CORRECTION

The preceding ___1___ document's were incorrectly filmed. They are refilmed following this target.

MORING

12-83

pool at the present time.

MR. McCORMICK: Are the gathering lines of the gas purchasing companies in all of those areas, I presume they are.

MR. FORBES: Yes, sir, I believe they are. I don't know how far El Paso goes up here.

MR. DAILEY: I believe they are in everything except area four.

MR. McCORMICK: How about the market for gas in the No. 4.

MR. DAILEY: There are only at the present time three gas wells inside that area. The gas from, I believe, two of these three wells anyway is used chiefly for gas purposes.

MR. McCORMICK: I would like for you to tell me which companies operate in each of the areas that you know which are gathering purchasing companies? That is, for high pressure gas.

MR. DAILEY: Dry high pressure gas?

MR. McCORMICK: Yes.

MR. DAILEY: Actually as far as I know, El Paso purchases some gas in area three and so does Southern Union. The El Paso purchases dry gas through this area in through here, No. 1. Whether Charles Henry Johnson purchases any dry gas there I do not know. In area two the El Paso is the main purchaser. However, I believe the Southern Union Purchases from one or two wells in the area. When Mattix had the line throughthere

they took it from area two. Whether Southern Union is continuing to do so, I don't know. As far as I know, there are no sales out of area four. In addition to that, there is a small amount of dry gas purhased out of area three by the Phillips and the warm fuel, plant fuel and house fuel.

MR. McCORMICK: Would you have any ideas or suggestions as to how the Commission would determine as to each particular well whether it was a gas well or oil well?

MR. DAILEY: In which area?

MR. McCORMICK: Well, take three for instance.

MR. DAILEY: I believe area three is probably in that regard, is probably the easiest. I don'tbelieve that any of the oil wells producing from the Queen down through this area will produce from top allowable. I don't believe they are capable of it. There may be one or two that are but as far as I can find out, why, they aren't. Therefore, the way we have it divided, the main problem would be to determine where the well was producing.

MR. McCORMICK: How accurately can that be determined?

MR. DAILEY: I couldn't say.

MR. McCORMICK: In area one there, what ideas do you have about determining gas wells and oil wells?

MR. DAILEY: That is in area one. Again I believe you will find that the largest portion of the area, any oil wells in there are producing large volumes of water with a

few exceptions and are marginal. I don't believe that the problem would be too hard to work out.

E. L. SHAFER: Mr. Chairman.

MR. SPURRIER: Yes, sir.

MR. SHAFER: E. L. Shafer, Continental Oil Company. With regard to Mr. McCormick's question concerning area one, the Commission has previously by rule stated that those reservoirs in area one are primarily gas reservoirs. Therefore, Mr. McCormick's question would narrow it down to the classification of an individual well in that reservoir. I would suggest that the Commission use some criteria such as gas-oil ratio or other mediums of that nature to differentiate between an oil well as compared to a gas well. Inasmuch as they can and will be producing from the same reservoir essentially.

MR. McCORMICK: Would there be anything wrong with classifying area one as, all wells in there, as gas wells?

MR. SHAFER: I don't know that there would be. I don't know how you would limit the oil production from an individual well unless you placed a top allowable limit on that well. Even though you classify it as a gas well. In other words, there is no problem of corelative rights or withdrawals from an individual well since there is no limiting gas-oil ratio in effect at the present time. It is merely a classification for proration purposes. I think some criteria such as gas-oil ratio would still give each individual, whether or not he is producing an oil well or gas well the same rights and privileges that he presently has.

MR. McCORMICK: How about this division of the Seven Rivers into the lower 100 feet and the upper portion of it, is that going to be capable of accurate determination?

MR. SHAFER: I think so. I see no reason why that should pose any problem.

MR. DAILEY: That division was put in there, to explain the reason for it being put in there, you find that the bottom hole of the formation pressure through that section in here, I believe development started in the area of 1936 or 1937, the formation pressure in the hole in that area was very low in that portion of those formations that had been opened. Whereas the Yates and the upper portion of the Seven Rivers which had not been open for production had a considerable higher pressure. I believe the Yates and Seven Rivers were averaging better than 1,000 pounds, whereas theQueen pressure, I doubt if it would go over 500. That was the reason, to protect the possibility of trying to repressure the Queen through opening up both the high pressure gates in any one well.

MR. McCORMICK: How thick is the Seven Rivers formation in No. 2?

MR. DAILEY: Approximately 400 feet.

MR. McCORMICK: It is fairly uniform?

MR. DAILEY: Fairly. Not too uniform.

MR. McCORMICK: Is it more than 100 feet thick at any point?

MR. DAILEY: Is it what?

MR. McCORMICK: Is it more than a hundred feet thick at any point where there is production?

MR. DAILEY: It is 400 feet.

MR. McCORMICK: Is it more than 100 feet at the minimum at any point?

MR. DAILEY: You mean that has been opened up for production?

MR. McCORMICK: Well, if you are allowed to produce oil from a lower 100 feet of it is there any point where the Seven Rivers is not 100 feet thick?

MR. DAILEY: No, there is no place where the Seven Rivers is less than 100 feet thick. No. The way it worked out in there the total thickness of the Yates and Seven Rivers varies from, I believe, over in this area. It is approximately seven hundred and forty or fifty feet as near as I can remember, and it gets somewhat thinner this way, probably, oh, say loses 100 feet of its thickness coming this way. As far as we can tell, as far as we can trace it. The Yates is approximately 250 feet thick which would mean that you would have between 450 and 550 feet of Seven Rivers as you go across there.

MR. McCORMICK: Is there any disagreement among geologists as to where one formation begins and the other stops?

MR. DAILEY: You mean the Seven Rivers and the Queen or the Yates and Seven Rivers?

MR. McCORMICK: All three of those.

MR. DAILEY: There would be between, I believe, you would find some between the Yates and Seven Rivers especially back in here along this area, it is rather definite, especially where

you have an electrical --

MR. ADAIR: (Interrupting) For the purpose of the record, will you indicate where you are pointing?

MR. SPURRIER: Just say from east to west.

MR. DAILEY: Well, in area one, along the reef there is a rather definite separation point between the Yates and Seven Rivers that can be picked off from line wells or radio active surveys or from electrical logs. As you go east, that definite break becomes somewhat indefinite, the characteristics of the Yates and Seven Rivers become fairly similar.

MR. SANDERS: That is in area two.

MR. DAILEY: That's right.

MR. ADAIR: That is the southeastern portion of area two.

MR. DAILEY: That's right. Similar conditions exist up here farther north.

MR. SANDERS: Farther north of area one, is that what you are speaking of?

MR. DAILEY: That's right.

MR. McCORMICK: I would like to ask another question. Assuming that the Commission would adopt, would go ahead and define pools somewhat like you have it there, with perhaps some minor changes, do you have a practical suggestion as to how the Commission would go through the mechanics of saying that this well is an oil well or it is a gas well?

MR. DAILEY: No. It would undoubtedly require a study of each individual well by qualified engineers or geologists.

MR. FRANK R. LOVERING: Lo vering, with Shell. I have a question. Does this thing resolve itself into defining gas cap rather than gas reservoirs or gas pools? Isn't that the result of this survey?

MR. DAILEY: In area three to a certain extent, yes.

MR. LOVERING: It seems to me that in areas one and two, it seems that it is admitted that gas is coming from the same wells.

MR. DAILEY: Not all the gas.

MR. LOVERING: A good part of it.

MR. DAILEY: Part of it, yes.

MR. LOVERING: As a gas field, so designated, those wells would produce on gas allowables the same reservoir an oil well connection of producing curtailed and limited by limitations in oil allowables rather than gas and might there not be some advantage given to gas areas in regard to recoveries both in the fluids and in reservoir energy? I don't see how you can have a gas pool so devined that actually the source of production is from an oil and gas reservoir.

MR. DAILEY: I believe that the only place where we have done that is in area one.

MR. LOVERING: That is particularly the one I had in mind.

MR. DAILEY: It, as Mr. Shafer pointed out, has been declared primarily a gas reservoir by the Commission.

MR. LOVERING: Even in area two, doesn't that area amount to have nothing more than a gas cap overlying on the edges there, say, oil horizon adjacent to there, you get oil wells, so testified,

out of the same reservoir, don't you?

MR. FORBES: Area two is mostly dry gas, Mr. Lovering, practically all of it. We will admit there is oil here and here (indicating).

MR. LOVERING: I don't object to mostly. It is oil and gas regardless of which is predominate.

MR. FORBES: I would say in area two, the gas in area two is a gas cap for these small wells.

MR. LOVERING: The impression I got from the testimony and maybe others here too, that actually you are defining a gas cap in each case and all these gas pools would be actually producing from the same reservoir as the adjacent oil wells.

MR. SHAFER: Perhaps I can clarify that for you a little in area two. Ithink the only sections that we have described or suggested be place in the dry gas reservoir that also produces oil is the upper Yates section.

Admittedly, in the upper Yates and some of the little troughs throughout that area, I believe are three in number, there is a limited oil production. However, on an acreage basis, the acreage assigned to those oil wells comprises approximately three per cent of the total area set up in the gas pool and inasmuch as it is true of area two that the Commission has stated that the reservoirs are primarily gas reservoirs, we feel that the individual producing sections or formations that we have suggested be place in the gas pool or one hundred per cent productivity of dry gas or are primarily productive of dry gas.

The only instance in which I can see that any confusion might be created is in area one designated as, primarily as a gas reservoir and the gas reservoir we are suggesting, the one and the same. If they call the entire thing a gas pool, however, and limit the production of oil from a gas well to top allowable, I cannot see that it will change anything from what its present status is.

MR. LOVERING: I think your statement is understandable and probably true. The thing I forsee here is that we are going to get faced with the problem of proration of oil wells on one side of the line and gas wells on the other which you may be producing from the same reservoir, and that we may have a problem, the Commission would have a problem of prorating to everybody's satisfaction oil where gas production of those wells from the other side of the line.

MR. SHAFER: You are making the point that, for instance, taking an example, say, in the area two or Langemat area, you have a well producing from the Yates, say, upper Seven Rivers which is a very common occurrence in area one, or the Jalco pool, you might have a well producing from the Yates and upper Seven Rivers which is now classified as an oil well. That comes back to the same point. I can't see any reason why that well in area one couldn't be designated a gas well.

MR. FORBES: We separated these two areas by sulphur content and the lack of permeability here.

MR. SHAFER: There are geological factors and other factors

that caused you to draw the line in there. Otherwise, we would have made one pool out of the entire thing.

MR. LOVERING: To actually separate the gas to gas pool or reservoirs, as separate from gas, it ispractically impossible to do, is that right?

MR. SHAFER: That is something that I hope everyone will bear in mind. We did not have the opportunity to take a new field or new area and work up some appropriate rules and regulations. We are taking an old set of conditions that existed for many, many years. We studied them thoroughly and we tried to do the best we could. Admittedly, there is a lot of debatable points, there is a lot of questions that can arise regarding the lease boundaries of surface ownership and other matters. We tried to avoid those things andkeep it strictly on a geological and individual well data basis at this time, in order to get some sort of gas pool boundary set up, in order that these other matters can be intelligently discussed later on.

I am afraid if we got into those factors right now, we would be going on to next Christmas.

MR. LOVERING: I don't want to go to next Christmas.

MR. SANDER: We have concluded our testimony. If nobody has any more questions, we would like to introduce the three exhibits up here into evidence.

MR. McCORMICK: Why don't you mark the one, two and three?

(Maps, marked as Exhibits 1, 2, and 3, for identification.)

MR. CAMPBELL: Stanolind representative has asked to make

a statement before we put on our evidence.

MR. L. H. BOND: L. H. Bond, Stanolind Oil and Gas Company. As has previously been stated by Phillips representatives, Stanolind participated in this study, one of our engineers working on the study full time for a considerable period. It is my opinion that this study represents a reasonable approach to the problem but that as has been mentioned, adjustments will probably have to be made to take into account new data which is discovered by further development or futher study of individual areas. I think it does represent a good start at solving the problem and concur generally with Continental's recommendations for these four areas.

MR. SPURRIER: Thank you.

(Witness sworn.)

MR. CAMPBELL: If the Commission please, Gulf Oil Corporation, Jack M. Campbell, Atwood, Malone and Campbell, Roswell, New Mexico. Gulf desires to present for the Commission's consideration a minor modification of the proposed gas pool designations and calling as its witness, R. L. Boss, Hobbs, New Mexico.

R. L. B O S S,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. CAMPBELL:

Q State your name.

A R. L. Boss.

Q Where do you reside?

A Hobbs, New Mexico.

Q By whom are you employed?

A Gulf Oil Corporation.

Q What capacity?

A Zone Geologist.

Q Have you testified before this Commission on previous occasions?

A Yes.

MR. CAMPBELL: Is the Commission satisfied with the qualifications of Mr. Boss as an expert witness in the field of geology?

MR. SPURRIER: Yes.

(Marked "Gulf's Exhibit No. 1" for identification.)

Q I hand you what has been identified as Gulf's Exhibit 1, in Case No. 245, and ask you to state what that is?

A It is a plat showing the interpretation of the Yates structure and in addition the outlines of the gas areas one and two have been shown plus the suggested revision of those areas.

Q Did you prepare this map yourself?

A That's correct.

Q Did you obtain the information on the contours yourself in the preparation of the map?

A That's correct.

Q The contours as shown on this map are the same as the contours shown on Continental's Exhibit No. 1?

A They are drawn on essentially the same horizon, however, there

is a variation among many of the geologists in using the Yates as a reference datum. Some use the top of the Yates sand and some use a point 20 to 30 feet babw. In this instance, I believe the Continental uses the top of the sand, and I believe Gulf uses the lower horizon. It amounts to a slight variation but essentially the map should correspond very closely.

Q You are acquainted with the proposed gas pool designations as indicated in Continental's Exhibit No. 3?

A I am.

Q Based upon your studies in the area you referred to, do you have a recommendation as to modification of the Continental's recommendations?

A I do.

Q Have you prepared a statement setting out your views in that regard?

A Yes.

Q First will you state which area is involved in your proposed modification?

A Well, it is common boundary of areas one, two and three.

Q The known boundaries?

A The known boundaries.

Q Of areas one and two?

A That's correct.

Q And the southern boundary of area three?

A Yes.

Q Read the statement you prepared in connection with your study.

A "The proposed delineation of shallow gas areas in Southeastern Lea County is in general accord with the interpretation made by the Gulf Oil Corporation. We concur in the statement that the Grayburg formation is primarily an oil reservoir in areas 3 and 4. While Gulf recognizes the fact both sweet and sour gas are produced from the Yates and Seven Rivers formations in the southern part of the county, the difference being attributed to the production of sour gas from porous dolomites of the "reef" area along the western margin of production, the fact the Yates sands are apparently productive of sweet gas over much of the entire area leads to the interpretation that no distinct separation exists and this reservoir within the Yates and Seven Rivers formations is essentially a common one. However, if it is felt desirable to differentiate between the sweet and sour areas, Gulf will offer no objection to such delineation.

"Gulf is not in accord with the north limits recommended for the Yates-Seven Rivers gas poolor pools. The essential difference which embraces most of the Eunice-Monument field, is the fact that in the latter theQueen formation is productive or potentially productive of gas. The common boundary of the areas as previously recommended is drawn through the last tier of sections in Township 21 South, Range 36 East. However, the southwest part of this township occupies such a relatively low position structurally that the Queen formation, particularly the lower Queen, occurs below the gas-oil contact. Thus, the only formations here potentially productive of gas are the Yates

and Seven Rivers. The area of Yates-Seven Rivers (solely) gas production should, therefore, be extended northward.

"Relative structural position appears a reasonable basis for separation of the areas. The interval from the top of the Yates to and including the upper queen sand is approximately 750 feet. The gas-oil contact in the immediate area has been established as approximately 200 feet below sea level. The 550 foot Yates contour thus represents the approximate south limit of Queen gas and pool limits herewith proposed follow, as nearly as possible, this contour with exceptions where specific data are available.

"The resulting north boundary of the Yates-Seven Rivers gas area would be extended as shown on Gulf Exhibit No. 1, to include the following area:

"Township 21 South, Range 35 East:
E½ Sec. 12, E½ Sec. 13, and E½ Sec. 24.

"Township 21 South, Range 36 East:
W½/Sec 7, W½ Sec. 18, All Sec. 19, S½ Sec. 20,
W½ Sec. 28, All Sec. 29, All Sec. 30, NE¼ Sec. 31,
N½ and SE¼ Sec 32, N½ Sec. 33, and N½ Sec. 34."

Q Mr. Boss, for the benefit of those here can you point out generally on Continental Exhibit No. 3, what that area embraces?

A The Yates, Seven Rivers areas would be extended northward then to include the east half of 12, the east half of 13, the east half of 24 of Township 21 South, Range 35 East; to include the west half of Section 7, the west half of 18, all of 19, the west half of 20, the west of 28, all of 30, all of 29, the northeast of 31, the north half and southeast of 32, the north half of 33 and the north half of 34.

Q Based upon your study do you recommend that the north limits of the Yates-Seven Rivers pool be extended as shown on the dotted lines of Gulf's Exhibit 1?

A I do.

MR. CAMPBELL: That is all.

MR. SPURRIER: Does anyone have any questions of this witness?

MR. SELINGER: Does the witness mean that you want areas one and two to be extended to take in a portion of what Continental has designated as area three, is that what you mean?

A Correct.

MR. DAILEY: Do you mean that, or extend area two and leave area one as is?

A As we have interpreted that area as Yates-Seven Rivers gas production, it really would make no difference which one according to our interpretation, so we have no objection to extending two up to include that.

MR. SPURRIER: Any further questions? If not, the witness may be excused.

MR. CAMPBELL: I think for the benefit of the Commission it might help to determine what Continental feels about that proposed extension, whether they object to it or feel that it would be satisfactory generally.

MR. SPURRIER: Mr. Sanders, do you have any comment?

MR. SANDERS: No, sir, we have no objection to that.

MR. SPURRIER: Is there any other comment on Gulf proposal?

MR. DON LITTLE: Mr. Chairman, my name is Don Little. I represent Standard Oil Company of Texas, from Houston. Standard of Texas owns a joint venture interest in many of the Continental operated leases scattered throughout this area. We have reviewed the report and the exhibits submitted here today by Continental and are in substantial agreement with the findings of that report insofar as it suggests or attempts to define the limits of the gas pool in the area under consideration. We feel that this report represents a constructive approach to this problem of defining these gas pools and we recommend it to the Commission on that basis for their study and dommission. Thank you.

MR. SPURRIER: Thank you. Anyone else?

MR. LOVERING: It occurred to me that they be referred to as gas areas rather than to gas pools. I don't think they are gas pools.

MR. SHAFER: Although we have referred to them as gas pools we originally commenced this study and referred to them as areas primarily because of lack of nomenclature. We hadn't decided any names. However, to be of any benefit they must be common sources of supply which is synonomous of pools. Otherwise, we can't promulgate any rules or regulations to fit those various pools. I suggest that we do consider them as pools even though it is contrary to Mr. Lovering.

MR. LOVERING: I withdraw my objection.

MR. C. E. CARDWELL: C. E. Cardwell, with Atlantic. Continental pointed out in this testimony Atlantic did go over this study with them and we are in substantial agreement with their recommendations to the Commission.

MR. SPURRIER: LThank you, Mr. Cardwell. Anyone else? Has anyone anything further in the case? Do you have something, Mr. Dewey?

MR. DEWEY: We have the Blinebry gas field if you would like to hear it this afternoon. It is a deeper gas field than presented.

I am R. S. Dewey, Humble Oil and Refining Company, Midland, Texas. On behalf of the Humble Oil and Refining Company we wish to state that we are in substantial agreement with the evidence that has been placed before the Commission in this case in regard to the shallow fields in Lea County. As our part of the hearing we have prepared a very short discussion of the Blinebry gas pool and I think, Mr. Spurrier, that perhaps some of the other operators have some other pools they want to discuss. We have one witness, Mr. W. L. Crothers, who has n't appeared before you before.

(Witness sworn.)

W. L. CROTHERS,

having been first duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. DEWEY:

Q I wish you would state your name, please.

A W. L. Crothers.

Q For whom are you employed?

A Humble Oil and Refining Company.

Q In what capacity?

A Petroleum Engineer.

Q How long have you been active in this area?

A In West Texas and New Mexico since 1936.

MR. DEWEY: Is that suffiecien qualifications?

MR. SPURRIER: Yes.

Q Mr. Crothers has prepared a statement which he would like to read and which we will leave with the Commission. I might say that this matter has been discussed with the various operators concerned in the area so far as we know it is not controversal. We haven't been able to find any material disagreement with it.

MR. CROTHERS: "Blinebry Gas and Oil Pays. There are 12 oil wells in the Blinebry Field and 11 gas-distillate wells are completed to produce from the Blinebry pay. Data available for these wells are listed in the accompanying tables. The oil wells are all marginal with allowables in March 1951 ranging from 5 to 28 bbl/day and averaging 11 bbl/day. As shown on the accompanying map, the oil wells are in three areas over an interval of about 8 miles. Practically all these oil wells were originally drilled with some other pay such as Drinkard as an objective and were only completed in the Blinebry after failure to produce in other pays. The average cumulative production of the oil wells to

January 1, 1951, is approximately 15,000 bbl/well. It should be noted that on the map only wells with production tests or drill stem tests of a Blinebry pay are shown although there are a number of other wells in the area producing from the Paddock, Drinkard and other pays. It will be noted from the map that the Blinebry has been found productive of gas over an area about 9 miles long with a maximum width of about 2miles. Data available are sufficient to indicate whether gas production will be continuous over the entire length of the area involved. Initial tests of Blinebry gas wells show production of distillate varying in gravity from 50 to 64 degrees A.P.I. at gas-distillate ratios varying from 40,000 to 100,000 cubic feet per barrel.

"If oil is found in a reservoir with a gas cap and the pressure in the gas cap is lowered faster than that in the oil pay, oil will migrate to the gas cap. The small percentage of the oil migrating to the gas cap will be produced. Pressure data for the Blinebry pay show that the pressures of the oil wells have dropped much faster than those of the gas wells, indicating that little if any oil migration of a gas cap has occurred or will occur. Pressures reported for oil wells include the following: Olsen, Danglade 1, 11-49, 1635; Penrose, Hinton 3, 7-50, 839; Penrose, Hinton 4, 7-50, 1525; Rowan, Elliott B-13-1, 6-50, 903; Sinclair, Hill 1, 11-48, 1018; Texas, Lockhart 2, 11-50, 812.

"Back pressure tests indicate the gas wells had pressures of about 2300 pounds at the middle of 1950.

"Cross-sections AA' and BB' were prepared primarily to determine whether oil and gas production were from the same zone. Section AA' shows oil production in Gulf-Pike 1 just above

the top of the Blinebry while oil production in Sinclair-Hill 1 is from a point about 65 feet below the top of the Blinebry. These wells are about 7 miles apart. In the central area where most the oil wells are located, Rowan-Elliott B-12-1, Section BB', is shown by drill stem tests to have its best oil pay 65 feet below the top of the Blinebry. Data on Section AA' for such gas-distillate wells as Gulf-Vivian 5, Humble-Penrose 1, and Sinclair-Sarkeys 1 indicate that gas production is from just below the top of the Blinebry.

It is believed that these data indicate that it is unlikely that the Blinebry gas-distillate pay is a gas cap of the oil pay or pays. The gas-distillate pay occurs about 65 feet higher in the section than the oil pay and has a bottom hole pressure from 800 to 1500 pounds higher. In the event that it should be the gas cap of the oil pay, it is believed that negligible loss of ultimate oil production would occur as a result of prorating and producing the gas pay as a separate gas pay.

A proposed area boundary for the Blinebry gas-distillate pay is shown on the attached mpa. The area included inside this boundary is largely undeveloped. It is recommended that this boundary be revised as development extends or reduces the area inclosed in it."

MR. DEWEY: The material has been supplied to a great many of the operators operating in southeastern Lea County and it has been available to them. However, if there is anybody that desires to cross examine the witness, they may do so.

MR. SPURRIER: Does anybody have any questions of this

witness? Mr. Dewey, I presume you desire to introduce this as an Exhibit?

(Marked, Humble Oil and Refining Company Exhibit A Case 245, for identification.)

MR. SPURRIER: Does anyone have anything further on any other pool?

MR. CAMPBELL: Yes.

MR. R. S. CHRISTIE: My name is R. S. Christie, Amerada Petroleum Corporation. Our part in this study is an effort to define two small gas pools in which we have production. The reports were reviewed at a meeting held in Hobbs in the last few days, and I believe there is no disagreement on our findings either

The first report is on the Monument-McKee gas pool. This is a very short report. If you care to, I will read it or just submit the report, whichever you prefer.

MR. SPURRIER: If there is no objection, we will dispense with the reading of the report. Is there anyone who would care to hear the report?

MR. CHRISTIE: I might state that this comprises, the Monument-McKee gas pool comprises in our estimation, at least Section 36, Township 19 South, Range 36 East, Section 31, Township 19 South, Range 37 East, Section 1, in Township 20 South, Range 36 East, Section 6, Township 20 South, Range 37 East. At the present time there is just one well completed in this formation. I would like to present this as Exhibit No. 1.

The second gas pool which we are attempting to define is the Hightower Permo-Pennsylvanian Gas Pool. It is defined as being in Section 22, Section 23, Section 26 and Section 27 in

Township 12, South, Range 33 East. At the present time there are two completed gas wells in this reservoir. I would like to present this as Amerada Exhibit No. 2.

MR. SPURRIER: Does anyone have any questions? You may be excused.

MR. MORRELL: I might ask Mr. Christie one question. It just occurred to me, you are suggesting under your Exhibit No. 1, the name Monument-McKee gas pool?

A Yes, sir.

MR. MORRELL: I would like to call the attention of the Commission to the fact that there is a Monument-McKee Oil pool. The similarity of names might be confusing unless it is specified each time it is written out.

MR. CHRISTIE: I don*t believe there is an oil pool now. The original well, the well that is referred to there came in originally as a high gas oil ratio well and has since gone to gas and as far as I know there are no wells producing oil in the McKee Sand Monument pool.

MR. MORRELL: Then, the McKee should be withdrawn.

MR. CHRISTIE: Yes.

MR. SPURRIER: It is recommended, Mr. Christie, that the pool be changed from an oil pool to a gas pool?

MR. CHRISTIE: That is correct. I believe the Commission has already designated that as a gas pool at this time. Although, it may not be officially recognized.

MR. CAMPBELL: Gulf has been requested to furnish some information to the commission in three suggested gas pools, Tubb Gas Pool, the Amanda Gas Pool and the Justis Gas Pool. I think that these have all likewise been submitted to the metting of the operators and in the interest of saving time, if there is

no objection, we will just identify the Exhibits, introduce them and submit them to the reporter for the record.

MR. SPURRIER: All right.

R. L. BOSS,

recalled, having been previously duly sworn, testified as follows:

By MR. CAMPBELL:

Q You have testified before in this hearing have you not?

A Yes, sir.

Q I hand you what has been identified as Gulf's Exhibit 2 and ask you to state what that is.

A That is a map showing a general outline suggested for the Tubb Pool and also the line of a cross section prepared as supplemental data for the Tubb Pool.

Q Exhibit 2 is just a map showing that?

A Yes.

Q I hand you what has been identified as Gulf's Exhibit 3 and ask you to state what that is.

A This is a cross section which is supplemental data with regard to the Tubb Gas zone.

Q I hand you what has been identified as Gulf's Exhibit 4 and ask you to state what that is?

A A table prepared showing data, showing wells actually producing from Tubb zone.

Q I hand you what has been identified as Gulf's Exhibit 5 and ask you to state what that is?

A That is a table showing data from other wells which had showings in the Tubb Zone.

Q Are all the wells that are shown there from this particular zone producing gas?

A That is true.

Q Based upon your study in that particular gas pool, is it your suggestion that the Commission give consideration to designating the Tubb Gas Pool as shown in Gulf's Exhibit 2?

A Yes.

Q I now hand you what has been identified as Gulf's Exhibit No. 6. I ask you to state what that is?

A That is a map showing the outline proposed for the Amanda Gas Pool.

Q I hand you what has been identified as Gulf's Exhibit 7 and ask you to state what that is?

A That is a section prepared as supplemental data for Amanda Gas Pool.

Q Based on your study of the Amanda Gas Pool, is it your recommendation that the Commission give consideration to establishing an Amanda Gas Pool as shown in Gulf's Exhibit 6.

A Yes.

Q Are the wells producing in the Amanda Gas Pool, are there any oil wells producing in that zone?

A No, sir. The pool is limited to a single well producing gas only.

Q I hand you what has been identified as Gulf's Exhibit 8 and ask you to state what that is?

A That is a map showing the proposed boundaries of the Justis Gas Pool with the line of cross section prepared also.

Q I hand you what has been marked as Gulf's Exhibit No. 9 and ask you to state what that is?

A This is a cross section prepared through the Justis Pool showing the vertical limits of the gas zone.

Q Based upon your studies in the Justis Gas Pool, is it your suggestion that the Commission give consideration to establishing the Justis Gas Pool as shown on Exhibit No. 8?

A It is.

Q Are there any oil wells producing from that particular zone in the Justis Gas Pool?

A No.

MR. CAMPBELL: We would like to have the record show that the Gulf Exhibits One through Nine, are offered in evidence. Please submit copies of your statement to the reporter.

MR. SPURRIER: Any questions of this witness? If not the witness may be excused.

(Witness excused.)

MR. DEWEY: Mr. Chairman, in order that there be no confusion between the Blinebry Oil Pool and the area that Mr. Crothers recommended for the Blinebry Gas Pool, we suggest that the name for the gas pool be Blin. We further suggest that as there are a number of small gas pools to which no testimony has been presented today, that the case be held over until the nxt time at which time we will try to complete all the gas pools in Lea County.

MR. SPURRIER: Without any objections, Case No. 245 will be continued to the next hearing.

MR. DEWEY: So we can finish it up at that time.

MR. SPURRIER: THis is a recommendation that will be made to the Commission. I am sure that they will continue it.

Any further testimony in this case at this time? If not, we will proceed with Case No. 249.

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STATE OF NEW MEXICO)
: SS
COUNTY OF BERNALILLO)

I HEREBY CERTIFY that the foregoing and attached transcript of hearing in Case No. 245, before the Oil Conservation Commission on April 24, 1951, at Santa Fe, New Mexico, is a true and correct record of the same to the best of my knowledge, skill and ability.

DATED at Albuquerque, this 14th day of May, 1951.

Ada Dearnley

ADA DEARNLEY, Court Reporter

GULF OIL CORPORATION'S EXHIBIT NO. I

TUBB GAS POOL

In the multi-pay field of the Eunice townsite area there are five wells completed in what is commonly referred to as the Tubb gas zone. Four of these were plugged back to this pay after failing to find production in deeper objectives and the fifty is a dual completion, producing gas from the Tubb zone and oil from the underlying Drinkard pay. In addition, in at least eight other wells in this area, drill stem tests have indicated the zone to be potentially productive of gas.

The cross-section A-A' has been prepared to illustrate both the relative structural and stratigraphic position of the gas zone in those wells completed from that pay. In addition, other wells from which drill stem tests data relative to showings from this section are available, have been indicated by appropriate symbol on the attached map.

Data furnished by actual production tests plus the supplemental drill stem test data indicate this zone to be a dry gas reservoir. Structurally high wells such as Continental No 3-D Wantz, and low wells, such as Gulf No. 3 Paddock, produce only gas with variable amounts of distillate. Several dry holes at slightly lower elevations on the flanks of the structure furnish added evidence that the zone is not productive of oil down dip and thereby suggestive of a gas cap at the higher structural elevations. Further evidence to support this conclusion is in the fact that the zone is spearated from the nearest underlying oil pay, the Drinkard zone by some 200 feet of section, much of which

is relatively impermeable.

The Tubb sand or Drinkard sandy member is a convenient **referance** datum for the productive zone in question. The pay in the five producing wells falls within a maximum interval of 130 feet below the top of this datum. In the several wells from which drill stem test data are available, the potential section appears somwhat more extensive vertically, the extremes being from 108 feet above the Tubb horizon to 203 feet below. However, in the wells actually produc[illegible] the pay is confined to the section below the Tubb sand and in other wells in which testing was completed, only three included beds above this horizon. This evidence plus that furnished from sample examination in many other wells of the area appears sufficient to conclude the top of the Tubb sand represents the upper limit of this pay. In the attached tables are shown comparative data with respect to the intervals and the results obtained from testing within this zone.

While the top of the Tubb sand rather sharply defines the upper limit of the zone, the lower limit is somewhat indefinite. The maximum depth of any test completed was 203 feet below the sand member. From the electric logs a "break" approximately 225 feet below the Tubb horizon is readily identified and this, although somewhat arbitrary, offers a possible lower limit to the zone. It is thus suggested that the Tubb gas zone be limited vertically to the stratigraphic section comprising the 225 feet of beds immediately below the top of the Tubb sand.

The horizontal or geographic limits of the pool are also rather indefinite. From the attached map it will be noted that the wells in which showings were recorded are scattered in a north-south direction over much of the Drinkard Pool but east and west they are confined largely to the east flank of the structure. However, from sample date the zone is recognizable in most wells of the Drinkard Pool and it is not improbable that subsequent exploitation may prove the zone productive over much of the Drinkard area. Based on these data the proposed limits of the pool are as indicated on the accompanying map.

GULF CORPORATION'S EXHIBIT NO. TWO

AMANDA GAS POOL

The Gulf No. 1 Amanda, located at C NW SE Section 25, Township 22 South, Range 37 East, is productive of gas from a localized zone of porosity in basal Permian dolomite. This well was drilled to a depth of 7335 feet and found Permian sediments in contact with the pre-Cambrian at 7332 feet. The 5½ inch casing was cemented at 7214 feet, the well plugged back to 7174 feet and completed through perforations between 7025 and 7065 feet, after 1500 gallons of acid, flowing 3,372 MCF gas per day with 5.44 barrels of distillate.

Although a number of wells in the immediate area penetrated a comparable sequence of Permian sediments, in none was the Amanda zone sufficiently developed to warrant exploitation. This zone thus appears a quite local development and until proved otherwise,

by data available at a later date, must be considered a dry gas reservoir.

There are no other oil or gas pays in the remaining few feet of the subjacent Permian beds and in the overlying section the nearest pay stratigraphically is the lower Drinkard of Andrews oil zone. From the attached Section C the relative position of this gas pay is available.

In view of the quite local development of the zone, the depth necessary to reach it, and the small potential indicated no further exploitation of this pay appears probable. The immediate section within which the well is located (see accompanying map) namely; Section 25, Township 22 South, Range 37 East, appears ample for the horizontal limits of the pool. For like reasons, the presently exposed stratigraphic interval provides adequate vertical limits.

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GULF CORPORATION'S EXHIBIT NO. 3

JUSTIS GAS POOL

In the Justis gas Pool, the lateral limits of which have previously been defined, there are at present four producing wells. The gas pay of this pool occurs in a section of porous dolomite immediately underlying the Glorieta horizon. In order to illustrate the structural and stratigraphic relation of the wells which have either tested or are producing from this zone, the cross-section B-B' has been prepared.

Available data suggest this reservoir is quite limited, being confined almost wholly to the very crest of the structure.

At lower structural elevations the zone is water-bearing. The Western Natural Gas Co. No. 1 Eaton (well 2 of section) which occupies a relatively medial structural position was originally completed in this pay for a potential of 9,000 MCF per day. Subsequently, because of encroaching water, it was necessary to plug the well back to the more shallow Queen formation. In addition, the Atlantic-Olsen No. 1 Justis (Langlie) and the Olsen No. 2 Wimberly (wells 4 and 5 of section), both of which occupy a hight structural position, tested all underlying formations without disclosing any additional oil or gas pays. These data suggest the zone to be a dry gas reservoir and not a gas cap associated with an adjacent oil pay at either a lower structural or stratigraphic position.

From the data at hand it is disclosed the productive section is confined to the interval from a minimun of 7 feet to a maximum of 160 feet below the Glorieta horizon. In view of the performance of the reservoir to date, it seems probable the productive limits of the pool will fall within this interval. For this reason, the more or less arbitrary figure of 200 feet below the Glorieta datum appears as a reasonable vertical limit for the Justis gas zone.

In view of its limitations, little if any additional exploitation of this reservoir is anticipated and therefore the horizontal limits of the pool as presently defined appear adequate. These limits, as shown on the accompnaying map, comprise the following lands: SW/4 Section 1, SE/4 Sec. 2, E/2 Sec. 11, W/2 Sec. 12, W/2 Sec. 13, E/2 Sec. 14, E/2 Sec. 23, and W/2 Sec. 24, all in Township 25 South, Range 37 East.

AMERADA PETROLEUM CORPORATION
EXHIBIT NO. I
CASE 245

MONUMENT-McKEE GAS POOL

In the Monument field there is one well producing gas from the McKee sand in the Simpson formation. Three other wells drilled through the McKee sand have indicated on drill stem tests that they will produce gas from that zone.

The attached cross-section shows the sample logs and drill stem test results for all wells drilled through the McKee sand in the Monument field. The attached map shows the location of the wells.

The McKee sand is considered as the zone starting at 9846' (-6256') in Amerada Petroleum Corporation's State F Well No. 5 and extending to the top of the Ellenberger formation at 10,010' (-6520'). The water level is at approximately 6330' subsea.

Amerada State F Well No. 5 was completed November 4, 1948 as a high gas-oil ratio oil well. This was the discovery well for the Monument--McKee pool. The thin oil column was soon depleted and the well was reclassified as a gas well March 1, 1950. The well currently produces condensate with a gravity of 65 degrees API. No other well has indicated any oil column.

The boundaries originally set out by the Oil Conservation Commission for the Monument-McKee Pool, should cover any possible gas productive acreage from that zone. Those boundaries are:

T. 19S, R36E Section 36
T. 19S, R.37E Section 31
T. 20S, R.36E Section 1
T. 20S, R.37E Section 6

AMERADA PETROLEUM CORPORATION
EXHIBIT NO. L
IN CASE 245

HIGHTOWER PERMO-PENNSYLVANIAN GAS POOL

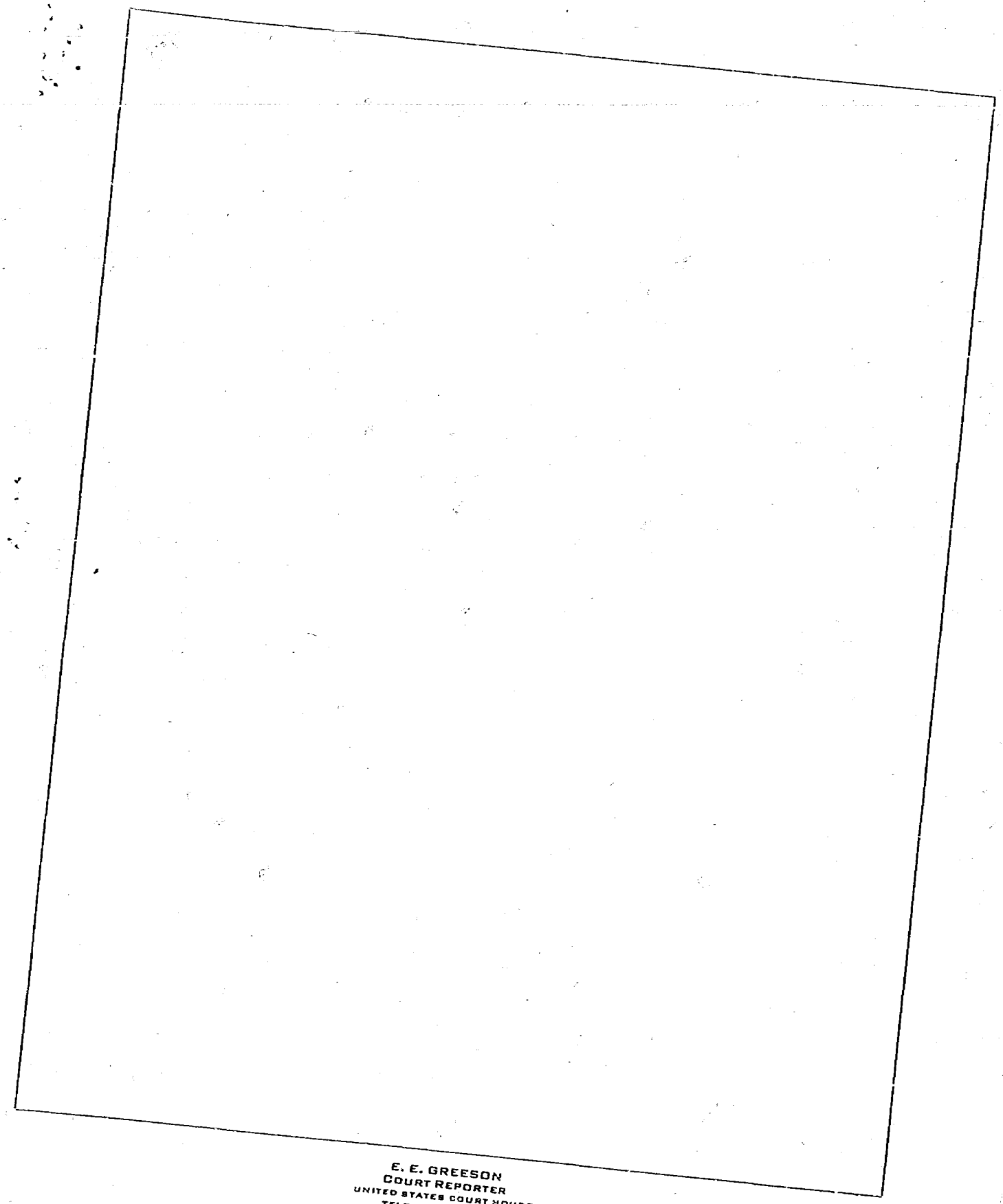
In the Hightower field there are two gas wells completed in a section refered to as the Permo-Pennsylvanian zone. Two other wells drilled through this zone have indicated on drill stem tests that they will produce gas from that zone. Three other wells were drilled through this zone with insufficient porosity development to produce and one of these wells found water in the base of this zone.

The attached cross-section shows the electric logs and drill stem test results for five wells drilled through the Permo-Pennsylvanian zone in the Hightower field. The attached map shows the location of all wells in the Hightower field.

The zone that is gas productive starts at or near the top of the Wolfcamp in the Amerada Petroleum Corporation's B.C. Roach Well No. 1 at 8385' (-4136') and extending to 8690' (-4441') which point is 70' below the top of the Pennsylvanian. The water level in this zone is at 4500 subsea. Water found on a drill stem test in the lower part of this zone separates this reservoir from lower oil productive zones.

The boundaries originally set out by the Oil Conservation Commission for the Hightower Permo-Pennsylvanian Pool, should cover any possible gas productive acreage from that zone. Those boundaries are:

T.12S, R33E Sections 22, 23, 26 & 27.



E. E. GREESON
COURT REPORTER
UNITED STATES COURT HOUSE
TELEPHONE 2-0872
ALBUQUERQUE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO

TRANSCRIPTION OF HEARING

CASE NO. 245

24 July 1951
(DATE)

Original

E. E. GREESON
ADA DEARNLEY
COURT REPORTERS
BOX 1302
PHONE 2-4547
ALBUQUERQUE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
July 24, 1951

CASE NO. 245: (Readvertised). In which the Oil Conservation Commission on its own motion will hear further testimony and date relating to the Byers gas pool in Sections 29, 30, 31 and 32 in Township 18 S, Range 38 E. NMPM, Lea County, New Mexico.

MR. SHEPARD: We will take up Case No. 245.

(Mr. Graham reads the Notice of Publication.)

MR. SHEPARD: State your name, Mr. Manley, for the record.

MR. MANLEY: My name is E. D. Manley, exploitation engineer for the Shell Oil Company, Hobbs, New Mexico.

(Mr. Manley sworn.)

MR. GRAHAM: Mr. Manley, will you state your name and also your position and then explain your testimony?

MR. MANLEY: My name is E. D. Manley, exploitation engineer, Shell Oil Company, Hobbs, New Mexico. I wish to present testimony relative to the delineation and designation of the Byers Gas pool of Lea County, New Mexico. I have a prepared statement that was made by Shell Oil Company with the help of others in their office at Hobbs, that shows the data and contains the conclusions drawn from this study, so you won't have to take this down. (To the reporter.)

"BYERS GAS POOL

In the Hobbs Field Area there are three wells producing dry gas from the Byers Gas Pool A total of four wells have produced gas from this horizon but at present only three wells are producing with the fourth shut in due to its very low capacity. An attached tabulation shows the well locations and producing interval.

The Byers Sand is a member of the Queen formation, Whitehorse group of the Permian system. The Byers Sand (sometimes known as the Big Gas Sand) occurs at an approximate depth of 3650 feet and averages about 70 feet in thickness. Other producing horizons in the same area are the Bowers Sand of the Seven Rivers formation which is approximately 500 feet above the top of the Byers, and the Hobbs pay zones (San Andres) which underlie the Byers some 300 feet. The 500 feet separating the Bowers oil reservoir from the Byers Gas Reservoir consist predominately of anhydrite. The 300 feet separating the Byers Gas reservoir from the Hobbs oil pay consist of dolomite and sandy dolomitic limestones ofGrayburg age - the upper portions of which are impermeable.

The Byers Sand is prevalent over the entire Hobbs structure and during the development of the Hobbs pool it presented blow-out hazards due to its high pressure. Gulf W. Grimes No. 4, Unit C, Section 32-T18S-R38E, the first commercial gas well in the Byers Gas Pool, was plugged back from the Hobbs pay and recompleted as a Byers gas well in

the early part of 1941. It had an initial potential of 23.8 million cubic feet of sweet gas per day and a shut in surface pressure of 1700 psi.

The gas produced from this horizon has a negligible hydrogen sulphide content and is considered sweet whereas the gas occuring in the Hobbs pay has a 1.3 per cent H_2S content. At present the Byers gas production is not accompanied by any liquids but during the early life of the reservoir distillate was produced in small amounts.

The cumulative gas production as of March 1, 1951, was 6,557,730,000 cubic feet and the average daily production was 698 MCF during the last 14 months. A portion of the gas from the field is being sold to the Hobbs Gas System with the remainder being utilized for gas lifting wells in the Hobbs Pool and for domestic lease fuel. No gas is being wasted; the gas employed in gas lifting is later recovered in the Phillips Hobbs Gasoline Plant gas gathering system.

On the basis of the Byers Sand's stratigraphic position, the fact that its gas composition is different from the Hobbs Pay gas, and the absence of associated liquid hydrocarbons, it is proposed that the Byers Sand under the following acreage be defined and designated as a gas pool:

T. 18S, R. 38 E Sedions 29, 30, 31 and 32

Between the depths of 3500' and 3800'

The proposed gas pool is shown on the attached plat.

MR. MANLEY: I would like to present this tabulation as Exhibit 1, which is attached to the testimony. It shows the location and total depth, the well producing interval, and any remarks that are pertinent to the case.

MR. SHEPARD: Are you through Mr. Manley?

MR. MANLEY: Yes, sir.

MR. SHEPARD: Any questions? Any statements? If not, you are excused.

MR. MANLEY: Thank you sir.

MR. SHEPARD: Case 245 will be taken under advisement.

-o-o-

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I HEREBY CERTIFY THAT THE FOREGOING AND ATTACHED TRANSCRIPT OF PROCEEDINGS BEFORE THE OIL CONSERVATION COMMISSION IN CASE NO. 245, HELD ON JULY 24, 1951, IS A TRUE AND CORRECT RECORD OF THE SAME TO THE BEST OF MY KNOWLEDGE, SKILL AND ABILITY.

DATED at Albuquerque, New Mexico, this 4th day of August, 1951.

G. G. Greenan
REPORTER

My Commission Expires: 8-4-52

CASE 521: OCC application for order establishing means and methods of prorating natural gas in Lea, Eddy, Chaves and Roosevelt Counties, New Mexico