

CASE 4470: Appli. of ANADARKO  
FOR A WATERFLOOD PROJECT; LEA  
COUNTY, NEW MEXICO.

*Handwritten signature*

130

Case. Number.

4470

Application,  
Transcripts.

Sm all Exhibts.

ETC.

ROUGH DRAFT FOR WATERFLOOD LETTERS

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

*Reference is made to* Commission Order No. R-4077, <sup>presently</sup> entered in Case No. 4470, approving the ANADARKO TEAS YATES WATERFLOOD PROJECT.  
~~Waterflood project.~~

*each of*  
*Injection into the few authorized active injection*  
*wells shall be through 2 3/8 inch internally*  
*plastic coated tubing set in a packer located as*  
*near as is practicable to the uppermost perforation*  
*on the casing shoe. The tubing tubing, annulus*  
*of each well shall be sealed with a corrosion-*  
*inhibited fluid and equipped with a pressure gauge at the*

As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 882 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

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

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

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

Very truly yours,

A. L. PORTER, Jr.  
Secretary-Director

cc: OCC: Hobbs X  
Artesia         
Aztec       

USGS Hobbs

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



# OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO  
P. O. BOX 2088 - SANTA FE  
87501

GOVERNOR  
DAVID F. CARGO  
CHAIRMAN

LAND COMMISSIONER  
ALEX J. ARMIJO  
MEMBER

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

December 8, 1970

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

Re: Case No. 4470  
Order No. R-4077  
Applicant:  
Anadarko Production Company

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,

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

A. L. PORTER, Jr.  
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x  
 Artesia OCC \_\_\_\_\_  
 Aztec OCC \_\_\_\_\_  
 State Engineer x

Other \_\_\_\_\_

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

December 11, 1970

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

O Dear Mr. Kellahin:

Reference is made to Commission Order No. R-4077, recently entered in Case No. 4470, approving the Anadarko Teas Yates Waterflood Project.

P Injection into each of the ten authorized water injection wells shall be through 2 3/8 inch internally plastic-coated tubing set in a packer located as near as is practicable to the uppermost perforation or the casing shoe. The casing-tubing annulus of each well shall be loaded with a corrosion-inhibited fluid and equipped with a pressure gauge at the surface.

Y As to allowable, our calculations indicate that when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 882 barrels per day when the Southeast New Mexico normal unit allowable is 42 barrels per day or less.

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

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

-2-

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

December 11, 1970

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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.

O

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

Very truly yours,

P

A. L. PORTER, Jr.  
Secretary-Director

Y

ALP/ir

cc: Oil Conservation Commission - Hobbs  
U. S. Geological Survey - Hobbs  
Mr. D. E. Gray, State Engineer Office,  
Santa Fe

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. 4470  
Order No. R-4077

APPLICATION OF ANADARKO PRODUCTION  
COMPANY FOR A WATERFLOOD PROJECT,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on December 2, 1970, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 8th day of December, 1970, 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, Anadarko Production Company, seeks authority to institute a waterflood project in its Teas Yates Unit Area, Teas Yates-Seven Rivers Pool, by the injection of water into the Yates formation through ten injection wells in Township 20 South, Ranges 33 and 34 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.

(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.

-2-

CASE No. 4470  
Order No. R-4077

IT IS THEREFORE ORDERED:

(1) That the applicant, Anadarko Production Company, is hereby authorized to institute a waterflood project in its Teas Yates Unit Area, Teas Yates-Seven Rivers Pool, by the injection of water into the Yates formation through the following-described ten wells in Lea County, New Mexico:

UNIT WELL NO.	PREVIOUS OPERATOR, LEASE AND WELL NO.		L o c a t i o n		
			UNIT	SECTION	TOWNSHIP RANGE
13-1	Anadarko Federal AB No. 1	M	11	20	South 33 East
2-2	Reserve Federal Bobb No. 2	D	13	20	South 33 East
3-2	Reserve Federal Bobb "C" No. 2	J	13	20	South 33 East
3-4	Reserve Federal Bobb "C" No. 4	B	13	20	South 33 East
6-1	Anadarko Sinclair Federal No. 1	L	14	20	South 33 East
9-1	Anadarko Federal "C" No. 1	N	14	20	South 33 East
11-1	Reserve Federal 1-14 No. 1	B	14	20	South 33 East
15-1	Spartan Drilling Co. Federal No. 1	I	14	20	South 33 East
12-1	Anadarko Federal AC No. 1	A	15	20	South 33 East
1-1	Cities Service Jewell McDonald No. 1	E	18	20	South 34 East

(2) That the subject waterflood project is hereby designated the Anadarko Teas Yates 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

DAVID F. CARGO, Chairman

ALEX J. ARMijo, Member

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

esr/



CASE 4468: Application of Continental Oil Company for a dual completion and water injection, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Langlie Jack Unit Well No. 16 located in Unit M, Section 21, Township 24 South, Range 37 East, Lea County, New Mexico, in such a manner as to permit the production of gas from the Jalmat Gas Pool and the injection of water into the Langlie-Mattix Pool for secondary recovery purposes through parallel strings of tubing.

CASE 4469: Application of Anadarko Production Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Teas Yates Unit Area comprising 1200 acres, more or less, of Federal lands in Township 20 South, Ranges 33 and 34 East, Lea County, New Mexico.

← CASE 4470: Application of Anadarko Production Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Teas Yates Unit Area, Teas Yates-Seven Rivers Pool, Lea County, New Mexico, by the injection of water through ten wells into the Yates formation.

CASE 4471: Application of H. L. Brown, Jr. for an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to drill an undesignated Morrow test well at an unorthodox gas well location 660 feet from the South line and 1980 feet from the East line of Section 19, Township 19 South, Range 30 East, Eddy County, New Mexico. The E/2 of said Section 19 would be dedicated to said well.

DOCKET; EXAMINER HEARING - WEDNESDAY - DECEMBER 2, 1970

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

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

CASE 4436: (Continued from the October 14, 1970, Examiner Hearing)

Application of El Paso Natural Gas Company for the amendment of the General Rules and Regulations governing the prorated gas pools of New Mexico and the amendment of the Special Rules and Regulations governing the Tapacito-Pictured Cliffs and Basin-Dakota Gas Pools located in Rio Arriba, San Juan, and Sandoval Counties, New Mexico. Applicant, in the above-styled cause, seeks the amendment of the General Rules and Regulations governing the prorated gas pools of Northwest and Southeast New Mexico and the Special Rules and Regulations governing the Tapacito-Pictured Cliffs and Basin-Dakota Gas Pools located in Rio Arriba, San Juan, and Sandoval Counties, to permit substantial changes in the method of classifying marginal wells, and the assignment of allowable to marginal wells governed by the aforesaid rules and regulations, as well as a substantial change in the balancing of production procedure required by said rules. Copies of the proposed amendments will be circulated by way of the Commission's general mailing list and will be available upon request made to the Commission at its Santa Fe office.

CASE 4465: In the matter of the hearing called by the Oil Conservation Commission on its own motion to consider the revision of Rule 1216 of the Commission Rules and Regulations to permit matters involving the limiting of total production of gas from a gas pool to be heard before an examiner.

CASE 4466: Application of Reserve Oil and Gas Company for a non-standard gas proration Unit and dual dedication of acreage, 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 17, Township 25 South, Range 37 East, Jalmat Gas Pool, Lea County, New Mexico, to be dually dedicated to its Woolworth "B" Well No. 1, a gas well, located 330 feet from the North line and 990 feet from the West line of said Section 17, and to Jalmat oil wells in said quarter section.

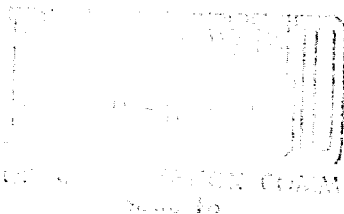
CASE 4467: Application of Gulf Oil Corporation for commingling of production, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to Rules 303 and 309 of the Commission Rules and Regulations to commingle, prior to measurement, production from the Hobbs (Grayburg-San Andres) and Hobbs-Blinbry Pools on its W. D. Grimes NCT-B Lease in Section 33, Township 18 South, Range 38 East, Lea County, New Mexico. Applicant further seeks authority to commingle, prior to measurement, the aforesaid production with the Hobbs (Grayburg-San Andres) production from its W. D. Grimes NCT-A Lease in Section 32, said Township and Range. Allocation of production to each lease and pool would be on the basis of well tests.



**ANADARKO PRODUCTION COMPANY**

3109 WINTHROP AVENUE P. O. BOX 9317 FORT WORTH, TEXAS 76107

CABLE ADDRESS: ANOARK



DECEMBER 6, 1972

NEW MEXICO CONSERVATION COMMISSION  
STATE LAND OFFICE BUILDING  
COLLEGE AVENUE  
SANTA FE, NEW MEXICO 87501

ATTENTION: IDA RODRIGUEZ

DEAR MS. RODRIGUEZ:

THANK YOU FOR THE TRANSCRIPT OF THE TESTIMONY IN  
CASES No. 4469 AND 4470. IT HAS SERVED OUR PURPOSE AND I  
AM RETURNING IT.

SINCERELY YOURS,

*Paul A. Tucker*

PAUL A. TUCKER  
SENIOR PETROLEUM ENGINEER

PAT/FJB

ENCLOSURE

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

IN THE MATTER OF THE APPLICATION OF )  
ANADARKO PRODUCTION COMPANY FOR AN )  
ORDER AUTHORIZING A WATERFLOOD PROJECT )  
ON THE TEAS YATES UNIT AREA COMPRISED )  
OF THE YATES FORMATION UNDERLYING THE )  
SE/4 SE/4 OF SECTION 10, THE SW/4 SW/4 )  
OF SECTION 11, THE N/2 AND THE N/2 S/2 )  
OF SECTION 13, THE N/2, THE N/2 S/2, )  
THE SW/4 SE/4 AND THE SE/4 SW/4 OF )  
SECTION 14 AND THE NE/4 NE/4 OF )  
SECTION 15, TOWNSHIP 20 SOUTH, RANGE )  
33 EAST AND THE SW/4 NW/4 OF SECTION )  
18, TOWNSHIP 20 SOUTH, RANGE 34 EAST, )  
LEA COUNTY, NEW MEXICO. )

CASE NO. 4470

A P P L I C A T I O N

COMES NOW Anadarko Production Company, hereinafter referred to as "Applicant", and makes its application for an Order by this Commission authorizing Applicant to institute a waterflood project in the Teas Yates Seven Rivers Pool, Lea County, New Mexico by injecting water into the Yates sand formation in and under the SE/4 SE/4 of Section 10, the SW/4 SW/4 of Section 11, the N/2 and the N/2 S/2 of Section 13, the N/2, the N/2 S/2, the SW/4 SE/4 and the SE/4 SW/4 of Section 14 and the NE/4 NE/4 of Section 15, Township 20 South, Range 33 East and the SW/4 NW/4 of Section 18, Township 20 South, Range 34 East, Lea County, New Mexico, and in support of this application states:

1. The Unit Area of the Teas Yates Unit consists of the Yates sand formation in and under the lands above described, which lands are depicted within the heavy broken line on Exhibit 1 attached to this application. All of the wells now located within the Unit Area and producing from the Yates sand formation have reached an advanced state of depletion and are regarded as stripper wells.

DOCKET MAILED

Date 11-19-70

2. Applicant proposes to inject water into the Yates sand formation by the conversion to injection wells of the seven presently producing and three plugged and abandoned wells at the locations indicated on the said Exhibit 1.

3. The following listed owners of overriding royalty are the only interest owners in the entire Unit Area who have not executed the Teas Yates Unit Agreement nor ratified the same:

<u>Interest Owner</u>	<u>Tract</u>	<u>Unit Interest</u>	
		<u>Phase I</u>	<u>Phase II</u>
New Mexico Boys Ranch, Inc.	12	.000031	.000124
E. B. Noble	12	.000010	.000041
Peter Rapkoch	13	.000001	.000005
David Bond Kyte and The Bank of California, N.A., Trustee	13	.000007	.000035
Higgins Trust, Inc.	13	.000021	.000105

Of the foregoing interest owners, all except E. B. Noble have indicated that they will ratify the Unit Agreement, but absence of corporate officers, pending probate proceedings or other causes have delayed the actual execution and return to Applicant of the instruments of ratification. In the case of E. B. Noble, Applicant has been unable to locate this person and the proceeds attributable to this interest have been held in suspense by the purchasers of production for a period in excess of eleven years, due to the absence of knowledge of his whereabouts.

4. Should this Commission decline to permit the only producing wells located upon Tracts 12 and 13 to be converted to injection wells as herein proposed by Applicant, a waterflood of less than maximum effectiveness will result, with attendant waste in the form of oil left unrecovered in the reservoir. To prevent such waste and to protect the correlative rights of the very

substantial majority of interest owners in Tracts 12 and 13 who have executed or ratified the Unit Agreement, Applicant seeks authority of this Commission to convert the only producing wells on Tracts 12 and 13 to injection wells and to account to the non-signatory owners of overriding royalty upon such basis as may hereafter be agreed upon by Applicant with such owners.

5. Applicant urges, although the Unit Area of the Teas Yates Unit in its entirety does not qualify as a waterflood project area under the provisions of Rule 701 E 2 of this Commission, that in view of the unitization of the Yates sand formation into one common area for operations contemplated by the Unit Agreement, the entire Unit Area be designated by this Commission as the area of Applicant's waterflood project.

6. The data required by Rule 701 B of this Commission are attached hereto as Exhibits 1 through 4, respectively.

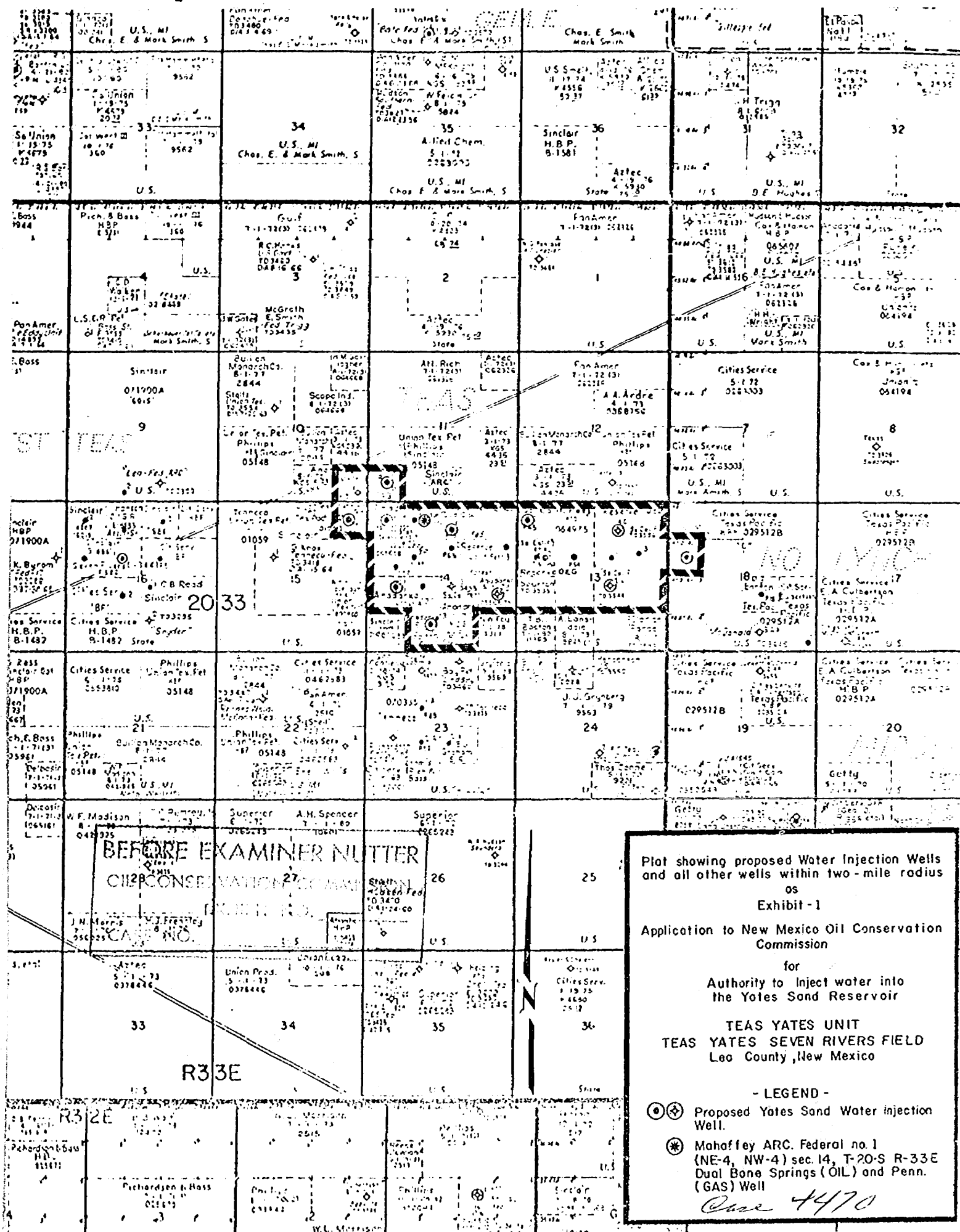
WHEREFORE, Applicant requests a hearing before an examiner, notice of hearing to be given according to law, and requests that after notice and hearing, this Commission issue its Order designating the Unit Area of the Teas Yates Unit as created by the Teas Yates Unit Agreement dated as of June 1, 1970 as Applicant's Teas Yates Unit Waterflood Project and authorizing the conversion to injection wells of the seven presently producing wells and the three plugged and abandoned wells at the locations indicated on Exhibit 1 attached hereto.

ROBERT E. ANDERSON  
P. O. Box 9317  
Fort Worth, Texas 76107

KELLAHIN & FOX

BY Jason W. Kellohin  
P. O. Box 1759  
Santa Fe, New Mexico 87501

Attorneys for Applicant



**ANADARKO PRODUCTION COMPANY**

DIAGRAMMATIC SKETCH of TYPICAL INJECTION WELL

as Exhibit - 3 to Application to New Mexico Oil Conservation Commission for Authority to inject water into the Yates Sand Reservoir

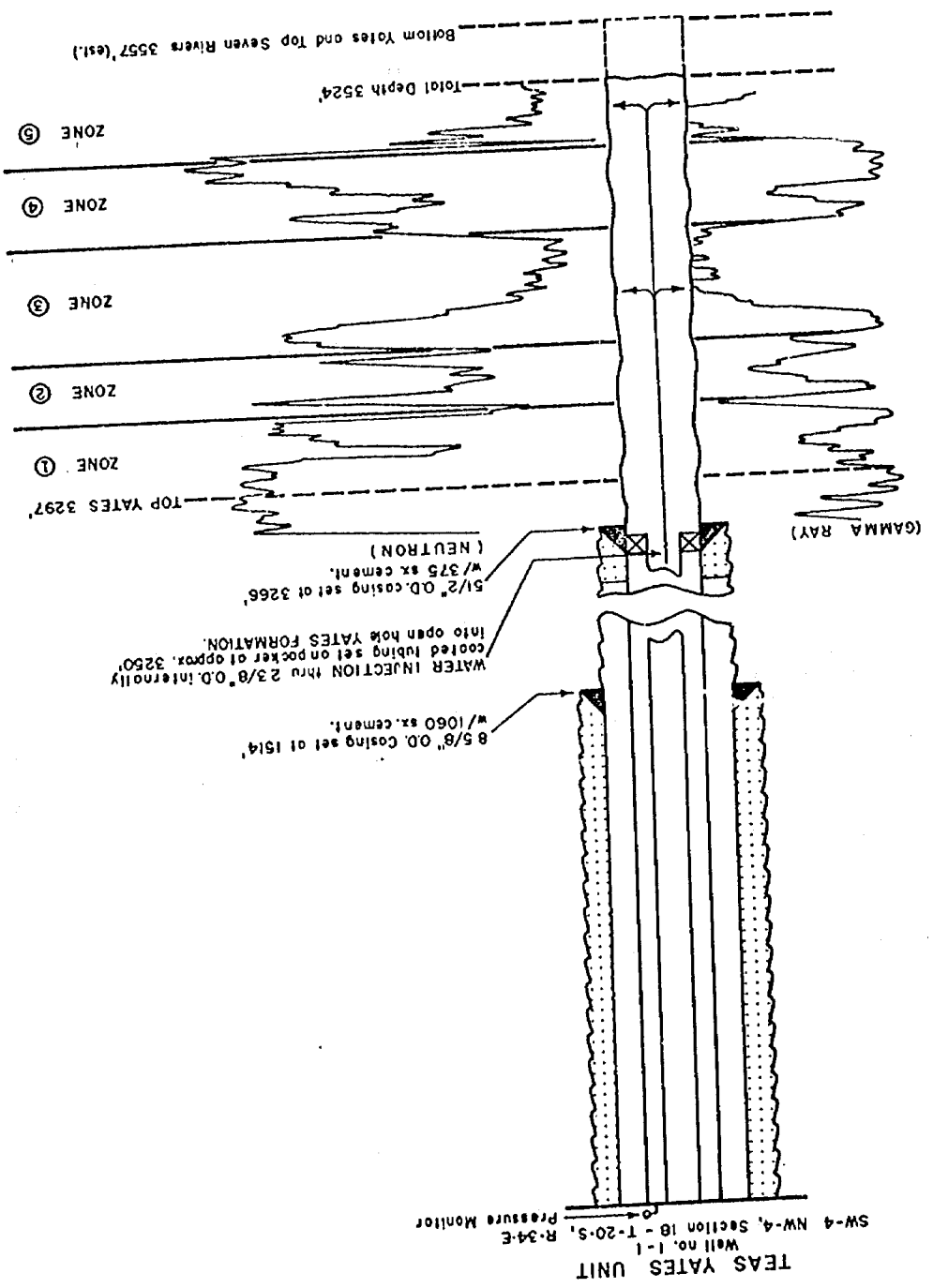
**TEAS YATES UNIT**  
**TEAS YATES - SEVEN RIVERS FIELD**  
 Lea County, New Mexico



*Case 4470*

\* Formerly Cities Service Oil Company  
 J. McDonald "C" well no. 1

Injection water to be a mixture of Yates produced water and Seven Rivers source water. Average daily water injection rates estimated at 300 BPD per well at surface pressure of 1800 psi.



**BEFORE EXAMINED BY THE**  
**OIL CONSERVATION COMMISSION**  
 EXHIBIT NO. \_\_\_\_\_  
 CASE NO. \_\_\_\_\_

**TEAS YATES UNIT**  
 Well no. 1-1  
 SW-4 NW-4, Section 18 - T-20-S, R-34-E  
 Pressure Monitor



PROPOSED WATER INJECTION WELL COMPLETIONS  
TO  
EXHIBIT 4  
APPLICATION TO NEW MEXICO OIL CONSERVATION COMMISSION  
FOR  
AUTHORITY TO INJECT WATER INTO YATES SAND RESERVOIR

TEAS YATES UNIT  
TEAS YATES SEVEN-RIVERS FIELD  
LEA COUNTY, NEW MEXICO

Unit Well Number	Previous Operator, Lease, and Well No.	Location Section - Twp - Range	Elev. Depth	Present Completion Formation		Casing Surface		Proposed Water Injection Completion
				Zone	Interval	Surface	Log	
1-1	Cities Service Jewell McDonald #1	SW/4 NW/4 18-20S-34E	3624'	3524'	Yates-pump (OH)	8-5/8" OD set at 1514' cemented w/ 1060 sacks.	5 1/2" OD set at 3266' cemented w/ 375 sacks.	Well now prod. from all porous Yates Zones from open hole. Water will be injected into these open hole intervals.
2-2	Reserve Federal Bobb #2	NW/4 NW/4 13-20S-33E	3599'	3359'	Yates-pump 3325'-59' (OH)	No surface	5 1/2" OD set at 3325' cemented w/ 200 sacks around shoe and 200 sacks thru stage at 1410'.	Well now prod. from Yates Zone 3 (open hole). Well will be deepened thru all Yates Zones, logged and completed in all Yates Zones of porosity for injection.
3-2	Reserve Federal Bobb "C" #2	NW/4 SE/4 13-20S-33E	3611'	3540' 3420' PB	Yates-TA 3335'-50' (perf) 3361'-66' (perf)	8-5/8" OD set at 1001' cemented w/ 500 sacks.	5 1/2" OD set at 3491' cemented w/ 75 sacks.	Well now perf. in Yates Zone 1 (TA). Yates Zones 2 and 3 (perf) and Zone 5 (open hole) to be opened for injection.
3-4	Reserve Federal Bobb "C" #4	NW/4 NE/4 13-20S-33E	3608'	3536'	None	8-5/8" OD set at 990' cemented w/ 525 sacks.	None	Well now plugged and abandoned. Well to be re-entered, logged, and completed for injection in porous Yates Zones thru perfs.
6-1	Anadarko Sinclair Federal #1	NW/4 SW/4 14-20S-33E	3586'	3428'	Yates-TA 3236'-56' (perf) 3284'-33'0' (perf)	8-5/8" OD set at 950' cemented w/ 300 sacks- circulated.	4 1/2" OD set at 3426' cemented w/ 523 sacks- top cement 650'.	Well now prod. thru perfs. from Yates Zones 2 and 3. Water to be injected into these zones.

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 4  
CASE NO. 4470

PROPOSED WATER INJECTION WELL COMPLETIONS

EXHIBIT 4

TO  
APPLICATION TO NEW MEXICO OIL CONSERVATION COMMISSION

FOR  
AUTHORITY TO INJECT WATER INTO YATES SAND RESERVOIR

TEAS YATES UNIT  
TEAS YATES SEVEN-RIVERS FIELD  
LEA COUNTY, NEW MEXICO

Unit Well Number	Previous Operator, Lease, and Well No.	Location Section - Twp - Range	Elev.	Depth	Completion Zone	Present Formation Interval	Casing Surface	Long	Proposed Water Injection Completion
1-1	Cities Service Jewell McDonald #1	SW/4 NW/4 18-20S-34E	3624'	3524'	Yates-pump	3266'-3524' (OH)	8-5/8" OD set at 1514' cemented w/ 1060 sacks.	5 1/2" OD set at 3266' cemented w/ 375 sacks.	Well now prod. from all porous Yates Zones from open hole. Water will be injected into these open hole intervals.
2-2	Reserve Federal Bobb #2	NW/4 NW/4 13-20S-33E	3599'	3359'	Yates-pump	3325'-59' (OH)	No surface	5 1/2" OD set at 3325' cemented w/ 200 sacks around shoe and 200 sacks thru stage at 1410'.	Well now prod. from Yates Zone 3 (open hole). Well will be deepened thru all Yates Zones, logged and completed in all Yates Zones of porosity for injection.
3-2	Reserve Federal Bobb "C" #2	NW/4 SE/4 13-20S-33E	3611'	3540'	Yates-TA	3335'-50' (perf) 3361'-66' (perf)	8-5/8" OD set at 1001' cemented w/ 500 sacks.	5 1/2" OD set at 3491' cemented w/ 75 sacks.	Well now prod. in Yates Zone 1 (TA). Yates Zones 2 and 3 (perf) and Zone 5 (open hole) to be opened for injection.
3-4	Reserve Federal Bobb "C" #4	NW/4 NE/4 13-20S-33E	3608'	3536'	None	Dry Hole	8-5/8" OD set at 990' cemented w/ 525 sacks.	None	Well now plugged and abandoned. Well to be re-entered, logged, and completed for injection in porous Yates Zones thru perfs.
6-1	Anadarko Sinclair Federal #1	NW/4 SW/4 14-20S-33E	3586'	3428'	Yates-TA	3236'-56' (perf) 3284'-3370' (perf)	8-5/8" OD set at 950' cemented w/ 300 sacks- circulated.	4 1/2" OD set at 3426' cemented w/ 523 sacks- top cement 650'.	Well now prod. thru perfs. from Yates Zones 2 and 3. Water to be injected into these zones.

BEFORE EXAMINER INITIALS  
OIL CONSERVATION COMMISSION  
EXHIBIT NO. 4  
CASE NO. 4470

Case  
4470

PROPOSED WATER INJECTION WELL COMPLETIONS  
TO  
EXHIBIT 4  
APPLICATION TO NEW MEXICO OIL CONSERVATION COMMISSION  
FOR  
AUTHORITY TO INJECT WATER INTO YATES SAND RESERVOIR

TEAS YATES UNIT  
TEAS YATES SEVEN-RIVERS FIELD  
LEA COUNTY, NEW MEXICO

Well Number	Previous Operator, Lease, and Well No.	Location Section - Two - Range	Elev.	Total Depth	Completion Zone	Present Formation Interval	Casing Surface	Log	Proposed Water Injection Completion
9-1	Anadarko Federal "C" #1	SE/4 SW/4 14-20S-33E	3596'	3342'	Yates-pump	3290'-3342' (OH) 3267'-86' (perf)	No surface	7" OD set at 3290' cemented w/ 50 sacks around shoe and 400 sacks logged, and completed in all Yates Zones of porosity for injection.	Well now prod. thru perfs and open hole Yates Zones 2 and 3. Well to be deepened thru all Yates Zones.
11-1	Reserve Federal 1-14 #1	NW/4 NE/4 14-20S-33E	3592'	3319'	Yates-pump	3235'-50' (OH) 3275'-87' (OH)	No surface	5 1/2" OD set at 3215' cemented w/ 335 sacks 10% plus 100 sacks neat circulated to surface.	Well now prod. from Yates Zone 2 and 3 (open hole). Well will be deepened thru all Yates Zones, logged, and completed in all Yates Zones of porosity for injection.
12-1	Anadarko Federal AC #1	NE/4 NE/4 15-20S-33E	3582'	3335'	Yates-pump	3293'-3335' (OH)	No surface	5 1/2" OD set at 3293' cemented w/ 50 sacks around shoe and 300 sacks completed in all Yates Zones of porosity for injection.	Well now prod. from Yates Zone 2 and poss. 3 (open hole). Well will be deepened thru all Yates Zones, logged, and completed in all Yates Zones of porosity for injection.
13-1	Anadarko Federal AB #1	SW/4 SW/4 11-20S-33E	3578'	3507'	Yates-pump	3282'-3300' (perf) 3330'-3352' (perf)	No surface	5 1/2" OD set at 3275' cemented w/ 50 sacks-top cement 2610'. Perf 5 1/2" @ 2600' and cemented w/450 sacks-top cement 970'. 4" OD liner 3219'-3487' cemented w/40 sacks.	Well prod. thru perfs from Yates Zones 1 and 2. Yates Zones 3 and poss. 4 to be opened for water injection thru perfs.

DRAFT  
GMH/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. 4470

Order No. R- 4077

APPLICATION OF ANADARKO PRODUCTION COMPANY  
FOR A WATERFLOOD PROJECT, LEA COUNTY,  
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on December 2, 1970,  
at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this \_\_\_\_\_ day of December, 1970, 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, Anadarko Production Company,  
seeks authority to institute a waterflood project in the its  
Teas Yates Unit Area, Teas Yates-Seven Rivers Pool,  
by the injection of water into the Yates formation  
through ten injection wells in Section \_\_\_\_\_  
Township 20 ~~XXXXXX~~ South, Ranges 33 and 34 ~~XXXXXX~~ 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.

(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, Anadarko Production Company, is hereby authorized to institute a waterflood project in the its Teas Yates Unit Area, Teas Yates-Seven Rivers Pool, by the injection of water into the Yates formation ten through the following-described/wells in Township ----- North,--South,--Range ----- West,--East,--NMPM, Lea County, New Mexico:

<u>Unit Well No.</u>	<u>Owner/Operator, Lease, and Well No.</u>	<u>Location</u> <u>Unit - Section - Township - Range</u>
1-1	Cities Service Jewell McDaniel No. 1	E - 18 - 20 South - 34 East
2-2	Reserve Federal Noble No. 2	D - 13 - 20 South - 33 East
3-2	Reserve Federal Noble "C" No. 2	J - 13 - 20 " 33 "
3-4	Reserve Federal Noble "C" No. 4	B - 13 - 20 " 33 "
6-1	Anadarko Lincoln Federal No. 1	L - 14 - 20 " 33 "
9-1	Anadarko Federal "C" No. 1	N - 14 - 20 " 33 "
11-1	Reserve Federal 1-14 No. 1	B - 14 - 20 " 33 "
12-1	Anadarko Federal AC No. 1	A - 15 - 20 " 33 "
13-1	Anadarko Federal AB No. 1	M - 11 - 20 " 33 "
15-1	Spartan Drilling Co. Federal No. 1	I - 14 - 20 " 33 "

tions.

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

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

(2) That the subject waterflood project is hereby designated the Aradarko Teas Yatai 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.

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
December 2, 1970

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production  
Company for a unit agreement, Lea  
County, New Mexico.

Case No. 4469

Application of Anadarko Production  
Company For a waterflood project  
Lea County, New Mexico

Case No. 4470

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
C. W. STUMHOFFER	
Direct Examination by Mr. Anderson	3
Cross Examination by Mr. Nutter	16

E X H I B I T S

	<u>Marked</u>	<u>Admitted</u>
Exhibit No. 1 (4469)	4	8
Exhibit No. 1 (4470)		15
Exhibit No. 2		15
Exhibit No. 3		15
Exhibit No. 4		15

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MR. NUTTER: Case 4469.

MR. HATCH: Case 4469, Application of Anadarko Production Company for a unit agreement, Lea County, New Mexico.

MR. KELLAHIN: Jason B. Kellahin, Kellahin and Fox, Santa Fe, appearing for the Applicant in association with Mr. Robert E. Anderson who will present the case. I would move that it be consolidated for the purposes of the record with Case 4470.

MR. NUTTER: We will call Case 4470 at this time.

MR. HATCH: Case 4470, Application of Anadarko Production Company for a waterflood project, Lea County, New Mexico.

MR. NUTTER: Cases 4469 and 4470 will be consolidated for purposes of testimony.

C. W. STUMHOFFER

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

DIRECT EXAMINATION

BY MR. ANDERSON:

- Q State your name for the record?
- A C. W. Stumhoffer.
- Q By whom are you employed, Mr. Stumhoffer?
- A Anadarko Production Company.

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Q In what capacity?

A Superintendant of the secondary recovery division.

Q Have you qualified and testified as a witness before this Commission?

A Yes, I have.

MR. ANDERSON: Are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

Q (By Mr. Anderson) Mr. Stumhoffer, briefly, what is sought by Anadarko's Application in 4469?

A In Case 4469 Anadarko seeks approval of its Teas-Yates Unit that has been formed for secondary recovery of oil from the Yates formation that is found at a depth of 4147 feet to 3376 feet as shown on Gammaray Nutron Log on Anadarko's Federal "A" Number 3 located 1980 from the North line and 1650 from the West line of Section 14, Township 20 South, Range 33 East, Lea County, New Mexico.

Q Mr. Stumhoffer, I refer you to what was attached to the Application as Exhibit 1, being the unit agreement dated as of June 1, 1970. Have you a copy of that before you?

A Yes, I do.

Q Was that unit agreement prepared by you or under

your direction or employees supervised by you?

A Yes, it was.

Q I refer you to Exhibit "A" to that being the plat of Teas Yates Unit, will you explain briefly why the particular unit area depicted there was chosen for unit possession?

A We chose the particular boundaries that have been outlined to include all wells that are produced from the Yates formation under the Teas Yates Seven Rivers Field. The boundaries were depicted by the fact that the reservoir limits had been defined by dry holes on all sides of the reservoir.

Q And the proposed unit area now concludes what was formally the proration unit for all the wells that produced from the Teas Yates sand in the pool?

A From the Yates formation, right.

Q And what is the unitized formation as proposed by the unit agreement?

A It is the Yates formation as found in the well that I gave the information on.

Q That is the only formation that is unitized?

A That's right.

Q Is Exhibit "A" portion of Exhibit 1, the plat originally attached to the Application correct in all respects?

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A It is not.

Q You have a corrected plat?

A Yes, I do.

Q Was that prepared by you or under your direction or under your supervision?

A Yes, it was.

Q In what respect does that differ from the plat attached to the original Application?

A It shows Anadarko as the Lessee of record of tract 15. Tract 15 was previously an unleased federal tract that Anadarko obtained by bid effective November 30 of this year, 1970.

Q I refer you to Page 3 of Exhibit "B", being schedule of ownership in the unit agreement and ask you if that is in all respects correct?

A No, it is not.

Q In what respect is it incorrect?

A It is incorrect as to the Tract 15 ownership.

Q And do you have the corrected Page 3?

A Yes, I do.

Q Was that prepared by you or under your supervision?

A Yes, it was.

Q With the exception of the two corrected pages

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which have been handed to the Examiner, is Unit 1 the unit agreement in all other respects correct?

A Yes, it's correct.

Q Has the approval of the regional supervisor, USGS, been obtained to this unit?

A Yes, he has given preliminary approval.

Q And what is yet lacking to obtain final approval?

A The approval of the New Mexico Oil Conservation Commission as to the approval of the unit.

Q Now, I direct your attention to Paragraph 3 of the Application wherein we point out that certain owners of overriding royalty have not as yet signed or ratified the unit agreement. Subsequent to the filing of the Application, has ratification been received from any of those indicated owners?

A Yes, we have received a ratification from New Mexico Boys' Ranch, Inc.

Q And do you know the status of the ratification as to any of those other parties?

A We have not obtained ratification from the other parties shown. We have contacted and are attempting to obtain ratification from three of the remaining four. The fourth one we have been unable to locate. We have had no

refusals to ratify the unit agreement.

Q Are all tracts within the unit area qualified under the terms of the unit agreement?

A Yes, sir.

Q Ratification was necessary to present to royalty and working interest owners?

A Yes.

MR. ANDERSON: At this time I would move the admission into evidence of Exhibit 1 originally attached to the Application as corrected by the substituted pages.

MR. NUTTER: Exhibit 1 as amended by the addition of the two pages will be admitted in evidence in Case 4469.

(Whereupon, Applicant's Exhibit 1 was admitted in evidence.)

Q (By Mr. Anderson) Now, then, Mr. Stumhoffer, turning to Case 4470, I will ask you to explain briefly to the Commission what is sought by this Application?

A In Case 4470 Anadarko seeks approval from the New Mexico Oil Conservation Commission for the proposed waterflood development of the Teas Yates Unit.

Q Now, the proposed area, is that the area shown on Exhibit 1 attached to the Application within the heavy

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broken lines as the unit area?

A Yes.

Q Do you propose all of that as the waterflood area?

A Yes.

Q What about the status of the presently producing well shown on that Exhibit? Those that are producing, are they making their allowable?

A They are all marginal wells at or near their economic limit of three barrels per day. We have some less than that.

Q Would that be regarded as a strip of well?

A Yes, it would be.

Q Would you explain briefly the proposed injection program that you contemplate if this Application is granted?

A We propose to use a peripheral tap injection pattern using the low, structurally low wells for injection. There will be ten injection wells. Of the ten wells, seven will be conversions of existing producing wells. They are listed on Exhibit 4.

Q At this point, I will ask you if Exhibit 4 attached to the Application was prepared by you or under your direction?

A It was.

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Q Is it correct?

A Yes.

Q In all respects?

A Except for Tract 15 it is now an Anadarko Lease and on the Exhibit 4 it is shown as an unleased federal tract.

Q And has corrected page 3 been prepared to show that change in ownership?

A Yes, it has.

Q Proceed.

A We propose to utilize ten wells for injection purposes of the ten, seven will be conversions of existing producing wells as previously stated. We will re-enter two dry holes that shows in the Yates formation and complete them for injection and we will convert a temporarily abandoned Yates formation well that was completed for production but never was produced for injection and that will total ten injection wells.

Q Mr. Stumhoffer, I would refer you to Exhibit 2 and 3 that were attached to the Application and ask you if those Exhibits were prepared by you or under your supervision?

A Yes, they were.

Q What is Exhibit 2?

A Exhibit 2 is a gamma ray neutron log of the City



Service Jewett McDonald (C) No. 1 Well located in the Southwest of the Northwest quarter of Section 18, Township 20 South, Range 34 East, Lea County, New Mexico. On this log we have shown the producing formation as to subject to water injection.

Q Is that log typical of the formation shown in all the wells you propose to use as injection wells?

A Yes, it is.

Q What about Exhibit 3?

A Exhibit 3 is a diagrammatic sketch of a typical water injection well completion on which we have shown the casing program for Well No. 1-1 on the Teas Yates Unit. This is the well that Exhibit 2 shows the gamma ray neutron log we propose to inject into the open hole section down tubing set on a packer at the bottom of the five and a half inch O.D. casin string that has been cemented. We will inject approximately at 300 barrels of Seven Rivers water per day at a service pressure of approximately 1800 pounds.

Q Is the information shown on that schematic diagram typical of the ten injection wells that will be utilized?

A All ten injection wells will be completed similar to this well. They will be an injection into open-hole interval or through perforations or a combination thereof

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under a packer.

Q I call your attention to Section 3 of the Application where there are listed certain overriding royalty owners who have not computed the unit agreement. We have referred to them a moment ago. Is this list as presently set out correct or does the same information apply with respect to New Mexico Boys Ranch?

A The same applies to New Mexico Boys Ranch as previously they have ratified the unit agreement, the others have not.

Q With the exception of these interested owners shown on this Paragraph 3 have all other overriding royalty owners, overriding interest owners and working interest owners signed the unit agreement and operating unit agreement under which this waterflood will be conducted?

A We have a 100 percent working interest and royalty ratification under all tracts except Tracts 12 and 13.

Q Now then I call your attention to the plat of the unit area which also depicts the proposed waterflood area and notice on there that each of tracts 12 and 13 which are presently producing wells are indicated to be converted to injection wells if the Commission grants the Application here. Now, if for any reason those wells were not permitted

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to be converted to injection wells, would that materially interfere with the effectiveness of your proposed flood?

A Yes, it would.

Q Are any of the royalty interest owners or overriding royalty owners who have not signed under Item 12 or 13?

A Yes, they are under 12 or 13. They are minor overriding royalty interest as set out in the Application.

Q Under Tract 12, we now have one, E. B. Nobel and under 13 these three individuals who have not ratified the unit?

A That's right.

Q What arrangements will Anadarko make to account to these royalty owners for the conversion on the only producing well on the tract where they own and they have not ratified the unit agreement if these wells are converted to injection wells so they no longer have production from their tract?

A Anadarko was willing to assume responsibility for payment of the monies due these overriding royalty interest owners on a unit basis.

Q Are you aware of the possibility that they would be held to be entitled to be paid on something either than

the unitized basis?

A Yes, I realize that.

Q Are these interests of such magnitude that it wouldn't make any appreciable difference in the economics of your program?

A No, it wouldn't.

Q Are they willing to proceed even if they are paid on a non-unitized basis?

A The reason we would like to convert these wells into injection, they are low structurally and further for maximum recovery they should be converted to injection.

Q Does the entire unit area as proposed strictly qualify as a waterflood project area under the provision of Rules 701E2?

A No, it does not.

Q Are you asking the entire unit area be approved as an exception to that Rule?

A No, we are only asking for allowable purposes. We have some 40-acre proration units that do not have wells on them and we only ask that the 40-acre proration units that have existing wells or will have injection wells to be considered for allowable purposes. We would like to include the whole area in the waterflood area.

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Q Why would you like it all?

A Because of the type of waterflood pattern we propose where we plan to use a perforable type flood. We will drill oil across these undrilled 40-acre proration units to existing well and we feel like they should be within the waterflood area. We feel that the economics do not justify drilling of wells on 40-acre proration unit.

Q You would propose the entire unit area of the Teas Yates unit as a waterflood project area but with the recognition no allowable based on that number of acres necessarily?

A That's correct.

Q Were Exhibits 1 through 4 and the one change, Page 2, Exhibit 1, prepared by you or under your direction?

A Yes, they were.

MR. ANDERSON: We move the introduction into evidence of Exhibits 1 through 4 and as attached to the Agreement and with the one corrected page.

MR. NUTTER: Exhibits 1 through 4 as amended will be admitted as amended.

(Whereupon, Exhibits 1 through  
4 were admitted into evidence.)

MR. ANDERSON: That concludes our examination of

Mr. umhoffer.

CROSS EXAMINATION

BY MR. NUTTER:

Q What percentage of working interest has committed its acreage to this unit?

A 100 percent.

Q What about royalty interest?

A It's all federal acreage.

Q And the U. S. Government has agreed to this unitization?

A Preliminary approval.

Q Of your overriding royalty owners, how many tracts are involved in this tract that has not been signed?

A Two, Tract 12 located in the Northeast, Northeast of Section 15 and No. 13 located in Southwest of the Southwest of Section 11 and Township 20 South, Range 33 East.

Q 13 in Section 11?

A Right.

Q And in Section 15, No. 12?

A We have one unsigned overriding royalty owner, a very small one as shown in the Application under Tract 12 and three under Tract 13, very small overriding royalty interest.

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Q And outside of that overriding royalty interest everything else is 100 percent committed?

A That's right.

Q And you are willing to treat these tracts as an un-unitized tract for payment of overriding royalties?

A We would like authority to convert the wells to injection.

Q Now, you mentioned that there were certain tracts that don't have wells on them. If you will turn to Exhibit 1, I guess it is Exhibit "A" in the unit agreement, please?

A Yes.

Q We also need Exhibit No. 1, Case 4470 so we can tell which of the injection wells. It would appear in Section 14, the Federal "A" No. 1 which is shown as an abandoned well?

A Yes.

Q Over on our Exhibit 1 in Case 4470 I notice that is circled but not colored green?

A That is the County map, the discovery well of the field.

Q That circle around that well doesn't mean a thing?

A No.

Q On Exhibit "A" it is shown as an abandoned well

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and that well will be back on production as soon as you get water into the well North and West of it?

A We plan to complete this well in Seven Rivers. The Seven Rivers is water productive and producing some oil with it and we will produce it into a certain tank battery and use water to inject into the Yates.

Q This won't be an oil well in your flood?

A No.

Q Which wells would account for allowable?

A We have nine existing wells, Tract 13, I will start on the Northwest side of the unit, Tract 13, Well No. 1 -- I'm sorry that is going to be an objection.

Q It will account for allowable purposes?

A Tract 13, Well No. 1, an injection well. Tract 12, No. 1, an injection well. Tract 5, Well No. 2, Tract 5, Well No. 3 we plan to drill a well at location 990 from the North line and 990 from the West line of Section 14. It will be Tract 5, Well No. 5.

Q So that 40 will count?

A Tract 6, Well No. 1 will be an injection well. Tract 7, Well No. 1 will be a producing well. Tract 9, Well No. 1 will be an injection well. Tract 14, Well No. 1 on the three shown on the map will be reentered and completed



for production. Tract 10, Well Nos. 1 and 2 will be producing wells. Tract 11, Well No. 1 will be an injection well. Tract 15, Well No. 1 we will re-enter for injection. Tract 8, Well No. 2 will be a producing well. Tract 2, Well No. 1 will be a producing well. Well No. 2 on Tract 2 will be an injection well. On Tract 4, Well No. 1, will be a producing well. Tract 3, Well Nos. 2 and 4, will be completed for injection. Well No. 3 on Tract 3 will be a producing well. Tract No. 1, Well No. 1, will be converted to injection. There will be a total of 21 wells. There will be 10 injection wells and 11 producing wells each on a 40-acre proration unit.

Q Very well, now Mr. Stumhoffer, it appears from the casing program this is a rather unusual casing program on some of these?

A Yes, it is. It is on a potash area and this is the reason for it.

Q These wells that don't have any surface pipe, the first one would be on Page 1 of Exhibit 4, the Reserve Federal Bob No. 2?

A 2-2.

Q Yes, sir, 2-2, Unit Well 2-2. It indicates there is no surface pipe in this well but five and a half-inch

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pipe is set at 3325 cemented with 200 sacks around the shoe and 200 sacks through a stage at 1410. Could you give me the top of the cement on the top of that second stage?

A I do not have that available.

Q Available in your files?

A No.

Q No way of knowing how far the cement came?

A No.

Q Well No. 9 on the one on Page 2 of Exhibit 4 which has no surface pipe but the seven-inch is at 3290 cemented with 50 sacks around the shoe and 400 sacks to the surface?

A They did not specify where the cement was pumped out but they did say circulated to surface.

Q By surface you mean the cement did not come back to the surface from wherever it was staged?

A I don't believe I have any information of where it was staged in the well file.

Q Now, on Well No. 11-1 we've got 335 sacks plus a hundred sacks of neat cemented and circulated to the surface. I presume that is from the shoe, is this correct?

A I took this from the well record and this is what the well record stated, circulated to surface.

Q Down from what point?

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A I assume from the 3215.

Q From the shoe?

A From the shoe. This is the best information I had.

Q Now, what about the next well, 12-1, 50 sacks around the shoe and 300 sacks to the surface, is this a stage?

A Yes, it was in these wells they pulled the surface pipe. They cemented around the shoe and was anywhere from 50 to 500 sacks and knocked a hole in the long string, pulled the surface pipe and cemented through the hole. This was at varying depths, anywhere from 400 to 1400 feet. In a lot of cases they did not specify where they pumped the cement out on the upper stage. I have no information in our files.

Q Who drilled these wells originally?

A The wells that Anadarko operates in this field were drilled by Henry Black and Company.

Q Who is the operator of these wells that were completed in this manner, the original operator?

A The original operator is Henry Black Drilling Company.

Q And Well No. 13-1 appears to have five and a half

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at 3275 cemented with 50 sacks. This is a complicated cementing program.

A Five and a half O.D. set at 3275. They cemented the shoe with 50 sacks. The top of that cement was at 2610. They perforated the five and a half inch O.D. at 2600.

Q Which would be immediately above the top?

A Yes, and cemented with 450 sacks and the top of the cement came to 970 feet.

Q You don't have any cement from the surface to 970?

A That's correct.

Q In each case you plan to inject down tubing and under a packer, is that correct?

A That's right.

Q And although some of these wells have open hole and some have pipe down through the pay, your injection will either be through open hole or perforations or a combination of the two?

A Yes, sir.

Q But in all events, under a packer?

A Yes, sir.

Q What about casing tubing annulus?

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A We will load it with treated water and we will either have a pressure gauge at the surface or have it in such a situation we can detect any communication. There will be no pressure on the backside of the casing.

Q When were these wells drilled?

A During 1953 to '58, the bulk of them. There was one drilled in 1965.

Q And these wells were drilled in the oil potash area, is this correct?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Stumhoffer? He may be excused. Do you have anything else, Mr. Anderson?

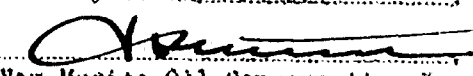
MR. ANDERSON: That completes our presentation.

MR. NUTTER: If there is nothing further anyone wishes to offer in Case 4469 or Case 4470 we will take the case under advisement.

STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO )

I, SOVEIDA GONZALES, Court Reporter, 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.

  
COURT REPORTER

I do hereby certify that the foregoing is a true and correct record of the proceedings in the hearing of Case No. 4468-4470  
by me on Dec 2 1970  
  
New Mexico Oil Conservation Commission

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