

MR. UTZ: Case 3287.

MR. DURRETT: Application of Texaco Inc. for a waterflood project, Lea County, New Mexico.

MR. KELLY: Booker Kelly of White, Gilbert, Koch and Kelly on behalf of Texaco. I have one witness and ask that he be sworn.

(Witness sworn.)

WILLIAM P. YOAST

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

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, employer and position, please?

A William P. Yoast, employed by Texaco Inc. as a petroleum engineer.

Q And what is your place of occupation?

A In Hobbs, New Mexico.

Q Have you previously testified before this Commission?

A No.

Q Would you give the Examiner a brief resume of your professional and educational background?

A I graduated from Texas Technological College with a

Bachelor of Science degree in chemical engineering. I commenced petroleum engineering duties in November of 1954. In February of 1956 I commenced petroleum engineering duties in all of Texaco's drilling and production operations in the area, including Lea County, Eddy County, Chaves and Roosevelt Counties. Currently employed as supervisor of engineering capacity in these same counties.

Q As part of your professional experience you have had actual working knowledge of the area in which the subject wells are contained?

A Yes.

MR. KELLY: Are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q Would you briefly state to the Examiner what Texaco seeks by this application, referring to what has been marked as Exhibit 1?

(Whereupon, Applicant's Exhibit No. 1 was marked for identification.)

A Yes. Texaco seeks authorization to perform secondary recovery operations by injecting water into the Queen formation in Texaco's J. F. Black lease, this lease being located in Section 21, Township 24 South, Range 37 East, Lea County, New Mexico. Texaco currently has three producing

wells in the Langlie-Mattix Pool on this lease and one well which is in the Jalmat Pool. Texaco proposes to drill two injection wells and one injection well in order to accomplish this secondary recovery operation.

Q You said two injections wells and one injection well. You mean one producing well?

A Propose to drill one production well and two injection wells.

Q Could you locate on Exhibit 1 the injections wells and the producing well?

A Yes. The proposed injection wells will be the Well No. 6 and Well No. 7; No. 6 being in Unit F and Well No. 7 being in Unit B of Section 21. The proposed producing well to be drilled is in the Northeast Quarter of the Southwest Quarter of Section 21.

MR. UTZ: No. 7 is actually in Unit B? This shows it a little over in -- well, some question.

A Well, it's really, I think will be on the borderline of those units in there. Well No. 7 is to be located 2640 feet from the West Line of Section 21 and 1320 feet from the North Line of Section 21, with Well No. 6 being located 1340 feet from the West Line and 2,030 feet from the South Line of Section 21.

MR. UTZ: Give me those again.

A No. 6?

MR. UTZ: Yes.

A 1340 feet from the West Line and 2640 feet from the South Line.

MR. UTZ: Is that a standard section?

A Yes, sir, I believe it is. I did not check the survey on it to be definite.

MR. UTZ: And the casing in the No. 7 well will be right on the quarter-quarter section?

A Yes, it would.

MR. UTZ: On the other one it would be on the half section line, 20 feet off center?

A Yes.

Q (By Mr. Kelly) Are there other existing waterflood projects that adjoin the proposed project?

A Yes, as indicated on Exhibit 2, the currently active Woolworth Unit operated by Amerada is in a pilot flood stage. It is south, adjacent to the proposed area project bordering the south end of Section 21. As indicated by their outlines surrounding the entire area of the proposed project, other proposals are being studied for secondary recovery in the Langlie-Mattix Pool. These have not been consummated as yet, but this will indicate that this area of the Langlie-Mattix Pool is at a stage of primary depletion and secondary recovery

operations should be commenced in the near future.

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

Q What agreements, if any, have you reached with the adjoining projects?

A Texaco has executed an agreement with George Buckles, who operates a pilot flood east adjacent to Texaco's Black lease. Texaco is currently negotiating a similar agreement with Shell Oil Company, who is operating a similar waterflood operation south adjacent to Texaco's Black lease.

Q Could you give the Examiner a brief history of this field as it pertains to the Texaco acreage and the position of the completion that you are in now?

A Yes. Approximately ten years ago the Texaco J. F. Black lease was producing approximately 1834 barrels of oil per month. It is currently producing only 22 barrels of oil per month, which indicates it is near the economic stage of depletion which we have estimated at 99%.

Q What would your expectation be of production if this waterflood application is approved? Would you have a successful project?

A As indicated on Exhibit 3, this is a performance curve plotted on the George L. Buckles Knight lease. It indicates production prior to the commencement of injection of

water and also indicates the performance after injection of water commenced. As seen on the curve, an injection of water commenced on this Buckles lease early in 1964. Indicated also, early in 1965, a response was received from this injection with water which increased oil from approximately 844 barrels of oil per month to approximately 1270 barrels per month during the first month of response. Texaco anticipates similar results on our project.

(Whereupon, Applicant's Exhibits 3 and 4 were marked for identification.)

Q Have you prepared a structure map for the top of the Queens?

A Exhibit 4 indicates a structure map, it is not contoured on top of the Queens. This structure map is contoured on top of the Yates formation from drilling samples, and the contours made by Texaco's Geological Department. This Department anticipates the Queen top at approximately 700 feet below the top of the Yates formation, and the contours should be similar for the Queen formation, which indicates that the structure on Texaco's Black lease should be similar to that on the Buckles and the Shell project.

Q Now you have three producers currently in the Queens. There were no logs on those wells, is that it?

A Those wells were drilled many years ago. They have

never been logged. However, the two injection wells and the one producing well to be drilled will be logged, with the two injection wells being cored for additional information.

Q Well, based on the production data of the Buckles lease, which is shown in Exhibit 3 and the structure information that you have, would you expect to have a successful waterflood project?

A Yes. I definitely would. I can expect very similar results.

Q What would you expect the life of the secondary recovery would be?

A We have estimated a nine-year life from day of commencement of injection of water on the J. F. Black lease.

Q And you say you consider it about 99% depleted now as far as primary production?

A Yes, that is true.

(Whereupon, Applicant's
Exhibit No. 5 was marked
for identification.)

Q Now, referring to what has been marked Exhibit No. 5, the diagrammatic sketch of your proposed injection well, would you go through that for the Examiner?

A Yes. Exhibit 5 illustrates the proposed drilling, casing and cementing program of the Black Well No. 6 water injection well. Well No. 7 will be identical to this with the

exception of its total depth, will be approximately 3606 feet rather than the total depth of the well No. 6 being at 3705 feet.

Surface casing is to be set at approximately 250 feet and top of the Red Beds and cemented to surface by 250 sacks of Incor neat cement. After drilling to total depth, 2-7/8ths inch production casing will be run and set at that depth and it will be cemented with approximately 150 sacks of Incor, 4% gel, and the cement is to reach the base of the salt expected at approximately 2600 feet. The base of the salt in Well No. 7 is expected to be approximately 2540 feet.

The production casing will be selectively perforated, the perforation will be selected after logging and after receiving core analysis data. This will insure that water will go into the exact selected intervals in the Queen formation. After perforating the well will be acidized for cleanup and tubing will be run which will be internally plastic coated for corrosion.

A packer will be set at 3320 feet, it will also be plastic coated for corrosion. Texaco will also spot corrosion-inhibited water in the tubing casing annulus for the additional protection.

Q What is the source of your water?

A Texaco proposes to drill a water supply well to

the Santa Rosa formation. It will be cased all the way through the water supply zone, selectively perforated after being logged, and we anticipate withdrawing approximately 400 barrels a day from this supply well, 200 barrels a day being injected into each of the injection wells. We anticipate that possibly it will be necessary to inject approximately 300 barrels per day into each of the injection wells.

Q Could you show, referring back to Exhibit 1, the proposed location of the water well?

A Yes. This water well is to be located 2340 feet from the West Line and 1430 feet from the North Line of Section 21.

Q Is there presently a well to the Santa Rosa water in any of the adjoining project areas?

A Yes. Shell Oil Company is using a water supply well completed in the Santa Rosa formation. This well is located in the Southwest Quarter of the Southeast Quarter of Section 21. It is near their injection well No. 6.

Q Have they been able to get adequate water out of that well for their injection project?

A Yes. I do not have the exact producing capacity of the well current, but Shell has been obtaining an adequate water supply from this source.

Q Do you have information as to the characteristics

of the water?

A Yes, I do.

Q Could you briefly give those to the Examiner?

A This information was obtained from water analysis of Shell's water supply well and it indicates that it is a brackish non-potable water.

Q Have you furnished the salt water characteristics and other pertinent data to the State Engineer's office?

A Yes, I have.

Q Do you expect to encounter the same characteristics in your water well?

A We expect to be on strike with Shell's well and obtain similar results.

Q Has Texaco made any plans of what alternates it would use if its first well was not successful?

A Yes, we have. One alternative would be to drill a second well near the Shell well and another alternative would be to negotiate the purchase of water from Shell.

Q In your expert opinion do you feel that the granting of this application and the institution of this waterflood project would result in efficient and economic production of the oil and protect correlative rights of all operators in the area?

A Yes, I do. We have estimated there are approximately

250,000 barrels of secondary oil to be recovered on the Texaco J. F. Black lease through the nine-year remaining period once the injection commences.

Q Were Exhibits 1 through 5 prepared by you or under your supervision?

A Yes, they were.

MR. KELLY: I move the introduction of the exhibits.

MR. UTZ: Exhibits 1 through 5 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 5 were offered and admitted in evidence.)

MR. KELLY: We have no further questions at this time.

CROSS EXAMINATION

BY MR. UTZ:

Q With regard to the location of your two injection wells is the location critical to the extent that you could not move them off, say ten, fifteen, twenty-five feet off the quarter-quarter section line?

A No. It is flexible enough that they could be moved.

Q Would you be in a position to state which way you would move them?

A No, sir, not to state definitely, but probably in a southeast to southwest location for Well No. 7 and

possibly an east movement of Well No. 6. This is only a prospective movement. It would have to be studied to be definite on the footage each direction.

Q Ordinarily, so that you will understand, ordinarily the Commission does not approve any well locations right on a quarter-quarter section line.

A Yes.

Q We like to have them off ten feet or more.

A Yes. We can move those wells any satisfactory direction.

Q Will you let me know soon?

A Yes, I can call you back probably tomorrow.

Q I believe you stated your tubing would be internally plastic coated?

A Yes.

Q With inert water in the annulus on both wells?

A Yes, sir.

Q What is the range of production, do you have that available, within the unit area or within the project area?

A On Exhibit 3 that is the most responsive production currently producing, in July, 1965, currently produced approximately 1150 barrels of oil per month. I do not have the exact data on the Buckles Jamison lease, which is north adjacent to their Knight lease and east adjacent to

Texaco's Black lease, but it is down to a similar position range of Texaco's Black lease. The exact numbers I do not have with me. I can obtain them, if you desire.

Q I believe you stated that the, was it the lease produced 22 barrels per month?

A Per month, yes, sir.

Q And obviously no well will produce more than 22 barrels per month?

A That's right.

Q I think that will suffice.

MR. UTZ: Any other questions of the witness?

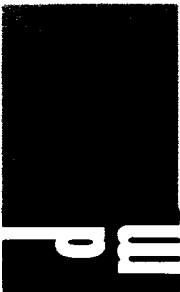
MR. IRBY: Yes, sir. Frank Irby, State Engineer's office.

BY MR. IRBY:

Q Mr. Yoast, I didn't get that, I'm not sure that I got that description of Shell's water supply well correctly. Would you restate that for me?

A Yes, sir. It is located in the Southwest Quarter of the Southeast Quarter of Section 21. It is very near their injection Well No. 6, the water supply well being in a southeast direction from Well No. 6. The exact footage I do not have.

Q Is this the same description that was in your letter to me dated July 28? I have been trying to find it



and I can't.

A Let's see, yes, sir, that is the description in this letter dated July 28. That is the correct location as furnished by Shell Oil Company.

Q Do you anticipate that the Santa Rosa is going to supply sufficient water to carry out this flood?

A Yes, sir. We do anticipate the Santa Rosa will last the nine-year life as we have expected.

Q If it is necessary to acquire water from other sources, you would immediately notify the State Engineer and the Oil Conservation Commission?

A Yes, sir. Every change of water supply source that we anticipate we will, of course, notify both offices.

MR. IRBY: Thank you. That's all the questions I have.

MR. UTZ: Any other questions of the witness? The witness may be excused.

(Witness excused.)

MR. UTZ: That completes your case?

MR. KELLY: Yes, sir.

MR. UTZ: Any statements in this case? The case will be taken under advisement.



I N D E X

<u>WITNESS</u>		<u>PAGE</u>
WILLIAM P. YOAST		
Direct Examination by Mr. Kelly		2
Cross Examination by Mr. Utz		12
Cross Examination by Mr. Irby		14
<u>EXHIBIT</u>	<u>MARKED</u>	<u>OFFERED AND ADMITTED</u>
Exhibit 1	3	12
Exhibit 2	6	12
Exhibits 3 & 4	7	12
Exhibit 5	8	12

[illegible]

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 Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 26th day of August, 1965.

Ida Davenport
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 32-87, heard by me on 8-11-1965.

1965
Edward G. [Signature] Examiner
 New Mexico Oil Conservation Commission