BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 26, 1963

EXAMINER HEARING

IN THE MATTER OF:	
Application of Gulf Oil Corporation for a special gas well test, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce and flare approximately 3000 MCF of gas per day for a period of not less than 6 nor more than 9 days from its Hackberry Hills Unit Well No. 1, located in Unit O of Section 1, Township 22 South, Range 25 East, Eddy County, New Mexico, to determine if the gas reserves in place justify the expense of a pipeline to the nearest market outlet.	Case 2843

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will take up Case 2843.

MR. DURRETT: Application of Gulf Oil Corporation for a special gas well test, Eddy County, New Mexico.

MR. KASTLER: Bill Kastler, appearing on behalf of Gulf Oil Corporation, from Roswell. Our witness will be John H. Hoover. Before commencing the case I would like to make a brief statement by reading, if you please, a slight excerpt from the statutory definition of waste.

This is 65-3-3, annotated, "As used in this act, the term 'waste', in addition to its ordinary meaning, shall include:" and I skip to subparagraph "'Surface Waste' as those words are generally understood in the oil and gas business, and in any event to embrace the unnecessary or excessive surface loss or destruction without beneficial use, however caused, of natural gas of any type or in any form of crude petroleum oil, or any product thereof, but including the loss or destruction, without beneficial use, resulting from evaporation, seepage, leakage or fire --" and so forth.

I wish to state that if the Commission, in granting the application which Gulf is seeking to flare gas for a period of between six and nine days, if the Commission finds that the gas is not being flared without beneficial use, but is being flared to serve a beneficial use, then the Commission is actively engaged in preventing waste. So I want to point this up and tell you that in my questions from Mr. Hoover I intend to exhibit such facts and conditions which will authorize the Commission to find that there is a beneficial use being served if this application should be granted.

May Mr. Hoover be sworn, please?

MR. DURRETT: Yes.

(Witness sworn.)

JOHN HOOVER

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Will you please state your name, your position and by whom you are employed?

A John Hoover, employed by Gulf Oil Corporation, District Production Engineer, Roswell, New Mexico.

Q Have you frequently appeared before the New Mexico Oil Conservation Commission and testified as a petroleum engineer?

A Yes, sir, I have.

MR. KASTLER: Are Mr. Hoover's qualifications acceptable?

MR. NUTTER: Yes, they are.

Q What is Gulf seeking in this application?

A We are seeking authority to produce and flare approximately three million cubic feet per day of gas from our Hackberry Hills Well No. 1 for a period of not less than six days, no more than nine days, to determine if the gas reserves in place justify the expense of a pipeline to the nearest market outlet.

Q Is this authority to flare gas needed as an exception to statewide Rule 404?

A Yes, sir, in my opinion it is. Rule 404, which is

entitled "Natural Gas Utilization", reads in part that "After the completion of a natural gas well, no gas from such well shall be permitted to escape to the air."

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

Q Will you please refer to Exhibit No. 1 and explain the case a little more fully?

A Yes, sir. Exhibit No. 1 is a plat of the Hackberry Hills Unit, and the unit is outlined by hashed marks. The Hackberry Hills Well No. 1 is colored in red and circled, and it is located 880 feet from the South line and 2130 feet from the East line of Section 1, Township 22 South, Range 25 East, Eddy County, New Mexico.

This well was completed August 15, 1961, within the interval of 9622 feet to 9654 feet in the Canyon formation of Pennsylvanian age. It has been shut-in since completion pending a market outlet. In our attempt to obtain a market outlet we received a proposal from a prospective purchaser that if the unit could develop a deliverability of 10 million cubic feet per day with reserves to support that deliverability, that they would provide a connection on the unit.

Well, this obviously called for additional wells. Therefore, in view of this prospective market, the Hackberry Hills

Well No. 2 was spudded, and it is located in the Northeast Quarter of Section 7, Township 22 South, Range 26 East. This well was drilled to a total depth of 10,500 feet and it was completed dry, plugged and abandoned in February, 1963. This same prospective purchaser then offered to purchase the gas if the unit would lay a line to his gathering system.

We have an alternative of tying into his system on the center of Section 30 of 21 South, Range 27 East, that's just north of the town of Carlsbad or to the center of Section 5 in 22 South, 27 East, that is just to the east of the town of Carlsbad. The estimated cost to install a tank battery and a line to deliver gas to the center of Section 30 is estimated to cost $98,500.

We have evaluated the economics of this thing and the Hackberry Hills Well No. 1, which was drilled to a total depth of 11,536 feet cost approximately $375,000. Since the well was plugged back, $68,000 was written off on the hole below the producing formation, which would leave a gross cost of approximately $307,000. So, adding the cost of the line of $98,500 to this gross cost, we come up with a gross investment of approximately $405,500.

Evaluating this thing we find that if we can determine that there are only 320 acres of reserves which are being drained,

the discounted cash flow rate of return after income tax will be approximately 7.4%. The profit to investment ratio, .15, which means that for a dollar spent you make fifteen cents. If we can determine that the well is draining 640 acres, the discounted cash flow rate of return jumps to 16.3%, the profit to investment ratio .88.

Based on these economic analyses, if only 320 acres of reserves are indicated, the economics are poor. On 640 acres the economics are acceptable, and anything over the 640 acres naturally improves the economics.

What I have shown on this Exhibit No. 1 is that we have a long line delay, we'll lay approximately eight miles of line at considerable expense, we have shown that an attempt to improve the productivity from the unit, we stepped out and drilled a well and got a dry hole, and what I will show in the next exhibits I hope will be the reason for this.

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

Q What is shown on Exhibit No. 2?

A Exhibit No. 2 is merely a four point back pressure test that was taken on the Hackberry Hills Well No. 1, and I present it only to show that the well is capable of producing the three million a day, and I would like to call to the Examiner's

attention that the well produced 2841 MCF per day on a 21-hour stabilized flow rate with a tubing pressure of 2156 pounds; the absolute open potential was 6,800,000. The gas liquid hydrocarbon ratio on this test was 22,100 cubic feet per barrel. The well is capable of making the three million per day.

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

Q Is Exhibit No. 3 a procedure for conducting the reservoir limit test that you are proposing, and will you please explain?

A Yes, it is. On this procedure, the first step will be with the well shut-in measure, the tubing pressure by dead weight tester. Two, we'll run an Amerada bomb to the bottom equipped with a 72-hour choke and allowed to remain on the bottom 15 minutes before opening the well. We will open the well to 16/64 inch choke and flow through a calibrated orifice meter, leaving the bomb on the bottom.

Based on previous test data, this choke setting should produce a producing rate of approximately three million cubic feet per day. It is important that the rate remain constant during the entire test. This will require occasionally setting the choke setting.

Step four, measure by dead weight tester the flowing tubing

pressure hourly if possible. This may be supplemented by installation of a pressure recorder. At the end of the 72-hour flow period we will pull the bomb with the well flowing, replace the chart and rerun. We will measure the tubing pressure with a dead weight tester before pulling and removing bomb. Continue flowing for a second 72-hour period maintaining constant rate and periodically measure tubing pressure with dead weight test.

Evaluation of the first pressure chart will be made during the second 72-hour flow period to determine the necessity of continuing the test. At the end of the test measure tubing pressure with dead weight tester and close well in for 72-hour buildup. After the 72-hour buildup, measure tubing pressure with dead weight tester and pull bomb. This is our proposed procedure, and I might add that we will have facilities to separate and save the condensate produced and the condensate recovery will be sold.

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

Q What is Gulf's Exhibit No. 4?

A Since the Hackberry Hills Well No. 1 is located on a federal lease, we advised the United States Geological Survey of our proposed test, and Exhibit No. 4 is a copy of their letter saying that they have no objection to flaring the gas.

Q Have the other working interest owners in this well and unit approved the running of the test?

A Yes, sir. As of this date we have received 97.9% approval, which represents all approval except one, and this one party has not indicated that he objects, he just has not answered.

Q To sum up your testimony to this point, would you please state briefly what beneficial purpose would be served by flowing this gas?

A The primary purpose of conducting the test is to determine if the gas in this undesignated pool can be economically marketed at the present time. We also hope to determine whether further development is warranted.

Q You have plans of further development, This is a federal-type unit, and both federal and state lands are involved, and you are required as well as other things to submit twice a year a plan of further development, is that not correct?

A Yes, sir, that is correct.

Q And this would have some bearing on future development and plans?

A Yes, it would.

Q Do you have anything further to add in this case?

A Only one thing, we desire to start this test as soon as possible and we'd like to start it sometime during the first half

of July. Since it's going to take considerable arrangements to set up the equipment to run this test, we're going to have to haul in test tanks and separators, and so forth, we'd like an indication from the Commission as soon as possible if our proposal is acceptable so we can at least proceed with the preliminary arrangements.

Q Will Gulf furnish any test data requested by the Commission?

A Yes, we would.

MR. KASTLER: This concludes the questions we have on direct examination. I would like to ask one more question to get the exhibits entered.

Q Were Exhibits 1 and 3 prepared by you or at your direction and under your supervision?

A Yes, they were.

Q Is Exhibit No. 2 a true reproduction of a back pressure test filed with the Oil Commission?

A Yes, it is.

Q Covering the Hackberry No. 1 well?

A Yes, sir.

Q And is Exhibit No. 4 a true reproduction of a letter received by Gulf from the United States Geological Survey dated May 27, 1963?

A Yes, it is.

MR. KASTLER: I would like at this time to move for the introduction of Exhibits 1, 2, 3 and 4.

MR. NUTTER: Gulf's Exhibits 1 through 4 will be admitted in evidence.

(Whereupon, Applican'ts Exhibits 1, 2, 3 and 4 were offered and admitted in evidence.

MR. NUTTER: Are you through with your witness, Mr. Kastler?

MR. KASTLER: I'm through.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q What will be the Item 7 on your procedure Exhibit 3, Item 7 is the evaluation of the first pressure chart will be made during the second 72-hour flow period to determine the necessity of continuing the test. Just what will you be looking for there?

A We'll be looking for a drawdown, ~~in~~ a constant drawdown. In other words, it's going to kind of determine past experience on running these things if we're getting a proper drawdown to show up on our calculation. Now, the test itself, I would like to just

read a couple of sentences which kind of explains what this thing does. The actual calculation of the in place hydrocarbons is made with a logarithmic plot of change of reservoir pressure per reservoir volume of hydrocarbons produced from the pressure drop. When this rate of change of bottom hole pressure becomes constant, the limits of a closed reservoir have been reached and a steady rate of flow is occurring in the reservoir. With a constant rate of change in bottom hole pressure and a knowledge of the coefficient of the expanse of the reservoir fluid, the volume of hydrocarbons connected to the well can be estimated by formula.

Q So, unless you have a stabilization during the first 72 hours, you'll have to continue the test, won't you?

A That's right.

Q You might have had the stabilization during the second 72 hours, but you wouldn't have been able to evaluate it at the conclusion of the sixth day?

A We think that the three million a day is going to give us enough drop to show up, but what we will probably be looking for in that first 72 hours, if we get a big drawdown, we may stop her right then.

Q Whether it's stabilized or not?

A Yes, sir. In other words, it might indicate whether

to go on or not. What we're looking for is to go on, and if it's, it's going to take a little reasoning, we're going to have to kind of feel our way on this thing.

Q The thing I want to establish, at the conclusion of the 72-hour, the second 72-hour period, you won't be able to evaluate that test in time to determine whether you want a six-day or nine-day test?

A No, sir.

Q It has to be based on the first three days?

A Yes, sir, we hope it's sufficient.

Q It will be either sufficient or insufficient?

A Yes, sir.

MR. KASTLER: In connection with that, isn't it true that you would need the order written in such a manner that you could use the nine-day period in the event that the stabilization has not occurred?

MR. NUTTER: Well, actually what you are seeking here is a nine-day authority, is it not?

MR. KASTLER: Yes.

A Yes, that's true.

Q (By Mr. Nutter) Now, I note on the reply to your letter to the United States Geological Survey that he authorizes the test at a rate of 3,000 MCF of gas per day, but he doesn't

say anything about the length of the test. Did you advise them as to length of time you were going to be running this test?

A Yes, we did.

Q Do you have your letter to him of May 17?

A I'm sure I do, Mr. Nutter. No, I apparently do not have it. However, their letter is dated May 27, 1963, and they were furnished a copy of our application for this hearing on May the 21st, so I'm sure that they were notified in our letter of our proposal; however, I do not have the letter. They were on notice of the hearing prior to them giving approval of this to flare the three million per day.

Q Well, your application of May 21 certainly does show a copy going to the United States Geological Survey.

A Yes, it did.

Q I wonder if you could make a photostatic copy of it and submit it to the Commission after you get home?

A Yes, I certainly will. I want to check one more place right here. I have a letter, a copy of the letter in our well file here, and I will send it to you, but this was dated May 17, 1963, and we did not state in the letter of the actual time, but in the letter we explained the length of the line, the cost, and I would like to read the second paragraph, "In order to complete the evaluation study, this proposal, Gulf recommends

that a reservoir limit test be made in this well to determine if sufficient reserves are present to justify the cost of laying a pipeline to the potential sales outlet. Attached is a copy of the proposed procedure to be used in making this test. A copy of all data will be furnished to you upon completion of the test", and our Exhibit No. 3 was the proposed test furnished to the United States Geological Survey as well as to our working interest owners.

Q And this contemplates a test of up to nine days?

A Yes, sir, it does.

Q We won't need a copy of the letter. Does anyone else have any questions of Mr. Hoover? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kastler?

MR. KASTLER: No.

MR. NUTTER: Does anyone have anything further to offer in Case 2843? If not, we will take the case 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 8th day of July, 1963.

Ada Dearnley
Notary Public-Court Reporter

My commission expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2843 heard by me on 6/26, 1963.

, Examiner
New Mexico Oil Conservation Commission