

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 4, 1968

EXAMINER HEARING

IN THE MATTER OF:

Application of Coastal States Gas)
Producing Company for special pool)
rules, Lea County, New Mexico.)

Case 3857

BEFORE: Elvis A. Utz
Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 3857.

MR. HATCH: Case 3857. Application of Coastal States Gas Producing Company for special pool rules, Lea County, New Mexico.

MR. HINKLE: Mr. Examiner, Clarence Hinkle of Hinkle, Bondurant and Christy appearing on behalf of Coastal States Gas Producing Company. We have two witnesses we'd like to have sworn.

(Witnesses sworn.)

MR. UTZ: Are there any other appearances in this case?

MR. PULTE: Yes, Mr. Examiner. John Pulte of Midwest Oil.

MR. UTZ: What's the last name?

MR. PULTE: Pulte, P-u-l-t-e. We will make a statement in support of Coastal States.

MR. UTZ: Are there any other appearances? You may proceed.

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

CARROLL STATON

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

DIRECT EXAMINATION

BY MR. HINKLE:

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

A My name is Carroll Staton. I'm employed by Coastal States Gas Producing Company in Midland, Texas.

MR. UTZ: What was the last name?

THE WITNESS: Staton, S-t-a-t-o-n.

Q What capacity are you employed?

A I am a geologist.

Q Are you a graduate geologist?

A Yes, sir.

Q Have you previously testified before the Commission?

A Yes, sir.

Q Your qualifications as a geologist are a matter of record?

A Yes, sir.

Q Are you familiar with the application of Coastal States in this case?

A Yes, sir, I am.

Q What is Coastal States seeking to accomplish?

A Coastal States seeks special temporary rules for the Tulk Pennsylvanian Field in Township 14 South, Range 32 East, Lea County, New Mexico, to include the provision for 160-acre

spacing and proration units and assignment of 80-acre allowables.

Q Have you made a study of this particular area?

A Yes, sir, I have.

Q Are you familiar with all of the wells that have been drilled and all the geological information that is available?

A Yes, sir, I am.

Q Have you prepared certain exhibits for introduction in this case?

A Yes, sir, I have.

Q Refer to Coastal State's Exhibit Number 1 and explain what this is and what it shows.

A Exhibit Number 1 is a simple regional index mapping of the area of southeast New Mexico locating the area of the Tulk Pennsylvanian Field, geographically, as being approximately 25 miles west of Lovington, New Mexico.

Q Does it show the other fields in the area?

A Yes, sir, it does.

Q Does it show the Baum-Pennsylvanian Pool?

A Yes, sir. It is located on this map.

Q Anything else you desire to state with respect to this exhibit?

A No, sir.

Q Now, refer to Exhibit Number 2 and explain what this is and what it shows.

A Exhibit 2 is a large map of the geographic area which includes the Tulk-Wolf Camp, the Tulk-Pennsylvanian Fields, the Gross Field, the Baum Field, and portions of the Lazy J and Saunders Fields in western Lea County, New Mexico. It's a structure map, the contour interval of which is at 50 foot intervals. It represents the structural attitude of the sub-surface of the Pennsylvanian as reflected by the Bough-B datum in mapping point.

The Tulk-Pennsylvanian Field was discovered in the Shell Number 1 State TU, located in the southwest quarter of the northeast quarter of Section 27, Township 14 South, Range 32 East, in midyear 1965. This location is indicated on Exhibit 2 by the red arrow.

Order Number R-2938 of the New Mexico Oil Conservation Commission Nomenclature Hearing of August 1st, 1965, established the Tulk-Pennsylvanian Field which consisted, at that time, of the northeast quarter of Section 27, 160 acres.

This well produced hydrocarbons for a short while but was eventually plugged and abandoned. A second well drilled by Shell designated the Number 1 State TUA was located in the southwest quarter of the northwest quarter of Section 34. This well was drilled to the Tulk-Pennsylvanian reservoir where reservoir rocks were of a type that would not sustain or produce hydrocarbons.

As a consequence of Shell's experience in the area, their leases were allowed to expire without additional activity and, subsequently, Coastal States acquired leases as shown on Exhibit 2 in yellow.

In the early part of 1968, Coastal States entered into a working interest unit agreement with Midwest Oil Corporation which included Alls of Sections 23 and 26 of Township of 14 South, Range 32 East as shown by the red outline on Exhibit 2.

Coastal States drilled the Number 1 State 26 located in the northwest quarter of the northwest quarter of Section 26, drilled the well to a total depth of approximately 10,500 feet where, at that depth, non-commercial reservoir rocks were encountered in the middle Pennsylvanian.

This well was completed from reservoir rocks of age and stratigraphic position equivalent to those encountered by Shell in their Number 1 State TU, the discovery well of the Tulk-Pennsylvanian Field.

Initial potential is recorded on New Mexico State Commission Forms and was 282 barrels of oil per day. At the present time --

Q You mean, water being produced? Was there any water?

A No.

Q No water.

A At the present time, there are two active locations

operated by Coastal States in the area of the Tulk-Pennsylvanian Field. These wells are Coastal States Number 1 State 22 located in the Northeast Quarter of the Southeast Quarter of Section 22, and the Coastal States Number 1 State 23 located in the Northeast Quarter of the Southwest Quarter of Section 23.

Completion attempts are currently being made in the State 1-22 after reservoir rocks were encountered in the Pennsylvanian which were indicative to be capable of producing hydrocarbons in the Tulk-Pennsylvanian Field reservoir and drilling activity is currently in progress in the State 1-23.

Q At what depth?

A Approximately 6,000 feet.

Q Do you anticipate that that well will be completed within the next thirty days?

A It should be, yes.

Q What is the black line A and A-Prime as shown on Exhibit 1?

A This is the line of cross-section, AA-Prime, which will be entered as Exhibit Number 3.

Q Upon what information is this map drawn as far as the contours are concerned?

A The mapping datum is in the Upper Pennsylvanian-Bough complex. The Bough-B datum is the one that is the basis on which this map was prepared.

Q By correlation of all of the wells that have been drilled in the area?

A All of the wells, yes, sir.

Q Is there anything else that you would like to say with respect to this exhibit?

A No, sir, only that it is speculative in large areas due to lack of control.

Q Now, refer to Exhibit Number 3 and explain what it shows.

A Exhibit Number 3 is a smaller presentation of a cross-section entitled "Diagrammatic Cross Section" from the Tulk-Wolf Camp to the Baum Field through the Tulk-Pennsylvanian Field.

This cross-section extends from the Phillips Number 1 Pello A to the discovery well of the Tulk-Wolf Camp Field on the south to the Coastal States Number 1 Federal 20 on the north.

At the south end of the cross-section is the Tulk-Wolf Camp Field and the Phillips Number 1 Pello A. At the time this well was completed, it was designated the discovery well of the Tulk-Wolf Camp Field. The cross-section continues through the Shell Number 1 State TUA, a bona fide dry hole in the Tulk-Pennsylvanian Field producing area. From the Tulk-Pennsylvanian producing area, the cross-section extends in a northeast direction to Coastal States Gas Producing Company's production in the Baum Field. What I have attempted to show on this cross-section is that one, the Tulk-Pennsylvanian reservoir,

the subject of this hearing, is separated from and is distinct from the Tulk-Wolf Camp Field production; that two, the Tulk-Pennsylvanian production in the Coastal States Number 1 State 26 is ~~from~~ the rocks of the same age and equivalent stratigraphic position as Pennsylvanian production in the Baum Field.

I have attempted to show on this diagrammatic cross-section the producing intervals of the wells on the cross-section by red dots. As noted, on the first of these wells on the cross-section, the red dot on the first well, the Phillips Number 1 Pello A, again, the discovery well of the Tulk-Wolf Camp Field produced hydrocarbons from a zone definitely younger than Pennsylvanian production and the Tulk Field, and definitely Wolf Camp in age and distinct from other production as shown on the cross-section.

Q Does this show a separation of the two producing zones, the Tulk-Pennsylvanian and the Tulk-Wolf Camp?

A Yes, it does. The first two wells on the cross-section are wells on the Tulk-Wolf Camp Field. The third well, the dry hole, is the Shell Number 1 State TUA drilled after the discovery well of the Tulk-Pennsylvanian Field and shown, from various production attempts in the open hole, to be a bona fide dry hole. Defining a bona fide dry hole is one that, in a producing zone, does not show any evidence of either porosity or permeability necessary to sustain production from the field reservoir.

This well, in geographic location, is between the Tulk-Wolf Camp Field and the Tulk-Pennsylvanian Field, showing a separation to the north from the Tulk Field and then south from the Tulk-Pennsylvanian Field.

Q You have colored three different zones, the yellow, the green and an orange zone. What does that indicate?

A These colors are merely for ease on the eye for those various zones of the Bough or Upper Pennsylvanian reservoirs to be differentiated easily.

It shows a continuation of the rocks from north to south, from the Tulk-Wolf Camp Field to the Baum Field.

Q And the wells have only been completed, I notice, in the B and C Zone, is that right?

A That's a good general statement, yes, sir.

Q What is the top of the A Zone, what formation does it represent?

A I personally view the top of the A Zone as being the top of the Pennsylvanian-Cisco, and that above it on the cross-section would be the lower part of the Wolf Camp Formation.

Q The correlations throughout the cross-section are relatively good, as far as this zone is concerned?

A Yes, sir.

Q Do you have anything else with respect to this exhibit?

A No, sir.

MR. HINKLE: I'd like to offer into evidence Exhibits 1, 2 and 3. That's all on direct of this witness.

MR. UTZ: Without objection, Exhibits 1, 2 and 3 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits
1, 2 and 3 admitted in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q The original field was the Northeast Quarter of Section 27, is that correct?

A Yes, sir, that's Commission Order Number R-2938, August 1st, 1965 Nomenclature Hearing.

Q And that well at the present time is abandoned?

A Plugged and abandoned. Coastal States has subsequently acquired the lease on the property.

Q And on your 1-23, you are drilling on that well?

A On that, yes, sir.

Q 1-22 is still in the location?

A No, sir, we're attempting to complete it at the present time.

Q I see.

MR. HINKLE: The next witness will give more information with respect to that.

Q It's your recommendation in nomenclature that we will just call this the Pennsylvanian Pool, is that correct?

A I assumed the Commission wasn't capricious and had good counsel. I agree with the Pennsylvanian nomenclature.

MR. UTZ: Are there any other questions of the witness?
He may be excused.

JACK R. MCGRAW

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

DIRECT EXAMINATION

BY MR. HINKLE:

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

A My name is Jack McGraw. I work for Coastal States Gas Producing Company as Division Engineer in Midland, Texas.

Q Are you a graduate petroleum engineer?

A Yes, sir.

Q Have you previously testified before the Commission?

A Yes, sir.

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

A Yes, they are.

Q Are you familiar with the application of Coastal States in this case?

A Yes, sir.

Q Have you made a study of the area involved?

A Yes, sir.

Q Refer to Coastal States Exhibit Number 4 and explain what this shows?

A Exhibit Number 4 is a graph showing the production history of the Tulk-Pennsylvanian Field. This shows that the Tulk-Pennsylvanian Field was discovered by Shell Oil Company in March of 1965 with the completion of their Number 1 TU State located in the Southwest Quarter of the Northeast Quarter of Section 27, Township 14 South, Range 32 East.

The well was completed through perforations at 9856 to 9880 which is the C-Zone of the Pennsylvanian, flowing at 148 barrels of oil per day plus 54 barrels of water per day.

Because of the water production, the well did not flow properly. Therefore, a pumping unit was installed in July of 1965. Producing performance indicates that the pumping unit was not capable of moving all the fluid that entered the well bore; therefore, the oil production declined until October of 1965 at which time it was reported that the casing had collapsed.

In view of declining oil production and increasing water production, the operator did not feel that an extensive casing repair job was justified. Therefore, the well was plugged and abandoned in February of 1966.

At a Nomenclature Hearing in August, 1965, the New Mexico Oil Conservation Commission designated the Northeast Quarter of Section 27, Township 14 South, Range 32 East as the Tulk-Pennsylvanian Field. This was Order Number R-2938. No special field rules were requested. Therefore, the Tulk-Pennsylvanian Field was operated according to Statewide rules. No activity was evident in the Tulk area until July, 1968 at which time Coastal States filed and completed its State Number 26 located in the Northwest Quarter of the Northwest Quarter of Section 26, Township 14 South, Range 32 East.

This well was completed initially at perforations of 9830 and -44 and had potential flowing with 282 barrels of oil per day with no water. This zone had appeared to be typed from drillstem type pressure calculations that showed permeability on the order of three millidarcies. Producing performance verified this as the well flowed about ten days and died. No water production, however, was evident.

The present perforations were re-acidized with 2000 gallons, 20% acid, and an additional zone at 9876 to -84 was acidized with 28% acid. After recovering the low fluid, the well was swabbed, 95% water with a high fluid level, indicating that this would be comparable production to the Bough-C in the Baum area. Because we didn't care to move this much water at this time if we didn't have to, we set a cast iron bridge plug at 9865 and

a retrievable brass plug at 9800. The casing was then perforated at 9863, -73 and acidized with 700 gallons and the well kicked off and flowed with 330 barrels of water, with 890 pounds flowing tubing pressure. This zone is producing at the present time.

By referring to the cross section which is Exhibit 3, you can see that the first two zones perforated were in the C Zone and are correlative to the zone that was perforated in the Shell Number 1 TU State. The third zone is above this in the B Zone and was not perforated in the Shell well.

In August of 1968, Coastal States drilled the State 2 Number 21 located in the Northeast Quarter of the Southeast Quarter of Section 22, Township 14 South, Range 32 East. Completion is in progress at this time. However, early tests indicate the well will produce four to 500 barrels of water to two to 300 barrels of oil, again comparable production to the Baum area.

A third well was spudded by Coastal States, had been spudded and is currently drilling at approximately 6,000 feet. This is the Coastal States' State 23 Number 1 located in the Northeast Quarter of the Southeast Quarter of Section 23, Township 14 South, Range 32 East.

Q Is that all that you had with respect to that exhibit?

A Yes, sir.

Q Refer to Exhibit Number 5 and explain what this shows.

A Exhibit Number 5 is a field plat showing the initial bottom hole pressure as determined from drillstem test on the wells that are presently drilled to or completed in the Pennsylvanian Zone. This shows just by casual observation that the pressures in the B Zone are pretty well constant at around 3500 to 3600 pounds, which probably indicates that this is the static reservoir pressure in this area.

Q That is initial pressure?

A Initial static reservoir pressure. The C Zone is somewhat less than this in one or two wells and in one case, we know it is, because of a tight zone and was not fully built up.

The others, we are not sure whether it is significant or just variation in the bottom hole pressure of the Baum.

Q Coastal States Number 1-22 in Section 22 and the 1-23 in Section 23 have been located on 160-acre spacing, have they not?

A They have, yes.

Q Have you formed any opinion from the information available in your study of the area as to whether or not one well will effectively, efficiently drain 160 acres?

A Of course, it has been, from our observation, from the two wells we have completed, so far, that the production is

comparable to the Baum Pool production, and in that particular area, it has been well demonstrated that one well would drain in excess of 160 acres and we're gathering all the pressure information, the initial pressure information that we can in order to prove that this will be the case in this area. However, we feel fairly competent that it will be the case.

Q Do you feel that within a year that you will have sufficient information to demonstrate whether or not one well will effectively and efficiently drain 160 acres?

A Yes, we do. At the current development rate, we have one rig running in the area, and we plan to continue to operate one well until the area is developed and we feel that in a year we will have sufficient wells to afford us the necessary information to determine if one well can efficiently and effectively drain the 160 acres.

Q Do you plan to take bottom hole pressures on completion of each well?

A Yes, we do.

Q Do you plan to run any interference tests?

A When sufficient wells are available, we definitely plan to gather all the information that we can to support our original thinking that one well will drain 160 acres.

Q Do you have anything else with respect to Exhibit Number 5?

A No, sir.

Q Refer to Exhibit Number 6 and explain what this is.

A Exhibit Number 6 is, shows the economics of the Tulk-Pennsylvanian Field. The estimated recovery factors and the economics in the Tulk-Pennsylvanian Field are based to a large degree on our experience and the performance of the Baum-Penn Field located approximately three miles east of the Tulk Field.

The economics in the Baum Field have improved somewhat since our prior hearing due to our obtaining a pipeline connection on a gas sales contract.

The Tulk area was also included in the gas sales contract. However, sufficient reserves must be proven before they were obligated to lay a gas cutting line into the Tulk area. We're confident that we will be able to get a gas and oil pipeline connection when sufficient reserves have been proven.

This exhibit also shows that operating costs and salt water disposal costs are high in this type production and, in this case, it has been estimated to be approximately fifty cents per barrel of oil produced over the life of the field.

Q This shows the estimated recovery for 40 acres, 80 acres and 160 acres in the area?

A Yes, sir. These estimated oil recoveries were originally based on volumetric calculations. However, the producing performance in the Baum Field indicates that these early

estimates are accurate or the average well in the field.

Individual well performance indicates that recovery will vary rather wildly. However, the average should recover approximately 150,000 barrels of oil on 160-acre spacing.

Q According to the figures shown on the Exhibit 6, would it be economical to drill and operate wells in this area on 80 acres?

A No, sir. The development costs are \$190,000.00 per well and, on this basis, it would not be economical on 40 or 80-acre development.

Q What ratio of recovery do you have on 160 estimated?

A The exhibit shows that it would be about 1.72, ratio of income to investment.

Q Do you have anything else with respect to Exhibit Number 6?

A No, sir.

Q You are asking for temporary special field rules for this area. Do you have any suggestion to the Commission as to the rules to be adopted?

A Yes, sir. We'd like that the field rules similar to those adopted for the Baum-Penn Field be granted and we ask for these for a period of one year, during which time Coastal States will obtain the necessary information if one well can effectively and efficiently drain the 160 acres.

Q And you are requesting 160-acre spacing with 80-acre allowable?

A Yes, sir.

MR. HINKLE: We'd like to offer in evidence Exhibits 4, 5 and 6.

MR. UTZ: Without objection, Exhibits 4, 5 and 6 will be entered into the record in this case.

MR. HINKLE: That's all we have of this witness.

(Whereupon, Applicant's Exhibits 4, 5 and 6 admitted in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. McGraw, I haven't read the Baum Pool Rules lately. Is that rigid spacing or what is the spacing there?

A No, sir, it's not rigid spacing. It's allowing the Government to space any quarter-quarter section from 150 feet from the center. I have a copy of those here that I'd be glad to leave with you.

Q Oh, we have them. I just haven't had a chance to get to them. And did you have a recommendation for horizontal limit?

A Sir?

Q Did you have a recommendation for horizontal limit?

A No, sir, we don't, at this time. We feel that it will

continue to develop and may actually extend on into the Baum Field. However, this is quite some distance away at this time.

Q I presume that the pool limits are still the Northwest Quarter, the Northeast Quarter of Section 27, even though that well has been abandoned. So you would certainly want the Northwest Quarter of Section 26, would you not?

A Yes, sir.

Q And it looks as though you might also need the Southeast Quarter of Section 22, too, according to those figures you gave me of the drillstem test.

A Yes, sir.

Q Well, obviously, it's going to take some kind of area.

A Yes, sir, it is, and we definitely want that included.

Q And it will be awhile before you know on your 1-23 Well?

A Yes, sir. It will be approximately fifteen days at the earliest.

Q Are all these wells at the present time spaced in accordance with your proposed locations here so that there will be no --

A Yes, sir. That's right.

Q Did you give me any bottom hole pressures?

A Yes, sir, and they're on the exhibit.

Q Oh, I see. Exhibit 5.

A Yes, sir. That's all the bottom hole pressure information that is currently available. We will continue to gather this information whenever we can.

Q What type of information would you gather in the next year if we grant you one-year temporary order?

A We feel that inside one year, with our production from our existing well, that we will be able to determine by drilling, by the initial pressure taken on new wells completed or by an actual or official interference test, that one well can efficiently drain the area.

Q Of course, you're already producing one well.

A Yes, sir.

Q And you feel that 160-acre spacing, in one year, you will have any production to show interference?

A Yes, sir, we do, from the information that we've been able to gain in the Baum area at 1,000 barrels a day or so, oil and water, I believe it will show up.

MR. UTZ: Are there any other questions of the witness?

Q (By Mr. Utz) Is this a sour crude?

A I'm sorry. I can't answer that. I feel pretty sure that this is a -- classified as an intermediate. It is not extremely sour, I know that.

Q Did you have gravity?

A Yes, sir. I did not report it, but it runs 43 to 44.

MR. UTZ: Are there any other questions? The witness may be excused. Any statements in this case?

MR. PULTE: Midwest Oil, John Pulte. Midwest supports Coastal States' request for special pool rules for the Tulk-Penn Pool, including provision for 160-acre spacing and the 80-acre allowable factor. We believe this is in the best interest of all concerned and will prevent unnecessary drilling expense without affecting correlative rights of royalty owners and the ultimate recovery of oil and gas.

We also believe that as drilling progresses, evidence will show that one well can efficiently drain 160 acres.

MR. UTZ: Are there any other statements? The case will be taken under advisement.

MR. HINKLE: Thank you very much.

MR. UTZ: The hearing is adjourned.

(Whereupon, hearing was adjourned at 2:55 o'clock PM.)

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E X H I B I T S

<u>Number</u>	<u>Marked for Identification</u>	<u>Received in Evidence</u>
Applicant's Exhibits 1, 2, 3	2	11
Applicant's Exhibits 4, 5, 6	2	20