BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 25, 1961

EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation for a salt water disposal well. Applicant, in the above-styled cause, seeks an order authorizing the disposal of produced salt water into the Grayburg and San Andres formations through its J. F. Janda "F" Well No. 17, located in Unit A, Section 4, Township 22 South, Range 36 East, Lea County, New Mexico, with the proposed injection interval from 3999 feet to 5650 feet. Case 2169

BEFORE:

Elvin A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2169.

MR. PAYNE: Application of Gulf Oil Corporation for a salt water disposal well.

MR. KASTLER: Bill Kastler, Roswell, New Mexico, appearing on behalf of Gulf Oil Corporation. Our two witnesses in this case are Gerald J. Savage and Don Bilbrey.

(Witnesses sworn.)

GERALD J. SAVAGE,

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Would you state your name, your position, and so forth?

A Gerald Savage; I am a production geologist, Gulf Oil Corporation, Roswell, New Mexico.

Q Are you familiar with Gulf's application in Case No. 2169?

A Yes, sir, I am.

Q Would you state briefly what is involved in this application?

A Gulf wishes to obtain permission to dispose of produced water underground in J. F. Janda "F" 17. This need is brought about by the consolidation of our surface collecting system, which has overtaxed the surface facilities.

Q Where is this water coming from?

A Water will come from our consolidated automatic battery located in Section 34 of 21 South, 36 East, which collects water from several Gulf leases in the area which produce from the Eunice, Eumont, Arrowhead, South Eunice and Jalmat pools.

Q Mr. Savage, have your qualifications as a petroleum geologist been previously accepted by this Commission?

A Yes, sir, they have.

MR. KASTLER: Is the witness qualified?

MR. UTZ: Yes, he is.

Q (By Mr. Kastler) Do you have a lease plat which shows the geographic location of the proposed injection well and all wells within a two-mile radius producing from the proposed injection zone?

A Yes, sir, I have. These plats I have caused to be labelled Exhibit No. 1 in this case.

Q Referring to Exhibit 1, would you please state what is shown there, give the description of the well location, et cetera?

A This plat is a lease and ownership plat of the area. It shows, outlined in red, Gulf's J. F. Janda "F" lease, and Gulf's J. F. Janda "F" Well No. 17, located 330 feet from the north and east lines of Section 4 of 22 South, Range 36 East. Also, this well is marked with a red circle. Also, marked with a green circle, are all wells producing from the Grayburg formation, or in the Arrowhead Pool, according to the January, 1961 proration schedule.

Q All wells within a two-mile radius?

A All wells within a two-mile radius, and I have included three wells which lie outside that two-mile radius, but which have about half their proration unit within the two-mile radius.

Q Does Gulf own the oil and gas lease covering all of Section 4, 22 South, 36 East?

A Yes, they do.

Q Would you state whether this is a State lease or a fee lease?

A This is a State lease.

Q It is Gulf's J. F. Janda State lease?

A That's right.

Q Is Gulf the owner of the Grayburg wells in Section 35, 21, 36?

A Yes, sir, they are.

Q Who are the owners of the Grayburg wells in Section 2, 22 South, 36 East?

A Continental Oil Company and the Cities Service Oil Company are the operators of the Grayburg producers in that section.

Q Is the Cities Service ownership confined to the SE/4 of Section 2?

A Their ownership is confined to the SW/4 of Section 2.

Q And the remainder is owned by Continental?

A That's right.

Q Who are the owners of the Grayburg producing wells in 11, 22 South, 36 East, within a two-mile radius?

A Texas-Pacific Company, Penn Oil, are the owners of these wells.

Q Have all those parties been notified of Gulf's application?

A Yes, sir, they have.

Q Do you have a log of the proposed injection well for introduction into this case as Exhibit 2?

A Yes, sir.

Q What is shown on this log?

A Specifically, shown on this log at a depth of 3,680 feet is the top of the Queen formation; the top of the Grayburg formation at a depth of 3,978 feet; the base of the 9 5/8-inch casing at a depth of 3,999 feet; top of the San Andres formation, 4,440 feet; the plugged-back depth, 5,650 feet, and the top of the Glorieta

formation at 5,774 feet.

Q Do you have a structure plat covering the area within a two-mile radius of Gulf's Janda "F" 17?

A Yes, sir, I have.

Q Has this been labelled Exhibit No. 3?

A Yes, sir.

Q What does this plat show?

A This is a structure plat contoured on top of the Queen formation with a contour interval of 50 feet. Shown outlined in red is Gulf's J. F. Janda "F" Lease and Gulf's J. F. Janda "F" Well No. 17, marked with a red circle. Also marked, with a green circle, are all wells within a two-mile radius of the subject well, which are completed in the Arrowhead Pool, and those additional three wells which I mentioned before, totalling 21.

Q Why is this structure plat contoured on the Queen structure when it is the Grayburg and San Andres formations that will receive the injected water?

A The majority of the wells in this area are Queen producers and do not penetrate to the Grayburg formation, so to provide sufficient control the Queen was mapped, which, it is felt, adequately reflects the Grayburg structure.

Q Is there an established oil-water contact for the Grayburg formation in this area?

A No, sir. A sharp oil-water contact has not been established for the Grayburg, but in tabulating the well data, Grayburg wells

in the area, significant amounts of water has been found to be produced at a depth of minus 300 feet with the deepest Grayburg producing from minus 328 feet. In no event could the oil-water contact be construed to be below a depth of minus 340 feet.

Q What is the situation in regard to water production from those wells marked green on your structure plat?

A According to the October, 1960, Oil and Gas Engineer Committee Report, which was the most recent I had available, 20 out of the 21 wells referred to produced water. Twelve of those 20 produced more water than oil. Of those 12 that produced more water than oil ten wells produced from two to four times as much water as they did oil. This substantiates my opinion that the oil-water contact must be near a depth of minus 300 feet, because those wells produced from a depth of approximately minus 300 feet, with only one well going to a depth of minus 328 feet.

Q The wells marked with green on your map, what is the lowest producing depth?

A That one well I mentioned is producing from a set of perforations from 3885 to 3900 feet, and the base of those perforations is at minus 328 feet. This is a vertical distance of 94 feet above the base of the 9 and 5/8-inch casing in J. F. Janda "F" No. 17. There are other wells located within the two-mile radius of the subject well which produce from as low as minus 350 feet, but this production is from the Queen formation, and the Grayburg was not reached.

Q Therefore, you don't expect them to be affected in any way by this injection of waste water?

A Not in the least.

Q Do you have any other statement you wish to make?

A I would like to say that if Gulf is granted their request in this case we will be injecting water into a 1651 foot interval and it is more than likely that, with general equal porosities and permeabilities the greater hydrostatic head near the bottom of the hole will cause a greater volume of water to be injected into the lower part of that interval. In addition, I would like to point out that we have experienced loss circulation difficulties in drilling the San Andres. All this is evidence that the majority of the injection water would probably enter the San Andres rather than the Grayburg.

Q Are there any wells within a two-mile radius producing from the San Andres to your knowledge?

A No, sir, there are none.

Q Will this application, if granted, impare any correlative rights, in your opinion?

A No, sir, it will not.

Q Were Exhibits 1, 2 and 3 prepared by you or at your direction and under your supervision?

A Yes, sir, they were.

MR. KASTLER: This concludes the questions I have of this witness on direct examination, and I would like at this time to

move that Exhibits 1, 2 and 3 be admitted.

MR. UTZ: Exhibits 1, 2 and 3 will be admitted into evidence.

BY MR. UTZ:

Q Mr. Savage, my records show that the Arrowhead, Queen, Grayburg Pool consists of the E/2 of Section 3; have you checked that?

A Yes, sir. I had checked that just last week, and unless our records of that pool are not up to date, I have Section 2 as being in the Arrowhead Pool; also Section 35 to the North, and the E/2 of Section 34. In any event, none of these wells, no additional wells within a two-mile radius are completed in the Arrowhead pool.

MR. KASTLER: You mean, none in addition to those circled in the green area here.

Q (By Mr. Utz) Where are the wells producing from in that section?

A They are producing from the Queen-Grayburg, which is the interval in the Arrowhead Pool.

Q If they are producing from the pool they should be in the pool, shouldn't they?

A I beg your pardon. I misunderstood you. I believe you are referring to the wells in the E/2 of Section 3?

Q That's right.

A No, sir. Those are completed in the South Eunice Pool.

MR. KELLAHIN: From the Queen formation?

A From the Queen formation.

Q (By Mr. Utz) At any rate, our proration schedule didn't show any wells on which we issued allowables in the E/2 of Section 3?

A No, sir. I tabulated all wells within this two-mile radius and I found none of the wells in Section 3 to be carried in the Arrowhead Pool according to January, 1961 proration schedule.

Q Well, it is possible they extended the pool too far, because it is in the pool. Will your other witness give testimony in regard to mechanical completion of this well?

A Yes, sir, he will.

Q It is your belief that the injection of water will be mainly in the San Andres?

A Yes, sir, that's correct.

Q Where is the San Andres in relation to the Queen-Grayburg?

A The San Andres is about 450 feet below the top of the Grayburg. That is, the top of the San Andres is 450 feet below the top of the Grayburg, and that lies about 300 or 280 feet below the top of the Queen.

Q So the injection zone will be well below the producing area of the Arrowhead Pool?

A Well, not exactly, inasmuch as the Arrowhead Pool includes the Grayburg formation. However, in view of this vertical distance of 94 feet, which is the distance from the base of the casing in our well to the base of the lowest producing well, we would be injecting our water at the highest interval, well below the producing

interval of those wells that are completed in the Arrowhead Pool.

MR. UTZ: Any other questions of this witness? Witness may be excused.

MR. KASTLER: Our next witness is Mr. Don Bilbrey.

DON BILBREY

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Would you please state your name, your position with Gulf Oil Company, and where you are employed?

A Don Bilbrey, employed by Gulf Oil Corporation as a petroleum engineer, Hobbs, New Mexico.

Q As a petroleum engineer for Gulf Oil, are you familiar with its application in Case 2169 and with the well history and completion data on the well Janda "F" No. 17?

A Yes, I am.

Q Have you previously qualified as an expert petroleum engineer before the New Mexico Oil Conservation Commission?

A No, sir, I haven't.

Q Would you please outline your educational background and what degrees you have received?

A I was graduated from the University of Texas in June, 1953, Bachelor of Science in Petroleum Engineering. In August, 1953, I received a Bachelor of Science from the same institution in Geology.

After a two-year stint in service I came back to the University of Texas and received a Master's in Geology, June, 1957.

Q Would you please now review your professional experience?

A I went to work for Gulf in May of 1957, and was assigned to the Roswell District Office as a production geologist. In January, 1958, I was transferred to Hobbs, where I worked as a geologist, mainly siting wells. In July of 1958 I was transferred back to Roswell as petroleum engineer, and I worked in the reservoir engineering section as a reserves engineer. In January of 1961 I was transferred back to Hobbs as a petroleum engineer. That is where I am now.

Q You are, therefore, qualified and have had experience both as a petroleum geologist and a petroleum engineer; is that correct?

A That's right.

MR. KASTLER: Mr. Utz, are the witness's qualifications acceptable?

MR. UTZ: Yes, sir, they are.

Q (By Mr. Kastler) Mr. Bilbrey, do you have a drawing of Gulf's J. F. Janda "F" Well No. 17, the completion data, for introduction here as Exhibit No. 4?

A Yes, I do.

Q Will you give the well's history, please?

A Gulf J. F. Janda "F" 17 was drilled in 1960 as a wildcat Devonian test. It reached a total depth of 11,730 feet, and was dry

in the Devonian. The well was then temporarily abandoned. When we ran into water problems and had to dispose of our surplus water we thought of using this well as a disposal well. In the latter part of 1960 we plugged back the Janda 17 to the depth of 5650. In the drilling of the well initially we set surface casing, 13 3/8, to 431 feet.

Q How was that cemented?

A It was circulated cement., and the 9 5/8 intermediate, 3999 feet, again the cement circulated. That leaves us with an open hole interval from 3999 feet to the plugged back depth of 5650 feet. We have, since that plug-back time, tested the well. We have treated it with acid and tested it for injection, and found that it will take water under a pressure of about 200 pounds, takes sufficient water for us to dispose of all that excess water we have now.

Q What is the quantity of water that you intend to inject into this well, if this application is granted?

A When all leases are finally connected to the central battery we will probably have from 3 to 4,000 barrels a day available. Right now we are producing about 2,000, 2500 barrels into the central battery.

Q In your opinion is this well capable of handling all salt water necessary to inject that might be produced from these wells?

A Yes, it will handle all the water at probably no more than 200 pounds surface pressure.

Q Do you propose to dispose of any more water on the surface, or in the surface pit, if this application should be granted?

A No. We prefer to dispose of all water in this well.

Q However, you intend to keep the pit available for any unforeseen happenings?

A In case of emergency the pit will still be available.

Q This application, if granted, in your opinion, will it result in any waste of oil or gas?

A No.

Q Will it compare any correlative rights, in your opinion?

A I think not.

Q Was Exhibit No. 4 prepared by you or at your direction or under your supervision?

A It was.

MR. KASTLER: These are the only questions I have for this witness on direct, and I would like to recommend and request that Exhibit No. 4 be admitted into evidence.

MR. UTZ: Without objection Exhibit No. 4 will be entered into the record.

BY MR. UTZ:

Q Mr. Bilbrey, what is the size of your production string, or your lower string, 9 5/8?

A Yes.

Q Where is the top of the cement on that?

A Circulated to the surface.

Q Do you intend to put tubing in this well?

A No, sir.

Q How old is this casing?

A This casing is new casing which was installed when the well was drilled, and it is probably not over five months old.

Q What volumes of water are you going to dispose of?

A Probably three to four thousand barrels a day, ultimately.

Q How corrosive is this water?

A In our producing wells in this area from which this water is coming we have experienced little or no corrosion. We feel it will not be a problem here.

Q Do you intend to treat it?

A No, sir.

Q Do you intend to use any coupons to check the corrosion?

A Yes, sir. This will be part of the larger system. We will keep an eye on it by means of coupons, and possibly caliber surveys if we feel it is necessary.

Q This is set at what formation, 39, just above the Grayburg, isn't it?

A No, sir. It is set just a few feet below the top of the Grayburg as we have it marked.

Q Can you explain why Gulf did not propose to set tubing in this well, put sweet oil in the annulus as additional protection against corrosion?

A As you might know, we have received permission from the

Commission to initiate, to pilot flood on our W. A. Ramsey lease, six injection wells. As soon as these injection wells are ready and that, we think, will be within a period of two or three months at most, that water will be injected in those wells, and this well will not be used, for the time being, as a disposal well. If, in the future, we need to dispose of more water we will have to go back to disposing in this well.

Q Actually, you are requesting this for a limited time?

A We would prefer that it not be limited simply for the reason we don't know how the six injection wells and the pilot flood will take the water. It might not take all the water. If so we will have to continue to dispose of some of the water in the disposal well.

Q What was the name of this flood?

A I don't know the technical name right off.

Q Do you have the order number?

A It was Case No. 2111, Order No. R-1820. It was approved by the O.C.C. November 16th, 1960.

Q And you think that you will be injecting water in six injection wells in four months?

A We hope to in three months. We had hoped that we would be able to inject by the time we got the automatic battery going so we could dispose of the water that way, but we have been running a little behind on our pilot flood compared to the automatic battery.

MR. UTZ: Any other questions?

MR. PAYNE: No questions.

MR. UTZ: Witness may be excused. Other statements in this case? Case will be taken under advisement. Hearing is adjourned.

(Whereupon, the hearing was adjourned at 5:10 P.M.)

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JUNE PAIGE, 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 6th day of February, 1961.

June Paige
Notary Public - Court Reporter

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EXHIBITS

NUMBER	EXHIBIT	IDENTIFIED	OFFERED	ADMITTED
Ex.#1	Lease Plat	3	8	8
Ex.#2	Log	4	8	8
Ex.#3	Structure Plat	5	8	8
Ex.#4	Completion Data	11	13	13

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2169, heard by me on Jan. 25, 1961.

New Mexico Oil Conservation Commission, Examiner