BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 14, 1976

EXAMINER HEARING

IN THE MATTER OF:	)	
Case 5446 being reopened pursuant to the provisions of Order No. R-4994.	)	CASE 5446 (Reopened)

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: William F. Carr, Esq.
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For the Applicant: W. Thomas Kellahin, Esq.
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I N D E X

	Page
JOHN L. MOSELEY	
Direct Examination by Mr. Kellahin	3
Cross Examination by Mr. Nutter	12

EXHIBIT INDEX

	Page
C & K Exhibit Number One, Plat	12
C & K Exhibit Number Two, Tabulation	12
C & K Exhibit Number Three, Graph	12
C & K Exhibit Number Four, Graph	12
C & K Exhibit Number Five, Tabulation	12
C & K Exhibit Number Six, Calculation	12
C & K Exhibit Number Seven, Calculation	12
C & K Exhibit Number Eight, Letter	12

MR. NUTTER: We will call the next case, Number 5446.

MR. CARR: In the matter of Case 5446 being reopened pursuant to the provisions of Order No. R-4992, which order established special pool rules and regulations for the Casey-Strawn Pool, Lea County, New Mexico.

MR. KELLAHIN: Tom Kellahin of Kellahin and Fox appearing on behalf of C & K Petroleum and I have one witness to be sworn.

(THEREUPON, the witness was duly sworn.)

JOHN L. MOSELEY

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q. Would you please state your name, by whom you are employed and in what capacity?

A. John L. Moseley, C & K Petroleum, Inc., Midland, Texas, Petroleum Engineer.

Q. Mr. Moseley, have you previously testified before this Commission and had your qualifications as an expert witness accepted and made a matter of record?

A. Yes, I have.

Q. And did you previously testify before this Commission on March 19th, 1975, that hearing resulted in Order No. R-4992, the pool rules for this particular pool?

A. Yes, I did.

MR. KELLAHIN: If the Examiner please, are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q. (Mr. Kellahin continuing.) Mr. Moseley, would you refer to Exhibit Number One and identify it?

A. Yes, our Exhibit Number One is a plat, a scale plat of the Casey-Strawn Field area in Lea County. Shown in red we have wells drilled to date in the field, including the four producing wells which do presently exist, the two dry holes, actually a third dry hole which is located to the south in Section 34.

Q. That well is the one in the far southeast corner?

A. Yes, sir, it is.

Q. It is indicated as a producer on your plat but it is a dry hole?

A. It is a producer in the Drinkard but a dry hole in the Strawn.

Q. Who is the producer of all of these wells?

A. C & K Petroleum produces and operates three of the four producing wells. The additional well is operated by Mesa Petroleum.

Q. All right, sir, would you please turn to what has been marked as Exhibit Number Two?

A. Our Exhibit Number Two is a tabulation of the field's production since its inception in February of '75 and shows that the cumulative production up to March 1st of '76 has been roughly two hundred and fifty-six thousand barrels from the field.

Q. You show a substantial increase in the water production in the fall of '75, what is that attributed to?

A. That is entirely due to the water production that we are experiencing from our Ship 34-A No. 1 Well which is located in the northeast quarter of the northwest quarter of Section 34.

Q. Do any of these other wells make substantial water?

A. No, they do not.

Q. How is the gas production divided among these wells?

A. Well, the gas production is shown on our Exhibit Two as the total gas production from the field and, of course, it is sold to various pipelines in the area.

Q. All of these wells make some gas, though?

A. Yes, sir, they do.

Q. Please refer to Exhibit Number Three?

A. Exhibit Number Three is a field performance graph which I have shown in red the oil production from inception.

The oil production peaked in September of 1975 at approximately twenty-seven thousand barrels per month from the field and has now declined to approximately twenty-thousand barrels per month in February of '75. This decline indicates that we are experiencing pressure depletion from the field.

Q. Okay, Exhibit Number Four.

A. Exhibit Number Four is a graph of the bottom-hole pressure history from the field and its relationship to the cumulative production from the field. I have shown in red the C & K operated Ship 27 No. 1 which was the discovery well and its bottom-hole pressure at various times over the past year or year and a half.

MR. NUTTER: Mr. Moseley, I wonder on Exhibit Number One, the wells are shown but I don't see the identification. I wonder if you could identify these wells for me and then I could follow the maps and so on?

A. Yes. All right, sir. The discovery well is shown on the plat, the Ship 27 No. 1, the only producing well in Section 27.

MR. NUTTER: Okay, that's the one that is marked discovery well? That's the Ship?

A. Twenty-seven dash one.

MR. NUTTER: Okay.

A. The well directly to the south in Section 34 is the Mesa operated West Knowles Unit No. 4 Well.

The well directly to the west of that well is the Ship, C & K operated Ship 34-A No. 1.

And the well to the south of that is the Ship 34-A No. 2.

MR. NUTTER: Okay, thank you.

Q. (Mr. Kellahin continuing.) Continue with Number Four, please?

A. The Exhibit Number Four as I say is a pressure production plot showing the bottom-hole pressures in the various wells at various times over the past year and a half.

I want to point out several things here, the first being the fact that the Mesa operated West Knowles Unit which is shown in blue had a shut-in pressure almost indentical, in fact, was identical with the shut-in pressure of the Ship 27 No. 1 after producing approximately seventy thousand barrels from the field.

MR. NUTTER: That would be this pressure point at approximately twenty-six?

A. Yes, twenty-seven hundred pounds, right.

Subsequent to that we drilled and completed the Ship 34-A No. 1 which is shown by the brown triangle. The first triangle there represents the initial shut-in or the drill stem test bottom-hole shut-in pressure and did indicate that it was somewhat higher than what the field pressure was at the time. However, I want to point out that it was at least

five hundred pounds below the initial field pressure as indicated from the initial field --

MR. NUTTER: It looks like its initial pressure was just slightly over thirty-five hundred pounds?

A. Yes, sir, that is correct.

MR. NUTTER: And the original pressure was a little over four thousand?

A. Yes, sir, which would indicate to me that we have had partial depletion at that point in the reservoir.

The fourth symbol here indicates the drill stem test pressure taken from the Ship 34-A No. 2 which is shown by the yellow hexagonal, which was the last pressure which was recorded in the field.

Q. (Mr. Kellahin continuing.) Exhibit Number Five?

A. Exhibit Number Five is simply a tabulation of the reservoir data or characteristics that we have seen in the field. I would like to point out the average permeability as shown on this exhibit is forty-four millidarcies which is quite good for this type of formation. This permeability was derived from two bottom-hole pressure build-up tests and we would expect that both of these would be representative of the field itself.

Q. Exhibit Number Six?

A. Exhibit Number Six is a graphical solution to the classical mathematical solution or equation for the relationship

between pressure drawdown and distance from a wellbore. I would like to point out here that with eighty-acre spacing, which is equivalent to about a thousand-foot radius, that you would expect to see something in the range of about a ten-pound drawdown in the reservoir, roughly a thousand feet from the wellbore with a production rate of roughly four hundred barrels a day and assuming a permeability of forty-four millidarcies which we have previously calculated for build ups. We would see this type of drawdown within a short period of time, roughly six weeks which indicates that the reservoir is communicated throughout.

Q. Exhibit Number Seven.

A. Exhibit Number Seven is some volumetric drainage calculations that we made using average reservoir parameters of porosity, water saturation and formation volume factor. You will note that the oil in place, assuming this is an average oil in place calculation, assuming eighty acres, would be roughly a million stock tank barrels in place. The average recovery from the four wells we expect to be in the range of a hundred and eighty-seven thousand plus barrels per well which would yield a recovery efficiency of approximately eighteen percent of the oil in place.

Q. This is a solution gas drive reservoir, is it not?

A. Yes, it is.

Q. And how does that recovery percentage compare to

the average for solution gas drive reservoirs?

A. This compares very favorably as shown at the bottom of the exhibit with what is normally accepted in the industry as average recovery factors for this type of reservoir.

Q. If you assume a forty-acre drainage area what kind of results do you get?

A. The results, assuming a forty-acre drainage area, would yield an oil in place of five hundred and twenty-five stock tank barrels for the same recovery per well would yield a recovery efficiency of approximately thirty-six percent which is in excess of what you would normally expect from a solution gas drive reservoir, considerably so.

Q. What other calculations have you made here?

A. I have shown also at the bottom of this exhibit a calculation which is based on a rule of thumb as found in the published literature of five barrels per acre foot per percent porosity, assuming a forty-three gravity oil and a thousand SCF per barrel GOR in a limestone or dolomite reservoir, this would yield a drainage area of a hundred and sixteen acres, assuming that the average recovery is a hundred and eighty-seven thousand barrels per well.

Q. Where did the nine percent porosity figure come from?

A. The nine percent porosity figure is the average porosity from the four producing wells in the field.

Q. How about the thirty-six feet of net pay?

A. That is also an average of net feet of pay from the field as a whole.

Q. Please refer to Exhibit Number Eight?

A. Exhibit Number Eight is simply a letter from Mesa Petroleum indicating their support of our contention that eighty-acre spacing should be made permanent here.

Q. In your opinion, Mr. Moseley, are the producing wells capable of draining an eighty-acre spaced drilling unit?

A. Yes, most definitely.

Q. In your opinion will the continuation of the current pool rules for the Casey-Strawn pool be in the best interests of conservation, prevention of waste and the protection of correlative rights?

A. Yes, it will.

Q. Is it your recommendation that the temporary rules be made permanent?

A. Yes, it is.

Q. Are there any changes to the current rules that you would desire to propose at this time?

A. No, we have none.

Q. Were Exhibits One through Eight either prepared by you directly or compiled under your direction?

A. Yes, they were.

MR. KELLAHIN: If the Examiner please, we move the

introduction of Exhibits One through Eight.

MR. NUTTER: C & K Exhibits One through Eight will be admitted into evidence.

(THEREUPON, C & K Exhibits One through Eight were admitted into evidence.)

MR. KELLAHIN: That concludes our direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q. Mr. Moseley, what is the current producing capacity of each of the four wells in the pool?

A. The current producing capacity on an average would currently be about twenty thousand barrels per month which would be roughly eight hundred barrels, seven hundred and fifty barrels per day.

Q. Are all of the wells about the same?

A. Yes, now, the Mesa well is producing roughly three hundred barrels a day, which is the well in the northwest quarter of the northeast quarter of 34. Our Ship 27 No. 1 is producing approximately a hundred barrels a day currently. The Ship 34-A-1 is producing approximately a hundred and fifty barrels a day, as is the No. 2, the Ship 34-A No. 2.

Q. And the 34-A No. 1 is the only well in the pool that makes water, is that right?

A. Yes, sir, that is correct. There is no indication,

I might add, that there is any type of water drive here that would affect our drainage calculations.

MR. NUTTER: Are there any further questions of this witness? He may be excused.

(THEREUPON, the witness was excused.)

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

MR. KELLAHIN: No, sir.

MR. NUTTER: Does anyone have anything they wish to offer in Case 5446? We will take the case under advisement.

REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand 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.

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 5446 (reopened), heard by me on 4/14, 1972.

....., Examiner
New Mexico Oil Conservation Commission

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