

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 8, 1964

EXAMINER HEARING

IN THE MATTER OF: Application of Cities Service Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause seeks authority to dispose of produced salt water into the Ellenburger formation through its Hodges "B" Well No. 2 which is dually completed in the McKee and Ellenburger formations and located in Unit I of Section 1, Township 25 South, Range 37 East, Lea County, New Mexico.

Case No. 3023

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

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MR. NUTTER: We will call Case 3023.

MR. PURRETT: Application of Cities Service Oil Company for salt water disposal, Lea County, New Mexico.

MR. KELLAHIN: If the Commission please, I am Jason Kellahin of Kellahin and Fox, representing the applicant. We have one witness.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1 through 6 marked for identification.)

E. F. MOTTER, called as a witness, having been first duly sworn, testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A E. F. Motter. M-o-t-t-e-r.

Q By whom are you employed and in what position?

A Cities Service Oil Company, Division Engineer of the Mex-Tex Division.

Q Have you testified before the Commission as a petroleum engineer and made your qualifications a matter of record?

A Yes, numerous times.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir.

Q Are you familiar with the application of Cities Service Oil Company in Case 3023?



A Yes, I am.

Q Would you state briefly what's proposed by Cities Service in this case?

A Cities Service proposes to convert its Hodges "B" Number 2 currently producing from the Ellenburger and McKee formations to a salt water disposal well in the Ellenburger formation. It will be a dual, McKee will continue to produce.

Q What are you producing from the McKee, oil or gas?

A It's oil. It's currently producing close to top allowable.

Q Referring to what has been marked as Exhibit Number 1, will you identify that exhibit and state what is shown on it?

A Yes, this is a plat of the North Justis Pool; the subject well is circled in red, and the other wells that are producing at the present time from the Ellenburger are circled in green. I think perhaps while we are looking at this map, a little bit of history of why we are asking for this disposal may be in order.

Cities Service is currently producing about 375-80 barrels of water per day, and we are using the pit disposal. As the Examiner will recall, about 1961 and '60, there were several hearings and considerable study on the pit disposal method in Lea County, with particular preference, or reference given to the Lea County water basin which produces from the Ogallala sand. This area is outside of what was considered an area that could possibly



faulting condition that exists.

Q In connection with that exhibit, would you care to comment on the completion of the Hodges "B" Number 2 well at this time?

A Yes. Perhaps, prior to doing that I would like to state that perhaps, going back to Exhibit Number 1, that the Ellenburger is a very active water drive, and I would like for the record to read the current producing capacity of the wells that remain producers in the Ellenburger formation. I've already stated that our Hodges "B" Number 2 is producing, or is capable of producing seven barrels of oil, 190 barrels of water. Humble Oil and Refining State BM Number 2, direct west offset, seven barrels of oil and 90 barrels of water. Immediately north of this, the Hale State Number 3 is producing 38 barrels of oil, 124 barrels of water. These are all daily production figures. Immediately north of that is the Amerada State NJ Number 1, which is producing 70 barrels of oil, 210 barrels of water per day.

To the east of the Amerada well is the West States Federal Number 6, which is producing 24 barrels of oil, two barrels of water per day. Immediately north of that is the Gulf Ramsey C Number 2, which is the only top allowable well in the field; it's producing 118 barrels of oil and no water. West of this well is the Texas Company Irwin "B" Number 1, and producing six barrels of oil, 88 barrels of water.

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Now, to get around to your question, we probably should refer to Exhibit Number 4, which is the log, and if the Examiner will turn to the five inch scale we have marked on this the top of the Ellenburger and the McKee, as well as the perforated intervals. This Hodges "B" Number 2 was completed November 9, 1961, at the total depth of 8456; seven inch casing set at 8442; cementing was done in two stages with a P. V. tool at 6508, and we used 300 sacks of cement on each stage. Top of cement on the first stage was 7,500; top of cement on the second stage was 4,480. This was confirmed by temperature survey and we later ran a cement bond log. The bond log indicated that the bonding was good in the lower zone up to 7,050.

The Ellenburger was completed in open hole section, 8,442 to 56, and also a perforated interval 8,400 to 30. The well swabbed dry on natural test, it was acidized a thousand gallons and potential was at the rate of .480 barrels per day on 24-64 choke; 180 pounds flowing tubing pressure. GOR of 757 to 1; gravity was $44\frac{1}{2}$ degrees. A bridge plug was set at 8,150. McKee was perforated as indicated. We had a natural flowing test on the McKee zone 370 barrels per day. The well was dualled and in less than six months the Ellenburger zone was dead, so we went in and acidized the Ellenburger and put it on artificial lift, and its potential following this was 175 barrels a day, six barrels of water. The Ellenburger has declined to its present producing rate seven barrels

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a day. Our combined production to March 1st was 32,281 barrels.

Q Referring to what has been marked as Exhibit 5, will you identify that exhibit and discuss it?

A This is a schematic of the proposed mechanics of dual completing the Hodges "B" Number 2 as a salt water disposal well in the Ellenburger, and a producing McKee perforations. We have a Baker Model Packer set at 8,350; we propose to run 2 3/8 inch plastic coated tubing to this packer. The McKee perforations or formation is being artificially lifted at the present time. We will run a Texas Iron Works parallel anchor on the two inch tubing and anchor the two inch buttress tubing of the McKee formation to this, and it will continue to be pumped.

The cost of this estimated salt water disposal zone will be about \$9,500.00. We expect to gravity oil-water into this Ellenburger zone, which will be about 88 barrels per day to start with. We do expect it to go up to perhaps 400 barrels a day within about six months. We think that the water will gravity because of the fact that the hydrostatic head of the salt water will be nearly 4,000 pounds. The latest bottom hole pressure taken on the Ellenburger that we have been able to determine was in the Amerada three locations north. This was in 1962, and the hydrostatic pressure was 2727. We are quite certain this has dropped some since then, but we will have in excess of 1,200 pounds hydrostatic pressure over the bottom hole pressure. We see no need to have to use any surface pump to inject this water. We

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will have a closed system to control corrosion as much as possible.

Q What is the source of the water you are disposing of here?

A At present we will be disposing water from the McKee formation, from our Number 2 Well, that's 25 barrels a day, and our Wells Number 4 and 5 are producing from the Devonian, a total of 163 barrels of water per day.

Q Have you contacted Humble Oil and Refining which has the west offset?

A Yes, we have talked to Humble. We do not have evidence of this by written evidence, but they have told us verbally they would offer no objection to this salt water disposal method.

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

A Yes, they were.

MR. KELLAHIN: At this time I would like to offer in evidence, Exhibits 1 through 5, inclusive.

MR. NUTTER: Cities Service Exhibits 1 through 5 will be admitted in evidence.

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

MR. KELLAHIN: That's all the questions I have on direct examination.

MR. NUTTER: Does anyone have any questions of Mr. Motter?



CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Motter, your well is actually higher in the Ellenburger than the Humble well to the west, isn't it?

A That's correct. That will be born out by the fact probably better on Exhibit Number 2.

Q Both wells are making the same amount of oil at the present time, but your well is making 190 barrels of water per day compared to 90 for the Humble well?

A Right, that is correct.

Q What has been the decline in production for your well here, Mr. Motter? You say it's produced 32,000 barrels of oil cumulatively. Over what life of the well has this been?

A I think I testified that the well was completed originally on November 9, 1961. It was completed, of course, as a top allowable well. The Ellenburger was a rated potential of 400 barrels a day. In six months the Ellenburger zone ceased to flow. We worked it over and installed artificial life and produced it at the rate of 175 barrels a day, and this brought it back to top allowable of well, we'd have to know what the allowable factor was, but it normally runs 115-20 barrels, but it's declined from this rate down to seven barrels since June, 1962, that would be approximately 18 months, slightly over 18 months, about 20 months.

Q That workover then was in June of '62?



A That's correct.

Q It was established as a top allowable then it had a steady decline since then to seven?

A That's correct.

Q Has the flows in water production been rapid or has it been a gradual build-up in water production?

A As you see there, we produced six barrels of water with that and we didn't produce any water when it was potentialled originally, when it was drilled. Water production has been rather gradual increase up to it's present 190 barrels per day. I will say that our artificial lift equipment is only capable of lifting 200 barrels a day from this well. It's a Kobe system and has a string of one-inch inside the two-inch, so we are limited on capacity.

Q It's producing at the capacity of the equipment right now, at 193 barrels of fluid?

A That's correct.

Q Do you know if the Humble well is limited by its mechanical equipment to that 97 barrels a day?

A I think it is. It's on a rod pump and it's pretty deep. It's probably producing from 8,100 feet, I would say.

Q What's the current rate of production on your Number 4 Well there in the Pevonian and Tubb-Drinkard?

A I can give you January's figure. Tubb-Drinkard, last



month it produced only about two barrels a day.

Q From the Tubb-Drinkard?

A Right.

Q And from the Devonian?

A Number 4 last month produced about 35 barrels a day.

Q How much water does that well make again?

A That well is making-- Let me check my notes here on that. Number 4 is making 11 barrels of water per day, and Number 5 is making 152; total being 163.

MR. NUTTER: Any other questions of Mr. Motter?. He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all.

MR. NUTTER: Does anyone have anything they wish to offer in Case 2023? We will take the case under advisement.

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STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, APA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 13th day of April, 1964.

Ada Dearnley
Notary Public - Court Reporter

My Commission Expires:
June 19, 1967

I do hereby certify that the foregoing is a complete record of the proceedings in the Executive Hearing of the Commission heard by me on 4/8 1964 3023

Asst. Examiner
New Mexico Oil Conservation Commission

