

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
September 11, 1962

EXAMINER HEARING

FARMINGTON, N. M.
PHONE 325-1182

DEARNLEY-MEIER REPORTING SERVICE, Inc.

ALBUQUERQUE, N. M.
PHONE 243-6691

IN THE MATTER OF:)

Application of Ambassador Oil Cor-)
poration for approval of a unit)
agreement and waterflood project,)
Eddy County, New Mexico. Applicant,)
in the above-styled cause, seeks per-)
mission to institute a waterflood pro-)
ject in the Grayburg-Jackson Pool,)
with the initial injection of water to)
be through six wells located in Sec-)
tions 22, 23 and 26, Township 17 South,)
Range 30 East, Eddy County, New Mexico,)
said project to be governed by Rule 701.)
Applicant further seeks approval of the)
Grayburg-Jackson Unit Agreement embrac-)
ing 1600 acres, more or less, of federal)
and State lands in Township 17 South,)
Range 30 East, Eddy County, New Mexico.)

Case 2634

BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 2634.

MR. DURRETT: Application of Ambassador Oil Corporation
for approval of a unit agreement and waterflood project, Eddy
County, New Mexico.



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MR. JENNINGS: I'm James T. Jennings of Roswell, appearing on behalf of Ambassador Oil Corporation.

MR. UTZ: Any other appearances in this case?

MR. JENNINGS: I have one witness, Mr. Riley of Ambassador Oil Corporation.

(Witness sworn.)

(Whereupon, Applicant's Exhibits 1, 2, 3 and 4 were marked for identification.)

MR. JENNINGS: Mr. Examiner, before we start here, I don't know whether the Commission has been furnished with copies of the unit agreement or not. They got lost in the mail and they were supposed to come direct. If you don't, I have extra copies. They were supposed to have been sent. They weren't attached to the application.

MR. UTZ: There doesn't appear to be any in the file.

MR. JENNINGS: We have a letter saying they were transmitted. I don't know what happened, I'm sorry.

MR. UTZ: You may proceed.

E. A. RILEY

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

DIRECT EXAMINATION

BY MR. JENNINGS:



Q Would you state your name, occupation and profession?

A E. A. Riley, I am Assistant Vice President in charge of secondary recovery, Ambassador Oil Corporation.

Q Have you on prior occasions testified before this Examiner or this Oil and Gas Commission?

A Yes, sir, I have.

MR. JENNINGS: Does the Examiner wish me to further qualify the witness?

MR. UTZ: No, he has previously been qualified.

Q You are familiar with the application filed here on behalf of Ambassador Oil Corporation?

A Yes, I am.

Q Generally it's an application for approval of a unit and a waterflood project?

A That is correct.

Q What is the unit area?

A The unit area contains 1600 acres, more or less contained wholly or partially in Sections 22, 23, 25, 26, 27 and 36, Township 17 South, Range 30 East, New Mexico principal meridian.

Q What types of land, state, fee or federal, are embraced?

A 1560 acres are federal acreage, one 40-acre tract is a state tract.

Q No fee lands?

A No fee lands.

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Q Has the unit agreement been submitted to the United States Geological Survey for approval?

A Yes, it has, and the area has been tentatively designated as a logical area for unitization.

Q Has it been submitted to the office of the Commissioner of Public Lands of the State of New Mexico?

A Yes, it has, and it has been approved as to form and content.

Q Do you have knowledge as to approximately what percentage of the working interest owners have approved the unit?

A At this time 72.26% of the working interest have signed, the remaining 27.36 have agreed to sign the unit, one of those being General American, who owns a 20.446719% working interest. Fortunately one of their officers is present at this hearing and I think he would be willing to make a statement that they are signing the documents. It's a matter of procedure at this time.

Q Generally what are the requirements as to percentage participation?

A A tract will be qualified by one of two ways, by the terms of the document, by execution 100% of the working interest and 100% of the royalty interest or 95% of the working interest and 75% of the royalty interest, provided 85% of the signing

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working interest indemnify those not signing as to any liability.

Q Mr. Riley, is the unit agreement one substantially in the form previously approved by the Commissioner of Public Lands, the State of New Mexico, and the Oil Conservation Commission and the United States Geological Survey?

A Yes, it is.

Q Do you feel that the unit will lead to a more efficient and orderly development and operation of the area?

A Yes, I do.

Q Do you feel that it is necessary to the development so that you can waterflood the project?

A Yes.

Q Do you feel that the unit is in the interest of conservation and for the prevention of waste?

A Yes, I do.

Q In connection with this unit, do you propose a waterflood project?

A Yes, we do.

Q Referring to Exhibit 1, could you tell the Examiner generally where the injection wells that you have proposed and the general plan of operation will be?

A Yes, I can. The Exhibit 1 is a plat of the unit area showing the unit boundaries in hashier; the pilot will consist of

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six injection wells to be expanded later into a five-spot injection pattern as indicated on the plat. The pilot injection pattern six wells are those wells connected with solid lines. These wells are located in our application where designated by tract and well number. Well No. 3-3 being located in Section 23, 7-3 in Section 23, wells 9-1, 12-1 and 10-2 in Section 26 and 7-2 in Section 22. Those have been encircled in red on Exhibit 1.

Q Could you just briefly relate the history of the development in the area and detail your plan of operation?

A Yes, I can. The field discovery well, the Rapallow Oil Company Beason No. 2, located in Section 28, 17 South, 30 East was completed in April of 1930 at a depth of 3126 for 16 barrels of oil per day. The following month the Premier Petroleum Company completed their Arnold No. 1, located in Section 23, 17 South, 30 East for 20 barrels of oil per day. Due to the low price for the crude and the general national economic situation, no further development was carried out until 1938 when several wells were drilled in the western portion of the field. This development continued through 1944 with the majority of the wells being drilled in the period from 1942 to 1944. These wells were completed with initial potentials in the range of 150 to 350 barrels per day.



The completion practices consisted of drilling to the top of the pay with cable tools, setting either 7" or 8-5/8" surface casing, cementing with 50 sacks of cement and then, that's surface casing, and then to set an oil string of 7" or 5 1/2" casing at 2500 or 3100 feet using 100 sacks of cement. The productive interval was ordinarily shot with two to four quarts of nitro-glycerine per foot.

In the middle of 1950's several wells were sand fracked with approximately 10,000 gallons of fluid and 15,000 pounds of sand. Although some success was witnessed, reservoir pressure had been depleted to the point that increased production did not hold up and this practice was limited. The pay zone in the field is the Premier Zone of the Grayburg series of Guadalupian age Permian system, and consists of sand stringers appearing in an over all dolomitic limestone body.

Generally there are three main pay stringers within the productive intervals. Occasionally these stringers become fingered into smaller ones through depositional facie changes. A solution gas drive was the predominant mechanism during the primary productive life.

Average estimated rock properties, the properties had to be estimated since there were little or no core data taken in the field. However, the nearby Loco Hills field did have cores



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taken in the Premier zone and these properties from the Loco Hills-Premier area show an average porosity of 19.6%, average permeability of 37 millidarcies, average connate water saturation of 25%, average residual oil saturation, 19%, oil gravity of 37 degrees API, oil viscosity estimated at $1\frac{1}{2}$ centipois, formation volume factor, the original formation volume factor, 1.28, the original gas-oil ratio of 250 cubic feet per barrel. Total gross pay thickness, 170 to 200 feet with net pay being very difficult to ascertain. However, it is estimated at an average of 13 feet. Total cumulative primary recovery as of July 1, 1960 was 1,745,323 barrels. At this time the area is in the stripper stage with production averaging 2.2 barrels per well per day.

Q Mr. Riley, would you refer to Exhibit 2 and just tell us generally what that shows? That's an isopach plat?

A Exhibit 2 is an isopachous map of the Premier sands compiled in the conventional manner. However, in this area, due to the severe lack of data, some liberties had to be taken in the interpretation of it. The map was prepared by ascertaining the individual thickness of the three sand stringers, totalizing them, plotting them on the map and drawing a conventional isopachous map.

Q Mr. Riley, did you prepare a general plan for development and submit that plan which has been identified as Applicant's



Exhibit 3 to the United States Geological Survey?

A Yes, I have. And I have been citing portions of that plan in previous testimony.

Q I believe you stated that the production has fallen to a stripper stage?

A That is correct.

Q Have you made any recent studies of the production?

A Yes, I have.

Q Referring to Exhibit 4, which is a tabulation of production, generally what does this reflect?

A This reflects that of the active wells in the field, thirty-five by number, the production averaged between the dates 4-1-61 to 10-1-61, 14,985 barrels, which is an average per well figure of slightly over two barrels per well per day.

Q Do you have logs of the injection wells?

A We do not have logs on any of the injection wells. We have some logs on nearby wells.

Q Have you attempted to obtain logs on injection wells?

A No, we have not.

Q How do you plan to flood this area?

A Our present plans are to inject water through tubing with a packer set in the casing just above the pay zone so as to confine water to the Premier zone.

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Q What kind of water do you propose?

A This will be fresh water. It will be purchased from a local commercial water supply company.

Q What will be the extent of your injection at the outset?

A We have a target of 500 barrels per well per day.

Q What generally was the casing program in the wells that you plan to use for injection?

A These wells were completed with surface casing, either 7" or 8-5/8", cemented with usual 100 sacks of cement and a production string of 7 or 5 1/2" set immediately above the pay zone and cemented with 100 sacks.

Q Possibly you might have testified to this but I don't recall. What was the depth of the Premier sand or formation?

A The Premier sand, as indicated on the radioactivity log of Ambassador Oil Corporation's Federal B No. 5, occurs in three stringers, the first stringer from 3132 to 3140, the second stringer from 3162 to 3173, and the third stringer from 3186 to 3195 feet.

Q Do you have any further comments on any of these exhibits, Mr. Riley?

A No, I do not.

Q In your opinion will the waterflood project prevent waste?



A Yes, it will.

Q Will it impair the correlative rights of any of the operators in any way?

A No, I think it will tend to protect correlative rights because our present plans are to flood along the unit boundary lines on a cooperative basis with the offset operators who declined to enter the unit when offered the chance.

Q What is your target date for the commencement of water-flood operations?

A We hope to have the unit effective and water entering or being injected by the first of 1963.

Q Mr. Riley, were Applicant's Exhibits Nos. 1 through 4 prepared by you or under your supervision?

A Yes, they were.

MR. JENNINGS: We have nothing further to offer at this time.

MR. UTZ: Exhibits 1 through 4 will be entered into the record of this case.

(Whereupon, Applicant's Exhibits 1 through 4 were entered into evidence.)

CROSS EXAMINATION

BY MR. UTZ:

Q Mr. Riley, do you have a list of your six injection



wells you propose at this time?

A Yes, I do. They are in the application, sir.

MR. JENNINGS: The third page of the application.

A They are also encircled in red on Exhibit 1.

Q The encirclement on Exhibit 1 doesn't give me the footage locations, however. I don't find it.

MR. JENNINGS: The foot locations in the quarter quarter sections?

MR. UTZ: In each section we should have. I don't believe they're in the application.

MR. JENNINGS: I just have the quarter quarter section in paragraph 9.

Q (By Mr. Utz) I wonder if you can submit us a list of the exact locations of these wells and what you propose to call them so that we can list them in our order.

A Yes, we can. We propose to number them as in the application, the tract number first, the old well number after the hyphen.

Q Yes, here they are.

MR. JENNINGS: Is that sufficient?

MR. UTZ: I think that will be sufficient, that's the quarter quarter section location?

MR. JENNINGS: Yes.



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MR. UTZ: And all these will be Ambassador is the operator?

A Yes, sir.

MR. JENNINGS: Yes, sir.

Q (By Mr. Utz) Mr. Riley, in reference to your producing ability of the wells in this unit, I notice that the AOC Federal "C" lease in June produced 429 barrels, in May, 488 barrels. Now, how many wells is that from?

A That's which lease? The A lease?

Q The C lease, AOC Federal "C", second column. That's in May and June of '60.

A That is two wells.

Q Do you have any way of knowing what the capacity of those two wells actually was?

A Yes, we do. We take monthly tests on those wells.

Q Well, I wonder if you would give me a breakdown of that?

A I do not have that with me. I'll be pleased to submit it to you.

Q As far as the per well basis is concerned, would that be the highest rate of production that you have?

A Yes, the average production is 2.2 barrels with a range from .925 barrels of oil per day per well.

Q .925?

A Right.



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Q I think that will be sufficient without furnishing any further information. Did you also furnish us a tabulation of the casing program other than what you have put in the record?

A At this hearing I did not. I do have it available.

Q Do you have that available to submit at this time?

A Yes, I do. It would be a complete well completion history.

Q Do you want to submit that as Exhibit --

A Exhibit 5.

(Whereupon, Applicant's Exhibit No. 5 was marked for identification.)

Q In your opinion is the casing program in your injection wells, as proposed, adequate to protect all surface waters?

A We are not sure at this time, but our plans are to, immediately upon initiating injection, is to run injection logs, profile logs to determine that the water is entering the pay zone.

MR. UTZ: Have you seen a list of this casing program, Mr. Irby?

MR. IRBY: No, sir, I have not seen the application. All I have seen is the docket.

Q (By Mr. Utz) Is this the only list you have?

A Yes, it is.

MR. JENNINGS: We have another one.



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Q How do you propose to test the casing in these older wells before you start injecting water?

A We will be injecting under packer through tubing.

Q Through tubing with the packer set just above the pay zone?

A That is correct.

Q So you actually won't run any casing test?

A We don't see any need to run any casing tests under that kind of an operation.

Q Will you have any type of fluid in the annulus at all?

A That is the normal practice.

Q What type of fluid, water?

A It will be fresh water.

Q And do you intend to put a gauge on that water so you can detect any packer leak?

A Yes, we'll maintain annulus gauges.

MR. UTZ: Any further question?

MR. IRBY: I would like to ask a few questions.

MR. JENNINGS: We would like to offer Exhibit No. 5.

MR. UTZ: It will be entered into the record in this case.

(Whereupon, Applicant's Exhibit No. 5 was entered into evidence.)

MR. UTZ: Mr. Irby.



MR. IRBY: Frank Irby, State Engineer's office.

BY MR. IRBY:

Q Would you describe for me, please, the tubing and packer you intend to use, Mr. Riley?

A It will be conventional 2-3/8" EUE 8 round tubing.

Q EUE? A EUE.

Q The section where this packer is to be set, is there cement in the annulus between the hole and the casing?

A Yes, we feel that there is with the hundred sacks that was used to cement the production string.

Q Will the water that you use be recircled?

A Yes, it will be commingled with produced water at the inception of water production.

Q What is the source of the water?

A The initial water will come from the Caprock Water Company, who brings water from the Caprock area some thirteen miles to sixteen miles to the east of us.

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

BY MR. UTZ:

Q This tubing was 2" tubing, was it not?

A Yes.

Q What type packer?

A It will be a tension type packer.



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

(Witness excused.)

MR. UTZ: Are there any statements in this case? The case will be taken under advisement.

MR. JENNINGS: I think there's one statement, Mr. Examiner.

MR. UTZ: Do you have a statement, Mr. Crosscrop?

MR. CROSSCROP: N. W. Crosscrop, General American Oil Company. We are one of the participants in this unit. We have not as yet signed the agreement, but it is satisfactory to us and will be in the mail within a few days.

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 2nd day of October, 1962.


Notary Public-Court Reporter

My commission expires:
June 19, 1963.

I do hereby certify that the foregoing is a complete record of the proceedings in the hearing of case No. 2634 heard by me on Sept. 4, 1962.


Examiner
New Mexico Oil Conservation Commission

