NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date NOVEMBER 18, 1993 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
Tommy Roberts	Tansey Law Firm	Farmington
Steven Dunn	Meridian Oil & Gas	Farmington
Dave Boneau	Yates Petroleum	Artesia
Mike Hill	Kinlaw Oil Corp	Austin, TX
Steve Brenner	Cumbre Court Reporting	Santa Fe
James Bruce	Hinkle Law Firm	Santa Fe
Maurice Trimmer	Bypass	SF
Rick Foppiano	OXY	Midland
Scott Gengler	"	"
Ron Lanning	Texaco	Denver
Tanya Trujillo	Campbell Carr Berge & Sheridan	SF
William F. Carr	Campbell, Carr, Foght & Bruce	Santa Fe

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STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:) CASE NO. 10,865

APPLICATION OF MERRION OIL & GAS CORPORATION

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

BEFORE: MICHAEL E. STOGNER, Hearing Examiner

November 18, 1993

DEC 2

Santa Fe, New Mexico

This matter came on for hearing before the Oil Conservation Division on Thursday, November 18, 1993, at Morgan Hall, State Land Office Building, 310 Old Santa Fe Trail, Santa Fe, New Mexico, before Steven T. Brenner, Certified Court Reporter No. 7 for the State of New Mexico.

* * *

I N D E X

November 18, 1993
Examiner Hearing
CASE NO. 10,865

* * *

E X H I B I T S

	Identified	Admitted
Exhibit 1	6	16
Exhibit 2	12	16
Exhibit 3	13	16
Exhibit 4	15	16

* * *

A P P E A R A N C E S

FOR THE DIVISION:

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Legal Counsel to the Division
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Santa Fe, New Mexico 87504

FOR THE APPLICANT:

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Attorneys at Law
By: TOMMY ROBERTS
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Farmington, New Mexico 87401

* * *

WHEREUPON, the following proceedings were had at 8:24 a.m.:

EXAMINER STOGNER: I will now call this hearing to order for Docket Number 34-93. Note today's date, November 18th, 1993.

At this time I'll call first case, Number 10,865.

MR. STOVALL: Application of Merrion Oil & Gas Corporation for a short-radius horizontal directional drilling pilot project and special operating rules therefor, McKinley County, New Mexico.

EXAMINER STOGNER: Call for appearances.

MR. ROBERTS: Mr. Examiner, my name is Tommy Roberts. I'm an attorney in Farmington, New Mexico, appearing on behalf of the Applicant, and I have one witness to be sworn.

EXAMINER STOGNER: Any other appearances?

Will the witness please stand to be sworn?

(Thereupon, the witness was sworn.)

EXAMINER STOGNER: Mr. Roberts?

STEVEN S. DUNN,

the witness herein, after having been first duly sworn upon his oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. ROBERTS:

Q. Would you state your name and your place of

residence for the record?

A. Steve Dunn, Farmington, New Mexico.

Q. And what is your occupation?

A. Petroleum engineer.

Q. And by whom are you employed?

A. Merrion Oil and Gas Corporation.

Q. How long have you been employed by Merrion in that capacity?

A. Eighteen years.

Q. Are you familiar with the operations of Merrion Oil and Gas Corporation in the area which is the subject of this Application?

A. Yes, I am.

Q. And have you testified before the Oil Conservation Division on any prior occasion?

A. Yes, I have.

Q. In what capacity?

A. As a petroleum engineer.

Q. And were your qualifications as an expert in the field of petroleum engineering made a matter of record and accepted at that time?

A. Yes, they were.

Q. Have you prepared exhibits to be submitted in conjunction with your testimony today?

A. Yes, I have.

MR. ROBERTS: Mr. Examiner, I would tender Mr. Dunn as an expert in the field of petroleum engineering.

EXAMINER STOGNER: Mr. Dunn is so qualified.

Q. (By Mr. Roberts) Mr. Dunn, would you briefly describe the purpose of the Application?

A. Merrion Oil and Gas seeks authority to initiate a short-radius horizontal directional drilling pilot project in its Arena Blanca Entrada Pool in McKinley County, New Mexico, wherein we propose to utilize our Arena Blanca Number 1 well in Unit I of Section 36, Township 20 North, Range 5 West, McKinley County, to plug back from the existing Entrada interval and kick off from the vertical, build angle to 90 degrees with a short-radius curve, and then continue drilling a horizontal lateral in a westerly direction for approximately 400 feet.

In addition, we're seeking approval for an unorthodox bottomhole well location, a nonstandard 80-acre proration unit, a special allowable equal to two times the normal 40-acre allowable to account for a double-size proration unit, and finally a target area limiting the horizontal displacement of the well's producing interval within 100 feet to the outer boundary of the 80-acre proration unit.

Q. Refer to what you've marked as Applicant's Number 1 and identify that exhibit.

A. Exhibit Number 1 is a lease ownership plat of the Arena Blanca field, and included thereon is the Entrada structure and net pay.

What I've shown on this exhibit is the location of the field in Township 20 North, Range 5 West, Section 36, of McKinley County, New Mexico, and the project area.

Also shown, as I said earlier, is the lease ownership for the project area, and it includes all the 40-acre offsets -- or 40-acre offset spacing units to the proposed horizontal well. Shown thereon is the location of the Arena Blanca Number 1, namely in the northeast of the southeast quarter of Section 36, and it's identified by a dark circle. And other Entrada penetrations, all of which are dry holes, are shown.

In addition, I've placed the geologic structure, and it's contoured on top of the Entrada formation. And I've also shown the producible net pay of the Entrada sand in the pool area, and it is shaded green.

And the pool itself is not shown for clarity reasons, but it consists of the south half of the northeast quarter and the north half of the southeast quarter of Section 36, 20 North, 5 West, roughly 160 acres in size.

Q. Do you also show the proposed spacing and proration unit for this particular operation?

A. Yes, I do. Shown in an X-hatched pattern as the

north half of the southeast quarter is the 80-acre proration unit that I would propose to dedicate to this well.

Q. I note that within the boundaries of the proposed spacing and proration unit there's an X. What does that X depict?

A. The X is the calculated bottomhole location of the existing well, based upon survey data taken during the drilling of that well.

Q. Okay, and then there's a dashed line between that mark, and then a square that's white in color. What does that depict?

A. The dashed line in the square box depicts the proposed horizontal well path, starting from approximately the bottomhole location of the existing well and headed westerly.

Q. Would you identify the ownership of the leases that are involved here in this project area?

A. All of Section 36 is a state lease, Number LG-7435, which is leased to Merrion Oil and Gas, all formations.

And immediately to the east, the offset 40-acre tracts are all open federal acreage.

Q. Tell us a little bit about the productive history of the Arena Blanca Number 1 well.

A. The Arena Blanca Number 1 is a -- It's the discovery well for this pool, and it's produced to date about 37,500 barrels of oil and a large quantity of water. It is a marginal producer.

Q. Is that location for that particular well -- Has that not been a previously approved unorthodox location?

A. That is correct. That location was approved for a nonstandard surface location by an administrative order. The Order Number is NSL-2053, dated May 23rd, 1985.

Q. What are the spacing rules for the Arena Blanca Entrada Oil Pool?

A. It's statewide oil spacing, 40 acres per well.

Q. Is the ownership of the Entrada formation in this project area common?

A. Yes, it is.

Q. Now, you've indicated that the proposed bottomhole location is unorthodox and that you're seeking approval of that unorthodox location. In your opinion, will the unorthodox bottomhole location adversely affect any other interest owner in this area?

A. No, it will not. In fact, the horizontal will be drilled in a direction that's moving away from non-Merrion acreage and toward the interior of our lease, and therefore correlative rights will be protected.

Q. Have you selected a proposed target area for the

proposed bottomhole location?

A. We propose a target area that would not approach closer to the exterior line of the proration unit than 100 feet. It would be a 100-foot limitation.

Q. How was that target area defined?

A. It was basically to give us enough latitude to move in a northerly direction, which is the closest control or closest limiting boundary we have on that proration unit. The well is -- The existing well is approximately 2360 foot from the south line, and it's approaching that northern boundary. We need a little bit of latitude because in horizontal drilling you cannot control with exact precision the path of the wellbore.

Q. Why do you ask for an 80-acre spacing proration unit?

A. The horizontal wellbore will physically cross both 40-acre spacing units, and therefore we felt it reasonable to dedicate both 40s to that well.

Q. Let me ask you to refer to or direct your attention to the area you've called the oil productive area on exhibit 1. It's the area colored green. How was that oil productive area defined? Describe how that was defined.

A. It was defined basically by the structural control from the existing drilling in the area. And in

addition, a three-dimensional seismic survey was run over the area to help us fine-tune our interpretation.

And what is shown there, the green area, is the oil thickness that is greater than -- 10 feet of oil thickness or greater, across the top of that Entrada dune. Anything less than 10 feet is really not producible with today's technology.

Q. Is there a maximum thickness of the net pay area depicted on this exhibit?

A. It's not shown, but we estimate that the oil column thickness could be up to 25 foot in thickness, out in the vicinity of the square box that is shown in the green area.

Q. Do you have an opinion as to the comparative economics of this horizontal drilling operation, versus the drilling of another vertical well?

A. Well, the work I've done indicates that we can drill a short-radius horizontal well for less than we can drill a vertical well. And in addition a vertical well, we believe, will perform very similarly to the existing Arena Blanca Number 1, which is subeconomic.

Q. Do you have an estimate of recoverable reserves in this area?

A. Well, we believe that up to 120,000 barrels of recoverable oil remain, and we don't know how much of that

we'll get, but that's what we're -- That's the prize.

Q. Is it your opinion that that cannot be tapped economically with a vertical well?

A. That is correct. A vertical well, we don't believe will return us a return on our investment at all, and that we probably will not even achieve a payout.

Q. What depth bracket allowable has been established for wells drilled in the Arena Blanca Entrada Oil Pool?

A. The special depth bracket allowable is 750 barrels of oil per day.

Q. And do you have a recommendation for a depth bracket allowable associated with this particular operation?

A. We propose a double depth bracket allowable to account for the double-size proration unit.

Q. Is that solely based on the size of the proration unit, compared to the statewide spacing established for the pool?

A. I wouldn't say solely. It also takes into account the fact that a horizontal well should be more productive than a vertical well.

Q. Let me have you refer to what you have marked as the Applicant's Exhibit Number 2 and ask you to identify that exhibit.

A. Exhibit Number 2 is a wellbore schematic of the

Arena Blanca Number 1, showing present wellbore configuration. This is the well that we propose to plug back and use for our horizontal drilling project.

Q. Okay. Now, refer to what you've marked as Exhibit Number 3 and identify that exhibit, and in particular describe how the hole will be directionally drilled.

A. Exhibit Number 3 is a directional plan, a schematic, if you will, of what we propose to do to drill this horizontal well. And depicted thereon is a plan view, a top-down view, that's in the smaller square. And I've labeled the surface location with an X, and with a circle would be the kickoff point, and the distance between the X and the circle is the deviation that occurred while drilling the vertical well. And then shown thereon is a straight line to the west, a planned short-radius lateral section.

In the vertical section view, which is basically a slice, a cross-section of our plan, I've shown the old vertical wellbore, and then the planned kickoff point at 5471 feet, and the trace of the horizontal wellbore.

To summarize what we're planning to do to drill this well, we will plug back the existing wellbore with cement and probably a retainer. We'll mill a casing section where we remove a part of the casing across the

kickoff point. We'll place cement across that section and dress it off to the kickoff point at 5471. Then we'll run bent-housing downhole motors and measurement equipment and commence to drill a short-radius build to horizontal.

Once we reach horizontal, then we'll change out bottomhole assemblies and drill our 400-foot, plus or minus, of horizontal lateral in a westerly direction. If drilling is going well and geological indications are positive, we may continue to extend the lateral, but obviously not further than our target boundary.

Q. How will you monitor the direction of the hole as drilling occurs?

A. We'll either have a steering tool or measurement while drilling. One or the other will be utilized.

Q. In your opinion, does this short-radius drilling technology have application in other fields operated by Merrion Oil and Gas?

A. Yes, it does. We operate six of the seven Entrada fields in the San Juan Basin. Every one of those fields is nearing its economic life. And we have in the past drilled one horizontal well in another field. It was a medium-radius well, but we had very good results. And we believe the short-radius technology will give us a little more control where we enter the top of the reservoir, and we believe there's a good potential in the other fields as

well.

Q. Now, turn to what you have marked as Exhibit Number 4 and identify that exhibit.

A. Exhibit Number 4 is the notification letter that I sent to the BLM as the responsible party for the open federal acreage which offsets the project area on the east side, and we mailed that letter on October 28th of 1993.

Q. What was the purpose of the letter?

A. The purpose of the letter is to provide notification to the surface managing agency, namely the BLM, that they may be present here today to present testimony relevant to this case.

Q. Do you have evidence that the BLM received this letter?

A. Yes, I do. On the back of Exhibit 4 is the certified return receipts with a signature.

Q. Are you familiar with the rules and regulations of the Oil Conservation Division regarding the requirement for notice to interested parties?

A. Yes, I am.

Q. And in your opinion, have those rules been satisfied in this case?

A. Yes, they have.

Q. 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 best interests of conservation?

A. Yes, it will.

Q. Were Exhibit Numbers 1 through 4 either prepared by you or at your direction or under your supervision?

A. Yes, they were.

MR. ROBERTS: Mr. Examiner, I move the admission of Exhibits 1 through 4.

EXAMINER STOGNER: Exhibits 1 through 4 will be admitted into evidence.

MR. ROBERTS: I have no other questions for this witness.

EXAMINATION

BY EXAMINER STOGNER:

Q. Mr. Dunn, let's take a look at the reservoir. How would you classify this reservoir in the Entrada? What type? And what's the drive mechanism?

A. This reservoir is a windblown sand-dune deposit, and what we're seeing here is the remnants of one of the old dunes that's been preserved.

The Entrada sand extends across the San Juan Basin and is a water-drive reservoir with -- It's a bottom water drive, and the water tends to be fairly fresh, less than 10,000 total dissolved solids.

And the producing mechanism, basically, is, the

water's pushing the oil into the top of these dunes, and when we tap in we pull the oil off the top, but due to the relative mobility -- The water likes to flow easier through the rock than the oil does, so water coning is a problem, and tends to produce lots of water in these operations.

Q. Were you experiencing this in the vertical portion of the wellbore? A coning, if you would?

A. Yes, we were. In fact, when we drilled the Arena Blanca Number 1, we had about a 14-foot oil column, and what you see on the map is an adjusted net pay to account for the water cone around that well. Our geologists and geophysicists have done a calculation and accounted for that.

Once you develop a cone around the vertical well, it becomes difficult to produce the well economically.

EXAMINATION

BY MR. STOVALL:

Q. Mr. Dunn, haven't you done some previous Entrada horizontal wells to attempt to reduce that --

A. We did --

Q. -- that pressure drop?

Q. -- we drilled one well. We drilled one well in our Papers Wash Entrada field, and it was a medium-radius well. And that was a field -- We actually used a well that was uneconomic. It had been shut in for several years, and

we estimate we're going to recover up to 120,000 barrels out of that well from the horizontal well.

Q. Was it able to reduce the coning effect by spreading your drawdown over the horizontal length?

A. It did reduce it, but we're still producing a lot of water.

When I say "reduce it", what it allows you to do is to produce, instead of about a 99-percent water cut, produce at 97 percent, and that doesn't sound like it's huge. And that doesn't sound like much --

Q. Hey, that's a --

A. -- but it's huge in the Entrada when you're moving --

Q. -- 300-percent improvement, right?

A. Yeah, that's right.

Q. Measured from the top?

A. That's correct. When you're moving 5000 barrels of water a day, that's quite a jump in the oil rate.

FURTHER EXAMINATION

BY EXAMINER STOGNER:

Q. This will be on pump, I assume?

A. That's correct. We'll probably initially produce it with a pumping unit because that's what's there, but eventually we'll be running a submersible pump.

Q. On the submersible pumps, do you run them all the

way to the end of the lateral?

A. No, we'll leave it in the vertical well. In fact, we won't run it much more deeper than maybe 2000 or 3000 feet.

The Entrada reservoir is about a 400-millidarcy permeability reservoir, and a tremendous inflow potential, and you literally cannot buy a pump large enough to pump it down. So we try to put the pump uphole, where we have to lift the fluid a lesser distance and keep our lifting costs down.

Q. Referring to Exhibit Number 3, up in the upper left portion there's a plan view, and you show the surface location of the kickoff point, and there's a squiggly line. Am I to assume that this well has already had a directional survey on the vertical portion?

A. That is correct, it's not a continuous survey. I ran, while drilling this well, ran a Monel non-magnetic collar and ran single-shot surveys that give azimuth and angle, and that is the trace that we were able to calculate using those single-shot surveys. But it is not a gyro survey, say.

Q. Do you plan to find out where this kickoff point actually is before you start your horizontal?

A. Very definitely. We'll be running a gyro.

Q. Referring back to Exhibit Number 1, that's all

one lease, all of Section 36?

A. That's correct. It's a state lease.

Q. As far as also on Section -- I'm sorry, Exhibit Number 1, you show all the wells, you say, that has penetrated the Entrada?

A. That is correct, in Section 36.

Q. Okay, that's what I was referring to. This is the only producing well?

A. That is right. This is the discovery well and the only producing well in the Arena Blanca field.

EXAMINER STOGNER: Okay. Do you have any further questions of the witness?

MR. STOVALL: (Shakes head)

EXAMINER STOGNER: Anybody else have any questions of Mr. Dunn?

You may be excused.

If nobody else has anything further in Case Number 10,865, this case will be taken under advisement.

(Thereupon, these proceedings were concluded at 8:46 a.m.)

* * *

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10865, heard by me on October 1993.

Michael E. Stogner, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

STATE OF NEW MEXICO)
) ss.
COUNTY OF SANTA FE)

I, Steven T. Brenner, Certified Court Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I transcribed my notes; and that the foregoing is a true and accurate record of the proceedings.

I FURTHER CERTIFY that I am not a relative or employee of any of the parties or attorneys involved in this matter and that I have no personal interest in the final disposition of this matter.

WITNESS MY HAND AND SEAL December 1, 1993.

STEVEN T. BRENNER
CCR No. 7

My commission expires: October 14, 1994