CASE 1394: Case called by OCC, at request of Ralph Lowe, et al., to consider reduction of allowables in Gladiola Pool, Lea County.

[redacted]

Case No.

1394

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 13, 1958

IN THE MATTER OF: Case No. 1394

TRANSCRIPT OF PROCEEDINGS

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3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 13, 1958

IN THE MATTER OF:

The hearing called by the Oil Conservation Commission of New Mexico, at the request of Ralph Lowe, et al., to consider the reduction of allowables in the Gladiola Pool in Lea County, New Mexico. Case 1394

BEFORE:

Mr. A. L. Porter, Jr.
Mr. Murray Morgan
Governor Edwin L. Mechem

TRANSCRIPT OF PROCEEDINGS

MR. PORTER: The next case to be considered will be Case 1394.

MR. COOLEY: Case 1394: In the matter of the hearing called by the Oil Conservation Commission of New Mexico, at the request of Ralph Lowe, et al., to consider the reduction of allowables in the Gladiola Pool in Lea County, New Mexico.

(Recess.)

MR. PORTER: The meeting will come to order, please. Just a minute, Mr. Buell. Mr. Errebo wants to make a statement at this time.

MR. ERREBO: If it please the Commission, with regard to Case 1053, the previous case, is Mr. Joiner here from Magnolia?

Mr. Joiner advises me that he has made a telephone call to his office and they advise him that the Sunray agreement has been received, signed.

MR. PORTER: Before we get into the case we have just announced, Case 1394, I would like to make an announcement concerning Bisti, the rehearing on the Bisti case. The Commission feels that we wouldn't have time to complete the docket this afternoon. We will try to complete this Case 1394 and possibly the nomenclature cases and continue the Bisti rehearing until 9:00 o'clock in the morning, and we will reconvene in the Highway Building out on Cerillos Road. The rehearing case will not be taken up this afternoon.

We will take up now Case 1394. Mr. Cooley.

MR. COOLEY: Are there any appearances in this case?

MR. QUINN: John Quinn of Hobbs, representing Ralph Lowe.

MR. COOLEY: Any other appearances?

MR. BUELL: For Pan American Petroleum Corporation, C. L. Kelly, J. W. Brown, Dan Currens, and Guy Buell.

MR. WEBB: Layton Webb, attorney for Sinclair Oil and Gas Company. I would like to enter an appearance.

MR. ERREBO: Burns Errebo with Sunray-Midcontinent. I would like to enter an appearance.

MR. KELLAHIN: Jason Kellahin, Kellahin and Fox, representing Hancock Oil Company.

MR. COOLEY: Any other appearances?

MR. PORTER: Mr. Buell.

MR. BUELL: May I be permitted to make a very short statement for Pan American?

MR. PORTER: Yes, sir.

MR. BUELL: Pan American is the operator of thirteen wells in this pool. I would like to say at the outset that we are opposed to the reduction below the normal unit allowable because in our opinion it is not justified from the standpoint of conservation, and certainly not from the standpoint of correlative rights. We're in this unusual position, if the Commission please, in this pool as in other pools where our interests are substantial, from the standpoint of reservoir studies; we have continuous studies in progress at all times. Certainly this pool, with our substantial interest in it, we try to stay right on top of it. For that reason we are able to say at this time that in our opinion no waste has occurred or will occur producing at the normal unit allowable.

We are in the position, though, of having to ask for a short continuance due to the fact, the unusual nature and the manner in which this hearing was called; due to the short time interval, we haven't had time to prepare formal exhibits or testimony to present, although from the standpoint of studies of the reservoir, we are right on top of it; so we would like to urge that a short continuance be granted of at least two weeks, to enable us to prepare our formal exhibits and our testimony so that we can present our side of this case.

MR. QUINN: John Quinn, representing Ralph Lowe. We have no objection to a continuance as far as I know, except that we would want to put on testimony here in order to support the emergency order which was granted, allowing the lower allowable, and also testimony to support possibly an interim order until the time that the Commission may set for a continuance. We believe that our evidence will show that a permanent order should be issued by the Commission on the lower allowable figure or some similar figure which was set by the emergency order. As I understand Mr. Buell's motion, he has all of his information here at this time, since he was on top of the situation, but he doesn't have his exhibits. If he has his information here, then it seems to me that he should present his information and data which he now has to the Commission, because of the fact that the Exhibits will only serve to clarify the data which he may have.

MR. BUELL: May it please the Commission, apparently I left the wrong impression on Mr. Quinn. I didn't mean to. From the standpoint of needing time for a complete reservoir study, that isn't necessary, but to correlate our data, to arrange it in a presentable form to the Commission so that it will justly reflect our position as the facts warrant, that is what we are asking for. Due to the short time interval between the notice of the hearing and today, in all fairness I believe we are entitled to it.

MR. QUINN: I would like to ask Mr. Buell if he intends to introduce data at that time which he may obtain subsequent to

this date, or do you want to correlate the data you now have and make exhibits to present to the Commission?

MR. BUELL: Mr. Quinn, it will always be Pan American's position, I hope, to present to the Commission the very latest and most current data available. I hope that answers your question.

MR. QUINN: We have no objection to that.

MR. PORTER: The Commission will withhold the decision on the motion made by Mr. Buell until after Mr. Quinn for Lowe has presented their testimony, and any other interested parties have had a chance to cross examine the witness. Mr. Quinn, will you proceed?

MR. QUINN; Since you have delayed ruling on the motion, at this time, I would like the record to show then that I will not agree to continuance prior to the time that we put on our evidence.

MR. COOLEY: I don't understand.

MR. QUINN: I believe I made the statement that I would agree to the continuance when it was made, but since we are going forward with the evidence and present evidence at this time, we intend to present evidence to the Commission of necessity for a permanent order, I'll state then that I will not agree that the continuance should be made at that time. Now Mr. Buell will renew his motion, I presume?

MR. BUELL: Yes.

MR. QUINN: I have a short statement before I put any evidence on, and that is that the applicant intends to show that

the emergency order which was entered into by the Commission on the 28th of February should be made permanent, and generally we intend to show that the number of wells producing water in the Gladiola Pool has been increasing over a period of the last six months; and on February 21st the Ralph Lowe Lawton State No. 2 Well, which is located in the northwest southwest quarter of 32, Township 11 South, 38 East, N.M.P.M., commenced producing 100 percent water. Prior to that date the well was capable of producing a top allowable since its completion date, which was on September 19, 1956.

We also intend to show that there is a possibility that the water production from certain wells in the Gladiola Pool is premature, and that this premature water production was caused by the higher allowable of these wells at excessive rates.

Also, as set out in paragraph 5 of the emergency order, that the production of the wells in the Gladiola Pool at the rate authorized for the month of March, 1958, and subsequently be authorized at a higher rate may result in underground waste.

During the period of purchaser prorationing which was had in June, July, August, September, and October of 1957, the production from the wells in the northernmost portion of the pool, which was formerly the North Gladiola-Devonian Pool and which was combined with the South Pool and made the Gladiola Pool, was reduced to an approximate average of 190 barrels of oil, and that during this period the pressure performance of certain of these wells

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indicated that production at a lower rate would result in additional ultimate recovery of oil from these wells.

In proving these points which we have stated, we intend to introduce the testimony of only one witness, Mr. Landua, petroleum engineer, and we have six exhibits which will be introduced in the course of the testimony.

Mr. Landua, will you be sworn and take the witness chair?

(Witness sworn.)

HARVIN L. LANDUA

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

DIRECT EXAMINATION

By MR. QUINN:

Q Will you state your name?

A Harvin L. Landua.

Q Where do you live?

A Midland, Texas.

Q Are you a petroleum engineer?

A Yes, sir.

Q What are your schools?

A Graduated from Texas A. and M. in 1938, was employed by the Humble Oil Company for approximately twelve and a half years, the last three years of which was in their reservoir engineering section down in Houston; and since that time have been with Mr. Ralph Lowe in Midland and with the Chemical Corn Exchange Bank in

New York in their Petroleum Division.

Q What is your knowledge, Mr. Landua, of the Gladiola Field?

A I started following Gladiola itself in about 1952 through Oil Conservation Commission records, and started following North Gladiola when it was discovered by Mr. Lowe in '56.

Q Have you made a study of that particular area?

A Yes, we have.

Q Are you familiar with Mr. Ralph Lowe's holdings in the field?

A Yes, sir.

MR. QUINN: Are Mr. Landua's qualifications acceptable?

MR. PORTER: Yes, sir.

MR. QUINN: I would like to mark these as exhibits.

(Lowe's Exhibits 1 through 11 marked for identification.)

Q Mr. Landua, I would like to hand you what has been marked as Plaintiff's Exhibit No. 1 and ask you to identify that.

A Exhibit 1 is a plat showing the various oil fields in the southeastern portion of Lea County of New Mexico. The field that we have in question today is Gladiola, is indicated on this plat, and its location in relation to other fields in the area is set out on this drawing.

Q Can you tell from that drawing the trend and the relationship to the other Devonian Field?

A Yes, sir, you can.

Q I'll hand you at this time Exhibit No. 2 and ask if you will identify and explain that exhibit.

A Exhibit 2 is a tabulation of the well and production data for Gladiola, North Gladiola and the Ralph Lowe operated leases. This exhibit shows the gross production by years for Gladiola, along with the base allowable rates at various years and months, the number of wells completed in the various areas by years and months, the bottomhole pressure information as it was obtained. This information is obtained primarily from Oil Conservation Commission records. It shows that the Gladiola portion of this area was discovered in 1950 and that up to the time that the North Gladiola area was discovered by Mr. Lowe, there were twelve wells in the Gladiola area that had produced approximately three and a half million barrels of oil. Mr. Lowe discovered this North Gladiola area in March of 1956. This information also tabulates the bottomhole pressures that were obtained in the North Gladiola area on the Lowe operated properties.

Q How up-to-date is that?

A It's basic data, it takes us up to the 1st of 1958.

Q Is there anything significant as to that data?

A Yes, I think it is, but I think we'll cover it down the line in our testimony, Mr. Quinn.

Q I will introduce then Exhibit No. 3 at this time and ask you to identify that and tell the Commission what it purports to show.

A Exhibit 3 is a tabulation; it's a tabulation in three parts.

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The first part shows the general completion depth and the amount of Devonian formation penetrated in the Gladiola area. The second portion lists the operators in the field, the number of wells that they have, and the average Devonian penetrated down to a subsea datum point of 8150 -- back up -- the second portion lists the operators in the field, the number of wells that they have and the gross footage of Devonian that these wells have above a datum point of 8150. It has nothing to do with the Devonian penetrated. The third part of this tabulation is an allocation of the average Devonian thickness above the 8150 datum point by areas.

I would like to hold this out for a minute and discuss it later.

Q Just go ahead and discuss that.

A Well, let's do it a little bit later on when we talk about these plats.

Q I give you then Exhibit 4 at this time and ask you if you will identify that and explain to the members of the Commission what that is and what it purports to show.

A Exhibit 4 is a structural map made up by one of Mr. Lowe's geologists. It's contoured on top of the Devonian as penetrated in the approximate 90 wells that have been drilled in the area. The plat also indicates the wells that were making water as of the 1st of March of '58, and further it indicates the wells that were standing by to be plugged.

Q Is there a copy of that exhibit on the board?

Q Is there a copy of that exhibit on the board?

A Exhibit 4 is up on the board and is identified by its Devonian structure map title blocks.

Q This is Exhibit 5. Would you explain that exhibit?

MR. BUELL: May it please the Commission, I wonder, for the purpose of the record, since this exhibit was prepared by someone other than the witness, if he would testify that he adopts it as his own?

MR. QUINN: I was going, at the conclusion of introduction of all exhibits, I was going to ask him if they had been prepared either by him or under his direction.

MR. BUELL: I want to bring it up now before he discusses it. I realized you hadn't introduced it; if he will state that he adopts it as his own.

MR. QUINN: Will you state that, Mr. Landua?

A No, sir, the work is not my own, but I agree with the work.

Q I give you then Exhibit No. 5 and ask if you will explain to the Commission this exhibit and what it contains.

A Exhibit 5 is also upon the blackboard and it's a correlary to Exhibit 4. Exhibit 5 indicates the amount of the Devonian material above 8150 feet subsea for each well in the field.

Q Do you have anything further to say on that exhibit?

A Yes. Now I would like to refer back to Exhibit 3 and say that when nature put this big island of oil down in this great big Devonian sea, that it was in contact with, it created --

Q (Interrupting) Pardon me, that is Exhibit 4, is it not?

A Yes.

Q Instead of 3?

A Yes, I'm going to refer to Exhibits 3 and 4, whatever these numbers are, Exhibits 4 and 5. I'll be referring to Exhibits 4 and 5 in this discussion.

This big island of oil has a mountain in the southwest corner. The areal extent of this mountain is about 600 acres and its thickness is about 200 feet. Its about 16 percent of the productive area. Now the remaining 84 percent of the productive area by our tabulation on Exhibit 3 indicates that this other 84 percent only has 52 feet of Devonian material above this 8150 foot bench mark. We think it's an unusual type of structure, and it has a distinct bearing on the performance of this field.

Q Do you care to refer back to Exhibit No. 3 at this time, or have you referred to that?

A No, sir, I think that's all that I need to say at this time.

Q This is Exhibit No. 6. Will you take a look at that and identify it and state for the Commission what that exhibit purports to show?

A Exhibit 6 is a summary of the production and bottomhole pressure information in the north segment of this Gladiola Pool. The bottomhole pressure information was obtained in the Ralph Lowe operated wells, and the production was obtained from Oil Conservation Commission records and was for the North Gladiola area as a whole

up to the time it was combined with the South Gladiola area.

In our opinion this summary is very significant. It indicates that during the period prior to pipe line proration in June of 1957, that the reservoir was performing in a nature whereby 1850 barrels per pound drop to about 6400 barrels per pound drop was being obtained. One pressure survey was obtained during this pipe line proration period. At that time, as we previously stated, the production rate had been cut back for this North area. Our information indicates that the reservoir performed in a manner whereby 19,000 barrels of oil were produced for each pound drop in bottomhole pressure during that period. Immediately after the period, we obtained another pressure survey and it indicated again that we were down in the range of 6,000 barrels for each pound drop in bottomhole pressure. In our opinion this indicates that this reservoir would be produced much more efficiently if these rates were cut down in the neighborhood of 190 to 200 barrels per day and allow the natural water drive that's present in this field to work to our benefit.

Q Going on through the exhibits, I'll hand you this Exhibit No. 7 and ask you to identify that and state for the Commission what the purpose of that exhibit is.

A Exhibit 7 is a tabulation of the wells currently producing water in the subsea depth of their producing interval. I would like to call particular attention to the Commission that this appearance of water in our opinion both in the North and South

segment of the Pool has been very erratic. For instance, Mr. Hammond has a well down there that produces some water, and its completion interval is a minus 8057 to minus 8067.

Again in the South area there's evidence of presence of water as low as a minus 8131 in some of the Hancock wells. In the north end, we have evidence that water is as high as a minus 8117, in Mr. Lowe's well it has gone to 100 percent water, and as low as 8156 in another well that Mr. Lowe has in the north area. We think this tabulation is very significant in that it indicates that the water advanced, even though on the edges it has been very erratic.

Q Do you have anything further to say on that exhibit at this time?

A No, sir.

Q Will you take this exhibit which is marked No. 8, identify it and explain what the purpose of this exhibit is and what it shows.

A At this stage in the development and production of the Gladiola area, there have appeared a number of problem wells. Some are incapable of making top allowables that have been assigned to it under its depth factor, manner of proration, and some are making excessive rates of water, and some are making very small percentages of water. When Lawton State No. 2 went to water, our first problem was to determine whether we had left oil in this well bore, so we took the logs that we had obtained in this well, the drill stem test data that had been obtained in the well,

the core analysis data that had been obtained in the well, and made a composite study. Our geological group analyzed this data, I analyzed the data, we had it analyzed by outside consultants. The agreement was unanimous that a very substantial portion of oil had been left in this well, even if the workover that we're attempting now is partially successful.

Q In that connection, Mr. Landua, I hand you this exhibit that has been marked Exhibit No. 9. I believe that concerns the same well which you are talking about, the Lawton No. 2.

A Exhibit 9 is a tabulation by months from the Form C-110 which Mr. Lowe's company has turned in to the Commission. It tabulates the production data from Lawton State No. 2 by months. It indicates that the well has produced 135,414 barrels of oil up to February the 21st, at which time it went to 100 percent water. Prior to that time it produced no water.

Q This is Exhibit No. 10. Would you explain to the Commission what the purpose of this exhibit is and what it purports to show?

A Exhibit 10, when we had obtained water in four other wells in the northern portion of the field, we were disturbed about the appearance of water, but the water encroachment wasn't as rapid as it was in this Lawton State 2. We put our wells on the pump, go ahead, and continued to get some oil even though we felt that waste was occurring we were willing to sit by and try to obtain some more data to see just how extensive it was; but when Lawton State 2 went to 100 percent water, why that's like getting your

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grocery bill cut off, your grocery money cut off, so we had our geological group and myself prepare a cross-section of Mr. Lowe's operated wells. It's Exhibit 10. This cross-section in effect shows that if the water is actually up to 8117 in Lawton State 2, that nineteen out of the twenty-four wells that Mr. Lowe operates should be producing some water.

Further than that, it also shows that Lawton State 3, which is another well on the Lawton State Lease, should be virtually 100 percent water, and it's a pipe line oil well. Lawton State 2 is surrounded by pipe line producing oil wells, and their subsea depths vary from 8075 as the top producing interval down to 8115 as a top producing interval.

Q This is Exhibit No. 11, our last exhibit. Would you look that over and state to the Commission what the purpose of that is and what it contains?

A Exhibit 11 is a tabulation of our average flowing tubing pressures that were obtained on February 24th and on March 10th. Not being able to take bottomhole pressures as rapidly as we would like to, we got a reading on our flowing oil wells. Our flowing oil wells continued to make pipe line oil and we think that there is a correlation between the flowing tubing pressures and the flowing bottomhole pressures in this type of reservoir.

Now this tabulation indicates that we have had an increase in flowing tubing pressures from 40 pounds to approximately a hundred pounds. We think that this reduced rate of production

reduces the differential pressure that exists between the oil zone in this reservoir and the underlying and edge water zones. When we reduce this differential pressure, we think we reduce the environment or the possibility of water encroaching too rapidly, and in that way we increase our ultimate recovery tremendously.

Q You say encroaching too rapidly, you mean at a rapid rate?

A Yes, just about like Lawton State 2.

Q Do you believe that could be called encroachment?

A If you say rapid encroachment, I suppose you could.

Q Does this represent all the exhibits that you have at this time, Mr. Landua?

A Yes, it does, Mr. Quinn.

Q Were all those exhibits prepared by you or under your direction?

A Yes, both.

Q You agree with what those exhibits show, and from what information did you prepare them?

A Various records, records that we have in Ralph Lowe's file, Oil Conservation Commission records, geological records which are exchanged between companies, and as I say, our old files.

Q Do you have any conclusion which you would like to draw, referring back to the various exhibits, in regard to this matter?

A Yes, I do, Mr. Quinn. I feel that this data shows that 85 percent of the Gladiola Field,as it's combined today, has a relatively thin pay section compared with other Devonian producing

areas along this trend in southeastern Lea County. We had a suspicion that this thin-type of reservoir was being produced too rapidly up to about a year ago, and since that time we have had indications or red flags appear all along our operation in this field that indicated that we should reduce this rate. We think that the relative thinness of the pay section is a very pertinent matter to consider when talking about producing rates in this reservoir. Another conclusion is that during the past six months, the number of wells in our operations, as well as in the operation of the field as a whole,has increased very rapidly. We think that the reduction in bottomhole pressure that has occurred, particularly in the north end of this field, has been too rapid, particularly in view of the fact that the field has a natural drive which appears to have the ability of maintaining pressures by itself at commercial rates of production. When we maintain these pressures we lower our operating costs, we delay the cost of installation of pumping equipment, and we create a condition that's conducive to more economical recovery of oil.

Q Is it your opinion, Mr. Landua, that allowing some flexibility with this lower proration which has been set at 190 barrels would be of benefit both to the royalty owners as well as the working interest owners in this field?

A I don't think there's any question but that it can benefit everyone who has any money invested in this field.

Q Are you asking for an arbitrary figure of 190, or in that

neighborhood?

A Mr. Quinn, we don't feel that we're equipped to set this figure. The only thing that we can say to the Commission here is that in our opinion there have been happenings at the rates that this field has been produced that say you'd better lower this rate.

Q Do you think the lower rate would be fair to both working interests and royalty owners in the field?

A Yes, sir.

Q Is it your opinion that this would be in the interest of conservation and prevention of waste?

A Yes, sir.

Q Would you state to the Commission whether or not in your opinion the greatest amount of oil will be produced eventually by the lower proration figure set?

A I think there's absolutely no question about it.

Q Is it your opinion that the lower figure of 190 barrels, if that figure will allow each lease to recover its fair share of the recoverable oil in the reservoir?

A I missed your question, Mr. Quinn.

Q Is it your opinion that the lower figure of 190 barrels which has been set will allow each lease to recover its fair share?

A Yes.

Q Of the recoverable oil in the reservoir, is that right?

A Yes, sir.

Q Is there any other information or statement that you would

like to make to the Commission at this time, other than the information you have already given, based on these exhibits which have been entered?

A Yes. Mr. Quinn, I think I overlooked one point. Because of the relative thinness of this Devonian pay section in 85 percent of this field, it's our conclusion and we have facts to indicate it by the performance in three wells, that workovers, successful workovers are going to be impossible. This also contributes tremendously to leaving much oil in this reservoir. As a summary statement, I would like to say that these past per well producing rates have resulted in happenings to certain individual wells that appear to us to have caused waste and reduction of ultimate recovery already. These producing rates should be reduced immediately in order to prevent further waste and prevent the further reduction of ultimate economical recovery of oil.

MR. QUINN: That's all that we have at this time.

MR. COOLEY: Mr. Quinn, would you like to formally offer your exhibits at this time?

MR. QUINN: Yes, I would. We would like to formally offer these exhibits in evidence, numbered from 1 to 11, at this time, for the record.

MR. PORTER: Lowe's Exhibits 1 through 11. Is there objection to the introduction of the exhibits? They will be admitted. Anyone have a question?

MR. BUELL: Guy Buell. I might suggest that it might save

time overall in the cross examination if we can have about a five or ten minute recess to look at some of the exhibits. I think we can eliminate some of the questions that we would ask. I believe it would save time overall.

MR. PORTER: We will have a five minute recess.

(Recess.)

MR. PORTER: The meeting will come to order, please. Mr. Buell.

CROSS EXAMINATION

By MR. BUELL:

Q Mr. Landua, I notice in your testimony you referred to encroachment or rapid encroachment. Do you use that word synonymously with coning?

A No, sir.

Q In your opinion is coning taking place in this field at this time?

A I don't think I'm in a position to say.

Q You just don't know?

A No, sir.

Q Would you define for me, please, it would help a lot, Mr. Landua, just what you mean by encroachment?

A Simply stated, encroachment is an advance, in this case, of water.

Q Would you not normally expect that in a water drive reservoir, encroachment of water?

A Certainly, I wouldn't expect it in such an erratic nature

as we have here, if the reservoir was handled properly.

Q Have you analyzed water production, Mr. Landua, from the standpoint of net pay and original oil in place that you would assign to the wells that are currently making water?

A No, sir, we haven't. We have some wells but not all the wells.

Q Let me ask you this. Strictly now from the standpoint of capacity, will all the wells operated by Lowe make the top allowable well for March, it's 237, is it not, would normally be the normal unit allowable?

A State your question again, please.

Q For the purpose of this question, I am interested only in capacity, from capacity to produce the water, will all the wells operated by Lowe produce at the rate of 237 barrels per well per day?

A No, we have one making 100 percent salt water.

Q All right. Other than the Lowe State No. 2, are all the wells currently capable of producing 237 barrels of oil per day?

A Yes, sir.

Q All of them. Did all of these wells make their assigned allowable in January?

A I'm not sure. I would have to examine the records.

Q Wouldn't that be included in some of the exhibits that you introduced?

A The total production would be in there.

Q Would you mind looking at your exhibits?

A It would be difficult to do because you were given some of this back allowable in that area.

Q In other words, you are not prepared at this time to answer that question?

A State your question again.

MR. BUELL: Would you read it back?

REPORTER (Reading): "Did all of these wells make their assigned allowable in January?"

A I will give you the figures and you can divide it out.

Q If you don't know offhand, it's not important enough to take a lot of time.

A Okay.

Q Do you make your statement on the current ability of your wells to produce on recent production tests or just your general knowledge of their capabilities?

A We don't have too many individual well tests, we have the production by leases. We have some individual well tests.

Q In other words, then, you based your answer on your general knowledge of the wells and not on individual well capacity tests?

A That would be true.

Q From this same general knowledge that you have of your wells, Mr. Landua, in your opinion would they produce, do they have the capacity to produce at a sustained rate of 125 percent above 237 barrels per well per day?

A I just don't know.

Q Sir?

A I don't know whether they have or not.

Q You just don't know.

A I'm of the opinion that they would.

Q All right. Would you give me the complete open interval in your log statement?

A Yes, sir. You want it in subsea depth?

Q Subsea, yes, please. Isn't it on the cross-section?

A I have the top of the Devonian on the cross-section, not the top of the producing interval.

Q Would you give the complete, the top and the bottom?

A Yes, it's 8117 to 8157.

Q 8157?

A Yes.

Q Now, in your direct, when you were talking about water being at minus 8117, you were referring to the top interval?

A Yes.

Q And I'm sure you made that statement because you felt since it went to 100 percent water that you had water that high in that well?

A Yes, sir.

Q Had that well made water previously to February 21st?

A Not to our knowledge.

Q None at all?

A No.

Q If it made it, you would know about it?

A Yes.

Q Based on your general experience as a reservoir engineer, Mr. Landua, does that appear to you to be the effect, that well going to 100 percent water, does that appear to you to be the effect of coning or premature encroachment or would that not indicate to you that you have a mechanical problem there?

A I don't know what you mean by mechanical problem.

Q All right. I'll ask you this way then. Normally in a water drive reservoir where you have coning or premature encroachment, don't you observe that initially the well will make a small amount of water and then gradually increase?

A I don't know whether that would occur when you had coning or premature encroachment. I've seen it occur both ways. We have it happening in this field where your water production is small and then increases very rapidly, and then we have the one well where it went from 100 percent oil to 100 percent water.

Q In other words, in your opinion, you have ruled out completely any mechanical trouble in that well as the cause of your 100 percent water trouble?

A No, sir, because I don't know what you mean by mechanical trouble.

Q Well, what do you engineers in the profession usually mean and what do you mean when you refer to mechanical trouble in a well?

A You could mean that you could have a casing leak, that's about the only one that I know of.

Q What about breakthrough in your cement?

A I don't know that I would call it mechanical.

Q You wouldn't call cement trouble mechanical?

A I don't know that I would call it mechanical.

Q Do you think something of that nature could have happened to your Lawton State 2?

A Well, it produced 502 days without any trouble, I would think that if you had environment that is conducive to a bad mechanical condition, possibly it would have appeared sooner.

Q Possibly?

A Yes.

Q I believe you mentioned that you were getting ready to work the well over, apparently you think you can do something with it?

A We think that this water appeared so rapidly, we just have to gamble with the possibility that this condition may be unusual. We're going to spend some money to see.

Q In other words, certainly in your thinking you haven't written that well off as a producing well?

A Not until after we do this workover.

Q You have a pumping unit on that well?

A No.

Q How did you ascertain, then, that it went to 100 percent

salt water?

A The well was flowing very nicely and then overnight the tubing pressure went to zero, stopped producing. We got a swabbing unit out on the well and swabbed it for two days. In these swabbing tests is when we got this information.

Q Do you have any idea, Mr. Landua, of the amount of water you produced when you were swabbing the well?

A 26 barrels an hour.

Q Sir?

A 26 barrels an hour. Standing fluid level was seven to eleven hundred feet from the top of the ground.

Q Would you state briefly for me again the wells operated by Lowe, other than your Lawton State No. 2, that are currently making water?

A Would I do what?

Q Your wells other than State No. 2 that are now making water, would you give me the names?

A The names?

Q Yes.

A Shell Browning No. 1, State "A" No. 2, Markham State No. 1, and Aztec Adamson No. 2.

Q From the standpoint of water production on those wells, Mr. Landua, what has generally been their history, has the rate gradually increased since they initially started cutting water?

A I would say that it's still increasing in all four wells.

Q In other words, you have observed a gradual rise in the water percentage in these four wells that you have just named?

A I don't know what you mean by gradual.

Q Well, I'm trying to avoid going into detailed questions on each well, Mr. Landua. I mean by gradual, just a normal sloping curve. If you don't think it was gradual, express it in your own words. I'm just trying to save time.

A I don't know whether it was gradual, because you would have to make a bench mark.

Q But you have noticed from month to month on your reports to the Commission that the water cut has been increasing?

A I'll say that it has varied appreciably. We haven't plotted up the dope to see if there is a trend.

Q Do you have any other wells other than the four you have just named and your Lawton State No. 2 that are currently making water?

A We have a plat that has the wells circled that are reported to be making water.

Q Are those circled in red on Exhibit No. 5, Mr. Landua?

A Exhibit 4 and 5, yes, sir.

Q Are they also circled on the copy that went into the records?

A Yes.

Q Would you go over to either Exhibit 4 or 5 for a minute, Mr. Landua?

A Yes.

Q Let me ask you this. Do you know of any wells that are located structurally higher that are producing water?

A What do you mean, structurally higher?

Q I mean high as opposed to low.

A Well, here is one that is higher than this one that's making water.

Q This one here, which well is that?

A Aztec Adamson 2 is higher than Sinclair Kendricks 1.

Q When did that well start making water?

A Just very recently.

Q Has that water production been reflected on any reports that you have submitted to the Commission?

A No, sir, we haven't submitted a report for March yet.

Q What was this water cut, what percent?

A I don't have the exact data because it has been on the pump about a week. I would say in the neighborhood of 20 to 25 percent.

Q Can you express that in barrels for me?

A Yes, sir. I would say about 80, well, I don't know. I would rather --

Q But around 20 percent?

A Yes, sir.

Q Do you know of any wells other than the one you mentioned, the Aztec well, that is located structurally high and producing water?

A Structurally high, you have to compare it with something. I would say Mr. Hammond's well down here is located structurally high compared to other wells here and with the north end.

Q In other words, what you are saying with reference to the Hammond well is that there are wells located structurally lower than he is?

A The map indicates that.

Q As a matter of fact, he is right on the edge of the field, Mr. Landua, as reflected by your exhibit?

A Depends on what you call edge. He's supposed to have 105 feet of Devonian above the 8150. Depending on the spacing, you might get another well in here.

Q Let's ask it this way, Mr. Landua. Looking to the productive limits line,as reflected by your Exhibits,to the west and to the south are there any wells located between Hammond's well and your productive limits? It's an outpost well, isn't it?

A It's the last well on the south end, let's put it that way.

Q Yes. As a matter of fact, Mr. Landua, in a water drive field such as I believe everyone agrees we have here, isn't it the normal thing to expect that low structural wells will produce water?

A At what point in the life of the field?

Q You are the witness. Answer the question if you can. Qualify it any way you want to.

A I would say that sometime in the life of the field you would

expect the low wells to produce water, yes, sir.

Q Well, you talked a lot about the relative thinness of 85 percent of this field?

A Yes, sir.

Q Certainly that would have something to do with the time at which your low wells would go to water, wouldn't it?

A Yes, sir.

Q All right, sir. What's the total cumulative production from this pool, do you know?

A I think around nine million barrels, up to the first of the year.

Q Quite a bit of oil, isn't it?

A Yes, sir.

Q All right now, in your opinion, based on your knowledge of the facts that exist in this field, and balanced with your knowledge of the amount of oil that has been withdrawn, you don't find it unusual for these edge wells to be making water, do you, Mr. Landua?

A This is a 3600 acre field and my studies have been based on individual wells, not so much field as a whole.

Q You are reducing the allowable on the field as a whole?

A To protect the individual wells.

Q To do what?

A To protect the individual wells and preserve correlative rights.

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Q I believe I understand you now. You are saying that this reservoir as a whole is not rate sensitive, but certain localized wells are, is that right?

A No, I'm saying that there has been some bad things happen to individual wells and it has been caused by the rates that have been in existence.

Q Mr. Landua, as a matter of fact, in a reservoir of this type, isn't the only unusual occurrence that we have all observed, isn't that the behavior of your Lawton State No. 2 well?

A I think it's unusual and bad practice for water to appear at different depths as it has.

Q Go back on your general theories now. Do you know of any water drive field that has produced a substantial amount of oil that has an exactly level water-oil contact?

A You mean exactly level by the --

Q I mean that is opposite to your --

A You mean not even a foot's variation in the water level?

Q You say this one is unusual --

A Yes.

Q Based on your experience, that is what you encounter in any water drive field after you have had substantial production?

A No, sir, I don't know about all water drive fields. I can't answer that question.

Q Have you had any experience at all in a water drive field other than this one?

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A Yes, sir.

Q Where?

A Deep Rock-Ellenburg in Andrews County, Texas and Denton Pool in Lea County, New Mexico.

Q What did you observe there from the standpoint of a level or stable water-oil contact after substantial amounts of production?

A It varies.

Q It varies, doesn't it?

A Yes.

Q So that is not unusual, the only unusual fact that we have that we may not be able to explain at this point of this hearing is your Lawton State No. 2, isn't it, Mr. Landua?

A Unusual fact --

Q Yes, sir.

A You say --

Q Unusual as opposed to normal and expected.

A Yes.

Q Now you are recommending 190 barrels a day as a maximum efficient rate, are you not?

A No, sir, I'm not recommending a figure.

Q What are you recommending?

A I'm just recommending that it be cut to some figure that the Commission can set.

Q Well, the Commission this morning cut it substantially down to 226, would that be all right with you?

A No, sir.

Q You think it ought to be lower than that?

A Yes, sir.

Q Without us going through the entire increment from 226 down to zero, can you give me some idea of what you think would be a reasonable rate?

A We have this figure that was obtained in June and August that indicated in our opinion that we ought to try it around 190 to 200 barrels a day for a period of time and see what happens.

Q In other words, you would feel better with 190 than you would with 226?

A Yes, sir. I would.

Q For April?

A Not for April, for right now.

Q Surely. And you are recommending that as maximum and efficient rate, correct?

A No, sir. I don't know how to define maximum and efficient rate.

Q Are you recommending that the Commission set a maximum and efficient rate?

A No, sir.

Q What are you recommending, Mr. Landua? Why are we here?

A I'm recommending that the Commission set a rate that's lower than what has been in existence so that we can observe and see if the things that we consider are bad production practices

will continue to occur.

Q Are you not asking, then, isn't the effect of your recommendation to set a maximum efficient rate?

A No, sir.

Q You talk about this beneficial performance that you observed during the June '57 pipe line proration?

A Yes, sir.

Q How was this beneficial performance demonstrated?

A By the pressure survey for one thing.

Q Sir?

A By the pressure survey that we had that indicated that we were letting the natural water drive work for us.

Q In your application you say pressure performance observed in certain wells?

A Yes, sir.

Q Without naming them, the certain wells, could you tell us generally which wells they were?

A Yes, sir. They were all located in the north part of this reservoir.

Q Let me ask you this, Mr. Landua. Have you observed field-wide pressure performance as reflected at that time on a field-wide basis?

A Well, the field-wide pressures with the two areas together has only been taken one time and that was by the New Mexico Commission. We have taken our pressures on our operated leases,

which are just in the north end of the field, and the Commission has in their records which I have tabulated on Exhibit 2, indicates the pressures that were reported by the Commission in the Gladiola area as they were measured, and I have read those.

Q In other words, you have analyzed pressures on a field or reservoir-wide basis rather than, as your application states, certain wells?

A I have done both.

Q The point I'm trying to make, I believe you realize it, Mr. Landua, is that beneficial performance as observed by you was not on a field-wide or reservoir basis?

A That's true.

Q And you have not looked at it?

A At that time the North Gladiola was considered a field by itself, South Gladiola was considered a field by itself.

Q And you have not taken those data and looked at those data and seen how they fit in on the field-wide picture?

A Yes, we have compared them.

Q You have done that?

A Yes, sir.

Q Then when you did that, you observed, did you not, Mr. Landua, that as a matter of fact you had normal pressure performance that you have been experiencing prior to this period of proration, did you not?

A What do you mean, normal?

Q I mean that your pressures reflected during that period fit the pattern, the attitude of the curve as exemplified by past pressures; I am speaking about a pressure curve, I am sure you as an engineer are familiar with it?

A Yes.

Q They assume attitudes you would expect on that curve?

A I wouldn't know what to expect.

Q Have you plotted performance against cumulative?

A Pressures?

Q Yes.

A No, sir. We have just made a table on it.

Q Do you think it might be beneficial to you from the standpoint of analyzing a little further these beneficial pressures to have looked at them on a field-wide curve, pressure versus cumulative?

A I don't know what it would show us, Mr. Buell, because we are concerned about damage that has already been done.

Q You don't know what it would show?

A We don't know how it would help us in our recommendation.

Q All right. You have shown the productive limit line on your Exhibit 4 and 5 in this water drive field to be minus 8150?

A I don't know that I would define it as a productive limit line. We have used it as a bench mark to work from in trying to determine how much Devonian material we have in these different areas of the field.

Q Mr. Landua, what is the usual connotation attached to a zero contour line on an isopac? Isn't it normally your productive unit?

A No, we have tied that down, we have said it is 8150.

Q Sir?

A We have said that the zero line there is at8150. We have tied it down. We are not saying that is the water-oil contact.

Q It's productive limits?

A Yes.

Q You are at your zero line of pay, that is all it would be?

A Yes, sir.

Q We are in a water drive field, what is going to determine productive --

A (Interrupting) Where?

Q Water-oil contact is going to determine it?

A Yes.

Q So actually your zero contact line, which is your bench line, is also your pick of the water-oil contact, is it not?

A No, sir.

Q How did you prepare that isopac, or the people under your direction, how did they prepare it?

A You mean the source of the data?

Q What sources, that's what I mean.

A We used scouting cards that are put out by these surveys that the companies exchange data on.

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Q Scout data alone?

A It's the Reinhardt scouting cards.

Q Mr. Landua, several times in the course of your direct, or at least one that I remember, you mentioned you had used core data. Would you have any objection to making the core analysis available to the Commission that you used in your analysis of this field?

A No, sir. We have a summary here. You mean the detailed data?

Q Yes.

A Yes, we have one that I can give them.

Q Why we are mentioning that, what in your opinion is the average porosity in this reservoir?

A We just have this one core dope and it was four and a half percent porosity on this one core analysis.

Q What average porosity are you using in your reservoir engineering work, you using the four and a half?

A No, we haven't used an average, we don't know what it is.

Q What was the average porosity you used?

A I used for what?

Q In your engineering reservoir work and in this field?

A We don't have any figure for average porosity.

Q You haven't made an analysis of the reserves to your well?

A Yes, we used basic recovery characteristics. We didn't go back to get --

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Q (Interrupting) You didn't use an average porosity?

A We didn't go back to try and develop average porosity. We figured it would be impossible.

Q What do you figure is the average permeability?

A I don't know.

Q What is it that is reflected by the analysis that you have?

A Just a second.

MR. COOLEY: Mr. Buell, while he is looking for that, I am not clear on your request. Do you wish to make a total analysis a part of the record?

MR. BUELL: Yes.

Q If you are going to have to look for it, Mr. Landua, and if you are going to submit the core analysis, we can get it from that.

A I have it right here. According to core lab summary, they analyze sixty and a half feet of permeable Devonian. The average was 76 millidarcies, and average porosity was 4.6 percent.

Q That is on your Lawton State 2?

A Yes, sir.

Q Perhaps I should direct this question to Mr. Quinn rather than to you. Would you have any objection to showing the surface traced of the cross-section exhibits you introduced on your Exhibit 4 and 5, so that we might relate those wells to the surface as well as they were reflected structurally by your exhibit?

A That's the way the cross-section was made.

Q Would you have any objection to showing the trace?

A I have no trace.

Q Do you have any objection to putting a trace on your Exhibit 4 and 5?

A No. You mean you want to put it on?

Q I would rather you would. It is your exhibit. I don't want to mark it up.

A I have no objection. I don't want to go to any more work. If you want to put it on, you can put it on.

Q Mr. Landua, several times in your direct testimony you indicated, to me anyway, that you were worried about this water drive being effective from the standpoint of maintaining pressure. In your opinion, based on data available today, would you say that we have had an effective water drive?

A I don't know what your concept of effective water drive is. Some people say you have to maintain pressure at 100 percent to have an effective water drive. Water drive varies by degrees.

Q I'm tired of defining words. I will ask you this question in this manner. You agree that we have about nine million barrels of oil cumulative produced from this reservoir?

A That's what the records show.

Q You don't doubt the records, do you, Mr. Landua?

A No, they are Conservation Commission records.

Q Would you also agree with me that in producing nine million barrels of oil we have experienced a pressure drop of only about

300 pounds?

A This pressure varies by areas. Our pressure study has been by the north area. We had a 400 pound drop in the north area where we produced about two million barrels of oil, in a round figure. Down in your south area, the pressure drop and performance was some different. I don't know exactly what the total pressure drop would be when you are weighing the whole business.

Q Mr. Landua, I'm sure you realize that in most all reservoirs pressure varies throughout that reservoir?

A Yes.

Q Your engineers have a way of weighting pressures so you can arrive at an average pressure?

A Right.

Q Do you agree with me then that taking this average pressure of this reservoir, which is a common and customary thing for engineers to do, that we have produced nine million barrels of oil with approximately a 300 pound pressure drop?

A No, sir, I don't agree because I don't know when the last pressure was.

Q You don't know what the average pressure in the reservoir is, do you?

A At this minute, no.

Q Do you happen to know the saturation or bubble point pressure?

A I have heard that it's below a thousand pounds, but I don't know what it is exactly.

Q Then you couldn't disagree with me if I told you it was 537?

A No, I couldn't disagree.

Q Based on your general knowledge or a study, if you made it, Mr. Landua, in your opinion, producing at the normal unit allowable rate in this reservoir, in your opinion will pressure ever decline to anywhere near the bubble point pressure in this reservoir?

A No, sir. I'm positive that it won't.

Q Sir?

A I am of the opinion that it won't.

Q Will not. You also testified, Mr. Landua, that lead me to believe that in your opinion in a water drive reservoir such as this that absolute pressure maintenance would be the best thing that you could do for effect in the field, is that right?

A Absolute?

Q Yes, sir, I understood you to say that.

A I think that you would get the most ultimate recovery if you had absolute pressure maintenance.

Q In other words, the greater recovery of most oil from this field is to keep that pressure at exactly where it is now?

A Now?

Q Yes, sir.

A No, I can't say that.

Q Well, surely you don't propose injection of some fluids

extraneous fluids to increase it?

A No, sir, but I think maybe if you could reduce the rate low enough that the pressure might go on back up.

Q You think that would be a good thing?

A It could be increased.

Q It would increase ultimate recovery?

A I think it would increase ultimate economical recovery.

Q Let's talk about actual ultimate recovery in physical barrels of oil from this reservoir.

A Yes, sir. I am of the opinion.

Q It wouldn't increase it, would it?

A Sir?

Q Returning this reservoir to its original virgin pressure and maintaining it there to completion would not increase ultimate physical recovery, would it?

A I don't know whether I can answer that.

Q Sir?

A I don't know whether I can answer that.

Q You don't know one way or the other?

A No, sir.

Q Actually, Mr. Landua, as a matter of fact, reducing pressure in this reservoir is going to increase ultimate recovery, isn't it?

A I don't know that either.

Q What happens to your reservoir volume factor in a water drive reservoir such as this when you decrease your pressure?

A If you keep it above saturation pressure, I would think your reservoir volume factor, there again, people define that in different ways, but I would think it would stay about the same.

Q Stay the same. You are not of the opinion and you have never seen any literature or technical papers to the effect that it would increase?

A No, sir.

Q What do you think would happen to the viscosity of the oil if we reduce the pressure in this reservoir?

A I think that it would keep it above the saturation pressure, that it shouldn't vary appreciably.

Q Again I will ask you the same question. You have seen nothing in the literature or technical papers that would indicate otherwise?

A No, sir.

Q Assume for the purpose of this question that in truth and in fact the phenomena that would occur on your reservoir volume factor is that it would increase as you decreased your pressure. What would be the effect of that in a reservoir? I realize you are assuming that it will, since you said it would.

A I don't know.

Q You don't know whether that would increase ultimate recovery or not?

A No, sir.

Q Would your answer be the same with respect to viscosity?

A Yes, sir. I mean I wouldn't know.

MR. BUELL: I think that's all I have at this time.

MR. PORTER: Anyone else have a question of the witness? Mr. Errebo.

By MR. ERREBO:

Q Mr. Landua, to save time of the Commission, can you tell me whether or not you have furnished the individual well pressures used in the average for your fifth and sixth surveys? I don't know on what exhibit that was reflected, but I believe you did offer that. Has that been furnished to any of the other parties in this matter, such as the Pan American or Hancock or any other company?

A No, sir.

Q Could you prepare that information and furnish that to Sunray?

A Yes.

Q Now I assume, Mr. Landua, in making your study of this field upon which your recommendations are based that you have had access to complete reservoir or complete production and test information on the Lowe wells. Do you figure that, you believe that is complete, the information which you have used in making these calculations?

A Of course I don't know exactly how complete, or the degree of completeness you mean.

Q Well, I'm not trying to trap you on that.

A I know, but what's your point?

Q I would like to know if you have measured the oil and water production per day on the Lowe wells before the pipe line proration occurred, and if that was also measured afterwards?

A It's a matter of record.

Q It is a matter of record?

A Commission record.

Q Has been furnished to the Commission?

A C-110, yes.

Q That is furnished periodically, is that correct?

A Yes, sir.

Q Over what interval of time?

A They get them every month. C-110's for the oil. There is another form for the water.

MR. ERREBO: Thank you.

MR. PORTER: I believe you referred to the wrong number form, it should be C-115, if you are referring to the production.

A Yes, that's what I am referring to.

MR. PORTER: Mr. Montgomery.

By MR. MONTGOMERY:

Q You were asked several questions, and some of them I would like to go back again and perhaps review those. One of them was the fact that you were asked, did you see anything unusual in this particular field besides the Lawton State No. 2 producing 100 percent water overnight. Did you see anything unusual about the fact that before proration we were able to obtain some 6,000 barrels of

oil per pound drop, and then during the reduced period, as you testified, we received some 19,000 barrels and then again it went back to its former rate on hundred percent purchases? Do you see anything unusual about that particular item?

A No, sir.

Q What is your conclusion from that information?

A My conclusion from that information is that the water drive worked for us to maintain pressure at lower rates.

Q At the lower rates?

A Yes, sir.

Q In other words, the water was not keeping up fast enough to get the oil out, at the increased rates?

A That's right. The water encroachment into the reservoir was less than the oil withdrawals.

Q Have you seen any other unusual features about this pool? Are there any wells high on the structure? The two wells, Pan American Wells No. 10 and 12, would you mind pointing to the Commission on the map where those wells were?

A Yes, sir, they are located on this edge of the field.

Q Do you know anything unusual about those two wells?

A Well, by Commission records they have not produced the top assigned allowables for this area for quite some time, but I understood just a few minutes ago that they worked over one or both, and I don't know the status of those wells now. Examination of the Commission records in the past has indicated that they have

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not been top allowable producing wells.

Q Are those wells flowing?

A To my knowledge, they had Cody pumps on them.

Q What would you gather from that information, these two wells are on the highest part of the structure and probably of the thick pay more than any part of the pool. What conclusion do you draw from the fact that they are marginal wells?

A Apparently the operator has seen fit to not take top allowable out of these wells despite the fact that they have the thickest pay.

Q Are those wells capable of producing top allowable?

A I don't know.

Q We can assume they probably were not. Then why did they not, because there was not enough oil in the well bore?

A Maybe they thought they were too close to the fault and at high producing rates they would draw in wells.

Q There are top allowable wells between those wells and the edge of the pool, are there not?

A These wells on this edge of the pool, yes, sir.

Q Are those wells top allowable?

A By the Commission records, they are, yes.

Q Did you assume that the drive mechanism wasn't sufficient at the increased producing rates to drive the oil through the well bore?

A Something wasn't sufficient for them to take top allowables

out of these wells. They were apparently being produced at capacity even though you had a flush-type field, flush-type condition in that part of the reservoir.

Q Were there any other unusual factors about this field that you found in your study?

A I think it's unusual for it to be so thick in one area and then so thin in so much of the area.

Q The core analysis that you referred to on the Lawton State No. 2, as I recall you said 62 feet of pay in that well?

A No, sir, I said that core lab analyzed 60 and a half feet of Devonian section.

Q Did they analyze any of that core being water bearing and would probably produce water?

A No, sir. There are indications that the whole sixty and a half feet is oil productive, would be oil productive.

Q You answered a question a little earlier when you had it on Exhibit No. 10, the question was did you think there was any coning, and I think your answer was no. I wonder if you will refer to Exhibit No. 10, wherein you said as I recall the minus depth on the well was 8172?

A Yes.

Q Did you make a statement that if that water level was present throughout the pool, some 18 of your 19 wells would be flooded out?

A No, I didn't say that. I should say they should be producing

some water. I don't know that they would be producing 100 percent water.

Q Would that indicate to you that there would be coning in that one well?

A I don't know how to define coning in a hard rock reservoir. This reservoir has fractures and bugs. I don't know how to define coning as regards this particular reservoir.

Q Can you see how there could possibly be any mechanical failures that would cause this well to produce water? The core analysis indicates there was no water whatsoever?

A That's true.

Q Do you have any water above the pay?

A I would say that it would be virtually impossible to be a mechanical failure in this well that would make it produce water.

Q Do you sincerely believe that we were producing this field at too rapid rate, after your some twenty years experience as an engineer?

A Yes, sir.

MR. MONTGOMERY: That's all I have.

MR. PORTER: Does anyone else have a question of the witness? Mr. Fischer.

By MR. FISCHER:

Q Mr. Landua, what's the nature of the workover now on this Lawton State 2?

A We have moved in a small rig and we have pumped 300 sacks

of cement in and in 100 sack batches, and it has gone in on a vacuum, then this morning they used 200 sacks that contain some flow seal plugger material and they were able to pump away 40 sacks and got a pressure buildup. I don't know if they have the 40 feet of perforated interval squeezed off or not.

Q It was squeezed on a retainer?

A Yes, sir.

Q Was it in the nature of a sort of diesel oil cement job?

A No, sir, I don't know the kind of cement, but it's straight cement. I don't know whether it was Portland or slow set.

Q Pardon?

A I don't know whether it was Portland or slow set, but it wasn't a diesel squeeze.

MR. FISCHER: Thank you.

MR. PORTER: Mr. Nutter.

By MR. NUTTER:

Q Mr. Landua, referring to your Exhibit No. 11, wherein you show that some eight or nine or ten wells had experienced an increase in flowing tubing pressures since the rate of production was reduced, now what do you make of that? What's its significance? I wonder if you would elaborate on Exhibit No. 11.

A Well, in our opinion, as we have previously stated, it's an unsaturated crude, it doesn't have much gas in solution, simply stated, this indicates to me that we have less differential pressure under this condition in our oil zone than we do in our water zone

in these wells that we observed.

Q In other words, you feel that the pressure is more equalized from the water into the oil section?

A I don't know that it would be equalized. I would say that the trend is toward equalization.

Q That's what I say, more equalized.

A Yes, sir.

Q Now on your Exhibit No. 6, on these bottomhole, the barrels of production per pound drop in bottomhole pressure --

A Yes.

Q -- Do you feel that at the rate of withdrawals for the first four bottomhole pressures were taken, that the water was failing to come in fast enough to maintain the pressures in there?

A Yes, sir.

Q And you feel that during the period of pipe line prorationing when the rates of production were curtailed, that the water was more or less equalized with the rates of withdrawal of the oil?

A No, sir, it wasn't equal.

Q Or the influxion of the water was closer to equal?

A Yes, sir.

Q Do you think there's any possibility, Mr. Landua, that the Lawton State No. 2 well went to 100 percent water as a result of increased production during the period that you were making up back allowable?

A It could very well be, yes, sir.

Q How much production did it make during the month of January?

A 8196 barrels.

Q To achieve a rate of 8196 barrels for the month, do you happen to know what the normal unit allowable for the State would have to be?

A No, sir, I don't.

Q Assuming it was a rate of 39 barrels, does that sound like an unreasonable rate for a normal unit allowable? It used to not be, at any rate.

A I don't know.

Q It's conceivable that we could have a normal unit allowable of 39 barrels?

A Well, I don't know about that.

Q At any rate, the production during the month of January was at a rate of 39 barrels normal unit allowable, Mr. Landua.

A Yes.

Q To you does that indicate that possibly the back allowable was not the contributing factor; if it would be the contributing factor, let me put it this way, would a rate of 39 barrels normal unit allowable also cause the same thing?

A I think any time you increase the producing rate you increase the chance of getting this water up there prematurely. Certainly we had a producing rate here that was above the normal allowable base rate.

Q What was the average daily rate of production during the

time that you were curtailed by the purchaser?

A I think you could. I haven't divided it out, but it reflects it during the month of June, '57, the well produced 5772 barrels.

Q Would that be approximately 192 barrels per day?

A I haven't divided it, Mr. Nutter.

Q Assuming it would be, would that be a more proper rate of withdrawal, in your opinion, than the current allowables are?

A Yes, sir, we think so.

MR. NUTTER: Thank you.

MR. PORTER: Are those all your questions, Mr. Nutter?

MR. NUTTER: Yes, sir.

MR. PORTER: Anyone else have a question of the witness? Mr. Cooley, did you have a question?

MR. COOLEY: Just a minute, please.

By MR. COOLEY:

Q Mr. Landua, you have made considerable reference to the fact that approximately 85 percent of the pool has only about 50 feet of pay?

A Let me say this, Mr. Cooley. It's 50 feet of Devonian, feet of section above the 8150 bench mark.

Q Yes. The inference has been that due to this thinner pay the water encroachment problem would become more acute. Can you please expand on that somewhat as to how the thinness of pay affects the water encroachment as a result of high production rates? What is the significance of this?

A It seems to me that one significant fact is that in the hard rock type reservoir like we have here, with fractures and vugs, once water makes its appearance, you have to handle it. When you have to start handling water, it adds to your production expense, and therefore reduces the amount of ultimate economical oil that you can afford to take from a well bore.

Q How is this any more so in a foot of 150 foot than 50 foot pay, and 200 feet?

A If you have 200 feet of pay section, you have a chance of having some hard streaks along the way that you can do a cement job and get a seal and retard the continued encroachment of this water.

Q In your opinion does the flooding out of your Lawton 2 well represent the movement of the oil that was formerly coming into that well bore off that lease to another lease, or do you feel that its lost forever in production? Does water encroachment move the oil off to another well, or is it actually lost?

A I don't know exactly how it would work.

Q Do you think that some or both may occur?

A I am of the opinion that when the water appears in this well like it has here, it is 100 percent water, and if you can't do anything about it, you are not going to get any more oil from the 40 acre tract.

Q If that, that is the 40 acre tract that the operator owns that is all he is going to get?

A He is out of the business.

Q Considering it from the ultimate recovery from the pool and not each operator's recovery, do you think that the watering out of the Lawton No. 2 represents a loss of the recoverable oil in the Gladiola Pool?

A I am of the opinion that it does.

Q How is that so, has it been bypassed?

A I would say that it has.

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

MR. PORTER: Mr. Webb.

MR. WEBB: I just have one question.

By MR. WEBB:

Q In your opinion is this field an edge water drive, or bottom water drive?

A I haven't made up my mind.

Q Would that make a difference, in your opinion, as to what is happening in these wells which are producing water, whether it was a bottom water drive or edge water drive? What I'm getting at, would that help to explain any of the problem wells which you have been talking about?

A You mean the fact that it would be edge drive rather than bottom drive?

Q Well, or vice versa, whichever in your opinion it is.

A The only thing I can say is that certainly the water is present on the edges, and we know that it's present in one place

kind of in the center. It's the only fact that I have about it, Mr. Webb.

Q Just one further question. In talking about the pressure drop, pounds of pressure in the number of barrels that you were able to produce per pound of pressure drop, you used the figure 19,000 barrels during proration, and a return to 6,000 barrels after proration, is that correct? What wells were those based on, was that a field-wide study?

A It was based on the north end, Mr. Webb, and the pressures were measured in the Ralph Lowe operated wells.

Q In the Lowe wells?

A In the Lowe wells only, and the production was taken from the Commission records for that portion of the field.

Q Had there been, of course there had been some recovery of oil subsequent to your check, subsequent to your pressure drop, prior to prorationing; had there also been some additional wells drilled in the field?

A Absolutely.

Q Would that have some effect on your pressure drop?

A I would think it would.

Q You say you are just using Lowe's wells, would that have some effect on your pressure drop in just those wells?

A Well, here is this exhibit that you refer to that tabulates the pressure information at the time of the sixth survey, there were thirty-three wells in the northern portion of the field and

we measured the pressures in 16; our wells were dispersed throughout the northern end of the field.

Q How many wells were there in the field, then, after pipe line prorationing, when you made your next survey?

A Forty-four wells and we measured the pressures in twenty.

Q In twenty?

A Yes, sir.

MR. WEBB: That's all.

MR. PORTER: Anyone else have a question of Mr. Landua? Mr. Kellahin.

By MR. KELLAHIN:

Q Mr. Landua, you knew that a field-wide survey on pressures was made by the New Mexico Engineering Committee in September in the Gladiola Pool, did you not?

A Yes, sir.

Q Was that information available to you?

A Yes, sir, I have it tabulated on this sheet.

Q Would you dispute the fact that according to the report made by the New Mexico Engineering Committee that the average of thirty-four wells which were under pipe line proration showed a pressure of 4,446.7 pounds, as against an average of twenty-five wells with full allowable showing a pressure of 4,521.2 pounds?

A I haven't examined that data.

Q It appears on that exhibit -- I mean if the figures I have given you appear on an exhibit -- I mean not on an exhibit but in

the New Mexico Engineering report?

A No, sir, I don't see how it could be.

Q That would be a difference of some 174 pounds of pressure. I notice on your exhibit you show within the limits of the field the Anita's Field No. 1, the Jack L. Hammond Well No. 1, is that correct?

A Are you speaking of this well down here?

Q Yes, sir. Do you know what that well tested? Is it a producing well, was it ever a producing well?

A Well, he has a well on the allowable schedule now, and that is this well here. I don't know if it is the one you are referring to or not.

Q Actually that well tested water, didn't it?

A Mr. Hammond told me that at these high rates, this 257 barrels per day, his well produced about 80 percent water, and he voluntarily cut it back on a 7-64 choke and he's getting about 170 barrels a day as an overall average, and the water percentage has reduced appreciably in this part of the field.

Q Now in the extreme northeastern portion of the field, you show an oil well outside of the limits of the field,do you not?

A I show an oil well up there that's outside the limits of this 8150 contour.

Q That is in the same producing formation?

A Yes, sir.

Q Did you have any reason for excluding it from the contour?

A Yes, because we assume the 8150 bench mark is a base to work from.

Q That is a producing oil well up there?

A Yes, sir. We have two dry holes that are also outside of that contour.

Q Mr. Landua, the Anita Field Well No. 1, Jack L. Hammond, I believe we're not point to the same well -- if you would refer again to your map in Section 25, it would be the well to the extreme eastern part of the field.

A He has a dry hole over here that shows a total of 12,800 feet on my plat.

Q That you show as being inside the limits of your map, do you not?

A I show it as being inside the 8150 contour.

Q It made water initially, did it not?

A I have no information about this well.

Q It just shows as a dry hole?

A Yes, it shows it as a dry hole.

Q That is the one that I was referring to, not the one you referred to that is producing on choke.

A I'm told it is producing on choke.

Q That being the Anita Field No. 1 Jack Hammond, as far as you know it has never produced oil?

A I don't have any information about the dry hole.

MR. PORTER: Anyone else have a question? Mr. Fischer.

By MR. FISCHER:

Q Mr. Landua, would you say that the Gladiola Pool is essentially an anticlinal structure?

A Yes, sir, I would say it's an anticlinal.

Q And did you say that you thought that the water was connected throughout the field, or there was a water table?

A No, sir, I just said that the Devonian around this area contains water and the field is connected to a big acquifer of Devonian water.

Q We can assume, then, possibly that this is a bottom water drive, is that correct?

A Well, I'm sure that water is in contact with the bottom, but whether the drive is as active from the bottom as from the sides is something that I haven't studied.

Q At the same level we can assume then that if this was connected to an acquifer that it, for example, the 8150 level, we can assume that the pressure is equally distributed in the field?

A There's a variation in the field,in the pressure throughout the field.

Q Well, then, I forget if you said, did you think that this Lawton was water coned?

A Was water coning.

Q That the loss of the hole was due to the coning of the water?

A The loss of the hole was due to the appearance of water,

whether it coned, I don't know exactly how it got up there.

Q Well, if your workover is unsuccessful, we could assume then that your relative permeability to water is greater than that to oil?

A Well, in a fractured and vuggy type reservoir, Mr. Fischer, I don't know exactly what relative permeabilities would mean to you.

Q Well, you gave an average permeability number, then we could assume possibly that your relative permeability to water was greater than what it was to oil, by voiding your oil or by voiding your space in that oil, you sucked the water up to where it filled the portion, the area around the hole, and the oil will not come through, due to the, say the service tension or the relative permeability of the water?

A That's true, oil won't come into the well bore.

Q Do you think we can call that coning?

A I just don't know, Mr. Fischer.

MR. FISCHER: Thank you.

MR. PORTER: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. BUELL: May I add to my motion for continuance a request that the normal unit allowable be reinstated and continued until this matter can be heard to conclusion? Frankly, I think based on the record made here today that such action is certainly

justified and warranted.

MR. KELLAHIN: If the Commission please, Jason Kellahin for Hancock Oil Company. We have no strenuous objection to a short continuance of this case or a lengthy continuance, depending on what is done with the allowable. We would like to join very strongly with Mr. Buell's motion that in the event of the continuance, the allowable be restored to the normal unit allowable for this pool. We don't feel that the testimony that has been offered here today justifies the continuance of the allowable cutback, and certainly a small operator such as Hancock Oil Company is being very seriously hurt by this curtailed production in this pool. Some of the larger companies can absorb such a loss of revenues, but the smaller companies are being seriously hurt. You would be doing a serious injustice unless there is compelling evidence to the Commission to continue this cutback.

MR. QUINN; I would like to make a statement here before the Commission of our case, and that is before any further motions are made or statements made, and that is that we believe that without reiterating any of the evidence that has already gone in both from the direct examination and the cross examination and what could be called redirect examination, that enough evidence is before the Commission to justify the lower allowable which was set by the emergency order. We have no objection to a continuance of this matter, if it is stipulated that any exhibits which will be offered by any of the protestants in this matter will be furnished

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to the applicant in advance of this hearing so that we'll have an opportunity to look them over, as we have presented all of our exhibits here to date; and further that we also have the right to introduce any data which we may obtain subsequent to the hearing, or prior to the hearing, and any other exhibits which we may see fit to introduce at that time.

I would like to point out that there hasn't been an iota of evidence introduced here by any of the protestants.

MR. WEBB: Mr. Porter, may I say something?

MR. PORTER: Mr. Webb.

MR. WEBB: Layton Webb with Sinclair. We are in a certainly unusual and certainly unenviable position here, in that we are not prepared to forward with the case today. It was just not humanly possible for us to get what data we thought the Commission would want in a hearing such as this. As I say, we are in a position where we are forced to ask for a continuance. I think probably if we would have had one week more we could have been ready. We are also in the position where we feel that the evidence presented today, assuming that it did justify the emergency order which the Commission was authorized to act, as I understand the rules under which the Commission acts on emergency orders, the hearing is to be held within fifteen days, and the order either becomes null at the end of fifteen days or becomes permanent, or of course by stipulation of parties or by Commission motion they can enter an interim order. Assuming that the information that the Commission

had when they entered this order at the first of the month was sufficient to show that waste was possibly being caused in this reservoir, I seriously doubt from listening to the testimony which was offered here today whether that testimony would be sufficient for the Commission to continue this order in effect to the detriment of those who are protesting it. Now what I am getting down to is that we cannot oppose the continuation of this order, if the Commission desires to do it, because we are not ready to go forward with our case today; but we do feel that if it is going to be continued, that the continuance, the case should be heard before the first of April, and we would suggest if the Commission has time for either the 31st or the 1st of April, or as I have previously suggested, at least privately to one member of the Commission, it may be possible and certainly appears now that the Jalmat case, the rehearing on the Jalmat case which is set for the 25th will not take longer than a day or a day and a half at the most, and from Sinclair's point of view we will be willing to wait if the case does continue, if you can set it down on the 26th.

Now if you are not going to continue the order, and after we listened to the testimony we felt that probably a continuation of this low allowable is not justified, then any time that the Commission desires to set the case will be satisfactory to us.

MR. ERREBO: Just a brief statement. Sunray-Midcontinent recommends continuance of the case for receipt of additional testimony and also recommends that the normal unit allowable be restored.

We don't believe that the evidence today justifies the continuation of the cut.

MR. PORTER: The Commission has decided to continue this case and try to dispose of it immediately after the Jalmat case on March 26th. We have decided that an interim order will be entered in which the 190 barrel a day allowable will be retained until the permanent order is issued.

MR. BUELL: Will the provision relating to back allowable also be included in the interim order?

MR. PORTER: Yes, sir. Thank you. The interim order will contain substantially the same provisions as the emergency order.

MR. COOLEY: You haven't ruled upon Mr. Quinn's request that all exhibits which the protestants propose to introduce be submitted to Mr. Quinn prior to the time of the hearing.

MR. BUELL: I might say that on behalf of Pan American I have told Mr. Quinn that we will get them to him as quickly as I can. I can't give him a definite date, but just assure him when we do them we will get them to him and it will be prior to the hearing.

MR. WEBB: We would be willing to get them. It will be a reasonably short time before the hearing, though.

MR. KELLAHIN: Hancock Oil Company will supply the exhibits as soon as possible.

MR. QUINN: Thank you, gentlemen.

MR. PORTER: I assume that the hearing is adjourned until

9:00 o'clock.

(Hearing adjourned.)

* * * * * * * * * * *

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 21st day of March, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1959.

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BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 27, 1958

IN THE MATTER OF: Case No. 1394

TRANSCRIPT OF PROCEEDINGS

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
March 27, 1958

IN THE MATTER OF:

The hearing called by the Oil Conservation Commission of New Mexico, at the request of Ralph Lowe, et al., to consider the reduction of allowables in the Gladiola Pool in Lea County, New Mexico. Case 1394

BEFORE:

Mr. A. L. Porter, Jr.
Mr. Murray Morgan
Governor Edwin L. Mechem

TRANSCRIPT OF PROCEEDINGS

MR. PORTER: The meeting will come to order, please. The case now being considered before the Commission is Case 1394.

MR. PAYNE: Case 1394: In the matter of the hearing called by the Oil Conservation Commission of New Mexico, at the request of Ralph Lowe, et al., to consider the reduction of allowables in the Gladiola Pool in Lea County, New Mexico.

MR. PORTER: To review this matter briefly, an emergency order was issued by the Commission, I believe effective March 1st, which reduced the maximum allowable in the Gladiola Pool to 190 barrels a day. The order called for the matter to be heard, of course, at the regular March hearing. The case was called at that time, and some testimony was presented. The matter was continued

to the 26th, and successively continued until today. In the meantime an interim order was issued maintaining the 190 barrel allowable until the matter is finally resolved.

Who has testimony to present at this time at this session?

MR. EASLEY: If the Commission please, I'm sorry if I am going to disappoint the Commission, but at this time the Applicants, Ralph Lowe, et al, move that the application be dismissed. By way of explanation, I would like to say that the application, of course, was made in good faith, based on what evidence we had at that time which was considered by the experts of Ralph Lowe to be ample evidence that there was waste being committed in the field in the reservoir, and I would like to state that the position of Ralph Lowe and his staff hasn't changed in that regard. We still maintain the view that the rate is too high to get the most out of the recovery in the pool. We feel that there are a number of danger signals there that should be heeded, but the other operators in the field, major operators who are represented here, we have conferred with them, and they of course are reasonable in their demands. They feel that they have ample evidence to show that the present rate that has been set, the statewide rate, is not too high for the field; and they think that they have evidence to support that, and were prepared to present it here. However, after discussing it with them we have, and this is merely advice to the Commission, we have made an agreement that each operator in the field will appoint a member of a committee to conduct a thorough study of the

situation there, and all the data which has been accumulated up to now plus any studies or surveys that the committee sees fit to make.

All of the operators, of course, are in substantially the same position. They all want to make the most out of the recovery, and we feel that all of us are in good faith in that regard and that we may come up with something that will substantiate our view or their view. If it substantiates theirs, why of course Ralph Lowe and the other Applicants certainly are willing to take the oil out of the ground if it won't disturb the situation as we have claimed it will; and we feel that these surveys will make it possible to make a more intelligent appraisal of the situation.

We would like to make it plain to the Commission, as I say, that we haven't abandoned the idea that this is too rapid a withdrawal, that the water is encroaching at too rapid a rate, and we want to make it plain that although we have stipulated or agreed with the other operators that this Committee will report back to the operators within a six months period, we want to be open that if any changes take place there which might jeopardize the position of Mr. Lowe, that we will be free and will certainly come back in and ask the permission of the Commission for some relief.

I believe that fairly states the situation. Of course, the April allowable has cut it back to within a reasonable range of what we were asking for initially, and we think that although it may be too high, it isn't so high that within six months it will do

procedure there, we agree that be made a part of the motion.

MR. BUELL: A part of the motion?

MR. EASLEY: Part of the motion.

MR. BUELL: Thank you. I would like to state that we are prepared at this time to go forward with our presentation, as we told you we would be when we asked for the continuance. I make that statement simply because we were a company asking for a continuance. I would like to point out that the Commission shouldn't construe our concurrence to this motion for dismissal as a lack of confidence in our case. On the contrary, it is a complete confidence in our case that makes us concur with this motion. We feel that Mr. Lowe is sincere in his views as expressed by Mr. Landua, and we are just as sincere in our views, and will express here today if the case isn't dismissed, since we feel that we are all reasonable people, we think that the proper way to handle it would be through the committee method. We fervently hope that at the conclusion of the study another hearing will not even be necessary.

I would assume that if the Commission grants the motion that some type of order cancelling the interim order that is now in effect will be issued.

MR. KELLAHIN: Jason Kellahin of Kellahin and Fox for Hancock Oil Company. Hancock Oil Company concurs in the motion for dismissal on the same basis as stated by Mr. Buell. Hancock Oil Company did not desire a continuance at the previous hearing

and was prepared to go forward with the testimony;subsequent to that Hancock with the other operators has worked up additional information and is prepared to offer it today.

Hancock did not feel then or feels now that waste is occurring in the Gladiola Pool. By that I do not want to infer that we question the good faith of Ralph Lowe in filing the application, and to me of equal importance, I want to emphasize the fact that Hancock feels that the Commission did the only thing it could do in entering the emergency order. We have no criticism of that action on the part of the Commission. However, if there is any further study on this, Hancock is most anxious to participate in it and will work with the other operators in developing all the information possible to determine just what the situation is in the Gladiola Pool. They are just as anxious that this pool be produced on a proper basis as Ralph Lowe or any of the other companies involved there.

MR. WEBB: Layton Webb for Sinclair Oil and Gas Company. I would like to concur in both the statements by Mr. Buell for Pan American and Kellahin for Hancock; and also make the additional statement to the effect that since we were one of the parties requesting the continuance in this case, we have made what we consider a complete study of this field and are prepared to go forward with the case at this time.

We would like to thank the Commission for setting it down at as early a date as they did, although I want to apologize to

the Commission for a statement I made that I said that I thought the Jalmat case would not take over a day or a day and a half.

MR. WATTS: Watts, with Aztec Oil and Gas Company. Aztec does not operate any wells in the Gladiola Pool. However, we do have interest in wells operated by Ralph Lowe, and because of our small interest in the pool we have not made a thorough study of the reservoir. However, we do recognize that water encroachment can be a valuable tool in production. We also believe that the data presented at the last hearing, data presented by Ralph Lowe, that is, concerning pressure drop in production was significant data. We would like to concur with Ralph Lowe, and at the time recommend a short period with reduced withdrawals so that data might be collected. I believe the operators have agreed to do this and we will concur with the dismissal of the case with that in mind.

I might add that during 1957, I believe the allowable, if you could call it an average allowable, was approximately 265 barrels a day, whereas beginning in April it will be 223 a day, so possibly that drop will aid in the collection and evaluation of the data.

MR. WEBB: I don't want to have to be sworn, and this is certainly no reflection on any evidence that was presented by Ralph Lowe; as a matter of fact, we just made the mathematical computation from the exhibit that they presented, and during this proration period I believe we calculated that the average production per well per day from Mr. Lowe's wells in the northernmost part was in

excess of 215 barrels per day. All we did was make a mathematical calculation from their own exhibits and checked those figures. That is what it turned out to be. I don't know that we ever really had a period of cutback to 190 barrels.

MR. LANDUA: I think what Mr. Watts said was the average allowable for the whole year.

MR. WATTS: I said the average allowable of 265.

MR. BUELL: May we have the record show that I was authorized by Sunray Mid-Continent Oil Company to make a closing statement for them in support of returning the field to the normal allowable. I am not advised as to what their position would be on this motion for dismissal, but I do want the record to show that they did authorize me to enter a statement supporting a return to the normal allowable.

(Discussion off the record.)

MR. EASLEY: If the Commission please, we withdraw our motion.

MR. BUELL: Pan American, as one operator who requested a continuance, as I stated before, we are ready to proceed. Since he has withdrawn his motion, I don't guess there's any need for us to withdraw our concurrence.

I might suggest it's rather late, and while we operators who are opposing this reduction are not opposing it in a group action, we have coordinated together in order to avoid repetition and duplication of effort. I believe the Commission would be

benefited in hearing all of the testimony uninterrupted, and it's getting rather late. I doubt if we could get through. We are willing to drive ahead and get as far as we can.

MR. KELLAHIN: On behalf of the operators who are opposing the cutback, I would like to know if there are any proponents who are in support of Mr. Lowe, I think they should proceed so they could have the benefit of the proponents' testimony. I don't know if there is anybody here who is supporting the application or not.

MR. EASLEY: I don't know of any other proponents, if the Commission please.

MR. PORTER: Is there anyone here supporting the application in this case? Mr. Easley, do you have additional testimony to present at this time?

MR. EASLEY: We don't have any testimony to present at this time, Mr. Porter.

MR. PORTER: Mr. Buell, are you ready to proceed?

MR. BUELL: We have our exhibits here. May we have a minute to get them ready and in order?

MR. PORTER: Yes.

MR. BUELL: We have one witness.

(Witness sworn.)

MR. BUELL: I think the position of Pan American is fairly clear, there is no need for a lengthy opening statement, so we will just get on with it.

DANIEL R. CURRENS

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

DIRECT EXAMINATION

By MR. BUELL:

Q State your complete name, by whom you are employed, and in what capacity, and at what location?

A Daniel R. Currens, employed by Pan American Petroleum Corporation as a Reservoir Engineer, Roswell, New Mexico.

Q Does that office have supervision over Pan American's operations in the Gladiola-Devonian Pool?

A It does.

Q Have you testified at prior Commission hearings, Mr. Currens, and are your qualifications as a petroleum engineer a matter of public record?

A Yes, sir.

MR. BUELL: Any questions?

MR. PORTER: No, sir.

Q Let me ask you whether or not all the exhibits which we will present were either prepared by you or under your direct supervision?

A They were.

(Pan American's Exhibit No. 1 marked for identification.)

Q Let me direct your attention, Mr. Currens, to what has

been marked as Pan American's Exhibit No. 1. What is that exhibit?

A Exhibit No. 1 is a map of the entire Gladiola Field, reflecting the structure of the Devonian in this area. It shows the wells that have been completed in the Devonian and those wells that have penetrated the top of the Devonian. It further shows the trace of a cross-section from north to south through this field.

Q Directing your attention back to the March 13th portion of this hearing, Mr. Currens, do you recall the structural interpretation that was presented by Mr. Landua?

A I do, yes, sir.

Q In that connection, let me ask you this. Is there any material difference in your structural interpretation and that presented by Mr. Landua?

A There's only one thing that we reflect in different manners, actually.

Q Briefly describe this disagreement.

A In the northern portion of the field, the minus 8100 foot contour line on the top of the Devonian shows a slightly different picture in this exhibit than it did in Mr. Landua's. As you may recall, in Section 6, Township 12 South, Range 38 East, the Lew Wallace No. 1 was reflected as being low, and in Section 32, Township 11 South, Range 38 East, Lawton State No. 2 was reflected as being low. Now I also recognize that these wells are somewhat structurally lower than the surrounding wells. It is just that we depict it in a different manner. As you recall, he depicted

these wells being low structurally, showing them even in a circle, showing them in a sink hole,more or less. My interpretation would show them to be in valleys rather than in sink holes.

Q Other than the difference that you have just discussed, generally speaking are the interpretations pretty much in accord?

A Yes, sir, I would say they are substantially the same.

Q As I recall, he showed as the outermost contour line on his structural presentation minus 8150. Is that the outermost contour on your map?

A Yes, it is.

(Pan American's Exhibit No. 2 marked for identification.)

Q Mr. Currens, I direct your attention to what has been marked as Pan American's Exhibit No. 2. What is that exhibit?

A That is a cross section from south to north through the Gladiola Field. It reflects the top of the Devonian as we would encounter it along this trace. It starts in the southwest on Ohio State E-476-A No. 2 and proceeds north through the field to Ralph Lowe State "A" No. 2. It is located in Section 32, Township 11 South, Range 38 East. This is the trace of the cross section we saw on Exhibit 1.

Q This is just another manner of showing structure?

A Yes, this is just to show you the structure and the horizontal plane across the trace of the cross section.

Q I notice on some of the wells on this exhibit, Mr. Currens, that the log does not penetrate the entire Devonian productive section. Why is that?

A Well, there are a number of scratch-type completions in this field.

Q What do you mean by "scratch-type completions"?

A Well, scratch-type completion, which is not an unusual sort of thing in a water drive field of this sort, it means that you penetrate the top of the producing interval only. You don't drill all the way through your oil column.

Q Do you have any other comments to make on this exhibit?

A No, sir.

(Pan American's Exhibit No. 3 marked for identification.)

Q All right, Mr. Currens, I direct your attention now to what has been marked as Pan American's Exhibit No. 3. What is that exhibit?

A Exhibit No. 3 is a series of performance curves versus time for the entire Gladiola Field. We show in here the number of wells in the field, the daily production rate for the field, the cumulative production for the field, and the reservoir pressure.

Q I will ask you to discuss each of those curves starting first with the uppermost curve which I believe is the pressure curve. Briefly describe the pressure curve.

A The pressure curve which is the topmost curve here on Exhibit

No. 3 shows a discovery pressure of the field which was approximately 4820, and proceeds in a very flat manner, very little pressure decline throughout the life of the field to a point here on January 1st, 1958, of approximately 4357 pounds.

Q Mr. Currens, I notice some various symbols on that pressure curve. What do they reflect or signify?

A Well, you note that some of the points are represented by dots enclosed in circles, these are points that are taken from the fieldwide pressure surveys as run by the N.M.O.G.C. There are other points here that are dots enclosed in triangles. These are the pressures that were reported by Mr. Landua in the March 13th hearing as the pressures run on the Ralph Lowe wells at various times. There's one last point here on the end, which is enclosed in a square, which represents the pressure on some wells that we ran ourselves the first of March, certain Pan American wells.

Q Let me see if I understand the dot within a circle, fieldwide survey?

A Yes.

Q Dot in the triangle, Ralph Lowe wells?

A Yes.

Q Dot in the square, Pan American wells?

A Yes.

Q Does that pressure curve also reflect the pressure of the initial well in the northern area of this reservoir?

A Yes, sir, the first triangular dot we see here is the

discovery well in the north end of the field, which was,oh, the latter part of March, 1956, Ralph Lowe's,4708 pounds on the discovery well.

Q How did the initial pressure come in in the north end, with respect to the curve reflecting the average pressure in the southern portion of the field?

A Came in right on the line with the fieldwide surveys.

Q Would you go now to the next curve on that exhibit, the cumulative curve?

A The cumulative curve is simply a reflection of the cumulative production in this pool, showing out here as of 1/1/58 we have a cumulative production of slightly more than nine million barrels of oil from the field. It is easy to see from this with only a 459 drawdown and the production that we have a water drive field. I don't think anyone doubts that.

Q Will you go now to the next curve?

A This is the daily producing rate for the entire Gladiola Field, ending out here on the last day of 1957 slightly more than 20,000 barrels per day. The January rate's also reflected on there, which is something over 21,000 barrels per day.

Q The bottom curve?

A It shows the numb·r of wells that were completed in the field with respect to time, the end of the year was approximately 84 wells, as I recall.

Q All right, Mr. Currens, before we leave Exhibit 3, let me

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direct your attention back momentarily to the plot you have of the I.P. in thenorthern area of this reservoir.

A Yes, sir.

Q Approximately how far was that well located from the older producing wells to the south?

A It would be about two miles, maybe a little more.

Q Would the fact that that well came in at the approximate range of pressure of the older producing wells indicate to you that in this reservoir production from wells in one area of the reservoir will affect wells or other portions or areas of the reservoir?

A Yes, sir, I certainly believe it does show that.

Q Based on your study and analysis of this Devonian reservoir, are you of the opinion that to arrive at accurate engineering conclusions it is necessary to study the entire reservoir?

A Yes, sir, I believe that in this reservoir, with the small pressure differentials we might have between various areas, that the only valid way to make a reservoir study is to study it in the whole, not by parts.

Q Mr. Currens, I want to call on your memory again and ask you if you recall at the March 13th portion of this hearing where Mr. Landua testified as to, I believe it was production per pound drop for certain increments of time?

A Yes, sir. I remember that. He presented an exhibit which in part showed the barrels of oil produced per pound pressure drop

for periods of time.

Q In your opinion as an engineer, Mr. Currens, is that a valid method of calculation upon which you can base a sound engineering conclusion as to efficiency of performance or ultimate recovery?

A I don't see how you could base any conclusion of that sort on that type of information. It simply says that for a period of time we produced so much oil and had so much pressure drop while we were doing it.

Q Has it been your general experience in working on reservoirs, Mr. Currens, that when you use data accumulated over a short increment of time, when you consider the long life of an oil field, that sometimes the results of a calculation over such a period could be very misleading?

A It's often misleading, yes, sir, very often.

Q Can you recall, Mr. Currens, any other limitation on the type of calculation that Mr. Landua made at that hearing?

A Well, as I recall that was based on pressures which were run from the Ralph Lowe wells only, and further on the production from the North Gladiola Field as it was then called, only.

(Pan American's Exhibit No. 4 marked for identification.)

MR. PORTER: Let me ask you, Mr. Currens, while Exhibit No. 4 is being passed out, have you made a similar calculation for the same increments of time used by Mr. Landua, only your calculations were on a fieldwide basis?

A Yes, sir, using fieldwide production data.

Q Directing your attention now to Pan American Exhibit No. 4, briefly explain what that exhibit reflects.

A Exhibit No. 4 as to what it reflects, is that what you said?

Q Yes, its composition, headings.

A Looking at Exhibit No. 4 we see we have a column which shows date, fieldwide pressure at that date, fieldwide production which would be an increment from the previous date to that date, the barrels of oil produced per pound of pressure drop for the entire Gladiola Field for that same increment of time, and the numbers that were reported by Mr. Landua at the March 13th hearing for that same period of time.

Q Mr. Currens, looking at the last two columns on this exhibit, do you see that these calculations form any kind of a pattern or trend or indicate anything in a uniform nature of any kind?

A Between the two columns?

Q Yes.

A No, there's no particular correlation between the two columns.

Q This is more or less self-explanatory and we won't go into each calculation for each period of time, but let me direct your attention to the first calculation you made for the period ending December 21st, 1956, compare the fieldwide with the North Gladiola area.

A Fieldwide would be 43,900 barrels of oil produced per pound

pressure drop. The North Gladiola area shows 1850 barrels of oil produced per pound pressure drop.

Q Just looking at those two figures alone, Mr. Currens, and nothing else, that would indicate to you that one area of the field was operating much less efficiently than any other area?

A Just looking at those figures?

Q Yes, just the figures alone.

A Yes, sir, it might indicate that.

Q But you as an engineer who studied this field know that circumstances and facts in the field completely explain that difference?

A Yes, sir, I think there is a very good explanation for that.

Q For the benefit of the Commission, you might briefly tell them what causes the difference between those two calculations.

A Well, it would depend on the number of wells that were completed during that period of time, the wells that were in the field at that period of time. Certainly the development in the North Gladiola area was small in comparison to the fieldwide development as a whole.

Q And we are dealing with a common reservoir?

A Yes, sir, it is certainly common reservoir.

Q Now if I interpreted Mr. Landua's testimony correctly, the figures that caused him the greatest apprehension were for the last two periods of time, the period ending August 1, 1957 when he compared it with December 1, 1957. Would you briefly discuss

the result of the calculation for the North area as presented by Mr. Landua, and compare those with the fieldwide calculation?

A Well, for those two periods of time you named, the increments ending August 1st and December 1st, the North area as the information presented by Mr. Landua shows had a production of 19,200 barrels of oil per pound of pressure drop during the first period and a production of 6,580 barrels of oil produced per pound pressure drop for the period, indicating that it was going down there. Looking over at the entire fieldwide results, we can see that for the first period it was 20,000 barrels per pound drop and for the second period there, the latter period I'm discussing, 20,200 barrels of oil produced per pound pressure drop.

Q In other words, on fieldwide, if this is a measure of efficiency, you show that the reservoir is improving in its efficiency, do you not?

A I would think that if this were a measure of efficiency of the reservoir it would show that it was producing at a more efficient rate.

Q If you believe that a calculation such as we have been describing was a valid thing from which to draw an engineering conclusion, could you conclude in any way that the rate should be reduced, based on that calculation?

A If I were of the conviction that this showed us that information, I could only say that the reservoir was being improved as time went on, based on these numbers that we show, these data.

Q You can see nothing there to necessitate a reduction in allowables?

A No, sir, I couldn't see anything from that that would necessitate a reduction in allowables.

Q Let's put Exhibit 5 up on the board.

(Pan American's Exhibit No. 5 marked for identification.)

Q Mr. Currens, I now direct your attention to what has been marked as Pan American's Exhibit 5, and I'll ask you to explain what that exhibit is, please.

A Exhibit No. 5 is a plot of reservoir pressure versus producing rate for the entire Gladiola Field. We can see that we start up here early in the life of the field with the first information we have, with a low producing rate and a high pressure. We extend along a very straight and flat curve to a point out here something in excess of 21,000 barrels per day and a pressure, oh, on the order of 4300 pounds.

Q Now on our Exhibit 3 we plotted pressure versus time. Is this simply another method of plotting pressure?

A Yes, sir, it is another method of plotting pressure, changing the variable and making it rate this time.

Q Do you see anything in the attitude of the pressure curve which you have plotted against producing rate that would give you any alarm from the standpoint of efficiency or ultimate recovery?

A It is certainly a very flat sort of curve. We have rate

varying from 300 barrels to 21,000 barrels and very little pressure drawdown.

Q Let me ask you this, Mr. Currens, are you of the engineering opinion that in this Devonian reservoir the greatest ultimate recovery of oil will result from pressure maintenance or through drawing down the pressure?

A It's my firm opinion that we will recover the most oil from this reservoir if we can drop the pressure as far as is possible. If we maintain pressure in this reservoir, we are going to leave oil behind, thereby causing waste.

Q Will you then assume for the purpose of this question that pressure maintenance would result in the greatest ultimate recovery. With that assumption let me ask you this. If you were of that opinion, is there anything in the attitude of that pressure curve that would alarm you?

A If I were of the opinion that we could recover more oil by pressure maintenance, I certainly wouldn't be alarmed by this curve. We have a very flat curve, it's very little drawdown for this period of time for the wide increase in rates that we show here. It couldn't alarm me, no, sir.

Q All right, Mr. Currens. Let's put Exhibit 6 on the board, please.

(Pan American's Exhibit No. 6 marked for identification.)

Q What is Exhibit No. 6?

A Exhibit No. 6 is another map of the Gladiola Field. It is essentially the same as we presented in Exhibit 1; however, the trace of the cross section is not on this, and certain wells are encircled in blue.

Q Does this exhibit have plotted by each well certain basic data relating to that well?

A Yes, sir, it does. As an example, here, let's look in Section 18, the Slack Hancock No. 2 in the southeast quarter of the northwest quarter of Section 18.

Q All right.

A You will note here that we show the elevation and the well number by the well. You'll see a single number which is a negative number below it,in this particular case, minus 8090, that reflects the top of the Devonian for that well. Beneath that you see two other numbers, in this case minus 8092 to minus 8107, which would reflect the completion interval in that well, and above it a number, plus 43, this shows the bottom of the completion interval with respect to minus 8150.

Q Now, with reference to minus 8150, in your opinion is that a reasonable pick of the water-oil contact?

A Yes, sir, I would say it was a reasonable estimate of the water-oil contact within say, oh, ten or fifteen feet.

Q I believe you said the wells colored in blue are wells that are now making water, is that correct?

A Yes, sir, this is through February, information as reported

to the Commission.

Q In that connection, let me ask you this, Mr. Currens. Generally speaking are those wells around the edge of the structure or completed low in the producing formation?

A You only need to follow them around and see that they are all edge wells on the structure, practically without exception. There is one exception here in Section 18, Sinclair's Rosa Schultz No. 1. Otherwise they are all very low wells structurally.

Q With respect to Sinclair's Schultz well, did the operator have some trouble in effecting a completion in that well?

A He had a great deal of trouble getting a completion in there, they were pretty deep in there.

Q In a water drive field such as we have here, and the cumulative production which we have enjoyed, do you find anything unusual or unexpected about low wells or edge wells making water?

A No, sir, I don't see anything unusual about that. On the contrary, I would be surprised if these edge wells in these low structural completions weren't making water in a field of this type with this type drive mechanism; anything else would be a surprise to me.

Q Directing your attention back again to the March 13th portion of this hearing, and in view of your statement that you just made, I take it then that you are in general agreement with Mr. Landua that as of that time that the edge wells making water was normal?

A Yes, sir.

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Q And that the only unusual factor that existed at that time was the performance of Lowe's Lawton State No. 2; are you in general agreement with that?

A Yes, sir, I am in general agreement with that.

Q What was the status of the Lawton State No. 2?

A That well had gone to 100 percent water as of that time.

Q Was testimony introduced to the effect that a workover rig was over the hole at that time?

A Yes, they did say that workover was being attempted on this well.

Q In the interim period between March 13th and today, what has happened to that well, based on information furnished to us by Mr. Landua?

A Mr. Landua furnished information to Pan American that Lawton State 2 had been worked over and it was now producing pipe line oil without a trace of water.

Q I realize that Mr. Lowe's representatives will probably put in full detailed information about the workover and the completion, if they see fit, but let me ask you this. Did he also furnish us the present completion interval?

A Yes, sir, he furnished us the present completion interval in that well.

Q Would you compare it with the old completion interval?

A Now he has some eighteen feet of section open, all but two of those being section that was opened previously before this

workover.

Q All right. In view of the apparent successful completion of Lawton State No. 2, in that it is now producing without any water at all, would you say that there is no unusual or unnormal or abnormal condition in the field at this time?

A Now that that well has been brought back to an oil producing status and is now an oil producing well, I fail to see anything unusual happening in this field at this time.

Q I will ask you to put up Pan American's Exhibit No. 7.

(Pan American's Exhibit No. 7 marked for identification.)

Q What is Exhibit No. 7, Mr. Currens?

A Exhibit No. 7 is a plot of reservoir pressure versus cumulative oil production for the entire Gladiola Field. It simply shows the pressure versus the production at any time.

Q Let me direct your attention to the extreme left portion of that exhibit and ask you the significance of the dashed line that goes in a downward manner, or what that dashed line reflects? Yes, sir, the one to the left.

A The dashed line here on the left simply would be what the predicted performance of this field would be with a depletion type drive field, comparing the recovery that we could expect with the drawdown to the bubble point pressure, which is 537 pounds; we can see that it's,oh,something slightly over six million barrels of oil. It will serve to point out again that we have a water drive

field here.

Q Let me direct your attention again, still on the left portion of the exhibit, to the solid line that starts at the left and goes right in a more or less horizontal manner, what is that solid line?

A The solid line we show up here with the points is simply a plot of the reservoir pressure versus the cumulative production for the entire reservoir.

Q All right. I notice where the solid line stops, a dashed line picks up and continues on to the extreme right portion of your exhibit. What does that line reflect?

A Well, that line is simply an extrapolation of the trend of pressure cumulative that we have had previously here. It's certainly not a prediction, it'just says if this trend were to continue what would happen. You will note that it stops at a point down here which is thirty-four and a half million barrels of cumulative recovery. That's the recoverable oil from the reservoir, by my calculations.

Q All right. In other words, to draw that horizontal dashed line you just assumed that the present trend that we have noticed to date would continue?

A Yes, sir, that's all.

Q You recall Mr. Landua's testimony to the effect that in his opinion the pressure in this Devonian reservoir would never decline to anything near the bubble point, do you not?

A Yes, sir, I recall that.

Q Are you in agreement with that testimony of Mr. Landua?

A I certainly am. We have a bubble point pressure point here of 537 pounds, we'll never reach that bubble point pressure. I certainly wish we could. We would recover more oil if we could.

Q From the standpoint of increased recovery, then, it is your opinion that the nearer or the more approximate the pressure is drawn down to bubble point, the greater the increased recovery of oil?

A If we were to draw this pressure down to the bubble point and slightly below, if we were able to do that, that's the place that we would realize the maximum recovery from this reservoir.

Q Since we know, or both of our witnesses that we have had are in agreement that we will never approach the bubble point, let me ask you this. What factors will come into play between the current pressure that we now have and a point above the bubble point pressure that will tend to increase ultimate recovery? What are those factors?

A Well, there are certain physical factors that we would have to consider. Naturally you have got your reservoir volume factor; as you decrease pressure on the crude oil, it's above its bubble point. You decrease pressure, you cause that oil to expand. As it expands it helps drive more oil out of the reservoir. You would have an improved viscosity relationship with a decrease in pressure. As you release the pressure from the crude, you make the oil less

viscous, and cutting its viscosity allows it to flow more easily. You have got the expansibility of the reservoir rock, as you decrease pressure on the rock in a reservoir. We have a reservoir here of 12,000 feet, you decrease the pressure on that rock, the rock expands, squeezing more oil out of the pores. You would have connate water expansion, the connate water from the reservoir would expand. All these things would be factors that would help increase ultimate recovery with a decline in pressure. If we can draw the pressure down we will get more oil out.

Q Mr. Currens, I will ask you to put up Pan American's Exhibit 8.

(Pan American's Exhibit No. 8 marked for identification.)

Q What is Exhibit No. 8, Mr. Currens?

A Exhibit No. 8 is designed to show the increased oil recovery that we can get from this reservoir as a result of oil expansion, simply by increasing the reservoir volume factor as we lower the pressure.

Q All right. Let me direct your attention to the extreme right portion of that reservoir and ask you what that set of curves thereon represent?

A Well, on the extreme right we show three curves on this figure. The top one is the reservoir volume factor, which shows that as the pressure decreases the oil expands, the reservoir volume factor increases, oil viscosity,which shows as the pressure is

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decreased the oil becomes less viscous and can flow more easily; and a rock expansibility curve which will show that as the pressure is taken off the reservoir rock, it too will have a certain expansion.

Q All right, now I direct your attention to the portion of the exhibit shown in red and marked Figures I, II, and III in Roman numerals. What do they reflect?

A Figures I, II, and III here are designed to show the increased recovery that we can gain from this reservoir as a result of raising the reservoir volume factor, expanding the oil, and driving it out as we reduce the pressure.

Q Go right ahead with your explanation.

A Well, looking here at Figures I and II, they're identical with the exception of the pressures shown on top of them. We can say that they represent the reservoir. Looking at Figure III, this is what we might call a combination figure, since it will reflect the recovery under these two conditions as shown in Figures I and II. Now with a fifty percent recovery factor, we will produce fifty percent of the oil, we will leave a residual oil saturation of fifty percent.

Q Excuse me, Mr. Currens, what do you mean by residual oil?

A Residual oil, saturation of residual oil is that oil that is left behind in the reservoir. Now we depict residual oil on the exhibit as the portion cross-hatched; the recovery is the portion shown in red not cross-hatched. If we were to get this reservoir with a pressure maintenance where the pressure stayed essentially

what it was on the 1st of January, 1958, or approximately 4375 pounds, we would produce this amount of oil shown in Figure III as colored in red, not this part that is cross-hatched. just the part colored in red. That would represent some thirty-four and a half million barrels of oil. Now taking another condition,at abandonment pressure of 2820 pounds, I have used that figure on a previous exhibit, taking the abandonment pressure at 2820 pounds we can look over at Figure III and we can see that in addition to this solid red amount of oil, the thirty-four and a half million barrels of oil, we will get some of this oil that is cross-hatched. This is what would be residual oil that we have squeezed out of that reservoir as a result of lowering the pressure, increasing the reservoir volume factor, and expanding the oil.

Q All right, what is the magnitude of the increased oil recovery under your two pressure situations that you have set up that would result from the increased reservoir volume factor?

A This additional oil that would be residual that we would recover?

Q Yes, sir.

A That is in excess of 260,000 barrels. That is over three-quarters of a million dollars' worth of oil that we can recover that we would normally leave behind if we maintain pressure, but we can recover if we drop the pressure to 2820 pounds.

Q That takes care of one of the factors you mentioned. Would you not only expect an increase due to the other factors you described?

A Yes, sir, you would have to expect certain other bonuses over here. I have only used reservoir volume factor because it lends itself to the most precise calculation. Certainly we have the viscosity improvement, the oil is less viscous and can flow more easily, has a better chance of being recovered. The rock expands, which will help squeeze more oil out of the pore spaces. I mentioned one previously in addition to these, the connate water, that will help some, too. These are bonuses in addition to what I show here, three-quarters of a million dollars' worth of oil.

Q As I see the problem that is before this Commission here today, it's concerned with the problem from their standpoint of waste from an individual well standpoint and from a reservoir standpoint. Now let me ask you this. Based on all the data that you have analyzed and evaluated on this entire Devonian reservoir, have you seen anything that indicated to you that the reduction of the allowable in this field would serve conservation?

A No, sir, I don't. I see nothing that would cause that to serve conservation.

Q On the contrary, would a reduction in allowable in this Devonian water drive reservoir actually be a dis-service to conservation?

A I think that by reducing the allowable, of course we are going to have to force the pressure up and cause a certain amount of maintenance of pressure in the reservoir, and that if we maintain pressure in the reservoir, we are going to leave behind oil

that could otherwise be recovered. If we can bring the pressure down, we are going to get the most out of the field.

MR. BUELL: That's all we have at this time.

MR. PORTER: Anyone have a question of the witness? Mr. Easley.

CROSS EXAMINATION

By MR. EASLEY:

Q Mr. Currens, you've testified that this unquestionably is a water drive field?

A Yes, sir, I believe it is a water drive field.

Q Water drive reservoir. As far as a water drive reservoir is concerned, I will ask you if it's a fact that the oil naturally goes before the water or above the water?

A Yes, sir, that is generally true.

Q Is it true also that as you remove the oil from the well bore that by virtue of that you reduce the pressure, thus bringing the other oil in with the water forcing it on in, the oil naturally coming before the water?

A As I understand your question, you are saying that as we produce oil from the field, water comes along behind it?

Q Yes, sir.

A Yes, sir.

Q That is a natural consequence in a water drive reservoir?

A Yes, sir.

Q And now, in this particular reservoir here, do you have

considerable amount of water?

A Being produced?

Q Yes. No, I'm sorry, in the aquifer.

A I think there is a pretty large aquifer there, yes, sir.

Q In the dry holes that have been drilled around the area, have you had any experience with those?

A I've looked through the reports and records on them.

Q Do you find water in those dry holes at approximately the level, the water-oil contact that you find in the reservoir?

A Yes, sir. That generally would be true, particularly on the east side of the field.

Q Let me ask you directly, do you know from your experience in the field and from the knowledge that you have of the wells that have been drilled whether or not you have an unlimited supply of water in this reservoir?

A No, sir, I don't know that we have an unlimited supply of water in the reservoir, in the area.

Q Would you say that you have a sufficient supply of water in this reservoir to produce the oil in place?

A I think we have a substantial amount of water there, yes, sir.

Q Would you say that you have a strong water drive in this reservoir?

A Yes, sir, I would say that there's certainly the effect of a water drive being seen here.

Q Would you say that is your principal drive?

A Well, depending on what you mean by "principal drive". Now the principal drive, of course, is going to be that we will have water coming along behind the oil and pushing it ahead of it. Now the thing that we would like to do, of course, is keep a big pressure or certain pressure differential between it.

Q Ordinarily in a water drive field don't you have a sustained pressure? You don't have a real drastic drop in pressure as you would in a depletion drive field?

A No, sir, you don't expect to get as big a pressure drop in a water drive field.

Q You have indicated in your exhibit, is that No. 8?

A This is No. 8.

Q You have elaborated on the expansion of the oil as you remove the oil from the well bore, and expansion of the fluids, as being a drive for the production of the field?

A Yes, sir, it will help drive, it sure will.

Q Now you have approached this right here from the standpoint of how much will be produced by an expansion drive, expansion of the fluids in place?

A Yes, sir.

Q Now this hasn't been on consideration of the additional water drive behind this oil pushing it before it, pushing the oil before the water?

A Are you talking about the increase that we would get as a

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pressure drop?

Q Yes.

A No, sir, that is only the increase we would get due to the pressure drop by expansion of oil.

Q In other words, you have ignored the question there, or have eliminated the question from your consideration as to whether or not the water would produce that oil anyway, if you have a strong water drive?

A I don't believe it could produce that additional oil there.

Q Well now, suppose you explain why the oil would not be forced ahead of the water, if you have a strong water drive.

A Well, it ties to your residual oil saturation. We have to leave so much residual in the reservoir. If we leave fifty percent oil saturation, it is simply a case whether we want to leave behind compressed oil or expanded oil. If we can leave expanded oil, oil under less pressure, certainly we leave less behind and produce more. If we maintain the pressure, we keep the oil compressed, that it can't expand, it can't help.

Q Suppose we consider this point in this reservoir, now you are talking about an ideal situation, aren't you?

A This could easily happen. I am not saying it will. I'm saying we should give it the opportunity, I think it can.

Q In other words, the substance of your statement here to the Commission is that you could produce this at an unlimited allowable, say a thousand barrels a day, and by virtue of reducing the pressure

that you are going to produce more oil?

A I'm not recommending a rate, but I think we can go to substantially higher rates than we now have and it won't hurt us.

Q Let's say how far can you go? You are saying that the pressure can be reduced, and because you reduce the pressure that you are going to have more in the way of an ultimate recovery. Let me ask you this question. If you produced it at the rate of 2,000 barrels a day, do you think that because of the reduction in the pressure you would have more in the way of an ultimate recovery?

A Well, I don't think we could ever see 2,000 barrels a day from this field, the situation being what it is. That would be an awfully high basic normal unit allowable. I don't care to set a number on the upper limit that we could produce this field. I think we can do it at substantially greater rates than we are now.

Q The theory that you have advanced here, that the problem of getting ultimate recovery depends on reducing the pressure; the maximum ultimate recovery depends on reducing the pressure, if possible, down to the bubble point?

A If we could possibly reduce the pressure in this field to the bubble point and even below, we would realize the maximum oil recovery from this field, in my belief.

Q Now, Mr. Currens, there are other factors which enter into each individual case which might limit the application of your theory, aren't there?

A You talking about for an individual well?

Q I'm talking about the reservoir.

A Would you state that again, please?

Q Your theory of reducing the pressure being the point which makes for more ultimate recovery varies with the situation, doesn't it?

A You mean --

MR. BUELL: I can't understand, may it please the Commission, what the situation is.

MR. PORTER: Just a minute.

MR. EASLEY: Excuse me, I didn't know I was being so obscure in my questioning.

Q What I'm driving at, Mr. Currens, is that the idea of dropping the pressure may not work in every instance if there are other factors like the premature encroachment of water to prevent the oil recovery?

A I think if you had a field where there was premature encroachment of water, that what you say might be true, but I don't see any premature encroachment of water in this field. We are talking about this Gladiola Devonian reservoir, I think that it is reacting just as it should, and if we could draw the pressure down we would increase the recovery.

Q Now in what manner do you propose to reduce the pressure?

A Well, sir, I wasn't advocating that we go in for some method to bring about a greater pressure reduction. All I'm saying is that there is no point in keeping the pressure up. If we're experiencing

a pressure drop by producing at the normal rate that this reservoir would be assigned, that this field would be assigned, if then we are getting a pressure drop it is helping us.

Q With regard to a water drive field, would you state whether or not it is rate sensitive?

A This field?

Q Any water drive field. Generally would a water drive field be rate sensitive?

A I couldn't testify on any water drive field, but I don't believe that this field is rate sensitive.

Q What did you find the gas-oil ratio to be here?

A Solution gas-oil ratio?

Q Yes.

A It is in the neighborhood of 175 cubic feet per barrel.

Q Is that a high or low ratio?

A That is very low gas-oil ratio.

Q In cases where you have a low ratio of gas, do you have a considerable amount of expansion or a lower rate of expansion of the oil in place?

A Possibly I could clear this up by saying that these data were taken from a bottom-hole sample that we obtained in this field, and run by our laboratory, so these are actual data pertinent to the crude in this reservoir.

Q Are you talking about --

A (Interrupting) The reservoir volume factor, the viscosity,

actually we didn't have a piece of reservoir rock in original conditions, this is a curve that you'll find in A.I.M.E. transactions as a typical carbonate curve for rock expansibility.

Q Those were actual tests that were run on the oil and rock?

A Yes, on the oil.

Q On the oil?

A Yes.

Q Excuse me, what did you say about the rock on the bottom?

A I said it is a typical curve as taken from A.I.M.E. transactions. I didn't make a calculation on that because it wasn't exact reservoir data.

Q With regard to a water drive reservoir such as this, is it possible that the fast rate of production will bring the water through the permeable rock and bypass some of the oil?

MR. BUELL: May it please the Commission, what advanced rate of production?

MR. EASLEY: I'm trying to get at this as theory.

MR. BUELL: I don't want to interrupt you any more than I have to, but I would like to be able to understand the question, and some of these I'm having a little trouble with. I apologize for interrupting.

MR. EASLEY: I'm sorry. I'm struggling with this engineering, I'll have to admit.

MR. BUELL: I know what he's going through.

Q (By Mr. Easley) Let's ask this question, if I can rephrase

it. In say the edge wells in this particular field, do you recognize that any rate of production might possibly cause premature water encroachment and leave oil in the formation?

A Well, by premature water encroachment, do you mean something like coning?

Q That, and then bypassing the oil in the formation.

A I don't believe we could bypass the oil in the formation even on these edge wells that we're speaking of, and I really don't think we could have any coning in this reservoir.

Q In other words, what you are saying is that you could produce it at any rate and you wouldn't have --

A (Interrupting) What I am speaking of there is any rate that we are liable to be granted as an allowable as a result of the normal unit allowable in this study.

Q But in other words, you recognize the principle that in a water drive field that you can produce it so fast that you commit waste in the reservoir?

A It depends on the reservoir conditions, the type of completions and things like that. Yes, that could be a case, but I don't think so in this field.

Q With reference to this field, what studies have you made with regard to the permeability of the formations?

A Well, sir, of course, we had the core analysis that Mr. Landua presented, we have core analysis on a well that we operate.

Q Have you arrived at any sort of idea about the average

permeability in the entire reservoir?

A I don't have the figure on the tip of my tongue, I could give you a pretty good idea if you want me to look at it.

Q Never mind that, I am asking if you did.

A Yes, I had an idea.

Q On the basis of the analysis of those two cores?

A Yes, sir.

Q You haven't made an analysis of any other wells in the field?

A I have information that people have told me. I don't have access to any actual, other core data myself, as such.

Q On how many wells do you have the data?

A I have the data, of course, on the well that Mr. Landua presented and Texas Crude A-19 No. 1, I believe it is, Pan American operated well.

Q How many cores have you the data on?

A Those two.

Q And on the basis of that you have arrived at what you think is the average permeability in the reservoir?

A No, sir, I said that what the average of those two might be, I looked at it and got an idea, yes, sir.

Q And that's part of the basis on which you have estimated the reserves and the amount of recoverable oil?

A The reserves are not normally estimated on the basis of permeability, Mr. Easley.

Q I'm sorry, but isn't that figured in as far as determining

the amount of recoverable oil?

A You want to know where I have my recovery factor?

Q Yes.

A I took an average recovery factor for a Devonian reservoir, a normal expected recovery factor for a water drive field.

Q It isn't keyed to this particular reservoir?

A No, sir, but it is certainly reasonable.

Q That is the basis on which you estimated that there would be 35.5 million barrels?

A Thirty-four and a half million barrels, yes, sir.

Q Is there homogeneity in the reservoir?

A This reservoir, of course, I have -- no reservoir is completely homogeneous, there are certain localized conditions that can be found spot-to-spot in any reservoir that you would find. I wouldn't say that this is an untypical reservoir.

Q Untypical Devonian reservoir?

A I said I would not say it was. I would say it was probably typical.

Q Did you have any analysis, did you analize the porosity as far as these cores are concerned?

A Yes, sir.

Q I'm wondering, I might ask you this, if we could have those as a part of the record.

MR. EASLEY: Do you have those here?

MR. BUELL: By "those", Mr. Easley, what do you mean by "those"?

MR. EASLEY: The analysis of the cores.

MR. BUELL: One of them is already in the record, and the core that we have on our well, we don't have it here but we will be glad to furnish it. You put one in the record?

A Yes.

MR. EASLEY: That would be fine.

Q (By Mr. Easley) You also have analyzed the fluids, in other words, the oil?

A Our laboratory did, yes, sir.

Q And do you have those with you?

A The curves that are pertinent here were drawn from those data.

MR. EASLEY: I'm wondering if we could also request that the data be put in the record.

MR. BUELL: We will be glad to furnish any data that we obtained from the bottom-hole samplings, a part of which is reflected on the two uppermost curves of Pan American's Exhibit No. 8.

MR. EASLEY: Thank you.

Q (By Mr. Easley) On your pressure chart there, reservoir pressure, it is No. 7?

A Yes.

Q Exhibit No. 7. Mr. Currens, on that you have shown the reservoir pressure versus cumulative oil production, and you have extended the curve there, up to the point that is shown to be nine million barrels produced; now that represents the oil produced?

A Yes, sir, that's oil recovered.

Q Now you have extended your curve on the basis of the amount of oil produced there?

A Sir, all I have got on that curve is to draw the line on out from the last trend that we have, following the trend out to my predicted recovery.

Q Would the increased production of water have any influence on that curve?

A Well, I didn't consider anything there. I just drew the line on out from the trend it now has. I'm not trying to predict anything there.

Q In other words, you are not representing that will be the --

A (Interrupting) No, sir, I am not saying that will be the reaction of the reservoir.

MR. LANDUA: That just so happens to be my total reserve prediction.

MR. EASLEY: May I ask permission for Mr. Landua to repeat the question? What was your question?

MR. LANDUA: My question was that in Mr. Currens' analysis he estimated that he would recover thirty-four and a half million barrels by some other means, and projected from his last pressure point on to the reservoir figure?

A That simply is a projection of the last trend;that covers some four or five points to that reserve, it's not a prediction.

Q You have stated here that the chart which is represented by your No. 4 Exhibit, I believe you said that these figures were

taken from Mr. Landua's report of the bottom-hole pressures?

MR. BUELL: By "these figures", Mr. Easley, what do you mean? There are several columns.

MR. EASLEY: Yes, I am sorry.

Q These figures with regard to Mr. Landua's report of the per pound pressure drop for the production of the oil in the last column. Now those were taken from his report?

A Those numbers are the ones that he showed on his exhibit.

Q I notice that you duplicate the dates over here --

A Yes, sir.

Q -- on which he took the bottom-hole pressure surveys, is that correct?

A Yes, sir.

Q And then will you explain to me how you related those to the other bottom-hole pressure surveys that were made in the field?

A Well, if I have your meaning correctly, here, you say what pressure did I use for the cumulative production?

Q Yes.

A I have shown the pressures that I would find at that period of time on the figure which was Exhibit 3, was it not?

MR. BUELL: Yes, 3.

A Or the performance time curve. On these dates I have come up to fieldwide pressure curve and taken the pressure that would be reflected by that pressure on those dates.

Q Your testimony is that you don't think that is representative,

that that is significant at all in the determination of the production of the oil?

A That those pressures?

Q Yes.

A Sir, all I have said about this exhibit is that it only reflects how much oil was produced for some period of time with a certain amount of pressure drop. I don't really see where it has any further significance than that, just a factual report of what happened at some period of time.

Q You are not attempting to show that this would be the per pound drop, then, of pressure over that period of time?

A You mean that this would be the oil produced over that period of time?

Q Yes.

A Well, sir, this is the incremental oil production for that period related to the pressure as shown on the curve in Figure III for the field-wide pressure for this field.

Q But it's your testimony that you don't think that either one of the figures is significant?

A No, sir, I don't think either one of them is significant.

MR. LANDUA: May I interject a question here? I want to be sure, Mr. Currens, that these pressures are at what datum?

A Which pressures?

MR. LANDUA: The pressures on your chart.

A The pressures that are the field-wide survey are at minus

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8,000 feet, which is the datum for the Commission. The pressures shown for Mr. Lowe's wells are just exactly as you have reported them to the Commission, 8150. The pressures as shown here by the six wells of Pan American are at 8,000 feet.

MR. LANDUA: There may be some discrepancy in your data because you made the statement when our well was brought in that it had pressure that was tied in with the field-wide pressure. The pressure we measured was 4808 at minus 8150.

A Yes.

MR. LANDUA: You corrected the pressure back to 8,000 feet in your statement?

MR. BUELL: I requested that they be shown that way on this exhibit because I thought it would eliminate confusion that might be created if we converted them to a common datum. For that reason we plotted them exactly as he reported them. It seems that we may have caused confusion rather than saving confusion.

MR. LANDUA: He took the pressure that we measured in the discovery well when he made the statement that the pressure in our well, even though two miles from the other production, was the same as the pressure that existed in the south quarter at the time.

MR. BUELL: The question was, did it come in at approximately the same range. His answer was yes. Surely you agree with that, Mr. Landua, that it did come in at the approximate pressures of the older wells.

MR. LANDUA: If he made that at the same datum; if he didn't,

there would be about 100 pounds difference.

A Pardon?

MR. LANDUA: If you corrected our pressures back to your 8,000 datum.

A Yes, there would be how much?

MR. LANDUA: If you made your correction, if you took our 4708 and corrected it back to the 8,000 foot datum.

A Yes, sir.

MR. LANDUA: Then I would say that the range would be right. Do I make myself clear?

A I'm afraid I didn't follow you, really.

Q (By Mr. Easley) Would you get the exhibit there and point it out, in which you indicated the wells that were producing water?

A Yes, sir, this is Exhibit No. 6.

Q I'm wondering if you would point out the wells on that map that your company operates that are producing water, and indicate the percentage of water, if you know.

A The Pan American State No. 1 in Section 19 and the State "AN" No. 1 in Section 19 are water producing wells. I don't recall the exact figures on them, it seems like one is about fifty percent and I don't know that the other is significantly different, right off-hand. I could check and see.

Q In other words, both of them are producing about fifty percent water?

A Well, one of them is, I believe. I can't think of the figure

on the other.

Q Can you say off-hand when those wells were drilled?

A I can look it up for you.

Q Does that show on the map?

A No, sir, it doesn't show on the map.

Q Well, suppose we wait on that and then you can supply it later.

A All right.

Q Do you know about the water production in the other wells along there? Are those the only two that you have that are producing water?

A The water production that we reflect on this map is the water production as reported by the operators to the Commission for January and what other operators have told me that their wells were producing water in February. They are taken from engineering committee records.

Q Do those records show it in percentage?

A No, they show it by barrels.

Q By barrels?

A Barrels of oil and barrels of water.

Q Have you made any study of the balance of materials or the amount of water that is coming in as compared with the amount of oil that is being taken out in the reservoir?

A Well, sir, we have only had cumulative water production, and you have something on the order, as I recall, about the first

of the year, of around 100,000 barrels. We produced nine million barrels the first of the year.

Q Does the decrease in pressure indicate that the water drive is keeping up with the withdrawal of the oil?

A Well, if you had it absolutely keeping up with the withdrawal of the oil, you would have absolute pressure maintenance.

Q Does that indicate that there is any absence of permeability that prevents the water from coming in to push the oil forward? Is there anything significant about that?

A Well, let's look at this. If we have a large connected aquifer to that field, that thing has a lot of inertia in it, it takes some time in a water drive field before water shows up. You expect to see it show up, certainly, because it is a water drive field. You shouldn't produce water with the first drop of oil you produce from a water drive field.

Q Now your statement that it's good for the pressure to drop depends upon whether or not you flood the wells out, isn't that correct? If you are going to decrease your pressure to the point where you flood some wells out, then that would not be economic recovery, would it?

A You mean that by decreasing the pressure, suck a whole lot of water into the reservoir?

Q Yes, or suck a whole lot of oil out.

A Out of the ground?

Q Yes.

A That is recovery.

Q I'm talking about the ultimate recovery.

A I think the only way we can effect the maximum ultimate recovery from this field is to get the pressure down as far as it will go. Anything we do to keep the pressure up is going to deplete the ultimate recovery and leave more oil behind.

Q At the expense of producing a lot of water in some of the other wells?

MR. BUELL: I wonder if you could be a little more definite. I think Mr. Currens is trying to answer your questions.

MR. EASLEY: Let me try again.

Q In the event that the allowable is held up to the point that it is now, say 223 barrels, but that as a result of that that the water is prematurely drawn into wells in the reservoir, do you think in your judgment that the reduction of the pressure or the allowable is justified?

MR. BUELL: May it please the Commission, this witness has already testified that in his opinion coning does not exist in this field and would not be created producing at any foreseeable normal unit allowable for the State. He has already answered that question once.

MR. EASLEY: It is a hypothetical question.

MR. BUELL: You want him to assume that you have coning?

MR. EASLEY: Yes.

A You want me to assume you have coning?

Q Or premature edge water being pulled in because of the rapid withdrawal.

A If I were to assume that water production was premature, which I don't think it is, but if I were to assume that water production was premature, then I would have to assume that that condition was unfavorable.

Q Then your theory of reducing the pressure is predicated on the fact that you have to avoid the premature production of water?

A I don't think we have any premature production of water in this field.

MR. EASLEY: If the Commission please, may Mr. Landua ask a question or two here?

MR. PORTER: Surely.

By MR. LANDUA:

Q I would like to start with the Exhibit 3, that is the one I would like to ask you a few questions about.

A Performance time.

Q Yes.

A Yes.

Q Mr. Currens, isn't it the usual practice whenever you plot your performance curve on a reservoir to go ahead and include the water production as well as other production?

A Well, sir, we have -- are you talking about, say here on cumulative?

Q I'm just wondering why the percent water or the amount of

water taken out of the reservoir hasn't been depicted on your curve?

A Water production is very small. If I were to put it, say the cumulative water production on the cumulative curve, you couldn't see it.

Q You could have a large scale on the side to depict the increase in water that has occurred?

A Yes, it wouldn't be on the same scale, it wouldn't be a fair comparison.

Q I understand that, but your pressure is on a different scale, too. It is possible to put it on?

A Yes. I have the figures, if you would like them.

Q I have them, too. I just wondered why they weren't shown on the curve.

A They were rather small amounts and I didn't show them because they would hardly show.

Q Good. You made the statement, I believe, that this barrel per pound drop was not any measure of the efficiency at which a reservoir was being produced?

A I think that only says that this reservoir did that at that time.

Q Then on down in your testimony, you use these figures on Exhibit 3 to say that you thought the reservoir efficiency was being increased?

A No, sir.

MR. BUELL: Hold it. May it please the Commission, Mr.

Landua must have missed this, and I am sorry; but I specifically asked him to assume for the purpose of this question that that is a valid engineering tool to use, and it was on that assumption only that he said, with that assumption, from 2,000 to 2,200, that assumption, that would be good efficiency, but he assumed that, Mr. Landua, that is not his opinion.

MR. LANDUA: He believes that the barrels per pound drop is no measure.

MR. BUELL: He testified to that, over a short increment of time. When you look at the long life of a reservoir, he testified it isn't a valid basis to drawing an engineering conclusion to reservoir efficiency and what you might expect in ultimate recovery.

Q (By Mr. Landua) Now he said that the efficiency was being improved, if you assumed that was a measure; now your first increment of 43,900 barrel per pound drop, and the last one, you only have 20,200?

A We were only --

Q Would you assume from those figures that the reservoir was being produced half as efficiently as it was in your first increment?

A Well, sir, we were only discussing the last two points in here.

MR. BUELL: I don't believe either Mr. Currens or myself understood that question, if it was a question.

Q Exhibit 3 --

A Exhibit 4.

Q Exhibit 4, the question is, in the first pressure increment that you report by your figures you say that 43,900 barrels of reservoir oil was obtained for each pound drop in bottom-hole pressure?

A Yes, sir.

Q Then on 12/1/57 for that increment you say that the barrels recovered for each pound drop was only 20,200?

A Yes, sir.

Q Is it your assumption or conclusion here based on these figures that this reservoir was being produced half as efficiently?

MR. BUELL: Pardon. May it please the Commission, I believe that I can clear that up. My hypothetical question, Mr. Landua, and the question on which I asked him to assume the validity of such a calculation from an engineering basis, was on the last two figures, the last two increments of time.

MR. LANDUA: Was there any reason for forgetting the first one?

MR. BUELL: No, I would be glad to ask him that, it is meaningless.

MR. LANDUA: We shouldn't be taking up time with meaningless things.

MR. BUELL: Very simple calculation, it didn't take five minutes.

Q I think that what Mr. Easley was trying to establish in Mr. Currens' testimony on reservoir pressure drop, we believe that

as the reservoir pressure is drawn down significantly in this reservoir, that it's conducive to water encroachment of one nature or another, and that much oil would be bypassed, much more than would be gained by his theoretical expansion of 276,000 barrels for that reservoir.

MR. BUELL: May it please the Commission, it appears Mr. Landua is doing more testifying than asking questions.

MR. MORGAN: I agree. I think it ought to be placed in the form of a question. Ask him if he agrees with that.

MR. LANDUA: Thank you.

Q Mr. Currens, would you say that if you produced this reservoir at a thousand barrels a day per well that you would cause waste?

A I don't think we'll ever have to look at producing this reservoir at a thousand barrels of oil per day per well, so I don't know.

Q Okay. You are of the opinion that it's impossible to bypass oil and have coning in this reservoir?

A In this reservoir, yes, sir.

Q No matter what producing rates you would have?

A I don't think you'll leave behind any oil that should be recovered, no, sir. Beg your pardon, sir, you said with what producing rates you had?

Q Yes.

A Any reasonable producing rate that we would have, anything

that we might expect as a normal allowable for the field.

Q Would you take Exhibit 6, the one that has the structural map of the water wells?

A Yes, sir.

Q Would you count for me the number of wells that you would consider edge wells in that reservoir, from your structure map?

A I would say sixteen.

Q Edge wells?

A Oh, edge wells, total.

Q Not water edge wells.

A Total edge wells, I may have missed one, but I got about thirty-eight there.

Q Thirty-eight out of a total of how many you consider in the field?

A There is something in excess of ninety, I would say right now.

Q In other words, about four-ninths of the total wells in the field are some type of an edge well?

A Yes, sir, the field is rather long, so we have a big periphery.

Q So whenever we have happenings to an edge well, we are talking about four-ninths of the reservoir?

A Yes, sir, if you want to say that. We are not talking about four-ninths of the reservoir, we are talking about four-ninths of the wells.

Q Four-ninths of the wells in the reservoir. In your opinion

can we completely ignore edge well happenings whenever we analyze this reservoir?

A No, sir, we can't, and that is why I think the reservoir is acting as it should, the edge wells make water. I don't know what else you would expect. Edge wells and low structural wells make water in water drive fields.

Q In examining your plat, I think you will see that some of the edge wells are making water at a higher interval than some wells located in other productive limits of the field. Is that unusual?

A No, sir, because if you get on the edge of the structure, let's say that you have a triangular sort of thing on the edge of a structure, if that's clear, you don't have as much oil on those edge locations as you have farther up-structure. You produce so much oil out of a well. You have voided that much reservoir space.

Q Even though that structure, even though the location of a pay is higher than it is at some well within the limits of the field?

A Depends on what you have as the entire volume underneath the well. You have got a smaller volume, so as you produce, your water has to come up somewhat higher.

Q Let's assume for the minute that the wells in this terrace-like part of this large structure of ours would go to 100 percent water and be washed out. Would the recovery of the 600-acre part of the field that is so thick be increased appreciably?

MR. BUELL: Do you understand that question, Mr. Currens?

A I wanted to ask him which was the terraced and which was the 600 acres.

Q I'm talking about in the northern part of the field, that is relatively flat.

A This part here, on north and this part on down south, from say here to here?

Q Not quantitatively in any way,but do you think that you would get more oil if the low thin wells would be washed out?

A In both ends of the field, up here in what you are calling the thinner end of the field, you have some good structural relief, you are coming up-structure. If the oil moves, it has to move that way, so I don't see where you would leave any oil behind that you would recover, as these wells are depleted, their methods of getting more oil or less out of them. I think you will get more if you drop the pressure.

Q If we drop the pressure and would cause premature coning, which we think happens?

A I don't agree with you. I don't believe there is premature coning in this field.

Q But the oil that would be left in the relatively thin area would be recovered in some other part of the field, in your opinion?

A Well, if the oil is left, it can't be recovered. If you are talking about recoverable oil, I believe that the -- you have got to expect in a water drive field wells to go to water and to

be abandoned because they have produced their proportionate share of the recoverable oil in place. Any oil that is ahead of that would move on forward and be produced. I don't think you are going to bypass any.

Q In your opinion, then, there's nothing that could be done that would cause you to bypass oil in any one of these well bores in this reservoir?

A No, sir, I wouldn't say nothing.

Q Something happened in Lawton State 2?

A Yes, sir.

Q We left some oil, we were lucky enough to do a workover and try to get it. You testified, Mr. Currens, that the reservoir pressure in our discovery well was in line with field average?

A Yes, sir.

Q How could that pressure have been drawn down, since there was no wells in that area?

A Well, as I recall the well came in at 1955, and the field was discovered in 1951. There's a long period of time.

Q Are you saying there would be drainage of oil from that area to the south?

A I would say there was an equalization of pressure between the two.

Q The only way you could equalize would be to have some travel fluid?

A If you had equalization of fluid, you would have expansion

of fluids, too.

Q It would have to travel?

MR. BUELL: What was that?

Q If the oil had to travel from the north end to the south end to cause the pressure drop, for our pressure to be in line with the field average pressure at the time?

A There would have to be a pressure average across the field. The pressures in the field reflect the drainage from the reservoir, of course.

MR. LANDUA: That's all. Thank you.

MR. PORTER: Anyone else have a question of the witness? Mr. Nutter.

By MR. NUTTER:

Q Mr. Currens, to what do you attribute the change in the barrels of oil obtained from the entire pool as of the bottom-hole pressure survey taken in December of 1956, the figure being 44,000 barrels of oil per pound drop, as compared with 8,800 barrels per pound drop in April of 1957?

A We produced more oil. We had less pressure drawdown. There were very few completions, or not nearly so many completions in the field at the first interval of time as at the second interval of time, which of course is going to have to be a reflection of this, too, as the actual numbers are.

Q Do you think that the completion of additional wells caused the recovery of less amount of oil per pound drop from December of

'56 to April of '57?

A Well, I can't really give much credence to these numbers, it is just a mathematical computation, where we have taken the amount of oil and the pressures for the period. I don't really see where it says anything more than that. I don't think it is a reflection of anything, particularly.

Q You attach no significance whatsoever to the number of barrels of oil that are produced per pound of reservoir pressure?

A Not over these increments of time, no, sir, these small increments.

Q You think the increments of time are too short in these comparisons here?

A Well, you have very short periods. Well, not very short, but you have short periods of time in this, one of them is about eight months. It's just a factual statement there, that during this period of time so much oil was produced. When we started we had this pressure and when we ended we had this pressure. I don't really know much more to say about that than that.

Q What causes the change in pressure in the reservoir?

A Well, certainly withdrawals would be a function, have something to do with it.

Q Do you attach any significance whatsoever to the last three figures on the right-hand side column on your Exhibit 4, being the amount of oil that was recovered per pound drop from June to August to December of 1957?

A I don't attach any significance to these numbers.

Q Mr. Currens, on your Exhibit No. 6, you depicted the water producing wells with blue circles, is that correct?

A Yes, sir.

Q What did you say was your estimate of the oil-water contact in this pool?

A I think it's approximately 8150 plus or minus, say 10, 15, feet.

Q Are all of these water producing wells completed in an interval that falls below that oil-water contact?

A Below it?

Q Yes.

A Of 8150?

Q Yes.

A No, sir.

Q What is the reason that they are producing water?

A Well, we have edge wells. As I have said before, you are on the edge of the structure, the structure is coming up, you have less productive area to void the smaller average oil column over your entire 40-acre lease. It is what I would expect, you withdraw oil and water comes in.

Q Now, the Lawton State No. 2 well up in Section 32 in the north end of the pool --

A Yes, sir.

Q What was the interval of completion on that well?

A Original?

Q Yes, sir.

A Minus 8117 to minus 8157 are the numbers I have.

Q Did that fall within or did the interval of completion on that well fall below your pick of the oil-water contact?

A Minus 8157 would be below minus 8150, yes, sir.

Q I don't know if you made any statements of your opinion as to why that well went to water or not. Do you have any opinion as to why water was produced in that well?

MR. BUELL: I have no particular objection if Mr. Currens wants to answer that. Actually, insofar as I know we have been offered nothing in the way of evidence that would even show that it was producing Devonian water, so until you know the source of your water it is pretty hard to analyze its performance. We see nothing that would preclude it from being water from up the hole.

Q Are you acquainted with the manner in which the well was worked over?

A Generally, sir, I believe by the information that Mr. Landua presented to Pan American.

Q Would the manner in which the well was worked over cause you to think that the water was from any source other than the Devonian?

A No, sir, I don't necessarily believe it would make it look like it came from anywhere else.

Q Do you think it was Devonian water?

A It very likely could have been, yes, sir.

Q Do you have an explanation for what Devonian water was encountered in that well overnight?

A I don't really know, it was an unusual factor in this field. However, it has now been cured because instead of 100 percent water that well now produces 100 percent oil, according to our information.

Q Mr. Currens, on your exhibits -- you don't have to turn to them, I can refer to them.

A All right, sir.

Q Exhibits 3, 5, and 7, in which you show various reservoir pressure statistics --

A Yes, sir.

Q -- for the pool as a whole?

A Yes, sir.

Q You show pressure declines and so forth, versus producing weight, cumulative oil production, and such other things?

A Yes, sir.

Q Do you think that you would have had the same curve if you had been dealing with the two pools separately, as you have with one curve representing the entire pool?

A I really couldn't say. I don't know, Mr. Nutter. I hadn't looked at it in that way.

Q Is there substantial variation in the thickness of the pay in the two parts of the pool?

A Well, yes, sure. There's a portion of the south that is

thicker than the north, certainly.

Q Would you expect pressure decline at a given rate of production to be greater or lesser in an area where the pay is thicker or thinner?

A It would depend on the type reservoir, of course. I think that very possibly where the pay is a little thinner, you could draw the pressure down a little bit faster.

Q So you think you might have a pressure decline in the north end of the pool?

A Yes, I think very likely that the pressure might be, well, in looking at the pressure surveys, field-wide pressure surveys in the field seem to indicate that slightly lower pressure in the north end than in the south.

Q Now, Mr. Currens, you made the statement that with the consideration of reservoir volume factors, viscosity of the oil, expansion of connate water and such --

A Yes.

Q -- that you feel the pressures in the water drive pool such as this should be dropped as low as possible?

A In this field I think it should be, yes.

Q Is this a theoretical observation or a fact that has been proved?

A Well, sir, of course, we can't go past the basic allowable rate here, but I firmly believe from the physical facts involved that by drawing the pressure down we will get more oil recovery.

Q Has this ever been substantiated in field tests?

A I couldn't cite one right off-hand, no, sir.

Q Do you feel that a pressure maintenance program such as is conducted in the East Texas Field is in error, then?

A I'm not familiar with the East Texas Field. I think that the most desirable method and means of producing a reservoir, particularly a water drive reservoir, let me say, is to drop the pressure to slightly below the bubble point pressure, establish a small residual gas saturation, and produce it at a pressure maintained below the bubble point pressure.

Q But you also stated that it was impossible to drop this field below the bubble point?

A Yes, we will never get this far here, unfortunately.

MR. NUTTER: I believe that is all. Thank you, Mr. Currens.

MR. PORTER: Mr. Kellahin.

By MR. KELLAHIN:

Q You have referred to the water-oil contact as being 8150 feet. Is that the original water-oil contact in the pool?

A I would have to say it would be somewhere in that neighborhood.

Q Wouldn't the withdrawal, something in excess of nine million barrels of oil, have any effect on the water-oil contact?

A You should have a rise, it might be evidenced in different places in different ways.

MR. PORTER: Does anyone else have a question of Mr. Currens?

MR. LANDUA: If it please the Commission, I would like to

ask one more.

MR. PORTER: Mr. Landua.

By MR. LANDUA:

Q In your opinion in this type of reservoir, would it be possible to predict that waste is going to occur before it actually occurred?

A Well, sometimes I think it is rather hard to say that waste occurred until after it occurred. I think that looking at the physical factors involved, we can say that we will realize more oil recovery if we can drop the pressure. Leaving behind oil that is possible to recover, in my opinion, is reservoir waste.

Q If your management asked you to determine whether waste was going to occur in this reservoir at a certain producing rate, you could not do it, is that correct?

A Absolutely?

Q Yes.

A No, sir, but I could sure give them my opinion.

Q That is what I wanted, your opinion.

A I could sure give them my opinion.

Q In your testimony you cannot predict that waste is going to occur?

A I think in my opinion I could tell them that if we were going to follow a certain set of conditions and so on we would probably recover more oil.

Q You don't have any practical yardsticks or practical

happenings in your mind that would indicate to you that waste is occurring and will possibly continue to occur?

A That waste is occurring in this field now?

Q Yes.

A You are talking about while producing under the normal rate?

Q Yes, that is correct.

A I don't believe that waste is occurring in this field while we are producing under the normal rate.

Q If it were occurring, could you detect it?

A Only after it had happened.

Q Then you could detect it?

A Yes, sir, possibly.

MR. LANDUA: Thank you.

MR. PORTER: Anyone else have a question of the witness? Mr. Buell.

REDIRECT EXAMINATION

By MR. BUELL:

Q Mr. Currens, the East Texas Field was brought up, and you said you knew nothing about it, is that right?

A I don't have any certain particular knowledge.

Q Then you couldn't disagree with me when I say that the East Texas reservoir is below the bubble point at the present time?

A No, sir, I surely couldn't.

Q One more question. I'm afraid that we have talked so much about reducing pressure that we might have actually lost sight of

the physical factors that existed in this reservoir. Do you anticipate very much of a pressure reduction while we are producing at only the normal allowable rate?

A That we would get a large pressure reduction?

Q Yes.

A I don't think it would be as large as we would like to have. It will not be too large.

MR. BUELL: Thank you. That's all. May I offer Exhibits 1 through 8 inclusive, please?

MR. PORTER: Without objection they will be admitted. The witness may be excused.

(Witness excused.)

MR. WEBB: May I be permitted to ask what we're about to do now?

MR. EASLEY: It is stipulated that the figures that are contained on this paper, which we will mark as Exhibit "A" to this hearing; we move that it be introduced in evidence.

If the Commission please, we would like to submit for the record letters from Jake L. Hamon and Colorado Oil and Gas Corporation supporting the position of Applicants, and I believe the Commission received a telegram from the McAllister Fuel Company, if there is no objection.

MR. PORTER: Is there objection to the admission of these letters?

MR. BUELL: Not from us.

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3-6691 5-9546

MR. KELLAHIN: I have no objection to the letters being submitted to the Commission, but we would object to their being treated as evidence.

MR. EASLEY: We offer them under those conditions.

MR. BUELL: I assume they are statements of position?

MR. PORTER: That is correct.

MR. KELLAHIN: If they are mere statement of position, we have no objection.

MR. BUELL: They do contain evidence, which I am sure the Commission will not consider, since they are unsupported by sworn testimony or exhibits in any form. There is evidence in the letters. As far as statement of position is concerned, we have no objection.

MR. EASLEY: We offer those as statement of position only and do not offer them as evidence in the case.

MR. PAYNE: Do you gentlemen have any objection to stipulating for a dismissal at this time?

MR. EASLEY: We are not prepared to stipulate.

MR. BUELL: I might move that the Commission dismiss because in my opinion, certainly, all the probative evidence is to the effect that waste will not result.

MR. WEBB: I would like to concur in that motion and state to the Commission that we have approximately thirty exhibits which we believe will support the testimony offered by Pan American and will show the same thing that they have offered.

MR. KELLAHIN: We would like to concur in the motion to

dismiss, and we have about thirty minutes' testimony and two exhibits.

MR. PORTER: Do you have any objection to the motion for dismissal?

MR. EASLEY: Surely, we'll have to object to the motion for dismissal.

MR. PORTER: The motion is sustained and the case will be dismissed.

The hearing is adjourned.

* * * * *

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this 11th day of April, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1959.

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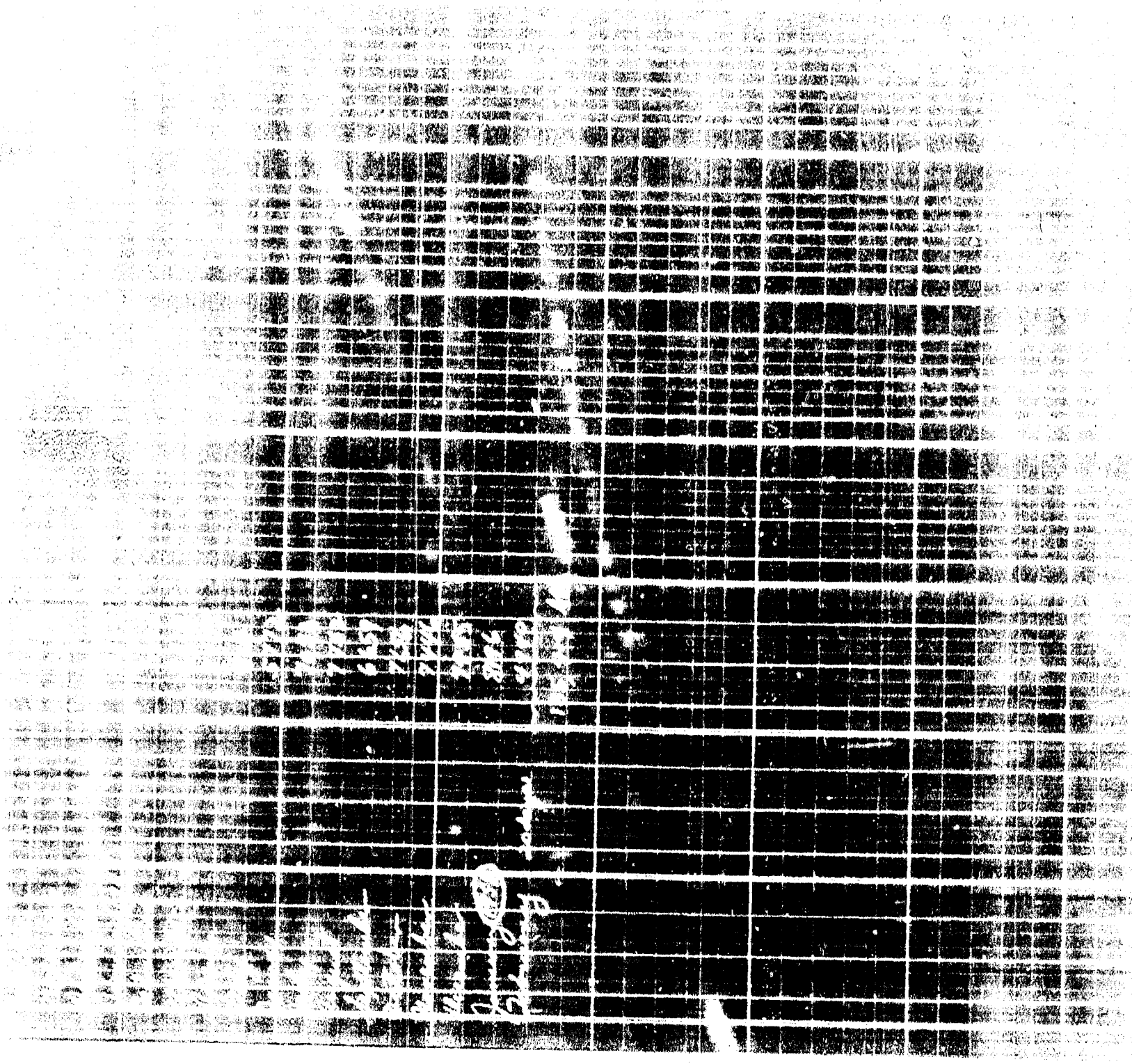
RALPH LOWE

WELL TEST RECORD

3-17-58

Well	Bbls. Water	Bbls. Oil	% Water
State "A"	185	200	48
Markham-State	140	230	38
Shell-Browning	200	385	34
#2 Aztec-Adamson	70	275	20

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No._____
CASE _____



[illegible]			
[illegible]			
[illegible]-State	1		
[illegible]	4		
[illegible]-Baltgn.	1	300	400
[illegible]-State	1	160	240
[illegible]-Wash.	1	300	340
Wyo.-Alcorn	1	360	400
Kendrick	1	300	355
State A	1	225	265

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FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field Wildcat County Lea State New Mexico

Test Date 3/29/56 Time 4:00 P.M. Status of Well Static

Top of Pay 11,990 Total Depth 12,135 Producing Formation Devonian

Tubing 2" Depth 12,130 B.H.C. Packer Pressure Datum 11,990

Casing Depth Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		800			Casing Press.
	6000		1940	.323	Tubing Press.
6000		2760			Top of Fluid
	2000		640	.320	Top of Water
8000		3380			Bre.-Shut in Flowing
	2000		640	.320	Temp. @
10,000		4040			Elev.D.F.
	1000		330	.330	Last Test Date
11,000		4370			Prod. Last Test
	1000		330	.330	B. H. P. Change
12,000		4700			Loss/Day
	24		8	.330	Choke Size
12,024		4708			Oil Bbls./Day
(-4150)					Water Bbls./Day
					Total Bbls./Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	L. Eschberger	Calibration No. 3	Calculated By L. Eschberger

Calculations and Remarks:

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INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 2:00 P. M. Status of Well Static

Top of Pay 11,985 Total Depth 12,080 Producing Formation Devonian

Tubing 2" EUE Depth 12,088 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,985 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		360		
	7900		2580	.327
7900		2960		
	9900		653	.327
9900		3613		
	2000		655	.327
11,900		4268		
	121		40	.327
Datum: 12,021		4308		

Casing Press.	Packer
Tubing Press.	180
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In 26	Flowing
Temp. @ 11,900'	175°F
Elev.-D.F.	Gr. 3871
Last Test Date	8-1-57
Press. Last Test	4271
B. H. P. Change	-142
Loss/Day	1.38
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
Instrument Amerada	Number 11266	Bbls/pound loss
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

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LAMAR ESCHENBERGER
REGISTERED PROFESSIONAL [illegible]
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adkerson Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-2-57 Time 2:00 P. M. Status of Well Static

Top of Pay 11,984 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 12,006 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,984 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		385		
	7900		2588	.387
7900		2973		
	2000		695	.347
9900		3668		
	2000		656	.328
11,900		4284		
	119		38	.328
Datum 12,019		4322		

Casing Press.
Tubing Press.
Top of Fluid
Top of Water
Hrs.-Shut In
Temp. @
Elev. D.F.
Last Test Date
Press. Last Test
B. H. P. Change
Loss/Day
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

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LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-2-57 Time 3:15 P. M. Status of Well Static

Top of Pay 11,998 Total Depth 12,016 Producing Formation Devonian

Tubing 2" EUE Depth 12,012 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,998 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press. Packer
Surface		402			Tubing Press. 402
	7900		2581	.327	Top of Fluid Surface
7900		2986			Top of Water None
	2000		654	.327	Hrs. Shut In 25½ Flowing
9909		3640			Temp. @ 11,900' 175°
	2000		656	.328	Elev.-D.F. Gr.
11,900		4296			Last Test Date 8-1-57
	119		39	.328	Press. Last Test 4478
Datum 12,019		4335			B. H. P. Change -158
					Loss/Day 1.33
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

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FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 4

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 3:15 P. M. Status of Well Static

Top of Pay 11,255 Total Depth 12,005 Producing Formation Devonian

Tubing 2" EUE Depth 12,003 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,955 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press. Pkr.
Surface		183			Tubing Press. 363
	7900		2581	.327	Top of Fluid Surface
7900		2964			Top of Water None
	2000		654	.327	Hrs. Shut In 27½ Flowing
9900		3618			Temp. @ 11,900' 178°F
	2000		654	.327	Elev. D.F. Gr. 3672
11,900		4272			Last Test Date 8-1-57
	122		40	.327	Press. Last Test 4479
Datum 12,022		4312			B. H. P. Change -160
					Loss/Day 1.31
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	A. P. Farr	Calibration No.	11	Calculated By	A. P. Farr

Calculations and Remarks:

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LAMAR ESCHBERGER
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FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aztec-Adamson Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-8-57 Time 4:45 P. M. Status of Well Static

Top of Pay 12,000 Total Depth 12,108 Producing Formation Devonian

Tubing 2" EUE Depth 12,029 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,108 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		416		
	7900		2577	.326
7900		2993		
	2000		663	.326
9900		3656		
	2000		651	.326
11,900		4299		
	117		38	.326
Datum 12,017		4337		

Casing Press.	Packer
Tubing Press.	416
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	24-36 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3867
Last Test Date	7-31-57
Press. Last Test	4476
B. H. P. Change	-139
Loss/Day	1.32
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

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REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aztec-Adamson Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 4:30 P. M. Status of Well Static

Top of Pay 12,002 Total Depth 12,040 Producing Formation Devonian

Tubing 2" EUE Depth 12,025 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,040 Perf. Liner: Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		421		
	7900		2579	.326
7900		3000		
	2000		654	.327
9900		3654		
	2000		654	.327
11,900		4308		
	115		38	.327
Datum: 12,015		4346		

Casing Press.	Packer
Tubing Press.	421
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In 24½	Flowing
Temp. @ 11,900'	175°F
Elev.-D.F.	Gr. 3845
Last Test Date	7-31-57
Press. Last Test	4483
B. H. P. Change	-137
Loss/Day	1.11
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	A. P. Fapp	Calibration No.	11	Calculated By	A. P. Fapp

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1873 - P. O. BOX 955
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Continental-Millage Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 8:15 A. M. Status of Well Static

Top of Pay 12,023 Total Depth 12,041 Producing Formation Devonian

Tubing 2" EUE Depth 12,020 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,041 Perf Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		410		
	7900		2580	.326
7900		2990		
	2000		652	.326
9900		3642		
	2000		604	.327
11,900		4296		
	122		40	.327
Datum: 12,022		4336		

Casing Press.	Pkr
Tubing Press.	410
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In	41 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3872
Last Test Date	8-24-57
Press. Last Test	4436
B. H. P. Change	-357
Loss/Day	1.83
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1872 - P. O. BOX 988
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
X PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR EBOHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Kendrick Well No. 1

Field North Shoebar Devonian County Lea State New Mexico

Test Date 12-1-57 Time 2:45 A. M. Status of Well Static

Top of Pay 12,003 Total Depth 12,030 Producing Formation Devonian

Tubing 2" EUE Depth 12,008 R.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,030 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	Pressure	Gradient Lbs./Ft.
Surface		400		
	7900		2579	.326
7900		2979		
	2000		654	.327
9900		3633		
	2000		654	.327
11,900		4287		
	116		38	.327
Datum 12,015		4325		

Casing Press.	Packer
Tubing Press.	400
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	42½ Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3966
Last Test Date	8-1-57
Press. Last Test	4482
B. H. P. Change	-157
Loss/Day	1.30
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 12266	Recovery Factor Bbls/pound loss
Run By A. P. Pate	Calibration No. 11	Calculated By A. P. Pate

Calculations and Remarks:

OIL CONSERVATION COMMISSION RECORDS PREPARED
FIELD WORK DATA
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 3-4691 P. O. BOX 952

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

P. PETROLEUM BLDG.
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawson-State Well No. 1

Field North Bladon (Devonian) County Lea State New Mexico

Test Date 12-2-57 Time 11:00 a.m. Status of Well Flowing

Top of Pay 11,956 Total Depth 12,017 Producing Formation Devonian

Casing 7" OD Depth 12,016 B.H.C. Packer Pressure Datum -8150

Tubing 2" Depth 12,034 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.		
					Casing Press.	Packer
Surface		359			Tubing Press.	359
	7990		2536	.327	Top of Fluid	Surface
7990		4965			Top of Water	None
	9002		665	.327	Bbls/Hour Last 24	Flowing
9902		7600			Temp. @ 11,900'	175°F
	9902		854	.328	Dev. @	Gr. 3875
11,90[illegible]		8236			Last Test Date	12-31-57
	125		41	.128	Press. Last Test	4436
Bottom 12,025		8297			B. H. P. Change	-139
					Loss/Day	1.12
					Choke Size	
					Oil Bbls/Day	
					Water Bbls/Day	
					Total Bbls/Day	
					Orifice & Line	
					Static & Differential	
					Gas Sp. Gr.	
					Cu. Ft./day	
					GOR	
					GFR	

PRODUCTIVE INDEX BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Test Date	Answer	Number	11265	Recovery Factor Bbls/pound loss	
Run By	A. P. Part	Calibrator No.	[illegible]	Calculated By	A. P. Part

Calculations and Remarks:

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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1873 - P. O. BOX 963
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR SCHLUMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 11:15 A. M. Status of Well Static

Top of Pay 12,010 Total Depth 12,070 Producing Formation Devonian

Tubing 2" EUE Depth 12,034 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,081 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		360		
	7900		2583	.327
7900		2943		
	2000		654	.327
9900		3597		
	2000		655	.327
11,900		4252		
	125		41	.327
Datum: 12,025		4293		

Casing Press.	Packer
Tubing Press.	360
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	24½ Flowing
Temp. @	11,900' 175°F
Elev. D.F.	Gr. 3875
Last Test Date	7-31-57
Press. Last Test	4435
B. H. P. Change	-142
Loss/Day	1.15
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By A. P. Parr	Calibration No. 11	Calculated By A. P. Parr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1978 - P. O. BOX 993

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawler-State Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-2-57 Time 12:30 P.M. Status of Well Static

Top of Pay 12,002 Total Depth 12,128 Producing Formation Devonian

Tubing 2" EUE Depth 12,033 B.H.C. Packer Pressure Datum -8150

Casing 7" 23# Depth 12,128 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press. Packer
Surface		364			Tubing Press. 364
	7900		2580	.327	Top of Fluid Surface
7900		2965			Top of Water None
	8000		60	.327	Bm. Shut In 24 hr. Survey
9900		3599			Temp. @ 11,900' 175°
	2000		654	.327	Elev. D.F. GL 3977
11,900		4253			Last Test Date 12-2-57
	127		42	.327	Press. Last Test 4295
Datum: 12,027		4295			B. H. P. Change -34
					Loss/Day 1536
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. PSIG

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	A. P. Farr	Calibration No.	11	Calculated By	A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
CALCULATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 3-1672 - P. O. BOX 969
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-1-57 Time 12:30 P. M. Status of Well Static

Top of Pay 11,996 Total Depth 12,030 Producing Formation Devonian

Tubing 2" EUE Depth 12,007 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,030 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		363		
	7900		2585	.327
7900		2948		
	2000		655	.327
9900		3603		
	2000		655	.327
11,900		4258		
	127		42	.327
Datum 12,027		4300		

Casing Press.	Packer
Tubing Press.	363
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In 25½	Flowing
Temp. @ 11,900	178°F
Elev.-D.F.	Gr. 3877
Last Test Date	7-31-57
Prods. Last Test	1488
B. H. P. Change	-38
Loss/Day	1.5%
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
FARE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1978 - P. O. BOX 953

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Oberholtzer Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 11-30-57 Time 2:00 P. M. Status of Well Static

Top of Pay 11,974 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 12,002 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,010 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press. Shutin
Surface		431			Tubing Press. 431
	7900		2574	.326	Top of Fluid Surface
7900		3005			Top of Water None
	2000		652	.326	Hrs. Shut In 24 Flowing
9900		3657			Temp. @ 11,900' 175°F
	2000		653	.326	Elev. D.F. Gr. 3868
11,900		4310			Last Test Date March 1957
	112		37	.326	Press. Last Test
Datum: 12,012		4347			B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
CASING-HEAD PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

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9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR SCHLUMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease State "A" Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-2-57 Time 8:00 A. M. Status of Well Static

Top of Pay 11,978 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 12,000 B.H.C. _____ Packer _____ Pressure Datum -8150

Casing 5½" Depth 12,010 Perf _____ Liner _____ Packer _____

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press. Static
Surface		347			Tubing Press. 347
	7900		1579	.326	Top of Fluid Surface
7900		2926			Top of Water None
	2000		654	.327	Hrs. Shut In 24 Flowing
9900		3580			Temp. @ 11,900' 175°F
	2000		655	.327	Elev. D.F. Gr. 3886
11,900		4235			Last Test Date 7-31-57
	136		44	.387	Press. Last Test 4279
Datum 11,036		4279			B. H. P. Change -356
					Loss/Day 1188
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound lobs
Instrument Amerada	Number 11266	
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

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TABLE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING
BOTTOM HOLE PRESSURE
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1572 P. O. BOX 983

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBONBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease State "A" Well No. 1

Field North Gladiola Devonian County Lea State New Mex

Test Date 12-2-57 Time 9:30 A. M. Status of Well Static

Top of Pay 12,972 Total Depth 12,022 Producing Formation Devonian

Tubing 2" EUE Depth 12,018 B.H.C. Packer Pressure Datum 4.50

Casing 5½" Depth 12,002 Perf Liner Packer 1

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		379		
	7900		2579	.326
7900		2958		
	8000		654	.327
9900		3612		
	2000		656	.328
11,900		4268		
	138		61	.440
Datum 12,018		4329		

Casing Press.	Packer
Tubing Press.	379
Top of Fluid	Surface
Top of Water	11,900' Interface
Hrs. Shut In	25½ Flowing
Temp. @	11,900' 187
Elev.-D.F.	Gr.
Last Test Date	First Test
Press. Last Test	
B. H. P. Change	
Loss/Day	
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	A. P. Farr	Calibration No.	11	Calculated By	A. P. Farr

Calculations and Remarks:

OILFIELD COMMISSION REPORTS PREPARED
CASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1578 - P. O. BOX 955

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

3 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBCHSERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 1

Field North Oladiola Devonian County Lea State New Mexico

Test Date 11-30-57 Time 6:00 P. M. Status of Well Static

Top of Pay 11,990 Total Depth 12,230 Producing Formation Devonian

Tubing 2" EUE Depth 12,135 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press. Packer
Surface		362			Tubing Press. 362
	7200		2554	.325	Top of Fluid Surface
7900		2926			Top of Water None
	2000		650	.325	Hrs. Shut In 27 Flowing
9900		3576			Temp. @ 11,900' 175°F
	2000		651	.325	Elev.-D.F. Gr. [illegible]
11,900		4227			Last Test Date 7-31-57
	324		40	.325	Press. Last Test [illegible]
Last Meas. P.B.D.		4267			B. H. P. Change -1[illegible]
					Loss/Day 1.[illegible]
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By A. F. Fait	Calibration No. 11	Calculated By A. F. Fait

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 5-1873 - P. O. BOX 983
9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EBOMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field North Gladiola Dev. County Lea State New Mexico

Test Date 12-3-57 Time 12:15 P. M. Status of Well Static

Top of Pay 11,995 Total Depth 12,116 Producing Formation Devonian

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		362		
	7900		2566	.325
7900		2928		
	2000		650	.325
9900		3578		
	2000		651	.325
11,900		4229		
	124		40	.325
Datum 12,024		4269		

Casing Press.	Packer
Tubing Press.	362
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	28½ Flowing
Temp. @	11,900' 175°F
Elev. D.F.	Gr. 3854
Last Test Date	7-31-57
Press. Last Test	4269
B. H. P. Change	-39
Loss/Day	1.3
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1873 - P. O. BOX 988
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ERDBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 3

Field North Gladiola Devonian County Lea State New Mexico

Test Date 11-30-57 Time 3:30 P. M. Status of Well Static

Top of Pay 11,989 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 11,999 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,010 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		389			Casing Press. Packer
	1900		2570	.325	Tubing Press. 389
1900		2959			Top of Fluid Surface
	2000		651	.326	Top of Water None
9905		3610			Hrs.-Shut In 24 Flowing
	2000		652	.326	Temp. @ 11,900' 172°F
11,200		4262			Elev.-D.F. Gr. 3886
	126		41	.326	Last Test Date Final Test
Bottom 12,026		4303			Press. Last Test
					B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production | Present Cumulative Production | Production Between Tests

Instrument Amerada | Number 11256 | Recovery Factor Bbls/pound loss

Run By A. P. Farr | Calibration No. 11 | Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 3-1573 - P. O. BOX 968
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 4

Field North Gladiola Devonian County Lea State New Mexico

Test Date 11-30-57 Time 5:00 P. M. Status of Well Static

Top of Pay 11,931 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 11,986 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,010 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		385		
	7900		2570	.325
7900		2955		
	2000		650	.325
9900		3605		
	2000		651	.325
11,900		4256		
	121		39	.325
Datum 12,021		4295		

Casing Press.	Packer
Tubing Press.	385
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	26 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3871
Last Test Date	7-31-57
Press. Last Test	4460
B. H. P. Change	-165
Loss/Day	1.37
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	A. P. Farr	Calibration No.	11	Calculated By	A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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TEMPERATURE SURVEYS

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TELEPHONE 3-1973 - P. O. BOX 983
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EBENBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace "31" Well No. 1

Field North Vladiola Devonian County Lea State New Mexico

Test Date 12-3-57 Time 8:15 A. M. Status of Well Static

Top of Pay 11,939 Total Depth 11,970 Producing Formation Devonian

Tubing 2" EUE Depth 11,964 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,939 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press. Packer
Surface		339			Tubing Press. 119
	7800		2571	.326	Top of Fluid Surface
7900		2912			Top of Water None
	8000		651	.326	Hrs.-Shut In 24 Flowing
9900		3565			Temp. @ 11,939' 175°F
	2000		651	.326	Elev.-D.F. Gr. 3880
11,900		4218			Last Test Date 8-1-57
	130		42	.326	Prese. Last Test [illegible]
Datum 12,030		4260			B. H. P. Change [illegible]
					Loss/Day 1,58
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production | Present Cumulative Production | Production Between Tests

Instrument Amerada Number 11266 Recovery Factor Bbls/pound loss

Run By A. P. Farr Calibration No. 11 Calculated By A. P. Farr

Calculations and Remarks:

FAT STOCK COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 2-1878 - P. O. BOX 968

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace "21" Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 12-3-57 Time 9:30 A. M. Status of Well Static

Top of Pay 11,950 Total Depth 11,995 Producing Formation Devonian

Tubing 2" EUE Depth 11,970 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,995 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press. Packer
Surface		340			Tubing Press. 340
	7900		2573	.326	Top of Fluid Surface
7900		2913			Top of Water None
	2000		652	.326	Hrs. Shut In 24½ Flowing
9900		3565			Temp. @ 11,900' 175°
	2000		653	.326	Elev. D.F. Gr. 3887
11,900		4218			Last Test Date Plant Start
	132		43	.326	Press. Last Test
Perfs 12,032		4261			B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
Instrument Amerada	Number 11266	Bbls/pbund loss
Run By A. P. Farr	Calibration No. 11	Calculated By A. P. Farr

Calculations and Remarks:

ABANDONED CONDITION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
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TELEPHONE 2-1972 · P. O. BOX 985
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR [illegible]
REGISTERED PROFESSIONAL [illegible]
FIELD [illegible]

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Warren-State Well No. 1

Field North Cardiola Devonian County Lea State New Mexico

Test Date 12-3-57 Time 11:00 A.M. Status of Well Static

Top of Pay 11,936 Total Depth 11,995 Producing Formation Devonian

Tubing 2" EUE Depth 11,959 B.H.C. Packer Pressure Datum -9760

Casing 5½" Depth 11,936 Perf Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. in.	★ Pressure	Gradient Lbs./Ft.
Surface		341		
	7900		2570	.325
7900		2911		
	10000		652	.326
9900		1563		
	10000		653	.326
11,900		4216		
	127		41	.326
Datum 12,027		4257		

Casing Press. [illegible]
Tubing Press. [illegible]
Top of Fluid [illegible]
Top of Water [illegible]
Hrs.-Shut in 27
Tapp. @ 11,[illegible]
Elev.D.F. [illegible]
Last Test Date [illegible]
Press. Last Test [illegible]
B. H. P. Change [illegible]
Loss/Day [illegible]
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS/DAY/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss

Instrument Amerada Number 11266

Run By L. P. Pitt Calibration No. 11 Calculated By A. P. [illegible]

Calculations and Remarks:

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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 2-1978 - P. O. BOX 952
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola Dev. County Lea State New Mexico

Test Date 6-1-57 Time 11:30 A. M. Status of Well Static

Top of Pay 11,935 Total Depth 12,020 Producing Formation Devonian

Tubing 2" EUE Depth 12,038 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,995 Perf Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		562			Tubing Press. 562
	7900		2570	.325	Top of Fluid Surface
7900		3132			Top of Water None
	2000		650	.325	Hrs.-Shut In 48 Flowing
9900		3782			Temp. @ 11,900' 178°
	2022		650	.325	Elev.-D.F. Gr. 3971
11,922		4432			Last Test Date 6-2-57
	121		39	.325	Press. Last Test 4426
Datum 12,021		4471			B. H. P. Change -45
					Loss/Day 0.45
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss

Instrument Amerada Number 11256

Run By L. Eschberger Calibration No. 7 Calculated By A. P. Pate

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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APPLICATIONS

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GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 2-1675 - P. O. BOX 982
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
A PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola Dev. County Lea State New Mexico

Test Date 8-1-57 Time 12:30 P. M. Status of Well Static

Top of Pay 11,994 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 12,006 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,994 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	*
					Casing Press.
Surface		558			Tubing Press. 558
	7900		2573	.325	Top of Fluid Surface
7900		3131			Top of Water None
	8000		650	.325	Hrs.-Shut In 29 Flowing
8000		3781			Temp. @ 11,900' 175°F
	2000		650	.325	Elev.-D.F. Gr. 3868
11,900		4431			Last Test Date 6-2-57
	119		39	.325	Press. Last Test 4465
Datum 11,919		4472			B. H. P. Change - 15
					Loss/Day 0.85
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By L. Eschberger	Calibration No. 7	Calculated By A. P. Barr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 3-1878 - P. O. BOX 953

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 3

Field North Gladiola Devonian County Lea State New Mexico

Test Date 8-1-57 Time 1:30 P. M. Status of Well Static

Top of Pay 11,938 Total Depth 12,016 Producing Formation Devonian

Tubing 2" EUE Depth 12,012 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,968 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		571		
	7900		8563	.324
7900		3134		
	2020		650	.325
9900		3784		
	2000		651	.325
11,900		4435		
	112		39	.325
Datum 12,013		4474		

Casing Press.	
Tubing Press.	571
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In	30 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3660
Last Test Date	6-8-57
Press. Last Test	4565
B. H. P. Change	- 92
Loss/Day	0.5%
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
		Bbls/pound loss

Instrument Amerada Number 11266

Run By L. Eschberger Calibration No. 7 Calculated By A. P. Bell

Calculations and Remarks:

COMMISSION REPORTS PREPARED
CASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 3-1572 - P. O. BOX 983

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

E. PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 4

Field North Shoebar Devonian County Lea State New Mexico

Test Date 8-1-57 Time 12:30 A. M. Status of Well Static

Top of Pay 11,955 Total Depth 12,005 Producing Formation Devonian

Tubing 2" EUE Depth 12,003 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,955 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		561			Tubing Press. 561
	7900		2570	.325	Top of Fluid Surface
9800		3131			Top of Water None
	8900		652	.325	Hrs.-Shut In 27 Flowing
9900		3781			Temp. @ 11,900' 175°F
	9900		651	.325	Elev.-D.F. Gr. 3872
11,900		4432			Last Test Date 6-2-57
	122		46	.325	Press. Last Test 4490
Datum 11,778		4472			B. H. P. Change +18
					Loss/Day 0.30
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266 Recovery Factor Bbls/pound loss

Ran By L. Eschberger Calibration No. 7 Calculated By A. P. Patt

Calculations and Remarks.

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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 2-1572 - P. O. BOX 993
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aston-Adamson Well No. 1

Field North Paddock Devonian County Lea State New Mexico

Test Date 7-31-57 Time 7:30 A. M. Status of Well Static

Top of Pay 11,909 Total Depth 12,208 Producing Formation Devonian

Tubing 2" EUE Depth 12,219 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,208 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		561			Tubing Press. 561
	7500		2572	.325	Top of Fluid Surface
		3136			Top of Water None
	8000		651	.325	Hrs.-Shut In 48 Flowing
8800		3787			Temp. @ 11,900' 175°F
	2000		651	.325	Elev.-D.F. Gr. 3867
11,900		4438			Last Test Date 6-3-57
	307		38	.325	Press. Last Test 4516
Datum	12,017	4476			B. H. P. Change -40
					Loss/Day 0.69
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 7	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 3-1979 - P. O. BOX 969
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aztec-Adamson Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 7-31-57 Time 5:30 A. M. Status of Well Static

Top of Pay 12,002 Total Depth 12,040 Producing Formation Devonian

Tubing 2" EUE Depth 12,025 B.H.C. Packer Pressure Datum -8250

Casing 5½" Depth 12,040 Perf Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		572			Tubing Press. 572
	7900		2572	.385	Top of Fluid Surface
7900		3114			Top of Water None
	2000		650	.325	Hrs.-Shut In 49 Flowing
9900		3764			Temp. @ 11,900' 175°
	2000		652	.326	Elev.-D.F. Gr. 3865
11,900		4416			Last Test Date 6-3-57
	115		37	.326	Press. Last Test 4517
Datum 12,015		4483			B. H. P. Change - 34
					Loss/Day 0.59
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP ★

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss

Instrument Amerada Number 11766

Run By L. Eschberger Calibration No. 7 Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

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TELEPHONE 2-1972 - P. O. BOX 962

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Continental-Millage Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 8-1-57 Time 7:30 A. M. Status of Well Static

Top of Pay 12,023 Total Depth 12,041 Producing Formation Devonian

Tubing 2" EUE Depth 12,020 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,041 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		575			Tubing Press. 575
	7900		2567	.325	Top of Fluid Surface
7900		3142			Top of Water None
	2000		650	.325	Hrs. Shut In 43 Flowing 0
9900		3792			Temp. @ 11,900' 175°F
	2000		651	.325	Elev.-D.F. Gr. 3872
11,900		4443			Last Test Date 6-3-57
	122		40	.325	Press. Last Test 4507
Datum 12,022		4483			B. H. P. Change -76
					Loss/Day 0.43
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./Day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	L. Eschberger	Calibration No. 7	Calculated By A. P. Pratt

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 3-1573 - P. O. BOX 953
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Kendrick Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 6-1-57 Time 2:30 P. M. Status of Well Static

Top of Pay 12,003 Total Depth 12,030 Producing Formation Devonian

Tubing 2" EUE Depth 12,008 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,030 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		575		
	7900		2566	.325
7900		3241		
	9000		651	.325
9000		3792		
	9000		652	.326
12,003		4444		
	116		38	
PBTD 12,016		4482		

Casing Press.	
Tubing Press.	575
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In	31 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3866
Last Test Date	First Test
Press. Last Test	
B. H. P. Change	
Loss/Day	
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By	L. Eschberger	Calibration No. 7	Calculated By A. P. Parr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
[illegible]

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 8 1671 — P. O. BOX 968
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR EICHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Love Lease Lawton-State Well No. 1

Field North Shidisli Devonian County Lea State New Mexico

Test Date 7-21-57 Time 2:00 P. M. Status of Well Static

Top of Pay 11,956 Total Depth 12,017 Producing Formation Devonian

Tubing 2" EUE Depth 12,015 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,034 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		528		
	7900		2566	.325
8900		3234		
	2000		659	.325
9930		3744		
	2000		651	.325
10,902		4395		
	123		41	.325
Datum	12,025	4436		

Casing Press.	
Tubing Press.	528
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In	30 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3875
Last Test Date	6-2-57
Press. Last Test	4464
B. H. P. Change	- 28
Loss/Day	0.47
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eichberger	Calibration No. 7	Calculated By A. P. Part

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1674 P. O. BOX 959

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBONBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Leare Lawton-State Well No. 2

Field North Nichols Devonian County Lea State New Mexico

Test Date 7-31-57 Time 11:30 A. M. Status of Well Staked

Top of Pay 12,010 Total Depth 12,079 Producing Formation Devonian

Tubing 2" EUE Depth 12,034 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,081 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		521			Casing Press.
	7900		2570	.385	Tubing Press. 521
7900		3091			Top of Fluid Surface
	2000		651	.326	Top of Water None
9909		3742			Hrs. Shut In 96 Flowing
	2000		652	.326	Temp. @ 11,900' 175°F
11,900		4394			Elev.-D.F. Gr. 3815
	125		41	.326	Last Test Date 6-28-57
Datum 12,025		4435			Press. Last Test 1419
					B. H. P. Change -98
					Loss/Day 0.33
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Recovery Factor Bbls/pound loss

Instrument Amerada Number 11266

Run By L. Ebenberger Calibration No. 7 Calculated By A. P. Ray

Calculations and Remarks:

OIL FIELD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1972 - P. O. BOX 988
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lurton-State Well No. 3

Field North Gladiola Devonian County Lea State New Mexico

Test Date 7-31-57 Time 12:30 P. M. Status of Well Static

Top of Pay 12,002 Total Depth 12,128 Producing Formation Devonian

Tubing 2" EUE Depth 12,033 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,128 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		532			Tubing Press. 330
	7900		2563	.324	Top of Fluid Surface
7900		3095			Top of Water None
	2000		650	.325	Hrs. Shut In 29 Flowing
9900		3745			Temp. @ 11,900' 175°F
	2000		651	.325	Elev. D.F. Gr. 3677
11,900		4396			Last Test Date 6-8-57
	127		141	.385	Press. Last Test 4467
Datum 12,027		4437			B. H. P. Change - 30
					Loss/Day 0.53
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests
Instrument	Amerada	Number	13766	Recovery Factor Bbls/pound loss
Run By	L. Eschberger	Calibration No.	7	Calculated By A. P. Ray

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 2-1872 - P. O. BOX 993
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 1

Field North Shoebar Permian County Lea State New Mexico

Test Date 7-31-57 Time 10:30 A. M. Status of Well Static

Top of Pay 11,926 Total Depth 12,030 Producing Formation Permian

Tubing 2" EUE Depth 12,027 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,030 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		531		
7900			2565	.325
8000		3096		
8200			650	.325
8400		3745		
8600			651	.325
8,800		4397		
127			41	.325
Datum 11,927		4438		

Casing Press.	
Tubing Press.	531
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	27 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3877
Last Test Date	6-2-57
Press. Last Test	4468
B. H. P. Change	-30
Loss/Day	0.51
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 1126	Recovery Factor Bbls/pound loss
Run By J. W. Whitaker	Calibration No. 7	Calculated By A. P. Farr

Conditions and Remarks:

FIELD RRAC COMMISSION REPORTS PREPARED
CASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1678 - P. O. BOX 993
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ECHSBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease State "A" Well No. 1

Field North Gladiola Devonian County Lea State New Mexico

Test Date 1-31-57 Time 5:30 A. M. Status of Well Static

Top of Pay 11,974 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 12,000 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,010 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		516		
	7900		2575	.326
7900		3091		
	2000		651	.326
9900		3742		
	2000		652	.326
11,900		4394		
	136		44	.326
Datum 12,036		4438		

Casing Press.	
Tubing Press.	516
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	50 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3886
Last Test Date	6-2-57
Press. Last Test	4442
B. H. P. Change	- 23
Loss/Day	8.38
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
Instrument Amerada	Number 11266	Bbls/pound loss
Run By L. Zachberger	Calibration No. 7	Calculated By A. P. Patt

Calculations and Remarks:

RECORDED SUBMISSION REPORTS PREPARED
LEASE SCHEDULES
CONSULTING

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1872 — P. O. BOX 988
8 PETROLEUM CITY BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EICHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease [illegible] Well No. 1

Field North Chaparral Devonian County Lea State New Mexico

Test Date 7-31-57 Time 3:00 P. M. Status of Well Static

Top of Pay 11,956 Total Depth 12,230 Producing Formation Devonian

Tubing 2" EUE Depth 11,135 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,225 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		542			Casing Press.
	7920		2565	.324	Tubing Press. 542
7920		3107			Top of Fluid Surface
	9900		650	.325	Top of Water None
9900		3753			Hrs. Shut In 27 Flowing
	10890		650	.325	Temp. @ 11,900' 175°F
10,890		4403			Elev.-D.F. Gr. 3678
	12h		h0	.325	Last Test Date 6-3-57
Datum 12,024		4443			Press. Last Test [illegible]
					B. H. P. Change [illegible]
					Loss/Day [illegible]
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	L. Eichberger	Calibration No.	7	Calculated By	A. P. Barr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1975 - P. O. BOX 983
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EBERSBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field North Gladiola Devonian County Lea State New Mexico

Test Date 7-31-57 Time 4:00 P. M. Status of Well Static

Top of Pay 11,295 Total Depth 12,116 Producing Formation Devonian

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		543		
	7500		2550	.324
7900		3108		
	8000		660	.325
9900		3752		
	2000		650	.325
11,900		4402		
	124		40	.325
Datum 12,024		4442		

Casing Press.	
Tubing Press.	543
Top of Fluid	Surface
Top of Water	None
Fns.-Shot in 28	Flowing
Temp. @ 11,900'	174°F
Elev.-D.F.	Gr. 3676
Last Test Date	6-3-57
Press. Last Test	4402
B. H. P. Change	- 38
Loss/Day	0.31
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss

Instrument Amerada Number 11265

Run By L. Ebersberger Calibration No. 7 Calculated By A. P. Ratz

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 2-1978 - P. O. BOX 958
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR EBENBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Love Lease Wallace Well No. 4

Field North Gladiola Devonian County Lea State New Mexico

Test Date 7-31-57 Time 5:00 P. M. Status of Well Static

Top of Pay 11,981 Total Depth 12,010 Producing Formation Devonian

Tubing 2" EUE Depth 11,956 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,010 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		559			Tubing Press. 559
	7900		2584	.325	Top of Fluid Surface
7900		3123			Top of Water None
	2000		650	.325	Hrs. Shut In 29 Flowing
9900		3773			Temp. @ 11,900' 175°F
	2000		650	.325	Elev.-D.F. Gr. 3871
11,900		4423			Last Test Date First Test
	121		39	.325	Press. Last Test
Devonian 12,021		4462			B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	L. Ebenberger	Calibration No.	7	Calculated By	A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1875 - P. O. BOX 983
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace "31" Well No. 1

Field North Oficila Permian County Lea State New Mexico

Test Date 8-1-57 Time 8:30 A. M. Status of Well Static

Top of Pay 11,939 Total Depth 11,970 Producing Formation Permian

Tubing 2" EUE Depth 11,944 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,937 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		529			Tubing Press. 529
	7900		2573	.325	Top of Fluid Surface
7500		3102			Top of Water None
	8000		652	.326	Hrs.-Shut In 26 Flowing
8000		3754			Temp. @ 11,900' 175°F
	2000		652	.326	Elev.-D.F. Gr. 3680
10,000		4406			Last Test Date 6-3-57
	130		42	.324	Press. Last Test 4408
Datum 10,830		4448			B. H. P. Change + 42
					Loss/Day 0.19
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266 Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 7 Calculated By A. P. Farr

Calculations and Remarks:

SPECIAL COMMISSION REPORTS PREPARED
LEASE MAPS AVAILABLE
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 2-1872 - P. O. BOX 988
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EGGENBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Warren-State Well No. 1

Field North Gladdle Devonian County Lea State New Mexico

Test Date 8-2-57 Time 9:30 A. M. Status of Well Static

Top of Pay 11,936 Total Depth 11,995 Producing Formation Devonian

Tubing 2" EUE Depth 11,959 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,936 Perf Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. in.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		545			Tubing Press. 545
	7900		2568	.325	Top of Fluid Surface
7900		3113			Top of Water None
	2000		650	.325	Hrs.-Shut In 27 Flowing
9900		3763			Temp. @ 11,900' 175°
	2000		651	.325	Elev.-D.F. Gr. 3977
11,900		4414			Last Test Date 6-30-57
	127		41	.325	Press. Last Test 4455
Datum 12,027		4455			B. H. P. Change 0
					Loss/Day 0
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
Instrument Amerada	Number 11266	Bbls/pound loss
Run By L. Eggenberger	Calibration No. 7	Calculated By A. P. Barr

Calculations and Remarks:

CORE-PET LABORATORIES SERVICE
MIDLAND, TEXAS
DAY OR NIGHT
TELEPHONE 22 SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE
TELEPHONE 21670 P. O. BOX 983
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Sinclair Lease Acanson Well No. 1

Field North Shoebole County Lea State New Mexico

Test Date 6-4-52 Time 12:00 Noon Status of Well Static

Top of Pay 11,875 Total Depth 12,020 Producing Formation

Tubing 2" EUE Depth 12,038 BHC Packer Pressure Datum 8150

Casing 5½" Depth 12,035 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		530			Casing Press.
7350		3133	2555	.323	Tubing Press. 598
Top					Top of Fluid Surface
8150	2000	3500	647	.324	Top of Water None
8150	2000		647	.324	Hrs Shut In 29 Flowing
Datum		3447			Temp. @ 11,900' 175°F
12,000	121	4086	39	.324	Elev. D.F. Gr. 3871
Bottom	12,063				Last Test Date 4-10-52
					Press. Last Test 4520
					B. H. P. Change - 3
					Loss/Day 0.6
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GLR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266 Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 6 Calculated By A. P. Farr

Explanations and Remarks:

COMPLETE ENGINEERING SERVICE
DRILL STEM TESTS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 2-1572 P. O. BOX 953
MIDLAND, TEXAS

LAMAR FOCHGERBER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Alexander Well No. 2

Field North Gladiola County Lea State New Mexico

Test Date 4-2-57 Time 1300 P. M. Status of Well Static

Top of Pay Total Depth Producing Formation

Tubing 2" EUE Depth R.H.C. Packer Pressure Datum -8150

Casing 5½" Depth Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		598		
	7920		2555	.323
7950		3253		
	8000		646	.323
8050		3799		
	8100		647	.324
8150		4446		
	11,119		39	.324
Datum 11,319		4485		

Casing Press.	
Tubing Press.	598
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	30 Flowing
Temp @	11,900' 175°F
Elev. DF	Gr. 3869
Last Test Date	4-10-57
Press. Last Test	4527
B. H. P. Change	- 42
Loss/Day	0.79
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11264	Recovery Factor Bbls/pound loss
Run By	L. Fechtenberger	Calibration No. 6	Calculated By A. P. Fett

Other Items and Remarks

...ABILITY COMMISSION AND NEW MEXICO
...ERVATION
...MISSION

COMPLETE ENGINEERING SERVICE
...ATION WELL PRESSURES
...AND GAS RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1872 - P. O. BOX 958

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

P. PETROLEUM ... BUILDING
MIDLAND, TEXAS

LAMAR FSCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 2

Field North Blackdom County Lea State New Mexico

Test Date 6-2-57 Time 2:00 P. M. Status of Well Static

Total Depth 11,998 Total Depth 12,016 Producing Formation

Tubing 2" EUE Depth 12,012 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,988 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		610		
	1900		2560	.324
7300		3172		
	8000		647	.324
9900		3817		
	10000		649	.325
11,900		4466		
	115		39	.325
Datum 12,015		4505		

Casing Press.	
Tubing Press	610
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	31 Flowing
Temp. @	11,900' 175°F
Elev.-D.F	Gr. 3860
Last Test Date	4-10-57
Press. Last Test	4511
B. H. P. Change	- 26
Loss/Day	0.49
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11256	
Run By L. Eschberger	Calibration No. 6	Calculated By A. P. Petty

Calculations and Remarks:

PA LEGAL COMMISSION REPORTS PREPARED
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BOTTOM HOLE PRESSURES
GAS OIL RATIOS
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WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 3-1972 P. O. BOX 939
8 PETROLEUM BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 4

Field North Gladiola County Lea State New Mexico

Test Date 6-2-57 Time 3:00 P. M. Status of Well Static

Top of Pay ____ Total Depth ____ Producing Formation ____

Tubing 2" EUE Depth ____ B.H.C. ____ Packer ____ Pressure Datum -8150

Casing 5½" Depth ____ Perf ____ Liner ____ Packer ____

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		596			Tubing Press. 596
	7900		2558	.324	Top of Fluid Surface
7900		3154			Top of Water None
	2000		647	.324	Hrs.-Shut In 32 Flowing
9500		3801			Temp. @ 11,900' 175° F
	2000		649	.325	Elev.-D.F. Gr. 3872
11,900		4450			Last Test Date 6-10-57
	172		40	.325	Press. Last Test 4520
12,072		4490			B. H. P. Change - 38
					Loss/Day 0.72
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Total Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss	
Run By	L. Eschberger	Calibration No.	6	Calculated By	A. P. Farr

Observations and Remarks:

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GAS OIL RATIOS
TEMPERATURE SURVEYS

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8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aztec-Adamson Well No. 1

Field New Mexico Atoka County Lea State New Mexico

Date 6-2-57 Time 12:00 Noon Status of Well Static

Tubing 2 3/8" Tota. Depth 12,108 Producing Formation

Casing 7" 23LB Depth 12,019 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,108 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		619			Casing Press.
	7000		2561	.32h	Tubing Press. 619
7721		3180			Top of Fluid Surface
	8000		648	.324	Top of Water None
8XX		3826			Hrs. Shut In 27 Flowing
	9000		650	.32h	Temp. @ 11,900' 175°F
10,972		1[illegible]8			Elev. D.F. Gr. 3867
	11.7		38	.325	Last Test Date 6-10-57
Bottom 12,011		4516			Press. Last Test 4548
					B. H. P. Change - 32
					Loss/Day 0.59
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 6	Calculated By A. P. Hurt

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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TELEPHONE 2-1572 - P. O. BOX 983
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
P. PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Aztec-Adamson Well No. 2

Field North Gladiola County Lea State New Mexico

Test Date 6-3-57 Time 1:00 P. M. Status of Well Static

Top of Pay Total Depth Producing Formation

Tubing 2" EUE Depth B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		619			Casing Press.
	7000		2562	.324	Tubing Press. 619
7900		3181			Top of Fluid Surface
	2000		649	.325	Top of Water None
9900		3830			Hrs. Shut In 28 Flowing
	2000		650	.325	Temp. @ 11,900' 175°
11,900		4480			Elev.-D.F. G. [illegible]
	115		37	.325	Last Test Date 6-8-57
Datum 12,015		4517			Press. Last Test [illegible]
					B. H. P. Change [illegible]
					Loss/Day [illegible]
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 1126	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 6	Calculated By A. P. Pope

Calculations and Remarks:

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
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AND ENGINEERING SERVICE

EVERETT G. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 3-1378 P. O. BOX 989
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Continental-Wallace Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 5-3-57 Time 7:00 A. M. Status of Well Static

Top of Pay ____ Total Depth ____ Producing Formation ____

Tubing 2" EUE Depth ____ S.H.C. ____ Packer ____ Pressure Datum -8150

Casing 5½" Depth ____ Perf ____ Liner ____ Packer ____

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		422		
	7900		2550	.323
7900		3172		
	2000		647	.323
9900		3819		
	2000		648	.324
11,900		4467		
	122		40	.324
Datum	12,022	4507		

Casing Press.
Tubing Press. 602
Top of Fluid Surface
Top of Water None
Hrs.-Shut In 60 Flowing
Temp. @ 11,900' 175°F
Elev.-D.F. Gr. 3877
Last Test Date First Test
Prev. Last Test
B. H. P. Change
Loss/Day
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By L. Eschberger	Calibration No. 6	Calculated By A. P. Parr

Calculations and Remarks:

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EVALUATIONS

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TELEPHONE 2-1972 P. O. BOX 993
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
V. PETRO BLDG.
MIDLAND, TEXAS
LAMAR EBCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Layton-State Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 6-2-57 Time 7:00 A. M. Status of Well Static

Top of Pay 11,956 Total Depth 12,027 Producing Formation

Tubing 2" EUE Depth 12,016 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,026 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		568			Tubing Press. 568
	7900		2559	.32#	Top of Fluid Surface
7900		3127			Top of Water None
	8000		648	.32#	Hrs.-Shut In 24 Flowing
9350		3775			Temp. @ 11,900' 175°F
	2000		648	.32#	Elev.-D.F. Gr. 3895
11,500		4423			Last Test Date 6-10-57
	125		41	.32#	Press. Last Test 4516
Bottom	12,025	4464			B. H. P. Change - 52
					Loss/Day 0.96
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266

Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 6 Calculated By A. P. Pate

Calculations and Remarks:

OIL CONSERVATION COMMISSION REPORTS PREPARED
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GAS-OIL RATIOS
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TELEPHONE 2-1872 - P. O. BOX 983
A TELEPHONE LINE SERVICE
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 2

Field North Giadiola County Lea State New Mexico

Test Date 6-2-56 Time 8:00 A. M. Status of Well Static

Top of Pay 12,010 Total Depth 12,070 Producing Formation

Tubing 2" EUE Depth 12,034 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,061 Perf Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		558			Tubing Press. 558
	7900		2563	.325	Top of Fluid Surface
7900		3121			Top of Water None
	2000		648	.324	Hrs.-Shut In 25 Flowing
9900		3769			Temp. @ 11,800' 175°F
	2000		648	.324	Elev.-D.F. Gr. 3875
11,900		4417			Last Test Date 4-10-56
	125		41	.324	Press. Last Test 4510
Datum 12,025		4458			B. H. P. Change - 58
					Loss/Day 0.58
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft/day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 6	Calculated By A. P. Parr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

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TELEPHONE 3-6872 - P. O. BOX 983
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM TIPS BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 3

Field North Caprock County Lea State New Mexico

Test Date 6-2-57 Time 11:00 A. M. Status of Well Static

Top of Pay 12,002 Total Depth 12,128 Producing Formation

Tubing 2" EUE Depth 12,033 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,128 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		514			Tubing Press. 514
	7900		2547	.323	Top of Fluid Surface
7900		3131			Top of Water None
	2000		647	.324	Hrs. Shut In 28 Flowing
9900		3778			Temp. @ 11,900' 175°F
	2000		648	.324	Elev. D.F. Gr. 3877
11,932		4426			Last Test Date 6-10-57
	127		41	.324	Press. Last Test 4467
Datum 12,027		4467			B. H. P. Change - 5
					Loss/Day 1.0
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11466 Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 6 Calculated By A. P. Hart

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
SCALE APPRAISALS
[illegible]

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
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WEST TEXAS OIL REPORTS

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TELEPHONE 2-1622 · P. O. BOX 982
R. PETROLEUM [illegible] BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR [illegible]OHSERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lawton-State Well No. 4

Field North Gladiola County Lea State New Mexico

Test Date 6-2-57 Time 10:00 A. M. Status of Well

Top of Pay Total Depth Producing Formation

Tubing 2" EUE Depth B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth Perf Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		573			Tubing Press. 573
	7900		2556	.324	Top of Fluid Surface
7920		3129			Top of Water None
	2000		648	.324	Hrs.-Shut In 50 Flowing
9920		3777			Temp. @ 11,900' 175°F
	2020		650	.325	Elev.-D.F. Gr. 3877
11,940		4427			Last Test Date Final Test
	127		41	.325	Press. Last Test
Datum 12,027		4468			B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By L. Eachberger	Calibration No. 6	Calculated By A. P. Part

Calculations and Remarks:

PRODUCTION INVESTIGATION, RESERVOIR & PRESSURE
TESTS AND SPECIAL
EVALUATIONS

COMPLETE ENGINEERING SERVICE
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TELEPHONE 2-1873 — P. O. BOX 953
6 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease State "A" Well No. 1

Field North Oil City Co. County Lea State New Mexico

Test Date 6-2-57 Time 9:00 A. M. Status of Well Static

Top of Pay 11,978 Total Depth 12,050 Producing Formation

Tubing 2" EUE Depth 12,000 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		557			Tubing Press. 557
	7900		2561	.324	Top of Fluid Surface
7900		3118			Top of Water None
	2000		649	.324	Hrs.-Shut In 96 Flowing
9900		3767			Temp. @ 11,900' 175°
	2000		650	.325	Elev.-D.F. Gr. 3886
11,900		4417			Last Test Date 6-30-57
	336		4h	.335	Press. Last Test 4568
Datum 12,236		4461			B. H. P. Change - 13
					Loss/Day 6.71
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11265

Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 6 Calculated By L. E. Rice

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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AND ENGINEERING SERVICE

TELEPHONE 3-1872 P. O. BOX 953

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBOHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 6-3-57 Time 8:00 A. M. Status of Well Gas

Top of Pay 11,990 Total Depth 12,130 Producing Formation

Tubing 2" EUE Depth 12,125 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,125 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		585		
	7900		2545	.322
7900		3130		
	2000		648	.324
9900		3778		
	2000		652	.325
11,900		4430		
	124		40	.325
Datum 12,024		4468		

Casing Press.	
Tubing Press.	585
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	25 Flowing
Temp. @	11,990' 175°F
Elev.-D.F.	Gr. 4098
Last Test Date	4-30-57
Press. Last Test	1000
B. H. P. Change	-32
Logs/Day	5.08
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eshbarger	Calibration No. 6	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION RECORDS PREPARED
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EVALUATIONS

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WEST TEXAS OIL REPORTS

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EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 2-1978 - P. O. BOX 985
P PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EICHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field North Gladiola County Lea State New Mexico

Test Date 6-3-57 Time 9:00 A. M. Status of Well Shut In

Top of Pay 11,995 Total Depth 12,116 Producing Formation

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		582			Tubing Press. 582
	7900		3550	.353	Top of Fluid Surface
7900		3132			Top of Water None
	2000		646	.323	Hrs. Shut In 96 Flowing
9900		3778			Temp. @ 11,900' 175°
	2000		648	.324	Elev.-D.F. Gr. 3654
11,900		4426			Last Test Date 6-10-57
	124		40	.322	Press. Last Test 4408
Datum 12,024		4466			B. H. P. Change - 22
					Loss/Day 0.177
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eichberger	Calibration No. 6	Calculated By A. P. Parr

Calculations and Remarks:

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EVALUATIONS

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BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 2-1975 · P. O. BOX 988
P. PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EBOHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field North Oil City Lea County Lea State New Mexico

Test Date 6-3-57 Time 9:00 A. M. Status of Well Static

Top of Pay 11,995 Total Depth 12,116 Producing Formation

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		562			Tubing Press. 562
	7900		4550	.383	Top of Fluid Surface
7900		3132			Top of Water None
	2000		646	.383	Hrs. Shut In 48 hrs. Flowing
9901		3778			Temp. @ 11,900' - 175°
	2000		648	.384	Elev.-D.F. Gr. 3878
11,900		4426			Last Test Date 4-10-57
	124		40	.384	Press. Last Test 4400
Datum 12,024		4466			B. H. P. Change - 22
					Loss/Day 0.41
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Ebohberger	Calibration No. 6	Calculated By A. P. Parr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
SHOT-L RATES
TEMPERATURE SURVEYS

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TELEPHONE 2-1972 - P. O. BOX 953.
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
U.S.C. ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Warren-State Well No. 1

Field North Glaciola County Lea State New Mexico

Test Date 6-3-57 Time 11:00 A. M. Status of Well Static

Top of Pay 11,936 Total Depth 11,995 Producing Formation

Tubing 2" EUE Depth 11,959 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,936 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		566		
	7900		2552	.329
7900		3119		
	2000		647	.324
9902		3766		
	2000		648	.324
11,900		4414		
	127		41	.324
Datum 12,027		4455		

Casing Press.	
Tubing Press.	566
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	28 Flowing
Temp. @	11,900' 175°F
Elev. D.F.	Gr. 3877
Last Test Date	4-10-57
Press. Last Test	4471
B. H. P. Change	- 16
Loss/Day	0.30
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GPR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 6	Calculated By L. E. Rey

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
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TELEPHONE 2-1978 - P. O. BOX 993
3 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR EICHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Easton-State Well No. 3

Field North Maddox County Lea State New Mexico

Test Date 4-10-57 Time 2:30 P. M. Status of Well Static

Top of Pay 12,102 Total Depth 12,129 Producing Formation

Tubing 2" EUE Depth 12,033 B.H. Packer Pressure Datum -8150

Casing 5½" Depth 12,129 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
					Tubing Press. 612
			2273	.325	Top of Fluid Surface
		1282			Top of Water None
			648	.324	Hrs. Shut In 51 Flowing
		3530			Temp. @ 11,900 175°F
			650	.325	Elev. D.F. Gr. 3877
		4480			Last Test Date 2-5-57
			41	.325	Press. Last Test 4597
Datum	12,027	4523			B. H. P. Change -76
					Loss/Day 1.21
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					CFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production		Production Between Tests
Instrument Amerada	Number 11266		Recovery Factor Bbls/pound loss
Run By Lamar Eichberger	Calibration No. 4		Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 3-1972 · P. O. BOX 983

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

6 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Helen Rowe Lease State "A" Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 12:30 P.M. Status of Well Static

Top of Pay 11,973 Total Depth 12,012 Producing Formation

Tubing 2" EUE Depth 12,000' B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
Surface		600			Casing Press.
	7900		2559	.324	Tubing Press. 600
7900		3159			Top of Fluid Surface
	2000		650	.325	Top of Water None
9900		3809			Hrs. Shut In 38 Flowing
	2000		651	.325	Temp. @ 11,900' 175° F
11,900		4460			Elev.-D.F. Gr. 3886
	125		41	.325	Last Test Date 3-13-57
Datum 12,025		4501			Press. Last Test 4505
					B. H. P. Change -1
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11256	Recovery Factor Bbls/pound loss
Run By Lamar Eschberger	Calibration No. 4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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TELEPHONE 2-1672 P. O. BOX 962
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
P. PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Pan. Am. Lease Lawton-State Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 11:30 A. M. Status of Well Static

Top of Pay 12,956 Total Depth 12,017 Producing Formation

Tubing 2" EUE Depth 12,016 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,034 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		610			Tubing Press. 610
	7200		2566	.325	Top of Fluid Surface
7200		3176			Top of Water None
	2000		649	.325	Hrs. Shut In 28 Flowing
9200		3825			Temp. @ 11,900' 175°F
	2000		650	.325	Elev.-D.F. Gr. 3875
11,900		4475			Last Test Date 2-5-57
	115		41	.325	Press. Last Test 4580
12,005		4516			B. H. P. Change -64
					Loss/Day 1.00
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Grt
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By Lamar Eschberger	Calibration No. 4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

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9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-20-57 Time 6:30 P. M. Status of Well Static

Top of Pay 11,985 Total Depth 12,020 Producing Formation -

Tubing 2" EUE Depth 12,008 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,985 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		627			Tubing Press. 627
	7900		3555	.323	Top of Fluid Surface
7900		3182			Top of Water None
	2000		649	.324	Hrs.-Shut In 33 Flowing
9900		3831			Temp. @ 11,900' 175°F
	2000		650	.325	Elev.-D.F. Gr. 3871
11,900		4481			Last Test Date 2-4-57
	121		39	.325	Press. Last Test 4616
Datum: 12,021		4520			B. H. P. Change -96
					Loss/Day 1.50
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11266	Recovery Factor Bbls/pound lost
Run By	Lamar Eschberger	Calibration No. 4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1872 - P. O. BOX 983
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 2

Field North Shallola County Lea State New Mexico

Test Date 4-10-57 Time 5:30 P. M. Status of Well Static

Top of Pay _____ Total Depth _____ Producing Formation _____

Tubing 2" EUE Depth _____ B.H.C. _____ Packer _____ Pressure Datum -8150

Casing 5½" Depth _____ Perf. _____ Liner _____ Packer _____

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		631		
	7900		2557	.324
7920		3188		
	8000		650	.325
8000		3838		
	2000		650	.325
11,900		4488		
	119		39	.325
Factors 12,019		4527		

Casing Press.	
Tubing Press.	631
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In 3½	Flowing
Temp. @ 11,900'	175°F
Elev.-D.F.	Gr. 3860
Last Test Date	First Test
Press. Last Test	
B. H. P. Change	
Loss/Day	
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss
Run By	Lamar Eschberger	Calibration No.	4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

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EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace #31 Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 9:30 A.M. Status of Well Static

Top of Pay 11,939 Total Depth 11,970 Producing Formation

Tubing 2" EUE Depth 11,964 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,939 Perf Liner Packer

Depth Feet	± Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		592		
	7900		2556	.324
7900		3148		
	2000		649	.324
9900		3797		
	2000		649	.324
11,900		4446		
	130		42	.324
Datum 12,030		4488		

Casing Press.
Tubing Press. 592
Top of Fluid Surface
Top of Water None
Hrs.-Shut In 35 Flowing
Temp. @ 11,900' 175°F
Elev.-D.F. Gr. 3880
Last Test Date 2-4-57
Press. Last Test 4562
B. H. P. Change-74
Loss/Day 1.16
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr
Cu. ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By Lamar Eschberger	Calibration No. 4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

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8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 3

Field North Vacuum County Lea State New Mexico

Test Date 4-10-57 Time 6:30 P. M. Status of Well Static

Top of Pay 11,998 Total Depth 12,016 Producing Formation

Tubing 2" EUE Depth 12,012 B.H.C. Packer Pressure Datum -8350

Casing 5½" Depth 11,988 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		633		
	7900		2558	.324
7900		3191		
	2000		650	.325
9900		3841		
	2000		651	.325
11,900		4492		
	119		39	.325
Datum 12,019		4531		

Casing Press.	
Tubing Press.	65
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	35 Flowing
Temp. @	11,900' 175°F
Elev.-D.F.	Gr. 3844
Last Test Date	2-4-57
Prod. Last Test	None
B. H. P. Change	-33
Loss/Day	1.30
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor
Instrument Amerada	Number 11266	Bbls/pound loss
Run By Lamar Eschberger	Calibration No. 4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 2-1572 · P. O. BOX 953
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 3:30 P. M. Status of Well Static

Top of Pay _____ Total Depth _____ Producing Formation _____

Tubing 2" EUE Depth _____ B.H.C. _____ Packer _____ Pressure Datum -8150

Casing 5½" Depth _____ Perf _____ Liner _____ Packer _____

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		631			Tubing Press. 631
	7902		2558	.324	Top of Fluid Surface
7900		3189			Top of Water None
	2000		649	.325	Hrs.-Shut In 32 Flowing
9900		3838			Temp. @ 11,900' 175°F
	2000		650	.325	Elev.-D.F. Gr. 3872
11,200		4488			Last Test Date 3-21-57
	122		40	.325	Press. Last Test 4525
Datum: 12,022		4528			B. H. P. Change -3
				Gain	Incr./Day 0.16
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss
Run By	Lamar Eschberger	Calibration No.	4	Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1573 P. O. BOX 958
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 2

Field Wantz Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 8:30 A.M. Status of Well Static

Top of Pay 11,995 Total Depth 12,116 Producing Formation

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum -9150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		603		
	7900		2551	.323
7900		3154		
	2000		646	.323
9900		3800		
	2000		615	.324
11,900		4415		
	124		40	.324
12,024		4488		

Casing Press.
Tubing Press. 603
Top of Fluid Surface
Top of Water None
Hrs. Shut In 25 Flowing
Temp. @ 11,900' 175° F
Elev.-D.F. Gr. 3874
Last Test Date 2-4-57
Press. Last Test 4559
B. H. P. Change -71
Loss/Day 1.11
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266

Recovery Factor Bbls/pound loss

Run By Lamar Eschberger Calibration No. Calculated By A. P. Farr

Calculations and Remarks:

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LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

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EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 1:30 A.M. Status of Well Static

Top of Pay 11,990 Total Depth 12,130 Producing Formation

Tubing 2" EUE Depth 12,135 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. in.	* Pressure	Gradient Lbs./Ft.
Surface		611		
	7900		2545	.322
8000		3158		
	9000		647	.323
9000		3803		
	10000		135	.326
10,000		4129		
	10900		328	.326
11,000		4457		
	12[illegible]		41	.326
12,000		4498		

Casing Press.
Tubing Press. 611
Top of Fluid Surface
Top of Water Trace
Hrs.-Shut In 24 Flowing
Temp. @ 11,900' 175°F
Elev.-D.F. Gr. 3871
Last Test Date 2-4-57
Press. Last Test 4557
B. H. P. Change -59
Loss/Day 0.92
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production
Present Cumulative Production
Production Between Tests
Recovery Factor Bbls/pound loss

Instrument Amerada Number 11256

Run By Lamar Eschberger Calibration No. 4 Calculated By A. P. Part

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1872 -- P. O. BOX 953

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

6 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ZOELLNER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Lewton-State Well No. 2

Field North Gladiola County Lea State New Mexico

Test Date 4-10-57 Time 1:30 P. M. Status of Well Static

Top of Pay 12,010 Total Depth 12,070 Producing Formation

Tubing 2" EUE Depth 12,034 B.H.C. Packer Pressure Datum -8350

Casing 5½" Depth 12,061 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		605		
	7900		2563	.324
7900		3168		
	2000		650	.32
9900		3818		
	2000		651	.325
11,900		4469		
	125		41	.328
Datum 12,025		4510		

Casing Press.	
Tubing Press.	605
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In 30	Flowing
Temp. @ 11,900	175°F
Elev.-D.F.	Gr. 3675
Last Test Date	2-5-57
Press. Last Test	453
B. H. P., Change	-38
Loss/Day	0.38
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By Lamar Zoellner	Calibration No. k	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOR
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 2-1972 - P. O. BOX 983
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Warren-State Well No. 1

Field North Maddox County Lea. State New Mexico

Test Date 4-10-57 Time 10:30 A.M. Status of Well Static

Top of Pay 11,936 Total Depth 11,995 Producing Formation

Tubing 2" EUE Depth 11,959 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,936 Perf Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		580		
	7900		2557	.324
7900		3137		
	2000		646	.323
9900		3783		
	2000		647	.323
11,900		4430		
	127		41	.323
Datum 11,027		4471		

Casing Press.
Tubing Press. 580
Top of Fluid Surface
Top of Water None
Hrs. Shut In 36 Flowing
Temp. @ 11,900' 225° F
Elev. D.F. Gr. 3877
Last Test Date 2-5-57
Press. Last Test 4541
B. H. P. Change -70
Loss/Day 1.11
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11265

Recovery Factor Bbls/pound loss

Run By Lamar Eschberger Calibration No. 4

Calculated By A. P. Farr

Calculations and Remarks:

ROAD COMMISSION REPORTS PREPARED
GAS APPRAISALS
ACTIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1972 - P. O. BOX 953
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

LAMAN EICHENBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 1

Field North Shoebar County Lea State New Mexico

Test Date 2/4/57 Time 2:00 P.M. Status of Well Static

Top of Pay 11,985 Total Depth 12,020 Producing Formation

Tubing 2" EUE Depth 12,008 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,985 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		695		
	7900		2570	.325
7900		3265		
	2000		655	.327
9900		3920		
	2000		656	.328
11,900		4576		
	121		40	.328
Datum: 12,021		4616		

Casing Press.
Tubing Press. 695
Top of Fluid Surface
Top of Water None
Hrs. Shut In 53 Flowing
Temp. @ 11,900' 175°F
Elev. D.F. Gr. 3871
Last Test Date First Test
Press. Last Test
B. H. P. Change
Loss/Day
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	Amerada	Number 11256	Recovery Factor Bbls/pound loss
Run By	L. Eichenberger	Calibration No. 2	Calculated By A. Pasfarr

Calculations and Remarks:

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1573 - P. O. BOX 989
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR SCHLUMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Adamson Well No. 3

Field Wasson Ellenburger County Lea State New Mexico

Test Date 2/4/57 Time 2:00 P.M. Status of Well Static

Top of Pay 11,895 Total Depth 12,016 Producing Formation

Tubing 2" EUE Depth 12,012 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,968 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		721			Tubing Press. 703
	7900		2565	.325	Top of Fluid Surface
7900		3268			Top of Water None
	2000		653	.327	Fins.-Shut in 5½ Tubing
9900		3921			Temp. @ 11,900' 130°
	2000		654	.327	Elev.-D.F. Gr. 3359
11,900		4575			Last Test Date 1/31/57
	119		39	.327	Press. Last Test 4609
Base 12,019		4614			B. H. P. Change -5
				Gain	Fluid/Day 520
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production	Production Between Tests
Instrument	America	Number 11265	Recovery Factor Bbls/pound loss
Run By	L. Schlumberger	Calibration No. 2	Calculated By A. P. Part

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
[illegible]
[illegible]

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1822 - P. O. BOX 569
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Shell Oil Co. Lease Lorto-State Well No. 1

Field North Shoebar County Lea State New Mexico

Test Date 2-5-57 Time 10:00 A.M. Status of Well Static

Top of Pay 11,956 Total Depth 12,017 Producing Formation

Tubing 2" EUE Depth 11,936 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,024 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		675			Tubing Press. 675
	1500		2560	.324	Top of Fluid Surface
3500		3235			Top of Water None
	5000		651	.326	Hrs.-Shut In 51 Flowing
6500		3886			Temp. @ 11,900' 175°F
	8000		553	.327	Elev.-D.F. Gr. 3875
11,900		4539			Last Test Date 11/2/56
	11,956		41	.327	Press. Last Test 4664
12,017		4580			B. H. P. Change -84
					Loss/Day .88
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11256	Recovery Factor Bbls/pound loss
Run By [illegible]	Calibration No. ?	Calculated By A. P. Parr

Calculations and Remarks:

RESERVOIR DESCRIPTION REPORTS PREPARED
FIELD APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 2-1978 · P. O. BOX 983
6 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBOMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Lawton-State Well No. 2

Field [illegible] County Lea State New Mexico

Test Date 2/5/57 Time 11:30 A.M. Status of Well Static

Top of Pay 12,340 Total Depth 12,979 Producing Formation

Tubing 2" E.U. Depth 12,334 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,381 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		656		
	7900		2541	.322
7900		3197		
	2000		647	.324
9900		3844		
	2000		649	.325
11,900		4493		
	125		41	.325
Datum -8150		4534		

Casing Press.
Tubing Press. 656
Top of Pay [illegible]
Top of Water [illegible]
Hrs.Shut In 48 Flowing
Temp. @ 11,900' 170°F
Elev.-D.F. Gr. [illegible]
Last Test Date 12/27/56
Press. Last Test 4658
B. H. P. Change -124
Loss/Day 1.24
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eberbarger	Calibration No. ?	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EXAMINATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1673 - P. O. BOX 993
EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS
LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Layton-State Well No. 3

Field North Blackdale County Lea State New Mexico

Test Date 12/21/56 Time 12:00 Noon Status of Well Static

Top of Pay 12,022 Total Depth 12,125 Producing Formation

Tubing 2" EUE Depth 12,033 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 12,125 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		690		
	1900		2561	.324
12,0		3251		
	2001		651	.326
12,0		3302		
	2002		653	.327
12,0		3355		
	2002		652	.327
12,027		6507		

Casing Press.	
Tubing Press.	690
Top of Fluid	Surface
Top of Water	None
Hrs.-Shut In	51 Flowing
Temp. @	11,850' 175°F
Elev.-D.F.	Gr. 3877
Last Test Date	12/21/56
Press. Last Test	6630
B. H. P. Change	-33
Loss/Day	-.72
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument [illegible]	Number 11266	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 2	Calculated By A. P. Par[illegible]

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS O.I. RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 3-1679 - P. O. BOX 968
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Wallace Well No. 1

Field North [illegible] County Lea State New Mexico

Test Date 8/[illegible] Time 12:00 [illegible] Status of Well Static

Top of Pay 11,[illegible] Total Depth 12,220 Producing Formation

Tubing [illegible] Depth 12,125 B.H.C. Packer Pressure Datum -8150

Casing 5½ Depth 2,1[illegible] Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		675		
[illegible]			2504	.352
1900		2223		
	2000		646	.323
[illegible]		3309		
	2X0		648	.324
11,900		4517		
	4[illegible]		40	.324
12,0[illegible]		4557		

Casing Press.
Tubing Press. 679
Top of Field Surface
Top of Water None
Hrs. Shut In 50 Flowing
Temp. @ 11,900 175°F.
Elev. D.F. Gr. 3874
Last Test Date 11/2/56
Press. Last Test 4651
B. H. P. Change -9#
Loss/Day 1.00
Choke Size
Oil Bbls/Day
Water Bbls/Day
Total Bbls/Day
Orifice & Line
Static & Differential
Gas Sp. Gr.
Cu. Ft./day
GOR
GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument [illegible]	Number 11256	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 2	Calculated By L. P. Farr

Calculations and Remarks:

ADDITIONAL COMMISSION REPORTS PREPARED
LEASE APPRAISALS
CALCULATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

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AND ENGINEERING SERVICE

TELEPHONE 2-1979 - P. O. BOX 989

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Lowe Lease Wallace Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 2/.57 Time 12:00 Noon Status of Well Static

Top of Pay 11,995 Total Depth 12,116 Producing Formation

Tubing 2" EUE Depth 12,005 B.H.C. Packer Pressure Datum 8150

Casing 5½" Depth 12,115 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		677			Tubing Press. 677
	7000		2549	.323	Top of Fluid Surface
7300		3226			Top of Water None
	8000		6.5	.323	Hrs.-Shut In 51 Flowing
9900		3872			Temp. @ 11,850' 175°
	9900		648	.324	Elev.-D.F. GL: 3[illegible]
11,900		4316			Last Test Date 12/27/56
	12%		40	.324	Press. Last Test 4618
12,004		4559			B. H. P. Change -39
					Loss/Day 1.51
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GPR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 12266

Recovery Factor Bbls/pound loss

Run By L. Eschberger Calibration No. 2 Calculated By L. P. Farr

Calculations and Remarks:

[illegible] COMMISSION REPORTS PREPARED
[illegible] APPRAISALS
[illegible]

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 8-1928 - P. O. BOX 993

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

P PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Wallace "31" Well No. 1

Field [illegible] County Lea State New Mexico

Test Date 2/4/57 Time 1:30 P.M. Status of Well Static

Top of Pay 11,939 Total Depth 11,972 Producing Formation

Tubing 2" EUE Depth 11,154 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,972 Perf. Liner Perf.

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		677			Tubing Press. 677
	7240		2548	.323	Top of Fluid Surface
7500		3225			Top of Water None
	8000		647	.323	Hrs.-Shut In 52 Flowing
8500		3872			Temp. @ 11,900' 175°F
	8990		547	.324	Elev.-D.F. Gr. 3680
11,900		4521			Last Test Date First Test
	11		11	.324	Press. Last Test
11,939		4552			B. H. P. Change
					Loss/Day
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11266	Recovery Factor Bbls/pound dess
Run By L. Eschberger	Calibration No. 2	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
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EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 2-1978 - P. O. BOX 986
9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBERSBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Warren-State Well No. 1

Field North Gladiola County Lea State New Mexico

Test Date 2/5/57 Time 5:00 A.M. Status of Well Static

Top of Pay 11,936 Total Depth 11,995 Producing Formation

Tubing 2" EUE Depth 11,952 B.H.C. Packer Pressure Datum -8150

Casing 5½" Depth 11,996 Perf. Liner Packer

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.	
Surface		656			Casing Press.
	7900				Tubing Press. 666
7200		1210	25##	.322	Top of Fluid Surface
	2300				Top of Water None
2500		3854	6##	.322	Hrs. Shut In 48 Flowing
	8300				Temp. @ 11,900' 115°F
11,900		4600	6#6	.323	Elev. D.F. Gr. 3877
	127				Last Test Date 11/18/56
12,027		4541	42	.323	Press. Last Test [illegible]
					B. H. P. Change [illegible]
					Loss/Day .96
					Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production

Present Cumulative Production

Production Between Tests

Instrument Amerada Number 11266 Recovery Factor

Run By L. Ebersberger Calibration No. 2 Bbls/pound loss

Calculated By A. P. Pate

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1972 - P. O. BOX 982

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

9 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBOMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Ralph Love Lease Aztec-Adamson Well No. 1

Field North Shoebar County Lea State New Mexico

Test Date 2/4/57 Time 4:00 P.M. Status of Well Static

Top of Pay 12,000 Total Depth 12,108 Producing Formation

Tubing 2" EUE Depth 12,019 B.H.C. Packer Pressure Datum -9650

Casing 5½" Depth 12,108 Perf 12,000-032 Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		693		
	2000		2566	.325
4220		3259		
	6000		652	.326
8600		7911		
	10,000		554	.327
11,200		4565		
	11,700		18	.327
12,012-017		4603		

Casing Press.	
Tubing Press.	693
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	55 Flowing
Temp. @	11,900 175°F
Elev. D.F.	Gr. 3967
Last Test Date	11/2/56
Press. Last Test	4676
B. H. P. Change	-73
Loss/Day	.78
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
Instrument Amerada	Number 11256	Recovery Factor Bbls/pound loss
Run By L. Eschberger	Calibration No. 2	Calculated By A. P. Parr

Calculations and Remarks:

...ED COMMERCIAL REPORTS PREPARED
...SSAY APPRAISALS
...XPLORATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

TELEPHONE 3-1972 - P. O. BOX 985

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR EBOMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Wallace Well No. 2

Field North [illegible] County Lea State New Mexico

Test Date 12-21-52 Time 3:00 P. M. Status of Well Static

Top of Pay _____ Total Depth _____ Producing Formation _____

Tubing [illegible] Depth _____ B.H.C _____ Packer _____ Pressure Datum -8150

Casing [illegible] Depth _____ Perf. _____ Liner _____ Packer _____

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.
Surface		695		
	8000		2698	.326
8300		3397		
	9000		654	.327
10,000		3957		
	10001		326	.326
11,000		4283		
	830		278	.327
11,550		4561		
	[illegible]		57	.327
[illegible] 12,000		4614		

Casing Press.	Packer
Tubing Press.	695
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	53 Flowing
Temp. @	11,850' 175°F
Elev.-D.F.	Gr. 3675
Last Test Date	First Test
Press. Last Test	
B. H. P. Change	
Loss/Day	
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production	Present Cumulative Production	Production Between Tests
		Recovery Factor Bbls/pound loss
Instrument Amerada	Number 11266	
Run By A. P. Farr	Calibration No. 12	Calculated By A. P. Farr

Calculations and Remarks:

RAILROAD COMMISSION REPORTS PREPARED
STATE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS

AND ENGINEERING SERVICE

TELEPHONE 2-1872 · P. O. BOX 953

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR SCHLUMBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company Felmont Oil Corp. Lease Lawton-State Well No. 3

Field North Eidson Ext. County Lea State New Mexico

Test Date 11-21-56 Time 1:30 P. M. Status of Well Static

Top of Pay _____ Total Depth _____ Producing Formation _____

Tubing 2" EUE Depth _____ B.H.C. _____ Packer _____ Pressure Datum -8150'

Casing 5½" Depth _____ Perf. _____ Liner _____ Packer _____

Depth Feet	★ Depth	Pressure Lbs. Sq. In.	★ Pressure	Gradient Lbs./Ft.
Surface		690		
	8000		2620	.327
8000		3310		
	2000		655	.327
10,000		3965		
	1000		328	.328
11,000		4293		
	650		279	.328
11,850		4572		
	177		58	.328
Datum: 12,027		4630		

Casing Press.	Packer
Tubing Press.	690
Top of Fluid	Surface
Top of Water	None
Hrs. Shut In	5½ Flowing
Temp. @ 11,850'	178°
Elev.-D.F.	Gr. 3877
Last Test Date	First Test
Press. Last Test	
B. H. P. Change	
Loss/Day	
Choke Size	
Oil Bbls/Day	
Water Bbls/Day	
Total Bbls/Day	
Orifice & Line	
Static & Differential	
Gas Sp. Gr.	
Cu. Ft./day	
GOR	
GFR	

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests	
Instrument	Amerada	Number	13266	Recovery Factor Bbls/pound loss	
Run By	A. P. Farr	Calibration No.	12	Calculated By	A. P. Farr

Calculations and Remarks:

OIL CONSERVATION COMMISSION REPORTS PREPARED
LEASE APPRAISALS
EVALUATIONS

COMPLETE ENGINEERING SERVICE
BOTTOM HOLE PRESSURES
GAS-OIL RATIOS
TEMPERATURE SURVEYS

WEST TEXAS OIL REPORTS
AND ENGINEERING SERVICE

EVERETT L. SMITH
REGISTERED PROFESSIONAL ENGINEER

TELEPHONE 3-1873 - P. O. BOX 953
8 PETROLEUM LIFE BUILDING
MIDLAND, TEXAS

LAMAR ESCHBERGER
REGISTERED PROFESSIONAL ENGINEER
FIELD ENGINEER

INDIVIDUAL WELL DATA SHEET

Company [illegible] Lease Adamson Well No. 3

Field North [illegible] County Lea State New Mexico

Test Date 7/11/50 Time 12:30 P.M. Status of Well Static

Top of Pay 11,999 Total Depth 12,016 Producing Formation

Tubing 2" Depth 12,012 B.H.C. Packer Pressure Datum -8150'

Casing 5½ Depth 11,988 Perf. Liner Packer

Depth Feet	* Depth	Pressure Lbs. Sq. In.	* Pressure	Gradient Lbs./Ft.	
					Casing Press.
Surface		705			Tubing Press. 705
	2900		2562	.324	Top of Fluid Surface
[illegible]		3252			Top of Water None
	[illegible]		551	.325	Hrs.-Shut In 54 Flowing
[illegible]		3514			Temp. @ 11,900' 170°
	[illegible]		326	.326	Elev.-D.F. Gr. 3869'
11,900		4204			Last Test Date First Test
	1000		326	.326	Press. Last Test
11,900		4570			B. H. P. Change
	115		39	.326	Loss/Day
11,915		4609			Choke Size
					Oil Bbls/Day
					Water Bbls/Day
					Total Bbls/Day
					Orifice & Line
					Static & Differential
					Gas Sp. Gr.
					Cu. Ft./day
					GOR
					GFR

PRODUCTIVE INDEX-BBLS./DAYS/LBS. DROP

Last Cumulative Production		Present Cumulative Production		Production Between Tests
Instrument	Amerada	Number	11266	Recovery Factor Bbls/pound loss
Run By	A. P. Parr	Calibration No.	1	Calculated By A. P. Parr

Calculations and Remarks:

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

September 19, 1956

REPLY TO
P. O. BOX 36
MIDLAND, TEXAS

Ralph Lowe Drilling Company
Box 832
Midland, Texas

Attention: Mr. C. L. Chase

Subject: Core Analysis
Lawton State No. 2 Well
Lowe Devonian Field
Lea County, New Mexico
Location: Sec. 32-T11S-R38E

Gentlemen:

Diamond coring equipment and water base mud were used to core the interval, 11,967 to 12,084 feet in the Lawton State No. 2. Samples were selected and quick-frozen by an engineer of Core Laboratories, Inc. at the direction of a representative of Ralph Lowe Drilling Company. These samples were analyzed by whole-core analysis procedures in the Lovington laboratory, and the results of the analysis are presented in this report.

Devonian formation analyzed between 12,009 and 12,070 feet is interpreted to be oil productive. In this interval, the 60.5 feet of permeable, productive formation analyzed has an average permeability of 76 millidarcys and a productive capacity of 4598 millidarcy-feet. The average porosity of the zone is 4.6 per cent.

Estimates of recoverable oil have been computed for the Devonian formation between 12,009 and 12,070 feet using the observed core analysis data in conjunction with estimated reservoir fluid characteristics considered applicable. These recovery estimates are presented on the core summary and calculated recoverable oil page of the report, and are subject to the conditions set forth in the body of and in the footnotes to the summary page.

We sincerely appreciate this opportunity to be of service to you.

Very truly yours,

Core Laboratories, Inc.

R S Bynum Jr (PE)
R. S. Bynum, Jr.,
District Manager

RSB:PE:sw
7 cc. - Addressee

Form F-11B

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS

Page 1 of 1 File WP-3-591 S
Well Lawton State No. 2

CORE SUMMARY AND CALCULATED RECOVERABLE OIL

FORMATION NAME AND DEPTH INTERVAL: Devonian 12,009.0-12,070.0

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		61.0	AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE		55.8
FEET OF CORE INCLUDED IN AVERAGES		60.5	AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	(c)	55.8
AVERAGE PERMEABILITY: MILLIDARCYS	Max.:	76	OIL GRAVITY: °API	(e)	46
	90°:	21			
PRODUCTIVE CAPACITY: MILLIDARCY-FEET	Max.:	4598	ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	(e)	300
	90°:	1271			
AVERAGE POROSITY: PER CENT		4.6	ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	(e)	1.21
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		10.7	CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT		130

Calculated maximum solution gas drive recovery is 45 barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is 92 barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (*Please refer to footnotes for further discussion of recovery estimates.*)

FORMATION NAME AND DEPTH INTERVAL:

FEET OF CORE RECOVERED FROM ABOVE INTERVAL		AVERAGE TOTAL WATER SATURATION: PER CENT OF PORE SPACE	
FEET OF CORE INCLUDED IN AVERAGES		AVERAGE CONNATE WATER SATURATION: PER CENT OF PORE SPACE	
AVERAGE PERMEABILITY: MILLIDARCYS		OIL GRAVITY: °API	
PRODUCTIVE CAPACITY: MILLIDARCY-FEET		ORIGINAL SOLUTION GAS-OIL RATIO: CUBIC FEET PER BARREL	
AVERAGE POROSITY: PER CENT		ORIGINAL FORMATION VOLUME FACTOR: BARRELS SATURATED OIL PER BARREL STOCK-TANK OIL	
AVERAGE RESIDUAL OIL SATURATION: PER CENT OF PORE SPACE		CALCULATED ORIGINAL STOCK-TANK OIL IN PLACE: BARRELS PER ACRE-FOOT	

Calculated maximum solution gas drive recovery is barrels per acre-foot, assuming production could be continued until reservoir pressure declined to zero psig. Calculated maximum water drive recovery is barrels per acre-foot, assuming full maintenance of original reservoir pressure, 100% areal and vertical coverage, and continuation of production to 100% water cut. (*Please refer to footnotes for further discussion of recovery estimates.*)

(c) Calculated (e) Estimated (m) Measured (*) Refer to attached letter.

These recovery estimates represent theoretical maximum values for solution gas and water drive. They assume that production is started at original reservoir pressure; i.e., no account is taken of production to date or of prior drainage to other areas. The effects of factors tending to reduce actual ultimate recovery, such as economic limits on oil production rates, gas-oil ratios, or water-oil ratios, have not been taken into account. Neither have factors been considered which may result in actual recovery intermediate between solution gas and complete water drive recoveries, such as gas cap expansion, gravity drainage, or partial water drive. Detailed predictions of ultimate oil recovery to specific abandonment conditions may be made in an engineering study in which consideration is given to overall reservoir characteristics and economic factors.

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees assume no responsibility and make no warranty or representations as to the productivity, proper operation, or profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

Ralph Lowe

Phone 4-7441

Box 832 Midland, Texas

March 17, 1958

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Re: Case #1394

Dear Mr. Porter:

Enclosed is a copy of the detailed core analysis from Ralph Lowe's Lawton-State #2 and photocopies of the individual bottom-hole pressure measurements made during the initial and each of six subsequent surveys in the Ralph Lowe operated wells at Gladiola.

Mr. Buell of Pan American requested that the core data be made a part of your file for this case, and Mr. Errebo of Sunray requested that the individual pressure measurements be included.

Yours very truly,

Harvin L. Landua
HARVIN L. LANDUA

HLL:rl

encls - 2

EMERGENCY ORDER E-8 WAS MAILED TO THE FOLLOWING 2/28/58

Cities Service, Hobbs
Gulf, Ft. Worth & Hobbs
Jake L. Hamon, 102 Western Bldg., Midland, Texas
Hancock Oil Co., 509 W. Texas Ave., Midland
Ralph Lowe, Midland
Jack Markham, Great Plains Life Bldg., Lubbock
McAlester Fuel Co., Magnolia, Ark.
Ohio, Hobbs
Pan American, Roswell & Hobbs
Pure Oil Co., Box 2107, Ft. Worth
Sinclair, Midland
Sunray, Hobbs
Texas Crude Oil Co., 1201 V & J Tower Bldg., Midland

Transporters:
Service Pipeline, Box 337, Midland
Magnolia, Box 633, Midland & Box 511, Brownfield

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

March 31, 1958

COPY

Mr. Mack Easley
Easley, Quinn & Stout
106 E. Taylor
Hobbs, New Mexico

Dear Sir:

On behalf of your client, Ralph Lowe, we enclose two copies of Order R-1139-A issued March 28, 1958, by the Oil Conservation Commission in Case 1394, which was heard on March 13th and March 26th at Santa Fe.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

OIL CONSERVATION COMMISSION
P. O. BOX 871
SANTA FE, NEW MEXICO

March 14, 1958

COPY

Mr. Ralph Lowe
P.O. Box 832
Midland, Texas

Dear Mr. Lowe:

We enclose a copy of Order R-1139, an interim order, issued March 14, 1958, by the Oil Conservation Commission in Case 1394, which was heard on March 13th.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encl.

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM (47).

W. P. MARSHALL, PRESIDENT

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA062 NSA160

1958 MAR 24 AM 10 58

NS EDA066 PD=MAGNOLIA ARK 24 1139AMC=
NEW MEXICO OIL CONSERVATION COMMISSION=
SANTA FE NMEX=

MCALESTER FUEL CO IS AGREEABLE TO CONTINUING THE 190 BOPD ALLOWABLE IN THE GLADIOLA DEVONIAN POOL FOR AN INDEFINITE PERIOD OR UNTIL ADEQUATE JUSTIFICATION FOR CHANGE IS EVIDENT=
MCALESTER FUEL CO VERNON TURNER=

190 BOPD=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM (25).

W. P. MARSHALL, PRESIDENT

SYMBOLS
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NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

1958 MAR 12 AM 11 54

LA085 DA237

D FWB208 PD=FORT WORTH TEX 12 1213PMC=
=OIL CONSERVATION COMMISSION=
MABRY HALL STATE CAPITOL SANTA FE NMEX=

=IN REFERENCE TO THE HEARING MARCH 13, 1958, TO CONSIDER A REDUCTION OF ALLOWABLES IN THE GLADIOLA POOL, LEA COUNTY, THE PURE OIL COMPANY IS OPERATOR OF ONE PRODUCING WELL IN THIS FIELD. THIS WELL IS PRODUCING NO WATER AND WE HAVE NO EVIDENCE WHICH INDICATES THE NECESSITY FOR A REDUCTION IN ALLOWABLES=
HARRY C WELLS ASST DIV PROD ENGR THE PURE OIL CO==

:13 1958=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

1958 FEB 28 AM 10 42

1201

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

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(37)

LA062

L DVAC88 PD=FAX DENVER COLO 28 1021AMM=
A L PORTER JR=
OIL CONSERVATION COMM SANTAFE NMEX=

WE SUPPORT RALPH LOWE IN HIS APPLICATION FOR EMERGENCY ORDER REDUCING OIL ALLOWABLES IN THE GLADIOLA POOL=
COLORADO OIL & GAS CORP BY J P MORONEY
VICE PRESIDENT=

Case file
E-8
Case No. 1394

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM (47).

W. P. MARSHALL, PRESIDENT

1201

SYMBOLS
DL = Day Letter
NL = Night Letter
LT = International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

LA155 DB241 3 EX

1958 MAR 12 PM 2 13

D LUA297 PD=LUBBOCK TEX 12 243PMC=
A L PORTER, SECY AND DIR=
OIL CONSERVATION COMM SANTA FE NMEX=

I AM IN AGREEMENT WITH RALPH LOWE'S REQUEST NUMBER 1394 IN REDUCING ALLOWABLE GLADIOLA FIELD=
JACK MARKHAM=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE

JAKE L. HAMON
VAUGHN BUILDING
DALLAS, TEXAS

March 21, 1958

Mr. Ralph Lowe
Midland Tower
Midland, Texas

Re: Reduction of Allowables in
The Gladiola (Devonian) Pool,
Lea County, New Mexico

Dear Sir:

I am the owner of only one well, which is in the extreme South end of the Gladiola Field. We completed this well on June 21, 1957, and started producing it at the allowable rate. It began showing water. We cut it back promptly to approximately 125 barrels a day and have been producing at that rate ever since.

Our production the first fifteen days of March on this well averaged 123 barrels a day on a 7/64" choke with 500 pounds pressure at the well head. At this rate, it ceased making water and is still not showing any water.

Our engineers advise that they are in accord with your petition requesting that the allowable rate in this field be reduced, and you are accordingly authorized to present this letter in evidence at the hearing.

Yours very truly,

Jake L. Hamon

Jake L. Hamon:dw

COLORADO OIL AND GAS CORPORATION
DENVER CLUB BUILDING
DENVER, COLORADO

March 21, 1958

Ralph Lowe
P. O. Box 832
Midland, Texas

Re: Allowable Production
Gladiola (Devonian) Field
Lea County, New Mexico

Gentlemen:

The Colorado Oil and Gas Corporation owns varying working interests in five leases producing from the Devonian formation in the Gladiola Field in Lea County, New Mexico.

After engineering studies Colorado Oil and Gas Corporation is agreeable to and strongly recommends that in the interest of conservation, allowable rates of production in the Gladiola Field be reduced for a period of six months to one year to allow time to observe field performance of wells in this field at reduced allowable rates. We recommend that allowable rates be reduced to a maximum of 190 barrels per well per day.

You may present this letter as a statement of our position at the forthcoming hearing on this matter to be held next Wednesday, March 26.

Very truly yours,

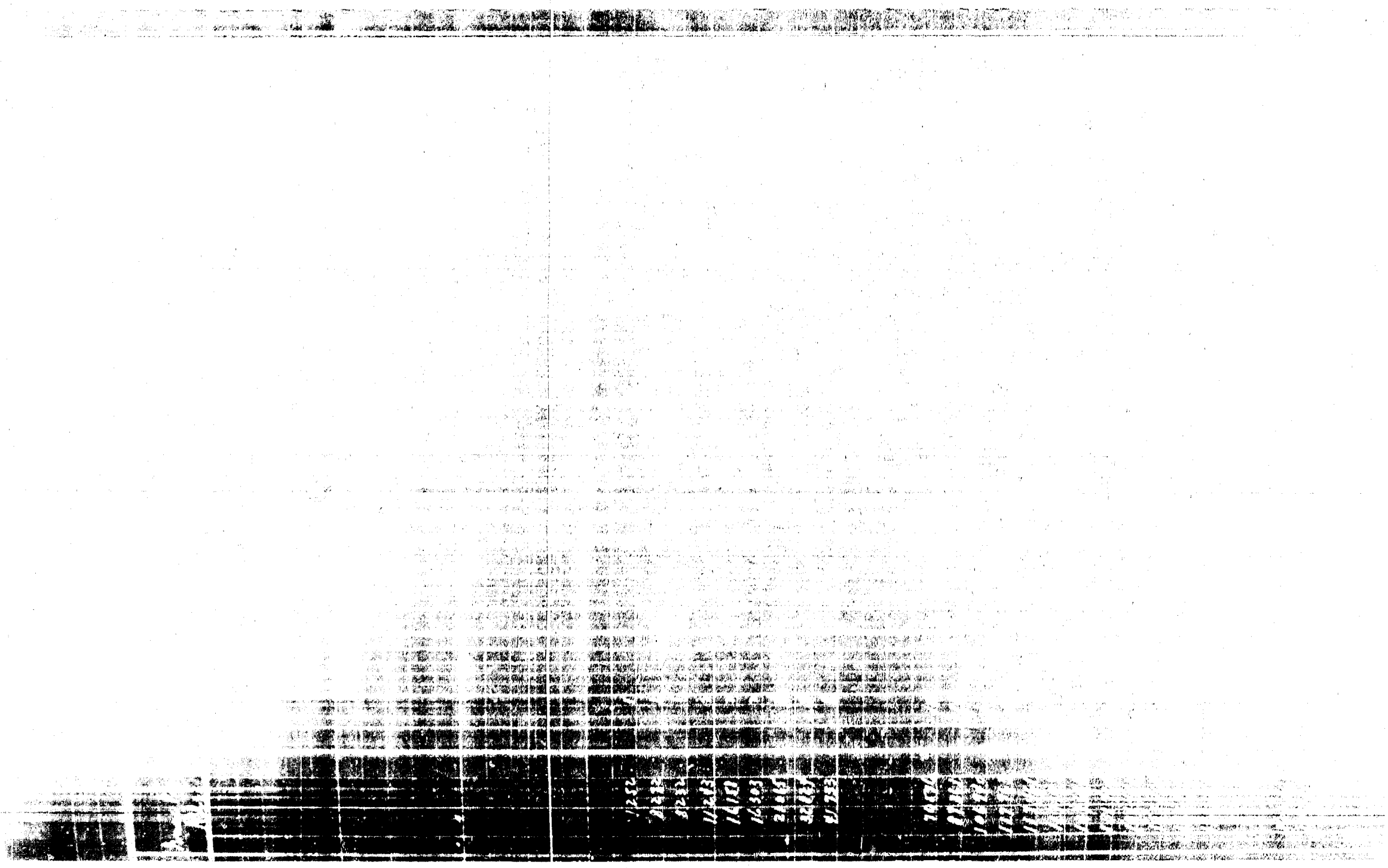
COLORADO OIL AND GAS CORPORATION

F. W. Heiser
Asst. Manager of Drilling and Production

FWH:vbs

Kenna
NEW HOPE
LONE
SOUYRES (ABD)
Elkins
ACME
High Lonesome
LIGHTCAP
TWIN LAKES
SHELF
S.R.R.
V E S
NORTHWEST
BASIN
KE (ABD)
MESCALERO
LANE
Coprock
CHISUM
APACHE SPRINGS
BAGLEY NO.
WHITE RANCH
MOORE
FOUR LAKE
E. CAPROCK
BAGLEY
BAGLEY E.
RANGER LAKE
HIGHTOWER
CAPROCK
(ABD)
LAZY "J"
WILLIAMS
GROSS (ABD)
BAUM
NO. TULK (ABD)
SAUNDERS
CAPROCK
TULK
CEDAR POINT
SO. SAUNDERS
HUME
HIGH LONESOME
HENSHAW W.
AND. RCH. W. (ABD)
ANDERSON RCH.
(ABD)
OUFFIELD
SQ. HIGH LONESOME (ABD)
FOREST
SQUARE LAKE
ROBINSON
RED LAKE
KEMNITZ
SAN MAL
NO. MALJAMAR
GRAYBURG-JACKSON
ROBERTS
SHOE BAR
W. CAVE
CAVE
HENSHAW ANDERSON
BAISH
LEAMEX
AID
MALJAMAR
EAST MALJAMAR
VACUUM
GRAYBURG-KEELEY
PREMIER
FREN
PEARSALL
N. SHUGART
CORBIN
ARTESIA
LEO
YOUNG
SO. MALJAMAR
LOCO HILLS
CORBIN SO.
PALMILLO (ABD)
BENSON NO.
TURKEY TR. E.
SHUGART
QUERECHE PLAINS
WATKINS
SANTA NINO (ABD)
TURKEY TRACK
CULWIN (ABD)
BUFFALO
LUSK

Maples
Enochs
Pep
Emzy
Highway
Lingo
NEW HOPE
MORTON
(ABD)
BLUIT
Bluit
BLEDSOE
Bledsoe
BLEDSOE E.
Lehman
Milnesand
MILNESAND
COCHRAN
NO. ALLISON
TWO STATES
ALLISON
BOUGH
GAS FLD
CROSS ROADS, E.
BUCKSHOT
CROSS ROADS
SAWYER
(ABD)
COCHRAN (ABD)
CROSS RDS. SO.
NORTH ECHOL
CULP
DICKINSON
LANDON
WINTHROP
FIELDS
ECHOL
EAST ECHOL
FIELD RCH.
SEC
FIELDS SO.
GLA. VOLA NO.
FOUR LAKE
GLADIOLA
SABLE
RANGER LAKE
Tatum
Gladiola
Bronco
PLAINS
GLADIOLA SO
BLD D
HENARD
BRAHANEY W.
BRAHANEY
PLAINS
OWNBY WEST
OWNBY
KING
BRONCO
TAMARA
CHAMBLISS
PLATANG
WEST
WAPLES-PLAT
WASSON N/E
JANICE
DENTON
CAUDILL
CHAMBERS
WASSON
Denver City
VENIS
SEAGRAVES W.
SEAGRAVE
SEAN
SO. DENTON
LOVINGTON
GEO. ALLEN
JONES RANCH
JONES RANCH SO.(ABD)
TOWNSEND
GIDSON
SHOE BAR NO.
(ABD)
LOVINGTON E.
GARRETT
NO. RUSSELL
TEX-PAC. BROWN
RUSSELL
ODC
WEST LOVINGTON
SHOE BAR
KNOWLES
LOVINGTON
SEMINOLE N/W (ABD)
SO. KNOWLES
SPENCER
ALSABROOK
W. SEMINOLE
CARTER
CARTER N. MEX.
SO.
SEMINOLE
BISHOP CANYON
REEVES
HOBBS
AYERS
Hobbs
E. HOBBS
N. RILEY
SEMINOLE S/W
BOWERS
RILEY
HOBBS S/E
NO. JENKINS
ROBERTSON NO.
DOSS



[illegible] depth of 6150 Subsea - Penn Well

[illegible] Wells by Quarters - 10-28

Quarter	[illegible] 3-1-58	Devonian Above -8150'	Overall Devonian Average Per Well
[illegible]	6	196	33
[illegible]	4	481	120
[illegible]	1	105	105
[illegible]	8	427	53
[illegible]	24	1302	54
[illegible]	1	33	33
[illegible]	4	687	172
[illegible]	1	80	80
[illegible]	13	2128	164
[illegible]	1	92	92
[illegible]	12	[illegible]	[illegible]

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER CONCERNING THE REDUCTION OF ALLOWABLES IN THE GLADIOLA (DEVONIAN) POOL, LEA COUNTY, NEW MEXICO.

EMERGENCY ORDER NO. E-8

NOW, on this 28th day of February, 1958, the New Mexico Oil Conservation Commission, a quorum being present, having considered the application of Ralph Lowe et al., for an emergency order and being fully advised in the premises,

FINDS:

1. That the applicant, Ralph Lowe, is the operator of twenty-four of the approximately ninety wells completed in and producing from the Gladiola (Devonian) Pool in Lea County, New Mexico.

2. That the producing mechanism in the said Gladiola Pool is an active water drive.

3. That the number of wells producing water in said Gladiola (Devonian) Pool has been increasing over the period of the last six months and that on February 21, 1958, the Ralph Lowe, et al. Lawton-State No. 2 Well, located in the NW/4 SW/4 of Section 32, Township 11 South, Range 38 East, NMPM, commenced producing 100% water, whereas prior to that date said well was capable of producing top allowable since completion on September 19, 1956.

4. That there is a possibility that the water production from certain of the wells in the said Gladiola (Devonian) Pool is premature and that said premature water production has been caused by the production of said wells at excessive rates.

5. That production of the wells in the Gladiola (Devonian) Pool at the rate authorized for the month of March 1958, may result in underground waste.

6. That during the period of purchaser prorationing in June, July, August, September, and October, 1957, the production from the wells in the northernmost portion of the pool (formerly North Gladiola-Devonian Pool) was reduced to an approximate average daily production of 190 barrels of oil and that during said period the pressure performance of certain of said wells indicated that production at a lower rate would result in the additional ultimate recovery of oil from said wells.

7. That the production from all wells in the Gladiola (Devonian) Pool should be curtailed to an amount not to exceed 190 barrels of oil per day per well.

8. That an emergency exists which requires the promulgation of an order without notice and hearing to eliminate the possibility of waste occurring in the Gladiola (Devonian) Pool in Lea County, New Mexico.

9. That the Commission should call a hearing at the earliest possible date to consider the advisability of a permanent reduction of the allowables in the said Gladiola (Devonian) Pool.

IT IS THEREFORE ORDERED:

(1) That notwithstanding the allowables assigned to the wells in the Gladiola (Devonian) Pool in Lea County, New Mexico by the Oil Proration Schedule for the month of March, 1958, no well in said Gladiola (Devonian) Pool shall produce an amount in excess of 190 barrels of oil per day during the effective period of this order.

(2) That the back allowable authorized for production in the Gladiola (Devonian) Pool by the Oil Proration Schedule for the month of March, 1958, be and the same is hereby suspended during the effective period of this order.

(3) That this order shall become effective at 7 o'clock a.m. Mountain Standard Time on March 1, 1958, and shall expire at 7 o'clock a.m. Mountain Standard Time on March 16, 1958.

(4) That a case be called for the regular hearing on March 13, 1958, to consider the advisability of a permanent reduction of the allowables in the Gladiola (Devonian) Pool, Lea County, New Mexico.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF THE STATE OF NEW
MEXICO FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 1394
Order No. R-1139-A

APPLICATION OF RALPH LOWE, ET AL.,
FOR AN ORDER REDUCING ALLOWABLES
IN THE GLADIOLA (DEVONIAN) POOL,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 13, 1958, and again on March 26, 1958, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 28th day of March, 1958, the Commission, a quorum being present, having considered the application, the evidence adduced, and the testimony presented at said hearings and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Ralph Lowe, appeared at the hearing March 13, 1958, and presented evidence to the effect that premature water encroachment and waste would occur in the Gladiola (Devonian) Pool if certain of the wells in said pool were permitted to produce at normal allowable rates; further that the Commission continued Case 1394 to March 26, 1958, and entered Interim Order No. R-1139, effective at 7 o'clock a.m., Mountain Standard Time, March 16, 1958, reducing the allowables in the Gladiola (Devonian) Pool until a permanent order of the Commission could be entered.

(3) That protestant, Pan American Petroleum Corporation, appeared at the hearing on March 26, 1958, and presented evidence to the effect that no premature water encroachment or waste is occurring, or is likely to occur in the future in the Gladiola (Devonian) Pool if wells in said pool are permitted to produce at normal unit allowable rates.

(4) That in the light of the evidence thus far adduced there does not appear to be a reasonable probability that premature water encroachment or waste will occur in the Gladiola (Devonian) Pool if the wells in said pool are permitted to produce at normal unit allowable rates.

(5) That upon completion of its case, protestant, Pan American Petroleum Corporation, made a motion to dismiss Case No. 1394.

(6) That applicant, Ralph Lowe, objected to the motion for dismissal.

(7) That Interim Order No. R-1139 should be rescinded and that Case No. 1394 should be dismissed.

IT IS THEREFORE ORDERED:

1. That Interim Order No. R-1139 be and the same is hereby rescinded.

2. That the Proration Manager of the Commission be and the same is hereby directed to issue supplements to the April, 1958, Proration Schedule, authorizing the production during April, 1958, of that back allowable for the Glaciola (Devonian) Pool which was suspended by Emergency Order No. E-8 and Interim Order No. R-1139.

3. That Case No. 1394 be and the same is hereby dismissed.

4. That this order shall become effective at 7 o'clock a.m., Mountain Standard Time, April 1, 1958.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF THE STATE OF NEW
MEXICO FOR THE PURPOSE OF
CONSIDERING:

CASE NO. 1394
Order No. R-1139

APPLICATION OF RALPH LOWE, ET AL.,
FOR AN ORDER REDUCING ALLOWABLES
IN THE GLADIOLA (DEVONIAN) POOL,
LEA COUNTY, NEW MEXICO.

INTERIM ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 13, 1958, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 14th day of March, 1958, the Commission, a quorum being present, having considered the application, and the evidence thus far adduced and being fully advised in the premises,

FINDS:

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

(2) That it was not possible for the operators in the Gladiola (Devonian) Pool to make a complete study of the reservoir characteristics of said pool prior to the time that this case was called for hearing.

(3) That it will be possible for the operators in the Gladiola (Devonian) Pool to make the necessary reservoir studies prior to March 26, 1958, and that this case should therefore be continued to that date.

(4) That all the parties who appeared and protested the granting of the subject application stipulated their willingness to furnish the applicant with copies of all exhibits which said protestants will offer at the continued hearing of this case within a reasonable time prior to said hearing.

(5) That there is a possibility that premature water encroachment will occur in certain of the wells in the Gladiola

(Devonian) Pool if said wells are permitted to produce at allowable rates authorized for March and April, 1958, and further that said premature water encroachment may result in underground waste.

(6) That the production from all wells in the Gladiola (Devonian) Pool should be curtailed to an amount not to exceed 190 barrels of oil per day per well.

IT IS THEREFORE ORDERED:

(1) That notwithstanding the allowables assigned to the wells in the Gladiola (Devonian) Pool in Lea County, New Mexico, by the oil proration schedules for the months of March and April of 1958, no well in said Gladiola (Devonian) Pool shall be produced in excess of 190 barrels of oil per day during the effective period of this order.

(2) That the back allowable authorized for production in the Gladiola (Devonian) Pool by the Oil Proration Schedule for the month of March 1958, be and the same is hereby suspended during the effective period of this order.

(3) That this order shall become effective at 7 o'clock a.m. Mountain Standard Time, on March 16, 1958, and shall remain in effect until such time as a permanent order is entered in this case.

(4) That Case No. 1394 be and the same is hereby continued until 9 o'clock a.m. on March 26, 1958, at Mabry Hall, State Capitol, Santa Fe, New Mexico.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

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

ir/

APPLICATION OF RALPH LOWE ET AL.
FOR AN EMERGENCY ORDER REDUCING
ALLOWABLES IN THE GLADIOLA POOL
IN LEA COUNTY, NEW MEXICO.

APPLICATION

COMES now Ralph Lowe, on behalf of himself and Colorado Oil & Gas Corporation, and makes application for an emergency order and in support thereof states:

1. That Ralph Lowe is the operator of twenty-four of the approximate ninety wells completed in and producing from the Gladiola (Devonian) Pool in Lea County, New Mexico.

2. That the producing mechanism in the said Gladiola Pool is an active water drive.

3. That the number of wells producing water in said Gladiola Pool has been increasing over the period of the last six months and that on February 21, 1958 the Ralph Lowe, et al. Lawton-State No. 2 Well located in NW/4 SW/4 of Section 32, Township 11 South, Range 38 East, NMPM, commenced producing 100% water, whereas prior to that date said well had been capable of producing top allowable since completion on September 19, 1956.

4. That the applicant states and believes that the water production from the above-described wells is premature and that said premature water production has been caused by the production of said wells at excessive rates.

5. That the said Gladiola Pool is in the 12,000 to 13,000 foot depth range and that said pool is therefore assigned a depth factor of 6.75 times the normal unit allowable and that the top unit allowable for said pool for the month of March, 1958, will be 236 barrels of oil per day.

6. That in addition to the top unit allowable heretofore set forth, the Commission has authorized the production during the month of March, 1958, of back allowable in the said Gladiola Pool as a result of purchaser prorationing by Magnolia Petroleum Company during the months of June, July, August, September and October, 1957.

7. That the applicant further states and believes that the production of the wells in the said Gladiola Pool at the presently authorized rates will result in additional premature water encroachment thereby reducing the ultimate recovery of oil from the said Gladiola Pool.

8. That during the period of purchaser prorationing referred to above, the production from the wells in the northern-most portion of the pool (formerly North Gladiola Pool) was reduced to an approximate average daily production of 190 barrels of oil and that during said period the pressure performance of certain of said wells indicated that production at this lower rate would result in the additional ultimate recovery of oil from said wells.

9. That the applicant states and believes that time is of the utmost importance and that an emergency exists which requires the promulgation of an emergency order to prevent the waste of oil in the Gladiola Pool in Lea County, New Mexico.

WHEREFORE the applicant prays that an emergency order be immediately entered curtailing the maximum production from any well in the Gladiola Pool in Lea County, New Mexico to an amount not to exceed 190 barrels of oil per day, and further that the Commission call a hearing on its own motion at the earliest possible date to consider the entry of a permanent order in this regard.

RALPH LOWE ET AL.

By: Harvin L. Landua
HARVIN L. LANDUA

ir/

February 28, 1958

7. That the applicant further states and believes that the production of the wells in the said Gladiola Pool at the presently authorized rates will result in additional premature water encroachment thereby reducing the ultimate recovery of oil from the said Gladiola Pool.

8. That during the period of purchaser prorationing referred to above, the production from the wells in the northern-most portion of the pool (formerly North Gladiola Pool) was reduced to an approximate average daily production of 190 barrels of oil and that during said period the pressure performance of certain of said wells indicated that production at this lower rate would result in the additional ultimate recovery of oil from said wells.

9. That the applicant states and believes that time is of the utmost importance and that an emergency exists which requires the promulgation of an emergency order to prevent the waste of oil in the Gladiola Pool in Lea County, New Mexico.

WHEREFORE the applicant prays that an emergency order be immediately entered curtailing the maximum production from any well in the Gladiola Pool in Lea County, New Mexico to an amount not to exceed 190 barrels of oil per day, and further that the Commission call a hearing on its own motion at the earliest possible date to consider the entry of a permanent order in this regard.

RALPH LOWE ET AL.

By: Harvin L. Landua
HARVIN L. LANDUA

ir/

February 28, 1958

CLASS OF SERVICE
This is a fast message unless its deferred character is indicated by the proper symbol.

WESTERN UNION
TELEGRAM

W. P. MARSHALL, PRESIDENT

(46)

SYMBOLS
DL=Day Letter
NL=Night Letter
LT=International Letter Telegram

The filing time shown in the date line on domestic telegrams is STANDARD TIME at point of origin. Time of receipt is STANDARD TIME at point of destination

DA086 NSB194

NS EDA065 PD=MAGNOLIA ARK 24 1139AMC= 1959 MAR 24 AM 11 58

RALPH LOWE=

ATTN HARVIN LANDUA=RM 905 MIDLAND TOWER MIDLAND TEX=

THE FOLLOWING WIRE SENT TODAY TO NEW MEXICO OIL CONSERVATION COMMISSION SANTA FE NEW MEXICO= MCALESTER FUEL CO IS AGREEABLE TO CONTINUING THE 190 BOPD ALLOWABLE IN THE GLADIOLA DEVONIAN POOL FOR AN INDEFINITE PERIOD OR UNTIL ADEQUATE JUSTIFICATION FOR CHANGE IS EVIDENT=

MCALESTER FUEL CO VERNON TURNER=

190 BOPD=

THE COMPANY WILL APPRECIATE SUGGESTIONS FROM ITS PATRONS CONCERNING ITS SERVICE