BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
APRIL 5, 1961

EXAMINER HEARING

IN THE MATTER OF

CASE 2229: Application of Amerada Petroleum Corporation for permission to commingle the production from two separate pools within the well-bore. Applicant, in the above-styled cause, seeks permission to commingle the oil production from the Warren-Connell Pool with the production from the Warren-McKee Pool by producing one allowable from the two pools through a common production string in its Turner Well No. 2, located in the NW/4 SW/4 of Section 17, Township 20 South, Range 38 East, Lea County, New Mexico.

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: The hearing will come to order, please. The first case on the docket is 2229.

MR. MORRIS: Case 2229. Application of Amerada Petroleum Corporation for permission to commingle the production from two separate pools within the well-bore.

MR. KELLAHIN: Jason Kellahin, Kellahin & Fox, Santa Fe, representing the applicant. We'll have one witness, Mr. Andy

Snyder.

(Witness sworn)

A. E. SNYDER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A A. E. Snyder.

Q By whom are you employed and in what position?

A I am employed by Amerada Petroleum Corporation as District Engineer in Hobbs, New Mexico.

Q Have you testified before the Oil Conservation Commission as a petroleum engineer and had your qualifications made a matter of record?

A Yes, sir.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir.

Q (By Mr. Kellahin) Are you familiar with the application of Amerada Petroleum Corporation in Case 2229?

A Yes, sir.

Q Would you state briefly what Amerada proposes in this application?

A In this application Amerada proposes to commingle within the well-bore the production from two separate pools, the Warren-

McKee Pool and the Warren-Connell Pool in their Turner No. 2 Well, located in the southwest quarter of Section 17, Township 20 South, Range 38 East, Lea County, New Mexico.

Q Have you prepared a plat showing the area involved in this application?

A Yes, sir.

(Whereupon, Amerada's Exhibit No. 1 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 1, will you discuss the information shown on that Exhibit?

A This Exhibit shows the Warren-McKee Pool. All of the wells located on the map are Warren-McKee producers, and there are four wells that are circled in red, these four wells are wells that were drilled to the Connell sand, which is about two hundred feet below the McKee. The well that this application covers is the Well No. 2, located in Unit L, Section 17, Township 20 South, Range 38 East. There are three other wells that drill to the Connell sand. I have shown the tops of the sand sub-sea datum on each of those wells; Amerada's Turner No. 7, location in Section 18, drilled to this sand and found there were no shows.

MR. NUTTER: These tops are tops of the Connell sand?

A Yes, sir. The No. 1 Turner drilled to the Connell, and found no show. The No. 13 Turner in Section 19 drilled to the Connell and found a fair stain. The casing was set through the sand at this location and perforated and acidized, but failed to

give up any fluid at all. It was swabbed dry.

Q What is the present status of the other Connell wells, Mr. Snyder?

A These three wells that drilled to the Connell, none of them ever produced anything from it. The No. 2 Well is presently a dual completion in the McKee and the Connell sand. The Connell side of this is dead and has been dead since December of 1960.

Q Your Turner No. 2 Well, then, I take it, is the only well in the area producing from the Connell sand, is that correct?

A Yes. It's the only well that ever has produced from the Connell.

(Whereupon, Amerada's Exhibit No. 2 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 2, would you discuss the information which you have placed on that Exhibit?

A Exhibit No. 2 is a copy of our electrical log run on the Turner No. 2. On this log I have placed the casing program at 296 feet. We set 13 3/8ths inch casing and cemented with 250 sacks, with cement circulated to the surface. About half way down the log at 3700 feet we show 8 5/8ths inch casing set at 3713 feet with 1500 sacks of cement. The top of the cement was found at 1050 feet. The next thing indicated on this log is right down at the bottom of it. We show the top of the McKee sand at 8996, the McKee perforations from 8996 to 9027, and 9037 to 9085. The top of the Connell sand at 9243, with Connell perforations at 9245 to

9263. 5½ inch casing set at 9267 to 9270 with 600 sacks, and the top of the cement was found at 3727.

Q What is the nature of the Connell sand?

A The Connell and the McKee are all in the Simpson series. It's a series of sands and shales. Both of them are rather unconsolidated sands, they're semi-consolidated, I suppose you would call them. Both zones have produced some fine floating sand with the oil production over the years.

Q Is the Connell sand a thick pay or thin pay section?

A No, it's a fairly thin section as compared to the McKee. You'll notice on the Exhibit No. 2 that the McKee sand is rather thick and massive, where the Connell is a very thinning stringer. It comprises thirty feet on the logs, maybe twenty-five feet. The other wells, where it was drilled, it was thinner than this. As I mentioned, on Exhibit 1, it was completely barren of oil saturation.

MR. NUTTER: Was the sand present in the other wells?

A Yes, it was present but thinner.

Q (By Mr. Kellahin) As I understand it, the Turner No. 2 Well has been produced as a dual completion in the McKee and the Connell, is that correct?

A Yes, sir.

(Whereupon, Amerada's Exhibit No. 3 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 3,

would you discuss the information shown on that Exhibit?

A Exhibit No. 3 is a performance curve of the Connell reservoir as it's been produced through Turner No. 2. On this curve we show gas-oil ratio, starting out when the pool was opened in the first part of 1959, the gas-oil ratio of about a thousand, which increased rapidly up to slightly over five thousand, and the last GOR we had showed it something below five thousand, indicating it was a small depletion type reservoir. It had reached a maximum GOR and started on a decline. The bottom hole pressure of 3396 measured at sub-sea datum of 5430, declining quite rapidly down to the present value of 866 pounds. Oil production, you can see the well was a top allowable well, making some 4000 barrels a month for about five or six months, and declined off rapidly down to the point in December where it made a very small amount of oil and died. We swabbed it several times. It would not respond to swabbing, so it has been shut-in since that time. Cumulative production curve shows about 838,000 barrels that the reservoir has produced prior to the time it died.

Q Is the Connell a solution gas reservoir?

A Yes, sir.

Q Do you find any indication of water drive present in the reservoir?

A No. Everything on the curve, everything about it indicates that it has no active water drive. It's a complete solution gas.

Q Are the curves depicted on this Exhibit typical of a solution gas reservoir?

A Yes, sir.

Q Of the type involved here?

A Very small depleted type reservoir.

(Whereupon, Amerada's Exhibit No. 4 was marked for identification.)

Q Referring to what has been marked as Exhibit No. 4, would you discuss the information shown on that Exhibit?

A Exhibit No. 4 is another performance curve of the McKee reservoir in this area. You'll notice that it started producing back in January of 1952. This curve does not cover the entire area of the McKee field, as shown on Exhibit No. 1, but is what we call the North Warren-McKee. It's about the north half of the McKee reservoir. It started with an ~~AIP~~ BHP of 3348 pounds at a minus 5350 feet, and has declined gradually over the years down to a current value of 752. The GOR on this reservoir has likewise exhibited an upward trend, starting from something on the order of 600 and up to a maximum of a little below 3000. This bottom hole pressure decline and the increasing GOR have been much slower in the McKee field because it's a much larger pool. The other curves here merely show the number of wells, the current rate of production, and the cumulative production from this North Warren-McKee field. The total cumulative production from this area of the McKee Pool is slightly over fourteen million barrels -- I'm sorry,

slightly over seven million barrels.

Q Just to tie the two Exhibits together, Mr. Snyder, would you give a comparison on the present pressures in the McKee and the Connell?

A The current pressures in the two reservoirs are very close together; 866 in the Connell against 752 in the McKee.

Q Would you anticipate,once the Connell is again put on production, that there would be further decline in the Connell?

A Yes, sir.

Q What is the present status of the McKee production, is that a flowing well?

A This McKee well is still flowing. It's becoming very weak. It's the only McKee well left,that we have, that is still flowing. The others have been put on artificial lift the last year or year and a half.

Q Would you anticipate that the Connell would continue as a flowing well for any substantial period of time?

A The McKee?

Q The McKee?

A Not very long. Within the next few months we anticipate having to put it on artificial lift.

(Whereupon, Amerada's Exhibit No. 5 was marked for identification.)

Q Referring to what has been marked as Exhibit 5, will you discuss the information shown on that Exhibit?

A Exhibit No. 5 is a plot of cumulative production versus reservoir pressure in the Connell reservoir as it has been produced in Turner No. 2, showing AIP of 3396 pounds, and the other points on this curve indicate times cumulative production when we actually measured the pressure. The last point on it is 866 pounds. We have extrapolated this in order to determine how much reserves are left in the Connell sand. In lining up most of the points where we could come near making the straight line extrapolation, it appears that we have a maximum of 10,000 barrels remaining reserves in the Connell sand. The well has produced 38,000 barrels, and we anticipate that it might ultimately recover about 48,000 barrels.

Q Would, in your opinion, that justify the installation of pumping equipment on the well?

A No, sir. I checked into the method that we would have to install pumping equipment, and with the present equipment in the well, it only has 5½-inch casing, the tubing in it is small, and we would have to run special rods with turn-down couplings, and buying the pumping equipment, and the costs, it would not justify setting pumping equipment.

(Whereupon, Amerada's Exhibit No. 6 was marked for identification.)

Q Now, referring to what has been marked as Exhibit No. 6, would you discuss the present status of the well?

A Exhibit 6 shows the present installation in the well as granted by the Commission order when we dually completed it. It

has two strings of 2/16ths inch flush joint tubing set in 7 inch casing with a permanent packer at 9100 feet, separating the McKee and Connell perforations.

(Whereupon, Amerada's Exhibit No.7 was marked for identification)

Q Referring to what has been marked as Exhibit No. 7, would you discuss the proposed completion?

A Exhibit No. 7 shows the way that we propose to complete this well in order to produce the small amount of remaining oil in the Connell zone at an economical type of program.

We would leave the present permanent packer in the well at 9100 feet. We would pull both strings of 2/16ths inch tubing, and run one string of 2 3/8ths inch standard API tubing. In this string there would be another packer, retrievable packer, set above the McKee perforations. It would be gas lift valves with one wire line retrievable valve set above the top packer.

The top packer would serve the purpose of keeping the gas pressure off the McKee formation, since it has a low bottom hole pressure. It would still allow it to feed into the tubing; we would be able to lift off the valve right above the packer. Just immediately above this top packer would be a standing valve in order to keep the gas pressure of the McKee inside the tubing in the McKee perforations.

Then, down just above the bottom packer there would be another standing valve to keep the McKee fluids from ever going into the

Connell reservoir. As time goes by, we expect that the Connell pressure would deplete more rapid than the McKee pressure, so this standing valve would be set there so no fluids from the McKee could ever go back down the hole into the Connell reservoir. Also, there would be a landing nipple in this interim there where we could run different kind of tools on wire line so that we could test either the McKee or the Connell, as individual zones.

Q As I understand it, then, there would be no possibility of fluids from the McKee entering the Connell?

A Yes, sir.

Q Would the type of completion you propose, assuming you are going to use a gas lift operation on the well, enable you, then, to produce the remaining fluids in the Connell?

A Yes, sir.

Q Would that effectively reduce the pressure above in order that that would flow into the tubing?

A Yes. The gas lift installation, we think we could draw the pressure down at this point to somewhere on the order of 350 pounds with gas lift installation so both zones would be able to feed into that.

Q How would you check the valve to be certain that there could be no communication into the Connell?

A By running what we would call a straight-through tool in the landing nipple, it would blank off the McKee perforations completely from the tubing, and we could pressure up on the tubing

and make sure that the lower standing valve is holding.

Q Is that an expensive test to run, Mr. Snyder?

A It is relatively expensive. If you have no trouble at all with your wire line equipment, everything works right, it could be done for somewhere on the order of three hundred dollars. It can be more expensive if you have a hard time getting some of your tools out.

Q Have you had experience with this type of check valve in the past?

A Yes.

Q Have you found an effective valve for the protection of the zone that you propose here?

A Yes. We have used this same type of valve in the McKee field, similar to that installation, and some of them have been in a year and are still holding very good.

Q What are the ~~flood~~ fluid characteristics of the two zones?

A The two zones are very similar in ~~flood~~ fluid characteristics. Neither zone makes any water. The oil and gas are both sweet. The gravity of the McKee averages about forty-five degrees; the gravity on the Connell fifty-one degrees.

Q With the volume of oil that would be produced from the Connell, there would be no appreciable change in the ultimate production from the well as to gravities, would there?

A No, sir.

Q Would you anticipate any corrosion problems?

A No.

Q Have you had any experience with corrosion in the well-bore at the present time?

A No, sir.

Q Would you outline briefly, Mr. Snyder, the reasons for proposing this type of completion as against the installation of pumping equipment on the well?

A As I mentioned before, we checked into what it would cost us to artificially lift this zone as an individual zone, and there's no way we can see where we can get the small amount of oil that would remain. Gas lifting from this depth through macaroni tubing would be inefficient. It would be costly to install pumping equipment. The rod couplings would have to be turned down to a special size to go into the small tubing, and there's no way that we can get the oil economically unless we do it this way.

Q In the event you are not able to complete the well as proposed, what would be the result as to the oil left in the Connell?

A We would just have to leave it there, have to plug it off and leave it.

Q These are two separate producing horizons, are they not?

A Yes.

Q What allowable do you propose as to the two zones?

A From the two zones we propose taking one well allowable. The maximum allowable for either of these zones,at the present rate,

would be 132 barrels per day. Both are in the same depth bracket. Currently, the McKee zone is assigned a 82-barrel allowable. It makes somewhat more than that, but is penalized due to GOR. When the well dies and we run gas lift valves, I anticipate for a while it will be capable of making top allowable. However, it probably would not be allowed top allowable due to the GOR.

The other wells that we put on gas lift, most of them were 60 or 70 barrel wells. When we installed gas lift, they went close to top allowable for a short time, and now they're back below top allowable. For a short period of time we might possibly expect a top allowable out of the two, but not for very long.

Q You are not proposing two allowables be assigned to the well?

A No, sir.

Q In your opinion, will this type of completion fully protect the two producing zones?

A Yes, I believe it will.

Q Would it result in any communication between the two zones as to thieving of oil from one zone into the other?

A No, I don't believe it would.

Q Is it economically feasible to make this type of installation?

A Yes.

Q In your opinion, is this completion in the interest of conservation and the prevention of waste?

A Yes, I believe it is.

Q Were Exhibits 1 through 7 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer in evidence Exhibits 1 through 7.

MR. NUTTER: Exhibits 1 through 7 will be admitted.

MR. KELLAHIN: That's all the questions I have.

MR. NUTTER: Does anyone have any questions?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

CROSS-EXAMINATION

BY MR. PAYNE:

Q Did you say you could test each one of the zones separately under the proposed installation?

A Yes.

Q Just how do you do that?

A In this landing nipple, you'll notice designated there on Exhibit 7, this is a seating nipple or landing nipple arrangement whereby we can run a wire line tool in it. The one tool we run in has the bottom part blanked off. It has an opening in the side so that the holes indicated in the tubing, the McKee formation, could feed through that, and the Connell would be blanked off. On the other side we can pull that tool and use on there one that has an opening straight through, and the McKee side would

be blanked off. This, as I mentioned, is a relatively expensive operation. We wouldn't want to do it real often, but we do have it there so we can make periodic tests,as the occasion arises, as we feel that we need to test, in order to find out what each of the zones are doing.

Q Neither one of the pools is exempt from gas-oil ratio tests?

A No.

Q So you would have to run those by this method?

A Yes, sir.

Q Did you say you produced some sand?

A Yes. Both zones have produced sand.

Q Would that cause you any trouble in trying to seal off one zone in testing?

A Sometimes it does cause trouble. That's what I mentioned. There are times that we have gone in to pull the equipment, and it doesn't come out easy, and it's an expensive operation to get it out.

Q You still feel that you could get an efficient GOR?

A Yes.

Q I believe you said you proposed to leave the same packer in the hole?

A Yes; the permanent type packer there at 9100 feet. We would not drill it out.

Q You do propose to change your tubing size, don't you?

A Yes.

Q How do you do that, with the same packer?

A This packer opening in the pack is set for a certain size of stringer, seal nipples, and all, and you would run those on the bottom of any size of tubing that you put in.

Q I believe you testified that if you have to abandon the Connell zone that oil will be lost?

A Yes.

Q Have you considered the possibility of secondary recovery in either of these two pools?

A The secondary recovery is under consideration in the McKee Pool. Amerada and the other operators are jointly working on an engineering study, just getting under way, for secondary in the McKee. However, in the Connell, I see no possibility there for secondary since the three wells we drilled, two of them, the pay was barren, it was completely tight, had no porosity, and the other one,although it had some staining,we were unable to get it to give up any liquids of any kind. I don't know where we could inject anything to get a secondary recovery.

Q If you institute a secondary recover program in the McKee, how is that going to affect your allowable that's coming out of this one hole? I believe you stated you only wanted one allowable.

A Yes; that's quite a ways down the road, and it's pretty hard to second guess what might happen in these instances. I expect by the time we got the unit together and get the approval,

l be two or three years down the road and have accomplished

our purpose, and be able to plug it off by that time.

Q This is a one-well pool, the Connell is?

A Yes.

Q Do you feel that you can get efficient flow from both zones through this one string of tubing?

A Yes, I believe we can.

Q Do you have any other installations like this?

A None in New Mexico, no, sir.

Q How about other states?

A Yes.

Q What's been your experience with them, satisfactory?

A Yes, sir.

Q What's the production from the Connell zone at present?

A It has been dead for three months now. The last production was in December. Its allowable was 12 barrels a day at that time.

Q Did it make that?

A Not in December, no.

Q In previous months it made about that?

A Something along that order, yes, sir. The eight months prior to that time that it ceased production, it averaged something on that order.

MR. PAYNE: Thank you.

MR. PORTER: I have one question.

MR. NUTTER: Mr. Porter.

BY MR. PORTER:

Q Did you testify as to the amount of oil that you would expect to recover in the Connell?

A Yes, sir. About another ten thousand barrels.

MR. PORTER: About ten thousand. Thank you.

BY MR. NUTTER:

Q Mr. Snyder, you said that if you didn't deplete this well in this manner, that ten thousand barrels of oil would be left?

A Yes.

Q That doesn't mean that oil would be irretrievably lost?

A As far as we are concerned, we could never go back and get it.

Q You couldn't go back and get it after you ~~completed~~ drilled the McKee? Why?

A We could, but at the time the McKee is completed -- in other words, we would have one well sitting way off from other operations; to go back in and do the type of work it would take to do and still install artificial lift, I doubt if we would ever consider it.

Q On your Exhibit No. 5, you show an expected decline for this well from the present position to an abandonment pressure of 350 pounds.

A Yes.

Q What is the interval of time that you would go from the present point to the abandonment pressure?

A Well, that interval depends on how we produce the well. Of course, if we put it in with the McKee where its feed-in will be slow, it will only be drawn down as fast as the McKee reservoir is drawn down. It may be several years. If it were a single completion, we would go in and put it on gas lift by itself. We probably could do that in a year or eighteen months' time.

Q Another thing, Mr. Snyder, you stated that gas lifting this well through a macaroni well would be inefficient. Have you considered the feasibility of gas lifting the well through gas lift valves on the string of tubing and gas down the annulus?

A Yes, sir. Of course, when we go into that we come into a very inefficient operation at this depth from this type of reservoir. We would also have to gas lift the McKee zone there.

Q You expect the McKee to cease flowing in the relatively near future?

A Yes, very soon. If we would run gas lift valves on both strings, it causes the efficiency of your operation to be very poor. The compressors that we have set, we designed those for a certain amount of gas, and we are almost to the top capacity of the compressors with the wells that we have on gas lift now. If we would do this in this well, with the inefficiency that we would have, we would have to set additional compressor capacity.

Q It would take more gas down the annulus to lift two strings of tubing than to lift a single string?

A Yes; it would probably triple the amount of gas.

Q How many ~~gas~~ wells do you have on gas lift at the present time?

A Thirteen.

Q Do you have any other wells in the area that are going to have to go on gas lift?

A No, that's all we have.

Q So you don't anticipate that you'll ever have to change compressors?

A No.

Q Mr. Snyder, you don't imply by this application that it would be impossible to artificially lift these two zones by the two strings of tubing that you have installed in the well?

A No, but it would be economically --

Q But mechanically, it's possible?

A Mechanically, it is possible.

Q Or to gas lift the two zones simultaneously?

A One of the problems we face is the $5\frac{1}{2}$ inch casing. The gas lift valves take up a certain amount of room, so we would be forced to a very,very tiny gas lift valve, and when you go to small size valves, they're inefficient, and putting the two strings together, it multiplies the inefficiency so that you would end up trying to do something that's almost impossible.

Q This data that you present on Exhibit 4 for performance curves for this Warren-McKee, is this poolwide data or information that applies to your No. 2 Well?

A It applies to our No. 2 Well and the surrounding wells. If you'll look at Exhibit No. 1, in the north half of Sections 19 and 20, you'll notice the dotted line going across there; everything to the south of that is Continental's unit. The curve represents all of the production from everything north of that line.

Q Including bottom hole pressure and GOR?

A Yes, sir.

Q Do you have the actual GOR on your No. 2 Well and the bottom hole pressure on that well?

A Yes.

Q What are those figures, please?

A GOR is about 4100, the bottom hole pressure, actually 700 pounds.

Q When was that bottom hole pressure taken?

A In May last year, in the statewide survey.

Q Which is the same time that you show the pool averaging 8752?

A Yes.

Q When was the GOR taken?

A I'm not certain about that. It was during the month that the fieldwide gas-oil ratio survey was scheduled.

Q You said this well is carrying a penalized allowable of 63 barrels in the McKee?

A Yes.

Q For high GOR?

A Yes. We have a limiting ratio of two thousand there in the field.

Q So, while the pool average is 2450, or something thereabouts, on GOR, your well's GOR is 4100?

A Yes, sir. Of course, the GOR on the Connell is slightly higher than that, about 4800.

Q Mr. Snyder, I'm at a loss to understand why you feel it necessary to put the standing valve down there at the bottom of your string of tubing in your proposed completion, just above the packer. I know what the purpose of it is; it's to keep the higher pressure McKee fluids from going down to the lower pressure Connell zone. If the pressures are higher in the McKee, how do you expect any flow to come up against the valve?

A The pressure you are speaking of is the static pressure. When we are producing, it will not be at static conditions. We will have drawn down the pressure somewhere on the order of 350 pounds.

Q Do you expect to draw down pressure in the McKee more than you do on the Connell?

A No, we expect to draw them down together. Regardless of what the pressure differentials were between the two, if you open them up into something that was not closed, then they would approach an equalized condition between the two of them.

Q The equalized condition is not going to unseat the bulb

in the valve?

A It won't be equalized in the tubing. Inside the tubing, while we're producing, it will have a pressure of 350 pounds. Both zones will be able to feed into that. It isn't like opening a big pipe and letting fluid come in, but they both have limited permeability, limited amount of feed-in, so both of them will be able to feed-in.

Q Are there any pools in southeastern New Mexico in the Simpson series in which the formations are more or less consolidated into the single pool?

A Yes. The Hare Pool is an example of that.

Q And the Connell and McKee are both produced as a single pool?

A Yes.

Q Was it a request at the time this well was completed to create two single pools?

A Yes.

Q You were willing to accept two allowables at the time that the wells were capable of producing two allowables?

A Yes.

Q But now those wells are not capable of producing the two allowables?

A Right.

Q On your Exhibit 3, you show this GOR breaking over the top in this solution gas reservoir at approximately October of

1959. Are these GOR points measured on tests, or are these producing ratios that you've encountered over the life of this well?

A They are actual measured ratios on the individual test.

Q Was there no GOR taken from October of 1959 until June of 1960?

A That's right.

Q Does that mean that there was no test taken for the state, or that the company did not take a GOR test on the well?

A We actually didn't take one ourselves.

Q So we don't know at exactly what point this GOR did break over the top, then?

A No. I suspect that it probably went higher than the five thousand.

Q You think it might have been at the point where the production took the drastic decrease in February of 1960?

A It could have been there.

Q Where do you think the curve would be here for production if the well were on artificial lift at this present time, by a separate string of rods, for instance?

A That would be real hard to determine. I believe we never have taken a PI test in the well, so, to know just exactly where we would be would be hard to say. Probably if we had installed some type of artificial lift back in February, 1960, the reservoir would have been easily depleted by that now.

Q The production curve would have been higher than the line

which roughly parallels 500 barrels a month?

A Yes.

Q This data, of course, applies to just the one well?

A Yes.

Q What test would you actually be conducting if you were to go in with your blank off tool and seal off the one zone and test the other? You would be conducting a productivity test on the two zones as well as taking a GOR?

A Yes, sir.

Q This would cost three hundred dollars, without trouble?

A Yes.

Q In order to establish the GOR for the well, it might be necessary to conduct such a test once a year?

A Yes.

Q I assume Amerada would be willing to take the test once a year?

A Yes, I am sure we would. As I mentioned, we have this McKee secondary study under consideration at the present time, so we're interested in knowing about the McKee, about its performance, and be able to tell to the other operators' satisfaction what the McKee is actually doing there, in order that its participation in any formula worked out might be reasonable.

Q Does Amerada advocate this type of dual completion for wells which are capable of producing top allowable in either or both of the zones?

A As a general rule, we don't. The purpose of this whole application is in order that we might salvage some of the eight or ten thousand barrels of oil that we have left. Otherwise, we feel we would have to go out and leave it there.

Q You don't advocate this for top allowable zones?

A No.

Q Do you use it for top allowable zones in other places?

A No, sir.

MR. NUTTER: Any further questions? Mr. Morris.

BY MR. MORRIS:

Q Mr. Snyder, as I understand it, your application, commingling, then, in the event it's approved, should become effective when the McKee zone is incapable of flowing, is that correct?

A Yes, that's right.

Q Are you going to make any attempt at that time to work over the zone to attempt to revive the flow?

A No. We have done all that we feel that we can in order to revive the flow out of the Connell. It died a number of times in the past month, and we swabbed it, and it started flowing again.

Q I'm referring to McKee. Are you going to attempt to revive the McKee when it dies?

A No, sir.

Q So, then, this type of an installation really is going to be preventing you from working over or attempting to revive the flow in the McKee?

A No. The McKee bottom hole pressure is down so low that we know that when it actually ceases actual flow, there will be nothing that we could do outside of injecting fluids, which we are in the process of studying now. Temporarily, for the next couple of years or so, until this unitization effort is complete, there would be nothing that we could do to revive the flow in the McKee. It's perforated all the way up to the top of the sand. It's just a matter of a depletion type reservoir, and the bottom hole pressure is essentially all used up.

Q Do you propose, in the event this application is granted, do you propose to notify the Commission at such time as the McKee ceases to flow, and that we should consider the effectiveness of any order that might be issued upon that date, upon your giving us notification?

A We could do that very easily.

MR. MORRIS: That's all I have.

BY MR. PAYNE:

Q Are you presently commingling the production from the two zones at the surface?

A Yes, at the surface.

Q Is that after separate measurement?

A Yes.

Q So, your production figures are actually based on separate metering right now, rather than periodic well tests? I mean, you know how much is coming from each zone?

A Yes.

Q What disposition is being made of the casinghead gas?

A It is being sold to Warren. Part of it goes into the compressor, andthe part left spills over to Warren's low pressure sales line.

BY MR. NUTTER:

Q What would it actually cost to run the string of rods with turn-down couplings and pumping unit and pump and so forth in this one?

A Just a rough figure, of standard rods, not turning down the couplings, or anything, it would cost us nineteen thousand one hundred seventy dollars. Of course, when we have to take the rods and have all the couplings turned, that, I don't know how much more that would cost, but it would be considerably more.

BY MR. PAYNE:

Q And you only expect to get ten thousand barrels of additional oil from the Connell?

A Yes. Those ten thousand barrels would be worth close to about thirty thousand dollars. However, there are several things to come out of that, royalty taxes, operating expenses, and so on. I figure that we would actually end up with about fourteen thousand dollars net money to Amerada from the income, not counting equipment that we would have to set. That's just actually deducting any standard operating cost.

BY MR. NUTTER:

Q Mr. Snyder, these problems are inherent in a well that has small casing?

A Yes.

Q You knew that you had the Connell there, and you knew you had the McKee. Why didn't you run the 7 inch casing? You would have standard size tubing.

A I can't answer that question. One reason for it might have been, this well was drilled in 1951 or '52, when pipe was hard to come by, and that might have been part of the reason.

Q The dual completion wasn't made until 1959?

A That's right.

Q What Order number was it that authorized the dual completion?

A I have a copy of it here. R-1329.

R-1323 authorized the dual completion

commingling authority only.

Q That was an "R" Order?

A Yes. It authorized dual completion and commingling on the surface at the same time.

Q Do you know whether or not the witness for Amerada in that hearing testified that it would be possible to artificially lift the two zones through the two strings of tubing?

A No, sir. I tried to find something on that, and I can find nothing in our records what he testified to.

Q You don't have a copy of the transcript of that hearing?

A Yes.

MR. PAYNE: Of course, you said mechanically it would be

possible?

A Yes, mechanically it would be possible.

Q (By Mr. Nutter) But you don't think that ten thousand barrels of oil would justify it?

A No, sir.

MR. NUTTER: Any further questions? The witness may be excused.

(Witness excused)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all.

MR. NUTTER: Does anyone have anything further they wish to offer in Case 2229?

MR. MORRIS: I have correspondence from the Skelly Oil signed by George W.Sellinger to the effect that this application should be granted as long as both zones are incapable of producing the top allowable.

MR. NUTTER: Mr. Snyder, although you have been excused from the stand, I would like to ask you if Skelly Oil Company has an interest in this well.

A No, sir.

MR. NUTTER: Do they have any wells in the McKee Pool?

A I don't believe they do.

MR. NUTTER: They don't have any wells in the Connell Pool?

A No.

MR. NUTTER: Thank you.

* * * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in machine shorthand and reduced to typewritten transcript under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 11th day of April, 1961, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My Commission expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2219, heard by me on 4-5, 1961.

....., Examiner
New Mexico Oil Conservation Commission