EXAMINER HEARING
OIL CONSERVATION COMMISSION
May 6, 1959

IN THE MATTER OF: Case No. 1658

TRANSCRIPT OF PROCEEDINGS

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EXAMINER HEARING
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IN THE MATTER OF:

Application of The Texas Company for an order authorizing a salt water disposal well. Applicant, in the above-styled cause, seeks an order authorizing the disposal of produced salt water through its "BN" (NCT-1) Well No. 1 located 1980 feet from the South line and 660 feet from the West line of Section 25, Township 11 South, Range 32 East, Lea County, New Mexico. Applicant proposes to inject the produced salt water in the interval from 3529 feet to 7430 feet.) Case 1658

BEFORE:

Elvis A. Utz, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. UTZ: The next case will be Case 1658.

MR. PAYNE: Case 1658: Application of The Texas Company for an order authorizing a salt water disposal well.

MR. WHITE: If the Commission please, Charles White of Gilbert, White and Gilbert, Santa Fe, New Mexico, appearing on behalf of the Applicant.

If the Examiner please, at the time of the filing of our application, or since the time of filing of the application, rather, the name of the Applicant has been changed from The Texas Company to the Texas Company, Inc. We would like to request that any order that might issue, that it refer to the Applicant as the Texas Company, Inc., formerly The Texas Company. We have one

witness, Mr. Herbert Wade.

If the Examiner please, there is not a "The" before the Texas Company, Inc. It's just "Texas Company, Inc."

MR. PAYNE: That change is effective now?

MR. WADE: It was effective May 1, yes, sir.

(Witness sworn.)

H. N. WADE

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

DIRECT EXAMINATION

BY MR. WHITE:

Q Will you state your full name, please?

A H. N. Wade.

Q By whom are you employed and in what capacity?

A Texas Company, Incorporated. I am Division Proration Engineer.

Q Are you familiar with the Applicant's petition in Case No. 1658?

A Yes, I am.

Q Have you previously testified before the Commission?

A Yes, sir.

MR. WHITE: Mr. Examiner, are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q The Applicant seeks authority to dispose of salt

water through your "BN" (NCT-1) Well No. 1. Is it the intention of Texas Company, Inc.,to fully convert this well at this time, Mr. Wade?

A Mr. White, the intention of Texas Company at this time is to obtain the use of this well as a standby to a salt water disposal well which has previously been drilled and is presently in use in this field. The permit on the salt water disposal well that is in use now, our State of New Mexico "BN" Well No. SWD-1 was granted by the Commission through its Order No. SWD-7. We have,since the time of the receipt of that permit, we have been injecting water into this well. This is in compliance with Order No. R-1224-A of the Commission, which relates to salt water disposal in Lea County. The Moore-Devonian Pool is one of the ten most critical areas, as outlined by the State Engineer's Office.

Q Will you give the status of the present water disposal program in this area?

(Texas Company, Inc.'s Exhibits Nos. 1, 2, 3 and 4 marked for identification.)

Q In reference to your testimony, you may refer to Exhibit 1 and explain it as you go along.

A Yes, sir. The exhibit which has been marked as No. 1 shows the area in the vicinity of the proposed disposal well. The proposed disposal well is outlined in a blue circle. The system presently in use in the field is shown as yellow for four

and a half inch pipe in the gathering system; as green for the six and five-eighths inch pipe in the gathering system.

It might be pointed out that the injection station as indicated on the plat is actually immediately adjacent to our SWD-1 Well.

Q That's in the southern part of the area?

A Yes, sir.

Q Which is in Section 25?

A Southwest Quarter of Section 25. The area involved or the area in which production of water from the Devonian is made is shown outlined in red.

Q Will you state the well history of your present disposal well and in so doing, also refer and explain Exhibit No. 2?

A As shown on Exhibit No. 2, the total depth, first, the present injection well is located 1434 feet from the South line and 898.6 feet from the West line of Section 25, Township 11 South, Range 32 East, in Lea County. The total depth of this well is 1450 feet. We are disposing of water into the Dewey Lake formation from 1260 to 1440 feet. We commenced injection May 21, 1958. At present the well is disposing of approximately 3630 barrels of water per day, give or take 200 barrels.

The present injection pressure is 1125 psi; the cumulative water as of April 1, 1959, was 854,106 into the injection well. We anticipate that the system will be required to dispose

of something between 5,000 and 7,000 barrels of water per day ultimately.

Q Would you give the completion program and the well history of the proposed injection well?

A Yes, sir. As I do so, I might refer the Examiner to the application which was filed by The Texas Company to obtain administrative approval on this application. It contains the data necessary, and I will just refer to it.

The State of New Mexico "BN" (NCT-1) Well No. 1 is located in Unit L, Section 25, Township 11 South, Range 32 East. It is to be used as a supplementary disposal well to dispose of water being produced from the Moore- Devonian Pool. It is planned to use the annulus between the eight and five-eighths inch intermediate casing and the five and one-half inch oil string as the injection interval; and in so doing, we will have open to injection the San Andres, Glorietta, Upper Clear Fork, Tubb, Lower Clear Fork, and Abo formations.

Top of the injection zone will be 3,529 feet, or the base of the intermediate casing. The top of the injection zone will be 7430 feet or the top of the cement behind the long string. So far as we know there is no injection of this type being used in the area. The surface casing is 13 - 3/8 inch O.D. set at 346 feet, cemented with 350 sacks; the cement on this string was circulated. As pointed out before, the base of the intermediate string was 3529; the cement on this string was likewise circulated.

On the 5 - 1/2 inch, it was set at 10,232 using 450 sacks, and as previously mentioned, the top of the cement on that string is 7430.

Q In your opinion, will this casing adequately protect any fresh water zones?

A Yes, sir, it will. The deepest fresh water that we are aware of is approximately 300 feet, I believe it is -- we will certainly adequately have that covered. As mentioned previously, this well is an oil producer and is currently producing from the Pennsylvanian from 9654 to 9710 feet. There is no next higher producing horizon. The next lower producing horizon would be the Wolfcamp gas at approximately 8150 feet.

As mentioned before, we expect we are at this time injecting approximately, or disposing of approximately 3600 barrels a day, which could go up to as high as 7,000 barrels a day. This well would be used in standby only to dispose of a part or all of that amount, if necessary.

Q In your opinion, is the injection zone of sufficient porosity and permeability to accept this anticipated volume of water?

A Yes, sir. I think when we get to the log that it can be shown, or it can be seen by the Examiner that there is porosity development throughout this entire interval. The injection will be by pump at an estimated pressure of 200 psi. We have not tested this interval and therefore we are just estimating

this. We anticipate a closed system. We don't expect any filtration or chemical treatment except in the instance where if we believe that corrosion might be involved, which we are not anticipating. The water is mineralized to such a degree that it is unfit for domestic, stock, and irrigation purposes and we do not think that there is any fresh water in any of the zones into which injection will be made. I think that covers the information on the proposed injection well.

Q Now will you refer to the log, Exhibit No. 3, and explain that, please?

A Yes, sir. The top of the zone of injection has been marked on the log as the base of the intermediate casing. Also the tops of the various formations which will be open to the injection have been marked for the convenience of the Examiner. I think a detailed analysis of this log will not add very much to the hearing. I might mention this, that the zones which will be opened are not too well defined so far as production tests are concerned. We do know this, that in one drill stem test in the San Andres in a Texas Company well, the J. H. Moore No. 1, this drill stem test was from 4,055 to 4,160 feet; during a two hour and fifteen minute test, the well recovered 55 feet of mud, 400 feet of muddy salt water. It had a final shutin pressure of 860 pounds per square inch. The Glorietta was also drill stem tested in this well from 5340 to 5486 feet. The test lasted for one hour and fifteen minutes, or the tube was open for that length of

time, recovered 210 feet of drilling water with a final shutin pressure of 30 pounds. There have been no additional drill stem tests of any of the remaining zones which will be open in this well, either in this well itself or any other well in the area, so we don't know too much about it. We can only assume that every one has had available to them the logs on all of their wells and the inspection of these logs has indicated that there will not be production from these zones.

Q Mr. Wade, do you have a water analysis report?

A Yes, sir, we have had made for us an analysis of the water to be injected, or being injected in this field, or disposed of. I might point out on this analysis --

Q Is that Exhibit No. 4?

A Yes, it is Exhibit No. 4. I might point out that of particular importance is the fact that the hydrogen sulfide is negligible or of not measurable quantity; the total solids are 47,000 parts per million. The mineral composition, sodium chloride, is 35,200 parts per million. This we consider to be relatively high mineralization of the water.

Q In your opinion is the water corrosive?

A No, sir. I don't think that we will expect too much corrosiveness primarily due to the fact that the hydrogen sulfide is very low. We just will not be able to determine the corrosiveness of the fluids being injected, of the water being injected, until we try them. We have not encountered any corrosive

problems with our present injection. If we do encounter corrosiveness, certainly, particularly as pertains to this requested disposal, we would take all necessary steps to inhibit the water to protect the casing in the proposed well.

Q What is the current producing status of the subject well?

A The well is currently producing, has an allowable assigned to it of six barrels of oil per day. It flows this allowable at a gas-oil ratio of 19,160. This gas-oil ratio does not result in a penalty in the allowable, but rather this is a limited allowable to the well.

Q In your opinion will the well flow to depletion?

A Yes, sir. We think with the gas-oil ratio that it is exhibiting that there is an excellent chance it will flow to depletion.

Q When do you expect the well to reach its depletion point?

A We have estimated that it will be somewhere in the vicinity of two years. There are no additional pays which would be opened in this well after it is ultimately depleted; therefore, we feel that this enhances its value as a disposal well.

Q What safeguards will you take to protect the Pennsylvanian oil production?

A Well, the primary one, of course, is that we will make every effort to eliminate any corrosiveness of the fluids

that are being injected in the annulus. We feel that the cementing program employed in the well is certainly sufficient to eliminate any contamination of the Pennsylvanian in the well.

Q What alternatives, if any, do you have in lieu of converting this into an injection well?

A I think we have a couple. One would be to drill an additional well to the Dewey Lake formation. We have had some difficulty with our injection well. We are currently disposing of 100 percent of the produced water. We're hoping that we are going to get by just fine with this well, but we have had to work it over once. We have had to decrease the size of the fluid ends in the pump; we have had to add an additional pump; so we can see the handwriting on the wall that we could run into some difficulties. We feel that we shouldn't compound the problem by having another such well on our hands. Too, we feel that it would cost something in the vicinity of about $20,000.00 to drill another Dewey Lake well.

The second alternative would be to use the Sunray-Midcontinent 13-A Well No. 1, which is located in the Southeast of the Northeast of Section 26.

Q Is that a dry hole?

A Yes, it's a dry hole which has been plugged and abandoned.

Q What would be the estimated cost to convert this well?

A We think we could get this well in shape to receive injection water for something in the vicinity of $30,000.00. The problem with these alternatives is that we can prepare the proposed well for injection for approximately $2,500.00 since it just involves surface changes in the equipment.

Q Then there's a definite economic saving by using the proposed well as an injection well, rather than resorting to the other two alternatives?

A Yes, sir.

Q Have you received any objections to the subject application?

A Yes, sir. We have received a letter from Mr. C. E. Caple. I might point out on our Exhibit No. 1 the lease shown in the Southeast Quarter of Section 25, formerly owned by McAllister, is now owned by C. E. Caple.

We did receive a letter, after we had notified all of the operators and the land owner of our intention to use this well for disposal purposes.

Q For the purpose of the record, would you read the protest, please?

A Yes, sir. This letter was dated March 12th, 1959, at Los Angeles 39, California. It is addressed to The Texas Company, Midland, Texas, and to the Oil Conservation Commission, Santa Fe, New Mexico.

"Sirs: In regards to the proposed disposal of salt

water from certain, locations near, and anything is near in these porous formations as are in these locations of this part of the State of New Mexico. I am and have reasons to know that the claim of or never will be any oils or gas in this two miles that are claimed in the application to the Oil Conservation Commission of the State of New Mexico is very injurious to the unharmed interests in SE¼ of Sec.25. Twp 11S.Rge 32E. for the ones that have interests in this claim. This is one of the very large encroachments of the rights of lease holders in this most porous section known in the whole world, and I feel that my objections to this proposal, shows that I will be imposed upon in that my leases might receive most of all of this salt water that the claim is made for.

"I am in a proper connection with certain interests in Houston, Texas for the operation of my interests in the above lease for gas and/or oil and I could not possibly profit in the operation of this interests, and with all of my under land of my lease flooded with salt water that does not help in any locations such as are in any porous underlands, so I must be injured in this proposal, so I will not and must not agree to this. I have just went through with a same kind of a movement here in Los Angeles in which case I agreed, but it was a case of drinkable water, but this other as in the above case, is salt water, a big problem in any bodies country, and if it was just on the surface it would be not so bad but in and down under, and in porous underlands, it is

out of the question with me.

"If I did not have any interests near this Moore fields I would no object, and at this distance my interests in Roosevelt County in several locations would not be effected as I know it, at this time.

"I want to urge the denial of this proposal of the Texas Company by the Oil Conservation Commission of the State of New Mexico.

"I am, C. E. Caple, 3029 Perlita Ave., Los Angeles 39, California."

Q Mr. Wade, in your opinion is that protest without merit?

A I have been pretty hard put to know what it is. I think he is opposing, I think there certainly is no merit, if I understand what he's saying.

Q Were these exhibits prepared under your direction or supervision?

A Yes, sir, they were.

MR. WHITE: At this time we would like to move the introduction of Exhibits 1 through 4.

MR. UTZ: Without objection the Exhibits 1 through 4 will be received.

MR. WHITE: That completes our presentation.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Wade, has there been a dry hole drilled in the Southeast Quarter of Section 25?

A Yes, sir, there has. It is called Ring McAllister. As a matter of fact, I think that may be a Texas Company well.

Q Do you have any particulars as to this well?

A No, sir, I don't. Do you mean as pertains to its use as a salt water disposal well?

Q Not only that, but as it pertains to the possible production of oil or gas in the Southeast Quarter of 25?

A My interpretation or the interpretation that has been given to the structure in this area indicates that there would not be any production in that area, in that Southeast Quarter.

Q Do you have any pertinent information pertaining to the Magnolia well in the Northeast Quarter of 25?

A No, sir, I don't.

Q You don't know whether that was drilled through the Pennsylvanian or not?

A I think I can find out. I believe that well was drilled, it was drilled through the Devonian, I know that. Yes, sir.

Q Do you know whether or not any of these zones that you are proposing to inject salt water into were drill stem tested?

A To the best of my knowledge there have been no drill

stem tests taken on any of the zones that are opened with the exception of the two drill stem tests I mentioned in the Moore well.

Q Where is the Moore well located?

A That well is located in the Northwest Quarter of the Northwest Quarter of Section 25.

Q What would you say the position of that well is in regard to the structure?

A The Moore well?

Q Yes, sir.

A I think that I'll introduce as another exhibit a structure map, which will make it easier to discuss.

MR. WHITE: That will be marked as Exhibit No. 5.

(Texas Company, Inc.'s Exhibit No. 5 marked for identification.)

A As will be seen on Exhibit No. 5, which has just been marked, the J. H. Moore well, insofar as the Devonian is concerned, is a medium or intermediate well insofar as structure is concerned on the Devonian. I think that the tests reflected in that well are certainly pertinent insofar as the two zones involved in those tests, and would be indicative of the productivity of the zones throughout that area.

Q Are your contour lines controlled by the two dry holes in the East Half of Section 25?

A Yes, sir.

Q You have taken into consideration the formation tops

on those two dry holes?

A Yes, sir.

Q Is there such a structure in conformity with this Devonian structure in the upper zones?

A I'm not familiar with the exact structural conformation in the upper zones. I can say this, that in general they will usually not be as sharp or sharply defined as the deeper seated horizons. They will usually have less dip to them, that is reflected here, but as to whether or not it would conform generally to this I just don't know, in the shallower zones.

Q Is the Pennsylvanian Pool water drive or solution?

A As I remember, the Pennsylvanian is solution gas. The Devonian certainly is strongly water drive.

Q Would it be practical to inject this salt water below the water-oil contact in the Devonian?

A I see nothing impractical about it. I think it could be done, yes, sir.

Q If you were to recommend such a project to your company, would you have a recommendation as to what well you would use?

A No, sir, I haven't. I don't know that there is a well immediately available for use in such a project, nor do I know what problems might be encountered in putting the water away. I have not investigated that part of it, Mr. Utz.

Q What is the interval between the Pennsylvanian and

the Devonian?

A The Pennsylvanian zone in the subject well is from 9654 to 9710 feet.

Q I have a C-105 on your "BTN" No. 1 which lists the top of the Mississippian at 10,209. Will that help you any? At any rate, it wouldn't be far off, far from the top of the Mississippian, it would be less than a thousand feet, wouldn't it?

A Yes, sir, I think that's right.

Q It would be probably in the neighborhood of 11,000 feet?

A That would be about right.

MR. FOSTER: If I might interject --

MR. UTZ: Would you state your name, please?

MR. FOSTER: L. M. Foster, Texas Company, Incorporated.

MR. WHITE: State your position with the Texas Company, Inc.?

MR. FOSTER: I am in the District Office, assistant to the District Engineer.

MR. WHITE: Are you familiar with the application?

MR. FOSTER: Yes, I am.

MR. WHITE: Did you hear the Examiner's question?

MR. FOSTER: Yes, I did.

MR. WHITE: Will you answer to the best of your ability?

MR. FOSTER: I can figure it up pretty fast, I

believe, if we don't need exact footages, I mean to the foot. Approximately 11,500 feet.

MR. WADE: 10,500 feet.

MR. FOSTER: I'm sorry, 10,500 feet.

MR. UTZ: All right, sir.

MR. FOSTER: As the top of the Devonian.

A We never did settle your question, did we?

Q (By Mr. Utz) I was asking for the interval between the Pennsylvanian and Devonian; that answers it sufficiently, I can figure the difference.

A About 500 feet, is that what we're going to arrive at?

Q Well, from the bottom of your (NCT-1) No. 1, it would only be about 280 feet to the top of the Devonian, and you have a plug set at 10,000 feet?

A That's right.

Q Do you think as a practical matter that deepening this well and injecting below the water-oil contact in the Devonian would be satisfactory?

A Deepening --

Q Deepening your "BN" (NCT-1) No. 1.

A I think it could be done. I think it would be fairly costly.

Q Do you think it would be more costly than opening up the plugged Sunray-Midcontinent well?

A Probably about the same.

Q Now, Mr. Wade, how old is the 5 - 1/2 inch casing in the "BT" (NCT-1) No. 1?

A It's about seven years old.

Q Do you have any knowledge of the corrosive nature of the formations in this area?

A That would be exposed to the 5 - 1/2 inch?

Q Yes, sir.

A No, sir, I don't. I don't have any intimate knowledge of the corrosiveness of those formations.

Q How much pressure would you calculate to be exerted near the bottom of your injection zone?

A About 3,000 pounds. Assuming that our 200 pounds is required at the surface.

Q What do you figure water per foot on salt water?

A I was using .4, no, I can't do that, it would be .5.

Q It would be about 3700 pounds?

A Right.

Q Plus your pressure?

A Yes, make it right at 4,000 pounds, 3400 to 4,000.

Q Do you believe that this casing will withstand that kind of pressure?

A I have no reason to think it wouldn't.

Q If it should not stand that type of pressure, or should you have a leak around the 5 - 1/2 inch casing, it would

enter inside the 5 - 1/2 inch, is that correct?

A Yes.

Q Then you would be dependent on the packer set at 9618 in order to keep from flooding out your Pennsylvanian oil?

A That would be true, yes, sir.

Q How much pressure do you think that the packer would stand, that is, weight on top of the packer? Is this a Model "D" packer that you have set there?

A I don't know.

MR. FOSTER: It would be a regular hook wall packer.

Q It is a hook wall packer?

MR. FOSTER: It would not be a Baker Model "D".

A Depending on the exact nature of the packer, which I don't know, I would think that we could probably handle a differential across the packer, well, I would think probably in excess of 2,000 pounds. I just don't know, not knowing the type of packer involved and so forth.

Q In the event of a leak into the inside of your 5 - 1/2 inch, the hydrostatic head on the packer would be in the neighborhood of 47, 4500 pounds, wouldn't it?

A It could, yes, sir.

Q In which case you might be pretty hard pressed to save the Pennsylvania zone?

A I don't think that we would even if we had a leak, which I don't anticipate. I think we would notice it soon enough

that we would not permanently injure the Pennsylvania zone.

Q How much tubing do you have set in this well? You could determine that from your well records.

A I'm afraid you know more about that than I do.

Q Well, at any rate --

A You have the packing set, don't you --

Q 9618 is your packing setting.

A Generally I would expect that the tubing would be down to approximately the point of the, mid point of the producing formation, the stringer on the tubing.

Q Is your Pennsylvania oil of a corrosive nature?

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

Q You would consider it sweet crude?

A Yes, sir.

Q What did you say the rate of production was from the Pennsylvania?

A Six barrels per day.

Q Six barrels.

A Yes, sir, flowing, with a gas-oil ratio of about 19,000 to 1, almost 20,000.

Q Did I understand you to say that you thought the Pennsylvania would flow for possibly another two years?

A Yes, sir, at which time I think it will probably be beyond its economic limit. In other words, it will flow at the economic limit.

Q Six barrels a day from this depth is nothing to write home about, is it?

A No, sir.

MR. UTZ: Any other questions of the witness?

MR. PAYNE: Yes, sir.

MR. UTZ: Mr. Payne.

BY MR. PAYNE:

Q Mr. Wade, I believe your proposed injection includes the San Andres, Glorietta,Upper Clear Fork, Tubb, Lower Clear Fork, and Abo formations, is that right?

A Yes, sir.

Q Are there any producing wells in those formations, say within a radius of two miles?

A Not to my knowledge, no, sir.

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

MR. UTZ: Are there other questions of the witness? If not, the witness may be excused.

(Witness excused.)

MR. UTZ: Any other statements to be made in this case?

MR. PAYNE: Yes, sir. In addition to the objection which Mr. Wade read, we have also received an objection from Myrtle M. Moore, who I take it is Mrs. J. H. Moore, in which she says that she formally protests the application of The Texas Company and that the proposed application will be very detrimental to the

production of oil in the North Half of Section 25,"in which I have four producing wells."

We have also received a statement from the State Engineer which reads as follows:

"Reference is made to your Case No. 1658 on your Examiner Hearing Docket for May 6, 1958. ....

Examination of the file on this well reveals that the surface casing consists of 346 feet of 13 3/8 inch casing on which cement was circulated to the surface with 350 sacks; that there is 3540 feet of 8 5/8 inch casing on which cement was circulated to the surface with 2000 sacks. It is my understanding that neither of these two strings of casing will be perforated. The formation below the longer of these two strings of casing is of permian age. If this information obtained from the file is correct, the State Engineer offers no objection to the use of this well for disposal of salt water. If anyone of the statements is incorrect, the State Engineer does object to the use of this well for salt water disposal."

In addition, we have received another letter from Mr. C. E. Caple, rather lengthy, in which he says he"wonders what Mr. Texas Company should do if I should dump any of my refuse on them." I think you might be interested in reading the entire letter.

MR. UTZ: Any other statements to be made in this case? If not, the case will be taken under advisement.

MR. WHITE: Let the record show that Exhibit No. 5 was introduced into evidence.

MR. UTZ: The hearing will be recessed until 1:30.

****

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings 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.

DATED this 8th day of May, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1959.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1656, heard by me on May 6, 1959.

, Examiner
New Mexico Oil Conservation Commission