

CASE 3904: Appli. of CONTINENTAL
for a waterflood project, Lea
County, New Mexico.

Case Number

3904

Application
Transcripts.

Small Exhibits

E T C.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
1120 SIMAS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
October 23, 1968

EXAMINER HEARING

IN THE MATTER OF:)

Application of Continental)
Oil Company for a waterflood)
project, Lea County, New Mexico.)

Case No. 3904

BEFORE: Daniel Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Case Number 3904.

MR. HATCH: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico.

(Whereupon Applicant's Exhibits Number 1 through 7 were marked for identification)

MR. KELLAHIN: If Examiner please, Jason Kellahin appearing for the applicant. This is our witness, Mr. V. T. Lyon. May the record show he has been sworn.

(Witness sworn)

MR. NUTTER: He is under oath.

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Mr. Lyon, are you familiar with the application of Continental Oil Company in the Case Number 3904?

A Yes, sir, I am.

Q Would you state what is proposed in this application?

A Case 3904 is the application of Continental Oil Company for authority to install a pilot waterflood in the North Mason-Delaware Pool by injecting water into its Thompson Federal 19, Well Number 2,

which is located nineteen hundred and eighty feet from the north line, nineteen hundred eighty feet from the west line of Section 19, Township 26 South, Range 32 East, Lea County, New Mexico.

Q Referring to what has been marked as Exhibit number 1, would you identify that exhibit?

A Exhibit number 1 is a copy of ownership plat showing the location of the well -- which is circled in red -- and located as I just described and the lease which is outlined in red. I believe that basic lease also includes section 18. But for designation purposes we refer to it as Thompson Federal 19 and this involves the north half of section 19 as shown on this exhibit.

Q Now, does the exhibit also show all of the producing wells within a radius of two miles?

A Yes, it does.

Q And the formation?

A The formation from which they produce and the ownership of those wells.

Q Now referring to what has been marked as exhibit number 2 and 3, would you describe those exhibits?

A Exhibit numbers 2 -- well, exhibit number 2 is the form C 108 showing the pertinent data on this well. Exhibit number 3 is a schematic diagram showing essentially the same information, but the subject well, Thompson Federal 19, number 2, is located in Unit F in Section 19, Township 26 South, Range 32 East.

It has eight and five eighths inch casing, set at 1,014 feet, cemented with 350 sacks of cement, which was circulated to the surface. Five and a half inch casing was set at 4,320, with 350 sacks of cement. The top of the cement indicated by the temperature log was 3,080 feet. We propose to inject, through cement or plastic coated tubing, two and three eighths inch in size at approximately 4,250 feet, where it will be tied into a packer at that depth. We propose to inject in the Delaware sand through perforations, 4,303 to 4,307 feet.

Q Now, as I understand, you will use a lined tubing. Is that correct?

A Yes, sir.

Q And will the casing tubing annulus be filled with inert fluid?

A Yes. Right.

Q Will you install a pressure gauge at the surface?

A Yes, sir.

Q Now, referring to what has been marked as Exhibit Number 4, would you identify that exhibit?

A Exhibit Number 4 is a copy of a portion of the radioactivity log run on the Thompson Federal 19, Number 2. It shows the Delaware lime or the El Mar at 4,251. The top of the Delaware sand at 4,290. It shows the perforation 4,303 to 4,307.

Q Would you give a brief history of the North Mason Pool?

A The North Mason Pool was discovered on September 18, 1954, when the Ibex Company completed the Hanson Federal Number 1, located 330 feet from the south and west lines of Section 25, Township 26 South, Range 31 East, Eddy County, New Mexico. The discovery well flowed 34 barrels of oil per day on the initial potential from an open hole completion interval 4,140 to 4,147. This was after a 500 gallon sand fracture treatment. Since discovery, 40 producing wells and one dry hole have been completed

in the New Mexico portion of the Pool. The Pool extends on down into Texas. Development drilling was essentially completed during 1956, with only three wells being completed after that time. Most of the wells were completed open hole and fractured treatment with approximately 3,000 gallons of lease crude and sand.

Q What is the current average daily production for the Pool at the present time?

A During July, 1968, the Pool averaged 228 barrels per day of oil, 215 barrels of water, 726 MC of gas per day. The average gas rate is 3.190 cubic feet per barrel. The oil production average is 5.4 barrels per day per well.

Q Do these producing rates indicate that the reservoir is essentially completed?

A Yes, they do.

Q Now what was the cumulative production from the Pool?

A As of August 1st, 1968, the Pool had produced slightly in excess of 2,600,000 barrels.

Q Now, what was the reservoir's drive mechanism on primary recovery?

A The reservoir's drive mechanism is solution gas.

Q Now referring to what has been marked Exhibit Number 5, would you identify that exhibit?

A Exhibit Number 5 is a structure map on the base of the Castillo Formation which is coincident with the top of the Delaware formation of El Mar lime with the countour interval of ten feet. It is obvious from the structure map that this is a stratographic trap type of reservoir. The production to the east is limited by a permeability pinch-out.

Q The structure would have little to do with oil production current?

A That is correct.

Q Do you have a definite oil-water contact in this area?

A No, we have not established a definite oil-water contact. The down structure wells northeast of the Inbe Pool were completed for a water cut of about 60%, while wells on the top of the structure were completed with a water cut of about 10%.

The productive limits of the reservoir to the northwest and southwest are fairly well defined by marginal wells or dry holes, into the south the reservoir course continues on into the State of Texas.

Q How about the development, then, to the northeast?

A Well, development to the northeast was discontinued because of the poor quality of the wells which were

drilled up there.

MR. NUTTER: You are referring to those two wells up there in Section 18?

THE WITNESS: In Section 18.

Q (By Mr. Kellahin) Well, the production limits of the reservoir to the northwest and southeast are fairly well defined, are they not?

A Yes, sir.

Q What is the pay sand in this reservoir?

A The pay sand is a Ramsey Member of the upper sand body in the Delaware series. It occurs at an average depth of about forty-one hundred fifty feet. It is part of the Bell Canyon Formation of the Delaware Mountain Group, Guadalupe Series and Upper Permian. The production is limited to an interval which occurs from five to thirty feet into the top of the horizon.

The Delaware sand is described as a light gray to gray-green, very fine green silt angular sand is found with varying amounts of silt and shale contamination. Bedding is usually massive with no evidence of fracture.

Q Now, Mr. Lyon, referring to what has been marked as Exhibit Number 6, would you identify that

exhibit?

A Exhibit Number 6 is a summary data sheet showing reservoir properties. The average porosity is indicated to be 24.7% silicone average air permeability 42.6%. The water saturation, 40%; initial oil saturation 60%, and estimated bottom hole pressure, reservoir pressure, eighteen hundred forty pounds per square inch.

We also show the reservoir fluid volume in acre feet, 13,800 acre feet.

Original stock tank oil in place 11,975,000 barrels. Cumulative recovery approximately 2,600,000 barrels, with an estimated remaining primary of 346,000.

We estimate secondary recovery volume based on 12,800 acre feet of volume, 1,792,000 barrels, secondary recovery.

Q In your opinion, is water flooding feasible in the North Mason Pool?

A Yes, sir. Based on the data which is available and from my knowledge of this data, it is my opinion that the North Mason Delaware can be economically flooded.

Q Would water flooding of the Pool result in

recovery of oil, which otherwise would not be recovered?

A Yes, it will.

Q Has Continental Oil Company made an engineering study of the feasibility of flooding in this reservoir?

A Yes, sir. We have conducted such a study. We have formed committees to unitize, and had actually scheduled a meeting of the engineering committee in order to begin our negotiations for unitization.

However, one of the operators had just completed some remedial work in his well, and increased his production rate so that the perimeters which we were considering were no longer applicable -- at least in some people's opinion -- so further negotiation is impossible until these things can be re-evaluated.

Q Do you anticipate that the area will be ultimately unitized?

A Yes, sir.

Q How much water do you anticipate will be injected in this particular project?

A At this time, we expect to inject between 150 and 250 barrels of water per day.

Q But, ultimately, you would anticipate that that volume would be increased if the flood is successful?

A Yes, sir. If the flood is expanded this would increase the water.

Q What is the source of the water to be injected in this waterflood project?

A We propose to inject produced water from our leases in this area and also water which is tendered to us by other operators in the Pool.

Q Do you have an analysis of this water?

A Yes, sir. Exhibit Number 7 is a copy of an analysis which was performed on a sample obtained from our Thompson Federal 19 battery.

Q Now, do you anticipate that this water will be compatible to the formation water?

A Yes, it certainly should be. It's the same water.

Q What waterflood allowable would you anticipate for this project?

A Well, we have two Federal leases involved here and I am not certain which way the Commission will interpret this. If you include both leases in

the project area, the North Mason Pool has a normal unit allowable of 37 barrels per day, which with three direct and one diagonal offset wells to the injection well would create a five well project area.

This would give an allowable of 185 barrels per day. Based on a 42 barrel allowable available under Rule 701, the project allowable would be 210 barrels, 126 barrels to the Thompson and 84 barrels to the Russell lease, which is the south half of Section 19.

Q You have two leases involved then?

A Yes, sir.

Q And they are not -- have not yet been unitized?

A No, they have not been unitized. They are both operated by Continental Oil Company. They are both Federal leases.

Q What is the present status of your injection well, Mr. Lyon?

A I am not sure.

Q You are not sure whether it is presently producing or not?

A It is my understanding that it is producing, but I don't have the rate.

Q In your opinion, will the granting of this application result in the protection of correlative rights and the prevention of waste?

A Yes, it will.

Q Will it also be helpful in disposing of produced water underground?

A Yes. The injection of water will be taking place at least a year in advance of what we would have proposed if Order Number R3221 had not been entered.

Q But, it is a waterflood project and not a salt water disposal project?

A Well, at this time it is really both. But, we do feel that we are gathering valuable information on the waterflood feasibility in that there is a reasonable likelihood that we will stimulate production.

Q Were exhibits 1 through 7 prepared by you or under your supervision?

A Yes, they were.

MR. KELLAHIN: At this time, I offer in evidence Exhibits 1 through 7.

MR. NUTTER: Continental's Exhibits 1 through 7 will be admitted in evidence.

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

MR. KELLAHIN: That is all I have on direct examination.

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

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Lyon, you mentioned that these are two separate leases. Is there a diversity of ownership between the two leases, any overrides or anything?

A I believe that there is a 3% override on each of them. And I think these overrides are diverse.

Q One is Thompson and one is Russell, I guess.

A I think that's right.

Q We will probably have to confine the project to the Thompson Federal 19 Lease.

A I don't think this will be a large penalty, at least --

Q At least for the time being.

A -- for the time being.

MR. NUTTER: Any other questions of Mr. Lyon? You may be excused.

(Whereupon, the witness was excused.)

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

MR. KELLAHIN: That is all, Mr. Nutter.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3904? Take the case under advisement and call Case Number 3905.

I N D E X

WITNESS:

V. T. LYON

PAGE

Direct Examination by Mr. Kellahim

2

Cross Examination by Mr. Nutter

14

E X H I B I T

Applicant's Exhibits 1 through 7 marked
for identification

2

C E R T I F I C A T E

I, BRENDA BURKS, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission, was reported by me and contains a true and correct record of said Hearing, to the best of my knowledge, skill and ability.

WITNESS MY HAND THIS 18th day of November, 1968.

Brenda Burks
Court Reporter

I do hereby certify that the foregoing is a complete record of the proceedings of the Examinor hearing of case No. 3904 heard by me on 10/23/68.
[Signature]
New Mexico Oil Conservation Commission

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

November 5, 1968

C
Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

O
Dear Sir:

Reference is made to Commission Order No. R-3541, recently entered in Case No. 3904, approving the Continental North Mason Thompson Waterflood Project.

P
Initial injection is to be through the one authorized water injection well which shall be equipped with plastic or cement-lined tubing set in a packer at approximately 4250 feet. The casing-tubing annulus shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge to facilitate detection of leakage in the casing, tubing, or packer.

Y
As to allowable, our calculations indicate that when the authorized injection well has 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 128 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 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

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

-2-

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Santa Fe, New Mexico

C 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.

O 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

P
Y
ALP/DSN/ir

cc: Oil Conservation Commission
Hobbs, New Mexico

U. S. Geological Survey
Hobbs, New Mexico

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

sent

ROUGH DRAFT FOR WATERFLOOD LETTERS

Mr. Jason Kellahin
Kellahin & Fox
Attorneys at Law
Post Office Box 1769
Santa Fe, New Mexico

Dear Sir:

Reference made to Commission Order No. R-3541, ^{recently} entered in Case No. 3904, approving the Continental North Mason Thompson Waterflood Project.

Initial injection is to be through the one authorized water injection well which shall be equipped with plastic or cement lined tubing set in a packer at approximately 1250 feet. The casing-tubing annulus shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge to facilitate detection of leakage in the casing, tubing, or packer.
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 128 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

¹²⁸
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
USGS

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

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. 3904
Order No. R-3541

APPLICATION OF CONTINENTAL OIL
COMPANY FOR A WATERFLOOD PROJECT,
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 31st day of October, 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, Continental Oil Company, seeks
permission to institute a pilot waterflood project in the North
Mason-Delaware Pool by the injection of water into the Delaware
formation through its Thompson Federal 19 Well No. 2, located in
Unit F of Section 19, Township 26 South, Range 32 East, NMPM,
Lea County, New Mexico.

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

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

-2-

CASE No. 3904
Order No. R-3541

(5) That the subject application should be approved and the 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, Continental Oil Company, is hereby authorized to institute a pilot waterflood project in the North Mason-Delaware Pool by the injection of water into the Delaware formation through its Thompson Federal 19 Well No. 2, located in Unit F of Section 19, Township 26 South, Range 32 East, NMPM, Lea County, New Mexico.

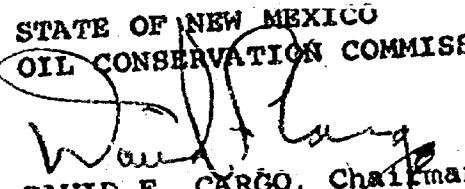
(2) That the subject pilot waterflood project is hereby designated the Continental North Mason Thompson Waterflood Project and shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the pilot 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.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


DAVID F. CARGO, Chairman


GUYTON B. HAYS, Member


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


esr/

Docket No. 31-68

DOCKET: EXAMINER HEARING - WEDNESDAY - OCTOBER 23, 1968

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

The following cases will be heard before Daniel S. Nutter, Examiner, or
Elvis A. Utz, Alternate Examiner:

CASE 3894: Application of Signal Oil and Gas Company for a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a non-standard oil proration unit comprising the W/2 NE/4 and the N/2 SE/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico, said unit to be dedicated to its State AP Well No. 1 located 1980 feet from the South line and 660 feet from the East line of said Section 17.

CASE 3895: Application of Sun Oil Company for a pressure maintenance project, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in its New Mexico State "H" Lease by the injection of water into the San Andres formation through its New Mexico State "H" Well No. 13 located in the SE/4 of Section 16, Township 8 South, Range 30 East, Cato-San Andres Pool, Chaves County, New Mexico. Applicant further seeks the promulgation of special rules to govern operation of said pressure maintenance project.

CASE 3887: (Continued from the October 9, 1968, Examiner Hearing)

Application of Kersey & Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Premier sand of Grayburg formation through two wells to be located in Units E and K of Section 12, Township 18 South, Range 23 East, Artesia Pool, Eddy County, New Mexico. Applicant further proposes to produce oil from the Upper Grayburg through parallel strings of tubing, if said zones are productive in the subject wells.

CASE 3896: Application of Kersey & Hanson, Yates Drilling Company, and John H. Trigg for several waterflood projects, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute several cooperative waterflood projects by the injection of water into the Queen and Grayburg formations through four injection wells located in Sections 21

CASE 3896 continued

and 28, Township 18 South, Range 29 East, Turkey
Track Queen-Grayburg Pool, Eddy County, New Mexico.

CASE 3897:

Application of Kersey-Wittkopp and E. A. Hanson for two
waterflood projects, Eddy County, New Mexico. Applicants,
in the above-styled cause, seek authority to institute two
cooperative waterflood projects by the injection of water
into the Queen formation through two injection wells loca-
ted in the NW/4 SE/4 and the SW/4 SE/4 of Section 6, Town-
ship 19 South, Range 31 East, Shugart Pool, Eddy County,
New Mexico.

CASE 3898:

Application of Tenneco Oil Company for salt water disposal,
Lea County, New Mexico. Applicant, in the above-styled
cause, seeks authority to dispose of produced salt water
into the Queen formation in the open-hole interval from
approximately 3258 feet to 3341 feet in its Ginsberg-Federal
Well No. 6 located in Unit E of Section 31, Township 25
South, Range 38 East, Langlie-Mattix Field, Lea County, New
Mexico.

CASE 3899:

Application of Cities Service Oil Company for salt water
disposal, Lea County, New Mexico. Applicant, in the above-
styled cause, seeks authority to dispose of produced salt
water into the San Andres formation in the interval from
approximately 4087 feet to 4176 feet in its State AD Well
No. 8 located in Unit J of Section 22, Township 10 South,
Range 32 East, Mescalero-San Andres Pool, Lea County, New
Mexico.

CASE 3900:

Application of Continental Oil Company for downhole commin-
gling, Lea County, New Mexico. Applicant, in the above-
styled cause, seeks authority to commingle production from
the Vacuum Wolfcamp Pool and the North Vacuum Abo Pool in
the well-bore of its State H-35 Well No. 7 located 660 feet
from the North line and 1780 feet from the East line of
Section 35, Township 17 South, Range 34 East, Lea County,
New Mexico.

CASE 3901:

Application of Continental Oil Company for salt water dis-
posal, Lea County, New Mexico. Applicant, in the above-
styled cause, seeks authority to dispose of produced salt
water into the Yates-Seven Rivers formations in the perforated
interval from approximately 3330 feet to 3552 feet in its
Lynn A-28 Well No. 6 located in Unit H of Section 28, Township

(CASE 3901 continued)

23 South, Range 36 East, Jalmat Pool, Lea County, New Mexico.

CASE 3902: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Queen formation through its Stevens "B" Well No. 8 located in Unit A of Section 12, Township 23 South, Range 36 East, Langlie-Mattix Pool, Lea County, New Mexico.

CASE 3903: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Delaware formation in the perforated intervals from approximately 4675 feet to 4765 feet in its Payne Well No. 11 and from 4666 feet to 4740 feet in its Payne Well No. 12 located 660 feet from the South line and 1650 feet from the West line of Section 30, 1935 feet from the North line and 2090 feet from the West line of Section 31, respectively, Township 26 South, Range 33 East, El Mar-Delaware Pool, Lea County, New Mexico.

CASE 3904: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Delaware formation through its Thompson Federal 19 Well No. 2 located in Unit F of Section 19, Township 26 South, Range 32 East, North Mason-Delaware Pool, Lea County, New Mexico.

CASE 3905: Application of Texas Pacific Oil Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation in the open-hole interval from approximately 12,269 feet to 12,541 feet in its State "O" Well No. 1 located in Unit J of Section 15, Township 10 South, Range 36 East, South Crossroads-Devonian Pool, Lea County, New Mexico.

- CASE 3906:** Application of Skelly Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Queen formation through its Mattix "A" Well No. 4 located in Unit K of Section 2, Township 24 South, Range 37 East, Langlie-Mattix Oil Pool, Lea County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 3907:** Application of Skelly Oil Company for a waterflood project, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the San Andres formation through its Hobbs "W" Well No. 9 located in Unit F of Section 29, Township 7 South, Range 34 East, Chaveroo-San Andres Pool, Roosevelt County, New Mexico. Applicant further seeks a procedure whereby said project may be expanded administratively without a showing of well response.
- CASE 3908:** Application of Pan American Petroleum Corporation for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the San Andres formation in the perforated interval from approximately 3932 feet to 4027 feet in its Miller Federal Well No. 4 located in Unit L of Section 35, Township 7 South, Range 31 East, Tom-Tom San Andres Pool, Chaves County, New Mexico.
- CASE 3909:** Application of Champlin Petroleum Company for salt water disposal, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into San Andres formation, Chaveroo-San Andres pool, Roosevelt County, New Mexico, through the following two wells located in Township 7 South, Range 33 East:
- Champlin Lauck-Federal Well No. 12,
Unit J of Section 29; Disposal Interval -
4202 feet to 4404 feet;
- Champlin State 32-7-33 Well No. 5, Unit J
of Section 32; Disposal Interval - 4303
feet to 4425 feet.

CASE 3910:

Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SW/4 of Section 17, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico. Said acreage to be dedicated to a well located in the NE/4 SW/4 of said Section 17.

CASE 3911:

Application of Atlantic Richfield Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the SE/4 of Section 8, Township 10 South, Range 34 East, Vada-Pennsylvanian Pool, Lea County, New Mexico. Said acreage to be dedicated to a well located in the NW/4 SE/4 of said Section 8. In the alternative applicant seeks approval of a non-standard oil proration unit comprising the E/2 SE/4 of said Section 8 and the W/2 SW/4 of Section 9, said Township and Range, said unit to be dedicated to a well to be drilled in the NE/4 SE/4 of said Section 8.

CASE 3882:

(Continued from the October 9, 1968, Examiner Hearing) Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Teague Blinbry Pool, Lea County, New Mexico.

CASE 3883:

(Continued from the October 9, 1968, Examiner Hearing) Application of Solar Oil Company for a special gas-oil ratio limitation, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 506 of the Commission Rules and Regulations to provide for a limiting gas-oil ratio of 6,000 cubic feet of gas per barrel of oil in the Imperial Tubb-Drinkard Pool, Lea County, New Mexico.

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Continental Oil Company		ADDRESS Box 460 Hobbs, New Mexico	
LEASE NAME Thompson Federal 19	WELL NO. 2	FIELD North Mason	COUNTY Lea
LOCATION UNIT LETTER F ; WELL IS LOCATED 1980 FEET FROM THE North LINE AND 1980 FEET FROM THE West LINE, SECTION 19 TOWNSHIP 26 RANGE 32 NMPM.			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	8 5/8"	1014	350
INTERMEDIATE			
LONG STRING	5 1/2	4320	350
TUBING	2 3/8	Approx 4250'	Baker Tension Model AD or equivalent at 4250'
NAME OF PROPOSED INJECTION FORMATION Delaware Sand		TOP OF FORMATION 4290	BOTTOM OF FORMATION 5400
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? tubing		PERFORATIONS OR OPEN HOLES? perforations	PROPOSED INTERVAL(S) OF INJECTION 4303-4307
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? producing oil well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? yes
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH 4302-4306, 4312-4313, 4315-4316, squeezed with 105 sks, cement.			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA Est. 300'	DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA none	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA none	
ANTICIPATED DAILY INJECTION VOLUME (BBLS.) 150	MINIMUM 250	MAXIMUM closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? pressure
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE yes		WATER TO BE DISPOSED OF yes	NATURAL WATER IN DISPOSAL ZONE yes
APPROX. PRESSURE (PSI) 1000			
ARE WATER ANALYSES ATTACHED? no			
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) USA Lessee: M. R. & Ellen Kate Madera, Box 94, Orla, Texas			
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Texaco, Inc. Box 728, Hobbs, New Mexico			
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>BEFORE EXAMINER NUTTER OIL CONSERVATION COMMISSION EXHIBIT NO. <u>2</u> CASE NO. <u>3904</u></p> </div>			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?	SURFACE OWNER no	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL no	THE NEW MEXICO STATE ENGINEER no
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)?	PLAT OF AREA yes	ELECTRICAL LOG no	DIAGRAMMATIC SKETCH OF WELL no

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

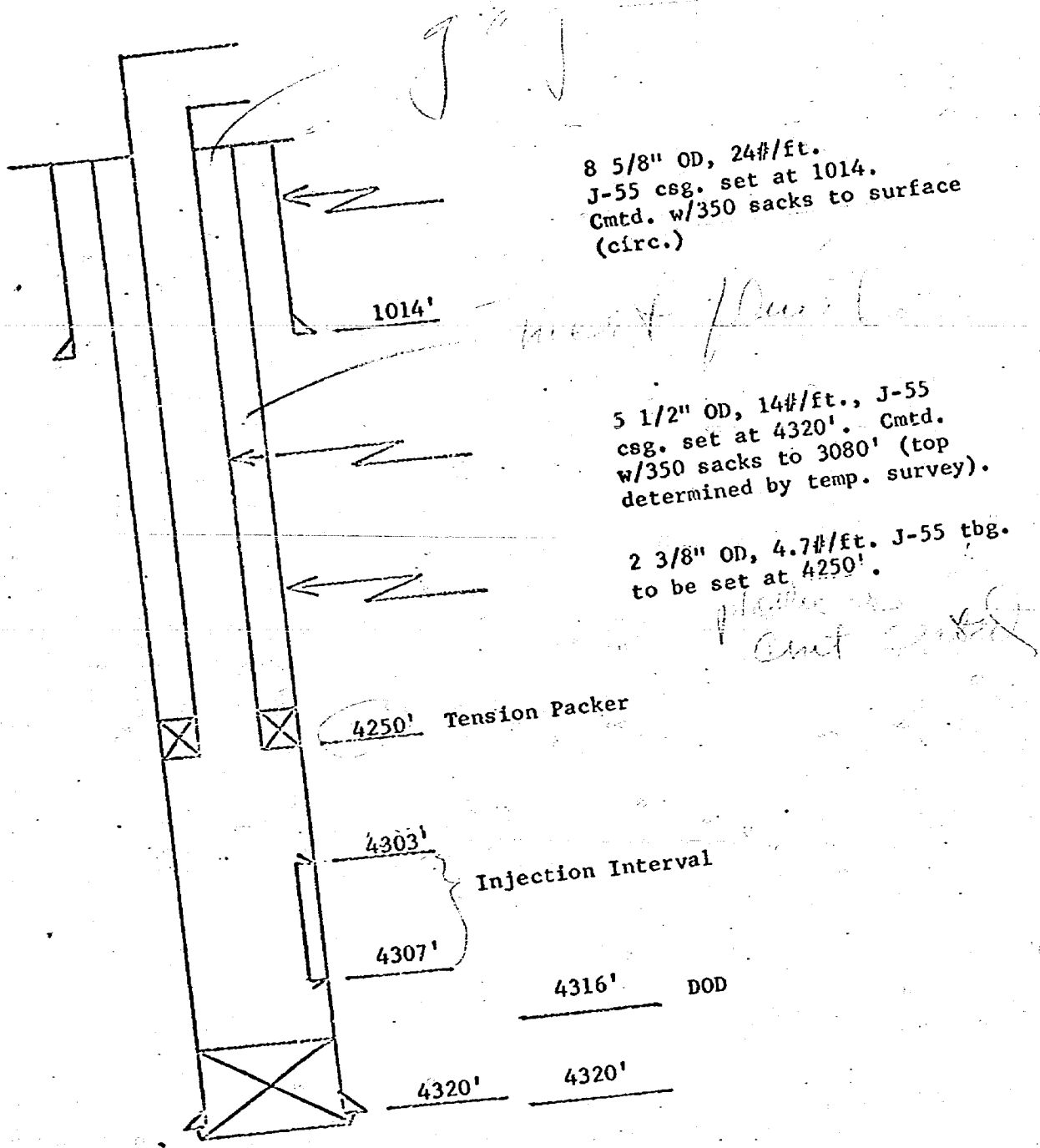

(Signature)

Asst. Division Manager
(Title)

September 26, 1968
(Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing.

Thompson 19 Federal No. 2
 1980' FNL & 1980' FWL, Sec. 19, T-26S; R-32E
 Lea County, New Mexico
 Elevation 3197' (10' above C.F.)



8 5/8" OD, 24#/ft.
 J-55 csg. set at 1014.
 Cmtd. w/350 sacks to surface
 (circ.)

5 1/2" OD, 14#/ft., J-55
 csg. set at 4320'. Cmtd.
 w/350 sacks to 3080' (top
 determined by temp. survey).

2 3/8" OD, 4.7#/ft. J-55 tbg.
 to be set at 4250'.

4250' Tension Packer

4303' Injection Interval
 4307'

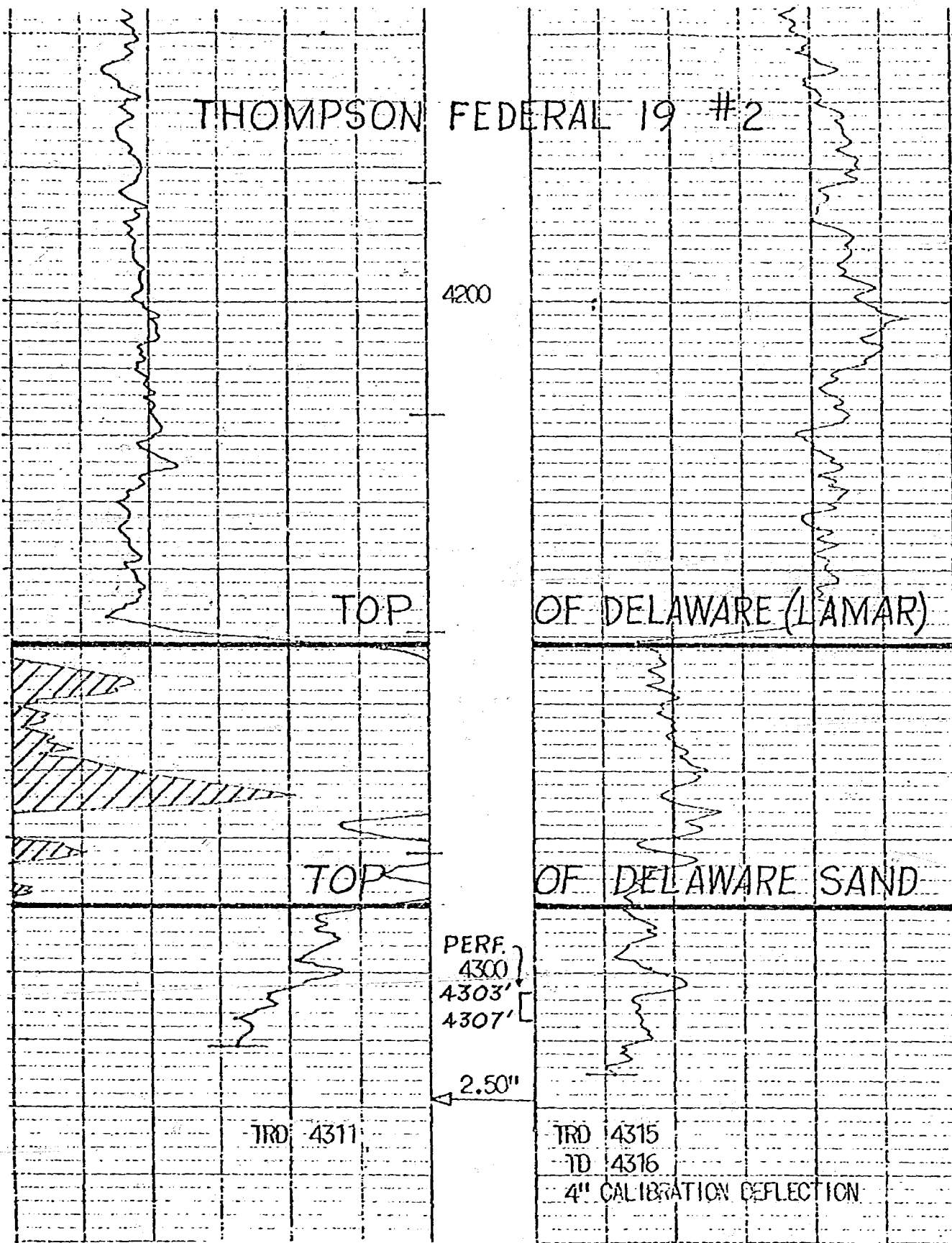
4316' DOD

4320' 4320'

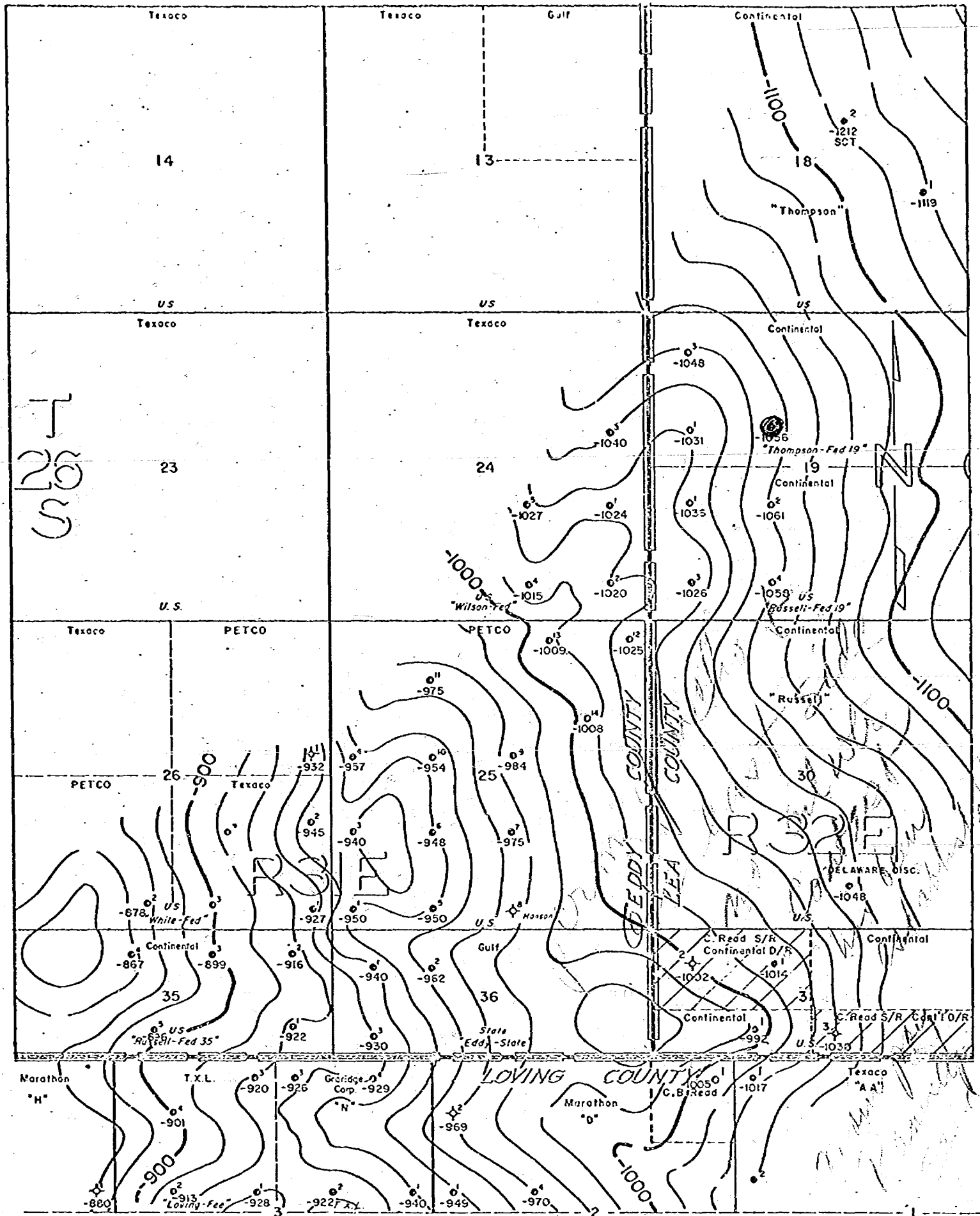
Perf. 4302-06' w/6 bpf.
 4312-13' w/4 bpf.
 Sq. w/70 sacks
 Perf. 4302-06' w/4 bpf.
 4315-16' w/4 bpf.
 Sq. w/35 sacks
 Drigd. out to 4316'
 Perf. 4303-07 w/4 bpf.

BEFORE EXAMINER NUTTER
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 3
 CASE NO. 3904

EXHIBIT NO. 3



BEFORE EXAMINER NUTTER
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 4
 CASE NO. 3904



BEFORE EXAMINER NUTTER
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 5
 CASE NO. 3904

CONTINENTAL OIL COMPANY
 PRODUCTION DEPARTMENT—HOBBS DISTRICT

NORTH MASON DELAWARE POOL
 EDDY & LEA COUNTIES, NEW MEXICO
 STRUCTURE-BASE OF CASTILE
 Contour Interval: 10'

SCALE
 0 1000 2000

SUMMARY DATA SHEET
NORTH MASON POOL
EDDY & LEA COUNTIES, NEW MEXICO

Reservoir Rock Properties

Average Porosity
Average Air Permeability
Initial Water Saturation
Initial Oil Saturation
Estimated Original Reservoir Pressure

24.7%
42.6 md
40.0%
60.0%
1840 psi

Reservoir Fluid Properties

Estimated Bubble Point Pressure
Initial Formation Volume Factor
Initial Solution Gas-Oil Ratio
Initial Oil Viscosity
API Gravity, Degrees

1840 psi
1.33
690 cf/Bbl.
0.7 cp
42

Primary Recovery

Primary Reservoir Volume, acre-feet
Original Stock Tank Oil in Place
Cumulative Primary Recovery 8-1-68
Remaining Primary Reserve 8-1-68
Estimated Ultimate Recovery

13,800
11,975,000 bbls.
2,600,000 bbls.
346,000 bbls.
2,946,000 bbls.

approx 25%

12,800
1,792,000 bbls.

Secondary Recovery

Secondary Reservoir Volume, acre-feet
Estimated Ultimate Secondary Recovery

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 6
CASE NO. 3904

EXHIBIT NO. 6



CONTINENTAL OIL COMPANY

Case 3904

P. O. Box 460
Hobbs, New Mexico
September 27, 1968

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

Attention of Mr. A. L. Porter, Jr.
Secretary-Director

Re: Application to Install a
Pilot Waterflood Project
in the North Mason-Dela-
ware Pool, Lea County,
New Mexico

Gentlemen:

Forwarded herewith in triplicate is completed Form C-108 requesting authority to install a pilot water flood project in the North Mason Delaware Pool by injecting into its Thompson Federal 19 No. 2.

Please set this matter for hearing on your October 23, 1968 Examiner docket.

Yours very truly,

VTL-JS
CC: RLA JJB JWK

DOCKET MAILED

Date 10-11-68


P I O N E E R I N G I N P E T R O L E U M P R O G R E S S S I N C E 1 8 7 5

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Continental Oil Company		ADDRESS Box 460 Hobbs, New Mexico	
LEASE NAME Thompson Federal 19	WELL NO. 2	FIELD North Mason	COUNTY Lea
LOCATION UNIT LETTER <u>F</u> ; WELL IS LOCATED <u>1980</u> FEET FROM THE <u>North</u> LINE AND <u>1980</u> FEET FROM THE <u>West</u> LINE, SECTION <u>19</u> TOWNSHIP <u>26</u> RANGE <u>32</u> NMPM.			

CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8 5/8"	1014	350	surface	Circ.
INTERMEDIATE					
LONG STRING	5 1/2	4321	350	3080	Temp. log
TUBING	2 3/8	Approx 4250'	NAME, MODEL AND DEPTH OF TUBING PACKER Baker Tension Model AD or equivalent at 4250		
NAME OF PROPOSED INJECTION FORMATION Delaware Sand			TOP OF FORMATION 4290	BOTTOM OF FORMATION 5400	
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? tubing		PERFORATIONS OR OPEN HOLE? perforations	PROPOSED INTERVAL(S) OF INJECTION 4303-4307		
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? producing oil well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? yes		
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH 4302-4306, 4312-4313, 4315-4316, squeezed with 105 sks, cement.					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA Est. 300'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA none		DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA none	
ANTICIPATED DAILY INJECTION VOLUME (BBLs.)	MINIMUM 150	MAXIMUM 250	OPEN OR CLOSED TYPE SYSTEM closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? pressure	APPROX. PRESSURE (PSI) 1000
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE -			WATER TO BE DISPOSED OF yes	NATURAL WATER IN DISPOSAL ZONE yes	ARE WATER ANALYSES ATTACHED? no
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) USA Lessee: M. R. & Ellen Kate Madera, Box 94, Orla, Texas					
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL Texaco, Inc. Box 728, Hobbs, New Mexico					
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?		SURFACE OWNER no	EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL no	THE NEW MEXICO STATE ENGINEER no	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		PLAT OF AREA yes	ELECTRICAL LOG no	DIAGRAMMATIC SKETCH OF WELL no	

I hereby certify that the information above is true and complete to the best of my knowledge and belief.


(Signature)

Asst. Division Manager
(Title)

September 26, 1968
(Date)

NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well. not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

Case 3904

DRAFT

GMH/esr

KMA ⁽¹⁾

Spec ltr

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:

ADP

John

CASE No. 3904

Order No. R-354

10-28-68

APPLICATION OF CONTINENTAL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23, 1968,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 20th day of October, 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, Continental Oil Company,
pilot
seeks permission to institute a/waterflood project in the _____
North Mason-
~~Unit Area~~ Delaware Pool by
the injection of water into the Delaware formation
its Thompson Federal 19 Well No. 2, located in Unit F of Sec-
tion 19, Township 26 ~~North~~ South, Range 32 ~~West~~ East, NMPM,
Lea County, New Mexico.

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

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

(5) That the subject application should be approved and the 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, Continental Oil Company,
 is hereby authorized to institute a ^{pilot} a/waterflood project in the
~~Unit Area~~ North Mason- ~~Delaware~~ Pool
 by the injection of water into the Delaware formation
~~through the following described wells in Township~~
~~North, South, Range~~ ~~West, East, NMPM~~
~~County, New Mexico~~
 through its Thompson Federal 19 Well No. 2, located in Unit F of
 Section 19, Township 26 South, Range 32 East, NMPM, Lea County,
 New Mexico.

(2) That the subject ^{pilot} a/waterflood project is hereby designated
 the Continental North Mason Thompson 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 ^{pilot} a/waterflood project
 herein authorized shall be submitted to the Commission in accor-
 dance with Rules 704 and 1120 of the Commission Rules and Regula-
 tions.

(4) 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.