

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. 3840
Order No. R-3485

APPLICATION OF CONTINENTAL OIL COMPANY
FOR A WATERFLOOD PROJECT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 21, 1968, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 9th day of September, 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, Continental Oil Company, is the owner and operator of the Lynn "A-27" Well No. 1, located in Unit D of Section 27, Township 23 South, Range 36 East, NMPM, Jalmat Pool, Lea County, New Mexico.

(3) That the applicant seeks authority to institute a waterflood project in the Jalmat Pool by the injection of water into the Seven Rivers formation in the perforated interval from approximately 3450 feet to 3600 feet in its Lynn "A-27" Well No. 1. In the alternative, the applicant seeks to have said well authorized for salt water disposal.

(4) That the subject well should be classified as a salt water disposal well.

-2-

CASE No. 3840
Order No. R-3485

(5) That the injection should be accomplished through 2 7/8-inch plastic-lined tubing installed in a packer set at approximately 3100 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge should be attached to the annulus or the annulus left open at the surface in order to determine leakage in the tubing, casing, or packer.

(6) That approval of the subject application for salt water disposal will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Continental Oil Company, is hereby authorized to utilize its Lynn "A-27" Well No. 1, located in Unit D of Section 27, Township 23 South, Range 36 East, NMPM, Jalmat Pool, Lea County, New Mexico, to dispose of produced salt water into the Seven Rivers formation, injection to be accomplished through 2 7/8-inch tubing installed in a packer set at approximately 3100 feet, with injection into the perforated interval from approximately 3450 feet to 3600 feet;

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

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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

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



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

David F. Cargo
DAVID F. CARGO, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

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

esr

Examiner Hearing - August 21, 1968

- CASE 3844: Application of Rice Engineering & Operating, Inc., 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, San Andres and Glorieta formations in the perforated intervals at approximately 3808-3834, 3962-3992, 5248-5261, and 5980-6054 feet in its Hobbs East San Andres SWD Well No. F-30 (formerly the Humble Oil & Refining Company S. E. Cain Well No. 1) located in Unit F of Section 30, Township 18 South, Range 39 East, Hobbs East San Andres Pool, Lea County, New Mexico.
- CASE 3845: Application of Rice Engineering & Operating, Inc., for salt water disposal, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Grayburg, San Andres, and Glorieta formations in the open-hole interval from 3540 feet to 5616 feet in its Justis SWD Well No. H-2 (formerly the Resler & Sheldon-Bette Sue Well No. 2) located in Unit H of Section 2, Township 26 South, Range 37 East, Langlie-Mattix Pool, Lea County, New Mexico.
- CASE 3846: Application of Bco, Inc., and Harry L. Bigbee for downhole commingling, San Juan County, New Mexico. Applicants, in the above-styled cause, seek authority to commingle production from the Gallup, Greenhorn, Graneros, and Dakota formations in the wellbores of the Harry L. Bigbee Nancy Wells Nos. 3 and 4 located, respectively, in Units N and F of Section 12, Township 24 North, Range 8 West, Escrito-Gallup Oil Pool, San Juan County, New Mexico. Applicants further seek an administrative procedure whereby said commingling may be authorized for additional wells to be drilled in the area comprising all of Sections 12, 13, and the E/2 of Section 14; said township and range.
- CASE 3847: Application of K. K. Amini for compulsory pooling, Lea County, New Mexico. Applicant, in the above-styled cause, seeks an order pooling all mineral interests in the Bough "C" zone of the Pennsylvanian formation underlying the NE/4 of Section 5, Township 10 South, Range 34 East, Lea County, New Mexico. Said acreage to be dedicated to a well to be drilled in the SW/4 NE/4 of said Section 5, adjacent to the Vada-Pennsylvanian Pool.
- CASE 3848: Application of Continental Oil Company for a non-standard gas proration unit and an unorthodox gas well location, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the approval of a 296-acre non-standard gas proration unit comprising all of Lots 3, 4, 5, 6, 11, 12, 13, and 14, Section 2, Township 21 South, Range 25 East, Springs-Upper Pennsylvanian Gas Pool, Eddy County, New Mexico, said unit to be dedicated to its Levers Federal Well No. 1 located at an unorthodox location 1594 feet from the North line and 660 feet from the West line of said Section 2.

(Case 2839 continued)

authority to institute a waterflood project by the injection of water into the Delaware formation in the perforated interval from 5073 feet to 5145 feet in its Fields Well No. 2 located in Unit M of Section 25, Township 23 South, Range 32 East, Cruz-Delaware Pool, Lea County, New Mexico. In the alternative, applicant seeks to have said well authorized for salt water disposal.

CASE 3840: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Seven Rivers formation in the perforated interval from 3450 feet to 3600 feet in its Lynn "A-27" Well No. 1 located in Unit D of Section 27, Township 23 South, Range 36 East, Jalmat Pool, Lea County, New Mexico. In the alternative, applicant seeks to have said well authorized for salt water disposal.

CASE 3841: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project by the injection of water into the Delaware formation in the perforated intervals from 4497 feet to 4507 feet in its Wilder Well No. 24 and from 4529 feet to 4535 feet in its Wilder Well No. 27 located in Units L and F, respectively, Section 26, Township 26 South, Range 32 East, El Mar-Delaware Pool, Lea County, New Mexico. In the alternative, applicant seeks to have said wells authorized for salt water disposal.

CASE 3842: Application of Continental Oil Company for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Seven Rivers formation in the perforated interval from 3208 feet to 3255 feet in its Eaves "A" Well No. 10 located in Unit P of Section 19, Township 26 South, Range 37 East, Scarborough Yates-Seven Rivers Pool, Lea County, New Mexico, and promulgation of special rules for said project. In the alternative, applicant seeks to have said well authorized for salt water disposal.

CASE 3843: Application of Continental Oil Company for a pressure maintenance project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a pressure maintenance project by the injection of water into the Seven Rivers formation in the perforated interval from 3012 feet to 3110 feet in its Sholes "B-25" Well No. 5 located in Unit G of Section 25, Township 25 South, Range 36 East, Jalmat Pool, Lea County, New Mexico, and promulgation of special rules for said project. In the alternative, applicant seeks to have said well authorized for salt water disposal.

DOCKET: EXAMINER HEARING - WEDNESDAY - AUGUST 21, 1968

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

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

CASE 3825: Application of Pan American Petroleum Corporation for a unit agreement, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks approval of the East Buffalo Valley Unit Area comprising 15,350 acres, more or less, of Federal, State and Fee lands in Township 14 South, Ranges 28 and 29 East, Chaves County, New Mexico.

CASE 3826: Application of Eugene E. Nearburg for salt water disposal, Chaves County, New Mexico. Applicant, in the above-styled cause, seeks authority to dispose of produced salt water into the Devonian formation in the open-hole interval from approximately 7965 feet to 8015 feet in his Magnolia Burt Federal Well No. 1 located in Unit P, Section 5, Township 8 South, Range 30 East, Cato Field, Chaves, County, New Mexico.

CASE 3837: Application of Continental Oil Company for the consolidation of three non-standard gas proration units, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a 640-acre standard gas proration unit comprising all of Section 26, Township 23 South, Range 36 East, Jalmat Gas Pool, Lea County, New Mexico, to be simultaneously dedicated to its Lynn B-1 Wells Nos. 1, 3, and 4 located in Units J, C, and M, respectively, of said Section 26, and authority to produce the allowable assigned to the unit from the subject wells in any proportion. Said Well No. 1 is presently dedicated to a 320-acre unit comprising the E/2 of said Section 26, said Well No. 3 is presently dedicated to a 160-acre unit comprising the NW/4 of said Section 26, and said Well No. 4 is presently dedicated to a 160-acre unit comprising the SW/4 of said Section 26.

In the alternative, applicant seeks the consolidation of the non-standard units comprising the E/2 and the SW/4 of said Section 26 into one 480-acre non-standard unit to be dedicated to said Well No. 1.

CASE 3838: Application of Continental Oil Company for an amendment to Order No. R-872 and an unorthodox gas well location, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-872 to permit the dedication of the non-standard proration unit authorized therein to its Lockhart "B" Well No. 4 located in Unit H of Section 14 and its Lockhart "B" Well No. 7 located at an unorthodox location 330 feet from the North line and 330 feet from the West line of Section 13, both in Township 21 South, Range 36 East, Eumont Gas Pool, Lea County, New Mexico. Applicant further seeks authority to produce the allowable assigned to said unit from either of the aforesaid wells in any proportion.

CASE 3839: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks



dearnley-meier reporting service, inc.

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

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 21, 1968

IN THE MATTER OF:)

Application of Continental Oil Company)
for a waterflood project, Lea County,)
New Mexico.)

Case No. 8840

BEFORE: D. S. NUTTER,
Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: Call Case 3840.

MR. HATCH: Application of Continental Oil Company for a waterflood project, Lea County, New Mexico.

MR. KELLAHIN: May the record show the same appearance and the witness, Mr. Porter, has been sworn and qualified.

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

* * * * *

J. ROGER PORTER, called as a witness, having been previously duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q Would you state your name, please?

A J. Roger Porter.

Q Are you the same Mr. Porter who testified in Case 3839?

A Yes, I am.

Q Mr. Porter, what does Continental Oil Company propose in Case 3840?

A Case No. 3840 is the application of Continental Oil Company for authority to inject water into its Lynn "A-27" No. 1 well in the Jalmat Pool.

Q Now, referring to what has been marked as Exhibit

No. 1, would you identify that exhibit?

A Exhibit No. 1 is a copy of a plat showing the proposed injection well circled in red at a location 990 feet from the west line and 990 feet from the north line of Section 27, Township 23 South, Range 36 East, Lea County, New Mexico. The Lynn "A" Lease is shown outlined in red and is described as the northeast quarter southeast quarter of the northwest quarter and the east half of the southwest quarter in Section 28, and the northwest quarter of Section 27, Township 23 South, Range 36 East, Lea County, New Mexico.

Q Now, referring to what has been marked as Exhibit No. 2, would you describe that exhibit?

A Exhibit No. 2 is a copy of the form C-108 for Lynn "A-27" No. 1. As shown on the form, we propose to inject produced water into the Seven Rivers formation in the approximate interval 3450 to 3600, through 2 7/8 inch and 2 3/8 inch O. D. plastic-lined tubing below a packer to be set at approximately 3100 feet. The well is to be deepened from its present total depth of 3353 feet to approximately 3600 feet where a four-inch O. D. Liner will be set.

Q Refer to what has been marked as Exhibit No. 3,

would you identify that exhibit?

A Exhibit No. 3 is a schematic diagram of the well showing the size and setting depth of the casing, the size and setting depth of the liner, the size and setting depth of the tubing, the location of the packer and the injection interval.

Q Now, your four-inch O. D. liner will be set and cemented into the casing, is that correct?

A That is correct.

Q And then perforated?

A After it is logged, that is correct.

Q Now, referring to what has been marked as Exhibit No. 4, would you identify that exhibit?

A Exhibit No. 4 is a copy of the radioactivity log on the Lynn A-27 No. 2, which is located 330 feet from the west line and 2310 feet from the north line of Section 27, Township 23 South, Range 36 East, Lea County, New Mexico. The log of the Lynn A-27 No. 2 well is used because the current total depth of the Lynn A-27 No. 1 does not make it possible to have a log section of the injection interval.

Q Referring back to Exhibit No. 3 for a moment, you will inject through tubing under a packer, is that correct?

A That is correct.

Q It will be a lined tubing, plastic-lined tubing?

A That is correct.

Q Will an inert fluid be in the casing, tubing and annulus?

A Yes, sir.

Q What volumes of water and from what sources do you propose to inject into this well?

A Initially, 750 to a thousand barrels of water a day will be injected from the Lynn A-27, Lynn A-28 leases. Then we plan to haul additional water from leases producing from the South Eunice Pool, providing that water is compatible with the injection water from the Lynn A-27 and Lynn A-28 lease.

Q Referring to Exhibit No. 5 would you identify that exhibit?

A Exhibit No. 5 is an analysis of water produced on this lease.

Q Is this water potable?

A No, it is not.

Q Is the Jalmat Pool considered to be a waterflood prospect?

A There is a strong water drive in the Seven Rivers and Basal Yates of the Jalmat Pool. These intervals are not considered to be waterflood prospects since there is a natural water drive, or waterflood, already in existence.

Q Now are you proposing to inject into this Seven Rivers Formation?

A Yes, sir.

Q There is other production in the area from the Seven Rivers, is there not?

A That is correct.

Q What will be the effect of injecting water into the Seven Rivers?

A The injection of produced water back into the Seven Rivers formation will have the effect of maintaining pressure in that formation.

Q Will this have any effect on the recovery of oil in this area?

A In view of the very strong water drive in the Seven Rivers formation, we do not expect any effect on oil recovery as a result of the injection. We do not expect recovery to be either increased or decreased.

Q It would not cause any damage to any offsetting wells, is that correct?

A No, the result of this application will be that produced water, well it will not result to damage to offset wells.

Q Will the granting of the application result in waste?

A No, the result of the application will be that produced water which is presently produced into pits on the lease will be injected underground. There will be no effect on the oil and gas production in the area.

Q Will the granting of this application result in any impairment of correlative rights?

A In my opinion there will be no impairment of correlative rights.

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

A Yes, they were.

MR. KELLAHIN: At this time, I offer in evidence Exhibits 1 through 5.

MR. NUTTER: Continental's exhibits 1 through 5 will be admitted in evidence.

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

MR. KELLAHIN: That's all I have on direct examination.

CROSS EXAMINATION

BY MR. NUTTER:

Q What's the current status of this well?

A Temporarily shut in. On initial completion this well was classified as a gas well and when it started to make

some quantities of oil in 1957, it was reclassified as a Jalmat oil well, and that is what it is classified as now, but it is shut in now.

Q The productivity declined to the economic limit?

A Right.

Q I notice that you are going to set a four-inch liner, I presume at the top of it; refer to your Exhibit No. 3.

A Yes, sir.

Q The top of this liner, is that 2950, is that correct?

A It is correct.

Q You would have a 74-foot overlap from the top of the liner to the shoe to the five and a half-inch pipe?

A That's correct.

Q You plan to cement that with 100 sacks. Will that be sufficient to come up from the shoe, up into the top of the liner?

A In my opinion it will be at least a hundred percent extra.

Q At any rate, the calculated amount should result in circulation of cement on the liner?

A Yes, sir.

Q Now, you stated that the annulus would be loaded with an inert fluid. It could be left open or equipped with a gauge, correct?

A Yes, sir.

Q And the log which you submitted here is for the

A-27 No. 2. That would be the south offset to the subject well?

A That is correct.

MR. NUTTER: Any other questions of this witness? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Kellahin?

MR. KELLAHIN: That's all, Mr. Nutter.

MR. NUTTER: Does anyone have anything further to offer in Case 3840? We will take the case under advisement.

STATE OF NEW MEXICO)
)ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter 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, 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 3rd day of September, 1968.

I do hereby certify that the foregoing is a correct record of the proceedings in the Bernalillo hearing of Case No. 3840 heard by me on 8/21, 1968.
Ada Dearnley

ADA DEARNLEY

[Signature]

Examiner
New Mexico Oil Conservation Commission

BEFORE EXAMINER'S OFFICE
 OIL CONSERVATION
 App EXHIBIT NO. 2
 CASE NO. 3840

Form C-108
 Revised 1-1-65

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

OPERATOR Continental Oil Company		ADDRESS Box 460 Hobbs, New Mexico	
LEASE NAME Lynn A-27	WELL NO. 1	FIELD Jalmat	COUNTY Lea
LOCATION UNIT LETTER D ; WELL IS LOCATED 990' FEET FROM THE West LINE AND 990 FEET FROM THE North LINE, SECTION 27 TOWNSHIP 23S RANGE 36E NMPM.			

CASING AND TUBING DATA					
NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
SURFACE CASING	7 5/8"	1219'	550	Surface	Circ.
Long String	5 1/2"	3024'	500	858'	Temp. Survey
Liner	4"	3600'	100	-	-
TUBING		2 7/8- 2 3/8"	3100'	NAME, MODEL AND DEPTH OF TUBING PACKER Baker Tension Model AD or equivalent at 3100'	
NAME OF PROPOSED INJECTION FORMATION Seven Rivers			TOP OF FORMATION Est. 3360'	BOTTOM OF FORMATION est. 3760'	
IS INJECTION THROUGH TUBING, CASING, OR ANNULUS? Tubing		PERFORATIONS OR OPEN HOLE? Perforations	PROPOSED INTERVAL(S) OF INJECTION Gross interval 3450'-3600'		
IS THIS A NEW WELL DRILLED FOR DISPOSAL? No	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED? Producing gas and oil well			HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE? No	
LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH --					
DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA 250'		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 est. 3660'	
ANTICIPATED DAILY INJECTION VOLUME (BBLs.) 750	MINIMUM 3000	MAXIMUM 3000	OPEN OR CLOSED TYPE SYSTEM Closed	IS INJECTION TO BE BY GRAVITY OR PRESSURE? Gravity	APPROX. PRESSURE (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	NATURAL WATER IN DISPOSAL ZONE Yes	ARE WATER ANALYSES ATTACHED? No
NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND) Francis Henry Randolph, Star Route, Jal, New Mexico 88252					
LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (1/2) MILE OF THIS INJECTION WELL					
Argus Production Company, 3313 Republic Nat'l. Bank Bldg., Dallas, Texas					
Texas Pacific, Box 1069, Hobbs, New Mexico					
Albert Gackle, Box 2038, Hobbs, New Mexico					
Shell, Box 1509, Midland, Texas					
Skelly (no production on lease)					
HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OF THE FOLLOWING? No		SURFACE OWNER No		EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL No	
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 701-B) Yes		PLAT OF AREA No		ELECTRICAL LOG No	
				THE NEW MEXICO STATE ENGINEER No	
				DIAGRAMMATIC SKETCH OF WELL No	

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


 (Signature)

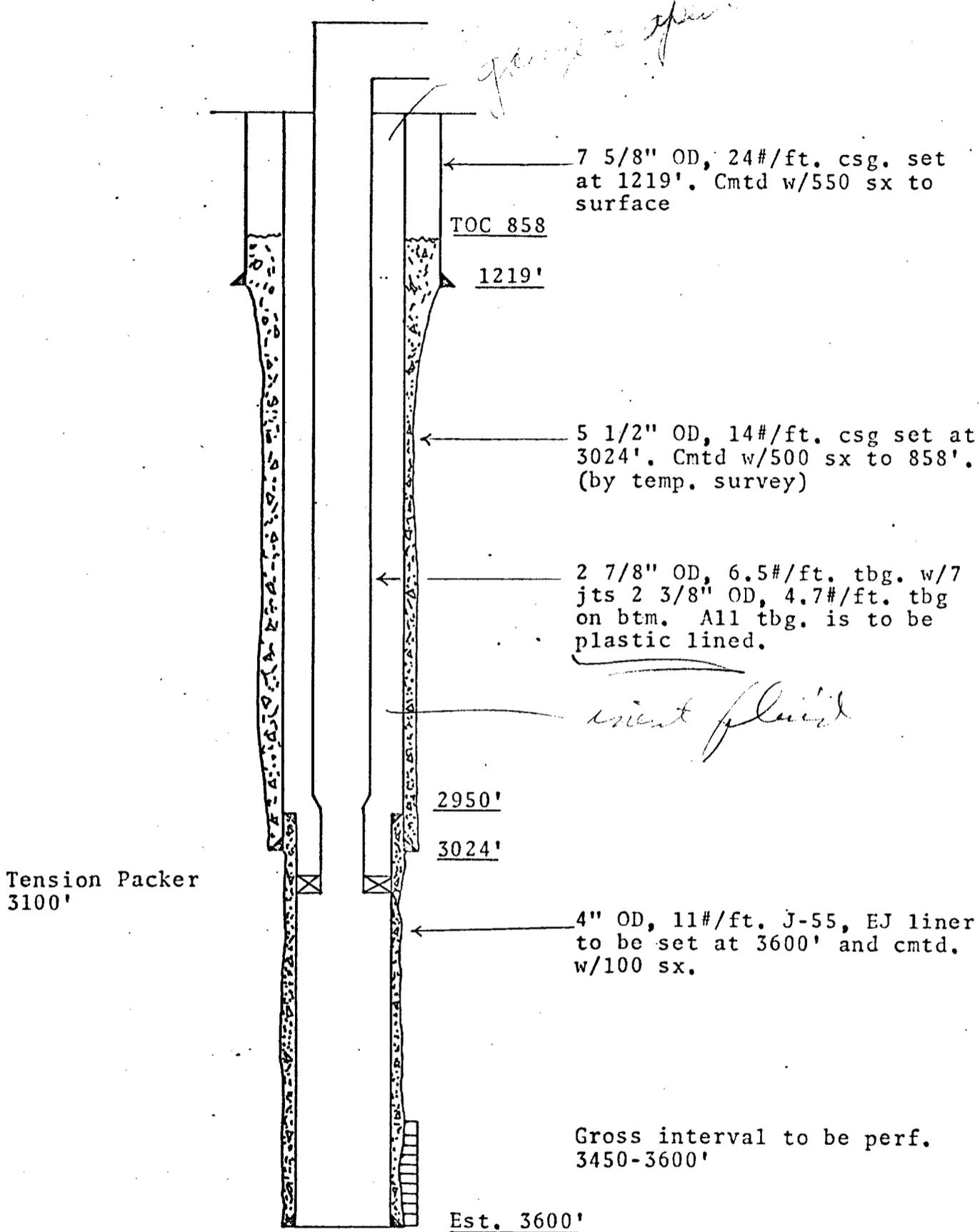
Assistant Division Manager
 (Title)

7-19-68
 (Date)

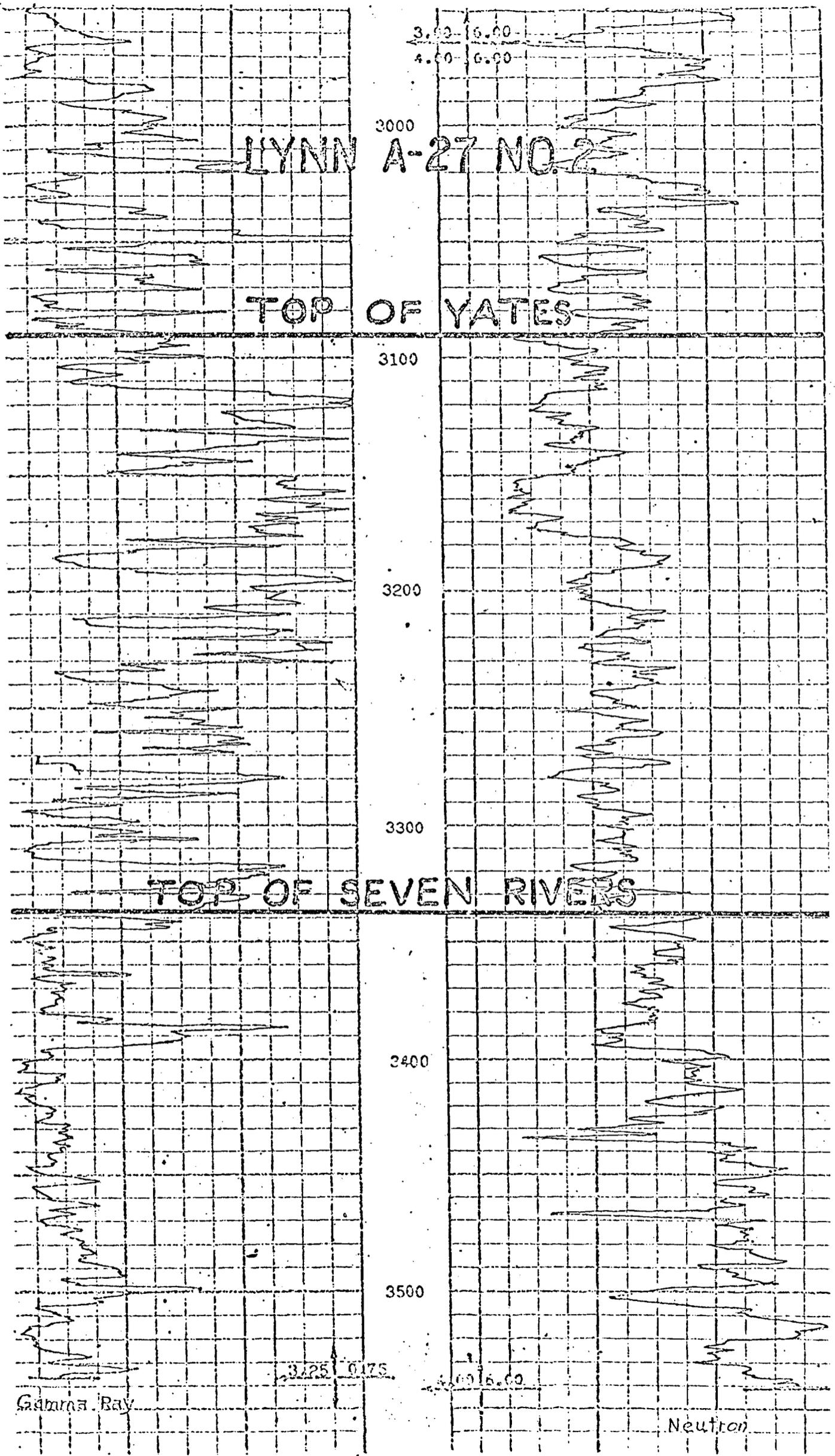
NOTE: Should waivers from the State Engineer, the surface owner, and all operators within one-half mile of the proposed injection well, not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 15 days from the date of receipt by the Commission's 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.

EXHIBIT NO. 2

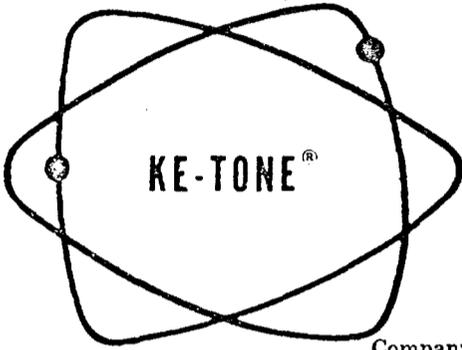
Lynn A-27 No. 1
990' FNL & FWL, Sec. 27, T-23S, R-36E
Lea County, New Mexico



BEFORE EXAMINED MATTER
EXHIBIT NO. <u>3</u>
CASE NO. <u>3740</u>



TELEPHONE: HOBBS 393-6215



UNITED CHEMICAL CORPORATION
OF NEW MEXICO

601 NORTH LEECH

P. O. BOX 1499

HOBBS, NEW MEXICO 88240

Company Continental Oil Company

Field Jalmat Yates Seven Rivers

Lease Lynn "A" #27

Sampling Date 7/9/68

Type of Sample _____

WATER ANALYSIS

IONIC FORM	me/l *	mg/l *
Calcium (Ca++)	44.91	900
Magnesium (Mg++)	92.11	1120
Sodium (Na+) (cal.)	257.58	5922
Bicarbonate (HCO ₃)	21.80	1329
Carbonate (CO ₃ ⁻)	NOT	FOUND
Hydroxide (OH ⁻)	NOT	FOUND
Sulphate (SO ₄ ⁻)	20.30	975
Chloride (Cl ⁻)	352.50	12,500
7.1 pH c @ 68° F		
Dissolved Solids on Evap. at 103° - 105° C		
Hardness as Ca CO ₃	137.02	6851
Carbonate Hardness, as CaCO ₃ (temporary)	21.80	1090
Non-Carbonate Hardness as CaCO ₃ (permanent)	115.22	5761
Alkalinity as CaCO ₃	21.80	1090
Specific Gravity c 68° F	1.010	

* mg/l = milligrams per Liter

* me/l = milliequivalents per Liter

BEFORE EXAMINED EITHER
CIL COMPANY
[Signature]
CABL 3840

EXHIBIT NO. 5

Makes Water Work

