BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 10, 1959

EXAMINER HEARING

IN THE MATTER OF:

Application of Humble Oil & Refining Company for an exception to Rule 16 of Order No. R-586. Applicant, in the above-styled cause, seeks the reclassification of its State V-11 Well, located 2080 feet from the South and West lines of Section 10, Township 21 South, Range 37 East, Lea County, New Mexico, as a Tubb gas well in exception to the gravity classification as set forth in Order No. R-586. Case 1807

BEFORE:
Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: The next case will be 1807.

MR. PAYNE: Case 1807. Application of Humble Oil & Refining Company for an exception to Rule 16 of Order No. R-586.

MR. BRATTON: If the Commission please, Howard Bratton, Hervey, Dow & Hinkle, Roswell, New Mexico, appearing on behalf of the Applicant. We have one witness and ask that he be sworn.

(Witness sworn.)

SAM F. HARRILL

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

DIRECT EXAMINATION

BY MR. BRATTON:

Q Will you state your name, address and occupation?

A My name is Sam F. Harrill. I live in Hobbs, New Mexico, I am a Senior Petroleum Engineer for the Humble Oil and Refining Company at Hobbs.

Q Have you previously testified before this Commission as an expert witness?

A Yes, sir, I have.

Q Are you familiar with the application in this case and the area covered and have you made a study of the well in the area in question?

A Yes, sir.

(Marked Applicant's Exhibits 1 and 2, for identification.)

Q Mr. Harrill, will you state what the application is in this case and what rule they're asking an exception from?

A We are asking for an exception to Rule 16 of Commission Order R-586 so that we may classify our New Mexico State V-11 which is currently a Tubb Gas Pool completion as a Tubb gas well. Rule 16, in effect, defines a gas well in the Tubb Pool as one producing liquid hydrocarbons with a gravity above 45 degrees. Our well initially produced with a gravity of 43 degrees and was classified as an oil well. Gravity increased to 46.7 degrees and was classified as a gas well. The current gravity is 42.3 degrees and

it is now classified as an oil well. We desire to get this exception to prevent this frequent reclassification of the well.

Q Referring to what has been marked Exhibit 1, is that a plat of the area in question?

A Yes, it shows our Well No. 11.

Q The location of that is where?

A The well is 2,080 feet from the South line and 2,080 feet from the West line, Section 10, Township 21 South, Range 37 East.

Q Does that well have a non-standard gas unit assigned to it?

A Yes, sir, it does.

Q That consists of what acreage?

A It consists of the North one-half of the Southwest Quarter and the Southwest Quarter of the Southwest Quarter of Section 10, 21, 37.

Q That 120-acre gas unit was assigned to that well by Order NSP469?

A That's correct.

Q Referring briefly to your log, your Exhibit No. 2, Mr. Harrill, will you explain what that shows?

A Exhibit 2 is a log section of the Tubb Zone in our Humble State V No. 11. It shows the top of the Tubb marker, which is at 6130, the upper limit of the Tubb Zone which is at

6,030 or 100 feet above the Tubb marker and the lower limit of the Tubb Zone which is at 6355 or 225 feet below the Tubb marker. The perforated interval in the Tubb zone is from 6108 to 6290 in five different sections. This illustrates that the well is completed within the Tubb Pool.

Q Will you give the history of this well from the time it was recompleted in the Tubb?

A The well was initially completed on 12-2-58 as a dual Blinebry-Tubb gas well. On testing the gravity of the liquid hydrocarbon from the Tubb Zone varied from 38.2 to 51.0 and leveled out at about 43 degrees at the end of testing. It was decided to not ask the exception at that time but to put the well on test or on production as an oil well to determine what might, what we might find out more about the gravity.

It was placed on production, excuse me, the initial potential of the well, in 24 hours it produced 20 barrels of liquid hydrocarbons, 1220 MCF of gas for a GOR of 61,000. The gravity of the liquid hydrocarbons was 43 degrees. The well was placed on production on the 5th of January, 1959, as an oil well and produced until the 23rd of January, 1959. During that time the average gravity was 46.6, varying from 45.6 to 47.6. We requested that the Commission reclassify the well, and it was so done effective February 1st, 1959, it was placed on production June the 2nd, 1959 and produced until September the 10th, 1959,

at which time it was shut in due to the low fravity. On the last test the official GOR test, it produced 17 barrels of liquid hydrocarbon, 784 MCF of high pressure gas, for a high pressure gas liquid ratio of 46,941. The gravity of the fluid produced was 42.30 degrees. The well has been shut in since September 10th.

Q Referring back to your plat to your Exhibit No. 1, Mr. Harrill, will you go over the figures shown on there and compare this well with the surrounding wells shown on that plat?

A Exhibit 1, as mentioned before, is a plat showing our State V Well No. 11 and the offset oil and gas units in the Tubb Gas Pool. The numbers shown are the latest test data and the latest shutin wellhead pressure. The figure in green is the liquid hydrocarbon production. The figure in red is the high pressure gas production. The next number is the gas liquid ratio, the next number is the gravity of the liquid hydrocarbon, and the next number is the shutin wellhead pressure.

These tests, except as indicated, were taken during the July and August official GOR survey. The wellhead pressures were taken during October, 1959 except as indicated. In some cases the information was not available, in which case we show a dash. The average for the offset wells, the offset gas wells, that is the average of the test data, is 29 barrels of liquid hydrocarbon, 1195 MCF of high pressure gas, and a high pressure gas liquid ratio of 41,000.

The arithmetic average of the gravity is 54.9 degrees. Arithmetic average of the shutin wellhead pressures is 1290 PSI. Fieldwide, based on 124 tests that were available at the Commission office at the time that the check was made, these tests being taken during July and August, 1959, these 124 wells had an average liquid hydrocarbon of 24 barrels per day, high pressure gas of 1275 MCF per day, high pressure gas liquid ratio of 54,000, and average of, the arithmetic average of the gravity for 106 wells for which the gravity was reported was 61.4 degrees API. The average pressure, shutin wellhead pressure for 37 wells that had been reported was 1517 PSI. These, of course, are only averages. We only give those to give some idea of just how the other gas wells in the pool, just what their production characteristics are.

MR. NUTTER: Were all of the wells included in the average gas wells?

A Yes, sir, they were all gas wells.

Q Have you made any comparisons with oil wells in the pool, Mr. Harrill?

A Yes, sir, I have the latest test data on all the oil wells in the pool. There are 15 oil wells. We aren't including our State V-11. On the tests that were taken during July and August of 1959, and there are one or two exceptions when the tests were taken later or at other dates, the average production was 28 barrels of oil, 138 MCF of gas, the gas-oil ratio average was

4874. The arithmetic average of the gravities as reported on the C-115's for August, 1959 was 39.2 degrees. The range of gravities was from 36.5 to 43 degrees API.

Q Are the gas-oil ratios on the oil wells above 40 degrees, with gravities above 40, do any of them have GOR like this well?

A No, sir, they don't. The highest gas-oil ratio for any oil well, based on the latest test, is 12,615, the gravity of that well or liquid hydrocarbons produced is 41 degrees.

Q Are there any other comparisons that you have made, Mr. Harrill, to the other gas or oil wells in the pool?

A The comparison that would indicate or show that this well is more of a nature of a Tubb gas, which we feel it is, is mainly based on the GOR and shutin wellhead pressure. Also the gravity itself is an indication that it is producing from the gas zone.

Q Do you have those samples you would like to show the Commission?

MR. BRATTON: We will not introduce them as exhibits because they don't store too well in your filing cases.

A The reason we say this is, that a Tubb condensate will have a gravity of about 72 degrees or somewhere in that neighborhood, it's actually hard to determine when you are trying to measure the gravity of the liquid that has a gravity that high. The gravity of a Tubb oil is about 38 degrees. We feel that any time

that you are producing a liquid, generally speaking, between these two limits that you are producing both oil and condensate from the well. In other words, we feel like that from our State V-11 we are producing from this oil rim that has been recognized by the operators and by the Commission and that we are also producing from the gas zone.

The clear bottle is a sample of the condensate, the next bottle is a sample of fluid obtained taking 100 parts of condensate and adding 10 parts of oil. That was just done as a matter of convenience, showing that it does color the oil. This is a sample of the oil from the State V-11. Actually the majority, we feel that the majority of the current Tubb gas well completions do produce some of this oil from the oil rim.

Q Mr. Harrill, is this well unusual? In other words, are there a number of wells like this in the pool or is this one rather in an unusual category?

A Well, in this sense, as far as I know at this time it would be the only well that might, that someone might desire to reclassify, and we so desire to reclassify.

Q In other words, it is about the only well in the pool that you have found with this high a gas-oil ratio, and where the gravity is fluctuating and has edged down below the 45 degree mark?

A That is true. There may be one or more cases, it would be hard to say without having more information than is available.

Q You already have a two-stage separator hooked up, do you not?

A Yes, sir, that is correct.

Q Would you explain your separator problem and also your price problem?

A Well, as far as that goes, we feel that there will be waste of reservoir energy if we are required to produce the well as an oil well. As a gas well it can produce into the gas purchaser's high pressure gas line which is about 600 PSI. As an oil well it would have to be flagged down to a low pressure gas line of about 10 PSI. The price of the high pressure gas is about nine cents per MCF and the price of the low pressure gas is about 7 MCF.

Q As an oil well you would be dissipating that reservoir energy from 600 pounds down to 10 pounds?

A Yes, sir.

Q In addition to your loss of price?

A That is correct.

Q In your opinion, Mr. Harrill, is it necessary that this well be classified as a gas well in order to protect your correlative rights?

A Yes, sir, I do. We feel that this well can well drain the 320 acres assigned to it. It would not be economical to drill the other two oil wells that would be required to develop the acreage, assuming that this same type completion would be made.

Q Actually you don't know if you drilled over there whether you would get a well above or below 45 degrees, do you?

A No, sir.

Q In summary, Mr. Harrill, what are your reasons why you believe this well should be classified as a gas well?

A Well, ignoring the gravity rule, and I would like to say here that we do not propose any change in this rule, I propose we do not infer there should be any change, we feel like this is a case where the arbitrary gravity that was assigned back in Case 1221 does not apply. This well has all the characteristics of the gas well, ignoring the gravity again. It can be produced into the high pressure gas line of the gas purchaser, and it would be a waste to produce it as an oil well.

Q It is completed in the Tubb Gas Zone?

A Yes, sir, it is completed within the Tubb Gas Zones.

Q All of its characteristics, producing history and fluctuation indicate to you that it is primarily a Tubb gas well?

A Well, yes.

Q Is there anything else you would care to say in this case, Mr. Harrill?

A No, sir, I don't believe I do.

Q Did you prepare Humble's Exhibits Nos. 1 and 2?

A Yes, I did.

MR. BRATTON: We would like to offer Humble's Exhibits

1 and 2.

MR. UTZ: Without objection they will be entered.

MR. BRATTON: We have nothing further to offer, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q How much fluid do you estimate this well will produce at normal allowables?

A It averages nine barrels per day.

Q Nine barrels? A Yes, sir.

Q Is the color of most of the liquids from other gas wells in the pool similar to this or are they all lighter?

A Well, we have made a comparison of our Tubb wells that substantiates more or less what we found. We concluded in our State V-11 we have 10 Tubb wells and we have found that the gravity or the color of the fluid is actually an indication of what its gravity might be. It's hard to determine too well because it only takes a small amount of the oil to discolor the condensate. However, it is very apparent that somewhere around 68 or 69 degrees or anything below that should or will be a dark fluid based on what we have found.

MR. UTZ: Any other questions of the witness? Mr. Nutter.

BY MR. NUTTER:

Q Mr. Harrill, I know some Tubb oil wells occur in the sinclinal structures. Do you think that there is a possibility that this well may be drilled into such a sinclinal structure?

A No, sir.

Q You haven't made any contour map of the Tubb for this study, have you?

A No, sir, I haven't. I'm just comparing it with cross sections through other wells.

Q I notice you have got 182 feet of perforated interval here. What is the average perforated interval in a Tubb well?

A I do not know, but I would say that our perforations aren't, I would not consider those excessive.

Q Do you think there's a possibility that the high GOR of this well may be attributed to the high perforations and the low gravity of the oil attributed to the low perforations?

A I think there's no doubt about it. I see no doubt. We really don't know where the oil is coming from, but I would say that that is true that the oil is coming from the lower part of the Tubb interval.

Q You may be more or less completed in a gas section in part of it and an oil section in another part of the well?

A Yes, sir. And if I may, I would like to say that most Tubb wells are so completed, or it is my opinion that they are.

Q Did you state that the highest GOR that you were able to

find for oil wells in the Tubb field was 12,615?

A I said that the latest test available, the tests that were taken during July and August show that to be the highest ratio. There may have been tests showing higher ratio, and they may actually produce at higher ratios.

Q This ratio on your well is 46,941 that you show on Exhibit No. 1, is that the test ratio or is that a producing ratio?

A That is a test ratio.

Q Have you taken any tests to determine what the producing ratios are?

A The producing ratio is about 24,000. I would like to go on, explain the reason for that, the wells are not produced continuously, that is the gas well. They are quite frequently produced for a few days and then shut in and they do not have time to stabilize. I feel that is the reason for the fact the ratio varies as it does.

Q Is there any tendency for wells in the Tubb Gas Pool to have a change in their gravity or their GOR's as time goes on?

A That's a very good question, but I do not have that data available.

Q This well doesn't have really a lengthy producing history to determine what the trend is as far as this well, does it?

A I would say not, although, well, you are right there. Enough production history, although I would think it would not

change much from what it is now, that is over the next year or so.

Q Mr. Harrill, what would the attitude of Humble be towards an order to classify the well one way or the other and then review the status of the well after a period of say one year and adequate producing history to make a final determination?

A I can certainly see nothing wrong with such an order.

MR. NUTTER: I believe that's all. Thank you.

MR. UTZ: Are there other questions? If not the witness may be excused.

(Witness excused.)

MR. UTZ: Are there other statements in this case? If not the case will be taken under advisement.

STATE OF NEW MEXICO)
: ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 20th day of November, 1959.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1807, heard by me on Nov. 20, 1959.

....., Examiner
New Mexico Oil Conservation Commission