

BEFORE THE  
OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
September 20, 1961

EXAMINER HEARING

CASE 2376

TRANSCRIPT OF HEARING

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PHONE CH 3-6691

ALBUQUERQUE, NEW MEXICO



NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING - DANIEL S. NUTTER

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE SEPTEMBER 20, 1961 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
Joe G Ramey	OCC	Hobbs
Burton Ceto	Morris R Lintwell	Hobbs
John W. Runyan	O.C.C.	Hobbs
Jack M Campbell	Campbell & Russell	Roswell
R. J. Miller	Gen. Amer Oil Co of Tex	Artesia
R. F. Montgomery	C. H. Sweet	Hobbs
John F. Millwee	Fred Turner Jr.	Midland, Texas
C. R. Block	TEXACO Inc.	Midland, Texas
Ed Robinson	TEXACO Inc	Midland, Tex
Jason Kellahi	Kellahi & Fox	Santa Fe
A. L. Porter	OCC	" "
J. J. Leonard	C. H. Sweet	Hobbs, N.M.
Ray Allen	Atlantic	Roswell, N.M.
L. C. HUDRY - Grant & Ditz	" State Engin.	" Santa Fe

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NAME:	REPRESENTING:	LOCATION:
Wm. L. D... Bert Ladd	... Cons. Oil & Gas, Inc.	... Denver, Colo.
G. A. D. ... L. C. ... R. D. COLTHARP	S. W. ... ... Continental Oil Co.	Farmington Santa Fe Artesia, N. Mex.
Carl W. Jones Dudley D. ...	Phillips Pet. Co. N. R. Williamson	Midland, Texas Roswell, N. M.

BEFORE THE  
OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
September 20, 1961 -

## EXAMINER HEARING

----- )  
IN THE MATTER OF: )

Application of the Oil Conservation Commission )  
on its own motion to abolish certain portions ) Case  
of the San Simon and Wilson Pools in Lea County, ) 2376  
New Mexico; to create a new pool for oil pro- )  
duction in Township 21 South, Range 35 East, )  
to be designated the North San Simon-Yates Pool; )  
and to establish a limiting gas-oil ratio for )  
said North San Simon-Yates Pool. )  
----- )

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Call next Case No. 2376.

MR. MORRIS: Application of the Oil Conservation Commis-  
sion, on its own motion, to abolish portions of the San Simon and  
Wilson Pools and create a new pool for oil production to be desig-  
nated the North San Simon-Yates Pool; and to establish a limiting  
gas-oil ratio for said pool.

If the Examiner please, Dick Morris appearing for the  
Commission staff.

MR. NUTTER: Are there any appearances to be made in  
Case 2376?

MR. JONES: Yes, sir, for Phillips Petroleum Company. I

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believe the Commission's files reflect that Charles C. Spann of Albuquerque has entered an appearance in the case; Carl W. Jones of Midland, Texas. We may offer one witness, depending upon the progress of the hearing.

MR. WHITE: Charles White of Gilbert, White & Gilbert, appearing on behalf of Sinclair, and all we have is a statement to read in the record.

MR. NUTTER: Would you proceed, Mr. Morris?

MR. MORRIS: If the Examiner please, the Commission staff will offer two witnesses in this case: Mr. Runyan, to testify concerning the geology and the general structure of the area, and to substantiate the proposal of the staff from the geological standpoint, and Mr. Ramey will then testify concerning the engineering aspects of the case. Call first Mr. Runyan, please.

MR. NUTTER: Mr. Ramey, would you stand and be sworn at the same time?

(Witnesses sworn.)

MR. MORRIS: Before the witnesses testify, I would like to state the general nature of the case. The Commission staff today is proposing the abclishment of certain portions of the existing Wilson Pool and the San Simon Pool. The staff is also proposing the creation of a new pool to be designated the North San Simon-Yates Pool, and this new pool will contain some of the acreage that was deleted from the other two pools, but will not necessarily contain all of the acreage that was deleted from the

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Wilson and San Simon Pools. Thus, under the proposal of the staff today, three pools would be in existence where only two presently exist.

JOHN W. RUNYAN

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Runyan, would you state your full name and position for the record?

A John W. Runyan, geologist, New Mexico Oil Conservation Commission.

Q Mr. Runyan, have you made a special study of the area involved in this case today?

A Yes, sir, I have.

Q Are you prepared to make recommendations as a result of that study?

A Yes, sir.

Q Would you refer to what has been marked for identification as Commission Staff Exhibit No. 1 and explain what that exhibit shows, and outline the general proposal in this case?

A Yes, Exhibit 1 shows the Wilson Pool and the San Simon Pool, as outlined in red.

Q Those are the present boundaries?

A Present horizontal boundaries, and the green shows the



areas which are to be deleted from these two pools.

Q The remaining portion colored in red would be the remaining portions of the Wilson Pool and the remaining portion of the San Simon Pool?

A Yes, that is correct.

Q Is that all you intend to show by your Exhibit No. 1?

A That's right.

Q Would you refer now to Exhibit No. 2 and explain what that shows?

A Exhibit No. 2 shows the proposed new horizontal limits for the new pool in the North San Simon-Yates.

Q Now, does this area on Exhibit 2 that is colored in green, does it contain all of the acreage that was deleted from the Wilson and San Simon Pools?

A No, it does not.

Q Why does not the proposed area to be in the North San Simon-Yates Pool include all of the acreage deleted from the Wilson and San Simon Pools?

A The acreage which is not included is non-productive acreage in which, at the present time, there is no development or has dry holes on the area.

Q Do you wish to show anything further from Exhibit No. 2?

A Only that the vertical limits of the North San Simon-Yates would be the Yates formation.

Q What were the vertical limits in the old Wilson?



A Yates, Seven Rivers; not in the old San Simon Pool -- the Yates formation.

Q Would you refer now to Exhibit No. 3, and explain what is shown by that exhibit?

A Exhibit No. 3 is a special contour map, contoured on top of the Yates, showing the geology of the area in question, structural geology. The structure map shows that there are three structures within this area, the old San Simon Pool, the area which is proposed for the new pool, and the Wilson Pool, each area an individual structure and these structures are separated by, I would say, the Delaware Basin on the south, re-entries, Laguna facies to the north.

Q I notice a red line marked A-A Prime on this Exhibit; what is that intended to depict?

A A-A Prime is the position of the cross section which is Exhibit 4.

Q Exhibit 4 is going to be a cross section along the lines A-A Prime on Exhibit No. 3?

A That's correct.

Q Would you refer now to Exhibit No. 4 and explain what is shown by that cross section?

A Exhibit No. 4 is a cross section which shows the geologic conditions that exist within these three areas, in the old San Simon Pool, the proposed new pool area, and the Wilson Pool, and going from the right side, or the north end of your old San Simon

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Pool, which is your very small anomaly, the production within that anomaly is further controlled by porosity and permeability conditions which are indicated by the erratic water zones which are found in the dry wells. Going into your second structure, or your proposed North San Simon-Yates, your cross section shows that your main production lies within your second main sand from the top of the Yates within this area, and if both your gas and oil is confined in the erratic position within this area, and the logs and the position of your hydrocarbons show that this area is controlled within the structure by porosity and permeability conditions also. Going further north up to the north end of the general part of your structure, you have here a complete porosity and permeability barrier. Going on up to your last two wells, in which you have the farthest north well in the Wilson 19, which has oil but very little gas; by this, there is a little bit of difference in the two areas, although production is still from the Yates in this particular area.

From here you go into re-entry area, or into your Wilson Pool and in your Wilson Pool you have -- here your gas is being produced from the Yates, the oil from the Seven Rivers, and you have a disturbed water table in this area in which, in many cases, you find oil being produced between two water strings. The cross section also indicates there is a separation between your gas zones and your oil zones in this area.

Q In Exhibit 4, that you have just gone through, this cross



section is basically designed to show the three separate structures that exist in the area under consideration today?

A That's correct.

Q The old San Simon Pool is one structure; the proposed North San Simon-Yates Pool is a separate structure; and the Wilson Pool area is another isolated and separate structure?

A That is correct.

Q Now, do I understand your testimony correctly that in the San Simon Pool you have production from a small anomaly that is distinct from the proposed North San Simon-Yates Pool structure by a saddle and an erratic water table?

A That is correct.

Q That erratic water table is not found in the -- what I will refer to as the middle structure?

A That is correct. Your water in that area is, in some cases, very close to the top of your Yates, but it does not extend into the production of the two wells which are presently producing whereas porosity and permeability situation controls the water, and your zones are somewhat erratic and if they were continuous, then your two wells would produce a considerable amount of water, which they do not.

Q In this middle section, the structure that is proposed for the North San Simon-Yates Pool, where is the production found on that structure?

A It is found in your second zone.

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Q Second zone?

A Second sand from the top of the Yates, second main sand. It is found in a somewhat erratic position, with gas sometimes being found lower than oil.

Q But the production from this second zone, the second sand is relatively uniform across this structure, isn't it?

A That is correct.

Q Although you do have a change in lithology as you move farther north in this area?

A That is correct.

Q In the extreme north portion of this cross section, on the middle structure here, what reasons can you give for the erratic condition existing there?

A You mean in this area here on the north end?

Q Yes, sir.

A You have a lithology change that slowly develops as you move north, and your sand here, as shown by the cross section, you have a development of dolomites which somewhat isolate this from the rest of the pool. Your production is somewhat lower, your oil production is somewhat lower from the top of the Yates than in the other portion of your pool, but this structure in itself is one of the high parts, or one of your highest parts of your structure within your proposed pool area.

Q Your production in this particular area is still from the second zone of the Yates formation, or is it?



A It is a little bit below that, a little bit below your second zone.

Q In this middle section we are talking about, this area of the North San Simon-Yates Pool, proposed pool, is there a gas-oil contact in that area?

A No, there is no definite gas-oil contact.

Q Now, as you move farther to the north into the area that will constitute the proposed Wilson Pool, you find your production there from oil stringers, do you not?

A That is correct.

Q With very little production of gas accompanying the oil?

A That is correct. Your GOR ratios are quite low; very little gas is produced with your oil in this area. Your oil is from the Seven Rivers, mainly, and your gas mainly from the Yates.

Q Do you have anything further you would like to offer with respect to this exhibit before we go to Exhibit No. 5?

A Only that I believe this exhibit shows definite separation between the three structures.

Q It shows a definite separation, based on the structural characteristics of the area and permeability characteristics?

A That is correct.

Q Would you refer now to Exhibit No. 5 and explain what that shows?

A No. 5 is a completion comparison chart which, again, shows your relationship of your oil and gas with your Yates, within

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your three structures. It shows that your old San Simon area is producing.

Q You have hung all the wells in this area on a zero foot subsea datum, is that right?

A That is correct.

Q And you have intended to show the relationship of the depths of the producing zones in all of the wells in this area?

A That is correct, and in relation to your Yates structure, it is quite deep in your old San Simon area in relation to your subsea datum against the shows that you have in this saddle in here, and coming up into your middle, or your proposed North San Simon-Yates Pool, your middle structure shows again the position in which your oil and gas lies in relationship to a subsea datum. It also shows again that your production of your oil and gas is some distance below your subsea datum, and it shows again your re-entry between your two pools. Then, going into your Wilson Pool, it shows that your gas production in the Wilson Pool lies almost entirely above the zero subsea datum, while the oil lies below, and it also shows that your water table, or your water zones in the Wilson Pool is confined to zones. There is no water and oil contact, and it is more or less a disturbed water situation.

Q As I understand your testimony, Mr. Runyan, with respect to the area here where you have the Wilson Pools shown, this exhibit shows that in this Wilson area gas is found above the subsea datum, and in the Yates formation, whereas in this middle

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section, which is the proposed North San Simon-Yates Pool area, you find gas and oil production below the subsea datum, some 130 feet below the zero footage mark, is that correct?

A That is correct.

Q You feel that that shows that these two areas are separate structurally, or separate structures?

A Yes, very definitely so. If they were connected, then your gas which lies in your middle--porosity and permeability structures were connected, then your gas which lies in your middle structure very definitely would have migrated up into your Wilson Pool.

Q So a structural barrier must exist between those two?

A That is correct.

Q Now, this exhibit shows further that in the San Simon area, the area to the extreme right of this exhibit, the production is some 280 feet, I believe you said, below the datum line?

A That is correct.

Q And what would be the most distinguishing factor here to show separation between that area and the middle area?

A Well, again it would be the depth of production, whereas some 280 feet below the top of your subsea datum, and again, you have production here, some 130 feet below the top of your zero datum, -- again, if there were not a barrier your oil would tend to migrate up into this area, and plus the pool here producing -- San Simon -- very little oil and very little gas.

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Q I believe you have a dry hole depicted on the map?

A That is correct. There is a dry hole which lies right in the bottom of the saddle which certainly gives you your control for your saddle.

Q You feel that one well would be adequate control in this particular situation to show the existence of a structural saddle between these two areas?

A That is correct.

Q Mr. Runyan, in your opinion, does this information depicted on Exhibit No. 5 show again, and a little bit more detail, the separation of these three areas on a structural and producing characteristic basis?

A Yes, it does.

Q Do you have anything further you would like to offer concerning these exhibits?

A No, sir, except that very definitely Exhibits 3 through 5 do show separation and three individual structures in this area.

Q Were these five exhibits, designated as Staff Exhibits 1, 2, 3, 4 and 5 in this case, were they prepared by you or under your supervision?

A Yes, sir, they were.

Q Where did you get the information that you used in preparing these exhibits, Mr. Runyan?

A Exhibits 3 through 5 were based on C-103, 104 and 105's as submitted by the operators and well owners.

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MR. MORRIS: If the Examiner please, the staff offers Exhibits 1 through 5 in this case, and that will complete the direct examination of Mr. Runyan.

MR. NUTTER: Staff Exhibits 1 through 5 will be admitted in evidence. Does anyone have any questions of Mr. Runyan?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Runyan, is your color code on these various exhibits red for gas and green for oil and blue for water?

A That is correct.

Q You have shown the top of the Yates there, and you mentioned that the Wilson Pool had the Yates and Seven Rivers as the vertical limits?

A That is correct.

Q But the proposed North San Simon, and the old San Simon Pool, would have the Yates formation only, is that correct?

A That is correct.

Q What is the average thickness of the Yates in this area?

A Approximately 250 feet, plus or minus; in the Wilson Pool itself it's in the main part of your structure, it's 250 feet, again plus or minus. There are only about six logs in the entire Wilson Pool and it is hard to get an average.

Q Referring to your cross section exhibit, I believe it is No. 4 there, you have five wells in the Wilson Pool depicted on that cross section?



A That is correct.

Q You also show two wells with a red interval drawn in them, or is the red in the Yates formation on those wells?

A Yes, that is correct, approximately 250 feet below the top would put your red in the Yates.

Q How about the green and the blue, would that be in the Yates or Seven Rivers?

A No, that would be in this area in the Seven Rivers.

Q Coming to your next structure, passing the saddle, between the Well "D" of 19 and "A" of 19, the next two wells have a green interval colored in, and a blue interval colored in. Would that be Yates or Seven Rivers?

A The blue would be just about into the Seven Rivers. Again, we have no logs in this immediate area which penetrate the Seven Rivers. That is about the base of your green, approximately 230 feet to the base of your oil zone here, and again, this area could be a little bit thicker, but the log did not penetrate into your Seven Rivers.

Q You have got logs on those two wells there?

A That's correct.

Q Can you pick the Seven Rivers on there, top of the Seven Rivers, or is it off the logs?

A I believe it is off the logs, right here.

Q So your cross section area is confined to the Yates formation?

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A That's correct, in your middle section.

Q You also stated that you had an erratic water table in this area; have any of these wells in the proposed North San Simon area, except for the first two there, have any of them penetrated any water?

A Texaco State "F" No. 4 penetrated a very small water zone at the base of their -- very bottom of their hole, and they completed just above that, perforating above that.

Q You show a very small blue mark here at the base of the perforation in which they reported a very small water zone?

A Yes.

Q That is the only one of those wells, to your knowledge, that penetrated?

A Yes, sir, and that well makes about eight barrels of water a day.

Q Some of the wells show red and green both; does that mean they produce both oil and gas?

A No, sir, in the Wilson Pool itself it shows red. I believe there are only a total of three gas wells in the entire Wilson Pool.

Q What do you call a gas well?

A It is a well that was completed in the gas zone and does not make any oil, and the oil up here, ones we reported on the C-105's, stating gas zones at different intervals, and getting into your middle portion here, the gas zones in here were based on

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GOR's, gas production and oil production, and your 105's again.

Q Is there actual correlation between the amount of red depicted on the cross section and the GOR of the well?

A No, there is not.

Q It is just the gross interval that produces gas or oil?

A Yes, sir.

Q Over in the south San Simon area, do any of those wells produce gas in any appreciable quantities?

A I believe that Mr. Ramey will testify as to actual gas and oil production from these areas.

Q On your Exhibit No. 5, Mr. Runyan, have you grouped those wells in any particular order there except to group them by position?

A No, sir, they are not. They are grouped -- only your North San Simon is somewhat grouped in some sort of order, but in your Wilson Pool they are grouped by sections.

Q So you couldn't draw any line across the plat of the area, follow any kind of a line across there?

A No, you could not. You have the entire top of the Yates.

MR. NUTTER: Any further questions of Mr. Runyan? You may be excused.

MR. MORRIS: Call next Mr. Ramey.

JOE D. RAMEY

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



DIRECT EXAMINATION

BY MR. MORRIS:

Q Will you state your name and position for the record, please?

A Joe D. Ramey, proration manager for the New Mexico Oil Conservation Commission.

Q Mr. Ramey, have you made a study of this area, and in conjunction with this case today?

A Yes, I have.

Q As a result of that study are you prepared to make certain proposals concerning the gas-oil ratio limitations and to corroborate Mr. Runyan's testimony?

A Yes.

Q Are you familiar with Order No. R-199 promulgated by this Commission?

A Yes, I am.

Q Briefly, what is the content of that order?

A Order R-199 excepts certain pools because of their low gas productivity, from the provisions of -- on taking gas-oil ratios and proper provisions of gas-oil ratio limitations as set out by the Commission rules and regulations.

Q As presently constituted, do the Wilson and San Simon Pools fall within the purview of Order 199?

A Yes, they do.

Q So they are presently exempt from gas-oil ratio limitations?

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A That is correct.

Q Would you refer now to what has been marked as Staff Exhibit No. 6 in this case and explain that exhibit?

A Exhibit No. 6 is just production curves for the proposed North San Simon area; oil production is shown in red, gas production in brown and the gas-oil ratio in green, producing gas-oil ratio.

Q Now, this exhibit shows the oil production to have come to a peak during the year 1960, and falling off somewhat at the present time?

A Yes, that is correct. It peaked at about, oh, slightly less than 6,000 barrels per month in, I believe, August of 1960, and the last production figure, which is July, 1961, the production was slightly under 3,000 barrels a month.

MR. NUTTER: Mr. Ramey, is this production for all of the wells in the North San Simon area?

A Yes, sir. I think there are a total of 18 wells.

Q (By Mr. Morris) This exhibit shows the gas production to have followed just about the same pattern, does it not?

A Yes, roughly so. It is a little more erratic than the oil production, particularly in that early part of the producing life there was no gas reported, and then, I think when gas sales commenced, we started getting some gas production reported, but it peaked in September of 1960, and it is slowly declining until in approximately the last three months it has apparently levelled off, and

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then in July of this year the gas production was around 115,000 MCF.

Q And the gas-oil ratio, if you take it on a curve, would show a general increase, and still increasing?

A Yes, that is correct.

Q Even though there have been high points, higher than the most current figure?

A That is correct.

Q What would be the present average GOR of the wells in the proposed North San Simon-Yates Pool?

A For July the average GOR was, producing GOR, was some 38,000.

Q Mr. Ramey, are there certain wells in this proposed pool that are producing with excessively high gas-oil ratios which would make this average GOR disproportionately high?

A Yes, there are a few wells which are producing a sizeable volume of gas with a high GOR. I think one well was producing with a ratio in excess of 400,000.

Q If you excluded the wells producing with extremely high ratios, could you come up with a more representative average gas-oil ratio for the proposed pool?

A Yes, excluding two or three wells, why, your pool ratio would be approximately 20,000 to one.

Q How does the production from the proposed North San Simon-Yates Pool compare with the production from the proposed Wilson and

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San Simon Pools -- take the Wilson first.

Q Well, first, this proposed North San Simon, I interpret it to be a solution gas type reservoir with solution gas drive mechanism. There is possibly some free gas in existence in the reservoir, but your Wilson Pool is a water drive reservoir; the oil is coming from the Seven Rivers. It is a sour oil with a gravity of 29 compared to the oil in the North San Simon area which has a gravity of 34, and it is an intermediate or sweet oil. Water production for the month of July in the North San Simon area, there was a total of 226 barrels compared to 52,100 barrels for the Wilson area. Gas production in the North San Simon for the month of July was 115,000 MCF, while in the Wilson the gas production for July was some 7,000 MCF, and I might note that this 7,000 MCF was as much -- well, for the month of July, it equalled 1960's total gas production. I think that was primarily because there was one Yates gas well which is selling gas to a drilling rig.

Q To summarize your remarks, in the North San Simon-Yates Pool area, the proposed pool area, you have a solution gas drive resulting in quite a bit of gas produced from the wells in that area, and high ratios?

A Correct.

Q In the Wilson Pool you have a water drive mechanism with very little gas production?

A That is correct. I think the gas that is produced with the oil in the Wilson Pool is probably too small to measure. I



think, in fact, it is too small to operate the lease satisfactorily.

Q And in the San Simon area, or what might be called the south San Simon area, you also have a solution gas drive, but you have low ratios?

A Yes. This is strictly a marginal area. It has been marginal for sometime. The July production from the two wells in the old San Simon Pool was 179 oil, two barrels of water, and they reported 79 MCF of gas.

Q Based on this information, Mr. Ramey, is it your opinion that there are three separate structures, and that there should be three separate pools created in this area as outlined by Mr. Runyan?

A Yes, I think a combination of the geological and production data certainly indicates three separate pools.

Q Do you feel that the proposed North San Simon-Yates Pool should be exempt from the GOR limitations under Order No. R-199?

A No, I do not. There are several wells in this proposed pool which are producing excessive gas.

Q So you feel that a gas-oil ratio limitation of some sort should be placed on the wells in this proposed pool?

A Yes, sir.

Q What recommendation would you make?

A I would recommend a limiting gas-oil ratio of 10,000 to one.

Q Ten thousand to one?

A Yes, sir.

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Q You feel that 10,000 to one would cause an undue hardship upon any operators in this pool?

A Well, any time you slap a limiting gas-oil ration on a pool you are going to be creating a certain amount of hardship, but I think this is the gas-oil ratio limitation which the operators can live with.

Q Do you have anything further to offer?

A No, I haven't.

Q Was Exhibit No. 6 prepared by you or under your direct supervision?

A Yes, it was.

Q Where did you get the information you used in preparing that exhibit?

A From the statistical report of the New Mexico Oil and Gas Engineers Committee, and from the C-115's as submitted by the operators.

MR. MORRIS: If the Examiner please, we offer Staff Exhibit No. 6 in this case, and that concludes the direct examination of Mr. Ramey.

MR. NUTTER: Staff Exhibit 6 will be admitted. Does anyone have any questions?

MR. JONES: Carl Jones, representing Phillips Petroleum Company.

CROSS EXAMINATION

BY MR. JONES:



Q Mr. Ramey, what state of depletion would you say that the proposed North San Simon field is in at the present time?

A Well, it varies. There are still some pretty good wells in there, and still some wells which are marginal; there are some wells which are marginal at this time.

Q Now, do you know whether or not all of the gas which is being produced from the wells within the proposed North San Simon unit is being marketed?

A I think the majority of the gas is, yes.

MR. JONES: That is all I have, Mr. Nutter.

BY MR. NUTTER:

Q Mr. Ramey, I notice that the peak production in this North San Simon area, as reflected by your Exhibit 6, was reached in 1960; was that at the time when the field was completely drilled up as it is today, or --

A I think at that time, Mr. Nutter, the eighteenth well came in. I understand there is a well now drilling, or in the process of being completed in the area at this time.

Q Since the pool reached that peak there has been a steady and progressive decline in production?

A Yes, in oil production: I wouldn't say the gas production has been. It has been decreasing somewhat, but certainly not in relation to the oil.

Q Now, what about individual wells as far as their GOR's are concerned?



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A Well, the individual wells, some of them seem to be setting roughly in line with what their completion ratios were, and some have increased steadily.

Q What is the actual range of ratios?

A It ranges from around 100 to in excess of 400,000.

Q You have ratios as low as 100?

A Yes, there is one well which is extremely marginal in this area, produces little oil or gas.

Q You said, if you excluded two or three wells, the average ratio would be 20,000 to one?

A Yes.

Q What would those three wells be?

A It would be the Phillips Yates "A" No. 1.

MR. MORRIS: Would you give the location of that, Mr. Ramey?

A It is in the S/W of the S/E, Section 29, 21 South, 35 East, and the Phillips Yates "A" No. 4, which is in the N/W of the N/E of Section 32, 21, 35. Those are two wells. There is another well in there which I don't have accurate figures on, but I believe it is high. I would just as soon not mention it at this time because the operator didn't send in total gas for four wells instead of breaking it down per well. I might also mention, Mr. Nutter, that Texaco No. 4 Well --

MR. NUTTER: S/E N/W of 29?

A Yes. That well has been shut in, and I assume it is be-



cause of excessive gas production. It is not being produced at this time.

Q Is there any correlation between the high GOR's and the structural position as Mr. Runyan has drawn the contour map of the pool?

A There are certainly wells which are higher structurally than these five wells, but two of these wells, the two Phillips wells, set on this little high as Mr. Runyan has depicted here. Then we have this well up here which is some 50 feet higher, which is a low ratio well.

Q That is the well up there in Section 19, Mr. Ramey?

A Yes, sir.

Q Actually, that could be interpreted as being a fourth structure in the area, couldn't it?

A I think, in general, you have more or less the same structure up in here. It is bounded by little troughs -- if you can take the word of an engineer in interpreting the work of a geologist -- but I would go along with Mr. Runyan in his interpretation of that entire North San Simon area as being one structure, generally one structure.

Q Have you ascertained whether there is any trend in GOR's in this pool?

A Well, the trend seems to be upward.

Q There is an increase in GOR's?

A I think your gas volume is essentially levelled off; your

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oil is decreasing, so the GOR is going to continue to rise.

MR. NUTTER: Any further questions of Mr. Ramey?

BY MR. PORTER:

Q Mr. Ramey, you testified that all of the gas in the pool was going to market, so there would be no surface waste of gas. Do you believe that, without a limiting ratio, there is underground waste occurring at the present time?

A I think it is possible, Mr. Porter. I can't visualize that one of these wells is producing approximately 50 million cubic feet a month, and I can't visualize waste not occurring under those conditions. I think that any time you produce excessive gas from an oil reservoir you are certainly leaning towards waste.

Q Your recommendation of a 10,000 to one gas-oil ratio limitation would be for the purpose, primarily, of assuring each producer their share of reservoir energy in the pool?

A Yes, sir. The gas is the reservoir energy in the pool; you take the gas away before you get the oil, you could leave some oil underground.

MR. PORTER: That is all I have.

BY MR. NUTTER:

Q Mr. Ramey, what about the ratios and fluid characteristics in the old San Simon area?

A Ratios there are running -- well, the oil, I believe, is of the same grade as that in the North San Simon, and the ratios reported are approximately 500 to one.



Q So you have low ratios, but do you have 34 degree oil?

A Yes, sir.

Q Is it an intermediate group?

A Yes, sir. I might note that the completion ratios on the wells in the old San Simon, one has reported a completion GOR of 50 to one, and the other one reported no gas on completion. They have increased somewhat, but still is minor.

MR. NUTTER: Any further questions of Mr. Ramey? He may be excused. Do you have anything further you wish to offer, Mr. Morris?

MR. MORRIS: I have nothing further.

MR. NUTTER: Does anyone have anything he wishes to offer in Case No. 2376?

MR. BLACK: C. R. Black, representing Texaco, Inc., out of Midland, Texas. Texaco concurs with the testimony stating that the wells which are to be included in the proposed North San Simon field are producing from a common reservoir and should be included in a common field. Texaco also concurs with the establishment of a limiting gas-oil ratio, and wishes to recommend that a limiting gas-oil ratio of not less than 6,000 to one be adopted.

MR. WHITE: Charles White, representing Sinclair. Sinclair requests that their State Lea Well 407 No. 5, in unit D of Section 33, Township 21 South, Range 35 East, remain in the San Simon Pool and continue to operate under that pool's exceptions to statewide rules 301 and 506 because of its low productivity of both oil and

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gas. For the months of September, 1960, through June of this year, the gas produced was too small to measure in this particular well. The oil production in September of '60, the monthly production was 76 barrels, October it dropped to 17 barrels, November, 11, December, 5, January, 4, February, 5, and March, 1. There is no production for the months of April, May and June. In July it produced 147 barrels of oil and 17 MCF of gas; in August of this year it produced 353 barrels of oil and 440 MCF of gas. The well was reworked from July 13, 1961, to August 8, and additional intervals were opened to offsetting gas production. August production indicates that the workover was unsuccessful and Sinclair anticipates a decline in the productivity of both oil and gas in the near future. If the oil productivity declines faster than the gas productivity then the GOR will greatly increase, which Sinclair believes justifies its operations under the statewide exceptions. We have a letter from Sinclair. if there is no objection we would like to introduce it as an exhibit. That is all.

MR. NUTTER: Does anyone have anything they wish to offer in this case?

MR. JONES: Phillips Petroleum would like to put on one witness, please, sir.

(Witness sworn.)

T. A. MATTHEWS

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



DIRECT EXAMINATION

BY MR. JONES:

Q Will you state your name for the record, please?

A T. A. Matthews.

Q And by whom are you employed, and in what capacity?

A By Phillips Petroleum Company as area petroleum engineer.

Q Have you previously testified before this Commission, Mr. Matthews?

A I have not.

Q Will you outline briefly your education and experience in your present position, please?

A I received the degree of Master of Science, chemistry major, and geology minor, in 1936 from the University of Arkansas. I was employed by Phillips Petroleum Company following that degree as a research chemist, but after two years was assigned to production research and conducted production research for ten years. Following this period of production research I became area petroleum engineer for the production department, and have continued in that capacity for the past thirteen years.

Q In that capacity have you had occasion to study the San Simon and Wilson areas which are the subject of this hearing, and with particular reference to the subject of this hearing?

A I have.

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

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MR. NUTTER: No, sir, please proceed.

Q Mr. Matthews, have you prepared, or had prepared under your supervision, a structure map of the San Simon area contoured on the Yates formation?

A I have.

MR. JONES: I ask that that be identified as Phillips Exhibit No. 1. Now, without going into too much detail, Mr. Matthews, does the structure map which has been identified as Phillips Exhibit No. 1, is it generally consistent with the structure map which has been introduced by the Commission staff?

A It is.

Q And particularly with reference to separation between the proposed North San Simon field and the two Skelly wells in the old San Simon area?

A That is correct.

Q What wells does Phillips Petroleum Company operate within the area of the staff-proposed North San Simon area?

A Phillips Petroleum Company operates five wells, which we designate as the Yates "A" lease wells, number 1 through 5, located in the SW/4 and the E/2 of the SE/4 of Section 29, and the W/2 of the NE/4 of Section 32. They are all in Township 21 South, Range 35.

Q Now, when were those five wells drilled?

A Those wells were all completed between the period of April, 1960 and August, 1960.

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Q And how many years, approximately, was that after the discovery well in that area was drilled?

A The discovery well was completed, I believe, by Skelly in 1943, and we completed these wells in 1960, so that is about 17 year later.

MR. NUTTER: Which well was that discovery well, Mr. Matthews?

A Skelly No. 1 State "U", I believe, and that well is located in the N/E of the N/E of Section 5, completed on November 28, 1943.

Q (By Mr. Jones) Mr. Matthews, have you prepared an oil production decline curve on the Phillips Yates "A" lease, or had one prepared under your supervision?

A I have.

MR. JONES: I ask that be identified, Mr. Examiner, as Phillips Exhibit No. 2.

Q Now, what does the oil production decline curve, which has been identified as Exhibit No. 2, indicate, Mr. Matthews?

A That reflects the declining rate of oil production on this recently developed Phillips Yates "A" lease, and reflects that since the early months of the development of this lease this lease has been unable to make its allowable.

Q Have you prepared a gas production decline curve on the Phillips "A" lease?

A I have.



MR. JONES: I ask that it be marked Exhibit No. 3, please.

Q Will you state what Exhibit No. 3 depicts?

A Exhibit 3 reflects that the gas production reached a peak shortly -- about the same time that the oil production reached its peak, and has been sharply declining since that period, with the present rate of gas production being, as I recall, about 50 million cubic feet a month from the lease.

Q Does Exhibit No. 3 indicate that, insofar as the Phillips Yates "A" lease is concerned, there is any levelling off in the gas production?

A It does not.

Q What does that exhibit indicate to you, then, with reference to the Yates "A" lease?

A It indicates to me that this lease is late in the life of the primary energy, and the declining gas production, along with the declining oil production, reflects an overall decline, currently, in the gas-oil ratio.

Q Is all of the gas produced from the Phillips Yates "A" lease being marketed?

A It is.

Q Have you prepared, or had prepared under your supervision an oil production decline curve of the San Simon field as presently designated?

A I have.

MR. JONES: I ask that be marked as Phillips Exhibit No. 4,

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please.

Q That excludes the two Skelly wells?

A That does not include those Skelly wells.

Q What does Exhibit No. 4 indicate, Mr. Matthews?

A It reflects that the oil production rate of the entire pool is also declining, and reflects that the pool, as a whole, is unable to produce its allowable. I believe there is no single lease that is able to produce its allowable.

Q Have you also prepared, or had prepared under your supervision, a gas production decline curve of the San Simon field as presently designated, excluding the two Skelly wells to the south?

A I have.

MR. JONES: That will be Exhibit No. 5, please.

Q Mr. Matthews, what does Exhibit No. 5 depict?

A It reflects the gas production from the entire field is also declining, although it does reflect that an apparent levelling off has taken place in recent months.

Q Have you prepared an economic analysis of the Phillips Yates "A" lease?

A I have.

Q Will you give that to the Examiner, please.

A Phillips Petroleum Company's records reflect that, as of August, 1961, our investment in the Yates "A" lease amounted to a total of \$185,080.98. Up to the same date of August the 1st, 1961, the net operating income, over and above operating costs, amounted

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to \$96,408.33, leaving a balance to pay out of \$88,672.65. According to my extrapolation of the decline curves, which have been presented in evidence, we can expect to reach an economic limit on this lease, under unrestricted rates of both oil and gas production, by the end of 1962, at which time the lease will lack approximately \$63,000 in returning the investment.

Q And that analysis is based upon the present status of the field, that is, exempt from gas-oil ratio limits?

A That is correct.

Q Do the exhibits to which you have testified indicate that the field, as a whole, and the Phillips Yates "A" lease in particular, are at or nearing the final stages of depletion?

A They do.

Q In a solution gas drive reservoir, when the reservoir is at or nearing the final stages of depletion, what is the best use for the gas in the reservoir?

A The gas, in the final stages of depletion, has essentially served its purpose of recovering the oil, and the best use of the gas is to be marketed during the economic life of the field.

Q Now, if the wells in the field are shut in or abandoned earlier than they otherwise would be because of a gas-oil ratio restriction, will oil which would otherwise be recovered be left in the ground?

A There will be some oil left in the ground, as well as gas, because of the attainment of an economic limit at a higher level



of oil saturation and gas remaining in the reservoir.

Q And that, of course, results in, or is, waste, is it not?

A That is correct.

Q The Phillips Yates "A" lease is a State lease, isn't it, State of New Mexico?

A That is correct.

Q And any waste that would result would not only result in oil which would not be recovered for the public good, but in this particular instance, would result in a direct loss to the State in severance taxes and royalty income, would it not?

A That is correct.

Q Do you believe the Phillips Yates "A" lease could be operated without waste and without leading to premature abandonment on any gas-oil ratio limit less than 10,000 to one?

A I do not.

Q From your testimony, what is your recommendation then, Mr. Matthews?

A My recommendation would be that the Phillips Yates "A" lease and, in fact, the proposed North San Simon field, be maintained in the present status of unrestricted gas-oil ratio.

Q If the Commission did not see fit to follow that recommendation, what would be your alternate recommendation?

A My alternate recommendation would be that no gas-oil ratio limit less than 10,000 to one be applied to this North San Simon field.

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MR. JONES: Phillips offers in evidence its Exhibits 1 to 5, inclusive.

MR. NUTTER: Phillips Exhibits 1 through 5 will be admitted in evidence. Does anyone have any questions of Mr. Matthews?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Matthews, in view of the economic picture as far as the Phillips lease is concerned, does that company contemplate any additional wells?

A We do not.

Q If you had a limiting ratio of 10,000 to one, what would be the permitted monthly rate of production of gas from this lease?

A We have five wells; I would assume that under the present 34 barrels per day oil allowable we would be permitted to produce approximately 340,000 cubic feet of gas per day, which amount for five wells would amount to 1,695,000 cubic feet per day, or for a 30-day month would amount to 51 million cubic feet of gas.

Q And, according to your Exhibit No. 3, the gas production on this lease has declined to somewhat less than 50 million?

A That is correct, if that final point is as accurate as the remainder of the points. It was obtained from a different source. The source of the information for the earlier points was the information that is regularly reported to the Commission; that final point had to be obtained from our gas metering station that sells gas to the gas on-line plant, and if there is no accounting error

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there, that is a true statement.

Q As far as you know, Mr. Matthews, is this Phillips lease the highest ratio lease in the pool?

A As far as I know that is the highest ratio lease in the field.

MR. NUTTER: Thank you. Any further questions of Mr. Matthews? You may be excused.

MR. JONES: That is all we have to offer, Mr. Nutter.

MR. NUTTER: Does anyone have anything they wish to offer now in Case 2376? Take the case under advisement and take a fifteen-minute recess.

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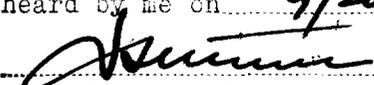
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"      "      5	9	13
"      "      6	18	22
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"      "      5	33	36

I do hereby certify that the foregoing is  
a complete record of the proceedings in  
the Examiner hearing of Case No. 2376  
heard by me on 9/20, 1941.

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

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