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1 of 5

BEFORE THE OIL AND GAS CONSERVATION COMMISSION

OF THE STATE OF COLORADO

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2-23

IN THE MATTER OF THE INVESTIGATION TO TAKE MEASURES TO PREVENT WASTE OF OIL AND GAS IN THE RANGELY FIELD IN THE STATE OF COLORADO.

CAUSE NO. 2

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PURSUANT TO NOTICE to all parties in interest, the above-entitled matter came duly on for hearing at the State Office Building, Denver, Colorado, at the hour of 10:00 o'clock, July 14, 1955.

BEFORE:

Mr. Warwick Downing, Chairman
Mr. H. C. Bretschneider, Commissioner
Mr. F. M. Van Tuyl, Commissioner
Mr. W. A. Dillon, Commissioner
Mr. Prescott Eames, Commissioner

APPEARANCES:

E. G. Knowles, Esq., Denver, Colorado,
Lee S. Osborne, Los Angeles, California,
Read Winterburn, Los Angeles, California,
F. H. Kratka, Jr., Rock Springs, Wyoming, for the Union Pacific Railroad Company;

Walter E. Will, Esq., Denver, Colorado,
T. O. H. Mattson, Denver, Colorado,
J. F. Neill, Denver, Colorado,
Tom T. Freeman, Denver, Colorado, for the Texas Company;

R. M. Williams, Esq., Bartlesville, Oklahoma,
F. L. Kirgis, Esq., Denver, Colorado, for the Phillips Petroleum Company;

R. W. Sullivan, Esq., Denver, Colorado
L. M. Lamar, Esq., New Orleans, Louisiana,
A. L. Vitter, Jr., New Orleans, Louisiana,
C. L. Pickett, Denver, Colorado,
Morris A. Betts, New Orleans, Louisiana, for the
California Company;

John W. Stayton, Esq., Austin, Texas,
Samuel Butler, Jr., Denver, Colorado,
Max S. Loy, Denver, Colorado,
R. J. Corbett, Denver, Colorado, for the
Sharples Oil Corporation;

R. B. Laughlin, Esq., Casper, Wyoming,
R. B. Giles, Casper, Wyoming,
M. O. Hegglund, Casper, Wyoming,
C. J. Christensen, Casper, Wyoming,
P. P. Manion, Tulsa, Oklahoma,
G. B. Jenkinson, Tulsa, Oklahoma, for the
Stanolind Oil & Gas Company;

R. C. Hawley, Esq., Denver, Colorado,
K. D. Sheppard, Denver, Colorado, for the
Continental Oil Company;

Stuart McLaughlin, Rangely, Colorado, pro se,
Evelyn M. Levison, San Francisco, pro se;
Ted P. Stockmar, Esq., Denver, Colorado, for
S. W. McLaughlin;
R. D. McNeal, Rangely, Colorado, for the
Rangely Engineering Committee;
J. L. Dougan, for the Weber Oil Company;
J. A. Lynn, Oklahoma City, Oklahoma, pro se;
M. F. Westfall, Cody, Wyoming, for the
Husky Oil Company;
D. H. Pollock, Salt Lake City, Utah, for the
Utah Oil Refining Company;
L. G. Truby, Jr., Albuquerque, New Mexico, for the
Pacific Northwest Pipeline;
Fred Evans, Salt Lake City, Utah, for the
Equity Oil;

J. R. Schwabrow, Casper, Wyoming,
G. G. Frazier, Denver, Colorado, for the
United States Geological Survey;

H. H. Morrell, Denver, Colorado,
F. J. Kirchman, Denver, Colorado,
W. R. Smith, Denver, Colorado,
A. J. Jersin, Denver, Colorado,
Wilbur Rocchio, Esq., Denver, Colorado, for the
Oil and Gas Conservation Commission.

I N D E X

Witnesses	Direct	Cross	Redirect	Recross
Lee S. Osborne	5	8		
E. N. Dunlap	18	51	76	
Jack Tarner	109	116		
Max S. Loy	132	135		
Martin O. Hegglund	137	143		

EXHIBITS

California Company

No.	Page
A	13
B	20
C	23
D	27
E	30
F	33
G	39
H	41
I	47

Phillips Petroleum Co.

No.	Page
A	110

CHAIRMAN DOWNING: Let's come to order and start our hearing. We are certainly happy to have this distinguished gathering here and we are very hopeful that some good may come out of this hearing. As far as our Commission is concerned we are devoted to just one thought, and that is conservation. We have only one desire and that is to do what is best for the State of Colorado, and I am sure that follows for the U. S. G. S., you note they are here; and whatever is done, if anything, must be agreed to between the U. S. G. S. and this Commission. Now we have the right to hope that you gentlemen feel the same about conservation. However, there is the element no doubt of company property and we hope you won't let that interfere with conservation. As a matter of fact, it would be foolish to do it because what conservation means is greater production for all, and if we do what is best to conserve what we have out there at Rangely, the profit for each company may be very much greater.

Now so far as we are concerned we made an order, and from a physical standpoint we think the order has been highly successful. I am not giving figures, we have them perhaps not in the detail you have, but as I understand it the decline in bottom hole pressure, the decline in reservoir energy, has been materially retarded and that is after all what we sought and we feel that is what has been accomplished. Now we hope that whatever is done here will not disrupt or prevent the

good that we have gained or that we will be forced to take a policy that might not be altogether pleasant all around. What I have in mind is will it be necessary in order to conserve the gas in the reservoir, the energy, to make a restriction upon the quantity of oil that may be produced? Now that is a serious question that I think is before us.

Certainly we have always felt rather ashamed that we are the agency that administers the field here that will produce approximately 20% of the oil in the ground when we look at what has been accomplished, and I am taking the East Texas Field as the example with a 96% recovery, and 20% in Rangely. Oh, but you say conditions are different. They are, but when they started to conserve oil and gas in Rangely they never dreamed of a 96% recovery. In other words, the brains of the industry found ways and means to bring about the preservation of reservoir energy so that a tremendous recovery was possible. I think the same thing is true here. I think that if proper conservation methods were applied the result would be not 20%, but 40% or maybe even 60% of the oil may be recovered, and I think that is what we ought to be shooting for.

Now those are just a few preliminary remarks to start off, and by the way before I forget it, I wish to announce that at ten o'clock on the day following this meeting we have asked the operators to meet with us and talk over the question of unitization. We don't know whether we will finish

here today, we don't know whether we will finish tomorrow, we don't know whether we will finish Saturday. I hope it won't take very long, but no matter how long it takes on ten o'clock on the day following we would like to meet with you and talk over and see what the best method is to pursue to bring about unitization. I mention that particularly because as far as this Commission is concerned we are not grabbing for power, we are trying to get rid of what power we have and pass it on to more capable hands, the U. S. G. S. through the process of unitization.

I don't know what your plans are but we have called upon the companies to present severally their suggestions and their plans for an order that would bring about conservation in this field that best could be applied. I don't know whether you have had any procedure among yourselves, if you have that will govern, but if not my suggestion is that the victor, the great and glorious victor in the litigation, Texas Company, open up and tell us what it has in mind and what it thinks we should do. Unless there is objection I will call upon the Texas Company first, that is Union Pacific-Texas.

MR. KNOWLES: Do you want us to make appearances here in the ordinary way?

CHAIRMAN DOWNING: Yes, I wish each of you as you rise and speak would always give your name so that the reporter may enter your appearance.

MR. KNOWLES: Walter Will for the Texas Company and E. G. Knowles for the Union Pacific. We understood that the Commission wanted to have something in the way of a formal statement, so we are going to present that through our first witness, who will be Mr. Lee S. Osborne.

CHAIRMAN DOWNING: You haven't the testimony written out?

MR. KNOWLES: No, sir.

CHAIRMAN DOWNING: All right, proceed in any way you think best.

LEE S. OSBORNE

called as a witness for the Union Pacific-Texas Company, being first duly sworn according to law, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. KNOWLES:

Q. For the record, will you state your name.

A. I am Lee Osborne, Assistant Vice President, Union Pacific Railroad Company.

Q. Residing in Los Angeles, California?

A. Yes. I am presenting this statement on behalf of the Texas Company and the Union Pacific Railroad. This prepared statement is very brief and sets forth the principle that we think should be followed in any order issued by the Commission. I would like to explain a bit of the background

of this statement. In the first place the recent Supreme Court ruling nullified the order that the Commission had issued requiring reinjection of all Weber gas produced, with minor exceptions: the field use, local sales, and so forth. As a result, the Commission requested the operators to meet with them informally and a meeting was held May 26. The outcome of that meeting was that the Commission requested all operators to submit to the Commission in written form a statement of each operator's production for the period from November 1, 1954, to May 1, 1955. Also they asked each operator to furnish a statement as to the amount of gas they thought would have to be flared if they maintained that same rate of production for the months of June, July, and August.

These statements were submitted to the Commission and a second meeting was held with the Commission on June 8. At this meeting the matter of continued operation at Rangely was discussed and it was agreed that the operators would maintain a status quo situation as near as possible. The emergency order was then issued by the Commission, Emergency Order No. 2-22, which primarily permitted each operator to continue to produce it's same rate of production that it had recorded for the six months I mentioned above. We think that this is very significant because it shows that the Commission recognizes the production as maintained for the field during those six months as a fair measure of the market demand for Rangely

crude. Also it recognizes the fact that the operator's production represents its fair share of that market. We worked very diligently in attempting to arrive at some formula where the mechanics of establishing a formula that we thought would permit each of the operators to continue to produce its relative share of Rangely production, and I must admit that we have failed. We could not come up with what we thought was a reasonable solution to the problem. As a result, we are submitting this brief statement, and I don't have enough copies to pass around so I will just read this statement.

"In the light of the information developed by the Commission as the result of its request from the operators in the Rangely Field for their average daily production of oil for the 6-month period ending May 1, 1955, and incorporated in Order 2-22, Emergency, which shows that the field averaged 64,363 barrels of oil per day, of which Texas-Union Pacific produced 19.3%, Texas-Union Pacific will not object to any lawful order that permits Texas-Union Pacific to produce 19.3% of the monthly field oil production; provided, however, that the said 19.3% of the monthly field oil production averages not less than 12,437 barrels of oil per day for each calendar month and further permits the sale and reasonable flaring of gas".

I would like to say, Mr. Downing, that in attempting to work out some formula, we were more than ever impressed

with the necessity of unitizing Rangely in order to protect correlative rights. It doesn't seem as though any order could be issued that would take care of everybody's needs and not do some damage to some operator. I may be out of order in suggesting this, but I would like to see what the outcome is of our attempt to unitize Rangely on a field-wide basis before you submit another permanent order regarding Rangely operation.

CHAIRMAN DOWNING: That is an order for this field?

THE WITNESS: Yes.

CHAIRMAN DOWNING: Well, it's your privilege, of course, to take that position. I don't imagine there will be any objection to it, it seems very reasonable. We will have that meeting as you know called very speedily.

THE WITNESS: Yes.

CHAIRMAN DOWNING: Is that all of your statement?

THE WITNESS: That is all.

CHAIRMAN DOWNING: Now does anyone wish to ask Mr. Osborne any questions?

MR. ROCCHIO: Yes, I do.

CHAIRMAN DOWNING: Let me ask first if anyone in the audience does, let's take it in an orderly manner. Does anyone present in the audience have any questions? All right, now anyone from the staff?

CROSS EXAMINATION

BY MR. ROCCHIO:

Q. Mr. Osborne, it's my conception that the emergency

order that the Commission issued, the formula utilized there, was based principally on maintaining more or less the status quo. Was that your understanding?

A. Yes.

Q. Not necessarily that the Commission was necessarily trying to determine what your percentage may or may not be, except that at that given time.

A. Yes.

Q. In other words, you in your suggestion here say that 19.3% of the production is the Texas-U.P. production. I mean I am not going to say it is or isn't, but it was at that time based on those figures?

A. Yes.

Q. If the Commission were to issue an order under this new statute, which it is compelled to do, and I will read from the statute: "Whenever the Commission limits the total amount of oil or gas which may be produced in any pool in this state to an amount less than that amount which the pool could produce if no restriction were imposed, the Commission shall allocate or distribute the allowable production among the several wells or producing properties in the pool on a reasonable basis, preventing or minimizing reasonably avoidable drainage." You state you have no objection if the oil production were maintained at that 12,437 barrels per day?

A. Yes.

Q. As I understand it this ratable take situation or a limitation on production would be a gas-oil ratio order or MER order, and it's possible that such an order wouldn't permit you to produce 12,000 barrels of oil. Are you contending that that necessarily be an unlawful order because it cuts down your production?

MR. KNOWLES: I don't see how Mr. Osborne can answer a question like that.

MR. ROCCHIO: Then let me rephrase it, Mr. Knowles.

Q. Would you have any objection to it?

A. Yes, we would.

Q. In other words, you want to maintain the production exactly where it is now?

A. Yes, sir.

MR. ROCCHIO: All right, that is all, thank you.

COMMISSIONER VAN TUYL: You mean to say that you can produce indefinitely there without having any decline in the field?

THE WITNESS: No, we can produce for a considerable length of time, but we recognize that field conditions change and that probably orders will change too.

CHAIRMAN DOWNING: Let me ask what do you think is a reasonable flaring of gas, what do you mean by that?

THE WITNESS: Well, reasonable flaring, I would say, is the amount of flaring necessary to protect correlative

rights.

CHAIRMAN DOWNING: Well, under these facts, how much would that amount in your opinion in feet per day?

THE WITNESS: Well, that all depends. Right now it would amount to a very small amount of flaring if all the injection capacity is used, but we have to keep in mind that when we inject gas on our property, without having some agreement with our neighbors, we might be subject to suit; and so if that came about we might flare more gas than we would under the existing conditions.

CHAIRMAN DOWNING: In other words, under the present circumstances there would be no necessity or no desire to flare any gas?

THE WITNESS: Well, it would be very little flare.

CHAIRMAN DOWNING: Yes, very little.

THE WITNESS: We intend to use our injection facilities to their full extent as long as we can, but we do recognize the danger of injecting where we might trespass.

CHAIRMAN DOWNING: If there be any delay, as apparently there will be in the determination of this matter, would you have any objection to our continuing the present emergency in force for another two weeks or perhaps a second two weeks, if necessary?

THE WITNESS: I have no objection, no.

MR. KNOWLES: I take it, Judge, if you extended that

order it would be a temporary order in this case based upon this hearing rather than another emergency order. It would really be an order after hearing.

CHAIRMAN DOWNING: I don't know that we would want to try to draft a new order. If an emergency order answers the purpose we would rather let that just continue to ride until we make a decision.

MR. KNOWLES: We don't want to be thought as taking the position that the Commission can issue emergency order after emergency order. Our position is that legally you can issue an emergency order, but that now that you have had a hearing on this, whatever order you do issue you might use the same terminology but it will be an order after hearing and not under the terminology or the provision--

CHAIRMAN DOWNING: In other words, it would be a temporary order instead of an emergency order?

MR. KNOWLES: Yes, sir.

CHAIRMAN DOWNING: All right, then we won't quarrel about that.

MR. ROCCHIO: The only thing to make temporary, Judge, is the period of time the Commission might do it, otherwise it's just an order.

CHAIRMAN DOWNING: Are there any other questions? If not, you are excused and thank you very much.

(Witness excused.)

CHAIRMAN DOWNING: Now it does occur to me that we would like to have a list of those present and whom you represent, and it might take quite a little while. I was going to suggest we send around a list and ask you to specify who you are and who you represent. Will you attend to that, Mr. Rocchio?

MR. ROCCHIO: Yes, it's already started.

CHAIRMAN DOWNING: Now does anyone want to follow?

MR. SULLIVAN: We have heard from one of the victors, Mr. Downing, perhaps you would like to hear from one who was on the side of the vanquished.

CHAIRMAN DOWNING: All right, go ahead.

MR. SULLIVAN: I will enter the appearance of myself, R. W. Sullivan, and Mr. L. M. Lamar for the California Company, and we propose to have one main witness. We are here today, as you well know, in response to your notice calling this hearing. One of the more important features of your notice was the request to operators to prepare and submit to you and be prepared to defend a proposed form of order, which we certainly trust and we believe will fill the bill for an order such as you outlined in your opening remarks.

With your permission, Mr. Downing, I will hand these several copies of it to you for the use of the Commission, and I will request that that be referred to hereafter as California Company Exhibit A. May I also remark that on the copies which

I have handed the Commission, and which will be used as our exhibit, there is attached a little map as an exhibit. Now we didn't have enough of those to attach to all of those but it's identical with the Exhibit 1 that was attached to Order No. 2-13, and it is simply demonstrative of the location of the gas injection wells and we brought it up to date for these purposes.

Now since the highly controversial implementation Order No. 2-13 was issued, we have seen a lot of changed circumstances with regard to not only the Rangely Field, but the conservation aspects of the state as a whole. Probably from the viewpoint of my company the most important aspect in these changes was the passage of the recent session of the legislature of a new conservation law, or amendments to our existing law. Probably the most outstanding feature of that new law was the emphasis that it places upon the protection of correlative rights, and the prohibition of reasonably avoidable drainage, and making that by the multiple reference to it throughout the law one of the primary obligations I believe of the Commission, both as a matter of preventing physical waste, which it is under the Act by definition the abuse of correlative rights, now by definition in the law becomes a matter of physical waste; and secondly, of course, some order which you will wish to enter from the noteworthy and meritorious motives that you stated in your opening remarks, Mr. Downing.

We have in addition since the entry of the promulgation of Order 2-13, of course, seen the installation in the field of expensive equipment and the conversion of wells to injection wells, all of which were done in compliance of your order by the operators. Now, of course, that order as implementing 2-8 was thrown out by the Supreme Court, as we are all well aware, but the force and effect of that order of the Supreme Court, as Mr. Osborne observed, in effect was to say that the Commission has no authority or had no authority certainly under the 1951 Act to force reinjection of gas; and also said, if not directly certainly by inference, that there must be some flaring of gas or some disposition of gas permitted.

The other feature which must be called to the attention of the Commission forcibly, particularly in the light of the new Act, is that during the course of the past period since the promulgation of Order 2-13 there has been a growingly flagrant abuse of correlative rights, particularly in the west portion of the field, and particularly our correlative rights. We are extremely relieved to believe that we now have some relief afforded to us from that situation through the action of this Commission under the mandate of the new law. Hence, we are proposing an order to you. The first and primary feature of that order will impose a daily oil allowable on every well in the field, and we believe that this feature

of the order will certainly be a corrective measure to the abuse of correlative rights, not only ours but everybody else also, who may have been abused in the past and continue to be abused. We also believe this will be corrective to prevent reasonably avoidable drainage in the field.

Our order also establishes in effect a gas-oil ratio by setting a maximum gas limitation for each well in the field in an amount which we believe and will attempt to show is neither excessive nor unreasonable, nor an amount which the disposition of which other than injection will result in an unreasonable dissipation of reservoir energy nor an unreasonable diminution of ultimate recovery.

The third feature of our order permits the gas produced in excess of the stated allowable figure to be reinjected. Then the order takes up the features of the reinjection and simply reincorporates all of the existing injection wells, injection areas, etc., that were previously contained in earlier orders. We have done this because we felt that there was some need to reinstate, by virtue of your order, any such feature that was to be contained in the order at all.

CHAIRMAN DOWNING: May I ask a question? What effect do you think the new statute has had upon the decision by the Supreme Court, that is with respect to our power?

MR. SULLIVAN: With regard to gas injection, sir?

CHAIRMAN DOWNING: With regard to the two matters that the Court decided that we had no power to do. If you don't want to answer, that is all right.

MR. SULLIVAN: I have already answered that to you, Mr. Downing. My conception of the new Act is that your authority to compel gas injection has not been expanded by the new law, and I took that position at the last and formal session that the operators in the field had with the Commission and that is my sincere position.

Now we intend to show through testimony and exhibits that this order that we are proposing will do the things that I have indicated that it will do. As I pointed out the features it will be a corrective measure to protect correlative rights, not only of ours but any other operators in the field who may be in that position of continuing to have under existing circumstances their correlative rights abused. They are victims in effect of drainage, of the common term.

Secondly, we believe it will set a reasonable gas-oil ratio and the gas limitation from each well that will satisfy the requirements of the statute with regard to the use of gas, and under the terms of the order of the decision of the Supreme Court in the Rangely case.

Now a third feature or corollary feature of this order, we suggest it be admitted on a battery basis, and we do this for two very clear reasons, I believe. One is we

believe that the battery basis of administration is the most feasible from an administrative viewpoint; and secondly we will attempt to show, we think it's probably self-evident, but we will mention in our testimony that a battery basis will encourage the operators to produce from the more efficient wells within each battery, which is certainly in the direction of conservation purposes.

Now to the end of supporting our proposed order, I would like to put on the stand Mr. E. N. Dunlap.

E. N. DUNLAP

called as a witness for The California Company, being first duly sworn according to law, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. SULLIVAN:

Q. Please state your full name, your employer, and your present position with that employer.

A. My name is E. N. Dunlap, I am employed by the California Company as Division Petroleum Engineer in the Western Division.

CHAIRMAN DOWNING: If there is no objection, this witness will be considered as a qualified expert.

MR. SULLIVAN: I don't want to put myself in the way of objecting, Mr. Downing, but we do have two new members on the Commission who have never heard these people testify before and if we could be very brief about it, with your

indulgence, it may go to the credibility of these various witnesses to find out just how expert they may be.

CHAIRMAN DOWNING: All right, proceed.

Q. Will you briefly state your educational background and your experience in the industry as a petroleum engineer?

A. I graduated with a Degree in Petroleum Engineering from the University of Texas in 1933. I was employed by the Humble Oil and Refining Company in the East Texas Field, and also in their production research laboratories, covering a period of about a year and a half. Following that I returned to school and took graduate work at the Massachusetts Institute of Technology and received the Master of Science and Doctor of Science Degree in Mining and Petroleum Production. In 1937 I then was employed by the Standard Oil Company of California, and since that time until the present have been employed in various capacities as a Petroleum Engineer, and their affiliated companies, including 3 1/2 years in connection with the California Research Corporation engaged in production and drilling research.

Q. Now as a part of your duties as Petroleum Engineer for the Western Division in the California Company's Denver office, are you familiar with the operations and the characteristics of the Rangely Field?

A. Yes, I am familiar with the characteristics of the Rangely Field through my present position, and even before

that time when I was connected with the California Research Corporation it was my duty to become familiar with the conditions in the Rangely Field as early as 1947. My current position on an every day basis, the great percentage of my time is spent studying the operations in the field and making recommendations as to the production and the injection program.

Q. We have here a map which we would like to have marked as California Company Exhibit B. Will you please describe that exhibit to the Commission.

A. Exhibit B shows primarily the gas-oil ratios in the various battery tracts. Those are represented by the large black figures you will see scattered over the field. It serves the further purpose of being introductory to give more or less a physical picture of the Rangely Field Weber Reservoir. I will outline briefly the salient features that are presented here to clarify it. You will see these contour lines are drawn on the points of equal elevation on top of the Weber producing reservoir. The outer limit, outer contour, approximates the original oil-water contact. There was a small original gas cap, small in volume. The area is fairly extensive and it's approximated minus 330 foot contour.

Also there is shownthe tracts in the field, the colors representing lease ownership by operators: the yellow representing the California Company, the pink representing Stanolind Oil and Gas Company, the hatching blue represents

Phillips Petroleum Company, the golden represents Continental Oil Company, the gray represents Sharples Petroleum Company, and the light green is Texas-Union Pacific operations. The red line designated "A A Prime", that is the line shown on the exhibit 1 attached to Order 2-13 which was used in connection with the designation of the gas injection areas, and for this purpose simply to indicate the area that we will be talking about when we say west area of the field.

Q. Do I take it from that reference to west area that we will from time to time throughout the presentation of your testimony make specific references to the west area?

A. That is correct.

Q. And that when you do say "west area" you will refer to the line west of "A A Prime" as indicated thereon and other maps?

A. Yes, it will be west of the red line.

Q. May I interrupt for one further point, this is basically, is it not, the map that has been used to show the general structure and the lease ownership throughout the entire Rangely hearing?

A. I believe that has been stipulated to by all participants.

Q. At least it was stipulated to in the court proceeding and we simply used this as an introductory map to familiarize particularly the two new Commissioners with the general land

setup and other features of the field. Now do you have any other significant features there that should be pointed out?

A. I might call your attention to the red circles that indicate the location of the presently used injection wells in the field.

Q. How many do those number?

A. It totals 18. There are two left off of this map because they are not presently being used, the Phillips Levison 16 and the 2-26 E. Also I might call your attention to the variation in gas-oil ratios and note that there are high gas-oil ratios in this general central area of 6455 on Texas-U.P. battery 31 B, I believe that is, and 5777 Texas Company battery 21 B. They range downward to the extreme northwest area where we find ratios in the order of 200 cubic feet per barrel, Stanolind C. Larson 1, California Company A. C. McLaughlin "B" battery.

Q. For purposes of comparison, how do those figures appearing prominently in black compare with the gas-oil ratios say in the initial stages of the production of the field or operation of the field?

A. Originally the field produced, with the exception of a slight period where one or two wells were producing on the top of the structure, all substantial oil in the early part of the field was produced at a ratio approximating 300 cubic feet per barrel.

Q. Then is it this vast increase in gas-oil ratios which has actually caused the problem which confronts the Commission here with regard to gas disposition?

A. That is right.

A. One other question, I notice you have some heavy black hatched lines within leased lines there. What do those indicate?

A. These dashed lines simply represent the dividing line between batteries on a multibattery lease. For example, McLaughlin "D" and McLaughlin "C" batteries are divided by those heavy lines. I should mention in passing that the basis of this information, the gas-oil ratio, was taken from the Rangely Engineering Committee Weber production report for the month of April, 1955.

Q. By batteries?

A. Showing the average by batteries.

Q. Do you have anything else to remark concerning this exhibit?

A. I believe that is all.

MR. SULLIVAN: I submit for introduction into evidence California Company Exhibit B.

CHAIRMAN DOWNING: Any objection to the receipt of that map? If not, it will be received.

Q. Let's refer to this exhibit as California Company Exhibit C, and will you mark it up there for convenience. Is

this basically now the same map that we had in Exhibit B?

A. The basic features, except the numbers in black, are essentially the same as you have seen on the previous exhibit, Exhibit B.

Q. Now read the legend on this exhibit and explain the purpose of the exhibit, Mr. Dunlap.

A. The title of this exhibit is "April, 1955, Production Rates, Barrels of Oil Per Day Per Well". The purpose of this exhibit is to show how radically the production rates vary between various properties, particularly in the west end of the field. I call your attention to some of those disparities. For example, the California Company A. C. McLaughlin battery "A" during the month of April produced at an average rate of 272 barrels per day per well. Offsetting that property were two properties, Stanolind A. C. McLaughlin Unit "A" which produced at a rate of 453 barrels per day and Phillips Petroleum Company Mattern lease which produced at 420 barrels per day, indicating that a very marked and serious disparity exists between the production in those two areas.

Likewise, comparing California Company A. C. McLaughlin battery which produced during the same period of time at an average rate per well of 256 barrels of oil per day, it's offset by the Stanolind Mary C. Hagood "A" lease which produced 368 barrels of oil per day. It wasn't quite

as flagrant as this illustration, but nevertheless a very serious disparity. One of the most glaring examples of disparity, in fact downright outrageous, is the comparison of Stanolind M. B. Larson "A-C" lease, which produced during that same period of time 580 barrels of oil per day compared to 256 barrels of oil per day for the California Company A. C. MaLaughlin "C" battery, a ratio of better than 2 to 1.

I could go on enumerating other instances of the same thing in the west area of the field, also in the east. Near the center of the field you will note a glaring disparity here between Texas-U.P. battery 20 which averaged 379 barrels of oil per day per well compared to the California Company Gray "B" battery of 192 barrels of oil per day. There again approximately a 2 to 1 ratio.

Q. In any event those are good examples and a careful study of the map would show more, I judge?

A. That is correct.

Q. I don't think we need to belabor any more of those points. Now down in the corner there, Mr. Dunlap, you also have some computations entitled "West Area Averages by Operators". Will you read those for the Commission.

A. Yes. This represents the average production per well per day for each operator. In the west area, California Company 165 barrels of oil per day per well; Phillips Petroleum Company, 228 barrels of oil per day; Stanolind, 248

barrels of oil per day.

Q. You have no average down there, however, for the Texas Company leases just immediately east of the line "A A Prime"?

A. No. We consider our most severe and critical problem is in the west area of the field. We haven't gone to a great deal of detail to portray the disparities over toward the east at this time.

Q. Let me ask you this: Are there any reservoir conditions which would account for these vast disparities in production rates?

A. No, there is not.

Q. Then what is your conclusion as to the result of these disparities in production rates?

A. That is very easy to answer. There is only one conclusion, that there is oil migrating across property lines from the areas of low production in the direction of areas of high production, which means one thing: drainage of oil by the property producing the large volumes of oil at the expense of the properties producing relatively small amounts of oil.

Q. What is the common term that is used for that?

A. The common accepted term in the oil industry is drainage.

Q. Do you have any other remarks on this Exhibit?

A. No, I believe that covers what I wanted to say about

Exhibit C.

MR. SULLIVAN: I submit California Company Exhibit C into evidence.

CHAIRMAN DOWNING: If there is no objection it will be received.

Q. I show you the next exhibit which we will refer to as California Company Exhibit D. Please read and explain the legend on this map to the Commission.

A. The legend appearing on this map, Exhibit D, is "Ratio production rate, production capacity, in terms of barrels of oil per day per darcy foot."

Q. Let me ask you first, where did you get your data supporting the numerator in that ratio, the barrels of oil per day?

A. That is taken from the same source as the data for the previous exhibit, from the Rangely Engineering Committee report.

Q. Covering what period?

A. Covering the month of April, 1955.

Q. Will you explain reasonably briefly your denominator in that ratio.

A. The denominator is the common measure of production capacity, darcy feet, which is simply a standard of measure of permeability, which is the measure of the degree to which a fluid will flow through a porous material.

Q. Then does that ratio indicate current production as compared to production capacity or ability to produce?

A. That is correct. It represents the ratio of production rate to the capacity to produce.

Q. Here again it's obvious from here that the black numbers appearing in the various areas in the west end of the field indicate some disparities. Would you point out again several of those disparities amongst tracts.

A. That will be easy, yes, sir. We have simply taken the production rates of the previous graph, divided by the permeability capacity, and you will see that these disparities are even more pronounced than they were on the previous exhibit.

Q. Just a moment, you say more pronounced. The disparity between the production rate as compared to their ability to produce is even more flagrantly out of line than those figures on Exhibit C, is that your point?

A. That is correct. This simply represents for the same reservoir conditions, to compare them on the same basis of permeability, the disparity is even worse.

Q. Very well, continue with your specific instances.

A. For example, getting back to the A. C. McLaughlin "A" battery, it shows an index or ratio of 52 as compared to the Stanolind McLaughlin Unit "A" of 205, a ratio of 4 to 1. As you will recall the previous exhibit, the ratio was about

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half that. Likewise, Phillips Mattern, 117, a ratio of more than 2 to 1. Comparing A. C. McLaughlin and the California Company battery "C" the ratio of 47, to Stanolind Mary C. Hagood "A" lease having a ratio of 83, is a disparity of 2 to 1. Likewise, comparing that with Stanolind M. B. Larson "A-C" lease of 166, is a ratio of 4 to 1 there.

Q. Also in the lower left hand corner of this map are again a tabulation of averages. Would you mind reading those to the Commission?

A. The average production rate per barrel per day per darcy foot for the California Company is 48.7, the Phillips Petroleum Company is higher, 67.5, as is Stanolind Oil and Gas Company having an average of 65.0 for the ratio.

Q. A careful examination of this exhibit would disclose other instances of disparity, would it not, Mr. Dunlap?

A. Yes, that is correct. We can continue with this line of testimony considerably longer.

Q. Do these disparities in indexes shown on these tracts result in your coming to the same conclusion that you came to with regard to Exhibit C, the California Company Exhibit C, with regard to the migration of oil across property line?

A. Yes. This exhibit confirms the conclusions that I have reached on the basis of the previous exhibit.

Q. In other words, this is simply another illustration

of a more flagrant way of the drainage existing there in the western portion of the field?

A. Yes, that is right, even more flagrant disparities.

Q. Do you have any other comments to make with regard to this exhibit?

A. None, other than the same conclusion that there is drainage resulting at the expense of the properties with low ratios, oil drainage, across property lines to the properties of higher ratios.

MR. SULLIVAN: I submit this for introduction into evidence.

CHAIRMAN DOWNING: No objection, the exhibit will be admitted.

Q. We now come to another similar looking map, which I request be marked California Company Exhibit E. Let's read and explain the legend and the use of this exhibit, Mr. Dunlap.

A. The legend appearing on California Company Exhibit E is "Ratio production rate to reserves in terms of barrels of oil per day per 100,000 barrels of original recoverable oil in place".

Q. Let me ask you again, now what are the sources of your data to support the figures you have used in your numerator and denominator in that ratio?

A. The production rate was obtained from the same source as on the previous two exhibits.

Q. What was that?

A. Rangely Engineering Committee April, 1955, production report. The denominator, the source of the information was from the Rangely Working Interest Owners Engineering Committee report in February and March, 1949.

Q. Here again we note the same disparities or new disparities between your figures in prominent black letters among tracts, particularly in the west end of the field, which of course we have emphasized. Will you point out a few of those disparities and comment on them, Mr. Dunlap.

A. That is very easy, and generally results in the same areas showing the same disparities under this method of comparison. This also is a generally accepted method of comparing production rates to bring out disparities. The California Company A. C. McLaughlin "A" battery, which averaged 29 barrels of oil per day per 100,000 barrels of recoverable oil -- incidentally, this is intended to be more of a relative basis rather than an absolute basis of reserves, simply to bring out the comparison between properties. Resuming my comparison, comparing the ratio of the California Company A. C. McLaughlin battery with 29 compared with Stanolind A. C. McLaughlin Unit "A" having a ratio of 82; Phillips Mattern lease having a ratio of 54, A. C. McLaughlin "C" battery having a ratio of 26; the Stanolind Mary C. Hagood "A" lease having a ratio of 54, the Stanolind M. B. Larson

A. C. lease having a ratio of 60, Stanolind M. B. Larson "D" lease having a ratio of 60.

Q. I think that is enough of the specific instances. Again an examination of the map carefully would disclose other cases, would it not?

A. That is correct.

Q. What do your averages show down in the lower left hand corner of this exhibit?

A. These averages show we have not picked out selected spots necessarily, that the actual overall conclusions are based upon the entire area picture, not just on specific instances. California Company has a ratio of 23.8 barrels of oil per day per 100,000 barrels of recoverable oil, Phillips has a ratio of 29.5, Stanolind has a ratio of 37.4; almost 60% higher than the average for the California Company. I conclude that this confirms again the same conclusions that we have reached on the previous two exhibits, namely, that there is migration of oil across property lines from the area of low ratio to the areas of high ratio.

Q. Then you have by virtue of the past three sheets shown that by all accepted standards that migration of oil or drainage of oil from properties is being done in the west end of the field at this time?

A. That is absolutely correct.

Q. Do you have any other remarks that you wish to make

with regard to this exhibit?

A. I don't believe so.

MR. SULLIVAN: I submit then for introduction into evidence California Company Exhibit E.

CHAIRMAN DOWNING: No, objection, it will be received.

Q. Now at this particular point we show you another exhibit which we shall refer to as California Company Exhibit F. This consists of three graphs. Would you simply explain the graphs from left to right, Mr. Dunlap, and what they indicate and illustrate.

A. The graph on the immediate left shows the average rate of production by operators in the west area, excluding Continental Oil Company which has only one well, by months, over a 5-year period. The vertical scale being in barrels of oil per day, and the horizontal scale being the years from 1951 through '55. As you will note, the area in the west end of the field comprising an average of 8850 acres and 222 wells shows a gradually increasing production rate from 1951 to 1955. California Company shows a gradually increasing rate of production, but not to the same degree as the total for the field. The Stanolind shows a fairly even rate of production until the middle of 1952, then a rather sudden increase to in the order of 10,000 barrels of oil per day, and again showing a rather abrupt increase in the latter part of 1954 up

to a rate on the order of 12,000 barrels of oil per day. Likewise, the Phillips Petroleum Company has shown a fairly even rate until the middle of 1952, at which time they increased their production rather abruptly.

Q. Now this chart again refers only to the Rangely west area as indicated on the top of the chart.

A. That is correct.

Q. And does not take into account production rates from the entire field?

A. No, it only refers to the west area.

Q. All right, go ahead to the second graph in the middle please.

A. The second graph is a presentation of the same data reduced to a well basis to bring out in a striking manner the disparities in the average production rate per well by operators in the west area, showing that the operators were producing at rates that were comparable in a year 1951 until about the middle of 1952, at which time Phillips Petroleum Company increased its production per well very abruptly; and the Stanolind Oil and Gas Company very shortly thereafter also increased their production quite abruptly. The colored lines are to bring out in a more clear fashion the operator's production rate. It was averaged on a yearly basis rather than on a monthly basis to eliminate fluctuations that detract from the more clear comparison.

Q. Now which are those, the colored lines?

A. Yes. The blue represents Phillips, the pink represents Stanolind, the yellow represents the California Company, and as you can see there the California Company production has increased gradually, a relatively modest amount, compared to the increase that has taken place in the operations of the other two operators.

Q. And this graph now was on a barrels of oil per well per day basis?

A. That is correct.

Q. Very well, go ahead.

A. The third graph, and the one that I believe is the most convincing, in fact to me that cinches the argument. It's a comparison of the percentage of the west unit area production currently, or we will take as being current, the 6-month period of November, 1954, through April, 1955, by operators compared with several norms or standards of share in the oil in the west area. One standard has been subdivided into four parts simply to show the effect of various lower limits of permeability, shown by the next four columns, and is based on the original oil recoverable in place above various lower limiting minimum permeabilities. That information was obtained from the Rangely Working Interest Owners Engineering Committee. This odd appearing symbol--

Q. Just a moment, you mean some report that the working

interest owners engineering committee made at some time?

A. That is correct. The data were taken from the report prepared by that committee which was issued in February and March, 1949.

Q. Thank you. Now pick out any one of those representative millidarcy ratings and show what the graph above it indicates. Just pick any one which occurs to you. I think they are all equally demonstrative of our point so we won't go through all of them.

A. Well, let's just take the 1 millidarcy, which happens to be the one that looks pretty good to the California Company.

Q. Let's don't be too obvious or conspicuous, let's don't take the most favorable one, let's take the least favorable one.

A. Let's then take the least favorable one based on the report the committee made of the recoverable oil in place. As far as the California Company is concerned that is the recoverable oil in place above 5 millidarcies, and you will note without any doubt, the disparities that are occurring between the current production and the original oil in place, namely for the California Company currently producing 67.1% in the west unit compared to its share of the oil based on pay above 5 millidarcies of 74.5%, showing a very much lower current rate of production than the percentage of the oil

to which it is entitled. On the other hand, just the reverse is the case of the Stanolind Oil and Gas Company which is producing 28.3% of the current production, whereas they are entitled on a basis of recoverable oil in place of only 21.2% of the west unit oil. By the same token you will find that the Phillips Petroleum is currently producing a greater percentage of the current production than the fraction of the oil to which they are entitled, namely 4.48 compared to .005.

We have also presented other forms in comparison, namely the ownership in the developed acreage in the field which is one commonly accepted standard in different areas, also the ownership by wells, and lastly the average production during the years 1951-52, excluding the month of May, which is the basis on which unitization in the west unit is now proceeding. You will note that on any norm or any basis or any standard of share of the oil in the west area that the California Company is suffering to the extent of difference in percentage points on the order of 7 to 9 per cent. On the other hand, Stanolind is enjoying the drainage of large quantities of oil from the California Company properties and likewise to a certain degree, though less marked, can be said of the drainage situation that exists between California Company and Phillips Petroleum Company.

Q. Now, Mr. Dunlap, are you through with that exhibit? Do you have anything else you care to remark on?

A. I believe that is all.

Q. You are familiar, are you not, Mr. Dunlap, with the proposed form of order for this as requested by the notice in this cause?

A. Yes, I am.

Q. Which is submitted by the California Company?

A. Yes.

Q. Did you assist in fact in the preparation of this order?

A. I did.

Q. Now the feature there of limiting the oil production in the field to 200 barrels per well per day, will it serve to correct the disparities that you pointed out from map to map as we have gone through your testimony?

A. I believe the order that we propose will substantially eliminate those disparities.

Q. It won't eliminate them completely?

A. No, but it will minimize or substantially eliminate them.

MR. SULLIVAN: I submit then California Company Exhibit F into evidence.

CHAIRMAN DOWNING: No objection, it will be received in evidence.

Q. Now, Mr. Dunlap, you testified earlier that as part of your duties as Division Petroleum Engineer for the

California Company that you were conversant and familiar with the operations in the Rangely Field. Does this include the gas injection program since it started?

A. Yes, that is true.

Q. Will you state for the benefit of the Commission what your estimate is of the success of the gas injection program to this time?

A. I think the gas injection program is proceeding very satisfactorily. I believe--

Q. Just a moment, we will mark this California Company Exhibit G, and rather quickly point out how this exhibit demonstrates and supports the conclusion that you have arrived at concerning the success of the gas injection program.

A. These graphs are performance graphs taken from the Rangely Working Interest Owners Engineering Committee report showing the reservoir pressure in 100 pounds per square inch against the cumulative recovery, and the cumulative recovery being on the horizontal scale in millions of barrels. On the right hand vertical scale is the gas-oil ratio in thousands of cubic feet per barrel. We will refer a moment to the pressure curves at this time. There are two curves, you will note, going from a point high on the left of the chart downward to the right. These were predictions. The light lines were made on the basis of the characteristics of the fluids in the rocks in the reservoir. Taking the range of reservoir

characteristics, the upper curve representing a prediction based on the lower limiting performance of .1 millidarcy, the lower curve represents the performance on all pay zones equal to or greater than 5 millidarcies. As you will note the heavy line represents actual performance against cumulative production. This followed substantially within the range of the predictions.

Now you will see by this tag approximately at a cumulative recovery of 71 million barrels gas injection was begun at that point and it was quite evident from the pressure graph the pressure decline was very markedly arrested or retarded.

Q. The rate of decline?

A. That is correct.

Q. As indicated on that graph?

A. Yes. That occurred, the full scale injection occurred, in the inauguration of Order 2-13 in September of 1953.

Q. Now do the other graphs at the bottom similarly or otherwise indicate the results of the gas injection program for other portions of the field?

A. Yes. I forgot to mention that this applies to the west portion of the field, not necessarily the same portion to which we referred to in our other exhibit, but the west block we will call it. The other two graphs on the bottom are

similar performance curves presented for the central block, which is figure 2, and the east block, which is figure 3. As you will see, performance is substantially in line with the predictions and with the start of gas injection the pressure decline rate was substantially or very markedly retarded, which leads me to the conclusion that we are increasing the ultimate recovery of oil. We are keeping more gas in the reservoir and that that gas is inevitably going to produce more oil, extra oil, when that gas is produced.

MR. SULLIVAN: We submit California Company Exhibit G into evidence.

CHAIRMAN DOWNING: That exhibit will be admitted if there is no objection.

Q. The next exhibit we will refer to then is California Company Exhibit H. Now what is this exhibit designed to do, Mr. Dunlap?

A. This exhibit purports to show the effect of various proration formulae, various combinations, of top oil limit per well together with gas-oil ratio limits, what effect those formulae, those combinations of oil production of gas-oil ratio have on three variables or three important factors in the field; namely, first the graph on the left, the total field production rate, the second graph the effect of the total field flare, that is maximum flare, and the last graph the flare gas-oil ratio in cubic feet per barrel. I will

start with the left figure in this Exhibit H. The vertical scale goes from approximately 15,000 barrels of oil per day to 75,000 barrels of oil per day. As you will note there are two curves in the upper portion of this figure, one labeled 300 and one labeled 200. The curve of the 300 value represents the predicted field oil production rate for various gas-oil ratio limits on the assumption of a top oil limit of 300 barrels of oil per day per well with credit for injection. By the same token the 200 barrel curve labeled 200 barrels indicates what would happen were various combinations used, what those combinations indicate as to the total field production rate.

You will note a red arrow here which will orient you with regard to what the California Company believes, and I personally believe, is a very reasonable combination of these variables in the form of a conservation order, namely, that 200 barrels a day top oil allowable in combination with a 750 gas-oil ratio with credit for gas injection. Now we have made other comparisons on the same basis that I have mentioned before; the only exception being no credit was allowed for gas injection simply to bring out the degree to which the field production rate would be curtailed in complying with such an order permitting no credit for gas injection, showing that especially in the lower gas-oil ratio limits the field production oil production rate would have to be drastically

curtailed.

Q. Just proceed to the middle graph.

A. The middle graph shows the maximum total field flare that would result under these same combinations of top oil allowable and the gas-oil ratio limit.

Q. Any combinations of those two then are shown on that graph?

A. Any combinations, yes. As you will see, the maximum flare under the 200 barrel a day top limit will increase from zero at gas-oil ratio limit in the order of 280 up to a maximum, if I may put it that way, of 47 million cubic feet of gas per day. Likewise for a--

CHAIRMAN DOWNING: What does that 47 million feet represent?

THE WITNESS: Mr. Downing, that 47 million feet represents what we believe would be the flare if the Commission issued an order with a 200 barrel a day top limit and a 1,000 gas-oil ratio limit, with this very important consideration, that the operators did not take full advantage of all their compressor horsepower. They took advantage of what horsepower the compressors had on the particular lease, but the result to this formula of course would result in some leases that are producing at a higher rate of production being curtailed, freeing horsepower to be used on other high gas-oil ratio leases, which could be operated with additional

compressors either to reduce the flare or to raise the field production even above this point. They have two alternatives or a combination, they can either raise the field production above what we have indicated here or they can reduce the flare below what we have indicated there, or they can make some adjustment in between.

CHAIRMAN DOWNING: Well, considering those other uses and the facilities now there, what would be the amount of actual flaring permitted under your order?

THE WITNESS: With all the compressor facilities that are installed in the field as of this date, we estimate that the field flare would be 13 million cubic feet under our order, 750 cubic feet per day, 200 barrels a day top limit. Does that answer your question?

CHAIRMAN DOWNING: Yes. Pardon me for interrupting, but just one other question while I think about it. What effect would the flaring of 13 million feet of gas have upon the reservoir energy in the pool?

THE WITNESS: Mr. Downing, I believe the flaring of 13 million cubic feet of gas in the pool would be approaching the lower limit of what I would consider a permissible flare without carrying to the extreme of harming correlative rights of the high gas-oil ratio leases.

Q. So there won't be any misunderstanding there as a result of your question, you stated that 13 million cubic feet

was your estimate of the amount of flare that would result if our proposed order is adopted if all operators used all of their injection capacity that exists in the field today, is that correct?

A. That is correct.

Q. Now what would the total permissible flare be under your proposed order, total or maximum, maximum permissible flare be?

A. The total maximum maximum permissible flare would be 47 million cubic feet per day, if none of the surplus compressor horsepower were used.

Q. The 47 million feet would be the total maximum amount of flare or the total maximum amount of gas which was not reinjected. Don't you have a quantity of gas there that would still continue to be used in the field for field use that would be deducted from that flare?

A. No, sir, I believe, Mr. Sullivan, that would be added.

Q. Now either you are confused or I am about this, because what does your arrow indicate on the middle chart?

A. This indicates our proposed order under gas-oil ratio limit of 750 cubic feet per barrel. That is the net gas-oil ratio limit which includes use and flare. The vertical scale indicates what the resultant flare would be.

MR. LAMAR: Mr. Dunlap, doesn't that arrow indicate

that the total maximum flare under the circumstances as you have stated, that is the application of the California Company proposed order, would be in the neighborhood of say 33 million instead of 47 million?

THE WITNESS: I stand corrected, Mr. Lamar. I was remembering the figure for 1,000 gas-oil ratio limit, excuse me. That should be 33 million cubic feet per day.

Q. I am glad to get that straightened out there, there is some difference. Now do you want to proceed to the graph on the right?

CHAIRMAN DOWNING: What was the 33 million, I didn't get that?

THE WITNESS: Mr. Downing, I was confused there and I confused you I am afraid. The figure that you asked me for I quoted you 47 million cubic feet of flare, which was for a ratio of 1,000, which is above what we propose. We don't propose a ratio limit that high.

CHAIRMAN DOWNING: In other words, 47 million is wrong and it should be 33?

THE WITNESS: It should be 33, which corresponds to our proposed order.

CHAIRMAN DOWNING: That doesn't affect the 13 million feet which would be the excess?

THE WITNESS: No, it does not affect it. The last figure on the right is a reduction of the same data presented

on the second graph to an oil basis, the total field flare divided by the oil production. This again shows that for any given gas-oil ratio limit the flare will be greater on a 300 barrel a day top oil limit than it will be on 200 barrel a day top oil limit. Actually we consider a 300 barrel top limit practically no oil proration at all. There again the arrow points to the flare results, cubic feet per barrel, resulting from the California Company proposal.

Q. Is that all you have on Exhibit H?

A. I believe so.

MR. SULLIVAN: I submit then California Company Exhibit H for introduction into evidence.

CHAIRMAN DOWNING: No objection, it will be received.

Q. Now we have one last exhibit which we will refer to as California Company Exhibit I. Earlier in your testimony you certainly indicated that a 200 barrel a day oil allowable would be a corrective measure toward the abuse of correlative rights existing and the reduction of reasonable oil drainage in the field. You have also testified that you think that the gas injection program is a success in so far at least as you presently know. Now thirdly, Mr. Dunlap, I am interested to hear you explain this particular exhibit with the idea in mind of showing the relationship between our proposed order and field production and conservation. Can you demonstrate that with this chart?

A. This chart, Exhibit I, is a graph plotting a ratio on the vertical scale of stock tank barrels of oil produced per barrels of net reservoir voidage times 100. This is in terms of per cent, plotted against the horizontal scale of gas-oil ratio limit, the same horizontal scale we have used on previous exhibits as in terms of cubic feet per barrel. I should explain the scale on the left. The ratio of stock tank barrels of oil produced per barrel of net reservoir voidage is simply the ratio of the number of barrels that you get in a stock tank if you produce 100 barrels of material out of the reservoir, oil plus its associated gas, measured to reservoir conditions in terms of per cent; in other words, if you produce 60 barrels of stock tank oil and you remove 100 barrels of material, oil and associated gas in the reservoir. I would like to use the designation "production efficiency" for this purpose of this graph.

Now that we have defined the two scales, the two upper solid curves show what the effect on the production efficiency, which is a measure of physical waste, would result from different combinations of gas-oil ratio limits and top oil allowables. As you will see, the top curve labeled "200 barrels a day" refers to 200 barrels a day top limit. The lower curve, 300 barrels per well of the top limits with credit for gas injection. For comparative purposes we have drawn in the approximate production efficiency under the no

flare order. No flare was permitted during the month of May, 1955, or at least no substantial flare existed. It is evident from this comparison, in my opinion, that whatever the gas-oil ratio limit you may choose that for a 200 barrel a day top limit on oil production you will have something in the order of 20% greater production efficiency than you would under 300 barrels a day top well limit. That indicates that the 200 barrel a day top limit is the least wasteful of the two rates we have chosen, and again we believe 300 barrels a day top limit is practically no oil proration at all and would let the drainage that is now occurring in the field continue uncorrected.

Q. Upon what sort of data are these lines on this graph based?

A. This vertical scale is simply based on straightforward calculations based on the gas laws which were given in elemental chemistry and physics, and data that was actually measured on reservoir materials from Rangely. To check that, and the source of that information, again comes from the Engineering Committee of the Rangely Working Interest Owners report in February and March, 1949.

Q. Now by way of summary -- are you through with this exhibit, Mr. Dunlap?

A. I believe so.

Q. By way of summary, let me then ask you whether it is

your opinion that in addition to it being a corrective measure to minimize or diminish the drainage situation that the proposed gas limitation with the gas injection feature is a reasonable approach to an order for the Rangely Field?

A. Yes, I believe that to be the case.

MR. SULLIVAN: I believe that is all that I have, Mr. Downing.

CHAIRMAN DOWNING: What effect would 200 barrels ratio production have on total production from the field?

MR. SULLIVAN: It was indicated on one of our exhibits there.

CHAIRMAN DOWNING: Can't you just tell me?

THE WITNESS: I am glad that you asked, Mr. Downing, I did not enter that rate into the record. As you can see by the chart it would be approximately 63,000 barrels of oil per day; and again I would like to mention that that represents our belief, our calculations of what would happen, and that may be higher because these calculations were based on the assumption that all of the installed compressor horsepower in the field would not be utilized.

CHAIRMAN DOWING: You say 53,000?

THE WITNESS: 63,000.

CHAIRMAN DOWNING: In other words it would not materially affect the total production?

THE WITNESS: That is correct.

CHAIRMAN DOWNING: Now, any questions of this witness first by other operators or anyone in the audience?

MR. LAUGHLIN: Mr. Downing, and members of the Commission, I am R. B. Laughlin, Stanolind Oil and Gas Company, and I would like to ask some questions.

CROSS EXAMINATION

BY MR. LAUGHLIN:

Q. Mr. Dunlap, throughout your early exhibits you referred to a number of what you termed "outrageous disparities or glaring disparities".

A. Yes.

CHAIRMAN DOWNING: I wonder, Mr. Laughlin, there are a great many exhibits here and maybe the cross examination ought to be one exhibit at a time. Would you like it that way?

MR. LAUGHLIN: I don't think it will be necessary in this cross examination. We may have to refer to one or two, but I don't have the numbers of them anyway, I couldn't see them.

Q. You pointed out what you term a number of outrageous disparities or glaring disparities?

A. Yes.

Q. In your early exhibits?

A. Yes, sir.

Q. If the California Company would shut in all of its wells, the disparity would have been even more pronounced and

more outrageous, would it not?

A. On the assumption that the California Company would, taking your assumption that would be true.

Q. Now I understood you to say, I believe, that there were no reservoir conditions which accounted for the disparity?

A. Generally there is no reservoir conditions that can account for the disparity.

Q. So the California Company had the opportunity of producing the same amount that the offset operators produced?

A. It would help me answer that question, Mr. Laughlin, if you tell me what you mean by opportunity.

Q. What I mean is that there are no reservoir conditions which prevented the production of the same amount as the offset operators which caused the disparity?

A. That is correct.

Q. And you had that opportunity to produce?

A. We had production capacity to produce that amount of oil, yes, sir.

Q. Did the rate of production of the wells owned by Stanolind or operated by Stanolind that you referred to -- I don't know which ones they were exactly -- did the rate of production of those wells during the period covered by your exhibit -- which I understand was only one month?

A. Yes, sir.

Q. Did the rate of production damage the reservoir?

A. Mr. Laughlin, if you will include in your definition of damage the reservoir physical waste, if I am permitted to refer to the statute, considering correlative rights as physical waste, I would say yes.

Q. All right, what is the definition of correlative rights then?

A. I said if I am permitted to take it from the statute. I would like to refer you to our lawyer.

Q. You have used it in your answer, but what is the definition as long as you are using it?

MR. SULLIVAN: May I supply him with a copy of the statute?

MR. LAUGHLIN: Yes.

A. I am reading from Item 9 under Paragraph 100-6-3. "The term "waste" as applied to oil shall include underground waste, inefficient, excessive or improper use or dissipation of reservoir energy, including gas energy and water drive--"

Q. That is the definition of waste, and unless you want to go ahead and read that my question was the definition of correlative rights in this statute.

COMMISSIONER BRETSCHNEIDER: That is No. 13.

A. "The term "correlative rights" shall mean that each owner and producer in a common pool or source of supply of oil and gas shall have an equal opportunity to obtain and produce his just and equitable share of the oil and gas

underlying such pool or source of supply."

MR. SULLIVAN: Now, Mr. Downing, he started out questioning him as to whether or not physical waste occurred and started asking him what his definition of waste was. I think the witness should be permitted so long as he has been asked to read from the statute to read the entire definition of waste.

MR. LAUGHLIN: I don't object. If he cares to I don't object if the Commission cares to hear it.

MR. SULLIVAN: I think the Commission is familiar with the law.

CHAIRMAN DOWNING: We are familiar with the law, but I don't know what counsel is really leading to.

MR. SULLIVAN: I will waive then my request that he be permitted to read the rest of the statute, but I don't intend to let this petroleum engineer argue the law which may eventually have to be decided in some other court.

MR. LAUGHLIN: I don't intend to argue the law, Mr. Sullivan, but he himself used the term correlative rights and I thought we should get it before the Commission.

CHAIRMAN DOWNING: Let's proceed, ask your next question and we will see where we are.

Q. So the disparity that you pointed out on your various exhibits was due to different rates of production?

A. Yes, sir.

Q. Now you testified, I believe, that an oil limit of 200 barrels per day would substantially eliminate the disparity that you referred to?

A. Yes, sir.

Q. In other words, it puts everybody on a basis of the maximum of 200 barrels a day?

A. On a battery basis, yes.

Q. On a battery basis. Would not the 350 barrels a day do the same job?

A. As I understand your question, you are asking whether or not a top oil limit of 350 barrels a day on a battery basis would do the same job. My answer is no, that would be practically no oil proration.

Q. How about 350 barrels a day on a well basis?

A. I would give the same answer.

Q. Now as I understand your rule, and I think you have just mentioned it, your rule you intend to administer on a battery basis?

A. Yes, that is correct.

Q. Aren't there a number of one-well leases in the Rangely Field?

A. That is true.

Q. And under your rule would it not be possible for an adjoining multiple well lease to produce the wells offsetting the 1-well lease above 200 barrels a day?

A. That is correct.

Q. Whereas a 1-well lease would be limited to 200 barrels a day?

A. That is correct.

Q. Would it not be further possible for the multiple well lease to make up deficient wells by more efficient wells?

A. Within the same battery?

Q. Within the same battery.

A. It would permit the production of the more efficient wells.

Q. Whereas if that one well on the 1-well lease is a deficient well he can't make it up anywhere.

A. No, sir. That is one of the things that an operator has to face; it's one of the things you accept with a 40-acre tract.

Q. Would not that violate the correlative rights of that owner?

A. No, sir, it certainly would not. We are comparing production on an area basis, Mr. Laughlin, which is represented by wells or battery areas, and our contention is that we are being drained on the basis of comparing production on an area basis.

Q. Well, if you drain the 1-well lease you are violating his correlative rights, are you not?

A. I am not agreed to your conclusion that we are

draining the 1-well lease. My conclusion would be in the reverse.

Q. You mean to say that if a number of wells offsetting a 1-well lease were produced at higher than 200 barrels per well per day they wouldn't drain that 1-well lease?

A. No, sir, they would not in my opinion.

Q. Under your proposed rule what do you estimate the total field production will be?

A. We estimate that the total field production will be 63,000 barrels a day. As I mentioned, I qualified that estimate by saying that it might be higher if all compressor facilities were utilized in the field. In making that estimate we are assuming that, like ourselves, the other operators will adjust their operations, will use their diligence, resources, ingenuity, to adjust their operations and facilities to obtain the maximum oil production which would be provided under the order which we propose.

Q. And your estimate is about 63,000 per day?

A. That is correct.

Q. What is the present rate of production as far as you know?

A. I have a convenient figure here for March, will that be late enough?

Q. That is all right.

A. 64,437.

Q. So your rule would propose to restrict the current rate of production by some 14 or 15 hundred barrels a day?

A. Not necessarily. It may be, as I indicated by maximum utilization of the installed compressor horsepower, it may be able to be increased above what we show to the extent it may equal this rate.

Q. But the figures upon which you prepared your charts were based on 63,000?

A. On the assumptions we made it would be 63,000, yes.

Q. One of your charts I believe, Mr. Dunlap, was based on showing disparity relative to original oil in place.

A. Yes, sir.

Q. You wouldn't suggest that oil restrictions be based throughout the field on oil in place?

A. No, sir, we are not suggesting that.

Q. Going back once again from a reservoir standpoint, the California Company could have produced the same amount of oil as those offset operators which you pointed out as disparities?

A. Yes. In my opinion the California Company has the capacity to produce comparable rates with the other operators.

Q. So what you are asking in your proposed rule is that all operators be reduced to that amount of oil which the California Company chooses to produce?

A. I cannot agree that the rate of oil production of

the California Company is simply what it chooses to produce. I will try to answer your question, Mr. Laughlin, I assume you are trying to elicit from me a reply as to what other remedies we have tried to avail ourselves of to correct this disparity other than coming to this Commission and asking for a proration order, is that right?

MR. SULLIVAN: Just let him ask the questions, Mr. Dunlap.

MR. LAUGHLIN: I asked the question and it has been answered. That is all I have at this time.

BY MR. WILLIAMS:

Q. Mr. Dunlap, in answer to Mr. Laughlin's question I believe you said there was no reservoir conditions that brought about this so-called disparity between the production by different companies.

A. Yes, sir.

Q. Was there any order of this Commission that caused that disparity?

A. No, sir.

Q. Now then if the California Company has the capacity to produce, has the reserves in excess of the other companies and has the facilities and on paper is entitled to a greater share of the production, will you tell this Commission why California Company didn't produce its share in the field?

A. Mr. Williams, you may have misunderstood me as to

the presently installed facilities of the California Company to produce. I was referring to reservoir conditions which would allow us to produce primarily. It is possible we could add facilities, of course, which would permit us, and I do believe we can add facilities to permit us to produce the amount of oil which would be comparable with the other operators. I don't know why we didn't produce the amount of oil on a comparable basis with the other operators. I assume that if there were other remedies available to us that we would have availed ourselves of those remedies.

Q. Now the so-called disparities about which you testified extend back to 1951, '52, '53 down through the years, do they not?

A. The disparities, I believe as one of the exhibits shows, have started in about the middle of 1952 and have in a general fashion tended to increase since that time.

Q. And during all of that time California Company has had an equal opportunity with all other operators to acquire and to install whatever facilities are necessary to produce their properties?

A. Yes, sir.

Q. Now the definition of correlative rights which you read a while ago defined it to be the equal opportunity of the different companies.

A. Yes, sir.

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Q. Now California Company doesn't need any relief from this Commission to give it an equal opportunity in this field, does it?

A. I don't know what your definition of opportunity is, Mr. Williams. We have an opportunity to produce that oil and if some of that production was spilled on the ground and run down the creek that would result in waste.

Q. You mean lack of market?

A. That is possible, yes, sir.

Q. Then you are asking for a market demand proration order, is that correct?

A. No, sir.

Q. What opportunity does Phillips Petroleum Company, Stanolind, Sharples, Texas-U.P., have in that field today that California Company does not have?

A. Going on past history, Mr. Williams, I can only say that the California Company has produced in the order of 31,500 barrels a day to about 32,000 barrels a day. If they had not had an opportunity to sell that oil that they would have availed themselves of that opportunity.

Q. And you are tying this again into market demand?

A. I don't believe so.

MR. SULLIVAN: Mr. Downing, at this point I think we are getting this witness a little far afield from his particular field of expertness. I am not certain at all that

Mr. Dunlap is either an expert or prepared to testify as to what market opportunities are in northwestern Colorado or any other part of the state.

CHAIRMAN DOWNING: I think the Commission fully understands that.

MR. SULLIVAN: Does Mr. Williams understand that?

MR. WILLIAMS: I would like very much to eliminate market demand from our consideration.

Q. Can you then name any other physical conditions from the standpoint of operations in the field whereby other companies have an opportunity to produce that California Company has not had, forgetting market demand?

A. No, sir.

CHAIRMAN DOWNING: I think he answered that several times.

Q. Now your Exhibit B, Mr. Dunlap, if I remember correctly was a gas-oil ratio map of the field?

A. Yes, sir.

Q. Now the ratios shown on that map do not represent the ratios that would have existed had it not been for the Commission's gas injection order?

A. Not necessarily, no.

Q. Those figures are in part the result of the dispersed gas injection that has been occurring in that field?

A. In part, yes.

Q. And as a matter of fact some of the areas of higher ratios are those areas in and around injection wells?

A. I believe that is true, yes.

Q. Now then your Exhibit C, if I remember correctly, was an oil production map wherein you purported to show this so-called disparity of oil production?

A. Yes.

Q. Now on that map I believe that you pointed to certain California Company batteries wherein your average production was in the order of 200 or 272 barrels?

A. Yes.

Q. And you then pointed to offset wells of Phillips Petroleum Company and Stanolind that were producing in excess of 400 barrels?

A. Yes, sir.

Q. Now the figures that you usedfor California Company were battery averages, were they not?

A. That is correct.

Q. The offset figures you used mainly were well figures?

A. The battery average, and that was one well lease so that was the results of the production of one well.

Q. But the result is it was a 1-well figure?

A. Reflects the production of one well, yes.

Q. Now in those California Company batteries, Mr. Dunlap, California Company has individual wells producing in

excess of the rates of any well of Phillips Petroleum Company or Stanolind, isn't that true?

A. That may be possible.

Q. For illustration, your well No. 13 in McLaughlin "A" for May produced at a rate in excess of 480 barrels of oil per day?

A. I will take your word for it, Mr. Williams.

Q. Assuming that is correct, is there any more inequity of the McLaughlin No. 13 well producing at 480 barrels a day than a Phillips Petroleum Company well producing at 420 barrels of oil per day?

A. Yes, sir, in my opinion there is a very great deal of difference. We are comparing the production of a 40-acre tract in the case of the Phillips well. We are comparing that with the production of a much larger tract than the California Company acreage, and in terms of producing what share of the oil is in that area I think that the California Company is very definitely suffering drainage under those conditions; even though the Phillips 1-well lease is producing in a greater rate than one individual well in the California Company battery area.

Q. Now, Mr. Dunlap, if you have a large lease and you have not been limited in your production by any order of this Commission and your per well average is low having a well to each 40 acres, it means that there are large parts of that

lease that are not as good productionwise as other parts?

A. No, sir, I don't believe that necessarily follows, if I understood your question.

Q. Then you would say that every 40 acres of the McLaughlin "A" lease has capacity to produce 480 barrels a day the same as does McLaughlin 13 well?

A. This is on a battery average simply averaging an area. I have not attempted to define what capacity existed under each well, nor the reserves underlying each 40-acre tract.

Q. Well, in using the 272 battery average as representing the area and the 420 barrel production of Phillips Petroleum Company well as being the average of its area, there is no comparison between the two properties, is there, propertywise?

A. I don't believe that I would compare the properties on the basis of their current production.

Q. What is there that restricts any well on that field from producing what it is capable of producing?

A. There are several factors that could affect it; one of which is physical facilities.

Q. Then you are asking this Commission to cut the other operators' production of the field back to the capacity of the facilities that California chooses to install, is that correct?

A. We are asking that the Commission cut the other

operators' production back to a rate at which we will have efficient reservoir operation, which will allow the field to produce at a reasonable rate and which will correct disparities in production between areas.

Q. Right on that particular point, I believe your Exhibit I reflected that using the factors that you propose, that is an oil limit of 200 barrels with a ratio of 750 to 1, this efficiency that you have just mentioned and I assume that the efficiency you are talking about was 44%?

A. That would be the approximate figure, yes.

Q. And that is what you in your proposed order so far as efficiency is concerned are aiming at?

A. We are aiming at production efficiency, production without waste. This is an exhibit which illustrates production efficiency.

Q. Now then if you used the 300 barrels of oil per day as the top limit and you would use a lower ratio which would thereby reduce the flare say of 500, what would be your percentage of efficiency?

A. It would be approximately 46%.

Q. As compared with what percentage under your recommendation?

A. Approximately 44%.

Q. Why not recommend then, Mr. Dunlap, the 300 barrel oil limit and 500 foot ratio and thus achieve a greater

percentage of efficiency under your own exhibit?

A. We do not recommend the 300 barrel a day per well rate with a 500 GOR limit because that would result in continuation of the very glaring disparity in producing rates that exist in the west area.

Q. Is there any reason why the California Company can not increase its wells to the 300 barrels rate and eliminate itself that disparity?

A. Physically there is no reason why we cannot do that.

Q. Well, spiritually, mentally, or any other reason, what's to limit the California Company?

A. I do not know the answer, Mr. Williams. I assume that if we had other avenues of remedy, if we have had those avenues in the past, we would have availed ourselves of that remedy.

Q. But you are telling the Commission that you don't now?

A. No, sir, that is out of my department.

Q. You are familiar with operating conditions in this field, are you not?

A. I am.

Q. And so far as you know then from the standpoint of physical operations in the field and so far as reservoir conditions are concerned, there is no reason why California Company cannot aid itself in eliminating this disparity, so-called?

A. As far as reservoir conditions go there is no reason why the California Company could not produce at a rate comparable to what Stanolind and Phillips are now producing; and with the adequate producing facilities which would be necessary to add, it would be possible to physically produce that amount of oil in my opinion.

Q. But for some reason the company has not seen fit to tell you about, they have not chosen to do so?

MR. SULLIVAN: Mr. Downing, we could abbreviate this a good deal if you would permit a departure from the normal procedure. We do have in the audience I believe a man who can tell you. We all know what Mr. Williams is driving at, it's the word "market". In fact he has used it himself, and with the permission of the Commission and Mr. Williams I think maybe we can abbreviate this whole discussion a good deal, and maybe by the time that you suggested we go to lunch. Would that be satisfactory?

MR. WILLIAMS: Except this, this particular witness is the one that has attempted to demonstrate to this Commission a so-called disparity. They think it should be corrected by the Commission, an arm of the Government. I think we should have the right to cross examine this particular witness to determine what that disparity is, whether or not it is real, something caused by the Commission order, something over which California Company has no control.

CHAIRMAN DOWNING: Haven't you examined him at great length on that question?

COMMISSIONER BRETSCHNEIDER: Don't you think we understand that already?

CHAIRMAN DOWNING: I think we caught the point a half hour ago. We are not altogether a dumb jury, just give us credit for catching the point and don't repeat it over and over again. Let me state we are not governed necessarily by the rules of evidence. The cardinal rule of this Commission I think is brevity. We like to have you present your case speedily. We don't like to have you argue with the witnesses. We like to have you make your point and when you make it go to another point and not keep repeating it. I hope you will try to observe those rules.

MR. WILLIAMS: I will do my best, if the Commission please.

CHAIRMAN DOWNING: All right, if you would like to have Mr. Sullivan put on this witness I think myself it will expedite it.

MR. WILLIAMS: Let me ask him as to one or two other exhibits, which are only within this witness's knowledge, I believe.

CHAIRMAN DOWING: All right, confine it to exhibits.

Q. Mr. Dunlap, referring to your Exhibit D, as I understand it that exhibit purports to show the production ratio as

between companies in the west end to their relative darcy feet as you have computed it?

A. Yes.

Q. What figure did you use in arriving at your relative darcy feet between the companies?

A. We used the figure of total darcy feet shown on the core analysis. It was made on the core at the time the well was drilled, and in some cases as you know some of the wells were not cored. For those particular wells the permeability capacity, the map was made on contours of equal permeability capacity and interpolations were made on those wells which were not cored to determine their darcy feet on a reasonable basis and estimated on reasonable basis.

Q. What was the minimum millidarcy that you considered?

A. In effect I would say the answer to that is one-tenth. I don't believe millidarcies were reported below one-tenth.

Q. You used all data showing the millidarcy above one-tenth?

A. Yes, sir.

Q. Now that relationship would vary materially if you use some other index, would it not?

A. I have not made that calculation.

Q. But it would vary depending upon the index that you used, wouldn't it?

A. That is possible.

Q. Now referring to Exhibit E, which is the next exhibit, now that is an exhibit on which if I understand you correctly you purport to show the producing rate versus your opinion as to reserves?

A. Yes, sir.

Q. Now arriving at those reserves you took into account permeability?

A. I did.

Q. What millidarcy factor did you use there or what was the minimum millidarcy that you considered?

A. We considered a minimum of 5 millidarcy minimum permeability for this reason, Mr. Williams, that 5 millidarcy basis was least favorable to the California Company in the face of reserves.

Q. But for Exhibit D you did use one-tenth, and to be at a disadvantage to other companies in this one you used 5 millidarcies?

A. Five millidarcies, yes, sir.

Q. And the index that you use would materially change the answer?

A. I didn't say that. I don't know whether it would change or not; I haven't made the calculation.

Q. Well, as an engineer you would know, would you not, that the millidarcy factor that you use would result in a

change?

A. I don't know that I would be qualified to say without actually going through the calculations whether that would affect the factor or not.

Q. You would normally think it would though, would you not?

MR. SULLIVAN: It might change it either way, up or down.

A. That is correct, it may change it, but I don't know in which direction it would be.

Q. But you used 5 millidarcies here and one-tenth on the other map because it did result in a different answer as to comparison?

A. Well, we knew I believe the figures are more readily available, the results of reserve calculations, on the lower limiting permeability than are the results of millidarcy foot calculations on various lower limit permeabilities. I don't believe the data are handy without going through a lot of calculations to determine those results.

Q. Now there are just two other questions. Your exhibit and testimony with respect to the success of the gas injection of the Rangely Field shows that there is a difference between the east end and the west end of the field, is there not?

A. Do you wish to refer to an exhibit?

Q. That would be Exhibit G, I believe.

A. Are you referring to comparing these two?

Q. Yes.

A. There is closer conformance to the Rangely prediction in the west end than there is in the east end on the basis of pressure performance; however, the gas-oil ratio performance, the conformance in the east unit is in line with predictions.

Q. But you are putting gas back though. Your pressure performance has shown a drop far more than the predicted drop even of primary, isn't that true?

A. Initially that is true, and at this point of gas injection the pressure did increase. Now we can take quite a bit of time at this hearing to discuss what effect shut in times will have on pressure as compared to the assumed reservoir pressure.

Q. But the point I am making is this: There is a marked difference between the west end and the east end so far as the results of the program?

A. Reflected by the pressures measured at the end of 72 hours in the east end my answer is yes.

Q. And the production limitations that you here propose to the Commission though are based upon California's position in the west end of the field and do not take into account at all the condition of operators in the east end of the field,

is that true?

A. No, sir. I believe that I stated that the proration order would substantially correct the disparities in the field, and our main problem is in the west area. However, the effect of our proposed order would be in correcting disparities in the more easterly portion of the field also.

Q. Now when you say that your problem is in the west end, when you say "our problem", you mean California Company's problem or the Commission's problem?

A. I believe that is a matter of law. Speaking as an engineer that is our problem.

Q. That is your problem and you are considering this proposed order from the basis of the California Company's problem in the west end and not from the standpoint of Phillips Petroleum Company and other companies having properties in the east end?

A. We have properties in the eastern area also.

Q. In relation though to properties in the west end they are relatively small?

A. We produce substantial quantities of oil in comparison with other operators in the more easterly section of the field. Our operations are substantial in the west end also.

Q. But the bananas are much better in the west area than the peanuts in the east end?

A. We are being hurt more on the west end than the

east end.

Q. In your opinion are the rates of production of Phillips Petroleum Company in that field wasteful?

A. The rates of oil and gas production at current rates?

Q. Has Phillips been wasteful in its operations in the Rangely Field?

A. I would like to refer back to the definition of waste as defined in the order, if I may.

Q. You mean correlative rights?

A. I mean waste as defined in the order.

Q. Other than correlative rights, from the standpoint of physical operation has Phillips operation in your opinion been excessive or, I forget your language -- these so-called flagrant operations, is that waste from a physical standpoint?

A. If you are referring to gas-oil ratios, no, sir, I don't believe so.

CHAIRMAN DOWNING: I think you have covered that.

MR. WILLIAMS: I was ready to quit.

CHAIRMAN DOWNING: It's time for lunch so we will adjourn until 1:30.

(Whereupon a recess for lunch was taken.)

AFTERNOON SESSION

CHAIRMAN DOWNING: Let's proceed, and let me say now that we hope there won't be any unnecessary repetition. Let's stick to the point and bring it out and when we have it

brought out let's stop and give the assumption that the Commission understands. At least we will do our best to understand the points you want to make. Now it's still the California Company. Will you resume the stand, Mr. Dunlap. Now is there any more cross examination? If not, any further redirect?

REDIRECT EXAMINATION

BY MR. SULLIVAN:

Q. Now after having been cross examined by attorneys for two other operators in the field, only two or three items have occurred to me which in the interest only of clarification of our position or the testimony of this witness require any mention. Now during what period, Mr. Dunlap, have the various disparities in production rates as indicated by the indexes that you showed us on the various exhibits, during what period have those disparities become most widely apart?

A. The period since the middle of the year 1952 up to the present time.

Q. Did you not show us on one of the California Company exhibits that during the period for instance of 1951-52 our production rates were, if not close together, almost comparable?

A. Yes, sir.

Q. Referring now to California Company Exhibit E, are there not areas there where there are disparities in the

indexes of production which we have put on this map between multiwell batteries and multiwell batteries and between multiwell batteries and single batteries?

A. That is true.

Q. Would you point out two of those just for illustration please.

A. An example would be comparing A. C. McLaughlin battery "C", which is a multiwell battery, at a ratio of production rate to reserves of 23 as compared to Stanolind L. N. Hagood "A" battery of 52; likewise, comparing California Company Emerald "B" battery having a ratio of 20 with Stanolind C. R. Stoffer "A" lease having a ratio of 35.

Q. Are there other similar examples of multiwell battery disparities as against multiwell batteries that a careful examination of the map will show?

A. Oh, yes.

Q. Then the two instances which Mr. Williams mentioned were really exceptions to the general situation, is that so?

A. They are unusual, yes.

Q. He picked out one well batteries and compared them with adjacent multiwell batteries, is that correct?

A. That is correct.

Q. Now will you point out the two instances which he indicated in his questions of you?

A. I believe his questions were of these two 1-well

batteries, Phillips Magor unit 1--

Q. Those are Stanolind leases?

A. These are Phillips.

Q. You mean comparing with Stanolind?

A. These are Phillips leases he based his questions on.

Q. Will you point out there are additional wells there in that same cluster which add to the disparity in the area.

A. Yes. There are two additional 1-well batteries adjoining the two of Phillips which are operated by Stanolind, namely, Associated Unit "A" and McLaughlin Unit "A".

Q. Now, Mr. Dunlap, is the inference necessarily to be drawn that a single well adjoining a property producing at a comparable rate with the single well on the adjoining lease will necessarily offset all of the drainage caused by a disparity in the production rates with a higher rate on the single well lease? That is perhaps badly worded. Let's put it this way: Can drainage in this field be figured on a well-to-well basis?

A. It is my opinion that it cannot. This field is not producing wide open and it's my opinion that on a field producing its wide open capacity the proper way of comparing the properties so far as drainage is on a comparison on an area basis, not on a well for well direct offset basis.

Q. Then I ask you once more whether or not the averages which we showed on each of our exhibits containing

these disparity figures did not show that on the average there was a disparity existing?

A. That is correct, in each instance.

MR. SULLIVAN: That is all I have.

CHAIRMAN DOWNING: Let me ask just one question. What is the reason for this allocation on a battery basis rather than on an individual well basis? Don't you think an individual well basis would be more fair?

THE WITNESS: Mr. Downing, our proposal or preference for application on a battery basis stems from really three things. We have administered gas injection under Order 2-13 on a battery basis, we are familiar with that method of administration; secondly, we believe that administration on a battery basis is much more feasible, less complicated; and thirdly, we think that it will allow the operator of a multi-well battery to exercise his best judgment to produce his oil out of the most efficient wells where he has that choice.

CHAIRMAN DOWNING: One more question. The Supreme Court indicated or stated that we do not have a right to restrict production in toto by only excessive flaring. Now to what extent of this 13 million feet that you mentioned would be considered excessive?

THE WITNESS: It's poissible you may have misunderstood, but I do not think 13 million is excessive.

CHAIRMAN DOWNING: Isn't any flaring, even in a small

degree, a diminution of reservoir energy or bottom hole pressure?

THE WITNESS: I cannot deny that absolutely there may be diminishment of the ultimate recovery. I believe a reasonable diminution is what we are concerned with, that is my understanding, and I do not believe that a flare of 13 million feet will result in an unreasonable diminution of the recoverable oil

CHAIRMAN DOWNING: Does it result in any diminution of reservoir energy?

THE WITNESS: That is possible that it would result in some slight diminution, in my opinion.

CHAIRMAN DOWNING: In other words, when you produce one million cubic feet of gas, and say 100,000 barrels of oil, voiding the reservoir, now you put back the million feet of gas and that void is filled, but the void caused by the 100,000 barrels of production is not put back and to that extent is it not true that there is bound to be a diminution of reservoir energy?

THE WITNESS: Yes, sir, I believe in the absolute sense as a scientific statement that would be correct.

CHAIRMAN DOWNING: That is all. Now any other questions by any members of the staff or the Commission?

MR. STAYTON: I am John Stayton, representing the Sharples Oil Corporation. I have some questions to ask. I

wasn't here when he got back on the stand.

MR. ROCCHIO: He just started, Mr. Stayton.

CROSS EXAMINATION

BY MR. STAYTON:

Q. Mr. Dunlap, I gather from your statements concerning the benefit of gas injection that irrespective of the order that the Commission comes out with, whatever the ratio that it fixes may be, and irrespective of whether it's a net ratio order or gross ratio order that California Company believing in gas injection will continue to inject at least to the extent of its present compressor capacity, is that right?

A. I am not qualified to say definitely yes or no as to the complete horsepower that we have installed at this time. I could only state that it is my opinion we would utilize the compressors to the extent necessary to operate under our proposed order.

Q. Do you know by that that if the Commission should come out with a gross gas-oil ratio order, say fixing a gross of 2,000 cubic feet per barrel of oil, just to pick some figure out of the air, that your company would use its compressor capacity only to the extent that it needed to stay within that limit or wouldn't it continue more or less at the present injection practices?

A. I think in my opinion that certainly we are in favor of gas injection. We would inject as much gas as we felt that

we could and still protect our lessors and to maintain a level of production under the order, and it would depend somewhat upon what the other operators decided to do at that time.

Q. Well, to get to something else, you would really anticipate that you would certainly utilize a good part of your compressor capacity for injection?

A. That is true, yes, sir.

Q. Irrespective of which order comes out?

A. If the other operators do I believe that is correct.

Q. Now for the benefit of some of the new Commissioners, very briefly tell us the type of reservoir we have here, Mr. Dunlap. It's a depletion gas type reservoir, is it not?

A. That is correct, essentially so.

Q. We have a gas cap in it, do we not?

A. Yes, we do.

Q. Now where is the gas located with respect to the oil, generally speaking with respect to the oil column?

A. Are you referring to the gas cap or the gas?

Q. The gas cap.

A. We have gas other than gas cap.

Q. I realize that.

A. That gas-cap gas is located in the crestal portion of the field, and as I described in the exhibit was originally located within the minus 330 foot Weber top contour.

Q. Generally speaking, the gas-cap area is in the

central portion of the field, is it not?

A. That is true.

Q. Now in a reservoir of this type if we have no gas injection, and just utilize the gas drive that we have, you would expect over the producing life of the field the gas-oil ratios to increase, would you not? That is true of all reservoirs of this type?

A. That is inherent in all depletion type reservoirs where there is no return of gas.

Q. In other words, up to a point, which is very near the producing limit or producing life of the field, the ratios continue to rise?

A. Yes, they will rise to a maximum point somewhat before the field is depleted and then decline after that time.

Q. Now where do we find ourselves with respect to the depletion of this field? Is it about half depleted on primary recovery anyway, is it about half way depleted?

A. I think that is a fair statement, yes, sir.

Q. And what is the average gas-oil ratio now for the wells in this field?

A. I believe the production of the May production report of the Rangely Engineering Committee shows an average gas-oil ratio produced of 1500 approximately.

Q. Now would you get up there to any of your base maps please, sir, that Exhibit E there is all right, and show the

Commission where the McLaughlin leases that are operated by the Sharples Oil Corporation are located.

A. The leases of the Sharples Oil Company are located in the central area of the field and three leases in the central area, namely, McLaughlin 40, in the northwest northeast of Section 21, the Sharples McLaughlin 440 "B" which comprises a considerable part of Section 33, and the Sharples McLaughlin 106 lease which is the east half of the southeast of Section 33, and also one other 2-well lease located in the west half of the northeast quarter of Section 36, all in Range 102 West, Township 2 North.

Q. In so far as the oil in place in those leases is concerned, that is the original oil in place of course, the centrally located leases are much better than that lease out there on the east edge, is it not?

A. I would have to look at the records, Mr. Stayton, to say for sure, but generally speaking I would be willing to speculate that would be in line.

Q. That would be in line with what you would expect, would it not?

A. Yes, sir.

Q. Now those are leases in the gas-cap area that we have talked about.

A. Yes. The first three leases are in the regional gas-cap area.

Q. Yes, in other words the gas-cap portion of it is beneath each of those three leases in the central part of the field?

A. Yes, sir.

Q. Now in so far as the difficulties of gas injection are concerned, and I am talking about the amount of gas you have to handle without putting it back and the amount of compressor capacity, the lease because of the gas-cap area structural position ordinarily would be called upon to handle more gas if you have an injection program than the lease outside of the gas-cap area, would you not?

A. It could be, it would depend on the way the wells were completed.

Q. I realize there are methods of attempting to cut the gas cap off by setting packers and things like that, but generally speaking the leases in the gas-cap area are the ones that are going to have the earliest trouble and the most trouble in so far as putting gas back is concerned, isn't that a fair statement generally speaking?

A. Yes, with the exception that I noted.

Q. Well, the exception that they might be able to set packers and do remedial work and try to cut the gas off, but there is a limit to even that, isn't there, in a gas cap? You finally reach the point where you can't cut the gas off even by setting packers, isn't that true?

A. That might be the case if you are injecting into the gas cap.

Q. And furthermore a lease in the gas-cap area if others are injecting gas into the gas cap and the field is fractured--and there are some fractures in this field, are there not?

A. Yes, sir, there are fractures in this field.

Q. The injection of gas by others conceivably may come into some of these leases, not the leases upon which the gas was injected, may migrate from the injected lease to some other lease in the gas-cap area, is that right?

A. If application of injection is not controlled properly there would be migration of gas injected on one property across property lines.

Q. And, of course, gas injected for example -- where are the Texas-U.P. injection wells with reference to the Sharples properties, do they have any near the Sharples leases?

A. There are several injection wells of the Texas-U.P. that are closer than other injection wells, other company's injection wells. I don't know what you mean by close, Mr. Stayton, but I will point out those injection wells that are closer than others; Texas-U.P. 32-27--

Q. Where is that?

A. To the northeast of the Sharples central area properties, Texas-U.P. Carney 12-5, to the southwest of the Sharples properties, Texas-U.P. 67-32 and 34-31 injection wells

which are also southeast of the Sharples leases in the central area.

Q. All right, now in other words those centrally located Sharples leases are straddled by injection wells, are they not?

A. Those leases lie between injection wells, yes.

Q. And you don't think that it's beyond the realm of possibility that some of the gas that has been injected into those injection wells we have been talking about has migrated to the Sharples lease, do you, through fracture or otherwise?

A. I don't believe it's likely that that has happened. I would have to make computations to answer that.

Q. Well, it could happen but you don't know whether it has happened, isn't that a fair statement?

A. I don't believe it has happened.

Q. Well, could it happen?

A. As I indicated under gas injection program that was not properly administered that might happen.

Q. All right, now I will ask you another question. Aside from the difficulty of putting gas and handling gas on a lease that is in the gas-cap area, I will ask you generally speaking is it easier to handle your gas disposal problem on a large lease or a small lease? In other words if you are going to have to inject gas and other conditions are equal, would you rather have a 640-acre lease or a 40-acre lease?

A. I would rather have the larger lease.

Q. It gives you more flexibility, does it not?

A. It does.

Q. Are you familiar with the oil in place shown to be under the Sharples operated properties by those engineering reports that you have referred to? I believe they showed it as approximately 3%. Are you familiar with those figures?

A. I can look them up. I know I am familiar with the source of the figures.

Q. And you know, don't you, from experience in these unitization meetings that Sharples has always contended, in fact some of the engineers have conceded, that its interest in the field is approximately 3% on an oil in place basis.

A. I can say this, that I know of instances where Sharples has contended that their share of the recoverable oil was 3%.

Q. And you know of instances in which other companies have offered to unitize upon a basis that would give them a 3% interest in the reservoir, do you not?

A. I would have to refer to figures on unitization. I am not as intimately acquainted with the unitization problems at Rangely as other people are.

Q. Well, do you know what their present part of the field production is, what their percentage is now, after this order that we have had?

A. I am quoting from memory, I believe it's about 2%.

Q. Well, if you will accept my statement, I think it's about 1.9, but that puts it pretty close together?

A. Yes.

Q. You know, do you not, that prior to the promulgation of Order No. 2-8 for a long period of time prior to that that Sharples had actually produced 3% and more of the total outlet for the field? Do you know that to be a fact?

A. No, sir, I do not know that to be a fact. However, it may be.

Q. Let's assume that that is a fact, and we will prove that later. Assuming that it was producing 3% or more of the field outlet until this order, Order No. 2-8, went into effect and it is now producing 1.9%, have you made any study of that lease or those leases so that you could tell me how much of that was due to structural position of the leases themselves and how much of it was due to this gas injection program?

MR. SULLIVAN: Mr. Stayton, are you cross examining or making your case?

MR. STAYTON: I am cross examining. He said this program was effective, I thought.

CHAIRMAN DOWNING: I think we will shorten this hearing up considerably if you make your case by direct testimony rather than cross examination.

MR. STAYTON: I just have a few more questions, Judge.

A. No, sir.

MR. STAYTON: Are you objecting to the question?

MR. SULLIVAN: If I could see any point in it, Mr. Stayton. I don't think I would have a leg to stand on in objecting, but I sort of hate to see this witness stand up there and testify to things that obviously belong in your direct testimony.

MR. STAYTON: I thought the witness testified this gas injection program was successful.

MR. SULLIVAN: That is true.

MR. STAYTON: I want to find out if it has been successful on Sharples lease. I think that is proper cross examination.

CHAIRMAN DOWNING: All right, proceed.

Q. Will you answer the question, Mr. Dunlap.

A. No, I have not made that analysis in that detail.

Q. You don't know then how much to attribute to structural position and how much if any to attribute to the injection program?

A. I will say this, that Sharples I believe has the same option that every other operator has of adding injection capacity if they are limited by gas-oil ratio limit. Every other operator has to maintain their production.

Q. It's your testimony that to get themselves back to 3%, all they have to do is put on another compressor or add

compressor capacity, are you telling the Commission that?

A. I am saying that is an alternative that they could consider in approaching a return to their previous rate.

Q. All right, now let me ask you this, and I am getting down to the order that you propose, and this is cross examination for the benefit of the gentlemen back there, under your 750 cubic feet of gas, and that is the net ratio, you are going to give credit for injecting gas?

A. That is our proposal.

Q. What is your oil limit, 200 barrels a day?

A. Top oil limit, yes, on a battery basis.

Q. All right, if everybody takes full advantage of that order, what's the field production of gas going to be, just roughly?

A. I would judge it would be in the order of about a little bit less than the gas production has been lately, in the order of 95 to 98 million feet a day.

Q. 95 to 100 million, somewhere in there?

A. Somewhere in that order.

Q. And of that if everybody takes full advantage of the relief they would get, the bonus they would get, by injecting the increased allowables, about how much of that gas would you calculate would be injected and how much flared?

A. Well, if they utilized their compressor capacity to the utmost it would be approximately 13 million feet of flare.

The difference between the gas production, whatever it may be, and 13 million then would be that gas which is injected and used

Q. Well, some of it though is used up in lease use and burned up in the plant and one thing and another, it wouldn't be quite that much, would it?

MR. SULLIVAN: He said gas flared and used.

MR. STAYTON: Oh, excuse me.

Q. All right, now in other words that would be an injection of -- what did you say, how much?

A. In the order of 65 million.

Q. So you would have the problem, the operators would have the problem, of injecting that much gas if they proceeded under the order and took full advantage of it?

A. That is correct.

Q. All right, now do you know how much gas was being flared in this field when the Union Pacific case went to trial?

A. I would like to look at the record to confirm that.

Q. Wasn't it about 20 million feet?

A. That may be.

Q. And if that is correct, then the problem that the operators would be confronted with now under your proposed order in so far as injection is concerned would involve a volume of gas more than three times the volume that was involved in the case in which the Supreme Court held unconstitutional, isn't that right?

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A. I think that is quite right.

Q. Now you talk about using present compressor capacity in getting credit for this injected gas. How much has been spent out there on compressors would you estimate by all operators, California Company, Texas-U. P., Phillips, and all of them?

A. I am sorry, Mr. Stayton, I can't give you a definite figure on that.

Q. All right, how much has the California Company spent?

A. Are you including only field compressors?

Q. Well, I am including whatever you have spent in order to inject gas back into this reservoir. How much has it cost you to keep yourself in your present position?

A. Probably $2,000,000.

Q. For your one company alone?

A. Yes, sir.

Q. Don't you know of your own knowledge that Texas-U.P. has probably spent that much or more?

A. I believe that is right.

Q. And then Phillips has spent some?

A. Yes, sir.

Q. And Stanolind?

MR. SULLIVAN: Now this is really getting pretty far afield for cross examination, even for Mr. Stayton's definition of cross examination.

COMMISSIONER DILLON: Mr. Counselor, and gentlemen, I think we could expedite matters here considerably if each counselor would make a statement and make his recommendations. I think that all the members of this Commission would rely upon the statement that any counselor would make, and I believe that would expedite this considerably. Personally, I think that is the way we ought to proceed.

MR. STAYTON: Mr. Commissioner, I have only a few more questions. I am going to make a statement. I will tell the Commission right now the purpose of this is in the Union Pacific case the Court specifically held that this Commission had no authority to compel the injection of gas in a situation where you have only involved in the production or flare of 20 million cubic feet. These people have come in here with an order under which they are going to compel the injection of three times that much and more, and we say that the authority that the Court said you didn't have in the first instance you certainly don't have now. You have even a worse situation from the standpoint of your own authority than you had originally.

COMMISSIONER DILLON: We can read these proposed orders and we can interpret them and we have an attorney that can give us the law on it.

MR. STAYTON: If you don't care to hear from us any more, of course I will stop.

COMMISSIONER DILLON: Go ahead.

Q. Now, Mr. Dunlap, just one question on one more point. Suppose that all we were concerned with was the value of this gas for the purpose of lifting oil to the surface, and for the purpose of my question we will say that it was worthless as a fuel. I realize that is not true, but if you weren't interested in saving the gas as a fuel and were going to operate the field under primary recovery mechanism and were not interested in saving the gas because it had no value except to lift the oil up, of course the gas-oil ratio considerably in excess of 750 cubic feet per barrel of oil would be justified, would it not, from a standpoint purely of lifting the oil to the surface?

A. Mr. Stayton, you have lost me with all the assumptions we have to make to answer that properly.

Q. Let me break it down this way: Forgetting about surface waste of gas which is flared, thinking about the most efficient utilization of gas energy to lift the oil only, and concerning ourselves only with the primary recovery mechanism you could certainly from an engineering standpoint justify a considerably higher gas-oil ratio than 750 cubic feet per barrel, could you not?

A. Mr. Stayton, I think you completely ignore the value of the gas in the reservoir. You specifically asked me to answer in regard to lifting the oil from the bottom of the

well bore. To that particular qualification I might be able to answer yes, but I would definitely want to limit my answer to lifting of the oil from the bottom of the well bore and not as a conservation measure applying to the reservoir.

Q. Well, you mean if you are not going to inject gas and if you are not going to attempt to save gas for sale or use as a fuel and are just going to use it to produce your oil that in a gas depletion type reservoir that a gas-oil ratio in excess of 750 cubic feet per barrel wouldn't be justified?

A. Making all those assumptions without regard to what the gas might do in regard to producing more oil, I think that could be answered affirmatively.

MR. STAYTON: That is all.

CHAIRMAN DOWNING: Does anyone else who hasn't cross examined this witness desire to cross examine him? Does some member of the Commission or staff wish to ask any questions

COMMISSIONER VAN TUYL: I have a question. Has your company done any research on water flooding of this field?

THE WITNESS: Our company has done research on water flooding but I have seen no results of any specific research that has been done on the application of it.

COMMISSIONER VAN TUYL: Do you know of any other companies that have made any studies, I will put it that way?

THE WITNESS: No, sir, not firsthand.

(Witness excused.)

CHAIRMAN DOWNING: We haven't as yet heard from Phillips and Stanolind. Are you folks ready to proceed with what you want to present?

MR. WILLIAMS: We have some proposals we would like to present under the Commission's suggestion. Is that to be done by witness or by statement?

COMMISSIONER BRETSCHNEIDER: A statement preferably.

CHAIRMAN DOWNING: If you make a statement I think maybe the suggestion made here is reputable counsel state what they intend to prove and maybe we could save some time if you will tell us what you want to prove.

MR. WILLIAMS: We have a written outline of what we propose. It in itself would maybe not mean too much to the Commission, it would require some explanation which we have a witness to explain or I can by statement explain.

CHAIRMAN DOWNING: Why not make an opening statement and tell us what it is.

MR. SULLIVAN: My recommendation is, Mr. Downing, that the Commission is only supposed to enter its orders and base them upon the testimony adduced. I am a little dubious about that.

CHAIRMAN DOWNING: Nevertheless we have the right to ask for an opening statement. In this hearing we particularly asked that each company give us a statement and if it isn't in writing we will be glad to receive it orally.

MR. SULLIVAN: I just wanted to indicate our willingness to listen to the witnesses.

CHAIRMAN DOWNING: After the statement is through, why, maybe a good deal of it will be conceded and we won't have to take too much testimony.

MR. WILLIAMS: May I say this to the Commission with regard to the position of the Phillips Petroleum Company that I am sure that this Commission knows that Phillips Petroleum Company from the very outset has been one of the strongest advocates of conservation in the operation of this field and every field in which we have an interest on the basis of the best possible engineering practices to maintain, preserve, and utilize to the utmost the reservoir interest. Phillips Petroleum Company has been a great advocate of pressure maintenance and gas injection in the Rangely Field, advocating at the very outset the proper method of controlling that operation would be through unit operations.

When it appeared that unitization looked discouraging our company went along with the Commission in attempting to sustain its prior order, which resulted in the gas injection on a dispersed or lease basis. We had some questions in our mind as to the effectiveness of lease gas injection. It's really not the way to carry on a gas injection program. We were such advocates of conservation that we were willing to go along to join hands with the Commission in an

effort to sustain that order, and under it we have had some years of experience. We have had the opportunity of observing the effect of that operation. That order was held to be invalid and now we do not have it, of course, so we are faced with the problem of what we should do in the future.

Now we say to you first that unit operation is, of course, the most desirable method of operation which will be discussed I take it at your conference at ten o'clock in the morning, but in the absence of unit operation we are faced with the problem of considering conservation versus correlative rights, and taking into account practical every day operating problems.

Now the Chairman this morning made some statement as to profits to the company. In considering conservation we must of necessity to a large extent consider profits, because it is not conservation to save a barrel of oil at the expense of a cost many times in excess of the value of the barrel of oil. It's like building a $500 fence to preserve a $15 cow, and our problem is one of striking a fair, reasonable, practical every day balance between conservation between property rights, correlative rights and field operation.

Now I think the Commission has gathered from the cross examination this morning our feeling toward the proposal made by the California Company. We feel that it's not in the interest of conservation but to take care of some particular

problem of the California Company only; one that if they chose they could take care of themselves. As to Phillips Petroleum Company recommendation as a balance between these different things that I talked of, it will involve some flaring of gas. Now in talking about the flaring of gas and the amount of gas utilized, there are two or three things that must be considered; the value of that gas as an energy medium, and the value of the gas for sale purposes.

May I dispose of the latter very briefly by saying this: This gas in this field is not of exceptional quality, it's only around 700 Btu. I believe that the Pacific Northwest and their proposal tendered 10 cents per million, which would mean that this gas would have a sale price of around 7 plus cents per MCF. If you utilize a gas-oil ratio of 750 cubic feet of gas per barrel, and assume that the entire 750 cubic feet of gas per barrel is flared, you are paying in reality about 4 cents per barrel of oil, which is very very cheap energy and to our mind is not an excessive flare of gas under these circumstances as an energy mechanism. Under unitization we would say to you that it has considerable value, under dispersed gas injection on a lease competitive basis we have some doubts from our actual experience in this field as to whether or not the value of reinjection justifies the cost and justifies the disadvantages as between properties that could result. Now one of the Commissioners awhile ago asked about

research on water flooding. Our company has given considerable thought to the matter of water flooding in this field. We are convinced, and we have a witness here who will explain more in detail if you wish, that by the use of water flooding methods of operation that the oil now being recovered through the medium of gas injection can be recovered through water flooding. In other words, we are not talking about now the ultimate recovery of the oil, we are talking about the rates of recovery and the time of recovery because we feel that when the operators can get together on a water flood operation that whether or not the gas is used now for this purpose or not, the oil can be recovered, and it's a mtter of time.

Now then as a sort of a compromise proposal of the Commission, we have prepared and would suggest what appears on this sheet. Now this is not in language that could be used in an order, it's merely a skeleton outline of suggestions. By following it you will note that it would be adopted on a per well basis.

Now we definitely feel that the only equitable method of applying any order of this character is on a per well basis. There is no justification for a battery or for a leased basis in considering equities as between properties. A battery basis or per lease basis gives to the operator of the bigger leases an advantage, an opportunity, that cannot be enjoyed by the operator of the smaller or the one-well leases,

and it is a denial under the statute in our opinion of the protection of correlative rights.

Along with the evidence this morning would show on these larger batteries that there are wells of all descriptions and a batterybasis would allow an operator to make up on certain wells on the batterywhat they can't do on the individual wells. If Phillips on the one-well lease is permitted to produce only 200 barrels of oil for the well, it's inequitable to allow a company that has eight wells in the battery by attributing to that well the allowable of other wells to permit it to continue to produce 480 barrels. We definitely advocate the per well basis as is followed in every state that I know of where they attempt to fix allowables for wells, except possibly in low stripper areas where as a matter of sheer convenience they go to a lease basis.

We would propose a daily oil volume of 300 barrels per well as a top limit for any well. May I say that a 200 barrel limit on a battery basis would be no limitation whatever on a company operating big leases on a battery basis.

We would suggest a gas-oil ratio of 750 MCF per barrel of oil. Now your solution ratio in this field at the outset was approximately 300 cubic feet of gas per barrel. This is merely double, plus the original solution ratio. This isn't any excessive ratio. In Oklahoma and Texas we are used to dealing with gas and we talk in terms of 2,000 to 3,000 foot

ratios, but because of the low solution ratio in this field we would suggest a limiting ratio of 750 MCF per barrel.

We would then arrive at a daily gas limit for a well by multiplying the basic daily oil volume by the gas-oil ratio, which in this case would be 225,000 MCF per every well in the field would be its maximum gas limit. In other words, each well in the field would be permitted to produce 300 barrels of oil or 225 cubic feet of gas, whichever it produced first.

Each well's daily oil production shall be determined by dividing the daily gas limit by its producing gas-oil ratio, but in no event shall the actual daily oil production exceed the basic daily oil volume.

No. 5, a well which produces at a gas-oil ratio in excess of the basic gas-oil ratio may be credited with a gas injection volume. In other words, our ratio is a net ratio, and to the extent that a well producing above the 225 MCF per day, as to a well producing above that, it could produce the excess if it returned it to the reservoir. If any volume of injected gas is credited to a well, its daily oil production shall be determined by dividing the sum of the daily gas limit and the injected gas volume by the wells producing gas-oil ratio. In no event shall any well so credited with a volume of injected gas produce in excess of the basic daily oil volume.

Then No. 6, all daily production volumes shall be calculated on a per well basis and a production and gas-oil

ratio test on each well in the field shall be taken during the months of April and October. The well tests taken in April shall be used in determining each wells daily oil production for the months of July through December and the well tests taken in October shall be used in determining each wells daily oil production for the months of January through June. In other words, many of the wells are being produced in a common tankage. There are meters metering the gas from a battery and to save setting up each well as a separate unit so far as measurement is concerned, we would propose semi-annual production tests of the well to be used as a basis of calculating what each well is permitted to do on a well basis.

No. 7, gas may be injected into such wells as may be approved for that purpose by the Commission. In other words, the Commission can still keep control over the injection wells, but not in excess of an average of three million cubic feet per day during any single month, unless a different volume be fixed by the Commission after notice and hearing. In other words, that would limit excessive injection in localized areas, but giving the Commission the authority after notice and hearing and considering the evidence to increase that limit.

Then No. 8, that no well that is immediately offsetting a separate lease line may be used for injection unless the operator of such well first obtains written waiver for the

use of such well as a gas injection well from the operator or operators of the lease or leases which such well directly offsets. That is to take care of the situation that Mr. Stayton is talking about and could have serious effect in the field, that if we used a direct offset as a gas injection well to the effect it might have to be the adjacent lease, the injection well should at least be behind a first line row of protection wells on the lease in which the gas is injected.

Now that is what we have to propose. Now it's not the ultimate in saving the last cubic foot of gas to get possibly the last barrel of oil, but on the other hand it is not a wide open production of the field without regard to conservation. It's an attempt to balance the desired conservation to the practical problems we have in the field under competitive lease operation.

Now if the Commission had the authority to unitize this field we would say, "Let's return every cubic foot of gas to the reservoir on the unit basis where it can be returned into the gas cap where probably it ought to be produced, and the gas-cap operator be permitted to share from production elsewhere in the field".

Now do you have any questions either from me as counsel or Mr. Tarner who is here from our company who can explain it from an operating and engineering standpoint?

CHAIRMAN DOWNING: I would like to ask one question--

MR. WILLIAMS: May I correct one thing? Mr. Kirgis said I referred to 750 MCF. It is 750 cubic feet, not MCF.

CHAIRMAN DOWNING: Let me ask, how much flaring could take place under this proposal?

MR. WILLIAMS: Let me verify the figure, I believe you said a maximum of 33?

MR. TARNER: Something in that neighborhood. It all depends on how much each operator utilizes the compressor capacity. I would say 33 to 40 million at a maximum if nobody used a compressor.

MR. WILLIAMS: He suggests a maximum in the order of 33 to 40 million, assuming that no operator returned gas to the reservoir.

CHAIRMAN DOWNING: That is assuming that they put everything through the reservoir or did not put it through?

MR. WILLIAMS: Did not.

CHAIRMAN DOWNING: If they put it through the reservoir what would the flare be then?

MR. WILLIAMS: If they put it all into the reservoir there would be no flare, of course.

CHAIRMAN DOWNING: I mean under the existing capacity?

MR. TARNER: It will be very small, 10 to 15.

MR. WILLIAMS: 10 to 15 million.

CHAIRMAN DOWNING: 10 to 15 if this 30 million was put through the existing capacity of the companies, the net

flare, the resulting flare, would be about 10 or 15 million?

MR. WILLIAMS: In the order of 10 to 15 million, which in total, Judge Downing, it looks like a substantial volume of gas; but divided by the number of barrels of oil produced in the field and multiplied by the value of the gas, it isn't a tremendous amount per barrel of oil produced.

MR. ROCCHIO: Mr. Williams, under your proposal, as well as the proposal of the California Company or any other, do you feel that a net gas-oil ratio order -- and when I say net I refer to the injection of gas -- would be a valid order on the part of this Commission under the present statute?

MR. WILLIAMS: I believe it would on the basis that we have proposed it, Mr. Rocchio. Now if the Commission required all of the gas to be returned to the reservoir there might be a serious question as to the validity, but on the basis here proposed and the optional rights to the operator and the limited credit they could get which is limited by a top oil allowable, we believe it comes within what would be reasonable.

CHAIRMAN DOWNING: Now the next question is you have made a statement which is very satisfactory. Now how much proof do you want to present in that statement or would you prefer to suggest the proof and we would ask the other operators if they want you to go to the trouble of proving it by evidence or whether they would accept your statement that

that is what your evidence would prove, if permitted.

MR. WILLIAMS: Let me answer your question this way: I have made the statement at the request of the Commission. We have a witness here and if the Commission has any questions it would like to ask of the witness who knows firsthand, he is here for that purpose. If any operator has a question they would like to ask of him, he is here for that purpose.

CHAIRMAN DOWNING: Let me ask, do any of the operators have any questions that they wish to ask any of the witnesses which are here for the Phillips Petroleum Company?

MR. LAMAR: I am L. M. Lamar of the California Company in New Orleans. I would like to make a comment, which I want to assure you I am making for the Commission's benefit. It is certainly the easiest way to hold a hearing to have somebody get up and make a statement and that is all. It's the easiest and the quickest way, but it is my opinion that the Commission cannot enter a valid order based on that kind of a hearing; that it has to have evidence in the record to support the order. Mr. Williams' statement, no matter how true, does not constitute such evidence. The same is true of other evidence. I don't want the Commission to go to a lot of trouble of entering an order and then have it be of no value because it's not based on testimony.

CHAIRMAN DOWNING: The Commission certainly can make an order based upon statements which are admitted by the other

operators, and that was the purpose of my question, and the statements are made now and if the operators want to examine any of these witnesses the door is open. But unless they want it and if you are willing to admit the statement is true, why take the time to summon some other witnesses? Maybe we will save time. Call your first witness.

JACK TARNER

called as a witness for the Phillips Petroleum Co., being first duly sworn according to law, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. WILLIAMS:

Q. For the purpose of the record, your name is Jack Tarner?

A. Yes, sir.

Q. You live in Bartlesville, Oklahoma?

A. Yes, sir.

CHAIRMAN DOWNING: Does anyone want the qualifications of this witness to be proved? If not, he will be considered as competent.

Q. Let's at least show on the record that he is a Petroleum Engineer.

CHAIRMAN DOWNING: I think we all know that.

Q. And he is well acquainted with the Rangely Field. State briefly, Mr. Tarner, your qualifications, your profession and knowledge of the Rangely Field and experience.

A. I am a graduate Petroleum Engineer with a Bachelor of Science and Master of Science Degree from the Pennsylvania State University and have followed the operations of the Rangely Field since 1946.

Q. Your company has properties in the field and you are acquainted with the operation of those properties?

A. Yes, sir.

(Whereupon, a document was marked as Phillips Exhibit No. A for identification.)

Q. Mr. Tarner, I hand you what I have asked the reporter to mark as Phillips Exhibit A, which purports to be Phillips' recommendation to the Commission in this hearing. Did you participate in the preparation of those recommendations?

A. Yes, sir.

Q. Are those your recommendations?

A. Yes, sir.

Q. Will you explain briefly for the purpose of the record from the witness stand what they do.

A. Well, Judge Downing, I will just make the statement that I will adopt Mr. Williams' statement as my testimony. I would just repeat the same thing Mr. Williams said. Is that all right?

CHAIRMAN DOWNING: All right, any cross examination, unless you have something further to add.

THE WITNESS: No, sir, unless you wish me to

elaborate on the water flooding.

MR. JERSIN: Mr. Tarner, will you elaborate on the water flooding.

THE WITNESS: We have obtained fresh samples of core from the California Company. They were gracious enough to give us samples of the Gray "B" 10. We brought those samples into the laboratory, saturated them with salt water, and reconstituted them into the same fluid distribution as they have in the reservoir. We put oil through them. The boys have finished water flood tests on them and we find that the samples were 30 millidarcies from 10 millidarcies permeability and floods better than any sample we have in any of our other operations. A sample having one-tenth of a millidarcy permeability flooded to about 35% residual oil saturation, which is very very satisfactory. It leads us to believe that there is no question but water flooding would substantially recover more oil, possibly better than double the primary recovery.

The facts that we have not investigated as yet are the costs that would be associated with the program. We have additional laboratory work being conducted right now. Now I gave the Research Department to September 1 to have the answer on this problem and got a little speed-up information out of them because of this particular hearing, but the samples as we have tested them so far have shown the Weber sandstone to

flood very satisfactorily with water.

MR. JERSIN: Would Phillips Petroleum Company enter into a water flooding operation without the complete unitization?

THE WITNESS: No, sir, we could not.

MR. ROCCHIO: Mr. Tarner, under your--

THE WITNESS: Let me answer that statement a little bit further please. I would say that no one could enter into that, not only the Phillips Petroleum Company, because you have single well leases out there and that under any of these programs it's now proving to our satisfaction that you have got to have the entire area unitized.

CHAIRMAN DOWNING: Do you think the Legislature could pass a law authorizing compulsory water flood?

THE WITNESS: I would like to see the Legislature pass a law like we have in Oklahoma where you could force unitization. I am for it.

MR. JERSIN: You have studied the results of approximately 21 months of gas injection under Order 2-13 as issued by the Commission.

THE WITNESS: Yes, sir.

MR. JERSIN: Would you give us a general statement as to whether you think that the reservoir as a whole has been benefited by this gas injection?

THE WITNESS: As a whole the reservoir I believe has

been benefited. Now you are talking about the reservoir as a whole. I think that there have been problems arising out of individual operations that are just insurmountable. Now we were afraid of that when we went into this whole program, and we were willing to try it, but I believe that on the individual lease basis that we now have that we have just found insurmountable problems. But there has been a benefit, no question about it.

MR. JERSIN: Now in conjunction with this water flooding statement you made you said it will take unitization to initiate water flooding project.

THE WITNESS: Yes, sir.

MR. JERSIN: If you don't ever get unitization in Rangely then it's possible the only oil you will recover is primary recovery, is that correct?

THE WITNESS: No, I don't agree with that at all, because the operators are going to come to their senses when the pressure gets down and these leases start declining and the people get rid of their fictitious ideas of the amount of reserves they have. We will get the field unitized around 5 or 6 hundred pounds, no question about it.

MR. ROCCHIO: Mr. Tarner, under your basic daily oil volume you have a top limit of 300. What will the field roughly be producing per day as a unit?

THE WITNESS: If the operators do not take any

advantage of their injection capacity it will be on the order of 55,000 barrels of oil a day.

MR. ROCCHIO: And you say without the injection facilities you will have 33 to 40 million cubic feet flared?

THE WITNESS: Yes, sir.

MR. ROCCHIO: By the utilization it will be somewhere between 10 and 15?

THE WITNESS: It could even be less if all the operators used their entire capacity that they have installed today, but I don't think they will. That is something we will have to wait and see. We have got to develop what that will be, because you can't even predict what people will do. I am just estimating 10 to 15 million cubic feet will have to be flared.

MR. ROCCHIO: My recollection that the average gas-oil ratio in the field at the present moment is about 1500 to 1?

THE WITNESS: Yes, sir.

MR. ROCCHIO: Do you consider 750 cubic feet to be a reasonable gas-oil ratio figure?

THE WITNESS: Yes, sir.

MR. ROCCHIO: Why?

THE WITNESS: Well, it's about the same multiple of solution gas-oil ratio that you have used in the other states, around 2 to 1, so I think it's certainly reasonable. It's impossible to produce at the solution ratio, which is around

300 cubic feet per barrel, and there is no scientific way of arriving at the proper figure. It's just what's reasonable, and the other states have adopted about 2 to 1, and that is the reason I have adopted it.

MR. ROCCHIO: Because of the solution ratio?

THE WITNESS: Yes, sir.

MR. ROCCHIO: Twice that?

THE WITNESS: Approximately, yes, sir.

CHAIRMAN DOWNING: What would you think about 1 to 500?

THE WITNESS: Going to 500 I think it's worth a try, yes, sir, it's all right. In other words, anywhere in the neighborhood of 500, 750, or 1,000, in that range somewhere is a reasonable figure. Now I think the only way we can ever test the reasonableness is to have an order and produce the field a little while and see what happens. In making these calculations we had to go to each individual well and estimate what each individual well would test and what it would actually do, and it's always an estimate, so anywhere in the order of 500 to 1,000. We are not saying that is the answer, we think it's a fair compromise.

COMMISSIONER BRETSCHNEIDER: This gas that is now being produced in the field is how much up there?

THE WITNESS: There is around 100 million being produced right at the present time.

COMMISSIONER BRETSCHNEIDER: And 65,000 barrels of oil, in round figures?

THE WITNESS: Yes, sir.

COMMISSIONER BRETSCHNEIDER: This proposal here would produce about 55,000 barrels of oil and about 40 million cubic feet of gas?

THE WITNESS: No. Actually you will produce about 60 to 70 million cubic feet of gas, but you use some of it in your lease operations.

MR. JERSIN: When you gave these figures of 500, 750, and 1,000 as reasonable gas-oil ratio figures, could you give us some upper and lower limits of what you might think would be reasonable oil production figures?

THE WITNESS: Oil production, 300 and 350.

CROSS EXAMINATION

BY MR. LAUGHLIN:

Q. Mr. Tarner, I just have a question about your No. 8. Your No. 8 prohibits injection wells as being a direct offset well. Do you intend that present injection wells would be exempted from your order?

A. I would hope not, but I am going to leave it up to the Commission. Really the purpose of that portion of the order or the suggestion is that we thought the Commission ought to have some leeway that if a man came in and asked for a certain well to be an injection well they could grant it

without a hearing. If he wanted to move offsetting another fellow, if he wanted to inject more than 3 million cubic feet per day, then the other operators ought to have a chance to say something about it.

Q. I agree with that, except the way it's written this would prohibit any well being an offset well being an injection well unless you got a waiver from the operator of the adjoining lease.

A. That is a personal opinion. I would like to see it adopted, whether it will be, I don't know.

Q. As a prohibition or after hearing by the Commission?

A. I would just like to have the opportunity to object to any well offsetting a lease line.

Q. At a hearing before the Commission?

A. Yes, sir.

MR. LAUGHLIN: That is all.

MR. ROCCHIO: Mr. Tarner, how would this affect your one-well lease?

THE WITNESS: It would cut a few of those one-well leases down to 300 barrels a day.

MR. ROCCHIO: There is no injection provision at all?

THE WITNESS: Well, you can't go above 300 barrels a day under this recommendation. That is the one part that hits us. But I will tell you what will hit us worse is this lease basis because then you would have some wells producing

over 300. This puts every well on an equal basis.

BY MR. SULLIVAN:

Q. You testified when Mr. Williams was talking that our proposed order of 200 barrels a day on a battery basis was in effect no limitation, no limitation at all. Now as a matter of fact how many wells would actually be limited to an amount less than they can produce by your 300 barrel order?

A. How many?

Q. In the field?

A. I don't know exactly how many. There are quite a few. You have got some over 400 barrels a day that would be limited; we have some.

Q. I just ask you how many wells total?

A. I don't know.

Q. Do you have any idea how many wells would actually be limited by a 200 barrel battery basis under the formula that we propose in our order?

A. We would have quite a few and you would have practically none, because you would be able to make up your poor wells by your good wells.

Q. But if we make up that average along the edge wells, which you suppose that we are going to do--

A. You are.

Q. Other wells in the battery are going to be cut proportionately, are they not?

A. Say that again please.

Q. If we produce edge wells in a battery at a rate in excess of the 200 barrels a day, under our proposal the interior wells in the battery will have to be cut proportionately so that the total battery production is not equal to an amount in excess of 200 times the wells connected to the battery.

A. But, Mr. Sullivan, I don't assume that all your wells can make 200 barrels a day on your battery basis. On a battery basis, yes.

Q. Do you have any idea how many wells would actually be restricted in their daily rates of production by our 200 barrel basis, no matter how we handle them?

A. On a battery basis how many wells?

Q. How many wells would be restricted to a rate below 200 barrels a day? You don't know, is that the answer?

A. Wait a minute, your question doesn't make sense.

Q. Just say that then.

A. That is it.

Q. Then you have no idea how many wells would be limited either by the 300 barrel basis or the 200 barrel basis as an actual matter, do you?

A. As an actual matter I have no idea how many individual wells would actually be limited. There will be quite a few wells limited.

Q. Then would it be a fair statement to say that our proposed 200 barrels a day is probably at this point according to your explanation as good a limitation as your 300 barrels?

A. It would not be a fair statement.

Q. How can you say that? You have already testified you had no idea how many wells would be restricted in either event.

A. You have wells that aren't any good and you are going to take other wells that are good -- and I admit you have some -- and you are going to make up the 200 barrels for them. Now I don't think it's fair.

MR. SULLIVAN: I have no more questions.

MR. ROCCHIO: What is the general overall effect of your proposal on conservation of this pool?

THE WITNESS: Conservation in the pool?

MR. ROCCHIO: Yes, forgetting the correlative rights for a moment.

THE WITNESS: I will forget correlative rights and I will say that from the pool as a whole it's not as good as the present order. It's better than just a plain flare order, it's a compromise in between.

MR. ROCCHIO: It's not as good as the emergency order you mean when you say present order?

THE WITNESS: No, I am sorry I am talking about 2-8.

CHAIRMAN DOWNING: Any more questions?

MR. STOCKMAR: I would like to ask for clarification only here as to whether the definition of the well in this proposed order will include an injection well in effect whether any production credit is given to an injection well under this proposal?

THE WITNESS: That is a good point. We have omitted it here. I would recommend to the Commission that they allow each injection well to be given an oil allowable of 200 barrels per well per day and that that allowable be transferred to the other wells on the lease.

MR. SULLIVAN: Did you say 200?

THE WITNESS: I mean 300.

MR. OSBORNE: This is not a question, but I just wish to point out that under No. 8 Union Pacific - Texas have only three wells which are not first line offsets and therefore we have only three injection wells and that would limit us to 9 million a day injection.

THE WITNESS: If you couldn't get additional wells after hearing from the Commission. I wanted that to be clear, that these are general rules and that any exceptions would have to be by hearing before the Commission.

MR. OSBORNE: But then suppose the neighboring property owner objected to it?

THE WITNESS: Then you have to fight it out with them. You do it now.

MR. WILLIAMS: I think this is not clear on that point and what he is now saying is in conflict with this statement because this would prohibit that use, even with a Commission order. What you really mean to say is that it not be used except after notice and after hearing of the Commission?

THE WITNESS: That is right. I say the Commission ought to be able to grant an exception well if they follow 7 and 8 just by a man coming in.

MR. STAYTON: These gas-oil ratios that you recommend are based upon getting credit for injected gas, it's a net ratio we are talking about, is it not?

THE WITNESS: Yes, sir.

MR. STAYTON: Of course if you were going to produce this field as some fields are produced without any injection and just under primary mechanism, just from a practical standpoint you would have to have a ratio in excess of the ratio we have been discussing here?

THE WITNESS: Definitely.

MR. STAYTON: In other words, you just couldn't operate the field with a ratio of 750 or 500 if you are not going to get credit for injected gas?

THE WITNESS: That is correct.

MR. STAYTON: Now you talked about some insurmountable difficulties when you have gas injection on a lease basis. I will ask you to look at the Sharples properties in the

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center of the field and I will ask you if it isn't very probable that Sharples is having extreme difficulty with those properties.

THE WITNESS: I would say they were having insurmountable difficulties.

MR. STAYTON: That is all, thank you, Mr. Tarner.

CHAIRMAN DOWNING: Any further questions?

(Witness excused.)

CHAIRMAN DOWNING: Is Sharples ready to present its testimony?

MR. STAYTON: We are going to make a statement and proposal if you would want us to do that. I will briefly state, if the Commission please, the substance of the order, which is very brief. It provides an oil limit and a gas limit and it's based upon the supposition that I will develop later in my statement to the effect that this Commission has no authority to require directly or indirectly injection of gas into this reservoir. It provides an oil limit of 200 barrels of oil per day and the gas limit is based upon a gas-oil ratio of 3,000 cubic feet per barrel of oil produced, and I will discuss that a little later on in my statement.

Now that gas limit plus the oil limit would mean that the maximum amount of gas that would be produced by any one well would be 600,000 cubic feet. We take the position, if the Commission please, that in the Union Pacific case the

Supreme Court of Colorado quite definitely held that the Commission has no authority to require directly or indirectly the injection of gas into this reservoir. As a matter of fact, the testimony that is developed here shows that if one of these net ratio orders is placed in effect which gives a man a premium for putting gas back, which means that every man that can put it back is going to put it back in order to produce the oil, if you give him that premium there will be produced from this reservoir 500 cubic feet net ratio, about 100 million cubic feet of gas per day, and you will have to put back into the reservoir about 70 million cubic feet.

Every obstacle that the Supreme Court found that this Commission was confronted with in trying to require injection of 20 million cubic feet is just multiplied when you go to requiring directly or indirectly the injection of 70 million cubic feet. Every argument that was made to the Supreme Court and trial court in that Union Pacific case could be made and made trebly strong if you enter a net gas-oil ratio rule that has the effect of requiring injection of gas into this reservoir.

As a matter of fact, the law that we presently have on the books is even stronger than the other law in so far as the position of Sharples is concerned because in this statute the duty is imposed upon you to protect the correlative rights of these operators. That is to see that they are allowed to

produce from this field on a parity basis, and that any rule or regulation that you put on the books that restricts them and prevents them from doing that we say is invalid because your duty to protect the correlative rights is in the same section of the statute and placed on par with your duty to prevent waste. So when the U. P. case was tried the correlative rights theory wasn't even in the case. Now if you were confronted with litigation involving the net gas-oil ratio order, you not only could make every argument in the U. P. case and sustained by the Supreme Court but you have a very valuable and weighty additional argument to be made.

Now we think it's self-evident, and the evidence in this Commission's own files, shows that Sharples has been severely damaged by this gas injection program. Mr. Tarner said their difficulties were insurmountable and the record of oil production out there shows they are insurmountable. Before this Rule 2-8 was placed into effect they were producing from this field 3% or more of the daily production. They are now producing, because of this illegal order that was put on their backs, they are now producing about 1.9% of the field production, or a reduction of some 33 1/3%; and if you think that is not hard for an independent operator with holdings in an oil field to stand a reduction of an allowable of that kind, then you are just not familiar with the oil business.

Now it may be true, and we are not going to debate

the question, that because of their position on the structure that some of that loss would have occurred anyway, but certainly it seems to me to be plain to anybody that the injection of the great amount of gas that they have had to put down in their own wells plus the injection of the gas into these offsetting injection wells, that that has certainly accelerated the decline in their production.

Now if you admit that the Commission has no authority, and we think it's perfectly plain from the decision of the Supreme Court, has no authority to compel injection into this field, then the question comes up, "What authority does the Commission have?" What is the Commission going to do under this statute? I submit to the Commission that in the past it has consistently, and I am not criticizing anybody and I don't want to be disrespectful to anybody, I am saying this with the utmost respect, but I think you have put the cart before the horse. This statute that is on the books, you may not like it, I am sure there are many people who do not like it, it's a statute that gives you very very limited authority. The Supreme Court said that what little authority you had was very grudgingly granted by the Legislature, which is certainly a fair statement.

Now in the past, what you have done you have thought about this flare out there, 20 million, 30 million, how much gas are we going to let go into the air. Well, in this

statute the Legislature plainly was not concerned with the flare. All you have to do is read this statute to see that it wasn't. What the Legislature was concerned with was giving this Commission the authority to adopt a reasonable order governing the production of gas with each barrel of oil produced from the reservoir. In other words, that is your duty, taking in the first instance the fact that you can't compel injection. The question you are concerned with is, "We can't compel injection, now what is a reasonable gas-oil ratio order in which this field can be produced?" Now that is the problem you are confronted with, not how much gas is going to be flared.

Once you determine how much gas is needed to produce the oil from this pool at practical levels then that amount of gas under this statute is automatically going to be flared because you can't compel injection. Now maybe you can get a statute that will, but I submit to you you can't do it under this one and I think the Supreme Court decision is very plain in that respect. So I say that the question you should decide is what is a reasonable gross gas-oil ratio rule for this field, taking into consideration you are not going to require and can't require the injection of any gas back into the reservoir.

Now what is that reasonable ratio? Well, the field is half depleted. The average gas-oil ratio in the field now

is 1500 cubic feet per barrel of oil produced. It's perfectly plain that you can't produce this field from a practical standpoint under any gas-oil ratio rule such as those that have been proposed here if it's going to be a gross rule. Of course these are all net rules giving a man credit for putting gas back, but if you put a gross gas-oil ratio rule on the books of 500 cubic feet or 750 cubic feet or even 1,000 cubic feet you are cutting production of oil in this field down to practically nothing. You have got to get up in the realm of 2 or 3 thousand cubic feet per barrel of oil produced for a gross gas-oil ratio order to be in any way practical, and it's a 3,000 cubic feet per barrel order that Sharples proposes.

Now there is nothing unique about that. That is not a high gas-oil ratio order. The ordinary rule in Texas even in a new field where gas-oil ratios are little is 2,000 cubic feet per barrel of oil. We give examples in our little statement here they have ratios in Texas of 2, 3, 4, 5, all the way up to 10,000 cubic feet per barrel. There is nothing unique, nothing startling, nothing that is going to injure anybody, a 3,000 cubic feet per barrel rule; and furthermore there is nothing unique in the flaring of a considerable amount of gas from this field. You have a big oil field out here that produces 64 to 65 thousand barrels of oil a day. That is a big operation. If you are going to produce that and not inject gas you are just going to flare a lot of gas from the field.

Unless you sell it, you necessarily are going to flare a lot of gas, and there is nothing unique about that.

We give example after example of other fields in which more gas is being flared than that. I will give you one example: In the Jameson Field in Coke County, Texas, they are producing 6,000 barrels of oil per day and flaring 225 million cubic feet of gas along with it. If this field were flared at the same rate it would be flaring 250 million cubic feet of gas per day. There is nothing unique in flaring a substantial amount of gas from a field from which you are producing 64,000 barrels of oil.

Now this limit, this oil limit, of 200 barrels per well, we have put that in the order because we think that it comes more nearly protecting the correlative rights of Sharples. It has been suffering under this order that the Commission issued, this 2-8 order that compelled it at great expense to inject gas, and as a result of which, at least partially as a result of which, its production has greatly declined; and we think if you put a 200 barrel limit on the wells in the field that would put the production in line. Furthermore, it would more nearly equalize withdrawals from all parts of the field than if you just turn the field loose without any limit in so far as production of oil is concerned, and moreover if you are going to have any sort of a gas-oil ratio rule you certainly have to have some limit, you have to

tie them together to get your gas limit; so we think the figure of 200 barrels is reasonable.

But what we want to impress upon you gentlemen is this: Now you have had one lawsuit; we have had one fight involving your power. Please, before you enter any kind of an order that is going to directly or indirectly require the injection of gas into this reservoir, please call upon your counsel and any counsel that you have confidence in and whose confidence you respect to ask him whether you have that power, because I say to you quite frankly I don't think you do, and I think the Supreme Court of Colorado quite plainly said that you do not. And if you don't have it, then the only thing you can do is promulgate a reasonable gross gas-oil ratio order.

Now the flare under the order we propose -- of course, if no compressor capacity is used the flare will be big. Mr. Loy back there says it will be in the order of 50 million feet a day or something like that.

CHAIRMAN DOWNING: How much?

MR. STAYTON: Fifty million cubic feet. Now that is just an approximation, that is not an exact figure. However, we anticipate, of course, that some of the compressor capacity that is still in the field will be used. If all of it were used the flare would be about 15 million feet a day instead of 60, and, of course, there is nothing unreasonable

in that; but we can't guarantee that all compressor capacity is going to be used, of course. But what you are confronted with, gentlemen, it seems to me, is what are you going to do once you accept the fact that you just don't have the power that you would like to have, which is to require gas injection. That is all we have.

CHAIRMAN DOWNING: What effect would the flaring of 50 million feet of gas have upon reservoir energy?

MR. STAYTON: Why, it's going to lose that much reservoir energy, it's going up into the air, that much is, but whether it's 50 million, 20 million, or 10 million it--

COMMISSIONER BRETSCHNEIDER: Did you say use it or lose it?

MR. STAYTON: I say lose it, you can't get it back, of course. Now it would be nice if you had a statute that gave you the authority to do something about it, but you just don't have it; at least we think you don't.

CHAIRMAN DOWNING: Now, gentlemen, you have heard the statement. Now is there any evidence you wish to present, Mr. Stayton?

MR. STAYTON: We have Mr. Loy here with figures about our production. They are of Commission record, are they not?

CHAIRMAN DOWNING: Our records, of course, are before us, yes.

MR. STAYTON: The only controversial figure maybe is

the amount of gas to be flared. Now if somebody wants to ask Mr. Loy about that--

CHAIRMAN DOWNING: Suppose you call your witness so he can be subject to cross examination.

MAX S. LOY

called as a witness for the Sharples Oil Corporation, being first duly sworn, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. STAYTON:

Q. What is your name?

A. Max S. Loy.

Q. What is your position with Sharples Oil Corporation?

A. Production Superintendent.

Q. Are you familiar with the Rangely Field?

A. I am.

Q. Are you familiar with the problems that Sharples has encountered in putting gas back?

A. I am.

Q. Now, Mr. Loy, in this statement we state that if the production of the field should continue at the present rate of approximately 64,000 barrels of oil per day, that the total gas produced will be approximately 101 million cubic feet, is that approximately correct?

A. That is according to the May figure.

Q. If you put in a net gas-oil ratio rule of say 500

cubic feet of gas per barrel of oil produced and everybody takes advantage of that to get their maximum production of oil, and they have a compressor capacity to do it, approximately how much of that 101 million cubic feet will be injected into the reservoir?

A. Probably around 70 million. I am just estimating that from the May production figures.

Q. In other words, the operators would be confronted with the problem of handling and injecting 70 million cubic feet of gas if they wanted to keep the production of the field at the same rate?

A. That is right.

Q. When the Union Pacific case was tried, what was the flare then and what volume of gas did the operators have to dispose of?

A. As I recall around 20 million.

Q. In other words, if you put in a net gas-oil ratio rule of 500 cubic feet per barrel, you would have about 3 1/2 times as much gas to contend with as you had when the Union Pacific case was tried, is that correct?

A. That is right.

Q. Now is it true that prior to promulgation of Rule 2-8, particularly Rule 3-B, that Sharples in the past produced 3% and even more of the total oil production from the field?

A. That is correct.

Q. And what is your percentage today, Mr. Loy?

A. I think in May production figures 1.93 as I recall.

Q. Now under our proposal of a 3,000 cubic foot per barrel gross ratio, what is your rough estimation of how much gas would be flared if no compressor capacity were used whatsoever, in the 200 barrel oil limit too?

A. I can only base my estimates on May, 1955, production, in that I have no idea of the capacities of certain wells in the field operated by other companies; but concerning just May, the oil that was produced and gas produced in May if we had a 200 gross oil production figure and a 3,000 gross gas-oil ratio figure, I estimated the total field gas production would have amounted to about 74 million, considering about 30% of that would be used as field use, gasoline plant, and so forth. I estimate that probably around 51 to 52 million will be flared.

Q. Now that is with no compressor capacity?

A. With no compressor capacity.

Q. Now suppose that California Company, which seems to thrive in gas injection, and the other operators use their present compressor capacity to the fullest extent, approximately what would the flare be then on an average until June 1, 1956, when we are going to have a pipeline in the field?

A. I would say over the whole period it would probably

average around 15 million, it should be considerably less than that.

Q. Less than 15 million now and it wouldn't average more than 15 million for a period of about a year?

A. That is my estimate.

MR. STAYTON: That is all the questions we have.

CHAIRMAN DOWNING: Any questions of this witness?

CROSS EXAMINATION

BY MR. ROCCHIO:

Q. Under your proposal of 3,000 to 1 ratio, I understand that the field average is 1500. Would you consider that a reasonable figure?

A. In what way do you mean?

Q. Would that be a reasonable gas-oil ratio figure?

A. 1500?

Q. The field average.

A. It all depends on what you consider.

Q. From the standpoint of the field and not the Sharples property, that would be a reasonable average, would it not?

A. At this stage of depletion it probably is. It's not a true average, it's an average that has been caused by gas injection, so I can't even say I can answer that question correctly, maybe it's too high.

Q. But it is the field average?

A. It is the field average, and actually it's closer to 16 than 15; I think it was 1583.

Q. Then your proposal doesn't only affect Sharples?

A. No, sir, it does not. That will cut other companies considerably. The fact of the matter is it will cut the field production approximately 10,000 barrels a day.

Q. From what it presently is?

A. Yes, sir.

MR. ROCCHIO: Thank you.

BY MR. WILLIAMS:

Q. Your proposal says each well?

A. That is correct.

Q. Do I understand that to be a per well basis?

A. That is correct.

MR. WILLIAMS: That is all.

CHAIRMAN DOWNING: Any questions by anyone else?

(Witness excused.)

CHAIRMAN DOWNING: I believe everyone has been heard now but Stanolind.

MR. LAUGHLIN: Mr. Chairman, and members of the Commission, I would like to just briefly tell you what Stanolind's proposal is so that then I think the testimony by our one witness will be perhaps a little more clear. Stanolind's proposal is a gas limit of 100,000 cubic feet per day per well, provided that gas may be produced in excess of 100,000

per well if the excess is injected back into the Weber formation; and for the purpose of facilitating administration we advocate an oil limit of 350 barrels per day. Now that compares to the Phillips suggestion, as I recall they have advocated 300 barrels per day oil limit; our rule is 350. Their ratio is based on 750 cubic feet per barrel and our 100,000 cubic feet is based on a ratio of 300 to 1, which is substantially the solution ratio.

We feel that with this proposal the flare will be kept to a minimum, and incidentally Stanolind favors complete injection of all gas, but recognizing Mr. Stayton's victory we have suggested a rule here which will, we believe, keep the flare to a minimum. Our rule will not result in a cut in field production, it will protect correlative rights and it will not disturb the equities in the field.

Now we have one witness, Mr. Martin O. Hegglund, and his testimony is in written form.

MARTIN O. HEGGLUND

called as a witness on behalf of Stanolind Oil and Gas Company, being first duly sworn, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. LAUGHLIN:

Q. Will you state your name.

A. Martin O. Hegglund.

Q. By whom are you employed?

A. Stanolind Oil and Gas Company.

Q. In what capacity?

A. I am District Engineer, and my district includes the Rangely Field.

Q. How long have you been employed by Stanolind as an Engineer?

A. Approximately 13 years.

CHAIRMAN DOWNING: If there is no objection, we will accept him as an expert.

Q. You have reduced your testimony to writing, have you not, Mr. Hegglund?

A. Yes, sir.

Q. Would you please read your testimony.

A. By notice of June 27, 1955, the Oil and Gas Conservation Commission of Colorado requested operators of the Rangely Field to recommend a set of new rules and regulations in accordance with the recent decision of the Colorado Supreme Court, and to present such in writing with reasons therefor.

In compliance with this request, Stanolind recommends the following rule: "No well producing from the Weber Sand Pool shall be permitted to produce an amount of gas in excess of 100,000 cubic feet per day, provided that a well may be permitted to produce gas in excess of said amount if the excess is returned to the formation from which produced; provided further, however, that in no event shall any well be

permitted to produce oil in excess of 350 barrels per day."

We recognize that the Rangely Field is predominately a volumetric reservoir and in the due process of depleting this type of reservoir an increase in the producing gas-oil ratio is to be expected, with or without gas injection. Under normal circumstances, we recognize that higher producing gas limits are not unreasonable. However, any field should be considered on its individual merits, depending on conditions and economics pertinent to that field. With considerable compressor capacity already in the field, we have a means of limiting gas flare for the Rangely Field to a reasonable amount. Therefore, we advocate limiting gas production to 100,000 cubic feet per day per well, with credit for gas injected for any excess.

It is our opinion that the Rangely Weber reservoir should be produced on the most efficient basis possible. This will require the minimum dissipation of gas for each barrel of oil produced, in so far as is practical under present conditions at Rangely. Accordingly, we do not adhere to the excessive flaring of gas but instead favor continuance of gas injection to the fullest extent that is practicable.

Continued gas injection will result in the minimum pressure decline, will maintain productivity from a reservoir standpoint at the optimum level, and will provide the highest pressure level possible which is desirable for well stimulation

measures that have recently become so important in this and other fields in increasing the ultimate recovery of oil. Also, the field is now equipped to inject approximately 80 million cubic feet of gas per day, and this compressor capacity should be utilized.

We very definitely do not favor any decrease in total field oil production as there is a market for the current rate of Rangely production. It should be recognized that if Rangely loses any portion of its market, such might then be forever lost to other states, to the detriment of the State of Colorado. In order, however, to facilitate administration of control on gas production, and, as an aid in protecting correlative rights, we feel a top individual well oil limit of 350 barrels of oil per day should be established by the Commission. Such a top limit on daily oil well rates will provide an efficient rate of production and will not restrict the total field oil output.

Currently, oil is being produced at gas-oil ratios varying from 200 up to 15,000 cubic feet per barrel, depending on structural location, relative stage of depletion, and proximity to present injection wells. However, the lower the ratio at which oil would be produced, the more efficient would be the production process, as less reservoir space would be voided with the low ratio oil. With high ratio production, gas would be dissipated, and unless returned to the reservoir, its

useful purpose in so far as the reservoir is concerned would be at an end upon reaching the surface with its associated oil.

An order for future operation of the field should be based on producing the field efficiently. For maximum recovery, the most efficient practice would involve maintenance of pressure with oil produced at its solution gas-oil ratio. For the Rangely Weber reservoir, the average solution ratio (volumetrically weighted) approximates 300 cubic feet per barrel under original reservoir conditions. With pressure decline since discovery, a portion of the solution gas has been dissipated, or is in free form for quick dissipation, and actually less than 300 cubic feet now remains in solution with each barrel of oil in the reservoir.

On the basis of a top oil limit of 350 barrels per well per day and approximately 300 cubic feet per barrel as an efficient permissible gas-oil ratio, each well would be permitted to produce 100,000 cubic feet per day. Under our proposed rule, a well may be permitted to produce gas in excess of said amount if the excess is returned to the formation from which produced. In no event, however, would any well be permitted to produce oil in excess of 350 barrels per day.

Q. Now, Mr. Hegglund, the rule speaks for itself, but pointed out specifically to the Commission, does this propose to be administered on a well basis or on a battery basis?

A. On a well basis.

Q. Did you hear Mr. Dunlap testify this morning that the California rule would result in substantially no cutback in the current rate of production or perhaps up to some 13 or 14 hundred barrels of oil per day?

A. Yes, I did.

Q. Have you made a computation as to what the California Company proposed rule would do to Stanolind's current rate of production?

A. It would cause an immediate cutback of 4,000 barrels of oil a day, approximately.

Q. I am sure the Commission would be interested in what flare will result from Stanolind's proposed rule. Will you comment on that?

A. I made some calculations that are subject to some estimates, of course. I estimated that the permissible flare would be in the order of 25 million cubic feet. However, if the gas is injected by the operators it would be substantially lower than that. I believe this figure compares with the 35 million quoted by the California Company, and I believe they made a statement to the effect that possibly 13 to 15 million would be the flare under injection conditions, and naturally with our lower permissible ratio, our flare would be less than the one they mentioned. Possibly the actual physical flare would be 10 million cubic feet per day.

Q. Now, Mr. Hegglund, I would like to refer to California Company Exhibit I. As I recall this exhibit is a production efficiency chart. Using that chart, will you compare the efficiency, if you can, of the California rule versus the Stanolind proposal?

A. In effect the California rule was based upon 200 barrels per well per day with a net gas-oil ratio of 750, and using the chart I get a production efficiency of about 44% on that chart. The Stanolind rule based upon 350 per day and a net ratio of 300, the 350 isn't on here but presumedly it would be about in this position right here, and the 300 here would probably make that about 48% as compared to the 44%.

MR. LAUGHLIN: That is all. He is tendered for cross examination, Mr. Chairman.

CHAIRMAN DOWNING: Any questions of this witness?

CROSS EXAMINATION

BY MR. SULLIVAN:

Q. Mr. Hegglund, with the 300 GOR per barrel, would you have enough gas available to use in the field for present field use needs?

A. The field is currently producing about 65,000 barrels a day and that would be 20 to 21 million cubic feet per day. I don't believe our fuel requirements are that high in the field today.

Q. But if they approximate that then under your

proposed order you would have no flare at all, do I understand correctly, assuming that there is gas injection to the full extent?

A. It is actually a matter of how you apply your calculations. I did not take credit for operating all the compressors in the field with my permissible flare.

Q. Now you state in your written statement here near the bottom of the page that there is a market for the current rate of Rangely production. That is self-evident, is it not? There has been no disposition of that production as far as oil is concerned, dumping it out on the ground. Do you know whether there is any additional market for Rangely production?

A. I am not an expert on the market situation; however, I have been advised that there is a market for the rate of our production.

Q. I see, for your rate of oil production. Now you testified that this order of yours will be an aid to protect correlative rights, that is correct, is it not?

A. Yes, sir.

Q. Do you believe at the present time there is any drainage across lease lines in the western part of the field?

A. I think in any field there is some drainage occurring, therefore, my answer in this field is there probably is some oil moving around.

MR. SULLIVAN: That is all.

BY MR. WILLIAMS:

Q. I just want to be sure I am clear on something. I don't have a copy of your testimony. Now did you testify 100,000 cubic feet of gas to the well as being the limit?

A. Yes, sir.

Q. That would be a ratio of 285?

A. Well, that is correct. We said 350 times 350 is 120,000, and we just used a round number.

Q. If you used the 285, that would be below the gas ratio of the field?

A. Technically that is probably right.

Q. In reality the only difference between your recommendation and that of Phillips is that you use permissible oil production of 350 where they propose 300, and you use a ratio of 285 or 300 where they suggest a ratio of 750. That is virtually the only difference between your proposal and that of Phillips?

A. That is right.

CHAIRMAN DOWNING: Any further questions?

(Witness excused.)

CHAIRMAN DOWNING: Now are there any of the other operators or sub-operators present who wish to give testimony? Does anyone else here want to give any additional testimony? The door is wide open.

MR. STOCKMAR: I don't know whether I am included

within the invitation there, but I am appearing here in behalf of a group of royalty owners who are beginning to perk up their ears and take a substantially greater interest in these Rangely affairs than heretofore. The particular people that I am representing here are Mrs. Evelyn Levison, Stuart McLaughlin, Andrew McLaughlin, the estate of A. C. McLaughlin, the University of Texas, the estates of Charles E. Hill, and other assorted royalty owners. I am appearing here as a friend of the operators in this field, particularly Stanolind, of whom I am very fond. I am simply coming here to request the operators to give serious consideration to the expanded features of our new statute, which takes into account a good deal more clearly the question of correlative rights and ratable market take, and to suggest to the operators that a good deal more consideration be given the individual royalty owner's problems than has heretofore been given.

The operators I know have viewed all of their problems as one company problem, and if they have lost a little here they can pick it up over here, and so on. The royalty owners are not so situated, as a result that the loss in one place is compensated for in another place. So I think the Commission and the operators would be well advised to take a closer look at individual correlative rights problems.

With respect to the question of unitization, I see the field's most substantial royalty owner is represented

here, Mr. Wormser, and he has indicated in his letter that unitization is without question a desirable thing here. There is a rumbling afoot, gentlemen, among the royalty owners to stand behind unitization as a proper handling of this field. I am not promoting and I am not necessarily in favor of the cooperative royalty owners organization. As long as all of the companies are well acquainted with what can arise there, I would suggest that bringing royalty owners into the fold with respect to discussion and solution of individual lease problems may greatly speed the accomplishment of conservation in this field.

CHAIRMAN DOWNING: Do you want to say something, Mr. Duncan?

MR. DUNCAN: No thanks, Judge.

CHAIRMAN DOWNING: Is there anyone here that wants to present any evidence? Has everyone been heard that wants to be heard? All right, we cannot close the hearing today because permission has been granted to the Texas and Union Pacific to present their testimony at a later time. About when would you be ready?

MR. OSBORNE: We presented our statement and I don't know of anything else to present.

CHAIRMAN DOWNING: You presented your recommendation. As I understand it you wanted more time to present your evidence.

MR. OSBORNE: No.

CHAIRMAN DOWNING: You don't desire to produce any evidence?

MR. OSBORNE: That statement was all we had to contribute.

CHAIRMAN DOWNING: Then as far as presenting the evidence is concerned by the operators, the case is now closed. As far as the Commission is concerned, I think we better retire a moment and decide on our order that we will make today. So if the Commission with the U. S. G. S. and staff would just come in here a minute we will try and reach a conclusion on today's testimony.

MR. WILLIAMS: This morning the Commission indicated it was willing to go to 6 o'clock this evening. I am wondering why we couldn't have our unitization meeting immediately following your conference and save ourselves a day tomorrow.

CHAIRMAN DOWNING: We announced it wouldn't be until tomorrow and I think there are some that are not here today that will be here tomorrow. I think it was very definitely understood, and besides maybe if you will think it over a little bit tonight you will be a little more unitization minded.

(Whereupon a short recess was taken.)

CHAIRMAN DOWNING: Gentlemen, I want to announce

first again that the meeting to talk over unitization will be held here tomorrow morning in this room at ten o'clock, and I hope you will all be here. I hope you will all have a good breakfast and be in a good frame of mind. Now as to this hearing we have before us, the Commission feels it may desire some additional evidence. We need a little time to study and digest all of this that comes in, and besides that we have the necessities of the members of our Commission. You know that we don't all live in Denver and you know some of us have something else to do besides attending this the same as you do. So our order will be, unless there is objection, that this cause will be continued until the 16th of August, at which time additional evidence may be taken by the Commission or anyone else, as anything that comes up is important and we will be glad to hear it. Until that time the emergency order will be kept in effect as a temporary order. Is that all right? Does anyone have anything to suggest with regard to our order?

MR. FREEMAN: I don't see Mr. Osborne here so I will speak in his absence. I do want to point out to the Commission that under the emergency order there is a zero hardship flare allocated to Union Pacific-Texas, whereas all the other operators' hardship flare has been allocated . I think the Commission would agree that there is an inequity created against Texas-Union Pacific in that no hardship flare at all is allowed under the emergency order for Union Pacific-Texas.

CHAIRMAN DOWNING: That is the substance of the letter that you wrote us?

MR. FREEMAN: Yes, sir.

CHAIRMAN DOWNING: We felt at that time there was no question involved because the order only goes to August 16, and we had a statement from your company and all the other operators of the amount they desired to flare during August. Now do you wish to flare more than that during August?

MR. FREEMAN: I do want to make this point, Mr. Downing, as we interpret the emergency order the operators who have had hardship flare allocated to them may use that hardship flare for the purpose of increasing their production over and above the average daily production for the six months period concerning which you asked us to furnish the figures. Now it was our distinct understanding that the hardship flare was to be allocated solely for the purpose of maintaining that rate of production rather than to increase that rate of production, and the Texas Company-Union Pacific has been allocated zero hardship flare.

CHAIRMAN DOWNING: Just exactly what is it you would like the Commission to say or do at this time?

MR. FREEMAN: Well, it seems to me that one of two things might be done. First, that the emergency order--

CHAIRMAN DOWNING: The temporary order?

MR. FREEMAN: The temporary order, if it is proposed

to follow the form of the current emergency order, it might be clarified, Mr. Downing, to make it perfectly clear that the hardship flare allocated to any particular operator may not be used for increasing his production over and above what it was on an average daily basis for the 6-month period in question. That is one thing you could do. The other thing you could do would be to recognize that Union Pacific-Texas as well as all of the other operators may have occasion to flare hardship gas just the same as the other operators are permitted to do.

CHAIRMAN DOWNING: I think the purpose of the order was to allow a gas production in accordance with what the operators requested because this was intended as a status quo order, not to determine rights but to preserve the status quo. I will ask the members of the Commission.

COMMISSIONER BRETSCHNEIDER: As I understand it, Mr. Freeman, it covers the period June, July, and August. Do you want to change that between June, July, and August, extend it or change it? We are not going to be beyond August 16, I believe, with this present problem.

MR. FREEMAN: Before I answer that, Mr. Bretschneider, may I ask you a question please? Do you interpret the emergency order as permitting an operator to increase his production over and above the figure set out in the emergency order by using the hardship flare gas?

COMMISSIONER BRETSCHNEIDER: I don't think so.

MR. WILL: That isn't what the order says.

COMMISSIONER BRETSCHNEIDER: What does the order say?

MR. FREEMAN: That the individual operator who has had hardship flare assigned to him may use that hardship flare for the purpose of increasing this production rather than merely maintaining it. May I read just the paragraph in the order?

CHAIRMAN DOWNING: Yes.

MR. FREEMAN: Your order states, and I am reading directly from the order now, it states: "Any operator shall be permitted to produce in excess of his average daily production of oil in the event he utilizes his injection equipment to full capacity and does not exceed the so-called hardship flare". Now I am not an attorney and I don't profess to interpret it, but to me as a layman, and to some attorneys who have interpreted the order, this gives any operator who has had assigned to him hardship flare, it gives that operator the right to use that hardship flare for the purpose of increasing his production over and above these figures stated in the emergency order. It's our understanding that this hardship flare could be used for that purpose only.

CHAIRMAN DOWNING: I think possibly the remedy would be for you to change your figures or change what you request so that our order may be in accordance with your amended request.

MR. FREEMAN: We would like to have some hardship flare along with the other operators or else have the order specifically state--

CHAIRMAN DOWNING: Is there any objection by anyone to the understanding that no one is to use the hardship flare as a method or way of increasing his daily oil production? I hear no such objection. No one objects to your interpretation on your first point.

MR. ROCCHIO: If you will eliminate those last few words, "and does not exceed the so-called hardship flare", and put a period at the end of capacity, it will do it. It wasn't the intended purpose or spirit of the order, as the operators well know, at the time we went through it that its purpose was to increase production over and above maintaining your average daily production for that 6-month period.

CHAIRMAN DOWNING: I think you will have no difficulty in solving that with Mr. Rocchio. I think we all understand it the same way.

MR. ROCCHIO: As a matter of fact, the Commission can issue the temporary order at this time.

COMMISSIONER BRETSCHNEIDER: We are going to read the new temporary order into the record if you will please listen.

MR. ROCCHIO: This will be Cause No. 2 and your Order No. 2-23, (Temporary Order) "That the Order No. 23 will

be the same as Emergency Order No. 2-22 and effective from this date to August 16, 1955", and in the second paragraph of the order portion of the order that it be amended to read as follows: "Any operator shall be permitted to produce in excess of his average daily production of oil in the event he utilizes his injection equipment to full capacity." Otherwise, the order is to remain the same. I think that will cover it. We will issue a formal written order following this hearing.

MR. FREEMAN: I just want to point out one other thing, and that is just to illustrate the point we have 50 compressors at Rangely and at this very moment two of them are down on account of mechanical failures in spite of everything. Now under this order here could we flare what would normally be injected with those two compressors?

MR. ROCCHIO: That is what hardship flare is for, to keep your daily production up. We gave you what you asked for, didn't we?

MR. FREEMAN: Do you consider that emergency flare?

MR. JERSIN: Yes.

MR. ROCCHIO: Call on your emergency flare.

CHAIRMAN DOWNING: That is all then for this time.

(Whereupon the hearing in Cause No. 2 adjourned at 4:00 o'clock p.m., July 14, 1955.)

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C E R T I F I C A T E

I, Donald E. Weimer, Certified Shorthand Reporter, hereby certify that I personally recorded in shorthand the proceedings in the foregoing matter in the first instance and that I later transcribed the same and that the foregoing record is true and correct to the best of my knowledge and belief.

Done at Denver, Colorado, this 18th day of July, 1955.

Donald E. Weimer

Certified Shorthand Reporter
2027 Newport Street
Denver, Colorado

Phone
FR7-0358