NEW MEXICO OIL CONSERVATION COMMISSION

EXAMINER HEARING

SANTA FE, NEW MEXICO

Hearing Date MARCH 3, 1994 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION
R.M. Williams	Quality Production	Hobbs
Jol Cooter	Wiser Oil	Santa Fe
KEITH LOGAN	DAVID ARRINGTON OIL & GAS	MIDLAND
MIKE Rolling	ARMSTRONG ENG	Roswell
PERRY L. HUGHES	THE WISER OIL CO.	CARLSBAD
PAUL THOMPSON	BRECK OPERATING	FARMINGTON
DOW Campbell	Marathon Oil Co	Midland
Rod Steward	Marathon	Midland
Meftah TISS	Marathon Oil Co.	Midland.
KURT MILLER	MARATHON OIL	MIDLAND
John Chapman	Marathon Oil	Midland
Craig Young	Marathon	Midland
Kellahin	Kellahin & Kellahin	Santa Fe
Jim Barber	Klabzuba Oil & Gas	Ft Worth TX
STEVE THOMSON	GECKO, INC.	Midland TX
William F. Carr	Campbell, Carr, Berge & Sheridan	Santa Fe

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SANTA FE , NEW MEXICO

Hearing Date MARCH 3, 1994 Time: 8:15 A.M.

NAME	REPRESENTING	LOCATION

NEW MEXICO OIL CONSERVATION DIVISION

STATE LAND OFFICE BUILDING

STATE OF NEW MEXICO

CASE NO. 10922

IN THE MATTER OF:

The Application of Marathon Oil Company for a High Angle/Horizontal Directional Drilling Pilot Project and Special Operating Rules Therefor, Lea County, New Mexico.

BEFORE:

DAVID R. CATANACH

Hearing Examiner

State Land Office Building

March 3, 1994

REPORTED BY:

CARLA DIANE RODRIGUEZ
Certified Shorthand Reporter
for the State of New Mexico

ORIGINAL

A P P E A R A N C E S

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Santa Fe, New Mexico 87504-2265
BY: **W. THOMAS KELLAHIN, ESQ.**
-and-
MARATHON OIL COMPANY
Post Office Box 552
Midland, Texas 79702
BY: **DOW CAMPBELL, ESQ.**

I N D E X

E X H I B I T S

EXAMINER CATANACH: Call the hearing to order this morning for Docket No. 7-94.

I'll go ahead and call the continuances and dismissals first.

[And there were proceedings held off the record.]

EXAMINER CATANACH: At this time I'll call Case 10922, the application of Marathon Oil Company for a high angle/horizontal directional drilling pilot project and special operating rules therefor, Lea County, New Mexico.

Are there appearances in this case?

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm Kellahin & Kellahin, appearing on behalf of the Applicant, and I have three witnesses to be sworn.

EXAMINER CATANACH: Any additional appearances?

Will the witnesses please stand to be sworn in at this time.

[And the witnesses were duly sworn.]

MR. KELLAHIN: Mr. Examiner, I'm appearing today in association with Mr. Dow Campbell. He's an attorney with Marathon Oil Company, and he resides in Midland, Texas.

My first witness is Mr. John Chapman. Mr. Chapman is a petroleum geologist.

JOHN J. CHAPMAN, JR.

Having been first duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Chapman, for the record, would you please state your name and occupation?

A. My name is John J. Chapman, Jr. I'm a senior geologist with Marathon Oil, in Midland, Texas.

Q. Mr. Chapman, on prior occasions have you testified as an expert petroleum geologist before the Oil Conservation Division?

A. Yes, I have.

Q. Pursuant to your employment as a petroleum geologist for Marathon, have you made a geologic study of the facts surrounding this application?

A. Yes, I have.

Q. And, based upon that geologic study, do you have certain recommendations and opinions to the Hearing Examiner concerning the viability of Marathon's project for a high-angle/horizontal

drilling pilot project in Lea County, New Mexico?

A. Yes, I do.

MR. KELLAHIN: We tender Mr. Chapman as an expert petroleum geologist.

EXAMINER CATANACH: Mr. Chapman is so qualified.

Q. Let me ask you, Mr. Chapman, to take out what we've marked as Marathon Exhibit No. 1, and identify that display for us.

A. This is a location reference map. It's actually two maps together. The left-hand map is a map showing the limits and extent of the Denton Devonian pool, outlined in green, showing those wellbores in place which have a TD of greater than or equal to 10,000 feet. Therefore, most of those wells have penetrated the top of the Devonian formation.

Q. When we look at the left-hand side of the display, what is the significance of the area shaded in green?

A. The area shaded in green covers those wells which have, historically, produced from the Devonian formation.

Q. The right-hand side of the display, what does that show?

A. It's a detail map of the nine sections surrounding Section 11 of 15 South, 37 East. The Marathon acreage position, which is the acreage of interest this morning, is in the south half of Section 11, 280-acre lease in the center of that plat. It shows the Devonian owners or operators of record, on their respective leaseholds.

Q. Have you had the appropriate personnel at Marathon verify for you, based upon current information, the offset operators adjacent to the project area?

A. Yes, we have.

Q. What is the significance, then, of the yellow shaded area?

A. The yellow shaded area is the 280-acre lease which is operated by Marathon Oil. It is the lease for which we are applying for this horizontal/high-angle project.

Q. Describe for us the concept. What are you trying to achieve here?

A. What Marathon is seeking to do is take the portions of the Denton Devonian field, which are becoming inactive, uneconomic to produce due to high water cuts, and, by utilizing short radius lateral technology, extend the life of the

field, to produce oil which currently would be bypassed and wasted under current, conventional wellbore spacing as it exists today.

Q. Is there a geologic explanation to why you have chosen this particular lease as the project area?

A. Well, beyond the fact that it's the only lease that we own, yes. The Marathon lease--well, the Denton Devonian field is a large, north/south trending anticlinal closure, highly faulted. The Marathon lease on Section 11 sits at the very apex of the field, at the highest point. Therefore it is the most attractive lease for capturing what is normally referred to as attic oil, oil above existing perforations in existing wellbores that would otherwise not be produced.

Q. So that the Examiner has an outline of where you're going with your presentation, Mr. Chapman, identify for us the initial project well that Marathon has selected to use as the reentry well for the horizontal drilling.

A. Marathon would propose that we reenter the Marathon Denton No. 5 well. It's the well that's located in the southeast of the southwest

of Section 11. That would be our initial well for short radius lateral technology.

Q. Let's turn now to Exhibit No. 2. Identify that display for me.

A. Exhibit No. 2 is a structure map on the top of the Devonian formation, covering Section 11. It is a map that's been made from a combination of subsurface data, standard wellbore subsurface data, integrated with 3-D seismic data. The map was made by myself and Mr. David Rebenstorf, Marathon's geophysicist in Midland, Texas.

Q. Can you use this display to illustrate this concept you're trying to execute with this project?

A. Certainly. As can be seen on this exhibit, the center of Section 11, and more specifically the center of the south half of Section 11, is the highest point not only of this lease for the Devonian, but for the entire field. It is, as I stated earlier, the apex of the field. Therefore, it is the most attractive target for attic oil, oil remaining in place above existing perforations in the field.

Q. Do you have an explanation as to why

you've not sought to include the 40-acre tract, which is the southwest of the southeast?

A. The 40-acre tract is not operated by Marathon Oil. It's currently operated by Dinero at the Devonian level. That 40-acre tract was originally farmed out by Marathon Oil in the early 50s. It was the location on which the discovery well for the Denton Devonian Field was drilled.

Q. Do you have an opinion as to whether this project area can be approved without having an adverse effect upon the correlative rights of Dinero, or the interest owners within that 40-acre tract?

A. Certainly. It is our intention to abide by the standard existing 330 stand-offs from exterior lease boundaries, and we feel that in no way will our drilling a short radius lateral endanger correlative rights in the field.

Q. Describe for us, Mr. Chapman, whether or not you have an opinion as to why you can't use additional vertical wells in the project area to capture this attic oil.

A. Well, we could use additional vertical wells. The question is, what is the most

economically attractive and efficient, and what would have the most long life success.

The Denton Devonian field is an extremely heterogeneous field. It is a limestone that is both vuggy and fractured. It has tight bands in it, it has some chert layers in it and shaley zones in it. And, being so heterogeneous, there are reservoir compartments which you may not penetrate, may not open with a conventional vertical well. So, in part, our drilling a short radius lateral will open up more of these compartments.

In addition, the number one reason is to avoid the vertical coning issue. Most of the fractures in the wellbores, in the Denton Devonian field, are vertical in nature. By drilling a new vertical well, you would be, to a certain extent, back in the same boat you had been previously, it would not be long before you initiated coning again.

Q. Have other operators tried to apply this technology to the Denton Devonian pool?

A. There have been two other operators who have applied to the State for permission to drill short radius lateral, Kinlaw and Collins & Ware.

Those two operators have drilled three wells to date in the Denton Devonian pool, as was approved by the state.

Q. Do you know what has been the outcome of those drilling efforts by the other companies?

A. All I know, to this point in time, is that, of the three wells, in two of them they were mechanically successful. That is, they were able to drill a short radius lateral of some appreciable distance, 400 to 600 feet. I know in one of the two Kinlaw wells, they had problems. They lost the bit in the hole.

They were able to drill their curve, but once they began drilling laterally, they lost a bit in the hole. Right now, my understanding is that well is waiting evaluation to see if they need to sidetrack and try again.

MR. KELLAHIN: Mr. Examiner, I have, for your information, copies of the four Division orders we could locate that deal with this subject matter. They're found as Order Nos. R-1016, 1044, 1012, 1023.

Q. Do you have a cross-section, Mr. Chapman, that illustrates this concept of the reservoir within the project area?

A. Yes, Exhibit No. 3 is just such a cross-section, and I would like to...

Q. Give us a moment to find that display and take a look at it. This is a two-well cross-section?

A. It's a two-well cross-section. In the lower left-hand corner there's a location index. It shows Section 11 as the green line, labeled A-A', shows the location of the cross-section. It passes through the Marathon Denton No. 5 well, which is the proposed reentry and short radius lateral candidate, and the Marathon Denton No. 3 well, which is the highest well in the Denton Devonian pool.

Q. The two wells are the Denton No. 3 and the Denton No. 5?

A. That's correct.

Q. If the objective is to attempt to produce the attic oil that is up-structure from the existing wells, why can't you obtain that production by adding perforations higher in the reservoir than currently exist in either of those wells?

A. Well, we could in the Denton No. 3. And, as a matter of fact, it's our intention to

do so. Let me step through the elements of this cross-section so you can see all the data is here.

The top of the orange represents the top of the Devonian formation. This cross-section is a true scale cross-section, in that both the vertical and the horizontal scales are equal, so it is showing true perspective of the reservoir.

As I stated, the top of the orange is the top of the Devonian formation. It's offset in a number of places by faults. The orange band represents a tight cap in the uppermost portion of the Devonian. That's a section Devonian, persistent throughout the entire Denton Devonian field, in which there's very little vuggy or matrix porosity. The porosity that's present in the net portion of the reservoir is primarily fractures.

On both of the two wellbores, you can see that I have placed the neutron porosity log. These logs are intended to qualitatively show the presence of porosity, not quantitatively. Because of the vintage of these logs, we didn't feel like they were of such a quality that you

could lay a 10 percent porosity line on there, for example; but those areas that I've shaded green, represent those areas of the reservoir in which there is presence of significant matrix porosity.

And then, on the side of the wellbores, you can see small black boxes, rectangles and squares. Those represent existing perforations in the wellbore.

Finally, I would like to note the three blue lines. The center blue line represents the lease corner between the Marathon-operated lease and the Dinero-operated lease.

The two dashed blue lines represent the projection of the standard 330-foot stand-off, as projected into this plane, the North 45 East plane. So, the area between the two dashed lines is what you might refer to as the no-man's-land in the reservoir, in which no one could drill or operate without a change in field rules.

Finally, as shown on the location map, there's a red line showing our proposed direction and extent of drilling for the horizontal well. And then, on the Marathon Denton No. 5, there's the actual curve shown again as projected into

the plane of this cross-section, showing where the horizontal well would exist. I've marked in a dashed horizontal line, the top of the current perforations in the Marathon Denton No. 3.

So, back to your original question. It's quite apparent that, in the Marathon Denton No. 3, there's existing reservoir yet to be opened. Marathon is in the process of doing standard well work in that wellbore right now, and it is our intention here shortly to open additional perfs, to capture some of the attic oil.

The extent of that attic oil covers such a large area that, just opening those perforations in No. 3, will not remove all the oil from that attic, again due to the propensity of the Devonian reservoir to cone water up the vertical fractures.

Q. The Denton Devonian is on 40-acre oil spacing?

A. That's right. It's under conventional 40-acre rules, 330 stand-offs from the proration unit boundaries. The allowable is 365 barrels per day, 2,000-to-1 GOR.

Q. For a 40-acre oil spacing unit, the

maximum oil allowable is 365?

A. That is correct.

Q. What do you propose to do or request for the assignment of an allowable for this initial well, and any other horizontal well drilled within the project area?

A. Our proposal is to keep the current allowables in place. We are not proposing any change thereof. We would maximize our production at 365 barrels per day, 2,000-to-1 GOR.

Q. Are you seeking authority from the Examiner to obtain administrative approval for the addition of any further horizontal wells to the project area?

A. That is correct. If the short radius lateral drilling that is proposed in the Marathon Denton No. 5 is successful, and is highly successful, there are several other wells on the Marathon lease which would be good candidates, potentially, at least four other of the existing wells.

And, rather than have to go through the whole process of the hearing and take up the State's time and our time, as long as we're abiding by the approved rules, it would be our

desire to seek a mechanism for having future wells administratively approved.

Q. In the event the horizontal producing portion, the lateral of the well crosses into more than a single spacing unit, two or more, do you seek to have the allowable calculated based upon the total number of 40-acre tracts penetrated by that producing lateral?

A. If we were to do that, and that's a big if, because it takes quite a lateral extent, but if Marathon were to do that, it would be our proposal that a horizontal well which penetrates two proration units would be assigned the allowable for the same two set of proration units.

However, with the restriction that there could be no more than two wells per proration unit, or as far as the entire project area, for any 40-acre proration unit you could produce no more than 365 barrels per day.

Q. Have you determined the precise azimuth and the distance that you're going to drill this lateral?

A. Our plan is to kick out the well and drill at an angle of north, 30 degrees east. We

hope to extend that lateral 500 feet beyond the radius; so, therefore, a total projected distance of 545 feet beyond the existing vertical wellbore.

Q. In the event you're required or need to make adjustments in the field as to length or direction, are you seeking approval of the Examiner to have that flexibility, so long as you honor the 330 setback from the outer boundaries of the project area?

A. That is correct. We do have that intention.

MR. KELLAHIN: That concludes my examination of Mr. Chapman. We move the introduction of his Exhibits 1, 2 and 3.

EXAMINER CATANACH: Exhibits 1, 2 and 3 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Chapman, the project area within Section 11, is that one lease?

A. The 280 acres that's shaded yellow, yes, that's one lease.

Q. Is that a federal lease, or--

A. No. If I may refer back to Exhibit No.

1, all the leases in that nine-section block are fee leases, with the exception of Section 2. Section 2 is state leases. But the entirety of Section 11, the entirety of our proposed project area, and the remaining seven surrounding leases, are all fee leases.

Q. Is the interest ownership in that project area common?

A. Under Marathon's 280-acre lease, yes, it is.

Q. Is Marathon the only working interest owner?

A. No. Marathon is a 50-percent working interest owner, and a number of smaller parties carry the other 50 percent.

Q. The project area is currently fully developed, with a well on each 40-acre tract?

A. There has been a Devonian test drilled on each 40-acre tract, that is correct.

Q. Which wells are producing at this time?

A. Currently, the Marathon No. 3, No. 4, No. 6, and No. 7 are actively producing from the Devonian formation. The proposed reentry is an inactive well, due to high water cuts.

Q. The No. 5 well has high water cuts, you

said?

A. Yes. The last time we tried to produce it, it had uneconomic high water cuts.

Q. Am I correct in understanding, the interval that you're going for is not currently perforated in the No. 5 well?

A. Well, no. That's a little difficult to see. If you'll refer back to Exhibit No. 3 again, where I have the red curve for the proposed horizontal well, you can see there's a black box right there. That interval has been perforated.

When it was perforated, it made 15,000 barrels of oil and then went to water, so it coned water rapidly. It's also in this orange-shaded tight cap, where the only effective reservoir storage is in fractures, and most wells will produce relatively small amounts.

There are some historical exceptions in the field, where locally you'll get higher density of fractures in that cap, and some wells have managed to produce quite well from that. But normally, you have very little recovery from it.

The first approximately 250 feet of our

wellbore will be drilling laterally through that tight cap. It is our intention, by choosing the direction we did, to, based on theory, we should be drilling at approximate right angles to what should be open fractures in the reservoir.

This is just based on regional current, in situ, stress regime. We don't have any direct data to corroborate where the open fractures are. But our intention is, the first half of the horizontal wellbore to be opening, if you will, reservoir sales, which currently aren't exposed anywhere in the reservoir, kind of an Austin chalk type play, seeking to maximize the encountering of fractures in the reservoir.

The second half of the wellbore will be in the top of the permeable and porous portion of the wellbore, the attic oil, the conventional attic oil portion, if you will.

Q. Is this potential throughout your project area, to produce this attic oil?

A. Currently, we don't see that potential in the No. 9 or No. 13 wells, the two westernmost wells in our lease. They're considerably downdip and watered out. We don't see those particular wellbores as having potential.

If the No. 5 works quite well, and, you know, as the two previous applicants, Collins & Ware and Kinlaw have stated, and I'll state again, this is still, certainly, experimental in nature, but if the No. 5 works quite well, both the No. 3 and 4, which are higher on structure will be candidates for horizontal applications, and the No. 6 and 7, which are high in their individual fault block, would be candidates for horizontal work in that particular fault block. It appears that individual fault blocks in the field act as separate reservoirs.

Q. All of those wells are separated by faults?

A. The No. 7 and the No. 6 well are separated. If you'll refer back to Exhibit No. 2, the Marathon 6 and 7 wells are separated from the remainder of the Marathon wells by a north/south trending fault.

Q. Okay. I'm a little unclear about how you want to set up the allowable. Am I correct in understanding, you want to retain the 40-acre allowable for every proration unit?

A. That is correct.

Q. You don't want to combine the whole

project area into one project?

A. No, we're not proposing that at this time. Just 365 barrels per 40-acre location, constrained to however many wellbores exist in it. For example, if you look in the north half of Section 11, you'll see a No. 7 and a No. 17 well. Those are Phillips'. I think, since the No. 17 well was drilled in the mid-70s, they've produced two wells from one 40-acre allowable, for the last couple of decades, under one 40-acre proration allowable.

So, we would be looking at that same type scenario. If we get more than two wellbores in the same 40-acre unit, they would share a 365 barrel allowable. We're not seeking to amalgamate the entire 280-acre tract.

Q. What's the advantage of forming a project area?

A. Well, the one change we are seeking from this current standard 40-acre proration, is that we want to honor the exterior 330 stand-offs, the 330 stand-offs between different leaseholds. What we would like the freedom to do, similar to what both Kinlaw and Collins & Ware applied for, is the freedom within the

interior of our tract, to drill right up to a 40-acre proration boundary and interior 40-acre proration boundary, or even cross such a boundary.

And then beyond that, as mentioned earlier, just the freedom to have administrative approval on subsequent wells within that 280-acre project area.

EXAMINATION

BY MR. STOVALL:

Q. Let me follow-up, if that horizontal well crossed two proration units and were successful, would you want, as we have done in the past, that particular wellbore having crossed two sections, to be able to have a double allowable? I shouldn't say a double allowable, but an allowable for each proration unit?

A. If one wellbore--my understanding is, if one horizontal wellbore was to cross into two, 40-acre tracts, and it was the only producing well in those two, 40-acre tracts, it would have an allowable twice 365.

Q. An allowable for each tract?

A. An allowable for each tract. But, you know, if there's still an existing vertical well

and one 40-acre tract--for example, let's take a scenario. We don't expect to cross, with the drilling of the short radius lateral from our No. 5, we don't expect to cross in the 40-acre tract where the No. 4 well was drilling, the northern offset 40-acre tract.

But, if we were to drill from the No. 5 far enough north that we were to cross into that 40-acre tract, then we would look for a shared allowable between the No. 5 and the existing vertical No. 4. Those two wells, together, would share 365 times two.

Q. Which one is the horizontal well?

A. No. 5.

Q. Gotcha. Okay.

A. If we kept the No. 4 as an active vertical producer, then the two wells together would have the 365 times two: I think that's 730 barrels a day.

EXAMINER CATANACH: I think that's all I have for this witness.

MR. KELLAHIN: Call Craig Young as our next witness.

CRAIG E. YOUNG

Having been first duly sworn upon his oath, was

examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Young, would you please state your name and occupation?

A. Craig E. Young. I'm a drilling engineer with Marathon Oil Company.

Q. Mr. Young, on prior occasions, have you testified before the Division as a drilling engineer?

A. No, I have not.

Q. Summarize for us your education.

A. I went to school four and a half years at Texas Tech University, Lubbock, Texas, and received a bachelor of science in mechanical engineering.

Q. Summarize for us your employment experience, particularly with the drilling aspects of your employment?

A. I worked five years in Midland, Texas, with Texas American Oil Corporation, a small independent there. Duties were operations, production and drilling.

Subsequent to that, I worked five and a half years with Marathon Oil Company. About four

of those years have been in a drilling capacity.

Q. Describe for us your past experience, if any, with horizontal drilling.

A. I have designed and drilled 12 short radius holes. I have a patent in short radius technology, completion technology.

Q. Approximately how many of these wells have you been involved in?

A. 12.

Q. All right, sir. And, have you been involved as the drilling engineer for this particular project?

A. Yes, I have.

MR. KELLAHIN: We tender Mr. Young as an expert drilling engineer.

EXAMINER CATANACH: Mr. Young is so qualified.

Q. Let me have you turn, sir, to Exhibit No. 4. Would you identify that display for us?

A. This is a plane view of our proposed horizontal. It shows our acreage position, the 330 setbacks, and our proposed direction and length of horizontal well.

Q. All right, sir, let's turn to Exhibit No. 5. Do you have an illustration to show how

the well is currently figured?

A. Yes, sir. This is a current schematic of the wellbore diagram. This well was drilled in 1951, and this is the situation as the wellbore currently exists.

Q. Let's turn to Exhibit No. 6. Identify and describe that display.

A. This is a more detailed plane view of our proposal. The center indicates the wellhead location. The clear line, so to speak, represents the natural vertical deviation to the kickoff point, and then the solid line represents our horizontal, showing our planned distances from the north and the east line, being 335 from the east.

Q. Okay. Let's turn to Exhibit No. 7, what are we looking at here?

A. We are looking at a vertical section of our proposal. The vertical line represents the vertical well. What we plan on doing is kicking off at 11,400 foot, right below the top of the Devonian, and drilling a 45-foot radius curve that has build grades of 127.33 degrees per 100 build grades.

After that, we build a 45-foot radius

curve section, then we would come in and drill the 500 foot long horizontal section, all this at a north-33-degrees-east orientation.

Q. How do you propose to know where you are at any given point during the operation?

A. The current plans are to use MWD, measurement while drilling technology, to have inclination, azimuth, direction, available on a continuous basis while we're drilling. Using conventional, accepted surveying methods, we'll tie into our base survey from the vertical well and basically know where we are at every point while we're drilling.

Q. What's the reason to use 11,400 feet true vertical depth as the kickoff point?

A. Basically, this gets us below the Woodford shale that's right on top of the Devonian. We're avoiding that, to minimize our drilling problems and completion problems, but yet maintain as high in the Devonian section as we can.

Q. Have you made a determination of whether the existing wellbore has sufficient mechanical integrity to be used for a reentry for this type of procedure?

A. All of our information indicates that it does.

Q. Once you complete drilling the lateral and make the decision to terminate actual drilling, what then do you do?

A. What we will do then is pull out with the motors, run back in, circulate our mud system out of the hole, by running tubing into the wellbore, and then we'll run our completion assembly.

What that would consist of is, at least initially, a packer up in the vertical well with tailpipe going around to the base of the curved section. Initial attempts will be to swab the well to see what means, if any, of artificial lift will be necessary.

Q. Will the wellbore be completed in such a fashion that any production from the Devonian reservoir will remain confined to that reservoir, and you will not have migration outside, either vertically upwards, or downwards, outside the reservoir?

A. That is correct. The casing integrity above the kickoff point will remain the same as it is now, so basically there will be no change

in isolation from the Devonian.

Q. After completing the well, is there anything else that's done in order to commence production? Is there any type of stimulation program required?

A. We have the option of, once we complete the well, of running cold tubing through the--production tubing to acidize the wellbore.

Q. Are you familiar with the application of this technology by the other companies within the Denton Devonian pool?

A. Yes, I am.

Q. And, with what results? Have they been able to successfully, at least mechanically, do the task?

A. Out of two of the wells, they have been mechanically successful. One well has had a problem. The service company is working on that problem to alleviate it. It's not a problem isolated to this area, I believe. I think it's a problem with their system, and they've been working to isolate that problem.

Q. Are there any unique or unusual features with regard to the application of this procedure to this project?

A. No.

Q. Let's turn now to Exhibit No. 8, and have you identify and describe that display.

A. Basically this is a plane view of the vertical well. At the coordinates 00, at the lower left-hand corner, is the wellhead or surface location.

This was based on a survey that was run in 1951 by Eastman. To the top represents north displacement, to the bottom represents south, to the right represents east displacement. Basically, this just plots the natural drift of the vertical well.

Q. You can use this information, then, to find where you are in the kickoff point in relation to the two dimensions?

A. That is correct. We'll use this survey to tie into our kickoff point, and any subsequent survey will be tied back to this, and we'll know, within three dimensions, exactly where we are.

MR. KELLAHIN: Mr. Examiner, that concludes my examination of Mr. Young. We move the introduction of his Exhibits 4 through 8.

EXAMINER CATANACH: Exhibit 4 through 8 will be admitted as evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Young how would you propose to plug back a well?

A. Referring to Exhibit No. 5, we will initially go in the well and drill out the cast-iron bridge plug. At that point in time, there are some existing perforations that are open below that. We will cement-squeeze those, drill that squeeze out, make sure they test and that we have a good cement squeeze there.

Q. Are you referring to the perforations from 11,390 to 11,476?

A. Yes, sir. Those perforations will be squeezed. The squeeze will be drilled out, the squeeze will be tested. At that point in time, they would start our section milling operations.

Q. The direction of the wellbore isn't going to change. Has that already been set?

A. Yeah. The proposed direction is north, 30 degrees east. That was based upon a geological evaluation in an attempt to intersect natural fractures.

Q. That won't change as a result of additional information you may gather?

A. No, sir. What may change that is actual field operations, maybe a little bit one way, a little bit the other.

Q. Has Marathon drilled one of these horizontal wells?

A. We've drilled over 40 short radius horizontal wells. Primarily those have been down south of Midland in our Yates Unit. We've drilled one south of Big Lake, Texas, approximately 9,000 foot.

Q. Have you been involved with other horizontal projects?

A. Yes, I have.

EXAMINER CATANACH: That's all I have of the witness. The witness may be excused.

MR. KELLAHIN: I would like to call, at this time, our reservoir engineer, Mr. Examiner, Mr. Meftah Tiss.

MEFTAH TISS

Having been first duly sworn upon his oath, was examined and testified as follows:

EXAMINATION

BY MR. KELLAHIN:

Q. Mr. Tiss, for the record, would you please state your name and occupation.

A. Meftah Tiss, and I'm a reservoir engineer working for Marathon Oil Company in Midland, Texas.

Q. Have you testified before the Division before?

A. No, I have not.

Q. Summarize for us when and where you obtained your degree.

A. I obtained a bachelor of science from Louisiana State University in 1985, and a master of science from the University of Oklahoma in 1987, both in petroleum engineering.

Q. Summarize for us your employment experience, subsequent to graduation.

A. I have been working for Marathon since July of 1988. I worked for Marathon in Tunisia, North Africa for five years. After that, I got transferred to Midland, Texas.

Q. Do your current duties as a reservoir engineer include reservoir calculations and studies for the Denton Devonian pool?

A. That's correct.

MR. KELLAHIN: We tender Mr. Tiss as an expert reservoir engineer.

EXAMINER CATANACH: Mr. Tiss is so

qualified.

Q. Summarize for us, Mr. Tiss, from reservoir engineering aspects, what Marathon is trying to accomplish with this application.

A. What Marathon is trying to accomplish from this application is to take a nonproducer, No. 5, into a horizontal well, to intersect fractures, and also to stay away from water coning.

Q. How does the application of horizontal technology give you a better chance to obtain those two objectives, than a vertical well would?

A. A horizontal well, by intersecting more fractures and having a higher productivity index than a vertical well, that will minimize the pressure draw down and, therefore, minimize water coning.

Q. What has been the recoveries from the 40-acre tract that's identified as the southwest quarter of the southeast quarter of Section 11, the Dinero tract? Do you know what those two wells have cumulatively produced out of that spacing unit?

A. Yes, I do. Those two wells, Well No. A-1, which was the discovery well, cum'd

over a million barrels of oil from the top 165 feet of the Devonian. The No. 1 well cum'd about 300,000 barrels of oil from the Devonian.

Q. What was the cumulative recovery of oil from the No. 5 well, the well that you intend to initially reenter?

A. The cumulative oil recovery from the No. 5 well is 1,142,000 barrels. The majority of that oil was from the Lower Devonian. In the tight cap, it only recovered 15,000 barrels of oil as compared to the No. A-1, the east offset, which recovered, as I said, over a million barrels of oil from that tight zone.

Q. Do you have an opinion, as a reservoir engineer, whether approval of this application for Marathon will impair the correlative rights of Dinero and the owners of that 40-acre tract?

A. No, it won't impair, because this well here will not extend beyond the 330-foot stand-off.

Q. Do the current producing vertical wells in the Marathon spacing unit, the project area, have the capacity to recover all of the attic oil that is in the reservoir?

A. That's not right. They don't have the

capacity to recover attic oil.

Q. So you're going to need additional wellbores of some kind in order to get the attic oil?

A. That's correct.

Q. In your opinion, the use of the No. 5 well in the application of the short radius lateral is the best way to do it?

A. That's correct.

MR. KELLAHIN: That concludes my examination of Mr. Tiss, and that completes our presentation, Mr. Examiner.

Mr. Examiner, I failed to give you a copy of the certificate of notification in this case. I would like to have that marked and entered as Exhibit 9.

EXAMINER CATANACH: We'll admit Exhibit 9 into evidence.

EXAMINATION

BY EXAMINER CATANACH:

Q. Mr. Tiss, do you have an estimate on how much oil the No. 5 well might recover?

A. We're estimating about 250,000 barrels.

Q. How did you arrive at that estimate?

A. From volumetrics.

Q. Would the potential for the No. 3 and 4 well be lower than that?

A. For No. 3 and 4, the potential would be, I would say, about the same, or a little bit higher.

Q. In your opinion, the horizontal technology, that's the only way to really recover this oil at this point in time?

A. That's true.

EXAMINER CATANACH: I have nothing further, Mr. Kellahin.

MR. KELLAHIN: That concludes this case on our application, Mr. Examiner.

EXAMINER CATANACH: Okay. There being nothing further in this case, Case 10922 will be taken under advisement.

(And the proceedings concluded.)

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 10922, heard by me on March 3 1994.

David R. Catanach, Examiner
Oil Conservation Division

CERTIFICATE OF REPORTER

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

I, Carla Diane Rodriguez, Certified Shorthand Reporter and Notary Public, HEREBY CERTIFY that the foregoing transcript of proceedings before the Oil Conservation Division was reported by me; that I caused my notes to be transcribed under my personal supervision; 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 April 11, 1994.

Carla Diane Rodriguez

CARLA DIANE RODRIGUEZ, RPR
CSR No. 4