BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 8, 1965

EXAMINER HEARING

IN THE MATTER OF:

Application of The Atlantic Refining Company for a waterflood project, Eddy County, New Mexico.

Case No. 3302

BEFORE:

Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: The next case will be Case 3302.

MR. DURRETT: Application of the Atlantic Refining Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Shugart Pool, Eddy County, New Mexico, by the injection of water into the Queen formation through six injection wells in Sections 11 and 14, Township 18 South, Range 31 East. Applicant also seeks the establishment of an administrative procedure whereby the project area could be expanded and additional injection wells approved.

MR. HINKLE: Clarence Hinkle, Roswell, representing the Applicant, Atlantic Refining Company. We have one witness and eight exhibits.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 8 marked for identification.)

RICHARD L. TRIMBLE, called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, please.

A Richard L. Trimble.

Q By whom are you employed?

A Atlantic Refining Company.

Q In what capacity?

A As a petroleum engineer.

Q You are a graduate petroleum engineer?

A Yes, sir.

Q Have you previously testified before the Oil Conservation Commission?

A Yes, sir.

Q Your qualifications as an expert petroleum engineer are a matter of record before the Commission?

A Yes, sir.

Q Have you made a study of Atlantic's requests in Eddy County, New Mexico?

A Yes, sir.

Q That study was made with respect to the waterflood projects?

A Yes, sir.

Q Are you familiar with the application of the Atlantic Refining Company waterflood project in Case Number 3302?

A Yes, sir.

Q What is Atlantic seeking to accomplish by this application?

A Atlantic is seeking to obtain approval of the Oil Conservation Commission for a waterflood project covering Atlantic's Swearingen Lease in the Shugart Pool, Eddy County,

New Mexico, pursuant to the provisions of Rule 701 of the Commission's Rules.

Q Refer to Atlantic's Exhibit Number 1 and explain what it shows, please.

A This is a plat showing Atlantic's proposed Swearingen waterflood project in Sections 11 and 14, Township 18 South, Range 31 East, Eddy County, New Mexico, covering, roughly, 720 acres. This exhibit shows the ownership of leases, the location of wells and the zones of completion for several miles around the project area, and it shows that all of the wells within the project area are completed in the Queen Sand. There are 13 wells within the project area. It shows Atlantic's proposed patterns for proposed injection wells. Injection wells are shown as triangles within the project area. It also shows the offset locations of the injection wells. The pattern is essentially a 40-acre five spot.

Q Is Atlantic the owner of all the leases within the project area?

A Yes, sir, Atlantic owns 100 percent of the working interest within the project area.

Q Are they all Federal lands?

A Yes, sir.

Q How many separate leases are involved in the project area?

A There are three separate leases within Atlantic's project area.

Q Can you give the description, or briefly state what each covers?

A Yes. The one lease covers the east half of the southeast quarter of Section 11, and another lease covers the northeast quarter, the southeast quarter of the northwest quarter and the north half of the southeast quarter of Section 14; and the third lease covers the remaining portion of Section 14.

Q Have all of the wells in the project area reached the advanced state of depletion and are similar to stripper wells?

A Yes, sir, they have.

Q Please refer to Exhibit Number 2 and explain what this shows.

A Exhibit Number 2 is an example showing the 13 completions within the project area giving the completion dates of the 13 wells, the initial 24-hour potential test of oil and water, and the June, 1965 daily production of oil, water and gas for each of the 13 wells. The 13 wells in June of 1965 produced at a rate of 32.4 barrels of oil per day.

Q That's the aggregate of the oil?

A That's the total of all the barrels which is less than three barrels of oil per day per well.

Q Abandoned?

A Abandoned on 1.7 barrels of water per day for the total project.

Q Now, referring to Atlantic's Exhibit Number 3, explain what that is and what it shows.

A Exhibit 3 is a structure map contoured on top of the Queen Sand, covering the Atlantic-Swearingen Project Area. It shows a rather gentle dipping to the south and east, and demonstrates that this is a stratographic trap type reservoir.

Q Does it indicate that all of the wells which have been completed in the Queen Sand formation are in the same reservoir?

A Yes, sir.

Q What is the approximate depth in which the wells of the project water and surrounding area are producing?

A The Queen Sand is found roughly to be 3400 feet.

Q Do you have a typical electrical log of any of the wells in the project area?

A Yes, sir, I have a log which is actually Exhibit Number 4, which is a gamma ray neutron log of Atlantic's Swearingen Federal Number 6 well which is located 1980 feet from the south and east lines of Section 14.

Q You might explain what this electrical log shows.

A This log shows the top of the Queen at 2428 feet and the base of the Queen at 3480 feet.

Q Were GORs taken on any of these wells in the project

when they were drilled?

A No, sir, we have no GOR information whatsoever. Now, we do have some information from nearby Queen reservoirs.

Q You have no definite information as to the permeability and porosity?

A No, sir, but from Exhibit Number 2 there, the initial potentials were, as you can see, ranged up to as high as 400 barrels per day, initially, so we anticipate they did have fairly good permeability.

Q Generally speaking, have waterflood projects in the similar Queen formations proved successful?

A Yes, sir.

Q Now, referring to Atlantic's Exhibit Number 5, state what that is, and what it shows.

A Exhibit Number 5 is performance curve showing monthly oil production, the cumulative oil production and the number of completions since 1953. Now, actually, this reservoir dates back to '39. It demonstrates that the peak production was in 1957 of about 5250 barrels of oil per month. Cumulative production to 7/1/65 was 487,906 barrels. Since that peak was reached in 1957, the production has declined rather steadily to 972 barrels oi oil per month in June of '65. And this Queen is typical of pressure depletion type reservoir which should respond to water flood.

Q In other words, this is a gas solution?

A Gas solution, gas-drive.

Q Now, refer to Atlantic's Exhibit 6 which consists of six parts, and explain each of those.

A Exhibit 6 is a diagramatic sketch of each of the proposed injection wells showing the total depth of the wells, the size and setting depth of its casing strings, number of sacks of cement used and the estimated top of the cement, or top of cement log. It shows the production interval in the Queen Sand; it shows the proposed packer and tubing setting depths and if you will notice, in every case, the packer is set on the tubing immediately above the producing interval and well below the estimated top of the cement.

Q All of these diagramatic sketches are similar?

A Yes, sir.

Q And all shows substantially the same thing?

A Yes, sir.

Q I notice that in some instances the casing has been set through the Queen Sand formation and perforated, and in others the casing has been set above the producing sand and you have open hole structures, is that correct?

A Yes, sir, that's right.

Q But in each instance the packers will be set above either the perforation or the producing formation?

A Yes, sir, it is as near to the producing interval as we can get them.

Q Now, what is the present condition of the casing in the proposed injection well?

A As far as we know the casing is in good shape.

Q Do you know whether new casing was used when these wells were drilled and completed?

A Actually we bought this production, and we think it had no casing in it, like some have said, some of the wells date back to '39 but we don't have definite records. We have not seen any logs.

Q Do you have any record to indicate that these wells were fracked?

A Yes, sir, every well has been fracked, and some as late as '62 and '63.

Q Would that indicate this casing withstood relatively high pressure?

A Yes, sir, it did.

Q Now, will the tubing, as shown on the diagramatic sketch of the well be plastic coated?

A No, sir, we don't plan to internally coat; we are going to be injecting fresh water, and until such time as we get back some residual water, we don't see any possibility of corrosion.

Q Do you intend to produce water in connection with the waterflood project?

A Yes, sir, we will reinject the produced water when it becomes available.

Q And if that water proves to be corrosive, or has any indication, do you anticipate Atlantic will take any action at that time with respect to the coating of the area of the tubing?

A Yes, sir. If corrosion is a problem we certainly will internally coat the tubing.

Q Approximately what quantity of water do you propose to inject, initially?

A We'll be injecting from about two to four hundred barrels per well per day, or a total of approximately 2,000 barrels of fresh water per day.

Q From what source would you obtain the water?

A This water will be purchased from the Double Eagle Corporation, and it will be fresh water.

Q Do you know where it comes from?

A Comes from the Capitan Reef, Lea County.

Q In the Caprock area?

A Right.

Q Now, would you refer to Atlantic's Exhibit Number 7 and explain what this is and what it shows?

A Exhibit Number 7 is a letter from the Assistant

District Engineer of the United States Geological Survey at Artesia, indicating his approval of Atlantic's proposed project plan of operation. This approval, of course, is subject to the Conservation Commission Regulations.

Q Now, I believe that Exhibit Number 1 indicates there is only one well, only one producing well located in the east half of the southeast quarter of Section 11, and that this well is to be converted to an injection well. Do you anticipate that this will effect, in any way, the status of the lease on which the well is located?

A No, sir, this is a ten-year term lease which can be renewed at the end of ten years.

Q For successive periods of ten years?

A Yes, sir.

Q Now, have you entered into any agreement with the owners of the overriding royalty interests with respect to the production which is to be allocated to this particular lease; that is the one covering the east half of the southeast quarter of Section 11?

A Yes, sir.

Q Referring to Atlantic's Exhibit Number 8, is this the agreement which you referred to?

A Yes, sir.

Q I might explain briefly --

A Exhibit Number 8 is a copy of the Overriding Royalty Pooling Agreement which simply allocates 1/13th of the production to the well located in the southeast quarter of Section 11.

Q Now, this agreement also indicated that Patons own certain overriding royalty interests in the east half of the southeast of Section 11, and the Johnsons own a like overriding royalty interest in the other leases covering land in Section 14?

A Yes, sir.

Q Now, are they the only -- Well, is Paton the only overriding royalty interest owner in the east half of the southeast quarter of Section 11?

A Yes, sir, he is.

Q Now, have you entered into any other agreements with other lease owners surrounding the project area for the purpose of protecting lease-lines?

A Yes, sir, we have.

Q Will you indicate or state what agreement you have entered into?

A We have entered into a leas-line agreement with Maxwell Oil Company to the east of Atlantic's project area, which agreement specifies that Atlantic will put on injection there their Atlantic Johnson Federal Number 1 Well in Section 11,

and Atlantic will put on injection Atlantic's Swearingen "A" Federal Number 5 Well in Section 14; and Maxwell will put on injection his Well "B" Taylor Federal Number 4 in Section 13. Then off to the west of Atlantic's project we have entered into a lease-line agreement with Hudson and Hudson, which specifies that Atlantic will put on injection its Swearingen Federal "B" Number 3 in Section 14; that we will convert to injection Shugart "B" Number 2 in Section 15, and Shugart "B" Number 1 in Section 11.

Q Now, is it your understanding that both Maxwell Oil Company and Hudson and Hudson will make appropriate applications to the Oil Conservation Commission for approval of these injection wells which you have indicated?

A Yes, sir, this is my understanding.

Q And you understand that will be done shortly?

A Yes, sir.

Q What do you anticipate will be the life of this waterflood project?

A We anticipate approximately an eight year life.

Q What do you anticipate will be the total or aggregate quantity of fresh water which will be injected on the project?

A Well, we think we need to purchase about two and a half million barrels of water and inject the produced water, about a million barrels of produced water, for a total injection

of three and a half million barrels.

Q Now, is Atlantic proposing that a project allowable be assigned to the project in accordance with Rule 701 of the Commission Rules?

A Yes, sir.

Q Now, in connection with the order which Atlantic is seeking, approving this project, would it be beneficial to Atlantic to provide for administrative approval of the expansion of the project area, and the drilling of any additional injection wells, or the drilling of any additional wells for the project's purposes?

A Yes, sir, it would.

Q In your opinion, will the proposed waterflood project in the --

A Yes, sir.

Q In your opinion, will the project be operated in a manner as to protect correlative rights, including those of override royalty interests?

A Yes, sir.

MR. HINKLE: We would like to offer in evidence Exhibits 1 through 8, inclusive.

MR. UTZ: Without objection Exhibits 1 through 8 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 8 admitted in evidence.)

MR. HINKLE: I believe that concludes our testimony.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Trimble, is it your thought that Maxwell and Hudson and Hudson would come under administrative approval of your record for expansion of this waterflood?

A No, sir. As I understand it they will come up for their own case. I don't think they are quite ready. They had some lease-line agreements of their own to work out with -- Hudson did with Marathon to the west there.

Q But you anticipate each one will be a separate lease project?

A Yes, sir. They plan their own plant; we intend to build our own plant and they will have their separate plant.

Q Well, then it's your intention that your project area will only include the cross-hatched area that is shown on your Exhibit 1?

A Yes, sir.

Q Do you intend to load the annulus in these injection wells?

A No, sir. We had planned to do that; actually, we'll be injecting, and if we, of course, if a leak occurs we will

get some pressure, some casing pressure immediately, and we will remedy it at once.

Q How will you detect the casing pressure?

A With a gauge.

Q A gauge on the annulus?

A Yes, sir.

Q You feel sure that you don't have any leaks in the casing then?

A We don't think we do. We have been producing. They make very little water, very little fluid of any kind, and when we fracked them, we should have it showing pretty good if it was going to, and it never did.

Q Did you put the frack pressure on the air portion of the casing also, or did you put it under a packer?

A We fracked some of the wells.

Q Fracked some of them right straight down the casing?

A Yes, sir.

Q But not all of them?

A No, sir.

Q These, of course, these fracks --

A These were done before we purchased the property, we bought it in 1964.

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

MR. GRAY: E. D. Gray, State Engineer's Office.

BY MR. GRAY:

Q At the present time about five percent of the fluid being produced is water, and you mentioned that in the total amount of water required, of about a million barrels, would be recirculated water, which is a total of about 30 percent of your total injection fluids. Now, I would thing that this would be a large quantity of water to be putting down an uncoated tubing.

A Yes, sir, that won't occur until about another anticipated three or four years before we get a sufficient volume of this produced water back, and at that time when we do -- The problem with these fluids is the produced water. Purcahsed water, of course, is fresh water, and it doesn't cause corrosion. When the produced, when we start injecting it, we will have to watch for corrosion, and we plan to have several coupon corrosion stations throughout our system.

Q Well, now, on that, this five percent of water that you are now producing, will that be injected immediately?

A No, sir, no, sir.

Q How will that be disposed of?

A It will probably evaporate, relatively, in the pit.

MR. GRAY: I believe that's all the questions I have.

BY MR. UTZ:

Q Is it a common practice to pull tubing, periodically,

in injection wells?

A Pardon?

Q Is it common practice to pull tubing in injection wells?

A No, sir, we wouldn't. We woudn't normally pull the tubing unless we suspicioned we had a tubing leak.

Q I was at a little bit of a loss as to why you want to wait four years?

A Well, the reason I said four years, because that is when we anticipate we will be getting back the produced water and it is the water that generally causes the corrosion. This water that we're purchasing, and we have signed the contract, it's drinkable water. You can actually drink it. So, until we do start to reinject the produced water, we don't anticipate any corrosion. I went out and I looked at Double Eagle's system, and it has been there six or seven years, and there has been no corrosion throughout their system yet.

Q Well, I wouldn't question your statement as to the water and the Double Eagle's system on down the road. I was questioning the advisability of pulling the tubing and putting plastic coated tubing in at the time you start reinjecting the produced water. I would gather that you were not convinced that even then you will then have corrosion problems?

A Being we are not convinced that we will at that time,

of course, we will have -- we'll have to look and see what the remaining life of the project is, and just what the completions are at that time. We are like a lot of oil companies, I guess, we want to defer expense as long as we can. I guarantee we will take care of it when it comes up.

MR. UTZ: Are there any other questions of this witness? He may be excused.

(Witness excused.)

MR. UTZ: Are there other statements in this case? The case will be taken under advisement and the hearing is adjourned.

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

I, Henry Watts, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 28th, day of October, 1965.

Henry Watts
Notary Public - Court Reporter

My Commission Expires:

April 7, 1969

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3302, heard by me on 9-8-65, 19.

Examiner
New Mexico Oil Conservation Commission