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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 21, 1970

EXAMINER HEARING

IN THE MATTER OF:)

Application of Texaco, Inc., for)
waterflood project, Lea County, New)
Mexico.)

Case No. 4295

BEFORE: Elvis Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 4295.

MR. HATCH: Case 4295. Application of Texaco, Inc., for waterflood project, Lea County, New Mexico.

MR. KELLY: Booker Kelly of White, Gilbert, Koch and Kelly, of Santa Fe, on behalf of the Applicant.

I have one witness and ask that he be sworn.

(Witness sworn).

(Whereupon, Applicant's Exhibits 1 through 4 were marked for identification).

MR. UTZ: Any other appearances in this case?
You may proceed.

CARL L. WHIGHAM

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, position and employer?

A My name is Carl L. Whigham, Jr. I am employed by Texaco, Inc., as Midland Division Proration Engineer located in Midland, Texas.

Q You have previously qualified before this Commission as an expert witness in the field of petroleum engineering?

A Yes, sir, I have.

Q Would you briefly state what Texaco seeks by the application, referring to what has been marked Exhibit No. 1?

A Texaco, on behalf of the working interest owners in the Cotton Draw Unit and Tenneco Oil Company, operator of the Monsanto waterflood project, seeks authority from the New Mexico Oil Conservation Commission to convert to water injection service the Cotton Draw Unit Well No. 13, located in Unit G of Section 16, Township 25 South, Range 32 East, Lea County, New Mexico, in the Paduca-Delaware Oil Pool.

Q Now, the Exhibit 1 shows the outline of the Cotton Draw Unit; is that correct?

A Yes, sir.

Q This well is immediately outside the unit boundary?

A Yes, sir, it is.

Q Could you give the Examiner a brief history of the Cotton Draw Unit and Tenneco's cooperative plug?

A Yes. The Cotton Draw Unit, which is actually a large area in excess of thirty thousand acres, was formed and approved by the Oil Conservation Commission in 1958 by Order No. R-1186.

The unit shown by Exhibit No. 1 is a participating area within this larger unit and the waterflooding operations being conducted by Texaco as operator in this Cotton Draw Unit were authorized by the Oil Conservation Commission by Order No. R-3314 dated September 11, 1967.

On the same date the Commission issued Order No. R-3313, which authorized Tenneco to conduct similar waterflood operations on what is called the Monsanto waterflood project in the south half of Section 16, Township 25 South, Range 32 East.

Q And this is basically an expansion of those two flood projects?

A Yes. The entire Paduca- Delaware Field is under waterflood and it has been broken down into these different projects.

The Cotton Draw Unit, for example, operated by Texaco for the working interest owners is that area included in the outline shown on Exhibit No. 1 and here there are twelve injection wells and thirty-seven producing wells and then immediately to the west is Tenneco's operation in the south half of Section 16, where there are two injection wells and five producing wells and then on the periphery of these major projects Tenneco on the southern extremity operates a

project called the S. D. Sena, Jr. project with one injection well and one producing well.

Q What section is that in?

A That's in the south half of Section 28, and then Tenneco has another project that is called the Ray Federal B, which has one injection well and one producing well and that's located in the southeast quarter of Section 10.

Texaco also has another project that is called the Paduca-Jordan Project and that is down in the vicinity of the Sena Project operated by Tenneco in Section 28 and is comprised of two injection wells and one producing well and then outside.

MR. UTZ: What's the location of that?

THE WITNESS: Unit E in Section 28 is one of the injection wells.

Q (By Mr. Kelly) It's the forty-acre unit?

A Yes, sir, and Unit G is the other injection well and Unit H is the producing well and then in addition to those five waterflood projects, there are three other wells outside the projects which have allowables and are being produced.

They are the Texaco wells on the Ray Federal B Lease up in Section 10. There are two wells there in the

northwest quarter of Section 10 and then the other well, which is outside of all the waterflood projects, is one in the northwest corner of the southeast quarter of Section 15 and that accounts for eighteen injection wells and forty-eight producing wells in the entire Paduca-Delaware Field.

Q Now, as far as your proposed injection well, what is its history and present status?

A This well is currently designated the Cotton Draw Unit No. 13 and is located in Unit H -- in -- no, Unit G in Section 16.

This well was formerly operated by Continental Oil Company. The production on the well declined over a period of three or four years down to less than one hundred barrels of oil per month, so Continental Oil Company abandoned operations.

They were uneconomical on that well and the well has been shut-in now for a couple of years now. Tenneco and Texaco, as operator of the Cotton Draw Unit, felt that this well would serve a very useful purpose as a back-up injection well for the Tenneco waterflood and for the Cotton Draw Unit waterflood; so, Tenneco and the Cotton Draw Unit purchased the well and the equipment from Continental with the purpose -- or with the objective of converting that well to injection

service so that's what we seek here at this hearing, is approval to convert this particular well here, Well No. 14, to injection service to benefit both the Cotton Draw Unit and also the Monsanto Unit operated by Tenneco.

Q Now, referring to what has been marked Exhibit No. 2, what has been the performance history of this flood project in the area that you have described?

A Exhibit No. 2 is a set of performance curves for the Cotton Draw Unit and it shows the additional development back in 1960 and '61. It shows a steady decline through the year 1968, when water injection operations were commenced in August.

At that time, there was an immediate decrease in production due to the conversion of producing wells to injection service and at the same time there was some remedial operations performed and the production was reinstated to about a thousand barrels a day during the first half of 1969 and then in very recent months or toward the end of 1969, there has been some increase in production.

Essentially, the conclusion that we would draw from these curves is that the operation has not been conducted long enough actually to give a very good estimate of future performance. We know that the Delaware sands don't

respond quite as readily sometimes as some of the San-Andres reservoir, for example, but we do intend to continue operations here for several more months and later we should have a much better estimate of what we can expect from this operation.

Q Now, you have prepared an exhibit, being Exhibit No. 3, which shows your proposed installation on the injection well. Is that basically similar to the other injection wells in the participating area you have described?

A Yes, sir, it does. All the other injection wells in the participating area are cased through the Delaware producing formation and were perforated in a manner very similar to the one depicted here in Exhibit 3 for the Cotton Draw Unit Well No. 13.

This shows, of course, that the production casing was installed with sufficient cement to bring the top of the cement outside the casing up to a depth of about twenty-two hundred feet. The water will be injected through plastic coated tubing set on a packer at about four thousand five hundred fifty feet and with this type of installation, we are confident that the injection fluid will be confined to the Delaware reservoir.

Also, we will install an adequate pressure gauge

in the annulus between the injection tubing and the production casing.

Q Now, the perforations you have shown there, those are the original production perforations?

A Yes, sir, they are.

Q To your knowledge, is there any other production zone or fresh water zone up structure from the perforations?

A No. There are no other productive zones at a shallower depth within the participating area. Actually, Texaco attempted to develop additional water sources within the participating area and drilled more than -- more than one well for the purpose of establishing additional water sources and they were unable to develop sources within the participating area.

Q This source of water is the same as you have been using in your whole waterflood project, I assume?

A Yes, it is.

Q What will be your estimated injection pressure in volume?

A It's estimated that the rate of injection in this proposed injection well will be about five hundred barrels of water per day and we estimate that the initial injection pressure at that rate will be about four hundred PSI.

Q And you haven't had any particular problem getting your other wells to take water in that quantity, I assume?

A No, sir, we have not.

Q Now, Exhibit No. 4 is the log of the injection well and you have outlined the perforations and the top of the Delaware sand; right?

A Yes, sir.

Q Do you have anything you want to comment on that exhibit?

A No, sir, I do not.

Q In your opinion, would the granting of this application prevent waste by allowing you to recover hydrocarbons that would otherwise be left in place and adequately protect correlative rights of all parties involved?

A Yes, sir. That is my opinion.

Q Were Exhibits 1 through 4 prepared by you or under your supervision?

A Yes, they were.

MR. KELLY: I move the introduction of our exhibits at this time.

MR. UTZ: Without objection, Exhibits 1 through 4 will be entered in the record of this case.

MR. KELLY: We have no further direct testimony,

Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Whigham, this well is actually not within the boundaries of the unit, is it?

A No, sir, it is not.

Q But, you are still going to call it the Cotton Draw Unit Well?

A Yes, sir.

Q I assume the outside is somewhat misleading: there is nothing wrong with that. But, it will be operated in conjunction with the unit or are you joint operators with Tenneco?

A We are joint owners with Tenneco and Texaco will operate the well.

Q You did say you were going to load the annulus with inhibited fluid, did you?

A We will load the annulus with inhibited fluid. yes, sir.

Q How long have you been injecting water in this unit?

A Since August, 1968.

Q You do have some response, do you not?

A It's difficult to say exactly how much. It does appear that there has been some response. We think we will be able to evaluate the effects of the injection much better within the next year.

There does appear to be some response at this time.

MR. UTZ: Are there any other questions of the witness? He may be excused.

(Witness excused).

MR. KELLY: Mr. Examiner, in some of these -- some previous hearings similar to this, we have asked and were successful in getting the Commission to allow us a rule to expand floods without showing a response.

I am wondering whether this would be a situation where that could be done. It's not in the original order.

MR. HATCH: We have done that on some cases. You have no producing well on that acreage at this time?

THE WITNESS: No, sir.

MR. HATCH: You are requesting in the order?

MR. KELLY: Yes. If we could handle it administratively if it comes up again.

MR. UTZ: You mean this type, if it comes up adjacent to the unit?

MR. KELLY: Yes, sir.

THE WITNESS: Yes, sir.

MR. HATCH: You would be talking about an entirely different waterflood project then, wouldn't you, instead of --

MR. KELLY: Well, the only difference here is that there is a defined unit and these would be wells that would be outside the unit area; but, as far as that, that's a contractual arrangement with the particular operator.

I don't know whether it would interfere with the Commission's --

MR. UTZ: Wouldn't this actually be an amendment to the Cotton Draw Unit Order No. 1186?

MR. KELLY: It would necessarily have to be.

MR. UTZ: It wouldn't be advertised properly for this case, would it?

MR. KELLY: That's it. I wasn't sure what your position was on that. It seems to me that in some of the other cases, of course, at least it was tied in with that particular order; we haven't advertised, but it's just been done.

Well, if you feel that it could be done, fine. If not, that's no great problem. We can just bring it to your attention. That's all we have, Mr. Examiner.

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STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, GLENDA BURKS, 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.

Glenda Burks
 Notary Public

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4295 heard by me on 1-21-73.
Glenda Burks
 New Mexico Oil Conservation Commission