

Case No.

1614

Application, Transcript,
Small Exhibits, Etc.

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

IN THE MATTER OF:

CASE 1614

TRANSCRIPT OF HEARING

MARCH 11, 1959

DEARNLEY - MEIER & ASSOCIATES
GENERAL LAW REPORTERS
ALBUQUERQUE NEW MEXICO
Phone CHapel 3-6691

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
MARCH 11, 1959

IN THE MATTER OF:

CASE 1614: Application of Texas Consolidated Oils, Inc., for an order authorizing a pilot water flood project in the Square Lake Pool in Eddy County, New Mexico, and for capacity allowables for said project. Applicant, in the above-styled cause, seeks an order authorizing it to institute a pilot water flood project in the Square Lake Pool in Eddy County, New Mexico. Applicant proposes to inject water into the Grayburg and San Andres formations through four wells located in Section 34, Township 16 South, Range 30 East. Applicant further seeks capacity allowables for nine wells in said Section 34.

BEFORE:

Daniel S. Nutter, Examiner

T R A N S C R I P T O F P R O C E E D I N G S

MR. NUTTER: Take next Case 1614.

MR. PAYNE: Case 1614. Application of Texas Consolidated Oils, Inc., for an order authorizing a pilot water flood project in the Square Lake Pool in Eddy County, New Mexico, and for capacity allowables for said project.

MR. EDWARDS: My name is Mac Edwards, Edwards & Reese of Hobbs, appearing on behalf of the applicant, Texas Consolidated Oils, Inc. We have one witness.

(Witness sworn)

PAUL R. GREGORY

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

MR. EDWARDS: If it please the Examiner, I would like to state at the outset that we would like to withdraw from his consideration our request for an exception under Rule 502, as of this time --

MR. NUTTER: You are amending your application, Mr. Edwards, to withdraw --

MR. EDWARDS: Withdraw our request for exception under Rule 502 in connection with the application. I would like to also state that on Page 3 after the period I would like to amend the application to strike that following sentence with reference to approval from the U.S.G.S. pertaining to water.

MR. NUTTER: What sentence is that?

MR. EDWARDS: It is the sentence following the period in the first line.

MR. NUTTER: You would strike the word -- starting with the word "Approval" and ending with the word "survey?"

MR. EDWARDS: Yes.

MR. NUTTER: Are there any further amendments?

MR. EDWARDS: Also it has been stated here in that -- I think that takes care of all of the --

MR. NUTTER: Would all of Paragraph 9 be stricken,

Mr. Edwards?

MR. EDWARDS: Yes, all of Paragraph 9 would likewise be stricken because I don't want that to be considered at this hearing.

MR. NUTTER: Is there objection to the amendment of the application as so moved this morning? If there is no objection, the application will be amended.

MR. EDWARDS: At this time I would like to offer in evidence Exhibits 1, 2, 3 and 4 pertaining to notice to the United States Department of Interior.

MR. NUTTER: These are all government forms which have been filed with the U.S.G.S., is that correct?

MR. EDWARDS: Yes, sir.

MR. NUTTER: If there is no objection, these Exhibits will be entered in Case 1614, Exhibits 1 through 4.

MR. EDWARDS: And at this time I would also like to offer in evidence Exhibit 5, which is an Affidavit of Mailing to offsetting operators within the distance provided by the Rules.

MR. NUTTER: Is there objection to the introduction of Exhibit 5 in Case 1614? If not, it will be admitted.

DIRECT EXAMINATION

BY: MR. EDWARDS:

Q Would you state your name, please?

A My name is Paul R. Gregory.

Q By whom are you employed and in what capacity?

A I am employed by Texas Consolidated Oils as production superintendent.

Q And how long have you been a production superintendent for Texas Consolidated?

A For two and a half years.

Q And prior to that time, what was your business.

A I was employed by Fain McGaha Oil Company in Wichita Falls in the production department.

Q And how long were you employed in that capacity?

A I was with that company for a period of nine years in all phases of production work.

Q And are you familiar with and have you had experience in water flooding projects?

A Yes, sir. I assisted in the installation of the flooding of approximately seventy-five wells in Hartley County, Texas.

Q Would you briefly give the Examiner some history of Texas Consolidated Oils with regard to its ownership?

A All right, yes. Texas Consolidated Oils is a company that has been taken over by the R.F.C. It was originally R.F.C. It is now the Treasury Department. And it is our job to retire a fifteen million dollar loan, and we have this application for a water flood project in Eddy County, New Mexico due to the fact that these wells have reached their economic limit by primary recovery. We are requesting permission to water flood.

MR. PORTER: Is this the property formerly owned by Snowden International?

A Yes, sir, that's correct.

Q (By Mr. Edwards) Now, Mr. Gregory, directing your attention to Exhibit B, would you explain to the Examiner the proposed injection wells?

A You are referring to the map?

Q Is that Exhibit A or B?

A That would be A in Section 34, Township 16 South and 16, 30 East; we propose to inject through old producing wells which were drilled in 1942. The location would be in the northeast quarter of Section 34 Wells No. 2 and 3. In the southeast quarter of Section 34 it would be Well No. 1, and in the northwest quarter of Section 34 Well No. 5. We propose to inject into two zones the upper and lower which are sometimes called Grayburg and San Andres in the Square Lake Field.

Q Why have you selected this particular injection pattern?

A Due to the fact that in the past five to seven years quite a few of the wells in this Field have been plugged and abandoned, and in order to get a good pattern we had to select these four wells, and I am sure that if this pilot flood proves successful that these plugged wells will be redrilled or re-entered.

Q Can you give the Examiner a brief history with re-

gard to the production of these wells since they were drilled in 1942?

A The cumulative production, to the 1st of January, 1958, these wells had produced approximately 50,000 barrels per well.

Q Can you give the Examiner any figure with regard to the overall production for the sixteen wells in the section?

A Yes, sir. That is approximately 800,000 barrels, since 1942.

Q Now, according to the information you have, based upon reservoir engineering reports, what percentage of the estimated reserves has been recovered to date?

A Between eighteen and twenty percent.

Q Do you feel that it is absolutely essential at this time that an injection program be commenced?

A Yes, I do. The wells can no longer be produced at their present rate of production.

Q What are these wells making now?

A Approximately one to two barrels a day.

Q And do you feel that a secondary recovery program is absolutely essential to recover as much as possible of the existing known reserves?

A Yes, sir, I do.

Q Do you feel that the program which you will commence and continue is in keeping with the conservation practice of the

State of New Mexico?

A I definitely do.

Q And do you feel that the program will prevent waste and protect the correlative rights of surrounding interests?

A Yes, sir, I do.

Q Now, what is your source of water on this particular program?

A We propose to use water from Santa Rosa formation from two wells that we have drilled in Section 33; that would be in the southeast quarter of Section 33.

Q You also have a gas lease where these wells are drilled?

A That is correct.

MR. NUTTER: What is the general or specific locations of those wells in the southeast quarter, Mr. Gregory?

A The No. 1 water well, which is in that southeast quarter. It is plugged. Do you see the plug marker? And the No. 2 water well is 600 feet northeast of that.

Q (By Mr. Edwards) Approximately how much water do you anticipate using for the four proposed injection wells?

A I believe the engineers have figured on 500 barrels per day, per well.

Q Now, with reference to Exhibit B, would you explain to the Examiner what your casing program has been and what you intend to do?

A Due to the fact that we are going to be able to use fresh water, we plan to inject through the casing, and these wells were cased according to specifications of State Rules and Regulations when they were originally drilled. They each have the proper amount of surface pipe, and the oil string in three wells, we have five and a half inch pipe set to the top of the formation. And the other wells have seven inch pipe which has all be tested and is in good shape.

Q What remedial work has been done on each of these wells, Mr. Gregory, with regard to efforts to increase the production?

A No. 5 Leonard was sand fraced approximately four years ago with very unfavorable results.

Q Would you explain in a little more detail exactly what you did?

A The well was sand fraced through the casing with 10,000 gallons and a pound and a half of sand. That is the only well that has been fraced. And since that time these four proposed injection wells have been cleaned at the bottom and are now setting.

Q Do you have an opinion with regard to how long you think it will take before you see appreciable results from this project, if it is approved?

A Should take between six and seven months to determine that from Well No. 1 in the northeast quarter of Section 34.

Q What was the primary recovery drive in this pool?

A Gas. I believe the average gas-oil ratio was between 900 and 950 when the well was originally completed.

Q Do you feel that your program, if approved here, this pilot flood, will adequately protect the correlative rights of General American --

A General American.

Q -- on the north?

A General American is operating two wells adjacent to this proposed flood, and Collier Production to the south, and they should definitely benefit by it.

MR. EDWARDS: Does the Examiner have any questions?

MR. NUTTER: Does anyone have any questions of this witness?

CROSS EXAMINATION

BY: MR. FISCHER:

Q Mr. Gregory, you said that the primary production mechanism was gas. Was that solution gas or gas gas?

A Solution gas.

MR. FISCHER: That's all I have.

QUESTIONS BY MR. IRBY:

MR. IRBY: Mr. Nutter, I am Frank Irby from the State Engineers office. I was absent when the witness testified concerning the source of supply of water for this flood project.

MR. NUTTER: I don't believe the witness testified

as to the formation and so forth that the water would be coming from.

MR. EDWARDS: I think he did. Santa Rosa.

A This is the Santa Rosa formation, producing fresh water at approximately 400 feet.

MR. EDWARDS: One further question. Is this on a Federal lease and not in an established water basin?

A That's correct. It is not in a designated water area.

MR. PORTER: Are there wells in the vicinity of the injection wells?

A Yes, sir, within a mile.

QUESTIONS BY MR. IRBY:

Q Do you have an analysis of the water?

A I don't have a copy with me. We have had it analyzed, but I failed to bring a copy of it with me.

Q Would you be willing to furnish the State Engineers with a copy of that?

A Yes, sir.

MR. EDWARDS: Certainly, sir.

MR. NUTTER: Any further questions?

MR. IRBY: No.

MR. PORTER: One question.

QUESTIONS BY MR. PORTER:

Q Approximately how many wells are owned by Texas

Consolidated in this Square Lake Pool?

A You mean producing wells or altogether, plugged and abandoned?

Q I know there are quite a few that are plugged and abandoned, quite a few that are temporarily abandoned, but I was referring to producing wells.

A Producing wells, approximately 55 in this Field.

MR. PORTER: Thank you, sir.

MR. NUTTER: Any further questions of Mr. Gregory?

MR. CHRISTY: Sim Christy of Hervey, Dow & Hinkle for Humble Oil & Refining Company, who is operating in the Square Lake Pool. We would like to ask one question of the witness and perhaps his attorney would care to answer. We understand the application as amended and deleted here, that Texas Consolidated does not seek any increase or change in the Field for statewide allowables for this application?

A Not at the present time.

MR. EDWARDS: That is correct.

MR. CHRISTY: No further questions.

QUESTIONS BY MR. NUTTER:

Q Mr. Gregory, what is your anticipated injection pressure?

A The peak should be around 1200 pounds, the maximum.

Q I notice on your Exhibit B that you have tested

casing to 2500 pounds. Those tests already have been conducted, is that correct?

A Yes, sir. Yes, sir.

Q Will the injection plus the hydrostatic head on that water exceed the 2500 pounds that you tested the casing to?

A I am not sure about that and I am not in a position to answer, but I wouldn't think so.

Q I also note from Exhibit B that the surface casing is set in the range of 500 to 555 feet, and cemented with 50 sacks of cement, is that correct?

A Yes, sir.

Q Did that cement circulate to the surface when that casing was set?

A Our records don't show that, but --

Q Would it be likely that 50 sacks would have caused cement to return?

A From my experience in that field, it should; it should circulate.

Q Now, what will be your injection interval, an open hole interval there, or through perforation?

A Yes, sir, open hole. Those wells were completed in open hole.

Q And how much pay is there that will be --

A The open hole section will average approximately 200 feet.

Q And a similar interval will be opened in the producing wells?

A Yes, sir.

Q What is the expected amount of oil that will be recovered as a result of this secondary recovery program, Mr. Gregory?

A They assume that there is between two and three million barrels in place still in that Field.

Q Now, we have recovered to date eighteen to twenty percent, is that correct?

A Yes, sir.

Q With relation to the amount of oil that has already been recovered, how much do they expect to recover from the secondary recovery? Is it anticipated less than or equal to or more than the primary?

A It should be equal to and perhaps more.

MR. PORTER: Mr. Nutter, does your question have reference to the whole pool?

MR. NUTTER: Of course, we can't talk about the whole pool on water flood yet because we are only injecting water into four wells. I think the question was probably with reference to one well that would be subject to the water flood at this time.

MR. PORTER: Well, what I was getting at, did the eighteen percent represent a percentage as provided to the whole

pool?

A Yes, sir, I believe that is a figure for the whole pool.

Q (By Mr. Nutter) This acreage that we are considering today is an average of the entire pool, probably?

A Yes, it is, a good average for the entire Square Lake Pool.

MR. NUTTER: Are there any questions anyone may have of Mr. Gregory? If not, you may be excused.

(Witness excused)

MR. EDWARDS: Mr. Examiner, would you like to have a structure map of this area, would it be helpful?

MR. NUTTER: I believe that it would be, Mr. Edwards. We would like to know just where it is.

MR. EDWARDS: Actually, I took this up with Mr. Gregory. It was not prepared under his supervision, but I think it would be admissible within the discretion of the Examiner, and he can use it for what purposes he wants in making his decision.

MR. NUTTER: We will label this as Exhibit No. 6.

MR. EDWARDS: For the sake of the record, I will hand you Exhibit No. 6 and ask you to indicate in pencil on this structure map the proposed injection wells.

A (Witness complies)

MR. EDWARDS: We offer this in evidence.

MR. NUTTER: Is there objection to the introduction

of applicant's Exhibit No. 6? If not, the Exhibit will be admitted in evidence.

Does anyone have anything further they wish to offer in Case 1614? We will take the case under advisement and take next Case 1294.

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, J. A. Trujillo, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Proceedings before the New Mexico Oil Conservation Commission was reported by me in Stenotype and reduced to typewritten transcript by me, and that the same is a true and correct record to the best of my knowledge, skill and ability.

WITNESS my Hand and Seal this, the 17th day of March, 1959, in the City of Albuquerque, County of Bernalillo, State of New Mexico.

James A. Trujillo
 NOTARY PUBLIC

My Commission Expires:

October 5, 1960

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 1614 heard by me on 3-11, 1959.

Samuel M. Patten, Examiner
 New Mexico Oil Conservation Commission

Exhibit "B"

CASING RECORD FOR INJECTION WELLS

	SURFACE CASING					OIL STRING					# FT.	TOP PAY	REMARKS
	SIZE	WT.	CND.	FT.	SH.	SIZE	WT.	CND.	SH.				
WIZ "G" 1	8 5/8"	28#	New	512'	50	5 1/2"	15.5#	New	100	2932	2932	Clean hole to total depth 3146' and tested casing to 2900 #.	
WIZ "E" 2	10"	32#	New	555'	50	7"	24#	New	100	2860	2860	Cleaned hole to total depth 3160' and tested casing to 2900#.	
WIZ "E" 3	8 5/8"	28#	New	505'	50	5 1/2"	15.5#	New	100	2800	2800	Cleaned hole to total depth 3085' and tested casing to 2900#.	
Lockard 5	8 5/8"	28#	New	515'	50	5 1/2"	15.5#	New	100	2816	2816	Cleaned hole to total depth 3081' and tested casing to 2900#.	

Exhibit "B"

CASING RECORD FOR INJECTION WELLS

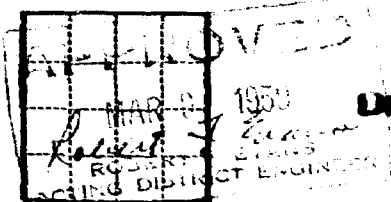
	SURFACE CASING					OIL STRING					# FT.	TOP PAY	REMEDIAL WORK, 1959
	SIZE	WT.	COND.	FT.	SXS. C.T.	SIZE	WT.	COND.	SXS. C.T.				
ETZ "C" 1	8 5/8"	28#	New	512'	50	5 1/2"	15.5#	New	100	2932	2932	Clean hole to total depth, 3146' and tested casing to 2500 #.	
ETZ "E" 2	10"	32#	New	555'	50	7"	24#	New	100	2860	2860	Cleaned hole to total depth 3160' and tested casing to 2500#.	
ETZ "E" 3	8 5/8"	28#	New	505'	50	5 1/2"	15.5#	New	100	2800	2800	Cleaned hole to total depth 3085' and tested casing to 2500#.	
Leonard 5	8 5/8"	28#	New	515'	50	5 1/2"	15.5#	New	100	2816	2816	Cleaned hole to total depth, 3081' and tested casing to 2500#.	

(SUBMIT IN TRIPLICATE)

Land Office **Las Cruces**

Lease No. **02427**

Unit _____



**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL	Notice of Intention to Inject Water	X

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

March 3, 19**59**

Well No. **Leonard 5** is located **1980** ft. from **[N]** line and **1980** ft. from **[W]** line of sec. **34**

SE/4 NW/4 of 34 **16 South 30 East** **N.M.P.M.**

(Of Sec. and Sec. No.)

(Twp.)

(Range)

(Meridian)

Square Lake

(Field)

Eddy County

(County or Subdivision)

New Mexico

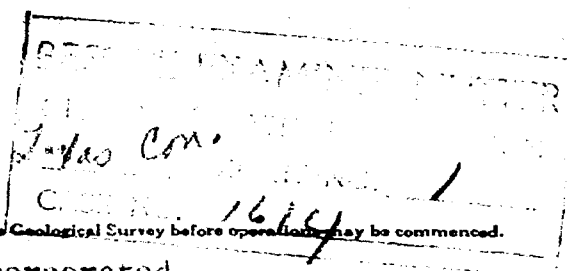
(Statistical Division)

The elevation of the derrick floor above sea level is _____ ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Well has been cleaned to total depth of 3081 feet and casing tested to 2500 pounds for the purpose of injection of water obtained from the shallow sands above 400 feet into the Grayburg formation at the approximate depth of 3085 feet and the San Andres formation at the approximate depth of 3146 feet.



I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company **Texas Consolidated Oils, Incorporated**

Address **Box 955**

Andrews, Texas

By **[Signature]**
Title **Attorney**

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF)
TEXAS CONSOLIDATED OILS, INCORPORATED,)
FOR A PERMIT UNDER RULE 701 OF THE NEW)
MEXICO OIL CONSERVATION COMMISSION)
STATEWIDE RULES AND REGULATIONS FOR AN)
ORDER GRANTING APPROVAL TO INJECT WATER)
INTO THE GRAYBURG FORMATION UNDERLYING)
A PORTION OF THE SQUARE LAKE POOL IN)
EDDY COUNTY, NEW MEXICO, AND AN ORDER)
EXCEPTING CERTAIN OIL WELLS IN THE)
SQUARE LAKE POOL FROM THE PROVISIONS OF)
RULE 502 OF THE NEW MEXICO OIL CONSERVA-)
TION COMMISSION STATEWIDE RULES AND)
REGULATIONS.)

No. 1614

A P P L I C A T I O N

Texas Consolidated Oils, Incorporated, hereby makes application to the Commission for an order authorizing the injection of water in the Grayburg Formation and the San Andres Formation in the Square Lake Pool in Eddy County, New Mexico, and further makes application to the Commission for an order excepting the wells described hereinbelow from the provisions of Rule 502 of the New Mexico Oil Conservation Commission Statewide Rules and Regulations authorizing applicant to produce at capacity the wells located within and off setting the pilot water flood program outlined herein, and for which a permit is sought by this application. In support of this application, applicant respectfully submits and shows the following:

1. Attached hereto as Exhibit A and made a part hereof is a plat of the Square Lake Pool area showing the location of the proposed intake wells, the location of all oil and gas wells including drill wells and dry holes and the names of lessees

*Application
made by
D. H.
to State
this*

within one-half mile of all intake wells and the name of each off set operator.

2. All wells within more than one-half mile of the proposed injection wells, as well as all wells within more than one-half mile of the proposed injection wells for a full scale flood operation, all as shown in Exhibit A attached hereto, are now producing from the Grayburg Formation and San Andres Formation, Permian Age. The Grayburg and the San Andres are the only formations producing in the immediate area involved in this application.

3. Injection will be made into the Grayburg encountered at an approximate depth of 3085 feet, and injection will be made into the San Andres encountered at an approximate depth of 3146 feet. The actual average thickness of the pay section of the Grayburg and the San Andres is not known, but it is estimated that the average thickness of these formations combined is approximately 35 feet in the area of the proposed project.

4. The casing program followed during the primary development of the Square Lake Pool was to set sufficient casing to protect the fresh water sands and to set the oil string from the surface to the top of the pay. The casing in each well as shown by Exhibit B has been tested and the present casing is satisfactory and will be used in its present condition. The casing program for the proposed injection wells is set forth more fully in Exhibit B attached hereto and made a part hereof.

5. Water will be injected into the Grayburg and San Andres and said water will be obtained from a shallow sand

Stricker

encountered from the surface to a depth of 400 feet. (Approval for the use of said water which will be obtained from United States lands has been obtained from the Regional Oil and Gas Supervisor, United States Geological Survey.) The area which is material to this application is not within the confines of an established water basin and no approval from the office of the State Engineer of the State of New Mexico is necessary.

6. It is estimated that the initial injection rate will be approximately 500 barrels per well per day.

7. The injection wells are located on state and federal leases owned by the applicant, and all of the injection wells will be operated by the applicant. The address of Texas Consolidated Oils, Incorporated, is Box 955, Andrews, Texas

8. The names and approximate locations of the four wells in which the injection is first proposed to be made as a pilot flood area are as follows:

Etz "C" 1	NW/4 SE/4, Section 34, T16S, R30E
Etz "E" 2	SE/4 NE/4, Section 34, T16S, R30E
Etz "E" 3	NW/4 NE/4, Section 34, T16S, R30E
Leonard 5	SE/4 NW/4, Section 34, T16S, R30E

9. The wells for which applicant requests an exception to Rule 502 of the New Mexico Oil Conservation Commission State-wide Rules and Regulations are as follows:

Stricker
amended
application
@ hrg

Etz "C" 2	NE/4 SE/4, Section 34, T16S, R30E
Etz "C" 3	SE/4 SE/4, Section 34, T16S, R30E
Etz "C" 4	SW/4 SE/4, Section 34, T16S, R30E
Etz "E" 1	SW/4 NE/4, Section 34, T16S, R30E
Etz "E" 4	NE/4 NE/4, Section 34, T16S, R30E

Leonard 3 SE/4 SW/4, Section 34, T16S, R30E
Leonard 6 SW/4 NW/4, Section 34, T16S, R30E
Leonard 7 NE/4 NW/4, Section 34, T16S, R30E
Leonard 8 NW/4 NW/4, Section 34, T16S, R30E

Applicant respectfully requests that this case be set for hearing before a trial examiner in Hobbs, New Mexico, unless the case can be sooner heard elsewhere by an examiner, in which event, the applicant requests the earlier setting.

Respectfully submitted,

TEXAS CONSOLIDATED OILS, INCORPORATED

By Paul R. Gregory

EDWARDS & REESE

By N. Randolph Reese
Hobbs, New Mexico
Attorneys for Applicant

ack
1614

March 17, 1959

C
O
P
Y

Mr. Robert L. Borton
Geologist
Roswell, New Mexico

Dear Bob:

Enclosed herewith is a copy of analysis from the water wells to be used by Texas Consolidated Oils in their pilot water flood program in Section 34, Township 16 South, Range 30 East. This water is to be taken from the Santa Rosa formation at 400 feet below the surface at two wells situated in the SE $\frac{1}{4}$ of Section 33, Township 16 South, Range 30 East. This analysis was obtained and is submitted to you with the thought in mind that it would be of value in determining the quality of water in the Santa Rosa formation in general.

Yours truly,

S. E. Reynolds
State Engineer

By:

Frank E. Irby
Chief
Water Rights Division

FBI/me
cc-F. H. Hennighausen
Dan Butler

DOWELL DIVISION OF THE DOW CHEMICAL COMPANY

FIELD LABORATORY REPORT
WATER ANALYSISDowell
Andrews, Texas

Attention: Mr. Hart

8

Midland, Texas

9065

Texas National Petr. Co. Water Well # 2

DATE SAMPLED BY

November 26, 1958

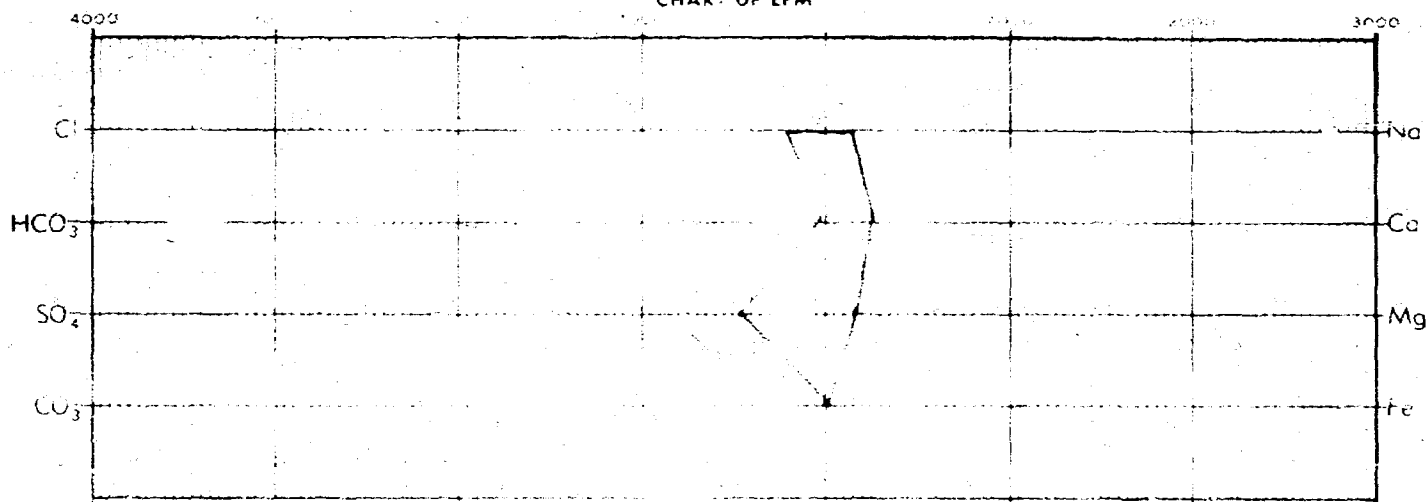
SAMPLE SOURCE

	PPM	CM	Hart	Complete	EPM
CALCIUM	950	47		6,730	190
MAGNESIUM	433	36		2,180	44
SODIUM	3,540	154		157	3
IRON					
HYDROGEN SULFIDE					
SPECIAL					

1.010

1.55

CHART OF EPM



This water was mixed with water from well # 1. There was no visible precipitates formed from mixing these two samples.

DOE

Houston, Texas

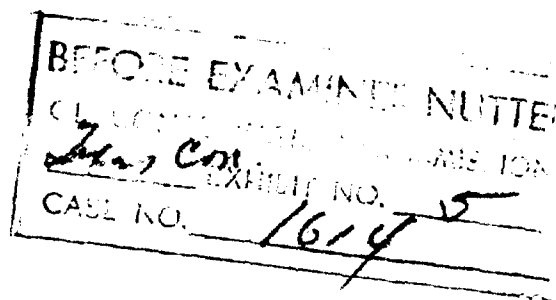
Houston, Texas

Houston, Texas

Houston, Texas

November 27, 1958

H. A. Stevens



BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF)
TEXAS CONSOLIDATED OILS, INCORPORATED,)
FOR A PERMIT UNDER RULE 701 OF THE NEW)
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STATEWIDE RULES AND REGULATIONS FOR AN)
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RULE 502 OF THE NEW MEXICO OIL CONSERVA-)
TION COMMISSION STATEWIDE RULES AND)
REGULATIONS.)

No. 1614

AFFIDAVIT OF MAILING

STATE OF NEW MEXICO)

)SS.

COUNTY OF LEA)

I, Freddye Hudnall, being first duly sworn upon my
oath, depose and state that I am secretary to Edwards & Reese,
Attorneys at Law, Hobbs, New Mexico, and that on the 12th day
of February, 1959, I deposited in the United States Mails at
the United States Post Office, Hobbs, New Mexico, postage pre-
paid, to each of the following named persons or operators, copies
of the Application in Cause No. 1614, together with the
attached Exhibits:

Mr. R. D. Collier
Box 798
Artesia, New Mexico

General American Oil Company of Texas
Box 416
Loco Hills, New Mexico

and that on the 18th day of February, 1959, I deposited in the
United States Mails at the United States Post Office, Hobbs,

New Mexico, postage prepaid, to the following named person, copy
of the Application in Cause No. 1614, together with the attached
Exhibits:

Mr. John Anderson
Regional Oil & Gas Supervisor
United States Geological Survey
Roswell, New Mexico

Further affiant sayeth not.

Ledger Hubbard

SUBSCRIBED AND SWORN to before me this the 4th day of
March, 1959.

Michael J. Watson
Notary Public

My Commission Expires:

12-29-61

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 3/11/59

CASE NO. 1614

HEARING DATE 9am 3/11/59
DSN @ SF

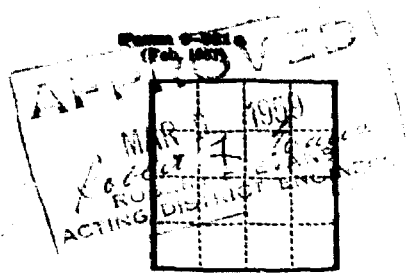
My recommendations for an order in the above numbered case(s) are as follows:

Enter an order approving a pilot water flood in the Square Lake Pool as requested by Texas Consolidated Oils, Inc.

Permit the injection of water through the four wells requested.

Applicant moved to amend application to delete any exception to Rule 502 (in effect does not seek capacity allowable at this time)

Van Pelt
Staff Member



Budget Bureau No. 42-R358.4
Approval expires 12-31-60.

(SUBMIT IN TRIPPLICATE)
**UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY**

Land Office Las Cruces
Lease No. 02427
Unit _____

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY
NOTICE OF INTENTION TO ABANDON WELL	Notice of Intention to Inject Water

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

March 3, 1959

Well No. Etz E 3 is located 660 ft. from N line and 1980 ft. from E line of sec. 34

NW/4 NE/4 of 34

16 South 30 East

N.M.P.M.

(Of Sec. and Sec. No.)

(Twp.)

(Range)

(Meridian)

Square Lake

Eddy County

New Mexico

(Field)

(County or Subdivision)

(State or Territory)

The elevation of the derrick floor above sea level is _____ ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Well has been cleaned to total depth of 3085 feet and casing tested to 2500 pounds for the purpose of injection of water obtained from the shallow sands above 400 feet into the Grayburg formation at the approximate depth of 3085 feet and the San Andres formation at the approximate depth of 3146 feet.

RECEIVED
FEDERAL BUREAU OF INVESTIGATION
MAR 5 1959
U.S. DEPARTMENT OF JUSTICE
WASHINGTON, D.C.
Case No. 1614

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

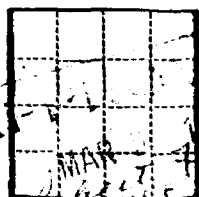
Company Texas Consolidated Oils, Incorporated

Address Box 955

Andrews, Texas

By M. Randolph Geese
Title Attorney

Form 9-581a
(Feb. 1951)



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office **Las Cruces**

Lease No. **02427**

Unit _____

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL	Notice of Intention to Inject Water	X

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

March 3, 1959

Well No. **Etz E 2** is located **1980** ft. from **[N]** line and **660** ft. from **[E]** line of sec. **34**

SE/4 NE/4 of 34 **16 South 30 East** **N.M.P.M.**
(1/4 Sec. and Sec. No.) (Twp.) (Range) (Meridian)
Square Lake **Eddy County** **New Mexico**
(Field) (County or Subdivision) (State or Territory)

The elevation of the derrick floor above sea level is _____ ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Well has been cleaned to total depth of 3160 feet and casing tested to 2500 pounds for the purpose of injection of water obtained from the shallow sands above 400 feet into the Grayburg formation at the approximate depth of 3085 feet and the San Andres formation at the approximate depth of 3146 feet.

RECEIVED EXAMINED MUTTER
SP. **2445 Con.**
SUBMIT NO. **3**
CASE NO. **1614**

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

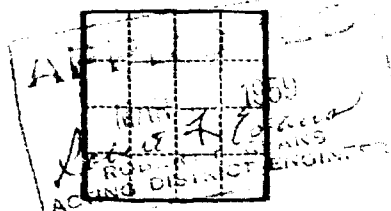
Company **Texas Consolidated Oils, Incorporated**

Address **Box 955**

Andrews, Texas

By **[Signature]**
Title **Attorney**

Form 9-551 a
(Feb. 1951)



(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4
Approval expires 12-31-60.

Land Office **Las Cruces**

Lease No. **02427**

Unit _____

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL.....	SUBSEQUENT REPORT OF WATER SHUT-OFF.....	
NOTICE OF INTENTION TO CHANGE PLANS.....	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING.....	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF.....	SUBSEQUENT REPORT OF ALTERING CASING.....	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL.....	SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR.....	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE.....	SUBSEQUENT REPORT OF ABANDONMENT.....	
NOTICE OF INTENTION TO PULL OR ALTER CASING.....	SUPPLEMENTARY WELL HISTORY.....	
NOTICE OF INTENTION TO ABANDON WELL.....	Notice of Intention to Inject Water	X

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

March 3, 1959

Well No. **Etc C 1** is located **1980** ft. from **N** line and **1980** ft. from **E** line of sec. **34**

NW/4 SE/4 of 34 (1/4 Sec. and Sec. No.)	16 South 30 East (Twp.) (Range)	N.M.P.M. (Meridian)
Square Lake (Field)	Eddy County (County or Subdivision)	New Mexico (State or Territory)

The elevation of the derrick floor above sea level is _____ ft.

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Well has been cleaned to total depth of 3146 feet and casing tested to 2500 pounds for the purpose of injection of water obtained from the shallow sands above 400 feet into the Crayburg formation at the approximate depth of 3085 feet and the San Andres formation at the approximate depth of 3146 feet.

DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
Zeph C. M. ...
CASE NO. **1614**

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company **Texas Consolidated Oils, Incorporated**

Address **Box 955**

Andrews, Texas

By **H. Randolph Reese**
Attorney
Title _____

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. 1614
Order No. R-1354

APPLICATION OF TEXAS CONSOLIDATED OILS,
INC., FOR AN ORDER AUTHORIZING A PILOT
WATER FLOOD PROJECT IN THE SQUARE LAKE
POOL IN EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on March 11, 1959, at Santa Fe, New Mexico, before Daniel S. Nutter, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 18th day of March, 1959, the Commission, a quorum being present, having considered the application, the evidence adduced and the recommendations of the Examiner, Daniel S. Nutter, 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, Texas Consolidated Oils, Inc., proposes to institute a pilot water flood project in the Square Lake Pool in Eddy County, New Mexico, by the injection of water into the Grayburg and San Andres formations through the following-described wells:

Etz "C" Well No. 1, NW/4 SE/4 of Section 34.

Etz "E" Well No. 2, SE/4 NE/4 of Section 34.

Etz "E" Well No. 3, NW/4 NE/4 of Section 34.

Leonard Well No. 5, SE/4 NW/4 of Section 34,

all in Township 16 South, Range 30 East, NMPL, Eddy County, New Mexico.

-2-

Case No. 1614
Order No. B-1354

(3) That the proposed pilot water flood project will not adversely affect the interests of any other operators in said Square Lake Pool.

(4) That the proposed program will promote conservation and will tend to prevent waste through the production of oil which might not otherwise be recovered.

IT IS THEREFORE ORDERED:

(1) That the application of Texas Consolidated Oils, Inc., for permission to institute a pilot water flood project in the Square Lake Pool in Eddy County, New Mexico, be and the same is hereby approved.

(2) That the following-described wells be and the same are hereby authorized as water injection wells:

Etz "C" Well No. 1, NW/4 SE/4 of Section 34.

Etz "E" Well No. 2, SE/4 NE/4 of Section 34.

Etz "E" Well No. 3, NW/4 NE/4 of Section 34.

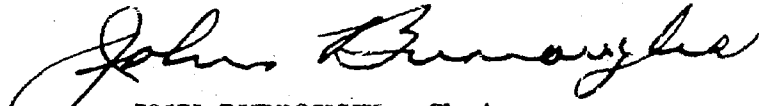
Leonard Well No. 5, SE/4 NW/4 of Section 34,

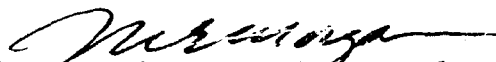
all in Township 16 South, Range 30 East, NMPM, Eddy County, New Mexico.


(3) That monthly progress reports on the water flood project herein authorized shall be submitted to the Commission in accordance with Rule 704 and Rule 1119 of the Commission Rules and Regulations.

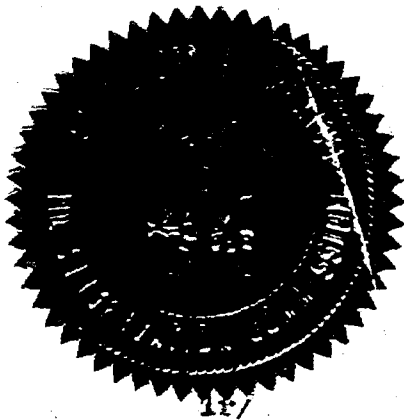
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


JOHN BURROUGHS, Chairman


MURRAY E. MORGAN, Member


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



OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

March 19, 1959

Mr. Max Edwards
Edwards & Reese
P.O. Box 2405
Hobbs, New Mexico

Dear Mr. Edwards:

On behalf of your client, Texas Consolidated Oils, Inc., we enclose two copies of Order R-1354 issued March 18, 1959, by the Oil Conservation Commission in Case 1614, which was heard on March 11th before an examiner.

Very truly yours,

A. L. Porter, Jr.
Secretary - Director

bp
Encls.

C
O
P
Y

TEXAS CONSOLIDATED OILS

MAIN OFFICE BOX 955

Andrews, Texas

July 20, 1959

L.T.

RECEIVED JUL 21 1959

Jda JUL 21 1959

*Case file
Case 1614*

New Mexico Oil Conservation Commission
321 Carper Building
Artesia, New Mexico

Dear Sirs:

In compliance with your Rule #703, Paragraph "A", we are notifying your commission that July 19, 1959, was the commencement date of the injection of water at our Square Lake Pool pilot water flood, Eddy County, New Mexico. Water is being injected through the following described wells:

Etz "C", Well No. 1, NW/4 SE/4, Section 34
Etz "E", Well No. 2, SE/4 NE/4, Section 34
Etz "E", Well No. 3, NW/4 NE/4, Section 34
Leonard, Well No. 5, SE/4 NW/4, Section 34

All in Township 16 South, Range 30 East, N.M.P.M., Eddy County, New Mexico.

This pilot water flood project was approved by your Commission on March 18, 1959, after a hearing in Santa Fe on March 11, 1959, Case No. 1614, Order No. R-1354.

Upon the conclusion of the current month and each succeeding month, we shall submit forms C-120, required by your Rules 704 and 1119.

Sincerely yours,

Paul Gregory

Paul Gregory
Production Superintendent

PG:emc

CC: K. C. English
Production Engineer
Texas Consolidated Oils
3300 Republic National Bank Building
Dallas, Texas