

Case No. 10721

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING)
CALLED BY THE OIL CONSERVATION)
DIVISION FOR THE PURPOSE OF)
CONSIDERING:)
APPLICATION OF MERIDIAN OIL INC.)

CASE NO. 10735

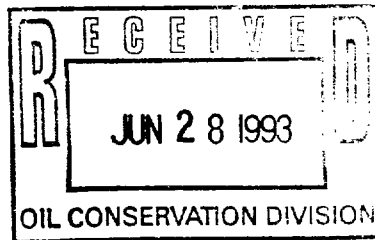
REPORTER'S TRANSCRIPT OF PROCEEDINGS
EXAMINER HEARING

BEFORE: Michael E. Stogner, Hearing Examiner

June 3, 1993

Santa Fe, New Mexico

This matter came on for hearing before the
Oil Conservation Division on June 3, 1993, at the Oil
Conservation Division Conference Room, State Land
Office Building, 310 Old Santa Fe Trail, Santa Fe, New
Mexico, before Lisa Danner-Suggs, Certified Court
Reporter No. 257, for the State of New Mexico.



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June 3, 1993
 Examiner Hearing
 CASE NO. 10735

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A P P E A R A N C E S

FOR THE APPLICANT: KELLAHIN AND KELLAHIN
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CUMBRE COURT REPORTING

P.O. BOX 9262

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1 EXAMINER STOGNER:

2 Now we'll call next case number 10735 which
3 is the application of Meridian Oil Inc. for downhole
4 commingling procedure within the Huerfano Unit in San
5 Juan County, New Mexico. I will call for appearances.

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

10 EXAMINER STOGNER: Are there any other
11 appearances in this matter? There being none, will the
12 witnesses please stand to be sworn at this time.

13 (Witnesses sworn.)

14 MR. KELLAHIN: Mr. Examiner, here's an
15 exhibit book and a couple of extra copies. I'd like to
16 call at this time Mr. Alan Alexander.

17 ALAN ALEXANDER

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

20 EXAMINATION

21 BY MR. KELLAHIN:

22 Q. Mr. Alexander, would you please state your
23 name and occupation?

24 A. My name is Allen Alexander. I'm currently
25 employed as a senior land advisor with Meridian Oil

1 Inc. in their Farmington, New Mexico office.

2 Q. Have you, as a petroleum landman in
3 Farmington for your company, Mr. Alexander, made a
4 review of the land title information utilized by your
5 company for what is described as the Huerfano Unit?

6 A. Yes, I have reviewed that.

7 Q. As part of that study and review, have you
8 satisfied yourself that Meridian has correctly
9 identified the various interest owners that have an
10 interest that would be affected if the Division grants
11 this application?

12 A. Yes, I believe that we have correctly
13 identified those owners.

14 Q. In addition, do you believe you have
15 correctly identified the offsetting operators if any,
16 that are entitled to notification pursuant to Division
17 notice rules?

18 A. Yes, we have.

19 Q. Are you generally familiar with the
20 participating areas and the structure and provisions of
21 the unit agreements involved for the Huerfano Unit?

22 A. Yes, I am.

23 MR. KELLAHIN: We tender Mr. Alexander as an
24 expert petroleum landman.

25 EXAMINER STOGNER: Mr. Alexander is so

1 qualified.

2 MR. KELLAHIN: Mr. Examiner, so that you can
3 see how the exhibit book is organized, Mr. Alexander
4 has provided an index to the exhibit book. Each of the
5 exhibits is identified starting with Exhibit A running
6 through Exhibit O. I propose to present his land
7 testimony first. We'll then skip down and present Mr.
8 Scott Daves' engineering testimony to describe how he
9 proposes to allocate production between the two pools.
10 And talk about the reservoir engineering aspects of the
11 case. Then we'll present the geologic evidence last.

12 Mr. Alexander has brought with him a larger
13 copy of the exhibit map that identifies the unit area
14 and which is shown on a smaller scale behind Exhibit
15 Tab A. That reduced copy is a little hard to read and
16 so here's a larger one that may aid you as Mr.
17 Alexander illustrates what his company proposes to do.

18 Q. (BY MR. KELLAHIN) Let's go to Exhibit A,
19 Mr. Alexander, and before we discuss the specifics,
20 identify for us what we're looking at.

21 A. We're looking at a plat of the Huerfano
22 Federal Unit. On that plat you will see well symbols
23 for both Pictured Cliffs and Fruitland Coal Wells which
24 are the triangular symbols. You will see the unit
25 outlined in the dark green line, and then you will see

1 the participating areas for the Pictured Cliffs
2 formation that is a red hash mark. You will also see
3 the existing singular Fruitland Coal participating area
4 which is a series of dashes, a hash mark with a series
5 of dashes.

6 You will also note that we have described
7 the Fruitland Drillblocks that we're talking about this
8 morning with a brown colored hash mark as well as the
9 Pictured Cliffs Drillblocks that we're talking about
10 this morning in diamond shaped hash markings.

11 Q. Identify for us the two Pictured Cliff
12 pools, a portion of each of which is located within the
13 unit boundary.

14 A. If you look up to the northwestern quadrant
15 of the map, you'll see a cluster of wells and also a
16 portion of the existing Pictured Cliffs participating
17 area. That Pictured Cliffs pool up there is known as
18 the West Kutz-Pictured Cliffs pool. The pool over on
19 the northeastern and eastern quadrant of the map
20 consists of the Ballard Pictured Cliffs pool.

21 Q. Identify for us the three tracts or spacing
22 units that are the subject of part of the application,
23 starting off with the spacing unit for Unit Well 549.

24 A. Yes. Again, if you'll look to the
25 northeastern quadrant, you'll see the brown hashing

1 that runs on a northwest-southeast trend -- direction,
2 I mean. It's in section 33 of -- let me get you the
3 correct township and range for that --

4 MR. KELLAHIN: It's on page two of the
5 application, paragraph three.

6 A. Yes. That drillblock is the drillblock that
7 we're proposing for the Huerfano Unit Number 549 Well.
8 And it's located section 3327 north 10 west. If you'll
9 look down to the eastern part of the unit, again
10 looking for the brown Fruitland Drillblock hatching
11 which is overlaid the Pictured Cliffs pool in this
12 instance, in sections 23 and 26, 26 north 9 west, you
13 will find in section 23 -- I'm sorry, in section 26,
14 you'll find the Huerfano Unit Number 59 Well. And in
15 section 23 you'll find the Huerfano Unit Number 46
16 Well.

17 Both of the 46 Well and the 59 Well are
18 existing Fruitland -- I'm sorry -- existing Pictured
19 Cliffs wells in which we are proposing to commingle and
20 recomplete with the Fruitland Coal formation. The
21 Number 549 Well that I spoke of previously is a new
22 well that we will drill, test, and hopefully commingle
23 both the Fruitland and the Pictured Cliffs formations.

24 Q. Are there any existing Fruitland coal-gas
25 well spacing units within the unit area?

1 A. Yes there are. And more particularly, there
2 is one Fruitland -- you will see it on the map. There
3 is a Fruitland participating area. The initial
4 participating area that was established, effective 4/24
5 of '89.

6 Q. Currently that consists of a single 360 --
7 320 acre half section spacing unit in section 26, is
8 it, of 26 north 9 west?

9 A. Basin 28. These numbers are a little bit
10 hard to read -- of 26 and 9. I believe that's right.
11 Yes.

12 Q. On a prior occasion has the Division
13 approved the type of administrative procedure
14 authorizing downhole commingling for any of the other
15 pools that are produced within the unit?

16 A. Yes, we do have an order that authorized us
17 to commingle the Mesa Verde and Dakota formations. And
18 for that reference you can refer to order number
19 R-9711.

20 MR. KELLAHIN: Mr. Examiner, here's a copy
21 of that priority.

22 EXAMINER STOGNER: Is this part of the
23 exhibit today?

24 MR. KELLAHIN: No. They're just a reference
25 for you to indicate what we've done in the recent past

1 for commingling.

2 EXAMINER STOGNER: I'll make administrative
3 notice of order number R-9711.

4 MR. KELLAHIN: Thank you, sir.

5 Q. (BY MR. KELLAHIN) Summarize for us, within
6 the context of the unit, what you're seeking with this
7 application, Mr. Alexander.

8 A. We're seeking to commingle the Fruitland and
9 Pictured Cliffs formations. And the 46 and 59 Wells, as
10 I mentioned previously, those are currently existing
11 wells completed in the Pictured Cliffs. And we would
12 like to go ahead and complete the Fruitland Coal and
13 commingle those reservoirs. We also would like to
14 drill a new well, the Number 549 Well. And again, we
15 would like to commingle the Pictured Cliffs and the
16 Fruitland Coal formation in that well.

17 All of these wells are within the confines
18 of the Huerfano Unit. We do have different ownership
19 in the Huerfano Unit because, as you can see, we are
20 dealing with an existing Pictured Cliffs participating
21 area. And we are also dealing with drillblock interest
22 on the Fruitland Coal formation.

23 Q. Are you also seeking an administrative
24 provision from the Division so that future applications
25 for downhole commingling can be processed

1 administratively without the necessity of notice of
2 hearing?

3 A. Yes, we are.

4 Q. And that would be for the two formations
5 that are the subject of this application, whether the
6 Pictured Cliff be in the Ballard Pictured Cliff or the
7 West Kutz-Pictured Cliff?

8 A. That is correct.

9 Q. Let's turn now to the subject of the
10 offsetting operators around each of the spacing units,
11 the identity of those operators and the notification of
12 this application to those operators. Behind which tab
13 number will we find that information?

14 A. Behind Exhibit Tab B, we have provided plats
15 for each of the wells that we are discussing this
16 morning. And on those plats -- they're nonsectionary
17 plats -- you will see the offset owners/operators
18 illustrated by alphabetic letters. And then at the
19 bottom of the page, or on the next page as the case may
20 be, for each of the exhibits we have indexed that
21 alphabetic letter with the appropriate party that we
22 have notified in this case.

23 Q. Have you received any objection from any of
24 the offsetting operators that were notified of this
25 hearing?

1 A. We have not received an objection from any
2 of the owners or operators that we have notified in
3 this application.

4 Q. Let's turn now to the topic of the interest
5 owners within the unit area that will share in the
6 production from your pool. First of all, how have you
7 identified those owners?

8 A. In order to identify all of the parties --
9 and we were not so concerned with overidentification,
10 but we wanted to make sure that we did get everybody
11 identified. If you look behind Exhibit Tab Number C,
12 you will see listing -- computer listing that we
13 extracted from our division department that listed all
14 of the owners that we currently have on pay in the
15 Huerfano Unit for the Pictured Cliffs formation, the
16 Fruitland formation and the Dakota formation.

17 Most of the interest in the Huerfano Unit is
18 similar through the -- all of the depths down through
19 the Dakota and each of the tracts. So in this way we
20 were able to locate, identify and receive -- we have a
21 mailing list for all of the parties which would include
22 royalties, overrides and working interest owners.

23 Q. Have you caused notification to be sent to
24 all those interest owners that would share in
25 production either from the Fruitland formation coal-gas

1 production or the Pictured Cliffs formation production?

2 A. Yes, we have.

3 Q. And how is that shown?

4 A. We have compiled all of those parties and
5 taken out the duplicate names that we've encountered
6 behind Exhibit Tab Number D. We have given a complete
7 list of all of the parties we've notified.

8 Q. Including their addresses?

9 A. Including their addresses. And we've
10 already also provided a copy of the certified mail
11 receipts for all of the parties.

12 Q. To the best of your knowledge, have you
13 received any objection from any of those parties that
14 were notified?

15 A. We have not to date.

16 Q. Turn to Exhibit E and identify that for us.

17 A. Exhibit E is a certificate of mailing
18 stating that we in fact have notified all of the
19 parties in Exhibit D.

20 Q. Let's go back and have you give us a summary
21 of how the participating areas work and how you expand
22 a participating area for the Pictured Cliffs production
23 and then for the Fruitland coal-gas production?

24 A. Probably the best way to talk about this and
25 illustrate it is to go back to Exhibit A. As you will

1 note, we have developed Pictured Cliffs participating
2 area. We're currently in the 24th expansion of that
3 participating area. The Huerfano Unit provides that
4 those participating areas do not in fact have to be
5 contiguous. And as you will see on the map, they are
6 not contiguous in their entirety.

7 The only Fruitland commercial well we have
8 to date we have discussed in the north half of 28, 26
9 north 9 west. All the wells in the Huerfano Unit are
10 initially drilled on a drillblock basis. And there are
11 some exceptions in the Huerfano Unit, on how you can
12 approach that differently. But basically, they're
13 drilled on a drillblock basis.

14 And then if the well is deemed commercial,
15 then that well is brought into the existing
16 participating area. Or if we did not have a prior
17 existing participating area, we would create a
18 participating area for that formation. We do have
19 participating areas for both of the formations that
20 we're dealing with this morning.

21 So if these wells are commercial in these
22 particular reservoirs, we will expand the appropriate
23 participating area to include these wells. And then
24 the parties in that participating area as well as the
25 drillblock will share in all of that production within

1 the Unit boundaries.

2 Q. If the Division approves your application,
3 do you see any opportunity for the violation of
4 correlative rights?

5 A. No. I believe the unit agreement fully and
6 adequately protects the interest owners and has
7 evaluated the issue of correlative rights. So I do not
8 see a correlative rights issue within the unit
9 boundaries.

10 Q. What does Meridian as operator achieve if
11 the Division approves an administrative procedure by
12 which future downhole comminglings can be processed
13 administratively for wells within the Unit area?

14 A. Well, we believe that we can make the
15 procedure much less complex and time consuming for both
16 the commission and for Meridian and for the working
17 interest owners in that we do not have to notify a very
18 large quantity of people every time we wish to pursue a
19 commingling opportunity in these reservoirs.

20 Q. At this point, without that procedure, every
21 individual downhole commingling well that you seek to
22 drill in the future or to commingle in the future is
23 going to require a hearing?

24 A. That is correct.

25 Q. Technically, you currently have difference

1 in ownership because you have differences in
2 participating areas?

3 A. That is correct. And that is likely in most
4 all probability will continue in the future as we
5 develop these reservoirs.

6 MR. KELLAHIN: That concludes my examination
7 of Mr. Alexander. Mr. Examiner, we move the
8 introduction of his Exhibits A through E.

9 EXAMINER STOGNER: Exhibits A through E will
10 be admitted into evidence. Mr. Alexander, looking at
11 Exhibit Letter A, what does the heavy green line
12 represent?

13 THE WITNESS: The heavy green line
14 represents the Huerfano Unit boundaries. Let me
15 clarify that for you. That is the acreage that's
16 dedicated to the Huerfano Unit. If you go back to the
17 original Huerfano Unit agreement, that boundary
18 actually covers other acreage that was never committed
19 to the Unit. So I wish to clarify that point for you.

20 EXAMINER STOGNER: Now let me make sure that
21 I understand. On the administrative procedure, on what
22 area you're requesting that it cover, you're seeking
23 that it just cover the Pictured Cliffs, participating
24 areas and the two pools that you alluded to only?

25 THE WITNESS: No, sir. We're asking that it

1 include both the Fruitland and the Pictured Cliffs
2 formations.

3 EXAMINER STOGNER: Let me rephrase my
4 question. The area in which you're seeking for this
5 administrative procedure represented on Exhibit A is
6 just the red hash-marked areas shown in the northwest
7 and the northeast portion of the Unit that are only in
8 the West Kutz-Pictured Cliffs and the Ballard Pictured
9 Cliffs.

10 THE WITNESS: No, sir. We're actually -- I
11 just represented those areas so you would see the two
12 pools that we're dealing with. Actually, they're one
13 participating area. But we have notified all of the
14 owners in the Huerfano Unit and immediately offsetting
15 the boundary of the Huerfano Unit for both the Pictured
16 Cliffs formation, regardless of the pool that it's in,
17 and for the Fruitland formation.

18 So we're asking for an administrative
19 procedure any time that we would drill or commingle a
20 well, whether that would be a new drill well or an
21 existing well that we're recompleting and commingling
22 in the Fruitland Coal and the Pictured Cliffs
23 regardless of the pool of the Pictured Cliffs, that we
24 be granted an administrative procedure to accomplish
25 that. Now that can be anywhere within the unit

1 boundaries that we're asking for that.

2 EXAMINER STOGNER: And when you refer to the
3 Unit boundary, you're referring to the large green
4 area?

5 THE WITNESS: Yes, sir, that's correct.

6 EXAMINER STOGNER: Now let me make sure that
7 I understand this. Forgive me. Because you only
8 mentioned two pools. You're talking about just where
9 those two pools are in the heavy green area, nothing
10 more? Just where those two pools are located?

11 MR. KELLAHIN: No, sir. That's still not
12 right.

13 THE WITNESS: We're asking, any time we
14 would encounter the Fruitland Coal or the Pictured
15 Cliffs formation, regardless of which pool it is, that
16 we be allowed this administrative procedure as long as
17 that well is located inside of the Huerfano Unit
18 boundary that is illustrated on Exhibit A.

19 We do not intend to ask for a limitation
20 specifically just to the West Kutz and the Ballard
21 Pictured Cliffs pool. We're asking that for the
22 Pictured Cliffs formation, regardless of what pool that
23 might eventually be dedicated to or is currently
24 dedicated to.

25 EXAMINER STOGNER: And you're alluding to

1 the Ballard Pictured Cliffs and the West Kutz-Pictured
2 Cliffs then, in this particular instance, was where the
3 three wells were?

4 A. Yes, sir, that's correct. That's the only
5 reason we wanted to describe those, so you understood
6 which pools we were actually dealing with today. We
7 did not intend that to be a limitation on the
8 administrative procedure.

9 EXAMINER STOGNER: Do you know if any of the
10 Pictured Cliffs pools that are within this Unit area
11 represented on Exhibit A are prorated under R-80RA-170
12 the gas proration rules and regulations?

13 THE WITNESS: Neither the -- to our
14 knowledge -- neither the West Kutz nor the Ballard are
15 prorated pools. I do not believe that we are dealing
16 with a prorated pool in the Huerfano Unit boundary.

17 EXAMINER STOGNER: How about the other two
18 pools that are represented -- two Pictured Cliff pools
19 that are represented in the Unit boundary.

20 THE WITNESS: I don't believe we're dealing
21 with a -- I have not made a study of the other Pictured
22 Cliffs pools to tell you that exactly. But I do not
23 believe that we're dealing with a prorated Pictured
24 Cliffs gas pool in the Unit boundary.

25 EXAMINER STOGNER: And neither at this time

1 is the Basin Fruitland Coal, is that prorated either;
2 is that correct?

3 THE WITNESS: No, sir, it is currently not
4 prorated.

5 EXAMINER STOGNER: In a nutshell, what do
6 you -- or perhaps this is the wrong witness -- see that
7 the administrative procedure -- how would that change
8 from what we already have in the general Rule 303-C?

9 THE WITNESS: The basic change is that since
10 we're dealing with participating areas in a federal
11 unit, we will nearly always be dealing with diverse
12 ownerships in the drillblocks where the wells are
13 drilled. Because you're probably dealing with a
14 participating area such as we're dealing with, with two
15 of the wells this morning, for one formation such as
16 the Pictured Cliffs formation.

17 And then the Fruitland Coal, since we have a
18 very small participating area there. And even if we
19 had a larger participating area, you're going to be
20 dealing with two separate participating areas which
21 involve two sets of ownerships in nearly all cases. So
22 therefore, we would have to come to hearing because we
23 have diverse ownerships in each and every case if we
24 didn't get the administrative procedure to handle this.

25 MR. KELLAHIN: That's the only change, Mr.

1 Examiner, from the Rule 303 Administrative Processing.
2 We'll meet all the other requirements, but we want a
3 waiver on that part that deals with diverse ownership.

4 EXAMINER STOGNER: With all other
5 requirements in 303-C being applicable?

6 THE WITNESS: Yes, sir, that's correct.

7 EXAMINER STOGNER: When I refer to Exhibit
8 -- I guess Exhibits C and B and Exhibit D being the
9 return receipts and notification list, does Exhibit D,
10 the mailing list, represent your Exhibit C, the diverse
11 interests?

12 THE WITNESS: It represents that, and it
13 represents the owners that are located immediately
14 outside of the unit boundary. The Exhibit C lists
15 represent those parties that are currently owners in
16 the Huerfano Unit. In the various participating
17 areas.

18 EXAMINER STOGNER: Just referring to the
19 list of Exhibit D, of people that were notified, did
20 Meridian receive any negative comments or objections to
21 this proposed procedure?

22 THE WITNESS: No, sir. Not from the list of
23 these parties are listed on -- behind Exhibit D. We
24 did receive an inquiry from the Gas Company of New
25 Mexico. But they're not listed as an owner on Exhibit

1 D, and we do not believe they in fact do own an
2 ownership anywhere within the Huerfano Unit. That's
3 the only inquiry that we did receive about this
4 application, was from the Gas Company of New Mexico.

5 EXAMINER STOGNER: I have no further
6 questions of Mr. Alexander at this time, Mr. Kellahin.
7 Do you have any additional questions?

8 MR. KELLAHIN: No, sir.

9 EXAMINER STOGNER: Does anybody else have
10 any questions of Mr. Alexander? If not, you may be
11 excused. Mr. Kellahin?

12 MR. KELLAHIN: I'd like to call Mr. Scott
13 Daves.

14 SCOTT DAVES,
15 the witness herein, after having been first duly sworn
16 upon his oath, was examined and testified as follows:

17 EXAMINATION

18 BY MR. KELLAHIN:

19 Q. Mr. Daves, would you please state your name
20 and occupation.

21 A. My name is Scott Daves. I am a reservoir
22 engineer with Meridian oil.

23 Q. Mr. Daves, on prior occasions have you
24 testified as a reservoir engineer before the Division?

25 A. Yes, I have.

1 Q. In addition, have you testified in prior
2 cases concerning downhole commingling of various pools
3 with approval of the Division?

4 A. Yes, I have.

5 Q. Have you in the past worked on allocation
6 formulas and presented those allocation formulas to the
7 Division in which you were allocating Fruitland
8 coal-gas production with some other reservoir?

9 A. Yes, I have.

10 Q. And pursuant to your employment as a
11 reservoir engineer, have you accomplished those duties
12 with regard to this case?

13 A. Yes, I have.

14 MR. KELLAHIN: We tender Mr. Daves as an
15 expert reservoir engineer.

16 EXAMINER STOGNER: Mr. Daves is so
17 qualified.

18 Q. (BY MR. KELLAHIN) Let me have you turn to
19 Exhibit A and let's just use that as an illustration.
20 Let's talk first about the reservoir aspects of the
21 Pictured Cliffs formation. Give us a general sense of
22 where we are with regards to the two pools that are
23 being developed in portions of the unit and tell us
24 what you see the objective of Meridian is with approval
25 of this application insofar as it affects the Pictured

1 Cliffs.

2 A. Where we see the Pictured Cliffs right now
3 is, it's basically a somewhat depleted reservoir where
4 the reservoir pressures are at or below typical
5 pipeline pressures in the area. And it's a sandstone
6 reservoir, basically it's driven by gas depletion.

7 Q. When you look over at the Ballard Pictured
8 Cliffs on the eastern edge -- northeastern edge of the
9 unit, describe for us the producing characteristics of
10 those current wells that are still capable of
11 production out of the Pictured Cliff within the unit
12 area?

13 A. They are typical sandstone reservoirs that
14 produce gas. There are no liquids that are produced
15 with them. They are at -- in the neighborhood of 175
16 to 200 pounds of reservoir pressure. And there again,
17 they do produce when line pressures are low enough to
18 produce.

19 Q. To take the two examples, Well 46 and 59
20 which are existing PC wells, and to recomplete them so
21 that they're downhole commingled with the Fruitland
22 coal-gas production, what are you attempting to attain?

23 A. What we're attempting to attain in these two
24 cases is a commingle that will allow us to produce the
25 existing reserves that are in the Pictured Cliffs down

1 to an abandonment and also produce the Fruitland
2 coal-gas that is associated with those coal reservoirs.

3 Q. Can you accomplish that with separate
4 wellbores?

5 A. No. It's uneconomic to do that.

6 Q. As you move into the Pictured Cliffs area
7 for the West Kutz, is there any significant difference
8 with the reservoir pressure between the two areas?

9 A. No. No, they're very similar.

10 Q. When you talk about a new drill, to drill a
11 well initially to be downhole commingled with Pictured
12 Cliffs and Fruitland productions, what are you
13 achieving with that configuration that you cannot
14 obtain if you were to drill those two pools separately?

15 A. An economic wellbore. An economic project.

16 Q. Describe for us what the general ranges of
17 the economics are.

18 A. In a Pictured Cliffs well, the cost to drill
19 one of these is such that it would take a well that had
20 approximately 750 million cubic feet of gas at an
21 initial rate of 300 MCF a day to make it an economic
22 project.

23 EXAMINER STOGNER: I'm sorry. What was that
24 daily rate?

25 A. 250 to 300 MCF a day.

1 EXAMINER STOGNER: I'm sorry. Go ahead.

2 THE WITNESS: That's all right.

3 Q. (BY MR. KELLAHIN) Do you expect to see
4 initially drilled wells within the unit area in the
5 Pictured Cliffs to have that level of productivity?

6 A. Probably not.

7 Q. Does this represent a salvage opportunity
8 for the unit owners to achieve additional Pictured
9 Cliff production that they might not otherwise achieve?

10 A. Exactly.

11 Q. Turn your attention now to the Fruitland
12 Coal. What's the opportunity there for Fruitland
13 coal-gas wells and why are you including that then with
14 the Pictured Cliffs for commingling purposes?

15 A. Primarily, the first thing that we notice is
16 that the formations are very close together. You can
17 drill a single wellbore that will allow you to get at
18 both reservoirs. And then to be able to produce them
19 together is a -- can you restate that question?

20 Q. Sure. On the Fruitland Coal, describe for
21 us why you can't successfully produce that reservoir
22 with a stand-alone well drill to the Fruitland Coal?

23 A. Oh, okay. So far the results that we've had
24 in the Huerfano Unit have been real mixed. Some wells
25 have been very successful. There was a commercial well

1 -- one well out of the entire unit that is deemed
2 commercial at this point in time. Now there may be
3 others ultimately that are. We're hoping that these
4 will be. But at this point, they're not commercial.

5 Q. Is it reasonable from a reservoir management
6 perspective to add the Pictured Cliffs into the
7 Fruitland Coal wellbore and produce both of the
8 reservoirs in a commingled wellbore?

9 A. Yes.

10 Q. That is an acceptable, efficient way of
11 producing those pools?

12 A. Yes, sir.

13 Q. Do you see any pressure differential?

14 A. Slight. Maybe 100 pounds of pressure
15 differential.

16 Q. It's going to be within 50 percent?

17 A. Right, right.

18 Q. Are there any fluid incompatibilities that
19 you see?

20 A. No, no.

21 Q. Any kind of water problems with either pool?

22 A. No.

23 Q. You've done this before, with other specific
24 wells, have you not?

25 A. Right.

1 Q. Has the commingling program been a success
2 for your company?

3 A. So far.

4 Q. Let's turn now to the specifics of Well 46.
5 Let me have you turn back to Exhibit N, and let's look
6 at the first display behind Exhibit N. Give the
7 Examiner your explanation of the wellbore schematic or
8 the illustration for Well 46 so he can see what you
9 propose to do with the well.

10 A. Okay. On the left-hand side, the wellbore
11 diagram you see there is what is currently in place.
12 The way that well was completed is a drill to right
13 above the Pictured Cliffs formation. They set casing
14 and then they moved off with the drilling rig and they
15 came back on with a cable tool. They drilled out the
16 final 200-plus feet and then they did a sand/water frac
17 and the well is produced like that since.

18 Q. And how would you change the configuration
19 to add in the Fruitland coal-gas production?

20 A. The only thing that we'll do differently is
21 that we will test the casing to insure its integrity.
22 And then we will move uphill and perforate and fracture
23 stimulate the Fruitland Coal and then we will commingle
24 the two.

25 Q. Turn now to the schematic for Well 59 which

1 is the next display and identify and describe that for
2 us?

3 A. Slightly different procedure here. Here
4 they drill to a total depth and then they ran casing
5 and cemented it. And then they perforated the Pictured
6 Cliffs and then they fracture stimulated it. And here
7 again, the only thing that we will do is, we will again
8 test the integrity of the casing and insure it's
9 suitable. And then we would perforate and fracture
10 stimulate the Fruitland Coal.

11 Q. You don't have an illustration of what you
12 propose to do with the third well?

13 A. The Huerfano 549?

14 Q. 549?

15 A. It would be almost identical to this right
16 here, the after picture, which would be the one on the
17 right, only we would fracture stimulate the Pictured
18 Cliffs first. And then we would move up and we'll
19 fracture stimulate the Fruitland Coal.

20 Q. Have you reviewed the geologic information
21 that has been prepared by Meridian geologists
22 concerning the mapping of both the Fruitland Coal and
23 the Pictured Cliffs reservoirs within the unit
24 boundary?

25 A. Yes, I have.

1 Q. As a reservoir engineer, do you see any
2 opportunity that the Pictured Cliffs well drilled
3 within the unit boundary will be any different than the
4 kinds of Pictured Cliffs wells that are currently
5 producing within that boundary?

6 A. No. They should be identical.

7 Q. You don't see an opportunity for a new
8 wonderful Pictured Cliffs reservoir within the unit
9 boundary that can justify itself on stand-alone wells?

10 A. No. We've looked at the Pictured Cliffs
11 quite extensively in this area, and that's just not
12 feasible, I would say.

13 Q. What portion of the coal are we in in the
14 Huerfano Unit? Where are we located?

15 A. In the under-pressured area, typical
16 pressures range from 300 to 400 pounds. It's a dry
17 Fruitland Coal I guess you could call it, relatively
18 speaking, to some of the areas to the north where you
19 produce water. These Coals do not produce water.

20 Q. Have you developed a proposal for the
21 Examiner concerning an allocation formula?

22 A. Yes, I have. That's Exhibit O.

23 Q. Let's turn to Exhibit O. Let's look first,
24 if you will, at the Huerfano Unit 46 allocation
25 formula. Describe for us your method, and then we'll

1 talk about the specific details.

2 A. Okay. The method for the two recompletions
3 was essentially -- you have existing production for
4 each of these wells, and there's a decline curve for
5 each two pages back.

6 EXAMINER STOGNER: Excuse me just for a
7 second.

8 THE WITNESS: What all of the first part of
9 this exhibit shows is basically a mathematical
10 derivation of the line that you see on the --

11 MR. KELLAHIN: Let me catch up with you.
12 You're on the third page back, you're looking at the
13 production quad and then the forecast for the 46 Well?

14 A. Right.

15 Q. (BY MR. KELLAHIN) Let's look at that for a
16 moment. Describe for us what you see.

17 A. What you have here is, this is the Huerfano
18 Unit Number 46. On the right-hand side there, in that
19 box, you have different variables. You have a date,
20 cumulative productions, a reference date of 12/99, and
21 then if you move down, water per month, you can see
22 that the water there is nonexistent. Then you have a
23 cumulative production, a remaining, and then an EUR
24 there.

25 Q. Let's look at the remaining reserves to be

1 recovered. What is that volume?

2 A. That is 171 million cubic feet. And then
3 the initial rate that you're seeing there in a monthly
4 is 1077 MCF per month. And all the allocation formula
5 will do is basically forecast that line to abandonment.

6 Q. Okay. Now take that forecast and show us
7 how you plug it back in to allocation formula.

8 A. Okay. If you follow through here, what it
9 does is, it takes the last producing rate prior to
10 recompletion and then it goes through the decline
11 methodology there where the decline is equal to one
12 minus the rate -- current rate divided by the initial
13 rate. And the units -- and that's raised to the one
14 over years.

15 And Q2 is the rate that's at any future
16 date. And Q1 is the current rate at MCF per day. And
17 then that equation takes you where you can calculate,
18 at any given point, what the rate should be.

19 Q. Then what do you do?

20 A. That allows you to, at any point in time,
21 given the initial rate and that decline, forecast what
22 the rate should be per month.

23 Q. Once you've established by your calculation
24 the appropriate allocation for the Pictured Cliffs,
25 what do you do about the Fruitland coal-gas?

1 A. The Fruitland coal-gas will be any gas above
2 and beyond that monthly projection. So if you go
3 through this, what it's saying at the bottom here is
4 that the Fruitland Coal production is equal to the
5 total production minus that projected Pictured Cliff
6 production. And that the total is equal to the
7 Fruitland Coal production plus the Pictured Cliffs
8 production.

9 Q. That portion of the allocation formula
10 attributing gas to the Pictured Cliffs is taken from
11 specific production data --

12 A. Exactly.

13 Q. From this individual well?

14 A. Exactly. That comes right off that decline
15 curve.

16 Q. Let's take this now and look at what you do
17 for the 59 Well?

18 A. The process will be identical.

19 Q. Let's turn three pages back then and look at
20 the production decline plot for the 59 Well.

21 A. Okay.

22 Q. Describe for us what that shows.

23 A. What that's showing is a reference date.
24 You can see what the past production was. And that
25 straight line is the forecasted production. In the

1 column on the right-hand side, we have a remaining
2 Pictured Cliffs reserves, the years that it's forecast
3 to get to those reserves, and initial rate and an
4 established decline for that well specifically.

5 Q. Once you have that information, then, take
6 it back and plug it into the formula for us for Well
7 59.

8 A. Okay. Here again, you have an initial rate,
9 that would be the top equation, there. You're trying
10 to determine the decline. You have an initial rate,
11 and a rate at any given point. And one minus that will
12 give you the decline. So you can determine Q2 at any
13 point, which is equal to Q1 times one minus that
14 decline raised to the year of production.

15 And that will always give you -- that will
16 give you the allocated production for the Pictured
17 Cliffs. And then the total production of the Fruitland
18 Coal production is the total production minus that
19 allocated Pictured Cliffs production.

20 Q. Now take us to an example of a new drill
21 which is to be drilled initially for downhole
22 commingling purposes within the unit. How do you get
23 the information, then, to attribute accurate values to
24 the Pictured Cliffs portion of the allocation?

25 A. What we typically are looking for when we do

1 a new drill is, we evaluate the drill block itself and
2 surrounding drill blocks to determine an original gas
3 in place, a current gas in place, and we use biometric
4 methods, log analysis, that sort of thing. And we also
5 use material bounds which is pressure versus Q
6 production. In both of these pools we have been able
7 to establish that through various log analysis
8 techniques we can get agreement on material balance and
9 volumetric reserves.

10 And I'll walk through the description on the
11 Huerfano 549. Here again, we're saying total
12 production is equal to the Fruitland Coal production
13 plus the Pictured Cliffs production. We rearranged the
14 formula trying to solve for Fruitland Coal production
15 which is equal to the total production minus the
16 Pictured Cliffs productions.

17 And here, what we're saying is that Pictured
18 Cliffs production at any point in time is equal to the
19 initial rate times the nominal decline for a specific
20 well. And then we step down here and we saw how to
21 determine that nominal decline. And if you'll refer to
22 the very last page in that exhibit, I'll walk you
23 through a derivation of that.

24 In this particular case, through volumetrics
25 and material balance, we determine that the EUR for the

1 Pictured Cliffs will be equal to 1.08 times a reservoir
2 pressure times a given recovery factor. And there I
3 gave you an example if the reservoir pressure was 300
4 pounds, you would have a Pictured Cliffs EUR of 275.4
5 million cubic feet of gas. And I go through the
6 determination of the Pictured Cliffs initial rate which
7 says that the initial rate will be equal to the total
8 for the first month times the ratio of the Pictured
9 Cliffs flow test divided by the summation of the
10 Pictured Cliffs flow tests and the Fruitland Coal flow
11 tests. So there again, our first month's production
12 would be 15 million cubic feet of gas. Our Pictured
13 Cliffs flow test is 500 MCF a day. Our Fruitland Coal
14 flow test is 400 MCF a day.

15 And then I go through the mathematics to
16 determine that. And then I establish that Q , that the
17 first month's Pictured Cliffs initial rate would be 8.3
18 million cubic feet per month. And then I step down
19 here, and then I determine the decline rate which is
20 the initial rate divided by the abandonment rate, in
21 this case is 300 MCF per month or 10 MCF per day, and
22 divide that by the EUR, and that gives me a decline of
23 .029 which is 2.9 percent.

24 Now if you refer back to the two decline
25 curves for the Ballard, you see one is 2.2 percent and

1 the other is, I believe, 5.3 percent. So it's in that
2 range which would make sense, it's a similar
3 reservoir. And then you can solve for the Fruitland
4 Coal production which is equal to the total minus the
5 allocated Pictured Cliffs production. And that's
6 basically what I've done through the first page. And
7 then I gave you an example of how I would calculate
8 that.

9 The problem with a new drill is that you're
10 going into an area typically that doesn't have an
11 established decline curve for that specific
12 drillblock. Whereas in the case of a recompletion you
13 have that. So we're going through using the parameters
14 of the reservoir to determine that.

15 Q. In your opinion, is that a fair and
16 equitable method for allocating production between the
17 two reservoirs?

18 A. Yes, it is.

19 Q. If you were receiving revenues based upon
20 that allocation, would you be satisfied, Mr. Daves?

21 A. Yes, I would.

22 Q. Will this be an opportunity, if the Examiner
23 approves it, for Meridian to economically recover gas
24 that might not otherwise be recovered from the
25 reservoir, thereby preventing waste?

1 A. Yes.

2 Q. Will approval of this application protect
3 correlative rights?

4 A. Yes.

5 MR. KELLAHIN: That concludes my examination
6 of Mr. Daves. We move the introduction of his Exhibits
7 N and O.

8 EXAMINER STOGNER: Exhibits N and O will be
9 admitted into evidence at this time.

10 Mr. Daves, let's go back to the decline in
11 this area. Should I drill a well in the extreme
12 southern part of this, what would be your estimated
13 decline of that Pictured Cliffs -- what would you
14 assign to Wildcat down in the southern portion?

15 THE WITNESS: I would probably go through
16 the same process of mapping to determine -- or at least
17 estimate a volumetric EUR. And then subsequent to
18 drilling it, I would assess what the reservoir pressure
19 is via a seven-day build-up. And that way I could lock
20 in on what is the Pictured Cliffs reserve for that
21 specific drillblock. And at that point I would go
22 through the same testing procedure right here to nail
23 down a decline.

24 EXAMINER STOGNER: So that a different
25 decline would be assigned to any particular well

1 regardless of where you drill? Not a single decline,
2 but it would be estimated then with the information
3 that you had in that general area and then
4 extrapolated?

5 THE WITNESS: Right. Plus also having the
6 specific data for that wellbore. We would have logs,
7 we would have pressure data. We could pretty well very
8 comfortably assign what the reserves would be for that
9 drillblock.

10 EXAMINER STOGNER: Explain to me what kind
11 of a testing procedure a new well would go through from
12 time of completion.

13 THE WITNESS: Okay. Typically, how we're
14 doing these right now is that we drill, we log the
15 well, that way we can determine net pay porosity, those
16 sorts of parameters. We set casing with cement, we
17 come back with a completion rig, or now we're doing
18 these rigless, where we go in and clean out, and then
19 we perforate, fracture stimulate, clean up --

20 EXAMINER STOGNER: Okay. Let's go back. On
21 the perforation, which would you perforate?

22 THE WITNESS: The Pictured Cliffs. The
23 Pictured Cliffs only at this point. We fracture
24 stimulate the Pictured Cliffs, we clean it up, we flow
25 it back initially to allow this clean up and then we

1 shut it in for a seven-day build-up. Therefore, we get
2 the reservoir pressure. And then at that point we flow
3 test the well. We clean it up and flow test it.

4 EXAMINER STOGNER: For how long of a
5 period?

6 THE WITNESS: For 24 hours.

7 EXAMINER STOGNER: Okay. Continue.

8 THE WITNESS: And at that point, once we
9 have the reservoir pressure and the flow rate, then we
10 go and we set a bridge plug above the Pictured Cliffs,
11 between the Fruitland Coal and the Pictured Cliffs, and
12 do the same procedure for the Fruitland Coal. And do
13 the same sort of testing and also get a build-up
14 pressure and a flow rate.

15 EXAMINER STOGNER: Seven-day build-up, flow
16 rate of 24 hours.

17 THE WITNESS: Uh-huh.

18 EXAMINER STOGNER: After the coal has been
19 tested, then what's the procedure? Taking the bridge
20 plug out?

21 THE WITNESS: Right. Take the bridge plug
22 out, run tubing, flow the well, clean it up and then
23 shut it down. And then wait to get surface equipment
24 on it, and then tie it in.

25 EXAMINER STOGNER: At any time, is there any

1 need that you see for any additional test to be made?

2 THE WITNESS: No, no. The only other piece
3 of data you need at that point is the first month's
4 production.

5 EXAMINER STOGNER: When you say first
6 month's production, you're talking about the first
7 total month's productions?

8 THE WITNESS: Right. First 30 days.

9 EXAMINER STOGNER: And then your formula
10 kicks in?

11 THE WITNESS: Right. And from that point
12 on, your Pictured Cliff production and your reserves
13 are a known.

14 EXAMINER STOGNER: So I see the figure
15 $Qt(1)$, at any time that is that first month's
16 production from now on out?

17 THE WITNESS: Right.

18 EXAMINER STOGNER: In your earlier testimony
19 you said that the initial flow rate for Pictured -- or
20 this is what I understand -- initial flow rate for
21 Pictured Cliffs well in this area for economical
22 purposes or stand-alone would have to be about 250 to
23 300 MCF a day; is that correct.

24 THE WITNESS: Yes.

25 EXAMINER STOGNER: How about for Fruitland

1 Coal?

2 THE WITNESS: Somewhere in the neighborhood
3 of about 300 MCF a day. And this is for a new drill.
4 And about the same reserves.

5 EXAMINER STOGNER: How about for a
6 recompleted well?

7 THE WITNESS: Probably in the neighborhood
8 of about 200 MCF a day because they're about 2/3 of
9 what it would cost to drill a well.

10 EXAMINER STOGNER: Do you know, say over the
11 next year or two, how many recompletions or how many
12 new drills should this order be approved?

13 THE WITNESS: Not offhand. I wouldn't want
14 to give you a number that I'm not sure about. These
15 are the only two that are budgeted at this point, or
16 the only three that are budgeted right now for the
17 Huerfano Unit.

18 EXAMINER STOGNER: When I refer back to
19 Exhibit N, and this shows you Number 46 Well, that was
20 completed with 7 inch casings?

21 THE WITNESS: I believe it's either 4-1/2 --
22 5-1/2 inch casing. That was the standard completion
23 practice when this well was drilled -- was 9 to 5 inch
24 casing and 5-1/2 inch, two intermediate TD.

25 EXAMINER STOGNER: I'm assuming that your

1 Exhibit N contains a typo?

2 THE WITNESS: It's possible it does. I'm
3 not going to guarantee that that number's right. But
4 the standard practice in this part of the San Juan
5 Basin has been 9 to 5/8 and then 5-1/2, but in this
6 case it could be an exception to where it is 7 inch.
7 Really wouldn't be that much of a -- I mean, it
8 wouldn't make that much difference.

9 EXAMINER STOGNER: What do you mean, it
10 wouldn't make that much difference?

11 THE WITNESS: As far as the way that the
12 well's going to produce and the way that you would
13 complete it.

14 EXAMINER STOGNER: Can I run two strings of
15 tubing in a 7 inch well easier than a 5-1/2 inch?

16 THE WITNESS: Yeah, you could.

17 EXAMINER STOGNER: Or dual completion?

18 THE WITNESS: The problem that you're going
19 to run into with a dual completion is that you're going
20 to have to set dual facilities. And with dual
21 facilities, you're going to need dual meter runs,
22 you're going to need dual compressors, you're going to
23 need dual separation facilities, dual flow lines and
24 dual strings of tubing and a packet.

25 EXAMINER STOGNER: And that is represented

1 in your 250 to 300 MCF a day figure you've given me for
2 the Pictured Cliffs?

3 THE WITNESS: These wells are producing
4 approximately 20 and 47 MCF a day in the Pictured
5 Cliffs right now.

6 EXAMINER STOGNER: And how about for the
7 Fruitland Coal?

8 THE WITNESS: Okay. Somewhere in the
9 neighborhood of 2 to 300 MCF a day is what we're
10 estimating for the coal. But the way that we're doing
11 our economics on recompletions is that we're assuming
12 that we're only going to need the facilities that are
13 out there with the addition of a compressor and
14 utilizing the same string of tubing.

15 Ultimately, it would be more cost effective,
16 rather than to dual it, probably to flood back the
17 Pictured Cliffs and recomplete the Fruitland Coal
18 rather than adding all the additional surface
19 equipment.

20 EXAMINER STOGNER: I guess I'm not quite
21 clear on your economics for a dual completer as a
22 opposed to a downhole commingling. Now, I understand
23 what you're telling me, but how about a figure? How
24 about some sort of --

25 THE WITNESS: Okay. Then you would probably

1 be looking at needing somewhere in the neighborhood of
2 250 to 300 MCF a day to dual complete this well. And
3 that's assuming that your casing does have integrity
4 and that you wouldn't have to do an extreme amount of
5 work on it to repair your casing.

6 EXAMINER STOGNER: Now are you saying 250,
7 300 MCF a day for each zone, or total production?

8 THE WITNESS: For each zone.

9 EXAMINER STOGNER: Something still seems
10 amiss, because for a new drill you had to have 250 to
11 300. Now you're saying 250 to 300 for a dual
12 completion. But you only have one well.

13 THE WITNESS: I'm talking about the
14 Fruitland Coal Well.

15 EXAMINER STOGNER: A stand-alone Pictured
16 Cliff and a stand-alone Fruitland, the way I see your
17 economics, if we drilled one with 7 inch, as your
18 number 46 shows on your exhibit, and now you told me
19 that you really don't know about this well.

20 So therefore, I'm having to now question all
21 the other information that you show on this exhibit. I
22 will now have to probably go to our well files and
23 review that information myself, to see what is
24 accurate. As opposed to a single drill with a dual
25 completion. I'm still not catching why you still need

1 the same total volumes from each zone with only one
2 well?

3 THE WITNESS: I guess I'm not quite
4 understanding your question.

5 EXAMINER STOGNER: If I drill two wells side
6 by side in the Pictured Cliffs and the Fruitland Coal,
7 you're telling me I have to have 250 to 300 MCF a day
8 for it to pay out. If I drill one well and dual
9 complete it, I have to have the same production rates.
10 Where did the drilling costs go?

11 THE WITNESS: I guess I'm still not exactly
12 understanding.

13 EXAMINER STOGNER: I drill one well to dual
14 complete it. You're telling me that's going to cost
15 twice as much as drilling two? Or it's going to cost
16 me the same amount to drill two wells, one to the
17 Pictured Cliffs and one to the Fruitland Coal?
18 According to your economics, that's what I'm reading.

19 THE WITNESS: To drill a Fruitland Coal Well
20 straight up, by itself, complete it, facilitate it, and
21 put it into a production standpoint, now I'm talking a
22 drill well, it's going to take -- at a minimum of 300
23 MCF a day to make that an economic wellbore.

24 For a Pictured Cliffs Well, it's going to
25 take in the neighborhood of the same amount of rates --

1 the costs are fairly similar. It's going to take a
2 slightly less rate simply because the stimulations are
3 slightly different. But it's going to take in the
4 neighborhood of 200 to 250 MCF a day to make the
5 Pictured Cliffs Well economic. I think that's what I
6 said. Am I right?

7 EXAMINER STOGNER: I'm sorry? 200 to 250?

8 THE WITNESS: 250. More likely, 250.

9 EXAMINER STOGNER: Okay. So scratch the 250
10 to 300 that you originally stated. So now we're down
11 to 200 and 250 for Pictured Cliffs.

12 THE WITNESS: Say 250.

13 EXAMINER STOGNER: No, you said 200 to 250.
14 We'll stay with that.

15 THE WITNESS: Okay.

16 EXAMINER STOGNER: Let's don't change it
17 anymore. Unless you want to go lower?

18 THE WITNESS: No.

19 EXAMINER STOGNER: So for dual completion,
20 for it to be economical, I'd have to produce between
21 250 and 300 MCF in each zone?

22 THE WITNESS: No. From the coals.

23 EXAMINER STOGNER: Oh.

24 THE WITNESS: On a drill well, a new drill
25 well --

1 EXAMINER STOGNER: Dual completed.

2 THE WITNESS: Dual completed.

3 EXAMINER STOGNER: New drill.

4 THE WITNESS: You're going to need -- I'd
5 have to sit down and go through it -- but you're going
6 to need approximately a combined rate -- now are we
7 talking combined rates or single string rates? I need
8 to understand that part.

9 EXAMINER STOGNER: You tell me. Both.

10 THE WITNESS: Okay. The combined rates for
11 the two of them would probably be in the neighborhood
12 of 550 to 650 MCF a day. And there again, that's going
13 to depend on what the EUR's are on the Pictured Cliffs,
14 what the pressures are. It's not a straightforward
15 rate type thing. Because you have declines, you have
16 reserves, there's a lot of pieces that go into that
17 number. You can't just say it's 400 here and 200
18 here. There's more to it than that.

19 Essentially, a dual well is going to
20 probably cause you more problems. Because of the dual
21 strings, the dual surface facilities, that sort of
22 thing. And there again, you know, if all the other
23 pieces and parts to the order fit, and you can allocate
24 production adequately, it seems like it would be wiser
25 to use the more economic choice. I mean, that way you

1 don't create waste.

2 EXAMINER STOGNER: Let's go up to the
3 procedure in which you had told me the wells were
4 drilled and tested, showed a Pictured Cliffs well test
5 300 MCF a day. Would Meridian then still propose to
6 downhole commingle?

7 THE WITNESS: That would also be a function
8 of the reservoir pressure. If it had 500 pounds, you
9 may not. If it had 200 pounds, you probably wouldn't
10 want to dual it. Because your reserves would be quite
11 a bit less.

12 EXAMINER STOGNER: What parameters then,
13 should be placed on that first test to decide whether a
14 downhole commingling would be authorized?

15 THE WITNESS: I think if it meets the
16 criteria of the rules, the specific rules for downhole
17 commingling as far as pressure and gas contents, I
18 think those would be the main considerations.

19 EXAMINER STOGNER: Let's talk about the
20 economical role then. You're telling me that if you
21 have one Pictured Cliffs that has 300 MCF a day, that's
22 economic.

23 THE WITNESS: Provided you have the reserves
24 there.

25 EXAMINER STOGNER: And that seven-day

1 build-up and 24 hour test would be able to determine
2 those reserves?

3 THE WITNESS: Yes.

4 EXAMINER STOGNER: On your terminology in
5 your figures the N_p , capital N little p, that
6 represents ultimate recovery.

7 THE WITNESS: Pictured Cliffs estimated
8 ultimate recovery.

9 EXAMINER STOGNER: That is in what units,
10 MCF?

11 THE WITNESS: MMCF.

12 EXAMINER STOGNER: MMCF. I apologize for
13 being nitpicky, but I find that looking at calculations
14 like this you can miss a bunch until you start writing
15 them down.

16 THE WITNESS: Right. I try to put the units
17 in there so that would be fairly easy to follow along
18 with.

19 EXAMINER STOGNER: Now the Q figures are
20 shown in MCF per day?

21 THE WITNESS: And MCF per month.

22 EXAMINER STOGNER: And the decline, that is
23 a unitless figure.

24 THE WITNESS: Right. Actually it is a
25 unitless.

1 EXAMINER STOGNER: Okay. Because that just
2 shows --

3 THE WITNESS: What percentage of change in
4 production.

5 EXAMINER STOGNER: And represents a curve on
6 a scale or --

7 THE WITNESS: Right.

8 EXAMINER STOGNER: I have no other questions
9 of Mr. Daves at this time.

10 MR. KELLAHIN: Mr. Daves, do you have the
11 formulas on computer floppy disc?

12 THE WITNESS: Yes. I have all of that for
13 you.

14 MR. KELLAHIN: I'd like to call at this time
15 Mr. Tom Yersak.

16 TOM YERSAK

17 The witness herein, after first being sworn upon his
18 oath, was examined and testified as follows:

19 EXAMINATION

20 BY MR. KELLAHIN:

21 Q. Sir, would you please state your name and
22 occupation?

23 A. My name is Tom Yersak. I'm a senior staff
24 geophysicist for Meridian Oil.

25 Q. Mr. Yersak, on prior occasions have you

1 testified as a petroleum geologist before the Division?

2 A. I have.

3 Q. Pursuant to your employment in that
4 capacity, have you made a review of the geologic
5 information that's specific as to this application?

6 A. Yes, sir.

7 MR. KELLAHIN: We tender Mr. Yersak as an
8 expert petroleum geologist.

9 EXAMINER STOGNER: Mr. Yersak is so
10 qualified.

11 Q. (BY MR. KELLAHIN) Let me have you go
12 through the geologic information to complete the
13 presentation for Mr. Stogner. If you'll start at
14 Exhibit Tab F. Let's start with the orientation map,
15 and have you identify for us the lines for the two
16 cross-sections that are shown on that display.

17 A. Once again, you're looking at a picture of
18 the Huerfano Unit which is outlined in green and the
19 two cross-sections are the A-A' that will illustrate
20 Huerfano 46 and 59, and cross-section B-B' which will
21 illustrate Huerfano 549.

22 Q. Let's turn then to Exhibit G and look at the
23 A-A' prime cross-section. Give us an illustration of
24 the relationship between the Pictured Cliffs and the
25 Fruitland Coal that appears to be the interval that you

1 want to perforate in that well?

2 A. First of all, what the geologist is trying
3 to depict here are the coals. And you can pick the
4 coals on these particular logs -- these induction logs
5 -- by looking for the higher resistivity spikes. And
6 so what the geologist highlighted in black here, were
7 the coals. And you can see how the relationship of
8 those coals on top of the Pictured Cliffs in this
9 particular area -- they are Fruitland Coals that sit
10 right on top of the Pictured Cliffs sandstone unit.

11 Q. You did not prepare this particular
12 cross-section?

13 A. That's correct.

14 Q. Have you reviewed that information and is it
15 consistent with your understanding and belief?

16 A. That's correct.

17 Q. How does this relationship between the
18 Pictured Cliffs and the Fruitland Coal relate to other
19 areas of the Huerfano Unit? Do we see this same
20 relationship or does it change materially as you move
21 across the Unit?

22 A. We see the same relationship across the
23 Huerfano Unit. There basically is a Basal Coal
24 interval and a Rowley -- Upper Rowley Coal interval.
25 In between you can have isolated coal stringers that

1 will come and go. But generally speaking, the two main
2 producing intervals in the Fruitland are the Basal Coal
3 and the Rowley Coal. And they're pretty consistent
4 across the Huerfano Unit.

5 Q. Let's turn to cross-section B-B' prime and
6 have you show us that relationship.

7 A. I believe that's --

8 Q. Is that M?

9 A. Yeah, M.

10 Q. Again, summarize for us the geologic
11 conclusions about this cross-section which is Exhibit
12 M.

13 A. Once again, you're looking at a
14 cross-section of induction logs here, resistivity
15 logs. And here you can see the Basal Coal and the
16 Rowley Coal. You don't see quite as few coal stringers
17 in between as you do in the other area, but there are a
18 few, as you can see. And you can see that that Basal
19 Coal does in fact sit right on top of the Pictured
20 Cliffs.

21 One thing that I'd like to mention, it's
22 probably of interest, in terms of the development of
23 the Fruitland Coal in this area, is that, you know, we
24 can't -- we can calculate net pay for the Pictured
25 Cliffs. We can't calculate net pay for the coals. But

1 we can qualitatively address the cleating or the
2 fracturing of the coals. You know, that's addressing
3 the permeability. And I can give us some idea whether
4 or not we think these coals are going to produce a
5 little bit better than ones that are not so good. What
6 we look at is on the SP. And it has some SP,
7 specialist potential, then we can hint that it might
8 have some better cleating.

9 But that's not always a -- there are
10 exceptions to that. We have drill coals that were not
11 very well cleated that had SP development. But there
12 seems to be some relationship between coal wells that
13 have SP development and good production and coal wells
14 that don't have SP development and poor production.

15 So we see an opportunity in the Huerfano
16 Unit to try to develop the Fruitland Coal. And what we
17 want to do is basically address that opportunity, at
18 the same time addressing the PC. The Huerfano Unit is
19 pretty much -- it's highly drilled up. And as far as
20 defining the reservoir, it's pretty much defined. I
21 could sit here and tell you that it's a highly
22 stratigraphic package of sediments. But pretty much,
23 you're not going to drill into a new sand that has not
24 been drilled into before.

25 So we're not going to be talking about some,

1 you know, hidden gas potential within the units that
2 has virgin reservoir pressures. We're dealing with a
3 reservoir that has been producing for quite a few years
4 and is pressure depleted.

5 Q. Let me have you identify the other geologic
6 displays that are included in the exhibit book.

7 A. Which ones do you want to start with?

8 Q. Let's look briefly at Exhibit H which is the
9 isopach on the Fruitland Coal?

10 A. Right.

11 Q. Simply to orient the Examiner within the
12 Fruitland Coal as to these wells and at least as to
13 coal thickness of this isopach, is that going to be a
14 significant parameter for you as a geologist in
15 determining the best location for Fruitland coal wells?

16 A. No, it isn't.

17 Q. Let's turn now to --

18 A. And you understand why. Because this is an
19 net isopach of all the coals. But I can't, by looking
20 at the logs, say, "Okay, this is net pay". And then I
21 can -- I can't calculate the amount of gas in place,
22 recoverable gas in place that the Fruitland Coals are
23 going to produce. I can do that for the Pictured
24 Cliffs.

25 Q. Let's look at the Pictured Cliffs then, when

1 we see Exhibit I. Identify that display for us.

2 A. Okay. That is a net pay isopach of the
3 Pictured Cliffs.

4 Q. Is this the kind of display that Mr. Daves
5 is talking about when he says he has information from
6 which he can, by volumetrics, calculate gas in place in
7 the Pictured Cliffs?

8 A. That is correct. And when you are
9 addressing the new drill, the Huerfano 549, essentially
10 drilling it an undeveloped 160, that's kind of a
11 misnomer. It isn't really an undeveloped 160. The
12 sands under that acreage are pressure depleted, in
13 other words, gas has been produced from the Pictured
14 Cliffs even though there hasn't been a well drilled
15 directly on that 160. You know, and pressure can be
16 directly related to what the well is going to
17 ultimately produce.

18 So what we're saying is, when we drill that
19 new well, we're not going to drill into virgin
20 pressure. There's already been gas produced out of
21 that 160 acres, and that we're going in at some lower
22 formation pressure.

23 And now Scott, our reservoir engineer, he
24 can take that number and he can, from material balance,
25 he can plot pressure versus cumulative production. And

1 he can predict the amount of gas in place. Essentially
2 knows how much gas has been produced. He knows how
3 much gas is in place. He knows how much gas is left
4 behind that can still be produced.

5 Now, he can back into that number in two
6 ways. He can come to me, and what we've discovered is
7 that we can go through and calculate the gas in place
8 via another method and that's volumetrics. And what we
9 can do is, we can take logs, and from the logs we can
10 calculate the net feet of pay. Then we can go through
11 a, you know, a calculation based on the average
12 porosity, the water saturation, and then we can come up
13 with a geologic gas in place. And what we found was
14 that that number substantiates the number that Scott
15 has predicted using material balance.

16 So we feel very comfortable that when we --
17 we're dealing with new drills, we can look at the
18 geologic data and we can get some estimate of what that
19 gas in place is. When we might not have any
20 pressure-cum data or any other data to go on to get
21 some idea of the reserves.

22 Q. In your opinion as a geologist, is the
23 geologic mapping for the Pictured Cliffs adequate for
24 which you can have the engineer reliably estimate gas
25 in place for the Pictured Cliffs within the unit area?

1 A. It is. It is.

2 Q. There are areas in the unit that don't have
3 Pictured Cliff wells. But do you have log data from
4 other wells in that area to give you a handle on the
5 Pictured Cliffs?

6 A. We do.

7 Q. So the absence of a Pictured Cliffs well in
8 the unit doesn't mean that you have a lack of Pictured
9 Cliffs data?

10 A. Right.

11 Q. Do you see from a geologist's perspective
12 that you have any pockets within Huerfano Unit that are
13 going to be viable candidates for stand-alone wells?

14 A. No. And that's getting back to the idea
15 that basically when you look at that net pay isopach
16 it's looking at a package -- sand package. There's
17 multiple sands in there.

18 That unit has been drilled sufficiently to
19 tap into all the various sandstone reservoirs to
20 produce at West Kutz, at Ballard. We pretty much --
21 not pretty much -- we have the reservoir -- the
22 characterization of the reservoir pretty much defined.
23 There are not going to be any hidden sandstones that
24 have not been drilled.

25 Q. Let's look, for example, to complete the

1 discussion, on Exhibit J. If you'll turn to the net
2 isopach on the PC. Let's find the new drill -- the
3 Huerfano 549. It's in the northeast of 33?

4 A. Right.

5 Q. Look in the southeast of that same section.
6 Was there a previous attempt in the Pictured Cliffs?

7 A. Yes, there was.

8 Q. What were the results of that well?

9 A. I don't know exactly how much that well
10 cumed, but I do know that it's now plugged and
11 abandoned, that particular well.

12 Q. That's the kind of drainage thing you are
13 looking at from a geologic perspective is that that
14 sand package is connected with a wellbore that's now
15 abandoned?

16 A. Right.

17 Q. You have similar information as we move
18 throughout the unit then, to illustrate the Pictured
19 Cliffs? It may not all be in here, but you have that
20 at Meridian?

21 A. Right.

22 Q. Let me have you identify the rest of the
23 displays then. Exhibit K, what is this?

24 A. That's a net thickness map of the coal for
25 the Huerfano 549.

1 Q. Okay. And then Exhibit L?

2 A. M is a structure map.

3 Q. I'm looking at L.

4 A. Oh, excuse me. Right. That is a structure
5 map on the base of the last group and coal for the
6 Huerfano 549.

7 Q. And finally, M is the cross-section we've
8 already talked about?

9 A. Right.

10 Q. Give me your sense as a geologist of the
11 objective of this particular application and what you
12 hope to accomplish if the Division Examiner approves
13 the application. What does this afford Meridian an
14 opportunity to do?

15 A. Well, it affords Meridian the opportunity to
16 develop the Fruitland Coals and at the same time, be
17 able to produce the remaining gas reserves out of the
18 Pictured Cliffs. We've gone through some extensive
19 dialogue already in terms of the economics, why it's
20 prudent that we commingle the wells rather than dual
21 complete them or drill stand-alone wells.

22 But basically, if we don't -- it is our
23 contention that it makes good business sense to -- for
24 existing PC wells to go up and perf -- and in fact, the
25 Fruitland Coals and commingle it with the existing PC

1 production for new drills, it still makes sense, if
2 you're going to drill a Fruitland coal well, you're so
3 close to the Pictured Cliffs you might as well go down
4 and drill with the Pictured Cliffs and also commingle
5 with the two reservoirs that way.

6 Q. From a geologic perspective, does that make
7 sense to you?

8 A. Yes, it does.

9 MR. KELLAHIN: This concludes my examination
10 of Mr. Yersak. We move the introduction of his
11 Exhibits F through M.

12 EXAMINER STOGNER: Exhibits F through M will
13 be admitted into evidence.

14 I've heard testimony today, Mr. Yersak,
15 about the Fruitland Coal in this area being dry and not
16 water productive. Is there any associated water
17 production? I mean, do we see absolutely zero, totally
18 dry? Or is there some water production with the
19 coal-gas?

20 THE WITNESS: Well, within the Huerfano Unit
21 there is none. Within the -- you know, Scott and I
22 talked about the fact that we're in the under-pressured
23 portion of the Fruitland Coal. Within the
24 under-pressured portion of the Fruitland Coal there are
25 areas where the coals do produce some water.

1 EXAMINER STOGNER: Do you see the Pictured
2 Cliffs as being harmed by any such water encroachment
3 if there should be any? Should the well be shut in for
4 any reason?

5 THE WITNESS: No.

6 EXAMINER STOGNER: Is the Pictured Cliffs --
7 does it have any associated water production?

8 THE WITNESS: As Scott has testified, no.

9 EXAMINER STOGNER: But you know of no
10 geological reasons for it to be water sensitive?

11 THE WITNESS: Right. We're not dealing with
12 any water sensitive clays that --

13 EXAMINER STOGNER: We're talking coal and
14 sand essentially?

15 THE WITNESS: Coal and sand.

16 EXAMINER STOGNER: You stated earlier that
17 the Huerfano Unit has essentially been drilled up.
18 When I see Exhibit Number A, I see a large area that
19 doesn't have any wells. Am I to assume when I look at
20 Exhibit A or the map of the unit area that you're
21 referring to Dakota or Mesa Verde area?

22 THE WITNESS: That is correct.

23 EXAMINER STOGNER: In which you get the
24 information from those logs because it's logged through
25 that interval?

1 THE WITNESS: Right.

2 EXAMINER STOGNER: I have no other questions
3 of this witness, Mr. Kellahin.

4 MR. KELLAHIN: That concludes our
5 presentation, Mr. Examiner. If you desire to do so, we
6 have for your convenience, a computer disc that's got
7 the formulas already on it, if you want to use it.

8 EXAMINER STOGNER: Yes, I would. I will be
9 glad to accept them. I will return this to you.

10 MR. KELLAHIN: You may keep it. It's an
11 extra one.

12 EXAMINER STOGNER: Somewhat out of the
13 ordinary, Mr. Kellahin, there has been some discussion
14 on some other commingling activity with Pictured Cliffs
15 and Fruitland Coal. What I've heard today, generally
16 speaking, can this information -- is it also applicable
17 to other comminglings of this nature or proposed
18 comminglings of this nature in the San Juan Basin? In
19 particular, I refer to cases 10721 through 25 that we
20 heard -- what -- four weeks ago?

21 MR. KELLAHIN: Mr. Daves was the expert
22 engineering witness on some of those cases. He's been
23 working on all the formulas. And perhaps those
24 questions are best put to him. If you want to recall
25 him as to that question, I think the better answer

1 comes from him.

2 EXAMINER STOGNER: Okay. Let's do that
3 while we're on it. I know it's somewhat out of the
4 ordinary, but we're somewhat loose. But at the same
5 time, I think it's important to put it on the record
6 should any other, say, federal government entity review
7 such commingling procedures for any particular
8 purposes.

9 MR. KELLAHIN: Let me take just a second
10 here, and I can give you the reference as to those case
11 numbers and to the individual wells so that you and Mr.
12 Daves are working with the same information.

13 EXAMINER STOGNER: And I'll tell you what,
14 I'll let you ask the question. That may be able to
15 speed this procedure and process up a little bit.

16 EXAMINATION

17 BY MR. KELLAHIN:

18 Q. Mr. Daves, let me show you a summary of some
19 of the prior cases we've presented to the Division.
20 Specifically, they're the wells involved in the prior
21 hearing. They are cases 10721 through 25. You
22 participated in some of those cases, did you not, sir?

23 A. Uh-huh.

24 Q. I've shared with the Examiner a tabulation
25 or an index of those cases. The various components we

1 had for describing how to categorize the requests in
2 those individual cases?

3 A. Right.

4 Q. Let me have you take that information, and
5 from that point of view compare it to what you're
6 seeking to do in the Huerfano Unit insofar as the
7 commingling?

8 A. Would you like me to go down one by one
9 through these?

10 Q. I think so. I think it might be helpful.
11 Let's look at it.

12 A. If I might, I'd like to start with the Road
13 C101, which is 10724. Its pools are based on Fruitland
14 Coal, the Pictured Cliffs and West Kutz. The ownership
15 in each of these is common. The issue here essentially
16 was nonstandard location and commingle. In this case,
17 we were determining that both formations as a
18 stand-alone would be uneconomic.

19 Q. The road C101 could have been processed
20 administratively except it included nonstandard
21 location?

22 A. That's correct.

23 Q. But within the context of that case,
24 Meridian presented the technical data that they would
25 have otherwise submitted administratively for downhole

1 commingling purposes?

2 A. Correct. And that is -- and each of these
3 are on that disc that you presented Mr. Stogner.

4 Q. When we see the column on the far right that
5 says subeconomic, you were dealing with PC and
6 Fruitland Coal. Is the criteria used to justify those
7 reservoirs being subeconomic the same kind of criteria
8 that you've applied to Huerfano Unit?

9 A. Exactly.

10 Q. When we go down to the Road C102, again, the
11 same question?

12 A. Right.

13 Q. Are you consistently applying the same
14 criteria economically with regards to well costs and
15 projection of future reserves?

16 A. Exactly.

17 Q. In addition to current rates?

18 A. Right.

19 Q. And then the Whitley A-100, how does that
20 compare to the current case?

21 A. It's very similar. The same criteria are
22 being used to run the economics to allocate the
23 reserves. It's an identical process.

24 Q. The last two, the Rowley, 7500 and the
25 McAllens 7500 are slightly different insofar as the

1 testimony was the Fruitland Coal could probably be
2 justified in many instances as stand-alone?

3 A. Right.

4 Q. But that the PC could not?

5 A. Right.

6 Q. And that the only way to produce a Pictured
7 Cliff was downhole commingling rather than dual
8 completion or stand-alone PC?

9 A. Right.

10 Q. Again, same criteria, same methodology, same
11 economics applied in all those cases as you applied to
12 the Huerfano Unit wells?

13 A. Right.

14 MR. KELLAHIN: If it would aid you, Mr.
15 Examiner, Mr. Daves and I would be happy to supplement
16 the presentation and provide you a little economic
17 summary that he can double check and verify with
18 regards to projections of costs involved so that you
19 can be satisfied that these are truly forecasted on a
20 reasonable method to give you subeconomic situations
21 where the only viable means of extracting the
22 additional gas is the commingling procedure.

23 EXAMINER STOGNER: Now are you talking about
24 the wells today, or the wells that we were alluding to
25 in the other previous cases?

1 MR. KELLAHIN: I propose to do it for all
2 the cases. Today's case and the previous ones so that
3 you can see the entire pattern of the economic process
4 that we've gone through to justify these wells.

5 EXAMINER STOGNER: I would appreciate that
6 because then I will make my presentation to my
7 supervisor and make it my presentation to him.

8 THE WITNESS: Would it help to provide you
9 which a generic curve that would show you Pictured
10 Cliffs EUR's and rates as to where the break-offs would
11 be for cutoff parameters for dual completion of
12 stand-alones? I mean, that seems to me to be a real
13 easy pictorial way to verify it. I've had to do that.

14 EXAMINER STOGNER: Mr. Kellahin, if you
15 think that Mr. Daves' suggestion would help in that
16 proposal that you're suggesting, I think it would be
17 somewhat helpful.

18 MR. KELLAHIN: All right. Sir, if you'll
19 give us the opportunity to supplement the record with
20 that information. That concludes our presentation.

21 EXAMINER STOGNER: Okay. What kind of time
22 frame are you looking at?

23 THE WITNESS: A week.

24 EXAMINER STOGNER: A week.

25 MR. KELLAHIN: Next Friday this time.

1 EXAMINER STOGNER: Before I take this case
2 under advisement, the discussion was held just to
3 downhole commingling. And should there be any
4 non-standard location or other exceptions to the
5 general rules and regulations that will be handled
6 accordingly, Mr. Kellahin?

7 MR. KELLAHIN: That is our intent, Mr.
8 Examiner.

9 EXAMINER STOGNER: Thank you. In that case,
10 case number 10735 will essentially be taken under
11 advisement. I will hold the record open just pending
12 the information that you're proposing, Mr. Kellahin.

13 MR. KELLAHIN: Thank you.

14 EXAMINER STOGNER: Before I call a recess,
15 is there anything further in case 10735? Let's take a
16 20 minutes recess.

17
18
19
20 I do hereby certify that the foregoing is
21 a complete record of the proceedings in
22 the Examiner hearing of Case No. 10735
23 heard by me on 11/3/93 1993
24 [Signature], Examiner
25 Oil Conservation Division

1 CERTIFICATE OF REPORTER

2
3 STATE OF NEW MEXICO)

4) ss.

5 COUNTY OF SANTA FE)

6 I, Lisa Danner-Suggs, Certified Court
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 involved
14 in this matter and that I have no personal interest in
15 the final disposition of this matter.

16 WITNESS MY HAND AND SEAL, June 14, 1993.

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18
19

20 
LISA DANNER-SUGGS
CCR No. 257

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