NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date AUGUST 31, 1988 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
W T Kellahin	Kellahin Kellahin Aubrey	Santa Fe
Hugh Ingram	Conoco Inc.	Hobbs
Chad Dickerson	Dickerson, Fisk, Vandiver	Artesia
Carol Sledge	TXO	Midland
Greg Wilson	TXO	Midland
Gary Harris	TXO	Midland
Bob Huber	Bryan	Santa Fe
Scott Hall	Campbell & Black	SF

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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

31 August 1988

EXAMINER HEARING

IN THE MATTER OF:

Application of TXO Production Corporation for an directional drilling and an unorthodox oil well location, Lea County, New Mexico. CASE 9470

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division:

For the Applicant: Chad Dickerson
Attorney at Law
DICKERSON, FISK & VANDIVER
Seventh & Mahone/Suite E
Artesia, New Mexico 88210

I N D E X

E X H I B I T S

MR. STOGNER: This hearing will come to order for Docket No. 26-88, August 31st, 1988. I'm Michael E. Stogner, appointed Hearing Examiner for today's cases.

The first thing we'll consider today is Case Number 9470, which is the application of TXO Producing Corporation for directional drilling and an unorthodox oil well location, Lea County, New Mexico.

Call for appearances.

MR. DICKERSON: Mr. Stogner, I'm Chad Dickerson of Artesia, New Mexico, appearing on behalf of TXO Production Corp. and I have three witnesses.

MR. STOGNER: Are there any other appearances? There being none, will the witnesses please stand at this time and raise your right hand.

(Witnesses sworn.)

Mr. Dickerson?

CAROL MORGAN SLEDGE,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Ms. Sledge, will you state your name, your occupation, and by whom you're employed, please?

A My name is Carol Sledge and I'm a landman for TXO Production Corp.

Q And you have previously testified before Mr. Examiner recently, have you not, and your credentials as a landman are of record?

A Yes, sir.

Q And are you familiar with the land situation surrounding TXO's application in Case 9470?

A Yes, I am.

MR. DICKERSON: Is the witness qualified, Mr. Stogner?

MR. STOGNER: Ms. Sledge is so qualified.

Q Ms. Sledge, will you summarize the purpose of TXO's application in Case 9470, please?

A TXO is seeking authority to re-enter the Amoco Hooper No. 1 Well located at a surface location 1,980 feet from the south line and 610 feet from the west line of Section 2, Township 17 South, Range 38 East.

We propose to deviate from vertical and

encounter the formation Strawn and Atoka at 11,600 feet with a potential bottom hole of 1,131 feet from the south line and 308 feet from the west line of said Section 6.

Q That's in the Atoka formation and what anticipated footages do you anticipate penetrating the Strawn at?

A 11,600 feet. Oh, for the bottom hole location?

Q In the Strawn.

A 1,206 feet.

Q From the south?

A Uh-huh. 306 from the west line.

Q And in the event TXO's re-entry of that Amoco Hooper Well is unsuccessful, what does TXO seek to do?

A It seeks to drill a well at an unorthodox location 1,131 feet from the south, 308 from the west line at a surface location.

Q And that would be a vertical hole?

A Vertical hole, yes.

Q Okay. Will you refer to what we have submitted as TXO Exhibit Number One and tell Mr. Stogner what your plat shows?

A This is a land plat showing the re-entry well. It's located in the northwest quarter of the south-

west quarter of Section 2.

Q What is the current spacing rules effective in this area?

A Currently it's statewide 40-acre spacing; however, we have requested 80-acre spacing units.

Q In the future, but it's being drilled on 40-acre spacing.

A Right.

Q Okay, Does TXO operate the entire southwest quarter which you have shaded in yellow on Exhibit Number One?

A Yes, they do, and all the minerals they desire to find in that southwest quarter.

Q And the proposed, anticipated penetration of your principal objectives in this well, the Strawn and the Atoka formations, actually lie in the southwest quarter of the southwest quarter, do they not?

A Yes, they do.

Q Is title to all interests common throughout the southwest quarter of Section 2?

A Yes, it is.

Q So crossing that 40 -- that quarter quarter boundary line makes no economic or other difference to any of the parties, royalty owners, working interest owners, or anyone else.

A Correct.

Q Okay. Identify what we have submitted as Exhibit Number Two and tell Mr. Stogner what that is.

A Exhibit Two is the affidavit of mailing that we would submit in accordance with Rule 1207 and Rule 111.

Q And the large number of interest owners is primarily because there is numerous unleased mineral owners --

A On offsetting tracts, right.

Q Okay.

MR. DICKERSON: I have no further questions of Ms. Sledge, Mr. Stogner.

CROSS EXAMINATION

BY MR. STOGNER:

Q Ms. Sledge, what is the present status on that particular well, the Hooper Well?

A The Hooper Well?

Q Uh-huh.

A I believe it was P & A'd out there, just sitting out there last time I saw it.

Q And who would that operator be?

A Amoco.

Q Has Yates obtained clear title or -- for

this particular well or --

A Have we clear title to it?

Q Yes, ma'am.

A Yes, sir.

MR. STOGNER: Okay. I have no further questions of Ms. Sledge.

GREG WILSON,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Wilson, will you state your name, your occupation, and by whom you're employed and in what capacity?

A My name is Greg Wilson. I'm employed by TXO Production Corporation as a geologist.

Q And you have previously testified before Mr. Stogner as a petroleum geologist, have you not?

A Yes, I have.

Q And have you made a study of the available geological data surrounding TXO's application in this case?

A Yes, I have.

Q Will you identify what we have submitted to Mr. Stogner as TXO Exhibit Number Three and discuss that map for him?

A This is a structure map on the top of the Strawn limestone which is our wildcat objective. In the -- in Section 35 and extending into the north half of Section 2 and the east half of Section 34 is the Knowles Devonian Field.

We have not looked at any production because we don't intend to drill to the Devonian.

Structure on the Strawn is basically down dip to the southwest coming down off of the Devonian structure. The fault which is on the map is based on well data, specifically the Amerada Hamilton No. 1-A in the northwest of the southeast and the Amerada Rhodes No. 2-A, which is in the northeast of the southeast. There's about 300 feet of throw between those two wells I've interpreted as a fault, and it's also based on seismic data.

We see the Strawn thickening to the south, which I will show in my next exhibit, a cross section, and so we anticipate approximately 200 feet of total Strawn section at our location.

The shaded area in which lies our bottom hole location, is a seismic anomaly that's based on one, two, three, four seismic lines that we have in the area.

The seismic anomaly is a function of the porosity. In passing from the slow shales into the fast Strawn limestone we get a seismic reflection and then from the base of the Strawn limestone down into the slow Atoka shales, a second reflection when there is no porosity present. When there is porosity present, we get an additional reflection from the base of the porosity, which will be a slow interval within the Strawn, and that's the seismic anomaly that we're looking for.

The surface location of the Amoco Hooper Well appeared to be right on the margin of one of our anomalies.

Our bottom hole location, or actually the point at which we'll penetrate the Strawn, which is 1250 feet from the south line, 350 from the west line, appears to be the most advantageous spot for the Strawn. It's the best, most distinct looking part of the anomalies that we find, and being a wildcat, we want to drill the best spot within the anomaly; therefore we need the irregular location.

That's everything I need to discuss there.

Q Mr. Wilson, refer to your cross section submitted as Exhibit Four and discuss that for us.

A This is a cross section which is noted

on Exhibit Number Three as A to A'. It shows -- the cross section goes from north on the left to the south on the right and shows our proposed re-entry.

These are two wells which are two wells which are on the up-thrown side of the fault but show the Strawn section, the Strawn limestone, which is colored blue, as thickening very drastically between those two wells, and coming down dip and then we've interpreted the fault, added that on the cross section, and we show what -- the amount of Strawn that we anticipate in our wellbore.

This is just basically to show that the Strawn is present in this area and is thickening in the direction of our wildcat location.

Q Okay, in your opinion, Mr. Wilson, is the requested unorthodox location sought by TXO in this case the best bottom hole location for a well located on a southwest quarter southwest quarter 40-acre spacing unit?

A Yes. Based on the work that we've seen and done in the -- within the Lovington -- the existing production in the Lovington Strawn play, and wells that have been drilled on or off the seismic lines, this appears to be the best location that we can drill.

MR. DICKERSON: I have no further questions of Mr. Wilson.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Wilson, how deep did the original Hooper Well No. 1 go?

A It was 9200 feet.

Q Now, did that penetrate either the Strawn or the Atoka? You indicate the Strawn.

A No, they drilled to the top of the Wolfcamp. They were looking for a Bone Spring development, which is equivalent to the Abo in this area; it's the basinward equivalent to the Abo.

Q So there's no geological information on -- depicted on this particular well.

A No. The structural position of the Strawn is not really that important and because of the nature of the shallower versus the deep structure, we couldn't get any structural information from it and, of course, no stratigraphic information because it didn't penetrate the Strawn.

The top of the Strawn should be at 11,150 feet. That's where we anticipate it, so this well was about 1000 feet short -- 2000, I should say.

Q Now you show about three seismic runs across this area, right?

A Four, actually.

Q All right, when were those four run?

A The north/south line is spec data, which was shot, I believe, early 1980, 1982 or '83; I'm guessing at that.

And the remaining lines, the northeast-southwest line is one that we shot last year.

And the east-west line and the northwest/southeast line we shot ourselves this year.

Q There appears to be very little well control out there, especially to the south.

A There is. The next closest well control would be in Section 16 and then over to Section 7 or 8 to the west. Most of the well control was drilled on Devonian structures and we're looking away from the structures and there's very little well control.

Q And from this seismic data you have determined that deviating this well that far off to the south would be a better location.

A Well, the surface location of the Amoco Hooper Well, as I said, appears to be right on the margin. From what we've seen from other wells drilled on the edge or near the edge of these anomalies in the existing Strawn play, sometimes you can be fooled; it might not extend as far as it actually appears to, and the safest course of ac-

tion is to drill for the center of these anomalies.

The -- even if you're within the Strawn porosity interval near the margins, oftentimes the permeability is poor, and since it is a wildcat, we don't know how thick or how much extent these really might have in this area, we feel that it's most prudent to drill the center of the anomaly, the apparent thickest part of it.

Q Have you found in your past experience with the seismic, or do you have a pretty good record about choosing the top of the anomaly or the best part of an anomaly with the seismic data only?

A Well, I'm -- I'm not the geophysicist that worked this, but I have been closely associated with it, and the seismic seems to be a very good tool for finding these.

We drilled two wells based on seismic. Both of them, we thought, would be -- well, one we thought would be within the center of a very small anomaly. The other we thought would be towards the edge. We anticipated 30 or 40 feet of porosity and we got 26 feet, and it's a good well but it's not one of the better wells in the area, and from the other seismic that we have in-house that crossed existing production, we feel like our geophysicist has a very good handle on picking these anomalies and where the best, thickest part is.

Q Let me take a look in here, when I look at this limit of seismic anomaly, that's that gray block.

A Right.

Q What does that tell me whenever I look at that boundary? What kind of a --

A Well, it's a typical brief of the core. When there's no porosity present you'll get a reflection from the top of the Strawn and one from the base and so you'll have essentially two straight lines on the seismic.

When the porosity is present you'll tend to get a second reflection developing within the second orb -- I mean within -- between the two reflections, or just a change in the two reflections and the boundaries show where it appears that there is no porosity and it's starting to give us an anomaly, a change in the seismic character of the Strawn.

Q So when I'm looking at your data I'm seeing zero porosity in the white area and --

A Well --

Q -- then in that gray area I'm getting --

A Well, as I said, it's hard to directly correlate a seismic anomaly with porosity. The porosity causes the seismic anomaly but there can be some (unclear) effects where the anomaly will appear to be farther than where the actual porosity may extend or it may be the

opposite, the porosity may extend farther than we're seeing an anomaly.

So we feel it's going to be safest to shoot the stencil (sic) and take what we believe to be the thickest part of the anomaly and the most distinctive anomaly; rather the most distinctive part of the anomaly, and that's where we've spotted our bottom hole location.

If you're familiar with the Lovington Strawn production to the west, there are a lot of cases where there'll be outstanding wells with very thick porosity sections one location, or sometimes less than one location, away from a dry hole where they found nothing, so the boundaries can be very sharp.

So it's very easy to miss these things.

Q Has seismic work like this, has it shown in the past over in the Lovington Strawn area to be fairly accurate? Showed these anomalies and then they'd later correspond with the production pods or algal mounds that we see over there?

A It's not a 100 percent correlation but it's -- it's a very good one; probably 60 to 70 percent of the very good, distinct anomalies will have Strawn porosity present, and that's an estimate on my part, that's not based on any statistical data but I think that's a good estimate.

Q Were you the first geologist to propose a directional drilling based on this seismic in this particular well?

A You mean the first within TXO or --

Q Yes, the first within TXO.

A Well, we -- the directional drilling was based on the seismic data which was on the recommendation of our geophysicist and the reason we want to do the directional drilling is because it will be a big cost savings, but the basis for the unorthodox location is the seismic data.

Q I have no further questions of Mr. Wilson.

MR. STOGNER: Are there any other questions of this witness?

MR. DICKERSON: No, sir.

MR. STOGNER: The witness may be excused.

MR. DICKERSON: Mr. Gary Travis, Mr. Stogner.

GARY TRAVIS,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. DICKERSON:

Q Mr. Travis, will you state your full name, your occupation and by whom you're employed?

A My name is Gary Travis. I'm a petroleum engineer with TXO Production Corp., Midland. Texas.

Q You have also recently testified before Mr. Stogner, have you not, and your credentials are a matter of record with this Division?

A Yes.

MR. DICKERSON: Is the witness qualified, Mr. Stogner?

MR. STOGNER: Mr. Travis is so qualified.

Q Mr. Travis, will you refer to what TXO has submitted as Exhibit Number Five and describe what that shows for Mr. Stogner?

A This is a wellbore schematic of the well as it now stands. It shows the plot and the six plugs that Amoco set in the wellbore when they P & A'd it in 1985. It shows the surface casing and the intermediate casing still set and the fact that they didn't run any long -- any production string.

It also shows the proposed kickoff point

at the plug at 8150.

Q Okay, refer to what we've submitted as TXO Exhibit Number Six and tell us what you show on that.

A This is a vertical section and a plan view of the proposed well showing a kickoff point at 8150, the intended 1-1/2 degree per 100 build rate of angle that we plan to achieve and then the average is 17.46 degree to TD.

Also it shows the 775 feet removal from the surface location and the top of the Strawn and a 900 feet to the southwest location in the Atoka. It also shows a measured depth of 11,729 feet for the well and a true vertical depth of 11,600 feet.

In the plan view section it shows a surface location, our intended angle and our location in the Strawn and the bottom hole location in the Atoka with the legal locations indicated.

It also shows radius of 100 feet for each location.

Q And that's the margin of error that TXO is requesting for the targeted locations, as given?

A Yes, sir.

Q Do you have anything further about Exhibit Number Six you'd like to add?

A No.

Q Refer to Exhibit Number Seven and summarize for us your proposed drilling procedures.

A This is a proposed drilling procedure that TXO plans to follow in the drilling of the Hooper No. 1 Well. It starts off with drilling out the surface plug and the plugs down to the plug at 8150 and going in there and dressing off the plug and kicking off at 8150 with the down and sidetrack drill bit and drilling to approximately 9300 feet, at which time we will choose the angle that we need to bottom hole the well at the proposed location.

At that time we'll run in with a pack hole assembly and drill to TD and if necessary, we'll make a correction run, but we intend to -- we hope to just have one motor run.

And that's what that shows.

Q And contemplated by TXO as a part of this are the required directional surveys by Rule 111 for any well intentionally deviated?

A Correct. At TD we'll run a multi-shot back to surface or to tie into the multi-shot we've already run at the kickoff point.

Q And you will thereby be able to -- at that point go to the exact bottom hole location of the well.

A Correct.

Q Mr. Travis, in your opinion will the granting of this application be in the interest of conservation, the prevention of waste and the protection of correlative rights?

A Yes.

MR. DICKERSON: Mr. Stogner, I move admission of TXO Exhibits One through Seven at this time and I have no further questions of Mr. Travis.

MR. STOGNER: Exhibits One through Seven will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Travis, I'd like to refer to your Exhibit Number Six and let's look at the plan view over to the right.

A Okay.

Q You propose to enter the top of the Strawn 1250 from the south line and 350 from the west line, within 100 foot radius of that particular point, right?

A That's correct.

Q Okay, let's take the worst case scenario here and if you hit the top of the Strawn 100 feet to the north, that would indeed put you in a different quarter

quarter section, would it not?

A Yes, it would.

Q And I realize you're talking about coming in later and asking for an 80-acre proration unit, of course that's in the future. Can TXO be a little bit more accurate and say -- what I want to do is narrow that limit down, either to a 50-foot radius or give you no radius at all to the north of you and keep it all to the south. I think you can understand this 40-foot interval that we're talking about, you're getting 100-foot leeway with your point that you propose to enter the top of the Strawn, but if you don't, we have a situation here. You'd have to come back in for hearing or one way or the other.

A That's right.

MR. DICKERSON: Mr. Stogner, we did request 100 feet, and you and I, I think, briefly discussed this situation on the phone. Would not limiting TXO's margin of error radius of their target by 50 feet solve our problem?

MR. STOGNER: I think it would be. At least --

MR. DICKERSON: That would keep us in Unit M.

MR. STOGNER: That's right.

MR. DICKERSON: For both

zones.

A Yeah. Of course, we were looking at economics; the smaller the target, the more expensive. I think that, you know, our 100 foot radius is more important in the Atoka than it would be in the Strawn because we, you know, we're going to try and hit that Strawn right on and then if we were off a little bit, we'll be off a little bit more in the Atoka.

Then, you know, you have some -- some margin of error running single shots as you go down in the well every 100 feet, and then when you run your multishot and TD, you could be off a little bit but I can see what you're saying. We could have our -- a hard run to the north, I guess, and maintain that 100 foot radius to the south in not a semi-circle but a truncated circle.

Q Either one of these would be a -- would be all right with TXO, either the 50 foot radius or a truncated southern limit?

A Yes, sir.

MR. STOGNER: Okay, I have no further questions of this witness.

Are there any other questions of Mr. Travis?

MR. DICKERSON: No, sir.

MR. STOGNER: He may be

excused.

Anything further in Case Number 9470?

MR. DICKERSON: No.

MR. STOGNER: This case will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C. S. R. DO HEREBY CERTIFY that the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 9470, heard by me on August 31 1988.

, Examiner
Oil Conservation Division