NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING (DANIEL S. NUTTER)

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE OCTOBER 28, 1959 TIME: 9 a.m.

NAME:	REPRESENTING:	LOCATION:
Herbert D. Miller	Amerada Pet	Tulsa, Okla.
Robert E. Statton	Sunray Mid-Continent Oil Co	Hobbs, NM.
Jack M Campbell	Campbell & Russell	Roswell NM
[illegible]	[illegible]	[illegible]
[illegible] Erebor	Socony Mobil Oil Co., Inc	Albuquerque
[illegible] McGee	Socony Mobil Oil Co	Hobbs.
[illegible] O'Neal	[illegible]	[illegible]
[illegible] Parker	Argo Oil Corp.	San Antonio, Texas
[illegible] slow	Argo Oil Corp.	San Antonio, Texas
[illegible]	Kellahin & Fox	Santa Fe
E. Seay	State Engr. Office	Santa Fe
[illegible]	Leonard Oil Co.	Roswell
[illegible] Christy	Harvey Dow & Hinkle	Roswell
John Hampton	Great Western Drlg Co	MIDLAND
[illegible]	"	"
[illegible]	"	"
Morrell Wilson	Shell Oil Corp.	Roswell

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING (D. S. Nutter)

Santa Fe, NEW MEXICO

REGISTER

HEARING DATE October 28, 1959 TIME: 9 a.m.

NAME:	REPRESENTING:	LOCATION:
D. S. Nutter	Cities Service	Hobbs, N. M.
D. M. Stevens	State of N. M.	" "
I. A. Ford	Graridge Corp.	Roswell, N. M.
H. N. Wade	Texaco, Inc.	Midland, Tex
B. E. Hellman	Texaco Inc.	Midland, Tex.
J. E. ROBINSON, Jr.	TEXACO INC.	MIDLAND, TEX
Gene R. Snow	Stanolind Oil & Gas Co	Roswell, N. Mexico
Nancy Kogal	NMOCC	Santa Fe

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 28, 1959

EXAMINER HEARING

IN THE MATTER OF:	
Application of Stanton Oil Company, Ltd., for a pilot water flood project. Applicant, in the above-styled cause, seeks an order authorizing it to institute a pilot water flood project in the Turkey Track Pool in Eddy County, New Mexico, by the injection of water into the Queen formation through four wells located in Section 34, Township 18 South, Range 29 East.	Case 1761 (Cont.)

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The first case on the docket this morning will be Case 1761

MR. PAYNE: Application of Stanton Oil Company, Ltd., for a pilot water flood project.

MR. HAMILTON: M. W. Hamilton, Santa Fe, New Mexico, appearing for the Applicant. If the Examiner please, this hearing was postponed at the request of the Wilson Oil Company; after the last hearing they withdrew their protest and request for postponement and have in fact approved the application. Since the last hearing, we have also filed with the Commission a statement as to the quantity and quality of water proposed to be used and the

availability of the water, and in a designation by Robert E. McKee, General Contractor, Inc. of the Stanton Oil Company, Limited. As their agent we would like to offer those documents in evidence and ask that they be considered a part of the record in the case.

MR. NUTTER: Mr. Hamilton, we do have the letter from Seth, Montgomery & Federici, Santa Fe, New Mexico on behalf of Wilson Oil Company. We have the letter from Wood & McShane as to the amount of water available and the quality and quantity of water and the designation by Robert E. McKee for Stanton Oil Company to operate this area for McKee. Do you have anything further to offer?

MR. HAMILTON: No. We have furnished the State Engineer with the proposed casing program, which I believe meets with their approval. I don't know if a copy of that was furnished to the Commission or not.

MR. NUTTER: We have a letter from the State Engineer which was received after the date of the last hearing.

MR. HAMILTON: Shall we ask that that be considered a part of the record?

MR. NUTTER: Shall we mark these as exhibits?

MR. HAMILTON: If you would.

MR. NUTTER: These letters will be marked as Exhibits. If nothing further in Case 1761 we will take the case under

advisement.

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission 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 14th day of November, 1959.

Ada Dearnley
Notary Public-Court Reporter

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. 1761 heard by me on 10-28, 1959.

....., Examiner
New Mexico Oil Conservation Commission

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1761

TRANSCRIPT OF HEARING

SEPTEMBER 30, 1959

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
SEPTEMBER 30, 1959

IN THE MATTER OF:

CASE 1761 Application of Stanton Oil Company, Ltd., for a pilot water flood project. Applicant, in the above-styled cause, seeks an order authorizing it to institute a pilot water flood project in the Turkey Track Pool in Eddy County, New Mexico, by the injection of water into the Queen formation through four wells located in Section 34, Township 18 South, Range 29 East.

BEFORE:

Daniel S. Nutter, Examiner.

T R A N S C R I P T O F P R O C E E D I N G S

MR. NUTTER: We will take next Case 1761.

MR. PAYNE: Case 1761. Application of Stanton Oil Company, Ltd., for a pilot water flood project.

MR. HAMILTON: M. W. Hamilton, Santa Fe, New Mexico, appearing for the applicant. We have two witnesses.

(Witnesses sworn)

OLIVER WOOD,

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

DIRECT EXAMINATION

BY MR. HAMILTON:

MR. NUTTER: Are there any other appearances to be made in Case 1761?

MR. SETH: Oliver Seth. I would like to enter an appearance for Wilson Oil Company.

Q (By Mr. Hamilton) Will you state your name and occupation, please?

A My name is Oliver Wood. I reside in Monahans, Texas, and I'm a consulting petroleum engineer.

Q Are you a member of the firm of consulting engineers, Mr. Wood?

A Yes.

Q What is the name of that firm?

A Wood & McShane.

Q You represent the applicant in this case?

A Yes, we represent the Stanton Oil Company.

Q Will you state your engineering qualifications?

A I was graduated from the University of Texas in 1942 with a B. S. degree in petroleum engineering, and I worked with Gulf and Sinclair for the past twelve years. I have been working entirely in water flooding the past nine years in Monahans, Texas in the water flood area in there.

MR. HAMILTON: Does the Examiner accept the qualifications?

MR. NUTTER: Yes, sir. Please proceed.

Q You are familiar with the application in this case?

A Yes, sir.

Q Will you state briefly just what it contemplates?

A The application in this case is an application on behalf of the Stanton Oil Company, Limited, for an order authorizing a pilot water flood project in the Turkey Track Queen sand pool in Eddy County, New Mexico.

Q Do you have a plat showing the location of the producing wells, the injection wells and the --

A Yes, sir, we do.

(Thereupon, Stanton's Exhibit No. 1 was marked for identification.)

Q From that diagram, Mr. Wood, would you explain just what the location of these various wells is?

A We have shown on this plat, which is our Exhibit 1 or A, the location of the pilot flood area which will be in Section 34, Township 18 South, Range 29 East. And we propose to drill four water injection wells, marked in green, 1-W, 2-W, 3-W and 4-W. These four water injection wells would be located on the corner of each 40 acre -- of this 40-acre drilling unit. In that way, the oil that is moved by each injection well would be moved only to the proper leaseholder in that area. The wells circled in brown are the wells which we anticipate will feel some effect or benefit from the flood. Two of the wells are totally enclosed, No. 1 and 5 Wilson, and the remaining six wells are outside the totally enclosed five spot but close enough that we feel they will feel some

benefit from the pilot.

Q Are you familiar with the structure and formation there?

A Yes, we have made a study of the Turkey Track Queen sand field. The only data available are cable tool sample logs. These logs indicate that there is no structure there, in our opinion, for oil producing purposes; that the production is governed by a porosity development in the Queen sand. You'll notice on the Exhibit there are a number of dry holes. We have studied the sample logs on those wells along with the other wells, and the red sand is present in those wells, but due to porosity pinchout the situation there is non-productive.

Q What conclusions have you drawn from your investigations there as to whether this formation will take the water that is to be injected?

A There is one well on the properties, Wilson No. 5, which is enclosed in the 40-acre pilot -- the proposed 40-acre pilot unit, outlined in yellow, that has been cored, and the core analysis on this particular well is, to summarize, indicates a horizontal permeability of approximately 103 millidarcies. It indicates a residual oil saturation of 19 percent, net pay average porosity of 19½ percent. The average connate water saturation is 35 percent. Based on this core data information, we feel very sure that the formation will take water and that oil will be produced as a result of this water injection program.

Q Mr. Wood, will you go into the water situation, the source, analysis and so on, of the proposed water?

A The source of water supply would be from water supply wells located on the leases. Two wells have been tested and indicate sufficient amount of water to put on the pilot flood operation. In that connection, these wells were pumped for twenty-four hours before the test and then tested, and we have a water analysis of the proposed water supply, which we would like to submit. I would like to say further that this proposed source of supply is in a red bed zone found at approximately 230 to 250 feet deep, and that the water analysis which we have obtained indicates to us, or indicates the water is brackish and contains substantial quantities of sulfates, and based on the information taken from the "Study and Interpretation of Natural Water" in the Geological Survey, Water Supply Paper 1473, U. S. Public Health Service (1946), based on the standard setup in that paper, this water is not suitable for human nor stock consumption nor suitable for irrigation purposes.

Q What volume do you propose to inject?

A In the pilot flood area, in the four proposed water injection wells, we propose to try and inject 250 barrels per day per well, a total of a thousand barrels per day in the four proposed water injection wells. We anticipate the injection pressure to be approximately 600 pounds per square inch.

Q What program do you have for the casing in your in-

jection wells?

A The water injection wells will be drilled new. They will be new wells and the casing program will be the one that is -- has been used in the other producing wells in the Turkey Track Queen sand field. We will set surface casing into the top of the salt and cement it. We will set an oil string, or in the case of injection wells, I guess you would call a water string. We will set the long string of casing through the pay zone, which is the Queen sand or the red sand, and we will perforate the pay zone. We intend to core and log the pay zone and use that information to select our zone to be perforated and our zone to inject our water into.

Q Do you consider that would be adequate to protect the fresh water zone?

A Yes, sir, we do. In addition to that, we plan to use either baked on plastic lined casing or baked on plastic lined tubing with a packer. With the steel situation the way it is, we don't know just which way we are going, but one or the other is proposed to be used.

Q Now, what is your anticipated recovery?

A In the 40-acre pilot area, which will be totally enclosed and is shown in the Exhibit outlined in yellow, we anticipate that the ultimate additional oil that will be recovered directly as a result of this pilot flood program will be 127,000 barrels.

Q Are you asking for any allowable at this time?

A At this time we are only making application for a permit to institute a pilot water flood, and it is our intention, if and when, the flood does respond, that we will request another hearing or talk with the Commission with regard to approval to expand the flood, at which time we will discuss the allowables which we feel we will be able to know what will be needed. But we are not at this time requesting any allowable increase. In other words, the top unit allowable would be adequate for the pilot flood.

Q Do you have, Mr. Wood, the production history and the present capacities of the producing wells that would be affected?

A We have prepared a production graph. We don't have the production tabulated, but we have the production plotted on a rate time graph for all of the wells in the subject area, which we would like to submit.

Q Will you state briefly from this graph or from your other data approximately what that shows?

A This graph shows the production from all wells in the area. It shows that the nineteen existing wells in the area have produced a combined total of 263,000 barrels of oil as of August 1, 1959. And the production rate during the month of July, 1959 was 2762 barrels, which --

MR. NUTTER: Mr. Wood, excuse me a minute. When you

refer to the nineteen wells in the area, do you mean the nineteen producing wells that are shown on your Exhibit No. 1?

A Yes, sir.

MR. NUTTER: I see.

A The production rate during the month of July, 1959 was 2762 barrels for nineteen wells, or an average of 145 barrels per well per month. In studying the curve and attempting to estimate the decline, we think the decline will be 4 percent per month, and by June of 1960, the production will be approximately 90 barrels per well per month. Further along the line, in the immediate pilot flood area the present producing rates of the wells in that pilot area are as follows: The Wilson No. 1, which is totally enclosed, outlined in yellow, is four barrels of oil per day. The Wilson No. 5 in the same totally enclosed area is three barrels per day. The Featherstone No. 1, just to the east of the pilot flood area, eight barrels per day. Feath ersone 2, eight barrels per day. The Wilson No. 2, directly north of the LO-acre pilot area, ten barrels per day. Directly south of the pilot area in the Brainard Lease, the No. 2 Well, four barrels per day, and the No. 4 Well, eight barrels per day, the No. 6 Well, nine barrels per day.

Q Mr. Wood, have you furnished the State Engineer with a copy of the water analysis?

A Yes, sir, we have. We have -- I have a letter to him. Can that be submitted in evidence?

Q I don't think that is necessary, if you have --

A We furnished -- in accordance with the Commission's memorandum No. 5-58, we furnished him with the four items requested in that memorandum, which was a copy of the application, the geological location of the water source, name and depth of the formation, and an analysis of the water.

Q Do you have a written statement there covering substantially what you have testified to, sir?

A Yes, sir. We have a written statement covering it.

Q Is there anything further you care to say in connection with the application?

A The one thing I would like to say further is something in regard to the unorthodox water injection well locations. We feel that a pattern of this type would provide equity for the movement of secondary oil in that each lease will be producing oil swept from within its own boundaries. With the wells located in this manner, they will have to produce only the oil swept from their own boundaries. Therefore, the royalty and other interest holders will be adequately protected.

Q Do you feel that any of the adjoining or abutted owners will be injuriously affected?

A No, sir. I think from the way this is set up that they will not be affected adversely in any manner.

Q Mr. Wood, in your opinion, will this result in a greater recovery of oil?

A Very definitely. The production data indicates that the nineteen wells in the total area there will be down to an average of 90 barrels per well per month in less than a year's time, which we think indiates that it is rapidly approaching the economic limit, and that if this program is not instigated in the near future, a large amount of oil that could be recovered will be wasted and left in the ground.

Q Were these plats and diagrams prepared under your supervision?

A Yes, sir, they were.

MR. HAMILTON: That's all. We'll offer -- what were they -- Exhibits 1, 2 and 3 in evidence.

MR. NUTTER: Without objection, applicant's Exhibits 1 through 3 will be entered.

(Whereupon, Stanton's Exhibits Nos. 1 through 3 were received in evidence.)

MR. NUTTER: Does anyone have any questions of Mr. Wood?

MR. PAYNE: Yes, sir.

CROSS EXAMINATION

BY MR. PAYNE:

Q Mr. Wood, I believe you testified you had an adequate water supply for your pilot, is that right?

A Yes, sir.

Q Now, do you have enough water for your proposed total

flood?

A The proposed total flood will be expanded as the production warrants and as the Commission approval is granted. And we anticipate that we can use substantial quantities of produced water from the oil wells, and that we will be able to drill additional water supply wells to augment that produced water.

Q Now, once a well receives a response from water injection, you need to back it up, don't you, with another injection well?

A Yes, sir.

Q So that you need to be fairly well assured that you are going to have anough water for that purpose?

A Yes. I might -- if I may state that all of these wells on the properties were drilled with cable tools, and this water producing zone which we have tested is found all over the area, and we feel certain in our own minds that an adequate source of water supply will be there.

Q Now, is this in a declared water basin?

A No, it is not.

Q So you don't need a permit from the State Engineer to drill a water well?

MR.HAMILTON: We have a permit from the State Land office exclusively, five years.

Q You have a water lease from the State Land office?

A Yes.

Q Do you propose to inject through tubing or through casing?

A I stated that we were not sure at this time whether we would inject down the casing or through tubing in a packer, but, in any event, the media that we extend through will be baked on plastic treated pipe.

Q So you don't feel there would be much danger of a casing leak or a tubing leak?

A No, sir, I do not.

Q Now, Mr. Wood, are your four injection wells located on lease lines?

A Yes, sir, they are. They are on the corner of each 40-acre tract.

Q Would you have any particular objection to moving them five feet north, each one of them?

A Well, it was our thinking that if we drilled them exactly on the corner that we would certainly be sweeping oil from each tract to each tract.

Q Do you have permission to drill these on Wilson's property?

A No. We are asking that this hearing grant permission for these unorthodox locations.

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

QUESTIONS BY MR. NUTTER:

Q Mr. Wood, if you were to move the location of these

wells a few feet one direction or another, that probably wouldn't materially affect the efficiency of the sweep, would it?

A No, sir, I don't think it would.

Q We probably couldn't control the straightness of the holes to the point where the bottom of the holes are going to be exactly in the middle of these wells anyway?

A That's right.

Q Which direction would you prefer to move them, if we moved them a few feet?

A Well, I think if we move all of them off of the line, I don't think it would make any -- from an engineering standpoint -- any particular difference so long as they were all moved the same direction, the same distance. A small footage, such as less than five feet, I don't think would materially affect the efficiency of the flood in any way.

Q Now, I missed the present productivity of the two wells that are enclosed within the pilot area, No. 1 and 5.

A The Wilson No. 1 and No. 5, which are in the enclosed area. The No. 1 Well makes four barrels per day at the present time, and No. 5 Well three barrels per day at the present time.

Q Mr. Wood, you offered this water analysis result -- tabulation, but I don't believe you mentioned what the quantity of the water that you are producing amounts to. How many barrels per day will these wells make?

A These two wells will make -- were tested about 2500

barrels per day. One of them is a much better well than the other. One of them tested about 2000 barrels per day, and the other one about 400 barrels a day, 500 barrels a day.

Q Are the producing wells making any water at the present time?

A At the present time the producing wells are making a very negligible quantity of producing water.

Q So at the present time you don't propose to use produced water in addition to the new water?

A There isn't a sifficient amount to even try to use it at the present time.

Q Have you made any tests, Mr. Wood, to determine the compatibility of the water here with any water in the formation itself?

A No, sir, we have not made a compatibility test, as such. However, the water that we intend to use is slightly brackish, and there is just a very very small amount of produced water, and we don't anticipate any problem with the compatibility of the waters.

Q I suppose you would install treating facilities if you did run into troubles,as far as compatibility is concerned?

A Yes, that's one thing I failed to bring out. We do plan to treat the water for prevention of corrosion and for the prevention of formation of bacteriaand algae, and also insure that it will go into the Queen Sand formation.

Q I note on Exhibit 3, Mr. Wood, that in the early part of 1955 the production of -- from this pool started increasing. What was that due to, additional wells being drilled?

A No, sir. I failed to point that out. In 1955 there were a number of new wells drilled on the property, and that's the reason for the large increase at that time.

Q What was the original area of development in this pool?

A You mean the first well drilled --

Q Yes, sir. It appears that the production from 1944 to 1945 was more or less constantly declining, and I assume that there were a constant number of wells there. Then, there must have been additional spurt of development. I just wondered where the original and new development occurred.

A I believe from 1944 to the end of '54, I believe that represents land wells, doesn't it, Joe? I'm recalling from memory, but I'm just certain that from '44 through '54 are nine producing wells, and during '55 ten additional wells were drilled.

Q Now, where were the original nine wells?

A Well, sir, I'd have to go through the records to tell you well by well, but I can do that.

Q Were they pretty well scattered out through the entire two-section area or --

A I frankly do not know exactly the order in which the wells were drilled.

Q Well, now, these new wells that have been drilled, Mr. Wood, what are they capable of making at the present time?

A Well, the overall average for all nineteen was brought out here as being 125 barrels -- 145 barrels per well per month for all nineteen wells at the present time.

Q So we might say that the average for all nineteen wells in the entire area is mainly five barrels per day?

A Approximately.

Q Approximately?

A Approximately, yes, sir.

Q Are any wells capable of making top unit allowable?

A I don't believe any well in the area is capable of producing the top unit allowable.

Q Do you know the well that is capable of making the largest amount of oil in this nineteen-well area and how much it is capable of making?

A Offhand, sir, I do not know which well is making the largest amount of oil.

MR. PAYNE: Mr. Irby, do you have any questions on the casing program?

MR. IRBY: I do, if I may, please. Frank Irby, State Engineer's office.

QUESTIONS BY MR. IRBY:

Q Mr. Wood, you said you would set your surface strings into the salt. How deep is the salt?

A It would be approximately 350 to 400 feet deep. We would probably go into the salt 10 or 15 feet to insure we were completely into the salt section.

Q What is your cementing plan on this surface string?

A We would cement the surface stringson the water injection well exactly as they have been done in the past for the producing well.

Q That doesn't answer my question.

A I'm not familiar with what the requirement is, but it would certainly be the same. The other wells indicate 25 sacks of cement. We would cement with enough cement, approximately 50 sacks, to try and circulate the cement around that surface string of casing.

Q Circulate it to the surface?

A To the surface.

Q Well, now, is that a definite statement that you will do that?

A We will attempt to do it, yes, sir.

Q What is your cementing plan on your long string?

A On our long string, our plans were to cement as required on the other wells in the area, which would be, I assume, approximately 50 to 100 sacks; based on the size hole and the size casing. In other words, we thought the casing program which had been used on the nineteen wells in the area could be followed in the completion of the water injection wells, and we certainly

didn't intend to cut down on the cementing or do anything different from what previously had been done.

Q Is there any fresh water at all in the zone above the red beds?

A Based on the information that has been reported to us, these wells have all been drilled with cable tools, and there is no fresh water. The only water zone is just one slightly brackish water zone, and there is no water from there down to the Queen Sand or the red sand pay zone.

Q This strata from which you propose to take your water for this flood project, what is the thickness of that strata?

A Approximately 20 to 30 feet, my understanding.

Q And is all of that saturated?

A Apparently so. In drilling with cable tools, it seems that when we get into it that there is water in the 20 to 30 foot interval there.

Q Is that under water table condition, or under hydrostatic pressure?

A I believe it would be under water table conditions.

Q Is there a confining bed of any sort above it, an impervious bed?

A Seems to be a red impervious shale above it which would more or less confine it, I think, to that zone.

Q But it doesn't rise in the hole when you drill into it?

A The water level?

Q Yes.

A It will rise. I believe the test information indicated it would rise from a 340-foot depth up the hole to approximately 200 feet; in other words, 140 feet, I would say. 230 to 200, only 30 feet.

Q Do you have any information as to the porosity and permeability of this water strata?

A The water strata? No, sir, I do not.

MR. IRBY: That's all.

MR. NUTTER: Are there any further questions of Mr. Wood? He may be excused.

MR. SETH: I would like a couple of questions on behalf of Wilson Oil Company.

QUESTIONS BY MR. SETH:

Q Did your firm develop this proposed plan, Mr. Wood?

A Yes, sir,we did.

Q Did you consult in that connection with any other interested parties in the area besides Stanton?

A Not directly, no, sir.

Q Did you do it indirectly?

A No, sir.

Q Who are the other interested parties?

A It is our understanding that there are no operating interests in the area. The other interests would be royalty in-

terests and overriding royalty interests, and that sort of interest.

Q Is that true with regard to Section 34, Mr. Wood, do you know?

A No, sir, I do not. We were employed to try and develop a water flood pattern there that would be fair and equitable to everyone, and we did not go into the ownership phase of it.

Q You are not familiar, then, with the proper ownership,particularly in this area?

A No.

Q Is that a consideration in developing a plan of this character?

A Well, I'm sure that it would be,if we propose to drill wells back and forth across the lease line or something of that nature, but we felt the leases within each 40-acre tract that it not be --

Q I'm not too clear on just what interest Stanton has in this acreage. Perhaps I missed that when you testified.

A That, again, is more of a legal problem than engineering, but it is our understanding that the properties are owned and operated by Robert E. McKee, and he has negotiated a contract with the Stanton Oil Company whereby they will instigate this water project and at some future time will acquire the properties. We have a letter in this regard from Robert E. McKee, general contractor, advising of this agreement.

MR. NUTTER: Do you want to mark this as an Exhibit, Mr. Hamilton?

A MR. HAMILTON: Yes. This will be 4. We will offer Exhibit 4.

(Thereupon, Stanton's Exhibit No. 4 was marked for identification.)

MR. NUTTER: Without objection, applicant's Exhibit No. 4, being a letter from Robert E. McKee, general contractor, will be admitted.

(Whereupon, Stanton's Exhibit No. 4 was received in evidence.)

Q (By Mr. Seth) Do you know whether or not it is a fact, Mr. Wood, that these leases are held under an operating agreement from Wilson Oil Company, and they are not, in fact, owned by Robert E. McKee?

A It is my understanding that some of the properties are held by an operating agreement, yes, sir.

Q Are you familiar with the agreement?

A No, sir, not completely. I have read it, but I'm not a lawyer.

Q Do you know whether it would permit secondary recovery operations at all?

A Again I do not know, sir.

Q Yet you did not take this up with Wilson Oil Company, the owner of the lease, the question of whether a secondary recovery program should be instituted?

A No, sir, we did not.

Q Did you take it up with the U.S.G.S.?

A The flood has been discussed some with the U.S.G.S., the water supply situation has been discussed some, but as far as the operating interest and that sort of thing, I have not discussed it.

Q Did you discuss the plan with a representative of the U.S.G.S.?

A The general plan.

Q Did you do it yourself?

A No, sir, not myself.

Q Who did it, do you know?

A I think the representatives of Mr. McKee.

Q And with whom did he discuss it?

A I understood with the U.S.G.S. representative in Artesia.

Q You don't know who that was. You don't know of your own knowledge whether it has been discussed at all, do you; just what has been told you?

A Mr. McKee's representative told me that he had done that, yes, sir.

MR. THOMPSON: I'm Ed Thompson with the U.S.G.S.

MR. NUTTER: What was your first name, please?

MR. THOMPSON: Ed Thompson, U.S.G.S. at Roswell.

Q (By Mr. Thompson) Do you know when this was dis-

cussed with our representative in Artesia?

A Well, it is my understanding, again from talking, that this thing has been -- the flooding of this property has been discussed for about a year, and, at first, I think McKee tried to flood it himself, and then another party, and then finally a deal was consummated with Stanton Oil Company, Limited. I don't know exactly when it was discussed with the U.S.G.S., no, sir.

Q (By Mr. Thompson) The reason I ask, I talked to our district engineer in Artesia yesterday, and he said it had not been discussed with him. However, he is fairly new there. We had a part time representative in Artesia for a considerable period of time following the death of Mr. Frost, which I'm sure you know, and there is nothing in our regional office records in Roswell that this had ever been discussed. Our new district engineer, Mr. Faunoff, was not familiar, and that was the reason I wondered whether it had been discussed prior to Mr. Frost's death, or possibly with our temporary representative in Artesia.

A Again, sir, I do not know. The final thing that we have presented here was not available until just shortly before the hearing, and it is our thinking that before anything could be done, we would have to secure the application -- or the permit to water flood from the State before we could go any further. In other words, if the State saw reason to deny it, there was no reason to go in for one.

MR. SETH: I have one more question, Mr. Wood.

Q (By Mr. Seth) This is not a legal question. How deep will the water go, is there an impervious bed at the bottom, or will the water --

A In the Queen Sand?

Q In the Queen.

A The water injected into the Queen Sand producing zone?

Q Yes.

A The water will move in the point of least resistance, which would be the normal flow pattern of your oil, which would be the porous zones.

Q I'm thinking about the vertical. What is there at the base of the Queen that will prevent the water from going into greater depth?

A I believe that the logs that we looked at all indicated a sandy lime or red shale under the pay zone, which would certainly isolate it.

Q Are you testifying that there is such a bed, Mr. Wood, or is that just your --

A Based on the data we have looked at, I would say there is.

Q About what depth is that, do you recall?

A Well, it would be approximately 2240 to 2250, depending on the well.

Q I didn't quite hear you.

A Approximately 2240 to 2250 feet, depending on the well.

Q To what depth does the interest of the Stanton Oil Company go, how deep is their ownership?

A I understand just from hearsay only that it's through this Queen Sand. I think 3,000 feet. I do not know, sir.

MR. SETH: That's all we have.

MR. NUTTER: Are there any other questions of Mr. Wood?

MR. PAYNE: Yes, sir.

MR. NUTTER: Mr. Payne.

QUESTIONS BY MR. PAYNE:

Q Mr. Wood, I'll ask you this question. If you don't know, perhaps Mr. Hamilton can answer. Do the Federal leases covering the acreage in the pilot area provide that secondary recovery operations can be carried on only after approval of the U.S.G.S.?

A I think that is correct, that you have to get their approval, but I'm not sure.

MR. HAMILTON: I believe that's right, yes.

MR. PAYNE: Thank you.

MR. NUTTER: Any further questions? Mr. Wood may be excused.

(Witness excused)

JOE B. McSHANE, JR.,

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

DIRECT EXAMINATION

BY MR. HAMILTON:

Q Will you state your name, please?

A My name is Joe B. McShane, Jr.

Q You are in the firm with Mr. Wood?

A I'm Mr. Oliver Wood's partner in the Oliver Wood & McShane Firm, Monahans, Texas. I was educated in the University of Trinity at San Antonio and the University of Texas in Austin. I was graduated from the University of Texas with a Bachelor of Science degree in petroleum engineering. I have worked for the Forest Oil Corporation in their water flooding activities in West Texas. I have also worked for the Signal Oil & Gas Company in their water flood operations in West Texas, and their water flood studies of the past three years in Southeastern New Mexico. I am presently a partner of Mr. Wood's in a consulting firm, Wood & McShane.

MR. HAMILTON: Will the Examiner accept his qualifications?

MR. NUTTER: Yes, sir. Please proceed.

Q Will you state the history, if you know, or the production history of these wells? I believe you are more familiar with that than Mr. Wood.

A In answer to the Examiner's earlier question with

regard to maximum production rates at the present time, according to the Conservation Commission's records, the Featherstone Wells No. 1 and 2 appear to be the maximum producers in the total nineteen-well area. They are also the maximum producers in the partially enclosed water flood area along with the McKee-Wilson No. 2 Well. These maximum productions range from 8 to 10 barrels per day per well.

Q Is there any other statement you care to make in connection with the application, Mr. McShane?

A I would be happy to attempt to answer any additional questions that the Examiner feels were left unanswered.

MR. NUTTER: Does anyone have any questions of Mr. McShane?

MR. SETH: I have a question with regard to one thing, Mr. Nutter. It is the well in the NE NE of Section 33.

CROSS EXAMINATION

BY MR. SETH:

Q Mr. McShane, do you have a plat there in front of you?

A Yes, sir.

Q How does that well fit into your overall plan and the acreage south of that?

A In this hearing we are attempting to bring out all of the information with regard to the pilot flood that is being applied for. In regard to the pilot flood, the Wilson No. 3 Well

located in the NE of the NE Section 33, Township 18, Range 29, will not be affected in any manner.

Q Not by the pilot plan?

A That is correct.

Q Is it in your ultimate plans?

A The ultimate plans in that area are not finalized at this time, no, sir.

Q You indicate that you will ultimately apply seven hundred odd acres?

A Seven hundred twenty acres, yes, sir.

Q And that proposed area does not include this well, as you now contemplate?

A At the present time that is correct. I would like to state in answer to that, in our opinion, -- in my opinion -- the expansion of this pilot flood will come with due engineering as additional water input wells are drilled and as additional reservoir information becomes available. If the reservoir information should indicate that that lease should be flooded or could be flooded, we would certainly then pursue the expansion of the flood in that area. However, our information at this time does not indicate that.

MR. SETH: That's all I have. Thank you.

MR. NUTTER: Any further questions of Mr. McShane? He may be excused.

(Witness excused)

MR. HAMILTON: That's all. We would like to reserve the right to submit to the Commission evidence as to the title involved in this situation, showing just what the --

MR. NUTTER: That will be satisfactory.

MR. PAYNE: Do you wish to put on a case, Mr. Seth?

MR. SETH: No, we wish to make a statement.

MR. NUTTER: Does anyone have any further testimony they wish to offer in Case 1761? Does anyone have any statement they wish to make?

MR. SETH: Mr. Nutter, I would like to make just a brief statement. The Wilson -- we don't wish to be misunderstood in this connection. Wilson Oil Company certainly is anxious to go along with any secondary recovery program and would be very much in favor of one in this area, but they would like to be a little more fully advised of the proposed program, and also to see that they inform us of the ownership problems which result out of the operating agreement with Robert McKee. We also don't quite see the position of Stanton Oil Company by way of the ownership, whether they are the operator or whether he is the operator, and we would like very much to have an opportunity to discuss this more fully with these gentlemen here and with Stanton Oil Company and see if -- and be more fully advised on the program. Wilson Oil Company has made a number of attempts to seek information relevant to the program for development from the McKee group, and we are unable to get it. The first opportunity we

had was last night when Mr. Wilson got in touch with these people here. And we would like to ask the Commission if they would consider continuing the case until the next hearing to work out the several problems that have been raised.

MR. HAMILTON: We will be entirely happy to meet with them and give them all of the information that they have. I would like to ask Mr. Seth; the inference has been left here, I think, that the interest of the Wilson Oil Company is such that it would be injuriously affected by the granting of this application. My understanding is that their interest was limited to a royalty interest;if they are contending they have a further interest, we would like to have it made a matter of record.

MR. SETH: Wilson Oil Company does own the leases, and they own them -- complete ownership below a certain depth, they have an overriding royalty as to each 40-acre tract to a hundred feet below total depth of the well. That has not been developed at this hearing, what the total depth of the wells are in each instance. They have an overriding royalty a hundred feet below total depth. The Wilson Oil Company owns the leases entirely below that depth; they are the lessee of record. The only interest that McKee has is by virtue of an operating agreement which it holds.

MR. PAYNE: Mr. Seth, who operates the two wells that are entirely enclosed --

MR. SETH: Robert E. McKee is the operator under

this agreement. They also drilled the wells.

MR. NUTTER: Mr. Hamilton, any information that you said that you would submit concerning the title of the properties and so forth, you would be willing to furnish Mr. Seth a copy of that?

MR. HAMILTON: Yes, sir.

MR. NUTTER: Do you have any objection to the continuance of the case, Mr. Hamilton?

MR. HAMILTON: You mean until --

MR. NUTTER: Until such time as the parties have had a chance to meet and discuss this matter, and reappear here, which would probably be on October the 28th.

MR. HAMILTON: If that is the desire of the Commission, we certainly have no objection.

MR. NUTTER: Without objection, the case will be continued to a hearing before the same Examiner on October the 28th. If you feel that it is necessary at that time, Mr. Seth, you can make an appearance in the case. If you feel that it is necessary to make an appearance, Mr. Hamilton, you can make an appearance. However, if you have reached an agreement, an appearance by letter should be satisfactory on the 28th.

MR. HAMILTON: Thank you.

MR. NUTTER: Is there anything further in Case 1761? It will be continued, then, to nine o'clock a.m. October 28, before the same Examiner.

MR. HAMILTON: Nothing further as far as the applicant is concerned.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, J. A. Trujillo, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 12th day of October, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
NOTARY PUBLIC

My Commission Expires:

October 5, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1761 heard by me on 9-30, 1959.

....., Examiner
New Mexico Oil Conservation Commission

Treat-Rite Water Laboratories, Inc.
BOX 548 - MONAHANS, TEXAS

RESULT OF WATER ANALYSES

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
APP EXHIBIT NO. 2

LABORATORY NO. M85932 1761

TO: Stanton Oil Company, c/o Wood & McShane
P. O. Box 398, Monahans, Texas

SAMPLE RECEIVED 8-14-59
RESULTS REPORTED 8-21-59

COMPANY Stanton Oil Company LEASE Brainard
FIELD OR POOL Turkey Track - Queens Sand
SECTION 34 [redacted] Township 18S Range 29-E COUNTY Eddy STATE N. M.
SOURCE OF SAMPLE AND DATE TAKEN:
NO. 1 Raw water - taken from water supply well.
NO. 2
NO. 3
NO. 4
REMARKS:

CHEMICAL AND PHYSICAL PROPERTIES

	NO. 1	NO. 2	NO. 3	NO. 4
SPECIFIC GRAVITY AT 60°F.	1.0093			
PH WHEN SAMPLED				
PH WHEN RECEIVED	7.2			
TOTAL ALKALINITY AS CACO3	80			
SUPERSATURATION AS CACO3				
UNDERSATURATION AS CACO3				
TOTAL HARDNESS AS CACO3	3,467			
CALCIUM AS CACO3	2,005			
MAGNESIUM AS CACO3	1,462			
SODIUM AND/OR POTASSIUM	2,907			
SULFATE AS SO4	3,418			
CHLORIDE [redacted] as Cl	4,363			
SILICA AS SIO2	7.5			
IRON AS FE	12.6			
MANGANESE AS MN				
BARIUM AS BA	none			
TURBIDITY ELECTRIC	142			
COLOR AS Pt	2.3			
DISSOLVED SOLIDS AT 103 °C.	11,204			
TOTAL SOLIDS AT 103 °C.	11,346			
TEMPERATURE °F.				
CARBON DIOXIDE CALCULATED	10.4			
DISSOLVED OXYGEN WINKLER				
HYDROGEN SULPHIDE	none			
RESIDUAL CHLORINE				
RESISTIVITY OHMS/CC	82			
Chlorides, as NaCl	7,187			
Boron	2.2			

NOTE: All Results Reported as Parts Per Million. Divide by 17.1 to Convert to Grains Per Gallon

Additional Determinations and Remarks Please feel free to contact me for any details or discussion concerning this analysis.

By Marian C. Mankin M. A