

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
September 10, 1969

EXAMINER HEARING

-----  
IN THE MATTER OF: )

In the matter of Case No. 3857 being )  
reopened pursuant to the provisions )  
of Order No. R-3504, which order )  
established 160-acre spacing units and ) Case No. 3857  
80-acre proportional factors of 4.77 )  
for the Tulk-Pennsylvanian Pool, Lea )  
County, New Mexico, for a period of )  
one year. )  
-----

BEFORE: Daniel Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: Case 3857.

MR. HATCH: Case 3857. In the matter of Case No. 3857 being reopened pursuant to the provisions of Order No. R-3504, which order established 160-acre spacing units and 90-acre proportional factors of 4.77 for the Tulk-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year.

MR. HINKLE: Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell, appearing on behalf of Coastal States Gas Division Company. We have one witness and six exhibits. I would like to have the witness sworn.

(Witness sworn.)

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, by whom you are employed and where you reside.

A Clarence Murray, Jr., and I am employed by Coastal States Gas Company, New Mexico Area Engineer and reside in Midland, Texas.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A Yes.

Q And your qualifications as petroleum engineer are a matter of record with the Commission?

A Yes.

Q Have you made a study of the Tulk-Pennsylvanian Pool and the other producing areas in the vicinity?

A Yes, I have. I have studied the logs and the drill stem tests and production history and have followed the development in all of these fields in this area.

Q What fields are you referring to?

A The Tulk-Pennsylvanian Pool which is the subject of this hearing and also the Baum field and the north Baum field.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A There have.

Q Refer to Exhibit 1 and explain what this is and what it shows.

A Exhibit 1 is a structure map of the area encompassing the Tulk-Pennsylvanian Field and also extending northward along this trend of Bough C. production through the Baum field and the north Baum area and it shows the structure.

It shows also on there a line of cross-section which we will present later, a cross-section through this field and adjacent field and also designates the discovery well for the Tulk-Pennsylvanian Field.

Q Is that the one where there is a green arrow?

A That's right.

Q What is the area shown in yellow?

A This is the general area of Coastal leases in the Tulk-Pennsylvanian Field.

Q This represents leases owned by Coastal?

A That's right. They are either owned by Coastal or a drilling unit or operated by Coastal.

Q At the time of the original hearing a year ago for adoption of temporary special field rules for the Tulk-Pennsylvanian Fields, how many wells had been completed at that time?

A At that time we had completed one well, the twenty-six number 1 and we had --

Q Now, where is that located?

A That's located in the northwest northwest of Section 26. That well had been completed. We were in the process of completing our State Twenty-two number 1, which is in the southeast -- northeast of the southeast quarter of Section 22. That well was in the process of completing

and we had staked a location for our State Twenty-three number 1, which is due east of the twenty-two there in Section twenty-three, at the time of the last hearing.

Q Although the Shell No. 1 Well was a discovery well, it was not producing at the time?

A It was not producing. The Shell well had been completed and produced for some three or four months when the casing collapsed and they later on then abandoned that particular well.

Q So, in reality, at the time of the original hearing there was only one well producing and that is your 126 in Section 26, is that right?

A That is correct.

Q And one other well drilling. Now, since the original hearing what wells have been drilled and completed?

A Since then, we completed our twenty-two number 1 and it produced for a short while and then we later made a salt water disposal well out of it.

Q That is in Section 22?

A In Section 22.

Q In the southeast quarter?

A Right. We then completed our State Twenty-three No. 1, which is in the northeast quarter of the southwest

quarter of Section 23, 10-15-'68, and the next well that we drilled then was our State Twenty-six No. 2 in the northwest quarter of the northeast quarter of Section 26 on the 10-27-'68.

Now, this was a dry hole. Our twenty-six number 2 turned out to be a dry hole. We then drilled a State Twenty-seven No. 1, which is in the southeast northeast quarter of Section 27, on the 11-21,'68. It is now producing.

MR. NUTTER: Which well was that?

THE WITNESS: The twenty-seven number 1.

MR. NUTTER: That was completed in November?

THE WITNESS: In November, the 21.

Q (By Mr. Hinkle) That's the one just east of the discovery well?

A That's right. That's the one just east of that old Shell Well, Shell State T. No. 1. We then drilled our State Twenty-Six No. 3, which is in the northwest southwest of Section 26 on the 1-10-'69, and it's now producing.

We then drilled out State Twenty-seven No. 2, which is in the southeast southeast of Section 27 on the 2-16-'69, and it is now producing.

Q That's all the wells that you have drilled in the area?

A That's all the wells that we have drilled in the area.

Q That's the five producing wells and two you might say dry holes?

A That's correct.

Q Counting the one in Section 22 which you converted to a salt water disposal?

A That's correct.

MR. NUTTER: How long did that well in Section 22 produce?

THE WITNESS: Oh, I believe it was approximately three to four months. It produced and we pulled a pump and reperforated and reacidized and we worked on it off and on there for about three or four months, something like that.

MR. NUTTER: Were you having trouble with water all the time in that well?

THE WITNESS: No. We had water in the lower zones and it would just tighten. It just didn't produce enough fluid to make a well.

MR. NUTTER: Do you have any idea how much oil that well produced?

MR. HINKLE: That will be shown in other exhibits.

MR. NUTTER: Will that be shown in other exhibits?

MR. HINKLE: Yes.

MR. NUTTER: Go ahead, then.

Q (By Mr. Hinkle) Have there been any other wells completed or in the process of being completed and drilled at the present time?

A Bell Petroleum is drilling a well at the present time in the northwest northwest of Section 35.

Q What is the status of that? Is it near completion?

A I believe they have just started it.

Q That's all the wells?

A Well, let's see. That well -- they were approximately eight thousand foot on Friday, I believe.

Q So, you have testified to all the wells that have been completed and drilled in this area?

A That's right. And all wells that have been drilled have been drilled on 160-acre spacing.

Q Do you have any other comments with respect to Exhibit No. 1?

A Not at this time. We will refer back to it a little later on in some discussion here.

Q Now refer to Exhibit No. 2 and explain what this



is and what it shows.

A Exhibit No. 2 is a production history of the Tulk-Pennsylvanian Field up through July, the end of July, 1969. It shows the production from the Shell Well in 1965.

It produced about 13,540 barrels before they abandoned it. There was no activity then. They plugged and abandoned the well February 1, 1966, and there was no activity until we drilled our State Twenty-six No. 1 and completed it in August of '68.

And this just shows the monthly production history and it shows the completion date of each one of our wells and the initial potential barrels of oil and barrels of water each well produced; and this question about how much oil the State Twenty-two produced, I thought I had that down.

Q Doesn't it show by the graph?

A No, it wouldn't show on the graph cumulative production that it made. It was probably on the order of a couple thousand barrels, if it made that much.

Q This shows the cumulative production of all the wells?

A Up to 8-1-'69, we had made 226,909 barrels from this field.

Q Do you have any further comments with respect to Exhibit No. 2?

A No, sir.

Q Now refer to Exhibit No. 3 and explain what this is and what it shows.

A Exhibit No. 3 is a map of the Tulk-Pennsylvanian Field showing the initial shut-in pressure as was taken on the drill stem test of the various zones in each one of these fields.

Q This is in the Tulk-Pennsylvanian, is it not?

A That is correct.

Q How do these pressures compare with the initial pressures in the Baum and the North Baum areas?

A These pressures are comparable to those we have taken in the other Bough C. Fields.

Q Somewhat the same?

A Yes.

Q Now refer to Exhibit No. 4.

A Exhibit No. 4 is a cross-section that was prepared -- is shown -- the line cross-section is shown on Exhibit 1 and the cross-section is a correlation of the

three zones through this trend of fields starting with -- south of the Tulk field and going north through the Baum field and on north through the North Baum area. And on it is shown the drill stem tests that were taken of the various zones and it also shows the completion interval of the various wells and it shows that both in the Tulk and the Baum and the North Baum area that were completed in the Bough C. Zone.

Q Does it show a continuity of this zone throughout this whole area from the Tulk-Pennsylvanian up to and including the North Baum area?

A Yes, it does.

Q Do you have any information as to the similarity of porosity and permeability characteristics in these three pools?

A Yes. From study that I made the porosity is similar and the permeability, although we don't have exact measurements, the permeability in all of the wells, we do have an indication from the amount of fluid that each of the wells produce that the permeability is very similar. They all produce fairly high volumes of oil and water.

Q Do you have any further comments with respect

to exhibit -- the cross-section exhibit?

A Not now, I believe. I might say that the structure map in this cross-section are very similar to the ones that we presented at the original hearing.

The structure map shows that the structure in the Tulk field is somewhat smaller than was presented at our initial hearing. As result of drilling and development, we have determined that the structures or this little nose there is smaller than we originally thought.

Q In other words, you have a smaller structure in the Tulk-Pennsylvanian field than your original map that was presented then, structure map?

A Yes, sir.

Q Have you made any interference tests in the Tulk-Pennsylvanian Pool?

A In the Tulk-Pennsylvanian Pool, itself, we have not run any interference tests because all of the wells except one have been on hydraulic pump. We have been pumping them all since we completed them. However, we have run interference tests in these other fields.

I might refer back to some previous testimony that we presented in Case 3701 on the Baum Field to the northeast there: at that time we showed that one well could

drain in excess of 160 acres and at that hearing Coastal showed a production of 400,000 barrels of fluid by two wells that affected the pressure over some one thousand acres. I believe at that hearing we showed that the old Chaplain Wells in Section 6 and 7 in the Baum Field had produced this 400,000 barrels of fluid and had lowered the pressures in the wells, then off-setting it on the north as we determined by the drill stem test.

Q Now refer to Exhibit 5 and explain what this shows.

A Exhibit 5 is the results of an interference test that we conducted in the North Baum Field, which lies on the upper end of the cross-section and wells that we refer to are located in Section 20 and Section 29.

Q What are those wells?

A These wells are completed in the Bough C. formation which is the same zone that were completed in this Tulk.

Q What are the numbers and locations of the wells?

A The two wells that we refer to are our Coastal States Federal Twenty No. 2, which is in the southeast quarter of the southwest quarter of Section 20, Township

13 South, Range 33 East and our Coastal States Chambers No. 1, which is in the southeast quarter of the northwest quarter of Section 29, Township 13 South, Range 33 East.

Q What is the distance between those two wells?

A It's approximately a half a mile, a little over. No, it should be about exactly a half mile between those two wells.

I might point out that the Chambers No. 1 Well is a structurally low well and we produced it for a short while and it made one hundred percent water. We then quit producing it because we were getting only water and the well is cased and perforated in the Bough C. Zone. We shut in the Federal Twenty No. 2 and our Number 4 well also to the northeast up there was shut in at the same time: and as shown on this exhibit our Federal Twenty No. 2 originally had an instantaneous shut-in pressure on a drill stem test of 2827 on the 9-12-'68.

The well then was shut in for 291 hours in February of '69. We then ran a bottom hole pressure bomb into the well and left it in the well for twenty-four hours. At the start of that twenty-four hour period, the pressure was 2494. At the end of the twenty-four hours when we pulled the bomb out it was 2483. During this twenty-four

period the pressure had actually dropped eleven pounds due to the production of the other wells in the field.

We ran another pressure on the 6-26 of '69. We left the well shut in for twenty-four hours and the pressure was 2157 and we didn't note any change during this twenty-four hour period. You also note on the Chambers Well the original initial shut-in pressure on November 10, '68, was 2753. We ran a bomb in the hole.

Now, this well had been shut in for about a month after we stopped producing it. We ran a bomb in the hole and left it for twenty-four hours on February 19, and the pressure was 2517. It started this twenty-four hour period and it was 2510 at the end of that time and the pressure had dropped seven pounds.

During the time we ran this all of the wells except the Twenty number 2 and the Twenty number 4 were producing and this indicates to us that in this area up there that one well will drain in excess of 160 acres.

Q How does this relate to the Tulk-Pennsylvanian area?

A Well, the wells are all producing from the same geologic interval. The producing characteristics are all the same and we feel or believe that this is true in the

Tulk-Pennsylvanian area also.

Q In other words, if one well will effectively and efficiently drain more than 160 acres?

A That is correct.

Q Have you made an economic study of the Tulk-Pennsylvanian Pool as far as drilling on 40 acres, 80 acres and 160 is concerned?

A Yes, I have. This is shown on Exhibit No. 6. Exhibit No. 6 shows a -- the first part of it shows the volumetric calculation of the oil in place and what we consider to be the recoverable reserves under -- for 40 acres, 80 acres and 160.

If you will note that it's our estimate that on 40 acres we would recover 37,800 barrels; under 80 acres we would recover 75,500 barrels and under 160 acres we will recover approximately 151,000 barrels of oil.

Q How does these recovery factors compare with your estimated recovery in the Baum and the North Baum?

A This is very similar. We expect to recover a like amount of oil on 160-acre spacing in the Baum and the North Baum area also.

Now, this 150,000 is what we consider to be the average recovery. Some wells are better than others and



some wells recover more than this and some wells recover less.

Q Does this economic study take into consideration the fact that you have drilled two dry holes?

A The economics presented here do not allow for dry holes and if you will note here in our economic section our ratio of income to investment for 40 acres is .44; for 80 acres is .86, and for 160 acres is 1.72.

Now, in the Tulk Field we drilled seven wells and two of them are dry holes and our ratio of income to investment would actually be closer to 1.2 than it is to 1.72.

Q Now, would Coastal States consider drilling additional wells if the spacing unit was 80 acres in this area?

A No, we would not.

Q You would be at an economic loss to do so, in your opinion?

A That's correct.

Q What is your recommendation to the Commission with respect to the special pool rules that are now in effect?

A Well, I would recommend that the temporary rules now in effect be made permanent, designating 160-acre spacing with 160 proportional factor of 4.77 for allowable purposes and this is a normal proportional factor for 80-acre spacing as published by the New Mexico Oil Conservation Commission.

MR. HINKLE: We would like to offer in evidence Exhibits 1 through 6.

MR. NUTTER: Applicant's 1 through 6 will be admitted in evidence.

MR. NUTTER: This page of rules. These are the rules that are in existence?

THE WITNESS: Yes, that's correct.

MR. HINKLE: Mr. Examiner, we have a letter here from Midwest Oil Corporation. This is addressed to the oil -- this is a copy of the letter addressed to the Oil Conservation Commission which I believe that you have the original in your files and it says, "in the matter of Case 3357 being reopened pursuant to the provisions of Order R-3504, Midwest Oil Company supports permanent rules establishing 160-acre spacing unit and 80 acre proportional factors 4.77 for the Tulk-Pennsylvanian Pool, Lea County, New Mexico."

MR. HATCH: The Commission does have the original of that and the Commission also has a telegram from Bell Petroleum Company in support of the application.

MR. NUTTER: That is the company that is presently drilling the well south?

THE WITNESS: Yes.

MR. HINKLE: That's all of our direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Murray, on your cross-section Exhibit No. 4 you show lots of wells, but actually only two of the wells in the pool are shown on the cross-section, is that correct?

A That is correct. The Shell discovery well is shown and our State Twenty-six 1 is shown.

Q And the Shell discovery well, that is the one that had the casing collapse and hadn't been producing for quite a number of years?

A Yes, sir.

Q So, in reality, we have one producing well. Now, that well is apparently perforated in the B Zone and the C Zone --

A That is correct.

Q -- of the pool. How about the other wells in the pool: what zones are they perforated?

A They are perforated in the same zones, B and the C Zones.

Q The Baum Pool -- or the North Baum Pool that you submitted the pressure interference data for the Chambers and the other well, what zones are those wells completed in?

A They are completed in the Bough C. Zone. The right-hand end of the cross-section contains our Federal Twenty No. 1 showing that it is completed in the Bough C. Zone, and all of our other wells are completed in this same zone in that section up there.

Q Now, that cross-section -- apparently the line on the plat goes over the Chambers Well but the Chambers Well is not on the cross-section?

A No, sir; it's not.

Q The line runs across it?

A It runs across it. I believe at the time the cross-section was prepared this was the same or similar cross-section we presented on our original hearing. I don't believe the Chambers Well had been drilled at that time.

Q Now, the pressure interference test was on the No. 2 which is west of that No. 1?

A That's correct.

Q But, the wells are completed in the same zone as this Federal No. 1, which would be the C Zone?

A Yes, sir, they are.

Q Now, what is this little well down here southwest in Section 4? I see it was on the plat a year ago, too, so evidently it is an old well in another pool.

A These wells were there -- are you referring to --

Q It's on that Phillip's Kim State Lease. It's that well in the northeast northeast of Section 4.

A The only reason for including these wells was to see that some of these wells down here were completed in a Wolf Camp and that this was a different zone than what we were completed in the Tulk; and it was intended to show the separation between the two fields.

In other words, you notice that in Section 34 there is a dry hole that Shell drilled that separates the two areas.

Q That's this TUA State No. 1 that is on your cross-section, isn't it?

A Yes, sir.

Q That was never productive from any of the zones?

A No, sir.

MR. NUTTER: Are there any further questions of Mr. Murray?

MR. HINKLE: I might ask him one question here. The Examiner called attention to the fact that your cross-section only goes through 126; that's the only producing well in the Tulk-Pennsylvanian Pool.

Now, you have examined the logs of all the other wells in the pool in the Tulk-Pennsylvanian. Do they correlate the same as on the cross-section with the 126?

THE WITNESS: Yes, sir. All of the other wells -- in other words, the zones that are present in the 26 are present in all the other wells that are completed there.

MR. HINKLE: They are all producing from the same formation, the same Bough C. Zone and Pennsylvanian formation?

THE WITNESS: Yes, sir.

MR. HINKLE: That's all.

MR. NUTTER: If there are no further questions of the witness he may be excused.

(Witness excused.)

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

MR. HINKLE: That's all.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3857? If not, we will take the case under advisement and call Case 4212.

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
CLARENCE MURRAY, JR.	
Direct Examination by Mr. Hinkle	2
Cross Examination by Mr. Nutter	19

E X H I B I T S

Applicant's Exhibits	
1 through 6	2



STATE OF NEW MEXICO   )  
                                   ) ss  
 COUNTY OF BERNALILLO )

I, GLENDA BURKS, Court Reporter in and for the  
 County of Bernalillo, State of New Mexico, do hereby  
 certify that the foregoing and attached Transcript of  
 Hearing before the New Mexico Oil Conservation Commission  
 was reported by me; and that the same is a true and correct  
 record of the said proceedings to the best of my knowledge,  
 skill and ability.

Glenda Burks  
 Notary Public

My Commission Expires:

March 12, 1973

I do hereby certify that the foregoing is  
 a complete record of the proceedings in  
 the Examiner hearing of Case No. 3851  
 heard by me on 9/12, 1969.

Glenda Burks, Examiner  
 New Mexico Oil Conservation Commission

I do hereby certify that the foregoing is  
 a complete record of the proceedings in  
 the Examiner hearing of Case No. 3851  
 heard by me on 9/12, 1969.

Glenda Burks, Examiner  
 New Mexico Oil Conservation Commission