

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 3, 1961

IN THE MATTER OF:

Application of The Ohio Oil Company for permission) Case 2206
to transfer allowables. Applicant, in the above-	
styled cause, seeks permission to shut-in certain	
wells in the Lea Unit, both in the Devonian and	
Bone Springs formations, and transfer the allowable	
for such wells, for a limited period of time, to	
other wells within said Lea Unit, Township 20 South,	
Ranges 34 and 35 East, Lea County, New Mexico.)

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case 2206.

MR. MORRIS: Application of The Ohio Oil Company for permission to transfer allowables.

MR. COUCH: J. O. Terrell Couch; I am appearing for Ohio Oil Company. The records of the Commission will show that Atwood & Malone, our New Mexico Counsel, have entered an appearance in this case for us.

Mr. Examiner, the orders of the Commission granting temporary pool rules for the Lea Devonian and the Lea Bone Springs Pool, being orders 1826 and 1827, indicated very definitely the Commission desired that Ohio conduct interference tests in both pools. Therefore, in order for Ohio to conduct those tests without losing

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current allowable from the shut-in wells, it is necessary for us to obtain authority to transfer allowables from wells within each of the pools to other wells within the respective pools. Our application sets forth the extent of authority which we seek, and it is rather broad. We consider it necessary, in order to effectively attempt to conduct these tests, that we be granted rather broad authority for the transfer of allowables, subject to restrictions as set out in our application.

We will have one witness in this case, Mr. Roy Young.

(Witness sworn.)

ROY M. YOUNG

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

DIRECT EXAMINATION

BY MR. COUCH:

Q Would you please state your name, by whom you are employed and your professional qualifications?

A My name is Roy M. Young. I am employed by The Ohio Oil Company as a reservoir engineer, a position which I have held for approximately nine and a half years. I have previously testified before the Commission, and my qualifications as to my education and training as a petroleum engineer are contained in the records of those prior hearings. I am the same Roy M. Young who testified in New Mexico Oil Conservation Commission Cases 2118 and 2119 which resulted in the issuing of Orders R-1826 and R-1827 which



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granted temporary 80-acre spacing and 80-acre proration for the subject pools. I have continued to study all the engineering and geological data pertaining to these pools to determine the proper well spacing which should ultimately be adopted for each of these pools.

MR. COUCH: Are the qualifications of this witness acceptable?

MR. NUTTER: Yes, sir. Please proceed.

Q Mr. Young, as I have stated in my preliminary statement, the request for interference tests included in the orders granting temporary pool rules -- will this require the shutting in of existing wells?

A Yes, sir, it will.

Q In order to do this without jeopardizing correlative rights of unit owners and losing allowables, will it be necessary to transfer allowables from the existing wells?

A Yes, sir, it is.

Q Will you tell us, in your opinion, the necessity for running these interference tests promptly, as early as possible?

A It is my opinion, and as I previously testified in Case 2118, that a Devonian reservoir in the Lea Devonian Pool will have a water drive as its reservoir mechanism. Because of this, pressure interference tests in the Devonian, as in any water drive reservoir, may be inconclusive. To have a chance to obtain positive results from interference tests in a water drive reservoir it is



necessary the interference tests be conducted as early as possible.

Q What is your recommendation as to the effective date for transferring of allowables?

A It is my recommendation that approval of this application as soon as possible be made effective March the 3rd, 1961, so that the operator can transfer allowables and begin interference tests very soon after Well No. 2 is completed and potentialled.

Q Is it necessary for us to have flexibility of transferring allowables within the Lea unit?

A In my opinion it is.

Q Will you please look at the exhibit labelled Ohio's Exhibit 1 in this case and state whether that was prepared under your supervision and direction?

A Ohio's Exhibit 1 was prepared under my direction and supervision.

Q Explain to us the symbols shown on Exhibit 1, please.

A Exhibit 1 is a map of the Lea Unit area which is located in Township 20 South, Range 34 and 35 East, Lea County, New Mexico. The Lea Unit area is shown on Exhibit 1 as outlined by the hashed line. It contains approximately 2560 acres.

Q The two wells shown there as producing wells, which are those?

A The two wells shown on Exhibit 1 as producing wells are the Ohio Lea Unit No. 1, located in the NW/4 SW/4 of Section 12. This well is actually on production. Well No. 2, located in the



SE/4 NW/4 of Section 12 is in the process of being completed and it is expected to be on production very soon. Well No. 2, like Well No. 1, will be an oil-oil dual completion in the Devonian and Bone Springs formations.

Q There are three wells currently drilling in the vicinity. Will you refer to those briefly, please?

A Yes, sir. The Ohio Lea Unit No. 4, located in the SE/4 NE/4 of Section 11, is currently drilling at approximately 13,100 feet. The Ohio Lea Unit No. 5, located in the NW/4 SE/4 of Section 12 is currently drilling at about 6,000 feet. The third well currently drilling is the U. S. Smelting Federal No. 1, which is west of the unit and located in the SE/4 NW/4 of Section 11.

Q There is one dry hole which has penetrated the Devonian in this vicinity. Will you identify that?

A Sinclair 6025 Federal No. 1, located in the SW/4 NW/4, Section 7, Township 20 South, Range 35 East.

Q That is east of and outside the boundary of the unit area?

A Yes, sir, it is.

Q Will the transfer of allowables as we have requested in our application endanger correlative rights, in your opinion?

A In my opinion it will not.

Q Will you state briefly the basis for that conclusion, Mr. Young?

A Yes, sir. In the Lea Unit the working interest owners share in the unit production throughout the unit on a fixed per-



centage which is based upon surface acreage and each working interest owner is chargeable with their respective overrides.

Q What about the royalty and overriding royalty interests; are they also unitized?

A The royalty and overriding royalty interests are unitized, but the rights of these owners to share in unit production are determined on the basis of surface acres of the respective tracts which are included in participating areas as approved by the State Land Commissioner and the U.S.G.S.

Q The participating area for each pool as intended, is it initially designated and a little enlarged to include all acreage reasonably deemed to be productive from that pool?

A That's correct.

Q As provided in the unit agreement itself?

A Yes, sir.

Q Until a participating area has been established or enlarged, what does the unit agreement provide in respect to payments that would be affected by the designation of that participating area?

A Until a participating area is established, a portion of all payments affected thereby may be impounded in a manner mutually acceptable to the owners of the working interests except royalties due the United States and the State of New Mexico.

Q And the necessity for that is that it cannot be determined just exactly what the royalty interest owners will receive



until the participating area boundary has been fixed; is that right?

A That's correct.

Q The agreement also includes provision for adjustments of royalty to the United States or State of New Mexico if that is necessary by the designation of the area?

A Yes, sir. That is provided in the unit agreement.

Q You have shown on Exhibit 1 an area outlined in red. What is that, please, sir?

A The area outlined in the red on Exhibit 1 is the boundary of the present Devonian participating area. It contains 360 acres and it is nine 40-acre tracts about Well No. 1, the discovery well.

Q Nine square 40's around the well, including the one the well is located on?

A Yes, sir.

Q The area you have outlined in orange on Exhibit 1 represents what?

A The area outlined in orange, which contains 2280 acres, is the proposed first revised Devonian participating area, and the proposed initial Bone Springs participating area. Applications for approval of these areas are now pending with the U.S.G.S.

Q Please explain the shaded areas shown in sort of a blue stippled shade on Exhibit 1.

A The shaded areas shown on Exhibit 1 is the acreage which is presently dedicated to the various wells.



Q With respect to Wells 2 and 4, were Forms C-128, dedicating acreage to them filed before approval of the temporary 80-acre spacing orders?

A That's correct.

Q And both wells were commenced before the effective dates of those orders?

A Yes, sir.

Q Initially only 40 acres were dedicated to each of those wells?

A Yes, sir.

Q In respect to Well No. 2 about to be completed, has revised Form C-128 been filed for that well?

A Yes, sir, it has.

Q Dedicating 80 acres?

A Yes, the S/2 of the NW/4 of Section 12.

Q No. 4 still has only 40 acres dedicated to it; is that correct?

A That's correct.

Q All acreage presently dedicated to wells 1, 2 and 4 is within the existing Devonian participating area?

A Yes, sir.

Q And all of the acreage dedicated to Wells 1 and 2 is also on the same basic lease?

A Yes, sir.

Q Obviously, no allowable can be transferred to and from



Well No. 4 until it is completed?

A That's correct, and the completion of that will probably take another two months.

Q Is it possible by that time the Devonian participating area will be enlarged?

A Yes, sir.

Q And the Bone Springs participating area will be approved initially so as to include all acreage that might be dedicated to Well 4 within the same participating area as the other wells?

A Yes, sir.

Q Regardless of how these participating areas are ultimately designated, because of this provision for impounding royalties until it is known how they will be shared, and overriding royalties, will the correlative rights of the royalty and overriding royalty owners be protected?

A Yes, sir, it will. The third restriction contained in Ohio's application for this hearing was included to protect the correlative rights of the royalty and overriding royalty interests in the event of transfer of allowable between wells not on the same base lease and prior to the time all acreage dedicated to the wells is included in the same participating area.

Q What if the U.S.G.S. approved Ohio's application for the proposed enlargement of the Devonian and for the initial Bone Springs participating area?

A In that event there would be no problem of ownership in



either pool.

Q That is, both royalty and working interests would be common throughout?

A Yes, sir.

Q As to all the acreage involved in these wells; is that right, sir?

A Yes, sir.

Q Suppose the U.S.G.S. denies these pending applications; is it reasonable to assume that at a minimum, the Land Commission and U.S.G.S. would approve enlargement of the Devonian and designation of a Bone Springs area that would include all acreage within nine 40-acre tracts, nine regular quarter-quarter sections around each completed well?

A Yes, sir.

Q That is sort of a minimum established rule of thumb the U.S.G.S. has followed in these instances, is it not?

A Yes, sir, that's correct.

Q Does it, therefore, appear to you it is virtually certain the additional acreage to be assigned to No. 4 is going to end up in the same participating area as Wells 1 and 2?

A Yes, sir.

Q In the meantime, can we commence interference tests using just wells No. 1 and 2?

A Yes, sir. They are both in the same Devonian participating area and both on the same base lease.



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Q What about the correlative rights of interested parties having leases outside of the unit boundary; what would be done to protect those correlative rights?

A The correlative rights of parties outside of the unit would be protected by the proposed restriction, that no allowable shall be transferred to any well located within 660 feet of the unit boundary.

Q We have asked authority to transfer these allowables from the effective date of the authority until December 31st, 1961, this year; is that right?

A Yes, sir.

Q Is it likely there will be a well located even 660 feet from the unit boundary before that time?

A Since it requires six months to drill and complete a Devonian well in this area it is my opinion that a well will not be completed nearer than 1320 to the unit boundary prior to December 31st, 1961.

Q In your opinion, that restriction will adequately protect the rights, as well as the practical impossibility of drilling a closer well; that will protect the rights of the offset leases?

A Yes, sir.

Q In order to improve the chances of obtaining an effective interference test, what is your intention with regard to production of these transferred allowables?

A In conducting the interference tests we expect to pro-



duce all transferred allowables from Well No. 2 until No. 5 is completed, and at that time the transferred allowables may be split between Wells 2 and 5.

Q That is going to depend on a decision at that time as to whether it should be split or whether it is preferable to continue to produce all transferred allowables from No. 2?

A Yes, sir.

Q What about sustained production rates of the amount involved in such transfers; how would that affect these wells?

A A sustained production rate of 600 barrels of oil per day from the Devonian in Well No. 1, during a three-day drawdown test in July of 1960 resulted in a pressure drawdown of 73 psi. This, in my opinion, shows the Devonian wells will be capable of producing the anticipated production rates for the proposed interference tests.

Q Without causing waste or damage to the reservoir?

A Yes, sir.

Q What about the Bone Springs?

A Sustained production rates greater than the current Bone Springs allowable in Well No. 1 on a drawdown test in October of 1960 showed that the No. 1 well was capable of producing approximately 200 barrels of oil per day, but with a drawdown exceeding 2,000 psi. This indicates to me that a double allowable may not be possible to be produced from a single Bone Springs completion. Well No. 2, on a preliminary flow test, flowed 234 barrels of oil



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and 18 barrels of acid water in $16\frac{1}{2}$ hours. This is a flow rate of 340 barrels of oil per day. No. 2, however, may not be able to sustain this amount of production over a long period of time.

Q Even with transfer of allowable privileges for the Bone Springs, is it possible that the operators will suffer a loss in current allowable in attempting to conduct these interference tests for the Bone Springs?

A Yes, sir, it is.

Q Because of the possibility the Bone Springs can't produce at these higher rates?

A That's correct. It is my opinion, however, that the possibility of the positive results from the interference tests for the Bone Springs would justify the risk of losing some current allowable.

Q This is a risk we are prepared to take if we can get the benefit of transferring allowables to the extent it is feasible to do so?

A Yes, sir.

Q It is possible, during the running of these interference tests, it will be determined No. 2 can produce at even higher rates than anticipated?

A That's correct.

Q If so, we would want to re-evaluate this situation as to the Bone Springs well at that time?

A Yes, sir.



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Q Do you plan to initially determine the optimum rates of production for the Bone Springs well?

A Yes, sir.

Q Will you use that as a guide for determination of how much allowable you will transfer from the shut-in well to the producing well?

A Yes, sir.

Q These possibilities of making revisions during the course of the test are evidence of the need for flexibility in trying to effectively conduct these tests, are they not?

A Yes, sir.

Q Is it your opinion that the production rates which are anticipated will cause waste or underground damage?

A In my opinion no damage will be done to either reservoir or cause underground waste.

Q In that connection, do we plan to conduct monthly production tests during the period of interference tests?

A Yes, sir. The Ohio plans to conduct monthly production tests on each flowing well to which allowable is transferred, and report these results to the Commission on Form C-116.

Q We also, of course, plan to report to the Commission the time at which we transfer allowable from one well to another, and the amount of allowable so transferred, would we not?

A Yes, sir.

Q We would also furnish any other reports of a reasonable



nature the Commission would call for?

A Yes, sir.

Q Would you summarize, Mr. Young, briefly, your position about the conducting of these interference tests?

A In summary, it is my opinion that interference tests are, in some instances, a useful and proper tool to be used with other scientific data to establish the proper well spacing requirements of any reservoir. The results of such tests may be informative in these pools. However, since the Devonian will probably have a water drive, the need for beginning interference tests as soon as possible cannot be overemphasized. For this reason I strongly recommend that the Commission grant approval as soon as possible for the transfer of allowables which is necessary to afford the unit operator a reasonable opportunity to attempt the taking of effective interference tests.

Q Is it your opinion that this proposal of transfer of allowables will not damage correlative rights, and not cause any physical waste?

A It is my opinion that the transfer of allowables will not damage correlative rights or cause physical waste. On the contrary the interference test tests resulting from the transfer of allowables can possibly serve to help us to more quickly establish permanent rules for the proper well spacing to be used in this pool and may ultimately prevent the drilling of unnecessary wells.

Q We will also be measuring bottom hole pressures periodi-



cally in connection with these wells?

A Yes, sir, and these bottom hole pressures will aid us in planning a more efficient depletion of the pools. This will aid in prevention of waste and protection of correlative rights.

MR. COUCH: That concludes our direct testimony and presentation in the case, Mr. Examiner, and I will say this: that the Commission has in its records rather detailed data, on the pool rules hearings, on the characteristics encountered in the No. 1. We have accumulated a little additional reservoir information with Well No. 2. We felt, however, it is not directly pertinent to this hearing; therefore, rather than lengthen the record we have not offered it. If the Commission staff is interested in this information we would submit it for their use, or, if you desire, put it in the record.

MR. NUTTER: I think the information may be pertinent at the hearing, maybe a year from now, when these cases are reopened.

MR. COUCH: Yes, sir, and we are accumulating that for this purpose.

MR. NUTTER: Does anyone have any questions of the witness?

MR. PAYNE: Yes, sir.

BY MR. PAYNE:

Q Mr. Young, how many wells do you have in the Bone Springs?

A We have one completed well, which is Well No. 1, and No. 2 is in the process of being completed now. We do have a prelim-

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inary flow test, 234 barrels in $16\frac{1}{2}$ hours, 340 barrels per day. That is a preliminary flow test.

Q But it is not actually completed?

A No, sir. It should be completed in the near future.

Q How can we make this order effective March 3rd, which you suggested, today, inasmuch as you have only one well?

A You asked about the Bone Springs, Mr. Payne. My recommendation as to the March 3rd date is actually pertaining directly to the Devonian, but since both zones are included in this hearing I would think that the Commission would issue a single order to cover both the zones and, therefore, the March 3rd date is, in my opinion, needed primarily for the Devonian, to permit us to transfer allowable just as soon as the No. 2 well is completed because of having to conduct, or wanting to conduct, pressure interference tests in water drive reservoirs just as soon as possible.

MR. COUCH: I would say, we would have no objection to saying those allowables will be transferred from or to a well until the well is finally completed. We just picked an effective date to be sure we could get the authority as promptly as possible.

Q (By Mr. Payne) What well do you propose to shut in in Bone Springs, No. 1?

A Yes, sir.

Q And transfer its allowable to No. 2?

A Yes, sir.

Q Maybe No. 5 later?



A Yes, sir.

Q What is the GOR of these wells?

A The gas-oil ratio in the Devonian is approximately 300 cubic feet per barrel.

Q It is the same in both wells?

A We have no flow test in the No. 2 well in the Devonian.

Q What disposition is being made of the casinghead gas; is it being flared?

A Yes, sir.

Q When you transfer your allowable, if you transfer from a low GOR well to a higher GOR well, there will be more casinghead gas?

A In my opinion, in the Devonian we will never have a high gas-oil ratio in the No. 2. I base that on the fact the reservoir pressure in the Devonian is approximately 6,000 psi, the crude highly under-saturated, bubble point pressure 557 psi. Therefore, we could never have a high producing gas-oil ratio greater than the solution until the reservoir pressure decreased to approximately 557 psi.

BY MR. NUTTER:

Q I don't suppose you expect the Devonian to decrease to 557?

A I certainly don't.

BY MR. PAYNE:

Q You testified the drive mechanism in the Devonian was



water; what about Bone Springs?

A Solution gas drive.

Q Inasmuch as the Devonian is a water drive pool, isn't it your opinion it is rate sensitive?

A It will be rate sensitive to the total reservoir withdrawals. Based upon the data that we now have available the reservoir is of sufficient size that the few wells which we have, or will have in here during the next year, the allowables from those wells certainly would not be large enough to cause an inefficient rate, in my opinion.

Q I believe you testified you wouldn't propose to transfer the allowable to any well closer than 660 feet to the unit boundary; is that right?

A That's correct.

Q How do you protect the owners in the unit who are not in the participating area; do you also propose that 660 foot limitation?

A No, sir, because as far as the Devonian goes we only have one well that is not within 660 feet of a participating area boundary, so it would be impossible to apply that under our proposal to transfer the allowables to Well No. 2.

MR. COUCH: May I suggest, within the unit all working interests would be unitized. There is no problem there between the working interest owners except as to what part of their interest would be chargeable with some override. That might reduce, to



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some extent, their interest. As to overriding royalties, under the unit agreement we are in effect placed in the position of having to hold up payments of royalties until such time as participating areas are actually designated.

MR. NUTTER: Except to the United States or State of New Mexico?

MR. COUCH: Yes, sir.

MR. PAYNE: In other words, I share back to the original date of the unit?

MR. COUCH: No, sir, back to the effective date of the participating or to the enlargement of the participating area as finally approved by the U.S.G.S.. That can be made retroactive to the date of completion of the well which either caused the designation or enlargement of the participating area.

MR. PAYNE: Until such time as an 80-acre is taken into the participating area it doesn't share, does it, so it could be drained?

MR. COUCH: Until such time as the effective date of the designation of the participation of that 80-acre tract, the owner of the royalty and overriding in that tract would not participate, but these are designated retroactively, quite frequently, so I understand, considering what would be a fair date, considering the rights of the parties.

MR. NUTTER: Some unit agreements require the effective date of the area be the date of first production?



MR. COUCH: I think, as far as initial designation is concerned, my recollection is that the agreement does provide, in regard to the enlargement of the unit area, once it is approved I believe the provisions are more flexible and, in effect, leave that date up to the Land Commissioner and U.S.G.S. to pick a date that will be reasonable under the circumstances and will give recognition to the rights of the parties. Actually, the participating area designation is principally and fundamentally to work out a fair way for allocation of overrides and royalties, and with that in mind, that is what makes it clear to me those interests are going to be borne in mind, taken care of, royalty paid on the basis of the participating areas as formed and enlarged.

MR. NUTTER: If the unit agreement does provide this flexibility there would be no problem in making an enlargement of the participating area effective to the date of first production, particularly if that well was a transfer well; would there be any problem there?

MR. COUCH: I would say there should not be, Mr. Nutter. As a matter of fact, our pending applications, I believe, request the enlarged Devonian area and the initial Bone Springs area both be made effective as of a date very shortly after the first production from the well, the date on which we ran the drawdown test on the No. 1 well.

MR. PAYNE: The date of first production from the original well?



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MR. COUCH: I think our request is that they be paid effective as of the date of the drawdown test on the No. 1 well, which indicated the size and area extent of the reservoir; about a month after the completion of the well.

MR. YOUNG: Our application for enlargement of the Devonian area is asked for as of August 1st.

MR. COUCH: 1960?

MR. YOUNG: Yes. The drawdown test on the Devonian which furnished us some information to justify enlarging the Devonian participating area was made in the middle of August, and the unit agreement provides we can make the enlargement effective the 1st of the month following, of the month in which we gained information to justify enlarging the unit.

MR. NUTTER: Have you received any indication from the U.S.G.S. that they are going to approve this enlarged area?

MR. COUCH: No official indication; they are presently under consideration in Washington, and I think we must just wait for the ultimate decision. As Mr. Young stated in his original direct testimony, the initial Devonian area has, of course, been designated, nine square 40's around the well, including the 40 on which the first well was located. We first made an application for Bone Springs area of exactly that same area, but after the drawdown tests were run it became apparent that the initial area shouldn't be that rule of thumb area the U.S.G.S. frequently uses, so we asked that they withhold designation until we could file



an amended request asking that the first Bone Springs area be that shown in orange, and my point for consideration is that, if the U.S.G.S. does not approve this large area shown by orange, it seems to be almost a virtual certainty they would approve the initial Bone Springs area at least as large as the area outlined in red, and, also, that applying this minimum rule of thumb, upon completion of Well No. 4 they would then enlarge that area to include nine square 40's around that well as to both pools. I think we can rely on that. I don't think we can rely on positive approval of the applications.

BY MR. PAYNE:

Q Inasmuch as the share of each owner does relate back to the date around first production, we don't have any problem with the transfer well in a participating area impairing somebody else's correlative rights in the unit, but not in the participating area; is that right?

A He will share back to the date of first production; yes, sir.

MR. NUTTER: What is the status of the Coxon-Hammond lease in Section 13? Is that still in the unit agreement?

MR. COUCH: Mr. Nutter, in my mind it is. In my mind it is in full force and effect. There has been a decision rendered by Mr. Enriques to the effect that that lease -- if it is the one you are referring to, I am sure it is -- is terminated, under a very technical construction of the statutes and regulations. We



were, in that decision, expressly granted the authority to appeal from it. We have taken the necessary steps as to perfect that appeal and are now in the process of preparing briefs which we hope to submit very shortly to the Solicitor, and which will, we hope, result in a revision of the Solicitor's opinions. There, again, I can't give you guarantees.

MR. NUTTER: At the present time we don't know if this lease will be in the participating area?

MR. COUCH: Except to this extent, Mr. Nutter, the Government, of course -- that is a Federal lease -- and the Government retains the right to require any lessee to join in and operate in accordance with an approved Federal Unit; if that lease is ultimately held to be terminated the Government, when it leases that land again, would, I feel quite certain, lease it subject to the Lea Unit agreement.

MR. NUTTER: So you would expect it to be in the unit regardless?

MR. COUCH: That would be my opinion, it would definitely be.

BY MR. PAYNE:

Q Would you relate how Ohio Oil Company takes an interference test?

A Yes, sir. We plan, in this instance, to shut in No. 1, transfer its allowable, if the Commission grants our request, to Well No. 2, produce both allowables out of Well No. 2, with No. 1



shut in, and periodically measure bottom hole pressures in Well No. 1 to detect any possible interference in Well No. 1.

Q You say, take them periodically. How often would you take bottom hole pressures?

A Recalling again, Mr. Payne, that this is a highly under-saturated crude, we should have a solid liquid column in Well No. 1. I cannot foresee you could have any gas in the wellhead of Well No. 1. We can take deadweight pressure measurements on the tubing of Well No. 1, and probably, in my mind, more accurately see any pressure change than we can with the bottom hole pressure gauge.

MR. COUCH: This is as to the Devonian reservoir?

A Yes, sir. This is the Devonian. If we could just detect one or two pounds in the surface measurements of the No. 1 Well, that would be, in my mind, time to run a bottom hole pressure. As to the exact period between tests, I would recommend that we run them at least weekly for awhile.

Q With bombs or on the surface?

A With bombs; the surface measurement is just incidental, certainly.

MR. COUCH: This would be a clue you ought to run a bottom hole pressure test, even if you had run one the day before?

A In other words, we are going to have, not only in this instance, we not only have to rely on our bottom hole pressure gauges, but we can rely on the surface measurements.

BY MR. PAYNE:



Q I take it you feel an interference test is more valuable in a water drive pool if you start it soon after the well's completion?

A By all means. It is within this initial period in a water drive, if you get positive results it will be in this period. Later on, after the water drive becomes effective and you have no pressure decline in your reservoir you would never pick up decline in pressure in any well.

Q The same is true to a certain extent in solution gas drive field?

A Yes, sir. You do have a slightly higher drop in pressure per unit withdrawals in initial stages of solution gas drive than you would have at some later date.

BY MR. NUTTER:

Q No well in this area has penetrated the water-oil contact has it?

A No, sir, it has not.

Q Do you have any information as to what that water-oil contact is, particularly with the Sinclair well to the east?

A No, sir. The Sinclair well out to the east is across the fault. You will note it is approximately 400 feet lower than the unit wells, and it is Devonian across a fault. That is shown on the structure map which was Exhibit 1 in Case 2118. In regard to your answer, the No. 1 Well was drilled in excess of 200 feet below its current perforations. It was, all of the net pay was



perforated. There is 200 feet below the bottom of the perforations of the No. 1, dense limestone, which contains neither oil or water. No. 2 drilled to a total depth equal to the subsea depth of the bottom perforations in Well No. 1. Therefore, I have no information as to where the water-oil contact is. It did not encounter the oil-water contact.

Q If structural conditions in the No. 2 are similar to those in the No. 1, then you might have 200 feet of dense lime below the perforated interval of the No. 2?

A Based on the logs of both wells and the core analysis in the No. 2, it would be my opinion we would find approximately 20 feet of still porous interval below the T.D. of Well No. 2, and then go into this 200 feet of dense lime.

Q Which, if it is the same as No. 1, would be water free?

A Yes, sir.

Q What is the allowable for the Devonian in here at the present time?

MR. PAYNE: This is the deepest well in the State?

A This is the deepest oil production in the State of New Mexico. The top allowable, currently, for the Devonian is 362 barrels a day.

Q (By Mr. Nutter) Do you believe the No. 2 well can produce 700 barrels of oil per day without coning water in from the bottom?

A Yes, sir, I do.



Q In view of the 200 feet of dense lime it is waterfree?

A That, plus the fact, Mr. Nutter, that if the psi of this well, the No. 2, is the same as the No. 1, 8.18 barrels per day psi, 700 barrels only would cause a drawdown of approximately 80 pounds in the No. 2 well. Lowest perforation in the No. 2 is 40 feet above the T.D. of the well, and at T.D. we were still in the oil column. Even if the oil-water contact was at T.D. of the well we still have 40 feet of pay above that T.D., or assumed oil-water contact, and with the approximately 80-pound drawdown, that is 700 barrels per day. In my opinion there wouldn't be any water coning at all.

Q You say you would take monthly tests and report on C-116?

A We propose that provision for that very purpose, to give the Commission all the pertinent facts of the producing characteristics of these producing wells which will be producing at these high production rates.

Q I presume some arrangements will be made to alter your method of production in the event No. 2 should start making any water?

A Certainly.

BY MR. PAYNE:

Q Do you plan to conduct these tests continuously until December 31, 1961?

A To answer that, Mr. Payne, I would say that it would depend upon the results we get before then.



Q But you would like to have authority to continue it that long, if necessary?

A Yes, sir.

BY MR. NUTTER:

Q What is the U. S. Smelting and Refining Well drilling at the present time?

A It is around 12 or 13,000 feet; that is as close as I can answer that.

Q How soon do you expect your No. 4 at 13,100 to be completed?

A Final completion, in my opinion, would be approximately two months.

Q Do you believe you will transfer some of the allowable to the No. 4 when it is completed; in other words, share the Devonian allowable between the 2 and 4?

A To answer that, Mr. Nutter, I would say that our current plans are to transfer No. 4's allowable to Well No. 2.

BY MR. PAYNE:

Q You mean, transfer Wells No. 1 and No. 4 both to Well No. 2? How much would 2 be producing?

A 1,086 barrels.

Q And you would shut in No. 4 and conduct interference tests in it, too?

A Yes, sir.

BY MR. NUTTER:



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Q So this isn't a request for approval to shut in just No. 1, then?

A No, sir.

Q What about this No. 5, when it is completed, what are you going to do with it?

A My personal opinion there would be to share, let No. 2 and 5 share all of the transferred allowables from 1 and 4.

Q Is this an edge water drive, or do you have any idea where it would be coming from?

A It certainly would be an edge water drive. Well No. 1 doesn't have any bottom water.

Q You think the water is coming from the west?

A Yes, sir, it is. Of course, the fault to the east would prevent it from coming, in my opinion, from coming from all directions except the west.

BY MR. PAYNE:

Q In your opinion, what would be the most efficient rate to produce this pool?

A Not knowing exactly the amount of oil in place I don't believe we could answer that at this time, Mr. Payne.

Q You don't think a thousand barrels of oil from one well is too high?

A As far as the reservoir is concerned, no, sir.

BY MR. NUTTER:

Q How many net feet of pay do you have in the No. 1 well?



A 81 feet in the 1, but still in the porous oil zone at T.D. Assuming the structure conditions of the No. 2 are the same as Well No. 1 I would say No. 2 would probably have 98 to 100 feet of net pay.

MR. NUTTER: Any further questions of Mr. Young? He may be excused.

MR. COUCH: I have another.

REDIRECT EXAMINATION

BY MR. COUCH:

Q Mr. Young, by obtaining permission to transfer allowables from any well to any other well within the same pool in this unit, as shown by your testimony, we are, in effect, seeking authority to transfer allowables in such a way that there could be very substantial high rates of production from one well; is that right?

A That's correct.

Q Obviously, as operator of this unit, we intend, regardless of what reports the Commission requires, to keep a very close watch on these wells and the rates at which they are produced to ascertain whether there is any indication that waste is occurring, or that the wells should not be produced at that high a rate?

A That's correct.

Q So that when you say your proposed test procedure might result in producing 1,086 barrels per day from Well No. 2, you are saying that, certainly, with the reservation that that rate would not be maintained if the tests on the well showed that there was



any possibility of damaging that reservoir; isn't that right?

A That's correct.

MR. COUCH: I have no further questions.

BY MR. PAYNE:

Q Is this reservoir similar to the Gladiola Devonian?

A I will have to answer that, Mr. Payne, by saying that I am not familiar enough with the Gladiola Devonian to make a comparison.

BY MR. NUTTER:

Q What is the comparison between the reservoir here, and the Denton?

A The comparison that I would make first, Mr. Nutter, is that the oil column at Denton is something on the order of 1500 to 1800 feet, whereas here our net pay is on the order of 100 feet, and a gross oil column of approximately 215 feet, and the net pay seems to be, in the first two wells, of course, pretty well grouped rather than scattered as it is at Denton Devonian.

Q Ohio has wells in the Denton?

A Yes, we do, one lease, containing six or seven wells.

Q Do you recall several years ago when considerable concern was expressed as to whether the rates of withdrawal in the Denton, which were in the neighborhood of 225 barrels per day per well, were excessive with the 1500 foot oil column and active water drive?

A Yes, sir. I was familiar with that hearing.

Q Did you share those beliefs in the Denton?



A The problem there was the number of wells times this current allowable of, I believe you said, 225.

Q It was in that neighborhood.

A The number of wells times 225 was a rather large production rate to be coming from a single reservoir. It was my opinion at that time, and still is, that the water encroachment in the Denton Devonian was at its normal depletion and normal expectation in a water drive reservoir. Here, all the data, to me, leads me to the opinion we have a sizeable reservoir here, so that the withdrawal of three or four wells times the current well allowable would be a very small rate in relation to the number of barrels which I believe is in place here, so that it is my opinion there will certainly be no damage at this time in these rates.

Q In other words, the withdrawals per acre foot of pay are going to be less than they were in Denton?

A Yes, sir. I believe that.

BY MR. PAYNE:

Q That is particularly true since this pool is now being developed on 80-acre spacing?

A Yes, sir.

REDIRECT EXAMINATION

BY MR. COUCH:

Q In speaking of rate sensitivity of a water drive reservoir, I believe in your direct testimony, or in cross examination, you pointed out it is the cumulative withdrawal, cumulative rate



of withdrawal that is particularly important rather than the rate on a particular well, did you not?

A It is the sum of the rates of all the wells rather than the rate of one well. I will make that distinction. I reserve cumulative for the total cumulative that has ever been produced out of a reservoir.

BY MR. NUTTER:

Q That wouldn't stand true in the case of coning from the bottom?

A No, sir.

MR. NUTTER: Any further questions?

BY MR. PORTER:

Q Do you think you might have had more ultimate recovery in the Denton on wider spacing?

A I don't believe I am qualified to answer that, Mr. Porter.

MR. NUTTER: Any further questions of Mr. Young? He may be excused.

MR. COUCH: May I briefly close to state, as set forth in our application: All our working interest owners have approved this request for this rather broad authority set forth in the application. I will say this, if the Commission does not think it appropriate at this time to grant the broad authority we have asked for, then we do ask that the Commission grant us as broad authority as it considers is possible under the circumstances, recognizing the reports it will be receiving, and that if the authority is not

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as broad as we asked, we urge that the Commission include in the order a provision authorizing administrative approval of additional transfers and such matters as that so that additional hearings will not be necessary as we proceed with this program, for time is of the essence in getting an effective test, particularly in the Devonian. So, if we are set up with full flexibility, or a set-up where we can come in for administrative approval and receive prompt attention without necessity of notice and hearing, we think we can do a better job of trying to run effectively the tests which the Commission has indicated they want to have run.

I offer the Exhibit No. 1.

MR. NUTTER: Ohio's Exhibit No. 1 in this case will be admitted.

MR. PAYNE: Would you like to have the Commission send you a telegram when an order is entered in this case?

MR. COUCH: We would certainly appreciate it.


MR. NUTTER: Does anyone have anything further to offer in this case? Case will be taken under advisement.



STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JUNE PAIGE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission 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 6th day of March, 1961.



Notary Public - Court Reporter

My Commission expires:
May 11, 1964.

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E X H I B I T S

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Ex.#1	Location Map	4	35	35

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 2206
heard by me on 3/3, 1961.

[Signature], Examiner
New Mexico Oil Conservation Commission

