BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 8, 1975

EXAMINER HEARING

IN THE MATTER OF:	
Application of Llano, Inc. for a unit agreement, Lea and Eddy Counties, New Mexico.	CASE 5563
Application of Llano, Inc. for a pressure maintenance project, Lea and Eddy Counties, New Mexico.	CASE 5564

BEFORE: Richard L. Stamets, Examiner.

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: William F. Carr, Esq.
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For the Applicant: Clarence Hinkle, Esq.
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I N D E X

EXHIBIT INDEX

MR. STAMETS: We will call the next Case, 5563.

MR. CARR: Case 5563, application of Llano, Inc. for a unit agreement, Lea and Eddy Counties, New Mexico.

MR. HINKLE: Clarence Hinkle, Hinkle, Bondurant, Cox and Eaton appearing on behalf of Llano, Inc. We also have associated with us Don Maddox of Hobbs who is supposed to be here. He just stepped out and he will probably be here shortly. We have one witness and I believe sixteen exhibits.

MR. STAMETS: Any other appearances in this Case?

(THEREUPON, the witness was duly sworn.)

MR. HINKLE: Mr. Examiner, Jerry Losee who was here earlier asked me whether or not Case 5563 was a forced pooling for unitization, a forced unitization, and I told him it wasn't and I would like to let the record show that there is no intention from this application for forced unitization.

We would like to call the next Case too because our exhibits overlap, and we would like to have these cases consolidated for purposes of testimony.

MR. STAMETS: Is there any objection to the consolidation of these two Cases?

Will you call Case 5564, please?

MR. CARR: Case 5564, application of Llano, Inc. for a pressure maintenance project, Lea and Eddy Counties,

New Mexico.

MR. STAMETS: These two Cases will be consolidated for purpose of testimony.

G. W. EDWARDS

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q. State your name, your address and by whom you are employed.

A. My name is G. W. Edwards; I live in Hobbs, New Mexico; and I'm employed by Llano, Incorporated in Hobbs.

Q. What is your position with Llano?

A. Executive Vice President.

Q. Have you ever testified before the Oil Conservation Commission?

A. No, sir.

Q. Are you a geologist and a petroleum engineer?

A. A geological engineer and a registered professional engineer.

Q. State briefly your educational background and your qualifications and experiences as a geologist and a petroleum engineer, or an engineer?

A. In 1950 I graduated from the St. Louis University with a degree in geological engineering. Shortly thereafter

I took a position with the Bureau of Mines as a mineral specialist. In 1951 I went to the Federal Power Commission in Washington, D.C. as a reservoir engineer and gas geologist in the Division of Gas Certificates. In 1953 I was employed by Phillips Petroleum Company as a reservoir engineer. Subsequent to that time I became a reservoir engineer in the Economics Department. In 1963 I was assistant manager of the Reservoir Engineering Division and Economics Department. As a result of departmental consolidations, in 1968 I became director of the Reservoir Engineering Division for the Western Region in the Exploration and Production Department. In 1971 I became director of the Reservoir Engineering Division in the Southwestern Region of the Natural Gas Resources. In 1975, June the second, I became employed with Llano, Incorporated in Hobbs as Executive Vice President.

I have testified in Texas before the Federal Power Commission and the Security Exchange Commission.

Q. Have you made a study of the Lusk Strawn Pool area?

A. Yes, sir, I have.

MR. HINKLE: Are the qualifications of the witness acceptable?

MR. STAMETS: They are.

Q. (Mr. Hinkle continuing.) Are you familiar with the applications of Llano in these Cases?

A. Yes, sir.

Q. What is Llano seeking to accomplish?

A. In the Case of 5563, Llano is seeking approval for the unit agreement covering the Lusk Strawn Pool comprising twenty thousand, eight hundred and sixty-three point eighty-eight acres of Federal and State lands located in Lea and Eddy Counties, New Mexico.

Q. What about Case 5564?

A. In Case 5564 Llano is requesting approval of a pressure maintenance project which will be coextensive with the proposed unit area, an authority to institute a pressure maintenance project by injection of gas, initially into two wells. The applicant has further requested rules covering the project and administrative approval for expansion of the project, including conversion of additional wells for the injection of gas.

Q. Have you prepared or has there been prepared under your direction, certain exhibits for introduction in this Case?

A. Yes, sir.

Q. Are those the ones that have been marked one through sixteen?

A. Yes, sir.

Q. Refer to Exhibit One and explain what this is and what it shows?

A. Exhibit One is a land plat and a tract plat,

outlining the proposed unit area, which consists of the twenty thousand, eight hundred and sixty-three point eighty-eight acres.

It further defines those lands which are Federal lands and State lands. The Federal lands being eighteen thousand, five hundred and sixy-one point six acres, or eighty-nine point oh six one percent of the total unit area.

The State lands, which are the blue-shaded area, accumulate to two thousand, two hundred and eighty-two point twenty-eight acres or ten point nine three nine percent of the proposed unitized land.

The blue line on the extreme periphery of it is the proposed unit area.

This map also shows the interior units which are the Plains Unit the Lusk Deep Unit and a portion of the Big Eddy Unit in the southwest.

It shows the tract designations.

Q. The tract designations are the ones referred to in the unit agreement?

A. Yes, sir.

It further indicates the leasehold of record and it shows those tracts in which Llano has operational rights in the Strawn.

Q. Now refer to Exhibit Two and explain what this shows?

A. Exhibit Two is termed a general well plat which again shows the confines of the proposed unit area. The shaded area to the southwest is the Big Eddy Unit. The wells that are indicated on there, some three hundred in number, are in compliance with the Commission Rule 701 to show wells in the area and it shows all wells, irrespective of formation and completion. It is color coded in such a way that the producing formations from the Yates on through the Morrow gas zone are identified. The legend also shows the well status symbol with respect to producing wells, shut in, plugged, dry, junked or abandoned, et cetera.

Q. Are there any further comments with respect to this exhibit?

A. No, sir.

Q. Refer to Exhibit Three and explain what that is?

A. Exhibit Three is a plat, again showing the unit outline as proposed. The Big Eddy Unit is in the cross hatched area. This map is made to show several things, one being that the preceding exhibit showed all of the wells irrespective of completion depth, depth drilled, productive status and so on, and this map is intended to screen out all wells, except those which penetrate into the Strawn. In general it shows Strawn completions and Morrow completions and dry holes which were of sufficient depth to have drilled to the base of the Strawn.

On the interior of the unit boundary it shows the zero line of the productive limits, estimated productive limits of the Strawn Reef reservoir.

It shows in the northern portion in the east half of Section 6, of Township 18, Range 32 East, the two proposed injection wells, and in the orange arrow they are identified. The orange button shows possible future injection wells which we are not proposing for conversion at this time.

In addition to these factors, the heavy dark line which traverses the map from the southwest to the northeast is Llano's twelve-inch pipe line.

The square rectangle shaded in dark in Section 20 is the proposed Llano compression installation.

The round button shaded dark is the remote absorber which will process the gas and this remote absorber will be operated by Phillips Petroleum Company under a processing agreement which is being established.

From the Llano compression station going north, the dark dashed line is the line which will carry the injection volume from the compression plant to the two proposed wells.

We proposed to inject crestal positions which are high on the structure and produce the oil volumes from the lower structure wells until such time as we experience high gas-oil ratios or break through then the wells will be, of

course, shut in or converted to injection wells.

In cases where we do not have additional wells or the pattern is not as we would like to have it for maximum efficiency, we will inject into a given well and withdraw from the same well and process the gas through the remote absorber of Phillips Petroleum Company.

Our plan of operation will ultimately go to sixty million a day and in these two wells the injectors that are proposed here and designated by the orange arrow, we propose to inject eight to ten million initially. Ultimately the injection well will accumulate to approximately three hundred and forty-five billion feet.

Q. What is the source of your gas?

A. The source of the gas will be extraneous gas which Llano has under contract or will contract at the appropriate time to begin injection.

Q. Any further comments with respect to Exhibit Three?

A. No, sir.

Q. Refer to Exhibit Four and explain that.

A. Exhibit Four is an isopachous map of the producing reservoir known as the Strawn Reef.

The wells colored in red are Lusk Strawn wells. Those which have an additional circle around the red button are currently producing wells.

The exterior of the unit boundary is also defined

on this map.

The Lusk Strawn Reef reservoir lies on the northwestern shelf of the Delaware Basin. The reef itself is defined by oil-water contacts on the east, the southeast, the southwest and generally to the south. It is defined by pinch outs of porosity on the north and the northwest. The reef is currently producing four hundred and thirty barrels of oil a day and approximately two and a half million feet of gas and about two hundred and fifty barrels of water a day from the southernmost extreme wells.

Q. Exhibit Four shows considerable acreage between the productive limits and the boundaries of the unit. Is there any provision for that acreage to participate under the unit agreement?

A. Yes, sir, the surface acreage will participate within the participation formula as five percent.

Q. Now, Exhibit Four also indicates that part of the Big Eddy area is productive from the Lusk Strawn, why was this acreage not included in the proposed unit agreement?

A. The Big Eddy Unit is a large unit, it has a multiplicity of owners, in the range of two hundred or so. We visited with the USGS and with their concurrence, we elected to in the interest of time to expedite the formation of the unit through the execution of a border protection agreement between the operators of the Big Eddy Unit and

Llano, Incorporated.

Q. Have you worked out an agreement, a border protection agreement with the Big Eddy Unit operator?

A. Yes, sir, we have and it has been executed.

Q. Essentially what does this provide?

A. There are three wells which we feel we can and may want to reenter, the 1, the 4 and the 5. And we, through this agreement, have operating rights with respect to the Strawn to produce or to inject or to monitor reservoir performance in any one of the three wells, and additionally the fourth well which is a dry hole on the south extreme of the productive limits.

MR. STAMETS: Would you please identify the wells you referred to as 1, 4 and 5?

A. Yes, sir, the Bass Sun Texas 1.

Q. (Mr. Hinkle continuing.) What section?

A. They are in Section 34. The 5 is in 34, the 1 and the 5 are in Sections 27 of 19 South and 31 East.

MR. STAMETS: That is all of the wells in the Big Eddy Unit that are completed or were completed in the Lusk Strawn Pool?

A. Yes, sir.

MR. STAMETS: Okay, thank you.

A. And within the confines of the border protection agreement as defined in the agreement.

Q. (Mr. Hinkle continuing.) Do you have any further comments with respect to Exhibit Four?

A. No, sir.

Q. Refer to Exhibit Five and explain what this is?

A. Exhibit Five is a letter from the Department of the Interior, the Geological Survey, the pertinent portions being as follows: (Reading.) The application filed October 23rd, 1973 requested the designation of the Lusk Strawn Deep Unit area embracing twenty thousand, eight hundred and sixty-three point eighty-eight acres in Lea and Eddy Counties, New Mexico, as logically subject to operations under the proposed unit area which embraces eighteen thousand, five hundred and eighty-one point six acres or eighty-nine percent of Federal lands and two thousand, two hundred and eighty-two point twenty-eight acres or ten point nine four percent of New Mexico State lands.

It further states: Unitization is for the purpose of conducting secondary recovery operations by injecting extraneous gas and will be limited to the Strawn zone of Pennsylvanian age as defined in Section 2-G of the unit agreement.

It continues: The land requested as outlined on your plat, marked Exhibit A, Lusk Strawn Deep Unit in Lea and Eddy Counties, New Mexico is hereby designated as a logical unit area. The designation of the Lusk Strawn Deep

Unit is granted provided the Lusk Deep and Plains Unit agreement which are wholly within the proposed unit area are amended to eliminate the Strawn zone.

The proposed form of unit agreement will be acceptable if modified as indicated. (End of reading.)

Q. So there is attached to that letter, another letter, what does that indicate?

A. The letter states: (Reading) Your letter of December 14th, 1973 requests preliminary approval for the text of two separately proposed amendments, one each for the Lusk Deep Unit and to the Plains Unit agreement, both in Lea County, New Mexico for the proposed form of consent and ratification to each such amendment.

The proposed amendments are proposed to eliminate the Strawn formation from both the Lusk Deep and the Plains Unit agreements while maintaining each such agreement with respect to all other formations.

The proposed amendments and form of consent and ratification are satisfactory with this office. (End of reading.)

Q. Have you obtained these amendments?

A. Yes, sir, we have.

Q. They have been executed?

A. Not entirely. The Lusk Deep Unit which requires an amendment by Gulf, Phillips and Kerr-McGee will be executed

simultaneously with the assignment of their properties to Llano.

The Plains Unit, the signing of the amendment will be conducted by Mobile and Clinton. Mobile has signed the amendment and Clinton has it under review.

Q. Now refer to Exhibit Six and explain this?

A. Exhibit Six is a letter from the Commissioner of Public Lands which in substance says: (Reading.) Your proposed agreement this date has been approved as to form and as to content. The certain minor changes -- (End of reading.)

Q. There is attached to this letter another letter under the date of January 11th, what does it show?

A. The letter of January 11th, 1974 also from the Commissioner of Public Lands withdraws the objections and recommendations as contained in the preceding letter of January 4th, 1974.

Q. Then the proposed form of unit agreement has been approved by the Commissioner of Public Lands?

A. Yes, sir.

Q. Now, three copies of the unit agreement were filed with your application. Are you familiar with that form?

A. Yes, sir.

Q. Who is designated as the operator?

A. Llano, Incorporated is designated as the unit operator.

Q. Is this the same form as has been previously approved by the USGS?

A. Yes, sir.

Q. And the Commissioner of Public Lands where Federal and State lands are involved?

A. Yes, sir.

Q. Does this form provide for a plan of operations?

A. Yes, sir.

Q. What does it essentially provide?

A. This was Exhibit Six?

Q. No, Section 12 of the unit agreement is the one that provides for the plan of operation.

A. Section 12 of the unit agreement recognizes that the lands within the unit area are reasonably proven to be productive and unitized substances and the main object and purpose of the agreement is to formulate and to put into effect a secondary recovery project in order to effect the greatest economic recovery of unitized substance and in order to prevent waste. The agreement provides that the initial plan of operation will be filed with the supervisor and the commissioner concurrently with the filing of the agreement for final approval.

Q. Does the unit agreement provide for a participating

formula?

A. Yes, sir.

Q. What is this formula?

A. The participation formula is based upon five percent surface acreage, twenty percent productive acreage, and seventy-five percent net acre feet.

Q. It is covered by section 13 of the unit agreement?

A. Yes, sir, it is.

Q. Do you consider this formula to be fair and equitable?

A. Yes, sir, I do.

Q. And calculated to protect correlative rights?

A. Yes, sir.

Q. Have you contacted, or has anyone in your organization contacted all of the working-interest owners or owners of leasehold within the proposed unit area?

A. Yes, sir, we have.

Q. And offered an opportunity to commit their acreage to the unit?

A. We've offered them an opportunity to commit their acreage to the unit or to sell it to Llano through purchase acquisition procedures.

Q. What percentage of the leasehold interest do you anticipate will be committed to the unit agreement?

A. We have what we think are sound commitments now,

ninety to eighty-nine percent and we think that ultimately we will have very nearly one hundred percent.

Q. Now refer to Exhibit Seven and explain what this shows?

A. Exhibit Seven is a type log and is the log which is referred to in the unit agreement. This log being a gamma ray sonic log on the El Paso Natural Gas Company Lusk Deep Number 2. It portrays the top of the Strawn and the top of the reef, the base of the reef, the unitized interval which is from eleven thousand and ninety-seven feet to eleven thousand, five hundred and four feet.

Q. This section is specifically described in the unit agreement as section 2-G, is it not?

A. Yes, sir.

Q. Now refer to Exhibits Eight and Nine, together, and explain what these are and what they show?

A. Exhibit Eight is a well diagram of the proposed injection well, which is the North 2 in the east half of Section 6, the Tenneco Oil Company Continental Federal A-1. This diagrammatic sketch shows where the thirteen and three-eighths casing is set, the eight and five-eighths, the top of the Strawn, the perforated interval, the volume of the cement in each case which is utilized, and it shows the size of the tubing, it shows the previous Wolfcamp perforations which had been perforated, but were also squeezed; and it

shows the packer arrangement; it shows the plugged total depth that exists now in the well bore.

Q. Now refer to Exhibits Ten and Eleven, are these the logs of the two wells that you have just testified to?

A. I just testified to Exhibit Eight, but Exhibit Nine which is another exhibit set out diagrammatically, the well bore arrangement, the testimony is essentially similar as to Exhibit Eight.

The Exhibits Ten and Eleven are merely the logs on these two well bores, which also have indicated on them the same information as contained in Exhibits Eight and Nine.

Q. These are the two wells which are to be used initially for the injection of gas?

A. Yes, sir.

Q. When do you expect to begin injecting gas into these two wells?

A. We think since we have the compression already in the yard and the line pipe also in stock that within sixty to ninety days after the effective date of the unit we can begin injection into two wells.

Q. During that sixty to ninety days what will you be doing?

A. We will at that time have the well records of all of the parties which are involved in the unit which we have acquired properties from. We will be reviewing these

well records, leading to the well work that will be required, the conversion of additional wells, the rearrangement of equipment in the field and shortly thereafter we will file for an administrative expansion of the project area into the southern and southwestern portion of the unit area.

Q. Now you have referred to the request for administrative approval of additional injection wells, is that quite essential to your program?

A. We feel that it is in order to expedite it. We, as soon as possible, want to increase our injection rate to sixty million cubic feet per day and we feel that the administrative provisions and procedures which are established by the Commission will move us in that direction in an orderly and rapid fashion.

Q. Do you have an estimate of the time from the time you begin injecting into the two initial wells, how long it will be until you want administrative approval of additional wells?

A. Within six months.

Q. Refer to Exhibit Twelve and explain what this shows?

A. Exhibit Twelve is a composite production time curve of the Lusk Strawn Deep Unit area which shows the oil production, the bottom hole pressure, the producing oil-gas ratio since the inception of production which was in late

1960 through July of 1975. It indicates that the current production rate from the reservoir is thirteen thousand, two hundred barrels of oil per month; it shows a gas-oil ratio of five thousand, seven hundred and an estimated current reservoir pressure in the range of seven hundred pounds.

Q. Refer to Exhibit Thirteen and explain this?

A. Exhibit Thirteen is a general data tabulation for the Lusk Strawn Deep Unit area, which shows the reservoir, the age, the average producing depth of eleven thousand, three hundred feet, the discovery date, the discovery well, the current wells which are known as Strawn wells, showing twenty-three producing, sixteen shut down, twenty-eight plugged and abandoned and twenty-seven dry and abandoned. It additionally shows the production rate of thirteen thousand, two hundred and sixty-eight barrels per month, accumulative production from the total reservoir and from the Lusk Strawn Deep Unit area, both being in excess of eighteen million barrels. It goes on to enumerate such items as that and includes fluid property composition, reservoir rock properties, and oil-water contacts which are described on the exhibit.

Q. Refer to Exhibit Fourteen and explain what this shows?

A. Exhibit Fourteen is a calculation of original oil in place by two methods, the material balance method, or based on performance, and volumetric method which is essentially

based upon geologic means. Under item one, the material balance, it shows the composite compressibility calculation for the reservoir system; it shows the calculation of the original oil in place in the absence of water influx which seems to be a valid supposition considering performance. The oil in place is estimated to be fifty-four point one million barrels by material balance methods and by the volumetric method the calculation for oil in place is estimated to be forty-four point two million barrels for the total reservoir which includes the Big Eddy Unit area and the Lusk Strawn Deep Unit area of forty-three million barrels.

I think that the fifty-four million barrels is the more reasonable figure in view of performance of the reservoir, having accumulated approximately eighteen and a half million barrels to date, and in my opinion the disparity between the two is probably in the porosity measurements since the reservoir not only has inter-crystalline porosity but has secondary porosity of vugular and fracture composition.

Q. Now refer to Exhibit Fifteen and explain what this shows?

A. Exhibit Fifteen shows the estimated additional recovery that is anticipated by the project. These numbers are stated in thousands of barrels.

Once again the original oil in place was fifty-four

million, the accumulative production was approximately eighteen and a half which leaves the remaining oil in place of thirty-five point six million barrels remaining of sixty-five point nine percent.

The future remaining primary recovery from August the first of '75 is estimated to be four hundred and ninety-eight thousand barrels. We anticipate that the future pressure maintenance recovery of oil will be four million seven hundred and sixty-two thousand barrels.

The future recovery of natural gas liquids, this is a hundred precent from the unit, will be an additional three million, seven hundred and fifty-six thousand for a total future recovery of primary, secondary and natural gas liquids of slightly in excess of nine million barrels.

The project would then evidence an increase in recovery of fifteen point seven percent over continued depletion performance.

Q. Refer to Exhibit Sixteen and explain this exhibit?

A. Exhibit Sixteen is the estimated future production from the unitized area, cycling at an injection rate of sixty million a day and again the figures are in thousands of barrels, so we can see that over a span of sixteen years the crude oil recovery from the unit is expected to be five million, two hundred and sixty thousand barrels, and the natural gas liquids are five million, two hundred thousand

barrels.

It might be pointed out at this time that the first four years that these liquids which amount to a million, four hundred and forty-four thousand barrels are not attributable to the unit, but are extracted from the gas which is processed in the plant and the gas is the extraneous gas which is being purchased outside of the unit confines or unitized interval and will be injected into the formation.

The natural gas liquids which are attributable to the unit through the same time period amount to a million, six hundred and ninety thousand barrels on the assumption of forty-five percent of the plant production will be reassigned to the unit, so, therefore, the column four, oil and natural gas liquids to the unit, totalizes six million, nine hundred and fifty barrels.

At the bottom of the exhibit is tabulated the economics as we see them, which accrue to the unit, it gives an annual rate of return of fourteen percent, a pay-out period of four and a half years, returning the investment one and a half times.

Q. Do you have any recommendations to make as to special pool rules which should be adopted?

A. Yes, we do.

Q. What are they?

A. This is one of them, We only have two copies of these, I think.

Our recommendations for special rules and regulations for the Lusk Strawn Deep Unit pressure maintenance project in the unit area are, one, the rules and regulations of the Lusk Strawn Pool outside of the project area be retained as written in Order Number R-2175-B which is the one currently in effect.

Recommendation two, the initial project area of Llano, Incorporated, Lusk Strawn Deep Unit, consisting of one thousand, seven hundred and sixty acres shall be described as follows and the description is tabulated therein.

Q. And that is the area where the two injection wells are?

A. The area where the injection wells are located and approximately one mile south.

Recommendation three, the allowable for the project area shall be the sum of the allowables of the several wells within the project area, including those wells which are shut in, curtailed or used as injection wells. Allowables for all wells shall be determined as hereafter prescribed.

Recommendation four, injection, shut in, or curtailed wells may be transferred to producing wells in the interest of performance efficiencies.

And recommendation five, the allowable assigned to

any well on a one hundred and sixty acre proration unit shall be top allowable for the Lusk Strawn Pool.

Recommendation six, the allowable assigned to any well which is shut in or curtailed in accordance with recommendation four above, which allowable is to be transferred to any well or wells within the project area for production shall in no event be greater than its ability to produce during the test period described in recommendation seven below, nor will it be any greater than the top unit allowable for the pool during the month of transfer, whichever is less.

Recommendation seven, the allowable assigned to any well which is shut in or curtailed in accordance with recommendation four above, shall be determined by a twenty-four hour test at a stabilized production rate which shall be the final twenty-four hour period of a seventy-two hour test during which time the well shall be produced under constant conditions. The daily tolerance limitation set forth in Commission Rule 502-I-A and the limiting GOR, if any, shall be waived during the test periods.

The Lusk Strawn Deep Unit project operator shall notify all offset operators offsetting the well, as well as the Commission, of the exact time that such tests are to be conducted. The tests may be witnessed by representatives of the offset operators or by the Commission.

Recommendation eight, the allowable assigned to each producing well in the project area shall be equal to the well's ability to produce or the top unit allowable for the Lusk Strawn Pool, whichever is less, provided that any producing well or wells within the project area which evidence substantial response to gas injection will be permitted to produce up to the project allowable or any proportion thereof. Each producing well within the project area shall be exempt from the Lusk Strawn limiting gas-oil ratio, four thousand to one.

Recommendation nine, the conversion of additional producing or shut in wells to injection and the expansion of the project area will be by application and through the administrative approval procedures of the Commission.

Q. In your opinion will the approval of these applications be in the interest of conservation and the prevention of waste and protect correlative rights?

A. Yes, sir.

MR. HINKLE: We would like to offer Exhibits One through Sixteen.

MR. STAMETS: Is there any objection to the admission of any of these exhibits? They will be admitted.

MR. HINKLE: That's all of the direct.

MR. STAMETS: Any questions of the witness? I think at this time we will take about a fifteen minute recess.

(THEREUPON, a short recess was taken.)

MR. STAMETS: The Hearing will please come to order.

CROSS EXAMINATION

BY MR. STAMETS:

Q. Mr. Edwards, in your outline of the project area here, is that basically the two proration units that have injection wells on them and the offsetting proration units?

A. Yes, sir, it is a little more than that.

Q. Well, if you were to expand the project area, would you propose that that should be the way that it should be expanded, that it would be expanded to include any proration unit on which an injection well is located, plus the offsetting proration unit?

A. At least that.

Q. Now, you have proposed a formula here for determining the project allowable. At the present time are there any top allowable wells in that pool?

A. No, sir, the top allowable is six hundred and five.

Q. Is there any reason to limit the project allowable to less than the number of proration units in the project area times the top allowable?

A. Is there any reason to limit it to less than?

Q. Yes, in other words, the formula that you proposed here, you get the top allowable for an injection well, but

any other well in the project area would only receive an allowable up to its ability to produce.

A. Right.

Q. And is there any reason to limit it to that volume?

A. No, only that each well has to be tested in order to get a future allowable.

My proposal is written in such a way that it allows me some flexibility because we do not know the condition of all of the bore holes and I don't know in the future which exactly will be producers and which ones will be injectors. I'm trying to allow for an ample allowable, plus the fact that I have a limited number of wells to work with, and that is going to be further reduced by the number of wells that will be observation wells or injection wells. And then in addition to that, ultimately, you see, we will have a cycling project, so I have to make provisions in there if I'm going to put sixty million a day into the ground, which we propose to do ultimately, I have to have a way to get sixty million back out.

Q. Let me explain what I was referring to there. Let's assume that you've got a four-well project for the time being, and under your formula you could get a top allowable say for one injection well, then that the other three wells had combined producing capacity of five hundred barrels a

day, you would have something in excess of eleven hundred barrels. I was asking, is there any reason to limit the allowable from the project to less than four times this six hundred barrels a day?

A. No, sir.

Q. Which would be more than you would have requested here, but still would be no more than the wells would be allowed under primary conditions?

A. That's right.

Q. On Exhibit Number Sixteen, column two, if I understand this correctly, now you would allocate forty-five percent of the plant-produced liquids for the first four years?

A. No, sir. Column two represents one hundred percent of the production from the plant. During the first four years, which are designated by footnote five. This will be the period of time when gas is coming in from extraneous sources and will be going into the reservoir at the rate of approximately sixty million a day. The unit wouldn't share in that gas because it is an outside gas volume. This is the total plant production entirely in column two, the first four years being the pressure build-up time when we are trying to get up to an operating pressure of four thousand pounds.

Q. Would the produced gas from the field be going

through the plant during this period of time?

A. Yes, sir.

Q. And would any allocation of those liquids go to the unit during this period of time?

A. Yes, a small percentage would be. The field right now is only producing about two million a day from the Strawn.

Q. In actuality then, in column three would there be a small volume?

A. In column three there would be a very small number there, which would be forty-five percent of the liquids extracted from whatever the indigenous gas volume was.

Q. You are looking at a four year fill up program and then you would be siphoning gas from the reservoir?

A. Right.

Q. Referring to Exhibits Eight and Nine, you show the annular space filled with inhibited fluid on the two injectors and a pressure gauge on the surface, is this the method you propose to use to determine leakage?

A. Yes, sir.

Q. Is the tubing treated in any way, or is there any necessity to treat it for corrosion?

A. We've considered that, but the extraneous gas is sweet gas and the reservoir gas and the reservoir fluids are not sour.

Q. Now, earlier in the testimony you indicated that you would be injecting high on the structure and producing low on the structure, and I would presume that initially you are referring to your project area?

A. In any event that would be the case. Initially we would be referring to the project area.

Q. Okay. Referring to the Big Eddy Unit, will the production from those wells commingle with the unit production, totally allocated to the Big Eddy; you talk about a border protection agreement and I would like just a brief description of how that works?

A. The Big Eddy border protection agreement permits the Big Eddy Unit to share in the same proportion the liquid and gas production from the unit, as though it had been in the unit.

Q. As if this were a single lease?

A. Yes, sir. That is in the event that we do not produce the well. If we produce the wells then it shares in proportion, the production is allocated back to the lease in the respective cases and they have an override on it and we have the balance.

Q. What will your injection pressures be?

A. A maximum of forty-five hundred pounds.

Q. And what reservoir pressure do you intend to build back up to?

A. We intend to operate at four thousand to forty-two hundred pounds, which is essentially the saturation pressure initially. The initial bubble point was four one seven three, so somewhere right in that range.

MR. STAMETS: Are there any other questions of this witness?

MR. HINKLE: Mr. Examiner, we have the original logs, the logs that were marked exhibits are just Xerox copies. If you would like to have the full log of the two injection wells we have them here, and we also have another copy of the recommended special pool rules if you would like to have those.

MR. STAMETS: We have two copies of the rules at this time.

MR. HINKLE: Would you like to have those originals?

MR. STAMETS: No, I believe those logs in the Commission's files and the exhibits that were presented should be sufficient.

MR. HINKLE: That is all we have.

MR. STAMETS: The witness may be excused. Anything further in this Case? We will take the case under advisement.

I would like to announce that Case 5551 will be heard as the last case today before Examiner Nutter.

State of New Mexico)
) ss.
County of Santa Fe)

I, SIDNEY F. MORRISH, a court reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Sidney F. Morrish, Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 5563/5564 heard by me on 10-8, 1975.

[redacted] Oil Conservation Commission, Examiner