

CASE 3870: Application of D. W.
ST. CLAIR FOR SALT WATER DIS-
POSAL, LEA COUNTY, NEW MEXICO.

Case Number

3870

Application

Transcripts.

Small Exhibits

ETC.

GOVERNOR
DAVID F. CARGO
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

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

P. O. BOX 2088
SANTA FE

October 2, 1968

Mr. D. W. St. Clair
501 First National Bank Building
Midland, Texas 79701

Re: Case No. 3870
Order No. R-3515
Applicant:
D. W. St. Clair

Dear Sir:

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

Very truly yours,

A handwritten signature in dark ink, appearing to read "A. L. Porter, Jr.", written over the typed name.

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

Carbon copy of order also sent to:

Hobbs OCC X

Artesia OCC

Aztec OCC

Other Mr. Harold Berends - Bureau of Land Management
Post Office Box 1449 - Santa Fe, New Mexico

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. 3870
Order No. R-3515

APPLICATION OF D. W. St. Clair
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 September 25, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Mitter.

NOW, on this 2nd day of October, 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, D. W. St. Clair, is the owner and operator of the Superior-Federal Well No. 7, located in Unit G of Section 25, Township 19 South, Range 34 East, NMPM, Pearl-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 4941 feet to 5060 feet.

(4) That the injection should be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4960 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be

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CASE No. 3870

Order No. R-3515

attached to the annulus or the annulus left open 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:

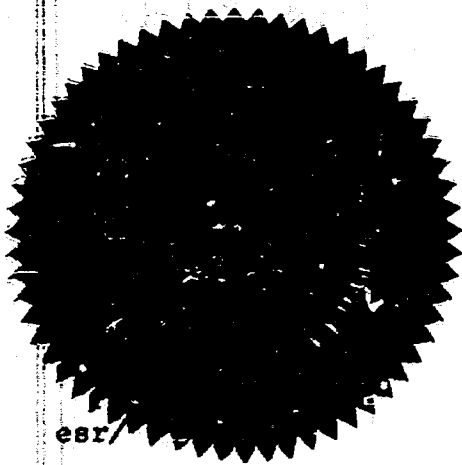
(1) That the applicant, D. W. St. Clair, is hereby authorized to utilize his Superior-Federal Well No. 7, located in Unit G of Section 25, Township 19 South, Range 34 East, N44PM, Pearl-Queen Pool, Lea County, New Mexico, to dispose of produced salt water into the Queen formation, injection to be accomplished through 2 3/8-inch tubing installed in a packer set at approximately 4900 feet, with injection into the perforated interval from approximately 4941 feet to 5060 feet;

PROVIDE HOWEVER, 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 casing, tubing, or packer.

(2) That the applicant shall submit monthly reports of his 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 P. Cargo
DAVID P. CARGO, Chairman

Glyton B. Lays
GLYTON B. LAYS, Member

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

D. W. ST. CLAIR
CONSULTANT - OIL PRODUCER
501 FIRST NATIONAL BANK BUILDING
MIDLAND, TEXAS 79701
August 29, 1968

TELEPHONE MUTUAL 2-1828

Case 3870

New Mexico Oil Conversation Commission
P. O. Box 1980
Hobbs, New Mexico

Attention: Mr. J. D. Ramey

Subject: Application for Salt Water Disposal Well
D. W. St. Clair Superior-Federal Lease (NM 086)
Sec. 25, T-19-S, R-34-E, Lea County, New Mexico

Gentlemen:

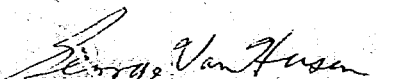
We attach quadruplicate copies of Forms 9-331 (Federal) and C-108 (State) covering request and information required on converting our No. 7 well on above captioned lease to a salt water disposal well.

We believe all required supplementary information is included, but if anything further is needed please advise us immediately.

We note that Case No. 3797, Docket 19-68 covered application and ultimate approval of Ernest A. Hanson for similar disposal into the Queen formation in a well approximately 2 miles SW of our well. With the precedent established may we assume that administrative approval can be granted?

Very truly yours,

D. W. ST. CLAIR


George Van Husen

GVH:db

50 SEP 6 AM 0 37

← CASE 3870: Application of D. W. St. Clair for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Queen formation in the perforated interval from approximately 4941 feet to 5060 feet in his Superior-Federal Well No. 7 located in Unit G of Section 25, Township 19 South, Range 34 East, Pearl-Queen Pool, Lea County, New Mexico.

CASE 3871: Application of Stoltz and Company for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the North Bagley Upper, Middle, and Lower Pennsylvanian Pools underlying the E/2 SE/4 of Section 32, Township 11 South, Range 33 East, Lea County, New Mexico.

NEW MEXICO OIL CONSERVATION COMMISSION

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

Case 3870
Form C-108
Revised 1-1-65

OPERATOR D. W. St. Clair		ADDRESS 501 First National Bank Bldg., Midland, Texas	
LEASE NAME Superior-Federal	WELL NO. 7	FIELD Pearl Queen	COUNTY Lea
LOCATION UNIT LETTER G ; WELL IS LOCATED 1980' FEET FROM THE North LINE AND 1980' FEET FROM THE East LINE. SECTION 25 TOWNSHIP 19-S RANGE 34-E NMPM.			

CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	8 5/8"	273	125	Circulated	Returns
INTERMEDIATE					
LONG STRING	5 1/2"	5142	270	2950'	Logs
TUBING	2 3/8"	5065	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson-Tension @ 4900		
NAME OF PROPOSED INJECTION FORMATION Queen Sand			TOP OF FORMATION 4626'		BOTTOM OF FORMATION 5110
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLE? Perforations		PROPOSED INTERVAL(S) OF INJECTION 4941-5060	
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No		IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? oil		HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? Yes	
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH 4778, 4789, 4821, 4833 85 sks.					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 200		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 None	
ANTICIPATED DAILY INJECTION VOLUME (BBLS.)	MINIMUM 100	MAXIMUM 300	OPEN OR CLOSED TYPE SYSTEM Closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure	APPROX. PRESSURE (PSI) 1700
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			NATURAL WATER IN DISPOSAL ZONE Yes		
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Federal Land			ARE WATER ANALYSES ATTACHED? Yes		
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL					
Shell Oil Co., P. O. Box 1509, Midland, Texas					
Gulf Oil Co., P. O. Box 1938, Roswell, New Mexico					
Tenneco Oil Co., Wilco Bldg., Midland, Texas					
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING?					
SURFACE OWNER Yes		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL Yes		THE NEW MEXICO STATE ENGINEER Yes	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		ELECTRICAL LOG Yes		DIAGRAMMATIC SKETCH OF WELL Yes	

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

Sergey Van Hise Agent 8-28-68
(Signature) (Title) (Date)

NOTE: Should waivers from the State Engineer, 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.

EXAMINER HEARING

Case No. 3870

TRANSCRIPT OF HEARING

MR. NUTTER: The hearing will come to order, please.
The next case will be Case 3870.

MR. HATCH: Case 3870, application of D.W. St. Clair
for salt water disposal, Lea County, New Mexico.

MR. NUTTER: Do you have an attorney, Mr. St. Clair?

MR. ST. CLAIR: No, I don't.

MR. NUTTER: Are you ready to go?

MR. ST. CLAIR: Yes, I am.

MR. NUTTER: Will you stand and be sworn, please.

(Witness sworn.)

D. W. ST. CLAIR

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

DIRECT EXAMINATION

BY MR. NUTTER:

Q Would you state your name, please, sir?

A D.W. St. Clair.

Q And you are the applicant in this case, Mr. St. Clair?

A Yes.

Q And you will be representing yourself?

A Right.

Q Would you proceed with your case, please?

A We propose to convert the No. 7 Superior-Federal Well,

Unit G, Section 25, 19 South, 34 East, Pearl-Queen Field from a marginal producer to a salt water disposal well. Disposal will be in perforations from 4941 to 5,060 under a tension packer about 4900 feet.

In approximately the last 30 days, this well has, for all practical purposes, ceased making any fluid, either oil or water, and this is purely an economic thing. We consider that in the very near future, we'll probably be making some kind of arrangements for secondary recovery in the area by injecting water into the producing zone and we feel that this is an intermediate step before the water flooding actually takes place.

Q There are waterflood operations currently being conducted in the Pearl-Queen Pool, are there not?

A Approximately three-quarters of a mile to the east and southeast.

Q And the acreage that you operate is on the extreme west end of the field, as I recall, Mr. St. Clair.

A There is another unit, the Mescalero Unit of E.A. Hanson to the west of us, but we are in the north and northwest of the limits.

Q And this well that you propose to inject water into would be on a pattern of water injection wells when and if you

get your waterflood started?

A Yes, it is actually an edge well, as far as our development is concerned.

Q Do you have a plat of the area?

A Yes.

Q I presume that is the same one that has been entered here with the application?

A Yes, that's the one that we have furnished, yes.

MR. NUTTER: Let's have these identified as exhibits and then this plat would be Exhibit Number 1.

(Whereupon, Applicant's Exhibits 1, 2, 3, and 4 were marked for identification.)

Q Now, Mr. St. Clair, this exhibit that has been identified as Exhibit Number 1 in the case is a plat of the Pearl-Queen Pool and I note that one section here has been colored in yellow. Is that your lease that is colored in yellow there?

A That is our Superior-Federal lease.

Q So you control all of that Section 25, except 40 acres, apparently, which belongs to Tenneco?

A Yes.

Q And the well that is identified in red is the well that you propose to inject water into?

A That is right, No. 7.

Q So it is on the limits of production insofar as that arm of the pool is concerned, the west Pearl-Queen Pool?

A Yes.

Q It is the easternmost well in that section?

A Yes.

Q Now, Exhibit Number 2 has been marked as the log and there are some arrows indicated at 4778, 4789, 4821, 4833, 4941, 5010, 5017 and 5060. What do those arrows represent?

A Those represent jet perforations.

Q This is the perforated interval, then, of Superior-Federal Well No. 7?

A Yes.

Q And that is the zone into which you will be injecting water?

A The upper four perforations have been squeezed.

Q I see.

A And we will be injecting into the 1, 2, 3, 4 lower ones.

Q So the overall interval of injection would be from 4941 to 5060, is that right?

A Right.

Q Now, what we had identified here as Exhibit Number 3

is a schematic diagram of a well. Would you explain that and the cementing and casing program of this well, please?

A Total depth of the well is 5154 feet, five and a half inch casing was cemented at 5142 feet, 12 feet off the bottom with 270 sacks, 5050 pozmix. The top of the cement was determined to be at 2950.

Q Was that by temperature survey?

A I believe it was by sonic log.

Q By sonic log. Okay. Proceed, please.

A I should have mentioned that eight and five-eighths inch casing was fully cemented and circulated to surface, the bottom of the eight and five-eighths being at 273 feet.

Q Is this surface casing of sufficient length to penetrate and go through all of the known producing water sands in this area?

A It is. That is the end of the Red Beds. I might add there is practically no surface water in this locality. I have shown the injection interval which we have previously mentioned, 4941 to 5,060; above that at approximately 4900 feet is a Guiberson tension packer on tubing and we would propose to inject the water down the tubing. It would be confined to these lower perforations by the packer and by the cement around the five and a half inch casing. We would, of

course, have the annulus either open or with a gauge so that any possible commingling could be checked if the annulus pressured up.

Q Would this annulus be loaded with some sort of inhibited fluid, Mr. St. Clair?

A Yes. At the moment, I would imagine we would use light mud.

Q And this two and three-eighths inch tubing, that tubing will be plastic-coated?

A We did not plan that at the moment because I had planned to simply go ahead with the setup we had for the pumping operation.

Q The tubing that's in there presently?

A Yes. Ultimately, we will probably plastic-coat it.

Q In other words, this tubing and this packer are in the well at the present time, and were used for production purposes?

A Right.

Q And the other perforations were previously squeezed then?

A Right.

Q Now, Exhibit Number 4 here is a water analysis. Would you explain that, please?

A That is a formation table analysis from our No. 1 well approximately 1320 feet west of the No. 7. This analysis was made some time after the initial completion of the well when we felt we had recovered all the acid water and any chemical additives that might have been injected during drilling, and it simply shows the parts per million chlorides to be 144,000, sulfate, 600, bicarbonates, 1350, for a total dissolved solids of approximately 145,000 parts per million. This is normal salt water for the Queen Formation.

Q And you don't anticipate that there would be any difficulty as far as injecting this water into the formation? It will be compatible, because it's the same water that's coming out?

A It's the same water that is coming out, and on our last acid treatment of this particular perforated interval, we had a maximum pressure, I believe, of a thousand pounds and it immediately fell off to zero. I'm looking at probably the low injection pressures at the moment.

Q How many producing wells are on this lease, Mr. St. Clair?

A Six. Six, after we take this No. 7 off.

Q And how much oil are those wells currently making?

A Between 105 and 125 barrels a day.

Q A hundred and five to one hundred twenty-five barrels per day of oil in production. What is the rate of water production from those six wells?

A Approximately, I'll give you a range, 100 to 130.

Q What is the trend insofar as water production is concerned?

A It has been declining. I think it's probably at about a leveled-out point now.

Q And that total water production, the 100 to 130 barrels of water per day, will be disposed of into this No. 7 well?

A Yes.

Q Now, if there's any affect from the injection of water into the formation here, would you anticipate that it would be a detrimental affect or possibly enhance the production?

A I feel sure it would enhance it because of the operations that we've had in the immediate area.

Q Then the floods in the other part of the pool have shown --

A They've shown highly successful.

Q -- successful response?

MR. NUTTER: Are there any other questions of

Mr. St. Clair? You want to offer these four exhibits, then, as exhibits in this hearing?

THE WITNESS: Yes.

MR. NUTTER: If there's no questions, the witness may be excused. The four exhibits by Mr. St. Clair will be admitted in evidence.

(Whereupon, Applicant's Exhibits Numbers 1 through 4, inclusive, were admitted in evidence.)

MR. NUTTER: Does anyone have anything they wish to offer in Case Number 3870? If not, we'll take the case under advisement.

I N D E X

<u>WITNESS</u>	<u>PAGE</u>
D.W. ST. CLAIR	
Direct Examination by Mr. Nutter	2

<u>EXHIBITS</u>	<u>MARKED</u>	<u>OFFERED AND ADMITTED</u>
Applicant's Exhibits Numbers 1, 2, 3, 4	4	10

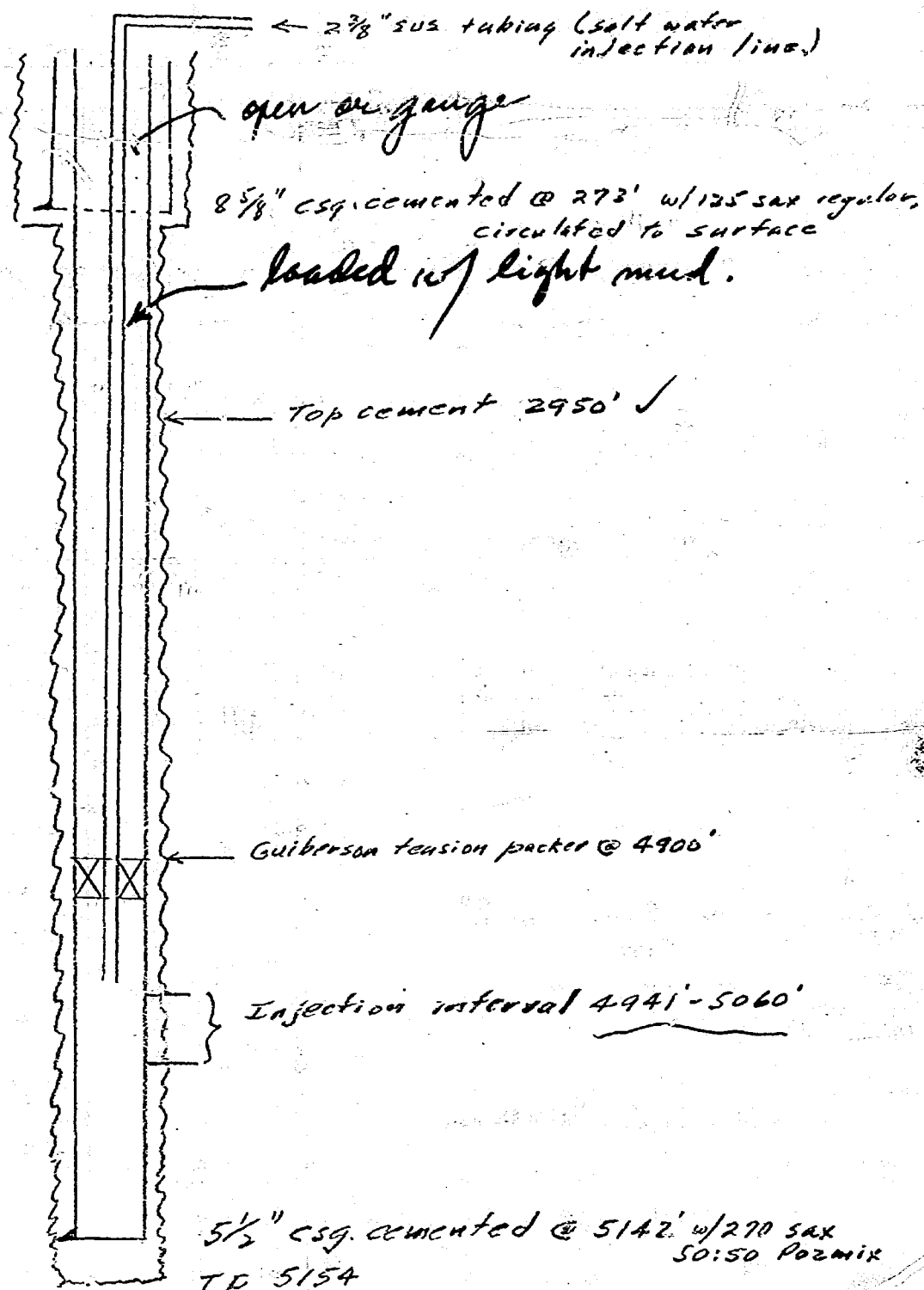
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I, CHARLOTTE MACIAS, Court Reporter in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the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

Charlotta Macias
Court Reporter

I do hereby certify that the foregoing is
a complete record of the record of the
the Executive Meeting of the N. M. O. C. 3870
heard by us on 9/25, 1968.
 J. B. ..., Executive
New Mexico Oil Conservation Commission

Diagrammatic sketch of proposed salt water injection
system in No. 7 well, 3rd Clair Superior-Federal lease.
1980' N & E lines, Sec. 25, T19S, R34E, Lea Co., N. Mex.



BEFORE EXAMINER NUTTER
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 3
 CASE NO. 3870

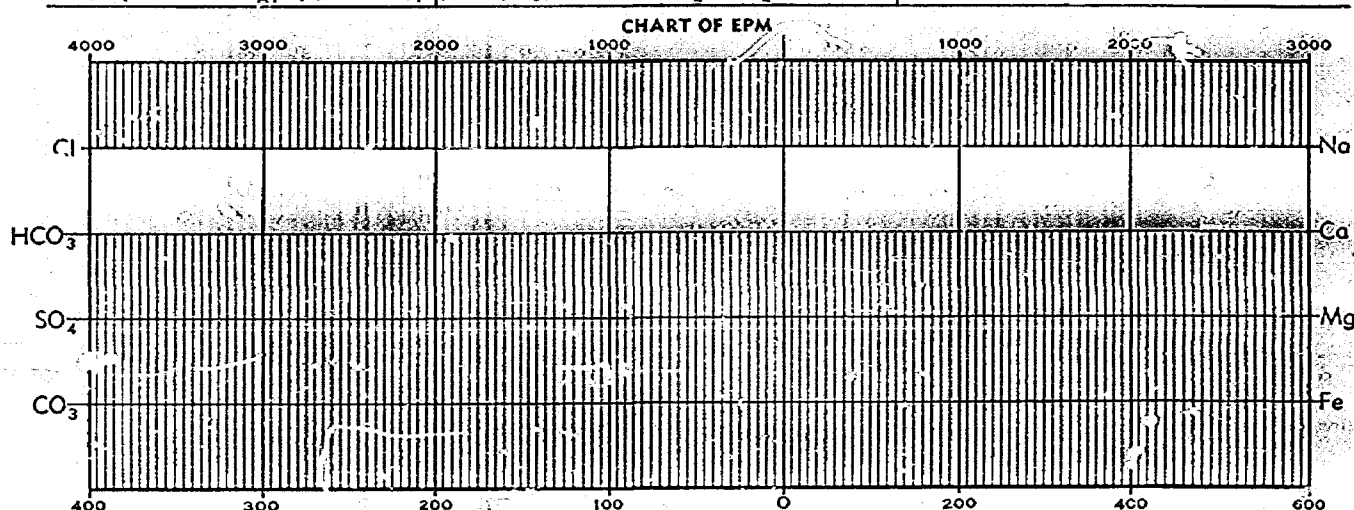
Case 3870

DIVISION OF THE U.S. CHEMICAL COMPANY
FIELD LABORATORY REPORT
WATER ANALYSIS

TO: D.W. St. Clair
501 First National Bank Bldg.
Midland, Texas

LABORATORY LOCATION Hobbs, N.M.		REPORT NUMBER 4649
COMPANY D.W. St. Clair		WELL Superior Federal #1
POOL Pearl Queen		LOCATION
COUNTY Lea		STATE New Mexico
FORMATION Penrose		DEPTH 5043- 5058
SUBMITTED BY Mr. Joe McKinney		TESTS DESIRED W.A.
DATE SAMPLE SUBMITTED May 10, 1964		
SAMPLE SOURCE Swab		

	PPM	EPM		PPM	EPM
CALCIUM	11900	585	CHLORIDE	144000	4040
MAGNESIUM	7240	594	SULFATE	600	13
SODIUM	67400	2836	BICARBONATE	1350	22
IRON			CARBONATE		
HYDROGEN SULFIDE			HYDROXIDE		
SPECIFIC GRAVITY 1.178			% SALT SATURATION		
AT 79 °F pH 5.3			CoCl ₂ /MgCl ₂		



REMARKS:

Formation water analysis from west offset well to No. 7, which is to be converted to SWD well.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 3870
CASE NO. 3870

F.F. Flippen 5-10-64

CHEMIST DATE

Case 3870