

CASE 4120: Application of SAM
BOREN FOR NEW POOL, RULES, DUAL
AND COMMINGLING, LEA COUNTY.

Case Number.

4120

Application

Transcripts.

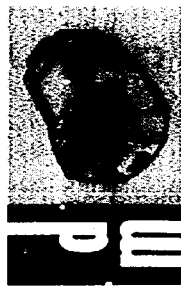
Small Exhibits

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

May 7, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Sam Boren
for the creation of a
new gas pool, promulgation
of special rules for the
pool, a dual completion,
and commingling, Lea
County, New Mexico.

Case 4120

BEFORE: DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

MR. HATCH: Case 4120, application of Sam Boren for the creation of a new gas pool, promulgation of special rules for the pool, a dual completion, and commingling, Lea County, New Mexico.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for the Applicant. I have one witness I would like to have sworn.

(Whereupon Applicant's Exhibit A was marked for identification.)

RALPH VINEY

called as a witness by the Applicant, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name?

A My name is Ralph Viney.

Q What business are you engaged in?

A Engineering and financial consulting.

Q Where are you located?

A In Midland, Texas.

Q Have you ever testified before the Oil Conservation Commission of New Mexico?

A No, sir.

Q For the benefit of the Examiner, will you please give a brief summary of your education and experience as an engineer and consultant?

A Yes, sir. Bachelor of Science degree in 1948, Chemical Engineering. Advanced degree in Engineering, advanced degree in financial management.

Q Where did you obtain your degrees?

A Texas, and TCU. And bachelor's degree was in the University of Tulsa.

Q How long have you worked in the consulting business?

A I was employed by major companies up until 1955. I was in the banking business from 1955 to 1961, and I have been in the consulting business since 1961.

Q Have you been located in the Midland area since that date?

A Yes, sir.

Q In connection with your work as a consultant, have you done work for Sam Boren in connection with Case 4120 presently before the Commission?

A Yes, sir.

MR. KELLAHIN: If the Examiner please, the witness'

qualifications acceptable?

MR. NUTTER: They are.

Q Mr. Viney, are you familiar with the application of Sam Boren in Case 4120?

A Yes, sir.

Q Briefly, what is proposed by Mr. Boren in this application?

A Mr. Boren is proposing and requesting a number of things, namely, a new gas pool designation, a 320-acre proration unit, dual completion, downhole gas lifting, commingling, both downhole or multizone commingling at the surface.

Q Referring to what has been marked as Applicant's Exhibit A, which is a multiple page exhibit containing a statement and Exhibits 1 thru 7-B, inclusive, would you, first directing your attention to the statement, discuss the proposed application for proration units of 320 acres in this case?

A Yes, sir.

Do you wish me to read the testimony or --

Q Summarize it, if you will.

A All right, sir. In Mr. Boren's request for the 320 acre proration unit for the Wolfcamp gas zone at 8700 feet, is made primarily on the basis of economics.

To digress momentarily, wells drilled to the Pennsylvanian oil zone in the North Bagley field run approximately \$185,000 to \$200,000 to complete, and Mr. Boren's Crowley State A well, the subject well in question here, is not a good Pennsylvanian oil well. It makes 35 to 40 barrels a day.

However, in drilling this well, he did test and complete in the Wolfcamp gas zone at 8700 feet, perforations being approximately 2718 to 2726. The Wolfcamp gas zone is capable and was tested at a maximum rate of about 10,000,000 feet a day. We had a 1200 pound drawdown in bottom hole pressure. The well makes considerable condensate on various tests, ranging from 13 to 20 barrels per mile.

The geological conditions on the southwest portion of the Bagley field and in the Bagley field, proper, are stratigraphic, and the Pennsylvanian zone bends from location to location.

So, basically, Mr. Boren was fortunate in being able to maybe pick up this Wolfcamp zone. The zone is completed

in the Crowley State "A" Well at 8,700 feet, has been correlated to offsetting wells. There is no porosity in the offset wells in this same zone. You will notice that there is a cross section in Exhibit A, labeled Exhibit 2, which correlates to the Meadco Shell State Well east of -- North and East of Mr. Boren's well, and to the BTA well, which is north by northwest of Mr. Boren's well. The horizon is there. The porosity is gone.

Now, basically, Mr. Boren recognizes that all operators in there would have the same problem, and I think Mr. Kellahin, if I could maybe extract from excerpts, we could --

Q If you would.

A Going to Page 2 of Exhibit A, the second paragraph, it may be a little redundant here, but let me review. The results of the Pennsylvanian explorers drilled along the southwest edge have not been encouraging. Mr. Boren recognizes the hazard involved in drilling in this area, and asks that all operators be afforded the same benefits being requested in this petition on additional wells that may be drilled in the area. It is recognized that a 320 acre gas proration unit with statewide well location requirements could have the effect of restricting additional exploration in the area.

In view of the foregoing, Mr. Boren respectfully requests that the Commission consider the following:

1. Establish temporary field rules for the Wolfcamp gas zone of 320 acres, with an exception to the statewide well location requirements of 660 feet and 1980 feet.
2. Permit operators offsetting the 320 acre requested gas unit to continue oil exploration on an 80 acre oil proration unit, and should an operator obtain the Wolfcamp gas pay as completed in the Crowley State "A" Well No. 1, said operator be allowed to communitize his Wolfcamp horizon acreage with offset acreage to form a 320 acre gas proration unit.
3. That the temporary rules for the Wolfcamp gas zone be limited timewise with the interval being of sufficient length to conduct exploration in the area, and to permit the assemblage of production performance data from the Crowley State "A" Well no. 1, to possibly determine the volume of the Crowley State "A" Well No. 1 Wolfcamp gas reservoir.

Mr. Kellahin, we have made volumetric estimates, and at this time this is the best we can do, and as all volumetric estimates, these are subject to question and

verification with production. We have included, however, a projected estimate of the reserves, the data used in arriving at the figures which are marked Exhibit 3 in Exhibit A, as presented. We have indicated the economics of a Wolfcamp horizon well, which is shown as Exhibit 4 in Exhibit A, and basically, we would estimate, assuming 320 acres, an average thickness of 7 feet through the horizon, that the in place gas is 2,210,000 Mcf, and that the recoverable gas, assuming a 70 percent recovery factor, is one and a half million Mcf.

The condensate recovered is projected at 31,000 barrels, approximately.

Basically, if we assume that a Wolfcamp well were drilled to the Wolfcamp horizon only, and assigned the cost of \$152,000 to such completion, and assuming we have a normal royalty situation, the estimated future profit to an operator to such a situation, above Federal income taxes, would be approximately \$104,000.

Mr. Boren's well, unfortunately, is burdened with overrights, and he would not recover this kind of profit. If we assume that the parameters as presented in the exhibit are reasonable, it is doubtful that an operator

could drill and complete a well in the Wolfcamp on 160 acre spacing.

Q Your calculation shown on Exhibit IV as to the estimated profit is based on 320 acre spacing?

A This is correct, yes.

Q Would it be profitable, in your opinion, to drill a well to the Wolfcamp on 160 acre spacing?

A Not with the conditions of formation and pressures as observed, I could not recommend it.

Q Based on the information that is presently available to you, in your opinion, is it probable that one well will drain 320 acres?

A One well should drain 320 acres, yes.

Q On the available information, it indicates this?

A Yes, and realizing this is a volumetric estimate at this time, yes.

Q Now, you mentioned a request for an exception to the well location requirements of 660 and 1980 feet. What well location would you propose?

A Mr. Kellahin, in order to encourage additional development in an area, and particularly in this area, we would suggest that the locations be on the 80 acre oil proration unit, both to encourage development in the area

and possibly find other and possibly new horizons in this area. We would request that we stay with the 80 acre proration unit, with a provision as asked that they be allowed to unitize or communitize their gas acreage or horizon to a 320 acre unit.

Q Now, it is also proposed -- does that complete your testimony as to the unit size, Mr. Viney?

A Yes, sir.

Q And it is also proposed that Mr. Boren be permitted to have a dual completion with commingling, both at the surface and in the wellbore.

Referring to that portion of your testimony, would state what Mr. Boren proposed in this case?

A Yes, sir. Basically, Page 3 of Exhibit A as submitted, the dual completion as effected in this well incorporates a downhole equipment installation to permit gas lifting in the casing. The dual completion effected is a normal type, or what possibly could have been referred to a previous normal type completion, whereby the production is separated from the casing zone by a production packer set on the tubing string. A packer in this well, a packer was set at 8,747. And for reference to those with Exhibit

A, if you will refer to Exhibit VI in this case, this is a schematic not to scale diagram of the downhole assemblage of equipment. You will note that the Model R packer is set at 8747. This is run on the tubing string. Incorporated in the tubing string directly above the packer are two sets of Otis engineering nipples. The lower nipple or the nipple directly on top of the packer is a landing nipple to hold a standing valve. The upper nipple is ported. There are perforations through this nipple, and it is open to the annular space. Into this ported nipple, an Otis choke assembly has been installed.

If you will refer to the right hand side of Exhibit VI, the lower equipment shown is the standing valve. The upper equipment is a diagrammatic sketch of the choke assembly. This choke assembly latches in and locks and sets into this upper landing nipple, as packing devices above and below the ported or perforated portion of the landing nipple, such that the port in the nipple is now cased off the tubing side.

Further, you will note that there is a 5/64 inch orifice in this choke assembly, which permit gas from the annular side to enter through the ported nipple,

and through the orifice into the turbine side, and the gas energy thus derived lifts the fluid in the tubing to surface.

Q At that point, then, you would have commingling of the fluids from the two horizons?

A Yes, this will be the amount and extent of downhole commingling. The question here, and if we may, let me refer again to Page 3 of Exhibit A, the first two paragraphs on that page we have discussed generally. The next question that should probably be prompted is how do we measure or know how much gas is used. The measurement of Wolfcamp gas used for lifting is a calculated volume, and is based on figures through an extensive amount of actual field production research by Dr. Kermit Brown of the University of Tulsa, which the industry has adopted. When I say this, the industry has adopted, I don't mean to be facetious. The oil industry has adopted Dr. Brown's work, and his findings, and are using them throughout the industry for their measurement purposes, have used Dr. Brown's work, have prepared orifices, have prepared charts and basis to estimate the volumes of gas requirements. On Exhibits 7-A and 7-B of Exhibit A, we have reprinted the basic material

that is available, whereby you can calculate the volumes passing through the various orifices that may or may not be used -- or may be used, excuse me.

In this particular case, on Exhibit VII, we incorporated the actual test data; the performance data of the Crowley State A Well No. 1, and have taken this information and used it to demonstrate how the volumes of gas would be calculated.

If you will refer to Exhibit VII, you will note on the right hand side of the presentation two lines which are gas gradient pressure curves. These were constructed, based on the information obtained from El Paso Natural Gas Company test of the wells.

Q Those tests are a part of your Exhibit A, are they not?

A Yes, sir. These exhibits, the El Paso test, together with their graphical presentation and their analysis of the gas are included as Exhibit V, and that should have been lettered 5-A, 5-B, and 5-C.

Q There are 3 pages in numbered Exhibit V?

A Yes, sir.

Q That is the basis of the information used on your

Exhibit VII?

A Yes, sir. On the gasgradient side on Exhibit VII, the curves on the left side of the chart, represent the pressure ~~gradients~~ that would exist in the tubing completion with the wells lifting 250 barrels of fluid per day in one case, and 300 barrels of fluid per day in the second case. The well is currently producing 40 barrels of oil and 200 barrels of water, and we have used the lower curve. In case one which we show in Exhibit VII, assuming that the Wolfcamp zone is shut in and the Pennsylvanian zone is produced, the amount of gas requirement to lift 250 barrels of fluid per day would be 346 Mcf. If we should produce the Wolfcamp side at approximately 3 million feet per day, and while producing the Pennsylvanian side, the requirement for gas would be 321 Mcf per day. This is an empirical calculation, it is based on many years of actual usage, and is reliable.

Q Is the method of calculation you have outlined one that is generally considered in the engineering profession as an accurate means of determining the gas production, a completion of this type?

A Yes, it is.

Q Now, referring to the proposal to commingle

storage of the produced well liquids, would you discuss what is proposed there?

A Yes. May I digress for a moment, Mr. Kellahin?

Q Yes.

A Basically, in conclusion, on the gas lift installation and the downhole multiple completion, the gas passing from the Wolfcamp zone into the tubing is physically entering the Pennsylvanian fluids, and to this extent is downhole commingling, so this is the extent of our downhole commingling.

Q Which would be the 321 Mcf?

A 320 or 346, or if we have a higher rate of production on the Wolfcamp side, then you would have lesser amounts of gas entering into the Pennsylvanian tubing completion.

Q Now, as to the amount of storage, would you discuss that?

A Yes. The condensate produced with the Wolfcamp gas is 61 degrees API fluid, is very volatile; and if stored in a vessel without any stage separation, the evaporation loss is tremendous. Let me refer to Page 4 of the Exhibit. The Wolfcamp gas side is produced into a

high pressure separator, at which point gas is separated, and the liquid from that high pressure separator enter into a low pressure separator, 50 pound operating pressure, the gas flashed off from the flow pressure vessel enters the low pressure gas sales line, and the liquids are directed to storage. We do not have component analysis of either the 47 degree Pennsylvanian oil or the condensate. We don't have an Engler distillation. Consequently, we could not make calculations as to exact losses that might occur. We did refer and confer with people in the separation business, and basically what we have estimated and come up with in this presentation is without commingling, assuming that we produce or direct 60 barrels of condensate to storage every day, we would lose 18 barrels. By commingling the condensate fluid with the Pennsylvanian oil, we estimate that we may stabilize 12 additional barrels, thus have this amount available for sale down to the pipeline. At this point, Mr. Boren would request approval to store the produced fluids from the Crowley State A Well No. 1 into common storage.

Q In connection with your proposal to commingle both downhole and at the surface, is the ownership underlying

the tract of land that would be dedicated to the well common throughout?

A Yes, it is.

Q Both to working interest royalties and overriding royalties?

A Yes, sir.

Q So there would be no problem in accounting for the proceeds from the various zones to the interest owners?

A No, sir, none.

Q Mr. Viney, in conclusion, in your opinion, is the proposal made by Mr. Boren for 320 acres spacing, with well locations based on the 80 acres, the dual completion in both the Wolfcamp and Pennsylvanian, and the commingling downhole for gas lift purposes and at the surface for the protection of the high volatile fluids, in the interest of conservation?

A Yes, sir.

Q Would any waste occur as a result of this type of installation, in your opinion?

A Not as proposed, no.

Q Can the production from the two different zones be accurately accounted for, in your opinion?

A Yes, sir.

Q Will the correlative rights of any operator in the area be adversely affected by this type of completion?

A Not as we see it, no.

Q Was Exhibit A, consisting of a multiple page exhibit, with Exhibits I through VII-B, inclusive, prepared by you or under your supervision?

A Yes, they were.

Q I believe we identified all the exhibits, with the exception of Exhibit I. Would you identify that?

A Yes, Exhibit I of Exhibit A is a structure map on the North Bagley field, with the contour structure or horizon being the Strawn. The acreage subject to this hearing is outlined in yellow.

Q If the Commission sees fit to approve the 320 acre spacing, in your opinion, on such spacing would the two horizons be fully developed?

A Yes, they would.

Q And as an economic matter, would the Wolfcamp be fully developed if it is not spaced on 320 acres? In your opinion, would it be economical to develop it on 160 acre spacing?

A No, sir, not based on the figures we have

submitted. We could not afford to complete or produce on this basis.

MR. KELLAHIN: I would like to offer into evidence Applicant's Exhibit A.

MR. NUTTER: Applicant's Exhibit A will be admitted into evidence.

(Whereupon, Applicant's Exhibit A was admitted into evidence.)

MR. KELLAHIN: That completes the direct examination of the witness.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Viney, did you not submit an electric log or gamma ray neutron log, or any other type log of the entire well?

A They have been filed with the Commission, and we will give you copies of that right now.

MR. NUTTER: You may want to make that an exhibit, Mr. Kellahin?

(Whereupon, Applicant's Exhibit B-1, B-2, B-3 was marked for identification.)

A Exhibit B-1 is the acoustic log. Exhibit B-2 is the guard log. And B-3 is the forxo log.

Q And those logs show the pay from the upper Wolfcamp on down through the Pennsylvanian?

A That's correct.

Q And it is my understanding that your perforations in the Wolfcamp are -- what is that perforated interval?

A 8717, 8,719, and 8,726.

Q 17, 19 --

A Actually, 20. Make that with 8,720. 8,718, 8,720, and 8,726.

Q And the perforations in the oil zone in the Pennsylvanian are at 9,459, is that correct?

A That's correct.

Q Mr. Viney, someone remarked to me the other day in studying this case file, that possibly this Wolfcamp was upper Pennsylvanian. Do you have anything to say regarding that?

A No, sir. I don't. This possibly would be geological determination and terminology, and I do not have anything.

Q There is a North Bagley-Upper Pennsylvanian gas pool in the general area, is this correct?

A Yes, sir. It is over to the west of this area, and whether it is correlative or is the same zone, we could not tie it in.

Q What is the nearest gas well producing from this Upper Pennsylvanian gas section?

A The nearest gas well, as we observed it, was a well located on Amerada acreage in Section 33, Eleven South, 33 East.

Q Which is approximately 2 miles northeast of your well?

A Yes, sir.

Q That would that No. 2 well there on the southeast of the northeast?

A Yes, sir. And there is one well, actually one well in 3, in Section 3, 12 South. And there is a well in 33, 11-33.

Q Which one of those in 3 would you be referring to?

A Well, actually, both of these wells do produce from the Wolfcamp horizon of Amorado. The one in 3, the northwest of the northwest in 3, and also the one in the southeast of the Southeast of 33, they have produced gas from the Wolfcamp, from the Wolfcamp series. Let me qualify that, because I cannot tell you this is the same Wolfcamp. I don't know. Possibly, we could correlate it.

Possibly there is communication. However, I do not know.

The pressures at which Amerada is producing their Wolfcamp gas and the pressures produced here do not show there has been or is communication.

Q Those wells were classified as Wolfcamp wells by the Commission, or Upper Pennsylvanian?

A Upper Pennsylvanian.

Q Now, according to the Commission rules, if your wells were described as Pennsylvanian well, it would automatically be on a 320-acre spacing?

A Well, this is the terminology, but there again whether I could say that this was Pennsylvanian or whether it was Wolfcamp, I hesitated, and, therefore, asked for the hearing to be on a special situation.

Q But it is recognized generally throughout the industry that there is a gray area there in the Lower Wolfcamp and Upper Pennsylvanian, so that it is difficult to pin down or define as either Wolfcamp or Pennsylvanian?

A Yes, sir, this is our thought, and I think it is generally held by most people working in this area.

Q But to play it safe, you asked for 320-acre spacing, if it is Wolfcamp or --

A Yes, I did.

Q But you do recommend that no particular well location requirements be established for this gas pool, but instead that the 80 acre oil well requirements for the area be applicable?

A Yes, sir, for this reason, that we do not want to discourage development in the area, because I cannot tell you that if we drill on the offset oil location that we would not pick up a real good prolific Pennsylvanian stringer. Any operator that did this, I think he should be afforded the same opportunity that Mr. Boren has requested.

Q And is the well that you have got today in the Bagley-Pennsylvania oil pool?

A Yes, sir, it is classified this way.

Q Now, I noticed that on your Exhibit I, up here on the northwest quarter of Section 5, it appears that you have a location drilling?

A No, that was a proposed location, and if I may refer to this, Mr. Nutter, the first paragraph of Page 2 of Exhibit A, we looked at the possible economics of a well in that area, and could not see that a well on strike or the wells on strike to this proposed location would recover more than about 80,000 barrels; and based on this

number of barrels, it was not economic at the current cost involved. So it exists as a proposed location.

Q How about that Meadco Shell State which is an east offset there, is that a very good well?

A No, sir. Let me show you the thinking that we used. The Meadco well, which is southeast, is producing approximately 60 to 65 barrels of oil, and about 100 to 140 barrels of water. The BTA well northwest in Section 31 is about a 65 to 70 barrel well now, and it has just been completed. There seems to be a pinchout existing between the north boundary of Section 5 and the line of wells that Dean Stolts has in Section 32, there is a change in the lithology, where we do not have a log or could not obtain a log of that dryhole located in the southwest of Section 32. Consequently, we lacked that information.

Q And the oil zone here is making 36 to 40 barrels of oil, and 200 barrels of water a day?

A Yes, the tests varied between 36 and 40 barrels of oil, and 191 to 200 barrels of water.

Q Is the oil zone producing at the present time?

A Yes, it is.

Q Has there been any change in the productivity

of the well?

A Yes, within the last 60 days, the well has levelled from 105 barrels a day at completion time to this level of 36 to 40 barrels.

Q How about water production?

A Water production has almost remained level. We made 200 barrels on initial completion, and the water is still at 200.

Q As far as you know, the total fluids are going to run approximately 250 barrels a day, and this is what the calculations for the gas lift is based on?

A Yes. We can if desired, or as you need, this can be changed to fit each volume of fluid being lifted, so we will have to do this for our calculation monthly to satisfy royalty payments, anyway.

Q As far as you can tell at the present time, only the one gas entry point will be necessary to lift the porosity?

A Yes, sir. The volume requirement may change, and we may have to insert a choke assembly with a larger orifice, but it is done with Wire Line service.

Q Of course, changing the orifice size would increase

or decrease the volume of gas entering the tubing?

A That's right. And we would keep you advised and provide you with the proper parameters of this change.

Q Now, regarding the surface commingling of the fluids, you have estimated you will be producing approximately 60 barrels of condensate a day, and 36 to 40 barrels of oil a day. What is the gravity of the condensate?

A 61 degrees.

Q And the oil.

A 47. With an equal mix, we had a stabilized gravity of 51 to 54, and I say that range because these are the changes we had while we tried equal mixes.

Q That was an equal mix?

A An equal mix. And with the actual mix of what we think we will be producing, we had a 51 degree mix.

Q And you expect that by the addition of oil to the condensate, you will stabilize that condensate and reduce evaporation?

A We will stabilize the condensate and save some of the additional condensate, yes.

Q This is a State Lease. Have you received the approval of the State Land Commissioner to this proposed commingling?

A I have not, and I do not know whether Mr. Boren's attorneys have filed this.

Q I believe that will be required to obtain the Land Commissioner's approval prior to commingling?

A Yes, sir.

Q What is your proposal, to commingle without the separate measurement of the fluids from each zone?

A Yes, sir. Just allow the fluids from the low pressure gas separation system to enter into common storage with the oil produced from---

Q Do you have separate separators for each zone?

A Yes, and we could put a flow type meter to measure the fluid as it leaves the separator. However, then we would have to account for the losses.

Q Now, on your Exhibit 1, you have the Boren acreage divided into 160-acre tracts. Are those separate leases or all one lease?

A These are farm-out tracts from a major company, and in effect they are 160-acre farm-outs, each tract constituting a unit. However, they are subject to the major company's provision that they could be pooled into the 320 acres for gas, if necessary.

Q Is the ownership identical throughout each one of the 160 acre tracts?

A Yes, it is.

Q So there would be no problem of commingling an 80-acre oil dedication with a 320 acre gas dedication?

A None, no sir.

Q There would be no variation in ownership, whatever?

A This is correct, there is no difference. The same net ownership exists to Boren.

MR. LONG: Mr. Viney, you didn't state there whether they were on two separate leases, or on two separate leases from the major company?

THE WITNESS: They are separate leases from the major company.

MR. LONG: You will need a communitization, also.

THE WITNESS: All right, sir.

MR. KELLAHIN: If the Examiner please, these are one basic rule, Mr. Long, in which he is getting a farm-out assignment out of the same basic lease.

MR. LONG: That wouldn't make any difference. If it is a mother lease, it is all right.

THE WITNESS: This I did not know, Mr. Long. I would have to have their attorney look up the records.

MR. NUTTER: Are there any further questions of Mr. Viney?

MR. RANEY: What is your acreage dedication, Mr. Viney, on 320 acres?

THE WITNESS: On 320 acres, we would propose using the west half of Section 5 for the Wolfcamp gas unit.

MR. NUTTER: And then your oil well would probably be the west half of the southwest quarter?

THE WITNESS: Yes, sir. Or the north half of the southwest quarter. I do not know how we would designate this, Mr. Nutter.

MR. RANEY: So the gas for the creation of a new pool here should be for the west half of Section 5?

THE WITNESS: Yes.

MR. NUTTER: Any further questions? The witness may be excused.

MR. KELLAHIN: At this time, I would like to offer in evidence Exhibits B-1, B-2, B-3, being the logs on the subject well.

MR. NUTTER: They will be admitted in evidence.

(Whereupon, Applicant's Exhibits B-1, B-2, B-3 were admitted into evidence.)

MR. KELLAHIN: That completes our case, Mr. Nutter.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4120?

MR. HATCH: The Commission has received a telegram from BTA oil producers, dated May 5, 1969. Re Case 4120, Examiner Hearing, May 7, 1969, BTA oil producers is an offset operator to the Crowley State A No. 1. BTA supports Sam Boren's application for 320 acre spacing for the Wolfcamp zone, provided that an exception is granted to Statewide rule 104-C-11-A, so that the last zone locations will coincide with the North Bagley oil zone locations, which are 660 locations.

BTA believes there is insufficient geological or engineering data available for defining the limits of this Wolfcamp gas zone, and economics require the gas zone development on 320 acre zone spacing without restrictive location rules until adequate reservoir data can be obtained.

R. L. Halversen for BTA oil producers.

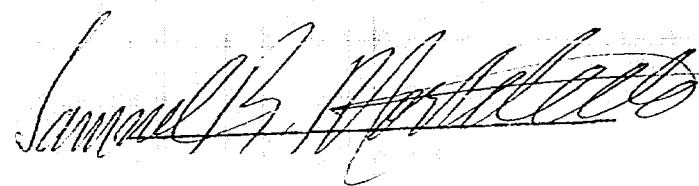
MR. NUTTER: Anything further in Case 4120? We will take the case under advisement and call Case 4121.

I N D E X

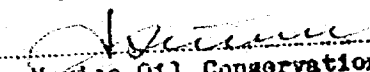
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STATE OF NEW MEXICO)
) ss.
 COUNTY OF BERNALILLO)

I, SAMUEL MORTELETTE, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.



I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4122 heard by me on 5/7, 1969.

 Examiner
 New Mexico Oil Conservation Commission



OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

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87501

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STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

August 4, 1969

Mr. Jason W. Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Re: Case No. 4120

Order No. R-3808

Applicant:

Sam Boren

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC

Other State Land Office

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 4120
Order No. R-3808
NOMENCLATURE

APPLICATION OF SAM BOREN FOR THE
CREATION OF A NEW GAS POOL, PROMUL-
GATION OF SPECIAL RULES FOR THE POOL,
A DUAL COMPLETION, AND COMMINGLING,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 7, 1969,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of August, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Sam Boren, seeks the creation of
a new gas pool for Wolfcamp production for his Crowley State "A"
Well No. 1, located in Unit L of Section 5, Township 12 South,
Range 33 East, NMPM, Lea County, New Mexico, and the promulgation
of special rules and regulations governing said pool, including
a provision for 320-acre spacing units.

(3) That the applicant also seeks approval for the dual
completion of said well to produce gas through the casing-tubing
annulus from the aforesaid Wolfcamp pool and oil through tubing
from the North Bagley-Lower Pennsylvanian Pool, with separation
of zones by a packer set at approximately 8747 feet, commingling

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CASE No. 4120

Order No. R-3808

in the well-bore, by means of a gas-lift assembly, sufficient Wolfcamp gas to lift the Pennsylvanian oil.

(4) That the applicant further seeks authority to commingle on the lease the liquid hydrocarbons from said pools after separately metering the production from each pool.

(5) That said Sam Boren Crowley State "A" Well No. 1 is completed in the Upper Pennsylvanian zone and should be considered an extension of the Bagley-Upper Pennsylvanian Gas Pool.

(6) That the applicant's request for the creation of a new gas pool for Wolfcamp production and the promulgation of special rules and regulations therefor should be denied.

(7) That the mechanics of the proposed dual completion with commingling in the well-bore, by means of a gas-lift assembly, sufficient Upper Pennsylvanian gas to lift the Lower Pennsylvanian oil are feasible and in accord with good conservation practices.

(8) That in order to protect the correlative rights of other producers in the Bagley-Upper Pennsylvanian Gas Pool, all gas produced from both zones of the dually completed well should be charged against the allowable for said well in the Bagley-Upper Pennsylvanian Gas Pool.

(9) That approval of the proposed commingling on the lease of the liquid hydrocarbons from the subject pools will help prevent the loss of Upper Pennsylvanian condensate production caused by vaporization and will not violate correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant's request for the creation of a new gas pool for Wolfcamp production and the promulgation of special rules and regulations therefor is hereby denied.

(2) That the applicant, Sam Boren, is hereby authorized to complete his Crowley State "A" Well No. 1, located in Unit L of Section 5, Township 12 South, Range 33 East, NMPM, Lea County, New Mexico, as a dual completion to produce gas from the Bagley-Upper Pennsylvanian Gas Pool through the casing-tubing annulus and oil from the North Bagley-Lower Pennsylvanian Pool through tubing, with separation of zones by a packer set at approximately

-3-

CASE No. 4120
Order No. R-3808

8747 feet, commingling in the well-bore, by means of a gas-lift assembly, sufficient Upper Pennsylvanian gas to lift the Lower Pennsylvanian oil;

PROVIDED HOWEVER, that all gas produced from both zones of the subject dually completed well shall be charged against the allowable for said well in the Bagley-Upper Pennsylvanian Gas Pool;

PROVIDED FURTHER, that the applicant shall complete, operate, and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations insofar as said rule is not inconsistent with this Order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the Gas-Oil Ratio Test Period for the Lower Pennsylvanian zone.

(3) That the applicant is hereby authorized to commingle on the lease the liquid hydrocarbon production from the Bagley-Upper Pennsylvanian Gas Pool and the North Bagley-Lower Pennsylvanian Pool produced by his Crowley State "A" Well No. 1, allocating said liquid production to each pool on the basis of monthly production tests;

PROVIDED HOWEVER, that said installation shall be operated in accordance with the provisions of the Commission's "Manual for the Installation and Operation of Commingling Facilities," and provided further, that the Commission may require separate metering of the liquid production from each pool prior to commingling in the event the Lower Pennsylvanian zone becomes capable of top allowable production.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

David F. Cargo
DAVID F. CARGO, Chairman

Alex J. Armijo
ALEX J. ARMJO, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

Memo

From

To Don Nutter

Re: Case 4120 May 7, 1969

They have applied for
2 Qu 21 (No. Bagley Lower Permit
Wolfcamp) & according to
our interpretation the
lower zone is Upper Perm.

Would suggest you
question the witness as
to proper classification
before you issue this order.

JLR

Case 4120

San Boron

MAIN OFFICE

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9 AM 8 15
'69 JUL 6

7-7-69

- ① Well - Less than one mile from the Bagley - Upper Penn. Gas Pool. Not a wildcat by o.s.c. definitions.
- ② Produces from same Geological Reservoir (interval/zone) as B. - U.P. Gas Act
- ③ Produces within vertical limits set by R-991 for the B. - U.P. Gas Pool. (Pool limit is -4250 to -4510, Boron well produces from -4410 to -4429)
- ④ well is completed in upper Penn not wolfcomp.

Recommend that this well be extended to Bagley - Upper Penn gas pool. Definitely not a new discovery.

GWR
Geologist
Hobbs

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 7, 1969

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, Alternate Examiner:

CASE 4119: Application of Union Oil Company of California to directionally drill, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to directionally drill its Owens Well No. 1 located 1980 feet from the North and East lines of Section 34, Township 14 South, Range 35 East, Lea County, New Mexico. Said well was drilled to a total depth of 11,199 feet and plugged back to approximately 9,000 feet. Applicant proposes to set a whipstock at approximately 9,000 feet and to directionally drill to a depth sufficient to bottom said well in the Lower Hueco formation at a point approximately 2298 feet from the North line and 1662 feet from the East line of said Section 34 (approximately 450 feet Southeast of the surface location.)

CASE 4120: Application of Sam Boren for the creation of a new gas pool, promulgation of special rules for the pool, a dual completion, and commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Wolfcamp gas pool for his Crowley State "A" Well No. 1 located in Unit L of Section 5, Township 12 South, Range 33 East, Lea County, New Mexico, and for the promulgation of special rules therefor, including a provision for 320-acre proration units. Applicant also seeks approval of the dual completion of said well to produce gas through the casing-tubing annulus from the aforesaid Wolfcamp pool and oil through tubing from the North Bagley-Lower Pennsylvanian Pool, commingling the liquid hydrocarbons from said pools on the lease. Applicant further seeks authority to commingle in the well-bore sufficient Wolfcamp gas to gas lift the Pennsylvanian oil.

CASE 4121: Application of Roger C. Hanks for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the Bar U-Pennsylvanian Pool, Lea County, New Mexico, including a provision for 160-acre spacing and proration units and the assignment of 80-acre allowables.

CASE 4122: Application of Roger C. Hanks for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian

Docket No. 13-69
Examiner Hearing - May 7, 1969
-2-

(Case 4122 continued)

formation in the interval from approximately 12,878 feet to 13,011 feet in his Atlantic Tebworth Well No. 1 located in the SW/4 SW/4 of Section 25, Township 8 South, Range 36 East, Allison Field, Roosevelt County, New Mexico.

CASE 4123: Application of Kersey and Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Premier and Lovington sands of the Grayburg formation through its Dublin Well No. 3 located in the NW/4 NE/4 of Section 3, Township 17 South, Range 29 East, Square Lake Pool, Eddy County, New Mexico.

CASE 3405: (Reopened) - TO BE CONTINUED TO MAY 21, 1969

In the matter of Case No. 3405 being reopened pursuant to the provisions of Order No. R-3081, which order established 640-acre spacing for the North Indian Hills-Morrow Gas Pool, Eddy County, New Mexico, for a period of one year after first pipeline connection in the pool. All interested parties may appear and show cause why said pool should or should not be developed on 320-acre spacing units.

CASE 4124: Application of Amerada Petroleum Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the State H "A" COM Unit Area comprising 1,281 acres, more or less, of State lands in Sections 18, 19, and 30 of Township 14 South, Range 35 East, Lea County, New Mexico.

CASE 4125: Application of Continental Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the San Andres formation through ten wells in Sections 34 and 35, Township 16 South, Range 29 East, Forest-San Andres Pool, Eddy County, New Mexico.

CASE 4126: Application of Curtis Hankamer for an exception to Order No. R-3221, as amended, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil or gas, or both, on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for the applicant's wells located in Sections 12, 13, 14, and 24, Township 26 South, Range 29 East, Brushy-Draw Delaware Pool, Eddy County, New Mexico. Applicant seeks

Docket No. 13-69

Examiner Hearing - May 7, 1969

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(Case 4126 continued)

authority to continue to dispose of salt water produced by said wells in four unlined surface pits.

CASE 4127: Application of Curtis Hankamer for an exception to Order No. R-3221, as amended, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Order No. R-3221, as amended, which order prohibits the disposal of water produced in conjunction with the production of oil or gas, or both, on the surface of the ground in Lea, Eddy, Chaves, and Roosevelt Counties, New Mexico, after January 1, 1969. Said exception would be for applicant's two wells located in Section 11, Township 24 South, Range 32 East, Double X-Delaware Pool, Lea County, New Mexico. Applicant seeks authority to continue to dispose of salt water produced by said wells in two unlined surface pits.

CASE 4128: Application of C. O. Fulton for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Premier and Lovington sands of the Grayburg formation through one well located in Unit D of Section 2, and two wells in Units D and P of Section 3, Township 17 South, Range 29 East, Square Lake Pool, Eddy County, New Mexico.

CASE 4117: (Continued from the April 23, 1969 Examiner Hearing)
Application of Eastern Petroleum Company for special pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special rules for the Rattlesnake-Dakota Pool, San Juan County, New Mexico, permitting the drilling of wells on 2½-acre spacing provided that no well be located nearer than 50 feet to the outer boundary of the quarter-quarter section and no nearer than 165 feet to another well producing from the same pool, and provided further, that a 40-acre proration unit would be subject to a 40-acre allowable regardless of the number of wells on the unit.

CASE 4118: (Continued from the April 23, 1969 Examiner Hearing)

Application of Dugan Production Corporation for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle gas production from undesignated Fruitland and Pictured Cliffs gas pools in the well-bore of its Federal "I" Well No. 4, located in the NE/4 NW/4 of Section 1, Township 29 North, Range 14 West, San Juan County, New Mexico.

Docket No. 13-69
Examiner Hearing - May 7, 1969

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CASE 4129: Application of Redfern Development Corporation for gas commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle Devils Fork-Gallup gas and Basin-Dakota gas after separately metering the Dakota gas and determining the Gallup production by means of the subtraction method. Said production is from the dually completed Largo Spur Well No. 1 located in Unit J of Section 18, Township 24 North, Range 6 West, Rio Arriba County, New Mexico.

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WESTERN UNION

TELEGRAM

W. P. MARSHALL
CHAIRMAN OF THE BOARD

R. W. MCFALL
PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

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1969 MAY 5 PM 3 32

NS MDA091 DJ PD=1 EXTRA MIDLAND TEX 5 357P CDT=

NEW MEXICO OIL CONSERVATION COMM=

STATE LAND OFFICE SANTA FE NMEX=

*See
case file*

ATTN: GEORGE HATCH, GENERAL COUNSEL, RE: CASE NO. 4120.

EXAMINER HEARING MAY 7, 1969. BTA OIL PRODUCERS IS AN OFFSET OPERATOR TO THE CROWLEY-STATE "A"-#1. BTA SUPPORTS SAM BOREN'S APPLICATION FOR 320 ACRE SPACING FOR THE WOLFCAMP ZONE PROVIDED THAT AN EXCEPTION IS GRANTED TO STATEWIDE RULE 104-C-II-(A) SO THAT THE LAS ZONE LOCATIONS WILL CONCIDE WITH THE NORTH BAGLEY OIL ZONE LOCATIONS, WHICH ARE ON 660' LOCATIONS. BTA BELIVES THAT THERE IS

WU1201 (R2-65)

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

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WESTERN UNION

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W. P. MARSHALL, PRESIDENT

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Send the following message, subject to the terms on back hereof, which are hereby agreed to

CONFIRMATION OF WIRE

May 5, 1969

New Mexico Oil Conservation Commission
State Land Office

Santa Fe, New Mexico 87501

Attn: George Hatch, General Counsel

Re: Case No. 4120

Examiner Hearing May 7, 1969

BTA Oil Producers is an offset operator to the Crowley-State "A"-#1. BTA supports Sam Boren's application for 320 acre spacing for the Wolfcamp zone provided that an exception is granted to Statewide Rule 104-C-II-(a) so that the gas zone locations will coincide with the North Bagley oil zone locations, which are on 660' locations.

BTA believes that there is insufficient geological or engineering data available to define the limits of this Wolfcamp gas zone and economics require the gas zone development on 320 acre spacing without restrictive location rules until adequate reservoir data can be obtained.

RLH:gh
RLH:gh

R. L. HALVORSEN
For BTA Oil Producers

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WESTERN UNION

W. P. MARSHALL
CHAIRMAN OF THE BOARD

TELEGRAM

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INSUFFICIENT GEOLOGICAL OR ENGINEERING DATA AVAILABLE FOR
DEFINE THE LIMITS OF THIS WOLFCAMP GAS ZONE AND ECONOMICS
REQUIRE THE GAS ZONE DEVELOPMENT ON 320 ACRE SPACING
WITHOUT RESTRICTIVE LOCATION RULES UNTIL ADEQUATE
RESERVIOR DATA CAN BE OBTAINED==

R L HALVORSEN FOR BTA OIL PRODUCERS==

4120 7 1969 "A"-#1 320 104-C-11-(A) 660 320

WU1201 (12-65)

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CASE NO. 4120

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

WEDNESDAY, MAY 7, 1969

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

1116 EXHIBIT NO. A

CASE NO. 11200

NEW MEXICO OIL CONSERVATION COMMISSION
EXAMINER HEARING
Wednesday, May 7, 1969

CASE 4120

Sam Boren's Application for Creation of New Gas Pool,
a Dual Completion and Commingling

Crowley State "A" Well No. 1

Location being designated as Unit L, 660 feet from the west line
and 1,980 feet from the south line of Section 5, Township 12
South, Range 33 East, N.M.P.M., Lea County, New Mexico

PRORATION UNIT REQUEST

Sam Boren's request for a 320-acre gas proration unit for the Wolfcamp gas zone completion at 8,700 feet for the subject well is made with projected economics being the major consideration. The operator recognizes and is cognizant that the reserve estimate and economic projections of the Wolfcamp horizon are based on very meager information.

The extent of the Wolfcamp gas reservoir is not known at this time. Sufficient production-reservoir performance data is not available to empirically estimate the reservoir volume; consequently, the maximum area within the pool that can be effectively and economically drained by the Crowley State "A" Well No. 1 Wolfcamp completion is unknown. A review of the electric logs of wells drilled offsetting the Sam Boren Crowley State acreage in Sections 5, 6 and 8, Township 12 South, Range 33 East, showed no evidence of porosity in the Wolfcamp section now open in Sam Boren's Crowley State "A" Well No. 1. A structure map of the North Bagley Field and an electric log cross-section of the well in question and offset wells are included in the exhibits.

To digress only momentarily, the economics of drilling a well in the northwest quarter (NW/4) of Section 5 was reviewed. The performance of completed Pennsylvanian oil wells on strike to Mr. Boren's tentative location indicates possible ultimate oil recoveries of 80,000 barrels. The cost to drill, complete and equip Pennsylvanian producers in the North Bagley Field ranges from \$185,000 to \$200,000. Because of the large volume of water produced with the oil, wells are equipped with hydraulic pumping equipment and the average monthly well operating expenses vary with operators from \$1,000 to \$1,500. Based on current prices being received for the oil and gas produced and sold and considering a normal lease royalty, a well that is unable to recover 100,000 to 125,000 barrels within a six to eight-year period is uncommercial.

The Crowley State "A" Well No. 1 is currently producing 36 to 40 barrels of oil per day and Mr. Boren was fortunate in being able to effect a completion in the Wolfcamp gas zone. The Wolfcamp gas zone will not only provide additional revenues from gas and condensate sales, but permits additional benefits in the way of reduced operating expenses by using a small portion of the Wolfcamp gas to gas-lift the Pennsylvanian oil completion zone.

It is recognized that the Pennsylvanian pay sections in the North Bagley Field are stratigraphic and with this geological characteristic, it is entirely possible that a well drilled on an 80-acre unit west of Section 5 could penetrate a prolific and highly profitable oil zone. The converse is also equally possible. The Crowley State "A" Well No. 1 is currently producing 36 to 40 barrels per day from the Pennsylvanian and had Mr. Boren not obtained the Wolfcamp gas pay, it is doubtful that this well would be on today's proration schedule.

The results of the Pennsylvanian explorers drilled along the southwest edge have not been encouraging. Mr. Boren recognizes the hazards involved in drilling in this area and asks that all operators be afforded the same benefits being requested in this petition on additional wells that may be drilled in the area. It is recognized that a 320-acre gas proration unit with the statewide well location requirements could have the effect of restricting additional exploration in the area. In view of the foregoing, Mr. Boren respectfully requests that the Commission consider the following:

1. Establish temporary field rules for the Wolfcamp gas zone of 320 acres with an exemption to the statewide well location requirements of 660 feet and 1,980 feet.
2. Permit operators offsetting the 320-acre requested gas unit to continue oil exploration on an 80-acre oil proration unit and should an operator obtain the Wolfcamp gas pay as completed in the Crowley State "A" Well No. 1, said operator be allowed to communitize his Wolfcamp horizon acreage with offset acreage to form a 320-acre gas proration unit.
3. That the temporary rules for the Wolfcamp gas zone be limited timewise with the interval being of sufficient length to conduct exploration in the area and to permit the assemblage of production performance data from the Crowley State "A" Well No. 1 to possibly determine the volume of the Crowley State "A" Well No. 1 Wolfcamp gas reservoir.

Volumetric estimates of the Wolfcamp zone are included herewith and in summary, should the 320-acre drainage area have a net effective average pay thickness of 7 feet, the in-place gas reserves are calculated to be 2,210,000 MCF. Estimating 70 percent recovery, the projected recoverable reserves are 1,547,000 MCF of gas and 31,000 barrels of condensate using an average condensate recovery of 20 barrels per million cubic feet of gas produced.

The calculated economics of the Wolfcamp gas zone using the above parameters indicate an operator may realize a profit of \$104,000 before Federal income taxes assuming a Wolfcamp well completion cost of \$152,000. At this writing, the economic justification of developing the Wolfcamp gas zone on 160-acre spacing is unwarranted. Copies of the Wolfcamp gas zone completion tests by El Paso Natural Gas Company and economic analyses are submitted as exhibits.

GAS LIFT INSTALLATION AND DOWNHOLE MULTIPLE COMPLETION

The dual completion of the Pennsylvanian oil zone at 9,450 feet and the Wolfcamp gas zone at 8,700 feet has been effected by running a Baker Model Type "R" packer on 2-3/8" EUE tubing and setting the packer at 8,747 feet in the 4-1/2" casing.

The gas lift installation incorporates the use of Otis Engineering landing nipples, a standing valve and an Otis ported nipple in the tubing string. An Otis side door choke nipple with a 5/64" orifice is set in the ported nipple. Gas from the Wolfcamp zone passes through the ported nipple and the 5/64" orifice into the tubing. The gas energy lifts the tubing fluids to the surface. The standing valve in the landing nipple, which is set above the packer, prevents gas from the Wolfcamp zone from passing into the Pennsylvanian oil zone. The Wolfcamp gas used for lifting and the Pennsylvanian oil solution gas is separated at the surface and sold.

The measurement of the Wolfcamp gas used for lifting is calculated using formulas developed by Dr. Kermit Brown which have been reprinted and used extensively by companies in the oil and gas industry. Copies of the reprints applicable to the Crowley State "A" well are presented as exhibits. In principle, the volume of the gas passing through the orifice is a function of the pressure differential across the orifice, the specific coefficient for the orifice used and the barrels of fluid being gas lifted.

On a separate exhibit, the calculated volumes of gas used for gas lifting the Crowley State "A" Well No. 1 are shown. The well is currently producing approximately 40 barrels of oil and 200 barrels of water per day with a surface flowing pressure of 100 psi. The volumes calculated and shown on the exhibit consider two cases:

- Case I Assumes that the Wolfcamp zone is shut in. The volume of gas passing through the 5/64" orifice is calculated to be 346 MCFD.
- Case II Assumes the Wolfcamp zone is being produced at a rate of 3,000 MCFD. The gas passing through the orifice under these conditions is 321 MCFD.

The gas passing from the Wolfcamp zone into the tubing is physically entering the produced Pennsylvanian fluids and to this extent is downhole commingling.

Mr. Boren respectfully requests Commission approval of the dual completion as effected and for permission to commingle the fluids from both horizons to the extent of using the Wolfcamp gas to gas lift the tubing completion fluids.

Page 4
CASE NO. 4120

COMMON STORAGE OF PRODUCED WELL LIQUIDS (COMMINGLING)

The gravity of the Wolfcamp hydrocarbon liquids (condensate) is 61° API. To reduce condensate losses through vaporization, Mr. Boren requests permission to commingle the produced Pennsylvanian 47° API oil with the Wolfcamp 61° API condensate in common surface storage.

The Wolfcamp gas and liquids produce into a high pressure separator with operating pressures of 600 to 900 psig. The operating conditions on the high pressure vessel are not known at this time but will be governed by the gas transmission company line pressure.

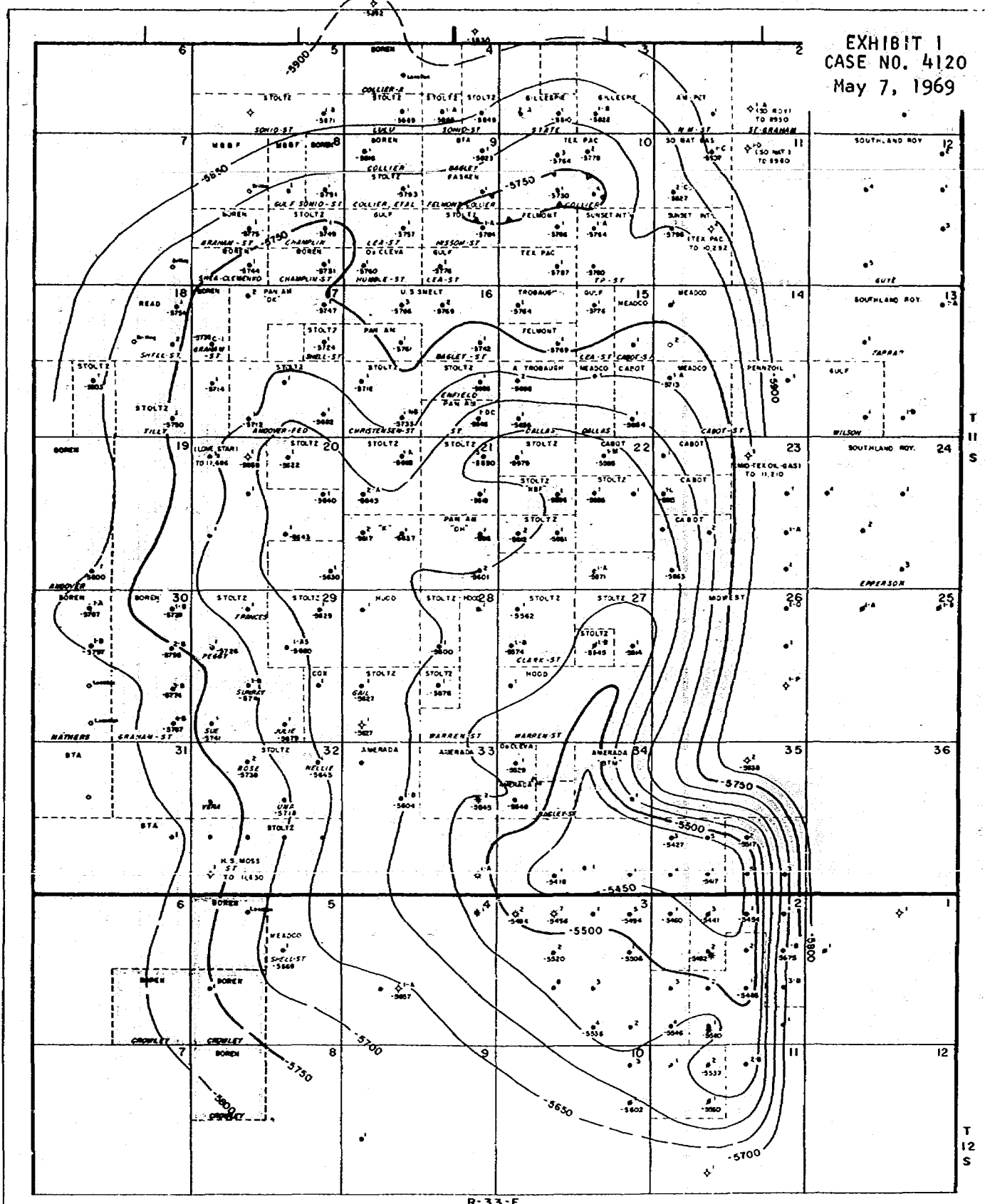
The liquids from the high pressure separator pass to a low pressure separator (approximately 50 psig). The gas flashing in the low pressure vessel enters the low pressure gas sales line. The condensate is directed to storage.

Without component analyses of the produced fluids, the extent of condensate loss through vaporization in atmospheric storage is, at this time, a best estimate. The condensate shrinkage with commingling is estimated at 10 percent and without commingling, the loss could be 30 percent.

Assuming condensate production to storage is 60 barrels per day and the shrinkage estimates reasonable, the loss through vaporization without commingling could be 18 barrels per day. By commingling the Wolfcamp condensate with the Pennsylvanian oil, it is estimated that 12 additional barrels of condensate could be retained as stabilized product for sale to the pipeline.

Mr. Boren requests approval to store the produced liquids from the Crowley State "A" Well No. 1 in common storage.

EXHIBIT I
CASE NO. 4120
May 7, 1969



R-33-E

SAM BOREN, ET AL
PRODUCING LEASEHOLD INTERESTS

NORTH BAGLEY FIELD
LEA COUNTY, NEW MEXICO
CONTOURED ON STRAWN

1" = 1000'

RALPH M. VINEY WOLAND, TEXAS

EXHIBIT 3
CASE NO. 4120
May 7, 1969

S A M B O R E N
CROWLEY STATE "A" WELL NO. 1

Location: Unit L of Section 5, Township 12 South, Range 33 East,
Lea County, New Mexico

WOLFCAMP RESERVOIR DATA AND RESERVE ESTIMATES

Reservoir Data

Perforations	8,718 - 8,726'
Casing Pressure	2,101 psig, 2,114.2 psia - El Paso Well Test
Gas Gravity	0.667 Specific Gravity (Air = 1.000) El Paso Test
Reservoir Pressure	2,571 psig = 2,584.2 psia - Calculated using Gradient from El Paso Test
Critical Pressure	670 psia
Critical Temperature	378° R
Porosity (ϕ)	15% - Range 14 to 18% of Bulk Volume*
Connate Water (C_w)	20% - Range 15 to 25% of Pore Space*
Reservoir Temperature	124° F

*Empirical calculations from electric logs

Gas Reserve Calculations

$$Q = PA \times VR \times F$$

where:

Q	=	Volume of gas at 60° F and one atmosphere pressure - MCF
PA	=	Absolute formation pressure in atmospheres
VR	=	Net effective reservoir volume
F	=	Correction factor ($1/z \times 520/T$)
PA	=	$\frac{2584.2}{15.025}$ psia = 172 Atmospheres
VR	=	$43,560 \text{ Cu. Ft./Ac. Ft.} \times \phi \times (1-C_w)$ $43,560 \times 0.15 \times (1-0.20)$ $5,227 \text{ Cu. Ft./Ac. Ft.} = 5.227 \text{ MCF/Ac. Ft.}$
F	=	1.098

$$Q \text{ in Place} = 172 \times 5.227 \times 1.098 = 987 \text{ MCF/Ac. Ft.}$$

Estimated Drainage Area	320 Acres
Average Thickness	7 Feet
Reservoir Volume	2,240 Ac. Ft.

$$\text{Estimated Gas in Place} = 2,240 \text{ Ac. Ft.} \times 987 \text{ MCF/Ac. Ft.} = 2,210,880 \text{ MCF}$$

Recovery Factor	70%
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$$\text{Recoverable Gas} = 2,210,880 \times 0.70 = 1,547,620 \text{ MCF}$$

$$\text{Estimated Recoverable Condensate} = 1,547.62 \text{ MMCF} \times 20 \text{ Bbls/MMCF} = 30,950 \text{ Barrels}$$

EXHIBIT 4
CASE NO. 4120
May 7, 1969

PROJECTED ECONOMICS OF A WOLFCAMP GAS COMPLETION ON 320-ACRE SPACING

Estimated Recoverable Reserves (8/8)

Gas - MCF	1,547,620
Condensate - Barrels	30,950

Estimated (8/8) Future Income

Gas Sales @ \$0.16/MCF	\$247,620
Condensate Sales @ \$3.16/Barrel	<u>97,800</u>
Total	\$345,420

Estimated Future Gross Income

To (7/8) Working Interest	\$302,240
Less Operating Expense @ \$0.03/MCF	<u>46,000</u>
Total	\$256,240
Less Estimated Development - Wolfcamp Zone only	<u>152,000</u>
Estimated Future Profit before Federal Income Taxes	\$104,240

The Crowley State "A" Lease is burdened with overrides and the calculated future profit is considerably less than the above figure.

Assuming the parameters used above are reasonable, the drilling and completion of a well on a 160-acre normal royalty interest ownership proration unit is not economically favorable.

**NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL**

**EXHIBIT 5
CASE NO. 4120
May 7, 1969
Form C-122
Revised 9-1-65**

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 4-17-69	
Company Sam Boren				Connection None	
Pool Bagley				Formation Wolfcamp	
Completion Date		Total Depth 10,300		Plug Back TD 9450	
				Elevation 4290	
Farm or Lease Name Crowley St.				Well No. A-1	
Csg. Size 4 1/2	Wt. 11.60	d 4.000	Set At 10,300	Perforations: From 8718 To 8726	
Tbg. Size 2 3/8	Wt. 4.7	d 1.995	Set At 8,749	Perforations: From To	
Type Well - Single - Broadhead - G.G. or G.O. Multiple G. O. Dual				Packer Set At 8749	
Producing Thru Csg. 8722		Reservoir Temp. °F 140 # 8726		Mean Annual Temp. °F 60	
				Baro. Press. - P _g 13.2	
L 8722	H 8722	G _g .667	% CO ₂ .19	% N ₂	% H ₂ S .01 grains
				Prover 2"	Meter Run
				Taps	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. in. H ₂ O	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI									2101		
1.	2"	X	1.000	120		13			1878	72	1 hr.
2.	2"	X	1.000	234		22			1647	72	1 hr.
3.	2"	X	1.000	385		46			1311	74	1 hr.
4.	2"	X	1.000	435		52			1123	76	1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor F _{pv}	Rate of Flow Q, Mcfd
1	17.09		133.2	1.049	1.224	1.019	2,979
2	17.09		247.2	1.039	1.224	1.033	5,550
3	17.09		398.2	1.014	1.224	1.049	8,860
4	17.09		448.2	1.008	1.224	1.053	9,873
5							

NO.	R _g	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio	Mcf/bbl.
1.	.20	473	1.25	.964	21.035	
2.	.37	482	1.28	.937	61.0	
3.	.59	506	1.34	.908	.667	XXXXXX
4.	.67	512	1.35	.902	.796	XXXXXX
5.					670	XXXXXX
					378	XXXXXX
						666 P.S.I.A.
						421 P.S.I.A.

P _c 2114.2 P _c 4469.8				(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.629$		(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.629$	
NO.	P _c ²	P _w	P _w ²	P _c ² - P _w ²			
1		1900.4	3611.5	858.3			
2		1699.2	2887.3	1582.5			
3		1443.6	2084.0	2385.8			
4		1313.5	1725.3	2744.5			
5							

Absolute Open Flow 16,000 Mcfd @ 15.025				Angle of Slope @ 45		Slope, n 1.000	
Remarks: Well made 54 barre's of distillate							

Approved By Commission:	Conducted By: El Paso Nat. Gas Co.	Calculated By: El Paso Nat. Gas Co.	Checked By:
	Jack T. Littlefield & Don Read	Jack T. Littlefield & Don Read	

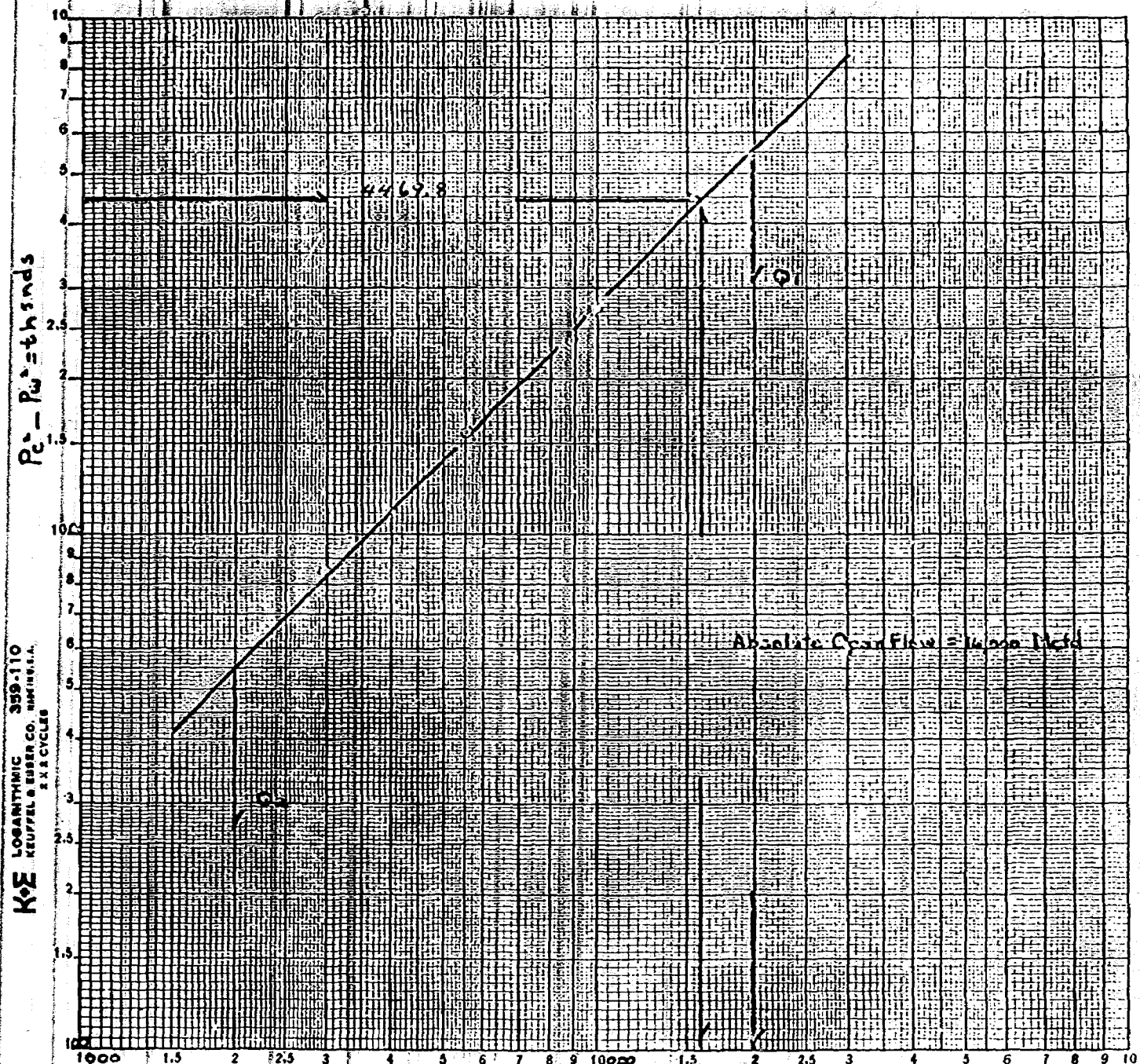
Sqm Boren
Crowley State A-1

5-12-33

Lea, County, New Mexico

4-24-69

EXHIBIT 5
CASE NO. 4120
May 7, 1969



$Q_1 = 20,000$ Mcfd
 $Q_2 = 2,000$ Mcfd

$\log Q_1 = 4.301030$
 $\log Q_2 = 3.301030$
 $N = 1.000$

Absolute Open Flow = 10,000 Mcfd

El Paso Natural Gas Company
CHROMATOGRAPH CALCULATIONS
Form 15-171 (Rev. 12-62)

EXHIBIT 5
CASE NO. 4120
May 7, 1969

Analysis No.
22710-8

Sample From CRAWLEY STATE A-1							
Owner SAM BOREN				State NM		County LEA	
Location or Field		Formation		Depth		From To	
Date Secured 4-17-69		Secured By TUTEN		Department			
Date Run 4-18-69		Run By Simmons		Checked By			
Source Press.		Rent Press.		Source Temp.		Atmos. Temp.	
SULPHUR - GRS. PER 100 cu. Ft.		Hydrogen Sulphide 0.01 GR		Mercaptan 0.06 GR		Total 0.07 GR	
Sweet							
COMPONENT	HE ₂	AR ₂ A	FACT ₂ F	CO ₂ FD AR ₂ A	MOLE %	GPIA	BTU
Helium	HE ₂						
Hydrogen Sulphide	H ₂ S						
Carbon Dioxide	CO ₂	700	2853	0.20	0.19		
Nitrogen	N ₂	11000	4160	1.58	1.15		
Methane	C ₁	230000	3695	84.99	82.56		833.86
Ethane	C ₂	33000	2419	7.98	7.75		137.10
Propane	C ₃	17350	2080	3.61	3.51	.966	88.38
Iso Butane	IC ₄	2255	1864	0.42	0.41	.134	13.35
Normal Butane	C ₄	4875	1825	0.89	0.86	.271	28.07
Iso Pentane	IC ₅	766	1878	0.14	0.14	.051	5.60
Normal Pentane	C ₅	634	2040	0.13	0.13	.017	5.21
Hexane	C ₆			TR	TR		
Heptane	C ₇						
TOTAL				10294	100.00	1.469	1111.57

Remarks: **X8372X 27**

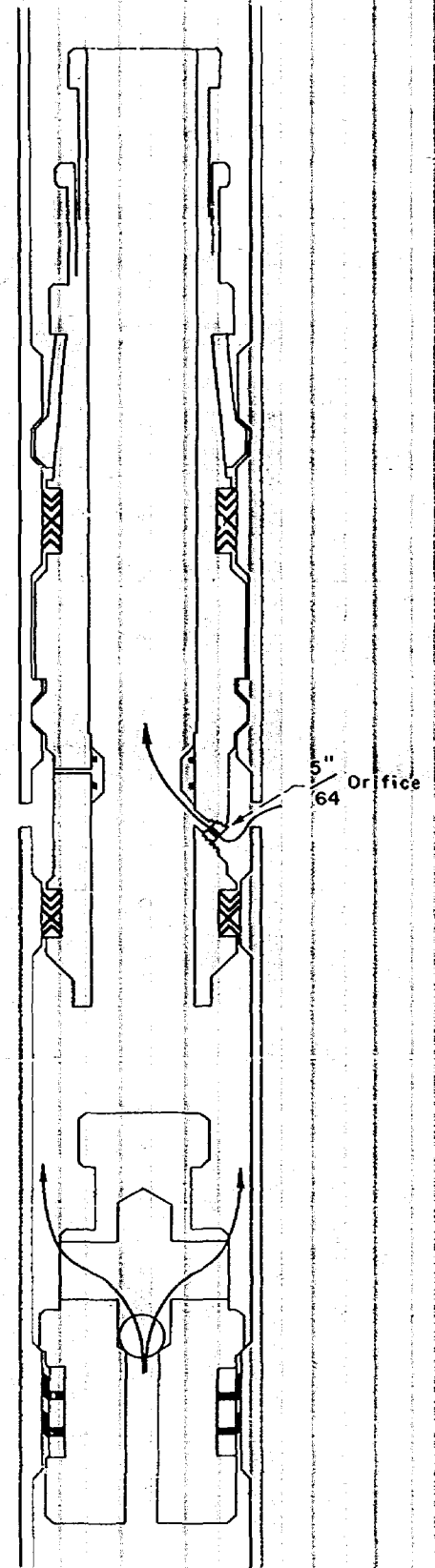
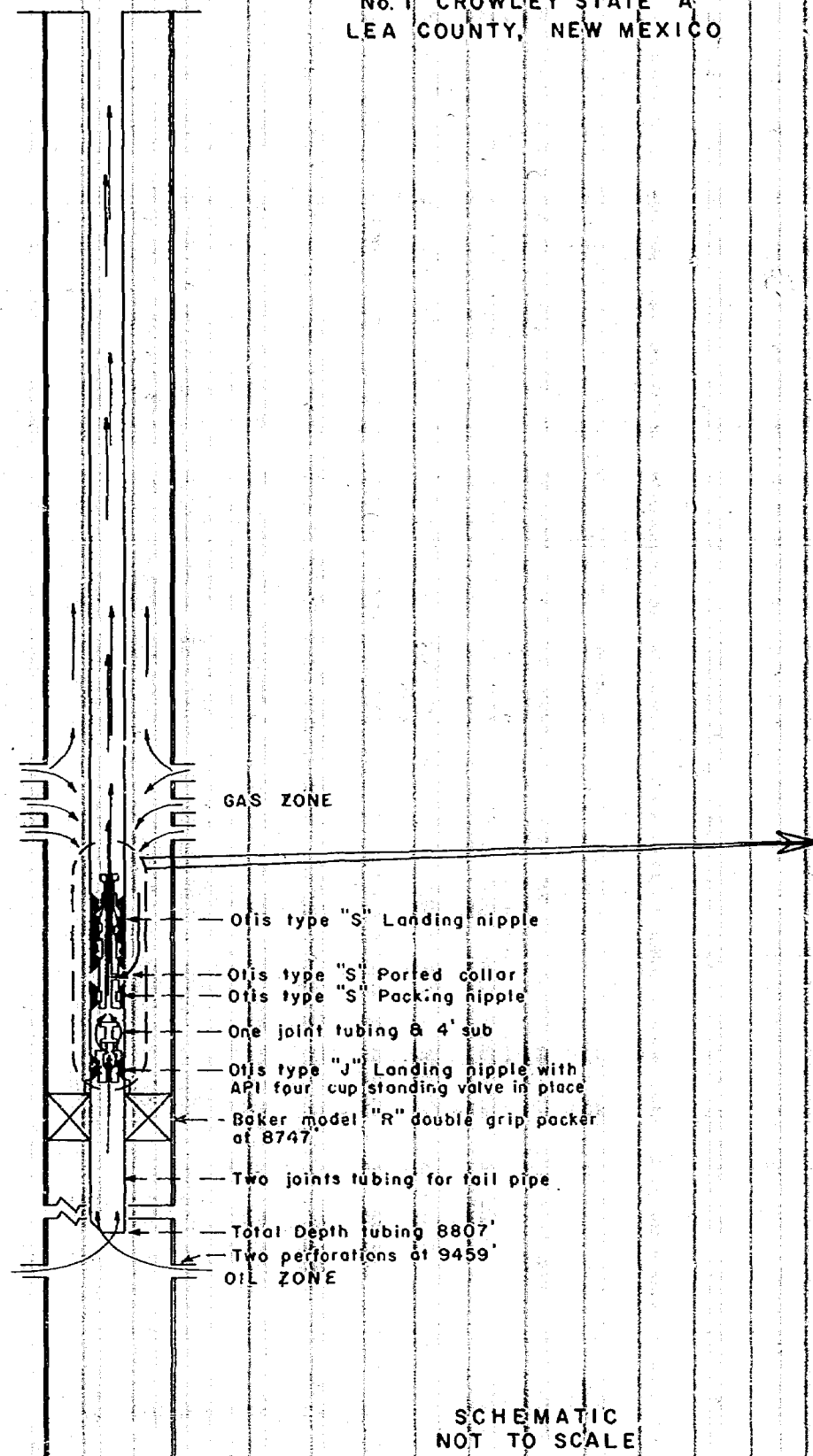
SEC 5
TWP 12 S
RGE 33 E

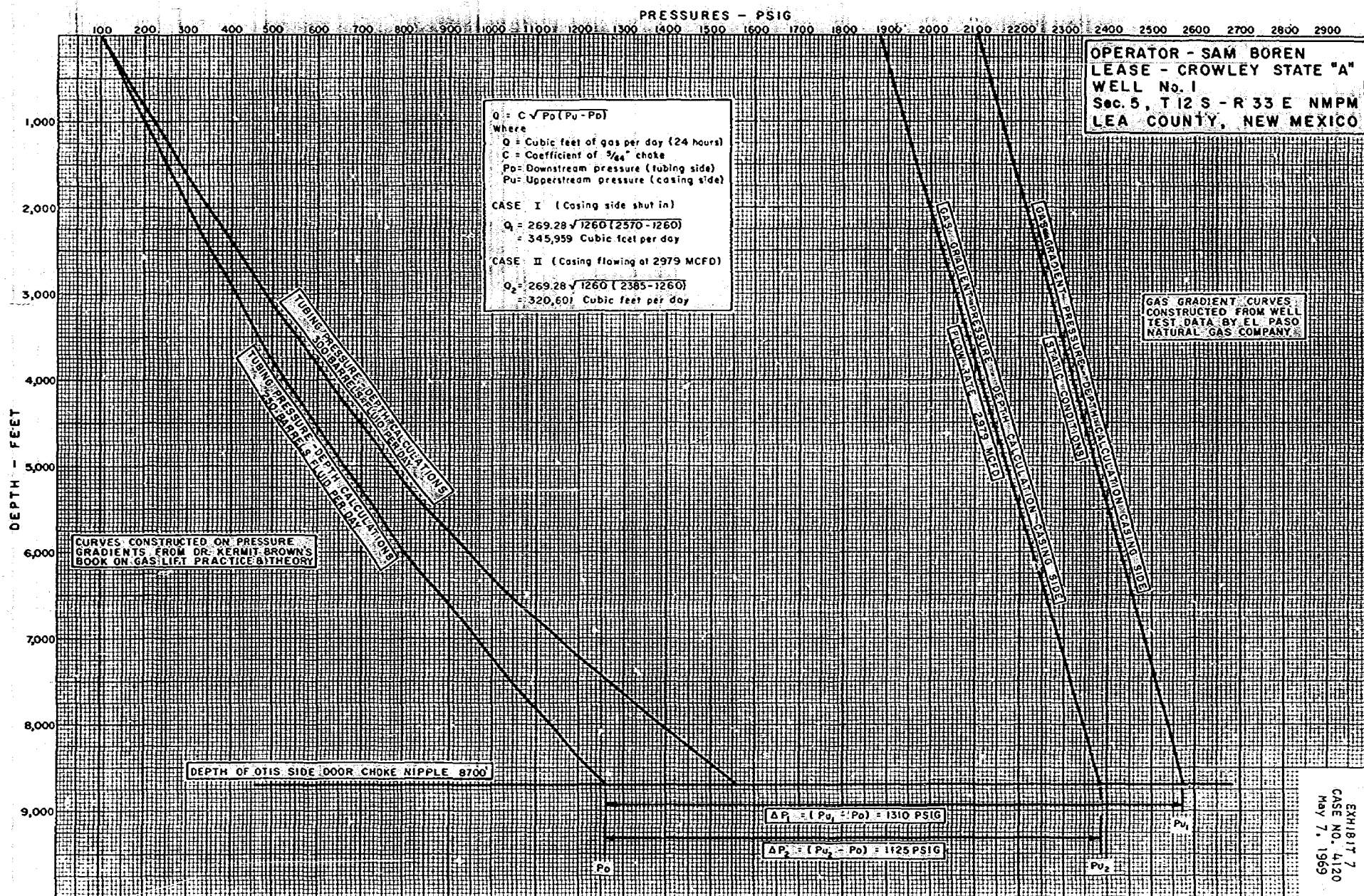
X7347X 27

Reg H.C. Sam Boren

WPA

SAM BOREN
No. 1 CROWLEY STATE "A"
LEA COUNTY, NEW MEXICO







SAMPLE CALCULATIONS FOR BOTTOM HOLE CHOKE

CALCULATION INSTRUCTION

NON-CRITICAL FLOW

$$Q = C \sqrt{P_u(P_u - P_d)}$$

—when the down stream pressure (P_d) is greater than 50 percent and less than 80 percent of the up-stream pressure (P_u).

CRITICAL FLOW

$$Q = CP_u/2$$

—when the down stream pressure (P_d) is less than one-half of the up-stream pressure (P_u).

24-HOUR COEFFICIENTS

Orifice Fraction	Diameter Decimal	Orifice Area	24 Hour Coefficient	Orifice Fraction	Diameter Decimal	Orifice Area	24 Hour Coefficient
1/64"	.0156	.00019		33/64"	.5156	.20881	13,680.
2/64"	.0312	.00076		34/64"	.5312	.22162	14,520.
3/64"	.0469	.00173		35/64"	.5469	.23491	15,360.
4/64"	.0625	.00306	174.24	36/64"	.5625	.2485	16,080.
5/64"	.0781	.00491	269.28	37/64"	.5781	.26248	17,040.
6/64"	.0937	.00691	396	38/64"	.5937	.27683	18,120.
7/64"	.1094	.00946	528.	39/64"	.6094	.29167	18,960.
8/64"	.125	.01227	696.	40/64"	.625	.3068	20,016.
9/64"	.1406	.015526	900.	41/64"	.6406	.3223	21,048.
10/64"	.1562	.01917	1,140.	42/64"	.6562	.33819	22,200.
11/64"	.1719	.023208	1,344.	43/64"	.6719	.35456	23,400.
12/64"	.1875	.02765	1,608.	44/64"	.6875	.37122	24,240.
13/64"	.2031	.03239	1,944.	45/64"	.7031	.3882	25,560.
14/64"	.2187	.03756	2,256.	46/64"	.7187	.40568	26,400.
15/64"	.2344	.04315	2,592.	47/64"	.7344	.4235	27,840.
16/64"	.25	.04908	2,952.	48/64"	.75	.44178	29,064.
17/64"	.2656	.0554	3,312.	49/64"	.7656	.4604	30,240.
18/64"	.2812	.06215	3,720.	50/64"	.7812	.4794	31,440.
19/64"	.2969	.06923	4,248.	51/64"	.7969	.498768	32,688.
20/64"	.3125	.0767	4,680.	52/64"	.8125	.51848	33,936.
21/64"	.3281	.08454	5,016.	53/64"	.8281	.53858	35,184.
22/64"	.3437	.09278	5,400.	54/64"	.8437	.55907	36,432.
23/64"	.3594	.10144	6,120.	55/64"	.8594	.58007	37,752.
24/64"	.375	.1106	6,840.	56/64"	.875	.60132	39,072.
25/64"	.3906	.11982	7,608.	57/64"	.8906	.62295	40,416.
26/64"	.4062	.12949	8,112.	58/64"	.9062	.64497	41,784.
27/64"	.4219	.1398	8,976.	59/64"	.9219	.66751	43,200.
28/64"	.4375	.15033	9,720.	60/64"	.9375	.69029	44,640.
29/64"	.4531	.16124	10,224.	61/64"	.9531	.71345	46,104.
30/64"	.4687	.17253	10,944.	62/64"	.9687	.73700	47,616.
31/64"	.4844	.18428	11,760.	63/64"	.9844	.76108	49,152.
32/64"	.50	.19635	12,552.	64/64"	1.00	.7854	50,760.

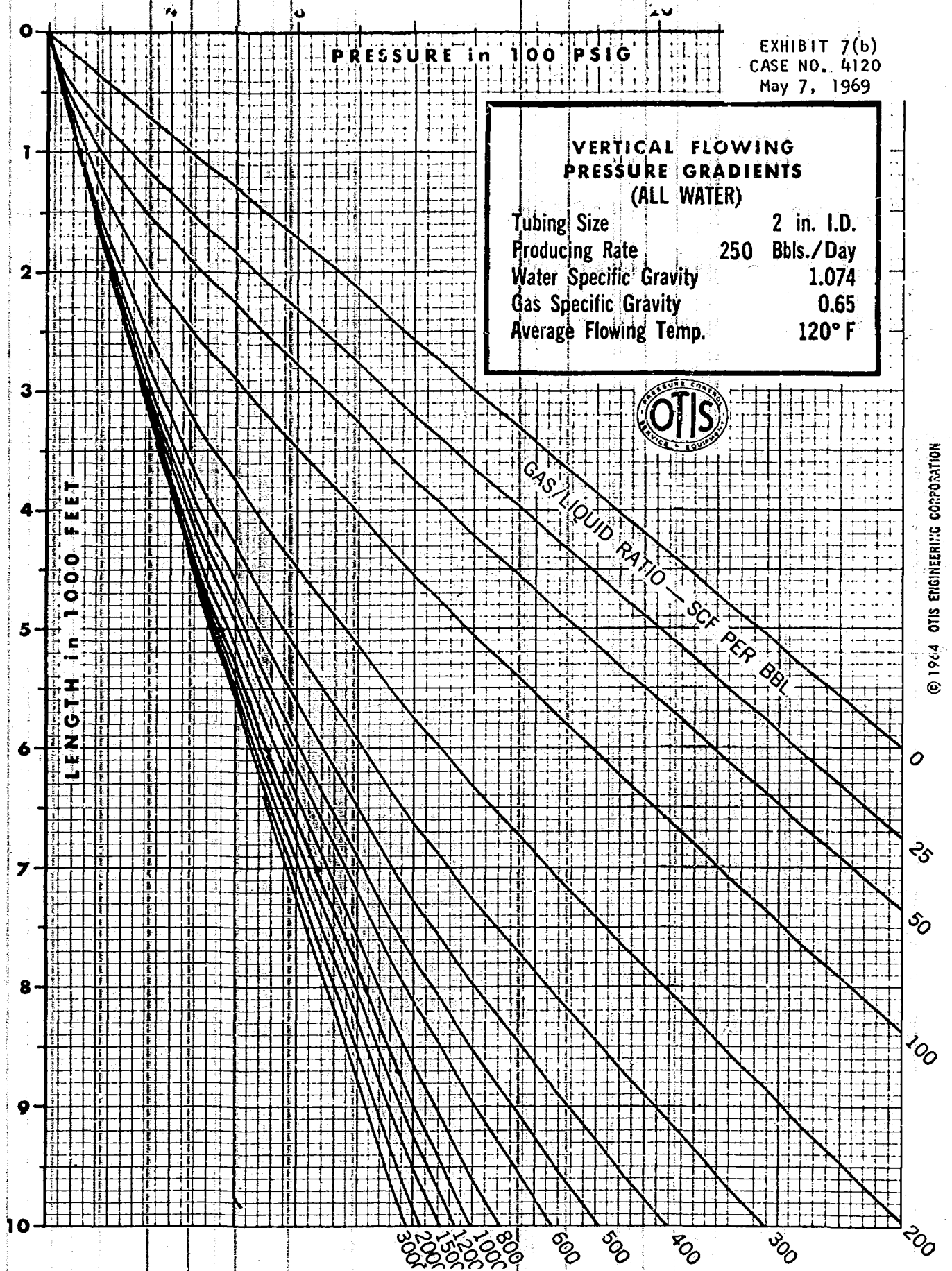
EXHIBIT 7(b)
CASE NO. 4120
May 7, 1969

**VERTICAL FLOWING
PRESSURE GRADIENTS
(ALL WATER)**

Tubing Size 2 in. I.D.
Producing Rate 250 Bbls./Day
Water Specific Gravity 1.074
Gas Specific Gravity 0.65
Average Flowing Temp. 120° F



GAS/LIQUID RATIO — SCF PER BBL



L. L. RIDGWAY COMPANY, INC.
PRINTED IN U.S.A.

NO. 650-10R
10 DIVISIONS PER INCH BOTH WAYS

RALPH H. VINEY

H

Consultant to the Oil and Gas Industry

MAILED
69 APR 16 PM 1 12

Central Building
MIDLAND, TEXAS 79701
915 682-5346

April 15, 1969

Mr. D. S. Nutter, Chief Engineer
New Mexico Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico 87501

Dear Dan,

Here are copies of material present on Sam Boren's
Crowley State "A" Well No. 1 in the Bagley Area,
Lea County.

Don what normally do you need in the way of
material on a Request for a New Gas Pool? Any
ideas you care to pass along will be appreciated.

Best personal regards,

Ralph H. Viney
Ralph H. Viney

RALPH H. VINCY

E

Consultant to the Oil and Gas Industry

Central Building
MIDLAND, TEXAS 79701
915 682-5346

April 15, 1969

69 APR 15 PM 12

Mr. J. D. Ramey
Supervisor & Oil & Gas Inspector
New Mexico Oil Conservation Commission
Hobbs, New Mexico 88240

Dear Mr. Ramey,

Sam Boren's Crowley State "A" Well No.1 Completion
Report Forms and Request for Creation of a New Gas
Pool, North Bagley Field, Lea County, New Mexico

With respect to the captioned the following are enclosed.

Form C-105

Form C-123

Acoustic Velocity Log

Guard Log

Foxro Log

Five duplicate originals
with attachments

Two copies - Request for
New Gas Pool

1 copy

1 copy

1 copy

Mr. Ramey should you require additional material or information please advise.

Very truly yours,

RALPH H. VINCY

DISTRIBUTION
 ANTARE
 AND OFFICE
 OPERATOR

NEW MEXICO OIL CONSERVATION COMMISSION
 WELL COMPLETION OR RECOMPLETION REPORT AND LOG

69 APR 18 PM 1 12

NAME OF WELL: San Bowen
 TYPE OF COMPLETION: X NEW RECOMPLETION
 ADDRESS: 225 Park Cities Bank Bldg. Dallas, Texas 75205
 COUNTY: L SECTION: 660 TOWNSHIP: West RANGE: 1980
 SOUTH 5 12-S 33-E
 DATE: 12-31-68 2-6-69 3-31-69 DEPTH: 4292 GR
 10,299 Two Rotary
 8710 - 8734 (Wolfcamp)
 9454 - 9466 (Ranger Lake)
 yes - Deviation Survey
 Acoustic Velocity Log, Guard Log, Forxo Log No
 CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB. FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
11 3/4	42.0	0 - 418	17 1/4"	385 sacks	
8 5/8	24 & 32	0 - 3895	9 7/8"	450 sacks	
4 1/2	11.6	0 - 10,299	7 7/8"	600 sacks	

 LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN
2 3/8"				

 TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 3/8"	8807	8745

 ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
8718 - 8726	500 gallons 15% Acid
9454	1500 gallons 15% Acid

 PRODUCTION

DATE	TYPE OF PRODUCTION	DEPTH	TEMPERATURE	PRESSURE	OTHER DATA
3-31-69	Wolfcamp - Flowing; Ranger Lake - Gas lift				
3-31-69 to 4-4-69		96	32.64	420	1600
				800	952
					See attachment
		100	2070	105	400
					200
					42

 Gas Vented - will be sold
 Detail of down hole equipment used to dual complete and gas lift. Deviation Survey & Elec Log
 I hereby certify that the information furnished on both sides of this form is true and complete to the best of my knowledge and belief.
 SIGNED: Paul H. May TITLE: Agent DATE: 4/14/69

[illegible]

Southeastern New Mexico

T	Canyon	9511
T	Strawn	9918
T	Neola	
T	Wess	
T	Dwyonian	
T.	Silurian	
T.	Montoya	
T	Simpson	
T	Mc Kee	
T	Effenburger	
T	Gr. Wash	
T	Granite	
T	DeLaware Sand	
T	Bone Springs	
T.		
T		
T.		

T. Ole Alago _____
T. Kirtland-Frontland _____
T. Pictured Cliffs _____
T. Cliff House _____
T. Menefee _____
T. Point Lookout _____
T. Mancos _____
T. Gallup _____
Base: Greenhorn _____
T. Dakota _____
T. Morrison _____
T. Toddlro _____
T. Entrada _____
T. Wingate _____
T. Chule _____
T. Permian _____
T. Penn. "A" _____

T. Penn. "B" _____
T. Penn. "C" _____
T. Penn. "D" _____
T. Leadville _____
T. Madison _____
T. Elbert _____
T. McCracken _____
T. Ignacio Qtzite _____
T. Granite _____
T. _____
T. _____
T. _____
T. _____
T. _____
T. _____
T. _____
T. _____

From	To	Thickness in Feet	Formation	From	To	Thickness in Feet	Formation
0	418		red bed				
418	1493		red bed and anhydrite				
1493	3766		anhydrite and sand				
3766	4012		anhydrite				
4012	7412		lime				
7412	8219		lime and shale				
8219	10299		lime				

Attachment to C- 05
Sam Boren Crowley State "A" Well No.1 Section 5, T12S, R33E,
NMP1 Lea County

1. With respect to Gas Lift Installation - See Otis Engineering Co. diagram of downhole installation.

Otis Engineering Co. estimated that with existing Wolfcamp Gas Reservoir Pressures that 300,000 ft³ of gas per day would pass through 5/64" choke in the side door port to gas lift the Ranger Lake Zone production.

On a daily basis 300 MCF of the 400 MCF of gas produced from the tubing would be gas lift gas. Thus the gas oil ratio of the Ranger Lake Zone would be.

$$\frac{(400,000 - 300,000) \text{ ft}^3}{105 \text{ BOPD}} = 952 \text{ ft}^3 / \text{bbl}$$

2. The Wolfcamp Gas Zone is produced on the casing side and the zone has been tested during the past 60 days.

On a test 4-2-69

Surface Pressure shut in	2070 psi
Flowing Surface pressure	1885 psi
Choke size	1/4/64
Rate	2900 MCFD
Line Pressure	900 psi

The Wolfcamp zone produces 13.3 barrels/MMCF of water white 59° API condensate.

The Wolfcamp Zone (Casing completion) is shut in waiting on a high pressure gas connection and designation of a new gas pool.

USE 450

INSTALLATION REPORT

1 12

General Office, Gulf Line, Inc.
P. O. Box 34380, Dallas, Texas 75234

INSTRUCTIONS: COMPLETE FOUR (4) COPIES. SEND 1st COPY TO DIVISION OFFICE, 2nd COPY TO DALLAS ACCOUNTING ATTACHED TO DELIVERY TICKET (M.S.O.), 3rd COPY TO DISTRICT OFFICE, 4th COPY TO CUSTOMER.

COMPANY <i>Sam Boren Oil</i>		FIELD <i>North Bagby</i>		DATE <i>APR 16</i>	
WELL NAME <i>Crowley State "A" Well #1</i>		COUNTY <i>Lea</i>		STATE <i>New Mexico</i>	
CASING	SIZE <i>4 1/2"</i>	WEIGHT <i>11.60 Lb</i>	GRADE <i>N. 80</i>		
LINER	SIZE	WEIGHT	GRADE		

FLUID CONTENT AND CONDITION:

COMMENTS:

TYPE PACKER	PART NO.	SERIAL NO.
LONG STRING	BORE ID.	TUBING SIZE
INTER-MEDIATE STRING	BORE ID.	TUBING SIZE
SHORT STRING	BORE ID.	TUBING SIZE

TYPE PACKER	PART NO.	SERIAL NO.
LONG STRING	BORE ID.	TUBING SIZE
SHORT STRING	BORE ID.	TUBING SIZE

TYPE PACKER	PART NO.	SERIAL NO.
TYPE SEALING UNIT	PART NO.	TENSION
SIZE TENSION SLEEVE	EXPENDABLE PLUG	FLAPPER VALVE

ACCESSORY EQUIPMENT ON WELL DIAGRAM — NUMBER THE SYMBOL & IDENTIFY BELOW:

- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing
- 2 Joints 2 3/8 N-80 Tubing

COMMENTS ON PACKER PERFORMANCE:

All measurements are Approximate

DIVISION

DISTRICT

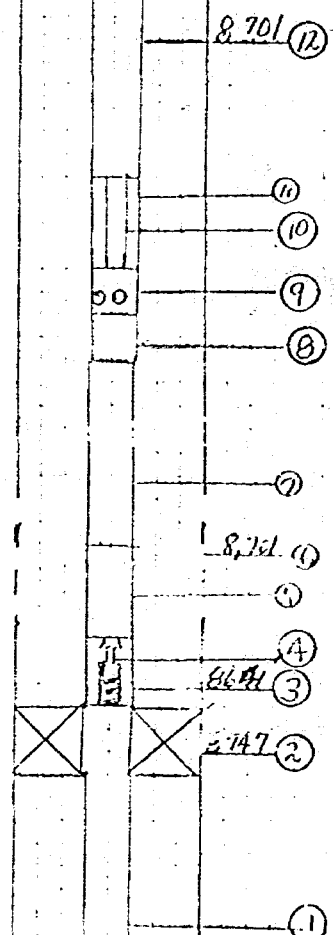
OPERATOR'S NAME

NO PROD. ZONES

ACC. ONLY

DATE

M.S.O. NO.



REQUEST FOR THE EXTENSION OF AN EXISTING POOL
OR
THE CREATION OF A NEW POOL

TO: The Oil Conservation Commission
State of New Mexico

Date April 10, 1969

The Sam Boren
Name of Operator

Crowley "A" State
Name of Lease

1 Located 660 feet from the W line and 1980 feet
Well No.
from the S line of 5 Section 12-S 33-E
Range

is outside the boundaries of any pool producing from the same formation. On the basis of the information submitted here-
with on form C-105, we hereby request that the
pool be extended to include the following described area

or that a new pool be created to include the following described area Sections 5, 6, 7 & 8 of Township 12-S,
Range 33-E Lea County, New Mexico

Suggested name: Bagley Wolfcamp Gas Pool

Name of Producing Formation: Wolfcamp

Sam Boren
Operator
Ralph H. Viney
Agent Representative

RH
RALPH H. VINEY

E

Consultant to the Oil and Gas Industry

105th BD
200 BLD
Penn

69 APR 5 AM

Central Building
MIDLAND, TEXAS 79701
915 682-5346

April 4, 1969

3718-8726 W.C.
C. L. H. 300 mg
Baker 'K' 874-11

9457-

Disc 4/20

New Mexico Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico 87501

Gentlemen:

Hearing request to commingle production and create
new gas pool with special rules for 320 acre spacing.
North Bagley Field, Lea County, New Mexico

Sam Boren respectively requests a hearing be set to consider the
captioned. The lease and well in question is Crowley State "A"
lease Well No. 1, North Bagley Lower Penn Field, State Lease No.
K-3747. The proposed 320 proration unit, subject to this request,
is the Sam Boren acreage located in the west half (W/2) of Section
5. T12S R33E N.M.P.M.

5/64"
unit
about 100
W.C. / 100

The Crowley State "A" No. 1 Well is producing from the Ranger Lake
and Wolfcamp horizons. Mr. J. W. Rankin, Drilling and Production
Superintendent with Sam Boren Oil Company visited with Mr. J. D.
Ramey and discussed a downhole equipment installation to effect
a dual completion to produce the Wolfcamp gas and gaslift the
Ranger Lake Oil. Quantities of Wolfcamp gas are used to lift the
Ranger Lake Zone production - and is in actuality down hole
commingling of fluids. Permission is requested to commingle
fluids in the well bore.

Ranger

400-500/105

952/1

The condensate produced with the Wolfcamp gas is water white,
very volatile and gravity is in excess to 59° API. High pressure
separation equipment has been installed to maximize recovery
of the condensate and to minimize waste permission to commingle
the Wolfcamp condensate and Ranger Lake Oil on the surface is
requested.

DOCKET MARKED

4-23-69

Just completed

Completed a dual completion

in the well bore

*commingle Wolfcamp gas to
gas lift the Ranger*

New Mexico Oil
Conservation Commission

-2-

April 4, 1969

Sam Boren respectfully requests of the Oil Conservation Commission of New Mexico to hear this application at the first open available date. Forms C-105 and C-123 to follow.

Very truly yours,

Ralph H. Viney
Ralph H. Viney
Agent

RHV:wj

cc: Mr. J.D. Ramey
P.O. Box 1980, Hobbs, New Mexico

Mr. J.W. Rankin

Mr. Sam Boren

DRAFT

GMH/esr
May 20, 1969

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

RECORDS CENTER

CASE No. 4120

Order No. R- 3808
NOMENCLATURE

APPLICATION OF SAM BOREN FOR THE
CREATION OF A NEW GAS POOL, PROMUL-
GATION OF SPECIAL RULES FOR THE POOL,
A DUAL COMPLETION, AND COMMINGLING,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 7, 1969,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this May day of May, 1969, the Commission, a
quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Sam Boren, seeks the creation of
a new gas pool *for his Crowley State "A" well No. 1 located in Unit 2 of Section 5, Township 12 North, Range 33 East, Lea County, New Mexico.* and the promulgation of
special rules and regulations governing said pool, including a
provision for 320-acre spacing units.

(3) That the applicant also seeks approval for the dual
completion of said well to produce gas through the casing-tubing
annulus from the aforesaid Wolfcamp pool and oil through tubing
from the North Bagley-Lower Pennsylvanian Pool, with separation
of zones by a packer set at approximately 8747 feet, commingling
in the well-bore, by means of a gas-lift assembly, sufficient
Wolfcamp gas to lift the Pennsylvanian oil.

(4) That the applicant further seeks authority to commingle on the lease the liquid hydrocarbons from said pools after separately metering the production from each pool.

(5) That said Sam Boren Crowley State "A" Well No. 1 is completed in the Upper Pennsylvanian zone and should be considered an extension of the Bagley-Upper Pennsylvanian Gas Pool.

(6) That the applicant's request for the creation of a new gas pool for Wolfcamp production and the promulgation of special rules and regulations therefor should be denied.

(7) That the mechanics of the proposed dual completion with commingling in the well-bore, by means of a gas-lift assembly, sufficient Upper Pennsylvanian gas to lift the Lower Pennsylvanian oil are feasible and in accord with good conservation practices.

(8) That in order to protect the correlative rights of other producers in the Bagley-Upper Pennsylvanian Gas Pool, all gas produced from both zones of the dually completed well should be charged against the allowable for said well in the Bagley-Upper Pennsylvanian Gas Pool.

(9) That approval of the proposed commingling on the lease of the liquid hydrocarbons from the subject pools will help prevent the loss of Upper Pennsylvanian condensate production ^{caused by} ~~through~~ vaporization and will not violate correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant's request for the creation of a new gas pool for Wolfcamp production and the promulgation of special rules and regulations therefor is hereby denied.

(2) That the applicant, Sam Boren, is hereby authorized to complete his Crowley State "A" Well No. 1, located in Unit L of Section 5, Township 12 South, Range 33 East, NMPM, Lea County, New Mexico, as a dual completion to produce gas from the Bagley-

Upper Pennsylvanian Gas Pool through the casing-tubing annulus and oil from the North Bagley-Lower Pennsylvanian Pool through tubing, with separation of zones by a packer set at approximately 8747 feet, commingling in the well-bore, by means of a gas-lift assembly, sufficient Upper Pennsylvanian gas to lift the Lower Pennsylvanian oil;

PROVIDED HOWEVER, that all gas produced from both zones of the subject dually completed well shall be charged against the allowable for said well in the Bagley-Upper Pennsylvanian Gas Pool;

PROVIDED FURTHER, that the applicant shall complete, operate, and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the Gas-Oil Ratio Test Period for the Lower Pennsylvanian zone.

(3) That the applicant is hereby authorized to commingle on the lease the liquid hydrocarbon production from the Bagley-Upper Pennsylvanian Gas Pool and the North Bagley-Lower Pennsylvanian Pool produced by his Crowley State "A" Well No. 1, ^{allocating said} ~~liquid production to each pool on the basis of separately metering the production from each pool,~~ ~~gas-oil and gas-condensate tests.~~

*monthly
production*

PROVIDED HOWEVER, that said installation shall be operated in accordance with the provisions of the Commission's "Manual for the Installation and Operation of Commingling Facilities," and

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico. on the day and year hereinabove designated.

provided further that the Commission may require separate metering of the liquid production from each pool prior to commingling in the event the lower Pennsylvanian zone becomes capable of top allowable production.