Case No.

2

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE OIL CONSERVATION
COMMISSION OF THE STATE OF
NEW MEXICO

In the Matter of the Petition of the Barnsdall Oil Company for a hearing to modify "Order No. 22", the proration order for the Monument Field, Lea County, New Mexico, made effective May 1, 1936, which said order was promulgated by the Oil Conservation Commission, pursuant to a recessed hearing held on the 25th day of February, 1936 for the purpose of considering a plan of proration for said field.

CASE NO. 2

ORDER NO. 33

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 10:00 o'clock A. M. on the 12th day of June, 1936, in the Supreme Court Room in the State Capitol, Santa Fe, New Mexico, upon the petition of the Barnsdall Oil Company, in the above designated matter.

Now, on this 16th day of July, 1936, the Commission, having before it for consideration the evidence adduced at the hearing in said case, and being fully advised in the premises, and finding that waste of oil and gas is reasonably imminent in the Monument field and that the following order is reasonably necessary to prevent such waste, therefore orders:

PRORATION PLAN FOR MONUMENT
FIELD, LEA COUNTY.

Sec. 1. The total allowable production of oil in the Monument field shall be allocated within the field by productive units. Units shall not be allocated more oil than they can produce without unreasonable waste.

Sec. 2. Productive units shall be classified as marginal and non-marginal units, a marginal unit being one that cannot produce the acreage unit allowable, and a non-marginal unit one with a daily potential equal to or larger than the acreage unit allowable. Marginal units shall be allocated approximately the amount of oil they can produce.

Sec. 3. The total allocation to marginal units shall be deducted from the total daily field allowable and the resulting number of barrels shall be designated as the total daily non-marginal field allowable.

Sec. 4. Regular units for allocation shall consist of 40-acre tracts in a square, and of tracts having an area of from 39 to 40 acres according to the surveys of the United States Government.

Sec. 5. If a productive tract, according to Government surveys, consists of more than 40 acres, the allocation to such special unit for both acreage unit allowable and bottom hole pressure allowable shall be in the ratio of its area in whole number of acres to 40 acres.

Sec. 6. When the area of a productive tract is less than 39 acres, such tract shall be considered a fractional unit. If the area in acres of a fractional unit, according to the official plats of the United States Government, is exactly a whole number, the allocation to such fractional unit for both acreage unit allowable and bottom hole pressure allowable shall be in the ratio of

that number of acres to 40 acres. If the area in acres of a fractional unit, according to Government survey plats, is not a whole number, the allocation to such fractional unit as compared to a regular unit, shall be in the ratio of the next larger whole number of acres to 40 acres.

Sec. 7. Eighty (80) per cent of the total daily non-marginal field allowable shall be allocated equally to the non-marginal productive units, except as otherwise noted herein. This allocation to each unit shall be designated as the acreage unit allowable.

Sec. 8. Twenty (20) per cent of the daily non-marginal field allowable shall be prorated to the different non-marginal units on the basis of the static bottom hole pressures of the wells. The average of the three lowest static bottom hole pressures shall be obtained, and this pressure shall be designated as the deduction pressure; provided, however, that if the average of the three lowest pressures is less than eighty (80) per cent of the highest unit static bottom hole pressure for the field, the deduction pressure shall be eighty (80) percent of the said highest unit static bottom hole pressure. This deduction pressure shall be subtracted from the actual bottom hole pressure for each unit. The results obtained for all the non-marginal units shall be added together and the sum shall be divided into the total bottom hole pressure allowable for the field. The quotient obtained shall be designated the bottom hole pressure factor. To obtain the bottom hole pressure allowable for each unit, this factor shall be multiplied by the difference between the bottom hole pressure for the unit and the established deduction pressure. Units having a lower bottom hole pressure than the established deduction pressure, as defined above, shall be considered as having the deduction pressure, and such units shall be allocated only the acreage unit allowable. Where there are more than one producing well on a unit, the applied bottom hole pressure for that unit shall be the average of the bottom hole pressures for all the wells. This pressure shall be used in computing the allocation to the unit as though there was only one well on the unit. The sum of the acreage unit allowable and the bottom hole pressure allowable shall be the total allocation for each non-marginal unit.

Sec. 9. Wells completed during a pressure survey period of three months shall be allocated the non-marginal unit allowable for Lea County during the balance of the period.

Sec. 10. The pressures of pumping wells can be taken at six-month intervals instead of three month intervals if the operator so desires. If the mechanical condition of a well is such that the bottom hole pressure cannot be taken the allocation to that unit shall be the acreage unit allowable for the field.

Sec. 11. The Umpire shall notify the operator of the day and hour that a well is to be shut in for bottom hole pressure test. The bottom hole pressure shall be measured not less than 24 hours nor more than 36 hours following said specified time. Notice to the operator shall be given by the Umpire not less than 24 hours before the time for the well to be shut in. The well shall produce its regular allocation during the 24-hour period ending at the time the well is shut in.

Sec. 12. When it is unsafe for the Proration Umpire or his representative to determine a static bottom hole pressure because of the mechanical condition of a well, that unit shall automatically receive the acreage unit allowable.

Sec. 13. The pressure shall be measured as near as possible to a point in the well 250 feet below sea level. When it is impossible to determine the pressure at this point the pressure may be adjusted from the actual point of determination to 250 feet below sea level, according to the static head of the fluid at the point at which the pressure is determined; provided that, when due to the mechanical condition of the well, it is impossible to determine the pressure closer than 150 feet from a point 250 feet below sea level, the well shall be considered not to be in condition to determine the static pressure, and it shall receive the acreage unit allowable until it is put in such condition that the pressure can be determined.

Sec. 14. Static bottom hole pressures shall be taken prior to August 1, 1936, and these pressures shall be used in making allocations for the period August 1-October 31, 1936. A similar procedure shall be followed for subsequent three-month periods.

Sec. 15. This order shall become effective August 1, 1936, at which time it shall revoke Order No. 22 of the Commission, adopted March 25, 1936. It shall remain in force until revoked by order of the Commission.

Sec. 16. Allocations to the Monument field as a whole shall be determined according to the plan of Order No. 1 of the Commission, "General State Proration Order", adopted June 29, 1935. Allocations for the field and the wells therein shall be included in "General State Proration Orders" of the Commission, prepared by the Proration Umpire for Lea and Eddy Counties, as authorized by the Commission in Order No. 1. This order supersedes any provisions of Order No. 1 with which it is in conflict.

Sec. 17. C. G. Staley, Proration Umpire for Lea and Eddy Counties and Deputy of the New Mexico Oil Conservation Commission, is hereby specifically authorized to determine the static bottom hole pressure and the allocations to each unit in the Monument field in accordance with this order.

OIL CONSERVATION COMMISSION

CLYDE TINGLEY
Governor

FRANK VESELY
Commissioner of Public Lands

E. [illegible] WELLS
State Geologist

HEARING OF THE OIL CONSERVATION COMMISSION ON THE 12th DAY OF JUNE, 1936, IN THE CAPITOL, SANTA FE, NEW MEXICO, CALLED AFTER THE ADVERTISEMENT AND IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER 72, LAWS OF 1935 FOR THE PURPOSE OF CONSIDERING CASE NO. 2: THE PETITION OF THE BARNSDALL OIL COMPANY FOR A HEARING TO MODIFY "ORDER NO. 22", THE PRESENT PRORATION ORDER FOR THE MONUMENT FIELD, LEA COUNTY, NEW MEXICO, MADE EFFECTIVE MAY 1, 1936, WHICH SAID ORDER WAS PROMULGATED BY THE OIL CONSERVATION COMMISSION, PURSUANT TO A RECESSED HEARING HELD ON THE 25th DAY OF FEBRUARY, 1936 FOR THE PURPOSE OF CONSIDERING A PLAN OF PRORATION FOR SAID FIELD. NEW AND ADDITIONAL EVIDENCE, OVER AND ABOVE THAT WHICH WAS TAKEN AT SAID HEARING ON FEBRUARY 25, 1936 SHALL BE TAKEN.

OF THE COMMISSION PRESENT:

Governor Clyde Tingley, Chairman
Commissioner of Public Lands
Frank Vesely, Secretary
State Geologist, E. H. Wells,
Commissioner

Mr. Vesely called the hearing to order at 10:00 o'clock A.M.

MR. VESELY:

Governor, ladies and gentlemen: This is a meeting called here for the purpose of hearing a petition of the Barnsdall Oil Company for the purpose of rehearing on Order No. 22 of the Oil Conservation Commission, which said Order No. 22 went into effect in the Monument Oil Field on May 1st, 1936. The Oil Company petitions this Commission that said Order No. 22 is, in their opinion, to ambiguous, indefinite and uncertain to be applicable and enforceable.

So I imagine all that will be necessary, Governor, now is to outline the procedure of this hearing.

MR. FLEETWOOD:

Governor, Members of the Commission: I think that no matter in what bad graces the Barnsdall Oil Company may be in some respects, this fine gathering owes us a vote of thanks in getting them to Santa Fe.

Due to the fact there appears to be some misapprehension on

the part of some of the operators in Monument what our real position is in this matter, we think it best to clarify it before going ahead with the case.

In our opinion, two factors important to all of us here are very properly outlined in Section 12 of the State Oil Conservation Law. The first part of the section reads:

> "The rules, regulations or orders of the Commission shall, so far as it is practicable to do so, afford to the owner of each property in a pool the opportunity to produce his just and equitable share of the oil and gas in the pool, being an amount, so far as can be practicably determined, and so far as such can be practicably obtained without waste, substantially in the proportion that the quantity of the recoverable oil and gas under such property bears to the total recoverable oil and gas in the pool, and for this purpose to use his just and equitable share of the reservoir energy."

The last paragraph reads:

> "Crude petroleum oil produced within the allowable as fixed by the Commission shall therein be referred to as "legal oil", and crude petroleum oil produced in excess of such allowable shall be 'illegal oil'".

In our minds those two questions of the New Mexico law will predicate the two issues here.

For the benefit of any of you not following this matter, we would like to say that up until the first part of this year we had flat top allowable in Monument. The properties no matter how good or how bad, each were producing the same amount of oil per day. In December, 1935, The Barnsdall Oil Company filed a petition asking for a hearing of the Commission to consider the question of changing the flat top allowable plan. We filed that petition in December. The hearing was set in January, 1936, and upon the insistance of some of the opposition, the hearing was continued thirty days and the actual hearing was held February 15th, 1936. At that time the Commission heard geological and engineering testimony.

We introduced four witnesses and introduced four plans. In substantiation our friendly opponents introduced counter witnesses, but no plan.

The rest of February, all of March and April passed before Order No. 22 became effective May 1st.

The Commission, we feel, in writing Order No. 22 felt the flat top allowable plan wasn't applicable and drew a new plan. We feel the Commission did not predicate Order No. 22 on the testimony produced. We are sure the Commission feels it did so. We feel the order was a fair attempt to pacify the Burnsdall Oil Company and satisfy everyone else.

The first week in May, after Order No. 22 became effective, we came out to file a law suit. We never did file one and didn't want to, but did not see any alternative. The pleadings were prepared, local counsel employed, but after conferring with the operators here and the State of New Mexico, we were convinced we were hasty in proceeding, so no suit was instituted, which I think all will agree was wise. We filed a petition for rehearing which brings us here today.

The petition Mr. Vesely referred to isn't very long, but I shall not read it. We only allege that we consider No. 22 too ambiguous, indefinite and uncertain to be applicable and enforceable. It deprives us of the equal protection of the law and also deprives us of our property without due process of law, in violation of the Constitution of the United States and in violation of the Constitution of the State of New Mexico, and is contrary to and in violation of the Oil Conservation laws of the State of New Mexico, for the reasons that the enforcement of said order will result in

the operation of lease hold estates in the Monument Field in such a manner as to injure neighboring leases. We further state in our opinion Order No. 22 will deprive us of an opportunity to produce oil and gas from our leases in the same proportion of the total production of the field that the oil and gas under and beneath said leases bears to the oil and gas under and beneath the entire area embraced in said Monument Field, and will result in a minimum allowable per unit in excess of the minimum allowable provided for by the oil conservation laws of the State of New Mexico. That is the petition we are here on.

We want to say we have heard rumors to the effect that the Barnsdall Oil Company looks with disfavor upon proration. We tried to make it clear last time and again now that our Company is small, but an old Company, and has actively furthered the interests of proration. First proration came up in Seminole and we took an active interest. We suggested and concurred with other operators that the State allocations be less than that recommended by the U. S. Bureau of Mines.

We favor proration and desire it at all times and have no reason in the world in trying to upset proration practices in the State of New Mexico, where it always has been clear and well cut.

We have no fault to find with the State's production; no fault in the manner of the State's allocation between pools. The fault we find in Order No. 22 is what is done with the state allowable after given to the pool. We believe the Commission and fellow operators have the same knowledge in this and we want it

distributed in a fair and equitable manner. We are amazed by this situation and there are gentlemen I think in this room who may take the stand supporting Order No. 22 though it wasn't based on scientific theory and predicated on sound engineering principles. I don't criticize them for that. Their Executive Departments favor the order and they have no choice in the matter.

At the last hearing the Barnsdall Oil Company proposed four plans for prorating the Monument Field, and we feel we supported those plans with scientific testimony. Our opponents offered no plan. One witness very frequently found it necessary to answer our questions with "I know, but I am not going to tell you." His attitude is above criticism. Unfortunately he was placed in that position. The Commission, in writing Order No. 22, admitted that flat top allowable was wrong, but they did not adhere to the testimony existing. No engineering testimony supports that order. The outstanding fault of the order is that it does not prevent drainage across property lines in the pool. We could talk all morning on nothing more than that. That there is a vital flaw in that order we will show you. We feel no engineer present will testify that as long as drainage continues between properties, each operator having the opportunity to produce proportionate oil in the reservoir 80% of the field allowable to acreage, defeats the purpose of the order, and 20% to bottom hole pressure is the formula, but it will not work. There is no precedent in the history of the oil industry for it. At least we have not been able to find it.

Yesterday, before we arrived, the operators held a meeting and found that static bottom hole pressure, defined as 24-hour shut in pressure, is the best known factor to prevent

drainage across property lines, and a proper index to the producing reservoirs. We feel our friends are seeing eye to eye with us. The operators admit that drainage across property must be stopped. If we agree that Order No. 22 does not do it, then it must be modified.

If we had our Monument wells in Hobbs, our allowable per day would be twice as much, and we do not think it fair that an operator in the Hobbs field with a well no larger should produce twice as much. If the Hobbs plan is good in Hobbs, it should be good in Monument, or if the Artesia plan in Artesia is good, it should be good in Monument. We do not see why we should be deprived of producing similar amounts because we are in Monument. We feel that the proration plan that is adhered to in Hobbs should be transplanted to Monument and give us the same break. Further that we have potentials in Hobbs and substitute Bottom Hole Pressure, or in Monument field eliminate potential and substitute bottom hole pressure.

We suggest that instead of 20% acreage, 80% bottom hole pressure, the order should be amended to 25% acreage and 75% bottom hole pressure which is about all we have to say at this time.

I want to comment on one minor matter. Last time we requested the Commission not to listen to testimony except from the witness stand. However some 25 or 30 operators gave their opinions, never sworn in, while we on the other hand tried to play fair and put on the stand under oath our witnesses. Let us have those who want to express their opinions, express them under oath and give us a chance to ask questions.

REGISTRATION

NAME	COMPANY
R. S. Christie	Amerada Petroleum Company
W. D. Anderson	Amerada Petroleum Company
C. N. Millikan	Amerada Petroleum Company
Edgar Kraus	Atlantic Oil Producing Company
R. D. Curtis	Barnsdall Oil Company
W. M. Fleetwood, Jr.	Barnsdall Oil Company
A. P. Loskamp	Barnsdall Oil Company
J. S. Noland	Barnsdall Oil Company
Harvey Hardison	The California Company
Paul N. Colliston	Continental Oil Company
J. C. Jonnston	Continental Oil Company
R. R. Porterfield	Devonian Oil Company
J. E. Howell	Empire Oil and Ref. Co.
D. D. Bodie	Empire Oil and Ref. Co.
Leo R. Manning	Geo. F. Getty Oil Co.
Lloyd L. Gray	Gulf Oil Corporation
R. S. Dewey	Humble Oil & Ref. Co.
W. E. Hubbard	Humble Oil & Ref. Co.
S. P. Hannifin	Magnolia Petroleum Co.
Jas. M. Murray	Murray, et al.
Glenn Bish	Ohio Oil Co.
C. A. Daniels	Phillips Petroleum Co.
Earl F. Kelso	Phillips Petroleum Co.
D. R. Knowlton	Phillips Petroleum Co.
William A. Kraus	Phillips Petroleum Co.
Floyd Brett	Repollo Oil Company
J. W. Jordan	Repollo Oil Company
N. B. Larsn	Repollo Oil Company
Jack H. Rankin	Repollo Oil Company
Paul McDermott	Repollo Oil Company
W. A. Yeager	Repollo Oil Company
N. M. Baird	Republic Production Company
D. B. Collins	Shell Petroleum Corporation
O. D. Crites	Shell Petroleum Corporation
M. Albertson	Shell Petroleum Corporation
R. G. Schneckle	Shell Petroleum Corporation
Colin C. Rae	Skelly Oil Company
George W. Selinger	Skelly Oil Company
B. Hays	Standolind Oil Company
J. O. Seth	Standolind Oil Company
E. A. Wahlstrom	Standolind Oil Company
J. E. Wootten	Standolind Oil Company

NAME	COMPANY
J. C. Heath	Sun Oil Company
J. K. Rufendick	The Texas Company
Cary P. Butcher	Tide Water Oil Co.
E. W. Childers	Tide Water Oil Co.
J. E. Roth	Tide Water Oil Co.
Ernest A. Hanson	U.S.G.S.
F. A. Standcliff	
F. J. Vesely	State Oil & Gas Inspector
C. G. Staley	Proration Umpire
Carl Livingston	Attorney, Oil Conservation Commission

R. D. CURTIS SWORN IN BY MR. VALLA.

MR. PEARSON EXAMINING MR. CURTIS.

Q. Your name please.
A. R. D. Curtis.
Q. Occupation?

A. Petroleum Engineer for the Barnsdall Oil Company.

Q. Educated as an Engineer?

A. Yes sir.

Q. How much experience?

A. Six years as a Petroleum Engineer and three years as general engineer.

Q. Have you had any contact with Lea County Area, particularly with Monument Field?

A. The last three or four months have spent a great majority of my time in Lea County, particularly in Monument Field.

Q. What were you doing?

A. Compiling statistics of the Lea County Pools, especially Monument, and witnessed the Bottom Hole Pressure survey made in April under Order No. 22.

Q. In your opinion as an engineer, is it necessary to minimize drainage across property lines in order to give each operator in the pool the opportunity to produce their proportionate part of recoverable oil in the pool?

A. Yes.

Q. What, in your opinion, is the best means to prevent drainage across the property lines?

A. Equalize bottom hole pressures.

Q. Are you familiar with Order No. 22?

A. Yes.

Q. Will the enforcement of Order No. 22 successfully minimize drainage of oil across property lines?

A. In my opinion, it will not.

Q. Why?

A. I believe too much weight has been given acreage factor and not enough to bottom hole pressure.

Q. With what result?

A. The well takes quite a time for the bottom hole pressures to equalize.

That is all.

JUDGE J. O. SETH CROSS EXAMINING MR. CURTIS.

Q. Have you ever seen a field prorated under bottom hole pressure control before?

A. Hobbs is essentially under bottom hole pressure.

Q. You have no actual experience in Hobbs Pool, have you?

A. No. We have no properties in that pool. Have studied the Hobbs plan and tried to work up information relative to Hobbs.

Q. Order No. 22 went into effect May 1?

A. Yes.

Q. Have any bottom hole pressure readings been taken officially since it went into effect?

A. No, the only official survey was made in April, prior to Order No. 22 going into effect.

Q. The order contemplates another, three months after the first?

A. Yes.

Q. It has not been made?

A. Not yet.

Q. There is no way to tell what results will be until subsequent readings are taken?

A. That is right.

Q. Did not Mr. Fleetwood say that most of the plan has not been put into effect anywhere?

A. I don't recall he made that statement.

Q. You say a somewhat similar plan was put into effect in Hobbs with more weight given potentials than acreage?

A. Yes sir.

MR. HARDWICK CROSS EXAMINING MR. CURTIS.

Q. What makes these differential pressures that you need to equalize?

A. The main thing is excess withdrawal.

Q. What would continue to equalize it?

A. In the low pressure area, less withdrawal; in the high pressure areas, more withdrawal.

Q. Do you find some areas with the same amount of withdrawals have a higher dropping pressure than others?

A. I believe that might be true.

Q. What causes that situation?

A. It might be that the areas under each well were alike but had different permeability.

Q. Isn't that the usual thing that causes these differences in dropping the rate of production is the difference of permeability?

A. No, I believe the time the wells are drilled in has something to do with the time it has been withdrawing a particular part of the reservoir.

Q. It is true, whether two inches or 50 feet, the ordinary difference in the pressure reactions accounted for the difference in permeability, as a rule, isn't it?

A. In general, I believe so.

Q. Where there is a difference in permeability, is there always a difference in the amount of oil in place?

A. I believe in general areas. In limestone pools of high permeability they have higher porosity and therefore more oil under higher permeability.

Q. More water too?

A. There might be.

Q. If the difference in bottom hole pressure is a difference in permeability, would it ever be possible to equalize those pressures without cutting some properties almost to nothing?

A. It would be necessary to shut some wells in.

Q. Is that a practicable method of operation?

A. Not from a practical standpoint.

Q. A well which shows low static pressure as compared with another well showing high static pressure might still have substantially the same recoverable oil?

A. I believe it possible, but as I stated before, a well with higher permeability has high porosity and more oil.

Q. That particular location on the 40 acre tract?

A. Yes sir.

Q. This field is somewhat spotted in that you have some wells of high potential and some of low potential in the same general area?

A. I believe the higher potential wells generally are in a group by themselves.

Q. You say if you have a well of high potential on a 40 acre tract it is not conceivable that you would drill a well of low potential on the same tract?

A. You might.

Q. You think if you have a well of low potential, you might step over one thousand feet and get another of high potential?

A. Yes.

Q. The mere fact that you have here a high or low potential well is not conclusive that the rest of the tract will be the same?

A. You might drill another high potential well on it.

That is all.

MR. FLEETWOOD EXAMINING MR. CURTIS.

Q. As long as there is variance in a field of bottom hole pressure, is it true drainage exists?

A. I believe when you have pressure differential between two wells it will cause drainage.

Q. Does the oil flow from high pressure in the area to low pressure?

A. Yes.

Q. Wells in the area of low pressure would produce oil in wells originally under areas of high pressure?

A. Possibly.

Q. Judge Seth asked you about whether this three months pressure has been taken. Of course it has not?

A. No.

Q. This order has only been in effect five or six weeks?

A. Yes.

Q. You told Judge Seth it was impossible to tell the exact effect of this order until they take tests again. Is it possible to scientifically analyze the right results or lack of results of order 22?

A. I believe so.

Q. In your opinion, a three months enforcement of Order 22 can materially affect the bottom hole pressure of a well and tend to equalize them?

A. I believe so.

Q. How long do you think it would be before there was no drainage in Monument Field if Order No. 22 continued?

A. At completion of the pool.

Q. It is more likely the pool would be abandoned before it reaches the point that bottom hole pressures would equalize?

A. I believe it is more possible.

Q. Mr. Hardwick asked about your statement if scientifically and theoretically it might be you would have to shut in wells of lower pressure. You commented it was impracticable, the inference being you would have to give some kind of a minimum. Did you testify last hearing that 13 or 14 barrels per day would repay the lifting costs in the Monument Area?

A. I believe so.

Q. You still adhere to that?

A. I do.

Q. Do you know of any wells belonging to any operators in the Monument field which are very low producing wells, yet are operated by the owners?

A. I do.

Q. What wells?

A. Repollo Williams No. 1; only 15 barrels per day.

Q. They are operating it?

A. They are.

Q. Any others?

A. Gulf Weir Well No. 1, 65 barrels.

Q. Any others?

A. Amerada Weir A No. 1.

Q. How much does that produce?

A. 22 barrels.

Q. If it is true it took 80 barrels per well to repay operators lifting cost, these operators producing these wells would lose money every day?

A. They would.

Q. Assuming Mr. Hardwick's statement is true about two areas of different bottom hole pressures could still have the same amount of oil in place, would the fact that different permeability existed make it true that the amount of recoverable oil is different under those two areas. Assuming the amount of oil the same, and the permeability in one is greater than in the other, would it affect the amount of recoverable oil, would it take a longer time to produce?

A. I don't understand the question.

Q. If two areas of very widely different bottom hole pressure, one very high permeability and another very low, let us assume under those two tracts of land exactly the same amount of oil. The porosity note greater in high than in low and the amount of oil the same under each tract, the low and high the same, would the area of high permeability have the greatest amount of recoverable oil?

A. Depends on how you are producing your wells.

Q. In what way?

A. What kind of proration plan you had in effect.

Q. If you produced those wells on some flat top allowable, would recoverable oil be the same for each tract?

A. I believe not.

MR. McDERMOTT CROSS EXAMINING MR. CURTIS.

Q. You said the Repollo Williams No. 1 well produced 15 barrels per day. Do you know of any other wells on that lease?

A. One completed.

Q. What is its potential?

A. Don't recall, but they said it is a good well.

Q. Same property?

A. Yes.

Q. The owner of that property operating that lease is operating a good well and a small well?

A. That is true.

Q. If you had a good well on that lease, you would not abandon any well no matter how small?

A. I believe No. 1 well operated first before No. 2.

Q. Mr. Curtis, have you ever made any tests of the porosity from the bores or samples of wells in the Monument Field?

A. No sir.

Q. So you do not know what the porosity is in the West side compared with the center of the field, except by inference. You don't know that if the permeability of one tract is greater than another, the porosity is greater, you make that inference?

A. I believe so in general.

Q. Do you know any tests of the porosity of the sands in the Monument Field?

A. No sir, other than on our own leases.

Q. Speaking about permeability as a general thing, the wells on the West side of that field have lower bottom hole pressure than the wells on the center of the area?

A. Yes sir. There is an area of lower pressure.

Q. You conclude then the wells on the west side have lower bottom hole pressure because they have less permeability, is that right?

A. Some of the wells have had large withdrawals.

Q. How many?

A. As well as I recall, quite a few over 20,000 barrels.

Q. Are there any wells on the west side having low bottom hole pressure than have had high withdrawals?

A. I believe a few.

Q. What do you mean by a few?

A. In looking over my map, they are equally distributed in the low pressure.

Q. Low permeability means that the sand or lime is very tight?

A. Yes sir.

Q. The result of some force of nature tighter than sands or lime in part of the fields, and permeability greater and greater bottom hole pressure?

A. Yes.

Q. Is it a fact that those wells having low bottom hole pressure have them because the oil is very hard to pull into the bore of the well through th ight lime, right?

A. At the rate they have been producing, at the rate of 100 barrels per day, don't believe that is the reason. That isn't very much oil per hour.

Q. You admit that the lower the permeability, the harder to pull oil from drainage area into the bore hole?

A. Correct.

Q. Should it be equally hard for the oil on the adjoining or nearby tract, having a high permeability to be drained, sucked or drawn through that same hard impermeable sand around the bottom hole pressure?

A. It would be harder, but you would have pressure differential set up which would cause drainage, although slow.

Q. Have you found it much easier for wells further east to draw oil until it is brought from the high permeability, than that oil in the west to draw oil to the east?

A. You mean into the well surrounding the well beyond each particular well?

Q. Yes.

A. It would be harder.

Q. The same reason which results in low bottom hole pressure in a well, that is, the drillings and permeable nature of the lime, is there not an argument likewise against the ability of that well to draw more oil from sections further removed and of higher permeability?

A. Possibly slower.

Q. What is the direction of the migration of the oil in the Monument Field, east to west, or west to east?

A. I believe from the high pressure to low pressure.

Q. Migration from center down to east or west?

A. If pressure differential exists.

Q. You think whatever pressure differential there might be on account of this well having an allowable of 80 barrels on the west side as compared with 120 barrels in the center of the field would overcome the driving force of the field and would run the oil down?

A. If pressure differential existed.

Q. And if existing?

A. Yes.

Q. The drive of that field from west to east is a natural drive?

A. Do not understand what you mean by natural drive.

Q. What is the drive of the field?

A. Essentially gas.

Q. You mean no water drive there?

A. Do not believe at present there is.

Q. How long before there is one?

A. I cannot tell.

Q. Where will it come from?

A. If it should come, from the west.

Q. What of that force of nature by that oil and where is it now or before a well is drilled there?

A. I don't know.

Q. All right, you say your counsel asked you a question whether if in two given tracts the borings are the same, that is to say the content under these two 40-acre tracts are the same because of similar borings, that is what it means, similar borings, would the content of oil be the same?

A. Yes, if you have the same volume of borings.

Q. I said if the permeability of one tract was greater than the permeability of the other. I suppose the permeability in the center is greater than on the tract on the west side, that is where you get the difference of permeability theoretically?

A. I believe so.

Q. How much more recoverable oil could there be under those conditions?

A. Depends on plan of operation; how much production allowed.

Q. Would you say that the recoverable oil in the center tract would be 25% more than the recoverable oil on the west side of the tract with the same borings?

A. How could you set any definite figure?

Q. Therefore you could not say that the recoverable oil in the center tract was more than 25% of the recoverable oil on the west side of the tract, granted the same borings?

A. Depends on bottom hole pressure and differential set-up of one property more than the other.

Q. Aside from that, asking you a mathematical question, if you have the same porosity and more permeability in one

than the other, you cannot say how much recoverable oil in one than the other?

A. Not if bottom hole pressure always equalize.

That is all.

JUDGE SETH CROSS EXAMINING MR. CURTIS.

Q. You testified that about 13½ barrels would repay the lifting cost?

A. I believe so.

Q. You believe there should be at least 25 barrels allowed every well?

A. Yes.

Q. You don't believe as a practical matter that the bottom hole pressure should be applied mathematically, there should be some differential?

A. There should be because under a scientific point, allow 100% bottom hole pressure, from a practical stand you should be allowed some oil.

Q. No operator would drill a well if they knew they only would get lifting cost?

A. That is true.

Q. You think there should be a deviation from the strict application?

A. You should consider a practical standpoint.

MR. HARDWICK CROSS EXAMINING MR. CURTIS.

Q. Let us assume a 40 acre tract with a well in the center. Along side that 40 acres is another and the only difference between the two is that the second tract has ten times the permeability as the first tract, these two side by side

with a well in the center. The well on the first tract has a potential of one, the well on the second tract has a potential of 10. I think we can also assume if you produce 100 barrels per day each, those pressure drop on well no. 1 would be considered more than the pressure drop on well No. 2, there being 10 to 1 difference in permeability?

A. You mean flowing pressure?

Q. Static pressure.

A. I believe a 24 hour period should be long enough to build up to true static pressure.

Q. It would build up in 24 hours?

A. I believe in general they will in three or four hours.

Q. Our assumption is they do not. Take your pressures, run the same. That means you have static pressure on well tract No. 1 considerably lower than the static pressure on 2, is that correct?

A. If you make those assumptions.

Q. Your theory is to equalize those pressures?

A. As soon as possible.

Q. You would equalize that pressure by cutting the allowable on tract No. 1 down to 50 barrels. You then would have the same static pressure under those two conditions. If you continue to produce those wells in that fraction, would the well on tract No. 2 drain oil from tract No. 1?

A. I don't believe it would if you could keep those bottom hole pressures static, set in as near equal as possible.

Q. To do that, you must assume that the pressure at the bottom hole pressure of well on tract 1 extends only for a slight area around, but now exactly to the boundary line between the two tracts?

A. Not the same as the bottom hole pressure of the well would probably be higher.

Q. You are assuming the pressure between the wells, tract No. 2 extends out of boundary, so it is equal on the two tracts?

A. I believe it is higher away from the well bore.

Q. That is true, but your assumption to prevent drainage when you get higher pressures on the well bore of the two tracts, they meet at the boundary line?

A. If they were identical, it would minimize drainage between the tracts.

Q. I am asking you now if you would absolutely equalize static pressure at the bottom hole pressure. These two tracts that you would have to equalize static pressure at the boundary line between?

A. Nearly so.

Q. Which one favored?

A. I believe the same pressure if well has 24 hour shut in pressures. You would have approximately the same pressure. At boundary line might possibly be a little higher.

Q. Matter of fact you would have to have a greater differential in the well on tract No. 2 to get the same amount of oil in that tract as tract No. 1. The one with more drop requires greater well differential to get oil than one of high permeability?

A. If you flow it, it does.

Q. Static pressure forces it up?

A. Static pressure builds up where it should be in 24 hours.

Q. In this particular field as it is?

A. Yes.

Q. What tests have you made that indicate that?

A. Some build up and flowing pressure tests made for six hours. In general many of those build up to original static pressure within a six hour period or very close to it.

Q. Tell me what you did.

A. Run the bomb with the well flowing, shut the well in, let bomb stay six hours, get rate of build or flowing pressure of well for six hour period.

Q. You found what?

A. In some cases some wells showed no build up. Flowing pressure was practically the static shut in pressure.

Q. Any increase in pressure and flowing?

A. Many increase in six hour period, only a few same flowing pressure as shut in.

Q. You think in this particular field in the less permeable sections that in a few hours, six or twleve hours, you have static pressure that truthfully reflect conditions in that field to the extent of drainage?

A. I believe 24 hours.

That is all.

Recess 11:20 for five minutes.

MR. FLEETWOOD EXAMINING MR. CURTIS.

Q. We have been indulging in a lot of idealistic questions in order to confuse some or clarify the issue. I ask you whether or not drainage is occuring in Monument field between properties?

A. I believe it is at present. You have a definite differential in pressure set up.

Q. That drainage will continue as long as there are differentials?

A. Yes.

Q. Does Order No. 22 tend to minimize the differentials in

those pressures before the field is abandoned?

A. It will be a number of years.

Q. Do you believe giving more weight to the bottom hole factor in that formula of Order 22 and less to acreage, it would tend to equalize drainage and would minimize it?

A. Yes.

That is all.

MR. FLEETWOOD:

That is our case Gentlemen. We wont introduce any other witnesses unless in rebuttal. The petitioner rests and needs it badly.

JUDGE SETH:

Could we have a five minute recess?

GOVERNOR TINGLEY:

Gentlemen, we will recess until 2:00 o'clock P.M.

Recessed from 11:30 A.M. until 2:00 o'clock P.M.

HEARING RECONVENED AT 2:00 o'clock P.M.

JUDGE SETH EXAMINING MR. WOOTTEN.

Q. State your name.

A. J. E. Wootten.

Q. By whom employed?

A. Stanolind Oil Company.

Q. For how long?

A. Since 1929.

Q. Are you familiar wih the bottom hole pressure measurement taken in Monument Oil Field in April, 1936?

A. Only so far as the proration records are concerned.

Q. Have you made a computation based on the various amounts each company would receive in that field under a 100% acreage and 100% bottom hole pressure under rule 22?

A. I have.

Q. Have you it with you?

A. I have.

Q. Is this computation based on the present Lea County allowable per well?

A. Yes, 100 barrels per day.

Q. How much would Barnsdall get from its four wells in the Monument field on the basis of 100% acreage?

A. 400 barrels.

Q. Under order 22?

A. 419 barrels.

Q. On the basis of 100% bottom hole pressure?

A. 410 barrels.

Q. There would be an actual loss of 9 barrels theoretically if bottom hole pressure applied?

A. Right.

Q. This was made up by you from the proration records?

A. It was.

JUDGE SETH:

We offer it in evidence. We also desire to offer as evidence to the Commission the Bottom Hole Pressure measurement made in the month of April in the Monument field and offer in evidence the record of the former hearing on the Monument Proration in February of this year.

That is all.

ALLOWABLES BY COMPANIES MONUMENT FIELD VARIOUS PRORATION PLANS

COMPANY	100% Acreage	ORDER #22	100% BHP	(SUBTRACTION FACTOR 1227# (80% Ac. 20%BHP	75% ac. 25%BHP	70% ac. 30% BHP	65% Ac. 35%BHP
Amerada	3122	3215	3177	3190	3207	3224	3241
Anderson Pritchard	300	309	305	306	308	310	311
Barnsdall	400	419	410	413	417	420	423
Continental	600	622	611	615	618	622	626
Empire	100	103	102	102	103	104	104
Gulf	1665	1667	1677	1679	1682	1685	1689
Ohio	200	206	203	204	204	205	206
Oilwell Drlg. Co.	100	102	101	101	101	101	101
Phillips	200	195	200	200	199	199	199
Repollo	615	632	624	626	628	631	634
Republic	200	206	204	205	207	208	210
Shell	700	663	666	667	658	650	642
Skelly	400	389	384	385	381	377	373
Sun	500	422	453	440	426	all	396
Superior	400	362	376	375	368	362	356
Texas	1300	1279	1299	1292	1290	1289	1287
Tidewater	100	102	101	101	101	101	101
Range of Allowable		80-115	79-106	80-108	75-110	70-113	65-115
Superior State 1-1122#							
Amerada State M-1-1506#		35	27	28	35	43	50
Average of 3 lowest wells 1227#							

Prepared By-

J. E. Wootten

(Lea Co. Average 100 Bbls. Unit.)

MR. FLEETWOOD CROSS EXAMINING MR. WOOTTEN.

Q. Did you testify on straight acreage, Barnsdall would receive 100 barrels per well for four wells?

A. Yes.

Q. You know there are five wells there?

A. Not on the present schedule.

Q. On the four wells?

A. 400 barrels.

Q. Order No. 22, 419 barrels?

A. On those four wells.

Q. You testified if distributed field allowable 100% bottom hole pressure, Barnsdall would receive 410 barrels, an average of 2½ barrels more than straight acreage per well?

A. Right.

Q. How did you figure 100% bottom hole pressure?

A. The allowable is based on straight relationship bottom hole pressure.

Q. In what way, how would it?

A. The bottom hole pressures of all the wells totaled, divided into the total field allowable to obtain a factor. That factor multiplied by the well pressure would give the allowable.

Q. Would that stop drainage across property lines?

JUDGE SETH:

We object.

MR. FLEETWOOD:

This witness qualified as an engineer, and we think the Commission is interested in the facts.

JUDGE SETH:

We have not qualified the witness. He has not qualified as an engineer.

MR. FLEETWOOD CROSS EXAMINING MR. WOOTTEN.

Q. What is your job?

A. District Engineer.

JUDGE SETH:

We object to that.

MR. FLEETWOOD.

Would still like to ask him what he knows.

JUDGE SETH:

He did not qualify.

GOVERNOR TINGLEY:

What are your objections?

JUDGE SETH:

The cross examination is limited to matters brought out on direct examination. They cannot go outside on cross examination. The witness has not qualified to anything except figures.

MR. FLEETWOOD:

I would not disagree with Judge Seth. We want the Commission apprised of the facts. I think the Commission is entitled to know and we are entitled to know.

JUDGE SETH:

Make him your witness. You can examine him.

GOVERNOR TINGLEY:

Objection sustained. Proceed.

MR. FLEETWOOD CROSS EXAMINING MR. WOOTTEN.

Q. Suppose that Order No. 22 was altered by eliminating 80% to acreage retaining the order as it is except in that respect and substitute 100% bottom hole pressure, what effect would that have?

A. It would cause several wells in the field to have no allowable whatever.

Q. What would the Barnsdall get, that is what we are interested in?

A. I have not calculated to the barrel on that basis.

Q. Do you know what change would result if order No. 22 was altered in that respect?

A. Only the wells that have pressure in excess of 90% of the three highest wells would obtain any allowable. The highest pressure would have very high allowable. Low pressures very low and some no allowable.

Q. That would be fair?

A. I do not think it would be fair.

Q. Order 22 provides every operator in the field a proportionate amount of oil in the reservoir?

A. Would say it tends to.

Q. Do you think any other closer than Order 22?

A. There may be methods. I don't know any.

Q. You are unable to suggest at this time any method better than Order 22 to give every operator the chance to produce his proportionate amount of oil?

A. Any method employing bottom hole pressure would have to be in operation for some length of time to determine how pressures range, going up or down or equalize. As long as bottom hole pressures are included, the plan can be modified from time to time as desired.

JUDGE SETH:

This is contrary to the Commission's order, I think.

MR. FLEETWOOD:

He offered this information.

JUDGE SETH:

We object.

MR. VESELY:

The commission thinks the former ruling of objection sustained stands.

MR. FLEETWOOD:

Exception.

MR. FLEETWOOD CROSS EXAMINING MR. WOOTTEN.

Q. You have testified on direct examination that allocating the entire field allowable between wells on an acreage basis would give the Barnsdall Oil Company's four wells a total of 400 barrels per day, Order No. 22, 419 barrels, and 100% bottom hole pressure 410 barrels, correct?

A. Right.

Q. Which of those three methods, in your opinion, would be more equitable and more nearly scientific?

XX JUDGE SETH:

We object to going into engineering testimony.

MR. FLEETWOOD:

As an engineer, may it please the Commission on direct examination this witness testified to the effect of the three plans. Surely we can ask which is the better.

JUDGE SETH:

The witness gave only calculations to the Commission, not his opinion on the three plans.

DR. WELLS:

Mr. Fleetwood, if you want to question the witness further along that line, make him your witness. The Commission feels he

was sworn in as a mathematician and not as an Engineer.

MR. FLEETWOOD EXAMINING MR. WOOTTEN.

Q. Mr. Wootten, will you tell us your profession at the present time?

A. District Engineer for the Stanolind Oil Company.

Q. Educated as a Petroleum Engineer?

A. No.

Q. What kind?

A. Electrical.

Q. Have you been engaged as District Engineer for any considerable length of time?

A. Past year district Engineer.

Q. Are you an electrical engineer for Stanolind?

A. District Petroleum Engineer.

Q. How long have you been employed in the capacity of Petroleum Engineer?

A. Since 1929.

Q. What districts come under your supervision in your present capacity?

A. New Mexico and West Texas.

Q. Are you familiar with the engineering factors which are involved in the Monument Pool?

A. Only so far as they apply generally to limestone formations.

Q. You have charge of these statistics and data in the field?

A. Yes.

Q. How long a time has Monument Pool been in the district over which you had supervision?

A. Since discovery.

Q. Who in your company is charged with the responsibility of the solution of engineering problems in the Monument Pool?

A. So far we have not had any particular problems in Monument pool.

Q. Who is the engineer who is responsible in the Monument Pool?

A. Our field engineer is located in Hobbs.

Q. He works under you?

A. Yes.

Q. As a qualified engineer, whose experience in your department includes supervision in the Monument pool from an engineering standpoint, I will now ask you which of these three methods you testified to are better from an engineering standpoint?

A. I am really not in a position to say because the proration plan in effect has not been in long enough to determine if applicable.

Q. What is your opinion?

A. 100% bottom hole pressure is the most desirable plan.

Q. That according to your direct testimony would be the plan whereby all the bottom hole pressures added together and that sum divided into the field allowable would give you a quotient?

A. On bottom hole pressure, divide the field outlet to obtain the factor.

Q. You think from a scientific standpoint that is the best way to handle proration in Monument?

A. Technically, yes.

Q. Order No. 22 not the best?

A. I don't know.

Q. You just said 100% bottom hole pressure plan is the best?

A. In my opinion, it is.

Q. In your opinion, Order 22 is not the best plan?

A. That would be so.

Q. In other words, you think Order No. 22 could be improved upon, don't you?

A. Of course any plan can be improved upon after put into effect.

Q. 100% bottom hole pressure better than Order No. 22?

A. To select a plan from the start of a field, I would select 100% bottom hole pressure.

Q. Why would you do that?

A. I think bottom hole pressure would obtain results that are desired in the plan.

Q. What results are those?

A. To prevent physical waste.

Q. Do you think Order No. 22 prevents physical waste?

A. It tends to.

Q. As well as 100% bottom hole pressure factor would?

A. At the present time it does.

Q. You don't think 100% bottom hole pressure the better way?

A. Very little difference in the two plans.

Q. 80% acreage and 20% bottom hole pressure the same as100% bottom hole pressure?

A. Right.

Q. No difference between those two?

A. Some, not material.

Q. Material enough to be able to say 100% bottom hole pressure is the better?

A. I believe 100% bottom hole pressure would probably be more applicable throughout the life of the field, at the present time, there is no material difference.

Q. Your opinion, as a petroleum engineer, do you think drainage ia occuring in Monument field as between properties?

A. It may or it may not, I don't know.

Q. What is your best judgment on the matter?

A. I don't know.

Q. You don't have any opinion?

A. At this time, no.

Q. Why do you think 100% bottom hole pressure better than Order No. 22?

A. It would prevent drainage over a long period of time.

Q. Don't you think Order No. 22 will?

A. The effect of Order No. 22, I think later in the life of the field might tend to be less effective in its prevention of drainage.

Q. You feel that perhaps the continuation of Order 22 if it doesn't result in drainage now, will later?

A. Possibly.

Q. You think it results in drainage now?

A. The plan does not. If there is any drainage, it was set up before the plan was effective.

Q. Is the plan correcting drainage?

A. I don't know.

Q. Wnat do you think?

A. We wont know until bottom hole pressure survey taken.

Q. 100% bottom hole pressure applied exclusively would prevent drainage from properties?

A. If the 100% bottom hole pressure factor equalizes pressure, it would.

Q. It would do that?

A. It would tend to.

Q. More than Order No. 22?

A. Not at the present time.

Q. Why?

A. There is no material difference in the allocation according to either plan at the present.

Q. Per well?

A. Per well.

Q. If order No. 22 took 80% away from acreage what would it do?

A. I answered it.

Q. What was it?

A. Some wells would get no allowable.

Q. It would prevent drainage?

A. It may or may not tend to.

Q. More so than Order 22 in its present form?

A. In this respect, that it would tend to equalize pressures more rapidly.

Q. Are you familiar with the Hobbs Pool?

A. Yes.

Q. What do you think of the Hobbs plan, do you dislike it?

A. I think any plan in limestone formations based on potential is fundamentally wrong.

Q. Have you thought so ever since it was put in in Hobbs?

A. Always about potentials.

Q. Has your company ever registered a protest about the Hobbs Proration plan?

A. I don't believe so, no.

Q. They have had it for six years?

A. Eight.

Q. Do you know of any good reason, scientific reason, why wells of equal producing capabilities or property under which we

assume just as much oil in Hobbs, under a similar property should in Monument have an allowable of one-half as much as Hobbs?

A. The producing capabilities of a well are nothing but potentials and potential has no relationshp of what the well should be allowed to produce.

Q. Assume a 40 acre tract in Monument and a 40 acre tract in Hobbs identical, same amount of oil in place, then can you give us any reason why the Monument well on that 40 acre tract should produce one-half as much per day as in Hobbs?

A. There is no reason, assuming the same amount of oil in place.

Q. Can you tell us any of the essential characteristic differences between Hobbs and Monument as pools?

A. No.

Q. Do you think there are any essential differences?

A. There may be.

Q. What do you think?

A. I am not a geologist. Could not say. In my opinion, insofar as limestone fields are similar in that respect. Further than that, I could not say.

Q. Can you think of any real reason, engineering reason, why similar property in Hobbs should have an allowable twice as much on the same type of property in Monument, some reason why from a fair and equitable and sould engineering standpoint?

A. From an engineering standpoint, two properties similar in all respects should get the same allowable.

Q. One more question, are you of the opinion that Order No. 22 prevents drainage as between properties in the Monument pool?

A. Like I say, I don't know. I am of the opinion if the plan is kept in effect, it would tend to prevent drainage.

Q. Order No. 22 a step in the right direction?

A. It employs the essential principals in the proration plan, yes.

Q. You testified in your opinion the use of 100% bottom hole pressure would more nearly tend to minimize drainage between properties in Monument, have you not?

A. I believe so, yes.

Q. You answered your questions that it was true the nearer we approach 100% bottom hole pressure, the more we would give to bottom hole pressure, just that much nearer we would come to the point of minimizing to the smallest degree drainage across property lines?

A. That is true.

Q. The nearer you get to 100% bottom hole pressure and still do justice the nearer you allocate the entire fields allowable on bottom hole pressure and still do justice, the closer you come to eliminating drainage and waste and experience true proration, that is right?

A. That is possible, it isn't necessarily entirely true.

MR. McDERMOTT CROSS EXAMINING MR. WOOTTEN.

Q. Does the company you are employed by have any production in the Monument Field?

A. No.

Q. Do you know of any oil field prorated on the 100% bottom hole pressure factor or theory?

A. No.

Q. You spoke about proration on 100% bottom hole pressure, you are speaking about theory and not practice?

A. That is right.

Q. 100% bottom hole pressure only theory?

A. That is right.

Q. Hobbs is quite an old pool?

A. Yes, rather.

Q. Potential factors have been used there for years and resulted in deep penetrations, has it not?

A. Yes.

Q. In order to get high potentials?

A. Right.

Q. Considerable acidization?

A. Right.

Q. Might have top allowable of 218 to 400?

A. Don't know exactly what they are.

Q. The Hobbs field makes water does it not?

A. Yes.

That is all.

MR. VESELY:

Q. What would be your opinion as to an order by the Commission on 100% on acreage and disregard bottom hole pressure altogether, in your opinion would that be fair to the oil operators, to the gas and oil royalty owners and to the state in the Monument Pool? Would such an order be a fair and just order on 100% allocation on acreage? You don't have to answer if you don't want to.

A. As this tabulation shows just presented, there is very little difference between 100% acreage and 100% bottom hole pressure or Order No. 22. As I see it now, any one of those three plans are fair, one as fair as the other.

MR. FLEETWOOD EXAMINING MR. WOOTTEN.

Q. You mean to testify that 100% acreage is fair and sound from an engineering standpoint method of prorating Monument?

A. As long as it gets the same amount of oil, it is as fair as the rest.

Q. I did not ask you that. Is 100% acreage a fair and sound method from an engineering standpoint for proration Monument pool?

A. Acreage is a very important factor in allocation, because it is a measure of two dimensions of three dimensions value.

Q. You think 100% acreage right?

A. If it gets the same oil, it is.

Q. Getting away from the assumption, tell me if 100% acreage in Monument Field is a fair and equitable manner of proration and whether it lets each operator produce his amount of oil in the Pool?

A. Not entirely, no.

Q. Order No. 22 closer to that?

A. I think so.

Q. 100% bottom hole pressure closer?

A. I really don't know, would have to see the plan operated before saying definitely. My opinion that 100% bottom hole pressure applied in Monument where there are 40 acre units, in reality is an acreage and bottom hole pressure plan.

Q. Of the three plans, you think 100% acreage less desirable from an engineering standpoint?

A. I would say it was because the area development in Monument.

Q. We agree drainage exists in Monument at the present time?

A. It possibly does. The field is too young to say drainage exists.

Q. If it does exist, it should be eliminated to give each operator a chance to produce his proportionate part of the oil?

A. Yes.

Q. We are agreed there are three ways of proration. You testified acreage is less desirable than Order No. 22, and 100% bottom hole pressure is probably the best?

A. Probably, yes,

Q. What do you think the effect would be of giving 25% acreage and 75% bottom hole pressure in accordance with the terms of Order No. 22?

A. I could not give definite figures.

Q. Would it tend to minimize drainage?

A. Probably it would, yes.

Q. You testified a while ago you did not know any field prorated on 100% bottom hole pressure?

A. Right.

Q. Do you know of any other field prorated on the basis of Order No. 22?

A. No.

Q. You never heard of one?

A. No.

Q. Mr. McDermott asked you if the top allowable in Hobbs was 218 barrels, you said it was?

A. Somewhere, don't know definitely.

Q. What is the largest potential in Hobbs?

A. I think the potentials in Hobbs range up to between 25 and 30,000 barrels.

Q. That kind of a well you believe gets around 218 barrels?

A. I think so.

Q. A similar well in Monument gets about what allowable?

A. About 110 barrels roughly.

Q. About one-half as much?

A. Yes.

JUDGE SETH CROSS EXAMINING MR. WOOTTEN.

Q. You know of any field under proration where the bottom hole pressures are equal?

A. No, there are no fields I know of.

MR. McDERMOTT CROSS EXAMINING MR. WOOTTEN.

Q. You know of any field under proration where the bottom hole pressures are equal?

A. No, there are no fields I know of.

MR. McDERMOTT CROSS EXAMINING MR. WOOTTEN.

Q. You would not recommend prorating Monument on the Hobbs basis?

A. No.

Q. Does the consideration of waste enter into your decision?

A. Yes, waste is one factor.

Q. Which way is the migration in Monument, from East to West, or West to East?

A. I don't know.

Q. From which direction does the drive of the field come?

A. I don't know.

MR. SELLINGER CROSS EXAMINING MR. WOOTTEN.

Q. I understand from your testimony, you recommend to the Commission at the present time that the Commission should take into consideration acreage and bottom hole pressure, is that correct? The present plan in the Monument pool should take into consideration two factors?

A. Right.

Q. Farther down the line, as the field gets older, more factors enter. Possibly bottom hole pressure will give a true indication of what relative capacity of wells will produce?

A. Don't believe bottom hole pressure would give you an indication of the ability to produce.

Q. Why is 100% bottom hole pressure the best method?

A. 100% bottom hole pressure as applied in Monument would in reality be a factor to take in acreage also, because acreage as units are the same size.

Q. What was your statement in regard to the effect of placing the Monument pool strictly on 100% bottom hole potential?

A. My opinion was that 100% bottom hole pressure would tend to equalize pressures.

Q. Relative to allowables of wells in the pool, what effect?

A. Very little difference of the present allowable.

Q. You made a statement some wells receive more?

A. No, I did not.

Q. I was under the impression that you made that statement.

A. Under certain conditions, it would receive no allowable.

Q. Based on 100% bottom hole pressure did you not say some wells would get no allowable?

A. Only 100% bottom hole pressure applied to order No. 22, then some wells would get no allowable.

Q. What would happen to the oil under those wells, would it be drained or remain under the ground or what?

A. Possibly some would be drained by surrounding wells.

Q. Some of the oil would be left in the ground and would not be produced?

A. Those wells would remain shut in.

Q. Those wells would receive no allowable and no production?

A. The fact that they receive no allowable not permanent, I would not think.

DR. WELLS: questioning Mr. Wootten.

If bottom hole pressures were used 100% in making allocations and if the absolute pressures were used without deduction; in other words, if all the pressures were added up and this amount divided into the total field allocation for all the wells; the factor obtained multiplied by each well pressures would give the allocation for that well. That was essentially your earlier testimony, as to method, was it not?

A. Yes.

Q. Isn't it true that that would be very little different from taking 90% of the average of the three highest pressures, and subtracting that from all the pressures. Would not the result be about the same?

A. Essentially the same.

MR. McDERMOTT CROSS EXAMINING MR. WOOTTEN.

Q. Do you know the difference approximately in proportion the original reserves in Hobbs and the estimated reserves in Monument?

A. I do not know.

Q. The reserves at Hobbs are greater than at Monument?

A. In my opinion, it is.

Q. Another difference between the two fields?

A. Yes.

MR. FLEETWOOD EXAMINING MR. WOOTTEN.

Q. If order No. 22 was rewritten so as to give 25% acreage and 75% bottom hole pressure on the same formula as Order No. 22 has now, you believe it an improvement over Order No. 22 or less desirable?

A. Less desirable.

Q. For what reason?

A. I think fundamentally 100% bottom hole pressure is correct.

Q. The nearest you get to it the better off you are?

A. 100% bottom hole pressure is the same as Order No. 22.

Q. What would 75% bottom hole pressure and 25% acreage do?

A. Would limit many wells to 25 barrels per day, and as time went on and more and more limited to 25 barrels, the spread allocation between a few wells over a wide range would amount to quite a difference between lowest and highest well.

Q. Would it minimize drainage?

A. It would cause waste.

Q. How?

A. It would set up so many different directions of drainage. Oil would move so far before it got to the well and then change location and move back.

Q. Close together and 100% bottom hole pressure better?

A. No, in order No. 22.

DR. WELLS: QUESTIONING MR. WOOTTEN.

Q. Isn't it true Order 22 greatly accentuates the relative importance of the bottom hole pressures, when 90% of the average of the three highest pressures is subtracted from all the pressures?

A. The range is very high.

Q. If only approximately 10% of the total pressures is used you are accentuating bottom hole pressure factor 1000%?

A. Every bit of that.

MR. FLEETWOOD EXAMINING MR. WOOTTEN.

Q. That is true of 20 barrels out of 100?

A. Proportionate allocation.

Q. Rest of it acreage?

A. Yes.

Q. Bottom hole pressure nothing to do with that?

A. No.

Q. Oil in place, the ability to produce has nothing to do with 80%?

A. As far as area.

Q. That is all areas the same?

A. Yes.

That is all.

Recess 2:55 o'clock P.M. for five minutes.

Hearing reconvened at 3:00 o'clock P.M.

JUDGE SETH:

We rest.

MR. VESELY:

Any arguments?

GOVERNOR TINGLEY:

We will reach a decision on this at a later date gentlemen. I guess this is all.