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OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
Santa Fe, New Mexico

TRANSCRIPT OF HEARING

Case 1327

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DEARNLEY - MEIER & ASSOCIATES
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I N D E X

MORNING SESSION - December 10, 1957.

MR. PORTER: The meeting will come to order, please. Mr. Howell.

MR. MALONE: If it please the Commission.

MR. PORTER: Mr. Malone.

MR. MALONE: I would like to complete the record in connection with the requests that were made for material that we were to furnish during the hearing yesterday. El Paso Natural requested a breakdown of the deliverability groups used on our Exhibit 7, I believe, and that information has been furnished to El Paso Natural. Mr. Utz requested a plot of our reserve and deliverability figures on the fifty-five wells. We furnished the basic information and the log, lot plot is being duplicated and will be over shortly. At eight o'clock last night we were able to have cleared four of the five logs that were cored, requested by Texas Pacific, and they were delivered to them and have been redelivered to us this morning. I believe we have met all the requests that were made yesterday.

MR. PORTER: Thank you, Mr. Malone. Mr. Campbell.

MR. CAMPBELL: If the Commission please, I would like to generally confirm what Mr. Malone has said, in addition he furnished me this morning with data I requested on their reserves calculations on the fifty-eight wells, and the deliverability data they used on the fifty-eight wells. We were furnished with some core information on the Janda I. Number 1 well, although there were no

interpretations available. We were furnished with complete core data on the C. Meyer B-11 Well, the One Farney A 17 Well on which there was complete core data, and we were furnished core data on the Janda J-1 Well which we don't understand was included in the five wells to which you have referred.

MR. MALONE: I have checked that since you mentioned it this morning. You are in error in that regard. It was one of the five wells. It is an oil well, but it was in the area and was cored through the horizon that we're interested in, and that was reflected in the core analysis that was with the log. Now, the Janda 1, on which there was no analysis, we furnished everything that we had on that and we made our own analysis from the original data.

MR. CAMPBELL: It had been our understanding that the Janda H-1, the gas well, was the one on which you had the core and which you used rather than the Janda J Well, so there would be only one well within the fifty-eight well area?

MR. MALONE: I have not checked the location of these wells. You undoubtedly have. The Cities Service log, which is the fifth log, is in Roswell. That is the reason we could not deliver it last night. It will be delivered as soon as we can get it up here.

MR. CAMPBELL: Perhaps at an intermission we can find out from Mr. Leibrock whether it was the Janda J or the Janda H Well that he used and clarify the record with regard to the identity of the

five wells. We have returned all the core data to Mr. Malone this morning, and for the benefit of the engineers I might say that no copies were made and all of us don't understand them or have real poor memories.

MR. PORTER: Thank you, Mr. Malone. It looks like somebody was active last night. Mr. Howell, would you proceed with your witness?

By MR. HOWELL:

Q Mr. Woodruff, I believe that just before recess yesterday you had identified a graph as Exhibit No. 2, which showed the estimates and actual market demand deliveries of residue gas and takes of Lea County gas during the month of February, 1956, is that correct? A That is correct.

Q Now, did you prepare similar graphs for the months of July, 1956, August, 1956 and October, 1956, which were the three other months in which evidence was introduced of overproduction of certain wells? A Yes, sir.

Q Did you number the graph for July, 1956, as El Paso's Exhibit No. 3?

A Yes, sir, I did, and I listed the August, '56 as Exhibit 4.

Q El Paso's Exhibit No. 4.

A October, 1956, as El Paso Exhibit No. 5.

Q Will you please go to the board and preceding to Exhibit No. 2, I'll first ask you if there were any unusual weather

conditions in the month of February, 1956?

A Yes, sir, there were.

Q What were those conditions?

A We had an extreme cold spell at the beginning of February, 1956.

Q What does the graph reflect as being the actual deliveries or market demand on El Paso's Permian Basin System, or Southern System as compared with the estimates?

A The upper dark line reflects the total Permian requirement. This is the total requirement from our Permian Basin System, both residue gas and dry gas. The heavy dotted line immediately before it is the estimated total Permian requirement.

Q By approximately how much per day during the month did the market demand exceed the estimates?

A Approximately one hundred million per day.

Q Now, during that same month, and particularly in the first part of the month and the last part of the month, how did the actual deliveries of residue gas compare with the estimated deliveries?

A The actual deliveries of residue gas was much less than the anticipated average demand.

Q By approximately how much during the early part of the month?

A For example, on the second of February we estimated that we would average, first this heavy line towards the middle of the

page, solid line is our estimated residue gas production. Necessarily it must be in making nominations, an average over the month. We realize there is going to be some variation in it at the first of the month. The actual conditions are the dotted line along with it. We estimated average for the month right at one billion five hundred million cubic feet. We received one billion two hundred million cubic feet on the second day of February. These are approximate figures.

Q Now, what effect did that have upon the necessity of producing gas from the prorated gas pools in Lea County?

A To meet our total market demand requirement out of the Permian Basin Area, we had to turn on additional dry gas to compensate for the volume of residue gas that was not available. Actually during the first few days of February, 1956, we reached the peak volume of gas from our dry gas sources that we have experienced in the Lea County Area right at seven hundred million cubic feet in one day.

Q Is that actually in excess of the treating and processing facilities, dehydrating facilities in the area?

A It is in excess of our plant facilities. Our plant facilities will handle something in the vicinity of 435,000,000. We do have treating and dehydration facilities which will enable us to deliver other volumes of gas. Frankly I don't know how our people did it, but we got the gas out when we had to have it.

Q Under those demands of peak production from Lea County, where was it necessary to get the gas to keep from shutting off the gas in our market areas?

A From the dry gas wells in Lea County.

Q From which wells?

A From those wells that could produce it. The high deliverability capacity wells.

Q Did that result in heavy overproduction of certain wells?

A It did.

Q Then following that did you attempt to cut back on the production of those wells? A Yes, sir, we did.

Q And get them in balance?

A We have done so.

Q Without going into as much detail in the month of July, please just state rather briefly what the conditions were in July.

A The lines on the Exhibit No. 3 for the month of July are the same as those on the month of February. I did not explain that the heavy line at the bottom of the page, heavy dashed line, represents the actual dry gas production. The heavy dashed straight line is our estimated dry gas production, the curved short dashed line is our actual dry gas production. It also shows that the variation in actual requirements as compared to our expected conditions.

I might point out one significant fact, in the month of July we had a holiday on July 4th. As I recall it was a week end.

the plants to which we supply gas shut down. Our market demand fell off. Our residue gas remained high. We had to compensate for the drop off in market demand by shutting off dry gas wells, similarly to how we had to turn them on over here when the demand was high.

Q Then later on in the month did the actual demand exceed your estimates and the supply of residue turn out to be less than your estimates? A Yes, sir, it did.

Q As a result was there overproduction of the gas wells in Lea County? A Yes, sir.

Q Did substantially the same things happen in August of 1956 and October of 1956?

A Yes, sir, that is correct.

Q Referring to Exhibit No. 5 for October 1956, what was the situation in that month with reference to the residue supply?

A The residue gas supply was considerably less than anticipated for that month. The result was that we had to produce more dry gas than we had anticipated that we would need. One significant feature about each of these graphs is this, that any time our market demand for dry gas exceeds that volume estimated, we are going to have overproduction in the pool because our allowables are based on our anticipated demand and the actual production, of course, is lower.

Q Is there anything else you want to point out on those graphs?

A I believe not.

Q Well, then, if you will resume your seat we will continue. As a result of a number of conditions, did we find it necessary to overproduce a number of wells during 1956?

A Yes, sir, we did.

Q Now, during the period of 1956 and 1957, what was the relation of the nominations as made by El Paso Natural Gas Company and other purchasers in the Lea County Area?

A The demand and nominations of El Paso were greater in proportion to the demand and nominations of the total of the other purchasers in the pools in Lea County.

Q What effect did that have upon the allowables which were granted to El Paso?

A That resulted in El Paso receiving as an allowable less gas than that that they had a demand for.

Q In order to meet the demand, did overproduction of wells cause pools to go out of balance?

A It did.

Q Had that condition existed more or less at all times since the beginning of proration?

A For El Paso's wells, no. In the pool it has been the general condition. Since 1955 we have had increasing condition in that there has been more and more, you might say less and less allowable to meet our market demand. There has been a greater

variation between actual demand and permitted production in the form of allowables.

Q Well, I probably haven't made my question as clear as I should. Even though a pool may be in balance, do you normally expect to find wells within the pool overproduced and other wells under produced at all times?

A Yes, sir, you expect that.

Q Has that condition existed since the early days of proration? A Yes, sir, it has.

Q Now, there was testimony introduced in this record relating to certain charts of the wells connected to El Paso Natural Gas Company's system. Have you caused a study to be made of charts for the four months that evidence was introduced in regard, that is February, July, August and October of 1956?

A Yes, sir, we have done so.

Q How many charts, approximately, were scanned for each month, or the number of charts that had to be looked over?

A 2600 charts.

Q For each month? A Yes, sir.

Q During the month of February, 1956, how many charts were found to have gone off the chart?

A In addition to the wells of Texas Pacific that were pointed out in the hearing, we had fifteen wells.

Q Fifteen wells that had gone over at one time or another

during the month? A Yes, sir.

Q What about July?

A In July we found that we had five charts.

Q What about August? A Four charts.

Q And what about October? A No charts.

Q What is it, in your opinion, causes a well to go off the chart and what can be done to correct it?

A There are various factors that could cause it, particularly thinking in terms of February of 1956 where we had severely cold weather. We often find that we have freezing conditions either at the well head, at chokes, through constrictions through which gas pass, when the wells then are turned on our volumes are increased, you find that you have a certain volume passing through at the restricted opening. Our people are instructed to go out there and turn on so much gas from that well, say like 4,000,000 cubic feet. They go out and turn it on. Subsequently you will find that the flow of gas melts the icing condition and causes the volume to increase and can permit the well to go off of the chart.

Normally we maintain orfice in the meter which can handle our normal producing habits, but if we have it turned on too much because of some abnormal constriction and that restriction is removed, then we do experience more volume going through.

Q What effort do you make to prevent wells going off charts?

A We periodically check the charts to see whether they have gone

off and our people are instructed to always bring them back on the chart as soon as that condition is found to exist. Of course, at the volume that is producing is necessary, then it requires an orfice change.

I might also point out that one other feature which we often find existing and which is common in Lea County, is that some wells log off when shut in. When turned on their ability to produce is comparatively low. You set a certain volume of gas on your chart and you go away and the well unloads and it can produce much more gas. That can also result in the measurement going off of the chart.

Q Now, with reference to those charts on the Texas Pacific Wells which were introduced, were those charts furnished to Texas Pacific shortly after the month in which the gas was produced?

A Yes, sir, our records reflect that the charts were mailed to Texas Pacific's Hobbs office in March of 1956. They were then forwarded to their Ft. Worth office on April 25, 1956 and since then have been returned to our office.

Q Was any complaint made prior to the time they were introduced here in evidence? A No, sir.

Q I believe we have discussed the difference in nominations between the several purchasers. Have you prepared any graph that would illustrate for any particular period of time the effect of lower nominations by other purchasers and what action El Paso

Natural Gas Company has taken to try to secure the necessary volumes of gas?

A Yes, sir, I have such a graph.

MR. HOWELL: Will you mark it as El Paso's Exhibit No. 6?

(Marked El Paso's Exhibit No. 6, for identification.)

Q You might just put one up on the board.

A That's what I intended to do.

Q What period of time is covered by this particular Exhibit No. 6?

A The last six months of 1957.

Q Does that represent actual or estimated figures?

A Actual conditions for the first three months and estimated conditions for the last three months.

Q Well now, what does the top blue bar indicate?

A The top blue bar indicates El Paso's actual and estimated market demand for gas from the Lea County Gas Pools for the last six months of 1957.

Q What does the next, the yellow bar represent?

A The next yellow bar represents our actual and calculated allowable under conditions that have or would exist without our purchasing gas from other purchasers in the Lea County Area.

Q Now, we have a third bar which is a combination of a green and red mark, what does that represent?

A That bar represents the volume of gas which El Paso

expects to pro ude from other wells.

Q And the green line?

A The green represents the volume that El Paso expects to purchase from other wells.

Q That is from wells under contract to El Paso?

A That is correct. The red line represents the volume of gas which we expect to purchase from Permian Basin Pipeline Company.

Q Have we begun taking some gas and purchasing from them in the latter part of 1957?

A Yes, sir, we started purchasing gas from them during the last few days of July, 1957.

Q Is that the source which you look forward to making up the deficiency between requirements and the allowables which are allowed to El Paso's contract connections?

A Yes, sir, that is correct.

Q Now, there are three other lines on the chart. What do they reflect?

A The middle yellow and green lines represent conditions that we have calculated when El Paso takes no gas from Permian and takes the full demand from El Paso connections. If we produce our full market demand from our wells we will end up getting the volume of gas represented by the yellow line in the form of allowables.

Q And the green line would represent additional overproduction?

A A difference between the yellow line and green line would

represent overproduction.

Q What is your last two lines? What do they represent?

A The last two lines are to explain an example where El Paso takes no gas from Permian and takes the allowable only from El Paso's connections. It just reflects that we would receive the yellow bar in the form of allowables and take only that amount in the form of production.

Q What happens to that market demand with reference to Lea County producers if that course is to be followed?

A That amount of our market demand must be supplied from sources other than Lea County.

Q Now --

A (Interrupting) It might be well, for those who do not have exhibits, to speak of the magnitude that we have here.

Q What is it?

A To speak of the magnitude we have on the bars.

Q Yes, I wish you would explain the chart in a greater degree, that you care.

A Our total market demand, actual and anticipated, during the last six months is eighty-seven and a half billion.

Q That's from prorated pools in Lea County?

A That is correct. Under the conditions that we anticipate will actually exist with our purchasing from Permian, we anticipate that there'll be 60.8 billion produced from our wells and 26.7

billion purchased from Permian Basin Pipeline Company which will come from other corrections in the various Lea County Gas Pools. I believe that will explain the magnitude of the volumes that we have there. If we produce only our allowables and had not taken the volume from Permian, we would have failed to meet our market demand and have to go elsewhere for the gas for the 26.7 billion cubic feet of gas that we anticipate purchasing from them.

Q During approximately a six month's period?

A That is correct. Actually our calculations show it would be slightly more than that as indicated on the graph, Exhibit No. 6.

Q Now, in connection with the Lea County situation, and particularly the Jalmat Pool, there was testimony introduced, and I wish we could refer briefly, I think it's Exhibit No. 5 introduced by the operators, which shows some relationship -- that's the exhibit -- Operator's Exhibit No. 5 contains comparisons in which, for example, the Jalmat Pool and the overproduction in the Jalmat Pool is compared to the Fulcher-Kutz Pool.

I believe the testimony shows that the chart was prepared on the base of the November proration schedule. Since seeing that chart, have you had occasion to look at the November proration schedule?

A Yes, sir, I have.

Q What is the entire allowable for all the wells in the Fulcher-Kutz Pool, including both those connected to El Paso's system and those connected to Southern Union's system?

A 590,066,000 cubic feet.

Q That's the entire pool allowable?

A For the month of November, 1957.

Q Did you examine the Jalmat Pool to discover what was the largest underproduced single well in that pool?

A Yes, sir, I did.

Q What's the amount of under production accumulated to that single well?

A 797,183,000 cubic feet.

Q It then follows that the underproduction attached to one Jalmat well is greater than the entire monthly allowable for the Fulcher-Kutz Field? A That is correct.

Q Incidentally, is that underproduced well connected to our system?

A No, sir, it is a Gulf well connected to Permian Basin's system.

Q There's also been some testimony relating to the rules in Texas for production of gas wells and the allowables. What is the statewide rule for any gas well that isn't in an allocated pool, or prorated pool?

A Statewide rule is that the production from a well will be restricted to 25% of its open flow capacity.

Q Is any consideration given to acreage in that statewide rule? A No, sir, it is not.

Q Are there a number of pools in Texas in which the deliverability or open flow or factors other than acreage are considered?

A Where other than acreage is considered?

Q Yes.

A Not to my knowledge. Normally acreage and, well I will correct that, there is the Panhandle field in which a portion of its total market demand is allocated on potential alone. Normally you find acreage combined with the deliverability or potential factor.

Q I think you misunderstood my question. You have now answered it that normally in Texas you find acreage combined with a potential or a deliverability factor?

A That is correct. I did not say that if I understand your restatement of my statement.

Q Then please correct me.

A I meant to state that normally when you find deliverability or potential in an allocation factor, it is combined with acreage.

Q I see. And there are pools, are there not, in Texas, using a number of different formulas? A There are.

Q Now, you have probably been as close to the problems of the Jalmat Pool and struggled as much as anyone in attempting to achieve balanced conditions. What are your recommendations for correcting the conditions which are shown to exist with the pool

containing a number of wells that are overproduced to a great extent and a number of wells that are underproduced to a great extent?

A First, I think that we should classify wells as marginal that are incapable of producing their allowables. That is provided in the rules and we do do so. I think there are other wells, of course, that could be classified as marginal.

Q In determining whether or not a well is incapable of producing its allowable, what would you recommend as the method to use?

A I would recommend that the Commission compare the well's delivery capacity as evidenced by review of its actual performance with the average allowable during the preceding six-month period. I recommend an average allowable rather than an allowable for any one month, because the allowables vary up and down as adjustments are made for variations in anticipated demand and actual demand for previous months, so you can get an abnormally high or abnormally low allowable for any one month, but comparing it with the average allowable over a six-month period will give you a good standard for comparison.

Q You would recommend that the determination be made on averages rather than on the single lowest month?

A That is correct.

Q In the six months previous period?

A Yes, sir.

Q What is your recommendation with reference to underproduction?

A I recommend that underproduction be cancelled in accordance with the present rules of the Commission pertaining to the gas pools in Lea County.

Q And in connection with the determination of whether or not a well is in balance, I believe you have already testified, or at least made a statement in this hearing, would you just briefly comment upon the interim rule which has been adopted by the Commission?

A It will be a considerable aid to meeting market demand to have this interim rule which the Commission has approved for all Lea County gas pools,which in effect assumes that a well is in balance during any month that it has an allowable equal to its overproduction. Any month that it could get in balance, it is assumed to be in balance. That gives added flexibility of operations to the purchaser.

In the example given last hearing, I showed that conceivably a purchaser will have to restrict his production from a well for the major portion of the month because of the previous interpretation that the well had to be in balance at the end of the month to have been in balance. It might need only one day's underproduction to bring it in balance. This interpretation gives added flexibility both to the purchaser and to the operator in

producing his well and permits added production and income to the producer for that period that he would be permitted normally to overproduce.

Q With reference to the formula of allocation, what has your experience in actually taking from wells in the Jalmat Pool led you to believe with reference to the deliverability factor?

A I have concluded from my analyses, and I believe our exhibits have shown, that for market demand to be met out of the Jalmat Pool, that we must have a deliverability factor in the allocation formula. That acreage alone is not permitting the market demand to be fulfilled from the wells in that pool.

Q Now, have you given consideration to the formula as recommended by Texas Pacific? A Yes, sir, I have.

Q Do you think that formula is a workable formula or could be used practically?

A Yes, sir, I consider that it could be used practically.

Q Do you think there are other formulas or other combinations that might also be practical and useable?

A I think any utilization of deliverability is a step in the right direction. The degree, of course, is variable. I think that at least fifty percent deliverability should be utilized in any allocation formula. It depends on several factors. The plus factor utilized in a deliverability formula.

Q What do you mean by the plus factor?

A In the formula recommended by Texas Pacific we have 75% acre times deliverability plus 25% acreage. The plus 25% acreage is the plus factor I referred to. That factor gives each individual well and every individual well the same amount for that particular factor. It assures a poor well of having a certain amount of volume even though it might have a small amount of deliverability. It in effect gives a poor well something which its deliverability might indicate it is not entitled to.

Likewise it draws down a high deliverability well by denying it everything that it would have received say had it been 100% deliverability. So that I can say that the plus acreage factor is fine particularly in a pool like Jalmat where we have wells in variable conditions. We have some wells in the later stages of depletion that have low deliverability whereby a hundred percent deliverability formula we would give them small volumes but maintain them as economically feasible.

Q Have you had an opportunity yet to complete or have someone helping you complete a brief analysis of Operators Exhibit 6?

A We are analyzing that exhibit, but I do not see that it has been brought forward here.

MR. HOWELL: We don't actually have the figures. I did want to put that in in evidence with Mr. Woodruff. If I may return and ask him about that as soon as the figures are put together, why that will conclude our examination.

MR. PORTER: That will be permissible. You expect those to be available some time this morning?

A Yes.

MR. HOWELL: Yes, they're working on it now.

MR. PORTER: Mr. Woodruff, there are a couple of questions I would like to ask you. I believe you recommended a method for defining a marginal well as being a comparison of the average monthly allowable for six months with the highest months production of the well?

A I did not say highest month's production, but I should have said so. It's maximum producing ability as evidenced by recent production as compared to its average month's allowable.

MR. PORTER: And also you recommended that this rule, I believe, as incorporated in the interim order concerning overproduced status of a well, when it would be considered overproduced, be made permanent?

A It was my intent to recommend that, yes, sir.

MR. PORTER: Now, Mr. Utz in Case 1352 yesterday morning, pointed out certain dangers of that. Do you agree with Mr. Utz that overproduction could get out of hand using that determination?

A Well, I think that we will have to agree with what he said that a well that is required to come no closer in balance in one month's allowable could conceivably never get completely in balance. I do not feel that there is discrimination caused in that

between an overproduced well and an underproduced well. Certainly under normal producing practices we try to take all the allowable of each well and produce an underproduced well consistently in an effort to take its allowable. Relief granted to an underproduced well under those conditions would be of no avail, we have taken everything that could be produced. I do not consider that the added flexibility given by utilization of this interim order would discriminate between overproduced and underproduced wells. It certainly would add to the flexibility of operations in the pools.

MR. PORTER: Anyone else have a question of Mr. Woodruff? Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Woodruff, can you explain to me how a pool can be in balance when you allow overproduced to be overproduced one month's allowable, not allow underproduced wells to carry the same amount of underage?

A If a well is overproduced, say you have a two-well pool, you have one well overproduced, the other well has to be underproduced an equal amount, in a balanced pool we will always have those conditions of overproduction compensating underproduction. The pool will come in balance if the underproduced well can produce its full allowable. If it does not produce its full allowable, then the overproduced well will of necessity have to produce it.

I do not visualize any difficulty in balancing a pool because of this interpretation.

Q But if you do allow an overproduced well to carry continuous overproduction, shouldn't you, to be fair, allow an underproduced well to carry its underage for a longer period? Maybe he'll want to work his well over.

A I would hope that they would work the well over. We would much prefer to produce it out of the well that receives it. However, in order that the market demand be fulfilled, it is necessary to place the market demand where it can be produced, and that is the purpose of the cancellation and redistribution order that we have.

Q In other words, we're only assuming a well to be in balancing, we are never actually finding it in balance?

A Under my recommended procedure, the overproduced well would be assumed to be in balance and might not get in balance. I might go on to say that under the other interpretation you are assuming that it didn't get in balance during say in my example the one day that it required. There is no way of us showing you or the producer showing you that he shut the well in for the first day of the month to get the well in balance, so you are forcing the operator to restrict the production from his well during the other twenty-nine days of the month to no more than the allowable during the balance of the month just to be able to show you that the well

did get in balance. During the period that the well is actually in balance it should be permitted to overproduce, and under the recommendation that I have made it will be permitted to do so.

Q So you are not recommending, are you, that we do a daily balancing period so that you will be able to produce your well at the first part of the month as well as at the last part of the month?

A I think that would be exact.

Q We do it by months? A That's right.

Q We have that latitude so you can produce a well at any day in the given month? A That is correct.

Q We do give you that latitude? A That's right.

Q Getting back to marginal wells, I believe in answer to Mr. Porter's question you stated that you would compare average monthly allowable with the highest month's production?

A That is correct.

Q Is that the only consideration you would make in determining a marginal well?

A I visualize no other features, but if you have some to ask me to analyze I would be glad to do so.

Q Well, frankly, it is kind of a new one on me. I hadn't thought about it except the last five minutes. Let's use a hypothetical case on the well having six months allowable as sixty million, and if that well had produced any one month twelve million, would you consider that to be a marginal well?

A No, sir.

Q In other words, he has proved his ability to produce the six months allowable by producing the twelve million in one month?

A Exhibited its producing ability in one month in an amount equal to the six month allowable. We could hope that he could produce it for the whole six months at that rate.

Q What you propose is identical to my hypothetical question then?

A Yes, sir, I believe so.

Q Do you propose the average six months allowable because of the fluctuation in allowables? A Yes, sir.

MR. UTZ: That's all I have.

MR. PORTER: Mr. Campbell.

By MR. CAMPBELL:

Q Mr. Woodruff, referring to El Paso Exhibit No. 1 which is your comparison of your nominations, allowable and production for Jalmat in total Lea County Area.

A Yes, sir.

Q Would you please refer to the year 1956? For the first six months of 1956 it appears from your tabulation that your nominations were roughly 32,000,000 M.C.F. total correct approximately?

A I think that would be very close.

Q And that your production for the same period of time was approximately 33,000,000 M.C.F.?

A I'll accept that.

Q So that during that six months period your production was essentially in balance with your nominations, am I not correct on that?

A Yes, sir.

Q Then, referring to the last six months of 1956, your total nominations were approximately 27,000,000 M.C.F., and your total production was approximately 40,000,000 M.C.F.?

A Yes, sir.

Q Can you explain to me why your actual production for the last six months was so far in excess of your nominations when it was in reasonable proportion and almost equal during the first six months of 1956?

A Yes, sir, I believe I can. Yesterday in explaining this exhibit, I pointed out that our policy in nominating had not changed. We nominate in the pools in Lea County, giving consideration to the contract minimum in each pool and the deliverability capacity of the wells to produce that. We continue to do so. I think that the nomination for both the first and last six months of 1956 show no change in that in referring to our Jalmat Pool nominations.

I also testified to the fact that we were not getting in the form of allowables as much gas as our market demand, that we had no where else to go for the gas and that it must be produced from Lea County Pools. On the first of July, 1956, in analyzing our condition, we found that every well capable of overproducing into our

system in all pools was overproduced. We knew that we had a peak demand period coming up toward the end of 1956 with no other source of gas available to fulfill that. We wanted to produce our wells in such a manner that we would encounter the minimum amount of overproduction so that during this year we would not be restricted to a point where we could not fulfill our market demand. The Jalmat Pool with El Paso having between eighty-five and ninety percent interest was the logical pool to produce that volume of gas required in excess of our allowables. We produced that volume of excess gas primarily from Jalmat because in so doing we returned to the Jalmat Pool allowable which compensated for eighty-five, approximately, percent of the overproduction.

Q Well, would your supplementing your nominations at the end of the month and for the next month, make them more in line with your production for the preceding month, interfere with that procedure you just mentioned?

A It would have interfered in this extent, Mr. Campbell: Any month that you overproduce allowable in a pool, the Commission makes adjustments for that overproduction two months subsequent to that month.

For instance, in July, if we overproduced in September they add the production in excess of allowables to that month, so they have compensated for the production in excess of nominations to supplement nominations in addition to that would be a double compensation.

The effect of the allocation of gas, the method used, does that.

Q Well, then, as I understand you, with the two month time lag, allowables are actually determined by the production, which of course, is determined by your purchases, is that right?

A That is correct.

Q Following that through, isn't it true that the last two months of the proration period ending December, 1956, and the overproduced status of wells at the end of that proration period, was exaggerated by the fact that your actual takes were so much in excess of your nominations for those two months?

A I believe essentially you are correct, if I understand your question properly, because the corrections for production in excess of allowables for November will be made in January of 1957 and for December in February of 1957. I note in referring to El Paso's Exhibit No. 1 that we did produce in excess of our allowables during November. I note that in December we produced under our allowables. Actually the variation is somewhat comparable over in one month under in the other, and probably the effect would have been almost nil because of its compensating factor.

Q But doesn't the allowable situation in December reflect an adjustment for October? A Yes.

Q Actually in both months you produced considerably in excess of your nomination for those two months?

A Yes, sir, that is correct.

Q Would you refer for a minute to your El Paso Exhibit No. 6?

A Yes, sir.

Q You have stated in your testimony that your situation with regard to the Jalmat Pool involves what you, I believe, referred to as your Southern System of marketing gas, and that that system and the availability of gas is affected by the market of other purchasers in the area? A That is correct.

Q You have referred particularly to Permian as the other principal purchaser in the Southern System?

A That is correct. I might say that it properly should be called our Permian System.

Q Rather than the Southern System?

A Yes, sir.

Q Well, now, you have also stated that when you find a deficiency in your Permian System, you are unable to obtain dry gas for the reasons indicated, that you find it necessary to go elsewhere to supply your markets for gas?

A That is correct.

Q Did I understand you correctly that the principal source you go to is the San Juan Basin, or are there other places you go for your gas?

A Primarily we have to go to the San Juan Basin.

Q Then I assume that in your Northern System and your Permian System there is some interconnection somewhere that permits you to

supply your Permian market with your Northern System gas, am I correct in that?

A Essentially correct, yes, sir.

Q Is that done with your Needles-Blythe interconnection? Do you have an interconnection in Arizona for that purpose?

A Yes, sir, that's correct.

Q So that you are able by the use of interchange and use of the two systems, if the gas is available for one or the other or both, to supply your market in California irrespective of availability of gas in individual pools or areas?

A That's correct, as long as we do have facilities which will enable us to do so. It may be well to explain one feature. That up until November of 1956 we were restricted in the volume of gas that we could take out of the San Juan Basin. So that any variation, I mean the variation required to meet market demand when residue gas fell off had to come out of our Lea County Pools. We completed facilities in November of 1956, which has enabled us to divert a portion of our market demand to that area.

Q Do you know what portion of the dry gas production in the San Juan area of New Mexico is owned by the El Paso Natural Gas Company?

A No, I do not know. It is a sizeable portion. We are probably the major operator in the San Juan Basin.

Q You have stated that you have recently, I believe you said

commencing the latter part of July, been able to supplement your available gas in the Permian Basin area of Lea County, New Mexico by acquisition of gas from Permian Basin Pipeline Company as reflected on Exhibit 6, is that correct?

A That is correct.

Q Has that gas been available to you on exchange base of any sort before that time?

A No, sir.

Q You have not exchanged gas in Lea County with Permian Basin before this period?

A We have in minor amounts. We have wells which Permian has interest in connected to our system. They have wells connected to their system which we have interest in, and we have balanced out the interest portion of the gas between the two companies which has amounted to as much as ten million cubic feet a day.

Q Now, how much area does this Permian System you are referring to, cover? Does it cover just New Mexico or parts of Texas?

A Texas and Lea County essentially.

Q You do exchange gas with Permian Basin Pipeline Company in Texas, don't you, in the West Texas area?

A Yes, we do. It is volume for volume. They deliver gas to us for transportation at Plains, Texas and we redeliver a like volume to them at Dumas, Texas.

Q Is the gas that they have been delivering to you in

Plains, Texas up to July of 1957, has the source of that been other than Lea County, New Mexico?

A A portion of it has been.

Q Do you know whether they have had facilities to deliver New Mexico gas?

A Yes, sir, they do have.

Q Now, with further reference to your present ability to acquire gas from Permian Basin Pipeline Company, do I understand in your Exhibit 6 and your statements that the only gas you are acquiring from them is gas to supplement your own connections in Lea County, New Mexico? In other words, are you taking, planning to take all of the gas you are able to take under the rules and regulations and the capabilities of the wells in Lea County, New Mexico before you take any Permian Basin gas?

A Yes, sir, we are.

Q Do you intend to continue that practice, is that correct?

A Yes, sir.

Q Is this gas that you are obtaining from Permian Basin Pipeline Company being acquired under a contract with that company?

A Yes, sir, it is.

MR. HOWELL: Off the record.

MR. PORTER: Off the record.

(Discussion off the record.)

(Marked Texas Pacific's Exhibits Nos. 12 and 12-A, for identification.)

Q Mr. Woodruff, I hand you what have been identified as Texas Pacific's Exhibits 12 and 12-A, appears to be a photostatic copy of an agreement. Would you examine that and state what it is if you know?

A I might first state, Mr. Campbell, that I'm not completely familiar with our contracts. However, I believe this is the contract we have with Permian Basin Pipeline Company whereby we have agreed to purchase from Permian that volume of our market demand in Lea County which is not allocated to our wells.

Q And is 12-A a supplement to that agreement with reference to particular sections of it?

A It is stated so to be.

Q And that is the contract, as you understand it, under which you are acquiring gas, or intend to acquire gas, on the basis indicated in your Exhibit No. 6?

A That I believe to be correct.

MR. CAMPBELL: I would like to offer this photostatic copy of this contract and supplemental contract in evidence. I will furnish the Commission with additional copies, additional two copies they have requested.

MR. HOWELL: May I ask what the materiality of the contract is?

MR. CAMPBELL: Well, the witness has testified that you may now acquire gas from Permian Basin Pipeline Company in Lea County, which includes the Jalmat Gas Pool, and that acquisition will have a bearing upon the purchases of El Paso Natural Gas Company in the Lea County area, which includes the Jalmat Gas Pool. Your witness has testified that it has been impossible for El Paso to acquire the required amounts of gas under the present proration system, and this contract is apparently your solution to the problem. I think it has a bearing upon the Commission's determination on our application, whether prorationing is required in the Jalmat Gas Pool.

MR. HOWELL: If it please the Commission, unless the materiality of a particular contract is apparent, we submit that the contractual relationships between parties is not a matter of a proration hearing before the Commission. We have testified that we have purchased gas from Permian Basin. The purchase of gas from Permian Basin can be comparable to the purchase of gas at the tail gate of plants. Certainly we don't want to complicate this hearing with putting in the contract covering every purchase of gas that El Paso Natural Gas Company makes.

If this were material to any contested issue in this hearing, the terms and provisions, price, measurement, treating portions of the contract, we'd certainly have no objection to do it, but our position has been all during the hearings that our contracts of

purchase are between the parties and the mere existence of the purchase is sufficient for the record in any hearing. There has been no testimony as to the basis of the purchase. There just has merely been testimony that we expect to acquire certain volumes of gas. There is similar testimony that we expect to acquire certain volumes of gas from contracts of the operators of wells, and under contracts with the operators of plants. We wish to object to the introduction of this contract as not being material to any issue before this Commission.

MR. MALONE: May it please the Commission.

MR. PORTER: Mr. Malone.

MR. MALONE: I don't want to shock Texas Pacific, but I want to join them. It is the view of the operators, to the extent that I'm authorized to express it, I haven't checked this with them, but I am expressing this view and which I believe they will concur. We believe this contract is material because it has become apparent that ratable takes from this pool as between wells connected to by Permian Basin and those by El Paso are going to be determined by what El Paso determines it is going to take under that contract.

Its rights under the contract are extremely pertinent to the operation of the proration system in the pool. As I understood the witness's statement, he said that they still propose to take all the gas they could from the El Paso wells and no more than they had to from the Permian Basin wells. If that is the approach of the

purchaser to this problem, we can expect the situation to get worse instead of better, and the question of what their rights under that contract may be will be very pertinent in determining whether they are taking ratably in the field.

For that reason we believe it is material and should be admitted.

MR. CAMPBELL: If I may be permitted a brief response to Mr. Howell, in the first place I agree with Mr. Malone that the conditions are probably going to get worse before they get better. This contract between Permian and El Paso is not like a contract between a producer and El Paso or a residue gasoline plant and El Paso. This is a contract between two purchasers in this area. It is entirely predicated upon the advent of proration in New Mexico and presumes to further the purpose of this Commission in carrying out the rules and regulations under prorationing.

I think that for that reason if for no other, it is a material part of a determination of this Commission whether prorationing is necessary in this pool in the first instance, which is a question we have raised, and if it's going to be prorated, what the effect of this contract may have upon it.

MR. PORTER: Anyone else have anything to say relative to the admission of these exhibits? Mr. Christie.

MR. CHRISTIE: I want the record to show that Mr. Malone wasn't speaking for Amerada in this particular instance.

I don't know what our position would be on that. Right at the time I think we would support El Paso. I think a contract is something sacred and has no bearing on this case.

MR. MALONE: I think I had better clarify my situation. I haven't had time to check with the companies, but let me say I was speaking as Ross Malone, lawyer, expressing his own personal opinion.

MR. CAMPBELL: I think Mr. Howell realizes that this contract has been filed with and approved by the Federal Power Commission. It is a public record. It is not in the same category exactly as between two private parties.

MR. HOWELL: May I answer that I am fully aware of that, and as a matter of fact, I think there is a copy of the contract on file with the Commission. My point goes to the materiality of any contract as between the parties, if we put that contract in, then I would like to see Gulf's contract with Permian Basin, and I would like to see some of the other contracts with Permian Basin, because you have just stated that what we take depends on this contract. What we take depends on what Permian Basin Gives us. If you are going to go into that ramification, let us see what Permian Basin has contracted to purchase from their supplies. The minute you get into analyzing contractual relationships between the parties, you get into something that isn't a matter before this Commission.

We certainly don't consider this contract a secret. It

has been well publicized; my whole point is that contracts between the parties are not material to the issues in this case.

MR. PORTER: Mr. Howell, the Commission will overrule your objection and admit Texas Pacific Exhibits 12 and 12-A to the record. Were you through with your questions?

MR. CAMPBELL: No, sir, I have a few more questions.

Q Mr. Woodruff, as you are aware, one of the issues in this matter is whether or not prorationing in any form or any formula is necessary in the Jalmat Gas Pool. You have testified that El Paso Natural Gas Company is connected to, and I didn't understand whether it was eighty-five to ninety percent of the wells, or purchases eighty-five or ninety percent of the gas, which was it?

A Eighty-five percent of the units.

Q The units?

A Which would be the acreage assigned to the wells connected of El Paso. I could give the percent of wells, but it is still eighty-five percent.

Q You are acquainted, are you not, with the provisions of the El Paso Natural Gas contracts in the Jalmat Gas Pool in Lea County? A Generally so.

MR. HOWELL: Now again I am going to offer an objection going into all of the purchase contracts.

MR. COOLEY: For what purpose?

MR. CAMPBELL: I am offering this, I am going to ask him

a question about a section of the contract, but the first question I am going to ask him relates to the provision of the contract which requires the buyer to take ratably on the basis of ability of the individual wells to deliver gas into the line.

The reason that I'm asking that that be put in is that we have taken the position that El Paso Natural Gas Company being purchaser from eighty-five to ninety percent of the units in this pool, that if there is a ratable take provision in their contracts within this pool and that the contracts contain some sort of deliverability factor, that there is no necessity for gas prorationing in the Jalmat Gas Pool. I think it is material for that purpose.

MR. COOLEY: Mr. Campbell, Section 65-3-15, Annotated New Mexico Statutes, requires that common purchaser, which El Paso is certainly qualified as such in the Jalmat Gas Pool, requires that common purchaser must take ratably. Anything in addition to that would seem to add very little.

MR. CAMPBELL: I'm aware of that, but I think that both of them in this particular pool have a bearing upon whether or not the gas prorationing is required. I might say that I intend to tender the contract into the record, whatever the Commission's ruling may be on. I certainly think that portion of it to which I related is material here.

MR. COOLEY: To clarify your position, you offer the contract to show that El Paso is required to take ratably in the

Jalmat Gas Pool?

MR. CAMPBELL: And that there is a deliverability factor in the contract.

MR. COOLEY: Would you please explain your later remarks concerning the deliverability factor?

MR. CAMPBELL: Well, I'll have to read the contract.

MR. HOWELL: It is no secret. I have no objection to having this language read. I merely object to any of the contracts going into the record.

MR. CAMPBELL: You don't object to my reading this portion to him?

MR. HOWELL: I do not object to your reading it as a tender to the Commission. But I do continue and renew my objection to any contractual provisions being made a part of this record.

MR. CAMPBELL: Well, the portion which I intended to make reference with this witness and which portion I now tender, is contained in Article 12, Section 1 of the contract.

"Buyer agrees, insofar as practicable, to take ratably from each allocation unit connected to its system in Lea County, based upon the well acreage allocation and the ability of individual wells to deliver gas into the buyer's gathering system against the working pressure therein, or against a pressure of 600 pounds per square inch gauge, whichever is lower, within the allowable limits that may be set from time to time by Governmental authorities having proper

jurisdiction thereof. In no event shall buyer be required to take or seller be required to deliver gas from any well in excess of 25% of the total of its open flow capacity."

Q I will now ask the witness the question, and you may object, and then I'm going to tender the contract.

MR. HOWELL: Go ahead and make your tender and my objection goes to the whole line.

Q Mr. Woodruff, you stated that you are generally acquainted with El Paso Natural Gas contracts in Lea County area?

A Yes, sir.

Q I'm going to read you a provision of that contract, being Article 12, Section 1, "It is expressly agreed that buyer undertakes no obligation to purchase solely from seller and within the district in which the acreage covered hereby is located, nor to purchase at all times seller's full allowable production. Buyer agrees, insofar as practicable, to take ratably from each allocation unit connected to its system in Lea County, based upon the well acreage allocation and the ability of individual wells to deliver gas into buyer's gathering system against the working pressure therein, or against a pressure of 600 pounds per square inch gauge, whichever is lower, within the allowable limits that may be set from time to time by Governmental authorities having proper jurisdiction thereof. In no event shall buyer be required to take or seller be required to deliver gas from any well in excess of 25% of the total of its open flow capacity".

Do you know whether such a provision is contained in all of the El Paso Natural Gas contracts in the Jalmat Gas Pool?

A I believe that it is.

Q And would that --

MR. WEBB: (Interrupting) May it please the Commission, Layton Webb with Sinclair. I don't believe that we can discuss all of the contracts in Lea County here. I'm not sure that the witness gave a correct answer to that question. I think we are going mighty far afield here. I think I have personal knowledge that that statement is probably not contained in all the contracts.

A Probably I was referring on an inflexion in my answer.

MR. WEBB: I would like to object to any further reference to contracts in the Lea County Pool.

MR. CAMPBELL: The witness has answered the question. I will make a tender of the contract dated April 6, 1951 between El Paso Natural Gas Company and Texas Pacific Coal and Oil Company relating to purchase of gas from El Paso Natural Gas Company in Jalmat Gas Pool, Lea County, New Mexico.

MR. HOWELL: I renew the objection on the behalf of El Paso Natural Gas Company on the grounds that contractual agreements as between the producers and purchaser in the field are not material to any issue in this hearing.

MR. CAMPBELL: I would like to have this marked because I have made a tender, because I have made a tender of it.

(Marked Texas Pacific's Exhibit No. 13, for identification.)

MR. PORTER: Mr. Howell, your objection is sustained. Texas Pacific's Exhibit 13 will not be included in the record.

MR. CAMPBELL: Just to maintain the record here, if the Commission please, may it show that Texas Pacific Coal and Oil Company now tenders over the ruling of the Commission Texas Pacific's Exhibit No. 13. I simply do that to make a part of the record in the event of anything in the future.

MR. PORTER: The record will so show, that it was tendered but denied.

MR. CAMPBELL: I have no further questions.

MR. PORTER: We'll take a short recess.

(Recess.)

MR. PORTER: The meeting will come to order. Mr. Webb.

By MR. WEBB:

Q If it please the Commission, Mr. Woodruff, in response to Mr. Campbell's question after he had read the provision out of the contract under which you are purchasing gas, apparently from Texas Pacific, he asked you if that provision or a similar provision was in all of your contracts. I'm not sure that I understood your answer completely.

A I believe my answer was that I believed that they are. I do not know.

Q You do not know personally?

A That they are in each and every one, but I believe that that or similar type of provision is.

Q Actually contracts between the purchaser and seller are negotiated and not all of your contracts in the Jalmat area are the same?

A I believe that to be correct.

MR. PORTER: Mr. Kelly.

By JOHN KELLY:

Q I would like to ask you one or two questions, Mr. Woodruff, for clarification, and also to try and help El Paso get a little more gas from Lea County rather than have you go out of Lea County to pick it up. Referring to Exhibit No. 1.

A Yes, sir.

Q In order to make this brief, let's just take one month, the month of September, 1957. Your recommended nomination to the Commission is 6,797,000? A Yes, sir.

Q Is it my understanding that you arrived at this recommended nomination to the Commission by taking the number of non-marginal units connected to the El Paso system and giving them a basic unit allowable, let's say in the neighborhood of 20,000 M.C.F. times your number of units and then plus the non-marginal allocation, they should total this figure or close to it, is that right, or how do you arrive at this figure?

A Well, that is the portion of our total market demand from

all Lea County Pools which was nominated for in Jalmat to be produced from all wells connected to El Paso's system. Now, the Commission takes that total volume along with the nominations of other purchasers and they deduct the amount that is to be allocated to marginal wells and allocate the balance to the non-marginal wells.

Q Let me put the question in another way. Do you recommend to the Commission a non-marginal unit allowable for all the non-marginal wells that you are connected to in Lea County on a unit base?

A I don't believe it could be expressed as such, Mr. Kelly.

Q Well, do you recommend to the Commission, let me say for the month of September. Would you have those figures there how you recommended to the Commission your nomination for the month of September, 1957?

A You mean the entire basis that I went through?

Q Yes.

A I do not have it readily available for me. I might be able to find it in our records. However, we do allocate, as I previously testified to, each of these pools giving consideration to our contractual obligation in each pool, and the capacity of the wells to deliver our demand into our pipeline.

Q Then you nominate a basic unit allowable in each pool then? You recommend to the Commission a basic unit allowable for the non-marginal wells?

A No, sir, we don't recommend a basic unit allowable. We nominate a total volume of gas for the pool and the Commission allocates that gas out in accordance with the allocation formula.

Q Do you recommend to the Commission the same proportion, taking into consideration the number of connections you have in the different pools, do you recommend the same proportion of gas be allocated to each pool in proportion to the number of non-marginal units that you do in each individual pool?

A Not necessarily.

Q Well, in the Jalmat Field for the month of September, 1957, this, the allowable the Commission gave to the purchasers amounted to 20,379 M.C.F. per non-marginal unit. If the Commission had given a similar nomination to the non-marginal units in the Eumont Pool, just to take one other pool for instance of 20,379, as against 9,814, I believe that El Paso would have picked up in the neighborhood of two billion extra feet for that month to your connection, and if that were so, if the Commission would allocate on an equal basis between the two pools, wouldn't that alleviate some of your problem on gas supply?

A I don't visualize how it would, Mr. Kelly. First, I think that each pool must stand on its own bottom and that the Commission must allocate the market demand expressed for that particular pool by the purchasers in that pool.

Q If I understand you correctly, you would ignore the fact

that we have separate pools in Lea County?

A That's right. I would not recommend that.

MR. KELLY: That's all.

MR. PORTER: Mr. Utz.

By MR. UTZ:

Q Mr. Woodruff, it has always been a little questionable to me how you arrive at your nominations and your demand for each pool. Would you explain that to me?

A I have attempted to point out in my testimony how we will do so. I will go over the general procedure again. We first estimate our total market demand for all of our customers. Then we, I'm thinking now in terms of the Permian Basin area. We then estimate the volume of residue gas available from processing plants in Texas and New Mexico that are connected to our system. The remainder of our market demand must be supplied from dry gas pools. We take that portion that is to be supplied from our Lea County Gas Pools and allocated it out among the various prorated pools, giving consideration to the contractual obligation in each of those pools and the ability of the wells in the pool to produce our market demand.

Q You do give weight to contracts and the ability of the well to produce? A Yes, sir.

Q One other thing that I would like to verify, referring to your Exhibit 1, which I believe you have there, I understood you

to say that the sixty-three billion that you took for first nine months of 1957, that you took only that amount even though your allowables were sixty-nine million, because that was all the Lea County area was capable of producing. Is that a true understanding?

A No, sir, I did not mean to say that if that were so. In 1957 we were attempting to get all of our overproduced wells in balance, except when the market demand required, we never produced an overproduced well except in a few instances where it was necessary to take sediment tests we did produce them at the time that was required.

The balance of our production had to come from those wells that were in a net underproduced condition, that is the underproduced wells. The underproduced wells were not capable of producing our market demand. In fact, they weren't even capable of producing our allowables. I believe that I pointed out that we produce sixty-three, I think I said sixty-four billion, rounding off from our Lea County Gas Pools where our allowable was seventy billion. Where we had actually asked for and had a market demand for ninety-five billion.

Q But you didn't take the allowable in an effort to balance the overproduction for a previous period?

A We did not produce overproduced wells unless it was required to do so in order to meet our market demand.

MR. PORTER: Anyone else have a question? Mr. Brown.

MR. BROWN: David Brown, Pan American.

By MR. BROWN:

Q Mr. Woodruff, you recall that approximately eighteen months ago there was an industry committee called Gas Proration Committee appointed by this Commission? A Yes, sir.

Q Were you a member of that Committee?

A I was.

Q Did that Committee during its consideration of the matter recommend the same balancing period be temporary as suggested in Case 1352 which you have recommended today for a permanent adoption?

A It is my recollection that we did. I do not recall your reference to Case 1352. I do not know what you have reference to in that particular instance, but we did consider this question.

Q Do you recall the decision of that Committee with respect to the special balancing provisions for overproduced wells?

A I recall that at the time we concluded our recommendation to the Commission to say that we did not recommend that.

Q Isn't it true that that Committee rejected these special provisions for overproduced wells for substantially the same reason given by Mr. Utz in his testimony in Case 1352 when he stressed that the special provisions should be only temporary?

A I cannot recall positively just why we rejected it, but I know that we did discuss that particular feature.

Q Did that same Committee consider the definition of marginal

wells? A It did.

Q Did they agree on a definition and recommend a definition to this Commission? A Yes, sir, they did.

Q Is it the same definition that you have recommended today?

A I do not recall.

MR. BROWN: Thank you.

MR. PORTER: Mr. Malone.

MR. MALONE: If it please the Commission, Ross Malone.

By MR. MALONE:

Q Mr. Woodruff, I'm sure that everybody present is aware of the fact I think the record ought to reflect the manner in which gas is taken from individual wells. It is true, is it not, that under your contract El Paso as the purchaser has the exclusive right to produce the well and determine the amount of gas that is taken from it?

A No, sir, that is not correct.

Q Isn't it true that you did exercise the exclusive right to do it?

A No, sir. I possibly could qualify my answer.

Q Would you explain just how that works?

A In that the operators of the well have a call on gas from the well if they desire to use it for lease use gas list, et cetera. We have in many instances been denied the use of the well completely during such periods. However, where such restriction is not caused

by the operator, we are the ones who regulate the amount of gas which is taken to the wells that we are connected to.

Q Would you agree that El Paso has the exclusive right to determine how much gas from a particular well goes into El Paso's facility?

A Yes, sir. We do so. My recollection is that the operator can deny us the privilege of taking it if he thinks it might be wasteful or injurious to his well to do so.

Q You know, as a matter of fact, that in the operation of these wells attached to your system, that your switcher goes out and turns the gas on and off and puts in the meter charts and takes them out and the operator doesn't know what has happened to his well until he gets a report from El Paso?

A That is unfortunately true in many instances. The operator goes ahead and forgets about his well and we go ahead and get the gas out of them, but we do regulate the volume of gas from the well.

Q So, in the final analysis, the person who determines whether an overproduced is going to be produced more or underproduced is going to be produced enough, is the switcher that goes out and turns the controls, isn't it? A Yes, sir.

Q He is the man that lives out in the field and works for El Paso? A That is correct.

Q You keep those switchers up-to-date on the status of each

well whether it is over or underproduced so that he will know which well he ought to turn off or on?

A We are aware in our dispatching department to the best of our ability of that condition, and it is the dispatching department that asks the switcher to turn on and turn off wells.

Q Is the decision as to the well to be turned on and how long it is to remain, by whom is that decision made?

A It is made in our field office by our dispatching department.

Q Does a field office have control over more than one pool, or do you have a field office for each pool?

A It is over more than one pool.

Q It is over more than one pool?

A Yes.

Q How many pools in Southeastern New Mexico does the field office handle the dispatching on?

A Our field office handles the dispatching over all the gas wells.

Q So that control is in a single office. How many switchers are there in this turning off or turning on?

A I can't say, but I can get the answer for you real quick.

Q Can you give us a rough estimate?

A May I consult with my associates?

Q Yes, it may help to get the record complete.

A I thought I could, but the man is gone.

Q If you can supplement the record after the lunch hour, I think that information might be helpful.

A I would be glad to do so.

Q Do you know approximately how many wells an individual switcher has the jurisdiction over to go over and turn off and on?

A I will be glad to give you that information at the same time.

Q All right, if we can have that average. Do you know how many prorated dry gas pools there are in New Mexico?

A I believe there are ten.

Q In how many of those pools is El Paso a purchaser?

A In each of the pools.

Q In each of the pools. So that El Paso is making nominations monthly for all of the gas pools in New Mexico?

A That are prorated, yes, sir.

Q Under the system of proration, inasmuch as the legal production is determined ultimately by the nominations, it is possible for El Paso to determine entirely as between the pools of New Mexico where its gas is coming from, isn't it?

A Yes, sir, I would say so.

Q That is a factor which you take into consideration each month when you make out your nominations to the Commission?

A I don't understand your reference to factor. I'm afraid I can't follow your question.

Q The factor of how much you are going to take from each

of the ten pools that you purchase from.

A We take into consideration how much will be taken.

Q Yes, the relative amount that is to come from each of the ten pools is something that you have to determine when you make your nomination?

A Yes, sir, we have to determine that.

Q It would be possible if El Paso, I don't mean to imply that El Paso does, but it would be possible through your nominations to control substantially whether the gas is produced we'll say in Northwestern New Mexico or Southwestern, wouldn't it?

A To some extent, yes, sir, it could be that way.

Q You would be limited only by the capacity of the pools themselves to produce gas, wouldn't you?

A The capacity of that and the capacity of our facilities to handle the gas.

Q And the facilities to handle --

A Yes.

Q You have referred to quite a number of problems that seem to beset the gas trend and purchasing industry fluctuations in oil allowables and shutting down of industry plants and cold days and warm days, all of those problems are common to all gas transportation facilities such as yours, aren't they?

A I do not really believe that it is true to all or that all of the factors are true to all; we have what I would call abnormal

conditions to try to visualize in our operation primarily attributable to the large percent of residue from casinghead gas that we take into our system. That is not true of any other pipeline company that I know of.

Q There are casinghead plants in Texas, quite a number in Texas? A Yes.

Q Whoever buys the residue gas from those plants has the same problem with reference to Texas allowable as you do?

A Yes, sir, what I was tending to infer was that the degree differs. That no one trys to produce with as large a percentage of casinghead gas as El Paso does, as I believe we have testified to that, we operate out of the Permian Basin system with better than eighty percent load of casinghead gas, which is not common in any other pipeline company that I am aware of. No other major pipeline company certainly.

Q That is a very small percent of your overall gas requirement, is it not?

A It is better than sixty percent.

Q Better than sixty percent of your overall requirements for your entire system? A Yes, sir.

Q There is a fluxuation that occurs from month to month as a result of climate that is a common problem that exists with all transportation facilities?

A Not to the extent, I believe, that it is common to

El Paso in many instances in that we are affected by whether it is wet or dry in our load to other pipelines furnishing gas pumping wells for irrigation purposes. Of course our irrigation load varies, it is according to whether it has been raining or hasn't rained. No other major pipeline company that I know of is aware of such a condition.

Q You are saying that yours is the only pipeline that serves gas in the area where a great deal of irrigation occurs?

A I'm not sure that I understand your question, but there are areas where gas from El Paso's pipeline is furnished to distributors who in turn supply to the buyers for irrigation purposes, and in those instances I believe that we are the only ones furnishing gas for that purpose.

Q For that particular irrigation area?

A Yes, sir.

Q But other pipelines furnish other irrigation areas, don't they? A That's right.

Q So they have the same problem you do with relation to fluxuation in gas for irrigation?

A Some other pipelines do. I was attempting to say that I do not think that normally they do have that condition. I'm thinking in terms of major pipelines. There are some that are formed primarily for that single purpose, which certainly may not be true.

Q You mentioned that some sixty percent of your supply comes from the residue gas. Can you tell us what percent of the gas that you sell goes to these irrigation areas for irrigation purposes?

A I do not have that available in my mind we could determine it. It is not an exceedingly large percent.

Q Actually it isn't as great a problem as some of the other things with which you have to deal in this question of supply and demand?

A When you say some other things, I couldn't say yes to that question. I think the fluxuation --

Q (Interrupting) Let me say some of the other problems that you have testified to.

A I could not answer your question affirmatively.

Q Please understand that I am not minimizing your problems, I'm sure that you have them and that they are tough ones, but I was trying to develop whether they were problems that were common to your industry and hence that operate in other prorated gas states very much as they would here. You referred to the operator's exhibit, - I believe before we get to that exhibit there is one other question I would like to ask. These problems that we have been talking about with which your company of necessity has to deal, are all problems relating to fluxuation in market demand and its effect on you and your take of gas, are they not?

A I believe that's correct.

Q Probably the best way to eliminate them, or to minimize them as much as possible, would be to just eliminate prorationing entirely, wouldn't it?

A It would probably be a lot simpler to operate that way.

Q That would be the ideal solution for your problem?

A I can't say it would be the ideal, but it certainly would make it a lot easier to operate.

Q That being true, you don't have to concern yourself with the question of correlative rights and the effect on the operators of these takes. Your basic concern is meeting your market demand, isn't it?

A No, sir.

Q No?

A I possibly should qualify that to say certainly basically we must fulfill our market demand, but we are also concerned with fulfilling our contractual obligation for our various purchasers.

Q Would you say that you were equally concerned with the protection of correlative rights as between the people in the field, the operators?

A I think certainly as we attempt to fulfill our contractual obligations insofar as that would affect protection of correlative rights, we do so.

Q In other words, to the extent that your contracts require it, you protect correlative rights?

A I believe it could be said that way.

MR. MALONE: Maybe Mr. Campbell would like to reoffer his exhibit.

MR. CAMPBELL: Maybe you would.

Q You have referred to the Permian Basin interchange arrangement. When did El Paso first undertake an effort to provide a market for the allowable allocated to Permian Basin wells?

MR. HOWELL: If the Commission please, just a minute, let's try to clarify one point. Are you referring to the contract which is a contract to purchase some gas from Permian which was introduced in evidence?

MR. MALONE: Yes, that was the contract.

MR. HOWELL: I think we get into confusion when you talk about the interchange agreement. We do have a contract with Permian Basin where we pick up some of their gas and they pick up some of ours.

MR. MALONE: The thing I was interested in is an analysis of the figures that you have given us of nominations against production and the effect in meeting your market demand of taking gas from Permian. I wanted to see when that situation was initiated.

A I do not know when the initial negotiations were entered into. However, the contract is dated May 9th, 1957.

Q So far as you know, prior to that time El Paso had made no effort to absorb the allowable allocated to Permian Basin connections?

A No, I did not say that. I am sure that negotiations went on for a sizeable period of time.

Q I will change the question to say that you had taken none of the gas prior to that time?

A That's right, we were not authorized by the Federal Power Commission to do so.

Q Does El Paso recognize the fact that under the statutes of New Mexico it is obligated to take ratably in prorated gas fields as well as non-prorated ones?

A I cannot state what El Paso is aware of as it pertains to interpretation of the statutes. I don't consider myself the witness to discuss such a matter.

Q You have testified that that switcher down there is the man who is going to determine whether ratable take is affected or not. I thought you were familiar with the operation in the field and hence could tell us whether in the instructions that go out to the switcher you are observing an obligation to take ratably.

A I consider that we are, yes, sir.

Q And do you make an effort to observe a ratable take in the Jalmat Pool?

A Yes, sir, we do so long as, I started in so long as doing so we can meet our market demand. Of course, the question becomes as to what is a ratable basis for taking, on the existing allowable basis we cannot fulfill our market demand and produce only the

allowable of each individual well because of the inability of many wells to produce that allowable.

Q And that results from the failure to reclassify any marginal wells to which you have testified, at least in part it results from that, doesn't it? A That's right.

Q You referred to the relationship between your contractual provisions and ratable take. Do you know of any contractual provision that prevents El Paso from taking ratably?

A None to my knowledge.

Q So you do give preference, or do you give preference to ratable take over your contracts?

A We do. Excuse me, did you say over our contracts?

Q Yes. The problem isn't presented if you don't have any contracts other than rate. Now, I invite your attention --

A (Interrupting) Excuse me for a minute, I am not sure that I understand what you were meaning by the question you just asked in which you asked if we gave preference to ratable take over our contracts. Would you mind explaining what you have in mind in that question?

Q You testified awhile ago that you took ratably to the extent that your contracts didn't interfere. I wanted to see --

MR. HOWELL: (Interrupting) Well, I don't believe that is what the testimony was.

MR. MALONE: Well, I may have misunderstood.

MR. HOWELL: I suggest that you let the witness testify and make the statement as to what the position is.

Q Would you tell us what your statement was with reference to the effect of contracts on ratable taking by your company?

A I do not recall my exact testimony. However, our policy in the prorated pools of Lea County is to take the allowable for each individual well if it's capable of producing it.

Q And as regards takes in excess of the allowable, what is your policy?

A We attempt to try to take as near on a ratable basis from each of the individual wells that are capable of overproducing as is possible. Whenever there has been a well shown by Texas and Pacific Exhibits, it has not always been on the same equal basis, and that sometimes is not possible because during peak demand periods you have to take it where it can be produced. Some of the wells can't make it, so you have to go to other wells to get it.

Q In those peak demands you do take gas where it can be produced without any reference to its effect on correlative rights, don't you? A I believe that's correct.

Q Now, you referred to an Exhibit No. 5 and you compared the months shown on Exhibit 5 for the months, the average months overproduction of the wells in the Fulcher-Kutz Field, I believe, which was 2.01% to the maximum underproduction of a single well in the Jalmat Pool. Was that the comparison that you made?

A No, sir, it was not.

Q Would you tell us what the comparison that you made was?

A What I compared was the total allowable for the month of November for the Fulcher-Kutz Pool with one well in the Jalmat Pool.

Q Would you make the same comparison, please, which is the largest pool in Northwestern New Mexico in comparison with El Paso connections?

A Blanco-Mesaverde.

Q Do you know what the comparison is in the Blanco-Mesaverde as compared to that single underproduced well in Jalmat?

A No, sir, I don't have that figure in mind.

Q You selected in your testimony the smallest pool in Northwestern New Mexico, didn't you?

A I believe probably it produces less than any other. I think our selection of that was premised on the fact that your witness had testified to that in comparing it with Jalmat also. So we took the Fulcher-Kutz Pool. Possibly we should have more properly referred to your Exhibit No. 4 on which the Fulcher-Kutz Pool is compared with Jalmat.

Q You did not by your testimony intend to indicate that a comparisor of these pools on the base of the average month's overproduced and underproduced of the wells in the pool was an unfair comparison, did you?

A I believe that I did.

Q You did?

A Yes.

Q You testified on direct examination, I believe, that the Commission had to prorate these pools by pools and not by areas, didn't you? A Yes, sir.

Q In answer to Mr. Kelly's statement?

A Yes, sir.

Q He said that you would not agree to a recommendation that the proration be for the entire area and the pools be abolished?

A That is correct.

Q Then if proration is to occur by pools and you are going to compare the over and underproduced status of the pools, you would have to do it on the basis of the allowable of each individual pool, wouldn't you? A I believe so.

Q And you --

A (Interrupting) Other factors, I think probably and properly should be considered too.

Q But you will agree with me then that if you accept a pool basis for determining it, that this exhibit does properly reflect a comparison between the pools on the basis that the exhibit was prepared?

A I agree that it does reflect a comparison between pools which shows that certain wells in one pool are overproduced and underproduced as are the relationships in monthly allowable as compared to other pools.

Q This maximum accumulation of underproduction in a single

Jalmat well resulted from the failure to cancel and reallocate underproduction, did it not?

A That is one of the major causes, yes, sir.

Q Such a cancellation has occurred in the Northwestern New Mexico pools, hasn't it?

A There was a cancellation February 1st, 1957, there hasn't been one since.

Q Thank you. Would you like to have a seat? I have one or two other questions. I'm not sure that I understood your testimony as to the place that deliverability, the part that it plays in Texas proration formulas. Would you state that again, please?

A I recall that I stated that in Texas the statewide rule, and I believe possibly it is included in the statutes for wells in non-prorated pools, require that production be limited to 25% of the open flow capacity of the well.

Q That is a limiting of production, isn't it?

A That's correct.

Q In non-prorated pools? A That is correct.

Q Do you know how many prorated gas pools there are in Texas?

A I do not have that figure in mind.

Q Do you know how many there were when you were head of the gas proration department? A No, sir.

Q Would you accept the figure of 420 as being the prorated gas fields in Texas?

A I think that would be a reasonable figure, yes, sir.

Q Do you take any issue with the testimony of Mr. Leibrock that of that 420 wells, only 21 have only potential or deliverability in their proration factor?

A I have no reason to question that.

Q If that be true, then 399 of the 420 are on a straight acreage or well basis, aren't they?

A No, sir.

Q They are not? A No, sir.

Q What are they?

A They have a great variety of proration formulas.

Q But none of which include deliverability?

A Assume that his figures are correct, that would be right. I might state just to clarify my answer, that many of them give consideration to one or more of the variable factors entering into recoverable reserve calculation which acreage, of course, does not do.

Q Now, with reference to the question Mr. Utz asked you as to your definition of a marginal well, isn't it true that a well which was shut down for workover or for some other reason other than its inability to actually produce the allowable would be prejudiced if that permanent regulation was adopted?

A I believe probably that it would, and I think I should have qualified my recommendation to him in this respect, that upon a

determination that a well appears to be marginal, the operator should be so advised and asked to show the Commission whether it was or was not a proper classification.

Q I think that would be a very fair addition to it. We can agree on it. That's all I have.

MR. PORTER: The hearing will recess until one-thirty.

(Recess.)

AFTERNOON SESSION

MR. PORTER: The meeting will come to order, please. Anyone else have a question of Mr. Woodruff at this time?

MR. COOLEY: I have one.

MR. PORTER: Mr. Cooley.

By MR. COOLEY:

Q. Mr. Woodruff, in your direct testimony I believe you stated that your company had found that it was not possible to meet the market demand for gas from the Jalmat Gas Pool on the straight acreage allowable formula, is that correct?

A Yes, sir.

Q Would you please elucidate on that point, how you feel this is so?

A Maybe I should state first that we cannot do it and balance our wells. The wells have a producing capacity which would enable us to do so, but the allowable is not allocated to the wells in a manner which will permit us to meet our market demand.

Q Why do you feel that is so, Mr. Woodruff?

A Well, that is true because a portion of the market demand is allocated to wells which cannot produce the market demand which cannot produce their share of the market demand or their allowable. As a result --

Q (Interrupting) May I interrupt in there, please, on these particular wells that you say cannot meet the market demand, do you mean that they meet the technical definition, say the one that you just proposed, of a marginal well or on peak demand conditions they can't continuously make their allowable? Are these marginal or non-marginal wells that you are referring to?

A I would be referring to all wells. However, the additional or excessive allowable normally would be accumulated by a non-marginal well. Of course, you take a portion of the total market demand and allocate to marginal wells. Sometimes it is in excess of what that marginal well can produce, that volume in excess is a portion of market demand we must produce elsewhere. As I say, that portion of the market demand which the non-marginal wells are capable of producing during excess demand periods.

Q Right to that point right there seems to be in conflict, Mr. Woodruff, by definition of non-marginal can't produce its allowable is capable of producing its allowable. You say certain of the non-marginal wells are not capable of producing their allowable.

A My stating of that fact was premised on peak demand

conditions. It's entirely possible that a well could over a year's period, say, produce its total allowable, if it could it should be a non-marginal well. One feature I think which I can point out to explain this is that in your over and underproducing rules or balancing rules, any well can over or underproduce for a six month's period and has an additional six months to make up its over or underproduction. An overproduced well has to make up its underproduction during the six month period. It has to be getting in balance each one of those six months or an attempt should be made to do so, while the overproduced well is not, or of course, tries to make up its underproduction during the same period.

But assume that it can't make up its underproduction, that underproduction is not cancelled until the end of the year. It comes conceivably six months after you have had to restrict your overproduced wells to get them back in balance. Now that condition, I think, was explained by our Exhibit No. 1 where we showed that we had a certain demand, a certain allowable, and that we produced so much gas.

Well, a well that didn't have to be shut back to get in balance would be incapable of producing the market demand. The market demand suffered because of it. We had to go elsewhere to get the gas.

Q Is this not a result of the suspension of the overage and underage rules which has occurred during the prorated life of this

field?

A It's much more acute because of that. The same condition would exist, however, but on a lesser scale under normal, or under conditions where the rules were enforced.

Q Might not that scale be reduced to the point where the rules would work through the cancellation of underage and restriction of allowable? The rules have never been given an opportunity to work to their fullest extent in the Jalmat Gas Pool, have they?

A No, they have not.

Q Then it is just speculation as to whether they will or will not work?

A No, I don't consider it speculation. I consider it to be conditions that I expected to be the conditions that we would actually encounter from the experience we have had in operating in the Lea County area.

Q It is understandable, Mr. Woodruff, that in periods of peak demand that your high deliverability wells must be called upon to meet this demand. Aren't these periods of peak demand interspersed throughout the proration periods to the extent that these wells could be cut back during the normal demand periods in allowing the other non-marginal wells to make up their underage?

A That is what we always attempt to do. The ability of the other wells to produce the market demand during those periods is a difficulty that we have shown in our Exhibit No. 1.

Q Periods of time over which an overproduced well or your top deliverability wells would have to be shut in would be materially reduced if the balancing provisions were put into effect?

A Yes.

Q Because it would reduce the imbalance considerably?

A That is correct.

MR. COOLEY: Thank you, Mr. Woodruff.

MR. PORTER: Anyone else have a question? Mr. Howell, I believe you asked for permission to allow the witness to explain an analysis of one of the previous exhibits.

MR. HOWELL: Yes, would you turn to Operator's Exhibit No. 6?

RE-DIRECT EXAMINATION

By MR. HOWELL:

Q Mr. Woodruff, have you and your assistants made a brief analysis of Operator's Exhibit No. 6?

A Yes, sir, we have.

Q Have you been able to correlate entirely the names of the wells furnished with the information contained on the chart?

A Yes, sir, I believe that we have. We have found one instance I believe where the numbers added to the exhibit do not agree with the list furnished by the operators this morning, which caused one of the bars to disagree.

Q Well, you found at least one on that?

A Yes, sir.

Q Did you take the group, the four groups of high deliverability wells and determine what the net overproduction from those four groups of wells is?

A Yes, sir. As shown by Operator's Exhibit No. 6.

Q Did you use the figures contained on Operator's No. 6 as a basis for this calculation?

A Yes, sir, we did. We determined that the forty-eight wells, actually, I believe our figures shown from this list would show there were forty-seven in the four top groups had a net overproduction of 1,090,000,000 cubic feet.

Q Referring to the top bar there, how many wells are overproduced as shown on Operator's Chart No. 6?

A Nine wells.

Q How many wells are underproduced?

A Three wells.

Q And what is the condition with reference to the second bar?

A Nine wells are over and three are under.

Q What is the condition with reference to the third bar?

A Nine wells are over and three under.

Q And what is the condition with reference to the fourth bar?

A Seven wells are over and five are under.

Q Now, did you likewise take the bottom four groups of wells with the lowest deliverability and compute the net underproduction

from that group of wells?

A Yes, sir, we did.

Q What did you find to be the net underproduction using the figures as shown on this exhibit?

A 1,143,000,000 cubic feet.

Q Now, did you further make any investigation as to the conditions in this group number ten which has the long bar running to the right? A Yes, sir, we did.

Q How many wells in that group do you find to be overproduced?

A Seven wells over and four wells under.

Q Now, did you analyze the underproduction of the four wells?

A Yes, sir, we did.

Q What did you find?

A We found that of the approximately 856,000,000 cubic feet of underage that one well had 797,000,000 of the total. Of course, the other three wells would have only a small underage accumulated.

Q From that brief analysis which was made in between testimony here, have you concluded that Operator's Exhibit No. 6 demonstrates that the overproduction in the Jalmat Field is pretty well centered in the wells with the high deliverability and the underproduction pretty well centered in the wells with the low deliverability?

A Yes, sir, I have reached that conclusion.

Q Does that conform with your actual experience?

A Yes, sir.

MR. HOWELL: That's all.

MR. PORTER: Anyone else have a question of the witness? Mr. Malone.

RE-CROSS EXAMINATION

By MR. MALONE:

Q Mr. Woodruff, I understood you to say that you analyzed the over and underproduction in the four top groups shown on Exhibit 6?

A Yes, sir.

Q And there were forty-seven wells in that group I believe?

A That's what we found from your list, yes, sir.

Q Those are the forty-seven wells in that entire group that have the highest deliverability, aren't they?

A Yes, sir.

Q If I understand your testimony, you further have found, as the exhibit shows, that twelve of those forty-seven are underproduced?

A I believe it would be thirteen.

Q Thirteen? A Yes, sir.

Q Let's take the figure thirteen. Let's see, we have got thirteen out of the forty-seven highest deliverability wells that are underproduced in the face of your testimony, that you had the underproduced wells turned on all the time, you never did turn them off, trying to equal this production. Can you account for that

situation?

A Sir, I certainly do not believe I ever said such a thing as that.

Q Well, I beg your pardon. What did you say? I thought you said that you didn't ever turn off the underproduced wells, you were trying --

A (Interrupting) No, excuse me. I believe I misunderstood what you stated. It is our policy to produce underproduced wells continually. I have not studied the individual wells, but I feel confident that were we to do so that many of these wells would probably be multiple unit wells receiving allowables in excess of their producing ability, consequently incurring underproduction.

Q That situation would be taken care of if a redefinition or redetermination of marginal wells was undertaken, wouldn't it?

A I believe so.

Q But as of the present time then we got between twenty-five and thirty percent of the highest deliverability wells which are carrying an existing net underproduction, is that correct?

A Did you say somewhere between twenty and twenty-five?

Q Twenty-five and thirty I would say.

A That is correct.

Q If the allowable of those twenty-five to thirty percent of the wells was further increased on the basis of the high deliverability which those wells have, they would be carrying a greater

underproduction?

A That is entirely possible. I think to answer your first question I should have pointed out one other feature, that we have the condition exhibited here I believe characteristic as of the end of September. It was from your November schedule which I believe would have reflected the conditions at the end of September as far as production is concerned.

Q That is correct.

A I previously stated that we were constantly attempting to get overproduced wells back in balance. We were shutting them in trying to get them back in balance. I think it entirely conceivable and probably through that many of these wells here were wells that we got in balance and actually got in an unbalanced condition and reflected as such on the November, 1957 schedule.

Q Wait a minute. You mean that switcher forgot to turn the well off --

A (Interrupting) To turn the well off did you say?

Q Yes, he had an overproduced well and converted it into an underproduced well. Is that what you said? I'm not sure that I understood you.

A Well, speaking of it in terms of switcher, I would say that probably we left the well shut off longer than we needed to to get the well in balance with the result that it ended up in an underproduced condition.

Q That is as of now at least entirely a speculation on your part because you haven't checked any of the individual wells, have you?

A That is true.

MR. MALONE: That's all.

A I think it is very reasonable speculation, Mr. Malone.

MR. MALONE: That's all.

MR. PORTER: Anyone else have a question of the witness? The witness may be excused.

(Witness excused.)

MR. PORTER: Mr. Howell, did you offer your exhibits?

MR. HOWELL: No, I did not, and I would now like to offer the exhibits in evidence, that would be El Paso Natural Gas Company Exhibits 1 through 6.

MR. MALONE: May I inquire if we have the number of switchers and the number of wells available?

MR. WOODRUFF: Yes, sir, I was just getting ready to state, I forgot to give you that. During normal operating conditions where we are not encountering peak demands, we constantly have four switchers. During periods of peak demand we call on other personnel available for switching and could have as many as fifteen or sixteen or still more if our peak demand required it. We could call on our field personnel to go out and turn on wells, but in normal operating conditions we have four.

MR. MALONE: That is for the Jalmat Pool?

MR. WOODRUFF: No, that is for the Lea County area.

MR. MALONE: That is for the entire Lea County area?

MR. WOODRUFF: That is what I understand.

MR. MALONE: How many wells are you taking gas from?

MR. WOODRUFF: I am sorry, I don't have the exact number, but it would be somewhere around 600.

MR. MALONE: So each switcher has a responsibility for turning off 150 wells under normal circumstances?

MR. WOODRUFF: That is correct.

MR. MALONE: Have you ever checked to see if the under-produced wells are the ones closest to his house?

MR. WOODRUFF: No, sir, I have not made such an analysis as that, but as I previously stated, his instructions to turn off and turn on wells come from our dispatching department and are not left to his responsibility.

MR. MALONE: Thank you.

MR. PORTER: Going back to the matter of the exhibits, are there any objections to the admission of the exhibits? They will be admitted. Mr. Cooley.

MR. COOLEY: Mr. Woodruff, these switchers and your dispatching department are also cognizant of the fact that even in unprorated pools they are required to take ratably, is that correct?

MR. WOODRUFF: Yes, sir, that is correct.

MR. COOLEY: What is the number of wells in the unprorated

gas pools? In other words, what is the total number of wells for which they are responsible?

MR. WOODRUFF: I would guess that we have something in the vicinity of fifty additional wells. I have not worked up that figure.

MR. COOLEY: Thank you.

MR. PORTER: If no further questions, the witness may be excused.

(Witness excused.)

MR. HOWELL: That concludes the testimony of El Paso Natural Gas Company.

MR. PORTER: Anyone else have testimony to present?

MR. CAMPBELL: I have. I have some rebuttal testimony. If the Commission please, I wonder if we could clarify the record before this witness starts as to that point we were discussing this morning as to whether there are one or two cored wells in the fifty-eight well area.

MR. MALONE: The only confusion was on the Janda H and the Janda J. The correct designation is the Janda J, is that correct? That is the log we furnished you, but Mr. Leibrock inadvertently referred to it in his testimony.

MR. CAMPBELL: That well in or outside the fifty-eight well area?

MR. MALONE: We have plotted the wells on the exhibit up

there and showed them to Mr. Keller at the noon hour.

MR. CAMPBELL: All right. I would like to recall Mr. Keller as a rebuttal witness.

RE-DIRECT EXAMINATION OF MR. KELLER

By MR. CAMPBELL:

Q Mr. Keller, to clarify the point that was just discussed between Mr. Malone and I, have you examined the location of the five wells, the cores of which were examined by Mr. Leibrock in the Jalmat Gas Pool, as they have been marked on Operator's Exhibit No. 1-A as to their location? A Yes, sir, I have.

Q How many of those wells are located within the boundaries of the fifty-eight well area to which he has referred?

A My inspection indicates one of the cored wells.

Q Where are the other cored wells with regard to the exterior boundaries of the fifty-eight well area, would you point those out for the Commission, please?

A According to the information shown on Operator's Exhibit 1-A the Cities Service cored well is located in Section 30, Township 22 South, Range 36 East.

Q Is that adjacent to the fifty-eight well area?

A No, sir, that's a distance of two and a half to three miles. Another cored well, the Continental Farney A No. 1 is located in Section 17, Township 23 South, Range 36 East.

Q Is that adjacent to the fifty-eight well area?

A No, it is in excess of a mile and a half from the boundaries of the fifty-eight well area.

Q Where are the other wells?

A The Gulf Janda J No. 1, which is a cored well, is located in Section 4, Township 23 South, Range 36 East, immediately west and adjacent to the fifty-eight well area. That is it offsets the boundary line. The Gulf Janda H No. 1 is located in Section 2, Township 23 South, Range 36 East, and it is located in the fifty-eight well area as outlined on Operator's Exhibit No. 1-A. The other cored well, the fifth one, is the Stanolind Meyers B No. 1, I believe located in Section 6, Township 24 South, Range 37 East. It is an offset to the boundary line of the fifty-eight well area.

Q So there are two wells immediately adjacent to the area and one well within the area, is that correct?

A Yes, sir, the other two being located a distance of from a mile and a half to two and a half miles.

Q Now, Mr. Keller, I think that the testimony of Mr. Leibrock makes it quite apparent that he disagrees with your approach to this matter by which you relate reserves, upon your definition as you determine them to deliverability as a factor in the allocation formula. Would you please explain briefly to the Commission again, based upon the information you have obtained from Mr. Leibrock's approach and his testimony, why you adopted the approach you did as to the reserves and generally how you applied it?

A Yes, sir, I was faced with the problem, an engineering problem of devising, evaluating and recommending to this Commission a proration allocation formula which would do the best job of protecting correlative rights.

Now, in order to do so it is necessary to set up a quantitative standard of comparison so that I may compare one formula, allocation formula with another and determine which is the better of the ones compared.

Now, I think we have all pretty well agreed that the perfect formula from the standpoint of furnishing maximum protection to correlative rights would be one that distributed allowables substantially in proportion to the recoverable gas in place under the various tracts.

It is my understanding that that is essentially, from an engineering viewpoint, what the statutes provide for. So I have chosen, and it's my understanding, that Mr. Leibrock also chose that standard of protection as a measurement to judge the relative desirability of one allocation formula compared to another. We did differ not in the standard but in the engineering calculations designed to evaluate that standard. One of us used the conventional volumetric method of calculating gas in place, recoverable gas in place per acre. That is the method which we have previously discussed where the gas reserve per acre is equal to the porosity, times the net pay thickness, times one minus the connate water times pressure

volume factor, times a recovery factor.

I have chosen to use, for reasons I will explain, the material balance approach. In fact, it is a graphical solution to the material balance equation. I have referred to it as the extrapolation of a pressure production curve. I have taken that reserve and divided it by the acreage assigned each well and arrived at the reserves per acre attributable to the acreage assigned to each well. I think there might well be a question in the minds of this Commission as to why two engineers would use two different approaches to the evaluation of the reserves per acre. I would like to explain why I did not use the volumetric approach.

First of all it seems quite apparent to me that the main requirement of this calculation of reserves in place is that it be able to determine if there is a difference between the recoverable gas in place throughout the field and if such difference does exist, what that difference is quantitatively. In a nut shell, the volumetric approach used by the operator's testimony is not capable to near the extent as the method employed by me of determining the variation in reserves per acre as they exist from one part of the field to the next.

The reason for that is that the data is simply not available from one part of the field to the next to evaluate the various factors that enter into calculation of the recoverable gas per acre, and those factors of the porosity, net pay, connate water, pressure

volume factor, and recovery factor. My availability of data in that field, I have, or had when I started, a very limited amount of core data, less than one percent of the wells in the field, and certainly with such meager porosity information I cannot expect to differentiate between the quality in terms of porosity of the pay from one place to the next with so little data.

Now, unfortunately, it is common engineering practice when we do not have the data, to evaluate the variation in a factor from one place to the next, we make the assumption that what data we have is representative and apply it uniformly throughout the area, and that's fine if we are attempting to evaluate the overall gas in place under a large area. But it utterly fails to measure the difference from one place to the next in the field.

The same type of situation exists in respect to the connate water data. There is not sufficient information in this Jalmat Field to evaluate the differences in connate water from place to place in the field.

The third factor, the recovery efficiency, it's my understanding that the operators' witness in calculating the recoverable gas in place, used a constant value for all of the wells for this factor, because there is not sufficient data to determine how much, if any, it will vary from place to place in the field. The pressure volume factor is a function of the pressures which we have measured and, unfortunately, the variation in pressures at least in the

fifty-eight well area is very small, so that factor has very little variation.

The other factor in the volumetric approach is the net pay. That can be determined or estimated from log core and other data. In summary, the data available to me would not permit me to use the volumetric method in order to evaluate the differences in recoverable gas in place. But I did have available to me the pressure production history of all of the wells in the field which I employed in order to estimate the reserves per acre attributable to the acreage assigned the various wells; as I previously testified I had data enabling reserve estimates per acre of that nature available on 260 some odd wells, but there were only 226 of these wells that I had deliverability data.

Q Do you consider that the approach used by you in your determinations was the only and the most satisfactory approach for determining the situation in this Jalmat Field as a whole?

A Yes, sir, it is the only method because of the data limitations that was available to me that would enable me to make a reasonable and realistic evaluation of the variations in the quality of the acreage throughout the field in terms of the reserves per acre.

Q Now, Mr. Leibrock has indicated that in his judgment some of your data is not thorough because it takes averages and operates on a fieldwide base. And I think he also testified that so far as

he was concerned, that he had made no studies with reference to any other possible approaches to the question of one hundred percent acreage or some other allocation formula in this field. Did you undertake to check your determinations with regard to this particular deliverability formula against any other approaches in this Jalmat Gas Pool?

A Yes, sir, I did. My problem was to devise, evaluate and recommend to the Commission a formula which I felt would do the best job from a correlative rights standpoint. In order to attempt to solve such a problem it is necessary to consider I think all of the factors which can be used from a practical standpoint in devising an allocation formula. I have done that.

MR. MALONE: If it please the Commission, may I make an inquiry of counsel as to whether he, as seems to be apparent, whether the preface which the witness has given as to a different allocation formula than the twenty-five, seventy-five, times acreage that was the subject of the hearing.

MR. CAMPBELL: You mean the deliverability aspects which is the subject of the hearing?

MR. MALONE: Is he now proposing a new allocation formula?

MR. CAMPBELL: No, he is not.

MR. MALONE: I misunderstood him, but I thought that he said that he was going to testify on their formula against this formula

MR. CAMPBELL: He isn't. He is going to testify to a

different approach against a deliverability. He is not proposing any different formula.

MR. HALEY: Thank you.

A I'm merely trying to describe a little more in detail than I did before some of the analytical work that I did in arriving at a deliverability formula as being a formula that would do the best job of protection from a correlative rights standpoint.

Q Would you refer to what has been identified as Texas Pacific Exhibit 14 and state to the Commission what that is and how it, in your opinion, confirms the position that you have taken?

A Well, as I have previously testified, my analytical work in respect to the allocation problem was necessarily confined to these 226 wells which I had pressure deliverability and research data on.

As I previously explained in one of the methods of analysis of that data was to divide those 226 wells into four equal groups after arranging the wells in order of increasing reserves per acre. That, as you recall, was the basis of the analysis from which Texas Pacific Exhibit No. 11 was derived.

Exhibit No. 14 arranges the data in the same manner. For each of the wells I have taken the reserves per acre arrived at as previously explained, and divided it by the reserves per acre of the average of the 226 wells. I have called that a relative reserve, that is it is relative to the average of the group.

I have also taken for each of the wells and calculated on the basis of the latest data available the acreage times deliverability factor and divided that factor by the acreage times deliverability factor of the average well of the group which I have termed the average relative allowable based on one hundred percent acreage times deliverability. Correction, that is the actual relative allowable on that basis for each individual well. I have done the same thing on the basis of acreage times pressure. I have done the same thing on the basis of acreage.

One correction in there, the allowable that I'm speaking of now is on a per acre basis so that it will be on a common denominator. Now, the result of that process is simply this, that if a well say has a relative reserve per acre of two, that is it's twice as good as the average, and if under a particular allocation formula its allowable per acre relative to the average well was two, then it would conform to the perfect allocation formula because the reserves and the allowable would be in direct proportion.

This process that I have just described was designed in order that I could measure the degree to which any particular factor approached being in direct proportion to the reserves per acre. Now, I have plotted the average of these relative allowables and relative reserves per acre for each of the four groups that I have divided the 226 wells in and have plotted them on Exhibit No. 11.

Q 14, is it not?

A Excuse me, 14. This enables on an average basis a visual determination of which factor of the three that are possible to use or practical to use fits closest to the reserve distribution. The reserve distribution in terms of the average relative reserves per acre is shown by the solid red line on Exhibit No. 14 located in this location. The relative allowable per acre average for each of the four groups is shown by the red dashed line based on one hundred percent acreage times deliverability.

Similarly the relative allowable average based on acreage times pressure shown by the green line, similarly the relative allowable average based on acreage as shown by the dashed dark blue line. Since it is allowable per acre, then the relative allowable per acre for the straight acreage the present formula would, of course, be constant for each acre assigned to the well. It, I think, is quite clear that on an average basis the acreage times deliverability factor more closely is in proportion to the reserve distribution than any of the other two factors.

Now, this relationship illustrated here on an average basis is what prompted me to recommend a deliverability factor in the allocation formula. Actually the one hundred percent acreage times the deliverable factor and the basis of my analysis most closely fits the distribution, reserve distribution than the 25-75 that I have recommended. The reason I have included a twenty-five percent acreage in the allocation formula is because that in effect puts a

marginal allowable in effect. That is even the very low deliverability wells will get at a minimum allowable equal to one-fourth the average well allowable.

Q Now, Mr. Keller, it has been suggested that by using averages as you have in this Exhibit No. 14 and as you did in Exhibit No. 11 which has been referred to and in Exhibit 8 and 9 where you divided the field into quarters there that you have not taken an accurate approach to the study of this field. Did you, after breaking this down into the basis of quarters, undertake to check that method of approach that you used on averaging these things out or something like that?

A Yes, sir, of course, I did, I realized in the conduct of this analysis that averages can sometimes be misleading and I certainly checked to be certain that these averages were reflecting a trend and a relationship that on the whole was a true relationship.

That, of course, is not a perfect relationship and there is considerable variation when we get into individual wells or small groups of wells, and it is for that reason that I prepared and presented Exhibit No. 10, because it certainly was not my intent to mislead anybody that this was more perfect than it actually is.

But in order to check to see if this trend indicated by this average analysis shown on Exhibit 14 was a real trend, I divided the wells into eight groups in a similar fashion to Exhibit 14 and

got the same conclusion. The curves aren't quite as smooth, but the trends are still there.

I still wasn't satisfied and realized, of course, that in the final analysis the thing that is going to determine whether or not this is absolutely real, this trend in general, is an individual well analysis, so I took the data on the relative allowables calculated on seventy-five, twenty-five formula that I have proposed and calculated on the one hundred percent acreage formula now in existence, and I took the relative reserves for each of these wells calculated in the manner I have just described, and I calculated the difference between the allowable under each formula, relative allowable under each formula for each well and the reserve which I thought of in terms of a deviation from the perfect formula that is the reserve distribution for each well.

I then arranged those deviations in order of increasing deviations for each of the formulas and compared the two. On that comparison I found that 206 of the comparisons showed that the deviation from reserves was less for the seventy-five, twenty-five percent formula than for the one hundred percent acreage formula. On the twenty wells the opposite was true, the deviation from the reserves was greater for the seventy-five, twenty-five formula than for the one hundred percent acreage formula.

I then, of course, concluded that this trend relationship between reserves and deliverability which I have demonstrated in

previous testimony for example on Exhibits 8 and 9, although there are a lot of individual well exceptions and is a general trend, I think I described it as a rough correlation, the trend is true and it is real and there is a greater correlation on the whole between reserve distribution and the seventy-five, twenty-five formula recommended than there is between acreage and the reserve distribution.

It is on that type of analysis that I have based my opinion that the recommended formula does a better job of protecting correlative rights than does the hundred percent acreage formula.

Q You recall, Mr. Keller, that Mr. Leibrock testified in one of his summarizing conclusions that one hundred percent acreage was better than your proposed deliverability formula, was based upon his study of fifty-eight wells within an area outlined in blue on Operator's 1-A?

(Marked Texas Pacific's Exhibit No. 15, for identification.)

Mr. Keller, using as you need the blank pieces of paper on the board there for illustration purposes, will you explain to the Commission your reaction to the approach used by Mr. Leibrock on the fifty-eight well area as compared to the approach which you used in arriving at your conclusions as to an allocation formula throughout the entire field?

A Yes, sir. It seems quite apparent that there were two

efforts made to calculate the deviation from the perfect formula. I have just discussed the calculation that I made another one has been previously presented. They are in contradiction of each other. In view of that, I believe this Commission should have an explanation, at least I feel imposed to give my explanation of why this difference in conclusion comes about. Actually the difference in the conclusions in my opinion is the result in the differences in the methods of analysis. I would like to, if I may, illustrate briefly the pertinent differences in the two methods of analysis as I understand them from the testimony which I have heard.

Let me put the Texas Pacific analysis on the left and the Operator's analysis on the right. First of all in the Texas Pacific analysis there were 226 wells employed in the analysis, that is sixty percent of the wells approximately in the field. In the operator's analysis of the relationship between the deliverability formula and acreage formula and reserves, there were fifty-eight wells employed, which is approximately fifteen percent of the wells in the field.

There is also a difference in respect to the location of these wells in the two analyses as to whether they are representative of field conditions. Referring to Texas Pacific Exhibits No. 8 and 9 which are maps showing the reserves and deliverability data available to me, it becomes apparent that the reserves and the deliverability data used by the Texas Pacific analysis are pretty

well spread throughout the field and should be representative of the field as a whole.

The fifty-eight well area is an area allocated in the center of the field. If you correlate that with the reserve map, it is an area which is predominantly high reserves, but the reserves are fairly uniform. In fact, as I recall the testimony was that the variation in reserves was four and a half fold in that area. You'll recall from my previous testimony that the reserves variation from the 265 wells was about ninety-one fold. Many times greater. So in my opinion the Texas Pacific analysis is much more representative of field conditions from the standpoint of both the number of wells and their location in the field as to whether they represent average field conditions.

I would like to next compare the two methods used to calculate the reserves peracre and their adaptibility to the problem at hand, that is the problem of differentiating, determine quantitatively the relative quality of the place to place in the field in terms of reserves per acre.

As I previously testified, I obtained my reserves estimates by a plot of pressure versus cumulative production. Those points I extrapolated as a straight line to one hundred pound abandonment pressure. Now, that is at a graphical equivalent of solving this equation which I will put on the board here. In other words, I said that the recoveries per acre for acreage assigned to each of the

wells is equal to the slope of this line that is the change in gas production per change in pressure times the current pressure minus an abandonment pressure divided by the acreage assigned to the wells. This is algebraically the same, I get the same answer as if I extrapolate this straight line and subtract from this total cumulative production, the cumulative to the date in question, and that was the first of '57 was my date.

Now, the operators' testimony, as I understand it, they used a volumetric base where they calculated the recovery per acre for each of the well tracts equal to the net pay thickness, times the porosity, times one, minus connate water, times a pressure volume factor, times a recovery factor. So we have now a comparison of the two equations used to estimate reserves per acre on the board.

Let's examine each of those and see how well they meet the requirements of determining the difference in quality of acreage assigned to the various wells. Referring to the Texas Pacific method, we find that the recoveries per acre are determined by one, two, three, four, five different factors, let's see how many of those that we have to estimate on each well tract and how many are actually the result of measured data on each well tract. The gas production cumulative on each production is measured. The pressure points are measured, the pressure as of 1-1-57 is estimated on the basis of measured data in some cases, and in other cases the pressure measurements is as of that date. It is substantially measured

data. The abandonment pressure is assumed. I have assumed a one hundred pound abandonment pressure uniformly for all the wells I have evaluated reserves on. The acreage is the measured acres assigned to each well. So we find that of the five factors, four of them are the result of direct measurements and one of them, the abandonment pressure, is an estimated number for each of the wells.

Now, let's examine the method of calculating reserve per acre, the volumetric method used by the operators. Let's see how many of those factors are measured on each of the wells, because the important thing is we're trying to differentiate, we are not trying to determine what the average over the fifty-eight well area or the 227 twenty-six well area is, we are trying to find out the difference within that area. The thickness, as I understand it, for the fifty-eight wells was estimated from logs on thirty-eight wells or about sixty-five percent of the fifty-eight wells, or about ten percent of the wells in the field.

The porosity, as I understand it, of the fifty-eight wells, the porosity was measured directly by cores on one well. That's roughly, oh, well let me correct that. As I understand it, a uniform porosity was used for each of the fifty-seven wells where core data wasn't available, and that was, I assume, the average of the five core analysis. But at best that is based on five wells which is about a little less than five percent of the fifty-eight that would be somewhere around less than one and a half percent

of the total field if my numbers are right.

Q That figure would be approximately nine and a half, ten percent of the fifty-eight, would it not, five wells in the --

A (Interrupting) Excuse me. Ten percent. I was thinking of the two wells that I had before.

Now, let's examine what this porosity evaluation for each of the wells would mean. We are trying to evaluate the difference between the wells on this and yet in the analysis of the fifty-eight wells it has been assumed or estimated, whichever you want to put it, that on fifty-seven it was the same.

Now, if you assume it's the same, how can you evaluate the difference? Now, it's my understanding that the basis for that assumption was the result of this five core analysis which showed that the variation in porosity for the five cored wells was very small, that is from the numbers as I have recorded them, the porosity only varied from about 16.4% to 17.9%. I don't believe that that is necessarily true at all, for example in checking available core analysis data I found that we had available two other, at least two other cored wells within the same areas as the five wells.

I would like to discuss that porosity information. Coincidently these two other cored wells that were available to me are offsets to the Continental Farney A No. 1 well which is one of the five wells. One of those offsets is the Sinclair Federal 714 No. 1 located just as a south offset to the Continental Farney A-1.

Now, the core analysis on that, employing the interpretation made by the core analysis laboratory, there were 22 feet of pay having an average porosity of 20.5%.

Q Have you marked the location of that well just south of the Continental Farney well?

A Yes, sir, it is located just south.

Q On Operator's Exhibit 1-A?

A On Operator's Exhibit 1-A. Another cored well I was able to obtain the data on was a southeast offset to the Continental Farney A No. 1, and that is the Texas Pacific State A Account No. 1 well No. 39. On the basis of the core laboratories interpretation of that core analysis there was fifty feet of pay almost two and a half times as much as the other offset, having an average porosity of 12.7%. So although the five wells upon which the operators based an average porosity and applied it, as I understand it, uniformly to fifty-seven and fifty-eight wells varied only from about 16.4% porosity average per well to 17.9, I find that there are three offsetting wells where the porosity varied from 12.7% to 20.5%.

So I think it is quite apparent that there is considerable doubt that the assumption of uniform porosity has any bearing on the determination of the differences in reserves per acre as between wells in the fifty-eight well area. Of course, it was that inadequacy of information that led me to use the alternative method that I have

used.

Going on to the comparison of the two methods of calculating reserves per acre, the operators in order to using a volumetric estimate, had to use an estimate of the connate water or a measurement of the connate water for each of the wells. Because one minus the connate water enters into that calculation so far as I know there is no data available to differentiate as to the actual connate variation within the fifty-eight well area. It is my understanding that a constant value for each of the wells was employed in the calculations.

So this has been assumed or estimated constant. The pressure volume factor I imagine was calculated on the basis of gas analysis, deviation factor analysis and the actual pressures on the wells. I assume that that was from actual data on most of the wells. Unfortunately there's not much variation in pressure within the fifty-eight well area and that factor will be fairly uniform. The recovery factor was, as I understand it, estimated at a certain value and this same value was assigned to each of the fifty-eight wells.

In summary, we find then that there are the porosity, the connate water and the recovery factor where it has been estimated or assumed for each of the wells that it's uniform and yet we're trying to evaluate differences between wells so we assume they are uniform. The other factor, pressure volume factor, the data on

pressure shows it's fairly consistent, so that factor in the fifty-eight well area is pretty uniform, although it is not in the field as a whole.

The thickness, as I understand it, was primarily evaluated from the gama ray neutron logs. That probably is the factor that can be best evaluated of all the five factors employed, although it has certain limitations which I'll discuss, I think, later on.

Q Now, I would like to very briefly with you run through the exhibits that have been, or some of the exhibits -- you have another matter?

A There is one other thing, and I would like to point out here in respect to the adequacy and the applicability of these two methods of analysis, and that is with respect to whether or not they represent field conditions. I already pointed out that the fifty-eight well area is in an area which is fairly uniformly good. That is very well illustrated, I think, by the fact that in the 226 well analysis I found that there was a recovery per acre variation of approximately ninety-one fold, that is the best was about ninety-one times as good as the poorest. I believe that the testimony was that the variation in the fifty-eight well area in the recovery per acre, I believe it was four and a half fold was the testimony, although my data indicates that it was closer to three and a half fold variation.

I think it is relatively apparent from that comparison that

the recovery per acre variation naturally is pretty uniform in the fifty-eight well area. While I think that anybody that has studied the field knows that the variation recovery per acre throughout the field is very large.

MR. PORTER: We'll take a short recess.

(Recess.)

MR. PORTER: The meeting will come to order.

Q Mr. Keller, I'm going to ask you, if you will go through with me very briefly some of the exhibits of the operators here and give us your reaction to those exhibits as they relate to your analysis of this situation in the light of the presentation by Mr. Leibrock.

First, in connection with the Operators' Exhibit No. 1-A up there which is what I believe he called the difference map, what comment do you have to make in connection with that?

A Well, sir, as I recall this map shows that about fifty percent of the acreage falls in the same quarter of reserves and deliverability on my Exhibits No. 8 and 9 and about fifty percent doesn't. The only comment I would like to make there is that that's really not a measurement of the correlation or lack of correlation that exists between reserve and deliverability. For example, if you just considered the red and blue area, about three-fourths of the area would correspond in respect to reserves and deliverability. If you analyze the agreement between acreage and reserves on the

similar type basis for any one quarter of the reserves, then three-quarters of the reserves wouldn't fall in the same quarter.

Q Now, would you please refer to Operator's Exhibit No. 2 which contains a part of it as your original Exhibit No. 10 with some additional markings on it?

A Well, the only comment I have about the Operators' Exhibit No. 2 is that this just emphasizes the spreads and the data between the individual wells that I have already shown on Exhibit No. 10. I don't pretend that that spread doesn't exist. If I had I would, certainly wouldn't have prepared Exhibit No. 10. I think it does tend to overemphasize that difference. For example, referring to group one reserves, the major sub group that so far is the difference between reserves and deliverability is the number four which contains only two wells; similarly you go the group four reserves, the major difference between reserves and deliverability only contains four wells, so it perhaps overemphasizes that, to my mind, a little bit.

Q With regard to Operators' Exhibit No. 3, what comment do you have in connection with that?

A Well, this Operators' Exhibit No. 3 purports to show that there isn't any relationship or reasonable relationship, as I remember the expression, between reserves and deliverability. I would like to comment that the range on deliverability on the graphical scale is about half of that that is shown on the reserve scale which would

tend to visually distort or obscure any relationship that does exist.

Of course, we know there is a relationship that exists areawise. As shown by Exhibit 9 and on a general trend basis as shown on Exhibit 10, it is a real correlation as exemplified by the deviation analysis that I previously testified to. The other thing that I think warrants some comment is that you can see that there is a large variation in reserves per acre, ninety-one fold actually, yet the one hundred percent acreage formula assumes there is none.

Q Do you conclude from that that the deliverability formula, despite it's, the fact that it is not perfect, comes closer to recognizing the reserves than the straight acreage formula on the base of that exhibit?

A Well, that is certainly true on the basis of that exhibit, and all the studies I have done.

Q With reference to Operators' Exhibits No. 4 and 5, just turn on over to 5. Have you ever, Mr. Keller, taken the position in this hearing that the adoption of a deliverability factor in an allocation formula would serve as a cureall for over and underproduction in Lea County or anywhere else?

A No, sir. I did express an opinion that the inclusion of deliverability factor should enable the purchaser to take more in proportion to the allowables than would one hundred percent acreage

formula. Of course, the over and under is also a function of the take practices of the purchaser.

Q Now, referring to Operator's Exhibit No. 6, you will note that there have been included on that exhibit, numbers reflecting the actual number of wells on each side of the zero line on exhibit, Operators' Exhibit No. 6. Would you state whether or not in your judgment that exhibit when fully analyzed supports your position with reference to this matter?

A Well, sir, my thought isn't in respect to any position on the thing. The thing that strikes me about this exhibit is that it obscures a relationship that I think very definitely exists. Supposedly this exhibit shows that there is no relationship between the deliverability of the wells and whether they are over or underproduced. Well, my analysis of that data as supplemented, certainly shows that there is; for example, take the best group of wells, there were nine overproduced and three underproduced, and there was a net overproduction, as I calculate, of approximately 350,000,000 for the total of the twelve.

Take the porous group of wells, the number ten opposite was true, nine of them were underproduced and one of them overproduced. The net underproduction was close to nine hundred million for the total for the group.

Now, in calculating for each group like that and plotting it, I got a general trend which showed in general that the better wells

tended to be overproduced and the poorer wells underproduced which is naturally what you would expect, and is what, as I understand it, all of the gas purchasers say happens.

Q Now, with regard to Operators' Exhibit No. 7, would you please refer to that? Do you have any comments with regard to that composite log?

A Yes, sir, you will recall that in the fifty-eight well analysis the pay thickness was one of the factors directly determining the recoverable gas in place and that there are only thirty-eight of the fifty-eight wells on which gama ray neutron logs were used to estimate net pay.

I want to point out briefly that you are limited where you just have a gama ray neutron curve in your ability to estimate pay and that is illustrated, I think, on this particular composite log. For example, at a depth of approximately 3530 feet as best I could scale it off, it is about six feet of porosity above ten percent considered pay by Mr. Leibrock. While in that same interval from 3520 to 40 on the gama ray neutron curve he has interpreted, as shown by red, about 13 feet. In other words, there is some, a false indication of net pay on the gama ray neutron curve that is denied by the porosity curve.

Q What brings that about generally?

A Oh, well, generally it's simply this, that the gama ray neutron curve measures first of all the radioactivity of the

formation, and second of all it measures the hydrogen content of the formation. Unfortunately shale has a high hydrogen content and so does gas pay, and often times since the type section is radioactivity, you may confuse shale and gas pay, and that's illustrated I think, well, there are several possibilities there. Here it is right here at 3663, there is three or four feet indicated to be pay by the neutron gama ray, but looking at the core analysis it doesn't show up.

Q Do these illustrate uncertainties surrounding the use of the gama ray neutron curve to determine net pay thickness, is that correct?

A That's correct. There's some limitation as to how accurately you can estimate pay with that data. Of course other types of logs, any additional data improves your accuracy in that respect.

Q Do you have any further comment on this exhibit?

A I don't believe so, no, sir.

Q Now, refer to Operators' Exhibit No. 8, please. Will you state anything you might have to say with regard to Operators' Exhibit No. 8?

A Well, I don't know, I'm not sure I understand the intent of this exhibit, but to me it is just what has been done is that three wells have been selected with pretty uniform pay thickness pressure, et cetera,which would necessarily require that they have uniform recoverable gas in place for each well. And in such case

it would show for uniform conditions, a hundred percent acreage would be applicable because hundred percent acreage assumes that conditions are uniform. If you take examples that are uniform, well, you more or less prove your case by your selection of data.

Now, I could take fifteen or twenty wells where the seventy-five, twenty-five formula fits awfully nice, but I don't believe the selection of data like that means anything in respect to the applicability of an allocation formula.

Q That uniformity that is indicated by the three wells or three tracts does not conform to your interpretation of the existent through the Jalmat Gas Pool?

A No, my studies indicate that the reserves per acre are about ninety-one fold on the extreme.

Q Would you refer to Exhibit No. 9, please? This is the exhibit I believe which you stated the conclusion reached was different, quite obviously, from the conclusion reached by you in a study of the field. What comment do you have in connection with Operator's Exhibit No. 9?

A Well, I think my explanation of the differences in the methods used to estimate the reserves per acre pretty well, as well as the location and character of the fifty-eight well area as previously discussed by me, pretty well explain the results shown on this exhibit.

It is just a matter that when you choose an area which is

pretty uniform in the first place,and then you assume a lot of the factors used in calculating the reserve per acre are uniform, you arrive at a fairly uniform reserve distribution per acre in that area. In fact, it was somewhere between three and four and a half fold, well under that type of situation a hundred percent acreage factor would be more applicable because it assumes uniformity, so I think the selection of the area and the manner in which the data was calculated dictates the results shown by this exhibit.

Q Now, Mr. Keller, you have had occasion to examine at least overnight these exhibits, and you were given an opportunity to study some of the logs used as a basis for them. Would you state now for the Commission what your conclusions are and whether or not your conclusions previously stated have been changed by virtue of the evidence and testimony offered by the operators?

A Well, my conclusions in respect to the recommended allocation formula have not been changed. I am still of the opinion that the recommended seventy-five, twenty-five allocation formula, although far from perfect, more nearly serves to protect correlative rights than does the present hundred percent acreage formula. And I think it is the best formula I can devise under the circumstances.

MR. CAMPBELL: I believe that's all.

MR. PORTER: Anyone have a question?

MR. CAMPBELL: Do you have anything else you want to state?

A No.

MR. PORTER: Mr. Malone.

MR. MALONE: If it please the Commission, I have a question or two.

RE-CROSS EXAMINATION

By MR. MALONE:

Q I would like at the outset of cross examination, to request that we be given an opportunity to examine the two core analyses from the wells the witness testified to which we have not had access to, and that we also be afforded an opportunity to examine the curves that were extrapolated on the 238 wells that are the basis of the reserve figures. I would like to observe at the outset that I don't have any idea that by anything I ask you that you are going to back down from any position you have taken or that I can bring you and Mr. Leibrock into agreement, as much as I would like to. I only want to define the areas of disagreement and try to get them as clearly set out as possible. 462

How did you define the method used by Mr. Leibrock in the computation of the recoverable gas in place in his fifty-eight wells? How did you refer to that, what process is that?

A I referred to it, I believe, the same as he did, as a volumetric calculation.

Q As a volumetric calculation of gas in place?

A Recoverable gas in place.

Q What is the method that you used for that purpose?

A I obtained an estimate of that by obtaining the future recoveries of the individual wells on the basis of an extrapolation of the pressure production data and dividing by the acreage assigned to the individual wells. That is a, really it's a graphical solution of a material balance solution.

Q Is that a material balance computation as you understand that term? A Yes, sir.

Q Would you tell us briefly the factors that are included in making a material balance computation?

A In this particular computation, I think that I illustrated those merely taking the slope of the pressure production curve and multiplying that by the remaining pressure down to the abandonment pressure.

Q Is or is not it true that in making a material balance calculation, one of the factors that you are required to take into consideration is the migration of gas across the boundaries of the tract as to which the computation is made?

A Well, the assumption that is implicit in the calculation as I have conducted it, is that the volume of gas being depleted from which the depletion occurs, remains constant.

Q Let me be sure I understand you. You are assuming in your computation that there is no migration of gas across lease lines during the period of time that production which you have put on your

graph is occurring?

A No, I'm not assuming that.

Q Well, I misunderstood you. Will you tell me what you did assume in that regard?

A Well, of course, the assumptions are not made by me, they are implicit in the equation, the material balance equation, the extrapolation of that straight line. It simply says that the volume of gas being depleted by that well or on which a pressure reduction occurs as a result of production from that well remains constant. Where that volume of gas is in respect to the lease lines is not determinable from such a calculation.

Q So that if the gas produced from a particular well on which you made that computation included any gas that had migrated across lease lines, it would tend to inflate the reserves which you would get, would it not?

A I don't agree that it would tend to inflate above what? When you say inflate, that means increase above something. I am not sure of your reference.

Q Above the recoverable gas in place under the tract.

A I don't know whether it would be or not, the migration could be plus or minus. It might deflate.

Q Assuming a migration toward the well, it would increase the reserves that would result from your computation, would it not?

A Would you restate that, I'm not sure I understand that

question.

Q Assuming a migration of gas across the lease lines to the well on which you have extrapolated a curve, that migration would be reflected in your curve with the result that you would show a larger reserve than the well in fact had if you assumed as a reserve the recoverable gas in place?

A If the well is depleting an area larger than that assigned to it and as a result migration occurs, the reserves calculated on the basis of the performance of the well would be larger than had that migration which we have assumed wasn't there, yes, sir.

Q So we are, I think, in complete agreement on that. The reserve calculation which you have made would be inflated to the extent of any migration that occurred across lease lines while the production was in process?

A Well, it works both ways.

Q Or deflated? A Or deflated.

Q Exactly?

A Yes, sir. The performance of that well is governed by the area being depleted by that well. Now, whether or not that area conforms to the lease lines is something that isn't determinable.

Q And from the computation which you have made it's impossible to say that the reserves that you have computed come from within the lease lines assigned to the well which produced the gas, isn't it?

A Oh, certainly that's true for either method of computation. Either one. But more so I think because of data limitations of the recoverable gas calculation from the volumetric calculations.

Now, Mr. Malone, I will certainly grant you that by sufficient data available, for example, let's assume we had a well drilled on every acre and we could measure the porosity and connate water and the pay thickness on every acre in the tract, we could measure that accurately, then we could calculate a recoverable gas in place that would not include any migrational effect that would be a better number than the manner in which I have arrived at a reserve estimate.

There's no disagreement in my mind on that from a theoretical standpoint. The reason that that's not possible in this particular situation, and the reason that is that the recoverable gas in place doesn't, calculation doesn't evaluate any better, the gas that's recoverable underneath that proper is because of the data limitations.

Q You have said that the method used by Mr. Leibrock would be a better method of computing the recoverable gas in place if adequate information on the area was available?

A No, I haven't said that. I have said that from a theoretical standpoint, if the data were available you could calculate the recoverable gas in place without the migrational effects in it.

Q And since the New Mexico statutes says that correlative

rights are based on the recoverable gas in place under the tract, it would be closer to the New Mexico statute than your method, if adequate material is available, wouldn't it?

A No, it would not.

Q For what reason?

A (Interrupting) Well, for the --

Q (Interrupting) We're assuming that adequate material is available.

A Simply that there are so many assumptions involved in that calculation that I think the method that I have used gives a closer estimate of the recoverable gas in place for the various well tracts than does the volumetric method.

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Q But you have admitted that your method includes any gas that may have migrated across the lease line, have you not?

A That effect is in there, yes, sir. That is not an admission, that is a statement of fact.

Q If adequate information is available to make a study of the type that Mr. Leibrock used, let's say if complete information were available to make a study of that type it would be a more accurate study as to recoverable gas in place than your study, would it not?

A Well, it depends on how complete it was relative --

Q I didn't say how complete.

A Well, how complete?

Q I don't understand that there are degrees of completeness.

Assume an ideal though an impossible situation, in other words, a situation that is so ideal it is impossible to actually obtain it. Assume, for instance,that every location in the pool was drilled and every well had been cored.

A You mean on 160 acres?

Q Yes. Would you consider that would be sufficient information to justify the type study made by Mr. Leibrock?

A I think it would certainly if that much information was available, it would certainly furnish more justification than exists, but I don't think necessarily that that degree of completeness would furnish a better answer to the recoverable gas in place distribution throughout the Jalmat Field, no, sir.

Q For what reason?

A Because of the assumptions that are inherent with the volumetric method. For example, you have a well on 160 acres, the assumption is that you can define exactly the pay thickness,the porosity, the connate water saturation, the permeability, that exist under every acre of that 160 acres on the basis of one point in a 160 acres. That's just a fundamental limitation to the method itself, and the data situation.

Q You, yourself, as an engineer, have used and do use that system frequently, do you not?

A As a last resort. I mean that is the least desireable method of estimating reserves. It is the one that is subject, in my opinion,

generally to the most possible error.

Q Now, are you referring to the estimation of reserves in a pool as a whole or under an individual tract?

A I am referring to the problem at hand. The determination of the variation in the reserves per acre or the recoverable gas in place from place to place in the field. I am not referring to the determination for the reserves for a field or a large lease as a whole.

Q It is your opinion that the volumetric calculation is the least desireable system to be used for that purpose?

A For the purpose at hand, yes, sir.

Q Yes.

A Of the two, there are only two available, that is certainly the least desireable and that was my testimony.

Q Well, I think we have got that difference of opinion delineated. Now, it costs quite a bit of money to core a well, doesn't it? A Yes, sir.

Q Fifteen or twenty thousand dollars to take a core on a well in this Jalmat Pool would not be an unreasonable estimate, would it?

A No, sir.

Q So that the coring of wells is an unusual rather than a usual procedure in the developing of a field of this type?

A No, to the contrary, the coring is a very general practice.

Q Would you be able to estimate the percentage of wells

in this pool that were cored?

A In this particular field, from my knowledge, a very small percentage was cored.

Q In your experience in other southeastern New Mexico gas pools, could you say what the normal percentage of coring would be?

A No, sir.

Q It is true that in making a volumetric calculation you take the core data that is available, the electrical and radioactivity logs and through the making of cross sections determine whether or not a sufficient correlation exists to justify the making of the study. That's the way an engineer, as I have been told, approaches that problem, is that substantially correct?

A That is one method.

Q Is that the method that you would have used in approaching a pool to determine whether or not you had sufficient information to make this type study?

A Well, it just depends, Mr. Malone. Every problem is a little bit different and you have to design the methods of analysis based on that situation.

Q You have made that type of analysis in making a study of this type yourself, have you not?

A You mean where I have tried to define the recoverable gas in place under tracts assigned individual wells?

Q I mean in making a volumetric calculation to determine

whether or not the information that you have available is sufficient to justify a net pay determination you take the cores that are available, correlate them with the electrical logs and radioactivity logs that are available, construct a cross section and try to determine then whether the uniformities are sufficient to permit you to draw sound conclusions.

A Well, there is nothing unreasonable about that procedure. That could certainly well be used in trying to evaluate reserves. I wouldn't try to use it in this situation, no, sir.

Q You have said that you prefer the extrapolation of a curve.

A It is not a matter of preference, it is a matter of what method will yield a reliable answer.

Q Is the question of whether or not the core data which you have available and the logs which you have available to study a particular area, are or are not sufficient to make a volumetric study, one that an engineer has to determine on the basis of his own knowledge and experience? In other words, is it a professional determination that he makes as a scientist? There is no rule book that says this information is enough and that one isn't enough, is there?

A No, sir, it certainly is a problem that demands the use of discretion and judgment and experience and so forth.

Q And so when that determination is made by an engineer, it is made on the basis of all of these factors, isn't it?

A Determination of what?

Q The determination that there is sufficient data available to make a volumetric calculation.

A Well, I think that's right, yes.

Q It's up to the evaluator to decide whether his data is sufficient to give him the answers that he wants and it is an area in which there is a room for a difference of professional opinion just as we have encountered here, is it not?

A Oh, certainly, but let me say this, that it's my opinion that an opinion in that respect, any opinion is no better than the data analysis back of the opinion.

Q You are not in a position to comment on the data analysis back of the opinion testified to by Mr. Leibrock without an opportunity to study all of the logs and cores that he had available, are you?

A Yes, sir, on the basis of my understanding of his testimony I am and have done so.

Q And you feel that you are in as good a position to express a professional opinion as to the adequacy of Mr. Leibrock's information as were he and the other engineers who reached a conclusion contrary to yours?

A Yes, sir, if I understood his testimony correctly as to the data available to make this determination of recoverable gas in place, I feel that I have enough information to form an opinion,

and I have formed such an opinion.

Q That likewise is an area in which professional opinions can differ, is it not? A Yes, sir.

Q Now, let's point out a little more clearly the location, please, of the wells on which core data was available up there. Would you please, since I can't get out of here, take a pointer and outline for the Commission the outlines of the fifty-eight well area? Would you just run the pointer arourd that fifty-eight well area, please? A (Indicates)

Q Would you point out the location of the five wells, starting with the well that's to the southeast of the area?

A (Witness complies)

Q Then, moving to the well to the northwest of the area.

A (Witness complies)

Q Then moving to the well to the southwest of the area.

A There isn't any southwest, one west.

Q To the west of the area. Then will you move to the next well that is shown? A (Witness complies)

Q Indicate the well which is within the fifty-eight well area.

A It is right on the extreme north end of the area.

Q It is true then that the cores that were taken generally came from what we might call the periphery of the area as to which we were making a cross section, is it not?

A No, sir, just on two sides of the periphery.

Q Just on two sides? A Yes,sir.

Q Where are the other three?

A Well, there's none on the north side, there's none on the south and west side, there's one on the southeast and then there's three on the northwest and one in the area.

Q Thank you very much. Would you return to the witness chair? Do I understand your testimony to be that in your opinion a gama ray neutron log is not an adequate or sound basis for making a net pay study in conjunction with core information?

A I don't believe I stated it in those terms, Mr. Malone.

Q You do use them yourself, do you not, for making a study of that kind?

A I have used them in evaluating net pay and porosity, yes, sir, in conjunction with all the other data that was pertinent in that regard, but not to distinguish between the reserve per acre as between individual wells where I didn't have a large number of wells cored.

Q You do use them in making a volumetric calculation, though, of recoverable gas in place?

A Oh, yes, sir. Mr. Malone, I would like to explain that I'm not saying that a volumetric estimate just has no place in engineering. I'm certainly not saying that it's often used and is very applicable in estimating reserves, especially for a large area, see. I might illustrate that by this comparison. Although there is a

large, a fairly large difference in the reserves per acre as between the individual tracts in the fifty-eight well area as between your witness's calculations and mine, in other words I think the variation was somewhere around three or four percent for the volumetric calculation.

Q Three or four fold?

A Excuse me, three or four fold. I get from my basis of my data in there a variation of about, is it twelve fold or three or four times as much.

Q That's in the fifty-eight well area?

A Yes, sir. Yes, sir. Yet when we get the averages of the two methods, they're within about fifteen percent of each other for the area as a whole, see, which just shows that the two methods for evaluating the total reserves for the total fifty-eight well area are within fifteen percent of each other, which is within the accuracy of either method.

Q Pardon me.

A But there is a large difference in the distribution of those reserves by the two methods,and it is just my opinion, based for the reasons that I have already discussed, that the volumetric method is inadequate to differentiate as to the distribution of those reserves and that the method that I have used does a much more reliable job of that.

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Q In spite of the fact that it does reflect over and under

production in the life of the well, or put it this way, does reflect drainage either from or to the well for which the reserve is computed?

A It doesn't reflect drainage. It reflects the most probable recoveries of gas that will be obtained from the individual wells. If there is drainage taking place, whatever drainage there is is included in that estimate.

Q The estimate assumes that that same drainage will continue for the life of the well? A Well, it varies.

Q It does assume that it will continue for the life of the well, does it not?

MR. CAMPBELL: He is attempting to answer the question.

A It assumes that the same degree of drainage will continue to exist or that the same area or volume of gas will continue to be depleted by that well if the migration towards that well increases in the future, then the curve should flatten in the future. If it decreases, then the curve should assume a sharper slope, yes, sir, that is correct.

MR. MALONE: Thank you very much.

MR. PORTER: Does anyone else have a question of the witness? The witness may be excused.

(Witness excused.)

MR. CAMPBELL: I would like to have the record show that I offered Applicant's Exhibit No. 14 in evidence. I believe that is

all the additional ones.

MR. PORTER: Any objection to the admission of Texas Pacific's Exhibit No. 14? It will be admitted. Anyone else have any testimony in the case?

MR. MALONE: If it please the Commission, if we could have a short recess for us to see about the 226 extrapolated curves. We will be back and put Mr. Leibrock on for just a few questions on that question or rest without any additional testimony. I think five minutes will be adequate.

MR. PORTER: We'll take a short recess.

(Recess.)

MR. PORTER: The meeting will come to order. We will recognize Mr. Malone.

MR. MALONE: We have nothing further, if the Commission please, and rest.

MR. PORTER: I believe we asked previously if there was any further testimony. Does anyone have a statement at this time?

MR. PAT McCARTHY: Pat McCarthy, Permian Basin. It seems to us that this case resolves itself about one issue, namely whether deliverability should be established as a factor in the proration formula. As I think most people in this room are fully aware, Permian is in favor of deliverability. I would like to refer the Commission to Permian's testimony in Case 582 heard on October 26, 1953 and to the transcript of proceedings in that case,

pages 73 to 88. Permian at that time, through witness Fowley, recommended a proration formula of deliverability times acreage. Although Permian recommended one hundred percent deliverability times acreage while Keller has recommended seventy-five percent deliverability times acreage with the remaining twenty-five percent being based on straight acreage, we believe Mr. Keller's recommendations in this regard would be an improvement over the one hundred percent straight acreage formula now being used by the Commission, and we believe it will tend to place the allowables more nearly where the reserves are.

We, therefore, urge the Commission to grant the application insofar as it relates to deliverability. Thank you.

MR. PORTER: Anyone else have a statement? Mr. Johnston.

MR. JOHNSTON: Paul Johnston, Gackel Oil Company. I would like to state that we have arrived at our position on this matter based on the analysis of all of the evidence that has been presented by both parties. I would also like to commend the El Paso Natural Gas Company for the exceptional job they have done in the past. I think under the circumstances they have done a very good job. I find no quarrel with the manner in which they have conducted their business although there are apparent exceptions. I would agree, as an engineer, that there are weaknesses in any approach to the problem of determining the reserves in any field. Admittedly there are a lot of wells or there are some wells that are under-

produced.

Now, if that is caused by a condition that is not mechanical, then that particular unit that is underproduced will in all probability remain underproduced for the remainder of the life of that unit.

Now, then, it would not, in our opinion, protect correlative rights though if on the one hand we used the formula as presented by Mr. Keller wherein if a well had produced approximately, or a unit had produced approximately one-half of the reserves, it follows that the pressure would be approximately one-half of what it was in the beginning. Although there might remain considerable amount of reserves and it might also be possible for that unit to meet the contract specifications and still continue to produce an equal amount of gas to determine units for a considerable period of time.

If we used that formula in an instance of that kind, then we would penalize that well. One way of looking at it would be just because it had produced half its reserve. Those wells that are behind on production now if it is not due to mechanical conditions as I have stated,then it probably never will reach a balanced position, and if there is a balancing of production within the pool, then in the long run each one of those units will have produced the amount of gas that we can get from that unit and still protect correlative rights by allowing each operator to produce his well now and at the same time.

The application of either formula to a well is not going to

change the amount of gas that's in place there now. I do feel, however, that it is necessary that the Commission enforce the present rules and regulations in order to protect correlative rights and also in so doing would bring about a balancing of our Jalmat Gas Pool insofar as proper allowables are concerned, and each well must be properly classified. Without elaborating further, we oppose the application of Texas Pacific Coal and Oil Company at this time.

MR. PORTER: Mr. Malone.

MR. MALONE: If it please the Commission, I think inasmuch as Texas Pacific is the Applicant here they are entitled to close, and I would like to make a very brief summary statement insofar as the case of the operators is concerned. The Commission has certainly been patient with us in a very long case and one that resolved into three sittings. I don't presume to think that anything I can say is going to make any major contribution.

I would like to point out about three things which have developed which seem to me to be of some consequence in this hearing. First, the situation with which we are faced, or the Commission is faced, is the fact that the acreage formula has been in existence in the Jalmat and other Southeastern New Mexico Pools during the entire period that we have had proration in those pools. The Jalmat Pool, which we are dealing with here, is as the testimony shows, from thirty-five to forty percent depleted. Investments, royalty purchases and well investments have been made on the basis

of the acreage formula which is in existence.

I think that in view of the fact that this Commission long ago resolved the question of potential in oil wells against the potential and in favor of a straight acreage basis, gave those people who assumed that acreage was going to continue in the gas fields of Southeastern New Mexico a right to assume that at least unless some very compelling reason arose, that the acreage formula which had been in operation would be continued. In a great many respects that question that the Commission decided that they are going to allocate oil on the basis of a 40 acre or 80 acre proration unit, giving no consideration to how much that well might produce on potential test, is involved the same determinations that the Commission is faced with here, and our entire industry has been developed in New Mexico on an acreage basis as far as oil is concerned. This pool has been developed during its prorated life on an acreage basis.

We are now faced with an application by a single operator in that pool who wishes to change to incorporate a deliverability formula into that proration system. An operator proposing that to the Commission, it would seem to me, assumes a very heavy burden in view of the fact that the Commission has fought this battle out first on oil and arrived at acreage, fought this same battle out on gas when we adopted the original Southeastern New Mexico rules and decided on acreage against the same arguments that have been

presented here, and against the same formula that has been presented here, so that I think that the Applicant carried a very heavy burden of proof in asking the Commission that a change which would have such a radical effect on the operators as shown by our exhibit should be made at this time.

Now, we had a complete difference of opinion between two engineers on what the relative reserves, or the recoverable gas in place, of these tracts was. I think we finally delineated the reason for their difference of opinion. It was which way do you go to compute reserves. We finally got into the record the fact that if a well had been drained surrounding operators during the course of the life when its production curve was plotted, that its reserves were going to reflect that and hence a deliverability formula would tend to merely perpetuate that drainage in the life of that well to the destruction of the correlative rights of the acreage around it. We feel that the approach taken by Mr. Leibrock was the only engineeringly proper approach to the problem under the circumstances. I'm sure that Texas Pacific feels the same way about Mr. Keller's approach.

I think we have demonstrated that there is room for a difference of professional opinion on the question. But Texas Pacific is carrying the burden of proof and as far as I can see from the testimony here, at the very most there is an equal division of professional opinion, so that in that case the party carrying the

burden of proof must necessarily fail. It perhaps is not surprising that all of the pipeline companies who are represented here have supported the introduction of deliverability, because as Mr. Woodruff readily agreed, if we just didn't have any proration, the pipeline company's life would be a lot easier. Deliverability is the nearest thing to no proration without getting to proration, because it is letting the wells produce as they will produce.

It isn't surprising that they, having to meet problems of market demand, would want to take the gas where they can get it easiest and quickest. Neither is it surprising that the operators whose correlative rights are affected definitely by the formula feel that the formula that gives the greatest possible protection and greatest stability should be retained.

We respectfully ask the Commission there be no change in the acreage formula.

MR. PORTER: Mr. Walker.

MR. WALKER: Don Walker, Gulf Oil Corporation. We are, of course, one of the operators in the Jalmat Pool and we feel that the Applicant has failed to show that gas prorationing is unnecessary in this pool, nor has he shown that the allocation formula including deliverability will more nearly protect correlative rights than the present one hundred percent allocation, acreage allocation formula. We urge the Commission to continue the present allocation formula in the Jalmat Gas Pool.

MR. HINKLE: I would like to make a statement on behalf of Humble. Under our conservation statutes it is the duty of the Oil Conservation Commission to prorate the production of gas from any field or pool where the capacity of the pool to produce exceeds the market demand. In carrying out proration the Commission must also insofar as possible prevent waste and protect correlative rights by setting allowables up to prevent discrimination between pools and wells within the pool so that each owner insofar as practicable will have an equal opportunity to produce his equitable and fair share of the recoverable reserves in place.

The Uncontradicted evidence in this case shows that the wells in the Jalmat Pool have the capacity to produce in excess of the market demand, and therefore, we submit that the primary requests of the Texas Pacific Coal and Oil Company's application must be denied.

With respect to the request of the Texas and Pacific, that deliverability be established as a factor in the allocation of gas, Humble would like to urge the Commission to retain the present field rules for the Jalmat Pool because of the following reasons: First, the existing rules incorporate deliverability in that marginal wells are allowed to produce all the gas that they are capable of delivering.

Second, the evidence in the case clearly shows that the allocation of gas under the present rules will more nearly permit each

operator to produce its fair share of the recoverable gas in place than would the deliverability formula proposed by Texas Pacific.

Third, the present rules will tend to prevent less migration between proration units and will thus better protect correlative rights than would the proposed allocation formula incorporating deliverability as a factor.

Fourth, that deliverability can be strongly influenced by manmade factors which would tend to promote economic waste due to the fact that the ultimate recovery of gas from the pool will not be materially increased.

Fifth, deliverability as a factor in the allocation formula was thoroughly considered by the Commission at the time proration was instituted. It was rejected then and we urge it be rejected now because the present rules have not been given a fair trial in that they have not been enforced.

Humble recommends that the present rules, including the balancing and well reclassification provisions, be strictly enforced and that no change be considered by the Commission until after the rules have been enforced for a reasonable period of time. It has been conclusively demonstrated that there is need for revision. Humble would further like to go on record as being opposed to temporary orders granting exceptions to the rules for the purpose of effecting periodic adjustments such as the order issued in connection with Case No. 1352.

MR. PORTER: Mr. Kellahin.

MR. KELLAHIN: Jason Kellahin, representing Phillips Petroleum Company. In the original hearing in this case Phillips Petroleum Company advocated acreage as being the best means for quickly instituting prorationing in the Jalmat Pool with the suggestion at that time that if the Commission in the future saw the need for it they could take a look at the situation and see how it was working.

As has been pointed out a number of times here, the present rules have not yet been fully given a fair test since there has been no balancing period in this pool. On the basis of the information which is now available, and I'm sure practically all the information available has been presented in this case, we can see no reason for changing the rules certainly at this time.

We would like to point out in that connection that approximately twenty percent of the deliverability tests have not yet been received by the Commission, and certainly until that information is in we do not feel the Commission should contemplate any change in the formula in the Jalmat Pool. For that reason we oppose the application of Texas and Pacific Coal and Oil Company in this case.

Now, I would like to make this further statement in behalf of Samedan Oil Corporation. As the Commission will recall, a situation involving Samedan, it helped to institute prorationing in Southeastern New Mexico, it has been suggested in connection with

this case that due to the fact that El Paso Natural Gas Company is connected to from eight to eighty-five percent of the wells in the Jalmat Pool and has a gas purchase contract with Permian Basin which should and probably will help relieve the situation to some extent, that there is no need for prorationing in the Jalmat Pool, and that is the prime part of the Texas Pacific application.

However, if the Commission will recall, in the original hearings in this case the manner of production, not necessarily by the pipeline alone, but by their use of gas from the gas well, resulted in an unequitable situation which affected Samedan and that information was fully presented to the Commission in the original case in the Jalmat Pool.

Under the statute, as Mr. Hinkle pointed out, the Commission is bound to prorate gas where the capacity of the pool exceeds the market demand, and for that reason Samedan certainly opposes any termination of gas prorationing in the Jalmat Pool. Further, Samedan sees no need, on the basis of the evidence presented here, for changing the present allocation formula and opposes the application.

MR. PORTER: Mr. Dipple.

MR. DIPPLE: Harry Dipple for Continental Oil Company. Continental concurs in the review and recommendations made by Mr. Malone and those that have followed him in opposition to the application. I would like to mention just one additional thing in

addition to those that others preceding me in statements have already mentioned. I think at least to me it was something that seemed rather sigrificant and ran through all of this hearing, and that is that Applicant's testimony dealt with reserves which we put in quotes on our exhibits, and I would like to call the Commission's attention that Applicant's witness never testified and offered exhibits on the basis of recoverable gas in place.

He had a special definition, whether he ever reported it to the Commission or not, for reserves, he had a manner of arriving at reserves, and it certainly bares a faint resemblance only to recoverable gas in place, and if there is any question in the Commission's mind about that, I would merely remind you of his answers to the last couple of questions on cross examination by Mr. Malone.

The only other thing I would like to say is somewhat personal to Continental Oil Company and perhaps to me as an individual. I want to thank the Commission for having granted the continuance. It fell my lot to speak up originally and ask for the continuance. I think there was good reason for the Commission being reluctant in granting it. It was granted, and I think the exhibits and the testimony that we have brought today has vindicated us in our request and we believe that the evidence, the exhibits will not only serve to permit the Commission to arrive at a proper conclusion in this case, but I believe it will be of assistance materially in administering your proration duty in the state with respect to

other gas pools.

I want the record to show that we do appreciate that. In conclusion Continental opposes the application in its entirety and joins in the recommendation that the present rules be strictly enforced.

MR. PORTER: Mr. Wade.

MR. WADE: H. N. Wade with the Texas Company. Texas Company believes that the evidence presented in this case without doubt should indicate to the Commission that prorationing should continue in the Jalmat Field. Texas Company concurs with the recommendation of protestants that the one hundred percent acreage be retained as the basis for prorationing of gas production from the Jalmat Pool.

It seems evident that the protestants in this case have quite adequately shown the Commission that the one hundred percent acreage allocation is the best available under the circumstances which exist in the pool. One of the major considerations before the Commission is the disruption of equities across lease lines which have been established over a considerable period of time which would undoubtedly occur if the present proration formula was eliminated.

It is our belief that the present production problems in the pool can be handled under the framework and rules of the Commission originally adopted by the Commission. The Texas Company recommends

that the rules and regulations adopted for the Jalmat Pool be continued in effect without change and that the application by Texas Pacific be denied.

MR. PORTER: Mr. Houston.

MR. HOUSTON: R. L. Houston for Shell Oil Company. Shell has only four wells in the Jalmat Pool and probably wouldn't be here but for the fact we see looming in the background applications in the other Southeastern New Mexico gas pools similar to this if the application for Texas and Pacific for placing of deliverability factor in the formula is granted.

We have no particular objection to most of Texas and Pacific's requests, certainly we think that the present rules should be enforced and that this long unbalanced situation should not continue, that the Commission should begin to have its balancing periods, but we object most strongly to the placing of the deliverability factor in the proration formula in the Jalmat Pool. We think that the unbalanced situation that has been pointed out by Texas and Pacific would be alleviated considerably by the putting into effect of the present rules and consistently enforcing them, and we furthermore think that the placing of deliverability factor in the formula would not prevent an unbalanced situation in the future as shown by the several graphs introduced showing that there are unbalanced situations in the fields where there are deliverability factors in the formula.

We also wish topoint out that matter of considerable interest to all of the operators in the field, that if you put deliverability factor in there, why as Mr. Keller testified on cross examination, the deliverability of wells can be improved by stimulation methods, and with the result will have a series of workovers by the operators which has been testified would cost from five to ten thousand dollars each, and spread over the number of wells that are under-produced would run somewhere in the neighborhood of two million dollars.

The natural expectation is that after everybody had boosted his well we would be in the, back in the same relative position we are now. So there would be no gain for the operators for that, there might be some gain for the acidizing companies and fracting company, but as far as the operators in the field are concerned, their correlative rights, there would be no change. For these reasons and because it is unfair and unwise to change rules at this late date, why we oppose the placing of a deliverability factor in the formula.

MR. PORTER: Mr. Tomlinson.

MR. TOMLINSON: Bill Tomlinson, speaking for Atlantic. Atlantic is opposed to the application of Texas and Pacific in all its aspects, including the proposed change from the present 100% acreage allocation formula to one of 75% acreage times deliverability plus 25% acreage. From our study of the Jalmat Pool and of the

testimony and exhibits presented here, such a change would be detrimental to correlative rights. We think that above all the Commission should strive to obtain maximum protection for correlative rights in reaching a decision on this case.

MR. PORTER: Mr. Howell.

MR. HOWELL: Ben Howell, representing El Paso Natural Gas Company. I wish to say that the prime concern of El Paso Natural Gas Company in this hearing and in the issues which have been raised, and I think thoroughly explored, is the desire to be able to continue to purchase from operators in the Lea County area and particularly the Jalmat Pool, the quantities of gas required for our market.

I think that the evidence has shown that in the operation of the rules up to this date, that a market which existed for Lea County gas and for Jalmat gas was not served by reason of the imposition of proration rules as they have been operating in the field. The argument is made that the acreage formula is more nearly in line with the reserve recoverable gas reserves in place. There has been much engineering testimony pro and con. It seems to me to be undisputed that it is admitted that the gas, recoverable gas reserves in place under the Jalmat Field are not equal throughout that field and that there does now exist substantial discrepancies.

I suggest that the mere fact of the large volumes of gas which are subject to cancellation and which we hope the Commission will

cancel on January 1 and which we hope will be cancelled at six-months intervals in time to come and redistribute to the overproduced wells does show that wells are given allowables which they cannot produce. And to that extent it is an unrealistic allocation of the allowables.

The difficulty from the standpoint of marketing and the basis of our fear in not being able to purchase and market the gas that we want from the Jalmat and other Lea County fields, is the fact that the correction comes about a year too late to take care of the market that may exist in the previous year.

Now, from the standpoint of the operator who is going to have underproduction cancelled at the end of the year, that operator would be in as equally as good position if he were never given an allowable for that well which was an impossible allowable to make. What we are doing in going around cancelling a year late might be said of using a round comb on your hair and just going around and round, we come around at the same place at the end as if we had put a deliverability factor into an allocation formula.

I do not care to elaborate at more detail, but El Paso has consistently had fear that the market demand cannot be made, it cannot be met with continued application of a straight acreage formula, and therefore supports that portion of Texas Pacific's application. We do not support the portion of Texas Pacific's application asking for the termination of proration in the Jalmat Field, nor the

establishment of any maximum overproduction in excess of that which the rule now established. We do support their application insofar as it asks for cancellation of underproduction and redistribution, and we do support their application in the request that a deliverability factor be included as a realisation of what is taking place and will take place with regard to the wells which are incapable of producing a fair share of the market for that field.

MR. STEWART: R. H. Stewart with Standard Oil Company of Texas. Standard opposes the application of Texas and Pacific and recommends that the Commission continue the present hundred percent acreage formula.

MR. DUTTON: Granville Dutton, Sun Oil Company, Dallas. If it please the Commission, I would like to read the statement of Sun Oil Company in this case. Sun Oil Company both as an operator in the Jalmat Gas Pool and as a matter of principle, is unalterably opposed to the termination of gas prorationing in the Jalmat Pool. Sun's position is that properly constituted and administered proration rules should be fostered as conservation measures. Equally important, such rules create a condition in which each mineral interest owner is given an opportunity to recover his fair share of the hydrocarbons under his land or the equivalent thereof.

The attainment of these regulatory goals involves public policies which are not amenable to control by private contracts.

In addition it might be noted that under the stabilised

conditions realized under well administered proration rules in the State of New Mexico, the number of wells drilled in New Mexico has increased from 677 in 1950 to over 2,000 during the first eleven months of this year. With respect to the alternative requests of the Applicant, Sun Oil would like to make the following comments: With reference to the request to redistribute underproduction to overproduced wells, the evidence adduced in this case does not clearly indicate that such underproduction has resulted from the inability of the wells to produce their average allowable.

On the other hand the rules promulgated by Order R-520 contain express provisions for moving marginal well production from the total allowable prior to distributing the remaining allowable among the non-marginal wells. Therefore, under the rules, such underproduction would not be a result of lack of average producing capacity. To redistribute such underproduction to overproduced wells would seem to constitute the taking of one man's property and giving it to another.

However, it is realized that gas prorationing is in its infancy and that the practicalities and complexities of gas production probably prohibit the attainment of an ideal proration system as of this date.

Therefore, if Rule 10-R-520 and Rule 586 of Order R-967 is interpreted to require such redistribution on balancing date, Sun Oil Company has no present objection providing the redistribution is made on

the dates specified in Order R-836. On the other hand, Sun would object if this redistribution provision should be continuously used in the future to permit certain wells connected to one particular pipeline to receive the allowables of wells connected to another pipeline.

With reference to the Applicant's request to establish deliverability as a factor in the proration formula, it is Sun's position that the deliverability of the gas well, as the potential of an oil well, is not an indication of recoverable gas in place. To relate recoverable gas in place to deliverability requires the assumption of limiting factors so restrictive as to make such a supposed relation undependable for proration purposes. Although Sun recognizes thatallocation upon acreage alone does not distribute production in as fair a manner as upon acre-feet, which is not, in turn is not as fair as upon in-place hydrocarbon volumes, such acreage allocation is practical and is much fairer than an allocation upon a formula based primarily upon deliverability.

Under the circumstances existing in the Jalmat Pool, Sun Oil Company is satisfied that the Special Rules and Regulations as set out in Order R-520 after notice and hearing, present a fair and reasonable method of prorationing gas. Therefore, Sun Oil Company respectfully requests that these rules be retained and enforced in the Jalmat Gas Pool.

MR. PORTER: Mr. Christie.

MR. CHRISTIE: R. S. Christie, Amerada Petroleum Corporation. Amerada concurs in the testimony presented by the protestants in this case. The evidence indicates that the allocation formula now in effect allocates allowables in a more equitable manner than the one requested by the application. We ask that the Applicant's application be denied.

MR. MOTTER: Cities Service is the operator of several wells in the Jalmat Pool and it is my opinion if deliverability is a factor in proration, this will cause most wells to be stimulated by fracting or other means to increase the productive capacity of the wells. We feel that the expense for stimulation will not necessarily increase the future earnings of wells in the Jalmat Pool.

Cities Service is therefore in favor of the present rules for the Jalmat Pool and urges their retention.

MR. PORTER: Mr. Brown.

MR. BROWN: Jack Brown, Pan American. Pan American concurs in the closing statement made by Mr. Malone, and joins with the other operators in opposing the application of Texas Pacific in its entirety.

In view of the previous statements, there seems to be little remaining to be said. However, I would like to add that it has been our observation, and in order for any gas proration formula to work, requires conscientious effort on the part of the gas purchasers,

the producers and the Conservation Commission. Not any one of those by itself, no matter how hard it tries, can make a proration formula work. Without conscientious effort on the part of all concerned any proration formula can fail.

MR. WEBB: Layton Webb, Sinclair. I agree that there is very little more that can be added. We do wish to concur in the closing statement by Mr. Malone and oppose the Texas Pacific application in all respects. We request the retention of the present rules.

MR. MILLER: Aaron Miller, Tidewater, Hobbs. Tidewater believes that the operators' testimony shows that one hundred percent acreage is more equitable and permits the operators in the Jalmat Pool to recover their fair share of the gas than would Texas Pacific's proposed changes.

Tidewater, therefore, concurs with Mr. Malone's closing statements and urges the Commission to deny Texas Pacific's application and to deny the present allocation formula.

MR. MALONE: If it please the Commission, Mr. Selinger for Skelly who was here and had to leave asked me to express his concurrence in the expression of the operators group. Skelly was not a member of that group.

MR. PORTER: Anyone else?

MR. CAMPBELL: I think I ought to say at the outset even though I am a good Irishman, I am not mad at the Texas Company and

these other protestants who have been picking on me. I have a few observations I would like to make. They are going to be very brief.

It seems to me rather unusual that a number of the statements which have been made here by various companies with regard to the basic errors in the use of deliverability factor in a formula, not all of them, but many of them would be applicable to the use of deliverability anywhere. I think that the Commission knows that a number of these operators are operating under a deliverability formula in other portions of New Mexico in the San Juan area. I don't know how much resistance there was to such a formula at the time it went into effect. I know there were suggestions of other types of approaches, but so far as I know there haven't been any applications by any of the operators to abolish it in that area.

I can't believe that the operators have as great concern about the basic principles of it as some of them may indicate or that the Commission has been as remiss in its duty to properly allocate gas as their statements would indicate insofar as the San Juan Basin area is concerned.

We made several requests in this application. Some of the operators who have made statements don't agree with any of them even that the purchasers ought to nominate realistically. I would like to briefly outline them and indicate to the Commission our position on them.

We believe, as I indicated at the opening statement of this hearing, that if gas prorationing is going to continue to operate as it has operated in the past, if the Commission is going to listen to the pleas for passing these balancing periods as they have in the past, and from what I have seen of the evidence of some underproduced wells in this hearing they will hear it again before long. If that is going to be the procedure under gas prorationing, most certainly we would be better off without it if all of us would rely on our contracts and look out for our own gas wells and the way the gas purchasers treat them. In the alternative we have made several requests. We requested that the Commission immediately cancel underage and redistribute it. The application is a little bit ambiguous as the Sun statement indicates. However, we requested that it be done immediately and that it be redistributed to all the wells, non-marginal wells in the Jalmat Gas Pool.

The reason for that was that the accumulation of underage and overage had built up to such a point that it not only was affecting the contractual and property rights of the Applicant, but it was affecting the market for gas from Lea County and the Jalmat Gas Pool in particular, as has been testified to by El Paso Natural Gas Company.

We don't like to see our gas remaining in the ground, our wells being shut in and possibly drained when gas is being sold

from other areas. To provide a market, that is naturally and normally a part of the market to which our wells are entitled.

The Commission has entered an interim order which has essentially made it possible for us this year to sell, if El Paso will take it, additional gas during this year from wells which have been shut in or shut back for a considerable portion of this year. That has provided us with some relief. I wish to state that the Applicant does not necessarily concur in the suggestion of El Paso Natural Gas Company that this interim order become a part of the regular rules. We believe that there should be sufficient flexibility to permit the proper marketing of gas and sale of gas from Southeastern New Mexico. We do not believe that the rules should put an impossible administrative burden on the Commission and the Commission staff.

We believe that somewhere between the two approaches perhaps that are now being suggested that that flexibility can be provided without the administrative burden.

Now, with regard to the request that the Commission require the purchasers to nominate in a manner that will permit them to take to the gas wells. It has been testified here that the failure to supplement nominations during the last two months of the last six months of 1956 resulted in overproduced wells going into the proration period for the first six months of 1957 in a situation that was actually more severe than it should have been. We believe

that purchasers should be directed in some manner to set up a system of nominations and supplemental nominations which would prevent that reoccurring in the future and aggravating the situation further. We had suggested the establishment of maximum takes from individual units based upon twice the monthly allowable for any single month. We made that recommendation in order to avoid a reoccurrence of some of these tremendous peaks from individual wells.

I don't know what the effect may be upon the wells. Nonetheless it has a drastic effect upon the balanced situation on those wells. We believe it might prevent the purchasers from creating a bad situation between individual wells or individual units in the Jalmat Gas Pool.

Then, of course, we did recommend that the Commission include in the allocation formula a deliverability factor, and we proposed a formula which we believe Mr. Keller adequately explained and justified in every respect. There has been some comment here that property rights have been acquired on the basis of the present rules. I'm sure that the attorneys recognize that that can't be the basis for a legal argument. It may be for an equitable argument, but the same ones who made the suggestion that they had acquired vested rights also presented the argument that this system should be given an opportunity to work. Really it has only been in effect a short time. It has never been enforced. Therefore it ought

to be given an opportunity to work.

That position seems to me to be somewhat inconsistent. We believe that the evidence of the operators even taken in a fifty-eight well area of which their own testimony shows there was a deviation of about four and a half, four to four and a half I believe it was, between the reserves -- their own calculations within that area and their testimony that straight acreage allocation assumed the same reserves under every acre, indicates that straight acreage is not a just and equitable way to allocate gas production.

We too appreciate the Commission's having been so patient in hearing this matter. We recognize that we stand, to put it mildly, somwhat in the minority in this situation as has been indicated here by these statements. We do not believe that our request is at all an unreasonable one. It is one which has been stated has been considered by the Commission before. It has taken us two and a half or three years of operation under the gas prorationing system to realize that if we are to sell our gas in the Jalmat Gas Pool and only our share of the gas, which is all we are entitled to, we have got to have some way in which to permit our wells which are capable of producing, our wells which have sizeable reserves to produce their share of the gas. And that unless we do so we are going to lose even more of our gas market to other gas sources in the future.

MR. PORTER: Anyone else?

The Commission appreciates the references to its patience. This case I believe has taken up I believe about four days, possibly more. However, it's been a very interesting case and I'm not greatly concerned about the time consumed by any case as interesting as this and I'm not even bothered so much by people frequently glancing at their watches, but I think the other two Commissioners got a little concerned a little while ago when my secretary asked to see my 1958 calendar.

We will take the case under advisement. The hearing is adjourned.

C E R T I F I C A T E

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 30th day of January, 1958

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1959.