BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

June 4, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico.

Case 4143

BEFORE: DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING

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MR. NUTTER: Case 4143.

MR. HATCH: Case 4143, continued from the May 21, 1969, Examiner Hearing, application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico.

MR. KELLAHIN: If the Examiner please, Jason Kellahin appearing for the Applicant. I have one witness I would like to have sworn.

(Thereupon, Applicant's Exhibits 1 through 5 were marked for identification.)

JOHN H. SWENDIG

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A John Swendig.

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

A With Amerada Petroleum Corporation as District Engineer in Hobbs, New Mexico.

Q Are you located in Hobbs?

A Yes.

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

A Yes, I have.

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

MR. NUTTER: Yes, they are.

Q Are you familiar with the application of Amerada in Case 4143?

A Yes, sir.

Q What is proposed by Amerada in this application?

A Amerada proposes to commingle in the wellbore the Eumont gas pool and Skaggs-Grayburg oil zone.

Q Referring to what has been marked as Exhibit No. 1, would you identify that exhibit?

A This a map of the Skaggs area, showing all the wells and completions, with the Skaggs-Grayburg wells shown in red circles, the Eumont gas wells in green.

Q Now, you show the Well No. 2 with an arrow pointing to it. That is the subject well, is it not?

A Yes, this is the Fred Turner Jr., "A" Well No. 2. This well is presently dually completed in the Skaggs-Grayburg and Eumont gas, and this was approved

by Order No. R-2974, in October of 1965. This well was for a dual completion in non-standard gas units, and the non-standard unit is shown in yellow on the map.

Q What is the closest Eumont production to that well?

A Continental has a Eumont gas completion in Section 13, Range 37 East, Township 20 South, and it is their S. E. M. U No. 41, but this is a shut-in gas well. The nearest production is in Section 24, Continental S.E.M.U, No. 69.

Q Do you know how long the Continental well in Section 13 has been shut-in?

A No, sir, I don't. It was completed prior to our Turner "A" No. 2. It has been shut-in at least since prior to 1965.

Q And it has not produced during that period, to your knowledge?

A No, sir.

Q Referring to what has been marked as Exhibit No. 2, would you identify that exhibit?

A Exhibit No. 2 is a schematic of the Fred Turner, Jr. "A" completion, and this is the completion that was approved by Order No. R-2974, and this shows the Eumont completion from 3,145 to 3,494; the Grayburg openhole

from 3,703 to 3,915. The Grayburg was produced through 3 inch tubing set with a Model D packer at 3,690, inch-and-a-half string of tubing run inside the 3 1/2, and the Eumont producing through the annulus.

Q Referring to what has been marked as Exhibit 3, would you identify that exhibit?

A If I might, the reason for our application, before we go to Exhibit No. 3, at the time of the dual completion, the Grayburg was producing 29 barrels of oil and a trace of water, with a gas-oil ratio of 6,800. The physical completion precludes efficient mechanical operation, and we have measured our pumping efficiency on this well of less than 50 percent.

Since the time of the dual completion, well conditions have changed such that the manner in which the well is dually completed is no longer applicable.

This brings up the Exhibit No. 3. One of the well conditions that have changed is the Grayburg capacity has increased as a result of water flooding adjacent to the Fred Turner "A" lease; and Exhibit 3 is a map showing the two active waterfloods in the area, Continental's S.E.M.U. Permian waterflood, and Texaco Skaggs-Grayburg unit, and on this map again the

Fred Turner "A" No. 2 is shown with an arrow. The active injection wells are shown by triangles.

In the course of remedial work on the Turner "A" No. 2, the two zones were allowed to flow together in order to clean the well up, and at that time the production from both zones was 126 barrels of oil, 54 barrels of water, with a GOR of 6,255.

MR. NUTTER: Will you go over those figures again?

A It flowed 126 barrels of oil, 54 barrels of water, and the GOR was 6,255.

MR. NUTTER: That is the combined zones on tests?

A Yes, sir, this is the combined zones. We were flowing the two zones together to clean the well up before putting it back on pump.

MR. NUTTER: What was the date of that test?

A 4-19-68.

Q (By Mr. Kellahin) You would say that this well has had a response from the offsetting flood, would you not?

A Yes. I might mention, too, three days prior to this test, on 4-16-68, the Grayburg zone alone produced 19 barrels of oil, a trace of water, and GOR of 468.

MR. NUTTER: Do you mean 1968 or 1969?

A No, sir, this was in 1968.

MR. NUTTER: More than a year ago?

A Yes, sir, it has been more than a year ago that we have been working at this. This was the first indication was a year ago.

Q Is the Grayburg now on a low GOR?

A Yes, sir, this was our first indication of waterflood response from Continental's flood, was a drastic decrease in ourgas-oil ratio. We have a long series of tests that were taken during June and July of 1968, showing the ratio to be around 400 to 500 to one.

Q Do you know whether the offsetting wells operated by Continental have received a response from the injection?

A Yes, sir. In the same section in Section 18, Continental's No. 77, No. 74, and No. 75 have shown response to water injection. I have some indication of the magnitude of these responses, if the Commission would like it.

The most notable response was in their Well No. 77, in January of 1967, it produced 127 barrels of oil; in February of 1968, it produced 909 barrels of oil. This is a little bit out of date, but this as far as I

have checked it, but all three wells have all shown responses to injection.

Q Now, referring to what has been marked as Exhibit No. 4, would you discuss that exhibit?

A There again, if I could say something about the Grayburg before we go on. The mechanical problems that we have, the remedial problems that we were working on in May of 1968, we were acidizing the Eumont zones, and since that time the Eumont began making water. Prior to that time, there was no water production from the Eumont production, no fluid production from the Eumont. After acidizing, the well makes eight or ten barrels of water per day, and this loads the well up. The well -- we will talk about the pressures in a minute -- but it is low pressure, and it creates a problem. The well is not capable of flowing the fluids out.

Exhibit 4 is a schematic of our proposed completion, which shows the utilizing the 3 inch tubing in the well now, and unseating the tubing from the packer, allowing the Grayburg production to produce into the annulus, Eumont water production to flow down to the pump, and the gas to flow out the annulus and all the fluids to be pumped through the 3 inch tubing.

Q What is the production from the Eumont at the

present time?

A Eumont production is somewhere -- it will run between 130 to 200 Mcf per day.

Q Do you expect that will continue at that rate?

A I would expect that the production will continue to decline from this point in depletion.

Q Have you made any estimate of the remaining reserves?

A Exhibit No. 5 is a pressure cumulative plot, showing two curves, One, the left curve, was prior -- the production and extrapolation prior to our acidizing the well. The plot on the right is production since acidizing, showing the reserves in the Eumont to be about 65,000 Mcf.

Q What disposition was made of this gas?

A This gas is sold to the Warren McGee unit, which produces by gas lift.

Q Would the fact that you are planning to commingle the production in the wellbore result in any reduction in the amount that would be received for the gas?

A No, sir, the same disposition of the gas will be in the future as it is presently. It will go to the Warren McGee gas systems.

Q Returning to Exhibit No. 4, as I understand it, Eumont gas would be produced through the annulus?

A Yes, sir.

Q And the Grayburg oil would be produced through the tubing?

A Yes, sir.

Q You would have a pump in the tubing?

A Yes, sir.

Q For what reason are you leaving the packer in?

A We have plans in the future to waterflood the Fred Turner, Jr., "A" lease, and the No. 2 will be an injection well eventually, and extension of Continental's pattern to the south and west. And the packer will be utilized when the well is converted to an injection well.

Q While the well is being produced, would there be any contact of the Grayburg fluid with the Eumont perforations?

A We have taken dynamometer tests on the pumping completion of the Grayburg, and show that we are pumping all of the fluid from the Grayburg. We have not been able to establish a bottomhole pressure for the Grayburg, but during the production operations fluid will be below the Eumont perforation. If the well is shut-in, we anticipate

that the fluid will rise above the Eumont perforations.

Q In your opinion, will that cause any damage to the Eumont zone?

A In treating this well in May of 1968, we found it required 2,300 pounds to pump into the formation after 30 minutes. After shutting down the pumps, we still had 500 pounds of pressure on the Eumont. We found in other areas where we have dual completions in the Eumont, that during remedial operations, the well has killed generally with oil, and we have not noticed any loss of fluids to the Eumont zone, and no loss of production when these zones were returned, so we do not anticipate that the Eumont zone will be hurt by having well fluids across --

Q What is the pressure in the Eumont?

A The pressure in the Eumont now is about 400 PSI.

Q What will you do with the Eumont when this well is converted for injection?

A Since the well will not flow on its own when the well is converted to injection, it will be necessary that the Eumont be squeezed off and abandoned.

Q How long do you anticipate the Eumont will

produce?

A If it is allowed to produce as it is now, the production will probably last about a year.

Q Would you consider this a salvage operation, insofar as the Eumont gas is concerned?

A Yes, the Eumont is a salvage operation.

Q Would it be economical to attempt to continue your dual completion as it was originally approved by the Commission?

A No, sir. If we continue to operate as we are now, the Eumont does not produce under the dual completion as set up, and it will remain shut-in if we do not dually complete it in the wellbore.

Q Will the commingling in the wellbore, in your opinion, cause any damage to any production from either the Eumont or the Grayburg?

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

Q Either in this well or adjacent wells?

A No, sir.

Q What would the GOR be on the commingled production?

A We estimate the GOR will be about 3,200 to one, commingled.

Q As I understand, the Grayburg has received a

response from the offsetting waterflood. At what rate would you anticipate you would produce that?

A About 50 to 55 barrels a day is the capacity at present. About 50 barrels of water per day.

Q If you are held to the limiting gas-oil ratio under Statewide rules, would that have any effect on your production?

A The 2,000 to one limiting ratio is affected then. Our allowable will be 37 barrels per day.

Q Are you asking, then, in this applicable that you be granted an exception to the GOR limitation?

A Yes, sir.

Q What do you propose in this connection?

A We would like to be exempt from the GOR limitation. And if it is necessary to establish a limiting GOR, we would like to have it set at 4,000 to one.

Q Were Exhibits 1 through 5 prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLAHIN: At this time I will offer Exhibits 1 through 5, inclusive.

MR. NUTTER: Amerada's Exhibits 1 through 5 will be admitted in evidence.

(Thereupon, Applicant's Exhibits 1 through 5 were admitted in evidence.)

Q Do you have anything to add?

A No, sir, that would be all.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Swendig, prior to the workover when you acidized the Eumont, it wasn't making anything, is that it?

A No, sir, it was still producing but it was producing quite weak, and we acidized it attempting to open up some additional zones and increase the flowing tubing pressure.

Q Then it started making eight barrels of water per day?

A Eight to ten barrels, we estimate.

Q What is the status of this well now?

A Well, the Eumont will not produce now. It will load up and die.

Q Have you tried bleeder strings down the annulus between the tubing and the casing.

A No, sir.

Q Isn't it common practice to run a bleeder string

down the well when you load up with the gas zone with liquid?

A Yes, sir, but we have in the present completion, you will notice there is a sliding sleeve arrangement, and we have run the inch-and-a-half and attempted to flow the Eumont through the inch-and-a-half with the sliding sleeve open and the Grayburg blanked off, and it still will load up and die. It doesn't have sufficient pressure to even flow through inch-and-a-half tubing.

Q Now, is this inch-and-a-half tubing in the well at the present time?

A Yes, sir.

Q And you are pumping the Skaggs-Grayburg through this inch-and-a-half?

A Right. Our pumping installation is set up right now with an inch-and-a-quarter pump. It should be a displacement of about 120 barrels per day. We moved about 30 barrels of oil and 25 barrels of water, and this is the maximum we have been able to produce from this. Even with the low ratios we have now, there is gas interference with the pump, and our mechanical efficiency is about 50 percent.

Q Are any of the Eumont gas wells presently being

pumped to relieve water load up?

A Not to my knowledge.

Q This is true down in the Jalmat area.

A There are gas wells pumped to remove water, yes.

Q And you would have room in this 7 inch casing to run another string of tubing, and pump this Eumont, if it was necessary?

A Yes, sir, we probably could. We have looked at the possibility, but we still have the same situation of pumping the Grayburg underneath the packer.

Q Well, the Grayburg GOR has come down?

A Yes, sir.

Q And with additional response from this waterflood, it would be normal to expect the GOR to reduce further, wouldn't it?

A I would expect that the GOR in this area will probably go down to 200, 250, eventually.

Q What is the present rate of production on these Continental wells offsetting?

A I can't answer that. I don't know what their production rates are.

Q The only figure you mentioned was the No. 77,

which in February of 1968 had produced 909 barrels.

A Are you talking about the oil wells?

Q Yes.

A There again, I didn't bring the Continental data completely up-to-date. March of 1968 was the last production that I had on the Continental wells, and I only tabulated this to see if there had been response. As far as I could see, they had responded, so I didn't continue it.

Q Did you have a GOR at that time on the Continental 77?

A I've got the monthly gas volume. It produced 2,017 Mcf, and 900 barrels of oil. This would be about 2,000 to one.

Q Now, you say that eventually you will put some wells on injection in your Turner "A" lease?

A Yes, sir.

Q To fill outContinental's pattern, this No. 2 Well would be an injection well?

A Yes, sir, our plans are to convert our No. 2, No. 5, No. 14, and No.1to injection. This would be an extension of Continental's five-spot pattern.

Q This No. 1 down here in Section 19?

A Yes, sir.

Q Now, as the tubing is lifted up out of the packer, you anticipate that the fluidsfrom the Eumont would drop to the bottom, and that the gas would come up the annulus. Do you expect that gas from the Grayburg would also break out and come up the annulus?

A Yes, sir, the gas from the Grayburg would break out and come up the annulus, also.

Q How would you propose that the well be prorated as far as the Eumont gas pool is concerned?

A Since it is a marginal well, it wouldn't be prorated as far as gas.

Q How much of the gas production would be attributed to the Eumont zone?

A It would be based on a well test prior to the commingling of the two zones, and use the subtraction type method.

Q The Commission has authorized the commingling in the wellbore of some marginal production down in southest New Mexico. Could you name an instance where the Commission has authorized commingling of gas pools and oil pools?

A To my knowledge, there has not been any.

MR. NUTTER: Are there any further questions of

Mr. Swendig? You may be excused.

Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That is all.

MR. NUTTER: Does anyone have anything to offer in Case 4143? We will take the Case under advisement, and call Case 3796.

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

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

Samuel K. Mortelette

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BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

May 21, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico.

Case 4143

BEFORE: ELVIS A. UTZ, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 4143.

MR. HATCH: Application of Amerada Petroleum Corporation for downhole commingling and special gas-oil ratio limitation, Lea County, New Mexico.

If the Examiner please, we have received a request to continue this case, also, to June 4.

MR. UTZ: Without objection, Case 4143, will be continued to June 4.

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

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

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4643, heard by me on May 14, 1969.

Examiner
New Mexico Oil Conservation Commission