STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

APPLICATION OF KNOX INDUSTRIES INC. FOR SPECIAL RULES, LEA AND ROOSEVELT COUNTIES, NEW MEXICO.) CASE NO. 10280

REPORTER'S TRANSCRIPT OF PROCEEDINGS
EXAMINER HEARING

BEFORE: DAVID R. CATANACH, Hearing Examiner
September 19, 1991
8:50 a.m.
Santa Fe, New Mexico

This matter came for hearing before the Oil Conservation Division on September 19, 1991, at 8:50 a.m. at the State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Linda Bumkens, CCR, Certified Court Reporter No. 3008, in and for the County of Bernalillo, State of New Mexico.

FOR: OIL CONSERVATION DIVISION

BY: LINDA BUMKENS CCR
Certified Court Reporter
CCR NO. 3008

I N D E X

September 19, 1991
Examiner Hearing
CASE NO. 10280

E X H I B I T S

A P P E A R A N C E S

FOR THE DIVISION: ROBERT G. STOVALL, ESQ.
General counsel
Oil Conservation Commission
310 Old Santa Fe Trail
Santa Fe, New Mexico
87501

FOR KNOX INDUSTRIES INC.: MONTGOMERY & ANDREWS
BY: MR. WILLIAM P. PEARCE, ESQ.
325 Paseo De Peralt
Santa Fe, New Mexico
87504-2307

Q. All right, sir. Let's direct your attention, please, to Exhibit Number 2. Could you highlight that exhibit for us, please?

A. Okay. This is a combination isopach structure map Drawn on top of the Lower Abo porosity. You will note that the structure map indicates this is on a monocline. The contour interval in this is 25 feet, and the production boundaries here are going to be determined by strategically -- that is, where the Sands get shaley and tightens up around the edge.

The isopach map, the different colors of the pink or orange, whatever it is, in the middle shows more than 15 feet. Now, the Knox Industries Number 2 well there has 16 feet of pay in it above ten percent porosity. Now, these -- this information was calculated from old logs.

The wells that you see on here are mostly old wells that have been previously drilled, and most of them have been plugged out, and the logs that were available at that time, you know, 25 maybe 30 years ago, there was not a lot of modern log interpretation to be done, but still, you know, we were able to determine the ten percent porosity cutoff, and this map was prepared in October 1990 by

Gordon Knox.

I have looked over a lot of his data, checked the logs, and checked the porosity calculations, and I do agree with this interpretation.

Q. All right, sir. With regard to the log, let's look, please, at what we've marked as Exhibit Number 3 to this proceeding, and could you describe that exhibit for us?

A. Yes. That shows the portion of the logs from the Federal -- or as it's called -- the Purvis Oil Corporation Federal 3C Number 2. This is the well that we're talking about there in Section 3, and it shows the zone of interest being the Abo porosity interval there between 8934 and 8960.

Q. All right, sir. Any other information on Exhibit 3 that should be highlighted?

A. 8950, I'm sorry. No, I don't think so.

Q. All right, sir. Let's look at Exhibit Number 4, please?

A. Okay. Exhibit Number 4 is a very simple cross section. Just a three-well cross-section from south to south, and its location is north on the Exhibit 2, which was the structure map, the cross-section.

Q. Okay. Let's get this located. The A A' line is the line running south to north shown on Exhibit Number 2, beginning at a well in the southwest quarter of Section 3; is that correct?

A. That's correct.

Q. Okay. Go ahead, I'm sorry.

A. Okay. This just shows the correlative Abo interval there. The two wells to the north, which are the two wells on the right on the cross-section, are producing wells. The well to the south is an old well that was drilled. I don't really know when -- 1969, but it just shows the correlative Lower Abo porosity interval.

Q. Okay. All right, sir. Anything else on 4?

A. No.

Q. All right, sir. Let's look, please, at Number 5. And could you describe what's represented on that exhibit?

A. Okay. Exhibit Number 5 is the reserve determination that I made based on two separate calculations. The first way is by volumetric calculations, and this is just a normal industry accepted method of calculating reserves. I've used 80-acre drainage, 15 feet of net pay, 14 percent porosity with the water saturation of 25 percent,

and then a recovery factor of 15 percent, which is normally used for reservoirs produced -- or wells completed in this type reservoir, and I have calculated recoverable oil at 122,000 barrels.

Then I have determined reserves by another method. In the early life of this well they did take bottomhole pressures. They had an initial bottomhole pressure which was taken -- oh, I think in October or November of 1990, which was 1600 pounds, then in February of 1991 the pressure was determined to be 1545 pounds, which gives us 55 pounds of reservoir drawdown, and then the oil produced in that interval time was 6619 barrels, and that gives us 120.345 barrels per psi of draw down.

Then if we can produce this reservoir down to a bottomhole pressure of 500 pounds, that gives us remaining reserves as of 2-14-91 of 125,760 barrels. Then when you add back in cumulative to that date, you get ultimate reserves of 132,379, and I wish to point out that these two reserve determination are very close.

Q. Okay. And based on those two calculations which arrived at very close answers, is it your professional opinion that at least for the 3C Number 2 well, something in the vicinity of 120 to

130,000 barrels of recoverable oil should be present on an 80-acre tract in that location?

A. That is correct.

Q. All right, sir. Let's look at Exhibit Number 6, and could you describe that exhibit for us, please?

A. Exhibit Number 6 is a production curve prepared on the Federal 3C Number 2 with a projected line on that that would allow it to produce the 130,000 barrels of oil ultimate that it is expected to produce. This has been done to show that this is a reasonable projection that calculated reserves will be recoverable in a reasonable method when you look at it on a production plot and forecast.

Q. All right, sir. Having derived what we believe are reasonable reserves for 80-acre tracts, I'd ask you to direct your attention to Exhibit Number 7, and could you describe that for us, please?

A. Yes. Here I have compared the economics of developing this well on 80-acre spacing as compared to 40-acre spacing. I have used -- well, for the 80-acre case, which is Number 1, the recoverable reserves are 130,000 barrels of oil. The drilling cost of $510,000, and this comes down to a net

profit of $964,000 which gives you a profit to investment ratio of 1.89.

Now, you know, this is just barely acceptable economics in this day and time for being able to drill wells. If we look at it on 40-acre spacing using half the reserves, and in reality you might recover one or two percent, more than half if you drill them on 40-acre spacing, but I've used 65,000 barrels of reserve and a drilling cost of 500,000. That's the difference in the drilling cost just recognizing that you can drill a well a little bit cheaper, you have shorter flow lines, probably are going to serve more wells; things of this nature.

The economics there indicates a net profit of only $162,000. This gives a profit to investment ratio of 4.32, which is not by any measure acceptable economics for investments in the oil and gas business at this time.

Q. All right. Mr. Stanford, after conducting the study that you have been describing to us, have you formed a professional opinion that it is necessary for the Milnesand Abo Pool to be spaced on 80-acres in order to insure the economic and economic development and operation of that pool?

A. Yes, I have.

Q. All right, sir. Let's look, please, at Exhibit Number 8. Could you describe that for us?

A. Exhibit Number 8 is a letter which has been agreed and accepted to by Petroleum Production Management Incorporated, which owns the acreage just to the north in Section 34, and they agree that 80-acre spacing will allow this field to be drained properly.

Q. And looking back at Exhibit Number 1, Petroleum Production is the company that operates the other two currently operating wells in the Milnesand Abo Pool?

A. Yes, that's correct.

Q. All right, sir. Let's look, please, at Exhibit Number 9?

A. Okay. That's a letter from Knox Industries BTA where the other people that have acreage in this area agreeing to the same thing, and they, once again, agree that 80-acre spacing will properly drain this pool.

Q. All right. Mr. Stanford, is it your opinion that development and operation of the Milnesand Abo Pool on 80-acre spacing is in the best interest of conservation of the natural resource and

protection of the correlative rights of interest owners in that pool?

A. Yes, it is.

Q. All right.

MR. PEARCE: Mr. Examiner, in addition to the 9 exhibits that we've discussed so far, there is an Exhibit Number 10, which is an affidavit prepared in my office which has attached to it notice letters to interest owners within a mile of the Milnesand Abo Pool boundary pursuant to the provisions of Rule 1207. Those letters were sent by regular mail rather than certified return receipt, and so we don't have return receipts to make a part of the record.

Q. (By Mr. Pearce) Mr. Stanford, were Exhibits 1 through 9 prepared by you, or reviewed by you, to such an extent that you can attest to their accuracy?

A. Yes, they were.

MR. PEARCE: Mr. Examiner, at this time I would move the admission of Exhibits 1 through 10, and I have no further questions for the witness.

EXAMINER CATANACH: Exhibits 1 through 10 will be admitted as evidence.

(Knox Industries Exhibits 1

through 10 were admitted as evidence.)

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Stanford, are Knox and Petroleum Production Management -- they're the only two current operators in the pool?

A. Yes, that's correct.

Q. BTA has acreage within the pool?

A. Yes. Some of that -- some of that acreage up in Section 33 -- See the west half of 33 up to the north? That is owned by BTA.

Q. Okay. Do you know when this pool was first discovered?

A. Yes. It was first discovered by the drilling of the Petroleum Production Management Well 693. Number 3 well, I believe it's called. I do not know the exact date, but it was approximately -- it was in 1990. I've got the production figures on the well here somewhere. It's a relatively new pool.

Q. Okay.

A. About a year-and-half old I think.

Q. Now, have there only been three wells drilled in the pool, or have there been some wells drilled and plugged?

A. No. That's the only three wells that have been drilled in the pool. As a matter of fact, re-entries were attempted by both PPI and -- well, it wasn't Knox Industries at the time, it was Purvis Oil Company who was the operator, but it was a Federal 3C Number 2. They attempted re-entry on the old holes on both of those wells, but the casing had been shot off and they were unable to get back in their casing and complete, so they drilled new holes in both those cases, and the well up to the northeast -- there was a new well that was drilled also.

Q. Okay. Have you done any reserve calculations on any of the other two wells in the pool?

A. No, not really. I do know that the number -- the well just to the north of the Federal 3C, it's a slightly better well production wise, which you would not think it should be looking at the isopach map, but we have done some studies of the completion procedures and the treating procedures and we have found out that Purvis did not open up about two or three feet of pay.

If you look on the log there you will notice down below --

MR. PEARCE: I'm sorry. Referring to Exhibit 3?

THE WITNESS: Yes.

MR. PEARCE: Okay. Go ahead.

A. See, there's another little section down below the red-colored section there which, you know, I haven't colored it in, but it sure looks like it ought to be net pay, and now we are evaluating the opening of this and going back in and re-acidizing the well, so, my opinion is that the Federal 3C well will be -- is good or better than the well to the north, so, you know, they're going to recover probably similar amounts of oil log at the net pay that's available and the drainage, and so forth.

Q. On your Exhibit Number 6, the line on your curve seems to change dramatically in the -- well, it starts to flatten out instead of going down the way it initially starts.

A. Well, you know, this is a typical hyperbolic-type curve which most wells that are drilled in reservoirs that have no water drive, you know, that's typically how they will perform. You have a steeper decline which flattens out, and then I used, I believe, an 8 percent decline, you know. After it rounds the curve and starts going straight,

that is an 8 percent decline.

Q. You haven't actually seen that production decline flatten out?

A. Not flatten out, no, because -- see, we're still up at the point where it's coming down, but, you know, that's a normal extrapolation to, but I did not prepare this curve to estimate reserves from. I prepared this curve to see if the reserves that were estimated by two other ways looked reasonable, and they do look reasonable.

Q. Is Knox just asking for 80-acre spacing plus -- do you know the typical well location requirements associated with 80-acre spacing?

A. No, I'm not familiar with the tested ones. However, they are requesting standup 80s, or would like to have the standup 80s.

Q. Now generally the Division doesn't limit the orientation of the spacing units.

A. Yes, sir, I'm aware of that.

Q. Why are they asking for that?

A. I can't answer that, sir. They just instructed me to come try to get standup 80s. I told them that they -- if they didn't restrict that they would have the option of doing it either way. That's all I can say, sir.

MR. PEARCE: It's my understanding, Mr. Examiner, that the three wells currently in operation in that pool are on standup 80-acre tracts, and they believe that it will lead to more orderly future development of the field if it expands for that provision to continue.

Q. (By Mr. Pearce) Getting back to the well location requirements, the Division generally requires a well to be located within 150 feet of the center of either quarter section. I assume that's fine with Knox?

A. Yes, that will be fine.

Q. Also, generally when we establish pool rules they're for a temporary period of 18 months to two years at the end of which the applicant is required to come back in and show us some additional evidence. Is Knox prepared to do that?

A. Yes.

Q. Okay.

A. We will like -- I mean, if you have a latitude between 18 months to two years, we would like to request two years if possible to give us a little bit more time to properly evaluate the field.

Q. And notification was given to all operators or owners of acreage in the pool and within one-half

mile of the pool boundaries?

A. Within a mile, yes.

Q. Oh, within a mile. Sorry.

MR. STOVALL: Just working interest; is that correct, Mr. Pearce?

MR. PEARCE: Well, as a matter of fact, Mr. Stovall, you may recognize that this case has been continued for some amount of time. It was caused by title searches. We didn't feel secure with just working interest owners.

MR. STOVALL: So this includes the royalty interest as well?

A. Yes, it does. And it cost a great deal more money and took a great deal more time.

MR. STOVALL: I wish I had known that a week ago. I just have one question on the orientation of the spacing unit.

DIRECT EXAMINATION

BY MR. STOVALL:

Q. I mean, is that -- it's not based upon necessarily any geological fact other than the fact that they think orderly development; is that correct?

A. Not that I'm aware of.

Q. I'd express a legal opinion on that, but I

prefer to leave that in the hands of the operators than to the Division, so I have to consider that.

EXAMINER CATANACH: Just one more question.

Q. (BY Mr. Catanach) Are you aware if Petroleum Production Management has enough acreage to currently dedicate 80 acres to each of their wells?

A. Yes.

Q. They do?

A. Well, you know, I don't know that. I'm not a land man. I've not researched the records, but, you know, I have been told that they have the leases. Theirs are all of the leases in the south half of Section 34, which would give them that necessary acreage.

EXAMINER CATANACH: Okay. That's all I have. The witness may be excused. There being nothing further in this case, Case 10280 will be taken under advisement.

MR. PEARCE: Thank you, Mr. Examiner.

(The foregoing case was concluded at the approximate hour of 9:00 a.m.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10280, heard by me on September 19 1991.

David R. Catanach, Examiner
Oil Conservation Division

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

REPORTER'S CERTIFICATE

BE IT KNOWN that the foregoing transcript of the proceedings were taken by me, that I was then and there a Certified Shorthand Reporter and Notary Public in and for the County of Bernalillo, State of New Mexico, and by virtue thereof, authorized to administer an oath; that the witness before testifying was duly sworn to testify to the whole truth and nothing but the truth; that the questions propounded by counsel and the answers of the witness thereto were taken down by me, and that the foregoing pages of typewritten matter contain a true and accurate transcript as requested by counsel of the proceedings and testimony had and adduced upon the taking of said deposition, all to the best of my skill and ability.

I FURTHER CERTIFY that I am not related to nor employed by any of the parties hereto, and have no interest in the outcome hereof.

DATED at Bernalillo, New Mexico, this day November 11, 1991.

My commission expires
April 24, 1994

LINDA BUMKENS
CCR No. 3008
Notary Public