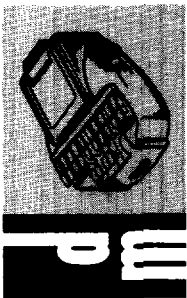


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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 23, 1969

EXAMINER HEARING

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IN THE MATTER OF:

Application of Atlantic-Richfield  
Company for a waterflood project  
and unorthodox injection well  
location, Eddy County, New Mexico.

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) Case No. 4110  
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BEFORE: Elvis A. Utz, Examiner.

TRANSCRIPT OF HEARING

MR. UTZ: Case 4110.

MR. HATCH: Case 4110. Application of Atlantic-Richfield Company for a waterflood project and unorthodox injection well location, Eddy County, New Mexico.

MR. HINKLE: Clarence Hinkle, Hinkle, Bondurant and Christy, Roswell, appearing on behalf of Atlantic-Richfield Company. We have one witness, Mr. Osborne.

(Witness sworn.)

MR. HINKLE: We also have five exhibits which have been identified and you have copies of them.

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

MIKE OSBORNE

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

DIRECT EXAMINATION

BY MR. HINKLE:

Q State your name, your residence and by whom you are employed.

A Mike Osborne. I reside in Roswell, New Mexico,

and I'm employed by Atlantic-Richfield Company.

Q Have you previously testified before the Oil Conservation Commission?

A No, I have not.

Q Are you a graduate petroleum engineer?

A Yes, I am.

Q State briefly your educational background and your professional experience.

A I graduated from the University of Oklahoma with a Bachelor's degree in petroleum engineering in January of this year and I have been employed by Atlantic-Richfield as an operation engineer since that time. Prior to my graduation, I worked three summers as an engineer in training; two of these were for Mobil Oil Corporation and the third summer was for Pan American Oil.

Q Are you familiar with the application of Atlantic-Richfield in this case?

A Yes, I am.

Q Are you familiar with the area that is involved in this case?

A Yes, I am.

Q Have you made a study of that area --

A Yes, I have.

Q -- and of the wells that have been drilled in the area?

A Yes, I have.

Q What is Atlantic-Richfield seeking to accomplish by this application?

A Atlantic-Richfield is seeking approval of the pilot waterflood project consisting of the north half of the northwest quarter of Section 23, Township 18 South, Range 31 East of Lea County, New Mexico, and for permission to drill an unorthodox injection well to be located 100 feet from the north and west lines of Section 23.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A Yes, there have been.

Q Refer to Exhibit No. 1 and explain what this is and what it shows.

A Exhibit No. 1 is a general plat showing the project area and all wells which have been drilled in the

formations from which these wells are producing or have been produced within a two mile radius of the project area. The plat also shows ownership of the lease hold interest and the character of the land involved, that is as to whether the land is federal, state or fee land. The proposed project area is outlined in red and the proposed unorthodox well is indicated by a red triangle.

Q Does Atlantic-Richfield own the lease that is involved in the proposed project area?

A Yes.

Q And also the lease covering the remainder of the north half of Section 23?

A Yes.

Q Does Atlantic-Richfield have any other leases in the immediate area?

A Yes, Atlantic-Richfield also has leased all of Section 14 to the north of the proposed project area.

Q Is their producing well located upon the proposed project area?

A Yes, there is. It is the Panco Federal No. 1

Q Have you made a study of that area --

A Yes, I have.

Q -- and of the wells that have been drilled in the area?

A Yes, I have.

Q What is Atlantic-Richfield seeking to accomplish by this application?

A Atlantic-Richfield is seeking approval of the pilot waterflood project consisting of the north half of the northwest quarter of Section 23, Township 18 South, Range 31 East of Lea County, New Mexico, and for permission to drill an unorthodox injection well to be located 100 feet from the north and west lines of Section 23.

Q Have you prepared or has there been prepared under your direction certain exhibits for introduction in this case?

A Yes, there have been.

Q Refer to Exhibit No. 1 and explain what this is and what it shows.

A Exhibit No. 1 is a general plat showing the project area and all wells which have been drilled in the

which is located 1980 feet from the west line and 660 feet from the north line of Section 23, Township 18 South, Range 31 East.

Q What is the history of this well?

A This well was originally drilled in June of 1964 as a wildcat to test the Delaware. The Delaware was found unproductive and the well was abandoned. Atlantic later picked up this property and in October of 1967 re-completed this well into the Queen formation for an initial production rate of 15 barrels of oil per day pumping.

Q Does Atlantic-Richfield have a waterflood project in connection with Section 14 to the north of the proposed project area?

A Yes.

Q What is the status of that project?

A That project has been under waterflood since November of 1965. The project has shown a response to water injections; has reached a peak and is now on a decline. It is currently producing approximately 200 barrels of oil per day.

Q That's the number one well which you have testified

to that is located on the 80 acres in the proposed project area received a response from this waterflood?

A Yes, this well has shown a response; production has increased from initial rate of 15 barrels of oil per day to a peak of about 40 barrels of oil per day and is currently producing 33 barrels of oil and 6 barrels of water per day.

Q Is the project in Section 14 unitized or is it on a lease basis?

A This project is being operated on a lease basis with cooperation across the leases and has not been unitized.

Q Why does Atlantic-Richfield propose to treat the 80 acre proposed project separately from that in Section 14?

A There are primarily two reasons why Atlantic wishes to treat the proposed project area as a separate area from the project area in Section 14. The reasons are because of the multiple interest on the leases and also because of the different remaining life of the two project areas. As I said, the Swearingen project in Section 14 has been under waterflood since November of 1965, and has



responded to water injection and is now in a state of decline and in this condition it would be difficult to determine equitable participation parameters if we did join the two units. The fact that this area has responded to waterflooding does show that additional oil can be recovered from the Queen sand in this area. Referring at this time to the proposed project area and especially to the proposed unorthodox location the reason that Atlantic would like to drill the well in this unorthodox location is because there is no offset production to the west of this proposed well. Consequently, any oil which is swept by injection from this well to the west will be lost because we do not anticipate that any development of the Queen sand will take place to the west of this well. Consequently, by locating this well as close as possible to the west lease line, we will be able to conserve this oil that would otherwise have been lost and in addition locating the well in this area, we will be able to prove up the reserves in the Queen sand at this location, which could possibly lead to future development to the west and south. If future

development does take place, the location of this well close to corner will protect correlative rights of all land owners in this area and all interests also. In addition, the location of the well at this point will provide for a maximum efficient sweep and will lead to additional oil recovery from the Queen sand.

Q What is the exact location of the proposed unorthodox injection well?

A We propose to locate this well 100 feet from the north and west line of Section 23, Township 18 South, Range 31 East.

Q Now, refer to Exhibit No. 2 and explain what this is and what it shows.

A Exhibit No. 2 is a structure map which was contoured on the top of the Queen sand in the area surrounding the proposed project area. This shows that the Queen sand is a southeast dipping monocline and to the best of our knowledge this reservoir is a stratigraphic trap and consequently structure is of no significance in determining the extent of the reservoir.

Q Does this Exhibit 2 also show the injection

wells in Section 14?

A Yes, it does and it shows the proposed project area and the proposed location of the injection well, also in red.

Q Now, refer to Exhibit 3 and explain what this is.

A Exhibit 3 is a gamma ray neutron log from the Panco Federal No. 1 which is located in the proposed project area. On the large scale of this log is indicated the perforations in the Queen from which this well is now producing. These are at 3444 feet to 3448 and from 3454 to 3456.

Q Now, refer to Exhibit 4 and explain this to the Commission.

A Exhibit 4 is a diagrammatic sketch of the proposed injection well which is to be located 100 feet from the north and west lines of Section 23. This shows all the proposed casing strength, including the proposed diameters and setting depths. In addition, it shows the proposed quantities and the estimated tops of the cement. It shows the proposed perforated interval tubing strings including

diameters and setting depths of the proposed packer and tubing string.

Q How much water do you anticipate would be injected in this well?

A We anticipate that we will inject approximately 300 barrels of water per day at an injection pressure of comparable to that which we find on the Swearingen project, which ranges from about 1400 PSI to 1750 PSI.

Q Where do you intend to get the water for injection purposes?

A We will purchase water from Double Eagle Water Company and we will also use some of the produced water from Section 14.

Q Now, referring back to Exhibit No. 1, I think you have already pointed out that there is no development in the southeast quarter of 15 and the northeast quarter of 22, 19 and 31 --

A That's true.

Q -- in the vicinity of the project area. Have you contacted Marathon Oil Company and Gulf, which are

the owners of the lease hold interest covering this area?

A Yes, we have. We have contacted both companies and informed them of our intent and our proposals. We have obtained a waiver from Gulf Oil Corporation, which is Exhibit 5. Although we have not obtained a waiver from Marathon, they have stated in telephone conversations that they have no objection to our proposals. In addition, if you will notice on Exhibit 1 all the land in this area is federal land and we have also contacted the U.S.C.S. and informed them of our intent and they said that they have no objection either to our proposals.

Q Now, are you seeking a project allowable for this project in accordance with Rule 701 of the Commission?

A Yes, we are.

Q In your opinion, will this proposed waterflood project be in the interest of conservation and the prevention of waste?

A Yes, I believe this to be true.

Q Will it also tend to protect correlative rights?

A Yes, sir, and it will also promote the greatest ultimate recovery of oil and gas from the project area.

MR. HINKLE: We would like to offer in evidence Exhibits 1 through 5.

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

MR. HINKLE: That's all of this witness.

(Whereupon, Applicant's Exhibits 1 through 5 were entered in the record.)

#### CROSS EXAMINATION

BY MR. UTZ:

Q Now, I believe the two reasons you stated for wanting to separate this from your flood to the north and the flood from the north incidentally does include all of Section 14?

A Yes, sir, it includes all of Section 14 plus the east half of the southeast quarter of Section 11.

Q The reasons were, first the multiple interests in the 80 acre tract?

A No, sir, there are multiple interests on the waterflood to the north, the Swearingen project.

Q And the longer life for your flood; you

anticipate longer life for your flood?

A Yes, sir, we predict that the Swearingen waterflood will continue for approximately another five years and that the waterflood on the Panco lease will continue for an additional nine and a third years.

Q I believe you said you did contact Gulf and you also have a waiver from them?

A Yes, sir. We contacted Marathon in addition and they said that they had no objections, and also the U.S.G.S.

Q Referring to your Exhibit No. 4, do you intend to load the annulus?

A Yes, sir, we plan to load the annulus with an inert fluid and to place a pressure gauge on the casing tubing annulus. This inert fluid will be an inhibited water.

Q The water you are going to buy from Double Eagle will be fresh water, undoubtedly?

A It is relatively fresh. We are using it at this time on the Swearingen project and notice no corrosion problems with it.

Q The produced water from your flood in Section

14, what kind of water is that?

A This is slightly salty. We are at this time submitting produced water analyses from this Swearingen lease to the state. We are treating the water on the Swearingen project with SO<sub>2</sub> to remove oxygen and also an inhibitor to reduce corrosion.

Q Then, the water you inject in this will be treated?

A Yes, sir, it will be.

Q The tubing will be plain unlined tubing?

A Yes, sir. We have been running coupons on the Swearingen lease and on the water injected there since November of 1965 and the corrosion rates are at a satisfactorily low level that we do not foresee any difficulties in the life of the flood, so we do not feel that there is any need for anything but unlined tubing.

MR. UTZ: Are there other questions of this witness?

REDIRECT EXAMINATION

BY MR. HINKLE:

Q I have one other question. In connection with



the proposed project area, is there diversity of ownership of over-riding royalties in that area and in Section 14?

A Yes, there are.

Q Is that another reason why you want to treat this as a separate project?

A Yes, because of these varying interests.

MR. HINKLE: That's all.

MR. UTZ: The witness may be excused.

Statements in this case? The case will be taken under advisement.

I N D E X

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<u>EXHIBIT</u>	<u>MARKED</u>	<u>OFFERED AND ADMITTED</u>
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STATE OF NEW MEXICO )  
 ) ss  
COUNTY OF BERNALILLO )

I, GLENDA BURKS, 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 2nd day of May, 1969.

Glenda Burks  
NOTARY PUBLIC

My Commission Expires:

March 12, 1973.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 4110 heard by me on May 23 1969  
Glenda Burks, Examiner  
New Mexico Oil Conservation Commission