NEW MEXICO OIL CONSERVATION DIVISION

STATE OF NEW MEXICO

CASE NO. 10531

IN THE MATTER OF:

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

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

August 20, 1992

REPORTED BY:

DEBBIE VESTAL
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

FOR THE NEW MEXICO OIL CONSERVATION DIVISION:

ROBERT G. STOVALL, ESQ.
General Counsel
State Land Office Building
Santa Fe, New Mexico 87504

FOR SOUTHLAND ROYALTY COMPANY:

KELLAHIN & KELLAHIN
Post Office Box 2265
Santa Fe, New Mexico 87504-2265
BY: **W. THOMAS KELLAHIN, ESQ.**

FOR McKENZIE METHANE:

RODEY, DICKASON, SLOAN, AKIN & ROBB, P.A.
Post Office Box 1357
Santa Fe, New Mexico 87504-1357
BY: **PAUL A. COOTER, ESQ.**

I N D E X

E X H I B I T S

	Page Identified
Exhibit No. 1	10
Exhibit No. 2	11
Exhibit No. 3	6
Exhibit No. 4	14
Exhibit No. 5	35
Exhibit No. 6	26
Exhibit No. 7	38
Exhibit No. 8	15

EXAMINER CATANACH: Call the docket to order for Docket No. 25-92 this morning. Call the continuances first. Case 10527 is continued to September 3. Case 10529 is continued to September 3. 10530 is continued to September 3. Cases 10502, 10503, and 10504 are all continued to September 3. Case 10522 is continued to September 3. And Case 10483 is continued to September 17.

[A discussion was held off the record.]

[A recess was taken.]

EXAMINER CATANACH: At this time we'll call Case 10531.

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

EXAMINER CATANACH: Are there appearances in this case?

MR. STOVALL: Did I call the right case, Tom?

MR. KELLAHIN: I'm finding my place on the docket. This is 10531?

EXAMINER CATANACH: Right.

MR. KELLAHIN: Yes, Mr. Examiner. My

name is Tom Kellahin, Santa Fe, New Mexico, appearing on behalf of Southland Royalty Company. And I have three witnesses to be sworn.

EXAMINER CATANACH: Are there other appearances in this case?

MR. COOTER: Paul Cooter with the Rodey law firm in Santa Fe appearing on behalf of McKenzie Methane.

EXAMINER CATANACH: Any other appearances?

Mr. Cooter, do you have any witnesses this morning?

MR. COOTER: No, sir. I would like to make a brief statement when that time comes.

EXAMINER CATANACH: Okay. Will the witnesses, please, stand to be sworn in.

[The witnesses were duly sworn.]

MR. KELLAHIN: Mr. Examiner, so that Mr. Cooter and I can explain to you what we're both seeking to accomplish for our respective clients, let me ask you, sir, to turn to the exhibit book and, if you'll look at the first display behind Exhibit No. 3, there's a plat that may help orient you to Mr. Cooter's concerns on

behalf of McKenzie Methane.

The section in question is 12. The development of that section for coal gas under the existing rules would require the gas wells to be located either in the northeast quarter or the southwest quarter.

The applicant has already developed the east half of the section with a coal gas well in the northeast quarter. That remains available in the west half of the section.

Because of Southland's desire to incorporate the development of Pictured Cliffs reserves in the northwest quarter in conjunction with the coal gas well, we're seeking approval of an off-pattern coal gas location in the northwest quarter. Usually it would be in the southwest quarter.

In Section 11 McKenzie Methane has the rights to develop that section, in fact, has developed that section with wells on pattern. There's a well in the northeast and southwest.

Their concern about our location is they don't want to be exposed to more than one well in the west half. We propose to drill the well in the northwest quarter under current pool

rules and spacing exceptions. It's our belief that this will be the only well in the west half under current rules.

The opposition of McKenzie Methane is conditioned upon our ability to stipulate that we would not seek an additional infill well in the southwest quarter of this spacing unit under current pool rules. I am unable to verify that stipulation this morning.

We would like to go ahead and present this case and let Mr. Cooter make his statement on behalf of his client so that he can preserve his option for another hearing in the event that he and I cannot satisfactorily resolve his concerns for his client.

With that statement, we're ready to present our case. Perhaps Mr. Cooter would like to make his own statement.

MR. COOTER: Mr. Kellahin has stated it correctly. I was advised by McKenzie Methane that an agreement had been reached with Southland, Meridian, that they would not -- unless the pool rules be changed, they would not seek to drill a second well, an infill well, in the southwest quarter.

And based upon that agreement, McKenzie Methane has no objection to this proposed location. If that agreement is in error and such a stipulation cannot be agreed to, perhaps subsequently to this hearing, then we would seek either a rehearing or an appeal to the de novo hearing before the Commission.

MR. STOVALL: Mr. Kellahin, let me make sure I understand. McKenzie is affirming that there is an agreement at this time, but you are not able to affirm. And I'm assuming that Mr. Alexander, sitting at the end of the table, he's not going to affirm that agreement at this time either; is that correct?

MR. KELLAHIN: He is unaware of which individual with Southland the agreement was made on behalf of their company with McKenzie Methane, and he's not authorized this morning to make that stipulation. I hope that after the hearing I can verify it, but I cannot do it now.

EXAMINER CATANACH: Go ahead.

ALAN ALEXANDER

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

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

A. My name is Alan Alexander. I'm employed as a senior staff landman with Meridian Oil in the Farmington, New Mexico, office.

Q. On prior occasions have you testified as a petroleum landman before the Division?

A. I have.

Q. And pursuant to your employment by Southland Royalty in this instance, are you familiar with the ownership involved in this particular spacing unit and the offsetting ownership surrounding the spacing unit?

A. I am.

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

EXAMINER CATANACH: Mr. Alexander is so qualified.

Q. (BY MR. KELLAHIN) Mr. Alexander, let's turn to the exhibit booklet. If you'll identify for the record what is behind tab Exhibit No. 1?

A. Yes. This exhibit is our application to the Division to commingle the Hanks No. 501 well in the Fruitland Coal and the Pictured

Cliffs Formation.

Q. What are the proposed spacing units to be dedicated to each of those two pools within Section 12?

A. We are proposing to dedicate the northwest quarter for the Pictured Cliffs Formation and to dedicate the west half for the Fruitland Coal Formation.

Q. When you look at the spacing units for each of those pools that surround your respective spacing units, have you identified the ownership?

A. Yes, I have.

Q. And have you shown as an attachment to the application the location of those other operators that offset your property?

A. Yes. Under Exhibit No. 2 you'll see the offset operator plats for each formation and which shows the offset operators respectively for those formations.

Q. Summarize for us what Southland Royalty Company seeks to accomplish with this application, Mr. Alexander.

A. We wish to develop both the Fruitland Coal Formation and the remaining reserves in the Pictured Cliffs Formation by drilling a

commingled well, a new drill well, in the northwest quarter of Section 12.

Q. When you examine the ownership that's entitled to share in the production from the Pictured Cliffs as well as the Fruitland Coal, what do you find?

A. The ownership is identical for both formations.

Q. What is the ownership of the base lease that's involved in both pools?

A. The base lease is a federal oil and gas lease.

Q. Let's turn now to the information behind Exhibit No. 3. Describe for us what the current status of development is in Section 12 with regards to the coal gas development and the Pictured Cliffs development.

A. Currently in Section 12 of 27 North, 10 West the Fruitland Coal has been developed through the Hanks 500 well that you will see located in the northeast quarter of Section 12.

Additionally, the section is currently producing from three Pictured Cliffs wells located in the northeast quarter, the southeast quarter, and the southwest quarter. You'll see

on the plat there is a symbol for a Pictured Cliffs well in the northwest quarter; however, that well was plugged and abandoned in 1989, I believe.

And we currently do not have a Fruitland Coal well in the west half of the section.

Q. What's Southland Royalty Company's plan for the development then of the west half of the section with a coal gas well?

A. We propose to develop both the Fruitland and the Pictured Cliffs through a single wellbore and to commingle these reserves. The most appropriate location for this well in order to develop the remaining Pictured Cliffs reserves would be in the northwest quarter since that quarter is not currently producing from the Pictured Cliffs Formation.

Q. Does Southland currently have Pictured Cliffs wells producing in each of the other three quarter sections?

A. Yes, we do.

Q. With regards to its location in the northwest quarter of 12, have you obtained the necessary surface clearances from the Bureau of

Land Management and other regulatory agencies for the location of the well on the surface?

A. Yes, we have.

Q. Let's turn to the information behind exhibit tab 4 and have you identify and describe that display.

A. This display is a topographic map which shows the location of the current Hanks No. 500 well. We actually attempted to locate this wellbore a little further to the east, which would put it more in the center of the northwest quarter; however, there are archeological sites involved in that, and the Bureau of Land Management was not agreeable to any location further east.

The current location that we're using is an improved location, which was previously staked by Southland Royalty Company, and it was originally intended as a replacement well for the Hanks No. 1 Pictured Cliffs well.

Q. Is the location that you're requesting approval for from the Examiner one that now has met all surface approvals?

A. It has met all surface and archeological and BLM approvals.

Q. Let me show you what I have marked as Exhibit No. 8, Mr. Alexander, and have you verify for me that the offsetting operators entitled to notice in this case were properly notified of the hearing.

A. Yes. This Exhibit No. 8 is the certification of mailing. And it does appear that we have in fact contacted all of the offset operators who are entitled to notice in this case.

MR. KELLAHIN: That concludes my examination of Mr. Alexander. We move the introduction of his Exhibits No. 1 through 4.

EXAMINER CATANACH: Exhibits 1 through 4 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Alexander, is your location standard with respect to setbacks?

A. Yes, sir, it is. It's located -- the proposed well is located 790 feet from the west line and 1800 feet from the north line.

Q. You said you currently had a Pictured Cliffs well in the northeast quarter, the southwest quarter, and --

A. And the southeast quarter.

Q. -- and the southeast quarter?

A. Yes, sir. You'll note on the plat, in order to clarify that, there is a square symbol that on the legend says a Dakota well, the 14-E. But if you'll look and if you'll see the sub-symbol there that's a "P", that means that well was dually completed in the Dakota and Pictured Cliffs.

MR. KELLAHIN: Mr. Examiner, if you'll turn to the next display behind that tab, there's a larger reproduction of the section and the well symbols may be easier to identify on that display.

Q. (BY EXAMINER CATANACH) Mr. Alexander, were you aware that negotiations with McKenzie were being conducted?

A. Yes, I was. In fact, I talked with Mr. Roger Litke with McKenzie Methane. He first called me, I believe, on Tuesday, perhaps Monday of this week, but I believe it was Tuesday, and we discussed this issue.

I think it may be a problem of communication. In fact, I came to the hearing this morning with the understanding that we had

worked an agreement with McKenzie whereby we felt that McKenzie was fully protected by the current rules and regulations of the Division whereby we could not put an additional well in the west half without first approaching McKenzie and the Division to get authority to do so.

EXAMINATION

BY MR. STOVALL:

Q. Is it safe to say that your attorney has represented correctly, that you can't say that there's been a definitive agreement reached?

A. No, sir. I do not know that there's been a definitive agreement reached with regard to the stipulation about the second well or a possible second well down in the southwest quarter of the section.

Q. But it's your understanding you couldn't do it anyway unless we approved it and McKenzie would have to be notified anyway?

A. Yes, sir, that's correct.

EXAMINER CATANACH: Mr. Cooter, did you have any questions? I'm sorry.

MR. COOTER: I'm in an unusual situation, and I feel that I must bide by what my client has told me, that is, to appear that there

was a stipulation agreed to and, with that, there would be no objection to this proposed location. Therefore, I have no questions.

EXAMINER CATANACH: The witness may be excused.

SCOTT DAVES

Having been duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. 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, sir.

Q. You testified in the hearing on the Aztec 700 well, did you not?

A. Yes, sir.

Q. And that was an application, among other things, to downhole commingle production in the Pictured Cliffs and the Fruitland Coal Gas Pools?

A. Yes, sir.

Q. With regards to your employment as a reservoir engineer, have you also made an engineering study of the facts surrounding this particular case?

A. Yes, sir, I have.

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

EXAMINER CATANACH: He is so qualified.

MR. KELLAHIN: Mr. Examiner, on your copy of the exhibit book behind exhibit tab No. 3, we have penciled in some current cumulative production numbers for convenience. Mr. Daves will describe for you that information as he begins to explain his conclusions and opinions.

Q. Let's turn to that display, Mr. Daves. Summarize for us what you're proposing to accomplish with the approval of the drilling of this well in this quarter section and downhole commingling that production with the two pools.

A. Right. What we're proposing here and the reasoning is, is that we have identified additional reserves in the Pictured Cliffs in that quarter section. And the well that was

there was the Hanks No. 1. It's currently plugged and abandoned. So, therefore, there was no option there to do anything with that well.

So what we proposed in conjunction with redrilling a Pictured Cliffs well is a Fruitland Coal well there and then commingling the two. And if you'll look at the various offsets there, what those numbers in pencil are, are cumulative production for each of the Pictured Cliffs wells and the nine quarter sections or the eight quarter sections surrounding the northwest quarter of Section 12.

And what we identified is that our well in the northwest quarter did not recover all of the reserves that were there, and that's fairly evident if you look at the wells around it, upwards of 2.8 Bcf of cumulative production; whereas, ours was 590 million cubic feet.

And if you look just to the east, you see that well has cum'd 1.5 Bcf, almost three times this well.

Q. You're looking at the Pictured Cliffs well in the northeast quarter of 12?

A. Yes, sir.

Q. Let's move clockwise around the section

and pick up the additional cumulative information on those PC wells as you move around your well location.

A. Okay. If you look in the southeast quarter, that's a new well. And it was completed, I believe, in 1980 or in that era. And it's already cum'd 185 million cubic feet of gas and is currently producing.

If you move on to the southeast, that well is currently producing and it has cum'd over 750 million cubic feet of gas. If you move to the southeast of 11, that well is currently producing and has cum'd 2.86 Bcf of gas.

And if you move to the northeast quarter, that well is currently producing, and it has cum'd 2.2 Bcf of gas. And if you move to the southeast of Section 2, that well has cum'd 945 million cubic feet of gas and is currently producing.

If you move to the south-southwest of Section 1, that well has cum'd 902 million cubic feet of gas and is currently producing. And then the last one there in the southeast of Section 1 was plugged and abandoned in 73, and we've identified that it was an openhole completion

which subsequently collapsed, therefore, the low cumulative production there of 78 million.

Q. How did you, as a reservoir engineer, validate the volume of remaining gas that's available for production out of the northwest quarter of the section?

A. We basically used two methods. We use a material balance method, P over Z versus cum'd gas, and also we verified that number with material balance -- I mean, with volumetric calculations.

Q. The end result of that analysis and those calculations causes you to conclude what volume of additional gas can be produced out of the northwest quarter in the Pictured Cliffs Formation?

A. Approximately 500 million cubic feet of gas.

Q. Is that a sufficient volume of gas to justify drilling the Pictured Cliffs well as a stand-alone well?

A. No, sir.

Q. How then is it best to develop those remaining Pictured Cliffs reserves?

A. The best way that we identified was to

drill through the Pictured Cliffs, complete that, in addition to that, complete the Fruitland Coal so that you have enough gas and enough reserves to make an economic prospect or project.

Q. What are the approximate costs of drilling a Pictured Cliffs well just to the Pictured Cliffs Formation?

A. Approximately $230,000.

Q. What is the savings to the interest owners that pay for the costs of the well if the Pictured Cliffs reserves are developed in conjunction with the coal gas well?

A. To drill and complete a commingled well, it could cost approximately $300,000. So you're saving yourself approximately 230 or --

Q. Okay.

A. -- $230,000. Because you're only going to pay, in addition with this Fruitland commingle, the additional cost to complete the well. Facilities and the drilling itself would be the same either way.

Q. So something in excess of $200,000 is going to be saved by approval of this particular application?

A. Right.

Q. When you examine the offsetting production that is now withdrawing Pictured Cliffs gas from this area, is the northwest quarter exposed to drainage by any of those wells?

A. Yes, sir. In fact, all of the wells probably.

Q. In the absence of a well in the northwest quarter to further develop the Pictured Cliffs reserves, what is your opinion about who will capture those reserves?

A. More than likely the well directly to the west and the well directly to the east and the one directly to the north.

Q. When we look at the coal pool for development, where are we within the basin Fruitland Coal Pool Reservoir? Where are we located?

A. Can you repeat that?

Q. Sure.

A. I want to make sure I understand.

Q. When you look at the whole coal pool basin, it's a huge basin, what portion of this basin are we in with this particular application?

A. In the southwest quarter of the basin,

I would say, in the under-pressured envelope.

Q. When you try and find on this surface, where do you go?

A. It's in our Minute Canyon. It's south of Bloomfield approximately ten miles.

Q. When you analyze the coal gas reservoir, trying to optimize your opportunity to get the best possible coal gas location for the west half of the section, what did you do to make that judgment?

A. The coal itself in the entire section is fairly continuous, fairly similar, so that really wasn't an issue as far as choosing a location for a coal well. The reason that we chose the location where we did was more for our Pictured Cliffs development.

Q. It doesn't compromise your ability to develop the coal gas by putting the well then in the northwest quarter?

A. Not at all.

Q. Describe for the Examiner how you propose to allocate production between the two pools.

A. Okay. Mr. Examiner, if you would turn to Exhibit 6, I believe, the first page of that,

what this first general equation states is that the total production is equal to the sum of the Fruitland Coal production and the Pictured Cliffs production.

And we rearranged that equation stating that the Fruitland Coal production is equivalent to the total production minus the Pictured Cliffs production. And the reason that we do that in that manner is that we have established declines for the area for the Pictured Cliffs Formation and in particular the Hanks No. 1 well in the northwest quarter.

So at that point the primary thing that we're trying to do is to establish a decline and an initial rate. And you'll see there that the Pictured Cliffs production is equal to, in the third equation, the initial Pictured Cliffs production times an established decline rate.

And in this case, from a field study that we did, it's approximately 8 percent. And that was verified by evaluating the surrounding wells and also the well that was there previously, the Hanks No. 1. And they both confirm that 8 percent is an extremely reasonable number.

And the next equation there is just that put into a monthly term or a monthly decline. And then the final one is establishing what the Fruitland Coal production would be on a monthly basis.

If you'll turn to the next page, the determination of that initial Pictured Cliffs production rate, what we've stated here and how we plan to verify that number is upon completion of the Pictured Cliffs Formation, get a flow test and determine what that rate is and then ratio that to the combined flow rates from the tests of the Pictured Cliffs and the Fruitland Coal. So, therefore, we have some fraction of that total rate that we know is Pictured Cliffs production and then apply that back into that original equation.

Q. Mr. Daves, is this the allocation formula and the equation that you testified to with regards to the Aztec 700 well?

A. Yes, sir, it's exactly the same with the exception that the decline is slightly different in this area.

Q. To refresh the Examiner's recollection about the Aztec 700, how does that case differ

from the one you're presenting today?

A. As far as the overall scheme of it, it's extremely similar with the exception that in this area we've identified that the decline is slightly different.

Q. The requested difference is that the Aztec 700 was the recompletion of an existing well, if I remember correctly?

A. No. It's a new drill well.

Q. The Aztec 700 was a new drill well just as this one was?

A. Right.

MR. KELLAHIN: For reference, Mr. Catanach, the Aztec 700 was Case 10496, Order No. R-9693. And here's a copy of that order.

Q. In your opinion, Mr. Daves, will approval of this application be in the best interests of conservation, the prevention of waste, and the protection of correlative rights?

A. Yes, sir.

Q. Will it afford Southland Royalty Company and the various interest owners and production in these two pools the opportunity to share in hydrocarbons that they might not otherwise share in?

A. Yes, sir.

MR. KELLAHIN: That concludes my examination of Mr. Daves. We move the introduction of his exhibit, I believe it's 6, yes, sir, Exhibit 6.

EXAMINER CATANACH: Exhibit 6 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Daves, why was the Hanks well No. 1 not able to recover the PC reserves in the northwest quarter?

A. What we've identified through evaluation of that wellbore is that it was an openhole completion stimulated with nitroglycerin, completed in approximately 1949. And that over time the wellbore itself, the openhole portion collapsed, and therefore it was not capable of production at that point.

Q. Is it not possible or not feasible to reenter the Hanks No. 1 at this time?

A. No. It's been permanently plugged and abandoned.

Q. Despite the fact that it's plugged and abandoned, could you not reenter it and

recomplete it?

A. It would probably be cheaper to go and drill a new well. The mechanical problems associated with trying to reenter that wellbore would be significant.

Q. The 500 million cubic feet that you determined to be the reserves under the northwest quarter --

A. Uh-huh.

Q. -- is that recoverable or is that --

A. That's remaining recoverable reserves.

Q. Remaining recoverable. The decline for the Pictured Cliffs in the area, do the wells exhibit similar decline rates?

A. On an average they do. Some of them are greater, some of them are less.

Q. Do you know what the range is?

A. Anywhere from approximately 15 percent to 3.3 percent. And the well, the Hanks No. 1, its decline was 8 percent, and that was over, from the life of the well, from 1949 until the hole collapsed.

Q. So the decline rate that you're going to use, was that just based on the Hanks well, or did you average?

A. It was an average of all of them. The average was 8.1 percent, and the Hanks itself was 8 percent.

Q. Now, you say you averaged all of the offset Pictured Cliffs wells?

A. Right.

Q. Do you have an estimate on what your initial production rates might be from the two zones?

A. We've estimated the Fruitland Coal rate to be approximately 300 Mcf a day and the Pictured Cliffs rate, approximately 120 Mcf a day.

Q. Do you have any information regarding reservoir pressure in the two different zones?

A. Yes, sir, I do. The Fruitland Coal pressure in the area is approximately 320 PSI, and the Pictured Cliffs in the area is approximately 240 PSI.

Q. Does the Fruitland contain water in this area --

A. No, sir.

Q. -- the Fruitland Formation?

A. It's a dry producer.

Q. Has Southland actually drilled the

Aztec 700?

A. No, sir. It's on the schedule for October, I do believe.

Q. Okay. Mr. Daves, how long will the Pictured Cliffs be tested initially?

A. Approximately 24 hours.

Q. You feel like 24 hours is enough to give you a good indication of what that's going to produce?

A. Yes, sir, that and the establishment that we do have offset production between the two, we should be able to come up with a reasonable rate.

Q. Do you have an opinion as to whether an additional well in -- or whether the proposed well in the northwest quarter will effectively drain the west half of the section?

A. For a Fruitland Coal well?

Q. Right.

A. Yes, sir, I think it would.

Q. Do you think it would be less effective than a well that was located in the southwest quarter?

A. It would be equivalent. I don't see that there would be a big difference.

EXAMINER CATANACH: That's all I have of the witness.

Mr. Cooter?

MR. COOTER: May I ask just a couple questions?

EXAMINER CATANACH: Yes, sir.

EXAMINATION

BY MR. COOTER:

Q. Mr. Daves, would you turn once again to your Exhibit No. 3. My copy doesn't have those penciled figures, and there are a couple of them I didn't get. The Pictured Cliffs well in the northeast quarter of 12, what's the cumulative production there?

A. 1,502,000 -- or 1,000,502,000. 1.5 Bcf.

Q. The southeast quarter is 185 million?

A. Yes, sir.

Q. And then the southwest quarter, your well there?

A. 750 million.

Q. I think I got everything else except the Hanks No. 1 well in the northwest quarter prior to it being plugged and abandoned.

A. 591 million.

MR. COOTER: Thank you sir.

MR. KELLAHIN: Call at this time our geologic witness, Ms. Stewart-Hicks.

MS. STEWART-HICKS

Having been duly sworn upon her oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Ms. Stewart-Hicks, have you on prior occasions testified before the Division as a petroleum geologist?

A. Yes, I have.

Q. You testified in the hearing on the Aztec 700 well, did you not?

A. That's correct.

Q. Pursuant to your employment as a geologist, have you also made a geologic study of the Pictured Cliffs and the coal gas pool with regards to this particular application?

A. Yes, I have.

MR. KELLAHIN: We tender Mrs. Stewart-Hicks as an expert petroleum geologist.

EXAMINER CATANACH: She is so qualified.

Q. (BY MR. KELLAHIN) Let me have you turn

with me to your geologic displays. I believe they start behind exhibit tab No. 5.

A. Uh-huh.

Q. The first display is what?

A. First map is a Pictured Cliffs net pay isopach map. Net pay is defined as resistivity greater than the shale baseline and with an SP deflection of greater than 10 millivolts deflection. The contour interval is 10 feet. But the map is colored in 20-foot increments.

You can see the Hanks 501 in the northwest quarter of Section 12 of 27 and 10, and it's identified by a star.

Q. When Mr. Daves does his engineering evaluation and determines that he believes there's remaining PC reserves to be produced by another Pictured Cliffs well in the northwest quarter, what is it that you can do to either validate or confirm his engineering conclusions?

A. I can supply him net pay figures which will help him determine volumetric calculations.

Q. When you look at the Pictured Cliffs net pay isopach, does it surprise you that he has concluded that there are additional reserves in the northwest quarter to be developed and

produced?

A. No, it does not surprise me.

Q. When you look at the four quarter sections within Section 12, which is the best of the four quarter sections for Pictured Cliffs production?

A. The northwest quarter is the best.

Q. And how do you conclude that?

A. It has the thickest net pay. You can see that you can anticipate over 70 feet of net pay in the northwest quarter as contrasted to 50 feet in the south half or 60 feet in the northeast quarter.

Q. For Pictured Cliffs productions, is there a relationship in productivity and net pay thickness in the reservoir?

A. Generally the thicker the net pay, the more reserves that you can recover.

Q. Let's turn now to your investigation of the Fruitland Coal. What have you displayed on the next exhibit following the isopach on the Pictured Cliffs?

A. This map is a net clean coal isopach of the Fruitland Coal Formation. Contour interval is 5 feet. The coloring is in 15-foot

increments. Again you can see the spacing units for the Hanks No. 501 is highlighted in the west half of Section 12, 27 and 10. And the Hanks 501 is identified by the star.

If you look at that map, you can see that the west half is fairly equivalent thicknesses from 35 feet up to 40 feet.

Q. From a geologic point of view, does it compromise the Fruitland Coal production by locating the well in the northwest quarter as opposed to the southwest quarter?

A. No. Both locations look equal.

Q. And geologically what do you gain with the well located in the northwest quarter that you don't achieve with the well in the southwest quarter?

A. You gain the ability to exploit the remaining Pictured Cliffs reserves.

Q. You've included a structure map on the base of the Fruitland Coal as the last display in this exhibit section.

A. Yes.

Q. Identify and describe that for us.

A. This is a structure map on the base of the Fruitland Coal Formation. Contour interval

is 20 feet, as you can see, the Hanks 501 identified by a star in the northwest of 12, Section 12. You can see that structural strike runs from northwest to southeast. And the formation dips to the northeast at approximately 50 to 85 feet per mile. In other words, it's quite flat.

Q. Structure is not then going to be an important component in determining a geologic conclusion for the optimum location?

A. That is correct.

MR. KELLAHIN: Let's go to the cross-section, which is in the pocket at the back of the exhibit book, Mr. Examiner. It is marked as Exhibit No. 7, if you'll unfold the cross-section for us.

Q. Before you discuss the cross-section itself, explain to us the orientation of that cross-section and tell us why you have selected that particular orientation.

A. The locator map, on the right side of the map, shows the cross-section orientation. It runs from southwest to northeast. It runs from -- it's a dip section. And the reason that I ran that was to see if there was any difference in

Fruitland Coal continuity, any changes in the Fruitland Coal, and also to show the changing thickness of net pay in the Pictured Cliffs.

Q. All right. Let's read across the cross-section and locate where your proposed well is going to be as we would find it on this cross-section.

A. The proposed well is -- the twin well is the Southland Royalty Company Hanks No. 13-E, which is the fourth well from the right on the cross-section. The Hanks 501 will be situated between that proposed twin well, the Hanks No. 13-E and the R. B. Sullivan Gas Unit No. 3.

Q. You've also shown on here the Pictured Cliffs information. What does this cross-section tell you about the Pictured Cliffs?

A. What this cross-section tells me is that you're thin in the southwest portion; you're thick in the center of the cross-section; then you're thin again to the northeast. You can see in the twin well to our proposed Hanks 501 that we have a nice, thick Pictured Cliffs section.

Q. What is your ultimate conclusion then about the entire geologic investigation you have made concerning this application?

A. I conclude that the Pictured Cliffs has remaining recoverable reserves in the northwest quarter and that the best way to exploit those reserves is to drill a commingled Fruitland Coal-Pictured Cliffs well.

MR. KELLAHIN: That concludes my examination of Mrs. Stewart-Hicks. We move the introduction of her exhibits. They are marked in the exhibit book as Exhibit 5 and Exhibit 7.

EXAMINER CATANACH: Exhibit 5 and --

MR. KELLAHIN: 7.

EXAMINER CATANACH: Exhibits 5 and 7 will be admitted as evidence.

EXAMINER CATANACH: I have no questions of the witness.

Mr. Cooter, anything of this witness?

MR. COOTER: No, sir.

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

EXAMINER CATANACH: Mr. Kellahin, do you propose to try and find out what's going on in terms of the agreement after the hearing?

MR. KELLAHIN: Yes, sir. I'll make that investigation. And then I'll discuss this matter with Mr. Cooter, and then we'll advise you

of the outcome of that discussion. I don't know that it affects you taking this under advisement and concluding the matter.

The evidence has been presented, and I see no reason to leave the record open. I think we can simply supplement that by the results of what Mr. Cooter and I determine is the final position of the parties on this issue.

EXAMINER CATANACH: If you provide me with that information, I'll appreciate it.

MR. KELLAHIN: All right, sir.

EXAMINER CATANACH: There being nothing further, Case 10531 will be taken under advisement.

[And the proceedings were concluded.]

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10531, heard by me on August 20 1993.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Debbie Vestal, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; 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 AUGUST 24, 1992.

DEBBIE VESTAL, RPR
NEW MEXICO CSR NO. 3