

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

and we will present nine exhibits.

Mr. Examiner, the purpose of this examination is to request a capacity allowable for Phillips Petroleum Company's Mexco "A" Well Number 2, located in the NE/4 SE/4 of Section 2, Township 17 South, Range 32 East, in the Maljamar Pool of Lea County. This well is an offset to a waterflood project by Boller and Nichols which was authorized by the Commission by Order Number R-1538, dated November 27th, 1959. We believe that the subject well is within the project area of this waterflood, as defined by Paragraph E-2 of Rule 701.

We also believe that the subject of this application, and the request which it presents, is within the purview of Paragraph E-3, the last sub-paragraph of that paragraph of Rule 701, which reads:

"Nothing herein contained shall be construed as prohibiting the assignment of special allowables to wells of buffer zones after Notice and Hearing. Special allowables may also be assigned in the limited instance where it is established at a Hearing that it is imperative for the protection of correlative rights to do so."

Our witness will be Mr. D. L. Czirr.

D. L. C Z I R R, a Witness, called by the Applicant, having been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JONES:



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

Q Mr. Czirr, by whom are you employed, and in what capacity?

A I am employed by Phillips Petroleum Company, Division Reservoir Engineer in our Western Division out of Midland, Texas.

Q In that capacity, does the Maljamar Pool come within your jurisdiction?

A Yes, sir.

Q Have you previously testified and had your qualifications as a petroleum engineer accepted by this Commission?

A Yes, sir.

Q Have you made a study with particular reference to the Maljamar Pool, and the well which is the subject matter of this application?

A Yes, sir, I have.

Q With special reference to the request contained in the application?

A Yes, sir.

MR. JONES: Are there any questions about his qualifications?

MR. NUTTER: No, sir.

MR. JONES: Mr. Examiner, we have Exhibits 1 through 9, which are bound in a brochure, which has been handed to you, and we also have a separate Exhibit Number 9; 1 through 8 are bound, and we have a separate Exhibit 9.

Q (By Mr. Jones) Mr. Czirr, what is the purpose and the



reason for the subject application?

A The purpose of the application is to request a capacity allowable for the Phillips Mexco "A" Well Number 2. The well has received response from the adjacent waterflood operations to a degree that it is now capable of producing in excess of its normal scheduled allowable. We believe that it is necessary to produce this well at its capacity to prevent migration into the edge of the field which is undeveloped, and it would be not commercially recoverable, and would be lost as to the total and as to the working interest owners and royalty interest owners.

Q Now, Mr. Czirr, what is Exhibit 1, which is within the brochure?

A Exhibit 1 is a plat of a portion of the Maljamar Field, and intended to show three waterfloods that have been approved by the Commission, and the relationship of the Phillips Mexco "A" Well Number 2, which is the subject of this application in relation to the Nichols Waterflood. It shows that the well is within the waterflood area, and that it is not offset to the North or to the East.

Q Now, what is Exhibit 2?

A Exhibit 2 is a larger scale plat of the area in the vicinity of the Mexco "A" Well Number 2. Again, it shows the waterflood area is the Nichols waterflood, and the injection wells that are in operation. It shows the relationship again of the Phillips Mexco "A" Well Number 2 relative to the injection

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

wells, and the fact that the Number 2 "A" is on the northern edge of the field and there is no development to the north or the east. The numbers under the wells in the vicinity of the Mexco Well Number 2 "A" are cumulative recoveries as of January 1, 1961, which shows the relative quality of different portions of the field in this immediate vicinity. The low recoveries along the northern edge confirm that this is the limit of the commercial development, in which case any oil that is moved north, or past the Number 2 "A" Well, would be lost and not commercially recoverable.

Q The subject well is of course the one indicated by that arrow on Exhibit 2, is it not?

A Yes, sir.

Q What is the status of the well shown as Well Number 1 "A" in the N/2 of Section 2?

A Phillips has three wells designated as our Mexco "A" lease. The 1 "A" which is in the SW/NW, the Number 2 "A" which is the subject of the application is in the NE/SE, and we have our Number 3 "A" in the SE/SW of the adjacent Section 1. All wells are currently pumping producers.

Q Is there any further San Andres development except to the north and the northeast and the east, other than the wells you have mentioned?

A No, sir.

Q Does the exhibit show that the subject well is directly



offset by an injection well in what is referred to as the Nichols waterflood area?

A Yes. We carry it as Mexco Number 2 "A" water injection well.

Q What is the status of the well which is indicated as the McLaughlin Number 1 well?

A It has been plugged and abandoned, after producing some 8700 barrels of oil.

Q Do you have anything further from Exhibit 2?

A No, sir.

Q What is Exhibit 3?

A Exhibit 3 is a schematic sketch of the Mobil oil production and Mobil water injection of the wells in the immediate vicinity of the Phillips Mexco "A" Well Number 2. It shows that the Nichols Waterflood has been a success, and is going to increase the ultimate recovery from this field, and has increased the producing rates. It also shows in the upper right-hand corner, the Phillips Mexco "A" Well Number 2, and shows it has received response from the water injection in the adjacent waterflood area.

Q What is the capacity at the present time of the Phillips Mexco "A" Number 2 Well?

A It is currently capable of producing 53 barrels of oil per day; that's based on a test the first five days of this month.

Q Mr. Czirr, do you know whether or not the well has received maximum stimulation from the offsetting waterflood, or is



there any way to tell that at the present time?

A It appears to have stabilized under the particular set of circumstances that the wells in that area are being operated. But as you can see, we only have a very short history, and it would depend upon the performance of the water input wells in the adjacent area which would have the primary effect on the producing rate of the Phillips Mexco "A" Well Number 2, as opposed to anything we can control.

Q Do you have anything further from Exhibit 3?

A No, sir.

Q What is Exhibit 4?

A Exhibit 4 is a cross-section of electro logs and sample logs from the Phillips Mexco "A" Well Number 2, shown on the right, south through the adjacent four wells, and shows the common completion intervals of these wells in this area; the fact that the wells in the waterflood area are being produced and operated from the same completion interval as is the Phillips Mexco "A" Well Number 2.

Q What are the three following exhibits, 5, 6, and 7?

A These three exhibits are decline curves for the three wells on the Phillips Mexco lease, and confirm that these three wells do define the limit of the commercial development in this area. These curves will show that none of the three wells would have paid out under primary operations, and at the present time, based on a forecast of the decline, under the primary

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

performance the wells would have resulted in a loss to Phillips in excess of \$116,000.00. So we think that this confirms that it would not be practical to develop further to the north in this immediate area.

Q That includes further development on this particular lease, does it not?

A Yes.

Q That will be uneconomical?

A That will have to be our conclusion, based on our experience.

Q The same observations would apply, I take it, to other development to the north?

A Yes, sir. We feel that this defines the limit of commercial drilling.

Q Now, this lease is a State of New Mexico lease, is it not?

A Yes, sir.

Q What is Exhibit Number 8?

A Exhibit Number 8 is a tabulation of the core analysis results from two Phillips wells that were drilled along this north edge of the Maljamar field. The subject well, Mexco "A" Well Number 2, and the Mexco Well "A" 3, which is two locations east and a location south of the subject well. The previous exhibits were selected to show that the waterflooding in this area had been successful in increasing recovery, and that as a result



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

of these water flood operations the Phillips Mexco "A" Well Number 2 had received response, and that it was not practical to continue development in this area, and the only feasible way to prevent migration of fluid and loss of ultimate recovery was to operate the Mexco "A" Well Number 2 at capacity.

Now, the core analyses shows that the best interval encountered in the Mexco "A" Well Number 2 was approximately from 4141 to 4700; this sand also occurs in the Mexco "A" Well Number 3, but as shown by the core analysis in the "A" 3 that it has deteriorated in quality to the extent that it did not have commercial permeability, although the sand did exist and was recognized by the person selecting the core for analysis; it had oil saturation, and so forth.

MR. NUTTER: Where, in the core analysis of the Number 3, would the correlative interval be?

A It would be approximately the same, say, 4144 to 50. It shows lower porosity, and the permeability being less than one-tenth millidarcy, which is where we cut off our measurements. The point in bringing this out is this, that the pay quality deteriorates to the north, and it does not though terminate as a person might have in a case of a fault, but has a gradual reduction in quality and over a large area could allow the migration of fluid; but in the congested flow pattern you would have around a well bore would not allow commercial saturation or recovery for additional development, but does allow



oil to resaturate this area immediately outside of the present development.

Q (By Mr. Jones) Mr. Czirr, what is the normal allowable of this well at the present time?

A For November, it would be 37 barrels of oil.

Q Now, from your study, do you believe that any oil which is swept on this lease by the waterflood project, and which is not recovered by the subject well, will be recovered by any other well in the field?

A No, sir.

Q And if it is not recovered by this well, is it your opinion, from the state of the formation which you have described, that that oil will be irretrievably lost and not recovered?

A Yes.

Q And to that extent it would constitute waste, would it not?

A Yes, sir.

Q Do you believe that allowing the subject well a capacity allowable will result in any significant drainage from other leases of other operators?

A No, sir.

Q The oil which is swept by the subject well has already, has it not, been irretrievably lost to the other operators in the field?

A Yes. If we are operating under a 37-barrel allowable,

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

and you have a higher capacity at that point, we believe that the oil will migrate and be forced to this unrecoverable area along the edge of the field.

Q And it would not, in any event, be recovered by any other operator?

A No, sir.

Q That being the case, Mr. Czirr, is it your opinion that this application is in the interest of conservation and prevention of waste?

A Yes, sir. I believe that the operation of that particular well at capacity is the only way to prevent the migration and loss of oil in this immediate area.

Q Do you believe that the correlative rights of all operators in the field, including those other than Phillips Petroleum Company, will be protected if this application is granted?

A Yes, sir.

Q Or they would not be adversely affected thereby?

A They would not be affected.

Q Do you have anything else to offer, Mr. Czirr?

A I believe not.

Q Were Exhibits 1 through 9 prepared by you, or under your supervision and direction?

A Yes, sir.

MR. JONES: We offer in evidence, Phillips Exhibits 1 through 9, and that concludes our direct presentation.



MR. NUTTER: Phillips Exhibits 1 through 9 will be admitted in evidence. Does anyone have any questions of Mr. Czirr?

CROSS-EXAMINATION

BY MR. NUTTER:

Q Does Phillips have any plans at the present time to re-enter the McLauhlin Well Number 1?

A No, not at this time. It's certainly something we would have to evaluate in the light of the performance in this immediate area.

Q Do you think that oil might be swept by that well and be irrevocably lost if it is not re-entered?

A It was not a good completion. I don't know what mechanical condition it was left in when it was abandoned. We have an investigation into that right now. If we could re-enter it for a reasonable amount of money, we believe that we could probably improve the situation there just like the other case.

Q What is the current rate of injection for the Nichols Lexco Number 2?

A It would be roughly 3700 barrels per month; I have the tabulation.

Q It appears that the average rate of injection into that well has been in the neighborhood of four to five thousand barrels per months since injection started?

A Yes, sir.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

Q Who is the owner of the well directly to the west of your Number 2 "A"?

A Mr. Kennedy is the operator, and I believe the owner; I don't know that to be a fact.

Q That's the well designated Vaughn State Number 1. Would that be the Kennedy State Number 1 that is on your exhibit?

A Yes, sir. It was drilled as the Vaughn State, and now carried in the Commission records as the Kennedy State.

Q Apparently from the production curve here, it has not received any response from the water injection program to the south?

A No, sir.

Q Do you know whether the well in the NE/SW of Section 2 is producing or not? It's shown as a temporarily abandoned well.

A It is a producing well. That is a Phillips; you are talking about the well that is the west offset to the well that is the Kennedy well?

Q Right.

A Yes, it's production is shown on Exhibit 3.

Q Which well would it be?

A The Nichols-Phillips Lexco State Number 2.

Q That's their Phillips Lexco State lease then?

A Yes, sir.

Q Has your Number 1 "A" shown any change in producing rate since the water injection program started?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

A No response from the waterflood that we could recognize.

Q Has Phillips given any consideration to the conversion, or the drilling of water injection wells in this area?

A Yes, sir.

Q What's been the outcome of that consideration?

A We have no immediate plans for any additional development in this area. By reason of our economics being so unfavorable now, that an expenditure to extend the development for producing, our injection wells would not be justified from the results we have seen so far.

Q You certainly couldn't justify it on the basis of primary recovery at any rate?

A No, sir.

Q When were the Number 1, 2, and 3 "A" Mexco State wells drilled?

A In 1960.

Q How about some of the Nichols wells further south, are they mostly about that age, or are they older wells?

A They are older wells, the late 1940's; the older development would be in the Nichols area.

Q So the difference in comparative production there is a function of time, as well as decreasing porosity and permeability to the north?

A Certainly to some extent, as shown on Exhibit 2, and that was one of the reasons we show also the ultimate primary as projected,



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182SANTA FE, N. M.
PHONE 983-3971ALBUQUERQUE, N. M.
PHONE 243-6691

because the wells had only been produced a short time, and in these three cases, in the case of the Phillips wells it would not be a direct relationship as compared to the older wells, but our ultimate, say, from Number 1 is going to be in the order of eleven to twelve thousand barrels.

Q Referring to the decline curves on Mexco "A" Number 1, the well reached a low point in August of 1961, and then had a substantial increase in production, which it declined to another low in March of '62, and had another increase in production.

Were these increases due to mechanical work on the wells?

A No.

Q Setting of pumps?

A No. It was just the operation of the lease, operating three to four or five barrels a day, your swing is based on efficiency; if you change your pump and so forth, it causes a rather wide swing in production.

Q This isn't any change in reservoir status, or anything?

A Not in our judgment.

Q And the increase in production on the "A" Number 2 from approximately March or April of this year, up to the current rate, is in your opinion, due to the water injection program?

A Yes, sir.

Q How long do you think it will be before this well resumes its previous decline?

A Based on the present performance in the area, both



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

injection wells and producing wells, seven or eight months, something of that nature.

MR. NUTTER: Does anyone have any further questions of Mr. Czirr? He may be excused. Do you have anything further?

MR. JONES: We have nothing further, Mr. Examiner.

MR. NUTTER: Does anyone have anything further they wish to offer in Case 2690? We'll take the case under advisement, and recess the hearing until 1:30.



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
D. L. CZIRR	
Direct Examination by Mr. Jones	3
Cross-Examination by Mr. Nutter	13

E X H I B I T S

<u>NUMBER</u>	<u>EXHIBIT</u>	<u>MARKED</u>	<u>OFFERED</u>	<u>ADMITTED</u>
Phillips #1	Plat	5	12	13
Phillips #2	Plat	5	12	13
Phillips #3	Schematic Sketch	7	12	13
Phillips #4	Cross-Section	8	12	13
Phillips #5	Decline Curves	8	12	13
Phillips #6	Decline Curves	8	12	13
Phillips #7	Decline Curves	8	12	13
Phillips #8	Tabulation	9	12	13
Phillips #9		12	12	13

