BEFORE THE

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

December 2, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Texaco, Inc., for a dual completion and water injection, Lea County, New Mexico.

Case No. 3982

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case 3982.

MR. HATCH: Application of Texaco, Incorporated for a dual completion and water injection, Lea County, New Mexico.

MR. KELLY: Let the record show the same appearances as in Case No. 3981. Mr. Whigham has already been sworn.

(Whereupon, Applicant's Exhibits Numbers 1 through 3, inclusive, were marked for identification.)

C. L. WHIGHAM, JR.

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

DIRECT EXAMINATION

BY MR. KELLY:

Q For the record, you are the Carl Whigham who testified previously in Case 3981?

A Yes.

Q Referring to what has been marked Texaco's Exhibit Number 1, would you state briefly what Texaco seeks by that application?

A Exhibit Number 1 is a map of a portion of the Jalmat and Langlie-Mattix Pools which are involved in this application. Many of the wells in this area are multiple completions, but we will only be discussing the completions in the Jalmat and Langlie-Mattix Pools. The well that we are proposing for water

injection and requesting approval for multiple completion as a dual is Texaco's Well No. 6 on the Fristoe "A", NCT-1 Lease comprising the west half of the northwest quarter of Section 35 in Township 24 South, Range 37 East. This is an 80-acre lease with two wells on the north 40 and two wells on the south 40. The particular area here in the vicinity of Section 35 lies along the eastern boundary of the Langlie-Mattix and Jalmat Pool areas.

You may note that this particular lease of Texaco adjoins Amerada's Woolworth Unit, and the well that we propose for an injection well will be on a pattern with and in cooperation with the Woolworth Unit.

Well No. 6 is presently completed as a Jalmat gas well. It was formerly completed in the Langlie-Mattix. Our plans are to drill out the Langlie-Mattix interval and inject water into the Langlie-Mattix zone that formerly produced in Well No. 6.

Well No. 11, which is a very close north offsetting well, is completed in the Justin Blinebry Pool. We would like to request approval for a project area comprising this entire lease.

We have identified the injection well as No. 6, and the other producing well will be Well No. 1. This well is not

found on the Conservation Commission's allowable schedule, because it has been shut in for a number of years. But it is planned that as responses indicating in this particular area, we will be able to put this particular well back on production from the Langlie-Mattix reservoir.

Then Well No. 10, which is a direct south offset from Well No. 1, is completed in the Justin Blinebry Pool. So our project area will be comprised of this entire lease.

I might add here that it would have been within the intent of the 701 and the provisions thereof, to include the adjoining tracts, 40-acre tracts which have wells completed in the Langlie-Mattix, but these are different leases, so we did not plan at this time to unitize. Later on, when response is exhibited in this area, serious and conserted effort will be made at that time to unitize a larger area.

Q Now, as I understand it, the proposed injection well, Well No. 6, is presently a Jalmat gas well, and was at one time producing from the Langlie-Mattix Pool?

A That is correct.

Q And your Well No. 1 in the south half of that lease will also be assigned as a Langlie-Mattix well, and be put back on production if you get response?

A Yes.

Q Now, what is the production history on that injection well, and Well No. 1?

A Well, the injection well ceased producing from the Langlie-Mattix interval several years ago when, in 1963, the well was plugged with cement and reperforated or recompleted. However, there has been no market for the gas, and the well has not produced.

Now, at the present time, negotiations are under way, and we are assured that we will be able to sell the gas that will be produced from Well No. 6.

Well No. 1 was a very low marginal oil well, and it ceased producing oil in 1957, but the well is still open in the Langlie-Mattix reservoir.

Q Do you have any estimate of the total production from this lease in the Jalmat and Langlie-Mattix Pool?

A No, I do not. However, these wells in this particular area on a broad average can be expected to yield approximately 30,000 to 40,000 barrels of oil per well. So these completions are very marginal from an economic standpoint. It is seldom profitable to drill a well in the Langlie-Mattix reservoir in this vicinity for completion as a single producer.

Q Do you have any information on the subject of the Woolworth unit?

A Yes, this unit was originally approved as a project, or as a pilot project, and has subsequently been expanded on several occasions by converting additional wells to water injection service. Water injection operations have been in operation long enough to indicate that the water flooding of the Langlie-Mattix reservoir will be successful. It is my understanding that the Amerada reservoir engineers roughly estimate at this time that secondary recovery may be as much as primary. So we can expect successful water flooding in the future.

Q Upon that assumption, then, you could expect to recover approximately 40,000 barrels from each well, if this were a successful flooding?

A That's correct.

Q What volumes of water will you be injecting into this well?

A Texaco's injection operations will be in cooperation with the Woolworth Unit, and in that line it is currently planned to inject about 400 barrels of water a day into Well No. 6.

Now, currently there is only about 100 barrels of produced salt water available for injection, so an additional 300 barrels of water daily will be obtained from the water source

that Amerada is using, so initially we will plan to inject approximately 300 barrels of purchased water and 100 barrels of produced water daily into this well at pressures that are estimated to be in the order of 500 PSI, initially.

Q Where will your produced water come from?

A Primarily from all of Texaco's adjoining leases in this immediate area. Texaco has leases on the east half of Section 26, and the north half of Section 35, as well as the southeast quarter of Section 35.

Q Your purchased water, that is fresh water?

A Yes.

Q So most of the water that would be injected into this well would be fresh water?

A Yes, that's correct.

Q Do you expect that your ratio of salt water will increase, or do you expect these adjoining wells to increase their water production as time goes on?

A If the water production does increase, it will probably be as a result of the water that is injected in the formation, because this particular area is in the late stages of primary production, and it is doubtful that natural primary water production will increase significantly above the rate at the present time.

Q Now, what is the drive mechanism of this reservoir?

A The Langlie-Mattix is a solution gas drive.

Q Now, turning to what has been marked as Exhibit Number 2, your schematic diagram of the proposed injection well, would you explain both the salt water injection features and the proposed multiple completion features?

A Exhibit Number 2 is a schematic diagram of the sub-surface installation that is anticipated from this well, subsequent to approval by the Commission for dual completion. We will plan to drill out the Langlie-Mattix Zone that has been previously plugged with cement. The open-hole interval below the casing is set down to a total depth, will be from a depth of 3,369 feet down to 3,918 feet, and water will be injected into this interval through the two and three-eighths-inch internally plastic-coated tubing, with a packer set at 3,300 feet.

The Jalmat gas perforations shown on this sketch are from a depth of 2,708 feet -- I'd like to correct that statement. The perforations are not over an interval, but are at specific points. There are four perforations, one at 2,708, one at 2,720, one at 2,788, and one at 2,796. The Jalmat gas will be produced from this interval up the tubing casing annulus to the outlet. The Jalmat gas from the Yates Formation is relatively

dry and as long as it continues to produce in that state, no difficulties are anticipated, and this type of completion should be quite adequate. If and when significant volumes of liquid, either oil or water, are produced, it may then be necessary to install another string of tubing through which to produce this Jalmat gas.

Q What kind of cementing program do you have in that well?

A Three strings of casing have been installed in the well, and each has been cemented adequately to preclude the migration of fluid from one zone to the other. The seven-inch casing has a cement top behind the casing at approximately 2,200 feet, which is through and above the Jalmat gas interval.

Q How about any surface water in this area?

A There is some fresh Oglalla water in the area, and there is also some brackish water found in the Santa Rosa Formation in this vicinity.

Q You have cement circulated to the surface through the fresh water area?

A No, the cement was not circulated to the surface on this particular completion. It was common practice at that time to cement with a volume of cement that would cover the lower 200, or 300, or 400 feet of casing, and at the time it was

not felt necessary to cement the casing all the way to the surface.

However, the casing records do indicate that sufficient casing, or sufficient cement was used to preclude the movement of fluids from one formation to another.

Q Well, your injection in this case will be water, which is not particularly corrosive, because most of it being fresh water?

A Yes, that is correct.

Q Do you anticipate any problems with corrosion or leaks?

A No, we don't.

Q How would you be able to detect any leaks since you will not have any inert fluid in the annulus?

A Probably the best way will be to compare the analysis of the water being injected with the water being produced. If very similar characteristics were noted, we could assume that the injection tubing was leaking, and we could remove the tubing and inspect it or replace it with a new string of tubing. But the primary method of determining whether or not a leak existed, I believe, would be by an analysis of the water that was produced on the Jalmat side of the well head, with the water that was being injected.

Q Are there other wells in the area that are producing gas up the annulus from the Jalmat?

A Yes, it is my understanding that Pan American Petroleum Corporation recently obtained approval from the Commission for a similar annular production authority to produce a Jalmat gas well located up in Section 21, in the northwest portion of the map that we show as Exhibit Number 1. If I'm not mistaken, this well was known as Pan American, US Meyers Well No. 4, located in Unit E, in Section 21.

Q In your opinion, this proposed installation will effectively segregate the two zones to prevent migration?

A Yes, sir.

Q You have also as Exhibit Number 3 a log?

A Yes.

Q In your opinion, would the granting of this application prevent waste by allowing you to produce oil and gas that might otherwise be left in place?

A Yes, it will.

Q In your opinion, will the granting of this application have any adverse effect on the correlative rights of other operators in the area?

A No, it will not.

MR. KELLY: I move the admission of the Applicant's

Exhibits 1, 2, and 3.

MR. NUTTER: Texaco's Exhibits 1 through 3 will be admitted into evidence.

(Whereupon, Applicant's Exhibits Numbers 1 through 3, inclusive, were admitted in evidence.)

MR. KELLY: That is all I have on direct.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Whigham, do you have any idea what the calculated top of the cement on the thirteen-inch casing might be?

A Not off-hand, Mr. Nutter.

Q Do you know what size hole was drilled there?

A I do not have any exhibits with me that indicate the hole size.

Q I suppose the same would be true of the eight and five-eighths-inch casing?

A Yes.

Q However, the surface casing was cemented with fifteen sacks, and the intermediate with 100 sacks?

A That is correct.

Q And you do have the top of the cement on the long string, being at 2,200 feet?

A That's right, well above the Jalmat gas interval.

Q Do you know whether Texaco -- you mentioned that you were going to cooperate with Amerado on this plug to the west there. Is it their intention, then, to put either their No. 7 well in the southeast-southeast of 27, or their No. 1 well in the southeast-northeast of 34 on injection?

A Yes, sir. I don't know what the time is on that, but consideration has been given to converting one or both of those two wells.

Q And they would be an extension of the existing pattern, and you well would be a further extension of the same pattern, then?

A Yes.

MR.NUTTER: Are there any further questions of Mr. Whigham? You may be excused. Do you have anything further, Mr. Kelly?

MR. KELLY: Nothing further.

MR. NUTTER: Does anyone have anything further in Case 3982? We will take the case under advisement.

I N D E X

EXHIBITS	MARKED	OFFERED AND ADMITTED
Applicant's Exhibits Numbers 1 through 3	2	12

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, SAMUEL MORTELETTE, Court Reporter 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.

COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3982 heard by me on 12/5, 1968.

Examiner
New Mexico Oil Conservation Commission