BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 28, 1965

EXAMINER HEARING

IN THE MATTER OF: Case No. 3003 being reopened pursuant to the provisions of Order No. R-2685, which order established temporary 80-acre proration units for the Tobac-Pennsylvanian Pool, Chaves County, New Mexico for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

Case No. 3003
(Reopened)

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

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MR. NUTTER: The hearing will come to order, please. The next case will be Case 3003 (Reopened).

MR. DURRETT: In the matter of Case No. 3003 being reopened pursuant to the provisions of Order Number R-2685.

MR. HINKLE: Clarence Hinkle appearing on behalf of Cabot Corporation. We have one witness and eight exhibits. I would like to have Mr. Sargent sworn.

(Witness sworn.)

(Whereupon, Exhibits Nos. 1 through 8 marked for identification.)

MR. HINKLE: The exhibits have been numbered in

consecutive order.

W. M. SARGENT, JR., called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q Your name is W. M. (Bill) Sargent, Junior?

A That is correct.

Q You are employed by the Cabot Corporation?

A Yes, sir.

Q In what capacity?

A As a petroleum engineer.

Q What is your title with the Cabot Corporation at the present time?

A Petroleum Engineer.

Q Were you the witness who testified originally in connection with this case?

A I am.

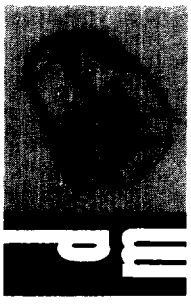
Q Pursuant to which the temporary field rules were adopted?

A Yes, sir.

Q At the time of the original hearing, how many wells had been drilled?

A One.

Q How many wells have been drilled since then?



A There have been 34 wells drilled in the field and pool, and there are 11 in various stages of completion at the present time.

Q Have you made a study of all the wells that have been drilled since the original well, studied the samples, the cores and all the electrical logs?

A With the exception of cores, I have studied the wells, yes.

Q You kept up with all the information available in the development of this pool?

A Yes.

Q Your qualifications are a matter of record in this case?

A Yes, sir, they are.

Q Have you prepared any exhibits in connection with this hearing?

A Yes, sir, I prepared Exhibits 1 through 8.

Q They were all prepared by you, or under your direction?

A Yes, sir.

Q Would you refer to your Exhibit Number 1 and explain what it shows?

A Exhibit Number 1 is just general data concerning the Tobac Pool of Chaves County, New Mexico. It was located 15 miles west of Milnesand in Township 8, Range 33 East. It was discovered in February, 1964 with the completion of Cabot

Signal State Number 1 Well in the Bough "C" formation at a depth of 9,050 feet. Development has proceeded pursuant to provisions contained in New Mexico Oil Conservation Commission Order R-2685 which established temporary 80-acre spacing and proration units.

Currently there are 31 producing wells and three dry holes and 11 wells being drilled and completed at the present time in the field. In February of this year production was 134,701 barrels from the field, and the field has produced some 900,000 till the first of April of this year.

I have one correction here. I notice that there was a typographical error in the order number referred to on Exhibit 1. It should be 2685 instead of 2658.

Q Now, refer to your Exhibit Number 2 and explain what it shows.

A Exhibit 2 is a tabulation of the rock and fluid properties of the Tobac Field; and the rock properties I have taken from four core analyses which I had available, and log analyses. It was indicated that there was 20 to 30 feet of gross pay, out of which 10 to 15 feet can be considered net pay.

The average porosity from four core analyses was 7.3 percent. The estimated water saturation is 25 percent, and the average permeability from the four core analyses was 284

millidarcies, with a range of 1 to 3,000 millidarcies.

The original reservoir pressure was 3031 psig at a minus 4620. Saturation pressure is estimated at 2950 psig. The original solution gas-oil ratio was estimated to be 1200 to 1. Reservoir temperature is 151 degrees. The estimated formation volume factor is 1.74. The oil gravity is 47 degrees; and once again this is a correction to the exhibit where it is shown 44 degrees.

MR. NUTTER: That should be 47?

A 47 degrees. The reservoir producing mechanism is a solution gas drive with possibly very minor water drive along the southeast flank of the field.

Q Do you have any further remarks with respect to this exhibit?

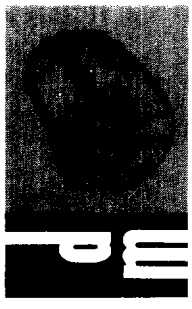
A No, sir.

Q Turn to Exhibit Number 3 and explain what it shows.

A Exhibit 3 is a map of the Tobac Pool area on which the wells are indicated, the wells that are currently producing, the drilling wells and the dry holes; also outlined is the current field nomenclature as defined by the Oil Conservation Commission; also several wells are colored, and these are for easy identification with the pressures shown on Exhibit 4.

Q Now refer to Exhibit 4 and explain what that shows.

A Exhibit 4 is just a plot of the initial bottom-hole



pressures of wells as they were completed in relationship to time. This plot indicates that from that initial pressure on Cabot Signal State Number 1 of 3031, that as each well was drilled subsequent to, but after the Number 4 Well, or the Cabot McAlister or the Signal Oil and Gas State 30-1, each well has had a subsequently lower pressure as it was completed. These pressures fall on a relatively straight line and indicate that the field is being drained by the wells currently producing.

Q What do you conclude from the information on this exhibit?

A I conclude that the Tobac Pool is being adequately and sufficiently drained by the current completions of the reservoir.

Q Turn to Exhibit Number 5 and explain what it is and what it shows.

A Exhibit Number 5 is a tabulation of the bottom-hole pressures run in February, 1965 by the New Mexico Engineering Committee.

Q Does this show relatively the same information as shown on your Exhibit Number 4?

A No, sir. This is the pressures on many of the same wells, but these pressures were taken within a three-day span in February of this year, and indicates that there is a spread, excluding the Ingram Garretson Number 1 Well, there's a spread

of only 114 pounds for the 14 wells listed.

Q How do you account for the difference in the Ingram Garretson Well?

A This well is located approximately one mile west of the field development in Section 25, 8, 32.

Q That's shown on Exhibit Number 3?

A Three, yes, sir. There is a possibility of a permeability barrier occurring between this well and the main portion of the field. To date there has been no direct offset connection for the field proper.

Q You said there was a variance in that well of about 114 pounds, is that normal or unusual, or what?

A This would be normal in this type of reservoir; and further indicates that the entire reservoir is being drained by the currently uncompleted wells.

Q Turn to your Exhibit Number 6 and explain what that shows.

A Exhibit 6 is a plot of pressure versus cumulative production, and once again I have used initially measured pressures for this plot, plus a 14-well average for the February, 1965, and you can note that this 14-well average falls on the straight line. This plot once again indicates that the field is being drained by the current completions.

MR. NUTTER: Were these the same 14 wells?

A The 14-well average pressure is the 14 wells I included on Exhibit 5, excluding the Ingram well.

MR. NUTTER: The same 14 wells you averaged the bottom-hole pressure at different times?

A No, the other points shown are the initial pressures, initial completion, just referred back to the cumulative production at the time these pressures were taken.

Q Does this exhibit also indicate the ultimate production from the pool?

A Yes. By extrapolating the line to an assumed abandonment pressure of 100 psig, the ultimate preliminary recovery from the field is indicated to be 3,600,000 barrels of oil.

Q What do you conclude from this exhibit, as far as one well draining 80 acres or more?

A Well, I conclude that the wells whose pressures I have used here have been drained by the wells previously completed, and that one well will drain 80 acres and more.

Q Is this about the best evidence that you can have of drainage of this kind in a pool?

A I feel that short of conducting an interference test between the wells, this is conclusive evidence of drainage of 80 acres, or of the entire pool by the currently completed wells.

Q Have you made any calculations with respect to the

total recovery?

A Yes, sir, on Exhibit 7 I have taken the 3,600,000 barrel indicated ultimate primary recovery from the field, not including the development in Sections 24 and 25 in 8, 32, which is the Ingram and Shell well to the west. I have divided that up among 27 current completions in the main portion of the field.

Now, referring to Exhibit 3, the map, this will exclude the wells in Sections 24 and 25 to the west, and in Sections 31 and 32 to the south, the Cabot MacAlister Fuel 1-A and the Cabot Tidewater State 1-A. These two wells are poor producers and produce only ten, fifteen barrels a day, and will not significantly contribute to recovery from this field.

Therefore, using the 27 current completions in the six section, seven section block to the north there, I arrived at 133,300 barrel ultimate recovery per well. Now, this is an average figure and it's not an absolute figure for any given well.

Q Have you made any calculations as to the economics of development of this pool on 40 acres and 80 acres?

A Yes, sir, I have. Inasmuch as the field is currently developed on 80-acre spacing, I have used the 133,300 barrel figure as a recovery factor for 80 acres, and half that amount for a recovery factor for 40 acres. Assuming one-eighth

royalty and a gross income per barrel of $2.95, the operator's gross income for 40 and 80 acres respectively is $172,000.00 and $344,000.00.

Q Are you referring to Exhibit 8 now?

A Yes, sir, I am. Our drilling costs are about $115,000.00 per well, and an additional $11,000.00 for tank battery and flow line. Operating costs for a well over a five-year period is estimated to be $15,000.00, for a total drilling, completing and operating cost of $141,000.00.

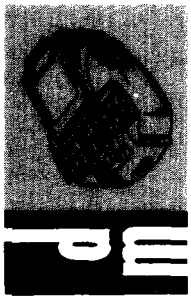
In the event a well has to be pumped, an additional cost of $20,000.00 will be experienced. A before tax profit, based upon these costs is $31,171.00 for a 40-acre location, and $203,082.00 for an 80-acre location; or a before tax profit to investment ratio of .25 for a 40-acre location and 1.61 for an 80-acre location.

Q Are there any other wells in this vicinity, or in Lea, Chaves or Roosevelt Counties completed in the Bough formation?

A Yes, sir, there are numerous wells.

Q Are all of those pools or fields developed on 80-acre spacing?

A I can only say that several of them have been spaced and developed on 80-acre spacing and proration units. Now, as



to whether all of them have been or not, I don't know. I know the main pools have been on 80 acres.

Q I take it from your testimony there's no question in your mind but what one well would effectively and efficiently drain more than 80 acres in this case?

A There's none.

Q Do you have any recommendations to make to the Commission with respect to the continuance of the present temporary field rules?

A It is my recommendation that the rules contained in Order R-2685 be continued on a permanent basis.

Q You have no recommendations to make as to any changes?

A No, sir.

Q Continue the same rules?

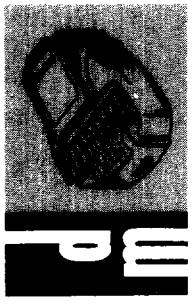
A That's right.

Q Do you know whether there's any objections from any of the operators in the pool or field to the continuance of these rules?

A I know of none. I personally contacted all but one operator, and they all agreed that development on 80-acres was what they desired, and most of them indicated that they would so notify the Commission.

Q You know of no protest, no objection?

A No, sir, I know of no objections.



MR. HINKLE: We would like to offer in evidence Exhibits 1 through 8, inclusive.

MR. NUTTER: Applicant's Exhibits 1 through 8 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 8 were admitted in evidence.)

MR. HINKLE: I believe that's all.

MR. NUTTER: Does anyone have a question of Mr. Sargent?

MR. DURRETT: I have a question, please.

CROSS EXAMINATION

BY MR. DURRETT:

Q Who was the operator that you didn't get to contact personally?

A Tom Brown Drilling Company.

MR. DURRETT: Thank you.

BY MR. NUTTER:

Q Referring to your plat which is Exhibit Number 3, you mentioned that the wells down in 31 and 32 were poor wells.

A Yes, sir.

Q What about the wells over in 24 and 25?

A It is my understanding that the Ingram Well in Section 25 is a very good well, comparable to many of the wells in the main section of the field. Now, my geologist in Midland

me that the Shell Well in Section 24 was completed just last week for a hundred barrels per day pumping.

Q I note two dry holes there, one in Section 19 and one in the northeast corner of Section 30?

A Yes, sir.

Q Do those go to the Bough "C"?

A Yes, sir, they are both Bough "C" wells which were drilled offsetting production. However, the Bough "C", though present, was completely impermeable.

Q And this is one of the reasons that you think maybe there's a permeability barrier that comes down through this area?

A Yes, that and the high pressure measured on the Ingram Well.

Q How about the Signal 1-30 in Section 30, is that a pretty good well?

A It was an excellent well. It was a complete surprise that their second well was dry. The Humble 1-3 Well in Section 20 was an excellent well, and I am sure Phillips is very disappointed their well was dry, offsetting it.

MR. NUTTER: Are there any other questions of Mr. Sargent? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further in this case?

MR. HINKLE: No, that's all.

MR. NUTTER: Does anyone have anything to offer in Case 3003 (Reopened)?

MR. DURRETT: I would like to state for the record that the Commission has received telegrams from Signal, Humble, Shell and Tidewater concurring with Cabot's request, and we have received a letter from MacAlister Fuel Company concurring with their request for permanent rules.

MR. NUTTER: Thank you. If there is nothing further in 3003 we will take the case under advisement.

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

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 11th day of May, 1965.

Ada Dearnley
Notary Public - Court Reporter

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3003 Reopened heard by me on 4/28, 1965.

..... Examiner
New Mexico Oil Conservation Commission