineering calculation?

8 A. That's correct.

9 Q. Are there any other issues for you as a
10 reservoir engineer that affect the commingling? Do
11 you have pressure differentials that are going to give
12 you a problem?

13 A. No. The reservoir pressures are well
14 within the guidelines for commingling.

15 Q. Any kind of liquids, fluids, or other kinds
16 of problems that are going to give you difficulties?

17 A. The tests that we've seen in the general
18 area of the two Rhodes wells and the Whitley is that
19 the waters are almost identical.

20 Q. Do you have a conclusion about whether or
21 not approval of these applications would give you an
22 opportunity to prevent waste?

23 A. Absolutely. Otherwise, those Pictured
24 Cliff reserves will probably be there for a long time
25 before anybody would economically be able to develop

1 them.

2 Q. Do you see any opportunity to impair or
3 adversely affect correlative rights?

4 A. No.

5 MR. KELLAHIN: That concludes my
6 examination of Mr. Daves.

7 EXAMINATION

8 BY EXAMINER STOGNER:

9 Q. Mr. Daves, in Case 10722, referring to
10 Exhibit No. 3, look up in the northeast quarter, is
11 that a Pictured Cliff well?

12 A. Yes, sir. That's the McAdams -- northwest
13 or northeast?

14 Q. Northeast.

15 A. Northeast. That's the McAdams 2, and it
16 was originally scheduled to be a Fruitland Coal
17 recompletion, but we had substantial casing problems,
18 and the well either has or will be plugged and
19 abandoned.

20 Q. Has it ever produced?

21 A. Yes. It was a producing Pictured Cliffs
22 wellbore.

23 Q. But you have no intention of producing that
24 well once this well is drilled?

25 A. No. That well is beyond repair.

1 Q. Now, going back to the two wells in
2 Sections 30 and 31, the Rhodes 101 and 102 --

3 A. Right.

4 Q. What's the feasibility of directional
5 drilling to get the wells further apart?

6 A. We did a study there and evaluated the
7 costs and compared that with the economics of doing
8 something, and we found it was uneconomic to do that.
9 These are, at best, marginal as they are proposed, and
10 to do something horizontally or in a high angle sense
11 would make them uneconomic.

12 Q. What I asked for is directional drilling.
13 I'm just talking conventional at this point.

14 A. Right.

15 Q. And that's what you're referring to?

16 A. That's exactly what we're talking about.

17 Q. Is the nature of the Pictured Cliffs out
18 here, should the well have to be shut in for some
19 marginal amount of time or some extended amount of
20 time, water flow back into the Pictured Cliffs from
21 the Fruitland Coal, is that going to cause any harm or
22 drowning out?

23 A. That was a concern that we had initially,
24 but what we have found is that in general in that area
25 on those coal wells that have been developed, the

1 water rates and the type of water is very similar to
2 the Pictured Cliffs water; so that shouldn't be a
3 problem. As long as we can maintain an established
4 flow, we shouldn't have a problem with that.

5 Q. How are you proposing to complete -- I
6 assume these are going to be perforations?

7 A. Right.

8 Q. Is there any stimulation that occurs?

9 A. We use a foam frac in each of the
10 intervals, foam being a nitrogen foam prop and frac
11 stimulation.

12 Q. In referring to your formula, or go back to
13 the -- I guess it would be the second page of the
14 formula, and look at $Q_t(1)$, that's the first month
15 total production?

16 A. Correct.

17 Q. That's the initial month that the well
18 produced from Day 1; is that what I understand?

19 A. That is the first month of sales. That is
20 what that $Q_t(1)$ will be, the first month total sales.

21 Q. That will remain constant from here on out?

22 A. Right.

23 Q. Your Q_{pc} and your Q_{ftc} , final Pictured
24 Cliffs flow test, final Fruitland Coal flow tests, I'm
25 not sure I follow you there. What do you mean by

1 final flow tests?

2 A. Okay. The way that we currently are
3 completing these wells with the Pictured Cliffs, we
4 move on the location with all of our frac equipment
5 and with coil tubing, what we do is we fracture
6 stimulate the Pictured Cliffs, flow it back, clean it
7 up, get aware there is no more sand entering the
8 wellbore and we have good sustainable flow, at that
9 point we shut it in. There's a seven-day shut-in
10 test.

11 And then we turn back around after that,
12 and we bring the well on, and we test it through a
13 separator so that we can gauge the well and get an
14 absolute idea of the flow. And at that point then we
15 set a bridge plug above the Pictured Cliffs, after
16 we've got that sustained flow test, and then we do the
17 same process with the Fruitland Coal.

18 Q. How many tests throughout the life -- is
19 this going to be a periodic test?

20 A. No. This is a one time -- this is
21 basically the flow tests that are from the initial
22 completion.

23 MR. STOVALL: Is this the same formula that
24 -- or have the orders in the other cases been
25 issued?

1 THE WITNESS: Um-hm.

2 MR. STOVALL: It's the same formula that
3 was approved in those cases?

4 THE WITNESS: Right.

5 Q. (EXAMINER STOGNER) Again, what is $Q_{pc}(P)$?

6 A. That is from the flow test. That's what
7 that means. It basically is a Pitot. That's what the
8 P stands for in each of these cases. I would say that
9 that is a typo comparing the Q_{pc} with the small "P"
10 and the Q_{ftc} with the little "P" on the other side of
11 that equation.

12 Q. They all mean the same?

13 A. Right. What it basically is is flow tests
14 that we get from the Pictured Cliffs plus the flow
15 tests that we get to the Fruitland Coal establishes
16 the denominator. And then the flow tests we got from
17 the Pictured Cliffs establishes the numerator.
18 Therefore you have a ratio there. They're flowing
19 under the same flow conditions; so they should be in
20 that respect equal. And then you multiply that ratio
21 times the total month's production and the initial
22 month's production. That in combination with your
23 reservoir pressure gives you a reserve number; so then
24 you can calculate your decline at that point.

25 Q. So that should be a small "P" and not a

1 capital?

2 A. Right. That's a typo. I just now noticed
3 it, too. I apologize for that.

4 Q. It appears like it's so far in the ones I
5 have researched, they should be changed to small "p."
6 Okay. I have no other questions of this witness.

7 Mr. Kellahin?

8 MR. KELLAHIN: That's it for this one.

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

12 EXAMINATION

13 BY MR. KELLAHIN:

14 Q. Would you please state your name and
15 occupation.

16 A. My name is Tom Yersak. I'm a geophysicist
17 for Meridian Oil Inc.

18 Q. Spell your last name.

19 A. Y-E-R-S-A-K.

20 Q. On prior occasions, Mr. Yersak, have you
21 testified before the Division as a geologist?

22 A. No, I haven't.

23 Q. Summarize for us your education.

24 A. I received a master's in geology in 1977
25 from Rutgers University. I have about 16 years

1 experience in the oil and gas industry.

2 Q. Summarize for us what you've done with
3 regards to the geology in each of these five cases.

4 A. I basically reviewed the data that was
5 given to me from the previous geologist, K. Stewart
6 Hicks. I reviewed that data. That's the data that's
7 used in the making of the isopachs and the structure
8 map. And I put together the cross-sections to
9 illustrate the geology for the Commission.

10 Q. Did you independently verify the prior
11 geologist's work?

12 A. I did, sir.

13 Q. Were you able to use that work from which
14 to reach your own independent conclusions about the
15 geology?

16 A. That's correct.

17 MR. KELLAHIN: We tender Mr. Yersak as an
18 expert petroleum geologist.

19 EXAMINER STOGNER: Mr. Yersak is so
20 qualified.

21 Q. (BY MR. KELLAHIN) Give us a visualization
22 of the issue for you as a geologist when we look at
23 the commingling. And I think what I'm asking for is
24 to take any of the cross-sections. We've shown the
25 examiner the cross-section you've prepared out of the

1 Rowley Com 500. And if you go to the one on the wall
2 of the hearing room, give us a general picture of what
3 you see as a geologist.

4 A. The first thing is that this is a
5 stratigraphic cross-section, and the datum on which
6 these well logs have been hung on the Huerfanito
7 Bentonite. What I have labeled on the cross-section
8 is the basal coal and the top coal, and in this area
9 the top coal is known as the Rowley coal. And I've
10 labeled the Pictured Cliffs.

11 Generally speaking, the basal coal is
12 pretty uniform in thickness, and in this particular
13 area the basal coal lies on top of the Pictured
14 Cliffs. There are places where it is separated from
15 the Pictured Cliff by a shale anywhere from 5 to 10
16 feet. Variations in the net coal isopach map normally
17 are the result of changes in thickness of the Rowley
18 coal or the top coal.

19 Q. Did you assist Mr. Daves in providing him
20 with your geologic interpretations from which then he
21 did his volumetric calculations of the Pictured Cliff
22 reserves?

23 A. I did, sir.

24 Q. And the small variances in his number is
25 the result of your difference in interpretation that's

1 directly applicable to the change in thickness of the
2 Pictured Cliff?

3 A. That's correct.

4 Q. Are all five cross-sections in the exhibit
5 books of similar methodology?

6 A. That's correct.

7 Q. And do we see this same relationship
8 between the Coal and the Pictured Cliff if we look at
9 each of those?

10 A. We do.

11 Q. And the conclusions you have reached about
12 the coal thickness that varies the most is the top
13 coal in each of the cases?

14 A. That's true.

15 Q. Okay, if you would return to your seat.

16 Let's continue then with the Rowley Com 500
17 and have you turn behind Exhibit Tab 6. The first
18 display is a Fruitland Coal isopach map?

19 A. That is correct.

20 Q. Have you provided similar isopach maps for
21 each of the five cases?

22 A. I have.

23 Q. What emphasis or conclusion do you place as
24 a geologist upon coal thickness in helping you decide
25 where to put your coal gas well in a given section?

1 A. There is no relationship.

2 Q. Why not?

3 A. Because there is no relationship between
4 the thickness of the coal and the producibility of
5 that coal. The producibility is a function of
6 permeability, the cleating, and essentially the gas
7 content of the coal, which is a hard thing to
8 quantitatively map.

9 Q. While all the displays in here will show an
10 isopach of Fruitland Coal, the coal thickness is not
11 the parameter by which you as a geologist help the
12 engineer in making the selection of where to put the
13 well?

14 A. That's correct.

15 Q. And there is no currently available data in
16 each of these cases from which you can accurately map
17 permeability?

18 A. That is correct.

19 Q. So you're using other information and your
20 best judgment as an expert as to where to put each of
21 these wells?

22 A. That's correct.

23 Q. When we turn to the PC mapping, that's
24 different, isn't it?

25 A. We're dealing now with a sandstone, and

1 there we can quantitatively define net pay that
2 basically could be used in a volumetric calculation to
3 come up with the gas in place, a number that would --
4 in this particular case, correlates very well with the
5 reservoir engineer's material balance calculations.

6 Q. So when we're trying to come up with a
7 methodology to equitably allocate production between
8 the two pools in each of these cases, if we target our
9 reserve calculation efforts on the Pictured Cliff,
10 that's going to be the most accurate way in which to
11 make the allocation analysis?

12 A. That is true.

13 Q. When we look at the isopachs for the PC,
14 are you confident that you have accurately and
15 adequately contoured the thickness of that reservoir?

16 A. I have.

17 Q. When you look at choices on where to put
18 the well, the PC portion of the well, you've got a 320
19 gas spacing unit, I guess you would have the choice to
20 put it in either one of the 160's that make up the
21 320?

22 A. Correct.

23 Q. In each of the cases, can you draw a direct
24 conclusion based upon PC thickness from the isopach in
25 which to help you decide where to put the well?

1 A. You can. Obviously, you would like to
2 position it in the thickest part of the PC if you
3 could, but you are looking at an averaging of that.
4 You're looking at a drainage radius, and you're taking
5 an average net pay thickness.

6 Q. Summarize for us then what you have done
7 with the assistance of the engineer in trying to find
8 your best opportunity in each of these sections, the
9 five involved, to penetrate not only the Fruitland
10 Coal but the Pictured Cliff. What were the parameters
11 and what did you select from to get your locations
12 where you're now proposing them?

13 A. Well, besides the surface limitations of
14 where exactly we could position a well, and the fact
15 that we weren't able to -- that the coal was not an
16 issue in terms of where we located the well, we
17 focused on the Pictured Cliffs. Basically, what we
18 try to do is try to find an optimum position where the
19 Pictured Cliffs was the thickest.

20 Q. All right. Let's take for an example then
21 the isopach of PC behind Exhibit Tab No. 6 in case
22 721. Your spacing unit orientation is the west half
23 of Section 7?

24 A. That's correct.

25 Q. And when you're looking in the west half,

1 show us why you have picked this particular location
2 for the Rowley Com 500.

3 A. Well, in terms of -- it wouldn't make any
4 difference if we drilled the well there or if we
5 drilled it --

6 Q. Farther south?

7 A. Farther south.

8 Q. When you look at the northwest quarter of
9 that section, there has already been a PC well drilled
10 in that quarter section, has there not?

11 A. That's correct.

12 Q. You have a structure map also shown in all
13 the exhibit books. This one is found behind Exhibit
14 No. 7. Is structure a key component that you as
15 geologist use to find well locations for either one of
16 these two pools?

17 A. No, it isn't, sir.

18 Q. It's just a point of information, but it is
19 not one of the parameters that you're using?

20 A. Correct.

21 Q. Let's turn now to the next one. It's 723,
22 the Whitley 100. And let's turn to Exhibit 6 and find
23 the isopach on the Pictured Cliff. And to serve as a
24 second illustration for us as to your methodology,
25 show us what the opportunities are for the well in the

1 southwest quarter as compared to what would happen if
2 it was moved into the northwest quarter.

3 A. First is the northwest quarter?

4 Q. Yes, sir.

5 A. If we drilled the well in the southwest
6 quarter, we would be, on average, draining the
7 thickest Pictured Cliffs. If we drilled it up in the
8 northwest, we'd be averaging, and it would be -- you
9 can see it gets a little thinner to the northwest.
10 And so we wouldn't have quite as much net pay in the
11 northwest quarter.

12 Q. So when you're looking at all these cases,
13 you can use as a component of your analysis then the
14 net thickness in the PC and see what area might be
15 effectively developed by a well located in one portion
16 of the section?

17 A. Correct.

18 Q. And then you factor in the other issues,
19 what you know about coal cleating?

20 A. Right.

21 Q. Fracture orientation, and the other
22 criteria in selecting a coal gas location?

23 A. Well, the other factors that are involved
24 in the Pictured Cliffs, this is a net pay map, but
25 when you do the volumetrics, you take into

1 consideration the porosity and the water saturation.
2 They're the other two variables that go into
3 calculating the gas in place besides the net pay
4 thickness.

5 Q. When you complete your analysis, do you
6 reach the same conclusions that Mr. Daves reached,
7 that in each of these cases the proposed location is
8 the optimum available location within the surface
9 limitations?

10 A. That's correct.

11 Q. In which to drill these wells?

12 A. That is correct.

13 Q. From your geologic perspective, do you see
14 an opportunity to develop this in any other way other
15 than by downhole commingling?

16 A. I don't.

17 Q. For each of these examples, then, that
18 represents the best way to do this?

19 A. That's correct.

20 MR. KELLAHIN: That concludes my
21 examination.

22 We now at this point move the introduction
23 of all of Meridian's exhibits in each of cases. They
24 will be numbered 1 through 8 in each case.

25 EXAMINER STOGNER: Exhibits 1 through 8 in

1 each case between cases 10721 and 10725 will be
2 admitted in evidence at this time.

3 EXAMINATION

4 BY EXAMINER STOGNER:

5 Q. In staying with case 10723, the Whitley
6 100, you give me an isopach here, but I understood
7 your earlier testimony that thickness is not a factor
8 in the coal, but yet you're showing it to be a factor
9 here. I'm a little confused. Did I misunderstand
10 you?

11 MR. STOVALL: Let me ask another question,
12 maybe I can get to that point. You have provided an
13 isopach just to give us some idea of where the coal is
14 and how the thickness lies?

15 THE WITNESS: Correct.

16 MR. STOVALL: But your testimony is that
17 that isopach and those thicknesses did not play a part
18 in your decision; is that correct?

19 THE WITNESS: That is correct.

20 Q. (BY EXAMINER STOGNER) Will it be the
21 geologist that chooses the perforations in the coal?

22 A. In conjunction with the reservoir engineer,
23 yes.

24 Q. Where does one usually put the coal, and
25 I'm referring to the type log for the Whitley A No.

1 100, Exhibit No. 8, or that's where it's at.

2 MR. KELLAHIN: That's where it would be.

3 Where would be your recommendations on
4 where to perforate the well?

5 THE WITNESS: This is an example here where
6 the basal coal is not lying directly on top of the
7 Pictured Cliffs, but you can see that we have multiple
8 coal seams in that basal zone, and we'd perf each of
9 those.

10 MR. STOVALL: When I look at that exhibit,
11 I see -- the coal, I assume, is the dark in the depth
12 track there?

13 THE WITNESS: That's correct.

14 MR. STOVALL: And I see numbers to the
15 left. Is that the number of shots in each of those
16 bands?

17 THE WITNESS: No. That's the number of
18 feet.

19 MR. STOVALL: Oh, okay.

20 THE WITNESS: Those are the numbers, if you
21 add those up.

22 MR. STOVALL: The footages of each little
23 coal seam?

24 THE WITNESS: That's correct. And it was
25 calculated off the electric log in this particular

1 case.

2 Q. (EXAMINER STOGNER) So perforations would
3 be where the coal actually comes in contact with the
4 well; is that correct?

5 A. That's correct.

6 Q. None in between on the matrix, sand matrix?

7 A. No.

8 Q. You said this was an example of there's a
9 shale layer there between that nine foot of coal and
10 the top of the PC?

11 A. Right. There's some separation between.
12 The coal isn't directly on top of the Pictured Cliffs,
13 that's correct.

14 Q. Whenever I have this kind of separation --
15 maybe I should be asking the engineer, feel free to
16 answer it -- as opposed to the others where the coal
17 is coming right down on the Pictured Cliffs, what kind
18 of association do I see with water and water quality
19 or the difference in the makeup?

20 MR. KELLAHIN: Can you answer that, Tom?

21 THE WITNESS: I'd like to --

22 MR. KELLAHIN: Why don't you step aside and
23 let's recall Scott Daves. Scott, why don't you come
24 back up and answer that? Did you hear the question?

25 MR. DAVES: Maybe restate that so I make

1 sure I understand the question.

2 SCOTT DAVES,

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

5 FURTHER EXAMINATION

6 BY EXAMINER STOGNER:

7 Q. I'm talking about the water quality or the
8 water makeup, essentially, the produced water in the
9 coal and in the Pictured Cliffs. Do I see much of a
10 difference whenever I have a shale separation between
11 the two zones as opposed to where the coal sits
12 directly on top of the Pictured Cliffs?

13 A. What we did in order to answer that
14 question, because that was a real consideration prior
15 to even thinking of applying, was we looked at those
16 wells within the Gallegos Canyon Unit that border our
17 acreage, and what we saw was that the water in the
18 Pictured Cliff wells that they had was almost
19 identical to the water that's produced in the coal
20 wells that they had. And they were similar separation
21 as what are shown in these logs.

22 Q. So the water quality does not vary
23 regardless of the --

24 A. No.

25 Q. I know the formula is for gas, and, of

1 course, that's the main thing we're after, but do you
2 have any idea what the ratio would be as far as any
3 liquids production that may occur? I'm talking
4 condensate and water.

5 A. There's little to no condensate in either
6 of the reservoirs. And as far as the water, the water
7 productions were fairly similar to within a barrel or
8 two a day of each other.

9 Q. How will that be reported, or how will
10 Meridian report that, the produced water from these
11 commingled wells?

12 A. Probably being with the datum that we see,
13 what we plan to do is report it off of a ratio very
14 similar to this off of the flow tests. And I think
15 the reason why we chose the flow test in the way that
16 we are, so that we would have an idea of initial water
17 rates and be able to allocate it from that point on
18 because there will be an issue of operating expenses,
19 and therefore we'll need to split that out
20 accordingly.

21 But, there again, all of these are common
22 interests where there is water production. On the
23 ones where there is a differing interest, in the cases
24 of the Rowley and the McAdams, there is no water
25 production in either reservoir.

1 Q. I assume, in many instances, these are
2 going to be a dewatering process for the coal?

3 A. Right.

4 Q. You're initially going to have a large
5 water?

6 A. Right.

7 Q. As the well produces and the water drops
8 off.

9 MR. STOVALL: Let me ask that because I
10 believe you testified in the Huerfanito cases last
11 time that you didn't think there was going to be much
12 dewatering. Is that correct? First, you did testify
13 in those, didn't you?

14 THE WITNESS: No, not in the Huerfanito.

15 MR. STOVALL: Did you testify in the last
16 commingling?

17 THE WITNESS: Right.

18 MR. STOVALL: One of the Meridian
19 witnesses, and I don't remember whether it was you or
20 whether it was in the Huerfanito cases, testified that
21 they didn't think there was going to be much water in
22 the coal in those locations. Do you remember that
23 testimony?

24 THE WITNESS: Um-um.

25 MR. STOVALL: So it wasn't you?

1 THE WITNESS: I don't believe it was.

2 MR. STOVALL: But you think there is some
3 water in the coal?

4 THE WITNESS: Minor amounts in the
5 neighborhood on an average of three to five to ten
6 barrels a day initially.

7 MR. STOVALL: It's not like when you get
8 further north?

9 THE WITNESS: No, it's nothing like that.
10 These are entirely different types of scenarios where
11 you might get a slightly different water. It drops
12 off to one or two barrels per day or per week, and
13 then that's it, whereas in the 30-6 or Cedar Hill
14 area, you have substantial water.

15 Q. (BY EXAMINER STOGNER) But Meridian will
16 separate those out in its monthly reports of
17 production?

18 A. Right.

19 EXAMINER STOGNER: Any other questions of
20 either the geologist or the engineering witness?

21 He may be excused.

22 MR. STOVALL: Mr. Kellahin, were you going
23 to do your notice? I don't think you had mentioned
24 those yet, if I'm not mistaken.

25 MR. KELLAHIN: If I haven't, they are

1 intended to be included in the exhibit book. I think
2 we put them right inside the cover sheet. They are
3 not identified as an exhibit number. I think in all
4 instances, we will have them marked as Exhibit 9.

5 MR. STOVALL: They're an affidavit by you
6 of notice to the required parties; is that correct?

7 MR. KELLAHIN: Yes, sir. And then they
8 track the information Mr. Alexander supplied that's in
9 the first portion of the exhibit book.

10 EXAMINER STOGNER: Anything further?

11 MR. KELLAHIN: No, sir.

12 EXAMINER STOGNER: With that, I'll take
13 Cases 10721 through 10725 under advisement.

14
15
16
17
18 I do hereby certify that the foregoing is
19 a complete record of the proceedings in
20 the Examiner hearing of Case Nos. 10721 through 10725
heard by me on 22 April 1993.

21  , Examiner
22 Oil Conservation Division
23
24
25

1 CERTIFICATE OF REPORTER
2

3 STATE OF NEW MEXICO)

4) ss.

5 COUNTY OF SANTA FE)

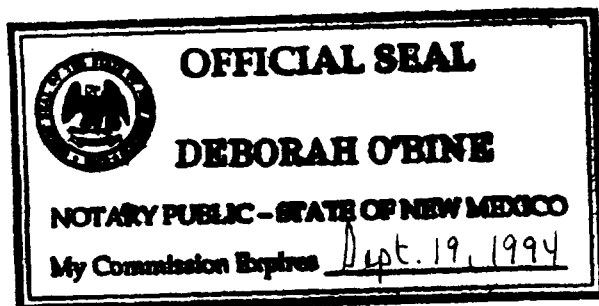
6 I, Deborah O'Bine, Certified Shorthand
7 Reporter and Notary Public, HEREBY CERTIFY that I
8 caused my notes to be transcribed under my personal
9 supervision, and that the foregoing transcript is a
10 true and accurate record of the proceedings of said
11 hearing.

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

16 WITNESS MY HAND AND SEAL, May 5, 1993.

17 
18

DEBORAH O'BINE
CCR No. 63.



Type Log for Rhodes "C"102

T.L. Rhodes C #3

nw ne 31-28n-11w

