BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 30, 1970

EXAMINER HEARING

IN THE MATTER OF:
(Reopened)
Case No. 4173 being reopened pursuant to the provisions of Order No. R-3811-A, which order extended 80-acre spacing units and a limiting gas-oil ratio of 400 cubic feet of gas per barrel of oil for the Hobbs-Drinkard Pool, Lea County, New Mexico, for a period of 90 days.

Case No. 4173

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: We will call Case No. 4173.

MR. HATCH: Case No. 4173, Reopened, In the matter of Case 4173, being reopened pursuant to the provisions of Order No. R-3811-A, which order extended 80-acre spacing units and a limiting gas-oil ratio of 4000 cubic feet of gas per barrel of oil for the Hobbs-Drinkard Pool, Lea County, New Mexico for a period of 90 days.

MR. KELLAHIN: If the Examiner please, Jason Kellahin of Kellahin and Fox, appearing for the Applicant. We would request that this case be continued to the Examiner's Hearing on October 28th.

MR. NUTTER: Case No. 4173 will be continued to the Examiner Hearing to be held at this same place at 9:00 o'clock A.M. on October 28th, 1970.

STATE OF NEW MEXICO)
) SS.
COUNTY OF SANTA FE)

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

RICHARD L. NYE, Court Reporter

My commission expires April 8, 1971.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4173, heard by me on 9/30, 1970.

Examiner
New Mexico Oil Conservation Commission

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

October 28,1970

EXAMINER HEARING

IN THE MATTER OF:	
Case 4173 being reopened pursuant to the provisions of Order No. R-3811-A, which order extended 80-acre spacing units and a limiting gas-oil ratio of 4000 cubic feet of gas per barrel of oil for the Hobbs-Drinkard Pool, Lea County, New Mexico, for a period of 90 days.	Case No. 4173 (reopened)

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: This is in the matter of Case 4173 being reopened pursuant to the provisions of Order No. R-3811-A.

MR. KELLAHIN: Jason Kellahin of Kellahin and Fox, appearing for Amerada Hess Corporation and Chevron Oil Company and we have two witnesses I'd like to have sworn.

MR. Examiner, please, this case was originally heard on an application for 80-acre spacing and a gas-oil ratio limitation of 4000 to one and a temporary Order was entered by the Commission. Back in July we had a hearing pursuant to that original Order to show cause why the pool should not revert to 40-acre spacing and the gas-oil ratio limitation revert to 2000 to one and as a result of that hearing in July the Commission entered an Order which scheduled the present hearing by the Commission authorizing all interested parties to appear and show cause why the pool should not be developed on 40-acre spacing and why the limiting gas-oil ratio should not revert to 2000 to one and/or why all casinghead gas produced by wells in the pool should not be reinjected.

Now, it is the purpose of the companies involved here, Amerada Hess Corporation and Chevron Oil Company, to show the Commission that in the event this pool were to revert to 40 acres and if the GOR limitation were reduced to 2000 to one, it would discourage any further development in the pool. Although

the pool is fairly well developed up now there are some undrilled locations which we feel will be drilled if the present pool rules remain in effect. In addition to that, because of the nature of the reservoir involved, recompletion of wells is indicated in many cases and I believe we will be able to show the Commission that if the gas-oil ratio limitation is changed, it will discourage any efforts to recomplete wells in the reservoir and could, in our opinion, result in a loss of recovery of recoverable oil and gas.

Again, because of the nature of the reservoir, which we will show the Commission, the injection of gas is not only not feasible because the cost of the injection would be, in our opinion, excessive, it would not increase recoveries in a sufficient amount to pay the costs of the injection equipment and would possibly even result in reduced recoveries because of the conversion of wells to injection and premature abandonment of wells in the pool. This, again, would, in our opinion, result in waste and for that purpose we want to offer two witnesses. The first will be Mr. Sidney Smith of Amerada Hess Corporation.

Please mark this exhibit A.

(Whereupon, Applicant's Exhibit A was marked for identification.)

SIDNEY SMITH,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Sidney Smith.

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

A I am employed by Amerada Hess Corporation as Regional Conservation Engineer in Midland, Texas.

Q Have you testified before the Oil Conservation Commission and one of its examiners and made your qualifications a matter or record?

A Yes, sir. I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. UTZ: Yes, sir.

Q Mr. Smith, you are familiar with Case No. 4173, are you not?

A Yes, sir. I am.

Q And did you testify at the hearing in July?

A Yes, sir. I did.

MR. KELLAHIN: In that connection, if the Examiner please, I would like to ask at this time to ask the Commission

or the Examiner to take notice of the record made in this same case at the hearing in July and at the original hearing resulting in the present pool rules. We make reference to at least one of the exhibits that were offered at the July hearing.

MR. UTZ: You just want us to remember them. You don't want to make this part of this record. The testimony transcript and evidence in the first two previous cases of 4173 will be made part of this record.

MR. KELLAHIN: That would include all of the exhibits, is that correct?

MR. UTZ: Yes, sir.

Q Mr. Smith, you heard the statement I just made to the Commission. Would that correctly summarize our position?

A Yes, sir. It does.

Q Referring to what has been marked as Amerada or Applicant's Exhibit A, a multiple page exhibit, and with reference to the various exhibits in there, were those all prepared by you in connection with this case?

A Yes, sir. They were.

Q Is there any change in the information that would change your opinion on the structural features of the reservoir that you haven't presented at the July hearing?

A No. There has not been any change.

Q In connection with that hearing, you did offer an exhibit B. Would you identify that?

A Exhibit B was an electrical log cross section throughout the field and reflects the continuity of the Drinkard formation.

Q And you have no reason to change your testimony in regard to that exhibit, do you?

A No, sir. I do not.

Q In your opinion it does reflect continuity of the Drinkard formation in this reservoir?

A Yes, sir. It does.

Q Now, referring to what has been marked as Exhibit B of Exhibit A, would you identify that exhibit?

A This is a map showing the current development of the Hobbs-Drinkard with the completion dates indicated by the wells. Since the last hearing held in July there has only been one additional completion in the pool, that being located in Section 29. This well is indicated by the yellow arrow shown on the map.

MR. UTZ: Mr. Kellahin, I think maybe we ought to get our exhibits straightened out here before we go any further. This whole book is Exhibit A?

MR. KELLAHIN: That is correct.

MR. UTZ: The sheets are marked Exhibit 1, 2, 3, 4 --

MR. KELLAHIN: I will refer to them as Exhibit 1, 2, 3, 4, all of which are part of Exhibit A. I thought this was simplier than marking each page.

MR. UTZ: I guess that will be all right. I would refer to them as Part 1 of Exhibit A.

MR. KELLAHIN: They have already been marked as Exhibit 1 so --

MR. UTZ: Exhibit A.

MR. KELLAHIN: Of Exhibit A, yes, sir. We will have the same situation with Chevron's testimony.

MR. UTZ: All right.

Q Now, in your opinion is this pool substantially developed under the 80-acre spacing field rules?

A Yes, sir. It is.

Q Are there any additional 80-acre locations that would be drilled in the event the 80-acre rules are continued in effect?

A Yes, sir. There are some additional locations, as you can see on the map, that could be drilled -- referring to some other locations in Section 29 -- there are other locations that can be drilled.

Q And would you anticipate that at least some of these

locations would be drilled?

A Yes, sir. I would.

Q Now, referring to what has been marked as Exhibit 2 of Exhibit A, would you identify that exhibit?

A Exhibit 2 of Exhibit A is an updated field performance curve. This same curve was presented at the July, 1970 field rules hearing and has been updated to reflect current production of cumulative oil production as two hundred eighty thousand three hundred thirty-nine barrels; cumulative water, seventy-six thousand seven hundred sixty-four barrels; cumulative gas, nine hundred fourteen million cubic feet.

Q Now, based on the production figures shown on this exhibit what is the current GOR for that pool?

A The GOR currently is running about -- still about four thousand to one.

Q Now, referring to what has been marked as Exhibit 3 of Exhibit A, would you identify that exhibit?

A Exhibit 3 of Exhibit A is an economic comparison of 40-acre development versus 80-acre development. This is the same exhibit presented at the July, 1970 hearing and this exhibit shows more -- reflects more favorable economics on 80-acre development as compared to 40-acre

development.

Q Now, you have not changed the figures from the exhibit offered in July?

A No, sir. We have not. We have simply removed the figures pertaining to dual completion cost of the well which those figures were included on the July exhibit but we feel they are not pertinent to the field rule hearing case so that they have been removed, but the other figures are the same.

Q Now, do these figures include any risk factor?

A No, sir. They do not. These figures are no risk economics.

Q Now, in light of the unfavorable economics on 40-acre development would the addition of a risk factor make that even less attractive?

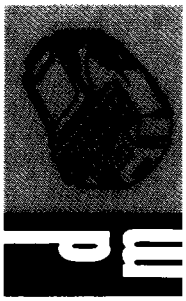
A Yes, sir. It would. With the risk factor this would not permit 40-acre development.

Q Now, have you had contact with any of the other operators in the pool in regard to development of this pool on 80-acres versus 40-acres?

A Yes. I have.

Q What position do they take in regard to that?

A All the operators I have contacted -- each operator I



have contacted or had correspondence with has indicated that they would not have any desire to develop a field of 40-acres and I believe that every operator has responded to this hearing and every operator is supporting the current 80-acre spacing pattern.

Q Now, does the fact that there are additional 80-acre well locations indicate to you that in the event the pool rules are continued there would be further development?

A Yes, sir. There is.

Q Now, what recovery do you expect from the Amerada Hess State A No. 5 well?

A The recovery from our well, the Amerada Hess State A, is less than half of this gross recovery we have shown for a well on 80-acres.

Q Now, that is your fifty-two thousand two hundred barrels, is that correct?

A Yes. That is correct.

Q And your Amerada well is less than half that?

A Less than half of that.

Q How do you arrive at this figure?

A This figure is based on operator's estimates and on field performance decline analysis and we feel it would be an accurate figure reflecting the recovery.

Q Now, at the July hearing, Mr. Smith, I believe you testified that you had a recovery factor of five percent. Now, what do you mean by that testimony?

A That testimony was based on the performance of our well at that particular time and was not pointed out that this was such and that I feel that recovery factor was too low.

Q If the inference was, in July, that your recovery factor for the entire pool was five percent, that is not correct, is it?

A No, sir. That is not correct.

Q What would you estimate the recovery factor to be?

A Since that hearing we have, based on this recovery, we have the recovery factor of -- I have estimated it as ten percent.

Q And that takes into consideration all of the wells?

A Yes, sir. This is all on a field-wide basis.

Q Now, referring to what has been marked as Exhibit No. 4 of Exhibit A, would you identify that?

A All right. Exhibit No. 4 of Exhibit A is a plot of static bottom pressure versus cumulative oil production. This graph was prepared immediately following the July, 1970 hearing, at which time it was offered and submitted

All right. [illegible] of [illegible] and [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible]

as evidence to the Commission.

Q Now, based on this curve can you draw any conclusions as to the performance of this reservoir?

A Yes, sir. I can. In my opinion, one must conclude from this performance curve that continuity does exist in the reservoir as evidenced by this drawdown and that I feel that this data supports our previous testimony as to the reservoir drainage.

Q And, in your opinion, will one well adequately and economically drain and develop 80-acres?

A Yes, sir.

Q And considering the economics involved, is it your recommendation that 8-acres spacing be continued in effect in this pool?

A Yes, sir. It is.

Q Now, referring to what has been marked as Exhibit 5 of Exhibit A, would you identify that exhibit?

A Exhibit 5 of Exhibit A is a reproduction of a Drinkard formation core analysis ran on the core taken from the most recent completed well in the pool. This is the well I referred to in Part 1 of Exhibit A, the Neotex Corporation Hobbs State No. 1 A. This core was taken very recently, September 29, 1970, and is the only core

data available since the last hearing held in July. Now, the thirty-seven feet analyzed, which are shown bracketed in red, the average permeability was twenty-six point eight millidarcies; porosity, twelve percent; water saturation was twenty-nine percent.

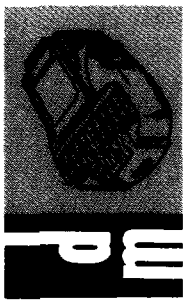
MR. UTZ: Seven percent porosity?

THE WITNESS: Twelve percent porosity.

Now, of all the feet counted you had a minimum value of six point seven percent with a one millidarcy permeability value. I offer this exhibit as new evidence that at least for this well the permeability is substantially higher than that testified to at the previous hearings, one in July and in my opinion that this evidence supports, again, previous testimony as to the ability of the well to drain 80-acres.

Q Now, returning your attention, Mr. Smith, to the provision of the present rules for four thousand to one gas-oil ratio, what would be the affect of reducing this ratio to two thousand to one?

A The allowables for the pool are currently limited due to capacity of the well and if this limiting GOR was reduced, the affect would be -- the overall affect would be reduction of allowable for only one well in the pool and that would be our well, the Amerada Hess State No. 5.



This reduction allowable would amount to twelve barrels per day. The gas production would be reduced only by an amount of three hundred eighty-eight MCF per day which would be the limit established by the two thousand ratio.

Q Well now, if the only result would be to reduce the allowable to one well by twelve barrels, why shouldn't the ratio revert to two thousand to one?

A There does exist some stratification in this reservoir and there are some zones that have higher gas saturation than other zones, so reduction of the limit to the two thousand to one ratio would discourage the operators in the field from opening these additional zones to production and lower the ultimate recovery of the pool.

Q In your opinion will there be recompletions in some of these wells to open up additional producing zones if the present rules are continued in affect?

A Yes, sir. I believe it would.

Q And this would result in the recovery of additional oil and gas?

A Yes, sir. It would.

Q Now, have you inquired as to the market for the gas under the four thousand to one limitation?

A Yes. I have. I have inquired to and received a letter

from the plant which processes the gas produced from this field.

Q That is Exhibit No. 6 of Exhibit A, is that correct?

A Yes, sir. It is Exhibit 6. I'd like to read it at this time.

"Gentlemen: This letter is in response to your recent inquiry relative to gas handling capacity at the Phillips Petroleum Company's Hobbs plant. The nominal capacity of the Hobbs plant is presently thirty million cubic feet per day. By January 1st, 1971, the capacity will be increased to a nominal thirty-eight million cubic feet per day."

Q Now, how much of the total in-put to the Phillips plant at Hobbs is from the Hobbs-Drinkard Pool?

A The Hobbs-Drinkard Pool supplies only between six and seven percent of the total in-put gas to this plant.

Q Now, Mr. Smith, the Commission, in its Order for this hearing, directed the operator to show cause why all casinghead gas produced by wells should not be reinjected. Have you made a study of the feasibility of this?

A Yes, sir. I have.

Q Referring to what is marked as Exhibit 7 of Exhibit A, would you identify that exhibit?

A Exhibit 7 of Exhibit A is a tabulation of gas injection costs for this field. The total investment is three hundred thousand dollars and the makeup of that investment is shown as Part One. In addition, other costs incurred by injecting gas would be a maintenance increase -- increased maintenance of nine thousand dollars per year and fuel costs of eleven thousand eight hundred dollars per year.

Q Now, is this computation based on the assumption that the pool had been unitized?

A Yes. It is.

Q Would that be essential to the operation of an injection program?

A I feel it would be necessary to have any type of efficient program.

Q Are you familiar with the ownership of the leases in the Hobbs-Drinkard Pool?

A No, sir. I am not.

Q There are a number of operators in the pool.

A There are seven operators in the pool.

Q Do all of the operators have more than one well or --

A No. The majority of the operators in the pool only operate one well. For this reason I feel that unitization

would be quite a significant problem in order to achieve.

Q Would that make it quite difficult to arrive at a unit agreement?

A Yes. It would.

Q Now, if the pool were unitized and if the gas injection program were instituted, in your opinion, would you get a satisfactory return on your investment?

A No, sir. You would not. I ran an economic analysis based on two hundred fifty thousand barrels increased recovery which was based on information pertaining to solution gas drive reservoirs and gas injection and this is a third or about thirty percent above primary recovery and based on this two hundred fifty thousand barrels increase in recovery, we would never pay out our investment. We don't generate any economics. We do not get our money back.

Q You arrive at a negative figure then, is that correct?

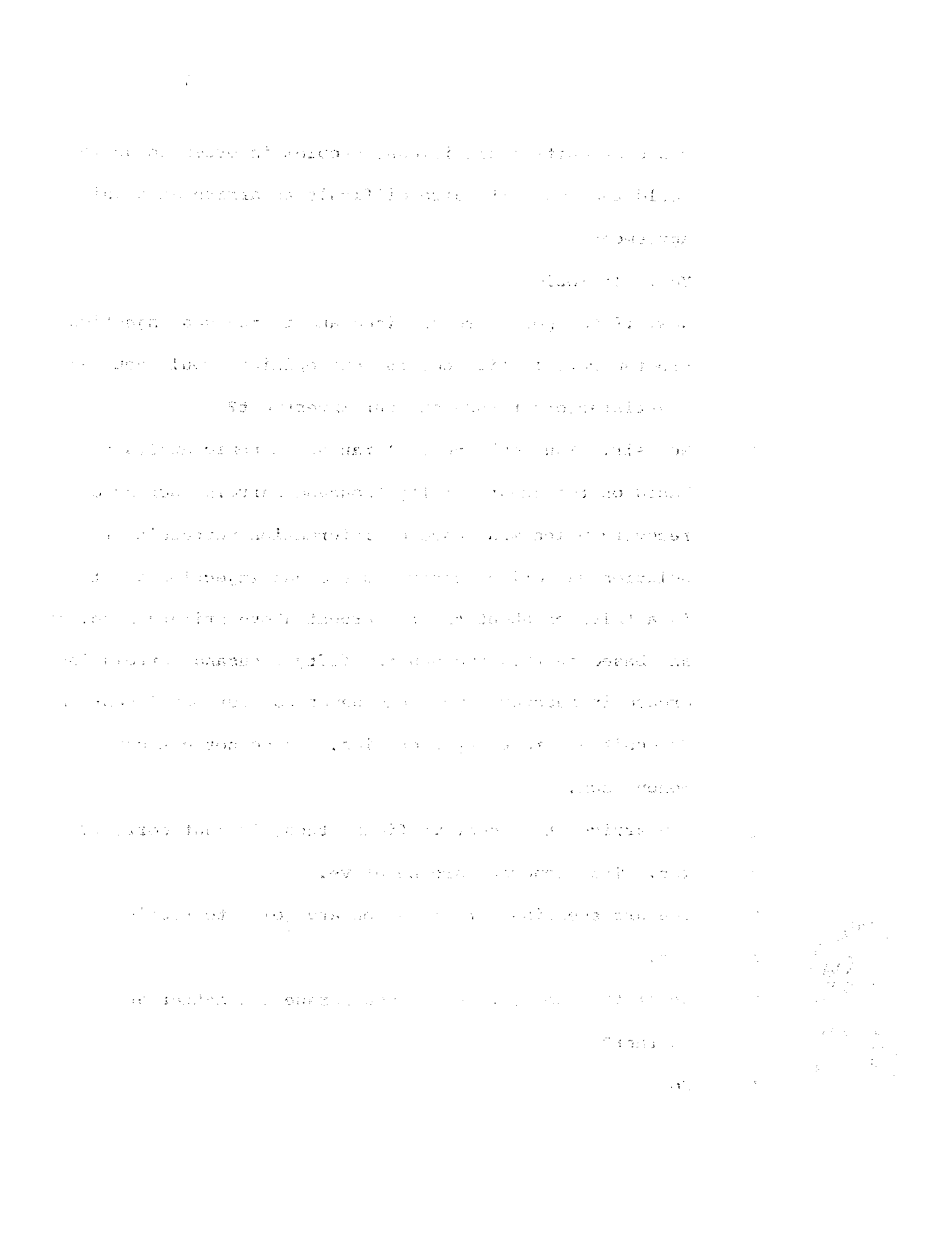
A Yes. The economics are negative.

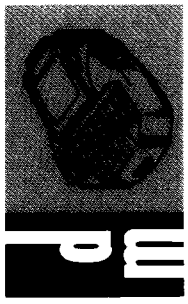
Q You are spending more than you are going to receive?

A Yes.

Q So at that point then did you pursue the matter any further?

A No.





Q Referring to what has been marked as Exhibit 8 of Exhibit A, would you identify that exhibit?

A Exhibit No. 8 of Exhibit A is a letter addressed to me from Pan American Petroleum Corporation in which they state that additional development to forty acre density does not appear to be economical and they feel the current four thousand to one GOR limit will not result in underground waste and in their opinion, reinjection of produced gas is also not economically feasible.

Q And Exhibits 9, 10 and 11, or 9 and 10, would you identify those exhibits, please?

A Exhibits 9 and 10 of Exhibit A are additional letters from other operators in the field which have been sent to the Commission in which they concur with the existing field rules and support the 80-acre spacing and existing four thousand GOR.

Q Now, is it your recommendation the current rules remain in effect?

A Yes, sir. It is.

Q Do you think it is essential to the efficient and economical operation of the Hobbs-Drinkard Pool?

A I think, based on this reservoir, that that pattern is the best one devised for development of this pool.

Q In regard to the gas-oil ratio, do you think it essential that it be continued at four thousand to one?

A Yes. I do.

Q Was Exhibit A prepared by you or under your supervision?

A Yes, sir. It was.

MR. KELLAHIN: At this time I'd like to offer in evidence Exhibit A, consisting of ten marked exhibits.

MR. UTZ: Without objection, Exhibit A, consisting of ten parts, will be entered into the record of this case.

MR. KELLAHIN: Examiner, please that completes the examination of this witness.

For your information, we will have some additional testimony in regard to the nature of the reservoir in regard to the feasibility of gas injection.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Smith, you made some statements in regard to your analysis of the gas injection system. Your statement is that the cost would be three hundred thousand dollars?

A Yes, sir. That is correct.

Q And your maintenance expense would be nine thousand dollars per year?

A Yes, sir. That is correct.

Q And fuel costs, eleven thousand eight hundred dollars?

A Yes, sir. That is correct.

Q What type of fuel would that be?

A This would be gas to run four compressors.

Q It is gas produced out of the field?

A Yes. It would be.

Q You estimate that eleven thousand is the volume of gas to be used as fuel.

A For the compressor requirements required, yes, that is the volume.

Q How much increased recovery did you state?

A Two hundred fifty thousand barrels.

Q Three hundred fifty?

A Two hundred fifty.

Q Now, what do you estimate the total recovery of the pool to be -- do you have a figure on that?

A Yes, sir. I estimate the ultimate recovery is seven hundred fifty thousand barrels. This would be -- this was a third of the ultimate, so it would be seven hundred fifty.

Q How much money does an operator make on a barrel of oil in this pool?

A The price of the oil is, I would say, about a dollar-

twenty.

Q A dollar-twenty a barrel, so if you recover two hundred fifty thousand barrels at a dollar-twenty, it just about gets your investment back on the increased oil production. Is that about the size of it?

A What was that?

Q Two hundred fifty thousand times a dollar-twenty is the way I figure it. That is about three hundred thousand dollars.

A Approximately, yes.

Q So that your deficit would be your fuel expenses and your operating expenses.

A Yes. You still have to incur these costs, yes, in this proposal.

Q What procedures did you use to estimate your recovery?

A I surveyed some statistical reports that on gas drive reservoirs which indicated this third additional primary. This would be for the primary recovery factor of approximately seventeen percent of which this pool does not have. It is only ten percent, so even with this recovery, which I don't think the reservoir would exhibit this much additional recovery, the economics were none. We just didn't recover our investment, so that is why I

arrived at that figure.

Q That is how you arrived at your deficit figure, your money figure, is that right?

A The cost for injection?

Q Yes?

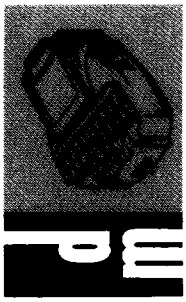
A No, sir. That is how I arrived at the recovery -- the recovery figure and you apply that to the cost, you come up with less than a break even deal.

Q Is ten percent pretty low for most reservoirs of this type?

A Ten percent is low, but it is the best that you can expect from a reservoir of this type. There are some stratifications present and I feel it is a fairly representative figure from a reservoir of this type with these characteristics.

Q I presume on your exhibit, Part Four on your Exhibit A, that if you extended this completion curve, that would give you the seven hundred fifty thousand barrels that you stated?

A No. This will not. This, I don't think, will give you the seven hundred fifty thousand barrels because I think-- this data supports our testimony, but this won't give you the seven hundred fifty thousand. The seven hundred



fifty thousand I feel like is based on how the field is performing now and how I project that it will perform.

Q Well now, would you call this a depletion curve?

A A depletion curve?

Q Yes?

A It exhibits depletion concerning pressure characteristics, yes, sir.

Q How would your seven hundred fifty thousand barrel curve deviate from this curve?

A It is larger.

Q Flatter -- it would be a straight line curve?

A It is larger.

Q It extends clear on down?

A Yes, sir. That is correct.

Q But would the curve, the angle of the curve be the same as this curve here?

A No. It wouldn't.

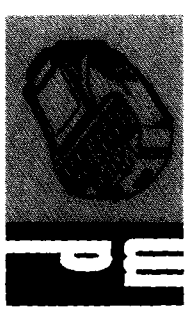
Q It would be flatter?

A Yes. It would be a lower angle.

Q Your initial pressure for your No. 1 well was about twenty seven hundred-thirty pounds, is that about right?

A Yes, sir. That is correct.

Q Your No. 5 well, is that the last well on which you



have data?

A Yes. That is correct.

Q So that would be approximately sixteen hundred sixty pounds?

A Yes. That is correct.

Q Now, you consider the entire reservoir now as about sixteen hundred sixty pounds?

A Approximately. Probably a little bit higher.

Q So that would be a thousand and seventy pound drop you produced during that period. These are in million barrels or --

A Thousand barrels.

Q Thousand barrels. That is about one hundred sixty-five thousand barrels. Did I read this correctly?

A It would be just only about a hundred thousand because if you are referring to point one, that is fifty-eight thousand cumulative.

Q We got into this before. That fifty-eight is from some other source?

A Yes. That is from some other source.

Q So then you don't consider the twenty-seven thirty as an initial pressure. It is something above that?

A Well, there have been withdrawals from another source.

This is the first available initial pressure we can get ahold of.

Q You got your slide rule there. According to this curve, how many barrels per pound do you get?

A A hundred barrels per pound.

Q Is this about normal for a pool like this?

A Yes.

Q How many more wells do you think will be drilled in this pool?

A One I am sure of. Possibly two or three more additional wells, perhaps even more.

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

MR. KELLAHIN: I'd like to ask one, if I may.

RE-DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Smith, in connection with your testimony on the additional recovery of two hundred fifty thousand barrels, is that the amount you feel would be recovered if gas injection were instituted in this pool?

A No, sir. I don't think that would be recovered.

Q You don't think you'd get that much?

A No, sir. I do not, due to the unfavorable mobility ratio

which was exhibited by projects such as this -- low sweep efficiency, the premature abandonment which would result as the result of breakthrough of wells. I don't feel that you would recover this much additional oil. This figure was --

Q That is most optimistic.

A At best it is most optimistic.

Q That is you can wish for this.

A Yes, sir. That is applying any sort of risk to this project, which we haven't done.

MR. KELLAHIN: That is all I have.

MR. UTZ: Any other questions?

You may be excused.

You have got another witness?

MR. KALLAHIN: Yes, sir.

RONALD PLATT

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

(Whereupon, Applicant's Exhibit B was marked for identification.)

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Ronald Platt.

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

A Chevron Oil Company in Denver as a proration engineer.

Q Have you ever testified before this Oil Conservation Commission and one of its examiners?

A No. I have not.

Q For the benefit of the Examiner would you briefly outline your education and experience as an engineer?

A I graduated from the University of Texas in 1962; Bachelor of Science in Petroleum Engineering. I was employed by Chevron Oil Company at that time and have been with Chevron ever since, capacity as drilling engineer, production engineer, construction engineer, reservoir engineer and proration engineer.

Q And the work you have done involved, to some extent, the Hobbs-Drinkard Pool?

A Yes. It has.

Q Are you familiar with the features of that reservoir?

A Yes. I am.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. UTZ: Yes, sir. They are.

Q Mr. Platt, referring to a booklet which has been marked

as Exhibit B in this case, which is a booklet containing three marked exhibits, would you refer to what has been marked as Exhibit No. 1 of Exhibit B and identify that exhibit?

A Yes, sir. Exhibit 1 is an economic analysis of what we consider a typical well under the present 80-acre spacing. The ultimate oil recovery we have used is thirty-five thousand barrels. This is what we estimate will be the recovery from our well. We operate one well in the field. It is the Chevron State 1 No. 5. It is in Section 29. This recovery is based on extrapolation of production decline. Extrapolation and analysis of the individual well decline curves in this field indicate that seven of the other eleven wells in this field will have recoveries of less than thirty-five thousand barrels. Thirty-five thousand is used in this analysis. The estimated investment here is for a single Drinkard completion of one hundred ten thousand dollars. As this analysis shows, there is very small net profit before income tax. In fact, it is almost a breakeven on the development well cost. Development of this field under 40-acres would result in even less recovery per well and would probably not even pay out the well costs and could

not be justified.

Q Now, you heard Mr. Smith testify in regard to the gas-oil ratio in this pool, did you not?

A Yes, sir.

Q In your opinion you believe that the four thousand to one ratio should be continued in effect?

A Yes, sir. I do.

Q Would it result in any waste?

A No.

Q What would be the affect, in your opinion, of reverting to two thousand to one ratio?

A I think reverting to a two thousand to one ratio would possibly lower the ultimate recovery in this field. I'd like to refer to Exhibit 2.

Q Referring to Exhibit 2 of Exhibit B then, what does that exhibit show?

A This is a log from our well, the No. 5 well in Section 29. The gross Drinkard section here is about four hundred-fifty feet thick. We have colored here by red what we consider to be net pay. As you can see, there are many thin widely scattered zones of porosity throughout this four hundred fifty foot interval. This well is completed in the top interval at 6648 to 66 and down in the bottom

interval, 6922 to 30. The middle zone here at 6712 to 18, gas with very little oil. This zone is isolated, not open for production. I think at present many other operators in the field perforated only one zone in this four hundred-fifty foot section. Some operators like us have two zones open with about two hundred-fifty feet between them. Some operators have perforated up through the entire four hundred foot section.

I think retaining the present four thousand to one GOR would permit the operators additional work, recompletion perforation of additional zones and result in increased ultimate recovery from the field.

Q Now, if the two thousand to one ratio were instituted, would this work ever be done, in your opinion?

A Probably not. Most of the zones are associated with high gas production. Operators will be extremely reluctant to open these additional zones for fear of getting increased gas production and penalize the allowables in the wells.

Q Would that result in recoverable oil being left in the reservoir?

A Yes. It probably would.

Q And would that cause waste?

A Yes.

Q Does this reservoir lend itself to pressure maintenance or secondary recovery by gas injection?

A No. It does not, due to the thin, widely scattered zones that are exhibited by this log. With varying properties, fluid saturation permeability in the zones, they will probably have rapid breakthrough of injection gas through one of the thin stringers into offsetting producing wells. I do not think this type of reservoir lends itself to gas injection.

Q Would that result in a premature abandonment of wells?

A Yes.

Q If you had a breakthrough?

A Yes.

Q Now, is there any gas cap in this reservoir in which gas could be injected?

A No. To my knowledge, there is not.

Q Now, referring to what has been marked as Exhibit 3 of Exhibit B, would you identify that exhibit?

A Exhibit 3 lists some of the data that we used in considering the feasibility of gas injection in this field. We have also come up with an estimated investment of about three hundred thousand dollars for this project. That includes compressors, a gathering system, injection lines,

injection well conversions. We have estimated a slightly higher operating cost of about four thousand dollars a month. That would be total operating cost for the system, maintenance, fuel, operational personnel. This would more than double the present operating cost in the field and I do not believe there will be any increase in the total field ultimate recovery as a result of this gas injection project. Any possible slight increase you might have in some areas of the field would be more than offset by loss of recovery of ultimate recovery in other areas of the field. This loss of recovery would be attributed to the presence of these very thin zones with high gas saturation in them causing premature breakthrough of gas into offsetting producing wells and premature abandonment of these wells and also due to the very poor sweep efficiency it is doubtful all of the remaining reserves in the wells that we would convert to injection would be recovered by the offsetting producing wells, and another factor is the greatly increased operating costs under this type of project. That would cause abandonment of the field at a much higher producing rate.

Q Is it your recommendation that the present rules for 80-acre spacing and a four thousand to one GOR be continued

in effect in this pool?

A Yes. I believe they will result in the maximum development and ultimate recovery of reserves in this pool.

Q And would any waste occur by the continuation of these rules in effect?

A No.

Q Was Exhibit B consisting of three numbered exhibits, three parts, prepared by you or under your supervision?

A Yes. They were.

MR, KELLAHIN: At this time I'd like to offer into evidence Exhibit B.

MR. UTZ: Without objection, Exhibit B, containing three parts, will be entered into the record of this case.

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

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Platt, it is your testimony then that the gas is not coming out of solution as much as it is out of high GOR zones?

A Yes, in these various little zones throughout the reservoir.

Q Where you have this condition, is the best way to pro-

duce a reservoir to open those gas zones to the low GOR zones or would you get better efficiency out of producing the reservoir if you left these high gas GOR zones closed until you recovered the other oil?

A In the case of the very high GOR zone, one well -- it is not open in our well -- the other zones, by referring to high GOR, our well had a GOR of six thousand to one and the most feasible way of depleting this is producing these as we are.

Q Your lower GOR zones first?

A We don't have a low GOR zone.

Q I thought you said you plugged off --

A We plugged off one zone that produced almost all gas with very little fluid.

Q When are you going to produce it?

A In the advanced stages of depletion of the field we will probably open the zone to recover the gas in the zone.

Q Do you have any idea what the GOR of that zone was?

A No. We recovered very little fluid -- gas at the rate of five hundred MCF a day with very little fluid recovery.

Q So the reason you didn't open that gas zone is because you feel that you can produce your other zones, your lower GOR zones more efficiently first before you open the gas

zone or do you intend to open the gas zone?

A Probably later on. This would penalize our oil production if we opened up the gas zone. All together I believe we'd still have the same depletion of the other zones. It would probably result in a penalized allowable and we saw no benefit from producing this gas zone at the present time.

Q It will still be there, won't it, when you get ready to produce it?

A Yes.

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

Statements in this case?

MR. KELLAHIN: That is all, Mr. Utz.

MR. UTZ: That is all your testimony?

MR. KELLAHIN: Correct.

MR. UTZ: The case will be taken under advisement.

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

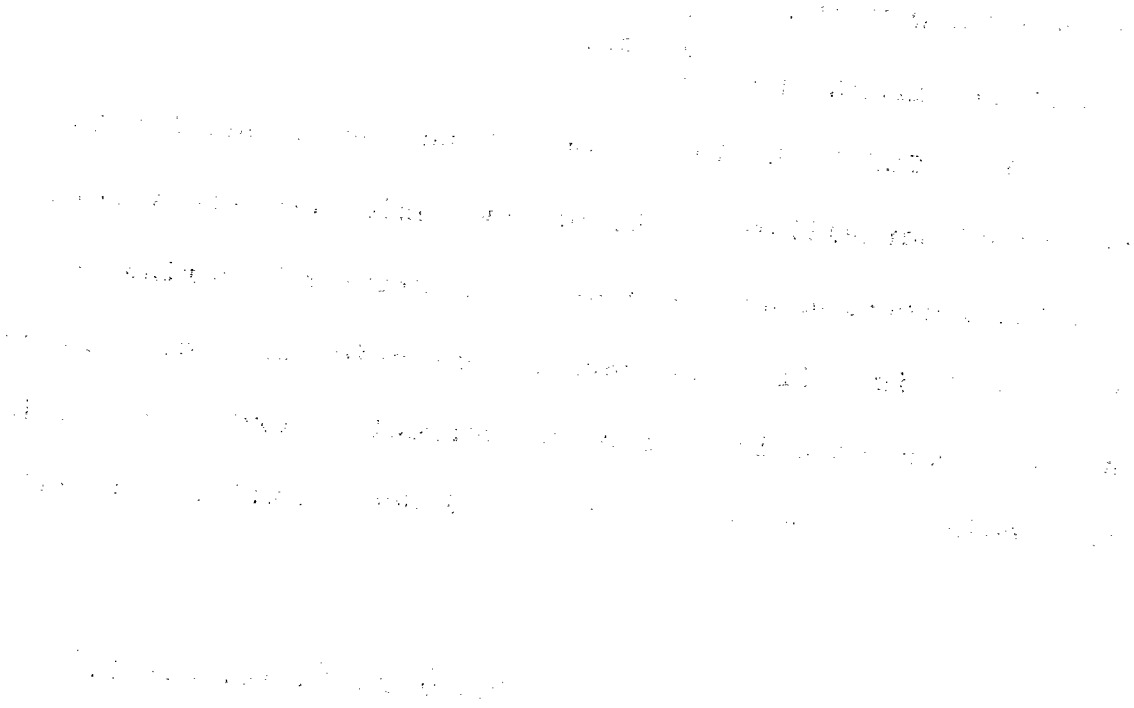
I, PETER A. LUMIA, a Court Reporter in and for the County of Bernalillo, State of New Mexico do hereby certify thatthe foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings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

Peter A. Lumia

Peter A. Lumia, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4173, heard by me on 10-25-79, 19....

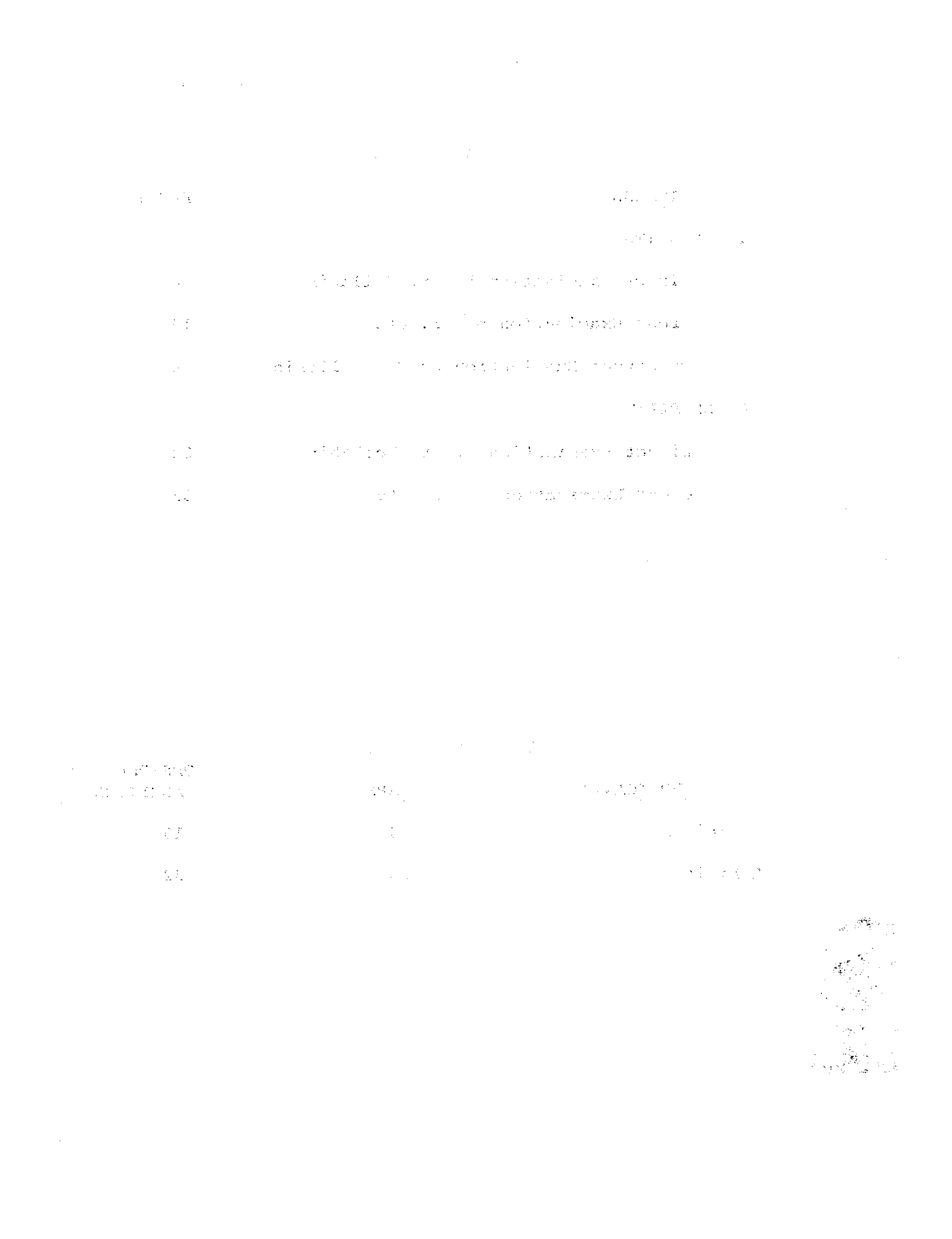
....., Examiner
New Mexico Oil Conservation Commission



I N D E X

E X H I B I T S

APPLICANT'S	MARKED	OFFERED AND ADMITTED
Exhibit A	3	19
Exhibit B	25	32



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 1, 1970

EXAMINER HEARING

IN THE MATTER OF:

Case No. 4173 Being reopened pursuant to the provisions of Order No. R-3811, which order established 80-acre spacing units and a limiting gas-oil ratio of 4000 cubic feet of gas per barrel of oil for the Hobbs-Drinkard Pool, Lea County, New Mexico.

Case No. 4173

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE , NEW MEXICO

Hearing Date JULY 1, 1970 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
DAVID G GRIFFIN	AMERADA HESS CORP.	MIDLAND TEXAS
Sidney K. Smith	" " "	" "
Gordon D. Ryan	Pan American Pet Corp	Fort Worth, Tx.
Robert E McCleskey	Pan American Pet. Corp	Ft. Worth, Texas
Eugene J. Miller	Getty Oil Co	Hobbs, N Mex
[illegible]	R.W. Byram & Co.	Santa Fe
[illegible]	[illegible]	Farmington
William Hooley	Burr & Cooley	--
T. P. Bates	Shenandoah Oil Corp.	Ft. Worth, Texas
Jason Kellahin	Kellahin & Fox	Santa Fe
Donald E Pray	International Hydrocarbon	Tulsa Okla
Henry Kaplinger	—	—
Richard S. Morris	Montgomery et al	Santa Fe
[illegible] Jennings	Jennings Christy & Copple	Roswell.
Jim [illegible]	U.S.G.S.	Artesia, N.M.
PETE HOFFMAN	CHAMPLIN PETROLEUM Co	FORT WORTH, TEXAS
W.B. SANER	CHAMPLIN PETROLEUM Co	FORT WORTH, TEXAS
HAL M. Stierwalt	same	Corsicana Texas

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date JULY 1, 1970 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
Gordon G. Marcum	State Land Office	

MR. HATCH: In the matter of Case No. 4173 being reopened pursuant to the provisions of Order R-3811, which order estiblished 80-acre spacing units and a limiting gas-oil ratio of 4000 cubic feet of gas per barrel of oil for the Hobbs-Drinkard Pool, Lea County, New Mexico.

MR. KELLAHIN: My name is Jason Kellahin, Kellahin and Fox, Santa Fe, appearing for Amerada Hess Corporation. We have one witness I'd like to have sworn.

SIDNEY K. SMITH,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Sidney K. Smith.

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

A I am employed by Amerada Division, Amerada Hess Corporation.

Q Where are you located?

A Midland, Texas.

Q What position do you hold with Amerada Hess Corporation?

A Currently I am performing duties as Regional Proration

Engineer for our Midland region.

Q Have you ever testified before the Oil Commission or one of its commissioners?

A No, sir. I haven't.

Q For the benefit of the commissioners would you briefly review your education and experience as an engineer?

A I received a Bachelor of Science degree in Petroleum Engineering from the University of Texas, Austin, January of 1969. In February of 1969 I began employment with the Amerada Division, Amerada Hess Corporation in their Midland region as a petroleum engineer and I have been performing duties and performing as Regional Proration Engineer at this time.

Q In connection with your duties as a Regional Proration Engineer does the Hobbs-Drinkard Pool come under your jurisdiction?

A Yes, sir. It does.

MR. KELLAHIN: Are the witnesses qualifications established?

MR. UTZ: Yes, sir. They are.

MR. KELLAHIN: Commissioner please, this being a reopened case I assume that the record in Case 4173 will be a part of the record in this proceeding -- if not, I would like to move that it be included for convenience. However, we have included some exhibits which were used in the former hearing.

MR. UTZ: I am sure it would follow, Case 4173 would be entered into the record and we will do so at this time, the record in this case, that is.

(Whereupon, Applicant's Exhibit 1 and Exhibit A were marked for identification)

Q (By Mr. Kellahin) Mr. Smith, referring to what has been marked as Amerada Exhibit No. 1, a multi-page exhibit, and referring prticularly to Exhibit A in that booklet, would you identify that exhibit, please?

A Exhibit A is a structure map on top of the Blinebry covering Townships 18 and 19 South, Ranges 37 and 38 East, Lea County, New Mexico. This map is the same exhibit which was submitted as Exhibit No. 1 in the hearing held on July 23, 1969, extablishing the temporary field for the Hobbs-Drinkard Pool. The structure reflects the Drinkard structure, correlates with the area, and the Drinkard line applying approximately 820 feet below the Blinebry.

Q In addition to correlating, is it comparable to?

A Yes. It is comparable.

Q You would anticipate that a structure map on top of the Drinkard would be substantially the same?

A Yes, sir.

Q Is that correct?

A Yes, sir.

Q What other information do you show on this exhbit?

A Until the completion of the Amerada Hess State A No. 5-A Well located in Section 33 the only other well completed in the Drinkard was the Pan-Am State No. A two eleven Well which is indicated by the blue arrow located in the North-ease quarter of the Northwest quarter of Section 4, Township 19 South, Range 38 East. This well is approximately one and a quarter miles southeast of the Amerada Well. This Pan-Am Well was completed in June, 1952 and temporarily abandoned in May of 1969 from the Drinkard.

Q The line connecting the three wells, is that depicted in the cross section which is the next exhibit?

A Yes, sir. It does.

(Whereupon, Applicant's Exhibit B was marked for identification)

Q Referring to Exhibit B, would you identify that exhibit?

A Exhibit B is a structure cross section showing the electric log intervals of the Tubb-Drinkard between the specified wells which were referred to, shown in Exhibit A. This exhibit reflects the continuity the Drinkard developed throughout the Pool area and this is also the same exhibit which was submitted as Exhibit No. 2 in the previous July, 1969 hearing.

Q Now, have there been any additional completions since

the hearing last year?

A Yes, sir. There have.

(Whereupon, Applicant's Exhibit C was marked for identification)

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

A Exhibit No. 3 is a map showing development in the Hobbs-Drinkard Pool, the majority of which occurred during the latter part of 1969, as is indicated by the completion dates which are shown above the well. Presently there are 12 producing wells in the Pool.

Q Now, this also shows some dual completions, does it not?

A Yes, sir. It does.

Q The Drinkard Wells are those which are all yellow or partly yellow, is that correct?

A Yes. The Drinkard Wells are solid and the dual completions of the Drinkard and the Blinbry shown.

Q Are all the wells currently producing shown on this?

A Yes. They are.

(Whereupon, Applicant's Exhibit D was marked for identification)

Q Now, to what has been marked as Exhibit D, would you identify that exhibit, please?

A Exhibit D is a field performance curve reflecting production of the Hobbs-Drinkard Pool since the completion of the Amerada Hess State A No. 5-a Well from which time the majority of the field development occurred. Accumulative oil and water production, including that of the Pan-Am Well, is shown on the exhibit as accumulative oil, 205,083 barrels; accumulative water, 63,971 barrels; gas production from July, 1969 through April of 1970, 578 million cubic feet. Currently the average field wide gas-oil ration shown by the G and O production is approximately 4000 to 1. The performance shown by the curve is typical of a solution gas-pattern reservoir with relatively low water production, that being about 11 barrels per day per well in the field now.

Q This, you say, is typical of a solution gas-pattern reservoir?

A Yes. It is.

(Whereupon, Applicant's Exhibit E was marked for identification)

Q Referring to Exhibit E, would identify that?

A Exhibit E is a map showing wells in the field in which static-bottom hole pressures were recorded. The pressures as recorded shown below the wells have been corrected to a minus 3200 foot datum. The order in which the pressures were taken are indicted by the numbers shown above the wells and they

are named in the legend.

Q Now, these were actually all initial bottom-hole pressures, is that correct?

A Yes, sir.

Q So the order in which they were taken would relfect the affect of production from wells completed prior to the date of the test?

A Yes.

(Whereupon, Applicant's Exhibit F was marked for identification)

Q Now, referring to Exhibit F, what does that reflect?

A Yes. This exhibit reflects that -- Exhibit F is a plot of this pressure data shown in Exhibit E. The pressures applied, the time and the dates of the tests are shown in the table below. The numbers correspond identically to those of Exhibit E. I'd like to point out that upon the completion date of the Amerada Well and the test date which is shown as Well No. 1, we recorded bottom hole pressure of 2725 psi and upon the completion of the Pan-Am State G, No. 5-E Well, which is shown as Well No. 3, we recorded bottom hole pressure of 2594. This is a pressure drop of 131 psi measured between the two wells which establishes a drainage area for the Amerada Well in excess of 80 acres.

Q You made reference to the Pan-Am Well. That is the

nearest well to your Amerada Well, is that correct?

A Yes, sir. That is southwest of it.

Q Do you attach any significance to the pressure drop between the Amerada Well and the Humble-Bowers A Federal Well?

A No. The Humble Well, the pressure recorded there, as shown by the data, I don't consider it to be representative of an initial pressure due to the cumulative oil produced at the time of the test.

Q You feel that would account for the pressure drop ?

A Yes. That would.

Q Now, does this exhibit, in your opinion, reflect one well will drain in excess of 80 acres?

A Yes.

(Whereupon, Applicant's Exhibit G was marked for identification)

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

A Exhibit G is a summary of well-spacing economics for the Hobbs-Drinkard Pool; 40-acre spacing and 80-acre spacing. This summary is the same exhibit which was submitted as Exhibit No. 5 in the previous July, 1969 hearing and shows favorable economics for 80-acre development in the field.

Q You say it shows favorable economics for 80-acre development. Does it show unfavorable economics for 40-acre

developments?

A Yes, sir.

Q In your opinion would it be practical or economical to drill and develop this pool on 80 acres, on 40 acres?

A No. Not on 40.

Q In the event this pool were to revert to 40-acre spacing in a proration unit, in your opinion would there be any further development?

A No. Very little, if any.

Q Now, you say this is the economics as shown at the hearing in July, 1969. Has there been any changes in the economics of this pool since that date, in your opinion?

A Yes. In regard to recovery anticipated on 80 acres, we have anticipated less recovery, on the order of approximately 13,500 barrels from our well which would affect the economics as shown.

Q In other words, the economics would not be quite so good as reflected by this exhibit?

A No, sir. It would not.

Q Is that correct?

A That is correct.

(Whereupon, Applicant's Exhibit H was marked for identification)

Q Now, referring to what has been marked as Exhibit H,

would identify that exhibit?

A Exhibit H is a summary of economic comparisons of the gas-oil ratio restrictions of 4000 to 1 limit versus 2000 to 1 limit as applied to an average well completed in the Hobbs-Drinkard Pool. Using a field wide GOR 4000 cubic feet per barrel, which it is currently, based on the performance of this well, which is approximately a hundred sixty barrels per day upon completion and 3 barrels per day at abandonment, the operating expenses, which determine the economic life, are significantly reduced with the 4000 limit. This will increase the present value of profits that we derive from the 4000 to 1 limit which is in existence now.

Q Is the gas produced in this pool being marketed?

A Yes, sir.

Q In your opinion, is it necessary that you have a 4000 to 1 limiting GOR rather than 2000 to 1, essential to the economical operation of this pool?

A Yes.

Q And that is because of the profit investment ratio?

A Yes.

Q And the return?

A Yes, sir. That is correct.

Q In your opinion, would operation of the pool at a 4000 to 1 ratio impair the pool in any way or cause any reservoir

damage?

A No, sir.

Q Would there be any less ultimate recovery from the pool?

A No.

Q Than if it were operated at 2000 to 1?

A No.

(Whereupon, Applicant's Exhibit I was marked for identification)

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

A Exhibit I is a summary of the current GOR status of each well in the Hobbs-Drinkard Pool. Out of a pool total of 12 wells, 5 wells have a gas-oil ratio now in excess of 4000 cubic feet per barrel and 7 wells in the pool have a GOR rate greater than 2000 to 1.

Q In all of the pools -- in all of the wells are there any that do not exceed 2000 to 1?

A Seven exceed.

Q Seven of the eleven wells?

A Seven of the twelve exceed 2000 to 1, yes.

Q Seven exceed 2000 to 1. Five exceed 4000 to 1 -- that is included in the seven, of course?

A Yes.

Q Now, actually the average GOR for the pool assumed by this exhibit is about what?

A Four thousand.

Q That would be an average GOR for the pool?

A Yes, from the performance.

Q Also shown on the performance?

A Yes. That is reflected in the performance curve.

Q Now, in your opinion, Mr. Smith, is it necessary for the economical operation of this pool to continue the pool rules as they presently exist including a provision for 80-acre spacing and proration units and a limiting gas-oil ratio of 4000 to 1?

A Yes, sir.

Q Would that be in the interest of conservation and prevention of waste?

A Yes.

Q Would the correlative rights of any operator be impaired by the continuation of these rules?

A No, sir.

Q Do you ask the Commission to make these rules permanent?

A Yes, sir.

Q Was Exhibit 1, consisting of lettered Exhibits A through I, inclusive, prepared by you or under your supervision?

A Yes. They were.

MR. KELLAHIN: At this time I'd like to offer in

evidence Exhibit 1.

MR. UTZ: Without objection Exhibit 1 will be entered into the record in this case.

(Whereupon, Applicant's Exhibit 1 was entered into case)

CROSS EXAMINATION

BY MR. UTZ:

Referring to your exhibit part E of Exhibit 1, I guess it would be, which has reference to the pressures at varieous times of completion of the reservoir, I believe you said one well which was the No. 2 Well, for purposes of this exhibit, the proper name being the Humble-Bowers A Federal No. 31-E, was not an initial pressure, is that correct?

A No, sir.

Q How much production is that?

A 1500 barrels.

Q All the rest of these pressures were initial pressures?

A Yes, sir. There was very slight production from the wells at the time the pressures were taken -- practically upon completion of the wells -- yes, sir.

Q Now, between the time that you completed the No. 1 Well which had a pressure of 2725, and the completion of the No. 2 Well you had 1500 barrels plus whatever production came from the No. 1, is that correct?

A Yes, sir.

Q How much was that?

A Production from No. 1 or total?

Q Yes -- well, production from the No. 1?

A Approximately 280 barrels.

Q 280?

A Yes, sir.

Q Barrels?

A Yes, sir.

Q Plus the 1500 barrels or at that time you had 1780 barrels production and a pressure drop of 2725 minus 2586, is that correct?

A Yes, sir.

Q 139 pounds?

A Yes, sir.

Q No. 2 Well is over a mile, isn't it?

A Yes, sir. It is.

Q What kind of reserves have you got in this pool?

A Total reserves or --

Q Well, are they fair or good or is this a skinny well?

A It is rather fair to skinny.

Q For production of only 1780 barrels and a pressure drop of 139, that is a lot of drop for production, isn't it?

MR. KELLAHIN: Mr. Utz, I think you are referring to the No. 2 Well which the witness testified he did not consider significant because he attributed that pressure drop to

production from that well prior to the test.

MR. UTZ: I am including the 1500 barrels production.

MR. KELLAHIN: He was making his comparison on the basis of the No. 3 Well to show the drainage rather than the No. 2.

Q (By Mr. Utz) Well, the whole exhibit purported to show at the time you drilled the well for production the pressure is lower and you included the No. 2 Well in this proposition, did you not -- is that correct?

A Yes, sir.

Q So do you see anything wrong with my comparison here -- 1580 production and 139 pounds drop?

A No, sir.

Q Well, isn't that a lot of drop for only 1780 pounds pressure over that distance?

A I don't think that it is representative of the drop due to the reservoir characteristics which appeared to indicate --

Q Let's go on to No. 3. We will see how that looks. In other words, I would have been happy if you would have shown this in the form of an exhibit -- the production versus pressure drop, so let's look at No. 3. Now, how much production was in the pool between the completion of the No. 2 and the No. 3 Well -- do you have that data?

A Production between the No. 2 and No. 3 Well?

Q Yes, sir. Cumulative production up until the time the No. 3 Well was completed -- let's just take a look at it.

A I don't have that data specifically. No.

Q Was there very much?

A It would be approximately 14,000 barrels production.

Q 14,000 barrels?

A Between the time of the completion of the No. 2 Well, which was completed 7-20-69 and the No. 3 completed 10-7-69.

Q In other words, it would be roughly -- and you may check my figures -- it would be roughly 180 barrels per pound drop?

A This is between the --

Q It would be 131 pounds drop, is that correct?

A Yes.

Q 14,000 barrels production, approximately, 180 barrels per pound drop.

A Yes, sir.

Q Is that normal?

A Yes, sir.

Q You consider that normal?

A Yes.

Q Do you consider this pool pretty well developed now -- is it a small pool?

A Yes, sir. We consider it fairly fully developed. Yes, sir.

Q Is it drive-gas expansion in its entirety -- no water at all?

A No, no.

Q In your opinion, if you reinjected the gas in the pool to maintain your pressure would you recover more oil?

A Yes.

Q Would this be an expensive proposition to reinject this gas?

A Yes. It would.

Q It is?

A Yes.

Q You think it would be a worthwhile project?

A I really don't -- I haven't fully evaluated it at this time. I really couldn't say. I haven't gone into that much detail.

Q What type of oil is this -- is this a medium gravity oil or --

A 35 grade.

Q 35?

A Yes.

Q What kind of a depletion factor do you think you have got?

A On recovery or --

Q Yes, recovery factor?

A Approximately -- it is small -- about 5 per cent on reserve which is due to the reservoir characteristics. It is rather small.

Q Five per cent is all?

A Yes.

Q Would you recommend your company do something about this in order to try to get this recovery up -- in other words, that is leaving 95 per cent of the oil in the ground, isn't it?

A Yes, sir.

Q Now, I gather from your testimony that you are testifying to the fact that 40-acre spacing would not recover any more of this oil, is that correct?

A That is right.

Q What kind of permeability do you have?

A Permeabilities are in the range of 2 1/2 to 5 millidarcies.

Q Pretty tight, isn't it?

A Yes, sir.

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

The witness may be excused.

Any statements in this case?

MR. RYAN: I'd like to enter the appearance of

Gordon D. Ryan appearing on behalf of the Pan-American Petroleum corporation, Fort Worth, Texas and make a statement that Pan-Am totally supports the position of Amerada Hess in this matter and urges the position be adopted.

MR. MILLER: I'd like to enter a statement in the name of Getty Oil Company. My name is E. G. Miller. We fully support the Amerada Hess contention.

MR. UTZ: Any other statements?

MR. HATCH: The Commission has received communications from Mid-Continent Division of Shell Oil Company, Humble Oil and Refining Company, Chevron Oil Company, Fina Oil Company in support of the applicant.

MR. UTZ: No other statements, the case will be taken under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, Peter A. Lumia, 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.

Peter A. Lumia
Certified Shorthand Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4173 heard by me on July 1970.

Examiner
New Mexico Oil Conservation Commission

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 23, 1969

EXAMINER HEARING

IN THE MATTER OF:

Application of Amerada Hess Corporation for special pool rules and pool extension, Lea County, New Mexico.

Case No. 4173

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

I N D E X

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MR. UTZ: The Hearing will come to order, please. Case 4173.

MR. HATCH: Case No. 4173. Application of Amerada Hess Corporation for special pool rules and pool extension, Lea County, New Mexico.

MR. KELLAHIN: I am Jason Kellahin of Kellahin and Fox appearing for the Applicant. We have two witnesses that I would like to have sworn, please.

MR. UTZ: Any other appearances?

(Witnesses sworn.)

MR. MORRIS: May I make an appearance?

MR. UTZ: You want to make an appearance?

MR. MORRIS: Yes, sir.

MR. UTZ: You may make an appearance.

MR. MORRIS: I am Richard Morris of Montgomery, Federici, Hannahs and Morris of Santa Fe, appearing on behalf of Shell Oil Company.

MR. UTZ: In opposition?

MR. MORRIS: No, sir, I am more or less neutral.

MR. KELLAHIN: I call as our first witness, Mr. Johnston.

WILLIAM K. JOHNSTON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A William K. Johnston.

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

A By Amerada Hess Corporation as a petroleum geologist.

Q Where are you located?

A Hobbs, New Mexico.

Q Have you ever testified before the Oil Conservation Commission or its Examiners?

A No, I haven't.

Q For the benefit of the Examiner, would you give a brief summary of your education and experience as a geologist?

A I graduated from Kansas State College in Manhattan, Kansas with a Bachelor of Science degree in geology. After a brief stint in the Navy, I was employed by Amerada Petroleum as a petroleum geologist and have been employed the last 13 years with them. Four and a half years was spent in Billings, Montana, a year and a half in Casper, Wyoming, five years in Midland, and the last two years in

Hobbs. My work has been primarily concerned with geological studies of the sub-surface as it relates to petroleum exploration and petroleum development.

Q In connection with your work as a geologist, did you do any work in the area involved in the Application of Case 4173?

A Yes, I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. UTZ: Yes, they are.

BY MR. KELLAHIN:

Q Mr. Johnston, briefly what is proposed by Amerada Hess in this Application?

A Briefly, Amerada Hess proposes to seek an extension of the Hobbs-Drinkard Pool with provisions for 80-acre oil proration units.

Q How many wells have been completed in the Hobbs-Drinkard Pool at the present time to your knowledge?

A Two wells have been completed in the Hobbs-Drinkard field. One was completed in 1952 and has been tenporarily abandoned, so at the present time, there is only one.

Q Now, referring to what has been marked as

Amerada Hess Exhibit No. 1, would you identify that, please?

(Whereupon, Amerada Hess Exhibit No. 1 was previously marked for identification.)

A Exhibit 1 is a structure map on top of the Blinebrey covering the Hobbs field, contour intervals of 50 feet.

Q You say that is contoured on top of the Blinebrey. Does the Drinkard formation conform to the Blinebrey in your opinion?

A Yes, sir, I believe it closely conforms. The Blinebrey structure reflects the Drinkard structure very closely. The reason a Drinkard map wasn't prepared was because of lack of control. The wells that have penetrated to date, both the Blinebrey and the Drinkard, we can compare the datums on the two horizons and they show the structural attitudes are very similar. For instance, the Amerada No. 5 State "A" in the NE/4 of Section 32, 18 South 38, is 28 feet high to the Gulf No. 16 Grimes on the Blinebrey, the Gulf well being in the NW/4 of Section 32, 18 South, 38 East; 28 feet high on the Blinebrey and 4 feet high on the Drinkard. So between those particular wells, there is some. The structure on the Blinebrey lacks 24 feet of truly reflecting the Drinkard structure. I chose that particular example because that is the extreme on the structural crest. Most

of the other wells more closely agree as far as the structural attitude between the two go.

Q What other information have you depicted on Exhibit No. 1?

A Exhibit No. 1 can be used as a sort of information map. The wells colored brown show the Blinebrey producers. The wells which have only a brown ring around them show active Blinebrey wells. By "active," I mean their locations or their drilling to the Blinebrey or in the process of completing from the Blinebrey. The red color denotes the Drinkard producers of which there are only two. The wells with the red ring around them represent active Drinkard operations. The wells which are colored green denote wells which have penetrated the Drinkard but have not completed in the Drinkard and actually are just Drinkard controlled wells.

Q You use logs on those wells for control on your plat, is that correct?

A Yes, sir.

Q And contours?

A Yes, sir.

Q You referred to the wells with a red circle as being "active," and there again, you mean either well

locations or drilling or testing?

A Right.

Q Do you know the status of those wells at the present time?

A Three are in the process of completing and two are still drilling.

Q Which three are in the process of being completed?

A The Standard of Texas No. 5 State "I" is in process of completing. The Shell No. 7 State "H" is in the process of completing. The Humble, No. 31 Bowers "A" Federal is in the process of completing. The Shell No. 5 State "B" and the Continental No. 8, State B-3 are in core drilling.

Q Now, have you depicted the present pool boundaries of the Hobbs-Drinkard Pools on that Exhibit?

A Yes, sir. The present boundary is denoted by the yellow line. That area enclosed in the yellow line is the present limit of the Hobbs-Drinkard Pool which was established in 1952. The orange outline is the proposed extension to the Hobbs-Drinkard field as proposed Amerada Hess.

Q In connection with that extension, you have included acreage which at the present time there are no wells

either drilling or in process of completing, is that correct?

A Yes, sir.

Q For what reason do you propose to include this acreage in the pool delineation?

A This is done mainly on the basis that we feel this is a structural accumulation, and we have taken the Blinebrey map which we feel reflects the Drinkard structure, and by outlining the structure high on the crest of the structure, we feel that this is where the Drinkard production would be anticipated to occur. In other words, we have just outlined an area on the crest of the structure irregardless of whether there is active wells there or not.

Q Now, you do not include the Humble-Bowers well, is that correct?

A Yes, sir.

Q Was that well in process of being completed at the time you made this Application?

A Yes, sir, it was in an active state and we had no control on that well at the time this outline was made.

Q Of course,you have no objection to extending the pool boundaries to include that well, would you, at this time?

A No, sir, we have no objection at all.

Q Do you have anything else to comment on in connection with Exhibit No. 1.

MR. UTZ: Excuse me just a minute. You just mentioned the Humble-Bowers. What section is that in?

THE WITNESS: That is in Section 29 of 18-38 in the NW/4.

MR. UTZ: It is marked here Humble "A".

THE WITNESS: Humble 31-A Bowers.

MR. UTZ: Just north of it is Bowers, and the one further well, this is also Bowers?

THE WITNESS: Yes, sir, that's right. It is on the bottom of the --

MR. UTZ: (Interrupting) Clear down here?

THE WITNESS: Yes, sir. I might just talk about the Drinkard accumulation. We feel that this is a structural accumulation. One reason for this, of course, is the two producing wells, the two wells that have established Drinkard production, lie on the structural crest, and in fact, very close to the structural access.

There are wells, one to the north and one to the south of the field that have recovered water on production tests in the Drinkard. To be more specific, the well to the north is the Lone Star No. 1 Golden. It is in the SW/4

of Section 7, 18 South 38. Actually, it is not on Exhibit 1 but it lies two miles due north of the Shell No. 1-B McKinley A-19 in the SE/4 of Section 19, 18 South, 38 East. The well to the south --

MR. UTZ: (Interrupting) Did you say north? You meant south, didn't you?

THE WITNESS: North. Two miles north of the Shell-McKinley well in Section 19.

BY MR. KELLAHIN:

Q It does not appear on Exhibit No. 1, is that correct?

A Yes, sir.

MR. UTZ: It is down south here, isn't it?

BY MR. KELLAHIN:

Q It is in Section 7, is it not?

A The location of the well is in the SW/4 of Section 7, 18 South, 38 East. It is not shown on that map but it is approximately two miles north of the Shell-McKinley well.

MR. UTZ: All right.

THE WITNESS: That well did produce water on a production attempt in the Drinkard. The well to the south which tested water on the production test of the Drinkard

REPORTER'S NOTE: Page 12 has inadvertently been skipped in the number sequence of this transcript. The text is in tact.

is the U. S. Smelting No. 1 Bordage, B-O-R-D-A-G-E, which is in the NW/4 of Section 22, 19 South, 38 East. It lies two miles south of the Pan American No. 34 State A-2 R.A.A. which is in the NE/4 of Section 9, 19 South, 38 East.

MR. UTZ: What happened to that well, water?

THE WITNESS: It showed water in the Drinkage production tests. The Gulf No. 16 Grimes in the NW/4 of Section 32, 18 South, 38 East, tested both oil and water on production attempts in the Drinkard. So we have two wells which are immediately off structure to the north -- one to the north, one to the south -- and the Gulf well all have tested water, and it appears from this information that the flank wells on the structure will be water-bearing with hydrocarbon accumulation on the crest of the Hobbs structure.

Two wells which I might mention, the Sun No. 1-A McKinley in NE/4 of Section 20, 18 South, 38 East, and the Gulf No. 1 Morris in the NE/4 of Section 21, 18 South, 38 East, tested the Drinkard and on both tests, only mud was recovered. We have indications in this direction that the Drinkard might be too tight to be productive. However, the indication is on the top part of the Hobbs structure that the Drinkard porosity is present in all the wells, and that

the final accumulations of the hydrocarbon will be due to the structure position.

BY MR. KELLAHIN:

Q Generally what is the nature of the Drinkard formation geologically?

A Can we go to Exhibit 2 on this?

Q Yes, sir.

(Whereupon, Amerada Hess Exhibit No. 2 was previously marked for identification.)

A Exhibit 2 is a structural cross-section showing the Drinkard sections and it is located by A.A. Prime on Exhibit No. 1. As we can see on the cross-section, Exhibit 2, the Drinkard section which I am referring to from the base of Tubb sand to the top of Abo is very uniform in thickness. The porosity within this section is scattered throughout the section. The samples indicate in these wells that the section is composed of all carbonate. It is innerbedded dolomite and limestone with most of the reservoir porosity occurring in the dolomite.

The Pan American No. 11 "X" State A-2, R.A.A., which was the original Drinkard completion in the Hobbs field tested this zone over its entirety, drill-stem tests 3 through 7. These tests recovered oil cut mud with the

exception of drill-stem Test No. 6 toward the basal part of the section which in addition to oil cut mud, they recovered 100 feet of free oil and gas at a rate of 65,000 cubic feet per day.

These tests and the low characteristics of the wells on this cross-section indicates that the section is uniform. We find no separation within the Drinkard such as shale breaks and so forth that might lead us to believe that there is separate reservoirs connected with this. By samples in the Amerada No. 5, State "A", we first contacted porosity approximately 70 feet below the base of the tubb sand and we ran porosity continuously to varying degrees to the top of the Abo.

Q Were any cores taken in either the Pan American or the Amerada well?

A No, sir, no cores were taken.

Q No cores are available from any of the wells, is that correct?

A No, not through the Drinkard.

Q Now, you mentioned the Pan American well. That did produce, did it not?

A Yes, sir, it produced and was completed in 1952.

Q And that is the only well that has produced from

the Hobbs-Drinkard Pool to the present time other than the tests made on the Amerada well, is that correct?

A Yes, sir.

MR. UTZ: Did you say 1962?

THE WITNESS: 1952.

BY MR. KELLAHIN:

Q Do you have anything else in connection with Exhibit No. 2?

A I might just mention since we are on the Pan American well, it produced approximately 17 years and it produced a total of 57,700 barrels in those 17 years.

Q Do you have any information from that well?

A No, sir, I don't have any at all.

Q Do you have any information on water production?

A No, sir.

Q You would, however, anticipate that there was some water production from the well, would you not?

A I would anticipate both gas, water and oil production together in this type of section.

Q Now, referring to what has been marked as Exhibit No. 3, would you identify that exhibit?

MR. UTZ: Excuse me just a moment. You people from International, unless you just want to listen, we are

not going to get to you until after lunch, about 1:30.

(Whereupon, Amerada Hess Exhibit No. 3 was previously marked for identification.)

THE WITNESS: Exhibit 3 is a copy of the Gamma Ray Neutron Log on the Amerada No. 5 State "A". It is marked on this log or the formation tops and the perforations.

BY MR. KELLAHIN:

Q Now, were Exhibits No. 1, 2 and 3 prepared by you or under your supervision?

A Yes, sir.

MR. KELLAHIN: At this time I would like to offer Exhibits 1, 2 and 3.

MR. UTZ: Without objections, Exhibits 1, 2 and 3 will be entered into the record in this case.

(Whereupon, Amerada Hess Exhibits Nos. 1, 2 and 3 were offered and admitted in evidence.)

BY MR. KELLAHIN:

Q Do you have anything else, Mr. Johnston?

A No, sir.

MR. KELLAHIN: This completes the direct examination of the witness.

MR. UTZ: Do you have another witness?

MR. KELLAHIN: Yes.

MR. UTZ: Who will be an engineering witness?

MR. KELLAHIN: Yes, sir.

CROSS EXAMINATION

BY MR. UTZ:

Q How nearly to completing is the Continental No. 8, I believe it is, in Section 33; do you have any recent data on that?

A No, sir, I don't have the drilling depth, but it is at the present time drilling, and of course, they have pipe to run and so forth. I would judge probably information on the Drinkard testing of this will may be possibly a week off.

Q How about the other wells in the area that are in the process of drilling or completing; are there any of them that you have any data on so far as the Drinkard is concerned as to whether they are productive or not?

A Yes, sir. I have information up to last Friday. The Humble No. 31-A Bowers on an 8-hour test flowed 30 barrels of oil by heads and 110 barrels of load water. The Shell No. 7, State "A", the last gage I have on that is a 24-hour gage. It flowed 160 barrels of oil and 22 barrels of load water. I have no information on the gas on either of those wells. The Standard of Texas No. 5,

State "I", flowed 5 barrels of oil per hour with gas at a rate of 1,000,000 cubic feet per day, and a certain amount of load water of which I am not sure how much.

Q It would appear, then, that you've got continuous production from the Humble well in Section 29 down to the Pan American Oil?

A Yes, sir, it appears that that is the case.

Q But the acreage in the southwestern part of your recommended area here hasn't been proven as yet?

A No, sir.

Q And some of the northeastern part?

A Yes, sir. I would anticipate the productive area to increase toward the northwest quite a bit on the basis of evidently good tests on the Humble 31-A Bowers. It now appears that we have another small closure in Section 30 of 18 South, 38 East and should pull the Drinkard production up in that direction.

Q There won't hardly be room to drill will there, with all those little wells?

A They might have to deepen some of those ogalla wells.

MR. UTZ: Any other questions? Witness may be excused.

(Witness excused.)

MR. KELLAHIN: I call as my next witness, Mr. Stephenson.

CHARLES C. STEPHENSON

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A Charles C. Stephenson.

Q S-T-E-P-H-E-N-S-O-N?

A Correct.

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

A Amerada Hess Corporation as Division Engineer in Midland, Texas.

Q Have you testified before the Oil Conservation Commission in New Mexico and made your qualifications a matter of record?

A Yes, I have.

MR. KELLAHIN: Are the witness' qualifications accepted?

MR. UTZ: Yes, they are.

BY MR. KELLAHIN:

Q Mr. Stephenson, in connection with the Application of Amerada Hess Corporation, Case 4173, have you made a study of the matters involved in the Application?

A Yes, I have.

Q Briefly, what did you do in connection with this examination?

A Well, we calculated the economics of various methods of completing wells, and the most proper method of determining the economics for 40 and 80-acre spacing. Also, specifically tested the completion that we have in the Drinkard.

Q Now, in connection with the testing of the completion in the Drinkard, did you make an examination of the fluid characteristics?

A Yes, we did. First of all, I might refer to Exhibit 3 which indicates the perforated intervals in the Drinkard zone. There are two at a depth of 6674 to 6698 and from 6926 to 6936. In the process of drilling and completing this well, these two zones were production tested separately. The interval from 6926 to 6936 flowed on a production test at a rate of 81 barrels of oil and 10 barrels of water per day, with a tubing pressure of 100 pounds, and a gas-oil ratio of 9345 and the gravity of the

crude oil was35 degrees. After that test, a bridge plug was set and the upper perforations of 6674 to 6698 was production tested. That particular zone flowed 110 barrels of oil, 67 barrels of water per day with a tubing pressure of 220 pounds, a gas-oil ratio of 12,181, and the gravity was 37.8 degrees.

This indicated that the capacity of both of these zones combined would yield an oil well with an approximate 191 barrels of oil per day and 77 barrels of water per day.

After the production tests in the Drinkard zone, the well was subsequently completed in the Blinebrey zone which is up the hole approximately 1000 feet, and dual equipment was installed in the well. After both zones were completed, a bottom hole pressure was obtained in the Drinkard zone. This pressure was found to be 2650 pounds. After the static bottom hole pressure was measured, a flow test was then run to determine the actual capacity of the well and the characteristics of the reservoir. During this flow test the gage was left in the well to record the flow in the bottom hole pressure. The producing rate during the test declined quite rapidly and stabilized at approximately 36 barrels of oil per day with a gas-oil ratio of 27,751. The recorded bottom hole pressure during

this stabilized flow was approximately 800 pounds. This would represent a pressure decline or pressure draw-down under producing conditions of approximately 1850 pounds.

Now, at the conclusion of the flow test, the well was shut in to record the pressure build-up. The pressure build-up was measured for approximately 90 hours and terminated at that point. The pressure measured at that time was 2588, and it was still building very slightly. Analysis of the pressure build-up curve indicated that the pressure would eventually build up to the static condition of 2650.

Further analysis of the pressure build-up curve indicated that the reservoir had a permeability of approximately 5.5 mil D.A.R.C. (sic) and it indicated that we affected a drainage radius in the flow test which was in a duration of 78 hours of approximately 600 feet.

Now, various methods are available to calculate and forecast the reservoir pressures in the radial distance from a well which is producing at a constant rate for specified values of time. Such a calculation was made for this particular well and is presented as Exhibit No. 4.

(Whereupon, Amerada Hess Exhibit No. 4 was previously marked for identification.)

This is a pressure distribution graph calculated for the conditions noted during the previously mentioned flow test. As you can see from the data block, we assume that constant production of 36 barrels of oil per day with a recorded gas-oil ratio of 27,750, the V.F. pay, the porosity, the water saturation, were all determined from log analysis. The permeability was again taken from the calculated value off the pressure build-up curve which was 5.5 mil D.A.R.C. (sic) The other values shown which are premeability, compressibility and formation volume factors are estimated values for this particular type of crude.

As you can see, the graph illustrates reservoir pressure as a function of drainage -- pardon me -- drainage radius in feet. It shows the effective radius for a period of from 1, 10, 1 month, 100 days and 1 year flowing at this rate of 36 barrels of oil per day. It indicates that it would take approximately 3 weeks to establish communication with an 80-acre drainage radius.

We have calculated our drainage radius from different methods in the process of running our flow test, and the 78-hour flow test indicated that we were in communication with approximately 600 feet of reservoir drainage or reservoir radius. This pretty well fits what

we calculated from our pressure distribution calculations.

Q On the basis of the information presently available to you, in your opinion would one well effectively and economically drain and develope 80 acres?

A Yes, sir, I do.

Q Actually, as an engineer, you would prefer to have additional information, would you not?

A Of course, we always want additional information. I feel certain that this additional information which will be available in the future will support this data that we have presented here which indicated that 80-acre spacing would be suitable for this reservoir.

Q Now, in one other well located in this reservoir which has a heavy productive history, do you have any information on it as to either pressures or production?

A No, sir. The other well you refer to is the Pan American well which was completed in 1952. We have had various contacts with Pan American, and they have indicated that they did not record any pressure information in the well. The well did produce water, approximately 50 percent, during the life of its producing life.

Q With the oil production, did they report any gas production?

A No, sir, they did not.

Q You would, however, anticipate that there would have been some gas production, would you not?

A Very definitely.

Q Is the high G.O.R. characteristic of the Drinkard formations?

A I believe so. We operate several Drinkard fields in New Mexico and all of them have a characteristically high gas-oil ratio. It is either primarily free gas that is present with this type of crude or there is various gas strainers present in the reservoir. We do not know at this time which to be the case.

Q Now, on your well, do you have a market for your gas?

A Yes, sir, we do. We have a contract with Phillips Petroleum Company.

Q Have you made a study of the economics of drilling on 40 as against 80-acre spacing?

A Yes, sir, I have. That is presented as Exhibit No. 5.

(Whereupon, Amerada Hess Exhibit No. 5 was previously marked for identification.)

Q Would you discuss that exhibit, please?

A The exhibit indicates the recovery for both a 40 and

80-acre well completed in the Drinkard formation. It indicates approximately 26,000 barrels of oil would be recovered on 40-acre spacing, 668,000,000 cubic feet of gas being recovered as opposed to 52,200 barrels of oil and 1.3 billion cubic feet of gas on 80-acre spacing. Also, it shows the income that would be generated both on 40 and 80-acre spacing. It indicates after taxes and lifting costs, we would have an operating income for 40 acres of $113,000., and on 80-acre $229,000. Also the economics were figured on the expenditure necessary to drill a single completed well in the Drinkard zone, also as opposed to drilling a dual completed well in the Drinkard and Blinebrey zones. It indicates that our net income before income taxes would only be $20,000. if we had to drill a single well on 40 acres as opposed to $136,800. if we drill a single well on 80 acres. Also, considering the dual well cost investment, a 40-acre location would yield $90,000., whereas a 80-acre location would yield $209,000.

Q In connection with your well cost, do you include the operating cost too?

A The operating costs were considered as one lump sum of $250. per month, however, this essentially does not

include any salt water disposal costs that we will have to incur with the production of this crude.

Q What was the salt water production in connection with your well tests?

A It was approximately 50 percent which was the same as the Pan American well.

Q Now, in connection with the Application in Case 4173, Amerada Hess has asked that the State-wide gas-oil ratio limitations be removed in this pool. What is the basis for that?

A Well, the pool as it stands right now does not have the gas-oil ratio penalty in force. Also, there are some economic benefits obviously to be realized by allowing the wells to produce all the oil and gas that can be produced from the field. With this type of characteristic reservoir, we feel that there will not be any detrimental effect by allowing the wells in the Drinkard zone to produce the indicated vluid volumes with their high gas-oil ratio. Also, we need additional information to determine whether 80-acre spacing will be economical, and if the wells are prorated, this will certainly defer the time period to gather this information.

(Whereupon, Amerada Hess Exhibit No. 6 was previously marked for identification.)

A Exhibit No. 6 indicates an economic comparison by wells penalized with the 2001 G.O.R. limit as opposed to wells which are unpenalized. So you can see the top allowable for 40-acre spacing would be 114 barrels, and this penalized allowable would be 10.7. On 80-acre spacing the allowable would be 178 barrels per day and the penalized allowable would be 16.7, whereas, if it was not penalized it could produce its indicated rate of 36 barrels of oil per day and 769 M.C.F. gas per day.

Q As I understand, you say you need the higher producing rates in order to gather information within a reasonable length of time as to the reservoir conditions, is that correct?

A That is correct.

Q Also in order to pay out your wells at an economic rate?

A That's correct. Again, if we were prorated, even though you can generate acceptable reserves, the time period over which these reserves are produced make the well appear to be not as attractive as what it would have ordinarily if you could produce at a higher rate.

Q Will production of this reservoir without a limiting gas-oil ratio have any adverse effect on the reservoir?

A To my knowledge, I do not believe it will.

Q In connection with the Application, Amerada Hess Corporation has proposed an 80-acre proration unit. Do you have any recommendation as to the well location?

A At this present time we do not have any recommendations. It would be agreeable with us to locate in either one of the 40-acre locations within the 80-acre proration.

Q Would you recommend that all wells presently drilled or drilling be approved as to location?

A Yes, I would.

Q Now, as to the dedication of the acreage, do you have any recommendations as to whether the 80-acre tract be dedicated in the north and south or east and west direction?

A No, sir, we do not.

Q You would permit the dedication at any two 40-acre tracts, is that correct?

A That's correct.

Q Do you have anything to add, Mr. Stephenson?

A No, I don't believe so.

Q Were Exhibits 4, 5 and 6 prepared by you or under your supervision?

A Yes, sir, they were.

MR. KELLAHIN: At this time I would like to offer in evidence, Exhibits 4, 5 and 6.

MR. UTZ: Without objection, Exhibits 4, 5 and 6 will be entered into the record of this case.

(Whereupon, Amerada Hess Exhibits Nos. 4, 5 & 6 were offered and admitted in evidence.)

MR. KELLAHIN: That's all we have on direct examination, Mr. Utz.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Stephenson, you asked for a no G.O.R. limit here which in itself is a little unusual. You say you have no evidence that it would hurt the reservoir. Do you have any evidence that it wouldn't hurt the reservoir?

A At the present time there are an insufficient number of wells and data available from which to draw any satisfactory conclusion. I would say that in general the nature of the Drinkard zone is such that probably there is

free gas in all of the strainers present in this reservoir, and as such, all wells are going to produce a high gas-oil ratio. Because of this, all would be produced on a comparable rate to each other. We feel that this would be reason, temporary reason to ask for the no gas-oil ratio.

Q **What is your conclusion?**

A I believe it would primarily be a solution and if there is free gas, it would be a secondary gas expansion. But these zones do not appear to be connected with each other, the lower zone and the upper zone. It would be expansion within each zone itself.

Q It seems to me like this is about a half gas pool and half oil pool, isn't it?

A We are certainly going to have a high gas-oil ratio. We tried -- in our production test, you see, we tried to determine if this zone had a gas cap. We were not successful in any of our tests to determine this. This is what we were looking for to stay in the oil zone, and we found oil zones that have high gas-oil ratios.

Q Your evidence as to 80-acre drainage is based entirely on Exhibit 4?

A To date it is, yes, sir. There is no pressure

information between other wells at the present time to verify this from a pressure production standpoint.

Q What is the red arrow on Exhibit 4 indicating?

A It indicates our initial static bottom-hole pressure which is 26-50. Really, where the curve line intersects the static pressure, this indicates the radial distance during that specified time of production that we have established or estimated that we have established communications.

Q What is the radius of the 80-acre tract?

A It is 1047 feet.

Q That's where the arrow is?

A Yes, sir, it is.

Q It is your estimate, then, that it would take three weeks to reach your 80-acre drainage radius?

A Yes, sir.

MR. UTZ: Does anyone want to make a statement?

MR. MORRIS: Mr. Examiner, as has been pointed out in the evidence, Shell Oil Company has a well being completed in the SE of the NE of Section 32, and has another well drilling in the NW, NW of Section 33. Unfortunately Shell has not actually completed either of these wells and it is not in a position at this time to either concur

with or press opposition to the Application for 80-acre spacing. However, due to Shell's interest in this area, we would like to go on the record here with respect to well location requirements that would be established by the Commission if 80-acre spacing is adopted. There has been no well location pattern established in this area. It is quite to the contrary, and for this reason we would recommend that the Commission adopt a flexible rather than a rigid well location requirement in the spacing rules. In any event, should the Commission for some reason decide that rigid locations should be established, at least the existing wells and the wells that are being completed or drilling at this time should be given the usual acceptance to the well location requirements.

Thank you.

MR. UTZ: Other statements? The case will be taken under advisement.

MR. HATCH: You do have a telegram to read?

MR. UTZ: Yes, there is a telegram to read into the record.

MR. HATCH: It is dated July 22, 1969, John Cameron, Supervising Proration Engineer for Case 4173, Application of Amerada Hess for special rules in the

Hobbs-Drinkard Pool. Standard Oil Company of Texas is opposed to the adoption of 80-acre rules at this time. Standard of Texas operates one 80-acre tract on which we are now completing a dual Drinkard-Blinebrey well. We plan to drill and complete a second dual producer on this 80-acre tract if the Drinkard remains on State-wide rules. We believe the Drinkard formations should be developed under the same rules as the Blinebrey formations which is thus far developed on 40-acre density. Until evidence is available which dictates some other density, we do not believe existing data indicates that one well will effectively and economically drain more than 40 acres nor that larger spacing is necessary to assure economical development. We urge that the Hobbs-Drinkard pool continue to be governed by State-wide rules."

MR. KELLAHIN: If the Examiner please, in connection with the statement that has been read into the record, apparently according to our information, the only acreage held by Standard is the 80-acre tract to which they refer. If you are going to have an effective 80-acre pattern, it must be inaugurated soon to prevent the drilling from the reservoir on 40-acre tracts.

Now, admittedly, more information would be

desirable, but we feel we have presented enough information to indicate that one well would probably drain effectively on 80-acre tracts. We are asking for temporary rules for a period of one year in which to determine if this is supported by the facts, and we feel that it will be. If the order is not entered at this time, then there will be wells drilled on 40-acre tracts and it will be too late to space the reservoir on 80 acres which would result in waste as defined by our statutes.

MR.UTZ: 40-acre allowable is around this depth now is 114 barrels for 40 acres?

MR. STEPHENSON: Yes.

MR. UTZ: If you don't get any better well than you, a half of 80 will be plenty, won't it?

MR. STEPHENSON: We wouldn't want to drill them on that.

MR. UTZ: The case will be taken under advisement.

(Whereupon, the Hearing was concluded at approximately 11:50 A.M.)

STATE OF NEW MEXICO)
) SS.
COUNTY OF SANTA FE)

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

COURT REPORTER

My commission expires April 8, 1971.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4173, heard by me on January 23, 1969.

Examiner
New Mexico Oil Conservation Commission