

McCorkle, A..M.
Millikan, C. V.
Hannifin, S. P.
Gray, Lloyd L.
Griswold, E. H.

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CASE NO. 42

BEFORE THE OIL CONSERVATION COMMISSION OF THE
STATE OF NEW MEXICO

IN THE MATTER OF: THE APPLICATION OF THE LEA COUNTY OPERATORS COMMITTEE FOR A PERMANENT GAS-OIL RATIO ORDER FOR THE VARIOUS FIELDS LOCATED IN LEA COUNTY; INCLUDING A PLAN TO PERMIT THE TRANSFER OF ALLOWABLE FROM HIGH GAS-OIL RATIO WELLS TO LOW GAS-OIL RATIO WELLS TO PREVENT WASTE AND TO PROTECT PROPERTY RIGHTS.

Pursuant to notice by the Commission, duly made and published, setting April 27, 1943, at ten o'clock, A. M., for hearing in the above entitled matter, said hearing was convened on said day, at said hour, in the Coronado Room, La Fonda, Santa Fe, New Mexico, the Commission sitting as follows:

HON. JOHN J. DEMPSEY, Governor of New Mexico, Chairman
HON. JOHN M. KELLY, State Geologist, Secretary
HON. H. R. RODGERS, Commissioner of Public Lands, Member
HON. CARL B. LIVINGSTON, Chief Clerk and Legal Advisor.

APPEARANCES:

<u>Name</u>	<u>Company</u>	<u>Address</u>
R. E. Adams	Cities Service Oil Co.	Bartlesville, Okla.
D. C. Albers	The Ohio Oil Co.	Midland, Texas
W. D. Mitchell	Gulf Oil Corp.	Hobbs, N. M.
G. H. Gray	Repollo Oil Co.	Midland, Texas
Floyd Brett	do	Ft. Worth, Texas
H. E. Berg	Tidewater Assoc. Oil	Midland, Texas
L. F. Shippet	The Texas Co.	Midland, Texas
E. H. Holcomb	Great Western Prod., Inc.	Lubbock, Texas
Geo. P. Livermore	do	Lubbock, Texas
Francis C. Wilson	Wilson Oil Co.	Santa Fe, N. M.
Neville G. Penrose		Ft. Worth, Texas
Glenn Staley	Proration Office	Hobbs, N. M.
Leo Fry	Stanolind	Hobbs, N. M.
R. W. O'Neill	Phillips Pet. Co.	Odessa, Texas
D. R. McKeithan	do	Bartlesville, Okla.
Colin C. Rae	Skelly Oil Co.	Tulsa, Okla.
George W. Selinger	do	Tulsa, Okla.
H. B. Hurley	Continental Oil Co.	Ft. Worth, Texas
E. H. Griswold	N.M.F.U.	Midland, Texas
R. Van A. Mills	Continental Oil Co.	Ponca City, Okla.
C. C. Cragin	Western Gas	El Paso, Texas
W. B. Davis	do	Jal, N. M.
Bert Aston	Franklin Pet.	Roswell, N. M.
C. A. Scheurich	do	Clovis, N. M.
A. M. McCorkle	Lea Co. Oper. Com.	Ft. Worth, Texas
D. W. Bodie	Cities Service Oil Co.	Hobbs, N. M.
Edgar Kraus	Atlantic Refining Co.	Dallas, Texas
J. O. Seth	Lea Co. Oper. Com.	Santa Fe, N. M.
Guy Shepard	State Treasurer	Santa Fe, N. M.
Roy Yarbrough	State Oil & Gas	Hobbs, N. M.
Wilton E. Scott	Cities Service Oil Co.	Hobbs, N. M.
Fred M. Clement	Continental Oil Co.	Hobbs, N. M.
Leo R. Manning	State Land Office	
P. D. Grommon, Jr.	The Texas Co.	Midland, Texas

L. C. Thomas	The Texas Co.	Midland, Texas
John E. Miles		Santa Fe, N. M.
H. A. Kiker, Atty.	Southern Union Prod. Co.	Santa Fe, N. M.
Van Thompson	do	Dallas, Texas
M. C. Parrish, Jr.	do	Santa Fe, N. M.
C. G. Campbell	Texas Pacific Coal & Oil	Midland, Texas
O. F. Hedrick	do	Midland, Texas
Niven Baird	American Republics Corp.	Artesia, N. M.
R. V. Fitting, Jr.	Shell Oil Co.	Midland, Texas
J. D. Hudgins	State Tax Com.	Santa Fe, N. M.
R. S. Dewey	Humble Oil & Rfg. Co.	Midland, Texas
Ed Downing	Magnolia	Kermit, Texas
J. H. Moore	Shell Oil Co.	Hobbs, N. M.
F. E. Heath	Sun Oil Co.	Dallas, Texas
Frank Patten	P.A.W.	Washington, D.C.
John J. O'Malley		
M. Albertson	Shell Oil Co., Inc.	Houston, Texas
Foster Merrell	U.S.G.S.	Roswell, N. M.
Ernest A. Hanson	do	Roswell, N. M.
W. E. Hubbard	Humble Oil Co.	Houston, Texas
H. J. Kemler	Shell Oil Co.	Midland, Texas
A. E. Willig	The Texas Co.	Ft. Worth, Texas
E. G. Dahlgrin	Interstate Oil Compact Com.	Oklahoma City, Okla.
S..P. Hannifen	Magnolia	Roswell, N. M.
D. A. Powell	Drilling & Exploration Co.	Hobbs, N. M.
Bond D. Jones	Geologist	Amarillo, Texas
G. H. Card	Stanolind O & G. Co.	Ft. Worth, Texas
C. V. Millikan	Amerada Petroleum Corp.	Tulsa, Okla.

The meeting was called to order by the Chairman, and upon request of the Secretary, the Chief Clerk read the call of the meeting, as follows:

"NOTICE FOR PUBLICATION
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

The Oil Conservation Commission, by law invested with jurisdiction as the oil and gas regulatory body of the State of New Mexico, hereby gives notice of the following hearing to be held at Santa Fe, New Mexico:

Case No. 42

In the matter of: The application of the Lea County Operators Committee for a permanent gas-oil ratio order for the various fields located in Lea County; including a plan to permit the transfer of allowable from high gas-oil ratio wells to low gas-oil ratio wells to prevent waste and to protect property rights. This case is set for 10 o'clock A. M., April 27, 1943.

Any person having any interest in the subject of said hearing shall be entitled to be heard.

The foregoing Notice of Publication was made pursuant to the direction of the Commission at its Executive Meeting March

1943.

Given under the seal of said Commission at Santa Fe, New Mexico, on April 9, 1943.

OIL CONSERVATION COMMISSION

By (Sgd) John M. Kelly"

BY MR. SETH: I would like to have Mr. McCorkle sworn as a witness.

A. M. McCORKLE,

being first duly sworn to tell the truth, the whole truth, and nothing but the truth, was examined by Mr. Seth, and testified as follows:

DIRECT EXAMINATION

Q Mr. McCorkle, will you make your statement to the Commission?

A Governor Dempsey, Mr. Rodgers, Gentlemen: I am here as Chairman of the Lea County Operators Committee. There are approximately a hundred operators in the Lea County field. Notice of the meeting yesterday was sent out to each operator, but a large majority of the operators did not attend, but we held our meeting, and I want to read into the record the recommendations adopted at this meeting: (Reading)

"At a meeting of the Lea County Operators Committee called on April 12, 1943, and held in Santa Fe on April 26, 1943, representatives of twenty-three operators were present of approximately ninety-eight operators who are members of the Lea County Operators Committee. The operators were polled and a majority of those present agreed that the following recommendations be presented to the Conservation Commission at its hearing called to consider 'The application of the Lea County Operators Committee for a permanent gas-oil ratio order for the various fields located in Lea County; including a plan to permit the transfer of allowable from high gas-oil ratio wells to low gas-oil ratio wells, to prevent waste and to protect property rights', to be held at Santa Fe, April 27, 1943:

1. That a permanent gas-oil ratio order be promulgated.

2. That such permanent gas-oil ratio order provide for no exceptions without due notice and public hearing.

3. That no limiting gas-oil ratio be applied in Hardy, Penrose, skelly, mattix, Langlie, Rhodes, Lynn, Cooper and Jal Fields, for the following reasons:

(a) Two types of waste must be considered -- subsurface and surface. All fields mentioned above are nearing depletion and adequate reservoir energy exists to produce the remaining recoverable oil without subsurface waste. (See Exhibit "A" attached).

(b) In the case of the sand belt fields, namely, Hardy, Penrose, Skelly, Mattix, Langlie and Rhodes, approximately 55% of the gas is being utilized at present, and plans are completed and priorities have been granted for the equipment to make possible the utilization of approximately an additional 10% of the gas, which will bring the total to approximately 65%.

(c) The Lynn, Cooper and Jal Fields have a very active water drive. There are several wells which have high gas-oil ratios, but when the volume of fluid lifted is considered, the ratios are quite low considering the existing conditions in the reservoirs. Both from a geological study and results of remedial work, it can be stated that oil, gas and water are so closely association within the reservoir that the segregation of one from the other two is very hazardous. Attempted remedial work in the three dolomitic limestone fields has usually proven unsuccessful and ultimately led to the abandonment of the well.

4. That the following limiting ratios be set for the other fields in Lea County, to-wit:

<u>POOL OR AREA</u>	<u>GAS OIL RATIO LIMIT</u>
Arrowhead	3500
Corbin	2000
Eaves	4000
Eunice	6500
Halfway	2000
Hobbs	2500
Lynch	2000
Maljamar	4000
Monument	4000

North Lynch		2000
North Maljamar		2000
Skaggs	5000	6000
South Eunice		7000
South Lovington		2000
South Maljamar		2000
Vacuum		2000
West Eunice		2000
New and undesignated pools		2000

Wells in newly discovered or undesignated pools shall be allowed to produce with a limiting gas-oil ratio of 2,000 cubic feet per barrel for purposes of allocation until a hearing shall have been called and testimony presented upon which a ratio can be set. Such hearing shall be called and rules issued within six months after the completion of the discovery well or upon the completion of ten producing wells in the new pool, whichever occurs first.

No substantial subsurface waste exists in the fields listed above. In order to accomplish progress in the elimination of surface waste a mathematical approach was used in determining the limiting ratios. These limiting ratios were set so as to affect approximately the same percentage of units in each field.

5. That testing procedure for measuring gas-oil ratios, appended hereto as Exhibit "B", be adopted as Rules and Regulations of the Commission and not included as part of the gas-oil ratio order.

6. It is further recommended that in order to reduce the volume of gas produced, that the transfer of allowable from high to low gas-oil ratio units be permitted in all Lea County Fields under the following provisions:

(a) Transfer of allowable will be permitted only after application to and approval by the Commission. The application shall show 48-hour individual tests of production of oil, gas and water of the well from which transfer is requested and the well or wells receiving the transferred allowable. Such tests shall have been made within 30 days of date of submitting request for transfer. A plat of the wells involved shall be attached and also a statement of the amount of allowable to be transferred

to each such well. A copy of the application shall be furnished all offset operators by the applicant at the time same is submitted to the Conservation Commission.

(b) Permits to transfer shall be in force for a period of one year from date of approval, unless rescinded by the Commission. Renewals or changes may be obtained at the discretion of the Commission only upon submission of the information as shown in (a) above.

(c) Transfer of oil from one unit to another or others will be permitted only within contiguous abutting portions of the same basic lease or unitized area provided the areas involved shall not exceed 200 acres.

(d) Transfers of allowable oil can be made only to a unit or units with a lower gas-oil ratio.

(e) The amount of allowable transferred shall be the marginal or adjusted allowable for the unit, whichever is the smaller.

(f) No unit shall be permitted to produce an allowable in excess of the allowable for two units.

Test data supporting the above recommendations are submitted as Exhibit "C".

^{desired?}
We didn't have any duty to prolong this hearing. It is our ^{desired?} duty to have an engineer to support the engineering parts of these recommendations. AS I said a few minutes ago, these recommendations were not unanimous. Therefore, the minority will no doubt also want to introduce some evidence.

Q Could you give an estimate of the percentage of production represented by the twenty-three operators present at that meeting?

A I never checked up, but I am satisfied at least eighty-five to ninety per cent of the total production was represented at this meeting yesterday.

BY MR. KRAUS: In reading the figures for limiting the gas-oil ratios, I think 6000 was read for the Skaggs pool. I believe that is a typographical error, and it should be 5000.

A That is correct. That is the figure recommended yesterday and approved by the majority of the operators. I would appreciate it if you would change that figure. (Figure changed in pencil). I am glad Mr. Kraus picked that up.

BY MR. CUSACK: What I would like to get is, whose idea it was to limit the 4000 to 2500. The Hobbs Operators Committee say there has been no waste; that there is no intention to disturb that field. There are a lot of operators from Hobbs that rely on that,- on those letters. Why did you reduce Hobbs? What is your answer?

A I would prefer the engineer would answer that. That is the purpose of asking the engineer to be here. As Chairman of the Committee I polled the Committee, and there were very few there that voted against it. You could raise that question later. You were not in the room when that was voted on.

BY MR. CUSACK: No, I asked before I left whether the question was going to come if.

A I did not tell you it was not coming up.

BY MR. HANNIFIN (Magnolia Petroleum Company) Our principal interest is in the Vacuum area. We have thirty-eight wells that have higher gas-oil ratio than 2000 cubic feet. We would like to have some relief, and would like to raise that to 3000 cubic feet.

BY MR. KELLY: Are there any further questions of this witness?

BY MR. SETH: I would like to offer in evidence the records of the Commission as to the gas-oil ratios which were taken. I would like to have the data and charts attached to the Lea County Operators Committee recommendations, based on records of the Commission and Mr. Staley's office at Hobbs, received as part of the exhibit.

BY MR. KELLY: The exhibit will be accepted.

(Marked Exhibit No. 1).

Witness dismissed.

C. V. MILLIKAN,

being called as a witness, and being first duly sworn, was examined by Mr. Seth, and testified as follows:

DIRECT EXAMINATION

Q State your name.

A C. V. Millikan.

Q What is your profession?

A Petroleum engineer with the Amerada Petroleum Corporation.

Q How long have you been employed by the Amerada Petroleum Corporation?

A A long time,- about twenty years.

Q Have you been acquainted with Lea County operations since the beginning of that field?

A Not quite since the beginning,- since 1930.

Q Does the Commission desire any further qualification?

BY THE CHAIRMAN: No.

Q Mr. Millikan, you have participated in the meetings held in Santa Fe during the past few days?

A Yes, sir.

Q And taken an active part in the deliberations?

A Yes, sir.

Q You have heard the report read by Mr. McCorkle?

A Yes, sir.

Q And are familiar with it?

A Yes, sir.

Q Will you please take up the report and discuss the various recommendations from an engineer's point of view?

A I might explain here that while I am quite familiar with the Lea County operations in general, for the past two or three years duties have called my detailed attention to other areas. There are perhaps some details with which I am not familiar, but I am sure that other engineers, who have followed the details, can answer.

In discussing the recommendations one at a time, I will as best I can try to give a summary of the majority opinion of the

committee that presented these recommendations. I think you can recognize that at certain points there might be differences of opinion, and that I might be influenced to some extent by my own personal opinions.

I believe the best way to proceed is to discuss each individually, and complete that point, with any questions on the part of the Commission or the operators as to that point.

The recommendation for that permanent gas-oil order may, on the face, appear superfluous. The reason set out for that particular recommendation as it is made here is that the conditions which have existed in Lea County fields is due to the number of exceptions being granted to high gas-oil ratio wells, although the temporary order in each provided for adjusted production for high gas-oil ratio wells. There are some reasons, and very good reasons, why it should and some why it should not apply to certain wells in a given area, but a large number have been granted, and resulted in excess production of gas, which we believe now should be prevented, and it would be true conservation to give that consideration.

No. 1 is that a permanent gas-oil ratio order be promulgated, and No. 2, that such permanent gas-oil ratio order provide for no exceptions without due notice and public hearing. I think we could discuss that by saying that as a whole, operators are pretty apt to object to any applications for exceptions which may be made before the Commission. Once exceptions have started, the reasons for asking for exceptions is like the proverbial snowball,- it may be good to start a snowball down hill, but before it gets to the bottom of the mountain it gets beyond control and is very destructive. I think that is what the operators had in mind, but when stated in that form it may appear a little unusual.

No. 3, "that no limiting gas-oil ratio be applied in Hardy, Penrose, Skelly, Mattix, Langlie, Rhodes, Lynn, Cooper and Jal Fields, for the following reasons."

Now, there are two types of fields, the Lynn, Cooper and

Jal are water drive fields. The other fields are sand production, producing in a thin, very tight formation. We have no evidence there is any water drive present. The amount of gas in the fields show they are substantially depleted. They are very close to the point where they might be called stripper wells. There is still good production, as in a number of stripper wells, but at the same time they are producing considerable gas. A large part of the gas is being marketed, and some is being returned to the field. I believe 55% of the gas is now being marketed, and plans are under way to market additional gas, and I think long before this year is out there will be very little gas not going into market. The recommendation is that no limit be placed on that gas as it seems inconsistent with pool conservation. But under the conditions in this field we believe that is definitely the case, as it would restrict the volume of gas produced in that area which is below the actual market demand, which gas is being used in definite war industries. We think it should be put to the point where we could supply the gas, but if we put it at fifteen or twenty thousand, there would obviously be something wrong, so we would suggest there be a very high limit, so we put no limit. There is ample energy to get the oil, and the gas produced, a very high percentage goes into commercial use.

As to Lynn, Cooper and Jal, they are dolomite, and they have a substantial water drive, and it is simple to recover all the oil remaining in those reservoirs. The high percentage of water and the low percentage of gas, to put the gas oil ratio on that basis makes it look quite high, yet when put put it on an energy basis, with the amount of fluid, it is quite low. A well calling for a fifteen to twenty thousand gas-oil ratio, when you consider the fluid, it may be ^{that} the it is around one thousand. In most of the wells that have been plugged off to shut off the water, or the gas, in too many cases it was entirely unsuccessful and led to abandonment of the well. While the operator hoped to reduce the cost, ^{waste} what he actually did was to plug the well off.

If we do put a high gas-oil ratio, a reasonably high gas-oil ratio limit on those, it is liable to encourage attempted recovery work, which will lead to waste rather than conservation.

I think that covers the first point. Perhaps you would like to ask some questions on that.

BY MR. KELLY: Any questions to be put to the witness?

BY MR. RODGERS:

Q In asking for a permanent gas-oil ratio order,- has there been anything particularly unsatisfactory in the way the Commission has handled this in past years?

A I would say, with no criticism whatever on the action of the Commission, that the natural result has been that there is considerable dissatisfaction, not because of the order, but because of the exceptions that have been granted.

Q With a permanent order, and no provision for exceptions, do you suppose there would be any danger of it being inflexible, because there might be isolated cases where injustice would be done?

A I think there might be isolated cases where it might appear to the Commission there were good reasons why exceptions should be granted. I think there are very good reasons why exceptions should not be granted, and it would be up to the Commission to prevent waste in attempting to conserve. I would call your attention to this: when an exception is granted, we may have a case where the reason for it may appear very good. If the exception is granted, we are offering the opportunity to that particular well to use in excess of its proportion of the reservoir energy. So far as that particular operator is concerned, it may appear perfectly fair, but when you look at the field as a whole, it would actually create waste because of waste of energy, and thereby decrease the ultimate recovery.

BY MR. KELLY:

Q You feel that in case extreme hardship is caused an operator, Section 2 will provide relief after due notice and public hearing?

A Certainly; that is the privilege of any operator at any time.

Q In other words, you will not confiscate a man's property?

A It certainly gives him an opportunity to show his grounds. Yes, certainly, if they like.

Q Do you, by putting no limiting ratios in those fields, feel that satisfactorily takes care of the several exceptions heretofore granted?

A That substantially takes care of the existing exceptions.

BY MR. CRAGIN:

Q You mentioned the figure fifteen to twenty thousand cubic feet as a possible requirement of the gas-oil ratio to serve the existing market.

A Something of the sort is what I understood.

Q Are you familiar with the fact that some wells take a gas-oil ratio in excess of one hundred thousand to give gas needed to meet the market demand?

A It is my understanding, looking at the fields as a whole, it would take a gas-oil ratio limit of that order.

Q My point is it would take five or six times that to meet our market, the market we serve in New Mexico, Texas and Arizona.

A That is your statement?

Q Yes, sir, I want that in the record. I don't want the Commission to think a fifteen or twenty thousand ratio would meet that market.

BY MR. CUSACK: If there is any waste I would like to know where we are wasting gas. That field has gone along, and I would like to know where there is gas being wasted.

BY MR. KELLY: Would you want to discuss the Hobbs field?

BY MR. MILLIKAN: I think that will come under the next point.

BY MR. CUSACK: It always comes later, I know that.

BY MR. MILLIKAN: The next recommendation is that the following limiting ratios be set for the other fields in Lea County: (Reading)

Arrowhead	3500
Corbin	2000
Eaves	4000
Eunice	6500
Halfway	2000
Hobbs	2500
Lynch	2000
Maljamar	4000
Monument	4000
North Lynch	2000
North Maljamar	2000
Skaggs	5000

South Eunice	7000
South Lovington	2000
South Maljamar	2000
Vacuum	2000
West Eunice	2000
New and undesignated pools	2000

To set limiting ratios in such fields as these others is always a nightmare to the engineer. Inasmuch as engineering is a practical science, we do, at times, have to be practical. If we were setting these on a strictly technical basis, I think probably there could be an order of one thousand cubic feet per barrel, or on an average as low as six or seven hundred. To place the ratio as low as that would be obviously unreasonable. On the other hand, to turn them loose is much more unreasonable, so we have to bear a number of things in mind. We would like to do, or attempt the thing that is absolutely technically correct, and something that is reasonable. I doubt if all operators in any one of these fields would agree to any one of these figures suggested to the Commission. I think there is a difference of opinion on each one of them. To say they are right, -- no, I can't. They are reasonable in the opinion of the committees who have made the detailed studies. We believe an amount of conservation would be accomplished by setting the ratios suggested. To reduce them below, would create economic hardship; to raise them above that would create waste. I think that is all I can say. We believe they are reasonable.

BY MR. KELLY:

Q What changes have been made by these recommendations from the temporary order of the Commission now in effect?

A Arrowhead, in the temporary order, is 5000; in the recommended order it is 3500; Corbin is a new field; Eaves was 7000, reduced to 4000; Eunice was 7000, reduced to 6500; Halfway was 1000, increased to 2000 -- I will comment a little later on this; Hardy was 7000 and is now in the other classification; Hobbs was 4000, reduced to 2500; Langlie was 7000 and is now -- that comes later; Lynch was 1000, increased to 2000; Maljamar was 5000, -- I am sorry, that is Lynn.

Q We would be interested in a comparison on Section 2. I believe

Lynch is the field,- no, Monument.

A Maljamar, now, was 2000, and raised to 4000.

Q North Lynch?

A North Lynch was 1000, increased to 2000.

Q North Maljamar?

A It was 1000, is 2000 now.

Q Skaggs?

A Was 5000, not changed.

Q South Eunice?

A 7000, not changed.

Q South Lovington?

A South Lovington was 1000, increased to 2000.

Q South Maljamar?

A South Maljamar, 2000 in the other order. It is a new field.

Q Vacuum?

A Vacuum was 1000, increased to 2000.

Q West Eunice is a new field. That is the list.

BY GOVERNOR DEMPSEY:

Q This temporary order was made some three years ago?

A Something like that.

Q On the recommendation of the same operators?

A I believe not, as I recall.

Q On whose recommendation?

BY MR. KELLY: I believe it was on the recommendation of the same operators.

BY GOVERNOR DEMPSEY: You now want a permanent order, recommending changes in about one-third of the field. Why do you want us to issue an order, a permanent order?

BY MR. SETH: Do you wish to explain?

A I think there are several reasons for wanting the change, which may be different in different fields. Let's explain the permanent order, as contrasted with the temporary order. I think the words "permanent" and "temporary" are legal terms that apply to the powers of the Commission to write orders, rather than indicating permanency, as ordinarily used. As I recall, the Commission has

the authority to write temporary orders, which they have had very good reason to write as a benefit to the operators. As I recall, the temporary gas-oil ratio order was of that kind. Rather than having it renewed at relatively short intervals, we are asking it be made an order.

BY MR. KELLY: There is no such thing as permanency?

A There is no such thing as permanency, because I think this group may be back within a year asking for further changes, depending on changes in the field by depletion, or other causes.

BY MR. WILSON: Is that distinguished from a temporary order by the fact that the Commission can, in its discretion, issue, without notice to the operators in a field, necessary changes applied for by some operator?

BY MR. KELLY: No, sir, not under a temporary order.

BY MR. WILSON: It says temporary.

BY MR. KELLY: It is relatively the same as a permanent order. As I recall the testimony three years ago, the operators stated they would like to introduce new testimony.

BY MR. WILSON: It is a distinction without a difference.

BY MR. KELLY: That is right.

BY GOVERNOR DEMPSEY: Instead of coming in at frequent intervals and asking that it be continued, we make a definite order.

BY MR. SETH: It is always subject to change by the Commission.

BY MR. HANNIFIN:

Q I think Mr. Millikan read 1000, instead of 2000, on Vacuum.

A I believe that is correct.

Q And Maljamar?

BY MR. KELLY: I believe the record shows 2000 to 4000. Will you explain the reasons for the changes?

A I think that those changes particularly require,-- the next paragraph after these ratios are given, reads:

"Wells in newly discovered or undesignated pools shall be allowed to produce with a limiting gas-oil ratio of 2000 cubic feet per barrel for purposes of allocation until a hearing shall have been called and testimony presented upon which a ratio can be set. Such hearing shall be called and rules issued within six months after the completion of the discovery well or upon the completion of ten producing wells in the

new pool, whichever occurs first."

On those fields which heretofore had ratios of 1000, it seemed rather inconsistent to the majority of the Committee to set a 1000 ratio on them, and then apply, on other areas which might come in, a limiting ratio of 2000. There was also argument that from the figures we now have, placing it at 1000 is all right. The indication is that the natural or existing conditions, over which no one has any control, will, over a relatively short time, begin to raise the gas-oil ratio from 1000 to 2000, definitely creating a number of wasteful conditions. At this time, in order to keep the field under reasonable operating conditions, it was left at 2000. Otherwise, within a few months it might be necessary to make application to change it to 2000, or even higher.

BY MR. RODGERS: Some operators in the Vacuum field would like to see it changed from 2000 to 3000. Do you think that would bring about waste?

A Mr. Rodgers, as I attempted to explain, that is one of those relative things. To answer the question from a technical standpoint, I would have to say yes.

BY GOVERNOR DEMPSEY:

Q From a practical standpoint?

A From a practical standpoint, it was the opinion of the majority of the Committee considering this problem that 2000 is a more reasonable ratio.

Q We are asking you as a technical expert.

A From my own personal opinion, I do not feel qualified to answer. I have not followed the details of operations in the Vacuum field for the last year or so.

Q So you would not know whether 2000 or 3000 would be proper?

A I cannot answer.

BY MR. HANNIFIN: At the meeting of the operators yesterday, Magnolia took no part in the Lea County Operators meeting. We present this request to raise the gas-oil ratio from 2000 to 3000 as our individual request. We are the largest operator there; we

have 97 out of 340 wells.

BY MR. KELLY: Do you have an engineer to put on the stand?

BY MR. HANNIFIN: We have one engineer who works all of West Texas and this field also.

BY GOVERNOR DEMPSEY: Were you present at the meeting yesterday?

BY MR. HANNIFIN: Yes, sir.

BY GOVERNOR DEMPSEY: And made no request?

BY MR. HANNIFIN: I didn't see that we would be gaining anything.

BY MR. MILLIKAN: It is the privilege of any operator to take it up with the Commission at any time.

BY GOVERNOR DEMPSEY: That is the purpose of this hearing, but what I am trying to do is to avoid work.

BY MR. MILLIKAN: We are short handed and short of materials too.

BY MR. RODGERS:

Q I would like to ask a question to get some information. I don't know much about this. Who works out these tables?

A The Lea County operators have a number of engineers located in Lea County proper, or adjacent areas, whose duties it is to keep up with the details of the fields in which their respective companies are interested.

Q You don't employ an engineer, disassociated from any company?

A Not for this type of work or purpose. We do have some engineers employed by the Lea County operators. Their duty is to collect and coordinate data and assist the engineers of the companies.

BY MR. KELLY: We would like to have an engineer more familiar with the field to testify to that.

BY MR. BODIE: I would like to ask Mr. Hannifin a question. The engineers got out a sheet setting out the proposed ratios. They listed the Vacuum field --

BY MR. HANNIFIN: I think that was made five years ago.

BY MR. BODIE: And was --

BY MR. KELLY (Interrupting): I believe we would like to have Mr. Hannifin sworn in as a witness if you are going to question him for the record. We will excuse Mr. Millikan for a few minutes.

S. P. HANNIFIN

being called as a witness, and being first duly sworn to tell the truth, the whole truth and nothing but the truth, was examined by Mr. Bodie, and testified as follows:

Q In that same engineering report, it provided for a transfer of allowable, did it not?

A Yes, sir.

Q Yesterday afternoon when these ratios were voted on, and a majority of the operators accepted them as such, they still had in this report a clause for the transferring of allowables?

A Yes, sir.

Q After the various ratios had been decided on, the clause for transferring allowables was virtually wiped out?

A I believe so.

Q If they had left that clause in, for the transferring of allowables, would that have helped you out?

A I cannot state definitely. I am not an engineer.

Q It might have?

A It might have. I am not an engineer.

Witness dismissed.

C. V. MILLIKAN

now being recalled to the witness stand, was questioned by Mr. Seth, and continued as follows:

Q Will you please resume?

BY MR. KELLY:

Q A question was asked, Mr. Millikan, relative to the next paragraph, if the full allowable on transfer was allowed in the Vacuum field, would that remedy to a great extent the situation Mr. Hannifin was talking about; that is, the full transfer of penalized oil, would that grant the same relief as raising the ratio from 2000 to 3000?

A Yes, I believe it would do more than that.

Q You believe it would grant more than full relief?

A It would grant more relief than raising the ratio from 2000 to 3000.

BY MR. WILSON:

Q I am just asking for information. How much of Vacuum's output is used at the Phillips plant?

A I am sorry, I cannot answer that.

Q Is there any underground waste?

A We don't believe there is any unreasonable waste.

Q If the Phillips plant uses all, there would not be any waste?

A It is used to some extent, at least.

BY GOVERNOR DEMPSEY: Is the gasoline stripped there?

BY MR. WILSON: Yes, sir.

A I would say there is less waste than if --

BY MR. WILSON (Interrupting) I am asking for information. I believe all of Vacuum's gas is run to the Phillips plant.

BY MR. HANNIFIN: The Phillips plant takes all the well gas over 2000.

BY MR. MILLIKAN: As far as the transfer of allowables is concerned, that is a question that we discussed for the entire Lea County area. It will come up later, in a discussion of transferring allowables in Lea County. That question can be discussed as it applies to the whole field, rather than make Vacuum the guinea pig.

BY MR. KELLY: Any further questions? Will you proceed, Mr. Millikan?

BY MR. RODGERS: I wonder if Mr. Cusack's question was answered. Why was there a reduction from 4000 to 2500 in the Hobbs Pool? Can you answer that?

A I believe I can. The Committee gave consideration to the volume of gas being produced at Hobbs, and the ratios on the various wells. We tried to apply something that would be reasonable. Most any ratio for a particular well involves some underground waste. We have a practical problem of giving a reasonable balance between the wells.

BY GOVERNOR DEMPSEY:

Q He asked a question, if there is waste in the Hobbs field?

A Specifically, yes, I think there is some waste in every field

in Lea County, to be technical.

Q Can you be practical? I want to know the reason for the reduction in the Hobbs field. The question was asked if there was existing waste?

A There is waste in the Hobbs field.

BY MR. RODGERS:

Q Is there excessive waste?

A No, sir. At 2500 feet we believe we can get a reasonable balance.

Q Has there been a decrease in the pressure?

A I believe, according to the records, the pressure at Hobbs has been substantially the same.

Q Isn't it true that the bottom hole pressure indicates whether there is underground waste?

A Yes, sir.

Q As you answered before, there is not excessive waste at the present time?

A No, sir.

BY MR. SETH:

Q The waste is sub-surface waste?

A Yes, I believe there is some sub-surface waste.

Q At Hobbs, after it goes through the plant it is just burned?

A Yes, sir.

BY MR. CUSACK:

Q We have a letter that was sent us by the Operators Committee that there is no waste.

BY GOVERNOR DEMPSEY: When was that written?

BY MR. CUSACK: A couple of weeks ago, stating there is no waste at Hobbs.

BY MR. KELLY: Is that letter in this exhibit?

BY MR. CUSACK: Perhaps Mr. Millikan was not at that meeting. We want to rely on their statements when they are sent out -- we pay so much a barrel for their intelligence.

BY MR. KELLY: If that letter is not in this exhibit, will you see that it is filed with the Commission?

A Yes, sir, I think it is there.

BY MR. SETH: Here is the copy (Referring to Exhibit No. 2). We offer this exhibit in evidence.

BY MR. KELLY (To Mr. Millikan): Will you proceed?

A Recommendation No. 5 is, I believe, more of a suggested order, rather than a recommendation. (Reading)

"5. That testing procedure for measuring gas-oil ratios, appended hereto as Exhibit 'B', be adopted as Rules and Regulations of the Commission and not included as part of the gas-oil ratio order."

The reason for making that suggestion, these testing procedures are rather,-- quite involved. The details of making tests and setting up rules to apply generally over the County became quite involved, and the technique of testing changes from time to time necessarily after getting reports, and the use of new methods or instruments makes it desirable to make certain changes. If that is issued as rules and regulations, the Commission, rather than ordering them as it becomes advisable to make changes in testing procedures, those changes may be made by the Commission without going through the formality of a hearing. That is our reason for making that suggestion.

BY MR. KELLY:

Q How often do you think the wells should be tested?

A You mean on gas-oil ratios?

Q Yes, sir.

A I believe the practice now is at least once a year. I think that for low wells, I think that plenty frequent. Those wells which have a tendency to increase the gas-oil ratio, which are known by the men in charge, perhaps they should be tested with somewhat more frequency. I am sure Mr. Staley and his assistants know each individual well well enough to know whether it should be tested or not. To try to set out a rule that all wells should be tested at very frequent intervals, I think, might create a lot of work for the Commission and the members of the Lea County Operators Committee and the individual company, which in the end would accomplish very little. Those wells which have a tendency to increase the gas-oil ratio should be tested more frequently.

BY MR. GEORGE LIVERMORE: Do you mean for all operators to use standard equipment? It is now difficult to obtain pressure gauges.

A That is true, and there are several methods of measuring gas which are acceptable to the authorities.

BY MR. SETH: Is that all on that point? Will you proceed to the next one?

A No. 6: (Reading)

"It is further recommended that in order to reduce the volume of gas produced, that the transfer of allowable from high to low gas-oil ratio units be permitted in all Lea County Fields under the following provisions:

(a) Transfer of allowable will be permitted only after application to and approval by the Commission. The application shall show 48-hour individual tests of production of oil, gas and water of the well from which transfer is requested and the well or wells receiving the transferred allowable. Such tests shall have been made within 30 days of date of submitting request for transfer. A plan of the wells involved shall be attached and also a statement of the amount of allowable to be transferred to each such well. A copy of the application shall be furnished all offset operators by the applicant at the time same is submitted to the Conservation Commission."

That almost makes the suggested wording for the order, and I think it is so dependent on other points it needs no explanation.

BY MR. KELLY: I wish you would explain that a little more in detail, paragraph "a" under No. 6.

A That transfer of allowable should be permitted?

BY MR. KELLY:

Q Wouldn't you run into trouble with royalties on that?

A No, I think not. There are limitations here that would restrict it to the same lease.

Q Then don't explain. That is answered.

A (Reading) "(b) Permits to transfer shall be in force for a period of one year from date of approval, unless rescinded by the Commission. Renewals or changes may be obtained at the discretion of the Commission only upon submission of the information as shown in (a) above."

Oil leases sometimes act in peculiar ways, and it seems to have a tendency to go in either direction. When you are sure it will not make redistribution of factors within the reservoir from when it was opened up; that it produces under current, definite conditions; if we get a permit to transfer oil from one well to another, we would be bound for one year. After that well is

pulled on for several months it may come back and be a low ratio well. After producing the well to which a well is transferred, the higher one,-- it may also go to a high ratio well. It may then be desirable to reverse the transfer. We want to be in position so that we can make application to the Commission whenever it is desirable, as a conservation measure, to change the order at any time desired.

BY MR. BODIE: In case an operator has two wells on an 80-acre tract, and one well has a high gas-oil ratio, and the other well is normal. He transfers from the high to the normal. The normal well may make top allowable, but not double the amount. The pull on that well to get double the amount, would that not be waste?

A If that were the condition, yes, sir, and I don't know -- the operator should know his own well, and if you know it is going to make waste, then I think it is his obligation to come before the Commission and change it to where it will not make waste. Under the conditions he must make his amount of transfer half of the allowable, or an amount to be satisfactory. There is no obligation to transfer all of the allowable.

BY MR. WILSON: Are you referring to the penalized, or the whole allowable?

A That is the adjusted allowable.

(Reading from sub-division (c), Paragraph 6)

"Transfer of oil from one unit to another or others will be permitted only within contiguous abutting portions of the same basic lease or unitized area provided the areas involved shall not exceed 200 acres."

In other words, we cannot transfer from one side of the field to another, and can't transfer from one royalty to another. We would also be limited to 200 acres. There can be an extreme example,-- I believe one example is at Eunice, 300 acres,-- 320 acres I believe, in one lease, only 40 acres wide, which would make the whole tract two and a half miles long. Transferring oil two miles and a half might be a little unreasonable. We found it quite difficult to make a recommendation which would cover all cases, but we believe the Commission will use reasonable judgment in allowing this, and at the same time give

reasonable leaway so that we can obtain the objective of conservation, and at the same time not create any undue drainage by the offset operators.

BY MR. KELLY: Any questions on this Section c?

A (Reading sub-division (d)):

"Transfers of allowable oil can be made only to a unit or units with a lower gas-oil ratio."

At first thought, that may seem superfluous,- it possibly is. What we wanted to be sure to get away from was to leave an opening to transfer from a low gas-oil ratio well to a high gas-oil ratio well, because the higher might be a little better producer. The object of the transfer of allowable is conservation, and in the case of a transfer from a lower to a higher would not be in the direction of conservation.

(Reading sub-division (e)):

"The amount of allowable transferred shall be the marginal or adjusted allowable for the unit, whichever is the smaller."

There is a point at which we ran into a considerable divergence of opinion within the operators meeting. There are two points I would like to discuss. We have used the word "adjusted",- the common term is "penalized" allowable. The term "penalized" allowable is quite misleading, because it is not penalized. If the oil production is reduced because of high gas-oil ratio, it is not a penalty,- it is adjusted in order to accomplish equity between the operators there through conservation of gas within the reservoir. The reason for trying to reduce the gas-oil ratio is for the purpose of conserving energy within the reservoir. The State law says, in effect, that all operators shall have equal opportunity to produce and share the oil from a common reservoir by the use and sharing of the common energy. Gas is reservoir energy. When adjusted because of high gas-oil ratio, what we are trying to accomplish is equal distribution both of the oil produced and the reservoir energy. In order to do that,

we make an adjustment of the oil produced, but we are not penalizing that unit. We are adjusting it in order to create better equity.

BY MR. BODIE:

Q It is in the nature of a penalty?

A No, sir, there is no penalty. He may have his allowable reduced, but he has got equity,-- it is reduced if he is using an excess of reservoir energy. He is getting, without a reduction,- he is using in excess of the reservoir energy.

Q He would not use that if the transfer was to a low energy well?

A I would like to discuss that, Mr. Bodie. There is a difference of opinion among the operators, whether adjusted allowable should be transferred, or just the allowable should be transferred. I was on the side of transferring adjusted allowable. I would like to give my opinion, as a personal opinion, and not as a representative of the Operators. In the first place, within Lea County we have given the Commission a considerable number of data substantiating the fact that one well will drain forty acres. If it had drained eighty acres, we would have asked for an 80-acre spacing, but at the time the orders were written we believed forty acres was a reasonable spacing. Therefore, when we recommend a transfer,-- as I recall, there was no opposition to the idea of a transfer,-- when we recommended the allowable be transferred, we were, in effect, saying one well will drain eighty acres. Perhaps no one would agree to that without qualification. We believe the reservoir energy and ultimate recover that will be accomplished will more than offset it. Can we say there is a mal-adjustment of space ^{wy} as a result of such transfer? That, of course, has a direct relationship to irregular drainage. If we transfer the allowable from one unit to another, we are to assume we could concentrate withdrawals to the unit to which transferred, as respects the areas from which transferred. Operators in Lea County have spent large quantities of money in working for the conservation of gas. If we transfer the full

allowable from a high to a low ratio well, what incentive has the operator to go ahead and repair his well? In a majority of cases they are in bad condition, through no fault of the operator, but through a natural development of the field, but the waste is there. Each operator has the question before him as to whether he is justified in repairing his well or taking a lower recovery. If the full allowable is transferred, he has no incentive whatever to go in and repair his well and re-establish a normal drainage pattern under which the field was developed.

One other point is very important,-- certain inequities, -- if you transfer the full allowable certain inequities are bound to occur. If I should have one unit, with a high ratio, I am penalized because I have no place to transfer. If I have several units, I am in position to transfer from a high gas-oil ratio well to a low gas-oil ratio well, and the net result is, I am still getting the allowable if you put the full allowable,-- under conditions of transferring the full allowable. If I do not get the full allowable, I would repair the well, or not, as I saw fit. If I have one unit, and have a high gas-oil ratio, there is nothing I can do, in my opinion.

BY MR. RODGERS: Why transfer any allowable? Are there instances where you can't repair the well?

A Yes, sir, there are instances where you can't repair the well. In our own operations we have wells we have tried to work over three or four times. We have two wells in Monument shut in completely for several months. We don't know what to do with them. We have a number of other wells capable of making five, ten, fifteen, twenty or twenty-five barrels a day, producing at a high ratio, but adjusted down to lower quantities. We still have to produce out of a particular well, and the gas goes to naught. If allowed to transfer that, we can cut the gas produced, I think, twenty per cent less in some cases, in some cases ten per cent, and in some cases not over half as much gas.

BY MR. BODIE: Conditions as they are at present, with materials hard to get and labor scarce, you think it is a sound condition to

create an incentive for doing work when you could get the same result in some other way?

A In most wells there is very little material involved,-- a packer, or something like that. So far as tons of steel is concerned, when you come to the war program, it is only in tons of steel. I doubt if there would be on the average one ton of steel used, and in a large majority you would use practically none.

BY MR. RODGERS:

Q As I understand, an operator might have two wells, one low and one high gas-oil ratio, and we might be able to repair the well, ^{or} you say?

A Yes, sir.

Q And we lack interest, and fail to do that, consequently our allowable is adjusted down?

A That is one condition.

Q Now assume we have done nothing about that,-- we have accepted the adjusted allowable and done no repair work, and we come along with this particular recommendation. We can attempt to repair the well, or transver over to the other well. Inasmuch as we have had no interest in doing anything about it, and are willing to accept the waste, we might continue doing that rather than transfer?

A That is right.

Q If permitted to transfer the total allowable, that would be some incentive?

A No.

Q Or close down this one with the high ratio and transfer?

A If you transfer the adjusted allowable you would be in exactly the same position, if you did not have any interest in repairing the well, by transferring only the adjusted. If he could have transferred the full allowable, he would have less interest.

It is not only the interest in conservation, there is the matter of economics. It is not indifference on the part of the operators, it is a matter of economics.

BY MR. KELLY: What about the case where a man has done the remedial work, and has failed, due to natural conditions in the reservoir. Do you believe in that case he should be allowed to transfer the full allowable?

A No, sir.

BY MR. KELLY: Any further discussion?

A Just one more point: (Reading sub-division (f)).

"No unit shall be permitted to produce an allowable in excess of the allowable for two units."

I think the reason for that is obvious. Transferring too much oil would tend to create waste.

BY MR. SETH: We have one other engineer, or other engineers, but it scarcely seems necessary to put them on. We rest for the Operators, unless the Commission desires to call some of the other witnesses.

Witness dismissed.

LLOYD L. GRAY,

being sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

BY MR. KELLY:

Q State your name and occupation.

A Lloyd L. Gray; Chief Production Engineer for the Gulf Oil Corporation.

There was a difference of opinion at the meeting yesterday. One group wanted a little different wording than the other. One preferred to transfer the normal allowed^{able}, rather than the adjusted. This group recommended that section read^s as follows:

"That the amount of allowable transferred shall be the marginal or normal allowable for the field, whichever is the smaller."

I am not sure whether I am testifying in support of the majority or the minority opinion. Yesterday afternoon in the meeting the minority vote was about eleven to six. However, it is my understanding that after the meeting some of them stated

if the thing came to a vote again, they thought they would vote the other way.

Q Which way?

A Our way, for the minority. In addition to that, this problem came before the group during the latter part of a rather long session, and some had left the meeting. Several of those contacted later stated they would support our opinion, so I don't know whether I am supporting the majority or the minority.

Q Is that the only difference between the majority and the minority?

A Yes, sir.

Q No other differences?

A There were two or three that differed from the majority in certain phases, but no serious differences. As a matter of fact, I would like to give a little further testimony on the gas-oil ratios, as a representative of the Gulf Oil Corporation, and not the group.

It is my opinion that the transferring of allowables to lower gas-oil ratio wells will reduce the gas production in Lea County at least thirty million cubic feet per day, and it may be substantially more. I believe this will occur, no matter which of these proposals is accepted and made into an order. However, I believe there is no question that more gas will be saved if the normal allowable is transferred, for two reasons: First, if the penalty is applied, there is no incentive for an operator to transfer the allowable. I question, in many cases, whether the operator would go through the routine which would be required to obtain the transfer in order to do that, if he received no benefit. I see no reason why he would go through the ordeal of submitting plats, etc. Second: If the penalty is applied there is no incentive for the operator to unitize small tracts. In the recommendation, if the transfer be on the same project, lease, or unitized area, as though the operator has a small forty or eighty acre tract, it is entirely possible he may unitize that with his neighbor who has no incentive. Unitization is a hard job. In order to have the incentive to get a greater saving of gas, I think he should receive some benefit. There are some adjoining

small tracts, with different royalty owners, but having the same operator. It ^{is} there were some incentive he would go to the royalty owner and see if he could not unitize. There are other tracts that have different lease owners, but the same royalty owners. If the lease owner and the royalty owner have enough at stake, I believe they could make a real effort to unitize. I believe a permit to transfer the normal allowable would be sufficient to increase that unitization.

In these critical times there is another item to be given consideration: Manpower and critical materials. In these times there should be nothing done unnecessarily to increase the use of labor and materials. If only penalized allowable is transferred, there remains the full incentive to carry out remedial work, for which there may be no actual need for the duration.

In addition to what is perhaps theory, as a practical matter Lea County has carried on a very extensive remedial program. Because such extensive measures have already been taken, the possibility of reducing the gas-oil ratios in the remaining wells is becoming less and less. In the early stages of remedial work, successful operations in the neighborhood of seventy to eighty per cent have been carried out. I don't know what percentage there is now, but there have been operators where it is not over twenty per cent. It is not, then, how much it would mean to this well or that well, but to all wells, to get one job successful.

In addition, there is another idea I believe Mr. Millikan mentioned: In many instances there is not a great deal of material needed. Perhaps that is true. Setting a packer is an easy job, but that has already been done. Now we are up against the jobs requiring more and more material. We have two wells that I don't believe can be corrected except by drilling new wells, or whipstocking, which would require a number of tons of material.

I believe the whole problem resolves itself to this: whether the purpose of adjusted allowable is merely penalizing, or con-

^a serving gas. If the purpose is to penalize, certainly the majority opinion would be correct. On the other hand, if the purpose is to produce the equitable allowable of oil with the least amount of gas, and conservation of reservoir energy, I believe transferring the normal allowable is indicated.

That is all the testimony I have.

Q Mr. Gray, in any case, the transferring of allowable is just a temporary matter?

A I think the matter is up for readjustment continuously.

I have one other item: It has to do with gas-oil ratios. We have recommended a number of changes in gas-oil ratios. Several pools were eliminated. Those were eliminated for the reason they were all marginal classification; that is, the sand belt; and in the dolomite pools, there is a large water drive. I believe some suggested changes in the gas-oil ratios might not have been quite proper at this time. One reason, in my opinion, in most instances the present maximums are satisfactory and reasonable, considering the condition of the pools. The other being that it is usually a good engineering principle not to try too many changes all at one time. If you make a great many changes, there is no way of knowing which one would be good and which did no good. I believe it is much better to take the steps one or two at a time. For that reason I recommend the pools in which the Gulf is interested, being about as follows: Arrowhead, Monument, Hobbs, and South Eunice, that there be no change in the gas-oil ratio limits as are presently in force.

Q Are you recommending this for the benefit of the pool?

A I think in those instances, considering the condition of the pools, that the gas-oil ratios at present in effect are reasonable and are now effecting conservation within the meaning of the equities involved, and everything else.

I am speaking for the Gulf.

Witness dismissed.

E. H. GRISWOLD,

being sworn to tell the truth, the whole truth, and nothing but the truth, testified as follows:

BY MR. KELLY:

Q State your name and occupation.

A E. H. Griswold; Consulting Engineer, Midland, Texas, currently retained by the New Mexico Federal Unit. The New Mexico Federal Unit (a name used for convenience to describe an operation conducted by Continental Oil Company for itself and the other joint owners, Stanolind Oil and Gas Company, Standard Oil Company of Texas and Atlantic Refining Company, of certain Federal leases in Lea County) supervises the operation of 223 wells and considerable undeveloped acreage. The New Mexico Federal Unit recommends the enactment and enforcement of stringent rules and regulations for the conservation of oil and gas in New Mexico and suggests the following procedure:

I would like to make this statement: This recommendation as to procedures was arrived at thoughtfully at the meeting of the Lea County Operators. We are not presenting this in the nature of a minority report. We vary a little in detail. In those cases we are pleased to rely on the good judgment of the Committee to reconcile any differences between our procedure and that of the Lea County Committee. The procedure which we believe is practical is as follows:

- (a) The establishment of a reasonable gas oil ratio limit for each pool.
- (b) The penalizing of the allowable of each well exceeding that limit so that no well be permitted to produce more gas than an amount equal to the normal oil allowable multiplied by such gas oil ratio limit.
- (c) That no exceptions from this procedure be granted, regardless of supposedly peculiar conditions affecting any particular well or operation.
- (d) That accurate gas oil ratio measurements be made at periodic intervals and that sworn reports be required from the operators through the U. S. mails.

(e) The state authorities test a sufficient number of wells to insure reasonably accurate reports and enable them to detect inequities.

(f) That consideration be given to a production unit plan in those cases where additional conservation may be achieved by the use of such a plan, but that the tentative or final application of such plan be not permitted to alter the procedure here suggested or delay putting it into effect.

BY MR. KELLY: You wish to offer that as an exhibit?

A Yes, sir. (Marked Exhibit No. 3.)

BY MR. SELINGER: Would you mind reading that paragraph again?

A That consideration be given to a production unit plan in those cases where additional conservation may be achieved by the use of such a plan, but that the tentative or final application of such plan be not permitted to alter the procedure here suggested or delay putting it into effect.

It is the current procedure.

Witness dismissed.

BY MR. KELLY: If there are no further witnesses, the meeting will be adjourned, and the Commission will take this case under consideration.

C E R T I F I C A T E

I hereby certify that the foregoing and attached thirty-two and a half pages of typewritten matter are a true, correct and complete transcript of the shorthand notes taken by me in case No. 42, on the 27th day of April, 1943, and by me extended into typewriting; that the three exhibits offered in evidence are attached to the original of this transcript.

Witness my hand this 2nd day of May, 1943.


Esther Barton.