

CASE 2492: Application of WESTERN
DEVELOPMENT & YATES PETR. CORP. for
a waterflood proj. in ARTESIA POOL.

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plication, Transcript,
all Exhibits, Etc.

OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO

Date 3/22/62

CASE 2492

Hearing Date 9am 2/7/62

DSN @ SF

My recommendations for an order in the above numbered cases are as follows:

Enter an order authorizing Western Development Company of Delaware and Gates Petr. Corp to institute a water flood project in Section 10 Twp 19 S, Rge 28 E, Elky Co, N Mex, w/ injection to be into the Grayburg form of the Artesia Pool thru the following wells

						S	T	R
Western Spars	Steen	648	# 64	Unit C		10	19	28
"	"	"	"	67	" E	"	"	"
"	"	"	"	69	" D		"	
"	"	"	"	73	" B		"	
"	"	"	"	75	" G		"	
"	"	"	"	174	" K		"	

Injection shall be in accordance w/ paragraph C of the attached letter.

[Signature]

MAIN OFFICE 000



1962 MAR 22
STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

March 14, 1962

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

A
Reference is made to the application of Western Development Company and Yates Petroleum Corporation which seeks permission to institute a water flood operation in Section 10, Township 19 South, Range 28 East in Eddy County, New Mexico, and to my letters of February 2nd and February 12th 1962, pertaining to this application.

B
Yesterday this application was discussed with Mr. Nutter of your office and Mr. Spitler of Western Development Company who was accompanied by his District Engineer. After considerable discussion of the casing and cementing program to be used in this injection project I arrived at the following conclusion:

C
Injection through 4½ inch J-55 casing (11.6 pounds) will be permitted provided the casing is cemented from bottom to top, or provided casing is cemented from shoe up to 50 feet above the shoe, casing is pressure tested over a packer to 4000 psi on installation and tested to injection pressure at 60 day intervals (1000 psi minimum). As an alternate, injection may be made through tubing under packer set below the top of the cement surrounding the 4½ inch casing. All pressure test results shall be forwarded to the Oil Conservation Commission and the State Engineer Office on completion of each test.

I have concluded that if these conditions are met there is not likely to be a threat of contamination to any of the fresh water which may exist in the area.

Very truly yours,

S. E. Reynolds
State Engineer

By: *Frank E. Irby*
Frank E. Irby, Chief
Water Rights Division

FEI;hmv

the application is for a minimum of

oil wells in the Basin-Dakota Pool, San Juan and Rio Arriba Counties, New Mexico, including a provision defining an oil well in said pool as a well having a gas-oil ratio of 30,000 to 1, or less, and producing liquid hydrocarbons with a gravity of 49° API, or less; applicant seeks rules establishing 160-acre oil proration units and fixing well location requirements for said wells. Applicant further seeks the establishment of the four following non-standard oil proration units, all in Township 28 North, Range 13 West, San Juan County:

E/2 of Section 10, comprising 137.58 acres;
W/2 of Section 10, comprising 137.78 acres;
E/2 of Section 11, comprising 137.78 acres;
W/2 of Section 11, comprising 137.58 acres;

CASE 2492:

Application of Western Development Company and Yates Petroleum Corporation for a waterflood in the Artesia Pool, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a waterflood project in the Artesia Pool on the State 648 Lease located in Section 10, Township 19 South, Range 28 East, Eddy County, New Mexico; the injection of water into the Grayburg formation initially will be through six wells located on said lease, said project to be governed by the provisions of Rule 701.

CASE 2493:

Application of Waterflood Associates, Inc., Western Development Company and Yates Petroleum Corporation for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks permission to institute a waterflood project in the Artesia Pool on the State 14 and State 647 Leases located in Section 14, Township 18 South, Range 28 East, Eddy County, New Mexico; the injection of water into the Grayburg formation initially will be through six wells located on said leases, said project to be governed by the provisions of Rule 701.

NO. 4-62

DOCKET: EXAMINER HEARING - WEDNESDAY, FEBRUARY 7, 1962

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, as alternate examiner:

- CASE 2487: Application of Gulf Oil Corporation for a triple completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its W. A. Ramsay (NCT-C) Well No. 3, located 1650 feet from the South line and 330 feet from the West line of Section 36, Township 24 South, Range 37 East, Lea County, New Mexico, as a triple completion (conventional), in the North Justis-Ellenburger, North Justis-Fusselman and North Justis-McKee Pools with the production of oil from all zones to be through parallel strings of 2 3/8-inch tubing.
- CASE 2488: Application of Texaco Inc., for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks permission to complete its State "R" NCT-4 Well No. 1, located in Unit C of Section 7, Township 18 South, Range 35 East, Lea County, New Mexico, as a dual completion (tubingless) in an undesignated Drinkard pool and an undesignated Abo Pool with the production of oil from both zones to be through parallel strings of 2 7/8-inch casing cemented in a common well bore.
- CASE 2489: Application of Caulkins Oil Company for an amendment of Rule 5, Order No. R-1191, Rio Arriba County, New Mexico. Applicant, in the above-styled cause, seeks an amendment of Rule 5 of the Special Rules and Regulations for the South Blanco-Tocito Oil Pool, Order No. R-1191, to permit bottom hole pressure tests on all wells to be taken annually during the month of October of each year instead of semi-annually as Rule 5 presently prescribes.
- CASE 2490: Application of O. H. Randel for a 50-acre non-standard oil proration unit, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks permission to establish a 50-acre non-standard oil proration unit in the Abo formation, comprising Lot 3 and the North 702 feet of Lot 4, all in Section 19, Township 17 South, Range 31 East, Eddy County, New Mexico, said unit to be dedicated to a well to be drilled at a location 1629 feet from the South line and 537 feet from the West line of said Section 19.
- CASE 2491: Application of D. W. Falls, Inc., for the promulgation of special rules governing oil wells in the Basin-Dakota Pool, San Juan and Rio Arriba Counties, New Mexico, and for four non-standard oil proration units. Applicant, in the above-styled cause, seeks the promulgation of special rules governing

Western Development Company of Delaware



NEW OFFICE OCC

22 AM 8:42

~~SANTA FE, N.M.~~ ~~SANTA FE, N.M.~~
~~TELEPHONE NO. 2-2546~~

P. O. BOX 487 ARTESIA, NEW MEXICO
January 19, 1962

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico

Attention: Mr. J. E. Whitfield

Dear Sir:

The following information is forwarded to you concerning the joint application of Waterflood Associates, Incorporated, Western Development Company of Delaware and Yates Petroleum Corporation for a waterflood in the East Artesia Pool Area, Eddy County, New Mexico.

Wells proposed for water injection:

Waterflood Associates, Inc., State 14 No. 3, SE/4 NW/4, Sec. 14, T-18S, R-28E.
Waterflood Associates, Inc., State 14 No. 5, NW/4 NE/4, Sec. 14, T-18S, R-28E.
Waterflood Associates, Inc., State 14 No. 8, SE/4 NE/4, Sec. 14, T-18S, R-28E.
Waterflood Associates, Inc., State 14 No. 14, SE/4 SW/4, Sec. 14, T-18S, R-28E.
Western-Yates, State 647 No. 118, NW/4 SW/4, Sec. 14, T-18S, R-28E.
Western-Yates, State 647 No. 123, NW/4 SE/4, Sec. 14, T-18S, R-28E.

The following wells are proposed for water injection on the Western Development Company of Delaware and Yates Petroleum Corporation application to waterflood the Section 10 area of the Artesia Pool, Eddy County, New Mexico:

Western-Yates, State 648 No. 64, NE/4 NW/4, Sec. 10, T-19S, R-28E.
Western-Yates, State 648 No. 67, SW/4 NW/4, Sec. 10, T-19S, R-28E.
Western-Yates, State 648 No. 69, SW/4 SE/4, Sec. 10, T-19S, R-28E.
Western-Yates, State 648 No. 73, NW/4 NE/4, Sec. 10, T-19S, R-28E.
Western-Yates, State 648 No. 75, SW/4 NE/4, Sec. 10, T-19S, R-28E.
Western-Yates, State 648 No. 174, NE/4 SW/4, Sec. 10, T-19S, R-28E.

Production from both pool areas is from the Grayburg formation.

Very truly yours,

WESTERN DEVELOPMENT COMPANY
of Delaware

R. J. Davenport
R. J. Davenport
Production Superintendent

1-26-62
RJD:cm

MAIN OFFICE OCC

1952 JAN 12 ~~RECORDED~~ BEFORE THE OIL CONSERVATION COMMISSION
OF THE
STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
WESTERN DEVELOPMENT COMPANY OF
DELAWARE AND YATES PETROLEUM CORP-
ORATION FOR A WATERFLOOD PROJECT ON
THEIR WESTERN-YATES, STATE 648 LEASE
LOCATED IN SECTION 10, T-19S, R-28E,
ARTESIA POOL, EDDY COUNTY, NEW MEXICO.

662 2492

A P P L I C A T I O N

Come now applicants, Western Development Company of Dela-
ware and Yates Petroleum Corporation, and petition the Commission for
an order approving a waterflood on their Western-Yates, State 648 Lease
located in Section 10, T-19S, R-28E, Artesia Pool, Eddy County, New
Mexico, and in support thereof would show:

1. That applicants are owners and operators of said lease con-
taining, among other lands, the entire Section 10, T-19S, R-28E, Eddy
County, New Mexico.
2. That the lease in question has declined to a depleted state
of primary production.
3. That the lease in question can be waterflooded by a periph-
eral type flood pattern, thus recovering oil otherwise unobtainable by
primary production.

Wherefore, applicants pray that this application be set for hear-
ing before the Commission's duly appointed examiner, that appropriate
notice thereof be given, and that upon hearing, an order be entered granting
applicants approval to waterflood the area in question as outlined above.

Respectfully submitted,

WESTERN DEVELOPMENT COMPANY
of Delaware
and
YATES PETROLEUM CORPORATION

M E Spidler

M. E. Spidler
Chairman of the Operating Committee

P.O. Box 427

Artesia

*1-27-52
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OIL CONSERVATION COMMISSION

P. O. BOX 871
SANTA FE, NEW MEXICO

File 2492

C
O
P
Y

January 15, 1962

Mr. M. H. Spittler
P. O. Box 427
Artesia, New Mexico

Dear Mr. Spittler:

The Commission is in receipt of two applications for waterflood projects, one on behalf of Waterflood Associates, Inc., Western Development Company of Delaware and Yates Petroleum Corporation, and the other on behalf of Western Development Company of Delaware and Yates Petroleum Corporation.

Reference is made to Paragraph 2 of Commission Rule 701 concerning the method of making application for approval of a waterflood. This rule requires that plats, logs, casing programs and other pertinent information be submitted to the Commission along with the application for hearing. It will be appreciated if you will submit this information as soon as possible to supplement these two applications.

An examiner hearing is tentatively scheduled for February 7, at which time your cases will be docketed.

Very truly yours,

RICHARD S. MORRIS
Attorney

REM/esr

Western Dev. Artesia Phone Sh 62725

PAGE 1

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

February 7, 1962

EXAMINER HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1162

ALBUQUERQUE, N. M.
PHONE 243-6691

IN THE MATTER OF:

Application of Western Development Company and
Yates Petroleum Corporation for a waterflood in
the Artesia Pool, Eddy County, New Mexico.
Applicant, in the above-styled cause, seeks per-
mission to institute a waterflood project in the
Artesia Pool on the State 648 Lease located in
Section 10, Township 19 South, Range 28 East,
Eddy County, New Mexico, the injection of water
into the Grayburg formation initially will be
through six wells located on said lease, said
project to be governed by the provisions of
Rule 701.

CASE NO.
2492

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We call next Case No. 2492.

MR. MORRIS: Case No. 2492, application of Western
Development Company and Yates Petroleum Corporation for a water-
flood in the Artesia Pool, Eddy County, New Mexico.

MR. NUTTER: Who appears for the applicant?

MR. LOSEE: A. R. Losee, appearing on behalf of the
applicant, Artesia, New Mexico. We have one witness, Mr. Dick
Davenport.

(Witness sworn.)



R. J. DAVENPORT,

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

DIRECT EXAMINATION

BY MR. LOSEE:

Q State your name, please.

A Richard J. Davenport.

Q Where do you live, Mr. Davenport?

A Artesia, New Mexico.

Q What is your occupation?

A I am production superintendent of Western Development
Company..

Q Have you previously testified before this Commission?

A No, sir.

Q Would you please tell the Examiner your educational
background, your occupational experience, and any engineering or
geological or petroleum societies that you are a member of?

A I graduated from the University of Kansas with a
Bachelors Degree in Engineering in August of 1957. I went to
work for Continental as an oil engineer in September of 1957.
I worked for them, during which time -- on the training program,
I was acquainted with two waterfloods in Texas. In August of
1960, I left Continental's employment and went to work for West-
ern Development Company as production superintendent, where I am
still in the position. I am a member of the Artesia Waterflood



Association.

MR. LOSEE: Mr. Examiner, are Mr. Davenport's qualifications acceptable?

MR. NUTTER: Yes, sir.

Q (by Mr. Losee) Western Development Company and Yates Petroleum Corporation have filed an application, Mr. Davenport, to waterflood certain locations in Section 10, Township 19 South, Range 28 East, Eddy County, New Mexico. Would you please tell the Examiner the brief history of this field?

A The oil well discovery was the Well No. 62, which was spudded November 11, 1931, and completed July 31, 1932. This well was drilled with a cable tool as were the eight wells to follow, and the development, one well completed in '32, one in '33, and two in 1935, and one in 1936. There were three wells drilled through the horizon not completed as producing wells. Their records show the presence of oil in the driller's logs; however, without present-day fracture, these particular wells were considered to be non-commercial at that time. One well, the State 648, however, has not been completed. However, completion practices in the original nine wells was set and 6 $\frac{1}{4}$ -inch casing run. Nitroglycerine was used in the Grayburg formation. The pay interval consists throughout the ten wells producing in the area.

Q I will ask you to examine what has been marked as Exhibit 1.

A Exhibit No. 1 is an area map showing the Section 10



area outlined in red on the southern flank of the Artesia Pool.

Q Does this area map also show the names of the lessees within a two-mile radius?

A Right, it does show the lessees and the producing wells within a two-mile radius of the subject area.

Q Are these wells within this two-mile area producing from the same section as the wells in Section 10, proposed to be included in the waterflood project?

A Yes, sir, some of them are. Some of them to the south-east are producing in the same horizon. Some wells a mile and a half away are producing from the same horizon.

Q This area, how far is it from your production in Section 10?

A Approximately a half a mile away.

Q I will ask you to refer to what has been marked as Exhibit No. 2 and explain to the Examiner what it purports to reflect.

A Exhibit No. 2 is a project plat showing the proposed injection wells in a red triangle with the project area outlined in red. The proposed type of flood pattern is peripheral, the location and number of wells would make a five-spot or any other type pattern uneconomical in that the maximum volume of oil would not be recovered. A peripheral pattern will allow backup on all sides. Upon the approval of this application, Western Development Company plans to go in this State 648 No. 5 well and initially



run 4½-inch casing to start injecting water, also, to run some injectivity tests into this sand. Upon completion of those tests, they plan to start reworking all the wells marked as injection wells here. To continue the flood pattern, this formation is being flooded in the Grayridge formation, test flood No. 2 and 3 to the north, four and five miles, and also in the Loco Hills flood. Therefore, it is presumed to be floodable as evidenced by these two other successful waterfloods.

Q How many wells do you propose to have as producing and how many as injection wells?

A There would be six injection wells in the outside area, with four producing wells in the center.

Q Are all these wells located on the same lease?

A Yes, sir.

Q Is it a state lease?

A Yes, State 648.

Q Mr. Davenport, would it be economical to go in outside the injection wells and drill some backup wells to establish a five-spot pattern?

A No, sir, it wouldn't be. We drilled this State 648 No. 174 well, thinking it might be a good primary producing well. However, it has not proven to be so. It will make a good injection well and give us backup for peripheral-type flood pattern. However, the volume of recovery being such as it is, we could not economically justify additional backup wells.



Q Is there any design that you have been able to discover for a five-spot pattern for this small field?

A No, sir, it doesn't lend itself to a five-spot pattern because of no backup wells.

Q In your opinion, would this peripheral-type flood satisfactorily make a secondary recovery of the oil in this reservoir?

A Yes, sir. I feel it would be the most economical and best pattern here and would recover the largest volume of oil.

Q I will ask you now to refer to what has been marked as Exhibit No. 3 and explain what this exhibit portrays?

A Exhibit No. 3 is a production decline curve. It has only been drawn since 1947 up to the present date. The production history prior to 1947 was similar to this, only it did increase in the 1930's when -- during the flood production period. At the present time, you can see our producing rate is down to 50 to 60 barrels per month.

Q Per well?

A No, that's the entire field.

Q How many wells are now producing in this Section 10?

A There are now five wells producing.

Q I will ask you now to refer to Exhibit No. 4 and explain what it portrays.

A Exhibit No. 4 is just a listing of the oil production history since 1947 and the listing of the accumulated production.



The accumulated production, up to January 1 of 1947, was 135,000 barrels of oil. The accumulated production up to 1962 was

177,514 barrels, or approximately 42,000 barrels produced during the last fourteen years. The present rate of production for those five wells, in December of '61 was 55 barrels per month or an average of 11 barrels per month per well, which definitely indicates that the wells are in the advanced stage of depletion.

Q Is the same reason that you gave for Exhibit 3 not showing that production history prior to '47 applicable also to this Exhibit 4?

A Right. It is practically a continuation of these last fourteen years.

Q Most of the primary production was recovered prior to 1947?

A Yes, sir.

Q I will ask you now to refer to what has been marked Exhibit No. 5 and explain what that portrays.

A Exhibit No. 5 is a well completion data sheet showing the number of each well, the completion dates, elevation, total depth, the casing program, within a perforated interval, the open hole intervals. It should be noted on this exhibit, Wells No. 62 and 64, the casing program is unknown. It is not in our files. We know there is casing there, because there is a casing head. However, we do not know the depth or what exactly is in the hole. When we do get ready to go into those two wells by running our



survey wells tests, we will be able to determine just exactly what is there, and either at that time, run casing or go ahead and leave it as it is. I assume that it has the same casing program as the rest of the wells, since they were drilled about the same time. However, at this time we do not know.

Q If I understood you right, the first nine wells shown on this exhibit, with the exception of two, 62 and 64, show no record of any cement on this casing and actually the casing was set below the salt. Was this the completion practice when these wells were drilled?

A Yes, to set it in this manner. We have drilled several wells there and we do know that these areas there where there is a great deal of sloughing and caving in. There was no water volume at all recorded on the driller's logs in this area, and I assume the casing was set, because of the sloughing and caving, but was not cemented as shown on the exhibit.

Q I will ask you now to refer to what has been marked Exhibit No. 6A and ask you to explain what it portrays.

A Exhibit 6A is a cross section of new locations. This shows that even the three wells, No. 67, 69, and 75, that were not completed as commercial producers, do have the shows present. We feel that we can inject into these wells. The driller's logs on all of these indicate shows of oil through this interval, but they were not completed as commercial producers.

Q This only shows nine of the ten wells; why did you not



DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

ALBUQUERQUE, N. M.
PHONE 243-6691

show the 174 well on this exhibit?

A The 174, we drilled last year and we have the radio-activity log on this, which is Exhibit 6A. Therefore, I didn't include it in this cross section.

Q Actually, your wells that are not producing are Nos. 67, 69 and 75?

A Yes, they were never completed as producers.

Q Did all of those wells on the driller's logs record shows of oil?

A Yes, they did.

Q I will ask you now to refer to Exhibit 6A and explain it, please?

A Exhibit 6A is a gamma ray neutron log run on State 648, No. 174 well, the perforations are marked on the log and the two middle sets of perforations are believed to be those producing areas that are consistent throughout the ten-well area.

Q What is the depth below the surface, approximately, of those perforations?

A They are, the center of the perforation is from 2,078 and 2,082 to 92.

Q Why do you believe that these are the same intervals producing in your older wells?

A According to the strip logs available, this area is approximately the same depth below the top of the Grayburg. This indicates it is the same producing horizon as the older wells.



Q Is this the only well that you have any log on?

A Yes, it is.

MR. LOSEE: At this point, Mr. Examiner, I am referring to our exhibits marked 7 and 7A. They actually portray the casing programs for the injection wells. Exhibit 7 shows the production string and new production string, cemented to 1750 with the tubing and packer. This is the exhibit that was earlier submitted to the Commission and also submitted to Mr. Irby with the State Engineers office. In his letter directed to the Commission, in which he furnished us a copy, he stated that his office would have no objection if the injection was made through tubing and a packer. We did, in his exhibit, have an error in the depth of the cement. It showed 1950 and this has been corrected to 1750. After his evaluation of it, we would like to offer some testimony to support a less expensive program of injection, which would be through the producing string without the tubing and packer. We realize the State Engineer should be able to object and say what is necessary with respect to this alternative program.

However, Mr. Irby is in court in Carlsbad and he could not be here. We would like to submit evidence to support this. We would prefer this type, but if he desires, of course, we will set the tubing and packer. We would like to submit this again to the State Engineer and ask him to direct a letter to the Commission as to how he feels on it.

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MR. NUTTER: Ver good. We will withhold any order on this until we have had Mr. Irby's letter expressing his consent or disagreement.

MR. MORRIS: If the Examiner please, I believe Mr. Irby's original letter will be read into the record at a later time.

Q (by Mr. Losee) Mr. Davenport, will you refer to what has been marked Exhibit No. 7 and explain what it portrays?

A Exhibit No. 7 is a drawing of the proposed casing program. In this particular well, there were two strings of surface casing set at 10 3/4-inch at 346 feet and 1 1/4-inch at 579 feet. Presently there is an open hole interval from 579 feet to 2,238. We propose to go into this well and clean it out and run 4 1/2-inch casing to a total depth of 2,238 feet and being able to calculate the volume of cement required to bring the cement back to approximately 1,750 feet on the 4 1/2-inch casing.

Q You said, "proposed casing program." Do you mean the casing program shown by this exhibit which is one of the alternative programs you have proposed?

A This will be followed upon the approval of this application to go in and set this 4 1/2-inch through the pay section and perforate it to inject water.

Q Does this one also show your packer set?

A Yes, sir, I have shown the packer there because it was - I understood that the State Engineer did desire that we inject



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through tubing and packer. However, we are going to be running 4½-inch casing and cementing it, so I do not feel it is actually necessary that we inject through tubing. I feel that we would have a safe injection program without casing.

Q Mr. Davenport, before you go further into another alternative, at this time; you have suggested that there are two wells, as shown by an earlier exhibit, that you do not have any record on. Would you explain what you will do if there is no casing in those wells?

A If there is -- I know there is at least a part of a joint. If there is surface casing there, we will run 7-inch surface casing to approximately 500 feet and cement it.

MR. NUTTER: Then, proceed with standard 4½-inch program?

A Yes, sir.

Q (by Mr. Losee) Will the 4½-inch casing be new casing?

A Yes, sir.

Q I will ask you now to turn to Exhibit 7A, which is the alternative.

A In 7A, the packer is left out. As I stated, it will be new 4½-inch casing. We feel we will have a safe injection program, down casing. Surface casing has been in the area for some twenty-five or thirty years and drillers logs did not report any surface water. I feel if there was surface water there, we would have had water production in these wells before now, which we have



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not had. Also, in the area, Pan American drilled a deep well. They drilled a shallow water well to furnish water for this drilling rig, and they were unable to get enough water from this shallow well, which is located in the Northeast quarter of the Northwest quarter of Section 10, to furnish water for this drilling rig. The cost of running tubing with the packer for injection of water, initially, is around \$1,700 or \$1,800. We feel like that this is not a justifiable cost, because of our safety injection program with 4½-inch casing.

Q One of these wells, No. 174, that you recently drilled and logged, was there any evidence of water in that well?

A No, sir, that was drilled with a rotary rig and we were unable to tell if there was any surface water there.

Q This Pan American well that you mentioned that was drilled, is it a producer?

A It has been plugged and abandoned. It was in the Pennsylvania as a gas well, but it was plugged.

MR. NUTTER: Is that the well that is shown on your Exhibit as the Northeast of the Northwest quarter, Section 10?

A Yes, sir. It should be as plugged and abandoned. It was an error in making the map.

Q (by Mr. Losee) How long ago was it, do you know, when it was plugged and abandoned?

A No, sir, I don't.

Q Would it be more expensive to inject with water through



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tubing than it would be through the casing and if so, would you explain why?

A Yes, sir, it would be more expensive. The initial cost, as I mentioned, would be \$1,700 or \$1,800 plus your operations. All cost would be greater going through tubing, and each time you had to rework the well or anything, you would be forced to pull your tubing with the packer.. So, your initial cost would be considerably greater, and also your operational costs would be greater.

Q Does it take more horsepower to get the water down the tubing?

A Your friction loss would be less in casing than it is in tubing.

Q Your \$1,700 or \$1,800 figure, is that on the entire field or on the per well basis?

A That is on a per well basis.

Q It would be five wells in this category, which would amount to some \$8,000, approximately, initially?

A Yes.

Q How far away, if you know, was water in any quantity encountered in any of the wells drilled in this area?

A We have encountered water to the southeast in the McMillan Pool in several of the wells, the closest being approximately a half mile.

Q Would you, in this program, leave the annulus open to



the surface?

A Right. The annulus, between $4\frac{1}{2}$ inches and $8\frac{1}{4}$ casing, would be open. I feel like if there was any leaks developed in the $4\frac{1}{2}$ -inch, we would certainly know and it would come to the surface right away.

Q If you are allowed to commence this flood with this type of water injection casing program, would you have an opportunity to test this $4\frac{1}{2}$ -inch casing under high pressure?

A Yes, we use $4\frac{1}{2}$ -inch for the perforating. We have to treat the formation, at that time. We will probably reach pressures up to 3500 to 4000 pounds at that time, before we perforate. We could test the casing to be sure there was no leaks in the new casing.

Q How much do you anticipate your maximum injection pressure would be with the water?

A That is real difficult to tell because we have no reservoir data, but we are anticipating approximately 150 barrels per day per well, initially.

Q What pressure would that be injecting?

A Looking at the other floods through the area that injected into the same formation, we feel the injection pressure would be around 1100 or 1200 pounds.

Q In your opinion, would this alternative program protect any unseen difficulties that you might encounter in your life of the flood?



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A I feel it would. If any leaks developed in our 4½-inch, we would know immediately through the annulus of the two casing strings.

Q What would you do if a leak developed?

A If a leak developed, we would, of course, have to seal it with cement and inject with tubing under packer.

Q Would it be economical for you to continue if your casing was leaking, your program without correcting the defect?

A No, we couldn't economically inject water that was not going into the producing reservoir.

Q I will ask you now to refer to your Exhibit 8A.

A Exhibit 8A is a map showing the location of a water well that was drilled in 1960. This water well is drilled to the total depth of 235 feet. There is water sand from 205 to 235 feet. Seven-inch casing was set to a total depth with a solid liner from 205 to 235. This is the closest volume of water that we have encountered in drilling wells in the East Neuman area. It is the closest good source to our project.

Q Your company drilled the nearest well in the East McMillan-Queen field to these in Section 10, did they not?

A Yes, sir,

Q This was the closest source of water to Section 10, proposed for the flood area?

A Right.

Q Is this water well on a different oil and gas lease or



is it on the same oil and gas lease?

A It is on the same oil and gas lease, State 648.

Q If you would, please, refer to Exhibit 8A.

A Exhibit 8A is a test on the water well conducted by Smith Machinery Company. They pumped it for twelve hours with the initial grade of 58 gallons per minute and a subsequent rate of 46. This recommendation was theirs, that we pump from the level of 190 feet at a rate of 50-55 gallons per minute, which is approximately 1700 barrels of water per day. This would be more water than would be required by this flood on any given day. If we reached a 150-barrel per well injection well for six wells, that would be 900 barrels per day. Also, this water well has never been treated, either by chemicals or fractured, and we feel that if this were done, the capacity of the well could be increased considerably.

Q After fillup, what do you expect your injection rate to be?

A After fillup, we expect our injection rate to drop to a figure just over withdrawals or approximately 80 barrels of water per day.

Q If this water well should, during the life of the flood, not prove sufficient, would you have other sources in the area and if so, what would they be?

A In drilling wells south of the oil wells or south of the water well, we have encountered a great deal more water and a

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better source of water. I feel that there is a good water reservoir there, and I feel like this well will hold up through the life of the flood. However, if it doesn't, we have a source of water farther to the south.

Q Has your company notified the State Engineer's Office and the State Land Office of this application?

A Yes, sir. Exhibit Nos. 9 and 10 are copies of letters to the State Land Office and State Engineer's Office notifying them of this application.

Q Realizing that there is not a great deal of reservoir data available to you, in your opinion, could you estimate the recovery of oil that you would anticipate from this project that would not otherwise be recovered under primary methods?

A For working out our own economics, we have assumed a rough figure for secondary recovery, equal to primary, which would mean that by waterflooding this area we would recover 180,000 barrels of oil which would not otherwise be recovered by primary production.

Q Would this proposed waterflood program, in your opinion, promote conservation of a natural resource and prevent their waste?

A It would, in that it would recover oil that was otherwise unobtainable by primary production methods.

Q Were these exhibits which have been marked, 1 through 10, with several A's and B's, 6A and 6B and 8A and 8B, prepared



by you or under your supervision and direction?

A Yes, sir.

MR. LOSEE: At this time, we would like to move for the introduction of the exhibits.

MR. NUTTER: Western's Exhibits 1 through 10 will be admitted in evidence.

Q (by Mr. Losee) Under this proposal, if your application is granted, Western will comply with the Commission's rule 701, with respect to the allowable to this project, will they not?

A Yes, sir.

MR. LOSEE: I believe that is all of applicant's case, Mr. Examiner.

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

MR. MORRIS: I have a few questions.

CROSS EXAMINATION

BY MR. MORRIS:

Q Mr. Davenport, just on your Exhibits Nos. 4 and 5, I believe you gave some production data on the wells in this area. What is the highest rate of production on any well at the present time?

A At the present time?

Q Yes.

A Well, sir, I am unable to answer that. We haven't



tested each well individually. They are all on an underlying rod-pulling central power system right now. We start that power up twice a week but we haven't tested any of the wells.

Q In your opinion, no one well would be capable to produce anywhere near the top allowable?

A No, sir.

Q Mr. Davenport, I show you a document and ask if that is a copy of the letter that Western Development Company received from Mr. Irby, that Mr. Losee referred to a moment ago?

A Yes.

Q Rather than read that into the record, Mr. Losee, do you have any objections of making this a part of the record in this case?

MR. LOSEE: I have no objections at all.

MR. MORRIS: I have no further questions.

MR. NUTTER: Are there any other questions?

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Davenport, this casing program as shown on Exhibits 7 and 7A is fairly typical of all the wells in the pool, is that correct?

A Yes, sir. In this particular well, No. 75, there was a 10 3/4-inch string of casing set that was not set in the other wells. However, the 8 1/4-inch casing is typical string in the other wells.



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Q So, it is probably the only one that has this surface pipe?

A Yes, sir.

Q The program, as shown on Exhibits 7 and 7A, that you plan to complete the producing wells and the injection wells, do you have any program for the producing wells, as far as reworking them?

A No, sir. We feel they have been produced since the '30s. We feel like we will have to go in and clean them out to the total depth. However, by running tubing and putting them on individual pumping units, we will be able to keep the reservoir pumped off and do not plan any casing program for those.

Q Are you presently producing them through tubing?

A Yes, sir.

Q Do you use any packers on these?

A No, sir.

Q You will put individual pumps on these and keep the wells pumped off?

A Yes, sir.

Q In the case of the six injection wells, you will run a calibre survey on each of those?

A All of the wells were shot with nitroglycerine. I feel we will have to run a calibre test to calculate our cement for the volume to require it to back up.

Q The injection intervals in each of the six wells will be



fairly

~~barely~~ similar to 1930 to 50 feet?

A Well, sir, this cross section I had here is taken from the driller's logs and we don't feel we will be able to tell what our injection or what the perforations is until we have run a radioactivity log on each well.

Q It will be similar zones to the one you have shown here on 75?

A That is actually a schematic diagram for Well No. 75. We are unable to tell exactly where the shows of oil were.

Q Which interval on Exhibit No. 6B is the radioactivity log?

A The two middle sections, 2,284 to 92.

Q That is going to be your injection zone in all of your wells?

A Yes.

Q You will log all of the locations prior to running that?

A We will log them after the 4½-inch.

Q After taking calibre surveys, you will cement with your surface, to come back to 200 feet above the upper perforations?

A Yes, sir.

Q It would appear that Mr. Irby's objection in his letter regarding this was based primarily upon the top of the cement being so low, but that was an error on the schematic diagram.

MR. PORTER: It actually is 200 feet higher then, is that right?



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A Yes, sir.

Q (by Mr. Nutter) Does your water source ~~lie~~ in Section 14 within the declared basin of the State Engineers?

A No, sir, it is not.

Q No permission to withdraw from this will be necessary?

A No, sir.

Q You feel that you have another source of water farther south in the event that this water should not be or could not be obtained in sufficient quantities?

A Yes.

MR. NUTTER: Are there any further questions?

MR. PORTER: Mr. Davenport, this appears to be a rather isolated producing section here, although it is fairly a part of the older Artesia pool. You did not anticipate any wells outside of Section 10 might be effected?

A No, sir.

MR. LOSEE: I have one further statement. Mr. Examiner, the State Lease 648, which was originally issued in 1924 by the Commission for Public Lands, contains some unusual language in that it contains a specific grant to use water and I would ask that the Examiner take notice of the Land Office record of that Lease 648.

MR. NUTTER: 648 covers Section 10?

A Yes, sir.

Q (by Mr. Nutter) So, the water will be ~~leased~~ on the



lease?

A Yes, sir.

MR. NUTTER: Are there any further questions?

Mr. Davenport, you may be excused.

(Witness excused.)

Does anyone have anything to offer in Case 2492?

We will take the case under advisement and take up the
next case.

* * * *

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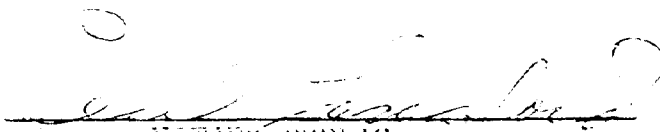
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STATE OF NEW MEXICO)
COUNTY OF BERNALILLO) ss.

I, CECIL LANGFORD, NOTARY PUBLIC in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of hearing was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.


NOTARY PUBLIC

My Commission Expires:



**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. 2492
Order No. R-2203**

**APPLICATION OF WESTERN DEVELOPMENT
COMPANY AND YATES PETROLEUM CORPORA-
TION FOR A WATERFLOOD PROJECT, EDDY
COUNTY, NEW MEXICO.**

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on February 7, 1962, 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 28th day of March, 1962, 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 applicants, Western Development Company and Yates Petroleum Corporation, seek permission to institute a waterflood project in the Artesia Pool on the State 648 Lease located in Section 10, Township 19 South, Range 28 East, NMPM, Eddy County, New Mexico, with the injection of water into the Grayburg formation initially to be through six wells located on said lease.

(3) That the proposed waterflood project should be authorized and should be governed by the provisions of Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowables.

(4) That injection of water through the casing should be authorized provided the casing is cemented from bottom to top or cemented from the shoe up to a minimum of 200 feet above the uppermost perforation in which event the casing should be pressure tested to 4000 psi on installation and tested annually thereafter over a packer to injection pressure or 1000 psi, whichever is greater.

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CASE No. 2492
Order No. R-2203

As an alternative, the injection of water should be made through tubing under packer set below the top of the casing cement.

(5) That the results of the above-mentioned pressure tests should be reported to the Commission and the State Engineer Office upon the completion of each test.

IT IS THEREFORE ORDERED:

(1) That the applicants, Western Development Company and Yates Petroleum Corporation, are hereby authorized to institute a waterflood project in the Artesia Pool on the State 648 Lease located in Section 10, Township 19 South, Range 28 East, NMPN, Eddy County, New Mexico, by the injection of water into the Grayburg formation initially to be through the following-described wells:

Western-Yates-State 648 Well No. 64, located
in Unit C;
Western-Yates-State 648 Well No. 67, located
in Unit E;
Western-Yates-State 648 Well No. 69, located
in Unit O;
Western-Yates-State 648 Well No. 73, located
in Unit B;
Western-Yates-State 648 Well No. 75, located
in Unit G; and
Western-Yates-State 648 Well No. 174, located
in Unit K;

all in said Section 10.

PROVIDED HOWEVER, That if water is injected through the casing the casing shall be cemented from bottom to top or cemented from the shoe up to a minimum of 200 feet above the uppermost perforation in which event the casing shall be pressure tested to 4000 psi on installation and tested annually thereafter over a packer to injection pressure or 1000 psi, whichever is greater.

As an alternative, the injection of water may be made through tubing under packer set below the top of the cement.

(2) That the results of the above-mentioned pressure tests shall be reported to the Commission and the State Engineer Office upon completion of each test.

(3) That the operation of the waterflood project herein authorized shall be governed by Rule 701 of the Commission Rules and Regulations, including those provisions regarding allocation of allowables.

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CASE No. 2492

Order No. R-2203

(4) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1119 of the Commission Rules and Regulations.

(5) 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.

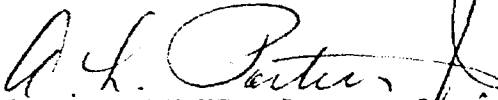
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



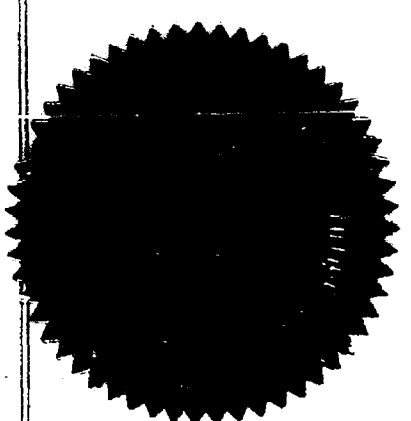
EDWIN L. MEEHAN, Chairman



E. S. WALKER, Member



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



esr/

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

March 29, 1942

**Mr. Jerry Loose
Loose & Stewart
Attorneys at Law
Box 239
Artesia, New Mexico**

Dear Mr. Loose:

Enclosed herewith is Commission Order No. R-2203, entered in Case No. 2492, approving the Western-Yates Waterflood Project in the Artesia Pool, Eddy County, New Mexico.

According to our calculations, when all of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 364 barrels per day.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate district proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Mr. Jerry Losce

March 29, 1942

producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP/ir

cc: Oil Conservation Commission
Drawer DD
Artesia, New Mexico

Mr. J. E. Kapteina
Oil Conservation Commission
Santa Fe, New Mexico

C
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Y

**Western Development
Company of Delaware**



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~~SANTA FE, SANTA FE, NEW MEXICO~~
~~TELEPHONE TA 2-5542~~

P. O. BOX 427 ARTESIA, NEW MEXICO

January 22, 1962

New Mexico Oil Conservation Commission
P.O. Box 871
Santa Fe, New Mexico

Attention: Mr. Richard S. Morris, General Counsel

Ref: Proposed Waterflood
Sec. 10, T-19-S, R-28-E
Eddy County, New Mexico

Dear Sir:

Please find enclosed a plat of the area requested for water-flooding on the Western Development Company of Delaware and Yates Petroleum Corporation joint waterflood application. The area is outlined in red and proposed injection wells denoted by a red triangle.

Injection will be into the upper Grayburg sand and sandy dolomite pay section. Anticipated rates and pressures are 150 barrels of water per day per injection well at 1200 PSI.

The enclosed radioactivity log on our State 648 No. 174 well is the only electric log in the proposed waterflood area.

Common completion practices when these wells were drilled were to set 8 1/4" casing at approximately 600 feet and complete openhole. We plan to clean out the injection wells, run a caliper survey and cement 4 1/2" casing. We would then be able to perforate the 4 1/2" and inject through tubing under a packer.

Yours very truly,

WESTERN DEVELOPMENT COMPANY
of Delaware

M. E. Spitler
General Manager

MES:cm

MAIN OFFICE OCC
1962 FEB 13 AM 8:08



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

February 12, 1962

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Western Development Company of Delaware and Yates Petroleum Corporation, which seeks permission to institute water flood operation in Section 10, Township 19 South, Range 28 East in Eddy County, New Mexico and to my letter on that subject dated February 2, 1962 on which hearing has already been held.

After discussing this with Mr. Nutter, who was the Examiner at the hearing, I have reached the conclusion that this office will offer no objection to the injection of water through the casing provided the surface casing is cemented well into the salt section and the 4½ inch casing has been cemented from the shoe up to a point well above the perforations in the casing. In each case where these two conditions do not prevail, we do object to the injection of water through the casing and suggest that it be injected through tubing and packer with the packer set well below the top of the cement outside the 4½ inch casing. Naturally, we object to any injection whatsoever if the 4½ inch casing is not adequately cemented either at total depth or immediately above the producing formation.

Yours truly,

S. E. Reynolds
State Engineer

By: *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Division

FEI/ma
cc-Losee & Stewart
Artesia, N. M.

Yates Petroleum Corp.
Artesia, N. M.

Western Development Co.
Denver 2, Colorado

F. H. Hennighausen
Roswell, N. M.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

February 2, 1962

MAIN OFFICE OCC
1962 FEB 5 AM 8:19
ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, N. M.

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Western Development Company of Delaware and Yates Petroleum Corporation which seeks permission to institute water flood operations in Section 10, Township 19 South, Range 28 East in Eddy County, New Mexico.

Information submitted indicates that the injection wells will have $4\frac{1}{2}$ inch casing set at 2238 feet which is the total depth of the hole and that cement will be returned to 1950 feet. The diagram shows the perforations to be immediately above the top of the cement between 1930 and 1950 feet. My off-hand opinion is that all fluids injected will return to the surface through the annulus outside the $4\frac{1}{2}$ inch casing. The diagram also shows that a packer will be set at 1910 feet in the $4\frac{1}{2}$ inch casing and this location is some 20 feet above perforations and 40 feet above the cement on the outside of the $4\frac{1}{2}$ inch casing. The diagram does not indicate, nor do any of their statements indicate that injection is to be through tubing, but I presume that it will be since the packer is shown at 1910 feet. It is my opinion that the cement outside the $4\frac{1}{2}$ inch casing should return to a point above the packer setting, in order to control the injection and that injection should be through tubing and packer.

If injection is to be through tubing and packer with the packer set a reasonable distance below the top of the cement outside the $4\frac{1}{2}$ inch casing, then this office offers no objection to the granting of the application.

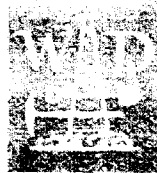
Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
cc-F. H. Hennighausen
Western Development Co.

By: *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Division

Western Development Company of Delaware



60 WEST FERRY, SANTA FE, NEW MEXICO

TELEPHONE TOLCS 2-0300
P. O. BOX 427 ARTESIA, NEW MEXICO

October 15, 1962

New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico

Attention: Mr. A. L. Porter, Jr., Secretary

Dear Sir:

This is to inform you that casing pressure tests on our State 648 Lease, Wells No. 64, 73 and 75 as per Commission Order No. R-2203 have been completed and water injection has been initiated.

Well No. 64, located in Unit C Section 10, was tested prior to perforating on June 14, 1962 by Dowell Incorporated to 4,000 pounds and held that pressure for 30 minutes.

Well No. 73, located in Unit B Section 10, was pressure tested by The Western Company August 4, 1962 before perforating to 4,000 pounds and held for 30 minutes.

Well No. 75, located in Unit H Section 10, was pressure tested by The Western Company before perforating April 28, 1962 to 4,000 pounds and held for 30 minutes.

Water injection was initiated on Well No. 75 September 18, 1962; Well No. 73 September 19, 1962; Well No. 64 September 29, 1962. Injection is down casing and plans will be made to pressure test 4 1/2" casing over a packer in September, 1963.

Very truly yours,

WESTERN DEVELOPMENT COMPANY
of Delaware

R. J. Davenport
R. J. Davenport

Production Superintendent

RJD:cm

cc: State Engineer Office
Santa Fe, New Mexico
Attn: Mr. Frank Irby

New Mexico Oil Conservation Commission
P.O. Drawer DD
Artesia, New Mexico
Attn: Mr. M. L. Armstrong

File 2492

POST OCT 17 1962

October 17, 1962

C
O
P
Y

Western Development Company of Delaware
P. O. Box 427
Artesia, New Mexico

Attn. Mr. R. J. Davenport
Production Superintendent

Dear Mr. Davenport:

Receipt of your letter of October 13, 1962 reporting pressure tests on your wells No. 64, 73 and 75 in the Artesia Pool in Section 10, Township 19 South, Range 28 East is hereby acknowledged. I assume that we may expect a similar report on Wells 67, 69 and 174 at a later date. Please advise me if this assumption is incorrect.

Very truly yours,

S. E. Reynolds
State Engineer

FBI/ma
cc-Mr. A. L. Porter, Jr.

By:
Frank E. Irby
Chief
Water Rights Division

**Western Development
Company of Delaware**



P. O. BOX 427 ARTESIA, NEW MEXICO

October 18, 1962

State of New Mexico
State Engineer Office
State Capitol
Santa Fe, New Mexico

Attention: Mr. Frank E. Irby, Chief
Water Rights Division

Dear Mr. Irby:

I will forward pressure test results on Well No. 67, 69 and 174, located on our State 648 Lease in Section 10, T.19 S., R.28 E., as soon as they are performed. These wells have not been prepared for water injection as yet, therefore, have not been pressure tested. The State 648 No. 174 well had pipe run to total depth upon completion and the surface pipe was cemented. This test will have to be performed over a packer.

Thank you for your letter of acknowledgement and early reply.

Very truly yours,

WESTERN DEVELOPMENT COMPANY
of Delaware


R. J. Davenport
Production Superintendent

RJD:cm

cc: New Mexico Oil Conservation Commission
P. O. Box 871
Santa Fe, New Mexico
Attn: Mr. A. L. Porter, Jr., Secretary

Western Development Company
825 Petroleum Club Building
Denver 2, Colorado

WESTERN-YATES

Oil Production History - State 648 Lease, Well No. 62, 63, 64, 67, 69, 71, 72, 73, 75 & 174

Cumulative to January 1, 1947 135,084

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961
Jan.	230	340	355	146	279	362	370	403	315	121	221	106	83	95	22
Feb.	224	236	374	336	302	227	307	300	253	33	181	95	89	86	45
Mar.	438	303	411	626	318	419	307	292	107	107	122	97	116	61	47
Apr.	576	472	373	112	306	298	351	283	44	110	159	95	50	55	47
May	470	472	315	374	355	324	355	219	42	195	118	156	0	39	33
June	409	142	360	351	340	264	331	392	61	242	90	169	16	35	115
July	419	439	364	381	274	449	283	333	217	202	185	97	87	60	45
Aug.	412	237	472	373	272	427	321	283	320	242	152	74	91	35	74
Sept.	431	313	256	364	338	424	484	293	292	186	143	43	47	57	71
Oct.	432	467	381	364	325	376	450	229	204	207	110	107	55	55	71
Nov.	207	402	329	237	362	332	129	255	223	217	113	101	19	47	47
Dec.	421	433	641	335	343	310	405	193	204	179	145	91	59	33	31
Total	4,660	4,260	4,651	4,099	3,814	4,212	4,093	3,475	2,282	2,040	1,698	1,197	711	584	521
Cum.	139,744	144,004	148,655	152,754	156,568	160,780	164,873	168,348	170,630	171,670	174,368	175,565	176,266	176,892	177,413

BEFORE EXAMINER NUTTER

OIL CONSERVATION COMMISSION

EXHIBIT NO. 4

CASE NO.

EXHIBIT NO. 4

Oil Lease Well Number	Completion Date	Elevation C. L.	Total Depth	Casing Depth	Cement	Perforated Intervals
STEIN-YATES						
Lease 648 No. 62	7-21-32	3536	2183	Unknown		OH
Lease 648 No. 63	9-30-32	3524	2196	8 1/4" @ 580 (No record of cement)		OH - 580 - 2196
Lease 648 No. 64	6-21-33	3531	2190	Unknown		OH
Lease 648 No. 67	1-8-34	3539	2856	10 3/4" @ 315 (No record of cement)		OH - 315 - 2856
Lease 648 No. 69	4-13-34	3506	2180	8 1/4" @ 610 (No record of cement)		OH - 610 - 2180
Lease 648 No. 71	3-29-35	3514	2132	8 1/4" @ 570 (No record of cement)		OH - 570 - 2132
Lease 648 No. 72	12-19-35	3520	2139	8 1/4" @ 575 (No record of cement)		OH - 575 - 2139
Lease 648 No. 73	3-20-36	3500	2149	8 1/4" @ 570 (No record of cement)		OH - 570 - 2149
Lease 648 No. 75	3-3-37	3499	2238	8 1/4" @ 579 (No record of cement)		OH - 579 - 2238
Lease 648 No. 174	Not Completed	3550	2200	7" @ 390 with 75 sacks, 4 1/2" @ 2197 with 125 sacks		2016-27, 2068-72, 2084-92, 2150-54

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 2197
CASE NO. 2197

EXHIBIT NO. 5

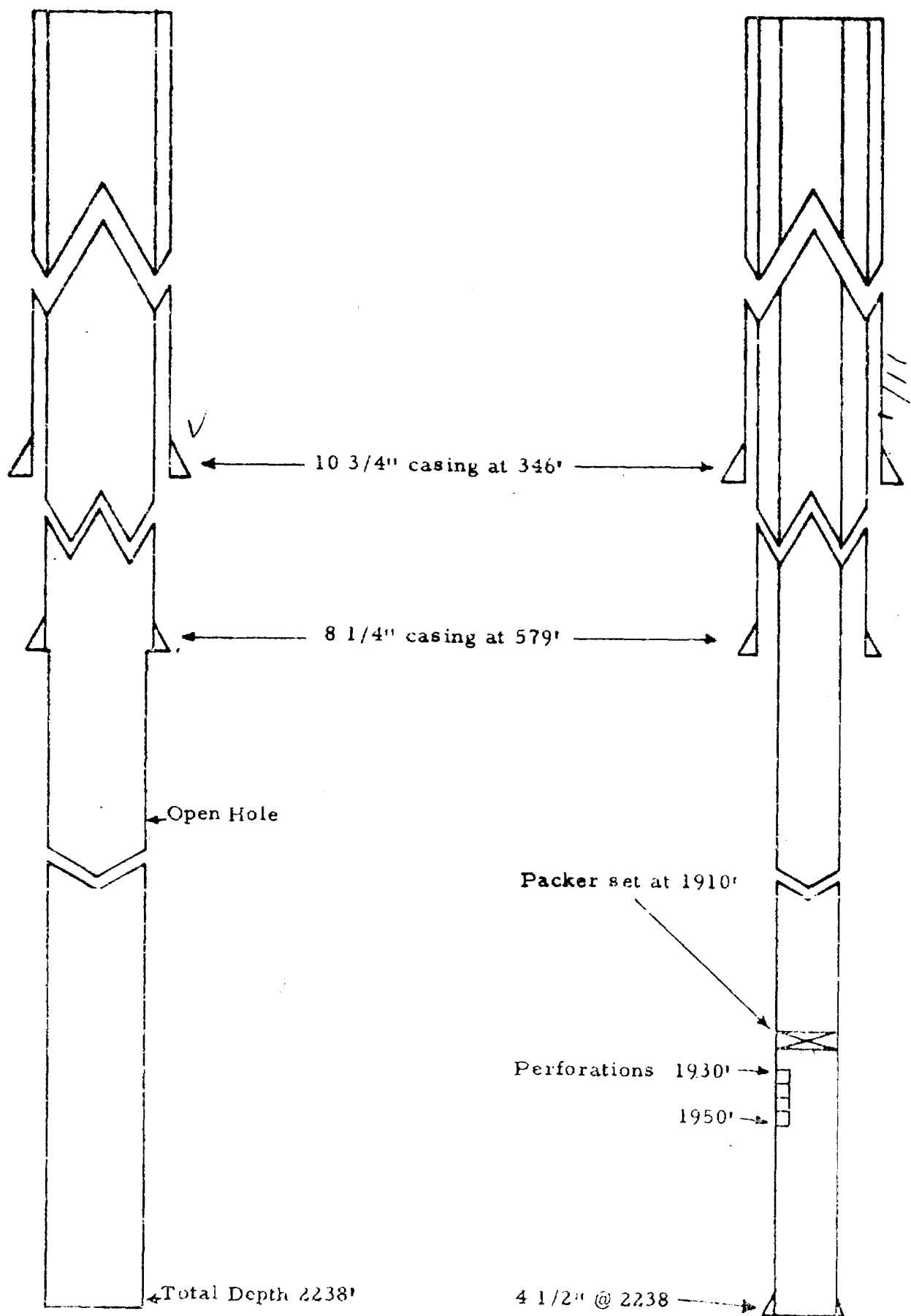
WESTERN-YATES STATE 648 NO. 75

Location: 1980' FNL & 1520' FEL

Section 10, T-19S, R-28E

Present Casing Program

Proposed Casing Program



Cement volumes will be calculated after running Caliper Log. Cement to return to 1750.

BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
EXHIBIT NO. 7
CASE NO. 2016

EXHIBIT NO. 7

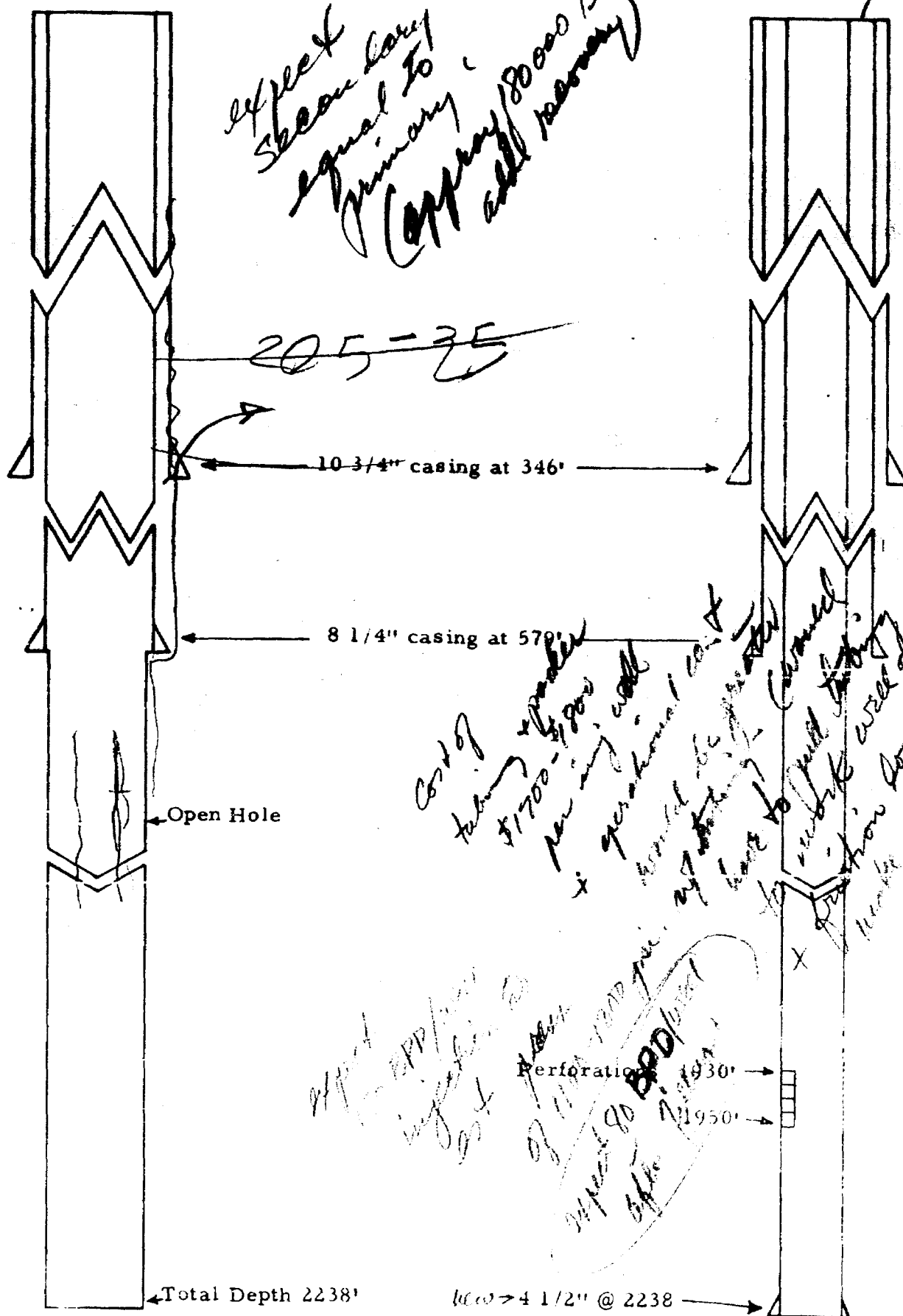
WESTERN-YATES STATE 648 NO. 75

Location: 1980' FNL & 1520' FEL

Section 10, T-19S, R-28E

Present Casing Program

Proposed Casing Program



BEFORE EXAMINER NUTTER
OIL CONSERVATION COMMISSION
 Appl EXHIBIT NO. 7A
 CASE NO. 2492

EXHIBIT NO. 7-A

Cement volumes will be calculated after running Caliper Log. Cement to return to 1750.

SMITH MACHINERY COMPANY
ROSWELL, NEW MEXICO

WELL AND TEST DATA SHEET

Customer: Western Development Company

Date: 1/2/64

Address: P. O. Box 477, Artesia, New Mexico

Well Location: 330' ENL & 2310' FEL, Section 14, T-19S, R-28E

Casing: 235 ft. of 7" in. I.D. ft. of in. I.D.

Perforations (size and location): Slotted

Drilled depth: 235' Depth before test: Depth after test:

Drilled by: Date:

Remarks: Equipment for test: 210' x 4" ipe, 3' x 4" suction, 25 Stage MA bowl pump.
Total 223'

TEST DATA

NOTICE: Take largest reading first; give plenty of time between readings to assure that conditions are stabilized.

Test Pump: 25 Stage 6" MA 210 4" 3' x 4"
Bowls (No. stages and size) setting col. size suction (length and diam.)
Static level: 180' (Prior to Test) Orifice used 4" ID x 2"

	Pumping level	Orifice	GPM	Remarks (air? sand? etc.)
1	190'	17"	58	Clear
2	187'	11"	46	

3
4 Fluid level at 190' - rate 58 GPM. Steady to

5
6

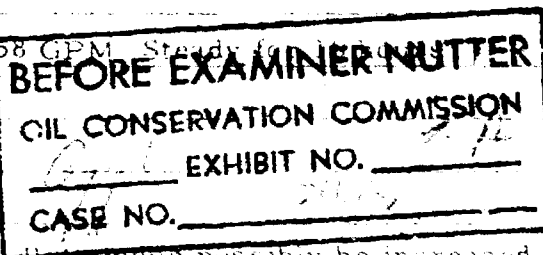
Remarks: Well pumped 18 hours.
Suspect some restriction. Rate could possibly be increased by washing water sand with acid.

Recommendation: Pump level at 190' - rate of 50 to 55 GPM

Tested by: Wesley Needham

Form No. 12 SMCO
TM Rev. 1-55 HP

EXHIBIT NO. 6-B



Western Development Company of Delaware

~~COMM. LANDS SANTA FE NEW MEXICO~~
~~TELEPHONE NO. 2-2542~~
P.O. BOX 427 ARTESIA NEW MEXICO

January 22, 1962

Commissioner of Public Lands
State Land Office
P.O. Box 791
Santa Fe, New Mexico

Attention: Mr. Ted Bilberry

Re: Proposed Waterflood
Sec. 10, T-19-S, R-28-E
Eddy County, New Mexico

Dear Sir:

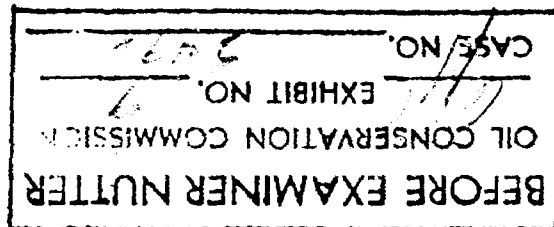
Western Development Company of Delaware and Yates Petroleum Corporation have made application to the New Mexico Oil Conservation Commission to waterflood a portion of its State 648 lease located in Section 10, T-19-S, R-28-E, Artesia Pool, Eddy County, New Mexico. This application has tentatively been set for hearing February 7, 1962.

Enclosed are two copies of the application and exhibits that will be presented to the Commission at the hearing.

Yours very truly,

WESTERN DEVELOPMENT COMPANY
of Delaware

M. E. Spitler
M. E. Spitler
General Manager



MES:cm

EXHIBIT NO. 9

Western Development Company of Delaware



P. O. BOX 427 ARTESIA, NEW MEXICO

January 22, 1962

State of New Mexico
State Engineer Office
Santa Fe, New Mexico

Ref: Proposed Waterflood
Sec. 10, T-19-S, R-28-E
Eddy County, New Mexico

Dear Sir:

Western Development Company of Delaware and Yates Petroleum Corporation have made a joint application to the New Mexico Oil Conservation Commission to waterflood its State 648 lease located in Section 10, T-19-S, R-28-E, Artesia Pool, Eddy County, New Mexico. This application has tentatively been set for hearing February 7, 1962.

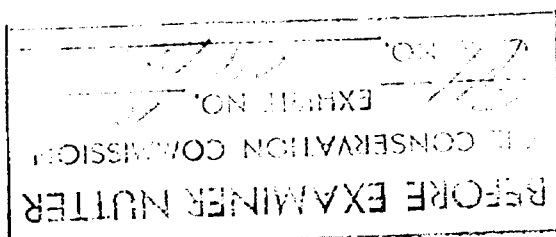
Enclosed is one copy of the application and exhibits that will be presented to the Commission at the hearing.

Common completion practices when these wells were drilled were to set 8 1/4" casing around 600 feet, drill the Grayburg pay and complete openhole. Driller's logs in the area are very incomplete and there is little information concerning shallow waters. Six of the original nine wells are still producing water free oil after twenty-seven years indicating satisfactory casing jobs. The remaining three wells are plugged and abandoned. If you would like to discuss the present casing program further prior to the hearing, we will be happy to meet you at your convenience.

Yours very truly,

WESTERN DEVELOPMENT COMPANY
of Delaware

M. E. Spitler
General Manager



MES:cm

EXHIBIT NO. 10