BEFORE THE
OIL CONSERVATION COMMISSION
Hobbs, New Mexico
March 1, 1956

IN THE MATTER OF

Case No. 1024

TRANSCRIPT OF PROCEEDINGS

BEFORE THE
OIL CONSERVATION COMMISSION
Hobbs, New Mexico
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| Application of Wilshire Oil Company of Texas for an order creating the D-K Abo and the D-K Drinkard Oil Pools in Lea County, New Mexico, and promulgating pool rules therefor, and for the deletion of certain acreage from the Warren-Drinkard and Warren-Abo Oil Pools in Lea County, New Mexico.<br><br>Applicant, in the above-styled cause, seeks an order creating the D-K Abo and the D-K Drinkard Oil Pools to consist of the N/2 of Section 30 and the S/2 of Section 19, Township 20 South, Range 39 East, Lea County, New Mexico, and promulgating pool rules therefor, and in addition for the deletion of all of Section 30, Township 20 South, Range 39 East, from the horizontal limits of the Warren-Drinkard and Warren-Abo Oil Pools. | Case No. 1024 |

BEFORE:

Warren W. Mankin, Examiner

TRANSCRIPT OF HEARING

EXAMINER MANKIN: The hearing will come to order. The next case on the docket is Case No. 1024, the application of Wilshire Oil Company of Texas for an order creating the D-K Abo and the D-K Drinkard Pools and the promulgation of rules therefor and the deletion of certain other areas from the Warren-Drinkard and the Warren-Abo in Lea County, New Mexico.

MR. CAMPBELL: Mr. Examiner, I am Jack M. Campbell of Campbell and Russell of Roswell, New Mexico, appearing on behalf of the applicant, Wilshire Oil

Company of Texas, and I have four witnesses to be sworn please. I might state at the outset, Mr. Examiner, that the application here requests first that the two new pools to be known as the D-K Drinkard and the D-K Abo Pools be set up covering each of those respective formations or zones in the N/2 of Section 30 and S/2 of Section 19, Township 20 South, Range 39 East, and second that pool rules be adopted for those two pools. Actually the only special pool rule that is being requested is the designation of a gas-oil ratio in the D-K Drinkard Oil Pool. So insofar as the D-K Abo Pool is concerned it simply amounts to a request for severing that from the Warren-Abo Pool and establishing a new pool with statewide rules applying.

MILES A. COLLIGAN

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

DIRECT EXAMINATION

By MR. CAMPBELL:

Q. State your name please.

A. Miles A. Colligan.

Q. Where do you live Mr. Colligan?

A. Midland, Texas

Q. And by whom are you employed?

A. Wilshire Oil Company of Texas.

Q. In what capacity?

A. Chief Geologist.

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

A. I have not.

Q. Will you please give the Examiner a brief review of your educational and professional background and experience?

A. I graduated from the University of California, at Los Angeles in 1940. I was employed by Wilshire Oil Company of California in 1946 and have been with that company or parts of its company ever since. I am now with Wilshire Oil Company of Texas.

Q. During that time have you had occasion to make geological studies and interpretations in West Texas and New Mexico?

A. I have.

Q. In connection with your employment have you made studies of the situation geologically with regard to the D-K Abo and Drinkard proposed oil pools and the presently existing Warren-Drinkard and Warren-Abo Oil Pools in Township 20 South, Range 39 East, Lea County, New Mexico?

A. I have.

Q. I show you what has been identified as Exhibit No. 1. Will you please state what that is?

A. Exhibit 1 is a contour map on top of the Abo horizon.

Q. In what area?

A. In the area of discussion, the D-K Abo area, in Township 20 South, Range 38---39 East East, Section 19 and 30 specifically.

Q. Was this contoured map prepared by you?

A. Under my direct supervision.

Q. And on what is your information based?

A. Based on electric log tops from the wells shown on the map.

Q. And it reflects your interpretation of the gological relationship between the Warren Pool and the proposed D-K Pool, does it?

A. Yes.

Q. Mr. Colligan, who are the leasehold owners in the area that is involved in the application?

A. Wilshire Oil Company of Texas and the Texas Crude Oil Company.

Q. Those are the only two in the N/2 of Section 30 and S/2 of Section 19?

A. The only two.

Q. Have you contacted the Texas Crude Oil Company with reference to your application?

A. I believe that has been done.

Q. I hand you what has been marked as Exhibit No. 2 and ask you to state what that is?

A. This is a letter from the Texas Crude Oil Company to Mr. Sindel of Wilshire Oil Company stating that they have no objections for the promulgating of pool rules or of the deleting of this area from the Warren-Drinkard or the Abo Oil Pool, Lea County.

Q. And they do state that they have no objection to the raising of the gas-oil ratio?

A. I believe it does. "And that the Texas Crude Oil Company does not object to the raising of the gas-oil ratio".

Q. Now, Mr. Colligan, I show you what has been marked as Exhibit No. 3, and ask you to state what that is?

A. This is a cross-section drawn of the D-K area to the Warren Abo and to the Warren-Drinkard and over to the Warren-McKee area. It is a east-west cross-section.

Q. Mr. Colligan, is it the cross-section of the wells which is reflected by the connecting lines shown on Exhibit No. 1, which is your contour map?

A. Yes, it is.

Q. Now, in addition to your studies, with reference to the contour situation geologically and your study of the cross-section on the wells, have you made some personal studies of cores from wells in this area?

A. Well, at the time of the drilling of the Wilshire Carter Well 43-25, I made personal examination of many of the cores taken through the lower Drinkard section and the upper Abo and especially in the upper Abo there were many instances of movement in the shales and so forth with intense fracturing, which to me indicates a fault condition and at the same time we were drilling that well, Murphy Baxter was drilling the 1-30 well which was a direct east offset, and they cored roughly the same interval but not quite so extensively and the same fault indications were picked up from that well also, further substanti ating the presence of a fault.

Q. Mr. Colligan, based upon your studies as reflected in these exhibits, what is your interpretation of the geological situation in that area and just explain generally to the Examiner the basis for your conclusion.

A. My interpretation of the contours on top of the Abo is---there is very definitely a separation between the production in the D-K area with the production to the west in the Warren-Drinkard and the Warren-Abo specifically. I think this severance can be demonstrated not only along the fault but just to a structure interpretation even without the fault. The Wilshire 43-25 Carter encountered water--salt water in the lower Drinkard, where none at all was encountered in the producing well, Wilshire 12-30.

Q. Is there anything else with regard to your cross-section of these wells that you wish to state to substantiate your conclusion that they are two separate reservoirs?

A. I think that the cross-section more or less speaks for itself. All of the information we have on there is based on electric log data and core data.

Q. And it substantiates and correlates with your interpretation as reflected in your contour map, is that correct?

A. Thats correct.

Q. And that those are added to by your information obtained from the examination of cores on the wells.

A. Yes.

Q. Based upon your studies and your interpretation, is it your recommendation that the area requested be established as a new pool, the D-K Drinkard Pool in the Drinkard zone and another new pool, the D-K Abo pool in the Abo zone?

A. Yes, it is.

Q. And that those areas be deleted from the presently defined limits of the Warren-Drinkard and the Warren-Abo Pools?

A. Yes.

Q. Thats all.

MR. MANKIN: Mr. Colligan, you indicated that this cross-section, Exhibit No. 3, was based upon electric logs and core data that you might of had. Does it reflect on your cross-section that Mr. Kugler prepared in Exhibit 3?

A. All of the core intervals are on the wells in question. In other words I think you will find the core intervals shown on the Wilshire Carter 43-25 and the Murphy Baxter 1-30 and our present producing well is not cored, the 12-30. I think you will find core data on wells over in the Warren-Abo, specifically Magnolia and Continental, I believe just the Magnolia has been cored.

MR. MANKIN: That substantiated that you did have some faults in between this new area to be proposed and the old D-K area both in the Drinkard and the Abo?

A. The pronounced fault characteristics or indications occured in the Abo, less in the Drinkard, but present.

MR. MANKIN: The other question which I have is, ---of course this particular application asks for the creation and pertains to the N/2 of Section 30 and the S/2 of Section 19, 20 South, 39 East. The old D-K Abo and D-K Drinkard areas would therefor touch the new area to be designated. Would you suggest that some areas on which dry holes were drilled west of this area which you suggest here might likewise be taken from the D-K Abo and the D-K Drinkard Pools as they might have been extended without proper considerations. In other words should more area be taken from the D-K Drinkard and D-K Abo to further separate the two pools as you would suggest in being created?

A. I think the fault is the limiting factor on the southwest.

MR. MANKIN: So you would not suggest possibly some additional acreage taken, say in range 38, from the D-K and taken out and leave that in some unproductive area. Just leave it there for the time being based upon the separation by the fault.

A. Based on the present information in the area. Further drilling may change that.

MR. MANKIN: Is there further question of the witness?

MR. MONTGOMERY: Mr. Colligan, is there anywhere where the Abo lies unconformably on top of the Devonian through this cross-section?

A. Yes, we found that to be the case.

MR. MONTGOMERY: Do you know of any place else where the Abo is known to have any faults in Southeastern New Mexico?

A. Not off hand, no. But I think there is a common fallacy around that there is no faulting in the Permian section and I think that in this particular area where it is extremely complex, I think we have every reason to believe it could be faulting in the lower Permian. In the Abo specifically and even in the lower Drinkard. The cores that were encountered in those two wells, both the Murphy Baxter and our well, the Drinkard had a tremendous section of anhydrite, quite a bit of fracturing and much secondary communication. Of course the underlying Abo was intensely fractured, sometimes even vertically. There is numerous indications of slickenslides. That, in my estimation, is a pretty good indication of faulting and possibly carried on into the Drinkard. As a result of solutions, secondary minerals were formed in these members and not necessarily so many formed in the Abo.

MR. MONTGOMERY: I am not objecting to your application, but I am just very anxious to see if there is faulting in the Permian, it would change the concept in there. Most of us do not believe that there is any faulting in that area. What type of minerals did you find?

A. Predominantly anhydrite. The seams were sometimes four feet thick--predominatly anhydrite.

MR. MONTGOMERY: What minerals were you associating with the fault. Was it anhydrite?

A. Mostly. Excuse me---you will notice on that one contour there--do you have the exhibit that shows the contours-----

MR. MONTGOMERY: I didn't understand you.

A. The dip meter on those two wells---we have an exhibit that shows the dip meter in volts, the 43-25 and the Wilshire 12-30 Federal.

MR. MONTGOMERY: What zone do you refer to?

A. Into the lower Drinkard or upper Abo, right closely associated to the area contoured.

MR. MONTGOMERY: But they were not necessarily taken at the same depth?

A. No. I couldn't say they were taken in the same bed, but within a 100' interval.

MR. MONTGOMERY: Thats all I have.

MR. MANKIN: Any further question of the witness?

MR. CAMPBELL: One more question Mr. Colligan. There has been a dry hole drilled to the west and south of the area that you are seeking to have designated as new pools, has there not?

A. Yes, sir, there has been.

Q. And did that test both the Drinkard and the Abo formations?

A. The Wilshire 43-25 tested both formations.

Q. And there has been another dry hole drilled immediately south of this proposed area?

A. It has been. Murphy Baxter drilled a well in Section 36 which has been subsequently abandoned.

MR. CAMPBELL: Thats all.

MR. MANKIN: Any further question of the witness? If there is nothing further, this witness may be excused.

A. T. SINDEL

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

By MR. CAMPBELL:

Q. State your name please.

A. A. T. Sindel.

Q. Where do you live, Mr. Sindel?

A. Midland, Texas

Q. By whom are you employed?

A. Wilshire Oil Company of Texas.

Q. And in what capacity?

A. Chief Petroleum Engineer.

Q. You have not previously testified before the New Mexico Oil Conservation Commission.

A. No, sir.

Q. Will you give a brief statement of your education and professional background and experience.

A. I graduated from the Missouri School of Mines in 42 and after coming back from the service I was employed by Standard Oil Company of Texas for two years, by Bay Petroleum Corporation for four years, by Ashland Oil and Refining Company for two years and I have been with Wilshire Oil Company for the past two years.

Q. And during the time you have been working for these various companies have you had ocassion to do work in the West Texas and New Mexico area?

A. Yes, sir.

Q. Have you made some studies with reference to the production history and the reservoir situation in the area covered by Wilshire Oil Company of Texas applicant in this case?

A. Yes, sir.

Q. I hand you what has been marked as Exhibit No. 4, and ask you to state what that is please.

A. That is a record of the production capabilities of the well in question. The type of production that has been obtained from them on various size chokes after stabilized flow and testing.

Q. Now, I hand you what has been marked Exhibit No. 5 and ask you to state what that is.

A. This is a graphic representation of the same information that was contained in Exhibit No. 4.

Q. Was this graph prepared by you or under your supervision?

A. Yes, it was.

Q. And where did you obtain the information in connection with the figures shown on Exhibit No. 4?

A. Well, they were obtained from files and switchers working on the lease, actually doing the measuring.

Q. I now hand you what has been identified as Exhibit No. 6 and ask you to state what that is.

A. That is a record of the Delta log and a temperature survey that was run on the Federal 12-30 well in question and when it was producing from the Drinkard formation.

Q. Now, Mr. Sindel, taking the figures that you have there on Exhibit No. 4, as shown by the graph, Exhibit No. 5, will you state what in your opinion those indicate with reference to a proposed gas-oil ratio for the D-K Drinkard Oil Pool, if it is designated as such?

A. It shows that by cutting down the choke size and decreasing the flow of liquids of fluids that the gas-oil ratio climbs rather rapidly and soon reaches the point

of almost all gas. It reached the point of 26,000-1 ratio, producing at a rate of 8 barrels of oil a day, whereas at 84 barrels a day it had a ratio of 9,000-1, and it progressed between those two degrees as the well was flowed, various rates.

Q. What problems does that create with regard to operating those wells on the normal statewide 2,000-1 gas-oil ratio?

A. Well, if the 18/64 choke were to produce 84 barrels of oil at 9,000-1 ratio that would give it an allowable of approximately 16 barrels a day. However, when produced the restricted flow to 16 barrels a day the gas-oil ratio would be in a magnitude of 20,000-1, and would be producing approximately 300,000 cubic feet per day, which again would entail cutting back production to limit the gas production to 146,000 cubic feet a day.

Q. Based upon that situation, what gas-oil ratio limit do you recommend for the D-K Drinkard Pool, if it is designated as such?

A. Producing at the allowable rate for that depth, which would be approximately 73 barrels a day, 10,000-1 ratio would enable us to produce it at an increased rate.

Q. I take it then, that in your opinion, if a 10,000-1 gas-oil ratio were established in the D-K Drinkard Pool, that it would not, in your opinion, result in waste or loss of reservoir energy or loss of oil which might otherwise be recovered?

A. That is correct.

Q. Do your own studies, have they indicated to you whether there may or may not be a gas-cap present or whether the gas is present through the entire zone?

A. From studies made and from the interpretation of the Delta log it is indicated that there is not a gas-cap for the gas bearing strata in this particular zone.

Q. You are making no recommendation for any change in the gas-oil ratio for the proposed D-K Abo Pool are you?

A. I would like to suggest and recommend that it have a limiting ratio of 10,000-1.

Q. You are speaking of both the D-K Abo and the D-K Drinkard----

A. I am sorry. In the D-K Drinkard only.

Q. And you are not suggesting that there be any change from the 2,000-1 in the D-K Abo at this time?

A. No, sir.

Q. Thats all.

MR. MANKIN: Mr. Sindel, has this gas been marketed in this area?

A. It is not being marketed as yet, but there are negotiations in the mail now and I believe Mr. Stone has more definite testimony on that.

MR. MANKIN: So actually it is proposed that in the very near future that if this larger ratio is granted that there would be no waste occuring there?

A. Thats right.

MR. CAMPBELL: We will offer testimony to establish the existence of a market for gas.

MR. MANKIN: Is there questions of the witness?

MR. MONTGOMERY: Do you have any other locations for gas to be drilled in this area?

A. Yes, sir. We are presently drilling a location to the northeast of this Federal 12-30, which is the Carter "A" 24-19. I believe it is shown on the map.

MR. MONTGOMERY: Do you plan on opening up the same zones in that well as you have open in this well?

A. Not necessarily. We have------the Abo is productive in this area and we would go to that initially.

MR. MONTGOMERY: Assuming that you were to recomplete a well in the Drinkard formation in the area, would you open the same zones that you have open in this well?

A. I believe we would with possibly more restriction over----instead of perforating the entire area we would restrict it more to the indicated permeability on the mecrolog and gamma ray.

MR. MONTGOMERY: But you do not feel that the excessive ratio in this well is possibly due to poor completion practice? Could you improve your completion practice?

A. That of course was the thought and that was the idea of running the Delta Log survey to determine if that was our trouble. If it was a gas-cap or if there was a zone in the Drinkard strata there that is gas productive, whereby it could be separated and it was for that reason that we ran the Delta log and in the interpretation of the Delta log why that is not the case.

MR. MONTGOMERY: Thats all I have.

MR. MANKIN: Any further questions of the witness?

MR. RIEDER: Mr. Sindel, do you have any anylsis of the fluid---bottom-hole anaylsis?

A. No we do not. I contacted Core Laboratories and told them the conditions of the well and ask them if they would attempt to obtain a bottom-hole sample. They stated that in addition to this well was making approximately 20% water with a high gas-oil ratio and that they could not obtain a satisfactory sample and would not even suggest taking it.

MR. MANKIN: Possibility in the new well that you get such a situation---if you were better situated for taking a sample that you might take a sample?

A. Yes, sir.

MR. MANKIN: In the new well that is to be drilled?

A. Yes, sir.

MR. MANKIN: Any further questions of the witness? If not, the witness may be excused.

JOHN A. DISH

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

DIRECT EXAMINATION

By MR. CAMPBELL:

Q. State your name please.

A. John A. Dish.

Q. Where do you live?

A. I live in Odessa, Texas

Q. By whom are you employed, Mr. Dish?

A. Worth Well Surveys.

Q. How long have you been employed by them?

A. About two years.

Q. Will you give to the Examiner a brief statement of your educational and professional background and experience?

A. I graduated from the University of Oklahoma in 1951. I worked for two years as a production engineer with Sinclair Oil and Gas and two years as an engineer for Worth Well.

Q. In connection with your employment by Worth Well Surveys, have you been requested by Wilshire Oil Company of Texas to prepare and examine and interprete a Delta log?

A. Yes, sir. To give interpretation of the log that we ran for them.

Q. I hand you what has been marked Exhibit No. 6 and ask you if you will using that exhibit , give to the Examiner your interpretation with regard to the existence or non-existence of a gas-cap and whether there may be any particular gas bearing strata within the Drinkard formation in the area involved in this case.

A. Our log indicates and from the slope of the curves that are run on it that the entire section that had been---through the perforations was gas productive and that there is no indication in any section of a definite free gas-cap, as we have experienced before.

Q. Refering to that Exhibit No. 6, if there were such a situation what would it probably indicate based upon other logs of like nature?

A. You will notice on this that we have designated run $N_o$. 1, which is a gradient temperature survey being the absolute well temperature and as we cross the perforated section, the entire section is cooled and that above the perforated section that the gradient itself has cooled. And below or at the bottom part of the curve, at no point does it break back to a hotter section than what is through the perforated section or above it, which indicates that there is no fluid entry isolated by itself or dead period or non-production.

MR. CAMPBELL: Thats all.

MR. MANKIN: Is there question of the witness? If not, the witness may be excused.

CLYDE N. STONE

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

DIRECT EXAMINATION

By MR. CAMPBELL:

Q. State your name please.

A. Clyde N. Stone.

Q. Where do you live Mr. Stone?

A. Midland, Texas

Q. By whom are you employed?

A. Wilshire Oil Company of Texas.

Q. In what capacity?

A. As counsel.

Q. In your capacity as counsel for Wilshire Oil Company of Texas, is it part of your work to negotiate and consumate the gas purchase contracts on the wells of Wilshire Oil Company of Texas?

A. It is.

Q. In connection with the wells situated in the proposed D-K Drinkard and D-K Abo areas, have you negotiated such a contract?

A. We have.

Q. With whom?

A. With El Paso Natural Gas.

Q. Has El Paso Natural Gas agreed by cnntract to purchase gas produced from this proposed---the proposed pools?

A. Thats right.

Q. And they have agreed in that contract to lay the necessary pipe lines to acquire the gas, have they?

A. Thats correct.

Q. Do you know the date of the contract, off hand?

A. No.

Q. Is it recent?

A. It is within the last ten days.

MR. CAMPBELL: Thats all.

MR. MANKIN: Is there question of the witness? If not the witness may be excused.

MR. CAMPBELL: I would like to request that---like to offer in evidence Exhibits 1, 2, 3, 4, 5 and 6.

MR. MANKIN: Is there objection to the entering of Exhibits 1 through 6 in this case? If not they will be so entered. If there is nothing else, we will take the case under advisement.

STATE OF NEW MEXICO )
) ss
COUNTY OF SANTA FE )

I, Joan Hadley, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Hobbs, New Mexico, is a true and correct record, to the best of my knowledge.

Joan Hadley