BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
October 24, 1957

# TRANSCRIPT OF HEARING

## CASE NO. 1334

DEARNLEY - MEIER & ASSOCIATES
INCORPORATED
GENERAL LAW REPORTERS
ALBUQUERQUE, NEW MEXICO
3-6691 5-9546

NEW MEXICO OIL CONSERVATION COMMISSION

Mabry Hall

Santa Fe, NEW MEXICO

REGISTER

HEARING DATE Examiner October 24, 1957 TIME: 9:00 a.m.

| NAME: | REPRESENTING: | LOCATION: |
|---|---|---|
| [illegible] | Harry Leonard Pinkle for Magnolia Pet Co | Roswell |
| W. Rumsey | Magnolia Petroleum Co | Hobbs |
| D. D. LAYTON | " " " | DALLAS |
| [illegible] | [illegible] | [illegible] |
| John M Campbell | Campbell & Russell | Roswell |
| [illegible] | [illegible] | [illegible] |
| R. F. Miller | Gen. Amer. Oil Co of Tex. | Artesia. |
| Dudley D. Morgan Jr | Malco Refineries Inc | Roswell |
| H. F. Harrington | Malco | Roswell |
| W. J. Cooley | OCC | Santa Fe |
| [illegible] | I & W Hot oil, Inc | Artesia |
| [illegible] | Cities Service Oil Co | [illegible] |
| [illegible] | [illegible] | Hobbs |
| A. R. Palmour | [illegible] | Santa Fe |
| [illegible] | Cities Service Oil Co. | Roswell |

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| NAME: | REPRESENTING: | LOCATION: |
|---|---|---|
| James M. Windham | I & W Hot Oil Service Inc. | Artesia, N. Mex. |
| N. M. Aldridge | " " " " " | Artesia N. Mex. |
| D. R. Owens | Pan American Petroleum Corp. | Roswell, N. Mex |
| Nancy Royal | N. M. Statehood Pptg Service | Santa Fe |
| Don Walker | Gulf Oil Corp | Fort Worth, Texas |
| Guy A. Swartz | " | Roswell, N. M. |
| H. B. Wofford | " | " |
| W. V. Kastler | " | " |

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
October 24, 1957

| | |
|---|---|
| IN THE MATTER OF: Application of Gulf Oil Corporation for an order authorizing the production of certain wells in the Monument Pool in excess of the daily tolerance established by Rule 502 1 of the Commission Rules and Regulations. | CASE NO. 1334 |

BEFORE:

MR. DANIEL S. NUTTER, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: The next case will be Case No. 1334.

MR. COOLEY: Case No. 1334. Application of Gulf Oil Corporation for an order authorizing the production of certain wells in the Monument Pool in excess of the daily tolerance established by Rule 502 1 of the Commission Rules and Regulations.

MR. KASTLER: My name is Bill Kastler and I'm attorney with Gulf Oil Corporation from Roswell, New Mexico. This application covers four wells in the Monument Pool which because of their producing characteristics occasionally provide in excess of 125% per day of the pool allowable.

Copies of this application have been sent to all operators

in the pool, as shown by a list attached to the original application. This notice was given in compliance with Section 521, sub-paragraph "B" of New Mexico Oil Conservation Commission Rules and Regulations. The original application was filed September 16, 1957, and was amended October 2nd, to correct the location of two of the wells concerned.

In our application we desire authority to exceed the 125% daily tolerance but we do not request authority to exceed the monthly allowable.

Our witness in this case is Mr. J. W. Wofford, Jr., from Roswell. Mr. Wofford, will you be sworn, please?

(Witness sworn)

J. W. WOFFORD, JR.

having been first duly sworn, testifies as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Would you please state your name and occupation?

A H. B. Wofford, Jr., Gulf Oil Corporation, Roswell, New Mexico; District Reservoir Engineer.

Q Do you have a degree in petroleum engineering?

A Yes, sir.

Q What schools did you attend?

A I attended two years at North Texas Agricultural College in Arlington, Texas; and two years at the University of Kansas,

graduated from University of Kansas in June, 1949, with Bachelor of Science in petroleum engineering.

Q And have you been engaged in the practice in the field of petroleum engineering since that time?

A Yes, sir.

Q What has been your experience in that field?

A I went to work with Gulf Oil shortly after graduation and worked one year in Crane, Texas doing general field work and well testing; six years in Fort Worth, Texas in Reservoir Engineering Unit, and have been in Roswell a little over one year in the capacity of District Reservoir Engineer.

Q Are you familiar with Gulf's application in Case No. 1334?

A Yes, sir.

MR. KASTLER: Mr. Nutter, I would like to move at this time that this witness' qualifications be admitted?

MR. NUTTER: The witness' qualifications are acceptable.

Q Mr. Wofford, for Exhibit Number One have you prepared a plat which will show the leases involved and the oil wells involved in our application?

A Yes, sir. The plat was prepared under my supervision.

Q Is this a plat showing a portion of Monument Pool?

A Yes, sir.

Q And will you explain what is outlined in red and green

on this plat, Exhibit Number One?

A Yes, sir. The leases outlined in red are the leases under consideration in this case. At the north or the top part of the plat, the small lease outlined in red is Gulf's May Love Lease and in the south portion of the plat, Gulf's Theodore Anderson lease is outlined in red. The wells that are circled and colored green are the wells under consideration.

Q Are these private lands or state or federal lands?

A They are private owned lands.

Q Now, will you please identify on this plat the Gulf's Theodore Anderson well No. 1, where is it located?

A Theodore Anderson well No. 1 is located in the center of the southwest quarter of the southeast quarter of Section 8, Township 20 South, Range 37 East.

Q When was this well initially completed?

A It was originally completed November 26, 1936, at a total depth of 3,872 feet in the Grayburg formation.

Q Would you outline it's producing characteristics, then it's capacity and the remainder of it's history, please?

A Yes, sir. On completion a producing string of five and a half inch OD casing was set at 3,810 feet and the well was completed natural with initial potential of 2,076 barrels of oil per day and no water flowing.

Q Was it later worked over?

A Yes, sir, in January, or on January 16, 1951, some fifteen years after completion, the well ceased to flow and was placed on gas lift. At that time it tested for 72 barrels of oil per day and 90 barrels of water. Then on July the 3rd, 1953, two years later the well was plugged back in an effort to eliminate water to a depth of 3,809 feet; the casing was perforated in the interval of 3,798 feet to 3,808 feet in the Grayburg formation. After a small acid treatment it tested a 120 barrels of oil per day and 310 barrels of water on gas lift. We --

Q Was it later plugged back again?

A Yes, sir. It was plugged back again on March 25, 1955. This time to a depth of 3,780 feet, and was perforated in the interval of 3,740 feet to 3,760 feet in the Grayburg formation. It tested at 297 barrels of oil per day and no water flowing. This plug back was highly successful in eliminating the water. Prior to this plug back, by the way, it had not produced.

Q Is this well now a dually completed well?

A Yes, sir. At the time it was plugged back the last time it was dually completed in the Eumont Gas Zone.

Q And is it now on pumps?

A Yes, it was placed on pumps in October the 20th, 1955, after it had stopped flowing. And it tested at that time 103 barrels of oil per day and 30 barrels of water.

Q Now, what is the characteristic of this well ?

it to be brought up here for this application this morning?

A This well has consistently been a water producing well even though that it has currently produced some 337,000 barrels of oil. It has always produced water, or not always because it has produced water over the last seven years at this rate and on a recent test in August it was capable of producing 47 barrels of oil and 41 barrels of water in eight hours pumping.

Q Is it possible then to produce this well at 125% of the daily allowable and get satisfactory results in doing that?

A Yes, sir. From this recent test taken if we extend that eight hour test to a twenty-four hour period we note that it's capable of producing 246 barrels of fluid per day. The calculated capacity of the pump is only 184 barrels of fluid per day, that's assuming a 100% efficiency which is rarely achieved, which this indicates that the well will flow after the pump is agitated.

Q I see. Then it is your opinion that there is being more oil produced than the pump capacity would indicate?

A Yes, sir.

Q And does that cause you to seek an exception to the 125% tolerance?

A Yes, sir. With a reasonable amount of supervision. It's difficult to prevent this well from producing in excess of 125% of its daily allowable in day to day operations.

Q Would you explain just why that is, that it is impractical for that well to produce within the limit of a 125%?

A Well, it is common practice to pump a well through full open tubing, and a pumper we'll say will go out and start the well to pump and unless he keeps the continuous gauge on the tank or is standing by the well, it's possible that, due to its erratic producing characteristics, it will produce in excess of its daily allowable before he can control it, with reasonable amount of supervision.

Q I see. Would you please outline the Theodore Anderson No. 2 well as to when it was initially completed and what its producing capacity was then and briefly trace that through to the present time, it's producing characteristics?

A Theodore Anderson Well No. 2 is located in the center of the northeast quarter of the northwest quarter of Section 17, Township 20 South, Range 37 East. It was originally completed in February 1937 at a total depth of 3,865 feet in the Grayburg formation. It also has producing string of five and a half inch casing. The initial potential at that time was 1,698 barrels of oil per day and no water flowing.

On March 9, 1952, or some fifteen years after the completion, the well was plugged back in an effort to eliminate water to a depth of 3,774 feet. And the casing was perforated the interval 3,740 feet to 3,760 feet, in the Grayburg fo

On test after this work it produced 713 barrels of oil per day and not water. This was without treatment. Then --

Q Is this a dually completed well today?

A No, sir, it isn't.

Q Has it been worked over again since that time?

A No, sir, it's never been worked over since that time, but it was placed on pump in August, 1956, and tested at that time 384 barrels of oil per day and 72 barrels of water.

Q Now, is this well similar to the Theodore Anderson No. 1 in that the pump capacity seems to be exceeded by your daily production.

A Yes, sir, it is. On a recent test, that is in August, 1957, it produced 47 barrels of oil and 8 barrels of water in three hours pumping, this is through full open tubing.

MR. NUTTER: How much was that again?

A 47 barrels of oil and 8 barrels of water in three hours; extending that test to twenty-four hour period would indicate a capacity of 440 barrels of fluid per day and the present pump capacity is only a 128 barrels of fluid per day.

Again at 100% efficiency this would indicate that the well will flow on being agitated with a pump, and with a reasonable amount of supervision, it's very difficult to control it's production within the daily allowable plus the permissible tolerance.

Q Mr. Wofford, would you now outline the history of the well known as Theodore Anderson No. 3, where it was located, initially completed and so forth?

A Yes, sir. Theodore Anderson Well No. 3 is located in the center of the southeast quarter of the southeast quarter of Section 8, Township 20 South, Range 37 East.

It was originally completed in March, 1937, at a total depth of 3,870 feet in the Grayburg formation.

The producing string is five and a half inch OD casing set at 3,810 feet.

It was completed natural at that time for a potential of 2,036 barrels of oil per day, and no water flowing.

On November 9, 1950, some thirteen years later, it was equipped with gas lift after it ceased to flow and at that time tested 363 barrels of oil per day and 648 barrels of water.

On January the 11th, 1955, or five years later than that, than the gas lift installation, it was plugged back to 3,790 feet, and the casing was perforated in the Grayburg formation in the interval of 3,760 feet to 3,780 feet. Without treatment it flowed 44 barrels of oil per day and no water. Prior to the plug back it would not produce.

Q This is now a flowing well as distinguished from one on pump, isn't it?

A Yes, sir.

Q And is the characteristics such that it has an inclination to load up if it is chocked down to any smaller producing capacity?

A Yes, sir. It has produced varying amounts of water for the last seven years, and is now producing water and at that low rate of flow it has a tendency to load up and die; and for that reason it's necessary to produce at high enough rates to maintain the flowing status, and also obtain the wells allowable; and for this reason it's difficult to prevent the well from producing more than 125% of its top unit allowable in any one day, with a reasonable amount of supervision.

Q Now, will you briefly outline Gulf's May Love Well No. 2?

A Yes, sir. The May Love Well No. 2 is located in the center of the southeast quarter of the southeast quarter of Section 32, Township 19 South, Range 37 East.

It was originally completed in November, 1936, at a total depth 3,898 feet in the Grayburg formation with a producing string of five and a half inch OD casing set at 3,759 feet.

It was completed after 3,000 gallon acid treatment for a potential of 374 barrels of oil per day and 56 barrels of water. It has produced water since completion.

No remedial work has been performed on this well since it was completed and it is still flowing today.

Q Are its characteristics the same as the Theodore

Anderson No. 3 Well in regard to its flowing?

A Yes, sir, very similar. It produces enough water so that at low rates it will load up and die, which would require then swabbing or shut-in period in order to build up enough pressure to flow. It's necessary to flow it at high enough rate to maintain the flowing status and to produce it's daily allowable. For this reason it's difficult again to control this well so that it does not exceed it's daily allowable, plus tolerance, in any one day.

Q Have you drawn any conclusions from your experience with these four wells, Mr. Wofford?

A Yes, sir.

Q Would you state them now?

A I believe that the method that is required to produce these wells in an efficient and economical method for achieving maximum recovery. I also believe that equities will be maintained by the method and that correlative rights will be protected since none of the wells will be produced in excess of its monthly allowable.

Q Do you have anything else to add?

A No, sir.

MR. KASTLER: Mr. Examiner, I would like to request that this exhibit No. 1 be properly stamped and labeled and admitted into evidence as an exhibit in this case No. 1334.

MR. NUTTER: The plat will be identified as Exhibit No. 1. Without objection Exhibit No. 1 in Case 1334 will be received. Does anyone have a question of the witness? Mr. Utz.

BY MR. UTZ:

Q Mr. Wofford, I understand then that the way you want to produce these wells is to produce them at whatever rate they happen to produce until the full monthly allowable is produced and then shut them in?

A No, sir. That's not my understanding exactly. I believe the desirable thing would be to produce without restriction, I mean on the daily rate, but at the same time we well attempt to produce only it's daily allowable each day. And we'll not produce the monthly allowable in a few days and then shut it in the remainder of the month. It's just that the wells are hard to control. We attempt to produce the daily allowable each day, but in some instances we exceed that due to its erratic characteristics.

Q I understood that when you curtailed production on these wells they would load up and quit flowing, isn't that true?

A Yes, on the two flowing wells.

Q Well, how do you get them to produce again, allow them to build up or swab or what?

A Well, I'm sure that sometimes it's necessary to swab them, but in, at this particular time if they are allowed to stay shut in for a few hours or several hours they will build up a

sufficient head to kick off once they are open. But in order to maintain the flow they have to be flowed at a fairly high rate.

Q I still don't quite understand just how you intend to produce them. Do you want to exceed 25% of the daily allowable, but you still have trouble flowing the wells? You have to swab them and move in a rig all the time. It's kind of an expensive operation.

A Yes, sir, it is.

Q You intend to let them flow until the flowing rate goes down and let them go down and turn them loose again and let them flow on a cycle?

A No, sir. If I can set an example or try to make an example of it. Say the well has been shut in for several hours and the pumper goes out and opens the well up. In order to start the well to flowing he has to open it up pretty wide chock, then with his regular duties he comes back in an hour or two hours or something like that. It's possible that in that period of time the well will have already exceeded the daily allowable plus tolerance, then he will shut the well in. In many instances by the time he comes back it has not produced it's allowable. Of course, and he continues to let it flow a few more hours. It's so erratic he can not maintain his supervision to keep it strictly at the unit allowable.

Q Is this a water drive pool?

A I understand it is. Yes, sir, or I believe it is.

MR. UTZ: That's all I have.

MR. NUTTER: Anyone else have a question of the witness?

BY MR. NUTTER:

Q Mr. Wofford, I notice several times during the course of your testimony you have mentioned the words reasonable amount of supervision. You state that these wells can not be produced within the allowed tolerance of Rule 502. With a reasonable amount of supervision could they be produced with a little bit more than a reasonable amount of supervision?

A Yes, sir, I believe so.

Q For instance, you have two wells here on the pump and two wells that are flowing, is that correct?

A Yes, sir.

Q How often would a, for instance these pumping wells, how often would the pumper have to come back and adjust the flow of the pumping wells in order to produce them within the 125% tolerance?

A Well, it's a little bit difficult to say. On the recent tests there were, well, one of the pumping wells produced it's allowable in three hours and one of them produced it's allowable in eight hours; and it's my understanding that's not constant by any means, that is one day it might take three hours and the next day more time or less time.

Q Now, on these pumping wells, as soon as the pumps have been turned on and the well has been aggitated, the wells will kick off and start flowing, is that correct?

A Yes.

Q Would a smaller pump remedy that in any manner?

A I would say that the pump we have on there is the average size. It's not a bigger pump than we actually need to produce the allowable. I mean, I think the pump is designed for the well under the conditions, so that --

Q It's designed for a well that a pump is necessary to pump the allowable for great rate of production, isn't it?

A Yes, sir.

Q Appears the pump may be excessive in size, do you feel that that's possible?

A Well, the capacity stated was that of 100% efficiency. Of course, we designed for much less than that because we never reach a 100% efficiency on pumps.

Q Except with these?

A Except with these where we have 300% efficiency.

Q Now, would the use of timers remedy this situation in any way for turning these wells off and on automatically by clocks.

A A time clock? No, sir, I don't believe that would be the complete solution because in most instances I believe the time clock just starts and stops the pump and here we have trouble

controlling the flowing of the well.

Q You could start the pump and shut the pump off but the well would continue to produce?

A Yes, I believe it would.

Q How about the case of your two flowing wells, would intermitters remedy the situation in those cases?

A Intermitters on the flow line?

Q Yes, sir, to shut the wells in or open them up, according to the need?

A Well, even that instance I believe you would have to have some control on the volume production. I mean, I know the intermitter would open the well and close the well but I'm not sure it would know how much the well had produced, you know, unless the pumper had gauged the tank or --

Q Mr. Wofford, I'm not sure that, in granting exception to Rule 502, that the commission has ever authorized a well to be produced at wide open capacity. Now, to get back to the question that Mr. Utz asked. I believe you stated that the well, you would attempt to restrict the production to the allowable rate but that you wouldn't want the wells to produce more than the allowable but they might just go out of control and produce more than you wanted them to produce but you would attempt to hold the production down to the 125% tolerance, is that correct?

A Yes, sir. I think that the rate at which we would flow

the wells would probably be in excess of the unit allowable because of the water production, but I believe what I said was that we will try to limit it's daily production to its unit allowable plus tolerance.

Q Is there any percentage figure of the daily unit allowable that you can produce the wells within, with a reasonable amount of supervision?

A I don't know. I don't believe I could, I mean the 125% is a reasonable figure which we try to approach.

Q Well, can you stay within a certain percentage figure, and what percentage figure of the daily allowable would that be that you can produce the well?

A Well, it would be my opinion that due to the erratic production characteristics that something like maybe 200% might be required in some instances on some days.

Q Could you produce these wells each day of the month within 200% of the daily allowable?

A I haven't made a study of that. I don't believe I could recommend any good figure except that in my opinion I should think that 200% would be more than enough to give a flexibility.

Q You believe at this time that it would be adequate and you would be able to produce the wells within that tolerance?

A Yes, sir, it's my opinion.

MR. NUTTER: Does anyone else have a question of the

witness?

RE-DIRECT EXAMINATION

BY MR. KASTLER:

Q Mr. Wofford, you have testified, I believe, that there is a certain amount of control that could be asserted or exerted over these four wells which might then reasonably bring them within the 125% tolerance and they would still be able to produce their full allowable, is that correct?

A Yes, sir.

Q In your opinion about how much time or how much effort would be needed to do that in order to accomplish this result?

A Well, considerably more effort than we are able to put on the well, I mean with the company staff we have.

Q Would you have to reduce the other duties of your pumper if you had him tending these wells more closely?

A Yes, sir.

Q I see. And that would run into an expense, would it not?

A Yes, sir, very definitely.

Q Now, you are not asking for any tolerance over the monthly allowable or the right to exceed monthly allowable day by day, are you?

A No, sir.

Q In your opinion would correlative rights be impaired if

Gulf were forced to stay within the 125 barrel tolerance trying to produce their full allowable?

A Yes, sir, I believe it probably -- it would not be possible for us to produce our monthly allowable if we were required to stay strictly within the 125%.

Q So you believe then that more than going over the 125% Gulf would be forced to produce something less than it's full allowable on these wells, is that correct?

A Yes, sir.

Q Now, in your opinion would correlative rights be impaired if this application were granted, in other words if Gulf were allowed to over produce these wells on the daily allowable, would that in any way impair correlative rights?

A No, sir. I don't believe so since we would stay within our monthly allowable.

Q Yes. But it would cost Gulf or it would cost Gulf Oil Corporation considerably more to accomplish the result if the application were not granted?

A Yes, sir.

Q And possibly result in an economic waste?

A Yes, sir.

Q Now, Mr. Wofford, as a reservoir engineer do you believe this erratic flow including extremely high rates of production at times and no rate of production at other times would cause any

underground waste or reservoir damage?

A No, sir. In my opinion we are making good utilization of reservoir energy to recover the oil.

Q What's the present allowable in this pool?

A The present unit allowable is 37 barrels per day.

Q All these wells are top unit allowable wells? If they are --

A According to the latest proration schedule they are, yes, sir.

MR. NUTTER: Any further questions of the witness? Mr. Utz.

BY MR. UTZ:

Q Mr. Wofford, are you in a position to take each of your four wells and state the rate at which you intend to produce them?

A No, sir, I couldn't say.

Q That information you have just given would be the reasonable rate these last tests, after work over?

A Well, those last tests --

Q What I am getting at is the length of time each day it would take you to produce the allowable of the wells?

A Well, from the tests I have it would appear that Anderson No. 1 would produce it's allowable or actually slightly more than it's allowable in eight hours. Anderson No. 2 will produce more than it's allowable in three hours. And tests I have

on Anderson No. 3 and May Love No. 2 were required tests, and I believe they were purposely restricted to the daily allowable within a twenty-four hour period. I don't believe that on a day to day operation that those tests would necessarily be representative, that we would produce them necessarily at a higher rate than their daily allowable.

MR. NUTTER: How about your May Love No. 2?

A Yes, sir. I covered that in my last remark. We have a test over a twenty-four hour period at it's allowable, but I don't believe that's representative of daily operations.

Q Then I must have misunderstood your Theodore Anderson No. 3 --

A That and May Love 2.

Q -- are the same thing?

A Same thing, yes.

MR. UTZ: That's all.

MR. NUTTER: Any further questions of Mr. Wofford? If not he may be excused.

(Witness excused)

MR. NUTTER: Have you offered your exhibit?

MR. KASTLER: Yes, I did.

MR. NUTTER: Does anyone have anything further in Case 1334? No further questions? Take the Case 1334 under advisement and proceed to Case 1335.

STATE OF NEW MEXICO )
: ss
COUNTY OF BERNALILLO )

I, MARIANNA MEIER, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me in Stenotype and reduced to typewritten transcript by me and/or under my personal supervision; that same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal, this, the day of November, 1957, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

Marianna Meier
NOTARY PUBLIC

My Commission Expires?

April 8, 1960.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 334, heard by me on 10-24, 1957.

..... Examiner
New Mexico Oil Conservation Commission