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FARMINGTON, N. M.  
PHONE 325-1182

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PHONE 243 6691

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
March 11, 1964

EXAMINER HEARING

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IN THE MATTER OF:

Application of Cabot Corporation for the  
creation of a new oil pool and for special  
pool rules, Chaves County, New Mexico.  
Applicant, in the above-styled cause,  
seeks the creation of a new Bough "C" Oil  
Pool for its Signal State Well No. 1,  
located in Unit A of Section 29, Township  
8 South, Range 33 East, Chaves County,  
New Mexico, and for the establishment of  
temporary pool rules therefor, including  
a provision for 80-acre proration units.

Case No. 3003

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BEFORE: DANIEL S. NUTTER, EXAMINER.

TRANSCRIPT OF HEARING



MR. NUTTER: We will call Case 3003.

MR. DURRETT: Application of Cabot Corporation for the creation of a new oil pool and for special pool rules, Chaves County, New Mexico.

MR. CHRISTY: Sim Christy of Hinkle, Bondurant, Bratton & Christy for the Applicant Cabot Carbon. We have one witness.

(Witness sworn.)

WILLIAM M. SARGENT, JR.

called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. CHRISTY:

Q Would you please state your name, position, with whom you are employed and in what capacity?

A William M. Sargent, Junior, employed by the Cabot Corporation as a petroleum engineer.

Q Mr. Sargent, have you previously testified before this Commission and had your qualifications as a petroleum engineer accepted?

A Yes, I have.

Q Are you familiar with the application in Case 3003 before the Commission and what it seeks?

A Yes, I am.



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Q Are you familiar with the well and general area--

A Yes, sir.

Q -- involved in the application?

A Yes, sir, I am.

Q Would you briefly tell the Examiner what is sought by the application in this case?

A Cabot has completed a Pennsylvanian discovery well in the Chaves County Panhandle in Section 29, Township 8 South, Range 33 East. We are requesting temporary field rules and designation of a new pool. We have requested the designation of the pool to be Tobac, T-o-b-a-c.

Q Do you have a map of the area and is it one of the instruments shown in your Applicant's Exhibit 1?

A Yes, sir, I do. The well location is pointed out by the arrow.

Q Would you please identify that by distances from the section line?

A The well is 660 feet from the North line and East line of Section 29, 8, 33.

Q Chaves County, New Mexico?

A Chaves County.

Q Do you have a well on the log and is that one of the instruments shown in Applicant's Exhibit 1?



A Yes, I do. On the log I have indicated the Bough "C" zone and the perforations in the well.

Q This is not a full log?

A No, this is only a portion of the log.

Q Tell us a little bit about the well history, and I might refer the Examiner to one of the pages in Applicant's Exhibit 1 on well history. There is only one well at the moment, is there not?

A Yes, sir, this is the only well in the area. This well was originally drilled to the Devonian at approximately eleven thousand four or five hundred feet. I'm not sure of the total depth on it. It was cased with 13-3/8ths surface casing at 207 feet, 8-5/8ths intermediate at 3650 feet, 5-1/2" production string at 10,332 feet.

The well was tested at 10,200 feet for possible gas production, but when this failed to materialize it was completed in the Bough "C" zone at 9,058 to 68 feet.

Q About when was the well completed?

A This well was completed approximately one month ago, as I recall. On potential test the well flowed 462 barrels of oil plus 352 barrels of water through 26/64 choke with a flowing tubing pressure of 650 pounds. The GOR was 1275 to 1.

Q I believe the Allison-Penn Pool about 22 miles to the



east over along the Lea-Roosevelt County lines is a comparable formation with that encountered in your Signal State No. 1?

A Yes.

Q Have you made a comparison of the rock and fluid studies of these areas?

A I have.

Q Would you tell us about that and refer to one of the other pages?

A The Allison-Penn and the Cabot discovery well are both producing from the Bough "C" zone of Pennsylvanian age. The net pays Allison-Penn is approximately nine feet. This is variable from well to well. Our well had 24 feet of what I considered to be net pay zone.

Q That's indicated on the logs?

A Indicated as on the logs. The porosity in the Allison is approximately 7%, and our well calculated from the log is 5%. Water saturation in the Allison is estimated at 25%, calculated from our log is 35%. The permeability of the Allison Pool has been reported at 200 millidarcies on the average. I calculated from the drill stem test of this zone in our well that the permeability was 190 millidarcies.

The Allison Pool had a reservoir pressure of 3363 compared to our measured pressure of 3055. The other data presented on this



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sheet is data which has been taken from the literature to arrive at a data necessary to calculate reserves.

Q Now, sir, I believe your application also seeks pool rules for this area involved in the Signal State No. 1 Well. Did I understand you correctly before the hearing that the rules you seek are approximately those that were granted by this Commission in the South Lane Pool which is to the Southeast of the present area? Those rules being codified in Case 2554, Order R-2253 and 2253-A?

A Yes, sir, this is correct.

Q This is your suggestion to the Commission of rules?

A Yes, sir.

Q I believe those rules provide for 80-acre spacing and provide for drilling the well in any of the 40's?

A Yes, sir.

Q Is that correct?

A This is correct.

Q And dedicating any 80 East Half, South Half, East Half?

A Yes.

Q Are those rules the same as the Allison-Penn formation with the exception of the fixed well locations?

A Yes, this is correct.

Q Do you feel that fixed well locations are preferable



at this time or do you feel that they should be variable well locations until the pool is further developed?

A I believe at this time we should have the liberty of locating our wells on either end of the 80-acre tract to be allocated to the well. One well we do not have enough information to determine the size of the area that we believe the pool will cover and the drainage pattern that would be best suited for this pool.

Q You would have no objection, though, to having that as a temporary portion of the rule at this time?

A The fixed locations?

Q Yes, the variable locations.

A The variable location?

Q Being temporary.

A No objection to it being temporary.

Q In your opinion, from what you know of the Signal State No. 1 well, will it effectively and efficiently drain 80 acres of Bough "C" production?

A It is my opinion that well will drain at least 80 acres.

Q Turning to the economics, or economic waste aspects of 80-acre proration which you propose in these new pool rules, have you prepared any comparison of 40 acres and 80-acre economic figures?

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A Yes, sir, I have. I have calculated the reserves based upon the reservoir data that was previously presented on 40 acres and 80 acres. This indicates the reserve for 40 acres of approximately 42,000 barrels and for 80 acres of 83,500 barrels.

Q You are now referring to one of the other pages of the exhibit?

A Yes.

Q Go ahead.

A One of the sheets included in the exhibit. By applying these reserves and the economics to these reserves we estimate that the income from 40-acre location would be \$99,300, 400 dollars; from 80 acres, \$198,778. This is based upon a straight 1/8th royalty.

We have not considered any overrides which were involved in these economics. We estimate we can drill and complete a flowing well in this field for \$115,000 plus \$10,000 for the tank battery and flow line for a total cost of \$125,000 per well on a new lease. Of course, the second well on the lease would be approximately \$115,000. We anticipate that we will eventually have to pump these wells and would use a hydraulic pumping unit at a cost of approximately \$20,000.

Q That is a rather standard occurrence in the Bough "C" formation, they go to pumping wells rather quickly?



A This has been our experience in the South Lane field. Therefore, the total cost of the well, capital cost is estimated to be \$145,000. We estimate that the life of the well will be approximately five years and we can operate it at approximately \$3,000 per year for an operating cost of \$15,000. This makes our total investment in the well \$160,000.

Comparing this to the estimated income on 40 acres, we would have a loss of \$60,600, and an income of profit of \$38,800 on 80-acre spacing.

Q You testified that the recoverable oil in your 40 and 80 acres is as depicted in this sheet. You also, I believe, calculated how you arrived at these figures?

A Yes, sir, I have shown that on the sheet.

Q Would you briefly tell us that?

A Using the 5% porosity and 35% water and the formation volume factor of 1.74 determined from the literature and the fluid properties that we know, we determined the oil in place to be 145 barrels per acre foot, or 3,480 barrels. Applying a 30% recovery factor to these numbers we arrive at  $43\frac{1}{2}$  barrels per acre foot recoverable oil, or 1,044 barrels per acre recoverable oil.

Q Do you have any suggestions to the Commission with respect to the horizontal limits of the proposed pool?

A I believe the Commission standard designation of one



mile would be fine.

Q Mr. Sargent, do you see where the correlative rights of any interested party, royalty or working interest owner or other owners might be violated by the granting of an application involving 80-acre spacing?

A No, I do not. I believe under 80 spacing such rights will be protected.

Q I believe also in the South Lane Pool rules that the rules provide for locations within 150 feet of the center of the particular 40-acre drill site, would that be your suggestion in this instance?

A Yes, this would allow for any physical variations of the physical location itself.

Q Was the exhibit and instruments attached to Exhibit 1 prepared by you or under your direct supervision except for the log?

A Yes, they were.

MR. CHRISTY: I think that's all we have at this particular moment.

MR. NUTTER: Are there any questions of Mr. Sargent?

CROSS EXAMINATION

BY MR. NUTTER:

Q The plat which is a part of your exhibit shows a couple



of dots, one in the Northwest, Northwest of 28 and one in the Southwest, Southeast of 20. Are those wells or just dots?

A No, sir. Those are proposed locations. We propose to drill the Northwest offset, MacAllister Fuel I understand is going to drill the east offset in the immediate future.

Q But only one well is drilled at the present time?

A There's only one well in the field.

Q And no core was taken of the Bough "C" in this zone?

A No. We plan to core future wells to actually determine rock properties.

Q Since no core was taken, what was the basis of your determination of 24 feet of net pay out of your gross? What was your cutoff point?

A I believe I used a 3% porosity cutoff from a sonic log. After looking at this log, comparing this to the Allison logs, I believe that 3% will produce.

Q In other words, you estimate there's 25 feet of gross pay here and 24 feet of net pay. Is this typical of the Bough "C" that you could calculate most of the gross net?

A I believe in this particular well the cutoff points appear to be close to the top and bottom of this actual lime zone. As I say, the porosity percent that will produce is a matter of individual opinion, and as I say, looking at recoveries from other

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fields and trying to see where this oil is coming from, I believe that 3% is going to produce in this area. I could just as well say that this whole 25 foot was net pay here.

Q In your estimate of economics you haven't given any consideration to the value of the gas, have you?

A No, sir, I have not. At the present time the closest line is some six or seven miles to the Southeast. I believe this line would be connected into the Lane Field. If this field develops into a sizeable area, which we hope it will, I'm sure that one of the gasoline plant owners will lay a line. In fact, we have already been approached by one owner; this, of course, will improve the economics.

MR. NUTTER: Are there any other questions of Mr. Sargent?

BY MR. PORTER:

Q Was this 462 barrel test, was that a 24-hour test?

A No, sir, that was not. I believe that was a six-hour test, calculated from a six-hour test.

Q It was projected to twenty-four hours?

A Yes, sir. I do have the production on March the 9th, last Monday, was 220 barrels of oil, 10% water on 10/64 choke. That is 750 pounds flowing tubing pressure. We feel that we have a well here capable of producing in excess of 1,000 barrels if it



was opened wide.

Q One other question, I think you gave it, what was your recovery factor?

A Thirty percent.

MR. PORTER: That's all I have.

MR. NUTTER: Are there any other questions of Mr. Sargent?

MR. DURRETT: Just one question.

BY MR. DURRETT:

Q Have you calculated any 80-acre allowable?

A It would be 187 barrels a day. The 40-acre allowable is 148.

MR. NUTTER: If there's no further questions, the witness may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Christy?

MR. CHRISTY: Yes. We would like to offer in evidence Exhibit 1 with all the sheets attached to it.

MR. NUTTER: Applicant's Exhibit 1 will be admitted in evidence.

(Whereupon, Applicant's Exhibit No. 1 was offered and admitted in evidence.)

MR. CHRISTY: We have nothing further.



