BEFORE THE
OIL CONSERVATION COMMISSION
HOBBS, NEW MEXICO
APRIL 13, 1960

IN THE MATTER OF:

CASE 1941 Application of Jal Oil Company for exceptions to various provisions of Orders R-520, R-967, and R-1092-A for 5 wells in the Jalmat Gas Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order cancelling the over-production incurred by the following described wells in the Jalmat Gas Pool:

Legal Well No. 2, NE/4 SE/4, Section 31
Dyer Well No. 3, SE/4 NE/4, Section 31
Jenkins Well No. 1, SW/4 SW/4, Section 29
Owens Well No. 1, SW/4 SW/4, Section 21

all in Township 25 South, Range 37 East, and the

Watkins Well No. 2, SE/4 NE/4, Section 35, Township 24 South, Range 36 East.

Applicant further seeks an exception to the deliverability test requirements of said Orders for each of the above-described wells and also seeks an exemption from prorationing as required by the Special Rules and Regulations for the Jalmat Gas Pool.

BEFORE:

John Burroughs
~~Daniel S. Nutter~~
A. L. Porter

TRANSCRIPT OF PROCEEDINGS

MR. PORTER: We will proceed at this time to Case 1941.

MR. PAYNE: Case 1941. Application of Jal Oil Company for exceptions to various provisions of Orders R-520, R-967, and

R-1092-A.

MR. GIRAND: If the Commission please, I would like to have the record show W. D. Girand of Hobbs, New Mexico, Mr. T. Murray Robinson of Oklahoma City, appearing on behalf of the Applicant.

At this time, if the Commission please, in regard to the application of 1941, we desire to delete the wells designated as Legal Well No. 2 and the Jenkins Well No. 1. The applicant will attempt to recomplete those wells, and there will be some testimony offered in the course of what they propose to do in regard to those.

At this time we would like to have Mr. Hardwick and Mr. Dewey Watson sworn, please. This will be all my witnesses.

(Witnesses sworn)

MR. GIRAND: Call Mr. Hardwick, please.

E. D. HARDWICK,

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

DIRECT EXAMINATION

BY MR. GIRAND:

Q State your name, please.

A E. D. Hardwick.

Q And where do you live, Mr. Hardwick?

A Midland, Texas.

Q By whom are you employed and in what capacity?

A Jal Oil Company, Inc. Vice president.

Q Mr. Hardwick, you are familiar with the application filed by the Jal Oil Company in Case 1941 where the Jal Oil Company desires exceptions to various provisions of Orders R-520, R-967, and R-1092-A for 5 wells in the Jalmat Gas Pool, Lea County, New Mexico?

A I am.

Q In connection with that application, did you at my request, prepare certain information in regard to each of the wells?

A I did.

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

Q Mr. Hardwick, I hand you here what has been identified as Applicant's Exhibit No. 1, being a copy of the "Southeast Gas Proration Schedule" prepared by the New Mexico Oil Conservation Commission for the month of April. I direct your attention to the page showing the April, 1960 Southeast Gas Proration Pool Balancing Schedule.

MR. PORTER: Does that page have a number?

MR. GIRAND: No, sir, the pages are unnumbered. It's the third page.

Q (By Mr. Girand) In the lower right hand corner of that Exhibit, that page of the Exhibit, there appears a computation in regard to the Jalmat Gas Pool, does it not?

A Yes.

Q Now, what is the allowable as established for the month of April, by that schedule?

A Six million, five hundred and forty-one thousand, nine hundred and twenty-six MCF.

Q All right. And how much of that allowable is assigned to marginal wells? Is that shown on the Exhibit?

A I don't believe any of it is assigned margins.

Q There is no allowable assigned to the margin of wells in that Exhibit?

A I don't see it.

Q All right. How many wells does it show are producing in the Jalmat Pool for the month of April?

A Three hundred and eighty-five wells.

Q All right. Now, directing your attention to Page 31 of the Exhibit, I will ask you whether or not the Exhibit shows on Page 31 the allowable assigned to the wells in question, the Dyer No. 3, the Watkins No. 2, and the Owens No. 1?

A Yes. It does show for April.

Q Now, directing your attention to those particular wells, will you read into the record the figures that are shown in regard to the particular wells.--

A The Dyer No. 3 --

Q -- and identify them by calling them as designated in the report?

A Dyer No. 3 has an allowable of 5,326 MCF's under "April New Allocation" column.

Q All right. What was the Watkins No. 2?

A Watkins No. 2 has an allowable of 1,950 MCF's for April, new allocation.

Q And in regard to the Eva Owen No. 1?

A Eva Owen No. 1 has 2,983 MCF's for April, new allocation.

Q Are all of these wells overproduced at the present time?

A No. The Eva Owen No. 1 is not overproduced, according to this schedule.

Q Now, in regard to the Dyer No. 3 and the Watkins No. 2, are those wells overproduced at the present time?

A Yes.

Q Are they overproduced more than the tolerance allowed by the Orders of the Commission?

A Appears so.

Q Mr. Hardwick, has the Jal Oil Company had their properties evaluated by a petroleum engineer to determine the reserves under additional wells?

A They have.

Q Who prepared that report?

A Ira Brinkerhoff, oil and gas consultant.

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

Q Mr. Hardwick, I hand you here what has been identified as Applicant's Exhibit No. 2, and ask you to state whether or not that is a reproduction of a part of the report prepared by the petroleum engineer you referred to?

A Yes, it is.

Q Now, in connection with that Exhibit, does that Exhibit show the reserves as of October the 1st, 1959, attributable to the wells in question?

A Yes, sir.

Q Directing your attention to those particular wells, being the Legal No. 2, the Eva Owen No. 1, and the Watkins No. 2, I will ask you to read into the record the reserves as determined by the engineer attributable to those particular wells and identify it by wells, please sir.

A The Dyer No. 3, being the first one on the list; all the reserves on this report listed under high pressure gas are for the Dyer No. 3. The reserves unrecovered are future reserves, October, '59 were 2,648,289 MCF. That is the Dyer No. 3 listed under "Gas Wells" column.

Q The Exhibit shows it as one--

A It shows it as one gas well.

Q --one gas well.

A Which is all in the zone leased.

Q It doesn't give the well number. Proceed, Mr. Hardwick.

A The next well in question is the Jenkins No. 1, which, according to this report, there are two gas wells listed on this report. In discussing, it was decided that for this information, the reserves would be divided in half, and the original reserves being 2,358,190 MCF's, and I did not divide the production listed

"Cumulated to 10-1-59", but I do have it through December 1959, which is 891,756, leaving a remaining future recovery of 1,466,443 MCF's.

Q Now, that is exhibited as of the end of December?

A Yes, because there were two wells listed in this. I quoted it in that manner.

Q All right. Now, directing your attention to the Eva Owen No. 1 --

A The Eva Owen No. 1, as listed on the October 1959 report, shows an unrecovered future reserve of 1,897,873 MCF.

Q Now, Mr. Hardwick, in connection with your study --withdraw that question. Go ahead with Watkins No. 2, if you will, please.

A The last well under question of this report is on the 2nd page of the reserves report, same being Watkins No. 2, showing unrecovered future reserves of 2,871,421 MCF.

Q Now, Mr. Hardwick, in connection with your study of the problem, did you prepare an analysis showing the number of Jalmat wells and the number of Jal Oil Company wells, and the percentage of Jal Oil Company wells to total wells in the Jalmat area, and also the total Jalmat allowable and the amount of gas that was assigned to the Jal Oil Company, Jalmat allowable, and the percentage of Jal's allowable to the total allowable of the pool?

A I did.

(Thereupon, Applicant's Exhibit No. 3 was marked for identification.)

Q Now, that Exhibit No. 3, directing your attention to it, covers the allowables as established for the month of March, 1960; is that correct?

A That's correct.

Q For the purpose of the record, will you read what that report shows?

A It shows the total Jalmat wells, 387. Jal Oil Company has 10 wells in this pool, for a percentage of 2.584 percent.

Q All right. Now, what does it show in regard to the allowable assigned to the Jalmat Pool for the month of March, 1960?

A The total allowable for the month of March for the Jalmat Pool was 8,600,945 MCF's. Jal Oil Company allowable was 131,666 MCF's. Percentagewise, 1.531 percent to total.

Q And the Exhibit shows that while the Jal Oil Company has 2.584 percent of the wells in the Jalmat Pool, it only is allowed to produce 1.531 percent of the gas?

A That's correct.

Q Now, in connection with the preparation of this application, Mr. Hardwick, did you make the same study in regard to the allowable assigned to the Jalmat Pool for the month of April,1960?

A That's correct.

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

Q I hand you here what has been marked, identified as Applicant's Exhibit No. 4, and ask you to state what that Exhibit shows?

A This Exhibit shows that for the month of April there were a total of 385 Jalmat Wells, Jal Oil Company having 10, for a percentage to total of 2.597 percent. The total allowable for the Jalmat Pool for the month of April was 6,541,921 MCF's; the allowable attributed to Jal Oil Company's wells, 100,240 MCF's; Jal Oil Company's allowable to total is 1.532 percent.

Q All right, sir. Mr. Hardwick, were you connected with the Jal Oil Company in October of 1959?

A That's true.

Q In the same capacity that you presently are representing the Company?

A I was.

Q You are familiar with the hearing in regard to Case 1778 and 1779, which were consolidated by the Commission?

A I am.

Q In that case, were the subject wells, the Eva Owen No. 1, the Dyer No. 3 and the Watkins No. 2 before the Commission for consideration?

A They were.

MR. GIRAND: At this time, if the Commission please, we would like to offer and adopt the record in the consolidated cases, No. 1778 and No. 1779, heard by the Examiner in Santa Fe on October the 7th, 1959, as a part of the record in this case.

MR. PORTER: Does anyone have any objections as to the admission of the records in the two previous cases? Any objection

to those records being made a part of this case? They will be considered part of the case.

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

Q (By Mr. Girand) Mr. Hardwick, I hand you here a letter dated June 8, 1959 on stationery of El Paso Natural Gas Company, addressed to Jal Oil Company, over the signature of D. B. Gillit, Dispatching Department. I will ask you whether or not you have ever seen that letter before?

A I have.

Q Was that letter written at the time shown and received by you according to the stamp thereon --

A Yes.

Q --as far as you know?

A Yes.

Q Does that letter deal with any of the wells in question at this hearing?

A Yes, it does.

Q For the record, would you read into the record the pertinent parts of the letter dealing with the subject wells?

A The second paragraph of the letter states: "The New Mexico Oil Conservation Commission has reclassified four (4) of your wells connected to our gathering system from marginal to non-marginal status. The wells are the Dyer #3, Legal #2, Jenkins #1 and Repollo #1 in the Jalmat Gas Pool. The allowables were made retro-

active to July, 1958, and all of the wells are now overproduced due to being produced at all times as marginal wells."

Q Now, that letter is dated 1959?

A That's dated June 8, 1959.

Q And prior to the receipt of that letter, your wells have been classified as marginal wells without restriction as to the amount of production?

A I believe that's correct.

Q Now, generally speaking, these wells-- I will ask you whether or not these wells produce any fluid in conjunction with the gas?

A Yes.

Q I will ask you whether or not the wells are artificially or mechanically produced?

A All except one is mechanically produced.

Q Which well is not mechanically produced?

A I am sorry. All are mechanically produced.

Q All right. Now, up until June of 1959 the wells have been classified as marginal wells under the Rules of the Commission?

A That's correct.

Q Then, in June of 1959 the Commission assigned or designated the wells as non-marginal wells?

A That's correct.

Q And charged against the wells all production up to June of 1958; is that correct?

A July of '58.

Q July of '58?

A According to this.

Q In other words, the production from the wells for the months of July, 1958 up until June of 1959 were legally produced by the Company?

A That's correct.

Q And without any knowledge that they would be charged against any allowable later set by the Commission?

A I believe that's correct.

Q Now, do you know of your own knowledge whether or not the wells would be overproduced at this time had the Commission not gone back for a period of one year and charged it against the wells, the gas produced by the wells?

A I can't answer for certain, but I don't believe they would.

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

Q Mr. Hardwick, I hand you here an instrument containing two pages, marked Applicant's Exhibit No. 6, appearing to be a letter from El Paso Natural Gas Company to Girand and Stout, Lawyers, Hobbs, New Mexico. Attention: W. D. Girand, over the signature of J. W. Baulch, Jr. I will ask you whether or not you have seen that letter or a copy thereof?

A Yes, I have.

Q Does the Exhibit on its face show a copy directed to your

office at Midland, Texas?

A It does.

Q What does Exhibit 6 deal with, Mr. Hardwick?

A It's dealing with the Watkins No. 2 Well located in the SE/4 of the SE/4 of Section 35, Township 24 South, Range 36 East, Lea County, New Mexico.

Q Mr. Hardwick, who is J. C. Chewning?

A She is Secretary for Jal Oil Company, Inc.

Q And where does she reside?

A Midland, Texas.

Q Are you familiar with her signature?

A Yes, I am.

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

Q I hand you here what has been marked Applicant's Exhibit 7, and ask you whether or not that is a photo copy of her signature?

A That's correct.

Q Now, Exhibit No. 6 appears to be in affidavit form. Will you state what the Exhibit purports to show?

A The Exhibit purports to show the original reserves less production through 1959, showing an unrecovered reserve January 1st, 1960--

Q Now --

A --for Watkins No. 2.

MR. GIRAND: I would like to have the record corrected to show that is Exhibit 7.

Q (By Mr. Girand) From what source were the original reserve figures obtained?

A From the Ira Brinkerhoff report.

Q The Exhibit has previously been introduced here?

A That's correct.

Q All right. From what source were the production, through December 1959, figures obtained?

A They were obtained through to October, '59 from the Brinkerhoff report, and from the Accounting records through December, '59.

Q And, of course, the unrecovered reserves are just a subtraction of the production from the original reserves?

A That's correct.

Q Now, after the hearing before the Examiner in October of 1959, did the Jal Oil Company watch the subject wells closely as to their production mannerisms and abilities?

A They did.

Q In connection with this hearing, did you prepare a memorandum of the producing history of the Watkins No. 2 from October '59 through February of 1960?

A I did.

(Whereupon, Applicant's Exhibit No. 8 was marked for identification.)

Q I hand you here what has been marked as Applicant's Exhibit No. 8, and ask you whether or not that is a reproduced or photo copy of that memorandum?

A That's correct.

Q For the record, will you read into the record your report, skipping the summary well activity and what not?

A This is a summary gathered from the gas production charts and also our field superintendent information. It's brief, but it explains how the well reacted under certain circumstances. From October the 1st to the 8th, it states this was a flowing well and no gas was produced during this period. The well was shut in. Well pressure, casing pressure I should say, 900 pounds. From October the 8th to the 16th, there was no gas produced. The well was shut in. October the 16th to the 23rd, no gas produced. The well was shut in. From October the 23rd to the 31st, well produced 308 MCF. Water produced 250 barrels per day when well was producing. October the 31st to November 8th, well produced 2,120 MCF's. Chart shows when line pressure goes up, production drops due to water condition and line pressure. Water 250 barrels per day. On November 8th to the 16th, well produced 141 MCF's. Well blown in almost every day to keep water off. Had to swab well in on November the 11th as water was too great for well to blow around.

Q Just a minute, Mr. Hardwick. When you say well had to be blown in nearly every day, does that require extra supervision?

A Yes, it does.

Q All right. Go ahead.

A On November 16th to the 22nd, well produced 1,440 MCF's. Water is blown off when well is not on line. Had to swab well on 11/17 due to same condition as above, same being water condition.

Q Now, just for the purpose of the record, Mr. Hardwick, what do you mean, you had to swab the well?

A The well wouldn't unload the water, so you bring a swab unit out, a pulling unit.

Q All right. Proceed, sir.

A On November 22nd to the 30th, well produced 987 MCF's. Changed orifice from three-quarter inch to one-quarter inch to see if well would produce less gas and not logg off.

MR. PORTER: Mr. Girand, at this time the hearing will recess until one-thirty.

(Recess)

MR. PORTER: The hearing will come to order, please. Mr. Girand, will you proceed with the questions?

Q (By Mr. Girand) Mr. Hardwick, I believe your last statement was in regard to the production record of the Watkins No. 2, for the period of November 22nd through November 30th, that appearing on Exhibit 8. Do you have Exhibit 8 in front of you, sir?

A Yes, I do.

Q All right. Will you proceed, starting with November 23rd--November 22nd-November 30th period and continue with your statement?

A From Nomvember the 22nd to the 30th, the well produced

987 MCF's. The orifice was changed from a three-quarter inch to a one-quarter inch to see if the well would produce less gas and not logg off. December 1st to the 8th, well produced 221 MCF's. Well died on one-quarter inch orifice and wouldn't blow around. Used a swab unit December 4th to get water off the formation and back to producing. December 8th to the 16th, the well died again on a quarter inch orifice and wouldn't produce. Orifice changed December 9th from one-quarter inch to one-half inch, and well swabbed in. The well produced approximately 350 MCF's and died. Well swabbed in December 10th produced 25 MCF's and died. Well swabbed in December 11th produced approximately 40 MCF and died. Orifice changed from one-half inch to one inch, and well was blown in. Well was able to produce with one inch orifice but casing pressure has dropped from 900 pounds to 600 pounds in approximately two months.

Q Just a minute. You mean that the pressure on the well, casing pressure, dropped three hundred pounds in the two months, being the months of--the last half of October through the first half of December?

A That's correct.

Q All right. Proceed, sir.

A December 16th to the 23rd, well produced 2,335 MCF's. Choke was pinched to reduce flow of gas. Well started logging off. This flow procedure was tested with El Paso Natural Gas Company as per their letter of March 7, 1960.

Q That letter of March 7th, 1960 is a letter previously

introduced in evidence here and identified by you; is that correct?

A Yes.

Q All right. Go ahead.

A December 23rd to the 31st, well produced 2,642 MCF. Chart shows well heading due to enormous amount of water, same being approximately 250 barrels per day. January 1st to the 8th, well produced 2,164 MCF. Chart shows well pinched down to determine low rate of flow and well died. Well later blown in when line pressure dropped allowing same to unload water. January the 8th to the 16th, well produced 2,696 MCF. Chart shows production at a specified rate; when choke is pinched well begins to logg off. Then choke is opened up and well unloads the water. January 16th to the 23rd, well produced 2,075 MCF's. Well producing at as low rate as can be produced without logging off. Water still approximately 250 barrels per day. January 23rd to the 31st, well produced 2,707 MCF's. Well started out low and appeared to be logging off, so choke was opened to allow well to unload water. February 1st to the 8th, well produced 2,517 MCF's. Producing at as low a rate as possible without logging off. February 8th to the 16th, well produced 1,706 MCF. Chart shows erratic production due to logging off condition. Well logged off on the 14th due to high line pressure and cold weather. February 16th to the 21st, well produced 1,246 MCF. Chart shows about the same as appeared February 8th to the 16th. February 21st to the 29th, well produced 1,084 MCF's. Well logged off several times due to cold weather. Was able to blow well in when line pressure and

weather permitted. Water production still approximately 250 barrels per day, and casing pressure dropping gradually due to water encroachment. Casing pressure on March 31st, 1960 was 360 pounds.

Q At the commencement of this period, under this Exhibit 8, your casing pressure was approximately 900 pounds?

A When we started, yes, sir.

Q And due to the manner in which the well has had to be produced, the casing pressure has dropped to 360 pounds as of March 31st of this year?

A That's correct.

Q If you know, is that encroachment of water in the zone from which you are producing?

A I can't say.

Q All right. Now, did you, in connection with this application, supervise the making of similar Exhibits covering the well known as the Eva Owen No. 1?

A That's correct.

(Whereupon, Applicant's Exhibit No. 9 was marked for identification.)

Q Mr. Hardwick, I hand you here what has been identified as Applicant's Exhibit No. 9, and ask you to please state what that Exhibit represents?

A Exhibit No. 9 represents the original reserves for the Eva Owen No. 1, and the production through 1959, and the unrecovered reserves, January 1st, 1960.

Q From what source were those figures obtained?

A The original reserves were obtained from the Ira Brinkerhoff report; the production through October was also obtained from the report, and we added to that October, November and December.

Q Then, the unrecovered reserves was just a subtraction of the amount?

A That's correct.

Q Does the Eva Owen Well make water?

A Yes, sir.

Q Was the Eva Owen Well one of the wells that was subject to hearing in Cases 1778 and 1779?

A That's correct.

Q In October, when we had the hearing before the Examiner in an attempt to obtain some relief of these wells, due to the overproduction resulting from the fact that the wells were required to be produced in the manner they are presently being produced, it was the fact that the wells were reclassified, and the allowable or the gas they had produced prior to July of 1959 had been charged against the well. From that time on, did you make a close study of the operations of the Eva Owen Well?

A Yes.

Q From what source did you obtain your information as to the producing habits and characteristics of this well?

A This information was prepared from El Paso Natural Gas Company charts and with our field superintendent information.

(Whereupon, Applicant's Exhibit No. 10 was marked for identification.)

Q Now, I hand you here an instrument containing two pages, identified as Exhibit No. 10, and ask you if that is the photo copy of the memorandum you prepared in regard to the Eva Owen No. 1 Well?

A Yes, it is.

Q Will you read it into the record, the information contained therein?

A From October the 1st to October the 9th, this information is compiled and the well does have a free piston installation, and was shut in approximately one year. Well is dead due to water condition after long shut in period and unable to blow well in.

Q Do you know why the well was shut in in the original instance?

A Yes, the well was overproduced.

Q Was that due to reclassification of the well?

A I believe that's correct.

Q All right. Proceed, sir.

A From October the 9th to the 17th, we have the same situation. We are unable to blow the well in. From October the 17th to the 24th, same as above. From October 24th to the 31st, most of this period is the same as above. Had pulling unit swab well in on the 31st, and same produced 43 MCF's and a considerable amount of water before well died. November 1st to the 9th, well was swabbed in November 3rd, and produced very little before dying. Swabbed

in again November 4th, and produced a total for this period of 90 MCF's and a considerable amount of water. November 9th to the 17th, well produced 59 MCF's for this period. Well was blown in several times and would not take line. This procedure performed each day to get fluid off of well. Produced approximately 40 barrels of water per day. November the 17th to the 23rd, the well produced 175 MCF's under the same conditions as I just described. November 23rd to December 1st, well produced 438 MCF's, under the same conditions. December 1st to the 9th, well produced 442 MCF's under the same conditions. December 9th to the 17th, well produced 297 MCF's. Same conditions. December 17th-December 24th, well produced 121 MCF's. Changed orifice December 18th from a half inch to one inch to get piston to run. Produced 814 MCF's after change, and approximately 40 barrels of water per day. December 24th-January 1st, well produced 1,664 MCF's. Well, according to the charts, having a hard time keeping fluid off the formation. January 1st to the 9th, produced 731 MCF's. Well logged off five times in this period, but was able to blow same in. Water production still about the same. January 9th to the 17th, well produced 175 MCF's. Well was blown each day, but well only took line two times and logged off each time due to water on formation. January 17th to the 24th, well produced 121 MCF's. Unable to get well to take the line. Tried blowing in once or twice each day. January 24th to February the 1st, well produced 7 MCF's. Same conditionsas above. February 1st to the 9th, well produced 451 MCF's. Line pressure down. Well blew in,

but unable to produce normally. February 9th to the 17th, well produced 579 MCF's. Same conditions as above. February 17th-22nd, well produced 161 MCF's. Well logged off after two days low production due to the same conditions as above. February 22nd to March 1st, well produced 348 MCF's. Produced low for one-half the time and was logged off approximately one-half the time. Each time well logged off, the well was worked with to get water off formation and get same back to producing. When producing it unloads approximately 40 barrels of water per day. On March 31st, 1960, the casing pressure was 400 pounds, and the tubing pressure 200 pounds.

Q Now, Mr. Hardwick, in connection with this hearing, did you make a comparison in regard to the Repollo Well No. 1, which was one of the subject wells of the hearing of October, 1959?

A I didn't make a comparison as to the production. I did make a summary of the reserves.

(Whereupon, Applicant's Exhibit No. 11 was marked for identification.)

Q All right. I hand you here what has been identified as Exhibit No. 11, and ask you if that Exhibit was prepared under your supervision?

A That is correct.

Q Now, what is the present status of the Repollo No. 1?

A It's dead.

Q And how long has it been dead?

A Approximately six months.

Q Was the Repollo No. 1 shut in because of overproduction?

A I don't believe it was shut in for that reason.

Q Do you know what reason it was shut in?

A It was shut in a time or two for some specific tests, and we were never able to get it back on.

Q At the time it was shut in, do you know whether or not it was able to meet its allowable?

A I would say yes.

Q Since the tests that were made on the Repollo Well were completed, how long did the Company attempt to bring the Repollo No. 1 back into--

A We worked with it approximately three months.

Q And by working with it, what did you do?

A There was a pumping unit installation at this well, and we continually pumped it, trying to unload the water so that the gas might come back in.

Q Now, your statement, as shown by Exhibit No. 11, deals with the original reserves as determined by the engineering report; is that correct?

A That's correct.

Q And, then, from that you have taken the amount of gas it would produce from the well?

A That's correct. Let me restate that. On this summary which we have presented here, the Repollo is not listed thereon.

Q It is not listed on--

A On the Brinkerhoff report I have here. These came from a prior Brinkerhoff report.

Q I see. You checked the figures against that report?

A Yes, I have.

Q You are satisfied that the figures appearing on Exhibit 11 are correct according to your records?

A That's correct.

Q That report showed a figure of 6,363,446 MCF as the reserves under that well?

A That's correct.

Q And showed the production through December of '59 of 2,184,353--

A That's correct.

Q --MCF. So, according to the report, the unrecovered reserves from that well, due to the fact that it was shut in, amount to 4,179,093 MCF; is that correct?

A That's correct.

Q And as far as your efforts have been since the well was shut in, you have been unable to bring the well back to produce any of that gas?

A That's correct.

Q So, as far as the Company is concerned, that gas is forever lost?

A Yes, sir.

Q Now, in connection with this application, did you make

similar studies in regard to the Dyer No. 3?

A Yes, sir.

(Whereupon, Applicant's Exhibit No. 12 was marked for identification.)

Q I hand you what may be identified as Applicant's Exhibit No. 12, and ask you to state what that Exhibit represents?

A This Exhibit represents the original reserves less production, and the unrecovered reserves as of January 1st, 1960 in the Dyer No. 3. Information is acquired from the Brinkerhoff report.

Q Will you read those figures into the record, please, sir?

A The original reserves, 3,436,278 MCF. Production through December, 1959, 793,606 MCF's. Unrecovered reserves, 2,642,672 MCF.

Q At the hearing in October, did you also make a memorandum as to the producing habits of the Dyer No. 3 Well?

A I did.

(Whereupon, Applicant's Exhibit No. 13 was marked for identification.)

Q I hand you what has been identified as Applicant's Exhibit No. 13, and ask you, is that your memorandum?

A This is.

Q And from what sources did you obtain the information?

A From El Paso Natural Gas Company charts, and our field superintendent information.

Q All right. Will you read the summary into the record, please?

A This well has a piston operation installed therein, and the piston is set from, October period, October 1st to the 9th, the piston is set one and one-half hours on, and one-half hour off.

Q Will you explain that a little bit by just an operation?

A Well, I will explain briefly, but you may want to talk with someone about the full details.

Q Insofar as you know.

A The piston, so far as I know, is a free piston floating up and down in the tubing. And it falls to the bottom and gathers up water, and at a certain time it comes to the top and is held there for a certain length of time, and allows the well to unload water coming thereafter. And this well is producing gas, and, then, the period it's off, it falls to the bottom and starts the same procedure again.

Q All right, sir. Go ahead.

A Each gas production kick on the chart is strong. Then, well production drops considerably due to the water volume. When line pressure is up to approximately a hundred and eighty pounds, production drops sharply. Production for this period is 2,282 MCF. Water, approximately 25 barrels per day. October 9th to the 17th, piston setting is the same. Line pressure was up October 12th, well died. Was able to blow same in on October 14th. Line pressure still high. Well died again. Same thing happened on October 15th

and 16th. Production for this period, 1,419 MCF's. Water about the same. October the 17th to the 24th, piston setting the same. Well blown in on the 17th and well died. Well blown in on October the 19th and died. Same thing happened on October 22nd and 23rd. Production, 405 MCF's for this period. Water increasing. October the 24th-November the 1st. Piston setting the same. Well was blown in four times in this period and logged off each time. Unable to keep same producing due to water. Production, 569 MCF's. Water approximately 30 barrels per day. November the 1st to the 9th. Piston setting the same. Well blown in two times in this period and died each time. Unable to keep producing due to water encroachment. Production, 296 MCF's. Water approximately the same. November the 9th to the 17th. Same piston setting. Unable to blow well in. Had swab unit swab well in well on November 13th, but was unable to keep well producing. Well died about four hours later. Production, 71 MCF's. Water approximately the same. November the 17th to the 23rd. Unable to blow the well in. No gas. November 23rd to December the 1st. Unable to blow well in. No gas. December 1st to the 9th. Piston setting was the same. Swabbed well in December 2nd and same died shortly thereafter. Production, 151 MCF's. Water approximately 30 barrels per day. December 9th to the 17th. Unable to get well to produce. No gas. December 17th to the 24th. Unable to get well to produce. No gas. December 24th-January 1st. Unable to get well to produce. No gas. January 1st to the 9th. Unable to get the well to produce. No gas.

January 9th to the 17th. Unable to get well to produce. No gas. January 17th to the 24th. Unable to produce well, so installed pump jack January the 21st to lift water off the formation. Production, 307 MCF's. Water, 30 to 35 barrels per day. January the 24th to February the 1st. Line pressure high; approximately 225 pounds. Pump running to keep water off the formation. Production is low due to line pressure. Production, 1,091 MCF's. Water production approximately the same. February 1st to the 9th. Changed orifice from one and a quarter to three-quarters. Pump was running. Production, 1,262 MCF's. Water the same. February 9th to the 17th. Pump running to keep formation clean. When line pressure is high, production is down. Production, 880 MCF's. Water the same. February 17th-22nd. Had trouble with pump jack engine and cold weather. Well produced very little gas. Production, 418 MCF's. Water approximately 35 barrels per day when well is producing. February 22nd to March 1st. Well produced in accordance with line pressure. Pump running to keep formation clear of water. Production, 1192 MCF's. Water about the same. This well on March 31st, 1960 had casing pressure of 250 pounds, tubing on the pump.

Q Now, Mr. Hardwick, just what is the Company's aim, insofar as you know, in the filing of this application? What is the Company seeking to obtain from the Commission?

A Well, the Company is certainly not trying to do away with proration. We feel that proration is necessary, but wells such as these, that produce a considerable amount of water, need some type

of a consideration or some form that they can be produced at a rate that it would recover the unrecoverable reserves. All of these wells have a tremendous amount of water for a gas well, and if they can't be produced economically, then, they certainly would be prematurely abandoned. And if abandoned, it's not only loss of reserves to the Company, but it's loss of reserves to the royalty owners and the State, purchaser and just everybody is affected by it.

Q Well, is the Company's opinion that if this gas is allowed to be lost due to the encroachment of water, that it will forever be lost to the public?

A That's true.

Q I will ask you whether or not the wells in question are connected to what is called a low pressure line of one hundred pounds operating pressure; is that correct?

A I believe that's correct.

Q And that is the lowest pressure line that is in existence in the area, that you know of?

A I believe you probably should ask the engineer on that. I am not too familiar--

Q Do you feel that, also, unless you are allowed to produce these wells, the Company, that is, in the manner that you have produced them in the past, that the wells will have to be prematurely abandoned?

A That is true.

Q It would be uneconomical to produce?

A Yes.

MR. GIRAND: I believe that's all I have of this witness.

MR. PORTER: Anyone have any questions of Mr. Hardwick?

CROSS-EXAMINATION

BY MR. PAYNE:

Q Mr. Hardwick, would you refer to your Exhibits 3 and 4 and tell me what relevancy they have, if any?

MR. GIRAND: If the Commission please, I don't think Mr. Hardwick is qualified to pass on the relevancy of the evidence. That is a matter for this Commission.

MR. PAYNE: Mr. Girand, he showed on Exhibits 3 and 4 the total wells in the Jalmat Pool owned by the Jal Oil Company. Then he showed the percentage of the total allowable that the Jal Oil Company gets. Now, he testified as to these matters, and I want to know what he hopes to establish by that.

MR. GIRAND: I think the Exhibit speaks for itself.

Q (By Mr. Payne) In other words, each hole in the ground should get the same amount of gas?

A I didn't say that. I believe that when this was exhibited, Mr. Girand said he requested this information.

Q Yes. Now, and I am trying to determine what it has to do with your proposal here, your requested relief. Do you feel that a well with one acre dedicated to it should have as much allowable as one with one hundred forty?

A I don't.

Q Now, what is the acreage dedicated to each of the wells in question?

A I believe they range from hundred sixty down to approximately forty.

Q And the deliverability always varies, I presume?

A Yes, sir. I think there is probably some question; maybe the engineer will establish on the deliverability. I am not qualified on that.

Q Now, since you have calculated the percentage of the total allowable that you get from-- Have you calculated the percentage that you have with the water in the pool?

A I have not calculated that.

Q Now, Mr. Hardwick, I believe you testified that due to the fact that these wells were reclassified, they generally were overproduced, and that had they been allowed to continue to be marginal wells, they wouldn't have been overproduced; is that right?

A I believe that's correct.

Q Now, Mr. Hardwick, why do you feel that a well which has demonstrated its ability to produce in excess of a non-marginal allowable should be classified marginal?

A Because of the inability, when the well was shut in, to come back and produce gas, which it has reserves there.

Q Well, Mr. Hardwick, the well was capable, and, in fact, did produce more than non-marginal allowed, did it not?

A I believe that's correct. I don't have those figures before me.

Q Therefore, it would seem rather anomalous, wouldn't it, to allow it to remain classified as marginal?

A I believe our situation at this time is greater than it was at the time that they were reclassified.

Q Now, Mr. Hardwick, you testified that you have watched these wells closely since the hearing in October at which time the Commission granted relief on these wells. If that is the case, why did the Commission find it necessary to advise Jal Oil Company that they were producing these wells or one of these wells in excess of the amount allowed by the Order entered in that case?

MR. GIRAND: If the Commission please, why the Commission did anything, we are not accountable for it.

MR. PAYNE: The witness testified--

MR. GIRAND: Just a minute. You asked him why the Commission did something. I don't know. Read the question.

(Question read by Reporter.)

Q (By Mr. Payne) You testified that you had watched these wells closely since the last hearing.

A I believe that's true.

Q Is it not a fact that you did produce one of them in excess of the allowable granted in the Order?

A That is correct. We were attempting to try to find what a minimum rate of flow was, and at that time it was overproducing.

We had not established that. Although we had cut it back some, we still hadn't established that a minimum rate of flow that we would flow the well without the logging off. And so we continued to produce it some to see if we couldn't establish that.

Q Now, Mr. Hardwick, I believe you testified that both the Owen and the Dyer, I believe it is, produce water when you made these summarizations?

A Yes.

Q And that includes January and February, does it not, of this year?

A Yes, sir.

Q In view of that, Mr. Hardwick, why did Jal Oil Company report to the Commission on Form C-115, for both January and February that these wells had no water production?

A I assume that would be an oversight on the person filling these out.

Q Now, you did show it for the one well, for the Watkins Well, but for the other four of these wells they show no water production?

A They leave it blank.

Q Yes, sir. Now, Mr. Hardwick, these wells are all perforated in the 80's, are they?

A I am not familiar with that.

Q Do you know if they were open hole in the Queen?

A Again, I am not familiare with that.

Q Do you know where your water is coming from?

A No, I don't.

Q The engineer will testify to that?

A I feel he probably will.

Q Now, Mr. Hardwick, I believe you testified that your application, if not granted here, there is a good probability that gas will be left in the ground which would never be recovered. Is it your opinion that some other well would not produce this gas?

A I am speaking just frankly of my opinion. I don't believe they would. I am not qualified on that.

Q I see. Now, you installed a pump jack recently, I believe you testified, in your Dyer Well?

A That's correct.

Q Is that a permanent pump jack or--

A It's permanent equipment.

Q Now, in your Eva Owen Well, you are still producing that by means of the free piston?

A That's correct, when we can get it on.

Q Which is dependent upon gas production-- Well, let me put it this way. You must have gas production in order to lift that piston and unload the water?

A That's correct.

Q Now, that is not the case in the pump jack, is it?

A No.

Q It's a separate water pump?

A I am not qualified to answer this, but to a certain extent, I believe that the gas is dependent upon the water also, even thought the pump jack is lifting the water from the formation.

Q Now, Mr. Hardwick, the pump jack is the ultimate, supposedly, weapon against large amounts of water, isn't it?

A That's correct.

Q And you generally proceed from a free piston stage to the pump jack stage?

A That's correct.

Q Now, in view of the fact, Mr. Hardwick, that-- Do you feel that you are asking the Commission here to take the ultimate step as to these wells? In other words, terminate prorationing to them? That is what it is, in effect, is it not?

A Something to that--

Q And that is the furthest, of course, that the Commission could ever go. Now, in view of that, do you feel that the Commission should take that step unless you have taken the ultimate step? In other words, until such time as you have used the pump jack in the Eva Owen Well?

A Well, of course, we feel that we should try to get all the reserves we can under each step down the line. But we feel that the pump jack, the time is almost set after that period comes. And we would like to try to recover a portion of it before that time, as the expense of the pump jack is very high.

Q Now, Mr. Hardwick, in view of your very large reserves

under each one of these tracts, I presume it would be very economically feasible to rework any of these wells,provided it's safe. Have you considered attempting to squeeze off to eliminate your water problem?

A This has been discussed some. I believe probably the engineer will probably answer more of these questions than I am qualified to answer.

MR. PAYNE: Thank you. That's all.

MR. PORTER: Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q What were Mr. Brinkerhoff's reserve figures based on, do you know?

A I don't know. He is an independent consultant.

Q Is he here today?

A No, he isn't.

Q You don't know what he considered, then, in arriving at these reserves for each one of these tracts?

A I don't.

Q Do you know if he knew whether large quantities of water were being produced, or the wells were capable of producing large quantities of water when he made his evaluation of the tract?

A I believe at the time that this report was made, I don't believe the water condition was as bad as it is right now. It has become worse since the time of this report. He was aware of some of it, I'm sure.

Q Are his reserves purported to be recoverable reserves or total reserves underlying the tract?

A Recoverable reserves.

Q And these estimates were made at the time when there wasn't as much water production as there is now?

A I believe that's correct. I would assume that. I don't know exactly what he based it on.

MR. NUTTER: Thank you.

QUESTIONS BY MR. UTZ:

Q Mr. Hardwick, I believe that you stated in your testimony that you felt that the amount of production subsequent to July 1st, 1958 was legal production, and your wells were produced legally?

A I was under that impression.

Q Are you familiar with Rule 8 of Order R-967?

A I don't have it before me. I would have to take a look to see.

Q Would you recognize the Rule if I read it to you?

A I would see.

Q I quote from Rule 8, last paragraph of Rule 8, of Order R-967. It has to do with classification of wells. "At the end of a proration period, if a marginal well is producing more than the total allowed for the period assigned as allowable, the marginal well shall be classified as a non-marginal well." What does that mean?

A Well, that means--I assume it says that--that if a

well is overproduced more than normal allowable for non-marginal wells, then it should be reclassified.

Q And do you feel that the Commission was acting in accordance with the Rules when we reclassified the well as a non-marginal well retroactive to the time it started overproducing as non-marginal?

A On some of the wells which we had at that time, they were producing considerable amount of water. The Repollo was one of them. And under the study which we are to put forth on this, we felt the reclassification to ultimately get the reserves probably was against the well ever producing its reserve.

Q Mr. Hardwick, do you believe that by virtue of the fact that a well is classified marginal, that it shouldbe allowed at any time to produce more than a non-marginal allowable well of like size?

A I think there are certain circumstances that surround individual wells that might call for that.

Q That is what you are asking for now, is relief from proration, under the Rules?

A We are asking for some relief, yes.

Q Are you familiar with the proration formula of Jalmat Gas Pool?

A Not too familiar with it, no. I understand it's on deliverability and acre specter.

Q Do you feel that the allowable assigned to your wells is

in proportion to the allowable assigned to the ~~Empire~~ entire Pool in accordance with the formula?

A I would say this: This is my opinion. Wells that produce a lot of water under the deliverability test, I believe that it doesn't do the wells justice.

Q As far as the formula is concerned, you feel that you are receiving your fair share of your--

A I feel sure, yes.

Q Because of your water problem, you want to be relieved to produce more than your fair share of the allowable?

A I believe, if the water wasn't present, that our share of the allowable would be more.

Q You mean to say, then, that you think that if you didn't have the water, your reserves would be more?

A I am not saying the reserves would be more, but I believe we are getting on something that probably the engineer could answer better than I can. But I do believe this: That if the water wasn't present, you would have a better deliverability test, which would give you a better allowable.

MR. UTZ: I see. Thank you.

MR. PORTER: Anyone else have a question?

QUESTIONS BY MR. PAYNE:

Q Mr. Hardwick, are you familiar with the completion methods of the Jal Oil Company wells in the Jalmat Pool?

A No, I am not.

MR. PAYNE: All right, sir.

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

(Witness excused)

MR. GIRAND: At this time we offer Exhibits 1 through 13, inclusive.

MR. PORTER: Who prepared the Exhibits?

MR. GIRAND: They have been testified to. The witness testified to, prepared each one of them.

MR. PORTER: I see. Without objection, the Exhibits will be admitted to the record.

MR. GIRAND: That is, with the exception of Exhibit 1. That's your own schedule.

MR. PORTER: You don't want to take that. The witness may be excused.

(Witness excused)

MR. GIRAND: Call Mr. Watson, please.

DEWEY WATSON,

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

DIRECT EXAMINATION

BY MR. GIRAND:

Q Will you state your name, please?

A Dewey Watson.

Q Where do you live, Mr. Watson?

A Jal, New Mexico.

Q By whom are you employed?

A Olson Oil, Incorporated.

Q Have you testified before the Commission in the capacity of a petroleum engineer before?

A Yes, sir, I have.

MR. GIRAND: Is the Commission satisfied with Mr. Watson's qualifications?

MR. PORTER: Yes, sir.

Q (By Mr. Girand) Mr. Watson, did Olson Oil previously own the wells presently known as Jal Oil Company's Dyer No. 3, Eva Owen No. 1, and Watkins No. 2?

A Would you restate that question again?

Q I said: Did the Olson Oil Company previously own those wells?

A No, sir.

Q Have you previously had any connection with the wells known as the Jal Oil Company's Dyer No. 3, the Watkins No. 2 and Eva Owen No. 1?

A The only one I didn't have anything to do with completion on was the Dyer No. 3. The Watkins 2 and Eva Owen No. 1, I was there on the completion on those.

Q Were you at that time employed by Jal Oil Company?

A On the Watkins 2, yes. The Eva Owen was Olson Oil Company.

Q Now, as a matter of fact, Mr. Watson, you are familiar with the hearing held in Santa Fe before the Examiner in October of 1959, wherein the subject wells were a matter of controversy at that time?

A Yes, sir.

Q You appeared at that time to testify in regard to those wells?

A That's correct.

Q Now, are you familiar with the application that has been filed with the Jal Oil Company in connection with the Dyer No. 3, Watkins No. 2, and Eva Owen No. 1?

A Yes, sir, I am.

Q In connection with that application, have you been requested by me and by the Jal Oil Company to make any study of the condition of the three subject wells?

A Yes, sir, I have been.

Q And in connection with that, did you make any further study as to the wells known as the Repollo No. 1 and Legal No. 2, and Jenkins No. 1 wells?

A Yes, sir, I did.

MR. GIRAND: If the Commission please, at this time, in regard to Exhibits Nos. 14 and 15, being the letter from Mr. J. W. Baulch, Jr., addressed to Girand and Stout, dated April 11th, 1960; and the accompanying map, which is Exhibit No. 15, I would like to make this statement to the Commission, that El Paso requested that

none of their men be used as witnesses in this matter. The map was presented to the writer as a map fully demonstrating the low pressure line system of the El Paso Natural Gas Company, located in Jalmat Pool. And the Exhibits are offered primarily to enlighten the Commission as to the wells that are located on this low pressure line of a hundred pound operating pressure, and their relation to the subject wells. The prorated force of them, Mr. Payne, is just to kind of orient things that we are talking about. And with that understanding, I would like to offer Exhibits 14 and 15.

MR. PORTER: The Exhibits will be admitted to the record for the purpose of--stated.

MR. GIRAND: All right.

(Whereupon, Applicant's Exhibits Nos. 14 and 15 were marked for identification.)

Q (By Mr. Girand) Mr. Watson, directing your attention to the map which has been identified as Exhibit 15, will you briefly state what the map purports to show?

A Well, this is a portion of the over-all map by El Paso Natural Gas Company showing the one hundred pound line pressure in the Jal area. And there are three compressor stations as indicated on the map where the field compressors are set to enable the line pressure to be brought down from around two hundred pounds down to a hundred at the wellhead. And those were primarily installed due to the weakened condition of the well, the low shut in pressures of all the wells in that area. The wells are tied in here so as

to be able to produce into the two hundred fifty pound line. In order to comply with their contract, the line pressure was lowered.

Q Now, the compressor stations operating off those lines are shown on the map, are they not?

A Yes, sir, they are.

Q And how are the wells identified as being connected to the line?

A By the red line.

Q Now, the area shown there is all located within the Jalmat Gas Pool, is it not?

A Yes, sir, it is. All except one well, which is in Section 2, 25, 37. It's a Justis Glorietta Gas Well. And that's the only exception that I have noted.

Q Mr. Watson (Whereupon, Applicant's Exhibit No. 16 was marked for identification.)

Q Mr. Watson, I hand you here what has been identified as Exhibit No. 16, and ask you if you can state for the record what that Exhibit represents?

A This is a list of the wells that are tied into the hundred pound system of El Paso Natural Gas, and furnished by Mr. Baulch.

Q Now, on Page 1 of the Exhibit there, under the wells identified as Continental Oil Company's State A-2-1, located in Section 2, Township 25 South, Range 37 East, is the well you referred to as not being in the Jalmat Pool--

A Yes, sir, it is. That is the Justis.

Q It is, however, connected to the low pressure line?

A Yes, sir.

Q All right. Now, what is the usual operating pressure of that line?

A Well, normally, it will be approximately a hundred pounds, plus or minus a few pounds either way.

Q Now, in connection with this hearing, did you have occasion to check on the Watkins No. 2 Well, belonging to the Jal Oil Company?

A Yes, sir, I did.

Q And what did you find in connection with that well, as to its operating condition?

A Well, at the time I checked it, which was 4/9/60, the well was logged off due to high line pressure, and it was left down 4/10/60, and it was swabbed for eight hours 4/11/60. And yesterday evening the well was flowing in the atmosphere, drinking very little gas on a full two-inch stream of water, and was unable to go into the El Paso line.

Q Now,does the Watkins No. 2 make a sufficient amount of water?

A Yes, it does; considerable amount of water.

Q Did you make any other observations in regard to that well?

A I think the testimony already presented limited the lowest

rate of flow that could be obtained and keep the well on the line was approximately three hundred twenty-five MCF per day.

Q Now, how did you arrive at that figure that it would require an allowable of that amount in order to keep the well on the line in its present condition?

A Well, that was actually taken by El Paso personnel and read off of their meters and charts.

Q Now, in order for that well to produce that amount, would that exceed the allowable assigned to that well?

A Under normal conditions, the way the allowable has been, yes.

Q Now, are you familiar with the manner of arriving at the allowable assignable to wells in the Jalmat Gas Pool?

A Yes, sir.

Q Briefly, what factors are used in order to determine the--

A Well, the acreage factor and deliverability factor.

Q Do you know how much of the allowable was assigned to the acreage factor under the Rules?

A Seventy-five and twenty-five. It slips my mind which it is. I need some help there.

MR. GIRAND: I think the Commission will take notice of that fact.

Q (By Mr. Girand) Do you know how much acreage is assigned to the Watkins No. 2?

A Forty acres.

(Whereupon, Applicant's Exhibit No. 17 was marked for identification.)

Q Now, Mr. Watson, I hand you here what has been identified as Applicant's Exhibit No. 17, and ask you if you can state what that instrument represents?

A This is an El Paso Natural Gas Company form which carries the same information as the official State form on the "One-point Back Pressure Test for Gas Wells for the Deliverability Test." This first test was taken on 4/1-8/60, and there was no deliverability calculated due to the fact that on here there is a note on it saying "Operator did not want well shut in." And I think the reason is obvious, due to the fact that if it is shut in, it would have to be swabbed off.

Q All right. Now, what did that show the rate of flow?

A The rate of flow was 292.3 MCF, and the line pressure was a hundred nine pounds.

Q All right. Now, directing your attention to the second page of the Exhibit, of the regular flow as shown by that Exhibit, I will ask you to state what that Exhibit is?

A Well, this is the same El Paso form, "Deliverability Test."

Q For what time? Taken when?

A For 2/20 through 27, 1959. And the rate of flow was 747.8 MCF, at a static pressure of 305.2 pounds. And there was a deliverability calculated for this, which was 650.8 MCF per day.

Q Now, directing your attention to the first page of the

Exhibit, that Exhibit fails to show any deliverability factor, does it not?

A Yes, sir.

Q Is there a notation on Page 2 of the Exhibit of any significance?

A Yes, sir, there is. The tubing pressure on this well did not have any pressure on seventy-two hour shut in, which means that it's logged off with water.

Q Now in taking deliverability tests, Mr. Watson, have you ever participated in taking those tests?

A No, sir, I haven't directly.

Q Well, did you know the procedure that is followed in taking one to the extent -- from the time the well is shut in and then the testing period thereafter to determine the deliverability?

A Yes, sir.

Q All right. State for the record what that is.

A Well, there is a free flow period consisting of twenty-four hours. And then it is shut in pressure of seventy-two hours, when the shut in pressure is recorded on a tubing indicator, and the flow data is used to determine the rate of flow of the operating pressure.

Q All right. Then, when is the test taken after the shut in period to determine the--one of the factors used in the deliverability?

A Would you state that again?

Q Well, after the shut in period, seventy-two hours, is there any further testing in order to arrive at any factor used in arriving at the deliverability of a well?

A Well, the tubing and casing pressure is recorded for twenty-four hours. I mean--

Q Is that immediately after the shut in period of seventy-two hours?

A The twenty-four hours following the shut in pressure, yes.

Q Now, where you have a well making water, such as the Watkins No. 2, and the other wells near it, in this application, will you state how long it would take you to bring a well back that is making water such as these wells are making in order for them to flow any gas in a twenty-four hour period after being shut in?

A Well, in the case of the Repollo--I mean the Watkins here, the most recently-- The well died on the 9th, and it was swabbed for eight hours, and it was dead through the 10th, and swabbed for eight hours on the 11th. And at six o'clock yesterday evening it was still producing nothing but water, and how much longer it will take, I don't know. So, it would be a matter of hours or a matter of days.

Q Well, in the case of the Watkins well being shut in for one day, after swabbing for two or three days, you haven't been able to get it back on the line; is that correct?

A Well, it was swabbed for one day and unloaded by itself. And, as I say, I don't have the information that was available this

morning.

Q But, assuming that it had been subjected to a test such as set forth by the Commission of testing the deliverability within a twenty-four hour period immediately following the shut in, what would have been its deliverability factor?

A Well, there would have been no deliverability.

Q In other words, it would be deprived of that factor, which makes up seventy-five percent of this allowable?

A Yes.

Q All right. Directing your attention to the Eva Owen Well No. 1, are you familiar with that particular well?

A Yes, sir.

Q In connection with that well, did you testify before the Commission in the November hearing?

A Yes, sir.

Q I mean October hearing.

A Yes, sir, I did.

Q How long had the Eva Owen Well been shut in?

A The Eva Owen was shut in on July 15th, 1958, and an under-age was made up 7/20/59. That would be one year and five days.

Q All right. Now, after overage had been made up, were you able to get the Eva Owen back on the line?

A No, sir. It hasn't been producing at the normal since the shut in period.

Q Did you make a study of what its production has been

s

since it has been back on production in relation to the allowable granted it?

A Yes, sir. It had been back on production for a period of nine months, and these figures only take eight months. And it has produced a total of 6,806 cubic feet.

Q All right. And how much was the allowable assigned to that well during that period?

A Well, the allowable assigned to it was 29,000,181 cubic feet.

Q And how much is it unproduced at the present time?

A Well, there was a new proration period took into effect the last of December, which cancelled out the approximate 16,000,000 that the well was under at that time. And it is now just a little over 13,000,000 behind.

Q Yet, that was the well that was shut in at one time for being overproduced?

A Yes, sir, for one year. And it looks to us like this is a prime example of what is going to happen to the rest of them in the very near future if they were shut in.

Q All right. Now, have you calculated the cost of putting on a pump unit on that particular well?

A Not on that particular well. On the Dyer No. 3 it was calculated, and it's estimated at eighty-five hundred dollars.

Q Have you made any calculation in regard to the Owen or the Watkins Well, either one, as to the cost of installing a pump?

A Well, the pump jack would be very similar to the one installed on the Dyer 3. I mean, the figures would be used to one and the same.

Q All right. Have you made any study as to the cost for producing gas through methods of operating a pump jack?

A Well, on the Dyer 3, estimated pay-out on the March, 1960 production, it will take sixteen and a half months to pay for the installation of the pump jack.

Q Would that also include the operating cost of the pump?

A No, sir.

Q About what are the Company figures, if you know, of the operating cost that is more or less a fixed charge to each well operated in that manner?

A It is one hundred and fifty dollars per month.

Q Did you calculate about how long it would take, considering the hundred fifty a month flat charge, plus the cost of putting in the pump and unit?

A No, sir, I did not.

Q But just on the basis of the cost of putting in the pump, it would take some sixteen and a half months to pay for the well at the present allowable--

A Yes, sir.

Q --in order to pay for the cost of the pump?

A Yes.

Q Would that be true on all the wells, such as the Watkins

2 and the--

A Well, it would take longer in the Eva Owen and Watkins 2 due to the low acreage. That would be just in proportion to the acreage factor, or almost proportional to it.

(Whereupon, Applicant's Exhibit No. 18 was marked for identification.)

Q Mr. Watson, I hand you what may be identified as Applicant's Exhibit No. 18, and ask you to explain what that instrument represents?

A This is also an El Paso chart, El Paso form, which we used. One-point Back Pressure Test and Deliverability. And it is on the Eva Owen No. 1.

Q And what period does it cover?

A It covers 3/6 through 13 of '59.

Q Now, what does the second page of the Exhibit cover?

A It is the same deliverability form, and it covers from 5--the day of the test is 5/16/58.

Q Now, does the Exhibit bear any notation in regard to the particular well as to the condition found by the tester?

A Yes, sir, it does. Under the remarks at the bottom of the page it says: "The shut-in used to calculate this test was taken from the nearest offset well (Sun-Lanehart #1," as requested by the New Mexico Oil and Gas Commission.

Q And it actually wasn't a deliverability test of the Eva Owen No. 1 as set forth in the Rules?

A Yes, sir, it was.

Q You say it was a deliverability test as set forth in the Rule?

A Well, it was in the effect that at the time, according to this note, the shut-in used to calculate this test was taken from the nearest offset well which was provided for in the New Mexico Oil Conservation Commission Rules, that an offset well could be used if it was unable to be shut-in.

Q All right. Now, are there any notations on the first page of Exhibit No. 18? Any of any importance to this--

A The same notation that was on the Watkins No. 2, "the tubing did not have any pressure on the shut-in," which indicates that the water in the tubing is balancing out with the gauge pressure, as logged off.

Q Now, what differences can you determine between the two pages, that is, the page covering the test for 1958 as compared to the test in 1959, to show that this well is either losing pressure or capability to produce, if any appears?

A Well, although the deliverability is lower on the 1959 test, the rate of flow is less, and it's producing at a lesser tubing pressure and line pressure. And there was no casing pressure taken on the '58 test, so you can't compare that. So, even though the deliverability is lower, the well is actually.--the pressures are all lower, tubing and casing both.

Q Do you have any opinion as to what is causing the pressure

to be reduced?

A Well, the whole area in the Jal area is--the pressure is dropping in the whole area due to the lower line pressure. And also, the increase in water, as the wells produce more gas.

(Whereupon, Applicant's Exhibit No. 19 was marked for identification.)

Q Now, Mr. Watson, I hand you here an instrument identified as Applicant's Exhibit No. 19, which contains five pages. Can you identify that instrument, please?

A Well, the first and second pages are El Paso Natural forms of the deliverability calculations. The fourth and fifth forms are "Multi-point Back Pressure Test for Gas Wells; El Paso Natural Gas form. Also containing the same information that is filed on the official New Mexico form.

Q All right. Now, directing your attention to the Exhibit and on page three thereof, being the test for April, 1958, what is the deliverability factor shown there?

A Two hundred forty-eight MCF.

Q All right. Now, for the testing period of March 13th, 1959, what is the factor shown there?

A Two hundred eighteen point eight MCF.

Q Is there a notation on that second page in regard to the 1959 test?

A Yes, sir.

Q Read that into the record, please.

A The note here, "The pressure was taken from R. Olsen Winningham No. 3-- or "P sub c was taken from R. Olsen Winningham No. 3 well and could not be shut-in due to water logging off well bore."

Q All right. Now, on the first page of the Exhibit, being the report for April, 1960, what is the deliverability factor used there?

A It is calculated at 158.4 MCF.

Q In other words, nearly 200.differential between April of 1958 to April, 1960?

A Nearly 100.

Q One hundred. That's right. I stand corrected. Now, in connection with the Dyer No. 3, did you make any further study in regard to the production habits of that well?

A I checked the charts after the well was put on the pump jack, and those production charts show a very unstable producing condition even with the pump jack moving the water.

Q Is it your testimony that the installation of the pump jack in itself was not an answer at all to the wells producing, such as these wells are being produced?

A What was that question?

Q That installation of a pump jack is not an answer at all to the producing of wells being produced where they have water in the production formation?

A Well, it's the best we can do right at the present time,

I mean.

Q Does the installation of the pump itself answer all the questions?

A No, sir. From the indication on the chart, it looks like it's going to log off even with the pump jack on.

Q Based on your observation of the Dyer No. 3, did you feel that that was the well that would be regulated just because it did have a pump jack on and protect your reservoir?

A I don't think it can be regulated close enough to entirely eliminate the problem we have here of overproduction, no.

Q In connection with your study of this application and the wells involved in this application, Mr. Watson, did you arrive at any conclusion that the rate of flow that these wells could maintain and still be produced without loss to the reservoir, or loss of their reserves?

A Well, about the only way they can be produced and prevent either abandonment or loss of reserves, or both, is the way they have been produced.

Q Well, now, what would be the rate of flow that would have to be allowed these wells at this time in order to maintain them?

A Well, it's going to be somewhere in the neighborhood of three to four hundred thousand a day.

Q All right. And what would be true in the Eva Owen?

A Well, if there is a pump jack installed, it's going to change the conditions there to where-- I mean, I think each well

will pretty well have to stand on its own. But under the present conditions, it won't even produce, so I have no way of-- It's going to have to go to a different medium of producing before we can come to any conclusion how much it will produce.

Q You were familiar with the Eva Owen No. 1 Well prior to the time it was shut-in, were you not?

A Yes, sir.

Q At the time that it was shut-in, do you know why it was shut-in?

A It was overproduced.

Q At the time it was shut-in, was it capable of producing more than the daily allowable that was assigned to it?

A Yes, sir, but I don't recall how much the daily allowable was.

Q Do you know whether or not it's comparable to the daily allowable assigned to the well at the present time?

A Yes, sir, it would be.

Q Was it more or less than the presently assigned allowable?

A Well, at that time I think the allowable was a little higher than it is at the present time.

Q At that time, or at the time it was shut-in, it was capable of making that allowable, was it not?

A Yes, sir.

Q And at the present time it's incapable of making that allowable that has been assigned?

A That's correct.

Q What do you attribute that loss of productivity to, if anything?

A Well, about the only thing it can be attributed to is by the shut-in period; allowing the water to move on in around the bore hole, and enough so that it won't go ahead and flow down.

Q As an engineer, Mr. Watson, what is your opinion as to the solution of allowing operators having wells, such as the wells in question here, to continue to produce their wells in an economical manner, and yet at the same time not turning them entirely loose, but prorate them in such a manner as to afford equal protection to all operators who have wells operating in the same manner these wells are?

A Well, it has occurred to me that the whole south end of that field down there, the pressure is dropping and the water is increasing, and not only in our wells but everybody's wells in the area. And it looks to me like it's right around the corner where all of these well will have to be either disseminated in a different pool, and, say, South Jalmat Pool, and taken out of the deliverability and the shut-in period of the proration. I mean that might not be the solution that we want, but it is a possibility.

Q Well, in parlance of the oil industry, are they considered wells such as stripper wells or wells on their last leg?

A They are definitely on their last leg.

Q And if they are not produced properly, the reservoirs

attributable to the acreage would be lost, would they not?

A Yes, I believe they would.

MR. PORTER: We will have a ten-minute recess.

(Short recess)

Q (By Mr. Girand) Mr. Watson, you have previously testified that you appeared on behalf of the Jal Oil Company in connection with the hearing this October, 1959, wherein the Repollo No. 1 Well was one of the wells, subject matter, of that hearing; is that correct?

A Yes, sir, it is.

Q In connection with the Repollo No. 1 Well, and using it as an example of what may or what we anticipate will happen on subject wells, will you state to the Commission just what you observed in regard to the performance of the Repollo No. 1? That is, in regard to the reserves attributable to it, its production habits and manners, and what happened after the well was shut-in?

A Well, from the completion date in 1950, July, the well produced one year and ten months into the El Paso six hundred pound system. And in March 1953, the pump jack was installed, and the well was still going into the two hundred fifty pound system at that time. Now, it produced a total of five years and eight months into the two hundred fifty pound system, and at that time the water volume became so great that it wouldn't make any gas, and the line pressure was dropped in the area to one hundred pounds, and we continued to make gas for two years and nine months more. Now, that's

a total of one hundred eleven months production history on the well. During that period we produced 2,184,353 MCF, which the reserves were given some 6,000-- I don't have that total reserve figure, but the unrecovered reserves were 4,100--or 4,179,093, which leaves us recovering approximately one-third of the reserves attributed to the lease. And the total months that the well produced and the total gas volume that was made, it figures out that the average production per month was about 9,679 MCF per month for that period of nine years and three months. Now, this well was allowed, through the sanction of the Commission and the El Paso Natural Gas, to produce unrestricted for that period of time until it was shut-in sometime in, I believe, July of 1959 for some test. And since that time the well has gone to nothing, and as far as we are concerned, it's gone forever.

Q But it was producing gas up to the time it was shut-in for the test?

A Yes, sir, it was.

Q All right. Now, basing your answer on your knowledge of the area in the Jalmat Pool, and particularly this area in the south part there where the wells have made water, is it your opinion that the same result will be realized on the subject wells here, such as the Dyer No. 3, the Eva Owen, and the Watkins No. 2, if they are required to attempt to produce under the allowable?

A I think it's reasonable to compare the production from those wells with the Repollo production, and I think the results

that have shown up in the Eva Owen very distinctly bear that out due to the one year shut-in period, and then we are unable to get the well back on production at the present time. And there is another thing here on that. The total reserves are much more than what has actually been recovered. I think the unrecovered reserves were 1,893,532 MCF.

Q Well, is it your-- Pardon me, go ahead.

A The allowable for the last nine months from July '59 through March of '60, the allowable attributed to that well was 3,677,000 cubic feet per month. And at that rate, the unrecoverable reserves-- I mean, if it flowed that rate every month, the unrecovered reserves would take five hundred fifteen months to actually recover, which is a little bit out of line. We know it won't produce that long.

Q Basing your answer on your knowledge of the area, and particularly of the wells, do you believe that it is practical from an economical standpoint to require these wells to be shut-in at any time?

A From our experience that we have had, no.

Q Do you feel that any requirement to have them shut-in at any time would result in a loss of and waste of gas in place?

A Yes, sir, I do.

Q All right. Do you believe that these wells should be exempt from such test as the deliverability test as called for by the Orders 967 and 1092-A?

A Yes, sir, I do.

Q In that connection, though, can these wells be maintained at the existing allowable assigned to them under the producing methods that are required in order to obtain gas from well bores?

A Would you repeat that, please?

Q Well, by the same token, based on the allowable that is assigned to these wells at the present time, can they be operated without being shut-in for overproduction?

A Well, the Dyer and Watkins can not. The Eva Owen can't make its present allowable under the present conditions.

Q At the time the Eva Owen was shut-in, though, it was making more than the allowable because that was the reason it was shut-in?

A Yes.

MR. GIRAND: I believe that's all.

MR. PORTER: Mr. Payne.

CROSS-EXAMINATION

BY MR. PAYNE:

Q Mr. Watson, would you give me the acreage that is dedicated to each of these wells in amount; not by quarter-sections?

A The Dyer No. 3 has 160 acres.

Q Yes, sir.

A The Eva Owen has 80 acres. And the Watkins No. 2 has 40 acres.

Q Now, Mr. Watson, are you familiar with the assignment No.

9 in Order R-520, dealing with the Jalmat Pool?

A I don't recall what it is, no, sir.

Q Well, reading No. 9, Mr. Watson, it states "one gas well on the Jalmat Pool can sufficiently drain 640 acres." Now, do you believe that?

A Given enough time, I assume it can.

Q Well, sir, you have testified now that if the gas doesn't come out of these wells, it's going to be lost. Now, why isn't it going to be produced from another well on the section?

A Well, at the rate that water is encroaching,it will--I think the gas is bound to be by-passed and left in place. And I don't see any other way it can happen.

Q So, some might be produced and some might be lost?

A Yes, sir.

Q Now, Mr. Watson, do you know where the water can come from that is being produced through these three wells?

A No, sir. I only know the Watkins-- We know it's coming out of that twelve foot--

Q Have you had any analysis made to show whether it's salt water or fresh water?

A Well, it's a brackish salt water. It's neither salt nor fresh water.

Q Now, has Jal Oil Company investigated to determine whether thereis a casing leak or whether the water from the Santa Rosa might be coming down the side of the pipe due to deterioration in

your cement job?

A Not to my knowledge, no.

Q Don't you think it would be of value to Jal Oil Company to know where this water is coming from?

A Yes, sir.

Q Now, Mr. Watson, was there a correlation between the water production and the depth of the perforations, or the depth to which the well was drilled and not ~~flood~~ pumped back?

A You mean it did as far as sub-soil or compared to other wells?

Q No. What I am getting at is, is there any correlation between the water production that you see out of these wells and the depth of the perforations? What I am still trying to get is, where is the water actually coming from?

A Well, it's normally assumed that the water would be coming out of the lowest zone in the well bore, but I don't think that is the case in your Yates Section. And then I think it's been found even in some wells further north of us there, that each sand lens or sand productive zone carries some fluid with it. It isn't confined to just one zone. Our problem would be simple if it were.

Q You feel, then, I take it, that water is coming from the Yates--

A Yes, sir.

Q --formation. Now, is it possible that since you completed your Watkins No. 1 with approximately six hundred feet of open hole

in the gas section, that this water can be coming from the Queen formation due to your completion job on the Watkins No. 1, and that is where the water is coming from that you are getting in the other three wells?

A No, I hardly believe so, because the history on that water introduction there is more or less an overnight proposition, and we test that Queen Section well enough to know that there isn't that much oil in it.

Q That much water?

A That wasn't there, that much water in it. There was a considerable amount of water, but the oil was very light, and it has been plugged back. I don't recall the depth of that. It's been too far back. But it was plugged back into the Yates Section. I don't know whether the records show it or not, but it was actually cemented back to the bottom of the Yates, or near the bottom, if not in the Yates.

Q What about the possibility of remedial work to shut off that water?

A Well, which well are you talking about?

Q On all three.

A On all three. Well, in the Watkins 2, I don't think there is any question about it. If you shut off the water, you would shut off the gas too.

Q You believe in that well, at least, the water is coming in through all the perforations?

A It's just a necessary evil. If you are going to produce the gas, you are going to have to take the water with it. And I have never been successful in plugging off water in the Yates yet. Now, it might be possible to do, I don't know; but I have never successfully accomplished it myself.

Q Well, now, is that what you are going to attempt to do with the two wells that you depleted from your application? I believe there was some testimony that there was going to be some kind of work done on them.

A I think that will be in the neighborhood of a crack job.

Q Now, your Legal Well was shut-in in March, wasn't it? Your Legal No. 2?

A I don't know.

Q The end of March?

A It was shut-in-- Let's see. This is the 12th. I think maybe it was shut in the last two or three days of March, and then opened back up and then shut back in now.

Q Well, now, when you started producing it in again in April, did you find that it was logged off?

A Yes, sir, it was.

Q You had swabbed it in?

A I don't know whether it was swabbed in or not. That could probably be better answered by one of the Company personnel, because I didn't start checking it until a few days before the hearing. I am not familiar with whether they did or didn't swab it off, although

I do know that it had to be either blown in or swabbed off. I don't think they swabbed it off.

Q Now, as I understand your free piston method of production, in order to lift the water you have to produce gas?

A Yes, sir.

Q Now, how does the pump jack method work?

A Well, there hasn't been very many pump jacks used in that manner. As far as I know, the Repollo was probably the first one in New Mexico. You can produce it in that manner; you can produce gas out the casing and water out your tubing. And there is enough water. The low pressures that we have down there, if you get the tubing loaded with water out of your bore hole, there is no chance of it blowing around to the tubing. I mean, all your gas has to come out of your gas casing, because there is not enough casing pressure left in it to push that water, a full load of water, out the tubing. So the way it's produced, it is pumped out the tubing and the gas flows out the casing.

Q And the pump is above ground, your water pump?

A No, sir,the water--it's a subsurface pump. It's just a regular oil pump. No difference.

Q Now, what you are interested in is keeping your water unloaded, I take it?

A Yes, sir.

Q Conservation rather than getting more gas than your neighbor?

A I think the Company would be entirely willing, if it were possible, to cut it back as much as the Commission desired. I mean--

Q Well, now, the thing that bothers me, Mr. Watson, why can't you shut in your casing, which your gas is produced through, and pump your water out, and not have gas production along with it?

A Well, you would get a small amount of gas, and it may be possible to do that.

Q Well, now, couldn't you then shut in the casing, take the water out of the tubing and such gas as comes out with it, have a separator and then run that to your gas sales; and wouldn't that figure be less than the allowable presently assigned to the wells?

A If at such time as the well doesn't produce enough water to be flowing water and gas out of the casing, as was the case of the Repollo. Now, I mean, on the Dyer 3, I meant I don't know enough about the well. It's just recently been put on the pump jack, and it hasn't been thoroughly established as far as the possibilities are concerned, but in the case of the Repollo, it was flowing water and gas out of the casing and all, more water than we could blow out of it. So, it did flow out the casing a long time. So, eventually the water will go clear over. And when you shut the casing in, and after your water volume becomes so great, you can't produce anything but water out of your tubing, and your casing will still be loaded up.

Q Well, it will still be loaded up, but you will be pro-

ducing the water as it comes in, won't you?

A A certain portion of it, yes.

Q And, now, what is the bottom hole pressure on each of these three wells? Do you have that?

A No, sir, I don't have the bottom hole pressure.

Q Well, what is the approximate depth of the oil?

A About twenty-nine hundred.

Q Now, if you keep the tubing full of water by this pump jack method and keep pumping the water out, isn't the hydrostatic head going to be sufficient to keep the gas from being produced out of that tubing?

A Yes, sir, it can be.

Q So, then, it looks like you could unload your water without producing gas?

A It's possible to unload some of it. Now, whether you are going to unload enough of it to keep it from logging off, that's kind of a trial and error method, after you get your operation going.

Q I see. Mr. Watson, has the Jal Oil Company considered the possibility of reinjecting the gas, either into the well which produced it, or into an adjacent well?

A I can't speak for the Company on that.

Q Well, these wells are fairly adjacent to each other, aren't they? They are close to each other?

A Well, there is four of them pretty close together, and

then the other one is about seven, eight miles off.

Q Well, now, couldn't you install a central compressor, reinject this gas back into the reservoir, and thereby unloading your water and still keeping your producing rate within the allowable?

A Well, a small amount of gas involved in this whole situation wouldn't warrant setting a twelve, fifteen thousand compressor, I don't believe.

Q Well, let's talk about that a minute. I believe you testified that these were on their last legs, or Mr. Girand there. And on the other hand, your reserves show, oh, approximately two hundred thousand dollars worth of recoverable gas for each of these wells.

A Well, let me ask you this: Do you think just subjecting our gas in that two or four wells that would be involved would be enough to keep that water from just flooding the whole situation now?

Q Well, I am not the one testifying.

A It was your suggestion.

Q That's what I am trying to find out from you. Now, you've got two hundred thousand dollars of recoverable reserves in each one of these wells, approximately. Surely you wouldn't mind spending twenty-five thousand dollars to get it. By the way, how are these reserves computed? Was that a pressure production decline method ~~for your~~ or pore volume analysis?

A I don't know how the man computed it.

Q And Jal Oil Company, as such, hasn't actually made a study of the reserves, other than hiring--

A An outsider.

Q And the line pressure which was checked out was approximately a hundred pounds?

A Yes, sir. I mean it will vary from sometimes ninety-six up to maybe a hundred fifteen or eighteen pounds.

Q Just depending on--

A Just depending on how well El Paso's compressors are running.

MR. PAYNE: Thank you.

MR. PORTER: Mr. Nutter.

QUESTIONS BY MR. NUTTER:

Q Mr. Watson, just exactly what do you expect to accomplish in the manner of operation that you are seeking in, an opportunity to try out here? In other words, if the Commission should grant you the relief that you have requested on the Watkins No. 2 Well, for instance, how much gas do you think you would be able to produce?

A You mean out from the recovery?

Q Per month.

A Well, I think the testimony established that it would flow at the rate of about three hundred twenty-five MCF per day, which, I am sure they would be willing to keep it-- I mean, just as long as it's flowing and keeping the water off the formation,

that's all we are asking.

Q Well, now, haven't there been times when in that well's life, as shown on the chronology of the activities here, when the well was producing something like less than that amount of gas and didn't seem to be logging on?

A Well, it's possible that it might have.

Q I notice here on November 26th to November 30th the well produced nine hundred eighty-seven MCF. This is the Watkins No. 2 Well; it produced nine hundred eighty-seven MCF. And it doesn't appear that there was any trouble until you changed the orifice from three-quarters to one-quarter to see if you could produce less gas and not log off.

A Well, that's correct. I mean they were attempting to establish a lesser amount of gas, a lesser rate of flow, the least amount of gas that could be supplied per day and keep it on the line.

Q But this is considerably less than the amount of gas just mentioned that the well would produce and not log off?

A Well, now, maybe I misunderstood you.

Q You said something about three hundred twenty-five MCF per day.

A Yes, sir. Just a second; let me check. What date were you referring to?

Q This was November 20th to the 30th, which would be nine days. It was averaging just a little over a hundred per day,

wasn't it?

A Well, it doesn't say what date the orifice was changed, does it?

Q I assume that the orifice was changed at the end of the nine-day period. Was that--

A Well, in case it did, it was only making a little over a hundred MCF per day,--

Q Now,--

A -- But then you go on from December 1st to the 8th, the well produced two hundred twenty-one MCF and died and would not blow around.

Q This was with the quarter inch orifice?

A Yes.

Q So, it would appear that a quarter inch orifice would cause it to load up?

A Yes, sir.

Q Now, what system of production does this Watkins No. 2 use? Was this a floating piston well?

A No, sir. There was no mechanical device on it.

Q This is just making as best as it can--

A Yes.

Q --pumping the water as it comes out of the formation?

A Right.

Q Now, on your Dyer No. 3, that is the well that has the pumping jack on it now?

A Yes, sir, it is.

Q How much do you think you will be able to produce if the Commission grants you the relief you requested, using the pumping jack?

A Well, the deliverability is only one hundred fifty-eight MCF.

Q Now, is that deliverability test taken with a pumping jack in operation?

A Yes. And if I may check back and see what the-- The rate of flow at that deliverability was two hundred fourteen MCF. So, I don't think it would be over that. I think it could be kept to that.

Q What was your average in the period of February 22nd to March 1st? Your pump was running to keep the formation clear of water and produced eleven hundred ninety-two MCF of gas during that period. How much would that be?

A That's still on the Dyer; right?

Q Yes, sir, this is the Dyer.

A Give me those dates again, please.

Q Was February 22nd and March 1.

A That would be eight days. An average of that would be a hundred forty-nine MCF per day, would it not?

Q I believe that's somewhere in the neighborhood of the figures. Now, referring to the Eva Owen No. 1 Well, what is the method of production on this well?

A Well, up until this last go-around, after it was shut-in, it was producing on a piston at the time it was shut-in, and it has been attempted to produce it on the piston since then, and unsuccessfully.

Q From the chronology of activities here on Exhibit No. 10, it doesn't appear to presently be producing any rate of production that has been particularly successful on this well, has it?

A That's correct. I mean, as far as the piston or even able to flow into the line at any rate, I think it's passed.

Q Is it your intention to place a pump jack on this well?

A I can't say. I haven't talked to the Company people to see, but I assume--

Q Can a pump jack be placed--

A --if there is any more gas to be produced, it's necessary, yes, sir. However, the pay-out on that particular project will be in accordance with the acreage factor. And I think I stated, as on the Dyer 3, it would be about sixteen and a half months pay-out, and it will be approximately double on this, or thirty-two to thirty-six months on the Eva Owen.

Q You are assuming there, for the purpose of making a calculation, that you wouldn't get any relief, and that you would have to operate under the Commission's allowable for the well; is that correct?

A That's correct.

Q Now, if you would get this relief, and you were able to

produce the well with a pump jack, how much gas would you make?

A We don't know. We may not be able to even make what it made before. That is something that nobody can answer, I don't think.

Q Mr. Watson, has any attempt ever been made on any of these wells to install a smaller diameter tubing to see if that would increase the flow?

A I believe not.

Q In some instances, isn't it true that installing a smaller tubing will improve flow efficiency?

A Well, now, I haven't had any experience along that line, so I can't say. But it stands to reason, I mean, from an engineering and lifting standpoint that it would possibly help it.

Q I noticed on one of these Exhibits one of the wells had two inch tubing and one had two and a half inch tubing. What did the third well have, do you know?

A No, I can't say what--

Q I believe the Exhibit reflects that you had two wells with two inch tubing and one with two and a half inch tubing. I stand corrected. Two of the wells have two and a half inch --

A Two have two and a half.

Q --and one has two inch.

A Well, it's possible that it would have had a longer flowing life with two inch. I'm sure it could have been somewhat longer. I mean, it's a little bit--

Q I suspect they have had a longer life by having tubing in them than they would have had if you hadn't had the tubing on them?

A Yes. There is no question in my mind about it.

MR. NUTTER: I believe that's all.

QUESTIONS BY MR. UTZ:

Q Mr. Watson, do you have completion data available there to answer some questions in regard to the total depth?

A I believe we do. Just a second. Which one would you prefer first?

Q I would like to know what the total depth is on the Watkins No. 2.

A Casing was set through on that well.

Q Casing was set where?

A The casing was set through the pay, and the plugback depth is 2968. Just a second here, I will get the TD, where it was drilled to. I think it was drilled to a total depth of 2987, and 2973 feet of five and a half casing was run and cemented.

Q Casing was set at 2973?

A Well, there was 2973 feet of casing run, and it was set at 2983. Direct floor measurements.

Q So, you have about three or four feet of open hole below the casing; is that correct?

A Yes, sir. It's approximately three feet, because this is 2983.7.

Q Was your tubing set at 2869?

A I will have to check because I am not sure. Yes, sir, 2869.

Q Well, that would leave about eighteen feet of hole below the bottom of the tubing; is that correct?

A Eighteen foot below the bottom of the tubing? If you said it was set at 2869, there would be approximately a hundred feet.

Q That's right Hundred nineteen feet. Do you think it's possible the water could be coming from that hundred eighteen feet over--

A Well, we are still talking about the Watkins 2?

Q That's right. You have some open hole below the base of the shoe, five and a half casing shoe.

A Well, that's only three feet.

Q Well, yes, that's true.

A Your perforation is there to 2942 to 54. And it's--

Q Do you think there is any water in that open three feet of hole?

A Well, I can't say whether there is or isn't, but according to the core, it sure didn't look like there would be. It was hard dolomite.

Q There would not be?

A Yes, there wouldn't be.

Q You really don't know where the water is coming from in

this well?

A Except it's coming through those perforations. As far as the exact place where it's coming from, no.

Q Do you know whether the cement job is open?

A As far as I know, it hasn't been tested.

Q Is this well producing through the tubing?

A Yes, sir.

Q Now, on your Owen No. 1, do you have the total depth for that well?

A Total depth is 2776.

Q The tubing was set at 2772.

A Well, that tubing has been changed two or three different times. It shows to be two and a half tubing at 2772.

Q Then, do you have approximately four feet of open hole below the tubing?

A Yes, sir.

Q Do you know whether any water is coming from that zone or not?

A Not for sure, no, sir.

Q You haven't tested the well to find out?

A As far as I know, no, it hasn't been.

Q Is that well producing through the tubing?

A Yes, sir. Well, it was. It's dead now.

Q Pardon?

A I say it was producing through the tubing before it died.

Q It's not producing at all,now?

A No, sir.

Q On the Dyer No. 3, what is the total depth of that well?

A Total depth is 2977.

Q And the two and a half inch tubing was set at 2960?

A Well, I suspect that that tubing was changed in this recent installation of the pump jack. . I don't know.

Q This well does have a pump jack on it?

A Yes, sir. Well, now, it's flowing gas through the casing and water--pumping the water through the tubing.

Q Actually, it would have seventeen feet of open hole below the tubing from which the water is being pumped?

A Yes, sir.

Q Do you know whether or not the water is coming from this zone?

A No, I don't know.

Q You haven't tested the well to find out?

A No, sir. It hasn't been.

MR. UTZ: That's all I have.

MR. PORTER: Any furthur questions?

MR. UTZ: One further question.

QUESTIONS BY MR. UTZ:

Q Do you have any idea where the gas and water contact is in this area?

A No, sir. As I stated before, it has been found that the

water, each individual sand, will usually carry some fluid, whether it's high or low. And as you go north of Jal, your casing will carry a little oil in the top section and produce dry gas out of it.

Q Do you think you have a partial water-dry in this area?

A Evidently, it has to be, because I don't know of any other area where there is water in the Yates like there is in this area we are talking about right here. Now, how it got there, I don't know, but I would assume it is a week or semi-weak, but actually, it's getting stronger water drive.

Q (By Mr. Payne) This hasn't always been present in this interval?

A Yes, sir. On the Dyer 3, and the Legal 2, and the Jenkins are all right in one year, and they all make a small amount of water on completion.

QUESTIONS BY MR. UTZ:

Q But there has been an encroachment of water?

A There has been an encroachment as time has gone on.

MR. UTZ: That's all I have.

REDIRECT EXAMINATION

BY MR. GIRAND:

Q Mr. Watson, I believe they have suggested certain things such as pumping the water and compressor stations, changing the tubing, things of that nature. Do you feel that the wells in their present condition would warrant the expense of such operation with-

out knowing what the results would be?

A Well, it's just a gamble whether you would ever see the money again, I mean, as far as anything you do. The installation of a pump jack seems to be the safest way out over an extended period of time. But if the wells are shut-in even with the pump jack on them I am not sure what the results are going to be.

MR. GIRAND: I believe that's all.

MR. PORTER: Any further questions of the witness?

MR. GIRAND: I want to reoffer all Exhibits, 1 through 18.

MR. PORTER: Without objection--

MR. GIRAND: Well, Exhibits 1 through 19.

MR. PORTER: Without objection, the Exhibits will be admitted.

(Thereupon, Applicant's Exhibits 1 through 19 were received in evidence.)

MR. PORTER: The witness may be excused.

MR. GIRAND: That's all we have to offer at this time.

MR. PORTER: Does anyone else have any testimony to offer in this case, 1941? Anyone have a statement to make? Mr. Kastler.

MR. KASTLER: Bill Kastler from Roswell, New Mexico, representing Gulf Oil Corporation. Gulf is an independent offset operator interested in the outcome of this case; our offset lease covers Section 32. We feel that no legal or equitable reasons for extending this exception has been shown in this case, which now

exists under the present Jalmat Field Rules. And, therefore, we enter our opposition.

MR.PORTER: Mr. Bratton.

MR. BRATTON: Howard Bratton, Roswell, New Mexico, appearing on behalf of Humble Oil & Refining Company. Humble objects to the exception of Jal Oil Company Owen Well No. 1, Dyer No, 3, and Watkins Well No. 2 from prorationing of--according to the Jalmat Rules and Regulations for the reason that we are also operators in the Jalmat Gas Pool of properties in close proximity to two of the subject wells, and feel that exemption of these wells would rule in violation of our correlative rights. The exemption of one operator in a pool from prorationing would be a violation of the correlative rights of the other operators who must remain subject to the Pool prorationing Rules.

MR. PORTER: Anyone else have any statement to make? Mr. Hughston.

MR. HIGHSTON: R. L. Hughston, Shell Oil Company. Shell Oil Company is an operator in the Jalmat Gas Pool, and is opposed to the granting of the Jal Oil Company's requested exceptions. We, in general, feel that the removal of prorationing in a selected area of a competitive reservoir is a bad thing; that the prorationing formula of the Rules, whether they are popular or unpopular, should be applied uniformly and equitably to all operators in the Field; that the correlative rights of the operators will be affected to the injury of some, and to the advantage of others. Here, if an

exception is allowed, the effect on the correlative rights of other operators might be small, but a bad precedent would be set. We think that Jal should be limited to the method of others in Jalmat Field who are faced with the water problem, which method is through the use of remedial measures.

MR. PORTER: Anyone else have a statement to make? The Commission will take the case under advisement.

* * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

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

WITNESS my Hand and Seal this, the 15th day of April, A.D. 1960, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Thomas T. Tomko
Notary Public

My Commission expires:

January 7, 1964