STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

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| IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING: | ) | CASE NO. 11,147 |
| APPLICATION OF SOUTHLAND ROYALTY COMPANY | ) | |

# ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

JAN

December 15th, 1994

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, December 15th, 1994, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, before Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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December 15th, 1994
Examiner Hearing
CASE NO. 11,147


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A P P E A R A N C E S

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* * *

WHEREUPON, the following proceedings were had at 9:11 a.m.:

EXAMINER STOGNER: At this time I'll call Case Number 11,147.

MR. CARROLL: Application of Southland Royalty Company for downhole commingling and an unorthodox coal gas well location, San Juan County, New Mexico.

EXAMINER STOGNER: 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: Any other appearances?

Will the witnesses please stand to be sworn at this time?

MR. KELLAHIN: I'll just bring them to the front, Mr. Examiner.

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: Mr. Examiner, this case is before you for two reasons. First of all, the downhole commingling process for combining the Pictured Cliff with the coal gas could have been accomplished administratively but for the fact that ownership in the two spacing units is different. We filed this case prior to the time that the Division suggested advertising these cases to be approved

without objection.

The second part of the case is that it is unorthodox insofar as the coal gas spacing unit is off-pattern. We are utilizing an existing PC well in the southeast quarter of the section in order to obtain the remaining PC reserves in the coal gas potential. The orientation of the coal gas spacing unit is the east half. The well location, therefore, is off-pattern because it's in the wrong quarter section.

The first witness is Mr. Alexander with Meridian.

ALAN ALEXANDER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name, sir?

A. Yes, my name is Alan Alexander.

Q. What is it that you do for Meridian, Mr. Alexander?

A. I'm a senior land advisor with Meridian Oil, Inc., in Farmington, New Mexico.

Q. Are you familiar with the land title matters surrounding this Application by -- in this case it's Southland Royalty Company?

A. Yes, sir, I am.

Q. Meridian and its personnel are acting as agents for Southland Royalty Company with regards to this?

A. That's correct.

Q. The exhibit book is prepared by you and your staff, is it, Mr. Alexander?

A. Yes, it was prepared under my supervision.

Q. All right. As a result of that work, are you knowledgeable about the ownership with regards to each of the two spacing units involved?

A. Yes, sir, I am.

MR. KELLAHIN: We tender Mr. Alexander as an expert witness.

EXAMINER STOGNER: Mr. Alexander is so qualified.

Q. (By Mr. Kellahin) Let's turn beyond Exhibit Tab Number 1, which contains the Application, look at Exhibit Tab Number 2 and the first display behind that exhibit tab.

A. Yes, the first display behind Exhibit Tab Number 2 is an offset operator/owner plat for the Pictured Cliffs formation. The boxes that contain numerical numbers show the offset owner/operators, and they're tabulated at the bottom of that page also.

Q. Was notification sent to the offset operators surrounding the Pictured Cliffs spacing unit of this particular Application?

A. Yes, sir, it was.

Q. To the best of your knowledge was there any objection?

A. We have received no objection.

Q. All right. In addition, the same type of notice was provided -- If we look behind the second display, there's the ownership plat for the coal gas spacing units that offset the east half of Section 3?

A. That's correct, and we've had no objections from any of those parties that we've notified also.

Q. All right. With regards to the downhole commingling process, did you cause notification to be sent, appropriate to Division rules, to the owners that are entitled to share in production in the Pictured Cliffs spacing unit, as well as the coal gas spacing unit?

A. Yes, sir, we did.

Q. And are the names and addresses of those interest owners shown as we continue through the displays behind Exhibit Tab Number 2?

A. That is correct.

Q. To the best of your knowledge, is there any objection by any of those interest owners to the commingling of that production?

A. No, sir, we have received no objections.

Q. All right. Let's look for a minute at Exhibit Tab Number 3 and have you identify that locator map.

A. Yes, the locator map behind Exhibit Tab Number 3 is a nine-section land plat. On that map you will see a legend down at the bottom left-hand corner for the well symbols that are on the map.

You'll also see that Section 3 of 29 North, 12 West, is located in the center of the map, and we have delineated the spacing units for both the Pictured Cliffs formation, being the southeast quarter, and for the Fruitland Coal formation, being the east half of Section 3.

We have also highlighted the McGrath Number 3 well, which we intend to complete with the Fruitland -- It's presently a Pictured Cliffs well, and we intend to complete the Fruitland Coal formation and commingle those two zones.

Q. Is this a continuation of both Southland and Meridian's company plan to take old Pictured Cliffs wells, try to extend their productive life by commingling that production with coal gas production and thereby increase recoveries from both pools?

A. That is correct.

Q. Has that process generally been successful by those two companies?

A. Yes, it has been.

Q. And this is a continuation of that same effort?

A. That is correct.

MR. KELLAHIN: That concludes my examination of Mr. Alexander. We move the introduction of the information behind Exhibit Tabs 2 and 3.

EXAMINER STOGNER: Exhibits 2 and 3 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Alexander, do you by chance know how long the McGrath Number 3 has been producing from the Pictured Cliffs formation?

A. No, sir, I don't know that. But our following witnesses do have that information.

EXAMINER STOGNER: Okay. I'll hold that question for them, then. Thank you, sir. You may be excused.

MR. KELLAHIN: Mr. Examiner, at this time I'll call Mr. Jay Close. Mr. Close is a petroleum geologist with Meridian, acting as an agent today and a witness for Southland Royalty Company. He resides in Farmington, New Mexico.

JAY CLOSE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Again for the record, Mr. Close, would you state

your name and occupation?

A. My name is Jay Close, and I work as a petroleum geologist for Meridian Oil, Inc., in Farmington, New Mexico.

Q. On prior occasions, have you testified before the Division with regards to the geologic aspects of Meridian and Southland's program to take Pictured Cliff wells and to commingle that production with the Fruitland Coal gas production?

A. Yes, sir, I have.

Q. And as part of that continuing plan of operation, have you made an examination of the geologic aspects that particularly apply to the McGrath Well Number 3?

A. Yes, sir, I have.

MR. KELLAHIN: We tender Mr. Close as an expert geologist.

EXAMINER STOGNER: Mr. Close is so qualified.

Q. (By Mr. Kellahin) Let's take Exhibit 3, which is the locator map, Mr. Close, and have you summarize for us what was the end result of your team's technical conclusions concerning how to take Section 3 and achieve the benefit of this plan of utilizing Pictured Cliff wells for commingling with coal gas.

A. As part of our ongoing process, we will take a section and look at the location and dedication, acreage

dedication, of each of the Pictured Cliffs and coal wells, if they exist in each section, and analyze what will be best for us to maximize production and reserve growth.

Q. When we look at Section 3, where are the Pictured Cliff existing wellbores that might have been utilized for this purpose?

A. In this particular case, we have Pictured Cliffs wells in the northwest, the northeast and the southeast quarter, and the Pictured Cliffs well in the southwest quarter was plugged and abandoned some time ago.

Q. So if you were selecting to stay on-pattern and to dedicate the south half of Section 3 to the coal gas pool, you could not have used the PC well in the southwest quarter?

A. Yes, sir, that is correct.

Q. What are you doing with the north half?

A. Very likely, we will perform some sort of recompletion efforts to the Fruitland Coal in the existing Pictured Cliffs well in the northwest quarter in the future. The McGrath --

Q. Is that a likely better candidate than the Pictured Cliff well in the northeast quarter?

A. We believe that it is possible, but there's probably no real inherent geologic advantage.

Q. All right. Did you choose the McGrath 3 well in

the southeast of 3 as the Pictured Cliff well?

A. This well is a so-called demand or regulatory well in which we received a letter requiring us as an operator, Southland, to either perform some sort of remediation to the wellbore or plug and abandon that well.

Q. That demand would have come from what agency, sir?

A. The BLM, Bureau of Land Management.

Q. All right. And the current status of the well, then, is what?

A. This well is currently shut in.

Q. You and the team decided that it was suitable to utilize the McGrath 3, then, as a recompletion candidate, if you will, to commingle PC and Fruitland Coal?

A. That is correct.

Q. Let's look at the geologic aspects of that analysis. If you'll turn with me to Exhibit 4, describe what you're showing there.

A. We've presented here in Exhibit 4 a geophysical log in which the Pictured Cliffs formation and the Fruitland Coal formation are identified for you, and the coal horizon of interest is highlighted in yellow, just above the top if the Pictured Cliffs formation. And you are looking at roughly 25 to 30 feet of coal that we plan to perform the recompletion efforts and production efforts

in.

Q. All right, sir. Let's turn to the next display. If you'll look behind Exhibit Tab Number 5, identify and describe that display.

A. You are looking here at a structure map on the base of the basal or the lowermost coal unit in this portion of the Fruitland Coal play, which would correspond to the base of the coal, highlighted in yellow in the previous Exhibit Number 5, and in this part of the San Juan Basin, as is typical, you are looking at a very gentle dip to the northeast.

Q. Is there a structural significance to you as a geologist in where within Section 3 you locate the opportunity to extract the coal gas production from the section?

A. No, sir, there is not.

Q. Let's look at the distribution of the coal, if you will. If you'll turn behind Exhibit Tab Number 6, identify and describe that display.

A. Behind Exhibit Tab Number 6 you have a coal isopach or a coal thickness map for the same area that was highlighted by the base of the basal coal structure map in the previous exhibit, and you can see that the net thickness is on the order of 30 to 35 feet of coal in Section 3 of 29 North, 12 West, in which the McGrath 3 well

is located.

Q. In Section 3 are we in a portion of the coal gas reservoir that in your geologic opinion could support, based upon reserve potential, the drilling of a new coal gas well as a stand-alone coal gas well?

A. No, sir, the economics will not permit the drilling of such a well.

Q. Well, in some portions of the Basin you can in fact drill stand-alone gas wells?

A. Yes, sir, you can.

Q. Describe for us what's occurring in this portion of the Basin, particularly within Section 3.

A. In this area of the Fruitland Coal play, the gas content, the gas-in-place resource, the reservoir pressure and the way that gas moves out of the coal, is such that it is not nearly as prolific as the northern or so-called overpressured area where the pressure -- the gas-in-place resource and the permeability in particular, is very much higher, permitting the drilling of successful stand-alone Fruitland Coal gas wells.

Q. There are coal gas wells drilled in this immediate vicinity, are there not?

A. There are some.

Q. And how successful have those wells been?

A. Typically in this area, you're looking at coals

that require a long dewatering process before one initiates any significant gas production.

Therefore, in addition to the drilling, completion and production costs that one has to associate to that well, you also have the water disposal costs in addition to that.

Q. So this particular area is not an area targeted where it could economically support the drilling of a stand-alone coal gas well?

A. In our opinion, in this area it does not permit the drilling of such a well. And the commingling efforts, we believe, are indeed economic, and we can capture both coal and Pictured Cliffs reserves that would otherwise be lost.

Q. There's no appreciable difference, then, within Section 3 as to exactly what quarter section you utilize to access the coal gas?

A. Geologically there is not.

Q. All right, let's look at the situation with regards to the Pictured Cliff. Do you have a display that will help us look at the Pictured Cliff Pool?

A. If you will turn behind Exhibit Tab Number 7, you'll see the McGrath Number 3 well identified to your left and then an arrow highlighted in yellow going towards your right that indicates where in the Fulcher-Kutz

Pictured Cliffs gas field we are located. And as you can see, we are in the -- Section 3 of the northern portion of Township 29 North, Range 12 West.

Q. You're on the edge, if you will, of that production in that pool?

A. Yes, sir, that is correct.

And I would like to add that the McGrath Number 3, that well was drilled in 1945. Therefore this well has produced a significant amount of gas as of this date.

Q. Okay. Is that typical of the Fulcher-Kutz Pictured Cliff Pool as a reservoir, that it's a mature reservoir and it's well into its productive life?

A. Yes, sir, that is correct.

Q. All right. In terms of prevention of waste and protection of correlative rights, Mr. Close, do you see any reason not to approve the downhole commingling and the unorthodox coal gas location that we've requested in this case?

A. No, sir, I do not.

Q. No adverse consequences to any interest owners?

A. No, sir, not to my knowledge.

MR. KELLAHIN: That concludes my examination of Mr. Close.

We would move the introduction of Exhibits 4 through 7.

EXAMINER STOGNER: Exhibits 4 through 7 will be admitted into evidence.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Close, how sensitive is the Pictured Cliffs formation in this area of the Fulcher-Kutz Pool to water encroachment?

A. We believe that there is not a compatibility problem in this area. We think that the chemistry of the produced waters between the two units are similar enough so as to minimize or really not even be a problem in terms of chemical compatibility.

Q. How about additional waters added to it in case the well had to be shut in and there was a flow between the Fruitland Coal water into the Pictured Cliffs formation?

A. We hope that such things are not happening, but if they are, we don't think that the flow would adversely affect the Pictured Cliffs reserves in this area.

Q. Is there enough gas being produced to lift the water out of the Fruitland zone, or is there going to have to be some beam pump addition?

A. These wells do indeed require both compression and pumping units.

Q. Will that be done initially or after the Fruitland has had a chance to flow on its own?

A. Due to the very low reservoir pressure in this area, as well as the water production, very likely we will install both compression and pumping units on the well immediately, so as to begin the dewatering process.

EXAMINER STOGNER: Okay, I have no other questions of Mr. Close. He may be excused.

Mr. Kellahin?

MR. KELLAHIN: Yes, sir, we would like to call our petroleum engineer at this time, Mr. Leonard Biemer. He spells his last name, B-i-e-m-e-r.

LEONARD BIEMER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Will you please state your name and occupation?

A. My name is Leonard Biemer. I'm a senior staff production engineer with Meridian Oil in Farmington, New Mexico.

Q. Mr. Biemer, on prior occasions have you testified and qualified as an expert petroleum engineer before this agency?

A. Yes, I have.

Q. And on past occasions you've testified before the agency as a petroleum engineer concerning the commingling

of Pictured Cliff and coal gas wells by Meridian Oil Company, I believe it was?

A. Yes, sir, I have.

Q. And with regards to this Application by Southland Royalty Company, have you continued that examination?

A. Yes, sir.

Q. In fact, this is one of the wells within your team's area of responsibility; you and Mr. Close have worked on this prospect?

A. Yes, sir.

Q. As based on that work, do you now have engineering opinions and conclusions concerning the feasibility of commingling coal gas and Pictured Cliff gas in this particular wellbore?

A. Yes, sir, the most economical way --

MR. KELLAHIN: Let me qualify you, sir.

THE WITNESS: Okay.

MR. KELLAHIN: We tender Mr. Biemer as an expert petroleum engineer.

EXAMINER STOGNER: Mr. Biemer is so qualified.

Q. (By Mr. Kellahin) All right, let me have your conclusions. What do you conclude?

A. Economically, the best way to produce the Fruitland Coal in this area is by commingling the remaining Pictured Cliff gas with the Fruitland Coal.

Q. All right, let's talk about the McGrath Number 3 well. It's current status is, it's temporarily shut-in?

A. Yes, sir.

Q. Do you have a recollection of what the approximate cumulative gas production has been in this well from the Pictured Cliff Pool?

A. Cum to date has produced 423 M-squared of gas.

Q. And do you have a display that illustrates that, do you not?

A. Yes, sir, if you'll look behind Exhibit Number 8 --

Q. It's the second display behind Exhibit Number 8?

A. Yes, sir, second exhibit.

Q. Let's look at the performance of the well. If you'll start on the far left of the production plot, show us what's occurred.

A. As you can see, starting in 1970 the well initially was producing and has steadily declined. Back in 1986 the well was shut in, blind-plated.

Recently we received a demand to either plug this well or do some remedial work.

In order to recover the remaining Fruitland Coal reserves that are there, or the remaining Pictured Cliff reserves, we decided economically that we must commingle this well with the Fruitland Coal.

Q. Do the remaining reserves available only in the Pictured Cliff justify remedial work for Pictured Cliff?

A. It's very marginal.

Q. All right. In order to achieve a level of economic margin that's acceptable, then, you have no other choice than to try to commingle this production with Fruitland Coal?

A. Right, with the addition of not being able to drill a new Fruitland Coal in that area due to poor economics, it's most feasible to commingle the two zones.

Q. The procedure for recovery is going to be executed by commingling both zones, and then are you going to combine compression with some lifting capacity on the well?

A. Yes, sir, we will be installing a pumping unit, and there is a new compression system out there, so the well will be compressed as --

Q. Do you have experience with that kind of application of technology to this type of well, commingled well?

A. Yes, it has worked in other areas.

Q. Do you see any adverse consequence to doing that in these two pools in this wellbore?

A. No, sir, I do not.

Q. Any kind of water compatibility or water

encroachment from the coal up into the PC that's going to be a substantial problem to you?

A. No, sir.

Q. Let's look on how you propose to allocate that production.

A. Turn back one page. The production is simply going to be allocated based on what we expect the Pictured Cliff to be producing, which is roughly 22 MCF a day. When the well comes in, it will simply be subtracted from that, and then based on the decline of that well.

Q. All right, that is a process that Meridian and Southland have utilized on numerous occasions to obtain approval from the Division by which you can appropriately and fairly allocate production between the two pools?

A. Yes, sir, it's a -- the same way.

Q. All right. Once you do that, then, and allocate by this formula, that portion of production attributable to the Pictured Cliff, then the balance goes to the coal gas?

A. Yes, sir.

Q. In your opinion, is that a fair and equitable means by which to allocate this production?

A. Yes, sir, it is.

Q. Let's turn back, if you will, Mr. Biemer, to Exhibit Tab Number 3, and let's look at the wells in the area.

Let me pursue with you for a moment the discussion I had with Mr. Close about the coal gas opportunity in this vicinity.

Can you show us an example of a coal gas well in this area and describe for us its productivity and the economic consequences to you as you examine Section 3?

A. In Section 3 there is no Fruitland Coal. In Section 2 there was an abandoned location, the Cornell Number 500.

Q. In the southwest quarter of 2, that --

A. Southwest --

Q. -- coal gas symbol --

A. Right.

Q. -- in fact, is not a drilled well?

A. It was not a drilled well, it was a bad location.

In Section 1 there is a Cornell Number 2, which is a producing well.

Q. All right, that would be off this plat?

A. Off this plat. And that well is currently producing around 100 MCF a day.

Q. Tell us what that means. If it's producing 100 MCF a day, how successful is that as a coal gas well?

A. In a recompletion that is a marginal well, but it can be done in a new drill that is uneconomical. 100 MCF a day on a new drill has a negative P over I and a 5-percent

rate of return.

Q. Couldn't possibly justify that for a --

A. We cannot do that, no, sir.

Q. -- for a new well?

Do you see any reason to expect that the coal gas well in Section 1, the results of that well would be any different if you were to drill that coal gas well in Section 3?

A. No, sir.

Q. Any difference in coal quality or productivity that would make a change?

A. No, sir.

Q. Okay. What's your ultimate conclusion as an engineer with regards to this Application?

A. The most economical and feasible way for us to recover the remaining Pictured Cliff reserves in the McGrath Number 3 and to develop Fruitland Coal reserves in Section 3 is by commingling the two formations.

Q. Are you aware of any kind of problem in commingling the production from these two pools?

A. No, sir.

Q. Any kind of cross-flow, migrations or fluid incompatibility that is too difficult to overcome?

A. No, sir.

MR. KELLAHIN: All right, that concludes my

examination of Mr. Biemer.

We move the introduction of his exhibits shown behind Exhibit Tab Number 8.

EXAMINER STOGNER: Exhibit Number 8 will be admitted into evidence at this time.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Biemer, could you tell me a little bit about the well? I know it was drilled in 1945, but what precludes Meridian from being able to dually complete this well?

A. What precludes us from doing it?

Q. Yeah.

A. We have 3-1/2-inch casing. The original well was 5 1/2, it was open-hole. At a later date 3 1/2 casing was run in there and cemented, and then the Pictured Cliff was re-stimulated. But there's nothing to preclude us from commingling this.

Q. So your plans now -- I take it the 3-1/2-inch casing is perforated in the Pictured Cliffs at this time?

A. Yes, sir, it is. We'll simply go down and set a cast-iron bridge plug above the Pictured Cliffs, go in there and perforate and stimulate the Fruitland Coal and clean it up and at that time, once the commingling orders are approved, commingle the well. We'll go back in and

drill that cast-iron bridge plug back out.

Q. How will this well be completed?

A. How will it be completed?

Q. Yeah.

A. We'll run in there with a -- It's a retrievable casing gun, it's an expendable gun, and perforate. We'll then go in there and nitrogen foam-frac it down the casing.

Q. And then what kind of a bottomhole assembly will you have ultimately?

A. We'll run some 1-1/2-inch tubing and install a pumping jack.

Q. What kind of rate of water do you anticipate coming from the Fruitland Coal at this time? Or perhaps the geologist could answer that question.

A. We're expecting between 75 and 100 barrels initially.

The FC State 24, which if you look behind Exhibit 3, off up in Section 36, up in the northeastern corner -- it's off your locator map -- Conoco has a well up there. Initially it started off around 75 to 100 barrels a day. Within a few months that dropped to 15 barrels.

They also have a pumping unit and compressor installed.

The production from that well also started off and has maintained around 100 MCF a day.

EXAMINER STOGNER: Okay, I have no other questions of Mr. Biemer.

MR. KELLAHIN: That concludes our presentation in this case, Mr. Examiner.

EXAMINER STOGNER: You may be excused.

Anything further in this case, Mr. Kellahin?

MR. KELLAHIN: No, sir.

EXAMINER STOGNER: Case Number 11,147 will be taken under advisement.

(Thereupon, these proceedings were concluded at 9:40 a.m.)

* * *

CERTIFICATE OF REPORTER

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

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

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 December 18th, 1994.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11147 heard by me on 15 December 1994

Oil Conservation Division