BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
December 15, 1964

EXAMINER HEARING

IN THE MATTER OF:

APPLICATION OF GULF OIL CORPORATION FOR A WATERFLOOD EXPANSION, LEA COUNTY, NEW MEXICO

Case No. 3164

BEFORE:

DANIEL S. NUTTER

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case Number 3164--application of Gulf Oil Corporation for a waterflood expansion, Lea County, New Mexico.

MR. KASTLER: Again, Bill Kastler appearing for Gulf Oil Corporation; and our witness is Don G. Bilbrey, who has already been sworn.

D O N G. B I L B R E Y, the witness, having first been duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Mr. Bilbrey, what is the purpose of this hearing?

A In this hearing Gulf Oil Corporation seeks permission to drill an infill water injection well on a non-standard location 1,320 feet from the southwest lines, Section 34-21S-36E, Lea County, New Mexico, and to expand the W. A. Ramsay NCTA pilot waterflood area to include the 40 acres surrounding the well.

Q Where is the pilot located?

A As you refer to Exhibit 1, which is the plat, the pilot is outlined in yellow and is located in parts of Sections 27, 33, 34 and 35, T-21-S, R-36-E, Lea County, New Mexico. It includes 27 wells in the Eumont and South Eunice Pools and covers 670 acres.

Q How long has the waterflood been in operation?

A Actual water injection has been going on since June, 1961. The hearing, Case Number 2111, was held before the Oil Conservation Commission in November, 1960 and authorization to install and operate the pilot waterflood was granted under Order Number R1820, dated November 16, 1960.

Q What formation is being flooded?

A I'd like to refer you to Exhibit 2, which is a gamma ray neutron log, Range 38A. We are waterflooding the Queen formation at a depth of approximately 3,800 feet, and putting water into a gross interval of 250 to 300 feet, covering both the Queen and Penrose sections. There are 13 possible pay sands within this interval and we have had as many as 11 of these open to the well bore in some wells in the pilot.

Q How many injection wells are involved?

A Six injection wells, on a double 80-acre file spot as shown on Exhibit 1. The wells are circled.

Q On Exhibit 1?

A Yes.

Q What volumes of water are currently being injected and at what pressures?

A During October, 1964, we injected an average of 819 barrels per day per well, at pressures ranging from 1,346 to 1,818 per square inch. The average injection pressure was 1,560 per square inch.

Q What is the source of the injected water?

A Queen-Grayburg produced water from our consolidated tank batteries in the area, supplemented with San Andres water from the J. F. Jonda NCTF Number 17 water supply well, located in the northeast quarter of Section 4.

Q How has the pilot performed to date?

A Very poorly. I'd like to refer you to Exhibit 3, the performance curve of the 27-well area. You will note that there has been no sizeable increase in oil production since injection was begun some 3½ years ago. There was a slight kick in mid-1961, but this was probably the result of deepening 12 wells, including six producers, to lower zones in the Penrose section prior to actual injection of water. There was a temporary halt in the production decline during the first half of 1963, but for the last year or so production has again been declining, but at a lesser rate. We feel that this last hump in the curve represents a token response to the flood in three or four of the producing wells.

Q Which wells have apparently responded?

A Wells 23, 25 and 30 give the best indications of having responded to the flood. These wells are located in the southeast portion of the pilot area, and response has been very slight. Exhibit 4 is the performance curve for Well Number 30, which is a center producer. The kick in production in mid-1961

is a result of the well having been deepened nearly 100 feet to at least three additional pay zones in the Penrose. Production declined until early 1963, when production leveled off before kicking slightly. During 1963 and 1964 production for this well has been increased from 200 barrels to 375, an increase of only six barrels per day. These three or four wells with similar production performance have hardly affected the production decline for the 27-well pilot itself.

Q Have you had any difficulties injecting water into the Queen in this area?

A There has been no trouble out of the ordinary in putting water into the reservoir, but since the flood has not responded as we would have liked, there is some doubt that the water is going where it should go. There was some early water breakthrough in several wells, but only one, the Number 45, has been closed in because of high water production. Breakthrough occurred within a month or two after injection was begun, and we suspected cycling of water through one or more high water saturation sand stringers in this gross Queen-Penrose section. In February of this year we plugged the six injection wells back to the bottom of P-2 to try and eliminate this problem to some extent, as well as cut down on the volume of reservoir being flooded. As yet we have seen no significant response to this last effort.

Q What is Gulf's current evaluation of the pilot waterflood?

A Right now it has to be classified as a failure. The token response to flooding shown in some wells in the southeast gives us some faint home that the Queen in this area might still be successfully waterflooded. However, as it stands now, we will have to abandon operations in the near future.

Q The proposed infill injection well, then, is a last-ditch effort to successfully flood this area?

A It appears so at this time. Operations are expensive and even Gulf can't continue to put money in an unsuccessful venture.

Q Where would the new input well be located?

A Referring to Exhibit 1, it would be located approximately 1,320 feet from the south and west lines of Section 34, 21 South, 36 East, and the location is circled and colored in yellow. It is centered among Wells Number 38, 34, 36, 49 and it would be on a 40-acre pattern.

Q That is outside the pilot area?

A Yes, and if we are permitted to drill the input well, we would want the 40 acres surrounding the well to be included in the unit area. Two additional wells would thus be added to the pilot, Well Number 49 and the new input well, Number 50.

Q How do you plan to complete the well?

A I'd like to refer you to Exhibit 5, which is a schematic diagram of the well. It is a typical injection well, completed and equipped the same as the six original input wells with injection down tubing beneath a packer. We plan to core the pay zone and run a sonic log to better evaluate or re-evaluate the reservoir in this vicinity. Casing will be carefully cemented through the reservoir to eliminate communication between zones behind the pipe. Only the two best pay zones, P-1 and P-2, will be perforated, in the Penrose section. At this time I would like to refer to Exhibit 6, which is a letter from Mr. Frank Irby, Chief, Water Rights Division, State Engineer's Office, to Mr. A. L. Porter, Jr., in which his office says they have no objection to granting the application, after having looked over the schematic diagram of the well completion.

Q Will operation of the well be similar to those now in operation?

A Yes, we plan to inject 500 to 1,000 barrels of water per day into P-1 and P-2 at approximately 1,500 per square inch. We will use the same water and injection facilities that are now being used in the pilot.

Q What is the purpose of drilling a new well?

A First, we want to try a closer spacing, a 40-acre five-spot, and second, we want to limit injection to only the best two pay zones. We think by limiting injection in sizeable

volumes of water to the best pay on a closer well spacing, we believe we can quickly and with assurance determine whether or not it will be possible to waterflood the Queen in the Ramsay Area.

Q And a new look at the reservoir through coring and sonic logging will be helpful?

A Yes, it will give us another look at the reservoir.

Q Is this application in the interests of conservation and the protection of correlative rights, and the prevention of waste?

A We believe so.

Q Were Exhibits 1 through 6 prepared or reproduced by you or at your direction or under your supervision?

A Yes.

MR. KASTLER: I'd like at this time to move that Exhibits 1 through 6 be admitted into evidence.

MR. NUTTER: Gulf Exhibits 1 through 6, inclusive, are admitted into evidence.

MR. KASTLER: And this concludes our direct testimony.

MR. NUTTER: Are there any questions of Mr. Bilbrey? ... Mr. Bilbrey, the application for the well gave the location as 1320 feet from the south and west lines. In order to designate this well to some particular 40-acre tract we will probably have to move the well five feet in some direction. Do you have

any preference as to the direction in which it should be moved?

MR. BILBREY: As long as it's in the neighborhood of five feet, I think it will make no difference.

MR. NUTTER: Are there any other questions of this witness? ... He may be excused. Do you have anything further, Mr. Kastler?

MR. KASTLER: Nothing further.

MR. NUTTER: If there is nothing further in Case Number 3164, we will take the case under advisement.

* * *

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ELIZABETH K. HALE, Notary Public and Court Reporter, do certify that the foregoing transcript in Case Number 3164 is a true and accurate record of proceedings to the best of my knowledge, skill and ability.

Witness my hand and seal this 17th day of December, 1964.

Elizabeth K. Hale
Notary Public and Court Reporter

My commission expires:

May 23, 1968.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3164 heard by me on 12/15, 1964.

..... Examiner
New Mexico Oil Conservation Commission