BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 21, 1963

EXAMINER HEARING

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| IN THE MATTER OF:<br><br>Application of Skelly Oil Company for the creation of a Strawn Gas Pool and for Temporary Special Pool Rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Strawn Gas Pool for its West Jal Unit Well No. 1, located in Unit H, of Section 20, Township 25 South, Range 36 East, Lea County, New Mexico, and the establishment of temporary special pool rules therefor, including a provision for 640-acre proration units. | Case 2764 |

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 2764.

MR. DURRETT: Application of Skelly Oil Company for the creation of a Strawn Gas Pool and for Temporary Special Pool Rules, Lea County, New Mexico.

MR. WHITE: May the record show the same appearance as in the previous case and we have one witness to be sworn at this time, Mr. Ron Jacobs.

(Witness sworn.)

RONALD J. JACOBS

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

DIRECT EXAMINATION

BY MR. WHITE:

Q Will you state your full name for the record, please?

A Ronald J. Jacobs.

Q By whom are you employed and in what capacity?

A Employed by Skelly Oil Company as conservation engineer, located in Tulsa, Oklahoma.

Q Have you previously testified before this Commission and as a conservation engineer?

A Yes, sir, I have.

Q Have your qualifications been accepted?

A Yes, sir.

Q Are you familiar with the subject application?

A Yes, I am.

Q Will you briefly state what Skelly is seeking?

A Skelly is seeking temporary rules for the Strawn formation found by a new discovery of the West Jal Unit Well No. 1. This well is located 1980 feet from the North line and 660 feet from the East line of Section 20, 25 South, 36 East, Lea County, New Mexico.

Q All the area underlying the acreage set forth in the application, does that all constitute new and unencountered common source of supply?

A Yes, the area requested by the application is all the direct and diagonal offset to the section in which the discovery well is located.

Q Will you refer to what has been marked Exhibit No. 1 and explain the map as it appears on the board?

(Whereupon, Applican't Exhibit No. 1 was marked for identification.)

A Exhibit No. 1 is a map showing portions of Townships 25 and 26 South, 35 and 36 East, Lea County, New Mexico. Circled in red is the location of the discovery well, West Jal Unit No. 1. The area outlined in red is the outline of a working interest unit in which a number of operators own an interest, these operators being as follows: Skelly Oil Company, The Atlantic Refining Company, Gulf Oil Corporation, Phillips Petroleum Company, Shell Oil Company, Southland Royalty Company, Sunray DX Oil Company, George H. Coates, General Crude Oil Company, and Socony Mobil Oil Company. Skelly Oil Company is operator of the working interest unit having 45.94 plus percent interest in the working interest.

The remaining interest is split up among the operators

I have heretofore mentioned and varies from slightly over 20% to less than one percent.

Outlined in green dashed lines emcompassing nine sections, these sections being Sections 16, 17, 18, 19, 20, 21, 28, 29 and 30, is the area for which temporary spacing rules is asked for in this application and at this time. The remainder of the map is self-explanatory. It has the leasehold information to the best of our knowledge as of approximately two to three weeks ago. Of course, these leases change hands from time to time so they may be slightly different, but as of a few weeks ago this was the lease situation to the best of our knowledge.

Q Mr. Jacobs, will you give a brief history of the subject well, the West Jal Unit Well No. 1, and in so doing refer to Exhibit 2?

(Whereupon, Applicant's Exhibit No. 2 was marked for identification.)

A Well, Exhibit 2 is a well data sheet showing most of the pertinent information on the West Jal Unit Well No. 1. We show the location which I have previously testified to. In addition we show the well was commenced on December 25, 1961. The well was initially completed July 28, 1962, and was recompleted January 22, 1963.

I might add the well involved is earning some farmout

acreage and required the testing of deeper horizons so as to perpetuate the lease on the federal requirements, an initial creation was attempted and was completed and was made July 28, 1962. After that time the well was drilled deeper.

The lower zones tested and evaluated and the well was plugged back and was, quote, recompleted, end quote, in January of 1963. Next we give the elevation of this well, total depth of 15,958, present plug back total depth being 12,790 feet. The producing fromation is the Strawn with the top of 11,500 feet, the base of the Strawn 12,155 feet.

Then the next we show the casing program and then following that we show the perforations in the Strawn interval, which is the pay section. Last we show the potential of this well which has a calculated open flow of 310,000,000 cubic feet of gas per day, and this was on a four point test, which is Exhibit No. 5, which we will introduce later.

Q Mr. Jacobs, are there any other wells in this area, and if so, where?

A There's only one other well that went through the Strawn section and that is located in Section 26, Township 25 South, Range 35 East. It is the Sun Harper Federal No. 1, at a total depth of 14,933 feet. The Strawn formation found in this well was not commercially productive, although they did have, some

gas shows.

The structural difference between the top of the Strawn in the Skelly, et. al, West Jal Unit Well, and the Sun's Harper well is approximately 1600 feet, that is the Sun Harper Federal well is approximately 1600 feet deeper, the top of the pay.

We feel that we're in a rather large fault block, the extent of which is not known at this time. We have taken a number of geophysical surveys, the area is quite complicated, the results are highly interpretative, and in fact that is one of the reasons that there was some farmout acreage involved in that, some of the operators involved in this unit did not feel that the data would indicate a trap sufficient and would be oil productive. For that reason we have no structural maps or isopach maps at this time, being only one well in this new pool.

Q Now, will you refer to Exhibit 3 and tell us what has been depicted on that log?

(Whereupon, Applicant's Exhibit No. 3 was marked for identification.)

A Exhibit 3 is a composite log of the West Jal Unit Well No. 1. First we have the sonic log,and if you go down through the log, the tops of the formations are marked in red on this log. I won't go into detail as to these tops because they are not germane to this hearing, but they are marked for

your information and for identification on this log.

Continuing on down through approximately the interval of the Strawn, which is at 11,510 feet, we have shown the drill stem test and indicated the casing. This can better be seen by examining the detail log of this section which follows immediately this section we have just looked at.

On the detailed log we have shown the drill stem test, and the drill stem test data, the interval that was tested, the location of the casing and on the left-hand side we have indicated the perforations. These perforations are colored in red in addition to the red markings, and they indicate that this zone is still open and is the producing zone.

The rest of the log, I believe, is self-explanatory. There again, we've picked up the tops and show all the important markers for all the formations that this well has encountered.

Q Have you made any calculations as to porosity?

A Yes. We have calculated the porosity from the logs and from log analyses the porosity is indicated to be at least 10%. It varied between 10 and 13%, but we feel that 10% is a very reliable figure. The Strawn formation here is a limestone and the porosity we feel is in the vugular nature. Also from logs we have calculated we find the water saturation to be 30%.

Q Will you refer to Exhibit 4 and explain your casing

program?

(Whereupon, Applicant's Exhibit No. 4 was marked for identification.)

A Exhibit 4 is a diagrammatic sketch showing the casing program for this well. The exhibit is self-explanatory, I believe. It shows where the casing was set, the size and weight, type of casing. It also shows the cement and the calculated tops of the cement in each instance. Again we have shown the perforated interval in the Strawn formation being between 11,736 to 11,894. It also indicated the total depth and the plug back total depth on this exhibit.

Q Will you now refer to what has been marked Exhibit 5 and explain your open flow potential?

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

A Exhibit 5 is a a copy of the New Mexico Oil Conservation Commission Form C-122, which is the multiple point back pressure test form. This form has been filled out and the test was taken on January 22, 1963, which is the date of final completion of this well.

As you can see from these calculations, the calculated absolute open flow is 310,000,000 cubic feet of gas per day. Attached to this form is a log, log graph showing a plot, I should

say, of the open flow calculation and indicating the 310,000,000 cubic feet of gas per day open flow potential. We do not have any cores in this well.

Q Will you state why?

A We had considerable difficulty in drilling this well. When we went into the Strawn formation we hit this high pressure gas, we started to mix mud and as soon as we started mudding up we started losing circulation up the hole and for about three or four months there we were mixing mud and trying to gain complete control of the well. We finally had to set an intermediate string of casing just above the Strawn formation to shut off the lost circulation. Unfortunately we do not have any cores, either hole cores or side wall cores from this well.

Q Mr. Jacobs, what was the cost of this No. 1 well?

A The cost of this well was $1,460,000.

Q What is your estimated cost as to any future wells you may drill?

A We estimate the cost to drill additional wells in this formation to be $450,000 each.

Q What is your future drilling program?

A Skelly Oil Company, as unit operator, will propose the drilling of a well in Section 21, and then will propose the drilling of a well in Section 17, which is inside the West Jal

Unit. We anticipate that this will take approximately a year for these two wells to be drilled. The problem here is in penetration rates and our drilling people estimate that it will take approximately six months to drill each well. We are also anticipating in Section 19 the drilling of a third well which will make four wells in this reservoir.

Q Have you made any preliminary calculations as to the reserves?

A On a volumetric basis, using the 10% porosity, using the 30% water saturation, using a reservoir pressure of 7,680 psi, and an 85% reservoir, we estimate that there will be recovered 980 MCF per acre foot. There are 51 average net feet in this Strawn section as evidenced by this log, and if considering a 640-acre unit --

MR. UTZ: How much net pay?

A Fifty-one. Calculating out the 640 acres times the 51 feet times the 980 MCF per acre foot, we come up with a volumetric calculation of 32,000,000 MCF, or 32,000,000,000 cubic feet recoverable reserves under a 640-acre tract based on this one well.

Q Mr. Jacobs, will you state what new pool rules you propose to advocate?

A We are proposing 640-acre spacing for the Strawn

formation. We are proposing that a committed well be located not less than 1320 feet from the unit boundaries.

Q Could you operate on the basis of say 1980 feet from unit lines?

A Well, of course, we would like the greatest flexibility in drilling these wells. Considering the cost of almost a half a million dollars each we would like to have some flexibility. Now, frankly, the land out here is flat. There are no particular topographic problems. We, if the Commission saw fit, would be willing to drill these wells at 1980. However, we do feel that the Commission should give consideration to the cost of these wells and give the operators a reasonable chance to locate these wells so as to avoid the drilling of unnecessary dry holes.

Q Will these proposed rules provide for the orderly development of the pool and also protect correlative rights?

A Yes, they will. We feel that the granting of temporary 640-acre spacing for this new pool will allow the pool to be developed approximately twice as fast as it would be if 320 acre were granted. Because by the drilling of these additional three wells in addition to the one already drilled we will have four complete sections drilled or proved up or not proved.

Q And you will furnish any new or additional reservoir



data to the Commission if, when and as it becomes known?

A Yes. Of course, we will gather as much information as possible. We are vitally interested in this Skelly as the operator of the unit and as a leasehold owner outside the unit is vitally interested in this new common source of supply.

Q Based upon the reservoir information now available, is it your opinion that one well can economically and efficiently drain 640 acres?

A Yes, sir. There's no doubt in my mind that a well will adequately and efficiently drain 640 acres from this formation.

Q How long would you request that these temporary rules be in effect?

A We would request that these temporary rules be in effect for two years. As I mentioned before, each well will take approximately six months to drill. We're looking at three additional wells which will take the better part of eighteen months. Then, too, we are negotiating at the present time for a gas market. By that time we also hope to have some production information and some performance data.

According to the negotiations we have made so far, as far as a gas market, which by the way are not finalized, and if you don't mind I won't go into a great deal of detail because we are



still negotiating with a number of companies.

Q What will the payout be?

A We estimate that the payout, based on the takes for the initial two-year period on an average well costing $450,000, will be slightly in excess of three and one-half years.

Q Again referring to your pool rules, are you familiar with Order R-2349 in Case 2654 in regard to the application of Carper Drilling Company for the creation of a new gas pool and temporary special rules and regulations?

A Yes. That order provides for temporary 320-acre spacing units. We have no objection to this type of order except that we would like for it to be modified where necessary to provide for the 640-acre spacing rather than the 320-acre spacing.

MR. WHITE: At this time, if the Examiner please, we would like to request that the Examiner take administrative notice of Order R-2349.

MR. UTZ: Will do so.

Q (By Mr. White) Is there anything further you would like to state in regard to the application, Mr. Jacobs?

A No, except that we feel that this is an important discovery in this State, some of the deep Strawn formation in this area has not been found. We feel that it's in the best

interest of all concerned that the field be developed as rapidly as possible, that the information be gained as rapidly as possible so that all persons interested in the area may share in that their correlative rights may be protected. For that reason we urge the Commission to adopt temporary 640-acre spacing for a two-year period.

Q Were these exhibits prepared by you or under your direction?

A Yes, sir, they were, except for Exhibit No. 5 which was merely a copy of the back pressure test which has heretofore been filed with the Commission.

MR. WHITE: At this time we offer the exhibits in evidence.

MR. UTZ: Without objections, Exhibits 1 through 5 will be entered into the record in this case.

(Whereupon, Applicant's Exhibits Nos. 1 through 5 were entered into the record.)

MR. WHITE: That concludes our testimony on direct.

MR. KASTLER: What pool was 2349?

MR. UTZ: Buffalo Valley, Pennsylvania Pool.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Jacobs, you have outlined a nine section area there

in which you, I believe you in your testimony requested that these spacing rules be effected. Does not Rule 1 of Order 2349 give you the same latitude there providing the pool was established consisting of Section 20?

A Well, we are looking immediately at the drilling of three direct offsets to this. Now, I think it would be in order, our geophysical information indicates, our geologists believe, and I believe that this pool covers at least the nine section area that I have outlined. I think it would be prudent to include these nine sections at this time rather than to come back and extend these things from time to time. What you say is probably true, but I think this would probably be a little more orderly in development of this pool.

Q Are you requesting these nine sections be designated as a pool?

A For the Strawn formation, yes, sir, and we would suggest that it be called West Jal Strawn Pool. However, we have no objections to the Commission designating it as any other name.

Q The provisions that any well drilled within a mile of the pool would protect your spacing regulation, would they not?

A Yes. Of course, we feel that it would also, as soon as these wells are drilled, or even before they are drilled, it would also protect this out here. Because there is some,

frankly, as far as we can tell, some open acreage there and we think that to prevent the unnecessary crowding of lease lines and to provide for the orderly development of this pool it would be desirable that this nine sections be spaced at this time.

Q However, you only have one well in nine sections that would show the original pool area?

A Yes, but it is, as you can tell from the back pressure tests, the open flow potential of 310,000,000, and indicates a pool of considerable size. Our information geologically indicates a pool with considerable size.

Q Referring to your back pressure test which is Exhibit No. 5, I note that you have four points, the first an hour and forty-five minutes and the next two hours, the third an hour and thirty minutes. Were any of those points stabilized?

A It is my understanding that this is when they were stabilized.

Q Do you have any pressure data, this flowing pressure data, to indicate that they were stabilized?

A I do not have it with me, but I'll be glad to furnish that by letter, or however you wish.

Q I notice that the first two points were not plotted on your log, log graph, I have roughly plotted them and they fall substantially below the line. Do you have any explanation for that?

A No. Except that we felt that the higher rates were more indicative of the absolute open flow at the two points, the last two points extrapolated out would give a more representative figure. Now, it may be that this plot is in error. Only performance data will really tell, but this is our best estimate of the performance at this time based on this four point test.

Q If one of the two original points were valid points and stabilized points, then it would tend to indicate that the well wasn't quite as large as 310,000 MCF?

A It may throw the line where it may only be 200,000 or even 100,000.

Q But it's still a pretty good size well?

A It's still a good well.

Q You didn't give any permeability information?

A No, sir.

Q Did you have any?

A No, sir, I explained that we do not have any core data on which to base any permeability.

Q You didn't have any micrologs either?

A There was a microlog run over most of the interval. A microlog was run between the interval of 11,740, which is just below the top of these perforations that are presently



open down to 13,600. We did not make calculations on the micro-log because we didn't feel that they were truly representative of any, you could accurately calculate permeability from the micrologs.

Q Not from the pay zone anyway?

A Not from the pay zone.

Q So, really, the only indication that you have as to what the permeability might be would be from your absolute open flow test?

A We feel we have considerable permeability. Just what that is I don't know. I don't feel you can really calculate permeability from four point test either. You might get a conformance factor or a ratio and differential pressures and things, but we'd only be fooling ourselves and be trying to fool the Commission if we tried to calculate the permeability from this data.

Q Do you have any idea whether you have fracturing in the reservoir or not?

A No, we do not feel from the sample that we collected from the well, we do not feel there is any appreciable fracturing. We feel that the porosity and all the connections are all through vugular things in the limestone.

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

MR. DURRETT: Yes, sir, I have a question.

BY MR. DURRETT:

Q Mr. Jacobs, I believe you stated on direct examination that you were requesting, as far as well locations, that the rule read not nearer than 1320 to the unit boundary?

A Yes.

Q Or possibly 1980 to the unit boundary?

A Yes, sir.

Q I assume that you also have no objection to the usual provision that the well also be located not nearer than 330 to a quarter, quarter section line, is that correct?

A We have no objections to that if the 1320 were adopted. Now, if the 1980 were adopted that would limit us quite a bit as to the area around the well, ten acres in each quarter section in which the well could be drilled, and if you limit it 330 here you appreciably cut down on the flexibility of locating these wells.

Q Yes, that's correct. But wouldn't you feel along those same lines that if the pool did happen at some later date to revert to 160 or 320 acres it would probably be a good idea for the Commission to try to prevent wells from being crowded in too close to a quarter, quarter section line?

A Well, then, you run into a problem of trying to locate

the wells as close to the center of the section as possible and yet try to look down the road and see the possibility of 320. I don't know how that can be reconciled to provide for orderly development. Of course, it's better that the wells be as equidistant as possible on the sections. But if you limit the distance not only from the unit lines but also from the quarter section, or quarter, quarter section lines, you really cut down on the permitted well location.

Q But you would feel that the Commission should probably at least consider this matter when it is drawing the rules?

A Yes.

MR. DURRETT: Thank you. I think that's all I have.

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

MR. WHITE: Mr. Dick Morris authorized me to state on behalf of the Shell that they concur in the granting of the application.

MR. UTZ: Are there other statements? Mr. Kastler.

MR. KASTLER: I'm Bill Kastler, appearing on behalf of Gulf Oil Corporation. I would like to state that Gulf Oil is an interest owner in the West Jal Unit and concurs most heartedly and unreservedly with this application.

MR. UTZ: Are there any other statements? The case

will be taken under advisement.

STATE OF NEW MEXICO )
) ss
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 28th day of February, 1963.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2764, heard by me on Oct. 24, 1963.

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