BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
January 24, 1962
EXAMINER HEARING

IN THE MATTER OF:

Applicant of Shell Oil Company for an exception to the gas-oil ratio provisions of Rule 26(A), Order No. R-1670, Lea County, New Mexico. The Oil Conservation Commission, on its own motion, will reopen Case No. 2314 in which the applicant seeks an exception to the gas-oil ratio provisions of Rule 26(A), Order No. R-1670, to permit its State Well No. 1-A, located 380 feet from the North line and 380 feet from the West line of Section 26, Township 24 South, Range 36 East, Lea County, New Mexico, to remain classified a gas well in the Jalmat Gas Pool, with a gas-oil ratio below 100,000 to 1.

BEFORE:

Elvis Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 2314.

MR. WALKER: Application of Shell Oil Company for an exception to the gas-oil ratio provisions of Rule 26 (A), Order R-1670, Lea County, New Mexico.

MR. SETH: We have one witness, if the Commission please.

MR. WALKER: Will you stand and raise your right hand, please? (Witness complies.) Do you solemnly swear that the testimony you are about to give will be the truth, the whole truth, and nothing but the truth, so help you God?

MR. STOKES: I do.

MR. UTZ: Do we have any other Appearances?

MR. SETH: Oliver Seth appearing for the applicant. If the Commission please, this is a case that was reopened at the

request of the Commission for the submission of some additional tests, the style of which the applicant has secured since the original hearing date.

D. D. Stokes.

called as a witness herein, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SETH:

Q Would you state your name, please, and by whom employed?

A My name is D. D. Stokes. I am employed by Shell Oil Company in Roswell, New Mexico as Division Reservoir Engineer.

Q Are you familiar with the application in this case?

A Yes, sir, I am.

Q Are you also familiar with the test data that was requested by the Commission since the last hearing?

A Yes, sir.

Q Do you have the data with you?

A Yes, sir.

MR. UTZ: Is this exhibit the same as the one you previously submitted to the Commission?

A Yes, sir, it is.

Q (By Mr. Seth) Now, referring to what has been marked Exhibit No. 1, would you state to the Commission, please, what this Exhibit shows and tell us a little bit about the background of these tests?

A This is a graph of the production history during the three month test period which the Commission prescribed for this well. It is divided into three parts with the top part showing flowing pressure behavior during the test period. The second part shows the gas-oil ratio and the bottom section shows the production of the gas-oil and water.

Q Now, it is divided from left to right into three sections?

A Yes, sir. We have three test periods taken in the months of August, September and October, 1961. During the month of August we were directed to test the well at a rate of around one million cubic feet per day. During this test period our average rate was 1,000,024 cubic feet per day with a maximum of 1,000,088 and a minimum of 909,000. During this period we produced no fluid and of course had an infinite amount of GOR. Our drawdown of surface pressure during this time averaged about four per cent. This section of it covers the month of September and at that time we were directed to test the well at about 350 MCFD per day which is approximately equal to the maximum gas allowable for an oil well in Jalmat. Again during this period we produced no fluid and the gas-oil ratio was infinite.

Q What was the drawdown?

A The average drawdown was around two or two and a half per cent during this period.

Q And in the third section, the right hand section?

A During the month of October we tested the well at a high-

er rate. The average during this month was 1,408,000 cubic feet per day with a mimimum of 1,239,000 and a maximum of 1,790,000. After three fays of production at a high rate we began to produce fluid, both oil and water and gas-oil ratio. It began to produce during the latter part of 20,000 feet per barrel. We were producing between 50 and 75 barrels of oil per day.

Q What would the drawdown average, roughly, during this period?

A The drawdown would be about 8 per cent here in the latter part of that flow period.

Q Did you have any cumulated oil production during this period?

A The well produced 1513 barrels of oil during the month and 100,045 barrels of water.

Q Now, considering the test and the draft and the statistical data that you have, what conclusion did you arrive at?

A Well, I believe this test period confirmed the testimony we presented at the original hearing. I also believe that if this well is classified as an oil well, that it will produce nothing but gas, it will never produce any oil and that our income and the income of the royalty owner both, will be cut severely because of the fact that we will be on a very low gas rate with no oil production. I feel if the well were produced at a steady rate during the month based on our gas allowable that it could produce liquid free, but due to the demand situation the well has produced

erratically during the month, it will pull hard on some days and shut in on others, and during the time it is pulling hard it does make liquid with the considering reduction in GOR.

Q By reason of the unusual performance of the well under the field rules, if you did not get an exception it would be an oil well one period and a gas well the next period, and it would change continually on that basis, is that correct?

A Yes, every six months we'd have to have the status changed. It would produce for six months as an oil well produced with GOR, then changed to a gas well, it would produce probably some gas in the normal rate.

Q Did you have data tabulated from which this exhibit was prepared?

A Yes, sir, that is tabulated and attached as Exhibit 2. I have no comments to make on that data.

Q Do you have any further comments as to the tests or to this Exhibit No. 1?

A No, sir, I believe that is all.

MR. SETH: We would like Exhibit 1 and 2 entered into the record, Mr. Examiner.

MR. UTZ: Without objection Exhibits 1 and 2 will be entered into the record.

(Whereupon applicant Shell Oil Company's Exhibits 1 and 2 were admitted in evidence.)

MR. SETH: That is all the direct testimony we have.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Stokes, would it be possible to install a choke in this well that would permit production at no higher rate than say a million a day?

A I believe it would, sir, but if we did that and the well was shut in for half the month and then could produce more than a million the last half, we'd just lose an allowable.

Q Then if that were done, you'd have to have some control on the purchaser to leave the well on the line until such time that it has produced it's allowable?

A Yes, sir.

Q Do you see any objection to that?

A no, sir.

Q That would solve the whole situation, would it not?

A I would believe for the present it would, sir.

Q Do you anticipate that some day it will start making at these lower rates?

A I believe that it enough gasses were drawn from the reservoir with that much pressure in the gas section that where the oil is coming from, the well will go to oil. If the gas rate is restricted so that the pressure drops faster than to the oil bearing it, I don't believe we'd ever make oil then.

Q How many acres is dedicated to this well?

A 200 acres.

MR. UTZ: Are there any other questions of the witness?

MR. MORRIS: I have one question, Mr. Examiner.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Stokes, were the tests from which the data shown on your Exhibit No. 1 in this reopened case, conducted by you in compliance with a letter to Shell Oil Company from Mr. Utz dated July 20, 1961?

A Yes, sir, they were.

MR. MORRIS: I would like to offer a copy of the letter written by Mr. Utz as part of the record in this case.

(Whereupon Applicant's copy of letter marked for Identification.)

Q (By Mr. Morris) Would you examine this document and state whether that is a copy of the letter received by Shell Oil Company?

A Yes, sir, that is a copy of the letter.

Q And after you received this letter from Mr. Utz, you conducted these tests in compliance with his request and the information that you are submitting today is the result of those tests?

A Yes, sir.

MR. MORRIS: I offer Mr. Utz's letter dated July 20, 1961, as part of the record in this case.

MR. UTZ: Without objection that will be entered into the record.

(Whereupon Commission's Exhibit was entered into evidence.)

MR. MORRIS: That is all.

MR. UTZ: Are there any other questions?

MR. SETH: We have nothing further.

MR. UTZ: The witness may be excused.

(Witness excused.)

MR. UTZ: Are there any statements in this case?

MR. MORRIS: Yes, sir, Mr. Examiner, I have a telegram from the Humble Oil and Refining Company signed by Mr. R. R. McCarty by F. A. Meadows, addressed to the Commission. It reads as follows: In reference to Case 2314 which has been re-opened on the January 24, 1962 docket, Humble Oil and Refining Company wishes to reiterate its position set out in our telegram of June 27, 1961 in the original hearing on this matter. It is emphasized again that high gas oil-gas ratios are common in the Jalmat Oil Pool and that the well for which Shell requests exception is similar to many other Jalmat oil wells. It is urged that the Commission deny Shell's request.

MR. UTZ: Are there any other statements?

The case will be taken under advisement.

I N D E X

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, KATHERINE PETERSON, 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.

Katherine Peterson
COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2314, heard by me on Jan. 24, 1962.

Examiner
New Mexico Oil Conservation Commission

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
February 21, 1963

IN THE MATTER OF: The hearing called in accordance with Order No. R-2191, to permit Shell Oil Company to appear and show cause why its State Well No. 1-A, located in Unit D, Section 36, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico should not be reclassified as an oil well in said pool.	Case No. 2314

BEFORE:

Elvis A. Utz, Examiner
A. L. "Pete" Porter

TRANSCRIPT OF HEARING

MR. UTZ: We will now take Case 2314.

MR. DURRETT: In the matter of hearing called in accordance with Order No. R-2191 to permit Shell Oil Company to appear and show cause why its State Well No. 1-A, located in Unit D, Section 36, Township 24 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, should not be reclassified as an oil well in said pool.

MR. MORRIS: If the Examiner please, I am Richard Morris of the Santa Fe law firm of Seth, Montgomery, Federici and Andrews, appearing for the Applicant, Shell Oil Company, in this case. We have one witness to present testimony, Mr.

Stokes.

(Witness sworn.)

MR. UTZ: Any other appearances in this case? You may proceed.

D. D. STOKES

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Stokes, will you state your name and position?

A My name is D. D. Stokes. I am Senior Reservoir Engineer for Shell Oil Company in Roswell, New Mexico.

Q Mr. Stokes, are you familiar with Case 2314 and its preferred counter parts?

A Yes, sir, I am.

Q And are you familiar with the subject of the case, being Shell's State Well No. 1-A and its performance?

A Yes, sir.

Q Would you give to the Examiner and to those present a resume of the history of this case to the present time?

A In May of 1961, we made application for an exception to Rule 26(A), Order No. R-1670, that is the rule governing gas-oil ratios in the Jalmat Gas Pool which provides gas-oil ratio less 100,000 to 1 should be classified as oil wells. Our well, at that time, on high gas rates, produced with the ratio of less

than 100,000 to 1. We appeared before the Commission on June 28, 1961, and at that time, were instructed to test the well at prescribed rates for a period of three months. We agreed to these tests and turned in the information to the Commission and another hearing was called in January of 1962. At that time we presented the testimony gathered from these tests, which showed that at rates of one million a day the well produced in liquid and rates of one million four to one million seven a day it produced oil and water. We tested the well at maximum gas rate that would be allowed for an oil well, which would be ten thousand times the unit allowable, and at this rate, the well also made no liquid.

Q Was an order of the Commission entered following the hearing on January the 24th?

A Yes, the Commission issued an order denying our application on the grounds no relief was needed since the well, when produced at the rate of a million a day, produced in liquid. The order contained provisions that we should produce the well at a rate not to exceed one million a day, subject to the allowable restrictions, and that we should report to the Commission at the end of each six-month period the gas-oil ratio on the well.

MR. MORRIS: At this point, I would assume that the record made in the previous hearings of this Case No. 2314 will be considered by the Examiner and by the Commission in this case

and we ask that the Commission give its consideration to the exhibits and to the testimony presented in the previous cases, even though this witness will show where the information has changed at this point.

MR. UTZ: Examiner will take administrative notice of all exhibits in the previous cases, as relative to the performance of the well at that time.

Q Mr. Stokes, you made reference to a finding in the previous order which denied your application. I refer you to Order No. R-2191, entered by the Commission on February 22, 1962, and I ask you that you read Finding No. (3).

A It states: "That the evidence presented at the hearings of this matter reflects that the above-described State Well No. 1-A would not produce liquids and the gas-oil ratio would be greater than 100,000 to 1 when the said well was produced at a rate not exceeding one million cubic feet per day."

Q Based upon that finding, the Commission decided that at that time no exception was needed?

A That is correct.

Q Has that picture changed, and do you have information showing you feel an exception is needed at this time?

A Yes, sir. The well now produces liquid at considerably lower gas rates than a million a day. I have prepared two exhibits, one of which shows the gas production and oil production in gas-oil ratio during the year of 1962. The other

one shows a special test taken during February.

Q Now, that first exhibit you referred to has been marked Exhibit No. 1 in this reopened case?

A Yes.

Q Referring to Exhibit No. 1, would you explain what that shows?

A Well, the order directing us to produce a rate not to exceed a million a day was issued on February the 22nd, however, we did not receive notice until March 15th. Looking at this graph, the unshaded on that hashered curve shows gas production, and after March 15th, our gas production rates did not exceed a million a day, except, I believe, on one 2-day periods until late in November of the year. You can also see from the gas-oil ratio curve, which is the jagged line in the center of the graph for the most part, that the general trend of gas-oil ratio throughout the year was down, producing at a rate of a million cubic feet a day in March and we had a ratio of about 35,000 to 1, while producing at that same rate in October, our ratio averaged about 20,000 to 1 flow.

Q The gas-oil ratio scale as shown on the right-hand margin of this exhibit?

A That is correct.

MR. UTZ: What is the gas-oil ratio curve, that heavy line?

THE WITNESS: That is the heavy line in the center of

the graph. For the most part, it does go up over to 100,000 to 1 in a few cases. The shaded area at the bottom is oil production, with the scale over on the left, barrels per day. Now, there is one period through here that covers about two months, from the middle of June until the middle of August, when the rate was quite stable at approximately 800,000 cubic feet per day there. During this period, the oil production rate was fairly stable at a rate of 30 barrels per day and the ratio through that period was stable at 20,000 to 1.

Q You feel that two-month period is fairly representative of the characteristics of this well during the period shown on the graph?

A Yes, sir, that is correct and it covers, with the testimony we presented previously, where the well produced no liquid at a rate of a million cubic feet a day, showing amount of drawdown to create oil and water production had decreased during the year.

Q Referring now to what has been marked as Exhibit No. 2, Mr. Stokes, will you explain what that shows?

A This shows the results of a special test that we made early in February, tests running from the 8th until the 18th. We tried to produce the well at the gas rate equivalent to where we would be allowed as an oil producer, in other words, the 10,000 to 1 build-up rate, 26 barrel a day unit allowable. During the early part of the test, the weather was quite cold

and we had trouble chocking and greasing and we were able to produce the well only part of the day. Notice on the 10th, we produced 6 hours, 3 hours at the normal rate, and we were having freezing trouble and had to open the well up to try to keep it flowing. For that extra three-hour period it was producing at a rate of about one million four a day or produced about five barrels of oil. It warmed up about the 12th and we were able to get a six-day test at rates between 360,000 a day and 475,000 a day. During this period we produced no liquid. You might say that the maximum gas production rate for Jalmat Oil Well is 360,000 cubic feet a day.

Q In other words, Mr. Stokes, this special test was designed to more than operate at oil well rates and you could produce only gas and no liquid?

A That is correct.

MR. UTZ: Was this test taken through tubing?

THE WITNESS: Yes, sir.

Q What conclusions can you draw from these two exhibits that would be relevant to this case?

A Referring to both exhibits, there are places here that a gas-oil ratio is less than 10,000 to 1. This generally occurs when a well is pulled at a hard rate. If we tested a well in excess of 100 barrels of oil a day, we would have a top allowable well, with a ratio of less than 10,000 to 1. Since we would be limited to 36 barrels a day, looking back in the

July of '62 period, if we produced at 36 barrels a day at a gas-oil ratio of 27,000 to 1, this would then penalize us to 14 barrels a day.

Q You are referring now to the penalty due to the 10,000 to 1, limiting ratio for wells classified as oil wells?

A That is correct. And our production in early May, at around 14 barrels a day, we had gas-oil ratio of 47,000 to 1; that would further penalize us. Eventually, we would reach a point where we would be penalized nothing and we would have no oil allowable and we would produce free of liquid, with a ratio in excess of 100,000 to 1.

Q So we are back to the same problem, are we not, Mr. Stokes, if you produce this well at gas well rates, you will make some oil, but if you produce it at oil well rates, you will produce only gas?

A That is correct.

Q And is there any point where the well could be produced in accordance with the rules, taking into account the definition of a gas well as being a well with the ratio of more than 100,000 to 1, and taking into account the limitation upon oil wells of a limiting ratio 10,000 to 1?

A No, sir, there is no point that it can be produced as a gas well without making oil, without severely reducing the allowable well.

Q Going back to the finding that you read earlier in

Order No. R-2191 that says that no exception was needed because if the well were produced at 100 MCF per day, the gas-oil ratio would be greater than 100,000 to 1 and it still could be considered a gas well, is that true today?

A No, that is no longer true.

Q What happens today if it is produced at the rate of a thousand MCF per day?

A Makes about 50 barrels of oil per day at that rate.

Q What is the general trend in this well of the producing characteristics?

A The overall trend throughout this year has been far below GOR with each succeeding month. Prior to this year, when we produced the well at one million cubic feet a day ratio in excess of 100,000 to 1 in December, producing at a million cubic feet a day ratio only 20,000 to 1. So I believe the general trend shows that ultimately this will become an oil well, but at the present time, it is still not capable of producing oil at oil allowable rates.

Q From that, could you conclude that the exception that was sought in the original case is needed even more today than it was then?

A Yes, sir.

Q And if that exception is granted, and the well is allowed to produce as a gas well, what will happen to your problem here?

A Well, I believe that if we can produce this as a gas well, we will ultimately draw the pressure down far enough so that oil can be produced at low gas rate. When this occurs, the well should be reclassified as an oil well. However, if we are classified as an oil well now, the well won't produce any liquid and it's a good chance that the pressure drawdown will never be sufficient to permit oil to flow at low gas rates.

Q What is your specific request of the Commission at this point?

A We feel, in view of the unusual production characteristics of this well, and which to my knowledge are unique in New Mexico, we feel an exception to this rule is in order and request the well be continued to be classified as a gas well until at least it is able to produce oil at oil well rates. We further suggest that the well be tested at the end of each three-month period at the gas rates equivalent to the maximum gas allowable for Jalmat Oil Well in order to determine whether its classification should be changed.

Q Now, let me be sure I understand your proposal to the Commission, Mr. Stokes. Shell is still seeking an exception to Rule 26(A) of the special rules for Jalmat Gas Pool?

A Yes, sir.

Q Which would exempt it or allow it to be classified as a gas well, even though its gas-oil ratio falls below 100,000 to 1?

A That is correct.

Q And you suggest that that exception be granted until such time as oil can be produced at rates of gas production, which would be constant with the production of oil within the normal unit allowable?

A Yes.

Q And to determine that point, you suggest that tests be taken at three-month intervals and submitted to the Commission?

A Yes, sir, that is correct.

Q Now, if your request is granted, Mr. Stokes, will correlative rights be fully protected in the area?

A Yes, sir, I believe so. At the original hearing we presented as an exhibit two cross sections, a structure map of this area. These exhibits showed that the closest oil well to the Jalmat Oil Well is the T. P. Coal and Oil Watkins No. 1 location to the west completed at about the same structural position as our well and yet is produced as an oil well, with oil-gas ratio for two years top allowable well. The two closest oil-gas wells are north offset and northwest offset, structurally with our well, yet, produce gas without any liquid. This, to me, indicates that the production we are getting is from an isolated stringer, not present in any of the offsetting wells and will probably not be drained unless we are able to get it from our well.

Q And from that, would you further conclude, Mr. Stokes,

that a possibility of waste would be present if the request is not granted?

A Yes, if we produce the well as an oil well now and produce no liquid, there is.

Q Is there a chance that a drawdown will never become sufficient for allowable oil flow?

A Since the stringer apparently is not being drained by nearby wells, it will never be drained.

Q Were Exhibits 1 and 2 prepared by you or under your direction?

A Yes, they were.

MR. MORRIS: Mr. Examiner, we offer Shell Exhibits 1 and 2 in the reopened case and into evidence and that concludes examination of this witness at this time.

MR. UTZ: Without objection, Exhibits 1 and 2 will be entered into the record.

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Stokes, I don't understand why you will not receive enough drawdown to eventually pool the oil in the well bore under the 360 MCF a day gas rate as compared to something like 800 to a million a day?

A Well, the well makes quite a bit of water in addition to oil. I feel there is a good chance the water will block that formation if it is allowed to come in contact with it over

a long period of time when there is no oil flow.

Q Rather than the process of lowering the pressure, its lowering the rate of flow that you are worrying about to pull the oil into the well bore.

A Well, from the well performance, you have to draw the pressure down more than eight per cent in order to start oil flow. Of course, the rate at which the well produces in order to reach the eight per cent drawdown has decreased over the past year and I believe will continue to decrease. At the same time, we are faced with the same problem of pumping water at the same time as oil when we produce at these rates. I am afraid that if we shut the well down to a rate of 360,000 a day, which rate it produces in liquid, that the water could block the oil bearing zone, wherever it might be.

Q (By Mr. Morris) When the reservoir pressures get lower?

A Yes, sir.

MR. MORRIS: Mr. Examiner, in connection with your question, might I ask another question?

MR. UTZ: Yes.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Stokes, at that low rate of flow, would your well be producing gas at economic rates?

A Well, yes.

Q I don't mean just in paying quantity but would it be an economic proposition to produce the gas at such reduced rates?

A It would seem to be somewhat unfair, you might say, to have a penalized gas well that is capable of producing more gas. We would still make small amounts of money on it but certainly not as much as at the normal gas rate.

Q At those rates, it would be classified as an oil well but would be producing no oil?

A Yes, that is correct. If it were classified as an oil well, we probably would lose income.

MR. MORRIS: That is all I have on that line, Mr. Examiner.

MR. UTZ: Any other questions of this witness? The witness may be excused.

MR. MORRIS: I would like to make a brief observation, Mr. Examiner. The witness has testified and it has been shown in previous hearing of this case that this is truly a unique situation. If the well is classified as a gas well, then it will produce oil and gas. If it is classified as an oil well, it will produce gas oil and produce no oil only. Truly and nominally, we feel that in this type of a situation which has no counter part anywhere in New Mexico, according to the witness' testimony, that an exception is in order and should be granted by the Commission.

MR. UTZ: Any other statements? The case will be taken

under advisement.

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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ELAINE BUCHANAN, 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 16th day of April, 1963.

Elaine Buchanan
Notary Public - Court Reporter

My Commission Expires:

October 14, 1966.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2764, heard by me on Feb. 21, 1962.

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

I N D E X

EXHIBITS

NUMBER	MARKED FOR IDENTIFICATION	OFFERED	ADMITTED
#1	6	13	13
#2	7	13	13