BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO
January 5, 1972

EXAMINER HEARING

IN THE MATTER OF:

Application of Amoco Production Company for special pool rules, Lea County, New Mexico.

Case No. 4640

BEFORE: Daniel S. Nutter,
Alternate Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Case 4640.

MR. HATCH: Case 4640: Application of Amoco Production Company for special pool rules, Lea County, New Mexico.

We will take a recess.

(Recess.)

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

MR. BUELL: If I may say a few words to accomplish a double purpose, one, kind of a little opening statement; two, kind of an apology.

As you probably are aware, Mr. Examiner, it has been an extremely long period of time since I have been before you on an Application involving pool rules.

I hope this is an omen of good times to come and we will have many many more pool rule hearings before you.

This is our Application for pool rules in the east Jim-Yates Pool.

At the present time it is a one-well pool, although, as our testimony will show, subsequent development is seriously being contemplated.

I might also point out that while production from Yates and some of our exhibits and our testimony, in order to more precisely define the exact producing interval, we will be referring to the top of the lower Yates conglommerate, because that is the precise interval proposed, which the well is producing

I might also point out, Mr. Examiner, after Mr. Porter sees the excellent performance of this one well he may move to change the name of the pool to the Little Gem Yates Oil Pool, because the well is a little gem.

We have one witness, Mr. Malloy, who has not been sworn.

TOM MALLOY

BY MR. BUELL

Q Would you state your complete name, Mr. Malloy; by whom you are employed; and in what capacity and what location, please, sir?

A Thomas V. Malloy.

I am employed by Amoco Production Company as a staff engineer in the Division Office at Houston, Texas.

Q Mr. Malloy, you have never testified before the New Mexico Oil Conservation Commission.

In view of that, would you briefly state your educational background in the field of petroleum engineering?

A I received a degree of Bachelor of Science in Petroleum Engineering from the University of Pittsburgh in 1938.

Q What have you done in the field of petroleum engineering since graduation?

A I have been employed in the oil industry continuously since graduation, since 1942 I have been employed by Amoco Production Company in various engineering capacities.

Q All right, sir. Now, you testified as a petroleum engineer before the Conservation Commission of both the states of Louisiana and Texas; is that right?

A Yes, sir, I have.

Q Are there any questions of his qualifications, Mr. Examiner?

MR. NUTTER: No, he is qualified.

Q (By Mr. Buell) In order that the Examiner can evaluate your testimony, I am going to ask you at the outset to briefly state the pool rules that we are recommending here today.

A In that connection, Mr. Examiner, I will also refer to our Exhibit No. 1, which is somewhat of a summary itself of the rules we are recommending.

MR. NUTTER: I will ask, Mr. Malloy, in the interest of brevity, to be more brief.

A The pool rules that we are recommending here today would provide for the 80 acre oil units consisting of either the north half, southeast half, east, or west half of the governmental quarter section, with the usual right to drill a well on each quarter section, the spacing provision that the well be within 200 feet of a government center, of a governmental quarter section, the usual provisions for the exceptions being granted, administration for topographical conditions, and that the well on a standard proration unit of 79 to 81 shall be given 80 acre proration factor of two.

Q (By Mr. Buell) The production in this pool is more shallow than

5,000?

A Yes.

Q The current unit allowable for the existing well in the pool is 80 barrels a day, is it not?

A Yes.

Q As I understand your recommendation, if it is approved by the Commission, what would be its allowable?

A Its allowable would be 160 barrels.

Q All right, sir. Would you turn now, Mr. Malloy, to what has been identified as Amoco's Exhibit No. 2?

A This is the structural contour map on the top of the lower Yates carbon pat pay. This is the pay section within the Yates Formation.

This was prepared utilizing data from the completed well, the discovery well for this Pool, which is identified by a large red arrow, and also data obtained from numerous other wells in the area which were completed as dry holes which have been drilled subsequent to the completion of this well.

Q Would you locate for the record the discovery well, Amoco's Discovery Well, Amoco's Bates Federal No. 1?

A Amoco's Bates Federal No. 1 is located 660' from the south line; 1980' from the west line of Section 26, 19 South, 33 East.

This is in the unit in Section 29.

Q All right, sir. How would you describe the structure of the pay that is reflected on Exhibit No. 2?

A Well, this would be described as an asymmetrical domal feature.

It has an axis trending from the southeast to the northwest.

Q Speak up. Were logs running on all of the dry holes shown on this exhibit?

A No, sir, not in all of the wells.

Several of the wells did have logs, others the tops were obtained from sample data, too, so it is entirely possible that with additional drilling and more rigid data the structure interpretation shown here could be slightly changed.

Q Based on your study of this reservoir and the immediate area, its position in the area, do you feel that the position on the structure will be critical from the standpoint of whether or not a well will be productive or a dry hole?

A No, sir. Several of the wells which were completed as dry holes, based on the depth at which the pay was encountered, would have been expected to be producers.

However, they had no permeability in the pay zone; therefore, they were completed as dry holes.

Q So, you feel that porosity, permeability development will

be more controlling than position on the structure?

A Yes, that is correct.

Q Mr. Malloy, as you probably recall, back in June of 1968, a discovery allowable application was held on our Bates Federal No. 1.

I believe that is Case No., Mr. Examiner, 3795.

Was an exhibit introduced at that hearing that reflected structure?

A Yes, there was a map introduced as an exhibit at that hearing in 1968 showing structure.

However, it was the structure on the top of the Yates Formation.

It was not on the top of the pay interval, which we have identified as the lower Yates on Exhibit No. 2.

Q It just showed Yates on the regional basis rather than looking closely and critically at an area like you are doing here?

A That is correct.

Q All right. Do you recall what the current horizontal limits of this Pool are?

A The East Jim Yates Pool has been defined as the south half of Section 26, 19 South, 33 East.

Q Do you have any other comments to make on Exhibit No. 2, Mr. Malloy?

A No, sir.

Q All right. Would you look now at what has been identified as Amoco's Exhibit No. 3; what is that exhibit?

A Exhibit 3 is the zonic gamma ray log of the Bates Federal Well No. 1, the discovery well for this Pool.

The Yates pay has been identified on this log at near the total depth of the well, and the interval which has been perforated for completion has been also shown.

Q All right, sir. Do you have any other comments to make on this log?

A I don't believe so, sir.

Q Are you introducing a cross-section exhibit here today, Mr. Malloy?

A No, sir. At the Hearing in 1968 a cross-section was introduced.

There has been some drilling in the intervening time.

However, there is really not new data that would change the interpretation and change the picture, so I didn't prepare a cross-section for this Hearing.

Q That is already in the Commission records and files?

A Yes.

Q Would you turn now to what has been identified as Amoco's Exhibit No. 4?

A Amoco's Exhibit No. 4 is a tabulation of data such as is available on the reservoir fluid characteristics, on the reservoir rock.

Very briefly, this lists the average porosity as eight per cent interstitial water saturation, twenty-eight per cent.

The permeability is unknown.

The oil produced from this pool is 34° api gravity; the solubility of the gas is unknown because the gas-oil ratio is too small to measure and because of the very low gas solubility, we have estimated the reservoir volume factor at 1.02, reservoir barrel.

Q Do you have any other comments?

A I don't believe so.

Q If you will look at Amoco's Exhibit No. 5, what is that exhibit?

A Exhibit No. 5 is a performance graph of the East Jim Yates Pool or Yates Federal Well No. 1 from the discovery in 1968 until the latter part of 1971.

Q Would you comment very briefly, please, on each indice of performance that is mentioned on this exhibit?

A At the top we have tabulated the available--shortly after completion of the well, the bottomhole pressure measurement was made. The pressure datum of thrust plus 230' was 1,209 pounds per square inch.

In late November, early December, 1971, an additional pressure measurement was made at the same datum of +230'.

The pressure was 1,187 psi or a decline of only 22

pounds from the original.

The second curve on Exhibit No. 5 is the barrels of oil per day produced each month throughout the life of the reservoir after the production of the discovery allowable. This generally shows then that the well has been capable of producing the normal allowable assigned, normal unit allowable assigned, and at the bottom is a curve showing the cumulative production, which is about 116 barrels of oil today.

Q Let's go back to your middle curve, the average barrels of oil per day.

I noticed in October of 1970 that it shows it produced an average of about 40 barrels of oil per day.

I know that the normal unit allowable was much higher than that.

How do you account for that?

A Was made--the answer was made through a misunderstanding, and the production during August of 1970 was at a higher than the allowable rate, it being thought that discovery allowable still continued because of that original production in August.

Then there was the well that was under produced in October to compensate for it.

Q So, this well does have excellent ability to produce?

A Yes, it does.

As a matter of fact, it has been tested a number of times at rates about 200 barrels per day, and maybe even exceeding that slightly.

Q Let me ask you this. I don't notice any curve here showing water production. Did this well ever make water?

A No, it has never produced any water.

Q And it has produced a 116,000 barrels with only a 22 pound pressure drop?

A Yes, sir, that is correct.

Q Is this well slowing or pumping?

A This well is pumping because of a very small amount of gas that is in solution in it, even with the bottomhole pressure being at a high level, it just won't flow, so it is pumped.

It does pump with a very high fluid level, however.

Q Some of these tests that have been conducted on this well in the range of 200 barrels a day are based on an observation that you made that the fluid level in the well was high?

A Yes, sir.

Q The fluid was high?

A Even producing at the 200 barrel a day test rate.

Q Do you have any other comments on Exhibit 5?

A No.

Q Would you turn then, please, to what has been identified

as Amoco's Exhibit 6; what is that exhibit?

A Exhibit 6 is a data sheet which I have set forth a comparison of the oil recovery to date, to the oil in place, I have repeated the parameters that we used, the porosity of eight per cent, the water saturation 28 per cent, the RVF of 1.02.

It has been determined that the well has an effective net pay of 16', so going through those calculations, that calculates as 7,040 barrels of oil in place here per acre, or 281,600 barrels in place in this 40 acre unit.

Q While you are giving some figures, go a little slower for the sake of the reporter. I believe he is up with you right now.

A Then, using the cumulative production of 116,000 barrels and 281,000 barrels of oil in place, you had a 40-acre unit with 16' of pay, we have recovered 41.2 per cent of the oil in place under a 40-acre unit.

Q Mr. Malloy, do you as a reservoir engineer, what data of these types indicates to you from the standpoint of the drainage radius of the well--

A The fact we have had no water influx to the well, the reservoir is exhibiting very slight signs of depletion in that the reservoir pressure has dropped only 22,000 pounds. I concluded definitely we are draining an area in excess of the 40 acres.

Q All right, sir. Let me ask you this. We didn't core the pay and we have no core data as to permeability. Do these types of form data give you any idea as to the permeability in the well bore?

A Yes, I would say that the performance data of the well and the reservoir indicate a very excellent permeability in this pay.

Q All right, sir. Based on the data reflected on our Exhibit 6 and other performance characteristics of this well which you have observed have you formed an opinion as to whether or not one well in this Pool will effectively and efficiently drain in excess of 80 acres?

A Yes, sir, I feel because of the excellent performance of the well and the reservoir that very definitely one well can efficiently and economically drain in excess of 80 acres.

Q Do you foresee that any reservoir damage could occur if the Commission approved our recommendation here tody and adopted our 80 acre units and our two times factor which at this time would result in 160 barrels a day rate for this Field; do you see any reservoir damage or waste occurring?

A No, sir, I would not anticipate any damage of that type.

Q Do you feel that the recommendations made here today will prevent waste as well as protecting the correlative rights of all of the owners in the area?

A Yes, sir, I do.

Q Do you have anything else you would care to add?

A I don't believe so.

Q Mr. Examiner, that is all we have by way of direct evidence and testimony.

I would like to formally offer Amoco's Exhibits 1 through 6.

MR. NUTTER: Amoco's Exhibits 1 through 6 will be admitted in evidence.

CROSS-EXAMINATION

BY MR. NUTTER

Q Mr. Malloy, your bottom-hole pressure decline curve is based on two points?

A That is correct.

Q There is no confirming point that would indicate whether the line is to the flat or to the steep?

A No, nothing at this time, no, sir.

Q Either point could be in error?

A The pressure that was obtained in late 1971, I believe, was after either a 48 or 72 hour shut-in.

The data that were entered on the form at the initial one showed stabilized pressure.

I don't recall of there being a record of shut-in time for that.

However, it was considered a stabilized pressure, and we feel the long shut-in time for this later pressure would

give us stabilized pressure, also.

Q What is the original IP on this one?

A This initially was swabbed at a rate of 137 barrels in four hours, I believe, on the initial test.

Q It would appear that the well was capable of producing top allowable for most of the period of time plus the discovery allowable?

A Yes, sir.

Q Which was, I guess, the discovery allowables were completed then just prior to August when they over produced these?

A That is correct. Just looking at the data, discovery allowable hearing that was held in June, '68, it can be presumed that the discovery started then probably August 1 and in '68, and ended August 1st, '70, but through error they produced at the higher rate throughout the month of August.

And we do feel, I mean the well has been capable of producing the normal allowable in excess of that, as shown by the test that has been taken from time to time.

Q Do you have a current potential on the well?

A I have seen some test data. I don't know if I have it with me, of the well pumping, oh, in the vicinity of 200 barrels a day.

Q So, in other words, if your proposal were approved here and you got here your acreage factor of two, the well would

have been on an allowable of 160 barrels, which would be up here off of your chart?

A Yes.

Q We have no evidence to indicate that the well can't produce that. You do have a test?

A We do have test data from time to time throughout the life of the well that shows the well has been able to produce in the vicinity of 200 barrels a day.

Q How come you have never drilled a second well here, Mr. Malloy?

A I think because of the fact there have been so many dry holes drilled, some of these dry holes have been drilled subsequent to the completion of this well. This subject well was completed in May, 1968, the well that is on Exhibit No. 2 is labeled as Gorman-McKnight, which is immediately south of that in Section 35. It was completed as a dry hole in July, '68.

The well over towards the northwest corner of Section 35, the Smith-McKnight was April, 1971.

The well immediately to the east of the discovery well was October, 1968.

Q That is a Pan-Am well there?

A Yes, sir, it was. All three of these wells were Pan-Am or Amoco wells.

Then up in the two McKnight wells in the northwest of

26-4, they were 1969 completions as dry holes.

So, we have tried to drill another well in this reservoir. We just haven't hit it.

MR. PORTER: You think that one well will get all of the oil that would be gotten by more wells?

THE WITNESS: We are still contemplating doing some more drilling, probably in the southwest of 26, for this reservoir.

Q (By Mr. Buell) Actually, a recommendation to drill the additional well has been processed through the lower level of management and is ready to go to top management now?

A Yes.

Q Would you like for us to furnish you the latest potential tests by--by that, by potential tests, I mean to show that the well can easily make in excess of the 160.

MR. NUTTER: You might file that with the Commission.

CROSS-EXAMINATION

BY MR. NUTTER

Q What is your interpretation of 16 feet of net pay based on, Mr. Malloy?

A It was obtained from the microlateral log.

Q Were there any cores run?

A No cores were taken in the interval from the microlateral log.

It has been estimated that there is possibly sixteen

feet of pay.

Q There is a calculated porosity?

A Yes, it is a calculated porosity, and the water saturation from the logs.

See, the completion is actually over a forty foot interval from 3,305 to 3,390, and within that forty foot interval we feel there is probably sixteen feet of good effective net pay.

Q You feel you do have a water drive here?

A It is either a water drive or there is a mighty big reservoir to maintain the pressure as it has, with the production of 116,000 barrels, with the number of dry holes that we have around here, we have to find where the biggest reservoir is.

Q The biggest reservoir doesn't show up as yet?

A It hasn't shown up as yet, so I would presume there is probably an aquafair thus far that is aided in maintaining the pressure.

Q Wouldn't there be a possibility if you had a water production drive and you increased your pressure to a level higher--

A That might result in a condition of water--oh, some adverse effect on the reservoir by those high productions. I mean, nothing that has been obtained in producing and testing the wells so far has indicated any adverse effect.

Q It has never been produced at the rate?

A It has never been produced over a sustained period of time at the rate, though, but if that would be the case, if there were indications of damage, then drilling a second well on an 80 acre unit and reducing the individual well producing rates would certainly appear to be in order.

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

You may be excused.

Do you have anything further, Mr. Buell?

MR. BUELL: No, Mr. Examiner, I do not.

MR. NUTTER: Does anyone have anything they wish to offer in Case 4640?

We will take the case under advisement.

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

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

Richard Sturges
CERTIFIED SHORTHAND REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4640 heard by me on 1/5, 1972.

, Examiner
New Mexico Oil Conservation Commission

I N D E X

E X H I B I T S

APPLICANT'S	MARKED	ADMITTED
Exhibit No. 1	5	15
Exhibit No. 2	6	15
Exhibit No. 3 & 4	9	15
Exhibit No. 5	10	15
Exhibit No. 6	;3	15