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CASE 3060: Application of FRANK
 DARDEN for a waterflood project,
 Eddy County, New Mexico.

CASE NO.

3060

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
July 1, 1964

EXAMINER HEARING

IN THE MATTER OF: (Reopened)

Application of Frank Darden for a water-
flood project, Eddy County, New Mexico.
Applicant, in the above-styled cause,
seeks authority to institute a waterflood
project in the Artesia Pool in his Cowntown
Unit Area by the injection of water into
the Grayburg and San Andres formations
through two injection wells in Sections 13
and 24, Township 18 South, Range 28 East,
Eddy County, New Mexico.

Case No. 3060

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

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MR. UTZ: The next case will be 3060.

MR. DURRETT: Application of Frank Darden for a water-flood project, Eddy County, New Mexico.

MR. MORRIS: May it please the Examiner, I am Richard Morris of Seth, Montgomery, Federici and Andrews, Santa Fe, New Mexico, appearing for Mr. Frank Darden in this case. The Examiner will recall that this case was considered at the Examiner Hearing on May 27, at which time the application and the advertisement in the case pertained only to injection of water into the Grayburg formation. However, testimony was offered at that time concerning Mr. Darden's plans to inject into the San Andres formation as well as the Grayburg formation with the understanding that the case would be readvertised to cover the additional formation, and that the testimony offered at the May 27th hearing would be offered in support of the application as readvertised.

Accordingly, at this time I offer into evidence and ask that the Commission consider the record and all exhibits offered at the May 27th hearing of Case 3060.

One further word of explanation would be in order. At the May 27th hearing Mr. Frank Irby of the Office of the State Engineer offered some objections to the granting or consideration by the Commission of this application, inasmuch as he had not been furnished all of the information that he desired. Since that



time we have furnished Mr. Irby with that information. I had a conference with him this morning prior to the hearing. Mr. Irby will submit, I understand, later, a letter to the effect that he will have no objection to this proposal so long as he or his office is notified in sufficient time so that an official from his office can be present when the casing in the two injection wells are pressure tested. Mr. Darden has no objection to that requirement being incorporated either in the order or in a Commission letter accompanying the order. I believe with that understanding we will have resolved all of our difficulties with the State Engineer's Office.

With that background I move that the Commission consider the previous testimony and exhibits in support of the application as presently advertised.

MR. UTZ: Is there any objection to the Commission considering the testimony in the previous record? The case will be taken under advisement.



STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public 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.

Witness my Hand and Seal this 6th day of July, 1964.

Ada Dearnley
 NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 3040, heard by me on July 19, 1964.
Shirley J. [Signature] Examiner
 New Mexico Oil Conservation Commission

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
May 27, 1964

EXAMINER HEARING

IN THE MATTER OF:

Application of Frank Darden for a water-
flood, Eddy County, New Mexico. Applicant,
in the above-styled cause, seeks authority
to institute a waterflood project in the
Artesia Pool in his Cowntown Unit Area, by
the injection of water into the Grayburg
formation through two injection wells in
Sections 13 and 24, Township 18 South,
Range 28 East, Eddy County, New Mexico.

Case No. 3060

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

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MR. UTZ: We will call next Case 3060.

MR. DURRETT: Application of Frank Darden for a water-flood, Eddy County, New Mexico.

MR. MORRIS: Mr. Examiner, please let the record show my appearance as in the preceding case. Mr. Darden will be the witness in this case, and let the record also show that he has been previously sworn.

At the outset of this case I would like to move that this case be readvertised in order to include authority for Mr. Darden to inject water into the San Andres zone as well as into the Grayburg, to which formation the advertisement is presently limited. The Artesia Pool has as its vertical limits the Queen, Grayburg and San Andres formations, and perhaps the advertisement would be broad enough to cover our request, but to avoid any possible conflict, we would move that the case be readvertised.

We would request, however, that since Mr. Darden is present, that he be permitted to present his case both as to the Grayburg and San Andres formations at this time. We have the further complication in this case that up to this time we have not been able to furnish the Office of the State Engineer with the information that he desires concerning this case. Since the case has to be readvertised, assuming that our motion in that respect will be granted, we would request that we be allowed to go ahead and

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present our case today and present to Mr. Irby copies of our exhibits in support of our case, and then if the State Engineer's office has any further question or any objection to our proposal we can either work it out with that office informally or Mr. Darden can be present when this case is brought up upon recall or readvertisement. If that procedure is suitable with the Examiner, we are ready to proceed at this time.

MR. UTZ: Off the record.

(Whereupon, a discussion was held off the record.)

MR. UTZ: Case 3060 will be advertised for the July 1st hearing to include the San Andres as well as the Grayburg formation for injection in the Artesia Pool, and you may give your testimony that you have available at the present time with the stipulation that Mr. Darden will be present at the July 1st hearing for any cross examination if the matter isn't settled satisfactorily before then.

MR. MORRIS: Fine.

FRANK DARDEN

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

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Darden, what is it that you seek by your application



in Case 3060?

A We seek authority to institute a waterflood project in the Artesia Pool in the proposed Cowntown Unit Area by the injection of water into the Grayburg and San Andres formations through two injection wells in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

(Whereupon, Applicant's Exhibits Nos. 1 & 2 were marked for identification.)

Q Referring now, Mr. Darden, to what has been marked as Exhibit 1 in this case, would you state what it is and what it shows?

A Yes, sir. Exhibit 1 shows the outline of the Cowntown Unit in Sections 13 and 24, 18 South, 28 East, Eddy County, New Mexico, with the location of the producing wells thereon. It also shows the present active water injection wells operated by Waterflood Associates and International Oil and Gas Corporation in Section 14. The active injection wells are designated by circles with a solid line between the circles.

The proposed injection pattern for the Cowntown Unit is marked by a dashed line showing the proposed injection wells thereon.

Q Mr. Darden, you've got a few proposed injection wells that lie outside of the Cowntown Unit Area. Are these tentative

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locations for those wells?

A That is correct.

Q And the only two that we are concerned with here today are those two wells lying within the Cowtown Unit Area?

A That's right.

Q I gather from looking at this plat that your proposed waterflood would be an extension of the pattern in existence on the Waterflood Associates' properties to the west of your unit?

A That is correct.

Q Would you identify the two injection wells within the Cowtown Unit Area and give their location by footage, if you have that available?

A Yes, sir. The Ohio State Well No. 1, which is located 660 feet from the South line and 1980 feet from the West line of Section 13, Township 18 South, Range 28 East, and the Magnolia State Well No. 2, located 1650 feet from the North line and 330 feet from the West line of Section 24, Township 18 South, Range 28 East.

Q Refer now, Mr. Darden, to your Exhibit No. 2 and state what it is and what it shows.

MR. UTZ: The operator's name on those two wells would be Darden, would it not?

A Yes, sir. Exhibit No. 2 is a cross section which shows



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the geologic correlation and mechanical condition of certain wells in the area of the Cowntown Unit, including the two proposed injection wells. It shows one of the currently active injection wells of Waterflood Associates, their State 14 No. 8, and shows the correlation of the productive zone from that well to the Magnolia State No. 2 well, the Brown No. 2 well, the Ohio State No. 1 well, all within the proposed Cowntown Unit, and the Frank Darden Travis No. 1 well, which will be outside the unit area.

Q This cross section also shows the various productive horizons in this area, does it not?

A Yes, sir.

Q Would you describe those and how they appear in these various wells shown on your cross section?

A All of the wells in the Cowntown Unit are completed in the Jackson zone of the San Andres, and several of them are completed in zones off the Grayburg.

As can be seen from Exhibit No. 2, the Premier zone appears to be a continuous zone of productivity extending from the present waterflood in Section 1 onto the proposed unit. There are other zones in the Grayburg above the Premier zone which have been opened in various wells, but may not necessarily have enough continuity for effective waterflooding. There are no wells, to my knowledge, on the Waterflood Associates' leases that are completed in the



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San Andres. However, it is my understanding that International Oil and Gas has two wells, their No. 1-25 and No. 1-29, located in the East Half of the Northeast Quarter of Section 23, Township 18 South, 28 East, that are completed in zones of the San Andres as well as the Grayburg.

Q Does your cross section also show the physical installation of your two proposed injection wells at the present time, and also show how they might be modified for injection purposes?

A Yes, sir. It shows the position of the casing seat and the size of casing in each of these wells, and shows the zone which is presently open in both wells. The Magnolia State No. 2 is completed in the Jackson zone as an open hole completion, and through perforated casing in the Premier zone. The Ohio State No. 1 is completed at this time only in the open hole Jackson section. However, since the preparation of this cross section, we have run a gamma ray-neutron log in the Ohio State No. 1 and have found that the Premier zone indicates sufficient porosity so that we intend to perforate it in the near future.

Q How much open hole do you have in each of these two wells below the shoe of the casing?

A The Magnolia State No. 2 has 5 1/2" casing set at 2867 feet. The total depth is at 2903 feet, so we have 36 feet of open hole in that well. The Ohio State No. 1 has 5 1/2" casing set at



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2896 feet, and the total depth of the well is 2950 feet, so we have 54 feet of open hole in this well.

Q As to the producing wells within your proposed project area, Mr. Darden, are those wells all presently open to both the Grayburg and San Andres formations?

A No, sir, they are not. However, we are planning to run gamma ray-neutron logs in the wells which have not been opened in the Grayburg zone, and where the neutron log indicates sufficient porosity we intend to open them by perforating the casing.

Q In other words, where practicable, both the Grayburg and San Andres formations will be opened in all of your producing wells?

A Yes, sir.

Q As well as in these two injection wells?

A Yes, sir.

Q Do you have some information to present to the Examiner concerning the production history of the wells in this area and the present status of these wells from a production standpoint?

A Presently the wells in the Cowntown Unit are producing an average of three barrels per well per day. To January 1st, 1964, these leases had produced a total of 216,377 barrels.

Q Based upon the present status of these wells, Mr. Darden, would you say that this area is ripe for waterflooding?



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A Yes, sir.

Q And that these wells are properly to be considered strip-per production?

A Yes, sir.

Q What is your proposal for the injection of water into these two proposed injection wells?

A Well, we intend to first test the casing in each of these injection wells to be sure that it is ample protection against any communication with zones other than the productive zones we intend to flood, and then we intend to inject down the casing into both Grayburg and San Andres zones simultaneously. As the flood progresses we will make periodic surveys as to the efficiency of injection into the respective zones. If we should find that one zone is not taking economic volumes of injection water, we may find it necessary to go to dual injection, utilizing a higher injection pressure for one zone than for the other.

Q At this time there's no way to tell whether that possibility will become a reality or not, is there?

A No, sir, there isn't, because to my knowledge there has been no flood in the Jackson zone of the San Andres to this time.

Q What pressures do you anticipate for your injection, Mr. Darden?

A Well, we would expect the wells to take water initially



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at essentially no pressure, but that after reaching fill-up we would anticipate a maximum injection pressure of 2,000 pounds per square inch.

Q At what rate would you expect to inject water into each of these wells?

A We are hopeful that we will be able to achieve injection rates of approximately 500 barrels per well per day.

Q Do you have any estimate of the total amount of water required for your project?

A I would estimate somewhere in the neighborhood of a million and a half barrels of water.

Q What will be your source of water?

A We will probably purchase water from the Caprock Water Company, who is delivering water to the offsetting waterflood project at this time.

Q Mr. Darden, in your opinion will your proposed installation adequately protect fresh water zones in the area, if any, and other productive zones?

A Yes, sir.

Q Do you know whether there are any fresh water zones in this area?

A No, sir, I do not. I know that from the general area the presence of any continuous fresh water horizon is very doubtful.



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We made an extensive search for a shallow water supply when I was with Newmont Oil Company prior to forming the Yucca Water Company, which necessitated the building of approximately twenty-six miles of pipeline in order to get water to Loco Hills, and at that time we were not able to find any source of water in the area which appeared to have sufficient continuity or productivity to be useful as a source of water.

Q That was in this general area?

A Yes, sir.

Q What negotiations have you had, Mr. Darden, with your offset operators concerning your proposed waterflood project?

A We have had informal conversation concerning the feasibility of lease-line cooperation and the continuation of the pattern which has been established by Waterflood Associates and International Oil and Gas Corporation.

Q Have you received any objection from your offset operators to this proposal?

A No, sir.

Q Do you have an opinion concerning the effectiveness of your proposal in the protection of the correlative rights of all involved?

A We believe that this pattern that we're proposing will protect correlative rights adequately.



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Q What benefits do you expect to derive from this project?

A We expect the waterflood development of this property to generate a volume of secondary oil approximately equivalent to the volume which has been produced by primary operations, that is in the order of 200,000 barrels.

Q Were Exhibits 1 and 2 prepared by you or under your direction?

A Yes, sir.

MR. MORRIS: We offer 1 and 2 into evidence at this time.

MR. UTZ: Without objection, Exhibits 1 and 2 will be entered into the record.

(Whereupon, Applicant's Exhibits Nos. 1 & 2 were admitted in evidence.)

MR. MORRIS: That's all I have of Mr. Darden at this point.

CROSS EXAMINATION

BY MR. UTZ:

Q How old are the two wells that you propose to inject water into?

A The Ohio State well was completed in June of 1948. The Magnolia State No. 2 was completed in March of 1956.

Q Do you know whether or not the casing that was put in



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these wells was new at the time the well was completed?

A All of the information we have indicates it was new casing.

Q Would it be your intention to pressure test this casing before injecting?

A Yes, sir.

Q To what pressures?

A Two thousand pounds.

Q If it didn't hold two thousand pounds?

A Then we would inject with tubing below a packer.

Q In the event you have to two-stage, not two-stage, but dually inject, is it your opinion that this casing will be in good enough shape to withstand such pressures that you may have to inject with?

A Well, we'll determine that by pressure testing it, and in the event it should not be, we would then be required to go to two strings of tubing with two packers.

Q Ordinarily a well completed in 1948 wouldn't be expected to have casing in too good a shape, would it?

A Well, there's much more likelihood that we'll have to use tubing on that one than on the other one, yes, sir.

MR. UTZ: Any other questions of the witness?

MR. IRBY: Yes, sir.



MR. UTZ: Mr. Irby.

BY MR. IRBY:

Q You said that the information you have indicates that this casing was new when it was installed, Mr. Darden. What is that information?

A That's the reports in the well records which we were given when we purchased the wells from their previous operator.

Q They stated that it is new casing?

A I believe that that was written on the drilling reports. There was no invoice in the well record, so all we have to go on is what was written on the driller's report there.

Q You say you believe that it's on there. When you reappear on July 1st I'll expect a definite answer on this question.

A Fine. I'll be sure and look it up.

Q Now, you said that in this general area when you were with Newmont that you made a search for water with which to conduct a flood in this area and you didn't find sufficient water production to take care of the flood, is that correct?

A That's correct.

Q Did you find any water at all?

A Yes, sir.

Q In sufficient quantities to take care of livestock and domestic water?

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A Well, it's obviously not enough to take care of domestic water because all of the camps along the highway there have bought water at ten cents a barrel from Caprock Water Company for many years. There is an occasional windmill in the area and there's an occasional cow in the area, but it's a very arid region if you are familiar with it.

Q I'm not able to visualize exactly where this is in a general location, say, with respect to some settlement along the highway or so many miles east of Artesia or just off the Caprock, or something like this. Could you give me a picture like that?

A Are you familiar with the potash road that turns south from the John Trigg camp on the highway going east from Artesia to the town of Loco Hills?

Q Well, I don't know where the John Trigg camp is. I, of course, have been across from Artesia.

A I think it's about fifteen miles east of Artesia.

Q Then you would turn south?

A Turn south, and I'm just talking from memory here.

Q That's good enough.

A An areal map, but I would say that you would drive approximately six miles in a southeasterly direction on the potash highway and then you turn back to the west to these leases.

Q Any appreciable distance west?



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A Well, approximately three miles. If you are familiar with the Waterflood Associates waterflood project in Section 14, we're immediately east of that.

Q You said you'd probably get your water from Caprock. If you don't get it there, where do you expect to get it, or do you know?

A There is a possibility that there might be sufficient water on the property at shallow depth to supply two or three injection wells. The reason is there's a possibility, we understand, that Waterflood Associates recently drilled a water well offsetting our property, but that that water well was completed very rapidly in its production rate, so at this point that is the reason I say we probably will purchase water from Caprock Water Company.

Q On your Exhibit 2 I didn't get down this formation that's near the surface up here in which the Brown No. 2, the Ohio No. 1 and the Travis No. 1 seem to penetrate.

A Well, this is actually not too near the surface. As you notice, it's about 2350 feet from the surface. This doesn't go all the way, this cross section is not to scale to the surface.

Q These are depths from land surface?

A Yes, sir. These are well depths which are shown on the map.



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Q To make it clear, I am speaking of the upper zone which might be considered a pay zone.

A Yes, sir.

Q Which one is that?

A That is, well, it has various designations, it has been called Metex by some of the offset operators, but it didn't correlate with Metex from previous areas that I have worked in, so I refer to it as an Upper Grayburg zone. As you can see, this is a zone which is not continuous. It is not present in the Waterflood Associates State 14 No. 8, for example, but is present in our Brown No. 2, and we know now it is not present in our Ohio State No. 1 now that we have a gamma ray-neutron on it.

Q It isn't?

A It isn't. We thought it would be, but when we ran the log we found it is not. It is present, I believe, on the Harvey Yates well which offsets us to the east, which would be the Roger Harris Travis No. 1, Yates Harris Travis No. 1.

Q It's your intention to open these to any zone that appears productive from your gamma ray-neutron logs?

A Yes.

Q And I guess this goes to some of the questions that Mr. Utz asked about dual completion on these. I presume that you will not inject with the same pressure at each zone that you'll have to



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have or you expect --

A We don't know. At this point we can't say they are injecting simultaneously into various zones in the offsetting section. So we will start that way and then if our performance indicates this isn't getting, effectively flooding it, why then we'll take measures to institute dual injection.

Q It isn't my intention to embarrass you any more than I have to, Mr. Darden.

A Go right ahead.

Q Are you familiar with Rule 701 of the Commission rules?

A Well, I've been exposed to it from time to time. I will admit, however, that I have never operated a waterflood project under Rule 701. If you'll recall, all of the Newmont Oil Company projects were instituted prior to the promulgating of Rule 701 and therefore, I may be a little less familiar with it than some other operators would be.

Q I don't want to dig you a lot about this, but I would like to say that before I could withdraw objection to the granting of this application under Case 3060, I would have to have the information required by Rule 701.

A We'll be happy to furnish it to you.

MR. IRBY: Thank you. That's all I have.

BY MR. UTZ:



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Q Mr. Darden, which of these zones is San Andres and which the Grayburg?

A The Lovington and Jackson zones are San Andres and the -- actually the base of the Premier zone correlates with the top of the San Andres. So anything below the base of the Premier is classified within the San Andres formation.

Q The Grayburg would be the upper zone shown on your cross section?

A Yes, sir.

MR. UTZ: Any other questions of the witness?

MR. DURRETT: I have a question, please.

MR. UTZ: Mr. Durrett.

BY MR. DURRETT:

Q Mr. Darden, referring to your Exhibit 1, which is the plat, the International Oil and Gas Well No. 1-25, which is located in the Northeast of the Northeast of Section 23, that is just a proposed injection well?

A That is correct.

Q Is that well completed in the same zones that your wells are in?

A It is my understanding that it is. I have been in conversation with Mr. Appledorf of International Oil and Gas concerning the completion of that well, and he has promised to send me



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the complete data as to where the well is completed, but it's my understanding from telephone conversation with him that it is completed in the same zones which we have the offsetting well completed in.

Q When do they propose to put this well on or apply to make it an injection well?

A I don't know. This pattern is at this time tentative, and I think it's going to be, the actual date of putting the wells on injection will hinge to a great degree, I'm sure, on the performance from the initial area.

Q Do you think that the International Oil and Gas Well No. 1-29, which is in the Southeast of the Northeast, should receive a response from your Magnolia No. 2?

A Yes, sir.

Q That would probably indicate that they would desire pretty soon thereafter to start the International Oil and Gas 1-25 on injection?

A I would say that we will put the wells on simultaneously. Of course, this involves a lease line cooperation agreement between at least the three operators here along this line.

Q You are negotiating that at this time?

A Yes, sir.

MR. UTZ: Any other questions?



MR. MORRIS: One more question.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Darden, you said a minute ago that you never had the pleasure of operating a flood under Rule 701, but do you propose to operate this flood under the allowable provisions of that rule?

A Yes, sir.

MR. MORRIS: That's all.

MR. UTZ: Any other questions? The witness may be excused.

(Witness excused.)

MR. UTZ: Any statements in this case?

MR. MORRIS: Yes, sir. I would like to make one statement for the record that we will be in correspondence with the State Engineer's Office concerning what further requirements of information that might be desired, and we will do our best to furnish that information to avoid having to burden the Commission with a second hearing on this matter.

MR. UTZ: The case will be continued until the July 1st hearing.

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
PHONE 325-1182

SANTA FE, N. M.
PHONE 983-3971

ALBUQUERQUE, N. M.
PHONE 243-6691



STATE OF NEW MEXICO)
) ss
 COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public 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.

Witness my Hand and Seal this 9th day of June, 1964.

Ada Dearnley
 NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is
 a complete record of the proceedings in
 the Ex parte Hearing of Case No. 3060,
 held by me on *May 22*, 1964.
Chris A. Galt, Examiner
 New Mexico Oil Conservation Commission

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.
 PHONE 325-1182

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 PHONE 243-6691



OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

July 8, 1964

**Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Post Office Box 2307
Santa Fe, New Mexico**

Dear Sir:

Enclosed herewith is Commission Order No. R-2734, entered in Case No. 3060, approving the Frank Darden Cowntown Artesia Waterflood Project. Injection is to be through casing in the two authorized wells. The casing in each is to be tested to 2000 psi prior to conversion to water injection. Any well which will not withstand this pressure shall be equipped with tubing and a packer set immediately above the perforations. Please notify the State Engineer Office at Roswell and the Oil Conservation Commission Office at Artesia of the hour and date these pressure tests are to be commenced.

As to allowable, our calculations indicate that 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 294 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

OIL CONSERVATION COMMISSION

P. O. BOX 871

SANTA FE, NEW MEXICO

-2-

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Post Office Box 2307
Santa Fe, New Mexico

C
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P
Y

any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or 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
Artesia, New Mexico

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

GOVERNOR
EDWIN L. MECHAM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



P. O. BOX 2088
SANTA FE
87501

ASSISTANT
WALKER
SER

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

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Post Office Box 2307
Santa Fe, New Mexico

Dear Mr. Morris:

Gentlemen:

Enclosed herewith is Commission Order No. R-2734, entered in Case No. 3060, approving the Frank Darden Cawtown Artesia Water Flood Project. Injection is to be through casing in the two authorized wells. The casing in each is to be tested to 2000 psi. As to allowable, our calculations indicate that 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 294 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 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,

cc: OCC - Artesia
Frank Irby

A. L. PORTER, Jr.
Secretary-Director

*to water which will
Prior to conversion to water
injection. Any well which will
not withstand this pressure shall
be equipped with tubing and a packer
set immediately above the perforations
Please notify the State Engineer's Office
of the Santa Fe Office of Artesia
Pressure tests are to be commenced.*

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Frank Darden,
is hereby authorized to institute a waterflood project in the
Artesia in ~~the~~ his Cowtown Unit Area
Pool/by the injection of water into the
Andres
Grayburg and San / formation through the following-described wells
in Township 18 ~~N~~ South, Range 28 ~~West~~ East,
NMPM, Eddy County, New Mexico:

*Ohio State Well No 1, Unit N, Section 13
Magnolia State Well No. 2, Unit E of
Section 24*

(2) That the subject waterflood project shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and ~~1120~~ ¹¹¹⁹ of the Commission Rules and Regulations.

(4) 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.

DRAFT
JMD/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:

See E by letter in file
Ida - special water flood letter Cowtown Grayburg San Andres (Artesia)

CASE No. 3060

Order No. R- 2734

APPLICATION OF FRANK DARDEN
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
July 1, 1964, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this day of July, 1964, 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, Frank Darden,
seeks permission to institute a waterflood project in the

Artesia in ~~the~~ his Cowtown Unit Area
Pool by the injection of water into the
Grayburg and San Andres formations through two injection wells in
Sections 13 and 24, Township 18 ~~North~~, Range South
28 ~~West~~, NMPM, Eddy County, New Mexico.
East

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as "stripper"
wells.

(4) That the proposed waterflood project should result in the
recovery of otherwise unrecoverable oil, thereby preventing waste.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

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

July 1, 1964

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, N. M.

Dear Mr. Porter:

Reference is made to the application of Frank Darden for water flood project in Eddy County which was the subject of OCC Case 3060. This office offers no objection to the granting of the application to convert Magnolia State No. 2 and the Ohio State No. 1 to water injection, provided Mr. Darden gives sufficient notice to Engineer James I. Wright at our Roswell District Office in order that he or a member of his staff may be present at the time of testing the casing, and further provided that if the equipment in either of the wells fails to stand the required test that injection will be through tubing under packer with the packer set well below the top of the cement surrounding the 5½" casing.

Yours truly,

S. E. Reynolds
State Engineer

FEI/ma
cc-Frank Darden
Richard S. Morris

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

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION OF FRANK DARDEN FOR
APPROVAL OF A WATERFLOOD PROJECT,
EDDY COUNTY, NEW MEXICO

Case No. 3060

A P P L I C A T I O N

Comes now Frank Darden and applies to the New Mexico Oil Conservation Commission for approval of a waterflood project, and in support of his application states:

1. That he is the owner of the working interest in the SW $\frac{1}{4}$ of Section 13, and in the N $\frac{1}{2}$ NW $\frac{1}{4}$ and SW $\frac{1}{4}$ NW $\frac{1}{4}$ of Section 24, Township 18 South, Range 28 East, Eddy County, New Mexico. Said lands are proposed to be unitized as the Cowntown Unit as the subject of a separate application to the Commission.

2. Said lands have been developed in the Grayburg formation by seven wells which are presently producing but have declined to an advanced state of depletion and are properly to be considered stripper wells at this time.

3. At the present time there is under way in Section 14, immediately adjoining said properties to the west, a waterflood project in the Grayburg formation being operated by Waterflood Associates and other persons; it is anticipated that said project will be expanded to the east toward the properties owned and operated by applicant.

4. Applicant proposes to participate in the expansion of the waterflood project on adjoining properties by converting two wells to water injection as follows:

Ohio State Well No. 1, located 660 feet from the south line and 1980 feet from the west line of Section 13.

Magnolia State Well No. 2, located 1650 feet from the north line and 330 feet from the west line of Section 24.

DOCKET MAILED

DOCKET MAILED

Date 6-17-64

Date 5-15-64

5. Applicant proposes to inject water into the above described wells in the Premier and Metex zones of the Grayburg formation.

6. Approval of the subject application will enable the applicant to participate in the expansion of the presently existing waterflood project to the west of his properties, and by so doing will enable him to recover oil that would otherwise be unrecovered; approval of the subject application, therefore, would prevent waste and protect correlative rights.

WHEREFORE, applicant requests that this application be set for hearing before the Commission or one of its examiners, and that the Commission enter its order approving this application.

SETH, MONTGOMERY, FEDERICI & ANDREWS

By

Richard S. Morris

Attorneys for Frank Darden

DOCKET: EXAMINER HEARING - WEDNESDAY - JULY 1, 1964

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 3063: (Continued from June 10th Examiner Hearing)

Application of R. C. Davoust Company for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Turkey Track Section 3 Unit Area comprising 480 acres of State land in Section 3, Township 19 South, Range 29 East, Eddy County, New Mexico.

CASE 3064: (Continued from June 10th Examiner Hearing)

Application of R. C. Davoust Company for a waterflood expansion, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the expansion of the Turkey Track Queen Waterflood Project in Section 34, Township 18 South, Range 29 East and Section 3, Township 19 South, Range 29 East, Turkey Track Field, Eddy County, New Mexico, to include the Grayburg formation.

CASE 3070: Application of Nearburg & Ingram and Kincaid & Watson Drilling Company for a waterflood project, Eddy County, New Mexico. Applicants, in the above-styled cause, seek authority to institute a waterflood project in the Square Lake Pool by the injection of water into the Grayburg formation through three wells located in Section 6, Township 17 South, Range 30 East, Eddy County, New Mexico.

CASE 3071: Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its J. P. Collier Well No. 1 located in Unit F of Section 10, Township 11 South, Range 33 East, Lea County, New Mexico, to produce oil from the North Bagley-Upper Pennsylvanian Pool and an undesignated Middle Pennsylvanian Pool through 2 1/16 inch tubing.

CASE 3060: (Reopened)

Application of Frank Darden for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Artesia Pool in his Cowntown Unit Area by the injection of water into the Grayburg and San Andres formations through two injection wells in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3072: Application of Coastal States Gas Producing Company for the extension of a pool and for special temporary pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the extension of the Flying "M" San Andres Pool in Township 9 South, Range 33 East, Lea County, New Mexico, and temporary special rules therefor, including a provision for 80-acre well spacing and proration units.

CASE 3073: Application of Texaco Inc., for the creation of a new oil pool and for special temporary pool rules, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Pennsylvanian production for its Navajo Tribal AL Well No. 1 located in Unit H of Section 28, Township 26 North, Range 18 West, San Juan County, New Mexico, and for the establishment of temporary pool rules including a provision for 160-acre spacing and a GOR limitation of

4000 to 1. Applicant further seeks the establishment of an administrative procedure whereby interference tests could be conducted and allowables transferred.

- CASE 3074: Application of Continental Oil Company for an amendment of Order No. R-2385, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks the amendment of Order No. R-2385 to substitute for water injection purposes a well located in Unit H of Section 9, Township 17 South, Range 29 East, Eddy County, New Mexico, for the presently authorized well in Unit I of said Section 9.
- CASE 3075: Application of Marathon Oil Company for a special gas well test, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to produce and flare approximately 1000 MCF per day for a period of not less than three nor more than 30 days from Tom Brown Drilling Company's Antelope Sink Unit Well No. 1, located in Unit G of Section 18, Township 19 South, Range 24 East, Eddy County, New Mexico, in an effort to evaluate the reservoir.
- CASE 3076: Application of Marathon Oil Company for a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of an 80-acre non-standard proration unit comprising the SE/4 NW/4 and NE/4 SW/4 of Section 31, Township 17 South, Range 35 East, Vacuum-Upper Pennsylvanian Pool, Lea County, New Mexico, said unit to be dedicated to its State Warn A/1 Well No. 3, located in Unit F of said Section 31.
- CASE 3038: (Reopened)
Application of Kennedy Oil Company for a waterflood project and for designation of a waterflood buffer zone, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Square Lake Pool by the injection of water into the Grayburg-San Andres formation through one well located in Unit L of Section 20, Township 16 South, Range 31 East, Eddy County, New Mexico. Applicant further seeks the designation of the N/2 SW/4 of said Section 20 as a buffer zone offsetting Newmont Oil Company's Waterflood Project immediately south.

DOCKET: EXAMINER HEARING - WEDNESDAY - MAY 27, 1964

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 3033: (Continued from April 29, 1964 Examiner Hearing)
Application of Cherry Brothers and Cabot Corporation for the creation of a new oil pool and for special temporary pool rules, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the creation of a new oil pool for Lower Wolfcamp production for its Austin State Well No. 1, located in Unit F of Section 19, Township 14 South, Range 36 East, Lea County, New Mexico, and for the establishment of temporary pool rules therefor, including a provision for 80-acre oil proration units.
- CASE 3046: Application of Marathon Oil Company for a triple completion and a non-standard oil proration unit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the triple completion (tubingless) of its State Warn A/c 1 Well No. 3, located in Unit F of Section 31, Township 17 South, Range 35 East, to produce oil from the Glorieta, Wolfcamp, and Abo formations, Vacuum Field, Lea County, New Mexico. Applicant further seeks the approval of a non-standard 80-acre proration unit comprising the SE/4 NW/4 and NE/4 SW/4 of said Section 31 to be dedicated to the aforesaid Wolfcamp and Abo zones in said well.
- CASE 3047: Application of El Paso Natural Gas Company for three non-standard gas proration units and one unorthodox well location, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks the approval of the following three non-standard gas proration units:
A 376.88-acre unit comprising the SE/4 and E/2 SW/4 and Lots 1, 2 and 3 of Section 9 and Lots 3 and 4 and the NW/4 SW/4 of Section 10;
A 357.84-acre unit comprising the SE/4, S/2 SW/4, and NE/4 SW/4 and Lots 1 and 2 of Section 10 and Lots 3 and 4 of Section 11;
A 359.20-acre unit comprising the S/2 and Lots 1 and 2 of Section 11, all in Township 32 North, Range 7 West, Blanco Mesaverde Pool, San Juan County, New Mexico. Applicant further seeks the approval of an unorthodox location for a well to be dually completed in the Mesaverde and Dakota formations at a point 1650 feet from the South line and 825 feet from the East line of said Section 9.
- CASE 3048: Application of E. L. Fundginsland for compulsory pooling, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks an order force-pooling all mineral interests in the Basin Dakota Gas Pool underlying the S/2 of Section 3, Township 29 North, Range 13 West, San Juan County, New Mexico.
- CASE 3049: Application of Sohio Petroleum Company for a unit agreement, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Littman San Andres Unit Area comprising 661 acres, more or less, of State and Federal lands in Sections 8, 9, 16, and 17, Township 21 South, Range 38 East, Lea County, New Mexico. The Unit Area also includes 1280 acres of fee land in Sections 5, 6, 7, 14, and 15, Block A-29, PSL, Andrews County, Texas.

- CASE 3050:** Application of Sohio Petroleum Company for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Littman-San Andres Pool by the injection of water into the San Andres formation through 4 wells in Sections 8, 9 and 16, Township 21 South, Range 38 East, Lea County, New Mexico. Said project is to be operated in Lea County, New Mexico. Said project is to be operated in conjunction with applicant's proposed waterflood project in the Littman San Andres Unit in Andrews County, Texas.
- CASE 3051:** Application of Pan American Petroleum Corporation to amend Order No. R-2026, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks amendment of Rules 7 and 10 of Order No. R-2026 to permit the production of more than two times top allowable from wells in its Northeast Hogback Unit Pressure Maintenance Project even though they offset wells outside the project area.
- CASE 3052:** Application of The Atlantic Refining Company to amend Order No. R-2210, San Juan County, New Mexico. Applicant, in the above-styled cause, seeks amendment of Rules 7 and 10 of Order No. R-2210 to permit the production of more than two times top allowable from wells in its Horseshoe Gallup Unit Pressure Maintenance Project even though they offset wells outside the project area.
- CASE 3053:** Application of Texaco Inc. for a waterflood project, Lea County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Maljamar Pool by the injection of water into the Grayburg-San Andres formation through two wells located in Section 12, Township 17 South, Range 32 East, Lea County, New Mexico.
- CASE 3055:** Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its J. P. Collier Well No. 1 located in Unit F of Section 10, Township 11 South, Range 33 East, Lea County, New Mexico, to produce oil from the North Eagle Upper and Lower Pennsylvanian Pools through parallel strings of tubing.
- CASE 3056:** Application of Texas Pacific Oil Company for a dual completion, Lea County, New Mexico. Applicant, in the above-styled cause, seeks approval of the dual completion (conventional) of its State "AF" Well No. 3, located in Unit L of Section 5, Township 18 South, Range 35 East, Lea County, New Mexico, to produce oil from the Abo and Wolfcamp formations, Vacuum Field, through parallel strings of tubing.
- CASE 3057:** Application of Charles O. Trimble for an oil treating plant permit, Lea County, New Mexico. Charles O. Trimble, dba Trimble Mud Service, in the above-styled cause, seeks authority pursuant to Rule 312 to install and operate an oil treating plant approximately one mile South and West of Eunice, New Mexico, for the purpose of processing and treating sediment oil.
- CASE 3058:** Application of Cities Service Oil Company to establish a special GOR limit, Lea County, New Mexico. Applicant, in the above-styled cause, seeks the establishment of a special gas-oil ratio limit of 6000 cubic feet of gas for each barrel of oil produced in the Reeves-Pennsylvanian Pool, Lea County, New Mexico.

- 3 - Wednesday, May 27 Examiner Hearing

CASE 3059: Application of Frank Darden for a unit agreement, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of the Cowntown Unit Area comprising 280 acres, more or less, of State land in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3060: Application of Frank Darden for a waterflood, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Artesia Pool in his Cowntown Unit Area, by the injection of water into the Grayburg formation through two injection wells in Sections 13 and 24, Township 18 South, Range 28 East, Eddy County, New Mexico.

CASE 3061: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Dayton Grayburg Pool by the injection of water into the Grayburg formation through one well in Section 25, Township 18 South, Range 26 East, Eddy County, New Mexico.

CASE 3062: Application of Kewanee Oil Company for a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks authority to institute a waterflood project in the Atoka Grayburg Pool by the injection of water into the Grayburg formation through one well in Section 13, Township 18 South, Range 26 East, Eddy County, New Mexico.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3060
Order No. R-2734

APPLICATION OF FRANK DARDEN
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 July 1, 1964, at Santa Fe, New Mexico, before Examiner Elvis A. Utz.

NOW, on this 8th day of July, 1964, 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, Frank Darden, seeks permission to institute a waterflood project in the Artesia Pool in his Cowntown Unit Area by the injection of water into the Grayburg and San Andres formations through two injection wells in Sections 13 and 24, Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

-2-

CASE No. 3060

Order No. R-2734

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Frank Darden, is hereby authorized to institute a waterflood project in the Artesia Pool in his Cowntown Unit Area by the injection of water into the Grayburg and San Andres formations through the following-described wells in Township 18 South, Range 28 East, NMPM, Eddy County, New Mexico:

Ohio State Well No. 1, Unit N of Section 13

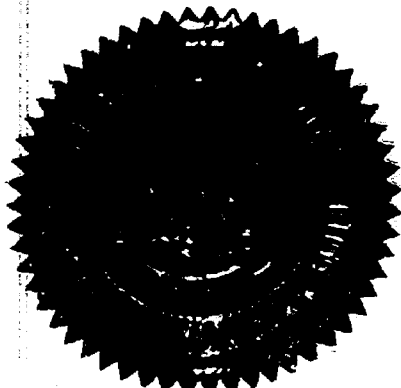
Magnolia State Well No. 2, Unit E of Section 24

(2) That the subject waterflood project shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) 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.

(4) 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

Jack M. Campbell
JACK M. CAMPBELL, Chairman

E. S. Walker
E. S. WALKER, Member

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

esr/

