

CASE 3069: Appli. of CONTINENTAL
for a pressure maintenance project
and a dual completion.

CASE No.

3069

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

Docket No. 16-64

DOCKET: EXAMINER HEARING - WEDNESDAY - JUNE 10, 1964

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 3063: Application of R. C. Davoust Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Turkey Track Section 3 Unit Area comprising 480 acres of State land in Section 3, Township 19 South, Range 29 East, Eddy County, New Mexico.
- CASE 3064: Application of R. C. Davoust Company for a waterflood expansion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the expansion of the Turkey Track Queen Waterflood Project in Section 34, Township 18 South, Range 29 East and Section 3, Township 19 South, Range 29 East, Turkey Track Field, Eddy County, New Mexico, to include the Grayburg formation.
- CASE 3065: Application of Gulf Oil Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the approval of the West Pearl Queen Unit Area comprising 2520 acres, more or less, of State, Fee and Federal lands in Township 19 South, Range 35 East, Lea County, New Mexico.
- CASE 3066: 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 Pearl Queen Pool by the injection of water into the Queen formation through 30 wells in Sections 28, 29, 30, 31, 32, and 33, Township 19 South, Range 35 East, Lea County, New Mexico.
- CASE 3067: Application of Texaco Inc., for the creation of a new oil pool and for special temporary pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Pennsylvanian production for its Navajo Tribal AL Well No. 1 located in Unit H of Section 28, Township 26 North, Range 18 West, San Juan County, New Mexico, and for the establishment of temporary pool rules including a provision for 80-acre spacing and a GOR limitation of 4000 to 1.
- CASE 3068: Application of Amerada Petroleum Corporation for a salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the interval from 9005 to 9033 feet, Pennsylvanian formation, through its L. H. Chambers Well No. 2 located in Unit C of Section 11, Township 12 South, Range 33 East, Bagley Field, Lea County, New Mexico.
- CASE 3069: Application of Continental Oil Company for a pressure maintenance project and a dual completion, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project in the Pennsylvanian "CD" formation underlying its Rattlesnake lease in Sections 1, 2, 11, and 12, Township 29 North, Range 19 West, Rattlesnake Pennsylvanian "CD" Pool, San Juan County, New Mexico.

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June 10 Examiner Hearing - Docket No. 16-64

Initial injection to be through two wells located in Units B and H of Section 11, one of which, No. 146 in Unit B, would be dually completed for water injection through tubing and Pennsylvanian "B" Gas Pool production through the casing tubing annulus. Applicant further seeks the promulgation of special rules for the operation of said project.

CASE 3038: Application of Kennedy Oil Company for a waterflood buffer zone and capacity allowables, Eddy County, New Mexico, or a determination that an offset well is producing primary oil. Applicant, in the above-styled cause, seeks the designation of the N/2 SW/4 of Section 20, Township 16 South, Range 31 East, Square Lake Pool, Eddy County, New Mexico, as a buffer zone adjacent to a waterflood project operated in the S/2 SW/4 of said Section 20 by Newmont Oil Company and the assignment of capacity allowables to applicant's Rowley Federal Wells Nos. 1 and 2 located in Units K and L, respectively, of said Section 20. In the alternative, applicant seeks a determination that the Newmont well located in Unit N and applicant's wells in Units K and L of Section 20 are producing primary oil and are not affected by the Newmont waterflood. Upon such determination, applicant seeks the assignment of normal primary allowables to the wells located in Units K, L and N of Section 20.

DRAFT

JMD/esr

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. 3069

Order No. R- 2730

APPLICATION OF CONTINENTAL OIL
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT AND A DUAL COMPLETION, SAN
JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
June 10, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter,
~~Examiner duly appointed by the Oil Conservation Commission of New~~
~~Mexico, hereinafter referred to as the "Commission," in accordance~~
~~with Rule 1214 of the Commission Rules and Regulations.~~

NOW, on this day of June, 1964, the Commission,
a quorum being present, having considered the ~~application~~ testimony,
the record, ~~evidence adduced~~, 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
authority to dually complete its Rattlesnake Well
No. 146, located in Unit B of Section 11, Township 29 North, Range

19 West, NMPM, San Juan County, New Mexico, to produce gas from the

Rattlesnake
Pennsylvanian "B" Gas Pool through the casing-tubing annulus and
to inject water into the Rattlesnake Pennsylvanian "CD" ^{oil pool} through

2 7/8-inch tubing, with separation of zones by a packer at
approximately 6500 feet.

(3) That the applicant also seeks authority to institute
a pressure maintenance project in the Rattlesnake Pennsylvanian "CD" ^{oil pool} formation.

underlying its Rattlesnake Lease in Sections 1, 2, 11, and 12, Township 29 North, Range 19 West, NMPM, Rattlesnake-Pennsylvanian "CD" Pool, San Juan County, New Mexico, with initial injection through two wells located in Units B and H of Section 11.

(4) That the applicant also seeks the promulgation of special rules and regulations governing the proposed project.

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

(6) That approval of the proposed dual completion and pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(7) That ~~the proposed~~ special rules and regulations should be adopted ^{to govern the proposed project} in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to dually complete its Rattlesnake Well No. 146, located in Unit B of Section 11, Township 29 North, Range 19 West, NMPM, San Juan County, New Mexico, to produce gas from Rattlesnake the Pennsylvanian "B" Gas Pool through the casing-tubing annulus and to inject water into the Rattlesnake Pennsylvanian "CD" Pool through 2 7/8-inch tubing, with separation of zones by a packer at approximately 6500 feet.

PROVIDED HOWEVER, that the applicant shall complete, operate and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer leakage tests upon completion and annually thereafter during the shut-in test period for the Rattlesnake Pennsylvanian "B" Gas Pool.

(2) That the applicant is hereby authorized to institute a pressure maintenance project designated the Rattlesnake CD Pressure Maintenance Project in the Pennsylvanian "CD" formation underlying its Rattlesnake Lease in Sections 1, 2, 11, and 12, Township 29 North, Range 19 West, NMPM, Rattlesnake-Pennsylvanian "CD" Pool, San Juan County, New Mexico, with initial injection through two wells located in Units B and H of Section 11.

(3) That Special Rules and Regulations for the Rattlesnake CD Pressure Maintenance Project, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
Rattlesnake CD PRESSURE MAINTENANCE PROJECT

RULE 1. The project area of the Rattlesnake CD Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the following-described area:

SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 29 NORTH, RANGE 19 WEST, NMPM

Section 1: $W\frac{1}{2}SW\frac{1}{4}$
Section 2: $E\frac{1}{2}$ and $E\frac{1}{2}W\frac{1}{2}$
Section 11: $NE\frac{1}{4}$
Section 12: $NW\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, and
 $NW\frac{1}{4}SE\frac{1}{4}$

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CASE No. 3036

Order No. R-2700

(4) That the proposed pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(5) That the proposed special rules and regulations should be adopted in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Curtis J. Little, is hereby authorized to institute a pressure maintenance project designated the Many Rocks-Gallup Pressure Maintenance Project No. 4 in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation initially through three wells in Units D and O of Section 27 and Unit I of Section 28, Township 32 North, Range 17 West, NMPM, San Juan County, New Mexico.

(2) That special rules and regulations governing the Many Rocks-Gallup Pressure Maintenance Project No. 4, San Juan County, New Mexico, are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE

MANY ROCKS-GALLUP PRESSURE MAINTENANCE PROJECT NO. 4

RULE 1. The project area of the Many Rocks-Gallup Pressure Maintenance Project No. 4, hereinafter referred to as the Project, shall comprise the following-described area:

SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 32 NORTH, RANGE 17 WEST, NMPM
Section 27: W/2 and SE/4
Section 28: E/2 E/2

✓ RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

✓ RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio, pressure regulation, control of pattern or sweep

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. 3036
Order No. R-2700

APPLICATION OF CURTIS J. LITTLE
FOR A PRESSURE MAINTENANCE PROJ-
ECT, SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 29, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of May, 1964, 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, Curtis J. Little, seeks authority to institute a pressure maintenance project in the Many Rocks-Gallup Oil Pool, San Juan County, New Mexico, by the injection of water into the Gallup formation underlying his Navajo Indian Lease in Sections 21, 22, 27, and 28, Township 32 North, Range 17 West, NMPM, San Juan County, New Mexico, with initial injection through three wells in Units D and O of Section 27 and Unit I of Section 28.

(3) That the applicant seeks the promulgation of special rules and regulations governing the proposed project similar to the special rules and regulations governing previous Many Rocks-Gallup Pressure Maintenance Projects.

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Order No. R-2700

efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on a ~~80~~-acre proration unit shall be top unit allowable for the pool.

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3 shall be determined by a 24-hour test at a stabilized rate of production which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Rule 502 I (a) of the General Rules and Regulations and any limiting gas-oil ratio for the pool shall be waived during such tests. The project operator shall notify the Commission and all offset operators in writing of the exact time and date such tests are to be conducted. The Commission and representatives of the offset operators may witness the tests.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less. Each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool, except that any well or wells within the project area producing with a gas-oil ratio in excess of 2,000 cubic feet of gas per barrel of oil may be produced on a "net" gas-oil ratio basis, which net gas-oil ratio shall be determined by applying credit for daily average gas injected, if any, into the pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = \frac{TUA \times F_a \times 2,000}{\frac{P_g - I_g}{P_o}}$$

where:

- A_{adj} = the well's daily adjusted allowable
 TUA = top unit allowable for the pool
 F_a = the well's acreage factor
 P_g = average daily volume of gas produced by the well during the preceding month, cubic feet
 I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet
 P_o = average daily volume of oil produced by the well during the preceding month, barrels

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$, to be less than 2,000 cubic feet of gas per barrel of oil produced.

RULE 8. Credit for daily average net water injected into the pool through any injection well located within the project area may be converted to its gas equivalent and applied to any well producing with a gas-oil ratio in excess of two thousand cubic feet of gas per barrel of oil. Total credit for net water injected in the project area shall be the gas equivalent volume of the daily average net water injected during a one-month period. The daily average gas equivalent of net water injected shall be computed in accordance with the following formula:

$$E_g = (V_{w \text{ inj}} - V_{w \text{ prod}}) \times 5.61 \times \frac{P_a}{15.025} \times \frac{520^0}{T_r} \times \frac{1}{Z}$$

where:

- E_g = Average daily gas equivalent of net water injected, cubic feet
 $V_{w \text{ inj}}$ = Average daily volume of water injected, barrels

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$V_w \text{ prod}$ = Average daily volume of water produced, barrels

5.61 = Cubic foot equivalent of one barrel of water

P_a = Average reservoir pressure at mid-point of the pay-zones of the pool in the project area, psig + 12.01, as determined from most recent survey

15.025 = Pressure base, psi

520° = Temperature base of 60°F expressed as absolute temperature

T_r = Reservoir temperature of 92°F expressed as absolute temperature (552°R)

Z = Compressibility factor from analysis of gas from the pool at average reservoir pressure, P_a , interpolated from compressibility tabulation below:

Reservoir Pressure	Z	Reservoir Pressure	Z	Reservoir Pressure	Z
50	.9725	300	.8325	550	.6560
100	.9465	350	.8030	600	.6135
150	.9215	400	.7710	650	.5655
200	.8885	450	.7220	700	.5220
250	.8600	500	.6900	750	.4630
				800	.3935

RULE 9. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 10. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for

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CASE No. 3036

Order No. R-2700

each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion.

RULE 10 The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall be filed in accordance with Commission Rule 701-B and shall be accompanied by a statement that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 15 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators and from the State Engineer.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(5) 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

JACK M. CAMPBELL, Chairman

E. S. WALKER, Member

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

S E A L

esr/



Chal 3069
MAIN OFFICE OCC

1964 MAY 5 AM 6:51

*1st Et. Hearing
in June*
CONTINENTAL OIL COMPANY

LEGAL DEPARTMENT

A. T. SMITH
GENERAL ATTORNEY
C. R. HAYSTON
F. E. R. [unclear]
W. M. [unclear]
G. H. M. [unclear]
C. R. ROBERTS
J. D. TRESNER
ATTORNEYS

1755 GLENARM PLACE
DENVER 2, COLORADO
May 1, 1964

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Gentlemen:

Enclosed is an application for a
water injection pressure maintenance program
in the Rattlesnake field, San Juan County,
New Mexico.

Please inform me when this has been
set down for hearing.

Very truly yours,

William M. Griffith
William M. Griffith

WMG:pk
Encls. 3 cys.



OFFICE 000

1964 MAY 13 AM 10:21

STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

May 12, 1964

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Continental Oil Company dated March 10, 1964 to obtain authority for pressure maintenance of the Pennsylvanian "CD" oil pool, Rattlesnake Field, San Juan County, New Mexico. Two wells are involved in this application which are Nos. 140 and 146 which Continental proposes to convert to injection wells. The application says nothing about the injection equipment in Well 140, but does say that injection will be through tubing in Well 146.

This office offers no objection to the granting of this application provided injection is through tubing under a packer set below the top of the cement surrounding the casing.

Yours truly,

S. E. Reynolds
State Engineer

By:

Frank E. Irby
Frank E. Irby
Chief
Water Rights Division

FEI/ma
cc-Continental Oil Co.



MAIN OFFICE OCC

1964 MAY 11 11:17
CONTINENTAL OIL COMPANY

LEGAL DEPARTMENT

A. T. SMITH
GENERAL ATTORNEY
C. R. HAMPTON
F. E. RADLOFF
W. M. GRIFFITH
G. H. MAYBERRY
C. R. ROBERTS
J. D. TRESNER
ATTORNEYS

1755 GLENARM PLACE
DENVER 2, COLORADO
May 4, 1964

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

ATTENTION Dan Nutter

Re: Rattlesnake Field
San Juan County
New Mexico

Gentlemen:

Pursuant to our telephone conversation
I would like to confirm that I have a conflicting
deposition scheduled for May 27, which was the time
you indicated the next hearing would be. I would
appreciate it if you would set down for hearing
the above matter for the first hearing in June.

Very truly yours,

William M. Griffith
William M. Griffith

WMG:pk

DOCKET MAILED

Date 6-1-64
DL

PIONEERING IN PETROLEUM PROGRESS

SINCE 1875

State of New Mexico
Oil Conservation Commission



P. O. BOX 871
SANTA FE

June 19, 1964

Re: Case No. 3069
Order No. R-2730
Applicant:
Continental Oil Company

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,
A. L. Porter, Jr.

15/

Hobbs OCC X

Artesia OCC_____

Artec OCC **X**

MR. WILLIAM M. GRIFFITH

OTHER

**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. 3069
Order No. R-2730

**APPLICATION OF CONTINENTAL OIL
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT AND A DUAL COMPLETION, SAN
JUAN COUNTY, NEW MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on June 10, 1964, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 19th day of June, 1964, 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 authority to dually complete its Rattlesnake Well No. 146, located in Unit B of Section 11, Township 29 North, Range 19 West, NMPM, San Juan County, New Mexico, to produce gas from the Rattlesnake-Pennsylvanian "B" Gas Pool through the casing-tubing annulus and to inject water into the Rattlesnake-Pennsylvanian "CD" Oil Pool through 2 7/8-inch tubing, with separation of zones by a packer at approximately 6500 feet.

(3) That the applicant also seeks authority to institute a pressure maintenance project in the Pennsylvanian "CD" formation underlying its Rattlesnake Lease in Sections 1, 2, 11, and 12, Township 29 North, Range 19 West, NMPM, Rattlesnake-Pennsylvanian "CD" Pool, San Juan County, New Mexico, with initial injection through two wells located in Units B and H of Section 11.

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(4) That the applicant also seeks the promulgation of special rules and regulations governing the proposed project.

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

(6) That approval of the proposed dual completion and pressure maintenance project is in the interest of conservation and should result in greater ultimate recovery of oil, thereby preventing waste.

(7) That special rules and regulations should be adopted to govern the proposed project in order to prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to dually complete its Rattlesnake Well No. 146, located in Unit B of Section 11, Township 29 North, Range 19 West, NMPM, San Juan County, New Mexico, to produce gas from the Rattlesnake-Pennsylvanian "B" Gas Pool through the casing-tubing annulus and to inject water into the Rattlesnake-Pennsylvanian "CD" Oil Pool through 2 7/8-inch tubing, with separation of zones by a packer at approximately 6500 feet;

PROVIDED HOWEVER, that the applicant shall complete, operate, and produce said well in accordance with the provisions of Rule 112-A of the Commission Rules and Regulations insofar as said rule is not inconsistent with this order;

PROVIDED FURTHER, that the applicant shall take packer-leakage tests upon completion and annually thereafter during the shut-in test period for the Rattlesnake-Pennsylvanian "B" Gas Pool.

(2) That the applicant is hereby authorized to institute a pressure maintenance project designated the Rattlesnake CD Pressure Maintenance Project in the Pennsylvanian "CD" formation underlying its Rattlesnake Lease in Sections 1, 2, 11, and 12, Township 29 North, Range 19 West, NMPM, Rattlesnake-Pennsylvanian "CD" Pool, San Juan County, New Mexico, with initial injection through two wells located in Units B and H of Section 11.

(3) That Special Rules and Regulations for the Rattlesnake CD Pressure Maintenance Project, San Juan County, New Mexico, are hereby promulgated as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
RATTLESNAKE CD PRESSURE MAINTENANCE PROJECT**

RULE 1. The project area of the Rattlesnake CD Pressure Maintenance Project, hereinafter referred to as the Project, shall comprise the following-described area:

**SAN JUAN COUNTY, NEW MEXICO
TOWNSHIP 29 NORTH, RANGE 19 WEST, NMPM**

Section 1: W/2 SW/4
Section 2: E/2 and E/2 W/2
Section 11: NE/4
Section 12: NW/4, N/2 SW/4, and
NW/4 SE/4

RULE 2. The allowable for the Project shall be the sum of the allowables of the several wells within the project area, including those wells which are shut-in, curtailed, or used as injection wells. Allowables for all wells shall be determined in a manner hereinafter prescribed.

RULE 3. Allowables for injection wells may be transferred to producing wells within the project area, as may the allowables for producing wells which, in the interest of more efficient operation of the Project, are shut-in or curtailed because of high gas-oil ratio, pressure regulation, control of pattern or sweep efficiencies, or to observe changes in pressures or changes in characteristics of reservoir liquids or progress of sweep.

RULE 4. The allowable assigned to any well which is shut-in or which is curtailed in accordance with the provisions of Rule 3, which allowable is to be transferred to any well or wells in the project area for production, shall in no event be greater than its ability to produce during the test prescribed by Rule 6, below, or greater than the current top unit allowable for the pool during the month of transfer, whichever is less.

RULE 5. The allowable assigned to any injection well on an 80-acre proration unit shall be top unit allowable for the pool.

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Order No. 2730

RULE 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3 shall be determined by a 24-hour test at a stabilized rate of production which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Rule 502 I (a) of the General Rules and Regulations and any limiting gas-oil ratio for the pool shall be waived during such tests. The project operator shall notify the Commission and all offset operators in writing of the exact time and date such tests are to be conducted. The Commission and representatives of the offset operators may witness the tests.

RULE 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or to top unit allowable for the pool, whichever is less, and each producing well shall be subject to the limiting gas-oil ratio (2,000 to 1) for the pool.

RULE 8. Each month the project operator shall, within three days after the normal unit allowable for Northwest New Mexico has been established, submit to the Commission a Pressure Maintenance Project Operator's Report, on a form prescribed by the Commission, outlining thereon the data required, and requesting allowables for each of the several wells in the Project as well as the total Project allowable. The aforesaid Pressure Maintenance Project Operator's Report shall be filed in lieu of Form C-120 for the Project.

RULE 9. The Commission shall, upon review of the report and after any adjustments deemed necessary, calculate the allowable for each well in the Project for the next succeeding month in accordance with these rules. The sum of the allowables so calculated shall be assigned to the Project and may be produced from the wells in the Project in any proportion.

RULE 10. The conversion of producing wells to injection, the drilling of additional wells for injection, and expansion of the project area shall be accomplished only after approval of the same by the Secretary-Director of the Commission. To obtain such approval, the project operator shall file proper application with the Commission, which application, if it seeks authorization to convert additional wells to injection or to drill additional injection wells shall be filed in accordance with Commission

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CASE No. 3069
Order No. R-2730

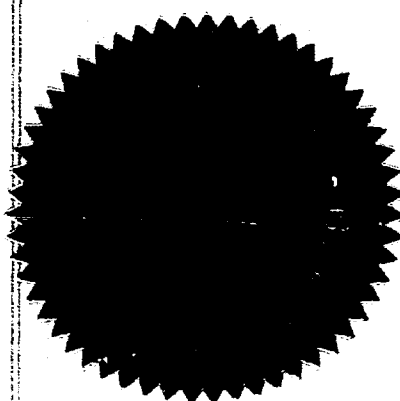
Rule 701-B and shall be accompanied by a statement that all offset operators to the proposed injection well have been furnished a complete copy of the application and the date of notification.

The Secretary-Director may approve the proposed injection well if, within 15 days after receiving the application, no objection to the proposal is received. The Secretary-Director may grant immediate approval, provided waivers of objection are received from all offset operators and from the State Engineer.

Expansion of the project area may be approved by the Secretary-Director of the Commission administratively when good cause is shown therefor.

(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

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. E. Walker
E. E. WALKER, Member

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

esr/



3067
MAIN OFFICE OCC

1964 MAY 15 AM 8:15

CONTINENTAL OIL COMPANY

P. O. Box 3312
Durango, Colorado
March 10, 1964

MAIN OFFICE OCC

1964 MAY 15 AM 8:22

New Mexico Oil Conservation Commission (3)
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Secretary-Director

Gentlemen:

Continental Oil Company herewith makes application for a hearing to obtain authority for pressure maintenance of the Pennsylvanian "CD" oil pool, Rattlesnake Field, San Juan County, New Mexico. The reservoir pressure will be maintained by injection of water. The water sources will be produced water from the Pennsylvanian "CD" zone and the DeChelly formation.

The feasibility of injecting water to maintain the reservoir pressure has been studied in detail and an engineering report recommending pressure maintenance has been approved by Continental Oil Company. The Pennsylvanian "CD" reservoir producing mechanism is a result of fluid expansion followed by solution gas and limited water drive. Performance has shown the reservoir to have finite boundaries. As a result, withdrawals have caused a steady decline in reservoir pressure. It will be in the best interest of conservation to arrest the pressure decline and conserve the reservoir energy.

It is proposed to convert Wells No. 140 and 146 to water injection. The injection rate will be about 3,000 barrels of water per day. The attached plat shows the location of the proposed injection wells. Well No. 140 is presently producing from the Pennsylvanian "CD" zone at a rate of 10 barrels of oil per day and 10 barrels of water per day. Well No. 146 is presently producing from the Pennsylvanian "B" gas zone with a retrievable bridge plug isolating the Pennsylvanian "CD" zone. This well will be dually completed for Pennsylvanian "CD" zone water injection down tubing and Pennsylvanian "B" zone gas production through the tubing-casing annulus. Attached is a log and diagrammatic sketch of the proposed injection wells.

MEMO
Page Two

Wells No. 100 and 145 will be converted to supply water from the DeChelly formation to supplement the 250 barrels per day of produced Pennsylvanian water. Well No. 100 is completed in the DeChelly formation as a water well and was previously used as a water supply well for the Dakota Waterflood in 1957 through 1960. Well No. 145 is presently a salt water disposal well in the Organ Rock formation. A total of 99,326 barrels of Pennsylvanian water has been injected into this well to February 1, 1964. This well will be converted from water disposal to water supply. Additional water supply will be obtained by perforating the DeChelly formation in this well.

Water compatibility is not expected to be a problem. Both the Pennsylvanian and DeChelly waters are salty. The Pennsylvanian produced water will be checked for compatibility with the DeChelly water.

We respectfully request an early hearing to present further testimony and secure approval for the pressure maintenance program as outlined herein.

Very truly yours,



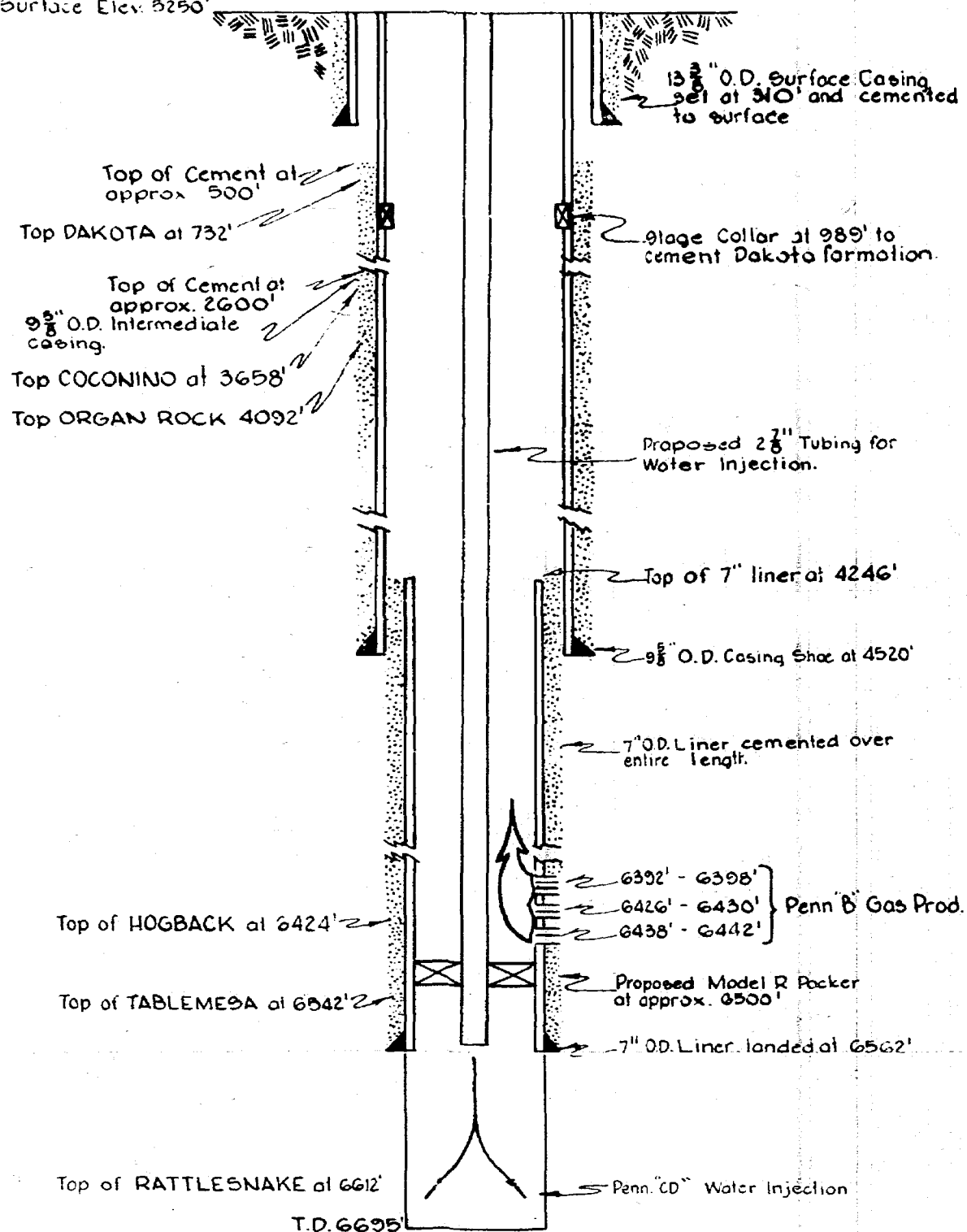
H. D. Haley
District Manager
Durango District
Production Department

ZJV/cb

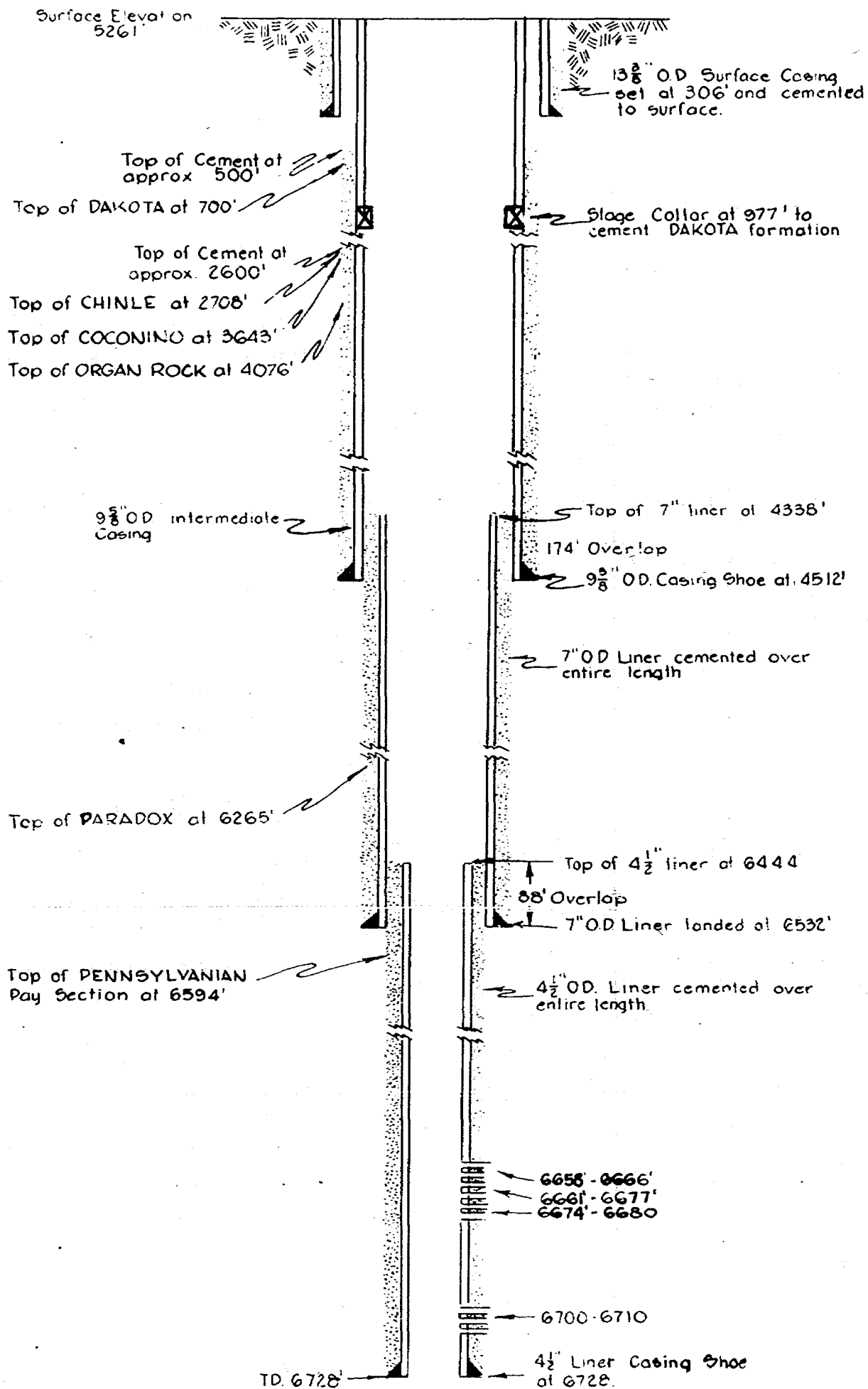
Attachments

cc: Mr. E. A. Austin, Continental Oil Company, Denver, Colorado
State Engineer's Office, P. O. Box 1079, Santa Fe, New Mexico
U. S. Bureau of Mines, P. O. Box 10095, Amarillo, Texas
U. S. Geological Survey, P. O. Box 959, Farmington, New Mexico
U. S. Geological Survey, P. O. Box 1857, Roswell, New Mexico
Navajo Tribal Council

Surface Elev. 5250'



CONTINENTAL OIL CO.
Proposed Dual Injection -
Production Completion
RATTLESNAKE WELL #146
NE-NW, Sec. 11 T29N R. 19W
San Juan Co., New Mexico
3-10-64 EVJ
Not to scale



CONTINENTAL OIL CO.
 Proposed Pennsylvanian "CD"
 Injection Well
 RATTLESNAKE WELL #140
 SE-NE, Sec 11, T29N, R19W
 San Juan Co., New Mexico

3-10-64 EJV

Not drawn to scale

3669



MAIN OFFICE OCC

1964 JUL 8 AM 7:46

CONTINENTAL OIL COMPANY

P. O. Box 3312
Durango, Colorado
July 6, 1964

New Mexico Oil Conservation Commission (2)
P. O. Box 2088
Santa Fe, New Mexico

Re: Case No. 3069
June 10, 1964
Docket No. 16-64

Gentlemen:

In the above case, Continental Oil Company testified that we would obtain compatibility studies of the two source waters for our Rattlesnake Pennsylvanian "CD" pressure maintenance program. Attached for your records are analyses of the Pennsylvanian "CD" zone produced water and the DeChelly water from Rattlesnake Well No. 100.

Also attached is the compatibility study conducted by Core Laboratories, Inc. showing good compatibility at atmospheric temperature and the reservoir temperature of 130° F. In regard to the laboratories' comment on sulfates in the DeChelly water, we do plan to inject in a closed system.

Very truly yours,

H. D. Haley
District Manager
Durango District
Production Department

EJV/ca

cc: NMOCC-Aztec
State Engineer's Office



MAIN OFFICE 001

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

1964 JUL 8 AM 7 45

File RP-3-WA-555

Company CONTINENTAL OIL CO. Well Name _____ Sample No. 1
Formation PENNSYLVANIAN "CD" RES Depth _____ Sampled From WATER DUMP AT TRATER
Location _____ Field RATTLESNAKE County SAN JUAN State NEW MEXICO
Date Sampled 6-12-64 Date Analyzed 6-15-64 Engineer HUFF

Total Dissolved Solids 54,226 mg/L CALC.

Sp. Gr. 1.033 @ 70 °F.

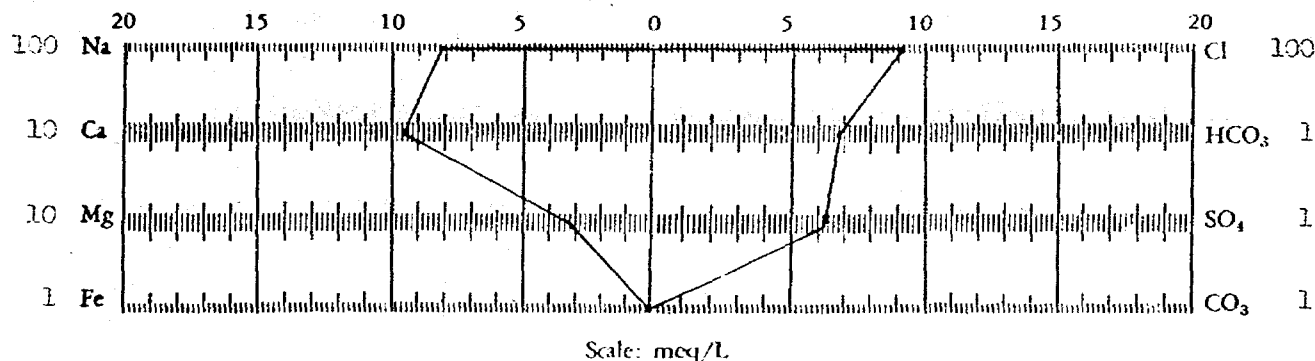
Resistivity .183 ohm-meters @ 82 °F. MEAS.

Hydrogen Sulfide ABSENT

pH 6.2

Constituents	meq/L	mg/L
Sodium	<u>806.2</u>	<u>18,512</u>
Calcium	<u>95.8</u>	<u>1,920</u>
Magnesium	<u>32.0</u>	<u>389</u>
Iron	<u>ABSENT</u>	
Barium		

Constituents	meq/L	mg/L
Chloride	<u>921.0</u>	<u>32,660</u>
Bicarbonate	<u>6.5</u>	<u>115</u>
Sulfate	<u>1.2</u>	<u>300</u>
Carbonate	<u>ABSENT</u>	
Hydroxide		



All analyses except iron determination performed on a filtered sample.



MAIN OFFICE OCC

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

1984 JUL 8 AM 7:46

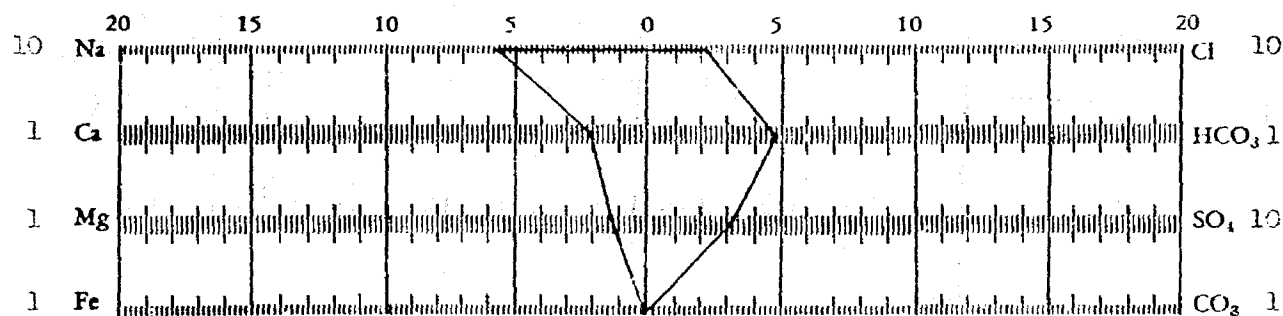
File R²-1-14-225

Company CONTINENTAL OIL CO. Well Name M. 100 Sample No. 2
Formation DE CHIELLY Depth _____ Sampled From PRODUCED WATER
Location _____ Field RATTLESHAKE County SAN JUAN State NEW MEXICO
Date Sampled 6-17-64 Date Analyzed 6-17-64 Engineer HUFN

Total Dissolved Solids 4,020 mg/L CALC.Sp. Gr. 1.000 @ 63 °F.Resistivity 1.60 ohm-meters @ 74 °F. ASAS.Hydrogen Sulfide ABSENTpH 7.4

Constituents	meq/L	mg/L
Sodium	<u>57.2</u>	<u>1,315</u>
Calcium	<u>2.0</u>	<u>40</u>
Magnesium	<u>1.2</u>	<u>24</u>
Iron	<u>ABSENT</u>	
Barium		

Constituents	meq/L	mg/L
Chloride	<u>20.0</u>	<u>781</u>
Bicarbonate	<u>1.9</u>	<u>293</u>
Sulfate	<u>31.2</u>	<u>1,500</u>
Carbonate	<u>2.4</u>	<u>72</u>
Hydroxide		



Scale: meq/L.

All analyses except iron determination performed on a filtered sample.

MAIN OFFICE OCC

1964 JUL

CONFIDENTIAL

555

A visual compatibility study was made on water samples from (Sample # 1) produced water, Pennsylvanian "CD" reservoir; and (Sample # 2) produced water, well # 100 De Chelly formation.

Combined at

Sample # 1

25 cc

25 cc

Results for approx. 30 hours.

clear, no visible reaction

Combined at

25 cc

25 cc

clear, no visible reaction

The sulfate in sample # 2 could create some problems; especially, in an open system.

/КОН

1/KOH
copy to a more
state level

MAIN OFFICE 000

1964 JUL 8 AM 7 46

P. O. Box 3312
Durango, Colorado
July 6, 1964

New Mexico Oil Conservation Commission (2)
P. O. Box 2086
Santa Fe, New Mexico

Re: Case No. 3069
June 10, 1964
Docket No. 16-64

Gentlemen:

In the above case, Continental Oil Company testified that we would obtain compatibility studies of the two source waters for our Rattlesnake Pennsylvanian "CD" pressure maintenance program. Attached for your records are analyses of the Pennsylvanian "CD" zone produced water and the DeChelly water from Rattlesnake Well No. 100.

Also attached is the compatibility study conducted by Core Laboratories, Inc. showing good compatibility at atmospheric temperature and the reservoir temperature of 130° F. In regard to the Laboratories' comment on sulfates in the DeChelly water, we do plan to inject in a closed system.

Very truly yours,

H. D. Heley
District Manager
Durango District
Production Department

LJV/ca

cc: NMOC-Aspen
State Engineer's Office

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
MAIN OFFICE 000

864 NI 7 46

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DURANGO PROD.	
JUN 24 1964	
OFFICE MS2	
SSV	Y/M
	2/10

File: RP-3-WA-555

A visual compatibility study was made on water samples from (Sample # 1) produced water, Pennsylvanian "CD" reservoir; and (Sample # 2) produced water, well # 100 De Chelly formation.

Combined at
Room Temperature

Sample # 1	Sample # 2	Results for approx. 30 hours.
25 cc	25 cc	clear, no visible reaction
75 cc	25 cc	slightly cloudy
25 cc	75 cc	clear, no visible reaction

Combined at
130 Degrees

25 cc	25 cc	clear, no visible reaction
75 cc	25 cc	clear, no visible reaction
25 cc	75 cc	clear, no visible reaction

The sulfate in sample # 2 could create some problems; especially, in an open system.

/KOH

*copy to NMOCC
state Engr.*

state Engr.



MAIN OFFICE OCC

CORE LABORATORIES, INC.

Petroleum Reservoir Engineering

DALLAS, TEXAS

WATER ANALYSIS

JUL 8 AM 7:46

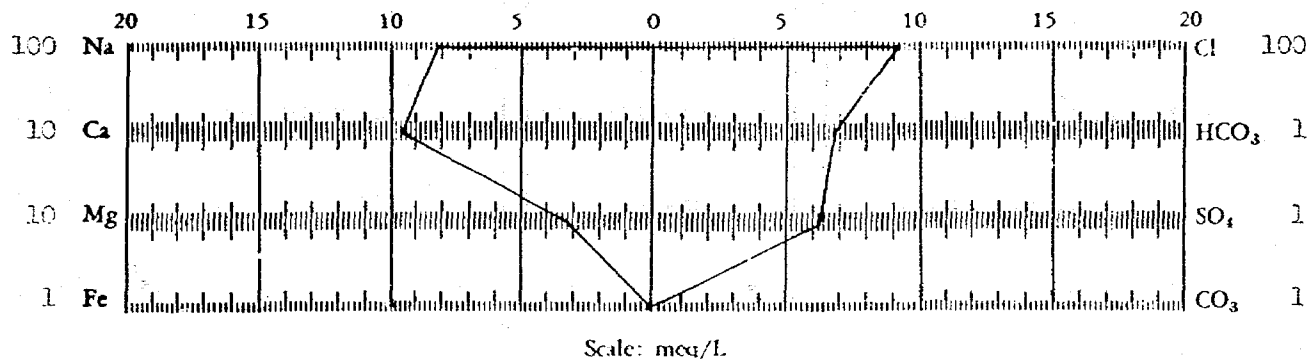
File CC-1-82-335

Company CONTINENTAL OIL CO. Well Name _____ Sample No. 1
Formation PENNSYLVANIAN "CD" RES Depth _____ Sampled From WATER DUMP AT TREATER
Location _____ Field RATTLESNAKE County SAN JUAN State NEW MEXICO
Date Sampled 6-12-64 Date Analyzed 6-18-64 Engineer HRFF

Total Dissolved Solids 51,226 mg/L CALC.Sp. Gr. 1.015 @ 70 °F.Resistivity .123 ohm-meters @ 82 °F. MEAS.Hydrogen Sulfide ABSENTpH 6.2

Constituents	meq/L	mg/L
Sodium	806.2	18,512
Calcium	95.8	1,920
Magnesium	32.0	389
Iron	ABSENT	
Barium		

Constituents	meq/L	mg/L
Chloride	921.2	32,600
Bicarbonate	6.0	115
Sulfate	7.2	300
Carbonate	ABSENT	
Hydroxide		



All analyses except iron determination performed on a filtered sample.



MAIN OFFICE OCC

CORE LABORATORIES, INC.
Petroleum Reservoir Engineering
DALLAS, TEXAS
WATER ANALYSIS

1964 JUL 8 AM 7:46

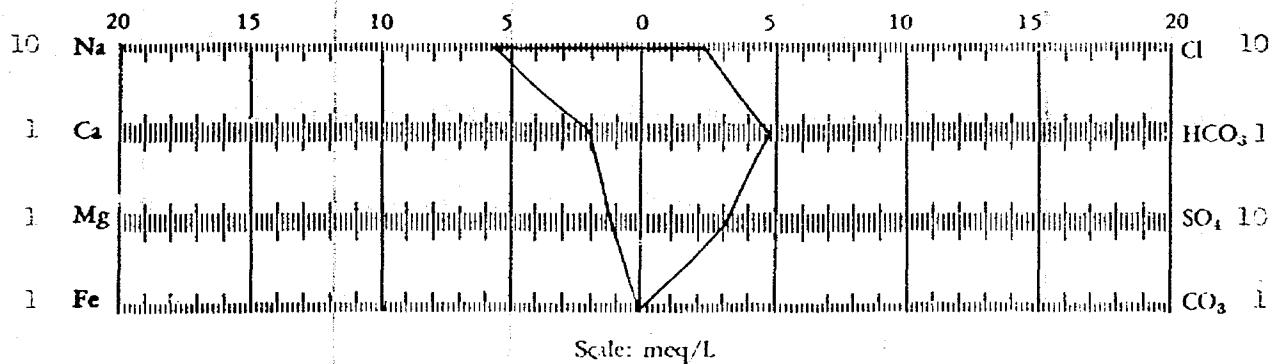
File RP-1-W-125

Company CONTINENTAL OIL CO. Well Name No. 100 Sample No. 2
Formation DE CHALLY Depth _____ Sampled From PRODUCED WATER
Location _____ Field BATTLESNAKE County SAN JUAN State NEW MEXICO
Date Sampled 6-12-64 Date Analyzed 6-12-64 Engineer HUFF

Total Dissolved Solids 4,020 mg/L CALC.Sp. Gr. 1.000 @ 63 °F.Resistivity 1.60 ohm-meters @ 74 °F. MEAS.Hydrogen Sulfide ABSENTpH 7.4

Constituents	meq/L	mg/L
Sodium	57.2	1,315
Calcium	2.0	10
Magnesium	1.2	12
Iron	ABSENT	
Barium		

Constituents	meq/L	mg/L
Chloride	20.0	761
Bicarbonate	1.9	293
Sulfate	31.2	1,500
Carbonate	2.4	72
Hydroxide		



All analyses except iron determination performed on a filtered sample

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

June 10, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Continental Oil Company
for a pressure maintenance project and a
dual completion, San Juan County, New Mexico

Case No. 3069

BEFORE:

Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case No. 3069.

MR. KELLAHIN: I am Jason Kellahin of Kellahin and Fox,
Santa Fe, New Mexico appearing in association with Mr. W. M.
Griffith, a member of the Colorado Bar who will present the case
on behalf of Amerada.

MR. GRIFFITH: I only have one witness, Mr. Nutter.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

SANBORN, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



Could I have him sworn at this time, please?

MR. DURRETT: Would you stand and be sworn, please?

(Witness sworn.)

* * *

FRED VAN MATRE, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. GRIFFITH:

Q Would you please state your full name, and you might spell it, and your address?

A Fred Van Matre, the last name is spelled V-a-n M-a-t-r-e. I live in Durango, Colorado.

Q By whom are you employed and in what capacity?

A I am employed by Continental Oil Company as a District Engineer in our district office, production office in Durango, Colorado.

Q Have you previously testified before the New Mexico Oil Conservation Commission as an expert witness in Petroleum Engineering?

A Yes, sir.

MR. GRIFFITH: Will the Commission accept the qualifications of Mr. Van Matre as an expert witness?

MR. NUTTER: Yes, sir, please proceed.

Q (By Mr. Griffith) Have you prepared an Exhibit showing



DEARNLEY-MEIER REPORTING SERVICE, Inc.
ALBUQUERQUE, N. M.
PHONE 243-6691

the Pennsylvanian CD Zone of the Rattlesnake Field?

A Yes, I have.

Q I have marked this Exhibit "Continental Oil Exhibit Number "A". Was this Exhibit prepared by you or under your supervision?

A Yes, it was.

Q Would you explain what Exhibit "A" shows?

A Exhibit "A" is a Lease Plat of the Rattlesnake Field. It shows oil wells that have penetrated the Pennsylvanian CD Zone. It also depicts the acreage ownership within a radius of two miles of the proposed injection wells Number 140 and 146 shown on this Lease Plat in the hashed area of, for instance, like in Section 1 and 6 and 31 and 36, depicts Continental's original Lease, and on the west side of this Plat, for instance, Section 11 extending into Section 2 on down into Section 14 depicts what we call tract 16 and 17 that was acreage that was recently acquired by Continental.

Q Now, for example, in Section 11, all of Section 11 is under lease to Continental?

A Yes, sir.

Q And those two different leases that Continental has --

A The old leases and the new leases.

Q What does Continental propose to do in this?

A Continental wishes to, by injecting water into the



Pennsylvanian CD Oil Zone into wells Number 140 and 146, to maintain the reservoir pressure.

Q Have you made any studies; when I say you, I mean Continental Oil Company, have you made any studies of pressure maintenance in this reservoir?

A Yes, we have prepared a pressure maintenance study of the reservoir. We have observed that the pressure has been declining at a very rapid rate, and with the injection of water, this pressure decline can be arrested and the whole recovery can be increased.

Q Could you expand on your statement that there has been a considerable drop in reservoir pressure?

A Yes, in Section 2 and in Section 1, you will notice wells 17, 24 and 100, these wells were drilled in the early 1920's and were produced from the Pennsylvanian CD Zone until 1940. At the time these wells were completed the original bottom hole pressure was 3400 pounds. In 1940 these wells were shut in. In 1960 Continental continued development of the field initially drilling Number 136 at the time. This well was completed, the bottom hole pressure was 1600 pounds. We continued development of the reservoir and have observed the pressure performance since that time, and the pressure is now rapidly decreasing from the 1600 pounds in 1960 down to the current pressure, in the field.



MR. NUTTER: That field is average?

A Yes, sir.

Q (By Mr. Griffith) What is the producing mechanism in the reservoir?

A The primary producing mechanism has been solution gas drive.

Q So this has caused --

A This is caused through this type mechanism. The pressure is expected to go down quite rapidly. We have experienced very rapid decreases in the oil producing rate. For instance, in 1962 your weight was 700 barrels a day and we were currently producing about 200 barrels of oil per day.

Q Have the boundaries of this reservoir been determined?

A Yes, sir, the boundaries have been defined. For instance, in Section 1, Continental drilled one Number 135 in the northeast of the northeast of Section 1. This well tested water in the Pennsylvanian CD Zone and was abandoned. We drilled Well Number 145 which is located in the southeast of the southwest of Section 12. We attempted a completion in the Pennsylvanian CD Zone. However, the Zone was very thin and had very little permeability and produced a small amount of water. We later drilled one Number 147 located in the southwest of the southeast of Section 13. We attempted a completion in the Pennsylvanian CD Zone in this well; however,



it was tight and we produced a small amount of water.

The well is currently shut in. The current well located in the northwest of the northeast of Section 20, we drilled that well to test the Pennsylvanian CD Zone, also. The zone produced water at that location.

On the west side of the reservoir in Well Number 44 located in the southeast of the southwest of Section 2, pressure built up. Surveys were conducted in that well. It was determined from the pressure build up surveys, we had a boundary or permeability pinchout, the reason we closed the well. Also, you will note in the northeast of the northeast of Section 3, the Humble Dry holes were tested, the Pennsylvanian CD Zone, and it also is non productive.

Q So this is the boundary in this reservoir?

A Yes, sir.

Q And has New Mexico Oil Commission granted Continental Oil Company permission to dispose of this salt water in this field?

A Yes, they have; and in August of 1962 the Commission granted Continental permission to inject water into the Organ Rock formation in Well Number 145. Continental laid a line from our main battery installation, which is located just south of Well Number 139 in the southeast of the southeast of --

Q If I can interrupt here, he marked on Exhibit "A"



where this battery is located; please continue.

A We installed the line from the battery down to Well Number 145 and installed the salt water disposal pump in the salt water tank.

Also, I might mention that all of the production from the existing producing wells go to this one central facility where all of the water is gathered in Number 145.

Q What is the present and total amount of water that has been disposed of in Well Number 145?

A To the first of May of this year, we have injected 115,000 barrels into the Organ Rock in Number 145, and at the present time we are injecting 250 barrels of water per day.

Q I believe you indicated earlier that you plan to use Well Number 140 initially as the injection well and then perhaps Well 146 subsequently. Have you prepared an Exhibit showing the completion of these two wells?

A Yes, I have.

Q That is Continental's Exhibit "B". Was Exhibit "B" prepared by you or under your direct supervision?

A Yes, it was.

Q Will you explain what Exhibit "B" shows starting with Well Number 140?

A On Exhibit "B" we have a schematic diagram of the proposed injection set up for Well Number 140. We would set a



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

model "R" packer approximately 6600 feet and inject through 2 and 7 inch tubing.

Q Did you receive a letter from the State Engineer inquiring as to the use of tubing in this injection well?

A Yes, we had a letter from the State Engineer indicating that our original application did not indicate that we would inject through tubing in this well; however, we do inject through tubing with the packer in the hole.

Q And I believe the original application didn't indicate tubing?

A That is correct, no tubing was indicated.

Q But our Exhibit "B" correctly shows the correct completion?

A That's correct.

Q Are the perforations limited to the Pennsylvanian CD Zone in Well Number 140?

A Yes, they are. The perforations as indicated in 6658, 6680 and 6700, and 6710, all within the oil zone.

Q What does Exhibit "B" show in relation to well 146?

A On Well Number 146 we began showing the proposed installation for injection on this particular well. We would inject through tubing with a model "R" packer set at approximately 6500 feet. We would inject into the open hole section of the Pennsylvanian CD. Also, we would produce the Pennsylvanian



"B" gas on through the tubing casing annulus.

Q Now, at the present time you plan to start injecting into Well Number 140, and if the results are satisfactory, then inject into Well Number 146?

A Yes, we plan to go to Number 140 first and observe the performance, and go to Well 146.

Q What is the source of the proposed injection water?

A We propose to utilize three sources of water. One would be the Pennsylvanian CD salt water which is being produced at this time. We would also use water from the Organ Rock formation in Well Number 145 and we propose to perforate the Dechelle formation.

Q And where is the well that would produce --

A Well Number 145, the current salt water disposal well.

MR. NUTTER: And that is the Zone --

A That is the Organ Rock open in that well now, sir, and we would leave the Organ Rock open and produce the water we have injected, back out.

Q And also perforate?

A Perforate the Dechelle.

Q So you have two zones producing from that well, then?

A Yes, sir.

Q Do you have any other source of water that you plan to use?



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 3-6691

A Yes, in the event that a sufficient supply cannot be developed in Well Number 145 we propose to install a line from the central battery to Well Number 100 located there in Section 2. Well Number 100 is presently completed in the Dechelle and will flow about 1900 barrels of water per day.

Q Are all three of these waters salty-type waters?

A Yes, they are.

Q What is the anticipated volume of water that will be injected into the formation?

A We propose to inject 3,000 barrels of water per day.

Q If the Commission approves this Application, what will the results be, in your opinion, of the pressure maintenance program?

A Our analysis, the reservoir, performance with the pressure maintenance as indicated, we can arrest the rapid pressure decline. We should be able to produce at the oil producing rate, and the ultimate recovery can be increased.

Q And in your opinion, is it in the best interest of conservation to arrest the pressure decline and to conserve the reservoir energy?

A Yes, it is.

MR. GRIFFITH: We have no further questions.

MR. NUTTER: Are there any questions of the witness?

CROSS EXAMINATION



BY MR. NUTTER:

Q Mr. Van Matre, this Number 146 will be a dual completion; is that correct?

A Yes, we would propose to set that up like shown on our Exhibit "B" there.

Q With the gas going up the annulus?

A Yes, sir.

Q Now, you stated that your original letter to the State Engineer did not indicate to use tubing in the Number 140?

A Yes, sir, our Application didn't show tubing, but we plan to install the tubing and packer.

Q So, then, after his letter of May 12, when he said he would offer no objection to the approval of the Number 140 for an injection well, or the conversion of Number 140 to the injection, if the injection was through tubing, then you went ahead and drew this schematic diagram, and presumably this would meet his requirements, then?

A Yes, I believe so.

Q You haven't had any further study with him on the subject?

A No, sir, I haven't.

Q Now, as I understand, after the first three wells had been produced for twenty years or so they were shut in, and the Number 136 was drilled in 1960 and had a pressure of 1600 pounds?

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ALBUQUERQUE, N. M.
PHONE 243-6691



DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

A 1600 pounds.

Q And now the average pressure is about 700?

A 700 pounds.

Q Now, is it your thought a pressure maintenance project order for this area would be similiar to the project orders that have been issued for other projects in the northwest that contain the provision for water credit for high gor's or is the gas oil ratio any problem?

A With any pressure it should start on down, so I don't anticipate a problem there.

Q So, in that portion of the rules that are normally written for these projects in the San Juan Basin, you would have to have TS rubing and all of that, and we don't have that letter here today, but you don't feel that that portion of the normal order is necessary in this case?

A No, sir, I don't believe so in this case.

Q The gas has never been any problem?

A No, sir, we have never exceeded the gas oil ratio.

Q Now, you stated that your initial injection would be 3,000 barrels per day?

A Yes, sir, that is --

Q That is assuming the use of both wells?

A No, sir, we would like to inject the 3,000 barrels of water a day into Well Number 140; however, Well Number 140 may



not accept this volume, and if not, we would convert Well Number 146 right away, also.

Q Your 3,000 would be whether it took one well or two wells?

A Yes, sir, this would offset our present reservoir rate by 1,000 barrels a day.

MR. NUTTER: Are there any further questions of Mr. Van Matre?

MR. DURRETT: I have a couple of questions.

CROSS EXAMINATION

BY MR. DURRETT:

Q Am I correct that you are requesting rules that are similar to previous pressure maintenance rules, that we have written, special rules including provisions for transfer of allowables and all of the miscellaneous provisions in those rules with the exception of gas oil ratio provisions; is that correct?

A Yes, sir, we would like to have the transfer allowable, and I can see no problem. We are exceeding the gas oil limitation that exists.

Q So you would think, at least at this time, you would like the rules similar to previous rules?

A Yes, sir.

Q Now, I am wondering about the provision that we have



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ALBUQUERQUE, N. M.
PHONE 243-6691

put in prior rules, special rules for pressure maintenance projects concerning wells directly or diagonally outside of the project area. Are the reserves more than a certain amount of allowable? Do you have any thoughts along that line, are you going to have that problem?

A I don't believe we will have that problem. Our present allowable is, of course, 194 barrels per day per well, and in my opinion it will never exceed this rate in any one well.

MR. NUTTER: There aren't any offset operators?

A No, sir.

Q (By Mr. Durrett) That wouldn't be a problem in your case, at all?

A No.

MR. DURRETT: I think that's all.

MR. NUTTER: Are there any further questions of Mr. Van Matre? You may be excused.

MR. GRIFFITH: I request the Commission to accept Exhibits "A" and "B" into evidence.

MR. NUTTER: Continental's Exhibits "A" and "B" will be admitted into evidence.

Do you have anything further, Mr. Griffith?

MR. GRIFFITH: I do not.

MR. NUTTER: Does anyone have anything they wish to



offer in Case 3069?

We will take the case under advisement, and the Hearing is adjourned until 1:30.

* * *

STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

I, CHARLES WALKER, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this day of , 1964.

Charles F. Lloyd Walker
NOTARY PUBLIC

My Commission Expires:
March 25, 1968.

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<u>Number</u>	<u>Marked for Identification</u>	<u>Offered</u>	<u>Received</u>
"A"	3	14	14
"B"	7	14	14

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Ex. Ct. hearing of Case No. 3069
held by me on June 10, 1964
[Signature], Examiner
New Mexico Oil Conservation Commission

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