CASE 4317: Application of UNION OIL CO. OF CALIFORNIA FOR THE CREATION OF NEW GAS POOL & RULES.

CH 4th EXAMINER HEARING

Case Number

4317

Application

Transcripts.

Small Exhibits

ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 4, 1970

EXAMINER HEARING

IN THE MATTER OF:

Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico.

CASE NUMBER
4317

BEFORE:

DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MARCH 4, 1970 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
MARVIN ZOLLER	[illegible]	[illegible]
ADRIAN F. TURNEY	UNION OIL CO OF CALIF	[illegible]
George J. Howard	Union Oil Co of Calif	Roswell, N.M.
Terry Clay	Superior Oil Company	Midland
Philip F. Patman	Superior Oil Company	Austin, Texas
John J. Russell	Union Oil Co. of Cal.	Roswell, N.M.
Boles Kelly	Mable Gilbreath	S.F.
[illegible]	[illegible]	[illegible]
C.W. Stumhoffer	ANADARKO PROD. Co.	Ft. Worth
Patrick H. Nelson	Eugene E Nearburg	Dallas
Guy Buell	PAN Am	Ft. Worth
PAT HOSFORD	✓ ✓	✓ ✓
Jason Kellahin	Kellahin & Fox	Santa Fe
Tom L. Ingram	Independent	Roswell
Nina S. Dubbams	R W Byram & Co.	Santa Fe,
Owen M. Hodges	Michael P Grace	Santa Fe
DICK PFIRMAN	Tenneco Oil Comp	Midland
[illegible]	[illegible]	[illegible]

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MARCH 4, 1970 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
John Dunat Jr	Pennzoil	Albuquerque
Kendall B. Cook, P.E.	Continental	Midland
B. C. SINCLAIR	PENNZOIL UNITED, INC.	MIDLAND

MR. HATCH: The Hearing will come to order, please.

MR. NUTTER: We will take the next Case 4317.

MR. HATCH: Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico.

MR. RUSSELL: John F. Russell, Roswell, New Mexico, appearing on behalf of the applicant, and I have two witnesses.

(Witness sworn.)

JOHN HOWARD

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

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name, address, the name of your employer and the capacity in which you are employed?

A John Howard, employed by the Union Oil Company of California in the Roswell office, employed as an exploration and development geologist in the Permian Basin.

Q Have you previously qualified to give testimony before the New Mexico Oil Conservation Commission?

A No, I have not.

Q Will you give a brief resume of your educational background and your practical experience?

A I received a BS degree in Geology from the University of Texas, at El Paso, in 1966, spent two years in exploration for minerals and the past two years working as petroleum geologist for Union Oil Company in the Permian Basin.

Q And you are familiar with the area in which this case applies, are you not?

A Yes, I am.

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

MR. NUTTER: Yes. They are.

Q Are you familiar with the application of Union Oil Company of California in Case Number 4317?

A Yes, I am.

Q What do you seek by that application?

A We seek a new field designation on the basis of the gas discovery in the Union Number 2 Federal 18 Well in Roosevelt County, New Mexico, and we seek to have statewide rules applied to this new field.

Q In connection with this application, have you

prepared some exhibits?

A Yes, I have.

(Whereupon, Exhibit Numbers 1,2 and 3 were marked for identification)

Q I will hand you what has been marked as Applicant's Exhibit Number 1, and ask you to identify and explain that exhibit.

A Exhibit Number 1 is a structure map of the Bluitt area contoured on top of the San Andres-Todd Zone. The Todd Zone is shown on the type log to the left and it's color-coded blue. The scale of the map is one inch equals 2,000 feet, contour interval is fifty feet, and the producing horizons are color-coded and the wells colored purple are producing from the Todd Zone, the wells colored white are producing from the Milnesand.

Q What are they producing, are they all oil wells, gas wells, or what?

A Some of the wells are oil wells and some are gas wells.

Q Are they different color or not?

A No, sir. I'll discuss the color-coding in a minute.

Q All right.

A Map 1 illustrates the trapping mechanism in the Bluitt Field. The trap is a structural stratigraphic trap.

The porosity and permeability in the Todd Zone are affected to the north by an increase of evaporates being anhydrite and salt, decreasing the porosity and permeability to the points where we have a stratigraphic trap, which is shown as the purple line, diagonal line across the map.

This stratigraphic trap crosses the structural nose which is shown trending west northwest and east southeast. The red color on the map denotes the Bluitt associated gas cap.

The map shows a gas-oil contact of approximately a subsea of a minus 560. The green on the map also shows the oil-producing zone below the Bluitt gas cap. Going eastward, the red again denotes gas production from the Union Number 2 Federal 18.

On off to the east in Texas is the Bledsoe Field which is color-coded green and produces oil from both the Milnesand and the Todd Zones.

This map shows the location of the Union Number 1 Federal 18 Well in Township 8 South, Range 38 East in Section 18 of the southwest quarter of the southeast quarter. This well was perforated over an interval of twenty-two feet in the Todd Zone. It had an initial potential in the pump of 100 barrels of oil plus eight barrels of water. This was in

June, 1969. The well was presently producing approximately fifteen barrels a day.

The Todd Zone in this well was cored and examination of the core showed that the dolomite in the Todd Zone was tight, but not from anhydrite and salt, as we see to the north in the stratigraphic trap. It was merely tight dolomite, exhibiting very little porosity and permeability. We continued our development program and drilled the Number 2 Federal 18 in Section 18 of 8 South, 38 East. That's in the southeast quarter of the southeast quarter. This was drilled as an oil well location.

The Union Number 2 Federal 18 was perforated over twenty-eight foot interval of the Todd Zone. It was treated with 500 gallons of acid, had an initial potential of 6.340 million cubic feet of gas per day. This is dry gas. This well is twelve feet low on top of the Todd Zone, the Number 2 Well is twelve feet low on top of the Todd Zone to our Number 1 Well.

It is seven feet low to our Number 1 Well on the top perforation. So, we are structurally downdip and have discovered dry gas to the oil zone in the Bluitt Field.

Due to the law of gravity, this phenomena cannot exist in a reservoir without there being a barrier between

the Number 1 and Number 2 Well separating into two reservoirs, the Number 1 and the Number 2 Well.

Q You say you had twenty-eight feet in Number 2. How many feet in Number 1 in the Todd Zone?

A This [illegible] perforated twenty-eight feet in Number 2, and perforated twenty-two feet in Number 1.

Q Both in the Todd?

A Yes, sir. On the basis of this gas discovery, we have placed permeability barrier between the Number 1 and the Number 2 Wells as is shown on the structure map. We have extended this permeability barrier to the north due to the evidence that was discovered in some of the wells that I will now discuss in Section 18.

The overlay on the map is pertinent data to wells which we feel have been affected by a tightening of the dolomite, causing a permeability restriction. The Austral Number 1 McGrail in Section 18 of 8 South, 38 East, located in the northwest quarter of the northeast quarter, this well was drilled in 1952. It was completed from both the Milnesand and the Todd Zones, although they were treated separately.

The Todd Zone was treated with a total acid of 11,000 gallons and it was potentialed with a flow of

five to eight barrels of oil per hour. This well was put on production in 1952 and was plugged and abandoned in 1954 with a cumulative production of 8,171 barrels of oil. It was abandoned after the production fell to five barrels of oil per day, or less.

The only log we have available in this well is the resistivity log and the zone appears to be composed of broken porosity in the Todd. It does not have the well-developed porosity and permeability that we have in the Bluitt Field.

The Franklin, Aston and Fair Number 1 Roden Federal is located in the southeast quarter of the northwest quarter of Section 18 of 8 South, 38 East. This well was perforated in the Todd over an interval of thirty-eight feet. It was acidized with 6,000 gallons. It flowed twenty-four barrels of oil, plus twenty-four barrels of water in seventeen hours. It was treated with 2,000 gallons of Kerosene emulsion and sand fracted at 60,000. It flowed eighty to ninety barrels of load oil, plus 750 to 1.25 million cubic feet of gas per day. The last gauge on this well was pumping four barrels of oil with thirty-five barrels of water per day. It was temporarily abandoned in July, 1969.

Q Did it ever flow any formation oil? You mentioned the load oil after that treatment and the gas-oil ratio. Did it make any formation oil?

A That I do not know.

Q When was this last report that it was pumping four barrels?

A I don't have the date on that.

Q But it shows a P and A on your map here?

A Yes, sir. It was temporarily abandoned in July of 1969, and a sonic log porosity on this well indicates a maximum of four and a half per cent porosity in time.

The Roden Number 1 Bluitt Federal which is located in the southwest of the northwest quarter of Section 18 of 8 South, 38 East, it was perforated in the Todd Zone, acidized with 500 gallons, well swabbed with seventy barrels of fluid, being forty per cent oil, forty per cent water, twenty per cent basic sediment, reacidized with 3,000 gallons and was potentialed on the pump for fifty-two barrels of oil, plus twenty-three barrels of water in twenty-four hours.

The low production of oil and the high production of water from this well indicates that the zone is being affected by a tightening of the reservoir. The Union Number 1

Federal 18 in the southwest quarter of the southeast quarter, Section 18 of 8 South, 38 East perforated the Todd interval, was acidized with 3500 gallons, swabbed eight barrels of fluid, cut sixteen per cent acid water, was reacidized with 6,000 gallons and swabbed five barrels of fluid per hour. Initial potential of this well was 100 barrels of oil, plus eight barrels of water in twenty-four hours.

As I said before, the well has declined to fifteen barrels of oil per day and is extremely tight. Production in the field relative to these wells that I have discussed so far, production in the field, there are seventeen producing wells and as of November 1969, twelve of these wells were flowing at or near their allowable of 4,216 barrels a month.

So, as you can see, these wells are not performing near the scale that the wells to the east in the Bluitt oil field are performing.

The Baumgardner Number 1 U.S.A. is located in the northwest quarter of the northeast quarter of Section 19 of 8 South, 38 East. This well is perforated in the Todd Zone. It was acidized with 5,000 gallons, was potentialed on pump for 140 barrels of oil, plus six barrels of water

in twenty-four hours. Production in this well has fallen to approximately fifty barrels per day at this time. Production indicates that the Todd Zone is partially restricted. However, it is producing -- we show here that it has produced twice as much oil in November, 1969 as the Union Number 1 Federal 18, indicating that the Union Number 1 is tighter than the Baumgardner Number 1 U.S.A.

Evidence presented on the wells that have just been discussed tends to prove the presence of a permeability barrier as shown on the map and we have presented evidence showing the presence of a gas well downdip from an oil well, being the Union Number 2 Federal 18 downdip from the Union Number 1 Federal 18.

This is resulting in a separate gas reservoir downdip from the Bluitt Oil Zone.

Exhibit 1 also shows structural cross-section AA prime, which is Exhibit Number 2.

If we may backtrack a minute, I would like to present evidence which is on the plat which I did not present from my notes. The Franklin, Aston and Fair Number 2 Shaw, Federal, in the southwest quarter of the southwest quarter of Section 18, of 8 South, 38 East, the core analysis on this well exhibited an average permeability

of 6.2 millidarcies and an average porosity of 6.6 per cent.

Moving east and downdip to the Union Number 1 Federal 18 -- is it necessary to give the location?

Q You have located these wells, haven't you?

A Yes. We show this core average permeability of .46 millidarcies with an average porosity of 4.86 per cent. This is substantially less than the Franklin, Aston and Fair Number 2 Shaw.

Continuing east and downdip to the Union Number 2 Federal 18, the information shown on the plat shows that the core average permeability was 9.3 millidarcies and average porosity of 6.2 per cent. The permeability in the Number 2 Well, then, is approximately twenty times as good as the permeability in the Number 1 Well.

Q Anything further on Exhibit 1?

A Just the location of the structural cross-section AA prime.

Q Now, I hand you what has been marked as Applicant's Exhibit Number 2, and ask you to identify it and explain what it portrays.

A Exhibit Number 2 is a structural cross-section beginning on the west side in the Bluitt Associated Gas Cap and I will discuss these wells in a moment.

And continuing through the Bluitt Associated Gas Field and going to the east, the last well on the cross-section is the Union gas discovery Number 2 Federal 18. This cross-section correlates the Todd producing zone from the gas cap to the Union Number 2 Federal 18.

And a matter of explanation, the green denotes those wells which are producing oil from the Todd Zone and the red indicates those wells which are producing gas from the Todd Zone.

The yellow is a structural marker used by most geologists in the area. It is a thin layer of silt. The purple is anhydrite which is the seal over the rest of the Todd reservoir, and is present also above the Milnesand reservoir. And the blue is the Todd dolomite.

Beginning on the west end of the Straw Section, we have the Shell Number 1 Bluitt, which is now operated as the Newburg Number 2 Kirkpatrick. This well is located in the northwest of the northeast of Section 14, of 8 South, 37 East. So, it is perforated in both the Milnesand and the Todd Zones and produces gas.

Moving eastward, the cross-section now shows the gas-oil contact at approximately a minus 560 subsea, and the next well on the cross-section is the Newburg Number 1

KGS Bates Federal. This is in the southwest of the northwest, Section 13 of 8 South, 37 East. This well is perforated in the Todd Zone and produces oil from that zone.

The next well on the cross-section is the Franklin, Aston and Fair Number 2 Bluitt Federal, which was the second well drilled there. It is located in the northwest of the southeast of Section 13 of 8 South, 37 East, perforated in the Todd Zone, produces oil from that zone.

Continuing downdip to the east, the next well on the cross-section is Franklin, Aston and Fair Number 2 Shaw. This is in the southwest of the southwest of Section 18, 8 South, 38 East. This well was also perforated in the Todd Zone and produces oil from that zone.

The next well on the cross-section, going eastward and downdip, is the Union Number 1 Federal 18. This well was also perforated in the Todd Zone and produces oil from that zone.

The last well on the cross-section, easterly downdip, is the Union Number 2 Federal 18, which is perforated in the Todd Zone and produces dry gas from that zone.

The purpose of Exhibit 2 is to show that the Number 2 Federal 18 and all other wells on the cross-section

are perforated in the same zone and the Number 2 Federal 18 is downdip from the producing oil wells in the Bluitt Field.

Q Did you have anything further on that exhibit?

A No.

Q All right. I will hand you what has been marked as Applicant's Exhibit Number 3, and ask you to identify and explain that exhibit.

A Exhibit Number 3 is a comparison of core permeabilities for three wells in the Bluitt Field. It probably would be simpler to locate these wells on the structure map. They are in Section 18, of 8 South, 38 East; they have been previously located. The well to the extreme left is the Franklin, Aston and Fair Number 2 Shaw.

The next well to the east is the Union Number 1 Federal 18, and the third well is the Union Number 2 Federal 18.

This comparison was prepared on a subsea datum. It shows structure. The purple on the map designates the Todd interval. The green shows the wells which are producing oil from the perforations that were shown on the core analysis, and the red shows the wells which are producing gas from the perforations shown on the core analysis.

The orange shows the measured permeability from the cores taken from these three wells.

It should be noted that all three cores were analyzed by the same company and that the permeability on these anylyses is plotted on a logarithmic scale in millidarcies.

Now, logarithmic scale tends to exaggerate low permeabilities. If this were plotted on a rectangular scale, the permeability in the Number 2 Well would be barely visible. If we want to examine the permeabilities, the Number 2 Shaw on the left has permeabilities ranging up to seventy millidarcies and that has an average permeability of 6.2 millidarcies.

Moving eastward to where we contend our Number 1 Federal 18 is affected by a permeability barrier, you will note that the maximum permeability in the Number 1, 18 is one millidarcie and that the average permeability in that well is .46 millidarcies.

Moving on to the east, the Union Number 2 Federal 18, we note that permeability in this well was measured as high as 100 millidarcies. Our average permeability for this well was 9.3 millidarcies.

Now, like the cross-section, this exhibit shows

the presence of gas downdip from the oil in the Bluitt Field, plus the presence of a permeability restriction in the vicinity of the Union Number 1 Federal 18. We fell this is supporting data for our permeability barrier which has been indicated on the structure map labeled Exhibit 1.

Q One other item on that exhibit that you have not identified?

A Yes, there is.

Q What is that?

A This is a temperature survey which was run on the Union Number 2 Federal 18. On this exhibit it is plotted on depth and will be discussed by another witness.

Q Were Exhibits 1, 2 and 3 prepared by you or under your supervision and direction?

A Yes, they were.

MR. RUSSELL: I have no further questions of this witness.

MR. NUTTER: Are there any questions of the witness?

MR. KELLAHIN: If the Examiner please, Jason Kellahin, Santa Fe, New Mexico, appearing in this case for Franklin, Aston and Fair, Incorporated, Eugene Newhurg and Tom Ingram. I have a couple of questions I would like to ask the witness.

CROSS-EXAMINATION

BY MR. KELLAHIN:

Q Mr. Howard, the area involved by the location of your Number 2, 18 well is presently within the Bluitt San Andres Pool, is it not?

A It's in the vicinity of the San Andres Pool, yes.

Q It's in the pool, isn't it, horizontal limits of the pool, or do you know?

A Yes, I believe it is.

Q Has your company had any experience with wells in the Todd San Andres Pool?

A The only ones I am familiar with are the ones in the Bluitt area.

Q Have you had any experience in the Chaveroo San Andres Pool?

A No, sir.

Q As I understand your testimony, there was a difference in the elevation of your perforations between your Number 1 and your Number 2 Well and I didn't get those figures. Could you give them to me again, please?

A I believe the difference was Number 2 Well was seven feet low on the top perforations of the Number 1 Well.

Q And then it's my understanding you testified there

was a barrier between those two wells?

A Yes, sir.

Q What's the nature of that barrier?

A Well, as I explained, it is just a tightening of the dolomite in which porosity and permeability are restricted to a point to which fluids cannot migrate into and saturate the rock.

Q It's not an intrusion of anhydrite. Is there a difference in the change of the nature of the reservoir?

A From my examination of the core in the Union Number 1, Federal 18, it is not a result of anhydrite. It's tight dolomite.

Q Isn't that rather a common occurrence in the San Andres Pool?

A Yes, it is.

Q That doesn't necessarily mean that in and of itself, indicates that there is a separate and distinct pool, does it?

You would have to have more than just the fact there is a permeability pinch-out in one particular area to establish two separate reservoirs, would you not?

A Yes, sir.

Q Do you know whether the same situation occurred in the Todd San Andres Pool?

A Yes, it did.

MR. KELLAHIN: Now, I ask, do you have another witness who can testify on pressures and other engineering information?

MR. RUSSELL: Yes.

Q Was it your intention in connection with the presentation of Exhibit Number 1 to indicate that your Union Number 2, 18 was in the same field as the Bledsoe Pool in Texas?

A No, sir. That is not our intention. Our intention was to show that we are disassociated with the Bluitt Field.

Q You are not connected with anyone, is that correct?

A Presently we do not know if we are connected with the Bledsoe Field.

Q You are projecting another well offsetting this Number 2 Well, aren't you?

A Yes, we are.

Q Do you know when that will be drilled?

A It should be studded this weekend.

Q Wouldn't that give additional information to indicate whether this is or is not a separate source of supply?

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

Q You don't think it would have any bearing?

A No, sir.

Q Let's assume for a minute that this direct offset comes in as an oil well. Would that have any significance of the nature of the reservoir in which you have completed your Number 2 Well?

A Yes, sir, that would support our data.

Q It would support?

A That's why we are drilling the well.

Q Then, it would have some bearing on whether it is or is not a separate reservoir?

A Not in the essence that you are stating it.

Q Would you explain just what you mean, then?

A The Number 2 Federal 18, by itself, shows that we are in a separate reservoir. Any oil found downdip could be associated with the gas found in the Number 2 Federal 18.

Q And you would not say that would indicate that it was in the Bluitt Field, at all?

A That is correct.

Q Do you make any fluids, at all, in the Number 2 Well?

A No, sir, we do not.

Q No oil, at all?

A No, sir.

MR. KELLAHIN: I believe that's all. Thank you.

MR. RUSSELL: I have one additional question, Mr. Examiner.

REDIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you explain to the Examiner, I don't think you have as yet, the acreage which you feel is included within this pool?

A That would be the acreage east of the permeability barrier as we have shown it drawn on the structure map in the eastern one-third of Section 18, and acreage east of there.

Q Is there acreage, then, in any other section to the east?

A Yes, there is.

Q Well, what do you feel is within the pool?

A Well, we can not define the limits at this time.

Q But are you of the opinion that some of Section 17 is productive of gas?

A Yes, it may be.

MR. RUSSELL: I have no further questions.

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. Howard, has any analysis been made of the gas produced from your 2, 18 well to compare that gas analysis with the gas produced from up-structure in the Bluitt Pool?

A Yes, it has.

Q What's the similarity or the dissimilarity in the gas?

MR. RUSSELL: The next witness will testify on that point.

A The next witness will testify as to that.

Q And also as to pressure differential?

A Yes, sir.

Q Now, just examining the logs between the Federal 2, 18 and the Federal 1, 18 Wells, Mr. Howard, there's really no dissimilarity between those logs and nothing in the appearance of the logs themselves to indicate the existence or nonexistence of any permeability barrier, is there?

A No, sir.

Q I don't want to testify, but I don't think I have ever seen two logs that were so similar to each other. Are you sure you didn't get the same log on here twice? But the logs themselves don't indicate any barrier. Your

assumption of the barrier is based on the fact that one well is gas structurally lower than the other one --

A No, sir. The Number 1 Well does insinuate that we are in a permeability restricted area and we have shown this on the core analysis comparison between three wells in Section 18.

Q What was the cored interval there on that well?

A It was the Todd interval, sir. All three of the cores in Exhibit 3 are from the Todd interval. The logs shown on the cross-section are porosity logs and porosity is not exactly the key to production in the San Andres. It's the permeability and this is not measured by those logs on cross-section.

Q Would you give me the figures that go on the top of these permeability logs here on the core analyses? They didn't reproduce very well and I can't read the number. I suppose the extreme right-hand line would be .01?

A .01.

Q 0.1?

A 0.1, yes, sir.

Q The next figure would be .05?

A Yes, sir.

Q What's the next line?

A It would be 1.0.

Q That's one, and the next one would be?

A Five. The next one will be ten.

Q Ten, fifty and 100?

A Yes, sir.

Q And all three are the same, I guess?

A Yes, sir.

Q So, your average permeability by the core analysis of the 1, 18 is .46?

A Yes, sir.

Q Now, on their analysis here of water saturation and oil saturation, core lab gives a figure for each one. Is there an oil saturation in the 2, 18?

A Yes, sir, there is.

Q But it doesn't produce any oil?

A No, sir, it's dry gas.

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

MR. RAMEY: I have a question.

CROSS-EXAMINATION

BY MR. RAMEY:

Q Mr. Howard, now, the Baumgardner Well which is in the northwest of the northeast of 19, --

A Yes, sir.

Q -- is some nine feet structurally lower than your Federal 2, 18?

A Yes, sir.

Q And how can you be certain that it's to the west of the permeability barrier and not to the east?

A The top perforation in the Union Number 2, 18 is ten feet high to the top perforation in the Baumgardner Number 1 U.S.A. If the Number 1 U.S.A. was in the same reservoir as the Number 2 Federal 18, it would either be making a substantial amount of gas since the two perforated zones will overlap on structure or we would be making oil in the bottom of our hole.

Q What is the GOR ratio?

A That I do not have. Information is very slim on that well.

Q You don't have any wells over here in the oil zone of the Bluitt? Are there any high ratio oil wells in there?

A High ratio GORS?

Q Yes.

A I don't have the data with me, sir.

MR. RAMEY: That's all.

MR. NUTTER: Are there any other questions? The

witness may be excused.

(Witness excused.)

ADRIAN F. TURNEY

called as a witness, having been previous sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name?

A Adrian F. Turney.

Q By whom are you employed and in what capacity?

A Union Oil Company of California, Petroleum Engineer, from Midland, Texas.

Q Have you previously qualified to give testimony before the Commission?

A Yes, sir.

Q Are you familiar with the application of Union Oil Company in case Number 4317?

A Yes, sir.

Q In connection with this application, have you prepared some exhibits?

A Yes, sir.

(Whereupon, Exhibit Number 4 was marked for identification.)

Q I hand you what has been identified as Applicant's Exhibit Number 4, and ask you to identify and explain it.

A Exhibit Number 4 is a side wall neutron porosity log run on the Union Number 2 Federal 18.

Q What does it show?

A Marked on the log are formation tops, and the completed interval in the Todd Zone showing the perforations. There is one perforation at each point shown on the log.

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

Q I hand you what has been marked as Applicant's Exhibit Number 5, and ask you to identify and explain that exhibit.

A Exhibit Number 5 is a differential temperature log which was run on the Union Number 2 Federal 18, in August of 1969.

Q Explain what that exhibit reflects and the conclusions that you draw from it.

A On the far right side at the bottom of the log is shown the perforated interval. On the far left side, the first curve is a collar locator curve. Above the packer, which is shown at 4624, you'll read "tubing collars."

Below the packer, you will read "casing collars."

The purpose for running this log was to determine where the gas was coming from in this well. The well was flowed for three hours and the flowing gradient, which is the second curve to the right on the log, was run. This curve established that the base of the flow was coming from the bottom of the perforations in this well. The well was then shut in and one-half hour later the third curve to the right was run and this is an absolute temperature curve.

The second curve from the right is also an absolute temperature curve.

The fourth curve from the right is a differential temperature curve which is a computed curve and its purpose is to show the slope in the third curve from the right, the absolute temperature curve.

These two curves, far right curves, indicate that the cooling in this well is in the perforated interval and therefore the gas production is coming from the perforated interval which is the Todd Zone. This is also shown on Exhibit Number 3, which has the same depth scale as the core log on the Federal 18 Number 2 Well.

You'll note that the maximum cooling from

approximately 4732 feet on the differential temperature survey to 4744 feet also corresponds approximately to the maximum permeability on the core log of Federal 18 Number 2.

(Whereupon, Exhibit Number 6 was marked for identification.)

Q I hand you what has been marked Applicant's Exhibit Number 6, and ask you to identify and explain this exhibit.

A Exhibit Number 6 is a diagramatic sketch of the Union Oil Company of California, Federal 18 Well Number 2. It shows eight-and-five-eighths-inch casing set at 321 feet and twelve-and-three-quarter-inch hole, and was circulated with 175 sacks of cement. Total depth, 4774 feet. Four-and-a-half-inch casing set at 4774 feet and seven-and-seven-eighths-inch hole with 300 sacks of cement.

Looking up the diagram, I have estimated cement top at 3800 feet. It indicates a packer, Baker Model R set at 4617 feet. Not 4624 as previously indicated on the differential temperature survey. And two-and-three-eighths-inch OD tubing with bottom at 4624 feet.

It also shows ten perforations from 4718 feet to 4746 feet and a plug-back depth of 4756 feet. Additionally, the elevations are shown on the bottom right-hand corner,

Kelly bushing, derrick floor and ground level.

(Whereupon, Exhibit Number 7 was marked for identification.)

Q I hand you what has been marked as Applicant's Exhibit Number 7, and ask you to identify that.

A Exhibit Number 7 presents data on the Austral Oil Exploration Company-McGrail Number 1, Unit B, which is in the northwest northeast, Section 18, Township 8 South, Range 38 East. The top of the page you'll see monthly tabulation of oil production from this well, showing the cumulative production of 8171 barrels of oil before the well was plugged in February of 1954, an estimated ultimate primary recovery of 11,200 barrels of oil.

Below it is the production decline curve showing the monthly oil production in barrels of oil on this well.

(Whereupon, Exhibit Number 8 was marked for identification.)

Q I hand you what is marked Applicant's Exhibit Number 8, and ask you to identify that.

A Exhibit Number 8 is proposal, special rules and regulations for the West Bledsoe Gas Pool. That's the name we are proposing for it. It's a new pool.

Q Does it ask for an exception for your discovery well?

A Yes, sir, it does.

Q What acreage do you propose to have dedicated to this well for proration purposes?

A We actually have two proposals.

Q Tell them what they are.

A The 160 acres in a north-south line in Section 18.

Q What section are you referring to?

A It would be the east half of Section -- east half of the east half of Section 18, Township 8 South, Range 38 East.

Q 160 acres?

A Yes, sir.

Q Or what is the other alternative?

A Or the east half of the southeast quarter, Section 18, Township 8 South, Range 38 East, plus the west half of the southwest quarter of Section 17, Township 8 South, Range 38 East.

Q Either one of those designations would be acceptable to you, but do you have a preference as to which you would prefer to have?

A Yes, sir. The first one which would be the east half of the east half of Section 18, Township 8 South, Range 38 East.

Q Has this well been tested?

A Yes, sir.

Q What sort of production did you get from it on the test?

A The potential test?

Q What is that, do you have that?

A 6.3 million cubic feet a day absolute open flow.

Q Anything further from any of these exhibits that you want to bring out at this time, including Exhibits 1, 2 and 3?

A No, sir.

MR. RUSSELL: At this time, I offer Applicant's Exhibits 1 through 8, inclusive, into evidence.

MR. NUTTER: Union's Exhibit Numbers 1 through 8 will be admitted in evidence.

(Whereupon, Exhibit Numbers 1 through 8 were offered and admitted in evidence.)

MR. RUSSELL: I have no further questions of this witness.

MR. NUTTER: Is this the witness or is there going to be another witness that is going to testify?

Q You have that information that the Examiner asked for previously?

A Yes, sir.

Q Would you give him that at this time?

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. Turney, has an analysis been made of this gas and has a comparative analysis been made of the gas produced from the Bluitt Gas Zone to the west of here, and if such analyses have been made, would you compare them, please?

A Sir, we do not have any gas analysis information from the gas cap area of the East Bluitt Associated Field. We do have a comparison of gas analysis from the subject well with other wells, oil producing wells.

Q This would be in the casing head gas that's produced with the oil in the other wells?

A Yes, sir. We have four analyses, the first is the Union Oil Company of California Federal 18 Number 2, which is Unit P, Section 18, Township 8 South, Range 38 East. We show a carbon dioxide content of 9.05 per cent, a nitrogen content of 10.25 per cent, hydrogen sulphite content of 1.03 per cent, menthene of 69.03 per cent. This is what we feel significant. Would you like for me to read them all?

Q No. Don't read all the numbers. Just give us a brief analysis of what this thing indicates.

A Proceeding to the right on the attached exhibit is Union Oil Company of California Federal 18 Number 1, which is in Unit O, Section 18, Range 38 South,-- Township 8 South, Range 38 East. It exhibits a carbon dioxide content of 14.30 per cent, a nitrogen content of 2.56 per cent, hydrogen sulphite content of 3.16 per cent, a methene content of 48.04 per cent.

There's also a difference in the specific gravity for the Federal 18 Well Number 2; the specific gravity is .802, and the Union Oil Company of California Federal 18 Number 1, the specific gravity is 1.040.

You will also note changes in,the differences in the GPN content, the BTU content and the hydrogen sulphite content. Proceeding further to the right with the Franklin, Aston and Fair, Incorporated, Roden Federal Number 2, Unit C, Section 19, Township 8 South, Range 38 East, it shows a carbon dioxide content of 15.18 per cent, a nitrogen content of 2.05 per cent, a hydrogren sulphite at 3.48 per cent, and a methene content of 46.02 per cent. It has specific gravity of 1.070.

Q Actually, all three of the wells on the right-hand side of this exhibit are quite similar to each other in characteristic of the analysis?

A Yes, sir.

Q And the essential difference is between the one on the left and the other three?

A Yes, sir.

Q Other than going into the individual differences between the other three?

A Yes, sir.

Q Has any comparison ever been made between the casing head gas produced from these three wells and the dry gas produced from the structure?

A No, we have not done this.

Q So, we still don't have a comparison of dry gas versus dry gas?

A No, sir, we don't.

Q How about pressure differences, what was your initial bottom hole pressure in this 2, 18?

A I have a copy of the monthly statistical report, Volume 1, September, 1969, showing Bluitt San Andres associated bottom hole pressures, at a pool datum of minus 560 feet. Down below you see where it says "Additional Tests."

The first well is the Union Federal 18 Number 1 which exhibited a bottom hole pressure of 531 pounds -- excuse me--

527 pounds at pool datum of minus 560 feet. The second well is the Federal 18 Number 2, which indicates a bottom hole pressure of 1522 pounds at the pool datum of minus 560 feet. Above are the pressures that were reported in the monthly statistical report.

Q This pressure given here for your Federal 2, 18, is this an initial pressure on this well?

A No, sir. This was a bottom hole pressure bomb that was run on September 3rd, 1969. The open flow test was run on August 26th, 1969.

Q Did you have any bottom hole pressure to compare before that?

A No, sir.

Q How long a test was taken on the well?

A The overflow test?

Q I just wondered how much gas has been produced.

A During the flow test?

Q Yes.

A I have a copy of it here.

(WHEREUPON, the taking of the Hearing was resumed by CA FENLEY at this point.)

A Sir, personally we don't have any estimate of how much gas was produced.

Q Do you have any idea of how long the well was shut-in before the pressure test was taken?

A We show on the exhibit here as one hundred ninety-two plus hours. I do not know exactly how many hours it was shut-in.

Q When was that open flow test taken?

A On August 26, 1969.

Q Well, that would be a hundred and ninety-two hours from August 26 until September 3 then- -

A Yes, sir.

Q - -since it was shut-in from the completion of the test.

A Yes.

Q Now, do you have any initial pressure in the old Bluitt Gas area?

A I do not.

Q Do you know if any initial pressures were ever obtained over in that area or not?

A I do not.

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

MR. RUSSELL: I have one further, if I may.

REDIRECT EXAMINATION

BY MR. RUSSELL:

Q In making comparison between this gas well and the other wells in the pool which are producing gas, are there any wells which are completed in only one zone or are they all commingled, these remaining wells? Do you know?

A I believe that's indicated on attachment number one. Felmont Federal would be the only well that's completed from the Milnesand zone and it's in the northeast northeast Section 9.

Q How many in the Todd formation?

A Yes, sir. There are five.

Q Just completed in the Todd formation?

A I'm sorry. It's two completed in the Todd formation.

Q Identity them.

A Kirkpatrick Number 3Y, and in the northwest quarter of Section 11; and the Perkins BTA, Number One Perkins in the northwest quarter of Section 10.

MR. RUSSELL: I have no further questions.

MR. NUTTER: Any further questions of Mr. Turney? Mr. Kellahin?

RECROSS EXAMINATION

BY MR. KELLAHIN:

Q Mr. Turney, the Union only has the two wells in the Bluitt area; is that correct? The Number One and the Number Two well?

A I believe we also own the Austral Number One McGrail.

Q So at present you are operating two?

A Yes, sir.

Q Did you conduct any bottom hole pressure tests that would indicate the size of the pool in this Number Two well?

A We conducted a flow test that I have not done any work on it.

Q Do you know what the results of that was regarding the size of the drainage area?

A No.

Q Did you ever see the figures yourself?

A I have the pressure data, that's all.

Q Did anybody in your organization make any calculations on the size of the pool to your knowledge?

A I think there were some made.

Q But you don't know what they were?

A No.

Q Do you know who made them?

A Another engineer.

Q And he is not present here?

A No, sir.

Q Could that information be made available to the Examiner?

A Yes, sir; it could.

Q The -- do you know what the original pressure was in the Number One Kirkpatrick Well?

A No, sir.

Q Now, as I understand, this well was drilled and plugged back; is that correct?

A Which was?

Q The Number Two well, drilled to what- -

A Which well are you referring to?

Q The Number Two well. Give me the total depth.

A The Union Number Two Federal 18?

Q I believe it's on your schematic.

A The plug depth at 4756; the total depth is 3774.

Q Did that penetrate the anhydride base of the Todd?

A No, sir.

Q Now, I understand, you are asking at this time for approval of a nonstandard unit; is that correct?

A Yes, sir.

Q For the Number 218 well?

A Well, we are asking for a new field designation, and in the special field rules we are asking, it would be granting an exception to the normal spacing.

Q The normal spacing would be a hundred and sixty acres?

A Yes, sir.

Q And you are asking for what dedication of acreage to the Number 218 as an exception?

A Either the east half of the east half of Section 18, Township 8 South, Range 38 East, or the east half of the southeast quarter of Section 18, Township 8 South, Range 38 East plus the west half of the southwest

quarter of Section 17, Township 8 South, Range 38 East.

Q Now, if you were approved -- approval were given to a unit in the east half of the east half that would dedicate to this well a unit a mile in length.

A Yes, sir.

Q In your opinion would your Number 218 well drain that area?

A I do not have any data to indicate whether it would or not.

Q You don't know then whether it would be proper to dedicate a unit a mile long to the well or not?

A No, sir.

Q On the basis of drainage.

A No, sir.

MR. KELLAHIN: That's all. Thank you.

MR. NUTTER: Any other questions of this witness? You may be excused.

MR. RUSSELL: I have no questions, but I would like to move the introduction of Exhibits Numbers Nine and Ten.

MR. NUTTER: These two sheets that were

introduced will be Exhibits Nine and Ten.

MR. RUSSELL; I have marked one of them.

I have nothing further, Mr. Examiner.

MR. NUTTER: Applicant's Exhibits Nine and Ten will be admitted in evidence.

(Whereupon, Applicant's Exhibits Numbers Nine and Ten were admitted in evidence.)

Does anyone have anything they wish to offer in Case 4317?

MR. KELLAHIN: If the Examiner please, we have two witnesses we would like to present.

MR. NUTTER: All right.

GRANT M. SMITH

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A I am Grant M. Smith.

Q And by whom are you employed and what position, Mr. Smith.

A Franklin Aston and Fair, Incorporated,

of Roswell. I am a petroleum geologist.

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

A Yes, sir.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Kellahin) Mr. **Smith**, are you familiar with the Bluitt-San Andres Associated Oil and Gas pool?

A Yes, sir.

Q Did you give expert testimony for Franklin Aston and Fair, Incorporated at the hearing in Case Number 3975 which resulted in Order R-1670I which established this pool and produced -- and the producing and spacing regulations?

A Yes, sir.

Q Now, you have heard the testimony of Mr. John Howard and Mr. Adrian Turney regarding the Union Number Two Federal 18 well located in the southeast of the southeast of Section 18, Township 8 South, Range 38 East, to the effect that it is a new discovery gas well and should be allowed to produce as they have requested?

A Yes.

Q You have heard all this testimony?

A Yes.

Q Do you agree with this testimony?

A No, sir.

Q Now, why do you not agree with this testimony?

A Well, there are a number of points that I disagree with them on.

Number One, it lies within the vertical and the horizontal limits of what has been designated the limits of this pool.

Q Can you give any explanation for the producing characteristics of this well without placing it in a new pool?

A Yes, sir.

Q Would you produce your exhibits in order we can present this testimony, Mr. Smith?

A Yes, sir.

Here's a complete file of exhibits.

Q Referring to what has been marked as Franklin Aston and Fair's Exhibits Number One, would you identify that, please?

A This is a structural map of the Bluitt-San Andres

Associated Oil and Gas pool.

Q Let's go through and identify the other exhibits before we get into your testimony.

Exhibit Number Two, Two A and Two B.

A Exhibit Number Two is a cross section the line of which is shown on Exhibit Number One as A, A Prime. Enclosed with Exhibit Number Two marked Two A and Two B are reproductions of the log on Union of California's Number 118 and 218 wells.

Q On Exhibit Number Three, will you identify that?

A Exhibit Number Three is a smaller scale structure map of the Bluitt pool showing some of the trapping components and my interpretation of the well -- why the well and pool behaves as it does, which I will go into in greater detail later on.

Q Exhibit Number Four; Four A, B, and C.

A Exhibit Number Four is a structure map of the Todd and San Andres pool showing the structural configuration showing some of the trapping components.

Number Four A is a production map showing its relationship to some of the trapping components and Number Four B also gives some of this information.

Q There isn't any Four C; I misstated that.

A Yes.

Q Now, Exhibit Five A, B and C.

A Five A, B and C are log reproductions of three of Franklin Aston and Fair's wells in the Todd-San Andres pool.

Number A is our Livoudair Federal Three in the northeast of the northwest of 30.

Five B is the Val Two in the northwest of the northeast of 30.

And the C is the Franklin Aston and Fair Featherstone Federal One in the northeast of the northwest of Section 29.

Q And then Exhibit Number Six.

A Exhibit Number Six is a log on Franklin Aston and Fair Roden Federal Number One in the east Bluitt pool.

Q Now, Mr. Smith, referring to these exhibits using them to explain your computation, would you give your reason for disagreeing with the testimony which has been offered on behalf of Union Oil Company?

A Well, I think the behavior of Union's

Number Two well can be explained without breaking the law of gravity. I think to understand the reason this well behaves as it does that you have got to make a study of some other pools in this area.

I would like to refer to the Exhibits Number Three and Number Four at this time.

Now, my interpretation of the trapping components in both of these pools is due to a porosity pinch-out on the north side or the northeast side of the east to the southeast plunging nose, the wells are very similar -- or the pools are very similar in structural configuration. It's almost amazing that you can find almost an identical well in each pool.

When we were first developing the Todd pool, needless to say we were at a loss to explain some of the behaviors that we ran into there.

As the pool was further developed, it began to form a pattern and we began to make a little sense out of why some of the wells acted as they did.

I would like to refer to Exhibit Number Four. I have shown the porosity pinch-out as an orange band marking the north flank of the nose, but the production characteristics of some of the wells in this

pool didn't seem to make a lot of sense.

If you will notice, there are two streaks that I show as reduced porosity and permeability development trending north-south through this pool.

To refer to Number Four A, which is the cumulative production for the wells in this pool to 1-1-69, and I used this figure before we started having water encroachment.

If you will notice our Number Four well on the edge of the first north-south trending tight streak had the cumulative production -- this well is now abandoned, I might add --- of six thousand six hundred and thirty-five barrels of oil. You can carry this on further south to our marked Federal Number Five in Section 25, had fourteen thousand two hundred and eighty-five barrels of oil before we converted it for saltwater injection into the "C" zone.

Then this tight streak seems to make kind of a dog leg and swing over in and bring it down and into the Skelly Number Two well in the southwest of the northwest of 31 of 736.

If you will notice the cumulative production on these wells, when we get over midway between these two tight streaks we start getting a lot better wells.

For instance, our Val Two which is in the northwest of the northeast of 30, had sixty-eight thousand nine hundred and seventy. It was drilled a long time after these wells to the west. Our Val Number One had sixty-five thousand seventy one. Our Skelly well in the northwest of the northeast of 31 had fifty-nine thousand three hundred and forty-three. The Skelly Two, fifty-four thousand. We drop on down in to the Atlantic wells in the southwest -- southeast quarter of 31, cumulative production to 1-1-69 was forty-six thousand and -- for the Number One; thirty-seven thousand for the Number Two.

These wells are now approaching a hundred thousand barrels cumulative production. Because some of these wells were drilled at a later date, I had to change this cumulative production figure. And, if you will notice, on the last wells in the southwest side of the pool I have a pencil figure in there which the cumulative production -- which is the production for these wells in October of '69.

The Pan Am well in the southwest of the southeast of 29 had one thousand five hundred and forty-two. The well in the southeast of the southeast

was completed since the first of the year for an initial potential of a hundred and thirty-four barrels a day.

The -- our Gates Number Two well in the northeast of the northwest in October produced one thousand one hundred and forty-six. The Gulf Number One well produced four thousand two hundred and eight, and the Gulf Number Two produced four thousand one hundred and ninety-seven. The Number Three well is a low well structurally and was in water.

I think this points out that going north-south through this field -- through this field -- or this pool and also, we are beginning to see the same thing in the Bluitt pool; we have these streaks of reduced porosity and permeability. They do not appear to extend all the way through the field. I think that in some instances this may merely be a reduction of porosity and permeability. I think also in other instances that it can be impermeable.

And even though you are low structurally in the field, if you are on the east side of one of these tight streaks, you can have a gas pocket trapped against

it. But pulling around the southern end of these, you will have common oil phase going around the bottom of it.

I think -- that's one reason I pointed out these wells on the southwest end of the pool have good production. They have this tight streak in the Todd-San Andres well -- does not extend all the way through the field. And I have shown on there in a green dash line how I visualized that a gas pocket could be trapped against this tight streak.

I think we have got to consider that cores and the logs themselves are not going to give us the whole story on porosity and permeability in this pool.

I have cored wells that had oil in them, excellent buggy porosity and pinpoint porosity and treat the well and acidize it and get enough of a show to make you think you have a well and go ahead and give it a sand-oil fracture and end up with nothing.

One reason for this as I have observed in the cores that you will find porosity filled with gypsum. I think it's possible in these wells to have -- in fact, I know it is; I have seen it -- have the gypsum dissolve out, and you have the core analyzed and get some pretty

good porosity and permeability, but in reality it isn't there because this is what is washed out from the wells being drilled.

To bring out the point that the well is in the vertical and horizontal limits of the pool, you can just look at the cross section which was the same cross section that I presented in the first hearing for pool designation; and you can see that both of Union's wells are completed within what is determined the vertical limits of the pool.

To go into a little more detail on unusual production characteristics, I would like to refer to Exhibit Number Five, which is the three wells that I mentioned previously. The Livoudair Three in the northeast of the northwest of 30, the Val Two in the northwest of the northeast of 30 and the Featherstone Federal Number One in the northeast of the northwest of 29.

Q Those are all in the Todd pool?

A Yes, sir; they are all in the Todd pool.

Q All right.

A As you can see on the structure map and also from the log sections, the Val State Number Two and the Livoudair Federal Number Three are almost flat.

They are within two feet of each other structurally.

The Livoudair Three nearly drove us crazy trying to figure out what was going on. This well was one of them that we treated, sand oil fracked it. We had a little show, and then we had a high GOR. Trying to figure out what in the world was the matter -- I would like to read just a little bit of our daily production record on this well.

"3-27-67, flowed and swabbed fifty-six barrels of load; total four hundred and eighty-two barrels of load recovered to date. On the twenty-four sixty-fourth inch choke making five hundred and ninety-one point eight thousand cubic feet of gas per day." And structurally there is not a lot of reason for that. It's a lower well than the Val Two.

On the following day on an eighteen sixty-fourth inch choke we made thirty-seven point twenty-two barrels of oil, sixty-eight point five barrels of water and five thousand eighty-one point six cubic feet of gas -- I mean, five hundred and eight-one thousand point s[illegible]ic feet of gas.

MR. RAMEY: Was that load oil?

THE WITNESS: No, that was load oil.

A (Continuing) As you can see from the cumulative production figure, this well was not a success to say the least; but we can go on and compare the log on our Featherstone Federal Number One, which is the farthest east well, some forty feet lower structurally, and we ran into almost the same situation in completing this well; acidized it, sand oil fracked it, made water and made gas. We tried emulsion breakers in it and we eventually plugged and abandoned that well.

The interesting thing is that this well is almost identical in behavior to our Roden Federal Number One in the Bluitt pool. It's located in the southeast of the northwest of Section 18.

As you can see this well is perforated in the P-2 or the "B" zone, whatever you wish to call it.

I visualize, as I have plotted on the Bluitt pool showing the tight streak coming down through it, that this well is very probably in a very similar structural position as our Featherstone Federal Number Two in the San Andres pool.

I would like to read some of the production history on that well.

"January 26, last year, flowed seventy-five point two barrels of fluid; 27, flowed seventy-six barrels of fluid." At this point we had recovered volume wise, most of our load and we drowned out one tank and found out that it was cut seventy-four percent.

I would also like to point out that at this same time we were making five thousand and ten -- or, no, excuse me -- at this tme on the 28th we had a gas test by City Service which showed the well to be making from seven hundred and forty-six thousand to one million two hundred and fifty thousand cubic feet of gas per day through a twenty-four sixty-fourth inch choke. Together with oil, with a large amount of water, we could go back and swab the well down and it will get the water out from it and it will come back and make this high gas. One reason we haven't attempted -- or we did discuss maybe putting a pump on this well and keeping the water moving and producing the gas -- but we felt that it would deplete reservoir energy because we feel that it is in the Bluitt pool.

I would like to point out some more similarities between the Todd-San Andres and the Bluitt pool.

Structural position doesn't seem to make a lot of difference about what you produce.

Our Number Three Livoudair Three well, if you will look on Exhibit Number Four B. And this is production for the year 1968 and we are beginning to have water coming in from the south indicating that we do have a partial water drive.

But this Livoudair Number Two well which is practically flat to our Livoudair Number Three which is practically flat to our Feather -- to our Val Number Two -- notice that it made two thousand three hundred and twelve barrels of oil and two thousand and four hundred barrels of water. Yet our Val Two well right next to it produced thirty-five thousand six hundred and forty-eight barrels of oil and only three hundred and sixty barrels of water.

You can carry this comparison through the various fields. I think the fact that Union's Number One well is a low producer is due to the fact that it is close to one of these tight streaks. We have lost porosity and permeability which may impart account for the water being produced.

I think the fact that the Baumgartener well to the south of it is making better production is an indication that we are approaching the end of this tight

streak which extends more south through the field.

I don't think there is any way of proving this except with additional drilling.

I would also like to point out in the Bluitt pool, in Section 36, the Sun Ray AY Number Two, on Exhibit Four B -- I mean, yes, in the Todd pool, excuse me -- it's in the northeast of the northeast of Section 36. In 1968 it produced five thousand seven hundred and eighty-seven barrels of oil and six thousand eight hundred and forty barrels of water.

The two wells to the south produced considerable water, but I would like to refer to production back earlier when these wells were completed or closely to the completion date of these wells. I would like to point out that in production for 1967; I will read the monthly water production for the AY Two well. And I would like you to note the structural position of this well in relation to the two wells to the south of it.

The AY Two, January, sixteen hundred barrels of water; February, fourteen hundred; March, fifteen; April, sixteen; May, sixteen eighty; June, seventeen hundred; eighteen hundred; eighteen hundred; eighteen hundred;

eighteen fifty; eighteen hundred. And yet we can come down to these wells that are way lower structurally and refer to the AY Four and Six for these same periods; twelve, ten, fifteen, twenty, twenty-five, thirty, thirty-five, thirty-seven, thirty-eight.

So, I think we can get into positions in proximity to these tight streaks where we will produce gas or water or oil without having it make much rhyme or reason in considering the established oil-water for the gas-oil contact of these pool.

I think it would be detrimental to the pool to let the Union well produce gas. I think we need more drilling to the east and to the south. I think there is a very strong possibility that we are still in the Bluitt pool and that we have communication around the south end of this tight streak.

Q (By Mr. Kellahin) Would you object if the well were allowed to produce gas according to the eighty acre proration unit on which it is located now?

A Well, now seriously; it would be within the proration rules of the pool.

Q In other words, you would object to the designation of a new gas pool for this well?

A Yes, sir.

Q Were Exhibits One through Six including Exhibit Four A, Four B and Five A, B, and C and Two A and Two B prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time we move admission of the Applicant's Exhibits. Franklin Aston and Fair's Exhibits.

MR. NUTTER: Franklin Aston and Fair's Exhibits -- what is it, one through five?

MR. KELLAHIN: One through six.

MR. NUTTER: One through Six including the A,B,C's will be admitted into evidence.

(Whereupon, Franklin Aston and Fair's Exhibits One, Two, Two A, Two B, Three, Four, Four A, Four B, Five, Five A, Five B, Five C and Six were admitted in evidence.)

MR. NUTTER: Is that all?

MR. KELLAHIN: And that completes the examination of the witness.

MR. NUTTER: Are there any questions of the witness?

MR. RUSSELL: Yes.

[redacted]

[redacted]

[redacted] is an indication on your exhibit it is different from the others in the pool?

A So, I would say it was a matter of porosity and permeability.

MR. BUETTNER: Just one moment.

No further questions.

- - - - - - - -

CROSS EXAMINATION

BY MR. BUETTNER:

Q Mr. Smith, on your exhibits pertaining to the Todd pool where you have sketched in your little gas-oil contact there, little gas pocket, you didn't mean to imply that it was there? It's just a possibility?

A No, it's a possibility that it could be there.

Q Then you have, likewise, drawn in a similar gas pocket on your Exhibit Three which would explain the gas production from the Union well.

A I might also add that we had considered moving

south of the Featherstone Federal well and maybe trying again, but under what we have seen now, I doubt that we would.

I can visualize these as being narrow gas pocket along the east edge of these tight streaks.

Q Now, if you take a look at your Exhibit Number Four A, Mr. Smith, and you have got your -- on the left side there, you have got your narrow band of low permeability or whatever you want to call it, permeability pinch-out, coming down through the third well there, being seventy-seven thirty-three barrels of cumulative production. Can't you extend that on clear down to the fourth well, the one that has made only eight thousand fifty and say here you do have a permeability break that separates the pool?

A I didn't do that because this well was drilled much later than the others. I think the well that I stopped -- that I stopped this on, the Skelly -- I might point out that we drilled the well in the northeast of the northwest of Section 31, and tested the Todd-San Andres and never got anything out of it. We got this on a farm out from Skelly. Skelly came back and asked us if we would care to go with him on a re-entry and

try for a re-entry and we turned it down.

They drilled this well and felt that maybe the oil was south of them. They moved down and drilled their second well, southwest. And they got a real poor well there. Then after that, we went back and farmed out the northeast quarter of 31 and drilled the Skelly Number One and Two wells. They are our two best wells in the field.

Q You got two good wells there?

A Right. Yes, sir, and now these -- the wells to the south were drilled by A. C. Holder -- are, oh, I can't give you dates exactly, but they are a year or two later than the Skelly well.

Q Are those the two wells in the southeast of 31?

A Yes, in the southeast of 31.

Q Well, in other words, this -- the first one there which has made forty-six thousand barrels is a relatively new well by comparison with the two wells to the west of it?

A Forty-six thousand, that is our Atlantic Two well. It is- -

Q That's not the Holder well?

A In the southeast of 31?

Q Yes.

A No, that's our Atlantic well.

Q Where is the Holder well?

A The Holder wells are south. They are in the southwest quarter of 31.

Q Oh, they are in the southwest quarter of 31.

A And he drilled after we drilled our wells in the southeast of 31.

Q Well, how does current production compare to these four wells?

A They are- -

Q Your well is forty-six thousand and then this Sun Ray well over here with sixty thousand?

A The Sun Ray well and our Atlantic well -- I don't know -- I haven't got the cumulative production figure on the Sun Ray wells. I think they are approaching a hundred thousand; maybe still short of it some. But they are now starting to make water, and our Atlantic wells are making water. And our Cook well in the southwest of 32 is pretty high water producer. We feel that we have

had the water contact move up on us in this area.

Q I see.

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

MR. RUSSELL: Yes, I do have a couple.

- - - - - -

CROSS EXAMINATION

BY MR. RUSSELL:

Q Mr. Smith, what was the original bottom hole pressure in the Bluitt-San Andres gas cap, if you know?

A Seems to me like twelve hundred pounds, but I don't know.

MR. KELLAHIN: We will offer that with another witness.

MR. RUSSELL: And also the oil zone.

THE WITNESS: He will testify to it.

Q (By Mr. Russell) Did any of the tight wells which you have referred to in your testimony, produce dry gas at the rate of over six million cubic feet per day?

A These wells that I referred to?

Q Yes.

A No.

Q What quantities were they? Do you recall?

A Well, I read the figures. Our Roden Federal Number One was tested at one and a quarter million, I think.

The Livoudair Federal Number Three, I believe, was- - But the actual oil wells have not made gas- -

Q That was dry gas. What you were referring to was the dry gas?

A Well, I wouldn't call it a dry gas. We moved packers in the hole -- in fact, I don't know that we had it analyzed, but we were trying to find out where our gas was coming from.

If you will notice in the Ellen Livoudair Federal Three- -

MR. KELLAHIN: What Exhibit is that?

THE WITNESS: On Five A.

A (Continuing) We had an unusual porosity development right at the top of the Slaughter section. It looks like it might be about four-one ten. We suspected that maybe all of our gas was coming from this. We set a packer below it, and found out that we had shut off a lot of our gas but we had also shut off some

oil. And we moved it back up the hole, and I think it's just one of those situations where you are coming close to the permeability and porosity barrier. You might have these pockets trapped in there, and I don't they make -- they have any real relation to the oil-water or the gas-oil contact proper.

Q (By Mr. Russell) You were not stating that this Union Number Two well is in a tight spot or area, are you?

A I think it's fairly close to one, but I don't -- I also don't think this: That it's always going to be the same distance from one of these things where you get good porosity or poor porosity. I mean, you are not going to say that all wells two hundred feet from the tight streak are going to be good and those that are one hundred feet are going to be bad. I don't think there is any way to perdict this.

Q But the other wells which you are referring to are in the tight areas, are they not?

A Which wells are you talking about?

Q The one which you were referring to on the logs.

A Well, our Val Two was a good well. The

Featherstone Federal is in a tight streak and the Livoudair Federal Three is approaching a tight streak.

Q The whole gamut?

A You bet. Yes.

MR. RUSSELL: I have no further questions.

MR. NUTTER: Are there any further questions of this witness? You may be excused.

It's almost five minutes after 12:00 by my watch.

How long is your witness going to take on direct, Mr. Kellahin?

MR. KELLAHIN: About twenty minutes.

MR. NUTTER: We had better recess, then.

We will recess the hearing until 1:15.

(WHEREUPON, the hearing was adjourned at 12:05 P.M.)

- - - - -

MR. NUTTER: The hearing will come to order, please. We will resume with Case Number 4317, and Mr. Kellahin, I believe you were about to call another witness.

MR. KELLAHIN: We will call Mr. Gratton.

PATRICK J. F. GRATTON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Yes. Patrick J. F. Gratton.

Q And by whom are you employed and in what position, Mr. Gratton?

A By Eugene Nearburg in Dallas, Texas, as a geologist.

Q And have you ever testified before the Oil Conservation Commission and made your qualifications as a geologist a matter of record?

A Yes, I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Kellahin) Mr. Gratton, are you familiar with the Bluitt-San Andres Associated Oil and Gas Pool?

A Yes, I am.

Q Now, did you give testimony for Eugene Nearburg at the hearing 3975 which established this pool and the producing and spacing regulations?

A Yes, I did.

Q Now, you have heard the testimony of Mr. John Howard and Mr. Adrian Turney regarding the Union Number Two Federal 18 Well located in the southeast of the southeast of Section 18, Township 8 South, Range 38 East; did you not?

A Yes, sir.

Q And you heard them testify that -- to the effect that it is a new discovery gas well and should be allowed to produce as they have requested?

A Yes; I heard that and I do not agree with it.

Q And why do you not agree with that testimony?

A Because I believe that the Union Number Two 18 Federal in the southeast southeast of Section 18, Township 8 South, Range 38 East is a completion which is

in contact with the oil phase of the Bluitt and San Andres Associated Pool.

Q Now, referring to what has been marked as Nearburg's Exhibit Number One; would you identify that exhibit, please?

A Yes. Nearburg's Exhibit Number One is a San Andres Pi structure map of the Bluitt field area of Roosevelt County, New Mexico. And shows the configuration of the greater Bluitt structure in the vicinity of Union's application and in the rest of the field area. This map is drawn on a marker 275 to 285 feet above the principal producing interval in this area. The interval is known as the San Andres-Slaughter B Zone, sometimes called the upper part of the P-1, sometimes identified as the Todd zone; but it is the same zone that others have referred to in their testimony here.

This map also shows the status of the wells in the area with oil wells shown as solid circles and gas wells shown as symbols with eight points radiating on the compass.

I have also shown on the map the location of the San Andres-Slaughter section in the extreme southeast portion of the field and how this ties in with the Union

Number Two Federal 18 which is the critical well in this area.

The map shows that there are approximately twenty wells now drilled and completed in the oil rim of the Bluitt-San Andres Associated Pool; and a number, approximately ten gas wells located also in this field. The gas wells produce from both the B zone and the P-1 which is overlying San Andres dolomite. The oil wells are limited to the B zone and Union's Number Two Federal 18 is opened up only in the B zone.

Q P or B?

A In the B zone, as in Baker.

I would like introduce Exhibit Number Two by referring to the line of the San Andres-Slaughter cross section shown in the southeast corner of the field.

Exhibit Number Two, Nearburg's Exhibit Number Two, is a San Andres-Slaughter cross section in the Bluitt field area of Roosevelt County, New Mexico.

It runs from the Baumgartener Number One USA, in the northwest of the northeast of Section 19, Township 8 South, Range 38 East, north through the Union Oil Company Number One Federal 18, located in the southwest of the southeast of Section 18, Township 8 South,

Range 38 East; and then on to the east to the Union Number Two Federal 18, located in the southeast of the southeast of Section 18, Township 8 South, Range 38 East.

This cross section is built from so-called porosity logs and shows the Slaughter Section consisting of the P-1 and the B zone of the P-2. The B zone previously identified as the Todd zone in earlier testimony.

The cross section shows that the three subject wells are all perforated in the B zone.

Each well has dolomite porosity development and each was completed initially for commercial production.

The Baumgartener Number One USA, initially potentialled for a hundred and forty barrels of oil per day plus six barrels of water. This well is now producing about fifty barrels of oil per day. It is located only 1840 feet southwest of the Union Number Two Federal 18.

The Union Oil Number One Federal 18 was originally completed pumping one hundred barrels of oil per day plus eight barrels of water per day. It is now averaging about fifteen barrels of oil per day plus two barrels of water per day.

The Union Number Two Federal 18 was completed

for calculated absolute open flow of six million three hundred and forty thousand cubic feet of gas per day. It is shut-in currently. It is only a quarter of a mile, that is about thirteen hundred and twenty feet between each of these wells, and although the Union Oil Number One Federal 18 was originally completed for commercial production, it is now falling to a point which indicates that it is near some kind of permeability barrier.

On the other hand, the Baumgartener Number One USA has the current production which indicates that it is not being affected seriously by any permeability pinch-out.

The character of the electric logs that are shown in the cross section and core analysis on the Union Oil Number Two Federal 18 indicates that this reservoir is very well developed; good porosity and good permeability.

The Exhibit Number Three of Nearburg is a pressure map showing the -- as best we could tell it -- the pressure which was present in this field before it underwent active development.

Exhibit Number Three shows the reservoir pressure at the gas contact as originally identified in the field at about minus five sixty; and it covers the

Bluitt field area of Roosevelt County, New Mexico.

This is an unaltered copy of an exhibit which was placed before the Commission at the hearing for Case 3975 on the 26th of March, 1969; and was our best information at that time of the distribuation of pressure in this area. There actually appeared to be a pressure gradient; that is, the pressure appeared on a regional basis to have originally been a little lower to the east than up on the structure. This is before development.

However, some of our pressure information was admittedly weak since we had to rely upon shut-in pressures on drill stem tests which can introduce errors of one hundred to two hundred pounds easily. Nevertheless, I call your attention to the fact that the two pressures which were recorded by bottom hole pressures bombs in the early stages of this field development at the Nearburg Number One Kirkpatrick Federal in the southeast of the southeast of Section 11, Township 8 South, Range 37 East and the Nearburg Number Kirkpatrick Federal in the northwest of the northeast of Section 14, Township 8 South, Range 37 East, both indicate an original reservoir pressure at the gas-oil contact of approximately

fifteen hundred and ten pounds.

Q Were these two wells completed originally in the gas cap?

A These two wells were completed open both in the P-1 and in the B zone. However, initial production from both of these wells was strictly dry gas. The first two years there was no sign of oil at all.

The Number Two Kirkpatrick Federal was completed about twenty feet high to the Number One Kirkpatrick Federal and based upon oil production which developed later in the life of the Number One Kirkpatrick Federal, we were able to identify the gas-oil contact as approximately minus five sixty in the Bluitt Associated Pool.

This map also shows the pressures which were encountered in the early stages of developing the oil rim to the gas cap in the B zone.

The original gas development began in 1963, and it was not until late 1968 that active oil development took place on the southeast nose of this structure. Shut-in bottom hole pressures were recorded for four wells after they had been completed a short time only to see how much draw down had taken place due to approximately five and a

half years of gas production from the gas cap.

You will note looking at wells in Section 13 or Township 8 South, Range 37 East, that the oil wells completed in the B zone and closer to the gas wells, specifically the Nearburg Number One Betts Federal in the southwest of the northeast of Section 13, and the Nearburg Number Two Betts Federal in the northeast of the southwest of Section 13, showed approximately two hundred pounds less pressure than the original reservoir pressure in the field; indicating that gas production over a five and a half year period had caused drainage at least a half a mile away. Other wells a little farther away from the gas cap -- for example, the Franklin Aston and Fair Number One Bluitt Federal in the northeast of the southeast of Section 13, showed less pressure decline or reduction and showed approximately seventy-four pound drop from what the original pressure was indicated to be.

Clearly, as we moved in a southeasterly direction with our current oil development program, we were getting away from the affect of gas withdrawals from the gas cap located several in some instances, and as close as one mile to the northwest.

We will be conducting additional pressure measurements as part of the Conservation Commission's direction to measure bottom hole pressures on a systematic basis shortly. In fact, we have scheduled tests for a number of wells here in March. I anticipate that we will still see this same pattern with, of course, lower pressures and also with less effect as we go in a southeasterly direction.

The original need for Exhibit Number Three of Nearburg's was to demonstrate that this field was indeed an associated pool where gas withdrawals updip were effecting the reservoir downdip and that loss of oil recovery would result due to migration of the oil rim into the gas cap.

As a result of testimony presented by Franklin Aston and Fair, Incorporated, and by Nearburg and other parties, and after running detailed reservoir fluid studies, the Commission ordered that in Number R-1670-I, that in order to prevent waste which would result from oil bating the gas cap, that there would be a balanced removal using a formula proposed by the Commission to equate the volumes removed downdip in the

oil rim with those removed in the gas cap.

My feeling is that the Union Number Two Federal 18 is a local accumulation of gas east of a permeability barrier which extends partway into the field. And that the oil phase of the Bluitt Associated Pool is in contact with this gas, and that the withdrawal of any gas from the Union Number Two Federal 18 should be according to the formula which applies to the rest of the wells in the Bluitt field so as to prevent oil bathing the gas zone in the Union Number 218.

Exhibit Number Four of Eugene Nearburg is a comparison of oil and water saturation in the Bluitt field area of Roosevelt County, New Mexico. We show a comparison between the Union Number One Federal 18 and the Union Number Two Federal 18.

Field experience is pretty well shown that we need porosity values greater than five percent in order to have any of this contribute oil or gas in substantial quantities into the well bore. If we drop below about five percent, we very rarely have permeabilities greater than a tenth of a millidarcy.

Accordingly, I have shown the core lab

analysis in the B zone for both of these wells for values of porosity greater or equal to five percent.

Referring back to Exhibit Number Two, you will note the core interval outlined in red on both of the subject wells; and that it embraces only the B zone of the Slaughter section plus the anhydrite immediately above and immediately below. And does not include any analysis of rocks from the P-1 which is gas saturated in this area. The amazing thing is when this core analysis -- that when the average, and these each represent about one foot or sampling every foot, the average of the analysis from the oil completion of the Union Number 118 against the average for the gas completion and the Union Number Two Federal 18 is identical or as close to being identical as one would ordinarily find in comparisons of this sort. The average oil saturation in the Union Number 118 is six point eight percent and that compares with seven point seven percent in the Number 218; and the average water saturation is thirty-eight point seven percent in the Number 118 and thirty-four point four percent in the Number 218.

My conclusions of what the situation is to

explain this, is simply that the gas which is currently being produced out of the Union Federal 18 is very close to an oil zone. In fact, it may have been displaced oil out of its immediate area. And this proximity which is so apparent by looking at the Exhibit Number One where we are thirteen hundred and twenty feet in one direction and eighteen hundred and forty feet in another direction from oil production, along with the other information I have presented and the fact that we will lose oil production in this field if we allow the oil rim to bath a gas zone makes me recommend that the Union Number Two Federal 18 be treated as part of the Bluitt-San Andres Associated Pool.

We are currently drilling the Number Seven Kirkpatrick Federal, which is a well located in the northeast of the southeast of Section 14, Township 8 South, Range 37 East. This well will reach total depth in approximately two days and the drilling contractor is currently planning on moving directly to the Union Number One Federal 17, located in the southeast of the southwest of Section 17, Township 8 South, Range 38 East.

The Union Number One Federal 17 is a one-half mile easterly conformation to the Union Number Two Federal

18.

The early plans for drilling and evaluative this test and the nature of the understanding of the geology and engineering of this reservoir makes me believe that this a critical or at least a very important test and the results of which could very heavily influence the Commission's appreciation of the geology and reservoir engineering in this part of the field.

I would like to take Union's Exhibit Number One now and show on it my belief why they, themselves are making a good cause for limiting the production on the Union Number Two Federal 18. If I could have a copy of the exhibit so I could look at it, please. Number One on Union.

MR. NUTTER: That was the one with the overlay?

THE WITNESS: Yes, sir.

A (Continuing) For the purpose of the transcript, the Union Number One Exhibit is a structure contour map of the Bluitt field, Roosevelt County, New Mexico and it covers essentially the same area as Nearburg's Exhibit Number One; however, Union has drawn their map to the scale one inch equals two thousand feet.

You will note that in this interpretation

of Union's, they show a northern limit of the effective Todd porosity running through the south side of Section 7 and 8 and the north side of Section 16, all being in Township 8 South, Range 38 East.

They also show a permeability pinch-out running due south from this Todd zone porosity pinch-out and stretching down into the field through the approximate center of Section 18, Township 8 South, Range 38 East. And they show a gas accumulation on the east side of this permeability pinch-out. They also show that there is no effective condemning dry hole between this area and the Bledso field of West Texas which lies approximately two miles east on trend and right on the New Mexico-Texas state line.

I have studied all of the logs and the Bledso field and the completions and the production information and while many of these were open hole completions from two zones, I am firmly convinced that the oil is coming from the B zone of the San Andres.

This puts this oil area in direct contact with, and in the same reservoir, as the gas zone which they have completed from in the Union Number Two Federal 18.

Furthermore, immediately west of the permeability pinch-out drawn down into Section 19 of Township 8 South, Range 38 East, Union has drawn the edge of the oil field running through a series of wells along the south side of the field and on the north end of Section 24, Township 8 South, Range 37 East and Section 19, Township 8 South, Range 38 East.

Since all of these wells along this edge of the field are commercial producers, it is much more likely that the extent of the Bluitt field reaches much farther south and into, approximately, the middle of Section 24 and 19 previously referred to.

Now, the Baumgartener Number One USA was previously reported to be making fifty barrels of oil per day currently. I see very little justification for drawing the pinch-out as Union has this far south in light of that producing well. And since the oil field obviously extends a little bit further than the middle of the well bore in a southerly direction, it most likely does connect with a down dip oil phase in Section 20 and Section 17, and eventually possibly connecting through Section 16 all being in Township 8

South, Range 38 East, to the Bluitt -- pardon, to the Bledso field.

This would mean that if pressure was reduced in the Union Number 218 Federal, this oil would tend to migrate into the gas phase, and there would be loss accordingly.

Based upon all these arguments, I believe that it would be wise to treat the Union Number 218 as part of the Bluitt Associated pool until we have really strong evidence that there is an isolated gas cap separate and distinct from the Bluitt field. Otherwise, it's very likely that we will lose production and reservoir energy will be reduced throughout the B zone in this general area since we have demonstrated that wells can drain areas up to a mile away.

In this respect, I concur with Franklin Aston and Fair. Eugene Nearburg is opposed to a new field designation for the Union Number Two Federal 18.

Q (By Mr. Kellahin) Were Exhibits One through Four prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits One through Four, Nearburg's

Exhibits.

MR. NUTTER: Nearburg's Exhibits One through Four will be admitted in evidence.

(Whereupon, Nearburg's Exhibits Numbers One, Two, Three and Four were admitted in evidence.)

MR. KELLAHIN: Do you have anything to add, Mr. Gratton?

THE WITNESS: I do not.

MR. KELLAHIN: That completes the testimony of this witness.

MR. NUTTER: Are there any questions of Mr. Gratton?

MR. RUSSELL: No questions.

MR. NUTTER: Mr. Gratton, tell me how New Mexico is going to lose if we cause the migration of oil from Texas to come into New Mexico?

THE WITNESS: You would be pretty safe. Those wells are not too good.

MR. NUTTER: Any other questions of the witness? He may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all I have, Mr. Nutter.

MR. NUTTER: Does anyone have anything else

they wish to offer in Case 4317?

MR. ENGRAM: I am Tom Engram from Roswell, and I was originally the operator of the first well in the Bluitt field that was drilled and there is a complete gas analysis available on that well if it would help you.

MR. NUTTER: Is that one of those dry gas wells?

MR. ENGRAM: Yes, a dry gas well; and the only thing that I recall about it specifically is that the GPM was very low -- I mean it was -- we were operating a gasoline plant and we were looking for another source of gas. And the specific gravity was in the neighborhood of point eight, or something like that.

MR. NUTTER: If you could furnish us with that gas analysis, I would appreciate it.

MR. ENGRAM: I would be happy to.

MR. NUTTER: Does anybody have anything further they wish to offer in Case 4317?

We will take the case under advisement.

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I N D E X

E X H I B I T S

NUMBER	MARKED FOR IDENTIFICATION	OFFERED AND ADMITTED IN EVIDENCE
Exhibits 1, 2 & 3	4	33
Exhibit 4	27	33
Exhibit 5	28	33
Exhibit 6	30	33
Exhibits 7 & 8	31	33
Exhibits 9 & 10	44	44
Franklin Aston & Fair's Exhibits Numbers 1, 2, 2A, 2B, 3, 4, 4A, 4B, 5, 5A, 5B, 5C and 6		61
Nearburg's Exhibits 1, 2, 3 & 4		87

STATE OF NEW MEXICO

COUNTY OF BERNALILLO

I, IDA MACKEY, Notary Public 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.

Witness my Hand and Seal this 9th day of March, 1971.

NOTARY PUBLIC

My Commission Expires:

June 19, 1971

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, CA FENLEY, 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.

CA FENLEY - COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4847, heard by me on [illegible] 1972.

[illegible]

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 25, 1970

EXAMINER HEARING

IN THE MATTER OF:

Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico. Case No. 4317

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 4317.

MR. HATCH: Case 4317. Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico.

I didn't read the cover letter very carefully, advertised it for the wrong date. They asked for it to be set for March 4th; so, I recommend that it be continued to March 4th.

MR. UTZ: 4317 will be continued to March 4th.

That got rid of a bunch. That leaves six cases and they will be taken in order, numerical order that is.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, GLENDA BURKS, 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.

Glenda Burks
Notary Public

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4317, heard by me on Dec 15, 1970.

, Examiner
New Mexico Oil Conservation Commission

Docket No. 7-70

DOCKET: EXAMINER HEARING - WEDNESDAY - MARCH 4, 1970

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 4318: Application of Pan American Petroleum Corporation for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of two existing non-standard gas proration units into one 320-acre non-standard unit comprising the N/2 of Section 7, Township 24 South, Range 37 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to its Meyers "B" Federal R/A Wells Nos. 1 and 10, located in Units D and G respectively, of said Section 7. Applicant further seeks authority to produce the allowable assigned to said unit from either of said wells in any proportion.

CASE 4065: (Reopened):

In the matter of Case No. 4065 being reopened pursuant to the provisions of Order No. R-3706, which order established 80-acre spacing units for the South Eunice-San Andres Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre units.

CASE 4314: (Continued and readvertised from February 25, 1970, Examiner Hearing)
Application of Coastal States Gas Producing Company for pool redelineation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the redelineation of certain pool boundaries to include the deletion of the W/2 and SE/4 of Section 21, Township 13 South, Range 33 East, Lea County, New Mexico, from the Lazy J-Pennsylvanian Pool and the extension of the North Baum Upper Pennsylvanian Pool to include said deleted acreage.

CASE 4069: (Reopened) In the matter of Case No. 4069 being reopened pursuant to the provisions of Order No. R-3701, which order established 80-acre spacing units for the Lovington-Devonian Pool, Lea County, New Mexico, for a one-year period. All interested parties may appear and show cause why said pool should not be developed on 40-acre units.

CASE 4317: (Continued from the February 25, 1970, Examiner Hearing) Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new San Andres gas pool for its Federal "18" Well No. 2 located 660 feet from the South and East lines of Section 18 Township 8 South, Range 38 East, Roosevelt County, New Mexico, and for the promulgation of special rules therefor, including provisions for 160-acre spacing units and a casing program.

CASE 4319: Application of Texaco Inc. for downhole commingling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the North Vacuum-Abo Pool and the Vacuum-Wolfcamp Pool in the wellbores of its New Mexico "Q" State Well No. 4 and its New Mexico "N" State Well No. 6, triple completions located respectively in Unit P of Section 25, Township 17 South, Range 34 East and Unit L of Section 30, Township 17 South, Range 35 East, Lea County, New Mexico.

CASE 4315: (Continued from February 25, 1970, Examiner Hearing)

Application of Pan American Petroleum Corporation for pool consolidation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of the Fowler-Lower Paddock and Fowler-Blinebry Pools, Lea County, New Mexico, into one pool. Applicant further requests that the consolidated pool be governed by rules presently applicable to the Fowler-Blinebry Pool.

CASE 4316: (Continued from February 25, 1970, Examiner Hearing)

Application of Pan American Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 1C4 C 11 to permit the drilling of a well at an unorthodox gas well location 330 feet from the North and East lines of Section 11, Township 23 South, Range 26 East, South Carlsbad-Strawn,-Atoka, and-Morrow Gas Pools, Eddy County, New Mexico. The N/2 of said Section 11 to be dedicated to the well.

LAW OFFICES OF
JOHN F. RUSSELL
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TELEPHONE 622-4641
AREA CODE 505

February 17, 1970

file. Case 4317

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
State Land Office
Santa Fe, New Mexico 87501

Dear Mr. Porter:

It is respectfully requested that Case No. 4317, being the application of Union Oil Company of California for the creation of a new gas pool, which has been set for February 25, 1970, be postponed under the examiner hearing on March 4, 1970.

Respectfully yours,

John F. Russell

John F. Russell

JFR:vj

Docket No. 6-70

DOCKET: EXAMINER HEARING - WEDNESDAY - FEBRUARY 25, 1970

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

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

CASE 4296: (Continued from the January 21, 1970 Examiner Hearing) Application of S. P. Yates for a pressure maintenance project expansion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand the S. P. Yates West McMillan Anderson Pressure Maintenance Project, authorized by Order No. R-3852, by the injection of water into the Queen formation through one additional well, the Anderson Well No. 3 located 2310 feet from the East line and 990 feet from the South line of Section 11, Township 20 South, Range 26 East, West McMillan-Seven Rivers-Queen Pool, Eddy County, New Mexico.

CASE 4308: Application of Bill J. Graham for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the perforated interval from 4913 feet to 4961 feet in his U. S. Smelting Federal Well No. 5 located in Unit P of Section 22, Township 24 South, Range 32 East, Double X-Delaware Pool, Lea County, New Mexico.

CASE 4309: Application of Mobil Oil Corporation for an amendment of Order No. R-3824, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3824 to permit the drilling of its Humphrey Queen Unit Well No. 13, a water injection well in its Langlie Mattix Humphrey Waterflood Project, at a non-standard location 1500 feet from the South line and 1220 feet from the East line of Section 4, Township 25 South, Range 37 East, Lea County, New Mexico, in lieu of the location authorized in said Order No. R-3824.

CASE 4310: Application of Klabzuba, Munson and Seaman for an unorthodox oil well location, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill a wildcat oil well to the Devonian formation at an unorthodox location 700 feet from the East line and 2500 feet from the South line of Section 13, Township 10 South, Range 27 East, Chaves County, New Mexico.

CASE 4311: Application of C. E. Long for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests from the surface down to the base of the Seven Rivers formation underlying the S/2 of the NE/4 of Section 31, Township 21 South, Range 36 East, Lea County, New Mexico, to form two 40-acre proration units for Jalmat, Eumont, or South Eunice Oil production to be dedicated to a well to be re-entered in Unit H and a well to be re-entered or to be drilled at a standard location in Unit G of said Section 31 and/or to form an 80-acre non-standard gas proration unit in the event gas production is encountered in the Jalmat or Eumont Gas Pools. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4312: Application of U. S. Potash & Chemical Company, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-111-A to include the following-described lands in the Potash-Oil Area defined by said order:

EDDY COUNTY, NEW MEXICO

Township 23 South, Range 31 East,
Sections 19, 20, 27, 28, 29 and 30: All

CASE 4313: Application of Atlantic Richfield Company for a non-standard gas proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of 160-acre non-standard gas proration unit comprising the N/2 S/2 of Section 36, Township 21 South, Range 37 East, Blinebry Gas Pool, Lea County, New Mexico, to be dedicated to its State 367 Wells Nos. 2 and 3 located, respectively, in Units L and K of said Section 36. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

CASE 4314: Application of Coastal States Gas Producing Company for pool redelineation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the redelineation of certain pool boundaries to include the deletion of the W/2 and SE/4 of Section 21, Township 13 South, Range 33 East, Lea County, New Mexico, from the Lazy J-Pennsylvanian Pool and the extension of the North Baum Upper Pennsylvanian Pool to include said deleted acreage.

CASE 4315: Application of Pan American Petroleum Corporation for pool consolidation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the consolidation of the Fowler-Lower Paddock and Fowler-Blinebry Pools, Lea County, New Mexico, into one pool. Applicant further requests that the consolidated pool be governed by rules presently applicable to the Fowler-Blinebry Pool.

CASE 4316: Application of Pan American Petroleum Corporation for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 104 C 11 to permit the drilling of a well at an unorthodox gas well location 330 feet from the North and East lines of Section 11, Township 23 South, Range 26 East, South Carlsbad-Strawn, Atoka, and-Morrow Gas Pools, Eddy County, New Mexico. The N/2 of said Section 11 to be dedicated to the well.

CASE 4317: Application of Union Oil Company of California for the creation of a new gas pool and special pool rules, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new San Andres gas pool for its Federal "18" Well No. 2 located 660 feet from the South and East lines of Section 18, Township 8 South, Range 38 East, Roosevelt County, New Mexico, and for the promulgation of special rules therefor, including provisions for 160-acre spacing units and a casing program.

LAW OFFICES OF
JOHN F. RUSSELL
412 HINKLE BUILDING
P. O. DRAWER 640
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-4641
AREA CODE 505

February 3, 1970

Case 4317

Mr. A.L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

I transmit herewith an application of Union Oil Company of California for the designation of a new gas pool in Roosevelt County New Mexico.

Exhibits will be ready within the next week or so at which time they will be forwarded to you. It is requested that this case be set for the first examiner hearing in March.

Very truly yours,

John F. Russell

John F. Russell

JFR/lm

Enclosure

DOCKET MAILED
Date 2-12-70
2-19-70

TOM L. INGRAM
100 SOUTH KENTUCKY AVENUE
ROSWELL, NEW MEXICO 88201

'70 MAR 6 AM 8 23

March 5, 1970

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

Attention Mr. D. S. Nutter

Re: Case #4317
Bluitt-San Andres Area
Roosevelt County, NM

Gentlemen:

In accordance with my statement at the hearing yesterday on the above case, I am attaching the following:

1. Gas analysis from the Nearburg & Ingram #1 Kirkpatrick, discovery well for Bluitt-San Andres gas (SE/4 SE/4 section 13, T-8-S, R-37-E). This sample was taken from drillstem test #2 @ 4540 - 4612. While this interval includes the lower few feet of the P_1 zone, the logs indicate that this is dense. Thus, the gas was coming from the P_2 (Todd or main pay in the field). This later was born out by the production perforations @ 4592 - 94, and 4598 - 4600.

2. Gas analysis from Nearburg & Ingram #2 Kirkpatrick, shown on Union's Exhibit #2 as Shell #1 Bluitt Unit (re-entered by Nearburg & Ingram). Gas taken from perforations. When Shell was testing this well in 1954, it had a CAOF of 3,000,000 cubic feet of gas per day.

One or both of the above were entered as exhibits in Case #2996 (Order 2665) on February 19, 1964. Bottom hole pressure data of 1515 psi and 1495 psi were also presented at that time.

By comparison of this with the Union #2 Federal 18, you will find that the analyses are very similar in all respects, and further support our thoughts that the wells are in communication.

Very truly yours,

TOM L. INGRAM

TLI:ee
Encl.

WOLF PETRO LAB, INC.
DIAL EMERSON 6-9701
DIAL EMERSON 6-7171
2411 WEST 42ND STREET
P O BOX 643
ODESSA, TEXAS

HYDROCARBON ANALYSIS

LABORATORY REPORT

Charge Nearburg & Ingram
Test No NPL-63-3009
Date of Run 11-7-63
Date Received 11-6-63

A Sample of Vented Gas from Kirkpatric No. 1 - Sample No. 1

Secured from Flow Line - Location 11-8S-37E

At Roosevelt County, New Mexico Secured by Warren

Purpose Time 8:30 A. M. Date

Sampling Conditions:

LOW-TEMPERATURE ANALYSIS

	Gas Vol. or Mol %	Liquid Vol. %	GPM
Hydrogen Sulfide	.75		
Carbon Dioxide	8.40		
Air			
Nitrogen	13.01		
Oxygen			
Methane	68.00		
Ethane	5.44		
Propane	2.64		.72
Iso-Butane	.33		.11
N-Butane	.63		.20
Iso-Pentane	.19		.07
N-Pentane	.18		.07
Iso-Hexane			
N-Hexane			
Pentanes (2)			
Hexanes (2)	.43		.18
Heptane (2)			
TOTAL	100.00		1.35

(1) and lighter
(2) and heavier

ANALYSIS INFORMATION

Volume of Sample cc. @ ° F
Sp. Gr. Residue Vol. of Residue cc.
Molecular Wgt. of Residue

VAPOR PRESSURE

lbs. @ 100° F
Calculated lbs. @ 100° F

GASOLINE CONTENT

26/70	Gasoline	.48	G. P. M.
100.00	Propane	.72	G. P. M.
Excess	Butanes	.15	G. P. M.
	TOTAL	1.35	G. P. M.

SULPHUR DETERMINATION

Hydrogen Sulfide	H_2S	grs/100 SCF
Mercaptans	RSH	grs/100 SCF
Sulfides	RSR	grs/100 SCF
Residual Sulphur	RSSR	grs/100 SCF
Total Sulphur		grs/100 SCF

OTHER DATA

BTU Content	(Actual)	Dry Basis	(Calc.)	919
Sp. Gravity	(Actual)		(Calc.)	.7774
A. P. I. Gr.	(Actual)		(Calc.)	

Run by: J. Wolf Checked by: J. Wolf Approved: J. Wolf

Additional Data and Remarks

43 11 20 / 34 14 / 45 18

COPIES

4 - Mr. J. A. Warren
Nearburg & Ingram
Box 847
Roswell, New Mexico

1 - File

Fractional Distillation Analysis Results Summary

Petroleum Analytical Laboratory Service, Inc.

P. O. Box 388 Phone EM 6-2866

ODESSA, TEXAS

No. .....
Run No. 6229
DATE OF RUN 12-24-63
Date Secured 12-23-63

To: Please return to me as these are only copies. (2)

A Sample of GAS FROM KIRKPATRICK #2 SA
Secured from Nearburg & Ingram
At Milnesand, New Mexico Secured by
Time Date
Sampling conditions Press
Temp

FRACTIONAL DISTILLATION

Percentage Composition

	MOL%	LIQ.%
Carbon Dioxide	9.48	
Air		
Nitrogen	10.85	
Oxygen		
Hydrogen sulf.	0.82(510Grs./100 cu.ft.)	
Hydrogen		
Methane	67.67	
Ethane	6.60	
Propane	2.92	
Butanes		
Iso-Butane	0.~~3~~ 0.34	
N-Butane	0.73	
Pentanes		
Iso-Pentane	0.23	
N-Pentane	0.21	
Hexanes +	0.15	
Heptanes		
TOTAL	100.00	

Calc. Sp. Gr. .787
Calc. A.P.I.
Calc. Vapor Press. Lb./Sq. In.
Sp. Gr.
Mol. Wt.

Liquid Content

Method	G.P.M.
Based on Analysis (Butanes)	0.340
Based on Analysis (Pentanes & Heavier)	0.230
Based on Analysis (Propanes)	0.801
Based on Analysis (Ethane)	

Heating Value

British Thermal Units Per Cu. Ft. at 14.65 p.s.i. at 60 F

Method	Gal.	Dry Basis	Wet Basis
Based on % Composition		939	923

Run by Simpson & Graves Checked by Approved by J. M. Simpson

Additional Data and Remarks

Carbon copies of this letter sent to:

Union Oil Company of California
P. O. Box 671
Midland, Texas 79701

Union Oil Company of California
300 Security National Bank Building
Roswell, New Mexico 88201

Eugene E. Nearburg
3303 Lee Parkway
Dallas, Texas 75129

Franklin, Aston, & Fair
P. O. 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

April 2, 1970

Mr. Jack Russell
Attorney at Law
Post Office Drawer 640
Roswell, New Mexico 88201

Re: Case No. 4317
Order No. R-3942
Applicant:
Union Oil Company of Calif.

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.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC
Aztec OCC

Other

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. 4317
Order No. R-3942

APPLICATION OF UNION OIL COMPANY
OF CALIFORNIA FOR THE CREATION OF
A NEW GAS POOL AND SPECIAL POOL
RULES, ROOSEVELT COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on March 4, 1970, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 1st day of April, 1970, the Commission, a quorum being present, having considered the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

That the applicant's request for dismissal should be granted.

IT IS THEREFORE ORDERED:

That Case No. 4317 is hereby dismissed.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARGO, Chairman

ALEX J. ARMIJO, Member

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

esr/

LAW OFFICES OF
JOHN F. RUSSELL
412 HINKLE BUILDING
P. O. DRAWER 640
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-4641
AREA CODE 505

February 27, 1970

Mr. A. L. Porter, Jr.
Secretary-Director
NEW MEXICO OIL
CONSERVATION COMMISSION
Santa Fe, New Mexico

Re: Union Oil Company
of California
Case # 4317

Dear Mr. Porter:

I enclose herewith in triplicate, various exhibits which will be introduced into the captioned case.

Very truly yours,

John F. Russell

JFR:eb
encl.

SKELLY OIL COMPANY
P. O. BOX 1650
TULSA, OKLAHOMA 74102

'70 MAR 6 AM 8 15

LAW DEPARTMENT
RONALD J. JACOBS
ATTORNEY

March 4, 1970

Re: Case No. 4317
Application of Union Oil Company
of California

Mr. A. L. Porter, Jr., Secretary-Director
Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

Dear Mr. Porter:

We understand that the captioned case has been re-advertised for the March 4, 1970 hearing and will be heard on March 25, 1970. This is the application of Union Oil Company of California for the creation of a new gas pool and special pool rules for its No. 2 Federal "18" well, located 660' from the south and east lines of Section 18, Township 8 South, Range 38 East, Roosevelt County, including provisions for 160-acre spacing units and a casing program.

This is to advise that Skelly Oil Company owns acreage in the SW/4 of Section 19 and in Section 22 and urges the Commission to adopt rules and regulations, including 160-acre units. Skelly Oil Company also recommends that the SW/4 of Section 19 and Section 22 be included within the defined limits of the pool.

Yours very truly,

Ronald J. Jacobs

RJJ:br

cc-Union Oil Company of California
Union Oil Building
619 West Texas
Midland, Texas 79701

SCHLUMBERGER

COUNTY ROOSEVELT
FIELD or LOCATION EAST BLUITT (S.A.)
WELL FEDERAL 18 #1
COMPANY UNION OIL COMPANY

COMPANY UNION OIL COMPANY OF CALIFORNIA

WELL FEDERAL 18 #1

FIELD EAST BLUITT (S.A.)

COUNTY ROOSEVELT STATE NEW MEXICO

Location: 660' FSL & 1980' FEL

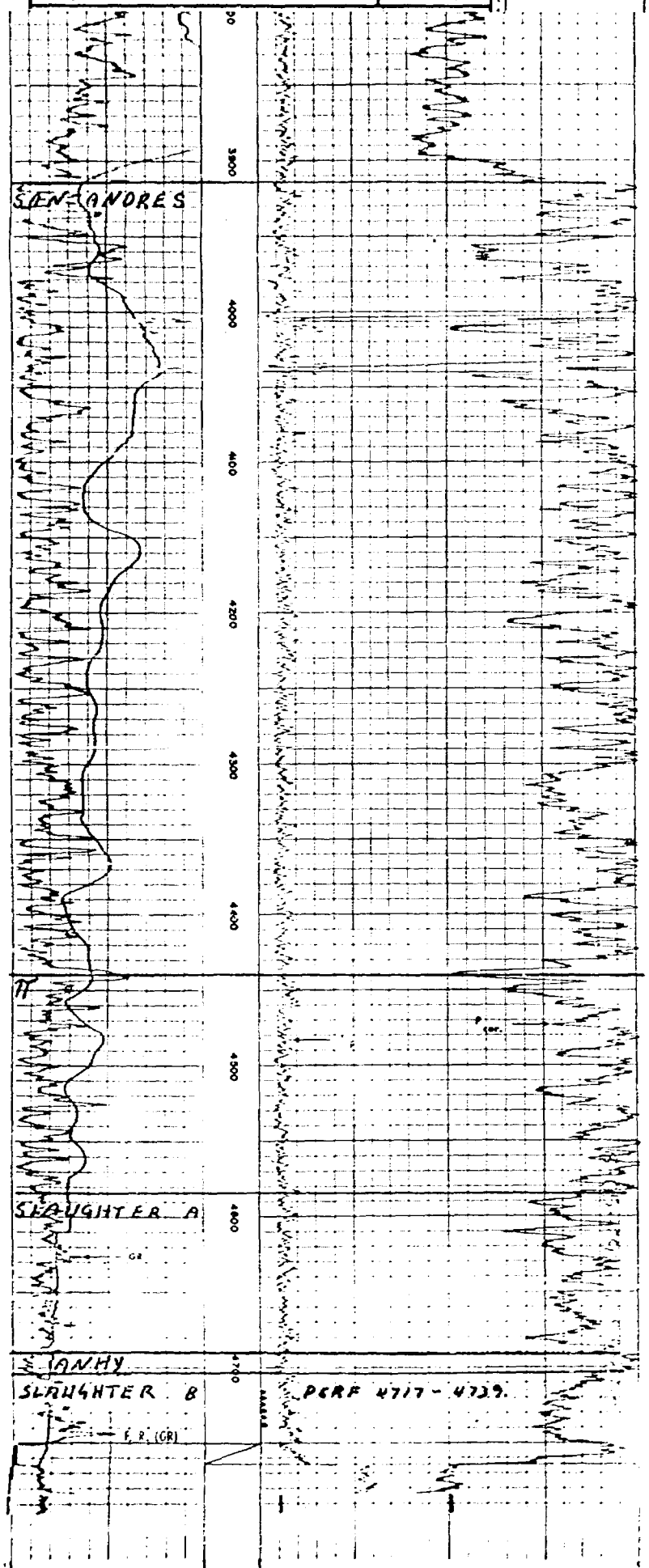
Other Services:

Sec. 18 Twp. 8-S Rge. 33-E

Permanent Datum: G.L. ; Elev.: 3982
Log Measured From K.B. 8 Ft. Above Perm. Datum
Drilling Measured From K.B.

Elev.: K.B. 3990
D.F. 3989
G.L. 3982

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2-A
CASE NO. 4317



SCHLUMBERGER

COMPANY [illegible]

WELL [illegible] 2 FEDERAL 16

FIELD EAST [illegible]

COUNTY [illegible] STATE NEW MEXICO

Location: [illegible] FSL & EL

Other Services:

Sec. 16 Twp. 19-S Rge. 36-E

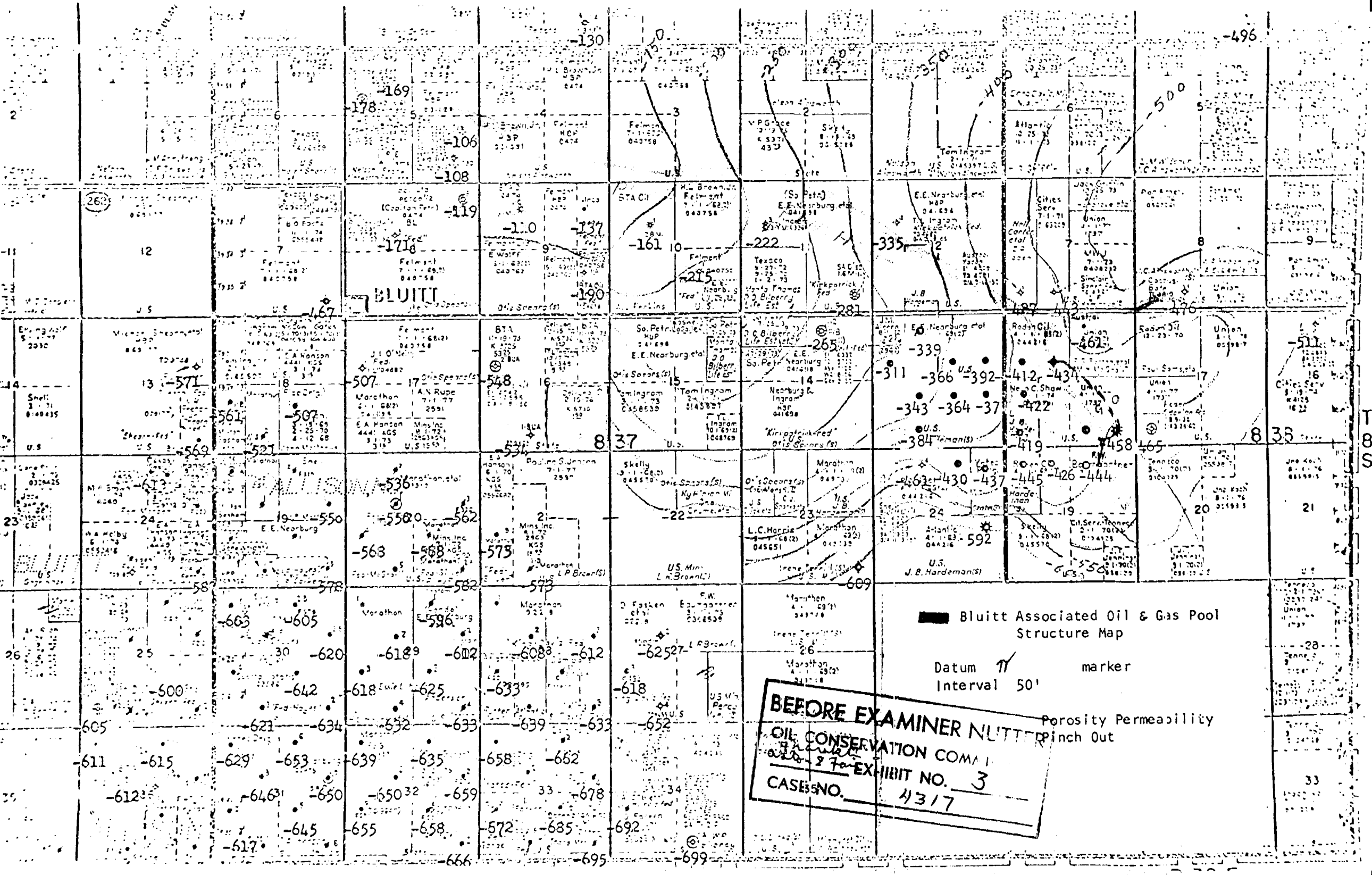
Permanent Datum: G.L. ; Elev.: 3327

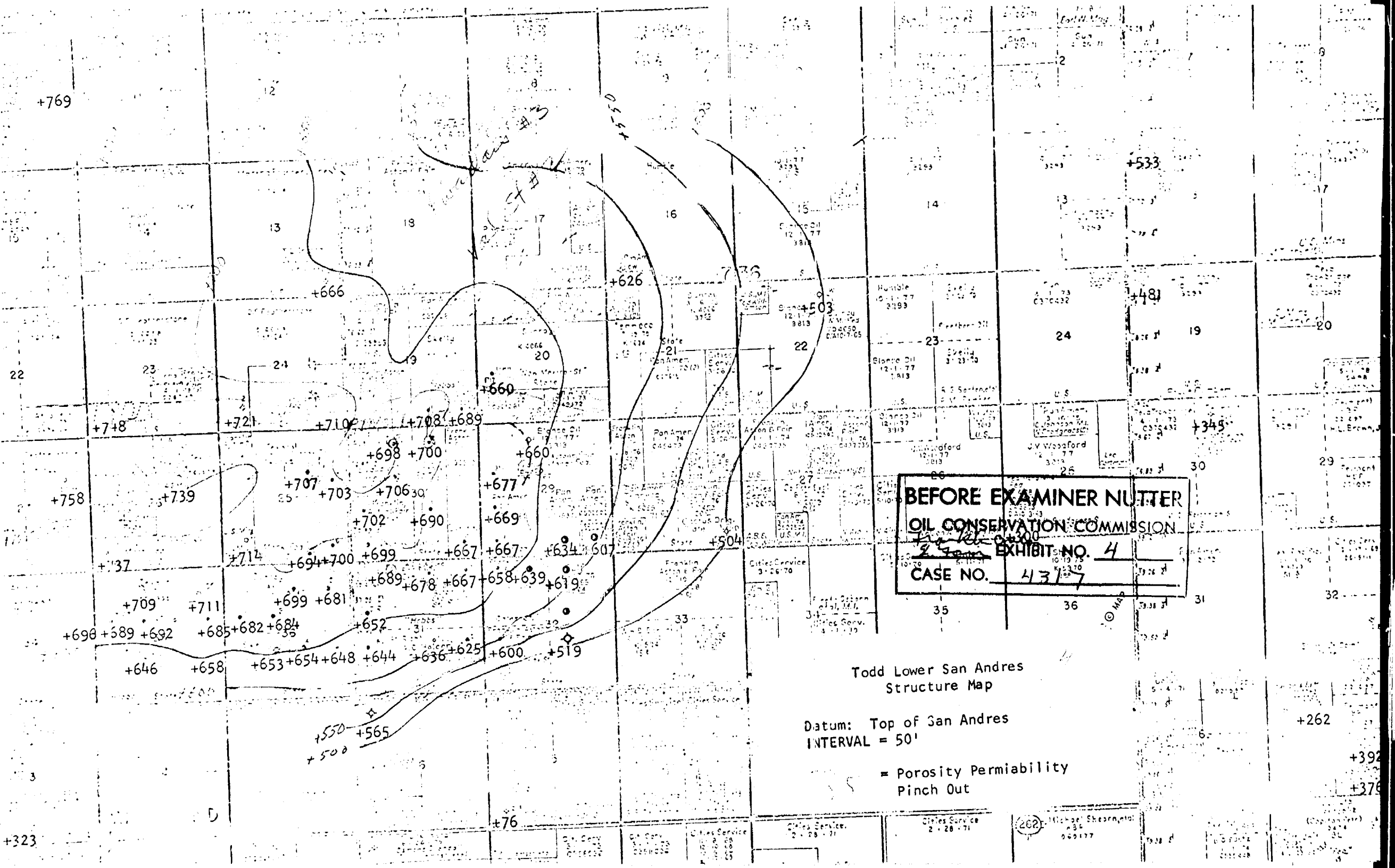
Log Measured From K.B. 6 Ft. Above Perm. Datum

Drilling Measured From K.B.

Elev.: K.B. 3333
D.F. 3332
G.L. 3327

COUNTY
FIELD or LOCATION
WELL
COMPANY


BLUITT
T 8 S
Bluitt Associated Oil & Gas Pool
Structure Map
Datum
marker
Interval 50'
Porosity Permeability
Pinch Out
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMM.
EXHIBIT NO. 3
CASE NO. 4317


+769
+666
+626
+503
+533
+481
+660
+748
+721
+710
+708
+689
+698
+700
+660
+758
+739
+707
+703
+706
+677
+702
+690
+669
+714
+694
+700
+699
+667
+667
+634
+607
+504
+689
+678
+667
+658
+639
+619
+709
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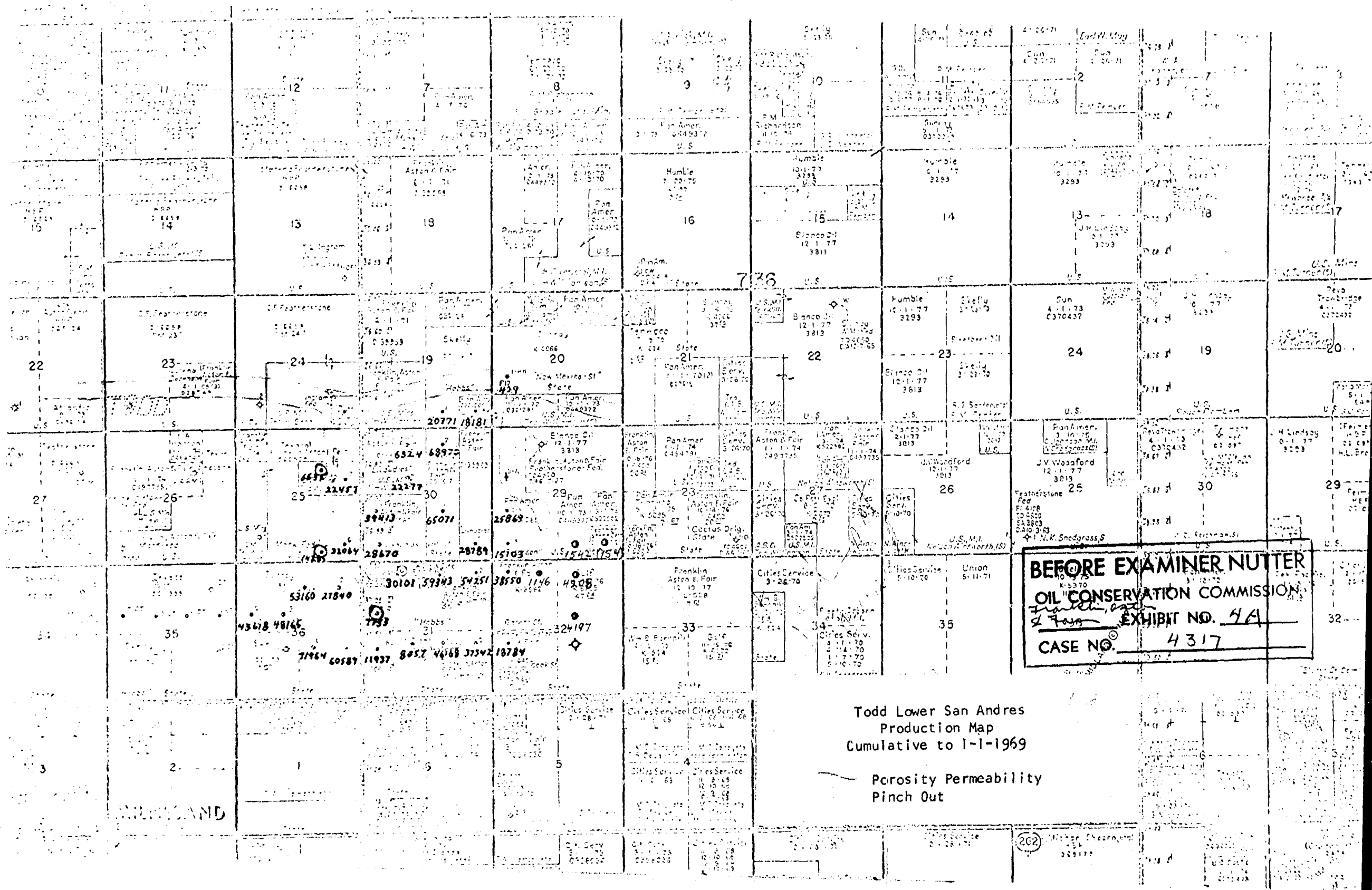
+699
+681
+698
+689
+692
+685
+682
+684
+652
+646
+658
+653
+654
+648
+644
+636
+625
+600
+519
+550
+565
+500
+76
+323
+345
+262
+392
+376
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 4317
Todd Lower San Andres
Structure Map
Datum: Top of San Andres
INTERVAL = 50'
= Porosity Permiability
Pinch Out



Todd Lower San Andres
Production Map
Cumulative to 1-1-1969

Porosity Permeability
Pinch Out

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Franklin, Aston & Fair EXHIBIT NO. 4A
CASE NO. 4317

Todd Lower San Andres
Production Map
Year - 1968

Oil

Water

Porosity Permeability
Pinch Out

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Franklin data
EXHIBIT NO. 4-B
CASE NO. 4317

ER

Gamma Gamma

NY FRANKLIN, ASTON AND FAIR

IVAUDAIS-ELLEN FEDERAL

TODD-SANANDRES

Y ROOSEVELT STATE N.M.

: 1871.3' FWL & 660' FNL

Other Services:
MLL
LL

) Twp. 7S Rge. 36E

UND LEVEL ; Elev.: 4156

3 10 Ft. Above Perm. Datum

KB

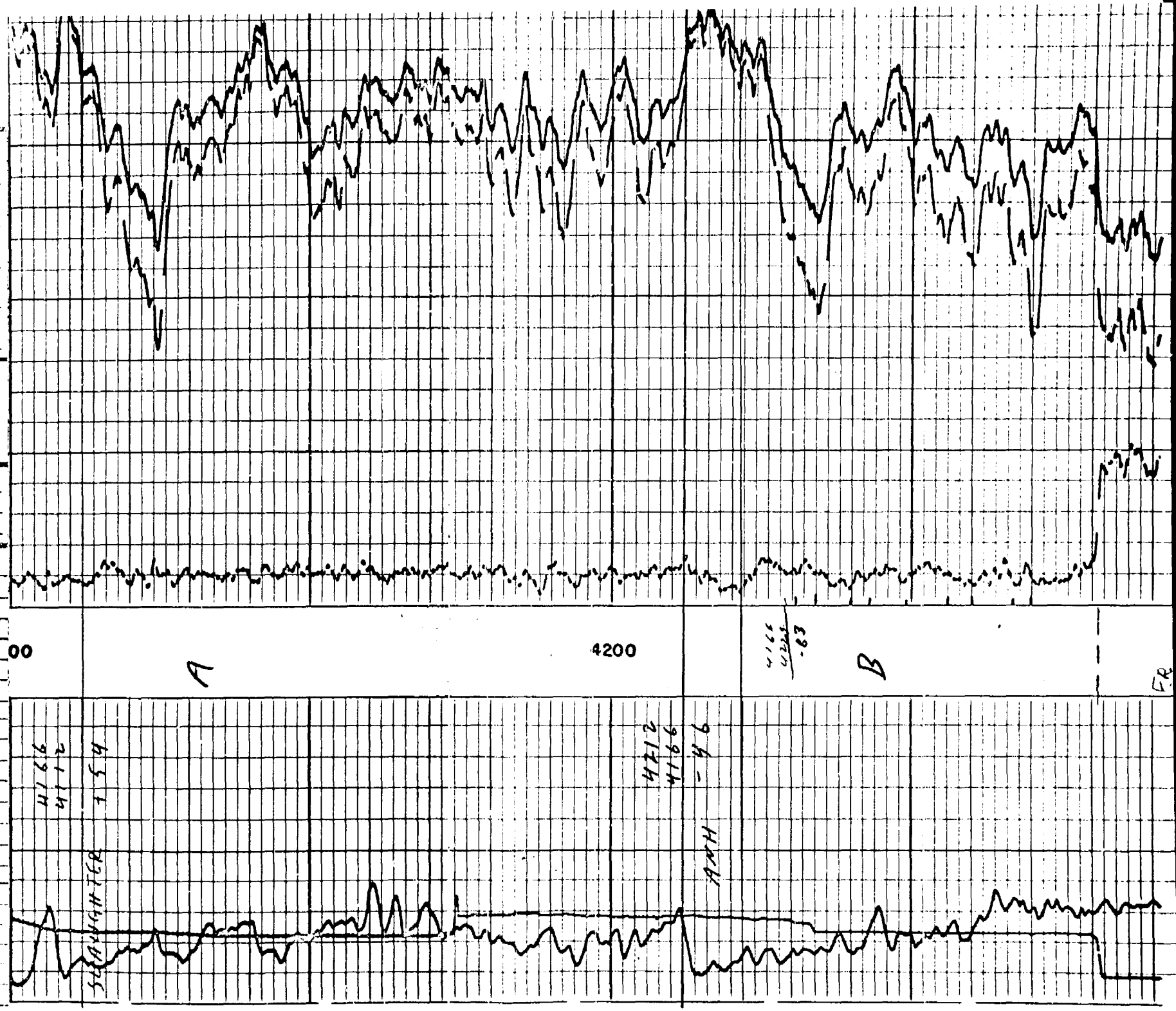
Elev.: K.B. 4166
D.F. 4165
G.L. 4156

3-18-67
ONE
FDC
4-75
4262
4281
0
SAN ANDRES
SPUDDED
10
FULL
101

OLSON
MCSMITH

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMM.
EXHIBIT NO. 5-A
CASE NO.

RECORD	CASING RECORD			
To	Size	Wgt.	From	To
TD	2 5/8		241	CMT



COMPANY FRANKLIN, ASTON, & FAIR

WELL VAL STATE #2

FIELD TODD - SAN ANDRES

COUNTY ROOSEVELT STATE NEW MEXICO

Location: 660' FNL 1980' FEL

Sec. 30 Twp. 7-S Rge. 36-E

Other Services: L, MLL

n: G.L. ; Elev.: 4152 Elev.: K.B. 4162

om , 10 Ft. Above Perm. Datum D.F.

d From KB G.L. 4152

	2-5-67
	ONE
	DC - GR
	4273
	4273
nterval	4272
val	0
e	Sale set search
Cl.	Limited
	0.2
	1
deg F.	101°
ne	2-15
	FREEMAN
	MR. SMITH

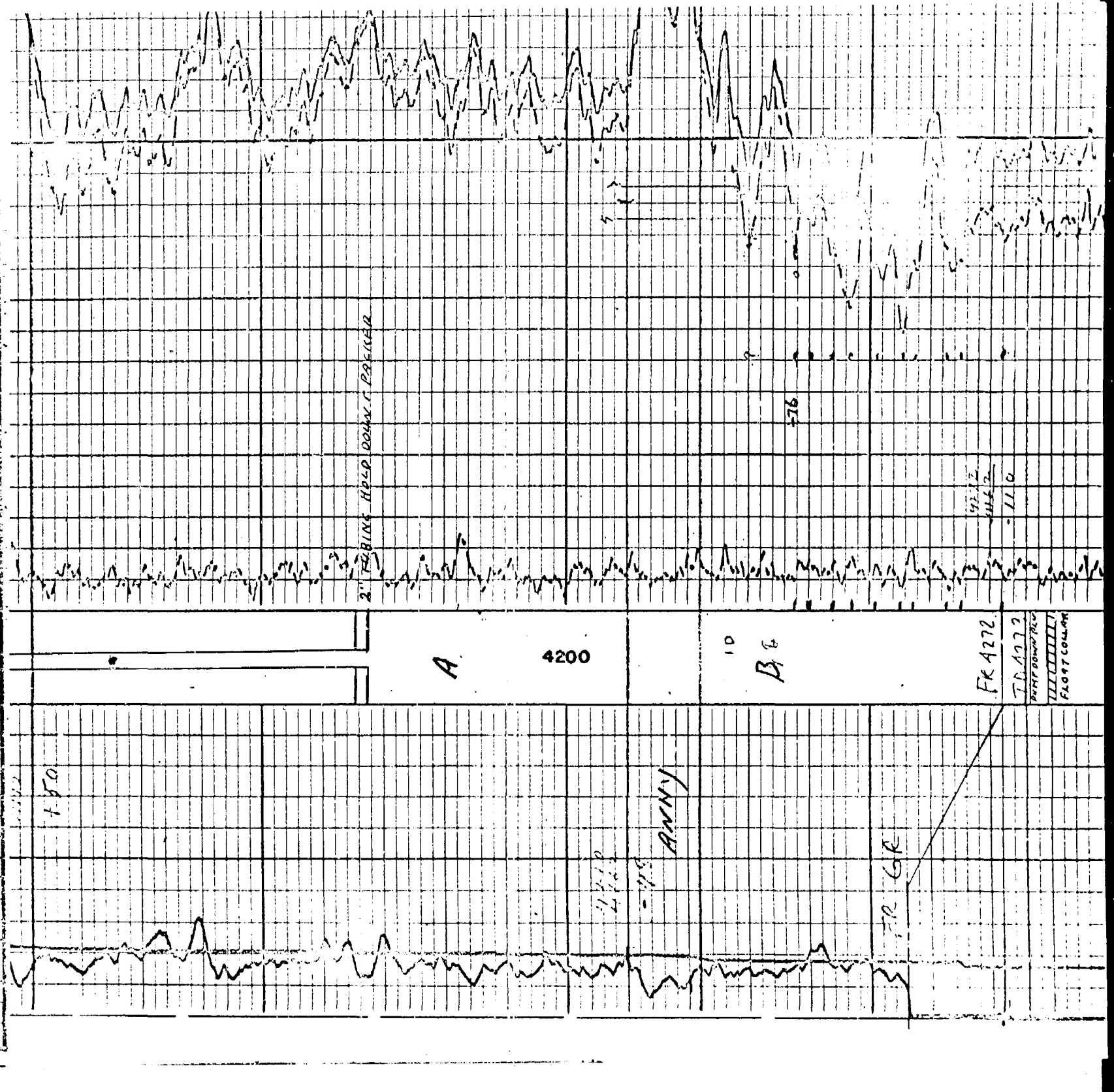
BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 3817

ORE-HOLE RECORD

From	To
[illegible]	[illegible]

CASING RECORD

Size	Wgt.	From	To
[illegible]	—	SURF	[illegible]



COMPANY [illegible] ACTON & FAIR

WELL [illegible] FEDERAL #1

FIELD TODD

COUNTY ROOSEVELT STATE NEW MEXICO

Location: 1980' FWL
660' FNL

Other Services:
L, MLL

Sec. 29 Twp. T-5 Rge. 36-E

Datum: G.L. ; Elev.: [illegible]

d From K.B. , Ft. Above Perm. Datum

sured From K.B.

Elev.: K.B. [illegible]
D.F.
G.L. 4140.6

	4-20-61
	ONE
	EDC-GR
er	4301
er	4300
d interval	4299
terval	0
hole	[illegible]
M Cl.	175,000
	10.4
	5.11
., deg F.	.03
time	2 1/2 HRS
	FREEMAN & TARRALL
	M. SMITH

FINAL

PRINT

MOP COPY

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 4
CASE NO. 4317

BORE-HOLE RECORD		CASING RECORD			
From	To	Size	Wgt.	From	To
205	TD	[illegible]		SURF	215

The well name location and borehole reference data were furnished by the customer.

SCHLUMBERGER

COMPANY FRANKLIN, ASTON & FAIR, INC.

WELL [illegible] MODEN FEDERAL [illegible]

FIELD EAST ROBERTS

COUNTY ROOSEVELT STATE NEW MEXICO

LOCATION 1980' FNL & 1980' FEL

Other Services:

Sec. 18 Twp. 8-S Rge. 38-E

Permanent Datum: GL Elev. 4002

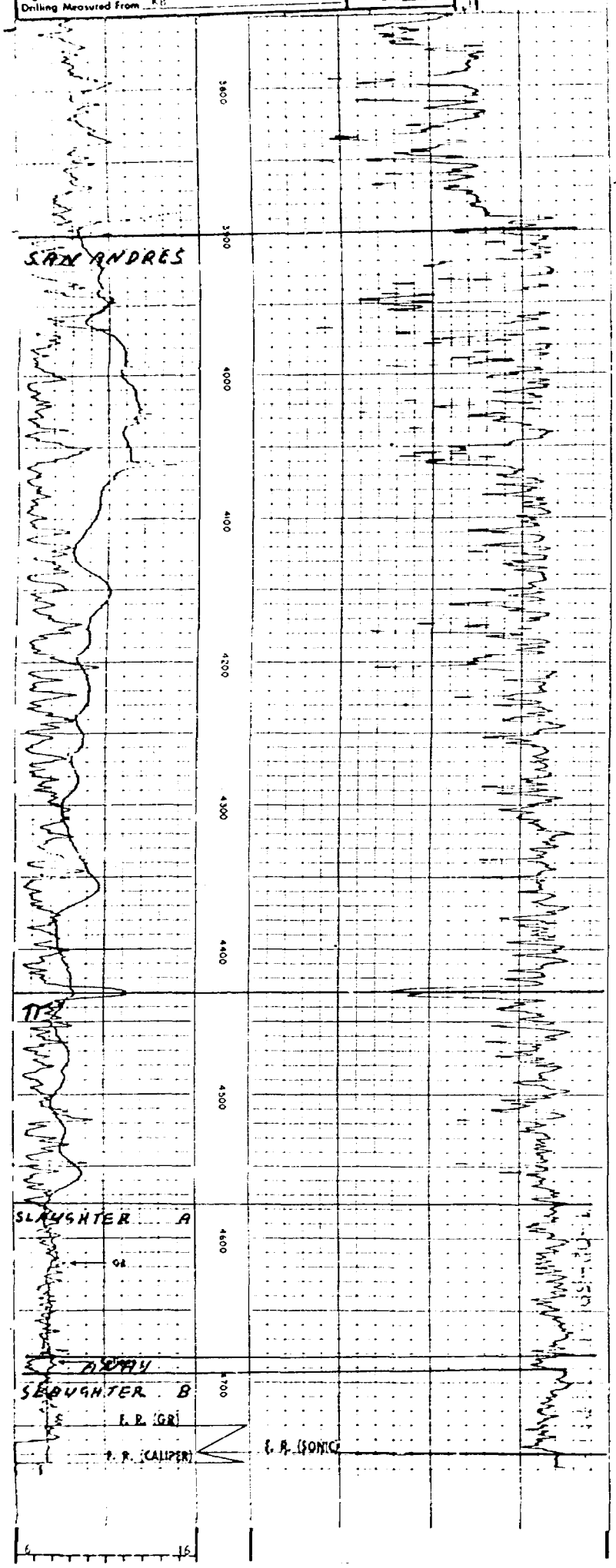
Log Measured From KB 9 Ft. Above Perm. Datum

Drilling Measured From KB

Elev.: K.B. 4011

D.F.

G.L. 4002



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Franklin-Aston & Fair EXHIBIT NO. 6
CASE NO. 4317

CORE ANALYSES

COMPARISON OF OIL & WATER SATURATIONS
BLUITT FIELD AREA, ROOSEVELT COUNTY, NEW MEXICO

Union Oil Company #1-18 Federal

% Porosity (Values ≥5%)		% Saturation Oil	% Saturation Water
5.8		5.8	50.0
6.0		7.7	33.5
5.9		6.3	35.1
7.0		7.9	29.9
7.4		12.1	25.3
5.9		8.1	37.3
6.2		3.9	61.0
8.2		6.0	41.9
6.3		5.4	40.3
6.9		4.9	32.6
	Total	68.1	386.9
	Avg.	6.8	38.7

Union Oil Company #2-18 Federal

% Porosity (Values ≥5%)		% Saturation Oil	% Saturation Water
6.7		5.4	38.8
6.6		9.9	27.6
5.1		6.9	36.8
6.2		5.3	39.6
7.1		7.9	32.8
5.5		6.6	37.4
9.3		10.1	20.9
11.2		9.8	33.0
9.4		6.9	30.0
7.5		8.7	34.8
5.8		6.7	39.8
8.1		7.2	36.6
10.7		7.7	33.2
5.2		9.2	46.6
5.1		3.9	32.1
6.0		8.7	34.8
6.6		10.3	30.6
	Total	131.2	585.4
	Avg.	7.7	34.4

NOTE THE VERY CLOSE AGREEMENT

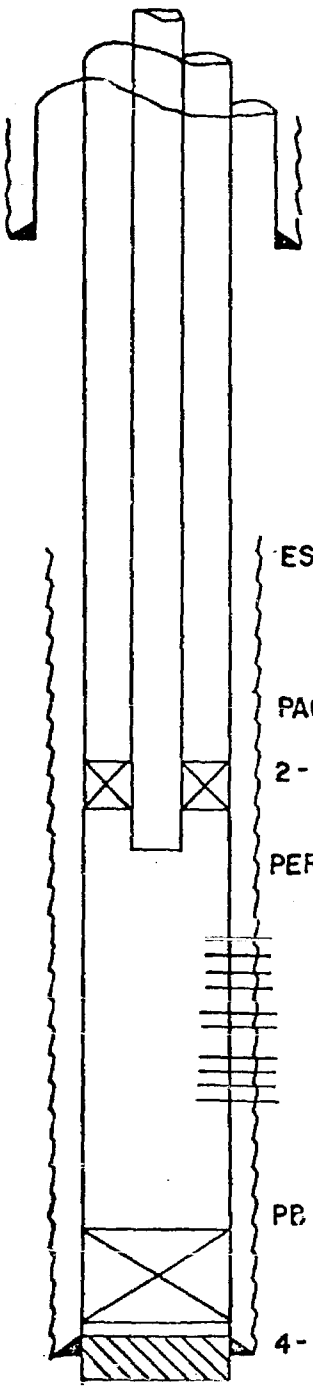
1970 Eugene E. Nearburg Dallas
Compilation by Patrick J. F. Gratton

DIAGRAMMATIC SKETCH

UNION OIL COMPANY OF CALIFORNIA

FEDERAL "18" WELL NO. 2

SECTION 18 - T8S - R38E, ROOSEVELT CO., NEW MEXICO



8-5/8" CASING at 321' in 12-3/4" Hole w/ 175 sxs. CEMENT (circ.)

EST. CEMENT TOP - 3800'

PACKER SET AT 4617' (BAKER MODEL "R")

2-3/8" OD TUBING at 4624'

PERFS.: 4718', 4722', 4725', 4727', 4732', 4734', 4740', 4742', 4744', 4746'.

PB at 4756'

4-1/2" CASING at 4774' in 7-7/8" Hole w/ 300 sxs. CEMENT

TD - 4774'

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
Applicant EXHIBIT NO. 6
CASE NO. 4317

ELEVATIONS

KB - 3984'
DF - 3983'
GL - 3976'

AUSTRAL OIL EXPLORATION CO.

FIELD BLUITT

ZONE SAN ANDRES (Grade Zone)

LEASE McGRAIL

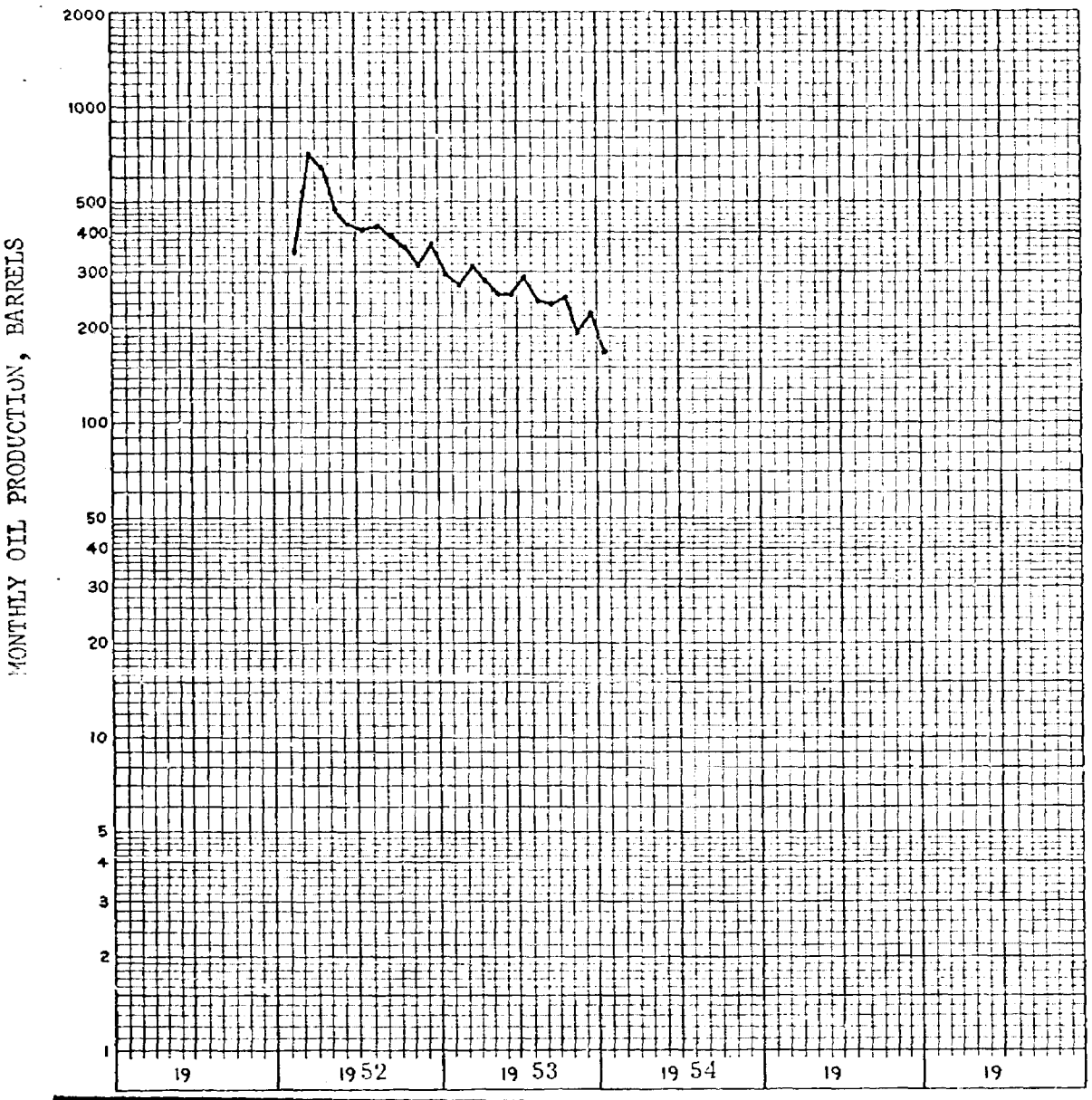
WELL No. 1 BLT B

SEC. 18, T8S, R38E

MONTHLY TABULATION OF OIL PRODUCTION
(No Water Production)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1952		350	707	653	476	426	412	420	392	360	314	371
1953	295	275	315	282	258	257	288	244	240	248	194	223
1954	171	P & A 2-16-54 Cum. Prod.=8171 BO										

Estimated ultimate primary recovery = 11,200 BO



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 4317

FORM 793

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMM.
Oppn EXHIBIT NO. 8
CASE NO. 4317

SPECIAL RULES AND REGULATIONS
FOR THE
WEST BLEDSOE GAS POOL

RULE 1. Each well completed or recompleted in the West Bledsoe Gas Pool or in the San Andres formation within one mile thereof, and not nearer to or within the limits of another designated San Andres pool, shall be spaced, drilled, operated, and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2. Each well shall be located on a standard unit containing 160 acres, more or less, substantially in the form of a square which is a quarter section being a legal subdivision of the U. S. Public Land Surveys, and shall be located not closer than 660 feet to any outer boundary of such tract nor closer than 330 feet to any quarter-quarter section or subdivision inner boundary nor closer than 1320 feet to the nearest well drilling to or capable of producing from the same pool.

RULE 3. The Secretary-Director of the Commission may grant an exception to the requirements of Rule 2 without notice and hearing when an application has been filed for a non standard unit and the unorthodox size or shape of the unit is necessitated by a variation in the legal subdivision of the United States Public Land Surveys, and the following provisions are complied with:

(a) The non-standard unit consists of quarter-quarter sections or lots that are contiguous by a common bordering side.

(b) The applicant presents written consent in the form of waivers from all offset operators to the non-standard unit.

(c) In lieu of paragraph (b) of this rule, the applicant may furnish proof of the fact that all of the aforesaid operators were notified by registered or certified mail of his intent to form such non-standard unit. The Secretary-Director may approve the application if no such operator has entered an objection to the formation of such non-standard unit within 30 days after the Secretary-Director has received the application.

RULE 4. Each well shall be equipped with such surface casing so as to protect all fresh water bearing strata. Sufficient cement shall be used to fill the annular space behind the casing to the top of the hole.

IT IS FURTHER REQUESTED:

(1) That the Union Oil Company of California No. 2 Federal "18" well, located 660 feet from the south line and 660 feet from the east line of Section 18, Township 18 south, Range 38 east, NMPM, Roosevelt County, New Mexico, is hereby granted an exception to the well location requirements contained herein.

(2) That the operator of the aforesaid Federal "18" No. 2 shall file a new Form C-102 outlining thereon the acreage dedicated to said well within 10 days after receipt of this order.

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

BLUITT SAN ANDRES ASSOCIATED FIELD
ROOSEVELT COUNTY, NEW MEXICO
COMPARISON OF PRODUCED GAS ANALYSIS

	Union Oil Co. of Calif. Federal 18 Well #2 Unit P Sec. 18 T-8-S; R-38-E	Union Oil Co. of Calif. Federal 18 Well #1 Unit O Sec. 18 R-8-S; R-38-E	Franklin Aston & Fair, Inc. Roden Federal Well #2 Unit C Sec. 19 T-8-S; R-38-E	Baumgartner Oil Co. 1-U.S.A. Well #1 Unit B Sec. 19 T-8-S; R-38-E
1. Fractional Analysis - Mol %				
Carbon Dioxide CO_2	9.05	14.30	15.18	16.34
Nitrogen N_2	10.25	2.56	2.05	2.47
Hydrogen Sulf. H_2S	1.03	3.16	3.48	3.40
Methane C_1	69.03	48.04	46.02	46.62
Ethane C_2	5.72	13.11	15.04	13.87
Propane C_3	3.02	10.53	11.08	10.43
Iso-Butane $i-C_4$	0.36	1.59	1.61	1.45
N-Butane $N-C_4$	0.72	3.49	3.30	3.02
Iso-Pentane $i-C_5$	0.26	1.12	0.91	0.90
N-Pentane $N-C_5$	0.22	0.97	0.74	0.76
Hexanes C_6	0.17	0.65	0.39	0.46
Heptanes Plus C_{7+}	0.17	0.48	0.20	0.28
2. Specific Gravity	.802	1.040	1.070	1.045
3. Liquid Content				
Propane Calc. G.P.M.	.829	2.890	3.041	2.863
Butanes Calc. G.P.M.	.344	1.616	1.563	1.422
Pentanes Plus G.P.M.	.322	1.247	.852	.921
4. BTU/CU.FT. @ 14.65 psia				
Dry Basis	953	1310	1288	1250
Wet Basis	937	1287	1265	1228
5. Hydrogen Sulfide GR/100 Cu.Ft.	650	2000	2200	2150

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 9
CASE NO. 4317

AFT:rb
2-25-70

BLUITT SAN ANDRES ASSOCIATED POOL BOTTOM HOLE PRESSURES XIX (19)
POOL DATUM -560' NOMINAL SHUT IN TIME ---

COMPANY LEASE	WELL UNIT	S.T.R.	DATE PRESS. RUN(1969)	TIME S.I. HRS./MIN.	ELEV.	GAUGE DEPTH	GRADIENT TBG.#/100'	B.H.P. @ GAUGE DEPTH	B.H.P. @ PREVIOUS TEST POOL DATUM PRESS. DATE(1968)
EUGENE E. NEARBURG									
Baetz Federal	1 G	13-8-37	9-15	72/00	4011	4590		1114	1108
"	2 K	"	"	"	4099	4569		1120	1120
"	3 H	"	"	"	4007	4610		1088	1186
"	4 C	"	"	"	4022	4590		1135	1135
"	5 N	"	"	"	4004	4615		1165	1147
Baetz Fed. KGS	1 E	"	"	"	4019	4579		939	939
Kirkpatrick	1 P	11-8-37	"	"	4031	4165		79[illegible]	801
"	2 B	14-8-37	"	"	4031	1230		568	642
RODEN OIL COMPANY									
Roden Bluitt Fed.	1 E	18-8-38	9-30	72/00	4005		36.5	100	606
"	2 D	19-8-38	"	78/00	4010	4570 (-560)		1008	

ADDITIONAL TESTS

UNION OIL CO. OF CALIFORNIA									
Federal 18	10	18-8-38	2-12-70	72/00	3982 (66)	4728 (Mid-Perfs.)	531	527	Sonic fluid level on pumping well
Federal 18	2P	18-8-38	9-3-69	192+	3984 (KB)	4624	1526	1522	BHP @ mid-perfs (4732') = 1531 psia

'70 FEB 5 PM 1 10

'70 FEB 5 PM 1 10

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF UNION OIL COMPANY OF CALIFORNIA FOR AN ORDER CREATING AND DESIGNATING A NEW GAS POOL FOR THE PRODUCTION OF GAS FROM THE SAN ANDRES FORMATION, SUCH POOL CONSISTS OF W½SW¼ OF SECTION 17 AND E½SE¼ OF SECTION 18 ALL IN TOWNSHIP 8 SOUTH, RANGE 38 EAST, ROOSEVELT COUNTY, NEW MEXICO, AND ESTABLISHING SPECIAL RULES AND REGULATIONS FOR SAID POOL, INCLUDING 160 ACRE SPACING.

No. 4317

APPLICATION

COMES NOW Applicant, Union Oil Company of California, by its attorney, John F. Russell, and states:

1. That Applicant did complete its union No.2, Federal 18 discovery well at a location 660 feet from the South and East lines of Section 18, Township 8 South, Range 38 East, N.M.P.M., Roosevelt County New Mexico, on or about August 20,1969, and said well potentialed 6.3 million cubic feet of gas per day from the San Andres Formation.

2. That said well discovered a new, common source of supply in this area.

3. That in conformity with the practices of the Commission, a pool should be created, defined and classified, including such acreage as appears to cover the newly discovered source of supply located in W½SW¼ of Section 17, E½SE¼ of Section 18, Township 8 South, Range 38 East, N.M.P.M., Roosevelt County

New Mexico.

4. That the probable areal extent of the common source of supply is limited, and to prevent waste and to protect correlative rights, proration units of 160 acres should be established.

5. That one well will efficiently and economically drain at least 160 acres of the said common source of supply.

WHEREFORE, Applicant requests the Commission to set this matter down for hearing before one of its examiners, to publish notice as required by law, and, after hearing, issue its order creating and designating a new gas pool as prayed for herein, and to provide for the orderly development of the common source of supply and to prevent waste, drilling units of 160 acres, well-spacing regulations, and a casing program for said common source of supply.

Respectfully submitted,

UNION OIL COMPANY OF CALIFORNIA

BY John F. Russell
John F. Russell
Its Attorney

P.O. Drawer 640
Roswell, New Mexico 88201

DRAFT

GMH/esr

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. 4317

Order No. R-3942

APPLICATION OF UNION OIL COMPANY
OF CALIFORNIA FOR THE CREATION OF
A NEW GAS POOL AND SPECIAL POOL
RULES, ROOSEVELT COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 ~~o'clock~~ a.m. on March 4, 1970, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this _____ day of April, 1970, the Commission, a quorum being present, having considered the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

That the applicant's request for dismissal should be granted.

IT IS THEREFORE ORDERED:

That Case No. 4317 is hereby dismissed.

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

CASE 4318: Application of PAN AM. FOR A NON-STANDARD GAS PRORATION UNIT, LEA COUNTY, NEW MEXICO.