

CASE 3330: Application of ANADARKO
PROD. CO. for a waterflood project
Eddy County, New Mexico

CASE NO.

3330

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

IN RE: APPLICATION OF ANADARKO PRODUCTION COMPANY,)
AS OPERATOR OF THE GRAYBURG-JACKSON UNIT, ORIGINALLY)
AUTHORIZED BY ORDER NO. R-2323, FOR AUTHORITY TO)
RECOMPLETE OR CONVERT FIVE (5) WELLS AS WATER IN-)
JECTION WELLS, ALL OF SUCH WELLS BEING LOCATED)
WITHIN THE BOUNDARIES OF THE GRAYBURG-JACKSON UNIT)
IN EDDY COUNTY, NEW MEXICO.)

Case No. 3330

MAIN OFFICE CC

A P P L I C A T I O N

65 OCT 13 PM 1

COMES NOW Anadarko Production Company, in its capacity as Operator of the Grayburg-Jackson Unit, Eddy County, New Mexico, hereinafter referred to as "Applicant", and makes application for authority to convert or recomplete the below-described wells as water injection wells into the Grayburg Premier Sand Formation in and under said Grayburg-Jackson Unit, and in support of this Application alleges the following:

1. The wells to be recompleted or converted to water injection wells and the locations thereof within the Grayburg-Jackson Unit are described as follows:

<u>Grayburg-Jackson Unit Well No.</u>	<u>Location</u>	<u>N. M. Unit Letter Designation</u>	<u>Sec.</u>	<u>Town- Ship</u>	<u>Range</u>
7A-2	SE/4 NE/4	H	26	17S	30E
13-1	NW/4 SE/4	J	26	17S	30E
13-4	SE/4 SE/4	P	26	17S	30E
13-5	NW/4 SW/4	L	25	17S	30E
13-8	SE/4 SW/4	N	25	17S	30E

ALL LOCATED WITHIN EDDY COUNTY, NEW MEXICO.

Wells No. 13-4 and 13-8 have previously been plugged and abandoned, but will be recompleted as water injection wells in the Grayburg-Jackson Premier Sand located at an approximate depth of 3,250 feet, and all the other wells above listed will be converted from producing wells to water injection wells in said Formation at the same depth.

2. That the original order number which originally authorized the waterflood project known as the Grayburg-Jackson Unit is Order No. R-2323; the formation to be flooded by the injection of water in the before-mentioned wells will be the Grayburg Premier Sand located at an approximate depth

of 3,250 feet; the fluid to be used for injection is water, and it is anticipated that there will be injected in each well a volume of Five Hundred (500) barrels per day. The source of the injection water will be local commercial water companies.

3. That the conversion or recompletion of the above-mentioned five (5) wells as water injection wells will aid in a more efficient and orderly development and operation of the Grayburg-Jackson Unit and Waterflood Project and is, in fact, necessary to allow the Applicant to completely develop and operate the Grayburg-Jackson Unit and Waterflood Project. In addition thereto, Applicant is in the process of entering into a Cooperative Line Agreement with the operator of leases covering land in Sections 24 and 25 in said township and range, which land directly offsets the Grayburg-Jackson Unit. It is anticipated that the formal agreement will be fully executed by the time of the hearing on this Application and, if so, a fully executed copy of such agreement will be exhibited and furnished to this Commission.

4. That there are attached hereto the following exhibits as indicated, or such exhibits, as indicated, will be furnished to the Commission within ten (10) days from date hereof:

- (a) A plat showing the location of the proposed injection wells and all other wells within a two-mile radius, such plat being marked Exhibit "A"; and
- (b) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-116 (Gas-Oil Ratio Report), such form being marked Exhibit "B"; and
- (c) A diagrammatic sketch showing casing and tubing data for the above-mentioned five injection wells, such sketch being marked Exhibit "C"; and
- (d) Waterflood application data sheet with pertinent reservoir and lease data, such application being marked Exhibit "D"; and
- (e) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-102 (Miscellaneous Notice), giving notice of intention to recomplete Wells No. 13-8 and 13-4 above, such form being marked Exhibit "E"; and

- (f) A map of the Unit area showing the proposed injection wells marked in red, such map being marked Exhibit "F".

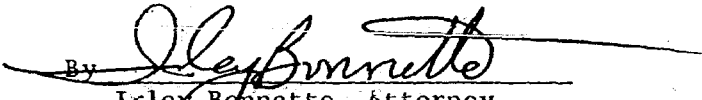
6. That a copy of this Application, together with all Exhibits, has been forwarded to the following parties:

- (a) The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; and,
- (b) The First National Bank of Fort Worth, Texas, and Anne Burnette Windfohr, in their capacity as Independent Executors of the Estate of R. F. Windfohr, Deceased, as Operator of the offset acreage located in Section 25, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to 1202 First National Bank Building, Fort Worth, Texas 76102; and,
- (c) Franklin, Aston & Fair, Inc., as Operator of the offset acreage located in the NE/4, Section 35, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to P. O. Box 1090, Roswell, New Mexico 88201.

7. That Applicant is filing this Application in accordance with the provisions of Rule 701 B, and Applicant requests and prays that an order be entered by this Commission allowing the recompletion and conversion of the above-mentioned wells as water injection wells and the injection of water into the above-mentioned formation underlying the land above-described within the Grayburg-Jackson Unit, all as provided under Rule 701 B.

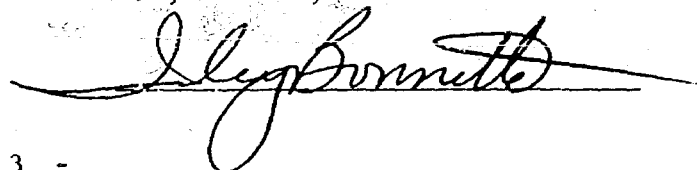
WHEREFOR, Applicant requests a hearing before an examiner and requests that after a hearing thereon the above-mentioned order be entered by the Commission.

ANADARKO PRODUCTION COMPANY

By 
Irley Bonnette, Attorney
P.O. Box 9317, Fort Worth, Texas

CERTIFICATE

I, Irley Bonnette, do hereby certify that on the 12th day of October, 1965, I mailed a true and complete copy of this Application, together with all Exhibits, to the following parties: The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; The First National Bank of Fort Worth, Texas, and Anne Burnett Windfohr, Independent Executors of the Estate of R. F. Windfohr, Deceased, 1202 First National Bank Building, Fort Worth, Texas 76102; and Franklin, Aston & Fair, Inc., P. O. Box 1090, Roswell, New Mexico 88201.



NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator ANADARKO PRODUCTION COMPANY		Pool GRAYBURG-JACKSON				County EDDY										
Address P.O. Box 9317 FORT WORTH, TEXAS						TYPE OF TEST - (X)	Scheduled <input type="checkbox"/>	Completion <input type="checkbox"/>	Special <input checked="" type="checkbox"/>							
LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	STATUS	CHOKESIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT./BBL.
		U	S	T	R							WATER BBL.S.	GRAV. OIL	OIL BBL.S.	GAS M.C.F.	
GRAYBURG-JACKSON	7A-1	G	26	17	30E	10-2-65	P				24	0		75	NIL	NIL

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

EXHIBIT "B"

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

E. A. Riley
E. A. RILEY (Signature)
SUPERINTENDENT SECONDARY REC.DIV.

OCTOBER 12, 1965

(Date)

GRAYBURG-JACKSON UNIT (R 2323)

OCTOBER 11, 1965

7A-2	13-1	13-4	13-5	13-8
508' - 8"	510' - 8"	510' - 8"	495' - 8"	515' - 8"
50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.
3030' - 7"	3070' - 7"	3090' - 7"	3100' - 7"	3150' - 7"
100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.

EXHIBIT "C"

APPLICATION TO INJECT FLUID
INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS

Field Grayburg-Jackson County Eddy District _____
Operator Ambassador Oil Corporation Date October 11, 1965
Address P.O. Box 9338, Ft. Worth, Texas
Lease (s) & Number (s) Grayburg-Jackson Unit (R-2323)
Reservoir Premier Discovery Date April, 1930

HAVE ANY INJECTION PERMITS BEEN GRANTED PREVIOUSLY IN THIS RESERVOIR?
IF ANSWER TO ABOVE QUESTION IS "NO", ALL OPERATORS IN THE RESERVOIR MUST BE
NOTIFIED OF THIS APPLICATION, AND COPIES OF NOTIFICATION ATTACHED HERETO.

I. Reservoir and fluid characteristics

A. Information on entire reservoir

1. Name of formation Grayburg-Jackson-Premier Zone
2. Estimated productive area of entire reservoir unknown
3. Composition (sand, limestone, shale, etc.) sand
4. Type of structure Stratigraphic trap
(Include cross-section and structural maps)
5. Subsea depth of oil-water contact none Gas-oil contact none
6. Type drive during primary production SOLUTION GAS
7. Original BHP 1,300 Current BHP 0
8. Was gas cap present originally? no At present? no
9. Ratio of gas cap volume to oil zone volume --
10. Saturation pressure -- Formation Volume Factor 1.28

B. Information on proposed project area

1. Number of productive acres in lease (s) within project area 1600
2. Average depth to top of pay 3300
3. Average effective pay thickness (ft) 13
4. Average porosity (%) --
5. Average horizontal permeability (mds.) 10 Range 5-60
6. Connate water content (% of pore space) 15
7. Gravity of oil (API) 37 Viscosity est. 1.5 CP

II. Primary Production history

1. Date first well completed on lease (s) May 1930
2. Oil, gas, water production by months since discovery. (Graphically as well as in tabular form.)
3. Stage of depletion of project area Stripper
4. Number of producing wells on each lease in project area 35
5. Average daily oil production per well at present time 2.2
6. Average gas-oil ratio nil Water production (%) none
7. Cumulative oil production to date from lease (s) 1,745,000

III. Results expected

1. Estimated original oil in place (bbls.) 9,000,000
2. Estimated oil saturation at present time (% of pore space) 50
3. Estimated residual oil saturation at abandonment 30
4. Estimated ultimate additional oil that will be recovered as a direct result of injection (bbls.) 1,750,000

IV. Injection

1. Type of Injection Fluid (water, gas, LPG) Water
2. Source of injected fluid (formation, depths) Commercial Water Supplier
3. Injection pattern and spacing 5 spot 80 acres
4. Maximum injection pressure to be used (psi) 1,200
5. Estimated maximum per well rate of injection (bbls.) 500
6. List complete injection well data on reverse side of this sheet.

(APPLICANTS MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

GRAYBURG-JACKSON UNIT (R 2323)

INJECTION WELL DATA

LEASE NAME & NO. WELL NUMBER		7A-2	13-1	13-4	13-5	13-8	
SURFACE CASING	SIZE	8"	8"	8"	8"	8"	
	LENGTH	508'	510'	510'	495'	515'	
	SACKS & TYPE CEMENT	50	50	50	50	50	
PRODUCTION CASING	SIZE	7"	7"	7"	7"	7"	
	LENGTH	3030'	3070'	3090'	3100'	3150'	
	SACKS & TYPE CEMENT	100	100	100	100	100	
TUBING	LENGTH	3010'	3050'	3070'	3080'	3130'	
	PACKER DEPTH	3010'	3050'	3070'	3080'	3130'	
INJECTION	DEPTH	3220'	3220'	3225'	3225'	3330'	
	THRU CASING OR TUBING?	TUBING	TUBING	TUBING	TUBING	TUBING	

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

Submit this notice in TRIPLICATE to the District Office, Oil Conservation Commission, before the work specified is to begin. A copy will be returned to the sender on which will be given the approval, with any modifications considered advisable, or the rejection by the Commission or agent, of the plan submitted. The plan as approved should be followed, and work should not begin until approval is obtained. See additional instructions in the Rules and Regulations of the Commission.

Indicate Nature of Notice by Checking Below

NOTICE OF INTENTION TO CHANGE PLANS		NOTICE OF INTENTION TO TEMPORARILY ABANDON WELL		NOTICE OF INTENTION TO DRILL DEEPER	
NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

FORT WORTH, TEXAS
(Place)

OCTOBER 12, 1965
(Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the ANADARKO PRODUCTION COMPANY

OPERATED GRAYBURG-JACKSON UNIT (R 2323)

Well No. 13-8 in N (Unit)

SE $\frac{1}{4}$ SW $\frac{1}{4}$ of Sec. 25
(40-acre Subdivision)

(Company or Operator)

Lease

T. 17S

R. 30E

NMPM,

GRAYBURG-JACKSON

Pool

County

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

RE-ENTER THIS PLUGGED AND ABANDONED WELL AND CLEANOUT TO T.D. OF APPROXIMATELY 3370'. SET $\frac{1}{2}$ " CASING TO T.D. AND PERFORATE OPPOSITE THE PREMIER ZONE OF THE GRAYBURG- AND COMPLETE AS A WATER INJECTION WELL UNDER COMMISSION ORDER NO. (R 2323)

Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....

Title.....

ANADARKO PRODUCTION COMPANY
Company or Operator

By

E. A. RILEY

Position

SUP. OF OPERATIONS, OIL CONSERVATION DIV.

Name

ANADARKO PRODUCTION CO.

Address

P.O. Box 9317, Fort Worth, Texas

EXHIBIT "B" (Well 13-8)

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

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NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

FORT WORTH, TEXAS
(Place)

OCTOBER 12, 1965
(Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the
OPERATED GRAYBURG-JACKSON UNIT (R 2323)
ANADARKO PRODUCTION COMPANY

SE 1/4 SE 1/4 of Sec. 20, T. 17S, R. 30E, NMPM., Well No. 13-4 in P Pool
(40-acre Subdivision) EDDY County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

RE-ENTER THIS PLUGGED AND ABANDONED WELL AND CLEANOUT TO T.D. OF APPROXIMATELY 3250'.
SET 4 1/2" CASING TO T. D. AND CEMENT TO SURFACE, PERFORATE CASING OPPOSITE PREMIER ZONE
OF GRAYBURG AND COMPLETE AS A WATER INJECTION WELL UNDER COMMISSION ORDER No. R 2323).

Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....
Title.....

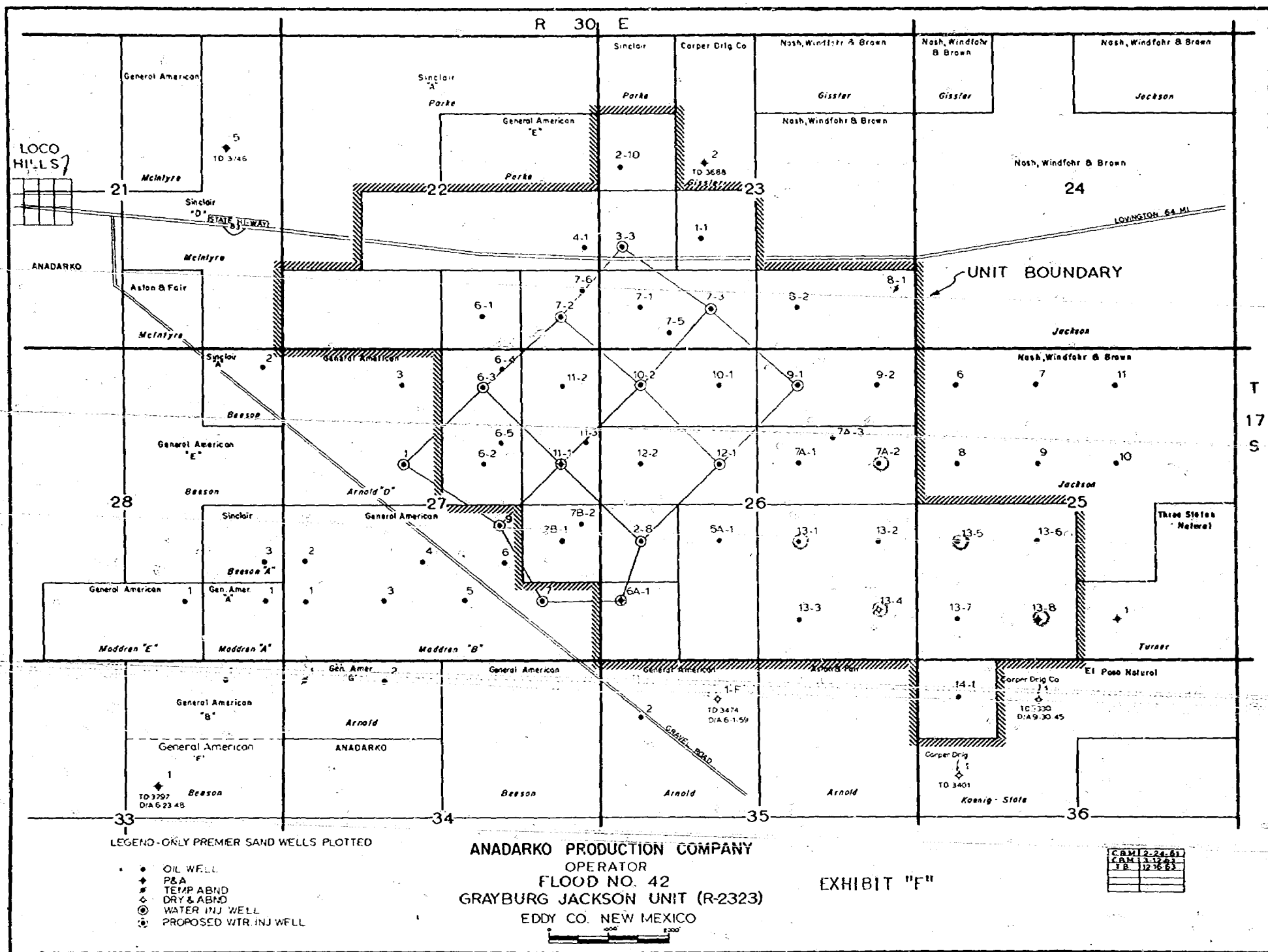
EXHIBIT "E" (Well 13-4)

ANADARKO PRODUCTION COMPANY
Company or Operator

By E. A. RILEY
Position SUPERINTENDENT SECONDARY RECOVERY DIV.
Send Communications regarding well to:

Name P.O. Box 9317, FORT WORTH, TEXAS

Address.....



1

1

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

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NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEZZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Fort Worth, Texas
(Place)

October 12, 1965
(Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the.....Anadarko Production Company
operated Grayburg-Jackson Unit (R 2323).....Well No. 13-8.....in.....N.....
SE.....SW.....(Company or Operator).....17S.....(Unit)
.....1/4.....1/4 of Sec.....T.....R.....30E.....NMPM, Grayburg-Jackson.....Pool
(40-acre Subdivision)
.....County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

Re-enter this plugged and abandoned well and cleanout to T. D. of approximately 3370'. Set 4 1/2" casing to T.D. and perforate opposite the Premier zone of the Grayburg. Install tubing and packer and complete as a water injection well.

Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....
Title.....

Anadarko Production Co.

By.....
Company or Operator
E.A. Riley
Superintendent, Secondary Recovery Div.
Position.....
Send Communications regarding well to:

Anadarko Production Co.

Name.....
P.O. Box 9317, Fort Worth, Texas
Address.....

Exhibit "E"

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

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Indicate Nature of Notice by Checking Below

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NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Fort Worth, Texas
(Place)

October 12, 1965
(Date)

Gentlemen:

Anadarko Production Company

Following is a Notice of Intention to do certain work as described below at the

operated Grayburg-Jackson Unit (R 2323)

Well No. 13-4 in P

(Company or Operator)

Lessee

(Unit)

SE 1/4 SE 1/4 of Sec. 26, T. 17S, R. 30E, NMPM, Grayburg-Jackson Pool
(40-acre Subdivision)
Eddy County

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

Re-enter this plugged and abandoned well and cleanout to T.D. of approximately 3250'
Set 4 1/2" casing to T.D. and perforate casing opposite Premier Zone of Grayburg.
Install tubing and packer and complete as water injection well.

Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....

Title.....

ANADARKO PRODUCTION COMPANY

Company or Operator

By..... E. A. Riley
Position..... Superintendent/Secondary Recovery Div.

Send Communications regarding well to:

Anadarko Production Co.

Name.....

Address..... P.O. Box 9317 Ft. Worth, Texas

EXHIBIT "E"

100

COMBING DEEP Ditch

GRAYBIRG-KEELY
Interior Design

三

IXOHILLS

EXHIBIT "A"

PREMIER™

DARJILING

GRAYBURG

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

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NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Fort Worth, Texas
(Place)

October 12, 1965
(Date)

Gentlemen:

Anadarko Production Company

Following is a Notice of Intention to do certain work as described below at the.....

operated Grayburg-Jackson Unit (R 2323)

(Company or Operator)

Well No. 13-4

P

(Unit)

SE 1/4 SE 1/4 of Sec. 26, T. 17S, R. 30E, NMPM, Grayburg-Jackson Pool

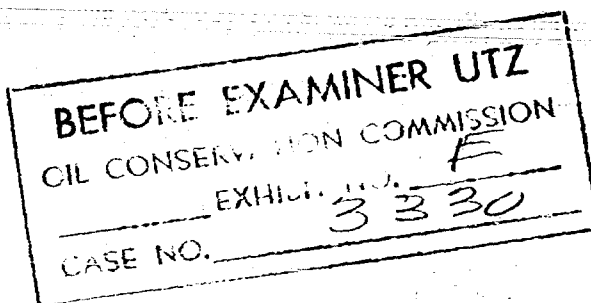
(40-acre Subdivision)

Eddy

County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

Re-enter this plugged and abandoned well and cleanout to T.D. of approximately 3250'
Set 4 1/2" casing to T.D. and perforate casing opposite Premier Zone of Grayburg.
Install tubing and packer and complete as water injection well.



Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....

Title.....

ANADARKO PRODUCTION COMPANY

Company or Operator

By..... E. A. Riley

Position..... Superintendent Secondary Recovery Div.

Send Communications regarding well to:

Anadarko Production Co.

Name..... P.O. Box 9317 Ft. Worth, Texas

Address.....

EXHIBIT "B"

RAILROAD COMMISSION OF TEXAS

APPLICATION TO INJECT FLUID
INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS

Field Grayburg-Jackson County Eddy District
 Operator Anadarko Production Company Date
 Address P.O. Box 9317, Fort Worth, Texas
 Lease (s) & Number (s) Grayburg-Jackson Unit (R 2323)
 Reservoir Premier Zone of Grayburg Discovery Date April 1930

HAVE ANY INJECTION PERMITS BEEN GRANTED PREVIOUSLY IN THIS RESERVOIR? Yes

IF ANSWER TO ABOVE QUESTION IS NO, ALL OPERATORS IN THE RESERVOIR MUST BE

NOTIFIED BY REGISTERED MAIL OF THE APPLICATION ATTACHED HEREON

BEFORE EXAMINER UTZ

OIL CONSERVATION COMMISSION

EXHIBIT NO. D

CASE NO. 3330

I. Reservoir and fluid characteristics

A. Information on entire reservoir

1. Name of formation Grayburg-Jackson Premier Zone
2. Estimated productive area of entire reservoir Unknown
3. Composition (sand, limestone, dolomite, etc.) Sand
4. Type of structure Stratigraphic Trap
(Include cross-section and structural maps)
5. Subsea depth of oil-water contact None Gas-oil contact None
6. Type drive during primary production Solution gas
7. Original BHP 1,300 Est. Current BHP 0-(non flood area) 1200 (Re-press. Area)
8. Was gas cap present originally? No At present? No
9. Ratio of gas cap volume to oil zone volume --
10. Saturation pressure -- Formation Volume Factor 1.28

B. Information on proposed project area

1. Number of productive acres in lease (s) within project area 1,600
2. Average depth to top of pay 3,250
3. Average effective pay thickness (feet) 13
4. Average porosity (%) 19
5. Average horizontal permeability (mds.) 36 Range 5-60
6. Connate water content (% of pore space) 25
7. Gravity of oil (API) 37 Viscosity Est. 1.5 CP

II. Primary Production history

1. Date first well completed on lease (s) April 1930
2. Oil, gas, water production by months since discovery. (Graphically as well as in tabular form.)
3. Stage of depletion of project area Stripper - except in repressured area
4. Number of producing wells on each lease in project area 36
5. Average daily oil production per well at present time 2.66 (non-flood area & 35.1 (responding area)
6. Average gas-oil ratio nil Water production (%) 30.5%
7. Cumulative oil production to date from lease (s) 1,755,000

III. Results expected

1. Estimated original oil in place (bbls.) 9,000,000
2. Estimated oil saturation at present time (% of pore space) 50
3. Estimated residual oil saturation at abandonment 30
4. Estimated ultimate additional oil that will be recovered as a direct result of injection (bbls.) 1,937,998

IV. Injection

1. Type of Injection Fluid (water, gas, LPG) Water
2. Source of injected fluid (formation, depths) Commercial water supplier & produced water
3. Injection pattern and spacing 5 spot; 80 acres
4. Maximum injection pressure to be used (psi) 1,200
5. Estimated maximum per well rate of injection (bbls.) 500
6. List complete injection well data on reverse side of this sheet. (See Exhibit "C")

(APPLICANTS MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF)

EXHIBIT "D"

INJECTION WELL DATA
GRAYBURG-JACKSON UNIT (R 2323)

	Well 7A-2	Well 13-1	Well 13-4	Well 13-5	Well 13-8
	Surface Casing				
Size	8"	8"	8"	8"	8"
Length	508'	510'	510'	495'	515'
Sacks of Cement	50	50	50	50	50
	Tubing				
Size	2"	2"	2"	2"	2"
Length	3010'	3050'	3070'	3080'	3130'
Packer Depth	3010'	3050'	3070'	3080'	3130'
	Production Casing				
Size	7"	7"	4 1/2"	7"	4 1/2"
Length	3030'	3070'	3090'	3100'	3150'
Sacks of Cement	100	100	100	100	100

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appl EXHIBIT NO. 6
CASE NO. 3330

EXHIBIT "C"

NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator HUNDARCO PRODUCTION COMPANY		Pool GRAVBURG-JACKSON		County EDDY	
Address P.O. Box 9317, Fort Worth, Texas					
LEASE NAME GRAVBURG-JACKSON	WELL NO. 7A-1	LOCATION G 26 17 30E			DATE OF TEST 10-2-65
		U	S	T	
		CHOKE SIZE		TBG. PRESS.	DAILY ALLOW-ABLE
		SCHEDULED		Completion	Special
		LENGTH OF TEST HOURS		PROD. DURING TEST	GAS - OIL RATIO CU. FT/ BBL
		WATER EMBLS.		GRAV. OIL BBLs.	GAS M.C.F.
		24		0	75
				NIL	NIL

No well will be assigned an allowable greater than the amount of oil produced on the official test.
During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.
Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.
Report casing pressure in lieu of tubing pressure for any well producing through casing.
Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

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

EXHIBIT "B"

E. A. RILEY
SUPERINTENDENT SECONDARY REC. DIV.

(Title)

October 12, 1965

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
EXHIBIT NO. 13
CASE NO. 3330

R. F. WINDFOHR ESTATE

1212 FIRST NATIONAL BANK BUILDING
FORT WORTH, TEXAS 76102

October 29, 1965

EDISON 2-5108

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

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

Re: Case No. 3330
November 3, 1965

With reference to the subject case concerning the application of Anadarko Production Company to expand their Grayburg Jackson Unit (R-2323), please be notified that the R. F. Windfohr Estate, operator of Nash, Windfohr & Brown leases which offset Anadarko's project, concur with Anadarko in their application and urge that it be granted.

As stated in our hearing, Case No. 3322 before the Conservation Commission on October 19, 1965, it is our intention to cooperate across the lease line with Anadarko, and furthermore, the water for our project will be furnished at cost by Anadarko.

Yours very truly,

R. F. WINDFOHR ESTATE

John Rush Vann

John Rush Vann

JRV:gc

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. 2634
Order No. R-2323

APPLICATION OF AMBASSADOR OIL CORPORATION
FOR APPROVAL OF THE GRAYBURG-JACKSON UNIT
AGREEMENT AND FOR AN ORDER AUTHORIZING A
WATERFLOOD PROJECT IN THE GRAYBURG-JACKSON
POOL, EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 11, 1962, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 3rd day of October, 1962, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, 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, Ambassador Oil Corporation, seeks approval of the Grayburg-Jackson Unit Agreement covering 1600 acres, more or less, of Federal and State lands in Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico.

(3) That the applicant proposes to institute a waterflood project in the proposed Grayburg-Jackson Unit Area with the initial injection of water into the Grayburg formation to be through six wells located therein.

(4) That approval of the proposed Grayburg-Jackson Unit Agreement will in principle tend to promote the conservation of oil and gas and the prevention of waste.

(5) That the wells in the proposed waterflood project have reached an advanced stage of depletion and are properly classified as "stripper" wells.

-2-

CASE No. 2634
Order No. R-2323

(6) That the proposed waterflood project should be authorized and the operation thereof should be governed by the provisions of Rule 701 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the Grayburg-Jackson Unit Agreement is hereby approved.

(2) That the plan under which the unit area shall be operated shall be embraced in the form of a unit agreement for the development and operation of the Grayburg-Jackson Unit Area, and such plan shall be known as the Grayburg-Jackson Unit Agreement Plan.

(3) That the Grayburg-Jackson Unit Agreement Plan is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Oil Conservation Commission of New Mexico by law relative to the supervision and control of operations for the exploration and development of any lands committed to the Grayburg-Jackson Unit, or relative to the production of oil and gas therefrom.

(4) (a) That the unit area shall be:

NEW MEXICO PRINCIPAL MERIDIAN

TOWNSHIP 17 SOUTH, RANGE 30 EAST

EDDY COUNTY, NEW MEXICO

Section 22: SE/4, NE/4 SW/4, and
S/2 SW/4
Section 23: SW/4 NW/4, SW/4, and
S/2 SE/4
Section 25: SW/4
Section 26: All
Section 27: NE/4 and NE/4 SE/4
Section 36: NW/4 NW/4

comprising 1600 acres, more or less.

(b) That the unit area may be enlarged or contracted as provided in said plan; provided, however, that administrative approval for expansion or contraction of the unit area must also be obtained from the Secretary-Director of the Commission.

(5) That the unit operator shall file with the Commission an executed original or executed counterpart of the Grayburg-Jackson Unit Agreement within 30 days after the effective date thereof. In the event of subsequent joinder by any party or

-3-

CASE No. 2634

Order No. R-2323

expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(6) That the portion of this order relating to the approval of the Grayburg-Jackson Unit Agreement shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey, and shall terminate ipso facto upon the termination of said unit agreement. The last unit operator shall notify the Commission immediately in writing of such termination.

(7) That the applicant is hereby authorized to institute a waterflood project in the Grayburg-Jackson Unit Area with the initial injection of water into the Grayburg formation through the following-described wells:

TRACT AND WELL NUMBER	LOCATION
3-3	NW/4 SW/4, Section 23
7-3	SE/4 SW/4, Section 23
9-1	NW/4 NE/4, Section 26
12-1	SE/4 NW/4, Section 26
10-2	NW/4 NW/4, Section 26
7-2	SE/4 SE/4, Section 22

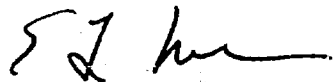
all in Township 17 South, Range 30 East, NMPM.

(8) That the operation of the waterflood project shall be governed by the provisions of Rule 701 of the Commission Rules and Regulations.

(9) 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 herein-above designated.

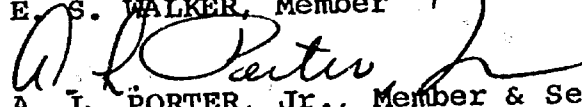
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



EDWIN L. MECHEM, Chairman



E. S. WALKER, Member



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

S E A L

esr/



ANADARKO PRODUCTION COMPANY

3109 WINTHROP AVENUE P. O. BOX 9317 FORT WORTH, TEXAS 76107
CABLE ADDRESS: ANADARK

October 12, 1965

Case 3330

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

Re: Grayburg-Jackson Unit (R 2323)
Eddy County, New Mexico

Gentlemen:

We have no objection to Anadarko Production Company's request
to convert wells Numbers 7A-2, 13-1, 13-4, 13-5, and 13-8 to water
injection status.

Yours very truly,

E. A. Riley

E. A. Riley
Superintendent
Secondary Recovery Div.

BGW/hb

Approved:

Franklin Aston & Fair, Inc.
P. O. Box 1090
Roswell, New Mexico

By *Franklin Aston*
President

Date October 14, 1965



ANADARKO PRODUCTION COMPANY

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

CABLE ADDRESS: ANOARK

October 12, 1965

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

Re: Grayburg-Jackson Unit (R 2323)
Eddy County, New Mexico

Gentlemen:

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injection status.

Yours very truly,

E. A. Riley
Superintendent
Secondary Recovery Div.

BGW/hb

Approved:

The First National Bank of Fort Worth, Texas &
Anne Burnett Windfohr, Independent Executors of the
Estate of R. F. Windfohr, Deceased
1202 First National Bank Bldg.
Fort Worth, Texas 76102

By

Date

10-13-65

3330

Heard. 11-3-65

Rec. 11-3-65

Grant Annulars an extension
to the Grayburg Jackson waterflood
unit

approve the five wells listed on front
page of application for hearing as injection
wells.

All five wells shall be completed
to inject water thru tubing and
cinder packer set as close as possible
above the injection zone. Annulars
shall be filled with ~~inert~~ inert
fluid.

Thrust R.F.

DOCKET: EXAMINER HEARING - WEDNESDAY - NOVEMBER 3, 1965

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 3327: Application of Texaco Inc. for an allowable increase, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an exception to statewide Rule 505 (a) and 505 (b) to increase the 40-acre proportional factor from 1.33 to 1.77 for the Vacuum-Glorieta Pool, Lea County, New Mexico.

CASE 3328: Application of Texaco Inc. for force pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force pooling all mineral interests in the Basin-Dakota Pool underlying the N/2 of Section 36, Township 30 North, Range 12 West, San Juan County, New Mexico.

CASE 3329: Application of Tenneco Oil Company for directional drilling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to recomplate by means of directional drilling the following wells:

Township 29 North, Range 9 West
Florance No. 24, Unit A, Section 23

Township 30 North, Range 8 West
Florance No. 36, Unit H, Section 3
Florance No. 35, Unit A, Section 18

Township 30 North, Range 9 West
Florance No. 5, Unit A, Section 22
Mansfield No. 1, Unit P, Section 19

All of the above wells are presently completed in the Blanco-Mesaverde Pool. Applicant proposes to set a whipstock above the Mesaverde producing interval and to directionally drill, recompleting said wells in the Mesaverde formation, and in some instances, to further drill to the Dakota producing interval thereby permitting dual completion of the wells to produce gas from the Blanco-Mesaverde and Basin-Dakota Gas Pools. Applicant further proposes to conduct appropriate deviation tests to ensure that none of the wells is completed nearer than 200 feet to the outer boundaries of its proration unit.

CASE 3330: Application of Anadarko Production Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in its Grayburg Premier Sand formation through five wells in Sections 25 and 26, Township 17 South, Range 30 East, Grayburg Jackson Pool, Eddy County, New Mexico.

- 2 -

NOVEMBER 3, 1965 EXAMINER HEARING

CASE 3331: Application of Marathon Oil Company for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Paddock-Yeso formation in its Federal Well No. 1 in Unit K of Section 24, Township 21 South, Range 23 East, Eddy County, New Mexico.

CASE 3323: (Continued from the October 19, 1965, Examiner Hearing)
Application of David Fasken for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of his Felmont-Collier Well No. 1 located in Unit H of Section 9, Township 11 South, Range 33 East, Lea County, New Mexico, to produce oil from the North Bagley Upper and Lower Pennsylvanian Pools through parallel strings of tubing.

Case 3330



ANADARKO PRODUCTION COMPANY

3109 WINTHROP AVENUE P. O. BOX 9317 FORT WORTH, TEXAS 76107
CABLE ADDRESS: ANADARK

October 27, 1965

State Engineer Office
State Capitol
Santa Fe, New Mexico 87501

Attention: Mr. Frank E. Irby

Gentlemen:

In response to your October 25 letter concerning our application dated October 12, 1965 covering our request to convert five (5) wells to water injection status in the Grayburg-Jack Unit (R 2323), please find enclosed the following corrected data:

1. Exhibit "C" Diagrammatic Sketch showing casing and tubing on the five (5) injection wells.
2. Exhibit "E" (Well 13-8) Form No. C-102 showing proposed method of recompletion of well.
3. Exhibit "E" (Well 13-4) Form No. C-102 showing proposed method of recompletion of well.

The corrected data will be supplied the Commission at the hearing. Also, it is being supplied the offset operator by copy of this letter.

These revised Exhibits should clarify the situation and answer all but one of your questions. The answer to this question is "the water injected into the five (5) proposed wells in this application will be fresh water processed through our Plant No. 2 whereas the produced water from the entire unit will be collected, and processed through Plant No. 1, and reinjected into the original pilot wells approved by the Commission following the hearing of Case 2634 on September 11, 1962".

We trust this satisfies your needs. We will be pleased to answer any other questions by return mail or at the hearing if you are planning to be in attendance.

Yours very truly,

E. A. Riley, Superintendent
Secondary Recovery Division

EAR/nb
CC: Franklin, Aston & Fair
Roswell, New Mexico
Co-Executors of R.F. Windfohr Estate
(John Rush Vann) Fort Worth, Texas

Case 3330

October 25, 1965

MAILED
OCT 26 AM 10

Mr. E. A. Riley, Supt.
Secondary Recovery Division
Anadarko Production Company
P. O. Box 9317
Fort Worth, Texas 76107

Dear Mr. Riley:

Reference is made to your application dated October 12, 1965 to the Oil Conservation Commission which seeks authority to recomplete or convert 5 wells to water injection. The wells are in the Grayburg-Jackson Unit, Eddy County, New Mexico. Your letter to this office dated October 12th states "fresh water purchased from Caprock Water Company will be injected through tubing and below a packer in wells Nos. 7A-2, 13-1 and 13-5. Wells Nos. 13-4 and 13-8 will be re-entered and cleaned out to total depth and new 4½" casing will be set to total depth." Your Exhibit C which is the diagrammatic sketch showing casing and tubing data for the 5 wells indicates that all wells will have 7" casing set at total depth and will be cemented with 100 sacks of cement. A short sheet between your Exhibits D and E submitted with the application is labeled Injection Well Data and shows that injection in each of the 5 wells will be through tubing. Your Exhibit D (Well 13-8) states "re-enter this plugged and abandoned well and cleanout to T.D. of approximately 3370'. Set 4½" casing to T.D. and perforate opposite the Premier Zone of the Grayburg and complete as a water injection well under Commission Order No. R-2323." Your Exhibit E (Well 13-4) states "re-enter this plugged and abandoned well and cleanout to T.D. of approximately 3250'. Set 4½" casing to T.D. and cement to surface, perforate casing opposite Premier Zone of Grayburg and complete as a water injection well under Commission Order No. R-2323."

My notes taken at the hearing in Case 2634 on September 11, 1962 which resulted in Order No. R-2323 indicate that you testified that injection into the wells would be through tubing under packer set immediately above the pay-zone. You also testified that the water to be injected would be fresh water from Caprock Water Company. You further testified that your produced water would be re-injected.

It appears to me that there are conflicting statements in your present application. It also appears that some of the statements in this application conflict with your testimony regarding well construction and equipment given at the hearing on September 11, 1962 which resulted in Oil Conservation Commission Order No. R-2323.

It will be necessary to reconcile the conflicting statements before I can waive objection to the granting of your application. If the wells are to be constructed and equipped as indicated in your testimony of September 11, 1962, I will be willing to waive objection to the granting of your application.

FEI/ma
cc-A. L. Porter, Jr.
F. H. Hennighausen

Yours truly,

S. E. Reynolds
State Engineer

By:
Frank E. Irby
Chief
Water Rights Div.

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

IN RE: APPLICATION OF ANADARKO PRODUCTION COMPANY,)
AS OPERATOR OF THE GRAYBURG-JACKSON UNIT, ORIGINALLY)
AUTHORIZED BY ORDER NO. R-2323, FOR AUTHORITY TO)
RECOMPLETE OR CONVERT FIVE (5) WELLS AS WATER IN-)
JECTION WELLS, ALL OF SUCH WELLS BEING LOCATED)
WITHIN THE BOUNDARIES OF THE GRAYBURG-JACKSON UNIT)
IN EDDY COUNTY, NEW MEXICO.)

Case No. 3330

MAIN OFFICE OF

A P P L I C A T I O N

'65 OCT 13 PM 1 04

COMES NOW Anadarko Production Company, in its capacity as Operator
of the Grayburg-Jackson Unit, Eddy County, New Mexico, hereinafter referred
to as "Applicant", and makes application for authority to convert or recomplete
the below-described wells as water injection wells into the Grayburg Premier
Sand Formation in and under said Grayburg-Jackson Unit, and in support of
this Application alleges the following:

1. The wells to be recompleted or converted to water injection wells
and the locations thereof within the Grayburg-Jackson Unit are described as
follows:

Grayburg-Jackson Unit Well No.	Location	N. M. Unit Letter Designation	Sec.	Town- Ship	Range
7A-2	SE/4 NE/4	H	26	17S	30E
13-1	NW/4 SE/4	J	26	17S	30E
13-4	SE/4 SE/4	P	26	17S	30E
13-5	NW/4 SW/4	L	25	17S	30E
13-8	SE/4 SW/4	N	25	17S	30E

ALL LOCATED WITHIN EDDY COUNTY, NEW MEXICO.

Wells No. 13-4 and 13-8 have previously been plugged and aban-
doned, but will be recompleted as water injection wells in the Grayburg-Jackson
Premier Sand located at an approximate depth of 3,250 feet, and all the other
wells above listed will be converted from producing wells to water injection
wells in said Formation at the same depth.

2. That the original order number which originally authorized the
waterflood project known as the Grayburg-Jackson Unit is Order No. R-2323;
the formation to be flooded by the injection of water in the before-mentioned
wells will be the Grayburg Premier Sand located at an approximate depth

of 3,250 feet; the fluid to be used for injection is water, and it is anticipated that there will be injected in each well a volume of Five Hundred (500) barrels per day. The source of the injection water will be local commercial water companies.

3. That the conversion or recompletion of the above-mentioned five (5) wells as water injection wells will aid in a more efficient and orderly development and operation of the Grayburg-Jackson Unit and Waterflood Project and is, in fact, necessary to allow the Applicant to completely develop and operate the Grayburg-Jackson Unit and Waterflood Project. In addition thereto, Applicant is in the process of entering into a Cooperative Line Agreement with the operator of leases covering land in Sections 24 and 25 in said township and range, which land directly offsets the Grayburg-Jackson Unit. It is anticipated that the formal agreement will be fully executed by the time of the hearing on this Application and, if so, a fully executed copy of such agreement will be exhibited and furnished to this Commission.

4. That there are attached hereto the following exhibits as indicated, or such exhibits, as indicated, will be furnished to the Commission within ten (10) days from date hereof:

- (a) A plat showing the location of the proposed injection wells and all other wells within a two-mile radius, such plat being marked Exhibit "A"; and
- (b) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-116 (Gas-Oil Ratio Report), such form being marked Exhibit "B"; and
- (c) A diagrammatic sketch showing casing and tubing data for the above-mentioned five injection wells, such sketch being marked Exhibit "C"; and
- (d) Waterflood application data sheet with pertinent reservoir and lease data, such application being marked Exhibit "D"; and
- (e) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-102 (Miscellaneous Notice), giving notice of intention to recomplete Wells No. 13-8 and 13-4 above, such form being marked Exhibit "E"; and

- (f) A map of the Unit area showing the proposed injection wells marked in red, such map being marked Exhibit "F".

6. That a copy of this Application, together with all Exhibits, has been forwarded to the following parties:

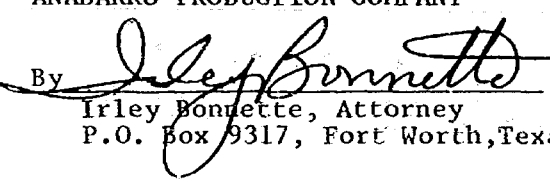
- (a) The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; and,
- (b) The First National Bank of Fort Worth, Texas, and Anne Burnette Windfohr, in their capacity as Independent Executors of the Estate of R. F. Windfohr, Deceased, as Operator of the offset acreage located in Section 25, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to 1202 First National Bank Building, Fort Worth, Texas 76102; and,
- (c) Franklin, Aston & Fair, Inc., as Operator of the offset acreage located in the NE/4, Section 35, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to P. O. Box 1090, Roswell, New Mexico 88201.

7. That Applicant is filing this Application in accordance with the provisions of Rule 701 B, and Applicant requests and prays that an order be entered by this Commission allowing the recompletion and conversion of the above-mentioned wells as water injection wells and the injection of water into the above-mentioned formation underlying the land above-described within the Grayburg-Jackson Unit, all as provided under Rule 701 B.

WHEREFOR, Applicant requests a hearing before an examiner and requests that after a hearing thereon the above-mentioned order be entered by the Commission.

ANADARKO PRODUCTION COMPANY

By


Irley Bonnette, Attorney
P.O. Box 9317, Fort Worth, Texas

CERTIFICATE

I, Irley Bonnette, do hereby certify that on the 12th day of October, 1965, I mailed a true and complete copy of this Application, together with all Exhibits, to the following parties: The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; The First National Bank of Fort Worth, Texas, and Anne Burnett Windfohr, Independent Executors of the Estate of R. F. Windfohr, Deceased, 1202 First National Bank Building, Fort Worth, Texas 76102; and Franklin, Aston & Fair, Inc., P. O. Box 1090, Roswell, New Mexico 88201.



NEW MEXICO OIL CONSERVATION COMMISSION
GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator ANADARKO PRODUCTION COMPANY		Pool GRAYBURG-JACKSON				County										
Address P.O. Box 9317 FORT WORTH, TEXAS						TYPE OF TEST - (X)		Scheduled <input type="checkbox"/>		Completion <input type="checkbox"/>		Special <input checked="" type="checkbox"/>				
LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT/BBL.
		U	S	T	R							WATER BBL.	GRAV. OIL	OIL BBL.	GAS M.C.F.	
GRAYBURG-JACKSON	7A-1	G	26	17	30E	10-2-65	P				24	0		75	NIL	NIL

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15,025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

EXHIBIT "B"

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

E.A. Riley
E.A. RILEY (Signature)

SUPERINTENDENT SECONDARY RECOVERY
(Title) DIV.

OCTOBER 12, 1965
(Date)

GRAYBURG-JACKSON UNIT (R 2323)

OCTOBER 11, 1965

7A-2	13-1	13-4	13-5	13-8
508' - 8"	510' - 8"	510' - 8"	495' - 8"	515' - 8"
50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.	50 SXS. CMT.
3030' - 7"	3070' - 7"	3090' $4\frac{1}{2}$	3100' - 7"	3150' $4\frac{1}{2}$
100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.	100 SXS. CMT.

EXHIBIT "C"

APPLICATION TO INJECT FLUID
INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS

Field Grayburg-Jackson County Eddy District _____
Operator Ambassador Oil Corporation Date October 11, 1965
Address P.O. Box 9338, Ft. Worth, Texas
Lease (s) & Number (s) Grayburg-Jackson Unit (R-2323)
Reservoir Premier Discovery Date April, 1930

HAVE ANY INJECTION PERMITS BEEN GRANTED PREVIOUSLY IN THIS RESERVOIR? _____
IF ANSWER TO ABOVE QUESTION IS "NO", ALL OPERATORS IN THE RESERVOIR MUST BE
NOTIFIED OF THIS APPLICATION, AND COPIES OF NOTIFICATION ATTACHED HERETO.

I. Reservoir and fluid characteristics

A. Information on entire reservoir

1. Name of formation Grayburg-Jackson-Premier Zone
2. Estimated productive area of entire reservoir unknown
3. Composition (sand, limestone, dolomite, etc.) sand
4. Type of structure Stratigraphic trap
(Include cross-section and structural maps)
5. Subsea depth of oil-water contact none Gas-oil contact none
6. Type drive during primary production SOLUTION GAS
7. Original BHP 1,300 Current BHP 0
8. Was gas cap present originally? no At present? no
9. Ratio of gas cap volume to oil zone volume --
10. Saturation pressure -- Formation Volume Factor 1.28

B. Information on proposed project area

1. Number of productive acres in lease (s) within project area 1600
2. Average depth to top of pay 3300
3. Average effective pay thickness (feet) 33
4. Average porosity (%) 35
5. Average horizontal permeability (mds.) 35 Range 5-60
6. Connate water content (% of pore space) 25
7. Gravity of oil (API) 37 Viscosity est. 1.5 CP

II. Primary Production history

1. Date first well completed on lease (s) May 1930
2. Oil, gas, water production by months since discovery. (Graphically as well as in tabular form.)
3. Stage of depletion of project area Stripper
4. Number of producing wells on each lease in project area 35
5. Average daily oil production per well at present time 2.2
6. Average gas-oil ratio nil Water production (%) none
7. Cumulative oil production to date from lease (s) 1,745,000

III. Results expected

1. Estimated original oil in place (bbls.) 9,000,000
2. Estimated oil saturation at present time (% of pore space) 50
3. Estimated residual oil saturation at abandonment 30
4. Estimated ultimate additional oil that will be recovered as a direct result of injection (bbls.) 1,750,000

IV. Injection

1. Type of Injection Fluid (water, gas, LPG) Water
2. Source of injected fluid (formation, depths) Commercial Water Supplier
3. Injection pattern and spacing 5 spot 80 acres
4. Maximum injection pressure to be used (psi) 1,200
5. Estimated maximum per well rate of injection (bbls.) 500
6. List complete injection well data on reverse side of this sheet.

(APPLICANTS MUST COMPLY WITH THE INSTRUCTIONS ON REVERSE SIDE HEREOF.)

GRAYEURG-JACKSON UNIT (R 2323)

INJECTION WELL DATA

LEASE NAME & NO. WELL NUMBER		7A-2	13-1	13-4	13-5	13-8	
SURFACE CASING	SIZE	8"	8"	8"	8"	8"	
	LENGTH	508'	510'	510'	495'	515'	
	SACKS & TYPE CEMENT	50	50	50	50	50	
PRODUCTION CASING	SIZE	7"	7"	7"	7"	7"	
	LENGTH	3030'	3070'	3090'	3100'	3150'	
	SACKS & TYPE CEMENT	100	100	100	100	100	
TUBING	LENGTH	3010'	3050'	3070'	3080'	3130'	
	PACKER DEPTH	3010'	3050'	3070'	3080'	3130'	
INJECTION	DEPTH	3220'	3220'	3225'	3225'	3330'	
	THRU CASING OR TUBING?	TUBING	TUBING	TUBING	TUBING	TUBING	

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

Submit this notice in TRIPPLICATE to the District Office, Oil Conservation Commission, before the work specified is to begin. A copy will be returned to the sender on which will be given the approval, with any modifications considered advisable, or the rejection by the Commission or agent, of the plan submitted. The plan as approved should be followed, and work should not begin until approval is obtained. See additional instructions in the Rules and Regulations of the Commission.

Indicate Nature of Notice by Checking Below

NOTICE OF INTENTION TO CHANGE PLANS		NOTICE OF INTENTION TO TEMPORARILY ABANDON WELL		NOTICE OF INTENTION TO DRILL DEEPER	
NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

FORT WORTH, TEXAS
(Place)

OCTOBER 12, 1965
(Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the ANADARKO PRODUCTION COMPANY
OPERATED GRAYBURG-JACKSON UNIT (R 2323) Well No. 13-8 in N (Unit)
(Company or Operator)
SE 1/4 SW 1/4 of Sec. 25, T. 17S, R. 30E, NMPM, GRAYBURG-JACKSON Pool
(40-acre Subdivision)
County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

RE-ENTER THIS PLUGGED AND ABANDONED WELL AND CLEANOUT TO T.D. OF APPROXIMATELY 3370'. SET 4" CASING TO T.D. AND PERFORATE OPPOSITE THE PREMIER ZONE OF THE GRAYBURG- AND COMPLETE AS A WATER INJECTION WELL UNDER COMMISSION ORDER NO. (R 2323)

Approved....., 19.....
Except as follows:

Approved
OIL CONSERVATION COMMISSION

By.....
Title.....

ANADARKO PRODUCTION COMPANY
Company or Operator

By.....
E. A. RILEY
Position..... SUPERINTENDENT, SECONDARY RECOVERY DIV.

Name..... ANADARKO PRODUCTION CO.
Address..... P.O. Box 9317, FORT WORTH, TEXAS

EXHIBIT "E" (Well 13-8)

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

Submit this notice in TRIPPLICATE to the District Office, Oil Conservation Commission, before the work specified is to begin. A copy will be returned to the sender on which will be given the approval, with any modifications considered advisable, or the rejection by the Commission or agent, of the plan submitted. The plan as approved should be followed, and work should not begin until approval is obtained. See additional instructions in the Rules and Regulations of the Commission.

Indicate Nature of Notice by Checking Below

NOTICE OF INTENTION TO CHANGE PLANS		NOTICE OF INTENTION TO TEMPORARILY ABANDON WELL		NOTICE OF INTENTION TO DRILL DEEPER	
NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (OTHER)		NOTICE OF INTENTION (OTHER)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

FORT WORTH, TEXAS
(Place)

OCTOBER 12, 1965
(Date)

Gentlemen:

Following is a Notice of Intention to do certain work as described below at the ANADARKO PRODUCTION COMPANY
OPERATED GRAYBURG-JACKSON UNIT (R 2323) Well No. 13-4 in P (Unit)
SE 1/4 SE 1/4 of Sec. 26, T. 17S, R. 30E, NMPM., GRAYBURG-JACKSON Pool
Eddy County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

RE-ENTER THIS PLUGGED AND ABANDONED WELL AND CLEANOUT TO T.D. OF APPROXIMATELY 3250'.
SET 4 1/2" CASING TO T.D. AND CEMENT TO SURFACE, PERFORATE CASING OPPOSITE PREMIER ZONE
OF GRAYBURG AND COMPLETE AS A WATER INJECTION WELL UNDER COMMISSION ORDER NO. (R2323)

Approved..... 19.....
Except as follows:

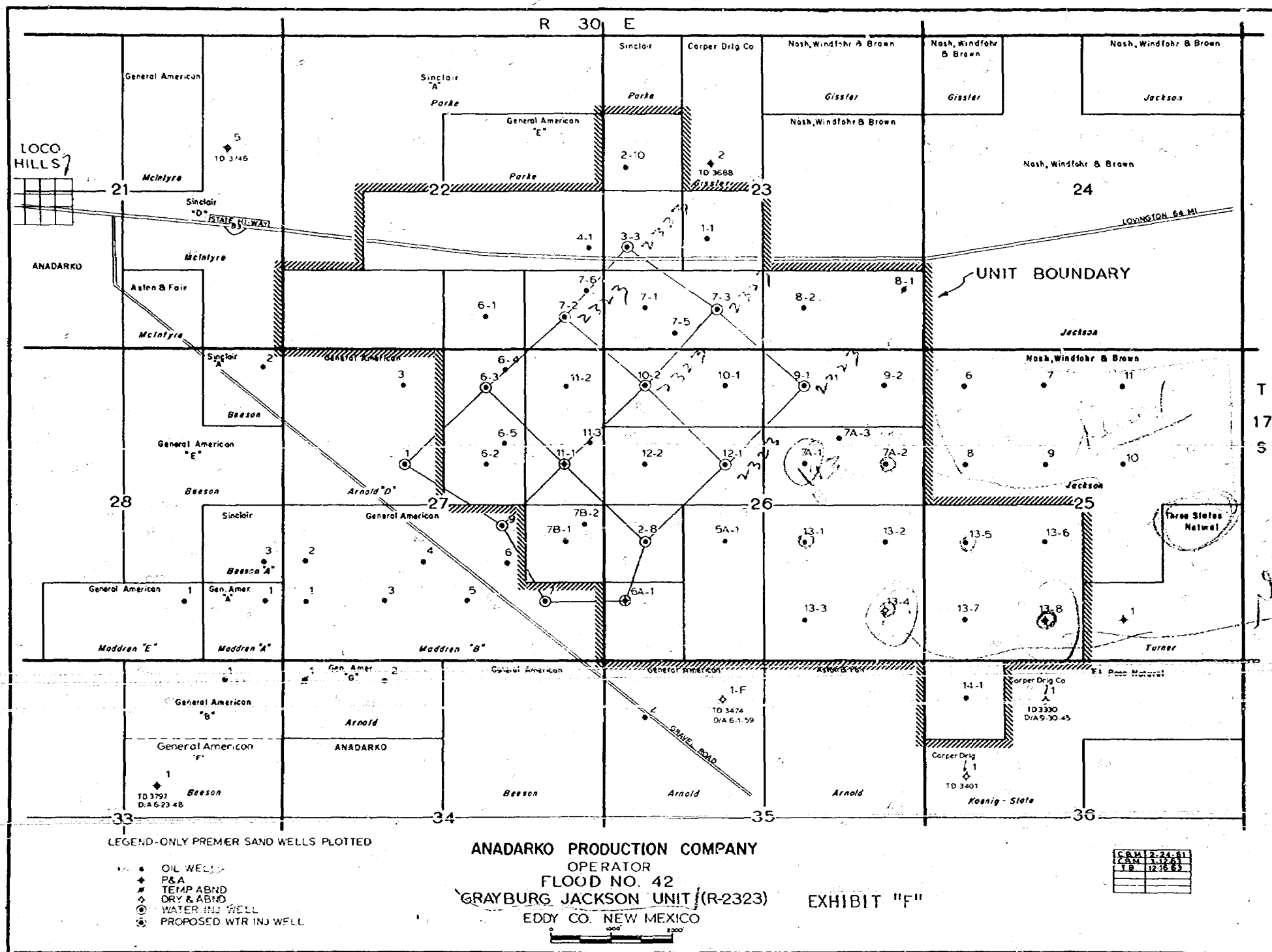
Approved
OIL CONSERVATION COMMISSION

By.....
Title.....

ANADARKO PRODUCTION COMPANY
Company or Operator
By.....
E. A. RILEY
Position..... SUPERINTENDENT SECONDARY RECOVERY DIV.
Send communications regarding well to:

Name..... ANADARKO PRODUCTION COMPANY
Address..... P.O. Box 9317, FORT WORTH, TEXAS

EXHIBIT "E" (Well 13-4)





ANADARKO PRODUCTION COMPANY

3109 WINTHROP AVENUE P. O. BOX 9317 FORT WORTH, TEXAS 76107
CABLE ADDRESS: ANADARK

October 12, 1965

AIR MAIL

2330

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

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

Enclosed please find, in triplicate, Application of Anadarko Production Company, as Operator of the Grayburg-Jackson Unit, for authority to recomplete or convert five (5) wells as water injection wells, all of such wells being located within the boundaries of the Grayburg-Jackson Unit, Eddy County, New Mexico.

We are also sending a copy of this Application to the following parties: The State Engineer, State of New Mexico; The First National Bank of Fort Worth, Texas, and Anne Burnette Windfohr, Independent Executors of the Estate of R. F. Windfohr, Deceased, offset operator in Sections 24 and 25; and Franklin, Aston and Fair, Inc., offset operator in Section 35. It is anticipated that these offset operators will sign waivers, and such waivers will be forwarded to you prior to the hearing.

It is requested that notice be given of this Application and that a hearing be set for as early as possible, but in no event later than November 3, 1965.

DOCKET MAILED

Date 10-22-65

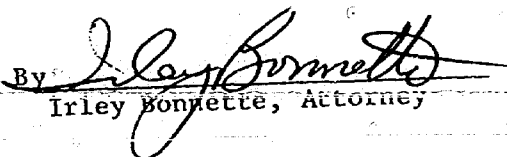
W

New Mexico Oil Conservation Commission
Page 2
October 12, 1965

If there is any additional information you desire,
please call the undersigned collect, Area Code 817, PE 2-1411,
Fort Worth, Texas.

Yours very truly,

ANADARKO PRODUCTION COMPANY

By 
Irley Bonnette, Attorney

IAB:jc
Enclosures

cc: The State Engineer, State of New Mexico,
Capitol Building, Santa Fe, New Mexico

The First National Bank of Fort Worth,
Texas, and Anne Burnette Windfohr,
Independent Executors of the Estate of
R. F. Windfohr, Deceased
1202 First National Bank Building
Fort Worth, Texas 76102

Franklin, Aston & Fair, Inc.
P. O. Box 1090, Roswell, New Mexico 88201

NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

MISCELLANEOUS NOTICES

Submit this notice in TRIPLICATE to the District Office, Oil Conservation Commission, before the work specified is to begin. A copy will be returned to the sender on which will be given the approval, with any modifications considered advisable, or the rejection by the Commission or agent, of the plan submitted. The plan as approved should be followed, and work should not begin until approval is obtained. See additional instructions in the Rules and Regulations of the Commission.

Indicate Nature of Notice by Checking Below

NOTICE OF INTENTION TO CHANGE PLANS		NOTICE OF INTENTION TO TEMPORARILY ABANDON WELL		NOTICE OF INTENTION TO DRILL DEEPER	
NOTICE OF INTENTION TO PLUG WELL		NOTICE OF INTENTION TO PLUG BACK		NOTICE OF INTENTION TO SET LINER	
NOTICE OF INTENTION TO SQUEEZE		NOTICE OF INTENTION TO ACIDIZE		NOTICE OF INTENTION TO SHOOT (Nitro)	
NOTICE OF INTENTION TO GUN PERFORATE		NOTICE OF INTENTION (Other)		NOTICE OF INTENTION (Other)	X

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICOFort Worth, Texas
(Place)October 12, 1965
(Date)

Gentlemen:

Anadarko Production Company

Following is a Notice of Intention to do certain work as described below at the.....

operated Grayburg-Jackson Unit (R 2323) Well No. 13-4 in P
(Company or Operator) (Unit)
SE 1/4 SE 1/4 of Sec. 26, T. 17S, R. 30E, NMPM., Grayburg-Jackson Pool
(40-acre Subdivision)
Eddy County.

FULL DETAILS OF PROPOSED PLAN OF WORK
(FOLLOW INSTRUCTIONS IN THE RULES AND REGULATIONS)

Re-enter this plugged and abandoned well and cleanout to T.D. of approximately 3250'
Set 4 1/2" casing to T.D. and perforate casing opposite Premier Zone of Grayburg.
Install tubing and packer and complete as water injection well.

Approved....., 19.....
Except as follows:Approved
OIL CONSERVATION COMMISSIONBy.....
Title.....

ANADARKO PRODUCTION COMPANY

By..... E. A. Riley
Position..... Superintendent Secondary Recovery Div.
Send Communications regarding well to:

Anadarko Production Co.

Name.....
Address..... P.O. Box 9317 Ft. Worth, Texas

EXHIBIT "E"

INJECTION WELL DATA
GRAYBURG-JACKSON UNIT (R 2323)

	Well 7A-2	Well 13-1	Well 13-4	Well 13-5	Well 13-8
	Surface Casing				
Size	8"	8"	8"	8"	8"
Length	508'	510'	510'	495'	515'
Sacks of Cement	50	50	50	50	50
	Tubing				
Size	2"	2"	2"	2"	2"
Length	3010'	3050'	3070'	3080'	3130'
Packer Depth	3010'	3050'	3070'	3080'	3130'
	Production Casing				
Size	7"	7"	4 1/2"	7"	4 1/2"
Length	3030'	3070'	3090'	3100'	3150'
Sacks of Cement	100	100	100	100	100

EXHIBIT "C"

3109 WINTHROP AVENUE

BOX 9317

FORT WORTH, TEXAS 76107

CABLE ADDRESS: ANDARK

October 24, 1965

2000

P. O. Box 2000

Seneca Co., New York

Attention: Mr. J. E. Rosten, Jr.

Conclusions

Enacted since 1911

Shedastic Productions Co. Inc.

Encls. for information to [redacted]

water in fact has been

the boundaries of the country.

11/11/1919

We are also interested in

Following parties: [redacted]

The above information was obtained from the files of the FBI, New York Office, dated 1/10/68.

11/11/2011, Monday, 11:11 AM

Received, offset date: 06/07/2018

Topic and Notes:

RECEIVED

[illegible][illegible][illegible]

DATE _____ **TIME** _____

and that a meeting to discuss the
subject should be held.

1980-2000: 1980-2000

Index

Case 3330

New Mexico Oil Conservation Committee
Page 2
October 12, 1965

If there is any additional information, please call the undersigned collect, Anna Ruth Vann, 1212 First National Bank Building, Fort Worth, Texas.

Yours very truly,

Anna Ruth Vann, Attorney

By _____
Anna Ruth Vann, Attorney

EWB:gc
Enclosures

cc: The State Engineer, State of New Mexico,
Capital Building, Santa Fe, New Mexico

The First National B. N. of Fort Worth,
Texas, and Anna Ruth Vann, Attorney,
Independent Executive of the Estate of
R. F. Windsor, Esq.,
1212 First National Bank Building
Fort Worth, Texas 76102

Franklin, Anna C. Vann, Esq.
P. O. Box 1000, Fort Worth, Texas 76102

cc: Mr. John Rush Vann, c/o R. F. Windsor Estate,
1212 First National Bank Building, Fort Worth, Texas 76102

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

IN RE: APPLICATION OF ANADARKO PRODUCTION COMPANY,)
AS OPERATOR OF THE GRAYBURG-JACKSON UNIT, ORIGINALLY)
AUTHORIZED BY ORDER NO. R-2323, FOR AUTHORITY TO)
RECOMPLETE OR CONVERT FIVE (5) WELLS AS WATER IN-)
JECTION WELLS, ALL OF SUCH WELLS BEING LOCATED)
WITHIN THE BOUNDARIES OF THE GRAYBURG-JACKSON UNIT)
IN EDDY COUNTY, NEW MEXICO.)

Case No. _____

A P P L I C A T I O N

COMES NOW Anadarko Production Company, in its capacity as Operator of the Grayburg-Jackson Unit, Eddy County, New Mexico, hereinafter referred to as "Applicant", and makes application for authority to convert or recomplete the below-described wells as water injection wells into the Grayburg Premier Sand Formation in and under said Grayburg-Jackson Unit, and in support of this Application alleges the following:

1. The wells to be recompleted or converted to water injection wells and the locations thereof within the Grayburg-Jackson Unit are described as follows:

<u>Grayburg-Jackson Unit Well No.</u>	<u>Location</u>	<u>N. M. Unit Letter Designation</u>	<u>Sec.</u>	<u>Town- Ship</u>	<u>Range</u>
7A-2	SE/4 NE/4	H	26	17S	30E
13-1	NW/4 SE/4	J	26	17S	30E
13-4	SE/4 SE/4	P	26	17S	30E
13-5	NW/4 SW/4	L	25	17S	30E
13-8	SE/4 SW/4	N	25	17S	30E

ALL LOCATED WITHIN EDDY COUNTY, NEW MEXICO.

Wells No. 13-4 and 13-8 have previously been plugged and abandoned, but will be recompleted as water injection wells in the Grayburg-Jackson Premier Sand located at an approximate depth of 3,250 feet, and all the other wells above listed will be converted from producing wells to water injection wells in said Formation at the same depth.

2. That the original order number which originally authorized the waterflood project known as the Grayburg-Jackson Unit is Order No. R-2323; the formation to be flooded by the injection of water in the before-mentioned wells will be the Grayburg Premier Sand located at an approximate depth

of 3,250 feet; the fluid to be used for injection is water, and it is anticipated that there will be injected in each well a volume of Five Hundred (500) barrels per day. The source of the injection water will be local commercial water companies.

3. That the conversion or recompletion of the above-mentioned five (5) wells as water injection wells will aid in a more efficient and orderly development and operation of the Grayburg-Jackson Unit and Waterflood Project and is, in fact, necessary to allow the Applicant to completely develop and operate the Grayburg-Jackson Unit and Waterflood Project. In addition thereto, Applicant is in the process of entering into a Cooperative Line Agreement with the operator of leases covering land in Sections 24 and 25 in said township and range, which land directly offsets the Grayburg-Jackson Unit. It is anticipated that the formal agreement will be fully executed by the time of the hearing on this Application and, if so, a fully executed copy of such agreement will be exhibited and furnished to this Commission.

4. That there are attached hereto the following exhibits as indicated, or such exhibits, as indicated, will be furnished to the Commission within ten (10) days from date hereof:

- (a) A plat showing the location of the proposed injection wells and all other wells within a two-mile radius, such plat being marked Exhibit "A"; and
- (b) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-116 (Gas-Oil Ratio Report), such form being marked Exhibit "B"; and
- (c) A diagrammatic sketch showing casing and tubing data for the above-mentioned five injection wells, such sketch being marked Exhibit "C"; and
- (d) Waterflood application data sheet with pertinent reservoir and lease data, such application being marked Exhibit "D"; and
- (e) Fully completed and executed by Anadarko Production Company, a New Mexico Oil Conservation Commission Form, No. C-102 (Miscellaneous Notice), giving notice of intention to recomplete Wells No. 13-8 and 13-4 above, such form being marked Exhibit "E"; and

- (f) A map of the Unit area showing the proposed injection wells marked in red, such map being marked Exhibit "F".

6. That a copy of this Application, together with all Exhibits, has been forwarded to the following parties:

- (a) The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; and,
- (b) The First National Bank of Fort Worth, Texas, and Anne Burnette Windfohr, in their capacity as Independent Executors of the Estate of R. F. Windfohr, Deceased, as Operator of the offset acreage located in Section 25, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to 1202 First National Bank Building, Fort Worth, Texas 76102; and,
- (c) Franklin, Aston & Fair, Inc., as Operator of the offset acreage located in the NE/4, Section 35, Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico, addressed to P. O. Box 1090, Roswell, New Mexico 88201.

7. That Applicant is filing this Application in accordance with the provisions of Rule 701 B, and Applicant requests and prays that an order be entered by this Commission allowing the recompletion and conversion of the above-mentioned wells as water injection wells and the injection of water into the above-mentioned formation underlying the land above-described within the Grayburg-Jackson Unit, all as provided under Rule 701 B.

WHEREFOR, Applicant requests a hearing before an examiner and requests that after a hearing thereon the above-mentioned order be entered by the Commission.

ANADARKO PRODUCTION COMPANY

By *Irley Bonnette*
Irley Bonnette, Attorney
P.O. Box 9317, Fort Worth, Texas

CERTIFICATE

I, Irley Bonnette, do hereby certify that on the 12th day of October, 1965, I mailed a true and complete copy of this Application, together with all Exhibits, to the following parties: The State Engineer, State of New Mexico, Capitol Building, Santa Fe, New Mexico; The First National Bank of Fort Worth, Texas, and Anne Burnett Windfohr, Independent Executors of the Estate of R. F. Windfohr, Deceased, 1202 First National Bank Building, Fort Worth, Texas 76102; and Franklin, Aston & Fair, Inc., P. O. Box 1090, Roswell, New Mexico 88201.

Irley Bonnette

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

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

November 9, 1965

Mr. Irley Bonnette, Attorney
Anadarko Production Company
3109 Winthrop Avenue
P. O. Box 9317
Fort Worth, Texas 76107

Re: Case No. 3330
Order No. R-2995
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,

A. L. Porter, Jr.
A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC

Other Mr. Clarence Hinkle

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. 3330
Order No. R-2995

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on November 3, 1965, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 9th day of November, 1965, 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 permission to expand the Grayburg-Jackson Unit Area Waterflood Project in the Grayburg-Jackson Pool by the injection of water into the Grayburg formation through five injection wells in Sections 25 and 26, Township 17 South, Range 30 East, NMPM, Eddy 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. 3330

Order No. R-2995

(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 expand the Grayburg-Jackson Unit Area Waterflood Project in the Grayburg-Jackson Pool by the injection of water into the Grayburg formation through the following-described wells in Township 17 South, Range 30 East, NMPM, Eddy County, New Mexico:

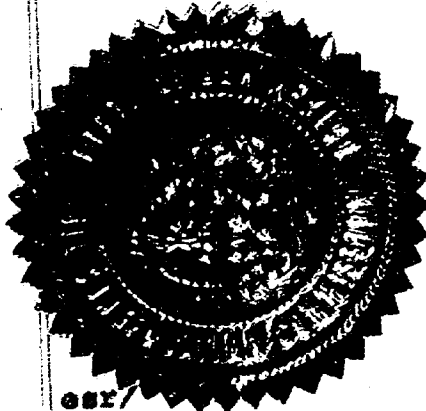
<u>WELL NO.</u>	<u>UNIT</u>	<u>SECTION</u>
13-8	N	25
13-5	L	25
13-4	P	26
13-1	J	26
7A-2	H	26

(2) That the subject waterflood project 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

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
C. S. JOHNNY WALKER
MEMBER

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

P. O. BOX 2088
SANTA FE
87501

*Injection is to be through the five authorized
water injection wells, which shall be equipped with
tubing and packers, with the casing-tubing annulus
loaded with an inert fluid.*

Mr. Irley Bonnette
Anadarko Production Company
Post Office Box 9317
Fort Worth, Texas

Gentlemen:

Reference is made to
~~Enclosed herewith is~~ Commission Order No. R-2295, entered in Case
No. 3330, approving the *authorizing the expansion of Anadarko Production*
Water Flood Project.

As to allowable, *indicate that*
According to our calculations, 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 1568 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 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,

cc: OCC -Artesia
Mr. Frank Irby
Clarence Hinkle

A. L. PORTER, Jr.
Secretary-Director

Company's Grayburg-Jackson Unit Area



ANADARKO PRODUCTION COMPANY

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

CABLE ADDRESS: ANDARK

December 20, 1965

State of New Mexico
Oil Conservation Commission
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr.

Gentlemen:

In response to your letter of December 10 relative to the calculated allowable for the Grayburg-Jackson Unit when all of the authorized injection wells have been activated, we calculate the maximum allowable to be 1610 barrels per day based on the following well count:

36 wells on normal 40 acre proration units	-36 x 42 =	1,512 BPD
7 wells on normal 40 acre proration units		
which already have a well count	-7 x 14 =	98 BPD
		<u>1,610 BPD</u>

We are not sure, but it appears you did not give an allowable to the well on Tract 14 (14-1). This well will qualify for a 42 BPD allowable following conversion of Tract 13 wells 4 and 8 (13-4 and 13-8).

This would account for the difference between your calculated allowable of 1,568 and our figure of 1,610 barrels per day.

Please let us know if you agree. Also we will be pleased to report to you on the change of status of any well (s) in the project area.

Yours very truly,

E. A. Riley
E. A. Riley
Superintendent
Secondary Recovery Div.

EAR/hb

Called Riley 12/29/65
He is counting the
well in the 36 acre
unit as 36 wells
which
includes the 7 wells on
Tract 14 (14-1) which was the
basis for calculating allowable
1610 BPD is
correct
Yes

OIL CONSERVATION COMMISSION

P. O. BOX 2088
SANTA FE, NEW MEXICO

January 4, 1966

C
O
P
Y
Mr. E. A. Riley
Superintendent
Secondary Recovery Division
Anadarko Production Company
P. O. Box 9317
Fort Worth, Texas 76107

Dear Mr. Riley:

Reference is made to your letter of December 20, 1965, and to our telephone conversation of December 29, 1965, regarding the calculated maximum allowable which your Grayburg Jackson Unit Waterflood Project will be eligible to receive as set forth in our letter of December 10, 1965.

Your calculation of 1610 barrels per day maximum allowable is correct. When we computed the maximum allowable of 1568 barrels per day, we did not include your Well No. 5-1 which is located in the SE/4 SW/4 of Section 22, Township 17 South, Range 30 East, as it did not appear on Exhibit F offered in Case No. 3330. This exhibit was the basis for determining the maximum allowable as set forth in our letter of December 10.

Very truly yours,

DANIEL S. NUTTER
Chief Engineer

DSN:sg

cc: Oil Conservation Commission - Hobbs
/ Oil Conservation Commission - Artesia
Case File 3330

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

December 10, 1965

C
O
P
Y
Mr. Irley Bonnette
Anadarko Production Company
Post Office Box 9317
Fort Worth, Texas

Dear Mr. Bonnette:

Reference is made to Commission Order No. R-2995, entered in Case No. 3330, authorizing the expansion of Anadarko Production Company's Grayburg-Jackson Unit Area Waterflood Project.

Injection is to be through the five authorized water injection wells, which shall be equipped with tubing and packers, with the casing-tubing annulus loaded with an inert fluid.

As to allowable, 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 1568 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 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,

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

-2-

Mr. Irley Bonnette

December 10, 1965

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

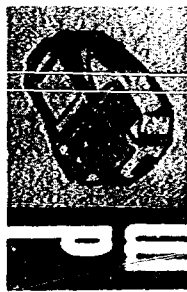
Oil Conservation Commission - Artesia, New Mexico

C
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PAGE 1

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
November 3, 1965

EXAMINER HEARING

IN THE MATTER OF:

Application of Anadarko Production
Company for a waterflood project,
Eddy County, New Mexico. Applicant,
in the above-styled cause, seeks
authority to institute a waterflood
project in its Grayburg Premier Sand
formation through five wells in
Sections 25 and 26, Township 17 South,
Range 30 East, Grayburg Jackson Pool,
Eddy County, New Mexico.

Case No. 3330

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING



MR. UTZ: Case 3330.

MR. DURRETT: Application of Anadarko Production Company for a waterflood project, Eddy County, New Mexico.

MR. BONNETTE: Actually, that's a misnomer. It's an expansion of a waterflood. The waterflood is in operation but this is to recomplete wells in this, water injection wells. I would like to -- I am a Texas attorney, and there's my association. My name is Irley Bonnette.

MR. DURRETT: The entry of appearance will be entered into the record.

MR. BONNETTE: In our application, we have six exhibits attached and I would like, due to typographical errors here, I would like to substitute three exhibits. I would like to substitute for the exhibit attached to the pleading, Exhibit C, and the only change there is at the bottom line, Well 13-4 and Well 13-8, show 7-inch casing, and it should be 4-1/2 inch for those two, and this change makes that substitution.

MR. DURRETT: Would you like that marked?

MR. BONNETTE: Yes, I would.

(Whereupon, Applicant's Exhibit C marked for identification.)

MR. BONNETTE: Exhibit D, we have a little trouble in the change from Ambassador to Anadarko. They show Ambassador as the operator, and it should be Anadarko, and I would like that marked to show that change.



MR. BONNETTE: On Exhibit E, a statement was left off in the full details which says, "Re-enter this plugged and abandoned well and clean out to total depth of approximately 3250 feet. Set 4-1/2 casing to total depth and perforate casing opposite Premier Zone of Grayburg. Install tubing and packer and complete as water injection well."

None of these amendments change the basic application, the form.

MR. UTZ: That recompletion procedure will be identical to the procedure used in the injection wells in the rest of the unit?

MR. RILEY: As to the tubing and packer installation?

MR. UTZ: Right.

MR. RILEY: Yes.

MR. BONNETTE: We do have, and the Commission should now have in their files waivers from Franklin, Aston and Fair, Inc., and the Executors of the R. F. Windfohr Estate. If you do not have those, I have copies of those.

MR. UTZ: Yes, we have them.

MR. BONNETTE: In support of my application, I have one witness, and may he be sworn?

(Witness sworn.)

(Whereupon, Applicant's Exhibits
D and E marked for identification.)

MR. UTZ: Are there any other appearances in this



case?

(Whereupon, Applicant's Exhibits A, B, and F marked for identification.)

E. A. RILEY

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

DIRECT EXAMINATION

BY MR. BONNETTE:

Q Would you state your name and whether or not you have testified before this Commission?

A My name is E. A. Riley. I am Superintendent of Waterflood Production for Anadarko, Fort Worth, Texas, and I have previously testified before the Commission.

MR. BONNETTE: Would you accept Mr. Riley as a qualified witness?

MR. UTZ: Yes, sir.

Q (By Mr. Bonnette) These exhibits which we have introduced in evidence, were they prepared by you or under your supervision?

A Under my supervision, yes.

Q Mr. Riley, you are familiar with the application that's on file here in 3330?

A Yes, I am.

Q Would you explain in detail the application and the



exhibits and why we are requesting the recompletion or the conversion of these wells?

A Yes. Referring the Commission to Exhibit F, which is the larger map than Exhibit A, it will be easier to see the specific wells I am speaking of. We're requesting permission to recomplete and/or convert five wells in the Grayburg Jackson Unit, Order 2323, to water injection status for two reasons; one, as a normal extension of our present injection pattern; and, two, to comply with the cooperative line well agreement with the east offset operator, the Windfohr Estate, so as to promote timely and orderly extension of the unit and to protect correlative rights.

The cooperative line agreement has been temporarily agreed upon between Anadarko and Windfohr, and we have received 92.79 percent approval by the unit working interest owners to enter into this agreement.

The agreement has been submitted to the United States Geological Survey and the State of New Mexico Land Commission for their approval as to form; following their approval we will execute the document, have the Windfohr group execute the document, and then submit it to the Land Commission and the United States Geological Survey for their final approval.

MR. BONNETTE: I might say the agreement is subject

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PAGE 6

to the approval of this Commission, granting this request.

A This agreement is very similar to the agreement previously entered into with the west offset operator, General American Oil Corporation of Texas, which we're currently operating under. The major exception is that the co-op agreement with Windfohr provides for the sale of pressured water to the Windfohr Estate for a starting price of 3.2 cents per barrel, with the price to be adjusted annually.

This was the only way we could work out the cooperative line agreement so as to have orderly and timely development along the east border of the unit.

The five wells in the application that we wish to either recomplete or convert, are Wells 7A-2, 13-1, 13-4, 13-5, and 13-8, being currently plugged and abandoned, and will be the wells that we propose to re-enter and recomplete.

The application also recites that this unit is operating as a unitized waterflood operation previously authorized by the Commission under Order R-2323. The first stage of expansion was approved in Commission Order WFX-169 and one additional well added by Commission Order WFX-215. The co-partner in the cooperative agreement, Windfohr and Brown, previously held it before the Commission on October 19th, and the case is under advisement for their application to conduct waterflooding on their leases.



The application also cites the six exhibits that are included with the application. I will review those briefly. Exhibit A is a map, as prescribed by the Commission, showing the unit boundaries and all leases within a two-mile radius and wells within a two-mile radius of the unit boundaries. On this map we have also shown the current injection wells connected with a black line, and the proposed injection wells encircled in red.

Exhibit B is the Commission C-116 form which shows a recent well test on producing Well 7A-2; on 10/2/65 the well showed a production capacity of 75 barrels of oil, no water and nil gas. At the current time the well is producing at a test of 193 barrels of oil per day and no water. As the Commission could see, this would allow us to seek administrative approval for the conversion of Wells 7A-2 and 13-1, but in verbal discussion with Mr. Nutter, he requested that we have a hearing and include these wells along with the other three wells on the application since the three wells, 13-4, 13-5, and 13-8, you could not grant administrative approval for their conversion without the hearing.

Exhibit C is an injection well data presentation with schematic showing the surface casing, production casing, and tubing scheme for the five injection wells. They indicate that injection into all five wells will be through tubing under

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packer, with packer set immediately above the pay zone.

Exhibit D is a general data sheet showing pertinent reservoir and production information. Most of this was previously submitted and presented to the Commission in the original application. There are two or three amendments to it that I would like to point out to the Commission. The current bottom hole pressure is shown in the non-flood area as zero surface pounds of pressure, but in the repressured area, approximately 1200 pounds. In the average daily production, in the non-flood area it is 2.66 barrels per well per day, and in the responding area, 35.1 barrels of oil per day per well. Cumulative oil production to date from the lease is 1,745,000 barrels. Source of injection fluid will be water from a commercial water supplier and produced water. However, in these five wells in this application, fresh water only or water from the Double Eagle Water Corporation will be injected into these two wells through our so-called Plant No. 2. All produced water is being collected at a central facility and will be reinjected through Plant No. 1 into the twelve wells served by that plant.

Exhibit E is in two parts, the first part being Commission Form C-102. The first part gives the detail of proposed plan of work for recompletion of 13-4, and the second part gives the full details of proposed plan of work on Well



13-8.

Exhibit F is a larger scale map of the immediate unit area, showing the unit boundaries in hashed line; the current injection wells on the unit and the offset operator to the west connected with a solid black line; and the five proposed injection wells in this application encircled in red.

The unit is responding very nicely to waterflood. At the current time, production is running approximately 750 barrels of oil per day.

Q You stated the offset operator to the west, you mean to the east?

A No, I mean to the west. Those wells are on injection, and they are connected in the solid black line.

Q You mentioned that you had 92 plus percent of the working interest owners under the unit agreement consenting. What percentage does that agreement require?

A The border agreement paragraph of the unit agreement calls for 65 or more.

MR. UTZ: Does that complete your examination?

MR. BONNETTE: Yes, sir. We would like to request that the exhibits that we have introduced be accepted as part of the testimony in this case.

MR. UTZ: Exhibits A through F will be entered into the record of this case.



(Whereupon, Applicant's Exhibits A through F, both inclusive, were offered and admitted in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Riley, let me ask if all the injection wells in the portion of the unit now in operation all are injecting through tubing and under a packer?

A Yes, they are.

Q How about the annulus, do you have any inert fluid in the annulus?

A It is treated water.

Q Treated water.

A Water treated to prevent corrosion. It is fresh water.

Q You propose that same installation in each of the wells?

A In each of the five wells under the application.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused.)

MR. UTZ: Are there other statements in this case?
The case will be taken under advisement.

* * * *

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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss

I, ADA DEARNLEY, Court Reporter - Notary Public, 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 11th day of November, 1965.

Ada Dearnley
Court Reporter - Notary Public

My Commission Expires:
June 19, 1967.

I do hereby certify that the foregoing is
a complete record of the proceedings in
the Examiner hearing of Case No. 3330,
heard by me on 11-3-65, 1965.
Thos. G. [Signature] Examiner
New Mexico Oil Conservation Commission

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

SANTA FE, NEW MEXICO

IN RE: APPLICATION OF ANADARKO PRODUCTION COMPANY,)
AS OPERATOR OF THE GRAYBURG-JACKSON UNIT, ORIGINALLY)
AUTHORIZED BY ORDER NO. R-2323, FOR AUTHORITY TO)
RECOMPLETE OR CONVERT FIVE (5) WELLS AS WATER IN-)
JECTION WELLS, ALL OF SUCH WELLS BEING LOCATED)
WITHIN THE BOUNDARIES OF THE GRAYBURG-JACKSON UNIT)
IN EDDY COUNTY, NEW MEXICO.)

Case No. 3330

ENTRY OF APPEARANCE

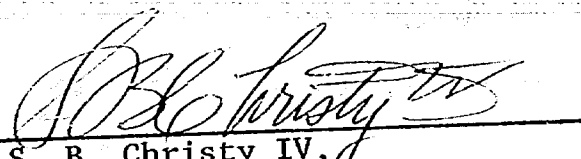
COMES NOW the undersigned attorneys, duly licensed to practice law in the State of New Mexico, and enter their appearance in this cause in behalf of the applicant, Anadarko Production Company.

The undersigned attorneys have associated in this case with Mr. Irley Bonnette, an attorney licensed to practice law in the State of Texas, and request that the Commission permit Mr. Bonnette to present evidence in behalf of the applicant at the hearing in this cause.

Respectfully,

HINKLE, BONDURANT & CHRISTY

By


S. B. Christy IV,
as a member of the firm

DRAFT

JMD/esr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

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

CASE No. 3330

Order No. R-2995

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

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
November 3, 1965, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this _____ day of November, 1965, 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 permission to ~~institute a~~ expand the Grayburg-Jackson Unit Area waterflood project, ~~in the~~ _____

in the Grayburg-Jackson Pool, by the injection of water into the
Grayburg, ~~Premier~~ Permian formation through five injection wells in
Sections 25 and 26, Township 17 North, Range South

30 West, NMPM, Eddy County, New Mexico.
East

(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.

