BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

March 26, 1969

EXAMINER HEARING

IN THE MATTER OF:

Case 3975 reopened in the matter of said case being reopened pursuant to the provisions of Order No. R-3618, which order established 80-acre spacing units for the East Bluitt-San Andres Pools, Roosevelt County, New Mexico.

Case No. 3975

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 3975.

MR. HATCH: Case 3975, reopened, in the matter of Case No. 3975 being reopened pursuant to the provisions of Order No. R-3618, which order established 80-acre spacing units for the East Bluitt-San Andres Pool, Roosevelt County, New Mexico, for a period of approximately two months.

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for Eugene Nearburg. We will have two witnesses we would like to present in this case.

MR. UTZ: Any other appearances?

MR. MORITZ: Jerry Moritz, with BTA. I would just like to make a statement.

MR. NATCHUS: Edward Natchus with Union Oil Company of California.

MR. UTZ: Just an appearance?

MR. NATCHUS: Just an appearance.

MR. UTZ: Any other appearances?

(Whereupon, Applicant's Exhibits Numbers 1 through 4, inclusive, were marked for identification.)

(Witnesses sworn.)

PATRICK J. GRATTON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A My name is Patrick J. Gratton.

Q By whom are you employed?

A By Eugene E. Nearburg.

Q What is your position with Mr. Nearburg?

A I am a geologist.

Q Where are you located?

A In Dallas, Texas.

Q Mr. Gratton, have you ever testified before the Oil Conservation Commission?

A Not before the New Mexico Oil Conservation Commission.

Q For the benefit of the Examiner, would you outline your education and experience as a geologist?

A Yes. I graduated from the University of New Mexico with a Bachelor and a Master's Degree in Geology, 1955, and 1958, respectively.

I worked for Shell Oil Company for five years in southeast New Mexico and in West Texas and East Texas. After that, I worked for Delhard Taylor for two years in Dallas, and subsequently for various independent accounts for a period

of five years, including Eugene E. Nearburg, concentrating in East Texas, West Texas, and southeast New Mexico.

Q In connection with your work for Mr. Nearburg, have you had anything to do with the East Bluitt-San Andres Pool in Roosevelt County?

A Yes, over a period of the last three years, a large part of my work has been centered on evaluation of San Andres development in southeast New Mexico; and among other areas in southeast New Mexico, the Bluitt field area, including the East Bluitt and San Andres field area, both areas of which we have production.

Q You have worked in both the Bluitt and East Bluitt?

A Correct.

MR. KELLAHIN: Are the witness's qualifications acceptable?

MR. UTZ: Yes, they are.

Q Mr. Gratton, referring to what has been marked as Nearburg Exhibit Number 1, would you identify that exhibit?

A Yes, that exhibit is now in front of the Examiner. It is an index map right immediately in front of you. It is an index map showing the location of the Bluitt field area in Roosevelt County, New Mexico, six to eleven miles southeast of the Todd field area, also in Roosevelt County, New Mexico.

Q Now, referring to what has been marked as Nearburg Exhibit Number 2, would you identify and discuss that exhibit?

A Yes, Exhibit Number 2 is mounted on the wall. It is the San Andres structure map of the Greater Bluitt field area, which embraces the East Bluitt and San Andres field area, as well as the older Bluitt and San Andres field, and shows the configuration of structure immediately above the pay zones found in these two fields.

It also shows the approximate north limit of effective B zone, and P-2 porosity and permeability in the Greater Bluitt field area. This pinchout of porosity and permeability is an effective limitation on production in the field.

I might step to this exhibit and show that the Greater Bluitt structure which affects the East Bluitt and San Andres field, and the Bluitt and San Andres field, is a long nose, possibly an anticline in part, with pinchout of permeability in one of the main pay zones running across the north side of the structure.

Also, I have shown on this map the structural position of the gas contact which is common to both of these fields. It occurs at minus 560, and is located in the B zone

of the Slaughter section of the San Andres in the Eugene E. Nearburg No. 1 Kirkpatrick Federal in Section 11, Township 8 South, Range 37 East.

Q Now, in connection with Exhibit Number 2, does that reflect that this is one or two common sources of supply, in your opinion?

A This Exhibit Number 2 shows that the East Bluitt-San Andres field is producing out of the same zone that a major part of the production in the Bluitt-San Andres field is producing from. There are two producing zones in the Bluitt-San Andres field. There is one producing zone in the East Bluitt-San Andres field. This same producing zone in the East Bluitt-San Andres field is one of the producing zones in the Bluitt gas field. They are common in that sense.

Q Is there another pool in the vicinity which is similar to this?

A Yes. The Bluitt, Greater Bluitt-San Andres field area. By that, I mean the East Bluitt and the Bluitt field combined is extremely similar to the Todd Upper and Lower field located about six to ten miles northwest of this feature. The structure is similar in configuration, the depth is almost identical, the producing zones are identical, they are

correlatives.

Oil is found in the Todd in the lower zone called the Bluitt B zone. Also, gas is found in Todd in that same zone as a gas cap.

Similarly, at Bluitt and at Todd, gas is also found in the upper zones which are referred to as P-1 in subsequent exhibits.

MR. UTZ: Let's get these zones straightened out. You say the Todd Lower is equivalent to which zone?

THE WITNESS: The B zone. And the Todd Upper is equivalent to the P-1.

MR. UTZ: Thank you.

Q Now, directing your attention to what has been marked as Exhibit Number 3, would you identify that exhibit?

A Yes, Exhibit Number 3 is a San Andres-Slaughter cross-section in the Bluitt field area of Roosevelt County, New Mexico. It shows the section from the pay marker in the San Andres down through the Slaughter pay zones which are encountered in this area. The section generally runs from, on the right, east to west on the left. The actual line of cross-section is shown on Exhibit Number 2 running from the Franklin, Aston & Fair No. 1 Roden Federal, up out of the East Bluitt-San Andres oil field into the Bluit-San Andres

gas field, where I have shown the section as it appears in the Nearburg No. 1 Kirkpatrick and No. 2 Kirkpatrick.

This cross-section is a structural section, and the top marker is the same marker that I have used for Exhibit Number 2 to show the configuration of the field. You can observe that the general attitude of the rocks is dipping to the east, and that we do rise up on to the Bluitt-San Andres nose in the vicinity of the Nearburg No. 2 Kirkpatrick.

The B zone, which is the producing zone in the East Bluitt-San Andres oil field, is also producing in the Bluitt-San Andres gas field, as shown on this cross-section. The B zone is part of the P-2 section of the Slaughter, and constitutes the upper half of it, and is found in the Eugene E. Nearburg No. 1 Bates Federal at 4,647 to 4,683.

The B zone is bounded by anhydrite zones, which effectively separate it from zones below and above, which might contribut some kind of fluid.

The P-1 zone is opened up above the B zone in the Bluitt-San Andres gas field. Every well in the Bluitt-San Andres gas field is opened up in this section, as well as being opened in the B zone.

The Nearburg No. 2 Kirkpatrick Federal is a dry gas well, producing from both the P-1 and the B zone. The

Nearburg No. 2 Kirkpatrick -- I mean No. 1 Kirkpatrick Federal is producing oil and gas, being perforated in both the P-1 and the B zone.

The No. 1 Kirkpatrick was originally completed as a dry gas well in November, 1963. However, by February, 1966, it had started making a fair amount of oil, and has subsequently established about 30 barrels a day average oil production, even though this well is in the Bluitt-San Andres gas field. This oil is identical in character, it has essentially the same gravity, 26 to 27 degrees, as that which is found in the East Bluitt-San Andres oil field; and it appears to me that there is excellent evidence that today there is a gas-oil contact in the Kirkpatrick No. 1 and Kirkpatrick No. 2, occurring at minus 560 feet.

This will explain the fact that the higher well, the Nearburg No. 2 Kirkpatrick Federal perforated in both zones, continues to make gas without any oil; for the Nearburg No. 1 Kirkpatrick Federal, perforated in the part below the gas-oil contact, is making about 30 barrels of oil per day, along with about 60,000 cubic feet of gas.

MR. UTZ: What is the location of the No. 1 there? I can't read it from here.

THE WITNESS: The location of the No. 1 Kirkpatrick

Federal is --

MR. UTZ: That dotted line, excuse me, that dotted line.

THE WITNESS: The No. 1 is located in the southeast southeast, Section 11, Township 8, Range 37 East.

The No. 2 Kirkpatrick Federal is located in the northwest of the northeast of Section 14, Township 8, Range 37 East.

MR. UTZ: How much oil did the No. 1 make?

THE WITNESS: The No. 1 is averaging about 30 barrels of oil per day at this time, and has made about 10,000 barrels of oil to date.

MR. UTZ: All right, sir.

THE WITNESS: The current gas-oil ratio is approximately 2,000-to-1.

Q Do you have any plans to re-enter the No. 2 Kirkpatrick?

A Yes. We planned to re-enter the No. 2 Kirkpatrick within the next 60 to 90 days and open up the B zone section which lies beneath minus 560, set a packer, perforate, acidize, and see if we can produce oil from this interval.

Q Is this B zone effectively separated from the other horizons?

A Yes, it is. There is a 20-foot anhydrite body present all over the area of Exhibit Number 2, and this anhydrite body effectively isolates the B zone from the overlying zone, the P-1. It does this because it is dense, and fractures cannot transmit through there. They die out in the anhydrite bodies.

Q Is the producing formation here a rather highly fractured --

A Yes, the B zone, which is the producing zone, of course, of the East Bluitt-San Andres, and also produces oil at the Bluitt-San Andres gas field, is a fractured reservoir. It has an average of about eight per cent porosity, running over about 25 average feet of pay.

The fractures are contributing greatly to the well performance; and based upon observations of cores, and examination of well performance, it is clear to me that the fractures are the main ingredient in establishing good drainage in this area.

Q Referring to what has been marked as Nearburg Exhibit Number 4, would you identify that exhibit?

A Yes, Exhibit Number 4 is also mounted on the wall. It is a map showing the reservoir pressure of the gas contact minus 560 in the greater Bluitt field area of Roosevelt County,

New Mexico.

Q Explain how that map was prepared, Mr. Gratton.

A Yes. Unlike most reservoirs which we have had opportunity to study, the San Andres reservoir is not static. It is in a hydrodynamic state, and the pressure actually changes for the same subsea position as you move from one area to another.

This map shows what the additional reservoir pressure was in the Slaughter section at minus 560, before development of the gas field which began in 1963. It's based upon drill stem tests, shutin pressures, and bottom-hole pressures run at the completion date on the Kirkpatrick No. 1 and Kirkpatrick No. 2.

In the Bluitt-Wolfcamp field, drill stem tests run in the Slaughter section indicated a high pressure for a depth of minus 560.

On the south side of Bluitt field, the Bluitt-San Andres gas field, drill stem tests run in the O'Neill No. 1 Federal also established pressures, but these were lower. This was before any substantial development in the area, or at least before there was any drainage in this area.

Pressures run on the No. 1 Kirkpatrick and No. 2 Kirkpatrick were almost identical. These were run very early

following discovery. The Kirkpatrick No. 1 was the discovery well for the Bluitt-San Andres gas field. These pressures are also lower than those recorded for the same position farther northwest.

Pressures were also recorded in the Shell No. 4 Bluitt Federal, in the Slaughter section, and these were also lower. There was a general tendency for pressures to be lower before development of this area. As you move from north to south, pressures decline.

Another point, the Cactus No. 1 Bates also found lower pressures for this depth.

These pressures are fairly reliable pressures. It appears that all of them were stabilized, and bottom-hole pressures were run in the discovery well, and also the No. 2 Kirkpatrick. I have contoured the initial reservoir pressure at minus 560, and it shows that pressure is around 1,650 pounds, originally, up here on the north end of the field, and that as you go to the southeast it dropped to 1,450 pounds. This is not a function of depletion of reservoir pressure declining due to withdrawal someplace; this is the original state of the reservoir.

After six years or five and a half years of production in the Bluitt-San Andres gas field, and at the

beginning of production in the East Bluitt-San Andres oil field, we ran a number of bottom-hole pressures to see what the pressure was today.

Franklin, Aston & Fair also ran a bottom-hole pressure in their No. 1 Bluitt-Federal, and these reservoir pressures were in each instance lower than what the original reservoir pressure was.

Of course, the Kirkpatrick No. 1 and No. 2 have experienced considerable pressure decline after producing for five and a half years. The Kirkpatrick No. 1 has lost 773 pounds, and the Kirkpatrick No. 2 has lost 862 pounds. The nearest well to these two wells, the Nearburg No. 2 Bates Federal in the East Bluitt-San Andres field, it is 4,770 feet away from the No. 2 Kirkpatrick Federal. Though it is almost a mile away, it has 209 pounds less pressure than what was originally in the reservoir at that depth.

As we get progressively more removed from the San Andres gas field, the Bluitt-San Andres gas field, we see that we still have reservoir decline of pressure, but which does not have as much. Accordingly, the No. 1 Bates Federal, Nearburg No. 1 Bates Federal, has a loss of 180 pounds, the No. 3 Bates Federal has a loss of 159 pounds, and the Franklin, Aston & Fair No. 1 Bluitt Federal has a loss

of 74 pounds, demonstrating that the Bluitt-San Andres gas field has effectively drained at least a portion of this area, because we have pressure decline caused by the withdrawal of gas in the Bluitt-San Andres gas field over a mile away from the nearest gas well.

MR. UTZ: Do you have any pressure differentials for the wells over to the northwest?

THE WITNESS: This well here --

Q Would you identify it, please?

A The Nearburg No. 3 Kirkpatrick Federal was drilled in 1965, and by that time already had about 300 pounds differential, so I could not use it either to establish the original pressure or to show what it would be today. This well was subsequently plotted. I have reviewed the Felmont Federal pressures by the time this well was drilled, it was after the production had been already established from the No. 1 and No. 2 Kirkpatrick and it was already down to about 1200 or 1300 pounds. I had to go back to just the pressures which were available at the time of the discovery, or before, or far enough removed to be reasonably certain there was no drainage.

MR.UTZ: You don't have pressures on some of the BTA stuff up there?

THE WITNESS: Well, this was later. I don't have it, but these pressures were later, and I am sure they would be less than this. I am sure they are less today than they were.

MR. UTZ: Now, the three wells located in Sections 32 and 33, are they --

THE WITNESS: These are in the Wolfcamp, Bluitt-Wolfcamp gas field. However, this test was run in the Slaughter section that I am using. It was a drill stem test. It was not a bottom-hole pressure survey, it was not a completion.

MR. UTZ: But those pressures are DST pressures?

THE WITNESS: Yes. I show over on this exhibit the source of this information, whether drill stem test, or bottom-hole pressure, or bomb.

MR. UTZ: It is your opinion that they are outside of the permeability?

THE WITNESS: Yes, they are with respect to the two zones producing here. But the zone they measured this in was a lower zone which has pressure -- which is part of the greater pressure system, the P-3. The P-3 is permeable, but is water-bearing throughout this whole area. It is not part of the trap.

Even eliminating these points up here, Mr. Examiner, we still have the highly reliable points of the No. 1 and No. 2 Kirkpatrick Federal, bottom-hole pressures run at discovery or immediately thereafter, and the pressures recorded in this area.

Furthermore, all of these pressures are considerably less than the pressures recorded here. I am not showing that the oil wells in the East Bluitt-San Andres field are just lower pressure than the No. 1 or No. 2 Kirkpatrick; they are substantially less than that. What I have tried to show was that there was originally a difference in pressure. In other words, a decline in this direction. But even adjusting for that decline, there has been a considerably larger decline in reservoir pressure due to withdrawals.

Q (By Mr. Kellahin) On the basis of the information available, do you reach a conclusion as to whether the East Bluitt-San Andres Pool and the Bluitt-San Andres Pool are the same common source of supply?

A They are, with respect to the B zone.

Q And that is the zone we are considering in this hearing?

A Correct. This is the only zone opened up in the East Bluitt-San Andres field.

Q Now, under the call of the case by the Commission, in the event it is found that the Bluitt and the East Bluitt are one in the same pool, tne Commission further calls for testimony as to the spacing in this pool, what is the spacing in tne East Bluitt at tne present time?

A Eighty acres.

Q Does the evidence you have available indicate that one well would effectively and economically drain and develop in excess of 80 acres?

A Definitely, because of the effect which the East Bluitt -- which tne Bluitt-San Andres gas field withdrawals have had on wells over a mile away in the East Bluitt oil field.

Q Do you have any recommendations to make to the Commission in regard to the adoption of rules for the classification of oil and gas wells, tne allocation formula to be adopted?

A My own personal feeling is that the evidence here shows that we have at the Greater Bluitt field area, a trapping situation, structural situation, reservoir situation, identical with the Todd Upper and Lower field of Roosevelt County just a short distance to the northwest. The same zone produces the hydrocarbons in each zone, is identical, and I believe that

the formula which was adopted for Todd, the withdrawal allocation formula has applied to gas and oil wells, would be an equitable solution to the problem which we have in the Greater Bluitt field area where gas cap does overlie oil on the east side of the structure.

Q Now, that is set out in Commission Order No. R-1670-G, is it not?

A Yes, that is my understanding.

Q Would you make any provisions in the order, however, for production from the P-1 zone?

A Yes, I believe that the P-1 zone is contributing gas. However, I think it would work an economic hardship to ask for the separation and completion of these two reservoirs in the gas field, and I believe that the performance of the wells, the gas wells in the Bluitt-San Andres gas field today, is such that the withdrawal formula that was used at Todd, if applied in Bluitt, would not result in any restriction on production at this time.

The Bluitt-San Andres gas field wells are not large wells today. I believe my most recent check was that the best well might make eight or nine million cubic feet per month. The withdrawal formula I am suggesting we use would allow on 320-acre spacing, which has been ruled for Bluitt gas,

the continued production of this amount of gas from these wells. But it would prevent the completion of a new gas well, with high withdrawal rates, which would, of course, affect the oil rim of this reservoir, and probably result in loss.

Q Do you feel that the formula as you propose to use would effectively protect the oil production in this pool?

A Yes, I think it would.

Q Just to summarize your testimony, would you briefly outline your opinion as to the information that shows this is one common source of supply, and for the adoption of the pool rules as you propose?

A Yes. The four exhibits which we have offered to the Commission show the location of the East Bluitt-San Andres field on the east side of the Bluitt-San Andres gas field, producing from the same zone which makes gas in the Bluitt-San Andres field. We have good evidence that this zone produces gas, because the Nearburg No. 3 Kirkpatrick Federal actually completed in this zone only, and made gas before it was abandoned.

The evidence of reservoir pressure decline in the East Bluitt field below what it should have been, based upon early pressure measurements in the general area, indicate that drainage in the Bluitt-San Andres gas field has affected areas

over a mile away. The excellent reservoir properties of the B zone, evidenced by well performance and observations of core fracturing, fractures in cores, I should say, support the fact that 80-acre drainage would be quite sufficient to economically and physically remove the oil from each of the 80-acre units.

Q Now, what do you recommend the spacing for gas?

A I believe that the gas units should continue to be 320-acre units, as originally adopted for the Bluitt-San Andres gas field.

Q Do you have any recommendation to make as to well locations?

A Yes. I believe that the order for the East Bluitt-San Andres oil field should be incorporated for the Bluitt field, as did apply to oil development units. This order calls for 80-acre spacing, allowing the operator to choose the north, south, east, or west half of quarter-sections for each 80-acre unit, with locations within 150 feet of the center of the quarter-quarter-section; and that a withdrawal formula similar to Todd be instituted to protect the oil rim from bathing the gas cap in the P-2.

Q Do you recommend the continuance of well locations as to gas production as provided in the Bluitt-San Andres Pool?

A Yes.

Q And you would extend that, then, to the area now covered by the East Bluitt-San Andres Pool?

A Yes, it is possible to make gas completions in the East Bluitt-San Andres field. I question whether these would be commercial, but as shown on Exhibit Number 3, there is probable gas pay in the P-1 in the East Bluitt-San Andres field. This has never been opened up, but probably could produce some gas.

Q Mr. Gratton, in your opinion, based on the information available to you, if a volumetric formula is not adopted for this pool, will there be a resultant loss in the ultimate recovery of oil in the pool?

A There is a possibility that this could take place, because there are some locations that could be drilled in the Bluitt gas field which conceivably could make high initial potentials, calculated open flows, and could produce gas at a rate which would cause a pressure decline in the vicinity of the oil rim, which would cause the oil to migrate into the gas cap and be a loss, definitely. The withdrawal formula, I think, should prevent this.

Q Were Exhibits 1 through 4 prepared by you or by someone under your supervision?

A They were prepared by me.

MR. KELLAHIN: At this time, I offer in evidence Exhibits 1 through 4, inclusive.

MR. UTZ: Without objection, they will be entered into the record of this case.

(Whereupon, Applicant's Exhibits Numbers 1 through 4, inclusive, were admitted in evidence.)

Q Do you have anything to add?

A No, I do not.

MR. KELLAHIN: That completes the direct examination of the witness, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Gratton, to be sure I understand this as to the zones, it is my understanding that the oil area or the area called East Bluitt at the present time is open only in the B zone?

A Correct.

Q And that the wells which are in the Bluitt area at this time are open in both zones?

A Correct. The Bluitt gas field, yes.

Q And further, it is your recommendation that these zones in the gas area be separated?

A No, I think that would work an economic hardship to separate these zones. I don't believe that the state of depletion of the reservoir, and the reservoir properties of the overlying zone, the P-1, that it would be a good idea to separate these as far as gas production goes. I think that that -- to do this, compared with the rewards that might be coming, what little rewards we might get out of it would be a hardship economically, because these wells are down to fairly low capacity right now.

Q Well, the formula won't work real well if you have two gas pools and one oil pool, will it? In other words, your volumetric equivalent on your oil would be based on the oil, and would give the gas allowable of two pools instead of one? Isn't that essentially correct?

A Yes, the gas -- we do not know how much gas is coming from the P-1. There has never been an independent test of that. While both zones are opened up, how much is contributing is questionable right now, and that is correct that the withdrawals, that would be true. I would believe it would be just fine if we had a part of the rule allowing that any operator who wanted to complete the P-1 independently, separately, should not be subject to withdrawal formula. This is similar to the rules which have been adopted for Todd.

Q Now, how thick is the P-1 zone?

A The P-1 has a gross interval of about 100 feet. However, the net pay in the P-1 is probably on the order of 15 to 20 feet, and it is lower porosity, probably lower permeability than any of the P-2 zone.

Q In other words, it probably isn't contributing much gas to production?

A It is my opinion that it is not contributing more than a quarter of the gas production in the field, which now is down to a fairly low level, anyway.

Q Do you have any bottom-hole samples from the oil zones that you could furnish the Commission with the data for setting up tables?

A We have not collected any bottom-hole samples of the reservoir fluids at bottom-hole pressures and temperatures, which I believe is what you are asking for.

Q That's right.

A The surface reservoir characteristics, of course, the surface fluid characteristics seem to be identical with Todd. They come from the same zone. We could gather such samples.

Q Don't you think it would be advisable in this volumetric formula, it is dependent on those bottom-hole

samples as far as setting up tables?

A We could prepare tables based upon that kind of information, and gather such samples.

Q How long would it take you?

A Well, I would say we had thirty days, we could gather such information.

MR. UTZ: Do you have another witness?

MR. KELLAHIN: Yes.

MR. UTZ: Call your other witness. I won't excuse Mr. Gratton. We might have some more questions of him later on. Does anyone else have any questions? You may call your other witness.

GRANT SMITH

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q State your name, please.

A I am Grant M. Smith.

Q By whom are you employed, and in what position?

A I am a geologist for Franklin, Aston & Fair.

Q Where are you located?

A Roswell.

Q Have you ever testified before the Oil Conservation Commission and made your qualifications a matter of record?

A Yes, sir.

MR. KELLAHIN: Are tne witness's qualifications acceptable?

MR. UTZ: Yes.

Q Mr. Smith, have you made an independent study of the reservoir conditions in the East Bluitt and the Bluitt-San Andres Pools in Roosevelt County?

A Yes.

Q Do you have operations in this pool?

A Yes, we drilled a discovery well in the East Bluitt-San Andres Pool.

Q At the hearing in Case 3975, which was held in December of 1966 -- I am sorry, 1968, to create a new pool in Roosevelt County, did you present testimony requesting an 80-acre spacing for what has been designated as the East Bluitt-San Andres Pool?

A Yes.

Q And since the discovery well, how many wells have been drilled in this pool?

A I believe there have been nine wells drilled.

Q In the development of this pool, have you noticed anything that would lead you to believe that this area should

not be developed on 80-acre spacing pattern as originally recommended by you?

A No, sir.

Q In your opinion, is it still your opinion that one well will effectively and economically drain and develop 80 acres as to oil in the East Bluitt?

A Yes, sir.

Q Now, you heard the testimony of Mr. Gratton in regard to the two pools being a common source of supply. Are you in agreement with that?

A Yes, sir.

Q Would you say the same factors would apply as to the spacing in the Bluitt-San Andres Pool as in the East Bluitt, insofar as oil is concerned?

A Yes.

Q Would you say the same factors would apply to the East Bluitt as in the Bluitt, as to gas?

A Yes.

Q Now, in the development of this pool, would you explain, just review the testimony briefly that you gave in the previous case? Would you explain the basis for your conclusion that one well will drain 80 acres?

A In general, it is the remarkable similarity between

this East Bluitt-San Andres Pool, and the Todd Pool some ten or eleven miles northwest of us. The pools are just almost identical.

The information we have gained from the wells that we have in the Todd Lower San Andres Pool, the behavior patterns of these wells, and the behavior patterns of the wells so far in the East Bluitt-San Andres, are very similar.

In addition to that, the information we have gained from logging and some cores taken further substantiate this.

Q Would you review that information briefly?

A We cored the Shaw Federal No. 2 Well, which was 660 from the south and the west of Section 18 of 8-38. I have a copy of Core Labs core analysis, which I can pass out.

MR. KELLAHIN: Let's have it marked as an exhibit.

(Whereupon, Applicant's Exhibit Number 5 was marked for identification.)

Q Now, referring to what has been marked as Exhibit Number 5, would you identify that exhibit?

A Yes, that is a core taken in our Shaw Federal No. 2 well, located 660 from the south and west of Section 18, 8 South, 38 East. It is over the B zone, or the oil producing zone in this area. We have mentioned previously here today the fractures in these cores, and in the description in the

right hand column on this analysis you will see that it is almost entirely fractured dolamite.

The upper section of the core from 4,680 down to 4,688, roughly, is dolamite, slightly fractured. From 4,688 down to roughly 4,697, it is dolamite, and they just marked this or described this as fractured.

The section below that from 4,697 down to 4,704 is dolamite fractured, slightly vuggy. And then from 4,706 to 4,709, dolamite again.

And then at the lower part of the core is described as dolamite fractured.

What I would like to point out, that in this core, the sections where it just says dolamite fractured, was very highly fractured and crumbled up, and we had to carry this off the reef floor tied in rag bundles. I don't think the core analysis shows fully the fractures, and porosity, and permeability in this zone.

I might mention that all the fractures for the most part are vertical fractures, and I think this is what gives us our good drainage for 80-acre spacing for wells in this area.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibit Number 5.

MR. UTZ: Without objection, Exhibit Number 5 will

be entered into the record of this case.

(Whereupon, Applicant's Exhibit Number 5 was admitted into evidence.)

Q Do you have anything to add, Mr. Smith?

A Well, in all of our logs in this well, we have run the gamma ray sonic log, and logs of this well and our other oil wells in this area are remarkably similar. I think core analysis for all of these would show just the same thing, and I believe that it indicates that these will drain 80 acres.

Q Do you find that the porosity and permeability of the formation is uniform throughout?

A Yes. Well, until you come to the edge of the field.

Q Until you come to the edge of the field and it pinches out?

A Yes.

MR. KELLAHIN: That is all I have on direct examination.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Smith, does Franklin, Aston & Fair have any gas wells?

A Not in the East Bluitt.

Q Not in this pool. And this was the only well you

cored?

A Yes, sir.

Q Do the oil wells in this oil area produce much gas?

A No, they are low GOR. I believe our last well was something like 460 to 1.

Q Perhaps you can answer this question also. How about tne gas wells in the upper area, do they produce much fluid?

A I didn't hear the question.

Q Do they produce much fluid?

A No, with the exception of the Kirkpatrick No. 1, I believe it is, that is making the oil. The others are not making a lot of fluid.

Q I will direct this question to Mr. Gratton.

MR. UTZ: As I interpret your testimony, the Delta P that you have there now, the difference in pressure between the oil area and the gas area was, I guess you would say, accomplished through initial production, rather than the manner in which it's been producing at the present time?

MR. GRATTON: Yes, these pressures were taken very early. They were allowed to stabilize, and we determined that over a seven-month period -- a seven-week period, I beg your pardon, that the No. 1 Bates Federal, which we surveyed

three times during this time, declined sixteen pounds in seven weeks, which, of course, is only one-tenth of the differential that we are talking about being present.

MR. UTZ: It is your opinion then that at the present time the rate of production between the two areas is pretty stable, as far as pressures are concerned?

MR. GRATTON: Well, we have to live with the fact that there is a big pressure sink up here in the gas field, and in that sense pressure is already -- there is a pressure differential running up there. But the sixteen pounds withdrawal here in seven weeks, if you believe that that is an accurate measurement, would work out to be something on the order of 160, maybe 180 pounds in a year. And in five years, that would be essentially the same rate that this has been withdrawing in the gas field, approximately the same rate of pressure decline per year, we are starting to experience down here now. We started out behind, but that would be about right.

MR. UTZ: Then it is your opinion that this type of formula will arrest the conditions pretty much as they are now?

MR. GRATTON: I think it will. The main reason being that the rate of pressure decline has gradually slowed

in the gas field, due to withdrawal rates apparently are balancing the rate of water encroachment from the edge, because there is not a serious decline any longer. The decline was accomplished in the first three or four years, primarily due to the heavy withdrawals at that time. The slow withdrawal rate is really not working a continued decline of the same rate that we will be declining over here, of course.

MR. UTZ: Who was the purchaser of this field?

MR. GRATTON: Of the gas?

MR. UTZ: Yes.

MR. GRATTON: Cities Service is buying some of the gas. Sinclair is buying some of the others, I believe.

MR. UTZ: So you do have two purchasers?

MR. GRATTON: Yes. Gene, is that correct?

MR. NEARBURG: Most of it in that particular field is Cities Service.

MR. UTZ: Thank you, I think that is all I have. Are there any other questions of either witness? You may be excused.

Are there any statements in the case?

MR. MORITZ: Jerry Moritz for BTA. We have two wells in the gas cap area, and we are not objecting to the adoption of rules similar to the Todd Pool as applied to this.

Our main worry is what the oil production is going to do, if it does reach a quick peak and drops off rather drastically. Out interpretation of the Todd rules is that if the oil production eventually reached zero, the gas cap conceivably would not have any allowable, and we would like to propose that there be some minimum put on a 320-acre unit, gas allowable.

We would like to propose that the minimum be set at 6,000 Mcf per month for a 320-acre well. That is all I have.

MR. UTZ: Any other statements?

MR. NATCHUS: I am Edward Natchus with Union Oil Company of California. I would like to say that we support the separation of our reservoir as being a gas cap and an oil rim, and we support the 80-acre spacing.

MR. UTZ: Any other statements? The case will be taken under advisement.

MR. HATCH: We have some telegrams to read. These are generally in support, but I better read them into the record.

The first telegram is from Roden Oil Company, by Jennings and Copple, addressed to the Oil Commission. Re: Case No. 3975, Order No. R-3618, Roden Oil Company, an operator

in the East Bluitt Pool, Roosevelt County, New Mexico, supports the position of Eugene E. Nearburg and Franklin, Aston & Fair, that the Bluitt-San Andres, and East Bluitt-San Andres are one pool as to production from the P-2 or B zone of the Slaughter, and recommend that the temporary rules in Order R-3618 be made permanent, and that due to similarity between the Bluitt and Todd pools, that a gas withdrawal formula similar to Order Number R-1670-G, be incorporated in the field rules.

This telegram is from Skelly Oil Company, by George Selinger. Re: Case 3975, reopened, Skelly Oil Company as interested offset owners support the recommendations of Franklin, Aston & Fair for the adoption of special rules for the Bluitt-San Andres Pool, including a provision for 80-acre oil spacing and 160-acre gas spacing.

This is addressed to the Oil Conservation Commission from Petroleum Corporation of Texas, by T. A. Ford. Case 3975, March 6. We respectively request gas well be given an allowable floor so that they won't be uneconomic if oil production should drop substantially.

Telegram from Tom L. Ingram, addressed to the Oil Commission. Re: Case 3975, Order No. R-3618. As operator in the East Bluitt area, I believe that the Bluitt-San Andres and East Bluitt-San Andres are one pool, insofar as the

production coming from the P-2 or B zone of the Slaughter. It is requested that the rules in Order R-3618 be made permanent. Due to the similarity between the East Bluitt and the Todd Pools, it is further requested that a gas rule similar to that in Order R-1670-G be incorporated into the field rules.

MR. UTZ: Thank you. Any other statements? The case will be taken under advisement.

I N D E X

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.

COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3925 heard by me on May 26, 1969.

Examiner
New Mexico Oil Conservation Commission

BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

February 5, 1969

EXAMINER HEARING

IN THE MATTER OF:

Case No. 3975, being reopened pursuant to the provisions of Order No. R-3618, which order established 80-acre spacing units for the East Bluitt-San Andres Pool, Roosevelt County, New Mexico.

Case No. 3975

BEFORE: Daniel S. Nutter,
Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 3975.

MR. HATCH: Case 3975, being reopened pursuant to the provisions of Order No. R-3618.

If the Examiner please, in this case one of the operators in the pool has requested that this case be continued to late in March, to give them time to obtain additional information.

MR. NUTTER: Case 3975 will be continued to the Examiner Hearing at nine o'clock A.M., March 26, 1969, at this same place.

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.

Samuel Mortelette
COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3975, heard by me on 2/5 1969.

..., Examiner
New Mexico Oil Conservation Commission

BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

December 2, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Franklin, Aston & Fair, Inc., for the creation of a new oil pool and for special pool rules, Roosevelt County, New Mexico.

Case No. 3975

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case 3975.

MR. HATCH: Case 3975, application of Franklin, Aston & Fair, Incorporated, for the creation of a new oil pool and for special pool rules, Roosevelt County, New Mexico.

MR. EATON: Paul Eaton, appearing on behalf of Franklin, Aston & Fair, and I have one witness, Mr. Grant Smith.

(Witness sworn.)

(Whereupon, Applicant's Exhibits Numbers 1 through 6, inclusive, were marked for identification.)

MR. NUTTER: Are there any other appearances in this case? Go ahead.

GRANT SMITH

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

DIRECT EXAMINATION

BY MR. EATON:

Q Please state your name.

A I am Grant Smith.

Q Your address, occupation, and employer are the same as you testified to in Case No. 3974?

A Yes, sir.

Q You are familiar with the application of Franklin,

Aston & Fair, in this case?

A Yes.

Q Are you familiar with the Franklin, Aston & Fair Bluitt Federal No. 1 Well in Section 13, Township 8 South, Range 37 East, Roosevelt County, New Mexico?

A Yes.

Q And are you familiar with the productive history of that well, and the geology of the surrounding area?

A Yes.

Q Your qualifications have been previously accepted by the Commission?

A Yes.

Q Mr. Smith, what is Franklin, Aston & Fair seeking by its application in this case?

A As originally filed, we sought creation of a new oil pool and spacing of 80 acres per well, 80-acre allowable.

Q Do you have anything further to say in connection with the application at this time?

A To the extent that the well is within one mile of the Bluitt San Andres gas zone -- gas pool, which appears to be producing from the A and the B zones of the Slaughter section of the San Andres. And our well is producing from the B zone of the Slaughter section, which would be part of the original

Bluitt San Andres Gas Field, although, to the best of my knowledge, there has been nothing in these original gas wells to say for sure that the oil was coming from the B zone or possibly from the A zone.

Q Are you primarily seeking temporary 80-acre space and proration for your Bluitt Federal No. 1 oil well, and any other oil wells that may be in the same pool?

A Yes, sir.

Q And we will get into that in more detail. First, let me hand you what has been marked as Exhibit Number 1, and ask you to state what that exhibit reflects.

A This is a map showing the location of the discovery well, all wells within a two-mile radius of the discovery well, and the production depths of these wells. It also shows the lease owners and operators within a two-mile radius. It also has marked on it a cross-section in red, labeled as AA Prime.

Q How is the Bluitt Federal No. 1 reflected on the exhibit?

A It is circled in red.

Q Generally, where is the Bluitt San Andres gas pool in relation to the Bluitt Federal No. 1?

A It is generally east of the Bluitt Federal No. 1. I did not outline it, because I had some information that indicated

the south half of the 11 had not been included in this pool, although there is a well there, and I assume there has been an order issued putting it in there.

MR. NUTTER: You said that the San Andres gas well was east. You mean west, don't you?

THE WITNESS: West, that is correct.

Q Mr. Smith, I hand you what has been marked Applicant's Exhibit Number 2, and ask you to state what that exhibit reflects.

A This is a correlation cross-section, having on it a well connected by the red line on Exhibit Number 1, showing the correlation and production intervals, and also some of the holes drilled in this area.

Q Would you like to explain that exhibit in more detail?

A Beginning with the well on the lefthand side, the Nearburg and Ingram, Kirkpatrick No. 1, shows this well to be perforated in the Slaughter A and the Slaughter B zone. I want to add one correction there. The information I had led me to believe that it was perforated solidly as shown here. I since found out from Mr. Ingram that that was selectively perforated, but the overall interval was the same.

The No. 2 well is the Shell Bluitt No. 4, which

penetrated the Slaughter A, B, and the top of the C zone, which is a dry hole.

The third well on the cross-section is the Franklin, Aston & Fair Bluitt Federal No. 1, perforated interval between the B zone of the San Andres.

The fourth well on the cross-section is an Austral discovery well, which penetrated the Slaughter A, B, and the top of the C zone, and produced for a while from the open-hole interval as shown on the cross-section, according to the information which I have.

And the fifth well on the cross-section is the Cactus Drilling Company, Bates No. 1, which penetrated the Slaughter A and B zones, and is a dry hole.

Q What is the purpose of that Exhibit Number 2?

A To show the completion interval of our well in relation to the wells on this cross-section.

Q Did you draw any conclusions from the exhibit?

A The main conclusion that we draw from it is that our well is an oil well completed entirely in the B section of the Slaughter of the San Andres. The other wells are either dry holes and gas wells, designated as San Andres Bluitt gas wells, which are completed in the A zone and just barely in the top of the B zone, or they are dry holes, or as I said before,

the Austral well which is completed or has all three zones of the San Andres open.

Q Mr. Smith, getting back to the Bluitt Federal No. 1 Well, would you give the history of that well as to when it was drilled, and the completion data, potential tests.

A We completed the well approximately a month ago, I don't have the data right here, flowing 150 barrels of oil per day, after a 3,000-gallon acid treatment from the B section of the San Andres. This was on a 20/64-inch choke. It is still flowing and maintaining the allowable for 80 acres.

Q What was the tubing flowing pressure on that well?

A As I recall, it was 150 pounds.

Q Since the completion of the Bluitt Federal No. 1, have any other wells been drilled in its vicinity?

A No wells have been drilled. There were two locations. We have a location which is an east offset to this well, and was started yesterday. I believe Mr. Nearburg has the location staked in it, which would be a diagonal northwest offset to this well, 1,980 from the north and 1,980 from the east of Section 13.

Q Have those two wells been staked so they would conform to an 80-acre?

A Yes, sir.

MR. NUTTER: What was the location of the well you started yesterday?

THE WITNESS: It is 1,980 from the south, and 660 from the west of Section 18.

MR. NUTTER: The direct east offset?

THE WITNESS: Yes, sir.

Q (By Mr. Eaton) Is there any other pool in the general area which is being produced from the same zone as your Bluitt Federal No. 1?

A Yes, the Todd San Andres Pool, approximately two miles northeast of Millen Sand in 7 and 8 South, Range 37 East, is producing from this interval.

Q Is that correctly known as the Todd Lower San Andres Pool?

A That's correct.

Q Is it an oil pool or a gas pool?

A It is an associated oil-gas pool.

Q Do you know what the spacing and proration pattern for that pool is?

A It is 80 acres for oil, and 320 for gas.

Q Are you familiar with the geology and the productive history of that pool?

A Yes.

Q In your opinion, Mr. Smith, are the characteristics of that pool comparable to what you have discovered in the Bluitt Federal No. 1 Well?

A They are very similar.

Q Would you explain your answer, please?

A Yes. The Todd San Andres -- or the Bluitt San Andres well was originally designated a gas field. The first wells in the Todd San Andres Pool now designated D were gas wells, producing from the A and the B zone. Further development and isolation of our pay zones indicates the oil is coming from the B zone in the Todd Lower San Andres, which appears to be the case in the discovery well of our Bluitt Federal No. 1.

The behavior of the Bluitt Federal No. 1 in completion and production so far is very similar to the oil wells in the Todd Lower San Andres Oil Pool. The logs show very similar porosity.

Q Let me hand you what has been marked as Exhibits Numbers 3, 4, 5, and 6, and ask you to state what these exhibits represent.

A These exhibits are portions of the large scale log of the Bluitt San Andres, or the Bluitt Federal No. 1, our discovery well there.

Q That is Exhibit Number 3?

A That is Number 3. And the other wells are taken from -- the other logs are from wells in the Todd Lower San Andres Gas Pool. They were selected because they are the same type log as we have run in the Bluitt Federal No. 1. They show very comparable porosity characteristics. From my interpretation, I would say that our Bluitt Federal No. 1 probably shows a better or a more uniform overall porosity than do the wells in the Todd San Andres Pool, with the exception of, say, one or two places where there may be a peak porosity which would exceed what we have in the Bluitt Federal No. 1.

Q Do you have anything else to say in connection with the relative characteristics of the Todd Lower San Andres Pool with your Bluitt Federal No. 1?

A In the way that the well treated, in the behavior of the well since completion, it is very similar to the Todd Lower San Andres.

Q Mr. Smith, has anything developed in the Todd Lower San Andres Pool which would suggest that the wells in that pool are not effectively draining 80 acres?

A No, I believe not. Our better wells in this pool which we have drilled on 80 acres have held up very well. We have some going on nearly two years production, we have some approaching one-year production which were drilled in September

of last year, some drilled in December of last year, some drilled in January of this year, which are still producing the allowable for 80 acres. We have some edge wells which, of course, have not produced this, but then they haven't produced the allowable for 40 acres, either.

So we feel that due to the highly fractured nature of this reservoir in the areas where you have the porosity and the fractures, that 80 acres is a good spacing.

Q Have you made any estimate of the reserves under your Bluitt Federal No. 1?

A Just on what we have of this one log, and we have had our own reserves or have made our own reserve calculations in the Bluitt Federal. We have had outside calculations made on the reserves, and some of them will range from 30,000 barrels per 40 acres up to 75,000. My personal feeling is that where we have good porosity development and permeability, that 125 to 150 barrels per 80 acres will be a pretty close estimate.

Q What is the average cost of a San Andres oil well in this area?

A They will run $45,000 to $50,000.

Q If wells were drilled on a 40-acre spacing pattern, then would the cost of the two wells be twice that of one well, we will say, drilled on an 80-acre spacing?

A Run that by again, will you?

Q If two wells were drilled on the basis of the 40-acre spacing pattern, would the cost of those two wells be twice that of one well drilled on an 80-acre?

A They would be very nearly the same thing. Taking into consideration, say, central tank battery, or something like that, they would be slightly less, but for all practical purposes, they would cost the same as on 80 acres.

Q Based on a top 80-acre allowable, in your opinion, what is the estimated payout life of your Bluitt Federal No. 1 well?

A If it holds, and everything indicates it will, I would say eight to ten months.

Q If two wells were drilled on the same 80-acre tract, would the payout life be twice that?

A Very nearly. Be practically the same thing.

Q In your opinion, will the Bluitt Federal No. 1, and any other similar well in the vicinity, effectively and efficiently drain 80 acres?

A Yes, I believe it will.

Q What is the basis for that opinion of yours?

A Mainly the comparison of the log to the logs of similar wells in the Todd Lower San Andres Well, and the behavior

of these wells in the Todd Lower San Andres.

Q After the two wells which you testified have been staked, after they have been drilled, and if productive, after they have produced for a while, will you have a better idea of the characteristics of this oil pool?

A Yes, sir.

Q Assume that 80-acre spacing proration is allowed on a temporary basis, and further assume that developments in the next year in the vicinity of your Bluitt Federal No. 1 establishes that 80-acre spacing will not be effective to drain 80 acres, will such development in that interim period be detrimental to later development of the area on a 40-acre spacing pattern?

A No, not materially. Of course, there is the time factor involved, but the way our wells have produced, our better wells in the Todd San Andres Pool, I don't believe it would materially affect the necessity of drilling on 40 acres, if this was being advisable at some later date.

Q In your opinion, will the establishment of 80-acre well spacing and 80-acre allowables on a temporary basis, avoid the drilling of unnecessary wells?

A Yes, sir.

Q Will it decrease the risk that might arise from the drilling of an excessive number of wells?

A Yes, sir.

Q Would it otherwise prevent waste and protect correlative rights?

A Yes, sir.

Q Have these exhibits been prepared by you or under your supervision?

A Yes.

MR. EATON: Mr. Examiner, we offer Applicant's Exhibits 1 through 6 into evidence.

MR. NUTTER: Applicant's Exhibits 1 through 6 will be admitted into evidence.

(Whereupon, Applicant's Exhibits Numbers 1 through 6, inclusive, were admitted in evidence.)

MR. EATON: Mr. Examiner, we might suggest, in view of Mr. Smith's testimony, that the Bluitt Federal No. 1 Well is or may be producing from the same pool as the Bluitt San Andres gas wells, that the Commission might consider either creating a new oil pool on some temporary basis, or consider amending the Bluitt San Andres Gas Pool rules on some temporary basis to provide for 80-acre spacing, and then possibly setting a date for a hearing in the next two, or three, or four months at the Commission's pleasure, to determine if the Bluitt San Andres Gas Pool should be perhaps expanded and redefined to

include this area as an associated oil and gas pool.

MR. NUTTER: When you were questioning your witness, Mr. Eaton, about waiting maybe one year to determine whether the drainage was effective or not on 80 acres, you were speaking strictly of drainage? You wouldn't suggest we wait that long to determine whether this is indeed a part of the Bluitt San Andres Gas Pool?

MR. EATON: No, we would leave that up to the Commission how it should be best handled.

I have no further questions.

MR. NUTTER: Does anyone have any questions of Mr. Smith?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Smith, just how far away is the Todd San Andres Pool?

A I'd say thirteen to fifteen miles west of the Bluitt Federal No. 1.

Q But the San Andres is more or less a blanket pay across this portion of Roosevelt and Lea County, and the apparent characteristics of the two pools are quite similar?

A Yes, sir.

Q I notice one characteristic of all the logs on your

cross-section, and all the logs you attached to Exhibits 3 through 6, that this anhydrite section is present?

A That is correct.

Q And the anhydrite section is present in the Todd section?

A Yes.

Q Is the anhydrite section productive?

A No, sir.

Q When you mentioned the perforations in the Ingram Well on the left of your exhibit here were not continuous, but were selective overall perforations, we can eliminate those perforations in the anhydrite?

A Yes, sir.

Q Now, we have two pools then in the Todd San Andres area?

A Yes, sir.

Q This thing has gone through quite a metamorphosis, as I recall. We started off with one pool, then we had an associated reservoir, and then the thing was split. What do we have now, a gas reservoir and an associated reservoir?

A That's right. I believe the gas, the Todd San Andres Gas Pool, is producing from the A zone of the Slaughter section,

and the Todd Lower San Andres produces oil and gas from the B zone.

Q That is your associated reservoir?

A Right. I know of no wells in the Todd San Andres Pool area where there is strictly an oil well in the A zone.

Q Although we do have some strictly oil wells in the B zone, as well as some gas wells?

A Yes, sir.

Q But everything that is in the Todd gas pool is from the A zone, and is a gas well?

A Yes, sir.

Q You haven't made any study of the Bluitt, or prepared any cross-sections for anything other than this first well here, which is the extreme southeast well of the Bluitt San Andres Gas Pool?

A The producing well, yes, sir. It is my understanding that other gas wells in that pool, in talking to Mr. Ingram, are also open in the A and the B section, but I do not have one on this cross-section.

Q And this would be the subject of another study to determine whether we do indeed have an associated reservoir here or not?

A Yes, sir.

Q Now, what kind of a gas-oil ratio do you have on your well here, Mr. Smith?

A I believe it is about 950 to 1. It is a low gas-oil ratio.

Q Do you know whether this Nearburg and Ingram well, which is the first well on your cross-section here, it is completed in the A zone and B zone, do you know whether that makes distillate or black oil, or what kind of liquid it does make?

A Not in detail. It was originally a gas well, but it is my understanding that gas production has declined, the oil production has declined. I do not believe that it is distillate. I believe it is black oil.

Q This would be further evidence, then, that we may have an oil ram on a gas pool here.

A It is a possibility.

Q The fact that the oil production has increased?

A I would think so. As far as I know, he has not gone into that well with packers to determine whether his oil is coming from that lower proration, which is in the top of the B zone, or whether it is coming from the A zone.

Q And you definitely have black oil here and not distillate, is that correct?

A Yes, sir. It is 25, I believe.

Q So that can't be distillate?

A No.

Q How long do you anticipate, Mr. Smith, that it would be before the well that you have started will be complete, and a test made on the well?

A It will take ten to twelve days to drill the well, and probably a week on the completion. I'd say fifteen days or three weeks, we will see the test on the well that we have just started.

Q Do you know whether Mr. Ingram has started his well or not, or if the location has merely been staked?

A It is my understanding the location is staked, and the location made, I believe.

Q In your conversation with him, has he stated when he expects to get the well started?

A Yes, sir, very soon. I imagine there is some rig problems.

Q But as far as you know, it will be drilled as soon as possible?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Smith in this case? You may be excused. Do you have anything further,

Mr. Eaton?

MR. EATON: Mr. Examiner, I do understand that Mr. Ingram has sent a telegram to the Commission.

MR. NUTTER: Yes, I believe we have that.

MR. EATON: Supporting the application?

MR. HATCH: The Commission has received one from Mr. Ingram in support, and the Commission also received a telegram dated November 26th from Kerr-McGee, addressed to the Commission, which I will read into the record. Regarding Case 3975, scheduled for hearing on December 2, 1968, this telegram will evidence Kerr-McGee Corporation's position with respect to Franklin, Aston & Fair request that 80-acre spacing prevail in the Bluitt San Andres Area, Roosevelt County, New Mexico. Kerr-McGee does not concur in said request, and believes that one well will not drain 80 acres. Signed, Kerr-McGee Corporation, by James P. Ryan. I should point out that the Ingram telegram is in support of Franklin, Aston & Fair's application for 80-acre proration.

MR. EATON: I have talked to Mr. Ingram, and I do know that he supports the application en toto.

MR. NUTTER: Does anyone else have anything to offer in Case 3975? We will take the case under advisement.

I N D E X

EXHIBITS	MARKED	OFFERED AND ADMITTED
Applicant's Exhibits Numbers 1 through 6	2	15

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.

Samuel Mortelette
COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the examiner hearing of Case No. 3975 heard by me on 12/2 1968.

Examiner
New Mexico Oil Conservation Commission

CLARENCE E. HINKLE
W. E. BONDURANT, JR.
S. B. CHRISTY IV
LEWIS C. COX, JR.
PAUL W. EATON, JR.
CONRAD E. COFFIELD
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POST OFFICE BOX 10

October 30, 1968

Case 3975

OF

'68 OCT 31 AM 8 29

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

Gentlemen:

We enclose triplicate copies of an Application of Franklin, Aston & Fair, Inc. for creation of a new oil pool and promulgation of temporary special pool rules in Roosevelt County. We would like an examiner's hearing as promptly as possible.

Yours very truly,

HINKLE, BONDURANT & CHRISTY

Paul W. Eaton, Jr.

PWE/jw
Enclosure

'68 OCT 31 AM 8 16

cc: Franklin, Aston & Fair, Inc.

DOCKET MAILED
Date 3/14/69

DOCKET MAILED
Date 1-23-69

DOCKET MAILED
Date 11-21-68

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering
DALLAS, TEXAS 75207
May 14, 1969

RESERVOIR FLUID ANALYSIS

Franklin, Aston & Fair, Inc.
P. O. Box 1090
Roswell, New Mexico

Attention: Mr. Grant Smith

Subject: Reservoir Fluid Study
Shaw No. 2 Well
East Bluitt Field
Roosevelt County, New Mexico
Our File Number: RFL 5733

Gentlemen:

Subsurface fluid samples were collected from the subject well by a representative of Core Laboratories, Inc. on April 10, 1969. These samples were delivered to our laboratory in Dallas where they were used in a reservoir fluid study. The results of the study are presented in this report.

The fluid was charged to a visual cell and heated to the reservoir temperature of 111° F. At this temperature, the fluid was found to have a bubble point pressure of 1234 psig. This is very near the sampling pressure of 1266 psig, and it is considered likely that the fluid is saturated in the formation.

The fluid was subjected to differential pressure depletion and evolved 398 standard cubic feet of gas per barrel of residual oil. The associated formation volume factor was determined to be 1.201 barrels of saturated fluid per barrel of residual oil. The liquid viscosity varied from a minimum of 1.74 centipoises at the saturation pressure to a maximum of 4.71 centipoises at atmospheric pressure during a similar liberation.

Separator tests were performed at room temperature to evaluate the effect of pressure on surface separation. These tests indicate that the optimum

separator pressure is approximately 80 psig. The reservoir fluid composition was measured by low temperature, fractional distillation.

It was a pleasure to perform this reservoir fluid study for you. Please let us know if you have any questions or if we may be of any further service.

Very truly yours,

Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses
Manager

PLM:JB:dr
2 cc. - Addressee
1 cc. - Mr. Pat Gratton
Eugene E. Nearburg
Dallas, Texas
2 cc. - Mr. Elvis Utz
New Mexico Oil Conservation Commission
Santa Fe, New Mexico

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5733

Company Franklin, Aston & Fair, Inc. Date Sampled April 10, 1969

Well Shaw No. 2 County Roosevelt

Field East Bluitt State New Mexico

FORMATION CHARACTERISTICS

Formation Name	San Andres
Date First Well Completed	_____, 19____
Original Reservoir Pressure	_____ PSIG @ _____ Ft.
Original Produced Gas-Oil Ratio	_____ SCF/Bbl
Production Rate	_____ Bbl/Day
Separator Pressure and Temperature	_____ PSIG. _____ °F.
Oil Gravity at 60° F.	27 °API
Datum	680 Ft. Subsea
Original Gas Cap	

WELL CHARACTERISTICS

Elevation	4000 Ft.
Total Depth	4730 Ft.
Producing Interval	4680-4720 Ft.
Tubing Size and Depth	2-3/8 In. to 4596 Ft.
Productivity Index	_____ Bbl/D/PSI @ _____ Bbl/Day
Last Reservoir Pressure	1266 PSIG @ 4560 Ft.
Date	April 10, 1969
Reservoir Temperature	110* °F. @ 4560 Ft.
Status of Well	Shut in
Pressure Gauge	Amerada
Normal Production Rate	125-150 Bbl/Day
Gas-Oil Ratio	460 SCF/Bbl
Separator Pressure and Temperature	11 PSIG, 125 °F.
Base Pressure	_____ PSIA
Well Making Water	None % Cut

SAMPLING CONDITIONS

Sampled at	4560 Ft.
Status of Well	Shut in 22 hours
Gas-Oil Ratio	_____ SCF/Bbl
Separator Pressure and Temperature	_____ PSIG, _____ °F.
Tubing Pressure	8 PSIG
Casing Pressure	_____ PSIG
Core Laboratories Engineer	HM
Type Sampler	Wofford

REMARKS:
* Temperature extrapolated to mid-point of producing interval = 111° F.

VOLUMETRIC DATA OF Reservoir Fluid SAMPLE

1. Saturation pressure (bubble-point pressure) 1234 PSIG @ 111 °F.
2. Thermal expansion of saturated oil @ 5000 PSI $= \frac{V \text{ @ } 111 \text{ °F}}{V \text{ @ } 71 \text{ °F}} =$ 1.01869
3. Compressibility of saturated oil @ reservoir temperature: Vol/Vol/PSI:

   From 5000 PSI to 3500 PSI = 6.26×10^{-6}

   From 3500 PSI to 2000 PSI = 6.92×10^{-6}

   From 2000 PSI to 1234 PSI = 7.96×10^{-6}
4. Specific volume at saturation pressure: ft ^{3}/lb 0.01966 @ 111 °F.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75207

File RFL 5733

Well Shaw No. 2

Reservoir Fluid SAMPLE TABULAR DATA

PRESSURE PSI GAUGE	PRESSURE-VOLUME RELATION @ 111 °F. RELATIVE VOLUME OF OIL AND GAS, V/VSAT.	VISCOSITY OF OIL @ 111 °F. CENTIPOISES	DIFFERENTIAL LIBERATION @ 111 °F. GAS/OIL RATIO LIBERATED PER BARREL OF RESIDUAL OIL	DIFFERENTIAL LIBERATION @ 111 °F. GAS/OIL RATIO IN SOLUTION PER BARREL OF RESIDUAL OIL	DIFFERENTIAL LIBERATION @ 111 °F. RELATIVE OIL VOLUME, V/VR
5000	0.9743	2.29			1.170
4500	0.9772				1.174
4000	0.9803	2.14			1.177
3500	0.9836				1.181
3000	0.9868	2.00			1.185
2500	0.9903	1.92			1.189
2000	0.9939	1.85			1.194
1700	0.9962				1.196
1600	0.9970				1.197
1500	0.9978	1.78			1.198
1400	0.9986				1.199
1300	0.9995				1.200
1234	1.0000	1.74	0	398	1.201
1229	1.0019				
1224	1.0034				
1215	1.0071				
1182	1.0160				
1133	1.0311				
1100		1.79	26	372	1.191
1065	1.0559				
1000	1.0842				
995		1.84	48	350	1.183
920	1.1297				
900		1.89	69	329	1.175
822	1.1961				
800		1.95	92	306	1.166
740	1.2742				
700		2.01	115	283	1.157
648	1.3808				
600		2.11			
598			138	260	1.148
568	1.5178				
508	1.6701				

V = Volume at given pressure
VSAT. = Volume at saturation pressure and the specified temperature.
VR = Residual oil volume at 14.7 PSI absolute and 60° F.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS 75207

File RFL 5733

Well Shaw No. 2

Reservoir Fluid SAMPLE TABULAR DATA

PRESSURE PSI GAUGE	PRESSURE-VOLUME RELATION @ 111 °F., RELATIVE VOLUME OF OIL AND GAS, V/VSAT.	VISCOSITY OF OIL @ 111 °F., CENTIPOISES	DIFFERENTIAL LIBERATION @ 111 °F.		
			GAS/OIL RATIO LIBERATED PER BARREL OF RESIDUAL OIL	GAS/OIL RATIO IN SOLUTION PER BARREL OF RESIDUAL OIL	RELATIVE OIL VOLUME, V/VR
500		2.21	164	234	1.138
415	1.9605				
400		2.34	190	208	1.127
320	2.4149				
296		2.49	218	180	1.116
232	3.2537				
195		2.80	251	147	1.102
117		3.13	282	116	1.089
0		4.71	398	0	1.022
				@ 60° F.	= 1.000

Gravity of residual oil = 28.0° API @ 60° F.

V = Volume at given pressure
VSAT. = Volume at saturation pressure and the specified temperature.
VR = Residual oil volume at 14.7 PSI absolute and 60° F.

Differential Pressure Depletion at 111° F.

Pressure PSIG	Oil Density Gms/Cc	Gas Gravity	Deviation Factor Z
1234	0.8149		
1100	0.8176	0.805	0.859
995	0.8202	0.806	0.865
900	0.8229	0.809	0.876
800	0.8256	0.819	0.884
700	0.8285	0.827	0.898
598	0.8312	0.841	0.907
500	0.8344	0.860	0.919
400	0.8377	0.888	0.927
296	0.8411	0.932	0.946
195	0.8451	1.010	0.960
117	0.8482	1.122	
0	0.8675	1.473	

SEPARATOR TESTS OF Reservoir Fluid SAMPLE

SEPARATOR PRESSURE, PSI GAUGE	SEPARATOR TEMPERATURE, ° F.	SEPARATOR GAS/OIL RATIO See Foot Note (1)	STOCK TANK GAS/OIL RATIO See Foot Note (1)	STOCK TANK GRAVITY, ° API @ 60° F.	SHRINKAGE FACTOR, $V_R/V_{SAT.}$ See Foot Note (2)	FORMATION VOLUME FACTOR, $V_{SAT.}/V_R$ See Foot Note (3)	SPECIFIC GRAVITY OF FLASHED GAS
0	74	432		27.4	0.8118	1.232	1.123
30	74	362	23	28.4	0.8301	1.205	
60	74	330	44	28.6	0.8360	1.196	
120	73	292	86	28.5	0.8357	1.197	

(1) Separator and Stock Tank Gas/Oil Ratio in cubic feet of gas @ 60° F. and 14.7 PSI absolute per barrel of stock tank oil @ 60° F.

(2) Shrinkage Factor: $V_R/V_{SAT.}$ is barrels of stock tank oil @ 60° F. per barrel of saturated oil @ 1234 PSI gauge and 111 ° F.

(3) Formation Volume Factor: $V_{SAT.}/V_R$ is barrels of saturated oil @ 1234 PSI gauge and 111 ° F. per barrel of stock tank oil @ 60° F.

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5733

Company Franklin, Aston & Fair, Inc. Formation San Andres

Well Shaw No. 2 County Roosevelt

Field East Bluitt State New Mexico

HYDROCARBON ANALYSIS OF Reservoir Fluid SAMPLE

COMPONENT	MOL PER CENT	WEIGHT PER CENT	DENSITY @ 60° F. GRAMS PER CUBIC CENTIMETER	° API @ 60° F.	MOLECULAR WEIGHT
Hydrogen Sulfide	1.92	0.49			
Carbon Dioxide	5.67	1.89			
Nitrogen	0.63	0.14			
Methane	19.42	2.35			
Ethane	5.67	1.28			
Propane	6.23	2.08			
iso-Butane	1.39	0.61			
n-Butane	3.93	1.72			
iso-Pentane	1.86	1.01			
n-Pentane	1.93	1.05			
Hexanes	3.91	2.53			
Heptanes plus	47.44	84.85	0.9092	23.8	237
	100.00	100.00			

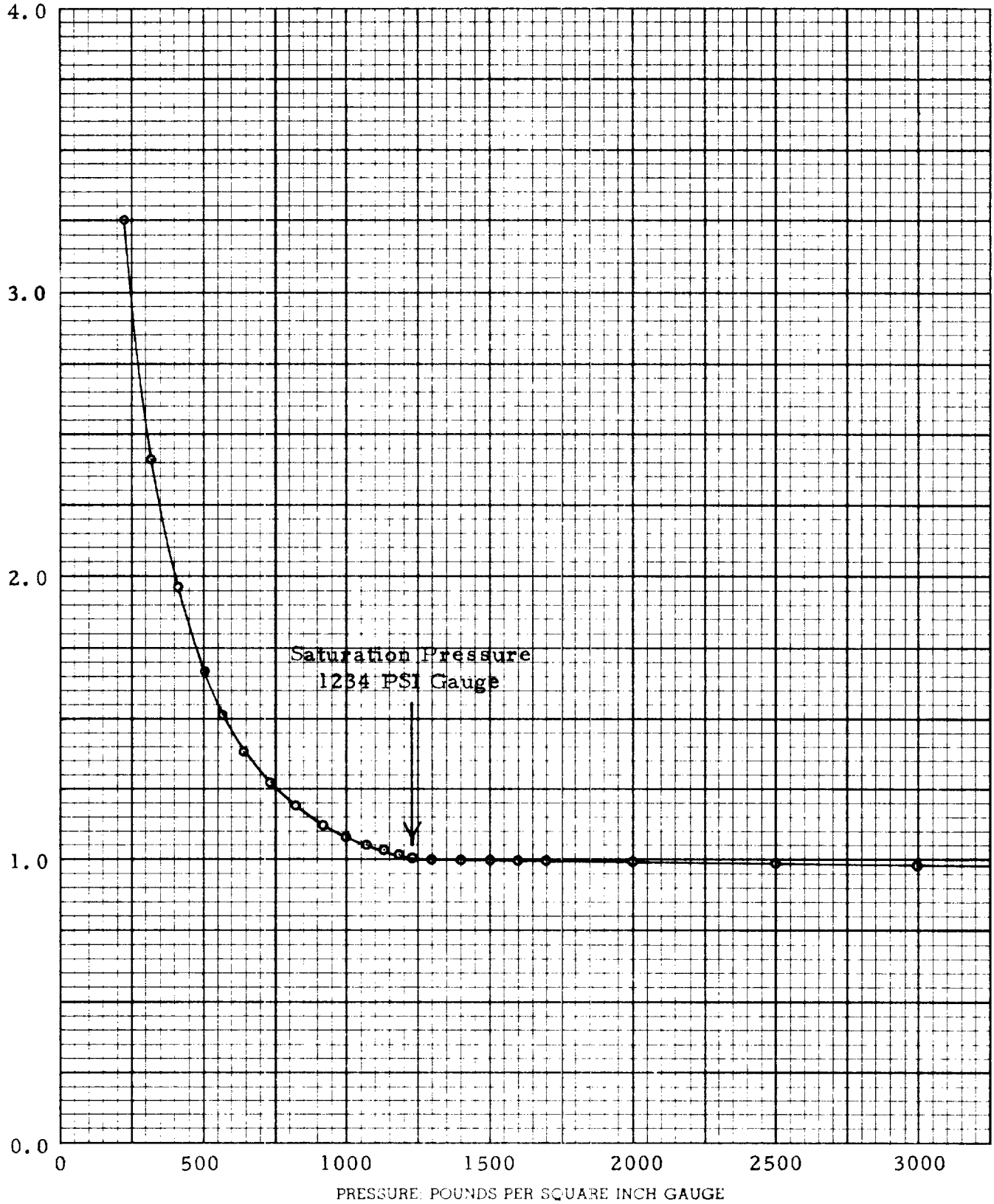
Core Laboratories, Inc.
Reservoir Fluid Analysis

P. L. Moses

P. L. Moses
Manager

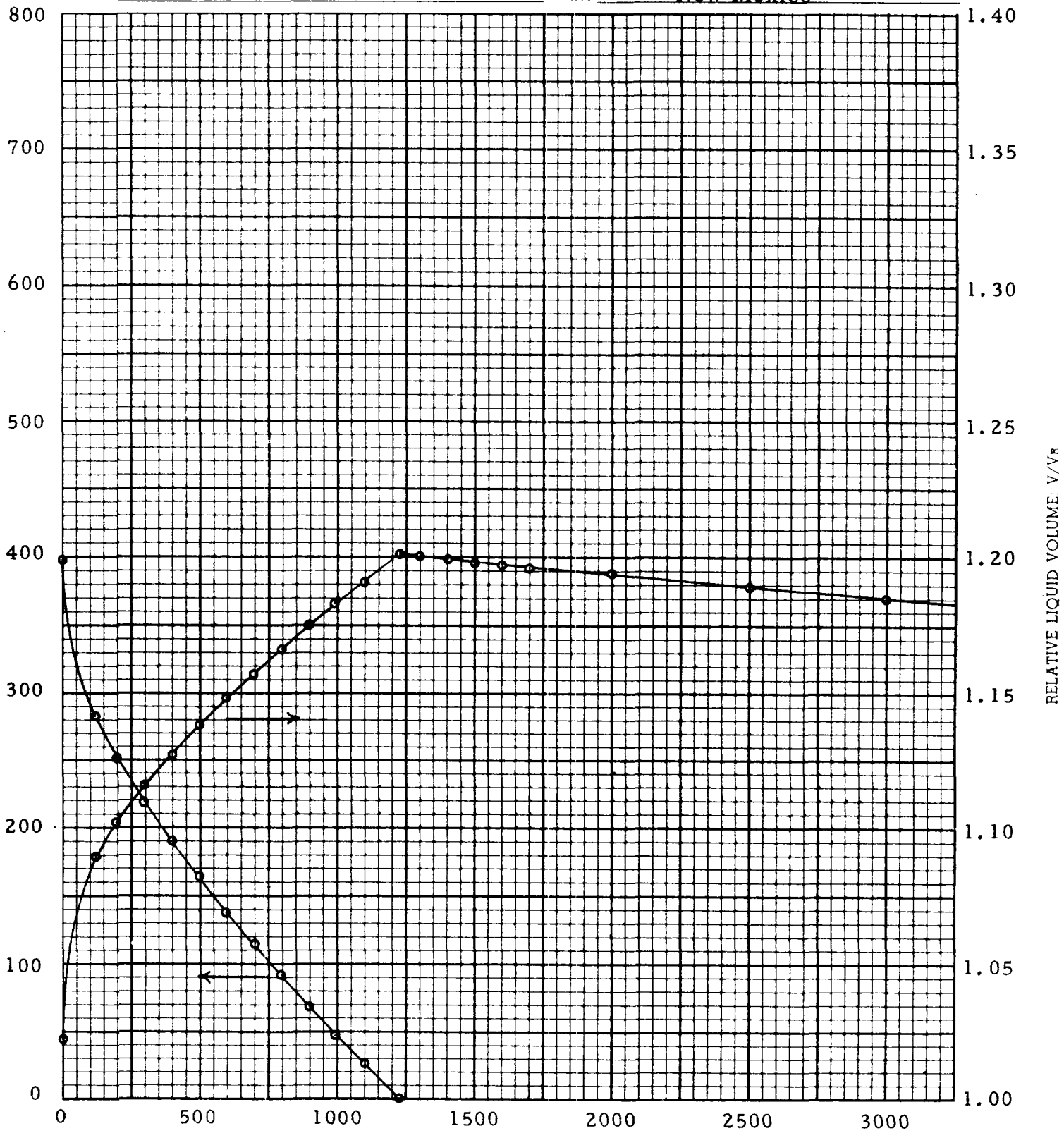
PRESSURE-VOLUME RELATIONS OF RESERVOIR FLUID

Company Franklin, Aston & Fair, Inc. Formation San Andres
Well Shaw No. 2 County Roosevelt
Field East Bluitt State New Mexico



DIFFERENTIAL VAPORIZATION OF RESERVOIR FLUID

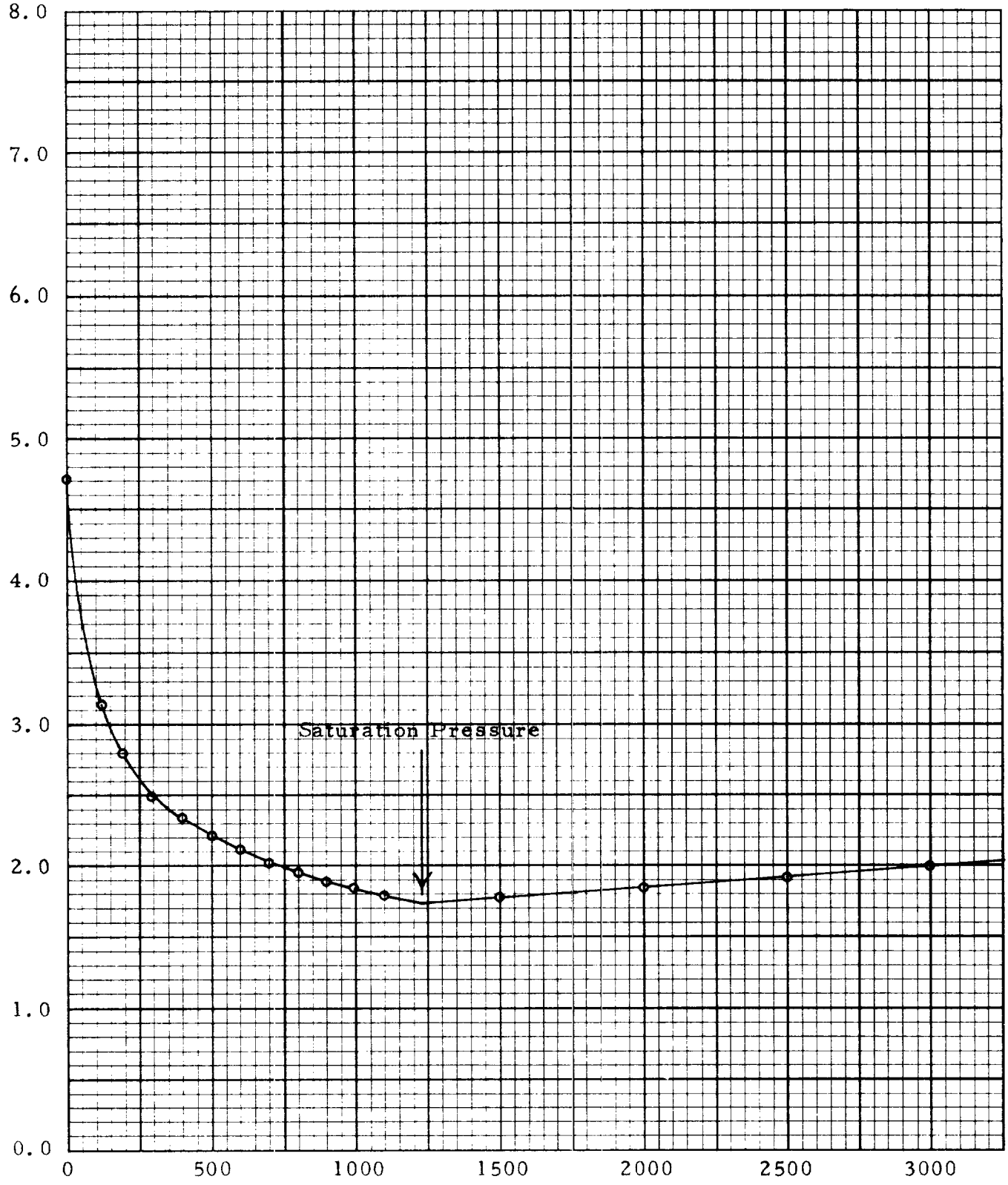
Company Franklin, Aston & Fair, Inc. Formation San Andres
Well Shaw No. 2 County Roosevelt
Field East Bluitt State New Mexico



CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

VISCOSITY OF RESERVOIR FLUID

Company Franklin, Aston & Fair, Inc. Formation San Andres
Well Shaw No. 2 County Roosevelt
Field East Bluitt State New Mexico



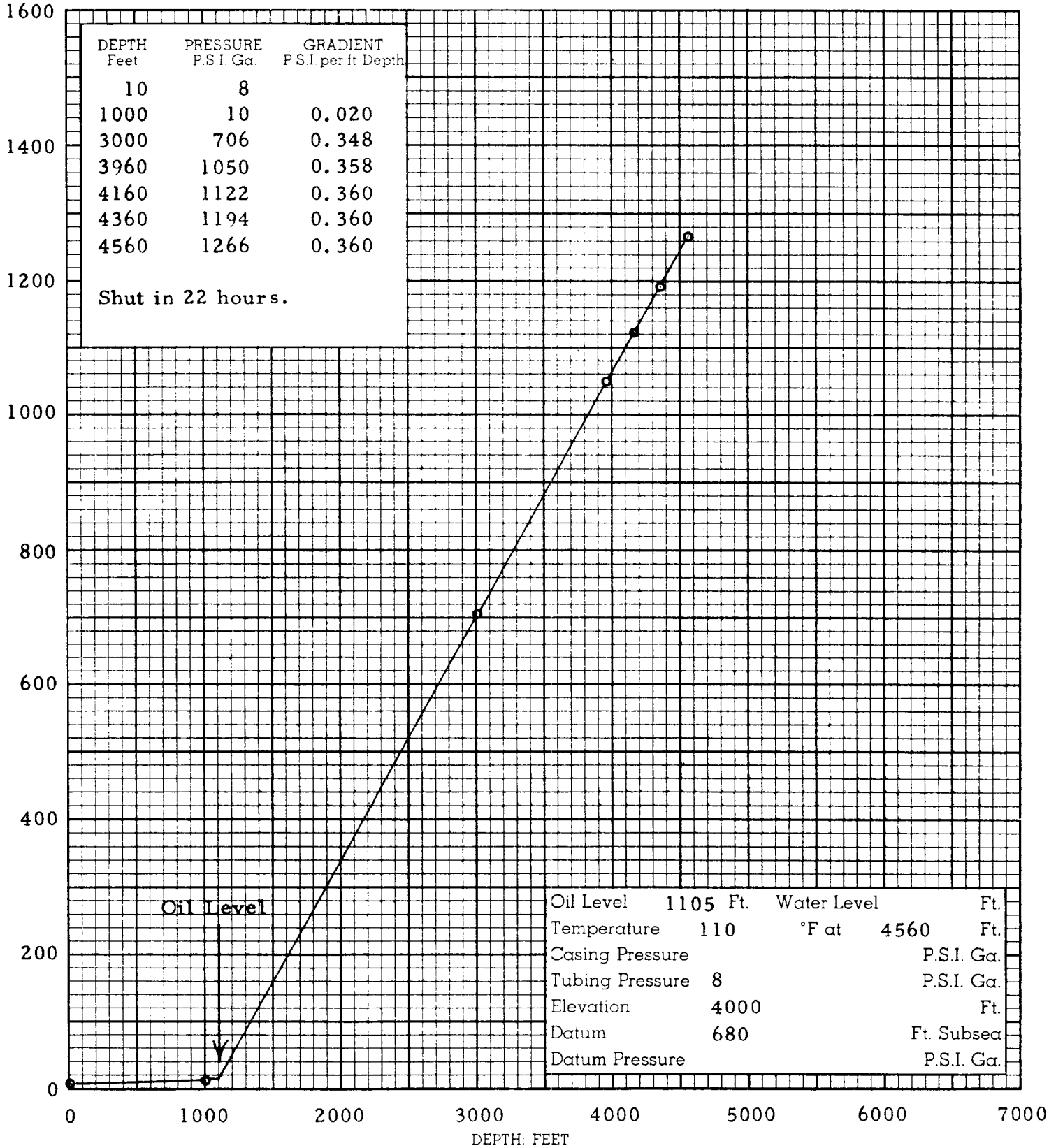
CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

File RFL 5733

Company Franklin, Aston & Fair, Inc. Formation San Andres
Well Shaw No. 2 County Roosevelt
Field East Bluitt State New Mexico

DEPTH Feet	PRESSURE P.S.I. Ga.	GRADIENT P.S.I. per ft Depth
10	8	
1000	10	0.020
3000	706	0.348
3960	1050	0.358
4160	1122	0.360
4360	1194	0.360
4560	1266	0.360

Shut in 22 hours.



Oil Level	1105 Ft.	Water Level	Ft.
Temperature	110	°F at 4560	Ft.
Casing Pressure			P.S.I. Ga.
Tubing Pressure	8		P.S.I. Ga.
Elevation	4000		Ft.
Datum	680		Ft. Subsea
Datum Pressure			P.S.I. Ga.

EUGENE E. NEARBURG
3303 LEE PARKWAY
DALLAS, TEXAS 75219

TELEPHONE
214-521-0220

File
Case 3975

27 January 1969

New Mexico Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico
Attn: Mr. Daniel S. Nutter

Subject: Continuance of hearing

File: Roosevelt County, New Mexico
E. Bluitt Field Area

Gentlemen:

You have set case 3975 on docket #4-69 for February 5, 1969 concerning a review of the provisions of order #R-3618 which deals with temporary rules for the E. Bluitt-San Andres Pool, Roosevelt County, New Mexico. The notice for this hearing states "all interested parties may appear and present evidence as to whether area is indeed a separate common source of supply or an extension of the Bluitt-San Andres gas pool."

Since the issuance of order #R-3618 on 9 December 1968, Franklin, Aston & Fair has completed two San Andres wells and Eugene E. Nearburg has completed one well in the San Andres. None of these wells has a high gas oil ratio. Franklin, Aston & Fair is in the process of attempting completion of the #1 Roden Federal, and Roden Oil Company is in the process of completing the #1 Roden Bluitt Federal, both structurally low wells on the extreme east side of the E. Bluitt Field. Nearburg has staked location and let contract for his #2 and #3 Baetz Federal wells which should provide useful additional information.

One of Nearburg's tests, the #2 Baetz Federal, is the most westerly location and should be the structurally highest in the E. Bluitt Field. This test and the #3 Baetz Federal will be drilled and completed in February 1969.

Because the information gathered to date has not proved the presence of a gas-oil contact in the E. Bluitt Field, and since the two wells planned by Nearburg could materially assist in understanding the connection between E. Bluitt-San Andres oil and Bluitt-San Andres gas fields, it is respectfully requested that the scheduled hearing be postponed until late March or early April 1969. This will allow time to digest the new information to be provided by the drilling and completion of Nearburg's tests. This time will also allow an opportunity to make several bottom hole pressure measurements and gas-oil ratio tests.

I have previously communicated with Franklin, Aston & Fair concerning this request for a continuance, and they are agreeable, and I am notifying by copy of this letter, the only other operator in the field, Roden Oil Company.

Sincerely,

Patrick J. F. Gratton

PJFG/ja

cc: Franklin, Aston & Fair
Attn: Mr. Tom Stephens

Roden Oil Company
Attn: Mr. George Staley

Southern Petroleum Expl.
Attn: Mr. Bill Hicks

Hinkle, Bondurant & Christy
Attn: Mr. Paul Eaton

Tom L. Ingram

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

January 29, 1969

DOCKET MAILED
Date 3/4/69

Eugene E. Nearburg
3303 Lee Parkway
Dallas, Texas 75219

Attention: Mr. Patrick J. F. Gratton

Re: Case 3975

Gentlemen:

We are in receipt of your letter of January 27, 1969, regarding Case No. 3975 which is set for hearing on February 5 to consider whether the East Bluitt San Andres Pool in Roosevelt County is a separate pool or is an extension of the Bluitt San Andres Gas Pool, and to consider proper rules to govern the area whether it is found to be a separate pool or such an extension.

We agree with you that since there is considerable activity in the area, additional information should be soon forthcoming which will help the Commission to arrive at a more intelligent final determination of the matter. We will, therefore, continue Case No. 3975 to the examiner hearing scheduled for March 26, 1969.

At that time we will consider (1) whether the oil producing area east of the Bluitt-San Andres Gas Pool constitutes a separate common source of supply, and if so, what the proper spacing and well location requirements for said pool should be and,

(2) whether the oil producing area east of the Bluitt-San Andres Gas Pool constitutes an oil run on the gas pool and if so, what the proper spacing and well location requirements for both gas wells and oil wells should be; what the GOR and/or gravity breaking point for classification of wells as gas wells or oil wells should be; what the allocation formula to determine proper withdrawals from the gas cap and the oil run should be (a volumetric

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

-2-
Eugene E. Nearburg
3303 Lee Parkway
Dallas, Texas 75219

January 29, 1969

Attention: Mr. Patrick J. F. Gratton

formula similar to that for the Todd Pool and as contained in Order No. R-1670-G should probably be considered).

Very truly yours,

DANIEL S. NUTTER
Chief Engineer

DSN/ir

cc: Franklin, Aston & Fair
Post Office Box 1090
Roswell, New Mexico 88201

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

July 23, 1969

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

Re: Case No. 3975
Order No. R-1670-I
Applicant:
Franklin, Aston & Fair

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

CORE LABORATORIES, INC.

Company [illegible]	File [illegible]
Well [illegible] FEDERAL [illegible]	Date [illegible]
Field [illegible]	Elevation [illegible]
County [illegible] State NEW MEXICO	Drlg. Fluid [illegible]
Location 660 FS & WL [illegible]	

Lithological Abbreviations

SAND-SS	DOLOMITE-DOL	ANHYDRITE-ANHY	SANDY-SDY	FINE-FN	CRYSTALLINE-XLN	BROWN-BRN	FRACTURED-FRAC	[illegible]
SHALE-SH	CHERT-CH	CONGLOMERATE-CONG	SHALY-SHY	MEDIUM-MED	GRAIN-GN	GRAY-GRY	LAMINATED-LAM	[illegible]
LIME-LM	GYPSUM-GYP	FOSSILIFEROUS-FOSS	LIMY-LMY	COARSE-CRSE	GRANULAR-GNR	VUGGY-VGY	STYLOLITIC-STY	[illegible]

WHOLE-CORE ANALYSIS

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS MAX	PERMEABILITY MILLIDARCYS 90	POROSITY PERCENT	RESIDUAL SATURATION PERCENT PORE OIL	RESIDUAL SATURATION PERCENT PORE WATER	DESCRIPTION
	CORE NO 2 4680-4730						
1	4680.0-81.8	<0.1	<0.1	1.1	0.0	90.4	DOL, SL/FRAC
2	81.8-83.4	0.1	0.1	2.3	8.4	51.7	DOL, SL/FRAC
3	83.4-85.0	0.1	0.1	3.8	14.6	32.1	DOL, SL/FRAC
4	85.0-86.7	1.4	1.1	4.4	10.8	38.3	DOL, SL/FRAC
5	86.7-88.3	0.6	0.4	5.6	7.9	34.1	DOL, SL/FRAC
6	88.3-89.9	0.1	0.1	7.2	10.6	22.5	DOL, SL/FRAC
7	89.9-91.6	72	0.1	11.5	14.7	19.2	DOL, FRAC
8	91.6-92.8	3.0	0.5	8.8	4.7	28.6	DOL, FRAC
9	92.8-94.2	0.5	0.3	7.3	[illegible]	31.0	DOL, FRAC
10	94.2-95.6	3.9	0.9	9.0	13.2	23.7	DOL, FRAC
11	95.6-97.0	0.5	0.4	6.6	9.6	30.1	DOL, FRAC
12	97.0-98.4	37	0.2	3.4	9.0	49.8	DOL, SL/FRAC
13	98.4-99.9	*1.0	*0.9	10.8	6.2	33.9	DOL, FRAC, SL/VGY
14	99.9-01.0	*0.1	*0.1	4.1	14.2	52.8	DOL, FRAC, SL/VGY
15	4701.0-02.6	*<0.1	*<0.1	3.2	14.3	36.5	DOL, FRAC, SL/VGY
16	02.6-04.4	3.5	0.6	4.5	3.1	29.3	DOL, VGY, SL/FRAC
17	04.4-06.0	3.4	<0.1	4.3	12.7	45.7	DOL, SL/FRAC
18	06.0-07.5	26	0.1	6.5	5.5	31.1	DOL, FRAC
19	07.5-09.0	0.1	0.1	5.8	11.8	27.6	DOL
20	09.0-10.6	0.3	0.2	5.8	5.5	46.7	DOL, SL/FRAC, SL/VGY
21	10.6-11.8	0.5	0.1	5.5	16.1	29.9	DOL, VGY
22	11.8-13.5	0.1	0.1	1.5	5.3	78.8	DOL, FRAC, SL/VGY
23	13.5-14.8	0.8	0.1	1.3	17.2	71.2	DOL, FRAC
24	14.8-16.4	0.2	0.1	3.5	9.4	28.3	DOL, FRAC
25	16.4-18.0	0.1	0.1	2.6	10.9	46.5	DOL, FRAC
26	18.0-19.0	<0.1	<0.1	1.5	0.0	93.5	DOL
	19.0-28.0 ANHY & DOL						
	28.0-30.0 LOST CORE						

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 5
CASE NO. 3975

ILLEGIBLE

Bluitt Gas   E. Bluitt Oil

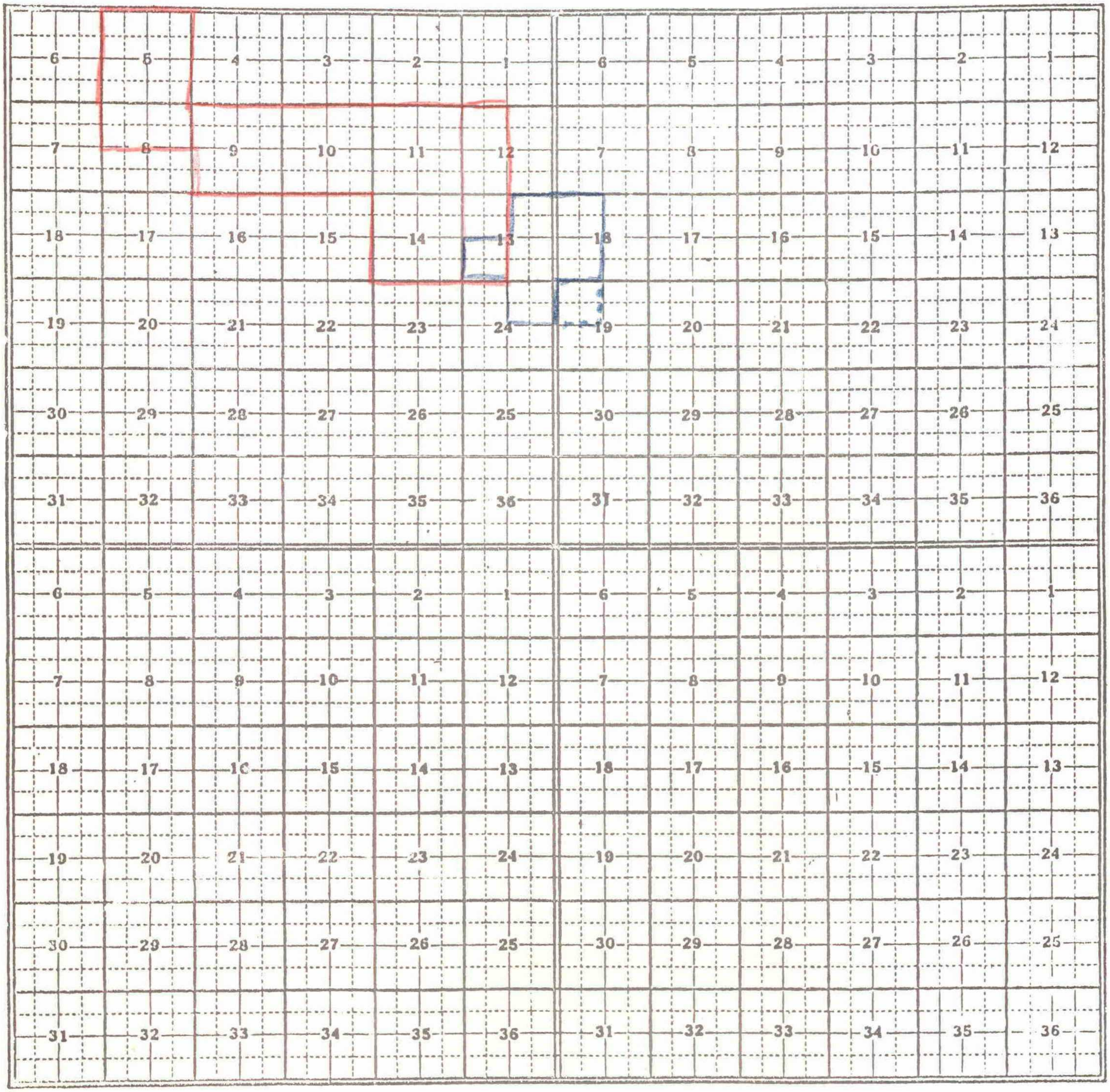
______________________ County, ______________________

Township __________ Range __________   Township __________ Range __________

Township __________ Range __________   Township __________ Range __________

37   Form 104—(Four on Township)   38

8



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