CASE 4604: MOTION OF THE OCC FOR EUNICE-MONUMENT GAS-OIL RATIO, LEA COUNTY, NEW MEXICO.

Case Number

4604

Application

Trascripts

Small Exhibits

ETC.

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

September 29, 1971
Examiner Hearing

IN THE MATTER OF:

the hearing called by the Oil Conservation Commission upon its own motion to consider the consolidation of the Eunice and Monument areas of the Eunice Monument Pool, Lea County, New Mexico, and the ascertainment of a common efficient gas-oil ratio for the consolidated area.

Case No. 4604

BEFORE: ELVIS A. UTZ, EXAMINER

TRANSCRIPT OF HEARING

MR. UTZ: Case 4604.

MR. HATCH: Case 4604. In the matter of the hearing called by the Oil Conservation Commission upon its own motion to consider the consolidation of the Eunice and Monument areas of the Eunice Monument Pool, Lea County, New Mexico, and the ascertainment of a common efficient gas-oil ratio limitation consolidated area.

If the Examiner please, George Hatch appearing on behalf of the Commission staff, and I will have one witness, Mr. Joe Ramey.

MR. UTZ: Are there other appearances?

MR. CHRISTY: Sam Christy, Jennings, Christy and Copple, in behalf of John Hendricks, Wolfson Oil Company, M.K.A. and Associates, and Bruce Willbank. We will have one witness.

MR. UTZ: Are there other appearances?

(Witnesses sworn)

JOE D. RAMEY

having been first duly sworn, according to law, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. HATCH:

Q Mr. Ramey, will you state your name, position and place of residence?

A Joe D. Ramey, I am supervisor of the Commission's District

One. I reside at Hobbs, New Mexico.

Q Are you familiar with Case 4604 and what it proposes?

A Yes, I am. In this case, first Order No. 850 which was effective January 1, 1950, defines the limits of the Eunice Monument Pool, but it did establish g.o.r.'s for the Eunice area at 6000 for the Monument area at 3000.

Now, the purpose of this hearing is to combine the Eunice and Monument areas into the one already defined pool, and to determine a common efficient g.o.r. for the pool.

Q Now, have you made a study of the two areas of the Eunice Monument Pool to determine whether or not the two areas are, in fact, a common reservoir?

A Yes, I have.

Q Would you present the results of that study to the Examiner at this time?

A Let me refer to Exhibit 1, which is a structure contour map of the Eunice Monument Pool.

This is an enlargement of the structure map which is part of the Roswell Geological Symposium, and this exhibit in itself was presented in Case 4552 by Mr. Williamson, and I just confiscated it for ease.

Basically this shows two structural highs, the Monument high and the Eunice high with a slight saddle effect in between.

This is the dividing line between the Monument area and the Eunice area. However, this saddle effect between the two highs is certainly not enough to warrant separation into two pools.

I have a little red line here which starts in Section 18 of 1937, and it continues across the pool dividing line into Section 19.

Q Is that 1937 or 2037?

A 2037, excuse me. And this is the north-south cross-section which I have labeled Exhibit 2.

This is a very short cross-section, as you can see, and it does go through the dividing line of the two areas, and it does show that your Grayburg formation is continuous through the area, and there is really, you know, no reason why this was split into two areas that I can see.

Q In your opinion are the two areas separate and distinct reservoirs now?

A No. I think they are all one common source of supply, and they should be considered as such, and, you know, should -- statistics and allocations and such should be carried as to the Eunice Monument Pool.

Q Well, in case the Commission did see fit to consolidate the two areas and treat it as one area have you made a study as to determine what a common efficient gas-oil ratio limitation should be for the consolidated area?

A Yes, I have, and I think probably the most important thing to consider in making the study would be pool performance, and so I have prepared production curves for both areas.

Exhibit No. 3 is a production curve for the Monument area. First I would like to state that here in 1953 there was a general reclassification of wells in the area which resulted in some of the wells which had been considered Monument wells being classified as Eumont wells, so actually back from '53 back you have a distorted curves because the information does include wells that were in the Eumont Pool, but considering the area on the curve from 530, plate 530 in the Monument your oil production declined, oh, probably until about 1962, and since 1962 it has been relatively stable at, oh, between 250 and 300,000 barrels a month.

Water production has increased. We do have kind of a tailing off effect to the last couple of years.

Your gas has been constant, relatively constant up until about 1968, which I believe then we had an increase which I feel is a result of the development of wells in the gas area of the Monument.

Now, with a consistent gas volume and declining oil volume you, of course, do have an increase in g.o.r., but basically I think we have a water drive reservoir here.

Now, how much help or influence the gas is, I am not

sure, but there is a gas cap in the Grayburg, and I am sure it is in communication with the oil at least in places in the pool.

I consider this a pretty good pool. We don't seem to have established a decline on it yet. You still have it in the neighborhood of 27 barrels per well oil production per day per well, and so I really wouldn't consider this pool to be in an advanced stage of depletion.

Now, going to Exhibit No. 4, prepared the same type of curves, and in this case you hurry. Classification looks like it was effective January 1, 1955, so there again we have distorted figures to --

Q Excuse me just a minute, Mr. Ramey. On Exhibit 3 did you identify it as having to do with the Monument area?

A Yes, I think I did.

Q All right. Exhibit 4 has to do with what area?

A It will be for the Eunice area.

Q All right. Go ahead.

A And then again going from 1955 on we find that our oil production is on a relatively steady slow decline.

Water has dropped off. It was producing in the neighborhood of 300,000 barrels a month, and it has now, you know, dropped off, but has been level or relatively level since 1963.

Gas production in this area has been on a steady

decline, and it appears that you have a declining gas-oil ratio in that the gas has declined more rapidly than the oil, but that the tail end, which is in June of this year, why, you find in the Monument producing ratio of around 7000, and in the Eunice something over 5000.

Your Eunice is certainly approaching, you know, the late stages of depletion in this reservoir or in this area.

You have only about 13 barrels per well per day per production, but at the rate of decline that we have had in this pool since 1950, why, it looks like there is several more years of production left in the pool.

Q Do you have any opinion, considering your performance curve there as to what the producing mechanism is in this pool?

A Well, in the Eunice area I believe it is water-drive. In the Monument it is primarily water-drive with perhaps some help from the gas.

Q All right. Do your Exhibits 3 and 4 show the producing gas-oil ratio for the Monument pool as approximately 7000 cubic feet of gas per barrel of oil and for the Eunice area of the pool -- excuse me, as approximately 5000 cubic feet of gas per barrel of oil?

Do you consider those figures accurately portrayed, a producing gas-oil ratio for each of the areas?

A No, I don't. If you will refer to what I marked as Exhibit

5, which this is a tabulation of the production information for the first five columns and then from there on to the right it is suggested production information, but this is labeled Monument pool, and to explain this, why, it would probably be simplest just to go through it, so if you will look at the first listing which is the month that would be January, the number of top allowable wells -- now, this is in the Monument area well, the number of top allowable wells was 38.

I should qualify that. I considered a well top allowable when it produced at or near top allowable, something within 90 or maybe 100 barrels.

If the allowable was 2400 and it produced 2320, why, I considered it a top allowable well.

Q All right.

A All right. The oil production for the month of January in the Monument area was 284,502 barrels. The number of producing wells was 377.

Gas production, 1,637,382 mcf.

Now, this gave a producing gas-oil ratio of 5755, and of per well oil per day of 24.3.

On the next three columns I arbitrarily established a definition for a gas well in the Monument area, and this definition was that the well had to produce gas in excess of the 3000 times top pool allowable times the number of

days in the month. It had to produce that much gas and have a producing ratio of over 100,000, and in this case, in January there were 30 wells which I considered to be gas wells.

Their oil production was 1,065 barrels which is about one-half of one percent of the oil production of the pool, and their gas production was 716,677 mcf. which is around forty-three percent of the gas production from the Monument area.

Now, these wells, this type of well actually contributes nothing to an oil reservoir, and so in considering the gas-oil ratio, why, I think you should take these wells out, because they distort the true producing gas-oil ratio of the pool.

And so on the next columns these are your oil and gas production figures for subtracting the gas well production and so you come out with essentially the same oil production of 283,437, but your gas is considerably lowered down to 920,710 which gives you a producing -- what I consider the true producing gas-oil ratio of the pool at 3248.

Now, I did this for the first six months of 1971, and the gas-oil ratio as a comparison in January is 5755, compared to 3248, what I consider to be the true g.o.r.

And then in June it was -- the producing g.o.r.

indicated to be 7072, but the true g.o.r. is 4173, and then I did the same thing for the Eunice area.

In this case your results aren't so drastic because you don't have the same number of gas wells.

In this case in January -- this is Exhibit No. 6, incidentally. In January the number of top allowable wells was five oil productions from the Eunice area, 97,701, 267 producing wells, gas production, 412,029 mcf. which resulted in a producing g.o.r. of 4217.

And then at a per well average, 11.8, and then going to again using the same gas well definition I find four gas wells which produce 290 barrels of oil and 43,601 mcf., and then subtracting these in the next two columns I come out with a true producing g.o.r. of 3227.

If you will compare what I consider the true producing g.o.r.'s between the two areas it comes out surprisingly close on all months. There is some fluctuation of 340 cubic feet per barrel, but basically you come out with around the same g.o.r.'s for the two areas.

Q Do you have anything else you would like to present concerning Exhibits 4 and 5?

A I should probably mention at this time that all of these production figures and all of this information -- I did get this information from the statistical books of the New Mexico Oil and Gas Engineering Committee, which is

compiled and edited by the Oil Commission, and these are compiled from Operator's Form C115, so they should reflect the true production of the areas.

Q All right. Have you prepared exhibits using various assumed common gas-oil ratio limitations to show what would be the effect of establishing certain g.o.r. limitations for the consolidated area?

A Yes. Our first one is Exhibit No. 7 which is entitled Monument Pool Number of Wells Producing Excess Gas.

In this case I have got certain information here for gas-oil ratios of 3000, 4500 and 6000. I think the easiest way is just to go through this, so if we will consider January again, under 3000, the number of wells which is 63 was the number of wells which produced excess gas at a 3000 limiting ratio, and the total gas production from these 63 wells then was 1,093,349 mcf.

The allowed gas, which would be 3000 times 80 times the number of wells which is 63 times the days and the months which was 31 comes out to be 468,720, and so the excess gas produced during January, then, was 624,629.

Now, this would be the volume of gas which would be locked off effective November 1 when the revised Rule 506 goes into effect.

And then I did the same thing for 4500, and at this case the number of wells which produced over the allowed

gas was 40, and their total volume was 880,000 and their excess was 43,679, and then again it is 6000. You have 27 wells, total production of 705,000, and excess of 303,000.

This just gives you an idea of how much gas will be locked off. Now, this is gas that was produced in these periods.

There probably are some wells that if the ratio was unincreased in this area would be able to make more gas.

Some wells perhaps between this 63 and 40 that could make more gas, and hence, you know, you wouldn't have a decrease of say in June at 4500, 575. This figure could be down somewhat.

And then I did the same thing in the Eunice pool, and this is considered June in this case at a 3000 ratio. You would have 18 wells affected, and their excess gas would be 72,682 or approximately two and a half million a day at a 4500 ratio, you only have 8 wells, with less than a million a day excess gas, and at 6000 2 wells with almost a nil excess gas, 6725 mcf. for the month.

I think this Exhibit No. 8, which is for the Eunice area shows that just about any ratio, either 3000, 4500 or 6000 would fit this pool without adversely affecting just a handful of wells.

It would essentially have no effect on the present production rate in the Eunice area.

Well, any ratio you set in the Monument area will affect a goodly number of wells.

Q Do you have anything further to add to your testimony concerning Exhibits 7 and 8?

A No. That's all I have.

Q All right. Based on your testimony you have presented to the Examiner today, these exhibits, do you have any opinion as to what should be established as the common efficient gas-oil ratio limitations for the consolidated area, should the Commission consolidate the area?

A Yes, I do, but, Mr. Hatch, one thing I left out on my Exhibit 1, you will note, you know, some green circles and brown circles.

Now, the brown circles show the location of what I consider to be the gas wells, and the green circles with the high ratio wells or wells that produced excess gas during the month of June.

Now, back to your question as to what I would consider the common efficient gas-oil ratio, I think my Exhibits 5 and 6 indicated that the maximum ratio there in June of around 4200 and based on this, I think that 4500 should be the gas-oil ratio for the pool.

I think it reflects or it still gives a little leeway over what the true producing g.o.r. is at this time, and I think that that should be the gas-oil ratio for this Eunice

Monument oil pool.

This would increase the ratio in the Monument area by 1500 and would decrease the ratio in the Eunice area by 1500.

Q Do you have anything further?

A That's all I have, Mr. Hatch.

MR. UTZ: Mr. Ramey, I have about two questions before we turn you loose to the rest of the people.

CROSS-EXAMINATION

BY MR. UTZ:

Q I think you stated, but I would like for you to reiterate to me so I will completely understand what you said, what do you consider the drive mechanism in the Eunice?

A In the Eunice I think it is nearly a hundred percent water, water-drive.

Q And in the Monument?

A In the Monument, certainly water-drive is probably the main factor, but I do feel that there has to be some help from the gas.

We have a big gas cap in this area which is in direct contact with oil in the Grayburg, and so I think it has to be a contributing factor.

Q You don't consider any gas caps in either pool?

A Yes. There is a gas cap in the Monument area. I don't think you should call these either pools. These are areas.

Q Well, they are areas. All right.

A In the Eunice, now, there is no indication of a true gas cap, as such. I think there was at one time, but I believe this has been dissipated.

We have some high ratio wells, two high ratio wells high on the structure, but some of your gas wells seem to be off to the side or what I consider gas wells, and there is also high ratio wells, seem to be scattered pretty well throughout the thing.

You can't tie them down to one area which -- let me point to Exhibit 1 here, Mr. Utz. As you can see in the Eunice here was the well I considered a gas well, and here is two and here is two. There is no pattern here.

Here is your high. If you had a gas cap you should expect gas wells here in the Monument. Here is your high point and it is pretty well circled with brown wells. You do have some here and out over here, so you do have a gas cap.

Q But you think this was a gas cap there at one time?

A Yes, I think so. There had to be about a hundred feet of gas in that area when the pool was drilled. There had to be about a hundred feet of gas in the Monument using the oil or the Eunice area, using the old rule of thumb that the gas-oil contact is a minus 150 and the top of your Grayburg on the high there is at 50, so there had to be

about a hundred feet of gas.

Q Mr. Ramey, to get back to the fundamentals, what is the purpose of a g.o.r. in a pool?

A Well, the purpose of a g.o.r. is to conserve the gas in the pool.

Q For what purpose?

A Because it is the reservoir. It is normally the reservoir energy, and in some pools it is certainly reservoir energy.

Now, in other pools it is not a factor in a strong water-drive. I am referring to some of your Devonian pools in Lea County.

You have gas-oil ratios in the neighborhood of 80 to 90 cubic feet per barrel. Gas is no factor. It is just a matter of fluid expansion, water is forcing the oil into the well bore, and, you know, the hole of the gas plays no part at all.

But in solution gas type reservoirs gas is the only -- or the main driving mechanism. It is what drives the oil from the formation into the well bore, so if you dissipate the gas in the formation or dissipate it out to the top of the pool, you don't allow it to do its work, and so oil recovery should be affected and should be lessened.

And in this case you have a water-drive, but you also have this gas now, whether the gas is contributing a

whole lot, I feel it has to be contributing something.

It may be a stabilizing effect that holds the oil and keeps it. It certainly will hold the oil. If you dissipate this you are going to allow some of the gas to -- or some of the oil to migrate up into the gas cap, and so you should, you know -- your withdrawal should be such that you do not -- from the gas cap that you do not allow any of the oil to move upward into the non-wet area.

If you do that you have lost oil, but the purpose of the gas-oil ratio is to conserve gas, conserve reservoir energy.

Q Conserve the reservoir so you can produce the oil without loss?

A Right. Right.

Q As much as possible?

A Prevent waste.

MR. UTZ: Are there other questions of the witness?

CROSS-EXAMINATION

BY MR. CHRISTY:

Q Following Mr. Utz' line of reasoning, as I understand it, did I understand you that the gas cap is dissipated in the Eunice portion of the pool?

A There is no indication that, you know, there is still a gas cap remaining in there.

Q Well, are g.o.r.'s important in the Eunice portion at all

if we have got a water-drive with no gas cap?

A I don't feel that they are too important in this particular area. I think too, you know -- primarily you are in the late stages of depletion there, and probably anything you did would not adversely affect the production from the Eunice area.

Q So the g.o.r.'s really don't mean much in the Eunice area?

A No.

Q Now, going to the Monument area, did I understand you to say it is primarily a water-drive with a gas cap which may be holding back the oil, so to speak, to let the water drive it? Do you feel that the gas is an effective mechanism of recovery in the Monument?

A Mr. Christy, it may not be, but if the gas were dissipated out of the top of the Grayburg you would certainly allow oil to migrate up into this gas area --

Q Well, aren't you --

A -- and wet this and you would lose this oil.

Q Well, aren't you saying that the gas cap is contributing to the drive?

A Yes.

Q All right.

A I think it may not be contributing to the gas. Let me qualify that. But I think it is contributing to the efficient production of the reservoir.

Q I may have misunderstood you, Mr. Ramey. On your Exhibit 7 I thought you said 43,679 excess in that middle column, and I believe it is 433. Did I misunderstand you?

A Exhibit 7?

Q Yes, sir. In January you were speaking of January in the middle column.

A Okay. That would be 433,679.

Q Yes, sir. I may have heard wrong. Now, as I look at Exhibit 7 I know taking off what you call gas wells the g.o.r.'s have increased in this last six months that you show, the six months that you show here approximately -- wait a minute. That is not Exhibit 7. That would be Exhibit 4, 5.

A 5.

Q 5. I beg your pardon. Taking off these gas wells as you call them the g.o.r.'s have increased from 3248 to 4173 in six months?

A Right.

Q Is that an increase of about a third?

A Yes. It is an increase of about a third, but it is also what we consider, you know, a climate increase. This is something that occurs every summer and winter.

Q Well, you have got half summer and half winter here.

A Right. So in the winter time more gas is used on the lease, more gas. More gas goes from the separator over

into the stop tank and out through the vent there, and then in -- well, it is just a matter of gas produced in January when it is cold as used in heater treaters and doesn't appear as production for some reason.

Q And in the summertime some of the wells are shut-in, are they not?

A And in summertime, no, I don't think so.

Q You don't know of an instance in which the plants have requested the operator to shut-in the wells in the summertime?

A Yes. I think they have been shut-in. Some of these high ratio wells have been.

Q All right, sir.

A But back to this, in June your heater treaters aren't being fired. You have -- you know, with warm weather you have better separation of oil with water, and so more gas appears. This is about a -- if I can go back over here to these production periods I think you can see here you have a low in your cold months, a low in your cold months every year, high, low, high, low, high, low.

Q But generally upwards?

A But generally upward.

Q Increasing the g.o.r.'s an increasing step?

A Well --

Q On that --

A Your gas --
Q Gas lines?
A Your gas line is stable. Your oil production falls off, your ratio is increasing.
Q Right. Increasing?
A Right.
Q And did I understand you while you are standing right at that exhibit speak something about the g.o.r.'s declining or are they increasing? Did I misunderstand you there?
A I may have said it. I didn't mean it.
Q You mean that they are increasing in both segments of the pool, don't you?
A No. I think they have decreased in the Eunice, and then more or less leveled off.
Q Well, what is that sharp upturn in the Eunice g.o.r., the most recent one?
A I don't know. We have high periods like for instance here and here and here and this might be one of those.
Q I see, sir. All right.
A But I, you know, considering say from '65 through '70 you have essentially got a common g.o.r. in that Eunice area, and the same here from '62 to '68 your g.o.r.,if anything, was declining, and in '68 --
Q And in '68?

A And then in '68 since we have had development of wells in the gas area, why, naturally, your g.o.r. is going to go up. These wells haven't contributed any oil, but they certainly contributed forty percent of the gas, or not all -- not all these wells.

Some wells were already in existence there, Mr. Christy.

Q While you are standing there I think we might as well cover this point.

A Okay.

Q On your Exhibit 2 would you pick for me the top of the Grayburg in that last well log over on the right for Texaco No. 28?

A It shows up at about -- looks like about 3610, 3620.

Q Could that be about 50 feet low where it actually is? Look at that log again.

A This would be a question of interpretation, I'm afraid. It could be. It looks like it ought to be here.

Q Yes, sir, it does. Would you mind putting an X right where you think it looks like it ought to be?

A But let me qualify that now.

Q I'll be glad to if you put the X where you say.

A Okay. I'll say right there. (Writing)

Q Okay.

A I will even draw a line.

Q You do a line. Thank you.
A I notice that this was prepared by my geologist, Mr. John Runyan down there, and while he was preparing this I came in and looked at it and I said, you know, it looked to me like the top of the Grayburg is up there, and he said no that you have got to change in your Queen formation and that he felt the top of the Grayburg is there, so --
Q It is kind of a debatable question?
A Right. I believed him.
Q While you are also there do you understand from Exhibit 2 that the Queen, which is Eumont, is it not --
A Right.
Q -- is tending to mesh with the Grayburg along the western line of the Monument portion of the field? Are they tending to come together or there is not a good separation between the two?
A I don't know. Looking at this there doesn't seem to be a whole lot of separation between the Queen pay and the Grayburg pay.
Q And actually if the correct top of the Grayburg is at the point with the line you just drew there is no separation.
A That's right.
Q Now, those wells are the wells over on that Texaco No. 28 well we have been talking about where we are trying to pick the top of the Grayburg is the one over on the west

line at a prime, is it not?

A It would be here.

Q Yes, sir. I have said west line. I mean it is the west portion.

A Well, more west than east.

Q Now, do I further understand, Mr. Ramey, that there is an artificial line drawn along the western boundary of the Monument, and if you are west of that line you are in the Eumont, and if you are east of that line you are in the Monument?

A That is about right. Now, I don't think it is a line. I think it is --

Q Kind of a circle, isn't it?

A It is a series of wells --

Q Yes, sir.

A -- in the area. Probably on this side and on this side you have -- you are going to have Eumont wells that have Grayburg open and Queen open.

Q Yes.

A And that would be on the Eumont side and on the Monument side. I'm sure you have Monument wells which have Queen and Grayburg opens.

Q Right.

A I think the determining factor in classifying those wells on this dividing line was that if more of the Eumont zone

was open it was called a Eumont well.

If more of the Grayburg was open it was considered a Monument.

Q I see.

A Did I say that right?

Q I believe that's correct.

A Okay.

Q What is the limiting g.o.r. in the Eumont?

A It is 10,000.

Q Did you consider the equities when you are establishing your suggested 4500 to 1? Did you consider the fact that there would be a high inequity around the perimeter of the Monument to those wells because of the difference in the g.o.r.'s in the Eumont and the Monument?

A Yes, I did. I did consider that, but I'm not -- I'm not at all sure which would be producing the gas, whether you are down dip here on the Grayburg to where it perhaps is -- the Grayburg should be oil productive, and if there is any gas production it should be in the Queen.

Q I see.

A And so I didn't feel that -- you have got an inequity across there, certainly, but I believe that your gas production in this area would be coming out of the Queen primarily and not out of the Grayburg.

Q I see. Now, in Exhibit 1 I believe you did not identify

your color code. I see the red wells. Are those the high producing oil wells?

A Those are wells which Mr. Williams stated that did produce over 2000 barrels a month.

Q Do you agree with that statement?

A I think basically. Now, I did find one well here. This well which is in Section 25 and in Unit N of Section 25, Township 19 South, Range 36 East, which he has color coded as pink, which in June produced 49 barrels of oil and some -- I don't know.

Q It is either wrong color code or it is dropped off there?

A Right. It is.

Q All right. How much of the oil that you have considered in your exhibit is produced from these "red wells" is it a substantial portion?

A I'm sure it is. I haven't -- I didn't check that out.

Q They seem to be rather massed together there in the northern part of the field of the red.

A That's correct. That's correct.

Q And you say a substantial portion of the oil production is coming from those wells?

A I'm sure it is. Now, I don't know how many wells are there, but it would be a substantial portion of it.

Q All right. Now, what are the brown wells?

A The brown wells are what I classify as gas wells. Those

are the wells that fit my gas well classifications which I went over.

Q What is the New Mexico Oil Conservation Commission's definition of a gas well?

A We have none.

Q We have none? Do we have a definition of a gas?

A Let me qualify that, now, Mr. Christy. We have gas well classifications in various pools from any figure of 25,000 up to 100,000, so in this case I used the maximum of 100,000 which is the Eumont gas well classification.

Q But you are not suggesting that this be classified as a gas --

A No, certainly not.

Q -- pool or anything?

A No.

Q I see.

A I just felt that in determining the true producing g.o.r. of this pool that you should pull gas wells out because I think these do not contribute to an oil pool.

Q Now, supposing we pulled out all those under 3000, go at it the other way, so to speak. Those would not be involved in any increase in g.o.r.'s? Those under 3000, and we took our g.o.r.'s, wouldn't that be substantially nigher than your Exhibits 4 and 5?

A Oh, I'm sure they would be, yes.

Q Now, supposing we took it at 200,000 to 1 rather than 100,000 to 1. Wouldn't that again change it?
A Yes.
Q The g.o.r.?
A Yes.
Q In other words, we are really just playing with numbers, aren't we? This is an opinion, and I'm sure it is a good one.
A Well, certainly, certainly.
Q We are just playing with numbers?
A Certainly.
Q What are the green wells on Exhibit 1?
A Green wells are wells that produced excess gas at the 3000.
Q At the 3000?
A Yes. Limitation ratio, yes.
Q All right, sir.
A In both areas.
Q All right, sir. Now, were you with the Commission when the Eunice portion of the field had a g.o.r. established of 6000 to 1?
A No, sir, Mr. Christy.
Q All right, sir.
A I might add that we dug through some of our old case files, and gas-oil ratios have been fluctuated somewhat in both of these areas.

Q And did I understand you thought that was 1950?
A No.
Q Or was it 1955?
A No. In 1950, yes.
Q That was Case 850?
A That was Order 850.
Q Yes.
A Effective January 1, 1950.
Q Is that when Eunice went on 6000 g.o.r.?
A I think it was, yes.
Q I see.
A It has been, I'll say -- it has been on that, it has been 6000 and 3000 since that time.
Q Yes.
A Prior to that it fluctuated.
Q And then we could look at your Exhibit No. 5, I believe --
A 3.
Q -- and define the condition of the Eunice at the time the 6000 was set, wouldn't we? We could find out what the oil production was, what the g.o.r.'s were, both b.s. production was, we could look at it there --
A Right.
Q -- at when the Commission made that order.
A But there again you do have a distorted figure.
Q Yes, sir. That was going to be my next question.

A You do have a distorted figure in 1950. January of '50 your producing ratio was in the neighborhood of 8000, but you did have these Eumont wells included in there.

This continued to climb until, you know, the revision here, and you had a drastic decrease from around the 80 or 90,000 figure down to 6000.

Q And when you took the Eumont out in '55 what was the g.o.r. in the Eunice?

A In the Eunice?

Q Yes.

A Well, I'm not sure about this area in here. This looks a little strange for some reason, but basically you might say 9500.

Q All right, sir. Thank you. And your oil production at that time?

A Was around, oh, 275.

Q And your gas production?

A Your gas was around 2,250,000 mcf a month.

Q All right, sir. I can't see well enough, Mr. Ramey. Just sit still, but could you tell me what your last g.o.r.'s on the 4 and 5 are, what month they are?

A They are for June, I believe.

Q Do you have the August 1971 g.o.r.'s for the two portions of the pool?

A No, I don't have those.

Q Do you have the July's?
A The July's? No, I don't have the July's figure. June is the last one I had.
Q All right, sir.
A I think the July stats books just came out some time last week. July would probably be higher.
Q You have not mentioned anything about bottom hole pressures in your direct testimony. Would you care to comment on bottom hole pressures in these two portions of this pool?
A I didn't study it.
Q You didn't study it?
A Except what has been posted on there. There does seem to be, I would say, probably in your area of your pink wells it looks like you have -- you have high -- some high pressure wells, 11, 1200 pounds.

You also have one here that is 700. You have one that is off-set by a 600, some of your so-called gas wells or wells -- what I consider gas wells. Just leave it at that, are in the 5 to 600 range, some 700.

I have considered Eumont gas well pressures. They ran in this area 700. There were some in the 500 in this area, so it seems like you have just a scattering of pressures.

Q How about down in the Eunice? We haven't had them since

'62, have we?

A They weren't on the map. I didn't look at them.

Q As a matter of fact, have there been any bottom hole pressures taken in the Eunice since '62?

A I doubt it. I think -- I don't know -- I don't think there is any flowing wells left in there.

Q Now, in your opinion, is the Monument portion of the field a homogeneous or heterogeneous reservoir?

A Well, we were discussing it yesterday, I think. I don't think there is a homogeneous in New Mexico.

Q So I gather your answer is heterogeneous?

A Right.

Q Now, when you were speaking a little while ago about the gas cap, perhaps just holding the gas if the g.o.r.'s were, in fact, going up on wells outside of the gas cap, would that indicate to you the gas cap is contributing, expending and contributing to the reservoir mechanics and recoveries?

A Yes, it could be.

Q Thank you very much, sir.

A However, now, Mr. Christy, we have got to keep in mind here this Eumont Monument site in here, now, where is the gas coming from in this area?

Q I don't know, sir.

A Is it Queen gas or is it Grayburg gas? Well, you have got gas well over here which I feel are probably Queen.

Q That is on this western perimeter?
A Right.
Q Is that Section 34 you are pointing to?
A No. In 26 and 34 and 35.
Q All right.
A There are five wells which I classify as gas wells in that area.
Q And you say you don't know where the gas is coming from?
A I feel like it is coming from the Queen. I haven't looked.
Q What do you base that on?
A Just due to the fact that your Grayburg is down off-structure and should be, you know, it should be below a gas-oil contact in that area.

MR. CHRISTY: Thank you very much, sir.

RECROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Ramey, could this 6000 g.o.r. in this area have contributed to the dissipation of the gas cap in the Eunice area?
A It possibly could have.

MR. UTZ: Are there other questions of the witness?

A I should point out, Mr. Utz, that we do have -- although most of your gas and, you know, high ratio wells are concentrated on the structure high, you do have high ratio wells directly offsetting some of these pink wells which

is a high production well, and so to certainly, you know -- if you took restrictions off the gas-oil ratio or increased it too much, well, I am certain -- I feel certain that you would affect, you know a direct offset. A high ratio well would certainly be robbing some energy from a low ratio on high producing oil well.

MR. UTZ: Are there other questions of the witness? You may be excused.

(Witness excused)

MR. UTZ: Do you have some testimony, Mr. Christy?

MR. CHRISTY: Yes, Mr. Examiner.

MR. UTZ: The table is yours.

MR. CHRISTY: Thank you.

(Witness sworn)

ROY C. WILLIAMSON, JR.

having been first duly sworn, according to law, upon his oath testified as follows:

DIRECT EXAMINATION

BY MR. CHRISTY:

Q Would you please state your name and address and your employment, sir?

A I am Roy C. Williamson, Jr. I am a partner in the consulting firm of Bailey, Sipes, Williamson and Runyan from Midland, Texas.

Q You are consulting engineers?

A That's correct.
Q And, Mr. Williamson, have you previously testified before this regulatory body and had your qualifications as a petroleum engineer accepted?
A I have.
Q And are you familiar with the matters involved in Case 4604 and the pool involved?
A Yes, sir, I am.
Q Have you made a study of that pool?
A I have.
Q All right, sir. Now, basically would you describe what the Eunice Monument pool is, what is its characteristics?
A Back to our general structure map here which is Exhibit No. 1 we can see basically that this is a north-south trending anacline, as pointed out by Mr. Ramey.

This is the current boundary between the Monument portion of the pool and the Eunice portion of the pool. The gas-oil ratio limit in the Eunice being 76,000 and the Monument being 34,000.

We can see in the Monument portion of the pool that we do have a high. This is the plus 150 foot contour interval, the innermost contour here.

To the north we have another dome. This innermost contour interval, being a plus 50, so we do have a reduction and elevation of approximately 100 feet from this

dome to this dome.

We have shown in red the wells that were producing back in this date as April, and I think the July data will support the coloring of these wells to indicate that they are 2000 barrels or more per well, but that is what the red coloring is.

The yellow numbers are the bottom hole pressure measurements that were taken at two different periods. The slanted numbers were taken as of 3/71. The numbers that are in the parentheses were taken by several of the operators in 7/71.

I also have one here, the trace of two cross-sections at an A prime cross-section starts in Section 22 of 1936, and it trends to the east for about two miles and then it trends generally south and ends in Section 17 of 20, 37.

We have another cross-section trace shown as BB prime. It goes -- it was lettered erroneously on the exhibit. BB prime actually follows this trace which goes from what we will see as the Hendricks-Patsy Federal No. 1 through Barber No. 3 and Barber No. 5 wells, operated by Atlantic.

Q You are correcting the exhibit on BB prime in the green colored line?

A That's correct.

Q Now, do you have an opinion, are there three different areas involved here or two? You seem to have mentioned

three different areas.

A Well, I feel that although you can correlate generally through this area when we get into the examination of the producing mechanism, the cumulatives, the current ratios, the current rates, I think we will find that the Eunice portion of this pool has produced somewhat independently of the center portion of the Monument pool, and also separated from the northern portion of the Monument pool.

We will have some discussion about the pressures, too, that will tend to corroborate the different producing mechanisms and probably some type of effective separation mechanism between these areas.

Q Would that tend to make it a more heterogeneous reservoir than a homogeneous?

A Right.

Q You agree with Mr. Ramey that it is the heterogeneous?

A It is very heterogeneous. Not only -- we have these apparent separations of areas, but within particularly this center area we seem to have both vertical and lateral heterogeneal, which we will point out later as recreates some peculiar producing characteristics.

Q Has the study of this reservoir been further complicated by the fact that it is overlaid by the Eumont pool?

A I think it possibly has particularly over on the western edge of the Monument pool.

Q Now, let's take up the Monument portion of it, and I would like to see your exhibit which I believe is 2A down here at the end with respect to first of all just whether -- why don't you identify it, probably do it better than I can say it.

A Okay. Fine. Okay. Exhibit 2A is the historical performance data for the Monument-Grayburg-San Andreas pool starting in 1942 and brought up to date in 1971. The dashed red and white line is the bottom hole pressure measurements as reported by the operator in the annual survey. The green line is the annual oil production by years.

You will note in 1952 we have a sharp drop which was at the same time which the production in the Eunice and the Monument field were reported separately.

The red line is the annual gas production, the blue line is the annual water production, and the yellow line is the annual gas-oil ratio through 1970, and the small yellow line here which is admittedly very hard to see is the monthly gas-oil ratio history through July of 1971.

Q I notice we have some blanks in the blue line, the water production. Why is that?

A The water production was not reported for these periods of time in the records. Why, I do not know.

Q Exhibit 2A is a plot against time?

A Right.

Q Do you garner any meaningful data out of that with respect to what the g.o.r. should be in the Eunice Monument pool?

A Right. We can see that the gas-oil ratio has generally been on an increase since about 1952, and we know that for the seven month period of 1971 we have had a rather sharp increase, and it is currently above some 7000 cubic feet per barrel.

Q And on an average, which I understand is a poor way to do it, but on the average, does there appear to be any effective water drive for the entire pool?

A There really doesn't. There probably is or are some locales where water is active, as we will point out later, but if we had a totally active water divide here I would expect this water curve to continue to increase and probably go to a hundred percent water at some time if the water is active.

We have seen some increase in water over the period from 1952 up to about 1968, but then the water production begins to decline which makes me believe that the water is either active only locally or is really not a totally effective water-drive.

It is not performing as you would expect a water-drive reservoir to perform.

Q Now, Exhibit 2A is a plot against time. Have you also made

a similar plot of the g.o.r. versus cumulative production of a well?

A Right. And this is shown as Exhibit 2B, and the purpose of this is to show the actual relationship of the gas-oil ratio, not with time, but with cumulative production, because time, of course, is independent of production, and you can produce certain numbers of barrels and it shows up on an annual rate, whereas here you are plotting the gas-oil rate versus that cumulative, and naturally as the rate drops off, as we can see from this green curve on Exhibit 2B, then the amount of oil production and the associated gas with it naturally should be reduced, and we have an emphatic description of what the gas-oil ratio is doing which, as you can see, has climbed quite rapidly from a period of about 110,000,000 barrels up to the current 190,000,000 barrels.

It has shown a very steady increase.

Q Now, you remember Case 4552 in July of 1971 before this Commission?

A Yes.

Q And at that time we were discussing the "one-barrel wells" and subsequent to that an Order B issued which will limit the productive gas capacity of those wells. Now, have you --

A Right.

Q I assume Exhibit 2A and 2B have all the wells in them?

A That is total field production, yes.

Q Now, have you gone back and taken out these one-barrel wells or g.o.r.'s?

A Yes, I have. If you will excuse me, it is Exhibit 2C. The lower curve here is the gas-oil ratio based on a total pool production less the production from the one-barrel wells, and we -- you will note on the scale this is versus time.

This is a full year, 1970, and seven months of 1971.

The top curve is the gas-oil ratio based on the total pool production, and we have shown the actual monthly production through 1971, but the one for 1970 is just an average for the year.

The main purpose of this is to show the gas, the one-barrel wells do contribute to the gas and do help up the gas-oil ratio, but the overall trend and shape of the curve is upward, and in either case is the same regardless of how you take the data and cut out certain types of wells.

Q Now, have you made a similar study and graph of the Eunice portion of the pool?

A Yes, I have. And this is shown as Exhibit 3A. This again is the historical performance data in the Eunice field showing again bottom hole pressure in the red and white

dashes, gas production is a red line, oil production is a green line, water production is a blue line, and gas-oil ratio in this case is a yellow line.

I will point out that the bottom hole pressure measurements were suspended in 1962. I could find no published records. I don't know that any operator ran them, but I was -- I didn't have that data.

The pressure when they stopped in 1962 was approximately 400 pounds. You will note that the gas-oil ratio and the water production and the oil production and the gas production have all shown a steady decline up until in the case of the gas-oil ratio in the first part of 1971.

Again I apologize for the small yellow line, but these are the monthly gas-oil ratios from a total pool average, and I looked through the July record of production, and from as best as I can tell this increased gas is coming from wells that have been recompleted higher in the section, in the Eunice field, so what this is telling me is that there is gas available in the top part of the Eunice field that was not in contact with the oil production.

If all of the gas and oil were in perfect or good vertical communication and the gas cap were still in effect, I would expect that with declining oil production the gas would break through and, in effect, show an

increase in gas-oil ratio.

This has not happened, so you would -- looking at this portion of the curve, prior to the recompletion in the upper portion of the section, you would say the gas cap were depleted, but the fact that people are able to come in and perforate here in the section and get additional gas tells me that there is gas available that was not in contact with this oil column.

Q Have you also plotted the Eunice portion versus cumulative production as distinguished from the Exhibit 3A?

A Yes. This is shown as Exhibit 3B, and again we have the oil production, the gas -- the oil production and the gas-oil ratio are both showing a decline with the exception of the gas-oil ratio here in the last few months.

We do see this increased ratio which is a function of some of the recompletions that have occurred in the upper portion of the pay zone.

Q Now, back to Exhibit 1, you showed us an AA prime plot, and I would like to now look at Exhibit 4 over here, and would you briefly discuss that exhibit and what it may have to do with this hearing?

A Okay. This is a cross-section that we described as shown by the trace on Exhibit No. 1, and it starts over in Section 22 on 1936 which is the Eumont-Seven Rivers-Yates oil field.

It goes over through a couple of the Eumont gas wells and then back into the Monument oil field, but we have shown here the first four wells on the left of the cross-sections are completed and carried in the Eumont-Yates-Seven Rivers field.

We have shown here the top of the Queen, the top of the Penrose, which is a member of the Queen, and this dashed line and this portion of the solid line over here is the top of the Grayburg as carries through the Monument field.

We have shown here the various producing intervals in the wells. If they are perforated they are shown as a box with a circle. In some occasions we do have open hole completion intervals, and there have been some recompletions shown in the case of this Gulf or Graham State F 3.

We have some completions shown up here. This well was actually plugged back. This is done mainly to show the relationship of the pay. The fact that the Queen does overlie the Grayburg and points out the fact that over in this portion, in this portion being the western edge of the Monument, there is considerable chance for communication to be occurring between the Queen and the Grayburg.

In fact, this whole condition can exist down the whole limit of contact, not on the west side, but I'm sure

on the east side, also.

I will point out over here in the John Hendricks-Alaska-Cooper No. 1, No. 2, No. 7 and No. 4 wells, and in some cases we are able to stop the water production, this being shown by the fact that these three wells were completed higher in the section.

These three wells being the Cooper No. 1, the Cooper No. 2 and the Cooper No. 6, and the water production essentially was eliminated by plugging back to the casing in all three cases.

The water production has been very minimal in the order of one barrel per day, whereas the Cooper No. 7 is still producing open hole from, oh, approximately 3770 on to a TD of about 3880, and water production for July was over 14,000 barrels a month, so in this case we have been effective in blocking the water, and the water has not encroached in this case into the reservoir.

We will have some cases later on to show that it has, which points out again the vertical heterogeneity that is occurring throughout the Monument pool.

Q Speaking of that heterogeneity in this center portion or whatever it is called in the center portion of the pool, your BB prime line, is that an example of what you are speaking of?

A Yes, it definitely is, and we will move over here to

Exhibit No. 5. The left well on this cross-section is the John Hendricks-Patsy No. 1 which is the fourth well from the eight prime ends of the long cross-section.

See, this is the exact same well we have just taken and keyed a cross-section to the north and east.

You will note here in the Patsy No. 1 that it is completed from the interval of 3478 to 3676. This is shown by the red line.

The oil production for July was 284 barrels, the water was 31 barrels, and the gas was 30,107 mcf.

We move to the next well, which is the Atlantic Richfield Bertha Barbara No. 5. Now, I could not find a log with the No. 5, and I have depicted here the log from the Barber No. 20 which is a very close off-set to the No. 5 and should represent the reservoir accurately there.

Q It is within about 400 feet, is it not?

A That's correct.

Q All right.

A Now, this well was perforated from the interval of 3510 to 3647. It was treated with 1500 gallons of acid, and the last day that they swabbed it, they swabbed 90 barrels of water and five and a half hours with no oil, and a slight gas flow, so we have here a completion in a correlative interval with the location as far as we can tell, no radical difference in them.

One well is in communication and does produce gas. The other well produced nothing but water from a quite high elevation in the Grayburg.

Now, the operators feel that something may have gone wrong here, and that maybe we had water channeling behind the casing in one direction or the other, so they moved to the next well to the northwest which is the Barber No. 3.

Again I depict the 3 by the No. 16 log which is an off-set well very close within a hundred feet or so of the 3.

They went in and perforated and squeezed at the interval 3620 to 3634 which is this little blue coloring right here.

They then perforated and squeezed up at 3406 to 3407, and then they came back and perforated the interval from 3465 to 3645.

They swabbed and tested it differentially over this entire interval. They tested the whole zone. They tested the bottom half independently and the middle part and the top half and some result of what they got out of this well was water.

The last test that they showed was a seven-hour test, recovered 130 barrels of water and 3 barrels of oil, and the wells were shut-in and are currently shut-in by the operator because obviously they are not productive at this

particular interval in the Grayburg.

I think this is very unusual in that here you have got wells that are relatively close and are also very close to the very top portion of the Grayburg.

You will note that on Exhibit No. 1 I have referred to the plus 150 foot contour interval. Well, this uppermost well here is right at that point, so these two wells both are at or near the very top of the structure, and yet carry water to the very top.

Q Do you have a field map of this are? Excuse me. Before you do that, can you give me any other anomalies? I was thinking of the Gulf and the Amerada problems.

A Yes, sir. Could we put that field map up? I think we can talk about it a little better.

Q May I ask you if there are any another anomalies?

A Yes, there are. We looked at several areas that seemed to have odd producing characteristics, trying to get a handle on what the producing mechanisms of the field were and in what way they did affect the various recoveries.

I will refer very briefly to this before we go into the other so-called anomalies. This is just the blow-up of the area of the Monument Eunice field map.

This heavy dashed line is the same area of production that we have shown on Exhibit No. 1. Now, I will agree that there has been some additional development probably

outside this line, but that data was not updated.

We also had shown on this map the zero contour line and the plus 150 foot contour line in the center portion of the pool, and in the northern portion we have the zero contour line and the plus 50 foot contour line.

Now, in the northwest quarter of Section 35 of 1936 we have an Amerada lease that contains four wells on 160 acres. I investigated the completion intervals within these wells and the No. 6 well and the No. 4 well are completed essentially in the same interval.

The No. 4 well is the one in the southeast quarter of the quarter-section, and the No. 6 well is in the northeast quarter, and the No. 6 well for July produced 262 barrels of oil, 8500 mcf., and about 393 barrels of water.

The No. 4, which is the direct south off-set, produced 32 barrels of oil, 47,648 mcf. of gas, and 63 barrels of water, so we have two wells that are almost in direct off-set, one to the other, completed in essentially the same intervals.

One produces large amounts of gas, and the other produced low amounts of gas, so this, to me, is a further indication that we have some lateral heterogeneity that is causing those wells to produce differently.

Now, another example of this in the southeast quarter

of Section 36, 1936, we have a 160 acre lease which is the Gulf-Graham-State F.

The No. 3 well, which is the well in the northwest quarter of the section and the No. 7 well, which is in the southwest quarter of the section, are again completed generally in the same interval with the following production for July of 1971.

The No. 3 well produced 10 barrels of oil, 26,000 mcf. of gas and 10 barrels of water.

The No. 7, the direct offset, produced 718 barrels of oil, only 1689 mcf. of gas, and 33,840 barrels of water.

That is 33,000 barrels of water in this well as compared to 10 barrels in that one, and 26,000 mcf. of gas in the No. 3, as opposed to 1600 mcf. in the No. 7, and these are the completion intervals.

I talked to the operators and did get these intervals, so they are correct, and again, this points out the fact that in a very short distance we have some very peculiar things happening in the way of reservoir mechanics.

Q Do you have an opinion as to whether or not there is a gas cap in the Monument portion of the field?

A Yes. I think there is a gas cap.

Q Do you have an opinion as to whether or not this gas cap appears to be expanding?

A Yes. I definitely think it is.

Q Give me an example of why you think so.

A We looked at all of the leases in the field. I will say the Monument portion of this field that have doubled in gas production from the period 1965 to 1970, and there were quite a large number of them.

This is complicated somewhat by the fact that there were some recompletions and some various intervals, some recompletions and higher intervals that could cloud the gas producing rate, so we decided to look at some of the lower structural -- structurally lower wells, and if you will note here in Section 11 of 20, 36, which is shown on your structure map, this portion right in here, which is the western portion of the section, you can see that it is quite low contour-wise and correlates generally with the lower production around the edge of the field.

We looked at the production of all the wells in there, and two of the easternmost wells which are the No. 3 well and the No. 4 well, they lie on the -- let's see, ABCDF -- the No. 4 well is in the F location, and I guess the No. 3 well is in the J location. No. It is a K location. The No. 3 well, and we see the production from these two wells over the five year period that we were discussing in the No. 4 well in 1959 for the year produced 33,546 mcf. of gas and 12,371 barrels of oil, in 1970 for the year this

well produced 140,775 mcf. of gas and 10,646 barrels of oil, so we have approximately a four plus increase in the gas production from the No. 4 well.

In the No. 3 well in 1959 it produced 27,895 mcf. of gas and 6,201 barrels of oil, in 1970 the well produced 141,046 mcf. of gas and 7,736 barrels of oil, so it would seem very impossible to me that this amount of gas, that this large increase here -- we are in 1965 which is pretty far down the curve on the producing history of the field.

It is hard for me to say that this could be any type of solution gas, and it is my opinion that this represents a very good example of the gas cap expansion in this area down to the lower elevations in the formation.

Q And this is in Section 11?

A That's correct.

Q It is not in Section 24, 35 or 36 mentioned by Mr. Ramey?

A No, it is not, and I also checked with the operators, and there have been no reworks, no recompletions, nothing that would cause -- I thought that maybe they had perforated higher in the section and had gotten more gas, but this was not the case, and their records reflect that there have been no recompletions in those wells.

Q Now, based upon your study of the Eunice Monument field, do you feel that the correlative rights of some of the operators would be violated at a g.o.r. ratio of 3000 to 1?

A I definitely think so.

Q Do you have a recommendation to this Commission as to what an appropriate g.o.r. would be which would not result in waste and would more tend to protect the correlative rights of the various operators within the field?

A Right. This is, of course, a very difficult number to arrive at, because in some parts of the field it is very obvious that the gas-oil ratio limit could be almost anything.

In other words, in my opinion the gas does not contribute to the oil production in certain parts of the field. In some parts it does, but I would say generally in the high structural part of the field that the gas production that has aided oil production has already done its work.

We have, I think, a fairly late stage of oil depletion in a certain portion of reservoir, so I think we could probably if we really looked into it and made a detailed field study, which would by the way, really need to be done to pin down the gas-oil ratio requirements in all portions of the field.

Without being able to do this, I am recommending that the gas-oil ratio limit be set at 6000, which I think is a very conservative figure. The reasoning behind that is that granted in the north part of the field you have

wells that are producing at a very low ratio, but in a moment we will look at some pressure data up there which, by the way, we need to go back and cover that will show, in my opinion, that the northern portion of that field is largely separated from the rest of the field.

At least I agree it is in the same correlative interval, but in really different -- which is what we are interested in.

In other words, what are the producing characteristics going to be during a man's lifetime and the development and depletion of this reservoir? You have got effective separation, and we can look at several other points that will point this out, but based on those facts, then I recognize and what I feel like a really conservative approach of 6000 ratio -- we have already seen that in the Eunice field it really doesn't matter what the ratio is because that is pretty far down in depletion.

There is some gas available, but it looks like it might not be in contact with the oil and would then have little effect as far as oil recovery.

Q Now, when I first employed you to make a study of this field, and since then, consistently, have I given you certain instructions as to what number you should come up with?

A Yes.

Q And what number did I tell you to come up with?
A You asked me to come up with a gas-oil ratio limit that in my opinion would be the most likely number to prevent waste and protect correlative rights in this field.
Q As a matter of fact, the number you have come up with doesn't help my clients very much, does it?
A No, it doesn't. I'm sure they would be a lot happier with 10, 12, 15,000 gas-oil ratio, but without a complete study and complete facts, it would be hard to justify a limit of this magnitude over the entire area that we are talking about.
Q Do you feel that the 6000 to 1 is a conservative figure?
A Yes, I do.
Q Do you feel it would adversely affect the northern part of the field that is where we have the oil production?
A No, I do not.
Q Would it adversely affect the Eumont area?
A Not that I can see at all.
Q Would it adversely affect or would it tend to assist and aid in correlative rights of the center portion of the field where the gas cap is?
A I think it would.
Q You think it would what?
A Would aid in protection of correlative rights.
Q We have all spoke of g.o.r.'s quite a bit. Would you

explain to me for the record just what the g.o.r. does? If you reduce your production does that help your g.o.r., or what is the g.o.r.?

A No. Of course, the gas-oil ratio is the ratio between the amount of oil produced and the amount of gas produced.

Generally speaking, the gas-oil ratio cannot be controlled by a reduction in production. All you are effectively doing there is curtailing some gas production, but if a reservoir has reached a stage of depletion where it is producing at a certain gas-oil ratio, normally a reduction in production, and I say production, being oil production, would not affect this gas-oil ratio, because unless you have another mechanism operative in the field such as gravity segregation, which I don't feel is a factor in this particular field, reducing the rate will naturally reduce the amount of gas, but the gas-oil ratio will still be about the same, or, in fact, can tend to go up as has been shown by several examples.

You have got the lifting ability of the gas as it comes through the reservoir, and up the producing string that if you cut back this gas you tend to leave some of the oil by slippage down in the reservoir, and indeed the gas-oil ratio very often goes up with a cutback in production.

Q Speaking of cutback in production, and I now refer you to Exhibit 7, have you calculated the loss in gas production

at a 3000 and 6000 to 1 ratio?

A Yes, I have. I have calculated that the -- I have done it in two ways, and the first calculation is just -- is really after the fact, because we have already got the eliminations of the 6B, 4B portions of Rule 506, in effect, but I calculated for the month of June comparing the actual gas production and the amount of production that would have occurred.

Had an actual in force 3000 gas-oil ratio limit been in effect we would have had a reduction of approximately 28.1 mcf. per day of gas, which would amount to forty-three percent of the June production which was 65.4 mm. per day.

Then I calculated the amount of gas that would be equivalent to increasing the gas-oil ratio from 3000 to 6000, and that amounts to approximately 13.7 more mcf. per day.

In other words, had we been at 3000 in June and increased it to 6000 in June, we would have increased the gas production by 13.7 more mcf. per day or some twenty-one or twenty-two percent of the current June production which was admittedly quite high because of the higher gas-oil ratios that were in effect at that time.

Q And the difference between the 28.1 and the 13.7 meaning would be the loss to the plant, even with a 6000 to 1?

A That's correct. You would lose somewhere in the

neighborhood of 14 more mcf. per day if we went from June to an enforced 6000 g.o.r.

Q Now, you spoke a moment ago concerning pressure data, and I wish you would give me some specific well examples of pressure data and then some general area averages.

A Okay. Back to the map up here.

Q And tell me also if we are talking about wells producing at approximately the same time so that we don't mix '70 wells with '52 wells.

A Right. I did look at the time of completion of wells throughout this trend, and generally we find that wells in the north end were completed about the same time in the south or middle portion of the pool.

There is no great difference in time of production. I will call to your general attention the fact that we have here in the center portion of the Monument field, we'll say, Section 7 of the 1937 -- we have pressures that are running somewhere between, oh, 520 up to nearly 800 pounds.

Falling off toward the west we have pressures down in the neighborhood of 500 pounds. We go to the north and refer to Section 19 of 1937 and we have pressures measured in there in the range of 11 to 1200 pounds, so we are looking at 11 to 1200 pounds.

In the north we are looking at somewhere around 5 to 8, maybe an average of say 6 to 700 pounds in the center,

and then in the Eunice field, as I have mentioned to you on Exhibit 3A, the last pressure measurements that we have were in the range of 400 pounds, so we go from 400 pounds to 700 pounds to 1200 pounds, all with about the same time of completion, so even though we can correlate between these zones from a real time standpoint, and an actual operating condition, these are producing pretty well as separate portions, in my opinion.

Q Ideally, you would have three different g.o.r.'s, would you not?

A Right. Really you would need, of course -- and Eunice is not too poor, now. I can look back in time and see that this probably should have separated ideally.

With a complete reservoir study you could probably pick some point in here that might show different producing mechanisms than are the major one and it could very logically have different completion rules in these areas.

Q Now, do we have some difference in pressures in nearby wells?

A Yes, we do. Referring up here to Section 19 we have the Phillips Land Office No. 1 well, and it is in the ABCD -- the K position, and the pressures that I am going to refer to here were taken back in -- I believe they were March of '70, because I wanted to compare some of the Eumont gas pressures at that time, so the pressure on this well, back

in March of 1970, was 1180 pounds, which is some thirty pounds less than here, which could be a front to a measurement area.

At the same time the Eumont -- this is a dual well completed in the Eumont gas in the Eumont oil, and the Eumont pressure was 668 pounds which shows a very marked pressure separation between the two pay zones in the well bore.

Moving down here into Section 25 in the southwest corner of the section we have the Skelly-Christmas No. 1. Now, the pressure in March of '70 in this well was 462 pounds, which again is somewhat less than this later pressure here.

The Eumont gas zone in this well has been dually completed, well was 563 pounds, so in this well the Eumont gas pressure was higher than in the Eumont, whereas back in the Phillips Land Office No. 1 the Monument was higher.

Moving one well to the east we have the Amerada State P No. 1 well, which in May of 1970 had a pressure measure of 770 pounds as compared to the 736 in 1971.

This well, the Amerada T No. 1 and the Skelly-Christmas No. 1 are completed in exactly the same interval, and yet we have some 300 pounds pressure difference measured in these two wells.

It is my understanding that all these wells are

treated identically as far as shut-in times and the measurements of pressures, so this seems very analogous to me that you would have wells that close, and having a significant pressure difference that I think would be larger than any area you might expect to occur.

Moving down then in the Section 36 of 1936 in the northeast corner we have Amerada State V as in Victory No. 1 well, and in May of '70 it had a measured pressure of 1111 pounds, also completed in the same intervals as the Skelly-Christmas No. 1 and the Amerada State P No. 1, so we have essentially three wells completed in the same correlative intervals, and we have a pressure range of 462 pounds up to 1100 pounds, so this again points out the anomalous nature of the reservoir, and it then is impossible to generalize in saying than anyone gas-oil ratio limit or rate or however you want to compare it to can effectively affect all of the wells, and in my opinion, anything that happens in this gas cap portion of the field, which would be centered in about 1937, would have very little effect on these good oil wells down here.

All of these red oil wells are top allowable. They are producing at maybe 12, 1400 gas-oil ratio. They have got a much higher pressure, and it is just inconceivable to me that this could be in any kind of very good communication with the rest of the field.

This thing has been developed since 1936, so if you don't have any communication in 30 some odd years, I don't think we are going to have any problem with going and depleting the reservoir, and it is obviously in the latter stages of depletion, certainly, in certain areas.

Q Well, who is the major producer of those red wells, those good oil wells?

A I believe Gulf has a very large share of those wells up there.

Q Who is the major one or two producers in the Monument portions of that field?

A The number one producer is Amerada, and the number two is Gulf.

Q Mr. Williamson, were Exhibits 1 to 7 prepared by you or under your direct supervision?

A Yes, they were.

Q Do you have anything else that you feel the Examiner should know about in connection with your study and recommendations as to limiting g.o.r.'s in the Eunice Monument pool?

A I don't believe I do.

MR. CHRISTY: That's all from this witness.

MR. UTZ: We will have a recess for fifteen minutes.

(Whereupon, a recess was held.)

MR. UTZ: Hearing will come to order, please. I

believe you just closed your direct and turned your witness over for cross-examination?

MR. CHRISTY: Yes, sir. That is true.

MR. UTZ: Are there any questions of Mr. Williams?

MR. HATCH: Joe may have some.

MR. UTZ: Mr. Ramey, we wondered if you might have some questions of Mr. Williamson.

MR. RAMEY: I forgot what he said.

THE WITNESS: Do you want me to say it again?

MR. UTZ: I don't believe we are going to repeat it for you.

CROSS-EXAMINATION

BY MR. RAMEY:

Q Mr. Williamson, you did state that you felt the gas cap was expanding at least in one area?

A Yes.

Q Is there any signs that this is a uniform expansion or --

A I think generally that it is. We did look, as I say, at most of the leases that had doubled in gas production from '65 to '70, and I have just a rough exhibit of that if you'd care to see it.

It does cover quite an area in the Monument field, and it shows this period, because we are pretty far down to depletion curve as far as solution gas-oil ratio, so I felt that any marked increase in gas production during this

period would probably be a result of some cap gas as opposed to any remaining solution gas that might be available for production into the well bore.

Q So ignoring correlative rights, which may or may not be the thing to do, the gas cap is working?

A In some cases it is, yes. It is also migrating off of the up structure leases toward the down structure leases, at least in some cases.

Q In this Amerada well in Section 35 1936 --

A Right.

Q Is that a dual completion by chance, do you know or --

A The Amerada well? Let's see, I can tell you in just a second. Is that the one that we had pressures in, the Amerada State? It was one that was producing a large volume of gas?

Q Oh, right.

A As far as I can tell it is not a completion of it. That was the 4 and the 6 well that I had compared.

MR. UTZ: Dual completion, you mean?

A And the 4 was the one that produced the majority of the gas or the big volume of the gas so far as the record says. It is not --

Q Now, here on your Exhibit 2C you took -- you just subtracted one-barrel wells?

A Right. Those that had the one-barrel allowable, which that

is --

Q So if a well may be 32 barrels in a 31 day month, why, you subtract it?

A No. I took the ones that were very close. In other words, if it was a barrel or two over I just said that is a one-barrel well and took it out.

Q So you were playing with figures, like I played with figures?

A Well, I guess so, right.

Q You didn't play as hard as I did?

A No.

Q Now, doesn't your pressure in the Monument and in the Eumont or the Eunice both go -- don't those pressures reflect a water-drive performance?

A I don't really think so, Joe, because it is possible that they could, but where is the water? If we have a water-drive why don't we produce large amounts of water, active water-drive?

Q Well, water is one of these things that isn't measured.

A Well, it is supposed to be. We have official records that say it is measured, so that is all we had to go on.

Q Right.

A But that pressure could also be maintained by a gas cap in certain areas or gas expansion in certain areas, and since we don't have a true sampling of the total pressure

over the reservoir, well, then that may or may not be representative.

Q But water is a factor, and I think you just said gas might be a factor?

A Right, that's correct. I think water is effective, particularly on the north end of this field. We can see that, in fact, the cumulatives on that north end are twice what they are on the rest of the field, so this again points out that something is happening better up there than in the rest of the field when, you know, you have got 600,000 barrels cumulative wells up there and in the middle of the field you have got 300,000, south you have got some additional mechanism in the north end which is probably water.

Q And your exhibit, small cross-section over here, is it possible that those bad cement jobs or something like that could have over the years allowed water up into those zones on the two wells?

A Well, I guess anything is possible with the exception of the fact that they did squeeze here and swabbed for quite a number of days, so any water that might have come up behind the pipe, I mean that is possible, but not too likely, I wouldn't think.

They swabbed quite a bit of water, and if you did have water invading that zone just from a bad cement job

I would think you would find some gas coming out with the water, which they didn't.

Q And is the Hendricks well you show perforations into the Eumont? Is that --

A Well, no, that depends on where you call that correlative interval in there. I do have it right above -- this line is above what I have shown as the top of the Grayburg, but again as you have found out there is some difference in opinion as to where the top might be, and indeed, the top of the Grayburg might be at this next peak up here, which will be an addition to the top of these perforations, and regardless of whether it is or isn't when you compare the shale zone in this particular zone, that would be right about the top of the perforations, pretty well shaled out, and I imagine would give you a pretty good separation.

Q How thick is that zone, though?

A Oh, it looks like it may be 8 to 10 feet, something like this.

Q Was this well treated?

A Yes, it was, with 8500 gallons of acid.

Q So treatment could have gone up possibly, there could be communications into the Queen?

A Oh, I guess that is possible, but we do have pretty good producing history throughout the Monument for this particular interval, producing gas, so I think that is

larger than Monument gas.

Q But there are anomalies probably in every reservoir?

A Right. Yes, as we have pointed out right on the western edge of this you have probably got Queen and Monument producing the same well bore, and the one's at 10,000 ratio and the one's at 3, so you have got these things that occur around the edges.

MR. RAMEY: That's all I have, Mr. Examiner.

MR. UTZ: Mr. Nutter?

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. Williamson, your testimony as to the great difference in offsetting wells and oil productivity, g.o.r.'s, water production, pressures and such as that, demonstrated not homogeneity of the reservoir, certainly?

A Yes.

Q When you have had a reservoir such as this in order to achieve the absolute ultimate in efficiency and conservation, it would be necessary to have individual allowables, individual g.o.r.'s and such assigned to each well?

A Right. You would have to unitize the whole field would be the fairest.

Q And since it is impossible to do that, in this case we have to select one single factor, say a g.o.r., and make it applicable to the pool?

A Right.
Q And when we do have a situation such as this where you have got an area that is depleted, but you have got an area that is in a primary state of production, so to speak, advanced primary at any rate --
A Yes.
Q -- it is necessary to select a figure that is conservative enough to afford protection to the best part of the reservoir?
A Yes.
Q And I believe you stated that your figure of 6000 to 1, your recommended figure was a conservative figure.
A Yes.
Q And Mr. Ramey has recommended 4500 to 1. You would agree that his figure is also conservative?
A It is more conservative, but I don't feel in looking at the gas-oil ratio history of the field that the 4500 is representative of where the majority of this field is producing, and I am saying that the majority of the field being the higher dome of the central portion of the Monument field, we see that that is the area where the gas is increasing, and the area to the north, which is the best part of it, where the red wells are, from what I can see is not even in any real communication with the rest of the field, so the rules should apply to that portion of

the reservoir that can most effectively be depleted while protecting correlative rights and preventing waste, and we do have, if we would eliminate the oil production from the good wells to the north -- this gas-oil ratio would be astronomical.

It would be much higher than what we are asking for of 6000. We may be producing at an average of 15,000 in the center part of the field, yes, sir, but that is --

Q But that is the point I am trying to make, we can't eliminate a major portion of the oil production from our consideration.

A Right. But the gas production withdrawal from the center part is not affecting that to the north. It doesn't matter what happens.

Q But we do have some wells as demonstrated by this homogeneity arguments of it. You remember we do have some wells with high ratio offsetting wells with extremely low ratio in there, too.

A Right. But not in the real good portion of the field up there. Most of the ratios in the red well area are low.

Q I believe, Mr. Williamson -- I don't want to testify to this or anything, but I believe I was noticing in the proration schedule yesterday that diagonal offsetting wells in the northern portion of the pool that had a ratio of over 3000 to 1 diagonally offsetting a well that had a

ratio of 171 to 1 which is another demonstrator of your --

A Right, right.

Q -- homogeneous conditions.

A Right. I know we can't pick it well by well because there would be too many rules from that standpoint.

Q Now, Mr. Williamson, assuming that Mr. Ramey's technique here of taking the total number of wells and deleting the so-called gas wells from his calculations and then coming up with those g.o.r.'s for the pool minus the gas wells which Mr. Christy pointed out had increased from January through June --

A Yes.

Q -- but if we take those figures and average the monthly g.o.r.'s, we find that for the Eunice pool the average g.o.r. has been 3732 to 1, the average g.o.r. for the Monument pool has been 3706 to 1.

Now, certainly his figure of 4500 to 1, his recommended figure, is quite liberal if you take the average g.o.r. of the wells.

A Yes.

Q But then looking at the trend we have got to set rules that will operate in this field, not for the immediate few months, but for the rest of the deletion of the field until another hearing is called.

A Referring back to my Exhibit 2C if we extrapolate that

gas-oil ratio increase that is shown without the one-barrel wells which are admittedly the high gas producing wells, we have got about 6500 ratio projected by the end of '71.

Q Well, we have got some gas wells that are more than one-barrel wells, though.

A Well, that is probably very true, but I think any ratio that you would take, no matter how you juggle the statistics, is going to show an increase in trend, and we have got to go out far enough to allow this field to be completed without waste and with a rule that people are not going to be back every six months and asking for another 500 cubic feet per barrel.

Q Well, this again would be the normal and the best way to handle the reservoir, would it not, to have a low ratio during its early life and later on in the life of the pool when your gas cap has expanded and it covers the major portion of the structure to increase the ratio?

A Well, but then again we are ignoring I think the effect. I would like to air from this standpoint, go back and eliminate just as good oil wells that we think are in a straight part of the well field, and I think we would be in a much higher ratio than even these numbers show.

Q Well, I agree that this probably would be the case.

A Because they produce, oh gosh --

Q They lower the ratios because these other wells are

increasing the ratio?

A Right, right. So it just depends on which way you look at it, and we are just trying to pick a middle ground that would allow equity to be pertained and prevent waste in what portion of the reservoir this gas-oil ratio is really going to apply to.

This is not going to affect that to the north, particularly.

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

CROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Williamson, you are here representing Hendricks and others; is that correct?

A Yes.

Q Now, what portion of the field are these wells located in?

A They are located largely in the gas cap portion of the field.

Q In this area?

A Yes. We can find the wells on this.

Q Oh, that is not necessary to pinpoint them. I just wanted to get a general idea.

A Right. They are back somewhere up in this area right in here, and naturally they would like to see a 20,000 ratio, but I mean we realize that is a little high to ask for and not representative of the reservoir.

Q Now, am I correct that your testimony is that you feel that these wells, these brown wells, we'll call them, and the pink wells, your oil wells, are not connected laterally?

A Not effectively, yes.

Q Effectively?

A Yes. The data that I can see in pressures and type of production, here you have got 600,000 cumulative wells, and you have got probably an average of 350,000 cumulative here, so you have got cumulative difference, you have got a current rate difference, you have got gas-oil ratio difference, and you have got pressure difference, so you have got an effective separation.

I'm not saying that you can't find one well that would agree with another well, either, but generally looking at the area which was what we have got to do with our set of field rules they are, I think separated.

Q Now, generally speaking, are the gas wells completed at a higher interval?

A Yes.

Q But they are still in the Monument pool limits?

A Yes, sir, yes, sir, in the gray pool.

MR. UTZ: Other questions?

RECROSS-EXAMINATION

BY MR. RAMEY:

Q Mr. Williamson, you said something that you had to define a situation that would fit the majority of the wells. Did you not say that in answer to Mr. Nutter?

A Well, I say the rules should apply to the whole field, but we can't have one set of rules that applies equitably from a reservoir mechanic standpoint, because we have got different producing characteristics, different ratios, like, well, the Drinkard, for instance, where everything is pretty high ratio. It is also a pretty good communication. There is not any real problem, but here you have got -- I mean, ideally, I would like to see the thing broken down into about three different parts, but that is rather time-consuming, and I'm sure the Commission wouldn't like to have to add all the additional headaches that would be required to do that, but the ratio limit would need to apply to what we are looking at from the majority standpoint in the area, which is exclusive of those good wells to the north.

Q Well, then, my Exhibit 6, I think, on this Eunice, I had eight gas wells, 5 and 6. I had eight gas wells out of 250 some wells.

A Yes.

Q And on the Monument I had 35 gas wells out of 360 something.

A Yes.
Q So looking at the overall picture, you have got something like 43 gas wells taken away and yet you end up with a ratio of -- an average of 3700, which fits nearly 500 wells.
A Yes, but your --
Q Or nearly 600 wells.
A Right. But then your gas limit of 100,000 -- there are a lot of wells that are down in between that. In other words, we don't have just two types of wells, 100,000 wells, and the gas limit wells. We have got some that are producing at various ratios all through this spectrum.

In other words, you have got a gas limit, but -- all right. Your well is exceeding with that gas limit, but it may be producing at a high gas-oil ratio, which is an indication of a stage of depletion of that reservoir at that well location, so just eliminate a high well over 100,000, doesn't take into account the spectrum.

Q Well, these were wells that made considerable volumes of gas?
A Right.
Q Wells that were capable of making considerable volumes of gas at a ratio in excess of 100,000?
A Right.

MR. RAMEY: That's all.

RECROSS-EXAMINATION

BY MR. UTZ:

Q Mr. Williamson, are most of the gas wells on a forty acre?

A Yes, I believe they are.

Q All are on forty acres, probably?

A Right.

Q Normally the unit allowable, current normal unit allowable is 70 barrels. How much gas at 6000 would each well be permitted to produce?

A It would be 70 times 6, 420,000 cubic feet per day.

Q There are all above 5000 feet?

A Yes.

Q Do you have any idea what the average dry gas well in this area produces per day?

A Dry gas wells, looking through the schedule and the production are very low, very low amount of gas in the dry gas.

Q On the average?

A Yes.

MR. RAMEY: Mr. Utz, I checked the gas allowable for non-marginal well in the Eumont on a 160 acres for 1970, and the allowable was for the year -- it was around 140,000 mcf.

MR. UTZ: Per day for the annual average?

MR. RAMEY: That was the allowable for the year was

around 140,000 mcf.

MR. UTZ: Pretty low, isn't it?

MR. RAMEY: It is pretty low.

MR. UTZ: Are there other questions of Mr. Williamson? He may be excused.

(Witness excused)

MR. CHRISTY: At this time we would like to offer into evidence M.K.A., et al, Exhibits 1 to 7 as corrected by the witness with respect to Exhibit 1.

MR. UTZ: They will be entered into the record of this case.

MR. HATCH: If the Examiner please, I believe that we failed to introduce our exhibits, and I would like to move the introduction of Exhibits 1 through 8.

MR. UTZ: Exhibits 1 through 8 of the OCC will be entered into the record of this case.

MR. CHRISTY: That's all from M.K.A. et al. We would like to make a short statement at this time, Mr. Examiner.

MR. UTZ: You will have the privilege of -- well, I don't know who has got the privilege of going last here.

MR. HATCH: I am not going to make a statement.

MR. UTZ: Do we have statements?

MR. KASTLER: Yes. I am Bill Kastler from Midland, now representing Gulf. Gulf Oil Corporation supports the 6000 to 1 gas-oil ratio in the combined Eunice Monument area.

While we have not completed a study of the reservoir in sufficient detail to present evidence at this hearing we believe that from the facts known it is far from clear that a gas-oil ratio of less than 6000 to 1 would damage the reservoir, particularly in the light of the producing history where 6000 to 1 has been legal in the Eunice pool and where ratios in excess of 6000 to 1 have been produced when the wells showed a capability of making such production.

While a gas-oil ratio of less than 6000 to 1 is undoubtedly more conservative from the standpoint of preventing or minimizing waste, by this same reasoning you could justify as being more conservative the return to the state-wide allowable of 2000 to 1.

We do not believe such strict conservatism would prevent waste for the reason that such a policy necessitates earlier abandonment of wells.

We believe that until some evidence of reservoir damage is obtained a producing gas-oil ratio of 6000 to 1 should be adopted, because even that represents a severe setback from the ratios at which the so-called one-barrel wells have been producing.

The highest gas-oil ratio wells are clustered together in an anacline area where, apparently, immediate drainage of top allowable wells is not taking place.

We believe that it is indeed possible that further studies might justify dividing the pool into three areas rather than combining it into one, although we do not at this time have any objection whatever, and in fact we support the consolidation of the Eunice and Monument pools.

Thank you.

MR. UTZ: Thank you. Are there other statements?

MR. FRAZIER: Richard Frazier with Amerada Hess Corporation, Seminole, Texas.

Amerada Hess Corporation, as the major operator in the Monument pool, has no objection to the proposal to combine the Eunice and Monument pool.

We support the proposal to increase limiting g.o.r. for the Monument pool and recommend that a 6000 to 1 ratio be adopted.

We feel that a 6000 to 1 ratio is fair to all operators in light of current reservoir conditions, and it should have no adverse effect on ultimate recovery.

MR. UTZ: Anyone else?

MR. CURRENS: Daniel R. Currens, Amoco Production Company, Houston, Texas. Amoco Production Company is an operator in both the Eunice and Monument areas of the Eunice Monument pool.

We also have substantial interest in wells operated by others in this immediate area.

We would concur with the two areas being officially consolidated on Commission records, and our studies do not indicate that any rate sensitivity really occurs in these pools.

We therefore would normally have no objection to changing the limiting gas-oil ratio in this type pool, however, we are concerned very definitely about the recent flaring gas problems in this area of southeast New Mexico.

For that reason we urgently request the Commission and its staff to review and analyze the record of this hearing and to particularly consider the standpoint of whether or not an increase in limiting gas-oil ratios would create an overload burden on the gas plants that serve the Eunice Monument area.

As everyone is aware, the Commission is at this time limiting the southeast normal unit allowable below market demand in an effort to eliminate or at least minimize the flaring of gas from gasoline plants that are operating near or in excess of capacity.

Under this procedure oil pools connected to plants that have unused capacity are treated the same as pools where flaring is a problem.

This, of course, works a hardship on those plant owners and operators who have invested money to increase plant capacity to prevent flaring and yet see this capacity stand idle because of a flare problem in another area.

We therefore urge the Commission to consider the

facts of this case very carefully before altering the limiting gas-oil ratio.

MR. UTZ: Are there other statements?

MR. LYON: Victor T. Lyon, Continental Oil Company. Continental Oil Company concurs with the Commission's proposal to join these two pools in one with the common gas-oil ratio.

Although we have not conducted a reservoir study we see no evidence that waste would occur if the gas-oil ratio limiting gas-oil ratio were set at 6000 cubic feet per barrel.

MR. UTZ: Anyone else?

MR. TWEED: Jerry Tweed of Midland with Atlantic Richfield Company. Atlantic Richfield Company concurs with joining these two pools together and agrees with the 6000 to 1 g.o.r. ratio.

MR. UTZ: Anyone else? Mr. Christy, I guess it is up to you.

MR. CHRISTY: Mr. Examiner, I think that what we should, of course, all strive to do here is to pick a g.o.r. that is fair to the operators that are involved in the g.o.r.

I believe the test shows that actually the Eunice area is not involved. I believe the test further shows that there is little or no effect on the north part of the pool, whatever the g.o.r.'s are, and the major operators in that north part just made the statement that he supports 6000 to 1.

He will be the one that if there is a mass

communication, he would be the one that would suffer the most.

The largest operator in the pool has said -- Amerada has said that they favor the 6000 to 1.

Amoco correctly points out that we should take into consideration whether or not the plant capacity can handle the gas at 6000 to 1.

I believe that there will be a telegram from Warren to the effect that they can take it for all the foreseeable future at 6000 to 1.

I think we will not hurt the major oil producers. We will not have ultimate waste and loss of oil production.

We will protect the correlative rights of the people within the gas cap or middle portions by 6000 to 1.

We do have evidence that this gas cap continues to expand, if that is true, and it appears to be true, then there is no migration of oil into the gas cap area.

I was interested to know from the figures that were given this picture of mathematics that if you increase your g.o.r.'s from 3000 to 1 where they are now set to 6000 to 1 to the state of New Mexico in royalty and production taxes there is an increase of some $9,464 a month or $113,500 a year, and three, as a taxpayer, I am interested in that if it does not violate correlative rights and does not result in a waste, and I believe the testimony shows it does not.

We therefore urgently recommend to the Commission that

it establish g.o.r.'s at 6000 to 1 which we believe are minimal for the foreseeable future in this pool.

Thank you, sir.

MR. UTZ: I believe we have some statements by telegram.

MR. NUTTER: Yes. I have a telegram here from Getty Oil Company, Midland, Texas. Getty recommends the pool be combined and the g.o.r. be 6000.

I have a telegram from Shell Oil Company, Midland. Shell recommends the consolidation of the pools with the limiting g.o.r. of 6000 to 1.

I have also got one here from Warren Petroleum Corporation which I will read in its entirety. It is from C. W. Miller, vice-president in Tulsa.

It states as follows: "Warren Petroleum Corporation has important gas connections in the Eunice and Monument oil pools, which gas is processed at its Monument gasoline plant.

Our field studies indicate that we can handle a gas-oil ratio limitation in the combined pool of 6000 to 1, whatever the allowable may be, within the foreseeable future.

In order to best serve the area and to protect our investment as well, we suggest the adoption of a g.o.r. for the combined Eunice and Monument pools of at least 6000 to 1." Signed Miller.

That's all.

MR. UTZ: Case will be taken under advisement.

I N D E X

STATE OF NEW MEXICO)
)
COUNTY OF BERNALILLO)

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

Linda Malone
Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. [illegible] heard by me on [illegible] 1971.

[illegible], Examiner
New Mexico Oil Conservation Commission

MONUMENT POOL
NO. WELLS - PRODUCING EXCESS GAS

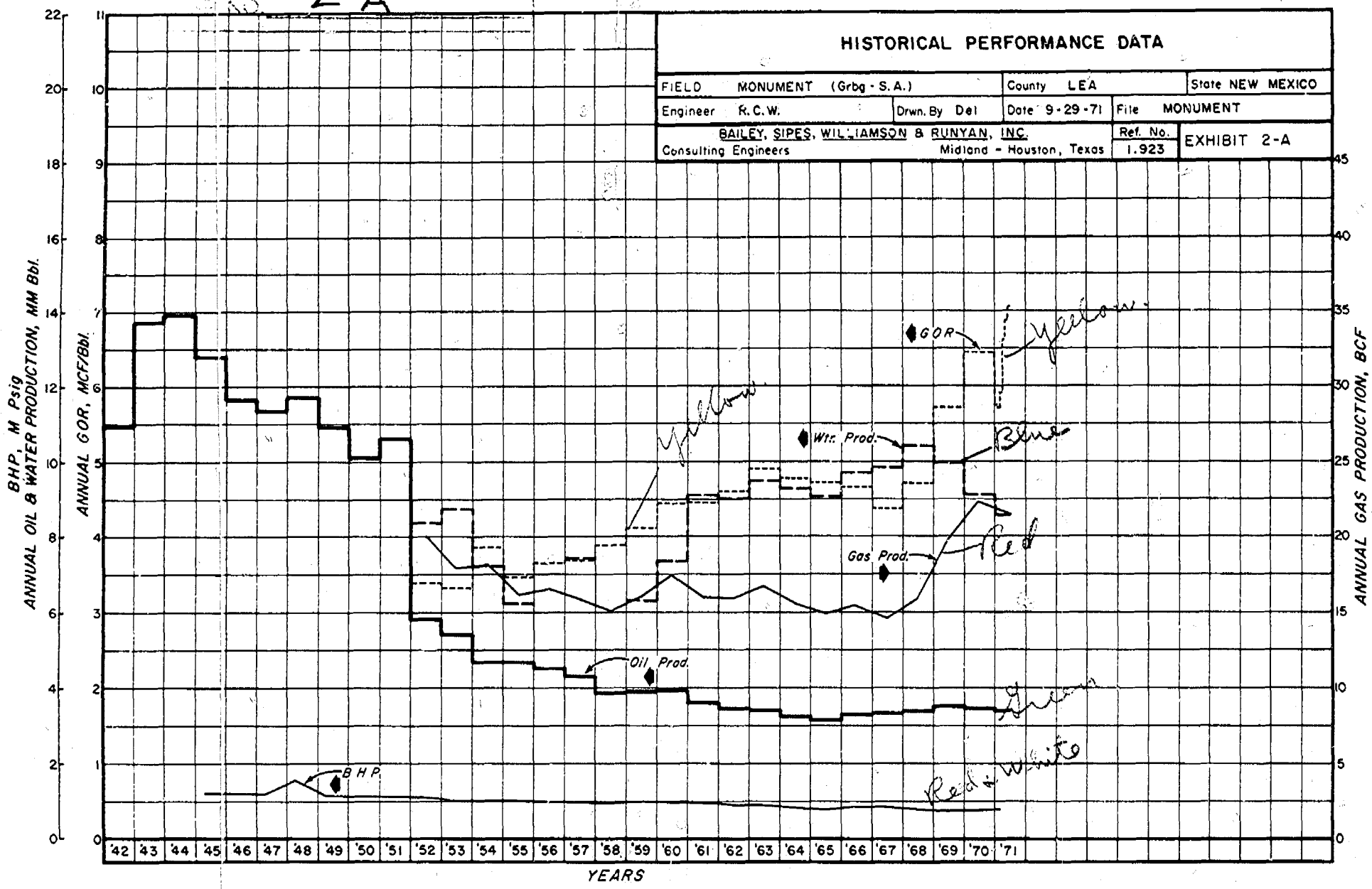
	@ 3000				@ 4500				@ 6000			
MONTH	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 3000 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 4500 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 6000 X 80 X DAYS X WELLS	EXCESS
JAN.	63	1,093,349	468,720	624,629	40	880,079	446,400	433,679	27	705,228	401,760	303,468
FEB.	57	937,808	383,040	564,768	40	793,045	403,200	389,845	28	651,023	362,880	288,143
MAR.	63	1,088,375	468,720	619,655	42	911,821	468,720	443,101	26	708,663	386,880	321,783
APR.	69	1,224,745	496,800	727,945	49	1,062,320	529,200	533,120	40	954,114	576,000	378,114
MAY	67	1,317,027	498,480	818,547	50	1,164,374	558,000	606,374	39	1,034,414	580,320	454,094
JUNE	71	1,302,330	511,200	791,130	50	1,115,077	540,000	575,077	37	962,215	532,800	429,415

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
OCC EXHIBIT NO. 7
NO. 4604

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
MKA EXHIBIT NO. 4604
CASE NO. 2-A

HISTORICAL PERFORMANCE DATA

FIELD MONUMENT (Grbg - S.A.)		County LEA	State NEW MEXICO
Engineer R.C.W.	Drwn. By Del	Date 9-29-71	File MONUMENT
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. Consulting Engineers Midland - Houston, Texas		Ref. No. 1.923	EXHIBIT 2-A



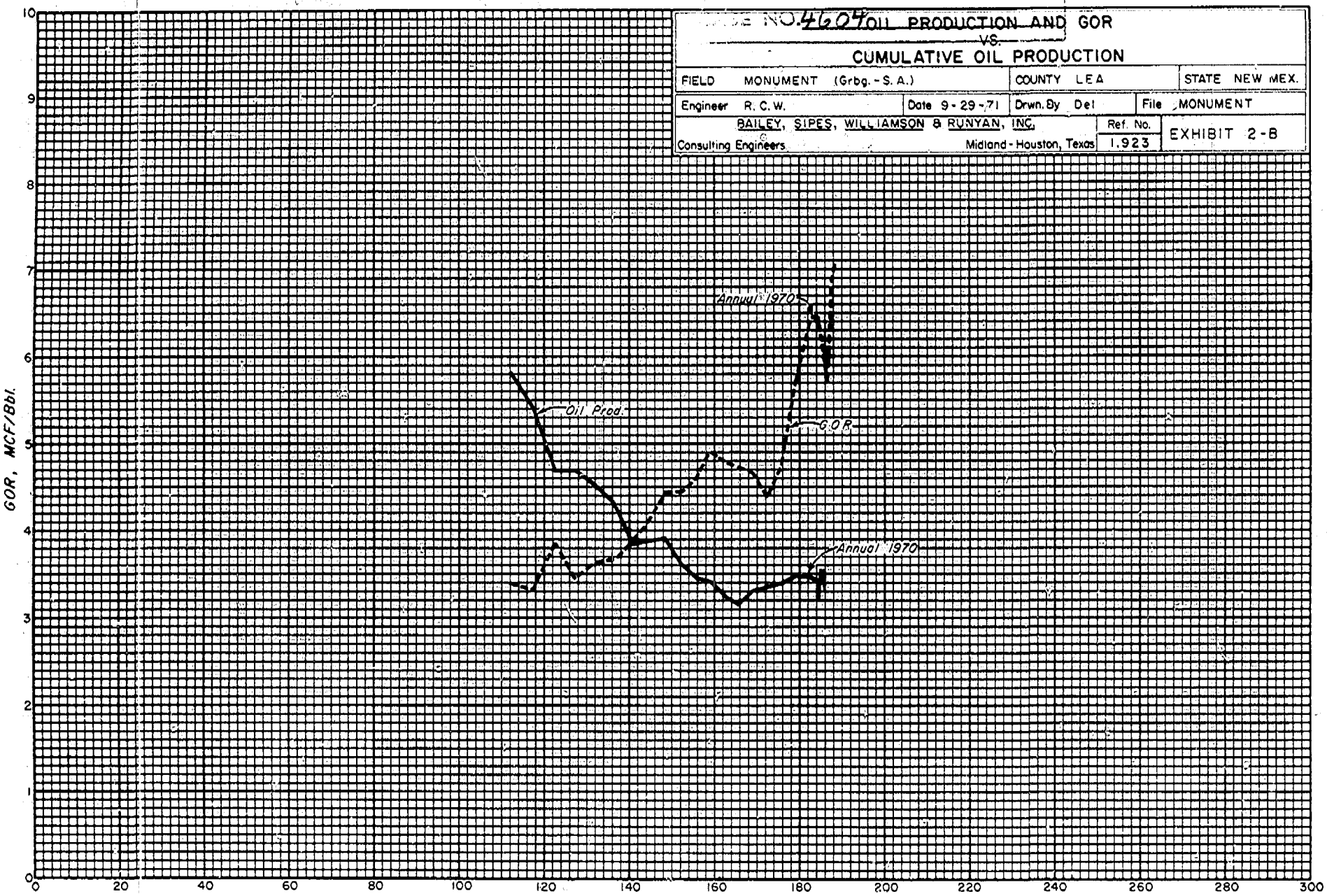
BEFORE EXAMINER UTZ

CONSERVATION COMMISSION

MKA EXHIBIT NO. 2-B

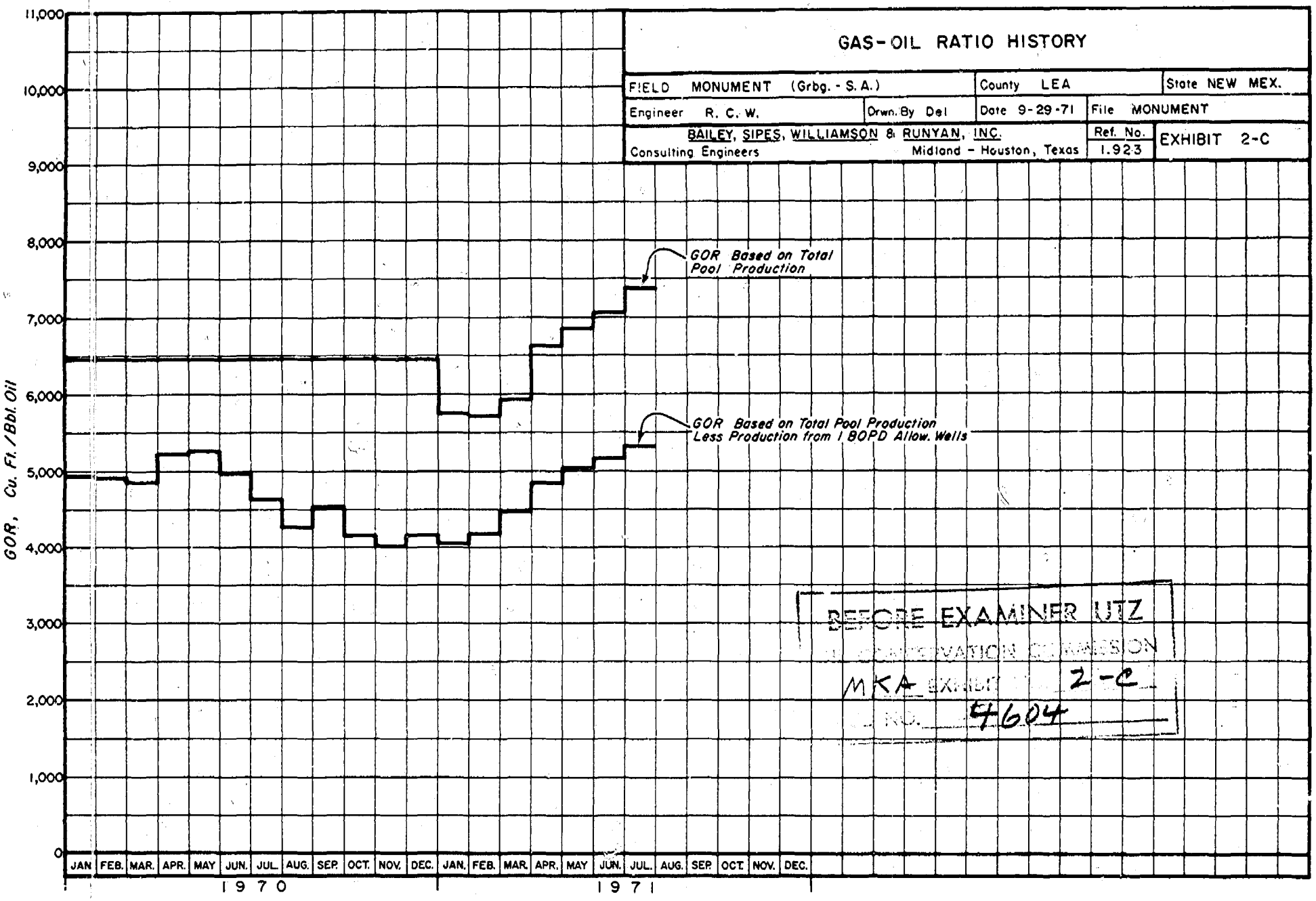
CASE NO. 4604 OIL PRODUCTION AND GOR
VS.
CUMULATIVE OIL PRODUCTION

FIELD MONUMENT (Grbg. - S. A.)		COUNTY LEA	STATE NEW MEX.
Engineer R. C. W.	Date 9-29-71	Drwn. By Del	File MONUMENT
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. Consulting Engineers Midland - Houston, Texas		Ref. No. 1.923	EXHIBIT 2-B



GAS-OIL RATIO HISTORY

FIELD MONUMENT (Grbg. - S. A.)		County LEA	State NEW MEX.
Engineer R. C. W.	Drwn. By Del	Date 9-29-71	File MONUMENT
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. Consulting Engineers Midland - Houston, Texas		Ref. No. 1.923	EXHIBIT 2-C

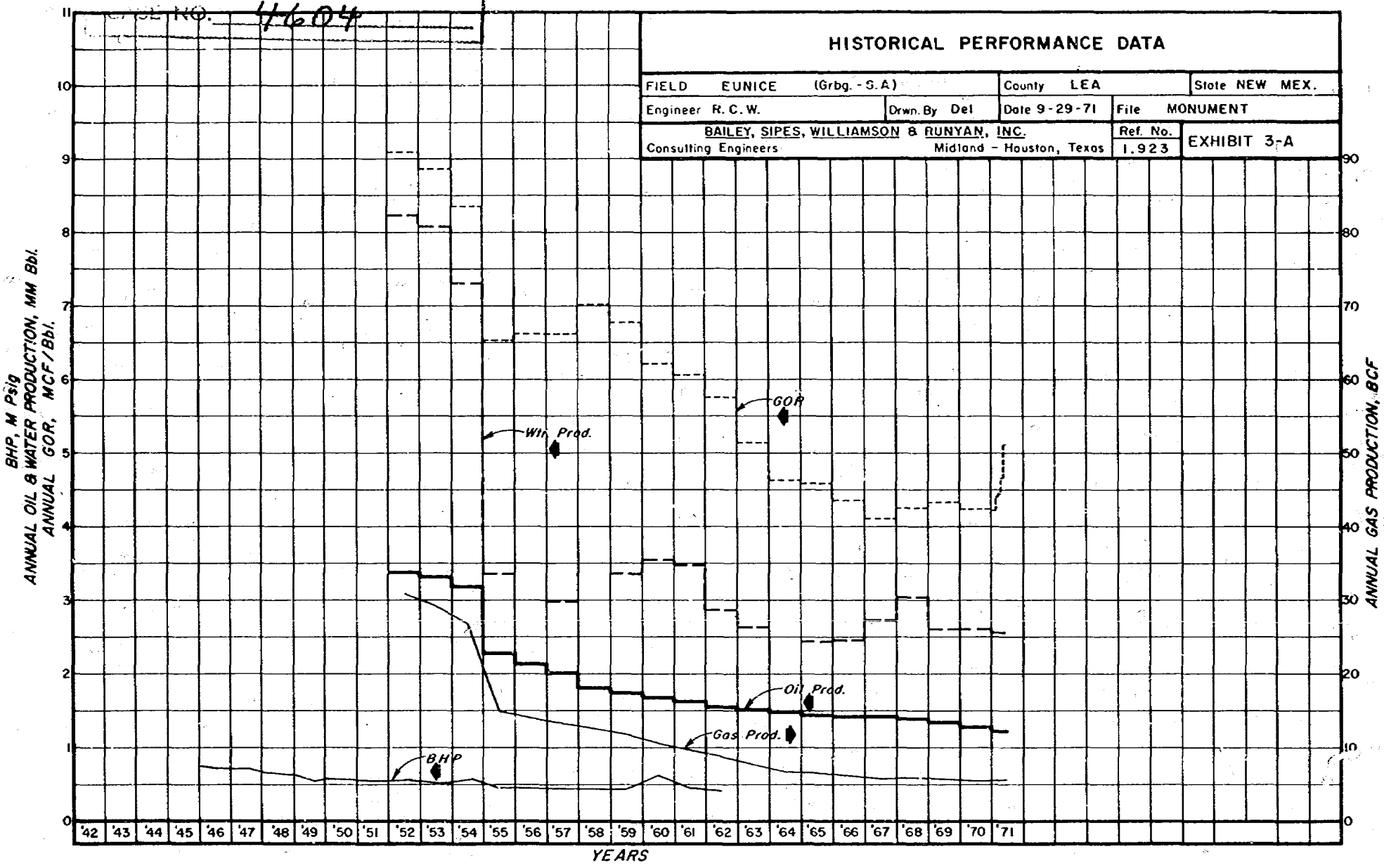


BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
MKA EXHIBIT 2-C
CASE NO. 4604

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
MKA EXHIBIT NO. 3-A
CASE NO. 4604

HISTORICAL PERFORMANCE DATA

FIELD EUNICE (Grbg. - S.A.)		County LEA	State NEW MEX.
Engineer R. C. W.	Drwn. By Del	Date 9-29-71	File MONUMENT
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC. Consulting Engineers Midland - Houston, Texas		Ref. No. 1.923	EXHIBIT 3-A



BEFORE EXAMINER UTZ

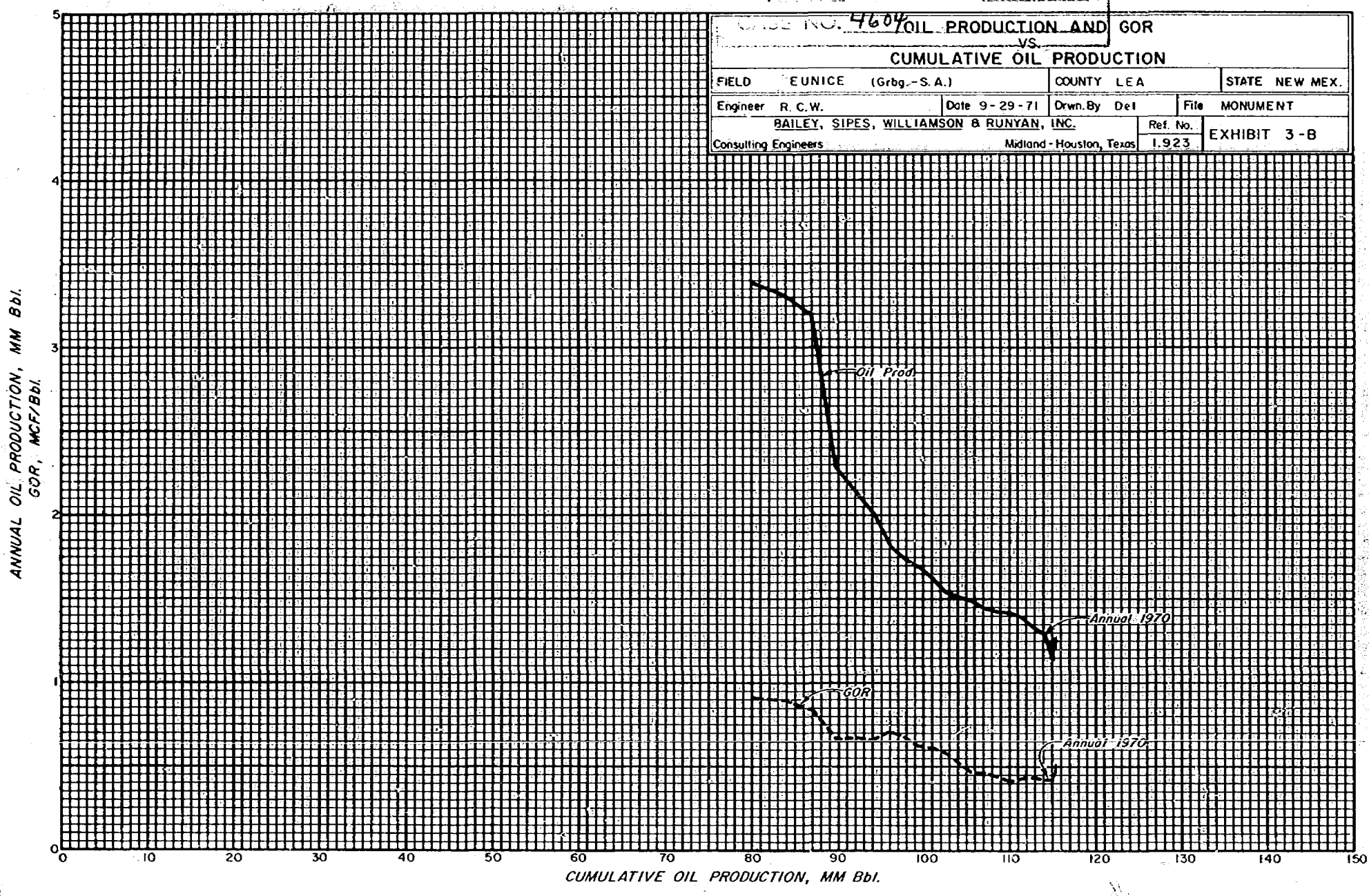
OIL CONSERVATION COMMISSION

MKA EXHIBIT NO. 3-B

CASE NO. 4604

OIL PRODUCTION AND GOR
VS.
CUMULATIVE OIL PRODUCTION

FIELD EUNICE (Grbg.-S.A.)		COUNTY LEA	STATE NEW MEX.
Engineer R. C. W.	Date 9-29-71	Drwn. By Del	File MONUMENT
BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.		Ref. No. 1.923	EXHIBIT 3-B
Consulting Engineers	Midland - Houston, Texas		



MONUMENT POOL
NO. WELLS - PRODUCING EXCESS GAS

	@ 3000				@ 4500				@ 6000			
MONTH	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 3000 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 4500 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 6000 X 80 X DAYS X WELLS	EXCESS
JAN.	63	1,093,349	468,720	624,629	40	880,079	446,400	433,679	27	705,228	401,760	303,468
FEB.	57	937,808	383,040	564,768	40	793,045	403,200	389,845	28	651,023	362,880	288,143
MAR.	63	1,088,375	468,720	619,655	42	911,821	468,720	443,101	26	708,663	386,880	321,783
APR.	69	1,224,745	496,800	727,945	49	1,062,320	529,200	533,120	40	954,114	576,000	378,114
MAY	67	1,317,027	498,480	818,547	50	1,164,374	558,000	606,374	39	1,034,414	580,320	454,094
JUNE	71	1,302,330	511,200	791,130	50	1,115,077	540,000	575,077	37	962,215	532,800	429,415

EUNICE (GB-SA) POOL
NO. WELLS - PRODUCING EXCESS GAS

	@ 3000				@ 4500				@ 6000			
MONTH	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 3000 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 4500 X 80 X DAYS X WELLS	EXCESS	NO. WELLS	PROD. FROM EXCESS WELLS	ALLOW. GAS 6000 X 80 X DAYS X WELLS	EXCESS
JAN.	12	137,293	89,280	48,013	6	83,352	66,960	16,392	2	35,581	29,760	5,821
FEB.	10	110,359	67,200	43,159	5	69,624	50,400	19,224	1	21,819	13,440	8,379
MAR.	14	163,476	104,160	59,316	5	78,438	55,800	22,638	2	40,230	29,760	10,470
APR.	12	162,918	86,400	76,518	7	114,673	75,600	39,073	7	114,673	100,800	13,873
MAY	10	149,239	74,400	74,839	5	98,310	55,800	42,510	4	83,768	59,520	24,248
JUNE	18	202,282	129,600	72,682	8	115,704	86,400	29,304	2	35,525	28,800	6,725

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
OCC EXHIBIT NO. 8
CASE NO. 4604

MONUMENT POOL

MONTH	NO. TOP ALLOW. WELLS	(NO. PROD. WELLS) OIL PROD.	GAS PROD.	PROD. G.O.R.	OIL PER WELL	(NO. GAS WELLS) OIL PROD.	GAS PROD.	(PROD. MINUS GAS WELLS) OIL	GAS	G.O.R. MINUS GAS WELLS	PER WELL MINUS GAS WELLS
JAN.	38	284,502 (377)	1,637,382	5755	24.3	1065 (30)	716,677	283,437	920,710	3248	26.3
FEB.	42	265,183 (373)	1,515,139	5714	25.4	1078 (29)	628,513	264,105	886,626	3357	27.4
MAR.	39	296,557 (376)	1,755,754	5920	25.7	1492 (30)	692,225	295,065	1,063,529	3604	27.5
APR.	39	285,142 (380)	1,888,481	6623	25.0	1355 (34)	809,999	283,787	1,078,582	3801	27.3
MAY	38	292,262 (378)	2,011,851	6884	24.9	1441 (32)	833,013	290,821	1,178,838	4053	27.1
JUNE	40	277,504 (366)	1,962,389	7072	25.3	1443 (35)	810,456	276,061	1,151,933	4173	27.8

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT 5
CASE NO. 4604

EUNICE (GB - SA) POOL

MONTH	NO. TOP ALLOW. WELLS	(NO. PROD. WELLS) OIL PROD.	GAS PROD.	PROD. G.O.R.	OIL PER WELL	(NO. GAS WELLS) OIL PROD.	GAS PROD.	(PROD. MINUS GAS WELLS) OIL	GAS	G.O.R. MINUS GAS WELLS	PER WELL MINUS GAS WELLS
JAN.	5	97,701 (267)	412,029	4217	11.8	290 (4)	43,681	97,411	314,348	3227	11.9
FEB.	4	95,220 (262)	401,906	4221	13.0	331 (4)	51,138	94,889	350,768	3697	13.1
MAR.	4	105,870 (257)	465,812	4400	13.3	378 (5)	72,183	105,492	393,629	3731	13.5
APR.	5	103,350 (257)	459,192	4443	13.4	356 (6)	89,115	102,994	370,077	3593	13.7
MAY	4	105,767 (257)	494,307	4674	13.3	274 (5)	78,351	105,493	415,956	3943	13.5
JUNE	3	101,176 (257)	518,232	5122	13.1	325 (8)	94,109	100,851	424,123	4205	13.5

BEFORE EXAMINER UTZ
OIL CONSERVATION COMM.
~~B~~OCC EXHIBIT NO. 6
CASE NO. 4604

OIL CONSERVATION COMMISSION

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

October 14, 1971

GOVERNOR
BRUCE KING
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

Mr. Sim Christy
Jennings, Christy & Copple
Attorneys at Law
Post Office Box 1180
Roswell, New Mexico 88201

Re: Case No. 4604
Order No. R-4206
Applicant:
OCC

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 x
Aztec OCC

Other

Exhibit No. 7

CALCULATED GAS PRODUCTION DIFFERENCES RESULTING
FROM RULE CHANGES

Calculations Based on June, 1971 Production and July-August, 1971 Proration Schedule

Amount of reduced gas production assuming an enforced 3000 GOR limit had been in effect for June, 1971.

28.1 MMCF/day or 43% of June production of 65.4 MMCF/day.

Gas production represented by an increase in the GOR limit from 3000 to 6000 cu. ft./Bbl for June, 1971.

13.7 MMCF/Day

BAILEY, SIPES, WILLIAMSON & RUNYAN, INC.
1100 V & J TOWER MIDLAND, TEXAS 79701
ROY C. WILLIAMSON, JR., P. E. 9/29/71
(915) 683-1841

EXHIBIT No. 7

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION UPON ITS OWN MOTION TO CONSIDER THE CONSOLIDATION OF THE EUNICE AND MONUMENT AREAS OF THE EUNICE MONUMENT POOL (GRAYBURG-SAN ANDRES), LEA COUNTY, NEW MEXICO, AND THE ASCERTAINMENT OF A COMMON EFFICIENT GAS-OIL RATIO LIMITATION FOR THE CONSOLIDATED AREA.

CASE NO. 4604
Order No. R-4206

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 29, 1971, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 13th day of October, 1971, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the horizontal limits of the Eunice-Monument (Grayburg-San Andres) Pool, Lea County, New Mexico, embraces what has been designated as the Eunice and Monument portions.

(3) That the Eunice portion has a gas-oil ratio limitation of 6,000 cubic feet of gas per barrel of oil.

(4) That the Monument portion has a gas-oil ratio limitation of 3,000 cubic feet of gas per barrel of oil.

(5) That the reservoir information available establishes that there is communication between the Eunice portion and the Monument portion of the subject pool.

(6) That the reservoir information available establishes that the Eunice portion and Monument portion constitute a common source of supply.

(7) That a common efficient gas-oil ratio limitation should be established for the entire area constituting the Eunice-Monument (Grayburg-San Andres) Pool.

(8) That the reservoir characteristics of the subject pool justify the establishment of a common efficient gas-oil ratio limitation for the entire Eunice-Monument (Grayburg-San Andres) Pool of 4,500 cubic feet of gas per barrel of oil.

(9) That in order to afford to the owner of each property in the Eunice-Monument (Grayburg-San Andres) Pool the opportunity to produce his just and equitable share of the oil and gas in the subject pool and for this purpose to use his just and equitable share of the reservoir energy, a limiting gas-oil ratio of 4,500 cubic feet of gas per barrel of oil should be established for the subject pool.

IT IS THEREFORE ORDERED:

(1) That, effective November 1, 1971, a common efficient gas-oil ratio limitation of 4,500 cubic feet of gas per barrel of oil is hereby established for the entire Eunice-Monument (Grayburg-San Andres) Pool, Lea County, New Mexico; that effective November 1, 1971, each proration unit in the Eunice-Monument (Grayburg-San Andres) Pool shall produce only that volume of gas equivalent to 4,500 multiplied by top unit oil allowable for the pool.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

BRUCE KING, Chairman

ALEX J. ARMIJO, Member

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

dr/

western union **Telegram**

1971 SEP 28 AM 8 39

KA008 (1023A EDT)

K CCE063 (SF 271CC 405063)PD=GULF WPC TUL 1018A EDT

09/28/71=ZCZC 2 PD : TULSA 10KLA=

PMS A L PORTER, JR., SECRETARY = DIRECTOR=

NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NMEX=

WARREN PETROLEUM CORPORATION HAS IMPORTANT GAS CONNECTIONS IN=THE EUNICE AND MONUMENT OIL POOLS, WHICH GAS IS PROCESSED AT ITS=MONUMENT GASOLINE PLANT. OUR FIELD STUDIES INDICATE THAT WE CAN=HANDLE A GAS=OIL RATIO LIMITATION IN THE COMBINED POOL OF 6,000=TO 1 WHATEVER THE ALLOWABLE MAY BE WITHIN THE FORESEEABLE FUTURE.=IN ORDER TO BEST SERVE THE AREA AND TO PROTECT

WU 1201 (R 5-69)

western union **Telegram**

OUR INVESTMENT AS=WELL, WE SUGGEST THE ADOPTION OF A GAS=OIL RATIO FOR THE COMBINED=EUNICE AND MONUMENT POOLS OF AT LEAST 6,000 TO 1.=JOINT A L PORTER, JR SANTA FE (ACTION); J D RAMEY, HOBBS (COPY=,=INFO).=

C W MILLER, VICE PRESIDENT WARREN PET CORP=

WU 1201 (R 5-69)

S-28-71

western union **Telegram**

KA017 NSB042 1971 SEP 28 AM 10 15 (945)

NS MDA020 RS PDF=MIDLAND TEX 28 848 A CDT=
A L PORTER JR=
SEC DIR NM OIL CON COMM SANTA FE NMEX=

RE EXAMINER HERING SEPT 29 1971 EUNICE MONUMENT POOL CONSOLIDATION OF POOL AREAS AND NEW GAS OIL RATIO (CASE 4604) GETTY OIL CO RESPECTFULLY RECOMMENDS TO THE COMMISSION THAT THE EUNICE AND MONUMENT AREAS OF THE EUNICE MONUMENT GRAYBURG SAN ANDRES POOL LEA COUNTY BE CONSOLIDATED AND THAT THE COMBINED FIELD GAS OIL RATIO LIMITATION BE 6,000 TO ONE=

J E PIERCE IDST PROD MGR GETTY OIL CO.=

WU 1201 (R 5-69)

western union Telegram

1971 SEP 29 AM 7 34

TLX MDA001 AA RX PDF MIDLAND TEX 29 SEP 823A CDT

NEW MEXICO OIL CONSERVATIONCOMM , DLR 1.50

STATE LAND OFFICE BLDG SFE

REFERENCE: CASE #4604 (EUNICE - MONUMENT POOL,
CONSOLIDATION OF POOL AREAS AND NEW GAS-OIL RATIO)
CALLED FOR SEPTEMBER 29, 1971

SHELL OIL COMPANY OPERATES 15 WELLS IN THESE TWO
FIELDS PRODUCING SOME 590 BOPD AND 1400 MCF OF GAS PER DAY.
SHELL OIL COMPANY RECOMMENDS THE CONSOLIDATION OF
THESE TWO FIELDS WITH A LIMITING GAS-OIL RATIO OF 6000.

F A MAC DOUGAL MANAGER OF ENGINEERING MID-CONT DIVN

SHELL OIL CO MIDLAND TEX.

4604 29 1971 15 1400 MCF 6000 ALSO 590

file Case 4604

GULF WPC TUL

WU ISCS 09/28/71 271FF312012 10:18A EDT
ZCZC MA 382 PD TULSA OKLA
PMS A L PORTER, JR., SECRETARY - DIRECTOR
NEW MEXICO OIL CONSERVATION COMMISSION SANTA FE, NEWMEX
BT
WARREN PETROLEUM CORPORATION HAS IMPORTANT GAS CONNECTIONS IN THE EUNICE AND MONUMENT OIL POOLS, WHICH GAS IS PROCESSED AT ITS MONUMENT GASOLINE PLANT. OUR FIELD STUDIES INDICATE THAT WE CAN HANDLE A GAS-OIL RATIO LIMITATION IN THE COMBINED POOL OF 6,000 TO 1 WHATEVER THE ALLOWABLE MAY BE WITHIN THE FORESEEABLE FUTURE. IN ORDER TO BEST SERVE THE AREA AND TO PROTECT OUR INVESTMENT AS WELL, WE SUGGEST THE ADOPTION OF A GAS-OIL RATIO FOR THE COMBINED EUNICE AND MONUMENT POOLS OF AT LEAST 6,000 TO 1.
JOINT A L PORTER, JR SANTA FE (ACTION); J D RAMEY, HOBBS (COPY-INFO).
C W MILLER, VICE PRESIDENT WARREN PET CORP

NNNN

ZCZC 383 PD TULSA OKLA
PMS J D RAMEY NEW MEXICO OIL CONSERVATION COMMISSION
HOBBS, NEWMEX
BT
NNNN

ACCEPTED
00382
00383
SF

Xc by mail per CWM 9-28-71 - A. L. Porter, Jr.
J. D. Ramey
Wm. V. Kastler
A. E. Risinger
E. L. Berry
E. C. Hutchinson
L. A. Boyd, Jr.

Case 4604
Heard 9-29-71
Rec. 10-5-71

I recommend that the G & R in the Monument - Eumont pool area be set at 4500:1

Mr. Ramey's testimony showed that the pool does not at this time need a G O R higher than this to produce the oil wells.

Testimony shows a gas cap exists in the area of the gas wells therefore the wells should not be allowed to produce more than their fair share of gas in the pool. — 4500 !

The G & R will protect the pool from waste of oil by preserving reservoir drive.

Thos E Mc

Docket No. 21-71

DOCKET: EXAMINER HEARING - WEDNESDAY - SEPTEMBER 29, 1971

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 4604: In the matter of the hearing called by the Oil Conservation Commission upon its own motion to consider the consolidation of the Eunice and Monument areas of the Eunice Monument Pool (Grayburg-San Andres), Lea County, New Mexico, and the ascertainment of a common efficient gas-oil ratio limitation for the consolidated area.

CASE 4598: Application of Continental Oil Company for an exception to Order No. R-2408, and for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill its Meyer B-4 Well No. 28 in Unit R of Section 4, Township 21 South, Range 36 East, as the second well on an 80-acre proration unit in the Oil Center-Blinebry Pool and to complete said well as a dual completion (conventional) to produce oil from said Oil Center-Blinebry Pool and the Eunice Grayburg-San Andres Pool through parallel strings of tubing.

CASE 4599: Application of Continental Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its SEMU Well No. 61 located in Unit P of Section 15, Township 20 South, Range 37 East, as a dual completion to produce gas from the Weir-Drinkard Pool through tubing and gas from the Weir-Blinebry Pool through the casing-tubing annulus.

CASE 4600: Application of El Paso Natural Gas Company for a non-standard gas proration unit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 320-acre non-standard gas proration unit comprising the NW/4, N/2 SW/4, SW/4 SW/4, and NW/4 NE/4 of Section 22, Township 17 South, Range 29 East, Grayburg-Morrow Gas Pool, Eddy County, New Mexico, to be dedicated to its Leonard State "Com" Well No. 1 located in Unit E of said section.

CASE 4601: Application of Humble Oil & Refining Company for the re-dedication of acreage, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3700, to permit the simultaneous dedication of the standard 640-acre Eumont gas proration unit authorized therein to its New Mexico "G" State Wells 2 and 6 located in Units P and M respectively of Section 26, Township 21 South, Range 36 East, Lea County, New Mexico rather than Wells 2 and 4 as at present.

CASE 4602: Application of Tenneco Oil Company for an unorthodox oil well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks as an exception to Rule 104 B II, approval of an unorthodox Pennsylvanian oil well location for its Pah Well No. 1 located 1500 feet from the South line and 990 feet from the East line of Section 3, Township 25 North, Range 11 West, San Juan County, New Mexico.

CASE 4603: Application of Tenneco Oil Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Sand Springs Unit Area comprising 2999 acres, more or less, of State lands in Townships 10 and 11 South, Ranges 34 and 35 East, Lea County, New Mexico.

CASE 4563: Continued from the August 11, 1971 Examiner Hearing
Application of Corinne Grace for special gas-oil ratio limitation and pressure maintenance project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce her State Well No. 1 located in Unit A of Section 1, Township 15 South, Range 29 East, Double L-Queen Pool, Chaves County, New Mexico, with no gas-oil ratio limitation, strip the liquids,and institute a pressure maintenance project by the injection of all said gas back into the producing formation through her State Well No. 2 located in Unit B of said Section 1. Applicant further seeks to transfer an oil allowable from said Well No. 2 to said Well No. 1.

CASE 4592: Continued from the September 15, 1971 Examiner Hearing
Application of Gulf Oil Corporation for amendment of order permitting commingling of production, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-4079, which order authorized the applicant to commingle production from the Hobbs (Grayburg-San Andres) and Hobbs-Blinebry Pools on its W. D. Grimes NCT-B Lease and to commingle production from said lease with the Hobbs (Grayburg-San Andres) Pool on its W. D. Grimes NCT-A lease, located in Sections 32 and 33, Township 18 South, Range 38 East, Lea County, New Mexico. Applicant seeks to allocate production to each lease and pool on the basis of by-monthly tests rather than monthly tests.

DRAFT

GMH/dr

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:

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION UPON ITS OWN MOTION TO CONSIDER THE CONSOLIDATION OF THE EUNICE AND MONUMENT AREAS OF THE EUNICE MONUMENT POOL (GRAYBURG-SAN ANDRES), LEA COUNTY, NEW MEXICO, AND THE ASCERTAINMENT OF A COMMON EFFICIENT GAS-OIL RATIO LIMITATION FOR THE CONSOLIDATED AREA.

CASE No. 4604

Order No. R-4206

10-8-71

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on September 29, 1971, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this _____ day of October, 1971 the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

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

(2) That the horizontal limits of the Eunice-Monument (Grayburg-San Andres) Pool, Lea County, New Mexico, embraces what has been designated as the Eunice and Monument portions.

(3) That the Eunice portion has a gas-oil ratio limitation of 6,000 cubic feet of gas per barrel of oil.

(4) That the Monument portion has a gas-oil ratio limitation of 3,000 cubic feet of gas per barrel of oil.

(5) That the reservoir information available establishes that there is communication between the Eunice portion and the Monument portion of the subject pool.

(6) That the reservoir information available establishes that the Eunice portion and Monument portion constitute a common source of supply.

(7) That a common efficient gas-oil ratio limitation should be established for the entire area constituting the Eunice-Monument (Grayburg-San Andres) Pool.

(8) ~~(6)~~ That the reservoir characteristics of the subject pool justify the establishment of a common efficient gas-oil ratio limitation for the entire Eunice-Monument (Grayburg-San Andres) Pool of 4,500 cubic feet of gas per barrel of oil.

(9) ~~(10)~~ That in order to afford to the owner of each property in the Eunice-Monument (Grayburg-San Andres) Pool the opportunity to produce his just and equitable share of the oil and gas in the subject pool and for this purpose to use his just and equitable share of the reservoir energy, a limiting gas-oil ratio of 4,500 cubic feet of gas per barrel of oil should be established for the subject pool.

(11) That in order to assure the protection of correlative rights, the operator of each well in the Eunice-Monument (Grayburg-San Andres) Pool should file a new gas-oil ratio test with the Commission's Hobbs District Office on November 1, 1971.

IT IS THEREFORE ORDERED:

Common Provisions

(1) That, effective November 1, 1971, a common efficient gas-oil ratio limitation of 4500 ~~barrels~~ cubic feet of gas per barrel of oil is hereby established for the entire Eunice-Monument (Grayburg-San Andres) Pool, Lea County, New Mexico; that effective November 1, 1971, each proration unit in the Eunice-Monument (Grayburg-San Andres) Pool shall produce only that volume of gas equivalent to 4,500 multiplied by top unit oil allowable for the pool.

Under for (2)

entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year herein-above designated.