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. 11,894
APPLICATION OF CHESAPEAKE OPERATING, INC., FOR AN UNORTHODOX OIL WELL LOCATION, LEA COUNTY, NEW MEXICO	ORIGINAL

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner

December 4th, 1997

Santa Fe, New Mexico

This matter came on for hearing before the New Mexico Oil Conservation Division, DAVID R. CATANACH, Hearing Examiner, on Thursday, December 4th, 1997, at the New Mexico Energy, Minerals and Natural Resources Department, Porter Hall, 2040 South Pacheco, Santa Fe, New Mexico, Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

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Examiner Hearing
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A P P E A R A N C E S

FOR THE APPLICANT:

KELLAHIN & KELLAHIN
117 N. Guadalupe
P.O. Box 2265
Santa Fe, New Mexico 87504-2265
By: W. THOMAS KELLAHIN

FOR YATES PETROLEUM CORPORATION:

CAMPBELL, CARR, BERGE and SHERIDAN, P.A.
Suite 1 - 110 N. Guadalupe
P.O. Box 2208
Santa Fe, New Mexico 87504-2208
By: WILLIAM F. CARR

* * *

WHEREUPON, the following proceedings were had at 11:38 a.m.:

EXAMINER CATANACH: All right, at this time I'll call Case 11,894, the Application of Chesapeake Operating, Inc., for an unorthodox oil well location, Lea County, New Mexico.

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 two witnesses to be sworn.

EXAMINER CATANACH: Call for additional appearances?

MR. CARR: May it please the Examiner, my name is William F. Carr with the Santa Fe law firm Campbell, Carr, Berge and Sheridan.

We represent Yates Petroleum Corporation, and I have one witness.

EXAMINER CATANACH: Any additional appearances? None.

Will the witnesses please stand to be sworn in?

(Thereupon, the witnesses were sworn.)

MR. KELLAHIN: All right, sir, we're ready.

MIKE HAZLIP,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A. Mike Hazlip, landman for Chesapeake Operating, Inc.

Q. Mr. Hazlip, on prior occasions have you testified before the Division as a petroleum landman?

A. Yes, I have.

Q. And in your capacity as a petroleum landman for your company, have you been involved with determining the offset ownership involved surrounding this spacing unit?

A. Yes, sir.

Q. Have you identified who that party is?

A. Yes, Yates Petroleum.

Q. And have you been in contact with Yates Petroleum Corporation concerning their concerns about your unorthodox well location?

A. Yes, sir, I have.

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

MR. CARR: No objection.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Mr. Hazlip, let me ask you to turn your attention to Exhibit 1. We're going to ignore the geologic interpretation that's also included on this display, and confine your attention to matters within your expertise.

First of all, identify for us what is outlined in the blue outline.

A. This is the 80-acre proration unit surrounding what we have proposed as our Salbar 1-16 well, to be located at -- to be at a location of 2456 feet from the north line and 1023 feet from the west line of Section 16.

Q. That unorthodox location would put you closer than the 330-foot setback to the south boundary of your spacing unit, would it not?

A. Yes, sir, it would.

Q. It would put you about 180 feet away?

A. Yes, sir.

Q. Have you determined who the offset operator or working interest owners are in the southwest quarter of Section 16 towards whom the well encroaches?

A. Yes, sir, that's Yates Petroleum Corporation.

Q. Have you been in contact with representatives of Yates Petroleum Corporation concerning their potential objection to your location?

A. Yes, sir.

Q. Let me direct your attention to Exhibit Number 2 and ask you if the three letters contained within Exhibit 2 represent the correspondence you have exchanged with Yates over this topic.

A. Yes, they do.

Q. When did you first contact Yates concerning their position about the unorthodox location?

A. I contacted Yates Petroleum Corporation on November 4 through a facsimile of a letter that's attached here.

Q. Okay. Did you offer to Yates any opportunity to settle or resolve any potential concern they might have concerning your well location?

A. Yes, we did. We offered Yates a mirror location and to provide them with well information from our well.

Q. Okay. What if any response did you receive to your letter?

A. I received a letter in response from Randy Patterson, in a letter dated November 6th, 1997. His response was that they were declining our offer and were going to object to our request for an unorthodox location. He made a comment that -- in his letter that the spacing rules and setback rules that were in place were not to be changed or breached in any way for the protection of

correlative rights.

Q. Did you respond to Mr. Patterson's letter?

A. Yes, sir.

Q. Without reading your response, which is dated December 1st, summarize for us the points that you were conveying to Mr. Patterson.

A. What I wanted to let Mr. Patterson know in response to that was that -- if you'll look at your Exhibit 1 plat, you can see that any well drilled outside the 330-foot setback boundary, I believe, breaches the rights or violates the correlative rights of any owners under that acreage. And I did want to make -- You know, I think that Mr. Patterson's statement is in conflict with their position.

I also offered Yates Petroleum the right to participate with us in our well if we could participate with them in a location further to the south where we see another prospect.

Q. How would that be accomplished? What was your proposal?

A. I was proposing to give Yates a 40-percent interest in our Salbar 1-16 well --

MR. CARR: Mr. Examiner, I'm going to object to this. They admittedly have been trying to settle, and they've reached no settlement agreement. But if the

negotiations that have failed become part of the testimony in this hearing, then nobody would be willing to settle, and that's why settlement are generally not involved.

I'm going to object to the inclusion of the third letter in the record that's in Exhibit Number 2, and I object to testimony about the details of some of the proposals, other than to note that the parties have tried to settle it and have been unable to do so.

MR. KELLAHIN: Mr. Examiner, settlements are not confidential unless the parties choose to make them confidential. I think it's important for you to know that we're not simply attempting to encroach on Yates to gain an advantage and that we have offered them an opportunity to share in our well as a reasonable way to resolve this dispute. And the fact that they won't accept it, I think, is significant and ought to be taken into consideration.

MR. CARR: It's absolutely irrelevant to what you have to decide, and that is whether or not they're gaining an advantage on the offsetting property and whether the location -- and we object to this line of testimony.

MR. KELLAHIN: It's very relevant, Mr. Examiner. They've asked for a substantial penalty against us. You ought to know that in order to mitigate any issue we've offered to give them an interest in our well.

EXAMINER CATANACH: I think I'll make the

determination of whether it's relevant or not, but I would like to hear the testimony regarding that.

Q. (By Mr. Kellahin) Please continue, Mr. Hazlip, with what specifically you offered in exchange with Mr. Yates.

A. We offered Yates Petroleum Corporation a 40-percent interest in our Salbar 1-16 well for a 40-percent interest in a prospect we identified in what would be the proration unit directly south of their -- for our inclusion in their prospect.

Q. What's the contractual device or type of agreement utilized by companies such as yours and Yates to put in effect that type of solution?

A. Yates and Chesapeake have in the past put together a joint operating agreement whereby we designated an interest, what the interest would be under, say, a working interest unit. In this case, we would have a separate operating agreement, one for our proration unit and one for the proration unit to the south, and it would include what each party's interest would be in both wells.

Q. And Yates thus far has declined to accept that proposal?

A. Yes, I called Yates Petroleum yesterday morning. I have not heard anything in response to my fax and -- facsimile to them. I called and talked with Robert Bullock

yesterday morning, and he said that Yates Petroleum had declined our offer and were going to go ahead and protest us.

Q. What's your company's position concerning the imposition of any penalty concerning the location?

A. We don't believe there should be a penalty whatsoever on this location. We don't see that we're infringing on Yates or doing anything detrimental to Yates or any mineral owners under the southwest quarter of Section 16.

Q. And that opinion is based upon the conclusions of your geophysicist concerning the size and the shape of this Strawn reservoir?

A. Yes, sir.

MR. KELLAHIN: We'll call Mr. Hefner in just a moment, Mr. Examiner, to document the size and shape of the isopach on the display. With the exception of that verification, that concludes my examination of Mr. Hazlip, and we move the introduction of Exhibit 2 at this point, and I will subsequently tender Exhibit 1 when Mr. Hefner has further authenticated it.

MR. CARR: Object to the inclusion of the third letter in Exhibit Number 2 as previously stated.

EXAMINER CATANACH: I'll overrule that objection and I'll admit Exhibit Number 2.

Mr. Carr, your witness.

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Hazlip, you've been talking to Mr. Patterson and others at Yates, have you not, about trying to settle this dispute?

A. Yes, sir.

Q. And you've proposed that by an exchange of operating agreements you could each acquire an interest in the Strawn proposal on the other's tract in this area; is that a fair general summary?

A. Yes.

Q. Do you know whether or not Yates considers their prospect their prospect superior to the one that you are now proposing as the subject of this hearing?

A. Whether or not they -- I don't even know that Yates Petroleum sees a prospect under their acreage.

Q. And so you really don't know what the basis of their refusal to join in a joint operating agreement with Chesapeake might be; you don't know why they have decided not to do that, do you?

A. No, sir, all I know is that they've --

Q. -- that you've made an offer; is that right?

A. Yes, all I know is that they've stated in a very firm manner that they believe the rules are in place and

should not be strayed from whatsoever.

Q. What are the rules in this area? Do you know?

A. 330 feet from the nearest lease line.

Q. And that would apply to any formation developed on 40-acre spacing, would it not?

A. I believe that's correct, or 80-acre spacing.

Q. And that's because of the rules that Chesapeake has obtained for the Northeast Shoe Bar-Strawn Pool?

A. Yes, that would apply to an 80-acre proration unit.

Q. You testified in that case, did you not?

A. Yes, sir.

Q. Wasn't the purpose of it establishing 330-acre setbacks in the Northeast Shoe Bar-Strawn Pool to provide for maximum flexibility in locating wells in these tracts?

A. No, not maximum flexibility. It was to assist in standard exploration procedures, but not to -- not for maximum, no.

Q. You're aware that the order provided -- and I'm talking now about Order Number R-10,848 -- provided that the 330-foot setback requests with a limitation of one well per proration unit would serve to provide the operators in the subject pool maximum flexibility in location. Do you disagree with that?

A. Yes, in some situations I believe it's absolutely

necessary, to protect correlative rights, to take into consideration all the separate situations, the specific situations.

And we've shown in various cases -- not just this one -- where today with the 3-D seismic, it's necessary to look at those specific cases, and sometimes -- and as we'll show today, it's necessary to exceed the 330-feet offset.

Q. You've worked on other Strawn reservoirs in this area, have you not?

A. Yes, sir.

Q. Are you aware that a 330-foot setback in an 80-acre-spaced pool is unusual?

A. Yes, under standard procedure, yes.

Q. Typically it would be within 150 feet of the center of a quarter quarter, would it not?

A. Yes.

Q. Now, these rules that are in effect for 80-acre-spaced pools are temporary rules; is that right?

A. Yes, sir.

Q. They're going to be reopened in February of this year?

A. I believe that could be.

Q. Of next year?

A. (No response)

MR. CARR: That's all I have, thank you.

REDIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Hazlip, in support of its objection did Mr. Bullock or Mr. Patterson provide you with any geologic information to show that they believed they had a prospect in the southwest quarter of 16?

A. No, sir.

Q. Did they advance to you the prospect that -- the potential that they had a prospect at all?

A. No, sir.

Q. They simply said no?

A. That's correct. As a matter of fact, when I first contacted Mr. Bullock about this possibility he seemed interested in it and asked me to put it in writing, and it sounded like something reasonable and worth approaching his management about.

Q. When the geophysicist gives you an isopach like this, and with your knowledge of these rules, it's simply impossible to access this Strawn reservoir in the absence of a special exception; is that not true?

A. Absolutely.

MR. KELLAHIN: No further redirect.

EXAMINATION

BY EXAMINER CATANACH:

Q. Is your well location actually 1023 feet from the

west line? I believe the ad says 1028.

A. Let me check here. I may have misread that. The "3" may have looked like a -- the "8" may have looked like a "3".

I believe that our plat, survey plat, shows 1023.

Q. 1023 is the correct location.

Now, Yates is the only affected party that you've provided notice to in this case?

A. Yes, sir.

Q. In addition to the wrong footage in the advertisement, the ad also states that you were going to dedicate a 40-acre proration unit. It's now your intention to dedicate 80 acres to this well; is that correct?

A. Yes, sir.

Q. Okay.

A. It was brought to our attention that this is close to the Northeast Shoe Bar-Strawn Pool, and we -- with the information that our geologist will show later, it warrants being put in that pool.

Also, I'd like to mention that in regard to the footage, I did, in my letter to Mr. Bullock, identify the location as 1023 from the west line.

Q. Okay. In your opinion will these changes affect any other party besides Yates Petroleum, who is present here today?

A. No, sir.

EXAMINER CATANACH: Okay.

MR. KELLAHIN: In fact, the actual Application that was sent to Yates showed the correct footage.

MR. CARR: Mr. Catanach, we're not confused about the location of the well. Whether it's on 80s or 40s, the requirements are 330 setbacks under the rules, and we have no problem with the ad or the notice.

EXAMINER CATANACH: Okay. So with that, I would suggest we just proceed with the case without having to readvertise it.

MR. KELLAHIN: I concur.

EXAMINER CATANACH: Okay. I don't believe I have any questions of the witness at this time.

MR. KELLAHIN: Mr. Examiner, my next witness is Robert Hefner. Mr. Hefner is a geophysicist with Chesapeake Operating.

ROBERT A. HEFNER, IV,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. For the record, sir, would you please state your name and occupation?

A. Yes, my name is Robert Hefner, and actually I'm

employed by Chesapeake as a geologist for the Permian Basin, but I have interpreted this data set.

Q. You have expertise in geophysics?

A. Yes, sir.

Q. On prior occasions have you testified before the Division Examiner concerning 3-D seismic interpretation?

A. Yes, I have.

Q. In fact, you've spent a substantial portion of your time on that activity?

A. Yes, sir, I do.

Q. With regards to the eight, nine or ten wells Chesapeake has drilled in this general area, have you in each instance been involved as the geologist interpreting the geophysical data?

A. Yes, I have.

Q. Have you done so in this case?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Hefner as an expert geologist with expertise in analyzing three-dimensional seismic data.

EXAMINER CATANACH: Any objection?

MR. CARR: No objection.

EXAMINER CATANACH: He is so qualified.

Q. (By Mr. Kellahin) Let's go back to Exhibit 1 for a moment. The size and the shape and the location of the

Strawn net isopach shown on this exhibit is your work product, is it not?

A. Yes, it is.

Q. We are about to show Examiner Catanach the kind of detailed three-dimensional seismic information that up to now Chesapeake and others have been reluctant to show in a public hearing; is that not true?

A. That is correct.

Q. As a result of that presentation and your interpretation, do you have an opinion now as to whether or not this location should be approved and, if so, without -- subject to any production penalty?

A. I believe it should be approved, because if it's not, I doubt it would ever be drilled, and I don't think there's any encroachment of this reservoir on Yates' leasehold and I'll demonstrate that through some other exhibits.

Q. In the Chesapeake-Marathon case that this Examiner heard some time ago, the presentation had to do with locating a Strawn reservoir, and the presentation was keyed to a structural interpretation, was it not?

A. That is correct.

Q. We're going to show him something more definitive in this case, are we not?

A. Yes, we are.

Q. Let's look at what we're seeing. This is defined by you as a Strawn net isopach, and you have displayed it within the spacing unit. Describe for me what you mean by that term.

A. This map is derived from the interpretation of the 3-D seismic data set and has been calibrated to well control from -- We've drilled actually 12 wells on this 3-D volume, and all of those 12 have been successful, and the methodology has proved to be very effective in defining these kinds of maps.

There's some subjective interpretation to the thicknesses, but as far as where effective Strawn reservoir is, the seismic displays that very well, and where you do not have productive Strawn.

Q. Let's talk about what you've just said. When we're looking at the zero line on this contour map, we are looking at the Strawn formation, and within that Strawn formation we have located the absolute limits of the potentially productive reservoir rock within the Strawn?

A. That's correct.

Q. And if we're outside the zero line, the Strawn reservoir rock is of such a poor quality that it could not be productive of oil?

A. That's correct.

Q. Okay. When we're looking at this, we're looking

at it in a bird's-eye view, we're looking down on the reservoir. And as you peer through the Strawn reservoir, all that we're seeing here is a display of the thickness of the Strawn formation that has reservoir-quality rock that's good enough to contain hydrocarbons?

A. That is correct. But even the zero-to-20-foot, you may not even, with a wellbore, find sufficient reservoir quality to establish commercial production. So really you have to get in the 60- to 80-foot range to establish commercial production.

Q. Okay. The zero line is the absolute maximum limit of the Strawn reservoir?

A. Uh-huh.

Q. And the likely point of contribution of hydrocarbons is going to be at some point where the thickness is greater than 20 feet?

A. Right.

Q. When we look at this display, we find virtually none of the reservoir encroaching into the Yates spacing unit?

A. That's correct. Well, yeah, there's -- It overlaps barely, but -- the zero line does, but there's no effective reservoir, in my opinion, that is coming from under that lease.

Q. Let's talk about the 3-D seismic data. Is the

3-D seismic information available to you in this area a sufficient size that you can define this Strawn reservoir with accuracy, as depicted on this map?

A. Yes, it's a 50-square-mile 3-D survey, and this is in the southern --

Q. So we're not on the boundary of the 3-D survey?

A. No, we're not. We have full coverage and full detail.

Q. And what is the grid size, if you will, of the data points that you're using for your 3-D seismic work?

A. They're 110 feet apart.

Q. So in each -- in any direction --

A. In any direction.

Q. -- we're going to have a data point on a grid that's got data points 110 feet apart?

A. That's correct.

Q. And with that data set, then, you can make a choice of pooling north-south vertical profiles or east-west vertical profiles on any dimension, so long as it's 110 feet apart?

A. That's correct.

Q. Okay. Let's go to Exhibit Number 3. Would you identify what we're seeing here?

A. Yes, this is a map that was derived from the 3-D volume. It's a -- derived on a computer workstation. It's

a mechanical product, so it does not have any subjective bias to interpretation at all.

Q. All right, let's describe what you're saying. When you pull up the 3-D data set and want to look with a bird's-eye view down the Strawn formation, and you want to see not only the reservoir-quality rock that would contain oil, but the rest of the Strawn, you would look through your data set, and this is what you would see, on Exhibit Number 3?

A. Yes, it's a volume of rock that the computer has analyzed --

Q. Okay.

A. -- that represents top and bottom of Strawn.

Q. Okay. When we compare the Strawn amplitude map on Exhibit 3 to the size and the shape of the Strawn net isopach that you have put on Exhibit 1, can you visualize -- show us how we can visualize how these color codes match your contouring?

A. In a general way, because it's not a one-to-one. There's some subjective interpretation as to thicknesses on the actual isopach that I generated, but there is a correlation between the two maps.

The color code is such that anything that is the dark blue is, in my terminology, what I call a tombstone Strawn, which is just Strawn lime mud that has no reservoir

quality to it whatsoever. And so as you go from regional or tombstone Strawn into something that's anomalous within that volume, you'll see the color changes.

And as you get into the hotter colors, the more of an anomaly, an amplitude anomaly, it represents. And the reason that happens is because the velocities decrease significantly, and the only way to decrease the velocities in what is normally a lime mud is to introduce porosity. And so the hotter it is, the more porosity you have.

Q. Let's take a moment -- Look at Exhibit 4 now. Let's keep Exhibit 3 out, because we're going to come back to it. Take Exhibit 4 and look at the color chart, if you will, on the far right margin. The color ranges are the same color ranges shown on Exhibit 3?

A. Well, the -- I think the actual -- I think they're close. I don't know that for a fact, but --

Q. All right. For purposes of my question, I think --

A. Yeah.

Q. -- what I want you to illustrate for us is, on Exhibit 4, at the top of the scale, there's a 3.250.

A. Right.

Q. At the bottom of the scale it's 1.0.

A. Right, and these are relative numbers. The actual values of them don't mean a whole lot; it's in

relation to each other. But the 3.25 that represents the dark blue would be what would be considered regional Strawn.

If you just -- What's unique about the Strawn in this play in this area is that you've got a Strawn rock that thickens Basinward to the north, and there's a regional thickness, and that regional Strawn thickness is just lime mud, and there's no reservoir quality to it at all until you start introducing these phylloid-type algae growths that start growing up against that regional.

And so it makes for the use of seismic tool for exploring for those growths or anomalies very efficient, because you can look at where the dark blue regional Strawn is and know that's regional rock, it has no possibility of yielding hydrocarbons. You look for where it becomes anomalous, and in this color display it would be where those colors start becoming hot or the wavelet shape changing character.

Q. On the color-code bar, then, you want to get down at the bottom of the scale where you're in the yellow and turn into these orange colors?

A. Exactly, you'd like to see that whole wavelet turn to the light-colored greens and to the oranges to even suggest that you may have reservoir-quality rock.

Q. And back on Exhibit 3 then, when we're looking at

the range of color change, we're looking at the base data that has not been interpreted, has not been applied with any of your judgments --

A. Right.

Q. -- and based upon this color code, can you define for me what is the maximum area in which you might find the Strawn reservoir to be bearing of hydrocarbons?

A. The way that we use this is that we'll draw an axis along that hottest color, which represents the maximum reduction of velocity, which then in turn implies the maximum amount of porosity development. And then you'd want to locate a well along that axis.

Q. So you're looking at the red color?

A. I'm looking at the red color.

Q. That's going to be the point of the Strawn that's got the greatest thickness, it's got a color change that is related to porosity?

A. Uh-huh.

Q. And as you move into the area where you have that green rim that makes a transition into white, blue and then purple --

A. Uh-huh.

Q. -- you're out of the hydrocarbons?

A. Right.

Q. Okay. In order to see if the Yates spacing unit

has any potential opportunity to have that productive share of the reservoir on their spacing unit, have you pulled an east-west line off the 3-D data set?

A. I have. That's Exhibit Number 4.

Q. And it's line 96?

A. And it's line 96.

Q. All right, let's look at Exhibit 4. The left side of that display is going to be to the west?

A. That's correct.

Q. The east side is going to be on the right side?

A. Right, and it covers about what their lease unit boundaries are.

Q. Okay. The vertical red line on Exhibit 4 is to be oriented to what point on Exhibit 3?

A. All right, that red bar that you see on Exhibit 4 is where this vertical seismic profile intersects that north-south line labeled "Trace 129".

Q. Okay.

A. And so from that intersection point east and west is represented by the vertical seismic section.

Q. Okay. On Exhibit 4 you have identified one of these four horizontal color bars with a blue line on top and it looks like maybe a green line on the bottom?

A. That is correct.

Q. What are you framing for us here?

A. All right, the blue line signifies the top of the Strawn, and the green line signifies Atoka shale.

Q. That would be the total opportunity in the Strawn formation?

A. That's correct.

Q. Within that formation, how do you read the color code and the other geophysical data to decide at what point you have an opportunity to recover hydrocarbons?

A. Most of that profile shows it to be the dark blue regional-looking Strawn. There's only one trace on there, which is just -- which is where we intersect with Trace 129, that suggests any possibility. You can see that it gets into the white color, and it's just that one trace. So that would be one trace that you may focus on to see if anything develops around that.

Q. As we're looking at this east-west line trace, it is actually located 110 feet south of the boundary between you and Yates?

A. That's right.

Q. Okay. And when we look at the intersection of the two trace lines, the east-west north-south line, that's at the approximate point in which the Strawn reservoir that you're targeting -- that's the farthest extension of that reservoir into the Yates tract?

A. Uh-huh.

Q. Everywhere else along that line it is farther back to the north?

A. Right.

Q. Okay. Can you utilize other information that you have to satisfy the Examiner that your interpretation of the existence of reservoir-quality rock is appropriate?

A. Yes, I do, and I think maybe --

Q. I may have given the Examiner your only copy.

A. -- the Examiner has the colored one.

Q. Bear with me just a minute.

A. But I have a black-and-white one I can use an talk off of.

Q. Hang on just a second.

A. Okay.

Q. Let me borrow from the Examiner Exhibit 5 for just a moment. I will duplicate this and make color copies after the hearing. Unfortunately, we have only one. Let me show Mr. Carr what I'm about to show the Examiner. Here's Exhibit 5.

A. I think the black-and-white probably shows the same thing.

Q. Here's Exhibit 5.

A. Okay.

MR. KELLAHIN: What he's going to do is, he's going to fold Exhibit 5 so it has a vertical margin right

along the black-white vertical line boundary.

MR. CARR: Okay.

MR. KELLAHIN: And he's going to take that and he's going to place it on Exhibit 4 where this interval, STRN is the top and STRNCL is the bottom, and he's going to put that on the right margin of Exhibit 4 in the Strawn reservoir, and he's going to move from right to left.

THE WITNESS: Okay. Mr. Examiner, what you see displayed here, this is what's termed a synthetic seismogram, and what --

Q. (By Mr. Kellahin) Exhibit 5 is what?

A. A synthetic seismogram.

Q. All right, sir.

A. And it's generated by using the actual log data. What you see in that gridded table is velocity, which is derived from the sonic log. And so any of -- As that curve moves to the right the faster the velocity is, and as it moves to the left the slower it is.

And you can see as you're going through -- At the very top I have labeled there something that says CSSH. That would be the Penn shale section, which in general has a lower velocity. And then as you come to the top of the Strawn you can see how you have a deflection to the right, indicating that lime mudstone that I term as regional Strawn or Strawn tombstone. And then it comes down, you

can see there's some minor changes in that Strawn. And then it comes to the Strawn clastics, which are a little slower velocity, and then the Atoka shale.

And so if you --

Q. Let's identify where the well is that this data came from.

A. Yes, this well is from the Inexco Berry Hobbs, which is just to the northwest of our project.

Q. It's shown on Exhibit 1, it's up in the --

A. It would be in the --

Q. -- northeast southwe- -- southeast?

A. -- northeast -- northeast of 17, I think.

Q. Yeah, northeast of 17.

A. So it's very close to the prospect. And you can fold that synthetic seismogram. What it does is, it generates -- You input a wavelet, a seismic wavelet, and it uses the velocity to generate the synthetic seismogram, which is just to the left of that velocity curve. And so it will give you the shape of the wavelet or seismic response from a well like the Berry Hobbs.

And you can lay that down on that east-west cross-section, and you can see, although this happens to be -- the wavelet happens to be black and white and not the color mapped, you can see that it's very dense black, which represents the same thing that we're seeing in the vertical

seismic section as the dark blue.

Q. All right, where would I place Exhibit 5 as I overlay it on Exhibit 4?

A. Well, you could place -- You can see the line that comes across on the top of the Strawn, so you could lay the top of the Strawn on that blue line on the vertical seismic section.

Q. And how far east-west do I place it?

A. You can move it all along there. You can see that, as you go further to the east, that the Strawn even gets thinner than what we're seeing in this wellbore, this particular wellbore.

To the west -- It matches a little bit better to the west because of -- the Strawn clastics are in part of that envelope and giving you some of those lighter colors at the base of the Strawn in that envelope. But as you move further west again, it thins, it thins again.

So both directions it thins, thickens a little bit through here. That's mostly because of the clastics. The top amplitude is very strong and represents tombstone regional Strawn.

Q. Do you have an opinion as to whether this is conclusive data to demonstrate that the Strawn reservoir you're attempting to access does not exist on the Yates tract?

A. Yes, it is.

Q. If Yates were to drill a well 330 from the common boundary, they would not be in the same reservoir with you?

A. No.

Q. If they were to be 184 feet off the common boundary, they still would not be in the same reservoir with you?

A. No.

Q. They have no share of this reservoir?

A. Right.

Q. Let's look at the dimension from the north-south now. In order to see what the reservoir looks like in a north-south dimension, you've pulled trace line 129?

A. Yes.

Q. And that trace line will go through your proposed unorthodox location and will extend into the Yates spacing unit so we'll get to see what happens there?

A. That's correct.

Q. All right, let's do that. If you'll turn to Exhibit 6 --

A. And so on Exhibit 6 --

Q. Don't go too quick now.

A. Okay.

Q. In the four horizontal color bands -- we're looking at the second one down from the top, right, the one

that you have put "Strawn" on the top and the bottom --

A. "Strawn", "Atoka", yes --

Q. All right, that --

A. -- bounded by those color lines.

Q. -- bounded by those color lines, that represents the Strawn formation that you're looking at in a north-south direction, right?

A. That's correct.

Q. Okay. Show us where this fits when we look back on Exhibit Number 3.

A. On Exhibit Number 3 it is that north-south line labeled Trace 129. There is a red line on this vertical seismic section which indicates where it intersects that east-west line we were just looking at, and then it goes through our location. There's a proposed wellbore, and the tops of that proposed wellbore.

And you can see, looking at this vertical seismic section, the regional Strawn on both sides, that dark blue. That's where you do not find reservoir-quality rock. And the Strawn, as you can see, clearly that is anomalous in between those dark blues. And so then it becomes interpreting, what does that anomaly mean? What is it trying to tell you.

And as I have suggested earlier, you're looking for the hotter colors. If you look at that upper peak,

they start to get into the whites, which is barely out of the blue. But there's only -- even on this line, only one trace where that upper peak gets into the green colors. And that is why we've located the wellbore on that trace where we have the maximum reduction in amplitude in that upper peak.

Q. Let's superimpose, now, on the data set your interpretation.

I regret to tell you I only have -- Do you have one of those?

A. I have one overlay that --

Q. All right, we'll share the overlay. Mr. Catanach, you have an overlay there.

If you'll take Exhibit 7 as the overlay, I will show Mr. Carr how to overlay this on his copy.

All right. Mr. Hefner, we have Exhibit 7, which is the overlay, and you have put that over Exhibit 4, so the Examiner can see your interpretation about the -- not only the structure of the mound but the actual reservoir volume of the mound where the hydrocarbons are contained.

A. Exactly. And what I'm looking at is what I was alluding to earlier, are those upper peaks and how much the amplitude has been reduced in those upper peaks.

As you can see, we've gone from what is regional, which is just a single peak and a high-value amplitude, to

what is now a peak-trough-peak relationship. And now you want to look at that upper peak above that trough to indicate how much porosity you have in that mound development.

And that's we located on that one trace, and that's why on the interpretation I've brought the top of Strawn, productive Strawn, up that high, because that's really the only thing that you can introduce to cause that peak to be diminished that much.

Q. Let's look at the mound on Exhibit 7. It's the area shaded in yellow.

A. Yes.

Q. That area shaded in yellow is the mound that contains the hydrocarbons?

A. That's correct.

Q. And that's contained with the Strawn formation?

A. That's right.

Q. In order to figure out where the Strawn mound, at least as to this point on an east-west line, extends into the Yates spacing unit, you would have to look at the bottom of the yellow mound on the left edge corner, and it would nick a part of the bottom of the mound?

A. It would if it exists, and it would be at the very bottom. These mounds grow upward. And we've also found, in this area, many of these mounds to have a water

leg. So it significantly adds risk, because anything that low would have a high probability of being wet if there's even any effective porosity at those extremes.

Q. If Yates were to drill their Strawn well in this mound, right on the boundary line -- we'll give them no setback --

A. Okay.

Q. -- they're not even going to get far enough into the mound that they can produce hydrocarbons?

A. Yeah, I would say not.

Q. Okay. When we look at this illustration, it also depicts something else I want you to discuss with us. When we look at the Strawn container, the block work, the wall, if you will, in blue --

A. Uh-huh.

Q. -- there is a structural component to the Strawn where it extends upward into the Pennsylvanian shale?

A. Uh-huh.

Q. And if you were to map this as a structure map, you might map that little structural high in there. Do you see that?

A. Yeah, you would, because you can see where it thins to the extremes on either side. So you would start building structure, on this particular interpretation for the top of the Strawn, even before you got into what I

would interpret as having any reservoir-quality rock.

Q. Okay. Let's do it. If you'll take the red line, go down the red line until we get to the first blue block. Do you see that?

A. Uh-huh.

Q. That would be the top of the structure in the Strawn --

A. Right.

Q. -- and you would go down that block, the second block -- There is going to be probably three blocks of Strawn formation in the structure before it levels out and is in the Pennsylvanian shale as you move to the north?

A. Uh-huh.

Q. Okay? My question for you is, if you're going to make a judgment as a geologist, based exclusively on a structural interpretation, and to use that interpretation to argue encroachment or violation of correlative rights, you've gone about this incorrectly?

A. Yeah, in this particular locale you would have, because we were in a well to the south, which indicated to have structure, and we drilled on that and it was dry.

Q. If you're going to attempt to address this case in terms of a structural interpretation, you're going to miss the point?

A. Right, you've got to interpret the reservoir

component of it. It's not just based on structure.

Q. Okay. And so when you look at the reservoir itself, the reservoir pore volume, the porosity as you've seen it in the 3-D seismic work, there's absolutely no reservations in your opinion that you're not infringing upon Yates?

A. That's a true statement.

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

We move the introduction of his Exhibits 3 through 7.

EXAMINER CATANACH: Exhibits 3 through 7 will be admitted as evidence?

Mr. Carr?

CROSS-EXAMINATION

BY MR. CARR:

Q. Mr. Hefner, if we go to Exhibit Number 1, if I understood your testimony, this was prepared by you; is that correct?

A. That's correct.

Q. If we go down to the middle block at the bottom that identifies who has worked on the exhibit, there are some other names. Who is Mr. Hanoch?

A. He's a geophysicist at Chesapeake.

Q. And has he worked with you on this?

A. Yes, he has.

Q. Did he actually prepare this, or did you?

A. I prepared it.

Q. Okay. Who is Aaron Reyna?

A. He's a production engineer.

Q. Okay. And Mr. Hazlip.

A. That's our New Mexico team, if you will.

Q. When Mr. Hazlip was testifying, I believe he mentioned a mirror location. Based on your interpretation, there really would be no purpose in a mirror location in the southwest quarter of Section 16; isn't that right?

A. Not according to our interpretation.

Q. And you wouldn't have an objection if somebody wanted to try that?

A. Right.

Q. Okay. When I look at this map, we've got an isopach. I haven't seen a structure map. Is structure important to you in trying to determine where you're going to locate a well out here?

A. What's more important, as we were trying to develop in the testimony, is the structural attitude of the porosity, not the Strawn proper.

Q. When you go out and drill one of these wells, do you still try and hit the top of the structure?

A. They don't always correspond. There are some

mounds that will grow in a lateral shape that will be offset from structural top of Strawn and stratigraphically would be offset. So no, they don't always coincide.

Q. And when you're picking a location, do you, even with this kind of seismic information, try and take a look at where the -- at the structure in addition just to the thickness of the individual pod?

A. Sure.

Q. Okay.

A. And I think you can see on our north-south, Exhibit 6 --

Q. Uh-huh.

A. -- that it happens to correspond fairly closely. You can see the structure is falling off as you go to the south.

Q. And they correspond?

A. Fairly close here, yeah.

Q. Okay. When we look at this map, do you have seismic information on the southwest quarter of Section 16?

A. We do.

Q. And have you examined that information?

A. I have.

Q. Do you see some Strawn features in the southwest quarter of Section 16?

A. I did.

Q. Were you involved in the decisions to make an offer to Yates to exchange joint operating agreements covering these various tracts?

A. Yes.

Q. And you're aware that there do appear to be features in the southwest of 16?

A. Yeah, we're actually going to participate with Yates in the drilling of one.

Q. When I --

A. I assume it's still going to be drilled.

Q. If we don't screw it up today perhaps?

Let me ask you about your Exhibit Number 3. That's the Strawn --

A. Okay.

Q. -- amplitude?

A. Yes.

Q. If I understood your testimony, this is really a product that you get out of a computer; is that right?

A. Yes.

Q. When you sit down at that computer, do you have, when you work with this information, the ability to select a frequency filter for the data?

A. There is that ability, but we've interpreted this data set at the processed frequency.

Q. Are you aware that if you use a different

frequency filter that, in fact, can affect the size of the porosity that's shown on the exhibit?

A. We try to calibrate everything to well control and make our calibrations there. We have not had to filter this data set to try to match well control.

Q. Okay. You are aware, however, if you use a different frequency it can, in effect, change the porosity shown?

A. The relative changes will still stay the same. The numbers may change --

Q. The numbers may change.

A. -- but the relative difference between the numbers will stay the same.

Q. If you look at this data, your feeling is, you don't have any interpretive -- there's no interpretive side to it, you can't adjust the filter or other techniques or factors to --

A. That wasn't --

Q. -- work the data?

A. All we did was took that envelope that you're seeing on these vertical seismic sections and asked it to tell us what the amplitude of that envelope is.

Q. And when we look at Exhibit Number 4 --

A. Uh-huh.

Q. -- if I look at this -- and I'm not an expert on

this at all -- and I look at the line coming down through the center of the exhibit --

A. That red line?

Q. Yes, sir.

A. Uh-huh.

Q. -- and if I look at your color coding, isn't it true that there is some porosity shown along that line on the right-hand side of it and moving off sort of down and toward the right from that?

A. Yeah, I think you can see it in that one trace there where the top part of that wavelet starts to turn white.

Q. And that is, I think you testified, 110 feet south of the line?

A. Right.

Q. Now, when Mr. Kellahin came over here and folded your exhibit for me --

A. Uh-huh.

Q. -- as if I knew what he was doing --

A. Okay.

Q. -- aren't you just trying to show here that, in fact, you're tying your seismic correctly into your well control? Isn't that part of what you were trying to show with that?

A. I'm trying to show what nonreservoir-quality

Strawn looks like on seismic.

MR. CARR: Okay, that's all I have. Thank you.

EXAMINATION

BY EXAMINER CATANACH:

Q. On your Exhibit Number 3, would you interpret some of the green-shaded area to be reservoir and hydrocarbon-productive?

A. There's that possibility. That's why I've taken that zero line just south of that lease line, because, you know, absolute zero is the blue. I don't know if it would be effective, I don't know if it would be commercial.

As I was, in the testimony, presenting, you'd be at the very bottom of that mound growth if, indeed, you found any rock that would meet net-pay cutoffs, and then it would be a high probability that it's wet and nonhydrocarbon-bearing.

Q. Do you generally in these Strawn structures see an oil-water contact?

A. We've seen in most all the wells we've drilled in this immediate area a water leg.

And that's why we take the time and effort to come to these kinds of hearings to -- you know, to locate this, to give us the maximum probability of having a successful well.

Q. Do you guys feel like you have this

interpretation down pretty good?

A. In the last twelve wells we've drilled it's worked.

Q. Any ones that were unsuccessful?

A. We were in one with Yates, which is the first one that we drilled out there. Yates operated it. And it showed some thickening that was nonreservoir rock that had to do with a different geophysical phenomenon.

So there are things that are pitfalls. But in the presentation you're seeing here, it's pretty straightforward.

Q. Have you guys drilled the other well that you came in previously on, the one where Marathon opposed you?

A. No, that's been appealed, and so we're waiting on the appeal.

Q. So basically it's your opinion that there are no hydrocarbons on Yates' tract for you to drain; is that --

A. Yeah, because it's -- The interval is thin, it has a high amplitude, there's no low velocity in it, it's that dark blue color. It's -- I can't conceive how you could put reservoir-quality rock in there and not change the amplitude of that wavelet.

EXAMINER CATANACH: I have no further questions, Mr. Kellahin.

MR. KELLAHIN: That completes the presentation.

Exhibit 8 is our certificate of notice of hearing.

And with the admission of this exhibit, that concludes our presentation.

EXAMINER CATANACH: Exhibit 8 will be admitted as evidence.

MICHAEL D. HAYES,

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

DIRECT EXAMINATION

BY MR. CARR:

Q. Would you state your name for the record, please?

A. Michael D. Hayes.

Q. By whom are you employed?

A. Yates Petroleum Corporation.

Q. Mr. Hayes, what is your current position with Yates Petroleum Corporation?

A. Petroleum geologist.

Q. Have you previously testified before this Division?

A. Yes, I have.

Q. At the time of that testimony, were your credentials as an expert in petroleum geology accepted and made a matter of record?

A. Yes.

Q. Are you familiar with the Application filed in

this case?

A. Yes, I am.

Q. Have you made a geological study of the Strawn formation in the subject area?

A. Yes, I have.

Q. And are you prepared to share the results of that study with the Examiner?

A. Yes.

MR. CARR: Are the witness's qualifications acceptable?

MR. KELLAHIN: No objection.

EXAMINER CATANACH: They are.

Q. (By Mr. Carr) Could you briefly state what Yates seeks with this Application?

A. We seek denial of their unorthodox location or, in lieu of that, if they receive it, a substantial penalty.

Q. What are the rules that govern the development of this acreage?

A. As I understand, this would come under the new rules for the Northeast Shoe Bar field, which -- I believe it's Order 10,848, established 80-acre proration units and spacing that's 330 feet from the quarter-quarter-section line.

Q. Are you familiar with the rules that generally govern 80-acre spaced pools in the area?

A. In general, in my experience. I'm not familiar with all of them, but mostly the rules allow for 150 feet from the center of the quarter-quarter.

Q. Can you explain to me why these well-location requirements have been adopted by the Division?

A. In the Northeast Shoe Bar case?

Q. Yes.

A. As far as I understand, that was upon a request from Chesapeake to have exception rules to allow for, as I read in the order anyway, maximum flexibility.

Q. Have you examined the pool boundaries, and does it appear that the proposed location is within a mile of the North Shoe Bar -- I'm sorry, Northeast Shoe Bar Strawn Pool?

A. It appears to be close, yeah.

Q. Let's go to what has been marked as Yates Petroleum Corporation Exhibit Number 1. Would you identify that and review it for the Examiner?

A. That's a Strawn top of -- a top-of-Strawn time structure map, basically a structure map based on seismic data. In fact, it is a seismic data.

Q. And this is the 3-D seismic data you have in the area?

A. Yes. The contour interval on this is a one-millisecond contour interval, which equates to perhaps

eight to ten feet, something like that, in thickness when you figure it out from synthetics.

And the colors here -- I don't want to imply that this is an isochron or an amplitude map like the last one where the colors were corresponding to porosity or something like that, necessarily, but these colors, the hotter colors here correspond to structurally higher features. So you're looking at essentially a structure map.

Q. When we look at the southwest quarter of the section --

A. Uh-huh.

Q. -- in fact, you have an anomaly in the Strawn in that acreage; is that not correct?

A. Yeah. In fact, what it appears to be is -- We sometimes refer to them as swarms or clusters or a complex of algal mounds that are developing in this area. As in the previous testimony, there tends to be a correspondence between the thickening of the Strawn interval and the higher structural position of the mound.

Q. When you look at this, do you see three separate features in the Strawn?

A. More so. I see one overall feature with higher structural position and bumps along that larger feature.

Q. Let's go to what was previously presented as

Chesapeake Exhibit Number 1. Would you take that out, please?

A. Uh-huh.

Q. When you look at this particular exhibit, is it your opinion that the unorthodox location is necessary in order to effectively drain the anomaly as shown on the map presented by Mr. Hefner?

A. No, it isn't necessary to have an unorthodox location to drain this pod or even this isochron -- net pay, I guess is probably the best way to refer to it as.

In fact, if you crammed a well right at the ultimate 330 boundary line as would be available to them, in fact, you could get inside of what is, I believe, 80-foot -- I believe that's 80, yeah, 80-foot contour interval, and it would adequately drain the pod from that position without having to go to an unorthodox location.

Q. And structurally, how would this location compare --

A. I don't --

Q. -- to the one that's being proposed?

A. I don't have his structure map, but he -- Mr. Hefner had testified that the isochron or the isothickness tends to correspond with structure, and I agree with that, in general, it seems to.

And based on our map, there is an excellent

structural position that corresponds to that 330-foot, in addition to the isochron thickening.

So you can kind of nail both the structure and the isochron thickness by putting it in the 330-foot position. And in fact, on my Exhibit Number 1, the well location that's spotted there -- it's referred to as Unit "E" orthodox location, 2970 from the south line and 990 from the west line -- that is, in fact, an orthodox location in an optimum structural position.

Q. When you work with seismic information, is there an interpretive side of it available to you when you work the data?

A. Yes, there is.

Q. And when you adjust a frequency filter can that, in fact, alter the size of the porosity and -- depending on which filter you use?

A. The techniques for identifying porosity with seismic vary from company to company or, you know, interpreter to interpreter. Some of the techniques that Mr. Hefner was describing Yates Petroleum uses, and we use some other techniques also.

Q. Let's go to what's been marked as Yates Petroleum Corporation Exhibit Number 2. Would you identify this, please?

A. This is simply an attempt to try to get some kind

of calculation of what an appropriate penalty might be in this circumstance if we were to lose and an unorthodox location was granted.

Q. Okay. Basically, what does it show?

A. I kind of tried two techniques in lieu of having any other way to kind of get a handle on this, really. One was using an areal extent. And what I'm calculating as area -- I don't have it clearly identified on the exhibit prior to this, but it's kind of the overall mound area in the north half of the southwest quarter.

Essentially what I'm saying is that the pod area has a total area of approximately 67 acres, of which approximately 27 acres lies on Chesapeake, and perhaps as much as 40 acres lies on us. And so I've just divided 40 acres by 67 acres to try to make an attempt at a penalty.

Q. Okay. Have you also attempted to calculate a penalty based on just the percentage encroachment --

A. Yeah, that's what the offset one -- I've called it linear calculation of penalty, and that one I've used. Basically their well location would be 146 feet closer than an orthodox position, and so I've divided it 146 by 330 just to come up with a penalty based on linear distance.

Q. If, in fact, instead of working off of a 330-foot setback, we were dealing with the typical 80-acre spaced unit where you had 510 feet --

A. Yeah.

Q. -- what sort of a penalty would result?

A. Well, I just did a quick calculation on that, and it's -- basically the encroachment at that point would be 326 feet from the 510 line, and that gets you to a penalty of approximately 64 percent. Now, these are kind of rough calculations. I'm just trying to get --

Q. Generally, though, if the well is penalized, which one of these do you think is the best approach to utilize?

A. I think the areal calculation gives a better feel for what -- the way I view the reservoir.

I think that there's a decent possibility -- in fact, a high probability -- that these pods are connected to some degree. I don't really feel that they go to zero at their edges.

And in fact, there's going to be pressure communication within this complex of Strawn mounds.

Q. Mr. Hayes, against what would you recommend that the penalty be applied?

A. There's various ways of doing the penalty.

In the case of this one, we're saying that -- I think a suggestion from us would be that to perhaps penalize it on a daily allotment as opposed to a rate allotment where you can -- you know, you can come up with

all kinds of figures for what the well is capable of producing or something like that.

So something on the order of days of the month or something like that.

Q. So if, in fact, you were penalized, say, a 60-percent penalty was adopted near 30 days in the month, you'd be allowed to produce 40 percent of the time?

A. Correct, essentially.

Q. If a penalty is not imposed on a well at the proposed location, what do you believe the impact will be on Yates?

A. I believe that they'll have an opportunity to intercept some of the reserves that are actually mostly lying on us to the south of that quarter-section line, and we will be effectively drained.

Q. Were Exhibits 1 and 2 prepared by you?

A. Yes, they were.

MR. CARR: At this time, Mr. Catanach, we move the admission into evidence of Yates Exhibits 1 and 2.

EXAMINER CATANACH: Exhibits 1 and 2 will be admitted as evidence.

MR. CARR: And that concludes my direct examination of Mr. Hayes.

EXAMINER CATANACH: Mr. Kellahin?

MR. KELLAHIN: Thank you, Mr. Examiner.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Hayes, Mr. Hefner testified that he's 10 out of 11, I guess, in drilling Strawn mounds on his interpretation of the geophysical data. Has Yates drilled any of the Strawn wells based upon your interpretation of geophysical data?

A. I actually work with a geophysicist that does most of the geophysical interpretation.

Q. So you have not had Yates drill any Strawn wells based upon your interpretation of the geophysical data?

A. Well, me and that geophysicist have drilled several wells, including one -- I was not responsible for the one that was drilled to the south of there, but in another area in a similar-type situation, similar to --

Q. Who is the geophysicist?

A. Dennis Cahill.

Q. Is this Mr. Cahill's time structure map on the Strawn?

A. Yes, it is.

Q. You had no input into the interpretation; you've just come to sponsor it today?

A. I had him prepare the exhibit, that's correct.

Q. Okay. When I look -- I'm trying to get myself oriented here. On the time structure map you've identified

for me on this grid the southwest quarter of Section 16. Do you find that point on the map?

A. Yes, yes.

Q. Then that corner is a 40-acre --

A. Yes.

Q. -- grid?

A. Along the left side, those are three 40-acre tracts.

Q. All right. When I look at that 40-acre tract, there is an open circle. Does that represent the Yates Bristol Arm 1-16 well location?

A. Yes, it does.

Q. And what's the status of that well?

A. It is currently being re-AFE'd at this point. We are intending to drill it with partners as soon as we get the AFEs re-signed. It expired, the original AFE --

Q. All right. So it hasn't been drilled?

A. No, it has not.

Q. Your argument for the Chesapeake location up in the top 40-acre tract --

A. Uh-huh.

Q. -- shows a proposed standard location at the high point of what appears to be a structural feature.

A. That's correct.

Q. Did I read that right?

A. That's correct.

Q. When I look at your 40-acre tract for the Bristol Arm well, I also find a structural high which is substantially east of your proposed location for the Bristol Arm well.

A. That's correct.

Q. Why are you not drilling on the structural high that you're asking Chesapeake to drill?

A. Because that location was, in fact, proposed by Chesapeake and not by Yates Petroleum.

Q. All right.

A. We had the option of either joining the well or going nonconsent, essentially.

Q. So when -- Your strategy here would be to drill on the high point of the structure?

A. Yeah, I'd push it a little to the east on that particular location, that's correct.

Q. All right. Is that still an open discussion between the companies about where to put this well?

A. It never was really discussed between the companies. They made the proposal to join in the well, and we joined.

Q. Okay. When you have participated -- when Yates has drilled a Strawn well in here -- In fact, you drilled one down in -- whatever this section is here.

A. I think it's 21.
Q. Twenty-one, the section south of 17?
MR. HEFNER: Northeast northeast --
THE WITNESS: Yes.
MR. HEFNER: -- of 21.
MR. KELLAHIN: In Section 21.
MR. HEFNER: Twenty, 20.
THE WITNESS: Twenty, sorry.
MR. KELLAHIN: In Section 20.
MR. HEFNER: Yeah, 20. There we go. Sorry.
Q. (By Mr. Kellahin) Bristol Arm is in the southwest southwest of 16?
A. Correct.
Q. The southwest diagonal offset would be the northeast northeast of 20?
A. That's correct.
Q. And you drilled a well there in the Strawn, did you not?
A. That's correct.
Q. If you were to extend your structure map on Exhibit Number 2 to take into account the well drilled in the northeast northeast of 20 --
A. Uh-huh.
Q. -- where would it have been positioned on this structure map?

A. I don't know precisely, but it would have been in a favorable structural position, as I recall. It's sitting basically on the high, as I recall.

Q. And what were the results of that well?

A. We encountered a nice, thick Strawn mound that was pretty tight.

Q. It has not been able to produce hydrocarbons in commercial-bearing quantities?

A. No, but the intention of Yates Petroleum, and I believe of partners, is that if that well works out at the Bristol location, that we might be able to do some stimulation techniques and perhaps bring that on line.

Q. Okay. When I look at the time structure map --

A. Uh-huh.

Q. -- are you proposing that there is a location in the Yates south 40-acre offset that would be appropriate to meet the competition from the Chesapeake well?

A. I believe so.

Q. And where -- There's a circle in that 40-acre tract. What does that represent?

A. That is a potential location that we might be able to drill that well at.

Q. All right. And under this time structure interpretation it would be on the structural high within that 40-acre tract?

A. That's correct.

Q. Okay. If you found it necessary to drill a well to offset the Chesapeake well, where would you put that well?

A. Well, based on this map, I think perhaps a potential location may be over in the northeast of the southwest. If you really just wanted to compete against them, if that was your intent, just to protect your lease line, perhaps in the northeast of the southwest.

Q. Well, that's got to be the point, doesn't it, Mr. Hayes? If the Division adopts a penalty, that penalty is useless because over time Chesapeake's going to get all the oil anyway, unless Yates meets the competition, right?

A. Yes, if Yates never drills another well, that would be correct. I believe they would drain, yes.

Q. You're proposing a penalty here, and I'm trying to figure out how the penalty means anything unless you find a well that you're going to drill in the offsetting spacing unit to meet that competition.

A. Uh-hun.

Q. And my question is, where would you put it?

A. Well, at this time I'd -- personally, I'd wait for them to drill their well and find out if I could adjust my maps accordingly and perhaps get better information. If they drilled a dry hole I might hesitate on drilling

anything.

Q. Okay. Now, is your data set of -- I'm looking at this time structure. And you'll have to bear with me, I'm a novice on this stuff --

A. Yes.

Q. -- but can't you convert these time structure maps to an actual depth so I can look at in a conventional footage sense?

A. Yes, you can.

Q. And have you done that?

A. At Yates, with Dennis Cahill and my interpretation, we generally don't actually. We tend to stick to straight time because of the conversion -- errors that can come in by conversion to depth, basically.

Q. Okay, so you haven't presented us the conversion map that shows us actual footage in depth?

A. That's correct. And in fact, we don't generally use that map.

Q. Okay. Are you working off the same 3-D database that Chesapeake is in this area?

A. No, we're not. But from Mr. Hefner's description, it sounds like very similar parameters and seismic-type data.

Q. When I look at the time-structure map, there's a bunch of little red dots.

A. Uh-huh.

Q. What do those represent?

A. That's -- I believe -- I'm not certain exactly what those little red dots are on the --

Q. Would that be the grid size for your 3-D work?

A. I don't think so, because we're actually at 110-foot information, just like Chesapeake is.

Q. So you would have had data that you could have generated, should your geophysicist have chosen to do so, a strong amplitude map? Right?

A. Uh-huh, yes.

Q. You could have given us a map like Chesapeake's Exhibit Number 3?

A. That's correct.

Q. And you didn't do that, did you?

A. No, sir.

MR. KELLAHIN: No further questions.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Hayes, your Exhibit Number -- This exhibit shows that, in your opinion, all of that Strawn reservoir is connected? Is that what this shows?

A. Really, it's showing a combination of things One is that the color code corresponds to the structural position, and the hotter colors just correspond to higher

structural position.

My interpretation that they may be all correct is basically based on the seismic data and my personal experience in the area. I'm not as convinced that that porosity goes absolutely to zero as Mr. Hefner is. In fact, I think it doesn't go all the way to zero, and I think there would be communication.

Q. Okay, so that -- That's just your opinion; that's not based on anything that's shown on this exhibit?

A. Well, in fact, it kind of is in the sense that I believe there's a correspondence between the structural position and the reservoir position, in the sense that I think the seismic does identify the position of where the productive reservoir is, yes.

Q. So it's your opinion you've got productive reservoir on your acreage --

A. Yes.

Q. -- that would be drained by --

A. Yes.

Q. -- location?

You have, in your other exhibits, actually defined what you believe to be the size of that reservoir?

A. Uh-huh. Basically I picked one of the contours in here that kind of circles around the yellow-orangish color on the 80 acres that's directly south of the proposed

location. That's how I came up with that particular number. It's just an areal extent.

Q. Okay, but I don't have anything that shows me where that pod that you mapped or calculate the area actually is?

A. That's correct.

Q. How am I going to rely on that if I don't -- if I can't really see where you've mapped that reservoir?

A. It basically corresponds with the burnt-orange color on the map, with a contour that's equivalent to that. And as it gets to the edge of the 80-acre tract, I did not include that acreage; I just cut it off at the section -- the quarter-quarter section line. In this case, actually, the edges of the 80-acre tract.

You can tell from the number of 67 acres total that -- approximately what kind of size area we're looking at.

Q. Now, that blue circle you have is actually -- that actually represents a standard location you think Chesapeake could drill?

A. Yeah, that was -- That's what that represents, yes.

Q. Okay. And do you know what the allowable is in this pool?

A. I believe on the 80 acres, I think it's 465, if

I'm not mistaken on the 80 acres. I think that's right. I have to check on that, actually.

Q. Okay. But you're suggesting that if we impose a penalty, that it be applied against a time factor?

A. That was the recommendation, yes.

Q. As long as they produced under the allowable per day?

A. Yes.

EXAMINER CATANACH: Okay, I have no further questions.

MR. CARR: That concludes our presentation.

MR. KELLAHIN: Mr. Catanach, I'd like to take a moment and recall Mr. Hefner to comment on the time structure map. It will take maybe five minutes.

EXAMINER CATANACH: Okay.

MR. KELLAHIN: Mr. Examiner, I've recalled Mr. Hefner to comment on Yates' time structure map.

ROBERT A. HEFNER, IV,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. If you'll take a moment, Mr. Hefner, and look at the time structure map, would you describe for the Examiner the difficulties of relying upon a time structure map as a

basis to give you a reliable indication of the exact position of this structure?

A. Yes, as we presented in testimony earlier that the Strawn is a stratigraphic play, it's not a structural play, and so the structure has no one-to-one tie with where you're going to find reservoir-quality rock.

And we've also seen from the drilling we've done that if you don't take these times -- that if you take the time to take time to depth, it will shift the axes of these structures, both -- in depth. So what may be a high may slowly -- what's low over here become higher than that.

And so in this place where it is positioned, we've seen wells that have been off with actual well control 50 feet.

Q. All right, let me ask you this: If the Examiner chooses to base his decision on structure, then in your opinion it's necessary for him to be accurate to take this time structure map and have to convert time to depth and recreate a structure map based on depth?

A. That's correct, because you also need to take into account where the lower limits are structurally of productive Strawn.

Mr. Hayes suggests that this is all in communication. I don't see how he can do that when a well that they drilled is on strike with a structural high that

had no reservoir-quality rock.

So making -- taking -- making that assumption, I think, is invalid. It has no basis.

Q. If you're going to execute exploration strategy based upon structure, in your opinion is it essential that you convert this time structure map to depth?

A. Yes.

MR. KELLAHIN: No further questions.

MR. CARR: I have no questions.

EXAMINER CATANACH: I have nothing of this witness.

Anything further?

MR. KELLAHIN: No, sir.

MR. CARR: I have a real short statement.

EXAMINER CATANACH: Okay, Mr. Carr?

MR. CARR: Mr. Catanach, the case before you presents a correlative-rights issue. It's the second case in two months where we've -- presented by Chesapeake where they are attempting to develop a small Strawn reservoir with a location that is virtually on their neighbor and by their interpretation does not extend onto the adjoining tract.

You have two interpretations before you. You have one that characterizes these as separate small pods and another, Yates, where we believe that, in fact, the

Strawn is continuous across the area and these are really small nipples on top of the formation.

And so what we have is their interpretation that confines the feature to them, ours that shows that it extends on both tracts.

What we have when we look at this situation is a -- we have pool rules that provide for 80-acre spacing that were obtained by Chesapeake, rules that the order adopting them says provides maximum flexibility to operators to develop the reserves.

And yes, there may be circumstances where geology dictates that you have to step out of the window, but here when we even look at Chesapeake's Exhibit Number 1 we see they have a standard location based on the rules they obtained for the 330 setback for 80-acre spacing, a location where based on their interpretation they will have 80 feet, a location that is, in fact, structurally high. We believe that, in fact, they should develop on a standard location.

But if they don't, we believe the penalty is appropriate. If the surface area approach mentioned by Mr. Hayes is not acceptable, we do know one thing for sure. We know that they're too close, too close than authorized by rule.

And if we take even the existing rules that will

be reviewed in February where we may go back to a 510-foot setback, but if we take the existing rules for the 330-foot setback, we see that they still are encroaching 44 percent on us.

We believe that if you're to provide our correlative rights and if you decide to grant their Application, that an appropriate penalty must be granted, and to have that penalty work so that it isn't just the result of a deliverability test but something which, in fact, cannot be adjusted. And we're not suggesting they would, but it's always a problem when you're basing a penalty on a deliverability test.

We think the appropriate way to do it would be to simply permit them to produce a percentage of the time that is consistent with the penalty imposed.

Thank you.

MR. KELLAHIN: Mr. Examiner, let's talk about what the Division practice is.

The Division approves unorthodox locations in a hearing context, in the absence of objection. If there is an objection, the Commission addresses it in several ways.

If the objecting party has a well at a standard location and the applicant seeks an encroaching location, a penalty is appropriate because the encroaching well produces at a less rate than the operator who has already

committed his resources at a standard location. And that decision is based upon reservoir share. So a penalty in that circumstance is appropriate.

In a circumstance where there is no data, it's appropriate, and we continue to utilize, a footage setback penalty, because in the absence of information we have no other choice.

What Mr. Carr has asked you to do is to ignore modern useful, critical, essential data and to confine yourself to rules and regulations that limit the ability of you as a regulator, and this Applicant as an operator, to produce Strawn oil that would not otherwise be produced. It's nonsense to suggest that we should not drill this location.

What have we provided you with? The first case, to the best of my knowledge, Mr. Examiner, of a definitive presentation on 3-D seismic information. I recommended to Chesapeake that they do this. They did it with reluctance, as all applicants before you are reluctant to show this kind of information. It's very proprietary, there's a lot of competition over it. But it is absolutely definitive.

And what does it define for you? The absence of reservoir on Yates' tract.

Yates had an opportunity. They've got 3-D seismic stuff. They could have brought us in a decent

structure map that gave you a true picture of structure, and then you could decide something about structure. You could ignore Mr. Hefner's testimony that structure is not important here, but then you at least have some data to make a reasonable decision on. They chose not to do that.

In addition, they chose not to give you the amplitude information to show you reservoir pore volume.

Mr. Hefner has done that for you. And in fact, he's done it in such a way that he's removed any of his bias or his interpretation.

If you will look at Exhibit 3, that is the raw data, if you will. And if you follow the color code you see that it's impossible to infringe upon Yates because they have no share of the reservoir. You have to look at a microscope to find any probability that there's oil under their tract. It's meaningless to impose a penalty.

We ought to do what is required by the evidence presented, and that is to accept the reliability of this information and approve this location without a penalty.

Mr. Carr suggests that we ought to be forced to the northern edge of the high point of this porosity thickness. That's a substantial risk we should not have to take. We would like the opportunity to drill at the point of greatest thickness.

Mr. Hefner has been successful ten times in a

row. He's established his reliability and expertise.

We believe you ought to grant this Application without a penalty. To do is fair for everyone.

Thank you.

EXAMINER CATANACH: All right, gentlemen. Would you like to submit rough draft orders in this case?

MR. KELLAHIN: Yes, sir, we'll be happy to.

MR. CARR: We'll be happy to.

EXAMINER CATANACH: Okay. Within a reasonable amount of time, I suspect.

MR. KELLAHIN: We have an expiring lease in early February, so we'll get you our order very quickly.

EXAMINER CATANACH: Okay. Is there anything further?

There being nothing further, Case 11,894 will be taken under advisement.

And this hearing is adjourned.

(Thereupon, these proceedings were concluded at 1:10 p.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 11894, heard by me on 12/4/97.

David R. Catanach, Examiner
Oil Conservation Division

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 10th, 1997.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1998