CASE 3934: Application of TEXACO FOR A WATERFLOOD PROJECT, LEA COUNTY, NEW MEXICO.

Case Number 3934 Application Trascripts Small Exhibits ETC.

BEFORE THE SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATE MENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS NEW MEXICO OIL CONSERVATION COMMISSION Santa Fe, New Mexico November 18, 1968 12 dearnley-meier ragorling service, inc PHONE 243-6691 . ALBUQUERQUE, NEW MEXICO IN THE MATTER OF: Application of Texaco, Inc., Cāse No. 3934 for a waterflood project, Lea County, New Mexico 1120 SIMMS BLDG. . P. O. BOX 1092 4 BEFORE: D. S. NUTTER TRANSCRIPT OF HEARING

# MR. NUTTER: Call Case 3934.

MR. HATCH: Application of Texaco, Inc., for a waterflood project, Lea County, New Mexico

MR. KELLY: Let the record show the same appearance and the same witness who is under oath.

(Applicant's Exhibits 1 through 4 marked for identification.)

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DALE McCARTER, called as a witness, having been previously duly sworn, was examined, and testified as follows:

## DIRECT EXAMINATION

BY MR, KELLY:

Q You are the same Mr. McCarter who testified in the previous case?

A Yes, I am.

Q Referring to Exhibit No. 1, the plat, would you state what Texaco seeks by this application?

A Texaco seeks approval to initiate a pilot waterflood project by injection of water into the Drinkard Formation in its V. M. Henderson Well No. 8 located in Unit E, Section 30, Township 21 South, Range 37 East.

Q Have you shown the offset operators on this?

A They are on the plat, I will call them out. It would be Gulf Oil Corporation, Pan American, Mobil, Sinclair, J. W. Peary, and J. H. Moore. They were notified by a copy of our application for the hearing.

What is the current status of the proposed injection Q

well? The well is a triple completion being completed in A the Penrose Skelly, the Paddock and the Drinkard formations. The Drinkard zone in the well is producing three barrels of oil per day, three barrels of water per day and G-O-R of approximately 1800. It is pumping.

On this lease, are there other Drinkard Completions? Q

Yes, sir. A

What is the average production from your lease on Q

the Drinkard? The average production from the Lease is approximately Α three and a half barrels of oil per day per well.

In your opinion, are these Drinkard wells in the Q

advanced stage of depletion?

Yes, sir, they are. А

What is the drive mechanism of the Drinkard Q

**Reservoir?** 

Again, it's a solution gas drive reservoir. Α

Now, what will be the source of your water --

ରୁ The water source will be that water produced in

Α

conjunction with the oil production on the V. M. Henderson Lease, which produces from the Blinebry-Paddock, Penrose-Skelly and Drinkard Formations.

What is the ownership status as far as the Q underlying lease?

They are all identical. A

Is this fee, State or Federal, do you know? Q

This is Federal. А

You have an exhibit marked Exhibit No. 2, which Q is your performance curve and production history for this

lease?

Yes; this again shows the production peramiters A for the Drinkard formation underneath the V. M. Henderson It shows it producing approximately three and a half Lease. barrels of oil per day per well with a gas-oil ratio of approximately 9,000 to 1 and approximately 10 barrels of water There are five current producing wells on the Lease. per day.

Now, what volumes of water will you be injecting, Q

did you testify to that?

No, sir; we will be injecting approximately 250 А barrels of water per day.

Will this rate go up, in your opinion? Q

Yes, sir. Α

Q What would be the maximum you would anticipate you would be injecting?

A I would anticipate not more than 350 to 375 barrels of water per day.

Q Then if you were to get response, you would probably be looking at other injection wells?

A Yes, with response we would probably enter into cooperative flooding with other offset operators because we would be approaching, right now, as you can notice on Exhibit No. 1, this well is not offset, directly offset by any other operator. Any other well that would be converted would be offset by another operator whereby causing it, or requiring that we enter a cooperative agreement or unitization, one or the other.

Q What injection pressures do you anticipate?

A We initially expect approximately two to three hundred pounds and a rapid increase to a thousand to 1100 pounds.

Q Referring to Exhibit 3, your sketch of the proposed injection well, would you explain that to the Examiner?

A Exhibit No. 3 shows the well which is a triple tubingless completion with one string of production, 2 and 3/8ths production casing set at 5329, the other two strings of 2 and 3/8ths-inch casing set at 6744. The surface casing is 11 and 3/4-inch set at 329 feet and cement circulated.

The intermediate string is 8 and 5/8ths, cemented with 1750 sacks, the top of the cement is unknown. This volume of cement calculates enough to circulate. As stated previously, all three zones are currently producing. We will run a string of one-inch internally plastic-coated tubing in the Drinkard string and set it at approximately 6600 feet which is some 18 feet above the perforated interval, and load the back side

with kerosine.

Do you feel that this will protect against migration? Q

Yes, sir, I do. А

Is there any fresh water in the area? Q

Yes; again the Ogalala is water bearing.

Do you feel that the proposed installation will Α protect the other oil producing zones and any fresh water? Yes, any leak that can be detected.

Now, do you have an estimate as to the potential А Q

recovery, of the secondary recovery? No, sir, I don't believe I could accurately estimate

any additional recovery from the injection. The recoveries on this portion of the lease have been very low; in fact, the cumulative recovery from Well No. 8 is only 11000 barrels of oil, so we could probably expect a fairly rapid fill-up and response, if it is going to occur, fairly soon due to the

low volumes that have been recovered.

Q In your opinion would injecting water into the Drinkard in this well have any adverse affect on any of the adjoining operators?

A No, sir, I do not.

Q This well will also serve the dual purpose of being a salt water disposal well?

Yes.

A

Q You also have a log on this well, right?

A Yes, sir.

Q Were Exhibits 1 through 4, No. 4 being the log, prepared by you or under your supervision?

A Yes, they were.

MR. KELLY: I move the introduction of Texaco's

Exhibits 1 through 4.

MR. NUTTER: Texaco's Exhibits 1 through 4 wills be admitted in evidence.

> (Whereupon, Texaco's Exhibits 1 through 4 offered and admitted in evidence.)

MR. KELLY: I have nothing further at this time, Mr. Examiner.

#### CROSS EXAMINATION

#### BY MR. NUTTER:

Q I missed your initial rate of water injection.

A 250 barrels of water per day.

Q And that is water that's produced from the Henderson -lease, only?

A Yes, sir, just from the Henderson lease.

Q It may be on here some place, but I can't find the top of the cement on these various strings of casing, Mr. McCarter.

A The top on the 11 and 3/4 surface casing is cement circulated.

Q Right.

A On the 8 and 5/8ths intermediate, we do not know what the top is, it was cemented with 1750 sacks of cement. The three strings of production casing were cemented with 1320 sacks and the top of the cement is fifteen bundred and --

Q So it's up in the intermediate?

A This is on Exhibit No. 3, the diagrammatic sketch, up in the left-hand corner.

O So the cement is up in the intermediate pipe then, on the small casing string?

A Yes, sir.

MR. NUTTER: Are there any other questions of Mr. McCarter? He may be excused.

(Witness excused.)

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

Kelly?

MR. KELLY: Nothing further.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3934? We will take the case under

advisement.

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# WÍTNESS

# DALE MCCARTER

Direct Examination by Mr. Kelly

Cross Examination by Mr. Nutter

| *<br>                   |        | OFFERED AND |
|-------------------------|--------|-------------|
| EXHIBITS                | MARKED | ADMITTED    |
| Applicant's 1 through 4 | 2      | 7           |

STATE CF NEW MEXICO ) ) ss COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceddings before the New Mexico Oil Conservation Commission was reported by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my hand this 26th day of November, 1968.

I do horeby ADMIDEARNLEY: a complete record of the proc the Excalmor hearing bearâ by L n T. Readiser

New Mexico Oil Conservation Complexion

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# OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

November 21, 1968

Mr. Booker Kelly White, Gilbert, Koch & Kelly Attorneys at Law Post Office Box 787 Santa Fe, New Mexico

#### Dear Sir:

Enclosed herewith is Commission Order No. R-3583, entered in Case No. 3934, approving the Texaco Drinkard Henderson Waterflood Project.

Injection is to be through the one authorized water injection well, which shall be equipped with a string of 1-inch internally plasticcoated tubing hung in the 2 3/8-inch casing to a depth of approximately 6600 feet. The casing-tubing annulus shall be loaded with kerosene.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 298 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district provation office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforemontioned Commission offices by letter of any change in the status of wells in the project area, i.e., when OIL CONSERVATION COMMISSION P. O. BOX 2088 SANTA FE, NEW MEXICO 87501

-2-Mr. Booker Kelly White, Gilbert, Koch & Kelly Attorneys at Law Post Office Box 787 Santa Fe, New Mexico

active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr. Secretary-Director

ALP/DSN/ir

Enclosure

CC1

Oil Conservation Commission Hobbs, New Mexico

Mr. D. E. Gray State Engineer Office Santa Fe, New Mexico

# BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

> CASE No. 3934 Order No. R-3583

APPLICATION OF TEXACO INC. FOR A WATERFLOOD PROJECT, LEA COUNTY, NEW MEXICO.

#### OPDER OF THE COMMISSION

#### BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on November 12, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this <u>21st</u> day of November, 1968, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

#### FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Texaco Inc., is the owner and operator of the V. M. Henderson Well No. 8, located in Unit E of Section 30, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That by Order No. R-2146, dated December 21, 1961, the subject well was authorized as a triple completion (tubingless) for the production of oil from the Penrose-Skelly, Paddock, and Drinkard Pools; that the Drinkard completion of the subject well has reached its economic limit of production.

(4) That the Penrose-Skelly perforations are at 3638 feet to 3790 feet, the Paddock perforations are at 5174 feet to 5184 feet, and the Drinkard perforations are at 6618 feet to 6730 feet.

(5) That the applicant now seeks authority to institute a pilot waterflood project in the Drinkard Pool by the injection

-2--CASE No. 3934 Order No. R--3583

of water into the Drinkard formation through the Drinkard string of said multiply completed well in the perforated interval from 6618 feet to 6730 feet.

(6) That the applicant would continue to produce the Penross-Skelly and Paddock zones of the subject well.

(7) That the mechanics of the proposed completion are feasible and in accord with good conservation practices.

(8) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells:

(9) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(10) That the subject application should be approved and the proposed waterflood project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

#### IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a pilot waterflood project in the Drinkard Pool by the injection of water into the Drinkard formation in the perforated interval from 6618 feet to 6730 feet through the Drinkard string of its multiply completed (tubingless) V. M. Henderson Well No. 8, located in Unit E of Section 30, Township 21 Fouth, Range 37 East, NMPM, Lea County, New Mexico.

(2) That the subject waterflood project is hereby designated the Texaco Drinkard Henderson Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

-3-CASE No. 3934 Order No. R-3583

esr/

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO OLL GONSERVATION COMMISSION an  $C^{(1)}$ Ð DAVID F. CARGO, Chairman B. HAYS, Member GUYTON

A. L. PORTER, Jr., Member & Secretary

ROUGH DRAFT FOR WATERFLOOD LETTERS Mr. Booker Kelly White, Gilbert, Koch & Kelly Attorneys at Law Post Office Box 787 Santa Fe, New Mexico

Dear Sir:

Enclored here Gommission Order No. R-3583, entered in Case No. Hendler 3934 Teraco Drinkard approving the

Waterflood Project Institution 1 hich shall 2 au 0 ene.

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Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr. Secretary-Director

cc: OCC: Hobbs X Artesia Aztec

> Mr.-Frank Lrby, State Engineer Office, Santa Fe, New Mexico Mr. D. E. Gray

CV2E NO 366 WO 366 W NCHSEIWW VILLES **BEFORE EXAMINER** ייק TEXACO Inc. Helle Bistriet PERFORMANCE CURTES V.M. HENDERSON LEASE DRINGLED FOOL LEA COUNTY, NEW MEXICO 5 (x) ( ( y ( y), initial walle milial walle milial walle 350-375 may 3.5 BERD LOUL



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DOMESTIC PRODUCING DEPARTMENT MIDLAND DIVISION TEXACO INC. P. O. BOX 3109 MIDLAND, TEXAS 79701

October 11, 1968

HEARING REQUEST DRINKARD OIL POOL LEA COUNTY, NEW MEXICO Par 3934

Oil Conservation Commission P. O. Box 2088 Santa Fe, New Mexico

Gentlemen:

It is respectfully requested that an Examiner Hearing be scheduled in Santa Fe, New Mexico to consider the application of Texaco Inc. for an order permitting waterflood operations on Texaco's V. M. Henderson Lease in the Drinkard Pool, Lea County, New Mexico. Authority will be requested to permit the conversion of Texaco's V. M. Henderson Well No. 8 from production to water injection service. The well is located in Unit E, Section 30, T-21-S, R-37-E, Lea County, New Mexico. It is planned to inject water down 1.315" OD internally plastic coated tubing with a packer set at approximately 6600' into the perforated interval at a depth of 6618' to 6730' in the Drinkard reservoir.

The injection fluid will be the salt water produced in conjunction with production from the Penrose Skelly, Eumont gas, Paddock and Drinkard Pools on the V. M. Henderson Lease. It is estimated that the initial injection rate will be approximately 250 bpd at a pressure of approximately 1000 psi. The project area is comprised of the NW/4 of Section 230 which includes the proration unit of the proposed Injection well and the offsetting units.

In compliance with Statewide Rule 701 we forward attached to this application a plat of the project area, a log of the proposed injection well, a diagrammatic sketch of the

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Date 11-1-68

# 011 Conservation Commission

subsurface installation in the proposed injection well and a list of the six offset operators. A copy of this letter requesting a hearing is being forwarded to each of the six offset operators as listed below. Yours very truly,

-2-

C. L. Whigham

Division Proration Engineer

CLW-MM Attach.

OCC, Box 1980, Hobbs, New Mexico Gulf Oil Corp., P. O. Box 1150, Midland, Texas 79701 Pan American Petroleum Corp., P. O. Box 1540, Midland, Texas 79701 Mobil Oil Corp., P. O. Box 633, Midland, Texas 79701 Sinclair Oil & Gas Co., P. O. Box 1470, Midland, Texas 79701 J. W. Peery, P. O. Box 401, Midland, Texas 79701 J. H. Moore, et al, 314 Gulf Building, Midland, Texas 79701 cc:

# OFFSET OPERATORS

TEXACO Inc. V. M. HENDERSON LEASE LEA COUNTY, NEW MEXICO

Gulf Oil Corporation P. O. Box 1150 Midland, Texas 79701

Zins

Pan American Petroleum Corp P. O. Box 1540 Midland, Texas 79701

Mobil Oil Company P. O. Box 633 Midland, Texas 79701

Sinclair Oil & Gas Company P. O. Box 1470 Midland, Texas 79701

J. W. Peery P. O. Box 401 Midland, Texas 79701

J. H. Moore, et al 314 Guif Building Midland, Texas 79701





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DRAFT GMH/esr 11-18-68

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BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO FOR THE PURPOSE OF CONSIDERING:

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APPLICATION OF TEXACO INC. FOR A WATERFLOOD PROJECT, LEA COUNTY, NEW MEXICO.

Order No. R-3583

CASE No. 3934

#### ORDER OF THE COMMISSION

#### BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on <u>November 12</u>, 196<u>8</u>, at Santa Fe, New Mexico, before Examiner <u>Daniel S. Nutter</u>.

NOW, on this <u>day of November</u>, 196<u>8</u>, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

#### FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Texaco Inc., is the owner and operator of the V. M. Henderson Well No. 8, located in Unit E of Section 30, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That by Order No. R-2146, dated December 21, 1961, the subject well was authorized as a triple completion (tubingless) for the production of oil from the Penrose-Skelly, Paddock, and Drinkard Pools; that the Drinkard completion of the subject well has reached its economic limit of production.

(4) That the Penrose-Skelly perforations are at 3638 feet to 3790 feet, the Paddock perforations are at 5174 feet to 5184 feet, and the Drinkard perforations are at 6618 feet to 6730 feet. CASE No. 3934

-2-

(5) That the applicant now seeks authority to institute a pilot waterflood project in the Drinkard Pool by the injection of water into the Drinkard formation through the Drinkard string of said multiple completed well in the perforated interval from 6618 feet to 6730 feet.

(6) That the applicant would continue to produce the Penrose-Skelly and Paddock zones of the subject well.

(7) That the mechanics of the proposed completion are feasible and in accord with good conservation practices.

(8) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(9) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

(10) That the subject application should be approved and the proposed waterflood project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

## IT IS THEREFORE ORDERED:

(1) That the applicant, Texaco Inc., is hereby authorized to institute a pilot waterflood project in the Drinkard Pool by the injection of water into the Drinkard formation in the perforated interval from 6618 feet to 6730 feet through the Drinkard string of its multiply completed (tubingless) V. M. Henderson Well No. 8, located in Unit E of Section 30, Township 21 South, Range 37 East, NMPM, Lea County, New Mexico.
(3)2) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in
(2) Tayloo Diversional Hereinsen

-3-CASE No. 3934

accordance with Rules 704 and 1120 of the Commission Rules and

Regulations.

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(4) -(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.