CASE 5668: ANADARKO PRODUCTION COMPANY FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO

### CASE NO.

5668

APPlication, Transcripts, Small Exhibits,

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### BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION Santa Fe, New Mexico April 14, 1976

### EXAMINER HEARING

IN THE MATTER OF: CASE Application of Anadarko Production Company for salt water disposal, 5668 Lea County, New Mexico.

BEFORE: Daniel S. Nutter, Examiner

### TRANSCRIPT OF HEARING

### APPEARANCES

For the New Mexico Oil William F. Carr, Esq. Conservation Commission: Legal Counsel for the Commission State Land Office Building Santa Fe, New Mexico

W. Thomas Kellahin, Esq. For the Applicant: KELLAHIN & FOX

Attorneys at Law 500 Don Gaspar Santa Fe, New Mexico

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MR. NUTTER: We will call Case Number 5668.

MR. CARR: Case 5668, application of Anadarko Production Company for salt water disposal, Lea County, New Mexico.

MR. KELLAHIN: Tom Kellahin appearing on behalf of Anadarko Production Company. I have one witness to be sworn.

(THEREUPON, the witness was duly sworn.)

### DAN KERNAGHAN

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

### DIRECT EXAMINATION

BY MR. KELLAHIN:

- Q. Would you please state your name, by whom employed and in what capacity?
- A. My name is Dan Kernaghan, I'm employed by Anadarko Production Company as Division Evaluation Engineer.
- Q. Mr. Kernaghan, have you previously testified before the Commission and had your qualifications as an expert accepted and made a matter of record?
  - A. Yes, I have.
- Q And are you familiar with the facts surrounding this particular application?
  - A. Yes, I am.

MR. KELLAHIN: If the Examiner please, are the witness' qualifications acceptable?

MR. NUTTER: Yes, they are.

- Q (Mr. Kellahin continuing.) Mr. Kernaghan, please refer to Exhibit Number One and identify it?
- A. Exhibit Number One shows the general area of the well that we are requesting permission to convert to salt water disposal. That well, the State "W" No. 1, is circled in red and the offsetting wells and their producing field are shown on this map.
- Q Let's go to Exhibit Number Two which is on a little larger scale. Again, if you will identify the proposed disposal well?
- A. Anadarko's State "W" No. 1 is identified with the red arrow. It is in location "O" of Section 21, 18, 34.

The four wells to the south identified with red circles are the wells in which the water which we propose to dispose of is produced.

- Q. What is the total volume of water you intend to dispose of?
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Outlined in green are two secondary units in the area. The one to the west is outside of a two-mile radius.

It is Mobile's EK Queen Unit. The one immediately to the east

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Q. Please refer to the water analysis, that's the next exhibit, Exhibit Number Five?

- A. Exhibit Number Five is a recent water analysis.
- Q. I'm sorry, let me correct that. Exhibit Number Five is your decline curve.
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  The increases in oil production are due to new drilling on
  this lease. These wells were not drilled at the same time,
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  a ten-year interval. The oil production is declining, the
  water production is holding about the same, in the neighborhood of about four thousand barrels a month.
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MR. NUTTER: This is on top?

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(THEREUPON, Applicant's Exhibits One through Six were admitted into evidence.)

MR. KELLAHIN: That concludes our case.

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BY MR. NUTTER:

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Q. Okay, now, the zone that you are going to be disposing of is down here at forty-eight, fifty approximately?

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- Q. Is this Armour Well to the east of your No. 1 Well producing?
  - A. Yes.
  - Q. Does it make water, do you know?
  - A. It makes a little water.
  - Q. What do they do with that water?
  - A. They are trucking it at the present time like we are
  - Q You are trucking at the present time?
- A. Yes. It is costing us about a thousand dollars a month to truck this water. We would look favorably to picking up Armour's water, although we have no contract or agreement with them at this time.
- Q. What has been the water-producing history of your "U" lease, has it just suddenly started making a hundred and fifty or has it slowly come up?

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A. No, it's shown on this graph and the water-oil ratio has probably come up with the completion of the three and four wells, but it has always made water.

Q. That is what the kick here at the end of 1972, oil production and water production then represents the completion of two new wells?

A. Yes, that is correct. Actually about November of '72 it was our State "U" 3 and then later on in '73 it was our state "U" 4 and it's a marginal well.

Q. So, water production per well has been rather uniform throughout the life of the wells?

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Q. What I'm trying to get at is whether there is much possibility that this estimated disposal volume of one hundred and twenty-five to one hundred and fifty barrels per day will greatly increase?

A. I don't feel like it will greatly increase. The data does not indicate to me that we are going to have appreciably more than this volume of water to dispose of over the life.

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five-tent	hs of	a pound	per f	foot of	depth (	to the	injection	zone
is going	to be	adequat	e to g	get all	of that	t water	put away?	,

- A. It is my opinion that it will be adequate.
- Now, on your schematic I notice that you mention that you will be using plastic-coated tubing, what about the annulus between the tubing and the casing?
- A. Well, it has been our practice to fill it with an inhibited salt water.
  - Q With a corrosion inhibited fluid?
  - A. Yes.
- Q. And you would leave it open at the surface so that if it develops any pressure in there you would see the manifestation of that pressure at the surface?
- A. That is correct. We prefer to do it this way.

  MR. NUTTER: Are there further questions of

  Mr. Kernaghan?

MR. KELLAHIN: No, sir.

MR. NUTTER: He may be excused.

(THEREUPON, the witness was excused.)

MR. NUTTER: Does anyone have anything they wish to offer in Case 5668? We will take the case under advisement

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### REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Signey F. Morrish, C.S.R.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 366, heard by me on 1976.

New Mexico Oil Conservation Commission

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Application of Anadarko Production Company for salt water disposal, Lea County, New Mexico.

CASE 5658

BEFORE: Daniel S. Nutter, Examiner

### TRANSCRIPT OF HEARING

### APPEARANCES

For the New Mexico Oil Conservation Commission:

William F. Carr, Esq.

Legal Counsel for the Commission

State Land Office Building

Santa Fe, New Mexico

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For the Applicant:

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Ů.	And	you feel	that	a surfa	ace pres	sure e	quivalent	to
five-tent	hs of	a pound	per f	oot of	depth t	o the	injection	zone
is going	to be	adequate	to g	et all	of that	water	put away?	1

- It is my opinion that it will be adequate.
- Now, on your schematic I notice that you mention that you will be using plastic-coated tubing, what about the annulus between the tubing and the casing?
- A. Well, it has been our practice to fill it with an inhibited salt water.
  - With a corrosion inhibited fluid?
  - Yes.
- And you would leave it open at the surface so that if it develops any pressure in there you would see the manifestation of that pressure at the surface?
- That is correct. We prefer to do it this way. MR. NUTTER: Are there further questions of Mr. Kernaghan?

MR. KELLAHIN: No, sir.

MR. NUTTER: He may be excused.

(THEREUPON, the witness was excused.)

MR. NUTTER: Does anyone have anything they wish to offer in Case 5668? We will take the case under advisement

## sid morrish reporting service General Court Reporting Service 825 Calle Mejia, No. 122. Santa Fe, New Mexico 87501 Phone (505) 982-9212

### REPORTER'S CERTIFICATE

I, SIDNEY F. MORRISH, a Certified Shorthand Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings to the best of my knowledge, skill and ability.

Sidney F. Morrish, C.S.R.

I do hereby certify that the foregoing a complete record of the proceedings in the Examiner hearing of Case No.

New Mexico Oil Conservation Commission

LAW OFFICES OF

JENNINGS, CHRISTY & COPPLE

IOIS SECURITY NATIONAL BANK BUILDING
P.O.BOX 1180
ROSWELL, NEW MEXICO 88201

TELEPHONE 622-4432 COMM.
AREA CODE 505

JAMES T. JENNINGS SIM B. CHRISTY IV MANUAL MANUAL BRIAN W. COPPLE

ROBERT G. ARMSTRONG

April 29, 1976

Oil Conservation Commission P. O. Box 2088 Santa Fe, New Mexico 87501

RE: 5668

Gentlemen:

Please forward to me a copy of the Order if and when issued in Case No. 5668 which was on the April 14, 1976 Examiner Docket.

Yours very truly,

JENNINØS

R-5211

JTJ/mb

mailed 4/30/26



DIRECTOR

JOE D. RAMEY

### **OIL CONSERVATION COMMISSION**

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

LAND COMMISSIONER

PHIL R. LUCERO April 28, 1976



**STATE GEOLOGIST** EMERY C. ARNOLD

Re: CASE NO. Mr. Tom Kellahin Kellahin & Fox Attorneys at Law Post Office Box 1769 Santa Fe, New Mexico

5668 ORDER NO.

Applicant:

Anadarko Production Company

Dear Sir:

JDR/fd

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

Yours very truly JOE D. RAMEY Director

Copy of order also sent to:

Hobbs OCC Artesia OCC Aztec OCC

**Other** 

### BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

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

> CASE NO. 5668 Order No. R-5211

APPLICATION OF ANADARKO PRODUCTION COMPANY FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO.

### ORDER OF THE COMMISSION

### BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 14, 1976, at Santa Fe, New Mexico, before Examiner, Daniel S. Nutter.

NOW, on this 27th day of April, 1976, 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, is the owner and operator of the New Mexico "W" State Well No. 1, located in Unit O of Section 21, Township 18 South, Range 34 East, NMPM, East E-K Queen Pool, Lea County, New Mexico.
- (3) That the applicant proposes to utilize said well to dispose of produced salt water into the Queen formation, with injection into the perforated interval from approximately 4852 feet to 4862 feet.
- (4) That the injection should be accomplished through 2 3/8-inch plastic lined tubing installed in a packer set at approximately 4700 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus or the annulus left open in order to determine leakage in the casing, tubing, or packer.
- (5) That the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 970 psi.

-2-Case No. 5668 Order No. R-5211

- (6) That the operator should notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.
- (7) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.
- (8) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

### IT IS THEREFORE ORDERED:

(1) That the applicant, Anadarko Production Company, is hereby authorized to utilize its New Mexico "W" State Well No. 1 located in Unit O of Section 21, Township 18 South, Range 34 East, NMPM, East E-K Queen Pool, Lea County, New Mexico, to dispose of produced salt water into the Queen formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4700 feet, with injection into the perforated interval from approximately 4852 feet to 4862 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device or the annulus left open in order to determine leakage in the casing, tubing, or packer.

- (2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 970 psi.
- (3) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.
- (4) That the operator shall immediately notify the supervisor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.
- (5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

-3-Case No. 5668 Order No. R-5211

(6) 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

PHIL R. LUCERO, Chairman

EMERY C. ARNOLD, Member

JOE D. RAMEY, Member & Secretary

SEAL

### CASE 5652: (Continued & Readvertised)

Application of Continental Oil Company for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle Pasin-Dakota gas and Otero-Gallup oil production in the wellbores of the following wells on its Northeast Haynes Lease in Township 24 North, Range 5 West, Rio Arriba County, New Mexico:

No. 1 in Unit L of Section 9 No. 2 in Unit B of Section 16 No. 3 in Unit P of Section 16 No. 4 in Unit E of Section 21 No. 5 in Unit E of Section 22 No. 6 in Unit D of Section 15 No. 8 in Unit P of Section 15



Application of Anadarko Production Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced water into the Queen formation through the perforated interval from approximately 4553 to 4881 feet in its New Mexico "W" State Well No. 1, located in Unit O of Section 21, Township 18 South, Range 34 Fast, Fast E-K Queen Pool, Lea County, New Mexico.

CASE 5669: Southeastern New Mexico nomenclature case calling for an order for the creation and extension of certain pools in Chaves, Eddy, Lea, and Roosevelt Counties, New Mexico.

a) CREATE a new pool in Lea County, New Mexico, classified as an oil pool for Oueen production and designated as the Eidson-Oueen Pool. The discovery well is the Manson Oil Corporation Caldonia Well No. 1, located in Unit N of Section 11, Township 16 South, Range 34 East, NAPM. Said pool would comprise:

TOWNSHIP 16 SOUTH, RANGE 34 FAST, IMPM Section 11: S/2
Section 12: SW/4

b) CRFATE a new pool in Eddy County, New Mexico, classified as a gas pool for Atoka production and designated as the McKittrick Mills-Atoka Gas Pool. The discovery well is the Southern Union Production Company Shelby Federal Well No. 1, located in Unit H of Section 13, Township 22 South, Range 24 East, MMPM. Said pool would comprise:

TOWNSHIP 22 SOUTH, RANGE 24 FAST, IMPM Section 13: N/2

c) CRFATE a new pool in Eddy County, New Mexico, classified as a gas pool for Strawn production and designated as the McKittrick Hills-Strawn Gas Pool. The discovery well is the Southern Union Production Company Shelby Federal Well No. 1, located in Unit H of Section 13, Township 22 South, Range 24 East, NMPM. Said pool would comprise:

TOWNSHIP 22 SOUTH, RANGE 24 EAST, MMPM Section 13: N/2

d) CREATE a new pool in Fddy County, New Mexico, classified as a gas pool for Upper Pennsylvanian production and designated as the McKittrick Hills-Upper Pennsylvanian Gas Pool. The discovery well is the Southern Union Production Company Shelby Federal Vell No. 2, located in Unit K of Section 12, Township 22 South, Range 24 East, NMFM. Said pool sould comprise:

TOWNSHIP 22 SOUTH, RANGE 24 FAST, NMPM Section 12: S/2

e) CRFATE a new pool in Chaves County, New Mexico, classified as a gas pool for Strawn production and designated as the South Newmill-Strawn Gas Pool. The discovery well is the Marathon Oil Company State 27 Well No. 1, located in Unit M of Section 27, Township 4 South, Range 27 East, NMPM. Said pool would comprise:

TOWNSHIP 4 SOUTH, RANGE 27 FAST, NMPM Section 27: V/2

f) CREATE a new pool in Roosevelt County, New Mexico, classified as an oil pool for Volfcamp production and designated as the South Prairie-Wolfcamp Pool. The discovery well is the SNB Operating Company New Mexico Federal Well No. 1, located in Unit I of Section 20, Township 8 South, Range 36 Fast, NMPM. Said pool would comprise:

TOWNSHIP 8 SOUTH, RANGE 36 EAST, NMPM Section 20: SE/4

### BEFORE THE

### OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF ANADARKO PRODUCTION COMPANY FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO

### APPLICATION

COMES now Anadarko Production Company, by and through its attorneys, Kellahin & Fox, and hereby requests approval to inject produced water into the Queen formation through its New Mexico "W" State No. 1 Well located 660 feet from the South line and 1980 feet from the East line of Section 21, Township 18 South, Range 34 East, N.M.P.M., Lea County, New Mexico, and in support thereof would show:

- Applicant is the operator of the New Mexico "W"
   State No. 1 Well.
- 2. Attached hereto is a copy of the subject area showing the proposed disposal well and the sources of the produced water which will be disposed of in the disposal well.
- 3. Applicant proposes to dispose of said water into the Queen formation through the perforated interval from approximately 4553 to 4881 feet.
- 4. Applicant seeks administrative provisions to make additional perforations between 4553 to 4881 feet in subject well.
- 5. Granting of this application will be in the best interest of conservation, prevention of waste and protection of correlative rights.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing and upon hearing an order be entered authorizing the requested disposal of water as described above.

Respectfully submitted,

ANADARKO PRODUCTION COMPANY

Kellahin & Fox P. O. Box 1769 Santa Fe, New Mexico

87501

ATTORNEYS FOR APPLICANT

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. Ý NEW MEXICO "W" STATE, WELL NO. 1. 660' FSL & 1980' FEL SECTION 21 T185-R34E ELEV. 4024'GL  $8^{5}/8^{9}$  0.0.,24 $^{\pm}$  J-55 surface cosing set at 416, cemented with 300 sacks. -Calculated cement top at 3650 Top of Queen - 4553 -51/2" Tension Packer set at 4700" 2 3/8" internally plastic coated tubing set at 4701. 4852'-62' Queen (Penrose) Sand -5 1/2" 0.0, 15.5 J-55, set at 4899' cemented with 400 sack. TD 4900

BEFORE EXAMINER NUTTER
OIL CONSERVATION OF MAISSION
ANALYSIS NO. 3
CASE NO. 568

ANADARKO PRODUCTION COMPANY

E.K. QUEEN EAST FIELD EDDY COUNTY, NEW MEXICO

DIAGRAMMATIC SKETCH

FIELD: E.K. Queen, East	RESERVOIR:	STATE: New Mexico
LEASE/UNIT: New Mexico State "U"	PERFS:	OPERATOR: Anadorko Production Co.
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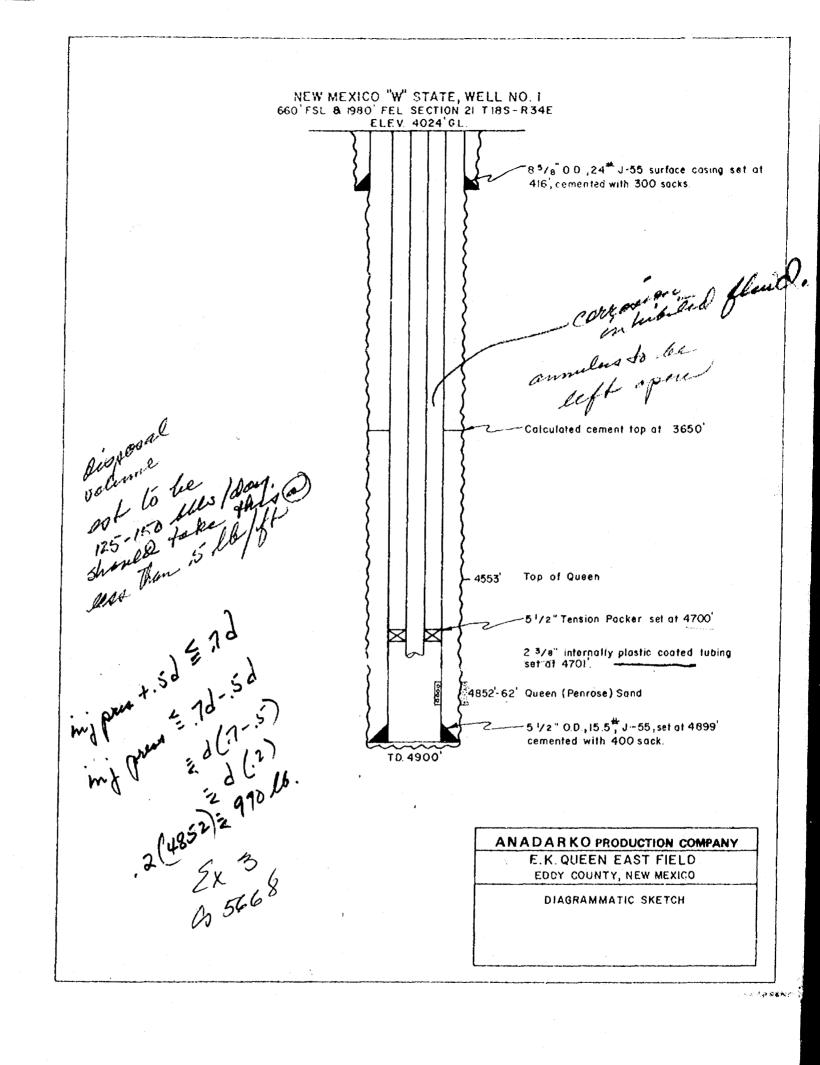


## TRETOLITE DIVISION 369 Marshall Avenue / Saint Louis, Missouri 63119 (314) WO 1-3500/TWX 910-760-1660/Telex 44-2417

### WATER ANALYSIS REPORT

COMPANY	Anadarko Pi	roduction Co.	ADDRESS	Loca	Hills,	г.н	DATE:	1,-6-76
SOURCE	State "U" ;	<i>#</i> 3	DATE SAN	IDI EU	4-5-7	6.5	ANALYSIS	11147
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FIELD: E.K.Queen, East	RESERVOIR:	STATE: New Mexico
LEASE/UNIT: New Mexico State "U"	PERFS:	OPERATOR: Anadarko Production Co
NO. WELLS:	co. <u>Leo</u>	LOCATION: 28-18-34
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OIL PROD		
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T. CODE NO.	LEASE NAME	WELL NO.



# TRETOLITE DIVISION 369 Marshall Avenue / Saint Louis, Missauri 63719 (314) WO 1-3500/TWX 910-760-1660/Tele: 44-2417

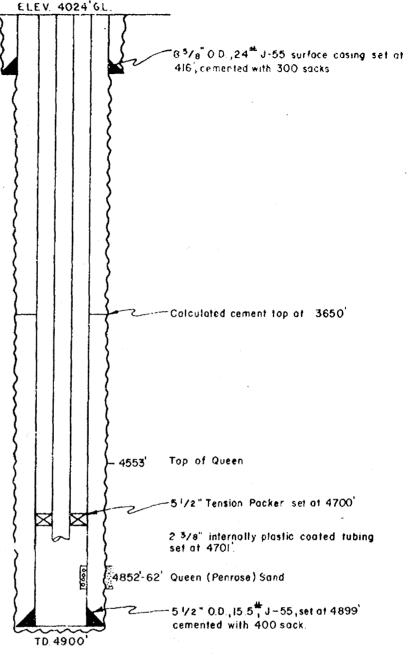
### WATER ANALYSIS REPORT

COMPANY	Anadarko Pro	duction Co.	ADDRESS	LocoHills, N.M.	DATE:	4-6-76
SOURCE	State "U" #3		DATE SAM	PLED 4-5-76	ANALYSIS —— NO.——	11147
	Analysis			Mg/t	*Meq/L	
1.	PH .	5.5		5 4		
2.		5.0 prm		4		
3.	,*	1.200				
4.	·	· · · · · · · · · · · · · · · · · · ·	_	257,904		
. 5.						
6.		alinity (CaCO.)	_			•
7.	Methyl Orange Alkali	-,	_	120		
8.	Bicarbonate (HCO <sub>3</sub>	•	HCO, _	146 ÷6	2.4	HCO;
9.	Chlorides (CI)		CI _	177,055 ÷35	1 044	CI
10.	Sulfates (SO <sub>4</sub> )		\$O₄ _	Trace ÷48	}	so.
11.	Calcium (Ca)		Ca _	12,400 ÷ 20	620	Co
12.	Magnesium (Mg)		Mg _	7,314 ÷ 12	.2600	Мд
13.	Total Hardness (Co	(CO <sub>3</sub> )	<del>.</del>	61,100		-
14.	Total Iron (Fe)		_	9.0 ppm		
. 15.	Barium (Qualitative			Pos.		
16. •M	illi equivalents per liti		INERAL COMP	OSITION		
<del></del>	Ca +	HCO <sub>3</sub>	Compound	Equiv. Wt.		= Mg/L
620	Cu +		Ca (HCO <sub>3</sub> )	81.04	2.4	194
600	Mg	→ SO <sub>4</sub> Trace	Ca \$O₄	68.07		01 200
3,770	Na -		$Ca\;Cl_2$	55.50	618	34,300
Sat	uration Values Dist	illed Water 20°C	Mg (HCO <sub>3</sub> )	2 73.17		· · · · · · · · · · · · · · · · · · ·
	Ca CO <sub>3</sub>	13 Mg/L	Mg SO,	60.19	600	2,860
	Ca SO <sub>4</sub> • 2H <sub>2</sub> O	2,090 Mg/l	Mg Cl <sub>2</sub>	47.62		
	Mg CO₃	103 Mg/L	Na ∺CO3	84.00		<del></del>
			Na <sub>2</sub> SO <sub>4</sub>	71.03	3,770	220,550
	443 20 20	(4) 15- Dual-Zan	Na Cl	58.46	79110	~~0,,,,
REMARKS _		n (1) Mr. Buckles $n$ (1) Worsham (1)		Δ		·
	CC: (1) Saltzma	m (I) Worsham (I)	MTV (1) 177			
	5 <sub>X</sub>	6			pectfully submitted folite company	

CV 5668

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(9) (8)	Mabil 5'T"   6	Deck Oil   N-1-81 2-8-75   L-6574 (J.N.8lair)   1511	Atlied Chem.   Richardson & Boss   Boss   HBP   E-5014   Contil.	(Rolph Nia) Tritonoles (Richardson Oil 25:183)  E-2519 Continuotas Curios (Passes) (Fares) 1045ff 2 7045ff 2 70	7 21 - 50 10 5900 CM Forest CE	1- 1 - 82 2- 6485 3121	Great L. 61 Mark 1
	7799	belon 5000' Silvator (O'Neil) Silvator 20 Allied Chem.	E.E. Kinney	22 Cont 1. St.	Const   Soss   -23	24	Scherzoon Collie Lo. No Si No. 3
	K65	Schorbover C.Co 3.16.75 Schorbover C.Co 3.951 Schorbover 2.Combust	Anadurko (143) M.M. (143) 10498 (143) (14	Circles Forest Control	23- 375- 375-28-5- P.R. Bass E-5014 EAST E-KI FUNIT 1556- CONT L(OPER)	9-9-75 X5277 26-96 Stobe	WHA!
	Amer. Petro.		etal Da (E.G. evick) 199 Anadarko S/R	70 4627 \$ 70 4900 Jns.L. Harden	Meso Pet. 41-1 1 - 16 - 78 1-556 1611	Jangsan Gwf-St. Amoco 10 453. Amoco 04 6-24-57 9 - 16 - 79 L-3556 25 52	ADE I
2200	bex   WAYeoger, etail   Suil Feet   18   173   19677/		Ahadarka Aliconti andisc	OSS 6553 U.S., MI Scharbouer Carrie Co., S	Azfec 4-19-76 K:5920	25∃ 25	334
"	TRAGEN   TOTAL O OF OCIS   15920   Westvoin Fed	[Pennzoil   9-1-80   12277   160:1-54"	MM. S. 193   MM. S	Affied Chem, 1 Anadorko? 6 - 15 - 75 1 N37 K-5093 E-1632	Meso Pet. Ambosadar L-3674 State 25.23	# Ameco   5 - 21 - 78   E. 31(4'   1 - 918   To. 13,481'   37.32	Amac 5 - 21 - Design of
	U.S., MI T.F. 'Seale	1 Union 1		State I	21 4193 T3 4324 O4 3-2-39 State	- Srate	NSSE &
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	A.R.Co. et al. City 10-10-10-10-10-10-10-10-10-10-10-10-10-1	12 - 21 - 75 12 - 21 - 75 14 - 22   15 - 17   17   17   17   17   17   17   17	*Pipeling-State* TomBrown	Eastland Orlg.  Winon-St TD 5038  DATI-5-02	May E. Williams State	4-19-76 K-5928 2119	etal 7-10-79 1-10-0 129-9
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ŀ	Horrow Discool	6868   4315 t.k	Union 0/R		C.B.Read (U.S.Smelt)), remain	USSmeH.Sr. 457 El 3975 Marathon On 110 HBP	200
	72 Mil. Elpase Hatl. I		9 Union	Diamond Drig 10 5746 10 5084 10 5084 11 4750 11 4750 11 4750	CB.Read (Union Pres)	TOIOSSO. 12 Gulf Gelty Ody ! Pice of	Moretter 37774 18 Read, stall 002418
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NEW MEXICO "W" STATE, WELL NO I 660' FSL & 1980' FEL SECTION 21 T185-R34E ELEV. 4024'GL.



case 5668 Exhibit 3

#### ANADARKO PRODUCTION COMPANY

E.K. QUEEN EAST FIELD EDDY COUNTY, NEW MEXICO

DIAGRAMMATIC SKETCH

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## TRETOLITE DIVISION 369 Marshall Avenue / Saint Louis, Mrssouri 63119 1314) WO 1-3500/TWX 910-760-1660/Telex 44-2417

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### WATER ANALYSIS REPORT

Analysis  1. PH  2. H <sub>2</sub> S (Qualitative)  3. Specific Gravity  4. Dissolved Solids  5. Suspended Solids  6. Phenolphtholein Alkalinity (CaCO <sub>3</sub> )  7. Methyl Orange Alkalinity (CaCO <sub>3</sub> )  8. Bicarbonate (HCO <sub>3</sub> )  9. Chlorides (Cl)  10. Sulfates (SO <sub>4</sub> )  11. Calcium (Ca)  12. Magnesium (Mg)  13. Total Hardness (CaCO <sub>3</sub> )	DATE SAA	257	14-5-71 Mg/t: 7,904	7.6.7.	DATE: ANALYSIS — NO *Meq/L	11147
Analysis  1. PH  2. H <sub>2</sub> S (Qualitative)  3. Specific Gravity  4. Dissolved Solids  5. Suspended Solids  6. Phenolphthalein Alkalinity (CaCO <sub>3</sub> )  7. Methyl Orange Alkalinity (CaCO <sub>3</sub> )  8. Bicarbonate (HCO <sub>3</sub> )  9. Chlorides (Cl)  10. Sulfates (SO <sub>4</sub> )  11. Calcium (Ca)  12. Magnesium (Mg)		257	7,904	7.47		
14. Total Iron (Fe)  15. Barium (Qualitative)	CI SO <sub>4</sub> Ca Mg	Tra 12, 7,3 61,	7,055 Ace ,400 314 100 ppm	- ÷61 - ÷35.5 - ÷48 - ÷20 - ÷12.2	2.4 4,988 620 600	HCO; CI SO; Ca Mg
620 600 Mg Solutation Values Distilled Water 20°C Ca CO <sub>3</sub> 13 Mg/l Mg CO <sub>3</sub> 103 Mg/l Mg CO <sub>3</sub> REMARKS  Ca SO <sub>4</sub> Trace Ca Co May No Mg/l No No No No No No No No No No No No No	Compeund  a (HCO <sub>3</sub> )  a SO <sub>4</sub> a Cl <sub>2</sub> kg (HCO <sub>3</sub> )  kg Cl <sub>2</sub> a HCO <sub>3</sub> o <sub>2</sub> SO <sub>4</sub> a Cl	d } <sub>2</sub>	Equiv.  81. 68. 55. 73. 60. 47. 84. 71. 58.	.04 .07 .50 .17 .19 .62 .00	Meq/L = 2.4 618 600	34,300 2,860 220,550
CC: (1) Saltzman (1) Worsham (1) Nix	, (1) II.	.T.6				

KELLAHIN AND FOX
ATTORNEYS AT LAW
BOO DON GASPAR AVENUE
POST OFFICE BOX 1769
SANTA FE, NEW MEXICO 87501

JASON W. KELLAHIN ROBERT E. FOX W. THOMAS KELLAHIN

March 18, 1976

TELEPHONE 982-43|5 AREA CODE 505

Mr. Bill Carr Oil Conservation Commission P. O. Box 2008 Santa Fe, New Mexico 87501

Re: Anadarko's application for Salt Water Disposal, Lea County

Dear Bill:

Please file the enclosed application on behalf of Anadarko Production Company for hearing on April 14, 1976.

Anadarko is requesting permission to dispose of salt water in its New Mexico "W" State No. 1 well located in Section 21, T18S, R34E, Lea County, New Mexico.

Very truly yours,

W. Thomas Kellahin

CC: Mr. Dan Kernaghan

WTK:kjf

Enclosure

₩ MAR 1 9 1976

O'L CONSERVATION COMM. Santa Fo

#### BEFORE THE

#### OIL CONSERVATION COMMISSION OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF ANADARKO PRODUCTION COMPANY FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO

#### APPLICATION

COMES now Anadarko Production Company, by and through its attorneys, Kellahin & Fox, and hereby requests approval to inject produced water into the Queen formation through its New Mexico "W" State No. 1 Well located 660 feet from the South line and 1980 feet from the East line of Section 21, Township 18 South, Range 34 East, N.M.P.M., Lea County, New Mexico, and in support thereof would show:

- 1. Applicant is the operator of the New Mexico "W" State No. 1 Well.
- 2. Attached hereto is a copy of the subject area showing the proposed disposal well and the sources of the produced water which will be disposed of in the disposal well.
- 3. Applicant proposes to dispose of said water into the Queen formation through the perforated interval from approximately 4553 to 4881 feet.
- 4. Applicant seeks administrative provisions to make additional perforations between 4553 to 4881 feet in subject well.
- 5. Granting of this application will be in the best interest of conservation, prevention of waste and protection of correlative rights.

WHEREFORE, Applicant respectfully requests that this matter be set for hearing and upon hearing an order be entered authorizing the requested disposal of water as described above.

Respectfully submitted,
ANADARKO PRODUCTION COMPANY

Kellahin & Fox
P. O. Box 1769
Santa Fe, New Mexico 87501

ATTORNEYS FOR APPLICANT

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#### BEFORE THE

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IN THE MATTER OF THE APPLICATION OF ANADARKO PRODUCTION COMPANY FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO

#### APPLICATION

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Respectfully submitted,
ANADARKO PRODUCTION COMPANY

Kellahin & Fox
P. O. Box 1769
Santa Fe, New Mexico 87501

ATTORNEYS FOR APPLICANT

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## BEFORE THE OIL CONSERVATION COMMISSION OF THE STATE OF NEW MEXICO

5668

CASE NO.

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

Order No. R- 5211
PPLICATION OF ANADARKO PRODUCTION OMPANY FOR SALT WATER DISPOSAL, EA COUNTY, NEW MEXICO.
ORDER OF THE COMMISSION
BY THE COMMISSION:
This cause came on for hearing at 9 a.m. on April 14, 1976 at Santa Fe, New Mexico, before Examiner, Daniel S. Nutter .
NOW, on this day of April , 1976 , 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,
is the owner and operator of the New Mexico "W" State Well No. 1,
located in Unit 0 of Section 21, Township 18 South,
Range 34 East , NMPM, East E-K Queen Pool ,
Lea County, New Mexico.
(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the Queen
formation, with injection into the perforated interval 4852 from approximately 4553 feet to 4881 feet.
(4) That the injection should be accomplished through 236 -inch plastic lined tubing installed in a packer
set at approximately 4700 feet; that the casing-tubing annulus
should be filled with an inert fluid; and that a pressure gauge
or approved leak detection device should be attached to the

-2- CASE NO.				
annulus in order to determine leakage in the casing, tubing,				
or packer.				
(4) That the injection well or system should be equipped				
with a pop-off valve or acceptable substitute which will				
limit the wellhead pressure on the injection well to no more 970 than 900 psi.				
(5) That the operator should notify the supervisor of				
the Hobbs district office of the Commission of the date				
and time of the installation of disposal equipment so that the				
same may be inspected.				
(8) That the operator should take all steps necessary to				
ensure that the injected water enters only the proposed injection				
interval and is not permitted to escape to other formations or				
onto the surface.				
(3) That approval of the subject application will prevent				
the drilling of unnecessary wells and otherwise prevent waste				
and protect correlative rights.				
IT IS THEREFORE ORDERED:				
(1) That the applicant, Anadarko Production Company,				
is hereby authorized to utilize its New Mexico "W" State Well No,				
located in Unit 0 of Section 21 , Township 18 South				
Range 34 East , NMPM, East E-K Queen Pool				
Lea County, New Mexico, to dispose of produced salt				
water into the Queen formation, injec-				
tion to be accomplished through				
tubing installed in a packer set at approximately 4700 feet,				
with injection into the perforated interval from approximately 4852 4862 feet to 4881 feet;				
PROVIDED HOWEVER, that the tubing shall be plastic-lined;				
that the casing-tubing annulus shall be filled with an inert				
fluid; and that a pressure gauge shall be attached to the annulus				
or the annulus shall be equipped with an approved leak detection or the annulus lift pure device in order to determine leakage in the casing, tubing, or				
packer.				

-3-		
CASE	NO.	

- (2) That the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 700 psi.
- (3) That the operator shall notify the supervisor of the Hobbs district office of the Commission of the date and time of the installation of disposal equipment so that the same may be inspected.
- visor of the Commission's Hobbs district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.
- (5) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.
- (6) 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.