BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1765

TRANSCRIPT OF HEARING

SEPTEMBER 30, 1959

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IN THE MATTER OF:

CASE 1765 Application of The Ohio Oil Company for a salt water disposal well. Applicant, in the above-styled cause, seeks an order authorizing the disposal of produced salt water into the Lower San Andres formation through its State B-4286 "A" Well No. 2, located in Unit F, Section 2, Township 17 South, Range 36 East, Lea County, New Mexico. The proposed injection interval is from 5725 feet to 5968 feet.

BEFORE:

Daniel S. Nutter, Examiner.

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: Take next Case 1765.

MR. PAYNE: Case 1765. Application of The Ohio Oil Company for a salt water disposal well.

MR. NEWMAN: Kirk Newman of Atwood & Malone, Roswell, New Mexico, representing the applicant. We have one witness.

(Witness sworn)

THOMAS O. WEBB,

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

DIRECT EXAMINATION

BY MR. NEWMAN:

Q Will you state your name and employment, please?

A My name is Thomas O. Webb. I'm employed by The Ohio Oil Company in the capacity of area petroleum engineer in Hobbs, New Mexico.

Q Have you previously testified before this Commission?

A No, I have not.

Q For the Commission, would you state briefly your professional and educational background, please?

A I graduated from the New Mexico School of Mines in May, 1949, receiving a B. S. degree in petroleum engineering. Shortly thereafter I went to work for The Ohio Oil Company, and was placed in their engineering department in February, 1951. I have worked as a petroleum engineer for that firm throughout the Permian Basin since that time. I was placed in the supervisory capacity in May, 1955.

MR. NEWMAN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir.

Q Are you familiar with the application in this case?

A Yes, sir.

Q Would you state briefly the nature and the purpose of this application?

A This is an application of The Ohio Oil Company for a salt water disposal well, and for authority to utilize a Lower San Andres formation as a salt water disposal horizon. The Ohio Oil

Company owns and operates one lease in the Lovington area, the State B-4286 "A" lease, containing one producing well, and one plugged and abandoned well. The producing well, Well No. 1, is completed in the Lovington Abo Pool, and presently produces approximately 60 barrels of oil and 184 barrels of water per day. We have determined by analysis that the waters produced by Well No. 1 are not potable in that the Lovington area salt water disposal committee has concluded that the underground disposal of produced oil fill brines will be necessary in the foreseeable future, and since we produce a considerable volume of water from our one well, we have determined that we should take precautionary measures to protect the fresh water bearing sand in our lease.

Q Mr. Webb, would you refer to what has been marked as Applicant's Exhibit 1 and state what that Exhibit shows, please, sir?

A Exhibit No. 1 is a map of the Lovington Field, Lea County, New Mexico, indicating all mineral ownership and all producing wells, to the best of my knowledge. Also indicated on the map are the present pool limits of the Lovington San Andres Pool, which are indicated in orange. The Ohio Oil Company property is indicated in yellow. It may be noted that The Ohio lease is situated on the extreme western flank of the Lovington San Andres Pool. Also shown on the map is the proposed salt water disposal well, our Well No. 2, which is the southernmost well on the -- on The Ohio's property.

Q Mr. Webb, would you now refer to what has been marked as Applicant's Exhibit 2, and state what this Exhibit shows, please, sir?

A Exhibit No. 2 is a plat of the Lovington area in the vicinity of The Ohio's lease, and contains a circle of one-half mile radius drawn around the proposed salt water disposal well. Here again, mineral ownership and oil-producing wells are shown, to the best of my knowledge. This Exhibit, by the way, is presented as a supplement to Exhibit No. 1, and is intended to satisfy the requirement of Rule 701-B. All of the operators within the one-half mile radius have received a copy of the application in this case.

Q Mr. Webb, would you please refer to what has been marked as Exhibit No. 3, and state briefly what this Exhibit shows?

A Exhibit No. 3 is a tabulation which shows the completion interval, the producing horizon, and the present productivity of all of the wells within the would be half mile radius of the proposed salt water disposal well. It may be seen from this tabulation that the area contains four producing Abo wells, one producing Paddock well, two producing San Andres wells, and the area also contains five San Andres wells which are presently either plugged and abandoned or shut in.

Q Would you now refer to your cross section which has been marked as Exhibit 4, and state to the Commission what that Exhibit shows?

A Exhibit No. 4 is an east-west cross section which has been designated as cross section AA A Prime, and has been prepared through six offset wells in The Ohio's proposed salt water disposal well.

Q Is there a plat showing the location of AA Prime line there?

A Yes, sir. The wells that are included on this cross section are designated on the small plat from the right of the Exhibit. Reduced scale logs were utilized when available. The producing interval of the offset wells that are producing from the San Andres formation is shown in red along with completion data for each of those individual wells. By the way, this producing interval is typical for all San Andres wells in the Lovington San Andres Pool. We've also shown on this cross section, in blue, the proposed salt water disposal interval for The Ohio's Well No. 2. The lowermost San Andres oil-water contact was determined by the pressure maintenance study committee in a report entitled "Pressure Maintenance Study," to be at minus 1260. The deepest oil-water contact for the San Andres formation is also shown on the cross section. It may be noted that the proposed disposal zones for The Ohio's well is approximately 600 feet below the lowest oil-water contact for the San Andres formation. We have used logs to show formation lithology and porosity when available. It may be noted that several dense sections exist between the proposed disposal zone and the San Andres pay. It minimizes the possibility

of invasion of the oil pay by disposal wells.

Q Are the dense sections shown in color?

A Yes, sir. These dense sections are shown in orange. We have also included in the cross section logs of two offset wells that completely penetrated the San Andres. To show the continuity of these dense barriers further, we have examined logs completely across the Lovington San Andres Pool, and we determined the condition of this fieldwise.

Q Is it your opinion that because of these dense barriers there could be no communication between the producing zones and the --

A Yes, sir.

Q Do you have any further remarks in connection with this Exhibit?

A I believe not.

Q Will you please now refer to your schematic drawing of the proposed disposal well, which has been marked as Exhibit 5, and state what this Exhibit shows, please, sir?

A Exhibit No. 5 is a schematic diagram of the downhold equipment in the proposed salt water disposal well. Briefly covering the history of this well, the well is the State B-4286 "A" Well No. 2. And it is located 1650 feet from the North line, and 2310 feet from the West line of Section 2, Township 17 South, Range 36 East, Lea County, New Mexico. The well was originally completed in the Lovington Abo Pool in April, 1954. Water produc-

tion increased rapidly. Due to this water production, an unsuccessful attempt was made to recomplete the well in the Paddock pay. The well was subsequently plugged and abandoned in January, 1955. We propose to drill out the present cement plugs, set a Baker Model "K" cast iron bridge plug at a depth of 6,000 feet in the 5½ inch OD casing, and we propose to dump one sack of cement on top of this bridge plug. The 5½ inch casing will then be tested to ascertain that it is holding satisfactorily. The Lower San Andres interval, 5845 to 5968 will then be perforated, treated and tested for injectivity. If additional disposal capacity is needed, we propose to perforate and treat the Lower San Andres interval 5725 to 5810. We then propose to set a permanent production packer at a depth of 5500 feet in the 5½ inch OD casing. 2⅜ inch plastic coated plug which will serve as a disposal string, will then be inserted into this. Now, we know from experience gained during the drilling and plugging operations of this well that the open hole interval, 3318 to 4200, will support a full column of mud with absolutely no mud loss to the formation. We, therefore, propose to load the annular space behind the 2⅜ inch casing with fresh water mud. We will then install a pressure gauge at the surface of the well on the annular space. By observing the pressures on this gauge, we may immediately detect any leak which may develop in the disposal tubing. This diagram also illustrates how the fresh water sands in the vicinity of our lease, which the disposal well may have penetrated, will also be protected. The top of the red beds in the

vicinity of this particular lease are located approximately 200 feet below the surface. By observing Exhibit No. 5, you may see how the casing program which was used during the drilling and completion of this well will protect any fresh water bearing sand. It may be seen that the 13 3/8 inch casing is set at a depth of 349 feet, and that cement was circulated completely to the surface behind the string. In addition to that, the 9 5/8 inch casing is set at a depth of 3318 feet, and here again cement was circulated completely to the surface behind this string.

Q Mr. Webb. do you consider that there is any question whatsoever but that all the fresh water sands in this area will be protected?

A None whatsoever, in my opinion.

Q Is there any possibility of invasion of the injected water into the lower formations?

A No, sir. Exhibit No. 5 also illustrates how those pays which exist beneath the San Andres will be protected from invasion. First, if you will note, the Paddock pay is 218 feet below the bottom of the proposed disposal zone. The Paddock will be separated from the disposal zone by a cast iron bridge plug with a 10-foot cement cap. In addition to that, it will be separated by a 90-foot cement plug which was placed in the well during the plugging of the well.

Q You have selected the lower zone of the San Andres formation. Are there any other satisfactory and shallower zones

for the disposal of this water in this area?

A No, sir. The Lovington area of salt water disposal committee concluded there are no shallow zones in the Lovington area which would be suitable for salt water disposal purposes, and we concur in this opinion. We feel that the lower San Andres will provide the most adequate zone for salt water disposal purposes which is not productive of oil and/or gas.

Q Has this particular zone of the San Andres been used for salt water disposal previously?

A Yes, sir, it has. It has been used in several salt water disposal systems in Southeastern New Mexico. The Hobbs and the Eunice Monument Eumont systems serve as ideal examples of that, and in each case has proven to be quite satisfactory.

Q Mr. Webb, would the granting of this application in any way cause waste or affect correlative rights?

A No, sir.

Q Do you have any other remarks in connection with this application?

A No, sir.

MR. NEWMAN: I believe that's all the direct.

MR. NUTTER: Does anyone have any questions of Mr. Webb? If not, he may be excused.

MR. NEWMAN: Just a minute.

Q (By Mr. Newman) Were these Exhibits prepared by you or under your direction?

A All with the exception of the cross section, which is Exhibit No. 4, and Exhibit No. 1, the map of the Lovington Field, which were prepared by our Midland Petroleum Engineering Department.

Q At your request?

A At my request, yes, sir.

MR. NEWMAN: We would like to offer Exhibits 1 through 5 in evidence.

MR. NUTTER: Ohio's Exhibits 1 through 5 will be entered. Does anyone have anything further they wish to offer in Case 1765? Take the case under advisement.

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 6th 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. 1765, heard by me on 9-30, 1959.

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