NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JUNE 3, 1993 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
William F. Carr	Campbell, Carr, Berge and Sheridan	Santa Fe
W. Perry Pearce	Kellahin & Kellahin	Santa Fe
Cecilia S. Leonard	MW Petroleum Corp	Houston TX
Victor T. Lyon	Gas Co. of NM	Santa Fe
Carolyn Hunter	MW Petroleum Corp	Houston
Bill Hawkins	Amoco Production Co	Denver

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JUNE 3, 1993 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION

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

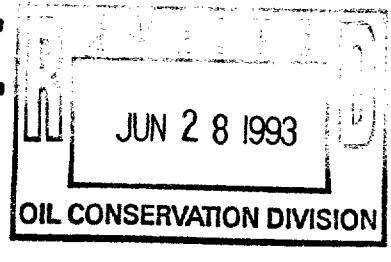
BEFORE: Michael E. Stogner, Hearing Examiner

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.

ORIGINAL



I N D E X

June 3, 1993
Examiner Hearing
CASE NO. 10735

E X H I B I T S

A P P E A R A N C E S

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

EXAMINER STOGNER:

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

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

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

(Witnesses sworn.)

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

ALAN ALEXANDER

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

EXAMINATION

BY MR. KELLAHIN:

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

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

Inc. in their Farmington, New Mexico office.

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

A. Yes, I have reviewed that.

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

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

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

A. Yes, we have.

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

A. Yes, I am.

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

EXAMINER STOGNER: Mr. Alexander is so

qualified.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

EXAMINER STOGNER: Is this part of the exhibit today?

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

for commingling.

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

MR. KELLAHIN: Thank you, sir.

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

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

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

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

administratively without the necessity of notice of hearing?

A. Yes, we are.

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

A. That is correct.

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

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

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

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

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

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

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

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

production or the Pictured Cliffs formation production?

A. Yes, we have.

Q. And how is that shown?

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

Q. Including their addresses?

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

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

A. We have not to date.

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

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

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

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

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

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

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

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

the Unit boundaries.

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

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

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

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

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

A. That is correct.

Q. Technically, you currently have difference

in ownership because you have differences in participating areas?

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

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

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

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

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

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

include both the Fruitland and the Pictured Cliffs formations.

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

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

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

boundaries that we're asking for that.

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

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

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

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

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

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

EXAMINER STOGNER: And you're alluding to

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

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

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

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

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

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

EXAMINER STOGNER: And neither at this time

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

MR. KELLAHIN: No, sir.

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

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

SCOTT DAVES,

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

EXAMINATION

BY MR. KELLAHIN:

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

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

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

A. Yes, I have.

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

A. Yes, I have.

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

A. Yes, I have.

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

A. Yes, I have.

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

EXAMINER STOGNER: Mr. Daves is so qualified.

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

Cliffs.

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

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

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

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

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

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

Q. Can you accomplish that with separate wellbores?

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

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

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

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

A. An economic wellbore. An economic project.

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

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

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

A. 250 to 300 MCF a day.

EXAMINER STOGNER: I'm sorry. Go ahead.

THE WITNESS: That's all right.

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

A. Probably not.

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

A. Exactly.

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

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

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

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

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

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

A. Yes.

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

A. Yes, sir.

Q. Do you see any pressure differential?

A. Slight. Maybe 100 pounds of pressure differential.

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

A. Right, right.

Q. Are there any fluid incompatibilities that you see?

A. No, no.

Q. Any kind of water problems with either pool?

A. No.

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

A. Right.

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

A. So far.

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

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

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

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

Q. Turn now to the schematic for Well 59 which

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

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

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

A. The Huerfano 549?

Q. 549?

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

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

A. Yes, I have.

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

A. No. They should be identical.

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

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

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

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

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

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

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

talk about the specific details.

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

EXAMINER STOGNER: Excuse me just for a second.

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

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

A. Right.

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

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

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

recovered. What is that volume?

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

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

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

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

Q. Then what do you do?

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

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

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

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

A. Exactly.

Q. From this individual well?

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

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

A. The process will be identical.

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

A. Okay.

Q. Describe for us what that shows.

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

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

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

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

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

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

A. What we typically are looking for when we do

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

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

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

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

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

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

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

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

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

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

A. Yes, it is.

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

A. Yes, I would.

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

A. Yes.

Q. Will approval of this application protect correlative rights?

A. Yes.

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

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

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

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

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

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

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

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

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

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

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

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

EXAMINER STOGNER: For how long of a period?

THE WITNESS: For 24 hours.

EXAMINER STOGNER: Okay. Continue.

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

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

THE WITNESS: Uh-huh.

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

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

EXAMINER STOGNER: At any time, is there any

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

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

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

THE WITNESS: Right. First 30 days.

EXAMINER STOGNER: And then your formula kicks in?

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

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

THE WITNESS: Right.

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

THE WITNESS: Yes.

EXAMINER STOGNER: How about for Fruitland

Coal?

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

EXAMINER STOGNER: How about for a recompleted well?

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

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

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

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

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

EXAMINER STOGNER: I'm assuming that your

Exhibit N contains a typo?

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

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

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

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

THE WITNESS: Yeah, you could.

EXAMINER STOGNER: Or dual completion?

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

EXAMINER STOGNER: And that is represented

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

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

EXAMINER STOGNER: And how about for the Fruitland Coal?

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

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

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

THE WITNESS: Okay. Then you would probably

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

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

THE WITNESS: For each zone.

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

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

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

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

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

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

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

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

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

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

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

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

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

THE WITNESS: 250. More likely, 250.

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

THE WITNESS: Say 250.

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

THE WITNESS: Okay.

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

THE WITNESS: No.

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

THE WITNESS: No. From the coals.

EXAMINER STOGNER: Oh.

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

EXAMINER STOGNER: Dual completed.

THE WITNESS: Dual completed.

EXAMINER STOGNER: New drill.

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

EXAMINER STOGNER: You tell me. Both.

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

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

don't create waste.

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

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

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

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

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

THE WITNESS: Provided you have the reserves there.

EXAMINER STOGNER: And that seven-day

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

THE WITNESS: Yes.

EXAMINER STOGNER: On your terminology in your figures the Np, capital N little p, that represents ultimate recovery.

THE WITNESS: Pictured Cliffs estimated ultimate recovery.

EXAMINER STOGNER: That is in what units, MCF?

THE WITNESS: MMCF.

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

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

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

THE WITNESS: And MCF per month.

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

THE WITNESS: Right. Actually it is a unitless.

EXAMINER STOGNER: Okay. Because that just shows --

THE WITNESS: What percentage of change in production.

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

THE WITNESS: Right.

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

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

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

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

TOM YERSAK

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

EXAMINATION

BY MR. KELLAHIN:

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

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

Q. Mr. Yersak, on prior occasions have you

testified as a petroleum geologist before the Division?

A. I have.

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

A. Yes, sir.

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

EXAMINER STOGNER: Mr. Yersak is so qualified.

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

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

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

want to perforate in that well?

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

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

A. That's correct.

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

A. That's correct.

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

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

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

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

A. I believe that's --

Q. Is that M?

A. Yeah, M.

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

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

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

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

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

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

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

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

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

A. Which ones do you want to start with?

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

A. Right.

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

A. No, it isn't.

Q. Let's turn now to --

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

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

we see Exhibit I. Identify that display for us.

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

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

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

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

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

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

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

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

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

A. It is. It is.

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

A. We do.

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

A. Right.

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

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

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

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

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

A. Right.

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

A. Yes, there was.

Q. What were the results of that well?

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

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

A. Right.

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

A. Right.

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

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

Q. Okay. And then Exhibit L?

A. M is a structure map.

Q. I'm looking at L.

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

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

A. Right.

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

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

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

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

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

A. Yes, it does.

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

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

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

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

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

THE WITNESS: No.

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

THE WITNESS: As Scott has testified, no.

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

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

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

THE WITNESS: Coal and sand.

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

THE WITNESS: That is correct.

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

THE WITNESS: Right.

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

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

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

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

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

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

comes from him.

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

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

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

EXAMINATION

BY MR. KELLAHIN:

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

A. Uh-huh.

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

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

A. Right.

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

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

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

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

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

A. That's correct.

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

commingling purposes?

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

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

A. Exactly.

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

A. Right.

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

A. Exactly.

Q. In addition to current rates?

A. Right.

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

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

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

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

A. Right.

Q. But that the PC could not?

A. Right.

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

A. Right.

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

A. Right.

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

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

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

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

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

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

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

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

THE WITNESS: A week.

EXAMINER STOGNER: A week.

MR. KELLAHIN: Next Friday this time.

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

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

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

MR. KELLAHIN: Thank you.

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

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10735, heard by me on 30 June 1993.

_____, Examiner
Oil Conservation Division

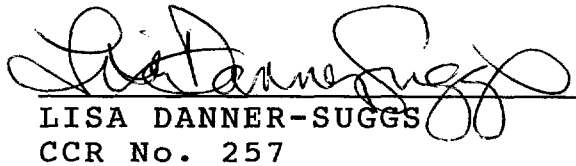
CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Lisa Danner-Suggs, Certified Court Reporter and Notary Public, HEREBY CERTIFY that I caused my notes to be transcribed under my personal supervision, and that the foregoing transcript is a true and accurate record of the proceedings of said hearing.

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

WITNESS MY HAND AND SEAL, June 14, 1993.



LISA DANNER-SUGGS
CCR No. 257

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 No. 10735
Order No. R-9921

APPLICATION OF MERIDIAN OIL INC. FOR DOWNHOLE COMMINGLING AND FOR AN ADMINISTRATIVE DOWNHOLE COMMINGLING PROCEDURE WITHIN THE HUERFANO UNIT AREA, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on June 3, 1993, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 9th day of July, 1993, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant, Meridian Oil Inc., seeks approval to downhole commingle conventional Pictured Cliffs gas and Fruitland Coal gas production within the wellbores of the following three wells all within the Huerfano Unit Area in San Juan County, New Mexico:

(a) in Section 23, Township 26 North, Range 9 West, NMPM, the applicant seeks to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 46 located 1650 feet from the South and West lines (Unit K). Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal

(Gas) Pool being the W/2 of said Section 23 and the SW/4 of said Section 23 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit;

(b) in Section 26, Township 26 North, Range 9 West, NMPM, the applicant seeks to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 59 located 890 feet from the North line and 1750 feet from the East line (Unit B). Said well is to be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the N/2 of said Section 26 and the NE/4 of said Section 26 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit; and,

(c) in Section 33, Township 27 North, Range 10 West, NMPM, the applicant seeks to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Huerfano Unit Well No. 549 tentatively to be drilled at a standard location for both intervals 1190 feet from the North line and 890 feet from the East line (Unit A). Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 33 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 33.

(3) Further, the applicant seeks the adoption of a special administrative procedure for authorizing the downhole commingling of conventional Pictured Cliffs gas and Basin-Fruitland Coal gas production in the wellbores of existing and proposed wells within the Huerfano Unit Area without hearing and without the requirement of notice to any offsetting operator and without the requirement that each interest owner in the Pictured Cliffs and Fruitland Coal Participating Areas be notified of such commingling.

(4) The Huerfano Unit is an exploratory unit comprised primarily of Federal lands and initially covered approximately 63,122.05 acres in portions of Townships 25, 26 and 27 North, Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico. The unit was formed in 1949/1950 and is currently operated by Meridian Oil, Inc.

(5) The pool boundaries of the West Kutz-Pictured Cliffs Pool, Ballard-Pictured Cliffs Pool, Huerfano-Pictured Cliffs Pool, and Fulcher Kutz-Pictured Cliffs Pool all fall within the Huerfano Unit Area and currently each is governed under the spacing provisions of the Division's General Rules and Regulations [Rule 104.C(3)] which provides for 160-acre drilling tracts.

(6) The Basin Fruitland Coal (Gas) Pool is spaced on 320-acre spacing, pursuant to the provisions of Rule 4 of the Special Rules and Regulations for the Basin Fruitland Coal (Gas) Pool, as promulgated by Division Order No. R-8768, as amended.

(7) The current "Pictured Cliffs" participating area for the subject unit contains 9,670.42 acres, more or less, of non-contiguous and often unconnected proration and spacing units throughout the Unit Area.

(8) The current Basin-Fruitland Coal gas participating area for the Unit contains 320 acres comprising a single standard gas spacing/proration unit for the Basin-Fruitland Coal (Gas) Pool in the N/2 of Section 28, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico.

(9) Both the existing Huerfano Unit Well Nos. 46 and 59 are within the current "Pictured Cliffs" participating area but outside the "Basin-Fruitland Coal (Gas)" participating area. The proposed Huerfano Unit Well No. 549 will be located outside of both the "Pictured Cliffs and Basin-Fruitland Coal (Gas)" participating areas.

(10) The majority of development within the Huerfano Unit Area has occurred in the deeper Mesaverde and Dakota intervals, and although there appears to be little development in the shallower Pictured Cliffs and Fruitland zones, there is an abundance of technical and geological data available for these two intervals.

(11) Engineering evidence indicates that the Pictured Cliffs producing horizon is nearing depletion in the Unit and geologic evidence indicates there to be no isolated and/or significant pockets of new or virgin producing intervals within the Pictured Cliffs formation underlying the Unit Area.

(12) Although Fruitland coal gas production data is somewhat limited within the Unit Area the evidence presented indicates the production capabilities from the Fruitland Coal to be marginal in nature, thereby making the downhole commingling of both zones practical in order to adequately and efficiently recover Basin-Fruitland Coal gas and the remaining conventional Pictured Cliffs gas reserves within the Unit.

(13) Further, the applicant's evidence indicates that due to the marginal production expected in both intervals, it will probably be uneconomic to drill either a stand alone Pictured Cliffs or Fruitland Coal Gas well or a dual producer in the Unit. However, in the event total gas production from both pools in a well exceeds 300 MCF per day, downhole commingling will not be allowed in the effected well until the combined production drops below 300 MCF/day.

(14) The applicant further demonstrated through its evidence and testimony that:

(a) there will be no cross-flow between the two commingled pools;

(b) neither commingled zone exposes the other to damage by produced liquids;

(c) the fluids from each zone are compatible with the other;

(d) the bottomhole pressure of the lower pressure zone should not be less than 50 percent of the bottomhole pressure of the higher pressure zone adjusted to a common datum; and,

(e) the value of the commingled production is not less than the sum of the values of the individual production.

(15) The Pictured Cliffs and Basin-Fruitland Coal (Gas) participating areas within the Huerfano Unit are not common; therefore, by virtue of different participating areas, the interest ownership between the Pictured Cliffs and Fruitland Coal within any given wellbore is not common.

(16) Applicant's Exhibits "C" and "D" in this case listed one hundred and ninety-eight (198) interest owners in the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas within the Huerfano Unit. All such interest owners were notified of the application in this case.

(17) Rule No. 303(C) of the Division Rules and Regulations provides that administrative approval for downhole commingling may be granted provided that the interest ownership, including working, royalty and overriding royalty interest, is common among the commingled zones.

(18) Eliminating notice to offset operators would not be in the best interest of conservation nor to the integrity of this process. The applicant's request to alleviate notice requirements to all offset operators other then themselves should be denied.

(19) The remaining portions of the applicant's proposed administrative procedure would provide for Division approval to downhole commingle wells in the Huerfano Unit Area without hearing, and without the requirement that each interest owner in the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas be notified of such commingling.

(20) The downhole commingling of wells within the Huerfano Unit Area will benefit working, royalty and overriding royalty interest owners. In addition, the downhole commingling of wells within the Huerfano Unit Area should not violate the correlative rights of any interest owner.

(21) The evidence in this case indicates that notice to each interest owner within the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas of subsequent downhole commingling within the Huerfano Unit is unnecessary and is an excessive burden on the applicant.

(22) No interest owner and/or offset operator appeared at the hearing in opposition to the application.

(23) An administrative procedure should be established within the Huerfano Unit for obtaining approval for subsequently downhole commingled wells without notice to unit interest owners and hearing, provided however that, all provisions contained within Rule No. 303(C) of the Division Rules and Regulations, with the exception of Part 1(b)(v), are fully complied with.

(24) The proposed administrative procedure for obtaining approval for downhole commingling will allow the applicant the opportunity to recover additional gas reserves from the Huerfano Unit Area which may otherwise not be recovered, thereby preventing waste and protecting correlative rights.

(25) In the interest of prevention of waste and protection of correlative rights, the proposed downhole commingling within the Huerfano Unit Well Nos. 46, 59 and 549 should be approved.

(26) Due to the nature of gas production from the Basin-Fruitland Coal (Gas) Pool, straight allocation of gas volumes from both zones is not appropriate. The applicant therefore seeks the adoption of a monthly allocation formula, based on initial production test and known/assumed parameters from the Pictured Cliffs zone whereby its initial rate, estimated ultimate recovery, and decline rate can be determined. Any production rate over what is calculated for the Pictured Cliffs utilizing the applied formula can be attributed to the Fruitland coal gas interval. See Exhibit "A" attached hereto and made a part hereof for additional reference.

(27) The applicant provided calculations and allocations for the two existing well Nos. 46 and 59 at the time of the hearing as Exhibit "O". Said Exhibit should be incorporated by reference into this order and production from both aforementioned wells should be based on the figures shown therein.

(28) The operator should consult with the Supervisor of the Aztec Office of the Division to insure the validity and scientific accuracy of the initial test on each well.

(29) The operator should be responsible for reporting the monthly gas production from each of the subject wells by utilizing the proposed allocation formula.

(30) An annual report should be submitted by the operator for each well to both the Aztec and Santa Fe offices of the Division showing the complete computations for each month.

(31) Any condensate production should be allocated entirely to the Pictured Cliffs interval. Water production should be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(32) Any change in the method of gas allocation between the two pools for any well subject to this order should be made only after due notice and hearing.

(33) To afford the Division an opportunity to assess the potential of waste and to expeditiously order the appropriate remedial action, the operator should notify the Aztec district office of the Division any time a well subject to this order is shut-in for seven consecutive days.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Meridian Oil Inc., is hereby authorized:

(a) to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 46 located 1650 feet from the South and West lines (Unit K) of Section 23, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the W/2 of said Section 23 and the SW/4 of said Section 23 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit;

(b) to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 59 located 890 feet from the North line and 1750 feet from the East line (Unit B) of Section 26, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the N/2 of said Section 26 and the NE/4 of said Section 26 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit; and,

(c) to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Huerfano Unit Well No. 549 to be drilled at a standard location for

both intervals 1190 feet from the North line and 890 feet from the East line (Unit A) of Section 33, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 33 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 33.

PROVIDED HOWEVER, in the event total gas production from both pools in a well exceeds 300 MCF per day, downhole commingling will not be allowed in the effected well until combined production drops below 300 MCF/day.

(2) The allocation of gas produced from the Pictured Cliffs and Fruitland Coal intervals in each of the subject wells shall be in accordance with the adopted allocation formula, as further referenced in Exhibit "A" attached hereto and made a part hereof or for the No. 46 and 59 wells allocations shall be based on the calculations presented at the time of the hearing as applicant's Exhibit "O", which is hereby incorporated by reference into this order.

(3) The operator shall consult with the Supervisor of the Aztec Office of the Division to insure the validity and accuracy of the initial test on each well.

(4) Further, the operator is responsible for reporting the monthly gas production from any well subject to this order to the Division utilizing said allocation formula. An annual report for each well shall be submitted by the operator to both the Aztec and Santa Fe offices of the Division showing the complete computations for the previous twelve month period.

(5) Any condensate production from a well shall be allocated entirely to the appropriate Pictured Cliffs Pool. Water production shall be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(6) Any variance in the method of gas allocation between the two pools for any of the subject wells shall be made only after due notice and hearing.

(7) The operator shall immediately notify the supervisor of the Aztec District Office of the Division any time one of the wells subject to this order has been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

(8) An administrative procedure for obtaining approval to downhole commingle additional wells within the Huerfano Unit, located in portions of Townships 25, 26 and 27 North, Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico, is hereby established.

(9) In order to obtain Division authorization to downhole commingle wells within the Huerfano Unit, the applicant shall file an application with the Santa Fe and Aztec Offices of the Division. Such application shall contain all of the information required under Rule No. 303(C) of the Division Rules and Regulations, provided however that the applicant shall not be required to provide notice to all interest owners within the Pictured Cliffs and Fruitland Coal participating areas in the Huerfano Unit of such proposed commingling. The application shall contain evidence that all offset operators and the United States Bureau of Land Management (BLM) have been notified of the proposed commingling.

(10) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

Exhibit "A"

CASE No. 10735

DIVISION ORDER NO. R-9921

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

GENERAL EQUATION

$$Qt = Qftc + Qpc$$

WHERE:

Qt	=	**TOTAL MONTHLY PRODUCTION FROM WELL (MCF/MONTH)**
Qftc	=	**FRUITLAND COAL (FTC) MONTHLY PRODUCTION (MCF/MONTH)**
Qpc	=	**PICTURED CLIFFS (PC) MONTHLY PRODUCTION (MCF/MONTH)**

REARRANGING THE EQUATION TO SOLVE FOR Qftc:

$$Qftc = Qt - Qpc$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS (PC) USING THE APPLIED FORMULA IS FRUITLAND COAL (FTC) PRODUCTION.

PICTURED CLIFFS (PC) FORMATION PRODUCTION FORMULA IS:

$$Qpc = Qpci * e^{-(Dpc)*(t)}$$

WHERE:

Qpci is the INITIAL PC MONTHLY FLOW RATE (CALCULATED FROM FLOW TEST)

OR

$$Qpci = Qt(1) * Qpc(p) \setminus \{Qpc(p) + Qftc(p)\}$$

WHERE:

Qt(1)	=	**FIRST MONTH TOTAL PRODUCTION (MCF)**
Qpc(p)	=	**FINAL PICTURED CLIFFS FLOW TEST (MCFPD)**
Qftc(p)	=	**FINAL FRUITLAND COAL FLOW TEST (MCFPD)**

AND WHERE:

Dpc is the calculated Pictured Cliffs Monthly Decline Rate Determined.

$$Dpc = (Qpci-Qpcabd)/Np(pc)$$

Where: Qpcabd = Pictured Cliffs Production Rate At Abandonment (300 MCF/Mo.); and, Np(pc) is the Pictured Cliffs Estimated Ultimate Recovery.

THUS: $Qftc = Qt - Qpci * e^{-(Dpc)*(t)}$

WHERE: (t) = TIME (MONTHS) FROM INITIAL PRODUCTION

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 NO. 10510
Order No. R-9711

APPLICATION OF MERIDIAN OIL INC. FOR DOWNHOLE COMMINGLING AND FOR AN ADMINISTRATIVE DOWNHOLE COMMINGLING PROCEDURE WITHIN THE HUERFANO SAND UNIT AREA, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on July 23, 1992, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 2nd day of September, 1992, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant, Meridian Oil Inc., seeks approval to commingle gas production from the Undesignated Gallegos-Gallup Associated Pool and the Basin-Dakota Gas Pool within the wellbore of its Huerfano Unit Well No. 131 located 800 feet from the North line and 990 feet from the West line (Unit D) of Section 34, Township 26 North, Range 10 West, NMPM, San Juan County, New Mexico. The N/2 of Section 34, forming a standard 320-acre spacing and proration unit for both zones, is to be dedicated to the subject well.

(3) The applicant further seeks the adoption of an administrative procedure for authorizing the downhole commingling of Gallup and Dakota production in the wellbores of certain existing and subsequently drilled wells within the Huerfano Unit Area without additional notice to each affected interest owner within the Unit Area.

(4) The Huerfano Unit is a Federal exploratory unit comprising some 63,122 acres in portions of Townships 25, 26 and 27 North and Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico. The unit was formed in 1950 and is currently operated by Meridian Oil Inc.

(5) The Huerfano Unit Well No. 131 was drilled in 1971 and completed as a producing well in the Basin-Dakota Gas Pool. Division records indicate that the subject well last produced in September, 1989.

(6) At the time the subject well was shut in, it was capable of low marginal production only from the Basin-Dakota Gas Pool.

(7) The Gallup interval is not yet completed in the subject well, however, the applicant expects initial production from said zone to be approximately 100-200 MCF gas per day.

(8) The proposed commingling is necessary in order to efficiently and economically produce the remaining gas reserves in the Dakota and Gallup formations.

(9) Although the interest is not common among the Dakota and Gallup zones in the subject well, the applicant notified all interest owners of its proposal to commingle. No interest owner and/or offset operator appeared at the hearing in opposition to the application.

(10) The proposed commingling should result in the recovery of additional gas reserves from each of the subject pools, thereby preventing waste, and will not violate correlative rights.

(11) The reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed commingling provided that the well is not shut-in for an extended period.

(12) To afford the Division the opportunity to assess the potential for waste and to expeditiously order appropriate remedial action, the operator should notify the supervisor of the Aztec District Office of the Division any time the subject well is shut-in for 7 consecutive days.

(13) The applicant should consult with the supervisor of the Aztec District Office of the Division upon completion of the subject well in order to determine a proper allocation of production from each of the commingled zones.

(14) The Basin-Dakota Pool has essentially been fully developed in the Huerfano Unit as evidenced by applicant's testimony which indicates that the Dakota Participating Area (PA) within the unit currently contains in excess of 44,000 acres.

(15) The Gallup Participating Area (PA) within the Huerfano Unit currently contains in excess of 10,000 acres.

(16) The applicant has identified substantial potential for new gas production from the Gallup formation within the Huerfano Unit.

(17) Further testimony by the applicant indicates that gas reserves in the Gallup formation on an individual well basis are not sufficient to economically justify the drilling of new wells to produce such reserves.

(18) The applicant has identified 20-50 wells within the Huerfano Unit currently completed in or producing from the Basin-Dakota Gas Pool which are candidates for downhole commingling.

(19) Applicant's Exhibit No. 7 Part (C) in this case is a list of over 400 interest owners in the Dakota and Gallup Participating Areas within the Huerfano Unit. All such interest owners were notified of the application in this case.

(20) By virtue of different Dakota and Gallup Participating Areas, interest ownership is generally not common among the Dakota and Gallup formations within any given drill tract in the Huerfano Unit.

(21) Rule No. 303(C) of the Division Rules and Regulations provides that administrative approval for downhole commingling may be granted provided that the interest ownership, including working, royalty and overriding royalty interest, is common among the commingled zones.

(22) Applicant's proposed administrative procedure would provide for Division approval to downhole commingle wells in the Huerfano Unit Area without hearing, and without the requirement that each interest owner in the Dakota and Gallup Participating Areas be notified of such commingling.

(23) Applicant's evidence and testimony indicates that all interests in the Gallup and Dakota formations within the Huerfano Unit Area are fully committed to the unit by virtue of ratification of the Unit Agreement. The applicant further testified that all such interest owners, by virtue of such ratification, have contractually agreed how they will participate and share in unit production.

(24) The downhole commingling of wells within the Huerfano Unit Area will benefit working, royalty and overriding royalty interest owners. In addition, the downhole commingling of wells within the Huerfano Unit Area should not violate the correlative rights of any interest owner.

(25) The evidence in this case indicates that notice to each interest owner within the Dakota and Gallup Participating Areas of subsequent downhole comminglings within the Huerfano Unit is unnecessary and is an excessive burden on the applicant.

(26) No interest owner and/or offset operator appeared at the hearing in opposition to the application.

(27) An administrative procedure should be established within the Huerfano Unit for obtaining approval for subsequently downhole commingled wells without notice and hearing, provided however that, all provisions contained within Rule No. 303(C) of the Division Rules and Regulations, with the exception of Part 1 (b)(v), are fully complied with.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Meridian Oil Inc., is hereby authorized to commingle production from the Basin-Dakota and Undesignated Gallegos-Gallup Associated Pools within the wellbore of its Huerfano Unit Well No. 131 located 800 feet from the North line and 990 feet from the West line (Unit D) of Section 34, Township 26 North, Range 10 West, NMPM, San Juan County, New Mexico.

(2) The operator shall immediately notify the supervisor of the Aztec District Office of the Division any time the subject well has been shut-in for 7 consecutive days, and shall concurrently present to the Division a plan for remedial action.

(3) The applicant shall consult with the supervisor of the Aztec District Office of the Division upon completion of the subject well in order to determine a proper allocation of production from each of the commingled zones.

(4) An administrative procedure for obtaining approval to downhole commingle additional wells within the Huerfano Unit, located in portions of Townships 25, 26 and 27 North and Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico, is hereby established.

(5) In order to obtain Division authorization to downhole commingle wells within the Huerfano Unit, the applicant shall file an application with the Santa Fe and Aztec Offices of the Division. Such application shall contain all of the information required under Rule No. 303(C) of the Division Rules and Regulations, provided however that the applicant shall not be required to provide notice to all interest owners within the Dakota and Gallup Participating Areas in the Huerfano Unit of such proposed commingling. In addition, the application shall contain evidence that all offset operators and the United States Bureau of Land Management (BLM) have been notified of the proposed commingling.

(6) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

Cdiffe
an 10721-25

4th Draft

MS 6/26/93

6/28/93

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. FOR AN UNORTHODOX GAS WELL LOCATION AND DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO. Case No. 10721

APPLICATION OF MERIDIAN OIL INC. FOR DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO. Case No. 10722

APPLICATION OF MERIDIAN OIL INC. FOR AN UNORTHODOX GAS WELL LOCATION AND DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO. Case No. 10723

APPLICATION OF MERIDIAN OIL INC. FOR AN UNORTHODOX GAS WELL LOCATION AND DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO. Case No. 10724

APPLICATION OF MERIDIAN OIL INC. FOR AN UNORTHODOX GAS WELL LOCATION AND DOWNHOLE COMMINGLING, SAN JUAN COUNTY, NEW MEXICO. Case No. 10725

Order No. R-****

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on April 22, 1993, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this _____ day of June, 1993, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

() Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

() At the time of the hearing Case Nos. 10721 through 10725 were consolidated for the purpose of presenting testimony.

() The applicant in each of the five following cases is Meridian Oil Inc. and due to the similarity, close proximity, and nature of each, a single directive issued by the Division is deemed appropriate:

(a) in Case No. 10721 the applicant seeks approval to downhole commingle Fulcher Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rowley Com Well No. 500 to be drilled at an unorthodox gas well location for the Fulcher Kutz-Pictured Cliffs Pool 2335 feet from the South line and 1850 feet from the West line (Unit K) of Section 7, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 332.92-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 through 4 and the E/2 W/2 (W/2 equivalent) of said Section 7 and to a 166.61-acre gas spacing unit for the Fulcher Kutz-Pictured Cliffs Pool being Lots 3 and 4 and the E/2 SW/4 (SW/4 equivalent) of said Section 7;

(b) in Case No. 10722 the applicant seeks approval to downhole commingle Fulcher Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed McAdams Well No. 500 to be drilled at a standard gas well location 790 feet from the North line and 1010 feet from the East line (Unit A) of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 28 and to a standard 160-acre gas spacing unit for the Fulcher Kutz-Pictured Cliffs Pool being the NE/4 of said Section 28;

(c) in Case No. 10723 the applicant seeks approval to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal

(Gas) Pool production within the wellbore of its proposed Whitley "A" Well No. 100 to be drilled at an unorthodox gas well location for the West Kutz-Pictured Cliffs Pool 2010 feet from the South line and 1090 feet from the West line (Unit L) of Section 17, Township 27 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the W/2 of said Section 17 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Gas Pool being the SW/4 of said Section 17;

(d) in Case No. 10724 the applicant seeks approval to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rhodes "C" Well No. 101 to be drilled at an unorthodox gas well location for both the West Kutz-Pictured Cliffs Pool and the Basin-Fruitland Coal (Gas) Pool, being 100 feet from the South line and 2270 feet from the West line (Unit N) of Section 30, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 315.97-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 through 4 and the E/2 W/2 (W/2 equivalent) of said Section 30 and to a 158.04-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being Lots 3 and 4 and the E/2 SW/4 (SW/4 equivalent) of said Section 30; and,

(e) in Case No. 10725 the applicant seeks approval to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rhodes "C" Well No. 102 to be drilled at an unorthodox gas well location for the West Kutz-Pictured Cliffs Pool being 790 feet from the North line and 1950 feet from the East line (Unit B) of Section 31, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 317.85-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 and 2, the NE/4, and the E/2 NW/4 (N/2 equivalent) of said Section 31 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 31.

() Both the West Kutz and Fulcher Kutz Pictured Cliffs Pools are governed under the spacing provisions of the Division's General Rules and Regulations [Rule 104.C(3)] which provides for 160-acre drilling tracts. The Basin Fruitland Coal (Gas) Pool is spaced on 320-acre spacing, pursuant to the provisions of Rule 4 of the Special Rules and Regulations for the Basin Fruitland Coal (Gas) Pool, as promulgated by Division Order No. R-8768, as amended.

() The proposed unorthodox locations are caused by various topographic reasons and not geologic.

() Applicant's geologic evidence indicates that gas production capabilities from both the Pictured Cliffs and Fruitland Coal intervals in this general area of the San Juan Basin is expected to be marginal in nature, thereby making the downhole commingling of both zones practical in order to adequately recover Basin-Fruitland Coal gas and conventional Pictured Cliffs gas reserves underlying each respective proration unit in a prudent manner.

() Further, the applicant's evidence indicates that due to the marginal production expected in both intervals, it will probably be uneconomic to drill either a stand alone Pictured Cliffs or Fruitland Coal Gas well or a dual producer in this area. **However**, in the event total gas production from both pools in a well exceeds 300 MCF per Day, downhole commingling will not be allowed in the effected well until such time as the well experiences a decline in production of either 100 MCF/Day in the Pictured Cliffs interval or 200 MCF/Day in the Fruitland coal gas interval.

() The ownership within the Basin-Fruitland Coal (Gas) Pool and the Fulcher Kutz-Pictured Cliffs Gas Pool or West Kutz-Pictured Cliffs Pool underlying each respective proration unit is not common.

() The applicant has notified all interest owners owning an interest in either the Pictured Cliffs or Fruitland formation within the subject proration units of its proposed downhole commingling.

() No offset operator and/or interest owner appeared at the hearing in opposition to the proposed downhole commingling and/or unorthodox well locations.

() The applicant further demonstrated through its evidence and testimony that:

a) there will be no crossflow between the two commingled pools;

b) neither commingled zone exposes the other to damage by produced liquids;

c) the fluids from each zone are compatible with the other;

d) the bottom hole pressure of the lower pressure zone should not be less than 50 percent of the bottom hole pressure of the higher pressure zone adjusted to a common datum; and,

e) the value of the commingled production is not less than the sum of the values of the individual production.

() In the interest of prevention of waste and protection of correlative rights, each of the subject applications should be approved.

() Due to the nature of gas production from the Basin-Fruitland Coal (Gas) Pool, straight allocation of gas volumes from both zones is not appropriate. The applicant therefore seeks the adoption of a monthly allocation formula, based on initial production test and known/assumed parameters from the Pictured Cliffs zone whereby its initial rate, estimated ultimate recovery, and decline rate can be determined. Any production rate over what is calculated for the Pictured Cliffs utilizing the applied formula can be attributed to the Fruitland coal gas interval. See Exhibit "A" attached hereto and made a part hereof for additional reference.

() The operator should consult with the Supervisor of the Aztec Office of the Division to insure the validity and scientific accuracy of the initial test on each well.

() The operator should be responsible for reporting the monthly gas production from each of the subject wells by utilizing the proposed allocation formula.

() An annual report should be submitted by the operator for each well to both the Aztec and Santa Fe offices of the Division showing the complete computations for each month.

() Any condensate production should be allocated entirely to the Pictured Cliffs interval. Water production should be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

() Any change in the method of gas allocation between the two pools for any of the subject wells should be made only after due notice and hearing.

() To afford the Division an opportunity to assess the potential of waste and to expeditiously order the appropriate remedial action, the operator should notify the Aztec district

office of the Division any time one of the five subject wells is shut-in for seven consecutive days.

IT IS THEREFORE ORDERED THAT:

() The applicant in Case Nos. 10721, 10722, 10723, 10724, and 10725, Meridian Oil Inc., is hereby authorized:

(a) to downhole commingle Fulcher Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rowley Com Well No. 500 to be drilled at an unorthodox gas well location for the Fulcher Kutz-Pictured Cliffs Pool 2335 feet from the South line and 1850 feet from the West line (Unit K) of Section 7, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well shall be dedicated to a standard 332.92-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 through 4 and the E/2 W/2 (W/2 equivalent) of said Section 7 and to a 166.61-acre gas spacing unit for the Fulcher Kutz-Pictured Cliffs Pool being Lots 3 and 4 and the E/2 SW/4 (SW/4 equivalent) of said Section 7;

(b) to downhole commingle Fulcher Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed McAdams Well No. 500 to be drilled at a standard gas well location 790 feet from the North line and 1010 feet from the East line (Unit A) of Section 28, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well shall be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 28 and to a standard 160-acre gas spacing unit for the Fulcher Kutz-Pictured Cliffs Pool being the NE/4 of said Section 28;

(c) to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Whitley "A" Well No. 100 to be drilled at an unorthodox gas well location for the West Kutz-Pictured Cliffs Pool 2010 feet from the South line and 1090 feet from the West line (Unit L) of Section 17, Township 27 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well shall be dedicated to a standard 320-acre gas spacing and proration

unit for the Basin-Fruitland Coal (Gas) Pool being the W/2 of said Section 17 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Gas Pool being the SW/4 of said Section 17;

(d) to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rhodes "C" Well No. 101 to be drilled at an unorthodox gas well location for both the West Kutz-Pictured Cliffs Pool and the Basin-Fruitland Coal (Gas) Pool, being 100 feet from the South line and 2270 feet from the West line (Unit N) of Section 30, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well shall be dedicated to a standard 315.97-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 through 4 and the E/2 W/2 (W/2 equivalent) of said Section 30 and to a 158.04-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being Lots 3 and 4 and the E/2 SW/4 (SW/4 equivalent) of said Section 30; and,

(e) to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Rhodes "C" Well No. 102 to be drilled at an unorthodox gas well location for the West Kutz-Pictured Cliffs Pool being 790 feet from the North line and 1950 feet from the East line (Unit B) of Section 31, Township 28 North, Range 11 West, NMPM, San Juan County, New Mexico. Said well shall be dedicated to a standard 317.85-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being Lots 1 and 2, the NE/4, and the E/2 NW/4 (N/2 equivalent) of said Section 31 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 31.

PROVIDED HOWEVER, in the event total gas production from both pools in a well exceeds 300 MCF per Day, downhole commingling will not be allowed in the effected well until ~~such time as the well experiences a decline in production of either 100 MCF/Day in the Pictured Cliffs interval or 200 MCF/Day in the Fruitland coal gas interval~~. the combined rate drops below 300 MCF/Day

() The allocation of gas produced from the Pictured Cliffs and Fruitland Coal intervals in each of the subject wells shall be

in accordance with the adopted allocation formula, as further referenced in Exhibit "A" attached hereto and made a part hereof.

() The operator shall consult with the Supervisor of the Aztec Office of the Division to insure the validity and accuracy of the initial test on each well.

() Further, the operator is responsible for reporting the monthly gas production from each of the five wells to the Division utilizing said allocation formula. An annual report for each well shall be submitted by the operator to both the Aztec and Santa Fe offices of the Division showing the complete computations for the previous twelve month period.

() Any condensate production from a well shall be allocated entirely to the appropriate Pictured Cliffs Pool. Water production shall be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

() Any variance in the method of gas allocation between the two pools for any of the subject wells shall be made only after due notice and hearing.

() The operator shall immediately notify the supervisor of the Aztec District Office of the Division any time one of the five subject wells has been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

() Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

Exhibit "A"

CONSOLIDATED CASES 10721, 10722, 10723, 10724, AND 10725

DIVISION ORDER NO. R-****

Case No. 10721	Rowley Well No. 500
Case No. 10722	McAdams Well No. 500
Case No. 10723	Whitley "A" Well No. 100
Case No. 10724	Rhodes "C" Well No. 101
Case No. 10725	Rhodes "C" Well No. 102

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

GENERAL EQUATION

$$Qt = Qftc + Qpc$$

WHERE:

Qt	=	TOTAL MONTHLY PRODUCTION FROM WELL (MCF/MONTH)
Qftc	=	FRUITLAND COAL (FTC) MONTHLY PRODUCTION (MCF/MONTH)
Qpc	=	PICTURED CLIFFS (PC) MONTHLY PRODUCTION (MCF/MONTH)

REARRANGING THE EQUATION TO SOLVE FOR Qftc:

$$Qftc = Qt - Qpc$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS (PC) USING THE APPLIED FORMULA IS FRUITLAND COAL (FTC) PRODUCTION.

PICTURED CLIFFS (PC) FORMATION PRODUCTION FORMULA IS:

$$Qpc = Qpci * e^{-(Dpc)*(t)}$$

WHERE:

Qpci is the INITIAL PC MONTHLY FLOW RATE (CALCULATED FROM FLOW TEST)

OR

$$Qpci = Qt(1) * Qpc(p) \setminus \{Qpc(p) + Qftc(p)\}$$

WHERE:

Qt(1)	=	FIRST MONTH TOTAL PRODUCTION (MCF)
Qpc(p)	=	FINAL PICTURED CLIFFS FLOW TEST (MCFPD)
Qftc(p)	=	FINAL FRUITLAND COAL FLOW TEST (MCFPD)

AND WHERE:

Dpc is the calculated Pictured Cliffs Monthly Decline Rate Determined.

Dpc = (Qpci-Qpcabd)/Np(pc)

Where: Qpcabd = Pictured Cliffs Production Rate At Abandonment (300 MCF/Mo.); and, Np(pc) is the Pictured Cliffs Estimated Ultimate Recovery.

THUS: **Qftc = Qt - Qpci * e^{-(Dpc)*(t)}**

WHERE: (t) = TIME (MONTHS) FROM INITIAL PRODUCTION