BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexcio
January 23, 1963

EXAMINER HEARING

IN THE MATTER OF:	
Application of Socony Mobil Oil Company, Inc., to create a new pool for Abo production and for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause seeks the creation of a new pool for Abo production in Section 26, Township 17 South, Range 34 East, Lea County, New Mexico, and the establishment of temporary special pool rules therefor, including a provision for 80-acre spacing units.	Case 2739
Application of Socony Mobil Oil Company, Inc., for temporary special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks establishment of temporary special pool rules for the Vacuum-Wolfcamp Pool in Section 26, Township 17 South, Range 34 East, Lea County, New Mexico, including a provision for 80-acre spacing units.	Case 2740
Application of Socony Mobil Oil Company, Inc., for temporary special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks establishment of temporary special pool rules for the Vacuum-Devonian Pool in Section 26, Township 17 South, Range 34 East, Lea County, New Mexico, including a provision for 80-acre spacing units.	Case 2741 (Consolidated)

BEFORE:

Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: This hearing will come to order. Case 2739.

MR. SPERLING: Jim Sperling, appearing for the applicant. I would like to ask that for the purpose of testimony and evidence to be presented that the three cases, 2739, 2740 and 2741 be consolidated. They, of course, involve the same area but different pools vertically.

MR. UTZ: Cases 2739, 2740 and 2741 will be consolidated for the purpose of the testimony, but separate orders will be written on each case.

MR. SPERLING: We have one witness.

MR. UTZ: Do we have any other appearances?

(Witness sworn.)

J O S E P H C. G O R D O N,

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

DIRECT EXAMINATION

BY MR. SPERLING:

Q State your full name, your place of residence, your employer and your capacity.

A Joseph C. Gordon, Jr., Socony Mobil Oil Company, at Hobbs, New Mexico, Senior Production Engineer.

Q You have testified before the Commission on previous occasions, have you not?

A Yes, sir.

Q Your qualifications are a matter of record?

A Right.

(Whereupon, Applicant's Exhibits 1 in Cases 2739, 2740 & 2741 were marked for identification.)

Q I would like, first, Mr. Gordon, to have you identify what you have denominated as Exhibit Number 1 in each of the three cases that have been assigned docket numbers following the filing of the application of Socony Mobil.

A The first one, Exhibit 1, Case Number 2739, is a map of the portion of the Vacuum area showing the wells which have been completed in and are now drilling which may be expected to drill through the Abo formation. Similarly, the Exhibit in Case 2740 shows the wells completed in or the wells drilling, which may be expected to penetrate the Wolfcamp formation; and the Exhibit in Case 2741 shows the wells which will be completed in, or are drilling to the Devonian formation.

The yellow areas on all three exhibits are the lease holdings of Socony Mobil Oil Company.

MR. UTZ: Just a moment. I either got one number wrong or -- Exhibit Number 1 with the purple coloring on the wells, is that 2740?

A Yes, sir, that is the Wolfcamp.

MR. UTZ: And the green is 2741?

A Yes, sir, that is the Devonian.

MR. UTZ: You may proceed.

Q (By Mr. Sperling) The area is designated, that is, the Township, Range, and, of course, the section where those locations are,are on the exhibits, are they not?

A Yes, sir.

Q Previously your company had been granted authority to multiple complete the wells in this area; is that not correct?

A Yes, sir. We have received permission for the multiple completion of our well, the State Bridges 95, located in the southeast quarter of Section 26, 17, 34, for multiple completion in the Abo, Wolfcamp, Pennsylvanian and Devonian formations. That well was the initial discovery in these formations. At the present time this well is being completed in the Abo, Wolfcamp and Devonian formations. Because of mechanical difficulties we have been unable to obtain the packer-leakage test, and we have been repairing the well in order to obtain a final completion. As a result of the repairs necessary we have been unable to secure any production from the well or any bottom hole pressures, or any test of any extensive nature, beyond the initial potential.

Q Do I understand that the well that you have been referring to, the State Bridges Number 95, is the only well that is in any stage of completion at the present time, in any of those three pools?

A Yes, sir. The other wells shown here are all drilling and none of them have set casing yet, or started their completion work.

Q Would you explain to the Examiner what conditions prevail in this area with respect to these three undesignated pools which has prompted your company to make an application for the spacing and the pool rules that you will propose?

A At the present time, there is a lack of development, and in order to bring about an orderly plan for the development we would like to propose rules of a temporary nature so that the area can be developed economically without drilling unnecessary extra wells, and we, therefore, will be proposing that we have a temporary 80-acre spacing for all three zones, with a one-year period here to allow for development, and then the submission to the Commission of the proper information to confirm, or possibly change our mind in regard to the 80-acre spacing.

Q What is the estimated cost of these wells? I assume you have costs relative to the wildcat wells, but what do you anticipate for the completion costs, drilling and completion costs concerned on these, do you know?

A Our wildcat well, the State Bridges 95, cost a total of $641,000.00. I would estimate that a completed triple completion could be made to these three formations for approximately $400,000.00. At the present time we are not concerned in this instance with, or solely concerned with the economics. We are more concerned about the drilling of unnecessary wells which might be done if we went ahead on a 40-acre pattern and on a later date found out that we could have produced the field more economically with an

80-acre pattern.

Q Now, are any of these present locations exceptions under rules which you will propose?

A Yes, sir. Several of the wells do represent exceptions to our rules that we will be proposing. This, I believe, is the normal circumstance and we would most certainly allow exceptions to be, receommend that exceptions be granted to wells that deviate from our proposed rules.

Q Would you please identify now your exhibit which makes the rule proposals that you were speaking of?

A We have furnished a small sheet here which is entitled "Summary of Proposed Temporary Rules for Presentation at the Examiners Hearing", and in all three cases, 2739, 2740 and 2741, we have proposed that the Commission adopt temporary 80-acre spacing for one year with the temporary 80-acre unit allowable appropriate to the depth. Two, a staggered 80-acre pattern to be on a northwest-southeast diagonal with the 80-acre units to be in the north or south, or east or west halves of the quarter section. Three, that the wells should be located within 150 feet of the center of the governmental quarter section. Also, the exceptions necessary to these rules will be allowed for all wells commenced before the date fixed by the Commission. These rules in this form specifically, or in this general form, have been furnished by the Commission previously in other cases in other fields.

Q What are you proposing as far as assignments of allow-

ables are concerned?

A We would propose that during this one-year period that the wells drilled on the 80-acre drilling units be assigned temporary 80-acre unit allowables appropriate to their depth, using the factors assigned for 80-acre drilling units in the present Commission rules. This would result, in the case of the Abo formation, which is in the 9,000 foot depth bracket, of an allowable of 4.77. The Wolfcamp formation, which is also in the 9,000 foot bracket would receive a 7.75 allowable factor.

Q What do you propose to do testwise in order to collect information which would be helpful to the Commission and to your company in determining efficient drainage in this area?

A If the temporary 80-acre rules are granted, I believe that Mobil would be glad to take the lead in forming an informal field committee of the operators to gather the required data in regard to bottom hole pressure, gas-oil ratio, interference tests, fluid sampling and flow testing, in order to substantiate or deny the existence of 80-acre capability for a producing well. I believe that this operators' committee would be very easily handled as it has been in many other fields in similar cases.

Q Mr. Gordon, referring to Exhibit No. 1 in Case 2739 which shows the Abo location or completion, calling your attention to the lower right-hand corner of the exhibit there is a line there which is designated present limit of Vacuum Abo Reef Pool?

A No, sir. As shown here in the lower right-hand corner

this Vacuum Abo Reef Pool is the present Vacuum Abo Pool. This is the Vacuum Abo Reef which runs through the general area and is a definite structural feature. The present Vacuum-Abo Pool produces entirely from the reefing structure and is separate from our other Abo structures as shown here.

In conversation with the Hobbs Commission Office and with an informal geological committee, we have been led to believe that the Commission itself will probably be retitling the present Vacuum-Abo Pool in a nomenclature case to be the Vacuum-Abo Reef Pool, and designate the Abo production which we have found in our State Bridges 95 to become the new Vacuum-Abo Pool. The Vacuum-Abo as found in our State Bridges 95 is Abo; the producing is Abo. In fact, it is not a reef-type structure and has no relation whatsoever to the reef and the occurrence of oil is not reef. We believe there is adequate testimony that could be presented at some other time to substantiate the difference between the Abo Reef and the Abo production found north of the reef.

Q The reason for my question was that conceivably development in the Abo could extend within one mile of the present limits of the Vacuum-Abo Pool, and that was the reason I was inquiring as to whether or not there is any relationship between the Abo Production as found in your Bridges 95 Well, and that of the older field lying to the southeast.

A Yes, sir. Well, I believe here, from examination of the logs and such, we could always maintain a separation or definition

between the reef production and this other production which is not reefing, and that there is a physical separation in this case between the reef and this other production.

MR. UTZ: Is this physical separation, you mean, by permeability pinchout or by depth?

A Permeability pinchout would be the barrier between; I believe, also, there is some separation in depth.

Q (By Mr. Sperling) Do you have anything further to add at this time, Mr. Gordon?

A No, sir.

MR. SPERLING: I think that is all the Direct at this time, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q You are recommending here, as I understand, a rigid pattern insofar as the location of the well in the quarter-quarter section?

A Yes, sir.

Q And also as to the location within that quarter section?

A Yes, sir.

Q Is the, so far as you know, is the Ohio McCallister Number 5 the only non-standard location that is now drilling?

A Yes, sir, it is the only one. I beg your pardon. It is not non-standard with respect to the location in the quarter section. The Shell well shown in Section 31 of 17, 35 is also non-

standard since it is in the northeast quarter. The State Bridges 95 is non-standard in respect to the fact that it is 200 feet from the center of the quarter-quarter section; and the Texaco Well State 0-11 in Section 36 of 17, 34 is 200 feet west of the center of the quarter-quarter section. For various reasons these wells were drilled at their designated location and we propose that they be accepted as is.

Q Mr. Gordon, do you have any core data or reservoir information of any nature from your 95 well which show what the reservoir characteristics are in these three pools?

A I believe we have no core data. The only information that we can furnish here, and I do not have it with me, would be calculations from log data.

Q You have no idea what the permeabilities and porosities would be --

A No, sir.

Q --of these zones. Do you have any pressure information?

A Drill stem tests is all we have here, sir, and I would be a little bit reluctant to furnish them because in the very near future we will be getting information, the most accurate information we can get.

MR. SPERLING: I might point out that some of the information what you are inquiring about was, if I recall correctly, was preserved in connection with the testimony in the multiple completion here on the State 95.

A Yes, sir.

Q (By Mr. Utz) Those were estimated, were they not?

A I believe that is all we can furnish at the present time are calculations from the log data.

MR. UTZ: Are there any other questions of the witness?

MR. DURRETT: Yes, sir, I have a question or two.

BY MR. DURRETT:

Q Mr. Gordon, this information we are talking about now that you might be able to furnish in the future, that would be what, test results on the State Bridges 95 Well?

A Well, in regard to the gathering of data during the next year period, is that what you have reference to?

Q Well, that is mainly what I was talking about, only I thought -- one thing I want to get clear is how soon would it be before you would have information concerning reservoir characteristics?

A We would have to start the gathering of it with a committee to act as a gathering point. This hasn't been done yet. I believe we would probably follow a program of gathering of initial bottom hole pressure, initial GOR, further testing for GOR and further testing for bottom hole pressure and the conducting of bottom hole pressure buildup tests to determine reservoir permeability; the possible conducting of interference tests between wells to demonstrate interference or lack of interference; the use of bottom hole pressure history during this first year period to demonstrate

the decline in new wells to show that the entire field was a common reservoir. We are speaking here in regard to one reservoir, but I believe our remarks would be applied equally to all three reservoirs.

Q The main point I was making was, actually, as things stand right at this time, we don't really have any way of knowing whether or not one well will or will not drain 80 acres?

A Yes, sir. That is correct. That is why at this time we want to start an 80-acre development program, which can be supplemented and filled out to a 40-acre program if it is needed. At the present time, under present statewide rules a field can be developed on a 40-acre program. We can never undrill it, for an 80-acre program which might prove to be desirable. At the present time, with our present information we can't say that at the end of the year we will come back and request an 80-acre program. It may be we may come back and request for all three zones that 40-acre rules be adopted. I believe that would be one extreme. The other extreme would be possibly that we would ask for 80 acres to be continued on a permanent basis, but the granting of temporary rules here would permit the field to be developed at the most economical cost possible without the expenditure of any unnecessary money.

MR. DURRETT: That is all I have.

BY MR. KELLY:

Q I just want to get a couple of questions for fill-in for

when I wasn't here. I am sure you covered it. Are you asking for 80-acre temporary spacing for one year?

A Yes.

Q And are you asking that the Commission grant well locations in either the northwest quarter or the southwest quarter of a quarter section?

A Yes.

MR. KELLY: That is all I have. I just wanted to make sure that their information was the same as the prior information I had. I would like to read a statement at the close of the case.

MR. UTZ: Do you have anymore questions?

MR. SPERLING: Just one more.

REDIRECT EXAMINATION

BY MR. SPERLING:

Q It appears that there are a number of wells drilling at the present time, which it would seem would furnish a basis for considerable information. What state drilling are these wells?

A I believe we should refer here to the Vacuum-Abo map in Case Number 2739, since it shows the maximum number number of wells. Starting from the top in Section 26 of 17, 34, our State Bridges 98 located in the northwest quarter, at the present time, I believe, is approximately at 4,000 feet in drilling ahead. Our State Bridges 96 in the northeast quarter of Section 26, is approximately at 6,000 feet and drilling a head. Our 95 is undergoing repairs. The Ohio Number 5 State McCalister in Section 25

is drilling below the Wolfcamp, I believe. The Texaco O-11 in Section 36 is drilling below the Wolfcamp and the Shell Well Number 5 Atate A, I believe in Section 31 of 17, 35 is somewhere between the Abo and Wolfcamp, I believe, I am not exactly informed as to where it is.

Q Have you spoken to the other operators in the area with a view toward exchanging of information and support of 40's or 80's?

A No, sir. We have not contacted the operators with a view for making up a committee of any sort.

Q But it is your intention to do so?

A Yes, sir. If the temporary 80's are granted we most certainly would take the lead in this.

MR. SPERLING: I think that is all I have.

CROSS EXAMINATION

BY MR. DURRETT:

Q Mr. Gordon, would you know, or do you have with you some of the expected completion dates on any of these wells that are drilling a head now?

A No, sir. I don't believe so. That could be furnished to you by letter.

Q Would you do that? I would appreciate it if you would.

A That is right.

Q Could you give us some idea, oh, say within a month or two when you think they would be completed, would you do that?

A I would have to go back to the record.

Q But you would give us a letter on that?

A Yes, sir, I will.

MR. DURRETT: Fine, thank you, I appreciate that.

MR. UTZ: Do you happen to know what the foot location of the Shell Number 2 is? It looks like it may be a 930.

A No, sir, I don't have any idea. It is plotted from data. I would hesitate to measure it here and scale it.

MR. UTZ: Are there any other questions of Mr. Gordon? The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any statements in the case?

MR. KELLY: I have a statement on behalf of Texaco. Texaco is currently drilling their ONCO Number 11 well and they plan possible completion in all three of these zones. Texaco also owns a considerable amount of acreage in the immediate area and therefore it can be seen that Texaco is vitally interested in the adoption of special rules for these new pools. Texaco has, and always will urge the Commission to adopt the widest feasible spacing program. It is never too late to infill drill in order to prevent waste. On the other hand, however, if a reservoir is developed on a close spacing pattern when a wider pattern would have efficiently drained the pool, it is too late to cover the unnecessary drilling of the unnecessary wells; and Texaco believes that this excess amount could be used by the industry for the

exploration and development of other oil and gas reserves in the State which would result in economic benefit to both the oil industry and gas industry of the State of New Mexico. Because of this, Texaco respectfully requests that the Oil Conservation Commission approve the application.

MR. UTZ: Are there other statements?

MR. DURRETT: Yes, sir. I have some communications I would like to read. The Commission has received a telegram, a quite lengthy telegram, from Marathon Oil Company and I will read this telegram in its entirety. "Reference Examiner's hearings in Cases Numbers 2739, 2740 and 2741, Marathon urges that in the three referenced cases, Socony Mobil Oil Applicant, will propose that the Commission adopt temporary field rules in the Abo Pool, Case Number 2739; in the Wolfcamp Pool, Case 2740; and in the Vacuum-Devonian Pool, Case Number 2741, all in Section 26, Township 17 South, Range 34 East, Lea County, New Mexico; and that the rules in each case provide for 80-acre proration units and 80-acre well spacing with relocation in the northwest quarter and the southeast quarter of any quarter section. Marathon is presently drilling a well at a location 560 feet from the west line and 660 feet from the south line of Section 26, Township 17 South, Range 34 East, which is projected to a depth sufficient to encounter the pools mentioned in the application in the three referenced cases. This well will not conform to the spacing and well location provision of the requested rules. Marathon recommends in each of these three

cases that the Commission adopt temporary special rules providing for 80-acre spacing and 80-acre proration units composed of two contiguous quarter quarter sections in any governmental quarter section, providing the rules provide for an exception without reduction of allowable to any existing well location, or any well heretofore completed or presently drilling, which may hereafter be completed in any or all of the pools mentioned in the three cases; and that the rules further provide for granting of future exceptions to such spacing and well location rules, if such further exception is necessary to protect the correlative rights of any party." Signed, A. R. Burrell, Division Manager of Marathon Oil Company.

The Commission has also received a telegram from Phillips Petroleum Company, and it reads as follows:

"Reference hearing January 23, 1963, Cases 2739 and 2740 application of Socony Mobil Oil Company for 80-acre spacing for Abo and Wolfcamp production, Section 26, Township 17 South, Range 34 East, Lea County, New Mexico. We concur in spacing and rules to be proposed by the applicant; also, we concur in rules to be proposed by them in Case 2741 for Vacuum-Devonian Pool. However, we urge consideration be given to exceptions of 160-acre spacing." Signed, Phillips Petroleum, Mr. Griffin, Manager of Production Division.

MR. UTZ: Are there any other statements?

MR. LYON: V. T. Lyon with the Continental Oil Company.

has not caught up with our map makers.

MR. UTZ: If there are no further statements, the case will be taken under advisement.

Continental does not, at the present time, have any wells drilling in this area. We do have acreage in the immediate area and we should like to go on record as favoring temporary 80-acre spacing in this pool in order to avoid the drilling of wells which we may learn at a later date are unnecessary. We would like to concur with the application in these cases.

MR. UTZ: Are there any other statements? Mr. Gordon, do you know whether or not this well drilling in the southwest of the southwest of Section 25 is being drilled by Marathon rather than Ohio?

MR. GORDON: Yes, that is a case of a name change which has not caught up with our map makers.

MR. UTZ: If there are no further statements, the case will be taken under advisement.

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

I, BILL LANGFORD, 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.

Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2739, heard by me on Jan. 23, 1963.

....., Examiner
New Mexico Oil Conservation Commission

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 19, 1964

EXAMINER HEARING

IN THE MATTER OF:
Case No. 2739 being reopened pursuant to the provisions of Order No. R-2421, Lea County, New Mexico; and
Case No. 2740 being reopened pursuant to the provisions of Order No. R-2422, Lea County, New Mexico; and
Case No. 2741 being reopened pursuant to the provisions of Order No. R-2423, Lea County, New Mexico.

Case No. 2739, 2740 and 2741

BEFORE: ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 19, 1964

EXAMINER HEARING

IN THE MATTER OF:

Case No. 2739 being reopened pursuant to the provisions of Order No. R-2421, Lea County, New Mexico; and Case No. 2740 being reopened pursuant to the provisions of Order No. R-2422, Lea County, New Mexico; and Case No. 2741 being reopened pursuant to the provisions of Order No. R-2423, Lea County, New Mexico.

CASE NO. 2739, 2740 and 2741

BEFORE: ELVIS A. UTZ: EXAMINER

TRANSCRIPT OF HEARING

MR. UTZ: Case 2739.

MR. DURRETT: In the matter of Case No. 2739 being reopened pursuant to the provisions of Order No. R-2421, which order established temporary 80-acre proration units for the North Vacuum-Abo Pool, Lea County, New Mexico.

MR. WHITE: If the Examiner please, Charles White of Gilbert, White and Gilbert, Santa Fe, appearing on behalf of the Texaco, Inc., and we have one witness.

In order to expedite matters, if the Examiner please, we would like to consolidate Cases 2739, 40 and 41 for the purpose of this hearing.

MR. UTZ: You will have the same witness in all cases?

MR. WHITE: Yes, sir.

MR. UTZ: Well, you will put the cases on somewhat in order of number?

MR. WHITE: That's correct.

MR. UTZ: So that the testimony on each pool will be somewhat segregated in the record.

MR. WHITE: Yes, sir.

MR. UTZ: For the purposes of hearing the Cases 2739, 40 and 41 will be consolidated and separate orders will be written on each case.

MR. JACOBS: Appearing for Skelly Oil Company is Ronald Jacobs, in Case 2740.

MR. UTZ: Are there other appearances?

MR. KELLAHIN: Jason Kellahin of Kellahin & Fox, Santa Fe, appearing on behalf of Amerada Petroleum Corporation in all three of the cases.

MR. SPERLING: Jim Sperling of Modrall, Seymour, Sperling, Roehl and Harris, Albuquerque, appearing on behalf of Socony Mobil Oil Company in the three cases.

MR. KELLAHIN: If the Examiner please, I would like to also enter an appearance and associated with me is Mr. Carl Jones

of the Texas Bar, in Cases 2739 and 2740, Phillips Petroleum Company.

MR. UTZ: This was in Cases 2739 and 40?

MR. KELLAHIN: Yes, sir.

MR. UTZ: Are there other appearances? All these appearances are opposing the application, I take it.

(Witness sworn)

MR. WHITE: If the Examiner please, we have arranged our testimony not as to refer to one exhibit such as the structure map of the Abo, then the next one would be the Wolfcamp, and the next one would be of the Devonian. Now, we don't have these exhibits set out for testimony for just one case and then the other case, as you had just mentioned.

MR. UTZ: You don't segregate the formations too much then?

MR. WHITE: No, sir, but I think the testimony will be orderly and be applicable to all the cases.

MR. UTZ: Well, you go ahead with it the way you prepared it, and we will try to disect it.

CARL L. WHIGHAM, JR.,

called as a witness herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. WHITE:

Q Mr. Whigham, would you state your full name for the record, please?

A My name is Carl L. Whigham, Jr.

Q For whom are you employed and in what capacity?

A Employed by Texaco, Inc., for the Midland Division, as Division Exploration Engineer.

Q Would you briefly give your educational and professional background?

A I graduated from Texas A & M College in 1949 with a BS degree in Petroleum Engineering, and at that time I went to work for Texaco, Inc., and for the past 15 years, I have been employed by Texaco or their foreign subsidiary in various petroleum engineering assignments in drilling and production operations.

Q Are you familiar with Cases 2939, 40 and 41, and the orders issued upon the hearings?

A Yes, sir, I am.

Q Is Texaco one of the producing operators in the area?

A Yes, sir, they are the principal producing operator in the area.

Q Have you conducted various studies of these three reservoirs?

A Studies have been conducted on these three reservoirs under my supervision.

Q Would you refer to Exhibit One, and explain that, please?

A Yes, sir. Exhibit Number One is a lease ownership map of

the area in question showing the various operators in this Vacuum area. It also shows the completion intervals of all 18 wells that have been drilled in the area, and it shows the sold line extending from the northern limits of the field to the southern limits of the field, which represents a line and that a cross section has been prepared and will be presented in a later exhibit. It may be noted that Texaco, Inc. operates eight of these wells, Socony Mobil Oil Company has drilled and completed and operate three of the wells, and Continental Oil and Marathon Oil Company each have drilled and completed two wells in the reservoir and Tidewater Oil Company, Phillips Petroleum Company and Shell Oil Company have each drilled and completed one well in these reservoirs.

The reservoir in which each well has been completed is designated by the color code. The green color denotes the four Devonian producing wells, the purple color denotes the 18 Wolfcamp producers, and the red color denotes the 11 Abo producers.

Q And I notice this exhibit is dated February 12, 1964. Have there been any recent development in this pool?

A Very little. Current development is limited at the present time to Phillips Petroleum Company Well Number 87 in Section 31.

Q That is not in the plat, is it?

A Yss, sir,it is.

Q Beg your pardon.

A This well has been completed in the Wolfcamp reservoir,

and operations are currently under way to complete the Abo.

Also in Section 35, Phillips Petroleum Company has spudded a well in the Southeast Quarter of the Southeast Quarter, and it is our understanding that they plan to drill the well to the Pennsylvanian formation and they anticipate completion in the Wolfcamp and Glorietta reservoirs.

MR. UTZ: Which section is that?

A That was Section 35.

Q (By Mr. White) Now, will you refer to Exhibit Two and explain that, please?

A Exhibit Number Two is the cross section which was mentioned, and this exhibit was prepared primarily to indicate the relative depth of the three reservoirs in question and also to show their continuity across the reservoir. The uppermost reservoir is noted to be the Abo, and a relative point designated as the base of the Abo and the top of the Wolfcamp was agreed upon by the major operators in the field, and the Conservation Commission at a meeting held January 9, 1963 in the Hobbs office of the Oil Conservation Commission. The second reservoir is the Wolfcamp reservoir and the main pay is indicated on this cross section to be continuous across the field. The lowermost reservoir is the Devonian and the solid line across this cross section indicates the top of the Devonian reservoir. Also shown on this reservoir is an oil-water contact. The purpose of presenting the oil-water contact, at a Sub-C depth of 8,080 feet, is to substantiate the

producing mechanism. This drive is a bottom water drive, whereas, the upper two reservoirs produce under a solution gas drive mechanism.

Q Now, will you now explain Exhibit Three?

A Exhibit Number Three is a structural contour map of the Abo reservoir, the correlative point being the base of the Abo and the top of the Wolfcamp, was determined from each individual well log and these points were plotted on this map and contoured at a contour interval of 50 feet. It can be noted that the geological structure is an elongated anticline trending north and south. Again, the Abo producing wells are designated by the red color, and it may be noticed that 11 wells have been completed in the Abo. There are seven other wells in the field that actually penetrated the Abo, but were not completed in this reservoir.

Q Will you now explain Exhibit Four, please?

A Exhibit Number Four is a similar structure contour map, drawn on the top of the Wolfcamp main pay zone. Each log was analyzed and the correlative point was picked and contoured on an interval of 50 feet. It is significant that all 18 wells drilled in this area have been completed in the Wolfcamp reservoir.

Q Now, will you similarly explain Exhibit Five?

A Exhibit Number Five is a similar structural contour map contoured on the top of the Devonian reservoir. These points were obtained from well logs on all wells that have penetrated the Devonian top. Four of these wells have actually been completed as

Devonian producers. Nine other wells in the area penetrated the Devonian, but were not completed in this reservoir. The five remaining wells did not penetrate the top of the Devonian.

Q Will you identify and collectively explain Exhibits Six, Seven and Eight, your reservoir data?

A As set out in the original hearing, approximately one year ago, all of the operators in this area have pooled their information, and this information has been averaged out and consolidated into these three exhibits, which show the reservoir data for each of the three oil pools in question. It is significant that each reservoir exhibits a permeability sufficient to support drainage in excess of 80 acres.

The Vacuum North Abo Oil Pool has an average permeability of 8.3 millidarcies. The permeability range, however, goes up to 104 millidarcies.

The Vacuum-Wolfcamp Oil Pool exhibits an average permeability of 3.2 millidarcies with a range in permeability up to 13 millidarcies.

And the Vacuum-Devonian Oil Pool shows an average permeability of 10 millidarcies, and the permeability range goes up to 26 millidarcies.

It is felt that these permeability values are significant in supporting our request, and it might also be noted at this time that the Vacuum North Abo Oil Pool is designated as a solution gas drive reservoir, and the producing mechanism for the Vacuum

Wolfcamp is solution gas drive reservoir, and the producing mechanism for the Vacuum-Devonian is a bottom water drive.

Q These exhibits present the most recent and all available data; is that correct?

A Yes, sir, it represents all data presently available.

Q Have you obtained any bottom hole pressure data?

A Yes, sir, we have obtained all the bottom pressure data that is currently available from all operators in the area.

MR. UTZ: Mr. White, in view of the hour, and I suspicion you are getting in the crux of this testimony, I wonder if this wouldn't be a goodtime to adjourn for lunch.

MR. WHITE: Perhaps it would.

(Noon Recess)

MR. UTZ: The hearing will come to order. We will continue with Cases 2739, 40 and 41. I believe you were on Exhibit Number Nine, were you not.

MR. WHITE: Yes, sir.

Q (By Mr. White) Mr. Whigham, will you explain Exhibit Nine and Ten?

A Yes, sir. Exhibits Numbers Nine and Ten present the bottom hole pressure data for the Vacuum North Abo Pool. Exhibit Number Nine presents this data in a tabular form for reference purposes, and these same values are plotted graphically in Exhibit Number Ten. It may be noted in Exhibit Number Ten that two sets of points have been plotted. To explain this, it should be noted

that one well, Marathon's McAllister Number Five, does not conform to a standard ordinary 80 pattern, even though 80 acres is available to be dedicated to this well. This well is spaced between three other wells, which are on a standard 80 acre pattern. So, this situation results, in four wells being spaced somewhat closer together than an 80 acre pattern. These four wells are represented by the pressure points, enclosed by a triangle. It may be noted that the minimum distance between these wells is 1220 feet. It can also be noted that the initial bottom hole pressure of each well is somewhat lower than the well previously drilled. In other words, this decrease in reservoir pressure denotes communication between these two wells. Therefore, on a basis of 1220 feet, minimum, between these wells, a drainage area can be calculated and this calculation results in a drainage area of 170 acres. The second curve plotted on Exhibit Number Ten are all the other wells, those that are spaced on standard 80 acre tracts. And again, it can be seen that each well exhibited an initial bottom hole pressure somewhat below that of the well previously drilled. These bottom hole pressure values are plotted against accumulative oil production from the Vacuum North Abo Oil Pool.

Q Now, reference is made to Exhibit Nine. I notice in your reservoir pressure information, your Well Number One is 3342, and on your well Number Five, you have 3343. How do you account for that increase?

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A If you were referring to the pressure numbers, my tabulation shows that Pressure Number One in the Mobil State Bridges was 3342 PSIA as compared to Pressure Number Five in the Texaco State)-14 of 3343. Were those the two values you were referring to? I believe for all practical purposes those pressures can be considered identical. The original reservoir pressure here was determined to be 3382 PSIA. That is the highest bomb pressure recorded in this field. Some of these other pressures- - As a matter of fact, there is only one other pressure which is a drillstem test pressure, the remaining nine pressures are bomb pressures.

Q Now, would you similarly explain Exhibits 11 and 12?

A Exhibits 11 and 12 are similar to the two just presented. Exhibit Number 11 is a tabulation of all the bottom pressure data that has been accumulated and made available from the Vacuum-Wolfcamp Oil Pool, and this pressure data is plotted graphically on Exhibit Number 12. Again, we have the two curves, one of them representing those wells that show communication at a minimum distance of 1220 feet, representing a drainage area of at least 107 acres. The uppermost curve represents the pressure taken in those wells which are spaced a minimum of 1575 feet, representing a drainage area of 179 acres. Again, it may be noted that each pressure recorded is somewhat below the pressure recorded in a previously drilled well. Some exception exists, but there are actually only three, and it is considered that the curves are plotted through the

average point. Point Number Five is a very poor well and was not adequately stimulated for percent of communication with other zones, and Well Number Seven exhibits a lower than average pressure for the same reason, but both of these curves do indicate communication between subsequent wells indicating a drainage area in excess of 80 acres.

MR. UTZ: These numbers on these charts here, is that a pressure number or well number?

A Those are pressure numbers.

MR. UTZ: I see. That accounts for my not being able to find the wells then.

A Yes, sir.

Q (By Mr. White) Now, will you similarly explain Exhibits 13 and 14?

A Exhibits 13 and 14 represent the bottom hole pressure data available from the wells that were drilled to and completed in the Vacuum Devonian Oil Pool. Exhibit Number 13 is a tabular representation and the values that appear in this table have been plotted on Exhibit Number 14. As stated previously, it has been determined that the Devonian is a water drive reservoir, and the pressure performance curve depicted by Exhibit Number 14 bears out this conclusion. It can be seen that the pressure has not declined as compared to accumulative oil production. It can also be seen that the aquifer pressure is essentially the same at bottom hole pressure as measured in the oil portion of the reservoir.

The pressure in general has averaged approximately 4,760 PSIA since original completion.

Q Now, will you refer to Exhibit 15, your monthly production information for your Devonian,and point out what you think is significant there?

A Exhibit 15 was prepared to substantiate previous statements that this is a water drive reservoir. Both oil and water production are tabulated monthly throughout 1963. It can be noted that water production has been significant and actually shows a slight increase, bearing out the contention that the Devonian is a water drive reservoir.

Q What conclusions do you draw from these exhibits and from the studies that you have made?

A The exhibits thus far show that any well in any one of these three reservoirs will effectively and efficiently drain more than 80 acres.

Q Now, will you refer to your Exhibit 16, your economic analysis?

A Exhibit Number 16 is an economic analysis showing the cost to drill and complete three different types of wells in these three reservoirs. It shows the net loss that would be incurred if these wells were drilled and completed and produced on 40 acre spacing, and it also shows the net profit that would result if these wells were drilled and completed and produced on 80 acre spacing. The triple completion would be in each of the three

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reservoirs, Abo, Wolfcamp and Devonian, and the average actual cost of those wells is $331,000.00. The reserves available from this well, based upon 40 acre proration units, would show a net loss for this operation of $18,500.00. On the other hand, if this well were drilled and completed and produced on 80 acre spacing, a net profit of $356,900.00 would be realized.

With regard to the dual completion example, that is shown in Exhibit Number 16, it was assumed that a well would be completed in the Wolfcamp and the Devonian oil reservoirs. These two were chosen because they were actually resulting in the most optimistic situation. They would result in the most profit of any two of the three reservoirs in question. This subject well is estimated to cost $235,000.00. Based upon a 40 acre proration unit, a net loss would incur of $2,000.00. Whereas, if this well were operated on 80 acre proration unit, a profit of $274,900.00 would be realized.

The third column shows the single completion, and for the same reason, the Wolfcamp reservoir was chosen because this would result in the most profitable of any single completion in these three reservoirs. The estimated cost for this well would be $120,000.00, and the net loss if operated on 40 acre units would be $6,500.00. Whereas, if this well were drilled and operated on 80 acre proration units, a net profit would be realized of $129,000.00.

All of these wells- - values are based upon a lifting cost of forty-five cents per barrel, taxes of 24 cents per barrel,

a net interest of 0.875, a net sales value of $3.46 per barrel, including the gas, resulting in a net value of $2.42 per barrel.

Q Then, this exhibit shows that none of the reservoirs can be developed upon a 40 acre proration unit economically?

A That's correct.

Q Does that conclude your testimony?

A Yes, sir.

Q Were these exhibits prepared by you or under your direction?

A Yes, sir, they were prepared under my direction.

MR. WHITE: We offer Exhibits One through 16 at this time. That concludes our direct.

MR. UTZ: Exhibits One through 16 will be entered into the record in this case. Are there questions of the witness?

CROSS EXAMINATION

BY MR. UTZ:

Q To be sure I understand this graph here, take a closer look at the Abo section, these pressures that are plotted with the triangles as symbols are different from the ones with circles as symbols, in that these wells have a different radius of drainage?

A Yes, sir, that's correct. Those points represented by the triangles are the pressure points for four wells that are spaced a minimum distance of 1220 feet from each other. We can refer to any one of the maps and I will point out those four wells.

Q Well, let's just take the Abo map since we are talking about it, your Exhibit Number Three. That will be pressures one, three, six and eight, wouldn't it?

A One, three, six and eight, that's correct. Pressure Point Number One is in the Mobil State Bridges Number 95. Directly east of that well is the McAllister Number Five, which is Pressure Point Number Three. Pressure Point Number Six is the next offset well to the east, McAllister Number Seven, and Pressure Point Number Eight is the Tidewater State "F" Well Number Six. Those are the four wells in the entire area that are actually spaced closer than would be normal under standard 80 acre spacing.

Q In other words, those four wells being clustered there on actually a spacing of less than 80 acres have caused a low pressure area in that particular part of the field?

A That appears to be a conclusion that could be drawn from this data.

Q Whereas, the other wells that are actually spaced more nearly in the 80 acre spacing, pressures are still a little higher?

A Yes, sir, they are a bit higher.

Q What would that indicate to you; does that indicate to you well interference?

A To me that would indicate that there is interference between all wells, but the interference would naturally be somewhat greater for those wells spaced on 40 acres, however, it shows that wells spaced on 80 acre patterns do have interference and

exhibit subsequently lower pressures.

Q In your opinion, would, say, a more even spacing then tend to draw down the pressures within the reservoirs on a more even basis and give everybody a little bit better opportunity to receive their oil in place?

A I don't know that I could make that statement, Mr. Utz.

Q Well, wouldn't you have to agree that the oil is going to travel toward this cluster of four wells here? I am not trying to prove or disprove your case. I just see something here that is quite interesting and I would like to have an opinion on it.

A Yes, sir. Each of these wells would have the same allowable. The withdrawals, I believe, would be approximately the same for all wells. Therefore, I don't see that there would be any greater migration toward this area than any other area in the field.

Q But, the pressures are lower in this area, are they not?

A They are at the present time. One feature that might account for that fact is that general area was developed before the wells remaining. This particular area is where the initial development took place.

Q You feel some of that pressure might be due to this area having been developed first?

A Yes, sir, I definitely do. These pressure points are actually plotted against accumulative oil production, and it does show that the more oil that has been produced, the lesser the

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pressure exhibited.

Q Well, the pressure on the Number 14 well is taken after having produced vertually the same as the Number Seven well, still the pressures are substantially different, about 300 pounds difference after the same amount of production. Is that about right, comparing Bressure Number Five with Pressure Number Six on your Exhibit Number Ten?

A Yes, sir. Pressure Number Five is the State "O" Number 14, and it is somewhat higher than the pressure recorded in Marathon's McAllister Number Seven. I would say that fundamentally the reason for that is that Well Number 14 is quite distantly located from the area of original development. It is located several locations southeastward from the vicinity of the initial development. I believe that for that reason a higher pressure could be expected,

Q Because it is draining a bigger area?

A No, sir, because it would be more apt to be encountering a pressure more nearly the virgin reservoir pressure.

Q You didn't actually run any interference tests in connection with this study, did you?

A No, sir.

Q So, pressures that you show here and the radius of drainage are actually shown because of the distance between the wells; in other words, the distance between the wells is what told you how much acreage these things were draining?

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A Yes, sir.

Q You didn't calculate it?

A Yes, sir, a drainage area was calculated from a circle with a radius equal to the spacing between the wells.

Q But, you didn't use pressure drop to calculate the radius of drainage in other words?

A No, sir, the extent of drainage wasn't determined specifically.

Q Then, the pressure drop that you show here in all cases, well, in the Abo and the Wolfcamp, was, in your opinion, due to production from the reservoir and the time at which the wells were completed?

A Yes, sir, that's correct.

Q In the Devonian reservoir, since you didn't have any pressure drop, naturally, if this is a water drive reservoir, you wouldn't have any, what is your basis for saying that this will drain in excess of 80 acres?

A I would refer, along with Exhibit 14 to Exhibit Number Eight, which shows the reservoir characteristics for the Devonian Oil Pool.

Q I can't find any Exhibit Number 14.

A Actually, the only thing I want to call attention to was the permeability in the Devonian reservoir. The permeability averages ten millidarcies with a range of one tenth up to 26 millidarcies, and it would be our conclusion from this permeability

data and the fact that this reservoir is water drive, that the conditions exist that would permit a drainage area of at least 80 acres.

Q You would anticipate a better sweep efficiency with water drive than you do with solution gas drive?

A Yes, sir, that's correct.

MR. UTZ: Are there other questions of the witness?

MR. KELLAHIN: Are you advocating for the rules for the three pools on an 80 acre basis be made permanent?

A Yes, sir.

MR. UTZ: Are there other questions? The witness may be excused. Do you have other witnesses?

MR. WHITE: That concludes our testimony.

MR. UTZ: Are there statements to be made in this case?

MR. JACOBS: Mr. Examiner, Ronald Jacobs for Skelly Oil Company. Skelly Oil Company is not an operator in any of these three pools, however, we do have acreage in Section 31 of 17 South, 35 East, and as an interested party in the area, which is probably productive, we concur in the recommendations of Texaco.

MR. KELLAHIN: If the Examiner please, Phillips Petroleum Company and Amerada Petroleum Corporation are operators in one or more of the three pools involved here. We feel that the testimony that has been presented by Texaco shows that as to each of the three zones there are adequate porosity and effective drive mechanism, and certainly as to at least two of the reservoirs

that the pressure figures show a drainage of not less than 80 acres and probably considerably more than 80 acres. As to the Devonian formation, with a bottom water drive, while we have no pressure information which supports this, porosity and the nature of the Devonian reservoir with a bottom water drive, certainly indicates that it will drain at least 80 acres. The economics clearly show that it is not profitable or wise to drill any of these three reservoirs on 40 acre units and in many instances, it would not be done. One well will effectively and economically drain a unit of not less than 80 acres, as shown by the testimony. That is the test provided by our statute on fixing a proration unit. The approval of the 80 acre spacing for these three pools will prevent waste and will prevent the drilling of unnecessary wells, and as a result will eventually promote the greater ultimate recovery of oil from these three reservoirs. We join with Texaco in advocating the 80 acre spacing rules be made permanent.

MR. SPERLING: Jim Sperling for Mobil Oil Company. Mobil urges the Commission to adopt the presently existing rules on a permanent basis, feeling that the testimony which has been presented certainly supports the recommendation that has been made. We urge the Commission to consider the economic factors which have been established here as controlling the development of this reservoir.

MR. UTZ: Are there other statements? I am sure somewhere in these three we have some other written statements, if you

want them to be in the record.

MR. WHITE: We would like to have them incorporated in the record.

MR. UTZ: I was afraid you would.

MR. DURRETT: Would it be satisfactory, Mr. White, if the Examiner took administrative notice of all the statements in the file.

MR. WHITE: That would be satisfactory.

MR. UTZ: If that is satisfactory with Counsel, the Examiner will take note of all the telegrams and other statements.

MR. WHITE: Fine.

MR. UTZ: To be made in support or vice versa.

MR. WHIGE: I didn't go quite that far. We will still compromise.

MR. UTZ: Which there seems to be four or five. The case will be taken under advisement.

* * * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2738-40-41 heard by me on Feb. 19, 1964.

....., Examiner
New Mexico Oil Conservation Commission

DEARNLEY, MEIER, WILKINS and CROWNOVER
General Court Reporting Service
Suite 1120 Simms Building Albuquerque, New Mexico Phone 243-6691

STATE OF NEW MEXICO)

COUNTY OF BERNALILLO)

I, ROY D. WILKINS, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill, and ability.

WITNESS my Hand and Seal of Office, this 3nd day of March, 1964.

NOTARY PUBLIC

My Commission Expires:

September 6, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2739-40-41 heard by me on Feb. 19, 1964.

, Examiner
New Mexico Oil Conservation Commission