BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASES NOS. 1504 AND 1505

TRANSCRIPT OF HEARING

SEPTEMBER 10, 1958

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 3-6691

BEFORE THE
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IN THE MATTER OF:

CASE 1504 Application of Gulf Oil Corporation for a dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Learey McBuffington Well No. 8, located 330 feet from the South line and 1980 feet from the West line of Section 13, Township 25 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Fusselman formation adjacent to the Justis-Fusselman Pool and oil from an undesignated Montoya pool through parallel strings of tubing.

CASE 1505 Application of Gulf Oil Corporation for a dual completion. Applicant, in the above-styled cause, seeks an order authorizing the dual completion of its Learey McBuffington Well No. 9, located 1650 feet from the South line and 1980 feet from the West line of Section 13, Township 25 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Fusselman formation adjacent to the Justis-Fusselman Pool and oil from an undesignated Montoya pool through parallel strings of tubing.

BEFORE:

Mr. 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: The hearing will come to order, please. First case now will be Case No. 1504.

MR. PAYNE: Application of Gulf Oil Corporation for a dual completion.

MR. KASTLER: My name is Bill Kastler. I am representing Gulf Oil Corporation, and if the Hearing Officer please, I would like to request that Cases No. 1504 and 1505, which is also an application of Gulf Oil Corporation for a dual completion, be consolidated for the purpose of hearing, inasmuch as they both involve dual completions of oil wells completed in the Fusselman and Montoya pay zones.

MR. NUTTER: Is there objection to the consolidation of Cases 1504 and 1505 for purposes of taking the testimony only? If not, they will be so consolidated.

MR. KASTLER: These cases come on before the Hearing Officer for the reason that they involve the first dual completion of the particular two pays, the Fusselman and Montoya, into the same well bore. We've consolidated, or asked that both cases be heard and approval be given in order to save all the time possible, and get into production at an early time. Our two witnesses are Gerald Savage and John Hoover. Mr. Savage is the geologist, and Mr. Hoover is the engineer.

(Witnesses sworn)

GERALD J. SAVAGE,

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Mr. Savage, please take the stand. Will you please state

your name and your position with Gulf Oil Corporation?

A Gerald J. Savage, production geologist for the Gulf Oil Corporation, Roswell, New Mexico.

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

A Yes, sir, I have.

Q Are you familiar with cases 1504 and 1505?

A Yes, sir.

Q Have you prepared location plats for both cases for introduction as Exhibits at this hearing?

A Yes, sir, I have.

Q Are these labeled "Lease plat Learcy McBuffington Gulf Oil Corporation, Case 1504, Exhibit No. 1, and the same for Case 1505 on Exhibit No. 1?

A Yes, sir.

Q Referring to Exhibit No. 1, Case 1504, will you please state what is shown on that plat?

A Specifically is shown Gulf's Learcy McBuffington Lease consisting of the S/2 of Section 13, Township 25 South, Range 37 East. Also is shown outlined in red Gulf's No. 8 Learcy McBuffington Well, which is located 330 feet from the South line and 1980 feet from the West line of that Section 13.

Q Referring now to Case 1505, Exhibit No. 1, will you state the similarity and what is shown in that Exhibit?

A Exhibit No. 1 in Case 1505 shows the same information with

the exception that Gulf's No. 9 Learcy McBuffington is outlined in red. All other data is the same,with the exception of the labeling of the Exhibit.

Q Mr. Savage, are other facts shown on the location plats such as, for example, any previous completion or dual completion in the Fusselman or Montoya pay zones?

A Yes, sir, there are other dual completions shown to the south of Gulf's Learcy McBuffington Lease, specifically Western Natural Gas No. 2, Wimberly, which is a south offset to Gulf's No. 8 Learcy McBuffington, this well is a Drinkard Fusselman dual; and also Western Natural Gas Company's No. 3 and No. 4 Wimberlys, which are also Drinkard Fusselman duals. On the Tidewater Coats Lease in Section 24 of Township 25 South, Range 37 East, is Tidewater's No. 14 Coats Federal located in the SW/4 of the NE/4 of Section 24, which is indicated as a Drinkard Montoya dual.

Q Mr. Savage, have you prepared contour plats on top of the Fusselman that may be introduced here, and are so marked for introduction as Exhibits No. 2 in Cases 1504 and 1505?

A Yes, sir, I have.

Q Referring to Exhibits No. 2 in both cases, would you state what is shown on both of these Exhibits?

A Shown on the Exhibits enumerated are: the structure as reflected by the top of the eroded Fusselman with a contour interval of 100 feet; the structure shows the Gulf's No. 8 Learcy McBuffington to be high on that structure, and shows Gulf's No. 9

Learcy McBuffington, to be on the flank of that structure.

Q These two Exhibits, then, show these are comparably on structure, these two wells in the Fusselman zone, is that correct?

A No, sir. Guld's No. 9 Learcy McBuffington is not comparable. The No. 9 is a little lower than the No. 8.

Q I meant comparing them with other wells, authorized dual completed wells in the Fusselman.

A I understand what you mean. Gulf's No. 8 occupies a comparable position on structure with other Fusselman and Montoya wells, and Gulf's No. 9 occupies a favorable position on structure with other Fusselman wells, and we have shown, by means of a production test, that the Montoya is productive in Gulf's No. 9 Learcy McBuffington.

Q Now, have you prepared for introduction here as Exhibit No. 3 in each case, contour plats showing the base of the Fusselman and the top of the Montoya?

A Yes, sir. I have copies of a structure map on top of the Montoya which is also the base of the Fusselman, and this I have caused to be labeled Exhibit No. 3 in Cases 1504 and 1505. These structure plats are contoured with a contour interval of 100 feet, and they show the structural position of Gulf's No. 8 Learcy McBuffington and No. 9 Learcy McBuffington in relation to other producers in the Montoya and Fusselman formations.

Q Have you prepared for introduction here Exhibits No. 4 in Cases 1504 and 1505, which consist of electric logs in each of the

two wells?

A Yes, sir. I have copies of the electric logs on Gulf's No. 8 Learcy McBuffington and No. 9 Learcy McBuffington, which have been labeled Exhibits No. 4 in Cases 1504 and 1505.

Q Referring to the two Exhibits No. 4, will you please explain what is shown as to the structure there?

A I have cause to be shown on these exhibits the top of the eroded Silurian formation, and on the No. 8 Learcy McBuffington. That horizon is at a depth of 6,656 feet, and the base of the Silurian, which is also the top of the Montoya in the No. 8 Learcy McBuffington, at a depth of 6,830 feet. The casing has been perforated at four intervals, between the depth of 6,886 feet and 7,032 feet. On the log of the No. 9 Learcy McBuffington, I have caused to be shown the top of the eroded Silurian at a depth of 6,750 feet, and the base of the Silurian at the top of the Montoya at a depth of 6,930 feet. The casing has been perforated in the Silurian zone, which is the Fusselman formation at four intervals, between the depth of 6,752 feet and 6,890 feet, and the casing has been perforated opposite the Montoya formation at two intervals, between the depth of 6,940 feet and 7,052 feet.

Q Mr. Savage, to conclude your testimony, is it your opinion that Wells No. 8 and 9 involved in these two cases are each capable of production from the Fusselman and the Montoya pay zones?

A Yes, it is, by reason of their structural position. In relation to other wells producing from those formations, it can be

reasonably assumed that Gulf's No. 8 ans No. 9 Learcy McBuffington would both be productive from the Fusselman and Montoya formations.

Q Do you have anything to add at this time?

A No, sir.

MR. KASTLER: Mr. Examiner, this concludes my direct testimony, or the direct testimony of this first witness. We intend to put Mr. Hoover on the stand following him, and he will testify as to the proposed installation — the casing installations.

MR. NUTTER: Are there any questions of the witness?

CROSS EXAMINATION

BY MR. FISCHER:

Q Is the Fusselman formation part of the Silurian?

A The Fusselman, as I understand it, is the lowermost limestone of the Silurian period, age, or something like that.

Q You didn't show the mechanics, but that will be done by the next witness?

A Yes, Mr. Fischer, that will be taken care of by Mr. Hoover.

Q Shown on this log is the top of the eroded Silurian to the base of the Silurian. In this case, is that all the Fusselman, or is there any -- there wouldn't be any Fusselman above, would there?

A No, sir. I might point out that the Permian formation is deposited on top of the eroded Silurian and that unless we encounter a faulted situation, we would not find any Silurian below the top of the Montoya.

MR. FISCHER: Thank you.

QUESTIONS BY MR. UTZ:

Q Would there be any Silurian below the top of it?

A It would be permeable on top of the eroded Silurian just above a possible detrital zone. The Devonian is absent when you have eroded Silurian.

MR. FISCHER: Just to clarify my thinking, Mr. Savage, what is the next formation on top of the eroded Silurian, what formation do you hit coming up the hole?

A It is the Tubb formation.

MR. FISCHER: That's all I have. Thank you.

QUESTIONS BY MR. NUTTER:

Q Mr. Savage, is there any indication to date that the Fusselman is productive in your McBuffington 8 Well? You have not perforated that well, as yet, have you, in the Fusselman?

A We have not perforated that zone, but we feel reasonably sure that the Fusselman would be productive in the No. 8 inasmuch as it is present and there are Fusselman wells producing down dip from the No. 8.

Q Was there any drill stem test taken in the Fusselman as you drilled through it?

A No, there was not.

Q Is the well presently completed in the Montoya and producing?

A To my knowledge, it is not producing.

Q Have these perforations been made to date?

A These perforations as shown on Exhibits No. 4 in Case 1504 and 1505 have been made. It is proposed to perforate the Fusselman formation in the No. 8 Learcy McBuffington between the depths of 6,730 feet and 6,830 feet.

Q Give those depths again, please.

A 6,730 to 6,830.

Q What will be the distance, then, from the lowermost perforations in the Fusselman to the uppermost perforation in the Montoya?

A The distance between the lowermost perforation in the Fusselman and the uppermost perforation in the Montoya in the No. 8 Learcy McBuffington will be 56 feet.

Q And what type of a rock is that that interval of 56 feet covers?

A It is partially the basal part of the Fusselman which is the Silurian, a grey green shale which is the impermeable layer between the Silurian and Montoya formation. That is about ten feet thick, and I believe we could point it out on the No. 8 Learcy McBuffington to be from a depth of 6,830 feet to 6,840 feet. The rest of the interval between those sets of perforations would be Montoya limestone.

Q Now, how about the other well, the No. 9 Well, what is the depth of the lowermost perforations in the Fusselman?

A The depth of the lowermost perforations in the Fusselman is 6,890 feet and the top of the uppermost perforation in the Mon-

toya is 6,940 feet, which is a separation of 50 feet.

Q What type of rock is present there in that 50-foot separation?

A In that 50-foot separation we find Fusselman limestone about 30 feet, that grey green shale, which is about 10 feet, between the depths of 6,920 to 6,930. The last ten feet would consist of Montoya limestone.

Q Do you know the top of the cement of the pipe that is in the hole, or will the other witness testify as to that?

A Mr. Hoover will testify as to that information.

Q Mr. Hoover will also testify as to bottom hole pressures, etc?

A Yes, sir. I believe he is prepared to do so.

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

(Witness excused)

MR. KASTLER: We would like to admit Exhibits 1, 2, 3, 4 in Cases 1504 and 1505 at this time.

MR. NUTTER: Without objection, Gulf Oil Corporation's Exhibits 1 through 5 in Case 1504 and 1 through 5 in Case 1505 will be admitted.

JOHN H. HOOVER,

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Will you state your name and position with Gulf Oil Corporation?

A My name is John Hoover, petroleum engineer with Gulf, Roswell, New Mexico.

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

A Yes, I have.

Q Are you familiar with Gulf's application for dual completions in these two cases?

A Yes, sir.

Q Do you have for introduction as Exhibits No. 5 in both Cases 1504 and 1505 a schematic diagram showing the proposed mechanical installation in each of those wells?

A Yes.

Q Was this prepared by you or at your direction or under your supervision?

A Yes, it was.

Q Will you please explain your Exhibit No. 5 in Case 1504, and after that, Exhibit No. 5 in Case 1505 as briefly as possible?

A Yes. This Exhibit 5 in 1504 is a proposed mechanical installation for this proposed dual completion. It shows that we have 13 3/8 inch casing set at 418 feet; cement circulated; 9 and 5/8 inch casing set at 3,450 feet; cement circulated to the surface. We have 7 inch casing set at 7,052 feet, and by temperature survey

indicated the top of the cement at 1,810 feet. The total depth of this well is 7,052 feet, and was plugged back to 7,047 feet. This drawing shows by color the Fusselman production, it being in green, and the Montoya production being in pink. We will have two strings of tubing. The long string will be 2 7/8 inch OD Hydril to the packer and 2 3/8 inch tubing below the packer. The short string is 2 3/8 inch tubing. We will have a Baker parallel string and anchor at approximately 6,800 feet, and the Baker Model "D" packer at approximately 6,850 feet. The Fusselman perforations, 6,730 feet to 6,830 feet. The Montoya perforations 6,886 feet to 7,032 feet.

Q I notice you have proposed Fusselman perforations at 6,730 feet to 6,830 feet, and do you have any further information than Mr. Savage had in his testimony as to whether this is a productive zone in the Fusselman?

A Our No. 7, which is the west offset, was productive in the Fusselman. On test, June the 10th, 1958, it flowed 254 barrels of oil and no water, and 84 MCF of gas, with a GOR of 331.

Q Thank you. Mr. Hoover, will you now refer to Exhibits No. 5 in Case 1504 and 1505 and state the specifications of that well as proposed to dually completion?

A The equipment in the No. 9 which is shown on Exhibit 5 in Case 1505 is identical to the No. 8; the only difference is in the setting. We have 13 3/8 inch casing set at 419 feet, and cement was circulated to the surface; 9 5/8 inch casing set at 3,44[illegible] feet, cement was circulated; 7 inch casing set 7,100 feet and by

temperature survey, the top of the cement was indicated at 2,620 feet. The total depth of this well, 7,100 feet, plugged back total depth 7,093 feet. The long string of tubing will be 2 7/8 inch Hydril to the Packer, and 2 3/8 inch below the packer. The short string will be 2 3/8 inch OD. We have a Baker parallel string anchor at 6,870 feet and Baker Model "D" production packer at 6,915 feet. The Fusselman perforations are from 6,752 feet to 6,890 feet. Montoya perforations, 6,940 feet to 7,052 feet.

Q Mr. Hoover, is the equipment which Gulf proposes to use in this dual completion in both of these cases equipment of a type which has previously been approved by this Commission?

A Yes, it is.

Q And has it been approved in connection with Gulf Oil Corporation's wells?

A It has.

Q Has Gulf's experience with such equipment been entirely satisfactory?

A Yes, it has.

Q What methods are there for determining whether the two pay zones in each well are separated and remain separate and will not commingle?

A We have run some bottom hole pressures on our No. 9 which has been perforated in the Fusselman and Montoya.

Q What is the pressure differential you have encountered there?

A The bottom hole pressure in the Fusselman at a datum of -3,810 was 2,841 pounds, and in the Montoya at 3,880 was 2,819 pounds. In our No. 8, the packer is set at a -3,771 and correcting the bottom hole pressure to our packer setting, we would have 2,829 pounds above the packer approximately, and 2,772 approximately below the packer, giving us 57 pounds differential. We have a tubing pressure recorded on the Montoya of 380 pounds, on the Fusselman 500 pounds. That gives us a 120-pound differential for packer leakage test.

Q Have you made any analysis of the respective fluids as to gravity in the Fusselman and Montoya oil?

A We are using the fluid analysis from the south offset wells. In the absence of core analysis, we use the Western Natural Wimberley No. 2 in the Fusselman and the Wimberley No. 5 in the Montoya. The Fusselman gravity is 33.6. The Montoya gravity is 36.6. The sulphur contents of Fusselman is .41 percent, of the Montoya .46 percent. The total chloride in the Fusselman is 615 pounds per thousand barrels, whereas in the Montoya the total chlorides only 4 pounds per thousand barrels.

Q If any leakage were to occur, then, in either of these wells between the two pays, you would have a means of determining that fact by noting a pressure differential, by noting the difference in the gravity of the two fluids, the gravity of the recovered fluid and also in the sulphur content, is that correct?

A Yes, we would have the first indication that there was

communication by the pressure equalization and then it could be also determined by testing the oil. The flow lines will be run separately from these two zones to the battery.

Q Is this proposed equipment designed so as to allow pumping, if necessary?

A Yes, it is.

Q Is it expected that pumping will be necessary in either or both of these pays?

A Not at the present time, but in the future if it is necessary it can be.

Q Are these applications made in the interest of preventing economic waste?

A Yes, they are. It is estimated that to drill a Fusselman well, it would cost $130,000, to drill a Montoya well would be $140,000, or two single zone wells in the Fusselman and Montoya, $270,000. The estimated cost of dual in the Fusselman and Montoya is $175,000, so it is a net saving of $95,000.

Q If these applications were granted, would correlative rights be protected?

A Yes, they would.

Q These are all the questions I have of this witness.

CROSS EXAMINATION

QUESTIONS BY MR. NUTTER:

Q Mr. Hoover, do you anticipate there will be any paraffin problem in any of these two wells?

A At the present time, none indicated.

Q Is the equipment such so that you could cope with the paraffin problem?

A Yes, sir.

Q Do you think the Baker packer is adequate to stand the pressure differential of 57 pounds?

A Yes, sir, more so.

MR. NUTTER: Any further questions of Mr. Hoover?

QUESTIONS BY MR. FISCHER:

Q Mr. Hoover, I didn't get the amount of savings there.

A $95,000. The Fusselman zone $170,000, Montoya well $140,000, making a total of $270,000. The dual was $175,000.

MR. FISCHER: That is all.

MR. KASTLER: I move to admit Exhibit No. 5 in 1505 and Exhibit No. 5, 1504.

MR. NUTTER: Is there objection to the introduction of Exhibit No. 5 in Case 1504 and No. 5 in 1505? If not, this Exhibit will be admitted in evidence.

Do you have any further questions, Mr. Fischer?

MR. FISCHER: What is the weight of that 7 inch casing? I mean the thickest weight?

A I don't have the weights, I could get that.

Q That's all right.

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

(Witness excused)

MR. NUTTER: Does anyone have anything further they wish to offer in Case 1504 or Case 1505? We will take these cases under advisement and take next Case 1506.

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 3rd day of October, 1958, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

J. 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. 1504-1505 heard by me on 9-10, 1958

..., Examiner
New Mexico Oil Conservation Commission