STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

17 September 1986

EXAMINER HEARING

IN THE MATTER OF:

Application of Merrion Oil & Gas Corporation for directional drilling and an unorthodox bottom hole oil well location, McKinley County, New Mexico.	CASE 8989

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Division: Jeff Taylor
Legal Counsel for the Division
Oil Conservation Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

For the Applicant: Tommy Roberts
Attorney at Law
Farmington, New Mexico

I N D E X

E X H I B I T S

MR. CATANACH: Call next Case 8989.

MR. TAYLOR: Application of Merrion Oil and Gas Corporation for directional drilling and an unorthodox bottom hole oil well location, McKinley County, New Mexico.

MR. ROBERTS: I'm Tommy Roberts, P. O. Box 129, Farmington. The zip code is 87499.

I'm appearing on behalf of the Applicant, Merrion Oil and Gas Corporation and I have one witness to be sworn.

MR. CATANACH: Are there any other appearances in this case?

(Witness sworn.)

STEVEN S. DUNN,

being called as a witness and being duly sworn upon his oath, testified as follows, to-wit:

DIRECT EXAMINATION

BY MR. ROBERTS:

Q Would you please state your name and your place of residence?

A My name is Steve Dunn and I'm from Farmington, New Mexico.

Q What is your occupation?

A I am Operations Manager for Merrion Oil and Gas Corporation.

Q How long have you been employed in that capacity?

A I've been employed by Merrion Oil and Gas for 10-1/2 years; the last 5-1/2 years as Operations Manager.

Q Are you familiar with the operations of Merrion in the area which is the subject of this application?

A Yes, I am.

Q Have you testified before the New Mexico Oil Conservation Division on any prior occasion?

A Yes, I have.

Q In what capacity?

A As a petroleum engineer.

Q Are you familiar with the application in this case?

A Yes, I am.

MR. ROBERTS: Mr. Examiner, I would ask that Mr. Dunn's qualifications as an expert in the field of petroleum engineering be accepted.

MR. CATANACH: Mr. Dunn is so qualified.

Q Could you briefly describe the purpose of this application?

A Merrion Oil and Gas seeks authority to plug back, side track and directionally drill our Federal 21 Well No. 1, located at a standard surface location 2,310 feet from the south and west lines of Section 21, Township 20 North, Range 5 West, Ojo Encino-Entrada Pool, to a new unorthodox bottom hole location within 100 feet of a point 2310 feet from the south line and 2,610 feet from the west line of the same section 21, the northeast quarter of southwest quarter of this section to remain as the dedicated acreage to the well.

Q Mr. Dunn, would you turn to what's been marked as Exhibit Number One and identify that exhibit?

A Exhibit Number One is a lease ownership plat of Section 21, Township 20 North, Range 5 West, covering the Ojo Encino-Entrada Pool and its offsetting leases.

Q Would you summarize the data illustrated on this exhibit, which is pertinent to the application in this case?

A This exhibit shows that all leases in this section are Federal leases. Merrion is 100 working interest owner of the lease covering the west half of the east

half of Section 21, shown in blue, and offsetting the Ojo Encino-Entrada Pool to the east.

We are also 75 percent working interest owner in the southwest quarter of Section 21, with the exception of the northeast of the southwest quarter, where we own 100 percent of the working interest.

Merrion is also 100 percent working interest owner in the southeast quarter of the northwest quarter of that same section in the Entrada formation only. The remainder of this quarter section, we have no working interest.

Q Mr. Dunn, turn to what's been marked as Exhibit Number Two and identify that exhibit.

A Exhibit Number Two is a well location and structure map of the Entrada formation in the Ojo Encino Pool area.

Q Summarize the data illustrated on this exhibit which is pertinent to this application.

A The Ojo Encino-Entrada Pool consists of the southeast quarter of the northwest quarter and the northeast quarter of the southwest quarter of Section 21, Township 20 North, Range 5 West, and is identified by the orange outline on Exhibit Number Two.

here are two wells in the pool, the Federal 21 No. 1, located at 2,310 feet from the south line,

2,310 feet from the west line, and the Federal 21 No. 2, at 2,310 feet from the north line, 2,310 feet from the west line in Section 21, also.

Our proposed unorthodox bottom hole location is shown on Exhibit Two in pink and the estimated extent of the oil saturated Entrada is shown with a green outline.

Q Describe the data on which the structure map was developed.

A The structure map was delineated using subsurface well logs and seismic data.

Q And please describe, if you would, the data on which the estimate of the extent of the oil saturated Entrada formation is based.

A The extent of oil saturation was found also using subsurface well logs and the seismic derived structure.

Q What percentage of the working interest applicable to the Entrada formation within the boundaries of the existing pool does Merrion own?

A We own 100 percent.

Q What amount of acreage is contained within the boundaries of the pool?

A 80 acres, more or less.

Q And, Mr. Dunn, on what spacing is the Ojo

Encino Pool currently developed?

A 40-acre spacing.

Q What are the standard location requirements for wells drilled within the boundaries of this pool?

A A standard location is 330 feet from any outer boundary of a spacing unit.

Q What is the current status of the wells that have been drilled within the boundaries of the pool?

A The Federal 21 No. 1 Well was plugged back and a completion attempt made in the Menefee formation. That was unsuccessful and the well is not producing presently.

The Federal No. 21-2 Well was produced to its economic limit and is currently shut in.

Q Mr. Dunn, would you explain the significance of structure with respect to the production of oil from the Ojo Encino-Entrada Pool?

A The Entrada is a bottom water-drive reservoir where the oil is 14 times more viscous than the formation water. Because of the viscosity difference, water tends to flow much more easily than the oil through the reservoir; therefore, the higher a well is structurally, the less water coning is a problem, the less water we have to handle. This extends the reservoir life and increases the recovery.

Q What is the location of the highest structural portion of the Entrada formation in this pool?

A As shown on Exhibit Two, the highest structural portion of the reservoir is enclosed by the +930 foot contour line and is generally located along the north/south half section line.

Q Where is the location with respect to the highest structural portion of the formation?

A The proposed location is positioned at or near the structurally highest area of the Entrada Pool.

Q And what are the footages associated with the bottom hole location of the proposed unorthodox location?

A The proposed bottom hole location is within 100 feet of 2,310 feet from the south line and 2,610 feet from the west line of Section 21, Township 20 North, Range 5 West.

Q Turn to Exhibit Number Three and identify that exhibit.

A Exhibit Number Three is a tabulation of predicted recoveries from several Entrada pools in the vicinity of Ojo Encino.

Q Where are these Entrada pools located in relation to the Ojo Encino-Entrada Oil Pool?

A The Arena Blanca Entrada Pool is approxi-

mately four miles to the southeast.

Eagle Mesa is approximately eight miles to the southeast.

The Leggs Entrada Pool is thirty-five miles to the northwest.

And Papers Wash is located six miles south of Ojo Encino.

Q What is the basis for the estimates of ultimate recovery illustrated in this exhibit?

A Production decline curves on the wells in these pools were used to predict remaining reserves. The remaining reserves were then added to the cumulative production to find the ultimate recoveries expected.

Q What conclusions, if any, can you draw from the data illustrated on this exhibit with respect to the recovery of oil from the pool?

A Well, the average recovery expected from an entrada reservoir is 34 percent of the oil in place by simple arithmetic average.

The Ojo Encino Pool has recovered nine percent of the oil in place and so we believe that there exists reasonable recovery potential of twenty-five percent of the oil in place, or around 240,000 barrels.

Q Refer to Exhibit Number Four and identify that exhibit.

A Exhibit Number Four is a wellbore schematic of the Federal 21 No. 1 Well showing its present condition.

The well is completed in the Menefee at approximately 2200 feet with several bridge plugs and cement retainers below.

Q What's the significance of this exhibit with respect to this application?

A This exhibit is intended to show that in order to return this well to production in the Entrada a fairly extensive workover would be required, and Merrion decided the cost of returning this well to production should be weighted against the cost and benefits of directionally drilling a new well.

Q Briefly describe the process by which you would propose to utilized this wellbore for purposes of directional drilling.

A Basically the bridge plug and retainers would be drilled out and we would cut a sixty foot windows in the casing at approximately 4000 feet. A cement plug would then be set and directional drilling would kick off at this point, using directional equipment.

Q Refer to Exhibit Number Five. Identify that exhibit.

A Exhibit Number Five is an economic sum-

mary comparing two cases.

Case one is to directionally drill to the top of the Entrada structure and Case two is to produce the Entrada in the existing wellbore.

Q In Case one you have assumed a recovery factor of 30 percent. What is the basis for the use of a 30 percent recovery factor?

A Well, 30 percent recovery is more conservative than the 34 percent and I wanted to be a little more conservative. And the other reason is it fits very well with the average Entrada well's initial rate in the area of 184 barrels per day used in this analysis.

Q What conclusions, if any, are you able to draw from the data illustrated on this exhibit with respect to the potential for increasing the recovery of oil in the Ojo Encino Oil Pool?

A Well, by drilling to a better position on top of the structure, we believe a substantial portion of the remaining potential can be recovered, which we've estimated in Exhibit Five at 194,000 barrels.

On the other hand, by re-opening the present wellbore we will recover far less at approximately 59,000 barrels.

Q Please turn to what's been marked as Exhibit Number Five and identify that exhibit.

A Exhibit Number Six?

Q Exhibit Number Six, I'm sorry.

A Exhibit Number Six a bar graph which shows the cost of drilling a new well versus directionally drilling and we estimate the cost of a new well at $502,000 and we believe we can directionally drill, on the other hand, at -- for a cost of $235,000.

Q Okay, what conclusions are you drawing from the data represented here in this exhibit?

A Well, from a cost standpoint it is much more desirable for us to directionally drill than to drill a new well.

Q Aside from the consideration of economics, are there any other advantages in directionally drilling from the existing wellbore?

A It allows us to use the existing surface location and the production equipment that's already in place.

Q Mr. Dunn, in your opinion will the granting of this application result in the prevention of waste and the protection of correlative rights, and be in the interest of conservation?

A Yes.

Q Mr. Dunn, are you familiar with the requirements set forth in Rule 1207 of the Rules and Regula-

tions of the New Mexico Oil Conservation Division?

A Yes, I am.

Q Have those requirements been satisfied in this case?

A Yes, they have. Merrion Oil and Gas is the operator in the Entrada of the offsetting leases that require notification.

Q Were Exhibits One through Six either prepared by you or at your direction and under your supervision?

A Yes, they were.

MR. ROBERTS: Mr. Examiner, I would tender Exhibits One through Six into evidence.

MR. CATANACH: Exhibits One through Six will be admitted as evidence.

MR. ROBERTS: And I have no other questions of this witness on direct.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Dunn, do you -- does your company intend to run directional surveys on the well when it's completed and ready to go?

A We'll have to run a directional survey in the existing well the way it is right now, just to make sure

of where it's located, and then we will be running continual directional surveys to control where we're going.

Q So after you finish drilling you will know where that bottom hole location is.

A Yes.

Q The bottom hole location looks like it's 30 feet from -- from that section, that quarter quarter section line. In the event that the bottom hole location crosses that quarter quarter section line, do you intend to dedicate a different quarter section to that well?

A Well, since we're 100 percent working interest owner in the offsetting lease, yes, we could.

Q The well was producing from the Entrada formation before you completed in the Menefee?

A That's correct.

Q And why was the Entrada abandoned?

A Merrion Oil and Gas recently purchased this well, as well as the other well that's in the pool. Texaco was the operator prior to that and they felt that the Entrada was at its economic limit, at least this is my best estimate, they thought it was at its economic limit and attempted a recompletion in the Menefee but it was unsuccessful.

MR. CATANACH: I have nothing further for Mr. Dunn. He may be excused.

Is there anything further in Case 8989?

If not, it will be taken under advisement.

(Hearing concluded.)

C E R T I F I C A T E

I, SALLY W. BOYD, C.S.R., DO HEREBY CERTIFY the foregoing Transcript of Hearing before the Oil Conservation Division (Commission) was reported by me; that the said transcript is a full, true, and correct record of the hearing, prepared by me to the best of my ability.

Sally W. Boyd CSR

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 8989, heard by me on Sept. 17, 1986.

David R. Catanach, Examiner
Oil Conservation Division