EXAMINER HEARING
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 29, 1958

IN THE MATTER OF: Case No. 1373

TRANSCRIPT OF PROCEEDINGS

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ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

EXAMINER HEARING
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IN THE MATTER OF:

Application of Gulf Oil Corporation for a dual completion. Applicant, in the above-styled cause, seeks an order authorizing an oil-gas dual completion for its Alice Paddock No. 5 Well, located 990 feet from the North line and 2310 feet from the East line of Section 1, Township 22 South, Range 37 East, Lea County, New Mexico, in the Blinebry Oil Pool and Tubb Gas Pool.) Case 1373

BEFORE: Mr. Daniel S. Nutter, Examiner

TRANSCRIPT OF PROCEEDINGS

MR. NUTTER: We will proceed next to Case 1373.

MR. COOLEY: Case 1373: Application of Gulf Oil Corporation for a dual completion.

MR. KASTLER: If the Commission please, I am Bill Kastler, attorney, representing Gulf Oil Corporation, and our two witnesses this morning are Mr. Gerald J. Savage and Mr. H. B. Wofford, Jr. I would like them to be sworn at this time.

(Witnesses sworn.)

Mr. Savage, will you please take the stand?

GERALD J. SAVAGE

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

DIRECT EXAMINATION

By MR. KASTLER:

Q Would you please state your name and where you reside and by whom you are employed?

A Gerald J. Savage, Roswell, New Mexico, Gulf Oil Corporation.

Q What is your position with Gulf Oil Corporation, Mr. Savage?

A I'm a staff geologist in the employ of the Gulf Oil Corporation.

Q Have you previously testified before the New Mexico Oil Conservation Commission as an expert witness?

A No, sir, I have not.

Q Where did you take your formal education?

A At the University of Colorado. I graduated in 1951 with a Bachelor of Arts Degree in Geology.

Q After your education, were you employed in the oil and gas industry?

A Yes, sir. In June of 1951 I was employed by the Gulf Oil Corporation, variously in Fort Worth and Midland, Texas, followed by a period of seventeen months in the Navy; and in September of 1954, I was transferred to the Roswell District of the Gulf Oil Corporation, where I am presently employed as a staff geologist.

MR. KASTLER: Mr. Nutter, I submit that Mr. Savage is qualified.

MR. NUTTER: Mr. Savage is qualified.

Q Mr. Savage, are you familiar with the general geologic

patterns in and around Gulf's Alice Paddock Well No. 5?

A Yes, sir, I am.

Q Are you familiar with the well history of Alice Paddock No. 5?

A Yes, sir.

Q Would you please outline that?

A The Alice Paddock No. 5 was originally projected as a test of the Tubb Gas and Drinkard Oil Zones. When the Drinkard Oil Zone was found to be non-productive, an attempt was made to complete as a gas well in the Blinebry Gas and Tubb Gas Zones. The producing GOR and the gravity of the fluid in the Blinebry Zone indicated an oil well, and application was made for a dual completion as a Blinebry Oil and Tubb Gas well.

(Applicant's Exhibit No. 1 marked for identification.)

Q I call your attention to Exhibit No. 1, Case No. 1373, Gulf Oil Corporation. Would you identify what that is and what it shows?

A It is a lease plat of the area around the Alice Paddock No. 5, which I have labeled Exhibit No. 1.

Q Would you please describe that area by Section, Township, and Range?

A The Alice Paddock lease is the east half of Section 1, Township 22 South, Range 37 East. The Alice Paddock No. 5 well is located 990 feet from the north line and 2310 feet from the east

line of that Section 1, and is located 330 feet from the lease boundary.

Q Mr. Savage, has an authorization been given Gulf Oil Corporation, to the best of your information and belief, authorizing this non-standard location?

A I have been informed that the non-standard location, Order No. 114, has authorized the non-standard location.

Q Was that the order dated September 1, 1957?

A Yes, sir, it is.

Q Mr. Savage, what is shown by the yellow square in this Exhibit No. 1?

A The yellow square outlines the standard proration unit for the Tubb Gas Pool, 159.87 acres.

Q The standard proration unit for the Blinebry Oil Pool, do you know how many acres that is and which unit that would be?

A The standard proration unit of 39.9 acres has been applied to the Blinebry Zone of this well.

Q Would that be the northwest quarter of the northeast quarter of Section 1?

A Yes, sir, it is.

Q Would you explain what other wells are shown on Gulf's Alice Paddock lease on this plat?

A On the Alice Paddock lease are shown Wells No. 1, 2, and 4 which are Paddock producers, and the No. 3 Alice Paddock, located 660 feet from the south and east lines of Section 1 is a Blinebry

Oil and Tubb Gas dual completion.

Q Was that Alice Paddock No. 3 dual recently authorized by this Commission?

A Yes, it was.

Q Does this plat, Exhibit No. 1, also show the offsetting or surrounding operators?

A Yes, sir, it does.

Q Do you have a log showing the formations penetrated by Alice Paddock No. 5 and showing the intervals perforated?

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

A Yes, sir, and this log I have labeled Exhibit No. 2.

Q Was this log prepared by you or at your supervision?

A Yes, sir, it was.

Q Specifically what information is shown on this log that is pertinent to this case?

A Specifically, this log shows the top of the Blinebry formation at a depth of 5,570 feet, perforated through the interval 5,517 feet to 5,828 feet, which on a 24-hour O.C.C. test ending 1-20-1958, through two and three-eighth inch tubing and 15/64 inch shock flowed 25 barrels of oil and 2 barrels of water with a gas volume of 753 cubic feet of gas, which gives a gas-oil ratio of 30,120 cubic feet of gas per barrel at a tubing pressure of 550 pounds; and also the top of the Tubb formation at a depth of 6,050 feet perforated through the interval 6,154 feet, 6,249 feet, which on

a 15-minute O.C.C. test dated 9-15-57 through two and seven-eighths inch tubing and four inch orifice flowed 8,400,000 cubic feet of gas per day with 400 pounds back pressure, with an estimated open flow of ten and a half million cubic feet of gas per day.

MR. KASTLER: Mr. Examiner, that's all the questions I have of this witness at this time.

CROSS EXAMINATION

By MR. NUTTER:

Q Mr. Savage, did you mention the gravity of the fluid that is being produced?

A No, sir, I did not. However, the gravity of the oil in the Blinebry Zone is in the range of 36 degrees A.P.I.

Q So this well, by the classification system prescribed in Rule 2 of the rules for the Blinebry Pool, would definitely be an oil well, is that correct?

A At the time of this particular test it would be.

Q Mr. Savage, do you believe that this 160-acres is productive of gas from the Tubb Pool?

A Yes, sir, I do.

Q The entire 160?

A Yes, sir. I believe it could be considered to be productive of gas.

Q Are there any Tubb gas wells to the east of this well?

A No, sir, there are not.

Q What evidence do you have that the east half of the 160 acres

would be productive of gas?

A Well, it is a known fact that the Tubb gas pay is approximately 225 feet thick, and there is a dip on the Tubb formation from the west side of the Alice Paddock lease to the east side of the Alice Paddock lease of approximately 125 feet, and by this correlation, I believe that the entire 160 acres would be productive of gas.

Q You haven't prepared any cross sections, however, to show that structure dipping to the east?

A No, sir, I have not.

MR. KASTLER: Mr. Savage -- Off the record.

(Discussion off the record.)

MR. KASTLER: Do you wish to correct your answer to that last question?

A Yes, sir. We had prepared a structure exhibit, but decided not to present it in this case, but at this time I would like to present this exhibit, which is a contour map on top of the Tubb formation.

MR. KASTLER: We had previously marked this as Exhibit No. 2. It should be remarked as No. 3, if you please.

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

MR. NUTTER: Gulf's contour map of the area has been marked Exhibit No. 3 in this case.

MR. KASTLER: Do you care to have me question him?

MR. NUTTER: Yes.

DIRECT EXAMINATION (Continued)

By MR. KASTLER:

Q Was Exhibit No. 3 prepared by you or at your direction or under your supervision?

A Yes, it was.

Q Would you please explain what is shown on Exhibit No. 3?

A On Exhibit No. 3 is shown the area of the Gulf's Alice Paddock lease. It is a contour map on top of the Tubb formation with a contour interval of 25 feet. The location of the Alice Paddock No. 5 well is encircled in red, and the 160-acre proration unit is outlined in yellow, and the Alice Paddock lease is outlined with dashed lines.

Q Now would you please explain what is shown on this plat which leads you to conclude that Alice Paddock No. 5 would be productive of the entire area outlined in yellow as a standard production unit?

A As I stated to Mr. Nutter, the dip on the top of the Tubb formation is to the east over the Alice Paddock lease, with a dip of 125 feet in a distance of one-half mile, and inasmuch as the Tubb gas section is approximately 225 feet and we are producing high enough in the Tubb Gas Zone that I believe that it could be reasonably stated that the entire 160 acres is productive of gas.

MR. KASTLER: I have no further questions at this time, Mr. Nutter.

MR. NUTTER: Does anyone have any questions of Mr. Savage?

MR. KASTLER: Mr. Nutter, if the Commission please, I would like to offer as our explanation of the reason for not including this plat or exhibit originally, we felt this being an application for a dual completion on a standard unit with an unorthodox unit location authorized, that it was not necessary or pertinent to this hearing.

MR. NUTTER: Your explanation is satisfactory, Mr. Kastler.

CROSS EXAMINATION (Continued)

By MR. NUTTER:

Q Are you acquainted with the location of the Blinebry and Tubb markers as those have been defined on the log, and what would the location be on the Exhibit No. 2?

A As I previously indicated, the Blinebry Zone, the top of the Blinebry formation in this well is at a depth of 5,570 feet. However, the Blinebry interval as defined by the Commission takes in an interval of 75 feet above the top of the Blinebry Zone to, I believe, 225 feet below the Blinebry formation.

Q These tops that you have marked on your Exhibit No. 2 are the Blinebry marker and the Tubb marker, then, rather than the tops of the formations?

A To the best of my knowledge, the Blinebry is as is called in the area, and corresponds to the top of the Blinebry as has been picked on surrounding wells that had penetrated to that depth, and the top of the Tubb formation is the top of the Tubb formation as

defined by the Oil Conservation Commission.

Q Would all perforations in the Blinebry area be within 75 feet above the top of the Blinebry marker and 300 feet below the top of the Blinebry marker?

A Yes, sir, they would fall within that zone.

Q Would all the perforations in the Tubb Zone be within a hundred feet of the Tubb marker and 225 feet below the bottom of the Tubb marker?

A Yes, sir, they are within that zone.

Q Mr. Savage, does the Tubb formation produce any liquid in this well?

A It is not known specifically what liquid will be produced inasmuch as we have not recovered all of our oil load from the Tubb Zone. However, condensate, that has been produced has a gravity of 46.8 degrees A.P.I.

Q Which under the Tubb definition would be classified as a gas well?

A I am not familiar with the Tubb gas definition. Is it the same as the Blinebry?

Q No, it is not. The rules for the Tubb as defined by Commission Order R-576-B is "That an oil well in the Tubb Gas Pool should be defined as a well which produces liquid hydrocarbons possessing a gravity of 45 degrees API or less." So would this well be classified as an oil well or a gas well?

A To the best of my knowledge, if it could be considered that

the condensate produced is from the formation, it would be a gas well.

Q But all of the load oil has not been recovered?

A All of the load oil has not been recovered.

MR. NUTTER: Any further questions of Mr. Savage? If no further questions, the witness may be excused.

(Witness excused.)

MR. KASTLER: Mr. Wofford, would you please take the stand?

H. B. WOFFORD, JR.

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

DIRECT EXAMINATION

By MR. KASTLER:

Q Would you please state your name, your place of residence, and by whom you are employed?

A My name is H. B. Wofford, Jr. I am in the employ of Gulf Oil Corporation as District Reservoir Engineer in Roswell, New Mexico.

Q As District Reservoir Engineer, are you familiar with the proposed dual completion of Alice Paddock No. 5?

A Yes, sir.

Q Have you prepared or had prepared a schematic diagram showing the mechanism involved in this hearing?

A Yes, sir. At my direction a schematic was prepared which we have labelled 4.

MR. KASTLER: Yes,this previously was Exhibit No. 3 and I

would like to have it re-labelled or re-numbered to No. 4.

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

Q Will you please explain Exhibit No. 4?

A Yes, sir. The well was drilled to a total depth of 6,710 feet and as was testified previously, when the Drinkard was found to be non-productive, it was plugged back with mud and cement to 6,324 feet. We have 13-3/8 inch O.D. surface casing set at 257 feet and the cement was circulated on that. We have an intermediate string of casing, 8-5/8 inch O.D., set at 2,948 feet. It was cemented with 1100 sacks with the top of the cement as 595 feet, determined by temperature survey. The producing string of 5-1/2 inch O.D. casing is set at 6,350 feet, cemented with 775 sacks with the cement top at 2935 feet, which connects with the intermediate string. That top was also determined by temperature survey.

Q What is the total depth of the well?

A 6,710 feet, approximately.

Q Is the well presently plugged back?

A Yes, sir.

Q To what depth?

A 6,324 feet.

Q Would you go on and continue to explain this diagram?

A Yes, sir. The Tubb formation was perforated in the interval indicated by Mr. Savage with the F.I. technique, or that is, there were 6-1/2 inch holes in a circle at each of the intervals indicated.

The Blinebry was perforated in the same manner. In the installation of the dual completion equipment, a Baker Model "D" production packer was set at 6,101 feet, and a Baker Model "D-A" production packer was set at 5,470 feet. 2-3/8 inch tubing was then run and suspended at 6,236 feet, the tubing perforations as indicated on the diagram as 6,234 feet to 6,237 feet. In the string of tubing was a Baker Model "E" changeover flow tube seated in the top packer and above that is a Garrett circulating valve which was used in the installation and under normal operating conditions is closed. The flow of fluids in this well are indicated by the yellow for the Tubb and the red for the Blinebry. The Tubb fluids enter the well bore through the perforations, enter the tubing perforations and flow up the tubing to the changeover flow tube where they are, the Tubb fluids are diverted into the casing annulus, the casing tubing annulus above the top packer, where they flow to the surface to the flow line. The Blinebry fluids enter the Blinebry perforations between the two packers, entering the flow tube directly and flowing directly into the 2-3/8 inch tubing to the surface.

Q Have you used a 2-3/8 inch tubing entirely in this well?

A Yes, sir.

Q Would you explain the reason for completion with a single string of tubing rather than double tubing?

A Well, we were, with the 5-1/2 inch casing that was run in the well, we were limited in the amount of space available in which to install the equipment.

Q Is it more economical to use a single string of tubing in that instance?

A Yes, sir.

Q Is this type of packer and crossover assembly successful, has it been experienced and tried out and successfully proven itself?

A Yes, sir, I believe it has.

Q Can adequate tests be performed to assure a complete separation of the respective zones to determine if any leakage occurs?

A Yes, sir.

Q Can any leakage occur, in your opinion?

A No, sir. Of course, we have tested the installation and have detected no leakage as yet, and don't anticipate any under normal conditions.

Q Will Gulf comply with such operating tests, reports and procedures required by the New Mexico Oil Conservation Commission?

A Yes, sir.

Q Is this application in the interest of correlative rights?

A Yes, sir, I believe it is.

Q Will it promote the conservation of oil and gas?

A Yes, sir.

Q Do you have anything else to add?

A No, sir, I believe not.

Q W s this schematic diagram prepared by you or under your direction or supervision?

A Under my supervision.

MR. KASTLER: I would like to move at this time for the admission of Exhibit No. 4 into evidence in Case No. 1373.

MR. NUTTER: Without objection, Gulf's Exhibit No. 4 will be admitted in this case.

MR. KASTLER: That's all the questions I have.

MR. NUTTER: Any questions of Mr. Wofford?

CROSS EXAMINATION

By MR. NUTTER:

Q Mr. Wofford, you heard Mr. Savage state that the gravity of the Blinebry liquids was 36 degrees API. Is that a stabilized gravity, or has there been any change in the gravity in the production from the Blinebry zone?

A To my knowledge, and as a matter of record, that is the only gravity that has been reported. I couldn't say if that is a stabilized gravity.

Q What about the GOR, what is that?

A The test made on the Blinebry zone for O.C.C. potential was 30,000 gas-oil ratio.

Q Is it a reasonable expectation to believe that the Blinebry is classified as an oil pool in this well, or that the Blinebry completion is classified as an oil well completion and that it will so remain?

A I believe that it is reasonable at this time; of course, by Commission rules, or the definition in the Commission rules and regulations, that gas-oil ratio would only have to increase two or

three thousand cubic feet per barrel for it to be classified as an oil well, and I anticipate that that will occur in a short time with continued production and depletion.

MR. KASTLER: As a gas well, you mean?

A Yes, as a gas well.

Q That is providing the gravity was more than 51 degrees?

A No, sir, a gas-oil ratio in excess of 32,000.

Q I believe according to the Rule 2 of the Special Rules of the Blinebry Oil Pool, Mr. Wofford, that it would have to produce with a gravity of 51 degrees and a GOR not exceeding 32,000 to be classified as an oil well?

A Yes, sir.

Q How about the liquids in the Tubb completion?

A As Mr. Savage testified, I believe that the only reported gravity we had is approximately 48 degrees API, and as he stated, the well is not completely stabilized; so that we are not sure at this time that that will be the stabilized gravity of the fluid, but according to the rules, it does qualify as a gas well at this time.

Q Is there any way of knowing whether it will so remain?

A No, sir, I don't believe I could say.

Q What is your expectation, that it will be an oil well or gas well eventually?

A I feel that it will be a gas well because a good many of the oil wells in the area indicated much more gravity of fluid

produced.

Q You think it will remain a Tubb gas well, then?

A Yes, sir' I believe it will.

MR. NUTTER: Let the record show that if there are any statements or observations as to a classification of a well as an oil well or gas well in the Blinebry Pool, that the definition as prescribed by Commission Order R-610-B will be the criteria for determining what that well will be classified as.

Are there any further questions of Mr. Wofford?

MR. COOLEY: Yes, I have one.

MR. NUTTER: Mr. Cooley.

By MR. COOLEY:

Q Mr. Wofford, I believe you testified that the Blinebry completion has a present GOR of approximately 30,000 to 1?

A Well, if I said "presently", I didn't mean that exactly. That was according to O.C.C. test taken the 20th of January.

Q Do you have any reason to doubt the accuracy of that test? Do you believe that would properly reflect the condition as it now exists?

A Yes, sir, under the conditions of that particular test, I would say that it was accurately represented production.

Q Do you think that the Blinebry completion can be produced in such a manner as to keep the GOR below 32,000 cubic feet per barrel of oil?

A Certainly, changing the choke size has an effect on that,

and we have tested various choke sizes over the past week and if we produce it at, oh, say with a one inch choke, we found that we can produce some 25 barrels of fluid and 25 to 50 barrels of fluid with a gas-oil ratio of 25,000 to 30,000; but we restrict that choke and we find that, well, our liquid decreases 10 to 15 barrels and the gas-oil ratio then may range up to 40,000 or more, recent test is 60,000. So it depends on flowing conditions. It is teetering on the borderline between an oil well and gas well.

Q I asked if the GOR exceeds the 32,000, it would become a gas well, in accordance with Rule 610-B?

A Yes, sir, I believe that's right.

Q The trend would be, would it not, through production of this well for the GOR to increase?

A Yes, sir, I think that would be the normal situation.

Q If and when the well does become a gas well under the definition in 610-B, you would then make application for a gas-gas dual and dedication of 160 acres to the well?

A I'm not completely clear on procedure in these. I think we would ask for a reclassification of the Blinebry zone, I don't know what would be required.

MR. KASTLER: Yes.

A Yes.

MR. COOLEY: That's all the questions I have.

MR. NUTTER: Are there any further questions of Mr. Wofford? If not, he may be excused.

(Witness excused.)

MR. NUTTER: Does anyone have anything to offer in Case 1373?

MR. COOLEY: Off the record.

(Discussion off the record.)

MR. KASTLER: If I may, I would like to state for the record that by administrative approval, DC Order 492 has been given to Gulf permitting a completion in this very well for a gas-gas dual and subsequent to that time, it was found that the Blinebry zone was productive of oil.

MR. NUTTER: That was a gas-gas dual in the Blinebry and the Tubb formation?

MR. KASTLER: Yes, it was. Thank you.

MR. NUTTER: Anything further in Case 1373? If not, we will take the case under advisement.

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C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in stenotype and reduced to typewritten transcript under my personal supervision, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this 17th day of February, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Ada Dearnley
NOTARY PUBLIC

My commission expires:

June 19, 1959.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1373 heard by me on 1-29, 1958.

, Examiner
New Mexico Oil Conservation Commission