BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 26, 1974

EXAMINER HEARING

IN THE MATTER OF:

Case 5081 being reopened pursuant to the provisions of Order No. R-4657, which order established temporary special rules and regulations for the North Shoe Bar-Wolfcamp Pool, Lea County, New Mexico, and Case 5082 being reopened pursuant to the provisions of Order No. R-4658, which order established temporary special pool rules for the North Shoe Bar-Strawn Pool, Lea County, New Mexico.

CASE NO. 5081 5082

BEFORE: Daniel S. Nutter, Examiner

For the New Mexico Oil Conservation Commission: Thomas Derryberry, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For the Applicant: Paul Eaton, Esq.
HINKLE, BONDURANT, COX & EATON
Hinkle Building
Roswell, New Mexico
and
Don Dent, Esq.

I N D E X

E X H I B I T S

MR. NUTTER: The Hearing will come to order, please. The first case this morning will be Case 5081.

MR. DERRYBERRY: Case 5081. In the matter of Case 5081 being reopened pursuant to the provisions of Order No. R-4657, which order established temporary special rules and regulations for the North Shoe Bar-Wolfcamp Pool, Lea County, New Mexico.

MR. EATON: Paul Eaton of the firm of Hinkle, Bondurant, Cox and Eaton of Roswell, and Don Dent, Attorney for Mesa Petroleum Company, representing the Applicant, Mesa Petroleum Company. Mr. Dent will handle the examination.

MR. NUTTER: Are there other appearances in this case? Will you proceed, please?

MR. DENT: Mr. Examiner, we are also appearing on Case to82 and our testimony will be representative of that case by the same witness and the same exhibits. Can we consolidate those for the purpose of this short bit of testimony?

MR. NUTTER: We will call now, Case No. 5082.

MR. DERRYBERRY: Case 5082. In the matter of Case No. 5082 being reopened pursuant to the provisions of Order No. R-4658, which order established temporary

special pool rules for the North Shoe Bar-Strawn Pool, Lea County, New Mexico.

MR. NUTTER: We have one appearance in this case. Are there appearances in Case No. 5082 other than we had before?

Would you proceed, Mr. Dent? The cases will be consolidated.

MR. DENT: Mr. Examiner, I have one witness I would like to call at this time, Mr. Les Carnes.

L. M. CARNES

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

DIRECT EXAMINATION

BY MR. DENT:

Q For the record, will you please state your name, by whom you are employed and in what capacity?

A Les M. Carnes, employed by Mesa Petroleum Company as Senior Reservoir Engineer in Amarillo, Texas.

Q Mr. Carnes, have you made a study of the North Shoe Bar-Wolfcamp Pool and the North Shoe Bar-Strawn Pool for purposes of determining whether or not the temporary field rules of 160-acre spacing should be continued or made permanent?

A Yes, I have.

Q Have you prepared or had prepared under your supervision certain exhibits to be presented at this time?

A Yes, sir.

Q I hand you what has been marked and handed to the Examiner, Mesa's Exhibit No. 1. Would you please refer to that exhibit and explain what you show there?

A Exhibit 1 is a structure map drawn on top of the Strawn formation in the North Shoe Bar Field. It depicts the Strawn reef structural trends in the area, and it shows a high around the Mesa Hillburn and Wiser Wells which are both Strawn wells. The map also shows Mesa 100 percent acreage in light yellow, and Mesa partial working interest in the light orange. It shows the Wolfcamp wells to be in orange color, coded on the map, and Strawn wells in green. The map shows that Mesa operates three Strawn wells, the Hillburn, the Wiser and the Lyster, and three Wolfcamp wells, the Gilmore, Chambers and Skelly State.

Q For the record, will you please identify where the Hillburn, Lyster and Wiser wells are located?

A Okay. The Hillburn Well is located in the northwest quarter of Section 13, Township 16 South, Range

35 East. The Wiser Well is located in the southwest quarter of Section 13, the same township and range. The Lyster Well is located in the northeast quarter of Section 13, the same township and range.

Q Give the location of the Gilmore and Chambers Wells in Section 7?

A The Gilmore Well is located in the southwest quarter of Section 7, Township 16 South, Range 36 East. The Chambers Well is located in the southeast quarter of Section 7, same township and range.

Q Is Mesa presently drilling a well in Section 14?

A Yes, we are.

Q What is the status of that well?

A That well is drilling at about 6500 feet as of yesterday morning. It is located in the southwest quarter of Section 14, Township 16 South, Range 35 East.

Q Have you prepared an isopach map of this area?

A Yes, sir.

Q Refer to what has been marked as Exhibit 2 and explain what you show on that exhibit?

A Exhibit 2 is a Strawn-isopach pay map. It depicts the hydrocarbon bearing net pay in the Strawn formation. It also shows in there areas that are bracketed,

and these areas depict what we now consider to be affected by the production from these three Strawn wells.

Q You refer to a bracketed area. Is that by the dashed red lines shown on this exhibit?

A Yes, it is.

Q What is the significance of that area, again?

A That shows what we estimate to be the area affected by the production from these three Strawn wells at this time.

Q How did you determine that area?

A In the case of the Strawn, it was based on the performance and extrapolated ultimate recovery from the Strawn which we will later get into on another exhibit.

Q Will you refer to Exhibit 3 and explain what data is shown there?

A Exhibit 3 is simply initial completion data tabulations showing pertinent completion data for all six wells, the three Wolfcamp and the three Strawn wells mentioned.

Q Have you prepared any pressure history data to show the Commission?

A Yes, we have.

Q Will you please refer to what is marked as

Exhibit 4 and review your pressure history of the North Shoe Bar-Strawn Field well?

A Exhibit 4 just shows the pressure history related to time, starting with the first well in the Strawn reservoir in the field. That was Hillburn No. 1, and the first pressure was the DST pressure and we feel this reflects initial Strawn reservoir pressure as 4274 PSIG at a datum of minus 7342. The date of that was September 7th, 1973. Later, on October 10th of '73, an extrapolated 72-hour build-up survey was taken, indicating the pressure to be 4248, slightly lower than the initial DST pressure, however, some test oil production had been recovered at that time.

Then, continuing on, it shows that our second well in the Strawn, the Lyster No. 1, on October 23 of '73, had a DST pressure of 4236, at the same datum of minus 7342.

It continues on and shows subsequent pressures to the completion of these first two wells. I would like to call your attention to the Wiser No. 1 pressure taken on June 10th, 1974. That was the first pressure taken in that well and it was only 3376 compared to the original pressure of 4274. No production had occurred from the

Wiser at that time, the new well. This indicates that production from the Hillburn Well had affected that well and the pressure was somewhat lower by 800 or 900 pounds due to the pressure disturbance caused by the Hillburn Well.

Q Have you prepared certain production data on Exhibit 5?

A Yes, I have.

Q Would you please refer to Exhibit 5 and explain what you have shown by that group of curves?

A Exhibit 5 is a three-part exhibit showing the performance curves for the three Strawn wells in this reservoir. The first page and the first curve is an oil performance versus time with the GOR shown in the circles. It indicates that the Hillburn Well has recovered 99,000 barrels of oil as of November 1, 1974. The extrapolation is quite steep, but it is because -- what it appears -- we just extrapolated trend that had already been established. I feel that is a little too steep, but that shows that the ultimate recovery would be about 130,000 barrels of oil and 1.4 BCF of gas.

The next performance curve is on the Lyster No. 1 Well. It indicates accumulative recovery of 59,000 barrels of oil as of November 1, 1974, and an

estimated ultimate recovery of 110,000 barrels and 1.2 BCF of gas.

The third curve is for the Wiser No. 1 Well. This has been a low permeability well and it has only recovered 8700 barrels with an estimated ultimate recovery of only 20,000 barrels.

Q Mr. Carnes, based upon your reservoir study and production data and pressure distribution curves which you have presented by these exhibits, what is your recommendation as to the spacing of the North Shoe Bar-Strawn Field?

A I would recommend that 160 acres would be the proper spacing for these wells.

Q Is it your opinion that one well will effectively and efficiently drain an area of 160 acres?

A Yes, it is. Let me say something further here. That is based, then, on the production performance that I have just related, the estimated ultimate recovery compared to volumetric estimates of recoverable oil in stock tank barrels per acre-foot divided into the ultimate recovery I have already indicated, would give you a drainage of about 230 acres for the Lyster Well and for the Hillburn, about 200 acres, and that is what is shown

in Exhibit 2 in those brackets.

Q Refer now to what has been marked as Mesa's Exhibit 6 and explain what you have shown in that exhibit?

A Exhibit 6 is a Wolfcamp isopach map showing the net Wolfcamp pay. It shows the pay ranges from zero to about 40 feet in thickness, and a pretty narrow Wolfcamp reef reservoir.

The dashed red lines in the upper right of the map and the lower left depict what we feel has been affected by production from Mesa's three Wolfcamp Wells, the Gilmore, the Chambers and the Skelly State No. 1. This area is about 697 acres, and that was based on a study done in June of a material balance nature. We had taken pressures subsequent to initial pressures which we will get into in a little bit, and we determined the oil-in-place and then calculated the area.

Q Refer to your next exhibit which is No. 7, and review the pressure history as it relates to the North Shoe Bar-Wolfcamp formation?

A Exhibit 7 is a pressure history of the Wolfcamp in the North Shoe Bar Field. It shows that the original pressure was 4097 pounds as determined from the DST measurement on the Skelly State No. 1, December 23, 1972.

This pressure was also measured on DST in the second well, the Gilmore No. 1, on December 10, 1973, nearly a year later. The reason for the same pressures was the distance between the two wells and the limited production from the Skelly State No. 1. The wells were shut in for some time waiting on a gas connection.

Q Have you also prepared a set of production curves as relates to the wellscompleted in the Wolfcamp?

A Yes, I have. It is Exhibit 8.

Q Please explain that exhibit.

A It is a three-part exhibit showing the production performance for the three Wolfcamp Wells, the Skelly State No. 1, the Gilmore No. 1 and Chambers No. 1. The first sheet is for the Skelly State No. 1, which indicates an ultimate recovery of 13,500 barrels based on the extrapolated performance and a cumulative recovery to November 1, '74, of 11,500.

The second page reflects the production behavior and extrapolated ultimate performance for the Gilmore No. 1. It indicates an estimated ultimate recovery of 164,000 barrels of oil with accumulative recovery as November 1, 1974, of about 77,000 barrels.

The last curve is for Chambers No. 1, which

shows an estimated recovery of 92,000 barrels of oil with a cumulative recovery to November 1, 1974 of 57,000 barrels.

Q Based on these data and your study of the Wolfcamp formation, do you likewise have a recommendation to the Commission as to the spacing in that formation?

A Yes, I do. I would recommend 160-acre spacing for the Wolfcamp formation also.

MR. DENT: Mr. Examiner, that concludes our direct evidence, and on behalf of Mesa, we would like to recommend that the Commission continue the 160-acre spacing order and that the temporary order be made permanent.

MR. NUTTER: Mr. Dent, Order No. R-4658-A, entered by the Commission in February of 1974, established a GOR of 4001 for the Strawn Pool and that is also the subject of this hearing today.

MR. DENT: We didn't know for sure whether it was or not. We also have recommendations as to that and I would like to direct our witness to it if it is within the scope of this hearing.

MR. NUTTER: Yes, sir, it sure is.

BY MR. DENT:

Q Mr. Carnes, would you refer to your production

data curves which have been marked as Exhibit 5 and 8 and review the GOR performance, and also tell the Commission your findings and recommendations as to the GOR limitations.

A Exhibit 5 is that three-part production curve for the Strawn formation, and for the Hillburn No. 1 which is the first sheet of that exhibit, it indicates that the measured gas-oil ratio has increased from about 1300 cubic feet per barrel in April of '74, the date the well first went on stream and commercial oil was sold to just about 3001 in November. We feel like these gas-oil ratios are low because the solution gas-oil ratio from the fluid analysis study was about 2500 to 1, and that was the reason that we appeared in February of this year and asked for GOR relief from the state-wide 2001 to 1 up to 4000. Some of the problems might be that our measurements are not accurate. We are looking to that right now. Some of the gas was temporary as previous testimony in February will reveal. They are processing it through a plant, recovering the liquids from that gas.

The next exhibit, or the next curve of this three-part exhibit is for Lyster No. 1. It reflects a little bit more of an increasing GOR trend from a little over 1000 cubic feet per stock tank barrel to over 4000

at the present time.

The last curve is the Wiser No. 1. It indicates a similar GOR trend, increasing from about 1000 to 1 to a little over 3000 to 1.

Since we are conserving gas that is being sold, liquids are being recovered from it. We feel that there is no waste taking place. We still want to ask for a 4000 to 1 limit in gas-oil ratio, in view of the fact that the solution ratio is 2500 and current producing gas-oil ratios are in excess of 2000. That is for the Strawn reservoir.

Q What is the current productivity per day of the Hillburn, Mr. Carnes?

A We are not certain about its mechanical problem-free deliverability or productivity because we've got parafin problems that we are trying to cure. As you notice, about September, the well averaged nearly 400 barrels a day, but unknown to us, parafin was accumulating and acted as a choke in the well and the production dropped severely to a low of about a little over 200 barrels a day in October.

CROSS EXAMINATION

BY MR. NUTTER:

Q Is the well a flowing well?

A Yes. All the wells are flowing in the Wolfcamp and Strawn.

Parafin problems have created a measurement problem for us in determining the true productivity of the well. I feel that the well will probably make in excess of 300 barrels a day once we get permanent parafin control facilities set up.

Q Do you scrape the parafin in here or do you hollow out the well or what?

A We scraped it and we are going to try to install a continuous scraping device on a wire line. Our production people are working on that.

Q What is the productivity of the Lyster? Apparently, it is around 160 barrels a day, is this correct?

A Yes. It was down to a low of 90 barrels a day in October. Not only did we have parafin problems, but we took an extended bottomhole pressure survey and it was shut in for several days, and that is the reason for the low point in October of '74. After the parafin had been cleaned up -- I think it was a partial clean-up -- for the first 20 days of November it averaged a little over 150 barrels a day. I feel that once we continually

clean the parafin out, we will have a productivity of between 200 and 250 barrels a day, but that's a guess. We've got about 2900 pounds of bottomhole pressure in that well, and initially, it flowed about as well as the Hillburn. Since it has about 1000 pounds higher pressure than the Hillburn, it also could be in the range of 300 to 400 barrels a day if we get the parafin problem cleared up.

Q Mr. Carnes, you mentioned that the solution GOR in the Strawn was 2500 to 1. What was the bubble point of this oil, do you know?

A In the Strawn, it was 3950.

Q So, the pressure has declined below the bubble point at this stage?

A Yes, sir.

Q And you expect this is free gas in the reservoir, then, that is being produced now?

A Some of it would be.

Q And the 4000 to 1 ratio that was adopted by Order No. R-4658-A is proposed to be continued in this pool?

A Yes, sir.

MR. NUTTER: Are there further questions of Mr. Carnes? He may be excused.

(Witness dismissed.)

MR. NUTTER: Mr. Dent, did you offer these exhibits?

MR. DENT: Mr. Examiner, at this time I would like to offer Mesa's Exhibits 1 through 8 in consolidated Cases 5081 and 5082.

MR. NUTTER: Mesa's Exhibits 1 through 8 in Cases 5081 and 5082 will be admitted in evidence.

(Whereupon, Applicant's Exhibits Nos. 1 through 8 were marked for identification, and were admitted into evidence.)

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

MR. DENT: I have nothing further, Mr. Examiner.

MR. NUTTER: Does anyone have anything they wish to offer in Case 5081 or 5082?

If not, we will take the cases under advisement.

STATE OF NEW MEXICO)
) SS.
COUNTY OF SANTA FE)

I, RICHARD L. NYE, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and 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. 5081-82, heard by me on 11/26, 1974.

, Examiner
New Mexico Oil Conservation Commission

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