BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 24, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Newmont Oil Company for a waterflood expansion, Eddy County, New Mexico

CASE NO. 3147

BEFORE: DANIEL S. NUTTER, EXAMINER

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order. We will call first Case 3147.

MR. DURRETT: Application of Newmont Oil Company for a waterflood expansion, Eddy County, New Mexico.

MR. RUSSELL: John F. Russell, appearing on behalf of Newmont and I have one witness.

(Witness sworn.)

CHARLES SEELY,

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

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name and address, by whom you are employed and in what capacity?

A Charles Seely, Houston, I am employed by Newmont Oil Company as chief engineer.

Q And have you previously qualified to give testimony before an examiner?

A I have.

Q Are you familiar with Newmont's application involved in case number 3147?

A Yes.

Q What do you seek by that application?

A We seek to expand its West Square Lake Waterflood Project by conversion of about ten wells.

Q I'll refer you to what has been marked as Exhibit 1 and ask you to explain to the Commission what that shows?

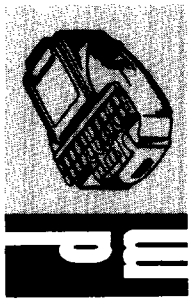
A This shows a map of the Newmont Square Lake Waterflood Project with the present development and flood area and with the area in which we're requesting an expansion to be granted.

Q And the present flood area is outlined in blue and the area to be expanded in red?

A Yes.

Q And proposed injection wells are shown in red?

A That's right.



Q All right. I'll refer you to what's been marked as Exhibit 2 and ask you to explain what that shows?

A This is a map showing a little bit larger area there of the Square Lake field with the different Waterflood projects that are presently established in the field. Over to the right is Newmont's East Square Lake Waterflood Project, the center is the scene of the Waterflood Project. Over to the west is a reasonable outline of Waterflood by Texaco and others.

Q And what is the one shown with the triangle in green?

A These are producers that are completed deeper than the zones that are being water flooded and we are getting the Grayburg-San Andres.

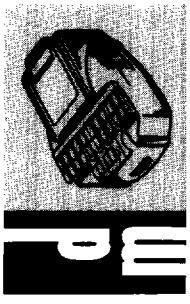
Q And this Exhibit Number 2, does it show all of the producers from within a two mile radius of your proposed injection?

A Yes sir.

Q I'll refer you to what's been marked as Exhibit 3 and ask you to explain what that shows?

A This is just tabular data showing the wells that are to be converted to water injection, the location, completion date, surface producing strings, purported pay, the amount of cement that has to be used, the estimated tops of cement and so forth.

Q And it shows the intervals in which you propose to



inject water, is that correct?

A That's correct.

Q You do not have well logs for any of these wells, do you?

A No.

Q All right. Now, I'll show you Applicant's Exhibit 4 and ask you to explain what it is?

A Just a schematic diagram of all of the wells to be converted to water injection, just giving information in the form of what was presented in the previous exhibit.

Q Now, do those diagrammatic sketches show the manner in which you propose to complete these wells as injection wells?

A That's correct.

Q And other than the various intervals and so forth as shown in each particular well, your completion and testing will be the same?

A Yes.

Q Now, will you explain to the Commission how you propose to complete these wells?

A Well, with the exception of one flood area which will be re-opened or redrilled, all the --

Q That is the Leonard State Number One?

A That's Leonard E. Number One, I believe. All the wells will be converted, cleaned out, pressure tested and if

there are no leaks we will use water from Yucca Water Supply which is fresh water. In case of any leaks that might develop then, of course, there will be injection under the packer.

Q Now, there is some casing in all of these wells, is that correct?

A That's correct, surface casing.

Q And is the casing in each of these set above the zone in which you inject?

A In all cases.

Q Now, in the event you complete these injection wells what tests will be taken to determine whether or not at a later time there might be leaks or lost water?

A Well, we take surface wellhead pressure readings and if there is any abnormal development in the casing, of course, this will be shown by an injection of water and in surface injection pressure.

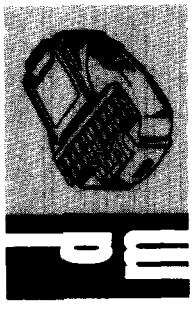
Q Is there a permanent flange on all of the wells?

A Well, if there is not, a lot of times they will take them around with them to keep them in working order and just put it over.

Q Move from one well to the other?

A Yes.

Q And in your opinion this procedure of completing and daily or weekly or whatever inspections will reflect any



leaks before any damage can be done?

A Right.

Q And, as you said, there is fresh water being injected?

A That's right.

Q What rate of pressure do you anticipate to inject?

A 1900 pounds.

Q Now, I will ask you to refer to Applicant's Exhibit 5 and ask you to explain what that is?

A That is a performance curve of the presently installed waterflood project which gives the daily average water production, the daily average oil and water injection, cumulative water injection, cumulative flood production and cumulative oil production. And, as you see, from the area there, particularly the Kelly, there has been a definite response to the water injection; however, it has been somewhat of a limited response. There was an oil well lot installed in the field back in 1959, in July of '59, and the first substantial response was, oh, about a year and a half later. There have been two or three expansions from that oil well essentially up to the present time. We've injected about 2,600,000 barrels of water into the reservoir through 12 water injection wells and, as you can see from the oil curve these responses were something over 200,000 barrels of oil. As you can see from that oil curve, there has been a significant response but it has been rather low, most of the

wells requiring at least 18 to 24 months before you can fill up enough to get responses and on this basis it's very difficult to keep expanding your project one well at a time and getting responses two years later and then converting the wells at that time.

Q Well, referring to what has been marked as Exhibit 6, what does that show?

A This is the present status of all the wells to be converted. There are some temporary abandoned wells and at present the daily output of the remaining will average about two barrels per well per day.

Q Now, referring you back to your Exhibit 1, does the proposed expansion to the west of your present project, do those injection wells follow the same pattern for the most part?

A That's correct, with the exception that some of the wells will not be converted.

Q Now, what about that one well to the east?

A This is off pattern by one well there.

Q Now, assuming that this waterflood project should not be approved, then what would be your plans for the continued development of the acreage covered by your proposal?

A Well, of course, there are several different things, but there's a real strong possibility that a lot of the wells have been flooded, a good many of them have been plugged in this

area, particularly over in the east but responses have been fairly low, there is about three or four that we have to inject into simutaneously, response is slow and it is of a rather low magnitude.

Q There is oil which may be produced through waterflood secondary recovery, through waterflood?

A That's correct.

Q Then, in your opinion would the granting of this application prevent waste and protect correlative rights?

A That's right.

Q One thing I don't believe I asked, at what rate do you propose to inject the water initially?

A We don't start injecting at a high rate, we usually hold off until we're injecting at a reduced rate for about the first month or so, then after that we will be injecting at the rate, at the pressure of 1800 pounds which up to this point the average injection rate is around 150 barrels per well per day.

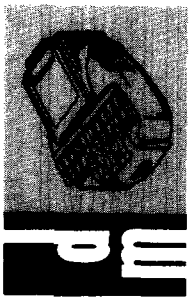
Q That's initially or later?

A No, that's later.

Q What do you anticipate your initial injections will be?

A Approximately around two or three hundred barrels per day.

Q But it will decrease over the life of the flood?



A That's correct.

Q Do you have anything further in connection with this application that you would like to advise the examiner on?

A No.

MR. RUSSELL: I have no further questions.

MR. NUTTER: Are there any questions of Mr. Seely?

MR. IRBY: Frank Irby, State Engineer's office.

CROSS-EXAMINATION

BY MR. IRBY:

Q Mr. Seely, you stated that these wells would be equipped with tubing and packer, where is this packer going to be set in the well?

A It will be set right at the -- say, 20 to 50 feet within the casing tubing?

Q Below the top of the cement?

A Oh yes, very definitely.

Q And you said that you are using fresh water. Now, will all injected water be fresh?

A Well, we'll be injecting in this well or others -- have been injecting since July, '59, nothing but fresh water up to this point. Now, I would imagine in the light of the flood that there could be some produced water that would be re-injected and at that time, of course, we would take different steps and it would probably be a separate system as is normally the case.

Q Then, may I infer your answer to mean that you will inject only fresh water until such time as you have adequate produced water to be used in it?

A That's correct.

Q And how will we know when you start using saline water for injection?

A Well, at this time I can see we're only producing less than about, oh, 200 barrels of water per day and the average is probably less than a hundred barrels of produced water per day up to this point and I don't --

MR. RUSSELL: Mr. Seely, if, under this proposed project you decide that it is time to use produced water, will you then notify the Commission of your proposed methods of injection?

THE WITNESS: Yes.

MR. RUSSELL: And the State Engineer?

THE WITNESS: Yes.

Q (By Mr. Irby) In the meantime Mr Seely what disposition are you going to make of the produced water?

A Well, either we'll convert one well or something out there as the salt water disposal or, that's about the only thing we probably can do, I would guess, with pits or something of this nature.

Q Impervious lined pits?

A Yes.

Q What disposition is being made of the limited amount, I believe you said 100 or 200 barrels per day is being produced now?

A I'm not real sure what we are doing at this time.

MR. RUSSELL: Can that information be obtained?

THE WITNESS: Yes, very definitely, and I will supply it to you.

Q (By Mr. Irby) Thank you. Now, in discussing the wells you said all except the Leonard E Number One could be injected in the manner you set, but I don't believe you discussed what you would do with the Leonard E Number One?

A Yes, if we redrill this well, it will be drilled, all the pipe will be perforated and probably injected into each zone number.

Q Will there be tubing and packer used in this?

A Yes.

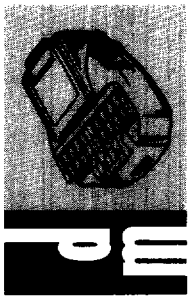
MR. IRBY: That is all the questions I have.

CROSS-EXAMINATION

BY MR. NUTTER:

Q Mr. Seely, now, I understand that all of these wells are open hole completions at this time? A That is correct.

Q And that one, the Leonard E Number One, you'll drill all the way through and then set a liner or production pipe perforated?



A Yes. Let me go a little bit further, probably this will be done but I meant we would inject probably down the tubing. In other words, we will selectively inject into two or three different zones we have expanded, but the pipe will be pressure tested in the same manner as set forth previously.

Q Now, in your expansion project over here which you have injected water for quite sometime now is selective injection made there or is this in open hole?

A Well, we go back to the most economical. If at all possible we have made it a rule to selectively do this, we have to have saline and cement.

Q Have some of the wells been selectively perforated?

A Yes, we have two or three of the wells that we had to redrill, in this case we've set them, perforated. In one case we have gone in and set a line, in this particular case we have not injected the tubing and the casing.

Q Do you think that maybe this may be attributed to the fact that some of the wells are in open hole without the selective injection?

A Very definitely.

Q So, in all probability, from an economical standpoint, you will try to use the selective methods?

A Any place at all possible.

Q Now, I think I understood you originally to say

that you were going to pressure test this casing up to the maximum expected injection pressure?

A That's correct.

Q Which would be 1800 pounds?

A Yes.

Q Now, I think you said that you'd inject down the tubing and under the packer in the event that it showed a casing failure?

A That's correct.

Q So your formal plan if the casing were damaged is to go down the casing?

A We got to get it down there in the right place so we are going to do this.

Q And you have, I believe, from my own examination of Exhibit Number 3, a minimum of approximately 900 feet of cement above the casing shoe on these wells?

A I'm sure that must be about right. I can look at it and check it. That's right.

Q Now, these cement tops are estimated from the volume of cement used and the size of the hole and the size of the pipe, it's calculated top?

A Yes.

Q And do I understand you correctly that you propose that in the event the Commission should approve the expansion of

this project which was on Number R-1525 which is number 701 and introduce project allowables for waterflood projects that you would come under the allowable provision of 701?

A That's correct.

MR. RUSSELL: I have one other question Mr. Seely.

REDIRECT EXAMINATION

BY MR. RUSSELL:

Q What is the anticipated life of the project?

A Probably 12 to 15 years.

Q Now, these wells that you inject down the casing without tubing, do you have any schedule of tests on these casings subsequent to the initial testing?

A As I mentioned previously, the testing that we do -- I mean, we've operated in several injection wells and we can tell pretty well when a leak or something of this nature develops. This can be done, as I mentioned, the surface injection pressure and also the rate at which you inject, the rate is going to increase and the pressure is going to decrease and as a future means of this we have of course the monthly or daily average for injection for each well and also the injection pressure.

MR. IRBY: Mr. Seely, I don't want to get into a lot of wording, I don't and you don't, and I don't like to receive them, but could you inform me on this particular flood if there is a drop in pressure or an increase in injection at any time

during the life of this flood so that I may be aware of any possibility of leaks?

THE WITNESS: Let me make this clear, that anytime this happens we're immediately going to go in with tubing and packer and test the casing and most likely there will be a leak and in the event there is one then, of course, we are going to inject underneath the packer.

MR. IRBY: You're not willing to advise me when this occurs?

THE WITNESS: Oh yes, if you so request.

MR. IRBY: I so request. This doesn't mean that you give me these monthly reports that you always make.

THE WITNESS: Right.

MR. NUTTER: Any further questions of Mr. Seely? You may be excused.

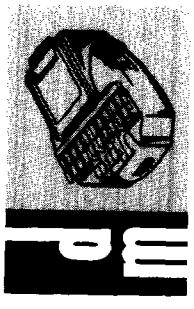
MR. RUSSELL: I would offer Applicant's Exhibits 1 through 6 into evidence.

MR. NUTTER: Applicant's Exhibits 1 through 6 are admitted into evidence.

(Whereupon, Applicant's Exhibits 1 through 6 entered in evidence.)

MR. RUSSELL: Nothing further.

MR. NUTTER: Does anyone have anything further in Case Number 3147? We will take the case under advisement.



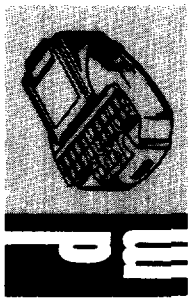
STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, JOHN ORFANIDES, 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.

John Orfanides
COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3147, heard by me on 11/24, 1964.

, Examiner
New Mexico Oil Conservation Commission



I N D E X

E X H I B I T S

NUMBER	MARKED FOR IDENTIFICATION	OFFERED	ADMITTED
Exhibit 1	3	16	16
Exhibit 2	4	16	16
Exhibit 3	4	16	16
Exhibit 4	5	16	16
Exhibit 5	7	16	16
Exhibit 6	8	16	16