

CASE 3486; Appli. of SHENANDOAH
OIL CORP. for a waterflood project
Lea County, New Mexico.

CASE NO.

3486

Application,

TRANSCRIPTS,

Small Exhibits

ETC.

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
November 2, 1966

EXAMINER HEARING

IN THE MATTER OF:

Application of Phillips Petroleum
Company for a waterflood project,
Lea County, New Mexico

Application of Shenandoah Oil
Corporation for a waterflood project.

)
)
) Case No. 3485 3486
)
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)
)
)
)
)

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

MR. UTZ: Case 3485.

MR. HATCH: Case 3485, Application of Phillips Petroleum Company for a waterflood project, Lea County, New Mexico.

If it please the Examiner, it appears that the legal advertisement contained an error in the pool description of this case. The pool should have been described as a Maljamar Pool rather than a Vacuum Field, and I would like to move at this time that Case 3485 be continued to 8:00 A.M., November 16, 1966, in order to allow the case to be re-advertised correctly

MR. UTZ: We will call Case 3486 which is the same situation.

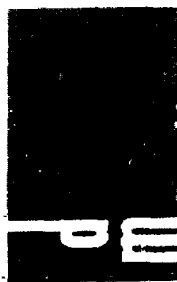
MR. HATCH: Yes. Case 3486, Application of Shenandoah Oil Corporation for a waterflood project, Lea County, New Mexico. It is the same situation in this case. It should have been advertised as Maljamar Pool rather than Vacuum Field. I would like to also move at this time that Case 3486 be continued to 8:00 A.M., November 16, 1966, in order to allow the case to be advertised correctly.

MR. UTZ: Case 3485 and Case 3486 will be continued until November 16, 1966 at 8:00 A.M.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1203 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO



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

I, W. DON McINTYRE, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF, I have affixed my hand this 17th day of November, 1966.

W. Don McIntyre
Court Reporter

Shirley D. [Signature]
Nov 2, 1966

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. 3486
Order No. R-3155

APPLICATION OF SHENANDOAH OIL
CORPORATION FOR A WATERFLOOD
PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 8 a.m. on November 16, 1966,
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 28th day of November, 1966, 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, Shenandoah Oil Corporation, seeks
permission to institute a waterflood project in the Maljamar Pool
by the injection of water into the Grayburg-San Andres formation
through four injection wells in Sections 7, 8, and 16, Township 17
South, Range 33 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 waterflood project should result in
the recovery of otherwise unrecoverable oil, thereby preventing
waste.

-2-

CASE No. 3486

Order No. R-3155

(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, Shenandoah Oil Corporation, is hereby authorized to institute a waterflood project in the Maljamar Pool by the injection of water into the Grayburg-San Andres formation through the following-described wells in Township 17 South, Range 33 East, NMPN, Lea County, New Mexico:

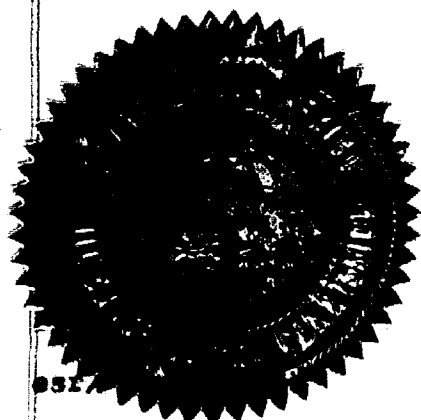
| OPERATOR | WELL NO. | LOCATION |
|--|----------|---------------------|
| Shenandoah Oil Corporation-State "A" No. 2 | | Unit C - Section 7 |
| Shenandoah Oil Corporation-State "A" No. 6 | | Unit E - Section 8 |
| Shenandoah Oil Corporation-Shell State "A" No. 1 | | Unit H - Section 8 |
| Shenandoah Oil Corporation-Phillips State No. 2 | | Unit D - Section 16 |

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

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

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

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



STATE OF NEW MEXICO

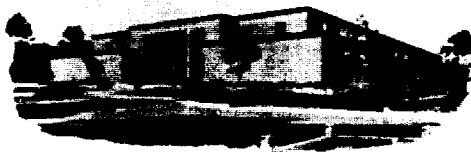
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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

State of New Mexico



Commissioner of Public Lands



GUYTON B. HAYS
COMMISSIONER

P. O. BOX 1148
SANTA FE, NEW MEXICO

January 31, 1966

New Mexico Oil Conservation Commission
Post Office Box 2088
Santa Fe, New Mexico 87501

Re: CTB-52 - State Lease B-8572

Gentlemen:

The captioned lease expired by operation of law August 7, 1964, due to cessation of production. The operator on the lease was Leonard Nichols.

The lease covered the Northeast Quarter of the Northeast Quarter of Section 7, Township 17 South, Range 33 East, Lea County, New Mexico, and had two wells, the No. 7-a and No. 4-A, drilled on it. The operator is still reporting these wells as shut-in with no production and commingled.

The Northeast Quarter of the Northeast Quarter of Section 7, Township 17 South, Range 33 East, is included in CTB-52, however, the lease, No. B-8572, is not mentioned. This acreage is now under State Lease K-5636 issued to Shenandoah Oil Company, Fort Worth, Texas, effective January 18, 1966. The two wells on lease No. B-8572 do not appear to be plugged and abandoned.

Very truly yours,

GUYTON B. HAYS
Commissioner of Public Lands

By

Ray D. Graham

RAY D. GRAHAM, Assistant Director
Oil and Gas Department

GBH/RDG/d

cc:

Mr. Joe Ramey
Oil Conservation Commission
Post Office Box 1980
Hobbs, New Mexico 88240

*Reviewed CTB 52
to be lost (none 85)
B-8572
and commingled
1-25-66
G.H.*

25
SHENANDOAH OIL CORPORATION

608 MUTUAL SAVINGS BUILDING
FORT WORTH, TEXAS 76102

B. J. KELLENBERGER
PRESIDENT

May 10, 1967

FILE
MAY 12 1967

TELEPHONE
ED 2-7381

Re: Docket No. 28-66 - Case No. 3486
Application of Shenandoah Oil Corporation
for a Waterflood Project, Lea County,
New Mexico

Mr. Frank Irby
State Engineer Office
Santa Fe, New Mexico

Dear Mr. Irby:

In accordance with Rule 703 (a) of the New Mexico Rules and Regulations Book, this is to advise you that water injection was commenced April 26, 1967, into the four wells as set forth in Case No. 3486 (see attached plat).

Very truly yours,

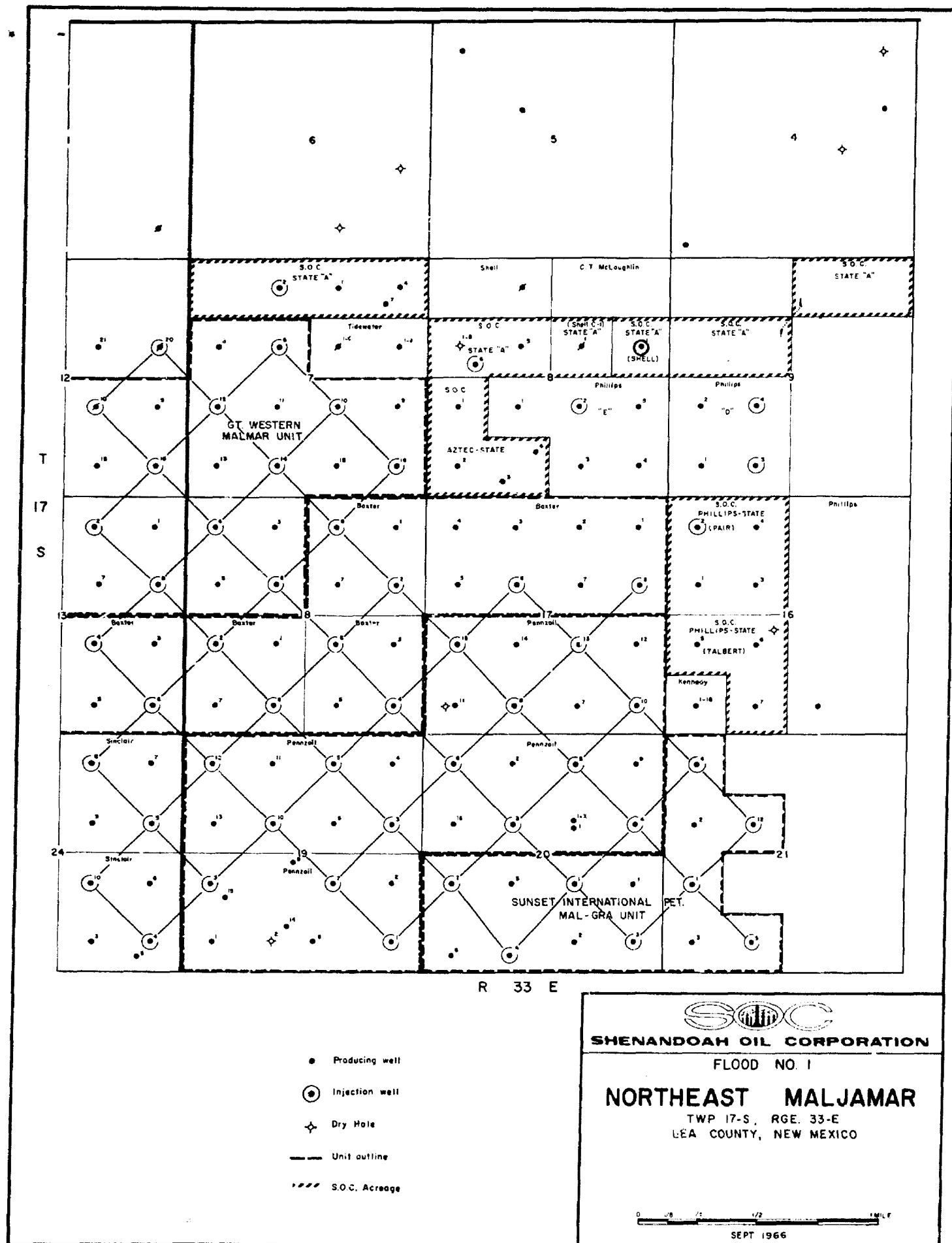
T. P. Bates, Supervisor
Secondary Recovery

TPB/ms

cc: New Mexico Oil Conservation Commission
Box 1980, Hobbs, New Mexico

New Mexico Oil Conservation Commission
Box 2088, Santa Fe, New Mexico

Jennings & Copple
Roswell, New Mexico



November 19, 1966

Re: Docket No. 28-66: Case
No. 3486-Application Of
Shenandoah Oil Corporation
For A Waterflood Project,
Lea County, New Mexico

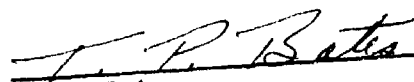
Mr. D. S. Nutter
Chief Engineer
Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Dear Mr. Nutter:

The attached information is being presented to you and requested that it be made a part of the EXHIBIT "B", (diagrammatic sketch of casing and cement record).

In reviewing EXHIBIT "B" an error on the State "A" No. 2 was noticed and should be corrected. The State "A" No. 2 intermediate string on EXHIBIT "B" presented at the hearing showed 1,281' of 103/4" casing. This should be corrected to read 1,281' of 8 5/8" casing.

Very truly yours,
Shenandoah Oil Corporation


T. P. Bates
Supervisor Of Secondary

cc: Mr. Frank Irby
State Capitol Bldg.
Santa Fe, New Mexico

Mr. James T. Jennings
Box 1180
Roswell, New Mexico

| Lease And Well No. | Hole Size | Size & Depth Of Casing | Sacks Of Cement Used | Lin. Feet Per Sack | Calculate Top Of Cement |
|--------------------|------------------------------------|--|----------------------|----------------------------|--------------------------|
| Shell State "A" 1 | 10 3/4" 8" | 8 5/8" @ 300' 5 1/2" @ 4,465' | 200 200 | 4.8996 5.9773 | Circulated 3,270' |
| State "A" 2 | 15" 10 3/4" 8" | 12 1/2" @ 305' 8 5/8" @ 1,281' 5 1/2" @ 4,120' | 25 50 100 | 3.6010 4.8996 5.9773 | 215' 1,036' 3,522' |
| State "A" 6 | 10 3/4" 8" | 8 5/8" @ 382' 5 1/2" @ 4,430' | 150 200 | 4.8996 5.9773 | Circulated 3,235' |
| Phillips St. No. 2 | 10 3/4" 8 1/2" 8" | 8 5/8" @ 297' 5 1/2" @ 4,470' | 200 200 | 4.8996 5.9773 | Circulated 3,275' |

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 11/23/66

CASE 3486

Hearing Date 8 am 11/16/66
DSD @ SF

My recommendations for an order in the above numbered cases are as follows:

Enter an order authorizing Shenandoah Oil Corporation to institute a waterflood project in the Maljamar Pool, Lea Co, N. Mex. by injection of water into the Grayburg-San Andres formation through the following four wells:

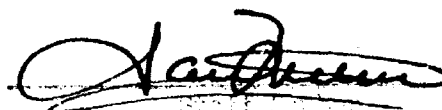
Star "A" No 2, Unit C, 7-175-33E

Star "A" No 6, Unit E, 8-175-33E

Shell Star "A" No 1, Unit H, 8-175-33E

Phillips Star No 2, Unit D, 16-175-33E

Name of waterflood project will be Northeast Maljamar
usual waterflood order.



GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 2088
SANTA FE

November 28, 1966

Mr. James T. Jennings
Attorney at Law
Post Office Box 1180
Roswell, New Mexico

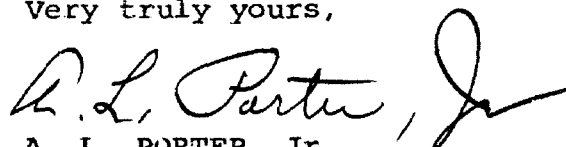
Re: Case No. 3486
Order No. R-3155
Applicant:

SHENANDOAH OIL CORPORATION

Dear Sir:

Enclosed herewith is a copy of the above-referenced Commission order recently entered in the subject case. Letter pertaining to conditions of approval and maximum allowable to follow.

Very truly yours,


A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC X
Artesia OCC
Aztec OCC

Other Mr. Frank Irby

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

December 6, 1966

C
O
P
Y

Mr. James T. Jennings
Attorney at Law
Post Office Box 1180
Roswell, New Mexico

Dear Sir:

Reference is made to Commission Order No. R-3155, recently entered in Case No. 3486, approving the Shenandoah Northeast Maljamar Waterflood Project.

Injection is to be through the four authorized water injection wells which shall each be equipped with plastic or cement lined tubing and a packer which shall be set immediately above the casing shoe.

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which the State "A" project area will be eligible to receive under the provisions of Rule 701-E-3 is 266 barrels per day when the minimum waterflood allowable factor of 42 is in effect and the maximum which the Phillips State Pair project area may receive is 168 barrels per day.

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

OIL CONSERVATION COMMISSION

P. O. BOX 2088
SANTA FE, NEW MEXICO

-2-

Mr. James T. Jennings
Attorney at Law
Post Office Box 1180
Roswell, New Mexico

C
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Y

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

ALP/DSN/ir

cc: Mr. Frank Irby
State Engineer Office
Santa Fe, New Mexico

Oil Conservation Commission
Hobbs, New Mexico

Docket No. 28-66

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 16, 1966

8 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 3485: Application of Phillips Petroleum 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 Grayburg-San Andres formation through three injection wells located in Sections 8 and 9, Township 17 South, Range 33 East, Maljamar Pool, Lea County, New Mexico.

CASE 3486: Application of Shenandoah Oil Corporation 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 Grayburg-San Andres formation through four injection wells located in Sections 7, 8, and 16, Township 17 South, Range 33 East, Maljamar Pool, Lea County, New Mexico.

ir/

- j) Extend the West Mesa-Upper Queen Gas Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 31 EAST, NMPM
SECTION 12: W/2

- k) Extend the Milnesand-San Andres Pool to include therein:

TOWNSHIP 8 SOUTH, RANGE 35 EAST, NMPM
SECTION 28: NW/4

- l) Extend the North Osudo-Morrow Gas Pool to include therein:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM
SECTION 19: S/2
SECTION 30: E/2

- m) Extend the Ranger Lake-Pennsylvanian Pool to include therein:

TOWNSHIP 12 SOUTH, RANGE 34 EAST, NMPM
SECTION 14: SW/4

- n) Extend the Shoe Bar-Pennsylvanian Pool to include therein:

TOWNSHIP 16 SOUTH, RANGE 35 EAST, NMPM
SECTION 26: NE/4

OVER

ir/

JAMES T. JENNINGS
ROGER L. COPPLE
BRIAN W. COPPLE

LAW OFFICES OF
JENNINGS & COPPLE
1012 SECURITY NATIONAL BANK BUILDING
P. O. BOX 1180
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-8442
AREA CODE 505

October 19, 1966

File 3-16

State Engineer
Capitol Building
P. O. Box 1079
Santa Fe, New Mexico

Attention: Frank Irby

RE: SHENANDOAH WATERFLOOD APPLICATION.

Dear Frank:

Enclosed herewith you will find a copy of the Shenandoah Oil Corporation's Application to institute a Waterflood Project in Sections 7, 8 and 16, Township 17 South, Range 33 East. Shenandoah contemplates purchasing water from one of the water companies now operating in the area and using this water and produced water in connection with its flood operation. This is adjacent to an existing flood in the same pool, and Phillips has likewise filed an Application to flood in the same area.

If there are any questions concerning this, please call me collect on Monday, October 24.

Yours very truly,

JENNINGS & COPPLE

James T. Jennings

JTJ/bc

Enclosure

COPY

JAMES T. JENNINGS
ROGER L. COPPLE
BRIAN W. COPPLE

LAW OFFICES OF
JENNINGS & COPPLE
1012 SECURITY NATIONAL BANK BUILDING
P. O. BOX 1180
ROSWELL, NEW MEXICO 88201

TELEPHONE 522-8432
AREA CODE 505

October 19, 1966

Case 3486

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

Attention: Ida Rodriguez, Secretary to the Director

Dear Ida:

RE: SHENANDOAH WATERFLOOD APPLICATION.

I have prepared Shenandoah's Application for the Waterflood Project which you have heretofore scheduled for hearing on November 2. I am enclosing herewith the original and one copy of the Application, together with a copy of a letter to the State Engineer reflecting that we have transmitted a copy of the Application to him.

If there is any question about the Application or if it is deficient in any manner, please call me collect on Monday, October 24.

Yours very truly,

JENNINGS & COPPLE


James T. Jennings

JTJ/bc

Enclosures

DOCKET MAILED

Date 11-4-66

for 11-16-66

DOCKET MAILED

Date 0-21-66
W

Docket No. 27-66

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 2, 1966

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

- - - -

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

CASE 3479: Application of Gulf Oil Corporation for an exception to Rule 8 of Order No. R-1638 and to Rule 301, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rule 8 of Order No. R-1638 and to Rule 301 of the Commission rules and regulations to permit discontinuance of individual gas-oil ratio tests in its West Bisti-Lower Gallup Sand Unit, Bisti-Lower Gallup Pool, San Juan County, New Mexico. Applicant proposes to report gas production and ratios on a unit-wide basis rather than individual well GOR data.

CASE 3480: Application of Tidewater Oil Company for a capacity allowable, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-3097 which permitted its GO State "J" Well No. 1 located in Unit H of Section 7, Township 17 South, Range 33 East, Lea County, New Mexico, which directly offsets the Malmar Unit Waterflood Project, to be produced at capacity for a period not to exceed 90 days from date of said order. Applicant seeks additional time in which to produce said well at capacity and the establishment of an administrative procedure for further extensions.

CASE 3336 (Reopened)

In the matter of Case No. 3336 being reopened pursuant to the provisions of Order No. R-3005, which order established 80-acre spacing units for the East Hightower-Upper Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

CASE 3481: Application of Sinclair Oil & Gas Company for a non-standard gas proration unit and an unorthodox location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of a 160-acre non-standard gas proration unit comprising the NW/4 of Section 7, Township 22 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be dedicated to its State 157 "B" Well No. 1 located at an unorthodox location for said pool 330 feet from the North line and 2310 feet from the West line of said Section 7.

- CASE 3482: Application of Sinclair Oil & Gas Company for a special gas well test, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce and flare up to three million cubic feet of gas per day, for a maximum of 30 days, from its Hackberry Hills Unit Well No. 4 located in Unit F of Section 22, Township 22 South, Range 26 East, Eddy County, New Mexico, as a reservoir limit test to determine the economic feasibility of a pipeline connection to said well.
- CASE 3483: Application of H. S. Moss for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water in the Wolfcamp formation in the interval from 9751 to 9850 feet in its D. P. Peck Well No. 1 located in Unit C of Section 26, Township 12 South, Range 37 East, Gladiola Field, Lea County, New Mexico.
- CASE 3484: Application of Phillips Petroleum Company for a pilot 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 Grayburg-San Andres formation through its Santa Fe Well No. 14 located in Unit P of Section 20, Township 17 South, Range 35 East, Vacuum Field, Lea County, New Mexico.
- CASE 3485: Application of Phillips Petroleum 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 Grayburg-San Andres formation through three injection wells located in Sections 8, and 9, Township 17 South, Range 33 East, Vacuum Field, Lea County, New Mexico.
- CASE 3486: Application of Shenandoah Oil Corporation 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 Grayburg-San Andres formation through four injection wells located in Sections 7, 8 and 16, Township 17 South, Range 33 East, Vacuum Field, Lea County, New Mexico.
- CASE 3487: Application of Amerada Petroleum Corporation for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of its State "SN" Unit Area comprising 692 acres, more or less, of State land in Sections 3 and 4, Township 15 South, Range 33 East, Lea County, New Mexico.

-3-

Docket No. 27-66

November 2, 1966 Examiner Hearing

- CASE 3488: Application of Amerada Petroleum Corporation for a waterflood expansion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand its Saunders SB Waterflood Project by the injection of water into the Permo-Pennsylvanian zone through its Texaco-State "AQ" Well No. 2 located in Unit E of Section 3, Township 15 South, Range 33 East, Saunders Permo-Pennsylvanian Pool, Lea County, New Mexico.
- CASE 3489: Application of William A. and Edward R. Hudson for a waterflood expansion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to expand their Puckett A Waterflood Project by the injection of water into the Grayburg-San Andres formation through their Puckett A Well No. 30 to be drilled at an unorthodox location 1345 feet from the North line and 25 feet from the West line of Section 24, Township 17 South, Range 31 East, Maljamar Pool, Eddy County, New Mexico.
- CASE 3490: Application of Sunray DX Oil Company for pool redelineation, Roosevelt County, New Mexico. Applicant, in the above-styled cause, seeks the redelineation of the Todd-San Andres Pool, Roosevelt County, New Mexico, into two separate pools: The Todd Upper-San Andres Gas Pool comprising that portion of the San Andres formation above the anhydrite bed found at 4200 feet in the Franklin, Aston and Fair Mark Federal Well No. 1 located in Unit M of Section 26, Township 7 South, Range 35 East, and the Todd Lower-San Andres Pool comprising that portion of the San Andres formation below said anhydrite bed, said Todd Lower-San Andres Pool to be governed by the existing rules for the present Todd-San Andres Pool. Also to be considered at said hearing will be such matters as the effective date of the aforesaid redelineation, the period of time in which to effect dual completion of the affected wells, the distribution of the affected wells' accumulated status in the present pool (overproduction and underproduction) to each of the new pools, and such other pertinent matters as may relate to the aforesaid pool redelineation. Also to be considered will be special pool rules for the proposed Todd Upper-San Andres Gas Pool, including 320-acre spacing for wells located therein.

ir/

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
SHENANDOAH OIL CORPORATION TO
INSTITUTE A WATERFLOOD PROJECT BY
THE INJECTION OF WATER INTO THE
GRAYBURG AND SAN ANDRES FORMATIONS
THROUGH FOUR INJECTION WELLS TO BE
LOCATED IN SECTIONS 7, 8, AND 16,
TOWNSHIP 17 SOUTH, RANGE 33 EAST,
LEA COUNTY, NEW MEXICO.

NO. 3486

APPLICATION FOR APPROVAL OF

SHENANDOAH OIL CORPORATION WATERFLOOD PROJECT

Comes now the Applicant, Shenandoah Oil Corporation, and
hereby makes application for approval of a Waterflood Project
pursuant to Rule 701 of the Rules and Regulations of the Commission
and in support thereof states:

1. Applicant desires to initiate a Waterflood Project to
inject fresh water into the Grayburg and San Andres formations in
the existing wells on the following described tracts:

| <u>WELL NUMBER</u> | <u>LOCATION</u> |
|--------------------------|---|
| State A-2 | NE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 7, T-17-S, R-33-E |
| State A-6 | SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 8, T-17-S, R-33-E |
| State A-1 (Shell) | SE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 8, T-17-S, R-33-E |
| Phillips' State (Pair) 2 | NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 16, T-17-S, R-33-E |

2. That the above wells and all other wells in the area
have reached an advance state of depletion and are stripper wells.

3. That Applicant feels that waterflooding the Grayburg
and San Andres formations is feasible and that flooding will result
in the increased ultimate recovery of oil and prevent waste.

4. That the Great Western Maljamar Unit, which is a Waterflood Project, adjoins the Applicant's project on the West and South, and that all the area to the West and South of the proposed project is presently under flood.

5. That the Phillips Petroleum Corporation is the owner and operator of adjacent leases in Sections 8 and 9, Township 17 South, Range 33 East, and that Applicant and Phillips have entered into a Co-operative Waterflood Agreement.

6. That in support of this application and in accordance with the provisions of Rule 701, Applicant submits herewith the following Exhibits:

Exhibit A - a plat showing the location of the proposed injection wells, location of the other wells and the ownership of all other leases within a two-mile radius, all of which wells are producing from the same formation, and also showing the Applicant's acreage within the area.

Exhibit B - a diagramatic sketch of the proposed injection wells showing tops of cement, perforations, and depths.

7. Applicant proposes to inject fresh to brackish water in the Grayburg and San Andres formations from a depth of 4250 to 4500 feet and to inject approximately 350 to 400 barrels per well per day which water is to be acquired from a commercial water company operating in the area, which water will be comingled with produced water.

8. That simultaneous herewith the Applicant is mailing a copy of this application, together with Exhibits, to the State Engineer, Capitol Building, Santa Fe, New Mexico.

WHEREFORE, Applicant requests the Commission set this matter down for hearing before an examiner at an early date, publish the notice as required by law and, after hearing, issue its Order:

1. Authorizing the Waterflood Project and injection of water in the Grayburg and San Andres formations in four injection wells located in Sections 7, 8 and 16, Township 17 South, Range 33 East.

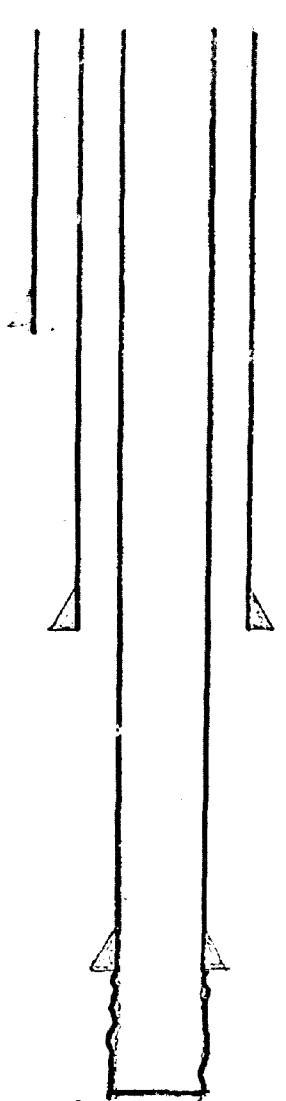
2. Establishing rules for the operation of the flood within the area and for administrative expansion and conversion of additional wells to water injection wells.

Respectfully submitted,

SHENANDOAH OIL CORPORATION

By 

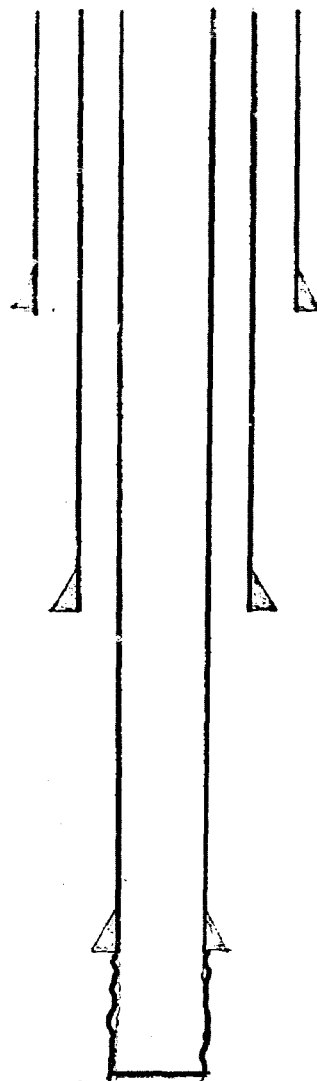
for JENNINGS & COPPEL
Attorneys for Applicant
P. O. Box 1180
Roswell, New Mexico



| State "A" (Shell) No. 1 | State "A" No. 2 | State "A" No. 6 | Phillips St. (Pair) No2 |
|--|---|--|--|
| 300' -8 5/8" Circulated (200 sks) | 305' -12 1/2" 25 sks Cement | 382' -8 5/8" Cement Circulated | 297' -8 5/8" 200 sks Cement |
| | 1281' -10 3/4" 50 sks Cement | | |
| 4465' - 5 1/2" 200 sks. Cement TD. 4465' Perf. 4290-4306 4386-4394 4410-4426 | 4120' -5 1/2" 100 sks Cement TD. 4345' Open Hole 4120-4345 | 4430' -5 1/2" 200 sks. Cement TD. 4430' Perf. 4224-4244 4316-4366 4384-4400 | 4470' -5 1/2" 200 sks. Cement TD. 4489' Perf. 4271-4412 |
| Note: A tension type packer will be run on plastic coated tubing and set inside oil string just above casing shoe. | | | |

EXHIBIT B

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. B
CASE NO. 3087



| State "A" (Shell) No. 1 | State "A" No. 2 | State "A" No. 6 | Phillips St. (Pair) No. 2 |
|--|---|---|---|
| 300' -8 5/8" Circulated (200 sks) | 305'-12 1/2" 25 sks Cement 1281'-10 3/4" 50 sks Cement | 382'-8 5/8" Cement Circulated | 297'-8 5/8" 200 sks Cement |
| 4465'-5 1/2" 200 sks. Cement TD. 4465' Perf. 4290-4306 4386-4394 4410-4426 | 4120'-5 1/2" 100 sks Cement TD. 4345' Open Hole 4120-4345 | 4430'-5 1/2" 200 sks. Cement TD. 4430' Perf. 4224-4244 4316-4366 4384-4400 | 4470'-5 1/2" 200 sks. Cement TD. 4489' Perf. 4271-4412 |
| Note: A tension type packer will be run on plastic coated tubing and set inside oil string just above casing shoe. | | | |

will pump
with from Yucca
with Co.
will use
300-350 BPD / week
2800-3000 gal surf press
will commingle prod. water and
no inj.

ann. well
fluid
to be placed in insert
& periodic gas checks

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EXAMINER HEARING

IN THE MATTER OF: Application of Shenandoah
Oil Corporation for a waterflood project,
Lea County, New Mexico.

) Case No. 3486

BEFORE: DANIEL S. NUTTER, Examiner

TRANSCRIPT OF HEARING



MR. NUTTER: We will call Case 3486.

MR. HATCH: Case 3486. Application of Shenandoah Oil Corporation for a waterflood project, Lea County, New Mexico.

MR. JENNINGS: Mr. Examiner, I am James T. Jennings of Roswell, Jennings and Copple, appearing on behalf of the applicant Shenandoah Oil Corporation. I have one witness, Mr. Pat Bates.

MR. NUTTER: Is that B-a-t-e-s?

THE WITNESS: Yes.

MR. JENNINGS: If it please the Examiner, we have only been able to locate logs of two of the wells involved, and we will at this time make these available to the Commission. We have not been able to locate the logs of the other wells.

(Witness sworn.)

* * *

T. P. B A T E S, a witness called herein, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. JENNINGS:

Q Mr. Bates, would you state your name and occupation?

A My name is Pat Bates, and I am Petroleum Engineer with Shenandoah Oil Corporation.

Q Would you briefly state your educational qualifications and experience qualifications?

A I have a Bachelor of Science Degree in Geology from the University of Houston, and graduated in June, 1950. I have been associated with City Service Oil Companies in West Texas, and Ambassador Oil Corporation as a waterflood engineer for the past twelve years, and now with Shenandoah Oil Corporation since January of this year.

Q In your capacity with Shenandoah Oil Corporation, do you have charge of the properties in the Maljamar Field?

A Yes, I do.

Q Are you familiar with the application which has been filed before the Commission in Cause Number 3486?

A Yes, I am.

Q Briefly, what do you -- Excuse me.

MR. JENNINGS: Mr. Examiner, do you consider Mr. Bates' qualifications satisfactory?

MR. NUTTER: Yes, please proceed.

Q (By Mr. Jennings) Briefly what -- Referring back to the last question, briefly what do you propose in this application?

A Well, Shenandoah proposes to request permission to inject water into State A Number 2, State A Number 6, and State A Shell Number 1, and Phillips State Number 2 well.

(Whereupon, Exhibit A marked for identification.)

Q (By Mr. Jennings) I hand you, Mr. Bates, what has

been marked as Exhibit A and ask you to identify that.

A Exhibit A is an area map showing in yellow the boundaries of Shenandoah's property, and circled in green would be the proposed injection wells, and in red shows offset injection of other units in the area on the south and west.

Q All right. Is this exhibit a copy of the exhibit which was attached to the application?

A That's right.

Q How do you propose to conduct this flood, Mr. Bates?

A What?

Q Into what formation do you propose to inject in the wells?

A The water injection will be into the Grayburg-San Andres formation around a depth of 4100 to 4400 in this area.

Q Did your company develop this property?

A No, it was purchased from Leonard Hinkle's Oil Company.

Q What was the general status of production at the time you acquired this property?

A Well, it was producing around 50 barrels of oil per day.

Q Out of how many wells?

A That would be fourteen actual wells.

Q How much of the primary production do you feel has been recovered at this time?

A I think an excess of 90 per cent at that time.

Q Actually what is the production today?

A Well, the production today, this property is experiencing response from offset injections up to 240 barrels per day.

Q Do you feel that the waterflooding of the formations is feasible?

A Yes, I do, and it certainly needs back-up. I think it is feasible, waterflooding is feasible and we certainly need back-up due to the fact that we are getting response from the offset injections.

Q Will it result in increased ultimate recovery?

A It will, yes.

Q Certainly prevent waste?

A Right.

Q Are there other floods in the immediate area?

A Yes. As I said, to the south and west and they are responding and are doing good.

(Whereupon, Exhibit C marked for identification.)

Q (By Mr. Jennings) I hand you what has been marked as Exhibit C and ask you to identify that.

A Exhibit C is a map, it has the boundaries of

Shenandoah Oil Corporation, the property outlined, and it has the current injection status of offset injection of these other companies.

Q Are you offset on the south and west by--

A On the south and west, south by Murphy-Baxter and west by Great Western.

Q Mr. Bates, you have just heard the testimony of Mr. Fredericks in the preceding case concerning the Phillips cooperative flood agreement?

A Right.

Q And you have entered into such an agreement with Phillips Oil?

A That is correct.

Q And I believe they have adjoining properties?

A That's right.

(Whereupon, Exhibit B
marked for identification)

Q (By Mr. Jennings) Mr. Bates, I hand you what has been marked as Exhibit B and ask you to identify that, if you will, please.

A Exhibit B is a diagrammatic sketch of the proposed injection wells, giving the casing depth setting and amount of cement used.

Q Would you briefly describe this on each of the wells?

A Well, on the State A Number 1, it shows that 300 feet

of eight and five-eighths was set and circulated with 200 sacks of cement, and the oil string of five and a half casing was set at 4465, also with 200 sacks. TD of the well is 4465, perforations from 4290 to 4306, 4386 to 4394, 4410 to 4426.

State A Number 2 indicates 305 feet with twelve and a half, cemented with 25 sacks. Intermedicate string 1281 feet, ten and three-quarters, cemented with 50 sacks. Oil string, five and a half casing set at 4120 with 100 sacks. TD of this well is 4345. It has open hole completions from 4120 to 4345.

State A Number 6 indicates 382 feet, eight and five-eighths casing and it shows it to be circulating at five and a half, oil string at 4430, cemented with 200 sacks of cement. The TD of State A Number 6 is 4430. The well is perforated and it was 4224 to 4244, 4316 to 4366, 4384 to 4400.

The Phillips State Parr Number 2 indicates 297 feet, eight and five-eighths surface casing cemented with 200 sacks of cement. The oil string is set at 4470 and it's five and a half casing cemented with 200 sacks of cement. The TD of this well is 4489 and it is perforated from 4271 to 4412.

Q How do you propose to inject the water?

A The water will be injected down the tubing, which will either be plastic coated, or cement lined tubing. This tubing will be on a tension-type packer set somewhere in the

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PAGE 8

vicinity of the casing shoe, and the annular space will be, as Mr. Fredericks indicated, filled with inert fluid, probably treated water or oil and periodic checks will be made with a gauge to surface on the annulus to check the pressure at surface.

Q What type of water do you propose to inject?

A This will be fresh water injected, we will obtain this water from possibly Yucca Commercial Water Company in the vicinity, Yucca Water Company.

Q What depths do you propose to inject?

A This will be into the Grayburg-San Andres formation from 4100 to 4400 feet.

Q How much water do you propose to inject in each well?

A We propose, as in our agreement, to 350 barrels of water per day per well or 2800 or 3,000 pounds of surface pressure.

Q Will the water be recycled?

A Right, the water -- the produced water will be commingled or recycled, treated.

Q Mr. Bates, referring to Exhibit B, was a copy of that exhibit attached to the application that you filed?

A Yes.

Q And I believe that you have -- that we have furnished

the Commission with logs of two wells, which wells were these?

A They were the Parr Number 2 and the Phillips State Number 2, and what was the other one?

MR. NUTTER: State A Number 6.

A State A Number 6. Those are the only two available logs.

Q (By Mr. Jennings) Was a copy of your application mailed to the State Engineer?

A Yes.

Q Were Exhibits A, B, and C prepared by you or under your direction?

A Right. Yes, sir.

MR. JENNINGS: I believe that's all. We would like to offer Exhibits A, B, and C.

MR. NUTTER: Applicant's Exhibits A, B, and C will be admitted into evidence.

(Whereupon, Applicant's Exhibits
A, B, and C offered and
admitted in evidence)

MR. NUTTER: Do you have any further questions?

MR. JENNINGS: No further questions.

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

MR. IRBY: Yes.

MR. NUTTER: Mr. Irby?

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. Bates, let me ask you a question, probably superfluous now; are any of these wells to be dual injectors?

A No, sir, they are not.

Q Good. I didn't have the information concerning your tubing and the fluid in the annulus. The only well you have with three-string casing is your State A Number 2?

A That's correct, yes, sir.

Q Now, starting with your State A Shell Number 1, what is the top of that cement on five and a half?

A I did not calculate that, I sure didn't.

Q Well, do you have it on any of those production strings?

A No, sir, I sure don't.

Q Well, can you tell me on each of them what the size of the bore-hole is for that production string?

A Well, I would have to, in order to be correct, would have to refer back to the well records to give you the correct information on it.

MR. NUTTER: Mr. Bates, you can determine what the wellbore size is, and you know the volume of cement and you can calculate the calculated top and furnish that to the State Engineer's Office and to the Oil Conservation Commission,

can't you?

THE WITNESS: Yes, sir, I sure can.

MR. NUTTER: We'll hold any order up until we have that information.

THE WITNESS: All right.

Q (By Mr. Irby) One more question, if I may. Can you assure me that the injection below the packer will also be below the top of the cement surrounding this production string?

A Yes, sir, it is -- It's our plans, shortly after injection is started, we will run injection profiles on these wells, to determine if there is any bypassing around the casing. The packer will be set below the calculated top, top of the cement.

MR. IRBY: That's all I have, Mr. Nutter.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Bates, what has been the primary production, cumulative primary in these leases?

A The cumulative primary is 480,000 barrels off of these leases.

Q That's total for all the leases?

A Yes, sir.

Q And what is your estimate of the secondary?

A We are looking at one times the primary.

Q One times?

A Yes, sir.

Q Now Mr. Bates, Tidewater has been in here a couple of times with a problem on a lease which they own in the south half of the northeast quarter of Section 7. They are just south of your lease.

A Yes, State A Number 7 up north there, yes, sir, I am familiar with that.

Q Do you know the situation there on that Tidewater well?

A Yes, sir.

Q It's had a response to this Great Western flood to the southwest?

A Yes.

Q Have they made any offers or any negotiations of any type with Shenandoah?

A We did, when I first joined the company, or the Land Department did, approach them with a deal to either purchase this lease or to have them come into a unit which we thought we were going to form originally, with Phillips, but that unit didn't take place and we haven't contacted those people since.

Q And they have made no contact with you, either?

A Well, to my knowledge, I don't know, I'm not in the

main office. So far as offers, they could have.

Q It would be possible for some kind of a joint agreement to be made covering the Shenandoah and Tidewater lease, however, wouldn't you imagine?

A Possibly could be, yes, sir.

Q Now, I don't have the Phillips case open before me. I see your four injection wells in green on your Exhibit Number A; could you tell me what the Phillips wells are that we had the hearing on earlier?

A It's on their -- I forget the lease now -- E Number 2.

Q That would be in the northwest of the southeast of eight?

A Eight, right. Then we go over to nine and we have their Phillips B 3 and 4 wells, their outside wells.

Q Yes, and then they said there was a possibility of that Number 4 in Section 8, I believe?

A Right.

Q Do you contemplate that this will fill the pattern as far as you and Phillips are concerned, to completely and efficiently flood this part of the pool or will additional wells be necessary?

A Well, to the south, maybe, on our Phillips State Tybert lease, it might be possible we'll go in there and put

another well or two on it later on.

Q Yes?

A But as far as Phillips is concerned, Shenandoah, we're pretty well settled on this.

Q Now, you said that these leases were originally producing 50 barrels when you bought them, they are up to 240 now; where has been that response?

A It has been on the south of Number 3. Number 3 well has been responding.

Q I see. Now, where is that?

A That is on the Aztec State, Murphy-Baxter Number 4 and 3 are south of that well. That's in Section 8, southwest quarter.

Q Oh, I see, yes. Which well now is that again?

A Number 3 and actually Number 4 is shown.

Q They are both there on the same forty?

A Right.

Q Have you had any response any place else?

A Yes, our Number 1 is showing response, upon State A in Section 7.

Q That would be in the northwest of the northeast of seven?

A Right, northwest of northeast.

Q Is a northeast offset to that?

A Tidewater.

Q Northeast to that injection well, it looks like a number six there?

A Number 6 and also our Parr Number 2 or Parr Number 1 -- Excuse me, Phillips State Number 1 is showing response on that, on injection of Murphy-Baxter Number 8 on offset.

Q Where is that, Mr. Bates?

A It's in Section 16, our Parr Number 1, it's in the southwest of the northwest quarter of Section 16.

Q Oh, yes, you had a response on that one, also?

A Yes, sir.

Q And you're going to flood directly north of this?

A That's correct.

Q That number 2 well?

A Yes.

MR. NUTTER: Are there any other question of Mr. Bates? He may be excused.

(Witness excused)

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

MR. JENNINGS: We have nothing further.

MR. NUTTER: Does anyone have anything they wish to offer in Case 3486? We will take the case under advisement and the hearing is adjourned.

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PAGE 16

I N D E X

| WITNESS | PAGE |
|------------------------------------|------|
| T. P. BATES | |
| Direct Examination by Mr. Jennings | 2 |
| Cross Examination by Mr. Irby | 10 |
| Cross Examination by Mr. Nutter | 11 |

E X H I B I T S

| NUMBER | MARKED FOR IDENTIFICATION | OFFERED | ADMITTED |
|--------|------------------------------|---------|----------|
| A | 3 | 9 | 9 |
| B | 6 | 9 | 9 |
| C | 5 | 9 | 9 |

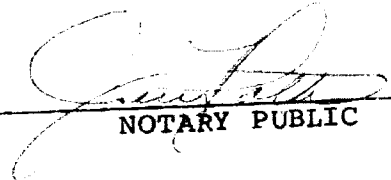
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STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, JERRY POTTS, 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; and 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 5th day of December, 1966.


NOTARY PUBLIC

My Commission Expires:
7-10-70



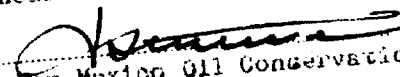
I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3486 heard by me on 11/16 1966.

Member
New Mexico Oil Conservation Commission

Exhibit C

