

Case No.

1467

Application, Transcript,
Small Exhibits, Etc.

For information of special rates and reg.
for application of new Tabb gas pool and
for application of new Tabb gas pool and

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 1467
Order No. R-1234

APPLICATION OF CONTINENTAL OIL
COMPANY FOR THE ESTABLISHMENT
OF THE WARREN-TUBB GAS POOL IN
LEA COUNTY, NEW MEXICO, AND FOR
THE PROMULGATION OF SPECIAL RULES
AND REGULATIONS FOR SAID POOL.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on June 11, 1958, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 6th day of August, 1958, the Commission, a quorum being present, having considered the application, the evidence adduced and the recommendations of the Examiner, Daniel S. Nutter, and being fully advised in the premises,

FINDS:

- (1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.
- (2) That the applicant, Continental Oil Company, is the owner and operator of the Warren Unit "BT" No. 8 Well, located 1980 feet from the South line and 1980 feet from the East line of Section 28, Township 20 South, Range 38 East, NMPM, Lea County, New Mexico, which well discovered a new gas pool in the Tubb formation when it was completed in said formation January 27, 1957. The top of the perforations in said formation is at 6360 feet.
- (3) That the applicant now requests that the Commission designate the above-described pool as the "Warren-Tubb Gas Pool" with horizontal limits comprising the E/2 of said Section 28, and the vertical limits extending from the "Tubb Marker" downward to the top of the Drinkard formation.

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(4) That the "Tubb Marker" shall be that point encountered in the Humble Oil and Refining Company State 'S' Well No. 20 SW/4 NW/4 Section 2, Township 22 South, Range 37 East, NMPM, at a depth of 5921 feet (Elevation 3380, Subsea Datum Minus 2541).

(5) That the applicant further proposes that Special Rules and Regulations be adopted for the Warren-Tubb Gas Pool.

(6) That the Warren-Tubb Gas Pool should be created as requested by the applicant; provided however, the horizontal limits should be restricted to the SE/4 of said Section 28 inasmuch as the NE/4 of said section has not yet been proven to be productive of gas from the same common source of supply.

(7) That no evidence was presented to justify a change in the size of the standard gas proration unit in the Warren-Tubb Gas Pool from the 160-acre unit prescribed by the statewide Rules and Regulations.

(8) That Special Rules and Regulations should be promulgated for the Warren-Tubb Gas Pool in order to prevent waste and protect correlative rights.

(9) That under present conditions, proration of gas is not necessary in the Warren-Tubb Gas Pool.

(10) That gas purchases from the Warren-Tubb Gas Pool should be on a ratable basis with gas purchases from the Tubb Gas Pool.

IT IS THEREFORE ORDERED:

(1) That a new gas pool for Tubb production, be and the same is hereby created and designated as the Warren-Tubb Gas Pool, with vertical and horizontal limits as shown on Exhibit "A" attached hereto and made a part hereof.

(2) That gas purchases from the Warren-Tubb Gas Pool shall be on a ratable basis with gas purchases from the Tubb Gas Pool.

(3) That special rules and regulations applicable to the Warren-Tubb Gas Pool be and the same are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE WARREN-TUBB GAS POOL

Acreage Requirements for Drilling Tracts:

RULE 1. Any well drilled to the Tubb formation within one mile of the boundary of the Warren-Tubb Gas Pool and not nearer to

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nor within the boundaries of another designated Tubb pool, shall be spaced, drilled, and operated in accordance with the regulations in effect in the Warren-Tubb Gas Pool.

RULE 2 (A) Wells shall be drilled on a tract consisting of approximately 160 surface contiguous acres substantially in the form of a square which shall be a legal sub-division (quarter section) of the United States Public Land Surveys.

Non-standard drilling units may be formed after notice and hearing or under the provisions of paragraph (B) of this rule.

Any unit containing between 158 and 162 acres shall be considered to contain 160 acres for purposes of these rules.

(B) The Secretary-Director of the Commission shall have authority to grant an exception to Rule 2 (A) without notice and hearing where application has been filed in due form and where the following facts exist and the following provisions are complied with:

1. The proposed non-standard unit consists of less than 160 acres or where the unorthodox size or shape of the tract is due to a variation in legal subdivision of the U.S. Public Land Surveys.

2. The non-standard unit consists of contiguous quarter-quarter sections and/or lots.

3. The non-standard unit lies wholly within a single governmental section.

4. The entire non-standard unit may reasonably be presumed to be productive of gas from the Warren-Tubb Gas Pool.

5. The applicant presents written consent in the form of waivers from:

- (a) All operators owning acreage in the quarter section in which any part of the non-standard unit is situated, which acreage is not included in said non-standard unit.

- (b) All operators owning interests in acreage offsetting the non-standard unit.

6. In lieu of sub-paragraph 5 of this rule, the applicant may furnish proof of the fact that said operators were notified by registered mail of his intent to form such non-standard unit. The Secretary of the Commission may approve the application if, after a period of 30 days following the mailing of said notice, no operator has made objection to formation of such non-standard unit.

Well Location Requirements:

RULE 3 (A) Wells shall be located at least 660 feet from the outer boundaries of the drilling tract and no closer than 330 feet from any quarter-quarter section line or subdivision inner boundary.

(B) The Secretary-Director of the Commission shall have authority to grant exception to Rule 3 (A) without notice and hearing where the application has been filed in due form and where the following facts exist and the following provisions are complied with:

1. The necessity for the unorthodox location is based on topographical conditions or the recompletion of an existing well, and

2. (a) The ownership of all oil and gas leases within a radius of 660 feet of the proposed location is common with the ownership of the oil and gas leases under the proposed location, or

(b) All owners of oil and gas leases within such radius consent in writing to the proposed location.

(c) In lieu of paragraph 2 (b) of this rule the applicant may furnish proof of the fact that said operators were notified by registered mail of his intent to drill an unorthodox location. The Secretary-Director of the Commission may approve the application if, after a period of twenty days following the mailing of said notice, no operator has made objection to the drilling of the unorthodox location.

RULE 4. When filing Form C-101, "Notice of Intention to Drill," or USGS Form 9-331-a (whichever is applicable), all operators shall strictly comply with the applicable provisions of Rule 104. Accompanying the above form shall be a plat (Form C-128) of the acreage contained in the unit showing the ownership of the dedicated acreage.

RULE 5. If the acreage assigned to a well is changed, the operator shall immediately notify the District Supervisor and Secretary-Director in writing of such change.

RULE 6. Each gas purchaser in the Warren-Tubb Gas Pool shall take ratably from all gas wells in the pool, apportioning its takes during any given calendar year among said wells on the basis of the acreage dedicated thereto.

RULE 7. No natural gas nor casinghead gas produced from the Warren-Tubb Gas Pool shall be flared or vented unless specifically authorized by the Commission after notice and hearing.

RULE 8. The monthly gas production from each well shall be metered separately and the gas production and associated liquid hydrocarbon production therefrom shall be reported to the Commission in accordance with the applicable Commission Rules and Regulations.

RULE 9. Shut-in pressure tests shall be conducted annually during the month of October on all wells in the Warren-Tubb Gas Pool. Prior to taking such tests, the well shall be:

(a) produced a minimum of 24 hours at a rate of flow high enough to clear the well of liquids.

(b) shut-in for not less than 60 hours nor more than 75 hours.

The results of such tests shall be reported to the Commission on Form C-124 on or before the 15th day of November. The Secretary-Director of the Commission may grant an exception to the above shut-in requirement if, in his opinion, such shut-in would cause injury to the well.

RULE 10. Gas produced from each well in the Warren-Tubb Gas Pool shall be produced into a separate high-pressure separator. The high-pressure gas shall then be metered separately prior to entering a gas transportation facility.

RULE 11. The distillate separated from the high-pressure gas in the high-pressure separator shall then be directed into a low-pressure separator. The distillate may be commingled with other

distillate produced by any other well or wells producing from the Warren-Tubb or Warren-Blinbry Gas Pools on the same basic lease following separation from the high-pressure gas in the high-pressure separator, provided gas-distillate test facilities are available and periodic tests are made.

Following the separation of distillate and low-pressure gas in the low-pressure separator, the low-pressure gas shall be directed into a low-pressure gas gathering system, and said low-pressure gas need not be measured separately from other low-pressure gas produced on the lease, provided that adequate test facilities are available and periodic tests made.

RULE 12. Each year during the month of October the operator of each gas well producing from the Warren-Tubb Gas Pool shall cause to be taken an annual gas-distillate ratio test. The results of such test shall be submitted to the Commission office (P. O. Box 2045, Hobbs, New Mexico) on or before November 15. The test shall outline the amount of high-pressure gas produced during the 24-hour test period, the amount of distillate produced during the test period, the amount of low-pressure gas produced during the test period, the high-pressure gas-distillate ratio, and the low-pressure gas-distillate ratio. Failure to submit the required test by November 15 will subject the well to shut-in until the date the required information is submitted.

RULE 13. In submitting Form C-115 (Operator's Monthly Report) for wells producing from the Tubb and Blinbry zones in which distillate is commingled and/or the low-pressure gas is commingled on the lease, the operator shall measure or estimate the volumes produced by each well in each pool by using the ratios as reflected by the most recent tests.

RULE 14. The Secretary-Director of the Commission shall have authority to grant exception to the provisions set forth in Rule 10 through Rule 13, inclusive, where it can be shown that compliance with these rules is un-economic or impractical. Applications for exception shall be submitted in triplicate to the Oil Conservation Commission, P. O. Box 871, Santa Fe, New Mexico, with a copy of each application being furnished offset operators.

RULE 15. Low-pressure gas produced by any gas well in the Warren-Tubb Gas Pool shall not be charged to said well in determining its ratable share of the pool production.

RULE 16. An oil well in the Warren-Tubb Gas Pool shall be defined as a well which produced hydrocarbons possessing a gravity of 45° API or less.

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RULE 17. An oil well in the Warren-Tubb Gas Pool shall have dedicated thereto a proration unit consisting of 40 acres, more or less, being a governmental quarter-quarter section legal subdivision of the United States Public Land Surveys.

RULE 18. No acreage shall be simultaneously dedicated to an oil well and to a gas well in the Warren-Tubb Gas Pool.

RULE 19. The limiting gas-oil ratio for oil wells in the Warren-Tubb Gas Pool shall be 2000 cubic feet of gas for each barrel of oil produced.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

E. L. Mechem

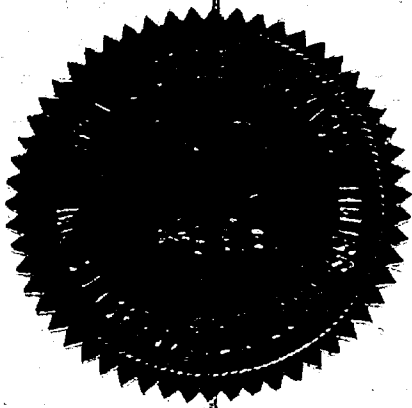
EDWIN L. MECHEM, Chairman

Murray E. Morgan

MURRAY E. MORGAN, Member

A. L. Porter, Jr.

A. L. PORTER, Jr., Member & Secretary



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EXHIBIT "A"

Vertical and Horizontal Limits of the Warren-Tubb Gas Pool

VERTICAL LIMITS

From the "Tubb Marker" downward to the top of the Driskard formation.

HORIZONTAL LIMITS

TOWNSHIP 20 SOUTH, RANGE 38 EAST, NMPM
Section 28: SE/4

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE NO 1467

TRANSCRIPT OF HEARING

June 11, 1958

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 2-6691

I N D E X

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BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
JUNE 11, 1958

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.

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

(Witnesses sworn)

MR. NOTTER: Mr. Kellahin, will these same witnesses testify in Case No. 1466?

MR. KELLAHIN: Yes, sir, they will.

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

CROSS EXAMINATION

BY MR. NOTTER:

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. NOTTER: 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. NOTTER: Where is Well No. 21, please?

A It is immediately south of the proration unit.

MR. NOTTER: Is it indicated on your --

A Yes, right here.

MR. NOTTER: -- on Section 33?

A Yes.

MR. NOTTER: 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 1930 feet from the South and East line of Section 28. It was plugged back and completed for gas in the Tubb and Blinbry 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 25 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 h. 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. KELLARIN: At this time we offer in evidence Exhibit No. 3.

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

will be entered.

MR. KELLAHER: 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. KELLAHER: 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 prorated.--

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

(Witness excused)

MR. NOTTER: 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.

C E R T I F I C A T E

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, J. A. TRUJILLO, 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 by me and/or 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, the 14th day of July, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Joseph A. Trujillo
 Notary Public

My Commission Expires:

October 5, 1960.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1447 heard by me on 6-11, 1958.
Samuel D. Hunter Examiner,
 New Mexico Oil Conservation Commission

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 6-16-58

CASE NO. 1467

HEARING DATE 9am 6-11-58 DSN@SF

My recommendations for an order in the above numbered case(s) are as follows:

Enter an order creating the Warren-Tuba
gar Pool as requested by Cont'l in
this case. Establish the horizontal
limits of the pool on the SE $\frac{1}{4}$ of
Sec 28, T20S, R38E rather than the E $\frac{1}{2}$
of the Section as requested. (Finding
for denial of full limits as requested:
acreage has not yet been proven pro-
ductive.) Establish the vertical limits
as being from the Tuba marker
(define same as is done in order R-⁴⁶⁴~~586~~)
to the top of the Drinkard. Adopt
Pool rules identical w/ those for the
Tuba gar Pool in R-586 with the
~~in~~ addition of a definition for an oil
Well in the pool similar to that in R-586-B
Include order that ^{Staff Member} gas shall be
taken from this pool on a basis retable
with gas takes in the Tuba gar Pool.

Handwritten signature
Examiner

REPORT OF THE COMMISSION
OF THE
STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION
OF CONTINENTAL OIL COMPANY FOR A
NEW GAS POOL DESIGNATION FOR TUBB
PRODUCTION FROM ITS WARREN UNIT
BT WELL NO. 8 LOCATED IN SECTION
28, T20S, R38E, LEA COUNTY, NEW
MEXICO. THE HORIZONTAL LIMITS OF
SAID POOL TO ENCOMPASS THE E/2
OF SECTION 28, T20S, R38E, N.M.P.M.,
LEA COUNTY, NEW MEXICO; AND FOR THE
ESTABLISHMENT OF POOL RULES TO GOVERN
THE PRODUCTION FROM THIS POOL.

A P P L I C A T I O N

Comes now applicant, Continental Oil Company, and respectfully petitions the Commission for a new pool designation for Tubb gas production from its Warren Unit BT No. 8 well, located 1980 feet from South and East lines of Section 28, T20S, R38E, N.M.P.M., Lea County, New Mexico, and for pool rules governing the production from this pool similar to those adopted for the Tubb pool with the exception that the limiting gas-oil ratio for oil wells as provided in Rule 19 of Order R-586-B be 6,000 cubic feet of gas for each barrel of oil produced. In support of this application, applicant would show:

1. That applicant is operator of the Warren Unit which contains, in addition to other lands, Section 28, T20S, R38E, N.M.P.M., Lea County, New Mexico.
2. That applicant drilled and completed on March 12, 1950, its Warren Unit Drinkard Well No. 8 as an oil well in the Drinkard formation at a location 1980 feet from the South and East lines of said Section 28.
3. That said well was plugged back and dual completed for gas production from the Tubb and Blinbry formations during February, 1957. The calculated open flow potential for the Tubb zone was 5810 MCF of gas per day. At a producing rate of 750 MCF per day, the well produced distillate at a rate of 192 barrels per day for a gas-distillate ratio of 18750 to 1. After recompletion, the well was redesignated the Warren Unit "BT" No. 8.

4. That the attached plat, contoured on the Tubb marker, indicates the location of the Warren Unit BT No. 8, the location and distance to the nearest Tubb production, the location of wells known to have tested dry in the Tubb zone, the general topographical features of the Tubb formation in this area, and the area suggested for inclusion in the proposed new pool.

5. That the nearest Tubb production to the Warren Unit BT No. 8 is located approximately 12,300 feet South in the Tubb pool.

6. That the accumulation of Tubb gas and distillate under the Warren Unit BT No. 8 is separated from the Tubb pool by an interval of low permeability as evidenced by the dry holes between the two accumulations.

7. That the suggested name for this new pool is the Warren Tubb pool.

8. That the limiting gas-oil ratio for oil wells to be drilled in the pool be 6,000 cubic feet for each barrel of oil produced.

Wherefore, applicant respectfully prays that this application be set for hearing before the Commission's duly appointed examiner at Hobbs, New Mexico, that due notice thereof be given, and that upon hearing an order be entered establishing a new pool designation and pool rules for the Continental Oil Company Warren Unit BT No. 8 Tubb formation.

Respectfully submitted
CONTINENTAL OIL COMPANY

By

R. L. Adams

DOCKET: EXAMINER HEARING JUNE 11, 1958

Oil Conservation Commission 9 a.m., Mabry Hall, State Capitol, Santa Fe, NM

The following cases will be heard before Daniel S. Nutter, Examiner:

- CASE 1337: Application of Gulf Oil Corporation for an order amending Order R-1093. Applicant, in the above-styled cause, seeks an order amending Order R-1093 to provide for the commingling, in exception to Rule 303, but only after separate measurement, of oil produced from the Fusselman, Ellenburger, and McKee formations underlying its Learcy McBuffington Lease, comprising the S/2 of Section 13, Township 25 South, Range 37 East, Lea County, New Mexico, and the transfer of said production by means of automatic custody transfer equipment, in exception to Rule 309 (a); applicant also seeks authority to commingle the production, after separate measurement, from the Blinebry and Drinkard formations and the Langlie-Mattix Pool underlying the above-described McBuffington Lease, and to transfer said production by means of automatic custody transfer equipment. Applicant further seeks authority to produce more than 16 wells into each of the common transfer facilities described above, in exception to Rule 309 (a).
- CASE 1341: Application of Jal Oil Company, Inc. for an oil-oil dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Sarkeys Well No. 2, located 660 feet from the North and West lines of Section 25, Township 21 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Blinebry Oil Pool and oil from the Tubb Gas Pool through parallel strings of tubing.
- CASE 1464: Application of Amerada Petroleum Corporation for an oil-oil dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Ida Wimberley Well No. 3, located 1980 feet from the South line and 990 feet from the West line of Section 24, Township 25 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Fusselman adjacent to the Justis-Fusselman Pool, and oil from the Drinkard formation adjacent to the Justis-Drinkard Pool through parallel strings of tubing.
- CASE 1465: Application of Magnolia Petroleum Company for an oil-oil dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its New Mexico "S" No. 1 Well, located 990 feet from the North line and 1650 feet from the East line of Section 2, Township 16 South, Range 32 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Wolfcamp formation adjacent to the Anderson Ranch-Wolfcamp Pool and oil from the Anderson Ranch-Devonian Pool through parallel strings of tubing.

CASE 1466: Application of Tidewater Oil Company for an exception to Rule 309 of the Commission Rules and Regulations. Applicant, in the above-styled cause, seeks an order authorizing the installation of automatic custody transfer equipment with positive displacement meters and automatic sampling equipment and other related facilities to receive, measure, and transfer custody of oil from the Justis-Ellenburger Pool produced from the wells located on its Coates "C" Lease, which comprises the E/2, SE/4 NW/4, and NE/4 SW/4 of Section 24, Township 25 South, Range 37 East, Lea County, New Mexico.

CASE 1467: Application of Continental Oil Company for the establishment of a new Tubb gas pool and for the promulgation of special rules and regulations. Applicant, 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 horizontal limits consisting of the E/2 of Section 28, Township 20 South, Range 38 East, Lea County, New Mexico. The applicant further seeks the promulgation 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.

CASE 1468: Application of Continental Oil Company for the establishment of a new Blinebry gas pool and for the promulgation of special rules and regulations. Applicant, in the above-styled cause, seeks an order establishing a new pool for Blinebry gas production to be designated as the Warren-Blinebry Gas Pool with horizontal limits consisting of the E/2 of Section 28, Township 20 South, Range 38 East, Lea County, New Mexico. The applicant further seeks the promulgation of special pool rules similar to those adopted for the Blinebry Gas Pool, as set forth in Order R-610, subject to modification of certain of said rules.

CASE 1469: Application of Phillips Petroleum Company for a non-standard gas proration unit. Applicant, in the above-styled cause, seeks an order establishing a 320-acre non-standard gas proration unit in the Eumont Gas Pool consisting of the S/2 of Section 14, Township 19 South, Range 36 East, Lea County, New Mexico, said unit to be dedicated to the applicant's Bern "A" Well No. 1, located 660 feet from the South and East lines of said Section 14.

CASE 1470: Application of Phillips Petroleum Company for a non-standard gas proration unit. Applicant, in the above-styled cause, seeks an order establishing a 320-acre non-standard gas proration unit in the Eumont Gas Pool consisting of the N/2 of Section 12, Township 19 South, Range 36 East, Lea County, New Mexico, said unit to be dedicated to the applicant's Monument Well No. 1, located 1977 feet from the North line and 660 feet from the East line of said Section 12.

CASE 1471: Application of Phillips Petroleum Company for a non-standard gas proration unit. Applicant, in the above-styled cause, seeks an order establishing a 240-acre non-standard gas proration unit in the Tubb Gas Pool consisting of the NW/4 and the W/2 SW/4 of Section 24, Township 22 South, Range 37 East, Lea County, New Mexico, said unit to be dedicated to the applicant's Sims Well No. 3, located 1980 feet from the North and West lines of said Section 24.

CASE 1472: Application of Sunray Mid-Continent Oil Company for an oil-oil dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its State Land 15 Well No. 3, located 660 feet from the South line and 1980 feet from the East line of Section 16, Township 21 South, Range 37 East, Lea County, New Mexico, to permit the production of oil from the Drinkard Pool and oil from the Blinebry Oil Pool through parallel strings of tubing.

Case 1467



CONTINENTAL OIL COMPANY

825 PETROLEUM BUILDING
ROSWELL, NEW MEXICO

R. L. ADAMS
DIVISION SUPERINTENDENT
OF PRODUCTION
NEW MEXICO DIVISION

May 13, 1958

New Mexico Oil Conservation Commission
Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr., Secretary-Director

Gentlemen:

Attached are three copies of Continental Oil Company's application for a new pool designation for Tubb gas production from its Warren Unit BT Well No. 8, located 1980 feet from the south and east lines of Section 28, T20S, R38E, NMPM, Lea County, New Mexico, and for the establishment of pool rules to govern the production from this pool. It is respectfully requested that this matter be set for hearing at the earliest convenient date.

Yours very truly,

R. L. Adams

RIA-JC

Enc

cc: HLJ, FTE

*Docketed
5-27-58
BP*

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION OIL CONSERVATION COMMISSION

EXHIBIT NO. 1467

CASE NO. 1467

Form C-122

Revised 12-1-55

MULTI-POINT BACK PRESSURE TEST FOR GAS WELLS

Pool Undesignated Formation Tubb County Lea

Initial Annual Special X Date of Test 4-14-58

Company Continental Oil Company Lease Warren Unit B.T. Well No. 8

Unit J Sec. 28 Twp. 20-S Rge. 38-E Purchaser El Paso Natural Gas Co.
9072

Casing 7" Wt. 23# I.D. 6.336 Set at PB 6692 Perf. 6360 To 6590

Tubing OD 2.375 I.D. 4.7 I.D. 1.995 Set at 6480 Perf. To

Gas Pay: From 6360 To 6590 L 6360 xG-MIX = .737 GL 4687 Bar.Press. 13.2

Producing Thru: Casing Tubing X Type Well G. G. Dual

Single-Bradenhead-G. G. or G.O. Dual

Date of Completion: 2-11-57 Packer 6240 Reservoir Temp. 95°

OBSERVED DATA

Tested Through (Flowmeter) (Orifice) (Meter) Type Taps Flange

No.	Flow Data			Tubing Data		Casing Data		Duration of Flow Hr.
	(Line) Size	(Orifice) Size	Press. psig	Diff. h _w	Temp. °F.	Press. psig	Temp. °F.	
SI						2071		72
1.	4	1.500	616	9.9	40	1864		24
2.	4	1.500	601	24.1	36	1759		24
3.	4	1.500	593	46.2	42	1603		24
4.	4	1.500	567	73.0	37	1458		24
5.								

FLOW CALCULATIONS

No.	Coefficient (24-Hour)	$\sqrt{h_{wpf}}$	Pressure psia	Flow Temp. Factor F _t	Gravity Factor F _g	Compress. Factor F _{pv}	Rate of Flow Q-MCFPD @ 15.025 psia
1.	13.99	78.93	629.2	1.0198	.9427	1.096	1163
2.	13.99	121.66	614.2	1.0239	"	1.090	1791
3.	13.99	167.35	606.2	1.0178	"	1.090	2448
4.	13.99	205.80	580.2	1.0229	"	1.085	3012
5.							

PRESSURE CALCULATIONS

Gas Liquid Hydrocarbon Ratio 37.650 cf/bbl. ✓
Gravity of Liquid Hydrocarbons 76.2 deg. ✓
F_c 9.936 (1-e^{-s}) 0.276

Specific Gravity Separator Gas .676
Specific Gravity Flowing Fluid .737
P_c 2084.2 P_c² 4343.9

No.	P _w P _t (psia)	P _t ²	F _c Q	(F _c Q) ²	(F _c Q) ² (1-e ^{-s})	P _w ²	P _c ² -P _w ²	Cal. P _w	P _w /P _c
1.	1877.2	3523.9	11.56	133.63	36.88	3560.8	783.1	1887.0	.91
2.	1772.2	3140.7	16.69	278.56	76.88	3217.6	1126.3	1793.7	.86
3.	1616.2	2612.1	24.32	591.46	163.24	2775.3	1568.6	1665.9	.80
4.	1471.2	2164.4	29.93	895.80	247.24	2411.6	1932.3	1552.9	.75 *
5.									

Absolute Potential: 6,700 MCFPD; n .98

COMPANY Continental Oil Company

ADDRESS Box 427, Hobbs, New Mexico

AGENT and TITLE W. D. Howard, Gas Tester

WITNESSED

COMPANY

REMARKS

Flow Rate No. 1 2 3 4

Bbls. Distillate Production 42 55 58 30

Gas-Oil Ratio 27,690 32,564 42,207 37,650

* Orifice size prohibited obtaining 30% drawdown on highest rate.

INSTRUCTIONS

This form is to be used for reporting multi-point back pressure tests on gas wells in the State, except those on which special orders are applicable. Three copies of this form and the back pressure curve shall be filed with the Commission at Box 871, Santa Fe.

The log log paper used for plotting the back pressure curve shall be of at least three inch cycles.

NOMENCLATURE

Q = Actual rate of flow at end of flow period at W. H. working pressure (P_w).
MCF/da. @ 15.025 psia and 60° F.

P_c = 72 hour wellhead shut-in casing (or tubing) pressure whichever is greater.
psia

P_w = Static wellhead working pressure as determined at the end of flow period.
(Casing if flowing thru tubing, tubing if flowing thru casing.) psia

P_t = Flowing wellhead pressure (tubing if flowing through tubing, casing if flowing through casing.) psia

P_f = Meter pressure, psia.

h_w = Differential meter pressure, inches water.

F_g = Gravity correction factor.

F_t = Flowing temperature correction factor.

F_{pv} = Supercompressibility factor.

n = Slope of back pressure curve.

Note: If P_w cannot be taken because of manner of completion or condition of well, then P_w must be calculated by adding the pressure drop due to friction within the flow string to P_t .

COMPANY Continental Oil Co.
 WELL Warren Unit BT No.8 (Tubb)
 LOCATION J 28-20S-38E
 COUNTY Lea
 DATE 4-14-58

CODING BOOK COMPANY, INC. NORWOOD, MASSACHUSETTS
PRINTED IN U.S.A.

NO. 31.291 LOGARITHMIC: 2 BY 2 3/4 INCH CYCLES (BASE SHORT WAY)

