REGISTER

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 28, 1965

EXAMINER HEARING

IN THE MATTER OF: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Central Drinkard Unit Area comprising 2,600 acres, more or less, of State and Fee lands in Township 21 South, Range 37 East, Lea County, New Mexico.

and

Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Drinkard Pool, Lea County, New Mexico, in its Central Drinkard Unit Area by the injection of water into the Drinkard formation through six wells in Sections 28, 29, and 32, Township 21 South, Range 37 East,

Case No 3240 and Case No. 3241 (Consolidated)

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

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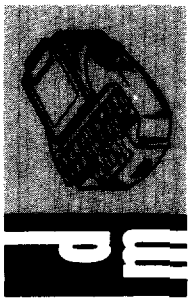
BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please. The first case we will take this morning will be Case 3240.

Do you want to consolidate these, Mr. Kastler?

MR. KASTLER: Yes.



MR. NUTTER: We will also call Case 3241, the application for a waterflood project, Lea County.

MR. KASTLER: If the Examiner please, I'm Bill Kastler, with Gulf Oil Corporation, from Roswell. Our two witnesses will be Mr. Bates M. Boles and Mr. Vance M. Hendricks.

MR. NUTTER: And you request that these cases be consolidated for purposes of testimony?

MR. KASTLER: I do.

MR. NUTTER: Case Number 3240, application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico, and Case Number 3241, application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico, will be consolidated.

(Witnesses sworn.)

(Whereupon, Applicant's Exhibits 1 through 7 marked for identification.)

MR. KASTLER: For a composite exhibit, we've marked this brochure as Exhibit Numbers 1 through 7 in these cases, Case Number 3240 and 3241, consolidated.

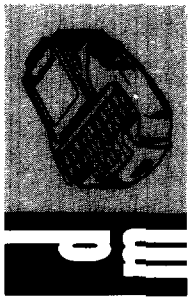
VANCE HENDRICKS, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q Please state your name, your position and employer.

A Vance Hendricks, Petroleum Engineer for the Gulf Oil



Corporation in Roswell, New Mexico.

Q Have you previously testified before the New Mexico Oil Conservation Commission?

A Yes, sir, I have.

Q Are you familiar with the technical aspects of Case Numbers 3240 and 3241 in which Gulf seeks approval of the Central Drinkard Unit as a waterflood?

A Yes.

MR. KASTLER: Are the qualifications of this witness satisfactory?

MR. NUTTER: Yes, they are.

Q (By Mr. Kastler) Will you please state why the leases within the proposed Central Drinkard Unit should be unitized?

A The proposed unit is being formed so that the lands underlying the lease may be waterflooded to obtain a greater oil recovery.

Q Do you have a plat showint the proposed unit?

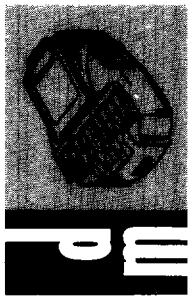
A Yes, it's Exhibit Number 1.

Q And it's contained within this brochure that you propose to introduce as your composite exhibit here?

A Yes, sir.

Q Referring to Exhibit 1, please state what is shown.

A Exhibit Number 1 is merely a map of central Lea County, near the Town of Eunice. Outlined in yellow is the proposed



unit which is comprised of 2,600 acres on which 45 wells have produced from the Drinkard Pool.

Q Is Exhibit Number 2 a structure map of the unit area?

A Yes, it is contoured on top of the Tubb, using an interval of 10 feet. The structure is a northwest southeast trending anticline. The dip is about 70 feet per mile.

Q To the best of your information and knowledge, what are the geological characteristics of the reservoir to be waterflooded?

A Buff to gray, having occasional thin green to black dolomitic shale particles.

Q Do you have well logs for the proposed injection locations?

A Yes, sir, I do. They are designated Exhibits 3-A through 3-F, and are found in the envelope in the back of the booklet.

Q If you select one of these logs, would you describe what it shows as a typical log?

A Exhibit Number 3-A is an electrical log of Gulf's Eunice King Number 4, situated in Unit E of Section 28-21 South, Range 37 East. Shown on this exhibit is the top of the Tubb and also the unitized interval.

Q Was this what was used in preparing your structure map in Exhibit 2?

A Yes, sir, it was.

Q Or the composite of those logs for all wells, not just the injection well?

A For all wells in the unit area.

Q Have you prepared an exhibit showing the production history and present status of the wells in the proposed unit in graphical form?

A Yes, it is Exhibit Number 4.

Q Please explain this exhibit.

A Exhibit 4 shows the performance of the wells in the unit area. At the present time there are 45 wells producing from the Drinkard. The larger curve in the center of the page checked in red is the monthly oil production. It can be seen, in December of 1964 the production was 8,068 barrels, or an average of 5.5 barrels per well per day.

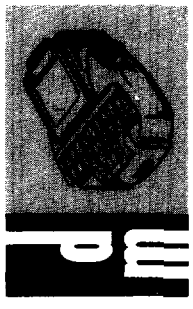
The lowermost curve shows the water production. The average in December of 1964 was two barrels per day per well.

The uppermost curve is the producing gas-oil ratio for the wells, and in December the ratio was 17,905 to 1.

Q Is this a typical producing history that you would expect from such a pay zone that would indicate if it's amenable for waterflooding possibilities?

A Yes, it is.

Q Is Exhibit Number 5 a tabulation of monthly oil, water



and gas production from which Exhibit Number 4 was prepared?

A Yes, it's the statistical data.

Q What does Exhibit Number 6 show?

A Exhibit Number 6 is a detailed map of the unit area. The wells that are circled are current Drinkard completions, whereas the wells that are enclosed in a square are wells that have previously produced from the Drinkard but are now recompleted. Shaded in orange are the six injection wells that will initially be undertaken. The pilot area comprised of 28-40 acre locations have 26 Drinkard wells completed at the present time, and two wells which have been recompleted, one of which will be returned to the Drinkard, it being the Gulf McCormack Number 12, situated in Unit B of Section 32, Township 21 South, Range 37 East; resulting in 27-40 acre tracts qualifying for a pilot waterflood allowable.

Q I take it then that your proposed pilot area is larger than the two five-spot closures, or two closures shaded in orange on Exhibit Number 6?

A Yes, it will incorporate all contiguous 40-acre tracts which are contiguous to the injection 40s.

Q Would they be contiguous is they were diagonals?

A Yes, they would be.

Q In other words, they're direct and diagonal offsets?

A Yes.

Q Do the diagrams on Exhibit Number 7 show how the injection wells will be equipped in the waterflood?

A Yes, the casing program and the downhole equipment to be used in the injection wells is shown. Taking the Gulf's Carson (NCT-A) Number 2 Well, which has been checked in green on this exhibit in the upper right-hand side of the exhibit as an example, it can be seen that the 7-inch casing is set at 6482 feet with 700 sacks of cement.

A temperature survey indicates the cement top behind the 7-inch pipe is 3,025 feet. The well has a total depth of 6,603 feet.

The plan is to inject water down the internally plastic coated tubing between a Baker Model R Packer to be set at 6,450 feet so that water will be restricted to below the packer in the base of the casing, and into the open-hole.

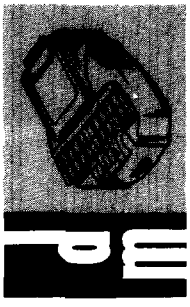
Q Is there anything being produced through the tubing casing annulus in this well?

A No. It will be a single zone completion.

Q This is your typical injection well completion, is that correct?

A Yes, there will be five singly-zoned completed wells and one dually completed well.

Q I'll get to that in a moment. What will be the source of the injection water, the type of water to be used, and what



other matters relate to this water injection?

A Yes. Gulf's Carson NCT-C Well Number 8 situated in Unit I of Township 21 South, Range 37 East, and checked with the green check on the preceding exhibit --

Q That's Exhibit Number 6?

A That's correct.

Q Give that location again, please.

A Yes. It is checked in green, and it is in Unit I of Section 28, Township 21 South, Range 37 East. It will be used as our water supply well in which we will produce brackish water from the San Andres formation. The Carson Number 8 was originally completed in the Brunson Pool at a depth of 7,743 feet. The well is currently a shut-in Blinebry well. Based on an estimated daily water volume of 750 barrels per well, the initial water need should be about 4,500 barrels per day.

Q Is that 750 barrels per injection well for the six wells?

A Per injection well, for a total of 4,500 barrels per day. All surface equipment will be corrosion resistant.

Q What will be your plans for obtaining further water after your pilot project proves successful?

A Most likely the water will be from the San Andres for the entire unit, unless the supplementary water supply is developed by various companies in Lea County.

Q What are the results expected from the project?

A It is believed that the proposed water will recover additional oil of about 75 percent of what was produced under primary operation. In terms of barrels, an additional seven and a quarter million additional barrels should be obtained.

Q Your initial ultimate primary recovery then is about ten million, and your expected additional secondary is seven and a quarter million additional?

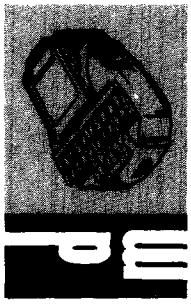
A That's correct.

Q What's the overall cost of the, anticipated cost of the project?

A Although no detailed estimates have been made for the entire project, the pilot cost will be in the neighborhood of half a million dollars, and to flood the entire unit it will be in excess of two million dollars.

Q What are the reasons for the project and what recommendations do Gulf, as unit operator, have for the Commission?

A Since the Drinkard Pool produces primarily by solution gas-drive mechanism a considerable quantity of oil will remain after primary operations. As a result of this, Gulf requests, with the other working interest owners, that the Commission approve the installation of the waterflood facilities, and grant a unit oil allowable equal to the sum of the current allowables for the wells not offset by water injection, plus the allowable



earned by 27 wells situated in the pilot waterflood area, as provided in Rule 701-E.

Q So I take it Gulf is advancing this proposed waterflood project as a prevention of waste?

A That is correct.

Q And in your opinion will the project protect correlative rights?

A It should, yes.

Q Were Exhibits Numbers 1, 2, 3, 4, 5, 6 and 7 prepared by you or at your direction and under your supervision?

A Yes.

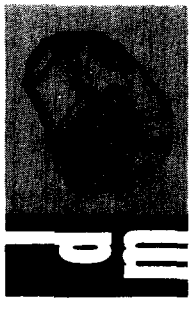
Q Has Gulf received a copy of a letter from the State Engineer of New Mexico, directed to the Oil Conservation Commission, concerning the unit plans to waterflooding and proration of water?

A Yes, we have.

Q Does this letter which was signed by Mr. Irby indicate the State Engineer has approved the proposed injection plans and project as a whole?

A Yes, sir, the State Engineer does approve with one provision, concerning Gulf's W. T. McCormack Number 13, which is the proposed dual completion.

Q This is the injection well in which you are going to simultaneously inject water and produce gas, is that correct?



A That is correct.

Q And is that depicted in one of your exhibits?

A Yes, also on Exhibit Number 7, in the center of the lower row of wells is the McCormack Number 13. This well is currently a dual completion in the Tubb Gas and Drinkard formations. The dual completion was made in December of 1956; and the well has produced in the dual capacity through these years.

It is our desire to use this well as a dual completion, and the intent is to use the existing equipment that is in the well. A Baker Model D permanent packer is set at 6,463 feet, and what we would like to do is form the well as shown in this diagram with a Garrett circulating valve above the packer, and another Garrett circulating valve below the packer.

Q The valve would be inserted into the water injection tubing?

A That is correct.

Q All right.

A Now, there is no intent whatsoever to place water above the packer, but to restrict the water down the plastic coated tubing below the Baker Model D packer into the base of the casing and open-hole section. The Tubb gas would be produced from the annular space, as it has been done for the last nine years.

Q Then why do you need the circulating valve above the packer?

A It is used to facilitate unloading the annular space after the well has been killed to restore Tubb gas production.

Q In your opinion does this proposed completion of the McCormack Number 13 Well as an injection and dual producing well fulfill the requirement of the State Engineer's Office?

A Yes, it should.

Q Do you have anything to add?

A Nothing.

MR. KASTLER: Mr. Nutter, this completes our direct testimony, and I would like, at this time, to move that Exhibits 1 through 7 as a composite exhibit, be admitted into evidence, and that the letter of the State Engineer, which was addressed to the Oil Commission, be given administrative notice.

MR. NUTTER: Gulf's Exhibits 1 through 7 in the composite exhibit are admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 7 were admitted in evidence.)

MR. NUTTER: The State Engineer's letter dated April 22, 1965, signed by Mr. Irby, is a part of the record in this case.

MR. KASTLER: Thank you.

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

Hendricks?

CROSS EXAMINATION

BY MR. NUTTER:

Q You mentioned that the McCormack Number 13 Well would be equipped with plastic coated tubing. Is this statement applicable to all the other wells, too?

A Yes, all tubing will be plastic coated, as well as the water lines carrying the water to the individual wells.

Q I wasn't exactly clear on what you stated you were requesting in the way of allowable here. You are requesting a normal project allowable, but you mentioned something else. What was that?

A Yes, sir. Referring to Exhibit Number 6, there are 28 40-acre locations that could qualify under Rule 701, as I understand the application of the rule. At present there are 26 wells completed in the Drinkard that would qualify. The two wells that are not at the present time completed in the Drinkard are Gulf's McCormack Number 12, which is in Unit B of Section 32, and Gulf's Eunice King Number 6, which is in Unit D of Section 28. These two wells have been recompleted. It is the intention of the working interest owners to recomplete the McCormack Number 12, which is the southernmost well, so that all in all we will have 27 40-acre tracts that would be completed in the Drinkard that would qualify for a project allowable, and

the allowable for the other wells in the unit would be what they are currently prorated at.

Q Of course, they would produce that allowable themselves?

A Yes.

Q That would not be assigned to the waterflood project?

A That's right.

Q Now, there are two wells in the 28 in the project area that are not completed in the Drinkard at the present time?

A Yes, sir.

Q And the one in Section 32, that Number 12, is the only one that you plan to recomplete back to the Drinkard?

A Yes.

Q This well in Unit L --

A Unit D.

Q -- will not be converted back?

A That is correct, initially.

Q So what you are actually requesting for the project area would be the assignment of an allowable to 27 wells?

A Yes, sir.

Q When was the development in here, Mr. Hendricks?

A The first well was in 1945, but the development continued in through '48.

Q Your production chart goes back to 1953, but there was production prior to that time?

A Yes, sir, that was an arbitrary decision.

MR. NUTTER: Are there further questions of Mr. Hendricks? The witness may be excused.

(Witness excused.)

MR. NUTTER: Will you call your other witness, please?

MR. KASTLER: Mr. Boles will have two exhibits. We will label them 8 and 9. They consist of our unit agreement and unit operating agreement.

(Whereupon, Applicant's Exhibits 8 and 9 marked for identification.)

BATES BOLES, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KASTLER:

Q State your name, title and employer.

A Bates Boles, District Clerical Supervisor, Gulf Oil Corporation.

Q Is that B-o-w-l-e-s?

A Boles, B-o-l-e-s.

Q Have you previously qualified as a witness?

A Yes.

Q Are you familiar with the Unit Agreement, the exhibits and status of working interest owners and royalty interest owners ratification?

A Yes.

Q Would you give the status of the working interest owners execution of the instruments in the Central Drinkard Unit?

A Based on secondary phase participation, approximately 91 percent of the working interest owners have signed ratifications. There are four working interest owners who have not signed ratifications, but none have indicated that they will not sign.

Q And substantially, does that allow you to deem as qualified all tracts in the unit?

A Yes.

Q Would you give the status of the royalty owners executions and ratifications?

A Based on secondary phase participation, approximately 93 percent of the unit area is fee lands, and seven percent State lands. If we consider the State royalty assigned, approximately 87 percent of the royalty interest have signed ratifications.

Q Has the Central Drinkard Unit Agreement been drafted after various preliminary drafts, and approvals of lessees involved?

A Yes, the operators formed a committee and held a meeting, after which the instruments were drafted to the satisfaction of all lessees.

Q Has this proposed unit agreement, as finally agreed upon by the working interest owners and some royalty interest owners been submitted to the Unit Division of the State Land Office for its preliminary approval?

A Yes.

Q Was that preliminary approval in form and content obtained?

A Yes.

Q Did the unit agreement provide for selection of a successor unit operator in the event of the resignation or removal of the original operator, so as to insure continuous responsible operation?

A Yes, the successor operator shall be selected by 75 percent of the voting interest after including the voting interest of the operator which was removed, subject to the approval by the Commissioner.

Q What is the basis of allocation of both the remaining primary and the secondary recovered oil?

A The unit agreement provides for a split formula which resulted from negotiations in the Operators Committee which was approved by the Commissioner. Specifically the allocation of the remaining primary oil, both to working interest owners and royalty owners, is based 50 percent on the ratio of total tract remaining primary reserves, subsequent to January 1, 1964;

to the total unit area remaining primary reserves subsequent to January 1, 1964; and 50 percent on the ratio of the total tract producing revenue for the six months period prior to January 1, 1964, to the total unit area producing revenue for the six months period prior to January 1, 1964.

Secondary participation shall be equal to 100 percent of the ratio of the total tract ultimate primary reserves to the total unit ultimate primary reserves.

Q Basically, to recap that then, the primary participation is based 50 percent on reserves and 50 percent on current income?

A Right.

Q And the secondary participation is based 100 percent on reserves?

A Right.

Q What does the unit agreement provide in regard to non-joinder and subsequent joinder?

A After effective date the commitment of any interest in any tract within the unit area shall be upon such terms as may be negotiated by the working interest owners and the owner of such interest subject to approval by the Commission.

Q In your opinion does the unit agreement provide for the prevention of waste and the protection of correlative rights?

A Yes.

MR. KASTLER: This concludes the questions on direct examination. I would like to move at this time that Exhibits 8 and 9 be admitted into evidence in this case.

MR. NUTTER: Applicant's Exhibits 8 and 9 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 8 and 9 were admitted in evidence.)

MR. NUTTER: Are there any questions of Mr. Boles?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Boles, the four owners who have not signed represent the nine percent of the working interest which has not signed?

A That is right.

Q How many total owners are there?

A Seventeen.

Q So 13 of the 17 have signed?

A That is right.

Q And that 13 is 91 percent?

A 91 percent.

Q And including the State, 87 percent of the royalty?

A Yes.

Q Let's see if I have your formula down correct. It's a

split formula. The allocation of the remaining primary is based 50 percent on the remaining primary reserves of the tract to the unit remaining primary reserves?

A That's right.

Q As of January 1st?

A January 1st or subsequent to January 1, 1964.

Q Of '64?

A Right.

Q And 50 percent on the ratio of the tract producing income to the unit producing income during a six months period from when?

A Six months period prior to January 1, 1964. It would be the last six months of '63.

Q Well, now, these tracts that have these wells which are recompleted in another zone rather than being in the Drinkard were actually penalized on that score, were they not?

A They were, yes.

Q Of your secondary recovery, it's 100 percent on the remaining secondary reserves of the tract as compared to the total unit?

A The ultimate primary reserves, in other words, for each barrel of primary you get a barrel of secondary.

MR. NUTTER: If no further questions the witness may be excused.

(Witness excused.)

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

MR. KASTLER: Nothing further.

MR. DURRETT: If the Examiner please, the Commission has received a telegram from Amerada supporting this application.

MR. NUTTER: Does anyone have anything further they wish to offer in these cases?

MR. SPURLOCK: R. C. Spurlock, for Sunray DX Oil Company. We're contributing 160 acres to the proposed unit and we support Gulf's application.

MR. NUTTER: Thank you. If there's nothing further in these cases we'll take the cases under advisement.

STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILL))

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner 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 4th day of May, 1965.

Ada Dearnley

Notary Public - Court Reporter

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3240-3241 heard by me on 4/28, 1965.

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

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE APRIL 28, 1965 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
John F. Russell	T.P. Oil Company	Roswell, N.M.
R.C. Sinclair	Sunray DX Oil Co.	Tulsa, Okla.
Wm. J. Monroe	Austral Oil Co. Inc.	Houston, Tex.
C. [illegible] Williamson Jr.	✓ ✓ ✓ ✓	✓ ✓
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	Pampa, Texas
John H. Hendrix	T.P. Oil Co	Hobbs, N.M.
Ed. Poulter	T.P. Oil Co	Midland, Texas
George H. Hunker Jr.	Monsanto Co.	Roswell, N.M.
[illegible] Hendricks	Sinclair	Roswell, N.M.
B. Boles	Gulf Oil Corp	Roswell, N.M.
J.L. Hutchison	Carl Oil Corp	Roswell, N. Mex
J.H. Hoover	Carl Oil Co-p	Roswell, N. Mex
Wm. B. Ellis	Monsanto Co.	Midland, Texas
Bill Kastler	Gulf Oil Corp.	Roswell, N.M.

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

REGISTER

HEARING DATE APRIL 28, 1965 TIME: 9 A.M.

NAME:	REPRESENTING:	LOCATION:
P. G. Anderson	Monsanto Co.	Midland, Tex.
Jim Sperling	Mobil Oil Co.	Albuquerque