

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO. 1467

TRANSCRIPT OF HEARING

June 11, 1958

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BEFORE THE
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IN THE MATTER OF:

CASE NO. 1467 Application of Continental Oil Company:
for the establishment of a new Tubb :
gas pool and for the promulgation of :
special rules and regulations. Appli- :
cant, in the above-styled cause, seeks :
an order establishing a new pool for :
Tubb gas production to be designated :
as the Warren-Tubb Gas Pool with hori- :
zontal limits consisting of the E/2 of :
Section 28, Township 20 South, Range :
38 East, Lea County, New Mexico. The :
applicant further seeks the promulga- :
tion of special pool rules similar to :
those adopted for the Tubb Gas Pool, as :
set forth in Order R-586, subject to :
modification of certain of said rules. :
:

BEFORE:

Daniel S. Nutter, Examiner.

T R A N S C R I P T O F P R O C E E D I N G S

MR. NUTTER: Take next Case 1467.

MR. PAYNE: Application of Continental Oil Company for the
establishment of a new Tubb gas pool and for the promulgation of
special rules and regulations.

MR. KELLAHIN: If the Commission please, Jason Kellahin of
Kellahin & Fox, Santa Fe, representing the applicant, Continental
Oil Company. I have two witnesses, Mr. Nelson Edge and Mr. E. V.
Boynton.

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MR. NUTTER: Both witnesses stand and be sworn, please.

(Witnesses sworn)

MR. NUTTER: Mr. Kellahin, will these same witnesses testify in Case No. 1468?

MR. KELLAHIN: Yes, sir, they will.

MR. NUTTER: Let the record show that these witnesses have been sworn in both cases.

MR. KELLAHIN: I would like to call the first witness, Mr. Edge.

J. NELSON EDGE,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A J. Nelson Edge.

Q By whom are you employed, Mr. Edge?

A By Continental Oil Company.

Q In what position?

A I am a geologist.

Q Have you ever testified before this Commission before?

A No, I haven't.

Q Mr. Edge, would you briefly outline for the benefit of the Examiner your qualifications and experience as a geologist?

A I was graduated from the University of Oklahoma with a

Bachelor of Science degree in geology in June, 1952. In July of that same year I went to work for Continental, and went through a year's training program and have been employed by them since. I worked approximately five years in the Hobbs district office associated with the Production Department, and I am now working in the division office in Roswell.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NOTTER: They are.

Q Mr. Edge, are you familiar with the application in Case 1467? A Yes, sir, I am.

Q That is an application for the creation of a new pool. Have you made a study of structure in the Tubb pay zone in this area that is involved in this case? A I have.

Q Have you prepared a geological structure map in the process of this study? A Yes.

Q Now, referring to what has been marked as Exhibit No. 1, would you outline for the Examiner the information contained thereon?

A This is a structural contour map, contoured on the Tubb marker with contour interval of 25 feet. The map scale is one inch equals two thousand feet.

Q Now, would you describe this structure briefly and discuss its significance in this case?

A This Warren unit structure is located in Sections 27, 28, 33 and 34 of Township 20 South, Range 38 East, Lea County, New

Mexico, and lies adjacent to and due north of the Blinebry Gas Pool. This structure is a close anticline on all mapable Permian horizons, and this closure increases with depth in that on the Yates and Queen formations, the shallower formations, the closures amount to twenty, thirty feet, and at the greater depths in the Permian, approximately sixty, eighty to possibly one hundred feet of closure. This feature overlies a complexly faulted Pre-Permian system of sediments, and the closure in this area is in the order of 640 acres which is small, but the significant factor, I think here, is the existence of the closure in this case.

Q Now, you referred to the closure as varying from the depth of twenty to thirty feet. What zones would that apply to, then?

A That is in the Yates and Queen, approximately 2,500 to 3,000 feet depth.

Q Now, the closure of approximately sixty to eighty feet, then, would apply to the Blinebry and Tubb, is that correct?

A That's true.

Q Are you familiar with the lithology of the top pay zones?

A Yes, I have run samples and described cores through this zone on nearby wells; in the McKee area and to the south, out in the Terry-Blinebry Pool.

Q Would you describe that to the Commission and give its significance?

A The Tubb pay zone, which is the middle member of the Yeso formation, is primarily a sand stone, also has shale and dolomites. The sand stone is usually very fine grain shaley and with a heavy

clay mineral content, and this clay mineral content, then, is a dependent factor on the porosity and permeability which is significant here.

Q Now, how about the dolomite in the lower part of the section?

A The dolomite is a fine crystalline dolomite usually tan to brown, and it is of less consequence as an oil producing zone in this area.

Q Now, have you prepared a cross section of the area involved, Mr. Edge?

A Yes, we have and that is this cross section here. The Tubb marker is outlined here, and the cross section runs from north to south. You can see it goes across from the Warren-Drinkard, then up to our No. 1 unit, No. 8 Well, and through the 21 back up on to the Blinebry structure.

MR. NUTTER: Is that cross section indicated on Exhibit No. 1, Mr. Edge?

A Yes, sir. The cross section of the line is in brown on Exhibit 1.

MR. NUTTER: Thank you.

A I might explain there further; the proposed pool is outlined in red; the proposed limits of the Tubb Pool are in green, and it shows the distance from the Warren unit Blinebry No. 8 Well to the nearest Tubb producer.

Q (By Mr. Kellahin) Does that cross section illustrate that -- any separation in production between the Blinebry and the proposed

new pool?

A Yes, sir. The red color here is a productive interval, and the yellow is a nonproductive interval. And it can be seen here that the difference in the closure, these wells in the saddle are dry and have been plugged and abandoned in the Tubb zone. So from that you can see that there is actual separation by nonproduction between the two areas.

Q What is your conclusion as to the reason for that nonproduction in that area?

A As was stated earlier, the porosity and the permeability primarily in the Tubb sand has a heavy clay mineral content, and the permeabilities are just so tight as to warrant nonproduction.

Q Is there also a loss of porosity in that area?

A Porosity has declined probably along with permeabilities.

Q Now, based upon your study of the Tubb in this area, is it your opinion that there is separation between the limits of the Tubb Gas Pool as defined by the Oil Conservation Commission and the proposed pool under consideration in this case?

A Yes, I believe so.

Q Is it your recommendation that a new pool be created for Tubb gas production?

A It is.

Q Do you have anything to add to that, Mr. Edge?

A I think that covers it.

Q Now, were Exhibits Nos. 1 and 2 prepared by you or under your direction and supervision?

A Yes.

MR. KELLAHIN: At this time we would like to offer in evidence Exhibits 1 and 2.

MR. NUTTER: Is there objection to the introduction of Continental's Exhibits 1 and 2 in Case 1467? If not, they will be admitted.

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

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

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Edge, I note that right in the saddle you have depicted four wells by drawing small circles there. Did those four wells penetrate the Tubb?

A They did not. Those are Terry-Blinebry oil wells from the Terry-Blinebry Oil Pool, and they are about, approximately 6,200 feet.

Q Just what wells did you have which penetrated the Tubb and enabled you to draw the contours in this saddle area?

A The control was primarily based there on the Blinebry control which is separated from this marker by three to four hundred feet possibly, and the Yates, we have good control on the Yates. and on the shallower formations, and that structure is carried on with depth uniformly throughout. Fairly uniformly, I would say.

Q So you feel that by using Blinebry control and Yates control, you have been able to draw a reasonably accurate contour map of this area in here?

A That's true. We have, the deeper control, as I mentioned, the pre-Permian structure. I have contoured on the Devonian, in that area, and it is highly faulted, and there is a short feature on the pre-Permian beds.

Q What, in your opinion, is the maximum elevation of this high to the north, above the lowest point in the saddle?

A I figure possibly a minimum of 50 feet of closure there, with the maximum up to 100.

Q Do you feel that the permeability, the porosity, and other characteristics of this additional Tubb zone which have been discovered, vary in any degree from the Tubb zone to the south?

A Apparently not.

Q They are quite similar in nature, merely separated by their permeability and porosity pinch out?

A To the best of my knowledge, I would say.

Q Do you feel that these two pools are similar enough that pool rules as established by the Tubb Gas Pool in Order No. R-586 and subsequently amended by 586 --

MR. KELLAHIN: Mr. Nutter, our next witness will testify on that pool.

MR. NUTTER: As to pool Rules?

MR. KELLAHIN: Yes, sir.

MR. NUTTER: I was wondering if this witness, as a geologist, could see any reason why the pool Rules should be any different,

geographically speaking.

Q (By Mr. Nutter) -- the pool Rules as promulgated by 586?

A 586-A. I think so, possibly.

Q You think what, sir?

A I didn't hear the question.

Q Do you think that the characteristics of this reservoir to the north are similar enough to the characteristics of the Tubb Pool to the south that the pool Rules as established by 586 and amended by 586-A could be adopted for the new pool?

A Yes, I would say.

MR. NUTTER: Does anyone else have any further questions of Mr. Edge? If not, he may be excused.

(Witness excused)

MR. KELLAHIN: The next witness will be Mr. Boynton.

E. V. BOYNTON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Will you state your name, please, sir?

A E. V. Boynton.

Q By whom are you employed and in what position?

A Continental Oil Company as district engineer at Hobbs, New Mexico.

Q Have you previously testified before the Commission and had

your qualifications as an expert engineer accepted by the Commission?

A I have.

MR. KELLAHIN: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, sir, they are. Please proceed.

Q (By Mr. Kellahin) Mr. Boynton, are you familiar with the facts in Case 1467? A I am, yes.

Q Would you state briefly the facts in support of a new pool designation for Tubb production from the Warren unit BT No. 8 Well?

A Well, I refer you to Exhibit No. 1, which indicates Tubb producers in red, Tubb dry holes in yellow, and Tubb oil wells in green. As you can see, we now have two. The well No. 26 in Section 27 is in the process of being completed, but we do have a test on the Tubb in that well, I mean enough of a test to know that it is productive, and as we proceed southward, our Well No. 21 in Section 3 was dry in the Tubb. The Hawk "N" 3 was dry in the Tubb, and recently Hawk "B" 3 No. 7 in Section 7 --

MR. NUTTER: Where is Well No. 21, please?

A It is immediately south of the proration unit.

MR. NUTTER: Is it indicated on your --

A Yes, right here.

MR. NUTTER: -- on Section 33?

A Yes.

MR. NUTTER: I thought you said Section 3. I don't know.

A So these dry holes between Tubb production to the south, either oil or gas, indicates that this is a separate accumulation of hydrocarbons.

Q (By Mr. Kellahin) Now, where is your nearest Tubb Pool production?

A Nearest Tubb Pool production is 12,300 feet to the south.

Q Now, are you familiar with the completion of the Warren unit Drinkard Well No. 8 and what has occurred in connection with that well since?

A Well, the Well No. 8 was completed March the 12th, 1950 in the Drinkard formation and location of 1980 feet from the South and East line of Section 28. It was plugged back and completed for gas in the Tubb and Blinebry formations during February, 1957. The calculated open flow of the Tubb zone at that time was 5,810 MCF of gas per day, and at a producing rate of 750 MCF per day the well produced distillate at a rate of 192 barrels per day; for gas distillate ratio, 18,750 to 1.

Q That well has since then been redesignated, has it not?

A As Warren unit "BT" No. 8, yes, sir.

Q Now referring back to Exhibit No. 1, Mr. Boynton, you've heard Mr. Edge's testimony in regard to the control on the contours. Have you anything to add to that?

A Yes, I do have. The control on the contours there, we also have two Drinkard wells to the north there that did penetrate the Tubb, and gave us the control to draw that closure there. This

well, this is a Drinkard well, and this is a Drinkard well.

MR. NUTTER: These are the two small circles directly north of 28 and 26?

A That's correct. And, of course, No. 21 penetrated the Tubb.

Q (By Mr. Kellahin) Now, referring to Exhibit No. 2 which has already been introduced, Mr. Boynton, have you anything to add to the testimony which has been entered in connection with the testimony on that Exhibit?

A There again, this cross section is indicated by the brown dashed line in Exhibit No. 1, and it shows the identity of the zones that have been tested in the Tubb through that saddle area. As it is shown, a gas well or "BT" No. 8 is producing gas and is shown in red, the dry holes and the interval tested in the dry holes are shown in yellow in both the 21 and the 3 "BT" Well, and then the Hawk "B" 3 No. 1 "T" is an oil well in the Tubb, and it shows the identity that the zones tested are identical.

Q And does it also show the nearest producer in the Tubb Pool?

A Yes. That would be Hawk "B" 3 No. 1 "T". The distance between the No. 8 well and 1 "T" well is indicated by red line in Figure O, Exhibit 1.

Q Now, in your opinion, as an engineer, does this indicate separation between the Tubb Gas Pool and the proposed new pool?

A Definitely, yes.

Q Now, in the event a new -- pardon me -- now, referring to what has been marked as Exhibit No. 3 -- Exhibit No. 3 hasn't been

entered yet; would you state what that is designed to show?

A Exhibit No. 3 shows the results of a 4. back pressure test taken on the Tubb formation on April the 14th, 1958. This is after the initial completion test as shown in the application. It shows ability of the well to produce with an absolute open flow potential of 6700 MCF per day, and it shows the gravity of the liquid hydrocarbons produced to be seventy-six and two-tenths degrees API and the gas-oil ratio to be 37,650 to 1.

Q On the basis of your study, is it your recommendation that a new pool be created for Tubb gas production in this area?

A Yes, it is.

Q In the event a new Tubb Pool is designated for this well, do you have any suggestions as to the rules governing production of the pool?

A We would suggest that rules similar to those now employed in the main Tubb Pool to the south be adopted for this pool.

Q What is your recommendation as to the limiting gas-oil ratio?

A I recommend that it remain the same.

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

A Yes, it was.

MR. KELLAHIN: At this time we offer in evidence Exhibit No. 3.

MR. NOTTER: Without objection Continental's Exhibit No.3

will be entered.

MR. KELLAHIN: That's all the questions we have.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Boynton, what is the status of the Well No. 26 in Section 27?

A It is in the process of being completed.

Q You have had a test in the Tubb there, however, have you not?

A Yes, sir. We don't have exact count, but we did have some pitot measurements. The interval corresponding to this one here, I believe, before the well unloaded oil, after fractured test, was 750 MCF per day, and this corresponding interval here tested about 2,000 MCF per day without the well being cleaned out.

MR. KELLAHIN: For the record, Mr. Boynton, state what well you are referring to and what intervals, please.

A That's the Warren Unit "BT" No. 26 and it would be the upper interval and lower Tubb interval.

Q (By Mr. Nutter) Have you had a test on this well since the well has been cleaned up to indicate whether the formation is producing any liquids or not? A No, sir.

Q So as yet you don't know what gravity fluid will be produced from that No. 26 Well?

A That's true.

Q And if similar Rules are adopted for this pool that are

promulgated for the main Tubb Gas Pool, the gravity of fluid would be important in determining whether that well would be classified as an oil well or gas well, wouldn't it?

A I am not sure. Does gravity of the produced hydrocarbons enter into the definition of a gas well in the Tubb Pool?

Q Where a well is to be established. I think all wells, or gas wells, unless they are classified as oil wells, and Order No. R-586-B -- Let the record show that was B rather than A as I mentioned a while ago defines that in the Tubb Gas Pool, an oil well shall be defined as a well which produced hydrocarbon possessing a gravity of 45 degrees or less.

A Yes.

Q The gravity on Well No. 8, however, I think you stated was some 76.2 degrees?

A Yes, sir.

Q So that is definitely a gas well?

A Yes, sir.

Q Mr. Boynton, is the Continental Hawk "B" 3 Well No. 1 "T", which is some 12,000 feet south of the Warren unit "BT" No. 8, structurally higher or lower than the Well No. 8?

A It's comparable on the structure.

Q Yet it produces oil and the other wells produce gas?

A That's true.

Q Which helps to verify your opinion that there is a separation between these two pools?

A Yes, sir, between the two zones, that's correct

MR. NUTTER: Are there any questions of Mr. Boynton? Mr. Payne.

QUESTIONS BY MR. PAYNE:

Q Mr. Boynton, is the producing capacity of your well in this proposed pool area in excess of market demand?

A It is, yes.

Q Would you suggest that this new or proposed pool be pro-rated.--

A I do.

Q -- with a standard unit of 160 acres?

A Yes, sir.

Q Now, I notice on your application you propose that the Rules be similar to those in the Tubb Gas Pool. Could you tell me if the Rules which you would propose would materially differ in any respect?

A Only in one respect. I would like to see the lower limits of the Tubb Pool include the perforations we have on this well and go to the top of the Drinkard.

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

MR. NUTTER: What are the vertical limits of the Tubb Gas Pool that are presently established?

A I believe 300 feet below the top of the Tubb marker. 250.

MR. NUTTER: 225?

A 225.

Q Approximately how far is the top of the Drinkard below the top marker, Mr. Boynton?

A It is approximately 300 feet.

Q So you would suggest that the vertical limits be extended some 75 feet lower than they are presently defined in the old Tubb Gas Pool?

A Yes.

Q How about the vertical limits -- the top of the vertical limits, what would your suggestion there be?

A I have no quarrel with that.

Q The presently defined Tubb Gas Pool has vertical limits extending from a point 100 feet above the Tubb marker to 225 feet below the Tubb marker. Would the 100 feet above the marker be in keeping with your idea of what the vertical limit should be?

A That would be satisfactory, yes. There is a nonproductive area just below the Tubb marker there we have not found anything in.

Q Mr. Boynton, do you have any suggestion as to what the name of this pool should be?

A Warren Unit Tubb Pool, or Warren Tubb Pool, excuse me.

Q Warren Tubb Pool?

A Yes.

Q What is the limiting GOR in the Tubb Pool, Mr. Boynton?

A 2,000 to 1.

MR. PAYNE: And your application here proposes that the limiting ratio in the Warren Tubb be 6,000 to 1, is that right?

A We are backing up on that.

Q (By Mr. Nutter) You are recommending a gas-oil ratio limit of 2,000 to 1 be established for this pool?

A That's correct.

Q And that the pool Rules as previously adopted for the Tubb Gas Pool for this new pool be identical with the old ones with the exception that the vertical limits be changed?

A Correct.

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

(Witness excused)

MR. NUTTER: Does anyone else have anything further they wish to offer in Case 1467? If there are no further statements, we will take Case 1467 under advisement and recess the hearing until 1:15.

MAIN OFFICE OCC

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