STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
CASE 9830

EXAMINER HEARING

IN THE MATTER OF:

Application of Strata Production Company for a Horizontal Directional Drilling Pilot Project and Special Operating Rules Therefore, Eddy County, New Mexico

TRANSCRIPT OF PROCEEDINGS

BEFORE: MICHAEL E. STOGNER, EXAMINER

STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
November 29, 1989

ORIGINAL

APPEARANCES

FOR THE DIVISION:	ROBERT G. STOVALL Attorney at Law Legal Counsel to the Divison State Land Office Building Santa Fe, New Mexico
FOR THE APPLICANT:	No Appearance

I N D E X

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HEARING EXAMINER: Call next case, Number 9830.

MR. STOVALL: Application of Strata Production Company for a horizontal directional drilling pilot project and special operating rules therefore, Eddy County, New Mexico.

Applicant requests this case be continued to December 13, 1989.

HEARING EXAMINER: Case Number 9830 will be so continued.

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez 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 December 3, 1989.

Carla Diane Rodriguez
CARLA DIANE RODRIGUEZ
CSR No. 91

My commission expires: May 25, 1991

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9830, heard by me on 29 November 1989.

Michael E. Stogner, Examiner
Oil Conservation Division

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

EXAMINER HEARING

IN THE MATTER OF:

Application of Strata Production Company for an unorthodox gas well location, horizontal directional drilling pilot project and special operating rules therefor, Eddy County, New Mexico. Case 9830

TRANSCRIPT OF PROCEEDINGS

BEFORE: DAVID R. CATANACH, EXAMINER

STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
December 13, 1989

ORIGINAL

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL
Attorney at Law
Legal Counsel to the Divison
State Land Office Building
Santa Fe, New Mexico

FOR THE APPLICANT: MODRALL, SPERLING, ROEHL HARRIS & SISK
Attorneys at Law
500 Fourth Street, N.W.
Albuquerque, New Mexico 87103
BY: SEALY H. CAVIN, JR.

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HEARING EXAMINER: At this time we'll call Case 9830.

MR. STOVALL: Application of Strata Production Company for an unorthodox gas well location, horizontal directional drilling pilot project and special operating rules therefor, Eddy County, New Mexico.

HEARING EXAMINER: Are there appearances in this case?

MR. CAVIN: Mr. Examiner, my name is Sealy Cavin. I'm an attorney with the Modrall law firm in Albuquerque. I represent Strata Production Company, and I intend to call three witnesses today.

HEARING EXAMINER: Are there any other appearances?

Will the witnesses please stand to be sworn in?

(Witnesses sworn.)

MR. CAVIN: Mr. Examiner, our first witness will be Dan Leonard.

DAN LEONARD,

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

DIRECT EXAMINATION

BY MR. CAVIN:

Q. Mr. Leonard, would you please state your name, address, employer, and occupation?

A. My name is Dan Leonard. I'm involved with an independent oil and gas exploration company in Midland, Texas, called Leonard Resource Investment Corporation. I'm a landman by background.

Q. Have you previously testified before the Division as a landman?

A. I have.

Q. Have your qualifications as a landman been made a matter of record with the Division?

A. Yes.

MR. CAVIN: Mr. Examiner, are Mr. Leonard's qualifications as a landman acceptable?

HEARING EXAMINER: They are.

Q. (BY MR. CAVIN) Mr. Leonard, would you please state the purpose of your application in this matter.

A. Yes. Strata Production Company is seeking authority to drill a horizontal hole in the Bone Springs formation as an unorthodox location for gas, 460 feet from the south line, and 1,780 feet from the east line of Section 18, Township 26 South, Range 25 East, Eddy County, New Mexico.

Q. Mr. Leonard, I would refer you to Exhibit

1. Would you please describe Exhibit 1.

A. Exhibit 1 is a land plat that exhibits the control well of our prospect, a well that was drilled by Florida Exploration some years ago, the proposed location for our horizontal hole just east of it, and the offset operators, the acreage surrounding that location.

Q. So the Florida well is located in the southwest quarter of Section 18 that's indicated by an arrow there?

A. Yes, the southeast quarter of the southwest quarter of Section 18.

Q. And your proposed location is located in the southwest quarter of the southeast quarter of Section 18?

A. That's correct.

Q. Can you identify the offset operators to your proposed location?

A. South of the proposed location is Federal Lease 39125. That lease is owned by Leonard Resource Investment Corporation, Strata Production Company, and several other partners. That is also true of the lease that is due west of the location on the southwest quarter of Section 18. That's also owned by Leonard Resources, Strata, and several other

partners.

The lease that we're proposing to drill on is a lease that we have farmed in from Amerada Hess and Bonneville Fuels Corporation. And the lease just due east of that in the southwest quarter of Section 17 is a lease that is owned by El Paso Natural Gas Corporation.

Q. Next, Exhibit 2, Mr. Leonard, which I'll refer you to, did you compile the document, or did you request the correspondence from the BLM, Exhibit 2?

A. I did.

Q. Can you explain what Exhibit 2 provides for?

A. Yes. Exhibit 2 is a letter to the Oil Conservation Division from the BLM, confirming the identification of an archeological site at our originally proposed location, which is 660 feet from the south and west lines of -- well, it's 1,980 feet from the east line and 660 feet from the south line of Section 18.

The identification of that archeological site at that proposed location has required this move to an unorthodox location 200 feet south and east of that originally proposed location.

Q. So you originally proposed an orthodox

surface location, but you were required to change that location because of the archeological conditions?

A. That is correct.

Q. Mr. Leonard, is the BLM aware that this hearing is being held today?

A. Yes, they are.

Q. Did you invite them to attend?

A. We did, and I thought they were going to come, but they were unable to make it.

Q. Next, Mr. Leonard, I would refer you to Exhibit 3. Would you please describe Exhibit 3 for us?

A. Exhibit 3 is the formal application by Strata Production Company for the horizontal well pilot project and for the unorthodox location.

Q. Could you tell me if the offset operators of the proposed well have been notified?

A. Yes, they have.

Q. Mr. Leonard, I refer you to Exhibit 4. Would you please describe Exhibit 4?

A. Exhibit 4 is the sundry notice amending the surface location for the horizontal hole we propose to drill to 1,780 feet from the east line and 460 feet from the south line of Section 18.

Q. Mr. Leonard, were Exhibits 1 through 4

prepared by you or under your supervision or direction?

A. Yes.

MR. CAVIN: Mr. Examiner, I move the admission of Exhibits 1 through 4.

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

MR. CAVIN: I have no further questions of Mr. Leonard at this time.

CROSS-EXAMINATION

BY HEARING EXAMINER:

Q. Mr. Leonard, exactly who was notified again of this application?

A. The offset operators, Amerada Hess and Bonneville Fuels Corporation and El Paso Natural Gas, who owns that lease due east of the drill site in the southwest quarter of Section 17. The acreage south and west that is colored yellow on that plat is owned by Strata and its partners.

Q. The original location was 1980 from the east?

A. Yes, sir, and 660 from the south.

Q. Mr. Leonard, is the unorthodox location a factor in the proposed horizontal well? Could you have drilled at another standard location in the

southeast quarter?

MR. CAVIN: Mr. Examiner, I would like to defer those questions to the engineer or the geologist we'll be calling, if that's acceptable, because there are geologic and engineering reasons for the proposed location in addition to the archeological reasons.

HEARING EXAMINER: Okay. In that case, I have no further questions of the witness. He may be excused.

MR. CAVIN: Mr. Examiner, the next witness is John Byers.

JOHN C. BYERS,

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

DIRECT EXAMINATION

BY MR. CAVIN:

Q. Mr. Byers, would you please state your name, address, occupation, and employer for the Division, please.

A. John C. Byers. My residence is Lubbock, Texas. I operate a petroleum consulting firm. We're petroleum engineers.

Q. Mr. Byers, have you previously testified before the Division in your capacity as a petroleum engineer?

A. I have.

Q. Have your qualifications as a petroleum engineer been made a matter of record with the Division?

A. Yes.

MR. CAVIN: Mr. Examiner, are Mr. Byers' qualifications as a petroleum engineer acceptable?

HEARING EXAMINER: Yes, sir.

Q. (BY MR. CAVIN) Mr. Byers, are you familiar with the application in this case, 9830?

A. Yes.

Q. Have you prepared exhibits in connection with this application?

A. Yes, we have.

Q. Mr. Byers, I would like to ask you some questions regarding the proposed operations on the Yeso Hills Federal No. 1 well --

A. Yes.

Q. -- before we go into the exhibits. First, could you explain the drilling and evaluation operations and procedures which you propose?

A. We propose drilling a vertical hole through the Bone Springs section to an approximate total depth of 4,900 feet in order to evaluate the reservoir conditions in the Bone Springs. Assuming that they

are found to be what we expect or have indications from the Florida Exploration well, which is immediately to the west, then we propose to plug that well back to approximately 4675, then back off to a kick-off point and drill a directional hole with an approximate 300-foot radius, hopefully in a northeasterly direction.

The northeasterly direction is selected because, in our best estimate, which will be covered later, at this point the principal fracture pattern is in the Bone Springs if this area should extend in a northwest-southeast direction.

The purpose of this horizontal hole is to encounter as many of the fractured zones as we can in order to increase the productivity of the reservoir from that standpoint.

The Florida Exploration well had an indicated production from this area of approximately 500 Mcf per day, along with some small amount of water. We think at that rate of production, a gas well in this area would be a noncommercial venture. We think with the drilling of the horizontal hole through the Bone Springs and encountering the same rock that Florida did, that we might well expect the productivity of this well to be enhanced by as much as

five to tenfold.

Q. So, Mr. Byers, let me make sure I understand. The reason you are proposing an unorthodox surface location is twofold: one, so that you can be located closer to the Florida well; secondly, so you can intersect the fractures as you believe they run?

A. If the location were moved to inside of a normal gas proration unit for 160 acres, then the availability of length of lateral that we might drill will be reduced substantially.

At the unorthodox location, with a 300-foot rate of curvature from the vertical to the horizontal, the straight uncased or producing portion of the borehole will all be located within the standard proration dimensions.

Q. Could you please explain the completion and production operations and procedures which you're proposing for this well?

A. The well would be drilled, present plans, at 9-5/8 intermediate surface casing. Drilled vertically and plugged back, kick off the curved portion of the hole.

After the curved portion of the hole is drilled to the horizontal position, that portion of

the hole will be cased with 7-inch. Drill out of the 7-inch with 6-1/8 bit to the terminus of the lateral hole.

Q. Mr. Byers, I now refer you to Exhibit 5. Would you please describe Exhibit 5?

A. Exhibit 5 is a schematic. On the right side is a plat covering the southeast quarter of Section 18, Township 26 South, Range 25 East. It shows the proposed location of the Strata No. 1 Yeso Hills; also its relationship to the Florida Exploration well.

What we have depicted as a target area is the center 40 acres within that 160-acre southeast quarter of the section. Therefore, in order to be a legal location, the horizontal portion of the borehole must be confined within that.

This also shows the directions that are available to us to drill that well, as well as the lengths that we might be able to drill and still remain legal.

That gives us a variable in the event that the fracture pattern is not found to be in a general northwest-southeasterly direction. That gives us some other options in there.

On the left is simply an isometric

schematic of the target area and the methods through which we hope to encounter fractures in this reservoir.

Q. Mr. Byers, I now refer you to Exhibit 6 and ask you to give a description of Exhibit 6.

A. What is Exhibit 6? Oh. Exhibit 6 is a dual lateral log, micro SFL Schlumberger survey of the Florida exploration, Inexco Federal No. 1 well, drilled as a wildcat to the Morrow and later plugged back and tested in the Bone Springs at a location 330 feet from the south and east lines of the southwest quarter of Section 18, approximately 1,100 feet west of our proposed location.

Q. Mr. Byers, from a technical standpoint, why do you believe a horizontal well is warranted in this case?

A. We have evidence and sound expectations that the Bone Springs section is a fractured reservoir. It also is composed of a very tight matrix, I think, as exhibited by attempted completion by Florida Exploration, offering limited possibility for production.

Having the expectation of a fractured or joint reservoir, and assuming that those joints, in general, offer infinite flow capacity, we can avail

ourselves of the flow capacity of those and the capacity of the gas to move from the interstitial spaces of the matrix into the fractures and therefore expect higher productivity and a larger drainage area.

Q. Mr. Byers, from an economic standpoint, could you explain why you believe a horizontal well is warranted?

A. A conventional well drilled at this location with the expectation of initial productivity in the vicinity of 500 Mcf per day would be a noncommercial well. If we can enhance that rate of production by five to tenfold, then we shorten the life. We do not enhance the recovery or the amount of gas there. We enhance the amount of the gas that we can get out. Therefore, it becomes a commercial venture.

Q. So is it your opinion that a horizontal well in this case will prevent both actual and economic waste?

A. It will conserve our natural resources in that it will avail those resources to us which otherwise would not be.

Q. In your opinion, would a vertical well be economic based on today's markets?

A. No.

Q. Technology?

A. No.

Q. Mr. Byers, in your opinion, will the correlative rights of any offset operators be impaired in any way?

A. No. This is a pilot project. The production from that pilot project will be confined within the standard proration unit of 160 acres for a gas well. In all probability, if successful, the entire additional reservoir will be developed similarly.

Q. So it's your opinion, Mr. Byers, that the drilling of this well will be in the best interest of the conservation, protection of correlative rights, and prevention of waste?

A. Yes.

Q. Mr. Byers, were Exhibits 5 and 6 prepared by you or under your supervision or direction?

A. Exhibit 5 was. Exhibit 6 was not.

MR. CAVIN: Mr. Examiner, I move that Exhibit 5 be admitted at this time.

HEARING EXAMINER: Exhibit 5 will be admitted at this time.

MR. CAVIN: I have no further questions of Mr. Buyer.

CROSS-EXAMINATION

BY HEARING EXAMINER:

Q. Mr. Byers, you've noted or you've stated that you expect a five to tenfold increase in production. Is that over a conventional vertical well?

A. Yes, it is.

Q. What's that based on?

A. We can -- as you are aware, the productivity of a well is a direct function of the permeability and section encountered or opened in the borehole, referred to -- we might refer to it as permeable feet or millidarcy feet. If we double that, we should double production. If we triple it, we should triple production.

In this case, if the productivity of the Florida Inexco well was indicated to be approximately half a million feet per day, that well had to be in the vicinity of some fracture because, as we see the matrix at this time, it could not produce that much. Therefore, that one fracture must have produced a half a million feet per day. So if we can encounter five to ten fractures with a horizontal hole, then our productivity should be proportionately increased.

Q. That five to ten times figure, does that

represent five to ten times more reserves will be recovered?

A. More reserves will be recovered, not that there is more gas in the reservoir, but we can recover that much more economically.

Q. So will your horizontal well be draining a larger area than a conventional vertical well?

A. Under the conditions of this particular rock, yes. Now, if the rock were highly permeable and porous, no, it would not.

Q. So just due to the fractures?

A. Due to the fracture, due to the tight nature of the rock.

Q. How will the direction of the horizontal portion of the wellbore be determined?

A. We'll monitor the direction, inclination, and attitude of that hole with MWD tools while drilling. They're downhole tools. The only portion of the hole we will not be sure of, our MWD tools will be positioned approximately 60 feet behind the bit. So we will know the whole story of the hole with the exception of that last 60 feet.

Q. I'm sorry. I must have not made that clear. How will you determine which direction that hole will be drilled horizontally?

A. We plan to core, run dip meter, and also other sophisticated logs in the vertical portion of this hole in order to attempt to determine the orientation of those fractures. If that information is not positive, then we will have to assume that our initial determination that the fracture system was probably in a northwest-southeast direction is correct.

The hole will be drilled -- the lateral hole will be drilled in such a manner that we will know each time we cross a fracture. Therefore, we can determine the frequency that we do that. Then, using geometry, that can help us give a more positive orientation to this fracture system for future development.

Q. In a situation like this, is it best for the wellbore to encounter the fractures perpendicular?

A. Yes.

Q. So you won't know how long the horizontal section will be until you know the direction?

A. No. At this time I anticipate a lateral extension of approximately 1,200 to 1,500 feet is what I would like to have at this point.

Q. But you still propose that it be -- the terminus of the hole be at a distance 660 feet from

the proration unit?

A. Yes. Also we should add that even in the event that even the most easterly direction of a lateral hole that we anticipate in this is drilled, then the origin of that horizontal hole will also be within 660 feet of the lease lines.

Q. Is that, in fact, going to be a 90-degree angle for vertical?

A. Yes, approximately.

Q. Approximately? Do you have any other evidence regarding the construction of the well besides what you've testified to?

A. No. You mean casing patterns and such as that?

Q. Casing and setting depths, sizes?

A. The horizontal tools are developing too rapidly now. Right now I'm anticipating 6-1/8 drill-out tools, which will require 7-5/8 inch casing through the bent portion of the hole.

Q. Through the what?

A. Through the bent portion. Beyond that we will drill 6-1/8. And depending on the competency of the formation, we can determine from that. At that point we will decide whether to run 4-1/2 inch slotted liner in that section or leave it open hole.

Tubing equipment, wellhead, and all that is conventional, with the tubing seat impacter, which will be set above the curved portion.

Q. Can I get you to actually submit a detailed description of the well diagram and the drilling operations?

A. Yes.

HEARING EXAMINER: I believe that's all the questions I have of this witness at this time.

MR. CAVIN: Mr. Examiner, our final witness is George Scott.

GEORGE L. SCOTT, JR.,

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

DIRECT EXAMINATION

BY MR. CAVIN:

Q. Mr. Scott, would you please state your name, address, occupation, and employer, please.

A. George L. Scott, Jr., Suite 648, Petroleum Building, Roswell, New Mexico, geologist and president of Strata Production Company.

Q. Mr. Scott, have you previously testified before the Division in your capacity as a geologist?

A. Yes, I have.

Q. Have your qualifications as a geologist

been made a matter of record with the Division?

A. Yes, they have.

MR. CAVIN: Mr. Examiner, are Mr. Scott's qualifications as a geologist acceptable?

HEARING EXAMINER: They are.

Q. (BY MR. CAVIN) Mr. Scott, first, are you familiar with the application in this case, No. 9830, and with Exhibits 1 through 6 which have been presented?

A. Yes.

Q. Can you explain why the unorthodox surface location proposed is necessary and appropriate in this case from a geological standpoint?

A. This well needs to be located near the chief control well, the Florida Exploration well, in order to minimize the geological risk. Also, this would be the optimal location for drilling perpendicular to the main fracture direction and still bottom the hole at a legal distance from the edge of the proration unit.

Q. Mr. Scott, is it your opinion if this application is granted, it will result in the prevention of waste and the protection of correlative rights?

A. Yes.

Q. Mr. Scott, was Exhibit 6 prepared or compiled by you or at your direction?

A. Yes, it was.

MR. CAVIN: Mr. Examiner, I move that Exhibit 6 be admitted.

HEARING EXAMINER: Exhibit 6 will be admitted as evidence.

MR. CAVIN: Mr. Examiner, I have no further questions for Mr. Scott at this time.

CROSS-EXAMINATION

BY HEARING EXAMINER:

Q. Mr. Scott, approximately how thick is the Bone Springs in this area?

A. The total Bone Springs formation, without doing some checking, I couldn't give you a precise answer, but I would estimate about 2,000 feet thick, the entire Bone Springs. We're dealing here with a portion of the Bone Springs that is in the upper part of it. And this particular interval is about -- it varies from 150 to 250 feet thick, depending on where you are.

Q. Mr. Scott, besides the Florida Exploration well, is there any other Bone Springs production in this area?

A. No, not in this general area.

Q. Did the Florida well actually produce?
A. It was not completed as a formal gas well, but it produced gas during the extended testing period.
Q. So a Bone Springs pool was never created, to your knowledge?
A. That's my understanding.
Q. So you're in effect drilling a wildcat?
A. Yes, yes.
HEARING EXAMINER: I guess that's all the questions we have at this time. The witness may be excused.
Does that conclude your presentation, Mr. Cavin?
MR. CAVIN: Yes.
HEARING EXAMINER: On the drilling procedures that I requested, we'll just go ahead and close the record at this time but have those submitted within a week or so.
MR. CAVIN: Okay.
MR. STOVALL: Mr. Cavin, the set of exhibits which I was presented numbers each exhibit as Exhibit No. 1.
MR. CAVIN: Right.
MR. STOVALL: It makes it a little harder

to follow the testimony. Could I get that renumbered before we --

MR. CAVIN: You bet. How about this one? This is 1 through 6.

MR. STOVALL: That's a lot better.

HEARING EXAMINER: There being nothing further in this case, Case 9830 will be taken under advisement.

MR. CAVIN: Thank you.

CERTIFICATE OF REPORTER

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

I, Freda Simmons, 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 February 18, 1989.

Freda Simmons
FREDA SIMMONS

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9830, heard by me on December 13 1988.

David R. Catanach, Examiner
Oil Conservation Division