

CASE 4111: Application of TENNECO
FOR A DUAL COMPLETION AND SALT
WATER DISPOSAL, LEA COUNTY.

Case Number.

4111

Application

Transcripts.

Small Exhibits

ETC.



dearnley meier corporation

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS
1120 SIMMS BLDG. P.O. BOX 1092 ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
April 23, 1969
EXAMINER HEARING

IN THE MATTER OF:

Application of Tenneco Oil
Company for a dual completion
and salt water disposal, Lea
County, New Mexico.

Case No. 4111

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING



MR. UTZ: Case No. 4111.

MR. HATCH: Application of the Tenneco Oil Company for a dual completion and salt water disposal, Lea County, New Mexico.

MR. KELLY: I am Booker Kelly of White, Gilbert, Cook and Kelly of Santa Fe, New Mexico. On behalf of the applicant, I have one witness and ask that he be sworn.

(Witness sworn)

MR. UTZ: Any other appearances? You may proceed.

LEWIS WILLIAMS

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

DIRECT EXAMINATION

BY MR. KELLY:

Q Would you state your name, residence and employer, please?

A I'm Lewis Williams, presently living in Midland, Texas, and employed by Tenneco Oil Company.

Q And what is your position with Tenneco?

A Production Engineer.

Q Have you previously qualified as an expert petroleum engineer before this commission?



A Yes, I have.

Q Referring as to what has been marked as Exhibit Number 1, a plat of the area, would you briefly explain what Tenneco seeks to obtain by this application?

A Tenneco seeks to dispose of salt water down the eight and five eighths by five inch annulus, in the well marked by the red arrow in the approximate center of the plat, which is Exhibit Number 1.

Q Now, what is the present status of that well?

A This well is presently shut in for lack of a method to dispose of salt water.

Q And what is it's history?

A It's history is: The well is some six months old. When producing the well, it presently produces some seventy-two, forty barrels of oil per day plus, approximately, 1200 barrels of water per day, making it non-commercial.

Q And in what zone is it producing from?

A The Permo-Pennboe-C.

Q Now, is it Tenneco's plan to inject slowly the produced waters from that well back into that well?

A Yes.

Q So, there will be no other wells that will be tied into this injection well?

A That's right. There will be no extraneous water injected into this well.

Q Now, within a two-mile radius, are there any other wells presently producing from this same zone?

A Within this two-mile radius, marked on this plat, there are no wells producing from the zone of proposed injection. There are a number of zones producing from the same zone that this well produces from.

Q Now, going to Exhibit Number 2, which is your diagrammatic sketch; would you explain how you plan to dispose of this water?

A We would inject water at the surface, down that area, between the five and one-half inch casing, which is marked near the bottom of the page, and the eight and five-eighths intermediate pipe, which is set at approximately 4,050, cemented, back with a top, a cement top, at 1745 feet. The cement top on the five and one half, being at 8120.

Q So, your injection interval is approximately 4,000 feet?

A That's correct.

Q Where would you expect this injected water to go?

A Based on porosity and permeability, as determined by logs, we would expect most of the water to enter into

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what is known as the San Andres, which occurs immediately below the eight and five-eighths, at 4,050. In fact, the eight and five-eighths is set slightly into the top of the San Andres.

Q Are there other injection wells in the area, which are injecting into the San Andres successfully?

A Yes, referring back to Exhibit Number 1; over on the eastern edge of this two-mile radius circle, there is a well marked by a red triangle, which is a San Andres disposal well, operated by another operator.

Q And at about what rate are they injecting; do you know?

A As I understand it, this well is apparently taking some five to six thousand barrels of water per day at approximately 1300 psi.

Q And you are planning, at least initially, about 1400 barrels?

A Yes, we expect to inject some 1200 barrels a day at a pressure of not more than a 1000 pounds. We hope less.

Q Now, are there others below the San Andres, that has sufficient velocity to take this water if, for some reason or other, the San Andres wouldn't?



A Yes, there are other zones of velocity which occur in this proposed 4,000 foot interval, but we think there will be a preferential injection into the San Andres caused by more favorable velocity and permeability conditions.

Q And I believe you testified there were no other wells producing this 4,000 foot injection interval, with at least a two-mile radius.

A That's correct.

Q Now, do you feel, based on Tenneco's history, in this area, that this injection rate of twelve to 1400 will be constant?

A Yes. This well behavior has been such that the water production rate has not varied appreciably, since the well has been producing.

Q Now, about surface water in this area? Are you aware of any surface water or shallow formations?

A Yes, sir. There is surface water in the area. There are windmills in the area. This water is all extremely shallow; probably, Ogalalla, and occurs at 300 feet or shallower. And our well adequately protects against migration of saltwater into those freshwater sands. We have thirteen and three-eighths surface pipes, set at 372

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feet, cemented all the way back to the surface. This string of pipes, in itself, should be sufficient to protect those freshwater zones, but in addition to that, we will have the eight and five eighths, which are cemented, also.

Q In your opinion, will the proposed installation and that you have shown on Exhibit 2, present migration of this injection fluid to any other zone?

A Yes, it will.

Q Referring to as what has been marked Exhibit 3, which is your water analysis, would you say whether this water is considered to be highly corrosive?

A Exhibit 3 shows the results of an analysis on three different wells, which are in the same general area, and produce the same water that we propose to inject -- both sea water. Our experience has been in this area, over some several months, now, with some twelve wells, that this water does not appear to be corrosive. We have observed no appreciable corrosion in the producing wells that we now have.

Q Now, the casing that will come in contact with this water; is that new casing?

A Yes, sir. Yes, it is less than six months old.

Q Do you expect to have any corrosive problems there?

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A No.

Q Will you run any kind of test to see if the casing is experiencing corrosion?

A Yes. At the surface between the area of the eight and five eighths and five and a half, we will place coupons directly in the stream of flowing water, and monitor those coupons for corrosion rate; probably at monthly intervals to begin with.

Q If corrosion does become a problem, will you treat the water?

A Yes; if we observe appreciable corrosion, then we will start treating the water with inhibitors, to inhibit or stop that corrosion.

Q Now, referring to what has been marked as Exhibit 4; this is your application form to dispose of saltwater, is that correct?

A Yes, it is.

Q And has all the pertinent information, as far as casing and tubing data, and off-set operators and injection intervals --

A Yes.

Q Have all the off-set operators been notified?

A Yes, they have.

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Q And Exhibit 5 is a log of the injection wells?

A Yes, that's right.

Q Do you have anything that you want to comment on that log?

A No.

Q Is the well economic, now?

A No, it is not.

Q Do you feel that this well could be made economic if you were allowed to produce it further?

A Yes. Well, then this field, what is commonly known as the Vada-Penn, has a history of increasing of an oil percentage with time. We have observed this in at least two of our own wells, and also in wells of other operators. But we hope this well will exhibit a similar behavior that -- currently it produces almost a hundred per cent water, but we hope within time that this off-set in oil percentage would increase and the water percentage will decrease to the point where the well will be commercial.

Q In your opinion, will the granting of this application prevent waste by allowing you to produce oil from this well, that would otherwise be left in place?

A Yes.

Q In your opinion, will the granting of this



application have any adverse affect on correlative rights?

A No.

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

A They were prepared by me.

MR. KELLY: I move the introduction of applicant's Exhibits 1 through 5, at this time.

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

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

MR. KELLY: That concludes our direct examination, Mr. Examiner.

CROSS EXAMINATION

BY MR. UTZ:

Q How much water did you say this well was producing per day?

A About 1200 barrels per day.

Q And water?

A Sir?

Q Any water?

A 1200 barrels per day.

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MR. KELLY: That was the water figure.

THE WITNESS: Thirty to forty barrels of oil.

MR. UTZ: You have available the tops of the formations, between the bottom of the eight and five-eighths, and the tops of the cemented 8250 -- twenty?

A The tops of all the various formations?

Q Yes. You don't have all of the tops --

A No, sir; I don't have them all. The top of the San Andres -- I do have the top and the bottom of the -- Well, just the top of the San Andres -- 4120 as is shown on this -- C108. But I do not have all the rest of them.

Q What other formations are there in that interval?

A It would be all -- it would be quite a number -- ranging all the way from the San Andres at the top, to the Abo, at the bottom.

Q What is the deepest freshwater area that you know of?

A Less than 300 feet.

Q Do you intend to do anything with the annulus on this well?

A No, sir. You mean the eight and five-eighths by five-and-a-half?

Q No, sir. The five and-a-half by whatever size

the tubing is?

A Oh, the five and-a-half by two and seven-eighths inch tubing?

Q Yes.

A This is a hydraulically pumped installation, and the return of the produced fluids is through that annulus.

Q I see.

MR. UTZ: Are there any questions of the witness? You may be excused.

(Witness excused.)

MR. UTZ: Any statements? The case will be taken under advisement.

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I N D E X

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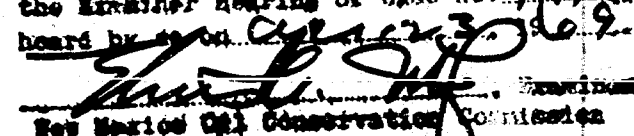
<u>EXHIBIT</u>	<u>MARKED</u>	<u>OFFERED AND ADMITTED</u>
Applicant's 1 through 5		10

STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, CA FENLEY, 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.



CA FENLEY - COURT REPORTER

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4111 heard by me on August 3, 1969.

 New Mexico Oil Conservation Commission



OIL CONSERVATION COMMISSION

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

GOVERNOR
DAVID F. CARGO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

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

April 29, 1969

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

Re: Case No. 4111
Order No. R-3744
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.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x

Artesia OCC

Aztec OCC

Other Bureau of Land Management and
State Engineer Office

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. 4111
Order No. R-3744

APPLICATION OF TENNECO OIL COMPANY
FOR A DUAL COMPLETION AND SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 23, 1969, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 28th day of April, 1969, 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, seeks authority to complete its Morton Federal Well No. 1, located in Unit A of Section 12, Township 9 South, Range 35 East, NMPM, Vada-Pennsylvanian Pool, Lea County, New Mexico, as a dual completion to produce oil from the Vada-Pennsylvanian Pool through perforations from 9839 feet to 9861 feet and to dispose of produced salt water down the annulus between the 5 1/2-inch production casing string and the 8 5/8-inch intermediate casing string into the San Andres, Glorieta, Yaso, Abo, and possibly other formations in the open-hole interval from approximately 4050 feet to 8120 feet.

(3) That coupon corrosion tests should be conducted continuously on said well and the results thereof filed quarterly with the Commission until further notice from the Secretary-Director of the Commission.

(4) That approval of the dual completion and salt water disposal as set out above will prevent the drilling of unnecessary

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CASE No. 4111
Order No. R-3744

wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tenneco Oil Company, is hereby authorized to complete its Morton Federal Well No. 1, located in Unit A of Section 12, Township 9 South, Range 35 East, NMPM, Vada-Pennsylvanian Pool, Lea County, New Mexico, as a dual completion to produce oil from the Vada-Pennsylvanian Pool through perforations from 9839 feet to 9861 feet and to dispose of produced salt water down the annulus between the 5 1/2-inch production casing string and the 8 5/8-inch intermediate casing string into the San Andres, Glorieta, Yeso, Abo, and possibly other formations in the open-hole interval from approximately 4050 feet to 8120 feet;

PROVIDED HOWEVER, that coupon corrosion tests shall be conducted continuously on said well and the results thereof filed quarterly with the Commission until further notice from the Secretary-Director of the Commission;

PROVIDED FURTHER, that the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

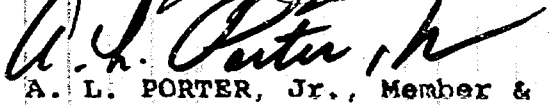
(2) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION


DAVID E. CARGO, Chairman


ALEX J. ARMIJS, Member


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


ESR/

Case #441

Heard 4-23-69

Rec. 4-25-69

Grant Tennessee to convert
their Modon Sed. #1 A. 12 -
95-35E. Vada - Penn Pool to
a SWD ~~well~~ - Oil dual.

Oil to be produced thru
2 7/8" tubing w/ packer set
at approx. 9862'. SW to
be injected thru 8 5/8 x 5 1/2
casing annulus into open
hole from 4050 - 8120.

Drms. in this interval are
S. A. Glorieta, Yano, ~~and~~
~~# 441~~. 2 7/8 tubing - 5 1/2
csg. annulus will be
full of power pump return
oil.

Injection fluid shall be
continuously checked w/
coupons & if corrosion
is present SW shall be
treated.

Shut Off

Docket No. 12-69

DOCKET: EXAMINER HEARING - WEDNESDAY - APRIL 23, 1969

9 A.M. - OIL CONSERVATION COMMISSION CONFERENCE ROOM,
STATE LAND OFFICE BUILDING - SANTA FE, NEW MEXICO

The following cases will be heard before Elvis A. Utz, Examiner, or Daniel S. Nutter, Alternate Examiner:

- CASE 4079: (Continued from the March 26, 1969, Examiner Hearing)
Application of Robert B. Holt for the creation of a new pool, assignment of a discovery allowable, and the promulgation of special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new Middle Pennsylvanian oil pool for his Aztec State Well No. 2 located in Unit A of Section 26, Township 13 South, Range 32 East, Lea County, New Mexico, and for the assignment of an oil discovery allowable in the amount of approximately 48,715 barrels to said well. Applicant further seeks the promulgation of special pool rules for said pool, including a provision for 160-acre proration units and the assignment of 80-acre allowables.
- CASE 4106: Application of Southland Royalty Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Permo-Pennsylvanian formation in the perforated interval from approximately 9485 feet to 9713 feet in its Guye Well No. 4 located in Unit F of Section 12, Township 11 South, Range 33 East, Inbe Permo-Pennsylvanian Pool, Lea County, New Mexico.
- CASE 4107: Application of Coastal States Gas Producing Company for special pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special pool rules for the West Sawyer-San Andres Pool, Lea County, New Mexico, including a provision for 80-acre spacing and proration units.
- CASE 4108: Application of Humble Oil & Refining Company for the rededication of acreage, Lea County, New Mexico. Applicant, in the above-styled cause, seeks to recomplete its New Mexico "V" State Well No. 5, a non-commercial Wantz-Abo oil producer, to a Tubb gas producer and to consolidate the 40 acres presently dedicated to said well with the 120 acres presently dedicated to its New Mexico "V" State Well No. 11, a Tubb gas producer, to form a standard 160-acre proration unit comprising the SW/4 of Section 10, Township 21 South, Range 37 East, Tubb Gas Pool, Lea County, New Mexico. Applicant further seeks authority to produce the allowable assigned to said unit from either of said wells in any proportion.
- CASE 4109: Application of Humble Oil & Refining Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the South Lea Unit Area comprising 8,324.16 acres, more or less, of State, Federal, and Fee lands in Township 26 South, Range 36 East, Lea County, New Mexico.

CASE 4110: Application of Atlantic-Richfield Company for a waterflood project and unorthodox injection well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pilot waterflood project by the injection of water into the Queen formation through one well to be drilled at an unorthodox location 100 feet from the North and West lines of Section 23, Township 18 South, Range 31 East, Shugart Pool, Eddy County, New Mexico.

CASE 4111: Application of Tenneco Oil Company for a dual completion and salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dually complete its Morton Federal Well No. 1, located in Unit A of Section 12, Township 9 South, Range 35 East, Lea County, New Mexico, in such a manner as to permit the production of oil from the Vada-Pennsylvanian Pool and the disposal of produced salt water through the intermediate casing-production casing annulus into the San Andres, Abo and possibly other formations in the open-hole interval from approximately 4050 feet to 8120 feet.

CASE 4112: Application of P-M Drilling Company for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Delaware formation in the perforated interval from approximately 5062 feet to 5100 feet in its James Federal Well No. 1 located in Unit A of Section 35, Township 23 South, Range 32 East, Triste Draw-Delaware Pool, Lea County, New Mexico.

CASE 4113: Application of Texas Pacific Oil Company for an unorthodox oil well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks to substitute its State "D" A/c-1 Well No. 1 located in Unit A of Section 2, Township 12 South, Range 33 East, in lieu of its State "C" A/c-1 Well No. 1 located in Unit B of said Section 2 as the producing well for the proration unit comprising the N/2 NE/4 of said Section 2, Bagley-Siluro-Devonian Pool, Lea County, New Mexico.

CASE 4114: Application of Gulf Oil Corporation for two unorthodox oil well locations and amendment to Order No. R-2729, Lea County, New Mexico. Applicant in the above-styled cause, seeks authority to drill two producing oil wells at unorthodox locations in Township 19 South, Range 35 East, as infill wells in the West Pearl Queen Unit Waterflood Project, Pearl Queen Pool, Lea County, New Mexico, said wells to be located as follows:

West Pearl Queen Unit Well No. 164 to be located 1325 feet from the North line and 2635 feet from the West line of Section 32;

West Pearl Queen Unit Waterflood Well No. 165 to be located 1420 feet from the South line and 1325 feet from the West line of Section 29;

(Case 4114 continued)

Applicant also seeks the amendment of Order No. R-2729, which order authorized the aforesaid waterflood project, to establish a procedure whereby additional injection wells and producing wells at unorthodox infill locations, as may be necessary to complete an efficient injection and producing pattern, may be approved administratively.

CASE 4115: Application of Southern Union Production Company for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Dakota formation underlying the W/2 of Section 16, Township 29 North, Range 9 West, Basin-Dakota Pool, San Juan County, New Mexico. Said acreage to be dedicated to a well to be drilled at a standard location in the W/2 of said Section 16. Also to be considered will be the costs of drilling said well, a charge for the risk involved, a provision for the allocation of actual operating costs, and the establishment of charges for supervision of said well.

CASE 4116: Application of Tesoro Petroleum Corporation for the amendment of Order No. R-2797 and for the extension of the South Hospah-Upper Sand Pool, McKinley County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-2797, which order approved the Hospah Unit Agreement, to delete from said unit agreement 233.87 acres in the Southeast portion of Section 1, Township 17 North, Range 9 West, McKinley County, New Mexico. Applicant also seeks the extension of the South Hospah-Upper Sand Pool to include a portion of the Southeast quarter of said Section 1.

CASE 4117: Application of Eastern Petroleum Company for special pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the promulgation of special rules for the Rattlesnake-Dakota Pool, San Juan County, New Mexico, permitting the drilling of wells on 2½-acre spacing provided that no well be located nearer than 50 feet to the outer boundary of the quarter-quarter section and no nearer than 165 feet to another well producing from the same pool, and provided further, that a 40-acre proration unit would be subject to a 40-acre allowable regardless of the number of wells on the unit.

CASE 4118: Application of Dugan Production Corporation for downhole commingling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle gas production from undesignated Fruitland and Pictured Cliffs gas pools in the well-bore of its Federal "I" Well No. 4, located in the NE/4 NW/4 of Section 1, Township 29 North, Range 14 West, San Juan County, New Mexico.

CASE 4096: (Continued from the April 5, 1969, Examiner Hearing)

Application of Kersey & Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority

-4- Examiner Hearing - April 23, 1969

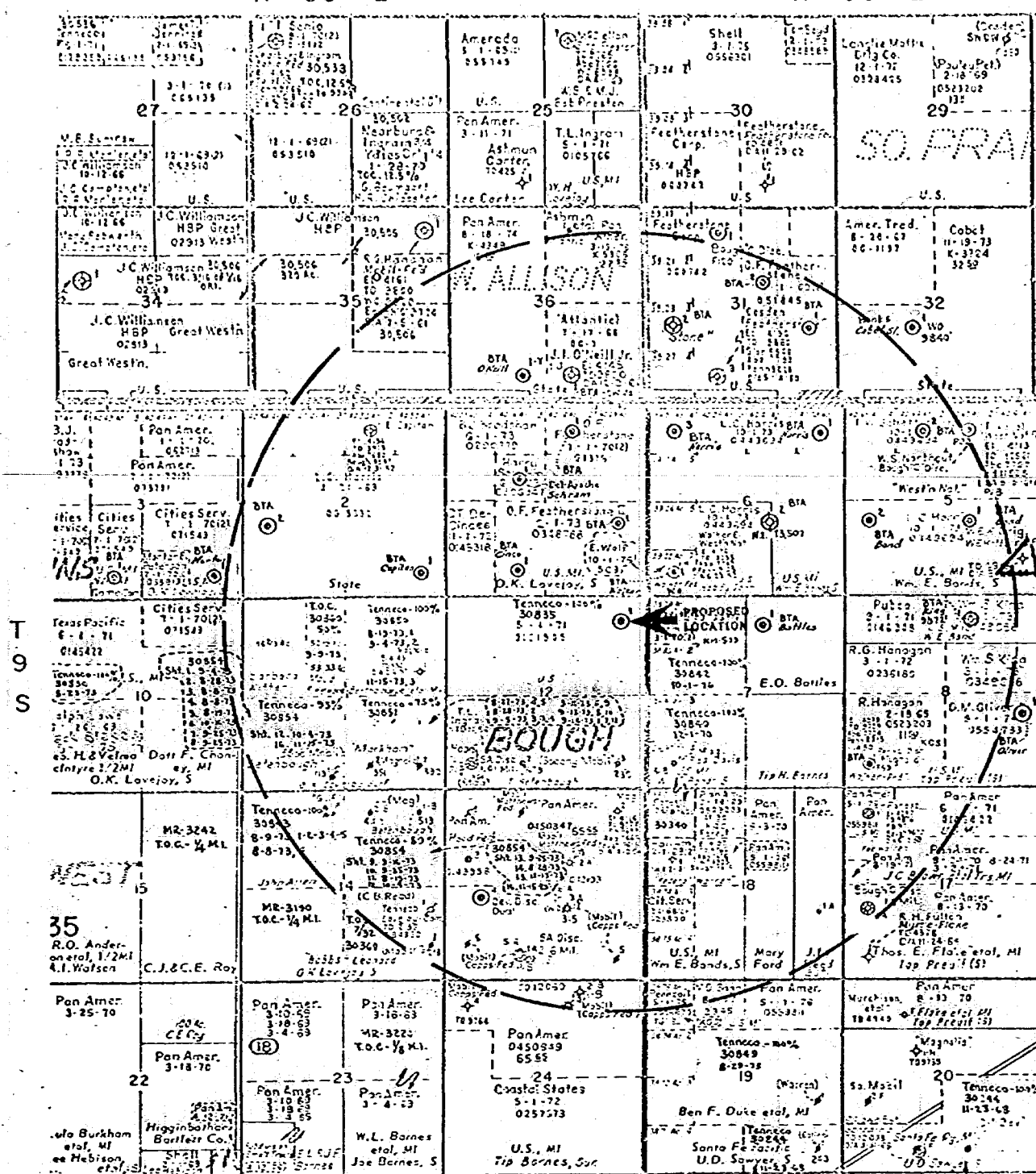
Docket No. 12-69

to institute a waterflood project by the injection of water into the Seven Rivers formation through four wells located in Units G, D, and F of Section 25, Township 17 South, Range 28 East, Aid (Yates-Seven Rivers) Pool, Eddy County, New Mexico.

CASE 4078: (Continued from the April 9, 1969, Examiner Hearing)

Application of J. Gregory Merrion for downhole commingling, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks authority to commingle production from the Devils Fork-Gallup Pool and an undesignated Mesaverde oil pool in the wellbore of his NCRA State Well No. 3 located in Unit L of Section 16, Township 24 North, Range 6 West, Rio Arriba County, New Mexico.

R - 36 - E



TENNECO OIL COMPANY
SUBSIDIARY OF TENNECO CORPORATION

VADA FIELD
LEA COUNTY, NEW MEXICO

PROPOSED SWD WELL (ANNULAR)
MORTON FEDERAL #1

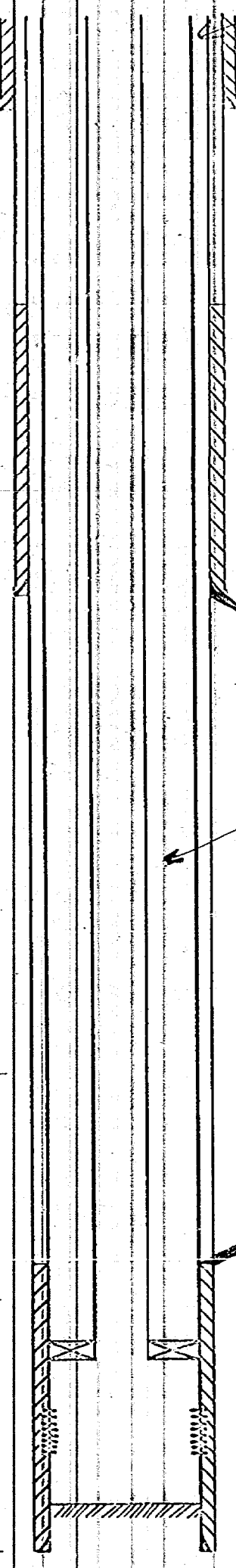
SCALE IN FEET

4000 0 4000 8000

There are no wells within a 2 mile radius that are producing from the Zone of proposed injection.

BEFORE EXAMINER UTZ
OIL CONSERVATION COMMISSION
Appr. EXHIBIT NO. 1
CASE NO. 9111

0
 1000'
 2400'
 7300'
 9920'
 5 1/2" 17 #/ft N-80
 5 1/2" 17 #/ft J-55
 5 1/2" 17 #/ft N-80



13 3/8" CASING AT 372' CEMENTED TO SURFACE

TOP CEMENT AT 1745'

8 5/8" CASING AT 4050' w/975 SX. CEMENT

INJECTION INTERVAL (PROPOSED)

TOP CEMENT AT 8120'

GUIBERSON RMC-1 PACKER AT 9802'

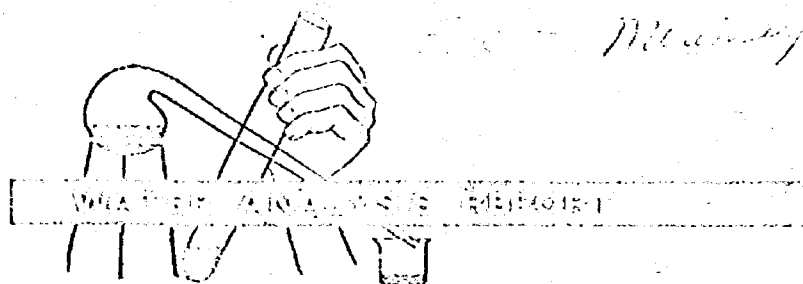
PERFS. 9839'-61'

PBTD 9888'

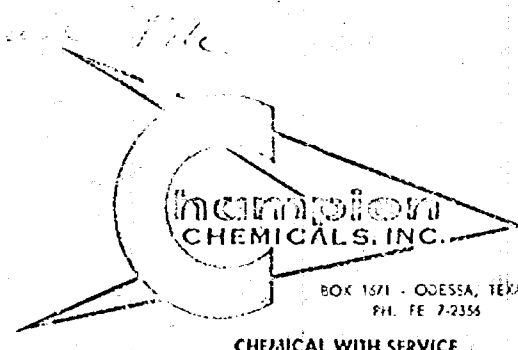
5 1/2" CASING AT 9920' w/260 SX. CEMENT

BEFORE EXAMINER UTZ
 OIL CONSERVATION COMMISSION
 No. 2 EXHIBIT NO. 2
 CASE NO.

TENNECO OIL COMPANY
 MORTON - FEDERAL NO. 1
 VADA FIELD - LEA CO. NEW MEXICO
 PROPOSED ANNULAR SWD WELL



SERVICE LABORATORY: Odessa, Texas Ph. EM 2-2353
RESEARCH LABORATORY: Houston, Texas Ph. ID 3-6771
PLANT: Odessa, Texas EM 2-2353 & LO 3-0863



BOX 1571 - ODESSA, TEXAS
PH. FE 7-2355

CHEMICAL WITH SERVICE

REPORT FOR _____	DATE SAMPLED _____
CC _____	DATE REPORTED <u>11-21-63</u>
CC _____	FIELD, LEASE, OR WELL <u>Hounsey, Ward & Insall</u>
CC _____	COUNTY _____ STATE <u>New Mexico</u>
COMPANY <u>Hounsey Oil Co.</u>	FORMATION _____
ADDRESS _____	DEPTH _____
SERVICE ENGINEER <u>Mr. Dean Williams</u>	SUBMITTED BY _____

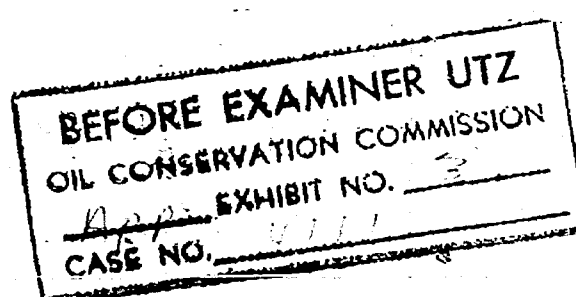
CHEMICAL ANALYSIS						
Chemical Component	Field, Lease, or Well					
	<u>Hounsey</u>	<u>Insall</u>	<u>Ward</u>			
Chloride (Cl)	59,000	59,000	59,000			
Sodium Chloride (NaCl)						
Iron (Fe)	36	40	37			
Total Hardness (CaCO ₃)						
Calcium (CaCO ₃)	4,960	5,120	5,160			
Magnesium (CaCO ₃)	936	908	900			
Hydrogen Sulfide (H ₂ S)	141	141	141			
Sulfate (SO ₄)	855	855	855			
Phosphate (PO ₄)						
Specific Gravity	1.063	1.066	1.063			
Density (lb./gal.)						
pH - Beckman <input checked="" type="checkbox"/> Strip <input type="checkbox"/>	6.80	6.80	6.82			
"P" Alkalinity (ml)						
"M" Alkalinity (ml)						
Bicarbonate (HCO ₃)	365	488	305			
Carbonate (CO ₃)	141	141	141			
Hydroxide (OH)						

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

REPORTED BY William Nabors

TITLE Chemist

FORM 101



Form C-111
Rev. 1-1-66

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 Horton Federal	WELL NO. 1	COUNTY Valle	COUNTY Lea
LOCATION			
UNIT LETTER A	WELL IS LOCATED 660	FEET FROM THE North	LINE AND 660
East	LINE, SECTION 12	TOWNSHIP 9-S	RANGE 35-E

CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	13 3/8	372	350	Circulated	--
INTERMEDIATE	8 5/8	4050	975	1745	Temperature Survey
LONG STRING	5 1/2	9920	260	8120	" "
TUBING	2 7/8	9808	NAME, MODEL AND DEPTH OF TUBING PACKER Guriberson RMC-1 @ 9802		
NAME OF PROPOSED INJECTION FORMATION San Andres			TOP OF FORMATION 4120	BOTTOM OF FORMATION 8120	
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Annulus			PERFORATIONS OR OPEN HOLE? Open Hole	PROPOSED INTERVAL(S) OF INJECTION 4050-8120	
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No		IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil well in Bough "C" Zone		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 Well is perforated for production 9839-61 Bough "C" in 5 1/2" csg.					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 300'±		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA None known		DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 9839	
ANTICIPATED DAILY INJECTION VOLUME (BBL/DAY) 1200	MINIMUM 800	MAXIMUM 1500	OPEN OR CLOSED TYPE SYSTEM Closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure	APPROX. PRESSURE (PSI) 1000 psi
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		
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) O. K. Lovejoy - Milnesand, New Mexico 88125			ARE WATER ANALYSES ATTACHED? Yes		
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL					
BTA - 104 S. Pecos, Midland, Texas 79701					
O. F. Featherstone - Roswell Petroleum Bldg., Roswell, New Mexico					
T. L. Ingram - 100 S. Kentucky Ave., Roswell, New Mexico					
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	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B)		PLAY OF AREA Yes		ELECTRICAL LOG Yes	
				DIAGRAMMATIC SKETCH OF WELL Yes	

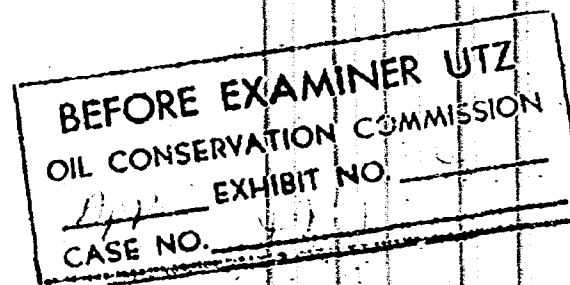
I hereby certify that the information above is true and complete to the best of my knowledge and belief.

L. M. Williams
(Signature)

Production Engineer
(Title)

March 17, 1969
(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.





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

March 18, 1969

MAR 26 11 00 24

for hearing

Case 4111

New Mexico Oil Conservation Commission
P. O. Box 1980
Hobbs
New Mexico 88210

RE: Salt Water Disposal Application,
Vada Penn Ext. Field, Lea
County, New Mexico.

Gentlemen:

Attached in triplicate is Tenneco Oil Company's application to dispose of produced salt water into the San Andres - Abo Shale interval through the 8-5/8" x 5-1/2" annulus of Tenneco's Morton Federal Well No. 1. This well is located in the Vada Penn Extension Field, Lea County, New Mexico. Included with this application are all the data required by Rule 701-B. All offset operators have been notified by copy of this application.

Very truly yours,

TENNECO OIL COMPANY

F. J. McDonald
F. J. McDonald
District Superintendent

LMW:cf

Attachments

DOCKET MAILED

Date 4-10-69

24

Form C-108
Revised 1-1-65

Case 4111

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 Morton Federal	WELL NO. 1	FIELD Vada Penn	COUNTY Lea
LOCATION UNIT LETTER A ; WELL IS LOCATED 660 FEET FROM THE North LINE AND 660 FEET FROM THE East LINE, SECTION 12 TOWNSHIP 9-S RANGE 35-E NMPM.			
CASING AND TUBING DATA			
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT
SURFACE CASING	13 3/8	372	350
INTERMEDIATE	8 5/8	4050	975
LONG STRING	5 1/2	9920	260
TUBING	2 7/8	9808	NAME, MODEL AND DEPTH OF TUBING PACKER Guiberson RMC-1 @ 9802'
NAME OF PROPOSED INJECTION FORMATION San Andres		TOP OF FORMATION 4120	BOTTOM OF FORMATION 8120
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Annulus		PERFORATIONS OR OPEN HOLE? Open Hole	PROPOSED INTERVAL(S) OF INJECTION 4050-8120
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Oil well in Bough "C" Zone.		HAS WELL EVER BEEN PERFORMED 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 Well is perforated for production 9839-61 Bough "C" in 5 1/2" csg.			
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 300'±		DEPTH OF BOTTOM OF NEXT HIGHER OIL OR GAS ZONE IN THIS AREA None known	DEPTH OF TOP OF NEXT LOWER OIL OR GAS ZONE IN THIS AREA 9839
ANTICIPATED DAILY INJECTION VOLUME (BBL/S.) 1200	MINIMUM 800	MAXIMUM 1500	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		IS INJECTION TO BE BY GRAVITY OR PRESSURE? Pressure	APPROX. PRESSURE (PSI) 1000 psi.
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) O. K. Lovejoy - Milnesand, New Mexico 88125		WATER TO BE DISPOSED OF Yes	NATURAL WATER IN DISPOSAL ZONE Yes
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL BTA - 104 S. Pecos, Midland, Texas 79701		ARE WATER ANALYSES ATTACHED? Yes	
O. F. Featherstone - Roswell Petroleum Bldg., Roswell, New Mexico			
T. L. Ingram - 100 S. Kentucky Ave., Roswell, New Mexico			
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? 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) Yes		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.

L. M. Williams
(Signature)Production Engineer
(Title)March 17, 1969
(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.

WF - 7/11

W.F



Drilling Fluids Division

POST OFFICE BOX 22111, HOUSTON, TEXAS 77027

Please Reply To:

722 VAUGHN BUILDING
MIDLAND, TEXAS 79701

June 5, 1968

Mr. W. J. Mathis
18th Floor
Wilco Building, Midland 79701

Dear Bill,

Analysis of the produced water in the Vada (Penn) Field, Lea County,
New Mexico is as follows:

Chlorides	61,000 ppm
Calcium	3,600 ppm
Magnesium	1,095 ppm
pH	6.8
OH	0
CO ₃	0
HCO ₃	8 epm

Bacteria tests indicate aerobics present to the extent that a
preservative should be used to reduce or eliminate deterioration of Starch.

Respectively yours,

C M Baggett

C. M. Baggett
Regional Technical Representative

Case 4111

WF-7-111



Drilling Fluids Division

POST OFFICE BOX 22111, HOUSTON, TEXAS 77027

W.F.

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MIDLAND, TEXAS 79701

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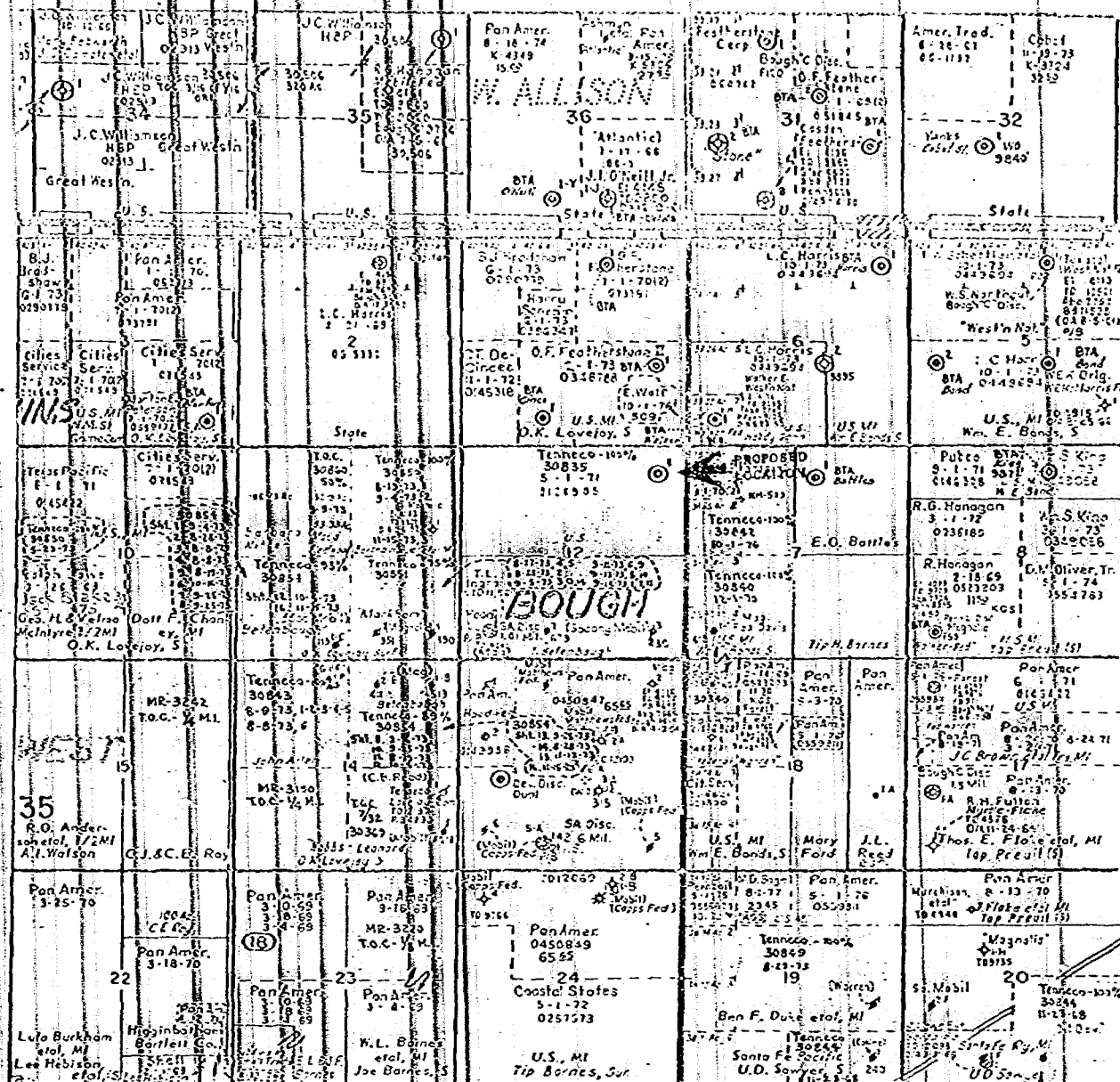
Respectively yours,

C M Baggett

C. M. Baggett
Regional Technical Representative

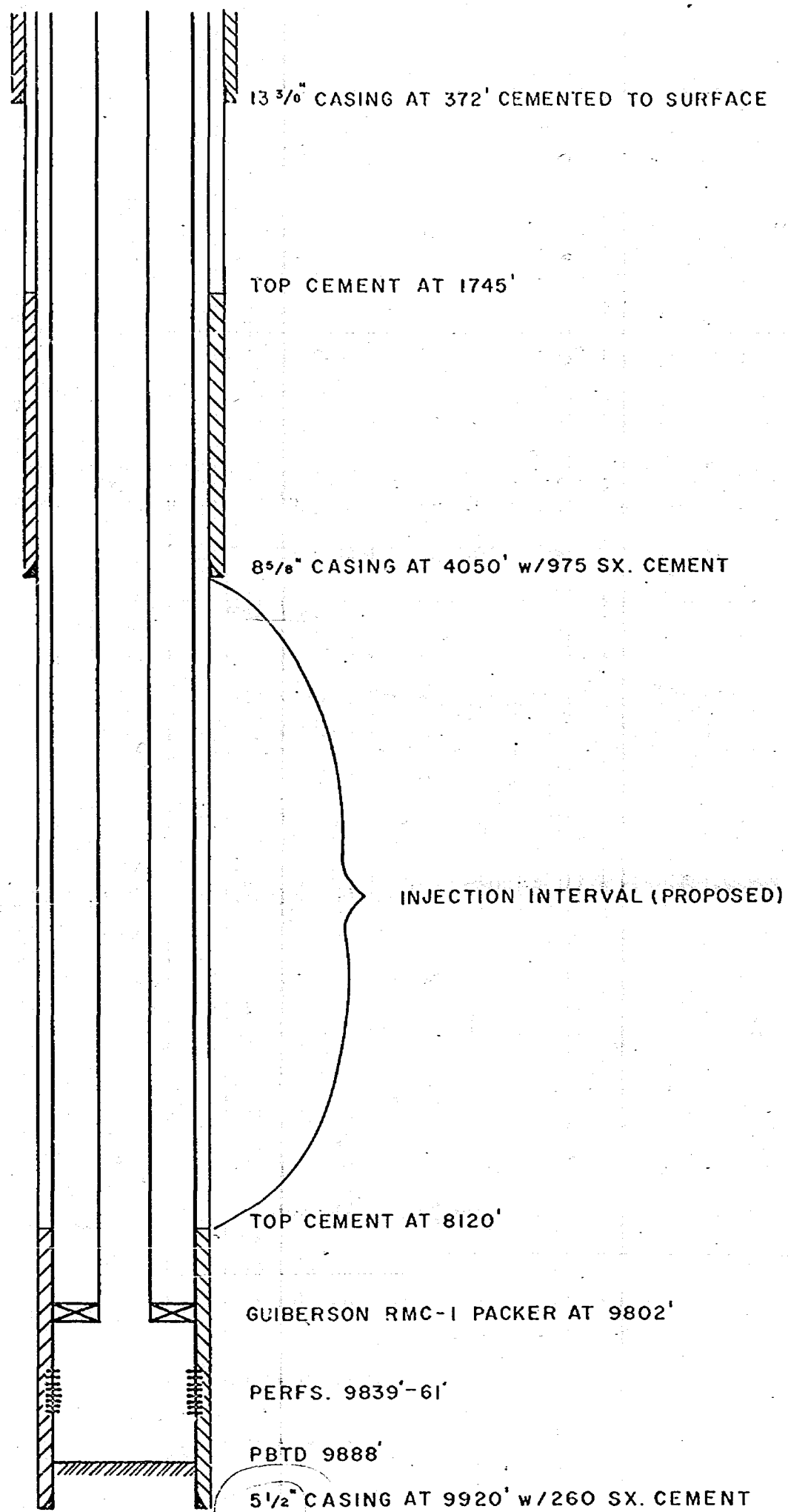
Case 4111

R - 3:6 - E



MIDLAND, TEXAS

Case 411



TENNECO OIL COMPANY

MORTON - FEDERAL NO. 1

VADA FIELD - LEA CO. NEW MEXICO

PROPOSED ANNULAR SWD WELL

Case 4111

DRAFT

GMH/esr

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. 4111

Order No. R-3744

APPLICATION OF TENNECO OIL COMPANY
FOR A DUAL COMPLETION AND SALT WATER
DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on April 23, 1969,
at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this day of April, 1969, 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, seeks authority
to complete its Morton Federal Well No. 1, located in Unit A of
Section 12, Township 9 South, Range 35 East, NMPM, Vada-Pennsyl-
vanian Pool, Lea County, New Mexico, as a dual completion to
produce oil from the Vada-Pennsylvanian Pool through 2 7/8-inch
9839 feet to 7561 feet and to dispose of produced salt water down the annulus
between the 5 1/2-inch production casing string and the

8 5/8-inch intermediate casing string into the San Andres, blanca,

yes, and Abo, and possibly other formations in the open-hole interval
from approximately 4050 feet to 8120 feet.

(3) ~~That the produced salt water should be continuously~~
~~treated prior to injection to prevent casing corroding and~~ that coupon

corrosion tests should be conducted continuously on said well and the results thereof filed quarterly with the Commission until further notice from the Secretary-Director of the Commission.

(4) That approval of the dual completion and salt water disposal as set out above will prevent the drilling of unnecessary wells, and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Tenneco Oil Company, is hereby authorized to complete its Morton Federal Well No. 1, located in Unit A of Section 12, Township 9 South, Range 35 East, NMPM, Vada-Pennsylvanian Pool, Lea County, New Mexico, as a dual completion to produce oil from the Vada-Pennsylvanian Pool through perforations from 9839 feet to 9861 feet inch and to dispose of produced salt water down the annulus between the 5 1/2 -inch production casing string and the 8 5/8 -inch intermediate casing string into the San Andres, ^{slonick, yes,} Abo, and possibly other formations in the open-hole interval from approximately 4050 feet to 8120 feet;

PROVIDED HOWEVER, ~~that the produced salt water shall be continuously treated prior to injection to prevent casing corrosion,~~

~~That~~ coupon corrosion tests shall be conducted continuously on said well and the results thereof filed quarterly with the Commission until further notice from the Secretary-Director of the Commission;

PROVIDED FURTHER, that the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(2) 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.