NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING - ELVIS A. UTZ

SANTA FE, NEW MEXICO

REGISTER

ILLEGIBLE

HEARING DATE APRIL 25, 1962 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
[illegible]	[illegible]	
[illegible]	[illegible]	
[illegible] Jr.	Amerada Pet. Corp.	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Santa Fe
[illegible]	Hudson	Artesia [illegible]
Jim [illegible]	British American Oil Producing Co.	Albuquerque
[illegible]	Amerada	Tulsa
H. E. Bushnell	Amerada	Tulsa
A. L. Porter	OCC	Santa Fe,
R. F. [illegible]	[illegible] Oil [illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Wink, Tex.
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

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NAME:	REPRESENTING:	LOCATION:
[illegible]	[illegible]	Farmington
[illegible]	[illegible]	[illegible]
[illegible]	Southwest [illegible]	[illegible]
[illegible] Roberts	British American	Midland, Texas
G. T. Judd		Dallas, Tex

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

April 25, 1962

EXAMINER HEARING

IN THE MATTER OF:

Application of Zapata Petroleum Corporation for two additional injection wells, Maljamar Pool, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to convert its Phillips 8-B Wells No. 3 and 5 located respectively in Units H and B, Section 19, Township 17 South, Range 33 East, Lea County, New Mexico, to water injection wells in its pilot waterflood project in the Maljamar (Grayburg-San Andres Pool authorized by Order No. R-2157.

CASE 2532

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: The Hearing will come to order, please. For the benefit of those interested, there will only be this change, so far as I know at the present time, in the order of the docket. 2541 and 2542 will go to the end of the docket. Case 2532.

MR. MORRIS: In the matter of the application of Zapata Petroleum Corporation for two additional injection wells, Maljamar Pool, Lea County, New Mexico.

MR. UTZ: Are there any appearances?

MR. RUSSELL: I am John F. Russell, Campbell and Russell, appearing on behalf of the Applicant, and I have one witness, Mr. Huddleston.

(Witness sworn)

MR. RUSSELL: Mr. Examiner, this is an extension, actually, of a prior Hearing and I would like to ask that the transcript in Case Number 2458 and Order R-2157 which was entered therein be incorporated and made a part of the record in this case.

MR. UTZ: Without objection, the transcript in Case 2458 will be entered into the record in this case.

KENNETH R. HUDDLESTON,

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

DIRECT EXAMINATION

BY MR. RUSSELL:

Q Will you please state your name?

A Kenneth R. Huddleston.

Q Where do you live, Mr. Huddleston?

A In Midland, Texas.

Q By whom are you employed and in what capacity?

A Zapata Petroleum Corporation, Engineer.

Q Have you previously qualified to testify before this Commission?

A Yes, I have.

Q MR. RUSSELL: Are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Russell) Are you familiar with the application of Zapata in this case?

A Yes, sir, I am.

(Whereupon, Applicant's Exhibit No. 1 Marked for Identification)

Q I hand you what has been identified as Exhibit No. 1 and ask you to state what that is.

A This is a plat of the east part of the Maljamar field. The acreage shown in red is our Phillips 8-B Lease. The two wells circled in red are the proposed injection wells.

Q Is that all one lease?

A Yes, it is.

Q Is your company the operator of the lease?

A Yes.

Q What are the blue circles on this exhibit?

A The blue circles are the wells that we previously requested for injection wells on the Western State Lease.

Q They were approved, were they not?

A That's correct.

Q What are the yellow ones to the north?

A Those are the injection wells that were approved at the same time for Murphy Baxter, the green wells are Great Western injection wells that were approved at the same time and the purple wells are the Water Flood Associates injection wells.

Q Have you made some studies of the wells on this lease with regard to their completion and production records, history?

A Yes, sir.

(Whereupon, Applicant's Exhibit No. 2 Marked for Identification)

Q I hand you what has been marked as Exhibit 2 and ask you to state what that is.

A This is a resume of the well records of the wells on our Phillips 8-B lease located in Section 19, Township 17 South, Range 33 East.

Q From your examination of the history of the completion and the production of these wells do you feel that everything has been done within economic limits to attain the greatest possible primary production from these wells?

A Yes, sir, I do.

Q Have you compiled the per monthly production from the lease and the cumulative production from January of 1961?

A Yes, sir.

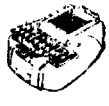
(Whereupon, Applicant's Exhibit No. 3 Marked for Identification)

Q I hand you what has been marked as Exhibit Number 3 and ask you if that is that compilation?

A Yes.

Q Now referring to Exhibit Number 3, I'll ask you if since 1958 there has been a consistent decline in the cumulative monthly production from this lease?

A Yes, there has. The lease made top allowable until about March of '59 and since then has been on a normal decline for a solution gas type reservoir.



(Whereupon, Applicant's Exhibit No. 4 Marked for Identification)

Q Have you made a test of these wells on this lease recently to determine the present producing status of each of the wells situated upon the lease?

A Yes, sir, I have. We test the wells once each month.

Q I hand you what has been identified as Exhibit 4 and ask you to state if that is that compilation?

A Yes. These are the tests taken in March this year.

Q 1962?

A That's correct.

Q Now I notice on Exhibit 4 that your Well Number 12 is presently flowing and producing 24.20 barrels of oil per day. Do you anticipate that the production on that well will continue to decline?

A Well, the well now is just barely flowing and I anticipate that it will certainly be down below the ten barrels a day at the time that the flood is expanded to include it.

Q Mr. Huddleston, you testified in the prior case in which mention was made of, I believe it was Well Number 16 which had a fairly high production at that time -- could you tell the Commission at this time whether the production on that particular well has remained constant or declined?

A I believe at that time the tests were taken in October, the well had made 36 barrels and our most recent --

MR. UTZ: Excuse me, which well was that?

MR. RUSSELL: Well Number 16 on the prior Hearing.

A This was the previous Hearing.

MR. UTZ: It's not shown on the map?

A It's in the Unit E of Section 20.

MR. UTZ: Thank you.

A Our most recent test on it, it had dropped to 28 barrels and we have had to swab it numerous times recently to keep it flowing and I'm sure we'll put it to pumping in the near future.

Q (By Mr. Russell) Based upon your knowledge of the decline of primary production from these wells since they have been completed on the lease, do you anticipate there will be a steady decline in the producing rate of the wells which have been referred to?

A Yes, sir, I do.

Q What is the average production per well on this lease based upon the tests as exhibited by Exhibit 4?

A These tests will add up to a little over 150 barrels, there are 15 wells so the average is about 10.1 or something like that.

Q Do you believe that within the time required to get the reaction from the injection wells with water that these wells will average below ten barrels per day?

A Yes, sir, I do because we have had one month, February of 1962, that we only produced 4300 barrels and at that time that

was less than 10 barrels a day per well.

(Whereupon, Applicant's Exhibit No. 5 Marked for Identification)

Q Mr. Huddleston, based on the primary oil production, have you prepared a decline curve for this lease that's involved in this application?

A Yes, sir. We prepared a decline curve and extrapolated what we thought.

Q I hand you what has been identified as Exhibit Number 5 and ask you if that is that decline curve?

A Yes, sir, that's correct.

Q Do you believe that your projection of the anticipated further decline in production is a reasonable projection based upon the primary production of these wells?

A Yes, I do.

Q Have you made any calculations with regard to the estimated primary and water flood reserves and the possible ultimate recovery both of the primary and the water flood?

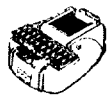
A Yes, sir.

(Whereupon, Applicant's Exhibit No. 6 Marked for Identification)

Q I hand you what has been marked for identification as Exhibit Number 6 and ask you if that is your calculation?

A Yes, sir, this is correct.

Q Will you explain, briefly, to the Examiner the basis for the calculation of your reserves and the data that you have had



available to make these calculations?

A Well, of course, the cumulative production is indicated there, what we have produced to the first of April, 1962, the remaining primary was arrived at by an extrapolation of this decline curve giving an ultimate primary reserves of 759,708 barrels of oil.

Q That's for the primary reserves?

A That's correct.

Q What have you calculated for the water flood reserves?

A We think that the water flood reserves will be 759,194 which is approximately one hundred percent times ultimate primary.

(Whereupon, Applicant's Exhibit No. 7 Marked for Identification)

Q I hand you what has been marked as Exhibit Number 7 and ask you what that exhibit is?

A This is a casing record of the two proposed injection wells showing the size and weight and grade of the surface and production casing and the amounts of cement with which they're cemented.

Q Referring to that exhibit, will you state to the Examiner what it reflects with regard to cement that was used in the completion of these two wells?

A Well, we circulated cement on the surface pipe and run temperature survey which indicated the tops of the cement on the oil string.

Q Is that for both of the wells?

A Yes, sir. That's correct.

Q Do you have available for the Examiner logs on the two proposed injection wells?

A Yes, sir.

(Whereupon, Applicant's Exhibit No. 8-A and 8-B Marked for Identification)

Q I hand you what has been marked as Exhibit 8-A and ask you which well log this is?

A This is the well log on the Phillips 8-B Number 5 located in Unit B.

Q I hand you Exhibit 8-B and ask you to identify that one.

A This is the Phillips 8-B Number 3 located in Unit H.

Q What have you shown on these logs, Mr. Huddleston?

A The intervals that were perforated and from which the wells are producing are shown in red opposite the respective zone on the large scale.

(Whereupon, Applicant's Exhibit No. 9 Marked for Identification)

Q I hand you what has been identified as Exhibit Number 9 and ask you to explain what that exhibit is.

A This is the log on Well Number 4, Phillips 8-B, it's located in Unit A of Section 19. This will be the five spot well.

Q Mr. Huddleston, what rate do you intend to inject water in these injection wells, initially, from the fill-up?

A We initially planned to inject water at about 400 barrels per day per well until we reached fill-up. Thereafter, why, we will probably inject between 150 and 300 barrels a day, of course, conforming to Rule 701.

Q You do propose to operate within the provisions of statewide Rule 701?

A Yes, sir, we do.

Q And in the same manner as under your prior application in Case Number 2458 which was approved?

A Yes, sir.

Q What is the source of the water for this project?

A We're currently negotiating with Caprock Water Company for purchase of water from them.

(Whereupon, Applicant's Exhibit No. 10 Marked for Identification)

Q Now I believe in Case 2458 you indicated that the source of supply for water for this project would be Yucca Water Company, did you not?

A Yes, sir, that's correct, but we favor the contract that was offered by Caprock.

Q In other words, the source of water, now, for the entire project including this one, if approved, will be from Caprock Water Company?

A Yes, sir. That's correct.

Q Have you had an analysis made for you of that water?

A Yes, sir.

Q I refer you to Exhibit Number 10 and ask you if that is the analysis which has been furnished to you?

A Yes, sir, that's correct. This was furnished to us by Caprock Water Company.

Q And in connection with your statement that Caprock Water Company will furnish the water for this entire project, I hand you what has been identified as Exhibit Number 11 and ask you what that is.

(Whereupon, Applicant's Exhibit No. 11 Marked for Identification)

A This is a letter from Caprock stating that they are agreeable to furnish us water for this project.

Q Have they indicated as to when they will be able to furnish you with this water?

A Yes. They've indicated that they would have water available within six weeks from the time that we execute the contract.

Q Has the contract been executed as yet?

A I anticipate that it will be executed this week.

(Whereupon, Applicant's Exhibit No. 12 Marked for Identification)

Q I hand you what has been identified as Exhibit 12 and ask you what that is.

A This is a letter from Murphy H. Baxter, stating that he has no objection to our putting these wells on injection.

Q Mr. Huddleston, based upon the information that you have furnished the Examiner and upon your knowledge of the specific properties and wells in question here, do you think that the institution or addition of this to your pilot water flood program will be in the best interest of conservation?

A Yes, I do, otherwise this all would be lost.

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

A Yes, sir.

Q Now, Mr. Huddleston, referring back to Exhibit Number 1, referring to your Phillips lease in the south half of 17 and the north half of 20 which have been previously approved for a pilot project, has any injection of water been started in this project?

A We are currently building the plant. We have not actually started the injection of water.

Q Now, referring again to Exhibit Number 4 which is the well test and specifically to Well Number 12, how long do you anticipate it would be after you start your project that there would be a response in that well?

A Oh, it will be over a year before I think the response reaches out to this well.

Q Based upon your knowledge of these wells and production history, in your opinion will the production of that well be considerably less than is shown on this exhibit?

A Yes, sir.

MR. RUSSELL: I would like to offer into evidence Exhibits Numbers 1 through 12.

MR. UTZ: Without objection, Exhibit Number 1 through 12 will be entered into this case.

(Whereupon, Applicant's Exhibits Nos. 1 through 12 received into Evidence.)

MR. RUSSELL: I have no further questions of the witness, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Huddleston, has any of this water been injected in any of these injection wells in this project?

A To my knowledge we're further along with our construction of our plant than anyone else up there and we have just begun to construct our plant.

Q So actually this would be just an extension to your previous request for initial water flooding?

A Yes, sir. We were purchasing some outstanding working interest in Section 19 at the time of the previous Hearing, was the reason that we didn't include it in the original Hearing.

Q Referring to Exhibit 6, your first portion of that Exhibit, I see at the top of the page where you use porosities and connate water and so forth and you arrived at barrels per acre foot; were those arrived at through analyses of cores or logs?

A Yes, sir. We cored, I believe, 13 of those 15 wells that

were drilled on that lease. We have excellent engineering data for those.

Q Still, in the calculation of your recoverable reserves you have used the pressure decline method?

A Yes, sir. I still prefer it over volumetric calculations.

Q With reference to your Exhibit Number 7, on the extension of the injection wells, I note that behind the 5½ inch casing on the Number 3 Well you would have something like 2,287 feet open?

A Yes.

Q On the Number 5 Well, something like 3,265 feet open?

A Yes, sir.

Q Are there any producing zones behind the pipe in this interval?

A No, sir.

Q Are there any fresh water zones?

A To my knowledge, there are not.

Q In other words, in your opinion no damage will incur by leaving this open behind the pipe for this interval?

A That's correct. We plan to, of course, inject water down tubing beneath the packer.

Q What size tubing do you intend to use?

A 2 inch.

Q 2 inch?

A Yes, sir.

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

MR. MORRIS: Yes, sir.

BY MR. MORRIS:

Q Mr. Huddleston, have any efforts been made to unitize in this area?

A Other than some informal discussions, no.

Q Any efforts that were made fell through in the initial stages?

A Right.

Q Would it be your intention to continue your pattern here as a five spot and put on injection wells Number 7 and 10 at a later time?

A Yes. I'm sure that that's, of course, in compliance with Rule 701 if that's where we get response.

Q Yes?

A Yes.

Q I note from the logs that you have your intervals perforated over a range of several hundred feet in your Well Number 4 as well as in your two proposed injections wells. Are the areas between your perforated intervals here impermeable zones?

A Yes, sir, they are.

Q Relatively?

A They definitely are. We selected and treated those zones and we had no indication of communication at all.

Q Referring now to the zones that you have perforated

which pretty well line up with each other on these three logs, do you find that the different zones of different porosities and permeabilities, do those zones vary quite a bit?

A They will correlate on the lease, the thickness and porosities and permeabilities will vary.

Q Will they vary substantially?

A No, I believe that we'll be able to effectively flood most of them.

Q Within one well, referring to the different perforated intervals, do those intervals vary in porosity and permeability?

A Only in the case of the San Andres. We had some high permeability in some of the San Andres zones.

Q Do you contemplate any problems with respect to your rate of water injection, with respect to your water all going in the more permeable zone, and little of it going to the less permeable zones?

A Yes. I anticipate that will be one of our problems. We'll just have to use plugging materials or we may have to go so far as to squeeze off some of those zones at the later date.

Q I note that your well Number 3 has a total depth, I believe, of 4,394?

A Yes, sir. That's correct.

Q In the Well Number 4 and 5, you show a perforated interval somewhere around 4,400 or a deeper perforated interval which, of course, could not be present in Well Number 3?

A The San Andres is not present in Well Number 3. We cut something like 15 feet of San Andres that was solid shale.

Q Is that going to cause your water injection pattern to give you some trouble in this area since your San Andres zone is not present?

A Well, there's no question about it, we won't get a completely effective four-way flood front.

Q You have not introduced a log, of course, on your Well Number 6 at this Hearing. I wonder if you would mind telling me if in the Well Number 6 that lower zone is present?

A Yes, it is. It's present in all of those wells except the Number 1 Well and the Number 3 Well. It's in the Southwest of the Southwest.

Q Now, if the total depth on the Number 3 was 4,394, is it your testimony that at that total depth you had penetrated what should have been the San Andres zone?

A We felt like that if we had been in the San Andres and it was going to be developed that we would have seen good, clean dolomite within, but it was one hundred percent shale.

Q In your Number 4 Well you encountered it at the depth of something like 4,500 feet, didn't you?

A Well, one of those wells is on the calf and the other one is off the calf and it makes about 75 feet difference in the drilling depth.

MR. MORRIS: That's all I have.

MR. UTZ: Any other questions of the witness?

These two injection wells that you are requesting to be approved here, do have casing set through the injection zone and selectively perforated, is that true?

A Yes, sir, they do, Mr. Utz.

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any statements in this case?

The case will be taken under advisement.

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, New Mexico, do hereby certify that the foregoing and attached transcript of Hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings to the best of my knowledge, skill and ability.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1963

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2532, heard by me on Jan. 25, 1962.

Elvis A. Utz, Examiner
New Mexico Oil Conservation Commission