

BEFORE THE
OIL CONSERVATION COMMISSION
STATE OF NEW MEXICO
at
Santa Fe, New Mexico

Transcript of Hearing in
Case No. 666

February 17, 1954

Regular Hearing.

ADA DEARNLEY & ASSOCIATES
COURT REPORTERS
ROOM 105-106, EL CORTEZ BLDG.
PHONES 7-9645 AND 3-9546
ALBUQUERQUE, NEW MEXICO

BEFORE THE
OIL CONSERVATION COMMISSION
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In the Matter of:

Gulf Oil Corporation's application for exception to Paragraph II, Sub-section 2, of Order R-264 concerning the vertical limits of the Langmat Gas Pool, as it affects applicant's W. A. Ramsay Well No. 1, SW/4 SW/4 SW/4 34-21S-36E, and for the approval and assignment of four standard 160-acre pro- ration units to said well, and the granting of pro- per allowable thereto; said units being the SW/4 Sect. 34 and SE/4 Sect. 33 of Twp. 21S, Rge. 36E; and the NW/4 Sect. 3 and NE/4 Sect. 4 of Twp. 22S, Rge. 36E.

Case No.
666

(Notice of Publication read.)

MR. CAMPBELL: Jack M. Campbell, Roswell, New Mexico. If the Commission please, I would like to make a brief opening statement as to the facts involved in Case 666. This is an application of Gulf Oil Corporation for an exception to two Commission rules. The well that is here involved is one of the oldest wells in Lea County. It was drilled by the Gypsy Oil Company in 1928 and has been a producing well since that time during the period when a market was available. In view of the fact that it was the first well drilled in New Mexico by Gypsy Oil Company, which is now part of Gulf Oil Corporation, considerable care was taken in the drilling and Gulf believes that they have as complete information with reference to the drilling data on this well as any well of comperable age in Lea County. Gulf seeks exceptions to two Commission rules in this case. The first rule to which an exception is sought is the rule

in Order Number R-264 in Case 245 relating to the delineation of the Langmat Gas Pool. As has been brought out here before today, the present order of the Commission sets the vertical limits of the Langmat Gas Pool at a point 100 feet above the base of the Seven Rivers, and below that point in this particular area is the Eunice Monument Oil Pool. It is the position of Gulf that the history of this well demonstrates that at no time has the gas which has been produced from this well been produced from an interval below the point now delineating the Gas Pool from the Oil Pool, although the well is, of course, open entirely through that area from a point at which the eight and a quarter inch casing was set down below the top of the Queen formation. So they are seeking an exception in view of the fact that the Commission, on checking its records and determining that this well was open in the gas and oil pools, advised the Gulf that although its well was located 330 feet north of the Eunice-Monument south, Eunice dividing line and there is a gas-oil ratio in the pool in which this well is located and no gas-oil ratio 331 feet south, that they would be subject to the gas-oil limiting ratio of 6000 to 1 in the Eunice-Monument Pool. Therefore, Gulf seeks an exception to the pool delineation order inasmuch as it is their position that this well is not producing from the oil pool. The second exception is an exception to Rule 7A of Order 369A in the Langmat Gas Pool asking the approval of a 640-acre pro-ration unit and the granting of an appropriate allowable. It is Gulf's position, and they will offer testimony in evidence to establish that, this well will efficiently and economically drain 640 acres; that adjoining operators can not be adversely affected inasmuch as Gulf is the owner of all of the leasehold interest in

the entire four sections involved, and the spacing pattern, such as it is, will not be disturbed by setting off any chain reaction of the ownership by Gulf of the surrounding acreage. Gulf feels that to deny this exception would be to require them to drill what they feel are unnecessary wells and result in economic waste. Based on what we consider to be the evidence and what we will present, we don't even see how a taxpayer can object to this 640 acre proration unit.

R. L. BOSS

having first been duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. CAMPBELL:

Q Will you state your name, please?

A R. L. Boss.

Q Where do you live, Mr. Boss? A Ft. Worth, Texas.

Q By whom are you employed? A Gulf Oil Corporation.

Q What capacity?

A Assistant Division Geological Supervisor.

Q Have you testified before this Commission on previous occasions as a geological witness? A Yes.

MR. CAMPBELL: Are the witness' qualifications as a geological expert satisfactory to the Commission?

MR. SPURRIER: They are.

Q Will you relate briefly to the Commission the history of your experience, practical experience, in the development of oil and gas area in southeast New Mexico?

A I have approximately eight years' experience in subsurface and field work in the mid-continent and Rocky Mountain areas. I was transferred to the Hobbs Geological Office in January of 1936.

During the ensuing sixteen years I was located in that office. The latter twelve years of which I was in charge of the office as Zone Geologist. That span of years covers by far the greatest portion of the development in southeastern Lea County. I think a glance at any lease or ownership map showing the development of that area would clearly reflect the active part Gulf played in that development. The many wells that we drilled in every pool as a result of our extensive holdings, necessitated keeping abreast continually, of development, being familiar not only with our own wells, but those of the offset operators, which were many. From that experience I think an intimate knowledge of the geology of the area was gained, which otherwise could not have been.

Q Are you generally acquainted with the present designation of oil and gas pools in Lea County, New Mexico?

A I am.

Q Would you please go to the map there, to Exhibit One, and I will ask you what Exhibit One is.

A Exhibit One is a plat which shows the outline of the various gas pools as defined by Commission orders that are common to this immediate area.

Q Will you point out to the Commission where the Gulf W. A. Ramsay Number 1 well is situated?

A The Gulf Number 1 Ramsay is located at this point which is 330 feet north and 330 feet east of the southwest corner of Section 34, Township 21 south, Range 36 east.

Q With reference to gas pool designations, what gas pool is that situated in?

A It falls within the confines of the Langmat Gas Pool.

Q Referring to Gulf Exhibit Number Two immediately to the left, will you state what that is?

A This plat shows the limits of the oil pools as defined by Commission order in this immediate area.

Q Where is the Gulf W. A. Ramsay Number 1 well located with reference to the Eunice-Monument and the south Eunice Oil Pool?

A The Ramsay well being 330 feet north of the south line of this section 34, falls within the Eunice-Monument Oil Field and just outside the limits of the south Eunice Oil Field.

MR. CAMPBELL: I would like to offer Gulf's Exhibits One and Two in evidence.

MR. SPURRIER: Without objection they will be admitted.

Q Mr. Boss, I believe you stated that with reference to the oil pool designation, the Ramsay well is situated 330 feet north of the dividing line between the Eunice-Monument and South Eunice Oil Pools, is that correct?

A That is correct.

Q Is there a gas-oil ratio limitation in the Eunice-Monument Oil Pool?

A There is.

Q What is that limitation, if you know?

A Six thousand to one.

Q Is there a gas-oil limitation in the South Eunice Oil Pool 331 feet south of this well?

A There is not.

Q Are you acquainted with the history of the W. A. Ramsay Number 1 well?

A Yes, sir.

Q When was this well drilled?

A This well was spudded April 16, 1928.

Q What special steps, if any, were taken by Gulf, then Gypsy, in the drilling of this particular well, if you know?

A This well was not only the first well that the Gypsy, which was then operating in New Mexico as a Gulf subsidiary, it was one of the first wells drilled in southeast Lea County. As a consequence, the company took every precaution to assure a successful operation. They moved in their own cable tool rig from Oklahoma and transferred their most capable cable tool drillers to drill this well. It was spudded, as I stated, on April 16, and operations continued throughout the balance of that year. We feel therefore, that the record that is available from the driller's records is dependable and offers significant evidence that we wish to present in this case.

Q Mr. Boss, I hand you what has been marked Gulf Exhibit Three and ask you to state what this is.

A This is the well record and formation record that was filed with the State at the completion of this well. Particular reference is made to the formation record which was transposed from the original driller's log and on which all significant showings of oil or gas are recorded.

Q This well record was prepared by the drillers at the time that the well was being drilled in 1928, is that correct?

A This is a transcript, of course, of that record.

Q This is from the files of Gulf Oil Corporation?

A That is correct.

MR. CAMPBELL: I would like to offer in evidence Gulf's Exhibit Number Three.

MR. SPURRIER: Without objection it will be admitted.

Q What other records, Mr. Boss, were maintained with reference to the drilling of this well?

A As was the custom for the Gypsy at that time to keep as

complete a sample record as possible on all their wells, we have an almost complete set of cable tool samples from this well. And a detail study of these samples has been made.

Q Referring to Exhibit Four, Mr. Boss, on the board there, will you state to the Commission what that is?

A Exhibit Four represents the interpretation of the sample record by myself on which have been superimposed the showings of gas and oil recorded by the drilling record. The Exhibit does not show or display the entire section penetrated, but merely that from approximately where the eight and a quarter casing was cemented to the total depth.

Q Based on the Exhibit Four, Mr. Boss, the sample log information and the driller's log information, will you state to the Commission what geological conclusions you are able to draw with reference to the productive zone of that particular well?

A Based on the record as disclosed from the drilling report and from interpretation of these samples, coupled with general familiarity with the area, it is my opinion that the gas is being produced from the Yates and Upper Seven Rivers formation. It is of particular significance to note that in the drilling record, the last increase in gas, or last gas showing, was noted at a depth of 3,558 feet. This falls some distance above the limit, the lower limit of the vertical limits established for the Langmat Gas Pool. It is therefore, my opinion that although additional section is supposedly below that point, the gas being produced from this well is from the section which falls within the limits of the pool to which it is designated.

Q In other words, as I understand you, it is your opinion

that the gas produced from that well is being produced from the Langmat Gas Pool?

A That is correct.

Q Do you know whether that gas is sweet gas or sour gas?

A It is very sweet.

Q Referring to the Exhibit marked Number Five on the board which is that contour map, will you state to the Commission what that is?

A This is merely a structure map of the immediate area showing the relation, structuralization of this Ramsay well with respect to the arrowhead pool to the east and the Eunice-Monument field to the northwest. The contours are drawn on the Yates datum and indicates that the Ramsay well is located in a synclinal area which delimits the oil production in these two pools.

Q Mr. Boss, would that be a possible explanation of the fact that in this well you have had no production of oil or sour gas below a point 100 feet above the base of the rivers?

A I think it is evidence that supports or accounts for the fact that no oil was encountered in this well in the Queen or lower Queen which was supposedly in this well.

Q Was this well originally drilled deeper and plugged back?

A That is correct. It was drilled to a depth of 3,959 feet and water was encountered at 3,940 and the well was then plugged back to the depth 3,856 feet, which exposes a portion of the Queen formation.

Q Based upon your study of the drilling information and the sample logs and your contour interpretation, is it your opinion that the gas being produced from this well is being produced from that Langmat Gas Pool?

A That is correct. Particularly because if gas were being produced from that lower section, it would undoubtedly be produced by the Queen formation, the upper part of which is exposed, and due to the fact that this gas is sweet gas in contrast to gas from wells that have the Queen exposed, we feel that that is particularly significant evidence that the Queen is not productive of gas in this particular well. The character of the gas, or specific reference to gas, will be covered by a subsequent witness. That is as much as I can say about the kind of gas that is being produced.

Q Mr. Boss, you stated that this well is some 25 years old. Do you know whether any major work has been done on this well since the completion in 1928?

A No, the well was shut in on January 1, 1929 as a gas well. During the ensuing years there was some production, particularly in the early years, to supply drilling operations nearby. In more recent years when a market was available, gas was produced, but prior to 1945 nothing was done in any way to this well. It just stood there and was produced occasionally.

Q Was something done in 1945?

A In 1945 a decision was reached to run tubing in the well. In order to do that rather than occasion any possible injury to the well through introducing fluid into the bore hole to kill the well, this operation was conducted under pressure using the Otis equipment. At an additional cost of some twenty-five hundred or more dollars, the tubing, a string of tubing was introduced into the bore hole.

Q Why was it, Mr. Boss, that you reached the conclusion that it would be considerable risk to undertake to kill this particular

well?

A Primarily at the expense of injury to the producing capacity of this reservoir. It is my opinion that by killing this well with water or particularly mud, the productivity of the well would be greatly influenced and it would be very injurious. This operation of running the tubing under pressure precluded any such injury to the well. There is also the possibility of a well of that volume and pressure at that shallow depth, could be hazardous if something went wrong and the well got away from you. Under those circumstances it would be necessary to pump mud into the formation, which definitely would be injurious to this type of reservoir.

Q Does this well have a high productivity, high pressure?

A Yes, relatively high.

Q Mr. Boss, what would be necessary now if you were to go back into this well and rework it to plug back to the point which has been defined by the Commission as the vertical limit, the bottom of the Langmat Gas Pool?

A We would have no other recourse other than to kill this well and plug back with cement to the required depth. The operation could not be done feasibly by pressure method as we did in running the tubing. Therefore, I am of the opinion that such an operation would be injurious to the productive capacity of the well. Since the exposed section is not producing gas, to the best of our knowledge, it is not, we therefore, feel that requiring this work to be done would constitute waste.

MR. CAMPBELL: That is all.

MR. SPURRIER: Does anyone have a question of the witness?

If not, the witness may be excused.

(Witness excused.)

MR. CAMPBELL: I would like to have the record show I offered in evidence Gulf's Exhibits Four and Five.

MR. SPURRIER: Without objection, they will be admitted.

J. W. COLE, JR.

having first been duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. CAMPBELL:

Q State your name, please. A J. W. Cole, Jr.

Q Where do you live, Mr. Cole? A Ft. Worth, Texas.

Q By whom employed? A Gulf Oil Corporation.

Q What capacity? A Division Gas Engineer.

Q Will you give to the Commission a brief resume of your educational and professional background in your profession?

A Graduated from the University of Texas in 1941 with a degree of Bachelor of Science in Chemical Engineering. Following that I was employed by the Sinclair Refining Company at Pasadena, Texas refinery. I was there one year and spent four years in the chemical warfare service of the United States Army, and joined Gulf in 1946, having been employed with Gulf since 1946.

Q Since 1946 working with Gulf, you have been employed in the capacity as a gas engineer?

A Yes, sir, I spent one year as a plant chemist at one of Gulf's natural gasoline plants and was then transferred to the Houston division as a gas engineer. That experience consisted largely of gas testing and gas measurement work and gas processing projections including some reservoir evaluations. In 1950 I was transferred from Houston to Ft. Worth as Division Gas Engineer of the Ft. Worth production division. My work there consisted of

supervising the testing and measurement of gas, doing gas processing evaluations, supervising the reporting of gas to the regulatory bodies, and serving in various and sundry other related capacities.

MR. CAMPBELL: Are the qualifications of the witness as gas engineer acceptable to the Commission?

MR. SPURRIER: They are.

Q Are you acquainted with the Gulf W. A. Ramsay Number 1 well?

A Yes, sir, I am.

Q Have you made any studies in connection with the production, the type of gas that is being produced from that well?

A Yes, sir, if you will allow me to make just sort of a general statement here, from our experience and well records and past test data, it was very evident that in this immediate area with which we are concerned, the gas produced from gas wells, or oil wells producing from formations below the vertical limits of the Langmat Gas Pool is sour gas, whereas gas from our W. A. Ramsay Number 1 well has always been, and still is, sweet gas. We have concluded that such gas is being produced from the formation prescribed for the Langmat Gas Pool. In order to verify or substantiate that conclusion, we decided the best thing to do was to conduct a field test survey in this immediate area to give us some up-to-date test data which we could bring before the Commission. We endeavored in this test survey to make a three-fold, or to gather data that would enable a three-fold comparison as follows. One, we desired to obtain data that would enable a comparison of the hydrogen sulphide content of our W. A. Ramsay Number 1 well with the hydrogen sulphide content of gas from nearby gas wells which are completed within the formation interval prescribed for the Langmat

Gas Pools. The second comparison we wanted to present was a comparison of the hydrogen sulphide content of the W. A. Ramsay Number 1 well with the hydrogen sulphide content of gas from nearby gas wells in other gas pools. And primarily the Arrow Gas Pool which is an adjacent pool and which produces from formation intervals that include the interval exposed in this Ramsay well below the vertical limits of the Langmat Gas Pool. Then the third comparison was to obtain a comparison of the hydrogen sulphide content of gas from the Ramsay Number 1 well with the hydrogen sulphide content of casinghead gas produced from oil wells in the immediate area. Which oil wells, of course, were producing oil and gas from formations that lie below the vertical limit of the Langmat Gas Pool.

Q Mr. Cole, how many wells were there with which you made comparisons for these purposes?

A Mr. Campbell, we actually made seven tests, or picked seven wells, for this comparison. That gave us what we think is a conclusive evidence.

Q Where are those wells with reference to the W. A. Ramsay well?

A For your convenience we have, I believe, it is Gulf Exhibit Number One, we have drawn a little red square around the seven wells from which we obtained tests. This is, of course, numbered One in Roman numerals. It is our William A. Ramsay Number 1 gas well. The number two test is from our J. F. Jander B Number 1 gas well. The number three test is from T. P. Coal and Oil Company's State "A" account Number 2 well, Number 41.

Q What were the tests made, were those first three wells comparative tests?

A All right, on those three they are all, of course, gas wells. Perhaps at this time it might be well for me, Mr. Campbell, to clarify, or get on record, what we call sweet and sour gas. That might be helpful in view of subsequent evidence. In the absence of a definition by statute or by Commission ruling, we have our own definition and that is something like this. By sweet gas we mean gas that we tested by the lead acetate test method, gives a negative result. Sour gas then, would be gas we tested by the lead acetate test method, would give a positive result. This lead acetate test method is a United States Bureau of Standards approved test.

Q Based upon that test using that definition, when you refer to sweet and sour gas, what did you find with reference to comparative tests between the gas produced from your W. A. Ramsay State Number 1 and the two wells producing from the Yates and Seven Rivers gas from the Jalco Gas Pool?

A We found that the gas from all three of these gas wells tested sweet to lead acetate, indicating that they are all producing sweet gas.

Q Will you point out to the Commission the tests that you made, the fourth and fifth wells, and what type of comparative test was there, what you found out?

A Test Number Four was from a sample of gas produced from our S. E. Felden Number 1. That well is a Eunice pool oil well, produces oil and casinghead gas. Sample five was from the J. F. Jander State wells 1 and 2. That is a combination sample. The two wells there producing in common separator took separator sample there to test it. Those two wells are in the South Eunice

oil pool. They produce oil from casinghead gas.

Q What did you find with reference to the comparison between the gas coming from those wells and the gas being produced by the W. A. Ramsay State Number 1 well?

A We found that the gas coming from these two tests, the gas from each of these two tank batteries was very sour. In fact, the gas from the S. E. Felden Number 1 gave us a result of 590 grains of hydrogen sulphide per hundred cubic feet of gas. From the J. F. Jander in wells 1 and 2 gas was very sour with a content of 510 grains of hydrogen sulphide per hundred cubic feet. Mr. Campbell, here again, since this gas is sour, naturally we would get a positive test on the lead acetate method I mentioned. We then used as a field test the Tutweiller method which is also accepted throughout industry as being satisfactory for field testing to give us the actual number of grains of hydrogen sulphide per hundred cubic feet.

Q Based upon your comparisons of those two oil wells producing from these oil pools, what conclusions did you reach with reference to the gas being produced from your Ramsay well?

A Well, we definitely, at least I am of the opinion, that this test data which shows how sour this gas is coming from these oil pools and how sweet the gas is coming from our Ramsay well as well as these other two wells that are completed within the vertical limits of the Langmat Pool, that certainly there could be no gas, no sour gas coming into our well bore.

Q How much sour gas would be required coming into your well bore to convert your gas from what you designate as sweet gas, to sour gas?

A We estimate that it would be less than two tenths of one percent by volume, would change this gas from sweet gas to sour gas.

Q Now, Mr. Cole, your study with reference to the last two wells, your Number Six and Number Seven, will you state what study you made there and the conclusions you were able to draw?

A Yes, sir, these are the two wells over in the Arrow Gas Pool. They are our Gulf William A. Ramsay Number 2 and our H. T. Madern Number 1. Those wells, according to our records, are completed in the Yates, Seven Rivers and Queens and the hydrogen sulphide test on the two wells were as follows: W. A. Ramsay State Number 2, 120 grains of hydrogen sulphide per hundred cubic feet. On the H. T. Matern Number 1, 82 grains of hydrogen sulphide per hundred cubic feet.

Q What conclusions do you draw from that?

A Well, from those tests we can draw the conclusion that it would take a very minute, just a very minute quantity of that type of gas entering into the well bore to change the gas from our Ramsay well from sweet gas to sour gas. Therefore, we do not believe that any of this gas from the formations exposed below the vertical limits in our Ramsay well are producing any gas.

Q It is your opinion then, based upon your comparative studies, that the gas being produced from the Ramsay well is being produced from the Langmat within the defined limits of the Langmat Gas Pool?

A That is correct.

MR. CAMPBELL: That is all.

MR. SPURRIER: Anyone have a question of the witness?

By MR. MACEY:

Q Have you ever had an opportunity to test the sulphur content, to test as to whether gas is sweet or sour while the gas was being drilled as it penetrated the Yates?

A I have never personally had that opportunity, no, sir.

Q Have you ever seen any results of any such an opportunity that might be afforded?

A Well, we have records on some of our wells, in fact, many of our wells as they drill stem test them, or as they let them blow from just open hole where they could run either one of these two tests. They could run the lead acetate test to indicate sour or sweet by our qualitative method, or they could run this Tutweiller. To give them the amount.

MR. SPURRIER: Anyone else? If not, the witness may be excused. (Witness excused.)

MR. CAMPBELL: If the Commission please, that insofar as our request for an exception to the limits of the pool are concerned, that completes the testimony and evidence. It is the position of Gulf, as I indicated at first, based on the geology, the history of the drilling of the well, and the analysis of the gas being produced from it as compared with other wells, oil and gas in the area, that this well is not producing any gas from a point below the bottom limit of the Langmat Gas Pool and that it would be dangerous to this well, 25 years old as it is, to go in at this time and undertake to rework the well and plug it back to that point, and we consider such a risk to be entirely unnecessary. Now, with reference to the second exception that we seek relative to the establishment of a 640-acre proration unit.

I would like to call Mr. John Ross.

JOHN L. ROSS

having first been duly sworn, testified as follows:

DIRECT EXAMINATION

By MR. CAMPBELL:

Q Would you state your name, please?

A John L. Ross.

Q Where do you live, Mr. Ross? A Ft. Worth, Texas.

Q You are employed by Gulf Oil Corporation?

A That is correct.

Q In what capacity?

A Special Petroleum Engineer in charge of reservoir engineer for the Ft. Worth division of the Gulf Oil.

Q Give a brief summary of your educational and professional background in your field.

A I graduated from Waynesburg College in Pennsylvania in 1943 with a Bachelor of Science in physics. I graduated from the University of West Virginia with a Mining Engineering degree. I was employed by the Gulf Oil Corporation in June 1948 and spent approximately two years in the Hobbs area office as a field engineer and have been employed for approximately the past three years as a reservoir engineer in the Ft. Worth offices.

MR. CAMPBELL: Are the witness' qualifications satisfactory to the Commission?

MR. SPURRIER: They are.

Q Mr. Ross, are you acquainted with the Gulf W. A. Ramsay Number 1 well? A I am.

Q Referring to the Exhibit which is marked Gulf Exhibit Number Six on the board up there, will you state what that is?

A This is the proposed proration unit for the Gulf W. A. Ramsay well Number 1 located 330 feet from the west and south lines of Section 34, Township 21, Range 36 east, Lea County, New Mexico.

Q For the record of the Commission, will you state what quarter sections are proposed to be included within the proration unit?

A This proposed proration unit will include the following four quarter sections. Quarter section, the southeast quarter section of Section 33, and the southwest quarter section of Section 34, Township 21, 36 east, the northeast quarter section of Section 4 and the northwest quarter section of Section 3, Township 22, Range 36 east.

Q That proposed proration unit which is shown in yellow, on Exhibit Number Six, consists of four 160-acre tracts, each of which is in a different section. Will you state why you propose to set up this proration unit in that manner?

A We propose this proration unit which does cross section lines, because we have a well located 330 feet from the south line and 330 feet from the west line of the center part of that proposed unit. That well is then ideally located with respect to drainage for a 640-acre gas proration unit.

Q Who is the owner of the leases in the balance of that entire four section area?

A The Gulf Oil Corporation is the owner of the working interest, not only of the proposed unit, but of the entire four surrounding sections.

Q Is the royalty ownership the same?

A The royalty interest is the same, being state lands.

Q Mr. Ross, in connection with this application, have you made a study of the performance history of this well?

A Yes, I have.

Q Referring there to your Exhibit Seven, will you state to the Commission what that is?

A This is a pressure performance curve of the Gulf W. A. Ramsay Well Number 1, showing the various pressure measurements we have made on our well, both subsurface and surface. It is a curve pressure versus time. Also included on this curve are pressure performance histories of three other wells, three other gas wells located in the Langmat Pool, all of which are within a one and one-half mile radius of our Ramsay Number 1.

Q Would you point out to the Commission on the map where these other wells are located?

A These other wells are located, T. P. Coal and Oil, State "A" Number 40, is located in section northwest, northeast quarter of Section 9, Western Natural Gas Harrington Number 1 Well, located in the northwest quarter of Section Number 10, and R. Olsen's James Matthey record Number 1 located in the northeast quarter of Section Number 10. These three wells are located within a one and half mile radius of the Ramsay Number 1. They are the nearest three, or the nearest gas wells in the Langmat Pool to our Ramsay Number 1.

Q Now, referring back again to your Exhibit Number 7 which is your pressure history curve, will you state to the Commission what that reflects with reference to the productive capacity and the drainage area of this W. A. Ramsay Number 1 Well?

A Well, as can be seen on this curve, the pressure performance

of the W. A. Ramsay Number 1 and the pressure performance of the other three wells is very similar. It is assumed since the pressures are very much the same even though these wells were completed many years after the W. A. Ramsay Number 1, they were completed at lower initial pressures, therefore, there had been a pressure draw down in this particular area before these wells were completed. By the same token, after these wells were completed, the pressure draw down in those wells, we think, favorably matches subsequent pressure draw-downs in the Gulf Ramsay Number 1. That pressure performance indicates then, that in this one and half mile radius around the Ramsay Number 1 there is good pressure communication. And having such pressure communication in this area means to us that the Gulf Ramsay Number 1 is capable of draining 640 acres.

Q I notice on your pressure curve there that there is some considerable variations in the pressure shown on your W. A. Ramsay Number 1 Well. Would you explain the reason for those variations?

A The reason for those variations is part of these pressures are shut in pressures, part of these pressures are flowing pressures, we have an exception on this well, we do not have to close the well in and obtain 24 hour shut in pressures. We have had an exception to submit flowing pressures on the particular well. Therefore, many of these pressures here are shown on this curve are flowing pressures. We wanted to put all the information on this Exhibit that we have available. For example, this pressure in 1949, it was flowing at a rate of 5,000,620 mcf per day. This flowing pressure in 1951, we made no measurement of the volume of gas being flowed at that time. Neither did we record the volume of gas being flowed in 1952, early 1952. In late 1952 this pressure was obtained

flowing at the rate of 11,000,000 cubic feet a day. That particular pressure was in excess of 700 pounds at 11,000,000 cubic feet a day. This pressure in October 1953 is a flowing pressure; the rate was approximately 2,000,000 cubic feet a day. This final pressure point is a shut in bottom hole pressure. The well was shut in approximately six hours and we recorded the bottom hole pressure at this last point. That pressure was 1178 pounds. So that during this period of time the reservoir pressure has declined from an estimated original of 1400 pounds to this 1178 pounds, or the pressure has only declined 222 pounds while producing in excess of 26 billion cubic feet of gas.

Q If that pressure curve there were averaged out across, straight across there on your average pressure, would you take a red pencil and draw that across from the last shut in pressure there to the most recent test?

A That red line would approximate the shut in reservoir pressure of the Ramsay Number 1, had we measured shut in pressure at each one of these points. I would like to point out the similarity between the red line, or the average line, between this last shut in pressure and this shut in pressure; I want to point out that that red line follows on the line of the other, the decline of the other three wells, indicating very good pressure communication in this particular portion of the Langmat Gas field.

Q Based upon your pressure study there and that pressure curve, history curve, what is your opinion with reference to the area which can be drained efficiently by this W. A. Ramsay Number 1 Well?

A It is my opinion that the W. A. Ramsay Well Number 1 is

capable of draining efficiently at least 640 acres.

Q Mr. Ross, have you made any other studies of the productive history of this well?

A Yes. As I stated before, the well has produced in an excess of 26 billion cubic feet of gas, while the pressure has only dropped 222 pounds. That in itself indicates a high effective permeability, a large drainage area. I made some volumetric calculations; they are based on assumptions, however, I feel that the assumptions are all reasonable. For a thickness, I used 340 feet, which is the entire section as obtained from the sample and drillers' log, from the first show of gas to the final show of gas. Now, using that particular thickness data in a volumetric calculation, certainly would give you an optimistic drainage area. Ordinarily, you would apply some gross determining net factor to that section, but considering all of that zone is pay, 340 feet, and assuming reasonable values for porosity and connate water, and making a calculation from an estimated bottom hole pressure of 14 pounds per square inch down to the last of 1178 measured bottom hole pressure, that volumetric calculation using that data and solving for acres drained during the production of this 26 billion cubic feet of gas through this pressure drop of 222 pounds, indicates that this well has drained and will continue to drain efficiently in excess of 640 acres.

Q Then you base your conclusions both upon your study of the pressure history and upon your volumetric analysis of the production history of this well to date, is that correct?

A That is correct.

Q You are acquainted, I guess, with the present productive

capacity of this well, are you not?

A Yes, sir.

Q Based upon your knowledge of the present productive capacity of this well, and I will ask you this first, are you acquainted with the approximate present allowables in February for wells, gas well production in the Langmat Gas Pool?

A Yes.

Q Based upon your study of the productive history of this well and its present productive capacity, is it your opinion that this well can produce four times the standard unit allowable now being granted to the Langmat wells in the Langmat Gas Pools without waste?

A Yes, sir. The allowable for Langmat Gas Pool well having 460 acre units would be 5,764,000 cubic feet of gas a day. We had an open flow potential test August 17, 1953, when the well tested 30 million cubic feet a day. As I pointed out on this pressure map, in November of 1952, the well flowed at a back pressure in excess of 700 pounds, 11 million cubic feet a day. There is no doubt in my mind that this well has a capacity to produce four unit allowables as assigned the Langmat Gas Pool.

Q Mr. Ross, if this exception with reference to the 640 acre unit is not granted by the Commission, what will be the alternative for Gulf with reference to the area?

A If this isn't obtained, the Gulf will be required to develop this property on 160 acre spacing. So to develop this proposed proration unit, it will be necessary for us to drill three additional wells. The estimated cost for a well in this area is \$50,000.00, and that means that it would cost Gulf \$150,000.00 to

develop this property which we feel is being efficiently drained by the well already there.

Q Do you feel that these three wells you referred to would be unnecessary wells, considering your knowledge of the productive capacity of this particular well?

A Yes, sir.

MR. CAMPBELL: That is all.

MR. SPURRIER: Any questions of the witness? If not, the witness may be excused. Is there anyone else to be heard in this case?

MR. GIRAND: If the Commission please. W. D. Girand, Me-Tex, and also as a friend of the Commission. We would like to enter our objection to any additional allowables to a production unit through one more hole. In other words, we feel that if the unit is 160 acres, that a well to each 160 should be required.

MR. CAMPBELL: I think for the record to be complete that it should show that amicus commission do not have any wells in the gas pool.

MR. GIRAND: That is correct, but the effect of the allowable in any of the pools will affect the allowable in the Langmat pool.

MR. CAMPBELL: I would like to have the record show Exhibits six and seven introduced as evidence.

MR. SPURRIER: Without objection, six and seven will be admitted. If nothing further in this case--

MR. KELLAHIN: If the Commission please, Jason Kellahin for Samedan Oil Company. As a matter of principle, we oppose the formation of a unit in excess of 160, and granting of four allowables, for the reason it will set a pattern which will be followed through-

out the pool. Samedan does not have any acreage within the immediate vicinity of this well, but as a matter of principle, we are opposed to this unit.

MR. CAMPBELL: I would like the record to show that the nearest production of Samedan Oil Company is at least ten miles distant from the W. A. Ramsay Number 1 Well. I would also like to state, in view of the fact that Gulf Oil Corporation, as the record shows, owns all of the leasehold interest in all of those four sections, that there is nothing to start a chain reaction outside of that immediate area with reference to this 640 acre unit.

MR. SPURRIER: Anyone else? Mr. Stahl.

MR. STAHL: On behalf of Permian Basin Pipeline Company, I would like to make our position quite clear in this matter. In general, we favor the application such as this wherein the operator is trying to get assigned to him, as in this case, a four unit allowable for one well. We feel that is beneficial to the industry in general, and that it saves unnecessary money being spent for wells which are not needed, that the operator can effectively demonstrate to the Commission that the area will be drained, it seems to us to be just good sense to grant these exceptions. Naturally, thinking very selfishly, it benefits us also, the tremendous saving for the Commission to grant the oil industry an exception such as this. We favor this, and we will favor such applications in the future as a matter of policy.

MR. SPURRIER: Anyone else? If nothing further, we will take the case under advisement. I would like to make an announcement about a meeting that was scheduled for nine o'clock in the morning. We will postpone that meeting, the Deliverability Study

Committee for Southeast New Mexico, until one o'clock tomorrow afternoon. We will recess this hearing now until nine o'clock in the morning.

C E R T I F I C A T E

I HEREBY CERTIFY that the foregoing and attached transcript of hearing on Case No. 666 before the Oil Conservation Commission, State of New Mexico, at Santa Fe, on February 17, 1954, is a true and correct record of the same to the best of my knowledge, skill and ability.

DATED at Albuquerque, New Mexico, this 25th day of February, 1954.


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