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

3 June 1987

EXAMINER HEARING

IN THE MATTER OF:

Application of Marathon Oil Company for pool creation, special pool rules, and discovery allowable, Lea County, New Mexico.	CASE 9145
and	
Application of Marathon Oil Company for the amendment of Division Order R-8282, as amended, Lea County, New Mexico.	CASE 9146

BEFORE: David R. Catanach, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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A P P E A R A N C E S, CONTINUED

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I N D E X

E X H I B I T S

MR. CATANACH: Call next Case 9145.

MR. TAYLOR: The application of Marathon Oil Company for pool creation, special pool rules, and discovery allowable, Lea County, New Mexico.

MR. CATANACH: Are there appearances in tnis case?

MR. KELLAHIN: If the Examiner please, I am Tom Kellahin of Santa Fe, New Mexico, appearing in association with Mr. Larry Garcia, Marathon attorney, and we are representing Marathon Oil Company.

MR. CATANACH: Are there other appearances?

MR. DICKERSON: Mr. Examiner, I'm Chad Dickerson of Artesia, New Mexico, appearing on behalf of Mr. James A. Davidson of Midland, Texas.

I have one witness.

MR. KELLAHIN: Mr. Examiner, with your permission, we would like to consolidate the next case, which is 9146, for purposes of presenting testimony and we would request that you enter separate orders. I think we can work with a consolidated case arrangement and we'd like to try that.

MR. CATANACH: We'll go ahead and do that, then, if it's all right with you, Mr. Dicker-

son.

MR. DICKERSON: Very good.

MR. CATANCH: Okay, at this time I guess we'll call next Case 9146.

MR. TAYLOR: The application of Marathon Oil Company for the amendment of Division Order No. R-8282, as amended, Lea County, New Mexico.

MR. CATANACH: Okay, same appearances, I assume, in both cases.

MR. KELLAHIN: Yes, sir.

MR. CATANACH: How many witnesses do you have?

MR. KELLAHIN: I have three witnesses.

MR. CATANACH: Can I get all the witnesses to stand and be sworn at this time?

(Witnesses sworn.)

MR. KELLAHIN: Mr. Examiner, I'd like to take a moment and see if I can outline for you in a brief way, the factual presentation, indicate to you Marathon's perspective in terms of these cases so that as you hear the evidence you will recognize those areas of disagreement, perhaps some areas of agreement, and I'll have a

feel for the kinds of things we'll asking you to render a decision on.

If I may begin back a little bit, in August of '86, after a hearing, Examiner Stogner entered a forced pooling order. We will submit to you a copy of the order. It's in Case 8960. The order number is R-8282.

The arrangement is this, is that Marathon had planned at that point to drill a Siluro-Devonian well, it's an oil well. The rule is it was on statewide spacing and Mr. Davidson has an interest in that 40-acre tract. He has, I understand, the same interest in each of the 40-acre tracts that are in that quarter section.

The order was entered and the case did in fact go to a Commission Hearing. The result of it, however, was the forced pooling order was entered.

Our evidence is that Mr. Davidson was provided notice pursuant to the pooling order and that he did not elect to participate in the well pursuant to the time frame allowed.

Thereafter the well was drilled and completed in mid-February of this year. After completion and some initial testing on the well, it is our evidence and belief that the oil well constitutes a new Siluro-Devonian discovery. It is our evidence and belief that the well will have the ability to drain more than 40 acres.

As a consequence of that, we have sought for and present to you today an application to establish 80-acre spacing. In the event the Division agrees with us and approves temporary 80-acre spacing for this new Devonian oil pool, we would also seek to amend the pooling order. It is our position with regards to the forced pooling cases that Mr. Davidson is not entitled to any new election period; that he cannot now pay his share of the cost of this successful producing oil well and avoid thereby the impact of the original order.

I'm sure we'll have disagreement about that and that will be one of the issues that you'll have to resolve, is to the extent to which the prior forced pooling order may be modified in order to make the pooling order acreage consistent with the spacing if you should approved 80-acre spacing.

I will save for closing argument my position on those questions and why I think we're correct.

Our proof is going to be through three witnesses. We'll provide a geologica witness who will set the geologica stage upon which we believe the new pool is justified.

We have an engineering witness that will provide you engineering calculations upon which he formulated the opinion that 80-acre spacing is justified, and

then we'll provide our land witness, who is the same land witness in the forced pooling case and he'll provide you the documentation and correspondence with regards to the amendment of the order.

That is the substance of our case and at such appropriate time we're ready to go forward.

MR. DICKERSON: Mr. Examiner, I think that a little bit more detail in the background of this case is in order.

Mr. Davidson wears two hats at this hearing. Mr. Davidson is the owner of 38.125 percent working interest in the south half land the south half of the northeast quarter of Section 14, Township 16 South, Range 38 East, Lea County, New Mexico, 400 acres in all.

He also is a royalty owner. He owns minerals which are subject to an oil and gas lease under that same 400-acre tract.

In addition to that he is a royalty owner, again owning minerals subject to an existing oil and gas lease in the Section 23, immediately to the south of the Section 14.

We, who practice before this Division, know that in many instances it's fairly common to be faced with a situation when we must resort to forced pooling in which we may not be totally certain whether a gas

well is going to be completed; whether an oil well is going to be completed; whether special pool rules affecting some zones may or may not come into effect prior to drilling a well. There are ways to avoid that problem.

The problem is avoided in practice, as you know, by filing an application pointing out the possibility of differing spacing units. It may be a 40, it may be an 80, it may be a 160, a 320, depending on what the facts and circumstances in the future holds at the time some party commences to drill a well.

That was not done in this case. This was a very straightforward, typical run-of-the-mill pooling case to which Mr. Kellahin referred. It affected only, the evidence in that hearing and we'll cite today the numerous portions of the transcript into evidence before this Division, both at the Examiner Hearing of last August and at the later Commission hearing in October, I think it was.

There was no representation, no hint, no inkling, at any point in any of that testimony or evidence given that that was such a sitution. This pooling case was fought and won by Marathon and lost by Mr. Davidson. No appeal has been taken from it, it is final. It affected the southeast quarter of the southeast quarter. At that time Marathon was interested in drilling and subse-

quently did drill its Benson No. 1 Well, located, and at that time anticipated to be a 40-acre oil well under the statewide rules.

After the election period and subsequent to the forced pooling order becoming final, Mr. Davidson was, in fact, accorded an opportunity to participate by paying his share of the costs in that well. he chose not to do so. He chose not to pay his proportionate part of the cost of a 40-acre oil well.

He, by not appealing the Division order, agreed to suffer the consequences of the penalty imposed upon him by that order, the statutory maximum, cost plus 200 percent.

Marathon subsequently drilled and subsequently completed, and it's our information that the well is currently a commercial producer from the projected Devonian formation.

It's also our information that since that time Marathon has also now drilled and is at total depth on another well immediately in Section 23, to the south, adjoining Mr. Davidson's interest in the subject, the original subject well, southeast of the southeast quarter of Section 13, which, as I said, is now at total depth.

Nothing, as far as Mr. Davidson -- Mr. Davidson has not been accorded by Marathon any infor-

mation whatsoever, regardless of his position both as a royalty owner and as a working interest owner of the information gained from drilling these wells.

There was great point made of this fact at the Examiner hearing and the Commission hearing fought in 1986. Marathon was not ordered to produce information as has been the custom of this Division over the years, yet Marathon now comes before us to change the rules of the game after these wells have been drilled.

The testimony at the original hearings, Mr. Examiner, was quite extensive testimony that it was perfectly possible for Mr. Davidson's offsetting acreage, consisting of 40-acre spacing, the 400 acres in which he owns almost 40 percent working interest, one of which, one spacing unit of which at 40 acres, was involved in that proceeding. But that proceeding left open the possibility of nine additional spacing units in Section 13 in which Mr. Davidson was really the majority interest owner, subject only to farmouts and whatnot from other parties possibly increasing Marathon's -- we're not sure of what Marathon's total interest may be.

At any rate, he was a substantial working interest owner throughout all that acreage. Much of the testimony at that proceeding was to the effect that he may get some benefit from drilling this well. He's

going to suffer a penalty which was imposed upon him, the statutory cost plus 200 percent, but he was going to get some benefit, too, if this well was drilled at the cost, risk, and expense of Marathon, and subseuently it was done.

The practical effect of drilling and completing a successful well might be to enhance and improve Mr. Davidson's knowledge of the mineral situation underlying his lands. That, in fact, has come to pass. While our information is very limited because of the refusal of Marathon to furnish any information whatsoever concerning the production history or data obtained from the drilling of either of these two wells, it is only after the fact that Marathon comes in for two separate forms of relief. One, to establish, as with this Benson Well in the southeast quarter of the southeast quarter of Section 13, or 14, I'm misstating, it is Section 14, to establish special pool rules providing for 80-acre spacing.

At the same time Marathon has filed a separate application to, and this is a quote, "amend" the forced pooling order.

It is our opinion that the purpose of the posing of these two separate applications in this fashion is to present a colorable argument to this division that it may in some manner amend the provisions of that pooling order to expand the force pooled acreage from

40 acres to 80 acres without what is otherwise absolutely and unequivocally required by our statute, and that is the prior obligation to have attempted to obtain a voluntary pooling.

Mr. Examiner, you know as well as we lawyers who practice in front of you, the custom and practice of this Division. Someone appears before this Division unprepared to show or make a prima facie case to some extent that they have attempted under our statutes to obtain voluntary pooling of the acreage, the customary treatment those parties get is to be invited to come back in two weeks or thirty days after they have attempted to obtain such voluntary pooling and then, if unsuccessful, and if they have been in good faith, the custom and practice again, as we all know, has been to, in the great majority, if not universally, grant forced pooling applications. We can argue over risk and who's the operator going to be and all those things. That's not the case before us today.

Mr. Kellahin has an aspect of credibility around here that he deserves. His clients recognize it. His opponents recognize it, and those of you who sit as judges in these cases recognize it.

But we think in this case what is attempting to be done is not permitted by our rules. We do not think it has ever been, to the best of my ability,

I've attempted to ascertain where -- whether or not it has ever been attempted before, I cannot find a case where it has been attempted, nor have I been successful in much less finding a case in which it has been successful.

It is Mr. Davidson's position that he was pooled in a 40-acre tract. He has to live with that pooling.

He was not pooled and cannot by slight-of-hand, by calling it an amendment to a pooling order and establishment of special pool rules, in effect lose 80 acres of his property, and a valuable property right at this point, and concedably (sic) through the efforts and at the expense of Marathon, but he cannot lose the property right that he owns in that other 40-acre adjoining tract in a procedure such as this.

It is our position that this Division, we recognize that under the broad terms of our pooling statute a great deal of discretion in this Division and its examiners to improper circumstances and based on the proper evidence before it, in some cases to amend and modify orders. It's not unusual for orders to be amended.

But this is much more than that. This is a retroactive attempt to do what should have been, must have been, but was not done in 1986 prior to the drilling of the well.

It's Mr. Davidson's position that Marathon has not made any effort whatsoever, much less any effort in good faith, to obtain a voluntary pooling agreement; that regardless of what this Division does, we submit that the statute requires that he have some option, whether to participate, whether in the normal course of events to farmout, Marathon can withdraw its application, and leave it on 40-acre spacing. He's fought that battle and won a year ago. That decision is final. It is not appealable by either or, by either side.

The effect of what Marathon attempts to do in this case is to avoid these practical problems. This, to put it bluntly, is not the simple, straightforward, typical run-of-the-mill pooling case that we're accustomed to seeing and hearing argued in this room.

That's all I have.

MR. CATANACH: You may proceed.

MR. KELLAHIN: Mr. Examiner, just very briefly, we try to bring you interesting cases. We think this is one of them. It is a chicken and egg problem about which you do first and how you guess what to do.

We think it might be of, if not comfort, at least help in deciding how to address Mr. Dickerson's concerns and mine if you'll let us make the factual presentation, and then we will do what you want us to do in

terms of briefing this question, submitting proposed orders, and we'd like to go forward at this point with the factual presentation, and give you that framework upon which to make the decisions both Mr. Dickerson and I seek to have you make.

MR. CATANCH: Please proceed, Mr. Kellahin.

MR. KELLAHIN: I'd like to call at this time our first witness, Mr. West Kubik. It's K-U-B-I-K.

MR. KELLAHIN: Mr. Kubik, would you take a moment, sir, and give me a copy of the exhibit packages that you have put together and we'll distribute these.

Mr. Examiner, I have distributed Marathon Exhibits One, Two and Three, which represent Mr. Kubik's geologic displays.

WEST KUBIK,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

Q And at this time I will ask you, Mr.

Kubik, to take Exhibit Number One, let's use Exhibit Number One to orient us as to what is being done in this particular area.

Let me first of all ask you, sir, did you prepare all three of these exhibits?

A Yes, I did.

Q Have you previously testified as a petroleum geologist before the Division?

A I have not.

Q Would you identify for the Examiner when and where you obtained your degree?

A I obtained my Bachelor of Science in geology from Oklahoma State in 1979. I obtained a Master's of Science in geology from Colorado School of Mines in 1982.

Q Will you summarize for us in a general way what has been your experience, your employment experience, as a professional petroleum geologist?

A I worked for two years as a parttime geologist with Kenai Oil and Gas, an independent in Denver while attending school at Colorado School of Mines.

After graduation I worked with Kenai as a fulltime geologist in the Rocky Mountain region for nine months, until March of '82.

I've worked in a variety of Basins in the Rocky Mountains. In late '82 I became employed with Mara-

thon in Midland. I have worked for Marathon in the Midland Office since late '82, that being approximately four and a half to five years, experience with Marathon. I've worked Western Anadarko Basin, Southern Midland Basin, but primarily for approximately three, three and a half years, I've worked Lea County, New Mexico, in a variety of formations.

Pursuant to that employment, Mr. Kubik, does the prospect that is being developed in what is called the East Garrett Siluro-Devonian Pool, is that an area for which you have made a geologic study?

Yes. I've been familiar with this area for some time in working some Wolfcamp zones and some Penn zones and handling the -- the geology for the -- for the East Garrett prospect.

Q All right, sir.

MR. KELLAHIN: We tender Mr. Kubik at this time as an expert petroleum geologist.

MR. CATANACH: Mr. Kubik is so qualified.

Q Mr. Kubik, let me take you through Exhibit Number One in a general way before we talk about the specifics.

Would you take a moment and explain to us how to understand the color code at the bottom of the display?

A In the color code I've simply undertaken to describe the production, the producing horizons on this index map, encompassing all of Township 16, 38, 16 South, 38 East, and portions of 15 -- portions of ranges in 15 South and portions of ranges in 17 South, just as an orientation and index map.

It shows a variety of producing formations as listed. They are listed in stratigraphic order, shallowest at the top, deepest at the base. It shows a variety of formations, Glorieta, San Andres, Drinkard, Abo, being some of the shallower formations producing from depths of 5-to-8000 feet, Wolfcamp and Brown producing from approximately 10,000 feet, and the interval of interest here, the Siluro-Devonian shown in red and showing the producing wells in nearby fields to the prospect, those fields being -- moving from the north to the south --

Q Right, just a moment, to make sure you don't get too far ahead of me.

A Okay.

Q Let's devote our attention to the other Siluro-Devonian Pools that have been established, at least insofar as this map shows.

A All right.

Q Before we talk about those, how do we look at the color code and orient ourself to the other Devon-

ian oil pools? Are they simply clustered by a color code? They're the orange wells, are they not?

A Yes.

Q All right.

A The Devonian wells are the orange wells on the map, yes.

Q Okay. Identify for us, starting in the top right with the Medicine Rock, identify for us the areas that are designated as particular Devonian Pools and then, if you will, also let us know if those pools are designated under statewide 40-acre spacing or whether they're on special rules of 80 acres or more.

A All right. Starting with the Medicine Rock Devonian Field in the far upper right of the map, to my knowledge that field was ordered on 80-acre spacing.

Q All right, sir.

A The very top left of the map is the very southern tip of the Denton Devonian Field. I do not have knowledge of what the word spacing was, whether special spacing was requested in that field. It appears to have been drilled on forties.

Moving south, immediately south of there, to the South Denton Devonian Field shown there, seven well producing field, again I do not know if special rules were granted or requested for that field. Again it was drilled

on forties.

Moving to the south, kind of the center portion of the map, the Knowles Field shown there, eight producers, to my understanding that was special rules of 80-acre spacing were granted on the Knowles Field.

The West Garrett Field to the left of the map, it's my understanding was spaced on forties, or granted forties, and then finally, the South Knowles Field, the bottom right, again to my understanding was originally granted 80-acre spacing.

Q On the exhibit there is an orange line that passes through the Marathon Oil Benson 1, which I will call the discovery well just to keep you on to that well point.

In addition to the discovery well there are other wells that are aligned with that line. Is that a line of cross section?

A Yes, it is.

Q All right, and that's your Exhibit Number Three?

A That is.

Q Okay. When we're looking at what Marathon proposes to have the Division establish as the East Garrett Siluro-Devonian Pool, have you reached a geologic opinion, sir, as to whether in your mind this constitutes a

new Devonian discovery?

A In my opinion, it does.

Q Have you satisfied yourself, sir, that this is both vertically and horizontally separated --

A Yes.

Q -- from other established Devonian pools?

A Yes, sir, I have.

Q And have you developed a geologic opinion as to whether or not the discovery well is within a reservoir that ought to be designated as a new pool?

A Yes.

Q When we look at the shaded area, did you shade that area in around the discovery well? It looks like half of four sections?

A Yes, I did.

Q What's the purpose of that?

A It was just to give it a very rough ballpark outline to -- to what the pool may eventually encompass based on a very rough outline of our seismic map, the distribution of the reservoir shown on our seismic map. It was just a very rough attempt to outline what -- what may be the pool outlines in a very -- in more of a land sense than in a geologic sense.

Q Prior to the drilling of the Benson 1 Well, the discovery well, when a geologist such as you with

this type of experience examines and identifies an area for a well, do you know prior to the drilling of that well in this type of Devonian area whether or not you're going to get wells that you as a geologist would recommend be developed on 40 or 80-acre spacing?

A No, sir.

Q Let's turn then to the Exhibit Number Two. Let's look at some of the specific geology about this particular discovery, Mr. Kubik.

First of all would you take a moment, sir, and simply identify the exhibit for us?

A The exhibit is a Silurian depth, Siluro-Devonian seismic depth map based on seismic and well control, constructed by Dave Rebenstorf, our geophysicist for the area, originally. It is based on a number of seismic lines, the critical ones to the prospect outlined in yellow. There are other seismic lines in the area and it is again a structural depth map on the Siluro-Devonian horizon.

Q This is the same Mr. Rebenstorf that testified at the forced pooling case in which Mr. Davidson's interest was pooled.

A It is.

Q All right, and you've taken that base map, then, that was used in evidence and have further evaluated it and reached certain conclusions?

A Yes.

Q All right. Describe for us generally, Mr. Kubik, what additional work or any alterations or changes you might have made in the base map.

A The -- really the only changes that were made were that the top of the Siluro-Devonian was anticipated, was encountered at a slightly lower structural elevation, but still -- still anomalously high and it simply caused Mr. Rebenstorf to go back in and provided his with a velocity point, allowed him to just do some very subtle recontouring and changed some of the contour values but it basically did not alter the reservoir at all.

Q But geologic data that was used to update his interpretation is the information derived from the Benson 1 Well?

A Yes.

Q The one we've called the discovery well?

A Yes.

Q Okay. Just to the south of that is a well that was called, or is called, the No. 1 Roddy Well?

A Yes.

Q What is the current status of that well, sir?

A That well is currently undergoing testing.

Q It has reached total depth and --

A Yes, it has.

Q -- you're preparing completion and testing on it?

A Yes.

Q OKay. The -- apart from the Benson Well and the Roddy Well, are there any other Siluro-Devonian tests or producing wells in the immediate area?

A On this map there are a few I might point out. To the immediate -- to the immediate west of the Benson Well there are two Silurian tests, shown as the Sun Yeager and the Major, et al, No. 1 Yeager, the two dry holes in Units I and J of Section 15, were dry holes to the Silurian.

The well in Unit A, 22, was a dry hole to the Silurian. These probably could be better seen on the index map. I have those dry holes listed but basically the Knowles Field is to the immediate south end of the map, which is Devonian production. That is the only other Devonian production on the map and there are -- there are a few dry holes, also.

Q The closest Devonian production is in the -- in the Knowles Field to the south.

A Yes, it is.

Q And how far away is the closest producing well in the Devonian from the discovery?

A Appears to be approximately 2-1/2 miles.

Q You said earlier that you have reached the geologic opinion that this constituted a new resrvoir?

A Yes.

Q Would you describe for us the reasons that you base that opinion on?

A Primarily based on our detailed seismic. We have a very dense grid, as you can see. These reservoirs are fairly straightforward to -- to define seismically. The other reservoirs that produce, such as Knowles and those off of this map, are very similar in that they are faulted anticlines, faulted on one or more sides.

We have dry holes on the flanks of our feature and intermediate positions between our feature and the nearest producing fields and our well did come anomalously high for that general area, but primarily it is based on the dense seismic grid. The seismic is a very good tool in here and I think very well defines that we definitely have separation from -- from any of the nearest Siluro-Devonian Pools.

Q What information, geologic information, do the logs from the Benson 1 Well allow you to do in determining and satisfying yourself that this is in fact a new discovery?

A I don't really know if that much is going

from the logs identified as a new discovery. Perhaps most of that would have had to be based, I think, on engineering information, but again, most of it was based on the seismic and our well just simply confirmed our seismic and the tops in the reservoir development.

Q Well, and that is the geologic benefit, then, of the log of the Benson Well is --

A Yes, sir.

Q -- it tells you the accuracy of the seismic.

A Yes, it has confirmed the seismic.

Q Can you as a geologist determine what the drainage is going to be for this reservoir?

A No, I really am not qualified to -- to make very detailed calculations and determinations on -- on what the drainage should be.

Q That's an engineering question.

A It is an engineering question.

Q Fine, let me ask you a geologic question, though, with regards to well spacing.

A Okay.

Q In terms of the geology, do you see it that this reservoir has an adequate size and shape to it whereby at least from a geologic perspective you would recommend either 40-acre spacing or 80-acre spacing or 160-

acre spacing? Can you not approach it from a geologic perspective?

A Yes.

Q All right. Making that assessment, what is your opinion, then, about how you would space wells in order to adequately explore and develop the new pool?

A My opinion as a geologist and who having looked at the other fields, their spacing, their correlative reservoir characteristics, it is my opinion that the pool should be drained on eighties.

Q Should be spaced on eighties.

A Spaced on eighties.

Q What kind of geologic parameters or factors have you looked at, Mr. Kubik, to satisfy yourself that this reservoir has the kind of geologic characteristics that would lead you to believe that it is a reservoir that could be spaced upon eighties as opposed to forties?

A Primarily in that looking at the surrounding fields we see some variability in the relative amounts of fracturing versus matrix porosity that contributes to production. Many of these fields are fractured; many of them also have good matrix porosity. I think it could be said in general that the data that I've been able to come up with for some of the immediately offsetting fields where there is some variation, is that in those fields where frac-

turing in a relative sense is more dominant than good matrix porosity, these fields have been ordered on eighties and have been drilled on eighties.

In those fields which have better inherent matrix reservoir porosity and less fracturing, the South Benton Field being a prime example in this area, that those fields were in fact drilled on forties, so that having that generalization at hand, of -- of more fracturing and less porosity being more conducive to 80-acres, it was certainly my opinion once seeing the Benson drilled, I sat on the well as the reservoir was drilled and was there for the initial test, and it was my opinion, looking at the samples, that we're dealing primarily with a fractured reservoir with very little matrix porosity, and certainly that was confirmed by the logs, the point being that we saw that we had a reservoir that was dominated by fractures and had very little or no good matrix porosity, therefore, by analogy to other fields that would tend to lend it much more to being spaced on eighties.

Q For the Benton Pool could you have made the judgment about the fractured nature of this reservoir and its potential for 80-acre spacing until the Benson Well had been drilled?

A We could not. You can make generalities that in general Siluro-Devonian resrvoirs have varying

amounts of matrix porosities. Some of them are fractures; some of them are not, and -- but the reservoir in the area is -- is complex enough and has enough heterogeneity that that really cannot be judged ahead of time, particularly on a rank wildcat well.

Q Let's turn to Exhibit Number Three, Mr. Kubik, and have you identify that exhibit for us.

A All right.

Q You've previously identified Exhibit Three as a cross section that you have prepared. Would you describe for us the method by which you've made a study to decide how to prepare a cross section?

A I made the cross section based on, I wanted to show the -- really, the nature of our wildcat relative to immediately adjacent dry holes and other producing fields. I ran the cross section through the South Benton Field to the north, through a -- starting with a dry hole to the north of that field, through the south -- through the north -- through the South Benton Field, and then through some dry holes between the South Benton Field and our well, through our well, and again through some dry holes flanking our wells and on to a producing field to the south, the Knowles, primarily just to show the analogy of field type, the production type, and also to show the separation of our feature from -- to the nearest Devonian Pool.

Q This is a structural cross section, is it?

A It is a structural cross section.

Q Is the methodology you have used in preparing the structural cross section one that is a standard method used by geologists?

A Yes, sir.

Q Having done this, what conclusion do you reach as a geologist based upon the relationship of the Benson Well to the other wells on the cross section?

A Basically, you can see that I note in the record that this is modeled partially off of our seismic information, which is a very dense grid in the area.

Basically you conclude that the Benson Well is on a separate horst-like feature with downthrown faults on either flank, separated from the immediately adjacent fields by low and wet Devonian.

Q Identifying a structure for the Devonian pools is in fact the basic building block upon which you discover and develop Devonian pools?

A Yes, it is.

Q You're looking for a stratigraphic -- structural features in order to trap the oil?

A Yes, very definitely out here. That is the -- the only way in this immediate -- that is the only

type of field in this immediate area are small. The Denton is somewhat large but for the most part fairly, fairly small structural accumulations faulted on one or more sides is the trapping mechanism.

Q Do you have a geologic opinion with regards to the continuity or discontinuity of these types of reservoirs so that you can make a judgment that based upon that fact a prudent operator would go either for 40 or 80 acre spacing?

A Generally, on other fields the -- the continuity of the reservoir within a field appears to be quite good. There -- there really aren't that many anomalies within fields to suggest a very broken up reservoir. The majority of the field certainly on the index map as well as the immediate area, all have pretty much continuous and even reservoir, although there certainly are some small scale variations well to well, but generally you do have a continuous reservoir over the entire feature and that certainly would allow you the option of either spacing.

Q And looking specifically at the Benson area, which Marathon proposes for the new pool, do you see any geologic feature or other characteristics of the geology on any of your work that would cause you to say, "Aha, discontinuous, we've got to go for 40-acre spacing."

A I have not.

Q All right. Are there in fact any geologic characteristics, features, sealing faults, that you have located that would preclude you from reaching the geologic opinion that we could space wells in this pool on 80-acre spacing?

A No.

MR. KELLAHIN: That concludes my examination of Mr. Kubik.

I would move the introduction at this time of his Exhibits One, Two, and Three.

MR. DICKERSON: Mr. Examiner, I would like to reserve the right to object to any of these until following a small amount of cross examination.

MR. KELLAHIN: No objection.

MR. CATANACH: All right, go ahead, Mr. Dickerson.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Kubik, I have one question regarding your Exhibit Number One.

You've shaded, as Mr. Kellahin described, four half sections of land in the general vicinity of the acreage that we're in dispute here today.

A Yes.

Q Did you do that shading based on your interpretation as a geologist from the information available to you as to the likely productive limits of this, what you have testified in your opinion, is a new Siluro-Devonian Pool?

A Again, in a very general sense, yes. I did not intend it to be a very detailed distribution of reservoir distribution. It was an attempt on my part simply to outline an area on the map and shade it primarily for reference purpose. I intended to make a very blocky outline of the feature. I certainly could have gone in and made a much more detailed shaded area to cover, you know, exactly what we have mapped as gray, but it was basically just a very general attempt to -- to cover the pool with a very blocky index-type shading.

Q Mr. Kubik, did you have any input into the development of this prospect as a prospect at the time it was presented to Marathon management?

A I was not the original geologist on the prospect but at a subsequent time, when that geologist left our office, I was handed responsibility for the prospect and since that time have been the geologist on the prospect.

So I have been involved in presenting it to management on a number of occasions and have been Marathon's geologist for the prospect since that time.

Q Who was that geologist and when did he leave Marathon's employment?

A His name was Jeff Zeeman (sic). He did not leave our employment. He was transferred to Houston and to my knowledge that would have been sometime, perhaps, in '85, I think. This prospect has been on the books for Marathon for - for some time.

Q So you had performed part of your duties as a geologist in relation to this prospect prior to the time the Benson No. 1 Well was drilled.

A Yes.

Q In connection with that, or based on your knowledge of what that geology was believed to have been been based on the seismic information and other data that you had prior to the drilling of that well, do you have an opinion as to how the boundaries of the roughly drawn, as you have stated, of the apparently or likely prospective, productive Devonian area may have changed by reason of information gained from the drilling the Benson No. 1?

A You're referencing the shaded area on Exhibit One?

Q Correct.

A That was drawn by me just very recently, specifically for this hearing as a -- as a, again, just an index feature.

We should probably go to the Exhibit Two. Now I could state simply that drilling of the Benson has not changed our outline or the shaded area of the structural feature on Exhibit Two.

Q So had you attempted to anticipate the likely productive area prior to the Benson No. 1 based on the knowlege that you had at that time, you do not think it would have differed greatly from what your opinion has now caused you to shade in?

A No, I don't, I don't believe so. Again, this shading I may have done, if asked to do a very generalized, blocky shading of -- of the pool area prior to the drilling, it may well have been very, very similar to this, to this shading.

Again, the two shadings are really very different features and are -- don't have that much real detailed relation to each other. One is a very detailed shading on Exhibit Two; the other one on Exhibit One is, again, is just a very gross generalization.

Q In connection with your study of this area prior to the drilling of the Benson No. 1 Well, Mr. Kubik, had you prior to that time familiarized yourselves with some of these other Siluro-Devonian fields in the area?

A Yes, I have.

Q And I believe it was your testimony that

based on your expertise as a geologist, it would not have been possible for you to anticipate the nature of the rock formations that you would in fact encounter when the Benson No. 1 Well was finally drilled.

A Not in detail, no.

Q Would it not have been, you were aware prior to the drilling of that well, were you not, that some of the wells in the general vicinity in this reservoir, Siluro-Devonian, were developed on forties while others were developed on eighties?

A I was aware of that.

Q It would not have been a farfetched assumption to anticipate that conceivably the rock drilled through when that Benson No. 1 Well was drilled might justify eighties, would it not have been, even prior to the time that well was drilled?

A You could have held that as a possibility.

Q Would it be fair to characterize the Devonian, other Devonian pools shown on your Exhibit Number Two as roughly half of them spaced on forties, roughly half spaced on eighties, or is there is -- have you calculated the percentages?

A You know, if you include the Denton Pool, with just a portion shows up to the upper left, to my know-

ledge the South Knowles, Knowles, Medicine Rock, were pooled on eighties; the West Garrett, the South Denton and the Denton to my knowledge, at least, were drilled and devloped on forties, so -- so that might be fair.

Q At any rate, it would not have required a great leap in your geological imagination to anticipate that possibly you would discover a pool which should be developed on 80-acre spacing when in fact the Benson No. 1 was drilled.

A As I said, that certainly was a possibility, but that was not something that I was addressing or that was not -- that I was not addressing at the time. I was reponsible for the geology and making sure that we had a successful wildcat.

Q Now you did not testify, as I understood it, in the original hearings involved pooling Benson No. 1 Well, is that correct?

A I did not.

Q Who did testify?

A Dave Rebenstorf.

Q And is he present today?

A He is not.

Q Is there a reason for that?

A We just felt that it was not necessary. His only reason for testifying previously was that he was

the -- the individual who made this Exhibit Number Two and therefore that he should be present. This exhibit has already been presented to this Division and he has described it, and it was felt that I could describe it probably as well as him, and that he was really -- really just not needed.

Q Does he still serve any function in connection with the development of this area?

A He's still a geophysicist in this area, handles seismic on this prospect.

Q And does the seismic data that Marathon has -- at this point when you have two wells drilled in the -- what you now believe to be a Devonian pool, can you explain to me as a layman how the seismic data may give way or be related to the subsurface data that you now have by virtue of drilling these two wells?

A Well, the -- what the drilling of the two wells has told us is, it has confirmed the seismic in the sense that we have an anomaly and we have an anomalous upthrown block and our well was significantly high to two offsetting dry holes. The wells that we drilled, as I testified previously, did change somewhat the numerical values of the contours within the structural feature. Specifically it reduced the total amount of closure slightly, but basically otherwise did not, certainly did not alter the shape. The

wells drilled as they were really will not tell you much about the outer limits of the field but it certainly confirms the feature as mapped with -- with minor modifications of the actual structural horizon.

Q One more question with regard to the shaded area on your Exhibit Number One, Mr. Kubik. If my mathematics is correct you have shaded the four half sections of land which would consist of approximately 1280 acres of land, do you not?

A Yes.

Q Without belaboring the point to cite to the specific place in the testimony in the earlier proceeding, assume for a moment that I tell you that I believe that the testimony in that proceedng was that the likely prospective area believed by Marathon to exist for this Siluro-Devonian Pool at the time prior to the drilling of the Benson No. 1 Well, consisted of approximately 320 acres.

Is that consistent with your testimony now, that your shaded 1280 acres has not been dramatically affected by the information gained from drilling the Roddy and the Benson No. 1 Well?

A No, it has not. This again was my attempt on my first trip to Santa Fe to testify to -- to outline and index area for -- for the field. Again, they're

different beasts.

The shaded area on Exhibit One, every bit of that shaded area that I have shaded is not to imply that every bit of the shaded area there should be productive.

Again, it was a very -- I just tried to keep it very blocky and very straight lined, just to identify where the pool is and roughly in a very gross sense where the pool is going to be.

I did not make the shaded area on Figure 1 anomalously larger because of something that we learned in the drilling of the Benson. Our specific interpretation on the distribution of the reservoir at this point is still on Exhibit Two, the shaded area on Exhibit Two, as far as specifics, and again, I don't know what else I can really say on that. Perhaps, you know, I didn't do enough -- put enough thought into exactly the detail for which I should put the shading area on Figure 1 and perhaps I've gone out of the bounds of what is usual at these -- these hearings. If I have, then I would apologize for that but again it was just a very gross attempt on my part to put a very blocky area over the -- over the pool. It was not intended to represent a productive area.

Q That was merely the question -- or the purpose of my question, Mr. Kubik. I did not in any way mean to imply that you had done anything out of the ordin-

ary. I simply wanted to find out whether or not that was to be relied upon to any great extent and your answer is it should not be, as far as --

A That would be my testimony. The shaded area in Figure 1 should not be referred to as a specific delineation of productive area. That should be referred to Figure -- Figure 2 again, as I've stated, but the shaded area in Figure 1 is just a reference area. It should not be referred to in any way as far as production is concerned.

Q And as a practical matter, the limits of this pool will be determined by later drilling, will they not?

A Yes, they will be.

Q Let's look at your Exhibit Number Two.

A Okay.

Q I notice at the -- what I believe to be the location of the No. 1 Benson Well in the southeast quarter of the southeast quarter of Section 13, a figure "Sil", which I suppose is Silurian?

A Yes.

Q -9387?

A Yes.

Q That is the top --

A Yes.

Q -- to the -- the subsea to the top of the

Silurian?

A Yes, it is.

Q Subsea, not subsurface?

A Subsea.

Q Is that -- was that on this map at the time it was prepared for the original hearing or is that information data confirmed by your core sample or your samples from the actual drilling of the Benson No. 1 Well?

A That is the top based on logging. It's a log top from the post -- after the drilling of the Benson Well.

Q And that is your pick of the top of that?

A Yes, it is.

Q Based on the log which appears on your Exhibit Number Three of Benson No. 1?

A Now that I'm -- I should note here, this top is a true vertical depth top. The top on the log will not -- will not exactly match the top shown here.

The bottom hole location, you can see there are two -- two well locations at the Benson, the southerly one being the surface location labeled "SL", the northeasterly one being bottom hole location and there is just, there will be a difference. The log will -- will show actual hole depth, whereas the true vertical depth will be slightly shallower, so they will -- I think the difference

was 8 feet, so the log will show a top, I think, somewhere in the range of 9395, I'm not certain, I don't have my numbers right in front of me, but -- but the number on the map is a true vertical depth, which will not exactly match the log but is correct based on a deviation survey run on the well.

Q Directing your attention for a moment to the log of the Benson No. 1 Well, there is a dark, horizontal line drawn. Do I understand that correctly to be roughly the top of the Siluro-Devonian as you have picked it?

A Yes. The lower -- the lower heavy line.

Q Okay. Back to Exhibit Number Two, Mr. Kubik, directing your attention to what I understand to be the location of your Roddy Well in Section 23 immediately to the south, there appears another figure, in fact there are two of them, Silurian, -9350 and -9344.

What do those figures refer to?

A The Silurian -9350 is again a log top, subsea log top, from the Marathon No. 1 Roddy.

The 9344 is the subsea Silurian depth assigned to the -- to the shotpoint from seismic shown immediately to the left of the well location. So the 9344 is associated with the seismic point to the -- to the west.

The 9350 is the actual Silurian top that we encountered.

Q Can you relate for us the difference, if any, with regard to the Benson No. 1 Well --

A Yes, sir.

Q -- as to the top of this Siluro-Devonian formtion as confirmed by your borehole data, as compared to the projection --

A On seismic.

Q -- based on seismic?

A The Benson is a little different than that. It is a little farther away from our nearest seismic line, but in general, it's certainly -- certainly matched quite well in a general sense.

You can see the immediate point immediately to the north labeled 9387 is perhaps the closest reference point that we have. There's also a 9387 shown just to the south and west of the well, so it certainly tied in quite well, but I do need to mention, you know, this map was -- was remapped after the information was derived from the Benson. These are not the original values on our original interpretation pre-drilling.

Q Looking at the No. 1 Roddy Well again, accepting, it appears to me, the seismic projection, you would have picked a top to the Devonian of -9344?

A Yes, approximately.

Q And in truth it was 9350?

A Yes.

Q So six feet of difference?

A Yes.

Q Can you tell us what -- or can you tell from this map what, if any, difference there was in those two picks in the No. 1 Benson Well?

A You mean the difference in what we would have anticipated and what we encountered?

Q Correct.

A Again, that would be based on the previously submitted map and this was not -- this is not the exact map that we used. This is not the map we had before we drilled the Benson.

To answer your question, the Benson came in - came in roughly 100 feet, give or take, low to our seismic projection on our original map, and having that data point, having that interval velocity point, we went in and remapped on the seismic and came up with this map, which is certainly a much closer match to what is really there.

Q Okay, now you have had access, you have obviously seen the logs ot the No. 1 Roddy Well.

A Yes, I have.

Q And the log of the No. 1 Roddy is not shown in your cross section, is it?

A It is not.

Q Is there a reason for that?

A The cross section is intended to be a very general -- a general description of the Silurian in the area, just trying to keep the wells to a minimum, the clutter to a minimum, and just to show in general our feature and surrounding features. You'll notice I also included only one, one well in the Knowles Field and one well in the South Denton Field.

Q So if I understand your correct -- your testimony, the actual drilling of the No. 1 Benson Well determined the Devonian to be lower than anticipated.

A Yes.

Q Which had the practical effect, did it not. of making the best location the No. 1 Roddy Well, based on the information that you had prior to drilling the No. 1 Roddy but subsequent to drilling the No. 1 Benson?

A Yes. After evaluating the data from the Benson, we felt at the time that we could get approximately 40 feet high to the Benson.

Q And at the time the No. 1 Benson Well, it was projected, I suppose, to have been at the highest point on the anticipated Devonian structure?

A Yes, it was.

Q And the truth has turned out to be that it is not in fact at the highest point on that Devonian --

A After, I believe, I do not have the map in front of me, but I think that there was an area encompassing the approximate positions of the Benson and the Roddy that based on the data appeared to be approximately flat, I think.

Q Since we are here in disagreement, Mr. Kubik, over the reservoir which has been discovered by the drilling of the No. 1 Benson Well, and I suppose confirmed by the Roddy Well, --

A Yes.

Q -- would it have not, even given your desire to keep to a minimum the number of wells which are depicted on your cross section, would not it have been more logical to have included the Roddy log on that cross section, eliminated one of the other wells to a further distance away from from this reservoir?

A I don't believe so. Again I just picked -- I just picked a well on our feature to just put on the cross section, just to show our structural feature.

In the sense of what this cross section is here to describe, there's no advantage in one well over the other.

Q Okay. Looking at, from my quick look at your Exhibit Number Three, the cross section, the Benson No. 1 Well shows, what is that, initial potential, 313 barrels

of oil?

A Yes.

Q 120 barrels of water per day?

A Yes.

Q When was that -- when was that well completed?

A I believe approximately February 11th or 12th, is that -- I believe 7th, I believe.

Q And do you know the current status of that well?

A Not in detail. It's still producing. I don't know. We in Exploration have not been kept up to date on exactly what the well's doing.

If we want to know, we can call them, but I do not know.

Q You do not know what the well is doing?

A Not exactly, no, sir.

Q Do you know approximately what the well is doing?

A I think approximately it's making 60 or 70 barrels of oil and I don't know how much water.

Q Were there-- I noticed on some of the other wells shown on your cross section there some drill stem test results and other information. Were there any drill stem tests conducted on the Benson No. 1 Well?

A Yes, there were.

Q Is there any reason the results of those tests are not shown on your exhibit?

A Again, just to generalize the feature, the perfs indicate that there is oil production on the -- on the feature. The drill stem tests, there were four of them, would have basically cluttered the map quite a bit, and they would show nothing that would be inconsistent with the perfs.

Again, I did that on some of the other -- other wells. I -- I left out, I just tried to provide the pertinent information to describe our reservoir fluid.

Q Did you have any core data in the Benson No. 1 Well?

A We did not.

Q And the Roddy Well, do you have any core data?

A We do have. We do. We cored the well. We do not have the analysis in hand yet.

Q Have you physically examined the cores?

A I have not.

Q Do you as a geologist and as an employee of Marathon, Mr. Kubik, do you know what Marathon's position is on the release of data now in your possession related to the Benson No. 1 Well and the Roddy No. 1 Well?

A I really do not in detail know what our status is right now or what our position is as far as releasing that data.

Q If I were to ask you for a copy of the log on the Roddy No. 1 Well, have you been instructed what you are to do upon that request?

A I have not. I'd certainly forward that to my superiors if we would feel that I would do it.

Q Both these wells were drilled tight, were they not?

A Yes, they were.

Q No informtion released to anybody, including Mr. Davidson.

A That's correct.

Q Do you know whether or not that is related to the dispute that Marathon has had with Mr. Davidson in the history of this proceeding?

A I do not know specifically, but in general it is our -- it is Marathon's policy to drill wildcat wells tight.

Q Have you calculated, Mr. Kubik, porosities from the logs in the productive intervals in the Roddy and the Benson wells?

A I have looked at the logs. That was primarily a job of our engineering section but I have -- I have

just looked at them in passing.

Q Do you know whether or not an engineer is to testify here for Marathon today?

A On either of these wells?

Q Yes.

A I don't believe so. No.

Q Do you have an engineer here?

A We do.

MR. DICKERSON: I have, Mr. Examiner, no further questions of this witness.

I also, let me ask Mr. Kellahin a question, if I may.

MR. CATANACH: Sure.

MR. DICKERSON: May I ask what is the substance of the testimony of the witnesses to follow?

MR. KELLAHIN: Engineering witness will provide volumetric calculations. He has some porosity on the Benson Well I think he's used in that calculation.

MR. DICKERSON: So you are calling an engineer.

MR. KELLAHIN: You bet, and then the last witness is a landman.

Q From your review, Mr. Kubik, of the infor-

mation from the Benson and the Roddy wells, have you been able to determine the likely oil/water contact on this Devonian structure?

A I have not, really. We -- we have some indications from both wells that are tentative but again it's primarily in the Engineering and Operations Department at this time.

Q Do you know what that tentative figure is?

A I don't know what -- what they are considering. You may certainly ask the engineer when he comes up. I wouldn't want to put words in his mouth as to what it -- what it is.

Q No, my question was merely do you know what it is.

A I have a ballpark idea.

Q Of this tentative figure?

A Yeah.

Q What is it, approximately?

A I think -- well I dont' see -- I have the information in my office. Again I'm not handling that. I know what it -- what they determined to be. I got a copy of the analysis they did at Core Lab to -- to determine this. I don't think any final decisions have been made; at least --

Q Well, is the answer that you do not remember or --

A I do not remember exactly what it is. I have been aware of it but at this point I do not have -- have that at hand anywhere.

Q At any rate, it's your information that some determination by other Marathon personnel has been made on this point.

A Yes, I believe so.

MR. DICKERSON: Mr. Examiner, I have no further questions of Mr. Kubik, and I have no objection to the introduction of these three exhibits.

MR. CATANACH: Okay, Exhibits One, Two, and Three will be admitted into evidence.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Kubik, I just want to -- well, I want you to briefly answer a question for me.

I just want to know --

A Sure.

Q -- in your opinion what separates this reservoir from all the other Devonian reservoirs in the area, very briefly, if you know?

A Just simply that it's a structural separ-

ation. They are structurally isolated features and -- and in general they would -- would each contain oil in the reservoir, whereas low positions, or flank positions, or intermediate positions between the fields would be water wet, constituting individual reservoirs.

MR. CATANACH: I have no further questions of the witness.

He may be excused.

MR. DICKERSON: Mr. Catanach, if I may, I have one further question you've reminded me of.

RECROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Kubik, with regard to the No. 1 Benson Well, and based on the information that Marathon has now obtained and of which you have personal knowledge, what is the relative situation concerning the southeast quarter of the southeast quarter of that section, the original spacing unit for the Benson No. 1 Well as compared to the southwest quarter of the southeast quarter, which is not intended to be included within that spacing unit, and I'm speaking from -- from a structural standpoint?

A We expect, well, just looking at the map, we expect that position to -- in a ballpark sense, to be roughly flat with the Benson.

Q And relatively lowers to any 80-tract that may be dedicated to the No. 1 Roddy Well?

A Based strictly on the map, yes, but it's hard to judge aforehand.

MR. DICKERSON: No further questions.

MR. CATANACH: Sorry, Mr. Kellahin, did you have any redirect?

MR. KELLAHIN: No, I didn't.

MR. CATANACH: The witness may be excused.

MR. KELLAHIN: Mr. Examiner, at this time we'll call Mr. Tom Engler.

TOM ENGLER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A My name is Tom Engler and I work as an engineer, a reservoir engineer, with Marathon Oil.

Q Mr. Engler, have you previously testified

before the Division as an engineer?

A No, I haven't.

Q Would you describe for the Examiner when and where you obtained your degree in engineering?

A In 1982 I received a Bachelor of Science in petroleum engineering in petroleum engineering from New Mexico Institute of Mining and Technology.

Q You were a classmate of Mr. Stogner's, were you not?

A That's correct.

MR. KELLAHIN: Don't hold that against him.

MR. CATANACH: He was a classmate of mine, too.

Q After your graduation, Mr. Engler, would you summarize for us what has been your employment experience as an engineer?

A For five years I've been working for Marathon Oil and a -- both a production and a reservoir engineer, primarily based in fields, producing fields in the southeast New Mexico area, and I've handled the engineering on the East Garrett Siluro-Devonian Field since the inception of the Benson.

Q That engineering would include the Benson well that we've been discussing today?

A Yes, that's correct.

MR. KELLAHIN: We tender Mr. Engler as an expert petroleum engineer.

MR. CATANACH: Any objections?

MR. DICKERSON: No objection.

MR. CATANACH: The witness is considered qualified.

Q Mr. Engler, I have placed before you what I've marked as Marathon Exhibits Four through Twelve.

Is this a package of exhibits that you have compiled, calculations that you have made, and other information that has been prepared either directly by you or under your direction and supervision?

A Yes, sir.

Q Let me begin, sir, and have you first of all simply identify for us Exhibit Number Four.

A Exhibit Four is simply the filing for the creation of a new pool that we did when the Benson was first completed.

Q All right, sir, let's turn to Exhibit Number Five and have you identify that exhibit.

A Again, Number Five is the C-105 which was filed with the state and it gives all the pertinent information between the completion and the IP of the test, and so forth.

Q Before we leave that exhibit, let me have you give us some of the production data at the bottom of the exhibit with regards to the date of first production and give us generally the type of test that was conducted and the initial test results.

A Well, as you see, the date of first production was February 11th, 1987, and we had an IP of 313 barrels of oil per day, 11.4 MCF per day, and 120 barrels of water per day.

This is also -- this is on a 24-hour test with a rod pump, on a pumping unit.

Q Let's turn now to Exhibit Number Six and again simply identify this exhibit for us.

A Exhibit Six is to show that we're requesting 80-acre spacing. It's location is shown as a -- we're requesting a laydown 80 to accommodate the reservoir.

Q All right, let's get to Seven, which begins, then, your calculations, and have you give me some of the background that you as an engineer will use, or information that you have by which you approach the aspepcts of your discipline to decide how you as an engineer will recommend to your management that you'll produce and develop the reservoir.

A In this case the first attempt was a volumetrics calculation and what you see before you is the 80

acres. We also ran, of course, 40 acres, but we used the data that we had at hand, and as you see there, to determine the volumetric amount of reserves in place, amount of reserves.

Q Why would you elect to use a volumetric calculation?

A Well, at the time we had preliminary data which would allow us to go through these calculations.

Q For what purpose can you use a volumetric calculation in determining whether or not you should space wells on 40 or 80 acres?

A Well, it allows the flexibility of assuming your drainage area, and therefore using the rest of your parameters determined with a -- and in this case, with a comparison of performance, or decline curve in the drainage area.

Q Is this a typical methodology or calculation by which a reservoir or production engineer will make calculations to determine how wells ought to be spaced in a given reservoir?

A Yes, with the data at hand this is a typical analysis.

Q Are you comfortable and satisfied that the parameters you've selected for the volumetric calculation are fair and reasonable?

A Yes, I am.

Q Let's talk, sir, a moment about the source of the data and how you determined that the parameters are fair and reasonable?

A To start at the top, we have an assumed porosity of approximately 3 percent and on Exhibit Number Eight you can see a data sheet which shows where some of these numbers came from.

Q All right, let's look at both of them together, or perhaps it's helpful to look at both Seven and Eight together.

A In Exhibit Eight we have data and fluid -- data sheet and fluid data and here you can see, like, for the porosity, 3 percent. We did some log analysis. This is on the Benson, only the Benson, and you can see on the last exhibit, Exhibit 12, a copy of the Benson logs where we used our analysis for the porosity.

Q Describe for us generally, Mr. Engler, the relationship of three percent porosity to the type of porosity ranges that you see in other Devonian Pools.

A Well, as the geologist mentioned, the Devonian Pool is a typically low matrix porosity, anywhere from 2 to 5 percent. In this case our reservoir quality showed up a little poorer than what we actually had anticipated originally.

Q What conclusions do you reach if now you find the reservoir porosity is a little poorer than you had anticipated encountering prior to drilling the well? What difference does that make to us today in deciding spacing?

A Well, what it does is it shows our fracture system is more of a dominant producing -- dominant producer, thus for, as evidenced by some of these other offset fields, the fracture system is more likely drained than has been pooled on 80 acres.

Q Describe for us the source of the other parameters that went into the volumetric calculation.

A Again, the second one is a net pay of 15 feet. This is again based off your logs.

And the drainage area in this case is shown as 80-acres; a water saturation of 35 percent is also a log analysis number. A formation volume factor of 1.07 is from a calculation off of our oil analysis from our fluid data which you see in Exhibit Eight, and a recovery of 55 percent is, being as it's a water-drive system, is an average water-drive recovery for this type of producing mechanism.

Q The drive mechanism being a water-drive reservoir, the percentage recovery is in the range of 55 percent.

A That's correct.

Q All right, using those parameters, then you make a volumetric calculation and you get recoverable reserves of what percentage? I mean what number?

A In this case it was 100, just a little under 107,000 stock tank barrels.

Q And that assumes an 80-acre area.

A Area, correct.

Q If you used a 40-acre factor in the calculation, what would that give you for a recoverable reserve number?

A It would give you approximately 53,000.

Q Okay. Approximately what did it cost Marathon to drill and complete the well, either dry hole costs or completed well costs?

A Completed well costs for the Benson is $1,142,000.

Q Can you drill and complete wells in this reservoir, realizing 50,000 barrels of oil?

A No, sir.

Q All right. Having done the volumetric calculation, do you have information by which you can study or determine permeability in the reservoir?

A I guess I don't know what you --

Q Well, we talked about some of the things that you as an engineer will look at. We've got porosity,

water saturation. You've got the height of the reservoir, recovery factor. I guess one of the other things we commonly hear people talk about is the permeability of the reservoir. Do we have enough information now to discuss permeability?

A Not at this time. We don't have a good handle on permeability.

Q Are you satisfied that there's enough preliminary information to cause you to reach the conclusion that this is a fractured reservoir?

A Yes, sir.

Q What difference will it make to you as an engineer in deciding spacing whether or not this reservoir is a fractured reservoir or the typical matrix reservoir we see?

A Well, I think that ties back into a matrix reservoir, in a matrix reservoir you can drain maybe a smaller area and as shown by your offset fields, this, you know, typical -- you have more of a typical 40-acre case.

In the case of a more fractured type reservor you are more of a drainage of 80 acres, because of the extension of the fractures and also the capacity of the flow.

Q Having made the volumetric calculation, what can you as an engineer now do to verify or confirm the

reliability of that volumetric calculation?

A Well, what I did is I -- I did a decline analysis to obtain reserves and another method, the performance of the Benson production.

Q Decline analysis, is that an accepted tool of yoyr profession by which to analyze reserves and make comparisons?

A Yes sir.

Q Okay, and you did that?

A Yes, sir.

Q Would you describe for us what you've done? Is that on Exhibit Number Seven?

A That's -- yes. On Exhibit Seven on the right side you have a decline analysis. The -- the input or data, we had an average initial rate for the first year of 70 barrels of oil per day. We had a final economic limit of 3 barrels of oil per day and we inputted a decline of 22 percent and this is based on the nearest offset Devonian production, and that's that Knowles Devonian Field, as you've seen previously.

Q By taking the -- all right, discuss for us how you analyze and evaluate the Knowles Devonian Field to get a decline number that you have confidence in.

A Okay, I took the annual production from -- for the Knowles Devonian and, of course, plotted it up to

determine the -- the decline for that field, and that's what it is.

Q That decline represents actual --

A Actual performance.

Q -- field decline for that reservoir?

A Correct.

Q Okay. Why have you utilized that number for the Benson decline analysis?

A Well, the Benson is yet to stabilize. We have, one, limited data, and, two, it hasn't had a stabilized rate, enough stabilized rate to get a good decline.

Q In order to provide the data are you comfortable that the Knowles Devonian Field analysis is an acceptable way to put that parameter into the calculation?

A Yes, sir, at this time, yes.

Q Having those bits of information, you have made a decline calculation?

A Yes, I did.

Q All right, and what does that tell you?

A From the calculations I obtained the reserve number of a little less than 109,000 barrels of oil.

Q Having done it that way, what conclusion do you draw?

A Well, with the good agreement between the two methods and using this preliminary data that I have, it

seems to show that the temporary pool rules of 80 acres will allow us to effectively drain or effectively develop this -- this specific pool.

Q What decline analysis result would have caused you to believe that 80-acre spacing is not appropriate?

A In this case, say, your decline was half or 10 percent, and you have much more decline reserves than was shown here.

Q I want to have you describe for us how you decide you have a reasonable correlation between the volumetric results and the decline analysis results, to say you ought to go to one spacing or another. How far off would these numbers have to be, in other words, for you to say 80-acre spacing is not going to work?

A I guess in my opinion I'd have to say if you were a, say, 75,000 barrels off, you'd probably want to look at possibly another type of either drainage area in your volumetrics to see what kind of drainage area you would get.

Q How would you characterize the degree of match between the two calculations in deciding whether or not you ought to stay with 80-acre spacing as a proposal?

A Well, in this case, these matched, in my opinion, exceptionally well.

Q Do you have an opinion, Mr. Engler, as to whether or not, based upon current available information, we went to 40-acre spacing and started drilling wells on 40 acres, whether those would be necessary wells or not?

A And my opinion at this time is that it would not be really beneficial to use such a drilling program.

Q Why not?

A I think on Exhibit -- Exhibit Nine we show an economic summary.

Option one is to drill one 80-acre well. That is the economics, in a sense, of our Benson No. 1.

Option two is to drill two 40-acre wells to develop the same amount of reserves of 106,000 barrels of oil.

Q Do you know whether or not you would have recommended to Marathon's management, had you known the reserves were only 106,000, whether you would have recommended to them that they drill the Benson Well in the first place?

A If I knew it was 106,000, I would not recommend drilling it.

Q Prior to drilling the Benson Well, what type of reserves had been projected for this area?

A I think prior to the drilling of the Benson, I believe we gave a half million barrels of oil.

Q And had we realized a reservoir that in fact had half a million barrels of oil, in that situation, could we have developed this on 40-acre spacing?

A Quite possibly, yes.

Q The economic summary is one that you have prepared yourself?

A Yes, sir.

Q Is this economic summary a typical way for an engineer to evaluate the economics of a prospect such as this?

A Yes sir.

Q It's a standard tool of your profession?

A Uh-huh.

Q Is it a tool or a technique by which a management spends money and makes investments?

A Yes, sir.

Q All right, and what is the result of the analysis?

A As you can see, say, with option one, with a gross investment of $1,143,00 have a profit-to-investment ratio of .11. It takes eight years to pay out the project, have a rate of return of 3.3 percent. Investment per equivalent barrel of oil is $13.50.

Under the second option you drill two 40-acres wells, you have an investment of $2,000,000 dollars,

and as you can see, there's a negative profit-to-investment ratio; you can't calculate a payout; you have no rate of return; it would take $23.30 per equivalent barrel of oil.

Q What's your conclusion, Mr. Engler, from this analysis?

A Economics are quite poor.

Q And what does that tell you about which option of exercise?

A In my opinion, option one is to drill one 80-acre well.

Q Let's turn now to Exhibit Number Ten, Mr. Engler , and have you simply identify this exhibit for us.

A Exhibit Ten is a wellbore schematic of the Benson. It simply shows what we ran in the way of casing, what we have in the way of completion, and where your Siluro-Devonian perfs are.

Q Is this a typical way to complete and set up for production a Siluro-Devonian Well?

A Yeah, this is typical for this depth.

Q All right, sir, and let's go to Exhibit Eleven and have you identify that for us.

A Exhibit Eleven shows the production history for the Benson No. 1 from the time we installed the pumping equipment till the time we finally dropped it off our report.

Q What use is this information?

A Well, in this case, you can see, from February 19th through March 25th we still, one, have no real stabilized production rate, and two, it does show that we are cutting a lot of water.

Q How comfortable are you in utilizing the 70-barrel a day rate in the calculations that were discussed earlier?

A 70 barrels a day is based on a May test. A May test shows the well pumping 70 barrels of oil per day and 120 barrels of water per day.

Q And that's your most current and -- and best evidence of the capacity of this well to produce?

A That's correct.

Q How would you characterize the drop in daily producing oil rate from mid-February through the end of March of this year?

A Well, in that time frame, as you see, your production dropping, the well still isn't stabilized to where I could obtain any kind of decline.

Q All right, sir, let's turn to Exhibit Twelve, then, and have you identify that for us.

A Exhibit Twelve is the gamma ray density neutron log off the Benson. It's simply to show again the log top of the Siluro-Devonian, the perforations, and it's

the porosity tool that we ran on the -- logging tool that we ran.

Q In summary, then, Mr. Engler, what is your recommendation and opinion to the Examiner with regards to how to space the new Benson reservoir that we have identified as the East Garrett Pool?

A In -- my recommendation is with the preliminary data at hand, that a temporary special pool order of 80 acres would, one, allow us to continue watching performance and possibly obtain further information on this reservoir to see whether 80 acres will be -- is the actual drainage area or not, and two, it's also economical, the best -- economically it effectively and efficiently drains the reservoir that we know at this time.

Q Without the benefit of an 880-acre spacing, if this is left on statewide 40-acre spacing, what is your in your opinion the concern and problem with doing -- leaving the pool on 40-acre spacing?

A Well, my concern would be we might drill unnecessary 40-acre wells and develop really no additional reserves as if we developed them on eighties.

Q The drop in producing rates from the initial potential down to the present time, can you draw any opinion with regards as to whether or not that is characteristic of a fractured reservoir versus a matrix reservoir?

A I do believe a typical fracture reservoir does have a high IP, dropping to some stabilized rate at some future time.

Q This would not be characteristic of a typical sand matrix reservoir that is more oftenly developed on 40-acre spacing?

A That's right.

Q The signals you're getting from the reservoir from your studies and calculations confirm that you ought to be careful, drill the minimum number of wells, and that number is on 80-acre spacing?

A That's right at this time.

MR. KELLAHIN: I have nothing further of Mr. Engler.

We would move the introduction of his Exhibits Four through Twelve.

MR. DICKERSON: And, Mr. Examiner, I would like the opportunity to cross examine prior to making any possible objections.

MR. CATANACH: Okay Mr. Dickerson.

CROSS EXAMINATION

BY MR. DICKERSON:

Q Mr. Engler, from your Exhibit Number Four

I notice that you filed, evidently, Marathon filed a request for creation of a new pool, and the date of that exhibit was March 4th, 1987.

A That's correct.

Q And then Exhibit Number Six, which is your Form C-102, I suppose also filed with the Oil Conservation Division, setting forth the 80 acres to be dedicated to your Benson No. 1 Well, was dated May 26th, 1987.

A Yes, sir. This Exhibit Six is strictly to show you our location in the laydown 80 acres.

Q Right, I understand that.

I note a typed provision at the bottom of your Exhibit Number Seven. It says TWE 3/07/DAH. What's the significance of that?

A Well, that shows it's from my file and the DAH is the secretary's name, secretary's initials.

Q And the significance of 3/07?

A I imaging that's her coding for how she files it in her disk.

Q That's not a date, do you think?

A No, sir.

Q Okay, at any rate would it be a reasonable conclusion from Exhibits Four and Six that Marathon has been considering hte establishment of a new Devonian oil pool since not later than March 4th of 1987?

A Once again, establishment --

Q Of this Devonian oil pool?

A Before March 4th?

Q Or at least by March 4th. It I'm making an untrure assumption, or something, correct me. It just seems that --

A This March 4th date is to file with the state because after you have potentialed the well you have to file for creation of a new pool.

Q Uh-huh. Okay, let me ask one other question, had Marathon determined by March 4th, the date of that instrument, the C-123, what spacing for this Benson Well would be appropriate?

A No, sir, we had not.

Q Had you as an engineer made a determination in your own mind on that point?

A Not by March 4th, no.

Q When did you make that determination, approximately?

A When we did our calculations would be in about the month of May.

Q At approximately the same time you had Mr. Kellahin file applications before the Division today, shortly before that?

A I'm not sure what time we did that.

Q Directing your attention to Exhibit Number Seven, and again, I'm a layman here, you have made one calculation and you have assumed, have you not, for your determination of the stock tank barrels in place, or recoverable stock tank barrels --

A Yes.

Q -- an 80-acre spacing.

A That's what's shown here, right.

Q And you also, although it's not shown on here, assumed a 40-acre spacing and came up with a figure one-half of your stock tank barrels for 80-acre assumed spacing?

A That's right.

Q Is there anywhere on this exhibit that you actually make a calculation based on engineering data available to you as to the area which is in fact being drained by the Benson No. 1?

A I guess I don't understand.

Q Have you made a calculation as an engineer as to the area not assuming a drainage area, but made a calculation as to the drainage area of the Benson No. 1?

A No, I have the comparison that you see there, the decline performance and volumetrics.

Q Could you make such a calculation?

A Not with the data we have right now.

Q What is the data that you would need that you do not have access to now?

A We are still waiting for a core analysis which you've heard that we have before.

Q On the Roddy Well.

A Correct. And we are still, we have still the -- in the works some more pressure trend and testing that we have not done yet.

Q Do you have some pressure data available to you from these wells at this point?

A We have some limited data, that's right.

Q What time frame do you anticipate receiving additional data in the way of, say, the core analysis that you're waiting on?

A Core analysis, the next month, month and a half.

Q And so at this point you have approximately three, three months of production history on the Benson Well?

A Well, four months.

Q Actually closer to four.

A Four months.

Q Based on a production history of that, it is possible for you as an engineer to make some calculations with the data that you do have right now or will have within

the near term future calculating the actual drainage area of the Benson No. 1 Well?

A With the performance production?

Q Or with all the data that you now have or will have, you could as an engineer, could you not, calculate, based on that information, a drainage area which is actually taking place?

A With more data we could always calculate something, yes, that's correct.

Q No, I'm saying with the data that you have now you may -- you could make some calculation, couldn't you?

A Not with the data we have now. The data we have now, calculations are shown.

Q You have not and you could not make a colculation based on your training as an engineer of the actual area in fact being drained by the Benson No. 1, based on the information you have now?

A That's correct.

Q Would you tell me just in one, two, three fashion what additional information you need in order to make such a calculation?

A We, like I said, one core analysis that we will get, and two, some pressure transient testing that we will obtain.

Q Do you have bottom hole pressure? I notice on your Exhibit Number Eight you have 4839 build-up from DST. That was virgin reservoir pressure?

A On a drill stem test, that's right.

Q How many drill stem tests were conducted on that well?

A The Benson? Four.

Q And was the pressure, was the pressure data that you've shown on your Exhibit Number Eight, was it the same in all four of these tests? Or were all four of these tests in the Devonian?

A All four were in the Devonian.

Q Were they all four in the interval which is now perforated and producing?

A No, sir.

Q Well, what was the pressure data obtained on the other three DSTs?

A Of the other three, one packer failed and two of the others had a -- I can't recall what the pressure data is at this time.

Q Do you have that information with you?

A No, I don't have any of the drill stem test data with me.

Q You're aware, are you not, that Mr. Davidson has requested Marathon to furnish certain informa-

tion to him?

A Yes, I've heard that.

Q And you're also aware that Marathon has refused to do so?

A I know that, yes.

Q But it is your testimony that you do have additional information which you, as an engineer, or anyone, attempting to determine the answer to the questions that we're debating here today would find it necessary to have in order to make such calculations?

MR. KELLAHIN: I'm going to object to the question. He did not say that, I do not believe.

MR. DICKERSON: I think it's a reasonable question, Mr. Examiner. Wouldn't anybody need that information in order to make a determination about the area actually being drained by this well?

A From a drill stem test? I do not see how.

Q The problem that I am seeing or I am having with your testimony, Mr. Engler, is you have assumed a 40-acre spacing unit and you've made calculations based on that assumption, and you have assumed an 80 and you have made calculations based on that assumption, but you're not giving us anything that supports the reasonableness of your

assumption.

A Well, the support, I believe, comes in the decline analysis, the performance that we're seeing on the Benson as tied into the volumetrics that we show.

Q How comfortable are you with that decline analysis averaged 70 barrels of oil per day based on less than four months production history?

A At this time this is the best data, delivery data we have.

Q You would concede that in ninety days or six months you will have more data and better data from which you can make such determinations?

A In six months to a year more points on your curve, yes, you can have a stabilized rate. That's why temporary rules.

Q And until that rate does stabilize it's more or less a guess or it has some inherent weaknesses in making an assumption of 70 barrels of oil per day average for the year, does it not?

A It's an educated guess.

Q But you cannot put one of these formulas down on paper to support that educated guess at this point?

A I guess I don't understand. The data is what we have at this time.

Q The point I'm attempting to make here is

that the calculations you have made on Exhibit Number Seven do not in fact support any testimony by you that that well is in fact draining 80 acres or 40 acres. You have assumed each and based your calculations based on that, correct?

A That's correct.

Q I mean you could have assumed 160-acre drainage.

A Correct.

Q And you would have come up with 213,000 barrels of oil in place.

A Correct.

Q It's a question of multiplication only.

A That's correct.

Q Okay, so the assumption that you're making is not supported by Exhibit Number Seven, is it?

MR. KELLAHIN: I'm going to object to the question, Mr. Catanach. He says, yes, it is supported.

Mr. Dickerson doesn't understand the choice of the parameters. I don't know how we could make it any clearer.

I think it's repetitious. He's asked the question. He's answered it as best he can, Yes, there is an acceptable engineering technique to examine the volume of the reservoir. He's confirmed it with the decline

curve. How many times does he have to say this is what he did?

MR. DICKERSON: Mr. Catanach, I think, my understanding of what Mr. Engler agreed to was that this is a mathematical assumption there. This Exhibit Number Seven by itself, was my question, does not by itself support any testimony that this Benson well is in fact draining 80 acres. It's cross examination. I think I'm entitled to ask the question and I think I"m entitled to an answer to the question, and I think the answer is, no, that Exhibit Number Seven does not support that assumption.

MR. KELLAHIN: Well, I think the answer is yes, and he's got to the point where he's arguing with the witness.

MR. CATANACH: Mr. Dickerson, in cases like this where there's no data available to make an exact determination of what a well is draining, certain assumptions have to be made up front before -- so you can establish temporary rules and then you come in later on with the data you need to -- to make those rules permanent.

MR. DICKERSON: I understand, Mr. Examiner. Are you telling me not to ask the question?

MR. CATANACH: Well, I don't see -- I don't know why you're pursuing this if you understand that point.

MR. DICKERSON: Really, I think I do understand it and as long as it's clear here, I'm happy with the record.

I'll withdraw that question.

Q Mr. Engler, in reviewing your -- all of these exhibits, and again here I'm, I'm sure, ignorant on much of this and merely a layman, but you have two wells in this pool at the present time.

A That's correct.

Q And the calculations that you have made, unless I've missed something here, are all based on either information that you have, limited though it may be, or assumptions that you have made concerning the Benson No. 1 Well, is that correct?

A This is on the Benson.

Q Okay.

A Correct.

Q But you have additional information obtained from the Roddy at this point of which you have knowledge, do you not?

A We have more information from the Roddy, that's correct.

Q Now do you as an engineer, you're here on behalf of Marathon testifying in support of an application to establish 80-acre spacing units. Do you as an en-

gineer consider the information that you have in your mind and available to you obtained from the Roddy Well to be pertinent or relevant to the questions that we're here concerning today?

A I don't know how to answer that. Yes, I guess it would be pertinent; however, most of the data on the Roddy is not available at the time.

Q But some is.

A The log is about the only thing I saw.

Q Whatever is available, you, as a representative of Marathon, do not intend to rely upon it today, even though it may be pertinent?

A As an engineer I looked at both logs and I used strictly the Benson on this case. The logs in either -- both wells are fairly similar.

Q Well, based on your examination and based on the knowledge that you have of the Roddy Well, is it your testimony that the Roddy well, which is higher structurally, as I understand it, than the Benson Well, is an equivalent well as far as it's productive capability?

A Well, with the data right now, that's correct.

Q It's your testimony that they're equivalent wells, one not significantly better than the other?

A Until we get the core data we'll have a

real, good idea of the actual productive capacity of the Roddy.

Q And so the jury is still out. It may or may not be equivalent to the Benson. It may be considerably better than the Benson?

A It may be.

Q Do the indications that you have based on the knowledge you've gained so far indicate it to be a better well than the Benson?

A At this time with the testing going on it is showing equivalent to the Benson productionwise.

Q The equivalent decline rate, you mean?

A It's too early for a decline.

Q With regard to your Exhibit Number Nine, your economic summary, did I understand you, Mr. Engler, to say based on the data that you have shown under the Option No. 1, drill one 80-acre well, is that or is that not a profitable well for Marathon?

A That is not.

Q So based on the information that you have from the Benson No. 1, you now only would not drill two wells on 40-acre spacing, you wouldn't even have drilled that one well on 80-acre spacing, would you?

A With these reserves, we would not.

Q But would it be reasonable to assume that

if the Roddy Well is in fact equivalent to the Benson No. 1 and it is also an uneconomic well, you're not going to drill anly additional wells in the prospect, are you?

A If it looks that poor, we would definitely have to consider our position.

Q You do not think it looks that poor in the Roddy Well, do you?

A I don't know at this time.

Q You don't have an opinion?

A My opinion is that at this time it's looking -- it's initial rate is looking consistent with the Benson, although we do not know what kind of decline we're going to show in the future with four or five months production.

Q How much further down the road towards having the information from the Roddy Well that you would require as an engineer in order to make a similar calculation would you be when you have in your hand the core analysis that you're waiting on?

A The core analysis and six to twelve months of production definitely help.

Q I'm going to ask you, Mr. Engler, would you direct my attention to the one of these exhibits that supports any evidence or that offers any evidence that the Benson No. 1 Well will adequately and efficiently drain an

80-acre spacing unit.

A Well, the drainage calculations are shown on the Exhibit Number Seven, the reserve comparison sheet.

Q Again, without getting the Examiner upset with me, you merely assumed the 80-acre spacing on that sheet, did you not?

A That's correct.

Q You didn't calculate an area of drainage.

A That's correct.

Q Are you authorized on behalf of Marathon, Mr. Engler, to state what, if any, information will and will not be available to Mr. Davidson or any other interested parties in this well?

A No, I'm not authorized.

Q You're not authorized to give any information?

A No, it's not of my -- this is something that's going to have to come above me, management, something other than me, to authorize the --

Q Well, are your instructions at this point that you are not to give any information to Mr. Davidson?

A We'd give any information that we have here. That's all I really know.

Q You pick and choose the information that you're going to give and that you're going to introduce be-

fore this Division and on which you base your application.

MR. KELLAHIN; I'm going to object. That's argumentative. This man need not answer the question.

MR. DICKERSON: The answer is obvious, I think, Mr. Examiner. I'll withdraw that question.

MR. KELLAHIN: The answer is obvious, Mr. Examiner. On March 3rd, '87, in response to Mr. Davidson's inquiry Mr. Lemay wrote Mr. Davidson and told him that he wasn't entitled to the information, and that's why he hasn't given it.

MR. DICKERSON: In argument we'll have a little more on this, Mr. Examiner, but in the interest of time I'm willing to drop it at this point.

MR. CATANACH: Okay.

Q Mr. Engler, you testified that there were four DST's, I think, on that Benson Well. In your analysis and based on your information obtained from those tests, did you calculate permeability?

A We did calculate -- on one drill stem test we got a good enough curve to analyze for a permeability number, that's correct.

Q And what was that permeability number?

A I believe it was 2-1/2 millidarcies is

what was shown on the -- the analysis.

Q And based on that calcultion, if you were to assume that level of permeability for this reservoir, could you not as a reservoir engineer calculate an area of the radius of drainage?

A Only if you had a degree of reliability on a build-up curve on a 4-hour build-up in the drill stem test.

Q And you do not have any such curves?

A No. We have the curve. We don't have the reliability. On a small drill stem test where you have 2-hour flow, 4-hour build-up, you do not have the actual -- don't see the transient (sic).

Q But if you assume that rate of permeability and together with the rest of the information that you have, you could then calculate an area of drainage, could you not?

A I'm not aware that you could.

Q Do you have any pressure analysis from bottom hole pressure tests?

A For the Benson I do.

Q And for the Roddy?

A No, I don't.

Q Will, in the normal process of completing that well, Marathon make such tests?

A I hope so, yes.

Q It would be your practice in most cases --

A Yes.

Q -- to do so?

A Yes.

Q Would it be fair from an engineering standpoint to say or to use a figure of 20 percent of the recoverable oil to have been produced, Mr. Engler, before you have established a reliable rate of decline?

A I -- 20 percent, I suppose it's possible, based more on time than amount of reserves.

Q And would at least not be an unreasonable amount of reserves to have been produced prior to making that determination?

A It may not.

Q In your opinion is decline analysis on a pumping well reliable?

A Yes, sir.

Q Based on your information and experience as an engineer?

A Yes, sir.

Q In your examination of this -- what pool was it that you examined that was closest to the --

A Knowles Devonian?

Q The Knowles Devonian. In your examination of that Knowles Devonian Pool did you also examine any of the other Devonian Pools in the area?

A I did.

Q Did you not learn anything of any consequence from your examination of those other pools?

A What I saw was, based on performance from those pools, I got declines again on those and again it ranged anywhere from 15 to 25 percent. With those averages I assumed the nearest producing pool as the best analogy to what we have here.

Q So based on your investigation into those other pools it was your opinion that the Knowles Devonian was representative of all the pools in the area?

A That's correct.

Q And that it would be comparable to the Devonian pool that we're here concerning today?

A That's correct.

Q What is the bottom hole pressure based on the information that you have in the Benson Well as compared to initial bottom hole pressures in other Devonian wells in the other pools in the area?

A I don't know what the other pressures in the other fields are on a drill stem test. I believe maybe a geologist might be able to tell you more on the data of

those fields.

Q You didn't come across that in your investigation of those other --

A No, I just looked at production.

MR. DICKERSON: Mr. Examiner, I have no further questions of this witness. I do, however, have an objection.

I have no objection to the introduction of Marathon's Exhibits Four, Five, and Six. I also have no objection to the introduction of Seven and Eight.

However, with regard to -- except to the extent I'm going to state in a moment.

With regard to Exhibit Nine, the testimony of this witness was that based on this information, which is exclusively termed the Benson No. 1 Well, it would not be an economic well to be drilled even on 80-acre spacing. It would not pay Marathon to do that.

The witness testified that he has at his control information available to him concerning the Roddy Well, which would be as a matter of law, I submit, relevant to this proceeding.

Marathon has chosen to select to pick and choose the information that they will make available to us as opposition in this hearing and to your-

self as the examiner charged with making a determination here.

To the extent it is pertinent to Mr. Engler as an engineer, it is pertinent to us in our status as opponents here. It is absolutely essential to you in your status as the examiner and in effect judge for this proceeding.

We think it is improper to allow the introduction of Exhibits Seven, Eight, and Nine in this well -- in this case, without along with that, for whatever purpose it may serve, requiring Marathon to introduce what other and additional information it has at its fingertips and has chosen to selectively leave out of this proceeding.

MR. CATANACH: We understood the witness to comment that not enough data was available from the new well with which to make any kind of determination.

MR. DICKERSON: Well, I was precluded, as I understood it, from pursuing too far into that by Marathon's not producing that data and I am blind and blundering in the wilderness trying to guess what may be in the -- some of these witnesses briefcase or back in their office back in Midland, as you are, Mr. Examiner, so none of us know, except Marathon, what that information is.

In all likelihood, and in my opinion as an attorney, it is relevant to this proceeding. It is part of the foundation that is necessary to lay for Marathon to come in with evidence that is presented for us. The evidence that it has presented should not be allowed and relied upon in view of the inability of myself to examine it; of yourself to examine it; to cross examine based on this information; to observe and perceive with the help of my witnesses any possible weak assumptions made, any unsupported assumptions, erroneous calculations made, regardless of how skimpy the information is or Marathon may consider it to be. Marathon has information available to it which it is choosing not to make available to the rest of us. It is not fair to Mr. Davidson to introduce part but less than all of the information available when this is a property right of his that is being affected here, and it is for that reason that, in my opinion, the evidence offered with regard to the exhibits that I have objected to is not properly before this body and should not be considered by it without requiring Marathon to come forward forthrightly with other information which it has in hand and let us all in on what information is known about these wells and the likelihood that -- or their contention that the proper drainage area for this Benson Pool or this Devonian Pool is 80 acres. We do not have any information to this point and these exhibits do

not support that in my opinion.

MR. KELLAHIN: Mr. Examiner, may I respond?

MR. CATANACH: Yes, sir.

MR. KELLAHIN: Under Rule 703 of the Rules of Evidence of District Court, this expert witness may in fact rely upon information that is not available here in the hearing room.

Mr. Dickerson, however, raises an objection that is not merited. The three exhibits have all been authenticated by this witness as being his work, relying upon information he derived from the Benson Well.

He has told you and your recollection is like mine, the information from the Roddy Well is not available; just now testing that well, and it's of no use to anybody, particularly Marathon, until they can analyze and study it. When that information is available and studied then that becomes part of the basis upon which you come back and make permanent rules.

Mr. Dickerson's objection to the three exhibits is not appropriate. They are properly authenticated. They're admissible under rules of civil procedure, rules of evidence, and we request that they be admitted.

His effort to extract from us

proprietary information about the Roddy Well by this means and this vehicle of objection, are also without merit. Mr. Davidson didn't pay for any part of that Roddy Well. He does't participate in that well. That's not his well; that's our well. He's not entitled to that information.

When that information is analyzed and evaluated then we will decide what use to make of it. The information we've given you today is based upon the Benson Well. If you determine in your opinion that it's insufficient for temporary rules, then you deny the application. That's how you solve that.

But the three exhibits are admissible and Mr. Dickerson's desire to use this hearing for discovery so that Mr. Davidson has an opportunity to decide how he's going to make investments for the rest of his property is not appropriate.

We've presented you with sufficient evidence on that question and the documents are certainly admissible and we'd ask that you do so.

MR. CATANACH: I'm going to allow the exhibits to be admitted into evidence in this case.

Do you want to do a little redirect of the witness?

MR. KELLAHIN: I have no questions of Mr. Engler.

MR. CATANACH: I just have a couple of questions.

CROSS EXAMINATION

BY MR. CATANACH:

Q Mr. Engler, where did you -- where did you actually get that 55 percent recovery factor that you used in your volumetric calculations?

A On that 55 percent, I used that from literature that we have around our office, basically. It's what we normally assume for a water drive reservoir.

Q Water drive fractured reservoir?

A Water drive fractured (inaudible).

Q The 22 percent decline, that's just based on the Knowles Devonian Field. Do you know of any other Devonian pools in the area with similar declines?

A Yeah, I ran declines on two, two or three of those other small pools in that area, and as I mentioned before, declines vary anywhere from 15 to 24-25 percent. So I just used the closest pool as an analogy.

Q If the Division decides to grant temporary rules for the new pool, including 80-acre spacing, do you have a recommendation as to the well locations for that pool?

MR. Kellahin: Mr. Examiner, we

would recommend to you the typical well locations in an 80-acre spacing. I believe they require a well to be within 150 feet of the center of a quarter quarter. If that's the standard you wish to apply to this pool, you'll find that the Benson Well is unorthodox and needs to be grandfathered in.

I think the Roddy Well is at a standard location.

We have no preference about it if you want to apply the standard well location we have no objection to it.

MR. CATANACH: Mr. Kellahin, what is the period of time that you're asking for the temporary rules to be in effect?

MR. KELLAHIN: I have been told 24 months. We might want to ask Mr. Engler if that is a period of time that would give sufficient opportunity to evaluate the data. If he's got some other time, we need to ask him, but I was told 24 months.

Q Then, Mr. Engler, would it, in fact, take 24 months to obtain the necessary data?

A I would say a minimum of a year to gain all the data that would be helpful.

Q But you're -- are you asking for two

years?

A Well, I'm -- I'm -- two years, I guess, is a normal procedure on them.

MR. CATANACH: I have nothing further of the witness.

Any other questions of this witness?

He may be excused.

MR. KELLAHIN; I realize we're running very short of time. I wonder if you might give us a very short break and let me consult with Mr. Dickerson. My desire will be to show him the balance of the land exhibits and to see whether or not we might dispose with the land witness and let him get to Mr. Davidson so we can hear his position?

All I intended to show with the landman was to -- to verify what I think we can perhaps stipulate to about what has occurred.

MR. CATANACH: Okay.

MR. KELLAHIN: If you'll give me a minute I think we can see if we can do that.

(Thereupon a brief recess was taken.)

MR. KELLAHIN: During the break, Mr. Examiner, Mr. Dickerson and I have stipulated in principal that I will attempt to summarize Mr. Daniels presentation, identify certain exhibits, and then we'll rest our case to give Mr. Davidson an opportunity to testify today so that we can finish the case today.

I will ask that Mr. Dickerson listen to me and correct me if I misstate what I think we're trying to do.

First of all, Mr. Daniels would testify that Exhibit Number Thirteen represents an accurate land arrangement, ownership plat, so that in regards, particularly to the southeast quarter, but I think it's typical of the south half of Section 14, that the parties and the percentages that are now involved in the 40-acre spacing for the Benson Well, will be the same parties and the same percentages if either -- if the south half of the southeast is dedicated and we go to 80-acre spacing. There will be change in the people, their percentages, and the ownership then is in common.

Fourteen, verification that on September 11th, '86, a certified letter was sent to Mr. Davidson providing him his 30-day election period to prepay his share of the well costs for the Benson Well. A copy of the Marathon order, R-8282, was inclosed in that letter,

along with the AFE, shown as Exhibit Sixteen.

Those documents are shown by a return receipt card that on September 15th Mr. Davidson received that package. It's Exhibit Number Seventeen.

Mr. Daniels' testimony would say that within that 30-day period Mr. Davidson did not elect to participate in the well and was pooled.

Exhibit Eighteen is my certificate to you with regards to the notices for hearing in the pool case. They include a copy of the cover letter to Mr. Lemay, the application, and the list of working interest owners and offset operators within a mile, all of whom were furnished that case and the application pursuant to the notice rules.

Exhbiit Nineteen represents a similar certificate for the amendment in the pooling order for which all interest owners in the 40-acre tract, as well as the 80-acre tract, the working interest owners, were sent notification by certified mail pursuant to the notice rules.

We further stipulate that Marathon testimony would be that they did not provide Mr. Davidson with a new opportunity to contribute his 40-acre tract but have elected to conform the force pooled acreage to an 80-acre tract should the Examiner order temporary rules.

rules, and that we did not go through the standard procedures you would normally go through to give Mr. Davidson a new election period or a new opportunity to negotiate a new deal with regards to the well.

That is the substance of Mr. Daniels' testimony and that is Marathon's position. If Mr. Dickerson concurs with me, we would, based upon that stipulation, then, move to introduce Marathon's Exhibits Thirteen through Eighteen.

MR. DICKERSON: I have no objection to that, Mr. Examiner. I would like for you to take, and again I'm attempting, as Mr. Kellahin is, to abbreviate our day here, to take administrative notice of the proceedings already conducted in Case 8960 and in the -- that was the Commission Hearing last fall involving this well and these parties, and in the preceding Examiner provision, in the interest of -- I'm attempting -- we'll have Mr. Davidson --not necessary to have him testify here today. Those proceedings adequately reflect the factual statements as opposed to my legal opinions in my opening statement regarding the extent of his interest in the Benson No. 1 Well, both in the 40-acre unit proposed for it initially, or his interest in the adjoining acreage both as a royalty interest and a working interest owner, and to leave, as far as possible, a record before us here today that pre-

sents what I think is the legal issue presented as a matter of record here, and yet save us some time, and if Mr. Kellahin has no objection to that, I will request a short opportunity for some legal argument but forebear calling Mr. Davidson as a witness because it would unduly and probably unprofitably delay us all and not further the determination of the legal and factual questions in front of us.

MR. KELLAHIN: I have no objection, Mr. Examiner.

MR. CATANACH: Okay. I will take administrative notice of Case 8960.

Would you like to, Mr. Dickerson, make a statement at this time?

MR. DICKERSON: Mr. Examiner, I think it's sufficiently clear from the record here today what is going on. Absent the amendment to the pooling order sought by Marathon to include the offsetting 40-acre tract to the west in which Mr. Davidson owns a 38.125 percent working interest, he would most likely not be of any great concern with this pooling case; however, in the present posture of this dispute, the pooling case and the amendment of the pooling order case, are inextricably intertwined so that we cannot have a result reached in one without injuring the interest of one party or another in the other case.

Marathon's witnesses today tes-

tified that their data is to some extent preliminary. We understand that as a practical matter. Any engineer and the people charged with making such determinations desire to have a longer history of production before committing to some of these calculations and expressing their opinion as a matter of any great certainty.

We propose a way that in my opinion would offer all parties an opportunity to have a decision rendered in this dispute based on the best possible evidence presented.

The Roddy Well is currently being completed. Marathon is awaiting certain informtion from that well and in the meantime both wells, presumably, will continue to be produced based on the title ownership in the wells in question and the fact that regrdless of the outcome in these two cases, this is not a case where Marathon is, insofar as I can tell, attempting to obtain 80-acre spacing in order to pool acreage and hold leases which might otherwise be subject to expire or something like that. It's not a case such as that. There is, obviously, the possibility that -- that 80-acre spacing would result in an increased allowable under our Rule 505 for a well of this depth, and I'm not at all insinuating that that's the motive for it. I do not know.

But the, given the fact that

title in both of these wells is uniform throughout both the -- a 40-acre spacing unit and the requested 80-acre spacing unit sought by Marathon, it is our position that there will be no prejudice to either party by postponing a decision in these cases until additional data is -- becomes available, and if I mischaracterize it, I have no doubt Mr. Kellahin will correct me, but my memory is that these witnesses to some extent acknowledge the fact that their evidence would be -- they would have better evidence at their control and would presumably use that evidence at a later time. I do not think that any party, including Mr. Davidson, would be prejudiced by doing that, nor do I think Marathon would be prejudiced by doing that.

To establish 80-acre spacing based on the state of this evidence, however, and to do the unthinkable, to amend the pooling order to expand a 40-acre spaced unit, clearly spaced as 40 acres in the original proceedings, by more or less rubber-stamp without due consideration of the legal issue involved as to the power of this Division to do that under these circumstances, would have the possible affect of prejudicing Mr. Davidson, however.

His interest does not change regardless of what the spacing unit dedicated to that Benson Well is. He has the same interest in both forties; however,

it is our position that he is pooled in the 40 acres originally dedicated to the well in the southeast quarter of the southeast quarter. He is not pooled, and he has the right to drill, as the owner of a working interest covering an undivided interest in the minerals in the southwest southeast and in the adjoining additional eight 40-acre spacing units in the south half of Section 14 and the south half northeast, and we would propose that an equitable way of avoiding this Division having to make this determination at this point of the legal issue that I'm posing, would be to simply delay any determination in these matters until additional information is determined. If Marathon in four to six months would have additional information, they can appear at that time and show us what they have gotten and we're all reasonable people and if we're convinced, we fold our tents and go home.

On the other hand, if -- if a decision is forced on us at this time, and assuming that one side or party is sufficiently aggrieved to want to pursue it, we've all been imbroiled in the past in other proceedings similar where we're faced with the de novo and then all the other related disputes that can get more and more complicated and more and more protracted, and more and more heated, and possibly all to no effect.

And it would therefore be our

position that a reasonable thing for you to do as Examiner would be to delay proceedings in this case pending receipt of additional information that will evidently be forthcoming in the near foreseeable future, and when that information is based, to reconvene -- or is obtained, to reconvene and make your decision based on all the best evidence that can be presented to you.

MR. CATANACH: Mr. Dickerson, what information do you think would be necessary ?

MR. DICKERSON: Well, I understand the core analysis would be helpful to an engineer in determining the nature of the reservoir in this Devonian structure, and it's going to be forthcoming shortly, I think was the testimony.

In the normal course of Marathon's business some bottom hole pressure tests will be conducted and we'll have all the time lengthening period of actual production from which drainage radius can in fact be calculated instead of assumed or estimated, and that it would have the additional benefit of forcing the parties to continue to litigate this under the normal procedures that our rules require when in fact it may all become moot at one point or another based on additional information.

I don't know what all information Marathon will get, Mr. Examiner, I'm in the dark.

MR. CATANACH: What would your opinion be, Mr. Dickerson, if the information that you're suggesting was submitted in confidentiality to the Division so that the Division could utilize the information sent in?

MR. DICKERSON: My -- I would have no objection to the information being furnished to the Division unless by that you imply, Mr. Examiner, that you would have access to it and we would not have access to it. That is not fair. That is not the way the American system of justice, even at the administrative level operates. We're entitled to know the witnesses against us; we're entitled to see the evidence against us; to have it presented. This is a public forum and to the extent that it is relied upon by the agency or a party when we're here opposing, this is -- this is people's lives, money, and property that we're talking about. It's not merely hypothetical, theoretical legal arguments or anything. It is -- it is money and it is principal to Marathon and to my client, as well, and so we certainly have no objection to Marathon furnishing it. We do have objection to an order being based on information which is secret to us but known to Marathon and to the Division that we have no opportunity to see or even know or in any way on appeal attack, question, or obtain.

MR. CATANACH: I understand.

Mr. Kellahin, would you like to

address --

MR. KELLAHIN: Thank you, Mr. Examiner.

Let me address the forced pooling question first and then talk to you about the interrelationship of the parties and the acreage.

We didn't get into the interrelationship and some of the timing of the various contracts and leases in Section 23 and 14. That matter is in the transcript for the Commission Hearing in the forced pooling case. I will tell you some of it but it's in the record and you might want to look at it.

I will tell you time is of the essence. It would be wonderful to have the time that Mr. Dickerson thinks that we have in order to slowly develop and analyze the reservoirs.

First of all, let me direct my attention to the forced pooling order itself.

The Division retains jurisdiction over the forced pooling case by its continuing jurisdictional language of that order. It's a chicken and egg problem in this kind of situation where you can't force pool anything other than a declared spacing unit and in a wildcat area like this, you're obligated to pool on the spacing pattern and that was 40 acres.

Mr. Dickerson would have you believe that this type of case is somehow similar to an application where the applicant in a forced pooling case expects to encounter multiple formations on varying spacing patterns.

That's a different question. What we're talking about here is the same pool that you drill to after you drill the well, then realizing that you now have information that causes you to believe that the spacing ought to be wider.

You have a change of facts with regards to the reservoir. It's something you can't know before you drill the well.

The law makes provision for this kind of change. You're allowed to change the forced pooling acreage. We don't have to give Mr. Davidson a new election. How can we? You can't. Think about how you physically give him a new election in this situation. It doesn't do anything more than give him a free ride. We've got a completed well. It's producing. He had his opportunity to share in that risk and he elected not to do so.

If you give him a new election period by requiring us to go through a new pooling case, he gets his thirty day election and he joins. He sends us a check for a producing well. He'd be foolish not to. He es-

capes the risk factor penalty and he is allowed to change the effect of not joining in the well.

Mr. Dickerson had you believe that you've never done this before. In fact you have. It's in a case called HCW Exploration. It first appeared before Examiner Catanach on May 14th, 1986. It was Case 8894 in which on behalf of HCW Exploration I requested a change in a forced pooling case.

This was a Jalmat case. We had force pooled originally in Order No. R-8071, Mr. Doyle Hartman. Mr. Hartman had an interest in that 160-acre tract and it was a Jalmat gas well and we pooled him.

After the pooling and after drilling the well and in fact after producing it for some time, the gas/oil ratio changed in that pool, or in that well, and we had an oil well. We came in here and changed the spacing so that it was now the appropriate oil spacing.

Mr. Hartman in that case had his lawyers come in here and say, guys, you've done it wrong. You've got to do it over. I get a new election.

It was the Division's decision in that case that, no, you had the continuing jurisdiction and the right to modify forced pooling orders so that they were consistent with the spacing rules. That's the way you've done it in the past. It's not absolutely perfect but

it's the way that works, and I think it's the only way that will work here.

How else can you think of fixing the pooling order that will not put all the risk back on Marathon and allow Mr. Davidson to escape that risk. It just doesn't work.

So we really do have just a spacing case and I wouldn't get caught up in the forced pooling problem. I don't think it's that big an issue. If you're wrong on it, then I guess somebody will have to tell us we're wrong, but I think you're legally sound. You've done it before. I think there's cases in other jurisdictions that make that appropriate; be happy to brief you on that question.

The spacing, though, I think is what we're here about. The spacing is to space it on 80 acres. It's what we do all the time. That's why we have temporary rules based upon preliminary data. This is no different than the hundreds of others you've heard. You get data like this early on and what do you do? You've got to protect the status quo. You can't wait thirty days or sixty days or six months while the engineers continue to get data and do colculations because you've got no control over the activity that's drilled around you. If you wait too long the accomplished fact is that you get close wells and un-

necessary wells on spacing patterns that are too close together.

So if you're going to make a mistake, make a mistake you can change and the mistake that you can change is one that allows you either infill drilling or down spacing.

We've said it a thousand times, you can't undrill the unnecessary well and next month or next year if we get wells on 40-acre spacing we can't take them away.

Mr. Dickerson wants you to wait. I have an advantage over him in that I did the forced pooling case before the Commission ad I understand the property interests among the parties.

Mr. Davidson is in a very competitive situation with Marathon in the two sections. If Marathon, as Mr. Daniels testified before the Commission, does not act within certain time frames, they cannot control the acreage that ought to appropriately be dedicated to a well. They have continuous drilling obligations of 180 days, and if we wait for 180 days after the completion of each of these wells while we get data, we'll lose the acreage and the primary beneficiary in many of those instances will be Mr. Davidson.

In some of that property he's

top leased us. In other of the property he has a mineral interest owner and we've got an impossible situation where we do not have the luxury of delay.

We would implore upon you that you act quickly. We think the action that you can take is fully allowed by the law and it's the only prudent action that you can take. Avoid drilling unnecessary wells until we know more about it; allow us a opportunity to gain further data. The information available to you is all we have. If you don't think it's enough, deny the case.

That's the answer. We're not required to disclose proprietary data. Mr. Lemay has told us we don't have to give Mr. Davidson information on the well. He's got an override, I think, in the Roddy Well. He's not a working interest owner. He didn't pay for it.

You give us an opportunity to analyze it before we have to give it away to give it away to the world.

But we think we've given you enough information to justify the spacing pattern. You don't have a standard drainage calculation, but Mr. Engler told you and I think you can calculate it for yourself, that an acceptable alternative is to take a volumetric calculation, match it with a decline analysis, and see if you're going to get a reasonable match, and he got a good match.

That's a comfort.

We don't have a large reservoir to make lots of mistakes in. We ask that you help us avoid making this mistake and grant us the relief we've requested.

Thank you.

MR. DICKERSON: Mr. Catanach, I would request that you allow myself and Mr. Kellahin, as well, if he would like it, fifteen days or so in which to submit a brief because I think that the legal issues would make that worth while.

MR. KELLAHIN; I would like to very much. I think I concur with Mr. Dickerson. It's -- it's an important decision to make and we would like to give you the benefit of both of our perspectives and see if there are some -- some new cases that might help you decide that question, and I would concur that perhaps fifteen days would give us a chance to do that.

MR. CATANACH: That would be fine.

MR. DICKERSON: Mr. Catanach, may I summarize in one minute or less?

In our opinion we did not know, it is not in evidence to my recollection, that Marathon has a 180-day drilling commitment between wells, but I think it is in evidence that the Roddy Well is now in the process of

being completed. It is not yet completed; therefore, Marathon, while it has a time problem, it is a time problem that is not imminent, not critical, and not going to lose any rights immediately. They've got a relatively long period of time in which to analyze this and decide where and if they want to drill their next well.

The gist of the testimony that I heard was why would anybody assuming that the data that has been presented here today by Marathon is correct, why in the world would Marathon or anybody else drill another well here?

And so if, however, you choose to go ahead and decide this case, I would agree with Mr. Kellahin that based on this evidence the proper thing for you to do is either grant or deny the application and I would simply submit to you in concluding that based on this evidence it would be perfectly proper for you to deny the application based on current evidence presented.

MR. CATANACH: Thank you. Anything else?

MR. KELLAHIN: That's it.

MR. CATANACH: Okay.

(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 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. 9145, 9146 heard by me on June 3 1987.

David R. Catanach, Examiner
Oil Conservation Division

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO

15 March 1989

EXAMINER HEARING

IN THE MATTER OF: (REOPENED)

In the matter of Case 9145 being reopened pursuant to the provisions of Division Order No. R-8497, which promulgated tenporary special rules and regulations for the North Knowles-Devonian Pool, Lea County, New Mexico. CASE 9145

BEFORE: Michael E. Stogner, Examiner

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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I N D E X

E X H I B I T S

MR. STOGNER: At this time we'll call Case Number 9145, which is in the matter of said case being reopened pursuant to the provisions of Division Order No. R-8497, which promulgated temporary rules and regulations for the North Knowles Devonian Pool in Lea County, New Mexico.

Call for appearances.

MR. KELLAHIN: Mr. Examiner, I'm Tom Kellahin of the Santa Fe law firm of Kellahin, Kellahin & Aubrey.

I'm appearing today in association with Mr. Larry Garcia, an attorney for Marathon Oil Company. He and I collectively represent Marathon Oil Company and we seek today to make the rules permanent for the pool.

MR. STOGNER: Are there any other appearances?

Will the witnesses please stand and be sworn at this time?

(Witnesses sworn.)

MR. STOGNER: Mr. Kellahin.

MR. KELLAHIN: Thank you, Mr. Stogner. We'll call as our first witness Mr. Eric Carlson.

His name is spelled C-A-R-L-S-O-N. Mr. Carlson is a geologist with Marathon Oil Company.

E. D. CARLSON,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A My name is Eric D. Carlson. I am a petroleum geologist.

Q Mr. Carlson, have you on prior occasions testified as a geologist before the Oil Conservation Division?

A No, sir.

Q Would you describe for us when and where you obtained your geologic degree?

A I obtained my Bachelor's degree in geological sciences at Cornell University in June, 1982.

Q Do you hold any other degrees in geology, Mr. Carlson?

A No, sir.

Q Subsequent to your graduation would you

summarize your employment experience as a petroleum geologist?

A Upon graduation I was hired by Marathon Oil Company to work as an exploration geologist in their Gulf Coast Offshore District.

After two years, in early 1984 I was transferred to Lafayette, Louisiana, as a production geologist or development geologist and in June of 1987 I was transferred to Midland, Texas, to work in their Midcontinent Region as a development geologist.

I've been there since that time.

Q Mr. Carlson, have you made a review of the geologic presentation that was originally made by your company before the Division, which resulted in the Division entering Order No. R-8497?

A Yes, sir.

Q And subsequently have you compiled new data and information and reached additional geologic conclusions about this particular pool?

A Yes, sir.

MR. KELLAHIN: At this time, Mr. Examiner, we tender Mr. Carlson as a expert geologist.

MR. STOGNER: Mr. Carlson is so qualified.

Q Mr. Carlson, let's turn to Exhibit

Number One. Before we discuss the specific content of it, simply describe for me, if you will, what we're looking at in this display.

A Exhibit Number One is a structure map made from geophysical data. Since the geophysical map was made two wells have been drilled into this map, or into this horizon, which is the Siluro-Devonian top. Those two wells are also included on the map.

The original well -- the original map was made by Dave Rebenstorf, a geophysicist who's appeared before this Commission in 1-87, and I revised it for this hearing.

Q When this matter was originally presented to the Division in June of 1987 for the creation of this new North Knowles Devonian Field, would you describe for us what information geologically was available at that time to determine the size and shape of the reservoir?

A At that time the detailed geophysical grid had been interpreted over this prospect and the Benson No. 1 Well had been drilled and completed and tested.

Q What were the major geologic conclusions as a result of the initial hearing in June of 1987?

A Well, the geological conclusions were validated by the drilling of the Benson No. 1 Well. We were interested in that prospect so we drilled a second

well, the Roddy No. 1, located to the south of the Benson Well.

Q Let me have you turn to Exhibit Number Two and identify and describe what new information you have utilized in your study that's been developed since the '87 hearing.

A Turning to Exhibit Two I would note three new significant parcels of information, the first being special core analysis from a core we cut in the Roddy No. 1 Well; the second being log analysis calculations from the Roddy No. 1 Well, and finally, the last several months production data, extended production for the Roddy No. 1 and Benson No. 1 Well.

Q Based upon the new data, Mr. Carlson, and your examination of all the material geologic information, what is your current opinion about the size and shape of the reservoir?

A In 1987 we very nearly had it as close as we could have it. It was very minor revisions since 1987, specifically a slight change in the oil/water contact to represent a slightly thinner reservoir than we first thought.

Q Is the oil/water contact displayed on Exhibit Number One as you interpret it to be?

A Yes, sir. It is exhibited with a dashed

line at 9422 feet subsea.

Q Are the faulting that bound this reservoir on virtually all sides continue, in your opinion, to exist as depicted on the display?

A Yes, sir.

Q How have you determined the oil/water contact for the reservoir, Mr. Carlson?

A Marathon conducted special core analysis in the Roddy No. 1 core which established the oil/water contact.

Q Let's have you turn, sir, to Exhibit Number Three and identify and describe the information contained on Exhibit Three.

A Exhibit Number Three is an abbreviated structural cross section running from the Roddy Well in the south to the Benson Well to the north.

On this cross section we have the Woodford and Siluro-Devonian tops. For the Siluro-Devonian tops for each well we have placed the measured depth and the subsea depth. We have also placed the perforated intervals, the cored interval in the Roddy No. 1 core, the oil/water contact at negative 9422 feet and a location map and this is a 2-to-1 vertical exaggeration.

Q What does this information tell you?

A This is a summary diagram which very

neatly displays the pertinent information for this prospect.

Q And what do you conclude, then, from the study of the information?

A I would conclude that our engineering data and our geological data prior to development and drilling of this prospect were in the largest sense correct.

Q Have you satisfied yourself that the information utilized for determining the location of the oil/water contact is reasonable and reliable?

A Yes, sir.

Q In examining the area within -- contained within the boundaries of the pool, we are currently utilizing 80-acre spacing in the pool.

A Yes, sir.

Q As a geologist do you have a recommendation to the Examiner as to whether or not we continue with spacing on 80-acre spacing?

A I would recommend that but with the qualification that myself I did not do the detailed calculations to establish that recommendation.

Q Do you see the opportunity in the reservoir to further develop the reservoir with additional drilling?

A I see very limited potential for further development in this reservoir.

Q In examining the cross section do you see any indication that as a result of drilling the Benson and Roddy wells, that we are -- are stratigraphically leaving hydrocarbons behind by spacing wells on 80-acre spacing?

A I would say no, there is, no, there is no stratigraphic component to the trapping mechanism.

Q From a geologic basis, then, can we ultimately conclude, Mr. Carlson, that based upon the information you have examined, 80-acre spacing continues to be appropriate spacing for the pool?

A Yes, sir.

MR. KELLAHIN: That concludes my examination of Mr. Carlson.

We move the introduction of his Exhibits One, Two and Three.

MR. STOGNER: Exhibits One, Two and Three will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Carlson, whenever I refer to Exhibit Number Three, you mentioned the Woodford formation.

I'm not familiar with that nomenclature. Is that equal --

A It's a --

Q I'm sorry, go ahead.

A Excuse me. It is a relatively radioactive shale that's commonly associated with the Mississippian.

Q Would you say this was the base of the Mississippian formation, then?

A That would be a reasonable statement.

Q Okay, so when you refer to the Woodford you're referring to a member of the Mississippian.

A That is correct.

Q Okay. Do you recall, Mr. Carlson, where the oil/water contact was in the original hearing?

A My exact recollection is -- evades me, but it was somewhere around 9450 subsea.

MR. STOGNER: I have no questions of this witness at this time. I may subsequent to your next witness.

You may be excused.

MR. KELLAHIN: Mr. Examiner, we'd like to call Mr. Tom Engler, who's a reservoir engineer with Marathon Oil Company.

T. W. ENGLER,

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

DIRECT EXAMINATION

BY MR. KELLAHIN:

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

A Yes. My name is Thomas Engler and I work as a reservoir engineer for Marathon Oil.

Q Mr. Engler, would you describe for us your educational background and work experience?

A Yeah. I graduated in 1982 with a Bachelor of science in petroleum engineering from New Mexico Tech.

Subsequent to that time I went to work for Marathon Oil, which I worked for for seven years in Midland, Texas, and in the Permian Basin of southeast New Mexico.

Q In June of 1987 did you testify before the Division as the reservoir engineer that made the calculations and recommendations for the establishment of the special rules for this pool?

A Yes, I did.

Q And subsequently have you continued with

your studies of this reservoir?

A Yes, I have.

Q And do you now have recommendations and conclusions for the Examiner with regards to what should be the special rules for the pool?

A Yes, I do.

MR. KELLAHIN: Mr. Examiner, we tender Mr. Engler as an expert reservoir engineer.

MR. STOGNER: Mr. Engler is so qualified.

Q Let's turn to Exhibit Number One simply as a point of reference, Mr. Engler. At the time of the hearing in June of '87 you had the discovery well, the Benson No. 1 Well?

A That's correct.

Q What were your major engineering conclusions based upon the study of the available data at that time?

A At that time we concluded that we felt that 80-acre spacing was the efficient spacing for the field.

We used a comparison of both decline analysis reserves on the Benson and versus a volumetric calculation of the Benson on 80 acres.

At that time we came up with on a

decline, 107,000 barrels of oil in reserves and in volumetrics we came up with -- oh, excuse me, a decline 109,000 and on volumetrics 106,000. We felt this was evidence that proved to us we were draining the 80 acres.

MR. KELLAHIN: Mr. Examiner, for your information I'd like to give you a copy of Order 8497, which is the order that sets forth the findings in the original pool rule case.

Q Subsequent to that hearing, Mr. Engler, what additional engineering data has been developed and examined by you?

A We acquired some pressure data from the drilling of the Roddy No. 1; core data and log data, of course, from the Roddy No. 1; and production data over the last 18 months from both the Roddy and the Benson.

Q Has the temporary period been a sufficient enough period in which to obtain adequate information from which then to make an analysis and draw conclusions about making these rules permanent?

A Yes. I feel we have sufficient data now.

Q Based upon the new data what have you done, Mr. Engler?

A On the new data the first attempt was to use a drawdown reservoir limit test.

Q What would be the purpose of that type of analysis?

A On this pressure test you can determine basically the drainage area or affected area of a well.

Q Okay. Let me have you turn to Exhibit Number Four. What does Exhibit Number Four show?

A Exhibit Four is the typical drawdown test pressure versus flowing time where you see a normal -- what you expect a normal decline in the slope.

Q Is this taken for any particular well?

A No, this is just from published literature, what one should look like.

Q For this kind of reservoir we'd see a pressure decline slope such as this?

A Right, with flowing time we should see pressure decrease.

Q Okay, and what does Exhibit Number Five represent?

A Exhibit Five shows the -- the same data, pressure versus flowing time, only this is off of the Roddy No. 1.

Q This was the well drilled after the establishment of the temporary rules?

A That's correct.

Q And what does this show you?

A There's two characteristics on this curve. You can see in five to ten hours a pressure increase. This is actually due to a choke plugging on the surface and really has no bearing or typical bearing on a drawdown, but the main part is from the 10 hours on to the 44 hours you see, instead of seeing a slope pressure drop or a slope change, you have a flat, constant pressure.

Q What does that tell you as an engineer?

A What it tells me is what I'm seeing is the influence of this water drive, a constant pressure boundary effect by the water always maintaining pressure within the reservoir.

Q It this an active water drive reservoir?

A Yes, sir, it is.

Q As a result of that drive mechanism in the reservoir were you able to use the pressure information to determine an effective interference or boundary between the Roddy and the Benson Well?

A No, we were not.

Q And why not?

A Well, for the -- for the simple reason that we have no slope, we could not determine any kind of a drainage area or a drainage calculation with this data.

Q Having been unsuccessful if you use this this type of information to establish spacing or drainage

between wells, what did you attempt next?

A The next attempt was to basically go into some reservoir engineering type calculations such as volumetrics and recovery factors.

Q Okay, what did you do?

A The first step was to determine using geologic data that was presented before in the Exhibit One, the volume or volumetric oil in place within this reservoir bounded by oil/water contact.

Q Let's turn now to Exhibit Six and have you identify and describe Exhibit Six.

A Okay. Exhibit Six is the production plot, oil. gas and water, by month for the Benson Well.

Q What's the purpose of this exhibit?

A Well, this (unclear) shows the additional data that we acquired since the June, 1987, hearing plus also shows that the water production or water increase, a sign of an active water drive.

Q Did you make a similar plot of the information for the Roddy Well?

A Yes, we did.

Q That's Exhibit Number Seven?

A Yes, it's the same type plot only it's just data from the Roddy.

Q What does this show you?

A Again this is all, you know, new data that we have now that we did not have before and again it also shows even on the structurally most highest well we're getting water to increase the water production.

Q You mentioned awhile ago that you -- you determined that you would use a volumetric method of analysis of the reservoir and try to determine, then, whether or not on that method of analysis the spacing was appropriate for the reservoir.

Let me have you turn to Exhibit Number Eight. In making that volumetric analysis what parameters were you using?

A As shown in Exhibit Number Eight, the first part of that exhibit, it goes through the parameters that we used, of course, for the volumetric oil in place.

Q The parameters, the source information for the parameters is also shown on the exhibit?

A That's correct.

Q Are you satisfied as an engineer that you had accurate parameters for making this type of calculation?

A That's correct.

Q All right, what -- what did you do, then?

A We, well, made the calculation

determining oil in place of a little over a million barrels.

Q All right, then what did you do?

A Well, the next step was to take the existing production from the two wells and determine an estimate of ultimate recovery, determine remaining reserves, and then come up with a total reserves or total recovery we felt we could get from these two wells.

Q The recovery factor listed in Roman Numeral III resulted in a recovery factor of 49 percent?

A That's correct.

Q And that would be a recovery factor if you produced the well to depletion?

A Produced the well to depletion, that's right.

Q So then what did you do?

A Well, the next step, we can up with this recovery factor of 49 percent and the next step we determined if we felt that we were within the ballpark or a normal range for this type reservoir within the area of -- of the North Knowles Field.

Q How did you go about determining then that 49 percent recovery was in a realistic range of reason for this type of Devonian reservoir?

A We did or I did a comparison of six

other Devonian fields within the area.

Q All right, let's turn before we get to that tabulation of information to Exhibit Nine and have you identify Exhibit Nine for us.

A Okay, Exhibit Nine is from the Benson Well. What's plotted here is just the old production data and then we drew a best fit line to determine remaining reserves from 1-1-89 on throughout depletion.

Q And how was this information utilized, then, in your analysis of the volumetrics?

A Well, this is added into the cum production determined as total oil recovery.

Q Did you do the same thing for the Roddy Well?

A Yes, sir.

Q And that's Exhibit Number Ten?

A Exhibit Number Ten, that's correct.

Q And how in your opinion as a reservoir engineer is there a best fit on this curve from the data points?

A From the data we have from this plot, this is the best fit we could -- we could get.

Q And you also utilized, then, this information to get remaining reserves for the Roddy Well, then?

A That's correct.

Q All right. Now let's go back and see on Exhibit Eleven what you have done in terms -- determining the comparison of the 49 percent in the North Knowles Field to other fields.

A Okay. Exhibit Number Eleven has the -- basically the same type reservoir calculations for six offset Devonian fields within near -- the nearest one near the North Knowles Field and also included, of course, is North Knowles.

The oil in place is a calculation basically done by volumetrics and the estimated ultimate recovery is production plus remaining reserves and then we come up with a recovery factor of each one of these fields, and then the last column is what the proration unit or spacing is under the rules for each one of those fields.

Q When we look at the last four fields shown on Exhibit Number Eleven, all those are 80 acre spaced fields?

A That's correct.

Q And the second column to the left of the -- of the spacing acreage is RF, that's the recovery factor or the percentage?

A That's correct.

Q And how do those recovery factors in the other 80-acre Devonian pools compare to the recovery in the

North Knowles?

A Well, an average of three other fields outside of North Knowles, which are Knowles, South Knowles, and Medicine Rock, the average recovery in those three is 50 percent and North Knowles, of course, as you see there, we're recovering 49 percent.

Q So what does that tell you?

A That tells me we're right in line with what we feel -- with any other field out there with the spacing of 80 acre drainage.

Q Let's talk about the range of the recovery factor. You've established for this pool approximately 49 percent recovery factor.

A That's right.

Q What would be the lower end of the spectrum of recovery factors and what would that do to the spacing? For example, if you had a 20 percent recovery factor, what would that then tell you?

A Since we feel that the oil in place is a pretty firm number, it would say that we were draining a smaller area. In other words, your drainage area might be 40 acres or somewhere in that neighborhood instead of 80.

Q And therefore what would you conclude?

A We would probably want to see by drilling into the well, or drilling (unclear) spacing on

it.

Q On the other hand, if the recovery factors were in the 70 or 80 percent range, what does that tell you as an engineer?

A Maybe some of our data might not quite be right, because that's extremely high recovery factor for any type of reservoir (inaudible).

Q Based upon this study of new available information, Mr. Engler, what is your ultimate conclusion as a reservoir engineer for the spacing of this particular pool?

A I feel the 80 acre spacing will prevent waste and simply -- and -- and basically what we're looking at as being drained from these wells.

Q In examining the engineering and looking at the Exhibit Number One, do you see the opportunity to drill any other wells in the reservoir at this time?

A At this time, no, we don't.

Q All right. Do you have an opinion as to whether the two wells are too many or too few?

A I think right now it's probably just right. I don't think we could add any more wells and I don't know, I don't think we could subtract any wells.

MR. KELLAHIN: That completes my examination of Mr. Engler.

We would move the introduction of his Exhibits Four through Twelve.

MR. STOGNER: Exhibits Four through Twelve will be admitted into evidence.

CROSS EXAMINATION

BY MR. STOGNER:

Q Mr. Engler, in looking at your -- or doing your reservoir study, did you notice or have any indication that the Roddy Well made any -- had any effect on the Benson Well?

A No. When Roddy came on line and started production there was no really change seen or any kind of dramatic drop off on the Benson.

Q And so there was no pressure difference in the Benson or --

A There was no interference, no.

Q For wells spaced on 80 acres and these wells are -- how far apart are these two wells?

A They would be, let's see, Roddy is a legal 80; the Benson being a wildcat drilled originally was put on, of course, a 40 acres. I believe they're a little -- pretty much near 1100 feet apart.

Q Has it been your experience in an 80 acre proration unit that these wells this far apart would

have any affect on each other, an 80 acre, if they were indeed draining 80 acres?

A If they being that far -- I guess I don't understand the question.

If they were that close?

Q Yeah.

A You would think that if it wasn't water drive you would see influence.

Q That's right.

A That's right, but we can't see it with that water drive masking everything.

Q Okay.

MR. STOGNER: I have no further questions of Mr. Engler. Mr. Kellahin, do you have anything further of Mr. Engler?

MR. KELLAHIN: No, sir.

MR. STOGNER: Does anybody else have anything further in reopened Case Number 9145?

This case 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 that 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. 9145 (Reopened) heard by me on 15 March 1989.

Michael E. Stogner, Examiner
Oil Conservation Division