

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1634

TRANSCRIPT OF HEARING

JULY 15, 1959

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
JULY 15, 1959

IN THE MATTER OF:

CASE 1634 (Rehearing) In the matter of the rehearing
requested by The Pure Oil Company for recon-
sideration by the Commission of Case 1634 which:
was an application for an order promulgating
temporary special rules and regulations for the
South Vacuum-Devonian Pool in Lea County, New
Mexico, to provide for 80-acre proration units
and for permission to shut-in one South Vacuum-
Devonian well and transfer its allowable to one
or more South Vacuum-Devonian wells on the same
basic lease. The rehearing will be limited
solely to the transfer of allowable issue.

BEFORE:

Mr. A. L. Porter
Mr. Murray Morgan
Gov. John Burroughs

T R A N S C R I P T O F P R O C E E D I N G S

MR. PORTER: In order to allow a sick man to be able
to go home, Mr. Bratton has requested that the Pure Case 1634,
be brought on. I told him I didn't see any Pure cases on the
docket, but we will hear Case 1634.

MR. PAYNE: Case 1634. (Rehearing) In the matter of
the rehearing requested by The Pure Oil Company for reconsidera-
tion by the Commission of Case 1634 which was an application for
an order promulgating temporary special rules and regulations for

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the South Vacuum-Devonian Pool in Lea County, New Mexico, to provide for 80-acre proration units and for permission to shut-in one South Vacuum-Devonian well and transfer its allowable to one or more South Vacuum-Devonian wells on the same basic lease. The rehearing will be limited solely to the transfer of allowable issue.

MR. BRATTON: If the Commission please, it will take us about two minutes to put a couple of exhibits up on the board.

(Short recess)

MR. PORTER: The meeting will come to order, please, and we will proceed with Case 1634.

MR. BRATTON: If the Commission please, Howard Bratton, Hervey, Dow & Hinkle, appearing on behalf of the Applicant, Pure Oil Company. I would like to make a brief statement prior to presenting our case. This case comes on for rehearing, limited to the sole issue as to whether in the South Vacuum unit the Applicant, The Pure Oil Company, should be allowed to shut-in one well for a temporary period of one year and transfer its allowable to a well or wells located on the same lease for the purpose of conducting interference tests during that year to determine the drainage area of a well in the pool. That being the question before the Commission, the evidence which we will present this morning will be very brief, and it will be devoted to two points. The first is whether interference tests will prove anything throughout the pool; in other words, is there such continuity throughout the pool that the tests which we propose will prove or disprove



a fact relative to the whole pool. The second is whether the transfer of the allowable from the shut-in well to a well or wells located on the same lease would damage either the well or the reservoir. Those are the two facts as to which we will present testimony.

We have previously presented our application for rehearing, and in support thereof, have presented a brief as to the reasons why we feel an operator should be allowed the opportunity to conduct interference tests in the interest of the Commission, and the operators may have the best available information as to drainage areas within the pool. Now, we will not go further into that subject other than to refer back to our application for rehearing and brief in support thereof. We have two witnesses this morning, and I will ask that they be sworn.

(Witnesses sworn)

GEORGE FISH,

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

DIRECT EXAMINATION

BY MR. BRATTON:

MR. BRATTON: Prior to proceeding, for clarification, this is for rehearing. I understand that all of the testimony and exhibits in the previous hearing are a part of this hearing.

MR. PAYNE: That is correct, Mr. Bratton.

Q (By Mr. Bratton) Will you state your name, please, by

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whom you are employed, and in what capacity?

A George Fish. I'm employed by The Pure Oil Company as Division Development Geologist for the Texas Producing Division.

Q Have you previously testified in the original hearing on this case?

A Yes, I have.

MR. BRATTON: Are the witness' qualifications still acceptable?

MR. PORTER: They are, yes, sir.

(Thereupon, Applicant's Exhibit No. 1-R was marked for identification.)

Q Referring, Mr. Fish, to what has been marked Exhibit 1-R, will you please explain what that is, what that Exhibit is, and what it shows?

A This is a structure map contoured on top of the Devonian formation. It is very similar to the map that was presented at the prior hearing. The only new information we have available since the other hearing is the drilling of the Magnolia No. 2 State, Section 27, which is located in the SE/4 of the NE/4 of Section 27 in Township 18 South, Range 35 East. That well encountered the Devonian higher than was shown by the contouring on my previous map so that a revised interpretation was necessary. The Devonian was encountered at a minus 7570 feet subsea. This well is -- hasn't been officially completed yet, at last report; they are waiting on orders. They had seven inch casing out at the



well, site, and I understand they are attempting to make a decision as to whether they will project that area on down to test the McKee sand.

Q Does the information obtained from that well rationally or basically change the contour or the outline of the pool as you previously presented it to this Commission?

A It does extend the limit of the pool to the northeast. The fact that it came in high necessitated an additional contour, a minus 7600 foot contour, and by virtue of that, all the other contours had to be moved to the northeast. The water level would also be moved, the interpretation of the water level to the northeast. Therefore, the pool encompasses a slightly larger area than previously shown.

Q Does the information obtained from that well change your belief that there is such continuity throughout the pool that an interference test conducted in any portion thereof would give evidence as to drainage in all portions of the pool?

A No, sir. It only confirms my previous conviction. I don't have a log on that well. The position of that well on my previously presented cross section would be approximately half way between the Magnolia 1-27 and South Vacuum unit No. 1-26.

Q Now, you are referring to Exhibit 2-R, which is a cross section of the pool?

A Yes, sir. This cross section is also similar to the cross section presented in the previous hearing. There has been

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one addition at the northeast end, which was the inclusion of the Sinclair No. 2-401. In the previous hearing, there was some discussion as to what a cross section would show if it were taken up to that well, so for clarification, I have added that well. We still feel that the Sinclair No. 2-401 is producing from an area of separate closure, but is producing from the same basic reservoir, that is the Devonian reservoir. The only -- the thing is that the Magnolia No. 2-27 would only serve to eliminate this long gap between these two wells and would strengthen our belief that the reservoir is present and continuous throughout the south closure of the South Vacuum-Devonian Pool.

Q Now, what well does Pure propose to shut-in?

A They propose to shut-in the South Vacuum unit No. 2-35.

Q Referring to Exhibit 1-R, will you show the location of that well?

A The South Vacuum unit No. 2-35 is located in the NE/4 of the SE/4 of Section 35, 18 South, 35 East.

Q All right. Now, that well is on the southeast edge of the wells which have been drilled?

A That is correct.

Q However, your cross section shows continuity throughout the reservoir so that the shutting of that well and the information obtained from interference tests thereon would, in your opinion, furnish information as to the rest of the pool?

A I think it certainly would. In fact, I think that this



is a better well to be shut-in than the well we had previously recommended being shut-in. It is on the southeast edge of the pool, and there will be no drainage from the southeast or the south. The only drainage or pressure interference that will occur will be from the wells producing in the main portion of the reservoir up to the north, the northwest.

Q Do you have anything further which you would like to testify with regard to either one of these Exhibits?

A No, sir. I believe that completes my testimony.

Q Did you prepare both of these Exhibits?

A Yes, sir, I did.

MR. BRATTON: We would like to offer Pure's Exhibits 1-R and 2-R in evidence.

MR. PORTER: Without objection, these Exhibits will be admitted into the record.

(Thereupon, Pure's Exhibits Nos. 1-R and 2-R were received in evidence.)

MR. PORTER: Anyone have a question of Mr. Fish?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Fish, you stated that you would shut-in your South Vacuum Well No. 2-35. Now, would you transfer the allowable of that well to another well or wells?

A Yes, sir, that is our proposal.

Q Which wells would you transfer it to?



A We have recommended that that allowable be transferred to the South Vacuum unit No. 1-35.

Q The nearest well to the 2-35?

A Yes.

Q The entire allowable?

A Yes, sir.

Q Now, do you think that, as a geologist, do you think that there is anything structurally here that would prohibit the efficient production of the two allowables from the 1-35?

A No, sir. I believe there is adequate section -- adequate pay qualities to sustain the production -- the allowable from two wells from 1-35.

Q Now, your horizontal green line on your cross section there is the water table?

A The blue line. The green line depicts the top of the Devonian.

Q Now, how close to that blue line, then, is your No. 135 perforated?

A Approximately 70 feet, I would say. I could get more exact figures if you desire, but it is approximately -- just reading my cross section, I would say approximately --

Q We probably can find out what the perforated interval is. What is the elevation of your water-oil contact?

A Minus 7880.

MR. NUTTER: Thank you. That's all.



QUESTIONS BY MR. PAYNE:

Q How deep is the well, Mr. Fish?

A How deep?

Q Yes, sir.

A TD, the subsea TD is shown on some of the cross sections. Beginning at the south end, the 2-35 was taken to granite, which was approximately 13,000 plus feet.

Q What is the allowable for these wells at present?

A I believe for the month of July it is 199 barrels a day.

MR. PAYNE: Thank you.

QUESTIONS BY MR. PORTER:

Q 139?

A 199.

Q 199, approximately 200 barrels?

A Approximately 200 barrels.

Q Have you considered transferring the allowable to other wells, more than one well?

A Yes, we have considered it. We think it would be preferable to transfer it to the one well. However, we would have no strong objection to transferring it to other wells. I think my engineer colleague is a little bit more qualified to state an opinion on that.

MR. PORTER: Does anyone else have a question of Mr. Fish? You may be excused.



(Witness excused)

HARRY C. WELLS,

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, please, by whom you are employed and in what capacity?

A I am Harry C. Wells, employed by The Pure Oil Company as assistant chief production engineer of The Texas Producing Division in Fort Worth.

Q Have you previously testified before this Commission as an expert witness?

A I have.

Q Are you familiar with this case and the original hearing, the application for rehearing, and the matters involved in this rehearing?

A Yes, I am.

MR. PORTER: His qualifications are acceptable.

(Thereupon, Pure Oil Company's Exhibit No.3-R was marked for identification.)

Q Referring to Exhibit No.3-R, Mr. Wells, will you relate what that is?

A Exhibit 3-R is the same exhibit which was presented as Exhibit No. 3 at the April 15th hearing, and it is simply a graph-

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ical and tabular production history for the south portion of the South Vacuum-Devonian Pool, excluding Sinclair's 401 No. 2, which we went into at the previous hearing. These two, the tabular and the graphic form merely add three months to that, which was presented at the last hearing, three months' production.

(Thereupon, Pure Oil Company's Exhibit No. 4 was marked for identification.)

Q Turning to Exhibit No. 4, Mr. Wells, will you explain what that is and what it shows?

A Exhibit No. 4 is a comparison of the core analysis data and the log data of each of the four wells completed in South Vacuum unit, Devonian reservoir to this point. Shown on Exhibit 4-R for each of these wells is the gross feet of pay, the net feet of pay from the neutron or sonic log, the weighted average porosity of the net pay above the oil water contact, as determined from the log after correlation with core analysis. The weighted average permeability of the net pay from core analysis, and the footage of cored sections having porosity greater than four percent or permeability greater than one-tenth millidarcy. I'll be happy to read those figures if you would like.

Q I don't believe that will be necessary.

A The thing we wanted to show with this exhibit is that porosity and permeability figures are very similar for all of the wells we have data on, and not only similar but are very good characteristics for an oil reservoir.



Q This confirms what is shown on Exhibit 2-R as to continuity so that interference tests conducted on one well would be information applicable to the entire pool?

A That is correct.

(Thereupon, Pure Oil Company's Exhibit No. 5-R was marked for identification.)

Q Turning to Exhibit 5-R, Mr. Wells, that is an outline of the procedure which you would propose in connection with the interference test?

A That is correct. We would propose to, first, run a forty-eight hour shut-in bottom hole pressure survey on all wells in the pool. Second, to open all wells on normal producing rate except that the South Vacuum unit 2-35 would remain shut-in, the South Vacuum unit 1-35 would be produced at twice the normal allowable. We would record daily bottom hole pressures on No. 2-35 for several days, and we would run static bottom hole pressure surveys on all wells at monthly intervals for approximately three months, and run subsequent surveys at about three months' intervals for the remainder of the one year period.

Q Now, it is my understanding that your proposal is to shut-in the South Vacuum 2-35 and transfer the full allowable to the South Vacuum 1-35?

A That is correct.

Q However, if the Commission should desire, you would have no objection to transferring that allowable to the remainder

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of the wells on that same lease instead of transferring it all to the 1-35?

A That is correct.

Q Now, in your opinion, would it damage either Well No. 1-35 or the reservoir to transfer the full allowable to it?

A In my opinion, it would not damage the reservoir or the well in the least. 1-35 would continue to flow at the approximate 400 barrel allowable with about 900 pounds per square inch surface tubing pressure. The only other possible damage that you could think of to the well would be caused from premature water production or coning of the oil-water contact. The static bottom hole pressure in No. 1-35 in February 6 of this year, as shown in our previous exhibit, was 4767 PSI at minus 7550 feet. The productivity index of that well is 4.4 barrels per day per PSI drawdown. The drawdown, therefore, in bottom hole pressure at a 400 barrel a day rate will be approximately 176 PSI, or about 88 PSI over and above the drawdown which we would have with normal allowable from this well. The flowing bottom hole pressure, therefore, would still remain 4591 pounds, or thereabouts. This reduction is of a very small percentage of the total bottom hole pressure. The oil-water contact in the 1-35 of minus 7880 feet is equivalent of a depth of 11,758 feet. The lowest perforation in this well is 11,680, or a height above the oil-water contact of 78 feet. We have run calculations on the rate of production necessary to cone water 78 feet, assuming a 7 percent porosity



uniformly all the way down, and the rate necessary would be approximately 1200 barrels per day, or more than three times the maximum rate proposed in this interference test. Therefore, we feel that there will be no danger at all from any water coning or premature water production due to producing two allowables from one well.

Q If the allowable is transferred to the other wells on the lease, will that result in transferring allowables to wells offsetting another lease, a separate lease?

A It will, certainly.

Q In your opinion, are pressure interference tests such as the one proposed here, is that the best available information as to the area which can be effectively drained by a well?

A It is one of the best tools we have for judging the effective drainage area of a well, together with other information such as that which we presented at the previous hearing on the initial bottom hole pressure of new wells prior to any production. I think those two criteria are the best available means we have.

Q In your opinion, would the procedure which you have suggested afford within a year further substantial evidence as to the area which can be drained by one well in this pool?

A Yes, I think that one year should give us fairly conclusive results.

Q Now, in conclusion, you believe that the most effective way would be to transfer the full allowable to the adjoining Well,



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No. 1-35, is it Pure's position that if the Commission so desires, they have no objection to transferring the allowables to the other wells on the basic lease?

A We have no objection. However, I would like to point out that if double the allowable is produced from an offsetting well, it is roughly equivalent to having two wells, one on each side of your shut-in well, producing at normal allowable rate. Therefore, as far as drainage areas are concerned, this, I think, would give a better picture and probably a quicker result from our interference test.

Q The results might be quicker, but they would not -- it would not effect the validity of the test, if the full allowable were transferred to the adjoining well?

A No, it certainly wouldn't.

Q Is there anything further which you have to offer in this case?

A I believe that's all.

Q Exhibits 3-R through 5-R were prepared by you or under your supervision?

A Yes, they were.

MR. BRATTON: I would like to offer those Exhibits in evidence.

MR. PORTER: Without objection, the Exhibits will be admitted.



(Thereupon, Pure Oil Company's Exhibits 3-R through 5-R were received in evidence.)

MR. PORTER: Anyone have any questions of Mr. Wells?

MR. PAYNE: Yes, sir.

MR. PORTER: I think you pretty well covered the point that I raised with the last witness.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Wells, how many wells does Pure have on this same basic lease producing from the South Vacuum-Devonian?

A The South Vacuum unit contains four presently producing Devonian wells.

Q Now, did I understand you to testify that all of those wells with the exception of the 1-35 are offset by producing wells on different leases?

A No. I believe the statement was that if the allowable were transferred to other wells, we would have equally -- to all other wells, we would have a condition of producing more than normal allowable from a well offsetting another lease.

Q Producing from the same pool?

A Yes. Not at this time, no.

Q I see.

A Not at this time. However, they would be offsetting the lease, --

Q Yes, sir.

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A -- the boundary line.

MR. PORTER: Do you anticipate that those wells will be drilled within the duration of the test you are asking for?

A They probably will be, yes.

Q (By Mr. Payne) Now, did I also understand you to testify that the information that you obtain from this interference test will be just as valuable and just as accurate if the allowable were transferred to four wells as it is if it is transferred to this one well?

A It will be just as valid and just as accurate, but it will be slower in being determined.

Q Would you be able to get the information you want within the one year period?

A I think we could.

Q Even if it were transferred to four wells rather than one?

A Yes.

MR. PAYNE: That's all. Thank you.

MR. PORTER: Anyone else have a question? Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Did you state what the perforated interval in this No. 1-35 is?

A I stated only the deepest perforation.

Q What is the total interval there?

A The overall interval is from 11,643 to 11,680.



Q So there are actually 37 feet of perforations?

A Right.

Q And your PI is what on this well?

A 4.4.

Q And how does the PI in this well compare with the other wells in the unit?

A We have not run PI tests on any other wells.

Q Now, if the Commission should -- first of all, let me ask you this, do any of these wells on your unit make water at this time?

A The 2-35 makes a small amount of water. The latest tests, it flowed 21 1/4 barrels of oil, I believe, and 1 1/4 barrels of water.

Q Do you take monthly tests on your wells?

A Periodic tests. I'm not sure whether they are monthly or not.

Q Now, during the course of this interference test that you request here, would you be willing to take monthly tests and file that with the Commission and --

A Including the one shut-in?

Q No, I was talking about monthly production tests, gas-oil ratio and measurement of the oil and water produced.

A We certainly would.

Q In the event the Commission should authorize the transfer of the allowable to just the one well, being the 1-35, and



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then future conditions would indicate that perhaps that allowable should be distributed to other wells, would you be willing to make that distribution?

A I certainly would.

MR. NUTTER: I believe that's all. Thank you.

QUESTIONS BY MR. PORTER:

Q In other words, about what you are asking for here would be the transfer with the option to transfer any portion of it to the other wells?

A Yes, sir. Under Mr. Nutter's condition, that is correct.

Q In the event that proved to be desirable?

A Right.

MR. PORTER: Anyone else have a question of the witness? You may be excused.

(Witness excused)

MR. PORTER: Does this conclude your testimony?

MR. BRATTON: We have nothing further.

MR. PORTER: Does anyone else have any statement to make, any comment on this case?

MR. BURTON: I am H. N. Burton.

MR. PORTER: Burton?

MR. BURTON: Yes. Speaking on behalf of Sinclair Oil & Gas Company, we own an approximate 9 percent interest in the South Vacuum unit, and we join in and concur with the recommenda-



tions of The Pure Oil Company in this hearing.

MR. PORTER: Does anyone else desire to make a comment or make a statement? If not, we will take the case under advisement.

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STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, J. A. Trujillo, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 24th day of Oct, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
 NOTARY PUBLIC

My Commission Expires:

October 5, 1960

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