

CASE 3756: Application of GULF
OIL CORPORATION FOR SALT WATER
DISPOSAL, EDDY COUNTY, NEW MEXICO.

Case Number

3756

Application

Transcripts.

Small Exhibits

ETC.

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2000
SANTA FE

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

May 6, 1968

Mr. Bill Kastler
Gulf Oil Corporation
Post Office Box 1938
Roswell, New Mexico 88201

Re: Case No. 3756
Order No. R-3409
Applicant:
Gulf Oil Corporation

Dear Sir:

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

Very truly yours,

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. D. E. Gray, State Engineer Office, Santa Fe, N.M.

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. 3756
Order No. R-3409

APPLICATION OF GULF OIL CORPORATION
FOR SALT WATER DISPOSAL, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on May 1, 1968,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 6th day of May, 1968, 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, Gulf Oil Corporation, is the owner
and operator of the Eddy State "AN" Well No. 5, located 2310
feet from the South line and 2310 feet from the East line of
Section 16, Township 19 South, Range 28 East, NMRM, East Millman
Queen-Grayburg Pool, Eddy County, New Mexico.

(3) That the applicant proposes to utilize said well to
dispose of produced salt water into the Queen-Grayburg forma-
tion, with injection into the perforated interval from approxi-
mately 1773 feet to 2142 feet.

(4) That the injection should be accomplished through
2 3/8-inch internally plastic-coated tubing installed in a
packer set at approximately 1700 feet; that the casing-tubing
annulus should be filled with an inert fluid; and that a pressure

-2-

CASE No. 3756

Order No. R-3409

gauge should be attached to the annulus or the annulus left open at the surface in order to determine leakage in the tubing or packer.

(5) 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:

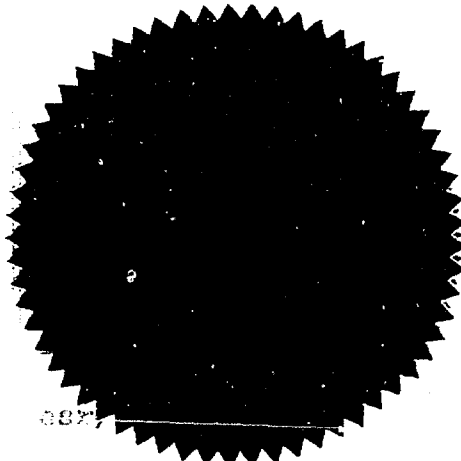
(1) That the applicant, Gulf Oil Corporation, is hereby authorized to utilize its Eddy State "AN" Well No. 5, located 2310 feet from the South line and 2310 feet from the East line of Section 13, Township 19 South, Range 28 East, NMFM, East Millman Queen-Grayburg Pool, Eddy County, New Mexico, to dispose of produced salt water into the Queen-Grayburg formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 1700 feet, with injection into the perforated interval from approximately 1773 feet to 2142 feet;

PROVIDED HOWEVER, that the tubing shall be internally plastic-coated; 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 left open at the surface in order to determine leakage in the tubing or packer.

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

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



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

DAVID F. CARCO, Chairman

CUSTON B. HAY, Member

A. L. PORTER, Member & Secretary

Case 3756

Heard 5-1-68

Re: 5-1-68.

1. Grant Gulf permission to convert their Eddy State ~~BN~~ ^{AN} #5, 2310/S&F sec. 13-19S-25E to a SUD well.

Disposal water will be from their Eddy State 'BN' + 'AN' leased in the E. Millman - Lucas Kingburg pool.

Approx 60 Barel/da will be disposed.

Thos L. Mc

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 1, 1968

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 Examiners:

CASE 3756:

Application of Gulf Oil Corporation for salt water disposal, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen-Grayburg formation in the interval 1773 feet to 2142 feet in its Eddy State "AN" Well No. 5 located 2310 feet from the South and East lines of Section 13, Township 19 South, Range 28 East, East Millman Queen-Grayburg Pool, Eddy County, New Mexico.

CASE 3002 (Reopened):

In the matter of Case No. 3002 being reopened pursuant to the provisions of Order No. R-2684-B, which order provided special rules and regulations for the Fowler-Lower Paddock Pool, Lea County, New Mexico. All interested parties may appear and show cause whether the special pool rules, as they relate to well spacing, well classification, and limiting gas-oil ratios, should remain in effect.

CASE 3559 (Reopened):

In the matter of Case No. 3559 being reopened pursuant to the provisions of Order No. R-3228, which order established 80-acre spacing units for the South Flying "M"-Pennsylvanian Pool, Lea County, New Mexico, for a period of one year. All interested parties may appear and show cause why said pool should not be developed on 40-acre spacing units.

ir/

Gulf Oil Corporation

EXPLORATION AND PRODUCTION DEPARTMENT—U. S. OPERATIONS
ROSWELL DISTRICT

T. W. Kidd
DISTRICT MANAGER
M. I. Taylor
DISTRICT PRODUCTION
MANAGER
F. O. Mortlock
DISTRICT EXPLORATION
MANAGER
H. A. Rankin
DISTRICT SERVICES MANAGER

April 8, 1968

P. O. Drawer 1938
Roswell, New Mexico 88201

Case 3756

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

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

Re: Application of Gulf Oil Corporation for Salt Water
Disposal, East Millman Queen Grayburg Pool,
Eddy County, New Mexico

Gentlemen:

Gulf Oil Corporation respectfully requests an examiner hearing to consider its application for approval to dispose of salt water in the Eddy State "AN" Well No. 5, located 2310' FSL & 2310' FEL of Section 13, T-19-S, R-28-E, East Millman Queen Grayburg Pool, Eddy County, New Mexico.

The salt water to be disposed of is produced from the East Millman Queen Grayburg Pool on applicant's Eddy State "BN" Lease described as the SE/4 of Section 11 and the Eddy State "AN" Lease described as the S/2 NW/4, N/2 SW/4 and N/2 SE/4 of Section 13. The attached plat shows these leases outlined in red and the proposed injection well circled in green. It is proposed to dispose of this produced salt water in the Queen Grayburg interval 1773' - 2142' through 2-3/8" OD plastic coated tubing set in a tension type retrievable packer at approximately 1700'. A schematic diagram of the proposed salt water disposal well is attached.

The disposal of this produced salt water underground is necessary to comply with the Commission's Order R-3221 which prohibits surface disposal after January 1, 1969.

A copy of this application has been furnished to offset operators.

Respectfully submitted,

GULF OIL CORPORATION

M. I. Taylor

M. I. Taylor

Attachments
JHH:sz

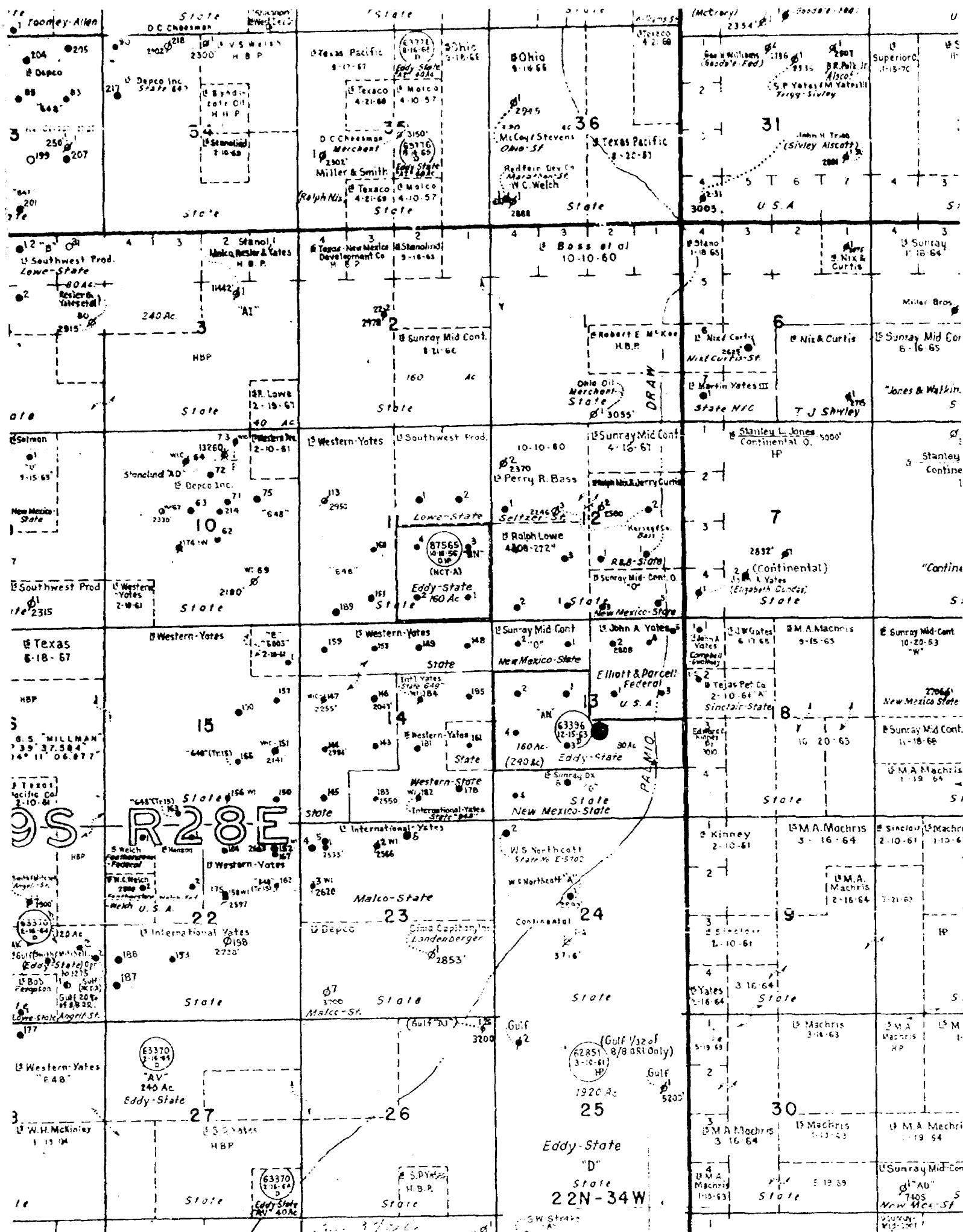
cc: New Mexico Oil Conservation Commission
Drawer DD
Artesia, New Mexico 88210
Sunray DX Oil Company
Post Office Box 1416
Roswell, New Mexico 88201



DOCKET NO. 1938

Date 4-18-68

Yates Petroleum Corporation
309 Carper Building
Artesia, New Mexico 88210



SCHEMATIC DIAGRAM
PROPOSED SALT WATER DISPOSAL WELL

Gulf's Eddy "AM" State No. 5
2310' FSEEL Sec. 13-19S-28E
Eddy County, N. M.

Casing-Tubing Annulus
Will Be Loaded With
Inhibited Water

8-5/8" OD Csg. @
620', cmt'd w/150
sacks.

2-3/8" OD 4.70# EUE
8 RT J-55 tubing plastic
coated internally

Tension Type retriev-
able packer @ 1700'

1773-85' 4 JSPF

2033-43' 2 JSPF

2136-42' 4 JSPF

5 1/2" OD 14# Csg at
2225' cmt'd w/300 sx

TD 2240'
PBD 2195'

Fish, 130' tbg.

Case 3280

dearnley-meier reporting service, inc.

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

1120 SUMMIT BLDG. • P. O. BOX 1092 • PHONE 243-4491 • ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 1, 1968
EXAMINER HEARING

IN THE MATTER OF:

Application of Gulf Oil Corporation
for salt water disposal, Eddy
County, New Mexico.

Case 3756

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MAY 1, 1968 TIME: 9 A.M.

NAME	REPRESENTING	LOCATION
BOY T. BUELL	PAN Am	FORT WORTH
DAVID G. WIGHT	PAN Am	FORT WORTH
Bill Kaster	Gulf	Lawrence
John Hoover	✓	✓
Bob Coleman	✓	✓
Bill Kern	BTA	MIDLAND, TEXAS
Jason W. Kellaher	Kellaher & Co.	San Antonio

MR. UTZ: Hearing will come to order. First case on the docket will be Case 3756.

MR. HATCH: Case 3756. Application of Gulf Oil Corporation for salt water disposal, Eddy County, New Mexico.

MR. KASTLER: If the Examiner please, my name is Bill Kastler, I'm an attorney from Roswell with Gulf Oil Corporation and our witness at this hearing will be Mr. John H. Hoover.

(Witness sworn)

MR. UTZ: Are there other appearances? You may proceed.

JOHN HOOVER

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

DIRECT EXAMINATION

BY MR. KASTLER:

Q Mr. Hoover, have you previously appeared before the New Mexico Oil Commission and testified as an expert Petroleum Engineer?

A Yes, I have.

Q And are you familiar with Gulf's application in Case No. 3756?

A Yes, sir.

Q What is Gulf seeking in this case?

A We are asking for authority to dispose of produced salt water into the Queen-Grayburg formation in our Eddy "AN" State Well No. 5, in the East Millman Queen-Grayburg pool, Eddy County, New Mexico. The disposal of this produced salt water is necessary to comply with the Commission's Order R-3221 which prohibits surface disposal after January 1, 1969.

Q Will you please explain what is shown on Exhibit No. 1?

(Whereupon, Applicant's Exhibits 1 through 5 marked for identification)

A Yes, sir. Exhibit No. 1 is a plat of our leases in the East Millman Queen-Grayburg pool from which this salt water is produced. We have outlined our leases on this plat in red and the Eddy "AN" State Lease is described as the south half of the northwest quarter, and the north half, southwest quarter, and the north half, southeast quarter, Section 13. The Eddy "BN" State is described as the southeast quarter of Section 11, both of these being in Township 19 South, Range 28 East, Eddy County, New Mexico. The proposed injection well is

circled and colored in green and it is located 2,310 feet from the east line and 2,310 feet from the south line of this Section 13.

Q Will you please explain what is shown on Exhibit No. 2?

A Exhibit No. 2 is also a plat of the East Millman area. The proposed injection well being our Eddy "AN" State No. 5 is marked by an orange arrow. The wells on this plat are marked to indicate the producing formation insofar as we were able to ascertain from our records. The color code that we have used is explained under the legend and it's the Queen -- the Queen formation is red, the Seven Rivers is yellow, blue is San Andres, and brown is Grayburg. On the pools in Section 18 to the east, there is one well which is colored in yellow. That is the only well in the Palmillo-Seven Rivers Pool.

To the southwest the wells that are colored in yellow are the Millman East Seven Rivers. To the northwest wells that are colored in red, blue and brown are in the Artesia Pool and on these particular wells our records didn't indicate the producing formation, therefore, I have only colored those for Queen, San Andres and Grayburg, which are the producing formations of the Artesia Pool.

All the other wells are in the East Millman Queen-Grayburg pool. To the west of our Eddy "AN" State is a waterflood project which is operated by Depco. This is offsetting our "AN" to the west and it's offsetting our "BN" to the south and east and they are, at the present time, injecting water into the Queen and Grayburg formations.

Q The dual completions are dually colored, is that correct?

A Not necessarily. If it's an injection well, they possibly may be dually injecting in both the Queen and the Grayburg, however, the producing wells in most cases, are open in the section producing at a single zone.

Q Will you now explain what is shown on Exhibit No. 3?

A Exhibit No. 3 is a schematic diagram of the injection well. We have eight and five-eighths inch OD casing set at 620 feet, it was cemented with 150 sacks and although we did not have the temperature survey, we estimated the top of the cement at 345 feet. We have five and a half inch casing set at 2,225 feet, cemented with 300 sacks and the estimated top of the cement is at 1,200 feet. The total depth of this well was 2,240 feet. It's plugged back to 2,195 feet. We propose to

have two and three-eighths inch tubing which will be internally plastic-coated and it will be set in a packer at 1,700 feet. The perforations are 1,773 feet to 1,785 feet, 2,033 feet to 2,043 feet, 2,136 feet to 2,142 feet.

MR. UTZ: Where did you say the top of the cement would be on the five and a half?

A We estimate it at 1,200 feet.

MR. UTZ: Go ahead.

A This well has a fish in it, it's got 130 feet of tubing which is still in the well. We expect if this application is approved that we would dispose of the water into this well by gravity flow.

Q Mr. Hoover, will you now please refer to what we have marked as Exhibit No. 4 and explain that?

A Exhibit No. 4 is a log, a sonic log, of the proposed injection well, being our Eddy "AN" State Well No. 5. On this log we have marked the top of the Queen; it's on the bottom part of the log, Mr. Utz, at 1,694 feet, the top of the Grayburg at 2,070 feet, and we show the plug-back depth there of 2,195 feet. The perforations are also shown. The top set of perforations, as we explained on Exhibit 3, are also shown on here.

The top set, 1,773 feet to 1,785 feet, that is in the Queen; the middle set of 2,033 feet to 2,043 feet, that is also Queen; and the bottom set, 2,136 feet to 2,142 feet is in the Grayburg.

Q It is noted that the log lists this well as John Hill Eddy State No. 1. Will you explain the difference in the nomenclature of the well?

A Yes, this well was originally drilled by John Hill on a Gulf farmout. The well was completed in March of 1960 and after producing 6,112 barrels of oil it was temporarily abandoned in January, 1964. We took the well over and renamed it the Eddy "AN" State No. 5.

Q What is the volume of salt water that you plan to dispose of in this application, if this application is approved?

A To answer this question I have prepared an Exhibit No. 5 where I have tabulated the monthly water production from the Eddy "AN" State and the Eddy "BN" State Leases. By months, for the year 1967, and for January and February, 1968, on the righthand column I have averaged the water production per day by barrels which you will notice it runs anywhere from 68 to 44 and at the bottom we have averaged the water production

from each lease, from the Eddy "AN" State, the average per day for the year 1967 and January, February, 1968, was 37 barrels per day; the "BN" State 21 barrels, making a total of 58 barrels per day, therefore, to answer your question, we would estimate that the water to be disposed of would be approximately 60 barrels per day.

Q What is the quality of the water to be injected?

A An analysis of the produced water from the Eddy "AN" State Well No. 1 was made and the chloride content was 61,000 parts per million; from the "AN" Well No. 3 it was 52,200 parts per million; from the "BN" Well No. 1, chloride content was 82,400 parts per million.

Q You refer to this proposal as a salt water disposal and not as a waterflood even though you are injecting into the producing formations. Is there any particular reason for calling this a salt water disposal instead of a waterflood or pressure maintenance?

A In view of the fact that the Commission's Order R-3221, prohibits the surface disposal of water after January 1, 1969, we need to dispose of this water, therefore, we considered it as salt water disposal mainly. The injected volume of only 60 barrels per day is so

small that we do not anticipate any production increase. It will be injected into the producing formation and there is an outside chance we could get a little push but if that should happen, we don't think it will, but if it should, and a reclassification is necessary, we would expect to request such reclassification.

Q Were all of the offset operators notified of Gulf's application for this salt water disposal?

A Yes, they were and we have received no indication of any objections.

Q Do you have anything further to add in this case?

A No, sir.

Q Were Exhibits 1 through 5 prepared by you or at your direction and under your supervision?

A Yes, they were.

MR. KASTLER: This concludes our hearing on Direct, Mr. Examiner, and I would like at this time to move that Exhibits 1 through 5 be admitted into evidence.

MR. UTZ: Without objection Exhibits 1 through 5 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 5 were offered and admitted in evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Do you happen to have the gravity or estimated average gravity of your salt water?

A If I don't have it with me I can get it. From the Eddy State "AN" No. 1 it was 1.069. From the "AN" Well No. 3 it was 1.066, and the gravity on the "BN" Well No. 1 was 1.082.

Q So that your hydrostatic head at the top of the perforations being on the order of 825 to 50 pounds?

A Yes, sir.

Q And you feel that this formation will take that amount of water easily enough at that pressure?

A Actually, we have made no injection test, but we went into this well with the idea of maybe recovering that fish and perforating a little lower interval, possibly make a small producer out of it, the way it turned out we couldn't get the fish out so we dropped that part, but in the process of trying to work this over, we lost considerable water to the formation just keeping it loaded so we feel like we have a well that will probably take -- well, at that time we were losing at the rate of about 500 barrels per day on this short test, so we feel that

this 60 barrels will get under gravity for some time and it will be just by the hydrostatic head.

Q There are some nearby wells that are producing from this same formation, are there not?

A Yes, sir, referring to Exhibit No. 2, the offset wells, the direct north and south, actually, they are northeast and southwest offsets, those wells are in the -- completed in the Grayburg.

Q I see.

A They are not open in the Queen. This injection well, we feel, although this is strictly an opinion, that most of the water will be going into the Queen formation because the porosity is about double in the Queen compared to what our section that is open in the Grayburg is, so we feel like the bulk of the water. if not all of it, will go into the Queen, therefore, those offset wells are not open in the Queen.

Q And because of that you wouldn't expect any response from your injection of water here?

A No, sir, we feel like that the volume is too small.

Q You say this well was drilled in 1960?

A It was completed, yes, sir, in March of 1960.

Q Do you know whether or not new casing was used on the five and a half inch string?

A No, sir, I don't.

Q Do you intend to pressure test the casing on this well?

A Yes, sir. One thing I didn't mention on Exhibit No. 3, we will load the casing tubing annulus with inhibited water, which will also give us a periodic check on the casing in addition to protecting.

Q So in view of that, then the only casing problem that you might have would be below the packer?

A That's right, yes, sir.

Q Around the shoe probably?

A Yes, sir, which would be right at the perforations.

Q Pardon?

A Which would be right at the perforations. We will have a packer set 70 feet above the top perforation.

Q You are going to use internally plastic-coated new two-inch tubing?

A Yes, sir.

Q And your annulus will either have a pressure gauge or left open so you can detect any change from the

static condition of the annulus?

A Yes, sir.

MR. UTZ: Are there other questions of the
witness? Witness may be excused.

(Witness excused)

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

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

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

Witness my Hand and Seal this 6th day of May, 1968.

Kay Embree
 NOTARY PUBLIC

My Commission Expires:
 November 19, 1971

I do hereby certify that the foregoing is
 a complete record of the proceedings in
 the oil and gas hearing of Case No. 3256,
 held on or about 5-1-68, 1968.
Thudle Secretary
 New Mexico Oil Conservation Commission

SCHEMATIC DIAGRAM
PROPOSED SALT WATER DISPOSAL WELL

Gulf's Propy "AHH" State No. 5
2310' FSEEL Sec. 12-198-288
Eddy County, N. M.

Casing-Tubing Annulus
Will Be Loaded With
Inhibited Water

2-5/8" OD Csg. @
620', cmtd w/150
sacks.

2-3/8" OD 4.70# EUE
8 RT J-55 tubing plastic
coated internally

Tension Type retriev-
able packer @ 1700'

1773-55' 4 JSPP

2033-43' 2 JSPP

2136-42' 4 JSPP

5 1/2" OD 14# Csg at
2225' cmtd w/300 sx

TD 2240'
PBTD 2195'

Fish, 130' tbg.

BEFORE EXAMINER UTZ

CONSERVATION

EXHIBIT NO. 3

CASE NO. 2756

CASE NO. 3756

EXHIBIT NO. 3

TABULATION OF MONTHLY WATER PRODUCTION
GULF OIL CORPORATION
EDDY "AN" & "BN" STATE LEASES
EAST MILLMAN QUEEN GRAYBURG POOL
EDDY COUNTY, NEW MEXICO

	<u>Eddy "AN" State Bbls.</u>	<u>Eddy "BN" State Bbls.</u>	<u>Total Bbls.</u>	<u>Avg/Day Bbls.</u>
<u>1967</u>				
January	1,181	637	1,818	59
February	1,281	611	1,892	68
March	1,419	680	2,099	68
April	1,254	633	1,887	63
May	1,052	656	1,708	55
June	1,182	571	1,753	58
July	1,128	593	1,721	56
August	1,144	690	1,834	59
September	1,109	680	1,789	60
October	771	600	1,371	44
November	1,089	630	1,719	57
December	1,144	650	1,794	58
<u>1968</u>				
January	1,144	694	1,838	59
February	980	607	1,587	55
TOTAL	15,878	8,932	24,810	
Avg/Day	37	21	58	

Case No. 3756
Exhibit No. 5

RETURN EXHIBIT TO UTZ

CASE NO. 3756