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BEFORE THE OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF COLORADO

IN THE MATTER OF THE PROMULGATION
AND ESTABLISHMENT OF FIELD RULES TO
GOVERN OPERATIONS IN THE LITTLE
BEAVER FIELD, WASHINGTON AND ADAMS
COUNTIES, COLORADO.

CAUSE NO. 30

December 15, 1964

DONALD E. WEIMER
CERTIFIED SHORTHAND REPORTER
DENVER, COLORADO

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PURSUANT TO NOTICE to all parties in interest,
the above-entitled matter came duly on for hearing at
the State Services Building, Denver, Colorado, at the
hour of 10:30 o'clock a.m., December 15, 1964.

BEFORE:

Commissioner H. C. Bretschneider
Commissioner H. H. Houston
Commissioner Howard Schmidt
Commissioner J. E. Dunn

APPEARANCES:

P. M. Westfeldt, Esq., Denver, Colorado, for
Monsanto Company.

Bob Johnson, Esq., Denver, Colorado, for
Plains Exploration.

W. R. Smith, Secretary, Denver, Colorado,
D. V. Rogers, Director, Denver, Colorado, and
Sam Freeman, Esq., Denver, Colorado, for the
Oil and Gas Conservation Commission.

CHAIRMAN BRETSCHNEIDER: The next cause on the agenda is Cause No. 30, Little Beaver "J". This is an application of Monsanto Company for establishment of 160-acre drilling units for production of gas, and for special field rules to govern same.

We have had this before. This is an extended hearing. Mr. Westfeldt represents the Monsanto Chemical Company. Mr. Westfeldt, if you want to proceed now and present the situation as you see it now you may.

MR. WESTFELDT: I would like to very much, Mr. Chairman. Let the record show the appearance of Patrick M. Westfeldt, appearing on behalf of Monsanto Company.

One little technical thing I would like to have clear in the record, and I don't think we need any testimony on it, the application was filed, I think, October 1, 1963, a little over a year ago, and at that time the name of the applicant was Monsanto Chemical Company. In between that time and now the name has changed. It's the same corporation and same applicant, it's Monsanto Company, and I just would like to have the record reflect that.

If the Commission please, this matter was originally set for hearing in October 1, 1963. I believe the record shows that proper notice was given at that time and upon motions duly filed from time to time during the period between then and now the matter has been continued

down to date. I have one witness, Mr. Ed Scholl, who is here and I would like to have him sworn.

CHAIRMAN BRETSCHNEIDER: Before we proceed, I see Mr. Hogsett is present. Are there any others who are interested in this cause that are present? Do you wish to make an appearance?

MR. HOGSETT: Not at this time. You mean you want to swear us?

CHAIRMAN BRETSCHNEIDER: No, not necessarily, just if you wish to have your name entered in the record as appearing on behalf of yourself or someone else.

COMMISSIONER HOUSTON: A little statement is what he wants to know.

MR. HOGSETT: I may want to make a statement.

MR. JOHNSON: I am Bob Johnson with Plains Exploration. We would like to be put in the record.

MR. WESTFELDT: Does Mr. Freeman want to inquire whether Mr. Johnson is appearing as a lawyer today or some other capacity?

MR. JOHNSON: I am appearing as attorney today. I brought an expert.

ED SCHOLL

called as a witness on behalf of the applicant, being first duly sworn, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. WESTFELDT:

Q. Will you please state your name?

A. My name is Ed Scholl. I reside at 1057 Revere, Denver. I am employed by Monsanto Company as a District Engineer in the Rocky Mountain area. I have been employed by Monsanto for eight years and I previously testified before this Commission.

Q. And have your qualifications as an expert witness been accepted by the Commission previously?

A. Yes, they have.

MR. WESTFELDT: I ask the Commission to accept Mr. Scholl's qualifications as an expert witness for the purposes of this hearing.

CHAIRMAN BRETSCHNEIDER: All right, if there is no objection, you will be accepted.

Q. First of all, Mr. Scholl, I would like to hand you Applicant's Exhibit A. Would you please identify and describe Exhibit A, Mr. Scholl?

A. Exhibit A is a land plat of the Little Beaver "J" area. It shows the limits of the Little Beaver "J" Field as defined by the Commission's order No. 30-18.

Q. Is that the dotted line that represents the present field limits?

A. Yes, it is.

Q. What else does the exhibit show?

A. Among other things it shows the proposed expansion of this field, namely, the west half of the west half of Section 29, and the west half of the west half of Section 32.

Q. Those are in Township 1 South, Range 56 West?

A. Yes. Also it shows the wells in the Nugget unit which are in the "D" sand in the northeast portion of the area, the Little Beaver "D" unit which is also a "D" sand secondary recovery project in the southeast portion. It shows the wells in the oil zone of the Little Beaver "J" reservoir, and it shows the wells in the gas cap.

I might add that Monsanto's acreage consists of the southwest of Section 19, the east half of Section 30, the east half of 31, and the proposed expansion, namely, the west half of the west half of Sections 29 and 32.

Q. Now, Mr. Scholl, you refer to the proposed expansion. Are you familiar with the Monsanto application in this proceeding?

A. Yes, I am.

Q. And does Monsanto request that this additional acreage indicated on Exhibit A be added to the Little Beaver "J" sand field?

A. Yes, they do.

Q. Now would you point out the gas wells in this reservoir?

A. Right now there are six gas wells producing in the gas cap area. Monsanto has the Borgman No. 3, which is located in the southwest of the northeast of the southeast of Section 31. Plains Exploration has their well in the northeast of the southeast of the southwest of Section 31. Coryell has the well in the southeast of the northwest of the northwest of Section 6.

Q. Now that is in a different township and range, isn't it? 2 South, 56 West?

A. Right. Triangle J has two wells in the northwest quarter of Section 31, and National Hogsett No. 3 which was recently turned into a gas well in the southwest of 30. There was in the past National Drillers, and I think they sold it to Frank Walsh. And another gas well in Section 1, which was in the northwest of the northeast of the northeast of Section 1.

Q. And that is Township 2 South, Range 57 West?

A. Right. And I believe that takes care of them all.

Q. Was this exhibit prepared under your supervision and direction?

A. Yes, it was.

MR. SMITH: There is one other well that I think you want to bring into the record, and that is the Forest Hough well located in the southwest southeast northeast, Section 36.

THE WITNESS: Yes, that is right.

MR. SMITH: 1 South, 57 West.

Q. Would you tell the Commission about that well, Mr. Scholl?

A. This well I think is under the Hewitt acreage now which is State of Colorado lease, I believe. This well was plugged and abandoned, I believe, in 1960 or '61, somewhere in there, and pipe was pulled on it. It watered out.

Q. And that well on this Exhibit A has the letters P and A by it.

A. Yes.

Q. And that means plugged and abandoned?

A. Yes, sir.

Q. And did you also say that that National Drilling No. 1 well in the northeast of the northeast of 1, is that watered out now?

A. Yes, it is. It is temporarily shut in.

Q. So there are presently six producing gas wells in the reservoir, is that right?

A. That is right.

MR. WESTFELDT: For the record I would like to ask the Commission to receive the Applicant's Exhibit A in evidence.

CHAIRMAN BRETSCHNEIDER: All right, we'll receive it.

Q. Mr. Scholl, I am handing you Applicant's Exhibit B.

Referring to Applicant's Exhibit B, Mr. Scholl, please state what it is.

A. Exhibit B is an isopach map of the "J" sand in the Little Beaver "J" gas cap. It represents the net pay as close as we can determine at this time at the present status of the gas cap. This map was prepared by an engineering committee. It was approved by the recent operators in unitization efforts of this gas cap.

Q. Who were the members of the engineering committee that prepared this, put this map together?

A. Monsanto, I was on the committee, Plains Exploration had two representatives, and a Mr. Bill Hewitt had a representative at the engineering committee.

Q. This exhibit bears the date of October 28, 1963, is that correct?

A. Yes.

Q. And is that about the time that the engineering committee prepared it?

A. Yes.

Q. Now, Mr. Scholl, what does this Little Beaver "J" sand gas cap isopach Exhibit B indicate with respect to the acreage in the west half of the west half of Section 29 and the west half of the west half of Section 32 which you have asked the Commission to add to the Little Beaver "J" sand field?

A. This isopach shows that the gas cap extends into this area and would probably have somewhere in the order of 5 to 10 feet of net pay in the gas cap. It extends from Monsanto's Newton lease down to Monsanto's Hazel and a portion of the Monsanto-Continental Oil Company Downing lease.

Q. And is it your request that this additional acreage be added, predicated on the extension of the reservoir end of that area?

A. Yes, it is.

MR. WESTFELDT: I would like to ask the Commission to receive Applicant's Exhibit B into evidence.

CHAIRMAN BRETSCHNEIDER: All right, it will be received.

Q. Now, Mr. Scholl, next I would like you to describe for the Commission the type of spacing units that Monsanto has proposed in its application?

A. We are asking a 2-fold type of an order: We are asking for 160 basic spacing for a gas well with the flexibility of dedicating as much as 640 acres to one gas well. It is my opinion that the one well can efficiently drain 160 acres very effectively.

Q. Do you have any objections to a basic unit that is smaller than 160 acres?

A. Yes. I think it's uneconomical to drill at this time on spacing units smaller than 160 acres. I feel, or

my calculations indicate, that a well would cost you about \$35,000 to drill at this time, and about the best you could expect from the remaining reserves in this reservoir now would be a return on your investment of a little less than 4.8% per annum.

Q. Is that before taxes or after taxes?

A. Before taxes, and in my opinion this would certainly prohibit drilling on anything smaller than 160 acres.

Q. Well, Mr. Scholl, is it your opinion that a gas well in this reservoir can drain an area larger than 160 acres?

A. Yes. Just briefly, this rock has average conditions of about 22.5% porosity, it has permeabilities ranging from 150 to 2000 millidarcies, and in my opinion this would certainly drain 640 acres -- one well would. We have further evidence that 640 acres could be drained in the circumstances around completing our Borgman No. 3. This well was originally drilled --

Q. Excuse me, Mr. Scholl. Borgman No. 3, that is the Monsanto well in the southeast quarter of Section 31, is that right?

A. That's right.

Q. Go ahead.

A. This well was originally drilled in 1953 and completed in the "D" sand, although a d.s.t. was taken in the "J" sand which showed the original pressure of about 1385

pounds. Now we put this well into the Little Beaver "D" unit for the secondary operations of the flooding "D" sand. When this well became available and no longer needed for this project, we had the right to buy this well back, and we re-completed it in the "J" sand.

Q. Now when did you re-complete it in the "J" sand?

A. In 1962. The pressure that was indicated in this well at that time was in the order of 450 to 500 pounds. This certainly indicates that the well was being depleted. The nearest well to this is the Plains well, which is half a mile away, and this is in the southwest quarter of Section 31, so that means that you effectively probably have a drainage area of a half mile or a diameter of a mile, which approximates a drainage area of 640 acres.

MR. WESTFELDT: I would like to call the Commission's attention to the fact that the exact sort of details, the way we proposed this, are spelled out in the application asking for the basic unit of 160 and permitting the combination of what we would consider compact blocks of adjoining or cornering a bridge into tracts that don't exceed a maximum up to 640 acres.

Q. Mr. Scholl, will you please just summarize your reasons for asking the Commission for this 2-fold rule on drilling units?

A. To repeat, we are asking for 160-acre basic spacing

with the right to dedicate up to 640 acres, for the reason that 160 acres is about the smallest that you could develop economically, and also to a large extent 160 acres coincides with lease ownership on these lands to some extent. If you allow the flexibility of dedicating 640 acres, you will prevent the drilling of unnecessary wells in the future.

Q. Mr. Scholl, here there are some wells on smaller tracts, such as 80-acre tracts, is that right?

A. Yes.

Q. What would you suggest the Commission do about that?

A. We feel that you should allow these as exception locations or exception tracts.

Q. Those existing wells?

A. Yes, sir.

Q. Proceeding further, Mr. Scholl, do you have any recommendation to make to the Commission with respect to the total withdrawals to be allowed from the gas cap area?

A. We feel that the gas cap withdrawals should remain around 1400 MCF per day.

Q. You say "remain". Why is this your recommendation and why do you say that?

A. This is approximately the limit that has been in the past with seven wells limited by the Commission at 200 MCF per day.

Q. What has been the performance of this reservoir

over the years?

A. The oil zone of the reservoir has performed extremely well under these limitations. We have now recovered somewhere over 47% of the original oil in place in the oil zone, and we feel like it will eventually surpass 50 or 55%; so there is still oil to be recovered in the oil zone, and this recovery is good in any reservoir under this type of situation to recover 55% of the original oil in place.

Q. And so your opinion on this allowable is based on performance, is that correct?

A. Yes, it's a historical performance of the reservoir.

Q. I didn't mean to interrupt you, go ahead.

A. In the past, Monsanto has always felt that the gas cap with an oil zone associated with it should normally be shut in until the oil zone is depleted and thereby utilize the energy of the gas cap expanding into the oil zone. However, the oil zone has performed quite well with the Commission's order of limiting each gas well to 200 MCF today and we see no reason to change this as far as limiting the total amount of withdrawals from the gas cap and keeping them at 1400 MCF per day.

Q. With a recommendation for 1400 MCF of gas from this gas cap, do you have any further recommendation to the Commission as to how that allowable should be allocated to the different tracts in the Little Beaver gas cap?

A. Yes. We propose that the Commission allocate the 1400 MCF per day, giving two-thirds credit to the acreage involved and one-third credit to the wells involved.

Q. Do you have a formula that expresses that?

A. Yes.

MR. WESTFELDT: Mr. Bretschneider, is it all right if I have this witness write it on the blackboard behind you up there?

CHAIRMAN BRETSCHEIDER: Yes, I think that would be a good idea.

MR. WESTFELDT: I think that would demonstrate it and people could understand it satisfactorily.

A. To repeat, we suggest that the Commission allocate the 1400 MCF per day, giving two-thirds credit to acreage and one-third credit to the number of wells. We do that by arriving at a formula that the tract allowable would equal the 1400 MCF per day times a factor which will give credit to the acreage and the well.

We propose that the acreage factor be two-thirds of the dedicated acreage in a particular tract divided by the total dedicated acres, plus one-third credit for the number of wells on that tract, divided by the total number of wells in the gas cap. This would then result in that particular tract's allowable or its share of the 1400 MCF per day.

Q. Mr. Scholl, maybe you will want to go up there again later but would you come back down for a minute.

Mr. Scholl, I am handing you Applicant's Exhibit C. I have just handed you Applicant's Exhibit C. Was this document prepared by you or under your supervision and direction?

A. Yes, it was.

Q. Now I would like you to explain Exhibit C to the Commission.

A. First of all Exhibit C shows the proposed formula, the allocation formula.

Q. That is the same formula you have written on the blackboard?

A. Yes, it is. It depicts an example of what could happen to each tract's allowable if sometime in the future all the acreage is dedicated in the gas cap to some existing or future well. I want to point out that it does not represent the situation as it may exist tomorrow or today. It involves the dedication of acreage to wells, perhaps pooling with existing wells on tracts that do not have a well on them or the recompletion or drilling of additional wells.

The top portion of this exhibit shows under these circumstances that I have just pointed out the total amount of acreage that could be dedicated by each operator.

For instance, Monsanto Company could dedicate 920 acres.

Q. On that point, Mr. Scholl, would that include this additional land that you are asking the Commission to add to the field?

A. Yes, it would. We, in certain instances, may have to recomplete wells.

Q. Recomplete a well into the "J" sand?

A. Into the "J" sand.

Q. Or drill another well?

A. Or drill another well. Similarly Triangle J would have 160 and so on down the list of operators whereby the total acreage in the gas cap is about 1460 acres.

To the right of this I have shown --

Q. Excuse me, Mr. Scholl. I am sorry to interrupt you, but just at that point because I would like to have the record clear on it before you proceed, you come out with a total of 1460 acres. That includes the additional land that you want to have added to the field. Does it exclude any of the land that is within the field limits as defined by the prior Commission order?

A. Yes, it does.

Q. What land is excluded in order to reach that 1460?

A. Actually a portion of Section 36 was deleted because a well has been abandoned on it, it has watered out, and also there is a dry hole on the east half of the

northeast quarter of Section 36. Also it has excluded the 40 acres that contain the old National well.

Q. Where is that?

A. In the northeast of the northeast of Section 1. This well has recently been temporarily shut in.

Q. Is it your opinion, Mr. Scholl, that those two tracts that are deleted are properly excluded from the gas cap acreage?

A. Yes, I think so.

MR. FREEMAN: Can you show us on the map which one on this 36? Could you just draw what you are taking out and what you are putting in?

THE WITNESS: Right here we have eliminated this, and this 80 right here.

MR. SMITH: The north 80?

THE WITNESS: Yes, because this well is gone.

MR. FREEMAN: Thank you.

Q. Perhaps for clarification purposes I can ask the record to show that the witness is proposing that there be excluded from the gas cap, whether it stays in the field or not doesn't make any difference, but for purposes of this formula the east half of the northeast quarter of Section 36, Township 1 South, Range 57 West, and the northeast quarter of the northeast quarter of Section 1, Township 2 South, Range 57 West.

Now go ahead, Mr. Scholl. What else does this Exhibit C show?

A. As I pointed out before, the acreage is shown in the top of the exhibit. I have also calculated the per cent each operator has of the total 1460. This is shown on the next column in per cent of total acreage.

Next we have shown the number of wells that each operator would have under these circumstances, which total 7 for the gas cap. You will note that we show 2 wells for Monsanto. This is done under the premise that in the future Monsanto would recomplete another well in the gas cap probably in the Nugget area. This percentage is then shown on the next column, which is the same as before, only it shows the per cent of total wells each operator has.

Now in the bottom of Exhibit C we show a summary of the resulting allocation that might occur in the future if this is accomplished.

Q. Does that mean if 1460 acres is dedicated to gas wells that would include the existing wells and any future wells that might be drilled?

A. Yes.

Q. Okay.

A. It would include 7 gas wells total in the gas cap, with Monsanto having two of them. Under the allocation formula that we propose, Monsanto would then under these

conditions have 51.4% of the 1400 MCF per day, or 721 MCF per day, and so on down the line. Triangle J would have 16.8%, or 236 MCF per day.

Q. At this point, Mr. Scholl, perhaps I am speaking too quickly in interrupting, but these figures are before the Commission now and the other interested parties here and I am sure they can see those percentage figures; but just so the Commission can see how your formula actually works, will you go back up to the blackboard and take say the Triangle J figure there as an example and put the numbers into the proper places in the formula and show how you reach that conclusion of 16.8% and 236MCF.

MR. FREEMAN: Off the record a minute.

(Whereupon there was discussion off the record.)

MR. WESTFELDT: Back on the record.

Q. I understand the point Mr. Freeman is talking about and I understand Mr. Freeman and the other members of the staff have added up acreage as indicated on Applicant's Exhibit A and they have come up with a total of 1560 acres rather than 1460 acres. Is there other acreage in the northeast quarter of Section 30 that you have deleted in reaching your 1460-acre calculation for the gas cap?

A. Yes, there is.

Q. Now what is the acreage there that you have deleted in your computations?

A. I failed to point out that if there is an oil well on the particular tract involved we felt that we should not give it that acreage to the gas cap.

Q. There are two oil wells in the northeast quarter of Section 30?

A. Yes. Monsanto Flessner No. 1 and No. 11.

Q. Doesn't the present Commission order establish 20-acre spacing for oil wells?

A. Yes.

Q. So their need of the full 160 you have included 120, is that right?

A. 120. Similarly in the National acreage in the southwest of Section 30 we have only given credit to 100 acres, namely, the south half of the southwest quarter and in the east half of the northeast quarter of the southwest quarter?

MR. SMITH: Go through that once more.

THE WITNESS: We have given the National acreage, we have given credit in the gas cap to the south half of the southwest of Section 30, and an additional 20 acres in the east half of the northeast quarter of the southwest quarter.

MR. WESTFELDT: Of Section 30.

Q. Mr. Scholl, go up to the blackboard if you will. I think they understand the acreage that has been excluded in your computations now.

A. We were going to take an example of the Triangle J at sometime in the future when all acreage is dedicated to see, just for example purposes, how they would calculate their allowable or their share of the 1400 MCF per day.

In this formula the Triangle J allowable would be 1400 MCF per day times two-thirds of its percentage of the dedicated acres to that tract, divided by the total dedicated acres for the gas cap. We have seen in the Exhibit C that this ratio equals 11%, so it would be two-thirds times 11%, or approximately 7.35%.

Now adding the well portion of it we see that Triangle J has two wells out of the seven wells that could possibly be completed or existing now in the gas cap that is equal to 28.6%, so it would be one-third of 28.6% for the well portion of it. This is equal to 11.1%. Adding these two we get 23.5%, and 23.5% of 1400 is the 236 -- excuse me, this is 9.5%, and this becomes 16.8% -- so 16.85% of the 1400 MCF per day would equal as shown 236 MCF per day under some future condition.

Q. All right, now, Mr. Scholl, you have explained how the formula works under this future full development of the field with full dedication of all of the gas cap acreage. I would like you to now give the Commission an example of how this formula can work tomorrow?

A. Let us suppose just for convenience that Monsanto

dedicates 320 acres to the Borgman well in the southeast of Section 31.

Q. And that is the only gas well that Monsanto has in the gas cap now?

A. That is the only well we have now. Under this condition Monsanto would only dedicate 320 acres in the total gas cap area. All the other operators would remain the same. Triangle J would have their 160, National 180, Coryell 40, Plains 80, and Hewitt 80.

Q. How would it work for Triangle J under those circumstances?

A. Triangle J would then have a share of the 1400 MCF per day which is based on two-thirds of their 160 acres dedicated. The total acreage dedicated now becomes 860 acres.

MR. SMITH: Just a minute, Mr. Scholl. How did you get 860 this trip?

THE WITNESS: Well, Monsanto has 320 --

Q. Speak loud enough so the reporter can hear you.

THE WITNESS: Monsanto would have 320 acres, Triangle J would have 160, National 180.

MR. SMITH: Based on this up here, where is the 180?

THE WITNESS: This would be 100 acres right here plus this 80, and Coryell, of course, would have their 40, Plains would have 80 acres, and Hewitt 80.

MR. SMITH: How can they dedicate without a well?

THE WITNESS: We are presuming that National and perhaps Hewitt can pool with somebody. This may not happen but it is certainly a possibility that Hewitt could pool with Plains or Triangle J, or National could pool with Triangle J or Plains.

MR. SMITH: Okay. All I wanted was the basis.

A. So on the well portion of Triangle J allocations we would then have one-third credit for two wells out of a total of six.

Q. That is in the present situation in the gas cap?

A. Right. Monsanto would not have another well in the gas cap. The total wells would be six. So allocating this out, you would have two-thirds of 18.6%, which is 12.4%, plus 9, which would be 11.1%, makes a total of 23.5% of the 1400 MCF per day, which equals 330 MCF per day under the present situation.

Q. Mr. Scholl, would you now tell the Commission your reasons for proposing this allocation formula to the Commission?

A. I think it's a fair method of giving equitable weight to both acres and wells in the gas cap. It gives substantial credit to those owners that have small tracts. It gives substantial credit for their well.

Q. And likewise it gives a reasonable credit for acreage in your opinion?

A. Right.

Q. Now if the Commission should accept your recommendations, would that in your opinion tend to prevent waste and protect correlative rights?

A. Yes. I feel that the gas cap production will be kept at a reasonable level which has historically shown success in the oil zone recovery, and it will prevent the drilling of wells on tracts smaller than 160 acres; and fair weight is given to leasehold acreage by the operators, and any existing or future well will be given equitable credit and thereby protect correlative rights.

MR. WESTFELDT: I don't know whether I asked the Commission to receive Exhibit C in evidence, but I now so ask if I haven't done it. That is all the questions I have of this witness now.

CHAIRMAN BRETSCHNEIDER: We'll accept Exhibit C for the record.

CROSS EXAMINATION

BY MR. FREEMAN:

Q. Let me understand one situation. When you start off on your second formula, this 860, and I realize this is an example but just so I understand it from the example, you have assumed that there is X number of acres that Monsanto hasn't put in, is that correct, in your second example?

A. Yes, sir.

Q. Now let's assume in the southeast quarter of Section 30 you drill a well. At the point in time in your example that acreage would not have been in, is that correct?

A. That is right.

Q. Now you drill that well and then is there an automatic dedication under your proposal, or how does this work?

A. No. We propose that the operator -- it would be left up to the operator what acreage he is going to dedicate. Actually we cannot say what would be dedicated until we go to the royalty owners and perhaps there may be different interests on the well site. In this particular case we do not own the hole.

Q. Let's assume that he does not dedicate acreage, then what is his position?

A. Well, we certainly -- I don't think we can dedicate any of his acreage without some joint agreement.

MR. SMITH: Under your plan 160 would automatically be dedicated to the well?

THE WITNESS: Automatically.

Q. You say that well is for the southeast quarter of so and so?

A. We would have to have 160 acres in order to complete the well.

Q. And thereafter you would file with the Commission an instrument of dedication of acreage showing that all

interests in this other acreage, say the 80 to the east of it had joined in the well and wished to dedicate their acreage to that well, is that the way it would work?

A. That is right.

MR. WESTFELDT: I think perhaps carrying the discussion a little further on that point, the matter of how you can dedicate acreage in addition to the 160-acre basic unit is really a legal question. You have to get agreement among diverse owners, if that is what they are, or you have to have a forced pooling of the acreage in the drilling unit, one or the other; but it's not an automatic thing legally just in the operator's unrestricted discretion.

Q. But you would impose then a total field allowable and include the dedicated and undedicated acreage within the field, the defined field I assume, is that your point?

A. I don't think the undedicated acreage would ever be used in the allocation of allocating the 1400.

Q. But it would be in the field by basis of the Commission order?

A. That's right.

MR. WESTFELDT: Now let me ask you a question, Mr. Scholl. The denominator of the fraction following the figure two-thirds in your Exhibit C is total dedicated acreage in the gas cap?

A. That is right.

MR. WESTFELDT: Total dedicated acres?

A. It does not include any acreage that is not dedicated to a well.

MR. SMITH: You used an example to explain to Mr. Freeman if you drilled this well with your 160 we would re-calculate the allowables for all the wells in the gas cap. Then if you came in with a dedication of additional acreage we would again re-calculate the allowables and presumedly they would all go down, except this one well which would go up by two-thirds of the two-thirds factor, and then we would issue a new allowable schedule including the new total dedicated acreage?

THE WITNESS: This is true.

MR. FREEMAN: Pat, the specific legal question I have in the formula, let's go back to the 860. Now you drill on one of your 160's. At that point, since the total allowable did not apply to undedicated acreage, theoretically could you then as an operator produce without any allowable?

MR. WESTFELDT: That isn't the legal effect of the formula as we are proposing it. If we moved, as you said earlier, up to the southeast quarter of Section 30, that might not be previously dedicated.

MR. FREEMAN: Then what happens?

MR. WESTFELDT: Then there would be at least an additional 160 acres that would automatically come in under

your drilling and spacing unit. So the denominator, the total dedicated acres, would increase by 160 acres, and you just add that to the 860 and you get the new figure. If at another time we were able to get the adjoining owners to commit their land and went through a forced pooling proceeding, then we would have a greater amount of acreage dedicated to the particular well and that would increase the total dedicated acres.

MR. FREEMAN: What I am saying is the new 160 then would automatically be under spacing and an allowable rule and established as a field rule?

MR. WESTFELDT: That is correct.

COMMISSIONER HOUSTON: What is wrong with it just as it is?

MR. WESTFELDT: I'm sorry, Mr. Houston, I didn't understand your question.

COMMISSIONER HOUSTON: I say what is the matter with letting the status quo prevail on it without making an exception?

MR. WESTFELDT: Well, actually the Commission order right now for well spacing in this field is a 20-acre order which is kind of --

COMMISSIONER HOUSTON: That is gas?

MR. WESTFELDT: Which covers both, and that is rather meaningless as far as gas wells, and particularly

when the statute says you shouldn't have drilling and spacing units which are smaller than what a well could drain. Our contention as to what is wrong with it now is that the allocation of gas cap allowable in the field is based 100% on wells. It gives credit completely to wells and doesn't give credit to acres.

Now, I know the Commission is quite familiar with the development of the Little Beaver "J" sand field and we know what we have done in the past in there. We haven't developed our gas acreage as fast as some of the other people have developed theirs because we wanted the energy to produce the oil, so we just have one gas well that has been producing now for two years. But we are now in the latter stages of development of the field and we are asking the Commission for an allocation based on acreage as well as wells, not just wells as is the case now.

MR. FREEMAN: So then we would then have, as I understand it at the start, a field rule allowable?

MR. WESTFELDT: That is what we are proposing, 1400 MCF total from the gas cap.

MR. FREEMAN: Right, and then that would be subdivided and changed as the acreage became dedicated. A person with an undrilled 160 -- just let me follow through the theory -- would be drained until he drilled his well and it would be up to him to protect himself to come under the

formula and get an allowable based on this formula of the 1400, his proportionate share, if you will, of the 1400?

THE WITNESS: Right.

MR. FREEMAN: Okay, thank you.

COMMISSIONER HOUSTON: In other words, you people don't think you are getting a fair shake out of the deal, is that it?

MR. WESTFELDT: We believe this, Mr. Houston: We don't think that the situation is fair now. We are not complaining about what has happened in the past because we are grown-ups and we operated the field the way we thought was proper from a good conservation standpoint, and the performance in the oil section of the reservoir indicates there is a lot of merit as to what has happened in the past. However, we are in the latter part of the development of this field, the life of this field, and in this last portion we are asking the Commission to do what the statute says and that is allocate your reservoir allowable on what's considered a just and equitable basis, and we are asking that acreage as well as wells be taken into account in the allocation.

We are not asking for an increase. Leave the gas cap allowable total the same, 1400 MCF, which is approximately what it has been in the past, but give credit for our acreage as well as our wells; and if we drill some more -- the only way we could really substantially enhance



our position would be to spend more money on recompleting an oil well into the "J" sand as a gas well or drilling a new gas well.

CHAIRMAN BRETSCHEIDER: When you do that you change the formula then.

MR. WESTFELDT: The formula and the results, we believe.

CHAIRMAN BRETSCHEIDER: What would happen if one of the gas wells so-called now plays out, goes into water?

THE WITNESS: Well, this would be effective in the formula, in the six portions.

CHAIRMAN BRETSCHEIDER: You would recalculate the formula?

THE WITNESS: Yes.

MR. WESTFELDT: You would recalculate the dedicated acreage.

MR. SMITH: And the number of wells?

MR. WESTFELDT: The number of wells and dedicated acreage, right.

MR. FREEMAN: I have some specific little problems that I see in the way the acreage lays out. Let's go to the southwest of 31, Mr. Scholl. Now we have got an undrilled 80 there, and then to the west you have got another 80 in Section 36 which would be --

MR. WESTFELDT: Also undrilled.

MR. FREEMAN: Undrilled, and then we have a little 40-acre piece down in 6.

MR. WESTFELDT: That has a well on it.

MR. FREEMAN: That has a well on it?

THE WITNESS: Yes.

MR. FREEMAN: Now under your system, would you be leaving it to the owners and operators -- I see you are not in this particular section of the field which could cause some problems?

THE WITNESS: Right.

MR. FREEMAN: Within the limits of your generalized ground rules that you have got in your application, I think there are several on your last page in your application.

THE WITNESS: Yes.

MR. FREEMAN: Would it then be the Commission's duty to force pool this acreage or make exceptions at its discretion? Is that your theory?

THE WITNESS: Well, actually we felt it would first be up to the operator if he wanted to get a share of the gas to negotiate with somebody that did have a well and try and work out an agreement where he could come in and pool his acreage voluntarily with this other guy. Suppose that Hewitt could pool with Plains, he would also pool I think with Coryell if they could work out an agreement. I don't know the feasibility of this, but it would certainly be up to the

Commission if they wanted to force pool.

MR. FREEMAN: I am saying the Commission would be left with two alternatives. Assuming somebody came in with a protect-my-correlative-rights application, we would then either have the alternative within the ground rules laid down in your formula or by the granting of an exception or force pooling?

THE WITNESS: Right.

MR. FREEMAN: Certain of these tracts?

THE WITNESS: Right.

MR. FREEMAN: Minimum of 160 and no larger than 640?

THE WITNESS: Yes.

MR. SMITH: This minimum of 160, the National Hogsett lease as an example, would you say the Commission should be allowed an exception to allow a drilling unit of 80 acres there? It isn't developed.

THE WITNESS: That is true. Frankly I don't see why anybody would want to drill on the 80 because I don't think it would be economical at this point, but --

CHAIRMAN BRETSCHNEIDER: If he didn't drill he would be out of the formula for the 80?

THE WITNESS: That is right.

MR. WESTFELDT: Excuse me, I'm not sure which acreage you are talking about, Bill.

MR. SMITH: I am talking about the north half of

the southwest quarter of Section 31.

MR. WESTFELDT: On that particular tract they could be combined voluntarily. It could be combined by force pooling if the Commission allowed an exception for a well in there which, of course, part of Mr. Scholl's testimony is he doesn't think anybody would drill on the 80; but nevertheless if they did, under the statute the Commission would have to make an appropriate adjustment in the allowable, make a further allocation so that each party gets his just and equitable share from his acreage.

MR. SMITH: I understand that, Mr. Westfeldt, but the point is this: the way the application has been presented is that the Commission would accept the Plains 80-acre tract in the south half of the southwest of 31 as a drilling and spacing unit.

THE WITNESS: Yes.

MR. SMITH: As such they then could not force a 160-acre tract on the north half.

MR. WESTFELDT: I see your point, Mr. Smith, and I don't believe that is the way it works. We say that it's fine if the Commission orders that these wells on these 160-acre tracts be considered exception locations. We are talking about a basic unit of 160 acres. I think what this boils down to, and it's interesting in the point of view of the discussion, is that we think that there should be 160-acre

units. The present wells, to the extent that they don't fall on a nice evenly owned 160, are exception locations, and the other parties can then get force pooling under the statute.

MR. FREEMAN: In your exception, Pat, as I understand, it goes to an exception as to well location as opposed to acreage?

MR. WESTFELDT: That is correct.

MR. FREEMAN: All right, this is what I was trying to get at.

MR. WESTFELDT: That is correct.

MR. SMITH: Mr. Scholl, I have one question on this drainage picture I would like to get into the record. Isn't it true during the interim in the past year under the Commission order which allowed certain wells to produce during certain months of the quarter allowable, hasn't it in effect been an experience of the field that there has been interference between the wells noted from time to time?

THE WITNESS: Bill, I don't think that it's so much interference down hole. I know there is a problem in the pipeline. In other words, when we are producing two wells, one may not be able to get into the pipeline because of a higher back pressure, but I don't know of any --

MR. SMITH: Well, to explain, I had understood, for example, the Plains Hogsett well I think we all know is

one of the better wells, and your Borgman well is also a good well.

THE WITNESS: Yes.

MR. SMITH: And I had understood -- as a matter of fact the Commission has specifically been asked to set these two wells so that they did not produce because there was a problem of one being able to take its allowable. Now was this due to a surface condition or subsurface condition?

THE WITNESS: I think it's a surface condition, because I know that -- Bob may bear me out here -- but some of the wells had trouble getting out in one month, you know the 18.4 MCR a day; therefore, they will take a portion of the next month to get their quarterly allowable. Well, when we start up and they are still in the line, we have to wait until they get out before we can really produce the maximum out of our well.

MR. SMITH: You haven't noticed any change in surface pressures?

THE WITNESS: No, sir, I haven't.

MR. FREEMAN: We could wind up by saying the southwest quarter of 31 with the adjoining acreage conceivable if the various parties were unable to agree, as I envision it, just trying to discuss the procedure, then we might eventually be in the position of on our own motion set a hearing to force pool, say in that area which comes to mind

as an immediate problem area.

MR. WESTFELDT: Why do you say, Mr. Freeman, on your own motion that that might be necessary? Why shouldn't the owner of the operating rights be the moving party?

MR. FREEMAN: Well, you have several in there.

MR. WESTFELDT: That is correct.

CHAIRMAN BRETSCHNEIDER: The operator would be.

MR. FREEMAN: I guess the operator would be.

Do you have any questions?

MR. JOHNSON: I would like to ask Mr. Scholl some questions if I may.

MR. FREEMAN: You may proceed.

BY MR. JOHNSON:

Q. What is the current reservoir pressure in the gas cap?

A. Bob, we haven't had a pressure in the reservoir. I feel that it's somewhere between 450 and 500 pounds, maybe a little less.

Q. From your testimony you say in 1962 that you checked the pressure and you have it ranging from 450 to 500. We have now moved two additional years, almost three years in time, and under your application you are trying to give due credit to two-thirds of acreage and only one-third to a well. It would seem to me that the reservoir pressure would have some bearing on this.

A. How do you mean?

Q. You have not checked the reservoir pressure?

A. No. I do know we are producing at 180 pounds pipeline pressure, and producing anywhere from 400 to 600 MCF a day. We haven't taken a pressure in ours. I fail to see, Bob, why -- are you implying there are different pressures in the reservoir?

Q. I do not know. You are the moving party and we are curious to know what data you have to justify your pressure and your spacing allocation.

A. Are you implying we should put reservoir pressure in an allocation formula?

Q. We are not implying; we are just asking.

A. I don't know what the question is, Bob.

Q. Well, you say you do not have pressure so I can't pursue that any further. What is your current reserve estimate under this gas cap?

A. Bob, I can't speak for the other people that were in the unitization efforts. Frankly I think it's somewhere around 5 billion cubic feet remaining.

Q. Did not the operating committee that was trying to unitize this field come up with a figure?

A. To my knowledge I don't recall. I have some economics of what I think it is if you would like those.

Q. I would like to have those put in the record if

I could.

MR. WESTFELDT: Go ahead and ask your question.

Q. What are your reserve figures that you are carrying in the gas cap?

A. Well, when you say carrying --

Q. Well, that you calculated?

A. Personally the reserves are about 3.5 billion.

MR. WESTFELDT: Is that your opinion?

THE WITNESS: That is my opinion.

MR. SMITH: To when abandonment?

THE WITNESS: 200 p.s.i.

Q. Is the oil migrating into the gas cap?

A. At this point I don't think it is. I think that there is movement of water into the oil zone, as we can vouch for in the performance of some of our oil zone wells. I don't know if there is. I feel like there may be some, but we are certainly producing very efficiently. If I may, Bob, on our Flessner 1 and 11 --

MR. WESTFELDT: Those wells are located in the northeast quarter of Section 30, is that right?

THE WITNESS: That is right. The northeast quarter of Section 30, these wells were originally perforated in the base of the "J". They are now experiencing a rather good oil production rate. Whether or not it's moving into the gas cap I don't know, but as the water encroaches from the

northwest we perforate higher in the section and thereby produce all that we can out of those wells, and I think that there is very little possibility that much is getting by those two wells and perhaps going the other way, Bob. You know the National well, it turned into a gas well. That means that the gas cap is expanding into the oil zone in that area. I don't know what it will do now or in the future, but I think we have a stable situation where we are producing very effectively as evidence by producing at this point 47% of the original oil in place, and perhaps we may recover 55% of the original oil in place without any additional development.

COMMISSIONER HOUSTON: Are these wells making any condensate?

THE WITNESS: Yes, sir. Our well makes about, I think, 2 or 3 barrels a day when we are producing it. I think some of the Triangle J wells make a goodly amount of condensate. I say condensate, I don't know the gravity of it, as far as the term or oil or condensate.

COMMISSIONER HOUSTON: Is this wet gas or dry gas?

THE WITNESS: Wet gas.

COMMISSIONER HOUSTON: It goes into the gasoline plant?

THE WITNESS: Yes, sir, the Little Beaver "D" plant. We have two systems there. We have high pressure

and low pressure systems.

COMMISSIONER HOUSTON: Did you figure all that in when you figured your 4.8% on the cost of the well?

THE WITNESS: Yes, sir.

COMMISSIONER HOUSTON: That net is for how long now?

THE WITNESS: About seven years.

MR. FREEMAN: Do you have any further questions?

MR. JOHNSON: Yes.

Q. (By Mr. Johnson) Are you experiencing a higher GOR ratio on your northeast quarter of 30 in the last year or two?

A. No, we are not.

Q. Do you think that the reservoir could withstand a higher withdrawal rate than is presently being allowed without injuring the oil?

A. I don't think so, Bob. As I said awhile ago, we see the gas cap expanding into the National Hogsett area and remaining relatively constant. Over in our Flessner area I think we have reached a balance where we have got a pretty stable situation at 1400 MCF a day.

Q. Under your formula that you are proposing up here, do I understand this correct that it is straight acreage and you are not paying any attention to the isopach sand map that you presented as Exhibit B, I believe?

A. That is right.

Q. For instance, the west half southwest of Section 32

you are giving full credit for 80 acres there and yet you are showing a zero isopach that cuts through there and cuts some acreage out?

A. The southwest quarter of Section 32?

Q. Yes, the west half southwest, you are asking the Commission to include this acreage in the area?

A. We did this for simplicity, Bob. We just took the 80 acres and came straight down.

Q. Well, under your simplicity of allowing two-thirds formula for undeveloped acreage, wouldn't you say this would not protect the correlative rights of those parties that have wells drilled?

A. We have no objection of taking a Planimeter if you want to and going around the isopach and dedicating that acreage and dividing it up. This is all right with us. We just did it to come straight down there. We didn't mean to refine it to say 10 acres, dedicate 10 acres.

MR. FREEMAN: May I ask one question of you, Bob? Are you preparing today to put on a different isopach map?

MR. JOHNSON: No, sir. We are asking how they are coming up with their formula.

MR. FREEMAN: I just wondered for our information will there be another isopach map introduced?

MR. JOHNSON: We were on the committee and that map was actually done in about 1954 to my knowledge and it

was the operating committee's decision that there was no need to go back and rehash the arguments for net sand for gas.

THE WITNESS: If I may, Bob, the engineering committee prepared -- Monsanto asked that the previous gas cap isopach be accepted by the engineering committee and the operators' committee that was formed just last year. We said let's use the gas cap isopach prepared when the first unitization efforts were proposed. Plains came in with this isopach changing the west side of it and everybody was agreeable so essentially this is Plains.

MR. JOHNSON: We have no objections to the map.

MR. FREEMAN: Okay, fine.

Q. Do you feel that undeveloped acreage is worth more than a developed acreage or a well? Under your formula it looks like two-thirds for undeveloped you are putting more weight on that.

A. I don't know what you mean.

Q. How do you justify giving two-thirds credit to undeveloped acreage versus one-third to a well?

A. This will not be undeveloped acreage when we dedicate a well to it.

Q. Why hasn't the acreage been developed in the past?

A. I think we explained that we chose to keep the gas cap shut in until the oil zone was produced. We felt that we would rather have a better recovery out of the oil zone

than produce the gas cap. We wanted to utilize the energy that we had. Fortunately we had a majority of the gas cap acreage.

Q. How do you propose to allow -- I believe it's a Mr. Hewitt owns the State acreage in Section 36?

A. Yes.

Q. How do you propose to allow him to get his share under your formula? You show Mr. Hewitt to be allowed 51,000 a day, and under your own testimony you say that it is uneconomical to drill a well.

A. Bob, I meant for that -- I thought I explained that that was an example of what could happen. If Hewitt could pool with somebody, you will notice that he does not have any credit for a well on the well portion of this calculation. It is merely an example that if Hewitt pooled with you or Triangle J this acreage would eventually become dedicated to some well. I didn't say that it would happen. It could happen.

Q. Is all the acreage in here leased? What I am thinking of particularly is southeast of 30, the northeast of 31.

A. Southeast of 30?

Q. Yes, sir.

MR. SMITH: It's held by production.

A. Yes, this is leased. We show it.

Q. All of it is leased?

A. To my knowledge.

Q. Or held by production?

A. To my knowledge.

Q. In other words, I see Monsanto Petteys in the southeast of 30. Does Monsanto have that under lease from Petteys?

A. No.

WESTFELDT: What do you know about the title to it?

THE WITNESS: I don't know anything about the title.

CHAIRMAN BRETSCHNEIDER: In that case Monsanto is the operator anyway?

THE WITNESS: Yes, we are the operator.

CHAIRMAN BRETSCHNEIDER: And also the one south where there is no well?

THE WITNESS: Yes.

CHAIRMAN BRETSCHNEIDER: Northeast of 31?

THE WITNESS: Yes.

CHAIRMAN BRETSCHNEIDER: Does that answer your question?

MR. JOHNSON: Yes, sir. He said he didn't know.

Q. Under your proposal, would there be a need for a hearing to dedicate over 160 acres to a well?

A. Would you mind repeating that?

Q. Under your proposed application, would there be a

hearing necessary to dedicate more than 160 acres to a well?

A. No, sir.

Q. It would be an arbitrary decision of the operator of that well?

MR. WESTFELDT: I object to the question because it presumes the answer, and that has been gone into already that it wouldn't be an arbitrary decision and that it would have to be done in a lawful manner. That is already in the record.

MR. JOHNSON: If one has it under lease, the lawful manner would be strictly if your lease calls for unitization they just unitize it.

MR. WESTFELDT: That is right, but it need not be arbitrary.

MR. JOHNSON: I have no more questions of Mr. Scholl.

CHAIRMAN BRETSCHNEIDER: Does anybody else have any questions?

MR. JOHNSON: We want to put on an expert.

MR. HOGSETT: There isn't any use of me attempting as a layman to get up here and argue these matters with the boys working at it, but there is a question that comes up in our mind. The two boys that are with me and Mr. Hartman, who has an interest, is that this has been Monsanto's way of operating. We drill the well on our side of the fence and they do the best they can to get it. We have went through

this and had to hire quite an expensive attorney, and the Commission with regard to the oil situation, they finally quit that. Then they come in here with undeveloped land entirely, and the questions I would have asked I made note of were just exactly the same as Bob had: how come two-thirds to undeveloped land and one-third to the well. It's awfully hard for a layman to buy it. It may be right, but it's awfully hard to sell us.

Another thing, the first thing we knew about this -- we knew nothing whatever until I got a letter from Monsanto saying: "Sign here and return." Up to that time we knew nothing whatever, any of us, about any part of this thing. So we have been very much in the dark.

CHAIRMAN BRETSCHNEIDER: There weren't any negotiations before they asked you to sign?

MR. HOGSETT: None whatever. I wish I would have brought that letter with me because that is exactly what they said: "Sign here and return."

MR. FREEMAN: You will be offering then at this point no actual testimony? You may want to make a statement as to what the Commission shall do as I understand it?

MR. HOGSETT: There isn't enough involved in this that we thought it was necessary to hire an attorney, win, lose, or draw. We did spend considerable money on this thing before, as Doug will remember, and I think Mr. Bret-

schneider was in on the deal.

MR. FREEMAN: Would you have any objection then if Bob put on his witness at this point?

MR. HOGSETT: Indeed I don't.

MR. FREEMAN: Did you have any redirect?

MR. WESTFELDT: Yes.

REDIRECT EXAMINATION

BY MR. WESTFELDT:

Q. There has been some discussion, Mr. Scholl, about your formula providing two-thirds weight or two-thirds credit to undeveloped acreage. Now let's look at your Exhibit C and your Exhibit C inside of the parenthesis. What is the fraction? How do you describe the fraction that is given the two-thirds weight?

A. Literally it says that two-thirds credit would be given to the total tract gas acres divided by the total field dedicated acres. It does not mean undeveloped acres.

MR. WESTFELDT: Thank you.

MR. FREEMAN: Would you like to call your witness?

MR. JOHNSON: Yes, I would like to have Ron Briggs sworn.

RONALD BRIGGS

called as a witness on behalf of Plains Exploration Company, being first duly sworn, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. JOHNSON:

Q. Would you state your name?

A. Ronald Briggs.

Q. For whom are you employed?

A. I am employed by Plains Exploration Company.

Q. In what capacity?

A. I am a petroleum engineer.

Q. Would you state what your education and employment record is?

A. I graduated from the Colorado School of Mines as a petroleum engineer in May of 1957, and I have been employed continuously since that time in petroleum engineering work: 5-1/2 years with Humble Oil and Refining Company, 1-1/2 years with Sohio Petroleum Company, and since September of 1964 with Plains Exploration Company.

Q. Are you a registered engineer?

A. I am a registered engineer in Illinois, Kansas, and Colorado.

MR. JOHNSON: May I ask that he be accepted?

MR. WESTFELDT: No objection.

CHAIRMAN BRETSCHNEIDER: If there is no objection from anyone, you will be accepted.

Q. Mr. Briggs, has the current withdrawal allowed oil to come into the gas cap?

A. As Mr. Scholl stated earlier, there is evidence

that there has been encroachment at least in one area of the gas cap into the oil column. This is particularly evident in National Drilling Company's Hogsett No. 3 in the southwest quarter of Section 30. The GOR in this well has increased in recent months to the point where, I believe, it is approximately 100,000 at this time, where before it was classified as an oil well with a GOR less than 30,000.

Other evidence which I have found can be noted by tracing the GOR history of some of the leases in the area. As an example, the National Drilling Company Hogsett lease has an average GOR for October, 1964, of 11,125. The GOR for the year to date of 1964 is 8,335. The cumulative GOR is 3,422. This indicates a steady increase in the gas-oil ratio for this lease. Now these figures were taken from the Conservation Commission records, and I calculated the gas-oil ratios myself.

Another indication would be on the Centennial Hogsett lease, the northwest quarter of Section 30, the cumulative gas-oil ratio is 936. The year to date gas-oil ratio for 1964 is 1649, and the October, 1964, gas-oil ratio is 2459. This also would indicate an increase in the gas-oil ratio. I think all of this tends to indicate that there is an encroachment of the gas cap down into the oil column, and it would also indicate that the 1,400,000 current withdrawal allowable is perhaps a little conservative as far as

maintaining the status quo and the gas-oil contact.

Q. I would like you to state, has Monsanto produced gas -- would you give the figure that they have produced in their Flessner Lease in this field from beginning to the present time? Mr. Scholl stated that they had not produced any free gas, but I would like the record to show what they have produced.

MR. WESTFELDT: I don't think Mr. Scholl said that.

MR. JOHNSON: He said they have not produced gas cap gas prior to 1962 as free gas. I just want to put it in the record.

MR. FREEMAN: Well, in fairness, why don't you let him correct his testimony if he wants.

MR. JOHNSON: Okay.

MR. FREEMAN: Why don't you correct your testimony if you don't agree with it and then Bob will continue with his presentation.

MR. SCHOLL: I don't think I could make the statement Flessner 1 and 11 ever produced any gas cap gas because they were gas cap wells at one time. These wells had ratios higher than any solution gas ratio. As a matter of fact, they were above 30,000.

MR. JOHNSON: That is all I wanted.

MR. SMITH: I think we should clear the record, Mr. Scholl. Isn't it a fact until very recently Flessner 1

and 11 were only produced intermittently from time to time to see what was happening.

MR. SCHOLL: That is right. Actually we left them shut in until the gas-oil ratio went down.

MR. FREEMAN: Go ahead.

Q. (By Mr. Johnson) Mr. Briggs, for the record we would like you to show a typical well, the economics of a typical well that is drilled and currently producing in the gas cap.

A. I have reviewed the production history and the economics for what I consider a typical well drilled in the gas cap. Now this typical well produces only minor quantities of liquid hydrocarbons and is primarily a gas well. According to the data which I have come up with the typical well here, and much of this is based I might say on the performance of Plains Exploration Company's Hogsett well in the southwest quarter of Section 31 because this is the well with which I am most familiar, these wells in the gas cap that have been drilled during initial development of the field have an average age of about 10 years, and cumulative recovery to date of approximately 730,000 MCF, which would be the allowable of 200 MCF per day for the 10-year period.

Based on an average revenue of 9.42 cents per MCF, including revenue from Trace Liquids, the income from

one of these wells to date would be \$60,170. After deducting operating expenses of \$15,000, or \$125 per well per month, the operating profit which one of these wells would show at the current time is \$45,170.

I have estimated the cost to drill and equip one of these wells at \$40,000. After deducting the required investment, the current pay-out status of one of these typical gas wells would be \$5,170 after a 10-year life.

Now if you were to apply a reasonable discount factor to this income to account for the time and value of money, it is questionable that these wells have paid out at this time.

MR. SMITH: Have you taken off royalty oil, Mr. Briggs?

THE WITNESS: Yes, I have. I have assumed a 1/8 royalty.

MR. FREEMAN: So this is the net figure?

THE WITNESS: Right. Now the pay-out period for these wells would be about 8.86 years. What I am trying to bring out here is at this time these wells are barely paid out and the operators that drilled these wells in good faith and in accordance with the existing regulations for spacing in the area have had to wait a total of 10 years to realize but a very meager profit for their \$40,000 investment.

Now, I have estimated the remaining reserves

for the gas cap at 4 billion cubic feet. There are currently six wells producing from the gas cap. If the remaining gas were divided evenly between these six wells, this typical well would have remaining reserves of 667,000 gross MCF, or 583,625 net MCF, and a remaining life at an average producing rate of 200 MCF per day of 9.14 years.

Using the average selling price for gas previously used of 9.42 cents per MCF, including revenue from liquids, these remaining reserves would provide a revenue of \$54,977. After deducting the operating expenses of \$125 per well month, you could expect an increased operating profit for these wells of \$41,267. This would make the ultimate status or the ultimate profit after deducting the required investment for one of these wells to depletion over a 19-year life \$46,437, which would represent \$1.16 per dollar invested.

Now, I think it is evident from the data which I have presented here that at best these gas cap wells have marginal economics, even those that were drilled at the very beginning of the development here. The per cent return on the investment, and this is approximate, for one of these wells through a 19-year life would be 9%. I do not feel that this is an excessive profit by any means. It is, as I said before, at best marginal. I believe that is all.

COMMISSIONER HOUSTON: Does that include the casing

when you pull the well and abandon it? Don't you sell that?

THE WITNESS: I have allowed very little for salvage value. No salvage value.

MR. JOHNSON: In light of this testimony on the economics, if an order is to be given we would recommend first that 1,400,000 per day is not necessarily the upper limit from this gas cap because we feel that the gas is expanding and going into the oil column, therefore, something above this could be allowed.

No. 2, no matter what formula is used, under our own figures of 200,000 per day per well we feel that this should be your bare minimum allowed to any given well regardless of how you calculate your formulas to justify the curtailment for the last 10 years and the additional curtailment in the future.

MR. FREEMAN: Well, did you have a separate formula to propose to the Commission as opposed to one that Monsanto has proposed?

MR. JOHNSON: We are not prepared -- we did not know what they were coming up with and we do not have a formula as such. You have to put a value on acreage. A well is worth X dollars and acreage is worth X dollars. I think we all agree on what it would cost to drill and complete a well, and this last year I believe we could check the State Land Board to see what this acreage over there sold

for so I think we could ascertain some values and that would be more equitable to allocate on some basis of this nature than to arbitrarily come up with two-thirds for undeveloped acreage and one-third for a well.

MR. FREEMAN: I think Pat has made this clear. He talked about dedicated acres in his formula and not necessarily undeveloped acreage, as I understood your later explanation.

MR. JOHNSON: Well, dedicated, I am sorry.

MR. FREEMAN: Well, that makes a difference. Now the only other formula, before Pat cross examines your witness, just so we get your complete story, conceivably the only other thing you could do would be to come up with acre feet, something of that sort.

CHAIRMAN BRETSCHNEIDER: You always run up against a proposition of reducing the pressure and disturbing the oil area so you have here a very narrow economic problem, and I think we are discussing how to conserve the gas pressure and the gas where it should be and also the oil.

MR. JOHNSON: To protect the correlative rights of the various parties.

CHAIRMAN BRETSCHNEIDER: To protect the correlative rights. Doesn't this formula protect the correlative rights or take care of the correlative rights?

MR. JOHNSON: I cannot say under their formula that it would protect those parties that drilled a well in

the early days under the then rules. You are changing the rules considerably where you are changing the parties who have lived with this all these years.

CHAIRMAN BRETSCHNEIDER: We can't help that.

MR. JOHNSON: Our correlative rights would change considerably and be injured as we see it under his Exhibit C. Under their formula we would be forced to go under an economical limit to produce the property and could conceivably be forced to abandon a property, therefore, we would lose.

CHAIRMAN BRETSCHNEIDER: You could lose if your well went dry, wouldn't you?

MR. JOHNSON: This is the risk we take in this business, but to have an order come out that would curtail us, to force us to abandon a property early, I can't see where that is conserving the petroleum for the state and the various parties. I would say it would injure them.

COMMISSIONER HOUSTON: One thing you have overlooked I think in your plan. You can't get any more on this pipeline. You brought out awhile ago they have to wait two or three days before they can produce some of these wells.

MR. HOGSETT: This is a mechanical surface control. It so happens our well when it is on stream, their well is not good enough to buck the line pressure, so technically without your present orders if you would let us produce we could cut them out forever.

MR. FREEMAN: Do you have any questions on cross?

MR. WESTFELDT: Yes.

CROSS EXAMINATION

BY MR. WESTFELDT:

Q. You testified about a 9% return on an investment on these typical wells. Was that an annual figure or is that cumulative over the 9, 10, or 19-year life?

A. This is an average figure over the life of the well.

Q. An average annual figure?

A. Over the life of the well.

Q. Nine per cent on the investment each year?

A. That is correct.

Q. And this typical well that you are talking about is a 10 year old well?

A. That is correct.

Q. So that doesn't include the Monsanto Borgman No. 3 that was only completed as a gas well in 1962?

A. That is correct.

Q. So it was the other wells in the gas cap that were producing the gas prior to the time that Monsanto completed that well in the gas cap?

A. Would you repeat the question?

Q. So it was the other wells in the gas cap that were producing the gas from this reservoir prior to the time that Monsanto completed its Borgman No. 3 well as a gas well?

A. Yes. I would consider this typical well to be one that was drilled and completed during the initial stages of development.

Q. And you have got cumulative recoveries for those wells which were 730,000 MCF?

A. That is correct.

Q. And how many wells was that divided among, 5 or 6 wells, or are you talking about 7 wells?

A. This is not really an average recovery. It's what I consider a typical recovery. There are five wells that would fall in this typical category. A typical well might be this National Drilling Company Hough well which was plugged and abandoned. It was an edge well and had low recovery.

Q. So that was low, but there were five wells that have this cumulative recovery figure that you testified to?

A. Yes, based on what I can see on this plat here, yes.

MR. WESTFELDT: I don't have any further questions of this witness.

CHAIRMAN BRETSCHNEIDER: Does anyone else have any questions?

MR. FREEMAN: Do you have any redirect?

MR. JOHNSON: No.

MR. HOGSETT: I would like to ask one question. We were never furnished anything from Monsanto in the way of

how this would affect the income that we have, which is not great as you well know from these small gas wells, so we did have it figured out and I don't have the figures with me but this would cut our income rather than even hold it together; so I see no reason, and I am kind of curious, as to why Monsanto can't go in there and drill a gas well if they want to. They have 160 and 320. I own part of it, I would like to see them go ahead.

CHAIRMAN BRETSCHNEIDER: Well, you better ask them.

MR. HOGSETT: I have never got a direct answer yet.

MR. FREEMAN: Just to finish up, you have no further testimony?

MR. WESTFELDT: I am not sure whether I do or not.

MR. FREEMAN: Bob, do you have any further testimony?

MR. JOHNSON: I have nothing at the moment.

CHAIRMAN BRETSCHNEIDER: Are you through with your witness?

MR. JOHNSON: Yes, sir.

MR. FREEMAN: Mr. Westfeldt, do you have any further testimony?

MR. WESTFELDT: No further questions or testimony.

CHAIRMAN BRETSCHNEIDER: Any further questions from anyone? Then we'll close the hearing and take the matter under advisement unless somebody wants to make a motion to do otherwise.

MR. WESTFELDT: Mr. Chairman, I didn't have any more evidence or testimony here but I would like to ask the Commission to indulge me for about two or three minutes and just make a very short statement.

CHAIRMAN BRETSCHNEIDER: You are entitled to. You may go ahead.

MR. WESTFELDT: I won't wear out my welcome, I hope, because we have been treated very courteously. I would like to say this: that the Plain's witness, Mr. Briggs, testified that he thought that this proposed allowable, this 1400 MCF from the gas cap was, and I am quoting, "A little conservative." Well, that is just the way you are supposed to be. You are the Conservation Commission and you are supposed to be a little bit conservative, and the results of your conservative behavior in the past have been good and that is what the evidence in this proceeding shows.

Next he showed in these typical wells, going back to beginning time, the 730,000 MCF cumulative recovery, he showed the 9% return annually on these figures. The evidence here shows that Monsanto was not producing the gas. All this means is that the other operators were producing the gas. So at least in the life of the field today, certainly based on acreage they have recovered a disproportionately high share. But we are not quarreling about that. We are just talking about things in the future. We know why

it was done; everybody knows why it was done.

Now, in this stage, in the latter development of the field, we think the statute says you have to establish an allowable; then you have to allocate it on a just and equitable basis. We have given you a formula that we think takes into account past investment, future investment, economic operations from here on out, no unnecessary wells, the possibility of combining acreage, and everybody getting their share; and we urge your adoption of this formula or something reasonably like it.

That is all we have.

CHAIRMAN BRETSCHNEIDER: All right, is it satisfactory with the Commission that we take it under advisement?

COMMISSIONER HOUSTON: Yes.

CHAIRMAN BRETSCHNEIDER: All right, we'll take it under advisement and advise you as soon as possible what our opinion might be.

(Whereupon the hearing in Cause No. 30 adjourned at 12:30 p.m., December 15, 1964.)

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C E R T I F I C A T E

I, Donald E. Weimer, Certified Shorthand Reporter, hereby certify that I personally recorded in shorthand the proceedings in Cause No. 30 of December 15, 1964, in the first instance, and that I later transcribed the same and that the foregoing record is true and correct to the best of my knowledge and belief.

Donald E. Weimer
Certified Shorthand Reporter