

Case Number
4556

Application

Transcripts

Small Exhibits

E T C.

dearnley-meier reporting service, inc.

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

209 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO



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

June 30, 1971

EXAMINER HEARING

IN THE MATTER OF:)

Application of Tenneco Oil Company)
for salt water disposal, Chaves County,)
New Mexico.)

Case 4556

BEFORE: Elvis A. Utz, Examiner

TRANSCRIPT OF HEARING

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1 MR. UTZ: Case 4556.

2 MR. HATCH: Application of Tenneco Oil Company, for
3 salt water disposal, Chaves County, New Mexico.

4 MR. BATEMAN: Mr. Examiner, I am Ken Bateman of
5 the firm of White, Gilbert, Koch and Kelly appearing for the
6 applicant. I have one witness and ask that he be sworn.

7 (Witness was sworn) (Exhibits 1 through 6 marked)

8 * * * * *

9 LEWIS WILLIAMS,
10 a witness, having been first duly sworn according to law,
11 upon his oath testified as follows:

12 DIRECT EXAMINATION

13 BY MR. BATEMAN:

14 Q State your full name and present position for the
15 record.

16 A Lewis Williams, Petroleum Engineer, employed by Tenneco
17 Oil Company in Midland, Texas.

18 Q Mr. Williams, have you previously testified before the
19 Commission?

20 A Yes.

21 Q Are your qualifications a matter of record?

22 A Yes.

23 MR. BATEMAN: Mr. Examiner, are his qualifications
24 acceptable?

25 MR. UTZ: Yes, they are.

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1 Q (By Mr. Bateman) Mr. Williams, will you refer to
2 Tenneco's Exhibit No. 1 and state what Tenneco seeks
3 by its application?

4 A Yes. Exhibit No. 1 is Form C-108 which was filed with
5 the Commission under this cover letter dated May 25th,
6 1971, in which Tenneco asked for approval to dispose of
7 salt water from its U.S.A. Reno lease into the U.S.A.
8 Reno No. 1. Thus, Form C-108 giving most of the data
9 pertinent to this application.

10 Q Mr. Williams, will you refer to your Exhibit No. 2 and
11 3 and tell the Examiner the production history of the
12 area in question?

13 A Exhibit 2 is a base map of Tenneco's U.S.A. Reno lease
14 showing the four wells, four producing wells thereon.
15 The number one well, the proposed salt water well, is the
16 well shown by the red triangle and the heavy line on the
17 west and north side of this lease is the border of the
18 Union Oil Company operated South Caprock Queen Unit
19 in which water has been disposed of or injected into the
20 same reservoir that we propose in our application.

21 This unit was the underwater flood for a number of
22 years and is now being phased out. It is my understanding
23 that Union is plugging these wells in this unit as
24 rapidly as they can now.

25 The well that Tenneco proposes as a salt water

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1 disposal well is offset directly to the north, is
2 the number five well of the unit I just mentioned.

3 This well had approximately 181,000 barrels of
4 water disposed of into it, the same formation, and the
5 number nine well to the west of Tenneco's proposed
6 injection well has had something over five hundred
7 thousand barrels of produced water injected into it.

8 The red circle is simply half a mile radius
9 circle designed to show the proximity of these
10 injection wells in the old unit to the proposed injection
11 well.

12 Exhibit 3 is simply the same map on a smaller
13 scale meant to show a wider area.

14 Q What is the present status of Well Number 1?

15 A It is a producing well along with wells 2, 3 and 4.

16 Q Will you refer to Exhibit Number 4 and tell the
17 Commission how you expect to dispose of the produced
18 water?

19 A We would propose to dispose of our water into the Queen
20 Sand through perforations in five-and-a-half-inch
21 casing through the Shawn two and three-eighths tubing
22 set on a Geiber tension type packer with the annulus
23 space being filled with a treated fluid with a pressure
24 gauge at the surface on the annulus to monitor the system.

25 Q What volume of water do you expect and what pressure?

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1 A We would anticipate an average daily injection of
2 100 barrels a day at a pressure in the neighborhood
3 of 500 pounds.
4 Q Will the well take that volume of water?
5 A Yes, we believe it will based on the experience of
6 Union in the South Caprock Queen Unit.
7 Q Continue with Exhibit No. 6 and tell the Commission what
8 relevance that has to your application. Number 5, excuse
9 me.
10 A Exhibit 5 is simply a gamma ray neutron log of the
11 subject well showing the injection -- the proposed
12 injection interval 3154 to 59.
13 Q Has the water been analyzed?
14 A Yes. Exhibit 6 is a water analysis of the produced
15 water from the Reno lease showing the chlorides and
16 other chemicals which would indicate that the water is
17 not fit for anything other than disposal.
18 Q Is there any fresh water in the area?
19 A Yes, there is a -- referring back to Exhibit 2, there
20 is a water well located approximately a half mile south
21 of Tenneco's Number 2 and this well, as far as I have
22 been able to tell, is completed from a -- an Alluvial
23 Sand at about 165 feet.
24 Q What is the location of that well?
25 A Tenneco's No. 2?

1 Q Well, either one of them so we can locate the well.

2 A The No. 2 well is in the southwest of the southwest
3 of Section 3 and the water well I mentioned is
4 approximately a half mile south of that.

5 MR. UTZ: Okay.

6 Q (By Mr. Bateman) Do you anticipate any problem with
7 contamination of that well?

8 A No, I don't.

9 Q Have all the offset operators been notified?

10 A Yes, they have.

11 Q Do you think, if your application is approved, the
12 correlative rights of all other operators will be
13 protected?

14 A Yes.

15 Q Were Exhibits 1 through 6 prepared by you or under your
16 direction?

17 A Yes, they were.

18 Q Do you have anything further to add to your testimony?

19 A I believe I have stated most of the pertinent data.

20 MR. BATEMAN: I offer Tenneco's Exhibits 1 through 6.

21 MR. UTZ: Without objection, Tenneco's Exhibits 1
22 through 6 will be entered into the record of this case.

23 (Whereupon, Tenneco's Exhibits 1 thru 6 were entered into record.)

24 MR. UTZ: Mr. Williams, referring to your exhibit 6,
25 this MG over L, would be milligrams per liter?

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1 THE WITNESS: Yes.

2 MR. UTZ: Does that have any relation to parts
3 per milligram?

4 THE WITNESS: That is roughly the equivalent.

5 MR. UTZ: So, 178,000 would be roughly parts per
6 milligram?

7 THE WITNESS: Yes.

8 MR. UTZ: This well, water well that you indicated
9 was the half a mile south of your Reno lease, how deep is that
10 water?

11 THE WITNESS: About 165 feet.

12 MR. UTZ: So, the surface indication in the
13 proposed injection well would be set and cemented below the
14 fresh water zones?

15 THE WITNESS: Yes, sir.

16 MR. UTZ: Do you propose to line the two and three-
17 eighths-inch tubing?

18 THE WITNESS: Yes, sir.

19 MR. UTZ: Plastic?

20 THE WITNESS: Plastic.

21 MR. UTZ: You testified, I believe, that the offsetting
22 well to the north and the offsetting well to the west was
23 already loaded with water?

24 THE WITNESS: Yes, sir.

25 MR. UTZ: And that was in the San Andres Formation?

1 THE WITNESS: The Queen Sand.

2 MR. UTZ: Yes, the Queen Sand. Are those wells
3 plugged?

4 THE WITNESS: No, sir, these two wells are not
5 plugged but they are inactive.

6 MR. UTZ: Were they injection wells, formerly?

7 THE WITNESS: Yes, sir.

8 MR. UTZ: So, you don't figure you are going to
9 hurt an injection well with water?

10 THE WITNESS: No.

11 MR. UTZ: Other questions of the witness?

12 He may be excused. Statements? The case will be taken under
13 advisement.

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1	<u>I N D E X</u>		
2	<u>WITNESS</u>	<u>PAGE</u>	
3	Lewis Williams		
4	Direct Examination by Mr. Bateman	2	
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10	<u>E X H I B I T S</u>		
11	Tenneco's Exhibits 1 through 6	<u>Marked</u> 2	<u>Admitted</u> 6
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dearnley-meier reporting service

1 STATE OF NEW MEXICO)
2)
3 COUNTY OF BERNALILLO)

4 I, Glenda Burks, Court Reporter, do hereby certify
5 that the foregoing and attached transcript of hearing before
6 the New Mexico Oil Conservation Commission was reported by me;
7 and that the same is a true and correct record of the said
8 proceedings to the best of my knowledge, skill and ability.

9 Glenda Burks
10 Court Reporter
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22 I do hereby certify that the foregoing is
23 a complete record of the proceedings in
24 the Bernalillo hearing of Case No. 4506
25 heard by me on August 19, 1971.
New Mexico Oil Conservation Commission



OIL CONSERVATION COMMISSION

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

GOVERNOR
BRUCE KING
CHAIRMAN
LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

July 7, 1971

Mr. Ken Bateman
White, Gilbert, Koch & Kelly
Attorneys at Law
Post Office Box 787
Santa Fe, New Mexico

Re: Case No. 4556
Order No. R-4164
Applicant:
Tenneco Oil Company

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.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC	<u>x</u>
Artesia OCC	<u>x</u>
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. 4556
Order No. R-4164

APPLICATION OF TENNECO OIL
COMPANY FOR SALT WATER DISPOSAL,
CHAVES COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 30, 1971,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 7th day of July, 1971, 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, Tenneco Oil Company, is the owner
and operator of the USA-Reno Well No. 1, located in Unit L of
Section 3, Township 15 South, Range 31 East, NMPM, Caprock-
Queen Pool, Chaves 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 3154
feet to 3159 feet.
- (4) That the injection should be accomplished through
2 3/8-inch plastic-lined tubing installed in a packer set at
approximately 3115 feet; that the casing-tubing annulus should
be filled with an inert fluid; and that a pressure gauge should
be attached to the annulus at the surface in order to determine
leakage in the casing, tubing, or packer.

-2-

CASE NO. 4556
Order No. R-4164

(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, Tenneco Oil Company, is hereby authorized to utilize its USA-Reno Well No. 1, located in Unit L of Section 3, Township 15 South, Range 31 East, NMPM, Caprock-Queen Pool, Chaves 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 3115 feet, with injection into the perforated interval from approximately 3154 feet to 3159 feet;

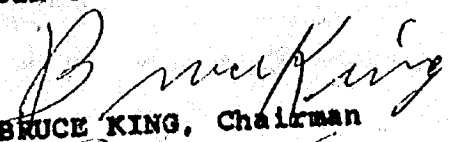
PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus at the surface in order to determine leakage in the casing, tubing, or packer.

(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.

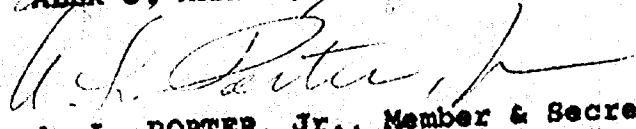
(3) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


BRUCE KING, Chairman


ALEX J. ARMIJO, Member


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



dr/

Case 4566

Recd 6-30-71

Rec. 7-2-71

Grant Tennessee's request for
for an SWD well for thin
to SA - Reno #1, F 3-155-31E.
Caprock - Queen Pk.

2 3/8 tubing to be int. plastic
coated, Annular to be filled w/
intert. fluid w/ pressure gauge
at the surface inspection and
a packer set at approx. 3115'.

Thurs Q. W. J.



TENNECO OIL COMPANY • P. O. BOX 1031 • 1800 WILCO BUILDING • MIDLAND, TEXAS 79701

May 25, 1971

C
New Mexico Oil Conservation Commission
P. O. Box 1980
Hobbs, New Mexico 88240

Re: USA - Reno No. 1
Salt Water Disposal
Application

O
Gentlemen:

Attached is Form C-108 and all necessary supporting data for our salt water disposal application on the captioned well.

Yours very truly,

ORIGINAL
SIGNED BY: F. J. McDONALD

P
F. J. McDonald
District Production Superintendent

LMW:gs

Y
attachments

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Tenneco Oil Company		ADDRESS P. O. Box 1031, Midland, Texas 79701			
LEASE NAME USA - Reno	WELL NO. 1	FIELD Caprock Queen	COUNTY Chaves		
LOCATION UNIT LETTER L ; WELL IS LOCATED 2310 FEET FROM THE south LINE AND 330' FEET FROM THE west LINE, SECTION 3 TOWNSHIP 15S RANGE 31E NMPM.					
CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8-5/8"	358	250	Circulated	
INTERMEDIATE					
LONG STRING	5-1/2"	3196	150	2280	Temperature Survey
TUBING	2-3/8"	3148	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson shorty tension @ 3115		
NAME OF PROPOSED INJECTION FORMATION Queen Sand			TOP OF FORMATION 3154' (+1274)		BOTTOM OF FORMATION 3159
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLES? Perfs 3154-59		PROPOSED INTERVAL(S) OF INJECTION Queen Sand	
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No		IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil Well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No	
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH None					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 800'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA None		DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA Unknown	
ANTICIPATED DAILY INJECTION VOLUME (BBLs.)	MINIMUM 50	MAXIMUM 200	OPEN OR CLOSED TYPE SYSTEM Closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure	APPROX. PRESSURE (PSI) 500
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE -			WATER TO BE DISPOSED OF Yes	NATURAL WATER IN DISPOSAL ZONE Yes	ARE WATER ANALYSES ATTACHED? Yes
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Federal Lease					
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL					
J. I. O'Neill, 410 W. Ohio, Midland, Texas 79701					
Texas Pacific Oil Company, P. O. Box 4067, Midland, Texas 79701					
Union Oil Company of California, P. O. Box 671, Midland, Texas 79701					
			BEFORE EXAMINER UTZ		
			OIL CONSERVATION COMMISSION		
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? Yes		SURFACE OWNER Yes		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL Yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		PLAT OF AREA Yes		ELECTRICAL LOG Radio Active	
				CASE NO. 4456	
				DIAGRAMMATIC SKETCH OF WELL	

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

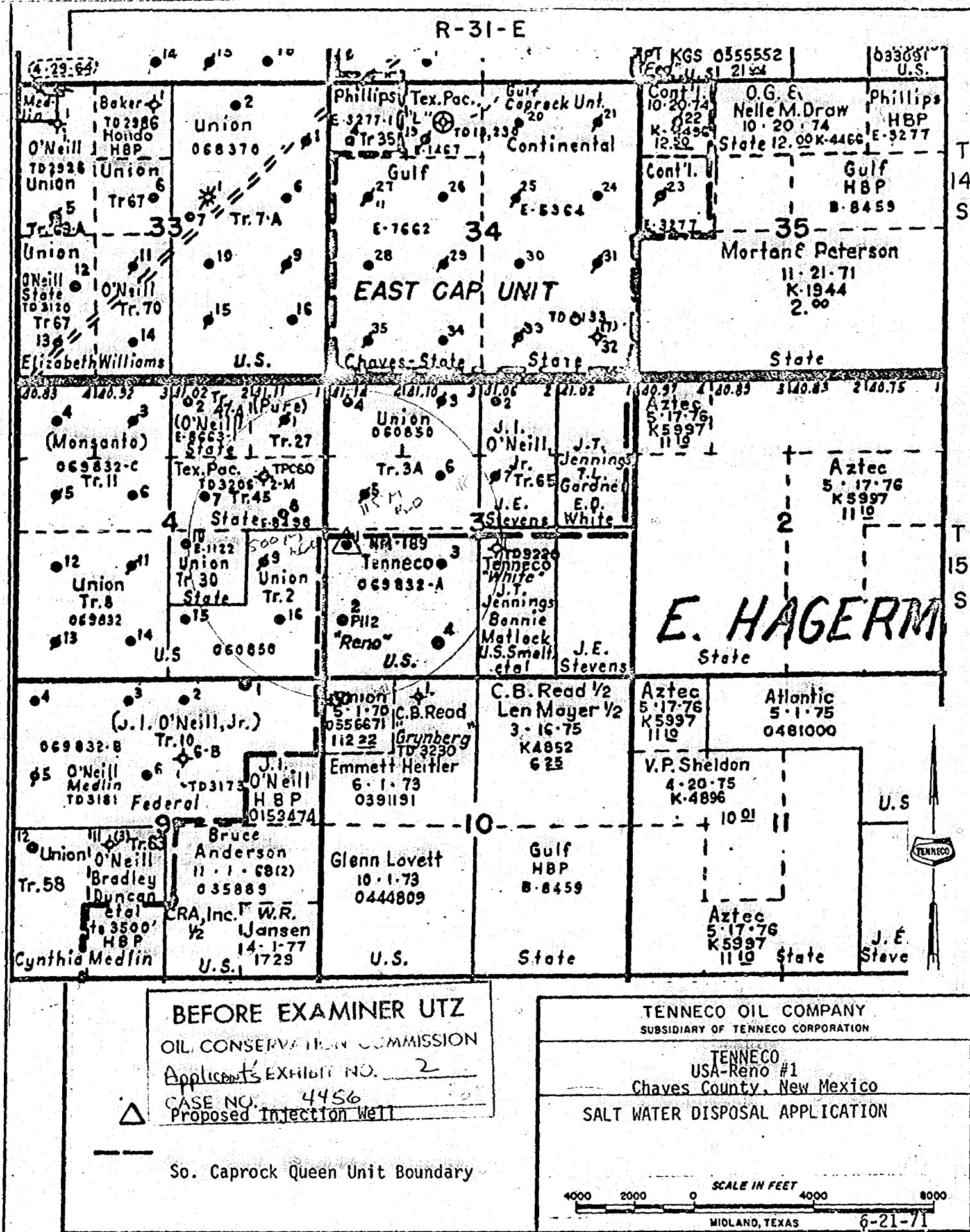
Lm Williams
(Signature)

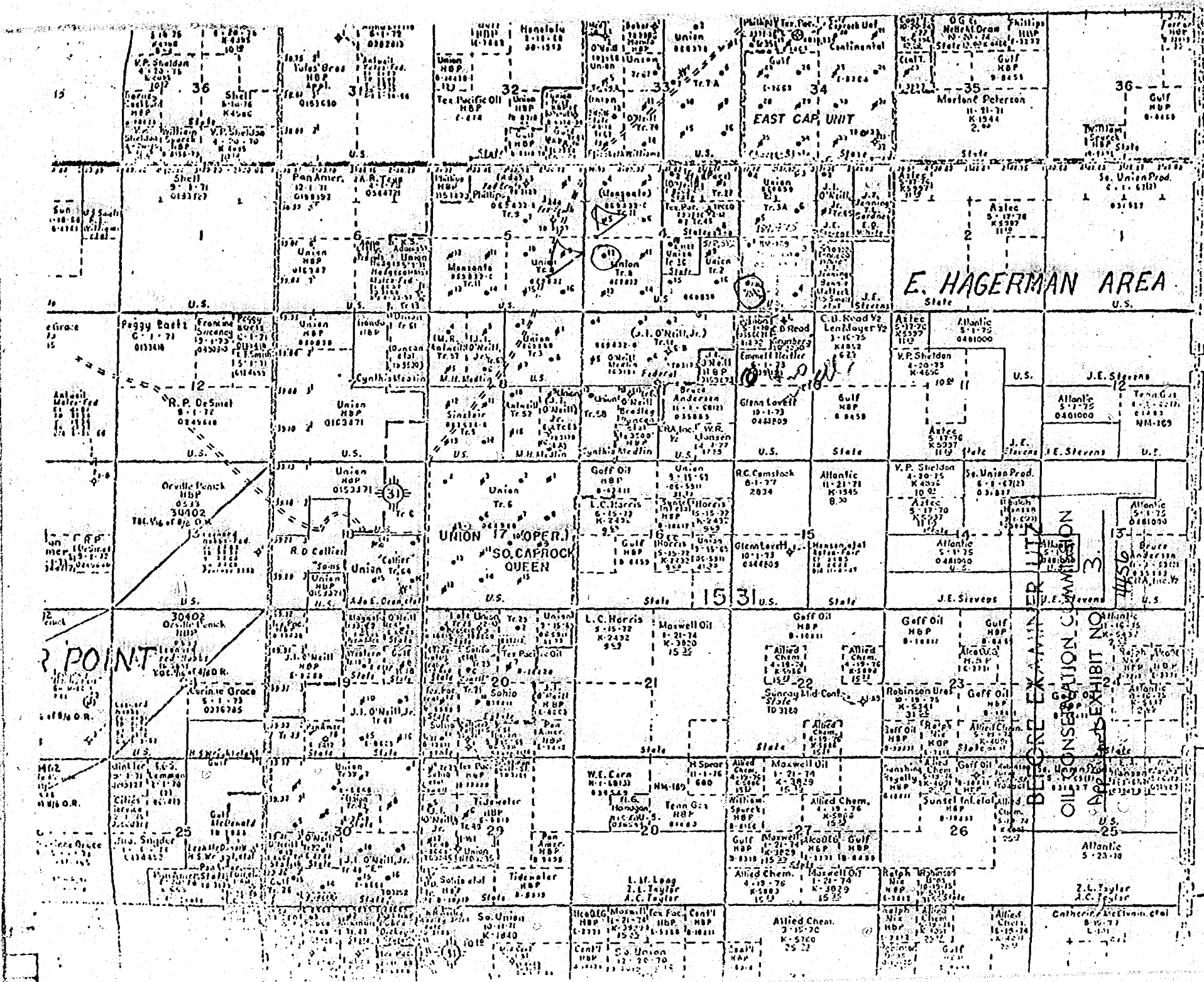
Prod Engr
(Title)

5-25-71

(Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.





E. HAGERMAN AREA

EXHIBIT NO. 1
OIL CONSERVATION COMMISSION

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8 5/8" CSG. AT 358' W/250 SX.
CEMENT CIRCULATED →

PRESSURE GAGE ON ANNULUS

*165 ft to break
H₂O*

2 3/8" 4.7 J-55 TUBING

*Leaked 2nd 800 Bbl.
500-800 Bbl.*

Plastic

ANNULUS FILLED WITH
TREATED WATER

Tested Shut In

CEMENT TOP AT 2280'

GUIBERSON TENSION
PACKER AT 3115'

QUEEN SAND PERFORATED
3154' - 3159'

5 1/2" CSG. AT 3196' W/150 SX



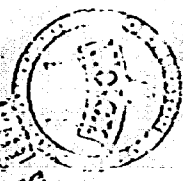
BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Applicants EXHIBIT NO. 4
4456

TENNECO OIL COMPANY
SUBSIDIARY OF TENNECO CORPORATION

USA - RENO Well #1

PROPOSED SALT WATER DISPOSAL
APPLICATION

6-21-71



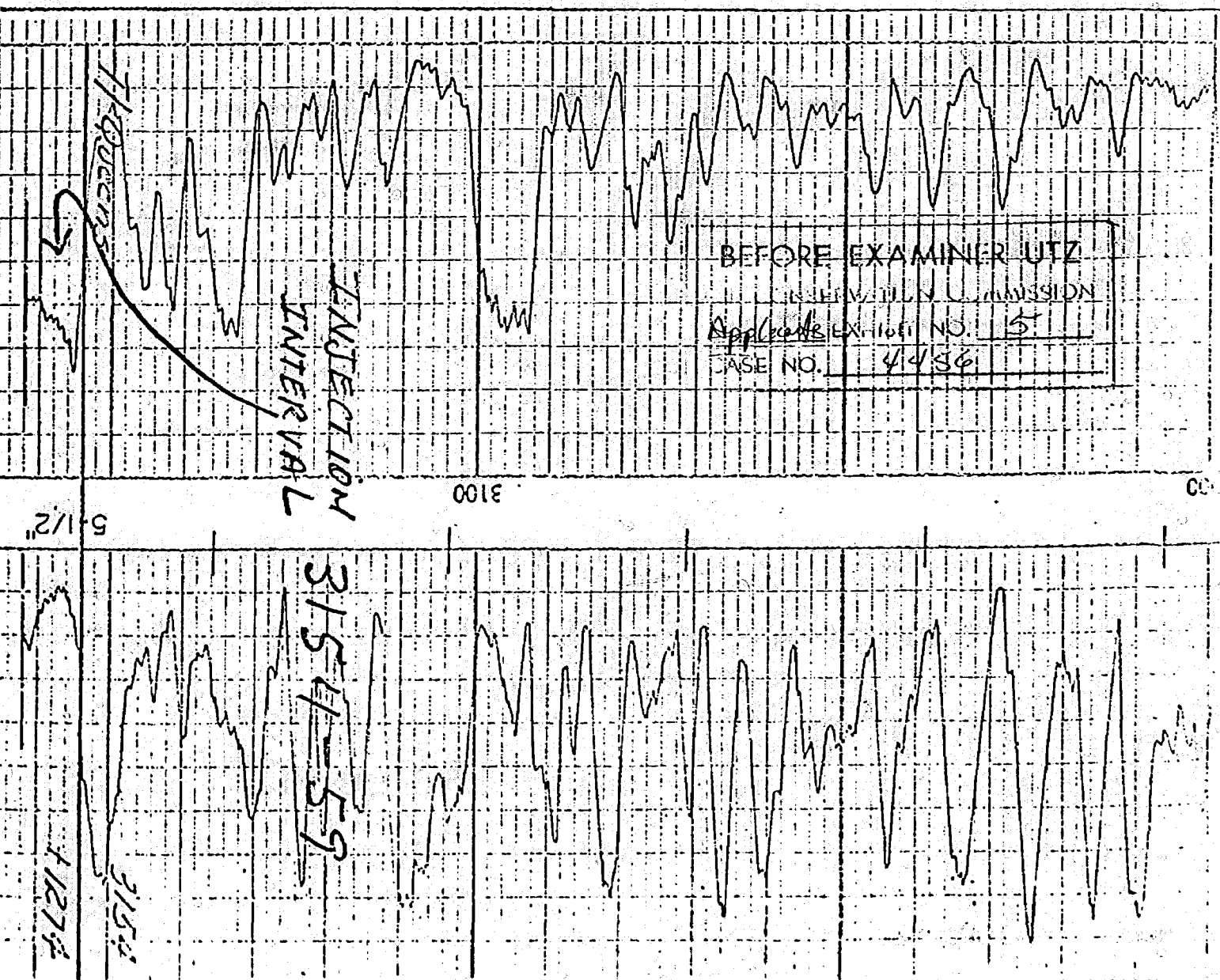
RADIOACTIVITY LOG

THIS FORM CONFORMS TO API RP 32

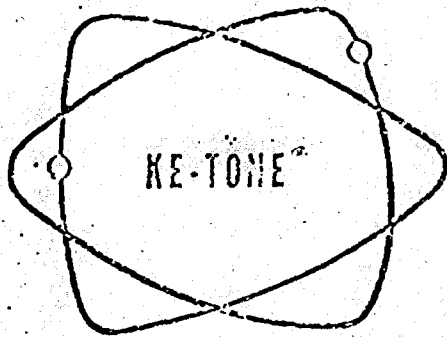
Location of **WELLES JET SERVICES, INC.** FILE NO.

COMPANY	U.S.A. REMO OIL CO. NO. 1
WELL	U.S.A. REMO OIL CO. NO. 1
FIELD	CAIROCK QUEEN
COUNTY	CHAVES
STATE	MEXICO
LOCATION	2310' FSL & 330' FTL OF SEC. 3
T - 15 - S, R - 31 - E.	

LOG MEAS. FROM	ROTARY DRIVE BUSHING	ELEV. 4128'
DRUG. MEAS. FROM	ROTARY DRIVE BUSHING	ELEV. 4128'
PERM. DATUM	11' ABOVE GROUND LEVEL	ELEV. 4128'
TYPE OF LOG	CAIROCK QUEEN	
DATE	12/2/56	
JOB NO.	11-2016 & 3193	
TOTAL DEPTH (DRILLER)	3167	
ECTIVE DEPTH (DRILLER)	3163.5	
OTAL DEPTH (R.A. LOG)	10	
TOP OF LOGGED INTERVAL	3162	
BOTTOM OF LOGGED INTERVAL	2334	
TYPE OF FLUID IN HOLE	3162	
FLUID LEVEL	2334	
MAXIMUM RECORDED TEMPERATURE	13.0	
NEUTRON SOURCE STRENGTH & TYPE	13.5	
SOURCE SPACING-IN.	13.5	
DETECTOR CLASS	DLG 1	
DETECTOR TYPE	DLG 1	
LENGTH OF MEASURING DEVICE-IN.	4	
O.D. OF INSTRUMENT-IN.	3 5/8	
TIME CONSTANT-SECONDS	2.5 & 2.0	
LOGGING SPEED FT./MIN.	20-40	
STATISTICAL VARIATION-IN.	0.3	
CONCENTRATION DIFFERENCE	0.3	



TELEPHONE: HO835 375-6215



UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HO835, NEW MEXICO 88240

Company Tenneco Oil Company

Field South Caprock Queen

Lease USA Reno

Sampling Date 4/18/68

Type of Sample Produced Water

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	227.54	4560
Magnesium (Mg++)	747.89	9094
Sodium (Na+) (cal.)	4102.38	94,314
Iron		104
Bicarbonate (HCO ₃)	2.00	122
Carbonate (CO ₃ -)	NOT FOUND	
Hydroxide (OH -)	NOT FOUND	
Sulphate (SO ₄ -)	56.21	2700
Chloride (Cl -)	5019.60	178,000
6.4 ph c @ 68 °F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	975.43	48,772
Carbonate Hardness as CaCO ₃ (temporary)	2.00	100
Non-Carbonate Hardness as CaCO ₃ (permanent)	973.43	48,672
Alkalinity as CaCO ₃	2.00	100
Specific Gravity c 68° F	1.170	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Calcium Carbonate Scaling Index - Positive

Calcium Sulfate Scaling Index - Positive

BEFORE EXAMINER UTZ

@184 RE. NSERVATION COMMISSION

Applicant EXHIBIT NO. 6

CASE NO. 4456

Makes Water Work



May 25, 1971

SWD
Set for hearing

New Mexico Oil Conservation Commission
P. O. Box 1980
Hobbs, New Mexico 88240

Case 4556

Re: USA - Reno No. 1
Salt Water Disposal
Application

Gentlemen:

Attached is Form C-108 and all necessary supporting data for our salt water disposal application on the captioned well.

Yours very truly,

F. J. McDonald

F. J. McDonald
District Production Superintendent

LMW:gs

attachments

DOCKET MAILED

Date 6-15-71

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Tenneco Oil Company		ADDRESS P. O. Box 1031, Midland, Texas 79701	
LEASE NAME USA - Reno	WELL NO. 1	FIELD Caprock Queen	COUNTY Chaves
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CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	8-5/8"	358	250
INTERMEDIATE			
LONG STRING	5-1/2"	3196	150
TUBING	2-3/8"	3148	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson shorty tension @ 3115
NAME OF PROPOSED INJECTION FORMATION Queen Sand		TOP OF FORMATION 3154' (+1274)	BOTTOM OF FORMATION 3159
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLES? Perfs 3154-59	PROPOSED INTERVAL(S) OF INJECTION Queen Sand
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil Well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH None			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 800'		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA None	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA Unknown
ANTICIPATED DAILY INJECTION VOLUME (BBL/S.) 100	MINIMUM 50	MAXIMUM 200	OPEN OR CLOSED TYPE SYSTEM Closed
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - Yes		WATER TO BE DISPOSED OF Yes	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure
		NATURAL WATER IN DISPOSAL ZONE Yes	APPROX. PRESSURE (PSI) 500
ARE WATER ANALYSES ATTACHED? Yes			
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Federal Lease			
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL			
J. I. O'Neill, 410 W. Ohio, Midland, Texas 79701			
Texas Pacific Oil Company, P. O. Box 4067, Midland, Texas 79701			
Union Oil Company of California, P. O. Box 671, Midland, Texas 79701			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? Yes		SURFACE OWNER Yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL Yes	
PLAT OF AREA Yes		ELECTRICAL LOG Radio Active	
		DIAGRAMMATIC SKETCH OF WELL Yes	

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

L. M. Williams *Prod. Engr.* **5-25-71**
(Signature) (Title) (Date)

NOTE: Should waivers from the surface owner and all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 15-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 701.

Case 4556

NEW MEXICO OIL CONSERVATION COMMISSION
APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

OPERATOR Tenneco Oil Company		ADDRESS P. O. Box 1031, Midland, Texas 79701	
LEASE NAME USA - Reno	WELL NO. 1	FIELD Caprock Queen	COUNTY Chaves
LOCATION UNIT LETTER <u>L</u> ; WELL IS LOCATED <u>2310</u> FEET FROM THE <u>south</u> LINE AND <u>330'</u> FEET FROM THE <u>west</u> LINE, SECTION <u>3</u> TOWNSHIP <u>15S</u> RANGE <u>31E</u> NMPM.			

CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8-5/8"	358	250	Circulated	
INTERMEDIATE					
LONG STRING	5-1/2"	3196	150	2280	Temperature Survey
TUBING	2-3/8"	3148	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson shorty tension @ 3115		
NAME OF PROPOSED INJECTION FORMATION Queen Sand			TOP OF FORMATION 3154' (+1274)		BOTTOM OF FORMATION 3159
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLE? Perfs 3154-59		PROPOSED INTERVAL(S) OF INJECTION Queen Sand	
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No		IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil Well		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No	
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH None					
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ANTICIPATED DAILY INJECTION VOLUME (BBLs.) 100	MINIMUM 50	MAXIMUM 200	OPEN OR CLOSED TYPE SYSTEM Closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure	APPROX. PRESSURE (PSI) 500
ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE - Yes			WATER TO BE DISPOSED OF NATURAL WATER IN DISPOSAL ZONE Yes		
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Federal Lease			ARE WATER ANALYSES ATTACHED? Yes		
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL					
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ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) Yes		PLAY OF AREA Yes		ELECTRICAL LOG Radio Active	
				DIAGRAMMATIC SKETCH OF WELL Yes	

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

L. M. Williams (Signature) Prod. Engr. (Title) 5-25-71 (Date)

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Case 4556

NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION TO DISPOSE OF SALT WATER BY INJECTION INTO A POROUS FORMATION

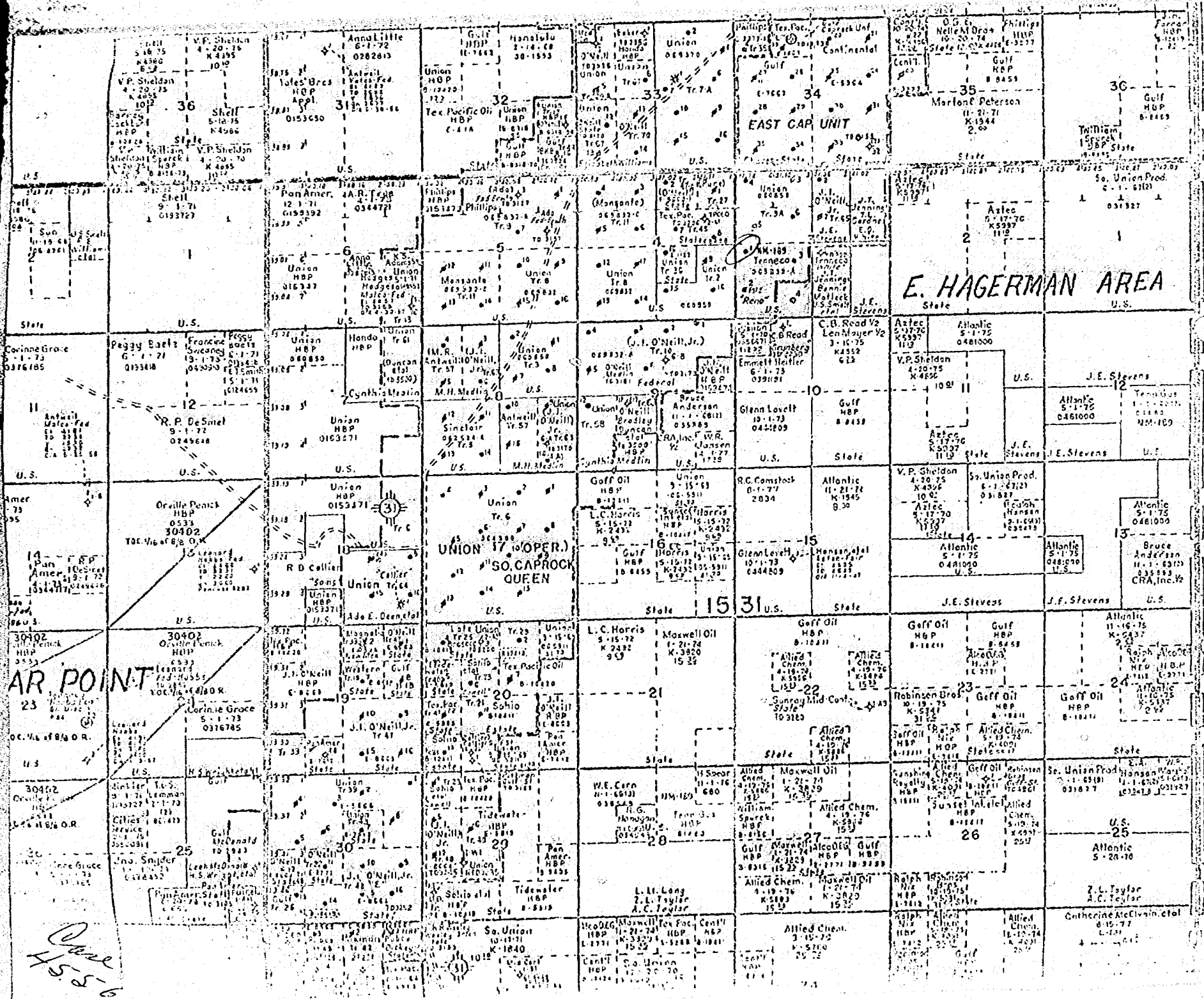
OPERATOR Tenneco Oil Company		ADDRESS P. O. Box 1031, Midland, Texas 79701				
LEASE NAME USA - Reno	WELL NO. 1	FIELD Caprock Queen	COUNTY Chaves			
LOCATION UNIT LETTER <u>L</u> ; WELL IS LOCATED <u>2310</u> FEET FROM THE <u>south</u> LINE AND <u>330'</u> FEET FROM THE <u>west</u> LINE, SECTION <u>3</u> TOWNSHIP <u>15S</u> RANGE <u>31E</u> NMPM.						
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NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY	
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LONG STRING	5-1/2"	3196	150	2280	Temperature Survey	
TUBING	2-3/8"	3148	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson shorty tension @ 3115			
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ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		PLAT OF AREA Yes		ELECTRICAL LOG Radio Active		DIAGRAMMATIC SKETCH OF WELL Yes

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L. M. Williams (Signature) Prod Engr (Title) 5-25-71 (Date)

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Case 4556



E. HAGERMAN AREA

UNION 17 (OPER.)
SO. CAPROCK QUEEN

AR POINT

45.56

15
S

8 5/8" CSG. AT 358' W/250 SX.
CEMENT CIRCULATED →

← PRESSURE GAGE ON ANNULUS

← 2 3/8" 4.7 J-55 TUBING

← ANNULUS FILLED WITH
TREATED WATER

← CEMENT TOP AT 2280'

← GUIBERSON TENSION
PACKER AT 3115'

← QUEEN SAND PERFORATED
3154' - 3159'

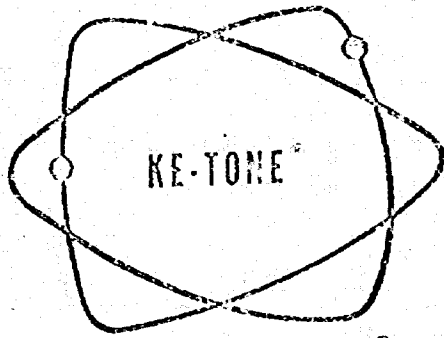
← 5 1/2" CSG. AT 3196' W/150 SX



TENNECO OIL COMPANY
SUBSIDIARY OF TENNECO CORPORATION

Case 4556

TELEPHONE: HOBBS 393-6215



UNITED CHEMICAL CORPORATION

OF NEW MEXICO

601 NORTH LEECH

HOBBS, NEW MEXICO 88240

P. O. BOX 1499

Company Tenneco Oil Company

Field South Caprock Queen

Lease USA Reno

Sampling Date 4/18/68

Type of Sample Produced Water

WATER ANALYSIS

IONIC FORM	me/l.	mg/l.
Calcium (Ca++)	227.54	4560
Magnesium (Mg++)	747.89	9094
Sodium (Na+) (cal.)	4102.38	94,314
Iron		104
Bicarbonate (HCO ₃)	2.00	122
Carbonate (CO ₃ -)	NOT FOUND	
Hydroxide (OH-)	NOT FOUND	
Sulphate (SO ₄ -)	56.21	2700
Chloride (Cl-)	5019.60	178,000
6.4 ph c @ 68 °F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	975.43	48,772
Carbonate Hardness as CaCO ₃ (temporary)	2.00	100
Non-Carbonate Hardness as CaCO ₃ (permanent)	973.43	48,672
Alkalinity as CaCO ₃	2.00	100
Specific Gravity c 68° F	1.170	

MOORE BUSINESS FORMS INC. CA

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

Calcium Carbonate Scaling Index - Positive @ 84°F.

Calcium Sulfate Scaling Index - Positive

~~~~~ Makes Water Work ~~~~~ Case 455-6

# RADIOACTIVITY LOG



**WELLEN JET SERVICES, INC.**

FILE NO.

Location of well

COMPANY TENNESSEE GAS TRANSMISSION CO.

WELL U S A PEMO OIL CO. NO. 1

FIELD CAPROCK QUEEN

COUNTY CHAVES

STATE MEXICO

LOCATION 2310' FSL & 330' FTL OF SEC. 3

T - 15 - S, R - 31 - E.

ELEV. 1128'

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PERM. DATUM 11' ABOVE GROUND LEVEL

LOG MEAS. FROM ROTARY DRIVE BUSHING

DRUG. MEAS. FROM ROTARY DRIVE BUSHING

DATE 12/2/56

JOB NO. 11-2016 &

TOTAL DEPTH (DRILLER) 3198

EFFECTIVE DEPTH (DRILLER) 3167

TOTAL DEPTH (R A LOG) 3163.5

TOP OF LOGGED INTERVAL 10

BOTTOM OF LOGGED INTERVAL 3162

TYPE OF FLUID IN HOLE OIL

FLUID LEVEL 2334

MAXIMUM RECORDED TEMPERATURE

NEUTRON SOURCE STRENGTH & TYPE

SOURCE SPACING-IN.

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DRAFT

GMH/dr

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. 4556

APPLICATION OF TENNECO OIL COMPANY  
FOR SALT WATER DISPOSAL, CHAVES  
COUNTY, NEW MEXICO.

Order No. R-4164

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 30, 1971,  
at Santa Fe, New Mexico, before Examiner AElvis A. Utz.

NOW, on this        day of July, 1971, 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, Tenneco Oil Company, is the owner  
and operator of the USA-Reno Well No. 1, located in Unit L of  
Section 3, Township 15 South, Range 31 East, NMPM, Caprock-Queen  
Pool, Chaves County, New Mexico.

-2-

CASE NO. 4556

Order No. R-

(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 3154 feet to 3159 feet.

(4) That the injection should be accomplished through <sup>2 3/8</sup> ~~2~~-inch plastic-lined tubing installed in a packer set at approximately 3115 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be attached to the annulus at the surface in order to determine leakage in the casing, 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, Tenneco Oil Company, is hereby authorized to utilize its USA-Reno Well No. 1, located in Unit L of Section 3, Township 15 South, Range 31 East, NMPM, Caprock-Queen Pool, Chaves County, New Mexico, to dispose of produced salt water into the Queen formation, injection to be accomplished through <sup>2 3/8</sup> ~~2~~-inch tubing installed in a packer set at approximately 3115 feet, with injection into the perforated interval from approximately 3154 feet to 3159 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined;



-3-

CASE NO. 4556

Order No. R-

that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus at the surface in order to determine leakage in the casing, 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 herein-  
above designated.

CASE 4557: Appli. of CONTINENTAL  
FOR TRANSFER OF ALLOWABLE, LEA  
COUNTY, NEW MEXICO.

De novo hearing - Oct. 13, 1971  
To be heard June 16, 1972